TUALATIN ARCHITECTURAL REVIEW BOARD MEETING

WEDNESDAY, SEPTEMBER 10, 2025

TUALATIN CITY SERVICES
10699 SW HERMAN ROAD
TUALATIN, OR 97062

Join Zoom Meeting
https://us02web.zoom.us/j/87341608844?pwd=O1mf44bVKICksbJq5dK9GvDjMDa2hx...

Meeting ID: 873 4160 8844
Passcode: 928154

Find your local number: https://us02web.zoom.us/u/kjkt79wlG

CALL TO ORDER & ROLL CALL

ANNOUNCEMENTS & COMMUNICATION

APPROVAL OF MINUTES

1. Architectural Review Board Meeting October 2, 2024 minutes review.

COMMUNICATION FROM THE PUBLIC (NOT ON THE AGENDA)

ACTION ITEMS

1. Mackenzie, on behalf of Lam Research Corporation, is requesting approval to construct a multi-phase project consisting of three buildings for office, research laboratory, and utilities, totaling 241,230 square feet, expansion of an existing bulk gas storage yard, and associated landscaping, parking, and public/site improvements on a 75.96 acre site zoned Manufacturing Park (MP).

COMMUNICATION FROM CITY STAFF

FUTURE ACTION ITEMS

ADJOURNMENT

CITY OF TUALATIN Planning Division

UNOFFICAL

Architectural Review Board

MINUTES OF October 2, 2024

ARB MEMBERS PRESENT:
Chair, Cyndy Hillier
Board Member, Patrick Gaynor
Board Member, Skip Stanaway
Board Member, Chris Goodell
Board Member, Keith Hancock
Board Member, Kylan Hoener

STAFF PRESENT:
Steve Koper, Community Development Assistant Director
Lindsey Hagerman, Office Coordinator

ARB MEMBERS ABSENT:
None

CALL TO ORDER AND ROLL CALL

The meeting was called to order at 6:30 p.m., and roll call was taken.

New Board Members introduced themselves.

COMMUNICATION FROM CITY STAFF

1. **Staff provided a brief legal training to outline the Architectural Review Board's role and responsibilities.**

Steve Koper, Assistant Community Development Director offered an overview of the training. He noted that asking questions is essential for effective legal training. He addressed the importance of acting collectively as a body. Additionally, he mentioned that political expressions are not allowed during meetings.

Mr. Koper shared the definitions of a public meeting, including an explanation of what a quorum is. He emphasized that public meetings must be accessible and visible to the public. He shared an example of what "serial" meeting entails. He noted this comes up more with social media. He let Board Members know if they have any questions they can be directed to staff but to be careful to not "reply all". He explained this could be the communication through

These minutes are not verbatim. The meeting was recorded, and copies of the recording are retained for a period of one year from the date of the meeting and are available upon request

via e-mail, telephone, face-to- face or even social media postings, such as Facebook. He pointed out that at social gatherings Board Members should avoid any discussion of official government business.

Chair Hillier asked if there would be a certain date for the 21 days for the meeting. Mr. Koper answered yes a date would be set.

Mr. Koper spoke about biased opinions, emphasizing that they arise when a decision-maker fails to provide a fair hearing. He pointed out Board Members need to disclose their biases, allowing applicants to decide whether to proceed or to abstain from participation. He also addressed conflicts of interest, explaining that they occur when a decision leads to a "private pecuniary benefit or detriment" for oneself, family members, or associated businesses. A potential conflict may arise when a decision or action could result in such an outcome. To illustrate this, he shared an example and stressed the importance of transparency in these situations. Additionally, he mentioned that the City has a legal attorney available for those seeking more information on legal matters.

Mr. Koper shared the definitions of public meetings, including an explanation of what a quorum is. He emphasized that public meetings must be accessible and visible to the public. He noted Board Members might limit public participation and ask them to leave if they are causing disruption during the meeting. He shared this may be someone cheering or booing during the meeting.

Chair Hillers asked for clarification if the Board Members or the Chair might limit public comment to three minutes. Mr. Koper answered yes they may ask for limits on public comments.

Mr. Koper described the staff's role and its impact on the Planning Commission. Staff ensures that applications are reviewed and meet the necessary criteria before being presented at meetings. He clarified the decision-making process, explaining that if an applicant demonstrates compliance with pre-existing criteria, the application must be approved, even if the decision-maker disagrees with those criteria or believes un-adopted additional, criteria should apply. He illustrated this point with an example of the criteria for an upcoming Industrial Master Plan application.

Board Member Stanaway asked how much information they should add as Board Members. Mr. Koper answered it depends and shared an example of situation where would need more content.

Mr. Koper highlighted the decision-making criteria must demonstrate compliance. He reiterated evidence the applicant has the burden of proof. The applicant must introduce evidence that shows that all of the approval criteria are satisfied. He explained the final decision might result in approval, approval with conditions or denial. He provided information on Land Use Board of Appeals (LUBA) may reverse or remand a local government decision when local government has "made a decision not supported by substantial evidence in the records as whole."

Mr. Koper opened up the floor to Board Members to questions.

Board Member Hancock asked for clarification on which date starts the clock on deeming and application being complete. Mr. Koper answered it is when the application has been filed.

Board Member Hancock asked if applications have a life span. Mr. Koper answered an approved application has a 2 year life span from decision to file a permit and keep it active. Additional eligible to extend one year and if they do not act with additional year, the application become void.

ADJOURNMENT

Board Member Gaynor made a MOTION to adjourn. Board Member Hancock SECONDED the motion. The Board Members unanimously voted to ADJOURN the meeting at 7:53 p.m. (7-0)

CITY OF TUALATIN

Staff Report

TO:	Architectural Review Board
THROUGH:	Aquilla Hurd-Ravich, Community Development Director
FROM:	Keith Leonard, Associate Planner
DATE:	September 10, 2025

SUBJECT:
Mackenzie, on behalf of Lam Research Corporation, is requesting approval to construct a multi-phase project consisting of three buildings for office, research laboratory, and utilities, totaling 241,230 square feet, expansion of an existing bulk gas storage yard, and associated landscaping, parking, and public/site improvements on a 75.96 acre site zoned Manufacturing Park (MP).

RECOMMENDATION:
Based on the analysis and findings, as well as the application materials demonstrating compliance with the applicable review criteria, staff respectfully recommend approval of the subject Architectural Review application (AR 24-0002), subject to the recommended conditions of approval in the attached written order.

EXECUTIVE SUMMARY:

- The public hearing has been rescheduled from its original date on April 2, 2025 and a rescheduled hearing date on June 11, 2025, pursuant to ORS 197.763.
- This is a Type III land use case, subject to a quasi-judicial hearing before the Architectural Review Board.
- The subject site comprises four parcels that total 75.96 acres of land in the Manufacturing Park zone, located on SW Leveton Drive, west of 108th Avenue, and south of SW Tualatin Road. The land is occupied by Lam Research Corporation and is improved with seven buildings and associated parking.
- The applicant requests approval to construct a four-story, 120,000 square foot office building, 90,000 square foot lab building, 29,000 central utilities building, 2,230 square foot storage building, one new access drive for trucks off SW Leveton Drive, and parking lot expansions by approximately 544 stalls (including demolition of 468 stalls and relocation/construction of 1,012 stalls). The applicant has also submitted a tree removal permit for 239 trees over 8-inches DBH to construct the improvements.
- The applicant is proposing three construction phases. Phase 1 will construct the office building (Building H) and northern parking lot within the initial 2-years of construction. Phase 2 will construct the lab (Building X), utility building (Building U), storage building (Facilities Storage) within the first four years. Phase 3 will expand the bulk gas yard and parking area in the southwestern area of the site with construction starting within 6-years (Exhibit A2).
- The SW Tualatin Road existing driveway will remain an emergency access for Lam Research with all employee access being directed to SW 108th Avenue and SW Leveton Drive.

- No study area intersections were found to have a crash rate higher than 1.0 for the five-year crash data from 2019 through 2023, nor were significant patterns found that could be addressed by improvements to the intersections.
- All public street intersections but one are projected to meet City of Tualatin and ODOT mobility standards with the proposed project. The intersection of SW Hazelbrook Road/OR 99W experiences long delays in the PM peak hour for vehicles turning right onto OR 99W, but capacity improvements are not recommended at this location.
- Proposed improvements to the transportation system include (1) coordination of traffic signals to facilitate left turn movements from OR 99W to SW Tualatin Road at their intersections with SW 124th Avenue. This will minimize the queue lengths and delays for southbound left turns on SW 124th Avenue and avoid potential spill back to OR 99W; and (2) Trim vegetation at the site access locations as needed to provide the recommended intersection sight distances.
- The proposed development was granted an Industrial Master Plan through IMP 24-0001 that established appropriate building materials and colors, modified setback standards, modified building height, modified parking lot landscaping standards, and added Tax Lot 2S122BA 00100 (Exhibit D).
- The existing City utilities are adequate to serve the proposed development.
- Public improvements include the following:
    - Half-street right-of-way dedication with street improvements along SW Leveton Drive and SW Tualatin Road, if needed based on existing conditions.
    - Asphalt grind and overlay on SW Tualatin Road adjacent to Lam's lots with proposed development, from SW 108th Avenue to the west end of the property.
    - Necessary public utility easements will be dedicated along SW 108th Avenue, SW Leveton Drive and SW Tualatin Road to accommodate water system meters and vaults and onsite water laterals.
    - Sidewalk will be constructed along the northernmost access to SW 108th Avenue to the main campus and other sidewalks will be reviewed and improved where needed to meet ADA specifications.
    - Existing street lighting will be evaluated for compliance with City standards. Upgrades will be required as needed.
    - Rerouting of an existing public water main serving the JAE Oregon site resulting in conversion of the entire line outside of the public right-of-way to a private water main owned and maintained by JAE.
    - Modification to existing and construction of new stormwater facilities to provide treatment, hydromodification, and detention for all private and public impervious surfaces will be required.
- The City Engineer and an independent consultant have reviewed the traffic study provided by the applicant, found it to be in substantial conformance with Tualatin's Traffic Study Requirements, and agree with its conclusions.
- "ODOT concurs with the findings of the TIA that all ODOT intersections are projected to meet ODOT mobility standards following completion of both phases of the project in 2030" (Exhibit K).
- "Given that this has not been shown to present safety or operation issues for northbound traffic on OR 99W, ODOT concurs that "mitigation is not recommended [at Hazelbrook] because it would encourage vehicles to travel this route from SW Tualatin Road instead of using SW 124th Avenue to access OR 99W northbound."" (Exhibit K).
- "ODOT has noted that "no further analysis of state highway facilities is required" (Exhibit K).

- Numerous public comments (Exhibit F) were received, which express concern over noise impacts and potentially increased traffic affecting the residential properties north of SW Tualatin Road. Most recent traffic comments request that the proposal limit employee access to SW Leveton Road and not SW Tualatin Road or SW 108th Road. The noise complaints are being investigated by the City's Code Compliance Officer. The public comments have been separated into in-favor and against comments and then four groups:, comments provided prior to applicant materials being posted on the City's Projects webpage, comments pertaining to the first proposed design deemed complete and the first public hearing notice being sent on December 16, 2024, comments submitted after the updated project design submitted and posted to the City's projects webpage on July 21, 2025 to August 20, 2025 and comments submitted after the Planning Commission's Industrial Master Plan Hearing on August 20, 2025.

OUTCOMES OF DECISION:
Approval of AR 24-0002 will facilitate construction of the proposed development in conformance with the conditions of approval, code requirements and IMP24-0001.

ALTERNATIVES TO RECOMMENDATION:
The Architectural Review Board may:
- Approve AR 24-0002 with amended conditions of approval and direct staff to provide updated Analysis and Findings; or
- Continue the hearing to a later date for further consideration; or
- Deny AR 24-0002 and provide staff with findings supporting this decision

FINANCIAL IMPLICATIONS:
No financial impact is expected.

ATTACHMENTS:

- Attachment A – Presentation
- Attachment B - Analysis and Findings
- Attachment C – Written Order
    - Exhibit A1 - Narrative
    - Exhibit A2 – Plan Set and Elevations
    - Exhibit A3 – Tree Assessment Report
    - Exhibit A4 – Transportation Impact Analysis
    - Exhibit A5 – Preliminary Stormwater Report
    - Exhibit A6 – Supporting Documents
    - Exhibit B – Public Noticing Requirements
    - Exhibit C – Clean Water Services Memorandum
    - Exhibit D – IMP 24-0001 Written Order
    - Exhibit E – Water System Capacity Analysis
    - Exhibit F – Public Comment
    - Exhibit G – Map 8-5 Transit Plan
    - Exhibit H – TDC Figure 73-1 Parking Space Design Standards
    - Exhibit I – TDC Figure 73-2 Vision Clearance Area
    - Exhibit J – Map 8-1 Functional Classification and Traffic Signal Plan
    - Exhibit K – ODOT Lam Review (email dated 7/29/25)

CITY of TUALATIN

11155-11361 SW Leventon Dr. Lam Research Expansion

Architectural Review (AR 24-0002

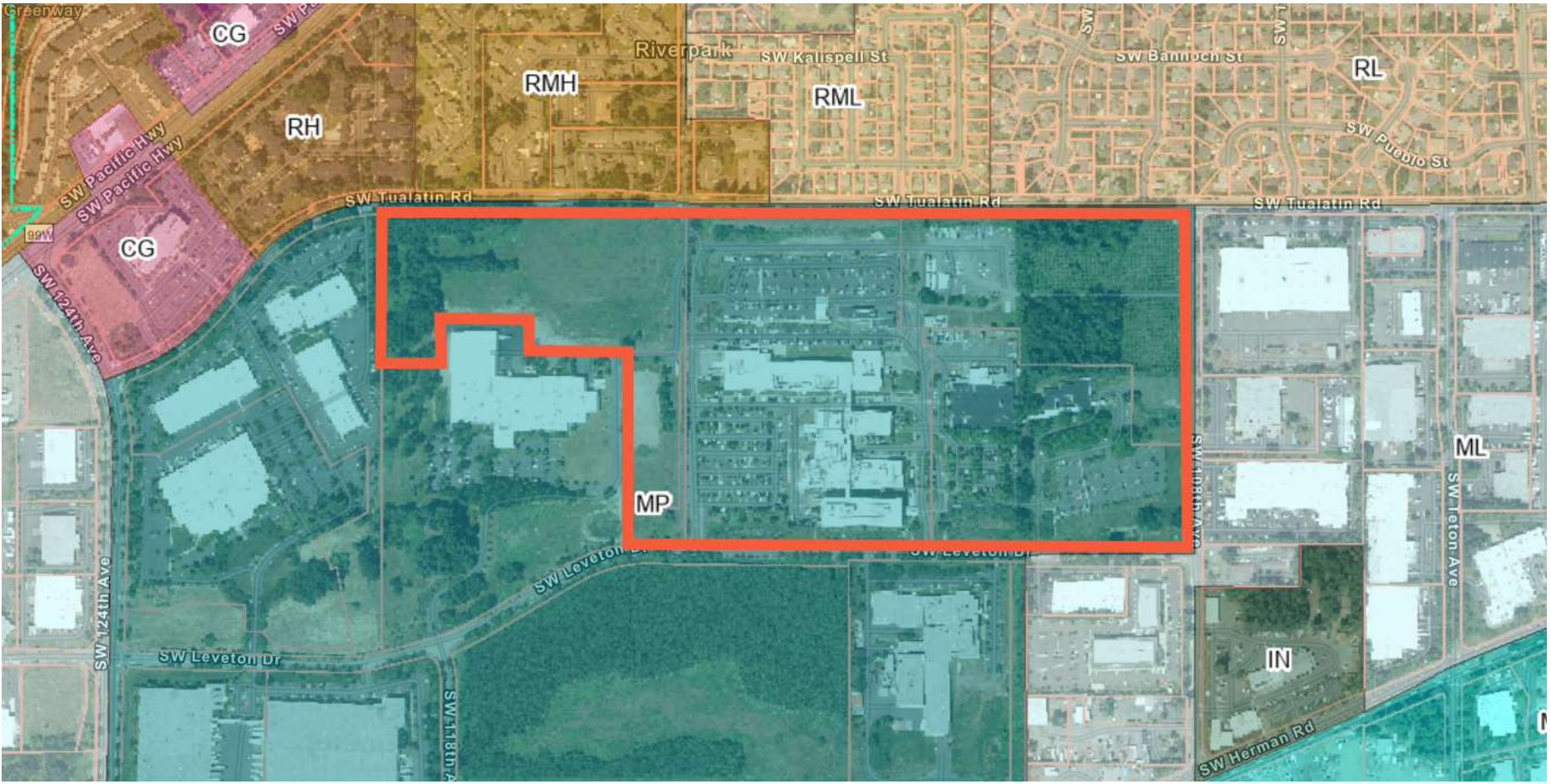
September 10, 2025

Tonight's Presentation

1. Site Background
2. Past Decision: IMP 24-0001
3. Project Overview
4. Applicable Criteria
5. Conclusion

CITY of TUALATIN

Site Background



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Past Decision

IMP 24-0001 Approved:

- Added Tax Map/Lot 2S122BA00100;
- Established appropriate building materials and colors;
- Modified building setback standards;
- Modified parking and circulation standards;
- Modified maximum building height; and
- Removed alternate parking lot landscaping standards and replaced these with Chapter 73C standards in effect on July 8,2024. Modified parking lot landscaping standards for the south half of the site

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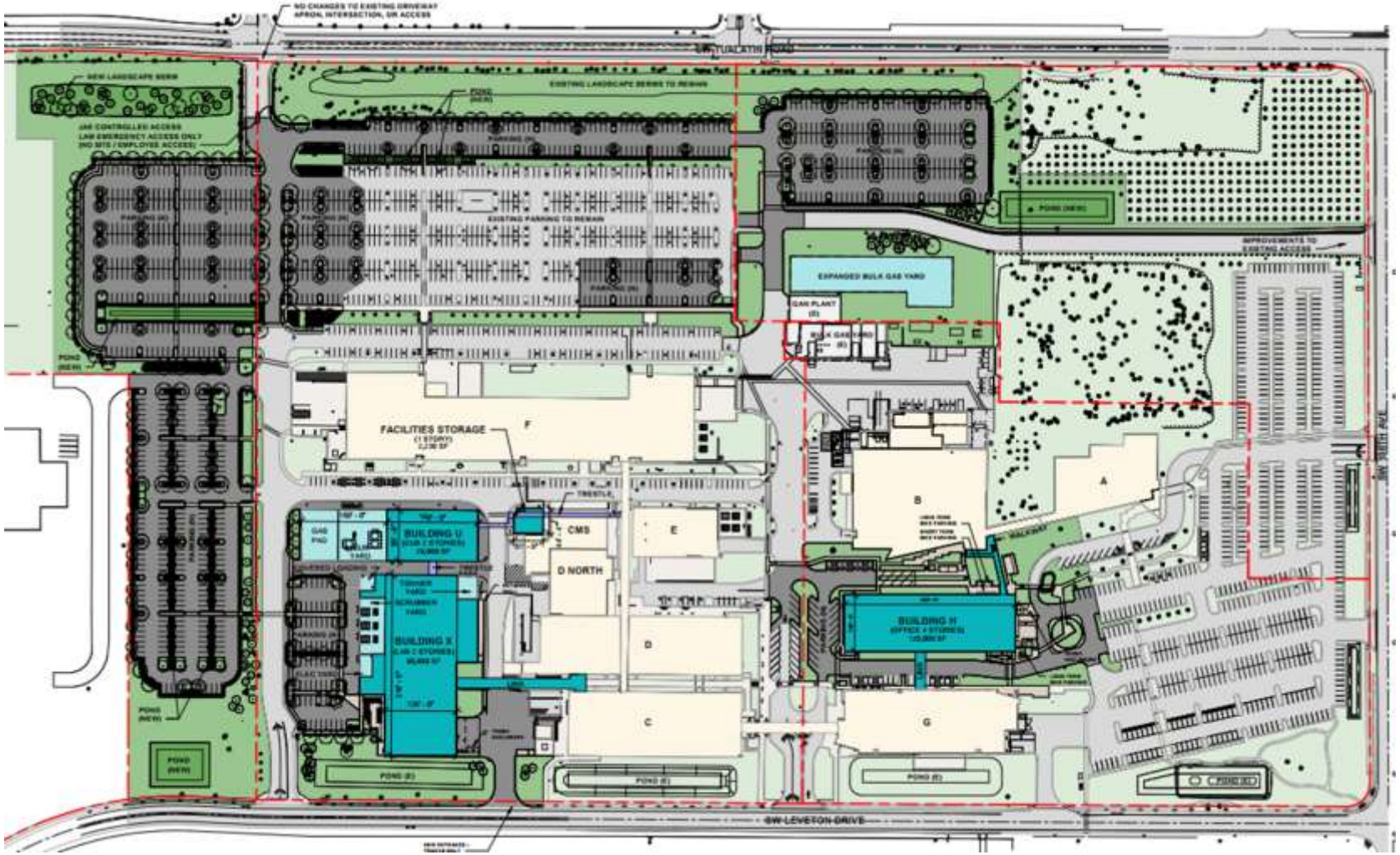
Project Overview



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Procedures (TDC 32.230)

Type III Industrial Plan Review:

- Application submitted on **July 8, 2024**
- Deemed incomplete on **July 24, 2024**
- Deemed complete on **December 16, 2024**
- 1st Notice of Hearing sent **December 16, 2024**
- 2nd Notice of Hearing sent **March 12, 2025**
- 3rd Notice of Hearing sent **May 16, 2025**
- Applicant asked to delay hearing twice to prepare updated materials
- Updated materials submitted on **July 21, 2025**
- Planning Commission IMP 24-0001 approval on **August 20, 2025**
- Architectural Review Board (ARB) Public Hearing **September 10, 2025**

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Architectural Review (TDC 33.020)

Architectural Review for Large Commercial Developments: Approval criteria listed in Chapter 73A through 73G, including:

- Site Design Standards
- Landscaping Standards
- Parking Standards
- Waste & Recyclable Management Standards

Conditions of Approval: may implement identified public facilities and services needed to serve the proposed development through Chapters 74 and 75.

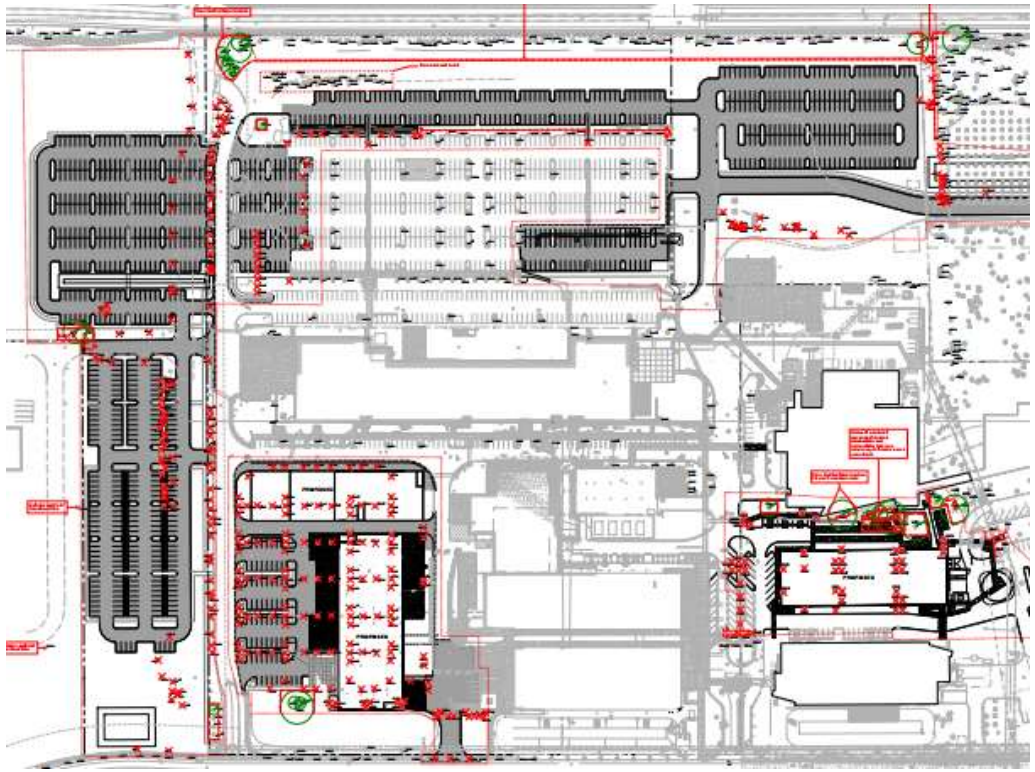
CITY of TUALATIN

Tree Removal (TDC 33.110)

The application includes tree removal:

Approval Criteria

- The tree is diseased
- The tree is a hazard
- Necessary to remove tree to construct proposed improvements



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MP Zone (TDC 62) & IMP 24-0001

- **The proposal complies with zoning:**
- Setbacks
- Building height
- Permitted uses

- ** IMP 24-0001*

USE CATEGORY	STATUS	
Office	**Accessory to a permitted industrial use**	
Laboratory	**Permitted Industrial Use**	
STANDARD	**REQUIREMENT**	**PROPOSAL**
Building Setbacks:		
Leveton Drive	**68 ft**	**77 ft**
Side/Rear	**0 ft***	**108th > 500 ft West > 300 ft Tualatin > 500 ft**
Parking, Circulation Setbacks & Building Height:		
Leveton Drive	**50 ft**	**120 ft**
108th Avenue	**43 ft**	**> 500 ft**
Tualatin Road	**35 ft**	**59 ft**
Building Height:	**85 ft***	**85 ft**

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Phased Construction

Three Phased Construction

- Phase 1 will construct the office building and northern parking lot within the initial 2-years of construction.
- Phase 2 will construct the lab, utility building, storage building within the first four years.
- Phase 3 will expand the bulk gas yard and parking area in the southwestern area of the site with construction starting within 6-years.

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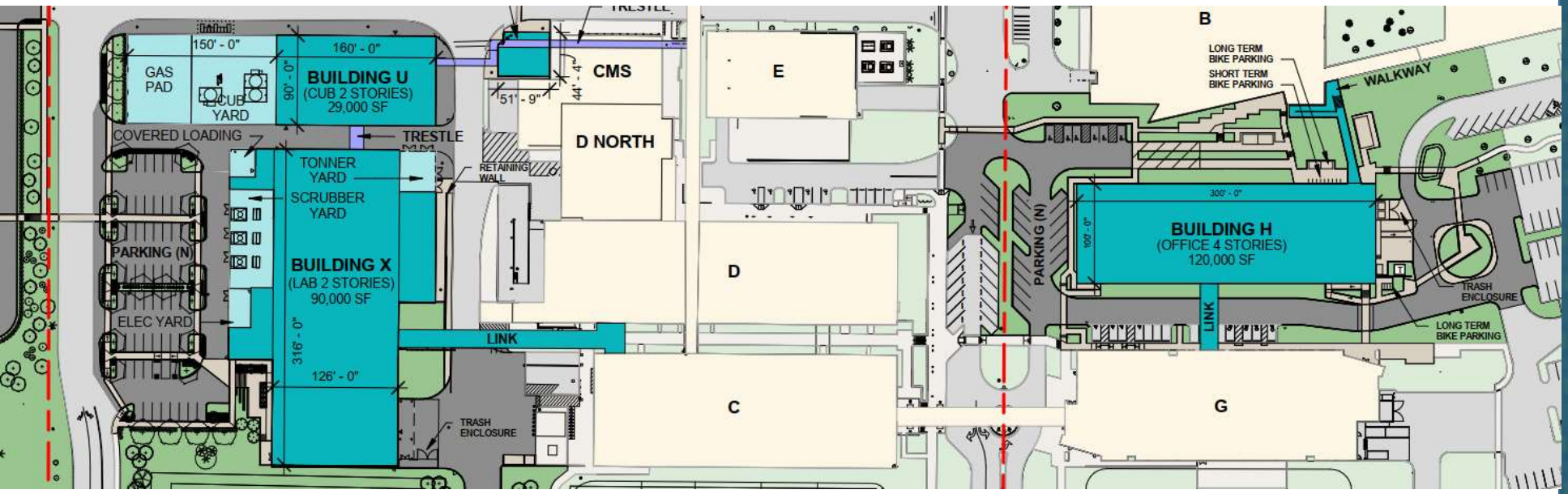
Site Design (TDC 73A)

The proposal complies with requirements for:

- Walkways
- Safety and Security
- Service, Delivery, and Screening



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Building Design (TDC 73A)

Office Building





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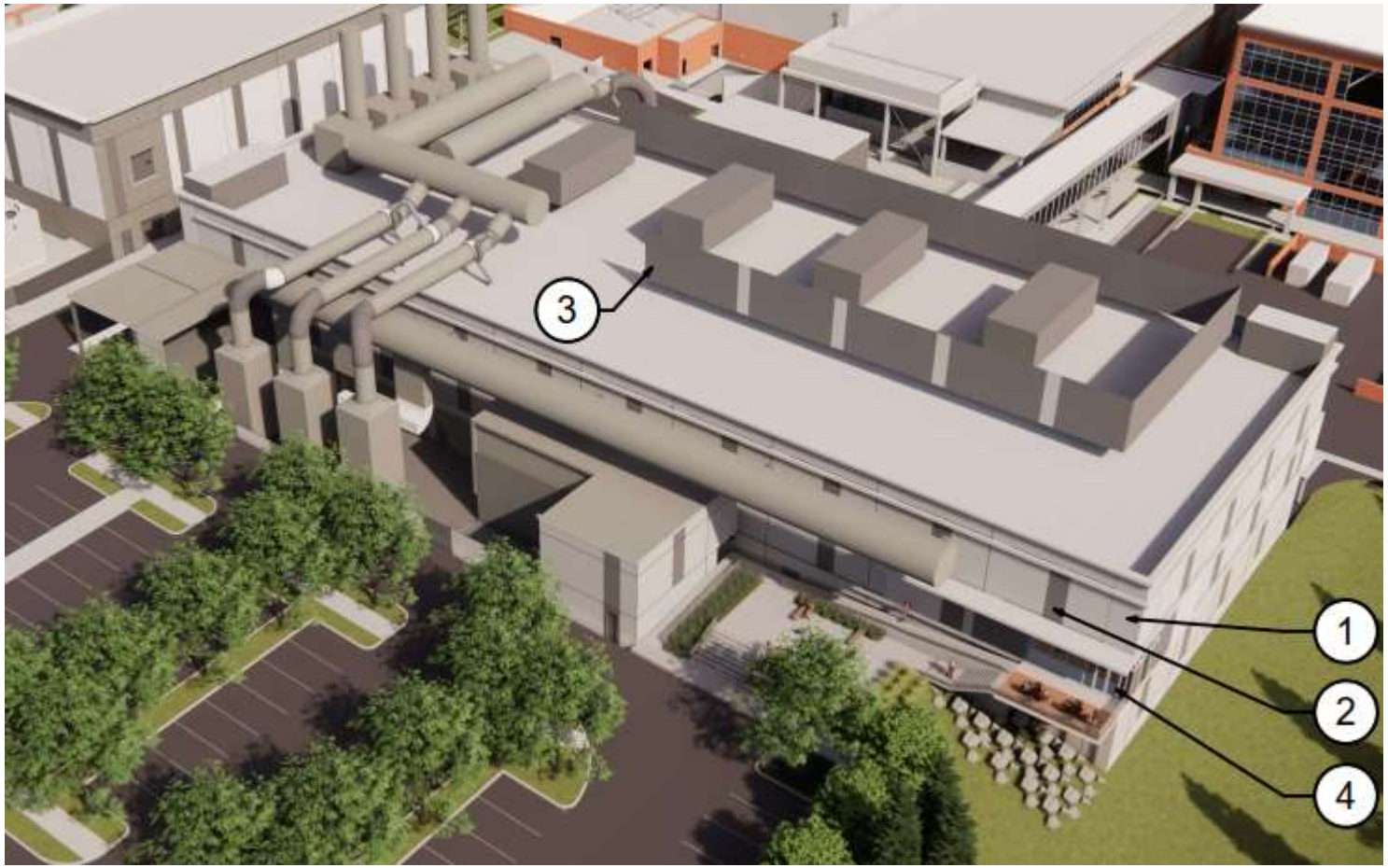
Building Design (TDC 73A)

- Lab Building



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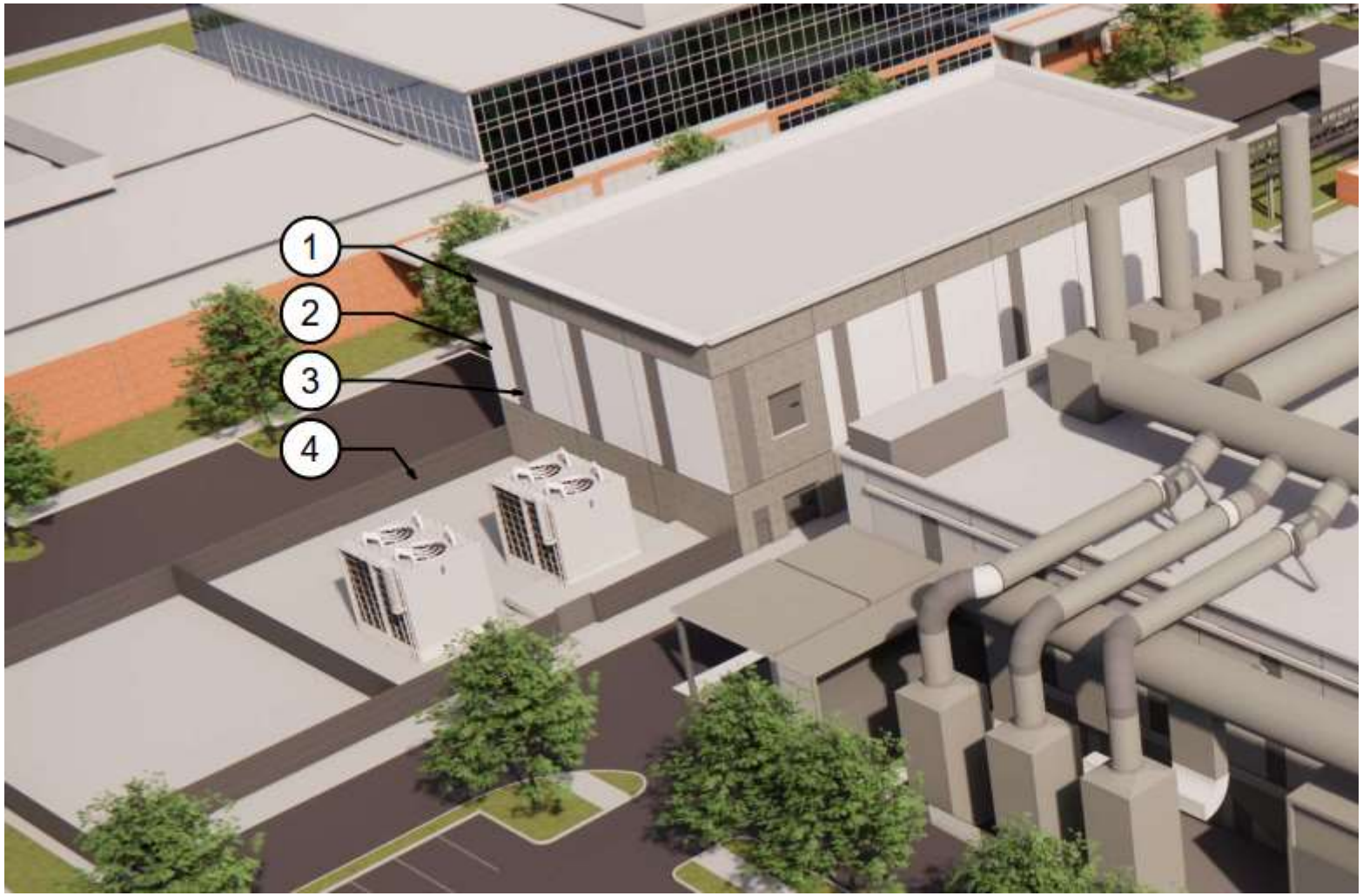
Building Design (TDC 73A)

- Utility Building



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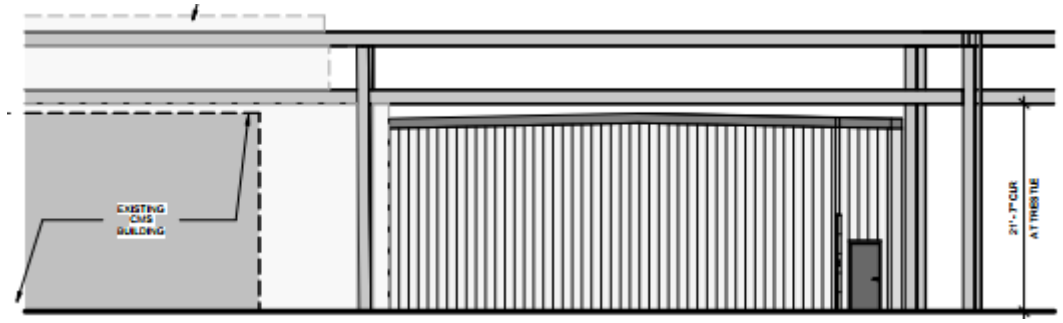
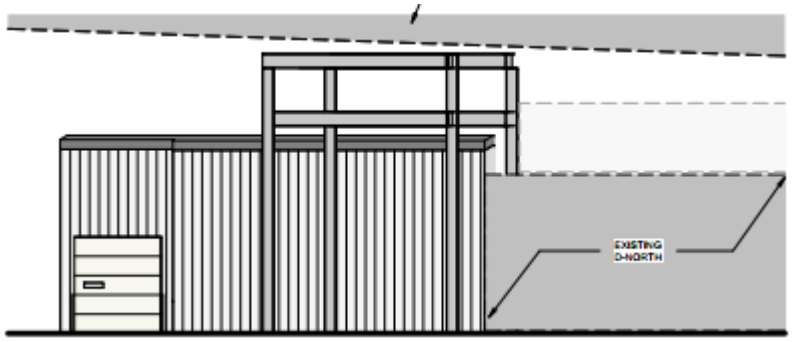
Building Design (TDC 73A)

- Storage Building



North Facade



West Facade

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Building Design (TDC 73A)





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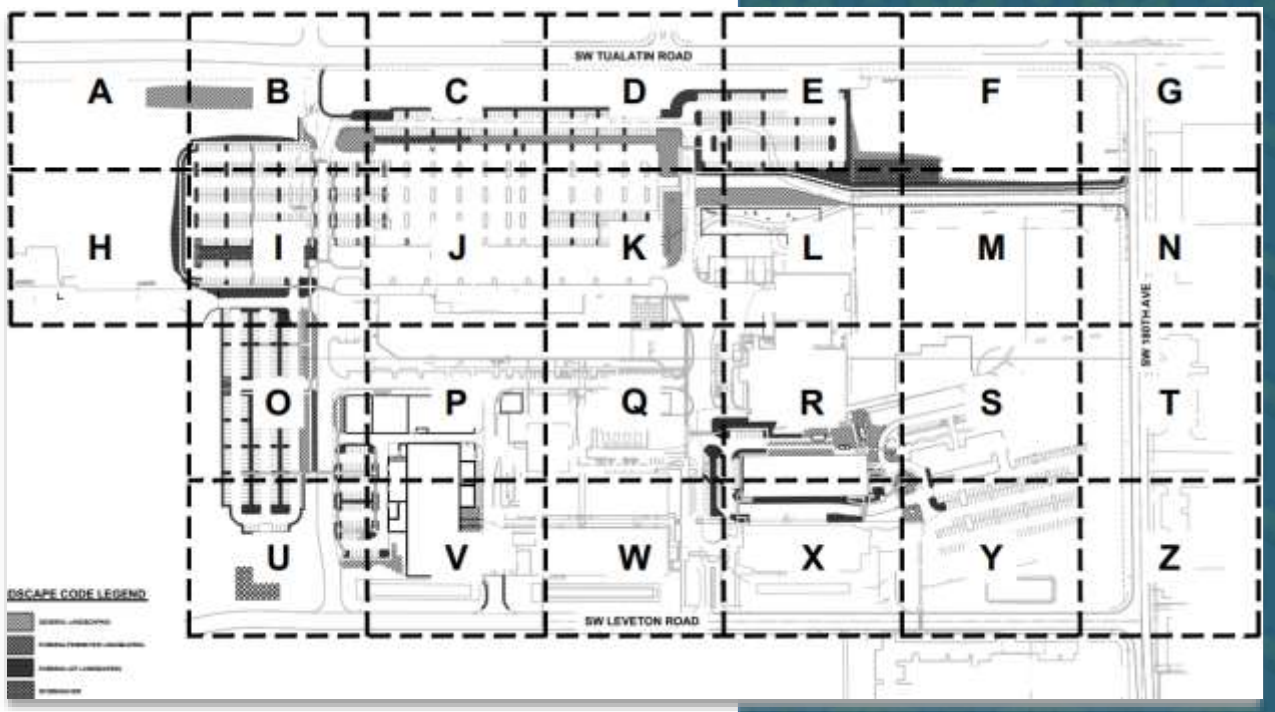
Landscaping Standards (73B)

The application demonstrates the proposal complies with requirements for:

- 25% of development area
- Building perimeter
- Tree preservation/ revegetation
- Minimum standards for plantings
- Irrigation



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Parking Standards (TDC 73C)

With conditions the application complies with requirements for:

- Minimum stall requirements
- Bike parking
- Vanpool / Carpool
- Dimensional Requirements

USE	MINIMUM VEHICLE PARKING	BIKE PARKING	COVERED BIKE PARKING
Office/Lab/Utilities/Storage	1.60 / 1000 SF of GFA	0.10 spaces / 1,000 SF GFA	First 5
Required	386	24	7
Provided	1,012 (net 544)	53	35

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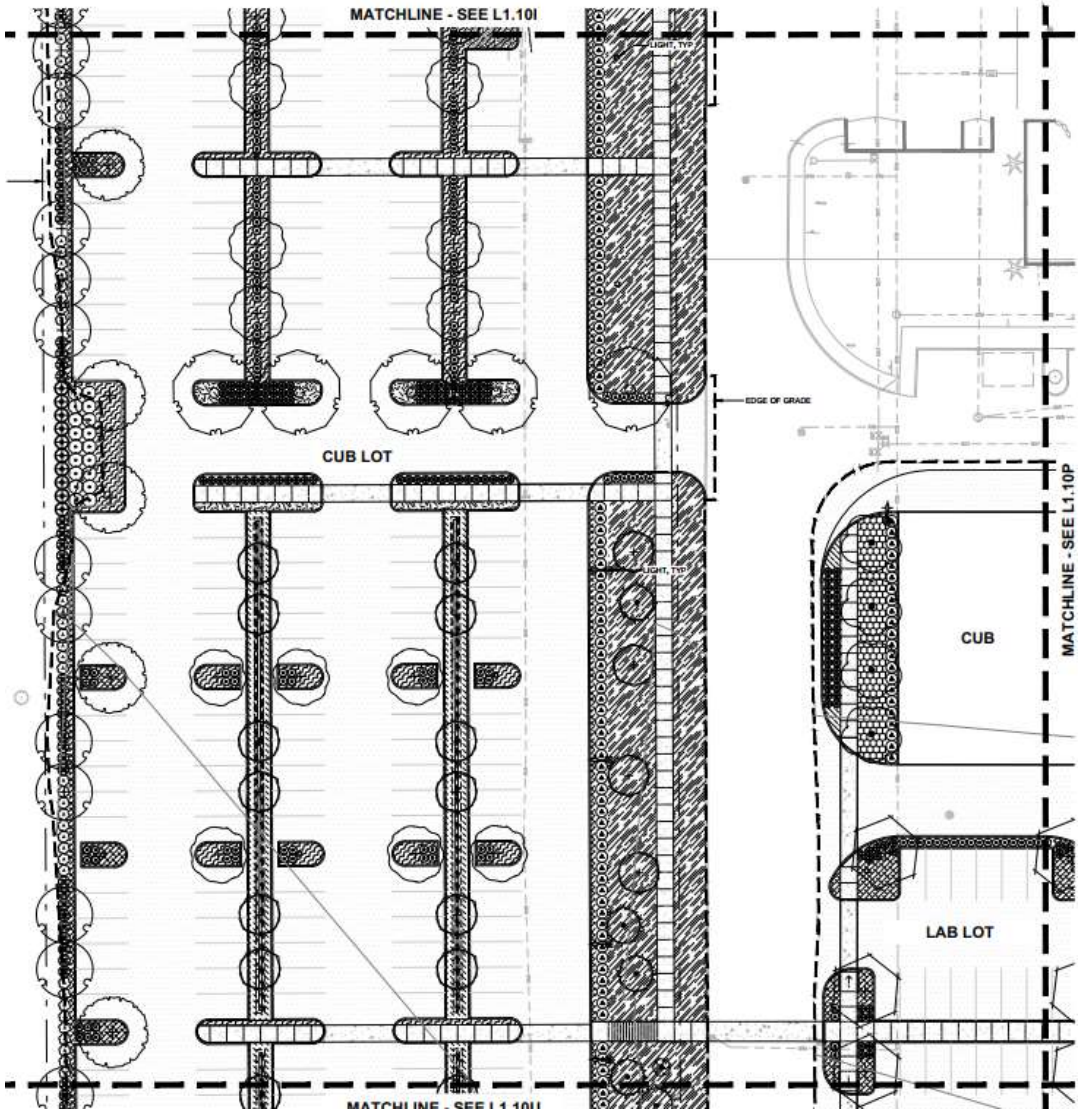
Parking Lot Landscaping (TDC 73C)

With conditions the application complies with requirements for:

- Minimum landscape square footage
- Island separation every 8 stalls for north lots



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Loading Standards (TDC 73C)

With conditions, the proposal complies with TDC 73C.120(1):

- Three required loading facilities: 12 feet x 35 feet; or
- Four Provided
  - 1 Office Building
  - 2 Utility Building
  - 1 Lab Building
- Evidence that adequate loading facilities exist on the same parcel



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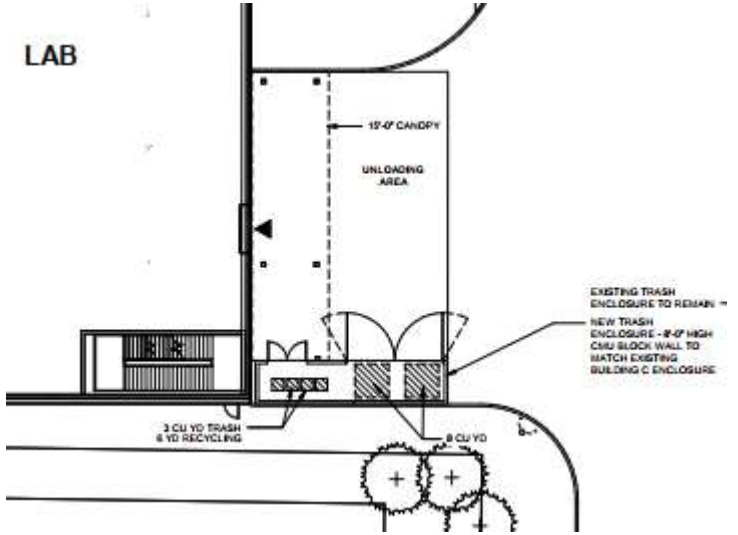
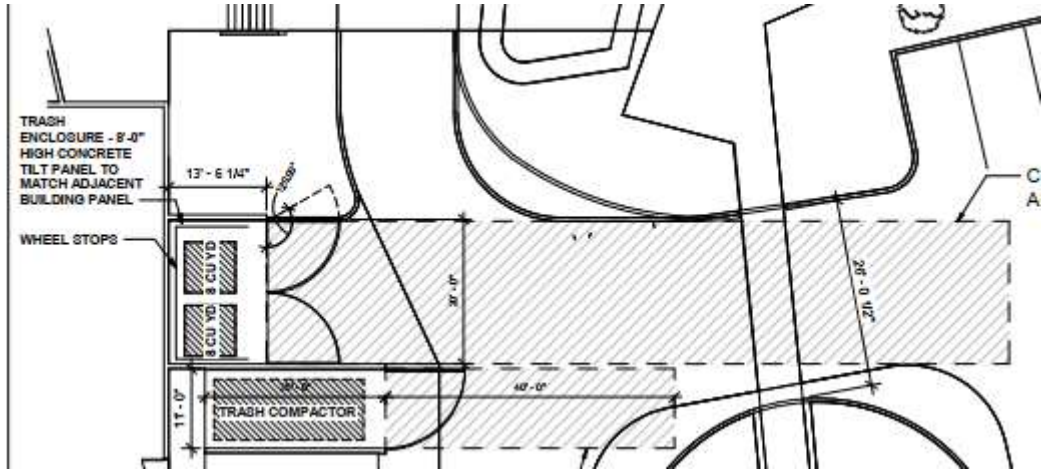
Waste and Recycling (TDC 73D)

With conditions, the proposal complies with requirements for:

- Waste Assessment Method
- Location
- Screening
- Access



Office



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Public Improvements (TDC 74)

With conditions, the proposal complies with public improvement standards:

- Right-of-Way and Easement Dedication
- Street Improvements
- Utilities: Water, Sanitary Sewer, Storm Sewer
- Stormwater: Water Quality Detention Facility
- Grading and Erosion Control

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Access Management (TDC75)

With conditions, the proposal complies with access standards:

- Minimum driveway distance from intersection
- Vision Clearance

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Public Comments

- We received numerous public comments that primarily address items that are more appropriately considered as part of the Architectural Review process and not the IMP.
- IMPs can modify the requirements for internal circulation, building location and orientation, street frontage, parking, setbacks, building height, or lot size as provided in TDC Chapter 62 for the Manufacturing Park (MP) Zone.

CITY of TUALATIN

Recommendation

- The findings demonstrate that the proposal meets the applicable criteria of the Tualatin Development Code with the recommended Conditions of Approval.
- Therefore, staff respectfully recommends approval of the subject Architectural Review application (AR 24-0001), as conditioned.
- Questions?

CITY of TUALATIN

CITY of TUALATIN

ANALYSIS AND FINDINGS

LAM RESEARCH CAMPUS

ARB Hearing: September 10, 2025

Case #:	AR 24-0002
Project:	Lam Research Corporation Campus
Location:	11155-11361 SW Leveton Drive; Tax Lots: 2S122AA 500 and 800; 2S122AB 100
Representative:	Mackenzie
Owner:	Lam Research Corporation

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Arrangements can be made to provide these materials in alternative formats such as large type or audio recording. Please contact the Planning Division at 503.691.3026 and allow as much lead time as possible.

I. INTRODUCTION

A. Applicable Criteria

The following Chapters of the Tualatin Development Code (TDC) are applicable to the subject project:

- TDC 33.020: Architectural Review
- TDC 33.050: Industrial Master Plan
- TDC 33.110: Tree Removal Permit/Review
- TDC 62: Manufacturing Park (MP) Zone
- TDC 73A: Site Design Standards
- TDC 73B: Landscaping Standards
- TDC 73C: Parking Standards
- TDC 73D: Waste and Recyclables Management Standards
- TDC 74: Public Improvements
- TDC 75: Access

The remaining The Architectural Review approval criteria (33.020 (5)) require compliance with the following chapters of the TDC:

- TDC 73A: Site Design Standards
- TDC 73B: Landscaping Standards
- TDC 73C: Parking Standards
- TDC 73D: Waste and Recyclables Management Standards

The remaining chapters, 33.020 , 33.050, 33.110, 62, 74 and 75, have been reviewed to ensure compliance with the Tualatin Development Code and in some cases conditions of approval were added where needed as allowed per TDC 33.020 (6).

B. Site Description

The Lam Research campus site consists of a 75.96-acre campus on four lots located at 11155 SW Leveton Drive (Washington County Tax Lots: 2S122AA 500 and 800; 2S122AB 100; 2S122BA 100). The general location of the site is south of SW Tualatin Road, west of SW 108th Avenue and north of SW Leveton Drive. Lam Research also has facilities south of Leveton Road and one building east of SW 108th Avenue. The four lots are zoned Manufacturing Park (MP).

The site contains several existing buildings and improvements, parking areas and drive aisles, stormwater facilities, walkways, landscaping, and hardscaping. The site is accessed by three driveways from SW 108th Avenue and three accesses from SW Leveton Drive. There is an access on SW Tualatin Road for JAE for deliveries and JAE employees and shared with Lam for emergency access only. This site is in the former Leveton Urban Renewal District. Currently, Lam Building “G”, approved with IMP22-0001/AR22-0006, is under construction in the southeast portion of the site but not depicted in Figure 1. The site slopes gradually from high elevations of 180 to 190 feet along SW Tualatin Road to low elevations of 140 to 160 feet along SW Leveton Drive, approximately a 40 feet elevation change from

north to south.

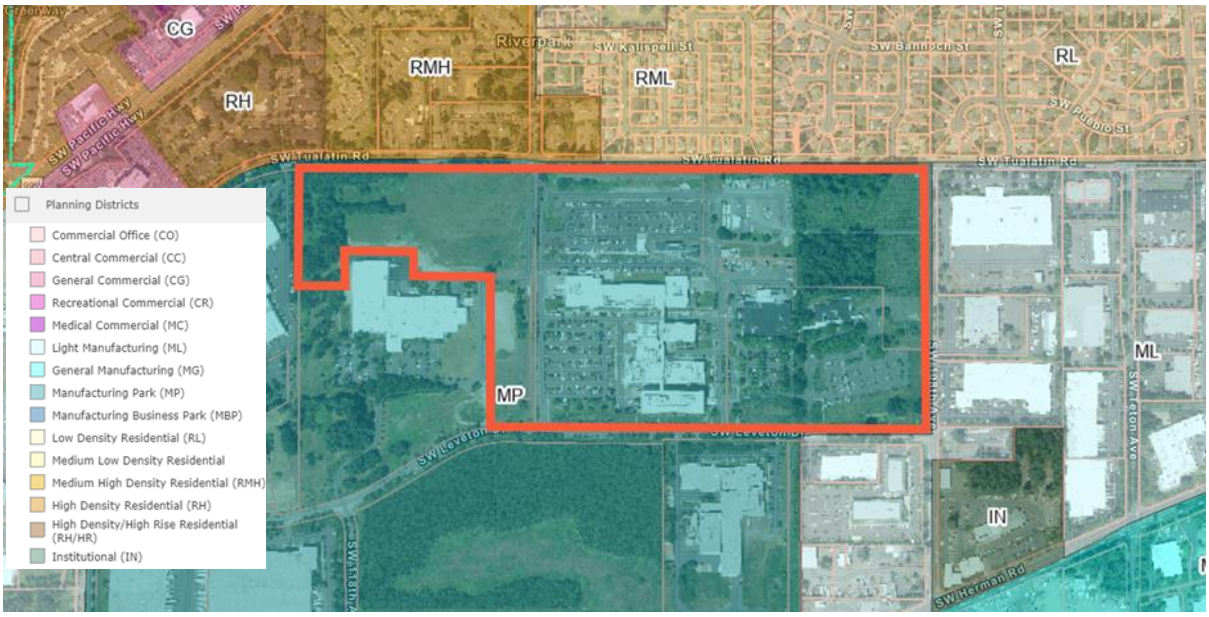


Figure 1: Aerial view of subject site (highlighted)

C. Proposed Project

The original Architectural Review (AR) application was submitted on July 8, 2024. After the application was deemed complete by the City on December 16, 2024, the applicant provided revised materials altering the original project design, as allowed under TDC 32.170 (Revised Applications). The final application materials were provided by the applicant on July 29, 2025. The most significant changes from the July 8, 2024 submittal that are proposed in the current application include the elimination of a previously proposed employee access to SW Tualatin Road (the existing access for JAE and emergency access for Lam would remain) and the size of the proposed building development being reduced from 423,470 square feet to 241,230 square feet. Public improvements associated with the proposed development include half-street right-of-way dedication with street improvements along SW Leveton Drive and SW Tualatin Road. Necessary public utility easements will be dedicated along SW 108th Avenue, SW Leveton Drive and SW Tualatin Road to accommodate water system meters and vaults and onsite water laterals. Sidewalk will be constructed along the northernmost access to SW 108th Avenue to the main campus and other sidewalks will be reviewed and improved where needed to meet ADA specifications. Traffic signals will be coordinated to better facilitate left turn movement from OR 99W to SW Tualatin Road at their intersection with SW 124th Avenue. Street lighting will be evaluated and required to meet City standards. Street trees will be planted as illustrated within approved permit plans. Rerouting of an existing public water main serving the JAE Oregon site will result in conversion of the entire line outside of the public right-of-way to a private water main owned and maintained by JAE. Modification to existing and construction of new stormwater facilities to provide treatment, hydromodification, and detention for all private impervious surfaces will be required. The proposed site plan is shown below in Figure 2 and in greater detail in the application Plan Set (Exhibit A2).

The current proposal includes construction of a new office building (120,000 square feet), lab (90,000 square feet), central utilities building (29,000 square feet), and storage building (2,230 square feet) on the southern portion of the campus adjacent to SW Leveton Drive. There will be parking areas located on the northern portion of the site with all employee traffic being directed to three existing driveways

on SW 108th Avenue and three existing driveways; one new driveway on SW Leveton Drive is proposed for truck-only traffic. Along SW Tualatin Road, the existing landscape berm is proposed to be extended to the west to provide additional voluntary buffering of the site. The applicant proposes a net increase of 544 parking spaces. This consists of demolishing 468 existing spaces to accommodate the proposed new buildings and constructing 1,012 new or replaced parking spaces. Included in the 544 new spaces are 127 spaces that were previously approved for Building "G" through AR 22-0006 but not constructed (later removed through an approved modification). In addition, associated landscaped and hardscaped areas as well as new stormwater detention ponds are proposed.

The development proposal concentrates construction location in the southern and western portion of the site (Exhibit A2). The lab and office buildings proposed designs include insulated metal panels that are smooth and ribbed in texture and colored gray and silver. There will also be a limited number of windows on the lab building due to the function of the lab facility. Architectural features of the storage building include gray, light gray, and dark gray painted concrete panels. The office building is similarly designed and colored to match Building G, which is the building that is currently being constructed under the approval of IMP 22-0001 and AR 22-0006. The storage building will be unoccupied and designed with no windows corrugated metal siding and roof panels.

The applicant's Architectural Review narrative states that three construction phases are planned. Phase 1 would construct the office building and northern parking lot within the initial 2-years of construction after the approval of AR 24-0002. Phase 2 would construct the lab, utility building, storage building within the first four years. Phase 3 would expand the bulk gas yard in the northerly area and parking in the southwestern area of the site with construction starting within 6 -years. The extended landscaped berm includes will be constructed using fill from excavations of that will occur during Phase 2 and would be finished in Phase 3.

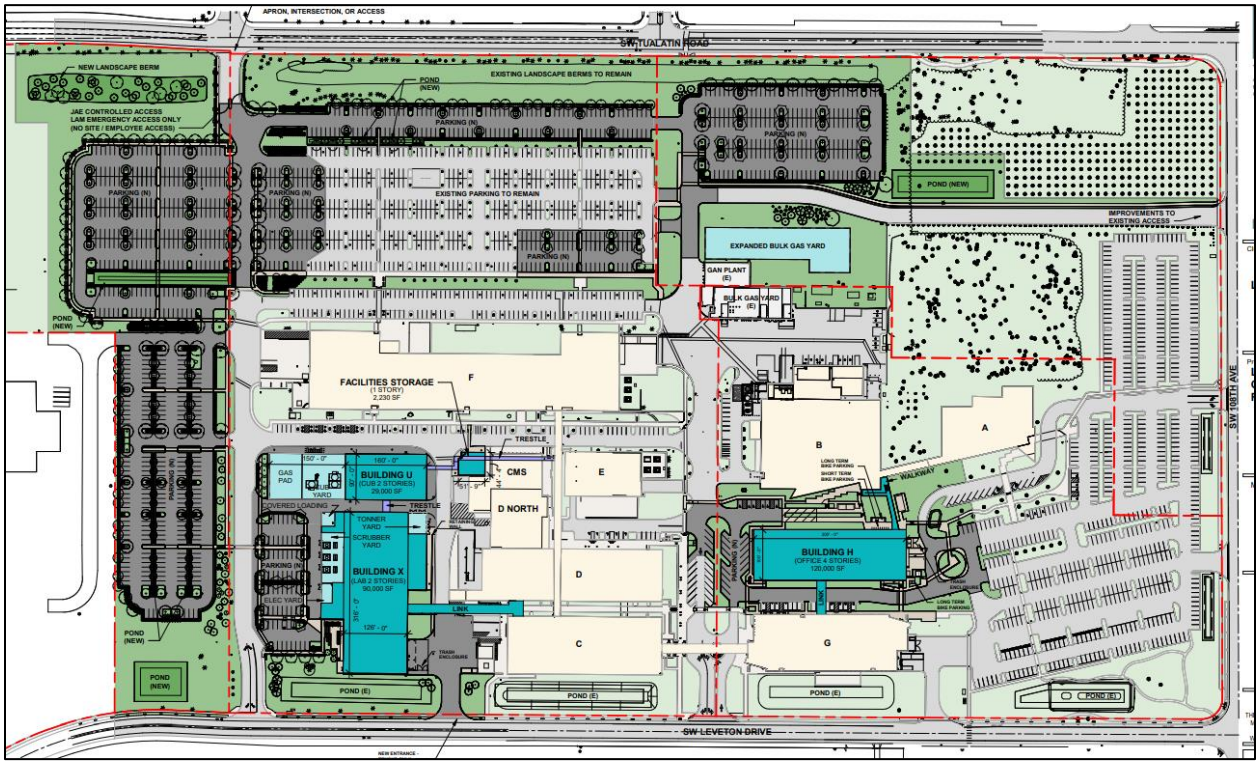


Figure 2: Site Plan (overview, dark gray and blue areas are locations where new development is proposed)

D. Previous Land Use Actions

- IMP24-0001- modification to building setbacks, parking and circulation, building height and parking lot landscaping.
- PLA 23-0004– Property Line Adjustment between Tax Map/Lots 2S122BA00200 and 2S122AB00100
- AR 22-0006 – Lam Building G
- IMP 22-0001 – Lam Building G
- AR 20-0001 – Lam Building D Addition
- AR 16-0010 – Lam Campus Parking Master Plan
- PLA 16-006 – Property Line Adjustment
- AR 15-0029 – Building D Expansion
- PAR 00-04 – Partition
- AR 00-03 – Novellus Phase 1
- IMP 00-01 – Novellus
- AR 89-24 – Oki Semiconductor

E. Surrounding Uses

Surrounding areas indicate a transitional area including industrial and residential use. Adjacent land uses include:

North: Residential Medium-Low Density (RML)
- SW Tualatin Road
- Fox Run Subdivision

South: Manufacturing Park (MP)
- SW Leveton Drive
- Fujimi Corporation

West: Manufacturing Park (MP)
- JAE Corporation

East: Light Manufacturing (ML)
- SW 108th Avenue
- Ascentec Engineering LLC
- Lam Research

F. Exhibit List

Attachment A – Presentation
Attachment B – Analysis and Findings
Attachment C – Written Order
Exhibit A1 - Narrative
Exhibit A2 – Plan Set and Elevations
Exhibit A3 – Tree Assessment Report
Exhibit A4 – Transportation Impact Analysis
Exhibit A5 – Preliminary Stormwater Report
Exhibit A6 – Supporting Documents
Exhibit B – Public Noticing Requirements
Exhibit C – Clean Water Services Memorandum
Exhibit D – IMP 24-0001 Written Order
Exhibit E – Water System Capacity Analysis
Exhibit F – Public Comment
Exhibit G – Map 8-5 Transit Plan
Exhibit H – TDC Figure 73-1 Parking Space Design Standards
Exhibit I – TDC Figure 73-2 Vision Clearance Area
Exhibit J – Map 8-1 Functional Classification and Traffic Signal Plan
Exhibit K – ODOT Lam Review (email dated 7/29/25)

II. FINDINGS

These findings reference the Tualatin Development Code (TDC), unless otherwise noted.

Chapter 32: Procedures

Section 32.010 – Purpose and Applicability.

[…]

(2) Applicability of Review Procedures. All land use and development permit applications and decisions, will be made by using the procedures contained in this Chapter. The procedure "type" assigned to each application governs the decision-making process for that permit or application. There are five types of permit/application procedures as described in subsections (a) through (e) below. Table 32-1 lists the City's land use and development applications and corresponding review procedure(s).

[…]

(c) Type III Procedure (Quasi-Judicial Review – Public Hearing). Type III procedure is used when the standards and criteria require discretion, interpretation, or policy or legal judgment. Quasi-Judicial decisions involve discretion but implement established policy. Type III decisions are made by the Planning Commission or Architectural Review Board and require public notice and a public hearing, with an opportunity for appeal to the City Council.

[…]

(3) Determination of Review Type. Unless specified in Table 32-1, the City Manager will determine whether a permit or application is processed as Type I, II, III, IV-A or IV-B based on the descriptions above. Questions regarding the appropriate procedure will be resolved in favor of the review type providing the widest notice and opportunity to participate. An applicant may choose to elevate a Type I or II application to a higher numbered review type, provided the applicant pays the appropriate fee for the selected review type.

Table 32-1 – Applications Types and Review Procedures

Application / Action	Type	Decision Body*	Appeal Body*	Pre-Application Conference Required	Neighborhood /Developer Mtg Required	Applicable Code Chapter
Architectural Review						
Commercial Buildings 50,000 square feet and larger	**III**	**ARB**	**CC**	**Yes**	**Yes**	**TDC 33.020**
[…]						
*** City Council (CC); Planning Commission (PC); Architectural Review Board (ARB); City Manager or designee (CM); Land Use Board of Appeals (LUBA).**						

Finding:

The proposal is to construct new commercial buildings with the MP zone that are greater than 50,000 square feet. According to Table 32-1, Large Commercial, Industrial, and Multifamily Developments require a Type III review procedure with the Architectural Review Board serving as the Decision Body. The application has been processed according to the applicable code for Type III procedures. This standard is met.

Section 32.030 – Time to Process Applications.

(1) Time Limit - 120-day Rule. The City must take final action on all Type II, Type III, and Type IV-A land use applications, as provided by ORS 227.178, including resolution of all local appeals, within 120 days after the application has been deemed complete under TDC 32.160, unless the applicant provides written request or consent to an extension in compliance with ORS 227.178. (Note: The 120-day rule does not apply to Type IV-B (Legislative Land Use) decisions.)

[…]

Finding:

The subject application was submitted on July 8, 2024. The application was deemed incomplete on July 24, 2024. On December 4, 2024, the applicant submitted additional items, and requested the application be deemed complete. The application was deemed complete on December 16, 2024. The applicant has cumulatively requested a 245-day waiver to the 120-day rule, the maximum allowed under ORS 227.178, making December 16, 2025, the final day by which the City must make a final decision on the application, including all local appeals. No additional extensions are allowed. The Architectural Review Board hearing for AR 24-0002 is scheduled for September 10, 2025. This standard is met.

Section 32.110 – Pre-Application Conference.

(1) Purpose of Pre-Application Conferences. Pre-application conferences are intended to familiarize applicants with the requirements of the TDC; to provide applicants with an opportunity discuss proposed projects in detail with City staff; and to identify approval criteria, standards, and procedures prior to filing a land use application. The pre-application conference is intended to be a tool to assist applicants in navigating the land use process, but is not intended to be an exhaustive review that identifies or resolves all potential issues, and does not bind or preclude the City from enforcing any applicable regulations or from applying regulations in a manner differently than may have been indicated at the time of the pre-application conference.

(2) When Mandatory. Pre-application conferences are mandatory for all land use actions identified as requiring a pre-application conference in Table 32-1. An applicant may voluntarily request a pre-application conference for any land use action even if it is not required.

(3) Timing of Pre-Application Conference. A pre-application conference must be held with City staff before an applicant submits an application and before an applicant conducts a Neighborhood/Developer meeting.

(4) Application Requirements for Pre-Application Conference.

- **(a) Application Form. Pre-application conference requests must be made on forms provided by the City Manager.**
- **(b) Submittal Requirements. Pre-application conference requests must include:**
  - **(i) A completed application form;**
  - **(ii) Payment of the application fee;**
  - **(iii) The information required, if any, for the specific pre-application conference sought; and**
  - **(iv) Any additional information the applicant deems necessary to demonstrate the nature and scope of the proposal in sufficient detail to allow City staff to review and comment.**

(5) Scheduling of Pre-Application Conference. Upon receipt of a complete application, the City Manager will schedule the pre-application conference. The City Manager will coordinate the involvement of city departments, as appropriate, in the pre-application conference. Pre-application conferences are not open to the general public.

(6) Validity Period for Mandatory Pre-Application Conferences; Follow-Up Conferences. A follow-up conference is required for those mandatory pre-application conferences that have previously been held when:

(a) An application relating to the proposed development that was the subject of the pre-application conference has not been submitted within six (6) months of the pre-application conference;

(b) The proposed use, layout, and/or design of the proposal have significantly changed; or

(c) The owner and/or developer of a project changes after the pre-application conference and prior to application submittal.

Finding:

The subject land use action is identified as requiring a pre-application conference in Table 32-1. The applicant participated in a pre-application meeting on June 5, 2024, approximately one month prior to submitting the Architectural Review application. These standards are met.

Section 32.120 – Neighborhood/Developer Meetings.

(1) Purpose. The purpose of this meeting is to provide a means for the applicant and surrounding property owners to meet to review a development proposal and identify issues regarding the proposal so they can be considered prior to the application submittal. The meeting is intended to allow the developer and neighbors to share information and concerns regarding the project. The applicant may consider whether to incorporate solutions to these issues prior to application submittal.

(2) When Mandatory. Neighborhood/developer meetings are mandatory for all land use actions identified in Table 32-1 as requiring a neighborhood/developer meeting. An applicant may voluntarily conduct a neighborhood/developer meeting even if it is not required and may conduct more than one neighborhood/developer meeting at their election.

(3) Timing. A neighborhood/developer meeting must be held after a pre-application meeting with City staff, but before submittal of an application.

(4) Time and Location. Required neighborhood/developer meetings must be held within the city limits of the City of Tualatin at the following times:

(a) If scheduled on a weekday, the meeting must begin no earlier than 6:00 p.m.

(b) If scheduled on a weekend, the meeting must begin between 10:00 a.m. and 6:00 p.m.

(5) Notice Requirements.

(a) The applicant must provide notice of the meeting at least 14 calendar days and no more than 28 calendar days before the meeting. The notice must be by first class mail providing the date, time, and location of the meeting, as well as a brief description of the proposal and its location. The applicant must keep a copy of the notice to be submitted with their land use application.

(b) The applicant must mail notice of a neighborhood/developer meeting to the following persons:

(i) All property owners within 1,000 feet measured from the boundaries of the subject property;

(ii) All property owners within a platted residential subdivision that is located within 1,000 feet of the boundaries of the subject property. The notice area includes the entire subdivision and not just those lots within 1,000 feet. If the residential subdivision is one of two or more individually platted phases sharing a single subdivision name, the notice area need not include the additional phases; and

(iii) All designated representatives of recognized Citizen Involvement Organizations as established in TMC Chapter 11-9.

(c) The City will provide the applicant with labels for mailing for a fee.

(d) Failure of a property owner to receive notice does not invalidate the neighborhood/developer meeting proceedings.

(6) Neighborhood/Developer Sign Posting Requirements. The applicant must provide and post on the subject property, at least 14 calendar days before the meeting. The sign must conform to the design and placement standards established by the City for signs notifying the public of land use actions in TDC 32.150.

(7) Neighborhood/Developer Meeting Requirements. The applicant must have a sign-in sheet for all attendees to provide their name, address, telephone number, and email address and keep a copy of the sign-in sheet to provide with their land use application. The applicant must prepare meeting notes identifying the persons attending, those commenting and the substance of the comments expressed, and the major points that were discussed. The applicant must keep a copy of the meeting notes for submittal with their land use application.

Finding:

The applicant has provided evidence within Exhibit A6 that a Neighborhood/Developer meeting was held on June 5, 2024, after the applicant conducted a Preapplication Conference. The applicant has provided documentation of mailed notification and sign posting as required by this section. The City did receive once comment that pertained to the CIOs not being informed of the Neighborhood/Developer meeting. The applicant's narrative addresses this issue stating "A board member of the Riverpark CIO, Janine Wilson, attended the Neighborhood/Developer Meeting. Ms. Wilson was concerned that residents of the apartment buildings near the Lam campus did not receive notice of the neighborhood meeting and expressed interest in assisting the project team contact those residents for future meetings and public hearings on the proposal. She provided her name and email address to the project team for this purpose. The project team sent emails to Ms. Wilson on June 10 and June 12, 2024, to request coordination but did not receive any response or further communication". A sign-in sheet and notes from the meeting are also included in Exhibit A6. These standards are met.

Section 32.130 – Initiation of Applications.

(1) Type I, Type II, Type III, and Type IV-A Applications. Type I, Type II, Type III, and Type IV-A applications may be submitted by one or more of the following persons:

(a) The owner of the subject property;

(b) The contract purchaser of the subject property, when the application is accompanied by proof of the purchaser's status as such and by the seller's written consent;

(c) A lessee in possession of the property, when the application is accompanied by the owners' written consent; or

(d) The agent of any of the foregoing, when the application is duly authorized in writing by a person authorized to submit an application by paragraphs (a), (b) or (c) of this subsection, and accompanied by proof of the agent's authority.

[…]

Finding:

The application has been signed by a representative of Lam Research Corporation, the owner of the subject site (Exhibit A6). This standard is met.

Section 32.140 – Application Submittal.

(1) Submittal Requirements. Land use applications must be submitted on forms provided by the City. A land use application may not be accepted in partial submittals. All information supplied on the application form and accompanying the application must be complete and correct as to the applicable facts. Unless otherwise specified, all of the following must be submitted to initiate completeness review under TDC 32.160:

(a) A completed application form. The application form must contain, at a minimum, the following information:

(i) The names and addresses of the applicant(s), the owner(s) of the subject property, and any authorized representative(s) thereof;

(ii) The address or location of the subject property and its assessor's map and tax lot number;

(iii) The size of the subject property;

(iv) The comprehensive plan designation and zoning of the subject property;

(v) The type of application(s);

(vi) A brief description of the proposal; and

(vii) Signatures of the applicant(s), owner(s) of the subject property, and/or the duly authorized representative(s) thereof authorizing the filing of the application(s).

(b) A written statement addressing each applicable approval criterion and standard;

(c) Any additional information required under the TDC for the specific land use action sought;

(d) Payment of the applicable application fee(s) pursuant to the most recently adopted fee schedule;

(e) Recorded deed/land sales contract with legal description.

(f) A preliminary title report or other proof of ownership.

(g) For those applications requiring a neighborhood/developer meeting:

(i) The mailing list for the notice;

(ii) A copy of the notice;

(iii) An affidavit of the mailing and posting;

(iv) The original sign-in sheet of participants; and

(v) The meeting notes described in TDC 32.120(7).

(h) A statement as to whether any City-recognized Citizen Involvement Organizations (CIOs) whose boundaries include, or are adjacent to, the subject property were contacted in advance of filing the application and, if so, a summary of the contact. The summary must include the date when contact was made, the form of the contact and who it was with (e.g. phone conversation with neighborhood association chairperson, meeting with land use committee, presentation at neighborhood association meeting), and the result;

(i) Any additional information, as determined by the City Manager, that may be required by another provision, or for any other permit elsewhere, in the TDC, and any other information that may be required to adequately review and analyze the proposed development plan as to its conformance to the applicable criteria;

(2) Application Intake. Each application, when received, must be date-stamped with the date the application was received by the City, and designated with a receipt number and a notation of the staff person who received the application.

(3) Administrative Standards for Applications. The City Manager is authorized to establish administrative standards for application forms and submittals, including but not limited to plan details, information detail and specificity, number of copies, scale, and the form of submittal.

Finding:

The applicant provided certification within Exhibit A6 that signs were placed on site along SW Tualatin Road, SW 108th Road and SW Leveton Drive, in accordance with the requirements of this section. This standard is met.

Section 32.150 - Sign Posting.

(1) When Signs Posted. Signs in conformance with these standards must be posted as follows:

(a) Signs providing notice of an upcoming neighborhood/developer meeting must be posted prior to a required neighborhood/developer meeting in accordance with Section 32.120(6); and

(b) Signs providing notice of a pending land use application must be posted after land use application has been submitted for Type II, III and IV-A applications.

(2) Sign Design Requirements. The applicant must provide and post a sign(s) that conforms to the following standards:

(a) Waterproof sign materials;

(b) Sign face must be no less than eighteen (18) inches by twenty-four (24) inches (18" x 24"); and

(c) Sign text must be at least two (2) inch font.

(3) On-site Placement. The applicant must place one sign on their property along each public street frontage of the subject property. (Example: If a property adjoins four public streets, the applicant must place a sign at each of those public street frontages for a total of four signs). The applicant cannot place the sign within public right of way.

(4) Removal. If a sign providing notice of a pending land use application disappears prior to the final decision date of the subject land use application, the applicant must replace the sign within forty-eight (48) hours of discovery of the disappearance or of receipt of notice from the City of its disappearance, whichever occurs first. The applicant must remove the sign no later than fourteen (14) days after:

(a) The meeting date, in the case of signs providing notice of an upcoming neighborhood/developer meeting; or

(b) The City makes a final decision on the subject land use application, in the case of signs providing notice of a pending land use application.

Finding:

The applicant provided certification within Exhibit A6 that signs in conformance with this section were placed on site in accordance with this section. This standard is met.

Section 32.160 – Completeness Review.

(1) Duration. Except as otherwise provided under ORS 227.178, the City Manager must review an application for completeness within 30 days of its receipt.

(2) Considerations. Determination of completeness will be based upon receipt of the information required under TDC 32.140 and will not be based on opinions as to quality or accuracy. Applications that do not respond to relevant code requirements or standards can be deemed incomplete. A determination that an application is complete indicates only that the application is ready for review on its merits, not that the City will make a favorable decision on the application.

(3) Complete Applications. If an application is determined to be complete, review of the application will commence.

(4) Incomplete Applications. If an application is determined to be incomplete, the City Manager must provide written notice to the applicant identifying the specific information that is missing and allowing the applicant the opportunity to submit the missing information. An application which has

been determined to be incomplete must be deemed complete for purposes of this section upon receipt of:

(a) All of the missing information;

(b) Some of the missing information and written notice from the applicant that no other information will be provided; or

(c) Written notice from the applicant that none of the missing information will be provided.

(5) Vesting. If an application was complete at the time it was first submitted, or if the applicant submits additional required information within 180 days of the date the application was first submitted, approval or denial of the application must be based upon the standards and criteria that were in effect at the time the application was first submitted.

(6) Void Applications. An application is void if the application has been on file with the City for more than 180 days and the applicant has not provided the missing information or otherwise responded, as provided in subsection (4) of this section.

[…]

Finding:

The applicant submitted the subject application on July 8, 2024, which was deemed incomplete on July 24, 2024. On December 4, 2024, the applicant submitted additional materials and requested that the application be deemed complete. The application was formally deemed complete by the City on December 16, 2024. These standards are met.

Section 32.230 – Type III Procedure (Quasi-Judicial Review – Public Hearing).

Type III decisions involve the use of discretion and judgment and are made by the Planning Commission or Architectural Review Board after a public hearing with an opportunity for appeal to the City Council. The decision body for each application type is specified in Table 32-1. A hearing under these procedures provides a forum to apply standards to a specific set of facts to determine whether the facts conform to the applicable criteria and the resulting determination will directly affect only a small number of identifiable persons.

(1) Submittal Requirements. Type III applications must include the submittal information required by TDC 32.140(1).

(2) Determination of Completeness. After receiving an application for filing, the City Manager will review the application will for completeness in accordance with TDC 32.160.

(3) Written Notice of Public Hearing – Type III. Once the application has been deemed complete, the City must mail by regular first class mail Notice of a Public Hearing to the following individuals and agencies no fewer than 20 days before the hearing.

(a) Recipients:

(i) The applicant and, the owners of the subject property;

(ii) All property owners within 1,000 feet measured from the boundaries of the subject property;

(iii) All property owners within a platted residential subdivision that is located within 1,000 feet of the boundaries of the subject property. The notice area includes the entire subdivision and not just those lots within 1,000 feet. If the residential subdivision is one of two or more individually platted phases sharing a single subdivision name, the notice area need not include the additional phases;

(iv) All recognized neighborhood associations within 1,000 feet from the boundaries of the subject property;

(v) All designated representatives of recognized Citizen Involvement Organizations as established in TMC Chapter 11-9;

(vi) Any person who submits a written request to receive a notice;
(vii) Any governmental agency that is entitled to notice under an intergovernmental agreement entered into with the City and any other affected agencies, including but not limited to: school districts; fire district; where the project either adjoins or directly affects a state highway, the Oregon Department of Transportation; and where the project site would access a County road or otherwise be subject to review by the County, then the County; and Clean Water Services; Tri Met; and, ODOT Rail Division and the railroad company if a railroad-highway grade crossing provides or will provide the only access to the subject property. The failure of another agency to respond with written comments on a pending application does not invalidate an action or permit approval made by the City under this Code;
(viii) Utility companies (as applicable); and,
(ix) Members of the decision body identified in Table 32-1.

(b) The Notice of a Public Hearing, at a minimum, must contain all of the following information:
(i) The names of the applicant(s), any representative(s) thereof, and the owner(s) of the subject property;
(ii) The street address if assigned, if no street address has been assigned then Township, Range, Section, Tax Lot or Tax Lot ID;
(iii) The type of application and a concise description of the nature of the land use action;
(iv) A list of the approval criteria by TDC section for the decision and other ordinances or regulations that apply to the application at issue;
(v) Brief summary of the local decision making process for the land use decision being made and a general explanation of the requirements for submission of testimony and the procedure for conduct of hearings;
(vi) The date, time and location of the hearing;
(vii) Disclosure statement indicating that if any person fails to address the relevant approval criteria with enough detail, he or she may not be able to appeal to the Land Use Board of Appeals on that issue, and that only comments on the relevant approval criteria are considered relevant evidence;
(viii) The name of a City representative to contact and the telephone number where additional information may be obtained; and
(ix) Statement that the application and all documents and evidence submitted to the City are in the public record and available for review, and that copies can be obtained at a reasonable cost from the City; and
(x) Statement that a copy of the staff report will be available for inspection at no cost at least seven days prior to the hearing and will be provided at reasonable cost.

(c) Failure of a person or agency to receive a notice, does not invalidate any proceeding in connection with the application, provided the City can demonstrate by affidavit that required notice was given.

Finding:
After submittal and completeness review as required by this section, notice for the Type III public hearing concerning AR 24-0002 was initially mailed by city staff on December 16, 2024, with the Architectural Review Board hearing scheduled on April 2, 2025. Subsequently, the applicant requested additional time to revise their application, and a second hearing notice was sent on March 12, 2025, which rescheduled the Architectural Review Board hearing until June 11, 2025. The applicant made a third and final request to postpone the hearing, and a third public notice was sent on May 16, 2025, which rescheduled the

Architectural Review Board hearing until September 10, 2025 (Exhibit B). Each of the three mailed notices contained the information required by this section. These standards are met.

(4) Conduct of the Hearing - Type III.
The person chairing the hearing must follow the order of proceedings set forth below. These procedures are intended to provide all interested persons a reasonable opportunity to participate in the hearing process and to provide for a full and impartial hearing on the application before the body. Questions concerning the propriety or the conduct of a hearing will be addressed to the chair with a request for a ruling. Rulings from the chair must, to the extent possible, carry out the stated intention of these procedures. A ruling given by the chair on such question may be modified or reversed by a majority of those members of the decision body present and eligible to vote on the application before the body. The procedures to be followed by the chair in the conduct of the hearing are as follows:

(a) At the commencement of the hearing, the person chairing the hearing must state to those in attendance all of the following information and instructions:

(i) The applicable substantive criteria;

(ii) That testimony, arguments and evidence must be directed toward the criteria described in paragraph (i) of this subsection or other criteria in the plan or land use regulation which the person believes to apply to the decision;

(iii) That failure to raise an issue accompanied by statements or evidence sufficient to afford the decision maker and the parties an opportunity to respond to the issue precludes appeal to the State Land Use Board of Appeals based on that issue;

(iv) At the conclusion of the initial evidentiary hearing, the decision body must deliberate and make a decision based on the facts and arguments in the public record; and

(v) Any participant may ask the decision body for an opportunity to present additional relevant evidence or testimony that is within the scope of the hearing; if the decision body grants the request, it will schedule a date to continue the hearing as provided in TDC 32.230(4)(e), or leave the record open for additional written evidence or testimony as provided TDC 32.230(4)(f).

(b) The public is entitled to an impartial decision body as free from potential conflicts of interest and pre-hearing ex parte (outside the hearing) contacts as reasonably possible. Where questions related to ex parte contact are concerned, members of the decision body must follow the guidance for disclosure of ex parte contacts contained in ORS 227.180. Where a real conflict of interest arises, that member or members of the decision body must not participate in the hearing, except where state law provides otherwise. Where the appearance of a conflict of interest is likely, that member or members of the decision body must individually disclose their relationship to the applicant in the public hearing and state whether they are capable of rendering a fair and impartial decision. If they are unable to render a fair and impartial decision, they must be excused from the proceedings.

(c) Presenting and receiving evidence.

(i) The decision body may set reasonable time limits for oral presentations and may limit or exclude cumulative, repetitious, irrelevant, or personally derogatory testimony or evidence;

(ii) No oral testimony will be accepted after the close of the public hearing. Written testimony may be received after the close of the public hearing only as provided by this section; and

(iii) Members of the decision body may visit the property and the surrounding area, and may use information obtained during the site visit to support their decision, if the information

relied upon is disclosed at the beginning of the hearing and an opportunity is provided to dispute the evidence.

(d) The decision body, in making its decision, must consider only facts and arguments in the public hearing record; except that it may take notice of facts not in the hearing record (e.g., local, state, or federal regulations; previous City decisions; case law; staff reports). Upon announcing its intention to take notice of such facts in its deliberations, it must allow persons who previously participated in the hearing to request the hearing record be reopened, as necessary, to present evidence concerning the newly presented facts.

(e) If the decision body decides to continue the hearing, the hearing must be continued to a date that is at least seven days after the date of the first evidentiary hearing (e.g., next regularly scheduled meeting). An opportunity must be provided at the continued hearing for persons to present and respond to new written evidence and oral testimony. If new written evidence is submitted at the continued hearing, any person may request, before the conclusion of the hearing, that the record be left open for at least seven days, so that he or she can submit additional written evidence or arguments in response to the new written evidence. In the interest of time, after the close of the hearing, the decision body may limit additional testimony to arguments and not accept additional evidence.

(f) If the decision body leaves the record open for additional written testimony, the record must be left open for at least seven days after the hearing. Any participant may ask the decision body in writing for an opportunity to respond to new evidence (i.e., information not disclosed during the public hearing) submitted when the record was left open. If such a request is filed, the decision body must reopen the record, as follows:

(i) When the record is reopened to admit new evidence or arguments (testimony), any person may raise new issues that relate to that new evidence or testimony;

(ii) An extension of the hearing or record granted pursuant to this section is subject to the limitations of TDC 32.030, unless the applicant waives his or her right to a final decision being made within the required timeframe; and

(iii) If requested by the applicant, the decision body must grant the applicant at least seven days after the record is closed to all other persons to submit final written arguments, but not evidence, provided the applicant may expressly waive this right.

Finding:

The Architectural Review Board will follow the hearing requirements set forth by this section. These standards will be met.

(5) Notice of Adoption of a Type III Decision.

Notice of Adoption must be provided to the property owner, applicant, and any person who provided testimony at the hearing or in writing. The Type III Notice of Adoption must contain all of the following information:

(a) A description of the applicant's proposal and the City's decision on the proposal, which may be a summary, provided it references the specifics of the proposal and conditions of approval in the public record;

(b) The address or other geographic description of the property proposed for development, including a map of the property in relation to the surrounding area;

(c) A statement that a copy of the decision and complete case file, including findings, conclusions, and conditions of approval, if any, is available for review and how copies can be obtained;

(d) The date the decision becomes final, unless a request for appeal is submitted; and

(e) The notice must include an explanation of rights to appeal the decision to the City Council in accordance with TDC 32.310.

(6) Appeal of a Type III Decision. Appeal of an Architectural Review Board or Planning Commission Type III Decision to the City Council may be made in accordance with TDC 32.310.

(7) Effective Date of a Type III Decision.

(a) The written order is the final decision on the application.

(b) The mailing date is the date of the order certifying its approval by the decision body.

(c) A decision of the Architectural Review Board or Planning Commission is final unless:

(i) a written appeal is received at the City offices within 14 calendar days of the date notice of the final decision is mailed; or

(ii) The City Manager or a member of the City Council requests a review of the decision within 14 calendar days of the date notice of the final decision is mailed.

Finding:

A final decision and any appeal will follow the requirements of this section. These standards will be met.

Chapter 33: Applications and Approval Criteria

[…]

TDC 33.020 Architectural Review

[…]

(5) *Approval Criteria.*

(d) *Large Commercial, Industrial, and Multifamily Development.* Applications for Large Commercial, Industrial, and Multifamily Development must comply with the applicable standards and objectives in TDC Chapter 73A through 73G.

[…]

Finding:

The subject application, which is for a large commercial development that must comply with the standards and objectives in TDC 73A through 73G. These standards are met by findings and conditions of approval for the subject application.

(9) *Permit Expiration.*

Architectural Review decisions (including Minor Architectural Review decisions) expire two (2) years from the effective date unless the applicant has received a building, or grading permit submitted in conjunction with a building permit application, substantial construction has occurred pursuant to the building permit, and an inspection has been performed by a member of the Building Division.

(10) *Extension of Permit Expiration.*

(a) An Architectural Review approval may be extended if the applicant, or successor interest, submits a written request for an extension of time within two (2) years of the effective date.

[…]

(c) Upon receipt of a request for an extension of time, the City will process the extension request as follows:

(i) If the City Manager approved the Architectural Review, then the City Manager will decide the extension request under the Type II procedures in TDC 32.220.

(ii) If the Architectural Review Board (ARB) approved the Architectural Review, then the ARB will decide the extension request under the Type III quasi-judicial procedures in TDC 32.230.

(d) The City must provide notice of the extension request to past recipients of the Architectural Review notice of decision and the applicant must post a sign pursuant to TDC 32.150.

(e) The City Manager or Architectural Review Board, as applicable, may grant the extension of time upon finding the following:

(i) The applicant submitted a written extension request prior to the expiration date;

(ii) There have been no significant changes in any conditions, ordinances, regulations or standards of the City or applicable agencies that affect the previously approved project so as to warrant its resubmittal for Architectural Review;

(iii) If the previously approved application included a special study, the applicant provided a status report includes a letter from a recognized professional that states that conditions have not changed after the original approval and that no new study is warranted; and

(iv) If the site has been neglected so as to allow the site to become blighted, the deciding party must factor this into its decision.

(f) The City Manager or Architectural Review Board, as applicable, may grant or deny the extension request. The decision must be in writing and must be made within sixty (60) days of receipt of the request for extension. If the decision is to grant the extension, the extension can be no more than a single one-year extension.

(g) Upon making the decision, the City must provide notice of the extension decision as provided in TDC 32.220 for Type II decisions made by the City Manager and TDC 32.230 for Type III decisions made by the Architectural Review Board.

Finding:

The proposed application is approved subject to compliance with the above criteria. With recommended Condition of Approval A1, these standards are met.

TDC 33.030. - Permit for New Driveway Approach and Closure Decisions.

All requests for driveway approaches and closures are as provided in TDC 75.020 and TDC 75.030.

Finding:

The standards concerned TDC 75.020 and 75.030 are addressed under TDC 75.

TDC 33.050. - Industrial Master Plans.

(1) *Purpose.* The Industrial Master Plan sets particular standards for development within the Industrial Master Plan Area (defined by such plan), in accordance with the Tualatin Comprehensive Plan, the Southwest Tualatin Concept Plan (SWCP) and the Leveton Tax Increment Plan. Such approved plans are intended to achieve a campus-like setting within an Industrial Master Plan Area, while allowing development to occur independently on a number of smaller parcels within that area. It is the intent of this chapter to provide procedures and criteria for the submission and review of such Industrial Master Plan applications. Development standards approved through a Master Plan process establishes alternative development standards that supersede conflicting provisions in the Tualatin Development Code.

(2) *Applicability.*

(a) An Industrial Master Plan is required for any development in the Manufacturing Business Park (MBP) Zone in a Regionally Significant Industrial Area (RSIA).

For properties in the Regionally Significant Industrial Area (RSIA) of the MBP Zone, lots or parcels may be divided into smaller lots or parcels of 20,000 sq. ft or larger when the Industrial Master Plan identifies at least one lot or parcel of 100 acres in size or larger and one lot or parcel 50 acres in size or larger.

(b) An Industrial Master Plan is optional for any development in the Manufacturing Park (MP) Zone or Manufacturing Business Park (MBP) Zone. An Industrial Master Plan is required to do any of the following:

(i) Modify the requirements for internal circulation, building location and orientation, street frontage, setbacks, building height, or lot size as provided in TDC Chapter 62 for the Manufacturing Park (MP) Zone and TDC Chapter 64 for the Manufacturing Business Park (MBP) Zone; and

(ii) Provide for individual parcels of less than 40 acres in the Manufacturing Park Zone. However, the parcels must not be less than 15 acres north of SW Leveton Drive and five acres south of SW Leveton Drive, unless otherwise provided under TDC 62.050(1).

(c) An Industrial Master Plan must be submitted for the entire Industrial Master Plan Area and include all owners of property within the area.

(3) *Procedure Type.* Industrial Master Plans must be processed in accordance with the Type III review procedures as specified in Chapter 32.

Finding:

The applicant proposed an Industrial Master Plan modification (IMP 24-0001), which was reviewed and approved by the Planning Commission on August 20, 2025. The Conditions of Approval of IMP 24-0001 will apply to the subject Architectural Review approval, and as excerpted below supersede development standards within the MP zone. These criteria are satisfied.

(6) Conditions of Approval.

(a) The Planning Commission may impose, in addition to the regulations and standards expressly specified in this chapter, other conditions found necessary to protect the best interests of the surrounding property or neighborhood or the City as a whole and for compliance with the Metro UGMFP Title IV policies and requirements.

(b) An Industrial Master Plan may be approved based on proposed parcel boundaries; in this case development under the Industrial Master Plan must be conditioned on creation of the proposed parcels through the subdivision or partition process or may be the subject of a concurrent land division application. Partition applications associated with an Industrial Master Plan may be approved by City Council in accordance with TDC 36.230(8).

Finding:

On August 20, 2025, the Planning Commission conducted a Type III quasi-judicial hearing in compliance with the requirements of TDC 32.230 to consider approval of Industrial Master Plan IMP 24-0001 for constructing the improvements requested in AR 24-0002. The Planning Commission unanimously approved IMP 24-0001 with the following conditions.

GENERAL:

1. If future modifications to this Industrial Master Plan are necessary, a new Industrial Master Plan application must be submitted to the City for review.

PUBLIC FACILITIES:

2. Through the Architectural Review Process:
   a. Private Easement declarations must be recorded and/or maintained for cross-access, parking, and utilities (including but not limited to: water, sanitary sewer, storm drainage) that extend across parcels shared under common ownership within the campus, when deemed necessary in accordance with TDC 74.330, and TDC 75.040 (2 & 3).
   b. Utilities must serve individual parcels within the campus, in accordance with the Public Works Construction Code and TDC 74.610, 74.620, and 74.630.

LOCATION, DESIGN, COLOR AND MATERIALS

3. Development proposed through the Architectural Review process must:
   a. Include building material elements consisting of, or complimentary to: masonry, sandstone, architectural metal siding, and window glazing. Color palettes must remain complimentary to earth toned shades.
   b. Meet the modified development standards listed in the table below:

STANDARD	**MODIFIED DEVELOPMENT STANDARDS UNDER IMP 24-0001**
LOT SIZE	
Minimum Lot Size	15 acres
MINIMUM SETBACKS	
Minimum Building Setback for Yards Adjacent to SW Leveton Drive	68 feet
Minimum Building Setback for Yards Adjacent to SW 108th Drive	98 feet
Minimum Building Setback for Yards Adjacent to SW Tualatin Road	Subject to Table 62-2 Development Standards in the MP Zone
Minimum Setback for Side and Rear Yards not Adjacent to Streets or Alleys	0 feet from side and rear yards under common ownership From other lots: Subject to Table 62-2 Development Standards in the MP Zone
Parking and Circulation Areas Adjacent to SW Leveton Drive	50 feet
Parking and Circulation Areas Adjacent to SW 108th Avenue	43 feet
Parking and Circulation Areas Adjacent to SW Tualatin Road	35 feet
Parking and Circulation Areas Adjacent to Private Property Line	0 feet from property lines under common ownership 10 feet from other lots
Fences	Subject to Table 62-2 Development Standards in the MP Zone
STRUCTURE HEIGHT	
Maximum Height	85 feet

Maximum Height Adjacent to Residential District	Subject to Table 62-2 Development Standards in the MP Zone

c. Maintain the earthen berm and landscaping consisting of deciduous street trees, evergreen trees, and shrubs along the northeast frontage of SW Tualatin Road to the driveway adjacent to 115th Avenue.
d. Retain the existing stand of trees behind Building A, or integrate into the parking lot design as deemed appropriate.
e. The version of TDC 73C Parking Standards effective on July 8, 2024 will apply.

Finding:
AR 24-0002 meets the general, public facilities, location, design, color and materials, Landscaping and Chapter 62 standards. Through the recommended Conditions of Approval, these standards will be met.

Section 33.110 Tree Removal Permit/Review
(1) Purpose. To regulate the removal of trees within the City limits other than trees within the public right-of-way which are subject to TDC Chapter 74.
(2) Applicability. No person may remove a tree on private property within the City limits, unless the City grants a tree removal permit, consistent with the provisions of this Section.
[…]
(4) Procedure Type. Tree Removal Permit applications are subject to Type II Review in accordance with TDC Chapter 32. Tree Removal Permit applications submitted with an Architectural Review, Subdivision, or Partition application will be processed in conjunction with the Architectural Review, Subdivision, or Partition decision.

Finding:
The applicant has submitted for tree removal in conjunction with the Architectural Review application. The criteria in TDC 33.110, addressed below, are the basis for approval or denial for tree removal as part of this Architectural Review. These standards are met.

(6) Approval Criteria.
(a) An applicant must satisfactorily demonstrate that at least one of the following criteria are met:
(i) The tree is diseased and:
(A) The disease threatens the structural integrity of the tree; or
(B) The disease permanently and severely diminishes the esthetic value of the tree; or
(C) The continued retention of the tree could result in other trees being infected with a disease that threatens either their structural integrity or esthetic value.
(ii) The tree represents a hazard which may include but not be limited to:
(A) The tree is in danger of falling; or
(B) Substantial portions of the tree are in danger of falling.
(iii) It is necessary to remove the tree to construct proposed improvements based on Architectural Review approval, building permit, or approval of a Subdivision or Partition Review.
(b) If none of the conditions in TDC 33.110(5)(a) are met, the certified arborist must evaluate the condition of each tree.
[…]

Finding:

The applicant's arborist surveyed trees on-site and adjacent to the site. The memorandum, Exhibit A3, describes tree protection, tree removal for the Lam development. Seven hundred and ninety-two (792) trees over 8-inch diameter (DBH) have been inventoried over the last several years. One hundred and eighty-four (184) trees over 8-inch diameter (DBH) are proposed for removal and 197 trees less than 8-inch DBH are proposed for removal. Two hundred and thirty-nine (239) trees over 8-inch diameter will be retained and protected. Tree protection fencing and limits of construction fencing are recommended to protect existing parking lot and landscape trees from construction impacts. Tree protection measures are identified in the Arborist's memorandum located in Exhibit A3. With recommended Conditions of Approval A14.a. and A15 related to tree removal as well as tree protection, these standards are met.

Chapter 62: Manufacturing Park Zone (MP)

[...]

TDC 62.200. - Use Categories.

(1) Use Categories. Table 62-1 lists use categories Permitted Outright (P) or Conditionally Permitted (C) in the MP zone. Use categories may also be designated as Limited (L) and subject to the limitations listed in Table 62-1 and restrictions identified in TDC 62.210. Limitations may restrict the specific type of use, location, size, or other characteristics of the use category. Use categories which are not listed are prohibited within the zone, except for uses which are found by the City Manager or appointee to be of a similar character and to meet the purpose of this zone, as provided in TDC 31.070.
(2)Overlay Zones. Additional uses may be allowed in a particular overlay zone. See the overlay zone Chapters for additional uses.

Table 62-1
Use Categories in the MP Zone

USE CATEGORY	STATUS	LIMITATIONS AND CODE REFERENCES
COMMERCIAL USE CATEGORIES		
Office	**P (L)**	**Permitted uses limited, see TDC 62.210(2).**
INDUSTRIAL USE CATEGORIES		
Light Industrial	**P (L)**	**Permitted uses limited to:** **• Manufacture or assembly of electronic or optical instruments, equipment, devices** **[…]** **• Research and development laboratories.** **[…]**
INFRASTRUCTURE AND UTILITIES CATEGORIES		
Basic Utilities	**P**	**—**

[…]

Finding:
The project area is within the Manufacturing Park (MP) Planning District. Lam designs and manufactures equipment used in the fabrication of semiconductor products. The proposed office building is an accessory use to the permitted Light Manufacturing use subject to limitations found in 62.210(2). As a result, the use limitations found in TDC 62.210(4) do not apply to the accessory uses. Additionally, storage, utility and laboratory buildings are proposed, which are all permitted uses related to Lam

Research operations. Lastly, expansion of an existing gas storage yard, which is also an accessory use, is proposed. This standard is met.

TDC 62.210. - Additional Limitations on Uses.

[…]

(2) Offices. Office uses are a permitted as specified below.

(a) Permitted Uses. The following are permitted uses:

(i) Offices for chemical and physical sciences, engineering, cartography, or other research functions;

(ii) Shared service facilities (as defined by TDC 31.060); and

(iii) Corporate, regional, or district headquarter offices if:

(A)The headquarters is for a permitted use in this Code;

(B) The offices occupy at least 20,000 square feet; and

(C)Manufacturing is not conducted, unless the manufacturing is a permitted use in the MP zone.

(b) *Accessory Uses to an Industrial Use.* Office uses accessory to a permitted industrial use are permitted.

(c) *Limited Uses.* Offices located on the same site as a permitted industrial use may be permitted, subject to TDC 62.210(4).

[…]

(5) Outdoor Uses. All uses must be conducted wholly within a completely enclosed building, except as provided by this section.

(a) Permitted Uses. Off-street parking and loading, utility facilities, wireless communication facilities, and outdoor storage occupying less than ten (10) percent of the total site area, are permitted outright as outdoor uses.

[…]

Finding:

The proposed office building will be used for offices and accessory uses associated with the permitted light industrial uses including the manufacturing of electronic instruments or equipment and research and development laboratories. The existing bulk gas storage yard, which is an outdoor storage area, will be expanded less than 10% of the total site. The applicant has not proposed outdoor uses besides off-street parking, loading, and utilities. With recommended Condition of Approval A24, this standard is met.

TDC 62.300. - Development Standards.

Development standards in the MP zone are listed in Table 62-2. Additional standards may apply to some uses and situations, see TDC 62.310.

Finding:

The development standards in Table 62-2 have been modified by the recently approved Industrial Master Plan (IMP 24-0001) and have been illustrated below. These standards are met.

Table 62-2: Development Standards in the MP Zone		
Current MP District Standards	**IMP Modifications**	**Proposed Development**
Minimum Setbacks		

Minimum Building setback for Yards Adjacent to Streets or Alleys, North of SW Leveton Drive	**100 feet**		**No change to current IMP condition of 68 feet from SW Leveton Drive and 98 feet from SW 108th Avenue**	**Approximately 77 feet from SW Leveton Drive and over 500 feet from SW 108th Avenue.**
Minimum Setback for Side and Rear Yards not Adjacent to Streets or Alleys, north of SW Leveton Drive	**50 feet**	**No minimum setback if adjacent to railroad right-of-way or spur track**	**0 feet from side and rear yards under common ownership.** **From other lots: Subject to Table 62-2 Development Standards in the MP Zone**	**Over 300 feet from west side yard. Over 500 feet from rear yard.**
Parking and Circulation Areas Adjacent to Public Right-of-Way	**50 feet**	**No minimum setback required adjacent to joint access approach in accordance with TDC 73C.**	**No change to current IMP condition of 108 feet from SW Leveton Drive and 43 feet from SW 108th Avenue.**	**59 feet to SW Tualatin Road. 120 feet to SW Leveton Drive.**
Parking and Circulation Areas Adjacent to Private Property Line	**5 - 25 feet**	**Determined through Architectural Review Process.** **No minimum setback required adjacent to joint access approach inaccordance withTDC 73C.**	**0 feet from property lines under common ownership.** **10 feet from other lots.**	**10 feet to west property line.**
Fences	**50 feet**	**From public right-of-way.**	**No change.**	**No fencing proposed.**
Structure Height				
Maximum Height	**70 feet**	**May be increased to 85 feet if yards adjacent to structure are not less than a distance equal to one and one-half times the height of the structure.** **Flagpoles may extend to 100 feet.**	**85 feet**	**The proposed lab building willbe 70'9" with a setback of 108'to SW Leveton Drive. Theproposed office building willhave a height of 60' and theCUB will be 54'9".**
Maximum Height Adjacent to Residential District	**28 feet**	**Measured at the required 50-foot or 100-foot setback line, includes flagpoles. The**	**No change**	**No structures are proposedwithin 100' of a property lineadjacent to a residentialdistrict.**

		building height may extend above 28 feet on a plane beginning at the 50-foot or 100-foot setback line at a slope of 45 degrees extending away from the setback line.		

[…]

Finding:
As noted, above, the Lam campus has an approved Industrial Master Plan (IMP 24-0001), included as Exhibit D, which modified setbacks and maximum building heights as reflected in the table above. These standards are met.

TDC 62.310. - Additional Development Standards.
(1) Industrial Master Plan. Minimum lot size, setbacks, maximum height, and other development standards may be modified by submittal of an Industrial Master Plan application. See TDC 33.050.
[…]

Finding:
As mentioned in the previous finding, the standards in the MP zone, as modified by IMP 24-0001, have been addressed through the applicant's proposal. This standard is met.

Chapter 63: Industrial Uses and Utilities and Manufacturing Zones – Environmental Regulations

Section 63.020 – Applicability.
The regulations of this Chapter apply to:
(1) All industrial uses and utilities, regardless of the Planning District in which they are located, and
(2) All Manufacturing Planning Districts, regardless of the use category
[…]

Finding:
The site is located in the Manufacturing Park (MP) District and the proposal includes industrial uses. Therefore, the noise, vibration, air quality, odor, heat and glare, materials storage, waste disposal, and dangerous substances regulations of this Chapter apply. With recommended Condition of Approval A25, these standards are met.

TDC 63.051. - Noise.
All uses and development must comply with the Oregon State Department of Environmental Quality standards relating to noise and the City of Tualatin noise ordinance in, TMC 6-14.

Finding:
The applicant has stated in their narrative that all noise restrictions of the DEQ and City of Tualatin will be abided by. There were a number of public comments that indicated that the Lam campus is causing

noise issues. These issues are currently under investigation by the City. With recommended Condition of Approval A25, this standard is met.

TDC 63.052. - Vibration.

(1) *Restrictions.* All uses and development must not cause or permit ground vibration into the property of another person that exceeds the limits set forth below in this section.

(a) Ground vibration as measured at the boundary of a residential planning district and an industrial planning district must not exceed 0.01 inches per second (0.00025 meters per second) RMS velocity.

(b) Ground vibration as measured at a common property boundary of any two properties within any industrial planning district must not exceed 0.1 inches per second (0.0025 meters per second) RMS velocity.

(2) *Method of Measurement.* Vibration measurement procedures must conform to the methods described in this section and to procedures approved by the Oregon Department of Environmental Quality.

(a) Instrumentation must be capable of measuring RMS value of the vibration velocity over the frequency range of ten to 1,000 hertz.

(b) Measurement values must be recorded for a sufficient period of observation to provide a representative sample.

(c) Attachment of the vibration transducer to the ground must be by magnetic or screw attachment to a steel bar of a minimum of nine inches (22.9 cm.) in length, driven flush with the ground surface.

(3) *Exemptions.* The requirements of TDC 63.052(1) do not apply to:

(a) Vibration resulting from the operation of any equipment or facility of a surface carrier engaged in interstate commerce by railroad;

(b) Vibration resulting from the operation of any road vehicle;

(c) Vibration resulting from construction activities and use of construction equipment; and

(d) Vibration resulting from roadway maintenance and repair equipment.

Finding:

The applicant has stated in their narrative (Exhibit A1), that no uses will cause or permit ground vibration. With recommended Condition of Approval A25, these standards are met.

TDC 63.053 - Air Quality.

(1) *Restrictions.* All uses and development must comply with the most recent air quality standards adopted by the Oregon Department of Environmental Quality. Plans of construction and operations must comply with the recommendations and regulations of the State Department of Environmental Quality.

(2) *Method of Measurement.* All measurements of air pollution must be by the procedures and with equipment approved by the State Department of Environmental Quality or equivalent and acceptable methods or measurement approved by the City. Upon request of the City, persons responsible for a suspected source of air pollution must provide quantitative and qualitative information regarding the discharge that will adequately and accurately describe operation conditions.

Finding:

The applicant has stated in their narrative (Exhibit A1), that the proposed development will comply with the most recent air quality standards adopted by the DEQ. With recommended Condition of Approval A25, these standards are met.

TDC 63.054. - Odors.
All uses and development must not emit odors in such quantities as to create a nuisance condition at any point beyond the subject property line of the emitting use.

Finding:
The applicant has stated in their narrative (Exhibit A1), that the proposed development will comply with odor restrictions as to not create a nuisance condition at any point beyond the Lam campus. With recommended Condition of Approval A25, this standard will be met.

TDC 63.055. - Heat and Glare.
(1)All uses and development must conduct all operations producing heat or glare entirely within an enclosed building.
(2) All uses and development may utilize exterior lighting, but the exterior lighting must be screened, baffled or directed away from residential planning districts.

Finding:
The applicant has stated in their narrative (Exhibit A1) that all operations producing heat and glare will be conducted within a fully enclosed building, and all exterior lighting will be directed away from residential planning districts. With recommended Condition of Approval A25, these standards are met.

TDC 63.056. - Storage and Stored Materials.
(1) All uses and development must store all materials, including wastes, in a manner that will not attract or aid the propagation of insects or rodents, or in any other way create a health or safety hazard.
(2) All uses and development that utilize open storage that would otherwise be visible at the property line must conceal it from view at the abutting property line by a sight obscuring fence not less than six feet high and not accessible to the general public to protect public safety.

Finding:
The applicant has stated in their narrative (Exhibit A1) that all materials, including wastes, will be stored appropriately and will be screened from public view. With recommended Condition of Approval A25, these standards are met.

TDC 63.057. - Liquid or Solid Waste Materials.
All uses and development are prohibited from disposing waste onto the site or into adjacent drainage ditches, creeks or other natural waterways in violation of State of Oregon DEQ standards, Clean Water Services Standards, City Standards, or in a manner that causes harm to wildlife.

Finding:
The applicant has stated in their narrative (Exhibit A1) that no waste will be disposed of onto or within the site or in any way that violates local, state, or federal regulations. With recommended Condition of Approval A25, these standards are met.

TDC 63.058. - Dangerous Substances.

All uses and development are prohibited from the storage, transfer, or processing of hazardous, toxic, or radioactive waste.

Finding:

The applicant has stated in their narrative (Exhibit A1) that no storage, transfer, or processing of hazardous, toxic, or radioactive waste is proposed as part of this development. With recommended Condition of Approval A25, these standards are met.

Chapter 73A: Site Design

TDC 73A.300. - Commercial Design Standards.

The following standards are minimum requirements for commercial development in all zones, except the Mixed-Use Commercial (MCU) zone, which has its own standards:

(1) Walkways. Commercial development must provide walkways as follows:

(a) Walkways must be a minimum of six feet in width;

(b) Walkways must be constructed of asphalt, concrete, pervious concrete, pavers, or grasscrete. Gravel or bark chips are not acceptable;

(c) Walkways must meet ADA standards applicable at time of construction or alteration;

(d) Walkways must be provided between the main building entrances and other on-site buildings, accessways, and sidewalks along the public right-of-way;

(e) Walkways through parking areas, drive aisles, and loading areas must be visibly raised and of a different appearance than the adjacent paved vehicular areas;

(f) Bikeways must be provided that link building entrances and bike facilities on the site with adjoining public right-of-way and accessways; and

(g) Outdoor Recreation Access Routes must be provided between the development's walkway and bikeway circulation system and parks, bikeways and greenways where a bike or pedestrian path is designated.

Finding:

As stated in Exhibit A1 and illustrated in Exhibit A2, walkways throughout the site are a minimum of 6-feet wide and constructed of concrete. The applicant has stated that all new walkways will meet ADA requirements, which will be confirmed during the site plan review phase of the project. Walkways are proposed to go through parking areas and will be constructed of concrete with the parking lot drive aisles and off-street parking spaces being constructed with asphalt. Walkways are located at primary building entrances and connect to the campus walkway system, accessways and sidewalks. Bicycle parking facilities are provided near the entrances to the proposed office building, near sidewalks and drive aisles providing access to the surrounding public rights-of-way. There are no outdoor recreation access routes required for this site. With recommended Condition of Approval A14.b., these standards are met.

[…]

(4) Safety and Security. Commercial development must provide safety and security features as follows:

(a) Locate windows and provide lighting in a manner that enables tenants, employees, and police to watch over pedestrian, parking, and loading areas;

(b) Locate windows and interior lighting to enable surveillance of interior activity from the public right-of-way;

(c) Locate, orient, and select exterior lighting to facilitate surveillance of on-site activities from the public right-of-way without shining into public rights-of-way or fish and wildlife habitat areas;
(d) Provide an identification system which clearly locates buildings and their entries for patrons and emergency services; and
(e) Above ground sewer or water pumping stations, pressure reading stations, water reservoirs, electrical substations, and above ground natural gas pumping stations must provide a minimum six foot tall security fence or wall.

Finding:
As shown in Exhibit A2, the proposed office building has windows along all sides and all floors. The laboratory building will have limited windows due to its function. The storage and utility buildings will not be occupied, and windows are not warranted for safety and security purposes. Where pedestrian, parking, and loading areas are not visible from windows the applicant will utilize closed circuit cameras for ensuring safety and security (Exhibit A1).

Photometric plans demonstrate full cutoff light fixtures have been selected to reduce light pollution from shining into public rights-of-way. No new above ground sewer or water pumping stations, pressure reading stations, water reservoirs, electrical substations, or above ground natural gas pumping stations are proposed. With recommended Condition of Approval A17 to address (d), these standards are met.

(5) Service, Delivery and Screening. Commercial development must provide service, delivery, and screening features as follows:
(a) Above grade and on-grade electrical and mechanical equipment such as transformers, heat pumps and air conditioners must be screened with sight obscuring fences, walls or landscaping;
(b) Outdoor storage must be screened with a sight obscuring fence, wall, berm or dense evergreen landscaping; and
(c) Above ground pumping stations, pressure reading stations, water reservoirs; electrical substations, and above ground natural gas pumping stations must be screened with sight-obscuring fences or walls and landscaping.

Finding:
As shown in Exhibit A2, the rooftop mechanical equipment will be located behind screening walls. The narrative included as Exhibit A1 states "all above grade and roof-mounted mechanical and electrical equipment will be screened with sight obscuring screening". Outdoor storage will consist of two new waste and recycling enclosures that will be screened with an 8-foot wall (Exhibit A2). The existing gas yard will be expanded and screened from public view by dense evergreen landscaping, topography and distance from abutting properties. With recommended Condition of Approval A26, these standards are met.

(6) Adjacent to Transit. Commercial development adjacent to transit must comply with the following:
(a) Development on a transit street designated in TDC Chapter 11 (Figure 11-5) must provide either a transit stop pad on-site, or an on-site or public sidewalk connection to a transit stop along the subject property's frontage on the transit street.
[…]

Finding:

As shown on Comprehensive Plan Map 8-5 (Exhibit G), the subject site is located along the Blue Line shuttle route with a stop located near the main driveway entrance on SW Leveton Drive. Public sidewalks along SW Leveton Drive and SW 108th Avenue connect the campus to this stop. There is no other plan in place for additional transit along either frontage. This standard is met.

Chapter 73B: Landscaping Standards

Section 73B.020 – Landscape Area Standards Minimum Areas by Use and Zone.

Zone	Minimum Area Requirement*	Minimum Area Requirement with dedication for a fish and wildlife habitat*
(5) IN, CN, CO/MR, MC and MP zones—All uses	**25% of the total area to be developed**	**22.5% of the total area to be developed**
**** For properties within the Hedges Creek Wetland Protection District which have signed the "Wetlands Mitigation Agreement," the improved or unimproved wetland buffer area may reduce the required landscaping to 12.5 percent as long as all other landscape requirements are met.***		

[…]

Finding:

The site is not located within the Hedges Creek Wetland Protection District. As shown in Exhibit A2 the proposal will include 279,500 square feet or 45% of the development area being landscaped. This standard is met.

TDC 73B.040. - Additional Minimum Landscaping Requirements for Commercial Uses.

(1) General. In addition to requirements in TDC 73B.020, commercial uses, except those located in the Mixed-Use Commercial (MUC) zone, must comply with the following:

(a) All areas not occupied by buildings, parking spaces, driveways, drive aisles, pedestrian areas, or undisturbed natural areas must be landscaped.

(i) This standard does not apply to areas subject to the Hedges Creek Wetlands Mitigation Agreement.

(b)Minimum 5-foot-wide landscaped area must be located along all building perimeters viewable by the general public from parking lots or the public right-of-way, but the following may be used instead of the 5-foot-wide landscaped area requirement:

(i) Pedestrian amenities such as landscaped plazas and arcades; and

(ii) Areas developed with pavers, bricks, or other surfaces, for exclusive pedestrian use and contain pedestrian amenities, such as benches, tables with umbrellas, children's play areas, shade trees, canopies.

(c) Five-foot wide landscaped area requirement does not apply to:

(i) Loading areas;

(ii) Bicycle parking areas;

(iii) Pedestrian egress/ingress locations; and

(iv) Where the distance along a wall between two vehicle or pedestrian access openings (such as entry doors, garage doors, carports and pedestrian corridors) is less than eight feet.

Finding:

Landscaping is provided in all practicable areas not otherwise occupied by buildings, vehicle areas, or pedestrian amenity areas (Exhibit A1 and A2). The office building will have a 5-foot-wide landscape strip around the perimeter of the building except for loading areas, bicycle parking areas and pedestrian ingress/egress areas of the building. The applicant has stated that the lab building will have landscaping in all areas viewable from the public right-of-way, except pedestrian ingress/egress areas and loading areas. There is an employee parking area west of the lab building that will not be used by the public therefore the 5-foot-wide building landscaping would not be required. Neither the storage or utility construction will be visible by the public or from the public rights-of-way. As part of the Building "G" office construction permitted under AR 22-0006, a public plaza is constructed east of these buildings and will be utilized by employees. With recommended Conditions of Approval A14.c-d. and A18, this standard is met.

(d) Development that abuts an RL or MP Zone must have landscaping approved through Architectural Review and must provide and perpetually maintain dense, evergreen landscaped buffers between allowed uses and the adjacent RL and MP zones.

Finding:
The subject property is adjacent to the MP zone to the east, west and south. There is RL-zoned property to the north of the Lam property, on the opposite side of SW Tualatin Road, so the RL-zoned property is adjacent to the site (Exhibit A2). In addition, there will be a new parking lot in the northwest portion of the site, which will have a new landscaping berm added. There is a large existing berm along the site's SW Tualatin Road frontage that will be retained and extended to further screen parking areas located in the northerly portion of the site (Exhibit A2). In addition, there will be a new parking lot in the northwest portion of the site, which will have new evergreen perimeter landscaping that will provide additional screening. With recommended Condition of Approval A14.d., this standard will be met.

(2) Manufacturing Park (MP)—Wetland Buffer. Wetland buffer areas up to 50 feet in width may be counted toward the required percentage of site landscaping, subject to the following:
[…]

Finding:
There are no wetlands within the development areas. This section of the TDC is not applicable.

Section 73B.080 – Minimum Landscaping Standards for All Zones.
The following are minimum standards for landscaping for all zones.

(1) Required Landscape Areas	• **Must be designed, constructed, installed, and maintained so that within three years the ground must be covered by living grass or other plant materials.** • **The foliage crown of trees cannot be used to meet this requirement.** • **A maximum of 10% of the landscaped area may be covered with un-vegetated areas of bark chips, rock or stone.** • **Must be installed in accordance with the provisions of the American National Standards Institute ANSI A300 (Part 1) (Latest Edition).** • **Must be controlled by pruning, trimming, or otherwise so that:**

	• **It will not interfere with designated pedestrian or vehicular access; and** • **It will not constitute a traffic hazard because of reduced visibility.**

Finding:
The density of plantings as shown on Landscape Plans (Exhibit A2) is sufficient to provide full coverage of landscaping within three years. No more than 10% of the landscaped areas will utilize bark chips, rock or stone. All landscaped areas will be installed in accordance with ANSI A300 Part 1 latest addition. These standards are met.

(2) Fences	**Landscape plans that include fences must integrate any fencing into the plan to guide wild animals toward animal crossings under, over, or around transportation corridors.**

Finding:
No fencing is proposed, and there are no established wildlife crossings in the vicinity. This standard is not applicable.

(3) Tree Preservation	• **Trees and other plant materials to be retained must be identified on the landscape plan and grading plan.** **During construction:** ○ **Must provide above and below ground protection for existing trees and plant materials identified to remain;** ○ **Trees and plant materials identified for preservation must be protected by chain link or other sturdy fencing placed around the tree at the drip line;** ○ **If it is necessary to fence within the drip line, such fencing must be specified by a qualified arborist;** ○ **Top soil storage and construction material storage must not be located within the drip line of trees designated to be preserved;** ○ **Where site conditions make necessary a grading, building, paving, trenching, boring, digging, or other similar encroachment upon a preserved tree's drip-line area, such grading, paving, trenching, boring, digging, or similar encroachment must only be permitted under the direction of a qualified arborist. Such direction must assure that the health needs of trees within the preserved area can be met; and** ○ **Tree root ends must not remain exposed.** • **Landscaping under preserved trees must be compatible with the retention and health of the preserved tree.** • **When it is necessary for a preserved tree to be removed in accordance with TDC 33.110 (Tree Removal Permit) the landscaped area surrounding the tree or trees**

	must be maintained and replanted with trees that relate to the present landscape plan, or if there is no landscape plan, then trees that are complementary with existing, landscape materials. Native trees are encouraged • **100% of the area preserved under any tree or group of trees (Except for impervious surface areas) retained in the landscape plan must apply directly to the percentage of landscaping required for a development**

Finding:
The Arborist Report (Exhibit A3) calls for preserving 373 on-site trees. With recommended Conditions of Approval A14.a. and A15, these standards are met.

(4) Grading	• **After completion of site grading, top-soil is to be restored to exposed cut and fill areas to provide a suitable base for seeding and planting.** • **All planting areas must be graded to provide positive drainage.** • **Soil, water, plant materials, mulch, or other materials must not be allowed to wash across roadways or walkways.** • **Impervious surface drainage must be directed away from pedestrian walkways, dwelling units, buildings, outdoor private and shared areas and landscape areas except where the landscape area is a water quality facility.**

Finding:
The applicant is required to obtain erosion control and grading permit with the city. With recommended Conditions of Approval A2 and A8, these standards are met.

(5) Irrigation	• **Landscaped areas must be irrigated with an automatic underground or drip irrigation system** • **Exceptions: Irrigation requirement does not apply to duplexes and townhouses.**

Finding:
Irrigation is proposed in new landscaping areas as detailed in the Notes on the Landscape Plan (Exhibit A2). This standard is met.

(6) Re-vegetation in Un-landscaped Areas	• **Vegetation must be replanted in all areas where vegetation has been removed or damaged in areas not affected by the landscaping requirements and that are not to be occupied by structures or other improvements,.** • **Plant materials must be watered at intervals sufficient to ensure survival and growth for a minimum of two growing seasons.**

	• **The use of native plant materials is encouraged to reduce irrigation and maintenance demands.** • **Disturbed soils should be amended to an original or higher level of porosity to regain infiltration and stormwater storage capacity.**

Finding:

The applicant proposes to landscape all areas not otherwise proposed for development. The applicant has stated that plant materials will be watered to ensure growth during at least two growth cycles. Areas disturbed by construction will have soils amended to original state or increased porosity to improve water infiltration and increase stormwater storage capacity. With recommended Condition of Approval A18, these standards are met.

Section 73B.090 – Minimum Standards Trees and Plants.

The following minimum standards apply to the types of landscaping required to be installed for all zones.

(1) Deciduous Shade Trees	• **One and on-half inch caliper measured six inches above ground;** • **Balled and burlapped; bare root trees will be acceptable to plant during their dormant season;** • **Reach a mature height of 30 feet or more;** • **Cast moderate to dense shade in summer;** • **Live over 60 years;** • **Do well in urban environments, tolerant of pollution and heat, and resistant to drought;** • **Require little maintenance and mechanically strong;** • **Insect- and disease-resistant;** • **Require little pruning; and** • **Barren of fruit production.**
(2) Deciduous Ornamental Trees	• **One and on-half inch caliper measured six inches above ground;** • **balled and burlapped; bare root trees will be acceptable to plant during their dormant season; and** • **Healthy, disease-free, damage-free, well-branched stock, characteristic of the species**
(3) Coniferous Trees	• **5 feet in height above ground;** • **balled and burlapped; bare root trees will be acceptable to plant during their dormant season; and** • **Healthy, disease-free, damage-free, well-branched stock, characteristic of the species.**
(4) Evergreen and Deciduous Shrubs	• **One to five gallon size;** • **Healthy, disease-free, damage-free, well-branched stock, characteristic of the species; and** • **Side of shrub with best foliage must be oriented to public view.**
(5) Groundcovers	• **Fully rooted;** • **Well branched or leafed;** • **Healthy, disease-free, damage-free, well-branched stock, characteristic of the species; and**

	• **English ivy (Hedera helix) is prohibited.**
(6) Lawns	• **Consist of grasses, including sod, or seeds of acceptable mix within the local landscape industry;** • **100 percent coverage and weed free; and** • **Healthy, disease-free, damage-free, characteristic of the species.**

Finding:
Per the Plant Schedule provided on the Landscape Plan included in Exhibit A2, the standards for groundcover, shrubs, and trees to be planted are met.

Chapter 73C: Parking Standards

The IMP 24-0001 was vested on July 8, 2024 and the parking lot standards in effect on this date will apply to this application.

TDC 73C.010. - Off-Street Parking and Loading Applicability and General Requirements.
[…]
(2) General Requirements. Off-street parking spaces, off-street vanpool and carpool parking spaces, off-street bicycle parking, and off-street loading berths must be as provided as set forth in TDC 73C.100, unless greater requirements are otherwise established by the conditional use permit or the Architectural Review process.

(a) The following apply to property and/or use with respect to the provisions of TDC 73C.100:

(i) The requirements apply to both the existing structure and use, and enlarging a structure or use;

(ii) The floor area is measured by gross floor area of the building primary to the function of the particular use of the property other than space devoted to off-street parking or loading;

[…]

(iv) Calculations to determine the number of required parking spaces and loading berths must be rounded to the nearest whole number;

(v) If the use of a property changes, thereby increasing off-street parking or loading requirements, the increased parking/loading area must be provided prior to commencement of the new use;

(vi) Parking and loading requirements for structures not specifically listed herein must be determined by the City Manager, based upon requirements of comparable uses listed

(vii) When several uses occupy a single structure, the total requirements for off-street parking may be the sum of the requirements of the several uses computed separately or be computed in accordance with TDC 73.370(1)(m), Joint Use Parking;

[…]

(ix) Required parking spaces must be available for the parking of operable passenger automobiles of residents, customers, patrons and employees and must not be used for storage of vehicles or materials or for the parking of trucks used in conducting the business;

(x) Institution of on-street parking, where none is previously provided, must not be done solely for the purpose of relieving crowded parking lots in commercial or industrial zones;

(xi) Required vanpool and carpool parking must meet the 9-foot parking stall standards in Figure 73-1 and be identified with appropriate signage;

[…]

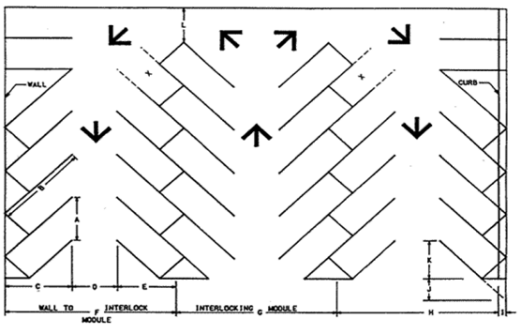
(xiii) If the applicant demonstrates that too many or too few parking spaces are required, applicant may seek a variance from the minimum or maximum by providing evidence that the particular use needs more or less than the amount specified in this Code.

Finding:
The applicant has proposed off-street parking spaces, off-street vanpool and carpool parking spaces, off-street bicycle parking, and off-street loading berths that will comply with TDC 73C.100. With recommended Conditions of Approval A14.e and A 19, these standards are met.

Section 73C.020 – Parking Lot Design Standards.
A parking lot, whether an accessory or principal use, intended for the parking of automobiles or trucks, must comply with the following:
(1) Off-street parking lot design must comply with the dimensional standards set forth in Figure 73-1;
[…]
(2) Parking lot drive aisles must be constructed of asphalt, concrete, or pervious concrete;
(3) Parking stalls must be constructed of asphalt, concrete, previous concrete, or a pervious surface such as pavers or grasscrete, but not gravel or woody material. Pervious surfaces, are encouraged for parking stalls in or abutting the Natural Resource Protection Overlay District, Other Natural Areas, or in a Clean Water Services Vegetated Corridor;
(4) Parking lots must be maintained adequately for all-weather use and drained to avoid water flow across sidewalks;
(5) Parking bumpers or wheel stops or curbing must be provided to prevent cars from encroaching on adjacent landscaped areas, or adjacent pedestrian walkways.

Finding:
As shown on the Site Plan (Exhibit A2), the applicant's proposed off-street parking lot design complies with the dimensional standards set forth in Figure 73-1 (shown below). Most stalls are proposed at 9 feet wide and are either 16 feet long, with landscape overhang spaces will be 18.5 feet long. Drive aisles are proposed between 24 to 30 feet. Both aisles and stalls are proposed to be composed of asphalt. Concrete curbs are also proposed. Wheel stops are proposed for parking stalls adjacent to pedestrian walkways to prevent encroachment. The applicant has proposed new stormwater facilities that will be located near new parking areas. Proposed stormwater drainage will avoid water flow over sidewalks. With recommended Condition of Approval A28, these standards are met.

Tualatin Development Code - Figure 73-1
Parking Space Design Standards for 9-Foot Stalls



Dimension	On Diagram	45°	60°	75°	90°
Stall width parallel to aisle	A	12.7	10.4	9.3	9.0
Stall Length of line	B	25.0	22.0	20.0	18.5
Stall depth to wall	C	17.5	19.0	19.5	18.5
Aisle width between stall lines	D	12.0	16.0	21.0	24.0
Stall depth, interlock	E	15.3	17.5	18.8	18.5
Module, wall to interlock	F	44.8	52.5	61.3	63.0
Module, interlocking	G	42.6	51.0	61.0	63.0
Module, interlocking to curb face	H	42.8	50.2	58.8	60.5
Bumper overhang (typical)	I	2.0	2.3	2.5	2.5
Offset	J	6.3	2.7	0.5	0.0
Setback	K	11.0	8.3	5.0	0.0
Cross aisle, one-way	L	12.0	12.0	12.0	12.0
Cross aisle, two way	-	22.0	22.0	22.0	22.0

X = Stall not accessible in some cases.

Parking Dimensions for Subcompact Parking	45°	60°	75°	90°
Stall Width	7.5	7.5	7.5	7.7
Aisle Width per Stall	10.5	8.7	7.8	7.5
Depth of Stalls at right angle to aisle	16.0	16.7	16.3	15.0
Aisle Width	11.0	14.0	17.4	20.0
Wall-to-Wall module	43.0	47.4	50.0	50.0

Note: These measurements are inadequate for average compacts. Each stall depth should be increased about 1 foot (2 feet total for the module) to accommodate for the usual range of compact sizes.

(6) Disability parking spaces and accessibility must meet ADA standards applicable at time of construction or alteration;
(7) Parking stalls for sub-compact vehicles must not exceed 35 percent of the total parking stalls required by TDC 73C.100. Stalls in excess of the number required by TDC 73C.100 can be sub-compact stalls;

Finding:
The Site Plan (Exhibit A2) illustrates 4 accessible parking spaces will be removed due to construction with 8 new accessible parking spaces being provided. ADA standards will be reviewed in greater detail during building permit review. No compact stalls are included in the proposal. These standards are met.

(8) Groups of more than 4 parking spaces must be so located and served by driveways that their use will require no backing movements or other maneuvering within a street right-of-way other than an alley;
(9) Drives to off-street parking areas must be designed and constructed to facilitate the flow of traffic, provide maximum safety of traffic access and egress, and maximum safety of pedestrians and vehicular traffic on the site;
(10) On-site drive aisles without parking spaces, which provide access to parking areas with regular spaces or with a mix of regular and sub-compact spaces, must have a minimum width of 22 feet for two-way traffic and 12 feet for one-way traffic; When 90 degree stalls are located on both sides of a drive aisle, a minimum of 24 feet of aisle is required. On-site drive aisles without parking spaces, which

provide access to parking areas with only sub-compact spaces, must have a minimum width of 20 feet for two-way traffic and 12 feet for one-way traffic;

Finding:
The design of the parking lot will not require movement on the public street. Drive aisles with parking are proposed to be a minimum of 24 feet wide. These standards are met.

(11) Artificial lighting, must be deflected to not shine or create glare in a residential zones, street right-of-way, a Natural Resource Protection Overlay District, Other Natural Areas, or a Clean Water Services Vegetated Corridor;
(12) Parking lot landscaping must be provided pursuant to the requirements of TDC 73C.200; and
(13) Except for parking to serve residential uses, parking areas adjacent to or within residential zones or adjacent to residential uses must be designed to minimize disturbance of residents.

Finding:
As shown on the Site Lighting Plans (Exhibit A2), lighting will primarily be focused on the building entrances, loading, and interior parking areas. There are no areas of Natural Resources Protection Overlay District, other Natural Areas, or a Clean Water Services Vegetated Corridor within the development area. These standards are met.

Section 73C.050 – Bicycle Parking Requirements and Standards.
(1) Requirements. Bicycle parking facilities must include:
(a) Long-term parking that consists of covered, secure stationary racks, lockable enclosures, or rooms in which the bicycle is stored;
(i) Long-term bicycle parking facilities may be provided inside a building in suitable secure and accessible locations.
(b) Short-term parking provided by secure stationary racks (covered or not covered), which accommodate a bicyclist's lock securing the frame and both wheels.
(2) Standards. Bicycle parking must comply with the following:
(a) Each bicycle parking space must be at least six feet long and two feet wide, with overhead clearance in covered areas must be at least seven feet;
(b) A five (5) foot-wide bicycle maneuvering area must be provided beside or between each row of bicycle parking. It must be constructed of concrete, asphalt, or a pervious hard surface such as pavers or grasscrete, and be maintained;
(c) Access to bicycle parking must be provided by an area at least three feet in width. It must be constructed of concrete, asphalt, or a pervious hard surface such as pavers or grasscrete, and be maintained;
(d) Bicycle parking areas and facilities must be identified with appropriate signing as specified in the Manual on Uniform Traffic Control Devices (MUTCD) (latest edition). At a minimum, bicycle parking signs must be located at the main entrance and at the location of the bicycle parking facilities;
(e) Bicycle parking must be located in convenient, secure, and well-lighted locations approved through the Architectural Review process. Lighting, which may be provided, must be deflected to not shine or create glare into street rights-of-way or fish and wildlife habitat areas;
(f) Required bicycle parking spaces must be provided at no cost to the bicyclist, or with only a nominal charge for key deposits, etc. This does not preclude the operation of private for-profit bicycle parking businesses;

[…]

(h) The City Manager or the Architectural Review Board may approve a form of bicycle parking not specified in these provisions but that meets the needs of long-term and/or short-term parking pursuant to Architectural Review.

Finding:

With the proposed additional building square footage, the Lam campus will be approximately 807,730 square feet. Currently, the Lam campus provides 64 short-term and 65 long-term bicycle parking spaces. As shown in Exhibit A2, the applicant proposes a combination of short-term and long-term bike parking areas; however dimensioned details of the bike parking furnishings were not included in the application materials. An additional 18 short-term and 35 long-term bicycle parking spaces will be added to the Lam site. A total of 82 short-term and 100 long-term bicycle parking spaces will be provided for the campus. With recommended Conditions of Approval A14.f. and A19 which will show compliance with standards (a), (b), (c), and (d), these standards are met.

Section 73C.100 – Off-Street Parking Minimum/Maximum Requirements.

USE	MINIMUM MOTOR VEHICLE PARKING	MAXIMUM MOTOR VEHICLE PARKING	BICYCLE PARKING	PERCENTAGE OF BICYCLE PARKING TO BE COVERED
(f) Industrial				
(i) Manufacturing	**1.60 spaces per 1,000 square feet of gross floor area**	**None**	**2 spaces, or 0.10 spaces per 1,000 gross square feet, whichever is greater**	**First five spaces or 30 percent, whichever is greater**

Finding:

As previously mentioned under TDC 73C.010, staff finds that the manufacturing rate of 1.6 spaces per 1,000 square feet of gross floor area is acceptable for determining parking requirements for the proposed buildings that support a research and development campus that is primarily dedicated to specialized manufacturing. Exhibit A1 and A2 indicate that 1,012 spaces will be constructed. More specifically, there will be 468 existing spaces removed for construction purposes and reconstructed, and 544 net new spaces will be constructed for a total of 1,012 parking spaces. Included in the 544 new spaces are 127 spaces that were previously approved for Building "G" through AR 22-0006 but not constructed. An analysis of required parking for the proposed use is provided in the table below.

Table 1: Minimum and Proposed Parking by Use

Use	GFA	Minimum Required Parking	Proposed Parking	Required Bike Parking	Required Covered Bike Parking
Office to support specialized manufacturing	*241,230*	*386*	***1,012***	***24***	***7***

Based on the required parking ratio, 386 parking spaces are required for building construction of 241,230 square feet. The applicant is proposing 35 long-term bicycle parking spaces (covered) and 18 short-term bicycle parking spaces. With recommended Conditions of Approval A 14.e-f, these standards are met.

(2) In addition to the general parking requirements in subsection (1), the following are the minimum number of off-street vanpool and carpool parking for commercial, institutional, and industrial uses.

Number of Required Parking Spaces	Number of Vanpool or Carpool Spaces
26 and greater	1 for each 25 spaces

Finding:

The proposal is for commercial use which will require a minimum of fifteen vanpool and carpool spaces. As shown in Exhibit A2, 5 carpool spaces will be removed for construction purposes leaving 7 vanpool/carpool spaces for the campus. The 5 spaces will be replaced, and an additional 15 required vanpool/carpool spaces will be provided meeting TDC standards. The new vanpool/carpool parking spaces will be constructed as part of Phase 1. Final design and location of the vanpool/carpool spaces will be reviewed during the building permit review process. With recommended Condition of Approval A14.g., this standard is met.

Section 73C.120 – Off-Street Loading Facilities Minimum Requirements.

(1) The minimum number of off-street loading berths for commercial, industrial, and institutional uses is as follows:

Use	Square Feet of Floor Area	Number of Berths	Dimensions of Berth	Unobstructed Clearance of Berth
Commercial	60,000 and over	3	12 feet × 35 feet	14 feet

(2) Loading berths must not use the public right-of-way as part of the required off-street loading area.
(3) Required loading areas must be screened from public view, public streets, and adjacent properties by means of sight-obscuring landscaping, walls or other means, as approved through the Architectural Review process.
(4) Required loading facilities must be installed prior to final building inspection and must be permanently maintained as a condition of use.
(5) The off-street loading facilities must in all cases be on the same lot or parcel as the structure they are intended to serve. In no case must the required off-street loading spaces be part of the area used to satisfy the off-street parking requirements.
(6) A driveway designed for continuous forward flow of passenger vehicles for the purpose of loading and unloading children must be located on the site of a school or child day care center having a capacity greater than 25 students.

Finding:

The campus site includes several existing buildings and 13 loading dock facilities. As shown in Exhibit A2, the total square footage for this project is 241,230 square feet, which requires 3 loading docks. The applicant is proposing one loading dock for the office building, two for the utility building and one for the lab building for a total of four new loading docks. The proposed loading docks will be approximately 12

feet x 60 feet with 14 feet of vertical clearance. With recommended Condition of Approval A14.g., these standards are met.

Section 73C.130 – Parking Lot Driveway and Walkway Minimum Requirements.
Parking lot driveways and walkways must comply with the following requirements:
[…]
(2)*Commercial Uses.* Ingress and egress for commercial and institutional uses must not be less than the following:

Required Parking Spaces	Minimum Number Required	Minimum Pavement Width	Minimum Pavement Walkways, etc.
Over 250	As required by City Manager	As required by City Manager	As required by City Manager

[…]

Finding:
The Lam Research campus is currently served by three driveways from SW Leveton Drive, three driveways from SW 108th Avenue, and an existing emergency vehicle access from Tualatin Road at 115th. As shown in Exhibit A2, the proposal includes one new driveway located off SW Leveton Drive intended for only trucks. The new driveway will be 36' wide for the first 50' from right-of-way and more than 24' wide (Exhibit A1). No sidewalk is provided near the new truck-only driveway as it is intended use is for truck traffic only. Additional findings are provided in Chapter 75.

(6) Maximum Driveway Widths and Other Requirements.
[…]
(d) There must be a minimum distance of 40 feet between any two adjacent driveways on a single property unless a lesser distance is approved by the City Manager.
(e) Must comply with the distance requirements for access as provided in TDC 75.
(f) Must comply with vision clearance requirements in TDC 75.

Finding:
The proposed SW Leveton Drive truck driveway is located approximately 328 feet east of the existing driveway to the west and 447 feet from the existing driveway to the east. With recommended Condition of Approval A3 standard (e) is met and recommended Condition of Approval A30 standard (f) is met.

TDC 73C.220. - Commercial Parking Lot Landscaping Requirements.
Commercial uses must comply with the following landscaping requirements for parking lots in all zones:
(1) General. Locate landscaping or approved substitute materials in all areas not necessary for vehicular parking and maneuvering.

Finding:
The parking lot contains landscaping in areas not used for vehicle and pedestrian movement. This standard is met.

(2) Clear Zone. Clear zone must be provided for the driver at ends of on-site drive aisles and at driveway entrances, vertically between a maximum of 30 inches and a minimum of eight feet as measured from the ground level.
[…]

Finding:
As shown in the Landscape Plans (Exhibit A2), the proposed plantings will provide for visual clearance at the end of drive aisles and drive entrances. With recommended Condition of Approval A30 related to maintenance, this standard is met.

(3) Perimeter. Minimum five feet in width in all off-street parking and vehicular circulation areas, including loading areas and must comply with the following.
(a) Deciduous trees located not more than 30 feet apart on average as measured on center;
(b) Shrubs or ground cover, planted so as to achieve 90 percent coverage within three years;
(c) Plantings which reach a mature height of 30 inches in three years which provide screening of vehicular headlights year round;
(d) Native trees and shrubs are encouraged; and
(e) Exception: Not required where off-street parking areas on separate lots are adjacent to one another and connected by vehicular access.

Finding:
As shown in the Landscape Plans (Exhibit A2), perimeter landscaping is proposed around all parking, circulation, and loading areas. The narrative, Exhibit A1, states that trees are located less than 30 feet on-center. Confirmation of deciduous trees located not more than 30 feet apart could not be confirmed on the south side of the northernmost SW 108th Avenue. This driveway will be utilized for access to parking areas to the west, therefore, deciduous trees 30 feet on center are required. With recommended Condition of Approval A14.l., these standards are met.

(4) Landscape Island. Minimum 25 square feet per parking stall must be improved with landscape island areas and must comply with the following:
(a) May be lower than the surrounding parking surface to allow them to receive stormwater run-off and function as water quality facilities as well as parking lot landscaping;
(b) Must be protected from vehicles by curbs, but the curbs may have spaces to allow drainage into the islands;
(c) Landscape separation required for every eight continuous spaces in a row;
(d) Must be planted with one deciduous shade trees for every four parking spaces. Required trees must be evenly dispersed throughout the parking lot;
(e) Must be planted with groundcover or shrubs;
(f) Native plant materials are encouraged;
(g) Landscape island areas with trees must be a minimum of five feet in width (from inside of curb to curb);
(h) Required plant material in landscape islands must achieve 90 percent coverage within three years; and
(i) Exceptions: […]

Finding:

No below grade landscape islands are proposed. Landscape islands will be constructed with curbs and stormwater drainage will not being affected. Given that a minimum of 386 parking spaces are required for the proposed use, 9,650 square feet of parking lot landscape island area and 97 trees are required. The applicant has proposed 1,012 total parking spaces, which requires 25,300 square feet of improved landscaped islands. While the application materials are silent on the square footage of parking lot landscaping included in the proposal, there are 399 trees proposed throughout the parking areas. With recommended Condition of Approval A14.j., these standards are met.

(5) Driveway Access. For lots with 12 or more parking spaces, site access from the public street must be defined by:

(a) Landscape area at least five feet in width on each side of the site access;
(b) Landscape area must extend 25 feet from the right-of-way line; and
(c) Exceptions: […]

Finding:
As shown in Exhibit A2, it is unclear if the proposed SW Leveton Drive driveway is flanked by the required five-foot-wide landscape area on each side of the new driveway and extending more than 25 feet from the right-of-way line. With recommended Condition of Approval A14.k., these standards are met.

Chapter 73D: Waste and Recyclables Management Standards

Section 73D.010 – Applicability and Objectives.
(1) Applicability. The requirements of this Chapter apply to all new or expanded:
(a) Common wall residential developments containing five or more units;
[…]
Section 73D.020 - Design Methods.
An applicant required to provide mixed solid waste and source separated recyclables storage areas must comply with one of following methods:
(1) The minimum standards method in TDC 73D.030;
(2) The waste assessment method in TDC 73D.040;
(3) The comprehensive recycling plan method in TDC 73D.050; or
(4) The franchised hauler review method in TDC 73D.060.

Finding:
The applicant proposes to use the Waste Assessment Method (TDC 73D.030) and has verified that the location and configuration of the proposed waste facility and access will satisfy Republic Services in Exhibit A6. As discussed below, these standards are met.

TDC 73D.040. - Waste Assessment Method.
This method tailors the storage area size to a waste assessment and management program for the specific user of a new or expanded building. It is most appropriate when the specific use of a building is known and the type and volume of mixed solid waste to be generated can be estimated.
(1) A waste assessment form must be obtained from the City Manager. The form must be used to estimate the volumes of both mixed solid waste and source separated recyclables generated.
(2) Techniques such as a compactor or cardboard baler may be implemented to minimize the square footage of the storage area.

(3) The plans must identify the size and location of interior, or exterior storage area(s) or both, specialized equipment to be used, and collection schedule required to accommodate the volumes of waste projected in the waste assessment.
(4) The application must demonstrate that the mixed solid waste and source separated recyclable volumes expected to be generated can be stored in less space than required by the Minimum Standards Method. If the application does not demonstrate that the waste assessment method requires less space, the minimum standards method will be required.

Finding:
The applicant has stated that the Waste Assessment Method is appropriate because the proposed development is an expansion of the existing development for a specific user and specific building uses (Exhibit A1). The applicant provided a Service Provider Letter from Republic Services that states the ingress and egress is adequate for container placement and access for trucks (Exhibit A6). The lab will have a waste enclosure located at the southeast corner of the building and a second enclosure will be provided at the northeast corner of the office building (Exhibit A1 and A2). With recommended Condition of Approval A14.l. demonstrating that the development includes an acceptable waste and recyclables management solution, these standards are met.

Section 73D.070 – Location, Design and Access Standards.
The following location, design, and access standards are applicable to all storage areas:
(1) Location Standards.
- **(a) The storage area for source separated recyclables may be collocated with the storage area for mixed solid waste.**
- **(b) Storage area space requirements can be satisfied with a single location or multiple locations, and can combine both interior and exterior locations.**
- **(c) Exterior storage areas must:**
  - **(i) Be located in central and visible locations on the site to enhance security for users;**
  - **(ii) Be located in a parking area; and**
  - **(iii) Not be located within a required front yard setback or in a yard adjacent to a public or private street.**

(2) Design Standards.
- **(a) The dimensions of the storage area must accommodate containers consistent with current methods of local collection at time of construction or alteration.**
- **(b) Indoor and outdoor storage areas must comply with Oregon Building and Fire Code requirements.**
- **(c) Exterior storage areas must be enclosed by a sight obscuring fence or wall at least 6 feet in height.**
- **(d) Evergreen plants must be placed around the enclosure walls, excluding the gate or entrance openings for common wall, commercial, and institutional developments.**
- **(e) Gate openings for haulers must be a minimum of 10 feet wide and must be capable of being secured in a closed and open position.**
- **(f) Horizontal clearance must be a minimum of 10 feet and a vertical clearance of 8 feet is required if the storage area is covered.**
- **(g) A separate pedestrian access must also be provided in common wall, commercial, and institutional developments.**
- **(h) Exterior storage areas must have either a concrete or asphalt floor surface.**

(i) Storage areas and containers must be clearly labeled to indicate the type of material accepted.

Finding:
The applicant has stated that both enclosures will include space for recyclables and mixed solid waste. One of the enclosures will serve and be located on the northeast exterior of the office building and the other enclosure will serve and be located on the southeast exterior of the lab building. According to Exhibit A2, the office building will provide a 13'-6 ¼" by 20 feet enclosure containing two 8 cubic yard receptacles and a 11' by 25' area for a trash compactor. Exhibit A2 illustrates two 8 cubic yards receptacles and an additional 3 cubic yards waste collection and 6 yards of recycling collection being provided for the lab building. An 8' high screening wall matching each building will be provided. Republic Services has reviewed the development proposal and have indicated the plans are sufficient and stated requirements for each enclosure (Exhibit A6). The design of the enclosures will accommodate the containers consistent with the Waste Assessment Method. The Building Division will confirm during the building permit review stage that the Oregon Building and Fire Code requirements are met. The applicant is not planning to utilize evergreen plants for screening due to the industrial nature of the use. Access and gate openings were reviewed by Republic Services and the applicant has stated that the gate openings will be at least 10 feet wide with a minimum horizontal clearance of 10 feet. Because the use is industrial, the applicant is not proposing separate pedestrian access. The storage area will have a surface of either concrete or asphalt and will be reviewed by the Building Division. The applicant has indicated that the storage area and containers will be clearly labeled. With recommended Condition of Approval A14.l., these standards are met.

(3) Access Standards.

(a) Storage areas must be accessible to users at convenient times of the day, and to hauler personnel on the day and approximate time they are scheduled to provide hauler service.
(b) Storage areas must be designed to be easily accessible to hauler trucks and equipment, considering paving, grade, gate clearance and vehicle access.
(c) Storage areas must be accessible to hauler trucks without requiring backing out of a driveway onto a public street. If only a single access point is available to the storage area, adequate turning radius must be provided to allow hauler trucks to safely exit the site in a forward motion.
(d) Storage areas must located so that pedestrian and vehicular traffic movement are not obstructed on site or on public streets adjacent to the site.
(e) The following is an exception to the access standard:
(i) Access may be limited for security reasons.

Finding:
As shown in the applicant's submittal, Republic Services, the applicable waste hauler, has indicated that the dimensions and accessibility of the enclosures meet their service needs (Exhibit A6). These standards are met.

Chapter 74: Public Improvement Requirements

[…]

TDC 74.110. - Phasing of Improvements.

The applicant may build the development in phases. If the development is to be phased the applicant must submit a phasing plan to the City Manager for approval with the development application. The timing and extent or scope of public improvements and the conditions of development must be determined by the City Council on subdivision applications and by the City Manager on other development applications.

Finding:
The applicant's Architectural Review narrative states that three construction phases are planned. Phase 1 will construct the office building and northern parking lot within the initial 2-years of construction after approval of AR 24-0002. Phase 2 will construct the lab, utility building, storage building within the first four years. Phase 3 will expand the bulk gas yard and parking area in the southwestern area of the site with construction starting within 6-years. Staff recommended Condition of Approval A1 will memorialize timing of the phased construction proposed by the applicant.

TDC 74.120 Public Improvements.
(1) Except as specially provided, all public improvements must be installed at the expense of the applicant. All public improvements installed by the applicant must be constructed and guaranteed as to workmanship and material as required by the Public Works Construction Code prior to acceptance by the City. Work must not be undertaken on any public improvement until after the construction plans have been approved by the City Manager and a Public Works Permit issued and the required fees paid.

Finding:
All public improvements will be installed by the applicant at their expense after approval of plans and issued Erosion Control, Water Quality, and Public Works Permits. With recommended Conditions of Approval A11, A12, and A16 this standard is met.

TDC 74.130 Private Improvements.
All private improvements must be installed at the expense of the applicant. The property owner must retain maintenance responsibilities over all private improvements.

Finding:
All private improvements will be installed by the applicant at their expense and will require prior approval of plans and building permits. With recommended Conditions of Approval A11, A12, and A16 this standard is met.

TDC 74.140 Construction Timing.
(1) All the public improvements required under this chapter must be completed and accepted by the City prior to the issuance of a Certificate of Occupancy.
(2) All private improvements required under this Chapter must be approved by the City prior to the issuance of a Certificate of Occupancy.

Finding:
The applicant will need to complete and obtain City acceptance of all public and private improvements proposed and modified by conditions of approval prior to receiving a Certificate of Occupancy. With recommended Condition of Approval A16 this standard is met.

[…]

TDC 74.210 Minimum Street Right-of-Way Widths.
The width of streets in feet shall not be less than the width required to accommodate a street improvement needed to mitigate the impact of a proposed development. In cases where a street is required to be improved according to the standards of the TDC, the width of the right-of-way shall not be less than the minimums indicated in TDC Chapter 74, Public Improvement Requirements, Figures 74-2A through 74-2G.
(2) For development applications other than subdivisions and partitions, wherever existing or future streets adjacent to property proposed for development are of inadequate right-of-way width, the additional right-of-way necessary to comply with TDC Chapter 74, Public Improvement Requirements, Figures 74-2A through 74-2G of the Tualatin Community Plan must be dedicated to the City for use by the public prior to issuance of any building permit for the proposed development. This right-of-way dedication must be for the full width of the property abutting the roadway and, if required by the City Manager, additional dedications must be provided for slope and utility easements if deemed necessary.

Finding:
The proposal is adjacent to SW 108th Avenue, SW Leveton Drive, and SW Tualatin Road. Required dedication of right-of-way and construction of public street surface infrastructure will benefit this development's expected addition of bicycle, pedestrian, and vehicular trips utilizing streets and sidewalks. Final plans will include a minimum of half-street right-of-way dedications to preferred cross-sections along with improvements within SW Leveton Drive and SW Tualatin Road meeting the requirements of the City of Tualatin. With recommended Conditions of Approval A3, A11, and A16 this standard is met.

TDC 74.320. - Slope Easements.
(1) The applicant must obtain and convey to the City any slope easements determined by the City Manager to be necessary adjacent to the proposed development site to support the street improvements in the public right-of-way or accessway or utility improvements required to be constructed by the applicant.
[…]
(3) For all other development applications, a slope easement dedication must be submitted to the City Manager; building permits must not be issued for the development prior to acceptance of the easement by the City.

Finding:
Any required slope easements necessary to support SW 108th Avenue, SW Leveton Drive, and SW Tualatin Road will be granted to the City. With recommended Conditions of Approval A3, A11, and A16 this standard is met.

TDC 74.330. - Utility Easements.
(1) Utility easements for water, sanitary sewer and storm drainage facilities, telephone, television cable, gas, electric lines and other public utilities must be granted to the City.
[…]
(4) For development applications other than subdivisions and partitions, and for both on-site and off-site easement areas, a utility easement must be granted to the City; building permits must not be issued for the development prior to acceptance of the easement by the City. The City may elect to exercise eminent domain and condemn necessary off-site public utility easements at the applicant's

request and expense. The City Council must determine when condemnation proceedings are to be used.
(5) The width of the public utility easement must meet the requirements of the Public Works Construction Code. All subdivisions and partitions must have a 6-foot public utility easement adjacent to the street and a 5-foot public utility easement adjacent to all side and rear lot lines. Other easements may be required as determined by the City Manager.

Finding:
Any required public slope and/or utility easements will be granted to the City. The public utility easement width will be 8-feet-wide adjacent to the final dedicated rights-of-way of SW 108th Avenue, SW Leveton Drive, and SW Tualatin Road. Additional width of public utility easement will include accommodation of the water system meters and vaults and onsite water laterals to meet the Public Works Construction Code. With recommended Conditions of Approval A3, A4, A5, A6, and A11 these standards are met.

TDC 74.420 Street Improvements.
When an applicant proposes to develop land adjacent to an existing or proposed street, including land which has been excluded under TDC 74.220, the applicant should be responsible for the improvements to the adjacent existing or proposed street that will bring the improvement of the street into conformance with the Transportation Plan (TDC Chapter 11), TDC 74.425 (Street Design Standards), and the City' s Public Works Construction Code, subject to the following provisions:
(1) For any development proposed within the City, roadway facilities within the right-of-way described in TDC 74.210 must be improved to standards as set out in the Public Works Construction Code.
(2) The required improvements may include the rebuilding or the reconstruction of any existing facilities located within the right-of-way adjacent to the proposed development to bring the facilities into compliance with the Public Works Construction Code.
(3) The required improvements may include the construction or rebuilding of off-site improvements which are identified to mitigate the impact of the development.
(4) Where development abuts an existing street, the improvement required must apply only to that portion of the street right-of-way located between the property line of the parcel proposed for development and the centerline of the right-of-way, plus any additional pavement beyond the centerline deemed necessary by the City Manager to ensure a smooth transition between a new improvement and the existing roadway (half-street improvement). Additional right-of-way and street improvements and off-site right-of-way and street improvements may be required by the City to mitigate the impact of the development. The new pavement must connect to the existing pavement at the ends of the section being improved by tapering in accordance with the Public Works Construction Code.
(5)If additional improvements are required as part of the Access Management Plan of the City, TDC Chapter 75, the improvements must be required in the same manner as the half-street improvement requirements.
(6) All required street improvements must include curbs, sidewalks with appropriate buffering, storm drainage, street lights, street signs, street trees, and, where designated, bikeways and transit facilities.
[…]
(8) For development applications other than subdivisions and partitions, all street improvements required by this section must be completed and accepted by the City prior to the issuance of a Certificate of Occupancy.

[…]
(10) Streets within, or partially within, a proposed development site must be graded for the entire right-of-way width and constructed and surfaced in accordance with the Public Works Construction Code.
(11) Existing streets which abut the proposed development site must be graded, constructed, reconstructed, surfaced or repaired as necessary in accordance with the Public Works Construction Code and TDC Chapter 11, Transportation Plan, and TDC 74.425 (Street Design Standards).
[…]
(14) The applicant must construct any required street improvements adjacent to parcels excluded from development, as set forth in TDC 74.220 of this chapter.
[…]
(17) Intersections should be improved to operate at a level of service of at least D and E for signalized and unsignalized intersections, respectively.
[…]

Finding:
A Transportation Impact Analysis from Mackenzie was submitted. The City Engineer and an independent consultant have reviewed this traffic analysis, found it to be in substantial conformance with Tualatin's Traffic Study Requirements, and agree with its conclusions. The applicant will construct a new access approximately 400 feet to the east of westernmost access to SW Leveton Drive. Sidewalk will be added along the northernmost access to SW 108th Avenue to the main campus. Sidewalks along SW Leveton Drive, SW 108th Ave, and SW Tualatin Road will be reviewed and improved where needed to bring them into compliance with ADA (PROWAG) specifications. Additionally, the City Engineer has reviewed the proposal against the above requirements. Required dedication of right-of-way and construction of public street surface infrastructure will mitigate this development's expected addition of bicycle, pedestrian, and vehicular trips utilizing streets and sidewalks. With recommended Conditions of Approval A3, A11, and A16 these standards are met.

TDC 74.425 Street Design Standards.
(1) Street design standards are based on the functional and operational characteristics of streets such as travel volume, capacity, operating speed, and safety. They are necessary to ensure that the system of streets, as it develops, will be capable of safely and efficiently serving the traveling public while also accommodating the orderly development of adjacent lands.
(2) The proposed street design standards are shown in Figures 72A through 72G. The typical roadway cross sections comprise the following elements: right-of-way, number of travel lanes, bicycle and pedestrian facilities, and other amenities such as landscape strips. These figures are intended for planning purposes for new road construction, as well as for those locations where it is physically and economically feasible to improve existing streets.
[…]
(4) All streets must be designed and constructed according to the preferred standard. The City Manager may reduce the requirements of the preferred standard based on specific site conditions, but in no event will the requirement be less than the minimum standard. The City Manager must take into consideration the following factors when deciding whether the site conditions warrant a reduction of the preferred standard:
(a)Arterials:

(i)Whether adequate right-of-way exists;
(ii)Impacts to properties adjacent to right-of-way;
(iii)Current and future vehicle traffic at the location; and
(iv)Amount of heavy vehicles (buses and trucks).

(b) Collectors:
(i) Whether adequate right-of-way exists;
(ii) Impacts to properties adjacent to right-of-way;
(iii) Amount of heavy vehicles (buses and trucks); and
(iv) Proximity to property zoned manufacturing or industrial.

[...]

Finding:
The proposal is adjacent to SW 108th Avenue, SW Leveton Drive, and SW Tualatin Road. These roads are designated as a Minor Collector, Minor Arterial, and Major Collector, respectively, on Tualatin Comprehensive Plan Map 8-1: Tualatin Functional Classification Plan and Traffic Signal Plan. A Transportation Impact Analysis from Mackenzie did not recommend additional improvements greater than the planned cross-sections. Prior to occupancy these streets will meet or will be improved to meet City Standards as determined by the City Engineer. With recommended Conditions of Approval A3, A11, and A16 these standards are met.

TDC 74.440 Streets, Traffic Study Required.
(1) The City Manager may require a traffic study to be provided by the applicant and furnished to the City as part of the development approval process as provided by this Code, when the City Manager determines that such a study is necessary in connection with a proposed development project in order to:

(a) Assure that the existing or proposed transportation facilities in the vicinity of the proposed development are capable of accommodating the amount of traffic that is expected to be generated by the proposed development, and/or
(b) Assure that the internal traffic circulation of the proposed development will not result in conflicts between on-site parking movements and/or on-site loading movements and/or on-site traffic movements, or impact traffic on the adjacent streets.

(2) The required traffic study must be completed prior to the approval of the development application.
(3) The traffic study must include, at a minimum:

(a) an analysis of the existing situation, including the level of service on adjacent and impacted facilities.
(b) an analysis of any existing safety deficiencies.
(c) proposed trip generation and distribution for the proposed development.
(d) projected levels of service on adjacent and impacted facilities.
(e) recommendation of necessary improvements to ensure an acceptable level of service for roadways and a level of service of at least D and E for signalized and unsignalized intersections respectively, after the future traffic impacts are considered.
(f) The City Manager will determine which facilities are impacted and need to be included in the study.
(g) The study must be conducted by a registered engineer.

(4) The applicant must implement all or a portion of the improvements called for in the traffic study as determined by the City Manager.

Finding:

A Transportation Impact Analysis and TIA Supplemental Letter from Mackenzie evaluated the following:

1. Three new buildings are proposed in both the southeast and at the southwest portions of the Lam campus in Tualatin, Oregon.

2. This project includes a four-story office building with an area of up to 120,000 square feet (SF) in the southeast portion of the campus and a two-story utility building with approximately 29,000 SF and a laboratory building with approximately 85,000 SF in the southwest portion of the campus.

3. At full occupancy, the proposed campus expansion is estimated to generate an additional 244 AM peak hour, 233 PM peak hour, and 2036 daily trips.

4. A safety review, capacity analysis, and queuing analysis was conducted for intersections meeting City thresholds for traffic study - all City intersections within a 1/4-mile of the project site, all ODOT facilities anticipated to be impacted by 50 or more peak hour trips, and intersections of concern as noted by ODOT or the City.

5. No study area intersections were found to have a crash rate higher than 1.0 for the five-year crash data from 2019 through 2023, nor were significant patterns found that could be addressed by improvements to the intersections.

6. All public street intersections but one are projected to meet City of Tualatin and ODOT mobility standards with the proposed project. The intersection of SW Hazelbrook Road/OR 99W experiences long delays in the PM peak hour for vehicles turning right onto OR 99W, but capacity improvements are not recommended at this location.

7. Queuing for study area intersections is currently estimated to be accommodated by existing storage areas.

Mackenzie's recommended improvements include:

- *A. Coordinate traffic signals to facilitate left turn movements from OR 99W to SW Tualatin Road at their intersections with SW 124th Avenue. This will minimize the queue lengths and delays for southbound left turns on SW 124th Avenue and avoid potential spill back to OR 99W.*

- *B. Trim vegetation at the site access locations as needed to provide the recommended intersection sight distances*

The City Engineer and an independent consultant have reviewed the traffic study provided by the applicant, found it to be in substantial conformance with Tualatin's Traffic Study Requirements, and agree with its conclusions.

ODOT's response (Exhibit K) summarizes:

- *"ODOT concurs with the findings of the TIA that all ODOT intersections are projected to meet ODOT mobility standards following completion of both phases of the project in 2030.*
- *Given that this has not been shown to present safety or operation issues for northbound traffic on OR 99W, ODOT concurs that "mitigation is not recommended [at Hazelbrook] because it would encourage vehicles to travel this route from SW Tualatin Road instead of using SW 124th Avenue to access OR 99W northbound."*
- *ODOT has noted that "no further analysis of state highway facilities is required".*

With recommended Conditions of Approval A3, A11, and A16 these standards are met.

[…]

TDC 74.470 Street Lights.
(1) Street light poles and luminaries must be installed in accordance with the Public Works Construction Code.
(2) The applicant must submit a street lighting plan for all interior and exterior streets on the proposed development site prior to issuance of a Public Works Permit.

Finding:
The applicant will evaluate street lighting levels in accordance with City standards. Street lights will be installed as needed to meet these standards. A maintenance fee will be paid for those installed. With recommended Conditions of Approval A3, A11, and A16, this standard is met.

[…]
TDC 74.485. - Street Trees.
[…]
(2) In nonresidential subdivisions and partitions street trees must be planted by the owners of the individual lots as development occurs.
(3) The Street Tree Ordinance specifies the species of tree which is to be planted and the spacing between trees.

Finding:
The applicant will plant street trees as shown within approved permit plans. Many large mature trees exist along the property frontage of SW Tualatin Road and will remain and serve the function of street trees. With recommended Conditions of Approval A3, A11, and A16 this standard is met.

TDC 74.610 Water Service.
(1) Water lines must be installed to serve each property in accordance with the Public Works Construction Code. Water line construction plans must be submitted to the City Manager for review and approval prior to construction.
[…]
(3) As set forth is TDC Chapter 12, Water Service, the City has three water service levels. All development applicants must be required to connect the proposed development site to the service level in which the development site is located. If the development site is located on a boundary line

between two service levels the applicant must be required to connect to the service level with the higher reservoir elevation. The applicant may also be required to install or provide pressure reducing valves to supply appropriate water pressure to the properties in the proposed development site.

Finding:
Lam Research Corporation's proposed rerouting of the existing public water main serving the JAE Oregon site will result in conversion of the entire line outside of public right-of-way to a private water main owned and maintained by JAE. One adequately sized private meter at SW Tualatin Road right-of way and a private domestic line will connect to existing lines on the JAE lot connecting past existing meters. The existing meters will be decommissioned.

If needed to obtain additional fire flow volumes in the future, JAE may obtain permits to loop this line over their lot with installation of a fire vault prior to connection to the public main in SW Leveton Drive.

Lam's proposed water services will be directly connected to public mains within adjacent public rights-of-way.

With recommended Conditions of Approval A5, A6, A11, and A16 these standards are met.

TDC 74.620 Sanitary Sewer Service.

(1) Sanitary sewer lines must be installed to serve each property in accordance with the Public Works Construction Code. Sanitary sewer construction plans and calculations must be submitted to the City Manager for review and approval prior to construction.
[…]

Finding:
New and modified buildings and structures will include separate laterals connecting to public mains within SW Leveton Drive. Downstream conveyance capacity will be confirmed or upgraded. With recommended Conditions of Approval A4, A11, and A16 this standard is met.

TDC 74.630 Storm Drainage System.
(1) Storm drainage lines must be installed to serve each property in accordance with City standards and Clean Water Services standards. Storm drainage construction plans and calculations must be submitted to the City Manager for review and approval prior to construction.
(2) The storm drainage calculations must confirm that adequate capacity exists to serve the site. The discharge from the development must be analyzed in accordance with the City's Storm and Surface Water Regulations and Clean Water Services standards.
[…]

TDC 74.640 Grading.
(1) Development sites must be graded to minimize the impact of storm water runoff onto adjacent properties and to allow adjacent properties to drain as they did before the new development.
(2) A development applicant must submit a grading plan showing that all lots in all portions of the development will be served by gravity drainage from the building crawl spaces; and that this development will not affect the drainage on adjacent properties. The City Manager may require the applicant to remove all excess material from the development site.

TDC 74.650 Water Quality, Storm Water Detention and Erosion Control.
The applicant must comply with the water quality, storm water detention and erosion control requirements in the Surface Water Management Ordinance. If required:
[…]
(2) On all other development applications, prior to issuance of any building permit, the applicant must arrange to construct a permanent on-site water quality facility and storm water detention facility and submit a design and calculations indicating that the requirements of the Surface Water Management Ordinance will be met and obtain a Stormwater Connection Permit from Clean Water Services.
(3) For on-site private and regional non-residential public facilities, the applicant must submit a stormwater facility agreement, which will include an operation and maintenance plan provided by the City, for the water quality facility for the City's review and approval. The applicant must submit an erosion control plan prior to issuance of a Public Works Permit. No construction or disturbing of the site must occur until the erosion control plan is approved by the City and the required measures are in place and approved by the City.

Finding:
The Civil Storm Drainage Overall Plan illustrates capturing stormwater runoff from the site's developed areas for each lot to private stormwater facilities on each lot with conveyance to the public stormwater system in SW 108th Avenue and SW Leveton Drive either directly or via private easements. The submitted Preliminary Stormwater Drainage Report prepared by Mackenzie includes modifying existing and construction of new stormwater facilities to provide treatment, hydromodification, and detention for all private impervious areas. Modified public impervious areas within SW 108th Avenue right-of-way continue to flow south towards a public stormwater facility on the west side of SW 108th Avenue north of the intersection with SW Leveton Drive which could be confirmed adequate or enlarged to ensure adequate capacity. Modified public impervious areas within SW Leveton Drive and SW Tualatin Road rights-of-way may require public stormwater Low Impact Development Approaches (LIDA) to provide stormwater management.

Final plans and stormwater calculations will demonstrate that the development has direct access by gravity to the public stormwater system with adequate infiltration and/or downstream capacity in accordance with City of Tualatin and Clean Water Service standards.

The site disturbance is approximately 14.4 acres. Erosion and sediment control plans and permit applications conforming to the requirements of the City of Tualatin, CWS, and Oregon Department of Environmental Quality will be provided with the construction permit submittal documents. The applicant will obtain an erosion control permit from the City of Tualatin for disturbance greater than 500 square feet. In addition, these plans must be sufficient to obtain a National Pollution Discharge Elimination System (NPDES) 1200-CN Stormwater Discharge Permit from Clean Water Services as an agent of Oregon Department of Environmental Quality if between 1 and 5 acres of disturbance or a National Pollution Discharge Elimination System (NPDES) 1200-C Construction Erosion Control permit from Oregon DEQ for over 5 acres.

A Clean Water Services' Service Provider Letter and Memorandum were received. After land use decision issuance, the applicant will submit final plans complying with the Service Provider Letter conditions and CWS Memorandum that are sufficient to obtain a Stormwater Connection Permit Authorization Letter from Clean Water Services in accordance with TDC 74.650(2) and CWS D&CS 3.01.2(d). With recommended Conditions of Approval A7, A8, A9, A10, A11, and A16 these standards are met.

TDC 74.660 Underground.
(1) All utility lines including, but not limited to, those required for gas, electric, communication, lighting and cable television services and related facilities must be placed underground. Surface-mounted transformers, surface-mounted connection boxes and meter cabinets may be placed above ground. Temporary utility service facilities, high capacity electric and communication feeder lines, and utility transmission lines operating at 50,000 volts or above may be placed above ground. The applicant must make all necessary arrangements with all utility companies to provide the underground services. The City reserves the right to approve the location of all surface-mounted transformers.
(2) Any existing overhead utilities may not be upgraded to serve any proposed development. If existing overhead utilities are not adequate to serve the proposed development, the applicant must, at their own expense, provide an underground system. The applicant must be responsible for obtaining any off-site deeds and/or easements necessary to provide utility service to this site; the deeds and/or easements must be submitted to the City Manager for acceptance by the City prior to issuance of the Public Works Permit.

TDC 74.670. - Existing Structures.
(1) Any existing structures requested to be retained by the applicant on a proposed development site must be connected to all available City utilities at the expense of the applicant.
(2) The applicant must convert any existing overhead utilities serving existing structures to underground utilities, at the expense of the applicant.
(3) The applicant must be responsible for continuing all required street improvements adjacent to the existing structure, within the boundaries of the proposed development site.
[…]

Finding:
The applicant will construct a new access approximately 400 feet to the east of the westernmost access to SW Leveton Drive. The northernmost access to SW 108th Avenue will be widened with private sidewalk on the north side to the main campus. The improvements will extend adjacent to all legal lots associated with this project along SW 108th Avenue, SW Leveton Drive, and SW Tualatin Road including compliance with ADA/PROWAG driveways, ramps and sidewalks and undergrounding of overhead utilities as approved by the City Engineer. With recommended Conditions of Approval A3, A11, A13, and A16 these standards are met.

Chapter 75 Access Management
[…]

TDC 75.020. - Permit for New Driveway Approach
(1) Applicability. A driveway approach permit must be obtained prior to constructing, relocating, reconstructing, enlarging, or altering any driveway approach.
(2) Exceptions. A driveway approach permit is not required for:
> **(a) The construction, relocation, reconstruction, enlargement, or alteration of any driveway approach that requires a state highway access permit; or**
> **(b) The construction, relocation, reconstruction, enlargement or alteration of any driveway approach that is part of the construction of a publicly or privately engineered public improvement project.**

(3) Procedure Type. A Driveway Approach Permit is processed as a Type II procedure under TDC 32.220 (Type II).

(4) Submittal Requirements. In addition to the application materials required by TDC 32.140 (Application Submittal), the following application materials are also required:

(a) A site plan, of a size and form and in the number of copies meeting the standards established by the City Manager, containing the following information:

(i)The location and dimensions of the proposed driveway approach;

(ii)The relationship to nearest street intersection and adjacent driveway approaches;

(iii)Topographic conditions;

(iv)The location of all utilities;

(v)The location of any existing or proposed buildings, structures, or vehicular use areas;

(vi)The location of any trees and vegetation adjacent to the location of the proposed driveway approach that are required to be protected pursuant to TDC Chapter 73B or 73C; and

(vii)The location of any street trees adjacent to the location of the proposed driveway approach.

(b) Identification of the uses or activities served, or proposed to be served, by the driveway approach; and

(c) Any other information, as determined by the City Manager, which may be required to adequately review and analyze the proposed driveway approach for conformance with the applicable criteria.

(5) Criteria. A Driveway Approach Permit must be granted if:

(a) The proposed driveway approach meets the standards of this Chapter and the Public Works Construction Code;

(b) No site conditions prevent placing the driveway approach in the required location;

(c) The number of driveway approaches onto an arterial are minimized;

(d) The proposed driveway approach, where possible:

(i) Is shared with an adjacent property; or

(ii) Takes access from the lowest classification of street abutting the property;

(e) The proposed driveway approach meets vision clearance standards;

(f) The proposed driveway approach does not create traffic hazards and provides for safe turning movements and access;

(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity;

(g) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and

(i)The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets.

(6) Effective Date. The effective date of a Driveway Approach Permit approval is the date the notice of decision is mailed.

(7) Permit Expiration. A Driveway Approach Permit approval expires one year from the effective date, unless the driveway approach is constructed within the one-year period in accordance with the approval decision and City standards.

[…]

<u>TDC 75.040. - Driveway Approach Requirements</u>

(1)The provision and maintenance of driveway approaches from private property to the public streets as stipulated in this Code are continuing requirements for the use of any structure or parcel of real property in the City of Tualatin. No building or other permit may be issued until scale plans are presented that show how the driveway approach requirement is to be fulfilled. If the owner or occupant of a lot or building changes the use to which the lot or building is put, thereby increasing driveway approach requirements, it is unlawful and a violation of this code to begin or maintain such altered use until the required increase in driveway approach is authorized by the City.
(2) Owners of two or more uses, structures, or parcels of land may agree to utilize jointly the same driveway approach when the combined driveway approach of both uses, structures, or parcels of land satisfies their combined requirements as designated in this code; provided that satisfactory legal evidence is presented to the City Attorney in the form of deeds, easements, leases or contracts to establish joint use. Copies of said deeds, easements, leases or contracts must be placed on permanent file with the City Recorder.
(3) Joint and Cross Access.

(a) Adjacent commercial uses may be required to provide cross access drive and pedestrian access to allow circulation between sites.

(b) A system of joint use driveways and cross access easements may be required and may incorporate the following:

(i) A continuous service drive or cross access corridor extending the entire length of each block served to provide for driveway separation consistent with the access management classification system and standards;

(ii) A design speed of ten mph and a maximum width of 24 feet to accommodate two-way travel aisles designated to accommodate automobiles, service vehicles, and loading vehicles;

(iii) Stub-outs and other design features to make it visually obvious that the abutting properties may be tied in to provide cross access via a service drive; and

(iv) An unified access and circulation system plan for coordinated or shared parking areas.

(c) Pursuant to this section, property owners may be required to:

(i) Record an easement with the deed allowing cross access to and from other properties served by the joint use driveways and cross access or service drive;

(ii) Record an agreement with the deed that remaining access rights along the roadway will be dedicated to the city and pre-existing driveways will be closed and eliminated after construction of the joint-use driveway;

(iii) Record a joint maintenance agreement with the deed defining maintenance responsibilities of property owners; and(iv)If subsection(i) through (iii) above involve access to the state highway system or county road system, ODOT or the county must be contacted and must approve changes to subsection(i) through (iii) above prior to any changes.

(iv) If subsection(i) through (iii) above involve access to the state highway system or county road system, ODOT or the county must be contacted and must approve changes to subsection(i) through (iii) above prior to any changes.

(4) Requirements for Development on Less than the Entire Site.

(a) To promote unified access and circulation systems, lots and parcels under the same ownership or consolidated for the purposes of development and comprised of more than one building site must be reviewed as one unit in relation to the access standards. The number of access points permitted must be the minimum number necessary to provide reasonable access to these properties, not the maximum available for that frontage. All necessary easements, agreements, and stipulations must be met. This must also apply to phased

development plans. The owner and all lessees within the affected area must comply with the access requirements.

(b) All access must be internalized using the shared circulation system of the principal commercial development or retail center. Driveways should be designed to avoid queuing across surrounding parking and driving aisles.

(5) Lots that front on more than one street may be required to locate motor vehicle accesses on the street with the lower functional classification as determined by the City Manager.

(6) Except as provided in TDC 53.100, all driveway approach must connect directly with public streets.

(7) To afford safe pedestrian access and egress for properties within the City, a sidewalk must be constructed along all street frontage, prior to use or occupancy of the building or structure proposed for said property. The sidewalks required by this section must be constructed to City standards, except in the case of streets with inadequate right-of-way width or where the final street design and grade have not been established, in which case the sidewalks must be constructed to a design and in a manner approved by the City Manager. Sidewalks approved by the City Manager may include temporary sidewalks and sidewalks constructed on private property; provided, however, that such sidewalks must provide continuity with sidewalks of adjoining commercial developments existing or proposed. When a sidewalk is to adjoin a future street improvement, the sidewalk construction must include construction of the curb and gutter section to grades and alignment established by the City Manager.

(8) The standards set forth in this Code are minimum standards for driveway approaches, and may be increased through the Architectural Review process in any particular instance where the standards provided herein are deemed insufficient to protect the public health, safety, and general welfare.

(9) Minimum driveway approach width for uses are as provided in Table 75-1 (Driveway Approach Width):

TABLE 75-1
Driveway Approach Width

Use	Minimum Driveway Approach Width	Maximum Driveway Approach Width
Commercial	1-99 Parking Spaces = 32 feet 100-249 Parking Spaces = two approaches each 32 feet	Over 250 Parking Spaces = As required by the City Manager, but not exceeding 40 feet.
Industrial	36 feet	Over 250 Parking Spaces = As Required by the City Manager, but not exceeding 40 feet

(10) Driveway Approach Separation. There must be a minimum distance of 40 feet between any two adjacent driveways on a single property unless a lesser distance is approved by the City Manager.

(11) Distance between Driveways and Intersections. Except for single-family dwellings, duplexes, townhouses, triplexes, quadplexes, and cottage clusters, the minimum distance between driveways and intersections must be as provided below. Distances listed must be measured from the stop bar at the intersection.

(a) At the intersection of collector or arterial streets, driveways must be located a minimum of 150 feet from the intersection.

(b) At the intersection of two local streets, driveways must be located a minimum of 30 feet from the intersection.

(c) If the subject property is not of sufficient width to allow for the separation between driveway and intersection as provided, the driveway must be constructed as far from the

intersection as possible, while still maintaining the 5-foot setback between the driveway and property line.

(d) When considering a driveway approach permit, the City Manager may approve the location of a driveway closer than 150 feet from the intersection of collector or arterial streets, based on written findings of fact in support of the decision.

(12) Vision Clearance Area.

[…]

(b) Collector Streets. A vision clearance area for all collector/arterial street intersections, collector/arterial street and local street intersections, and collector/arterial street and railroad intersections must be that triangular area formed by the right-of-way lines along such lots and a straight line joining the right-of-way lines at points which are 25 feet from the intersection point of the right-of-way lines, as measured along such lines. Where a driveway intersects with a collector/arterial street, the distance measured along the driveway line for the triangular area must be ten feet (see Figure 73-2 for illustration).

(c) Vertical Height Restriction. Except for items associated with utilities or publicly owned structures such as poles and signs and existing street trees, no vehicular parking, hedge, planting, fence, wall structure, or temporary or permanent physical obstruction must be permitted between 30 inches and eight feet above the established height of the curb in the clear vision area (see Figure 73-2 for illustration).

<u>TDC 75.050. - Access Limited Roadways.</u>

(1) This section applies to all developments, permit approvals, land use approvals, partitions, subdivisions, or any other actions taken by the City pertaining to property abutting any road or street listed in TDC 75.050(2). In addition, any property not abutted by a road or street listed in subsection (2), but having access to an arterial by any easement or prescriptive right, must be treated as if the property did abut the arterial and this Chapter applies.

(2)The following Freeways and Arterials are access limited roadways:

[…]

(n) Leveton Drive from 108th Avenue to 124th Avenue;

(o) 108th Avenue from Leveton Drive to Herman Road;

[…]

(3) This Chapter takes precedence over any other TDC chapter and over any other ordinance of the City when considering any development, land use approval or other proposal for property abutting an arterial or any property having an access right to an arterial.

(4)The City may act on its own initiative to protect the public safety and control access on arterials or any street to be included by TDC 75.030, consistent with its authority as the City Road Authority.

[…]

<u>TDC 75.140. - Existing Streets Access Standards.</u>

The following list describes in detail the freeways and arterials as defined in TDC 75.050 with respect to access. Recommendations are made for future changes in accesses and location of future accesses. These recommendations are examples of possible solutions and shall not be construed as limiting the City's authority to change or impose different conditions if additional studies result in different recommendations from those listed below.

[…]

(15) LEVETON DRIVE.

(a) 108th Avenue to 118th Avenue.

(i) On the north side of Leveton Drive, JAE (2S122B 200) shall align a driveway across from 118th Avenue and be permitted a second driveway approximately 50 feet from their east property line. Novellus (2S122AA 500 and 2S122AB 100) shall be permitted three driveways located approximately 25 feet and 950 feet from the west property line for Tax Lot 100 and 600 feet west of 108th Avenue for Tax Lot 500.

Finding:

The plans illustrate multiple existing accesses: three to SW 108th Avenue, three to SW Leveton Drive, and one emergency vehicle access for Lam to SW Tualatin Road opposing SW 115th Avenue. A new access is proposed approximately 400 feet to the east of the westernmost access to SW Leveton Drive. A new private sidewalk is planned connecting the northern SW 108th Avenue access to the main campus. These accesses were evaluated within the Transportation Impact Analysis prepared by Mackenzie. With recommended Conditions of Approval A3, A11, and A16 these standards are met.

III. RECOMMENDATION

Based on the application materials and analysis and findings presented above, staff finds that the applicable criteria have been met relative to AR 24-0002, and therefore recommend approval of this application with the following conditions of approval:

GENERAL:	
A1.	This Architectural Review approval expires two years after the date of issuance unless a building, or grading permit submitted in conjunction with a building permit application, has been issued and substantial construction pursuant thereto has taken place and an inspection performed by a member of the Building Division, or an extension is granted under the terms of Section 33.020(10) or most current revision of the TDC. Three construction phases are planned as provided by Section 74.110. Phase 1 will construct the office building, northern parking lot and associated site improvements within the initial 2-years of construction. Phase 2 will construct the lab, utility building, storage building and associated site improvements within the first four years. Phase 3 will expand the bulk gas yard, parking area in the southwestern area of the site and associated site improvements within 6-years.

PRIOR TO ISSUANCE OF EROSION CONTROL, PUBLIC WORKS, AND WATER QUALITY PERMITS:

Submit to the Engineering Division via eTrakit for review and approval:

A2. For Phases I, II, and III the applicant must apply for Engineering Erosion Control and applicable Public Works and Water Quality permits:

a. Apply using eTrakit. With the initial Engineering permit(s) application(s) include:
    i. One combined set of 22”x34” plans:
        1. Using NAVD 1988; and,
        2. Attaching one plan set including all applicable Engineering permits to one Engineering permit; and,
        3. Adding notes on other Engineering permits stating which application includes the attached plan set; and,
    ii. Per the fee schedule:
        1. Fee payment for an Erosion Control permit ; and,
        2. Initial deposit payments and cost estimates for each Water Quality and Public Works permit; and,
b. Deliver two 22”x34” hard copies of the combined Engineering permit plan sets to:

City of Tualatin
Attn: Engineering Division c/o Principal Engineer
10699 SW Herman Road
Tualatin, OR 97062

A3. For each Phase: The applicant must obtain City approval of Final Street Improvement Plans for SW 108th Avenue, SW Leveton Drive, and SW Tualatin Road adjacent to all lots associated with the proposed Phase of development in accordance with applicable sections of Tualatin Development Code (TDC) 74 and 75 and Public Works Construction Code (PWCC) that show:

a. Plan and profile of public street cross-sections and utilities 100 feet minimum beyond site frontage and further as needed to demonstrate consistent horizontal and vertical alignments or improvements as needed; and,
b. The boundaries and nature of private access and all public access and utility easements:
    i. Existing with recorded document numbers; and,
    ii. Proposed; and,
c. Dedication of:
    i. Right-of-way:
        1. Totaling 37 feet from the platted centerline for SW Leveton Drive and SW Tualatin Road. The City Engineer may approve Public Access Easements to replace portions of the standard required right-of-way dedication in locations where right-of-way dedication where there is a conflict with minimum setbacks as determined within the Industrial Master Plan (IMP24-0001); and,
        2. Any additional necessary to accommodate any final accepted future public stormwater LIDA management or other public improvement; and,
    ii. Public utility easements:
        1. A minimum of 8-feet-wide adjacent to rights-of-way of SW Leveton Drive and SW Tualatin Road; and,

2. Required by PGE to:
    a. Encompass poles and guy wires; and,
    b. Surround underground vaults; and,
    c. Access infrastructure; and,

d. Construction including:
    i. Full depth reconstruction to the centerline for SW Tualatin Road or as otherwise approved by the City Engineer (such as a full-width 2" grind and inlay of the existing asphalt pavement, and restriping); and,
    ii. Retrofit or repair of any areas of sidewalk or crosswalk along the subject property frontage that do not meet PROWAG standards; and,
    iii. Any final accepted future public stormwater LIDA management; and,
e. Existing remaining driveway approaches and sidewalks:
    i. Within compliance of ADA/PROWAG standards; or,
    ii. Proposed maintenance to bring into compliance; and,
f. All modified and proposed driveways with a width between 32 and 40 feet wide measured at right-of-way or as otherwise approved by the City Engineer to enable safe turning movements; and,
g. Turning movement diagrams proving all existing and proposed driveways operate without adverse impact to public rights-of-way as determined by the City Engineer with:
    i. Identification of any driveways privately restricted for specific passenger vehicles or truck use, proposed private signage necessary to control movement, and a circulation plan; and,
    ii. Onsite signage and maintenance plan for onsite signage as approved by the City Engineer; and,
    iii. Existing and proposed curb radii able to accommodate associated vehicular movements or propose a radius allowing turning movements for the widest path design vehicle (such as a WB-67 truck), associated curb, and sidewalk ramps consisting of reinforced concrete meeting PROWAG and as approved by the City Engineer; and,
h. Replacement of concrete doweled panels within SW 108th Avenue and SW Leveton Drive impacted by construction as determined by the City Engineer; and,
i. Street illumination meeting City standards using equipment from PGE's Option A list:
    i. Identifying standards are met; or,
    ii. Show the location of proposed streetlight poles, fixtures, and any streetlight footings and grounding material (may include the ground rod and copper wire) for the streetlight pole and/or junction box needed to meet the standards and submit:
        1. City approved streetlight design layout to the PGE Lighting Design Project Manager; and,
        2. Payment to cover the City's cost per Street Light Rate Schedule 95, Option A; and,
j. Undergrounding of overhead utilities in accordance with TDC 74.660; and,

A4. For each Phase : The applicant must obtain City approval of Final Sanitary Sewer System Plans for all lots associated with the proposed Phase of development in accordance with Tualatin Development Code (TDC) 74.620, Tualatin Municipal Code (TMC) 3-2, and Public Works Construction Code (PWCC) that show:

a. The boundaries of existing private and public sanitary sewer easements with recorded document numbers; and,
b. Downstream sanitary sewer capacity calculations assuring adequacy of public mains or including upgrades; and,
c. If approved by the City Engineer, a deed restriction enabling future construction of a private sanitary sewer gravity service from TLID 2S122BA00100 crossing one adjacent lot to connect to the public sanitary sewer mains within SW Leveton Drive; and,
d. Separate laterals for each new or modified building's or structure's service, or as approved by the City Engineer; and,
e. Location of the lines, grade, materials, and other details; and,
f. Cleanouts adjacent to right-of-way; and,

A5. For each Phase: The applicant must obtain City approval of Final Water System Plans for all lots associated with the proposed Phase of development in accordance with Tualatin Development Code (TDC) 74.610, Tualatin Municipal Code (TMC) 3-3, and Public Works Construction Code (PWCC) that show:

a. The boundaries of existing public water easements with recorded document numbers; and,
b. Proposed ten-foot-wide public water or utility easements outside existing public easements for all portions of water laterals to and surrounding any meter, reduced pressure backflow prevention, and fire vault by five feet; and,
c. Separate laterals to the main with gate valves for each:
    i. Domestic service for each building or structure served; and,
    ii. Fire protection service and appropriate backflow device for each building or structure served; and,
d. Separate, appropriately-sized water meters per domestic lateral located within the planter strip or City Engineer approved alternate location with:
    i. Reduced Pressure Backflow Assembly (RPBA) for all domestic laterals; and,
    ii. Irrigation after a domestic meter and RPBA serving the planter strip adjacent to this development; and,
e. A separate lateral, valve, meter, and RPBA for any proposed public stormwater LIDA; and,

A6. For Phase I obtain City approval of Plans which show:

a. The boundaries of existing public water easements with recorded document numbers; and,
b. Conversion of the existing 12-inch diameter public water main extending south from SW Tualatin Road right-of-way at the intersection with SW 115th Avenue within a public easement to a privately-owned and maintained line serving fire flow to the JAE Oregon's

lot, 11555 SW Leveton Drive, TLID 2S122BA00200 with a fire vault with Double Check Detector Assembly adjacent to SW Tualatin Road right-of-way; and,

c. A metered private domestic water service adequately sized to serve JAE Oregon's lot from the 16-inch public water main in SW Tualatin Rd connecting to the existing private lines after JAE Oregon's existing water meters including:
    i. A gate valve; and,
    ii. Within the public utility easement adjacent to SW Tualatin Road right-of-way and surrounded by 5-feet of public utility easement a:
        1. Meter; and,
        2. Reduced Pressure Backflow Assembly (RPBA); and,
d. Decommissioning of JAE's two existing 2-inch diameter water meters; and,
e. A private water easement over the rerouted and any existing portions of the water line to remain on Lam Research Corporation's lots:
    i. TLID 2S122BA00100; and,
    ii. 11355 SW Leveton Drive 2S122AB00100; and,
f. Lam Research Corporation's domestic and fire services directly connected to public water mains within adjacent public right-of-ways; and,
g. Separate water meters per domestic lateral located within the planter strip or City Engineer approved alternate location with:
    i. Reduced Pressure Backflow Assembly (RPBA) for all domestic laterals; and,
    ii. Irrigation after a domestic meter and RPBA serving the planter strip adjacent to this development; and,
h. A separate lateral, valve, meter, and RPBA for any proposed public stormwater LIDA; and,
i. Submit:
    i. A copy of a private water easement for the benefit of JAE Oregon's lot, 11555 SW Leveton Drive, TLID 2S122BA00200, for the rerouted and any remaining portions of the water line to remain; and past public right-of-way over Lam Research Corporation's lots:
        1. TLID 2S122BA00100; and,
        2. 11355 SW Leveton Drive 2S122AB00100; and,
    ii. Owner signed non-remonstrative agreements enabling the City to process a Vacation of the existing public water easement over:
        1. JAE Oregon's lot, 11555 SW Leveton Drive, TLID 2S122BA00200; and,
        2. Lam Research Corporation's lots:
            a. TLID 2S122BA00100; and,
            b. 11355 SW Leveton Drive 2S122AB00100; and,

A7. For each Phase : For all lots associated with the proposed Phase of development the applicant must obtain City approval of :

a. Final Stormwater System Calculations and Plans in accordance with Tualatin Development Code (TDC) 74.630 and 74.650, Tualatin Municipal Code (TMC) 3-5-200 through 3-5-430, Public Works Construction Code (PWCC), and Clean Water Services'

(CWS) Design & Construction Standards (D&CS) Chapter 4 stamped by an Oregon registered, professional engineer in accordance with TMC 3-5-390(1) that:

i. Addresses runoff from all new and modified private and public impervious areas:
    1. Showing:
        a. Gravity flow five feet from the outside of the established line of the building to the public stormwater system or as otherwise approved by the City Engineer in accordance with CWS D&CS 1.03.39 and 5.09.3(a) (1) and (4); and,
        b. Private stormwater facilities per lot:
            i. Connecting directly to public mains in accordance with CWS D&CS 5.09.3; or,
            ii. If approved by the City Engineer, a deed restriction enabling future construction of a private stormwater gravity service from (No address) TLID 2S122BA00100 crossing one adjacent lot to connect to the public stormwater mains within SW Leveton Drive as approved by the City Engineer; and.
        c. Public stormwater LIDA within right-of-way or within easements; and,
    2. Confirms the capacities of stormwater facilities for quality, quantity, and hydromodification to include new and modified impervious area within:
        a. Existing and proposed private per lot; and,
        b. Proposed public addressing right-of-way; and,

ii. Provides a downstream analysis and include solutions within final plans:
    1. For at least ¼ mile downstream from the release from the private development through the public stormwater system in accordance with CWS D&CS 2.04.2(m.3); and,
    2. Including but not limited to observable downstream impacts to structures; and,

iii. In accordance with TDC 74.650(2) and CWS D&CS 3.01.2(d), complies with:
    1. The submitted Clean Water Services' Service Provider Letter CWS File Number dated June 16, 2024 conditions to obtain a Stormwater Connection Permit Authorization Letter, and
    2. Requirements stated within the Clean Water Services' Memorandum dated January 6, 2025; and,

iv. Submit:
    1. Financial assurance for construction performance in accordance with TMC 3-390(3), PWCC 102.14.00, and amount per CWS D&CS 2.07 Table 2-1; and,
    2. A copy of the recorded private stormwater facilities agreement in accordance with TMC 3-5-390(4) and CWS D&CS 2.08.2:

a. Clarifying the party responsible for maintenance of the constructed portions of stormwater systems and any existing infrastructure; and,
b. The agreement must provide reference to all new and existing stormwater treatment, hydromodification, and detention facilities; and,

v. For existing private stormwater facilities, the applicant must address deficient facilities and bring them into compliance with the standard(s) under which they were approved.

A8. For each Phase: The applicant must obtain City approval of Final Erosion Control Plans for all lots associated with the proposed Phase of development in accordance with Tualatin Development Code (TDC) 74.640, Tualatin Municipal Code (TMC) 3-5-050 and 3-5-060, Public Works Construction Code (PWCC), and Clean Water Services' (CWS) Design & Construction Standards (D&CS) Chapters 2 and 6 that minimize the impact of stormwater from the development to adjacent properties; and,

A9. For Phase I obtain City approval of plans sufficient to:
a. Amend the existing issued 1200-C associated with AR22-0006; or,
b. Obtain a National Pollution Discharge Elimination System (NPDES) 1200-C Construction Erosion Control permit from Oregon DEQ; and,

A10. For Phases II and III obtain City approval of plans sufficient to:
a. Amend an actively maintained National Pollution Discharge Elimination System (NPDES) 1200-C Construction Erosion Control permit previously obtained from Oregon DEQ; or,
b. Obtain a National Pollution Discharge Elimination System (NPDES) 1200-C Construction Erosion Control permit from Oregon DEQ if the previously obtained 1200-C permit from DEQ expired.

PRIOR TO ISSUANCE OF BUILDING PERMIT:

Submit to eTrakit for review and approval:

A11. For each Phase : The applicant must submit copies of recorded documents for all lots associated with the proposed Phase of development in accordance with Public Works Construction Code (PWCC) and Tualatin Development Code (TDC) 74.210, 74.330, 74.350, and 75.040 which show the City Engineer approved:
a. Dedication of right-of-way for SW Leveton Drive and SW Tualatin Road; and,
b. Applicable slope easements for SW Tualatin Road; and,
c. Public utility easements:
i. Adjacent to SW Leveton Drive; and,
ii. Any additional to:
1. Encompass portions of private system from the public main to and surrounding domestic meters and fire vaults; and,

2. Adequately surround and maintain PGE or other utility infrastructure; and,

d. Applicable private deed restrictions and access, sanitary sewer, stormwater, and utility easements.

A12. For Phases I, II, and III: The applicant must obtain:
   a. Confirmation of approval from DEQ of an amended active 1200-C NPDES permit or a new permit; and,
   b. Erosion Control and applicable Public Works and Water Quality Permits from the City of Tualatin.

A13. If a Public Utility with a current Franchise agreement or Rights-of-Way License (PWCC 100 definitions) from Tualatin requires an applicant to participate in the process of obtaining a Franchise (PWCC 102.1.3 and 207 Public Utility) Permit, the applicant must perform in accordance with TDC 74.660 and 670, PWCC 207, TMC 03-06.

A14. The applicant shall provide Final Site Plan Set and Final Color Architectural Elevations (in .pdf format) for each of the three phases of construction that are in substantial conformance to the submitted plans for this Architectural Review and demonstrate:
   a. Trees identified in Tree Assessment Report (Exhibit A3) must be identified on the landscaping and grading plan, consistent with TDC 73B.080(3). Tree protection fencing and other Lam Research – Architectural Review preservation measures recommended by the Arborist should also be specified on the grading plan.
   b. Walkways that are a minimum of 6 feet in width; constructed of asphalt, concrete, pervious concrete, pavers, or grasscrete; and meet ADA standards at time of construction, consistent with TDC 73A.300(1).
   c. All areas not occupied by buildings, parking spaces, driveways, drive aisles, pedestrian areas must be landscaped in compliance with TDC 73B.040.
   d. A final landscaping plan must demonstrate the existing and proposed berm will be maintained with dense plantings including evergreen trees and shrubs that provide a buffer between the RL and MP zoned areas in compliance with TDC 73B.040(1)(d).
   e. A minimum of 386 parking spaces at an applied rate of 1.6 spaces per 1,000 square feet of gross floor area, consistent with TDC 73C.010(2)(a)(iv).
   f. Details to demonstrate that proposed bicycle parking meets the standards of TDC 73C.050(2)(a)-(c), and that a minimum of 24 short-term and 7 long-term bicycle parking spaces are provided, in conformance with TDC 73C.100(1).
   g. A minimum of 15 vanpool or carpool parking spaces, consistent with TDC 73C.100(2).
   h. A minimum of 3 loading facilities that are a no less than 12 feet wide x 35 feet long with an unobstructed height of 14 feet, consistent with TDC 73C.120.
   i. A final landscaping plan must demonstrate compliance with 73C.220 (3).
   j. In accordance with TDC Chapter 73C, a minimum landscape island area of 25 square feet per parking stall is required and parking lot landscaping must comply with the following:
      i. Landscape separation that is a minimum of five feet in width is required for every eight contiguous parking spaces in a row;
      ii. Landscaping strip that is a minimum of ten feet in width must be placed in between rows of facing vehicles;

iii. Must be planted with one deciduous shade trees for every four parking spaces, with required trees evenly dispersed throughout the parking lot;
iv. Must be planted with groundcover or shrubs; and

k. Native plant materials are encouraged.
l. Landscaping plan must demonstrate compliance with required driveway landscaping for the new SW Leveton Drive driveway per 73C.220(5).
m. Demonstrate that an adequate waste and recyclables management solution is provided in compliance with TDC 73D.040 Waste Assessment Method. These facilities must comply with the location, design, and access standards in TDC 73D.070.

DURING CONSTRUCTION ACTIVITY:

A15. The applicant must install tree protection fencing consistent with the Tree Assessment Report submitted as Exhibit A3 and Section 73B.080(3). Please contact the Planning Division to schedule an inspection with a minimum of 48 hours' notice. Where site conditions make grading or other similar encroachment upon a preserved tree's drip-line area, such grading or similar encroachment must only be permitted under the direction of a qualified arborist.

PRIOR TO ISSUANCE OF CERTIFICATE OF OCCUPANCY AND/OR CERTIFICATE OF COMPLETION FOR EACH PHASE OF DEVELOPMENT:

Submit to the Engineering Division via eTrakit for review and approval):

A16. For all lots associated with the proposed Phase of development the applicant must:
a. Complete all the private and public improvements as shown on the approved permit plans. All improvements must be constructed and guaranteed as to workmanship and material and also be accepted by the City in accordance with Tualatin Development Code (TDC) 74.120 and 74.140; and,
b. Submit an approved final erosion control inspection report to the Engineering division; and,
c. Submit pdf as-builts of the Engineering division permits along with maintenance bonds and complete any final fees for public improvements.

A17. Provide an identification system which clearly locates buildings and their entries for patrons and emergency services, pursuant to TDC 73A.300(4)(d). Building identification approved by TVF&R must be placed in a position that is plainly legible and visible from the street fronting the property. Numbers must contrast with their background, be a minimum of 4 inches high, and have a minimum stroke width of 1/2 inch.

A18. Areas impacted by grading and all areas not occupied by buildings, parking spaces, driveways, drive aisles, pedestrian areas, or undisturbed natural areas must be landscaped, pursuant to TDC 73B.040(1)(a).

A19. The applicant must install required vanpool and carpool signage, pursuant to TDC 73C.010(2)(a)(xi) and bicycle parking signage per MUTCD standards, pursuant to TDC 73C.050(2)(d).

A20. The applicant must construct proposed buildings and all site improvements as illustrated on the approved Final Site Plan and Final Color Architectural Elevations. The applicant must contact the Planning Division for a site inspection at least 72 hours prior to requesting a certificate of occupancy. This inspection is separate from inspection(s) done by the Building Division.

A21. The applicant must complete all the private stormwater and public improvements as shown on the approved permit plans. All improvements must also be accepted by the City in accordance with Tualatin Development Code (TDC) 74.120.

A22. The applicant must submit paper and electronic as-builts of the Engineering permits along with maintenance bonds and any final fees for public and water quality improvements.

PRIOR TO APPLYING FOR A VACATION OF THE PUBLIC WATER EASEMENT WITHIN THIS DEVELOPMENT

A23. The applicant must obtain a certificate of occupancy and/or completion for Phase I.

THE FOLLOWING ITEMS APPLY TO THE SITE IN AN ON-GOING MANNER:

A24. All uses must be conducted within a completely enclosed building, except off-street parking and loading, and basic utilities, pursuant to TDC 62.210(5).

A25. The proposed development must comply with the Environmental Regulations of TDC 63.

A26. All mechanical and electrical equipment must be screened in accordance with TDC 73A.300(5). Prior to approval of an electrical or mechanical permit, the applicant or property owner must submit scaled elevations illustrating that above-grade or on-grade equipment will be screened by parapet, sight-obscuring fence, landscaping, or other method.

A27. All sign permits require separate sign permit approval per TDC Chapter 38. This approval does not constitute sign permit approval.

A28. All site, building exterior, and landscaping improvements approved through the AR process must be continually maintained, so as to remain substantially similar to original approval through the AR process, except as permitted under TDC 33.020(7) (Modifications to Previously Approved Final Architectural Review Decisions).

A29. All parking spaces shall be continuously maintained in compliance with the dimensional standards specified in TDC Figure 73-1 (Exhibit H).

A30. No vehicular parking, hedge, planting, fence, wall structure, or temporary/permanent physical obstruction is permitted between 30 inches and eight feet above the established height of the curb in the vision clearance area specified in TDC Figure 73-2 (Exhibit I).

NOTICE OF ARCHITECTURAL REVIEW BOARD DECISION
APPROVAL WITH CONDITIONS

September 10, 2025

Case #:	AR 24-0002
Project:	Lam Research Corporation Campus
Location:	11155-11361 SW Leveton Drive; Tax Lots: 2S122AA 500 and 800; 2S122AB 100; 2S122BA 100
Representative:	Suzannah Stanley, Mackenzie
Owner:	Lam Research Corporation

I. FINDINGS

A. The applicant requests approval to construct a four-story, 120,000 square foot office building, 90,000 square foot lab building, 29,000 square foot central utilities building, 2,230 square foot storage building, one new access drive off SW Leveton Drive, and parking lot expansions by approximately 1,012 stalls (including demolition/replacement of 468 stalls and 544 new stalls). The applicant has also submitted a tree removal permit for 239 trees over 8-inchs DBH to construct the improvements.

B. The Architectural Review Board (ARB) conducted a noticed quasi-judicial public hearing on September 10, 2025, in conformance with the laws of the State of Oregon and the City of Tualatin.

C. The Tualatin Architectural Review Board found that the findings and analysis, the staff presentation, testimony at the public hearing, materials in the record, and discussion on the record, support the approval of and materials in the record address the approval criteria of TDC 33.020 for Architectural Reviews and support the approval of AR 24-0002 with Conditions of Approval.

II. ACTION

Based on the application materials and analysis and findings presented above, staff finds that the applicable criteria have been met relative to AR 24-0002, and therefore recommend approval of this application with the following conditions of approval:

GENERAL:	
1.	This Architectural Review approval expires two years after the date of issuance unless a building, or grading permit submitted in conjunction with a building permit application, has been issued and substantial construction pursuant thereto has taken place and an inspection performed by a member of the Building Division, or an extension is granted under the terms of Section 33.020(10) or most current revision of the TDC. Three construction phases are planned as provided by Section

74.110. Phase 1 will construct the office building, northern parking lot and associated site improvements within the initial 2-years of construction. Phase 2 will construct the lab, utility building, storage building and associated site improvements within the first four years. Phase 3 will expand the bulk gas yard, parking area in the southwestern area of the site and associated site improvements within 6-years.

PRIOR TO ISSUANCE OF EROSION CONTROL, PUBLIC WORKS, AND WATER QUALITY PERMITS:

Submit to the Engineering Division via eTrakit for review and approval:

A2. For Phases I, II, and III the applicant must apply for Engineering Erosion Control and applicable Public Works and Water Quality permits:

a. Apply using eTrakit. With the initial Engineering permit(s) application(s) include:
   i. One combined set of 22”x34” plans:
      1. Using NAVD 1988; and,
      2. Attaching one plan set including all applicable Engineering permits to one Engineering permit; and,
      3. Adding notes on other Engineering permits stating which application includes the attached plan set; and,
   ii. Per the fee schedule:
      1. Fee payment for an Erosion Control permit ; and,
      2. Initial deposit payments and cost estimates for each Water Quality and Public Works permit; and,

b. Deliver two 22”x34” hard copies of the combined Engineering permit plan sets to:

City of Tualatin
Attn: Engineering Division c/o Principal Engineer
10699 SW Herman Road
Tualatin, OR 97062

A3. For each Phase: The applicant must obtain City approval of Final Street Improvement Plans for SW 108th Avenue, SW Leveton Drive, and SW Tualatin Road adjacent to all lots associated with the proposed Phase of development in accordance with applicable sections of Tualatin Development Code (TDC) 74 and 75 and Public Works Construction Code (PWCC) that show:

a. Plan and profile of public street cross-sections and utilities 100 feet minimum beyond site frontage and further as needed to demonstrate consistent horizontal and vertical alignments or improvements as needed; and,
b. The boundaries and nature of private access and all public access and utility easements:
   i. Existing with recorded document numbers; and,
   ii. Proposed; and,
c. Dedication of:
   i. Right-of-way:
      1. Totaling 37 feet from the platted centerline for SW Leveton Drive and SW Tualatin Road. The City Engineer may approve Public Access Easements to replace portions of the standard required right-of-way dedication in locations where right-of-way dedication where there is a

conflict with minimum setbacks as determined within the Industrial Master Plan (IMP24-0001); and,

2. Any additional necessary to accommodate any final accepted future public stormwater LIDA management or other public improvement; and,

ii. Public utility easements:
   1. A minimum of 8-feet-wide adjacent to rights-of-way of SW Leveton Drive and SW Tualatin Road; and,
   2. Required by PGE to:
      a. Encompass poles and guy wires; and,
      b. Surround underground vaults; and,
      c. Access infrastructure; and,

d. Construction including:
   i. Full depth reconstruction to the centerline for SW Tualatin Road or as otherwise approved by the City Engineer (such as a full-width 2" grind and inlay of the existing asphalt pavement, and restriping); and,
   ii. Retrofit or repair of any areas of sidewalk or crosswalk along the subject property frontage that do not meet PROWAG standards; and,
   iii. Any final accepted future public stormwater LIDA management; and,
e. Existing remaining driveway approaches and sidewalks:
   i. Within compliance of ADA/PROWAG standards; or,
   ii. Proposed maintenance to bring into compliance; and,
f. All modified and proposed driveways with a width between 32 and 40 feet wide measured at right-of-way or as otherwise approved by the City Engineer to enable safe turning movements; and,
g. Turning movement diagrams proving all existing and proposed driveways operate without adverse impact to public rights-of-way as determined by the City Engineer with:
   i. Identification of any driveways privately restricted for specific passenger vehicles or truck use, proposed private signage necessary to control movement, and a circulation plan; and,
   ii. Onsite signage and maintenance plan for onsite signage as approved by the City Engineer; and,
   iii. Existing and proposed curb radii able to accommodate associated vehicular movements or propose a radius allowing turning movements for the widest path design vehicle (such as a WB-67 truck), associated curb, and sidewalk ramps consisting of reinforced concrete meeting PROWAG and as approved by the City Engineer; and,
h. Replacement of concrete doweled panels within SW 108th Avenue and SW Leveton Drive impacted by construction as determined by the City Engineer; and,
i. Street illumination meeting City standards using equipment from PGE's Option A list:
   i. Identifying standards are met; or,
   ii. Show the location of proposed streetlight poles, fixtures, and any streetlight footings and grounding material (may include the ground rod and copper wire)

for the streetlight pole and/or junction box needed to meet the standards and submit:

1. City approved streetlight design layout to the PGE Lighting Design Project Manager; and,
2. Payment to cover the City's cost per Street Light Rate Schedule 95, Option A; and,

j. Undergrounding of overhead utilities in accordance with TDC 74.660; and,

A4. For each Phase : The applicant must obtain City approval of Final Sanitary Sewer System Plans for all lots associated with the proposed Phase of development in accordance with Tualatin Development Code (TDC) 74.620, Tualatin Municipal Code (TMC) 3-2, and Public Works Construction Code (PWCC) that show:

a. The boundaries of existing private and public sanitary sewer easements with recorded document numbers; and,
b. Downstream sanitary sewer capacity calculations assuring adequacy of public mains or including upgrades; and,
c. If approved by the City Engineer, a deed restriction enabling future construction of a private sanitary sewer gravity service from TLID 2S122BA00100 crossing one adjacent lot to connect to the public sanitary sewer mains within SW Leveton Drive; and,
d. Separate laterals for each new or modified building's or structure's service, or as approved by the City Engineer; and,
e. Location of the lines, grade, materials, and other details; and,
f. Cleanouts adjacent to right-of-way; and,

A5. For each Phase: The applicant must obtain City approval of Final Water System Plans for all lots associated with the proposed Phase of development in accordance with Tualatin Development Code (TDC) 74.610, Tualatin Municipal Code (TMC) 3-3, and Public Works Construction Code (PWCC) that show:

a. The boundaries of existing public water easements with recorded document numbers; and,
b. Proposed ten-foot-wide public water or utility easements outside existing public easements for all portions of water laterals to and surrounding any meter, reduced pressure backflow prevention, and fire vault by five feet; and,
c. Separate laterals to the main with gate valves for each:
    i. Domestic service for each building or structure served; and,
    ii. Fire protection service and appropriate backflow device for each building or structure served; and,
d. Separate, appropriately-sized water meters per domestic lateral located within the planter strip or City Engineer approved alternate location with:
    i. Reduced Pressure Backflow Assembly (RPBA) for all domestic laterals; and,
    ii. Irrigation after a domestic meter and RPBA serving the planter strip adjacent to this development; and,
e. A separate lateral, valve, meter, and RPBA for any proposed public stormwater LIDA; and,

A6. For Phase I obtain City approval of Plans which show:

a. The boundaries of existing public water easements with recorded document numbers; and,
b. Conversion of the existing 12-inch diameter public water main extending south from SW Tualatin Road right-of-way at the intersection with SW 115th Avenue within a public easement to a privately-owned and maintained line serving fire flow to the JAE Oregon's lot, 11555 SW Leveton Drive, TLID 2S122BA00200 with a fire vault with Double Check Detector Assembly adjacent to SW Tualatin Road right-of-way; and,
c. A metered private domestic water service adequately sized to serve JAE Oregon's lot from the 16-inch public water main in SW Tualatin Rd connecting to the existing private lines after JAE Oregon's existing water meters including:
    i. A gate valve; and,
    ii. Within the public utility easement adjacent to SW Tualatin Road right-of-way and surrounded by 5-feet of public utility easement a:
        1. Meter; and,
        2. Reduced Pressure Backflow Assembly (RPBA); and,
d. Decommissioning of JAE's two existing 2-inch diameter water meters; and,
e. A private water easement over the rerouted and any existing portions of the water line to remain on Lam Research Corporation's lots:
    i. TLID 2S122BA00100; and,
    ii. 11355 SW Leveton Drive 2S122AB00100; and,
f. Lam Research Corporation's domestic and fire services directly connected to public water mains within adjacent public right-of-ways; and,
g. Separate water meters per domestic lateral located within the planter strip or City Engineer approved alternate location with:
    i. Reduced Pressure Backflow Assembly (RPBA) for all domestic laterals; and,
    ii. Irrigation after a domestic meter and RPBA serving the planter strip adjacent to this development; and,
h. A separate lateral, valve, meter, and RPBA for any proposed public stormwater LIDA; and,
i. Submit:
    i. A copy of a private water easement for the benefit of JAE Oregon's lot, 11555 SW Leveton Drive, TLID 2S122BA00200, for the rerouted and any remaining portions of the water line to remain; and past public right-of-way over Lam Research Corporation's lots:
        1. TLID 2S122BA00100; and,
        2. 11355 SW Leveton Drive 2S122AB00100; and,
    ii. Owner signed non-remonstrative agreements enabling the City to process a Vacation of the existing public water easement over:
        1. JAE Oregon's lot, 11555 SW Leveton Drive, TLID 2S122BA00200; and,
        2. Lam Research Corporation's lots:
            a. TLID 2S122BA00100; and,
            b. 11355 SW Leveton Drive 2S122AB00100; and,

A7. For each Phase : For all lots associated with the proposed Phase of development the applicant must obtain City approval of :

a. Final Stormwater System Calculations and Plans in accordance with Tualatin Development Code (TDC) 74.630 and 74.650, Tualatin Municipal Code (TMC) 3-5-200 through 3-5-430, Public Works Construction Code (PWCC), and Clean Water Services' (CWS) Design & Construction Standards (D&CS) Chapter 4 stamped by an Oregon registered, professional engineer in accordance with TMC 3-5-390(1) that:

i. Addresses runoff from all new and modified private and public impervious areas:

1. Showing:

a. Gravity flow five feet from the outside of the established line of the building to the public stormwater system or as otherwise approved by the City Engineer in accordance with CWS D&CS 1.03.39 and 5.09.3(a) (1) and (4); and,

b. Private stormwater facilities per lot:

i. Connecting directly to public mains in accordance with CWS D&CS 5.09.3; or,

ii. If approved by the City Engineer, a deed restriction enabling future construction of a private stormwater gravity service from (No address) TLID 2S122BA00100 crossing one adjacent lot to connect to the public stormwater mains within SW Leveton Drive as approved by the City Engineer; and.

c. Public stormwater LIDA within right-of-way or within easements; and,

2. Confirms the capacities of stormwater facilities for quality, quantity, and hydromodification to include new and modified impervious area within:

a. Existing and proposed private per lot; and,

b. Proposed public addressing right-of-way; and,

ii. Provides a downstream analysis and include solutions within final plans:

1. For at least ¼ mile downstream from the release from the private development through the public stormwater system in accordance with CWS D&CS 2.04.2(m.3); and,

2. Including but not limited to observable downstream impacts to structures; and,

iii. In accordance with TDC 74.650(2) and CWS D&CS 3.01.2(d), complies with:

1. The submitted Clean Water Services' Service Provider Letter CWS File Number dated June 16, 2024 conditions to obtain a Stormwater Connection Permit Authorization Letter, and

2. Requirements stated within the Clean Water Services' Memorandum dated January 6, 2025; and,

iv. Submit:

1. Financial assurance for construction performance in accordance with TMC 3-390(3), PWCC 102.14.00, and amount per CWS D&CS 2.07 Table 2-1; and,
2. A copy of the recorded private stormwater facilities agreement in accordance with TMC 3-5-390(4) and CWS D&CS 2.08.2:
    a. Clarifying the party responsible for maintenance of the constructed portions of stormwater systems and any existing infrastructure; and,
    b. The agreement must provide reference to all new and existing stormwater treatment, hydromodification, and detention facilities; and,

v. For existing private stormwater facilities, the applicant must address deficient facilities and bring them into compliance with the standard(s) under which they were approved.

A8. For each Phase: The applicant must obtain City approval of Final Erosion Control Plans for all lots associated with the proposed Phase of development in accordance with Tualatin Development Code (TDC) 74.640, Tualatin Municipal Code (TMC) 3-5-050 and 3-5-060, Public Works Construction Code (PWCC), and Clean Water Services' (CWS) Design & Construction Standards (D&CS) Chapters 2 and 6 that minimize the impact of stormwater from the development to adjacent properties; and,

A9. For Phase I obtain City approval of plans sufficient to:
- a. Amend the existing issued 1200-C associated with AR22-0006; or,
- b. Obtain a National Pollution Discharge Elimination System (NPDES) 1200-C Construction Erosion Control permit from Oregon DEQ; and,

A10. For Phases II and III obtain City approval of plans sufficient to:
- a. Amend an actively maintained National Pollution Discharge Elimination System (NPDES) 1200-C Construction Erosion Control permit previously obtained from Oregon DEQ; or,
- b. Obtain a National Pollution Discharge Elimination System (NPDES) 1200-C Construction Erosion Control permit from Oregon DEQ if the previously obtained 1200-C permit from DEQ expired.

PRIOR TO ISSUANCE OF BUILDING PERMIT:

Submit to eTrakit for review and approval:

A11. For each Phase : The applicant must submit copies of recorded documents for all lots associated with the proposed Phase of development in accordance with Public Works Construction Code (PWCC) and Tualatin Development Code (TDC) 74.210, 74.330, 74.350, and 75.040 which show the City Engineer approved:
- a. Dedication of right-of-way for SW Leveton Drive and SW Tualatin Road; and,
- b. Applicable slope easements for SW Tualatin Road; and,
- c. Public utility easements:

i. Adjacent to SW Leveton Drive; and,
ii. Any additional to:
    1. Encompass portions of private system from the public main to and surrounding domestic meters and fire vaults; and,
    2. Adequately surround and maintain PGE or other utility infrastructure; and,

d. Applicable private deed restrictions and access, sanitary sewer, stormwater, and utility easements.

A12. For Phases I, II, and III: The applicant must obtain:
a. Confirmation of approval from DEQ of an amended active 1200-C NPDES permit or a new permit; and,
b. Erosion Control and applicable Public Works and Water Quality Permits from the City of Tualatin.

A13. If a Public Utility with a current Franchise agreement or Rights-of-Way License (PWCC 100 definitions) from Tualatin requires an applicant to participate in the process of obtaining a Franchise (PWCC 102.1.3 and 207 Public Utility) Permit, the applicant must perform in accordance with TDC 74.660 and 670, PWCC 207, TMC 03-06.

A14. The applicant shall provide Final Site Plan Set and Final Color Architectural Elevations (in .pdf format) for each of the three phases of construction that are in substantial conformance to the submitted plans for this Architectural Review and demonstrate:
a. Trees identified in Tree Assessment Report (Exhibit A3) must be identified on the landscaping and grading plan, consistent with TDC 73B.080(3). Tree protection fencing and other Lam Research – Architectural Review preservation measures recommended by the Arborist should also be specified on the grading plan.
b. Walkways that are a minimum of 6 feet in width; constructed of asphalt, concrete, pervious concrete, pavers, or grasscrete; and meet ADA standards at time of construction, consistent with TDC 73A.300(1).
c. All areas not occupied by buildings, parking spaces, driveways, drive aisles, pedestrian areas must be landscaped in compliance with TDC 73B.040.
d. A final landscaping plan must demonstrate the existing and proposed berm will be maintained with dense plantings including evergreen trees and shrubs that provide a buffer between the RL and MP zoned areas in compliance with TDC 73B.040(1)(d).
e. A minimum of 386 parking spaces at an applied rate of 1.6 spaces per 1,000 square feet of gross floor area, consistent with TDC 73C.010(2)(a)(iv).
f. Details to demonstrate that proposed bicycle parking meets the standards of TDC 73C.050(2)(a)-(c), and that a minimum of 24 short-term and 7 long-term bicycle parking spaces are provided, in conformance with TDC 73C.100(1).
g. A minimum of 15 vanpool or carpool parking spaces, consistent with TDC 73C.100(2).
h. A minimum of 3 loading facilities that are a no less than 12 feet wide x 35 feet long with an unobstructed height of 14 feet, consistent with TDC 73C.120.
i. A final landscaping plan must demonstrate compliance with 73C.220 (3).
j. In accordance with TDC Chapter 73C, a minimum landscape island area of 25 square feet per parking stall is required and parking lot landscaping must comply with the following:

i. Landscape separation that is a minimum of five feet in width is required for every eight contiguous parking spaces in a row;
ii. Landscaping strip that is a minimum of ten feet in width must be placed in between rows of facing vehicles;
iii. Must be planted with one deciduous shade trees for every four parking spaces, with required trees evenly dispersed throughout the parking lot;
iv. Must be planted with groundcover or shrubs; and

k. Native plant materials are encouraged.
l. Landscaping plan must demonstrate compliance with required driveway landscaping for the new SW Leveton Drive driveway per 73C.220(5).
m. Demonstrate that an adequate waste and recyclables management solution is provided in compliance with TDC 73D.040 Waste Assessment Method. These facilities must comply with the location, design, and access standards in TDC 73D.070.

DURING CONSTRUCTION ACTIVITY:

A15. The applicant must install tree protection fencing consistent with the Tree Assessment Report submitted as Exhibit A3 and Section 73B.080(3). Please contact the Planning Division to schedule an inspection with a minimum of 48 hours' notice. Where site conditions make grading or other similar encroachment upon a preserved tree's drip-line area, such grading or similar encroachment must only be permitted under the direction of a qualified arborist.

PRIOR TO ISSUANCE OF CERTIFICATE OF OCCUPANCY AND/OR CERTIFICATE OF COMPLETION FOR EACH PHASE OF DEVELOPMENT:

Submit to the Engineering Division via eTrakit for review and approval):

A16. For all lots associated with the proposed Phase of development the applicant must:
a. Complete all the private and public improvements as shown on the approved permit plans. All improvements must be constructed and guaranteed as to workmanship and material and also be accepted by the City in accordance with Tualatin Development Code (TDC) 74.120 and 74.140; and,
b. Submit an approved final erosion control inspection report to the Engineering division; and,
c. Submit pdf as-builts of the Engineering division permits along with maintenance bonds and complete any final fees for public improvements.

A17. Provide an identification system which clearly locates buildings and their entries for patrons and emergency services, pursuant to TDC 73A.300(4)(d). Building identification approved by TVF&R must be placed in a position that is plainly legible and visible from the street fronting the property. Numbers must contrast with their background, be a minimum of 4 inches high, and have a minimum stroke width of 1/2 inch.

A18. Areas impacted by grading and all areas not occupied by buildings, parking spaces, driveways, drive aisles, pedestrian areas, or undisturbed natural areas must be landscaped, pursuant to TDC 73B.040(1)(a).

A19. The applicant must install required vanpool and carpool signage, pursuant to TDC 73C.010(2)(a)(xi) and bicycle parking signage per MUTCD standards, pursuant to TDC 73C.050(2)(d).

A20. The applicant must construct proposed buildings and all site improvements as illustrated on the approved Final Site Plan and Final Color Architectural Elevations. The applicant must contact the Planning Division for a site inspection at least 72 hours prior to requesting a certificate of occupancy. This inspection is separate from inspection(s) done by the Building Division.

A21. The applicant must complete all the private stormwater and public improvements as shown on the approved permit plans. All improvements must also be accepted by the City in accordance with Tualatin Development Code (TDC) 74.120.

A22. The applicant must submit paper and electronic as-builts of the Engineering permits along with maintenance bonds and any final fees for public and water quality improvements.

PRIOR TO APPLYING FOR A VACATION OF THE PUBLIC WATER EASEMENT WITHIN THIS DEVELOPMENT

A23. The applicant must obtain a certificate of occupancy and/or completion for Phase I.

THE FOLLOWING ITEMS APPLY TO THE SITE IN AN ON-GOING MANNER:

A24. All uses must be conducted within a completely enclosed building, except off-street parking and loading, and basic utilities, pursuant to TDC 62.210(5).

A25. The proposed development must comply with the Environmental Regulations of TDC 63.

A26. All mechanical and electrical equipment must be screened in accordance with TDC 73A.300(5). Prior to approval of an electrical or mechanical permit, the applicant or property owner must submit scaled elevations illustrating that above-grade or on-grade equipment will be screened by parapet, sight-obscuring fence, landscaping, or other method.

A27. All sign permits require separate sign permit approval per TDC Chapter 38. This approval does not constitute sign permit approval.

A28. All site, building exterior, and landscaping improvements approved through the AR process must be continually maintained, so as to remain substantially similar to original approval through the AR process, except as permitted under TDC 33.020(7) (Modifications to Previously Approved Final Architectural Review Decisions).

A29. All parking spaces shall be continuously maintained in compliance with the dimensional standards specified in TDC Figure 73-1 (Exhibit H).

A30. No vehicular parking, hedge, planting, fence, wall structure, or temporary/permanent physical obstruction is permitted between 30 inches and eight feet above the established height of the curb in the vision clearance area specified in TDC Figure 73-2 (Exhibit I).

III. APPEAL

The applicant or any person who submitted written comments or testified orally or in writing at the Tualatin Architectural Review Board hearing and who may be adversely affected by the Commission's decision may file a request for review of the final decision of the Tualatin Planning Commission to the City Council.

The Tualatin Architectural Review Board's decision will be final after 14 calendar days from the mailing of this order, unless a written appeal is received by the **Community Development Department Planning Division at 10699 SW SW Herman Road, Tualatin, Oregon, before 5:00 p.m., _____ ___, 2025. The appeal must be submitted on the City appeal form with all the information requested provided thereon, signed by the appellant, and include the applicable appeal fee.** The record and appeal forms are available at the Planning Division offices. The appeal forms must include reasons, current appeal fee, and meet the requirements of Section 32.310 of the Tualatin Development Code. The City Council will review and make a decision. The parties will be notified of the Council meeting date.

ADOPTED THIS 10th DAY OF September 2025.

ARCHITECTURAL REVIEW BOARD
CITY OF TUALATIN

BY: _____
Cyndy Hillier, Chair
Architectural Review Board

MACKENZIE.

ARCHITECTURAL REVIEW – TYPE III

To
City of Tualatin

For
Lam TUX

Dated
July 8, 2024
(Revised October 1, 2024)
(Revised November 1, 2024)
(Revised July 21, 2025)
(Revised July 29, 2025)

Project Number
2250180.00

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ATTACHMENTS

1. Land Use Application Form
2. Plans (revised 10-1-2024)
3. Title Report
4. Hydraulic Modeling Worksheet
5. Service Provider Letter (CWS)
6. Service Provider Letter (Republic Services)
7. Service Provider Letter (TVF&R)
8. Documentation of Neighborhood Meeting
9. Transportation Impact Analysis
10. Stormwater Report
11. Tree Removal and Protection Plan (Arborist Report)

I. PROJECT SUMMARY

Applicant:	Lam Research Corporation
Owner:	Lam Research Corporation 11155 SW Leveton Drive Tualatin, OR 97062
Site Address:	11155-11361 SW Leveton Drive (West of SW 108th Avenue between SW Tualatin Road and SW Leveton Drive)
Assessor Site Acreage:	2S122AA00500 – 15.75 acres 2S122AA00800 – 15.03 acres 2S122AB00100 – 27.23 acres 2S122BA00100 – 17.95 acres Total: 75.96 acres
Zoning:	Industrial, Manufacturing Park (MP)
Comprehensive Plan:	Manufacturing Park (MP)
Adjacent Zoning:	Industrial, Manufacturing Park (MP) Industrial, Light Manufacturing (ML) Low Density Residential (RL) Medium-Low Density Residential (RML) Medium-High Density Residential (RMH) High Density Residential (RH)
Request:	Approval of Type III Architectural Review for a new office building, central utility building, lab building, expanded bulk gas yard, and associated parking, circulation, and landscaping.
Project Contact:	Suzannah Stanley Mackenzie 1515 SE Water Avenue, Suite 100 Portland, OR 97214 971-346-3808 sstanley@mcknze.com

II. INTRODUCTION

Description of Request

The applicant is requesting approval of a Type III Architectural Review for a new office building, central utility building, lab building, storage building, expanded bulk gas yard, and associated parking, circulation, and landscaping on this previously developed site, located in the Leveton Industrial District and the Manufacturing Park (MP) Planning District.

Site and Surrounding Land Use

The site consists of four lots containing several buildings and associated facilities, parking areas, and landscaping. There are three main driveways into the campus from SW Leveton Drive, three driveways on SW 108th Avenue, and one additional driveway entrance from SW Tualatin Road which is a gated emergency services access and access for the neighbor, JAE. To the west and south are additional MP-designated lots. On the southeast corner and to the east are Light Manufacturing (ML)-designated lots. To the north, across SW Leveton Drive, there is residential development in the Low Density Residential (RL) Planning District, and in the Medium High Density Residential (RMH) District to the northwest.

Description of Proposed Development

This AR and the accompanying IMP have been updated since the original July 2024 submittal with smaller building area and changes to proposed driveway impacts. Notably, Lam employee access is no longer proposed via the existing driveway on SW Tualatin Road. No changes are proposed to the current use of the SW Tualatin Road access, which provides access for the neighboring property JAE as well as emergency-only access for Lam.

The proposed development includes a new office building, lab, central utilities building (CUB), and storage building concentrated in the southern portion of the campus. An existing parking area would be relocated and expanded along the northern boundary of the site and additional parking areas would be located along the western boundary. The existing landscape berm along the north property line would be extended to the west to buffer the expanded parking area. A new truck access will be constructed on SW Leveton Drive.

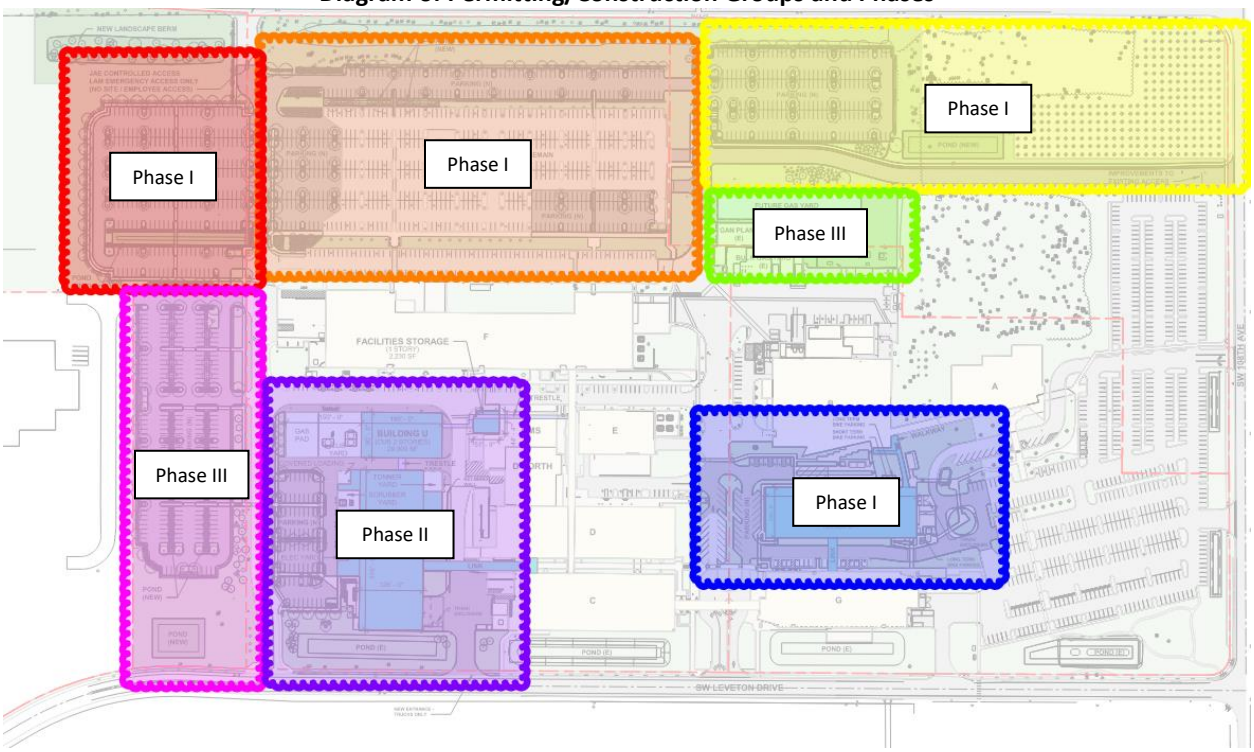
The proposed development is depicted on the site plan in Attachment 2 (Sheet A0.01). Of note, the site plans depict 127 spaces which were previously approved under AR 22-0006 but have not yet been constructed, so they have been removed from AR 22-0006 and are included again in this request. The net increase in Lam campus parking spaces is 544.

Considering the large scale and complexity of the proposed improvements, permitting and construction of buildings and site improvements will be done in groups. Additionally, construction of the proposed improvements will be separated into up to three phases. A diagram of this grouping and phasing is included below. Phase I, which includes the office building and northern parking areas, is expected to be initiated within the initial two-year approval period for this Architectural Review pursuant to TDC 33.020(9). Phase II includes the lab, CUB, and storage building and is expected to be initiated within four years following approval of this AR. Phase III consists of the expanded bulk gas yard and a parking area in the southwestern area of the site and is expected to be initiated within six years.

Aerial Image – Project Site



Diagram of Permitting/Construction Groups and Phases



III. ARCHITECTURAL REVIEW APPROVAL CRITERIA

This application addresses the necessary approval standards of the Tualatin Development Code relevant to Architectural Review for industrial development. As described in the following narrative, the proposal meets the standards of TDC *Chapter 62: Manufacturing Park Planning District (MP), Chapter 73: Community Design Standards, Chapter 74: Public Improvement Requirements, Chapter 75: Access Management,* and specific standards applicable to the subject property proposed through the concurrently reviewed Industrial Master Plan.

Chapter 32 - Procedures

Section 32.120. – Neighborhood/Developer Meetings.

(1) Purpose. The purpose of this meeting is to provide a means for the applicant and surrounding property owners to meet to review a development proposal and identify issues regarding the proposal so they can be considered prior to the application submittal. The meeting is intended to allow the developer and neighbors to share information and concerns regarding the project. The applicant may consider whether to incorporate solutions to these issues prior to application submittal.

(2) When Mandatory. Neighborhood/developer meetings are mandatory for all land use actions identified in Table 32-1 as requiring a neighborhood/developer meeting. An applicant may voluntarily conduct a neighborhood/developer meeting even if it is not required and may conduct more than one neighborhood/developer meeting at their election.

(3) Timing. A neighborhood/developer meeting must be held after a pre-application meeting with City staff, but before submittal of an application.

(4) Time and Location. Required neighborhood/developer meetings must be held within the city limits of the City of Tualatin at the following times:

- *(a) If scheduled on a weekday, the meeting must begin no earlier than 6:00 p.m.*
- *(b) If scheduled on a weekend, the meeting must begin between 10:00 a.m. and 6:00 p.m.*

(5) Notice Requirements.

- *(a) The applicant must provide notice of the meeting at least* 14 *calendar days and no more than 28 calendar days before the meeting. The notice must be by first class mail providing the date, time, and location of the meeting, as well as a brief description of the proposal and its location. The applicant must keep a copy of the notice to be submitted with their land use application.*
- *(b) The applicant must mail notice of a neighborhood/developer meeting to the following persons:*
  - *(i) All property owners within 1,000 feet measured from the boundaries of the subject property;*
  - *(ii) All property owners within a platted residential subdivision that is located within 1,000 feet of the boundaries of the subject property. The notice area includes the entire subdivision and not just those lots within 1,000 feet. If the residential subdivision is one of two or more individually platted phases sharing a single subdivision name, the notice area need not include the additional phases; and*
  - *(iii) All designated representatives of recognized Citizen Involvement Organizations as established in TMC Chapter 11-9.*
- *(c) The City will provide the applicant with labels for mailing for a fee.*
- *(d) Failure of a property owner to receive notice does not invalidate the neighborhood/developer meeting proceedings.*

(6) Neighborhood/Developer Sign Posting Requirements. The applicant must provide and post on the subject property, at least 14 *calendar days before the meeting. The sign must conform to the design and placement standards established by the City for signs notifying the public of land use actions in TDC* 32.150*.*

(7) Neighborhood/Developer Meeting Requirements. The applicant must have a sign-in sheet for all attendees to provide their name, address, telephone number, and email address and keep a copy of the sign-in sheet to provide with their land use application. The applicant must prepare meeting notes identifying the persons attending, those commenting and the substance of the comments expressed, and the major points that were discussed. The applicant must keep a copy of the meeting notes for submittal with their land use application.

Response: A Neighborhood/Developer Meeting was held at the Juanita Pohl Center in Tualatin at 6:00 PM on June 5, 2024. Mailed notice was provided to surrounding property owners using a mailing list prepared by City staff, and the required meeting notice signs were posted on the subject site on May 22, 2024. A sign-in sheet was provided for attendees to provide their contact information. Meeting notes were recorded to document the substance of the meeting and neighbor comments. All documentation of the Neighborhood/Developer Meeting can be found in Attachment 8, demonstrating the requirements of this section have been met.

A board member of the Riverpark CIO, Janine Wilson, attended the Neighborhood/Developer Meeting. Ms. Wilson was concerned that residents of the apartment buildings near the Lam campus did not receive notice of the neighborhood meeting and expressed interest in assisting the project team contact those residents for future meetings and public hearings on the proposal. She provided her name and email address to the project team for this purpose. The project team sent emails to Ms. Wilson on June 10 and June 12, 2024, to request coordination but did not receive any response or further communication.

Section 32.130. – Initiation of Applications.

(1) Type I, Type II, Type III, and Type IV-A Applications. Type I, Type II, Type III, and Type IV-A applications may be submitted by one or more of the following persons:

- *(a) The owner of the subject property;*
- *(b) The contract purchaser of the subject property, when the application is accompanied by proof of the purchaser's status as such and by the seller's written consent;*
- *(c) A lessee in possession of the property, when the application is accompanied by the owners' written consent; or*
- *(d) The agent of any of the foregoing, when the application is duly authorized in writing by a person authorized to submit an application by paragraphs (a), (b) or (c) of this subsection, and accompanied by proof of the agent's authority.*

(2) Type IV-A or B Applications. Type IV-A or B applications may be initiated by the City.

Response: This Type III application has been submitted by Mackenzie on behalf of the property Owner, Lam Research Corporation. The application form has been signed by Lam's Senior Director of Real Estate and Construction, Ajay Changaran. This standard is met.

Section 32.150. – Sign Posting.

(1) When Signs Posted. Signs in conformance with these standards must be posted as follows:

- *(a) Signs providing notice of an upcoming neighborhood/developer meeting must be posted prior to a required neighborhood/developer meeting in accordance with Section 32.120(6); and*
- *(b) Signs providing notice of a pending land use application must be posted after land use application has been submitted for Type II, III and IV-A applications.*

(2) *Sign Design Requirements. The applicant must provide and post a sign(s) that conforms to the following standards:*
   (a) Waterproof sign materials;
   (b) Sign face must be no less than 18 inches by 24 inches (18" x 24"); and
   (c) Sign text must be at least two inch font.

(3) *On-site Placement. The applicant must place one sign on their property along each public street frontage of the subject property. (Example: If a property adjoins four public streets, the applicant must place a sign at each of those public street frontages for a total of four signs.) The applicant cannot place the sign within public right-of-way.*

(4) *Removal. If a sign providing notice of a pending land use application disappears prior to the final decision date of the subject land use application, the applicant must replace the sign within 40-eight (48) hours of discovery of the disappearance or of receipt of notice from the City of its disappearance, whichever occurs first. The applicant must remove the sign no later than 14 days after:*
   (a) The meeting date, in the case of signs providing notice of an upcoming neighborhood/developer meeting; or
   (b) The City makes a final decision on the subject land use application, in the case of signs providing notice of a pending land use application.

Response: The required signs providing notice of the Neighborhood/Developer Meeting for this application were posted on the subject site's street frontages in accordance with these requirements. The signs were removed within 14 days after the meeting. A Certification of Sign Posting is included in Attachment 8. This standard is met.

Section 32.230. – Type III Procedure (Quasi-Judicial Review – Public Hearing).

Type III decisions involve the use of discretion and judgment and are made by the Planning Commission or Architectural Review Board after a public hearing with an opportunity for appeal to the City Council. The decision body for each application type is specified in Table 32-1. A hearing under these procedures provides a forum to apply standards to a specific set of facts to determine whether the facts conform to the applicable criteria and the resulting determination will directly affect only a small number of identifiable persons.

(1) *Submittal Requirements. Type III applications must include the submittal information required by TDC* 32.140*(1).*

(2) *Determination of Completeness. After receiving an application for filing, the City Manager will review the application will for completeness in accordance with TDC* 32.160*.*

(3) *Written Notice of Public Hearing—Type III. Once the application has been deemed complete, the City must mail by regular first class mail Notice of a Public Hearing to the following individuals and agencies no fewer than 20 days before the hearing.*
   (a) Recipients:
      (i) The applicant and, the owners of the subject property;
      (ii) All property owners within 1,000 feet measured from the boundaries of the subject property;
      (iii) All property owners within a platted residential subdivision that is located within 1,000 feet of the boundaries of the subject property. The notice area includes the entire subdivision and not just those lots within 1,000 feet. If the residential subdivision is one of two or more individually platted phases sharing a single subdivision name, the notice area need not include the additional phases;

(iv) All recognized neighborhood associations within 1,000 feet from the boundaries of the subject property;

(v) All designated representatives of recognized Citizen Involvement Organizations as established in TMC Chapter 11-9;

(vi) Any person who submits a written request to receive a notice;

(vii) Any governmental agency that is entitled to notice under an intergovernmental agreement entered into with the City and any other affected agencies, including but not limited to: school districts; fire district; where the project either adjoins or directly affects a state highway, the Oregon Department of Transportation; and where the project site would access a County road or otherwise be subject to review by the County, then the County; and Clean Water Services; Tri Met; and, ODOT Rail Division and the railroad company if a railroad-highway grade crossing provides or will provide the only access to the subject property. The failure of another agency to respond with written comments on a pending application does not invalidate an action or permit approval made by the City under this Code;

(viii) Utility companies (as applicable); and,

(ix) Members of the decision body identified in Table 32-1.

(b) The Notice of a Public Hearing, at a minimum, must contain all of the following information:

(i) The names of the applicant(s), any representative(s) thereof, and the owner(s) of the subject property;

(ii) The street address if assigned, if no street address has been assigned then Township, Range, Section, Tax Lot or Tax Lot ID;

(iii) The type of application and a concise description of the nature of the land use action;

(iv) A list of the approval criteria by TDC section for the decision and other ordinances or regulations that apply to the application at issue;

(v) Brief summary of the local decision making process for the land use decision being made and a general explanation of the requirements for submission of testimony and the procedure for conduct of hearings;

(vi) The date, time and location of the hearing;

(vii) Disclosure statement indicating that if any person fails to address the relevant approval criteria with enough detail, he or she may not be able to appeal to the Land Use Board of Appeals on that issue, and that only comments on the relevant approval criteria are considered relevant evidence;

(viii) The name of a City representative to contact and the telephone number where additional information may be obtained; and

(ix) Statement that the application and all documents and evidence submitted to the City are in the public record and available for review, and that copies can be obtained at a reasonable cost from the City; and

(x) Statement that a copy of the staff report will be available for inspection at no cost at least seven days prior to the hearing and will be provided at reasonable cost.

(c) Failure of a person or agency to receive a notice, does not invalidate any proceeding in connection with the application, provided the City can demonstrate by affidavit that required notice was given.

(4) Conduct of the Hearing—Type III. The person chairing the hearing must follow the order of proceedings set forth below. These procedures are intended to provide all interested persons a reasonable opportunity to participate in the hearing process and to provide for a full and impartial

hearing on the application before the body. Questions concerning the propriety or the conduct of a hearing will be addressed to the chair with a request for a ruling. Rulings from the chair must, to the extent possible, carry out the stated intention of these procedures. A ruling given by the chair on such question may be modified or reversed by a majority of those members of the decision body present and eligible to vote on the application before the body. The procedures to be followed by the chair in the conduct of the hearing are as follows:

(a) At the commencement of the hearing, the person chairing the hearing must state to those in attendance all of the following information and instructions:

(i) The applicable substantive criteria;

(ii) That testimony, arguments and evidence must be directed toward the criteria described in paragraph (i) of this subsection or other criteria in the plan or land use regulation which the person believes to apply to the decision;

(iii) That failure to raise an issue accompanied by statements or evidence sufficient to afford the decision maker and the parties an opportunity to respond to the issue precludes appeal to the State Land Use Board of Appeals based on that issue;

(iv) At the conclusion of the initial evidentiary hearing, the decision body must deliberate and make a decision based on the facts and arguments in the public record; and

(v) Any participant may ask the decision body for an opportunity to present additional relevant evidence or testimony that is within the scope of the hearing; if the decision body grants the request, it will schedule a date to continue the hearing as provided in TDC 32.230*(4)(e), or leave the record open for additional written evidence or testimony as provided TDC* 32.230*(4)(f).*

(b) The public is entitled to an impartial decision body as free from potential conflicts of interest and pre-hearing ex parte (outside the hearing) contacts as reasonably possible. Where questions related to ex parte contact are concerned, members of the decision body must follow the guidance for disclosure of ex parte contacts contained in ORS 227.180. Where a real conflict of interest arises, that member or members of the decision body must not participate in the hearing, except where state law provides otherwise. Where the appearance of a conflict of interest is likely, that member or members of the decision body must individually disclose their relationship to the applicant in the public hearing and state whether they are capable of rendering a fair and impartial decision. If they are unable to render a fair and impartial decision, they must be excused from the proceedings.

(c) Presenting and receiving evidence.

(i) The decision body may set reasonable time limits for oral presentations and may limit or exclude cumulative, repetitious, irrelevant, or personally derogatory testimony or evidence;

(ii) No oral testimony will be accepted after the close of the public hearing. Written testimony may be received after the close of the public hearing only as provided by this section; and

(iii) Members of the decision body may visit the property and the surrounding area, and may use information obtained during the site visit to support their decision, if the information relied upon is disclosed at the beginning of the hearing and an opportunity is provided to dispute the evidence.

(d) The decision body, in making its decision, must consider only facts and arguments in the public hearing record; except that it may take notice of facts not in the hearing record (e.g., local, state, or federal regulations; previous City decisions; case law; staff reports). Upon announcing its intention to take notice of such facts in its deliberations, it must allow

persons who previously participated in the hearing to request the hearing record be reopened, as necessary, to present evidence concerning the newly presented facts.

(e) If the decision body decides to continue the hearing, the hearing must be continued to a date that is at least seven days after the date of the first evidentiary hearing (e.g., next regularly scheduled meeting). An opportunity must be provided at the continued hearing for persons to present and respond to new written evidence and oral testimony. If new written evidence is submitted at the continued hearing, any person may request, before the conclusion of the hearing, that the record be left open for at least seven days, so that he or she can submit additional written evidence or arguments in response to the new written evidence. In the interest of time, after the close of the hearing, the decision body may limit additional testimony to arguments and not accept additional evidence.

(f) If the decision body leaves the record open for additional written testimony, the record must be left open for at least seven days after the hearing. Any participant may ask the decision body in writing for an opportunity to respond to new evidence (i.e., information not disclosed during the public hearing) submitted when the record was left open. If such a request is filed, the decision body must reopen the record, as follows:

(i) When the record is reopened to admit new evidence or arguments (testimony), any person may raise new issues that relate to that new evidence or testimony;

(ii) An extension of the hearing or record granted pursuant to this section is subject to the limitations of TDC 32.030*, unless the applicant waives his or her right to a final decision being made within the required timeframe; and*

(iii) If requested by the applicant, the decision body must grant the applicant at least seven days after the record is closed to all other persons to submit final written arguments, but not evidence, provided the applicant may expressly waive this right.

(5) Notice of Adoption of a Type III Decision. Notice of Adoption must be provided to the property owner, applicant, and any person who provided testimony at the hearing or in writing. The Type III Notice of Adoption must contain all of the following information:

(a) A description of the applicant's proposal and the City's decision on the proposal, which may be a summary, provided it references the specifics of the proposal and conditions of approval in the public record;

(b) The address or other geographic description of the property proposed for development, including a map of the property in relation to the surrounding area;

(c) A statement that a copy of the decision and complete case file, including findings, conclusions, and conditions of approval, if any, is available for review and how copies can be obtained;

(d) The date the decision becomes final, unless a request for appeal is submitted; and

(e) The notice must include an explanation of rights to appeal the decision to the City Council in accordance with TDC 32.310*.*

(6) Appeal of a Type III Decision. Appeal of an Architectural Review Board or Planning Commission Type III Decision to the City Council may be made in accordance with TDC 32.310*.*

(7) Effective Date of a Type III Decision.

(a) The written order is the final decision on the application.

(b) The mailing date is the date of the order certifying its approval by the decision body.

(c) A decision of the Architectural Review Board or Planning Commission is final unless:

(i) a written appeal is received at the City offices within 14 calendar days of the date notice of the final decision is mailed; or

(ii) The City Manager or a member of the City Council requests a review of the decision within 14 calendar days of the date notice of the final decision is mailed.

Response: This section defines the City's requirements for a Type III application review procedure, hearing, decision, and appeal process. This matter will be heard by the Architectural Review Board, which will issue a decision that can be appealed to the City Council by any party with standing. The applicant acknowledges understanding of the procedural requirements for a Type III review.

Chapter 33 - Applications and Approval Criteria

Section 33.020. - Architectural Review.

(2) Applicability.

(a) The following types of development are subject to Architectural Review:
(i) Any exterior modifications to improved or unimproved real property;
(ii) Any remodeling that changes the exterior appearance of a building;
(iii) Any site alteration which alters the topography, appearance or function of the site; and
(iv) Any change in occupancy from single family use to commercial or industrial use.
(b) Examples of development subject to Architectural Review, include but are not limited to the following:
(i) New buildings, condominiums, townhouse, single family dwellings, or manufactured dwelling park;
(ii) Construction, installation, or alteration of a building or other structure;
(iii) Landscape improvements;
(iv) New, improved, or expanded parking lots;
(v) New, or alterations to, above ground public utility facilities, pump stations, pressure reading stations, water reservoirs, electrical substations, and natural gas pumping stations;
(vi) New wireless communication facilities, and new attached wireless communication;
(vii) Installation of decorative lighting; and
(viii) Exterior painting, awnings, or murals.

Response: The proposal will include improving real property, altering the site, and adding four new buildings, an expanded bulk gas yard, landscape improvements, new truck access on SW Leveton Drive, and expanded parking. See project description for detail. Therefore, the proposal is subject to Architectural Review.

(3) Types of Architectural Review Applications—Procedure Type.

(f) General Development. All development applications, (except Single Family Dwelling, duplex, townhouse, triplex, quadplex, or cottage cluster, Clear and Objective and Large Commercial, Industrial, and Multifamily Development) are subject to Type II Review.
(g) Large Commercial, Industrial, and Multifamily Development. Development applications that propose any of the following are subject to Type III Review by the Architectural Review Board as the hearing body:
(i) New Commercial Buildings 50,000 square feet and larger;
(ii) New Industrial Buildings 150,000 square feet and larger; and
(iii) New Multifamily Housing Projects with 100 units or more units (or any number of units abutting a single family district).

Response: The proposed office building (approximately 120,000 SF), central utilities building (approximately 29,000 SF), lab building (approximately 90,000 SF), and storage building (approximately 2,230 SF) for Lam's manufacturing use have a combined total of 241,230 SF of floor area and fall into the Large Industrial category, requiring a Type III review.

(4) Application Materials. The application must be on forms provided by the City. In addition to the application materials required by TDC 32.140 (Application Submittal), the following application materials are also required:

(a) The project name and the names, addresses, and telephone numbers of the architect, landscape architect, and engineer on the project;

(b) Existing conditions plan, site plan, grading plan, utility plan, landscape plan, and lighting plan all drawn to scale;

(c) A building materials plan that includes a written description and image representation of facade, windows, trim, and roofing materials, colors, and textures;

(d) Title report; and

(e) A Service Provider Letter from Clean Water Services.

Response: All available required forms, information, plans, reports, and service provider letters described above are attached and submitted with this narrative or will be provided with this application. This standard is met.

(5) Approval Criteria.

(c) General Development. Applications for General Development must comply with the applicable standards and objectives in TDC Chapter 73A through 73G.

(d) Large Commercial, Industrial, and Multifamily Development. Applications for Large Commercial, Industrial, and Multifamily Development must comply with the applicable standards and objectives in TDC Chapter 73A through 73G.

Response: As shown in this narrative, the proposed new development complies with the applicable standards of TDC Chapter 73A through 73G. The applicable approval criteria are met.

(6) Conditions of Approval.

(a) Architectural Review decisions may include conditions of approval that apply restrictions and conditions that:

(i) Implement identified public facilities and services needed to serve the proposed development;

(ii) Implement identified public facilities and services needed to be altered or increased attributable to the impacts of the proposed development; and

(iii) Implement the requirements of the Tualatin Development Code.

(b) Types of conditions of approval that may be imposed include, but are not limited to:

(i) Development Schedule. A reasonable time schedule placed on construction activities associated with the proposed development, or portion of the development.

(ii) Dedications, Reservation. Dedication or reservation of land, or the granting of an easement for park, open space, rights-of-way, bicycle or pedestrian paths, Greenway, Natural Area, Other Natural Area, riverbank, the conveyance of title or easements to the City or a non-profit conservation organization, or a homeowners' association.

(iii) Construction and Maintenance Guarantees. Security from the property owners in such an amount that will assure compliance with approval granted.

(iv) Plan Modifications. Changes in the design or intensity of the proposed development, or in proposed construction methods or practices, necessary to assure compliance with this chapter.

(v) Other Approvals. Evaluation, inspections or approval by other agencies, jurisdictions, public utilities, or consultants, may be required for all or any part of the proposed development.

(vi) Access Limitation. The number, location and design of street accesses to a proposed development may be limited or specified where necessary to maintain the capacity of streets to carry traffic safely, provided that sufficient access to the development is maintained.

Response: These provisions authorize the City to impose conditions of approval on Architectural Review approvals and require no evidence submittal or response from the applicant.

(7) Modifications to Previously Approved Final Architectural Review Decisions. An applicant who wishes to modify a previously approved final Architectural Review decision may utilize one of the following procedures: …

Response: The subject property is the site of multiple AR approvals under which all the existing buildings and other improvements have been constructed; however, the proposed buildings and site improvements are in a site sub-area that will be redeveloped. Because the sub-area was not the subject of any specific requirements in previous AR approvals, it is not necessary or appropriate to process this application as a modification of any existing AR decision. It is preferable to process this application as a new AR for the sub-area, while ensuring that the review and approval are informed by and consistent with existing AR approvals for the property as a whole. As noted above, the scale of the proposed development requires Type III review.

(8) Effective Date. The effective date of an Architectural Review decision or Minor Architectural Review decision is the date the notice of decision is mailed.

(9) Permit Expiration. Architectural Review decisions (including Minor Architectural Review decisions) expire two years from the effective date unless the applicant has received a building, or grading permit submitted in conjunction with a building permit application, substantial construction has occurred pursuant to the building permit, and an inspection has been performed by a member of the Building Division.

Response: These provisions govern the validity period of an AR approval and require no evidence or response from the applicant.

(10) Extension of Permit Expiration…

Response: This request is not an application for an extension. These provisions may become applicable if the applicant needs to request an extension following approval.

Section 33.030. - Permit for New Driveway Approach and Closure Decisions.

All requests for driveway approaches and closures are as provided in TDC 75.020 and TDC 75.030.

Response: See the responses to Chapter 75 below.

Section 33.050. - Industrial Master Plans.

Response: The original Industrial Master Plan for the Lam Campus was approved in 2001 (IMP 00-01) and modified in 2022 (IMP 22-0001). A new IMP modification request is submitted concurrently with this application to modify setbacks, building height, and parking lot landscaping standards. The proposed IMP also requests that Type I Minor AR procedures are applied to expansions of gross floor area up to 15,000

SF (rather than 200 SF). Larger expansions would continue to be reviewed under Type II or Type III AR procedures as applicable.

Section 33.080. – Signs—Permits, Design Review, and Variances.

(1) Purpose. To implement the standards of TDC Chapter 38. Sign Variance review provides a public hearing process to review special situations that are not anticipated by the Sign Regulations in TDC Chapter 38, including TDC 38.100, 38.110, 38.120 and 38.140-38.240.

(2) Applicability. The requirements of this section apply to sign permits, sign design review and sign variances as required in accordance with TDC Chapter 38.

(3) Procedure Type. Sign permits, sign design review and variances are processed in accordance with the procedures in TDC Chapter 32 as follows:

(a) Sign Permits are subject to Type I review.

(b) Sign Design Reviews are subject to Type I review.

(c) Sign Variances are subject to Type III review.

(4) Specific Submittal Requirements. In addition to the general submittal requirements in TDC 32.140 (Application Submittal), the applicant must submit the information required by TDC 38.070 (Sign Permit Process).

(5) Approval Criteria.

(a) A Sign Permit may be granted if the City Manager finds that the proposed sign is in compliance with the regulations in TDC Chapter 38.

(b) Sign Design Review may be approved if the City Manager finds that the proposed sign is in compliance with the regulations in TDC Chapter 38 and the clear and objective standards in TDC 38.075.

(c) Sign Variances. All six of the following criteria must be met before a variance can be granted:

(i) A hardship is created by exceptional or extraordinary conditions applying to the property that do not apply generally to other properties in the same zone, and such conditions are a result of lot size or shape or topography over which the applicant or owner has no control;

(ii) The hardship does not result from actions of the applicant, owner or previous owner, or from personal circumstances, or from the financial situation of the applicant or owner or the company, or from regional economic conditions;

(iii) The variance is the minimum remedy necessary to eliminate the hardship;

(iv) The variance is necessary for the preservation of a property right of the owner substantially the same as is possessed by owners of other property in the same zone however, nonconforming or illegal signs on the subject property or on nearby properties does not constitute justification to support a variance request;

(v) The variance must not be detrimental to the general public health, safety and welfare, and not be injurious to properties or improvements in the vicinity; and

(vi) The variance must not be detrimental to any applicable Comprehensive Plan goals and policies.

Response: New signage will likely be limited to building identification and wayfinding signage. The applicant will obtain the appropriate sign permits prior to installing any new signs.

Section 33.110. - Tree Removal Permit/Review.

(2) Applicability. No person may remove a tree on private property within the City limits, unless the City grants a tree removal permit, consistent with the provisions of this Section.

(3) Exemptions. The following actions are exempt from the requirements of a tree removal permit.

(a) General Exemption. Four or fewer trees may be removed within a single calendar year from a single parcel of property or contiguous parcels of property under the same ownership without a permit, if the tree is:

(i) Not located in the Natural Resource Protection Overlay District (NRPO);

(ii) Not located in the Wetlands Protection Area (WPA) of the Wetlands Protection District (WPD);

(iii) Not a Heritage Tree; and

(iv) Not previously required to be retained or planted under an approved Architectural Review decision.

(b) Forest Harvesting Exemption. Forest Harvesting Uses, as provided by Agricultural Uses in TDC 39.300 are exempt.

(c) Orchard Exemption. Orchards Uses, as provided by Agricultural Uses in TDC 39.300, are exempt.

(d) Public Property Exemption. Tree removal on federal, state, county, or City property is exempt from the requirements of a tree removal permit. This exemption includes, but is not limited to road, improvements and maintenance to City parks, rights-of-way, water, sanitary sewer, and stormwater facilities. (Removal of trees from public right-of-way are governed by TDC Chapter 74.)

Response: The proposal does not fall under a subparagraph (3) exemption. This section applies.

(3) Procedure Type. Tree Removal Permit applications are subject to Type II Review in accordance with TDC Chapter 32. Tree Removal Permit applications submitted with an Architectural Review, Subdivision, or Partition application will be processed in conjunction with the Architectural Review, Subdivision, or Partition decision.

(4) Specific Submittal Requirements. In addition to the general submittal requirements in TDC 32.140 (Application Submittal), an applicant must submit the following:

(a) Tree Preservation Plan. A tree preservation plan drawn to scale must include:

(i) The location, size, species, and tag identification number of all trees on-site eight inches or more in diameter;

(ii) All trees proposed for removal and all trees proposed to be preserved;

(iii) All existing and proposed structures;

(iv) All existing and proposed public and private improvements; and

(v) All existing public and private easements.

(b) Tree Assessment Report. A tree assessment prepared by a certified arborist must include:

(i) An analysis as to whether trees proposed for preservation may be preserved in light of the development proposed, are healthy specimens, and do not pose an imminent hazard to persons or property if preserved;

(ii) An analysis as to whether any trees proposed for removal could reasonably be preserved in light of the development proposed and health of the tree;

(iii) a statement addressing the approval criteria set forth in TDC 33.110(5);

(iv) the name, contact information, and signature of the arborist preparing the report; and

(v) The tree assessment report must have been prepared and dated no more than one calendar year preceding the date the development or Tree Removal Permit application is deemed complete by the City.

(c) Tree Tags. All trees on-site must be physically identified and numbered in the field with an arborist-approved tagging system that corresponds to the Tree Preservation Plan and Tree Assessment Report.

Response: Existing trees are identified in Attachment 2, sheets L0.01 through L1.10Y, and in the Tree Removal and Protection Plan, Attachment 11, which was prepared by a certified arborist and addresses Section 33.110. While the proposed development requires removal of 184 existing trees (i.e., greater than 8" DSH), the proposed landscaping plan includes 399 new trees for a net increase of 215 trees. A Tree Removal Permit application will be submitted separately from this Architectural Review application. These standards will be met by obtaining a Tree Removal Permit prior to construction of the proposed development.

(5) Approval Criteria.

(a) An applicant must satisfactorily demonstrate that at least one of the following criteria are met:

(i) The tree is diseased and:

(A) The disease threatens the structural integrity of the tree; or

(B) The disease permanently and severely diminishes the esthetic value of the tree; or

(C) The continued retention of the tree could result in other trees being infected with a disease that threatens either their structural integrity or esthetic value.

(ii) The tree represents a hazard which may include but not be limited to:

(A) The tree is in danger of falling; or

(B) Substantial portions of the tree are in danger of falling.

(iii) It is necessary to remove the tree to construct proposed improvements based on Architectural Review approval, building permit, or approval of a Subdivision or Partition Review.

Response: Tree removal will be necessary to construct proposed improvements to the site, consistent with the anticipated development pattern proposed in the IMP reviewed concurrently with this AR. Refer to the Tree Removal and Protection Plan, Attachment 11, and Sheets L0.01 through L1.10Y, Attachment 2. The removal is necessary for the efficient use of the site. Criterion (a)(iii) is satisfied.

(b) If none of the conditions in TDC 33.110(5)(a) are met, the certified arborist must evaluate the condition of each tree.

(i) Evergreen Trees. An evergreen tree which meets any of the following criteria as determined by a certified arborist will not be required to be retained:

(A) Trunk Condition—extensive decay and hollow; or

(B) Crown Development—unbalanced and lacking a full crown;

(ii) Deciduous Trees. A deciduous tree which meets any of the following criteria as determined by a certified arborist will not be required to be retained:

(A) Trunk Condition—extensive decay and hollow;

(B) Crown Development—unbalanced and lacking a full crown; or

(C) Structure—Two or more dead limbs.

Response: Condition TDC 33.110(5)(a)(iii) is met as noted above. This standard does not apply.

(6) Emergencies. If emergency conditions occur requiring the immediate cutting or removal of trees to avoid danger or hazard to persons or property, an emergency permit must be issued by the City Manager without payment of a fee and without formal application, provided the owner provides enough information to the City Manager to document that an emergency exists. If an emergency exists and the City Offices are closed, the emergency condition may be abated provided the person files information documenting the emergency and necessity of immediate removal of the tree as

soon as practical after the City Offices reopen. An "emergency condition" for purposes of this section is when a tree presents an immediate danger of collapse, and represents a clear and present hazard to persons or property. For the purposes of this section, "immediate danger of collapse" means that the tree is already leaning, and there is a significant likelihood that the tree will topple or otherwise fail and cause damage before a tree cutting permit could be obtained through the nonemergency process. "Immediate danger of collapse" does not include hazardous conditions that can be alleviated by pruning or treatment. Examples of emergency conditions include:

(a) A tree leaning on a structure;

(b) A tree leaning on another tree and there is a significant likelihood that the tree will topple or otherwise fail; or

(c) If a utility service has been interrupted and repairs cannot be completed without the removal of a tree.

Response: No emergency tree conditions exist. This standard does not apply.

(7) Conditions of Approval. Any tree required to be retained must be protected in accordance with the TDC 73B and 73C.

Response: All trees required to be retained will be protected in accordance with TDC 73B and C. Refer to the Tree Removal and Protection Plan, Attachment 11. This standard is met.

(8) Permit Expiration. A Tree Removal Permit is valid for one year from the date of issue. A Tree Removal Permit approved in conjunction with an Architectural Review, Subdivision, or Partition decision is valid as provided in the terms of the Architectural Review, Subdivision, or Partition decision.

Response: Any tree removal will be completed within a year of the Tree Removal Permit issuance. This standard is met.

(9) Tree removal in violation of Zone Standards.

(a) In addition to any applicable civil violation penalties, any property owner who removes, or causes to be removed, one or more trees in violation of applicable TDC provisions must pay an Enforcement Fee and a Restoration Fee to the City of Tualatin, as follows:

(i) Enforcement Fee of $837.00 per incident, plus $10.00 for each tree removed; and

(ii) Restoration Fee of $2,000.00 per tree removed.

(b) The City Manager may administratively reduce or waive these fees based upon a demonstration of hardship, adequate mitigation, or other good cause shown.

Response: This Section provides guidance and penalties for enforcement actions and requires no response from the applicant. No tree removal in violation of Zone Standards is proposed.

Chapter 62: Manufacturing Park Planning District

Section 62.200. - Use Categories

(1) Use Categories. Table 62-1 lists use categories Permitted Outright (P) or Conditionally Permitted (C) in the MP zone. Use categories may also be designated as Limited (L) and subject to the limitations listed in Table 62-1 and restrictions identified in TDC 62.210. Limitations may restrict the specific type of use, location, size, or other characteristics of the use category. Use categories which are not listed are prohibited within the zone, except for uses which are found by the City Manager or appointee to be of a similar character and to meet the purpose of this zone, as provided in TDC 31.070.

(2) *Overlay Zones. Additional uses may be allowed in a particular overlay zone. See the overlay zone Chapters for additional uses.*

Table 62-1: Use Categories in the MP Zone (Excerpt)		
Use Category	***Status***	***Limitations and Code References***
Commercial Use Categories		
Commercial Parking	*P*	*—*
Commercial Recreation	*P (L)*	*Permitted uses limited to a health or fitness facility as a limited use subject to TDC 62.210(4).*
Eating and Drinking Establishments	*P (L)*	*Permitted uses limited to a restaurant or deli as a limited use and subject to TDC 62.210(4).*
Marijuana Facilities	*P (L)*	*Subject to TDC Chapter 80.*
Office	*P (L)*	*Permitted uses limited, see TDC 62.210(2).*
Other Educational and Vocational Services	*P (L)*	*Permitted uses limited to:* • *Correspondence, trade, or vocational school as a limited use subject to TDC 62.210(4);* • *Job training or related services as a limited use subject to TDC 62.210(4).*
Retail Sales and Services	*P (L)*	*Permitted uses limited to:* • *Sale of goods produced on-site subject to TDC 62.210(1);* • *Child day care center, subject to TDC 34.200;* • *Food or convenience store, mailing operations, reproduction or photocopying services, bank, and medical services as limited uses subject to TDC 62.210(2).*
Industrial Use Categories		
Light Manufacturing	*P (L)*	*Permitted uses limited to:* • *Manufacture or assembly of electronic or optical instruments, equipment, devices; musical instruments; toys; and sporting goods.* • *Production of textiles or apparel;* • *Printing, publishing, and lithography shops; and* • *Research and development laboratories.* *Primary processing of organic materials, such as tanning of leather, is prohibited.*
INFRASTRUCTURE AND UTILITIES USE CATEGORIES		

Table 62-1: Use Categories in the MP Zone (Excerpt)		
Use Category	***Status***	***Limitations and Code References***
Basic Utilities	*P*	*—*
Greenways and Natural Areas	*P*	*—*
Public Safety Facilities	*C (L)*	*Conditional uses limited to a fire station.*
Transportation Facilities	*P*	*—*
Wireless Communication Facility	*P (L)*	*Subject to maximum height and minimum setback standards defined by TDC Chapter 73F.*

Response: The proposed buildings within a large manufacturing campus site will be accessory to the primary use of the property for a permitted Manufacturing Planning (MP) District use (i.e., *Light Manufacturing:* "Manufacture or assembly of electronic or optical instruments, equipment, devices"). See TDC 62.210 below for detailed discussion of how applicable standards are met.

Section 62.210. - Additional Limitations on Uses

(2) Offices. Office uses are a permitted as specified below.

(a) Permitted Uses. The following are permitted uses:

(i) Offices for chemical and physical sciences, engineering, cartography, or other research functions;

(ii) Shared service facilities (as defined by TDC 31.060); and

(iii) Corporate, regional, or district headquarter offices if:

(A) The headquarters is for a permitted use in this Code;

(B) The offices occupy at least 20,000 square feet; and

(C) Manufacturing is not conducted, unless the manufacturing is a permitted use in the MP zone.

Response: As noted above, the proposed office building will be used in conjunction with a permitted *Light Manufacturing* use in the MP zone: "[m]anufacture or assembly of electronic or optical instruments, equipment, devices…" Therefore, the office use is permitted.

(b) Accessory Uses to an Industrial Use. Office uses accessory to a permitted industrial use are permitted.

Response: The proposed office building is accessory to the existing permitted industrial use. This standard is met.

(c) Limited Uses. Offices located on the same site as a permitted industrial use may be permitted, subject to TDC 62.210(4).

Response: The proposed office building is located on the same site as existing manufacturing buildings and meets standards of TDC 62.210(4), which is addressed below. This standard is met.

(4) Limited Commercial Uses. Commercial uses permitted as limited uses, as specified in Table 62-1, must be located on the same site as a permitted industrial use. The site must be used primarily for industrial purposes and the commercial use is subject to the following limitations. The office, retail, and service uses may be located in a stand-alone building or combined in a building with other permitted uses.

(a) Offices. Office uses must not exceed 25 percent of the total gross floor area of all buildings on the site…

Response: The subject site has an approved IMP (22-0001). The office use allowances and limitations of this section are superseded by the IMP. This standard does not apply.

Section 62.300. - Development Standards

Development standards in the MP zone are listed in Table 62-2. Additional standards may apply to some uses and situations, see TDC 62.310.

Table 62-2: Section 62.300 Development Standards				
MP District Standards			**Proposed IMP Conditions**	**Proposed for TUX**
Setback Requirements				
Minimum** Building setback for Yards **Adjacent to Streets** or Alleys, **North of SW Leveton Drive	*100'*		No change to current IMP condition of 68' from Leveton Drive and 98' from 108th Avenue.	77' from Leveton Drive and over 500' from 108th Avenue. COMPLIES.
Minimum** Setback for Side and Rear Yards **not Adjacent to Streets** or Alleys, **north of SW Leveton Drive	*50'*	*No minimum setback if adjacent to railroad right-of-way or spur track.*	0 feet from side and rear yards under common ownership. From other lots: Subject to Table 62-2 Development Standards in the MP Zone.	Over 300' from west side yard. Over 500' from rear yard. COMPLIES.
Parking and Circulation Areas Adjacent to Public Right-of-Way	*50'*	*No minimum setback required adjacent to joint access approach in accordance with TDC 73C.*	No change to current IMP condition of 108' from Leveton Drive and 43' from 108th Avenue.	59' to SW Tualatin Road. 120' to SW Leveton Drive. COMPLIES.

Parking and Circulation Areas Adjacent to Private Property Line	*5-25'*	*Determined through Architectural Review Process.* *No minimum setback required adjacent to joint access approach in accordance with TDC 73C.*	0 feet from property lines under common ownership. 10 feet from other lots.	10' to west property line. COMPLIES (through approval of proposed IMP standard).
Fences	*50'*	*From public right-of-way.*	No change.	No proposed fences. COMPLIES.
Structure Height				
Maximum Height	*70'*	*May be increased to 85 feet if yards adjacent to structure are not less than a distance equal to one and one-half times the height of the structure.*	85'	The proposed lab building will be 70'9" with a setback of 108' to SW Leveton Drive. The proposed office building will have a height of 60' and the CUB will be 54'9". COMPLIES (through approval of proposed IMP standard).
Maximum Height Adjacent to Residential District	*28'*	*Measured at the required 50-foot or 100-foot setback line, includes flagpoles. The building height may extend above 28 feet on a plane beginning at the 50-foot or 100-foot setback line at a slope of 45 degrees extending away from the setback line.*	No change.	No structures are proposed within 100' of a property line adjacent to a residential district. COMPLIES.

Response: As shown in the table above, all standards from Table 62-2 (Development Standards) are met, with the exception of standards which have been or are proposed to be modified through the IMP. With approval of the proposed IMP modifications to standards for building height and setbacks to interior lot lines, the proposed development will comply with all applicable standards and conditions of approval.

Section 62.310. - Additional Development Standards

(1) Industrial Master Plan. Minimum lot size, setbacks, maximum height, and other development standards may be modified by submittal of an Industrial Master Plan application. See TDC 33.050.

Response: An IMP application is being submitted concurrently with this AR to modify the prior IMP 22-0001 standards for setbacks, building height, and parking lot landscaping. The proposed development has been designed to comply with applicable standards, including the proposed IMP amendments.

(2) *Spur Rail Tracks. Spur rail tracks are not permitted within 200 feet of an adjacent residential district.*

Response: No spur rail tracks are present on the site nor being proposed. This standard does not apply.

(3) *Wetland Conservation Lots. Minimum lot size, width, or frontage requirement do not apply to wetland conservation lots.*

Response: The site is not a Wetland Conservation Lot. This standard does not apply.

Chapter 63: Industrial Uses and Utilities and Manufacturing Zones – Environmental Regulations

Section 63.051. - Noise.

All uses and development must comply with the Oregon State Department of Environmental Quality standards relating to noise and the City of Tualatin noise ordinance in, TMC 6-14.

Response: The proposed new development will comply with all DEQ and City of Tualatin noise standards. While the Lam campus has been the subject of noise complaints in the past, no violations of the applicable noise limits have been found. This standard is met.

Section 63.052. - Vibration.

(1) *Restrictions. All uses and development must not cause or permit ground vibration into the property of another person that exceeds the limits set forth below in this section.* (Shortened for brevity)

Response: The proposed new development will not cause or permit ground vibration as described and measured in this section. This standard is met.

Section 63.053. - Air Quality.

(1) *Restrictions. All uses and development must comply with the most recent air quality standards adopted by the Oregon Department of Environmental Quality. Plans of construction and operations must comply with the recommendations and regulations of the State Department of Environmental Quality.* (Shortened for brevity)

Response: The proposed development will comply with the most recent air quality standards adopted by DEQ. This standard is met.

Section 63.054. - Odors.

All uses and development must not emit odors in such quantities as to create a nuisance condition at any point beyond the subject property line of the emitting use.

Response: The proposed development is not anticipated to create nuisance odors. This standard is met.

Section 63.055. - Heat and Glare.

(1) *All uses and development must conduct all operations producing heat or glare entirely within an enclosed building.*

(2) *All uses and development may utilize exterior lighting, but the exterior lighting must be screened, baffled or directed away from residential planning districts.*

Response: All operations producing heat and glare will be conducted within an enclosed building, and all exterior lighting will be directed away from residential planning districts. This standard is met.

Section 63.056. - Storage and Stored Materials.

(1) All uses and development must store all materials, including wastes, in a manner that will not attract or aid the propagation of insects or rodents, or in any other way create a health or safety hazard.

(2) All uses and development that utilize open storage that would otherwise be visible at the property line must conceal it from view at the abutting property line by a sight obscuring fence not less than six feet high and not accessible to the general public to protect public safety.

Response: All materials, including wastes, will be stored appropriately and will be screened from public view. This standard is met.

Section 63.057. - Liquid or Solid Waste Materials.

All uses and development are prohibited from disposing waste onto the site or into adjacent drainage ditches, creeks or other natural waterways in violation of State of Oregon DEQ standards, Clean Water Services Standards, City Standards, or in a manner that causes harm to wildlife.

Response: No waste will be disposed onto the site or in any way that violates local, state, or federal regulations. This standard is met.

Section 63.058. - Dangerous Substances.

All uses and development are prohibited from the storage, transfer, or processing of hazardous, toxic, or radioactive waste.

Response: No storage, transfer, or processing of hazardous, toxic, or radioactive waste is proposed as part of this development. This standard is met.

Chapter 73A: Site *Design* Standards

Commercial Design Standards

Section 73A.300. - Commercial Design Standards

The following standards are minimum requirements for commercial development in all zones, except the Mixed-Use Commercial (MUC) zone, which has its own standards:

(1) Walkways. Commercial development must provide walkways as follows:

- *(a) Walkways must be a minimum of six feet in width;*
- *(b) Walkways must be constructed of asphalt, concrete, pervious concrete, pavers, or grasscrete. Gravel or bark chips are not acceptable;*
- *(c) Walkways must meet ADA standards applicable at time of construction or alteration;*
- *(d) Walkways must be provided between the main building entrances and other on-site buildings, accessways, and sidewalks along the public right-of-way;*
- *(e) Walkways through parking areas, drive aisles, and loading areas must be of a different appearance than the adjacent paved vehicular areas;*
- *(f) Bikeways must be provided that link building entrances and bike facilities on the site with adjoining public right-of-way and accessways; and*
- *(g) Outdoor Recreation Access Routes must be provided between the development's walkway and bikeway circulation system and parks, bikeways and greenways where a bike or pedestrian path is designated.*

Response: Proposed walkways will be a minimum of 6' in width and constructed of concrete, as shown on Sheets C1.10A through C1.10Y (Attachment 2). All new walkways will meet current ADA standards. Walkways are provided between the proposed new primary building entrances and other on-site buildings, accessways, and sidewalks. New walkways through parking areas will be concrete, which will have a different appearance than the asphalt paving used in parking areas. Bicycle facilities have been provided near the entrances to the proposed office building, near sidewalks and drive aisles with easy access to public right-of-way. See Sheet A0.01 (Attachment 2). No parks, bikeways, or greenways abut this property. Applicable elements of these standards are met.

(2) Accessways.

(a) When Required. Accessways are required to be constructed when a multi-family development is adjacent to any of the following:

(i) Residential property;

(ii) Commercial property;

(iii) Areas intended for public use, such as schools and parks; and

(iv) Collector or arterial streets where transit stops or bike lanes are provided or designated.

Response: The proposal is not for a multifamily development. This standard does not apply.

(3) Drive-up Uses. Drive-up uses must comply with the following:

(a) Must provide a minimum stacking area clear of the public right-of-way and parking lot aisles from the window serving the vehicles as follows:

(i) Banks—each lane must be 100 feet long;

(ii) Restaurants—each lane must be 160 feet long; and

(iii) Other uses—each lane must be between 80 and 160 feet long, as determined by the City.

Response: No drive-up uses are proposed. This standard does not apply.

(4) Safety and Security. Industrial development must provide safety and security features as follows:

(a) Locate windows and provide lighting in a manner that enables tenants, employees, and police to watch over pedestrian, parking, and loading areas;

Response: Windows and lighting are generally provided in accordance with this standard. Where these areas are not visible from building windows, security will be ensured via cameras located throughout the Lam campus. This standard is met.

(b) Locate windows and interior lighting to enable surveillance of interior activity from the public right-of-way;

Response: Windows and lighting are generally provided in accordance with this standard. Where interior activity is not visible from public rights-of-way, security will be ensured via cameras located throughout the Lam campus. Refer to the architectural elevations included in Attachment 2. This standard is met.

(c) Locate, orient, and select exterior lighting to facilitate surveillance of on-site activities from the public right-of-way without shining into public rights-of-way or fish and wildlife habitat areas;

Response: New exterior lighting will be located and oriented in accordance with this standard. See photometric plans, Sheets C2.11A through C2.11Z (Attachment 2). This standard is met.

(d) Provide an identification system which clearly locates buildings and their entries for patrons and emergency services; and

Response: The identification system for the proposed buildings and their entries will be consistent with the existing buildings on the site, which have been designed in accordance with this standard. This standard is met.

(e) Above ground sewer or water pumping stations, pressure reading stations, water reservoirs, electrical substations, and above ground natural gas pumping stations must provide a minimum six foot tall security fence or wall.

Response: No new above ground sewer or water pumping stations, pressure reading stations, water reservoirs, electrical substations, or above ground natural gas pumping stations are proposed. This standard does not apply.

(5) Service, Delivery, and Screening. Commercial development must provide service, delivery, and screening features as follows:

(a) Above grade and on-grade electrical and mechanical equipment such as transformers, heat pumps and air conditioners must be screened with sight obscuring fences, walls or landscaping;

Response: All above grade and roof-mounted mechanical and electrical equipment will be screened with sight obscuring screening. See Sheets A2.10 through A2.31 (Attachment 2). This standard is met.

(b) Outdoor storage must be screened with a sight obscuring fence, wall, berm or dense evergreen landscaping; and

Response: New outdoor storage is limited to waste and recycling enclosures, which will be screened with 8' CMU walls (refer to the architectural plans included in Attachment 2) and a gas yard which will be screened from public view by dense evergreen landscaping, topography, and distance. This standard is met.

(c) Above ground pumping stations, pressure reading stations, water reservoirs; electrical substations, and above ground natural gas pumping stations must be screened with sight-obscuring fences or walls and landscaping.

Response: No new above-ground pumping stations, pressure reading stations, water reservoirs, electrical substations, or above ground natural gas pumping stations are proposed as part of this application. This standard does not apply.

(6) Adjacent to Transit. Commercial development adjacent to transit must comply with the following:

(a) Development on a transit street designated in TDC Chapter 11 (Figure 11-5) must provide either a transit stop pad on-site, or an on-site or public sidewalk connection to a transit stop along the subject property's frontage on the transit street; and

Response: There is a Tualatin Shuttle (Blue Line) stop across the street from the main driveway entrance on SW Leveton Drive, with connecting public sidewalks. There are public sidewalks on all public street frontages. There is no other plan in place for additional transit along the site's frontages. This standard is met.

(b) Development abutting major transit stops as designated in TDC Chapter 11 (Figure 11-5) must:

(i) Locate any portion of a building within 20 feet of the major transit stop or provide a pedestrian plaza at the transit stop;

(ii) Provide a reasonably direct pedestrian connection between the major transit stop and a building entrance on the site;
(iii) Provide a transit passenger landing pad accessible to disabled persons;
(iv) Provide an easement or dedication for a passenger shelter as determined by the City; and
(v) Provide lighting at the major transit stop.

Response: The proposed development does not abut any major transit stops. This standard does not apply.

Chapter 73B: Landscaping Standards

Section 73B.020. - Landscape Area Standards Minimum Areas by Use and Zone

The following are the minimum areas required to be landscaped for each use and zone: (excerpt)

Zone	*Minimum Area Requirement**	*Minimum Area Requirement with dedication for a fish and wildlife habitat**
(5) IN, CN, CO/MR, MC and MP zones—All uses	*25 percent of the total area to be developed*	*22.5 percent of the total area to be developed*

Response: As shown on Sheet L0.01 (Attachment 2), 45% of the area to be developed as part of this project will be landscape area. This standard is met.

Section 73B.040. - Additional Minimum Landscaping Requirements for Commercial Uses

(1) General. In addition to requirements in TDC 73B.020, commercial uses, except those located in the Mixed-Use Commercial (MUC) zone, must comply with the following:
(a) All areas not occupied by buildings, parking spaces, driveways, drive aisles, pedestrian areas, or undisturbed natural areas must be landscaped.
(i) This standard does not apply to areas subject to the Hedges Creek Wetlands Mitigation Agreement.

Response: All areas in the proposed development not occupied by buildings, parking spaces, driveways, drive aisles, pedestrian areas, or undisturbed natural areas will be landscaped. See landscape plans, sheets L0.01 through L1.10Y (Attachment 2). This standard is met.

(b) Minimum 5-foot-wide landscaped area must be located along all building perimeters viewable by the general public from parking lots or the public right-of-way, but the following may be used instead of the 5-foot-wide landscaped area requirement:
(i) Pedestrian amenities such as landscaped plazas and arcades; and
(ii) Areas developed with pavers, bricks, or other surfaces, for exclusive pedestrian use and contain pedestrian amenities, such as benches, tables with umbrellas, children's play areas, shade trees, canopies.
(c) Five-foot wide landscaped area requirement does not apply to:
(i) Loading areas;
(ii) Bicycle parking areas;
(iii) Pedestrian egress/ingress locations; and

(iv) Where the distance along a wall between two vehicle or pedestrian access openings (such as entry doors, garage doors, carports and pedestrian corridors) is less than eight feet.

Response: There are four buildings proposed (office, lab, CUB, and storage). A minimum of 5' of landscaping is provided around the perimeter of the office building except at loading areas, bicycle parking areas, and pedestrian ingress/egress locations. Landscaping around the lab is provided around the lab building in areas that are visible from the public right-of-way, except at loading areas and pedestrian ingress/egress locations. The parking areas to the west of the lab are for employees, not the general public, so perimeter landscaping is not required for areas of the building visible from those lots. No perimeter landscaping is provided around the CUB or storage building, which are also not visible from public rights-of-way or public parking lots. Refer to the landscape plans on sheets L1.10A through L1.10Y (Attachment 2). This standard is met.

(d) Development that abuts an RL or MP Zone must have landscaping approved through Architectural Review and must provide and perpetually maintain dense, evergreen landscaped buffers between allowed uses and the adjacent RL and MP zones.

Response: The proposed development abuts MP-zoned land to the east, west, and south of the subject property. There is RL-zoned property to the north of the Lam property, on the opposite side of SW Tualatin Road, so the RL-zoned property is adjacent to the site, but does not abut it, and the proposed development is on the southern portion of the site. Because there is no RL-zoned property that abuts the development, this standard does not apply. Nevertheless, a landscape plan is included in this AR application, which maintains and extends the existing landscaped buffer and berm between the site and the residential area to the north. See sheets L0.01 through L1.10Y (Attachment 2).

(2) Manufacturing Park (MP)—Wetland Buffer. Wetland buffer areas up to 50 feet in width may be counted toward the required percentage of site landscaping, subject to the following:…

Response: No wetland buffers exist on the site. This standard does not apply.

Section 73B.080. - Minimum Landscaping Standards for All Zones

The following are minimum standards for landscaping for all zones.

(1) Required Landscape Areas	• *Must be designed, constructed, installed, and maintained so that within three years the ground must be covered by living grass or other plant materials.*
	• *The foliage crown of trees cannot be used to meet this requirement.*
	• *A maximum of ten percent of the landscaped area may be covered with un-vegetated areas of bark chips, rock or stone.*
	• *Must be installed in accordance with the provisions of the American National Standards Institute ANSI A300 (Part 1) (Latest Edition).*
	• *Must be controlled by pruning, trimming, or otherwise so that:*
	  ○ *It will not interfere with designated pedestrian or vehicular access; and*
	  ○ *It will not constitute a traffic hazard because of reduced visibility.*

Response:	Landscape areas will be designed, constructed, installed, and maintained so that within three years, the ground will be covered with living grass or other plant material. Less than 10% of the landscaped area will be covered with bark chips, rock, or stone. All landscaping will be installed in accordance with the provisions of ANSI A300. All will be controlled with pruning

	and trimming. No landscaping will interfere with pedestrian or vehicular access and will not create reduced visibility for traffic. These are all shown in landscape plans and discussed in Planting Notes on sheet L0.01. This standard is met.
(2) Fences	• *Landscape plans that include fences must integrate any fencing into the plan to guide wild animals toward animal crossings under, over, or around transportation corridors.*
Response:	No landscape fencing is proposed. This standard does not apply.

(3) Tree Preservation	• *Trees and other plant materials to be retained must be identified on the landscape plan and grading plan.*
	• *During construction:*
	  ○ *Must provide above and below ground protection for existing trees and plant materials identified to remain;*
	  ○ *Trees and plant materials identified for preservation must be protected by chain link or other sturdy fencing placed around the tree at the drip line;*
	  ○ *If it is necessary to fence within the drip line, such fencing must be specified by a qualified arborist;*
	  ○ *Top soil storage and construction material storage must not be located within the drip line of trees designated to be preserved;*
	  ○ *Where site conditions make necessary a grading, building, paving, trenching, boring, digging, or other similar encroachment upon a preserved tree's drip-line area, such grading, paving, trenching, boring, digging, or similar encroachment must only be permitted under the direction of a qualified arborist. Such direction must assure that the health needs of trees within the preserved area can be met; and*
	  ○ *Tree root ends must not remain exposed.*
	• *Landscaping under preserved trees must be compatible with the retention and health of the preserved tree.*
	• *When it is necessary for a preserved tree to be removed in accordance with TDC **33.110** (Tree Removal Permit) the landscaped area surrounding the tree or trees must be maintained and replanted with trees that relate to the present landscape plan, or if there is no landscape plan, then trees that are complementary with existing, landscape materials. Native trees are encouraged.*
	• *100 percent of the area preserved under any tree or group of trees (Except for impervious surface areas) retained in the landscape plan must apply directly to the percentage of landscaping required for a development*

Response:	Trees and plant materials to be retained are identified in Attachment 2, sheets C1.01A through C1.01Y. A Tree Removal and Protection Plan prepared by a certified arborist addressing Section 33.110 is also included (see Attachment 11). During construction, all preservation standards will be followed. Landscaping under preserved trees will be compatible with the preserved tree. Tree removal will only be necessary for the proposed building, parking areas, and the expanded gas yard. All landscaping requirements will be

	followed for these areas in accordance with the TDC landscaping standards. See sheets L0.01 through L1.10Y. This standard is met.
(4) Grading	• *After completion of site grading, top-soil is to be restored to exposed cut and fill areas to provide a suitable base for seeding and planting.* • *All planting areas must be graded to provide positive drainage.* • *Soil, water, plant materials, mulch, or other materials must not be allowed to wash across roadways or walkways.* • *Impervious surface drainage must be directed away from pedestrian walkways, dwelling units, buildings, outdoor private and shared areas and landscape areas except where the landscape area is a water quality facility.*
Response:	After grading, topsoil will be restored to provide a suitable base for seeding and planting. All planting areas will be graded to provide positive drainage. Soil, water, plant material, and mulch will not be allowed to wash across roadways and walkways. Impervious surface drainage will be directed away from walkways, buildings, outdoor shared areas, and landscape areas. See proposed grading plan, sheet SCI-1000 (Attachment 2). This standard is met.
(5) Irrigation	• *Landscaped areas must be irrigated with an automatic underground or drip irrigation system.*
Response:	Landscaped areas will be irrigated with an automatic underground or drip irrigation system, as shown in landscape notes on sheet L0.01. This standard is met.
(6) Re-vegetation in Un-landscaped Areas	• *Vegetation must be replanted in all areas where vegetation has been removed or damaged in areas not affected by the landscaping requirements and that are not to be occupied by structures or other improvements.* • *Plant materials must be watered at intervals sufficient to ensure survival and growth for a minimum of two growing seasons.* • *The use of native plant materials is encouraged to reduce irrigation and maintenance demands.* • *Disturbed soils should be amended to an original or higher level of porosity to regain infiltration and stormwater storage capacity.*
Response:	As shown in landscape notes on sheet L0.01, vegetation will be replanted in areas where it was removed or damaged. Plant materials will be watered to ensure survival and growth for at least two growing seasons. Disturbed soils will be amended to the original or higher level of porosity to regain infiltration and stormwater storage capacity. This standard is met.

Section 73B.090. - Minimum Standards Trees and Plants

The following minimum standards apply to the types of landscaping required to be installed for all zones.

(1) Deciduous Shade Trees	• *One and on-half inch caliper measured six inches above ground;* • *Balled and burlapped; bare root trees will be acceptable to plant during their dormant season;* • *Reach a mature height of 30 feet or more;* • *Cast moderate to dense shade in summer;* • *Live over 60 years;* • *Do well in urban environments, tolerant of pollution and heat, and resistant to drought;* • *Require little maintenance and mechanically strong;* • *Insect- and disease-resistant;* • *Require little pruning; and* • *Barren of fruit production.*
(2) Deciduous Ornamental Trees	• *One and on-half inch caliper measured six inches above ground;* • *balled and burlapped; bare root trees will be acceptable to plant during their dormant season; and* • *Healthy, disease-free, damage-free, well-branched stock, characteristic of the species*
(3) Coniferous Trees	• *Five feet in height above ground;* • *Balled and burlapped; bare root trees will be acceptable to plant during their dormant season; and* • *Healthy, disease-free, damage-free, well-branched stock, characteristic of the species.*
(4) Evergreen and Deciduous Shrubs	• *One to five gallon size;* • *Healthy, disease-free, damage-free, well-branched stock, characteristic of the species; and* • *Side of shrub with best foliage must be oriented to public view.*
(5) Groundcovers	• *Fully rooted;* • *Well branched or leafed;* • *Healthy, disease-free, damage-free, well-branched stock, characteristic of the species; and* • *English ivy (Hedera helix) is prohibited.*
(6) Lawns	• *Consist of grasses, including sod, or seeds of acceptable mix within the local landscape industry;* • *100 percent coverage and weed free; and* • *Healthy, disease-free, damage-free, characteristic of the species.*

Response: All proposed trees, groundcover, and lawn meet the standards of the trees and plants table above, as shown in the notes on sheet L0.01 and the planting schedule on sheet L0.02. This standard is met.

Chapter 73C: Parking Standards

Section 73C.010. - Off-Street Parking and Loading Applicability and General Requirements

(1) Applicability. Off-street parking and loading is required to be provided by the owner and/or developer, in all zones, whenever the following occurs:

(a) Establishment of a new structure or use;

(b) Change in use; or

(c) Change in use of an existing structure.

Response: The proposal includes the net addition of approximately 544 parking spaces in conjunction with the new buildings. The standards for parking will be met as shown in the following sections.

(2) General Requirements. Off-street parking spaces, off-street vanpool and carpool parking spaces, off-street bicycle parking, and off-street loading berths must be as provided as set forth in TDC 73C.100, unless greater requirements are otherwise established by the conditional use permit or the Architectural Review process.

(a) The following apply to property and/or use with respect to the provisions of TDC 73C.100:

(i) The requirements apply to both the existing structure and use, and enlarging a structure or use;

(ii) The floor area is measured by gross floor area of the building primary to the function of the particular use of the property other than space devoted to off-street parking or loading;

(iii) Where employees are specified, the term applies to all persons, including proprietors, working on the premises during the peak shift;

(iv) Calculations to determine the number of required parking spaces and loading berths must be rounded to the nearest whole number;

(v) If the use of a property changes, thereby increasing off-street parking or loading requirements, the increased parking/loading area must be provided prior to commencement of the new use;

(vi) Parking and loading requirements for structures not specifically listed herein must be determined by the City Manager, based upon requirements of comparable uses listed;

(vii) When several uses occupy a single structure, the total requirements for off-street parking may be the sum of the requirements of the several uses computed separately or be computed in accordance with TDC 73.370(1)(m), Joint Use Parking;

Response: The parking requirements for the site were most recently confirmed by IMP 22-0001. The entire campus is to be parked to meet the Manufacturing minimum ratio of 1.6 spaces per 1,000 SF of gross floor area. The proposed development would increase the total gross floor area of the Lam campus to 807,730 SF, which would require at least 1,293 off-street parking spaces. Of note, the site plan depicts 127 spaces which were previously approved under AR 22-0006 but have not yet been constructed. Therefore, these spaces are included with this application and will be constructed with Phase 1 of this proposal. The net increase in total Lam campus parking spaces associated with this proposal is 544. See sheets C1.10 through C1.10Y.

A summary of existing and proposed building area and number of parking spaces is provided below.

	Existing	Proposed	Total
Gross Floor Area	566,500 SF	241,230 SF	807,730 SF
Parking Spaces	1,754	544 (net)	2,298 spaces

As shown in the table, the proposed amount of parking exceeds the minimum parking requirement of 1,289 spaces. No maximum applies. Additional standards of this chapter are addressed below.

(viii) Off-street parking spaces for dwellings must be located on the same lot with the dwelling. Other required parking spaces may be located on a separate parcel, provided the parcel is not greater than five hundred (500) feet from the entrance to the building to be served, measured along the shortest pedestrian route to the building. The applicant must prove that the parking located on another parcel is functionally located and that there is safe vehicular and pedestrian access to and from the site. The parcel upon which parking facilities are located must be in the same ownership as the structure;

Response: The proposal does not include dwelling units. This standard does not apply.

(ix) Required parking spaces must be available for the parking of operable passenger automobiles of residents, customers, patrons and employees and must not be used for storage of vehicles or materials or for the parking of trucks used in conducting the business;

Response: Required parking spaces will not be used for the storage of vehicles or materials, or for the parking of trucks used in conducting the business. This standard is met.

(x) Institution of on-street parking, where none is previously provided, must not be done solely for the purpose of relieving crowded parking lots in commercial or industrial zones;

Response: No on-street parking is proposed. This standard does not apply.

(xi) Required vanpool and carpool parking must meet the 9-foot parking stall standards in Figure 73-1 and be identified with appropriate signage;

Response: All vanpool and carpool parking spaces will be 9' in width. This standard is met.

(xii) Where uses are mixed in a single building, parking must be a blend of the ratio required less ten percent for the minimum number of spaces. The maximum number of spaces must be ten percent less than the total permitted maximum for each use; and

Response: No mixed-use buildings are proposed with this application. This standard does not apply.

(xiii) If the applicant demonstrates that too many or too few parking spaces are required, applicant may seek a variance from the minimum or maximum by providing evidence that the particular use needs more or less than the amount specified in this Code.

Response: No variance is requested as part of the proposed development. This standard does not apply.

Section 73C.020. - Parking Lot Design Standards

A parking lot, whether an accessory or principal use, intended for the parking of automobiles or trucks, must comply with the following:

(1) Off-street parking lot design must comply with the dimensional standards set forth in Figure 73-1;
(a) Exception: Parking structures and underground parking where stall length and width requirements for a standard size stall must be reduced by one-half feet and vehicular access at the entrance if gated must be a minimum of 18 feet in width.

Response: This standard applies and will be met as shown in the following sections of Chapter 73C. The exception in subparagraph (a) is not applicable as no parking structures or underground parking are proposed.

(2) Parking lots and parking areas must be constructed of asphalt, concrete, pervious concrete, pavers, or grasscrete. Gravel is not an acceptable material;

Response: All proposed parking areas will be constructed of asphalt. This standard is met.

(3) Parking stalls must be constructed of asphalt, concrete, pervious concrete, pavers, or grasscrete. Gravel or woody material are not an acceptable materials. Pavers, pervious concrete, or grasscrete are encouraged for parking stalls in or abutting the Natural Resource Protection Overlay District, Other Natural Areas, or in a Clean Water Services Vegetated Corridor;

Response: Parking stalls will be constructed of asphalt. There is no Natural Resource Protection Overlay, Natural Area, or CWS Vegetated Corridor present on the site. This standard is met.

(4) Parking lots must be maintained adequately for all-weather use and drained to avoid water flow across sidewalks;

Response: New stormwater basins and swales will be located near the new parking areas. The proposed drainage plan avoids water flow across sidewalks. This standard is met.

(5) Parking bumpers or wheel stops or curbing must be provided to prevent cars from encroaching on adjacent landscaped areas, or adjacent pedestrian walkways.

Response: Vertical curbs are proposed along all landscaped and pedestrian areas adjacent to the proposed parking. This standard is met.

(6) Disability parking spaces and accessibility must meet ADA standards applicable at time of construction or alteration;

Response: Final plans submitted for building permit review will demonstrate compliance with applicable ADA standards. This standard is met.

(7) Parking stalls for sub-compact vehicles must not exceed 35 percent of the total parking stalls required by TDC 73C.100. Stalls in excess of the number required by TDC 73C.100 can be sub-compact stalls;

Response: The proposal does not include sub-compact parking stalls. This standard does not apply.

(8) Groups of more than four parking spaces must be so located and served by driveways that their use will require no backing movements or other maneuvering within a street right-of-way other than an alley;

Response: None of the proposed parking will require maneuvering within a street right-of-way (see sheet C1.10). This standard is met.

(9) Drives to off-street parking areas must be designed and constructed to facilitate the flow of traffic, provide maximum safety of traffic access and egress, and maximum safety of pedestrians and vehicular traffic on the site;

Response: Proposed drives have been designed by certified civil engineers in coordination with the City. This standard is met.

(10) On-site drive aisles without parking spaces, which provide access to parking areas with regular spaces or with a mix of regular and sub-compact spaces, must have a minimum width of 22 feet for two-way traffic and 12 feet for one-way traffic; When 90 degree stalls are located on both sides of a drive aisle, a minimum of 24 feet of aisle is required. On-site drive aisles without parking spaces, which provide access to parking areas with only sub-compact spaces, must have a minimum width of 20 feet for two-way traffic and 12 feet for one-way traffic;

Response: All proposed drive aisles are a minimum of 24' wide. This standard is met.

(11) Artificial lighting, must be deflected to not shine or create direct glare on adjacent properties, street right-of-way, a Natural Resource Protection Overlay District, Other Natural Areas, or a Clean Water Services Vegetated Corridor;

Response: As shown on the photometric plans (sheets C2.11A through C2.11Y), the proposed parking lot lighting will not shine or create direct glare on adjacent properties, street rights of way, a Natural Resource Protection Overlay District, Other Natural Areas, or a Clean Water Services Vegetated Corridor. This standard is met.

(12) Parking lot landscaping must be provided pursuant to the requirements of TDC 73C.200; and

Response: See section 73C.200 responses. This standard is met.

(13) Except for parking to serve residential uses, parking areas adjacent to or within residential zones or adjacent to residential uses must be designed to minimize disturbance of residents.

Response: The SW Tualatin Road frontage is across the street from a residential area. The existing landscaped berm along this frontage will be maintained and extended to the west to buffer the proposed expanded parking areas, which will minimize disturbance to residents. This standard is met.

Section 73C.030. - Shared Parking Requirements

Parking facilities may be shared by users on adjacent parcels if the following standards are met:

…

Response: The site is part of an IMP which includes four lots, all of which are under the same ownership and are used as an industrial campus for Lam Research. Existing and proposed parking facilities meet all standards, and shared parking facilities are not needed. This standard does not apply.

Section 73C.040. - Joint Use Parking Requirements

Response: As mentioned above, the site is part of an IMP which includes four lots under the same ownership in use as an industrial campus for Lam Research. This standard does not apply.

Section 73C.050. - Bicycle Parking Requirements and Standards

(1) Requirements. Bicycle parking facilities must include:

(a) Long-term parking that consists of covered, secure stationary racks, lockable enclosures, or rooms in which the bicycle is stored;

(i) Long-term bicycle parking facilities may be provided inside a building in suitable secure and accessible locations.

(b) Short-term parking provided by secure stationary racks (covered or not covered), which accommodate a bicyclist's lock securing the frame and both wheels.

Response: The Lam Research campus currently has64 short-term and 65 long-term bicycle parking spaces. The proposed TUX development will increase the total floor area of buildings on the campus to approximately 807,730 SF. This proposal includes 18 new short-term spaces (9 staple racks) and 35 long-term spaces (7 lockers and 2 covered shelters), which will bring the site to a total of 182 spaces, including 100 long-term spaces. This exceeds the minimum requirements. See sheets C1.10, L1.10R, and L1.10X for location and details of the proposed short-term spaces. This standard is met.

(2) Standards. Bicycle parking must comply with the following:

(a) Each bicycle parking space must be at least six feet long and two feet wide, with overhead clearance in covered areas must be at least seven feet;

(b) A five-foot-wide bicycle maneuvering area must be provided beside or between each row of bicycle parking. It must be constructed of concrete, asphalt, or a pervious hard surface such as pavers or grasscrete, and be maintained;

(c) Access to bicycle parking must be provided by an area at least three feet in width. It must be constructed of concrete, asphalt, or a pervious hard surface such as pavers or grasscrete, and be maintained;

(d) Bicycle parking areas and facilities must be identified with appropriate signing as specified in the Manual on Uniform Traffic Control Devices (MUTCD) (latest edition). At a minimum, bicycle parking signs must be located at the main entrance and at the location of the bicycle parking facilities;

(e) Bicycle parking must be located in convenient, secure, and well-lighted locations approved through the Architectural Review process. Lighting, which may be provided, must be deflected to not shine or create glare into street rights-of-way or fish and wildlife habitat areas;

(f) Required bicycle parking spaces must be provided at no cost to the bicyclist, or with only a nominal charge for key deposits, etc. This does not preclude the operation of private for-profit bicycle parking businesses;

(g) Bicycle parking may be provided within the public right-of-way in the Core Area Parking District subject to approval of the City Engineer and provided it meets the other requirements for bicycle parking; and

(h) The City Manager or the Architectural Review Board may approve a form of bicycle parking not specified in these provisions but that meets the needs of long-term and/or short-term parking pursuant to Architectural Review.

Response: All bicycle spaces will be 6' long and 2' wide with 5' maneuvering space. All access will be at least 3' in width and located on hard surface. The bike spaces will be conveniently located near entrances and sidewalks. Signs will be located at the main entrances and at the location of the bike parking itself. This standard is met.

Section 73C.100. - Off-Street Parking Minimum/Maximum Requirements

(1) The following are the minimum and maximum requirements for off-street motor vehicle parking in the City, except these standards do not apply in the Core Area Parking District. The Core Area Parking District standards are in TDC 73C.110.

Response: As described above in the response to 73C.010, the parking requirements for the site were confirmed most recently by IMP 22-0001. Per that IMP, the entire campus was to be parked at the Manufacturing ratio of 1.6 spaces per 1,000 SF of gross floor area. Based on that approach, the minimum required parking associated with the new buildings (total floor area of 241,230 SF) is 383 spaces.

Bicycle parking at the Manufacturing ratio requires 0.10 spaces per 1,000 SF of floor area with 30% being long-term spaces. The proposed TUX development will increase the total floor area of buildings on the campus to approximately 807,730 SF. Based on the minimum requirements for bicycle parking, this would require the campus to have a total of 81 spaces, with at least 25 being long-term spaces. The proposal includes the addition of 18 new short-term spaces (9 staple racks) and 35 long-term spaces (7 lockers and 2 covered shelters), which will bring the site to a total of 182 spaces, including 100 long-term spaces. This exceeds the minimum requirements. See sheets A0.01, L1.10R, and L1.10X for location and details of the proposed bicycle parking. The proposed provision of vehicle and bicycle parking is therefore consistent with the approved IMP.

(2) In addition to the general parking requirements in subsection (1), the following are the minimum number of off-street vanpool and carpool parking for commercial, institutional, and industrial uses.

Number of Required Parking Spaces	*Number of Vanpool or Carpool Spaces*
0 to 10	*1*
10 to 25	*2*
26 and greater	*1 for each 25 spaces*

Response: Based on the minimum parking standard of 1.6 spaces per 1,000 SF of gross floor area, the proposed buildings (241,230 SF total) require 386 parking spaces. As such, 16 vanpool/carpool spaces are required to serve the new buildings. Final plans will include at least this number of vanpool/carpool spaces. This standard is met.

Section 73C.120. - Off-Street Loading Facilities Minimum Requirements

(1) The minimum number of off-street loading berths for commercial, industrial, and institutional uses is as follows:

Use	*Square Feet of Floor Area*	*Number of Berths*	*Dimensions of Berth*	*Unobstructed Clearance of Berth*
Commercial	*Less than 5,000*	*0*	*0*	*0*
	5,000—25,000	*1*	*12 feet × 25 feet*	*14 feet*
	25,000—60,000	*2*	*12 feet × 35 feet*	*14 feet*
	60,000 and over	*3*	*12 feet × 35 feet*	*14 feet*

Industrial	*Less than 5,000*	*0*	*0*	*0*
	5,000—25,000	*1*	*12 feet × 60 feet*	*14 feet*
	25,000—60,000	*2*	*12 feet × 60 feet*	*14 feet*
	60,000 and over	*3*	*12 feet × 60 feet*	*14 feet*

Response: The existing site development includes numerous existing buildings and loading dock facilities, such that the property already complies with the minimum three loading berth requirement for industrial facilities exceeding 60,000 SF; however, additionally, the proposed new buildings will add 241,230 SF and will have four new loading berths (one at the office building, two at the CUB, and one at the lab building). Dimensions for each berth will be at least 12' x 60' with a minimum 14' of vertical clearance. This standard is met.

(2) Loading berths must not use the public right-of-way as part of the required off-street loading area.
Response: Proposed loading berths do not use public right of way. This standard is met.

(3) Required loading areas must be screened from public view, public streets, and adjacent properties by means of sight-obscuring landscaping, walls or other means, as approved through the Architectural Review process.
Response: Proposed new loading areas will be screened from public view. Refer to sheet A0.01, sheets L1.10A through L1.10Y, and the architectural elevations included in Attachment 2. This standard is met.

(4) Required loading facilities must be installed prior to final building inspection and must be permanently maintained as a condition of use.
Response: Proposed loading facilities will be installed prior to final building inspection and will be permanently maintained. This standard is met.

(5) The off-street loading facilities must in all cases be on the same lot or parcel as the structure they are intended to serve. In no case must the required off-street loading spaces be part of the area used to satisfy the off-street parking requirements.
Response: All proposed and existing off-street loading facilities associated with the proposed new buildings are on the same lot as the structure they will serve and are not part of the area used to satisfy off-street parking. See sheet A0.01 for loading dock locations. This standard is met.

(6) A driveway designed for continuous forward flow of passenger vehicles for the purpose of loading and unloading children must be located on the site of a school or child day care center having a capacity greater than 25 students.
Response: The site does not have or propose a school or childcare center. This standard does not apply.

Section 73C.130. - Parking Lot Driveway and Walkway Minimum Requirements

Parking lot driveways and walkways must comply with the following requirements:

(2) Commercial Uses. Ingress and egress for commercial and institutional uses must not be less than the following:

Required Parking Spaces	*Minimum Number Required*	*Minimum Pavement Width*	*Minimum Pavement Walkways, etc.*
1-99	*1*	*32 feet for first 50 feet from ROW, 24 feet thereafter*	*Curbs required; walkway 1 side only*
100-249	*2*	*32 feet for first 50 feet from ROW, 24 feet thereafter*	*Curbs required; walkway 1 side only*
Over 250	*As required by City Manager*	*As required by City Manager*	*As required by City Manager*

(3) Industrial Use. Ingress and egress for industrial uses must not be less than the following:

Required Parking Spaces	*Minimum Number Required*	*Minimum Pavement Width*	*Minimum Pavement Walkways, etc.*
1-250	*1*	*36 feet for first 50' from ROW, 24 feet thereafter*	*No curbs or walkway required*
Over 250	*As required by City Manager*	*As required by City Manager*	*As required by City Manager*

Response: The proposal is for an office building, lab building, and utilities building, accessory to a permitted manufacturing use on an industrial site in the MP District, which will add a combined approximately 241,230 SF of floor area. The associated parking requirement exceeds 250 spaces. Driveways have been designed in coordination with City Engineering staff and have been sized to accommodate anticipated traffic. The proposed new truck-only driveway on SW Leveton Drive is 36' wide for the first 50' from ROW and more than 24' wide thereafter. See sheet C1.10V (Attachment 2). This standard is met.

(4) Institutional Uses. Ingress and egress must not be less than 24 feet. In all other cases, ingress and egress for institutional uses must not be less than the following: …

Response: No institutional uses are existing or proposed on the subject site. This standard does not apply.

(5) One-way Ingress or Egress. When approved through the Architectural Review process, one-way ingress or egress may be used to satisfy the requirements. However, the hard surfaced pavement of one-way drives must not be less than 16 feet for multi-family residential developments (as defined in TDC 31.060), commercial, or industrial uses.

Response: A one-way ingress or egress is not proposed. This standard does not apply.

(6) Maximum Driveway Widths and Other Requirements.

(a) Unless otherwise provided in this chapter, maximum driveway widths for Commercial, Industrial, and Institutional uses must not exceed 40 feet.

Response: No proposed driveways exceed 40' in width. This standard is met.

(b) Driveways must not be constructed within five feet of an adjacent property line, unless the two adjacent property owners elect to provide joint access to their respective properties, as provided by TDC73C.040.

Response: All driveways will be more than 5' from an adjacent property line, except the existing access shared with the neighboring JAE property at SW Tualatin Road which straddles the existing lot line. This standard is met for the proposed new driveway.

(c) The provisions of subsection (b) do not apply to townhouses, duplexes, triplexes, quadplexes, and cottage clusters which are allowed to construct driveways within five feet of adjacent property lines.

Response: No residential uses are proposed. This standard does not apply.

(d) There must be a minimum distance of 40 feet between any two adjacent driveways on a single property unless a lesser distance is approved by the City Manager.

Response: All driveways are separated by 40' or more. This standard is met.

(e) Must comply with the distance requirements for access as provided in TDC 75.

Response: The proposal complies with distance requirements of TDC 75. See Section 75. This standard is met.

(f) Must comply with vision clearance requirements in TDC 75.

Response: The proposal complies with the requirements of TDC 75. See Section 75. This standard is met.

Parking Lot Landscaping

Section 73C.220. - Commercial Parking Lot Landscaping Requirements

Response: The IMP under review concurrently with this AR proposes some site-specific parking lot landscaping requirements, based on the current TDC standards listed below. The intent is for the IMP to provide certainty that new parking areas proposed in this and future ARs can use the current standards.

Commercial uses must comply with the following landscaping requirements for parking lots in all zones:

(1) General. Locate landscaping or approved substitute materials in all areas not necessary for vehicular parking and maneuvering.

Response: As shown on Landscape plans, sheets L0.01 thorough L1.10Y (Attachment 2), landscaping or approved materials will be located in all areas not necessary for vehicular parking and maneuvering. This standard is met.

(2) Clear Zone. Clear zone required for the driver at ends of on-site drive aisles and at driveway entrances, vertically between a maximum of 30 inches and a minimum of eight feet as measured from the ground level.

(a) Exception: does not apply to parking structures and underground parking.

Response: Clear zones are present at the ends of all on-site drive aisles and driveway entrances between 30" and 8' from the ground level. See sheets L0.01 thorough L1.10Y (Attachment 2). This standard is met.

(3) Perimeter. Minimum five feet in width in all off-street parking and vehicular circulation areas, including loading areas and must comply with the following.

(a) Deciduous trees located not more than 30 feet apart on average as measured on center;

(b) Shrubs or ground cover, planted so as to achieve 90 percent coverage within three years;

(c) Plantings which reach a mature height of 30 inches in three years which provide screening of vehicular headlights year round;

(d) Native trees and shrubs are encouraged; and

(e) Exception: Not required where off-street parking areas on separate lots are adjacent to one another and connected by vehicular access.

Response: More than 5' of perimeter landscaping is proposed around all parking, circulation, and loading areas, as shown on sheets L1.10A through L1.10Y (Attachment 2). Deciduous trees are located less than 30' apart on average, shrubs and ground cover will achieve 90% coverage within three years, and plantings with 30" mature height within three years will provide screening of vehicular light year around. See landscape plans. This standard is met.

(4) Landscape Island. Minimum 25 square feet per parking stall must be improved with landscape island areas and must comply with the following.

(a) May be lower than the surrounding parking surface to allow them to receive stormwater run-off and function as water quality facilities as well as parking lot landscaping;

Response: No below-grade islands are proposed. This option is not used.

(b) Must be protected from vehicles by curbs, but the curbs may have spaces to allow drainage into the islands;

Response: All landscape islands will have curbs, as shown on sheets L1.10A through L1.10Y (Attachment 2). This standard is met.

(c) Islands must be utilized at aisle ends to protect parked vehicles from moving vehicles and emphasize vehicular circulation patterns;

Response: Landscape islands are proposed at every aisle end. This standard is met.

(d) Landscape separation required for every eight continuous spaces in a row.

Response: The proposed new parking areas have landscape islands at least every 8 continuous spaces. See Landscape plans, sheets L1.10A through L1.10Y (Attachment 2). This standard is met.

(e) Must be planted with one deciduous shade trees for every four parking spaces; Required trees must be evenly dispersed throughout the parking lot;

Response: Deciduous shade trees will be provided in accordance with this standard in proposed new parking areas. See Landscape plans, sheets L1.10A through L1.10Y (Attachment 2). This standard is met.

(f) Must be planted with groundcover or shrubs;

Response: All landscape islands are planted with groundcover and shrubs. See sheets L1.10A through L1.10Y (Attachment 2). This standard is met.

(g) Native plant materials are encouraged;

Response: The proposed landscape plans incorporate native plant materials throughout. See L1.10A through L1.10Y (Attachment 2). This standard is met.

(h) Landscape island areas with trees must be a minimum of five feet in width (from inside of curb to curb);

(i) Required plant material in landscape islands must achieve 90 percent coverage within three years; and

(j) Exceptions:

(i) Landscape island requirements do not apply to Duplexes and Townhouses; and

(ii) Landscape square footage requirements do not apply to parking structures and underground parking.

Response: As shown in the civil and landscape plans, Attachment 2, landscape islands will be at least 5' wide. This standard is met.

(5) Driveway Access. For lots with 12 or more parking spaces, site access from the public street must be defined by:

(a) Landscape area at least five feet in width on each side of the site access;

(b) Landscape area must extend 25 feet from the right-of-way line; and

(c) Exceptions: Does not apply to parking structures and underground parking which must be determined through the Architectural Review process.

Response: All driveway accesses have more than 5' of landscape area on each side which extends more than 25' from the right-of-way line, as shown on sheets L1.10A through L1.10Y (Attachment 2). This standard is met.

Chapter 73D: Waste and Recyclables Management Standards

Section 73D.020. - Design Methods

An applicant required to provide mixed solid waste and source separated recyclables storage areas must comply with one of following methods:

(1) The minimum standards method in TDSC 73D.030;

(2) The waste assessment method in TDC 73D.040;

(3) The comprehensive recycling plan method in TDC 73D.050; or

(4) The franchised hauler review method in TDC 73D.060.

Response: The proposed new building will comply with the Waste Assessment Method of 73D.040 as discussed below. This standard is met.

Section 73D.040. – Waste Assessment Method

This method tailors the storage area size to a waste assessment and management program for the specific user of a new or expanded building. It is most appropriate when the specific use of a building is known and the type and volume of mixed solid waste to be generated can be estimated.

(1) A waste assessment form must be obtained from the City Manager. The form must be used to estimate the volumes of both mixed solid waste and source separated recyclables generated.

(2) Techniques such as a compactor or cardboard baler may be implemented to minimize the square footage of the storage area.

(3) The plans must identify the size and location of interior, or exterior storage area(s) or both, specialized equipment to be used, and collection schedule required to accommodate the volumes of waste projected in the waste assessment.

(4) The application must demonstrate that the mixed solid waste and source separated recyclable volumes expected to be generated can be stored in less space than required by the Minimum Standards Method. If the application does not demonstrate that the waste assessment method requires less space, the minimum standards method will be required.

Response: The Waste Assessment Method is appropriate because the proposed development is an expansion of an existing industrial campus for a specific user and specific building uses. New waste enclosures are provided at the southeast corner of the lab and southeast corner of the office building. The waste enclosures have been sized and designed based on the volume and type of waste produced at each building. A waste assessment form was not available as of the date of this narrative. The applicant will coordinate with staff to obtain the form and demonstrate the proposed amount of waste storage is adequate. This is supported by the attached Service Provider Letter from Republic Services (see Attachment 6). This standard is met.

Section 73D.070. - Location, Design and Access Standards

The following location, design, and access standards are applicable to all storage areas:

(1) Location Standards.

(a) The storage area for source separated recyclables may be collocated with the storage area for mixed solid waste.

Response: Both of the proposed exterior waste storage areas will include space for recyclables and mixed solid waste. This standard is met.

(b) Storage area space requirements can be satisfied with a single location or multiple locations, and can combine both interior and exterior locations.

Response: The proposal includes two exterior waste storage areas for waste and recyclables. One is located at Building T and one is located at Building X. This standard is met.

(c) Exterior storage areas must:

(i) Be located in central and visible locations on the site to enhance security for users;

(ii) Be located in a parking area; and

(iii) Not be located within a required front yard setback or in a yard adjacent to a public or private street.

Response: The proposed exterior waste storage areas are located according to these requirements and will be visible by Lam security cameras. See site plans included in Attachment 2.

(2) Design Standards.

(a) The dimensions of the storage area must accommodate containers consistent with current methods of local collection at time of construction or alteration.

Response: The storage areas have been designed to accommodate the appropriate containers. The attached Service Provider Letter from Republic Services (Attachment 6) demonstrates the proposal meets the requirements of the local hauler. This standard is met.

(b) Indoor and outdoor storage areas must comply with Oregon Building and Fire Code requirements.

Response: The storage areas have been designed to comply with these requirements, which can be verified during building permit review. This standard is met.

(c) Exterior storage areas must be enclosed by a sight obscuring fence or wall at least six feet in height.

Response: Storage areas will be enclosed by concrete or CMU walls that are 8' in height. Refer to Sheets A4.11 and A4.31 (Attachment 2). This standard is met.

(d) Evergreen plants must be placed around the enclosure walls, excluding the gate or entrance openings for common wall, commercial, and institutional developments.

Response: The proposal is an industrial development. This standard does not apply.

(e) Gate openings for haulers must be a minimum of ten feet wide and must be capable of being secured in a closed and open position.

Response: Gate openings are at least 10' wide and will be capable of being secured in a closed and open position. This standard is met.

(f) Horizontal clearance must be a minimum of ten feet and a vertical clearance of eight feet is required if the storage area is covered.

Response: Storage areas have been designed with the appropriate horizontal and vertical clearances. Refer to the architectural elevations included in Attachment 2. This standard is met.

(g) A separate pedestrian access must also be provided in common wall, commercial, and institutional developments.

Response: The proposal is an industrial development. This standard does not apply.

(h) Exterior storage areas must have either a concrete or asphalt floor surface.

Response: Storage area floor surfaces will be concrete or asphalt. This standard is met.

(i) Storage areas and containers must be clearly labeled to indicate the type of material accepted.

Response: The storage areas and containers will be clearly labeled, consistent with the labeling present on existing storage areas within the campus. This standard is met.

(3) Access Standards.

(a) Storage areas must be accessible to users at convenient times of the day, and to hauler personnel on the day and approximate time they are scheduled to provide hauler service.

Response: The storage areas will be accessible to Lam employees and hauler personnel at convenient and appropriate times of day. This standard is met.

(b) Storage areas must be designed to be easily accessible to hauler trucks and equipment, considering paving, grade, gate clearance and vehicle access.

Response: The storage areas have been designed to be easily accessible by the hauler's trucks and equipment. A Service Provider Letter will be submitted to the City to confirm the proposal meets the requirements of the local hauler. This standard is met.

(c) Storage areas must be accessible to hauler trucks without requiring backing out of a driveway onto a public street. If only a single access point is available to the storage area, adequate turning radius must be provided to allow hauler trucks to safely exit the site in a forward motion.

Response: Neither of the proposed storage areas will require backing out of a driveway onto a public street. Adequate area is provided to allow the hauler's trucks to maneuver within the site and safely exit the site in a forward motion. This standard is met.

(d) Storage areas must located [SIC] *so that pedestrian and vehicular traffic movement are not obstructed on site or on public streets adjacent to the site.*

Response: The proposed storage area locations are not in areas that would obstruct pedestrian or vehicular circulation on site or on adjacent public streets. This standard is met.

(e) The following is an exception to the access standard:
(i) Access may be limited for security reasons.

Response: Applicant acknowledges access to waste storage areas may be limited for security reasons.

Chapter 74: Public Improvement Requirements

Section 74.110. - Phasing of Improvements.

The applicant may build the development in phases. If the development is to be phased the applicant must submit a phasing plan to the City Manager for approval with the development application. The timing and extent or scope of public improvements and the conditions of development must be determined by the City Council on subdivision applications and by the City Manager on other development applications.

Response: Construction of the proposed site improvements will be separated into up to three phases, as described and illustrated in the introduction section of this report. Construction of any required public improvements will occur in conjunction with Phase I.

Section 74.120. - Public Improvements.

(1) Except as specially provided, all public improvements must be installed at the expense of the applicant. All public improvements installed by the applicant must be constructed and guaranteed as to workmanship and material as required by the Public Works Construction Code prior to acceptance by the City. Work must not be undertaken on any public improvement until after the construction plans have been approved by the City Manager and a Public Works Permit issued and the required fees paid.

(2) In accordance with the Tualatin Basin Program for fish and wildlife habitat the City intends to minimize or eliminate the negative impacts of public streets by modifying right-of-way widths and street improvements when appropriate. The City Manager is authorized to modify right-of-way widths and street improvements to address the negative impacts on fish and wildlife habitat.

Response: Any required public improvements will be installed at the expense of the applicant and constructed according to the Public Works Construction Code. Plans will be approved prior to construction. Any authorized modifications to street improvements will be followed. This standard is met.

Section 74.130. - Private Improvements.

All private improvements must be installed at the expense of the applicant. The property owner must retain maintenance responsibilities over all private improvements.

Response: All private improvements will be maintained by property owner. This standard is met.

Section 74.140. - Construction Timing.

(1) All the public improvements required under this chapter must be completed and accepted by the City prior to the issuance of a Certificate of Occupancy; or, for subdivision and partition applications, in accordance with the requirements of the Subdivision regulations.

(2) All private improvements required under this Chapter must be approved by the City prior to the issuance of a Certificate of Occupancy; or for subdivision and partition applications, in accordance with the requirements of the Subdivision regulations.

Response: All improvements, including any required public improvements, will be completed and approved before issuance of a Certificate of Occupancy. This standard is met.

Right-of-Way

Section 74.210. - Minimum Street Right-of-Way Widths.

Response: The street rights-of-way surrounding the site meet the applicable minimum width requirements. No additional dedications are required or proposed. This standard is met.

Section 74.220. - Parcels Excluded from Development.

On subdivision development applications …

Response: The proposal is not for a subdivision. This standard does not apply.

Easements and Tracts

Section 74.310. - Greenway, Natural Area, Bike, and Pedestrian Path Dedications and Easements.

Response: No greenway, natural area, bike, or pedestrian path dedications or easements are proposed. This standard does not apply.

Section 74.320. - Slope Easements.

Response: No new slope easements are required or proposed. This standard does not apply.

Section 74.330. - Utility Easements.

Response: No new easements for public utilities are required or proposed. This standard does not apply.

Section 74.340. - Watercourse Easements.

Response: No watercourse easements are proposed or required. This standard does not apply.

Section 74.350. - Maintenance Easement or Lots.

Response: Maintenance easements will be provided if required. This standard is met.

Section 74.410. - Future Street Extensions.

Response: No future street extensions are proposed or required. This standard does not apply.

Section 74.420. - Street Improvements.

When an applicant proposes to develop land adjacent to an existing or proposed street, including land which has been excluded under TDC 74.220, the applicant should be responsible for the improvements to the adjacent existing or proposed street that will bring the improvement of the street into conformance with the Transportation Plan (TDC Chapter 11), TDC 74.425 (Street Design Standards), and the City' s Public Works Construction Code, subject to the following provisions:…

(1) *For any development proposed within the City, roadway facilities within the right-of-way described in TDC 74.210 must be improved to standards as set out in the Public Works Construction Code.*

(2) *The required improvements may include the rebuilding or the reconstruction of any existing facilities located within the right-of-way adjacent to the proposed development to bring the facilities into compliance with the Public Works Construction Code.*

(3) *The required improvements may include the construction or rebuilding of off-site improvements which are identified to mitigate the impact of the development.*

(4) *Where development abuts an existing street, the improvement required must apply only to that portion of the street right-of-way located between the property line of the parcel proposed for development and the centerline of the right-of-way, plus any additional pavement beyond the centerline deemed necessary by the City Manager to ensure a smooth transition between a new improvement and the existing roadway (half-street improvement). Additional right-of-way and street improvements and off-site right-of-way and street improvements may be required by the City to mitigate the impact of the development. The new pavement must connect to the existing pavement at the ends of the section being improved by tapering in accordance with the Public Works Construction Code.*

(5) *If additional improvements are required as part of the Access Management Plan of the City, TDC Chapter 75, the improvements must be required in the same manner as the half-street improvement requirements.*

(6) *All required street improvements must include curbs, sidewalks with appropriate buffering, storm drainage, street lights, street signs, street trees, and, where designated, bikeways and transit facilities.*

(7) *For subdivision and partition applications, the street improvements required by TDC Chapter 74 must be completed and accepted by the City prior to signing the final subdivision or partition plat, or prior to releasing the security provided by the applicant to assure completion of such improvements or as otherwise specified in the development application approval.*

(8) *For development applications other than subdivisions and partitions, all street improvements required by this section must be completed and accepted by the City prior to the issuance of a Certificate of Occupancy.*

(9) *In addition to land adjacent to an existing or proposed street, the requirements of this section must apply to land separated from such a street only by a railroad right-of-way.*

(10) *Streets within, or partially within, a proposed development site must be graded for the entire right-of-way width and constructed and surfaced in accordance with the Public Works Construction Code.*

(11) *Existing streets which abut the proposed development site must be graded, constructed, reconstructed, surfaced or repaired as necessary in accordance with the Public Works Construction Code and TDC Chapter 11, Transportation Plan, and TDC 74.425 (Street Design Standards).*

(12) *Sidewalks with appropriate buffering must be constructed along both sides of each internal street and at a minimum along the development side of each external street in accordance with the Public Works Construction Code.*

(13) *The applicant must comply with the requirements of the Oregon Department of Transportation (ODOT), Tri-Met, Washington County and Clackamas County when a proposed development site is adjacent to a roadway under any of their jurisdictions, in addition to the requirements of this chapter.*

(14) *The applicant must construct any required street improvements adjacent to parcels excluded from development, as set forth in TDC 74.220 of this chapter.*

(15) *Except as provided in TDC 74.430, whenever an applicant proposes to develop land with frontage on certain arterial streets and, due to the access management provisions of TDC Chapter 75, is not allowed direct access onto the arterial, but instead must take access from another existing or*

future public street thereby providing an alternate to direct arterial access, the applicant must be required to construct and place at a minimum street signage, a sidewalk, street trees and street lights along that portion of the arterial street adjacent to the applicant's property. The three certain arterial streets are S.W. Tualatin-Sherwood Road, S.W. Pacific Highway (99W) and S.W. 124th Avenue. In addition, the applicant may be required to construct and place on the arterial at the intersection of the arterial and an existing or future public non-arterial street warranted traffic control devices (in accordance with the Manual on Uniform Traffic Control Devices, latest edition), pavement markings, street tapers and turning lanes, in accordance with the Public Works Construction Code.

(16) The City Manager may determine that, although concurrent construction and placement of the improvements in (14) and (15) of this section, either individually or collectively, are impractical at the time of development, the improvements will be necessary at some future date. In such a case, the applicant must sign a written agreement guaranteeing future performance by the applicant and any successors in interest of the property being developed. The agreement must be subject to the City's approval.

(17) Intersections should be improved to operate at a level of service of at least D and E for signalized and unsignalized intersections, respectively.

(18) Pursuant to requirements for off-site improvements as conditions of development approval, proposed multi-family residential, commercial, or institutional uses that are adjacent to a major transit stop will be required to comply with the City's Mid-Block Crossing Policy.

Response: A traffic study is included with this application in Attachment 9. Based on the City's review, the applicant will coordinate with the City to determine whether any street improvements are required. This standard is met.

Section 74.425. - Street Design Standards.

(1) Street design standards are based on the functional and operational characteristics of streets such as travel volume, capacity, operating speed, and safety. They are necessary to ensure that the system of streets, as it develops, will be capable of safely and efficiently serving the traveling public while also accommodating the orderly development of adjacent lands.

(2) The proposed street design standards are shown in Figures 72A through 72G. The typical roadway cross sections comprise the following elements: right-of-way, number of travel lanes, bicycle and pedestrian facilities, and other amenities such as landscape strips. These figures are intended for planning purposes for new road construction, as well as for those locations where it is physically and economically feasible to improve existing streets.

(3) In accordance with the Tualatin Basin Program for fish and wildlife habitat it is the intent of Figures 74-2A through 74-2G to allow for modifications to the standards when deemed appropriate by the City Manager to address fish and wildlife habitat.

(4) All streets must be designed and constructed according to the preferred standard. The City Manager may reduce the requirements of the preferred standard based on specific site conditions, but in no event will the requirement be less than the minimum standard. The City Manager must take into consideration the following factors when deciding whether the site conditions warrant a reduction of the preferred standard:…

Response: A traffic study is included with this application in Attachment 9. Based on the City's review, the applicant will coordinate with the City to determine whether any street improvements are required. This standard is met.

Section 74.430. - Streets, Modifications of Requirements in Cases of Unusual Conditions.
Response: No modifications are proposed or required at this time.

Section 74.440. - Streets, Traffic Study Required.

(1) The City Manager may require a traffic study to be provided by the applicant and furnished to the City as part of the development approval process as provided by this Code, when the City Manager determines that such a study is necessary in connection with a proposed development project in order to:…

(2) The required traffic study must be completed prior to the approval of the development application.

(3) The traffic study must include, at a minimum:

- *(a) An analysis of the existing situation, including the level of service on adjacent and impacted facilities.*
- *(b) An analysis of any existing safety deficiencies.*
- *(c) Proposed trip generation and distribution for the proposed development.*
- *(d) Projected levels of service on adjacent and impacted facilities.*
- *(e) Recommendation of necessary improvements to ensure an acceptable level of service for roadways and a level of service of at least D and E for signalized and unsignalized intersections respectively, after the future traffic impacts are considered.*
- *(f) The City Manager will determine which facilities are impacted and need to be included in the study.*
- *(g) The study must be conducted by a registered engineer.*

Response: The Transportation Impact Analysis is Attachment 9 and includes minimum requirements (a) – (g). This standard is met.

(4) The applicant must implement all or a portion of the improvements called for in the traffic study as determined by the City Manager.

Response: The applicant will implement any required improvements. This standard is met.

Section 74.450. - Bikeways and Pedestrian Paths.

(1) Where proposed development abuts or contains an existing or proposed bikeway, pedestrian path, or multi-use path, as set forth in TDC Chapter 11, Transportation Figure 11-4, the City may require that a bikeway, pedestrian path, or multi-use path be constructed, and an easement or dedication provided to the City.

Response: The site does not appear to abut or contain these features. This standard does not apply.

Section 74.460. - Accessways in Residential, Commercial and Industrial Subdivisions and Partitions.

Response: No accessways are proposed and the project is not a subdivision or partition. This standard does not apply.

Section 74.470. - Street Lights.

(1) Street light poles and luminaries must be installed in accordance with the Public Works Construction Code.

(2) The applicant submit a street lighting plan for all interior and exterior streets on the proposed development site prior to issuance of a Public Works Permit.

Response: No street lights are required. This standard does not apply.

Section 74.475. - Street Names.

Response: No new streets or street names are proposed. This standard does not apply.

Section 74.480. - Street Signs.
Response: No new street names signs are proposed. This standard does not apply.

Section 74.485. - Street Trees.

(1) Prior to approval of a residential subdivision or partition final plat, the applicant must pay the City a non-refundable fee equal to the cost of the purchase and installation of street trees. The location, placement, and cost of the trees must be determined by the City. This sum must be calculated on the interior and exterior streets as indicated on the final subdivision or partition plat.
(2) In nonresidential subdivisions and partitions street trees must be planted by the owners of the individual lots as development occurs.
(3) The Street Tree Ordinance specifies the species of tree which is to be planted and the spacing between trees.

Response: The proposal is not for a subdivision. This standard does not apply.

Utilities

Section 74.610. - Water Service.

(1) Water lines must be installed to serve each property in accordance with the Public Works Construction Code. Water line construction plans must be submitted to the City Manager for review and approval prior to construction.
(2) If there are undeveloped properties adjacent to the subject site, public water lines must be extended by the applicant to the common boundary line of these properties. The lines must be sized to provide service to future development, in accordance with the City's Water System Master Plan, TDC Chapter 12.
(3) As set forth is TDC Chapter 12, Water Service, the City has three water service levels. All development applicants must be required to connect the proposed development site to the service level in which the development site is located. If the development site is located on a boundary line between two service levels the applicant must be required to connect to the service level with the higher reservoir elevation. The applicant may also be required to install or provide pressure reducing valves to supply appropriate water pressure to the properties in the proposed development site.

Response: Water lines, including a new 8" domestic water connection to SW Leveton Drive from the proposed lab building, will be installed in accordance with the Public Works Construction Code and connected to appropriate water service levels. See sheets C1.30A through C1.30Y (Attachment 2) for details. There are no undeveloped properties adjacent to the subject site. This standard is met.

Section 74.620. - Sanitary Sewer Service.

(1) Sanitary sewer lines must be installed to serve each property in accordance with the Public Works Construction Code. Sanitary sewer construction plans and calculations must be submitted to the City Manager for review and approval prior to construction.
(2) If there are undeveloped properties adjacent to the proposed development site which can be served by the gravity sewer system on the proposed development site, the applicant must extend public sanitary sewer lines to the common boundary line with these properties. The lines must be sized to convey flows to include all future development from all up stream areas that can be expected to drain through the lines on the site, in accordance with the City's Sanitary Sewer System Master Plan, TDC Chapter 13.

Response: New sanitary sewer lines serving the proposed buildings will be connected to the existing on-site sewer system. See sheets C1.30A through C1.30Y (Attachment 2) for details. No undeveloped properties are adjacent. This standard is met.

Section 74.630. - Storm Drainage System.

(1) Storm drainage lines must be installed to serve each property in accordance with City standards. Storm drainage construction plans and calculations must be submitted to the City Manager for review and approval prior to construction.

(2) The storm drainage calculations must confirm that adequate capacity exists to serve the site. The discharge from the development must be analyzed in accordance with the City's Storm and Surface Water Regulations.

(3) If there are undeveloped properties adjacent to the proposed development site which can be served by the storm drainage system on the proposed development site, the applicant must extend storm drainage lines to the common boundary line with these properties. The lines must be sized to convey expected flows to include all future development from all up stream areas that will drain through the lines on the site, in accordance with the Tualatin Drainage Plan in TDC Chapter 14.

Response: New storm drain system components will be connected to the existing on-site storm system with modifications to accommodate needed drainage. Two new connections to the public storm drainage system are proposed (one on SW Leveton Drive near the southwestern corner of the campus and one on SW Tualatin Road near the northeastern corner of the campus). See sheets C1.30A through C1.30Y (Attachment 2) for details. No undeveloped properties are adjacent. This standard is met.

Section 74.640. - Grading.

(1) Development sites must be graded to minimize the impact of storm water runoff onto adjacent properties and to allow adjacent properties to drain as they did before the new development.

(2) A development applicant must submit a grading plan showing that all lots in all portions of the development will be served by gravity drainage from the building crawl spaces; and that this development will not affect the drainage on adjacent properties. The City Manager may require the applicant to remove all excess material from the development site.

Response: The area proposed for development will be graded to minimize the impact of storm runoff. This application includes grading plans on sheets C1.20A through C1.20Y (Attachment 2) showing that the proposed development will not affect the drainage on adjacent properties. This standard is met.

Section 74.650. - Water Quality, Storm Water Detention and Erosion Control.

The applicant must comply with the water quality, storm water detention and erosion control requirements in the Surface Water Management Ordinance. If required:

(1) On subdivision and partition development applications…

Response: The proposal is not for a subdivision. This standard does not apply.

(2) On all other development applications, prior to issuance of any building permit, the applicant must arrange to construct a permanent on-site water quality facility and storm water detention facility and submit a design and calculations indicating that the requirements of the Surface Water Management Ordinance will be met and obtain a Stormwater Connection Permit from Clean Water Services.

Response: Existing and proposed stormwater facilities meet the requirements of the Surface Water Management Ordinance. See the attached stormwater report (Attachment 10). A CWS permit will be obtained. This standard is met.

(3) For on-site private and regional non-residential public facilities, the applicant must submit a stormwater facility agreement, which will include an operation and maintenance plan provided by the City, for the water quality facility for the City's review and approval. The applicant must submit an erosion control plan prior to issuance of a Public Works Permit. No construction or disturbing of the site must occur until the erosion control plan is approved by the City and the required measures are in place and approved by the City.

Response: The required stormwater facility agreement and erosion control plan will be submitted with the construction permit. This standard is met.

Section 74.660. - Underground.

(1) All utility lines including, but not limited to, those required for gas, electric, communication, lighting and cable television services and related facilities must be placed underground. Surface-mounted transformers, surface-mounted connection boxes and meter cabinets may be placed above ground. Temporary utility service facilities, high capacity electric and communication feeder lines, and utility transmission lines operating at 50,000 volts or above may be placed above ground. The applicant must make all necessary arrangements with all utility companies to provide the underground services. The City reserves the right to approve the location of all surface-mounted transformers.

(2) Any existing overhead utilities may not be upgraded to serve any proposed development. If existing overhead utilities are not adequate to serve the proposed development, the applicant must, at their own expense, provide an underground system. The applicant must be responsible for obtaining any off-site deeds and/or easements necessary to provide utility service to this site; the deeds and/or easements must be submitted to the City Manager for acceptance by the City prior to issuance of the Public Works Permit.

Response: No new or modified above ground utilities are proposed as part of this application.

Section 74.670. - Existing Structures.

(1) Any existing structures requested to be retained by the applicant on a proposed development site must be connected to all available City utilities at the expense of the applicant.

(2) The applicant must convert any existing overhead utilities serving existing structures to underground utilities, at the expense of the applicant.

(3) The applicant must be responsible for continuing all required street improvements adjacent to the existing structure, within the boundaries of the proposed development site.

Response: There are no existing structures to be retained in the area of the proposed new development. This standard does not apply.

Section 74.700. - Removal, Destruction or Injury of Trees.

It is unlawful for a person, without a written permit from the City Manager, to remove, destroy, break or injure a tree, plant or shrub, that is planted or growing in or upon a public right-of-way within the City, or cause, authorize, or procure a person to do so, authorize or procure a person to injure, misuse or remove a device set for the protection of any tree, in or upon a public right-of-way.

Response: No trees or plants in the public right-of-way will be removed, destroyed, or broken during development. This standard is met.

Section 74.705. - Street Tree Removal Permit.
Response: No street trees are proposed to be removed. This standard does not apply.

Section 74.710. - Open Ground.

When impervious material or substance is laid down or placed in or upon a public right-of-way near a tree, at least nine square feet of open ground for a tree up to three inches in diameter must be provided about the base of the trunk of each tree.
Response: No impervious material is proposed to be laid down in the public right-of-way. This standard does not apply.

Section 74.720. - Protection of Trees During Construction.

(1) During the erection, repair, alteration or removal of a building or structure, it is unlawful for the person in charge of such erection, repair, alteration or removal to leave a tree in or upon a public right-of-way in the vicinity of the building or structure without a good and sufficient guard or protectors to prevent injury to the tree arising out of or by reason of such erection, repair, alteration or removal.
(2) Excavations and driveways must not be placed within six feet of a tree in or upon a public right-of-way without written permission from the City Manager. During excavation or construction, the person must guard the tree within six feet and all building material or other debris must be kept at least four feet from any tree.
Response: Trees within public rights-of-way will be protected in accordance with these requirements. This standard is met.

Section 74.740. - Prohibited Trees.

It is unlawful for a person to plant a tree within the right-of-way of the City of Tualatin that is not in conformance with City standards, including Table 74-1. Any tree planted subsequent to adoption of this Chapter not in compliance with City standards, including Table 74-1, must be removed at the expense of the property owner.
Response: No trees are proposed to be planted within the public right-of-way. This standard does not apply.

Section 74.745. - Cutting and Planting Specifications.

The following regulations are established for the planting, trimming and care of trees in or upon the public right-of-way of the City.

(1) When trees are cut down, the stump must be removed to a depth of six inches below the surface of the ground or finish grade of the street, whichever is of greater depth.
Response: No trees within the public right-of-way are proposed for removal. This standard does not apply.

(2) Trees must be planted in accordance with City standards, Table 74-1, except when a greater density is allowed under a special permit from the City Manager.
Response: No trees are proposed to be planted within the public right-of-way. This standard does not apply.

Section 74.765. - Street Tree Species and Planting Locations.

All trees, plants or shrubs planted in the right-of-way of the City must conform in species and location and in accordance with the street tree plan and City standards, including Table 74-1. If the City Manager determines that none of the species in City standards, including Table 74-1 is appropriate or finds appropriate a species not listed, the City Manager may substitute an unlisted species.

Response: No trees are proposed to be planted within the public right-of-way. This standard does not apply.

Chapter 75: Access Management

Section 75.020. - Permit for New Driveway Approach

(1) Applicability. A driveway approach permit must be obtained prior to constructing, relocating, reconstructing, enlarging, or altering any driveway approach.

(2) Exceptions. A driveway approach permit is not required for:

(a) The construction, relocation, reconstruction, enlargement, or alteration of any driveway approach that requires a state highway access permit; or

(b) The construction, relocation, reconstruction, enlargement or alteration of any driveway approach that is part of the construction of a publicly or privately engineered public improvement project.

(3) Procedure Type. A Driveway Approach Permit is processed as a Type II procedure under TDC 32.220 (Type II).

Response: A permit is required for the new truck driveway on SW Leveton Road. See responses to the relevant criteria below.

(4) Submittal Requirements. In addition to the application materials required by TDC 32.140 (Application Submittal), the following application materials are also required:

(a) A site plan, of a size and form and in the number of copies meeting the standards established by the City Manager, containing the following information:

(i) The location and dimensions of the proposed driveway approach;

(ii) The relationship to nearest street intersection and adjacent driveway approaches;

(iii) Topographic conditions;

(iv) The location of all utilities;

(v) The location of any existing or proposed buildings, structures, or vehicular use areas;

(vi) The location of any trees and vegetation adjacent to the location of the proposed driveway approach that are required to be protected pursuant to TDC Chapter 73B or 73C; and

(vii) The location of any street trees adjacent to the location of the proposed driveway approach.

Response: These items will be included with a future application for a driveway approach permit. This standard is met.

(b) Identification of the uses or activities served, or proposed to be served, by the driveway approach; and

(c) Any other information, as determined by the City Manager, which may be required to adequately review and analyze the proposed driveway approach for conformance with the applicable criteria.

Response: See the attached Transportation Impact Analysis (Attachment 9) for more details regarding the proposed truck access on SW Leveton Drive.

(5) Criteria. A Driveway Approach Permit must be granted if:

(a) The proposed driveway approach meets the standards of this Chapter and the Public Works Construction Code;

(b) No site conditions prevent placing the driveway approach in the required location;

Response: The proposed truck access on SW Leveton Drive will meet standards of the TDC and the Public Works Construction Code and no site conditions have been found that prevent placing the driveway in the proposed location. This standard is met.

(c) The number of driveway approaches onto an arterial are minimized;

Response: The proposal would modify the existing driveway approach on SW Tualatin Road. No new approaches are proposed. This standard is met.

(d) The proposed driveway approach, where possible:

(i) Is shared with an adjacent property; or

(ii) Takes access from the lowest classification of street abutting the property;

Response: The proposed new truck access is on SW Leveton Drive is classified as a Minor Arterial. While this is a higher functional classification than the other streets abutting the campus, it is the most appropriate location for truck access to an industrial site. This standard is met.

(e) The proposed driveway approach meets vision clearance standards;

(f) The proposed driveway approach does not create traffic hazards and provides for safe turning movements and access;

(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity;

Response: The future driveway approach permit application will be required to demonstrate these requirements are satisfied. Compliance is feasible because the proposed driveway approach is situated on a generally flat, linear segment of SW Leveton Road that does not pose significant constraints, as supported by the Transportation Impact Analysis (see Attachment 9). This standard is met.

(h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and

(i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets.

Response: A Transportation Impact Analysis is included in Attachment 9 and describes the impacts of the proposed driveway approach for truck access on the north side of SW Leveton Road. No adverse impacts to residential property or street function are anticipated as a result of the proposed new truck access, so no improvements are required.

(6) Effective Date. The effective date of a Driveway Approach Permit approval is the date the notice of decision is mailed.

(7) Permit Expiration. A Driveway Approach Permit approval expires one year from the effective date, unless the driveway approach is constructed within the one-year period in accordance with the approval decision and City standards.

Response: These items are advisory and require no factual information from the applicant.

Section 75.030. - Driveway Approach Closure.

(1) The City Manager may require the closure of a driveway approach where:
- *(a) The driveway approach is not constructed in conformance with this Chapter and the Public Works Construction Code;*
- *(b) The driveway approach is not maintained in a safe manner;*
- *(c) A public street improvement project is being constructed, and closure of the driveway approach will more closely conform to the current driveway approach standards;*
- *(d) A new building or driveway is constructed on the property;*
- *(e) A plan text amendment or zone change is proposed for the property served by the driveway;*
- *(f) A change of use or activity in an existing building increases the amount of required parking;*
- *(g) The driveway approach has been abandoned; or*
- *(h) There is a demonstrated safety issue.*

Response: The City has not identified a requirement to close a driveway approach. This standard does not apply.

(2) Notice. Notice of driveway approach closure must be given in writing to the property owner and any affected tenants stating the grounds for closure, the date upon which the closure becomes effective, and the right to appeal.

(3) Appeals. Any person entitled to notice under subsection (2) of this section may appeal the decision to the City Council.

(4) Effect. Closure is effective immediately upon the mailing of notice of the decision. Unless otherwise provided in the notice, closure terminates all rights to continue the use the driveway approach for which the notice of closure has been issued.

(5) Failure to Close Driveway. If the owner fails to close the driveway approach to conform to the notice within 90 days, the City Manager may cause the closure to be completed and all expenses assessed against the property owner.

Response: These items provide procedural direction and require no factual information from the applicant.

Section 75.040. - Driveway Approach Requirements.

(1) The provision and maintenance of driveway approaches from private property to the public streets as stipulated in this Code are continuing requirements for the use of any structure or parcel of real property in the City of Tualatin. No building or other permit may be issued until scale plans are presented that show how the driveway approach requirement is to be fulfilled. If the owner or occupant of a lot or building changes the use to which the lot or building is put, thereby increasing driveway approach requirements, it is unlawful and a violation of this code to begin or maintain such altered use until the required increase in driveway approach is authorized by the City.

Response: A new driveway approach for truck access is proposed on SW Leveton Drive for truck access. This approach will be authorized by the City before construction and maintained in accordance with the TDC. This standard is met.

(2) Owners of two or more uses, structures, or parcels of land may agree to utilize jointly the same driveway approach when the combined driveway approach of both uses, structures, or parcels of land satisfies their combined requirements as designated in this code; provided that satisfactory legal evidence is presented to the City Attorney in the form of deeds, easements, leases or

contracts to establish joint use. Copies of said deeds, easements, leases or contracts must be placed on permanent file with the City Recorder.

Response: The existing joint access on SW Tualatin Road will continue to provide access for the neighboring JAE site and emergency-only access for Lam. Any necessary updates to the current legal agreements will be filed as appropriate. This standard is met.

(3) Joint and Cross Access....

Response: The existing joint access on SW Tualatin Road will continue to provide access for the neighboring JAE site and emergency-only access for Lam. Any necessary updates to the current legal agreements will be filed as appropriate. This standard is met.

(4) Requirements for Development on Less than the Entire Site.

(a) To promote unified access and circulation systems, lots and parcels under the same ownership or consolidated for the purposes of development and comprised of more than one building site must be reviewed as one unit in relation to the access standards. The number of access points permitted must be the minimum number necessary to provide reasonable access to these properties, not the maximum available for that frontage. All necessary easements, agreements, and stipulations must be met. This must also apply to phased development plans. The owner and all lessees within the affected area must comply with the access requirements.

Response: Per the IMP, all existing access points were found to provide reasonable access. The proposed new buildings and parking areas have been designed to accommodate the added traffic and parking. This standard is met.

(b) All access must be internalized using the shared circulation system of the principal commercial development or retail center. Driveways should be designed to avoid queuing across surrounding parking and driving aisles.

Response: This provision is not applicable because the site is an industrial campus owned and operated by a single manufacturing user/tenant.

(5) Lots that front on more than one street may be required to locate motor vehicle accesses on the street with the lower functional classification as determined by the City Manager.

Response: The site has three street frontages and multiple existing vehicle access points. A new access point for trucks is proposed on SW Leveton Drive. This standard is met.

(6) Except as provided in TDC 53.100, all driveway approaches must connect directly with public streets.

Response: All driveway approaches connect directly with public streets. This standard is met.

(7) To afford safe pedestrian access and egress for properties within the City, a sidewalk must be constructed along all street frontage, prior to use or occupancy of the building or structure proposed for said property. The sidewalks required by this section must be constructed to City standards, except in the case of streets with inadequate right-of-way width or where the final street design and grade have not been established, in which case the sidewalks must be constructed to a design and in a manner approved by the City Manager. Sidewalks approved by the City Manager may include temporary sidewalks and sidewalks constructed on private property; provided, however, that such sidewalks must provide continuity with sidewalks of adjoining commercial developments existing or proposed. When a sidewalk is to adjoin a future street improvement, the sidewalk construction must include construction of the curb and gutter section to grades and alignment established by the City Manager.

Response: Sidewalks are provided along all street frontages. No improvements or dedications are required or proposed. This standard is met.

(8) The standards set forth in this Code are minimum standards for driveway approaches, and may be increased through the Architectural Review process in any particular instance where the standards provided herein are deemed insufficient to protect the public health, safety, and general welfare.

(9) Minimum driveway approach width for uses are as provided in Table 75-1 (Driveway Approach Width): … (Table withheld for brevity, Industrial standard minimum is 36' and maximum is 40')

Response: The width of the proposed new truck access on SW Leveton Drive is 36'. This standard is met.

(10) Driveway Approach Separation. There must be a minimum distance of 40 feet between any two adjacent driveways on a single property unless a lesser distance is approved by the City Manager.

Response: All driveway approaches are separated by more than 40'. This standard is met.

(11) Distance between Driveways and Intersections. Except for single-family dwellings, duplexes, townhouses, triplexes, quadplexes, and cottage clusters, the minimum distance between driveways and intersections must be as provided below. Distances listed must be measured from the stop bar at the intersection.

- *(a) At the intersection of collector or arterial streets, driveways must be located a minimum of 150 feet from the intersection.*
- *(b) At the intersection of two local streets, driveways must be located a minimum of 30 feet from the intersection.*
- *(c) If the subject property is not of sufficient width to allow for the separation between driveway and intersection as provided, the driveway must be constructed as far from the intersection as possible, while still maintaining the 5-foot setback between the driveway and property line.*
- *(d) When considering a driveway approach permit, the City Manager may approve the location of a driveway closer than 150 feet from the intersection of collector or arterial streets, based on written findings of fact in support of the decision.*

Response: All driveways meet the minimum distance requirements described above. This standard is met.

(12) Vision Clearance Area.

- *(a) Local Streets. A vision clearance area for all local street intersections, local street and driveway intersections, and local street or driveway and railroad intersections must be that triangular area formed by the right-of-way lines along such lots and a straight line joining the right-of-way lines at points which are ten feet from the intersection point of the right-of-way lines, as measured along such lines (see Figure 73-2 for illustration).*
- *(b) Collector Streets. A vision clearance area for all collector/arterial street intersections, collector/arterial street and local street intersections, and collector/arterial street and railroad intersections must be that triangular area formed by the right-of-way lines along such lots and a straight line joining the right-of-way lines at points which are 25 feet from the intersection point of the right-of-way lines, as measured along such lines. Where a driveway intersects with a collector/arterial street, the distance measured along the driveway line for the triangular area must be ten feet (see Figure 73-2 for illustration).*
- *(c) Vertical Height Restriction. Except for items associated with utilities or publicly owned structures such as poles and signs and existing street trees, no vehicular parking, hedge, planting, fence, wall structure, or temporary or permanent physical obstruction must be permitted between 30 inches and eight feet above the established height of the curb in the clear vision area (see Figure 73-2 for illustration).*

Response: All driveway approaches meet the vision clearance requirements described above. This standard is met.

IV. CONCLUSION

As demonstrated in the narrative above and referenced attachments, this AR application meets the relevant criteria and warrants approval.



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C1.01N	EXISTING CONDITIONS & DEMOLITION PLAN
C1.01O	EXISTING CONDITIONS & DEMOLITION PLAN
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C1.20A	GRADING PLAN
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C1.30C	UTILITY PLAN
C1.30D	UTILITY PLAN
C1.30E	UTILITY PLAN
C1.30F	UTILITY PLAN
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C2.11V	PHOTOMETRIC PLAN
C2.11W	PHOTOMETRIC PLAN
C2.11X	PHOTOMETRIC PLAN
C2.11Y	PHOTOMETRIC PLAN

LANDSCAPE DRAWINGS

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L1.10S	PLANTING PLAN
L1.10U	PLANTING PLAN
L1.10V	PLANTING PLAN
L1.10W	PLANTING PLAN
L1.10X	PLANTING PLAN
L1.10Y	PLANTING PLAN

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Mechanical/Electrical

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REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:

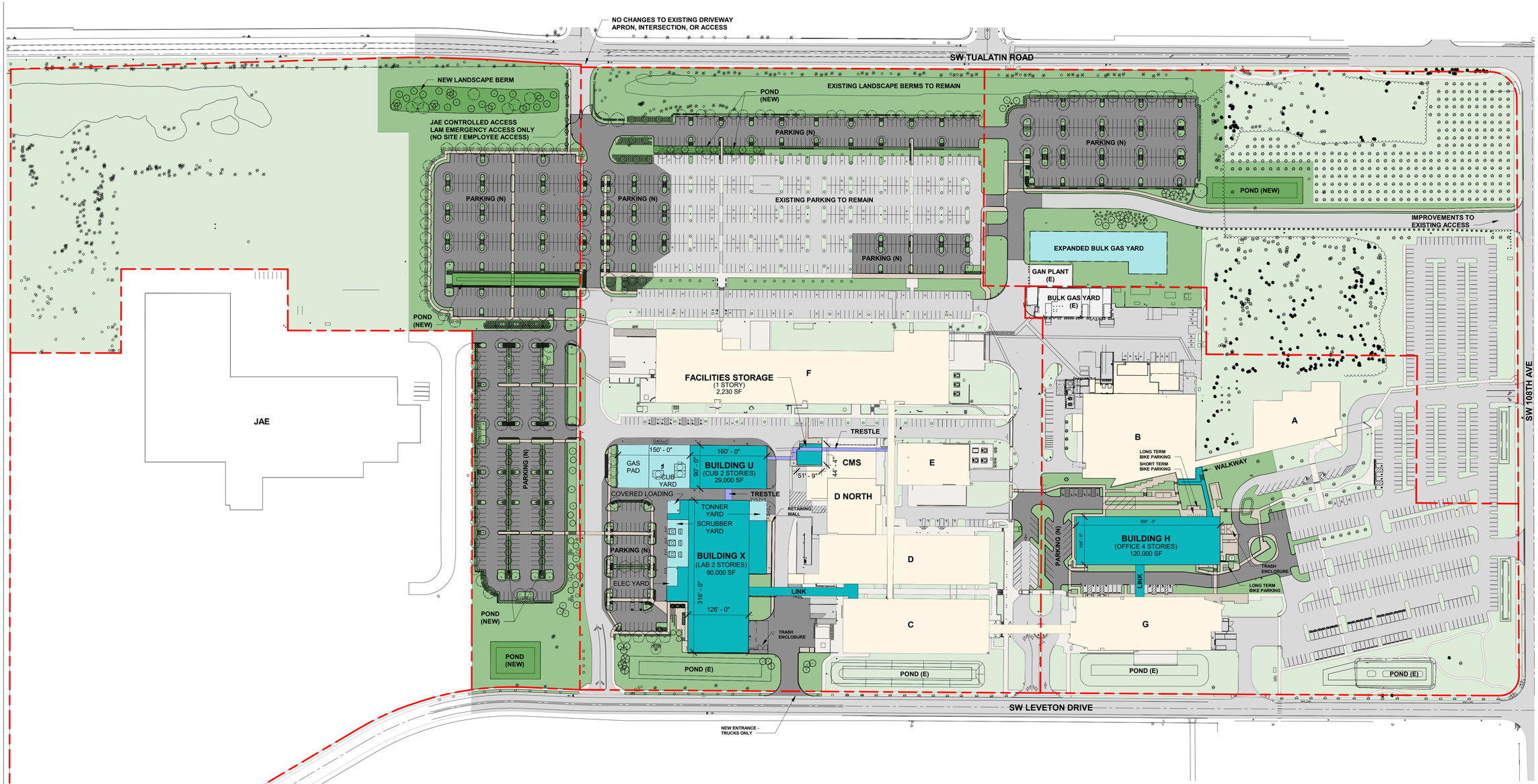
TITLE SHEET AND DRAWING INDEX

SHEET

G0.01

JOB NO. **2240022.02**

ARCHITECTURAL REVIEW 07/21/25



1 A0.01 ARCHITECTURAL SITE PLAN
1" = 100'-0"

LEGEND

- EXISTING BUILDINGS
- NEW BUILDINGS (TOTAL: 241,230 SQ FT)
- NEW YARDS
- NEW TRESTLE
- NEW PEDESTRIAN
- NEW PARKING AND DRIVE AISLES
- NEW DETENTION POND
- RETAINING WALL
- PROPERTY LINE

PARKING:
- EXISTING: 1,784
- REMOVED: 468
- NEW PROVIDED: 1,012
- TOTAL = 2,328

BIKE PARKING:
- PROPOSED SHORT TERM: 18
- PROPOSED LONG TERM: 35
- TOTAL SHORT TERM = 82
- TOTAL LONG TERM = 100

ARCHITECTURAL REVIEW 07/21/25

Autodesk Docs://Lam - Revised SMP/LAM-Site_ Master Plan MODEL-V24-A.rvt 7/22/2025 1:13:36 PM 1" = 100'-0"

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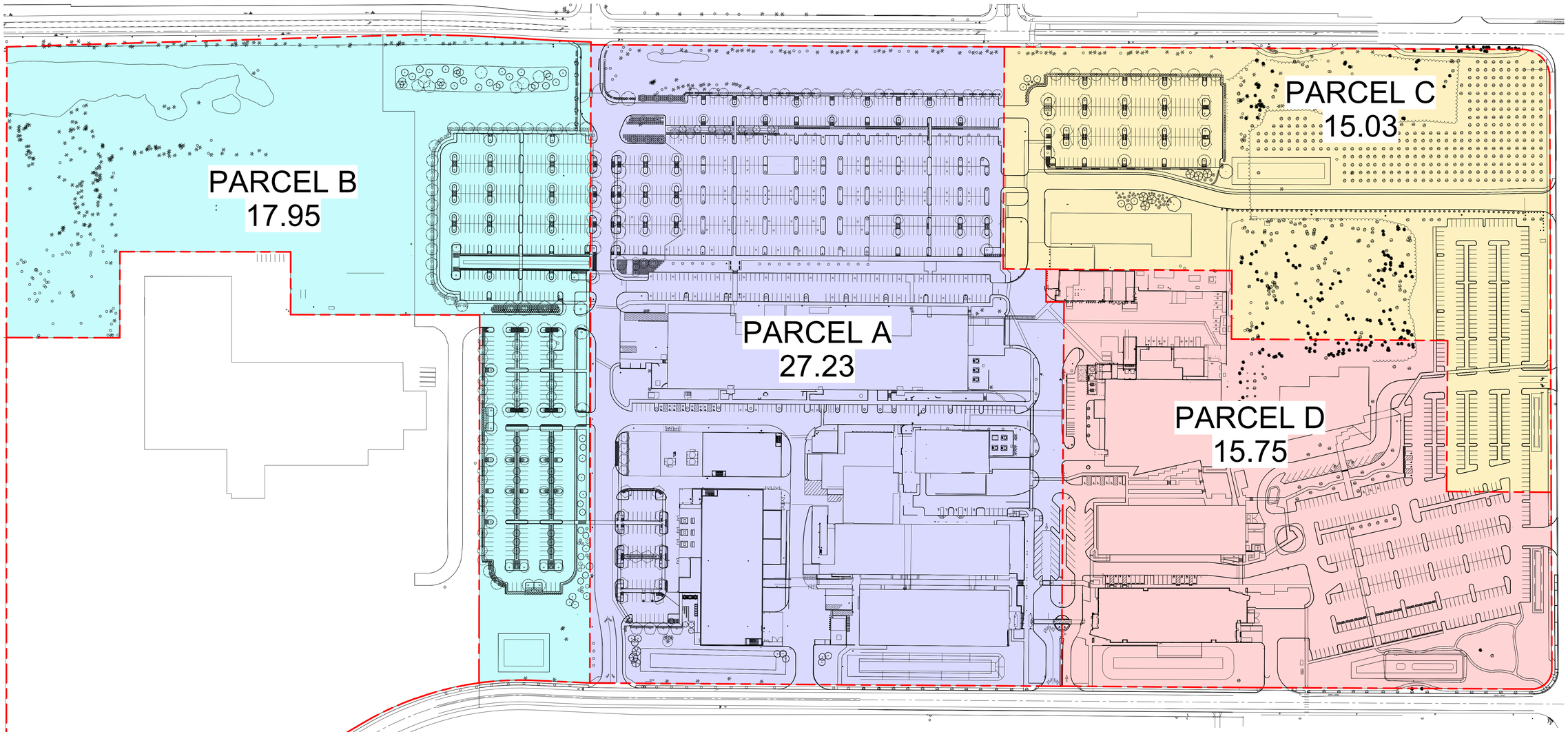
REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:
ARCHITECTURAL SITE PLAN

SHEET
A0.01

JOB NO. **2240022.02**



1 A0.02 PROPERTY LINE EXHIBIT
1" = 100'-0"

LEGEND

EXISTING PROPERTY LINE

TOTAL SITE AREA: 75.96 ACRES

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SHEET TITLE:
PROPERTY LINE EXHIBIT

SHEET
A0.02

JOB NO. **2240022.02**

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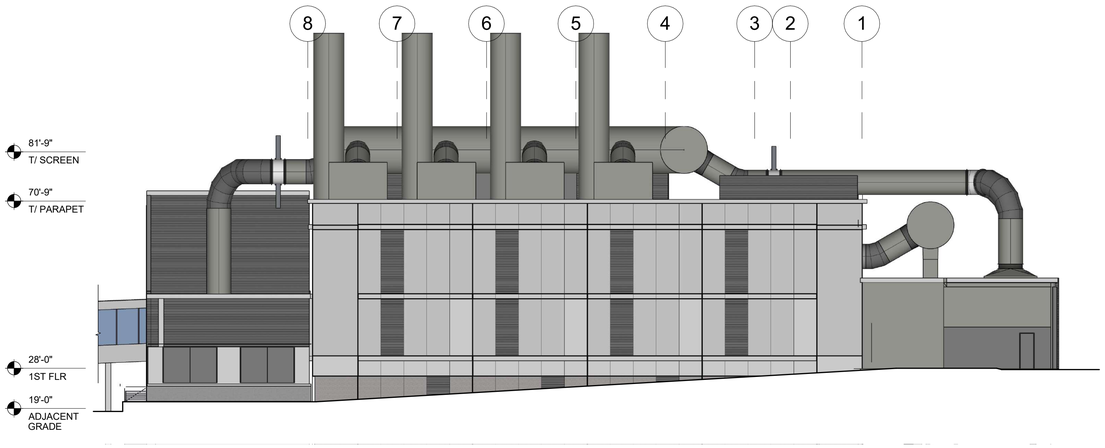
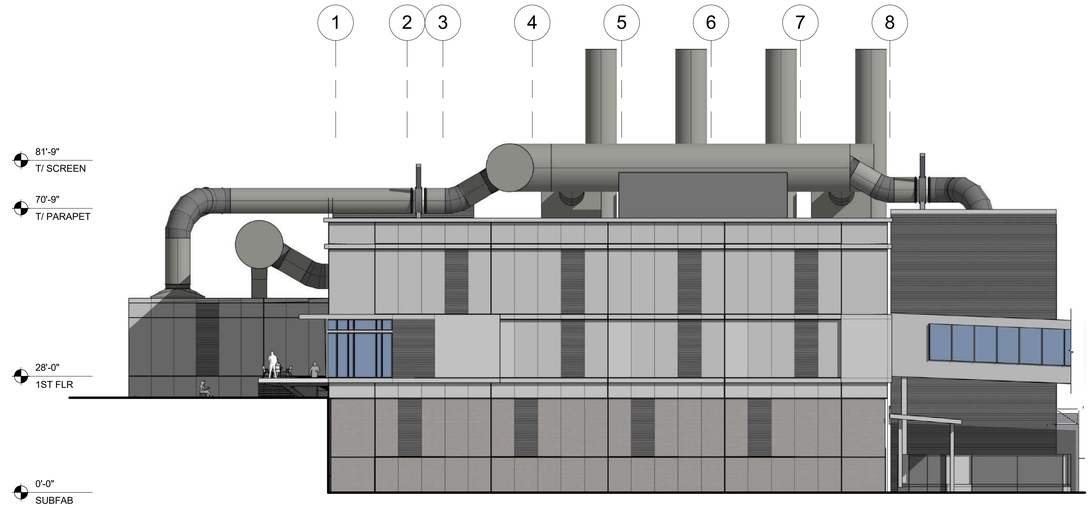
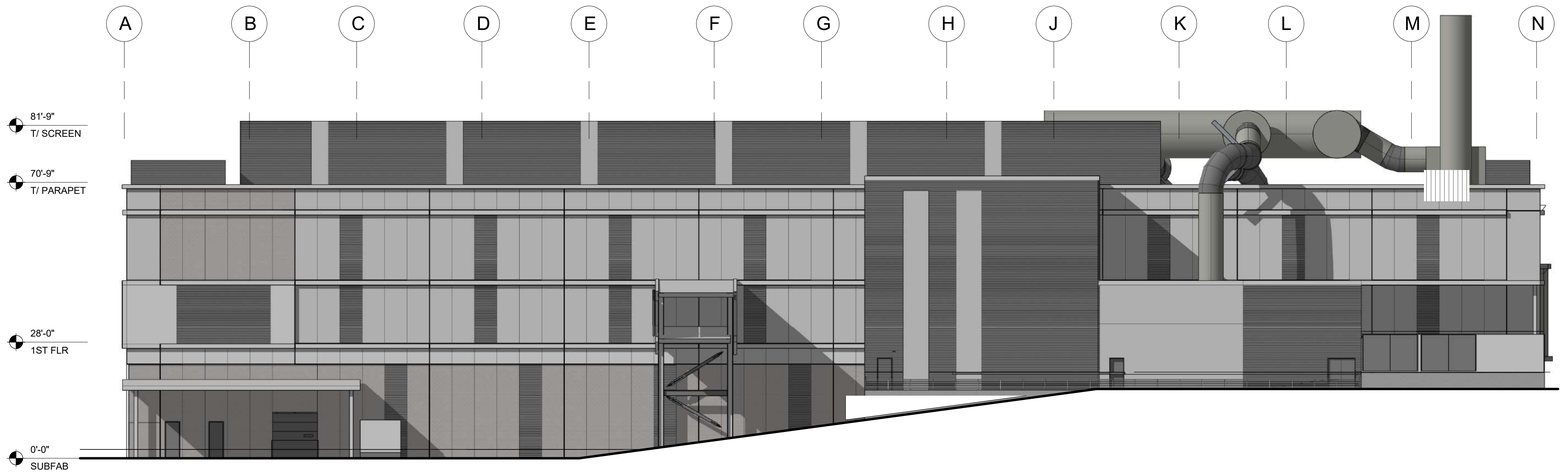


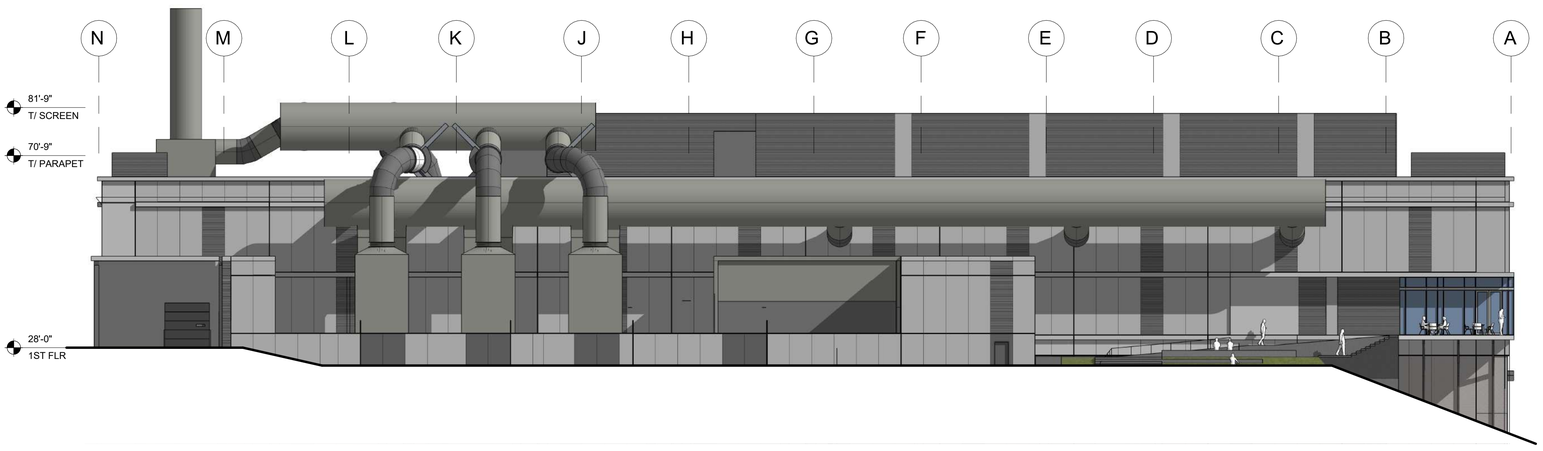
1 A2.10 BUILDING X - NORTH ELEVATION
1/16" = 1'-0"



2 A2.10 BUILDING X - SOUTH ELEVATION
1/16" = 1'-0"



3 A2.10 BUILDING X - EAST ELEVATION
1/16" = 1'-0"



4 A2.10 BUILDING X - WEST ELEVATION
1/16" = 1'-0"

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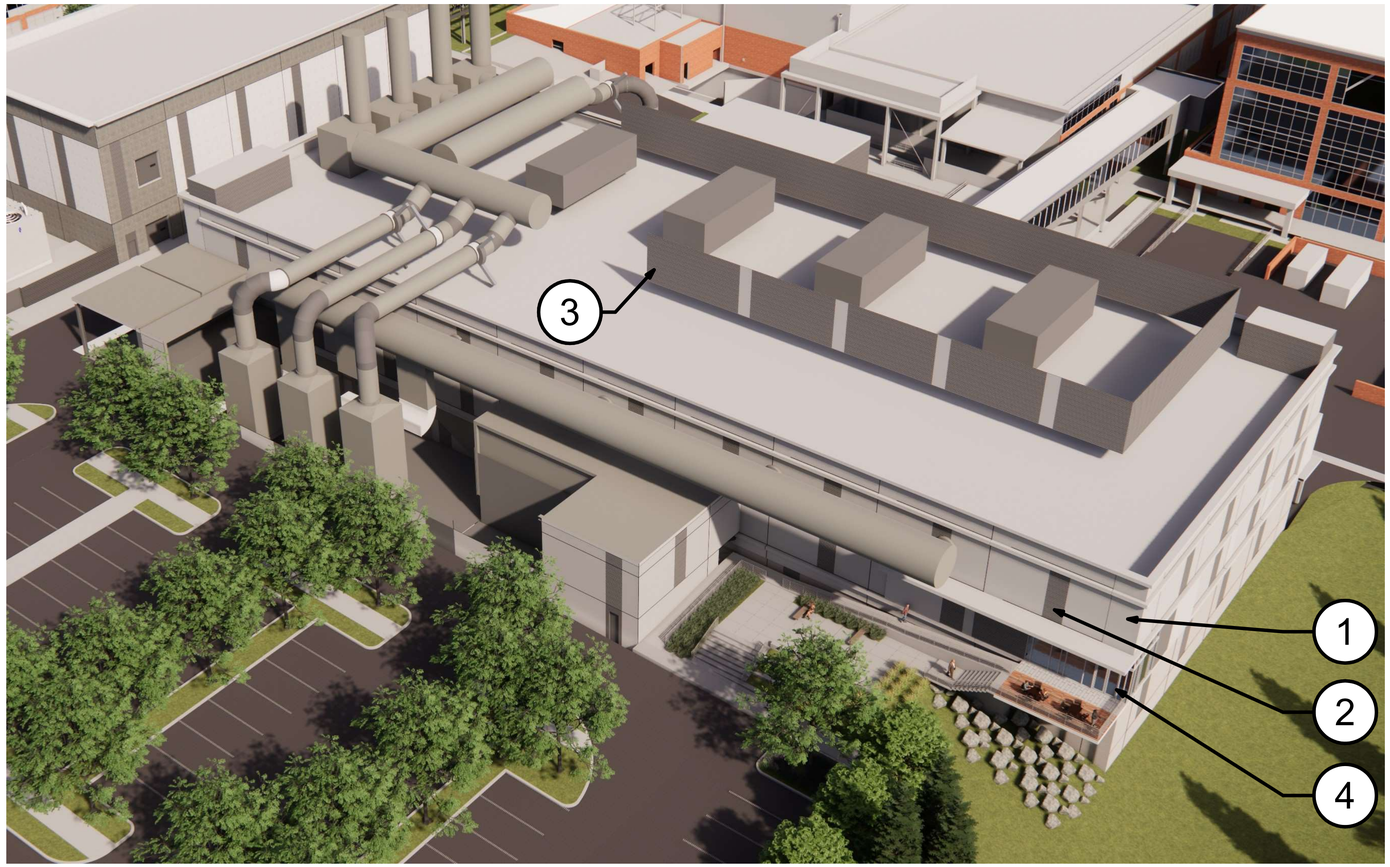
Delta	Issued As	Issue Date

SHEET TITLE:
BUILDING X - ELEVATIONS

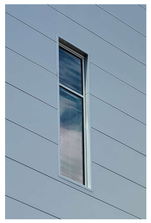
SHEET
A2.10

JOB NO. **2240022.02**

ARCHITECTURAL REVIEW 07/21/25



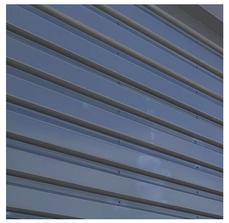
1 MP-1 - KINGSPAN OPTIMO INSULATED METAL PANELS, SMOOTH, IN ZINC GRAY AND SILVERSMITH



2 MP-2 - KINGSPAN MINI-WAVE INSULATED METAL PANELS, RIBBED, IN ZINC GRAY



3 MP-3 - AEP SPAN BOXRIB METAL PANELS, SLATE GREY



4 STOREFRONT - SILVER MULLIONS



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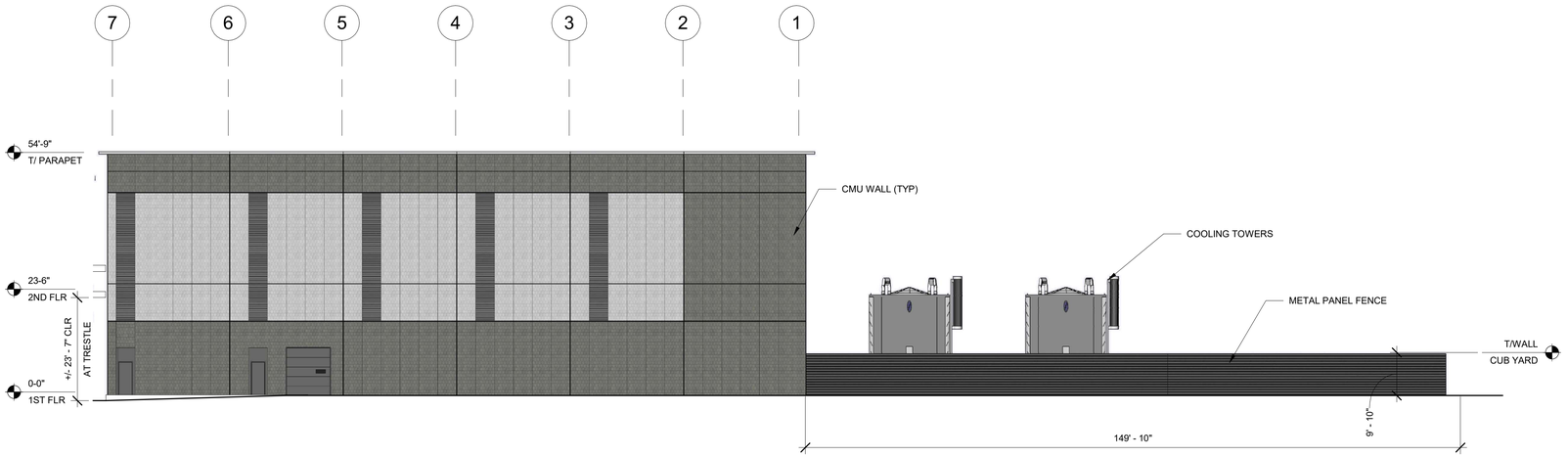
Delta	Issued As	Issue Date

SHEET TITLE:
BUILDING X - MATERIALITY

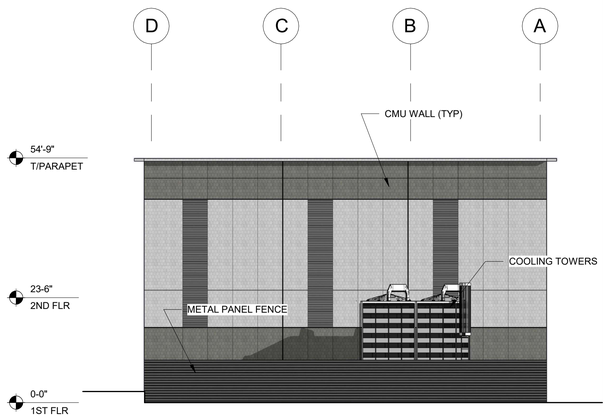
SHEET
A2.11

JOB NO. **2240022.02**

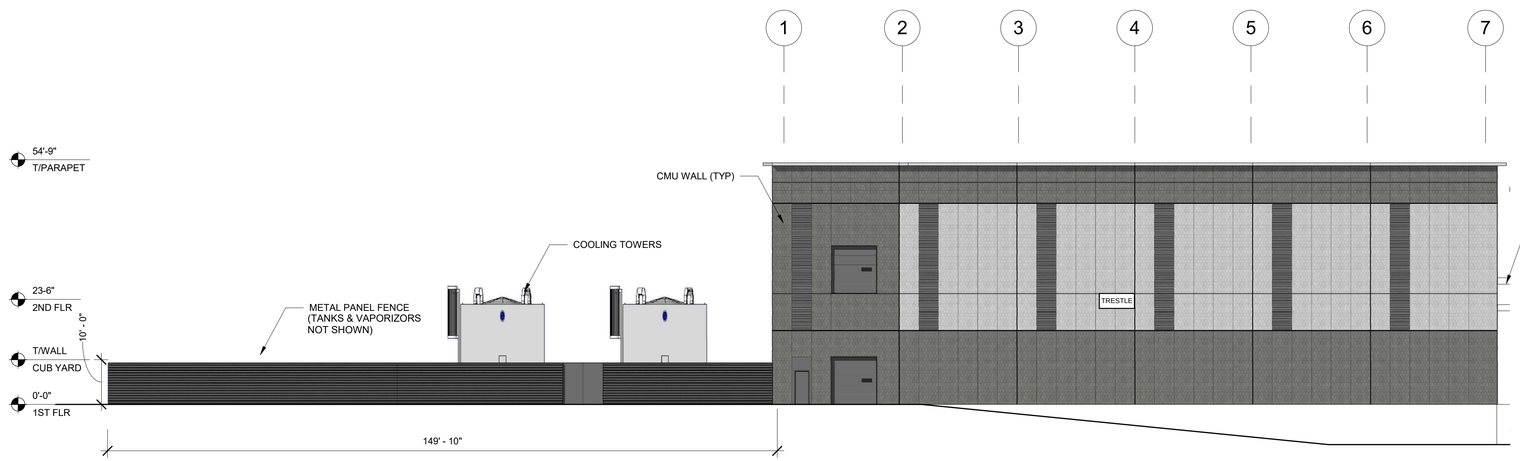
ARCHITECTURAL REVIEW 07/21/25



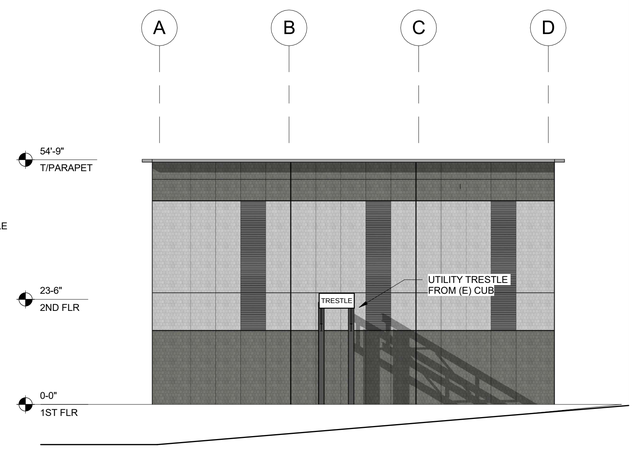
1 A2.20 BUILDING U - NORTH ELEVATION
1/16" = 1'-0"



2 A2.20 BUILDING U - WEST ELEVATION
1/16" = 1'-0"



3 A2.20 BUILDING U - SOUTH ELEVATION
1/16" = 1'-0"



4 A2.20 BUILDING U - EAST ELEVATION
1/16" = 1'-0"

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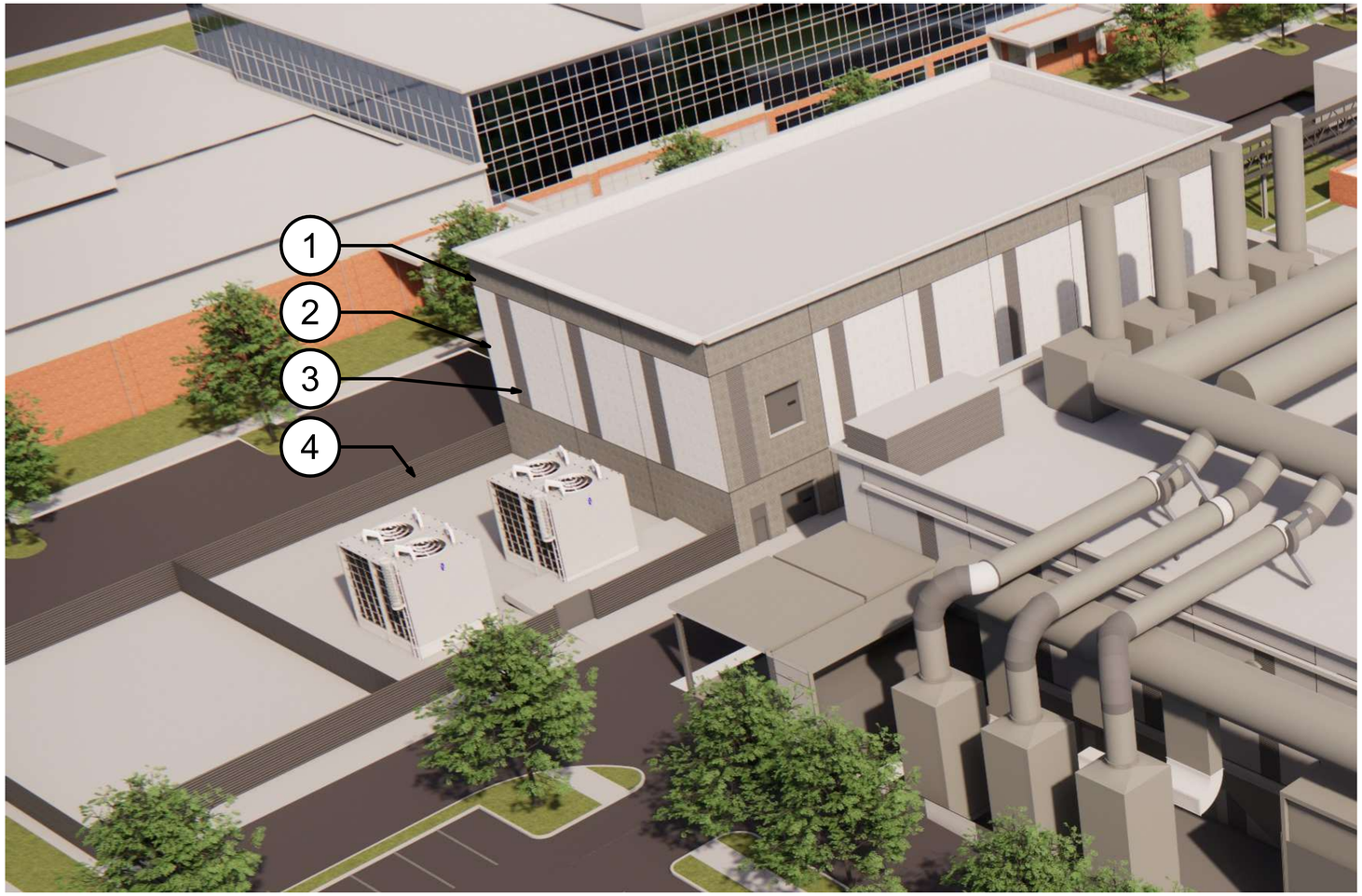
Delta	Issued As	Issue Date

SHEET TITLE:
BUILDING U - ELEVATIONS

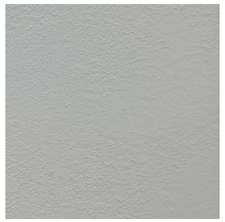
SHEET
A2.20

JOB NO. **2240022.02**

ARCHITECTURAL REVIEW 07/21/25



1 CONC -1 - GRAY PAINTED CONCRETE
(SW 7019 GAUNTLET GRAY)



2 CONC -2 - LIGHT GRAY PAINTED CONCRETE
(SW 7004 SNOWBOUND)

3 CONC-3 - DARK GRAY PAINTED CONCRETE
(SW 7674 PEPPERCORN)



4 MP-3 - AEP SPAN BOXRIB METAL PANELS,
SLATE GREY



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SHEET TITLE:
BUILDING U - MATERIALITY

SHEET
A2.21

JOB NO. **2240022.02**

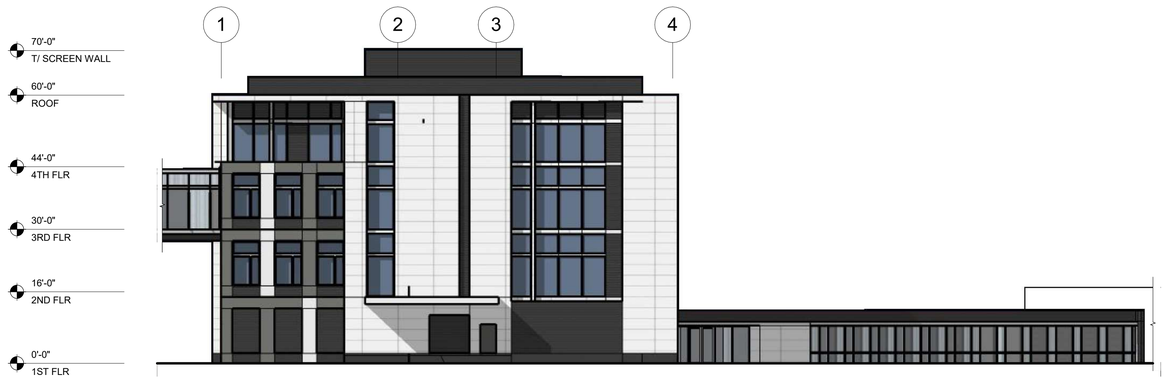
ARCHITECTURAL REVIEW 07/21/25



1 A2.30 NORTH ELEVATION
1/16" = 1'-0"



2 A2.30 SOUTH ELEVATION
1/16" = 1'-0"



3 A2.30 EAST ELEVATION
1/16" = 1'-0"



4 A2.30 WEST ELEVATION
1/16" = 1'-0"

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SHEET TITLE:
BUILDING H - ELEVATIONS

SHEET
A2.30

JOB NO. **2240022.02**

ARCHITECTURAL REVIEW 07/21/25



1 CONC-1 - GRAY CONCRETE TILT PANEL PAINTED (SW 7019 GAUNTLET GRAY)

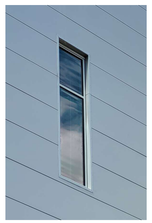


2 CONC-2 - LIGHT GRAY CONCRETE TILT PANEL PAINTED (SW 7004 SNOWBOUND)

3 CONC-3 - DARK GRAY CONCRETE WITH FORMLINER, PAINTED (SW 7674 PEPPERCORN)



4 MP-1 - KINGSPAN OPTIMO INSULATED METAL PANELS, SMOOTH, IN ZINC GRAY AND SILVERSMITH



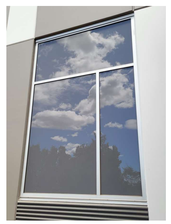
5 MP-2 - KINGSPAN MINI-WAVE INSULATED METAL PANELS, RIBBED, IN ZINC GRAY



6 MP-3 - AEP SPAN BOXRIB METAL PANELS, SLATE GREY



7 STOREFRONT - SILVER MULLIONS



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SHEET TITLE:
BUILDING H - MATERIALITY

SHEET
A2.31

JOB NO. **2240022.02**

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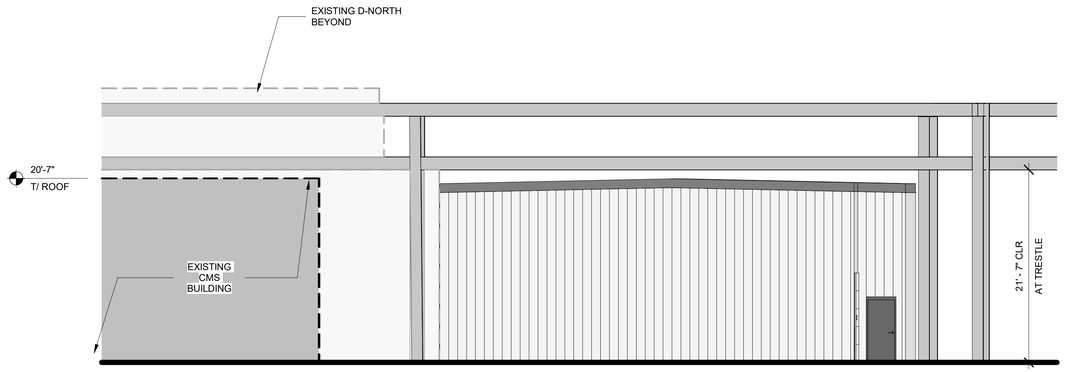
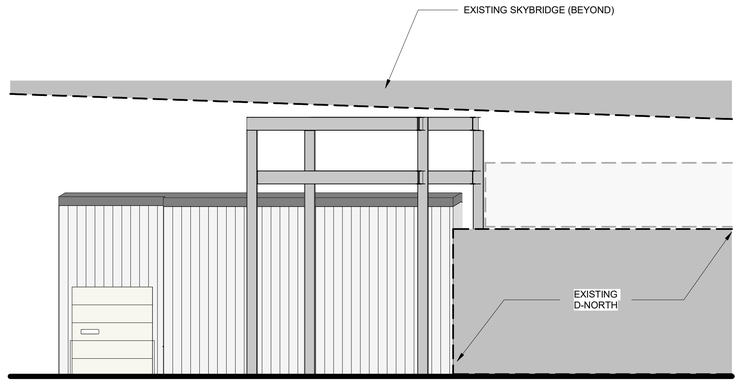


1 A2.40 FACILITIES STORAGE - NORTH ELEVATION
1/8" = 1'-0"



2 A2.40 FACILITIES STORAGE - WEST ELEVATION
1/8" = 1'-0"

1 MP-1 - PRE ENGINEERED METAL BUILDING CORRUGATED METAL CLADDING

2 MP-2 - PRE ENGINEERED METAL BUILDING CORRUGATED METAL ROOFING

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SHEET TITLE:
FACILITIES STORAGE - ELEVATIONS / MATERIALITY

SHEET
A2.40

JOB NO. **2240022.02**

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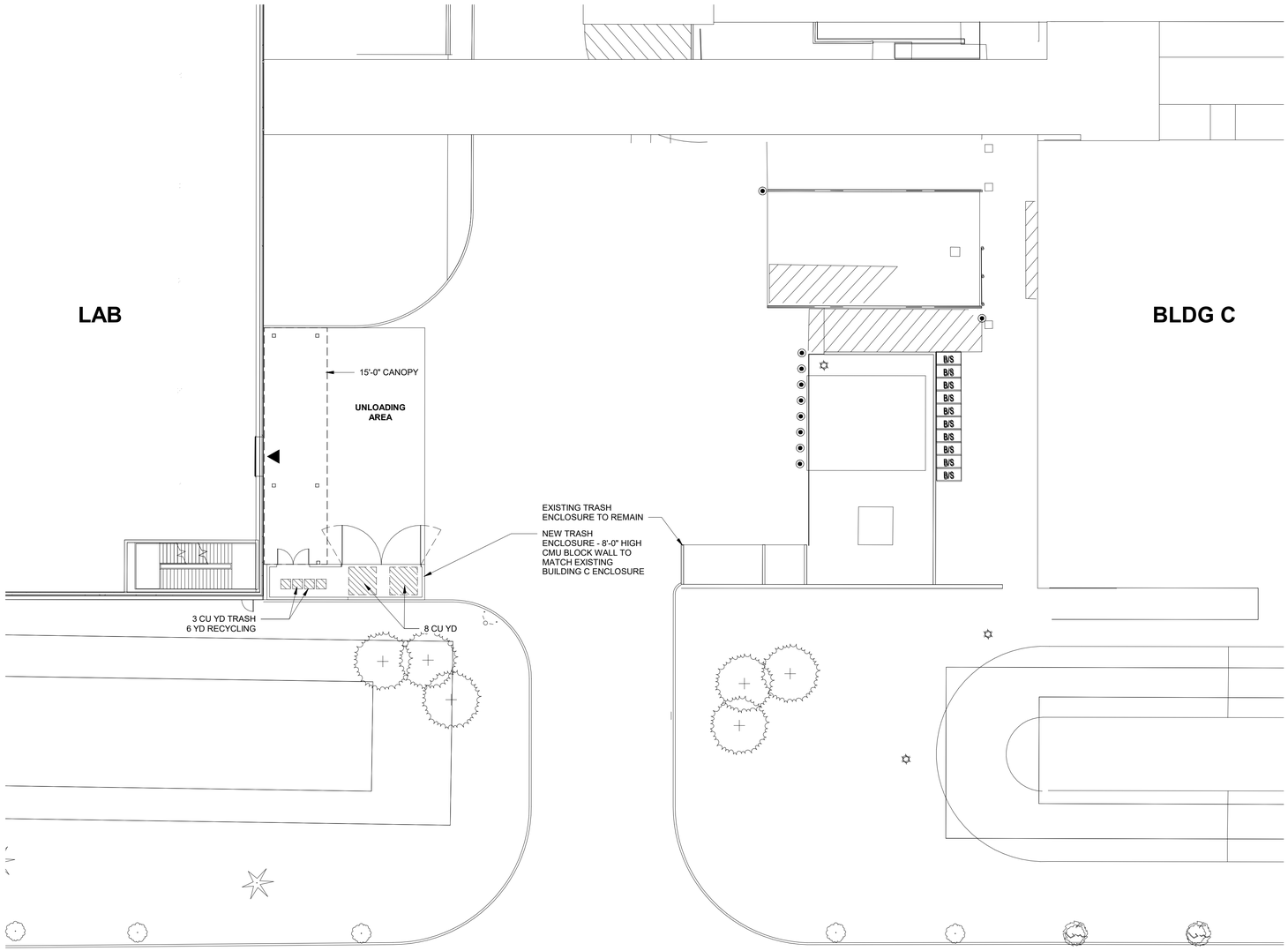
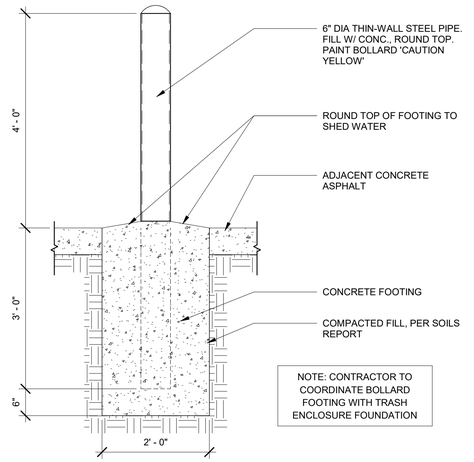
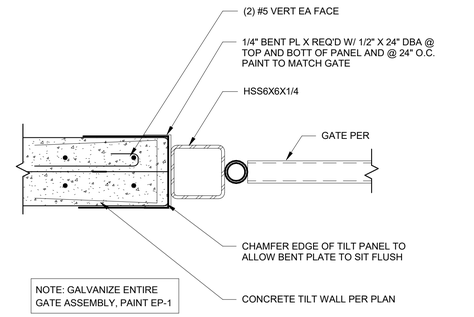


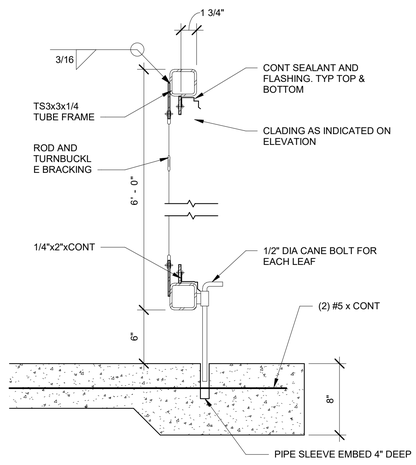
1 A4.11 LAB - ENLARGED SITE PLAN
1/16" = 1'-0"



2 A4.11 BOLLARD DETAIL
3/4" = 1'-0"



3 A4.11 GATE HINGE DETAIL
1 1/2" = 1'-0"



4 A4.11 GATE SECTION
1 1/2" = 1'-0"

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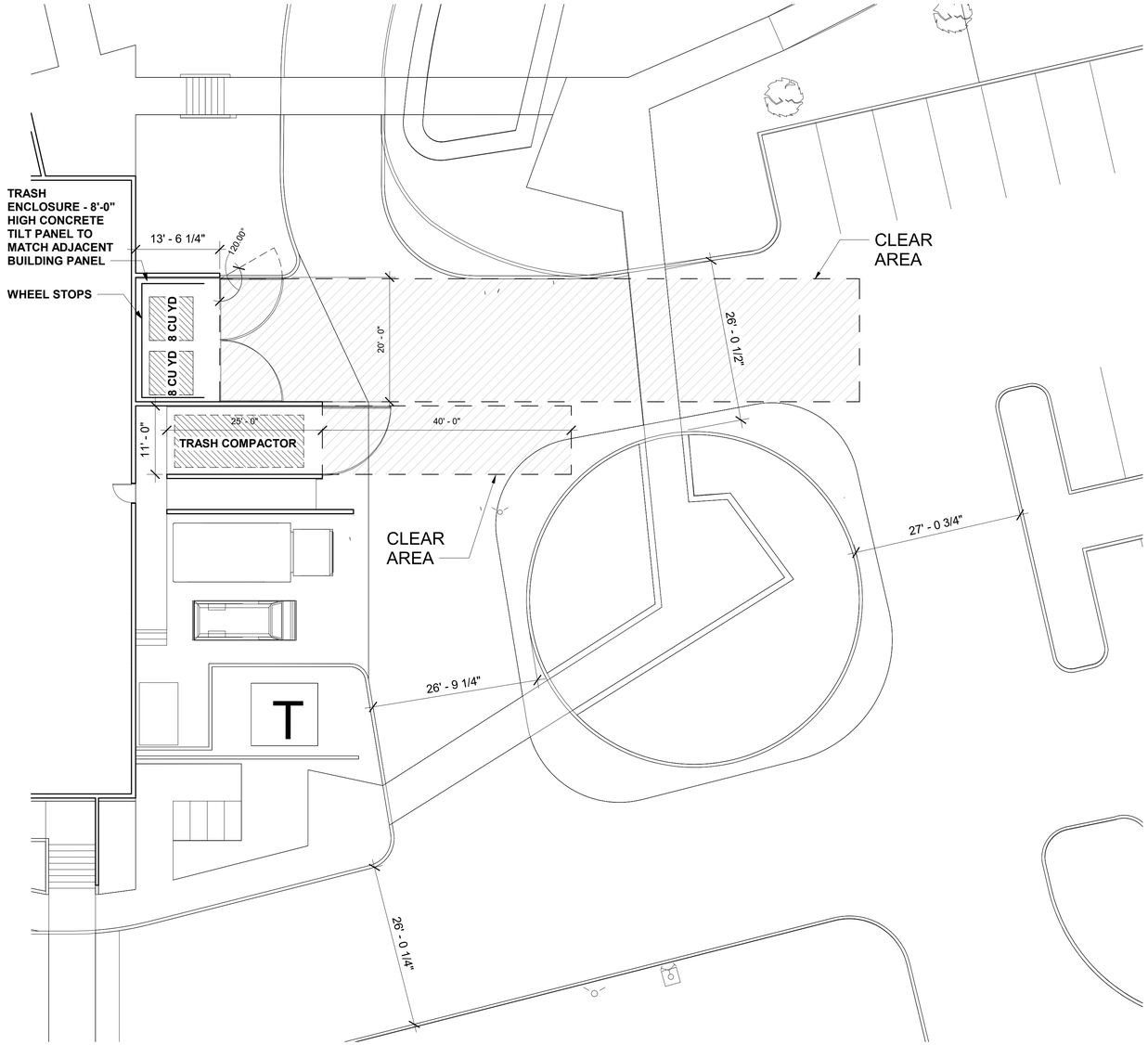
Delta	Issued As	Issue Date

SHEET TITLE:
BUILDING X - ENLARGED TRASH ENCLOSURE PLAN

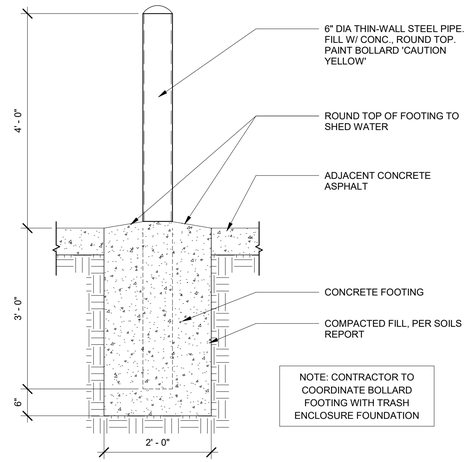
SHEET
A4.11

JOB NO. **2240022.02**

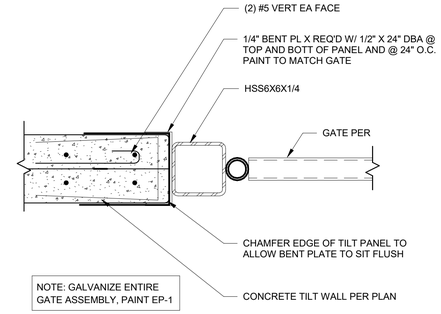
ARCHITECTURAL REVIEW 07/21/25



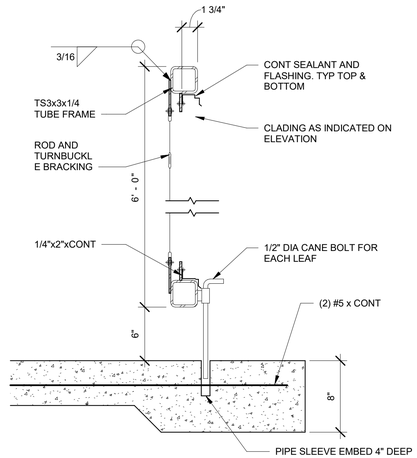
1 A4.31 BUILDING H - ENLARGED DOCK PLAN
3/32" = 1'-0"



2 A4.31 BOLLARD DETAIL
3/4" = 1'-0"



3 A4.31 GATE HINGE DETAIL
1 1/2" = 1'-0"



4 A4.31 GATE SECTION
1 1/2" = 1'-0"

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REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:
BUILDING H - ENLARGED TRASH ENCLOSURE PLAN

SHEET
A4.31

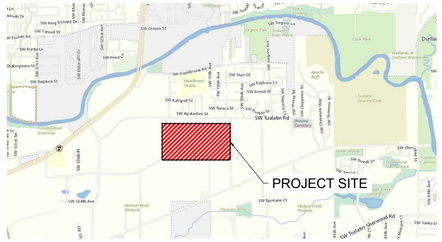
JOB NO. **2240022.02**

ARCHITECTURAL REVIEW 07/21/25

LAM TUX

ARCHITECTURAL REVIEW

TUALATIN, WASHINGTON COUNTY, OR
TAX LOT 2S122AA00500 AND 2S122AB00100
NE 1/4 OF THE NE 1/4 SECTION 22, TOWNSHIP 2S, RANGE 1W



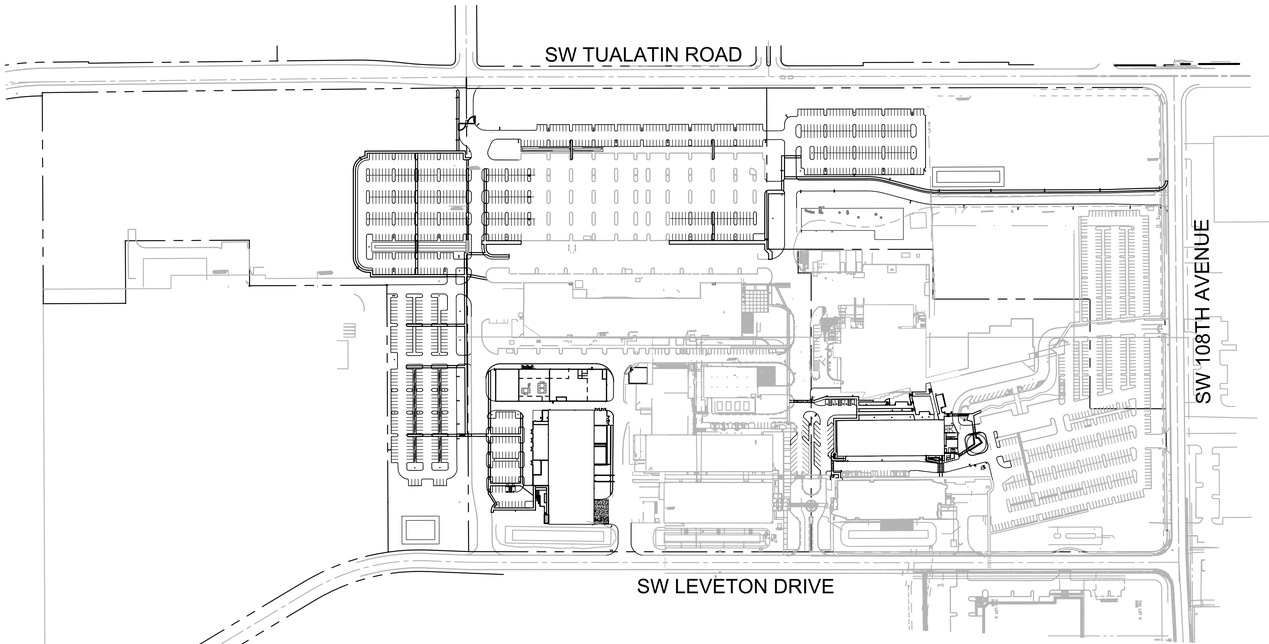
VICINITY MAP
SCALE: NTS

VERTICAL DATUM

ELEVATIONS ARE BASED ON THE ONE-QUARTER SECTION CORNER COMMON TO SECTIONS 15 AND 22, T2S, R1W. THE ELEVATION WAS HELD PER WASHINGTON COUNTY GG_022-086 DATA SHEET ON FILE WITH THE WASHINGTON COUNTY SURVEYOR'S OFFICE. THE PUBLISHED ELEVATION IS 177.22 FEET ON THE NGVD 29 VERTICAL DATUM

HORIZONTAL DATUM

THE HORIZONTAL DATUM FOR THIS SURVEY IS THE OREGON STATE PLANE COORDINATE SYSTEM, NORTH ZONE, NAD(83).



1 SITE MAP
C0.00

200 0 100 200 400 800
(IN FEET)
1 inch = **200** ft.

OWNER/DEVELOPER

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REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:
COVER SHEET

SHEET:
C0.00

JOB NO. **2250180.00**

GENERAL NOTES

1. ALL WORK SHALL CONFORM TO THE CURRENT STANDARD SPECIFICATIONS AND REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION AND THE CURRENT AMERICAN PUBLIC WORKS ASSOCIATION STANDARDS FOR PUBLIC WORKS CONSTRUCTION
2. THE SURVEY INFORMATION SHOWN AS A BACKGROUND SCREEN IS BASED ON A SURVEY BY OTHERS AND IS SHOWN FOR REFERENCE ONLY. CONTRACTOR TO VERIFY ALL EXISTING CONDITIONS WITH ITS OWN RESOURCES PRIOR TO START OF ANY CONSTRUCTION
3. CONTRACTOR MUST COMPLY WITH LOCAL AND STATE REQUIREMENTS TO NOTIFY ALL UTILITY COMPANIES FOR LINE LOCATIONS SEVENTY-TWO (72) HOURS (MINIMUM) PRIOR TO START OF WORK. DAMAGE TO UTILITIES SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE
4. CONTRACTOR SHALL ADJUST ALL STRUCTURES IMPACTED BY CONSTRUCTION IMPROVEMENTS TO NEW FINISH GRADES
5. REQUEST BY THE CONTRACTOR FOR CHANGES TO THE PLANS MUST BE APPROVED BY THE ENGINEER.
6. ALL WORK WITHIN THE PUBLIC RIGHT-OF-WAY REQUIRES A PUBLIC WORKS PERMIT
7. CONTRACTOR SHALL PROVIDE THE ENGINEER OF RECORD WITH AS-BUILT PLANS AT LEAST 2 WEEKS PRIOR TO REQUESTING AGENCY SIGN OFF ON PERMITS FOR OCCUPANCY
8. CONTRACTOR SHALL PERFORM ALL THE WORK SHOWN ON THE DRAWINGS AND ALL INCIDENTAL WORK NECESSARY TO COMPLETE THE PROJECT

SITE DEMOLITION NOTES

1. COMPLY WITH ALL APPLICABLE CODES AND REGULATIONS FOR DEMOLITION OPERATIONS AND SAFETY OF ADJACENT STRUCTURES AND THE PUBLIC
2. INSTALL EROSION CONTROL MEASURES AND TEMPORARY FENCING PRIOR TO ANY DEMOLITION ACTIVITIES
3. MITIGATE DUST POLLUTION DUE TO DEMOLITION ACTIVITIES
4. PROTECT ALL EXISTING STRUCTURES, UTILITIES, LANDSCAPE AND OTHER ELEMENTS THAT ARE NOT DESIGNATED FOR REMOVAL. ANY DAMAGE TO EXISTING IMPROVEMENTS NOT DESIGNATED FOR REMOVAL SHALL BE REPAIRED/REPLACED AT THE CONTRACTOR'S EXPENSE
5. DO NOT BEGIN REMOVAL UNTIL ITEMS TO BE SALVAGED OR RELOCATED HAVE BEEN REMOVED AS NOTED. IF REMOVED GRAVEL OR PAVEMENT MATERIALS ARE TO BE RECYCLED OR REUSED, PREVENT CONTAMINATION OF THESE MATERIALS FROM TOPSOIL OR OTHER DELETERIOUS MATERIAL
6. CONTRACTOR SHALL COORDINATE DEMOLITION WORK WITH AFFECTED UTILITY COMPANIES, OBTAIN ALL REQUIRED PERMITS, NOTIFY THEM PRIOR TO STARTING WORK, AND COMPLY WITH THEIR REQUIREMENTS. ADDITIONAL REMOVALS MAY BE REQUIRED BY THE AUTHORITIES HAVING JURISDICTION AND THE CONTRACTOR SHALL CONFIRM ACCORDINGLY PRIOR TO BID. ACCURATELY RECORD ACTUAL LOCATIONS OF CAPPED AND ACTIVE UTILITIES FOR AS-BUILT PURPOSES AND SUPPLY TO OWNER AND ARCHITECT/ENGINEER OF RECORD
7. DEMOLISH AND REMOVE ALL NON-BUILDING SITE STRUCTURES AND ASSOCIATED FEATURES (APPURTENANCES) AS SHOWN. WITHIN AREA OF NEW CONSTRUCTION, REMOVE DESIGNATED WALLS AND FOOTINGS TO 2 FEET MINIMUM BELOW FINISHED GRADE. DEMOLISH ALL PAVED AREAS DESIGNATED FOR REMOVAL DOWN TO NATIVE SUBGRADE
8. ALL VEGETATION AND DELETERIOUS MATERIALS WITHIN THE LIMITS OF WORK SHALL BE STRIPPED AND REMOVED FROM THE SITE PRIOR TO GRADING WORK UNLESS NOTED OTHERWISE (E.G. PROTECTED TREES)
9. IF HAZARDOUS MATERIALS ARE DISCOVERED DURING DEMOLITION, STOP WORK AND IMMEDIATELY NOTIFY THE OWNER AND ARCHITECT/ENGINEER OF RECORD

GRADING NOTES

1. ROUGH GRADING: ROUGH GRADE TO ALLOW FOR DEPTH OF BUILDING SLABS, PAVEMENTS, BASE COURSES, AND TOPSOIL PER DETAILS AND SPECIFICATIONS
2. FINISH GRADING: BRING ALL FINISH GRADES TO LEVELS INDICATED. WHERE GRADES ARE NOT OTHERWISE INDICATED, HARDSCAPE FINISH GRADES ARE TO BE THE SAME AS ADJACENT SIDEWALKS, CURBS, OR THE OBVIOUS GRADE OF ADJACENT STRUCTURE. SOFTSCAPE GRADES (INCLUDING ADDITIONAL DEPTH OF TOPSOIL) SHALL BE SET 6 INCHES BELOW BUILDING FINISHED FLOORS WHERE ABUTTING BUILDINGS, 1-2 INCHES WHERE ABUTTING WALKWAYS OR CURBS, OR MATCHING OTHER SOFTSCAPE GRADES. GRADE TO UNIFORM LEVELS OR SLOPES BETWEEN POINTS WHERE GRADES ARE GIVEN. ROUND OFF SURFACES, AVOID ABRUPT CHANGES IN LEVELS. AT COMPLETION OF JOB AND AFTER BACKFILLING BY OTHER TRADES HAS BEEN COMPLETED, REFILL AND COMPACT AREAS WHICH HAVE SETTLED OR ERODED TO BRING TO FINAL GRADES
3. EXCAVATION: EXCAVATE FOR SLABS, PAVING, AND OTHER IMPROVEMENTS TO SIZES AND LEVELS SHOWN OR REQUIRED. ALLOW FOR FORM CLEARANCE AND FOR PROPER COMPACTION OF REQUIRED BACKFILLING MATERIAL. DAMAGE TO UTILITIES SHALL BE CORRECTED AT THE CONTRACTOR'S EXPENSE
4. EFFECTIVE EROSION PREVENTION AND SEDIMENT CONTROL IS REQUIRED. EROSION CONTROL DEVICES MUST BE INSTALLED AND MAINTAINED MEETING THE LOCAL AGENCY AND STATE AGENCY REQUIREMENTS. THE AUTHORITIES HAVING JURISDICTION MAY, AT ANY TIME, ORDER CORRECTIVE ACTION AND STOPPAGE OF WORK TO ACCOMPLISH EFFECTIVE EROSION CONTROL
5. DRAINAGE SHALL BE CONTROLLED WITHIN THE WORK SITE AND SHALL BE ROUTED SO THAT ADJACENT PRIVATE PROPERTY, PUBLIC PROPERTY, AND THE RECEIVING SYSTEM ARE NOT ADVERSELY IMPACTED. THE ENGINEER AND/OR AUTHORITIES HAVING JURISDICTION MAY, AT ANY TIME, ORDER CORRECTIVE ACTION AND STOPPAGE OF WORK TO ACCOMPLISH EFFECTIVE DRAINAGE CONTROL
6. SITE TOPSOIL STOCKPILED DURING CONSTRUCTION AND USED FOR LANDSCAPING SHALL BE APPROVED BY THE LANDSCAPE ARCHITECT
7. CONTRACTOR TO REVIEW AND CONFIRM GRADES AT JOIN POINTS, SUCH AS AT DAYLIGHT LIMITS AND BUILDING ENTRANCES, PRIOR TO CONSTRUCTION
8. ACCESSIBLE PARKING SPACES AND LOADING ZONES SHALL BE CONSTRUCTED AT 2% MAXIMUM SLOPE IN ALL DIRECTIONS
9. PEDESTRIAN SIDEWALK CONNECTIONS BETWEEN PUBLIC R.O.W. AND BUILDING ENTRANCES SHALL BE CONSTRUCTED AT AND 2% MAXIMUM CROSS SLOPE AND 5% MAXIMUM LONGITUDINAL SLOPE (8.33% FOR DESIGNATED RAMPS)

UTILITY NOTES

1. ALL WORK SHALL CONFORM TO THE CURRENT EDITIONS OF THE STATE PLUMBING AND BUILDING CODES WITH LOCAL AMENDMENTS AS APPLICABLE ALONG WITH ANY ADDITIONAL REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION.
2. THE WORKING DRAWINGS ARE GENERALLY DIAGRAMMATIC. THEY DO NOT SHOW EVERY OFFSET, BEND OR ELBOW REQUIRED FOR INSTALLATION IN THE SPACE PROVIDED. THEY DO NOT SHOW EVERY DIMENSION, COMPONENT PIECE, SECTION, JOINT OR FITTING REQUIRED TO COMPLETE THE PROJECT. ALL LOCATIONS FOR WORK SHALL BE CHECKED AND COORDINATED WITH EXISTING CONDITIONS IN THE FIELD BEFORE BEGINNING CONSTRUCTION. EXISTING UNDERGROUND UTILITIES WITHIN THE LIMITS OF EXCAVATION SHALL BE VERIFIED AS TO CONDITION, SIZE AND LOCATION BY UNCOVERING (POTHOLING), PROVIDING SUCH IS PERMITTED BY THE AUTHORITIES HAVING JURISDICTION, BEFORE BEGINNING CONSTRUCTION. CONTRACTOR TO NOTIFY ENGINEER IF THERE ARE ANY DISCREPANCIES.
3. NOT ALL REQUIRED CLEANOUTS ARE SHOWN ON THE PLANS. PROVIDE CLEANOUTS AS REQUIRED BY THE AUTHORITIES HAVING JURISDICTION AND THE CURRENT EDITION OF THE STATE PLUMBING CODE (E.G. UNIFORM PLUMBING CODE CHAPTER 7, SECTIONS 707 AND 719, AND CHAPTER 11, SECTION 1101.13).
4. ALL SANITARY AND STORM PIPING IS DESIGNED USING CONCENTRIC PIPE TO PIPE AND WYE FITTINGS, UNLESS OTHERWISE NOTED
5. ALL DOWNSPOUT LEADERS TO BE 6 INCHES AT 2.0% MINIMUM UNLESS NOTED OTHERWISE
6. IF APPLICABLE, PROVIDE 2 INCH PVC DRAIN LINE FROM DOMESTIC WATER METER VAULT AND BACKFLOW PREVENTER VAULT TO THE DOUBLE DETECTOR CHECK VALVE (FIRE) VAULT. PROVIDE 1/3 HP SUMP PUMP AT BASE OF FIRE VAULT AND INSTALL 2 INCH PVC DRAIN LINE WITH BACKFLOW VALVE FROM SUMP PUMP TO DAYLIGHT AT NEAREST CURB. FURNISH 3/4 INCH DIAMETER CONDUIT FROM BUILDING ELECTRICAL ROOM TO FIRE VAULT FOR SUMP PUMP ELECTRICAL SERVICE. NOTE: COORDINATE WITH FIRE PROTECTION CONTRACTOR FOR FLOW SENSOR INSTALLATION AND CONDUIT REQUIREMENTS
7. PREFABRICATED PLUMBING PRODUCTS USED SHALL BE LISTED ON THE IAPMO R&T PRODUCT LISTING DIRECTORY (pld.iapmo.org). ALL SUBMITTALS FOR REVIEW SHALL BE ACCOMPANIED BY MANUFACTURER'S LITERATURE CLEARLY STATING THIS CERTIFICATION AND/OR THE PRODUCT LISTING CERTIFICATE FROM THE IAPMO DIRECTORY WEBSITE
8. IF APPLICABLE, CONTRACTOR TO PROVIDE POWER TO IRRIGATION CONTROLLER. SEE LANDSCAPE PLANS AND SPECIFICATIONS
9. SEE BUILDING PLUMBING DRAWINGS FOR PIPING WITHIN THE BUILDING AND UP TO 5 FEET OUTSIDE THE BUILDING, INCLUDING ANY FOUNDATION DRAINAGE PIPING
10. CONTRACTOR TO MAINTAIN MINIMUM 3 FEET OF COVER OVER ALL UTILITY PIPING AND CONDUITS, UNLESS NOTED OTHERWISE
11. WHERE CONNECTING TO AN EXISTING PIPE, AND PRIOR TO ORDERING MATERIALS, THE CONTRACTOR SHALL EXPOSE THE EXISTING PIPE TO VERIFY THE LOCATION, SIZE, AND ELEVATION. NOTIFY ENGINEER OF ANY DISCREPANCIES
12. CONTRACTOR SHALL SCOPE ALL PRIVATE ONSITE GRAVITY SYSTEM LINES THAT ARE BEING CONNECTED TO FOR PROPOSED SERVICE. SCOPING SHALL OCCUR A MINIMUM OF 72 HOURS PRIOR TO CONSTRUCTION AND THE ENGINEER SHALL BE NOTIFIED IMMEDIATELY OF ANY DISCREPANCIES WITH AS-BUILT RECORDS/SURVEY FINDINGS OR IF THE EXISTING UTILITIES ARE DAMAGED OR SHOW SIGNS OF SIGNIFICANT DETERIORATION. CONTRACTOR SHALL PROVIDE THE ENGINEER WITH VIDEO RECORDS, ALONG WITH A SKETCH IF THE LOCATIONS DIFFER FROM AS-BUILT PLANS OR SURVEY FINDINGS
13. PRODUCT MATERIAL SUBMITTALS FOR REVIEW BY THE ENGINEER SHALL BE ACCOMPANIED BY A MANUFACTURER'S CERTIFICATION THAT THE PRODUCT IS CAPABLE OF MEETING PERFORMANCE EXPECTATIONS (I.E. - WATERTIGHT, MINIMUM/MAXIMUM BURIAL, PREVENTION OF GROUNDWATER INTRUSION, ETC.) BASED ON THEIR REVIEW OF THE PROJECT PLANS. IN THE ABSENCE OF A MANUFACTURER'S CERTIFICATION, THE GENERAL CONTRACTOR'S REVIEW STAMP SHALL CONSTITUTE THAT THEY HAVE PERFORMED THE NECESSARY REVIEW TO CERTIFY THE PRODUCT'S CONFORMANCE TO PROJECT SPECIFICATIONS AND GENERAL EXPECTATIONS
14. PIPE LENGTHS SHOWN ON PLANS ARE TWO DIMENSIONAL AND MEASURED FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE
15. MANHOLE RIM ELEVATIONS SHOWN ON PLANS REFERENCE THE CENTER OF THE STRUCTURE. THE CONTRACTOR SHALL BE RESPONSIBLE FOR RECONCILING LIDS/GRATES/ETC TO THE SLOPES OF THE SITE GRADING
16. MANHOLE OR VAULT RIM ELEVATIONS SHALL BE SET FLUSH IN PAVEMENT AREAS AND 3-4 INCHES ABOVE GRADE IN LANDSCAPE AREAS. RIMS IN PAVEMENT AREAS SHALL BE H-20 TRAFFIC RATED

SITE WORK NOTES

1. ALL CURB RADII TO BE 3 FEET UNLESS NOTED OTHERWISE
2. STAIR RISERS AND TREADS SHALL BE CONFORMANT WITH THE REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION AND THE CURRENT EDITION OF THE STATE BUILDING CODE (E.G. INTERNATIONAL BUILDING CODE, CHAPTER 10, SECTION 1011.5)
3. WHEREVER A PEDESTRIAN WALKING PATH IS WITHIN 36 INCHES OF A VERTICAL DROP OF 30 INCHES OR GREATER, GUARDRAIL SHALL BE INSTALLED CONFORMANT WITH THE REQUIREMENTS OF THE AUTHORITIES HAVING JURISDICTION AND THE CURRENT EDITION OF THE STATE BUILDING CODE (E.G. INTERNATIONAL BUILDING CODE, CHAPTER 10, SECTION 1015)

EROSION CONTROL NOTES

1. HOLD A PRE-CONSTRUCTION MEETING OF PROJECT CONSTRUCTION PERSONNEL THAT INCLUDES THE LOCAL AGENCY INSPECTOR TO DISCUSS EROSION AND SEDIMENT CONTROL MEASURES AND CONSTRUCTION LIMITS
2. EROSION AND SEDIMENT CONTROL MEASURES MUST BE IN PLACE BEFORE ANY LAND IS DISTURBED AND MUST REMAIN IN PLACE AND BE MAINTAINED, REPAIRED, AND PROMPTLY IMPLEMENTED FOLLOWING PROCEDURES ESTABLISHED FOR THE DURATION OF CONSTRUCTION, INCLUDING APPROPRIATE NON-STORMWATER POLLUTION CONTROLS
3. THE EROSION CONTROL DRAWING IS FOR GENERAL GUIDANCE ONLY. THE CONTRACTOR SHALL KEEP THE PLAN CURRENT FOR ALL PHASES OF CONSTRUCTION AND MEET EROSION/SEDIMENT CONTROL REQUIREMENTS OF ALL AUTHORITIES HAVING JURISDICTION (AHJ). ALL EROSION CONTROL MEASURES SHALL CONFORM TO THE REQUIREMENTS OF THE AHJ, THE PLANS, AND THE PROJECT SPECIFICATIONS
4. CONSTRUCT EROSION CONTROL IN CONJUNCTION WITH ALL CLEARING AND GRADING ACTIVITIES, AND IN SUCH A MANNER AS TO ENSURE THAT SEDIMENT AND SEDIMENT LADEN WATER DO NOT ENTER THE DRAINAGE SYSTEM, ROADWAYS, OR VIOLATE APPLICABLE WATER STANDARDS
5. METHOD OF INSTALLATION FOR SEDIMENT FENCE SHALL NOT CAUSE DAMAGE TO VEGETATED SLOPE EXCEPT AT POINT OF INSTALLATION. SIDECAST MATERIAL SHALL BE KEPT TO A MINIMUM AND SHALL BE TO THE UPHILL SIDE OF THE SEDIMENT FENCE. THE FENCE SHALL BE INSTALLED AT LEAST 4 FEET FROM ADJACENT TREES
6. ALL EROSION CONTROL DEVICES SHALL BE EXAMINED AND REPAIRED AFTER EACH STORM OCCURRENCE, AND INLETS SHALL BE CLEANED OF SEDIMENT WHENEVER NECESSARY
7. HYDROSEED AND MULCH ALL DISTURBED AREAS UPON COMPLETION OF CONSTRUCTION OR AS DIRECTED BY THE AUTHORITIES HAVING JURISDICTION
8. THE CONTRACTOR SHALL LIMIT CONSTRUCTION TRAFFIC TO PAVED AREAS TO PREVENT AND MINIMIZE SEDIMENT TRACKING OFF-SITE. CONTRACTOR SHALL SWEEP OR VACUUM PAVED AREAS IF SEDIMENT ACCUMULATION OCCURS. DO NOT TRACK SEDIMENT TO THE PUBLIC STREET OR NEIGHBORING PROPERTIES
9. INSTALL TEMPORARY EROSION PREVENTION SUCH AS JUTE NETTING OR GEOTEXTILE ON DISTURBED AREAS STEEPER THAN 4H:1V
10. STAGING AND STOCKPILE AREAS TO BE DETERMINED BY CONTRACTOR AND ADJUSTED TO ACCOMMODATE THE PROGRESS OF CONSTRUCTION

ABBREVIATIONS

℄	CENTER LINE
ℙ	PROPERTY LINE
AC	ASPHALT CONCRETE
AHJ	AUTHORITY HAVING JURISDICTION
AWWA	AMERICAN WATER WORKS ASSOCIATION
BC	BOTTOM OF CURB
BCR	BEGIN CURB RETURN
BMP	BEST MANAGEMENT PRACTICE
BS	BOTTOM OF STEP
BW	BACK OF WALK
C	COMPACT
CB	CATCH BASIN
CI	CAST IRON
CIP	CAST IN PLACE
CO	CLEANOUT
CONC	CONCRETE
CLR	CLEAR
CVR	COVER
DI	DUCTILE IRON
DW	DOMESTIC WATER
ECR	END CURB RETURN
ELEV	ELEVATION
EP	EDGE OF PAVEMENT
ESC	EROSION/SEDIMENT CONTROL
EW	EACH WAY
EX	EXISTING
FDC	FIRE DEPARTMENT CONNECTION
FF	FINISH FLOOR
FG	FINISHED GRADE
FH	FIRE HYDRANT
FI	FIELD INLET
FL	FLOWLINE
FW	FIRE WATER/FACE OF WALL
G/GUT	GUTTER LINE
GB	GRADE BREAK
H	ACCESSIBLE STALL
HDPE	HIGH-DENSITY POLYETHYLENE
HMA	HOT MIX ASPHALT
IE	INVERT ELEVATION
LT	LEFT
ME	MATCH EXISTING
MH	MANHOLE
MJ	MECHANICAL JOINT
NTS	NOT TO SCALE
OC	ON CENTER
ODOT	OREGON DEPARTMENT OF TRANSPORTATION
OSHA	OREGON STATE HEALTH AUTHORITY
OSSC	OREGON STATE SPECIFICATIONS FOR CONSTRUCTION
PC	POINT OF CURVATURE
PCC	POINT OF COMPOUND CURVATURE
PCCP	PORTLAND CEMENT CONCRETE PAVING
PR	PROPOSED
PRC	POINT OF REVERSE CURVATURE
PT	POINT OF TANGENCY
PVC	POLYVINYL CHLORIDE
RD	ROOF DRAIN
ROW	RIGHT OF WAY
RSGV	RESILIENT SEAT GATE VALVE
RT	RIGHT
S	STANDARD
SAN	SANITARY SEWER
STA	STATION
STM	STORM
SW	SIDEWALK
TC	TOP OF CURB
TH	THRESHOLD
TS	TOP OF STEP
TW	TOP OF WALL
TYP	TYPICAL
WC	WHEELCHAIR

LEGEND

	EXISTING	PROPOSED
RIGHT-OF-WAY LINE		
BOUNDARY LINE		
PROPERTY LINE		
CENTERLINE		
CURB		
WETLAND BOUNDARY	WTB	
EDGE OF PAVEMENT		
EASEMENT		
FENCE LINE		
GRAVEL EDGE		
POWER LINE	PWR	PWR
OVERHEAD WIRE	OHW	
TRAFFIC SIGNAL WIRE	TS	
TELEPHONE LINE	TEL	TEL
TELEVISION LINE	TV	
GAS LINE	GAS	GAS
STORM SEWER LINE	STM	STM
SANITARY SEWER LINE	SAN	SAN
WATER LINE	WAT	WAT
TREE		
CONTROL MANHOLE		
DRYWELL		
FIRE DEPARTMENT CONNECTION	FDC	
FIRE HYDRANT		
WATER BLOWOFF/AIR RELEASE	WBO	
WATER METER		
WATER VALVE	WAT	
BACKFLOW PREVENTOR		
WATER VAULT	WV	
MONITORING WELL	W	
STORM/SANITARY MANHOLE	S I	
STORM SEWER CATCH BASIN		
SANITARY CLEAN OUT		
GAS VALVE		
GAS METER	G	
SIGN		
MAIL BOX	MB	
FOUND SURVEY MONUMENT		
GUY WIRE ANCHOR		
UTILITY POLE		
HVAC UNIT	AC	
POWER VAULT	P	
ELECTRICAL METER	EM	
POWER JUNCTION BOX	EB	
POWER TRANSFORMER	TFR	
LIGHT POLE		
TELEPHONE/TELEVISION VAULT	T	
TELEPHONE/TELEVISION JUNCTION BOX		
TELEPHONE/TELEVISION RISER	TR	
SIGNAL JUNCTION BOX	SGB	
BOLLARD		
ADA COMPLIANT CURB RAMP SLOPE ARROW		
SLOPE ARROW		
DOCK DOOR		
DRIVE-IN DOOR		
SPOT ELEVATION		XXX.XX
EXISTING SPOT ELEVATION	XXX.XX	

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REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:

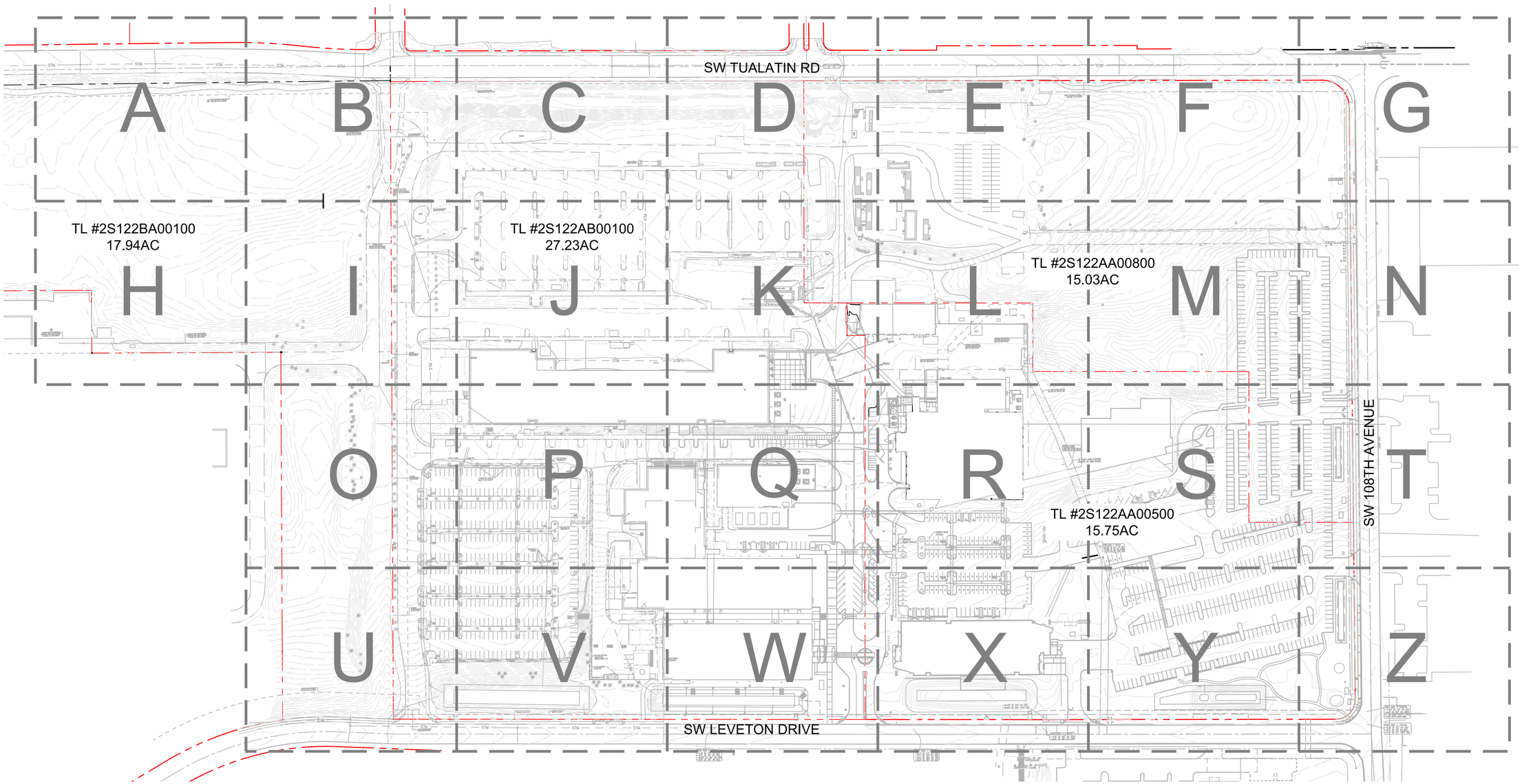
CIVIL GENERAL NOTES, SYMBOLS AND ABBREVIATIONS

SHEET:

C0.01

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



1 C1.01 OVERALL EXISTING CONDITIONS & DEMOLITION PLAN

100 0 50 100 200 400

(IN FEET)
1 inch = **100** ft.

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REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:
OVERALL EXISTING CONDITIONS & DEMOLITION PLAN

SHEET:
C1.01

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2

"225018000" C:\TEMP\ACPUBLISH_18540\180- C1.10- OVERALL SITE PLAN.DWG:C1.01 NKB 07/21/25 11:20 1:100



1 EXISTING CONDITIONS & DEMOLITION PLAN
C1.01A

20 0 10 20 40 80
(IN FEET)
1 inch = **20** ft.

KEYNOTES

02-01	REMOVE (ITEM AS NOTED)
02-02	PROTECT (ITEM AS NOTED)
02-03	RELOCATE (ITEM AS NOTED)

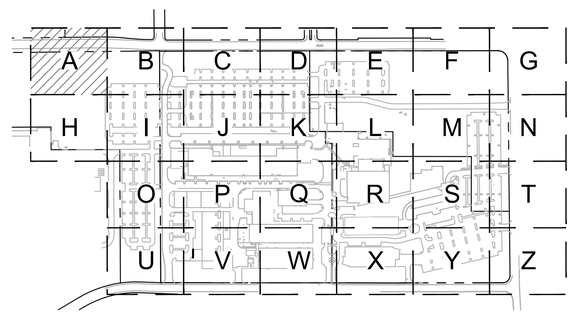
LEGEND

LIMITS OF WORK

SAWCUT

NOTES

1. REMOVE ALL ITEMS WITHIN LIMIITS OF WORK UNLESS OTHERWISE NOTED



KEY MAP
SCALE: NTS

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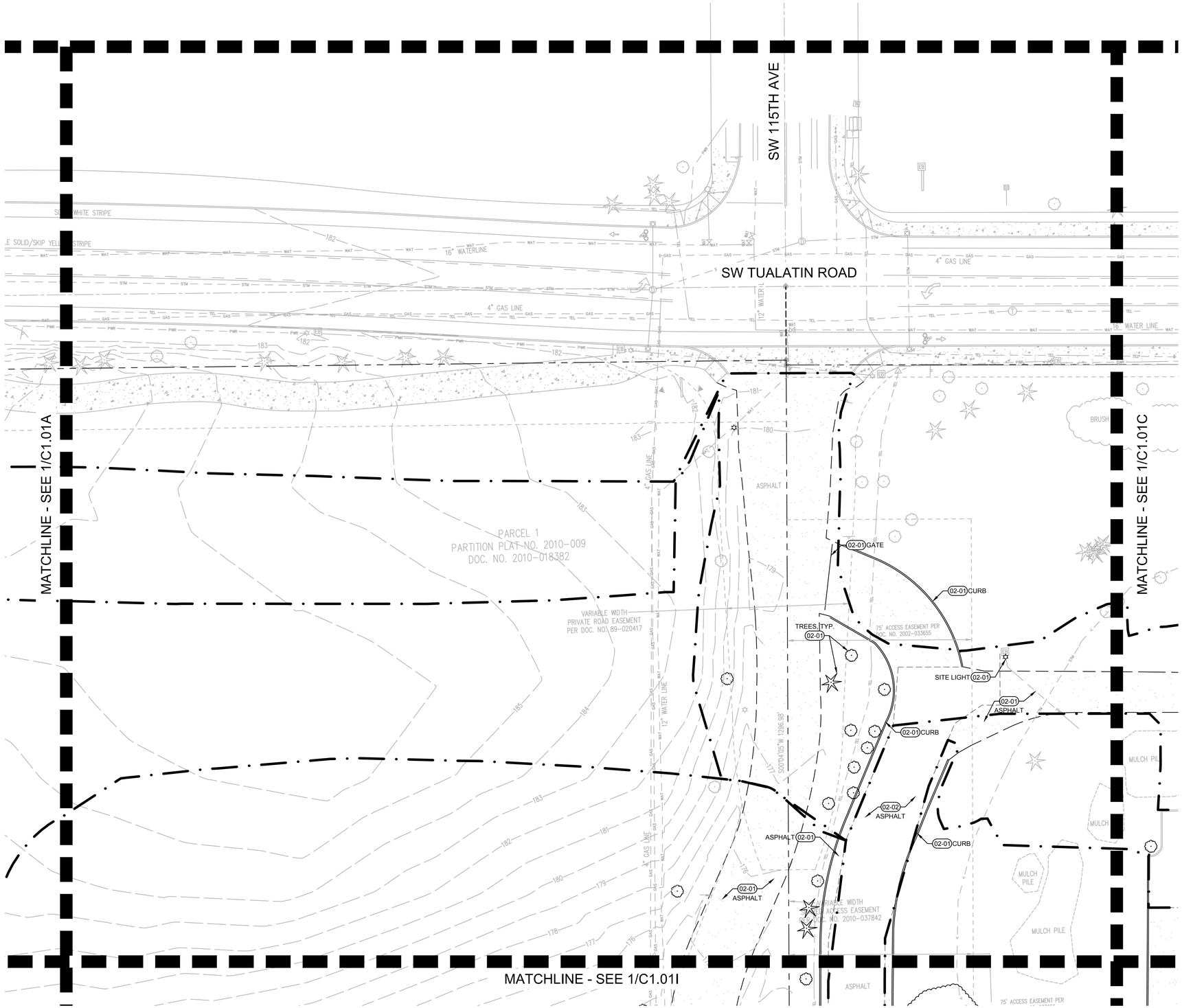
Delta	Issued As	Issue Date

SHEET TITLE:
EXISTING CONDITIONS & DEMOLITION PLAN

SHEET:
C1.01A

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



KEYNOTES

02-01	REMOVE (ITEM AS NOTED)
02-02	PROTECT (ITEM AS NOTED)
02-03	RELOCATE (ITEM AS NOTED)

LEGEND

LIMITS OF WORK

SAWCUT

NOTES

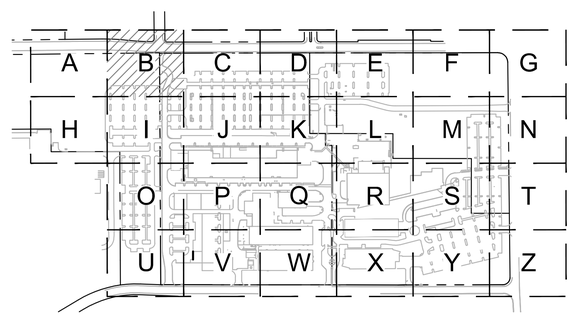
1. REMOVE ALL ITEMS WITHIN LIMIITS OF WORK UNLESS OTHERWISE NOTED

1 C1.01B EXISTING CONDITIONS & DEMOLITION PLAN

20 0 10 20 40 80

(IN FEET)

1 inch = **20** ft.



KEY MAP
SCALE: NTS

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REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:

EXISTING CONDITIONS & DEMOLITION PLAN

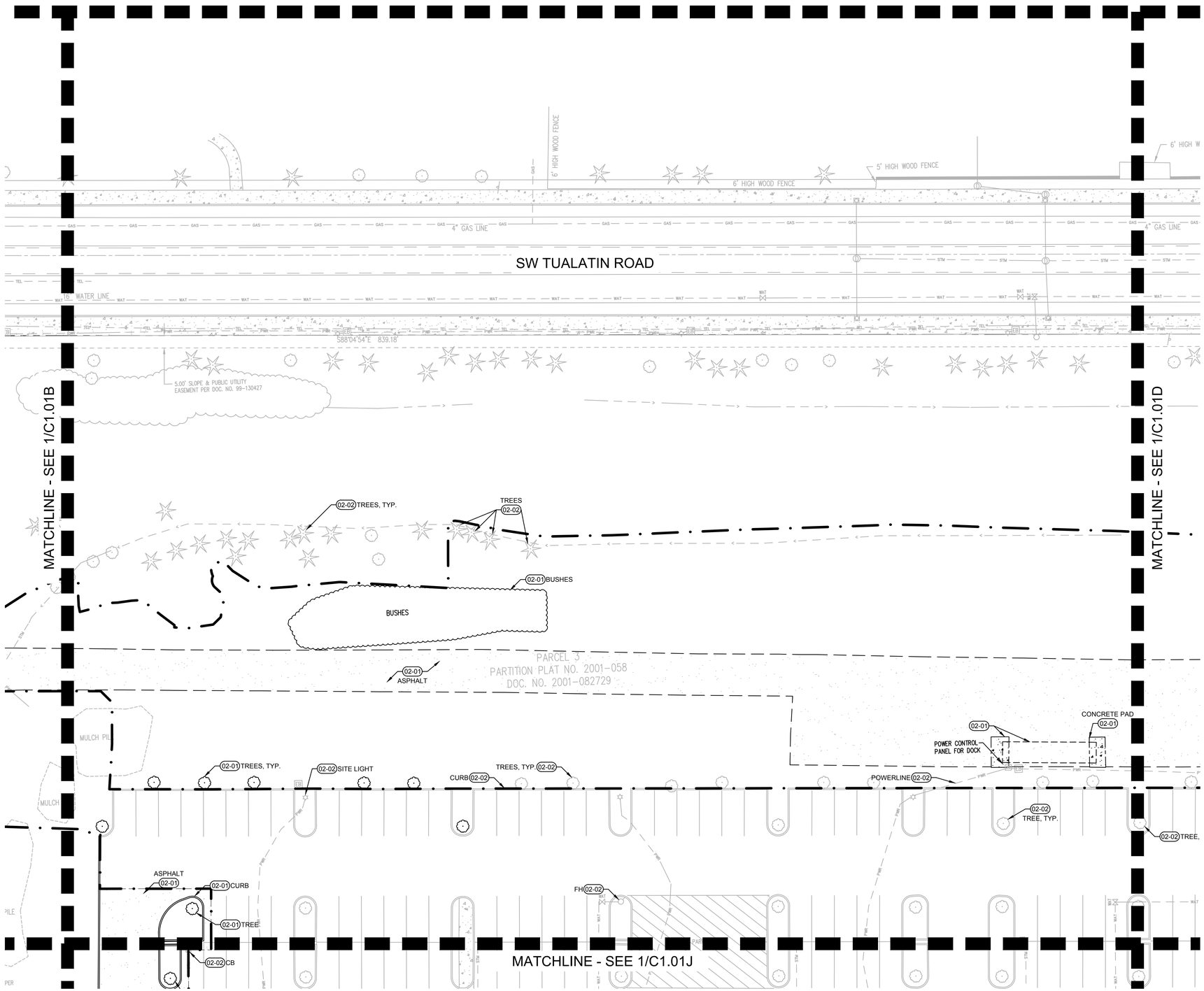
SHEET:

C1.01B

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2

2250180000 \\GRP.MCK\PROJECTS\PROJECTS\22501800\DRAWINGS\CIVIL\TUX180- C1.01 DEMO.DWG:C1.01B ADS 07/18/25 09:15 1:20



1 C1.01C EXISTING CONDITIONS & DEMOLITION PLAN

20 0 10 20 40 80

(IN FEET)

1 inch = 20 ft.

KEYNOTES

02-01	REMOVE (ITEM AS NOTED)
02-02	PROTECT (ITEM AS NOTED)
02-03	RELOCATE (ITEM AS NOTED)

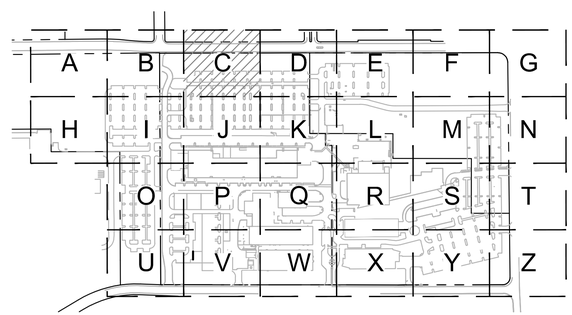
LEGEND

LIMITS OF WORK

SAWCUT

NOTES

1. REMOVE ALL ITEMS WITHIN LIMIITS OF WORK UNLESS OTHERWISE NOTED



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SCALE: NTS

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EXISTING CONDITIONS & DEMOLITION PLAN

SHEET:
C1.01C

JOB NO. **2250180.00**

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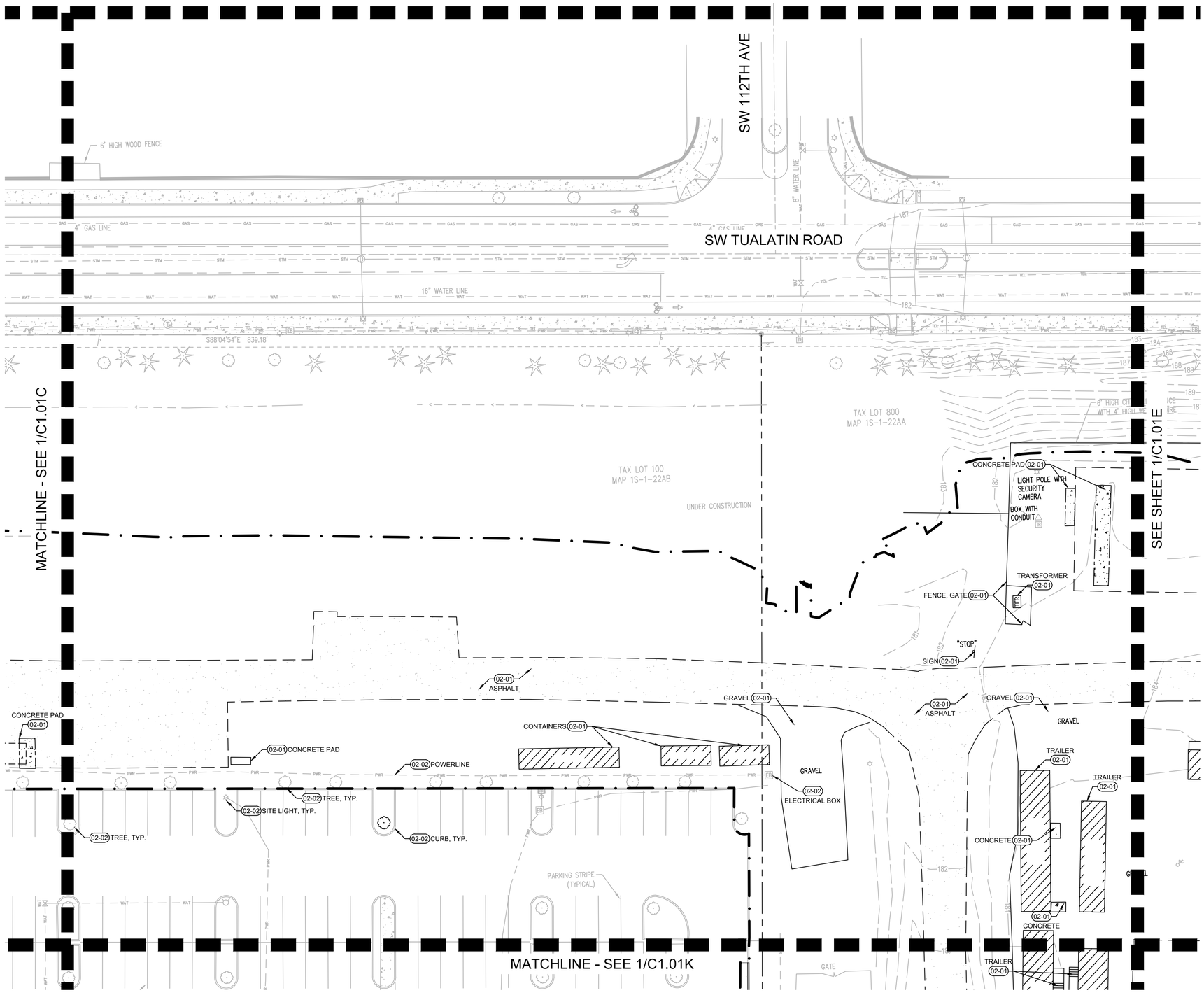


1 C1.01D EXISTING CONDITIONS & DEMOLITION PLAN

20 0 10 20 40 80

(IN FEET)

1 inch = **20** ft.

KEYNOTES

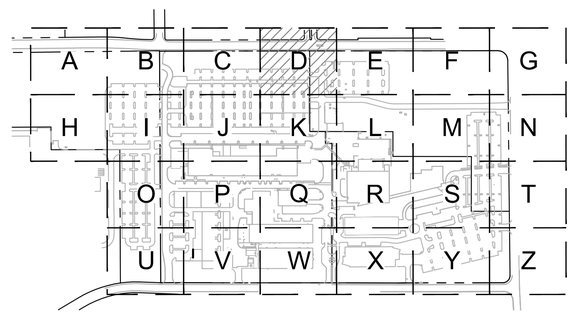
02-01	REMOVE (ITEM AS NOTED)
02-02	PROTECT (ITEM AS NOTED)
02-03	RELOCATE (ITEM AS NOTED)

LEGEND

— · — · —	LIMITS OF WORK
- - - - - -	SAWCUT

NOTES

1. REMOVE ALL ITEMS WITHIN LIMIITS OF WORK UNLESS OTHERWISE NOTED



KEY MAP
SCALE: NTS

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EXISTING CONDITIONS & DEMOLITION PLAN

SHEET:

C1.01D

JOB NO. **2250180.00**

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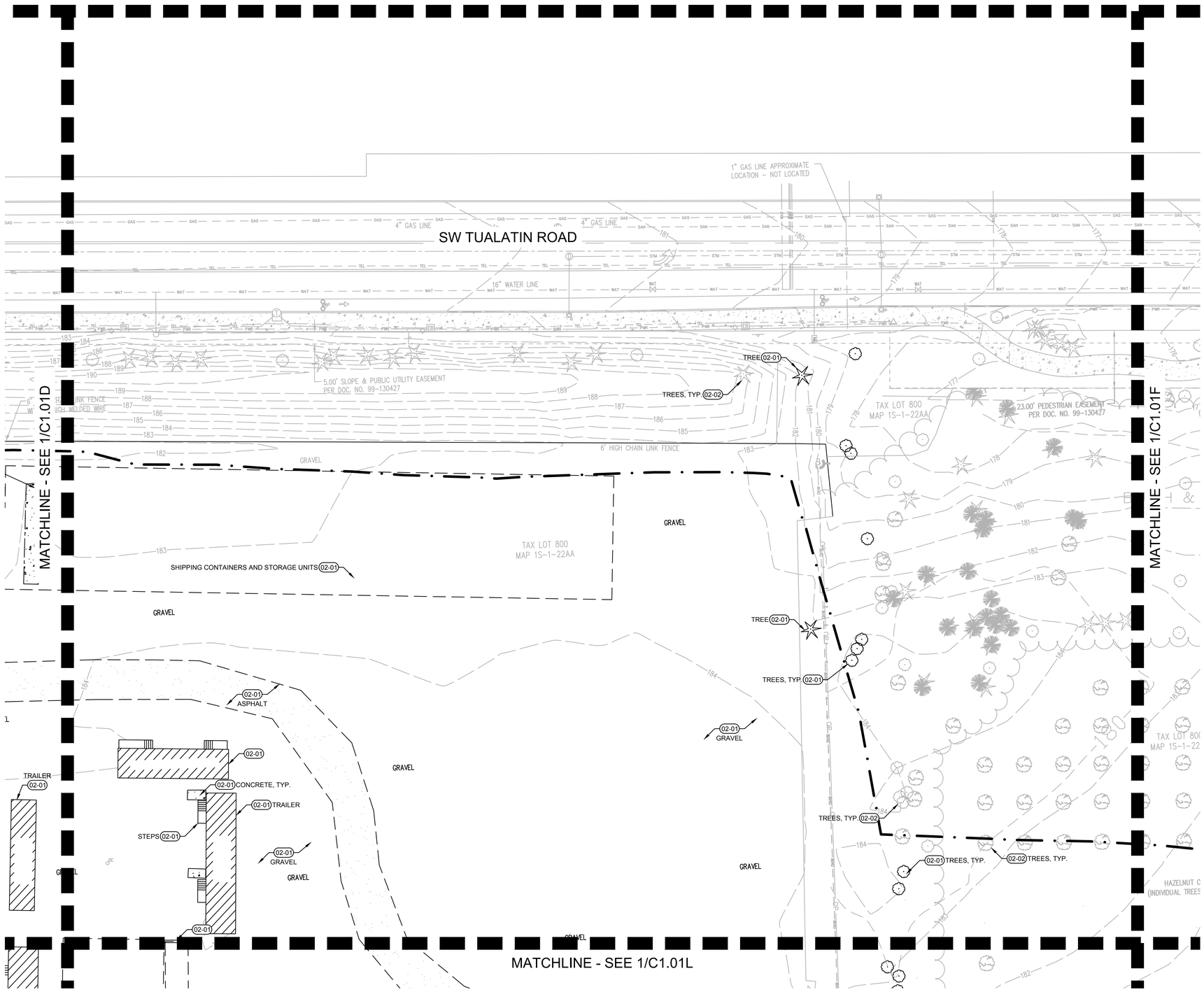

1 EXISTING CONDITIONS & DEMOLITION PLAN
C1.01E

20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

KEYNOTES

02-01	REMOVE (ITEM AS NOTED)
02-02	PROTECT (ITEM AS NOTED)
02-03	RELOCATE (ITEM AS NOTED)

LEGEND

- LIMITS OF WORK
- SAWCUT

NOTES

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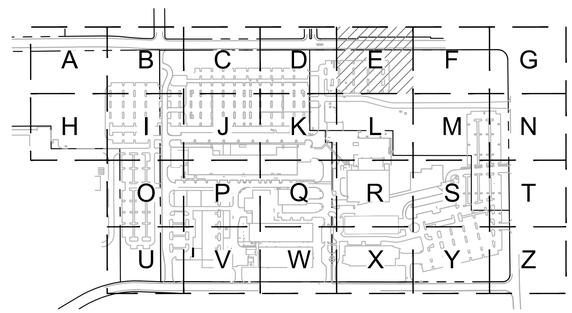

KEY MAP
SCALE: NTS

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EXISTING CONDITIONS & DEMOLITION PLAN

SHEET:
C1.01E

JOB NO. **2250180.00**

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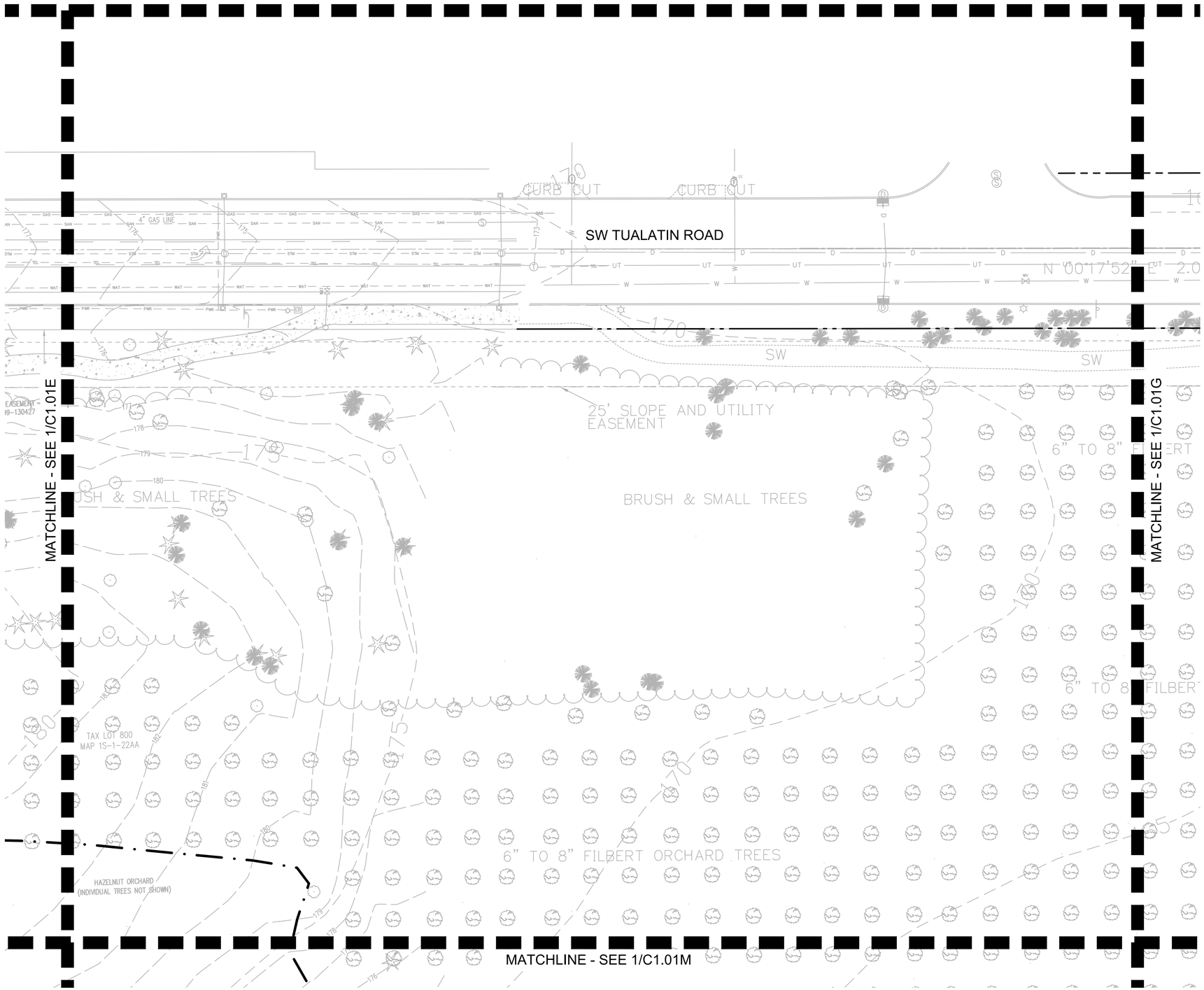

KEYNOTES

02-01	REMOVE (ITEM AS NOTED)
02-02	PROTECT (ITEM AS NOTED)
02-03	RELOCATE (ITEM AS NOTED)

LEGEND

LIMITS OF WORK

SAWCUT

NOTES

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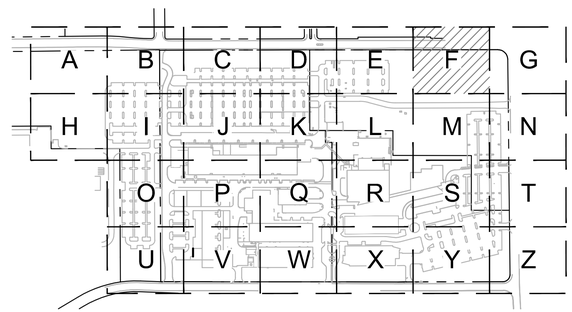

KEY MAP
SCALE: NTS

1 C1.01F EXISTING CONDITIONS & DEMOLITION PLAN

20 0 10 20 40 80

(IN FEET)
1 inch = **20** ft.

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EXISTING CONDITIONS & DEMOLITION PLAN

SHEET:
C1.01F

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2

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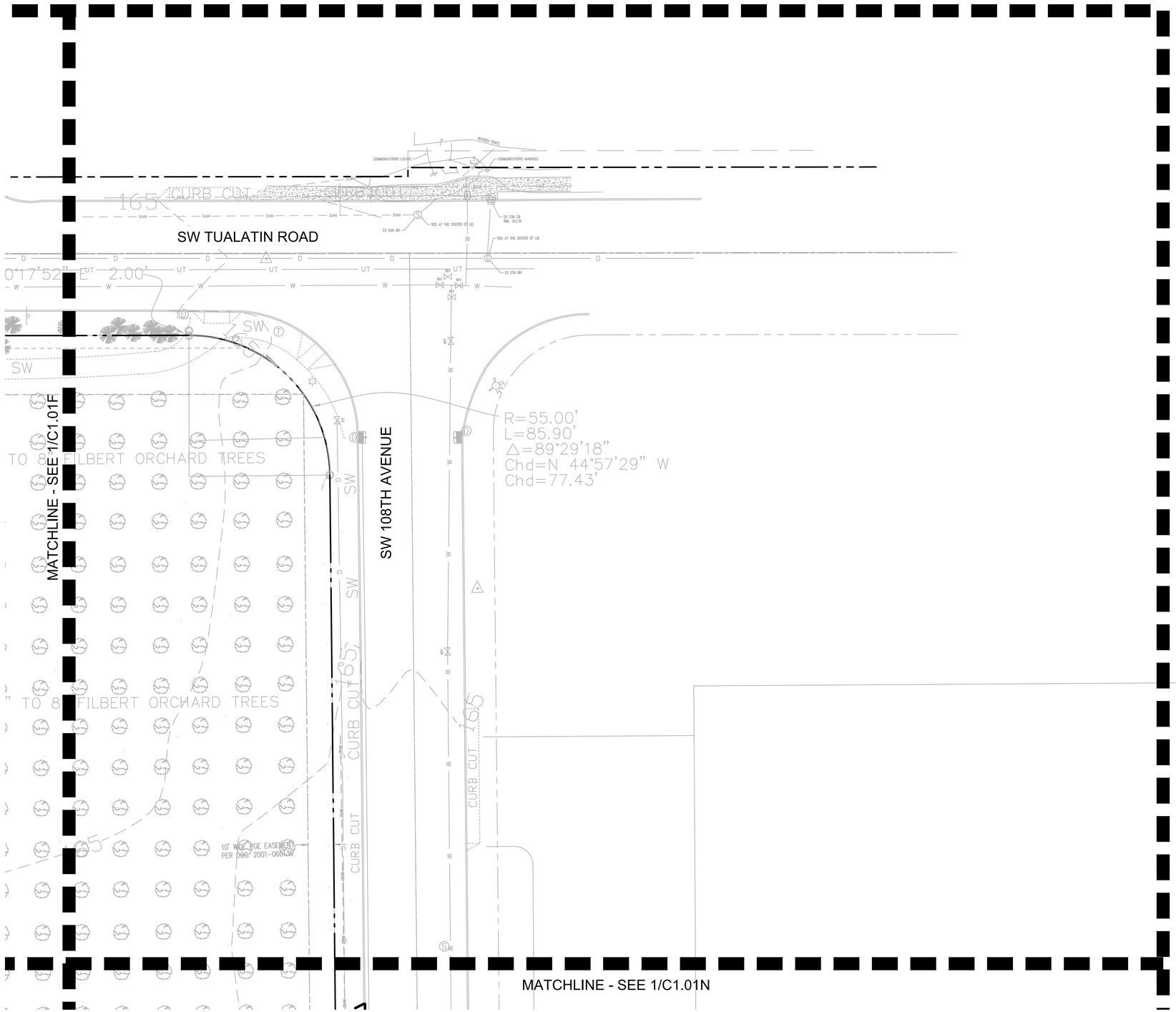

1 EXISTING CONDITIONS & DEMOLITION PLAN
C1.01G

20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

KEYNOTES

02-01	REMOVE (ITEM AS NOTED)
02-02	PROTECT (ITEM AS NOTED)
02-03	RELOCATE (ITEM AS NOTED)

LEGEND

LIMITS OF WORK

SAWCUT

NOTES

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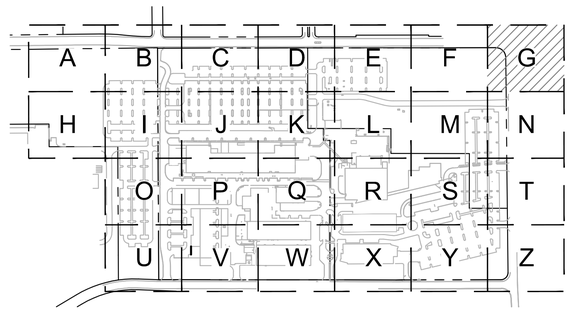

KEY MAP
SCALE: NTS

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SHEET TITLE:
EXISTING CONDITIONS & DEMOLITION PLAN

SHEET:
C1.01G

JOB NO. **2250180.00**

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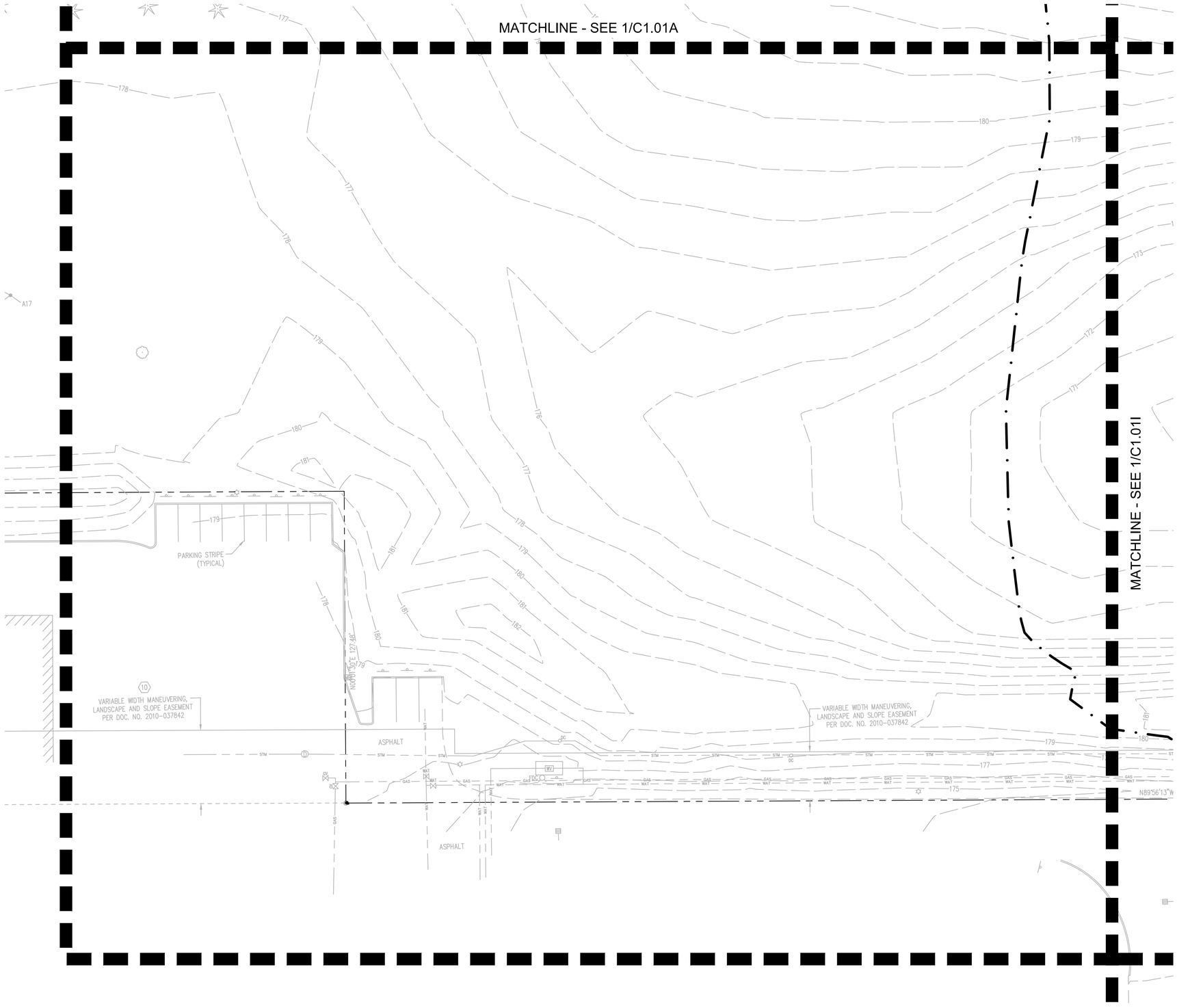

1 EXISTING CONDITIONS & DEMOLITION PLAN
C1.01H

20 0 10 20 40 80
(IN FEET)
1 inch = **20** ft.

KEYNOTES

02-01	REMOVE (ITEM AS NOTED)
02-02	PROTECT (ITEM AS NOTED)
02-03	RELOCATE (ITEM AS NOTED)

LEGEND

LIMITS OF WORK

SAWCUT

NOTES

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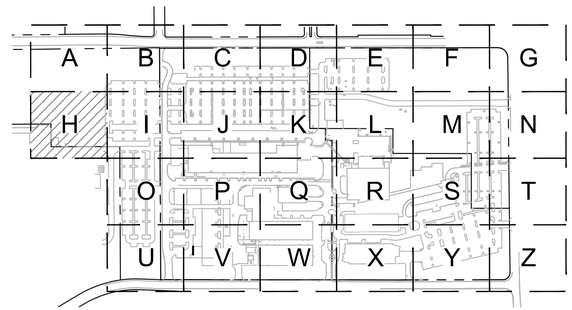

KEY MAP
SCALE: NTS

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Delta	Issued As	Issue Date

SHEET TITLE:
EXISTING CONDITIONS & DEMOLITION PLAN

SHEET:
C1.01H

JOB NO. **2250180.00**

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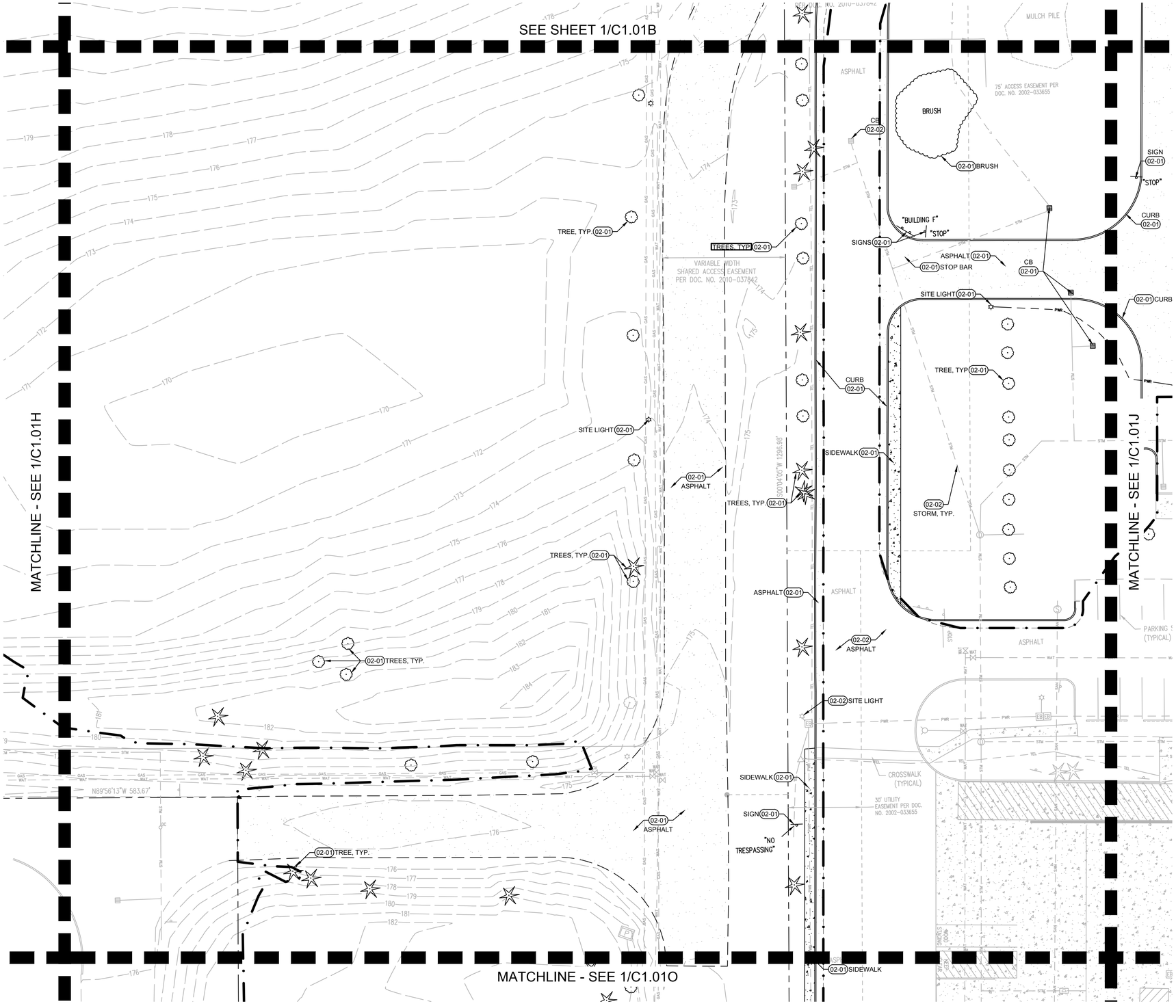

1 EXISTING CONDITIONS & DEMOLITION PLAN
C1.01I

20 0 10 20 40 80
(IN FEET)
1 inch = **20** ft.

KEYNOTES

02-01	REMOVE (ITEM AS NOTED)
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LEGEND

LIMITS OF WORK

SAWCUT

NOTES

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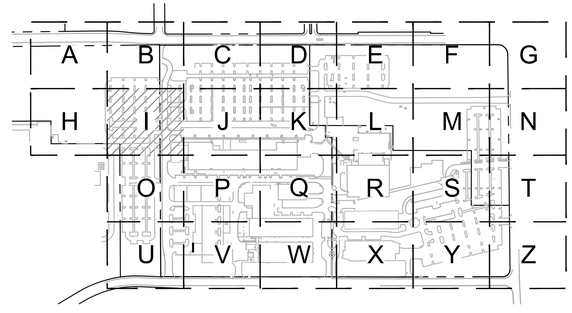

KEY MAP
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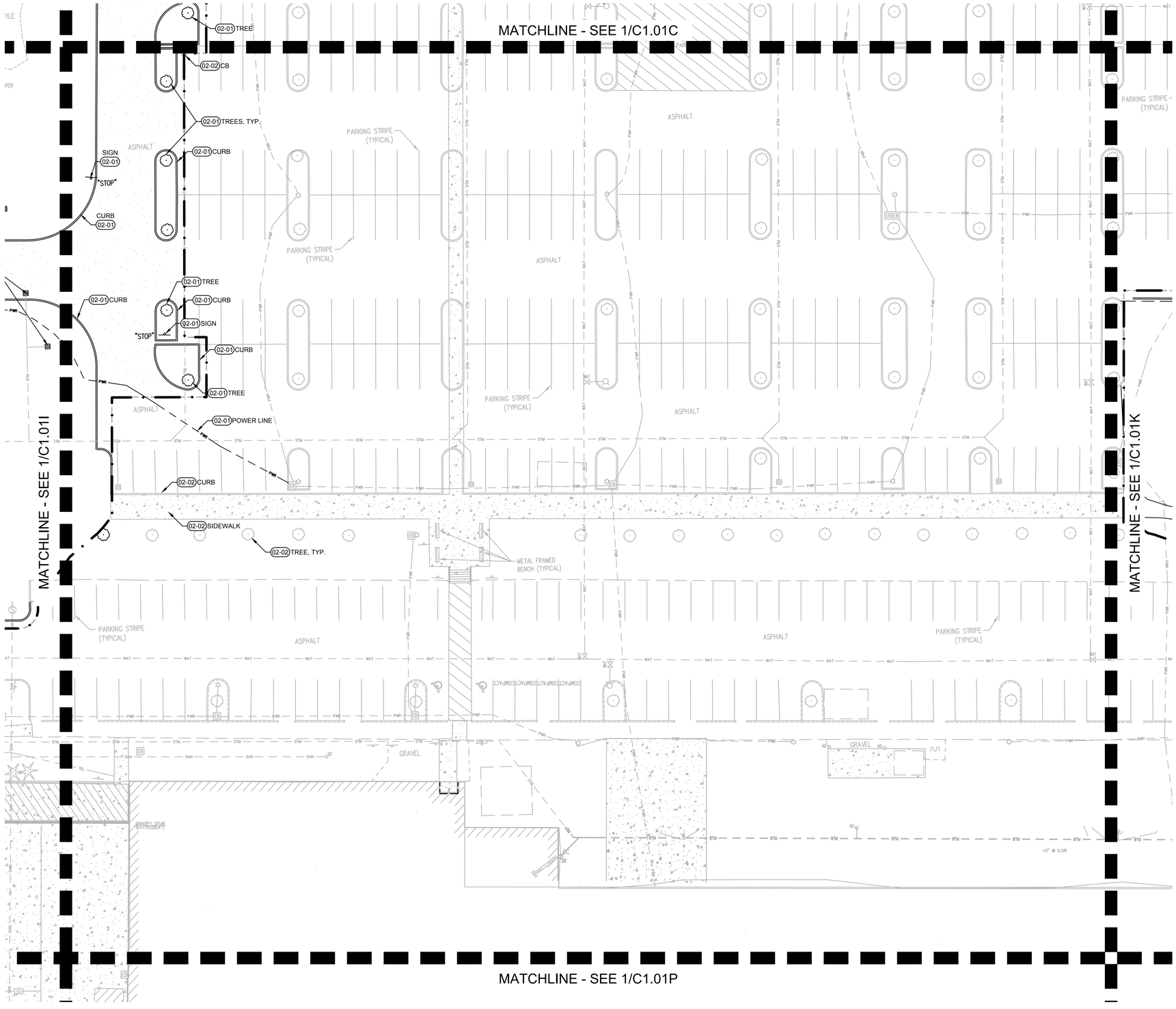

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LEGEND

LIMITS OF WORK

SAWCUT

NOTES

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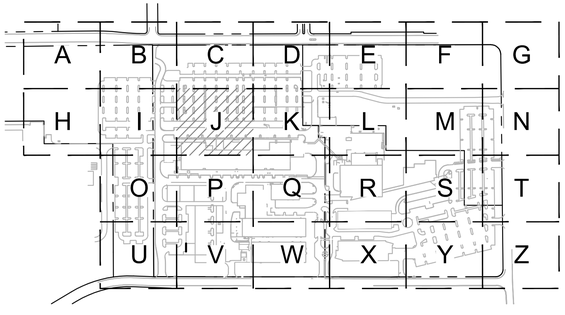

KEY MAP
SCALE: NTS

1 C1.01J EXISTING CONDITIONS & DEMOLITION PLAN

20 0 10 20 40 80

(IN FEET)
1 inch = **20** ft.

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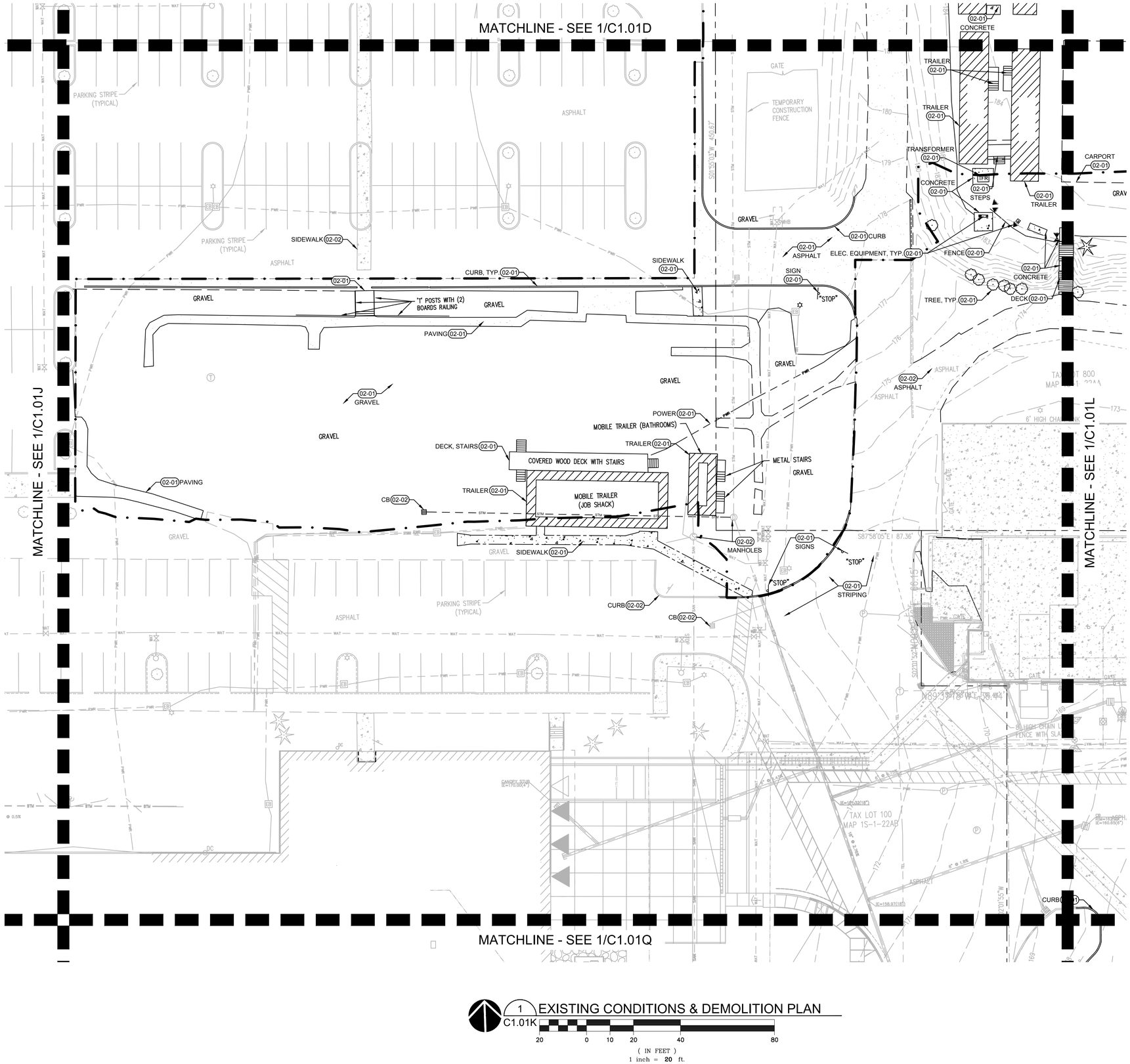

KEYNOTES

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02-03	RELOCATE (ITEM AS NOTED)

LEGEND

- LIMITS OF WORK
- SAWCUT

NOTES

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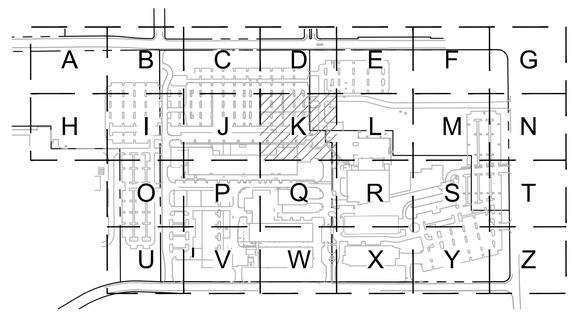
1 C1.01K EXISTING CONDITIONS & DEMOLITION PLAN

20 0 10 20 40 80

(IN FEET)

1 inch = **20** ft.



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SHEET:

C1.01K

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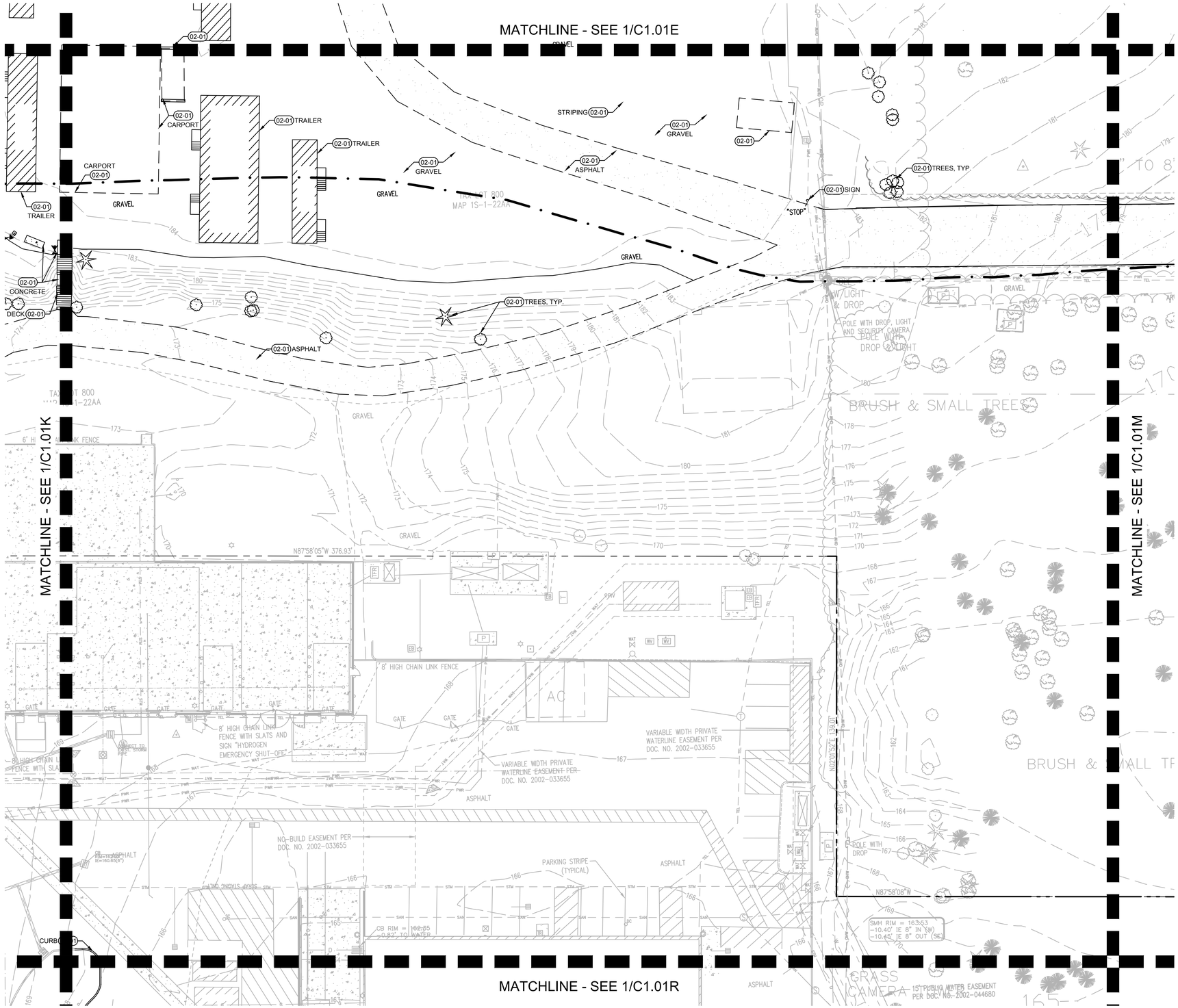

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LEGEND

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- SAWCUT

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(IN FEET)
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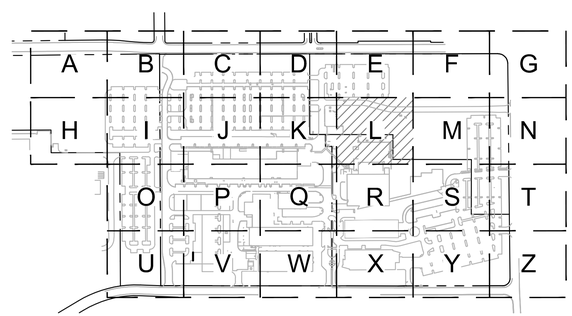

KEY MAP
SCALE: NTS

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C1.01L

JOB NO. 2250180.00

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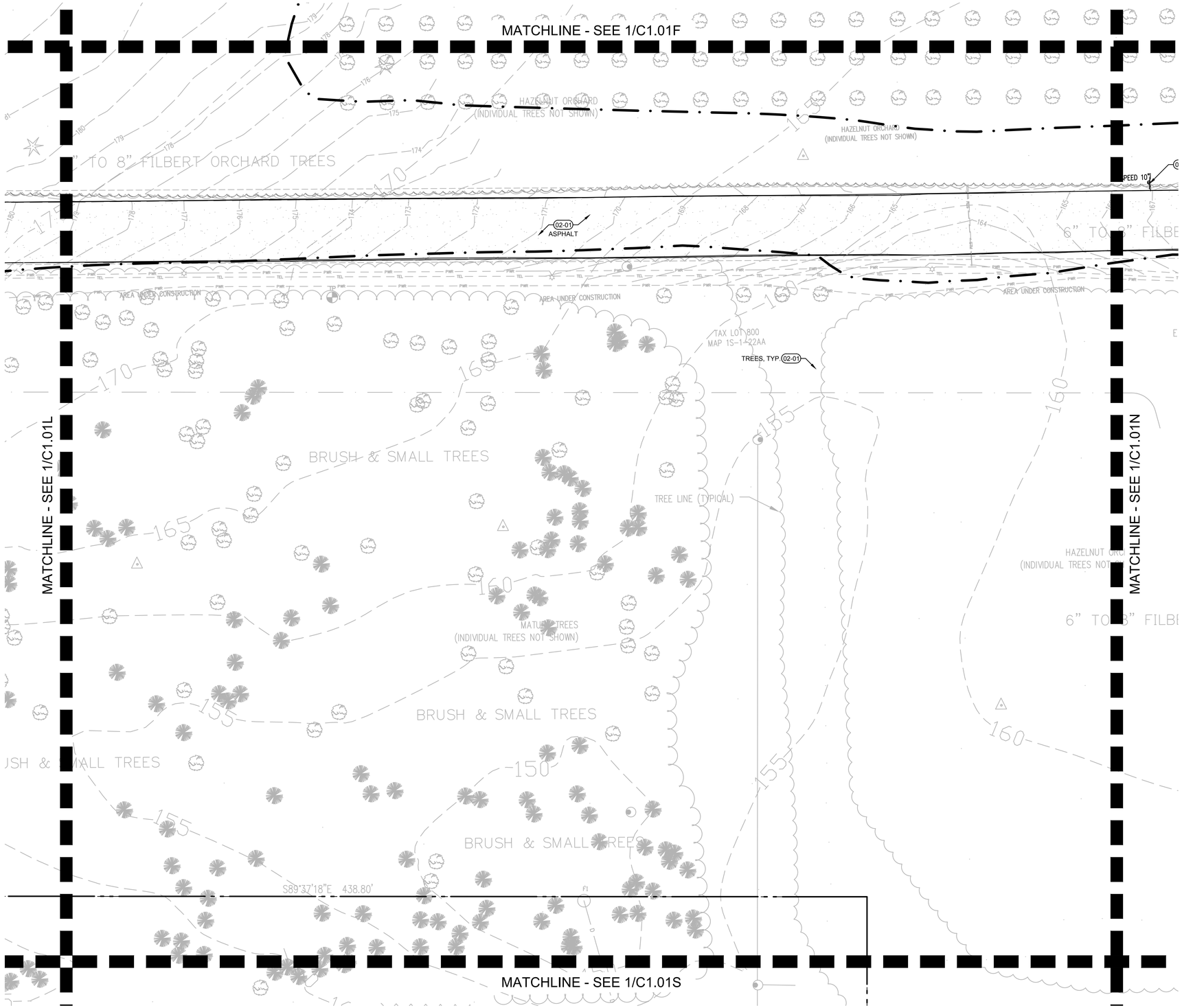

KEYNOTES

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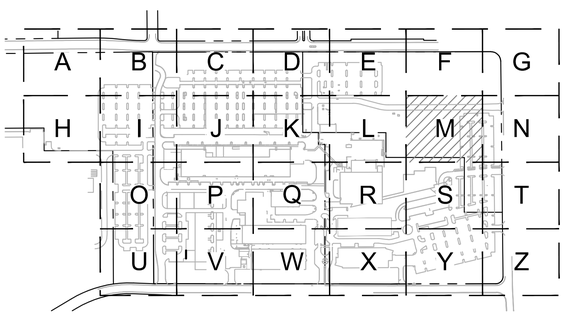
02-03	RELOCATE (ITEM AS NOTED)

LEGEND

— · — · —	LIMITS OF WORK
- - - - - -	SAWCUT

NOTES

1. REMOVE ALL ITEMS WITHIN LIMIITS OF WORK UNLESS OTHERWISE NOTED



KEY MAP
SCALE: NTS

1 C1.01M EXISTING CONDITIONS & DEMOLITION PLAN

20 0 10 20 40 80
(IN FEET)
1 inch = **20** ft.

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Delta	Issued As	Issue Date

SHEET TITLE:
EXISTING CONDITIONS & DEMOLITION PLAN

SHEET:
C1.01M

JOB NO. **2250180.00**

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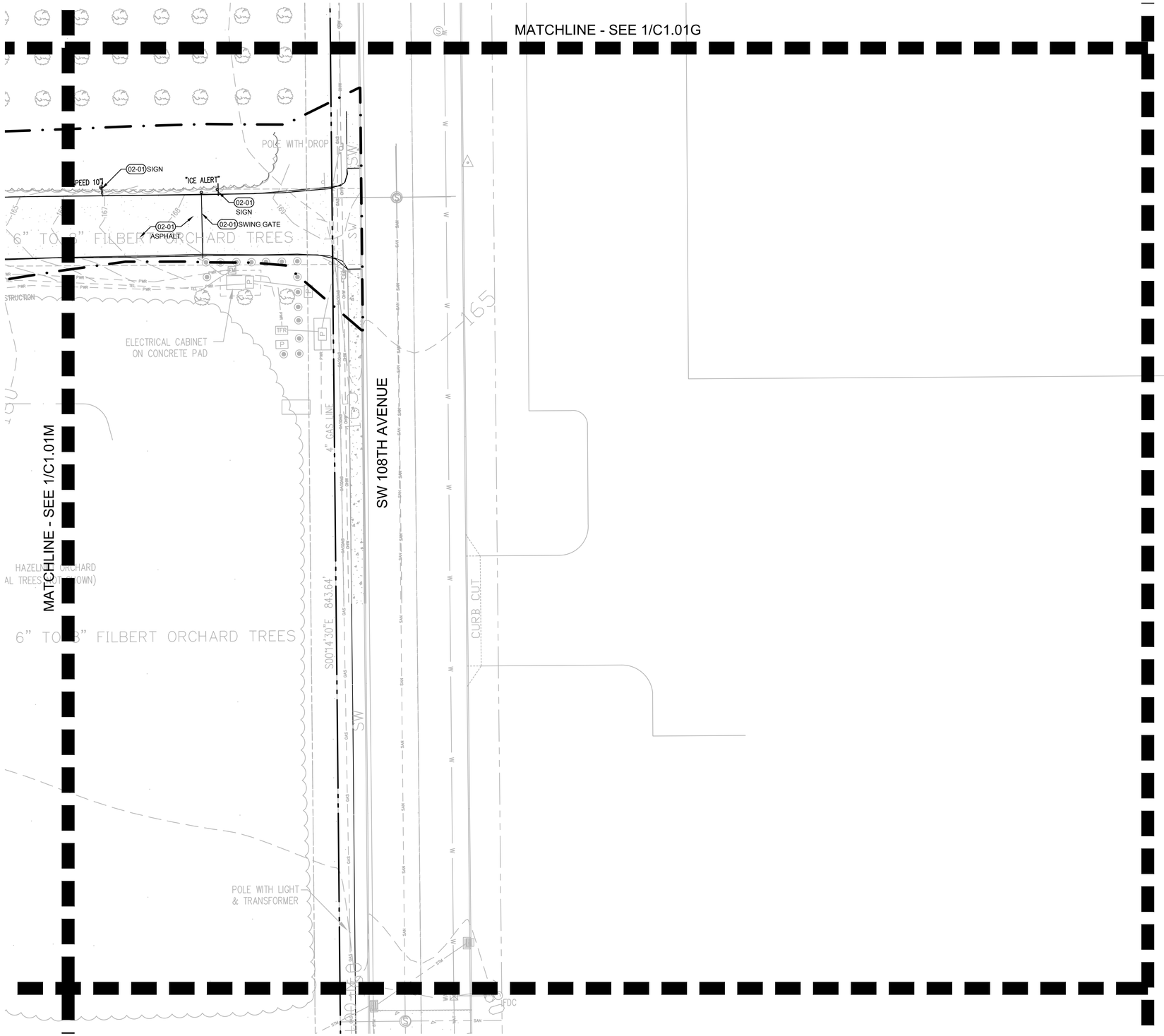


1 C1.01N EXISTING CONDITIONS & DEMOLITION PLAN

20 0 10 20 40 80

(IN FEET)
1 inch = **20** ft.

KEYNOTES

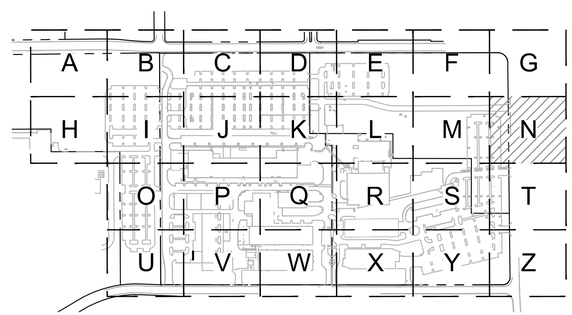
02-01	REMOVE (ITEM AS NOTED)
02-02	PROTECT (ITEM AS NOTED)
02-03	RELOCATE (ITEM AS NOTED)

LEGEND

- LIMITS OF WORK
- SAWCUT

NOTES

1. REMOVE ALL ITEMS WITHIN LIMIITS OF WORK UNLESS OTHERWISE NOTED



KEY MAP
SCALE: NTS

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SHEET TITLE:
EXISTING CONDITIONS & DEMOLITION PLAN

SHEET:
C1.01N

JOB NO. **2250180.00**

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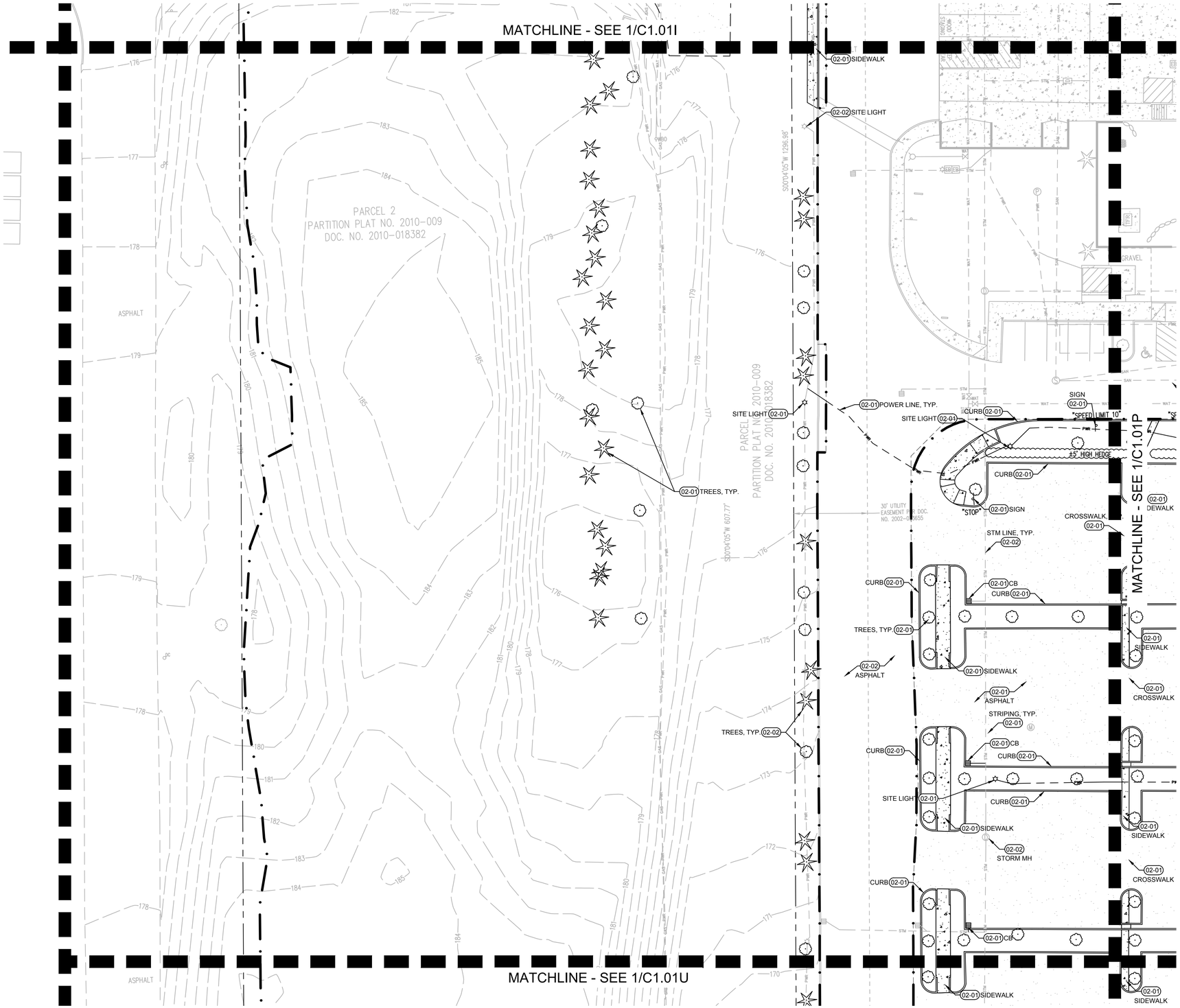
2250180000 \\GRP.MCK\PROJECTS\PROJECTS\225018000\DRAWINGS\CIVIL\TUS\180- C1.01 DEMO.DWG:C1.01N NKB 07/19/25 22:32 1:20



KEYNOTES

02-01	REMOVE (ITEM AS NOTED)
02-02	PROTECT (ITEM AS NOTED)
02-03	RELOCATE (ITEM AS NOTED)

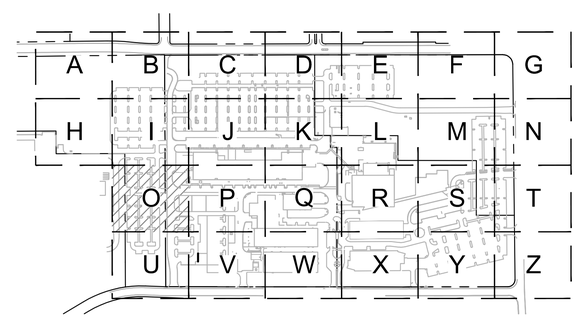
LEGEND

LIMITS OF WORK

SAWCUT

NOTES

1. REMOVE ALL ITEMS WITHIN LIMIITS OF WORK UNLESS OTHERWISE NOTED



KEY MAP
SCALE: NTS

1 C1.01O EXISTING CONDITIONS & DEMOLITION PLAN

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

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EXISTING CONDITIONS & DEMOLITION PLAN

SHEET:
C1.01O

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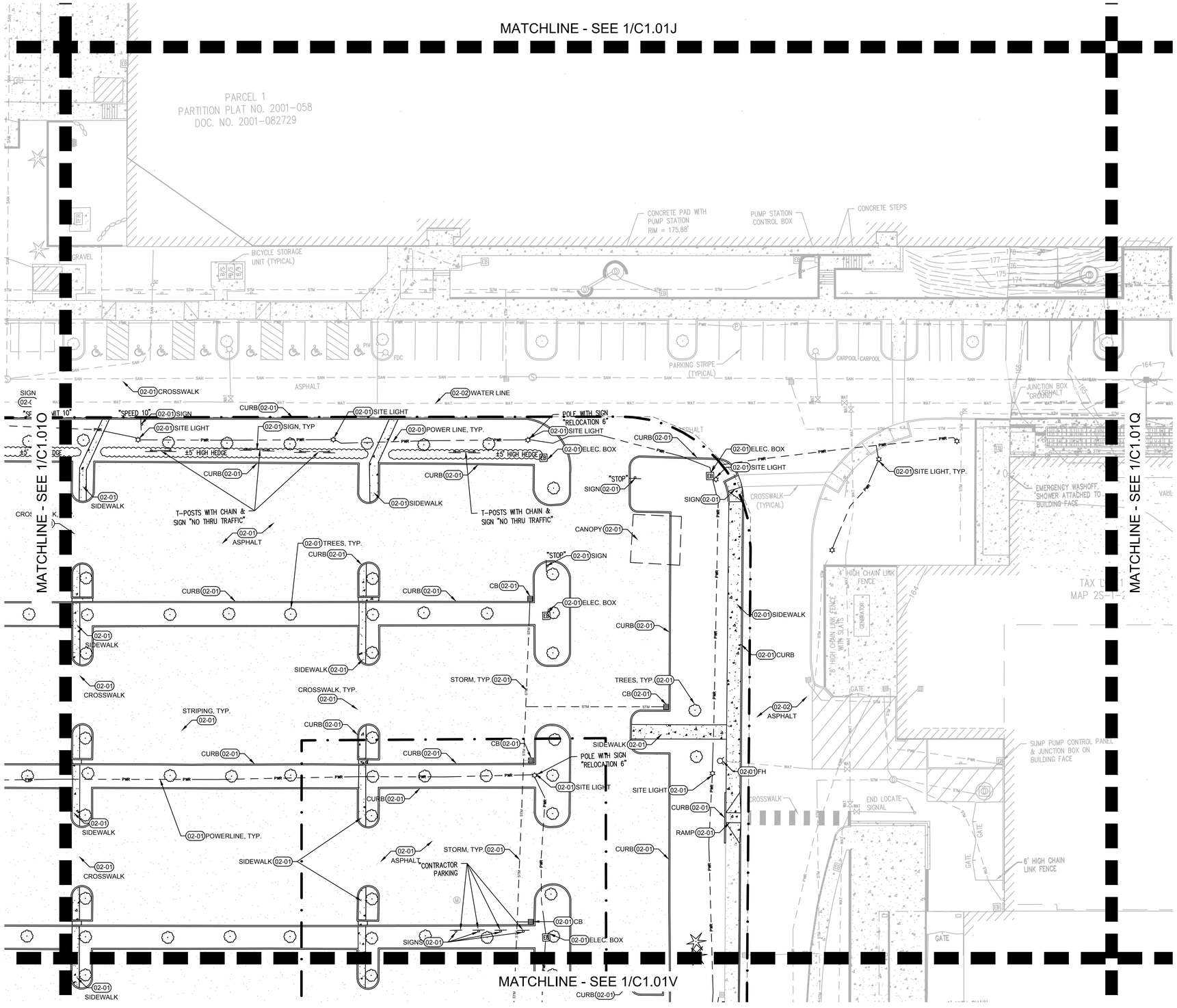


1 C1.01P EXISTING CONDITIONS & DEMOLITION PLAN

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

KEYNOTES

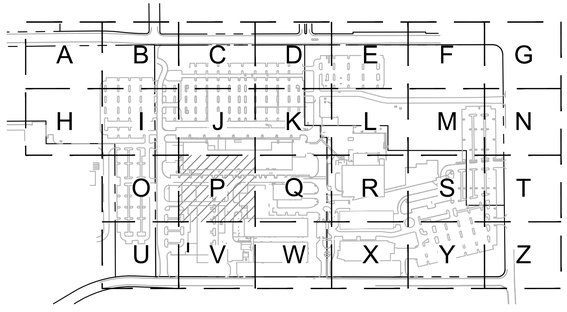
02-01 REMOVE (ITEM AS NOTED)
02-02 PROTECT (ITEM AS NOTED)
02-03 RELOCATE (ITEM AS NOTED)

LEGEND

LIMITS OF WORK
SAWCUT

NOTES

1. REMOVE ALL ITEMS WITHIN LIMIITS OF WORK UNLESS OTHERWISE NOTED



KEY MAP
SCALE: NTS

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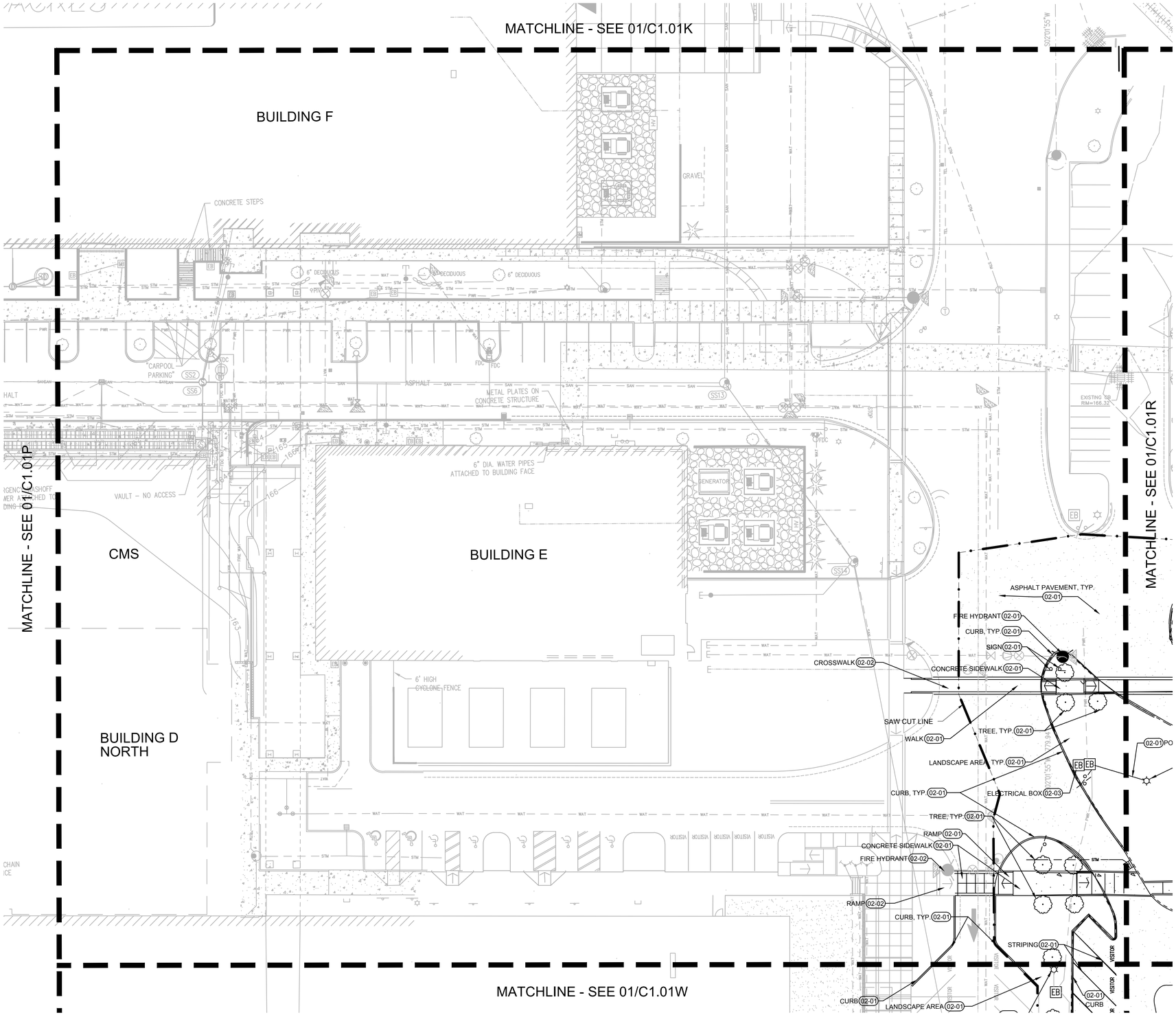


1 C1.01Q EXISTING CONDITIONS & DEMOLITION PLAN

20 0 10 20 40 80

(IN FEET)
1 inch = **20** ft.

KEYNOTES

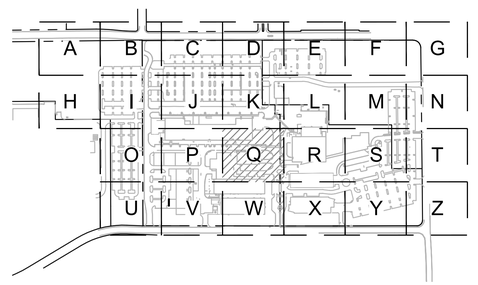
02-01	REMOVE (ITEM AS NOTED)
02-02	PROTECT (ITEM AS NOTED)
02-03	RELOCATE (ITEM AS NOTED)

LEGEND

- LIMITS OF WORK
- SAWCUT

NOTES

1. REMOVE ALL ITEMS WITHIN LIMIITS OF WORK UNLESS OTHERWISE NOTED



KEY MAP
SCALE: NTS

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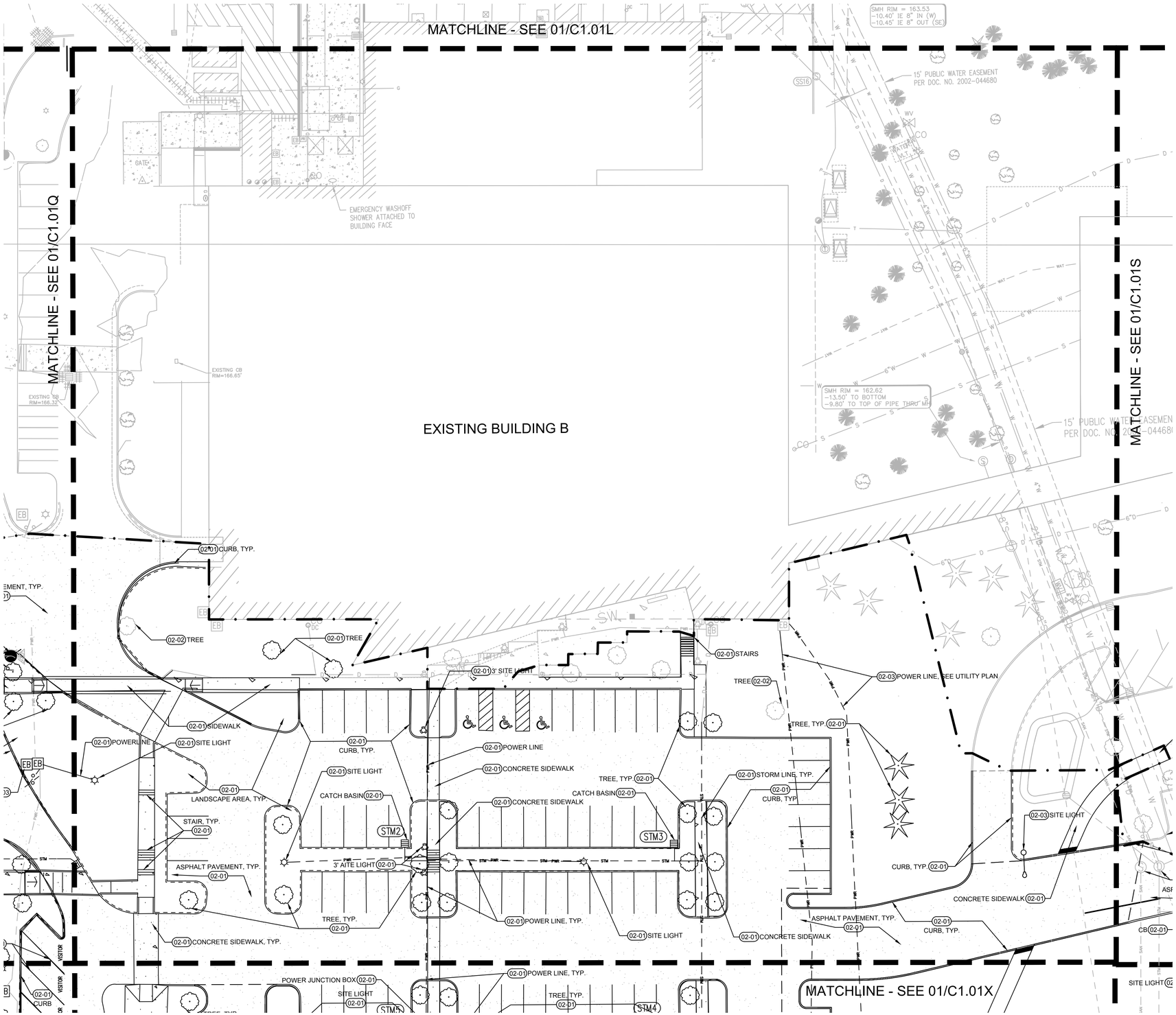


1 C1.01R EXISTING CONDITIONS & DEMOLITION PLAN

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

KEYNOTES

02-01	REMOVE (ITEM AS NOTED)
02-02	PROTECT (ITEM AS NOTED)
02-03	RELOCATE (ITEM AS NOTED)

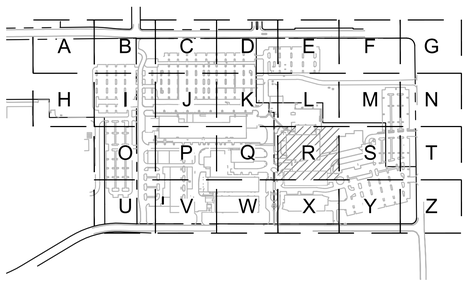
LEGEND

LIMITS OF WORK

SAWCUT

NOTES

1. REMOVE ALL ITEMS WITHIN LIMIITS OF WORK UNLESS OTHERWISE NOTED



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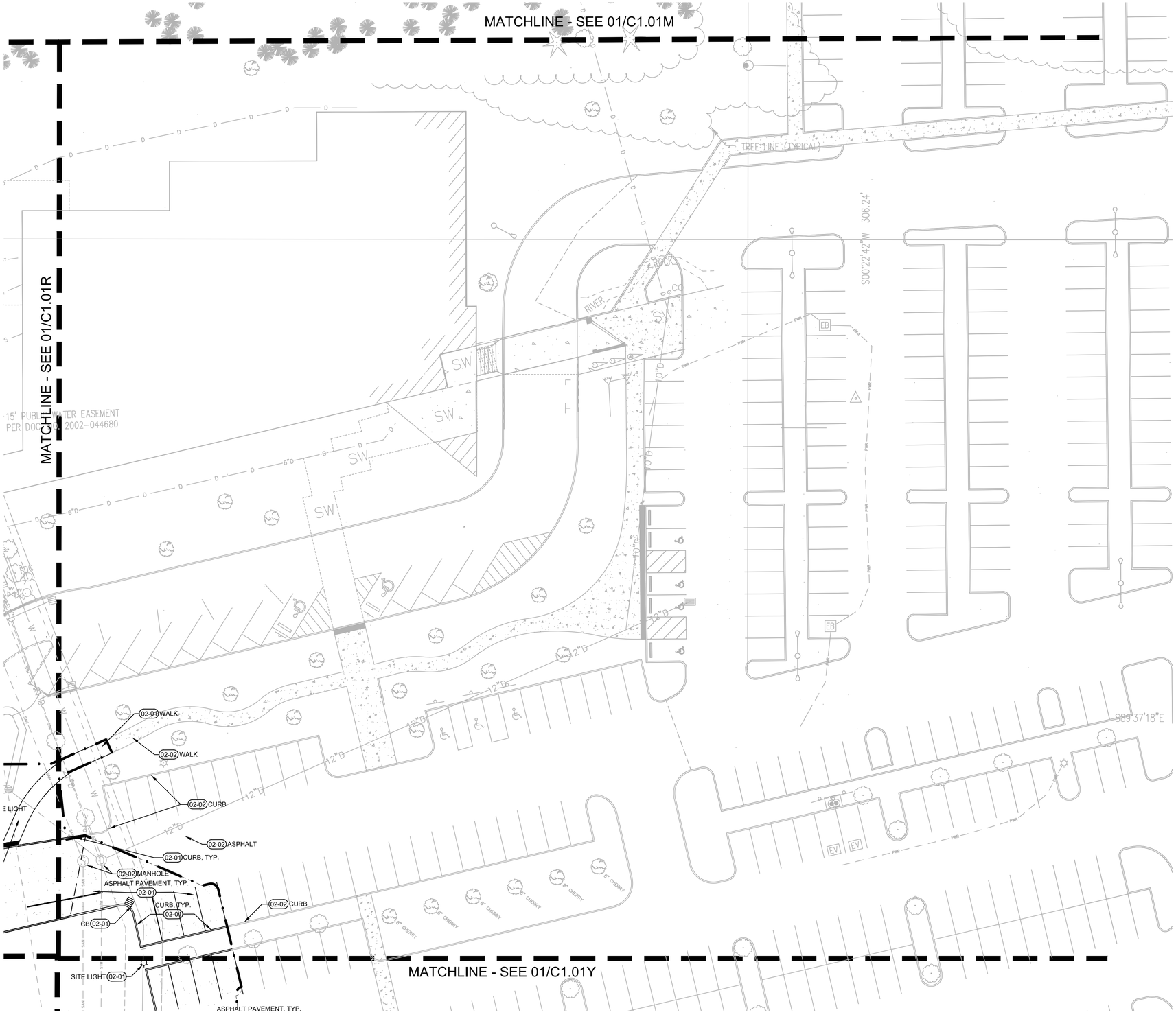


1 C1.01S EXISTING CONDITIONS & DEMOLITION PLAN

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

KEYNOTES

02-01	REMOVE (ITEM AS NOTED)
02-02	PROTECT (ITEM AS NOTED)
02-03	RELOCATE (ITEM AS NOTED)

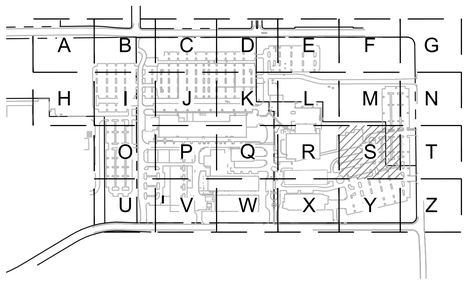
LEGEND

LIMITS OF WORK

SAWCUT

NOTES

1. REMOVE ALL ITEMS WITHIN LIMIITS OF WORK UNLESS OTHERWISE NOTED



KEY MAP
SCALE: NTS

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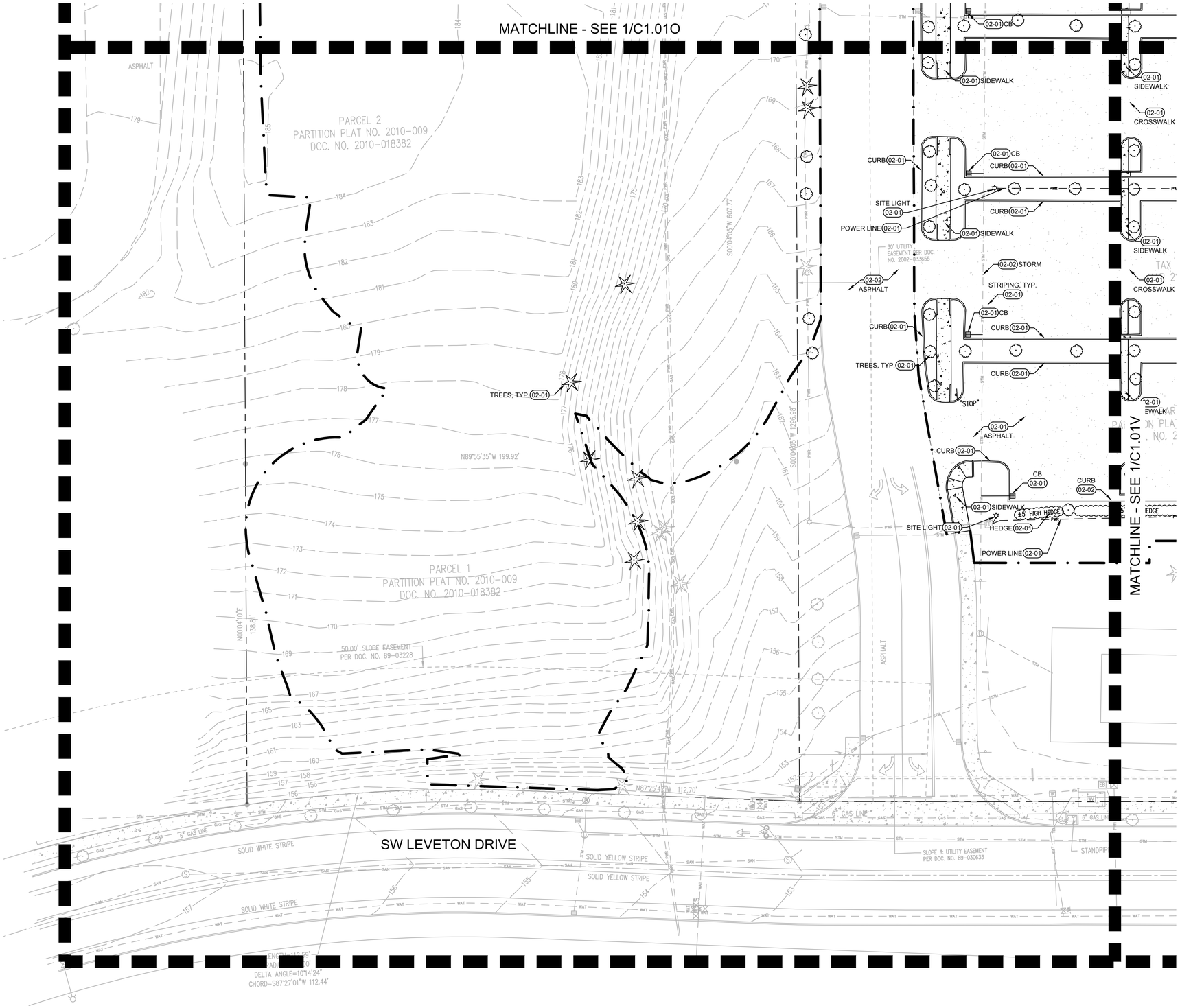
ARCHITECTURAL REVIEW 07/21/2

2250180000 \\GRP.MCK\PROJECTS\PROJECTS\2250180000\DRAWINGS\CIVIL\BLDG H\141- C1.01 DEMO.DWG:C1.01S ADS 07/16/25 07:42 1:20



1 C1.01U EXISTING CONDITIONS & DEMOLITION PLAN

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

KEYNOTES

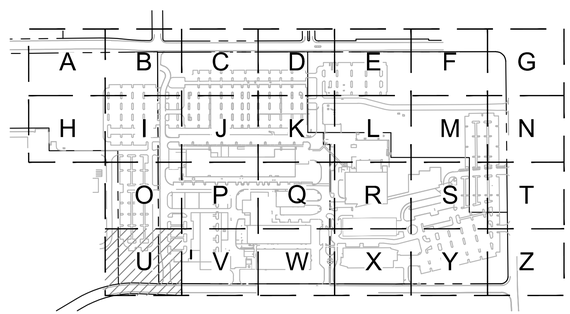
02-01	REMOVE (ITEM AS NOTED)
02-02	PROTECT (ITEM AS NOTED)
02-03	RELOCATE (ITEM AS NOTED)

LEGEND

- LIMITS OF WORK
- SAWCUT

NOTES

1. REMOVE ALL ITEMS WITHIN LIMIITS OF WORK UNLESS OTHERWISE NOTED



KEY MAP
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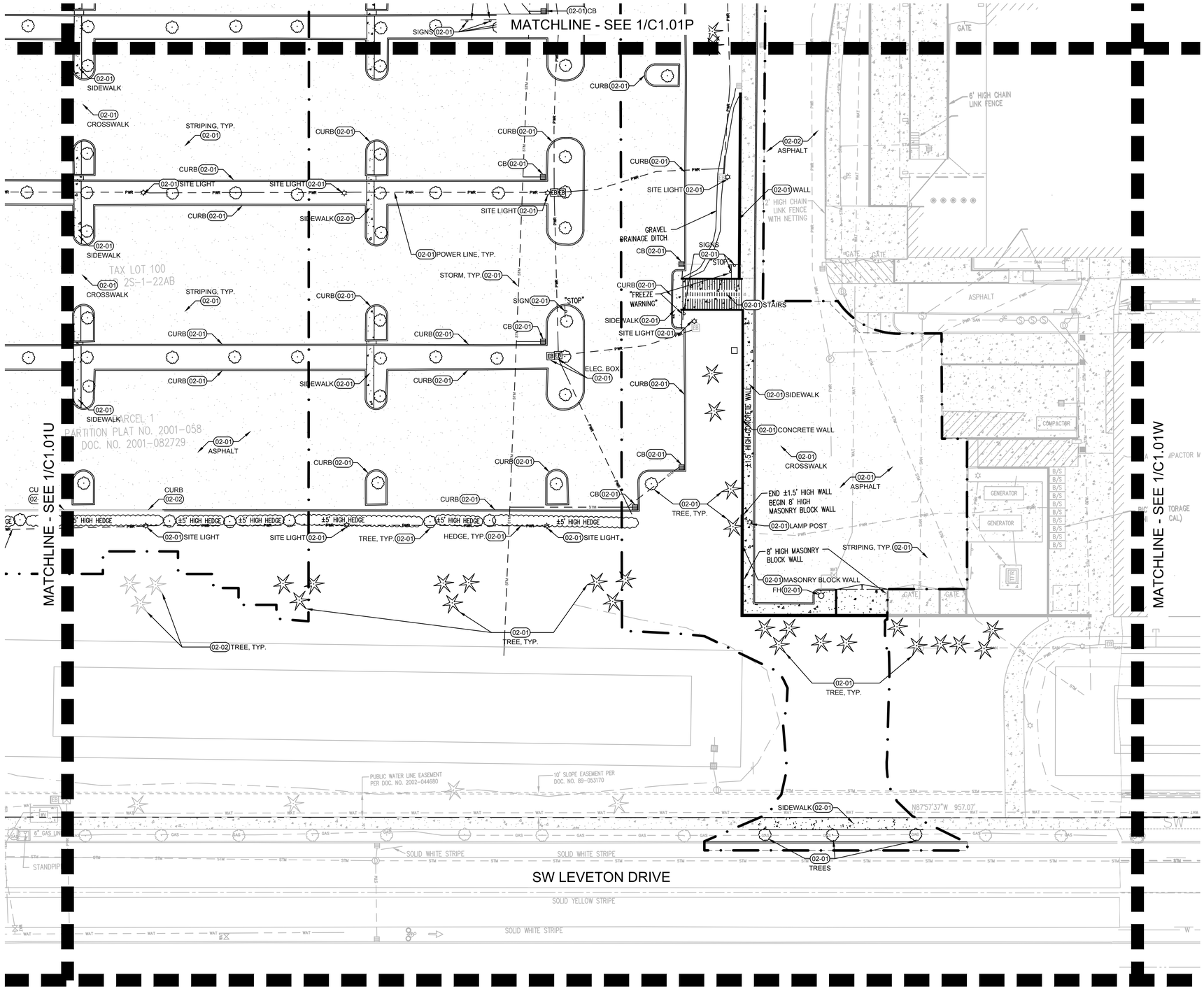


KEYNOTES

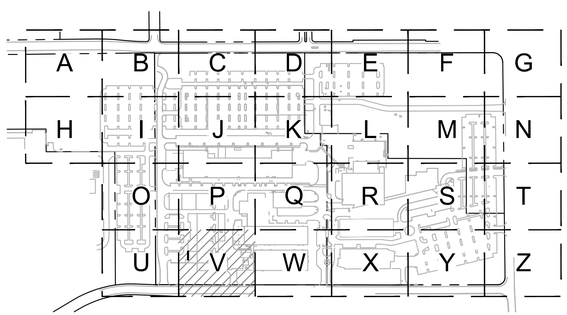
02-01	REMOVE (ITEM AS NOTED)
02-02	PROTECT (ITEM AS NOTED)
02-03	RELOCATE (ITEM AS NOTED)

LEGEND

— · — · —	LIMITS OF WORK
- - - - - -	SAWCUT

NOTES

1. REMOVE ALL ITEMS WITHIN LIMIITS OF WORK UNLESS OTHERWISE NOTED



KEY MAP
SCALE: NTS

1 C1.01V EXISTING CONDITIONS & DEMOLITION PLAN

20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

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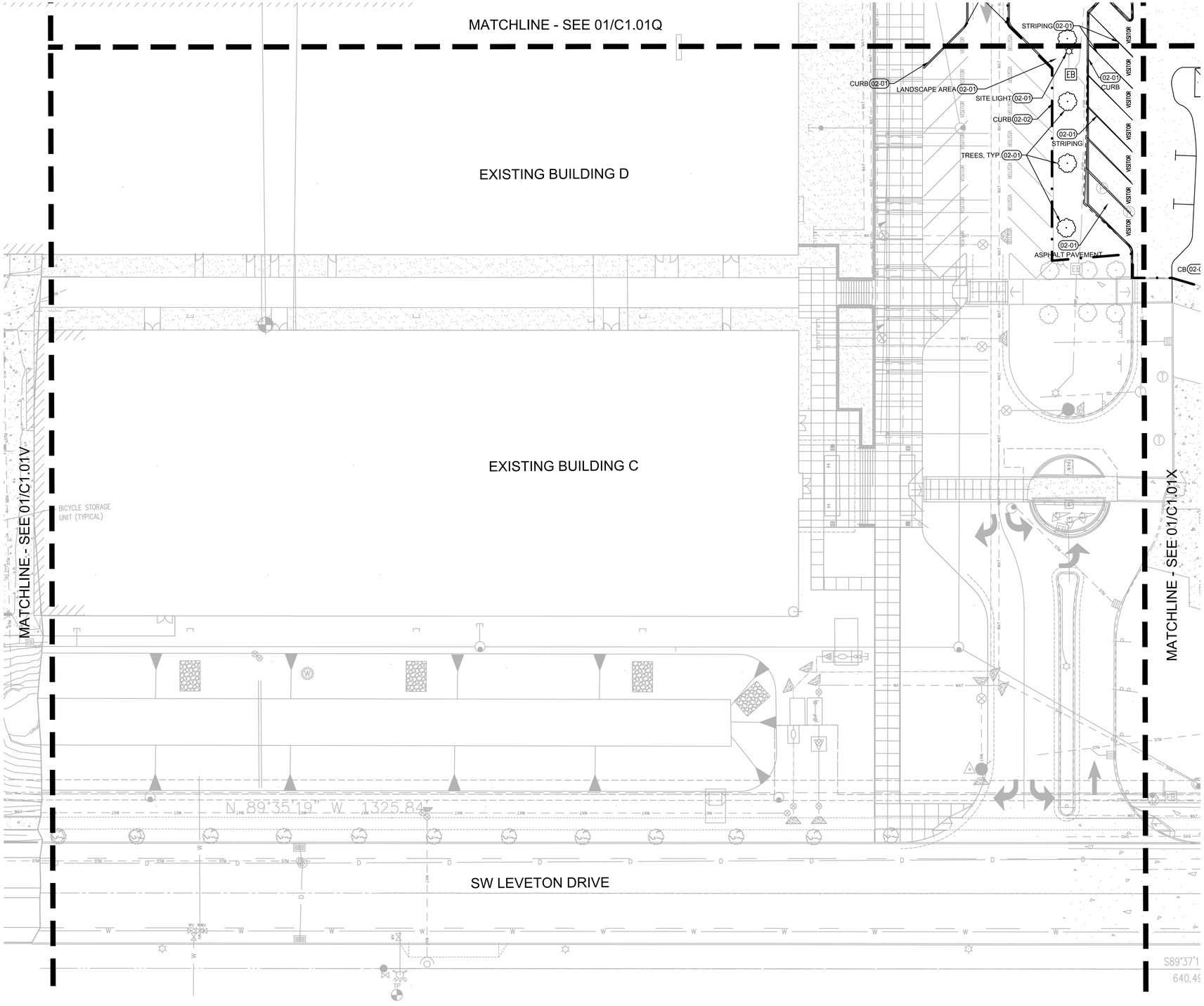


1 C1.01W EXISTING CONDITIONS & DEMOLITION PLAN

20 0 10 20 40 80

(IN FEET)

1 inch = **20** ft.

KEYNOTES

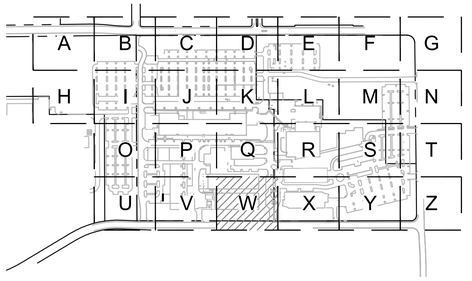
02-01	REMOVE (ITEM AS NOTED)
02-02	PROTECT (ITEM AS NOTED)
02-03	RELOCATE (ITEM AS NOTED)

LEGEND

- LIMITS OF WORK
- SAWCUT

NOTES

1. REMOVE ALL ITEMS WITHIN LIMIITS OF WORK UNLESS OTHERWISE NOTED



KEY MAP
SCALE: NTS

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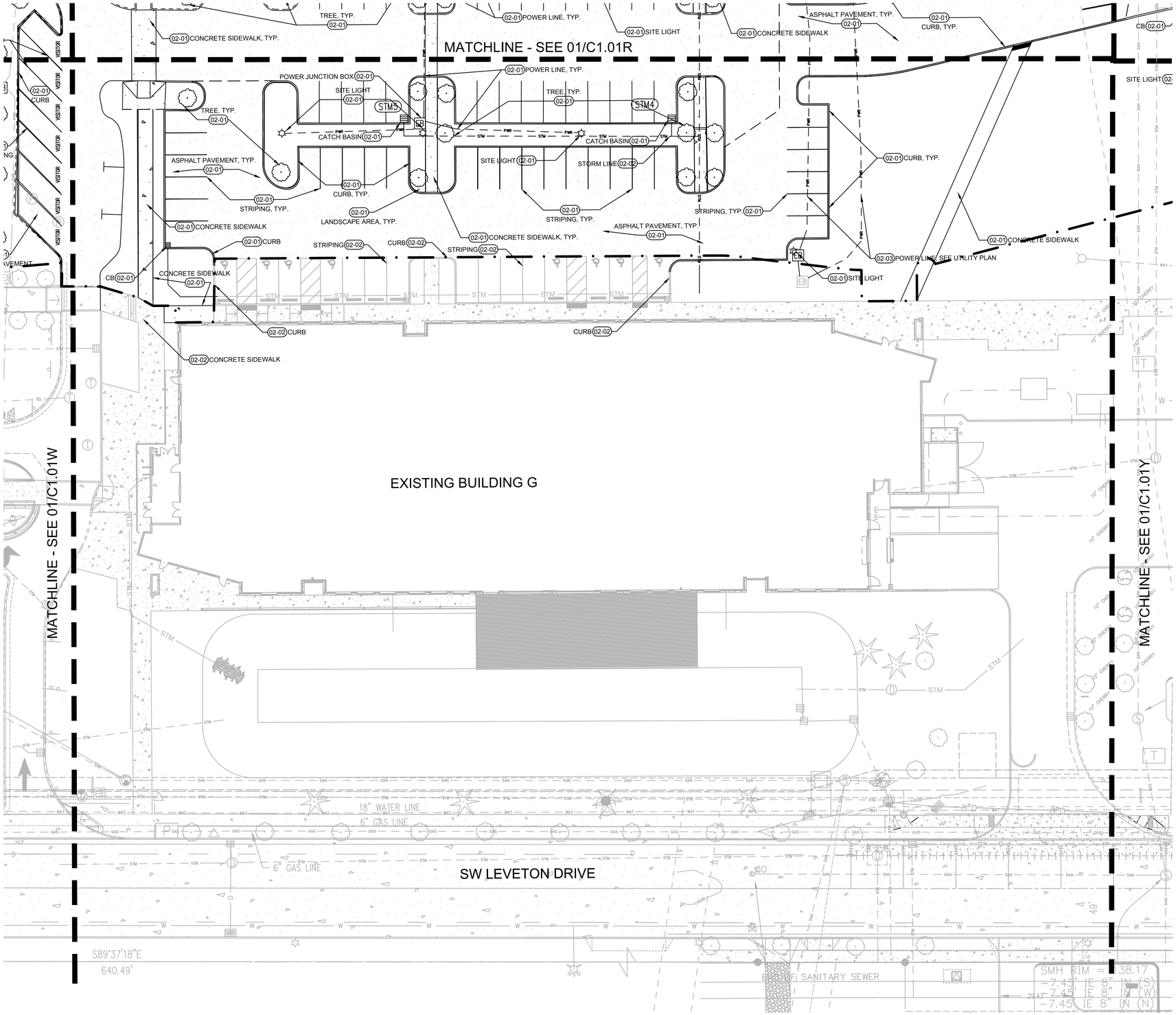


1 C1.01X EXISTING CONDITIONS & DEMOLITION PLAN

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

KEYNOTES

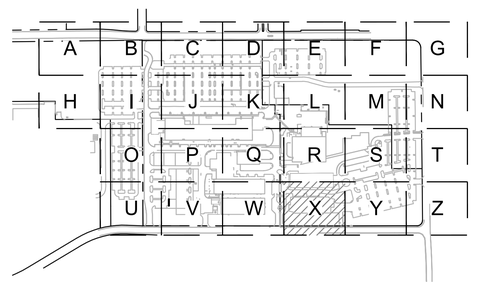
02-01	REMOVE (ITEM AS NOTED)
02-02	PROTECT (ITEM AS NOTED)
02-03	RELOCATE (ITEM AS NOTED)

LEGEND

- LIMITS OF WORK
- SAWCUT

NOTES

1. REMOVE ALL ITEMS WITHIN LIMIITS OF WORK UNLESS OTHERWISE NOTED



KEY MAP
SCALE: NTS

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EXISTING CONDITIONS & DEMOLITION PLAN

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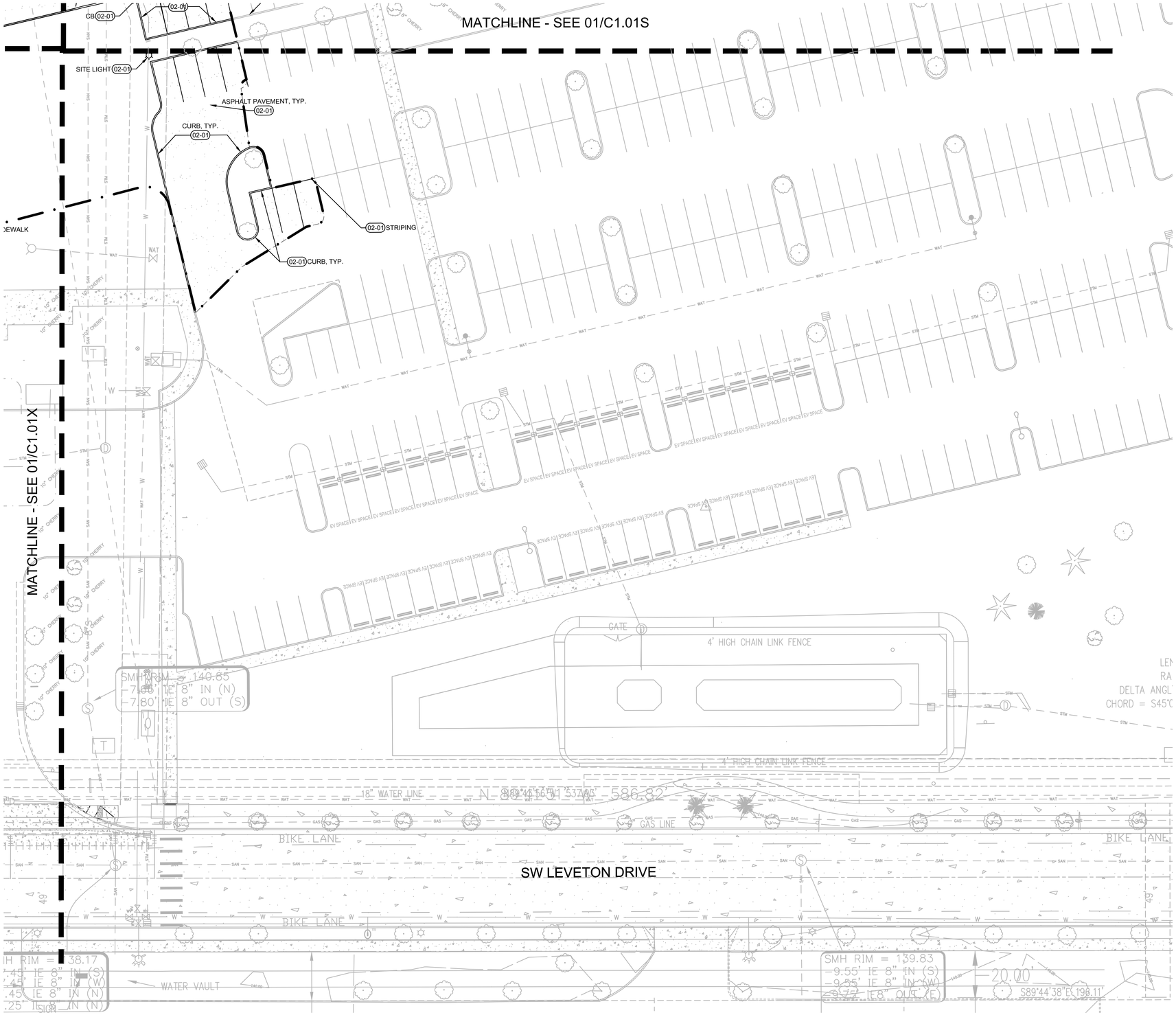


KEYNOTES

02-01	REMOVE (ITEM AS NOTED)
02-02	PROTECT (ITEM AS NOTED)
02-03	RELOCATE (ITEM AS NOTED)

LEGEND

LIMITS OF WORK

SAWCUT

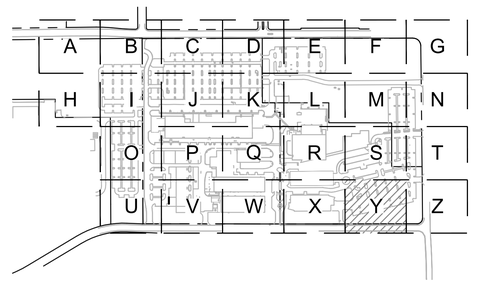
NOTES

1. REMOVE ALL ITEMS WITHIN LIMIITS OF WORK UNLESS OTHERWISE NOTED

1 C1.01Y EXISTING CONDITIONS & DEMOLITION PLAN

20 0 10 20 40 80

(IN FEET)
1 inch = **20** ft.



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REVISION SCHEDULE

Delta	Issued As	Issue Date

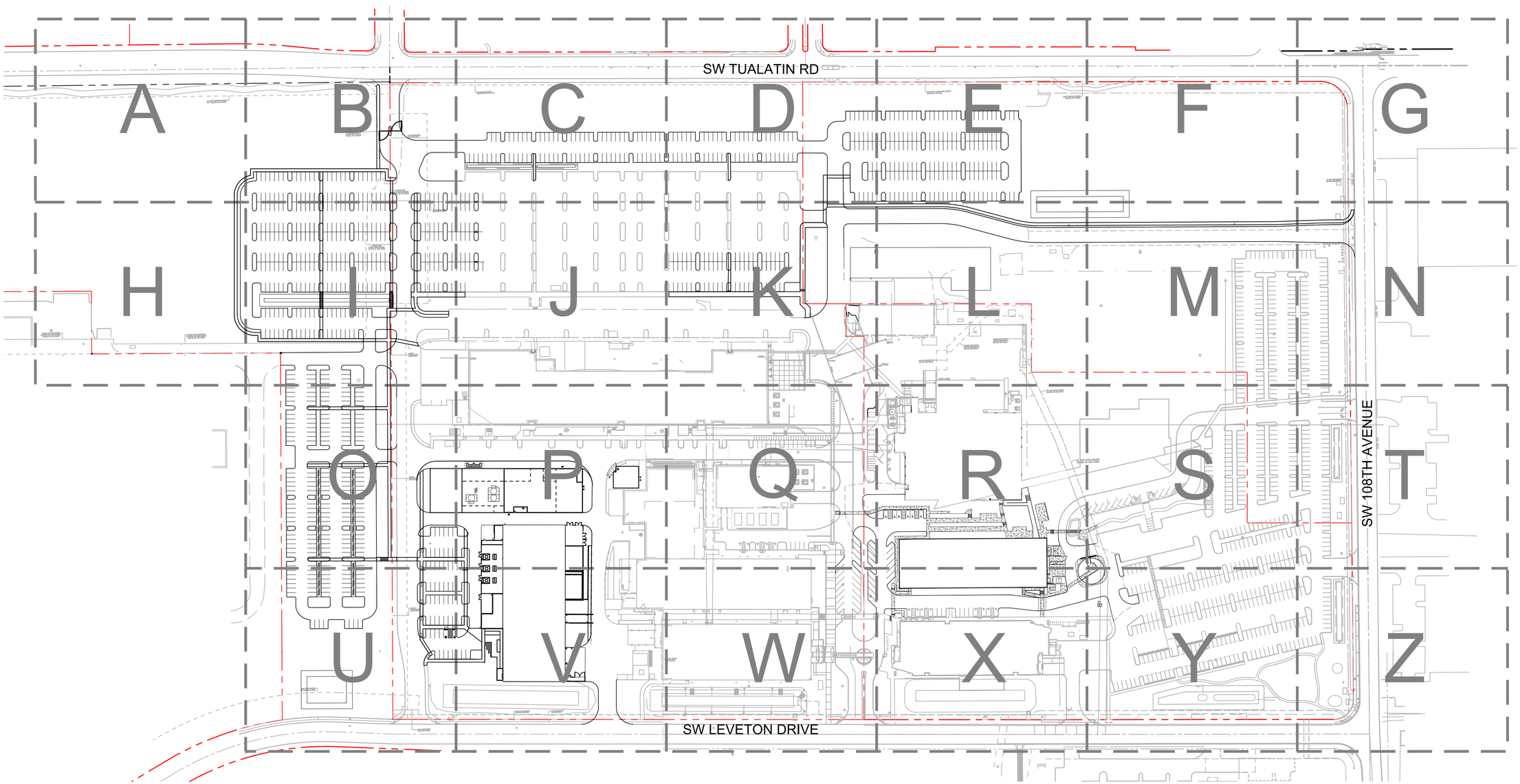
SHEET TITLE:
EXISTING CONDITIONS & DEMOLITION PLAN

SHEET:
C1.01Y

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2

2250180.00 \\GRP.MCK\PROJECTS\PROJECTS\2250180.00\DRAWINGS\CIVIL\BLDG H\141- C1.01 DEMO.DWG:C1.01Y ADS 07/16/25 08:14 1:20



1 C1.10 OVERALL SITE PLAN

100 0 50 100 200 400

(IN FEET)
1 inch = **100** ft.

SITE DATA

	EXISTING COVERAGE		PROPOSED COVERAGE	
	ACRES	%	ACRES	%
TOTAL PROPERTY AREA	73.16	100.0%	73.16	100.0%
BUILDING AREA FOOTPRINT	6.77	9.3%	8.72	11.9%
PAVED IMPERVIOUS AREA	24.13	33.0%	26.64	36.4%
TOTAL IMPERVIOUS AREA	30.90	42.2%	35.36	36.4%
TOTAL LANDSCAPE AREA	42.26	57.8%	37.80	51.7%
LIMIT OF WORK	-	-	14.40	19.7%

BUILDING FLOOR AREA

	AREA (SF)
EXISTING* BUILDINGS	566,500
PROPOSED BUILDINGS	241,230
TOTAL SITE BUILDINGS	807,730

* EXISTING BUILDING ASSUMES BUILDING G CONSTRUCTION IS FINISHED

CAR PARKING DATA

PARKING TYPE	EXISTING*	REMOVED	PROVIDED	TOTAL
STANDARD	1738	459	1004	2283
ACCESSIBLE	34	4	8	38
CARPOOL SPACES	12	5	0	7
COMPACT SPACES	0	0	0	0
TOTAL PARKING	1784	468	1012	2328

* EXISTING PARKING ASSUMES BUILDING G CONSTRUCTION IS FINISHED

BIKE PARKING DATA

TOTAL BIKE PARKING REQUIRED	0.10 STALL / 1,000SF BUILDING AREA		
TOTAL LONG TERM BIKE PARKING REQUIRED	30%		
	EXISTING*	PROPOSED	TOTAL
BUILDING SQUARE FOOTAGE (SF)	566,500	241,230	807,730
SHORT TERM BIKE PARKING	64	18	82
LONG TERM BIKE PARKING	65	35	100
TOTAL BIKE PARKING REQUIRED			81
TOTAL LONG TERM BIKE PARKING REQUIRED			25

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SHEET TITLE:
OVERALL SITE PLAN

SHEET:
C1.10

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2

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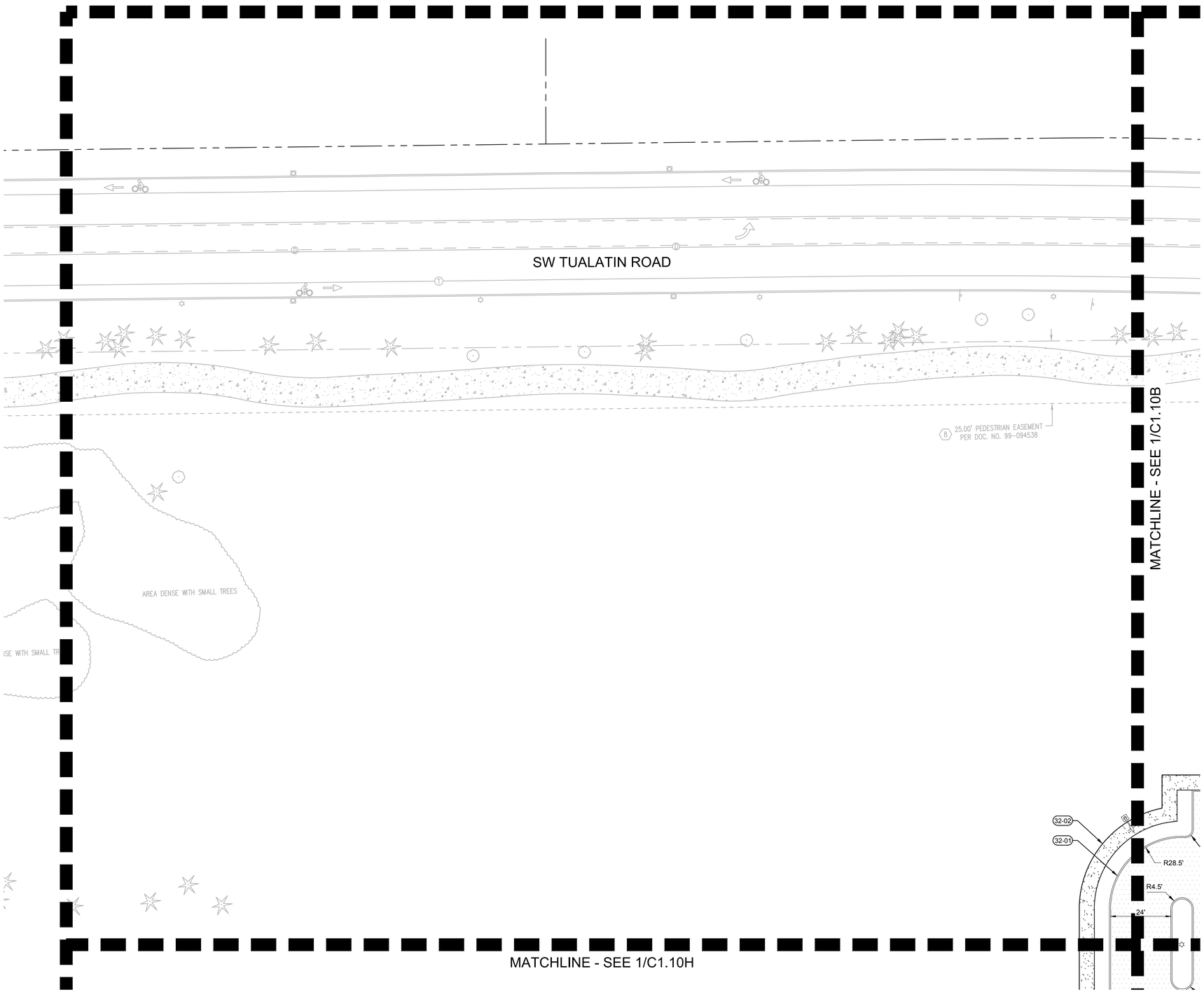

KEYNOTES

32-01	VERTICAL CURB
32-02	SIDEWALK
32-03	PARKING STRIPE
32-04	GRASSCRETE
32-05	STAIRS
32-06	ACCESSIBLE PARKING STALL
32-07	ASPHALT PAVEMENT
32-08	LANDSCAPE AREA
32-09	WHEEL STOP
32-10	FLUSH CURB
32-11	CONCRETE-ASPHALT TRANSITION
32-12	PARALLEL CURB RAMPS
32-13	PERPENDICULAR CURB RAMP
32-14	SITE LIGHT
32-15	SAWCUT EXISTING ASPHALT
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32-17	BOLLARD
32-18	BOARDWALK
32-19	BIKE RACK
32-20	PEDESTRIAN RAMP WITH HANDRAILS MAX 8.3%
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32-22	TRASH COMPACTOR
32-23	SERVICE RAMP
32-24	SITE WALL
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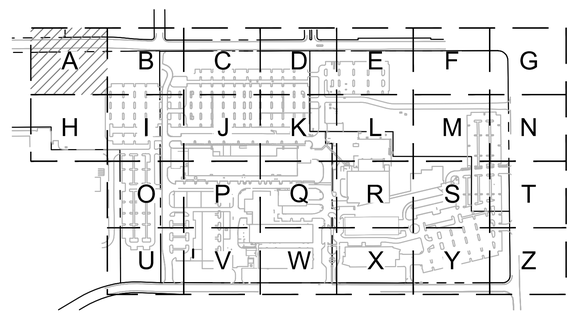
32-26	CONCRETE PAVEMENT
32-27	SPEED HUMP
32-28	OVERHEAD SKYBRIDGE
32-29	SECURE SWING GATE WITH KNOX BOX
32-30	ENCLOSED WALKWAY
32-31	CURB CHANNEL
33-04	FIRE HYDRANT
33-06	INSTALL FDC
33-16	ELECTRICAL GEAR
33-17	STORMWATER FACILITY
33-22	ELECTRIC TRANSFORMER



KEY MAP
SCALE: NTS

1 C1.10A SITE PLAN

20 0 10 20 40 80
(IN FEET)
1 inch = **20** ft.

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SHEET TITLE:
SITE PLAN

SHEET:
C1.10A

JOB NO. **2250180.00**

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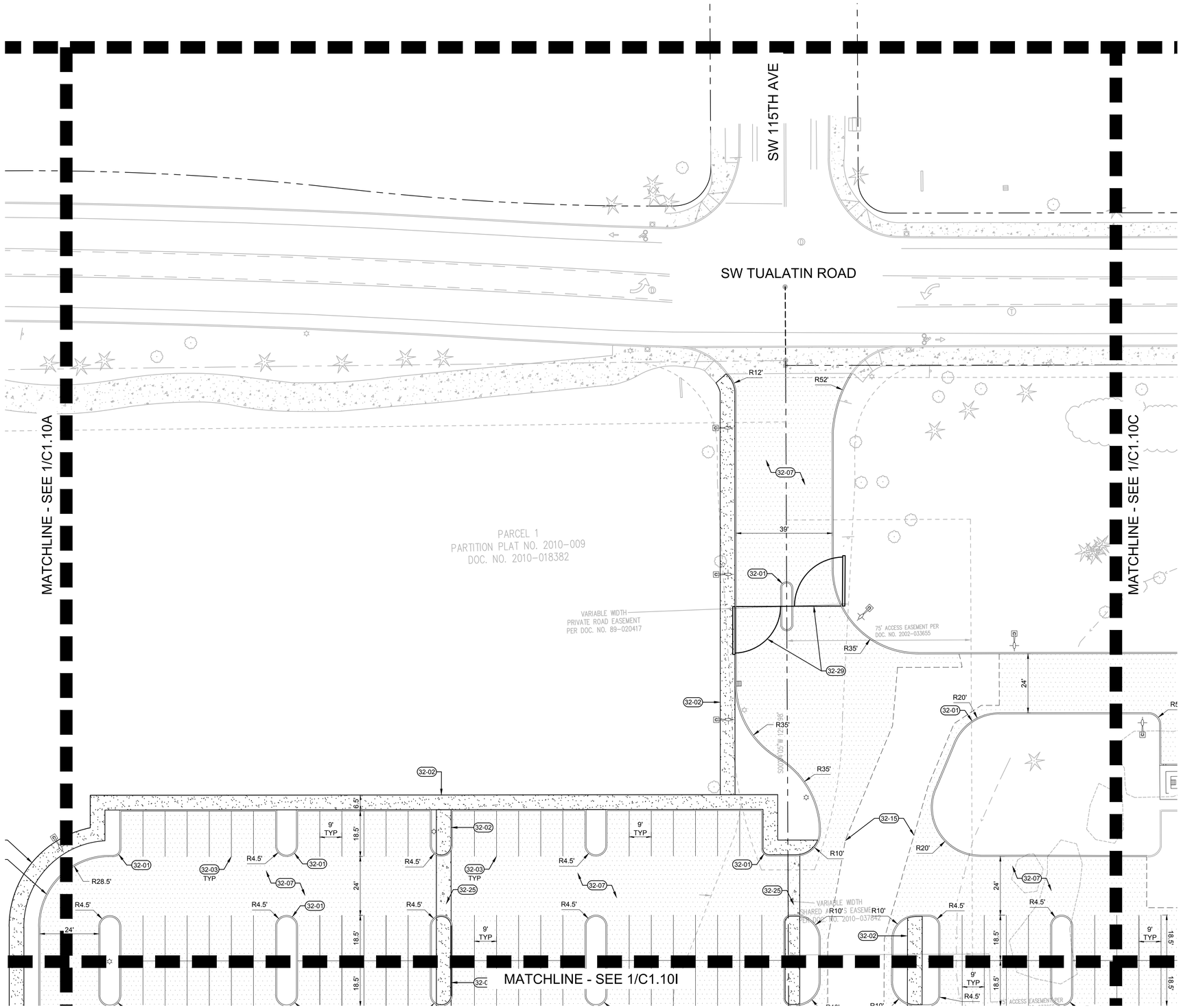

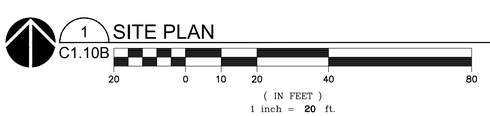

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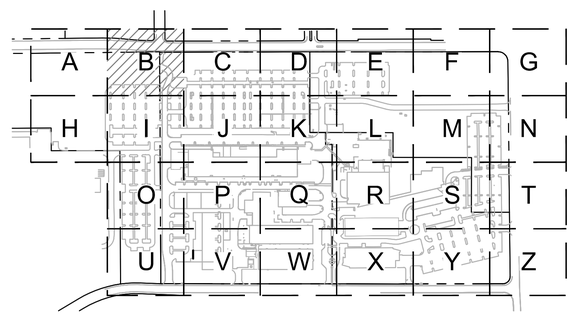
33-17	STORMWATER FACILITY
33-22	ELECTRIC TRANSFORMER



KEY MAP
SCALE: NTS

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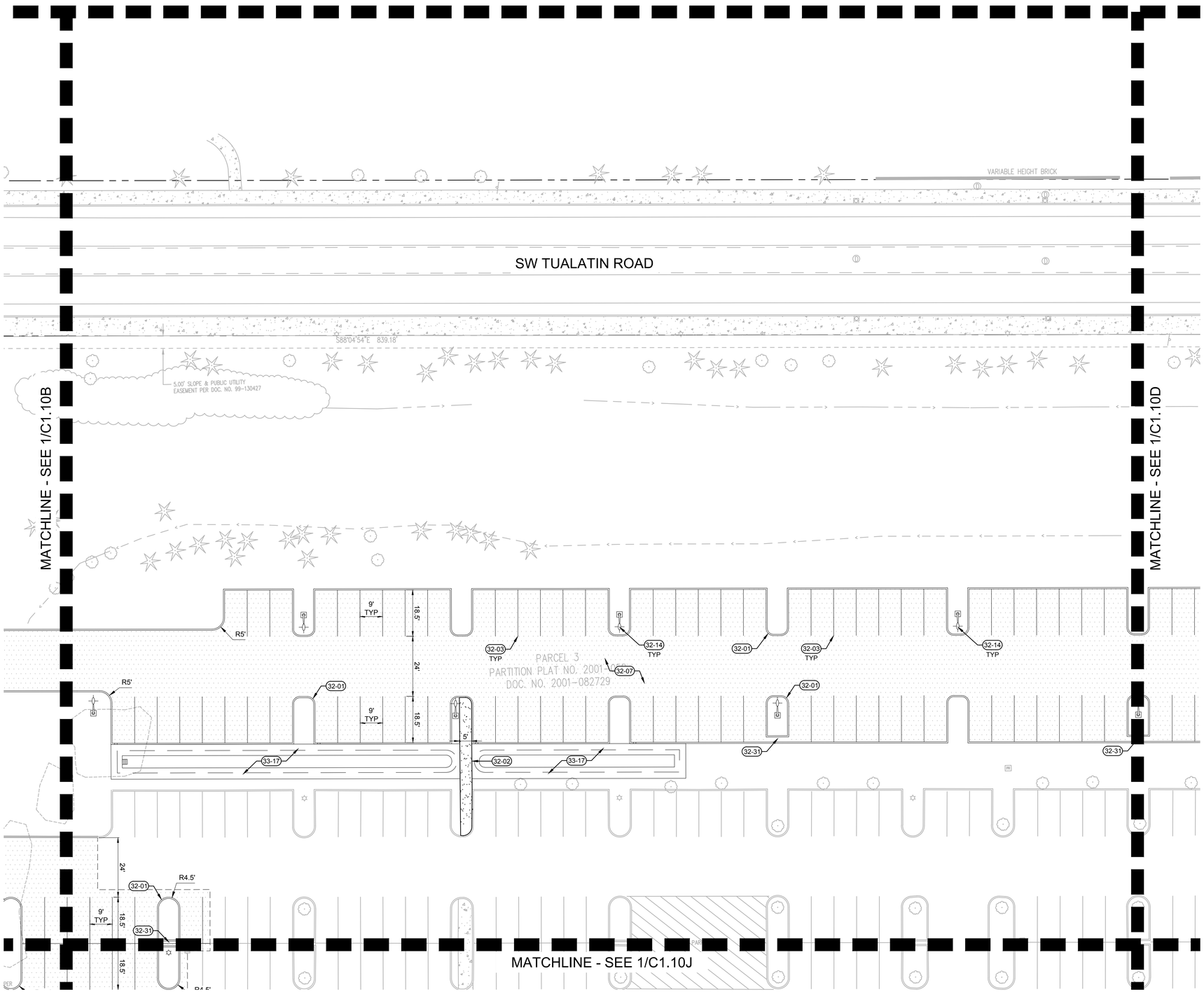
SHEET TITLE:
SITE PLAN

SHEET:
C1.10B

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



1 SITE PLAN
C1.10C

20 0 10 20 40 80
(IN FEET)
1 inch = **20** ft.

KEYNOTES

32-01	VERTICAL CURB
32-02	SIDEWALK
32-03	PARKING STRIPE
32-04	GRASSCRETE
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32-28	OVERHEAD SKYBRIDGE
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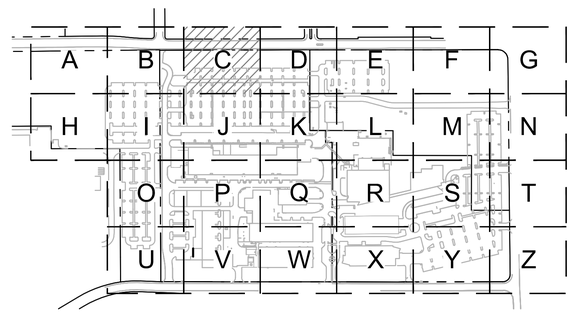
32-30	ENCLOSED WALKWAY
32-31	CURB CHANNEL
33-04	FIRE HYDRANT
33-06	INSTALL FDC
33-16	ELECTRICAL GEAR
33-17	STORMWATER FACILITY
33-22	ELECTRIC TRANSFORMER



KEY MAP
SCALE: NTS

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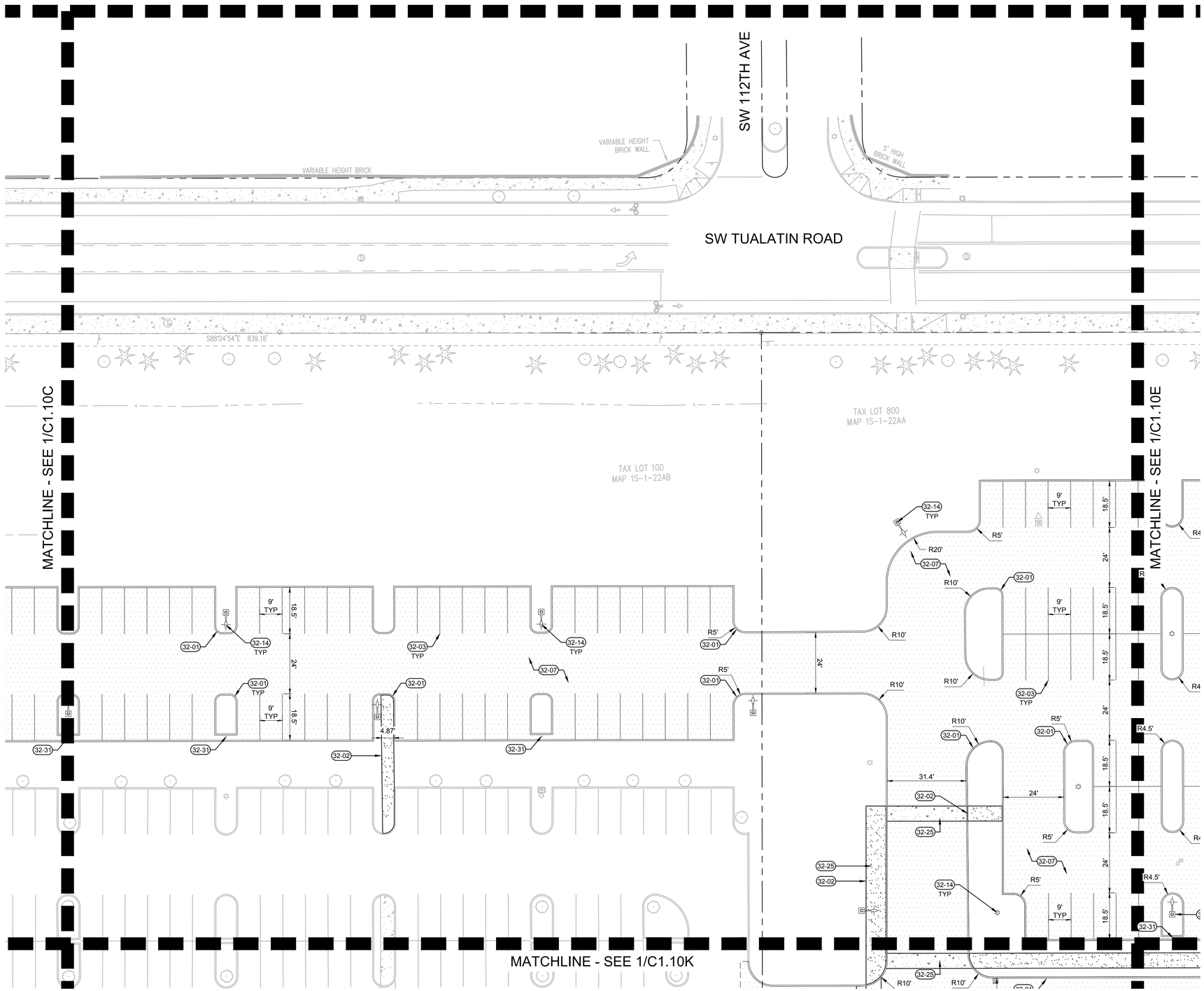
Delta	Issued As	Issue Date

SHEET TITLE:
SITE PLAN

SHEET:
C1.10C

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



1 SITE PLAN
C1.10D

20 0 10 20 40 80
(IN FEET)
1 inch = **20** ft.

KEYNOTES

32-01	VERTICAL CURB
32-02	SIDEWALK
32-03	PARKING STRIPE
32-04	GRASSCRETE
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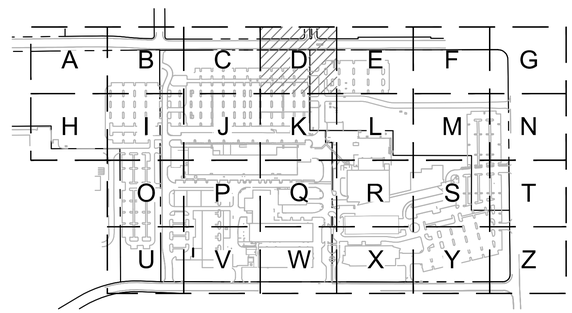
33-06	INSTALL FDC
33-16	ELECTRICAL GEAR
33-17	STORMWATER FACILITY
33-22	ELECTRIC TRANSFORMER



KEY MAP
SCALE: NTS

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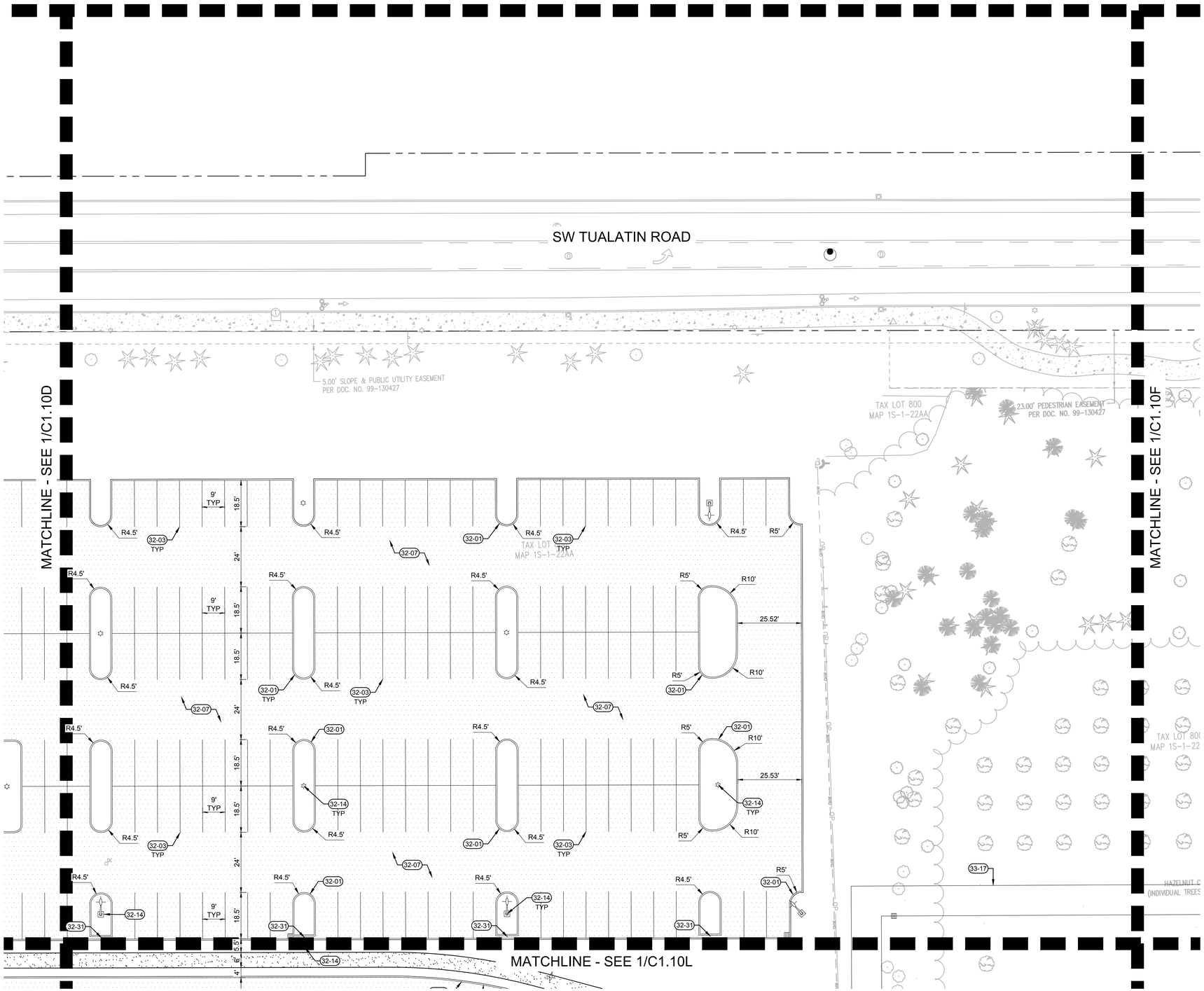
SHEET TITLE:
SITE PLAN

SHEET:
C1.10D

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



1 SITE PLAN
C1.10E

20 0 10 20 40 80
(IN FEET)
1 inch = **20** ft.

KEYNOTES

32-01	VERTICAL CURB
32-02	SIDEWALK
32-03	PARKING STRIPE
32-04	GRASSCRETE
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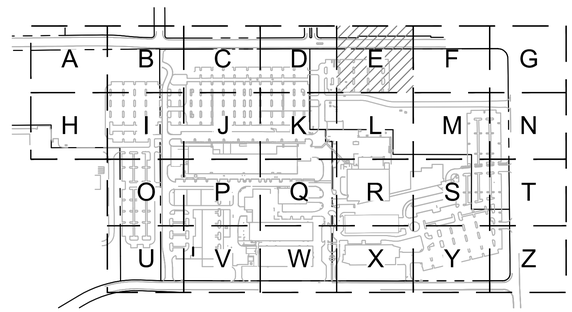

KEY MAP
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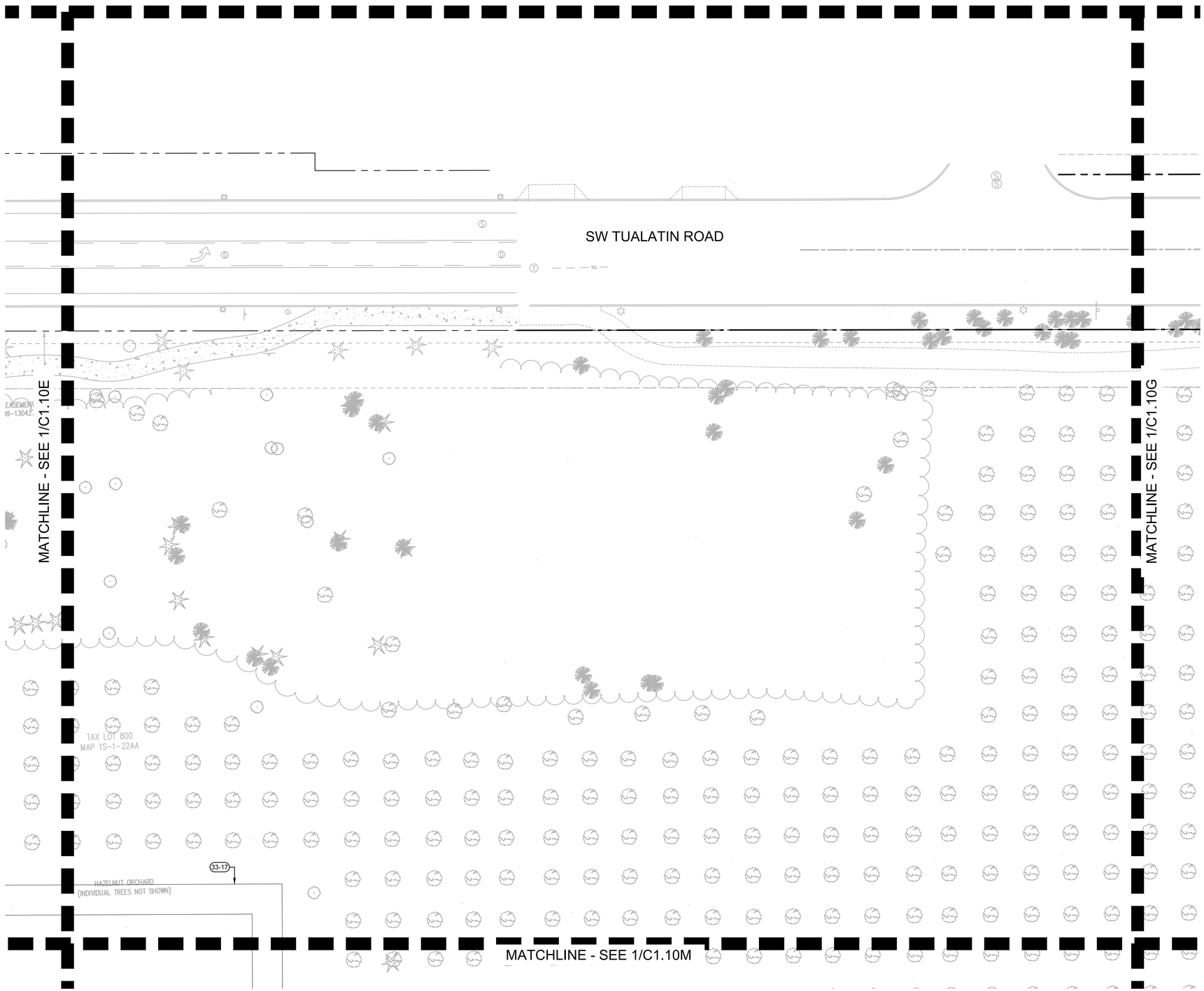
SITE PLAN

SHEET:
C1.10E

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



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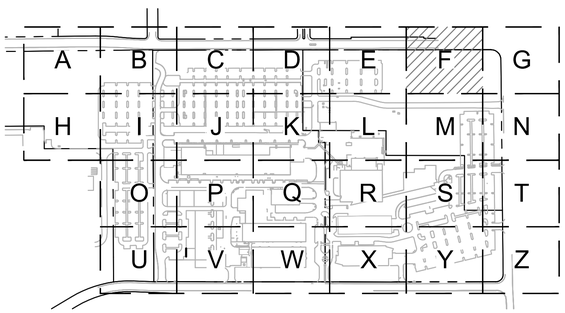

KEY MAP
SCALE: NTS

1 C1.10F SITE PLAN

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

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REVISION SCHEDULE

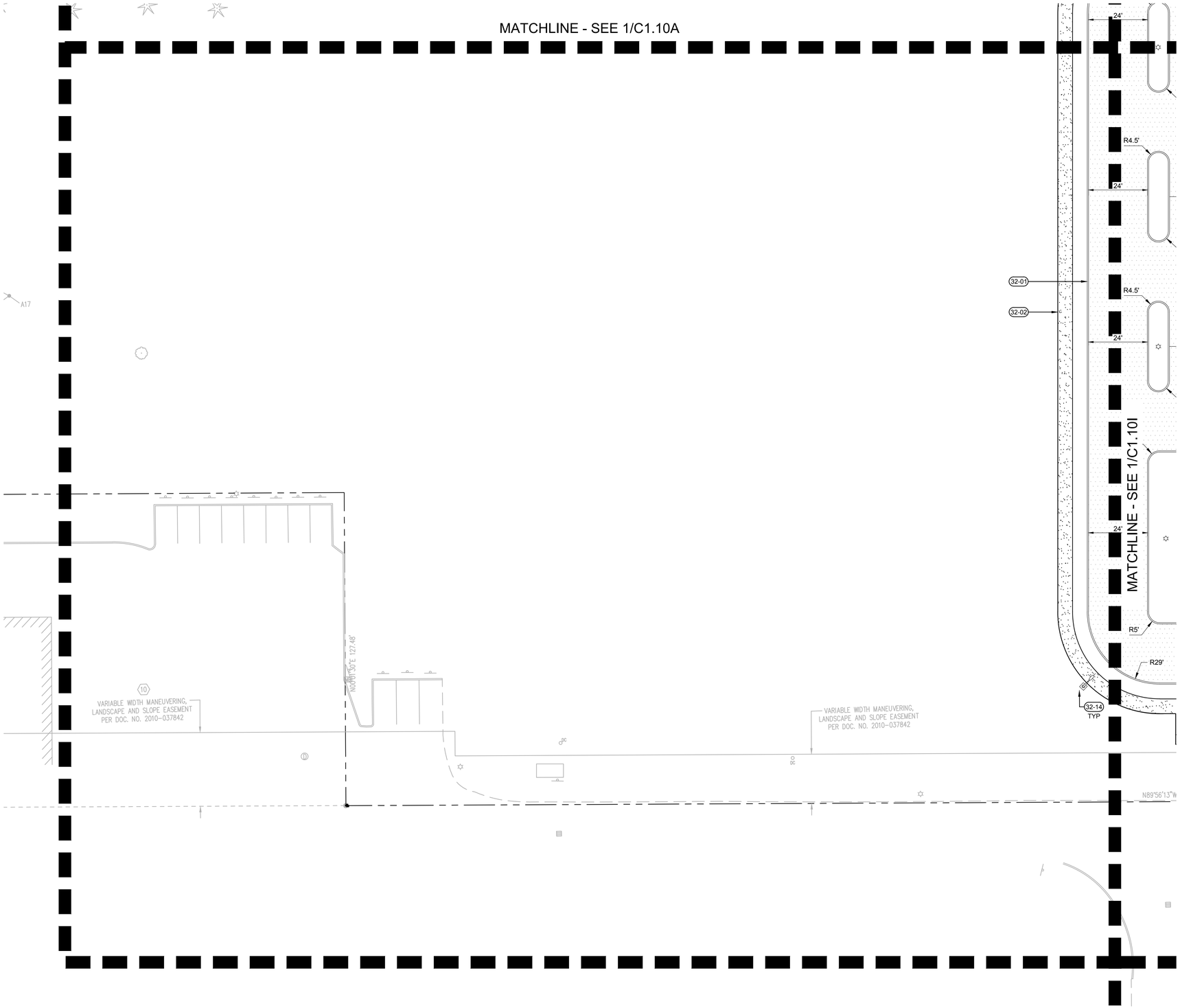
Delta	Issued As	Issue Date

SHEET TITLE:
SITE PLAN

SHEET:
C1.10F

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



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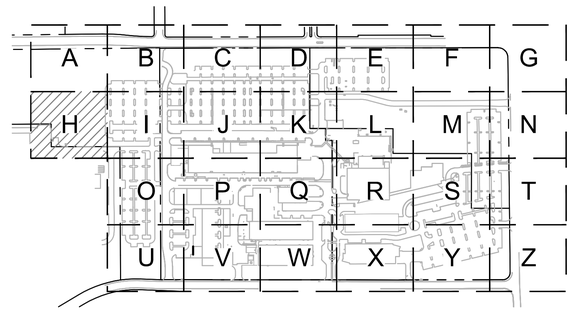
32-28	OVERHEAD SKYBRIDGE
32-29	SECURE SWING GATE WITH KNOX BOX
32-30	ENCLOSED WALKWAY
32-31	CURB CHANNEL
33-04	FIRE HYDRANT
33-06	INSTALL FDC
33-16	ELECTRICAL GEAR
33-17	STORMWATER FACILITY
33-22	ELECTRIC TRANSFORMER

1 C1.10H SITE PLAN

20 0 10 20 40 80

(IN FEET)

1 inch = **20** ft.



KEY MAP
SCALE: NTS

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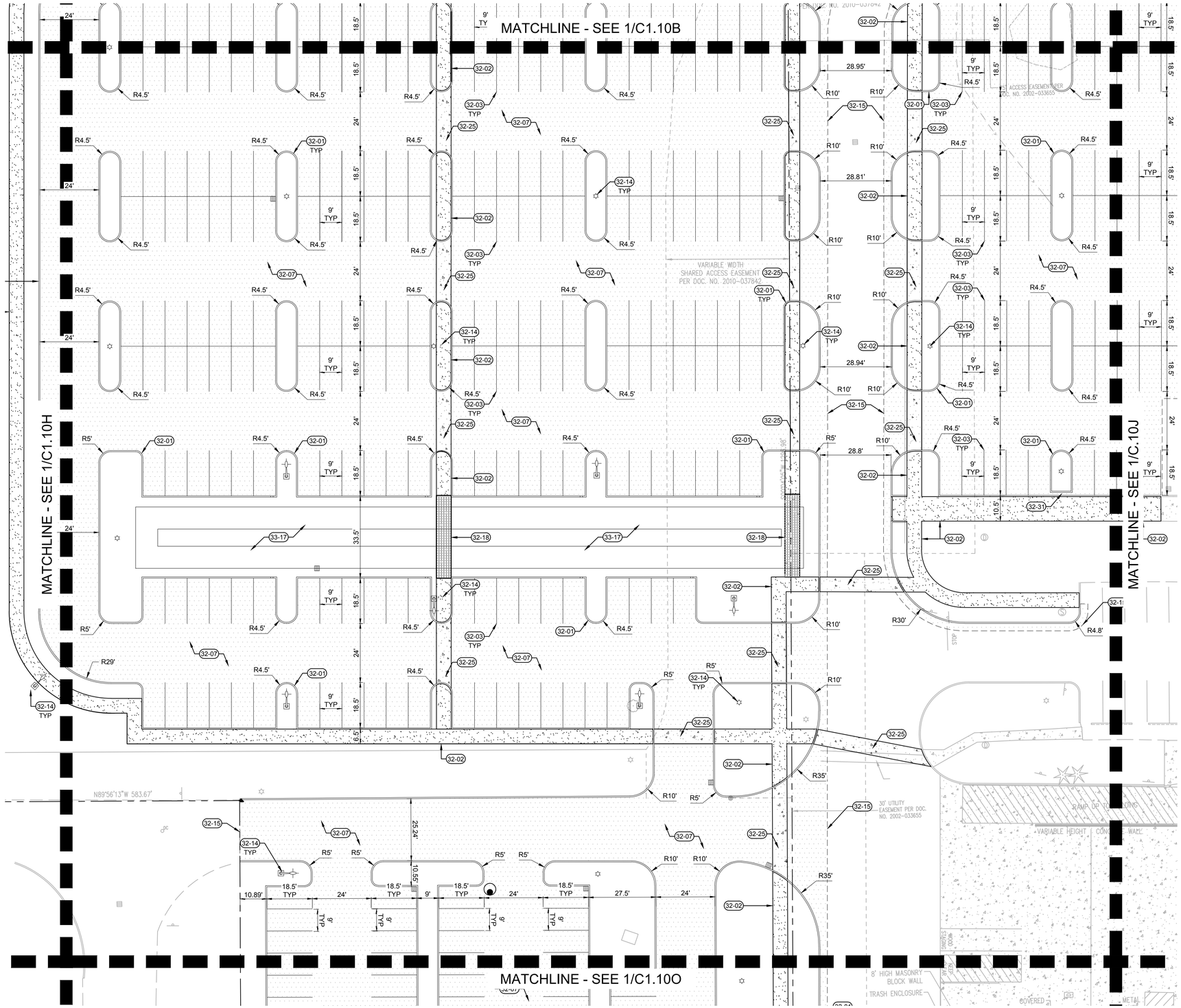
Delta	Issued As	Issue Date

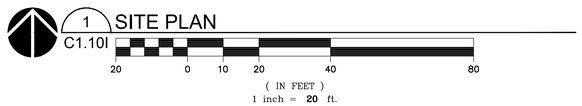
SHEET TITLE:
SITE PLAN

SHEET:
C1.10H

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2





KEYNOTES

32-01	VERTICAL CURB
32-02	SIDEWALK
32-03	PARKING STRIPE
32-04	GRASSCRETE
32-05	STAIRS
32-06	ACCESSIBLE PARKING STALL
32-07	ASPHALT PAVEMENT
32-08	LANDSCAPE AREA
32-09	WHEEL STOP
32-10	FLUSH CURB
32-11	CONCRETE-ASPHALT TRANSITION
32-12	PARALLEL CURB RAMPS
32-13	PERPENDICULAR CURB RAMP
32-14	SITE LIGHT
32-15	SAWCUT EXISTING ASPHALT
32-16	PAVEMENT STRIPING
32-17	BOLLARD
32-18	BOARDWALK
32-19	BIKE RACK
32-20	PEDESTRIAN RAMP WITH HANDRAILS MAX 8.3%
32-21	TRASH ENCLOSURE
32-22	TRASH COMPACTOR
32-23	SERVICE RAMP
32-24	SITE WALL
32-25	CONCRETE CROSSWALK
32-26	CONCRETE PAVEMENT
32-27	SPEED HUMP
32-28	OVERHEAD SKYBRIDGE
32-29	SECURE SWING GATE WITH KNOX BOX
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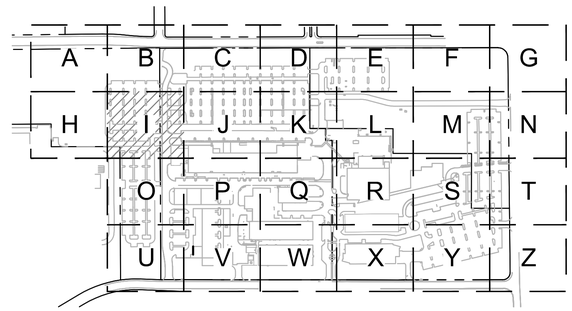
33-04	FIRE HYDRANT
33-06	INSTALL FDC
33-16	ELECTRICAL GEAR
33-17	STORMWATER FACILITY
33-22	ELECTRIC TRANSFORMER



KEY MAP
SCALE: NTS

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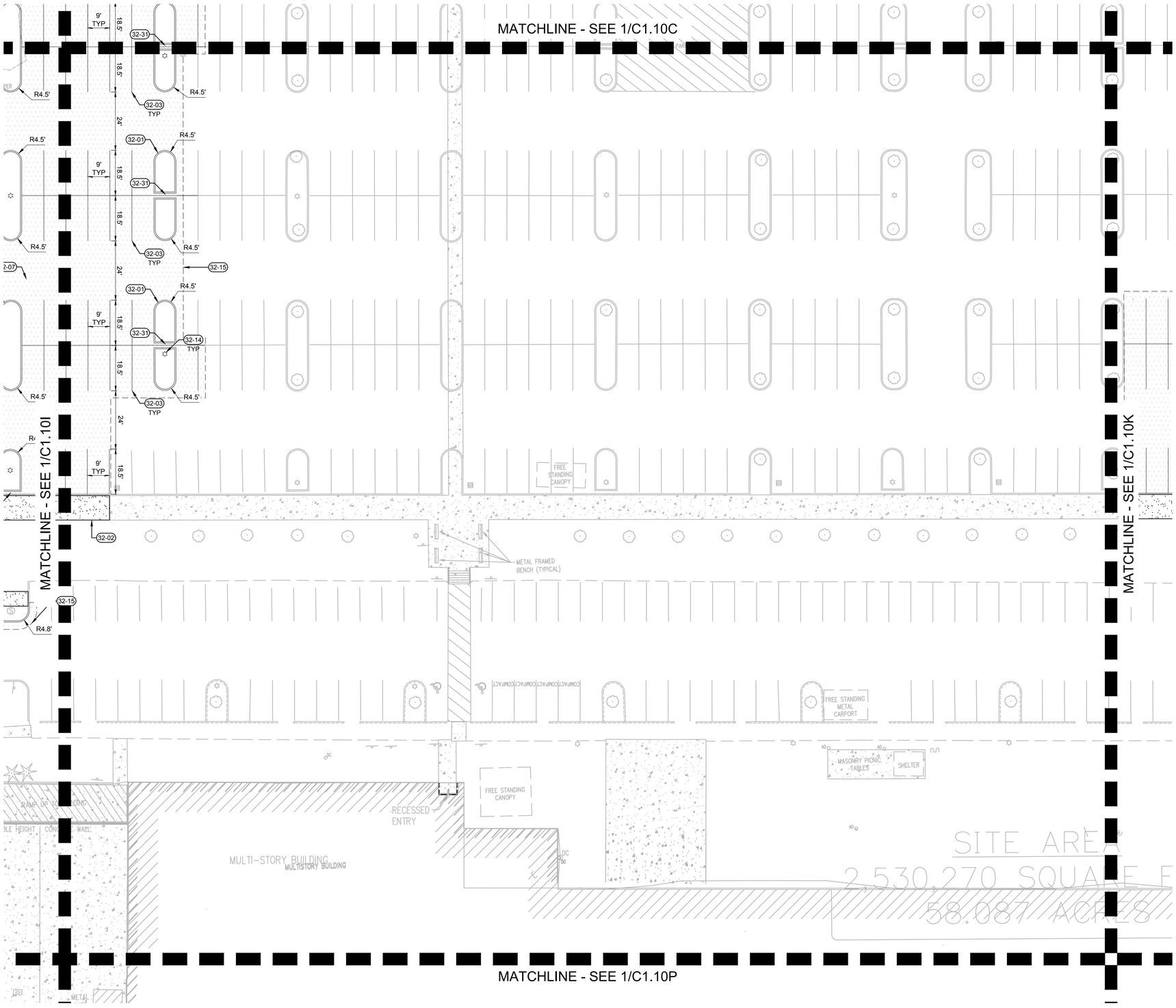
Delta	Issued As	Issue Date

SHEET TITLE:
SITE PLAN

SHEET:
C1.10I

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



1 SITE PLAN
C1.10J

20 0 10 20 40 80
(IN FEET)
1 inch = **20** ft.

KEYNOTES

32-01	VERTICAL CURB
32-02	SIDEWALK
32-03	PARKING STRIPE
32-04	GRASSCRETE
32-05	STAIRS
32-06	ACCESSIBLE PARKING STALL
32-07	ASPHALT PAVEMENT
32-08	LANDSCAPE AREA
32-09	WHEEL STOP
32-10	FLUSH CURB
32-11	CONCRETE-ASPHALT TRANSITION
32-12	PARALLEL CURB RAMPS
32-13	PERPENDICULAR CURB RAMP
32-14	SITE LIGHT
32-15	SAWCUT EXISTING ASPHALT
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32-18	BOARDWALK
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32-22	TRASH COMPACTOR
32-23	SERVICE RAMP
32-24	SITE WALL
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32-26	CONCRETE PAVEMENT
32-27	SPEED HUMP
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32-29	SECURE SWING GATE WITH KNOX BOX
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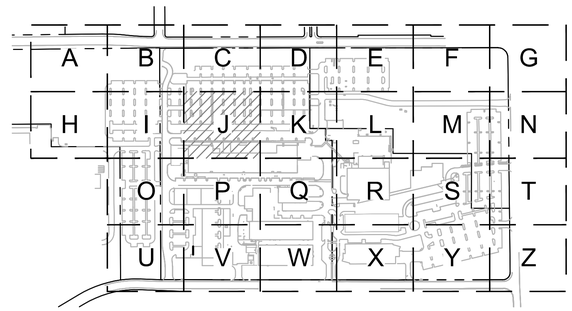
32-31	CURB CHANNEL
33-04	FIRE HYDRANT
33-06	INSTALL FDC
33-16	ELECTRICAL GEAR
33-17	STORMWATER FACILITY
33-22	ELECTRIC TRANSFORMER



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SITE PLAN

SHEET:
C1.10J

JOB NO. **2250180.00**

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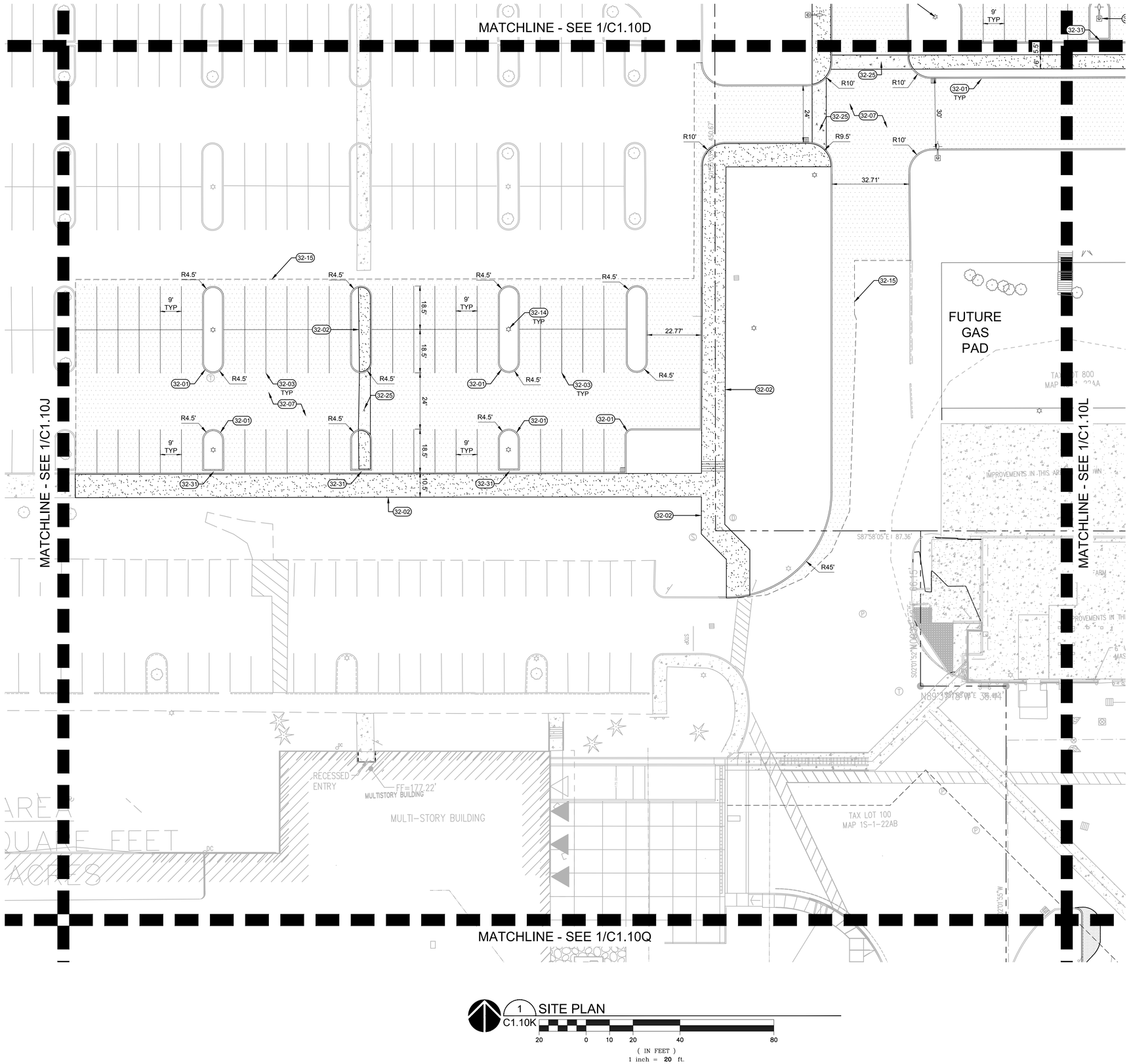

1 C1.10K SITE PLAN

20 0 10 20 40 80

(IN FEET)

1 inch = **20** ft.

KEYNOTES

32-01	VERTICAL CURB
32-02	SIDEWALK
32-03	PARKING STRIPE
32-04	GRASSCRETE
32-05	STAIRS
32-06	ACCESSIBLE PARKING STALL
32-07	ASPHALT PAVEMENT
32-08	LANDSCAPE AREA
32-09	WHEEL STOP
32-10	FLUSH CURB
32-11	CONCRETE-ASPHALT TRANSITION
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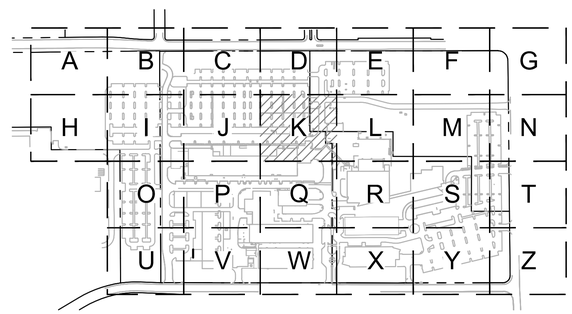
33-06	INSTALL FDC
33-16	ELECTRICAL GEAR
33-17	STORMWATER FACILITY
33-22	ELECTRIC TRANSFORMER



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SHEET TITLE:
SITE PLAN

SHEET:
C1.10K

JOB NO. **2250180.00**

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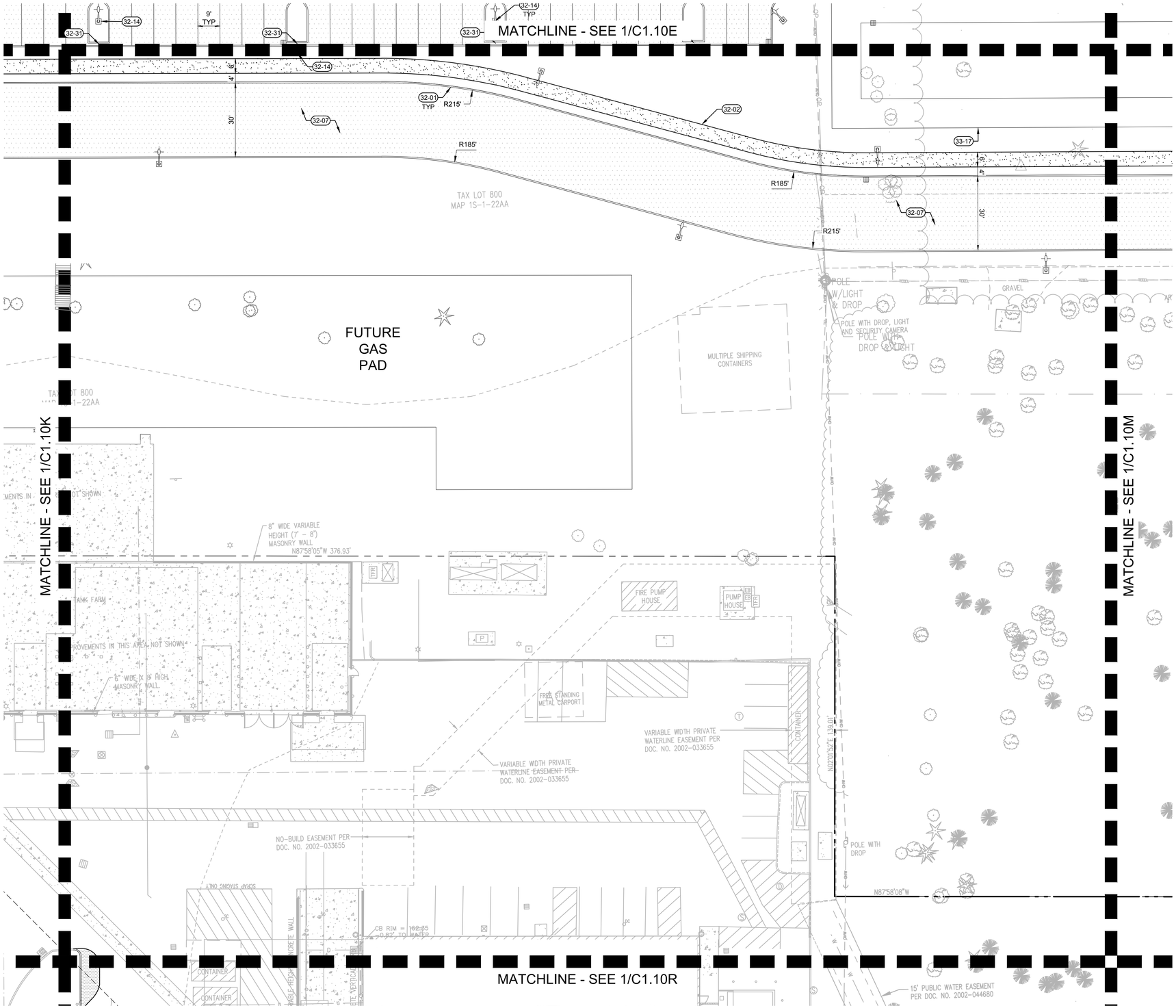

KEYNOTES

32-01	VERTICAL CURB
32-02	SIDEWALK
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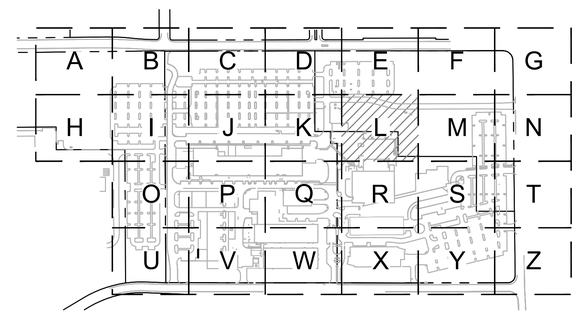
33-04	FIRE HYDRANT
33-06	INSTALL FDC
33-16	ELECTRICAL GEAR
33-17	STORMWATER FACILITY
33-22	ELECTRIC TRANSFORMER



KEY MAP
SCALE: NTS

1 SITE PLAN
C1.10L

20 0 10 20 40 80
(IN FEET)
1 inch = **20** ft.

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SHEET TITLE:
SITE PLAN

SHEET:
C1.10L

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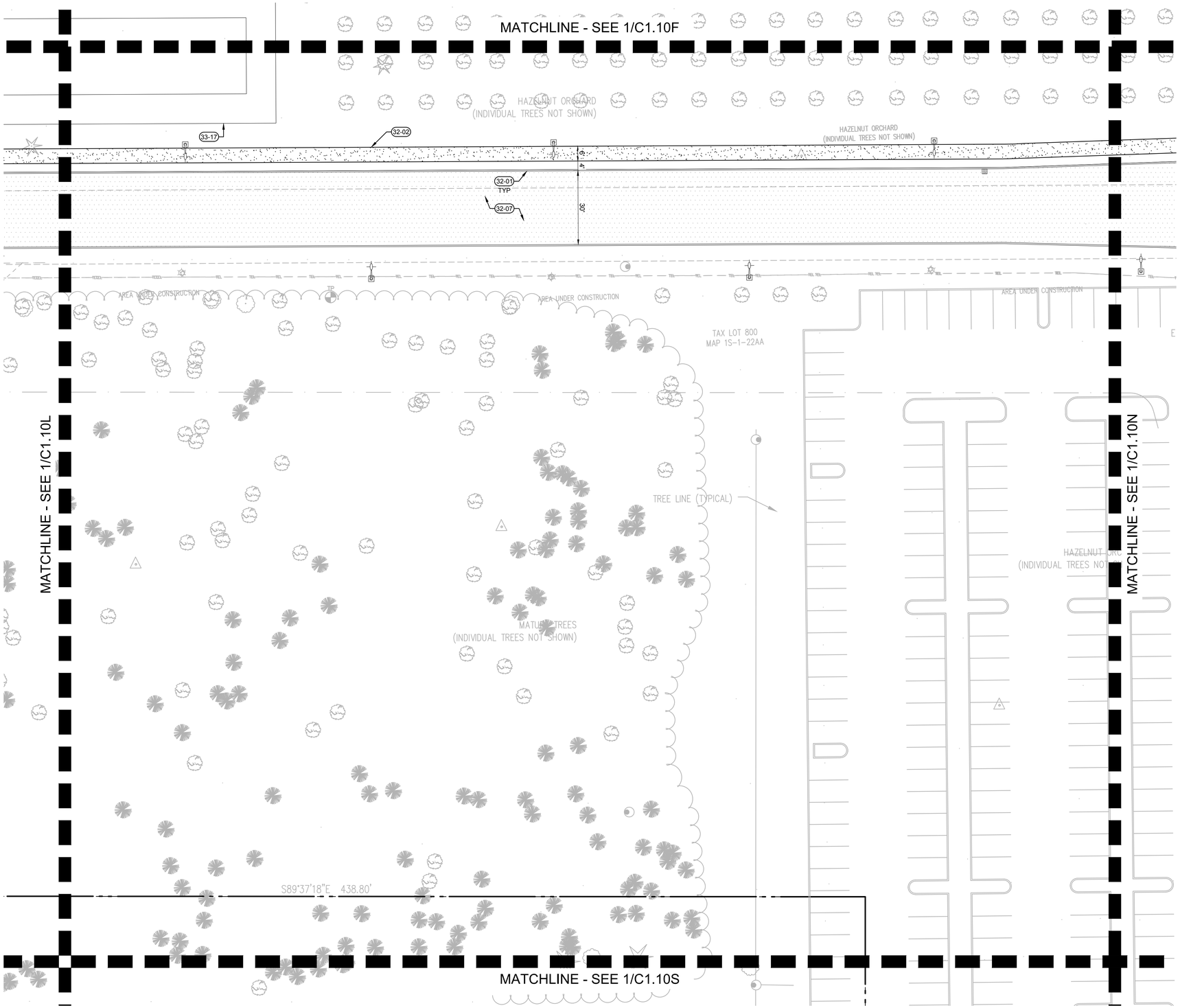

KEYNOTES

32-01	VERTICAL CURB
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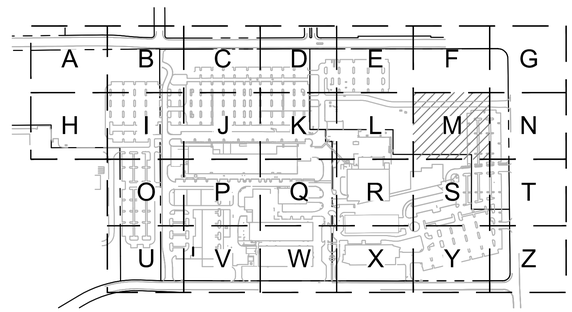
32-29	SECURE SWING GATE WITH KNOX BOX
32-30	ENCLOSED WALKWAY
32-31	CURB CHANNEL
33-04	FIRE HYDRANT
33-06	INSTALL FDC
33-16	ELECTRICAL GEAR
33-17	STORMWATER FACILITY
33-22	ELECTRIC TRANSFORMER

1 C1.10M SITE PLAN

20 0 10 20 40 80

(IN FEET)
1 inch = **20** ft.



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SITE PLAN

SHEET:
C1.10M

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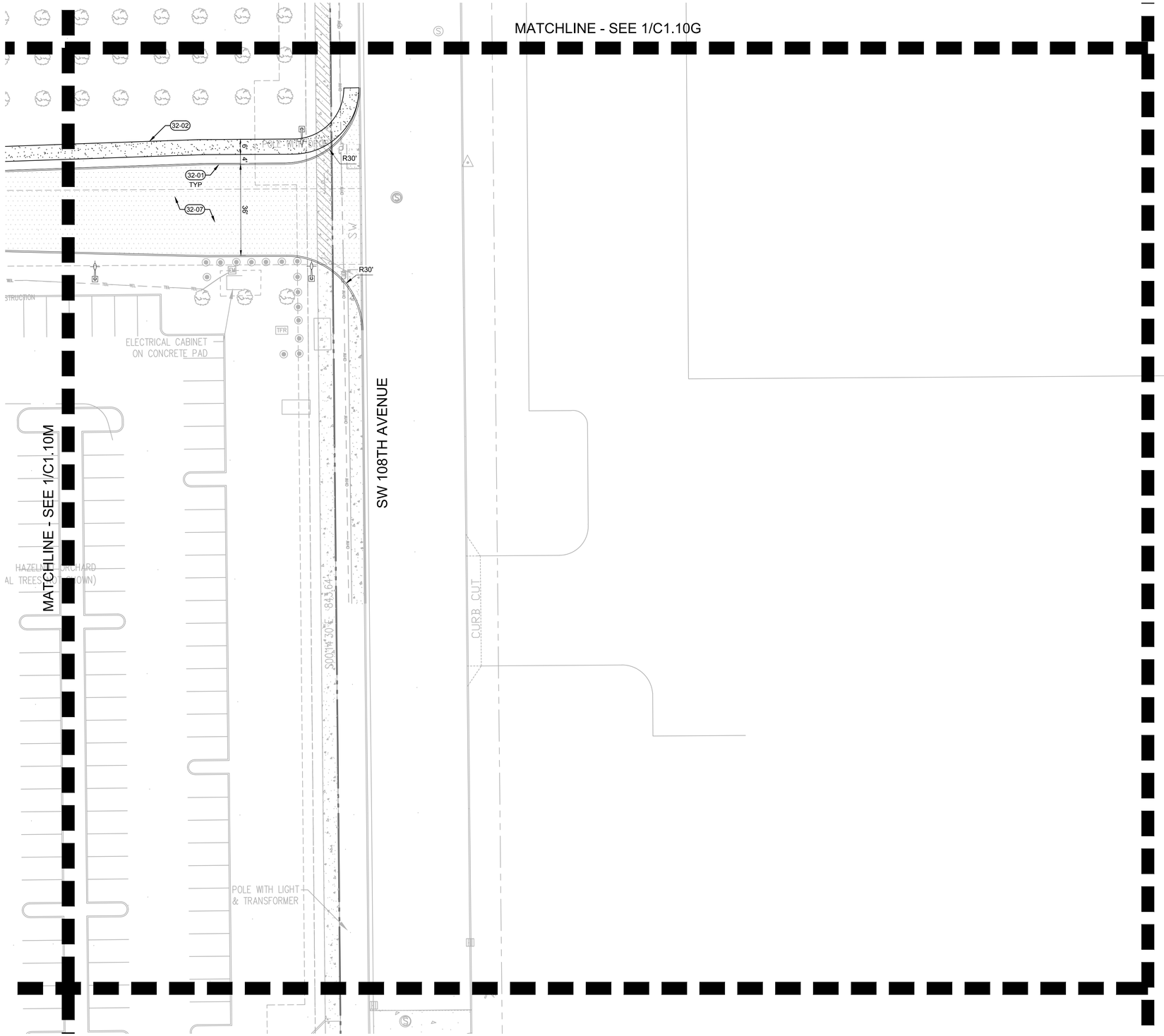
"2250180" \\GRP.MCK\PROJECTS\PROJECTS\2250180000\DRAWINGS\CIVIL\TUX\180- C1.10 SITE PLAN.DWG:C1.10M NKB 06/28/25 13:41 1:20



1 SITE PLAN
C1.10N

20 0 10 20 40 80
(IN FEET)
1 inch = **20** ft.

KEYNOTES

32-01	VERTICAL CURB
32-02	SIDEWALK
32-03	PARKING STRIPE
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32-05	STAIRS
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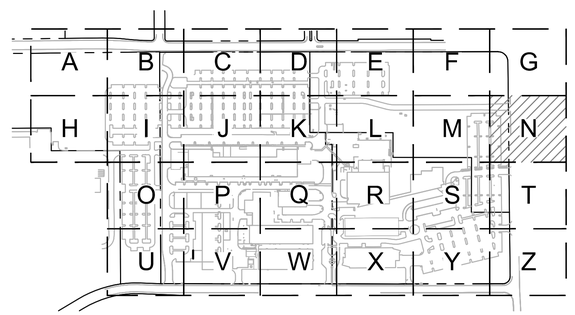

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SHEET TITLE:
SITE PLAN

SHEET:
C1.10N

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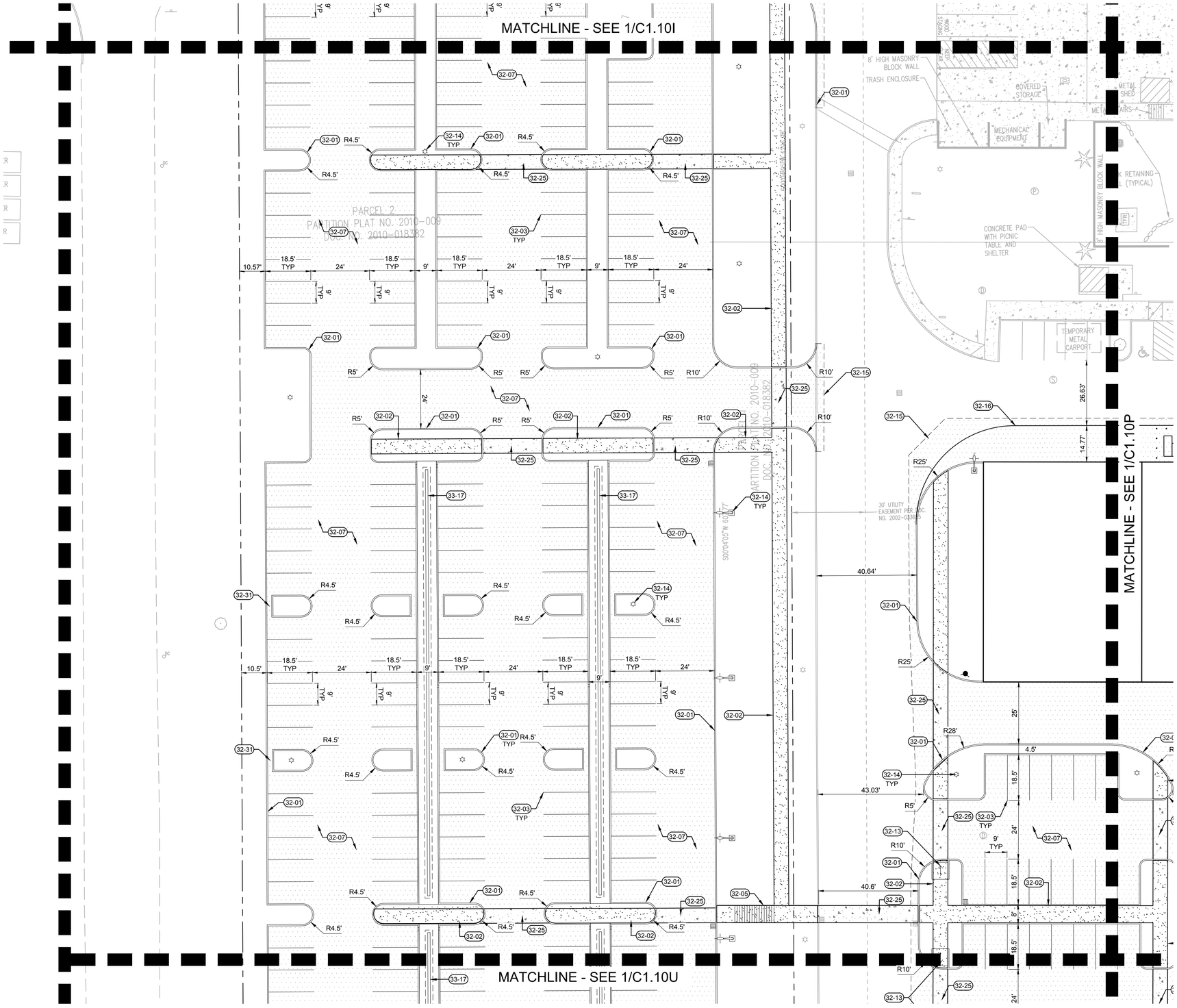
"2250180000" \\GRP.MCK\PROJECTS\PROJECTS\225018000\DRAWINGS\CIVIL\TUX\180- C1.10 SITE PLAN.DWG;C1.10N NKB 07/18/25 15:03 1:20



KEYNOTES

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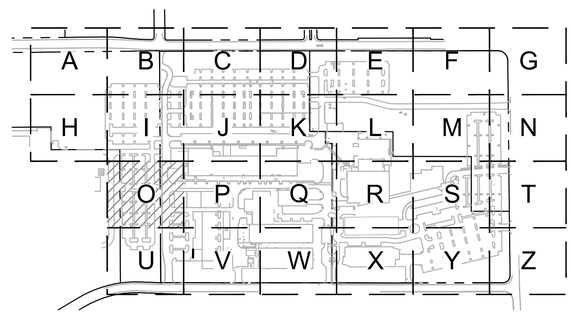
33-22	ELECTRIC TRANSFORMER

1 SITE PLAN
C1.10O

20 0 10 20 40 80
(IN FEET)
1 inch = **20** ft.



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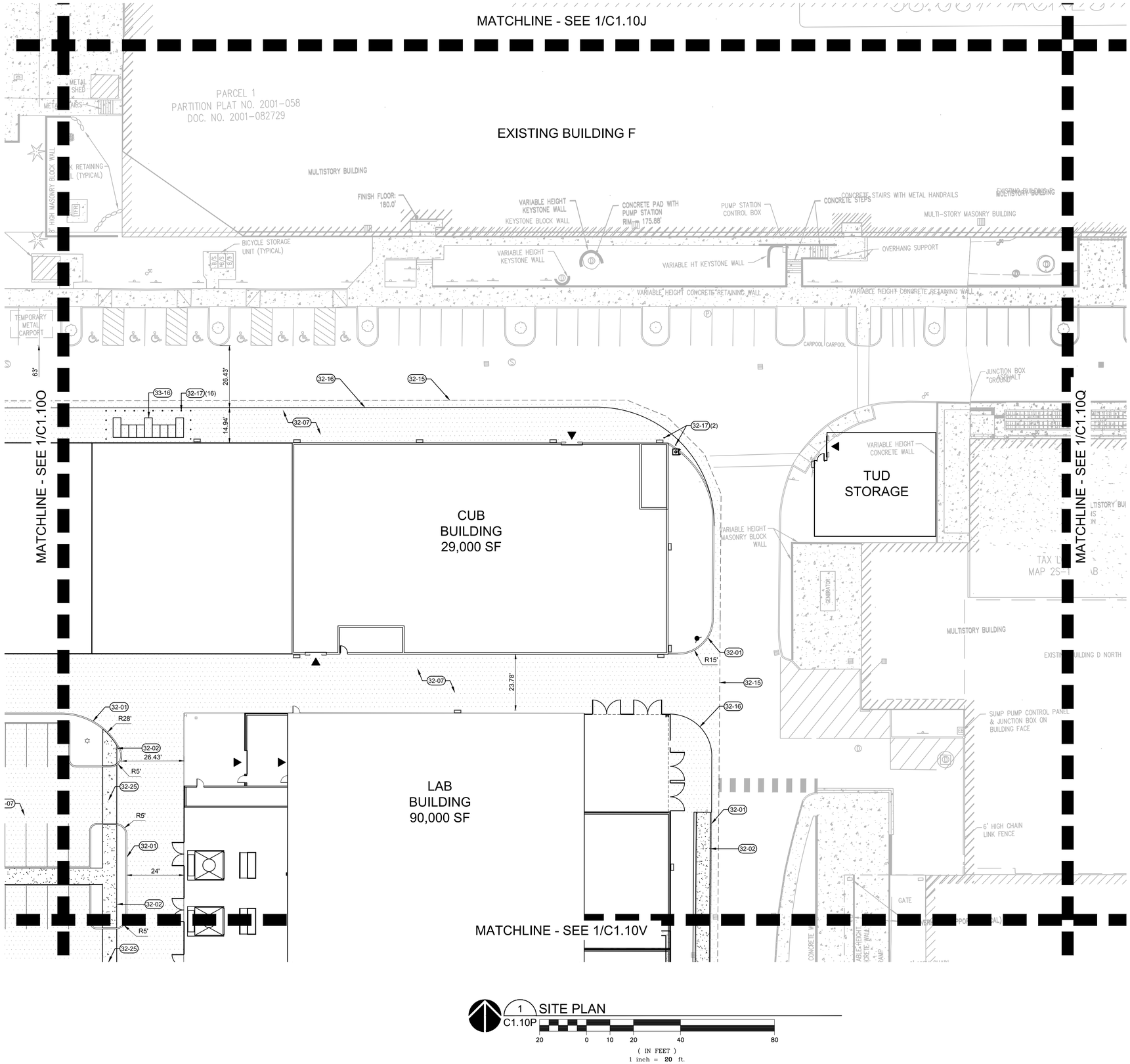


KEYNOTES

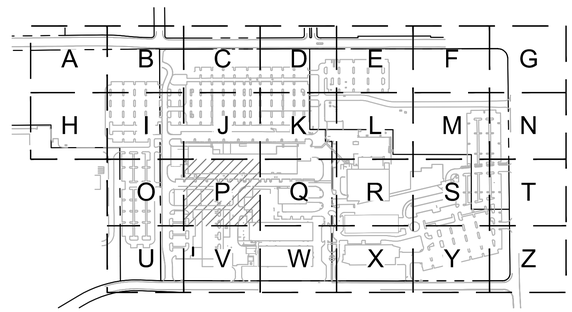
32-01	VERTICAL CURB
32-02	SIDEWALK
32-03	PARKING STRIPE
32-04	GRASSCRETE
32-05	STAIRS
32-06	ACCESSIBLE PARKING STALL
32-07	ASPHALT PAVEMENT
32-08	LANDSCAPE AREA
32-09	WHEEL STOP
32-10	FLUSH CURB
32-11	CONCRETE-ASPHALT TRANSITION
32-12	PARALLEL CURB RAMPS
32-13	PERPENDICULAR CURB RAMP
32-14	SITE LIGHT
32-15	SAWCUT EXISTING ASPHALT
32-16	PAVEMENT STRIPING
32-17	BOLLARD
32-18	BOARDWALK
32-19	BIKE RACK
32-20	PEDESTRIAN RAMP WITH HANDRAILS MAX 8.3%
32-21	TRASH ENCLOSURE
32-22	TRASH COMPACTOR
32-23	SERVICE RAMP
32-24	SITE WALL
32-25	CONCRETE CROSSWALK
32-26	CONCRETE PAVEMENT
32-27	SPEED HUMP
32-28	OVERHEAD SKYBRIDGE
32-29	SECURE SWING GATE WITH KNOX BOX
32-30	ENCLOSED WALKWAY
32-31	CURB CHANNEL
33-04	FIRE HYDRANT
33-06	INSTALL FDC
33-16	ELECTRICAL GEAR
33-17	STORMWATER FACILITY
33-22	ELECTRIC TRANSFORMER

1 C1.10P SITE PLAN

20 0 10 20 40 80

(IN FEET)

1 inch = 20 ft.



KEY MAP
SCALE: NTS

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SHEET TITLE:
SITE PLAN

SHEET:
C1.10P

JOB NO. **2250180.00**

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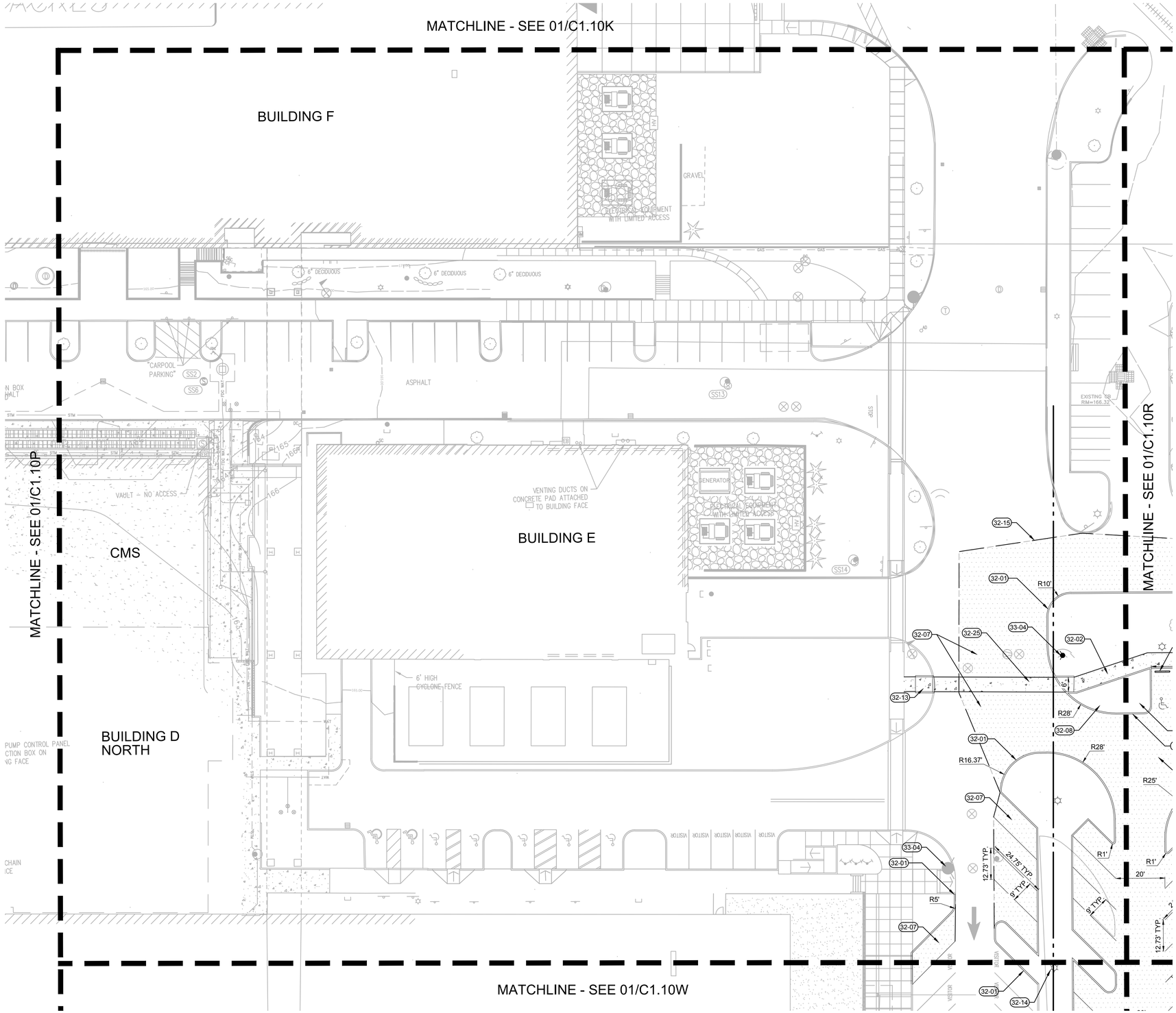

1 SITE PLAN
C1.10Q

20 0 10 20 40 80
(IN FEET)
1 inch = **20** ft.

KEYNOTES

32-01	VERTICAL CURB
32-02	CONCRETE SIDEWALK
32-03	PARKING STRIPE
32-04	GRASSCRETE
32-05	CONCRETE STAIRS
32-06	ACCESSIBLE PARKING STALL
32-07	ASPHALT PAVEMENT
32-08	LANDSCAPE AREA
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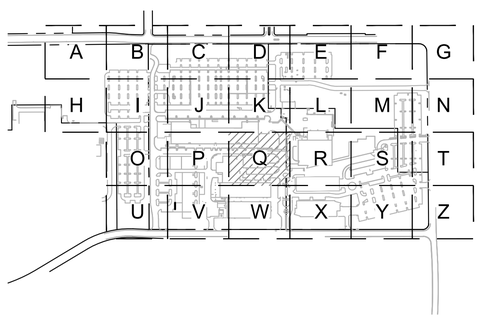
32-29	SECURE SWING GATE WITH KNOX BOX
32-30	ENCLOSED WALKWAY
33-04	FIRE HYDRANT
33-06	INSTALL FDC
33-16	ELECTRICAL GEAR
33-17	STORMWATER FACILITY
33-22	ELECTRIC TRANSFORMER



KEY MAP
SCALE: NTS

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SITE PLAN

SHEET:
C1.10Q

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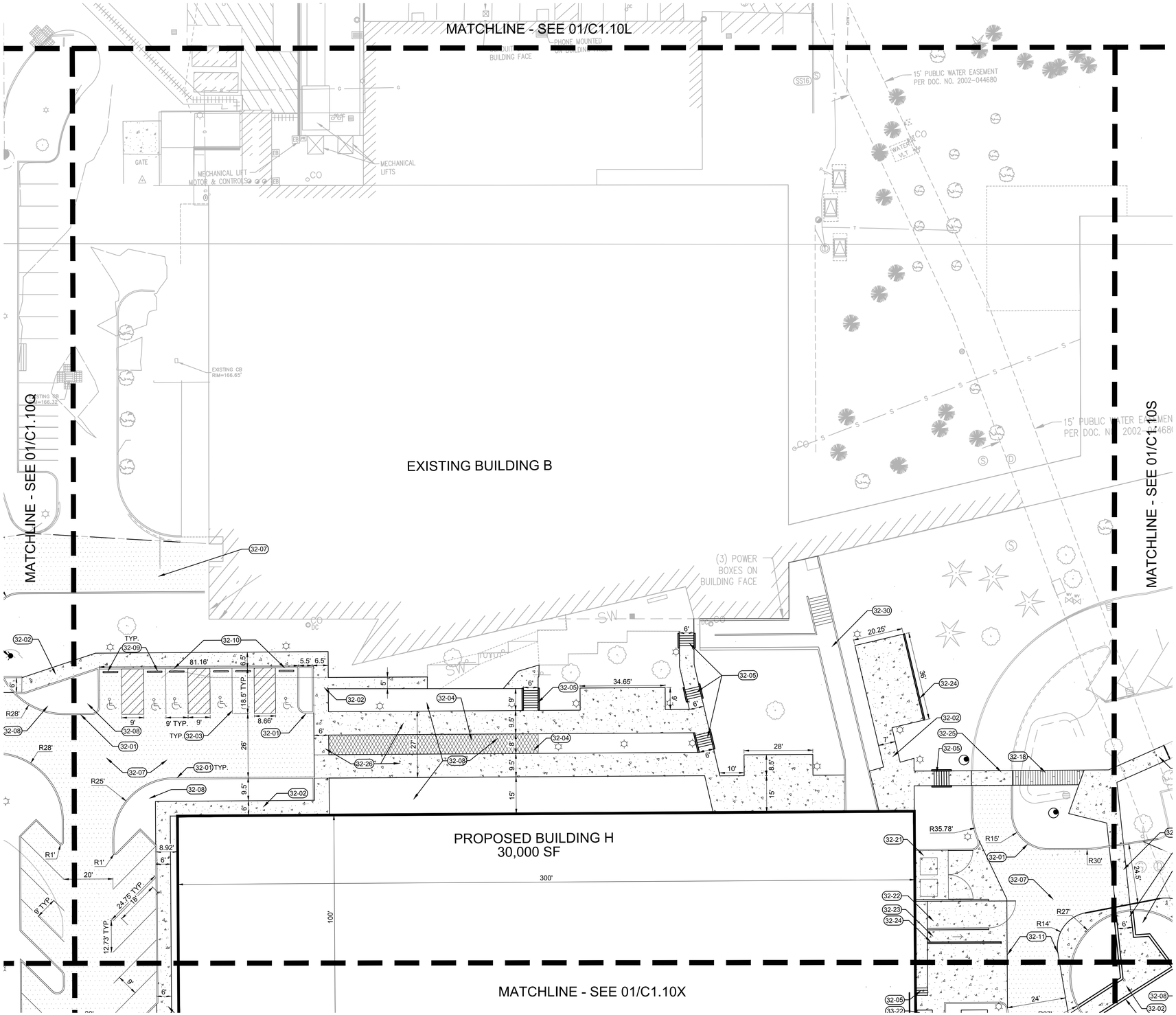

KEYNOTES

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32-02	CONCRETE SIDEWALK
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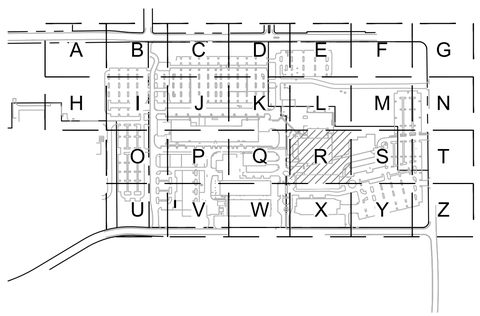
33-04	FIRE HYDRANT
33-06	INSTALL FDC
33-16	ELECTRICAL GEAR
33-17	STORMWATER FACILITY
33-22	ELECTRIC TRANSFORMER

1 C1.10R SITE PLAN

20 0 10 20 40 80

(IN FEET)
1 inch = **20** ft.



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C1.10R

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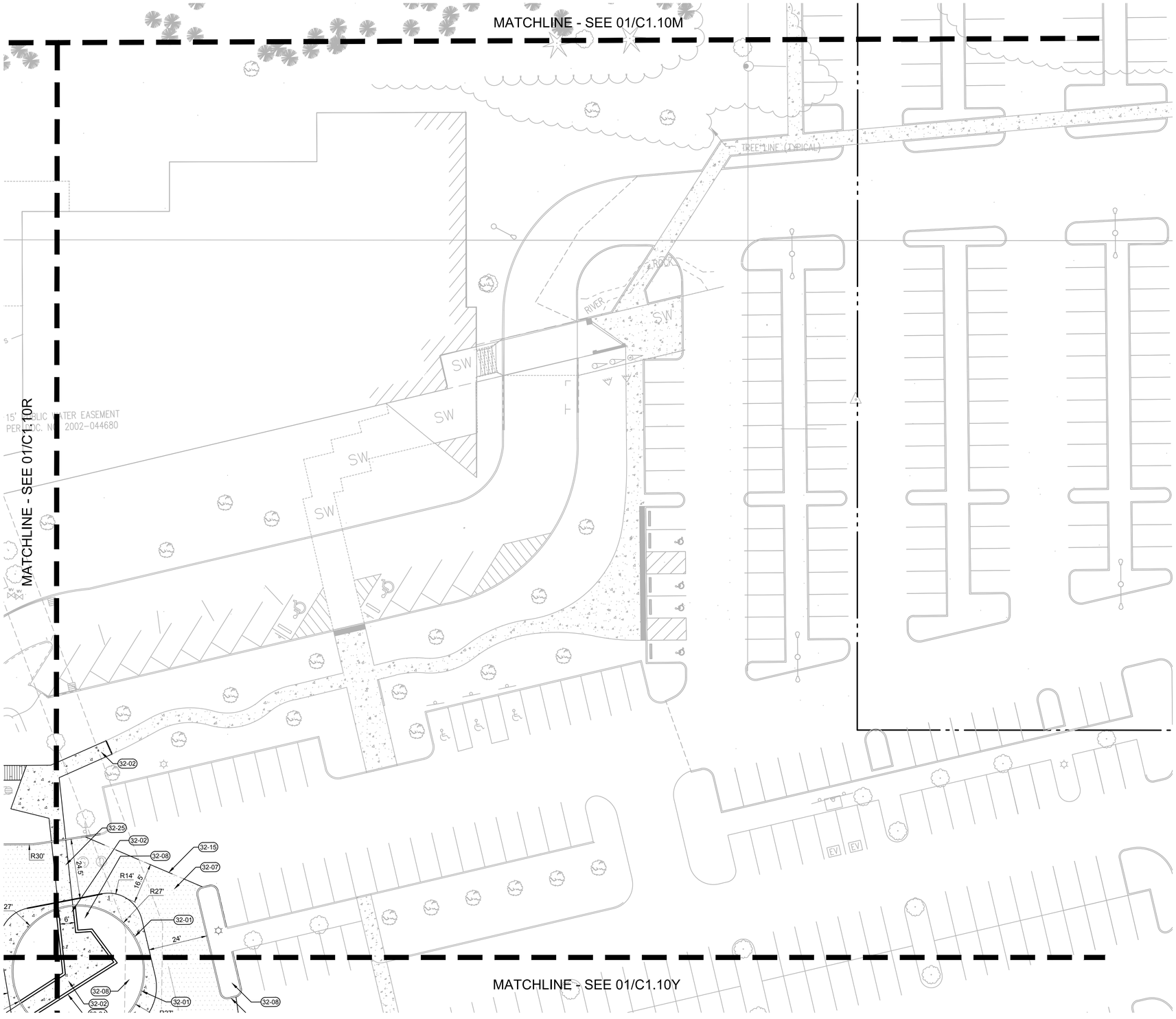

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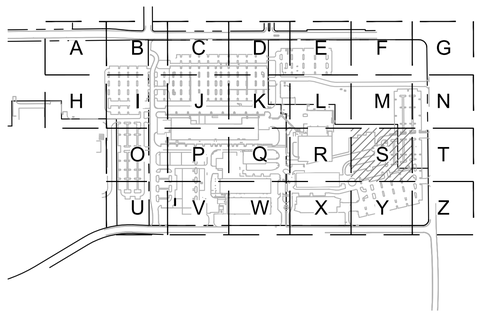

KEY MAP
SCALE: NTS

1 SITE PLAN
C1.10S

20 0 10 20 40 80
(IN FEET)
1 inch = **20** ft.

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SITE PLAN

SHEET:
C1.10S

JOB NO. **2250180.00**

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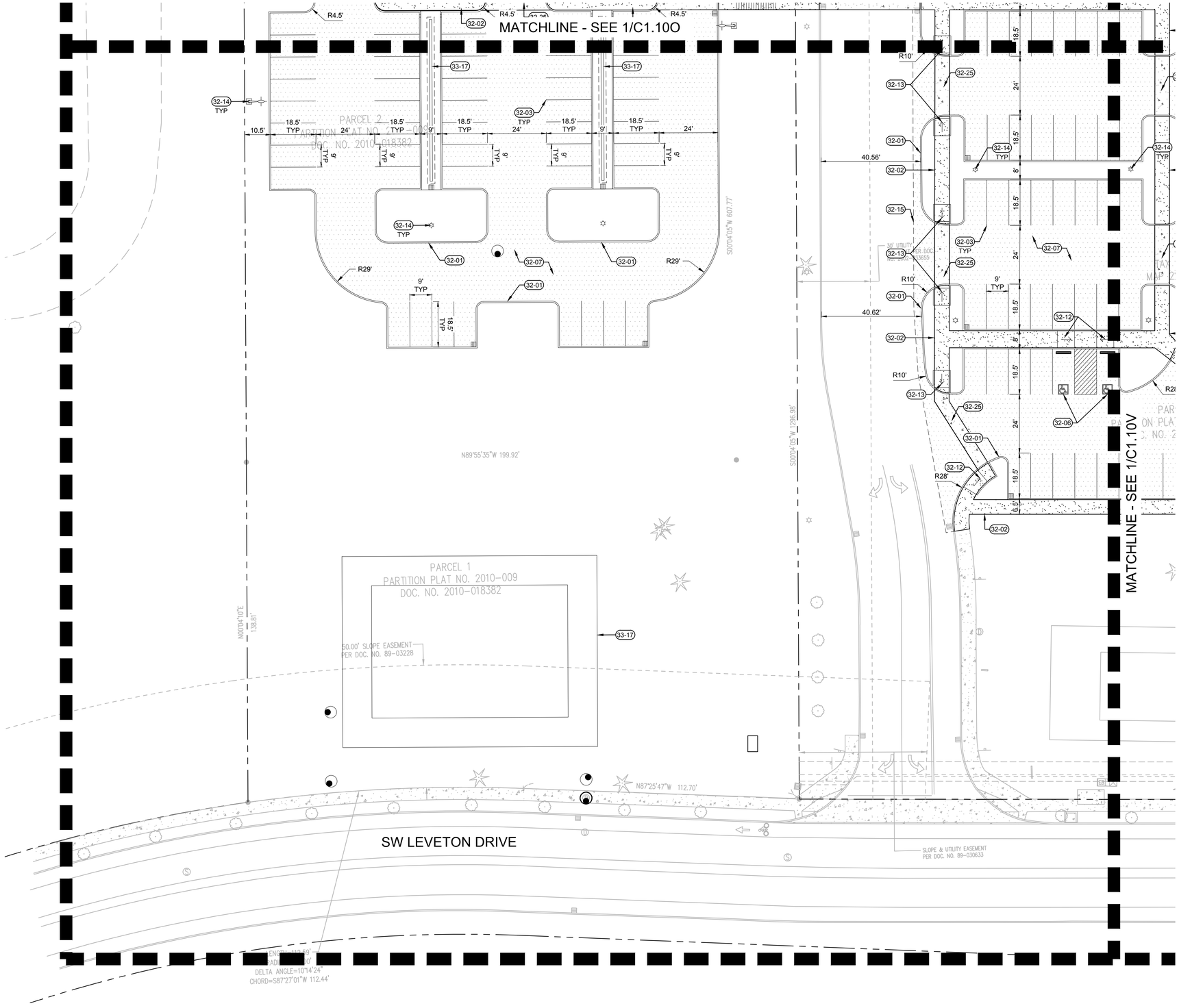

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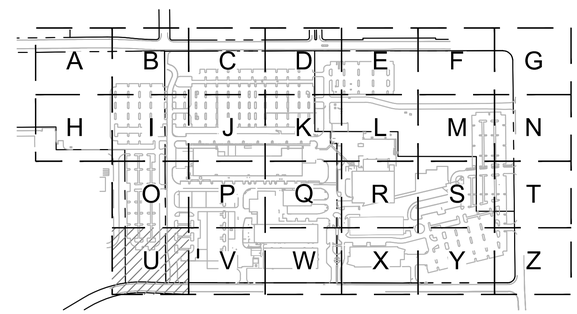
33-17	STORMWATER FACILITY
33-22	ELECTRIC TRANSFORMER



KEY MAP
SCALE: NTS

1 C1.10U SITE PLAN

20 0 10 20 40 80
(IN FEET)
1 inch = **20** ft.

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SHEET TITLE:
SITE PLAN

SHEET:
C1.10U

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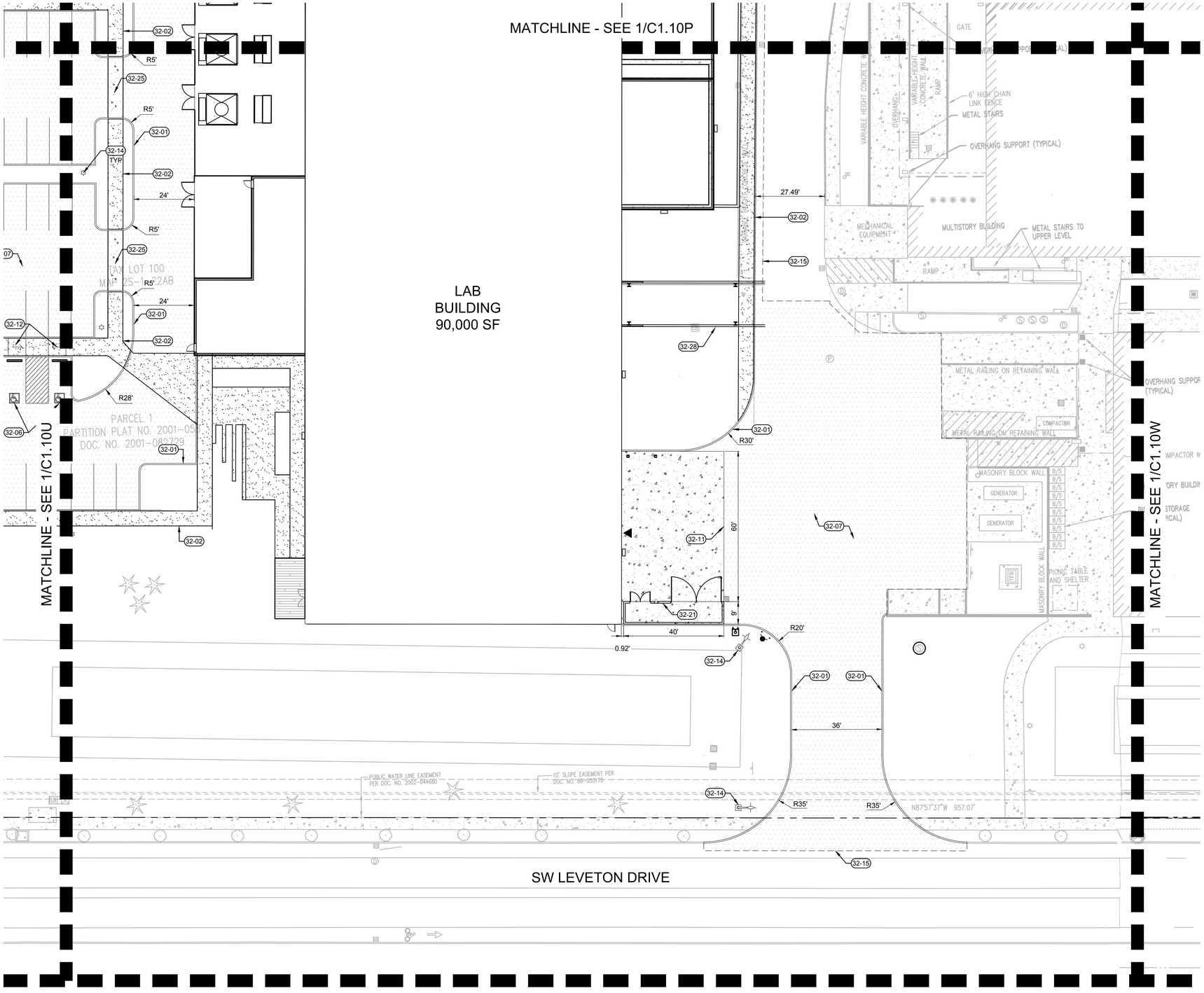

1 SITE PLAN
C1.10V

20 0 10 20 40 80
(IN FEET)
1 inch = **20** ft.

KEYNOTES

32-01	VERTICAL CURB
32-02	SIDEWALK
32-03	PARKING STRIPE
32-04	GRASSCRETE
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33-04	FIRE HYDRANT
33-06	INSTALL FDC
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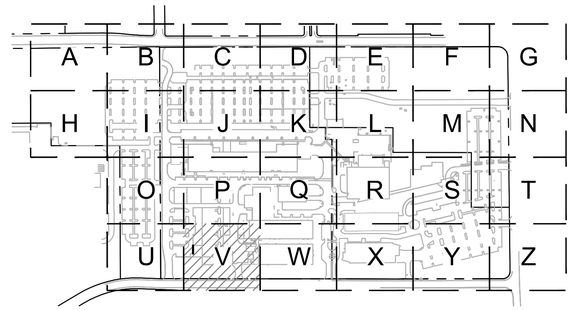
33-17	STORMWATER FACILITY
33-22	ELECTRIC TRANSFORMER



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SHEET:
C1.10V

JOB NO. **2250180.00**

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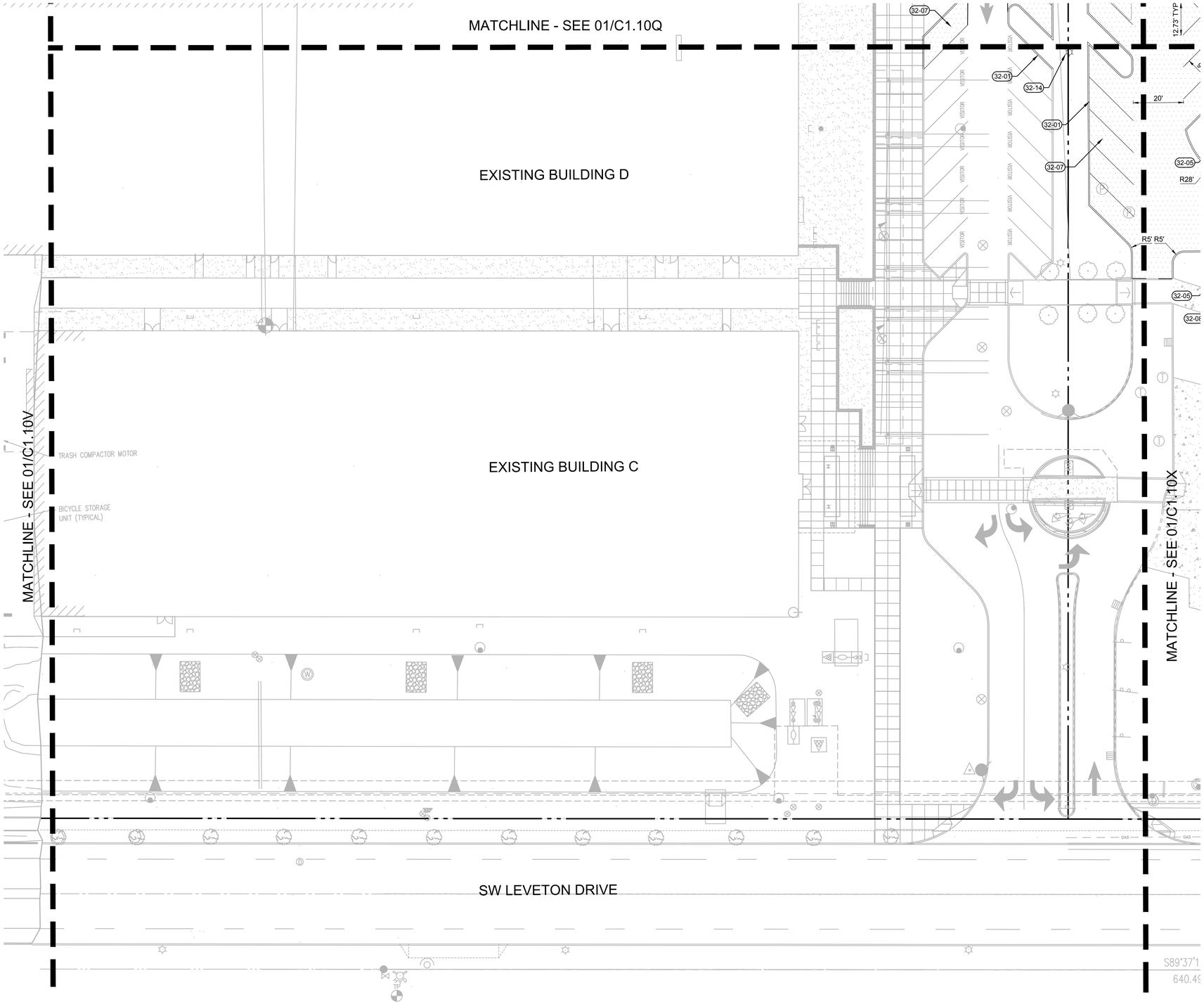

1 SITE PLAN
C1.10W

20 0 10 20 40 80
(IN FEET)
1 inch = **20** ft.

KEYNOTES

32-01	VERTICAL CURB
32-02	CONCRETE SIDEWALK
32-03	PARKING STRIPE
32-04	GRASSCRETE
32-05	CONCRETE STAIRS
32-06	ACCESSIBLE PARKING STALL
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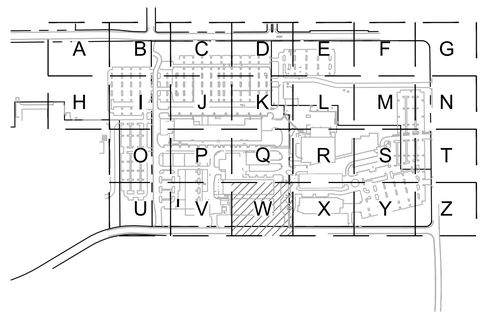
33-22	ELECTRIC TRANSFORMER



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SITE PLAN

SHEET:
C1.10W

JOB NO. **2250180.00**

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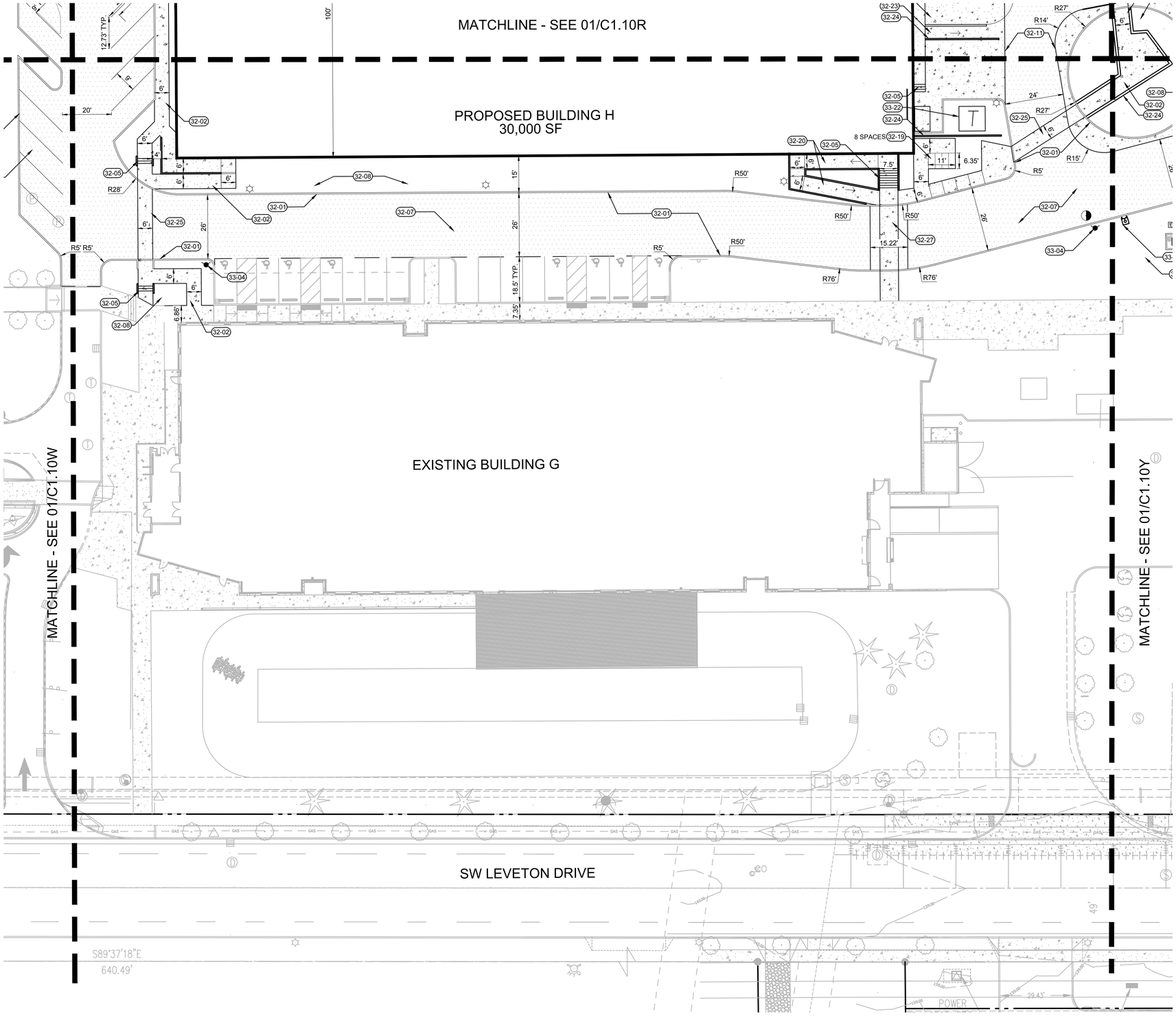
"225018000" \\GRP.MCK\PROJECTS\PROJECTS\225018000\DRAWINGS\CIVIL\BLDG H\141- C1.10 SITE PLAN.DWG:C1.10W ADS 07/16/25 08:17 1:20



1 SITE PLAN
C1.10X

20 0 10 20 40 80
(IN FEET)
1 inch = **20** ft.

KEYNOTES

32-01	VERTICAL CURB
32-02	CONCRETE SIDEWALK
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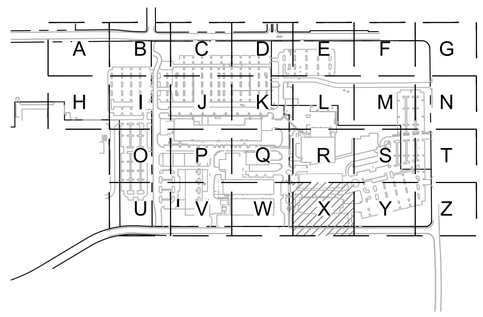

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REVISION SCHEDULE

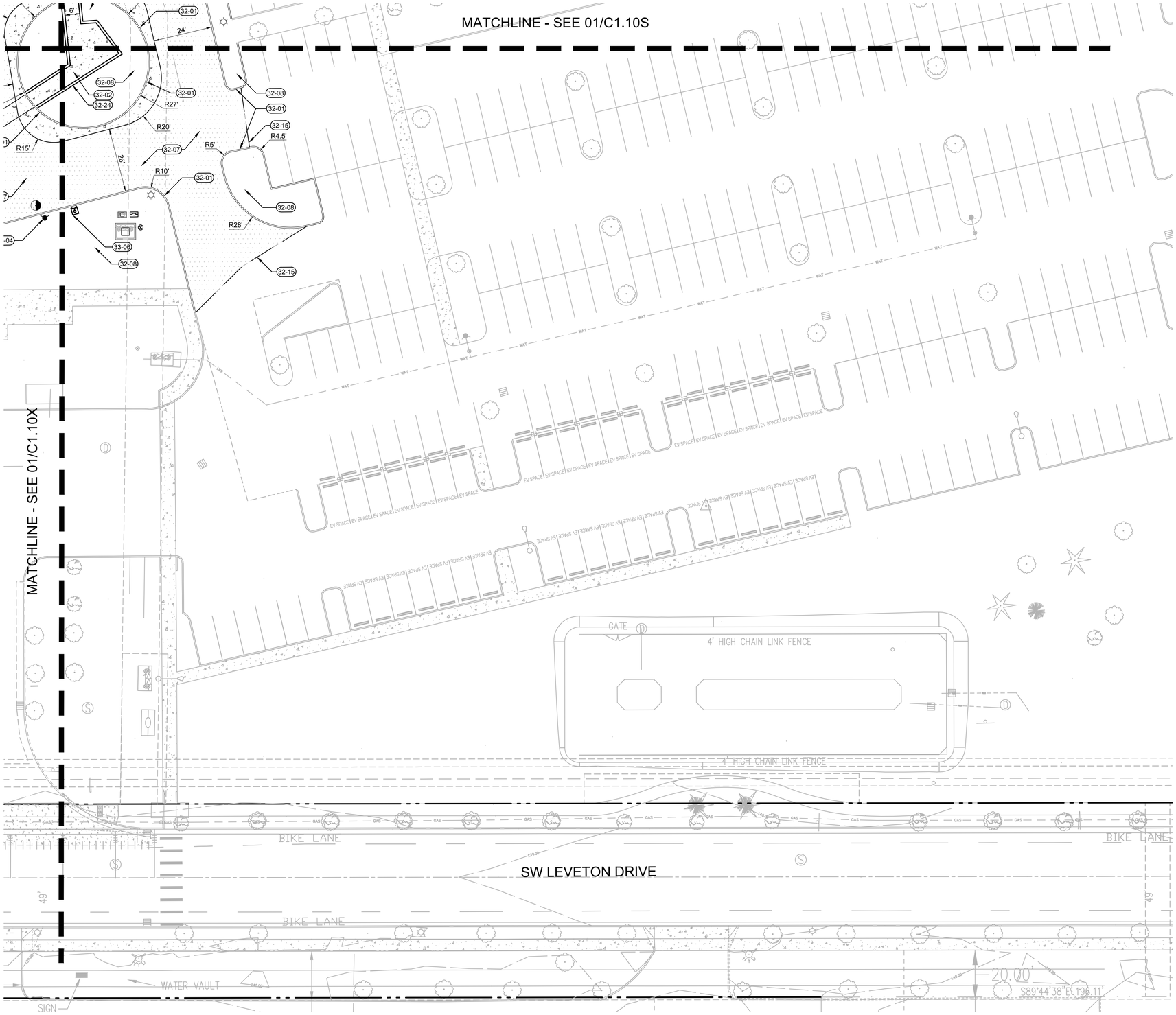
Delta	Issued As	Issue Date

SHEET TITLE:
SITE PLAN

SHEET:
C1.10X

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2

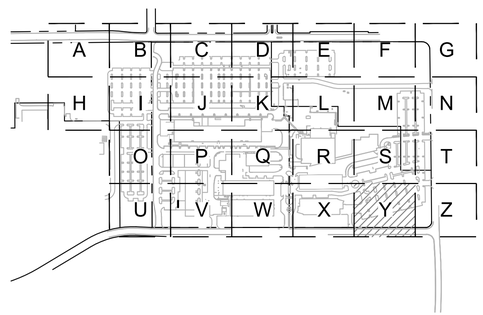


1 SITE PLAN
C1.10Y

20 0 10 20 40 80
(IN FEET)
1 inch = **20** ft.

KEYNOTES

32-01	VERTICAL CURB
32-02	CONCRETE SIDEWALK
32-03	PARKING STRIPE
32-04	GRASSCRETE
32-05	CONCRETE STAIRS
32-06	ACCESSIBLE PARKING STALL
32-07	ASPHALT PAVEMENT
32-08	LANDSCAPE AREA
32-09	WHEEL STOP
32-10	FLUSH CURB
32-11	CONCRETE-ASPHALT TRANSITION
32-12	PARALLEL CURB RAMP
32-13	PERPENDICULAR CURB RAMP
32-14	SITE LIGHT
32-15	SAWCUT EXISTING ASPHALT
32-16	PAVEMENT STRIPING
32-17	BOLLARD
32-18	BOARDWALK
32-19	BIKE RACK
32-20	PEDESTRIAN RAMP WITH HANDRAILS MAX 8.3%
32-21	TRASH ENCLOSURE
32-22	TRASH COMPACTOR
32-23	SERVICE RAMP
32-24	SITE WALL
32-25	CONCRETE CROSSWALK
32-26	CONCRETE PAVEMENT
32-27	SPEED HUMP
32-28	OVERHEAD SKYBRIDGE
32-29	SECURE SWING GATE WITH KNOX BOX
32-30	ENCLOSED WALKWAY
33-04	FIRE HYDRANT
33-06	INSTALL FDC
33-16	ELECTRICAL GEAR
33-17	STORMWATER FACILITY
33-22	ELECTRIC TRANSFORMER



KEY MAP
SCALE: NTS

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REVISION SCHEDULE

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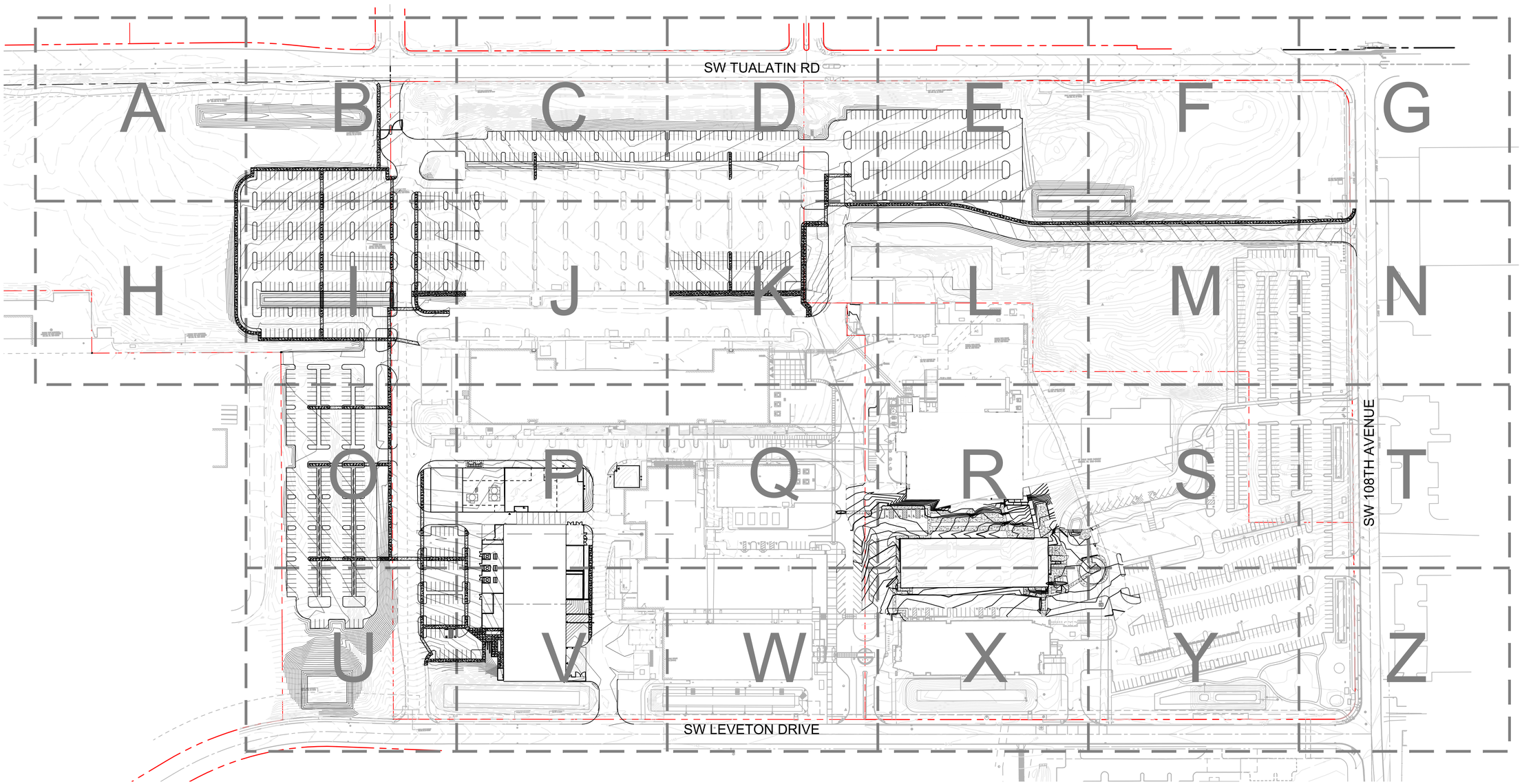
SHEET TITLE:
SITE PLAN

SHEET:
C1.10Y

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



1 C1.20 OVERALL GRADING PLAN

100 0 50 100 200 400

(IN FEET)
1 inch = **100** ft.

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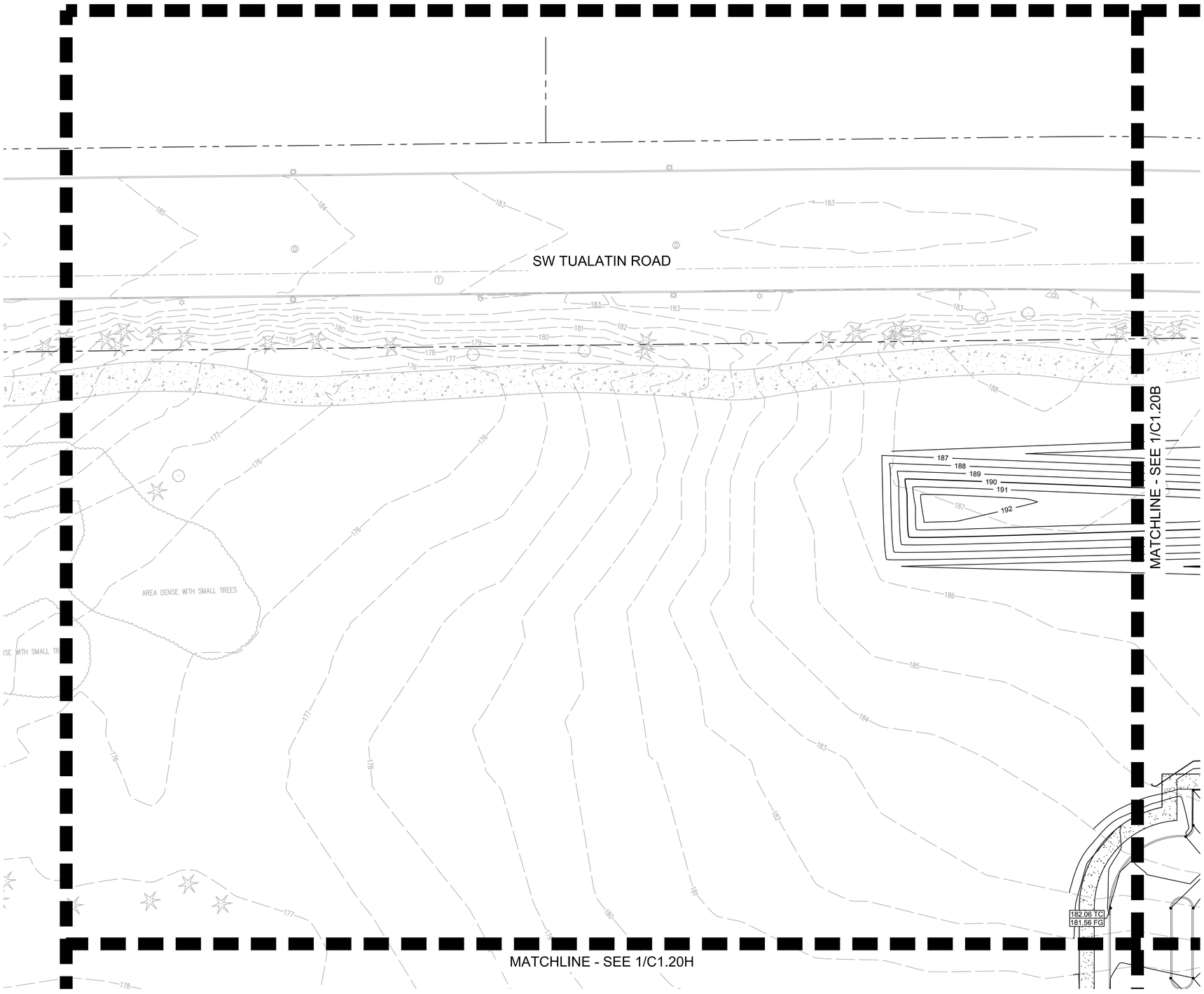
SHEET TITLE:
OVERALL GRADING PLAN

SHEET:
C1.20

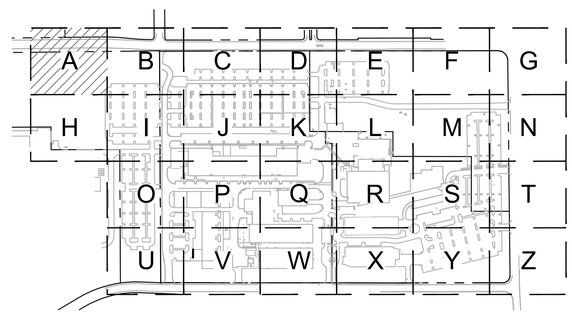
JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



1 GRADING PLAN
C1.20A

20 0 10 20 40 80
(IN FEET)
1 inch = **20** ft.



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SHEET TITLE:
GRADING PLAN

SHEET:
C1.20A

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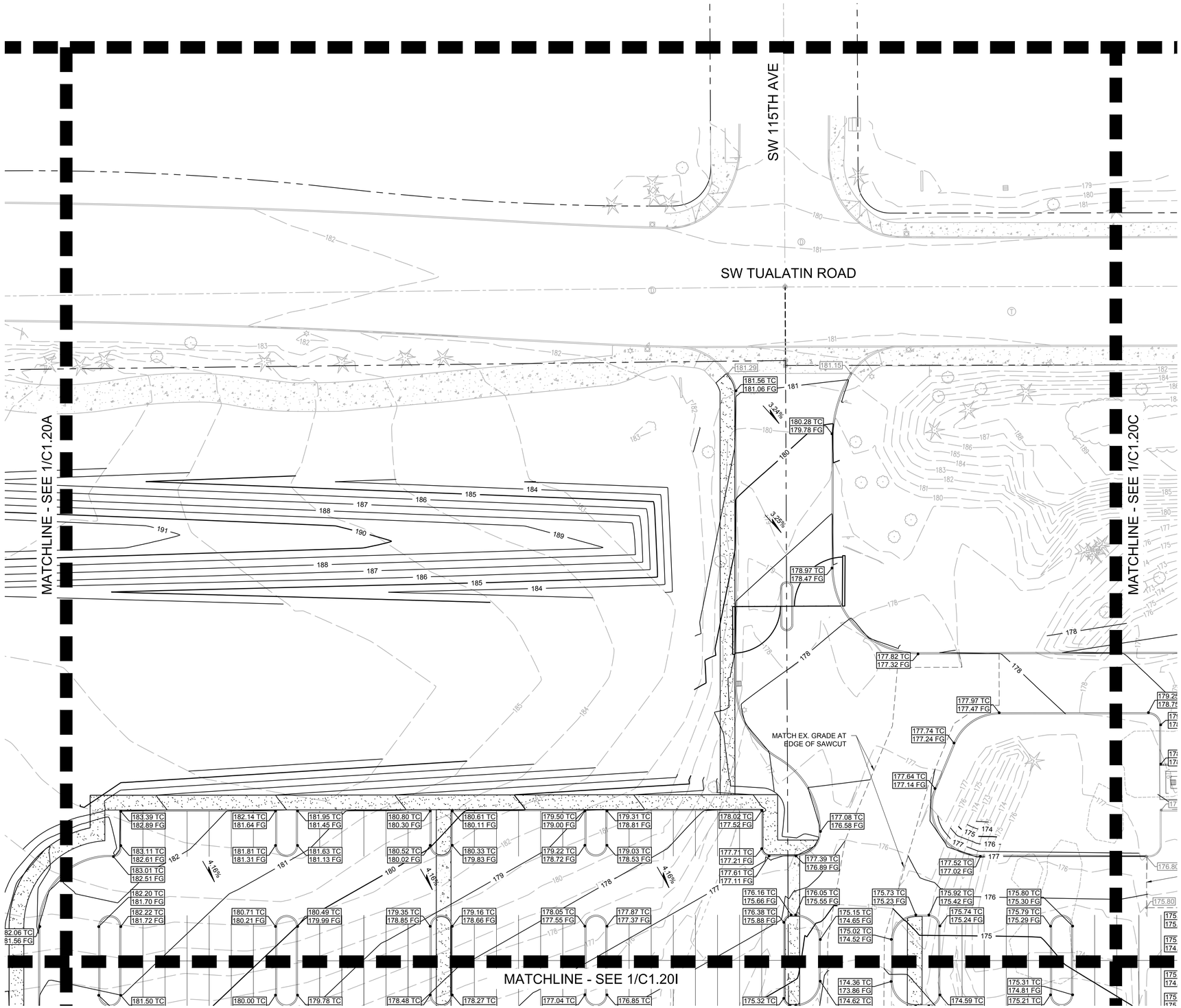

1 GRADING PLAN
C1.20B

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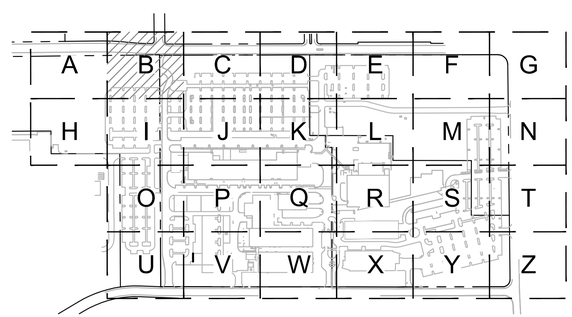
(IN FEET)
1 inch = 20 ft.



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SHEET:
C1.20B

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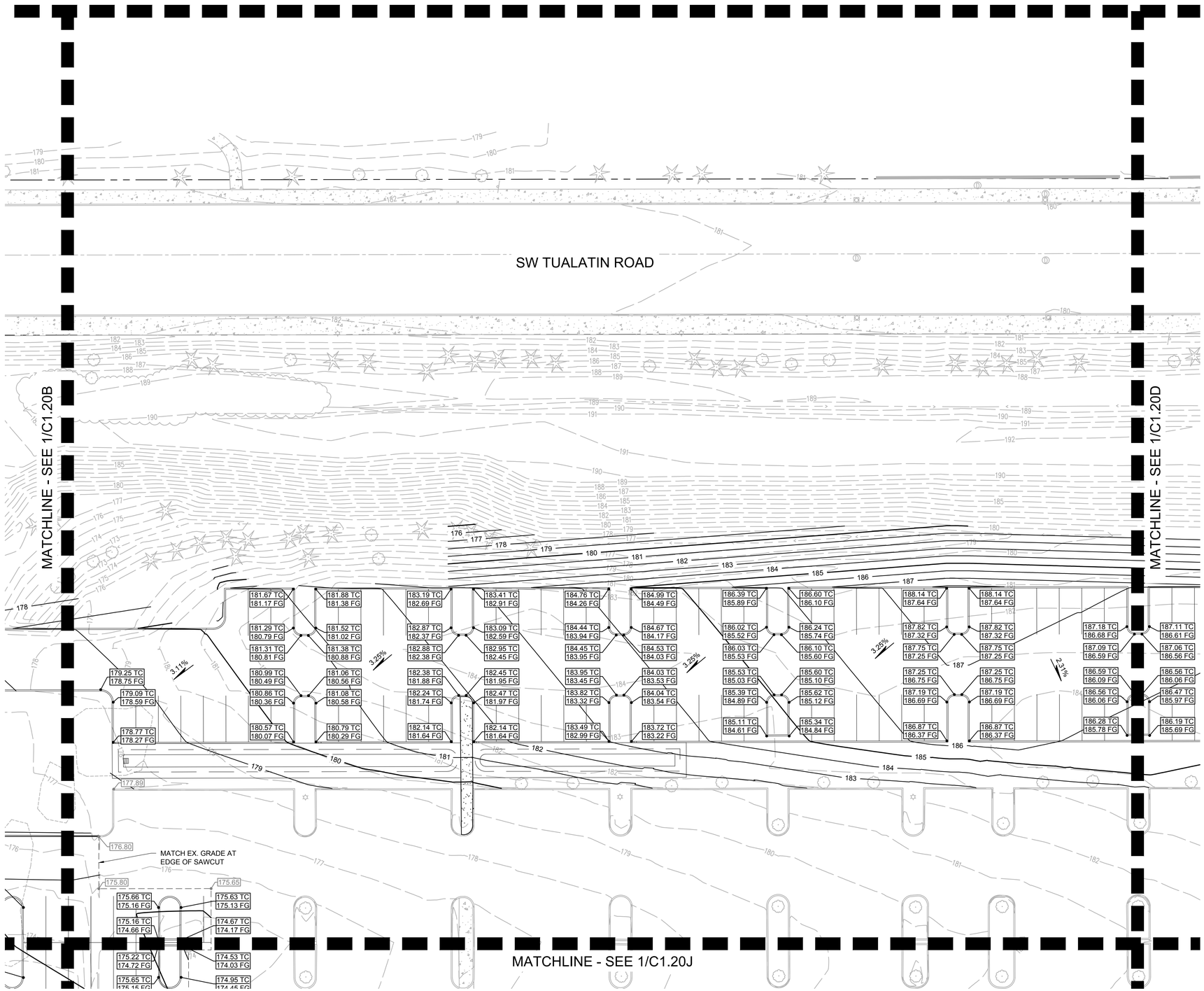

1 GRADING PLAN
C1.20C

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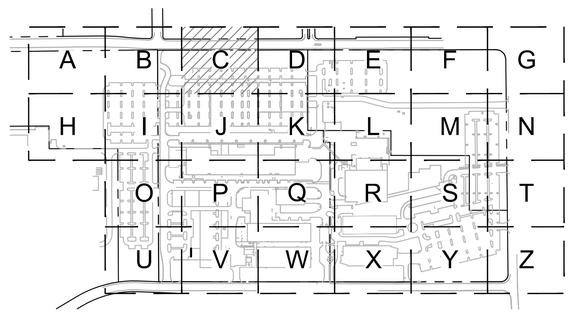
(IN FEET)
1 inch = **20** ft.



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SHEET:
C1.20C

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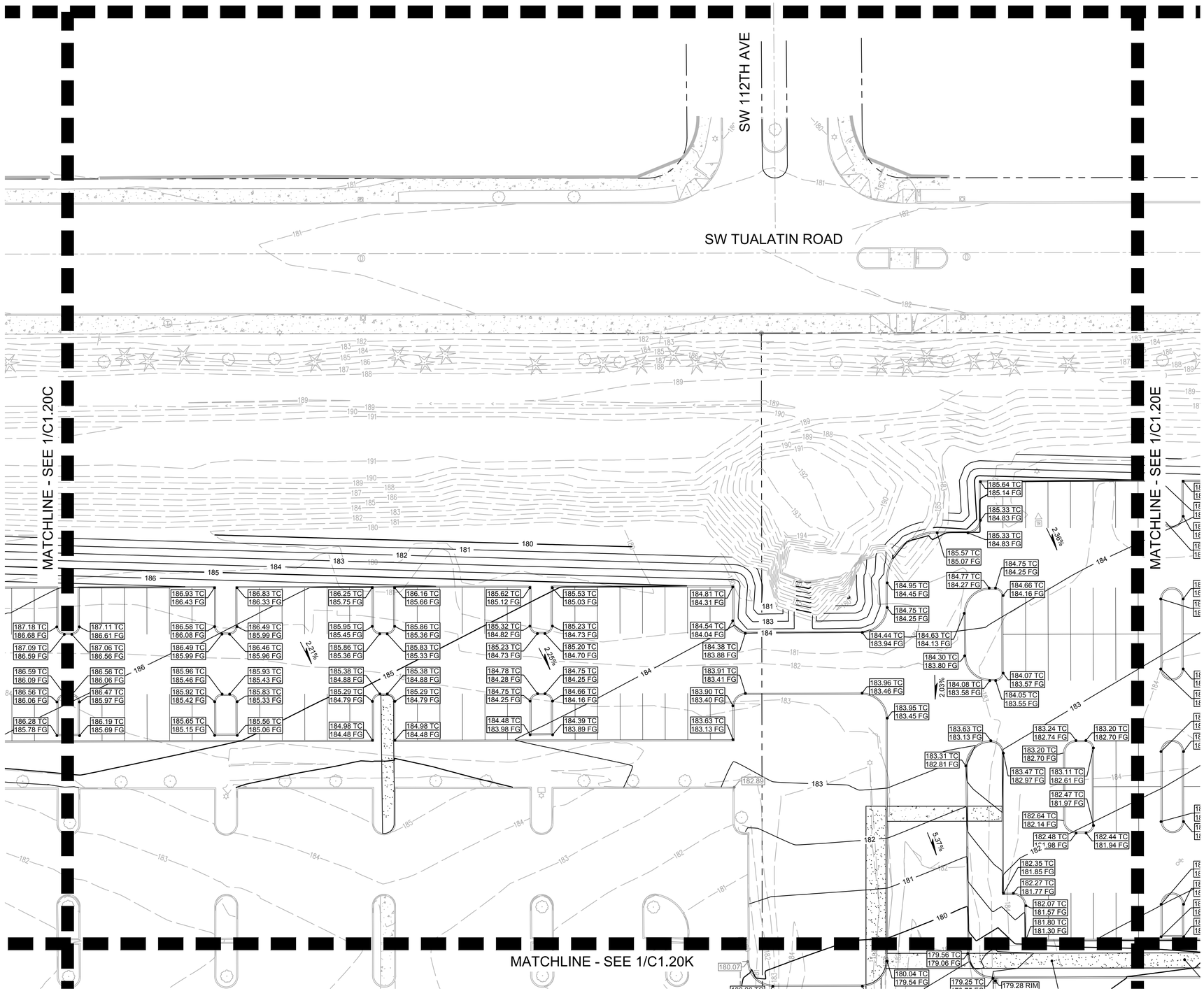
ARCHITECTURAL REVIEW 07/21/2

"2250180" \\GRP.MCK\PROJECTS\PROJECTS\2250180000\DRAWINGS\CIVIL\TUX\180- C1.20 GRADING PLAN.DWG;C1.20C ZMP 07/16/25 13:36 1:20



1 GRADING PLAN
C1.20D

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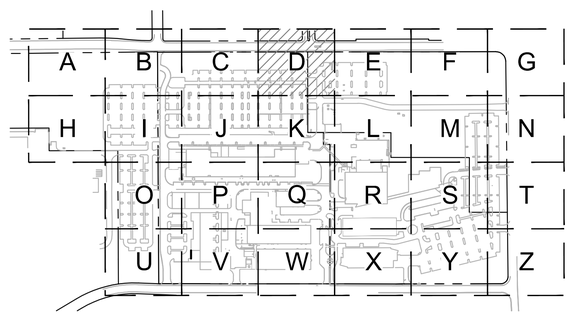
(IN FEET)
1 inch = **20** ft.



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SHEET:
C1.20D

JOB NO. **2250180.00**

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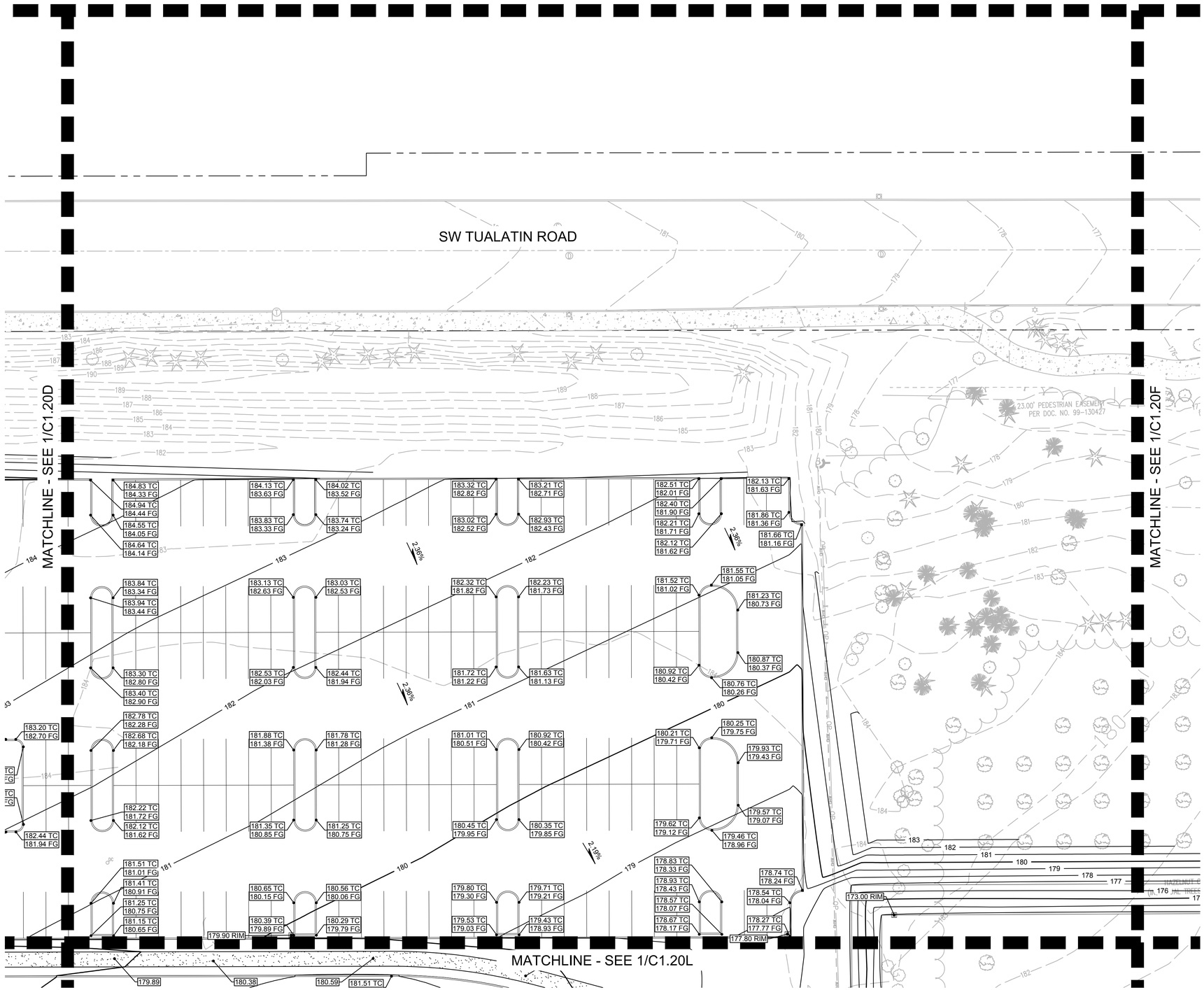

1 GRADING PLAN
C1.20E

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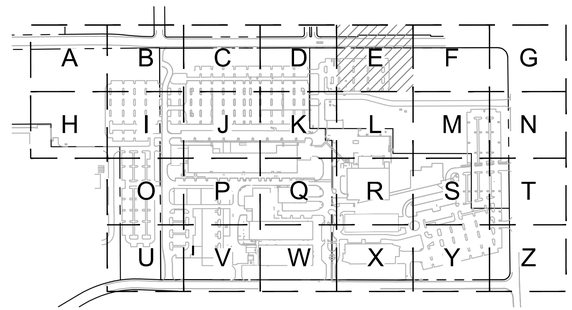
(IN FEET)
1 inch = **20** ft.



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C1.20E

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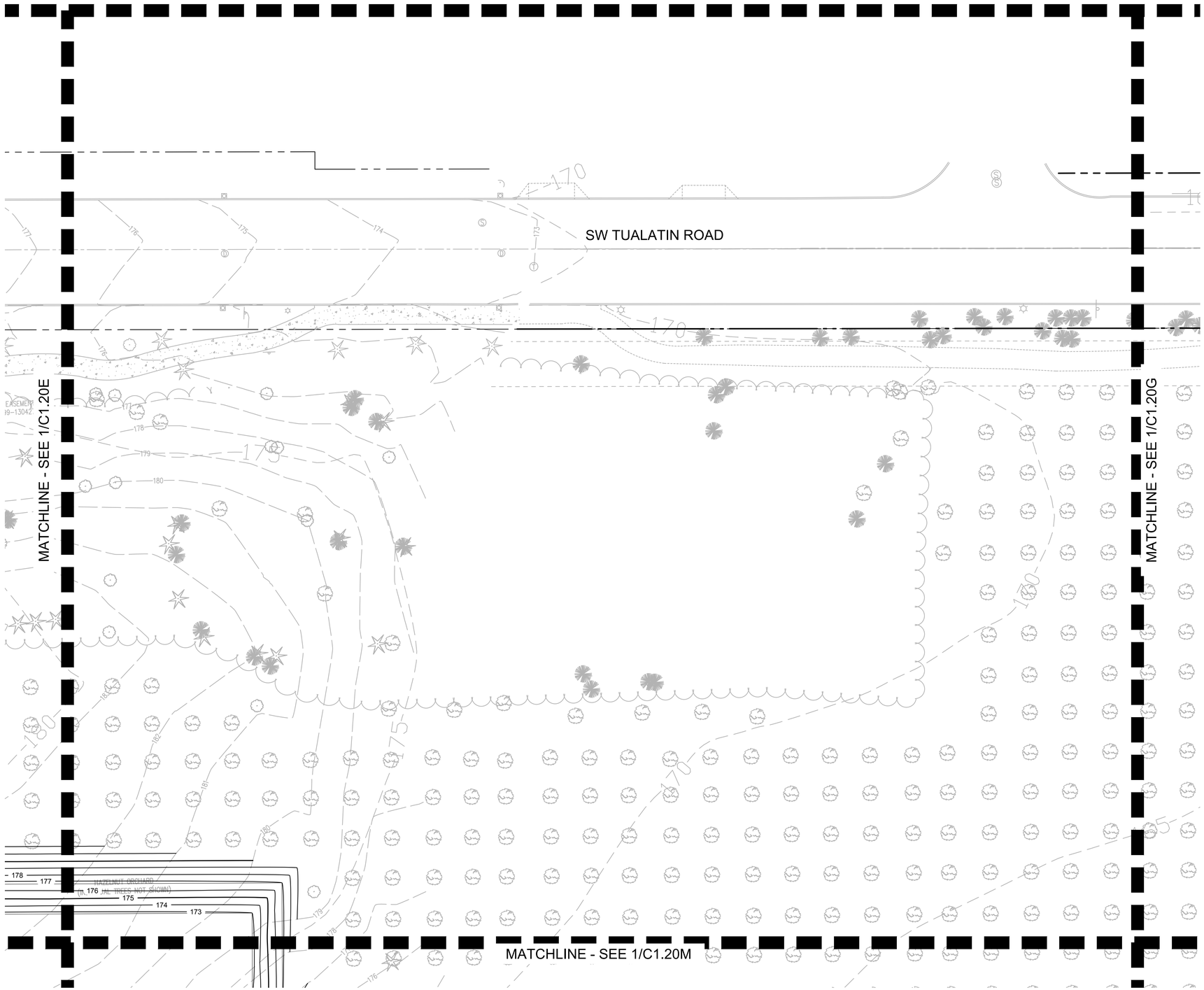

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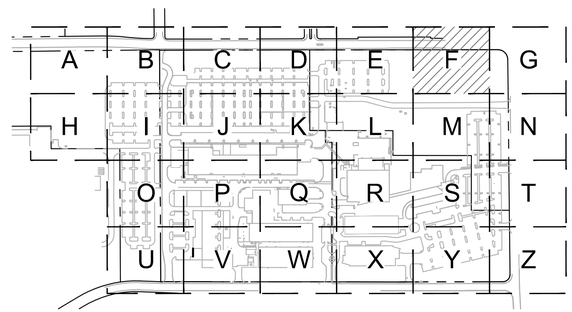
(IN FEET)
1 inch = **20** ft.



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SHEET:
C1.20F

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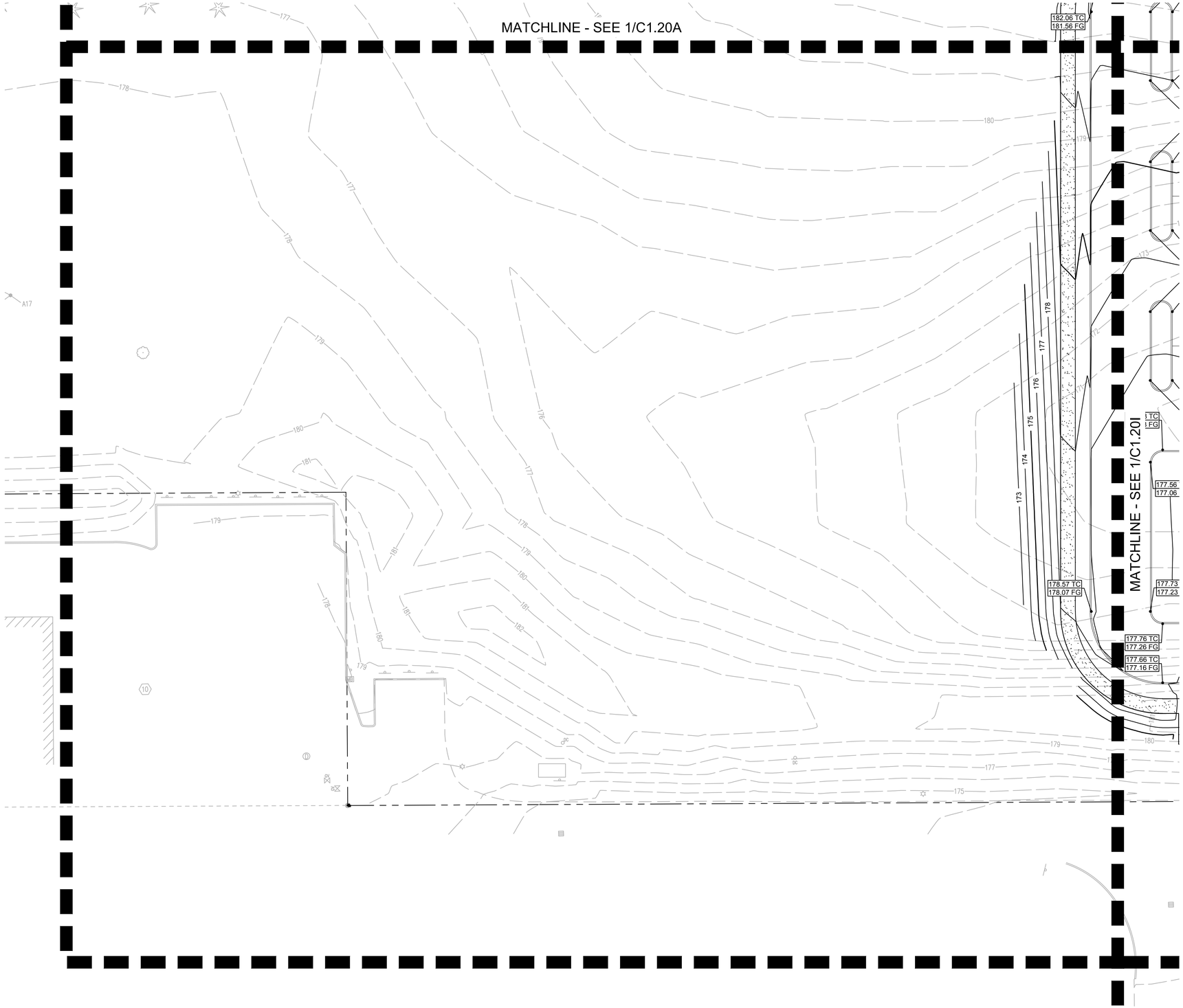
ARCHITECTURAL REVIEW 07/21/2



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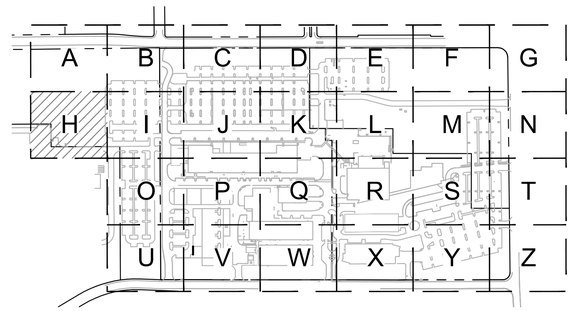

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GRADING PLAN

SHEET:
C1.20H

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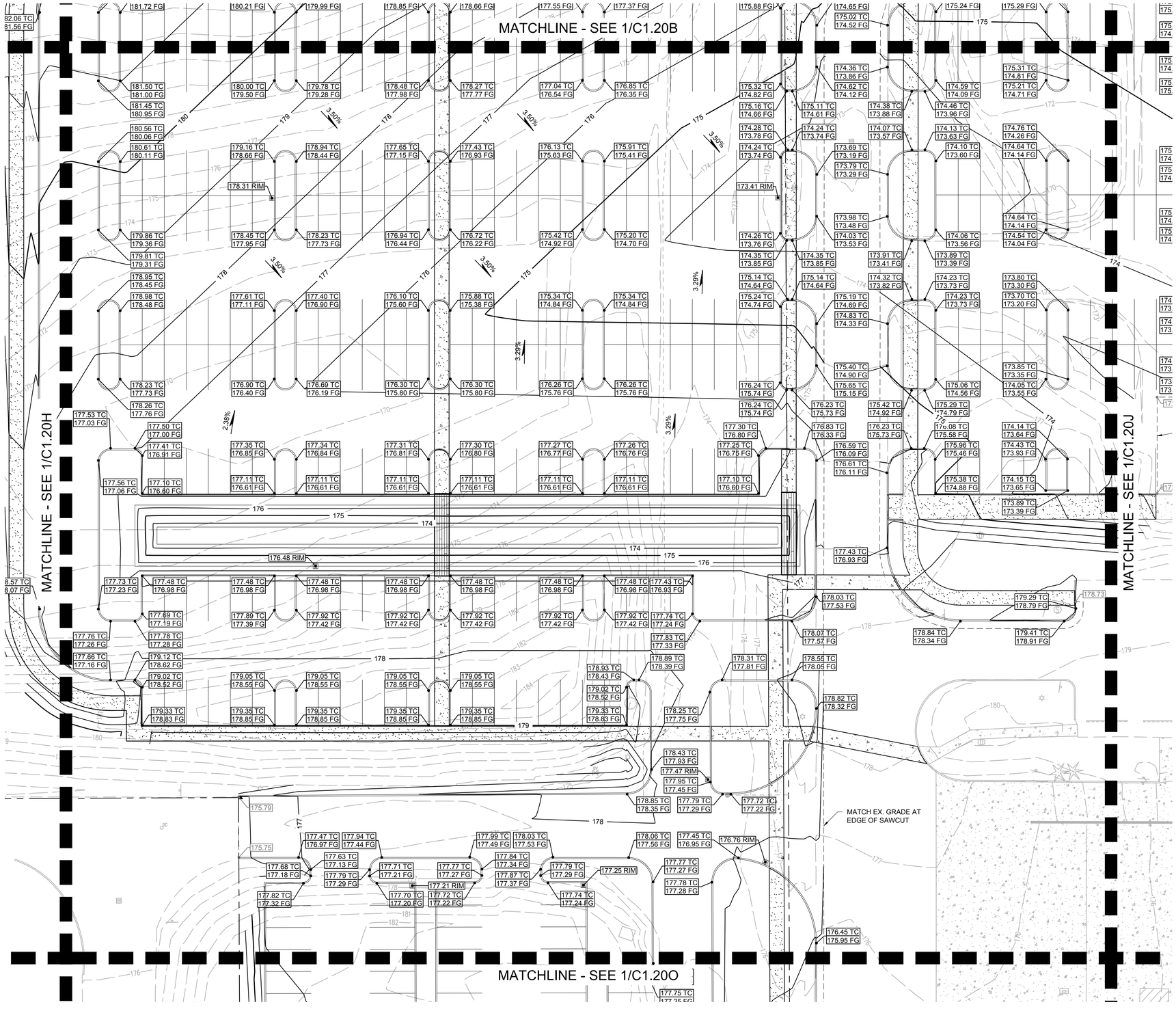
ARCHITECTURAL REVIEW 07/21/2



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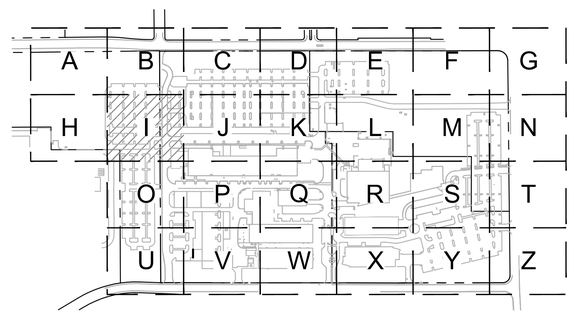
(IN FEET)
1 inch = **20** ft.



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C1.20I

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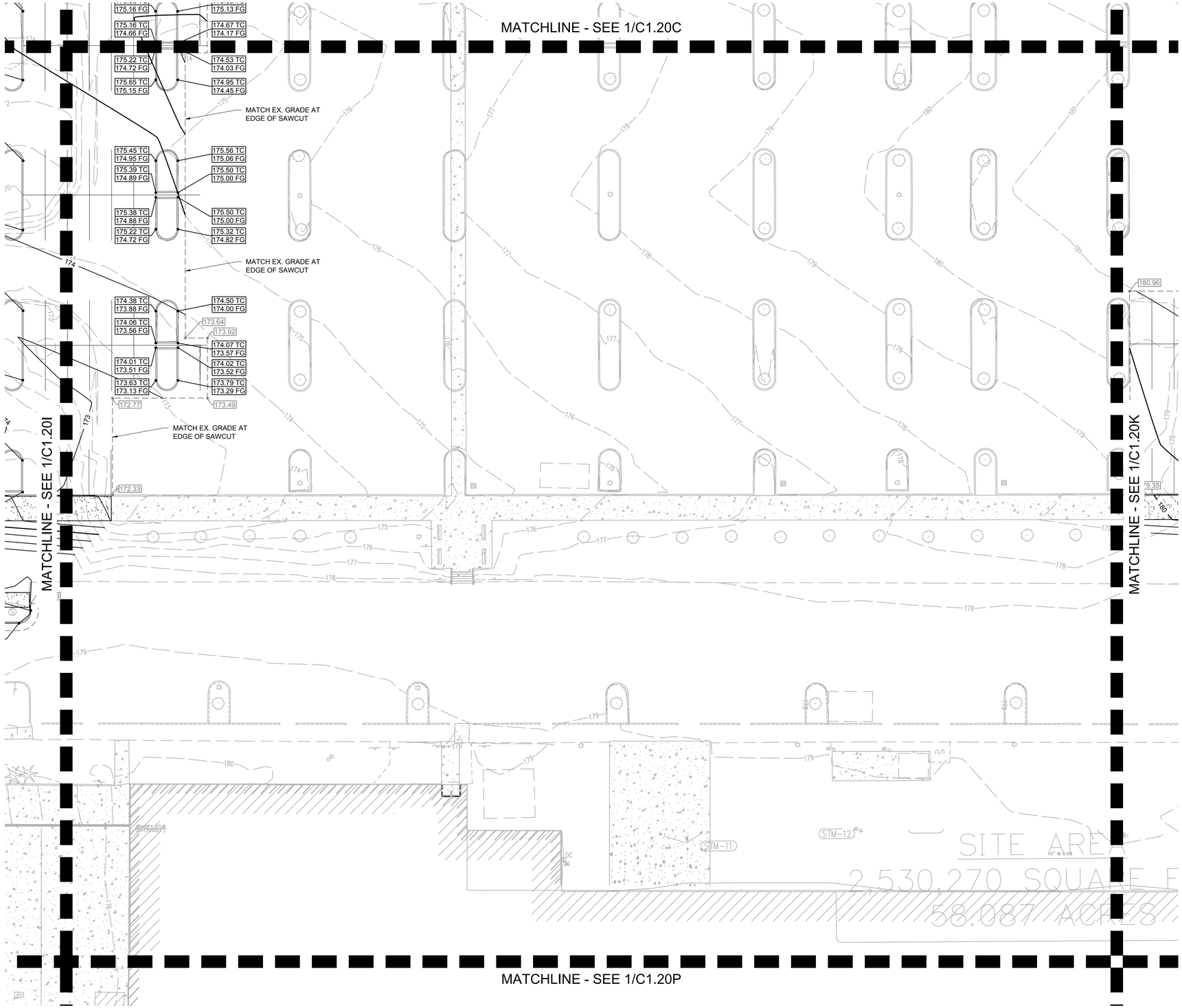

1 GRADING PLAN
C1.20J

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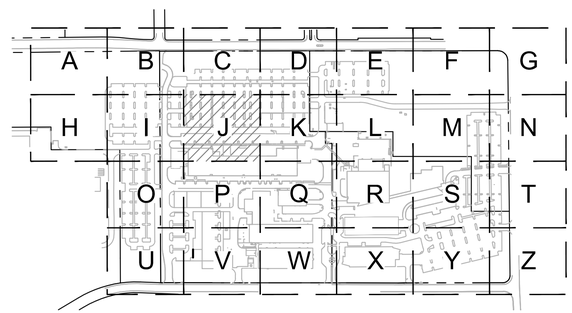
(IN FEET)
1 inch = **20** ft.



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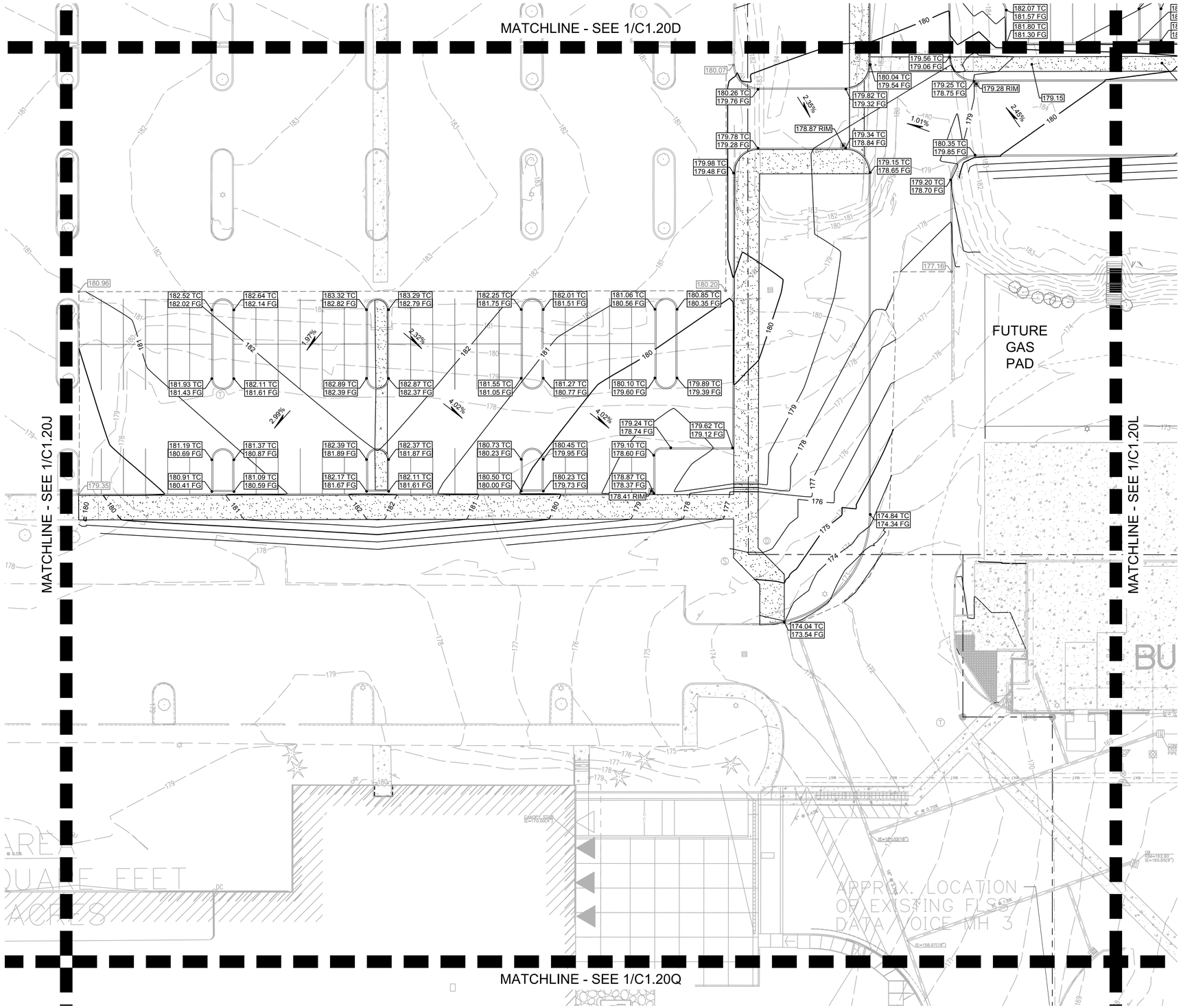

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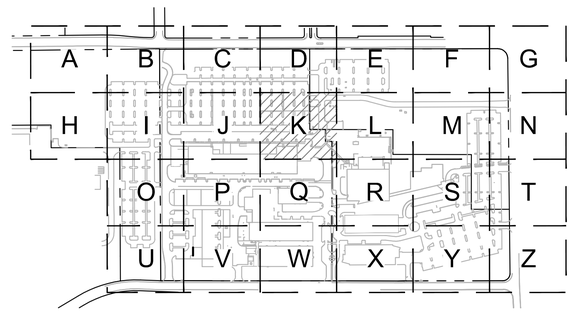

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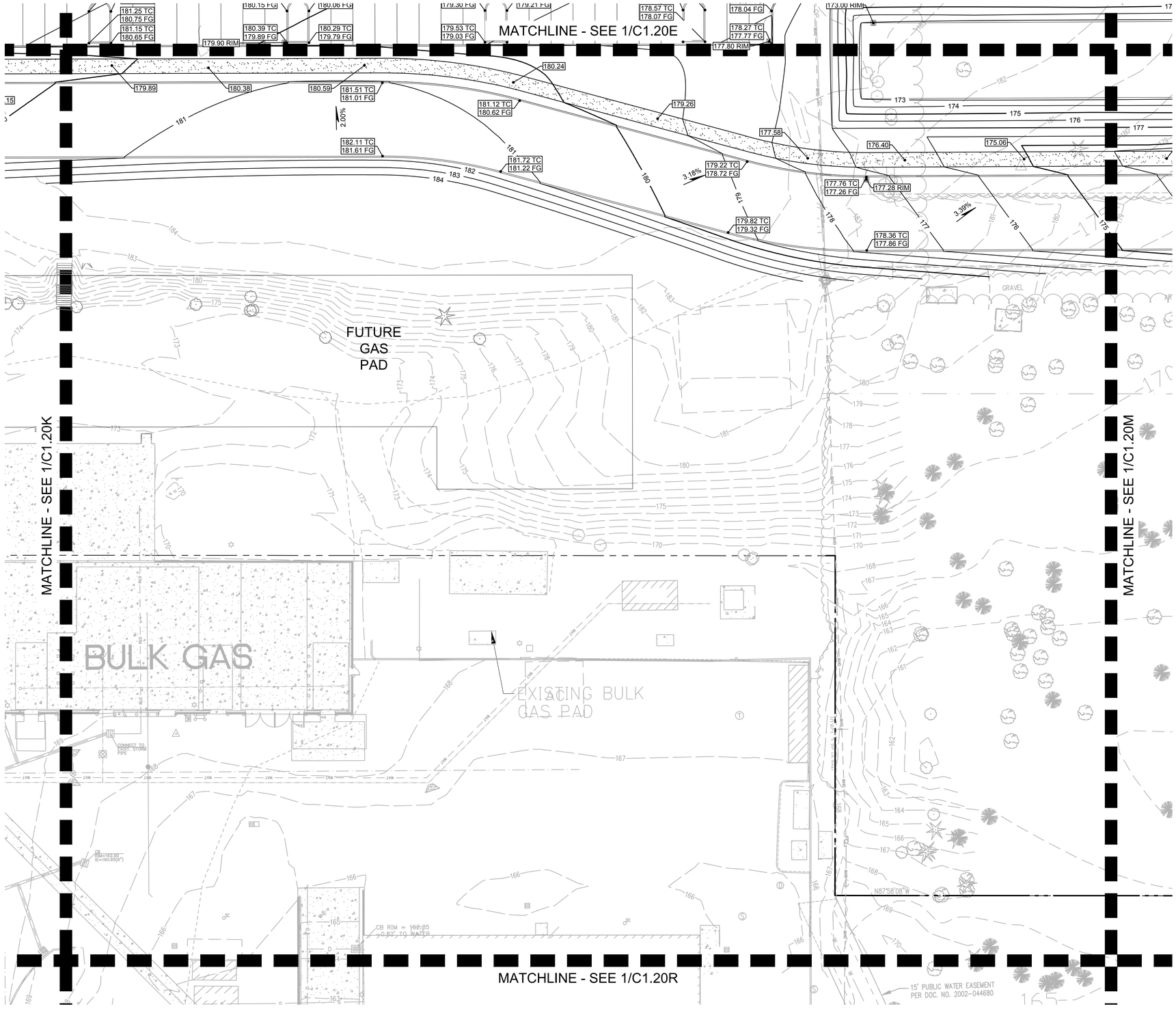

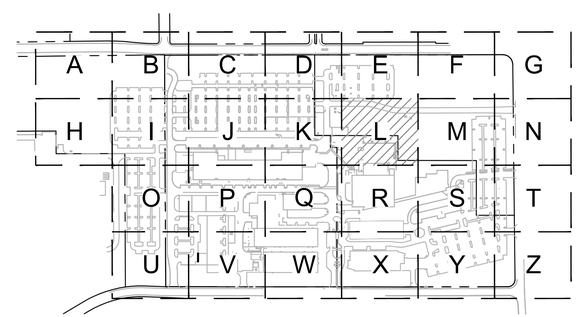

KEY MAP
SCALE: NTS

1 C1.20L GRADING PLAN

20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

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REVISION SCHEDULE

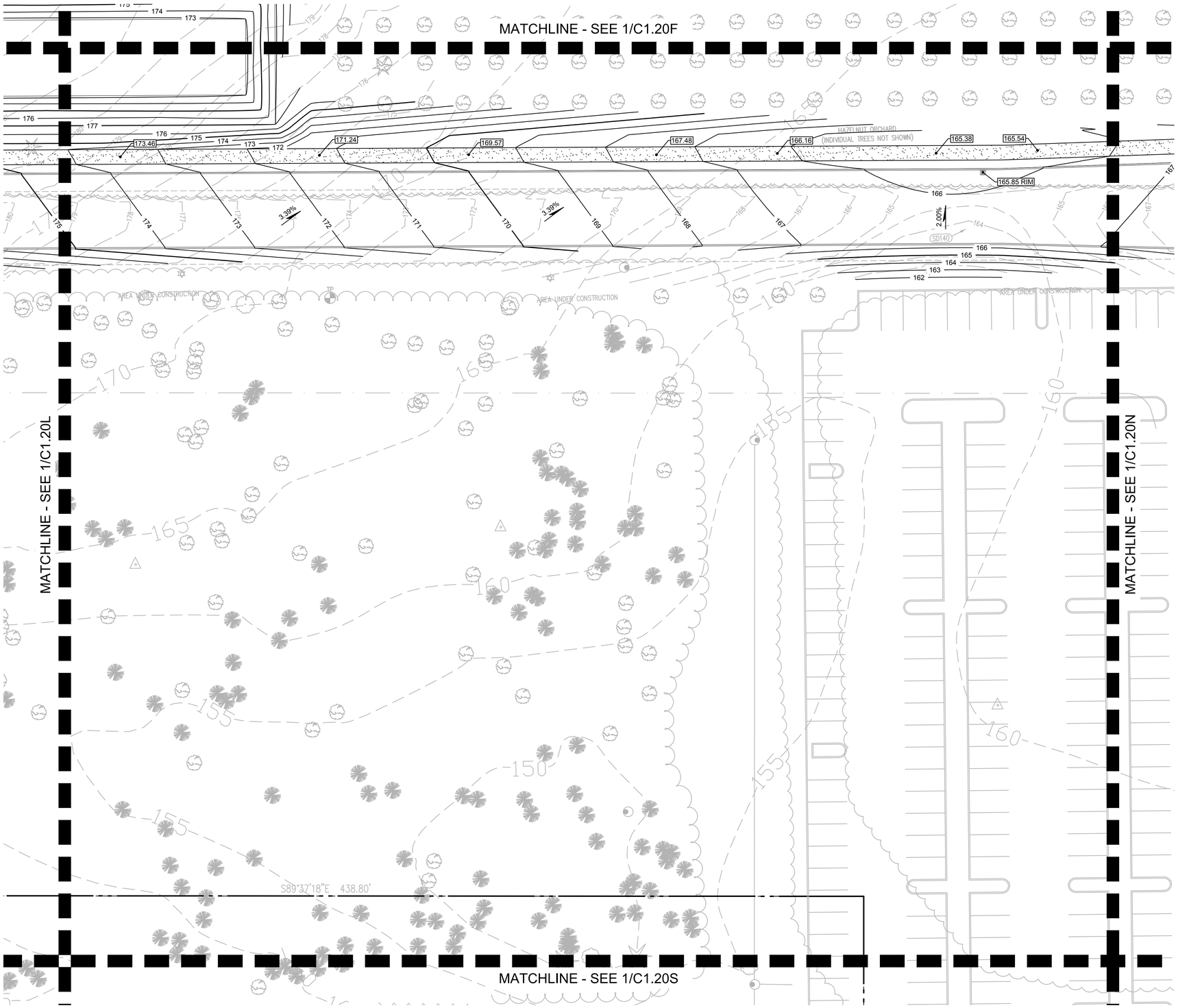
Delta	Issued As	Issue Date

SHEET TITLE:
GRADING PLAN

SHEET:
C1.20L

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



1 GRADING PLAN
C1.20M

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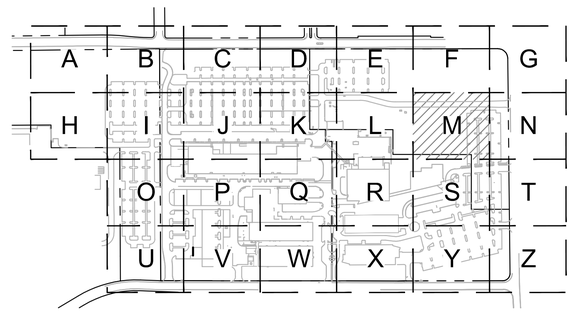
(IN FEET)
1 inch = **20** ft.



KEY MAP
SCALE: NTS

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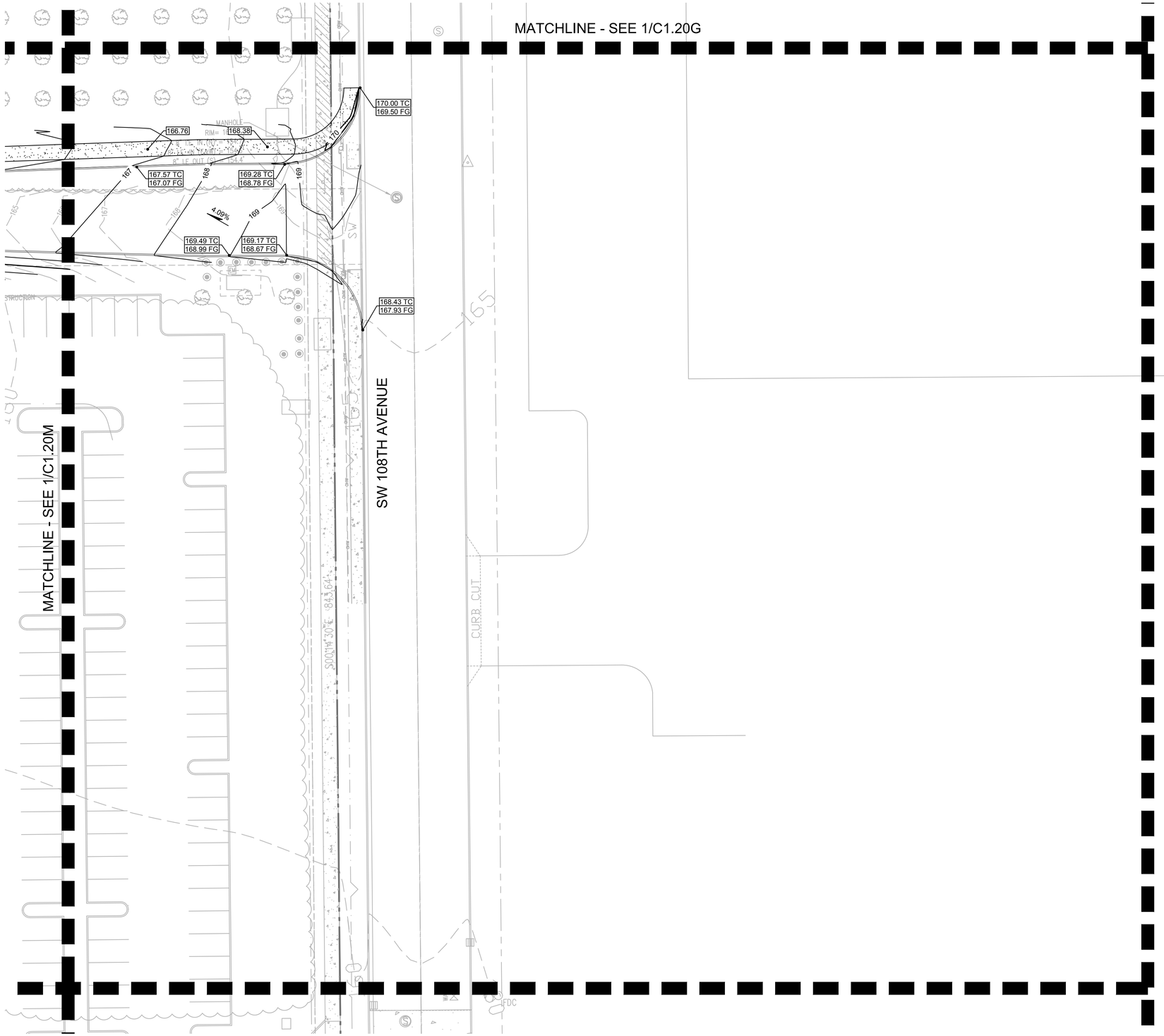
SHEET TITLE:
GRADING PLAN

SHEET:
C1.20M

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



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C1.20N

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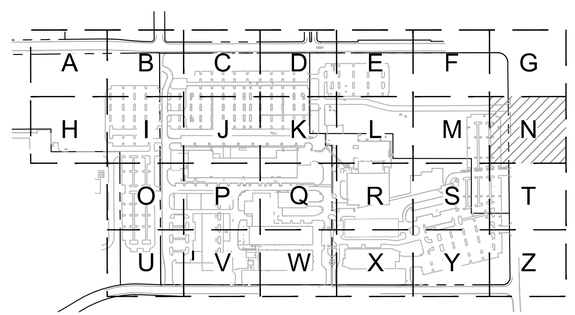
(IN FEET)
1 inch = **20** ft.



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SHEET TITLE:
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SHEET:
C1.20N

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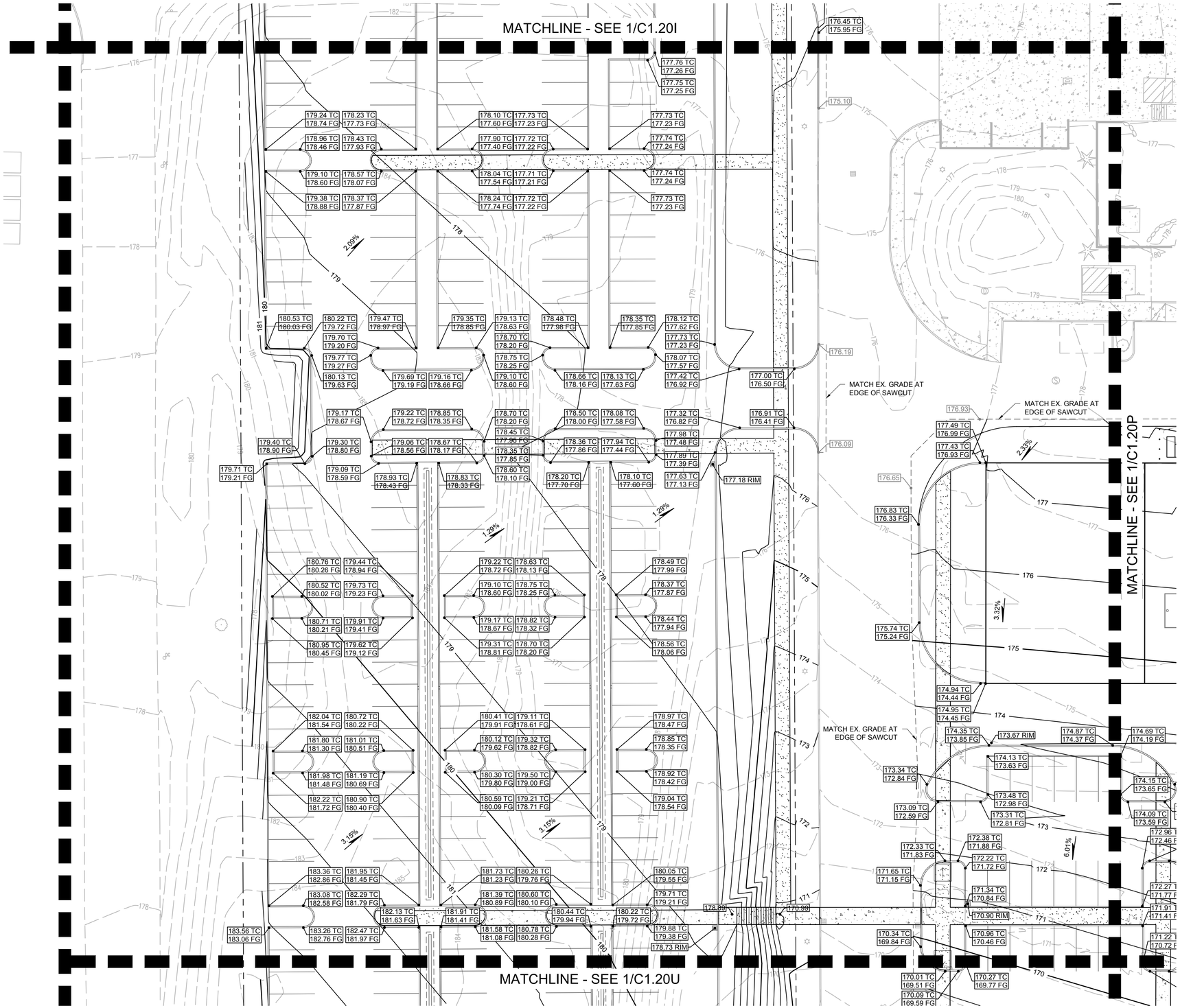

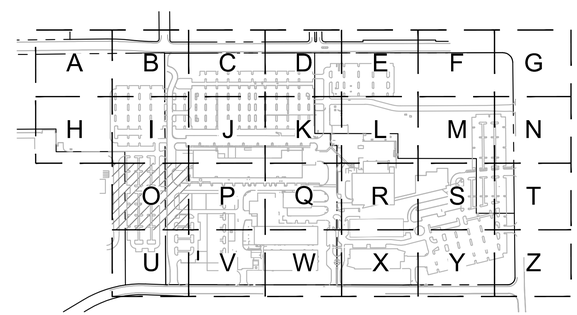

KEY MAP
SCALE: NTS

1 GRADING PLAN
C1.20O

20 0 10 20 40 80
(IN FEET)
1 inch = **20** ft.

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GRADING PLAN

SHEET:
C1.20O

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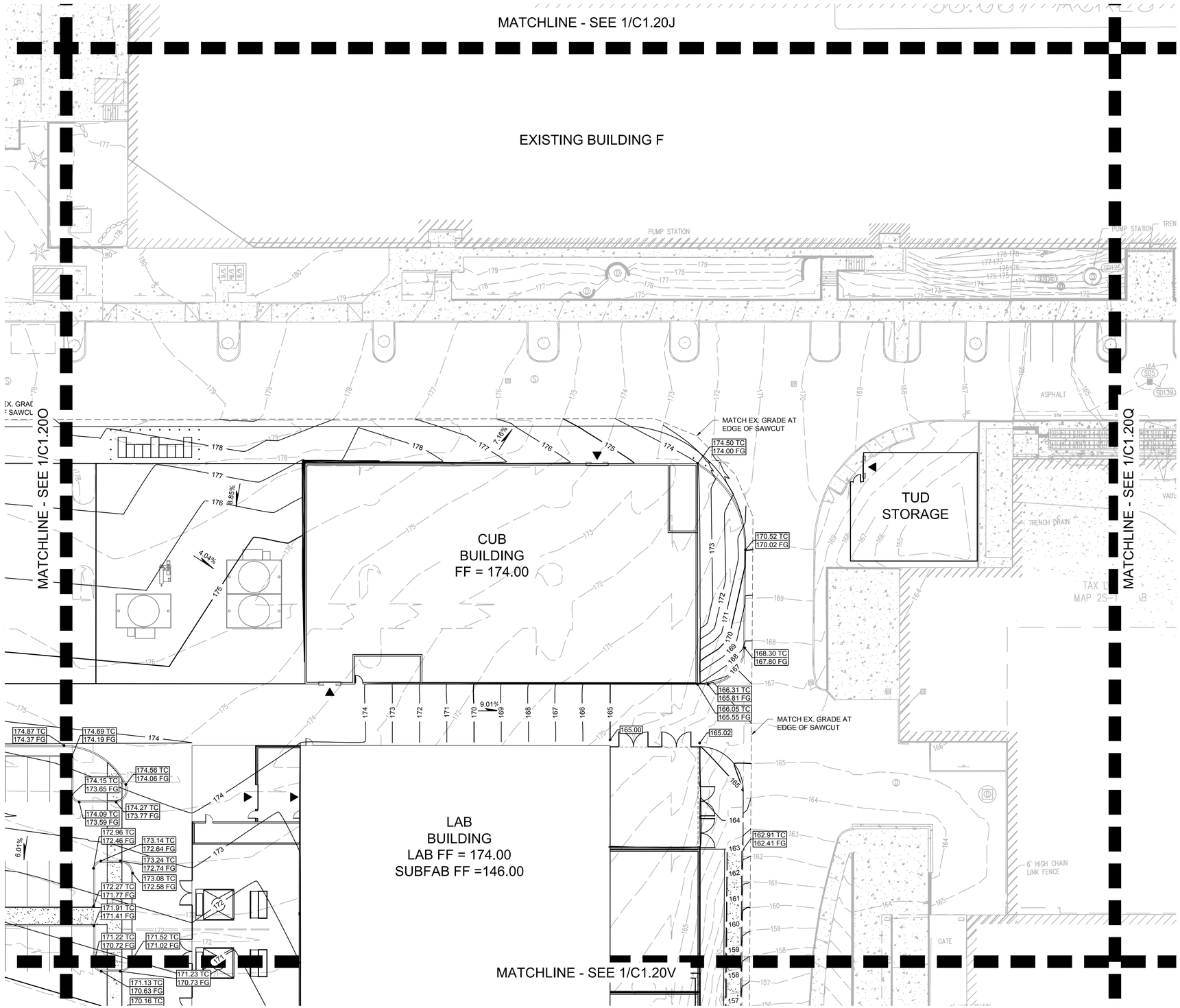
"2250180000" \\GRP.MCK\PROJECTS\PROJECTS\2250180000\DRAWINGS\CIVIL\TUX\180- C1.20 GRADING PLAN.DWG:C1.20O ADS 07/16/25 16:11 1:20



1 GRADING PLAN
C1.20P

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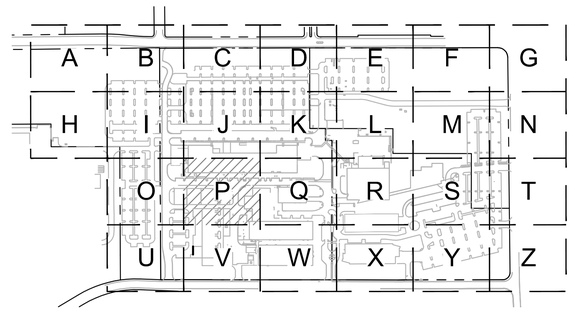
(IN FEET)
1 inch = **20** ft.



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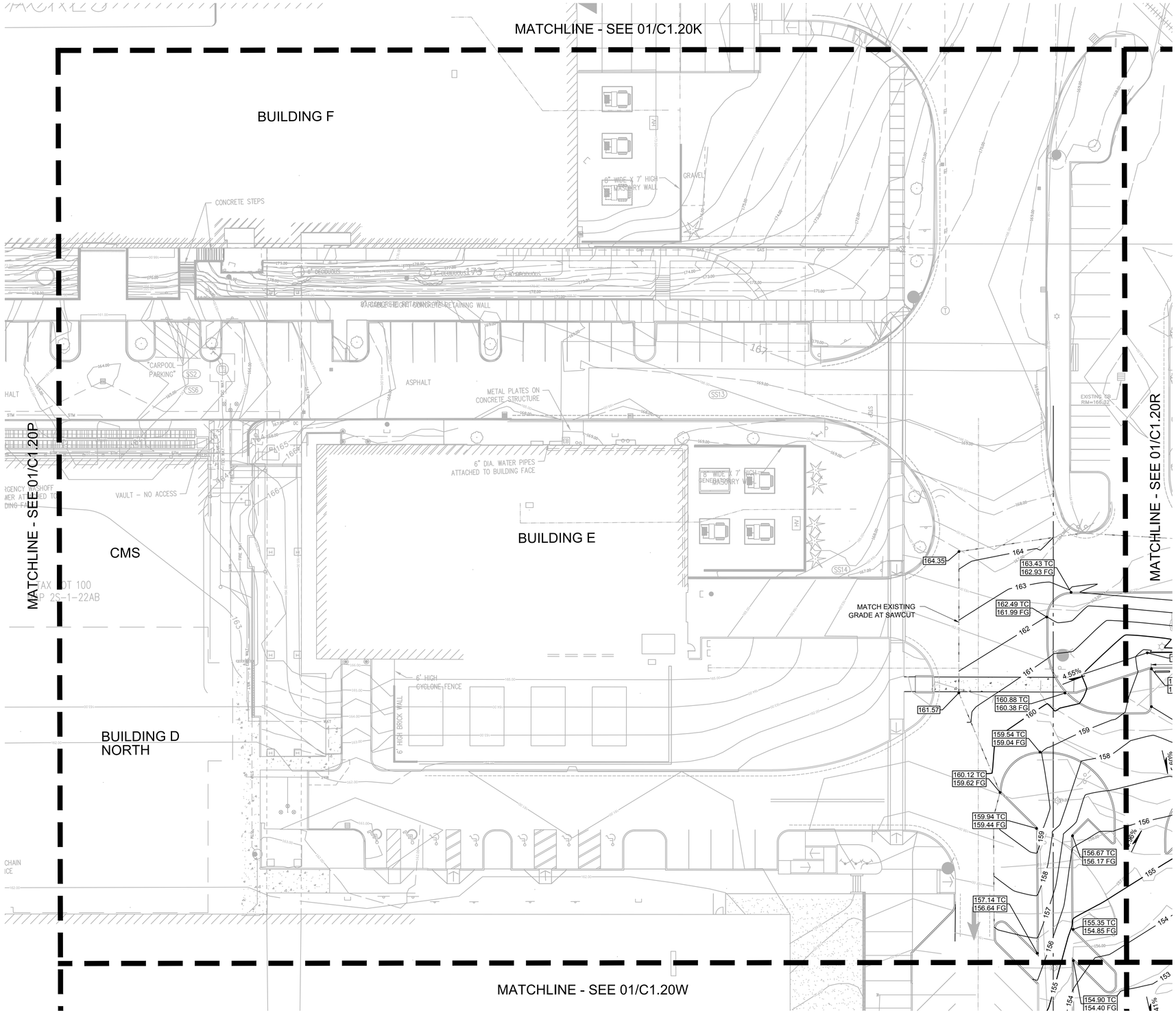
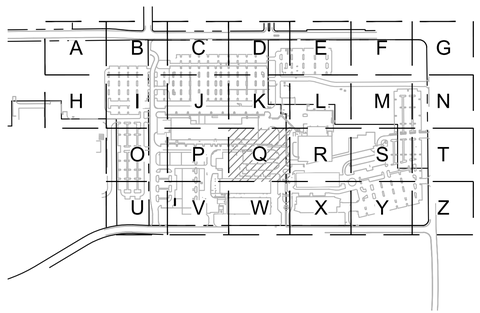


1 C1.20Q GRADING PLAN

20 0 10 20 40 80

(IN FEET)
1 inch = **20** ft.



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SHEET:
C1.20Q

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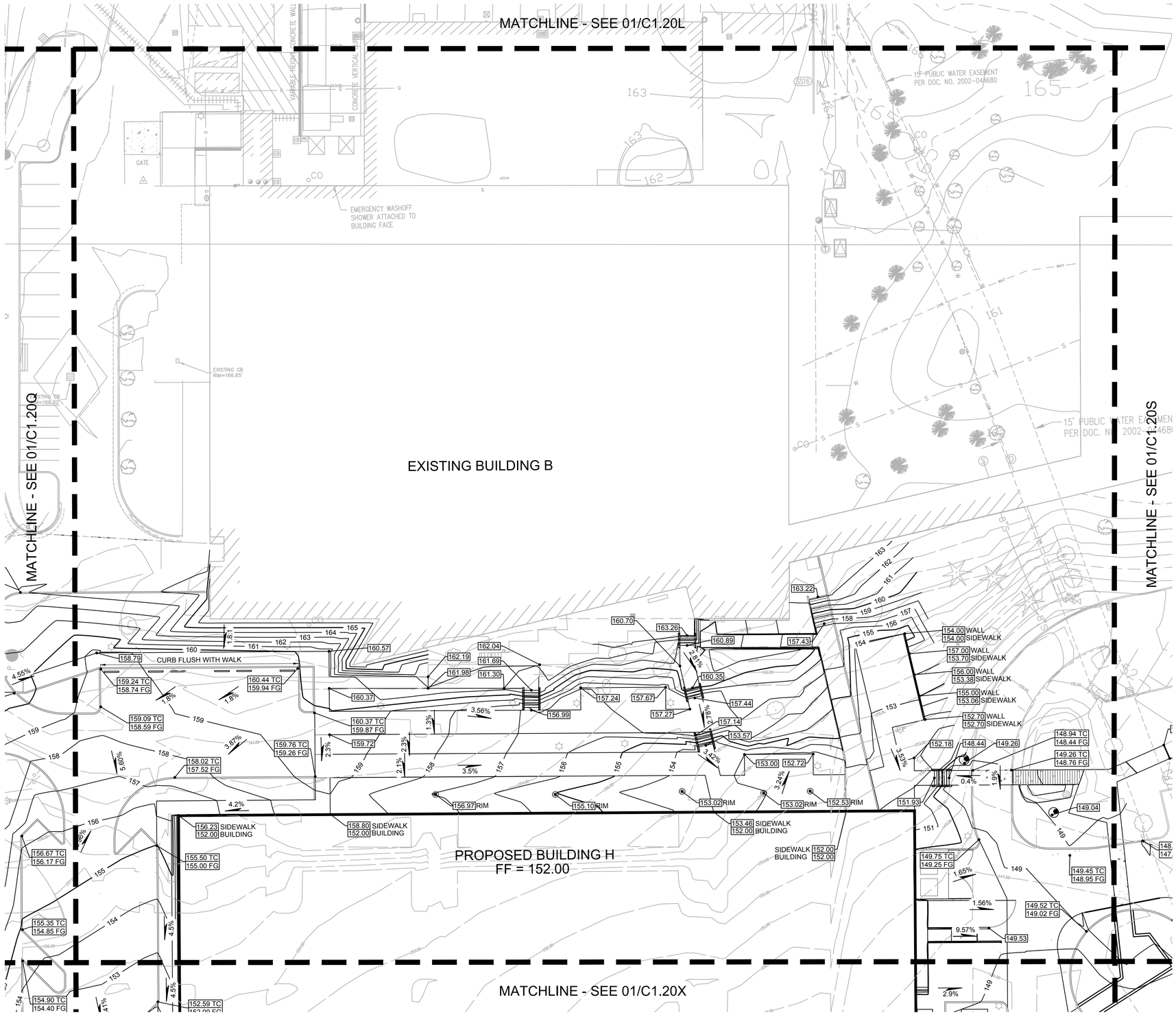

1 GRADING PLAN
C1.20R

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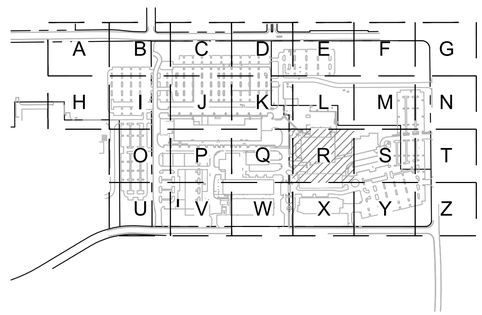
(IN FEET)
1 inch = **20** ft.



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C1.20R

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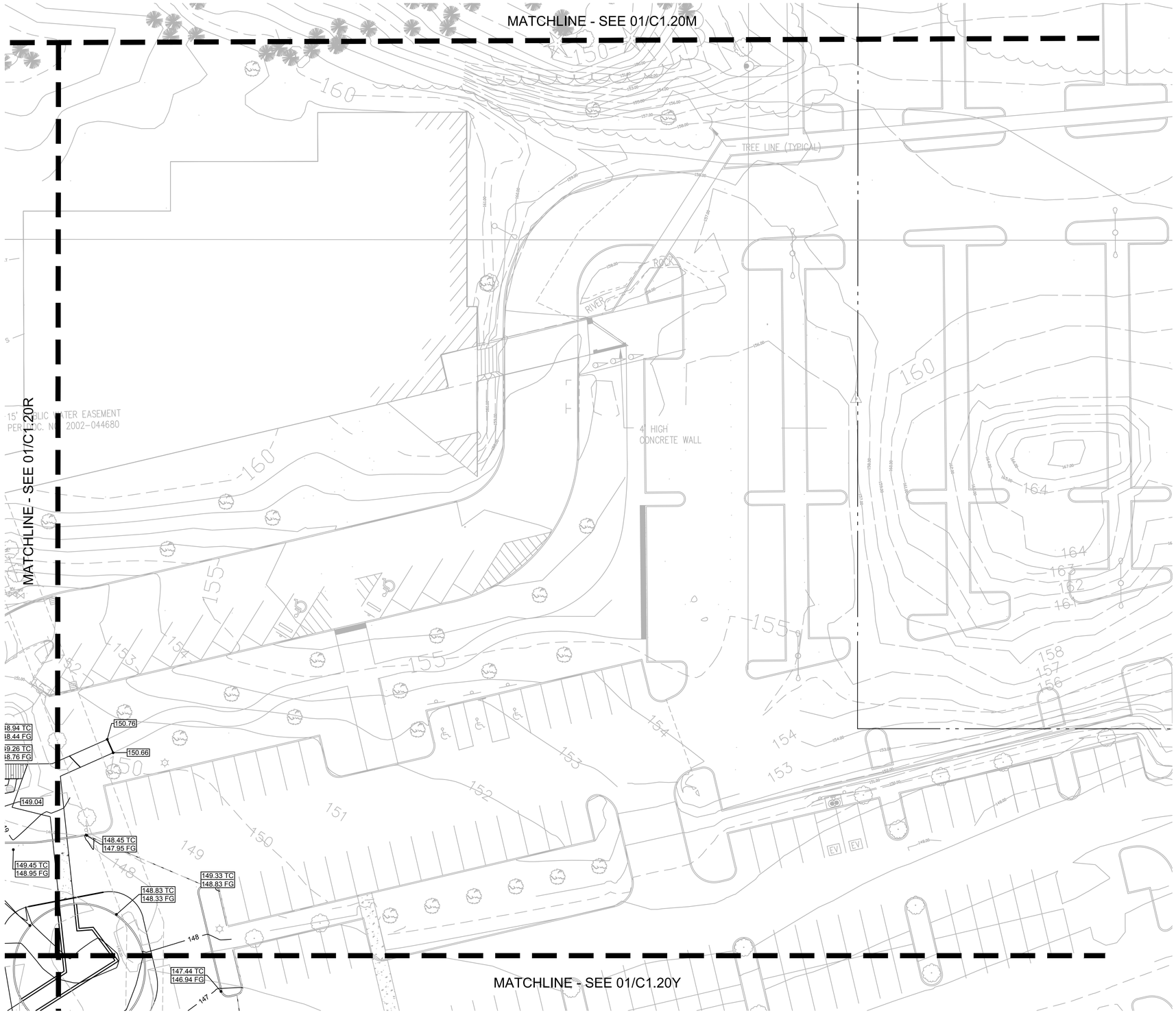

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C1.20S

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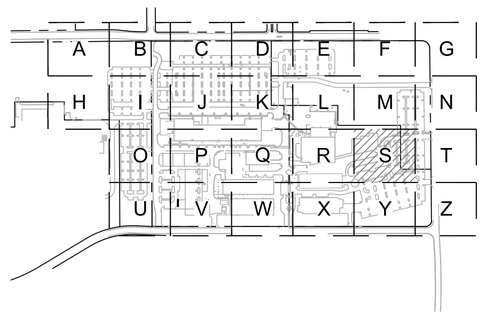
(IN FEET)
1 inch = **20** ft.



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SHEET:
C1.20S

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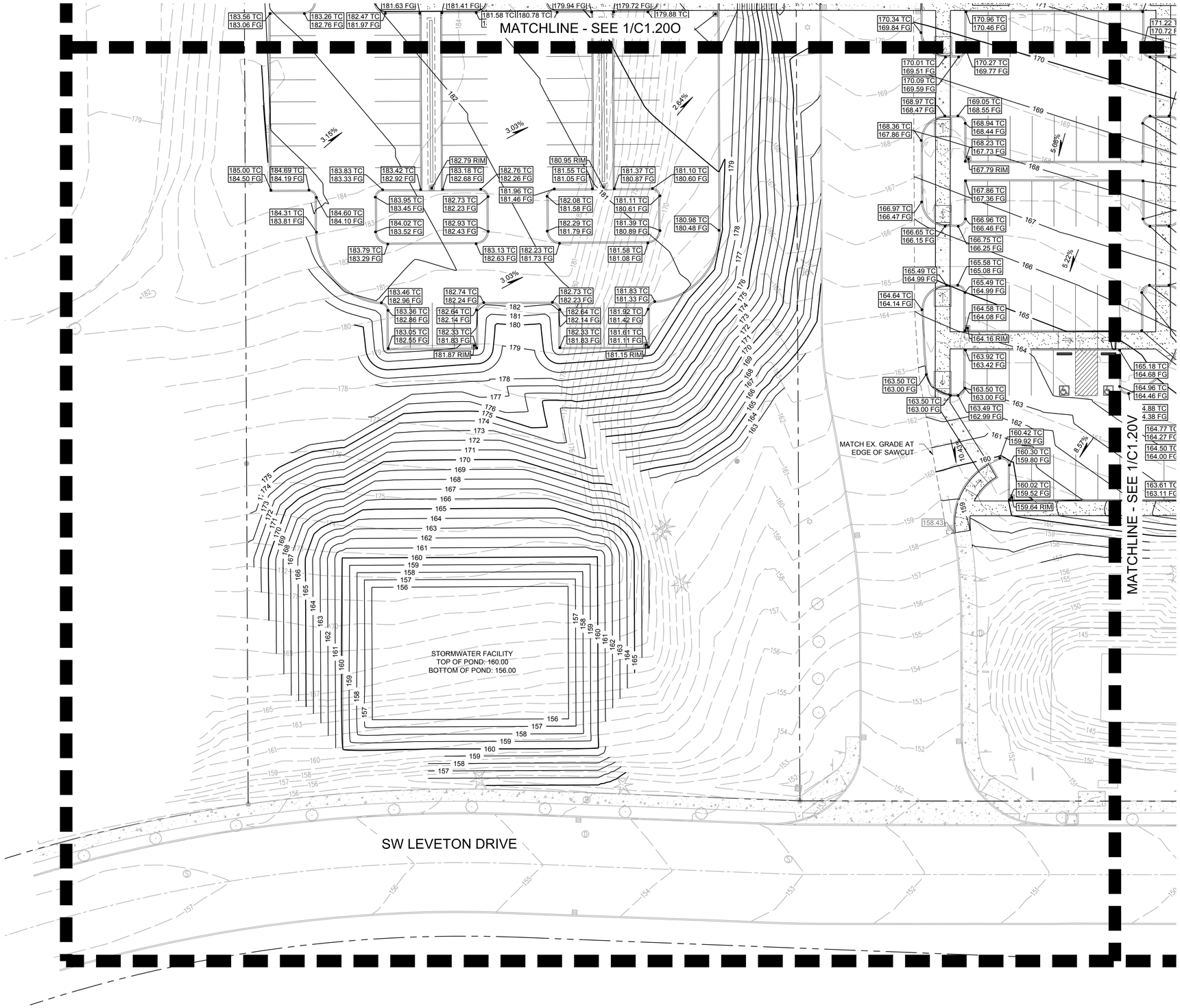

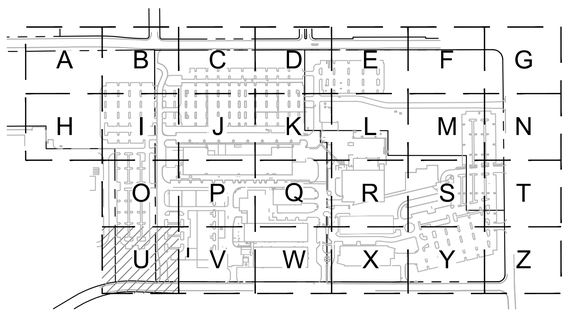

KEY MAP
SCALE: NTS

1 C1.20U GRADING PLAN

20 0 10 20 40 80
(IN FEET)
1 inch = **20** ft.

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SHEET:
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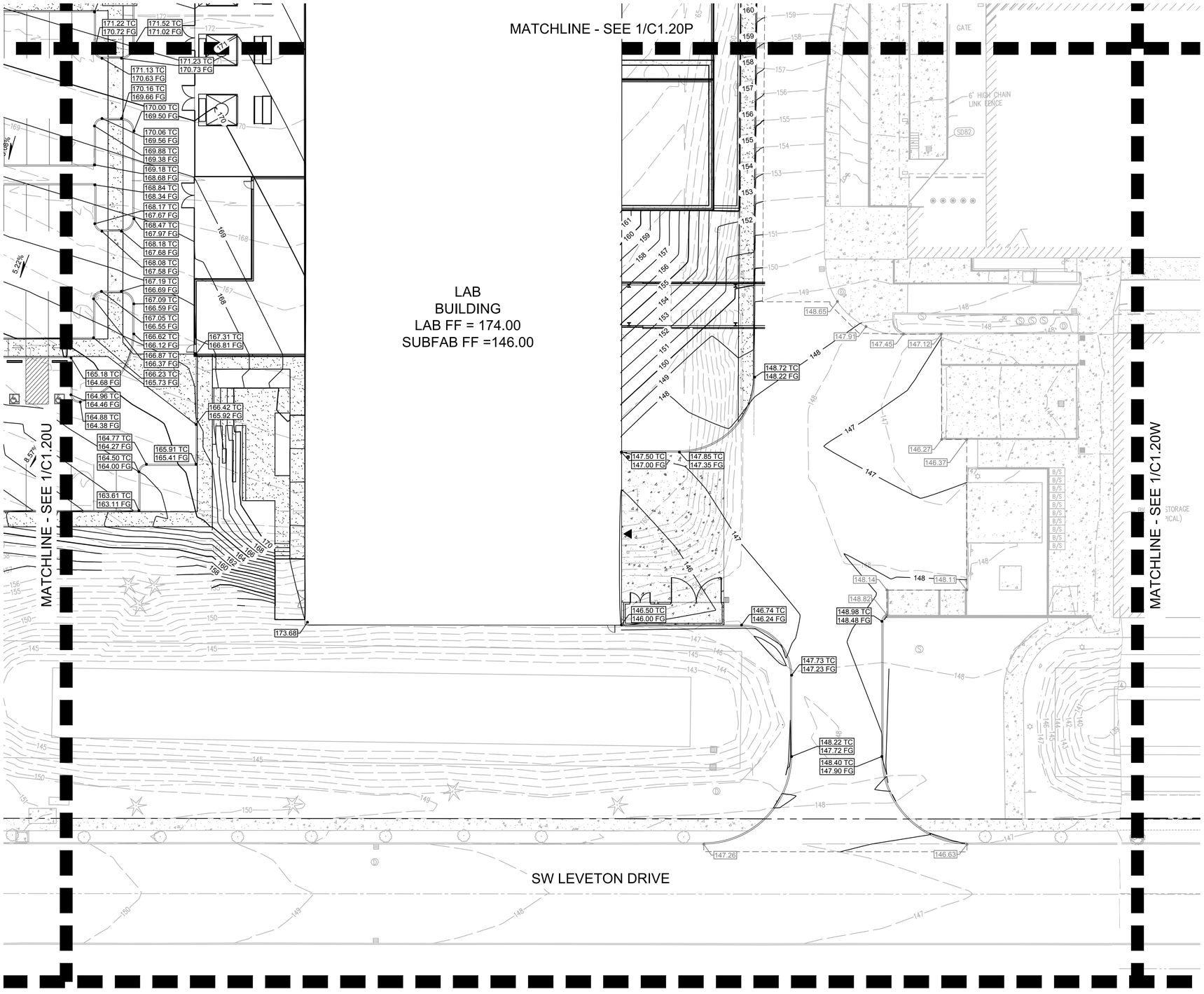

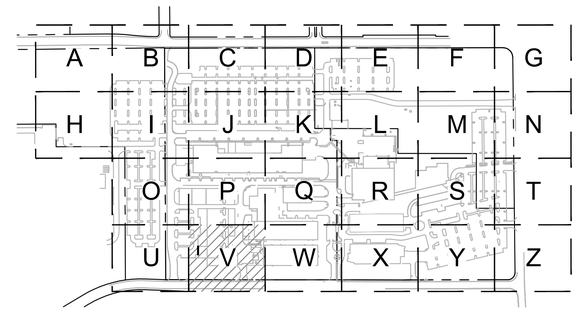

KEY MAP
SCALE: NTS

1 GRADING PLAN
C1.20V

20 0 10 20 40 80
(IN FEET)
1 inch = **20** ft.

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SHEET:
C1.20V

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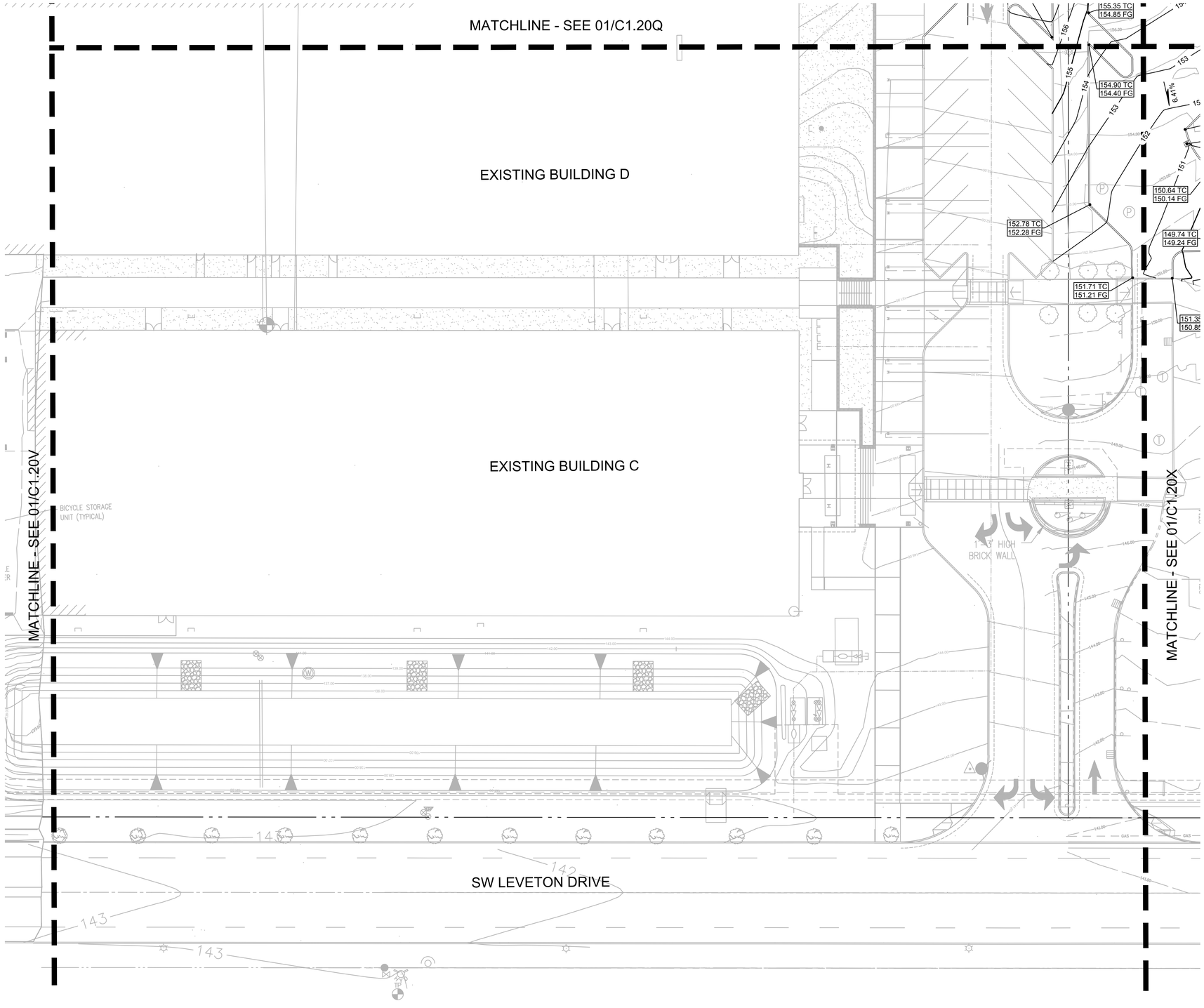

1 GRADING PLAN
C1.20W

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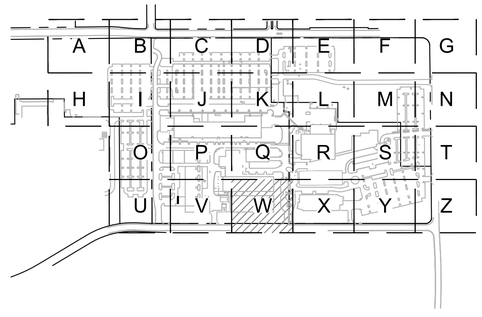
(IN FEET)
1 inch = **20** ft.



KEY MAP
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SHEET:
C1.20W

JOB NO. **2250180.00**

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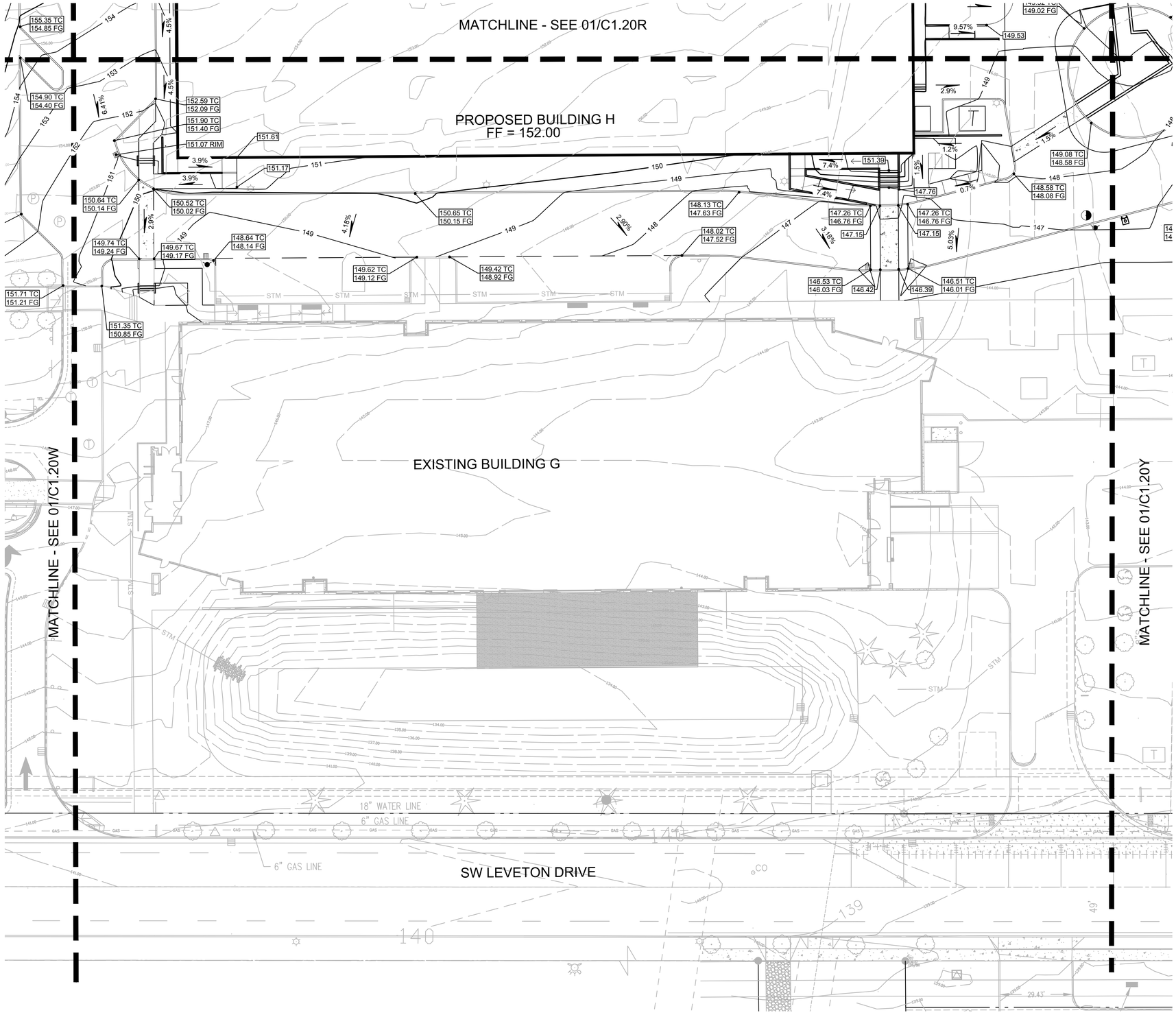

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C1.20X

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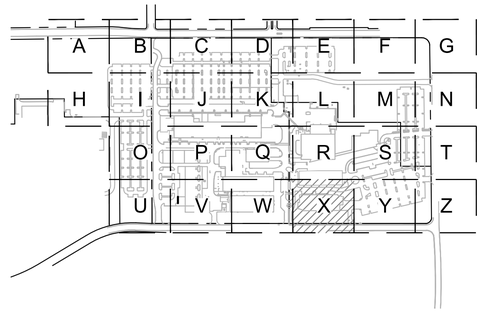
(IN FEET)
1 inch = 20 ft.



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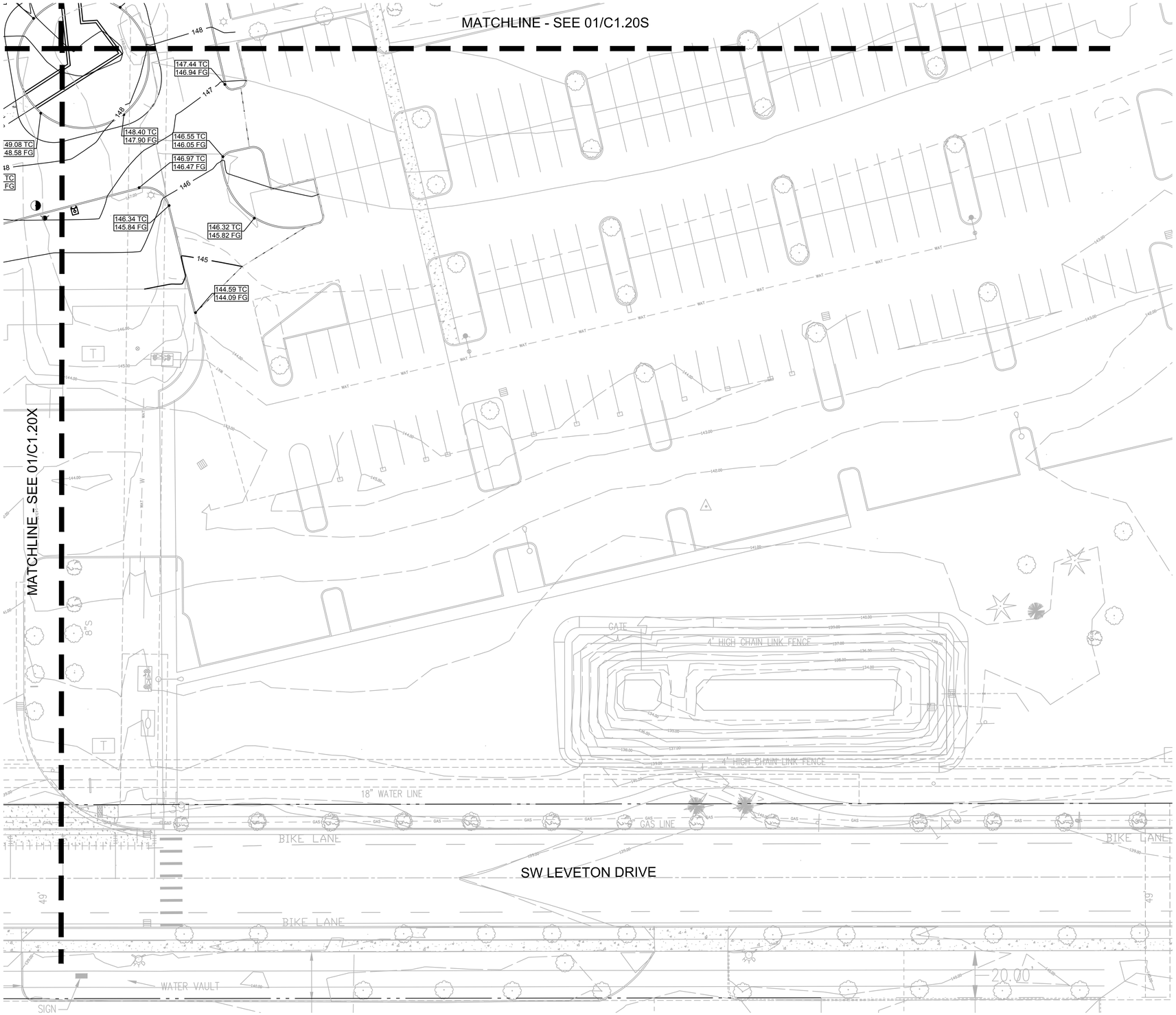

1 C1.20Y GRADING PLAN

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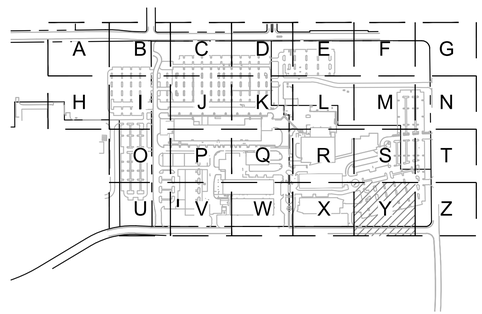
(IN FEET)
1 inch = **20** ft.



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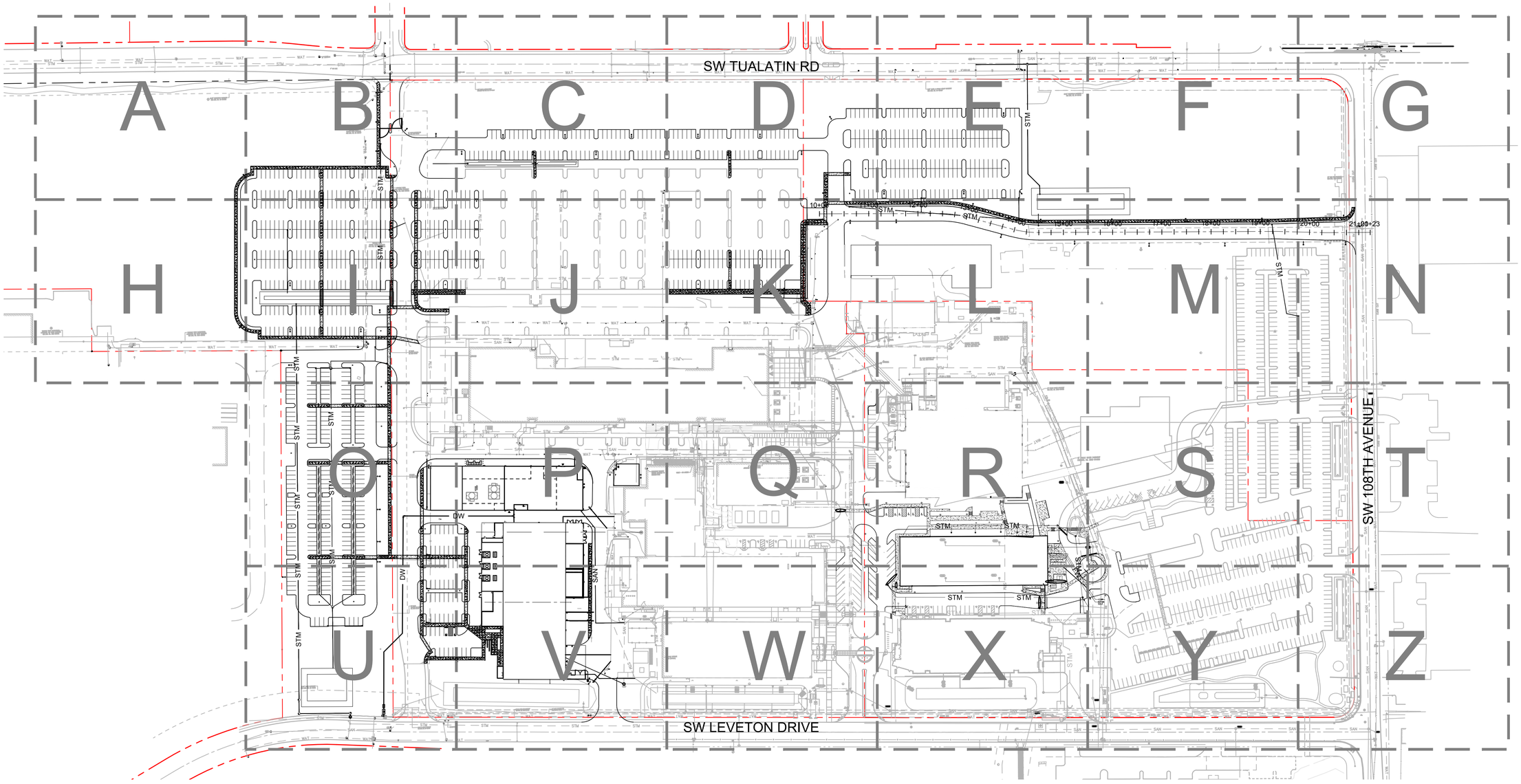

1 C1.30 OVERALL UTILITY PLAN

100 0 50 100 200 400

(IN FEET)
1 inch = **100** ft.

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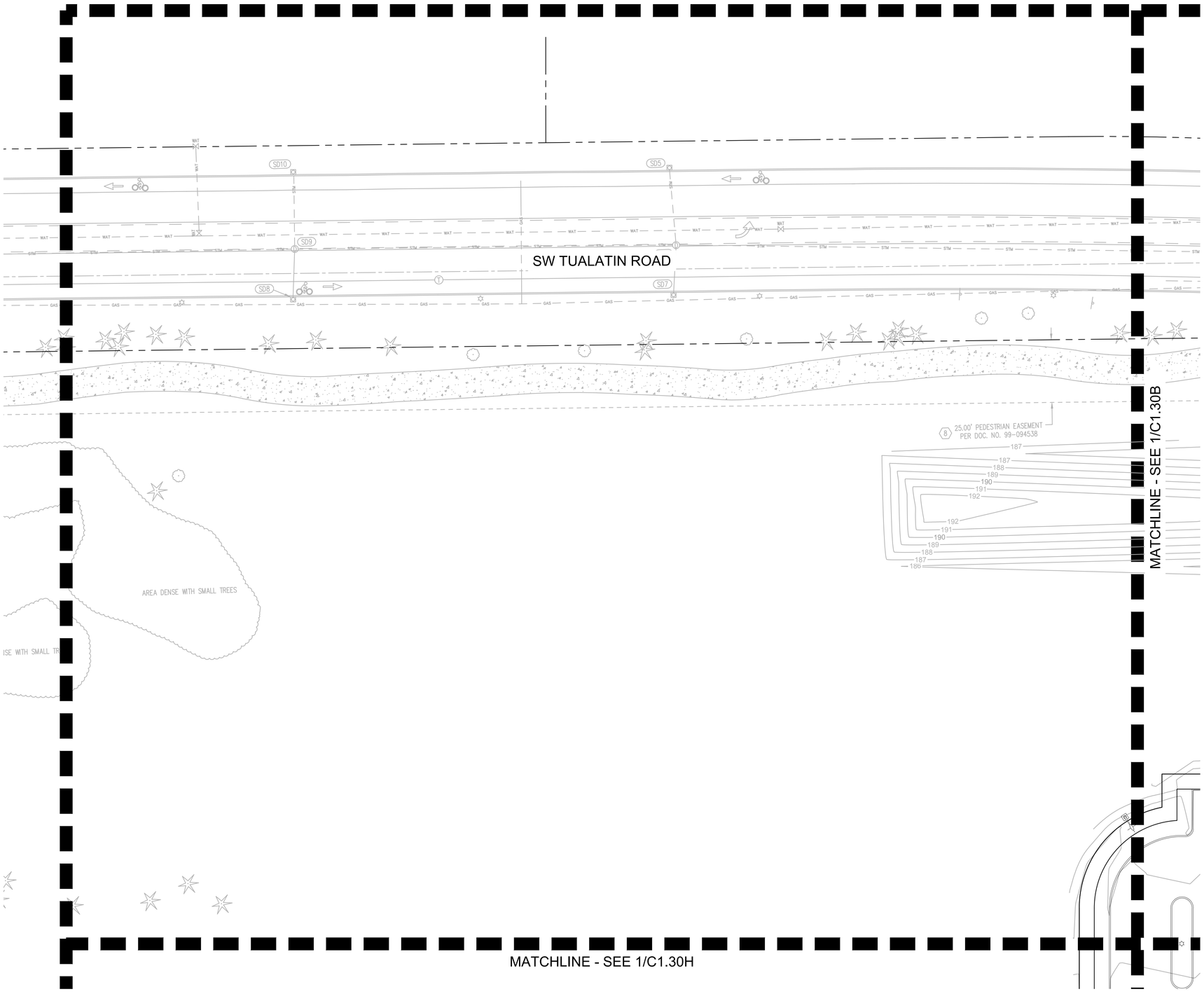
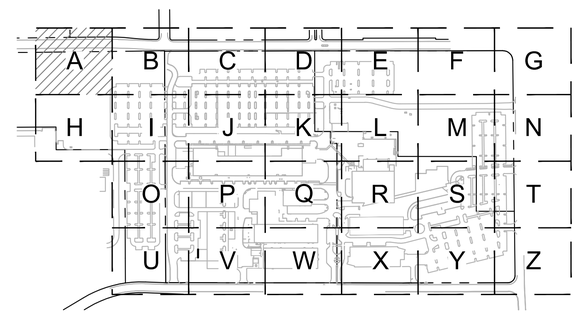
2250180000 \\GRP.MCK\PROJECTS\PROJECTS\2250180000\DRAWINGS\CIVIL\180- C1.10- OVERALL SITE PLAN.DWG;C1.30 ADS 07/18/25 11:04 1:100



KEYNOTES

33-01	CLEANOUT
33-02	CATCH BASIN
33-03	DOWN SPOUT
33-04	FIRE HYDRANT
33-05	SANITARY SEWER CLEANOUT
33-06	INSTALL FDC
33-07	RELOCATED POWER JUNCTION BOX
33-08	PROPOSED POWER LINE
33-09	LIGHT TO BE ADJUSTED TO MATCH NEW GRADE
33-10	8" WATER METER PER COT DWG #634
33-11	8" REDUCED PRESSURE BACKFLOW ASSEMBLY PER COT DWG #617, WILKINS 375ADA
33-12	CHECK VALVE TO PREVENT BACKWATER FROM POND
33-13	CONNECT TO EXISTING STM
33-14	CONNECT TO EXISTING WAT
33-15	UTILITY CROSSING
33-16	ELECTRICAL GEAR
33-17	STORMWATER FACILITY
33-18	STORM MH
33-19	8" DOUBLE CHECK VALVE
33-20	3" DOMESTIC BACKFLOW
33-21	3" WATER SERVICE WITH 3" WATER METER



KEY MAP
SCALE: NTS

1 UTILITY PLAN
C1.30A

20 0 10 20 40 80
(IN FEET)
1 inch = **20** ft.

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REVISION SCHEDULE

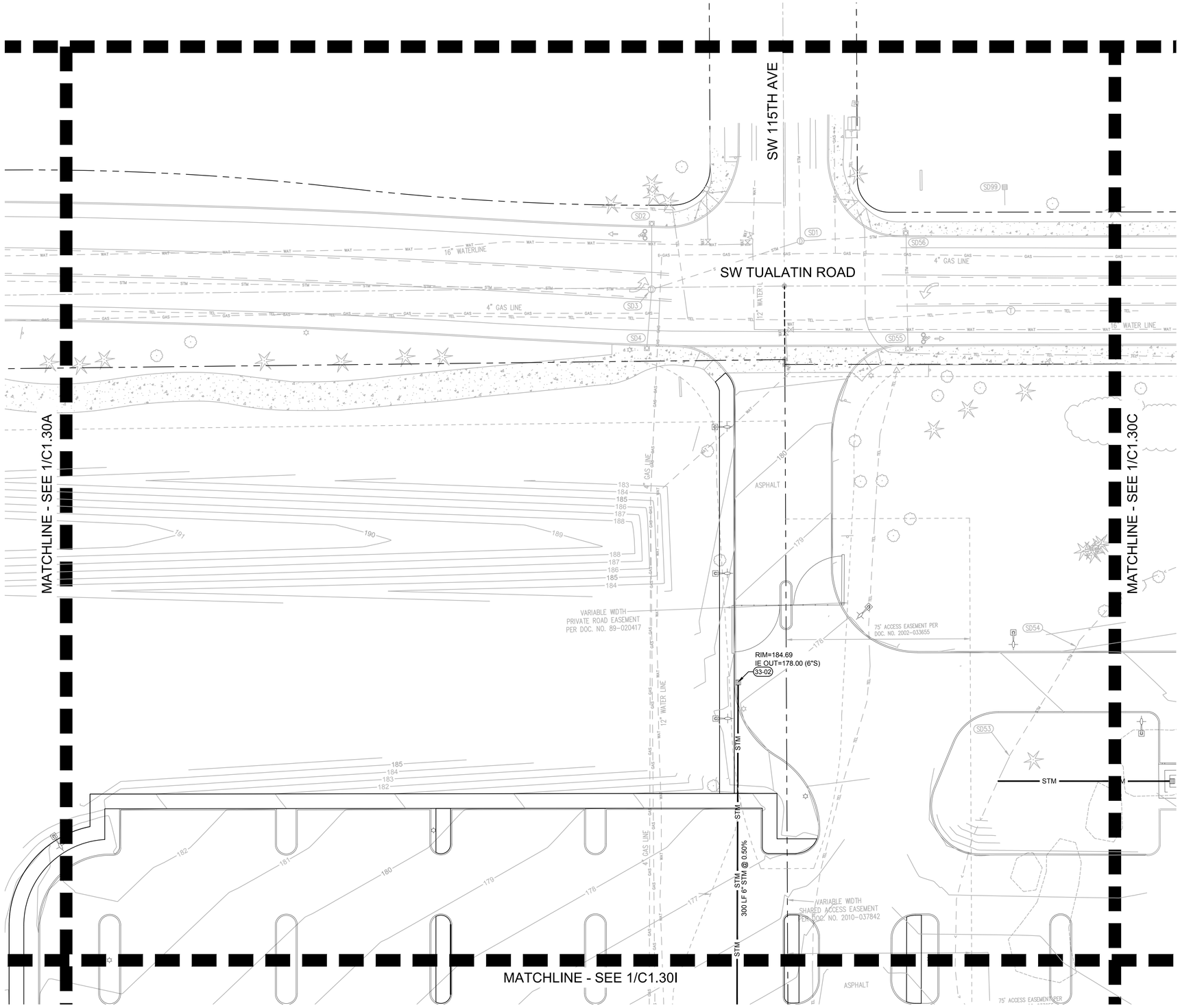
Delta	Issued As	Issue Date

SHEET TITLE:
UTILITY PLAN

SHEET:
C1.30A

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



1 UTILITY PLAN
C1.30B

20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

KEYNOTES

33-01	CLEANOUT
33-02	CATCH BASIN
33-03	DOWN SPOUT
33-04	FIRE HYDRANT
33-05	SANITARY SEWER CLEANOUT
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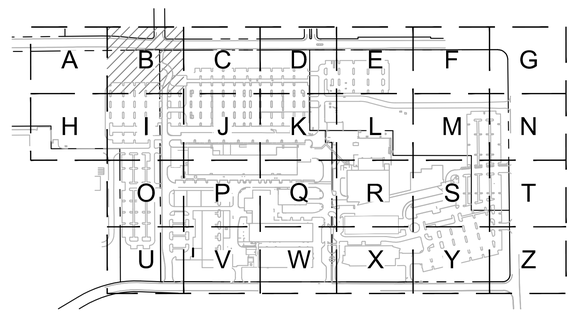
33-17	STORMWATER FACILITY
33-18	STORM MH
33-19	8" DOUBLE CHECK VALVE
33-20	3" DOMESTIC BACKFLOW
33-21	3" WATER SERVICE WITH 3" WATER METER



KEY MAP
SCALE: NTS

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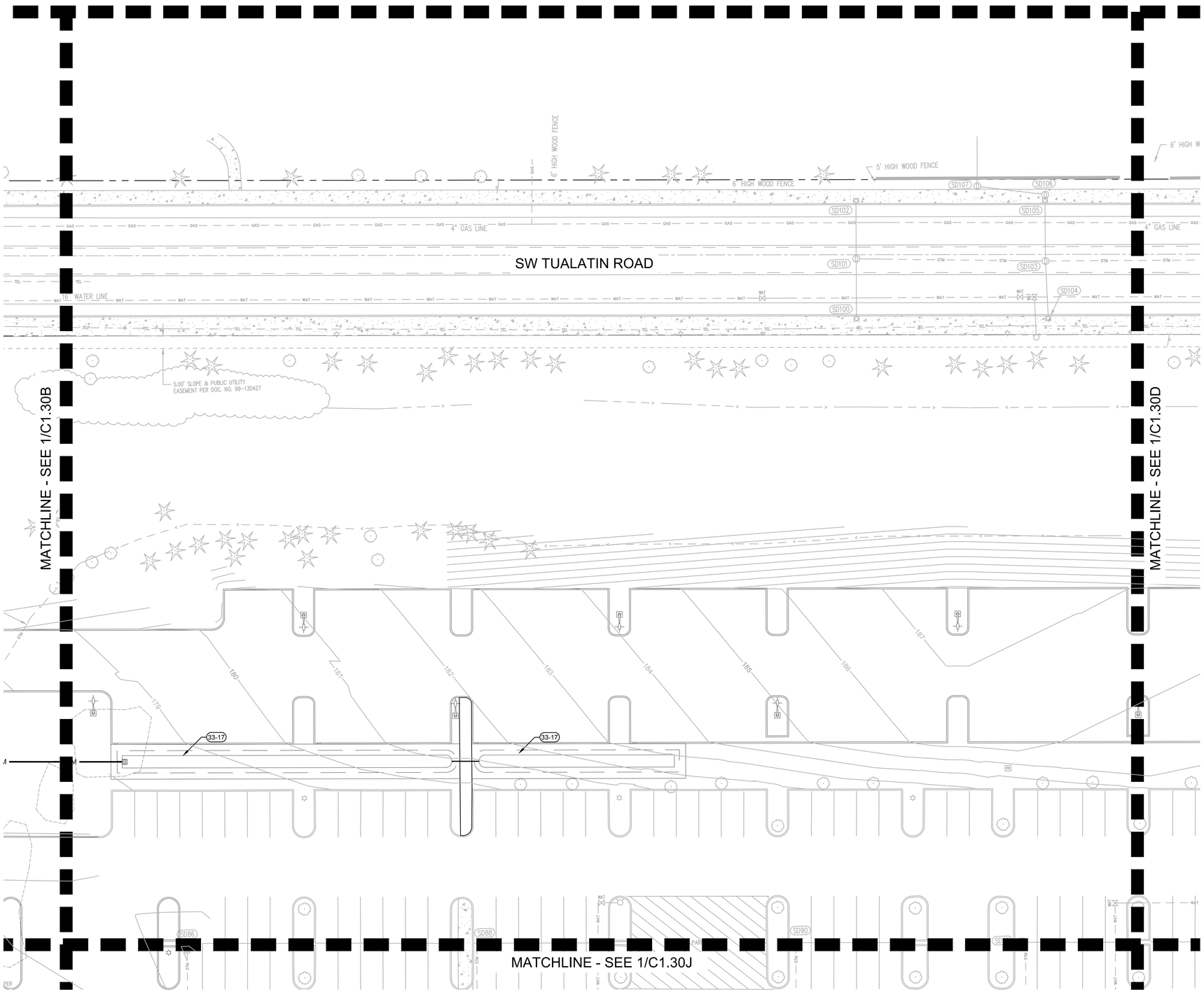
UTILITY PLAN

SHEET:
C1.30B

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



1 UTILITY PLAN
C1.30C

20 0 10 20 40 80
(IN FEET)
1 inch = **20** ft.

KEYNOTES

33-01	CLEANOUT
33-02	CATCH BASIN
33-03	DOWN SPOUT
33-04	FIRE HYDRANT
33-05	SANITARY SEWER CLEANOUT
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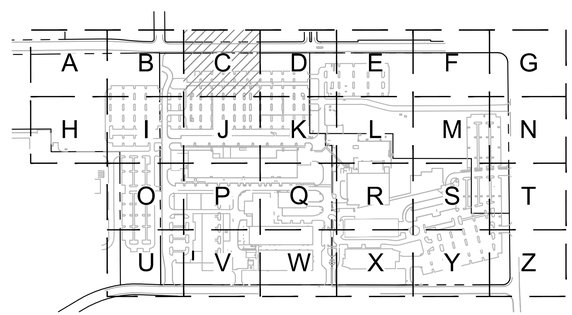

KEY MAP
SCALE: NTS

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UTILITY PLAN

SHEET:
C1.30C

JOB NO. **2250180.00**

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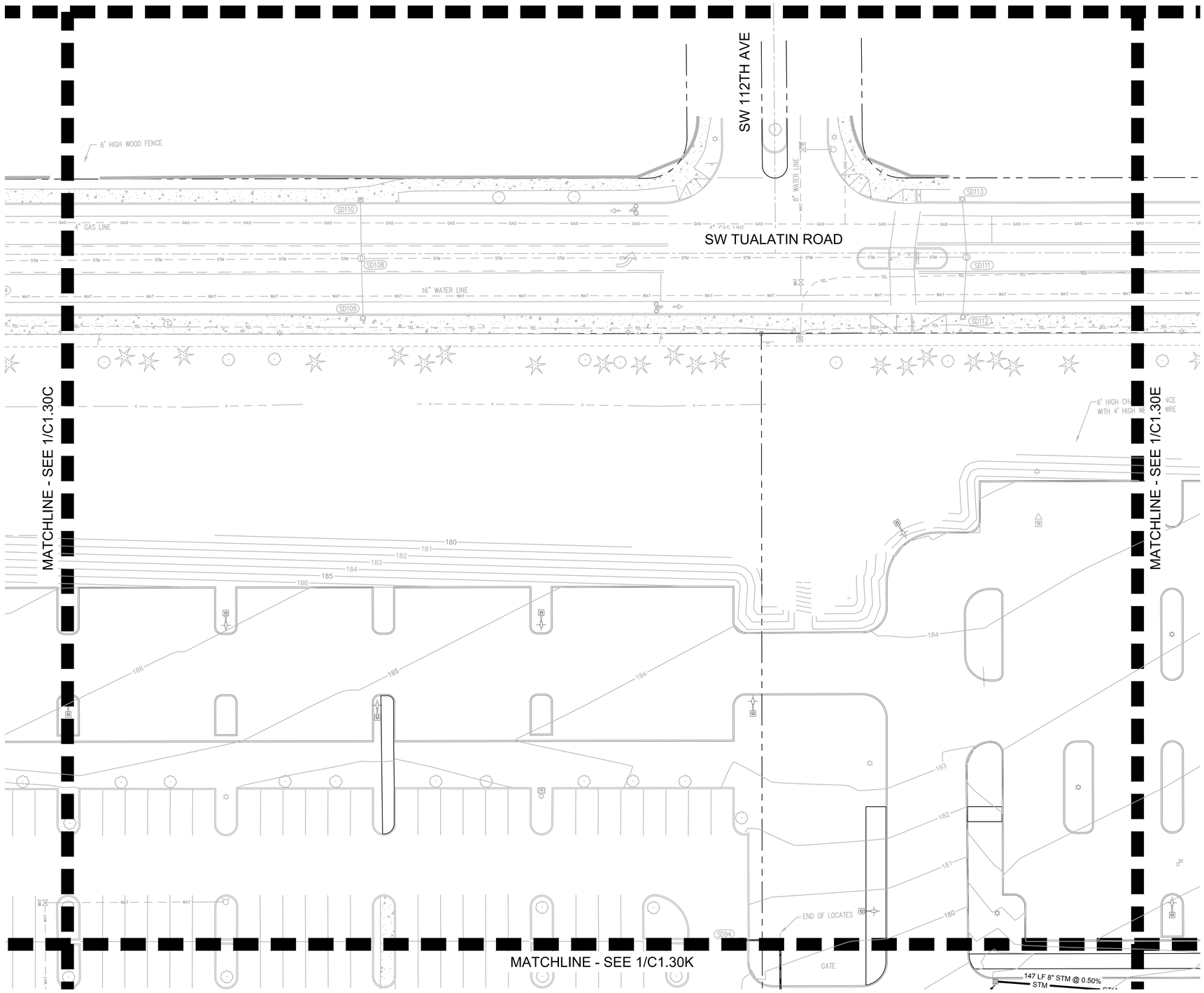

1 C1.30D UTILITY PLAN

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

KEYNOTES

33-01	CLEANOUT
33-02	CATCH BASIN
33-03	DOWN SPOUT
33-04	FIRE HYDRANT
33-05	SANITARY SEWER CLEANOUT
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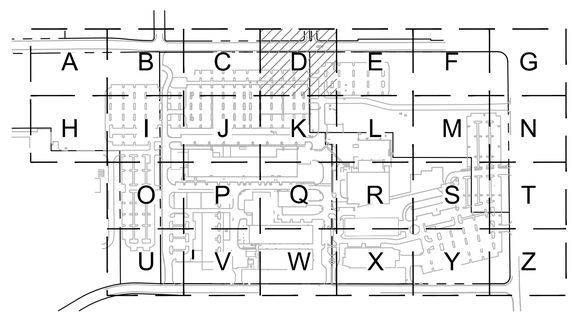

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UTILITY PLAN

SHEET:
C1.30D

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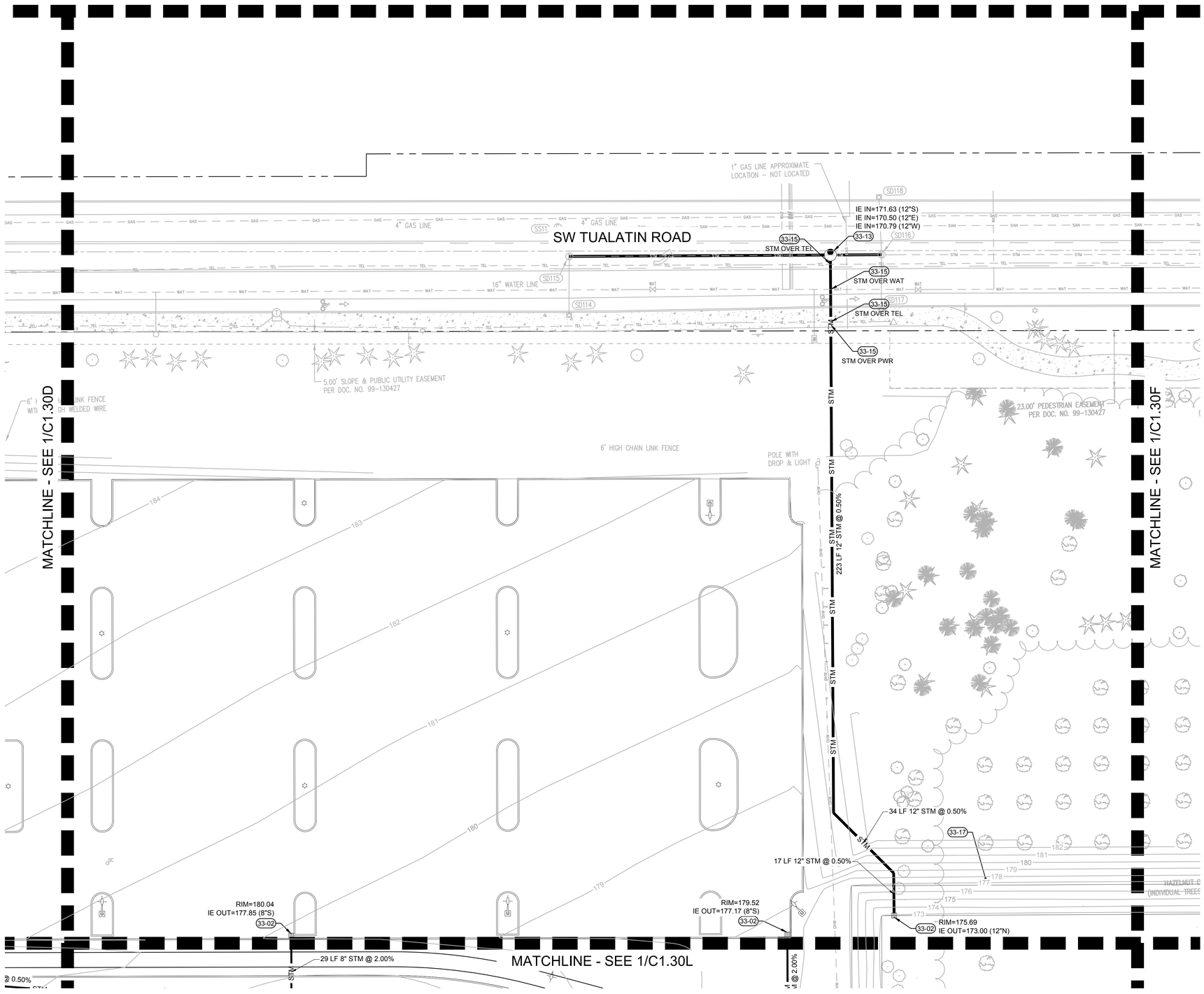

1 UTILITY PLAN
C1.30E

20 0 10 20 40 80
(IN FEET)
1 inch = **20** ft.

KEYNOTES

33-01	CLEANOUT
33-02	CATCH BASIN
33-03	DOWN SPOUT
33-04	FIRE HYDRANT
33-05	SANITARY SEWER CLEANOUT
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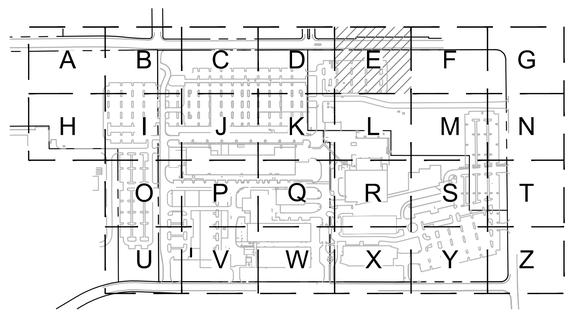

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SHEET:
C1.30E

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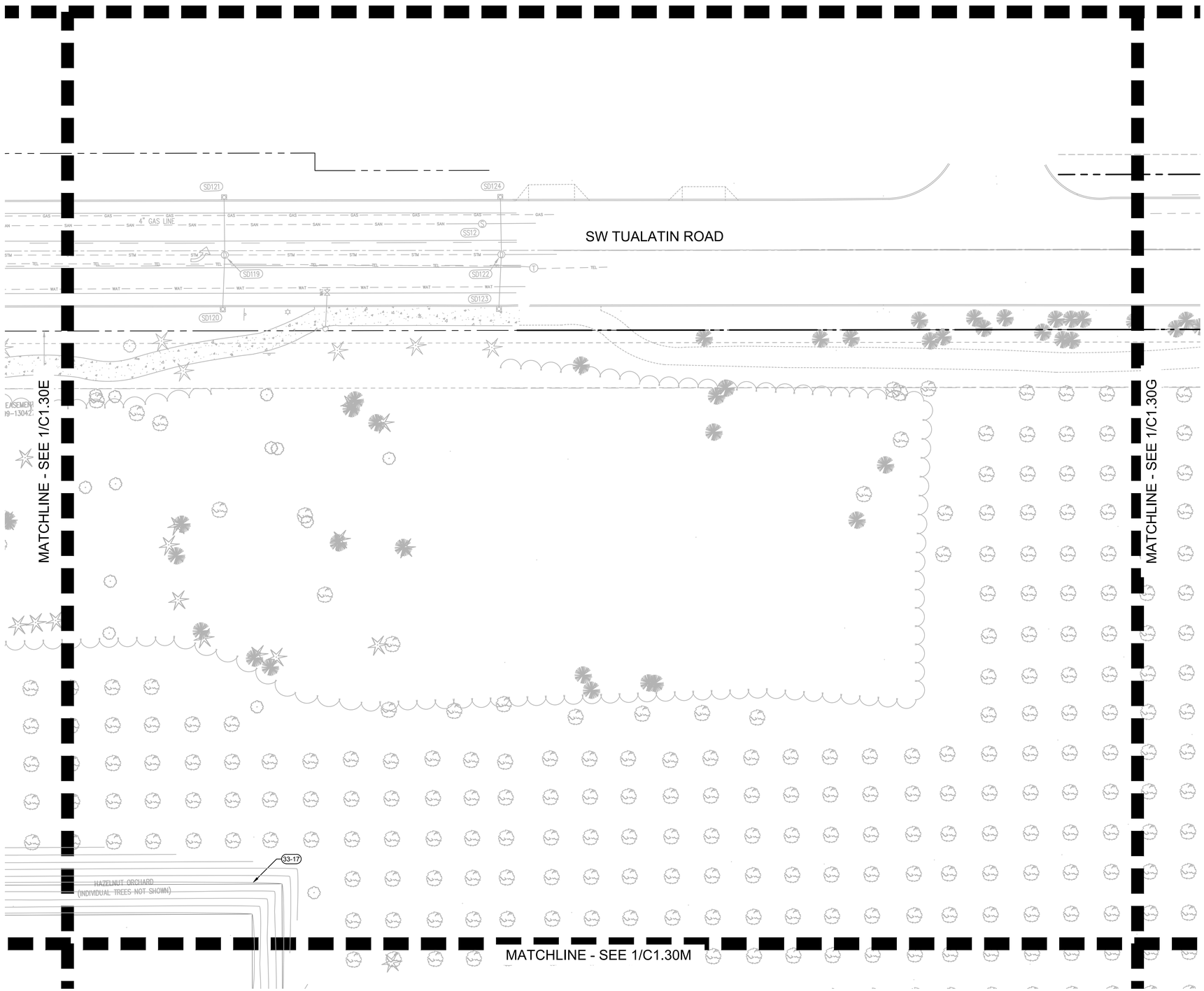

KEYNOTES

33-01	CLEANOUT
33-02	CATCH BASIN
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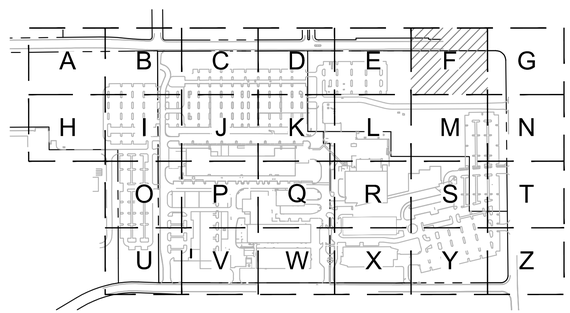
33-17	STORMWATER FACILITY
33-18	STORM MH
33-19	8" DOUBLE CHECK VALVE
33-20	3" DOMESTIC BACKFLOW
33-21	3" WATER SERVICE WITH 3" WATER METER

1 C1.30F UTILITY PLAN

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.



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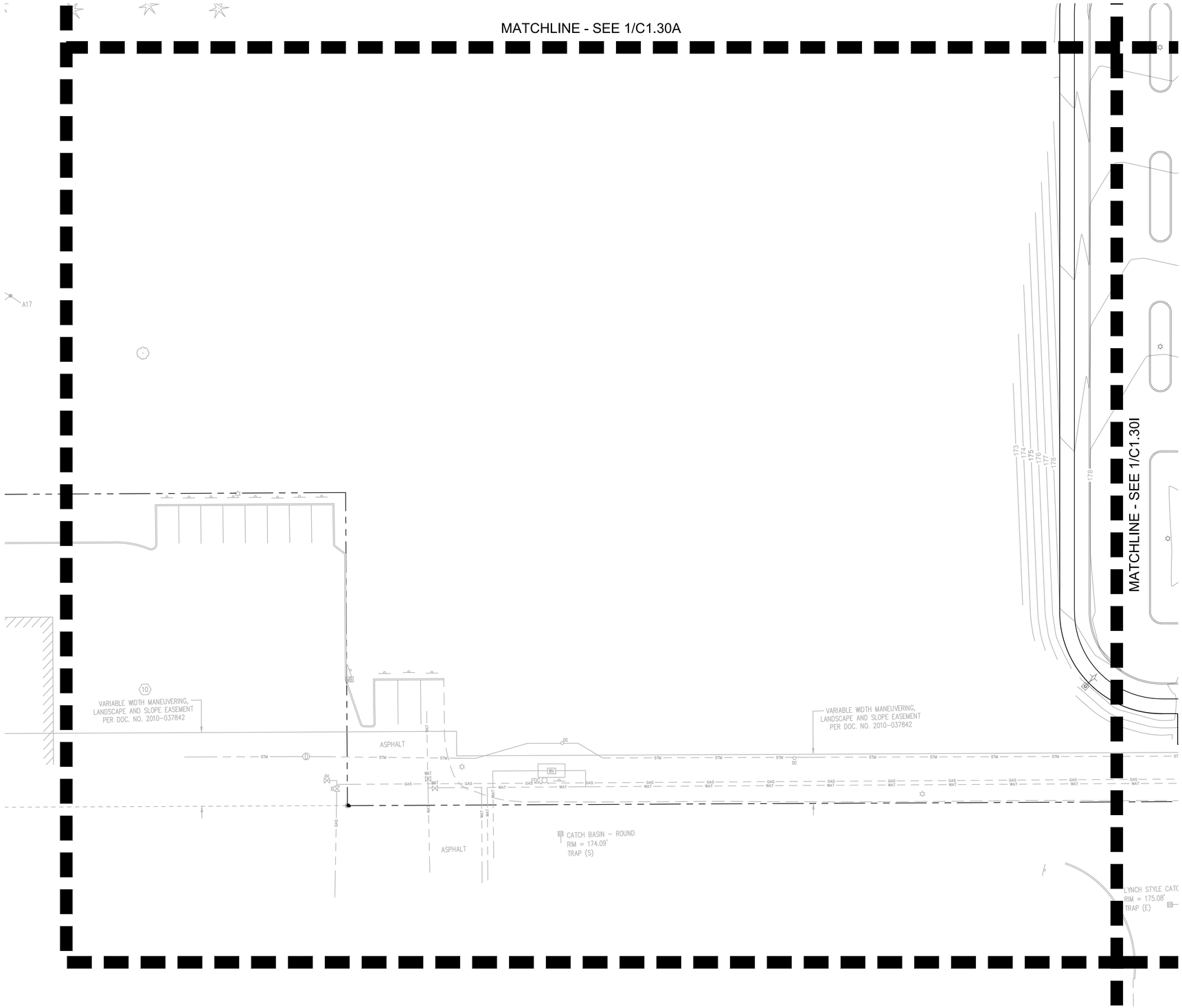
SHEET TITLE:
UTILITY PLAN

SHEET:
C1.30F

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2

225018000 \\GRP.MCK\PROJECTS\PROJECTS\225018000\DRAWINGS\CIVIL\TUX\180- C1.30 UTILITY PLAN.DWG;C1.30F NKB 07/18/25 12:46 1:20



1 UTILITY PLAN
C1.30H

20 0 10 20 40 80
(IN FEET)
1 inch = **20** ft.

KEYNOTES

33-01	CLEANOUT
33-02	CATCH BASIN
33-03	DOWN SPOUT
33-04	FIRE HYDRANT
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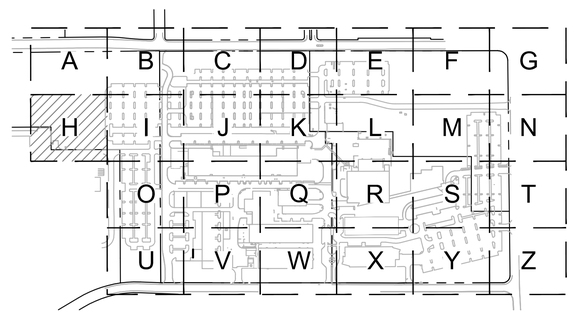

KEY MAP
SCALE: NTS

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SHEET TITLE:
UTILITY PLAN

SHEET:
C1.30H

JOB NO. **2250180.00**

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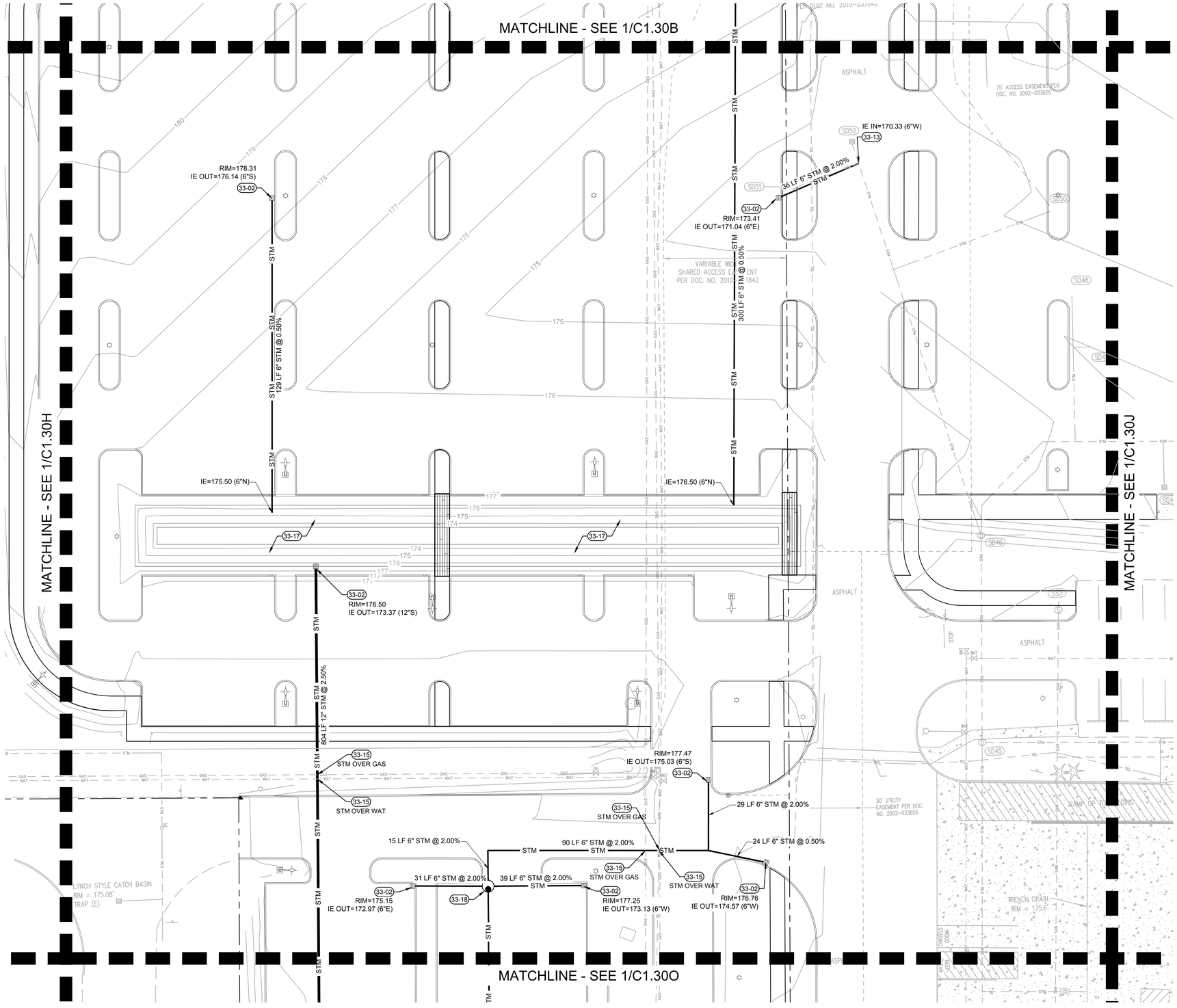

1 UTILITY PLAN
C1.30I

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(IN FEET)
1 inch = **20** ft.

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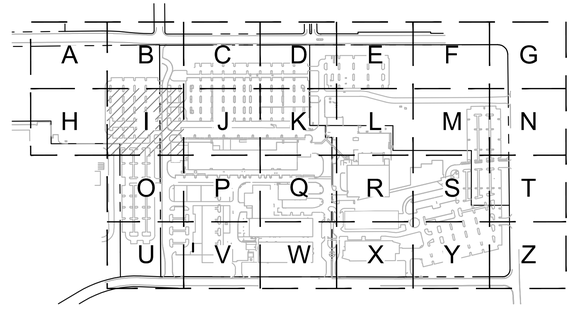

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UTILITY PLAN

SHEET:
C1.30I

JOB NO. **2250180.00**

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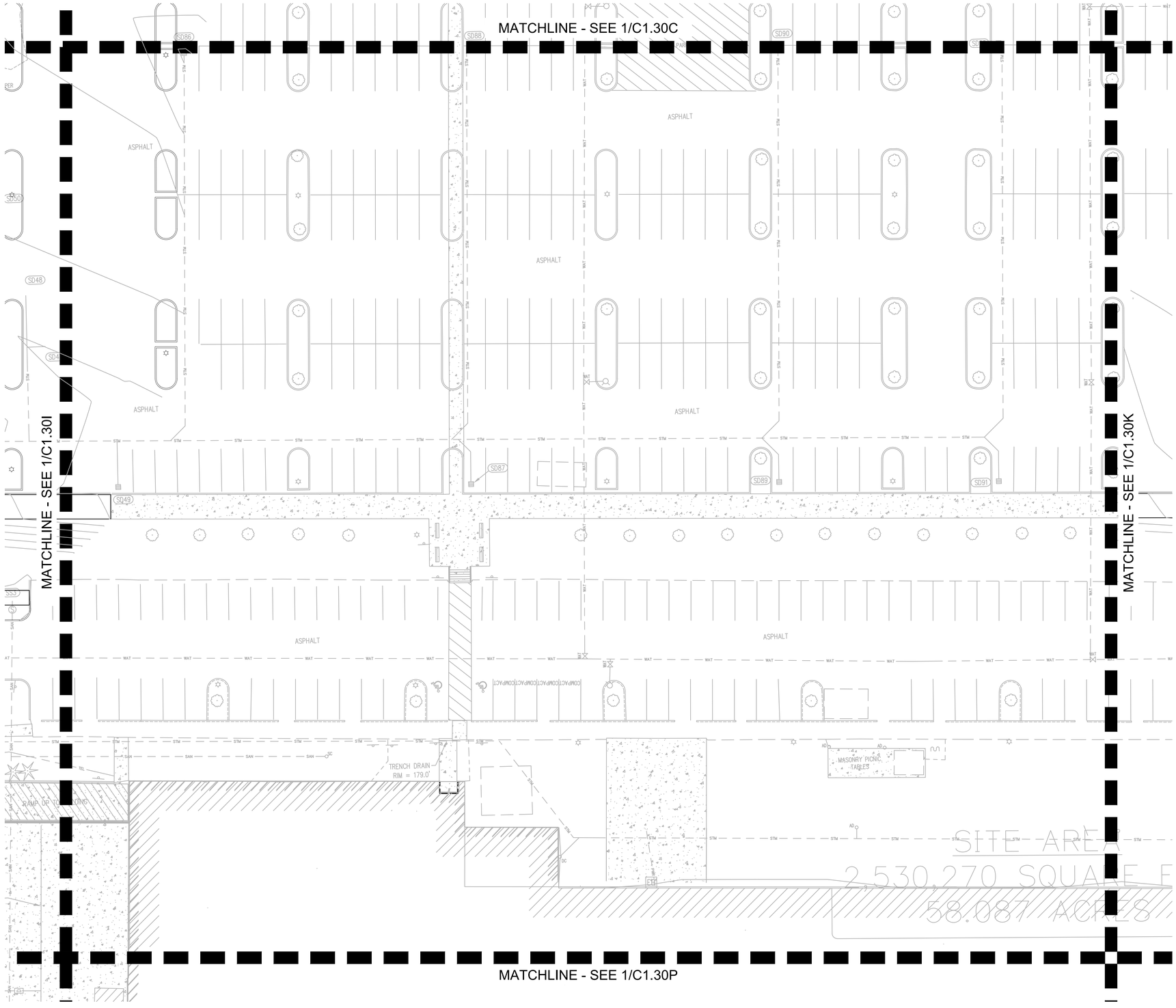

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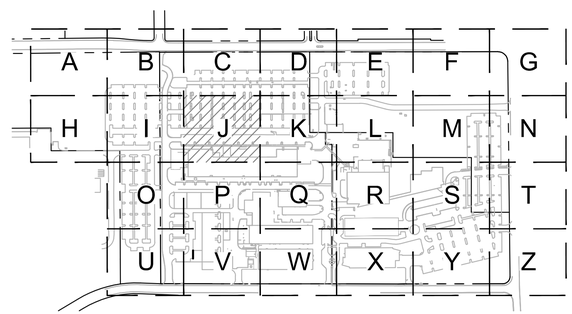

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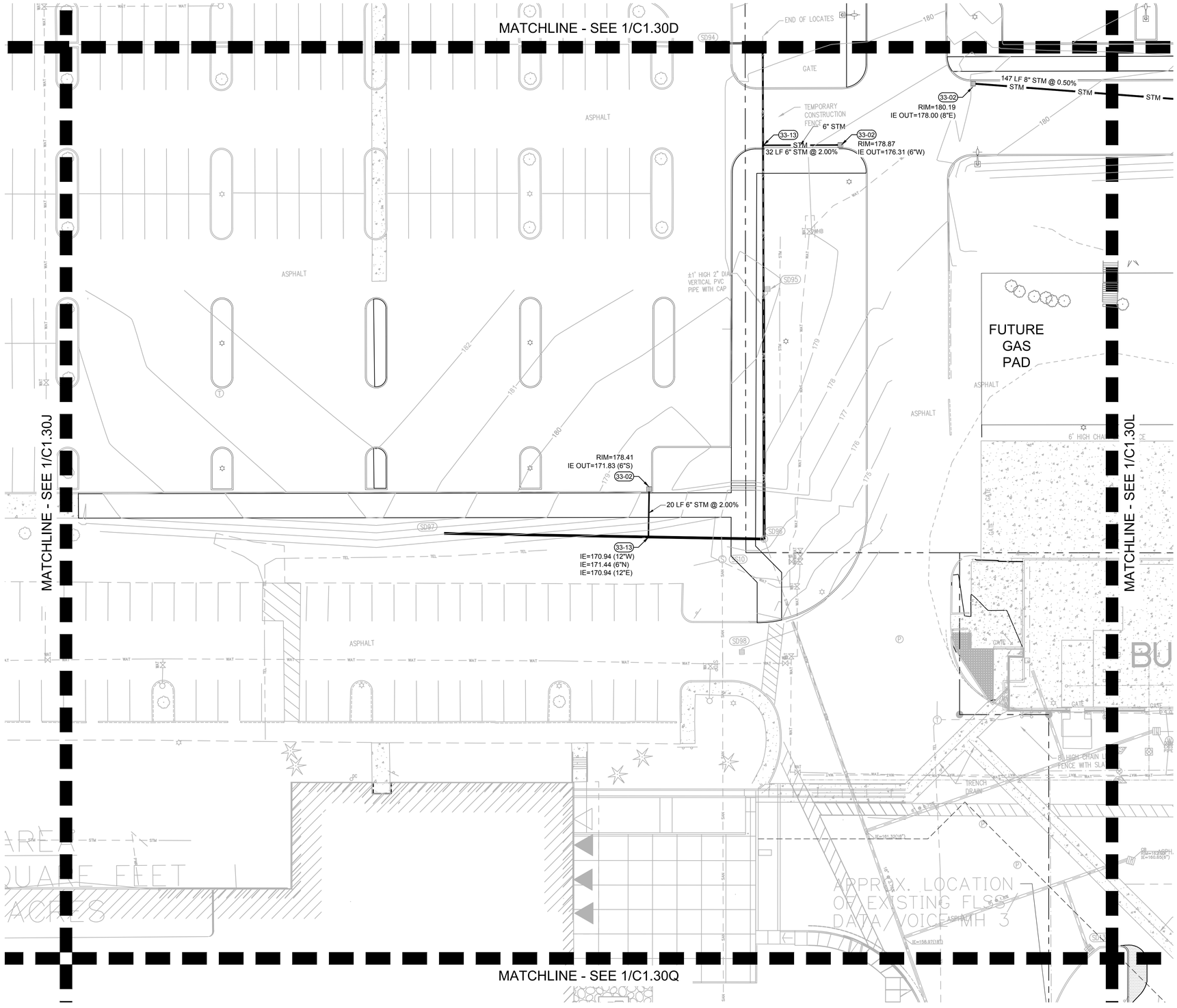
SHEET TITLE:
UTILITY PLAN

SHEET:
C1.30J

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2

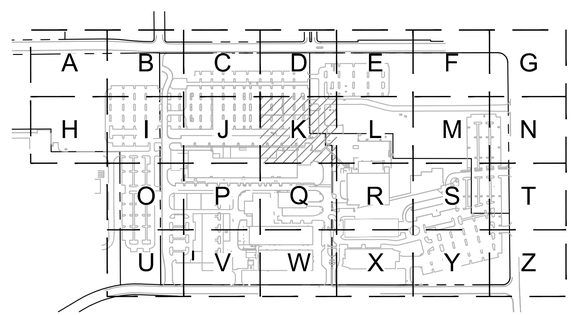


1 UTILITY PLAN
C1.30K

20 0 10 20 40 80
(IN FEET)
1 inch = **20** ft.

KEYNOTES

33-01	CLEANOUT
33-02	CATCH BASIN
33-03	DOWN SPOUT
33-04	FIRE HYDRANT
33-05	SANITARY SEWER CLEANOUT
33-06	INSTALL FDC
33-07	RELOCATED POWER JUNCTION BOX
33-08	PROPOSED POWER LINE
33-09	LIGHT TO BE ADJUSTED TO MATCH NEW GRADE
33-10	8" WATER METER PER COT DWG #634
33-11	8" REDUCED PRESSURE BACKFLOW ASSEMBLY PER COT DWG #617, WILKINS 375ADA
33-12	CHECK VALVE TO PREVENT BACKWATER FROM POND
33-13	CONNECT TO EXISTING STM
33-14	CONNECT TO EXISTING WAT
33-15	UTILITY CROSSING
33-16	ELECTRICAL GEAR
33-17	STORMWATER FACILITY
33-18	STORM MH
33-19	8" DOUBLE CHECK VALVE
33-20	3" DOMESTIC BACKFLOW
33-21	3" WATER SERVICE WITH 3" WATER METER



KEY MAP
SCALE: NTS

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REVISION SCHEDULE

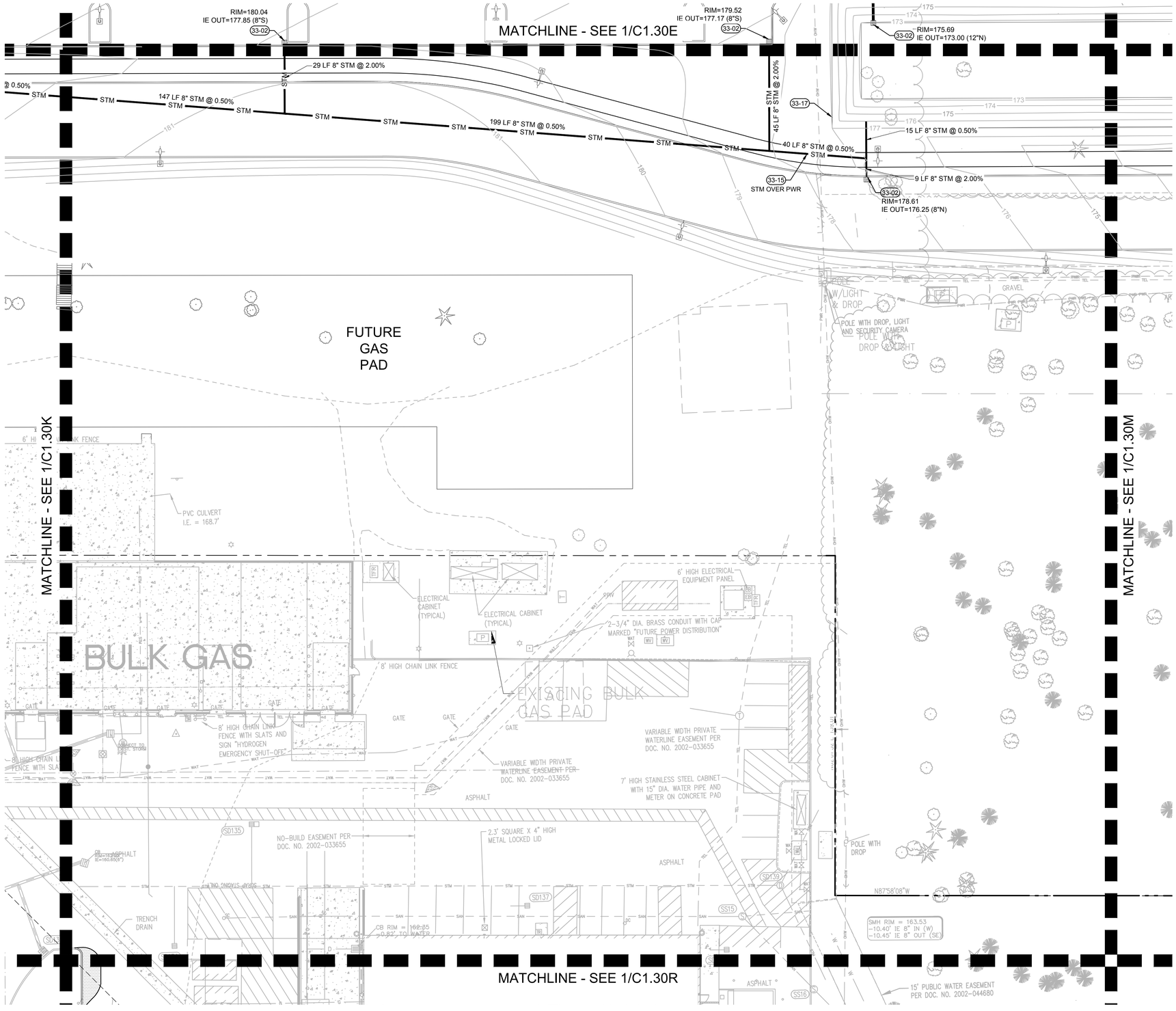
Delta	Issued As	Issue Date

SHEET TITLE:
UTILITY PLAN

SHEET:
C1.30K

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



1 C1.30L UTILITY PLAN

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

KEYNOTES

33-01	CLEANOUT
33-02	CATCH BASIN
33-03	DOWN SPOUT
33-04	FIRE HYDRANT
33-05	SANITARY SEWER CLEANOUT
33-06	INSTALL FDC
33-07	RELOCATED POWER JUNCTION BOX
33-08	PROPOSED POWER LINE
33-09	LIGHT TO BE ADJUSTED TO MATCH NEW GRADE
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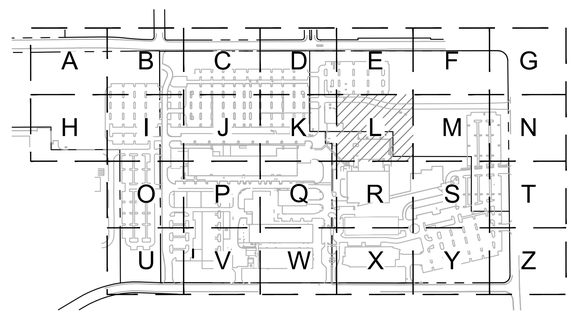
33-14	CONNECT TO EXISTING WAT
33-15	UTILITY CROSSING
33-16	ELECTRICAL GEAR
33-17	STORMWATER FACILITY
33-18	STORM MH
33-19	8" DOUBLE CHECK VALVE
33-20	3" DOMESTIC BACKFLOW
33-21	3" WATER SERVICE WITH 3" WATER METER



KEY MAP
SCALE: NTS

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Delta	Issued As	Issue Date

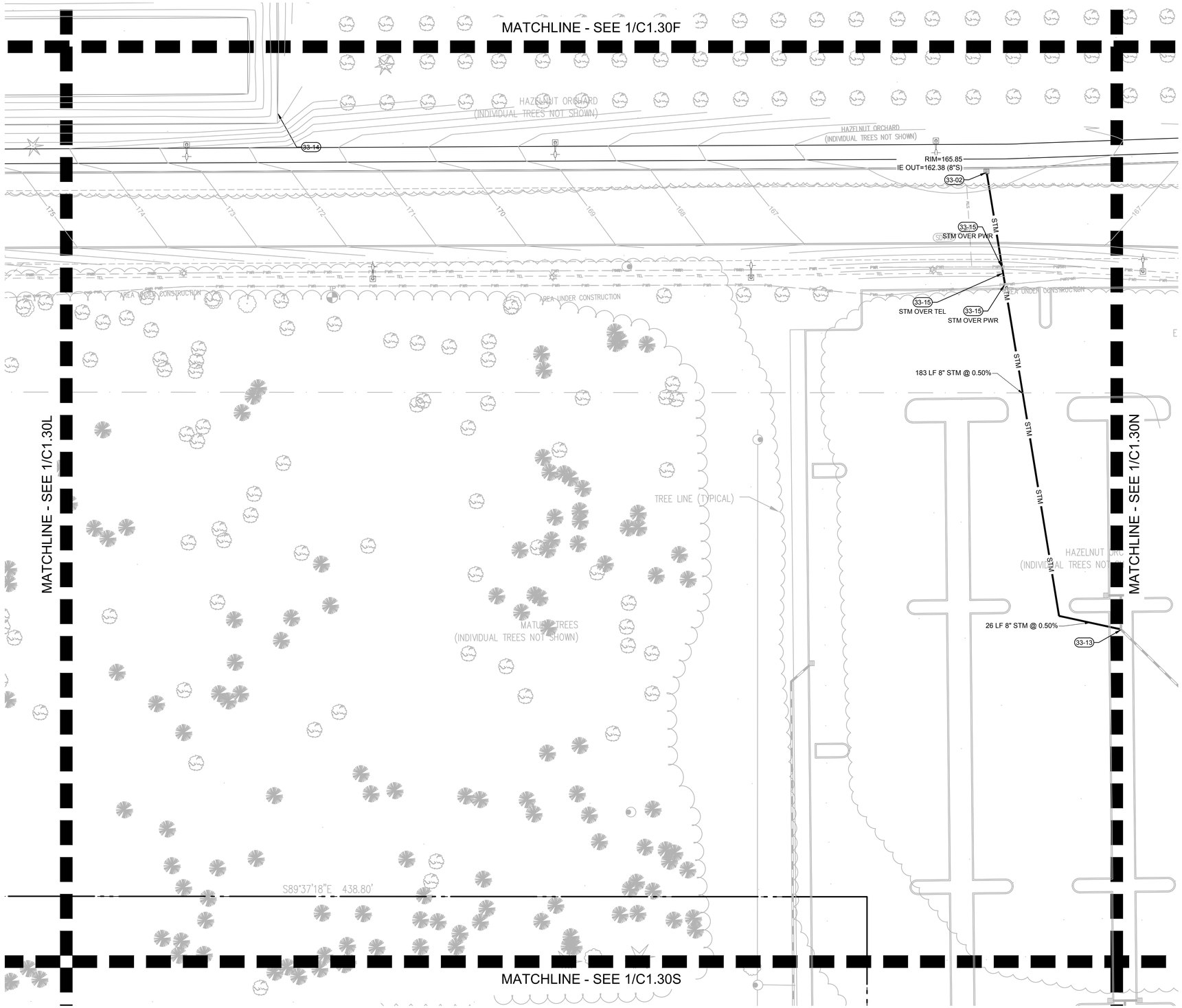
SHEET TITLE:
UTILITY PLAN

SHEET:
C1.30L

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2

"2250180000" \\GRP.MCK\PROJECTS\PROJECTS\2250180000\DRAWINGS\CIVIL\TUX180- C1.30 UTILITY PLAN.DWG:C1.30L ADS 07/16/25 16:22 1:20



KEYNOTES

33-01	CLEANOUT
33-02	CATCH BASIN
33-03	DOWN SPOUT
33-04	FIRE HYDRANT
33-05	SANITARY SEWER CLEANOUT
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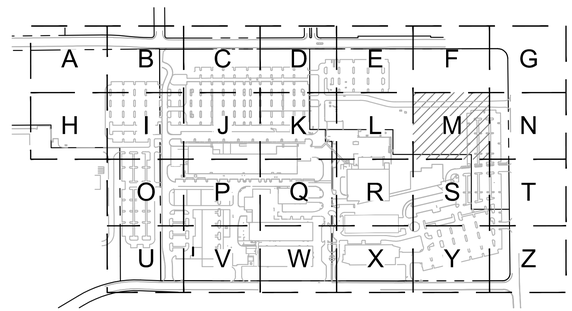
33-14	CONNECT TO EXISTING WAT
33-15	UTILITY CROSSING
33-16	ELECTRICAL GEAR
33-17	STORMWATER FACILITY
33-18	STORM MH
33-19	8" DOUBLE CHECK VALVE
33-20	3" DOMESTIC BACKFLOW
33-21	3" WATER SERVICE WITH 3" WATER METER

1 C1.30M UTILITY PLAN

20 0 10 20 40 80

(IN FEET)
1 inch = **20** ft.



KEY MAP
SCALE: NTS

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REVISION SCHEDULE

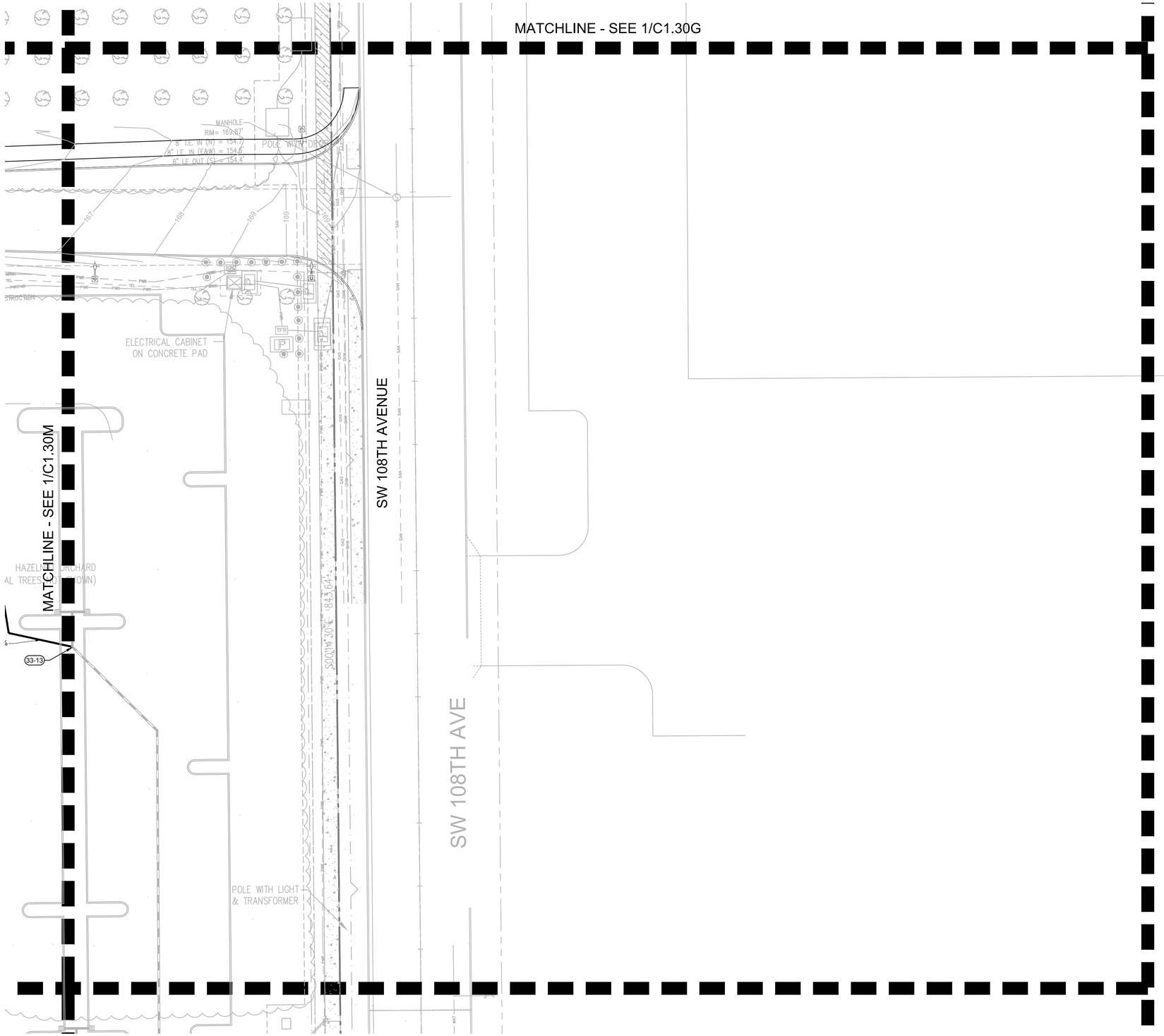
Delta	Issued As	Issue Date

SHEET TITLE:
UTILITY PLAN

SHEET:
C1.30M

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



KEYNOTES

33-01	CLEANOUT
33-02	CATCH BASIN
33-03	DOWN SPOUT
33-04	FIRE HYDRANT
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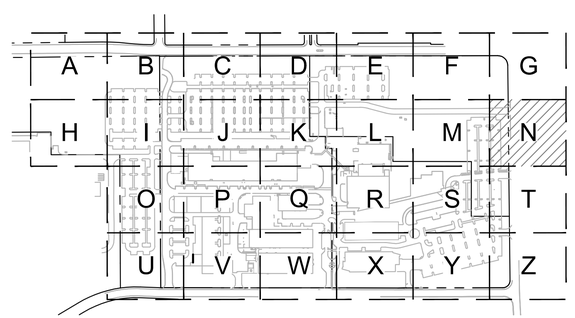
33-16	ELECTRICAL GEAR
33-17	STORMWATER FACILITY
33-18	STORM MH
33-19	8" DOUBLE CHECK VALVE
33-20	3" DOMESTIC BACKFLOW
33-21	3" WATER SERVICE WITH 3" WATER METER

1 C1.30N UTILITY PLAN

20 0 10 20 40 80

(IN FEET)
1 inch = **20** ft.



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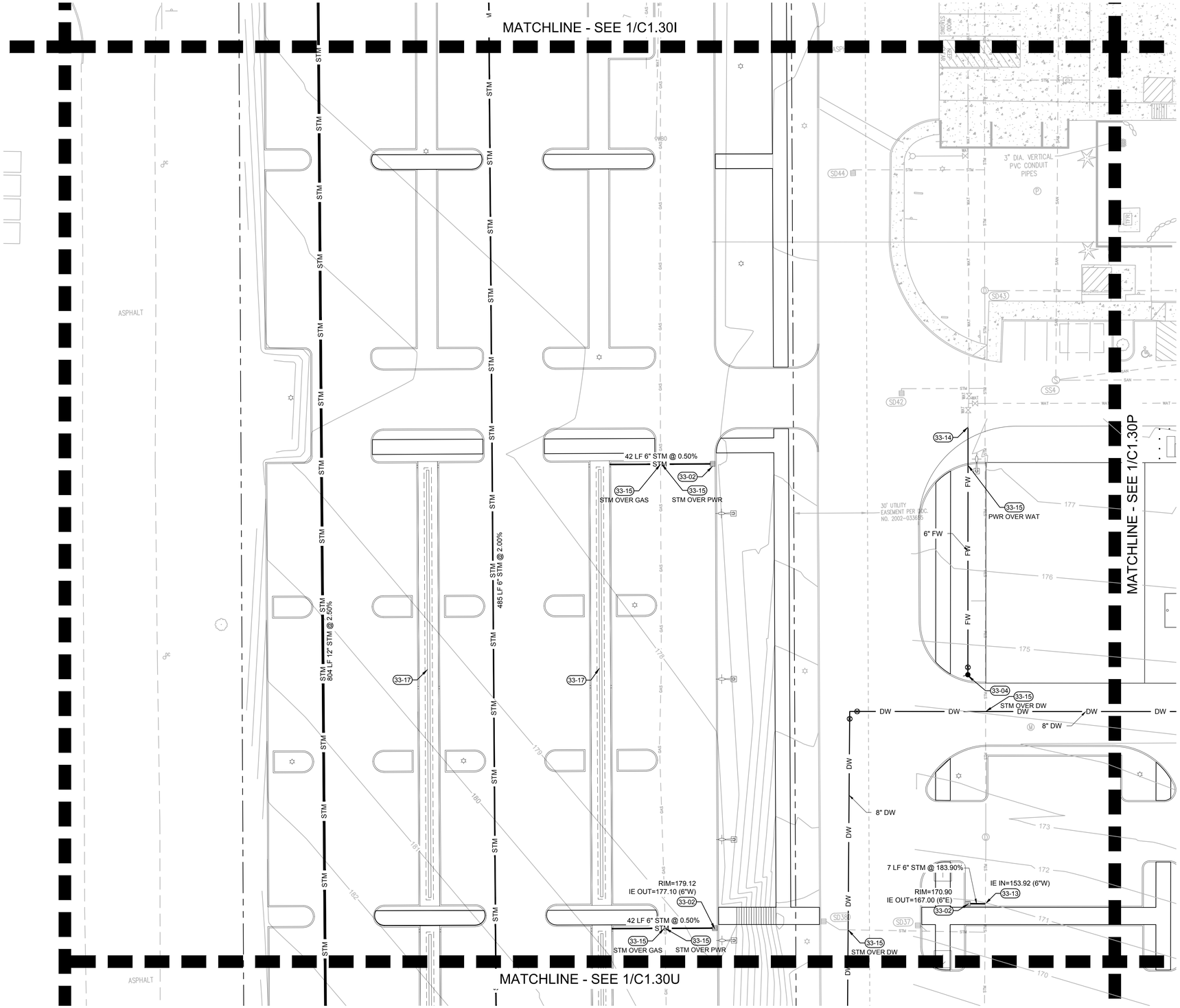
SHEET TITLE:
UTILITY PLAN

SHEET:
C1.30N

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2

225018000\DRAWINGS\CIVIL\TUX\180- C1.30 UTILITY PLAN.DWG;C1.10P ZMP 08/16/25 10:47 1:20



KEYNOTES

33-01	CLEANOUT
33-02	CATCH BASIN
33-03	DOWN SPOUT
33-04	FIRE HYDRANT
33-05	SANITARY SEWER CLEANOUT
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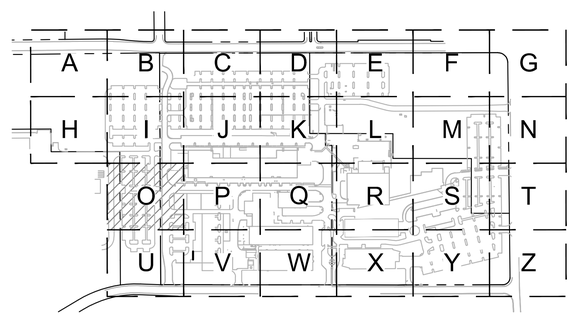
33-18	STORM MH
33-19	8" DOUBLE CHECK VALVE
33-20	3" DOMESTIC BACKFLOW
33-21	3" WATER SERVICE WITH 3" WATER METER

1 C1.30O UTILITY PLAN

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.



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REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:
UTILITY PLAN

SHEET:
C1.30O

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2

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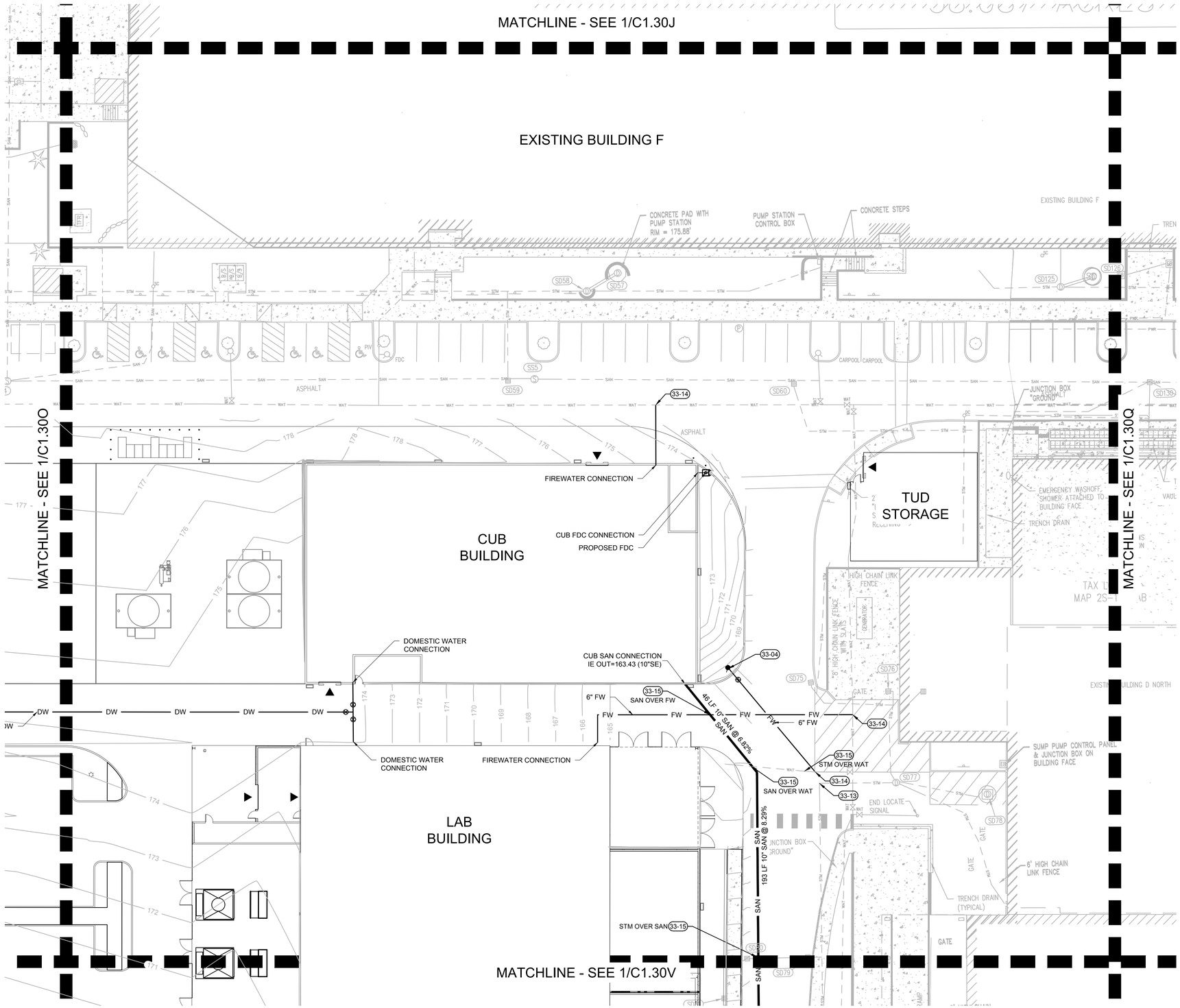

KEYNOTES

33-01	CLEANOUT
33-02	CATCH BASIN
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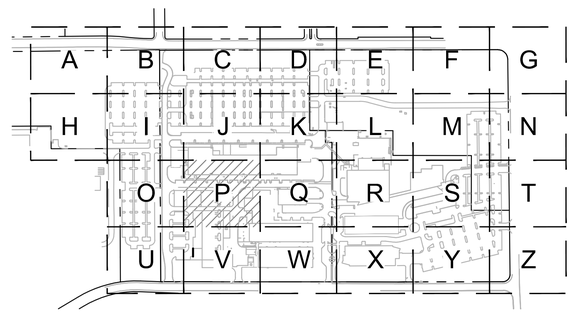
33-18	STORM MH
33-19	8" DOUBLE CHECK VALVE
33-20	3" DOMESTIC BACKFLOW
33-21	3" WATER SERVICE WITH 3" WATER METER

1 C1.30P UTILITY PLAN

20 0 10 20 40 80

(IN FEET)
1 inch = **20** ft.



KEY MAP
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Delta	Issued As	Issue Date

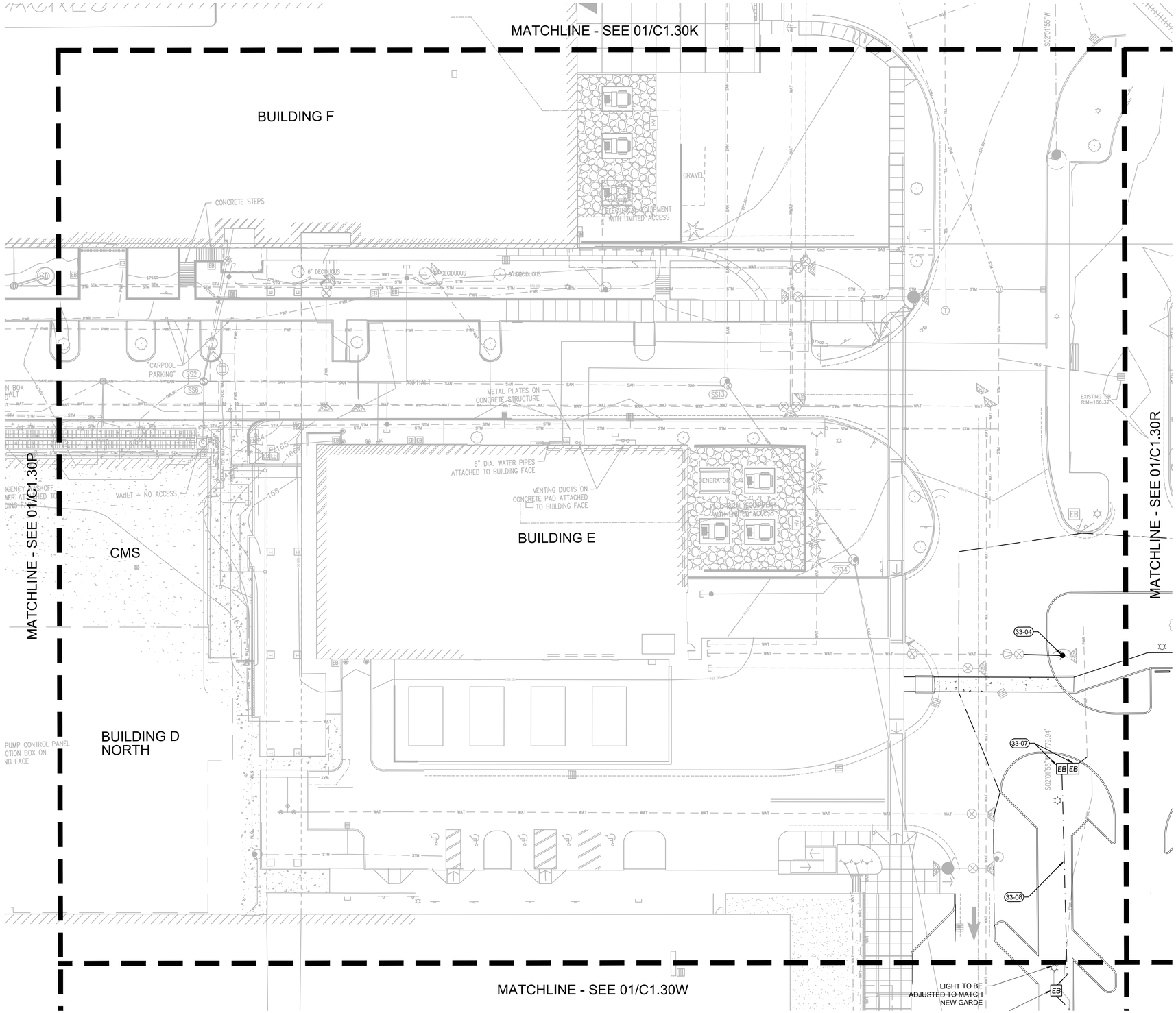
SHEET TITLE:
UTILITY PLAN

SHEET:
C1.30P

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2

225018000 \\GRP.MCK\PROJECTS\PROJECTS\225018000\DRAWINGS\CIVIL\TUX\180- C1.30 UTILITY PLAN.DWG:C1.30P ADS 07/16/25 15:32 1:20



1 UTILITY PLAN
C1.30Q

20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

KEYNOTES

33-01	CLEANOUT
33-02	CATCH BASIN
33-03	DOWN SPOUT
33-04	FIRE HYDRANT
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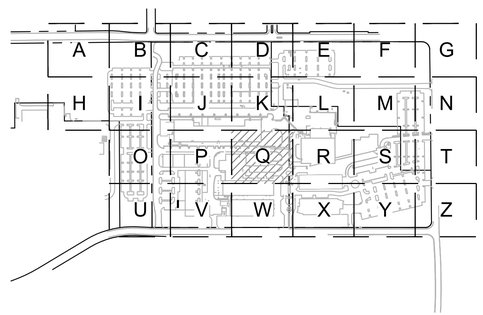

KEY MAP
SCALE: NTS

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REVISION SCHEDULE

Delta	Issued As	Issue Date

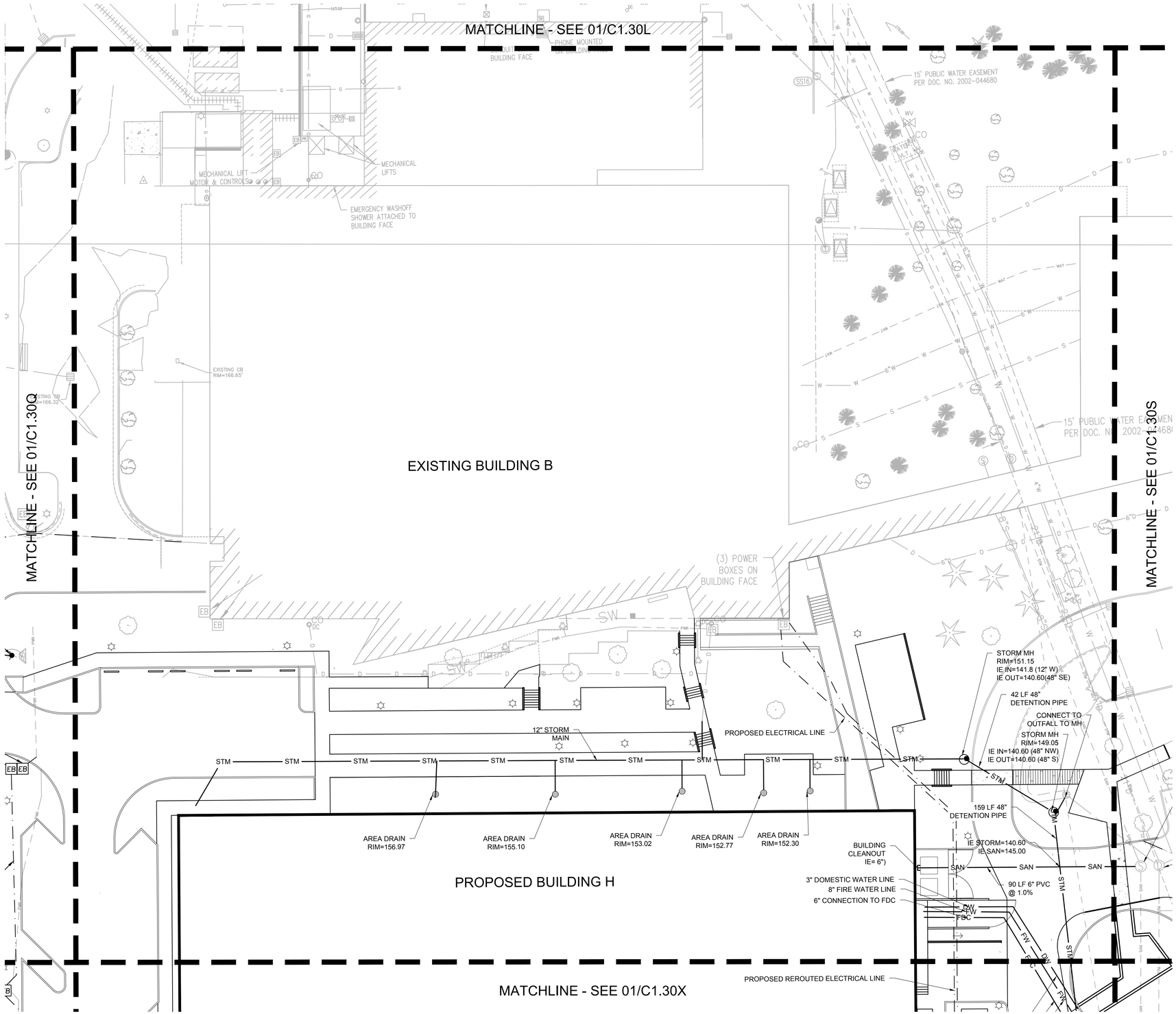
SHEET TITLE:
UTILITY PLAN

SHEET:
C1.30Q

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2

"2250180000" \\GRP.MCK\PROJECTS\PROJECTS\2250180000\DRAWINGS\CIVIL\BLDG H\141- C1.30 UTILITY PLAN.DWG;C1.30Q ADS 07/18/25 08:05 1:20



1 C1.30R UTILITY PLAN

20 0 10 20 40 80

(IN FEET)

1 inch = 20 ft.

KEYNOTES

33-01	CLEANOUT
33-02	CATCH BASIN
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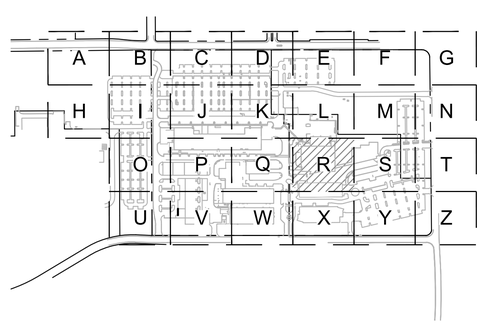

KEY MAP
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REVISION SCHEDULE

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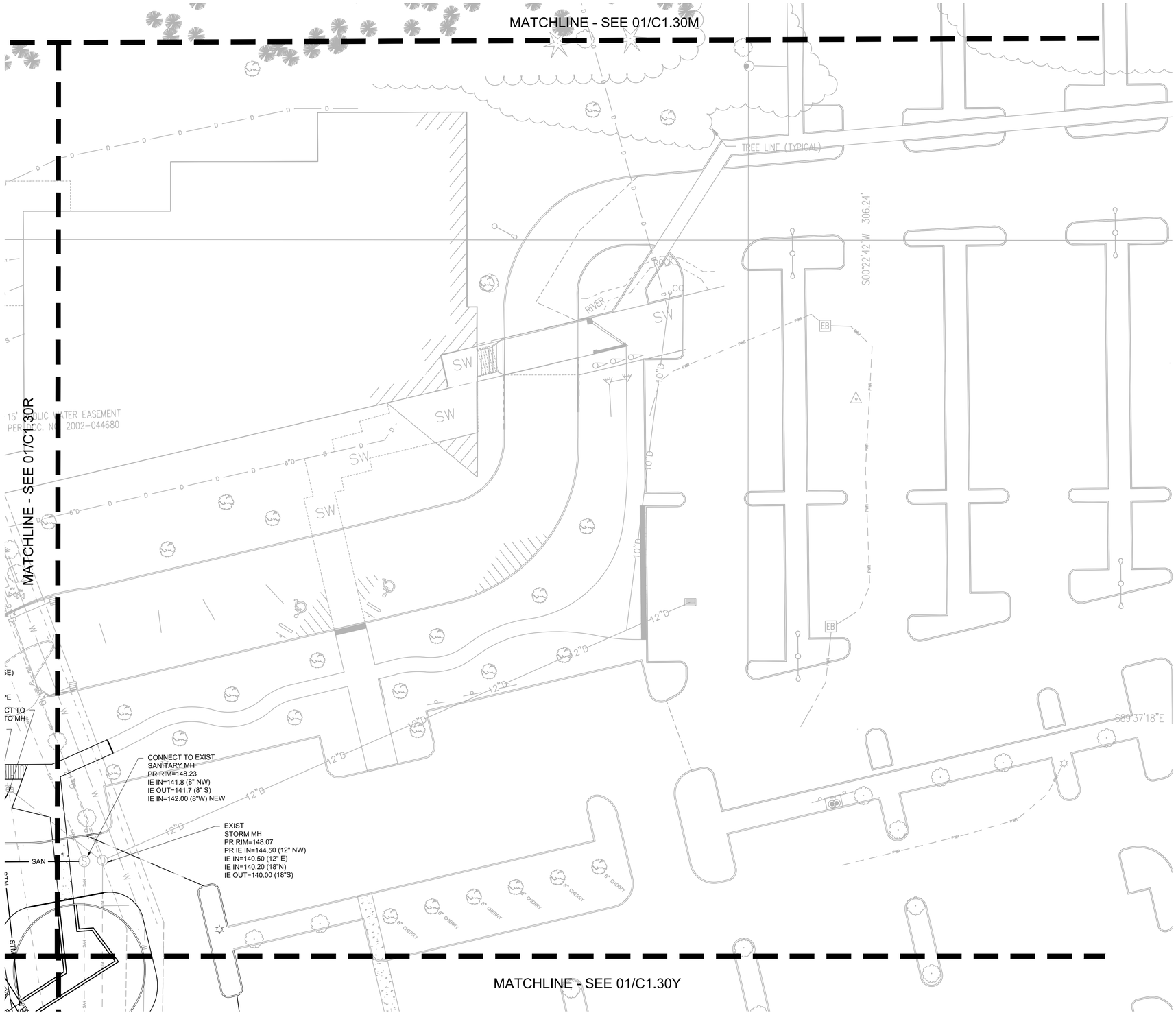
SHEET TITLE:
UTILITY PLAN

SHEET:
C1.30R

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



KEYNOTES

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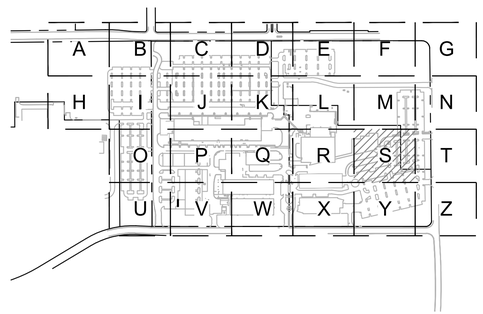

KEY MAP
SCALE: NTS

1 UTILITY PLAN
C1.30S

20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

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REVISION SCHEDULE

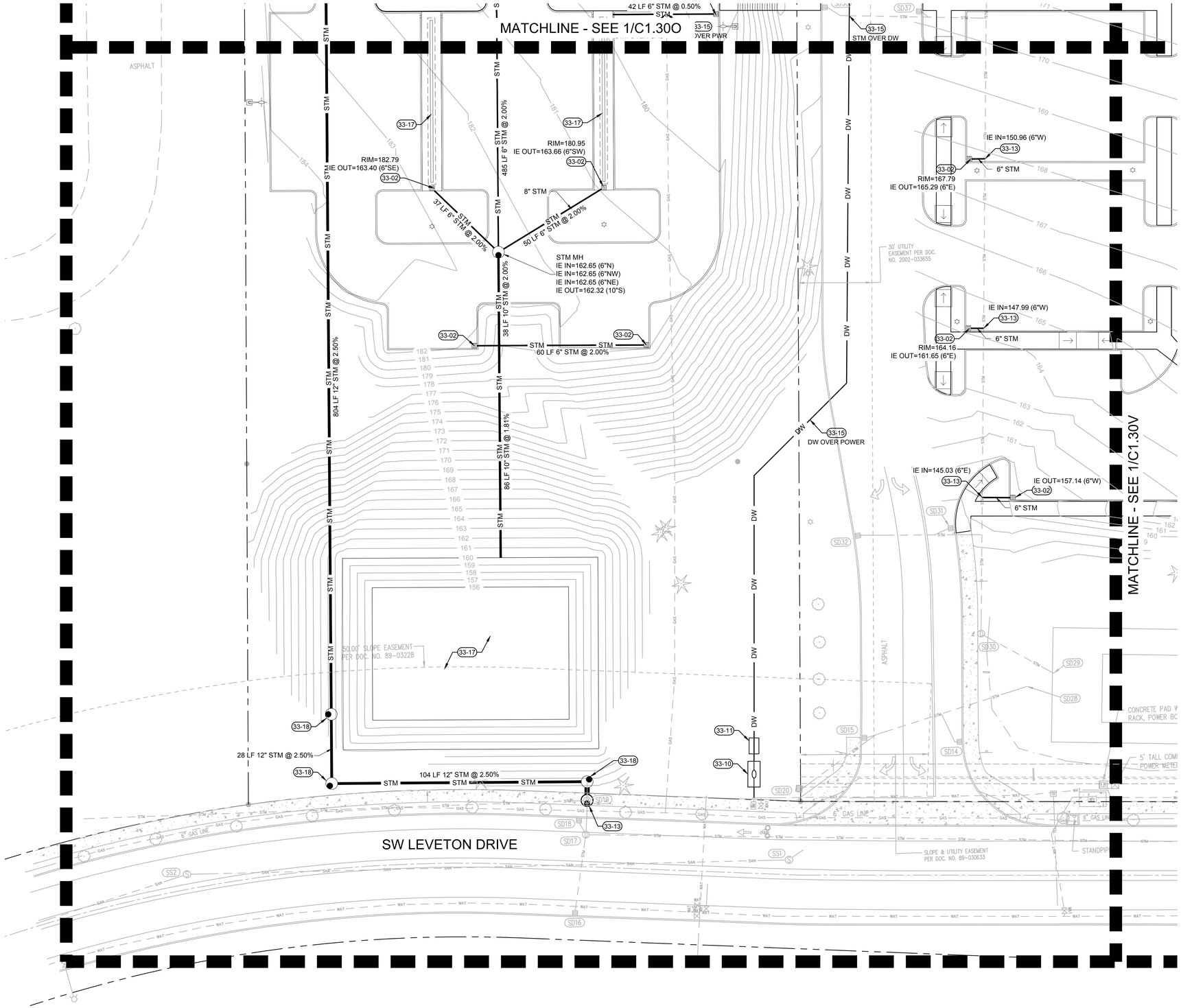
Delta	Issued As	Issue Date

SHEET TITLE:
UTILITY PLAN

SHEET:
C1.30S

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2

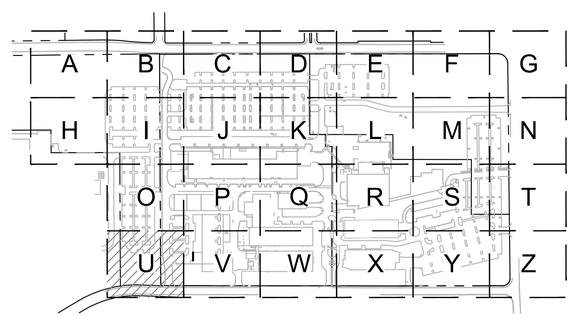


KEYNOTES

33-01	CLEANOUT
33-02	CATCH BASIN
33-03	DOWN SPOUT
33-04	FIRE HYDRANT
33-05	SANITARY SEWER CLEANOUT
33-06	INSTALL FDC
33-07	RELOCATED POWER JUNCTION BOX
33-08	PROPOSED POWER LINE
33-09	LIGHT TO BE ADJUSTED TO MATCH NEW GRADE
33-10	8" WATER METER PER COT DWG #634
33-11	8" REDUCED PRESSURE BACKFLOW ASSEMBLY PER COT DWG #617, WILKINS 375ADA
33-12	CHECK VALVE TO PREVENT BACKWATER FROM POND
33-13	CONNECT TO EXISTING STM
33-14	CONNECT TO EXISTING WAT
33-15	UTILITY CROSSING
33-16	ELECTRICAL GEAR
33-17	STORMWATER FACILITY
33-18	STORM MH
33-19	8" DOUBLE CHECK VALVE
33-20	3" DOMESTIC BACKFLOW
33-21	3" WATER SERVICE WITH 3" WATER METER

1 UTILITY PLAN
C1.30U

20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.



KEY MAP
SCALE: NTS

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REVISION SCHEDULE

Delta	Issued As	Issue Date

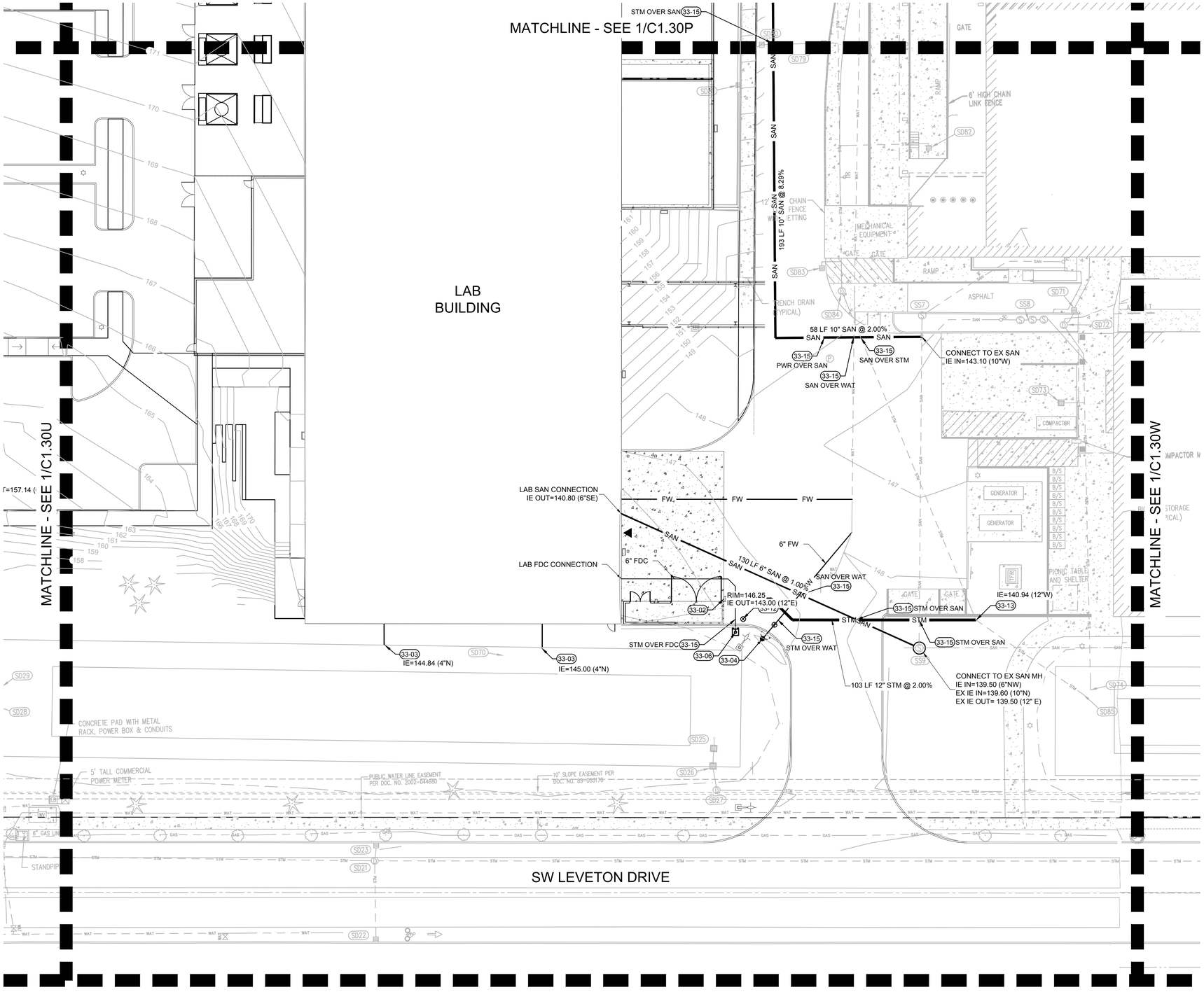
SHEET TITLE:
UTILITY PLAN

SHEET:
C1.30U

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2

2250180000 \\GRP.MCK\PROJECTS\PROJECTS\225018000\DRAWINGS\CIVIL\TUX\180- C1.30 UTILITY PLAN.DWG:C1.30U ADS 07/16/25 15:30 1:20



KEYNOTES

33-01	CLEANOUT
33-02	CATCH BASIN
33-03	DOWN SPOUT
33-04	FIRE HYDRANT
33-05	SANITARY SEWER CLEANOUT
33-06	INSTALL FDC
33-07	RELOCATED POWER JUNCTION BOX
33-08	PROPOSED POWER LINE
33-09	LIGHT TO BE ADJUSTED TO MATCH NEW GRADE
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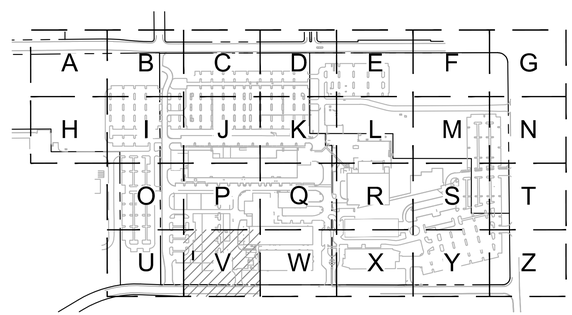
33-11	8" REDUCED PRESSURE BACKFLOW ASSEMBLY PER COT DWG #617, WILKINS 375ADA
33-12	CHECK VALVE TO PREVENT BACKWATER FROM POND
33-13	CONNECT TO EXISTING STM
33-14	CONNECT TO EXISTING WAT
33-15	UTILITY CROSSING
33-16	ELECTRICAL GEAR
33-17	STORMWATER FACILITY
33-18	STORM MH
33-19	8" DOUBLE CHECK VALVE
33-20	3" DOMESTIC BACKFLOW
33-21	3" WATER SERVICE WITH 3" WATER METER

1 UTILITY PLAN
C1.30V

20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.



KEY MAP
SCALE: NTS

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REVISION SCHEDULE

Delta	Issued As	Issue Date

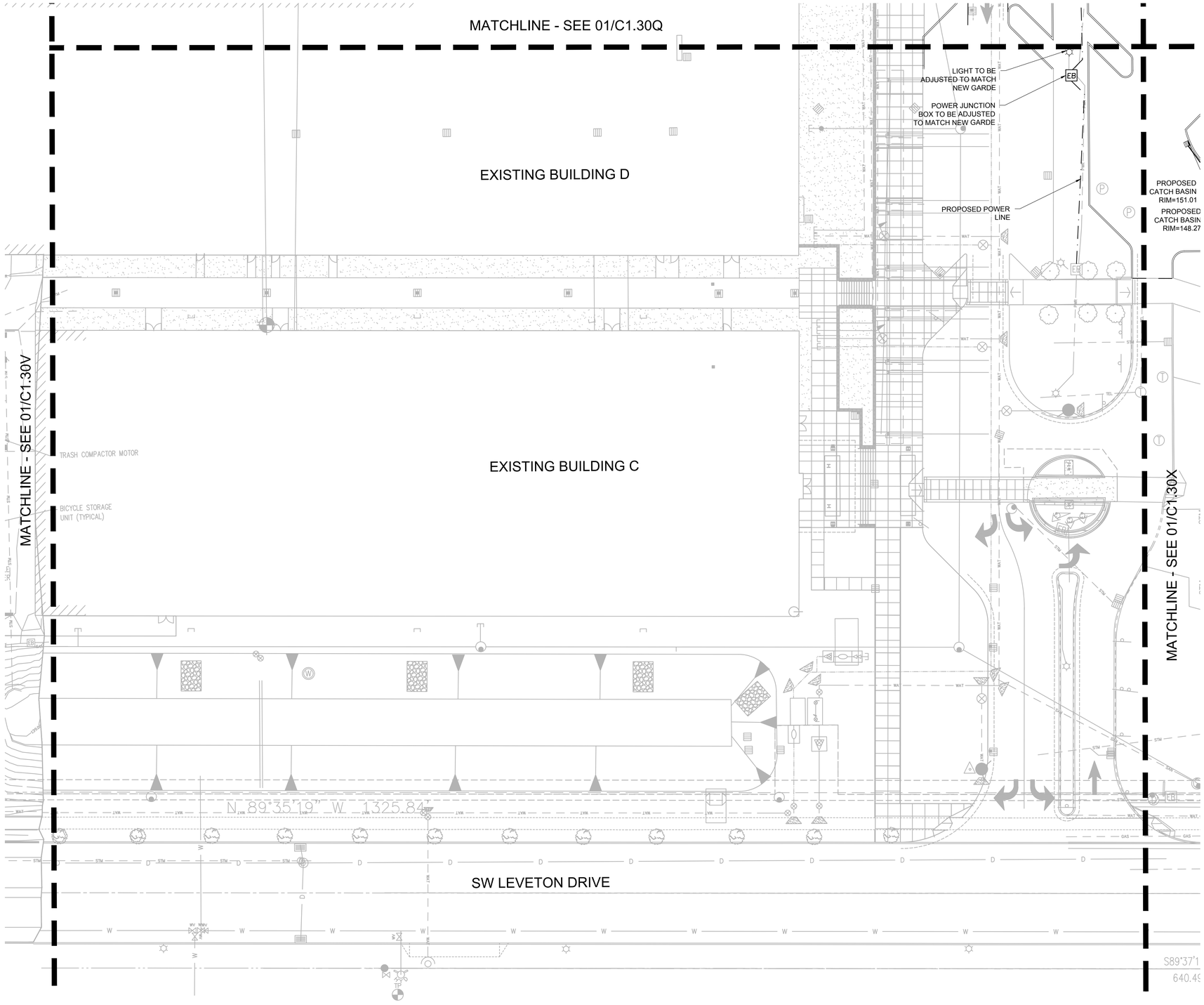
SHEET TITLE:
UTILITY PLAN

SHEET:
C1.30V

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2

"2250180000" \\GRP.MCK\PROJECTS\PROJECTS\2250180000\DRAWINGS\CIVIL\TUX\180- C1.30 UTILITY PLAN.DWG:C1.30V MB 07/18/25 14:54 1:20



KEYNOTES

33-01	CLEANOUT
33-02	CATCH BASIN
33-03	DOWN SPOUT
33-04	FIRE HYDRANT
33-05	SANITARY SEWER CLEANOUT
33-06	INSTALL FDC
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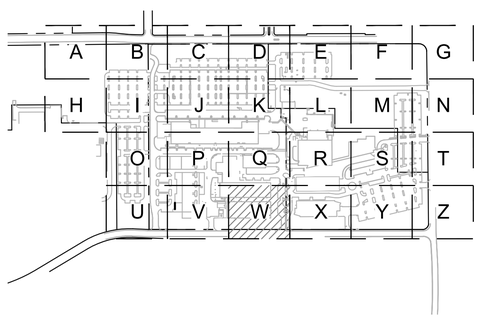
33-14	CONNECT TO EXISTING WAT
33-15	UTILITY CROSSING
33-16	ELECTRICAL GEAR
33-17	STORMWATER FACILITY
33-18	STORM MH
33-19	8" DOUBLE CHECK VALVE
33-20	3" DOMESTIC BACKFLOW
33-21	3" WATER SERVICE WITH 3" WATER METER

1 C1.30W UTILITY PLAN

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.



KEY MAP
SCALE: NTS

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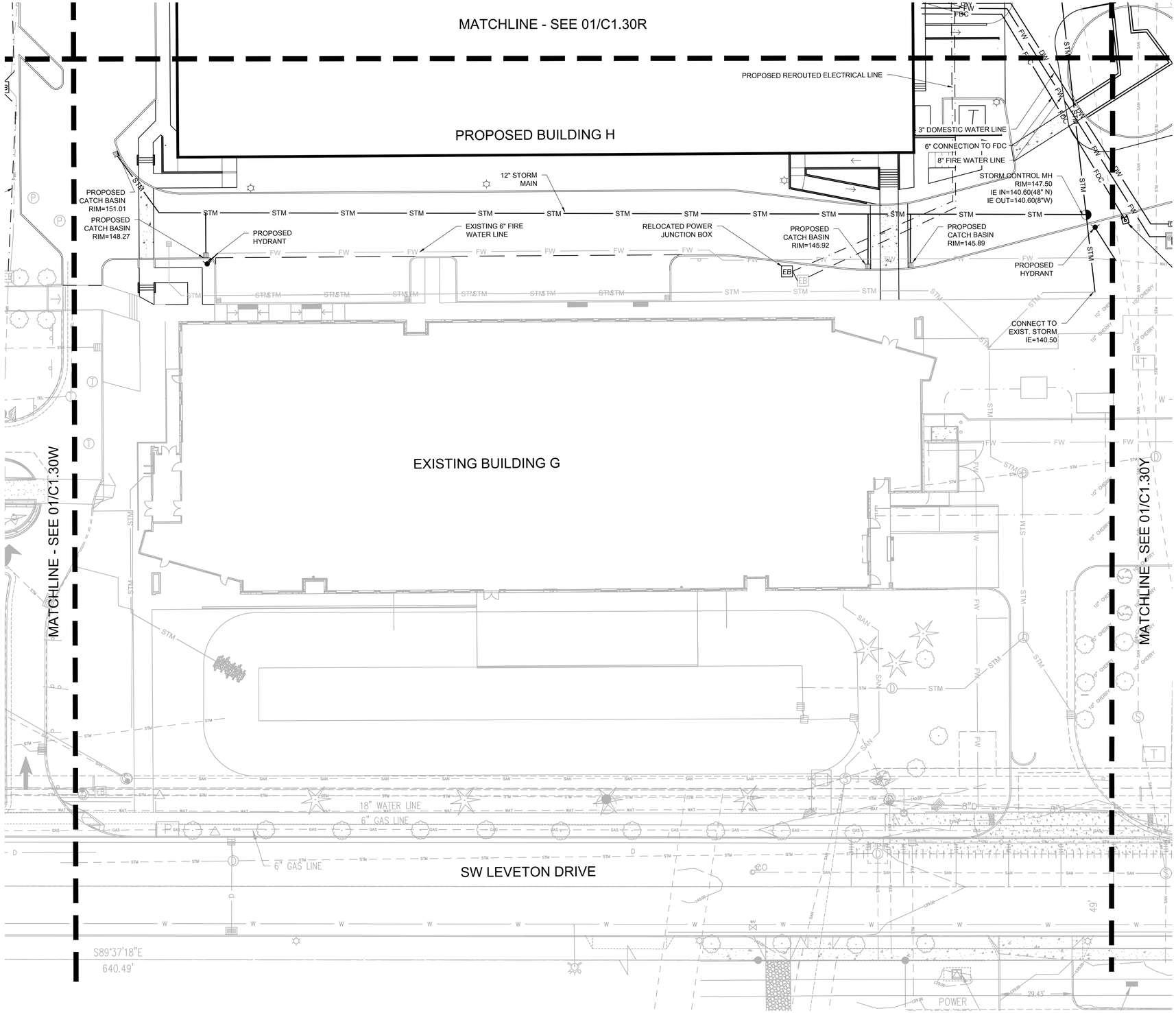
Delta	Issued As	Issue Date

SHEET TITLE:
UTILITY PLAN

SHEET:
C1.30W

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



KEYNOTES

33-01	CLEANOUT
33-02	CATCH BASIN
33-03	DOWN SPOUT
33-04	FIRE HYDRANT
33-05	SANITARY SEWER CLEANOUT
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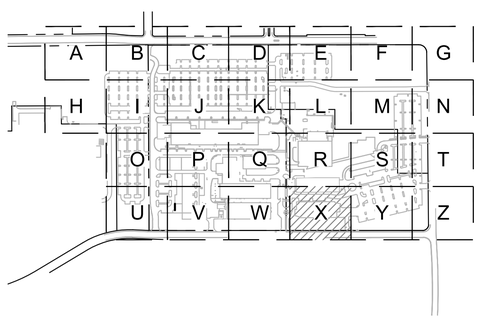
33-16	ELECTRICAL GEAR
33-17	STORMWATER FACILITY
33-18	STORM MH
33-19	8" DOUBLE CHECK VALVE
33-20	3" DOMESTIC BACKFLOW
33-21	3" WATER SERVICE WITH 3" WATER METER

1 UTILITY PLAN
C1.30X

20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.



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SCALE: NTS

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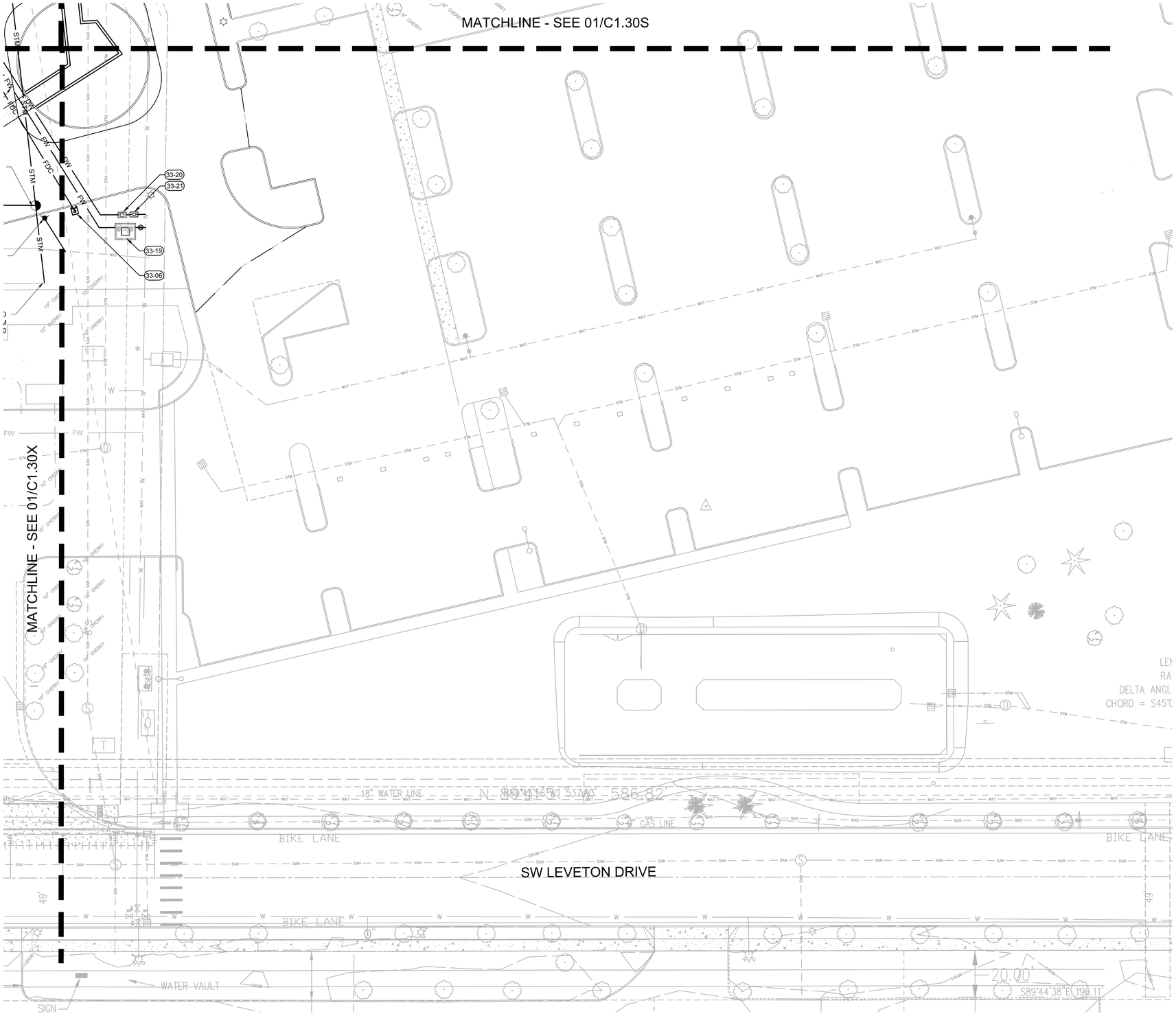
Delta	Issued As	Issue Date

SHEET TITLE:
UTILITY PLAN

SHEET:
C1.30X

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



1 UTILITY PLAN
C1.30Y

20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

KEYNOTES

33-01	CLEANOUT
33-02	CATCH BASIN
33-03	DOWN SPOUT
33-04	FIRE HYDRANT
33-05	SANITARY SEWER CLEANOUT
33-06	INSTALL FDC
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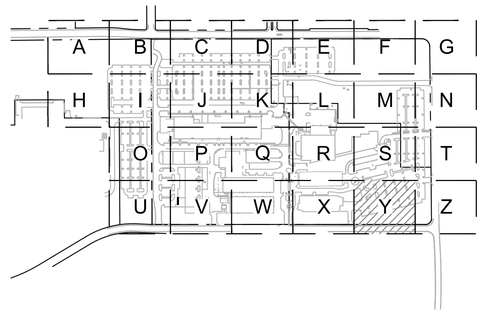
33-16	ELECTRICAL GEAR
33-17	STORMWATER FACILITY
33-18	STORM MH
33-19	8" DOUBLE CHECK VALVE
33-20	3" DOMESTIC BACKFLOW
33-21	3" WATER SERVICE WITH 3" WATER METER



KEY MAP
SCALE: NTS

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REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:
UTILITY PLAN

SHEET:
C1.30Y

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2

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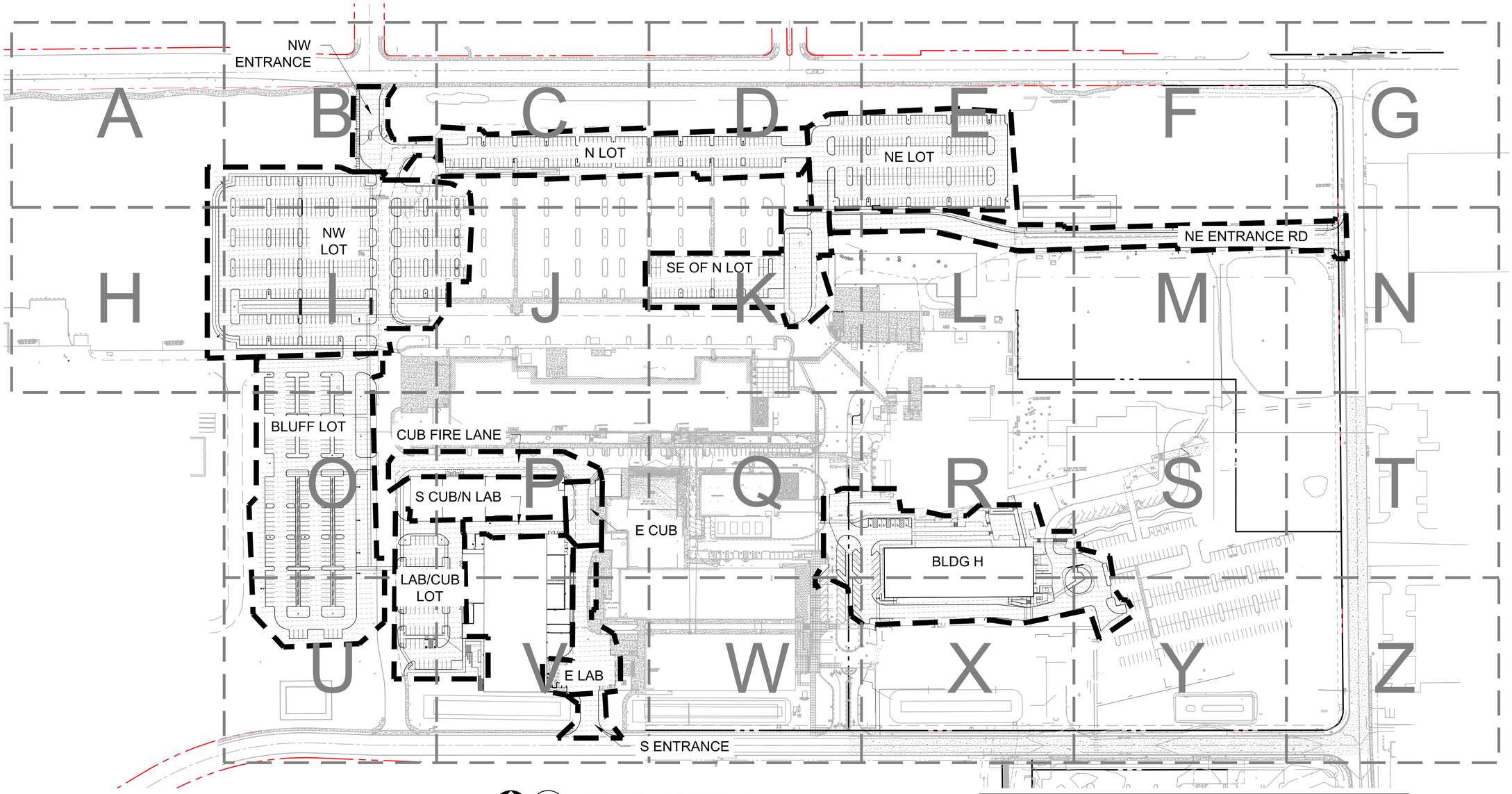

PHOTOMETRIC CALCULATIONS

AREA	MINIMUM (FC)	AVERAGE (FC)	RATIO - MAX TO MIN	RATIO - AVG TO MIN
BLDG H	0.18	0.93	74.17	5.17
BLUFF LOT	0.22	0.71	7.55	3.23
CUB FIRE LN	0.16	1.07	21.50	6.69
S CUB/N LAB	0.28	1.17	15.61	4.18
E OF LAB	0.14	0.64	23.14	4.57
E OF CUB	0.13	1.09	37.85	8.38
LAB/CUB LOT	0.17	0.85	20.94	5.00
N LOT	0.15	0.59	6.53	3.93
NE LOT	0.14	0.83	13.71	5.93
NE ENTR.	0.20	0.72	8.45	3.60
NW ENTR. RD	0.33	0.86	3.67	2.61
NW LOT	0.18	0.85	10.11	4.72
SE OF N LOT	0.34	1.00	6.15	2.94
S ENTR.	0.20	0.46	3.90	2.30

1 C2.11 OVERALL PHOTOMETRIC PLAN

100 0 50 100 200 400

(IN FEET)

1 inch = **100** ft.

LUMINAIRE SCHEDULE

LETTER	SYM	QTY	MFG	CATALOG #	DIST	WATTS	VOLTAGE	HEIGHT	MA LENGTH	CONFIG
A		57	LITHONIA LIGHTING	KAD LED 20C 530 30K R2 MVOLT	LITHONIA LIGHTING KAD-LED LED CONTOUR SOFT SQUARE FULL CUTOFF	35	UNIVERSAL (120-277V)	30FT	N/A	SINGLE
B		59	LITHONIA LIGHTING	KAD LED 20C 530 30K R2 MVOLT	LITHONIA LIGHTING KAD-LED LED CONTOUR SOFT SQUARE FULL CUTOFF	35	UNIVERSAL (120-277V)	30FT	N/A	TWIN
C		17	LIGMAN LIGHTING	JE-10571-T3-8 030	LIGMAN LIGHTING LED BOLLARD MOUNTED ROUND FULL CUTOFF	11	220-240V	3FT	N/A	SINGLE
D		20	ACUITY BRANDS	ARC2 LED P4 40K MVOLT DMG DNAXD	ACUITY BRANDS ARC 2 LED ARCHITECTURAL WALL LUMINAIRE	30	UNIVERSAL (120-277V)	20FT	N/A	SINGLE

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REVISION SCHEDULE

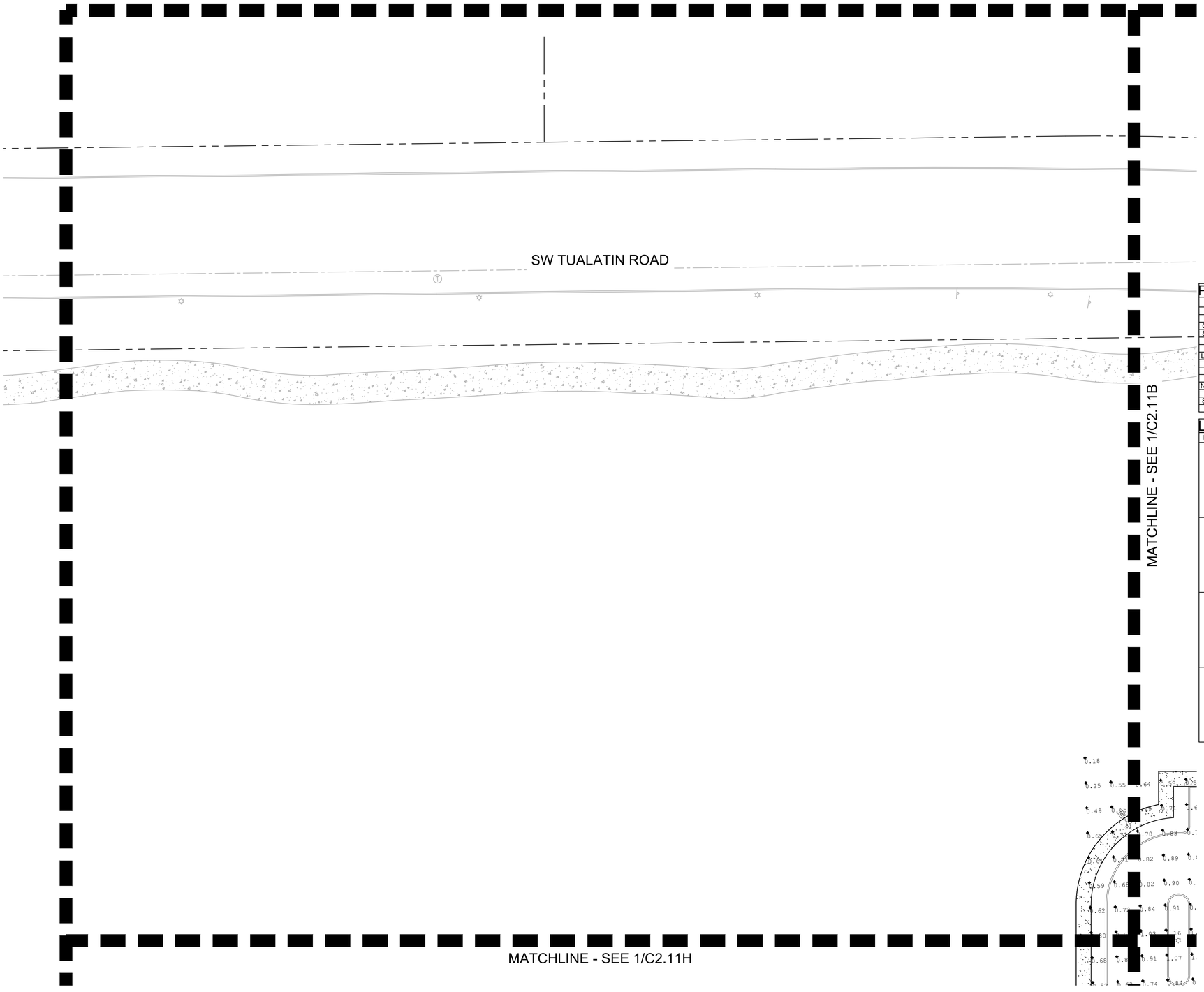
Delta	Issued As	Issue Date

SHEET TITLE:
OVERALL PHOTOMETRIC PLAN

SHEET:
C2.11

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2

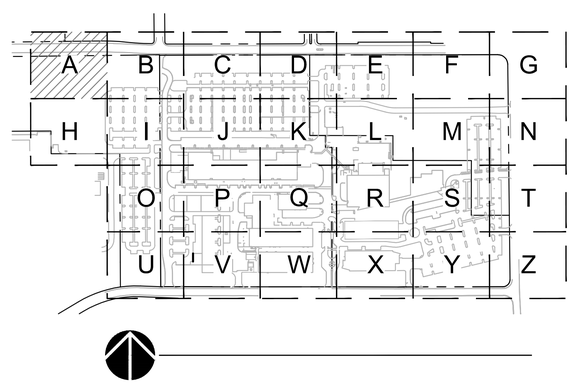


PHOTOMETRIC CALCULATIONS

AREA	MINIMUM (FC)	AVERAGE (FC)	RATIO - MAX TO MIN	RATIO - AVG TO MIN
BLDG H	0.18	0.93	74.17	5.17
BLUFF LOT	0.22	0.71	7.55	3.23
CUB FIRE LN	0.16	1.07	21.50	6.69
S CUB/N LAB	0.28	1.17	15.61	4.18
E OF LAB	0.14	0.64	23.14	4.57
E OF CUB	0.13	1.09	37.85	8.38
LAB/CUB LOT	0.17	0.85	20.94	5.00
N LOT	0.15	0.59	6.53	3.93
NE LOT	0.14	0.83	13.71	5.93
NE ENTR.	0.20	0.72	8.45	3.60
NW ENTR. RD	0.33	0.86	3.67	2.61
NW LOT	0.18	0.85	10.11	4.72
SE OF N LOT	0.34	1.00	6.15	2.94
S ENTR.	0.20	0.46	3.90	2.30

LUMINAIRE SCHEDULE

LETTER	SYM	QTY	MFG	CATALOG #	DIST	WATTS	VOLTAGE	HEIGHT	MA LENGTH	CONFIG
A		57	LITHONIA LIGHTING	KAD LED 20C 530 30K R2 MVOLT	LITHONIA LIGHTING KAD-LED LED CONTOUR SOFT SQUARE FULL CUTOFF	35	UNIVERSAL (120-277V)	30FT	N/A	SINGLE
B		59	LITHONIA LIGHTING	KAD LED 20C 530 30K R2 MVOLT	LITHONIA LIGHTING KAD-LED LED CONTOUR SOFT SQUARE FULL CUTOFF	35	UNIVERSAL (120-277V)	30FT	N/A	TWIN
C		17	LIGMAN LIGHTING	JE-10571-T3-8 030	LIGMAN LIGHTING LED BOLLARD MOUNTED ROUND FULL CUTOFF	11	220-240V	3FT	N/A	SINGLE
D		20	ACUITY BRANDS	ARC2 LED P4 40K MVOLT DMG DNAXD	ACUITY BRANDS ARC 2 LED ARCHITECTURAL WALL LUMINAIRE	30	UNIVERSAL (120-277V)	20FT	N/A	SINGLE



1 C2.11A

20 0 10 20 40 80

(IN FEET)
1 inch = **20** ft.

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REVISION SCHEDULE

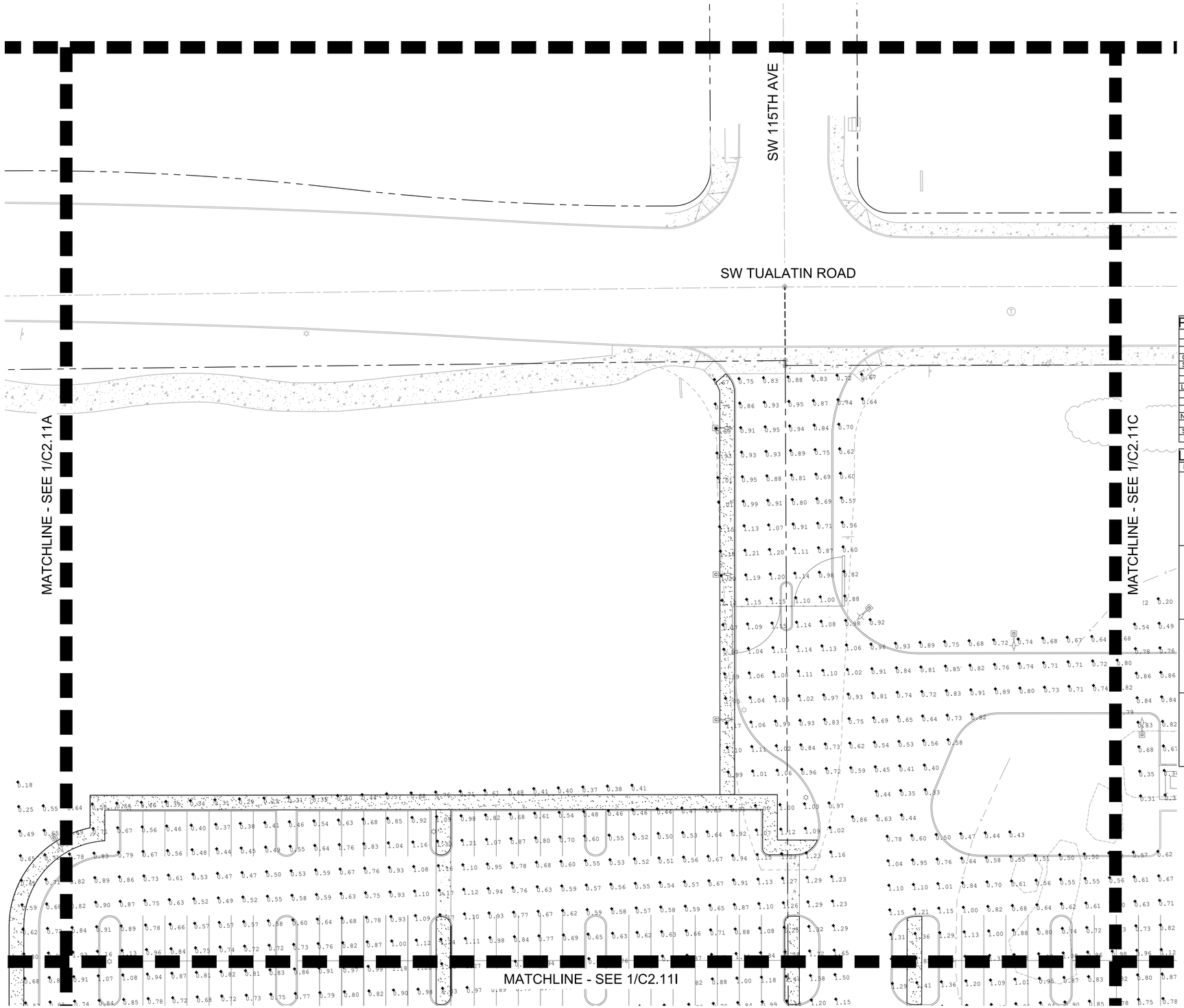
Delta	Issued As	Issue Date

SHEET TITLE:
PHOTOMETRIC PLAN

SHEET:
C2.11A

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



1 C2.11B

20 0 10 20 40 80

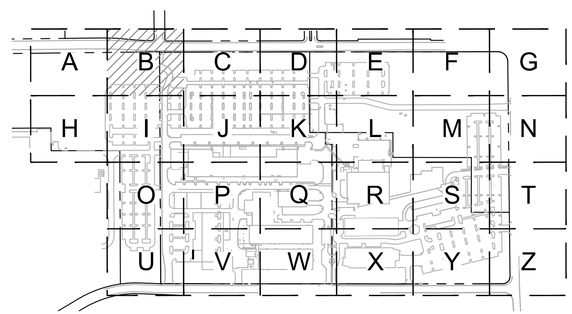
(IN FEET)
1 inch = **20** ft.

PHOTOMETRIC CALCULATIONS

AREA	MINIMUM (FC)	AVERAGE (FC)	RATIO - MAX TO MIN	RATIO - AVG TO MIN
BLDG H	0.18	0.93	74.17	5.17
BLUFF LOT	0.22	0.71	7.55	3.23
CUB FIRE LN	0.16	1.07	21.50	6.69
S CUB/N LAB	0.28	1.17	15.61	4.18
E OF LAB	0.14	0.64	23.14	4.57
E OF CUB	0.13	1.09	37.85	8.38
LAB/CUB LOT	0.17	0.85	20.94	5.00
N LOT	0.15	0.59	6.53	3.93
NE LOT	0.14	0.83	13.71	5.93
NE ENTR.	0.20	0.72	8.45	3.60
NW ENTR. RD	0.33	0.86	3.67	2.61
NW LOT	0.18	0.85	10.11	4.72
SE OF N LOT	0.34	1.00	6.15	2.94
S ENTR.	0.20	0.46	3.90	2.30

LUMINAIRE SCHEDULE

LETTER	SYM	QTY	MFG	CATALOG #	DIST	WATTS	VOLTAGE	HEIGHT	MA LENGTH	CONFIG
A		57	LITHONIA LIGHTING	KAD LED 20C 530 30K R2 MVOLT	LITHONIA LIGHTING KAD-LED LED CONTOUR SOFT SQUARE FULL CUTOFF	35	UNIVERSAL (120-277V)	30FT	N/A	SINGLE
B		59	LITHONIA LIGHTING	KAD LED 20C 530 30K R2 MVOLT	LITHONIA LIGHTING KAD-LED LED CONTOUR SOFT SQUARE FULL CUTOFF	35	UNIVERSAL (120-277V)	30FT	N/A	TWIN
C		17	LIGMAN LIGHTING	JE-10571-T3-8 030	LIGMAN LIGHTING LED BOLLARD MOUNTED ROUND FULL CUTOFF	11	220-240V	3FT	N/A	SINGLE
D		20	ACUITY BRANDS	ARC2 LED P4 40K MVOLT DMG DNAXD	ACUITY BRANDS ARC 2 LED ARCHITECTURAL WALL LUMINAIRE	30	UNIVERSAL (120-277V)	20FT	N/A	SINGLE



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SHEET TITLE:
PHOTOMETRIC PLAN

SHEET:
C2.11B

JOB NO. **2250180.00**

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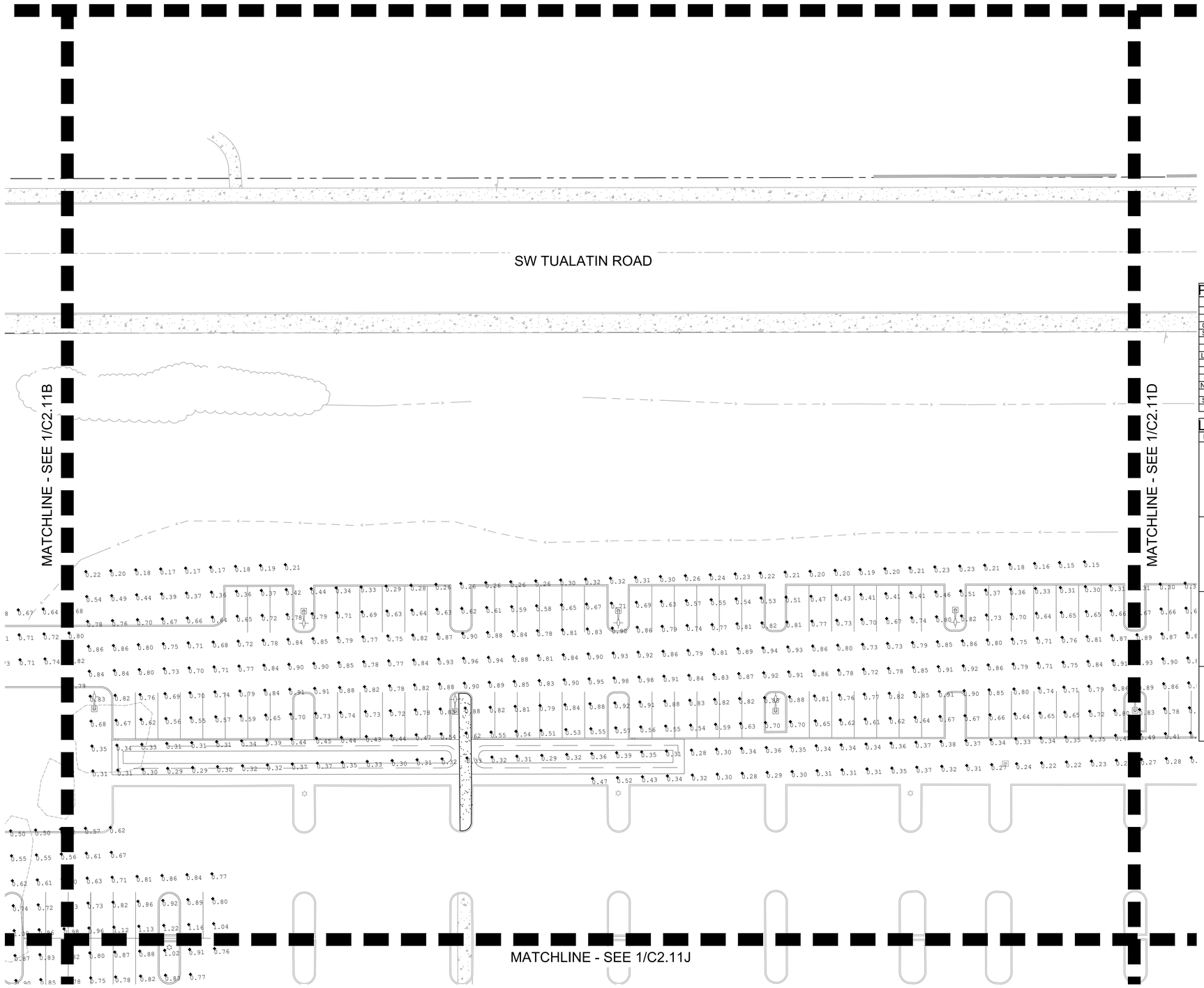

PHOTOMETRIC CALCULATIONS

AREA	MINIMUM (FC)	AVERAGE (FC)	RATIO - MAX TO MIN	RATIO - AVG TO MIN
BLDG H	0.18	0.93	74.17	5.17
BLUFF LOT	0.22	0.71	7.55	3.23
CUB FIRE LN	0.16	1.07	21.50	6.69
S CUB/N LAB	0.28	1.17	15.61	4.18
E OF LAB	0.14	0.64	23.14	4.57
E OF CUB	0.13	1.09	37.85	8.38
LAB/CUB LOT	0.17	0.85	20.94	5.00
N LOT	0.15	0.59	6.53	3.93
NE LOT	0.14	0.83	13.71	5.93
NE ENTR.	0.20	0.72	8.45	3.60
NW ENTR. RD	0.33	0.86	3.67	2.61
NW LOT	0.18	0.85	10.11	4.72
SE OF N LOT	0.34	1.00	6.15	2.94
S ENTR.	0.20	0.46	3.90	2.30

LUMINAIRE SCHEDULE

LETTER	SYM	QTY	MFG	CATALOG #	DIST	WATTS	VOLTAGE	HEIGHT	MA LENGTH	CONFIG
A		57	LITHONIA LIGHTING	KAD LED 20C 530 30K R2 MVOLT	LITHONIA LIGHTING KAD-LED LED CONTOUR SOFT SQUARE FULL CUTOFF	35	UNIVERSAL (120-277V)	30FT	N/A	SINGLE
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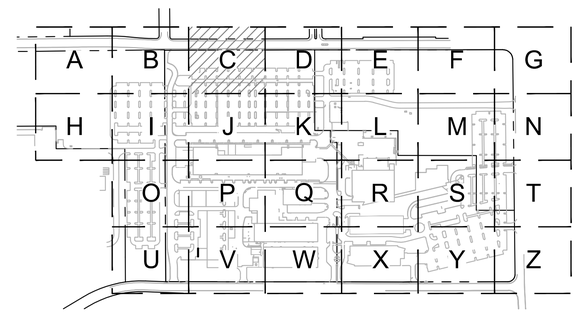

1 C2.11C

20 0 10 20 40 80

(IN FEET)
1 inch = 20 ft.

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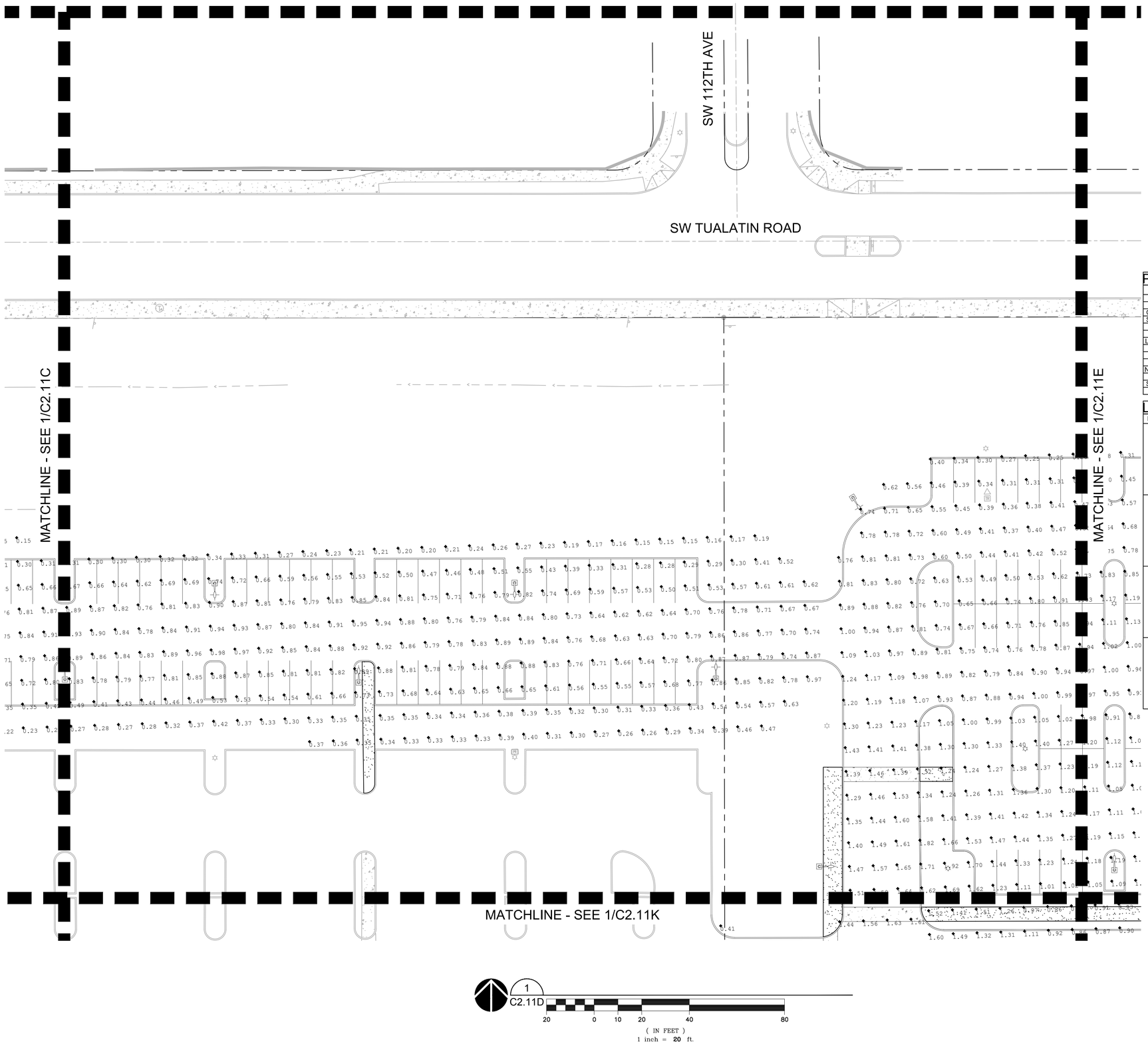

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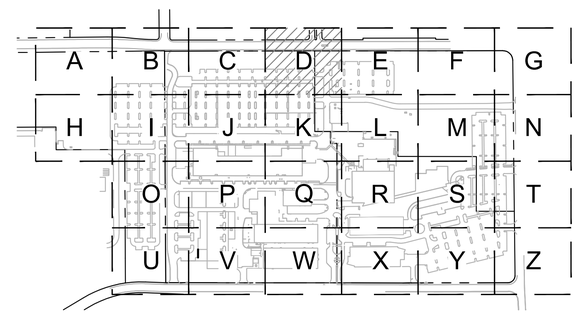

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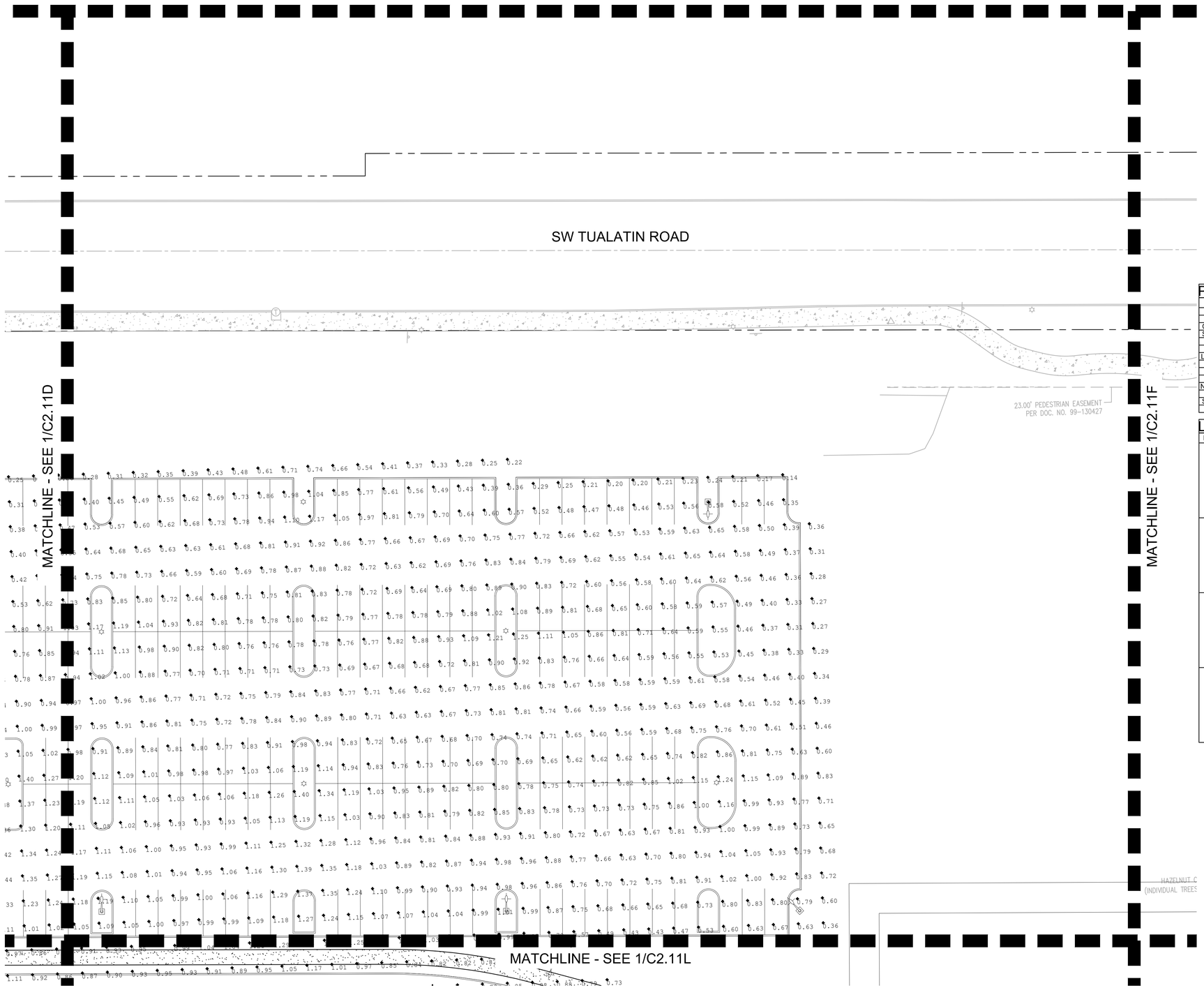

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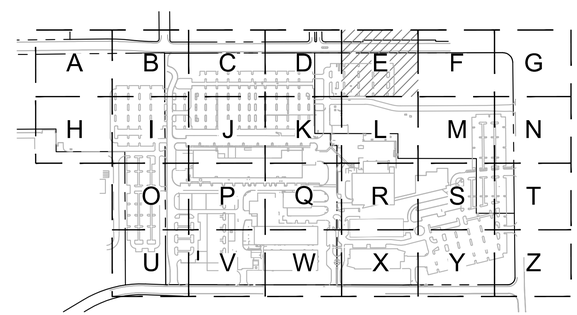

1 C2.11E

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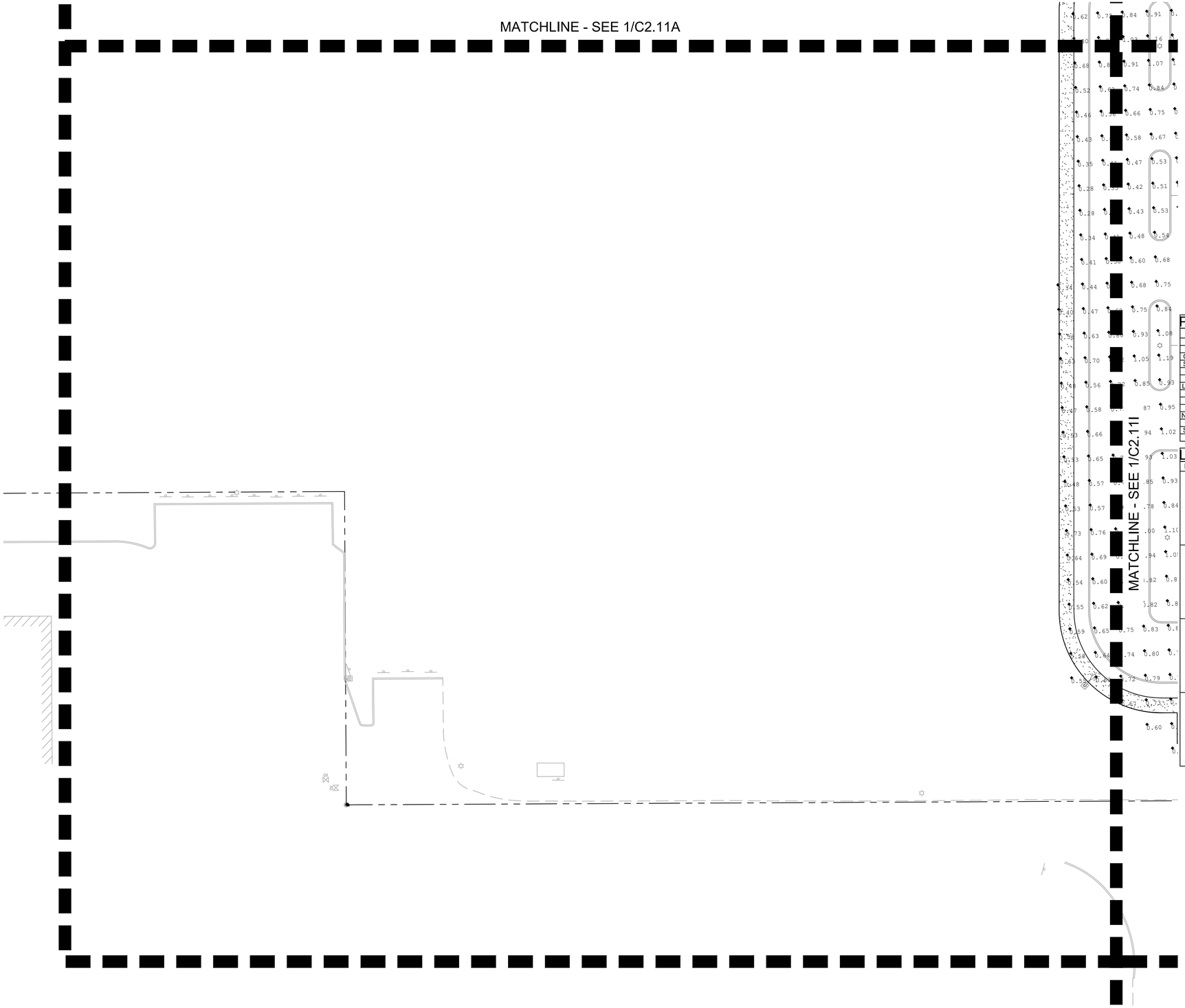

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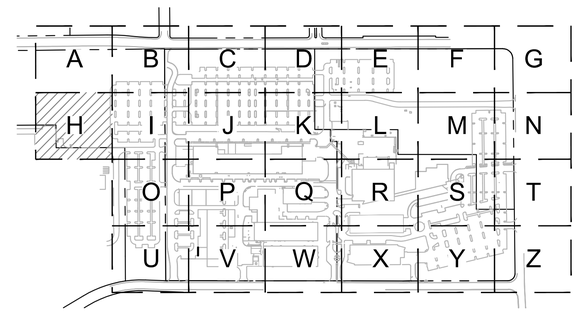

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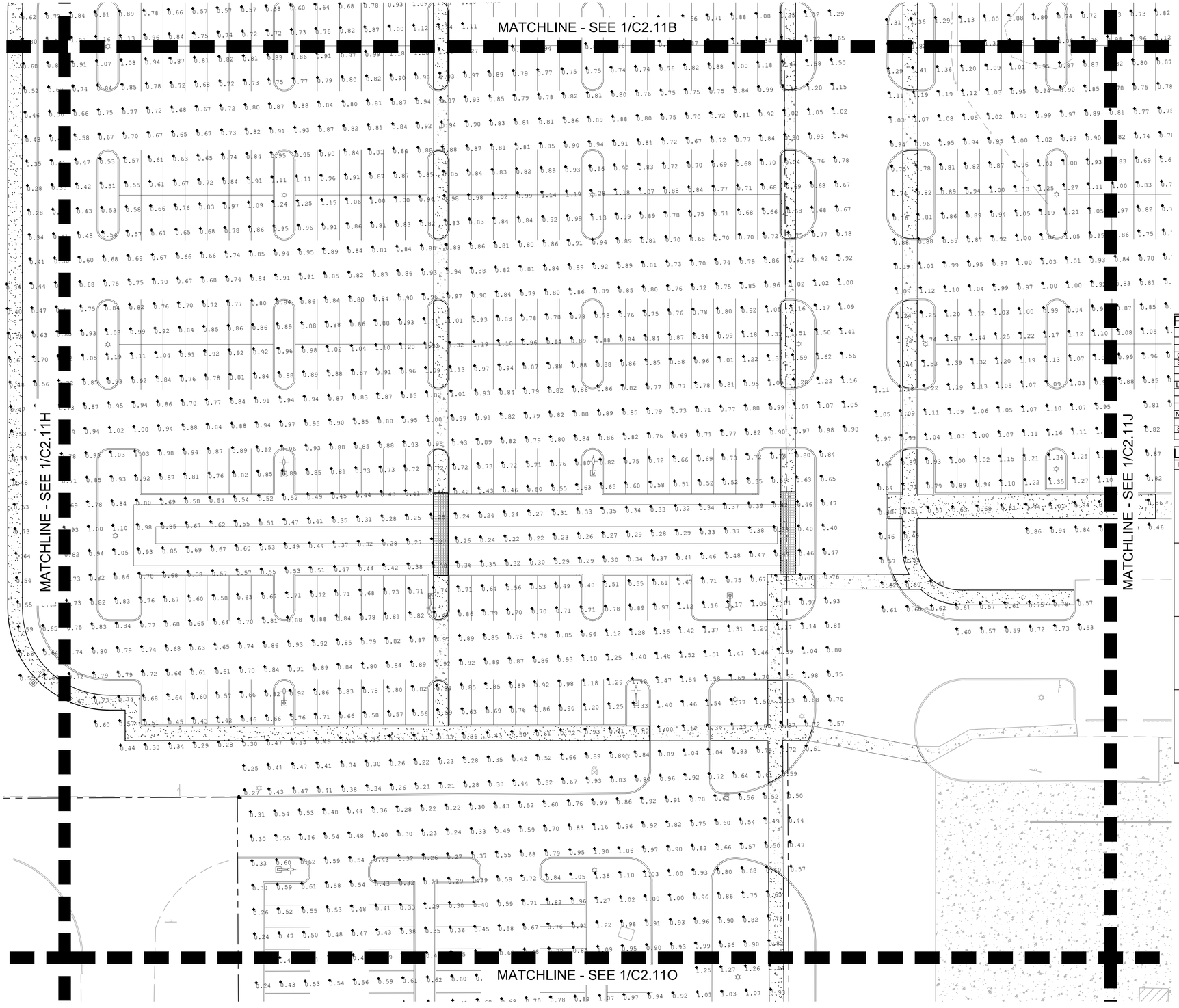
2250180000 \\GRP.MCK\PROJECTS\PROJECTS\225018000\DRAWINGS\CIVIL\TUX\180- C2.11 PHOTOMETRIC PLAN.DWG,C2.11H NKB 07/20/25 14:50 1:20



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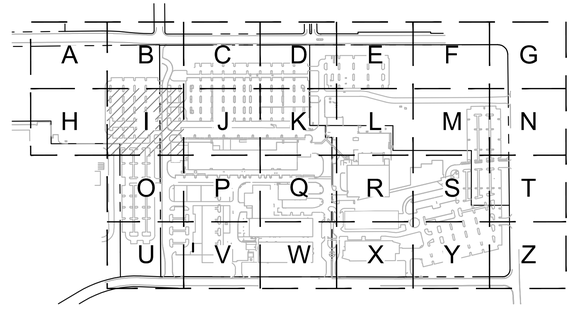

1 C2.11I

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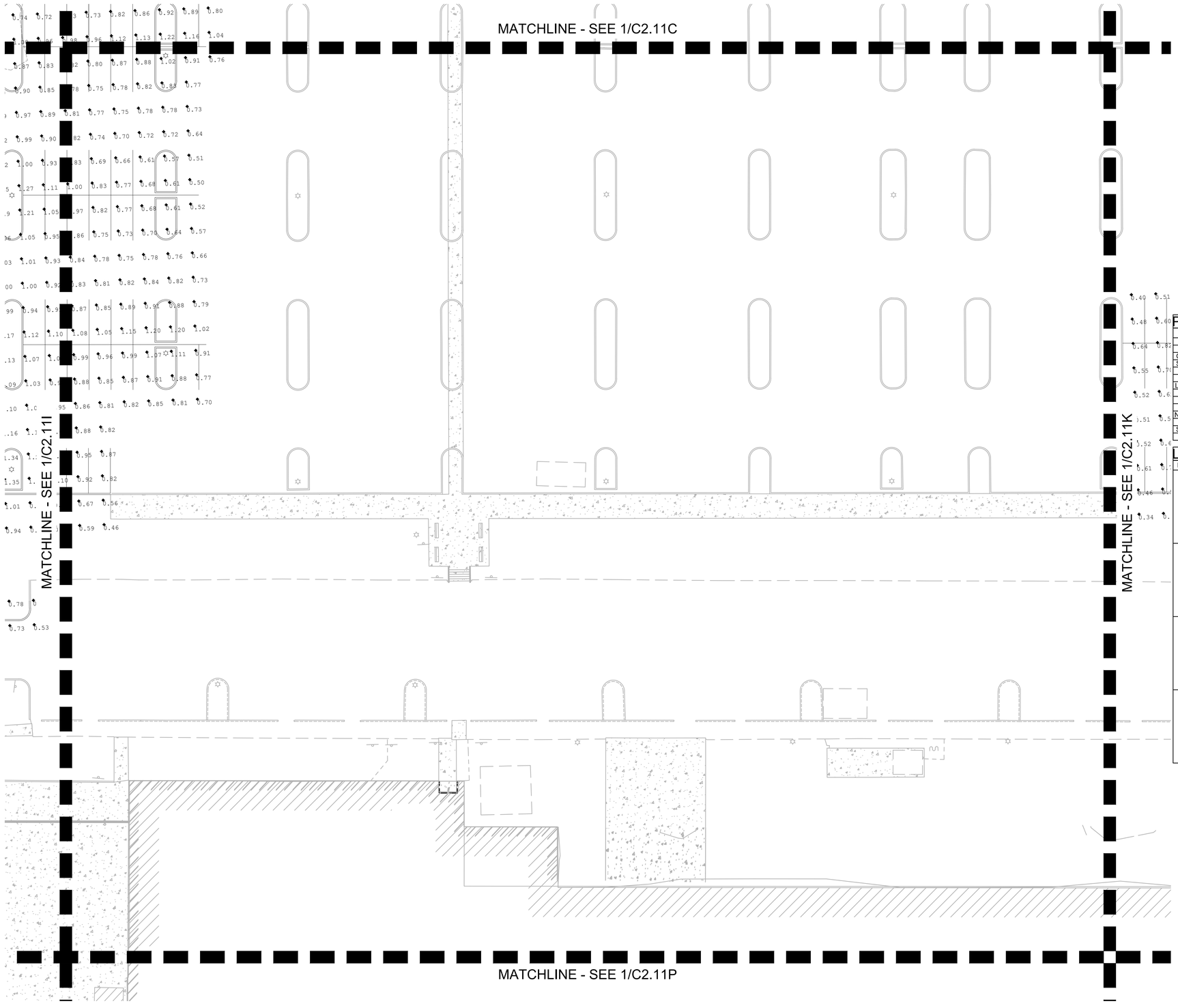

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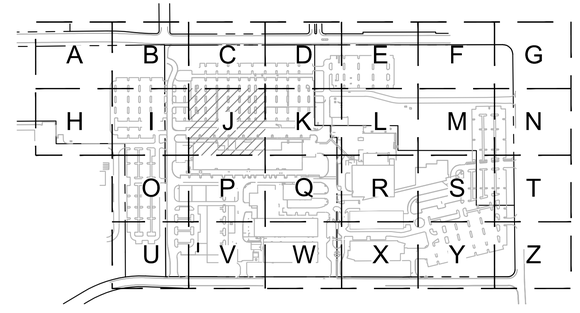

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REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:

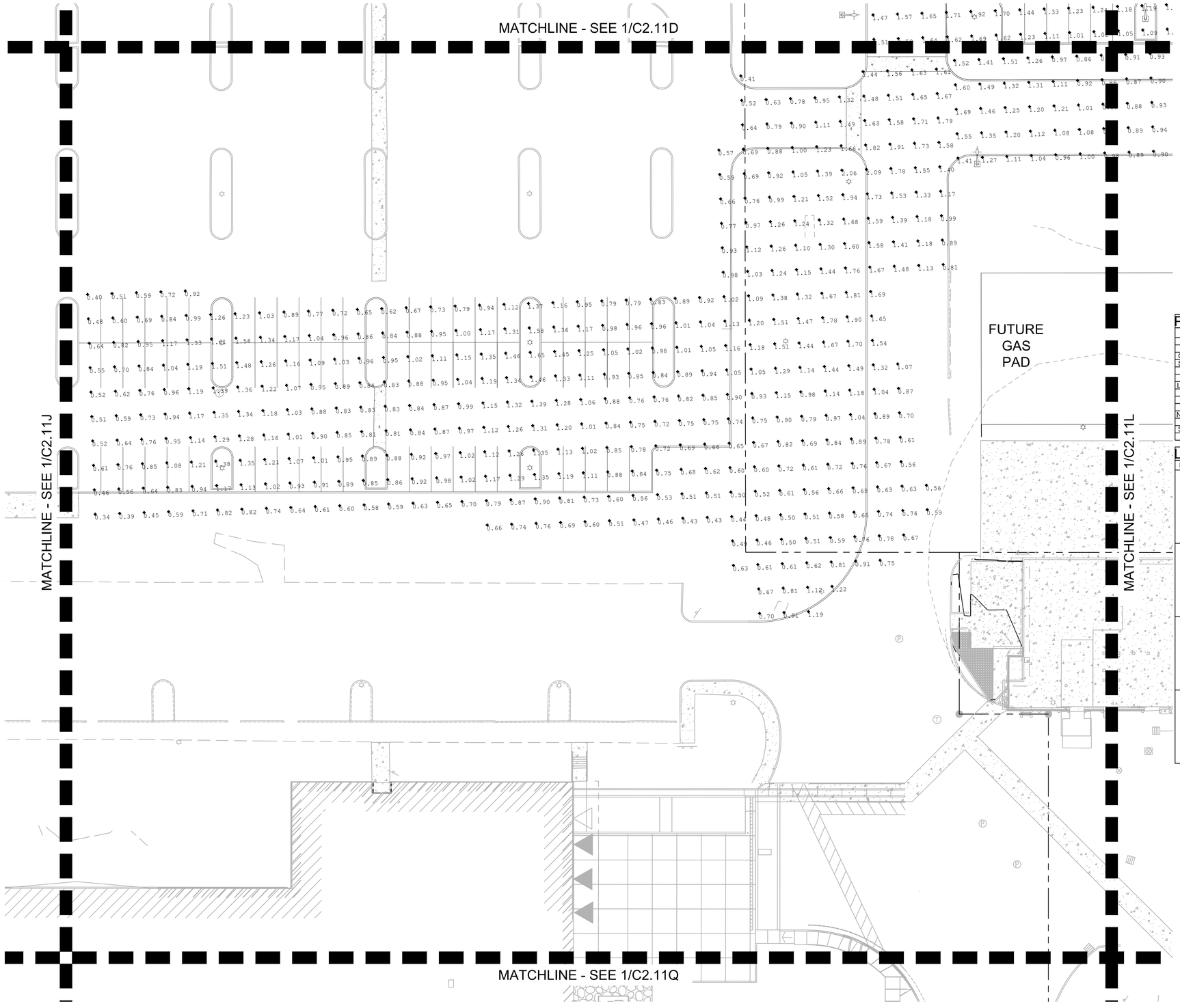
PHOTOMETRIC PLAN

SHEET:

C2.11J

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2

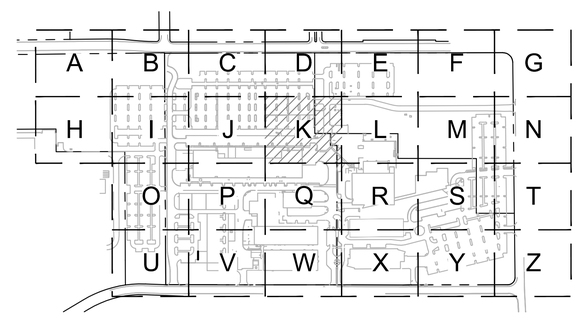


PHOTOMETRIC CALCULATIONS

AREA	MINIMUM (FC)	AVERAGE (FC)	RATIO - MAX TO MIN	RATIO - AVG TO MIN
BLDG H	0.18	0.93	74.17	5.17
BLUFF LOT	0.22	0.71	7.55	3.23
CUB FIRE LN	0.16	1.07	21.50	6.69
S CUB/N LAB	0.28	1.17	15.61	4.18
E OF LAB	0.14	0.64	23.14	4.57
E OF CUB	0.13	1.09	37.85	8.38
LAB/CUB LOT	0.17	0.85	20.94	5.00
N LOT	0.15	0.59	6.53	3.93
NE LOT	0.14	0.83	13.71	5.93
NE ENTR.	0.20	0.72	8.45	3.60
NW ENTR. RD	0.33	0.86	3.67	2.61
NW LOT	0.18	0.85	10.11	4.72
SE OF N LOT	0.34	1.00	6.15	2.94
S ENTR.	0.20	0.46	3.90	2.30

LUMINAIRE SCHEDULE

LETTER	SYM	QTY	MFG	CATALOG #	DIST	WATTS	VOLTAGE	HEIGHT	MA LENGTH	CONFIG
A		57	LITHONIA LIGHTING	KAD LED 20C 530 30K R2 MVOLT	LITHONIA LIGHTING KAD-LED LED CONTOUR SOFT SQUARE FULL CUTOFF	35	UNIVERSAL (120-277V)	30FT	N/A	SINGLE
B		59	LITHONIA LIGHTING	KAD LED 20C 530 30K R2 MVOLT	LITHONIA LIGHTING KAD-LED LED CONTOUR SOFT SQUARE FULL CUTOFF	35	UNIVERSAL (120-277V)	30FT	N/A	TWIN
C		17	LIGMAN LIGHTING	JE-10571-T3-8 030	LIGMAN LIGHTING LED BOLLARD MOUNTED ROUND FULL CUTOFF	11	220-240V	3FT	N/A	SINGLE
D		20	ACUITY BRANDS	ARC2 LED P4 40K MVOLT DMG DNAXD	ACUITY BRANDS ARC 2 LED ARCHITECTURAL WALL LUMINAIRE	30	UNIVERSAL (120-277V)	20FT	N/A	SINGLE



1 C2.11K

20 0 10 20 40 80

(IN FEET)
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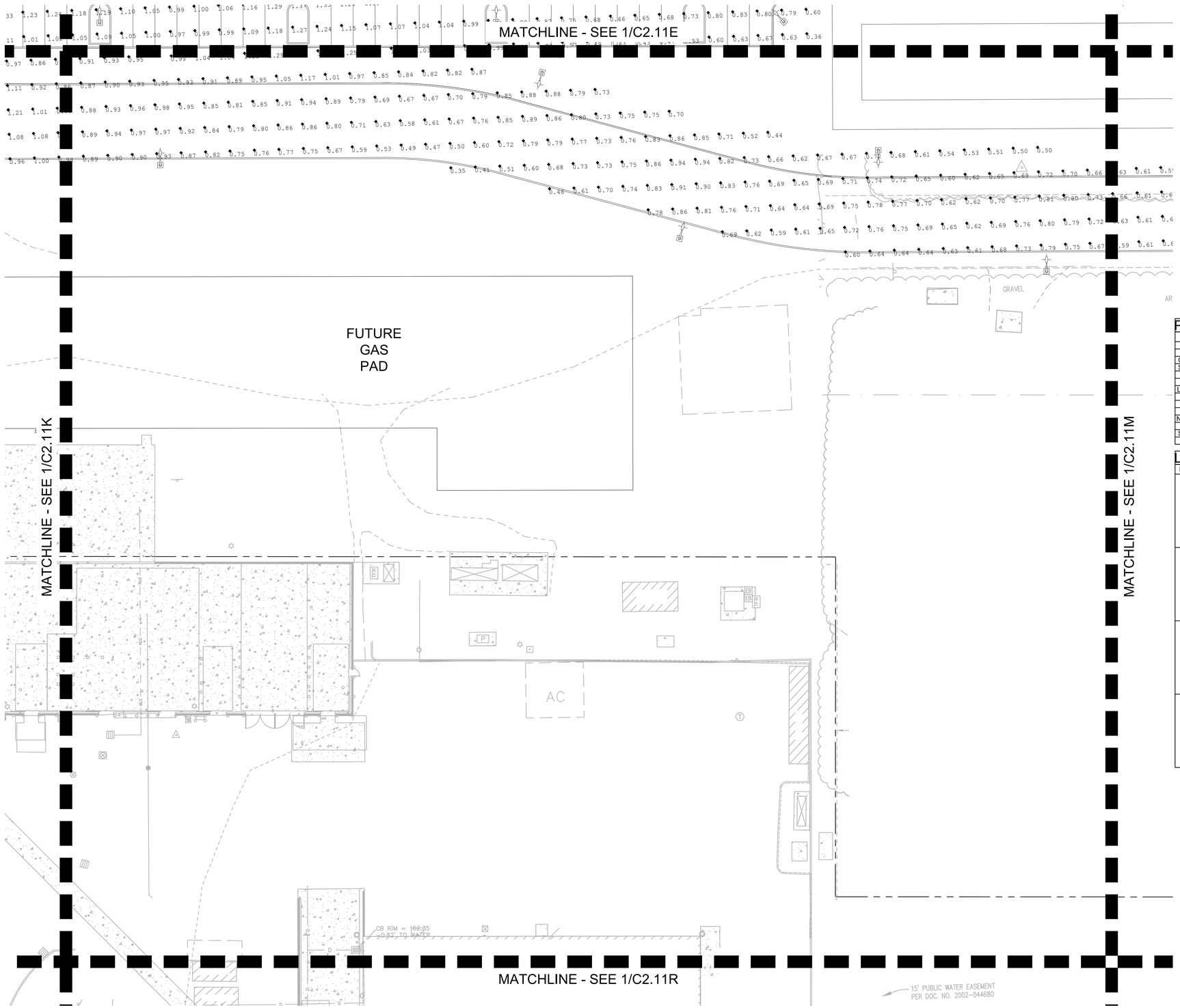
SHEET:
C2.11K

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



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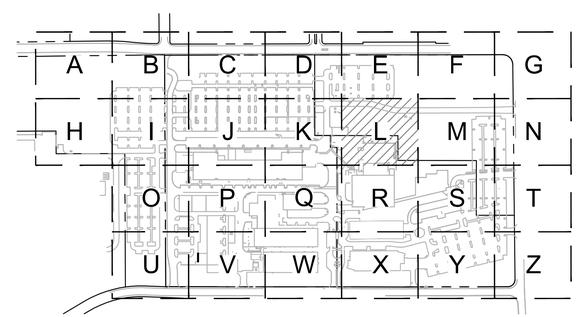

1 C2.11L

20 0 10 20 40 80

(IN FEET)
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REVISION SCHEDULE

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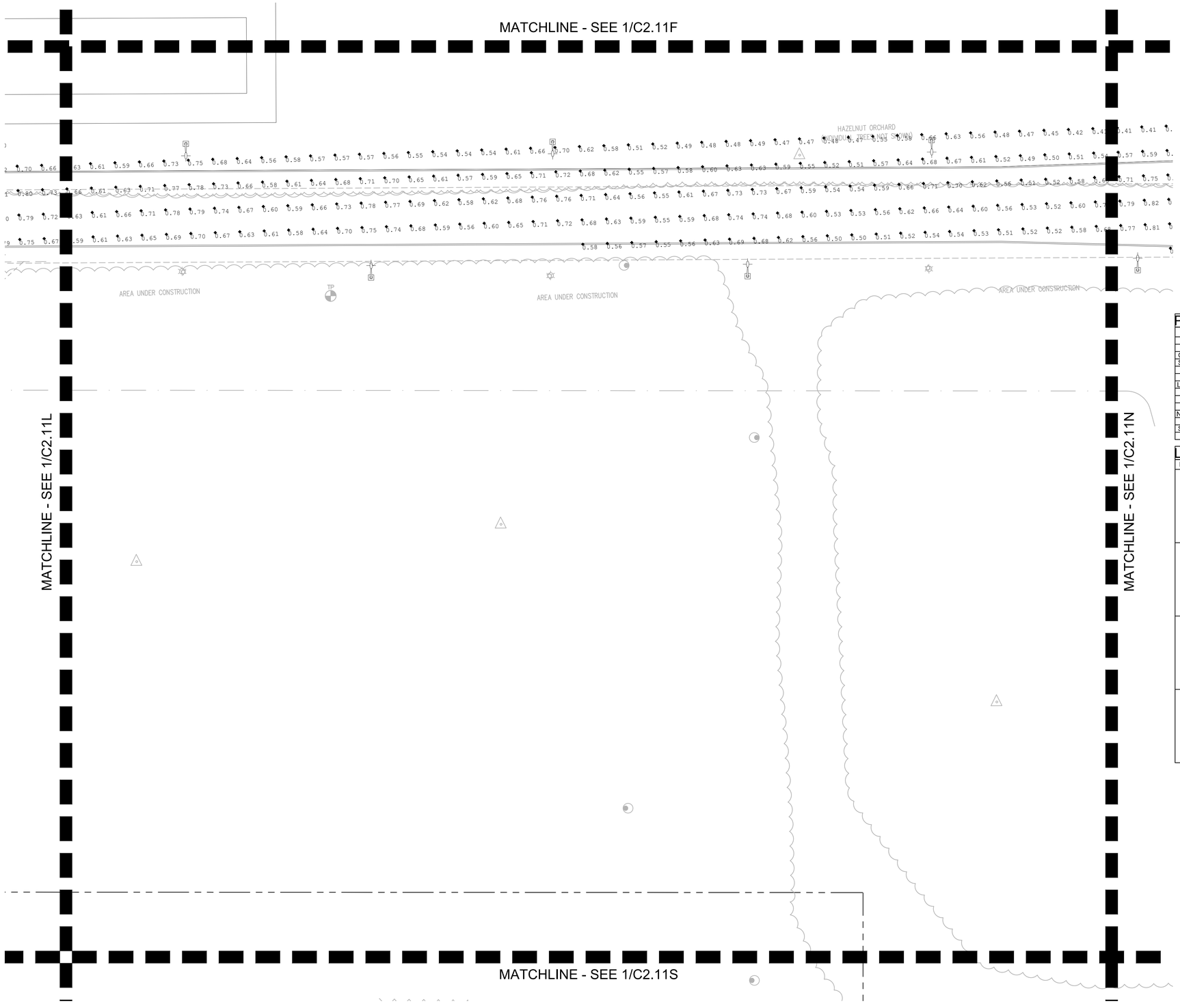
SHEET TITLE:
PHOTOMETRIC PLAN

SHEET:
C2.11L

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2

"225018000" \\GRP.MCK\PROJECTS\PROJECTS\225018000\DRAWINGS\CIVIL\TUX\180- C2.11 PHOTOMETRIC PLAN.DWG;C2.11L ADS 07/16/25 16:27 1:20



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LUMINAIRE SCHEDULE

LETTER	SYM	QTY	MFG	CATALOG #	DIST	WATTS	VOLTAGE	HEIGHT	MA LENGTH	CONFIG
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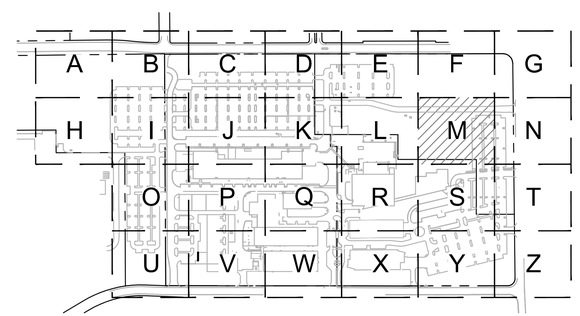

1 C2.11M

20 0 10 20 40 80

(IN FEET)

1 inch = **20** ft.

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REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:

PHOTOMETRIC PLAN

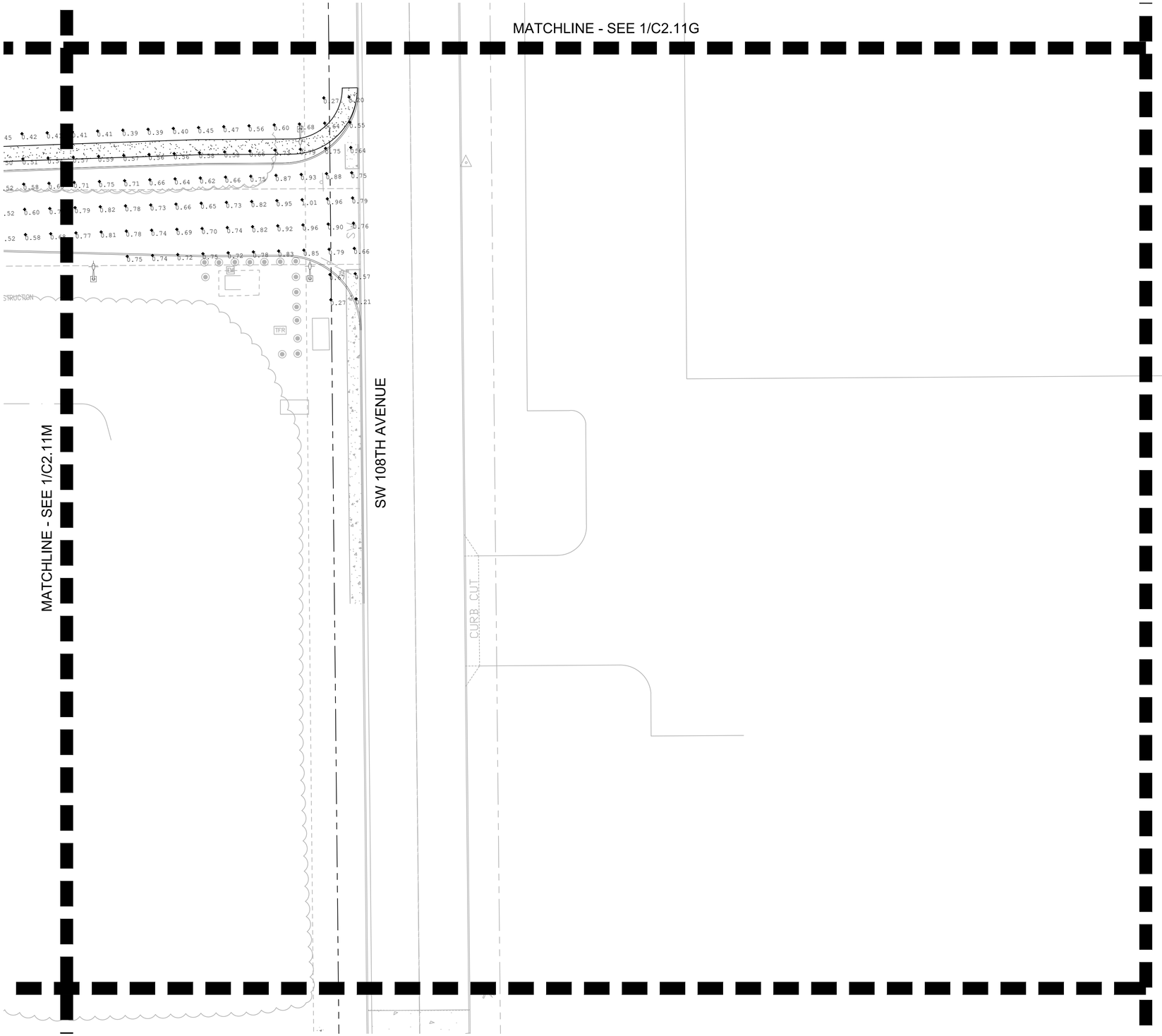
SHEET:

C2.11M

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2

"2250180000" \\GRP.MCK\PROJECTS\PROJECTS\225018000\DRAWINGS\CIVIL\TUX\180- C2.11 PHOTOMETRIC PLAN.DWG:C2.11M ZMP 07/16/25 09:16 1:20



1 C2.11N

20 0 10 20 40 80

(IN FEET)
1 inch = **20** ft.

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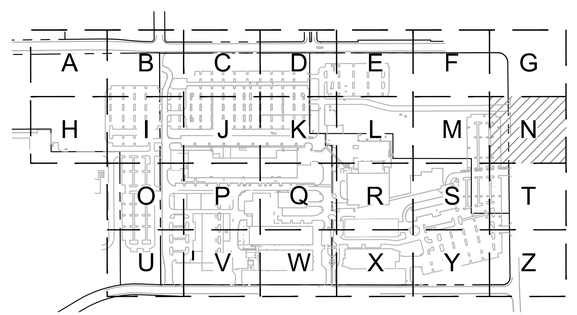

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REVISION SCHEDULE

Delta	Issued As	Issue Date

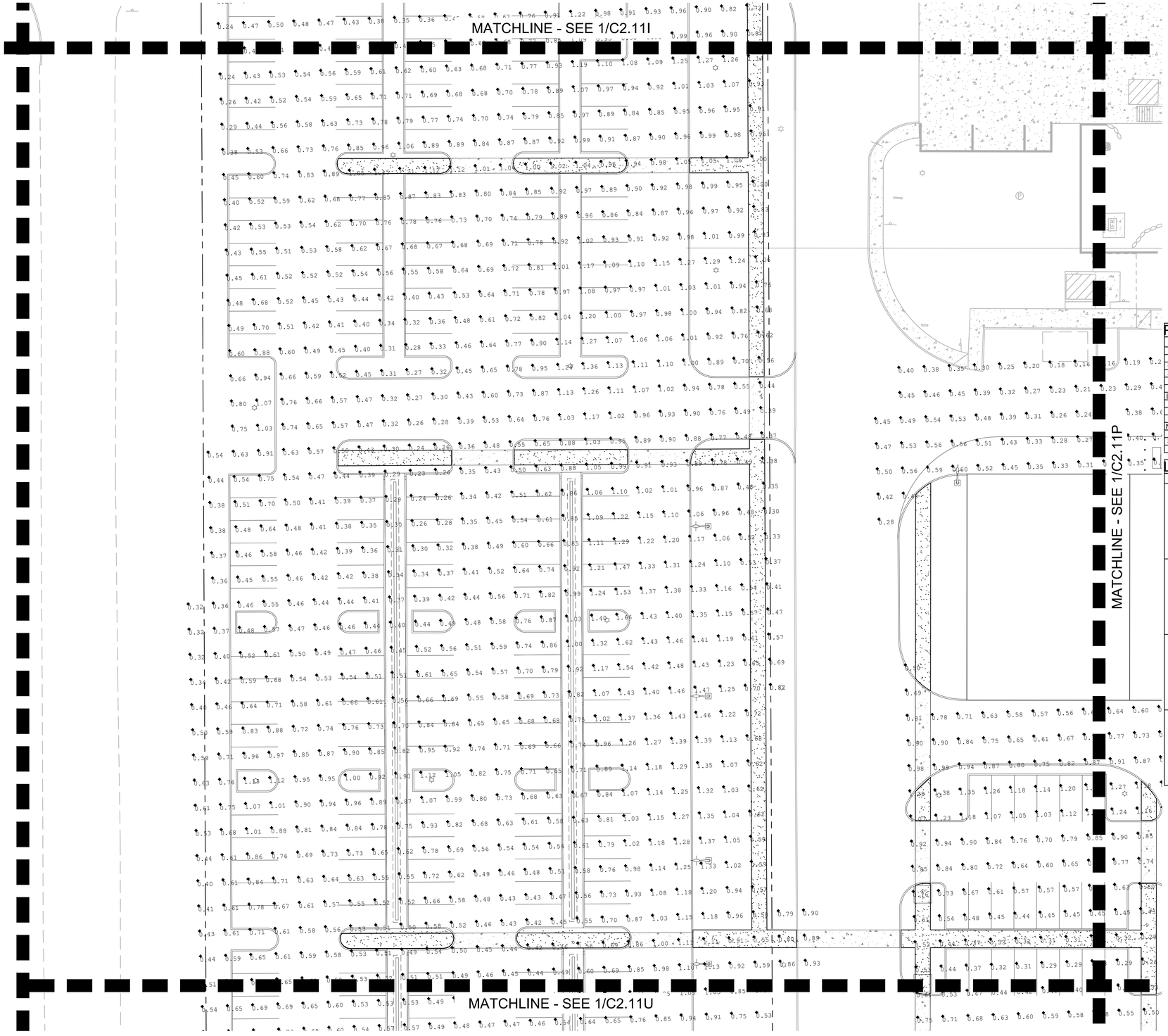
SHEET TITLE:
PHOTOMETRIC PLAN

SHEET:
C2.11N

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2

2250180000 \\GRP.MCK\PROJECTS\PROJECTS\2250180000\DRAWINGS\CIVIL\TUX\180- C2.11 PHOTOMETRIC PLAN.DWG:C2.11N ZMP 07/15/25 07:12 1:20



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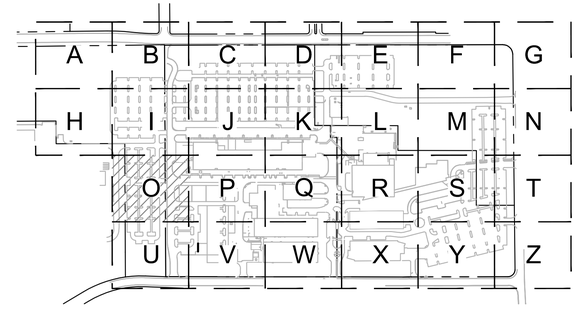

1 C2.11O

20 0 10 20 40 80

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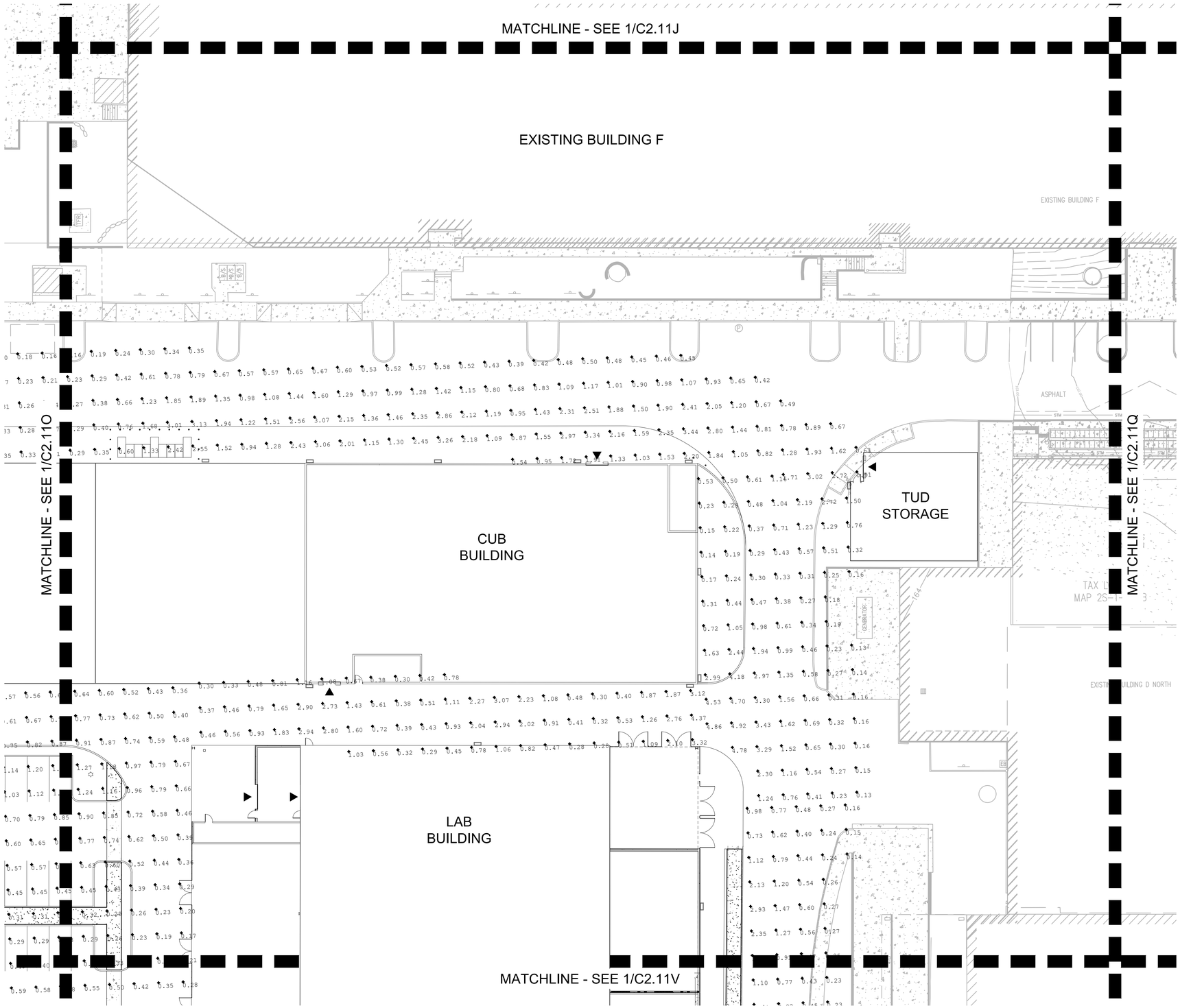
2250180000 \\GRP.MCK\PROJECTS\PROJECTS\225018000\DRAWINGS\CIVIL\TUX\180- C2.11 PHOTOMETRIC PLAN.DWG;C2.11O ADS 07/11/25 09:41 1:20



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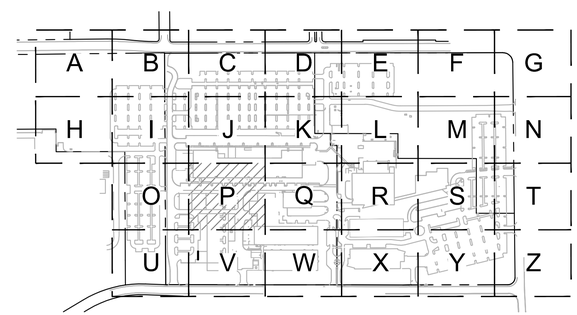

1 C2.11P

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SHEET TITLE:

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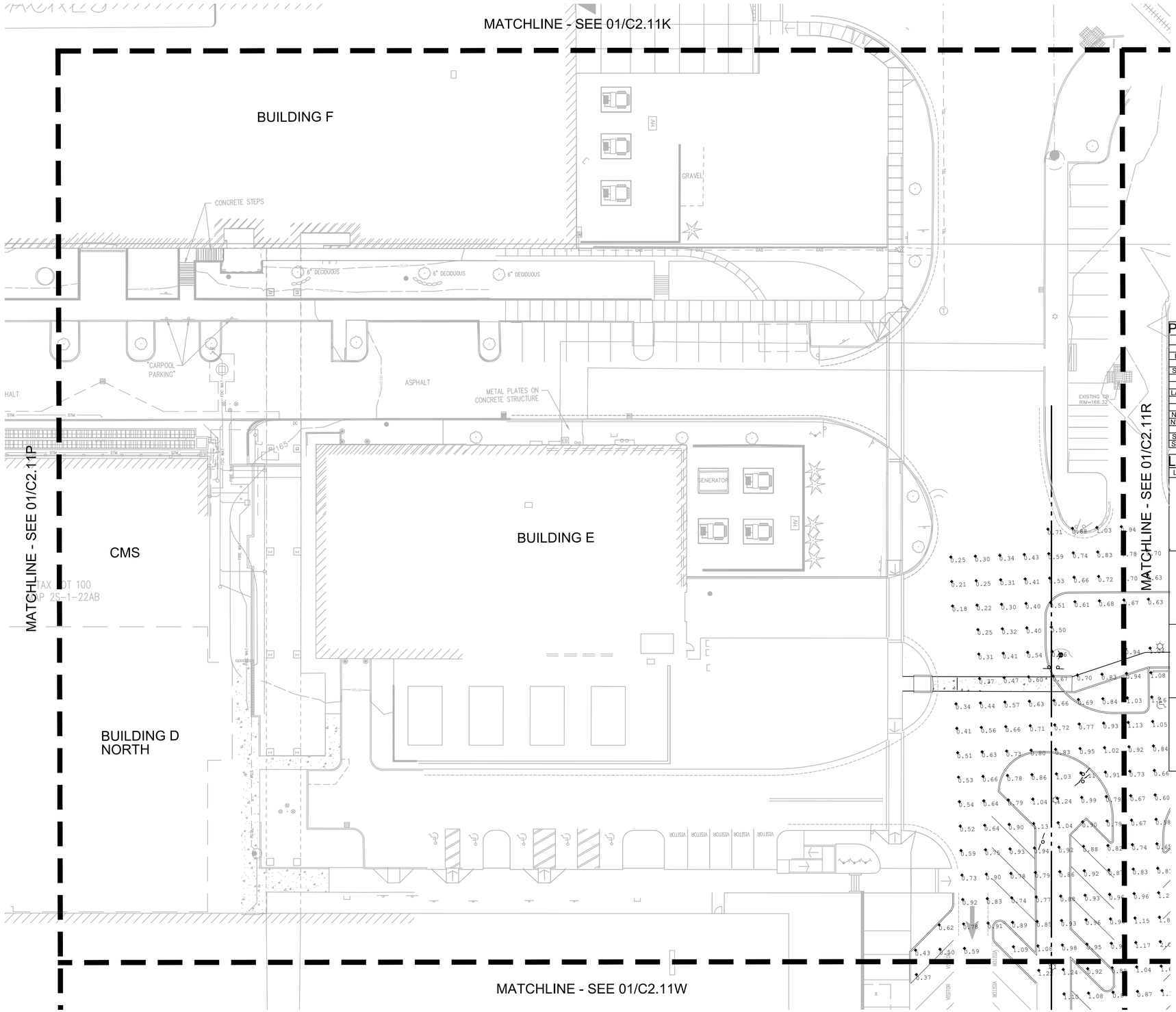
SHEET:

C2.11P

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2

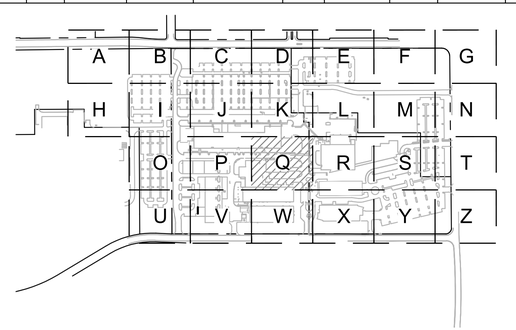


PHOTOMETRIC CALCULATIONS

AREA	MINIMUM (FC)	AVERAGE (FC)	RATIO - MAX TO MIN	RATIO - AVG TO MIN
BLDG H	0.18	0.93	74.17	5.17
BLUFF LOT	0.22	0.71	7.55	3.23
N OF CUB	0.16	1.07	21.50	6.69
S CUB/N LAB	0.28	1.17	15.61	4.18
E OF LAB	0.14	0.64	23.14	4.57
E OF CUB	0.13	1.09	37.85	8.38
LAB/CUB LOT	0.17	0.85	20.94	5.00
N LOT	0.15	0.59	6.53	3.93
NE LOT	0.14	0.83	13.71	5.93
NE ENTR. RD	0.20	0.72	8.45	3.60
NW ENTR. RD	0.33	0.86	3.67	2.61
NW LOT	0.18	0.85	10.11	4.72
SE OF N LOT	0.34	1.00	6.15	2.94
S ENTRANCE	0.20	0.46	3.90	2.30

LUMINAIRE SCHEDULE

LETTER	SYM	QTY	MFG	CATALOG #	DIST	WATTS	VOLTAGE	HEIGHT	MA LENGTH	CONFIG
A		62	LITHONIA LIGHTING	KAD LED 20C 530 30K R2 MVOLT	LITHONIA LIGHTING KAD-LED LED CONTOUR SOFT SQUARE FULL CUTOFF	35	UNIVERSAL (120-277V)	30FT	N/A	SINGLE
B		58	LITHONIA LIGHTING	KAD LED 20C 530 30K R2 MVOLT	LITHONIA LIGHTING KAD-LED LED CONTOUR SOFT SQUARE FULL CUTOFF	35	UNIVERSAL (120-277V)	30FT	N/A	TWIN
C		17	LIGMAN LIGHTING	JE-10571-T3-8 030	LIGMAN LIGHTING LED BOLLARD MOUNTED ROUND FULL CUTOFF	11	220-240V	3FT	N/A	SINGLE
D		20	ACUITY BRANDS	ARC2 LED P4 40K MVOLT DMG DNAXD	ACUITY BRANDS ARC 2 LED ARCHITECTURAL WALL LUMINAIRE	30	UNIVERSAL (120-277V)	20FT	N/A	SINGLE



KEY MAP
SCALE: NTS

1 C2.11Q PHOTOMETRIC PLAN

20 0 10 20 40 80
(IN FEET)
1 inch = **20** ft.

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REVISION SCHEDULE

Delta	Issued As	Issue Date

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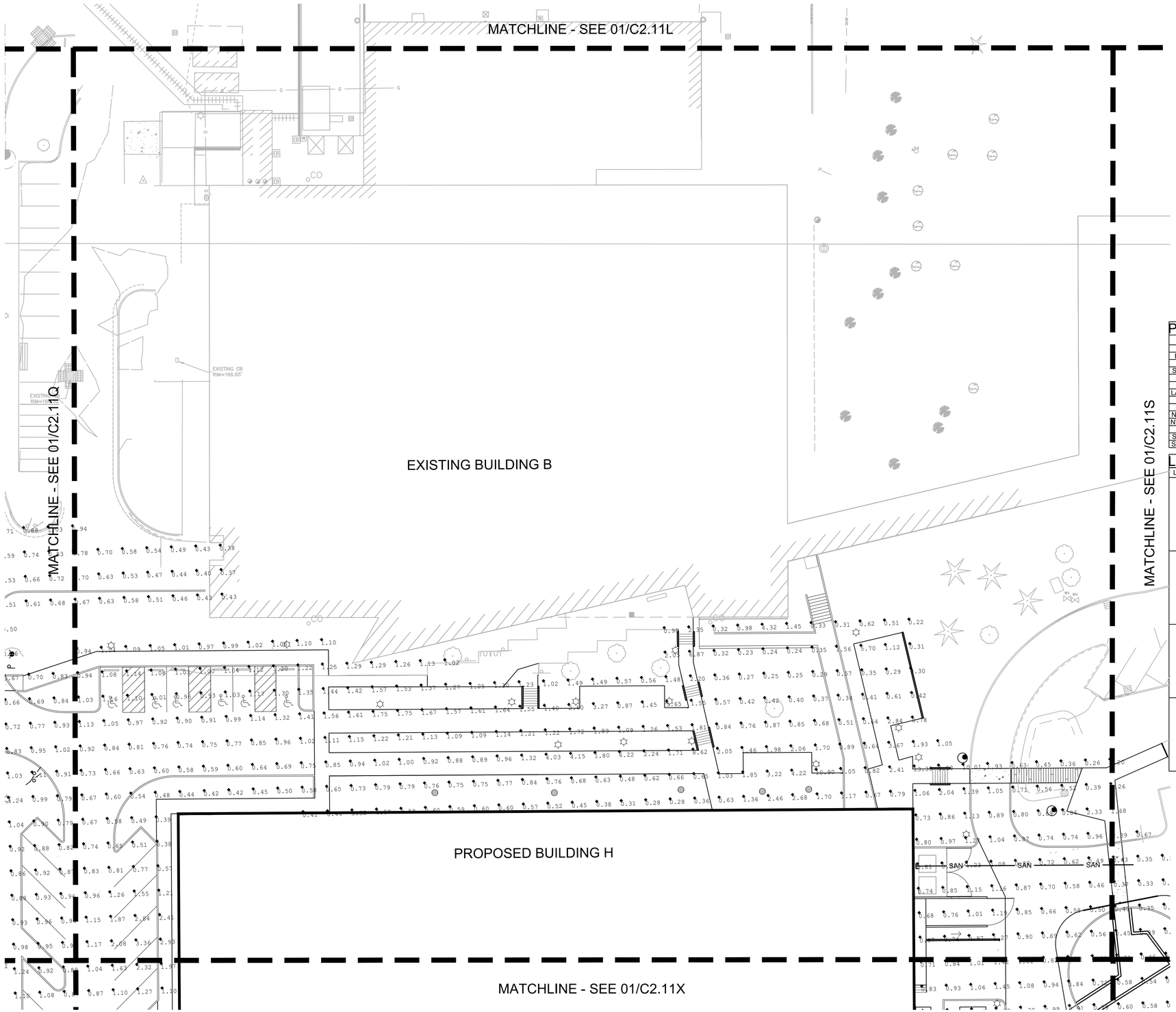
PHOTOMETRIC PLAN

SHEET:
C2.11Q

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



PHOTOMETRIC CALCULATIONS

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LUMINAIRE SCHEDULE

LETTER	SYM	QTY	MFG	CATALOG #	DIST	WATTS	VOLTAGE	HEIGHT	MA LENGTH	CONFIG
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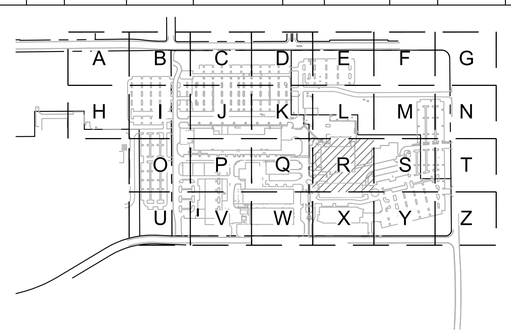

KEY MAP
SCALE: NTS

1 PHOTOMETRIC PLAN
C2.11R

20 0 10 20 40 80
(IN FEET)
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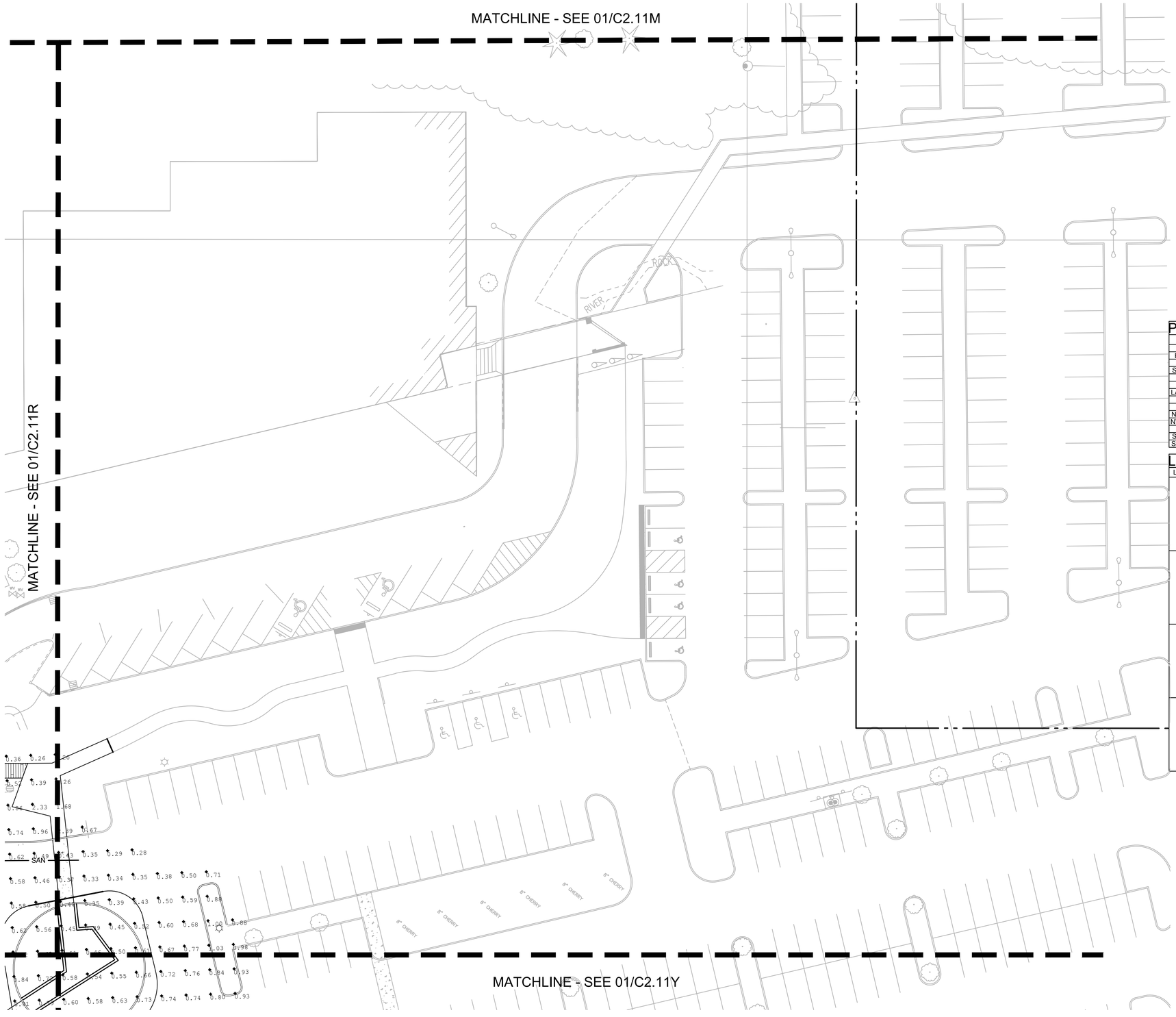
ARCHITECTURAL REVIEW 07/21/2



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LUMINAIRE SCHEDULE

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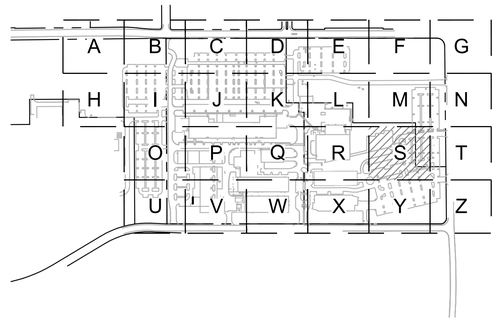

KEY MAP
SCALE: NTS

1 C2.11S PHOTOMETRIC PLAN

20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

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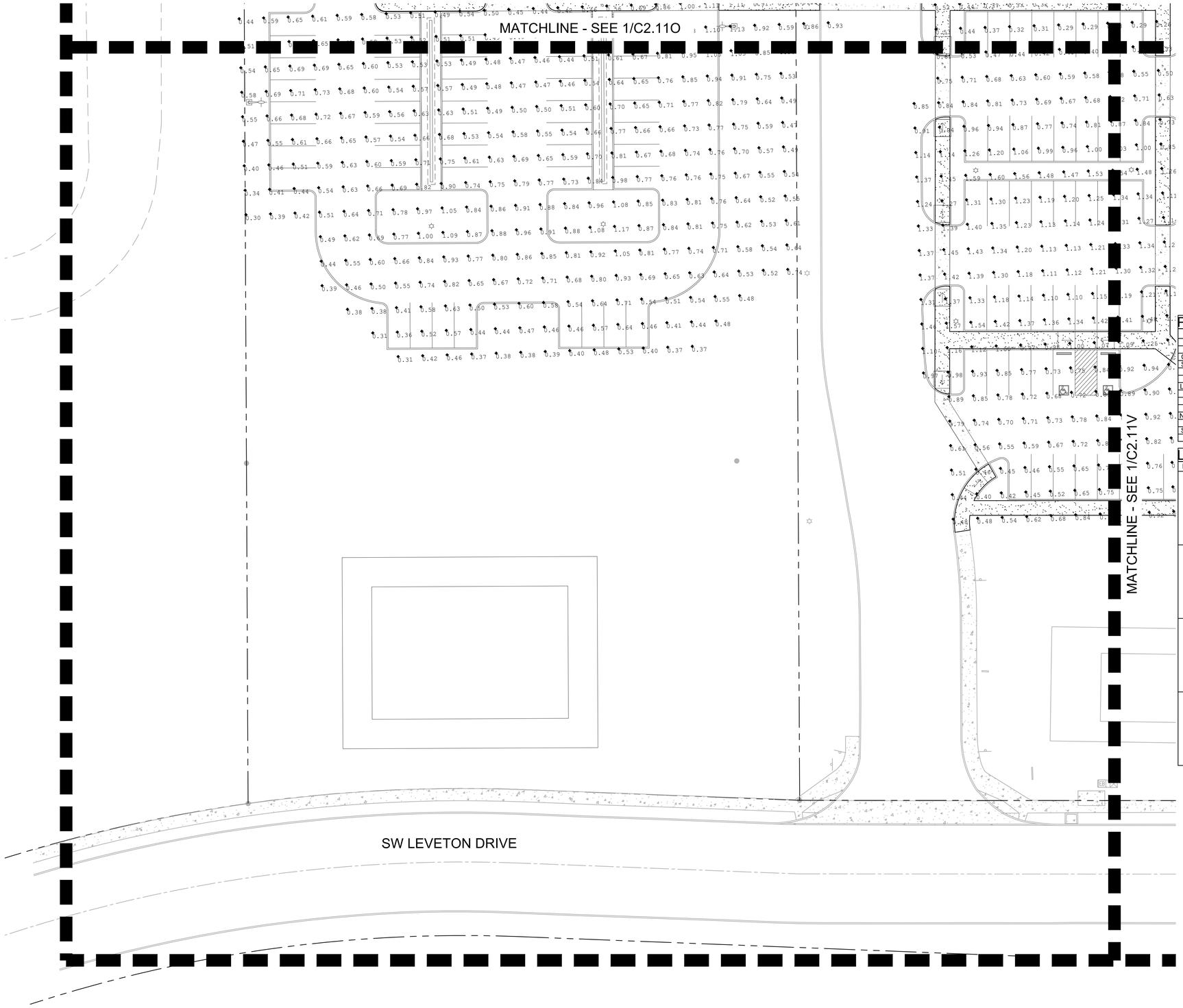
PHOTOMETRIC PLAN

SHEET:
C2.11S

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



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NW ENTR. RD	0.33	0.86	3.67	2.61
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LUMINAIRE SCHEDULE

LETTER	SYM	QTY	MFG	CATALOG #	DIST	WATTS	VOLTAGE	HEIGHT	MA LENGTH	CONFIG
A		57	LITHONIA LIGHTING	KAD LED 20C 530 30K R2 MVOLT	LITHONIA LIGHTING KAD-LED LED CONTOUR SOFT SQUARE FULL CUTOFF	35	UNIVERSAL (120-277V)	30FT	N/A	SINGLE
B		59	LITHONIA LIGHTING	KAD LED 20C 530 30K R2 MVOLT	LITHONIA LIGHTING KAD-LED LED CONTOUR SOFT SQUARE FULL CUTOFF	35	UNIVERSAL (120-277V)	30FT	N/A	TWIN
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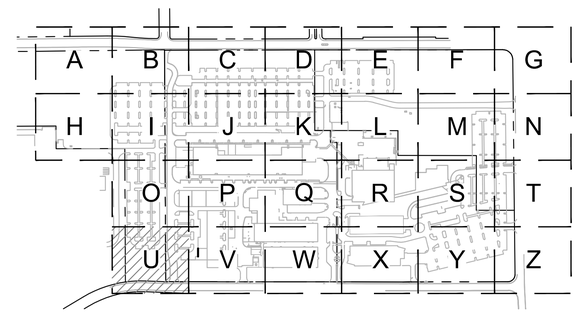

1 C2.11U

20 0 10 20 40 80

(IN FEET)
1 inch = **20** ft.

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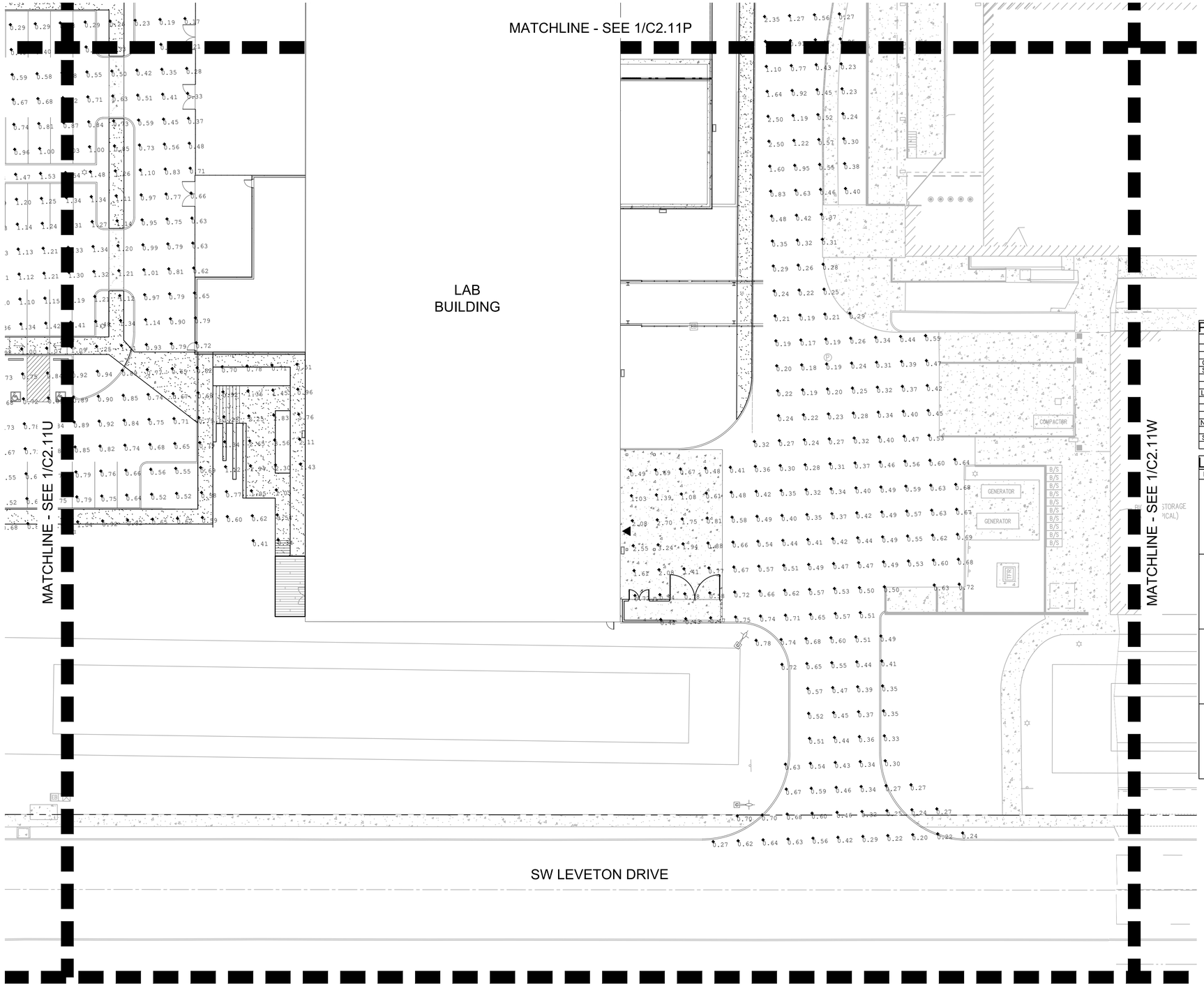
PHOTOMETRIC PLAN

SHEET:
C2.11U

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2

2250180000 \\GRP.MCK\PROJECTS\PROJECTS\2250180000\DRAWINGS\CIVIL\TUX\180- C2.11 PHOTOMETRIC PLAN.DWG,C2.11U ZMP 07/17/25 11:34 1:20



PHOTOMETRIC CALCULATIONS

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LUMINAIRE SCHEDULE

LETTER	SYM	QTY	MFG	CATALOG #	DIST	WATTS	VOLTAGE	HEIGHT	MA LENGTH	CONFIG
A		57	LITHONIA LIGHTING	KAD LED 20C 530 30K R2 MVOLT	LITHONIA LIGHTING KAD-LED LED CONTOUR SOFT SQUARE FULL CUTOFF	35	UNIVERSAL (120-277V)	30FT	N/A	SINGLE
B		59	LITHONIA LIGHTING	KAD LED 20C 530 30K R2 MVOLT	LITHONIA LIGHTING KAD-LED LED CONTOUR SOFT SQUARE FULL CUTOFF	35	UNIVERSAL (120-277V)	30FT	N/A	TWIN
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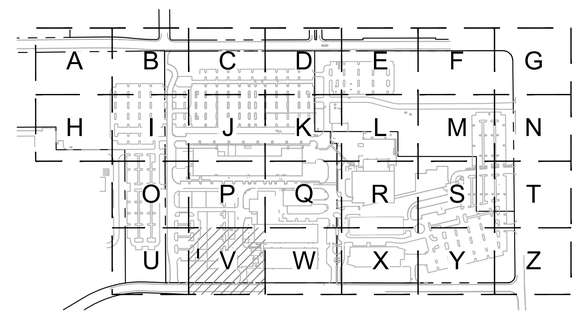

1 C2.11V

20 0 10 20 40 80

(IN FEET)
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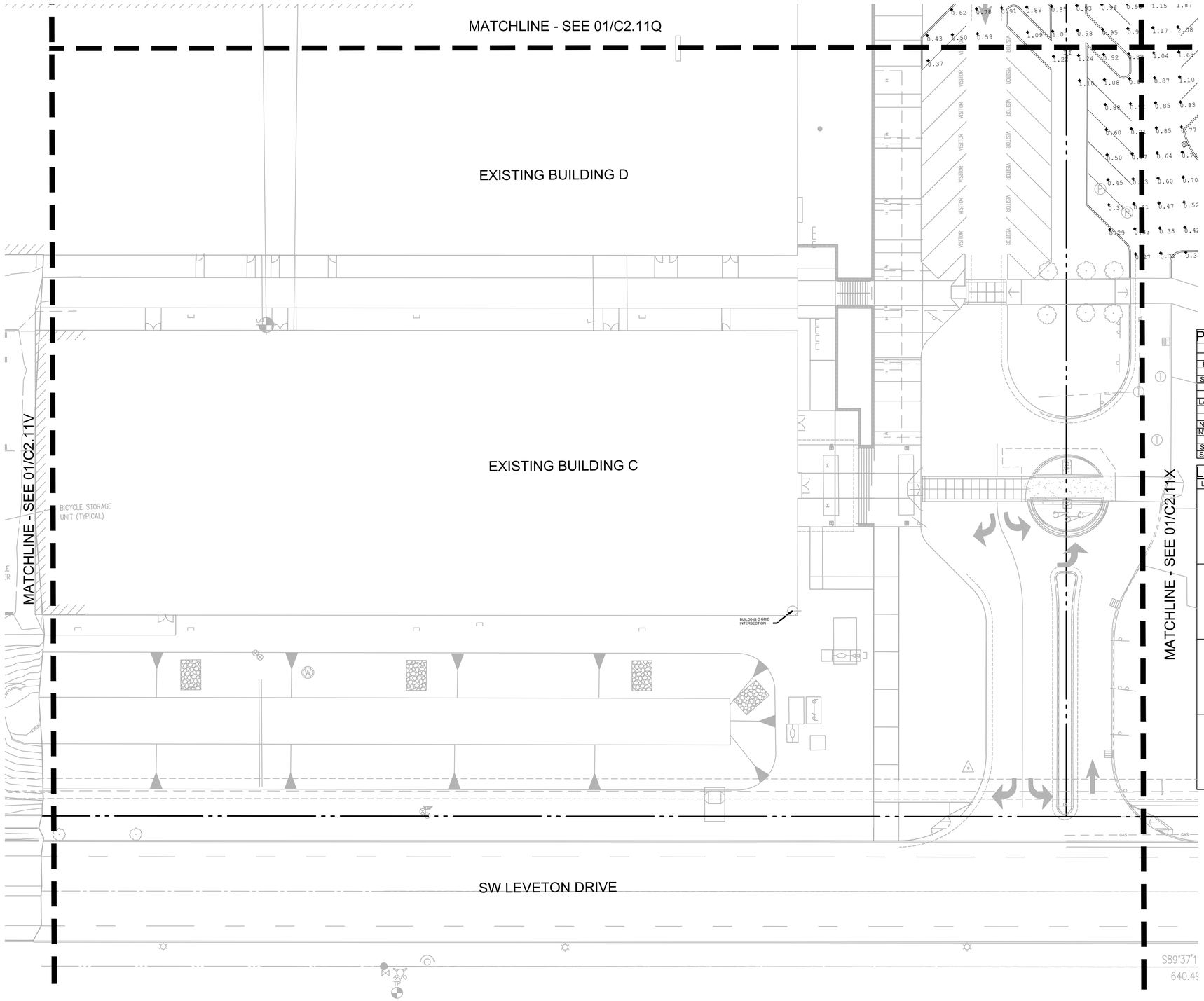
SHEET TITLE:
PHOTOMETRIC PLAN

SHEET:
C2.11V

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



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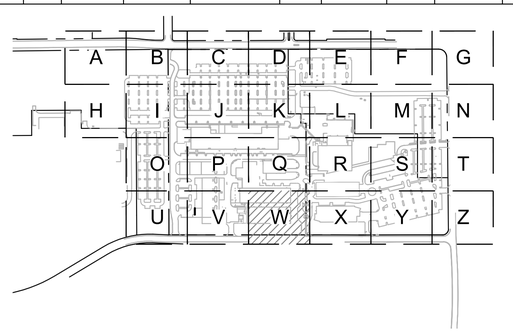

KEY MAP
SCALE: NTS

1 PHOTOMETRIC PLAN
C2.11W

20 0 10 20 40 80
(IN FEET)
1 inch = **20** ft.

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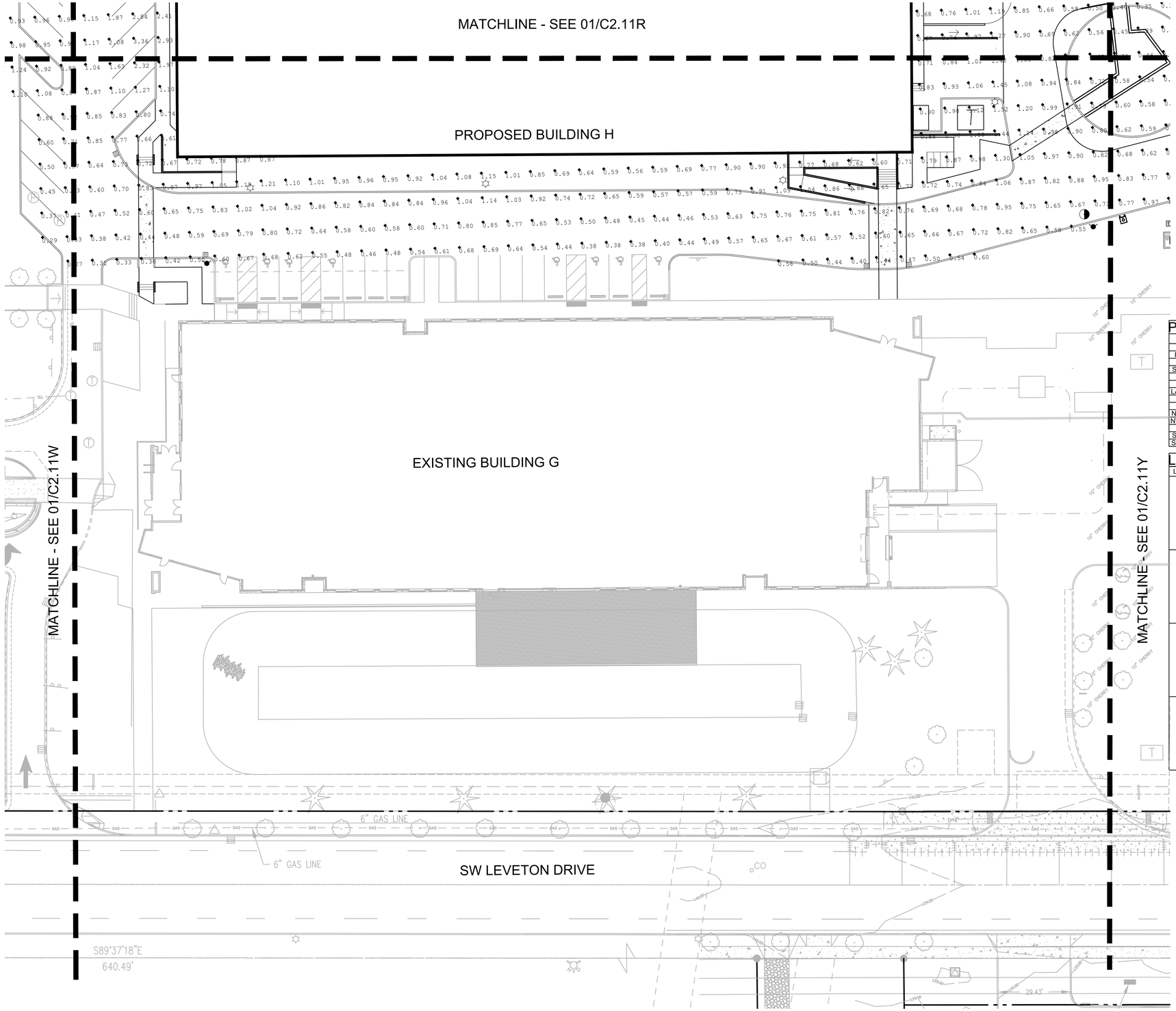
SHEET:
C2.11W

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2

"2250180" \\GRP.MCK\PROJECTS\PROJECTS\2250180\DRAWINGS\CIVIL\BLDG H\141- C2.11 PHOTOMETRIC PLAN.DWG:C2.11W ADS 07/16/25 14:27 1:1



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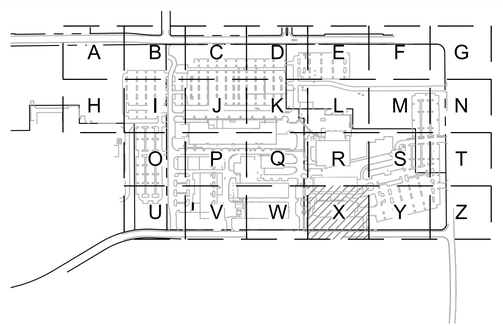
N OF CUB	0.16	1.07	21.50	6.69
S CUB/N LAB	0.28	1.17	15.61	4.18
E OF LAB	0.14	0.64	23.14	4.57
E OF CUB	0.13	1.09	37.85	8.38
LAB/CUB LOT	0.17	0.85	20.94	5.00
N LOT	0.15	0.59	6.53	3.93
NE LOT	0.14	0.83	13.71	5.93
NE ENTR. RD	0.20	0.72	8.45	3.60
NW ENTR. RD	0.33	0.86	3.67	2.61
NW LOT	0.18	0.85	10.11	4.72
SE OF N LOT	0.34	1.00	6.15	2.94
S ENTRANCE	0.20	0.46	3.90	2.30

LUMINAIRE SCHEDULE

LETTER	SYM	QTY	MFG	CATALOG #	DIST	WATTS	VOLTAGE	HEIGHT	MA LENGTH	CONFIG
A		62	LITHONIA LIGHTING	KAD LED 20C 530 30K R2 MVOLT	LITHONIA LIGHTING KAD-LED LED CONTOUR SOFT SQUARE FULL CUTOFF	35	UNIVERSAL (120-277V)	30FT	N/A	SINGLE
B		58	LITHONIA LIGHTING	KAD LED 20C 530 30K R2 MVOLT	LITHONIA LIGHTING KAD-LED LED CONTOUR SOFT SQUARE FULL CUTOFF	35	UNIVERSAL (120-277V)	30FT	N/A	TWIN
C		17	LIGMAN LIGHTING	JE-10571-T3-8-030	LIGMAN LIGHTING LED BOLLARD MOUNTED ROUND FULL CUTOFF	11	220-240V	3FT	N/A	SINGLE
D		20	ACUITY BRANDS	ARC2 LED P4 40K MVOLT DMG DNAXD	ACUITY BRANDS ARC 2 LED ARCHITECTURAL WALL LUMINAIRE	30	UNIVERSAL (120-277V)	20FT	N/A	SINGLE



KEY MAP
SCALE: NTS

1 PHOTOMETRIC PLAN
C2.11X

20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

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REVISION SCHEDULE

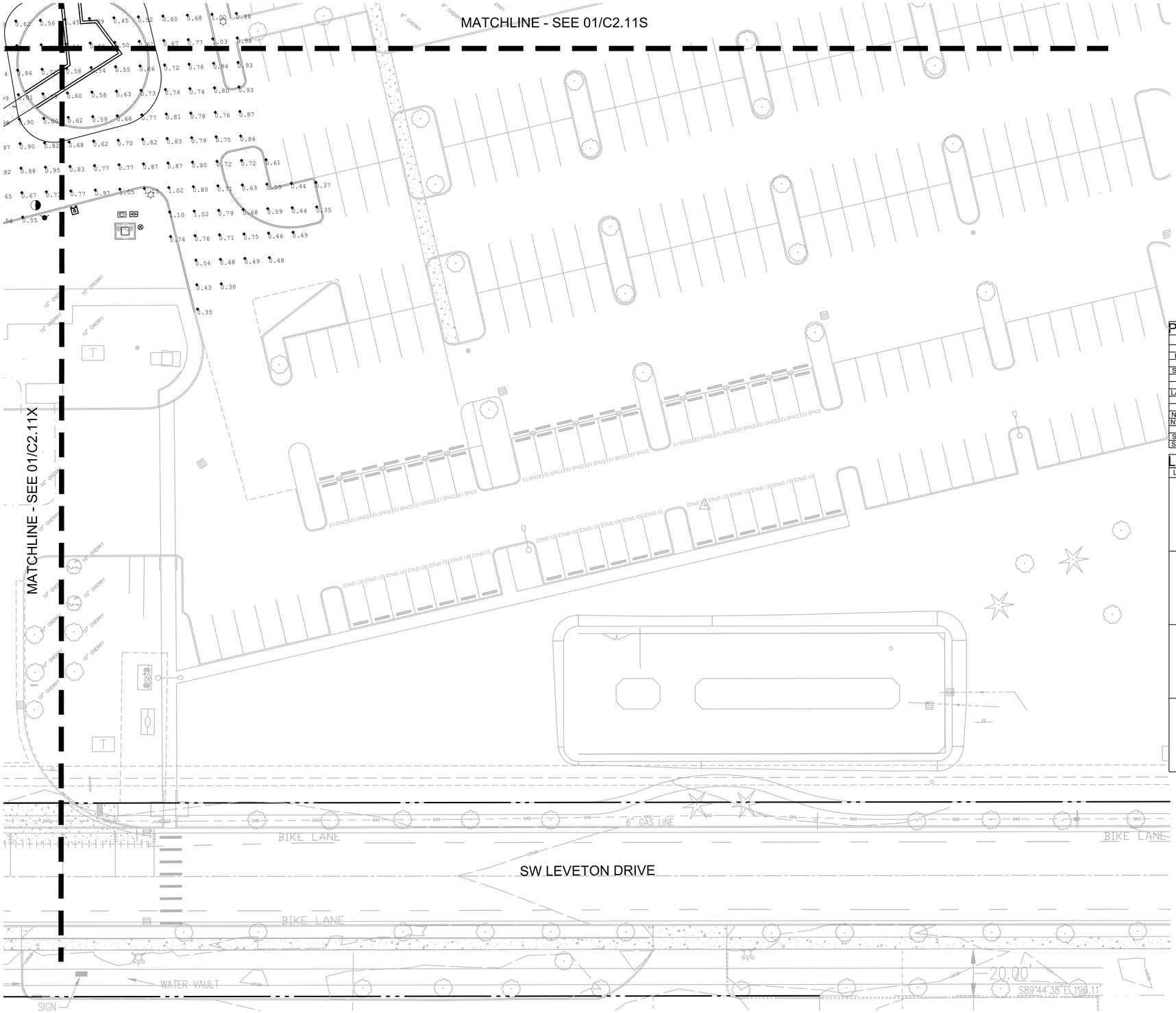
Delta	Issued As	Issue Date

SHEET TITLE:
PHOTOMETRIC PLAN

SHEET:
C2.11X

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



PHOTOMETRIC CALCULATIONS

AREA	MINIMUM (FC)	AVERAGE (FC)	RATIO - MAX TO MIN	RATIO - AVG TO MIN
BLDG H	0.18	0.93	74.17	5.17
BLUFF LOT	0.22	0.71	7.55	3.23
N OF CUB	0.16	1.07	21.50	6.69
S CUB/N LAB	0.28	1.17	15.61	4.18
E OF LAB	0.14	0.64	23.14	4.57
E OF CUB	0.13	1.09	37.85	8.38
LAB/CUB LOT	0.17	0.85	20.94	5.00
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LETTER	SYM	QTY	MFG	CATALOG #	DIST	WATTS	VOLTAGE	HEIGHT	MA LENGTH	CONFIG
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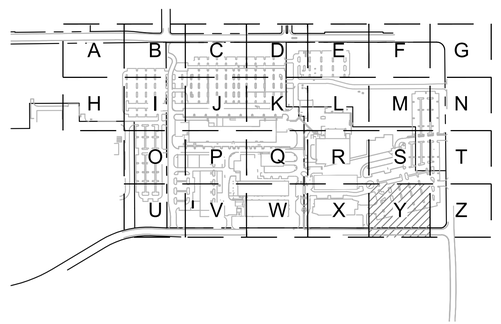

KEY MAP
SCALE: NTS

1 C2.11Y PHOTOMETRIC PLAN

20 0 10 20 40 80

(IN FEET)
1 inch = **20** ft.

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PHOTOMETRIC PLAN

SHEET:
C2.11Y

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2

"2250180000" \\GRP.MCK\PROJECTS\PROJECTS\2250180000\DRAWINGS\CIVIL\BLDG H\141- C2.11 PHOTOMETRIC PLAN.DWG:C2.11Y ADS 07/15/25 17:17 1:1

TABLE OF ABBREVIATIONS

ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE	MAX	MAXIMUM
		MIN	MINIMUM
B&B	BALL AND BURLAP	MIX	MIXTURE
CAL	CALIPER	NTS	NOT TO SCALE
CONC	CONCRETE	OC	ON CENTER
DEG	DEGREE	POC	POINT OF CONNECTION
DIA/Ø	DIAMETER	PVC	POLY VINYL CHLORIDE
DWGS	DRAWING	SCH	SCHEDULE
ELL	ELBOW	SF	SQUARE FOOT
EQ	EQUAL	SPEC	SPECIFICATION
FT	FEET/FOOT	TYP	TYPICAL
GAL	GALLON	X	TIMES
GALV	GALVANIZED		
H/HT	HEIGHT		

SITE INFORMATION

JURISDICTION	TUALATIN, OR
STORMWATER	CWS
PROJECT SITE AREA	14.40 AC
LANDSCAPE AREA	279,500 SF
	6.42 AC
PERCENT OF AREA TO BE DEVELOPED	45%

SITE TREE DATA

TOTAL TREES PROPOSED FOR REMOVAL	
OVER 8" DSH	184
UNDER 8" DSH	197
TREES RETAINED/PROTECTED	373
TOTAL NEW TREES PROPOSED	399

LANDSCAPE NOTES

GENERAL

1. CONTRACTOR SHALL CONFIRM ALL EXISTING CONDITIONS PRIOR TO COMMENCING WORK.
2. CALL BEFORE YOU DIG. CONTRACTOR SHALL VERIFY INVERT ELEVATIONS OF ALL UNDERGROUND UTILITIES AND NOTIFY LANDSCAPE ARCHITECT IF THERE ARE ANY DISCREPANCIES WITH PLANTING ROOT ZONES. TO REQUEST LOCATES FOR PROPOSED EXCAVATION CALL 1-800-332-2344 (OR 811) IN OREGON.
3. NOTIFY THE OWNER OR OWNER'S REPRESENTATIVE OF ANY DISCREPANCIES OR CONFLICTS WITH EXISTING CONDITIONS PRIOR TO COMMENCEMENT OF ANY WORK.
4. LOCATION OF EXISTING TREES SHALL BE VERIFIED IN THE FIELD BY THE CONTRACTOR PRIOR TO COMMENCEMENT OF WORK.
5. DAMAGE TO EXISTING CONCRETE CURB, ASPHALT PAVING, OR OTHER STRUCTURE SHALL BE REPAIRED OR REPLACED TO PRE CONSTRUCTION CONDITIONS.
6. CONTRACTOR SHALL COORDINATE WITH THE OWNER ANY DISRUPTION TO VEHICULAR CIRCULATION PRIOR TO COMMENCEMENT OF ANY WORK.

PLANTING

1. ALL EXISTING TREES, PLANTS, AND ROOTS SHALL BE PROTECTED FROM DAMAGE FROM ANY CONSTRUCTION PREPARATION, REMOVAL OR INSTALLATION ACTIVITIES WITHIN AND ADJACENT TO PROJECT LIMITS.
2. SHRUBS ADJACENT TO PARKING AREAS SHALL BE PLANTED 2 FT MINIMUM AWAY FROM THE BACK OF CURB. SHRUBS AND GROUNDCOVER ALONG OTHER PAVEMENT EDGES SHALL BE PLANTED A MINIMUM OF ONE HALF THEIR ON CENTER SPACING AWAY FROM PAVEMENT EDGE.
3. ALL PLANT MATERIAL SHALL BE HEALTHY NURSERY STOCK, WELL BRANCHED AND ROOTED, FULL FOLIAGE, FREE FROM INSECTS, DISEASES, WEEDS, WEED ROT, INJURIES AND DEFECTS WITH NO LESS THAN MINIMUMS SPECIFIED IN AMERICAN STANDARDS FOR NURSERY STOCK, ANSI Z60.1-2004.
4. DO NOT PLANT TREES ABOVE WATERLINES, UTILITIES, OR OTHER UNDERGROUND PIPING.
5. IF DISTURBANCE IS NECESSARY AROUND EXISTING TREES, CONTRACTOR SHALL PROTECT THE CROWN AND ALL WORK WITHIN THE TREE DRIPZONE SHALL BE LIMITED TO THE USE OF HAND TOOLS AND MANUAL EQUIPMENT ONLY.
6. REPLACE, REPAIR AND RESTORE DISTURBED LANDSCAPE AREAS DUE TO GRADING. TRENCHING OR OTHER REASONS TO PRE-CONSTRUCTION CONDITION AND PROVIDE MATERIAL APPROVED BY THE OWNER AND OWNER'S REPRESENTATIVE.
7. EXISTING AREAS PROPOSED FOR NEW PLANT MATERIAL SHALL BE CLEARED AND LEGALLY DISPOSED UNLESS SO NOTED.
8. A SOILS ANALYSIS, BY AN INDEPENDENT SOILS TESTING LABORATORY RECOGNIZED BY THE STATE DEPARTMENT OF AGRICULTURE, SHALL BE USED TO RECOMMEND AN APPROPRIATE PLANTING SOIL AND/OR SPECIFIED SOIL AMENDMENTS.
9. TOPSOIL SHALL BE AMENDED AS RECOMMENDED BY AN INDEPENDENT SOILS TESTING LABORATORY AND AS OUTLINED IN THE SPECIFICATION.
10. ALL LANDSCAPED AREAS SHALL BE COVERED BY A LAYER OF ORGANIC MULCH TO A MINIMUM DEPTH OF 2-INCHES.
11. HOLD PLANT MATERIAL BACK FROM LANDSCAPE LIGHTING 24".
12. GENERAL CONTRACTOR TO PROVIDE LANDSCAPE ARCHITECT WITH SUBCONTRACTOR'S PLANT ORDER FORM WITHIN 60 DAYS OF IFC SET. PROCURING TREES EARLY WILL BE NECESSARY TO OBTAIN MATCHING SPECIES IN THE QUANTITIES AND SIZES SHOWN AND REQUIRED.

IRRIGATION

1. UNLESS OTHERWISE INDICATED, ALL NEW LANDSCAPE AREAS TO BE IRRIGATED WITH A FULLY AUTOMATIC UNDERGROUND IRRIGATION SYSTEM.
2. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS (IRRIGATION PLANS) TO LANDSCAPE ARCHITECT PRIOR TO CONSTRUCTION. DRAWINGS TO INDICATE HEAD TYPE, GALLONS PER MINUTE, LATERAL LINES, AND BE AT MINIMUM SCALE OF 1"=20'
3. CONTRACTOR TO DETERMINE STATIC WATER PRESSURE AT THE P.O.C. PRIOR TO PREPARING SHOP DRAWINGS.
4. CONTRACTOR SHALL ESTABLISH MINIMUM PRESSURE AND MAXIMUM DEMAND REQUIREMENTS FOR IRRIGATION SYSTEM DESIGN, AND PROVIDE INFORMATION IN AN IRRIGATION SCHEDULE.
5. IRRIGATION SYSTEM AS DESIGNED AND INSTALLED SHALL PERFORM WITHIN THE TOLERANCES AND SPECIFICATIONS OF THE SPECIFIED MANUFACTURERS.
6. SYSTEM SHALL BE DESIGNED TO SUPPLY MANUFACTURER'S SPECIFIED MINIMUM OPERATING PRESSURE TO FARTHEST EMITTER FROM WATER METER.
7. SYSTEM SHALL PROVIDE HEAD TO HEAD COVERAGE WITHOUT OVERSPRAY ONTO BUILDING, FENCES, SIDEWALKS, PARKING AREAS, OR OTHER NON-VEGETATED SURFACES.
8. ALL IRRIGATION PIPE MATERIAL AND INSTALLATION SHALL CONFORM TO APPLICABLE CODE FOR PIPING AND COMPONENT REQUIREMENTS.
9. PROVIDE SLEEVING AT ALL AREAS WHERE PIPE TRAVELS UNDER CONCRETE OR HARD SURFACING.
10. VALVES SHALL BE WIRED AND INSTALLED PER MANUFACTURER'S RECOMMENDED INSTALLATION PROCEDURES AND CONNECTED TO THE IRRIGATION CONTROLLER.
11. REFER TO CIVIL DETAILS AND DETAILS ON L5.11 FOR POINT OF CONNECTION AND BACKFLOW PREVENTION INFORMATION.
12. MAINLINE LAYOUT IS DIAGRAMMATIC ONLY.
13. GENERAL CONTRACTOR TO COORDINATE CONTROLLER LOCATION WITH OWNER'S REPRESENTATIVE.
14. ZONE THE FOLLOWING AREAS SEPARATELY: TEMPORARY AREAS, PERMANENT LANDSCAPE AREAS, STORMWATER AREAS, AND TREES.
15. QUICK COUPLERS TO BE PLACED EVERY 300 LINEAR FEET MAX.
16. IRRIGATION SHALL BE WINTERIZED THROUGH LOW PRESSURE, HIGH VOLUME AIR BLOWOUT CONNECTION THROUGH QUICK COUPLER.
17. THE SYSTEM SHALL BE GRAVITY DRAINED. THE CONTRACTOR SHALL PROVIDE APPROPRIATE MANUAL DRAINS AT LOW POINTS.

STORMWATER FACILITY PLANT SCHEDULE

VEGETATION REQUIREMENTS
CWS 4.09.2.C.13 - DETENTION POND
CWS 4.09.4.C.13 - VEGETATED SWALE

FACILITY 1 - DETENTION POND A (8,112 SF) SEE SHEET L1.10U

	PLANT SPECIES (*DENOTES EVERGREEN)	RATE	QTY	SIZE	SPACING
	GRASSES AND GROUNDCOVERS:	100%	(8,112)		
	CAREX OBNUPTA / SLOUGH SEDGE*		2,704	PLUG	12" OC
	AGROSTIS OREGONESIS / OREGON BENTGRASS		2,704	PLUG	12" OC
	JUNCUS PATENS / SPREADING RUSH*		2,704	PLUG	12" OC
SHRUBS:		1/20 SF	(406)		
	SPIRAEA DOUGLASII / DOUGLAS'S SPIRAEA		67	1 GAL	12" OC
	CORNUS SERICA / RED-OSIER DOGWOOD		67	1 GAL	12" OC
	SYMPHORICARPUS ALBUS / SNOWBERRY		67	1 GAL	12" OC
	HOLODISCUS DISCOLOR / OCEANSPRAY		67	1 GAL	12" OC
	ALMELANCHIER ALNIFOLIA / SERVICEBERRY		69	1 GAL	12" OC
	MAHONIA NERVOSA / CASCADE OREGON GRAPE*		69	1 GAL	12" OC
TREES:	1/100 SF	1/100 SF	(81)		
	ACER CIRCINATUM / VINE MAPLE		25	2 GAL	24" OC
	ALNUS RUBRA/ RED ALDER		24	1 GAL	12" OC
	THUJA PLICATA / WESTERN RED CEDAR*		24	2 GAL	24" OC

PLANTS REQUIRED: 8,599 (100%) PLANTS PROPOSED: 8,559 (100%)
PERCENT EVERGREEN: 63.98%

FACILITY 2 -DETENTION POND B (6,800 SF) SEE SHEET L1.10I

	PLANT SPECIES (*DENOTES EVERGREEN)	RATE	QTY	SIZE	SPACING
	GRASSES AND GROUNDCOVERS:	100%	(6,800)		
	CAREX OBNUPTA / SLOUGH SEDGE*		2,266	PLUG	12" OC
	AGROSTIS OREGONESIS / OREGON BENTGRASS		2,267	PLUG	12" OC
	JUNCUS PATENS / SPREADING RUSH*		2,267	PLUG	12" OC
SHRUBS:		1/20 SF	(330)		
	SPIRAEA DOUGLASII / DOUGLAS'S SPIRAEA		57	1 GAL	12" OC
	CORNUS SERICA / RED-OSIER DOGWOOD		57	1 GAL	12" OC
	SYMPHORICARPUS ALBUS / SNOWBERRY		57	1 GAL	12" O.C
	HOLODISCUS DISCOLOR / OCEANSPRAY		57	1 GAL	12" OC
	ALMELANCHIER ALNIFOLIA / SERVICEBERRY		45	1 GAL	12" OC
	MAHONIA NERVOSA / CASCADE OREGON GRAPE*		57	1 GAL	12" OC
TREES:	1/100 SF	1/100 SF	(68)		
	ACER CIRCINATUM / VINE MAPLE		24	2 GAL	24" OC
	ALNUS RUBRA/ RED ALDER		24	1 GAL	12" OC
	THUJA PLICATA / WESTERN RED CEDAR*		20	2 GAL	24" OC

PLANTS REQUIRED: 7,198 (100%) PLANTS PROPOSED: 7,198 (100%)
PERCENT EVERGREEN: 63.97%

FACILITY 3 -DETENTION POND C (1,100 SF) SEE SHEETS L1.10E, L1.10F, L1.10L,L1.10M

	PLANT SPECIES (*DENOTES EVERGREEN)	RATE	QTY	SIZE	SPACING
	GRASSES AND GROUNDCOVERS:	100%	(1,100)		
	CAREX OBNUPTA / SLOUGH SEDGE*		367	PLUG	12" OC
	AGROSTIS OREGONESIS / OREGON BENTGRASS		367	PLUG	12" OC
	JUNCUS PATENS / SPREADING RUSH*		366	PLUG	12" OC
SHRUBS:		1/20 SF	(55)		
	SPIRAEA DOUGLASII / DOUGLAS'S SPIRAEA		10	1 GAL	12" OC
	CORNUS SERICA / RED-OSIER DOGWOOD		9	1 GAL	12" OC
	SYMPHORICARPUS ALBUS / SNOWBERRY		9	1 GAL	12" O.C
	HOLODISCUS DISCOLOR / OCEANSPRAY		9	1 GAL	12" OC
	ALMELANCHIER ALNIFOLIA / SERVICEBERRY		9	1 GAL	12" OC
	MAHONIA NERVOSA / CASCADE OREGON GRAPE*		9	1 GAL	12" OC
TREES:	1/100 SF	1/100 SF	(11)		
	ACER CIRCINATUM / VINE MAPLE		4	2 GAL	24" OC
	ALNUS RUBRA/ RED ALDER		4	1 GAL	12" OC
	THUJA PLICATA / WESTERN RED CEDAR*		3	2 GAL	24" OC

PLANTS REQUIRED: 1,160 (100%) PLANTS PROPOSED: 1,160 (100%)
PERCENT EVERGREEN: 64.22%

FACILITY 4 -VEGETATED SWALE A (3,146 SF) SEE SHEET L1.10C

PLANT SPECIES (*DENOTES EVERGREEN)	RATE	QTY	SIZE
HERBACEOUS PLANTS:	6/1 SF	(3,146)	
CAREX DENSA / DENSE SEDGE*		630	PLUG
JUNCUS EFFUSUS VAR. PACIFICUS / SOFT RUSH*		630	PLUG
JUNCUS PATENS / SPREADING RUSH*		1,886	PLUG

PLANTS REQUIRED: 3,146 (100%) PLANTS PROPOSED: 3,146 (100%)
PERCENT EVERGREEN: 100%

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REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:
GENERAL NOTES AND INFORMATION

SHEET:
L0.01

JOB NO. **2250180.00**

THE SURVEY INFORMATION SHOWN AS A BACKGROUND SCREEN ON THIS SHEET IS SHOWN FOR REFERENCE ONLY AND IS BASED ON A SURVEY BY: HICKMAN & ASSOCIATES DATE:

ARCHITECTURAL REVIEW 07/21/2

PLANT SCHEDULE

SYMBOL	BOTANICAL / COMMON NAME	SIZE	
TREES			
	ACER MACROPHYLLUM BIG LEAF MAPLE	1.5" CAL. B&B	
	ACER PALMATUM 'SANGO-KAKU' CORAL BARK JAPANESE MAPLE	1.5" CAL. B&B MATCHING	
	ACER RUBRUM 'BOWHALL' BOWHALL RED MAPLE	1.5" CAL. B&B	
	ALNUS RUBRA RED ALDER	1" CAL. B&B	
	AMELANCHIER ALNIFOLIA REGENT SERVICEBERRY	1" CAL. B&B	
	ARBUTUS UNEDO STRAWBERRY TREE	6' HT. MULTI-TRUNK	
	CERCIDIPHYLLUM JAPONICUM KATSURA TREE	1.5" CAL. B&B	
	CERCIS OCCIDENTALIS 'CLAREMONT' CLAREMONT WESTERN REDBUD	1.5" CAL. B&B	
	GLEDITSIA TRIACANTHOS INERMIS 'MORAINE' MORAINE HONEY LOCUST	1.5" CAL. B&B	
	MALUS X 'PRAIRIFIRE' PRAIRIFIRE CRAB APPLE	1.5" CAL. B&B	
	NYSSA SYLVATICA 'DAVID ODOM' AFTERBURNER TUPELO	1.5" CAL. B&B	
	OSTRYA VIRGINIANA AMERICAN HOPHORNBEAM	1.5" CAL. B&B	
	PARROTIA PERSICA 'JL COLUMNAR' PERSIAN SPIRE™ PARROTIA	1.5" CAL. B&B	
	PINUS PONDEROSA WILLAMETTENSIS WILLAMETTE VALLEY PONDEROSA PINE	6' HT. MIN. B&B	
	PRUNUS SARGENTII 'JFS KW21PS' PINK MYST® SARGENT CHERRY	1.5" CAL. B&B	
	PRUNUS SERRULATA 'KWANZAN' KWANZAN JAPANESE FLOWERING CHERRY	1.5" CAL. B&B	
	PSEUDOTSUGA MENZIESII DOUGLAS FIR	5' HT. MIN. B&B	
	QUERCUS GARRYANA OREGON WHITE OAK	2" CAL., B&B	
	THUJA PLICATA 'HOGAN' HOGAN WESTERN RED CEDAR	5' HT. MIN. B&B	
	TILIA CORDATA 'GREENSPIRE' GREENSPIRE LITTLELEAF LINDEN	1.5" CAL. B&B	
	TILIA TOMENTOSA 'STERLING' STERLING SILVER LINDEN	1.5" CAL. B&B	
	ULMUS 'PATRIOT' PATRIOT ELM	1.5" CAL. B&B	
	ULMUS DAVIDIANA JAPONICA 'MORTON' ACCOLADE® ELM	1.5" CAL. B&B	
	ZELKOVA SERRATA 'GREEN VASE' GREEN VASE JAPANESE ZELKOVA	1.5" CAL. B&B	
	ZELKOVA SERRATA 'HALKA' HALKA ZELKOVA	1.5" CAL. B&B	
SYMBOL	BOTANICAL / COMMON NAME	SIZE	SPACING
SHRUBS			
	ABELIA X GRANDIFLORA 'KALEIDOSCOPE' KALEIDOSCOPE GLOSSY ABELIA	5 GAL.	36" o.c.
	ACANTHUS MOLLIS 'HOLLARD'S GOLD' HOLLARD'S GOLD BEAR'S BREECH	5 GAL	48" o.c.
	ACER CIRCINATUM VINE MAPLE	5 GAL.	96" o.c.
	ACER CIRCINATUM 'PACIFIC FIRE' PACIFIC FIRE VINE MAPLE	5 GAL. 36" HT. MIN.	72" o.c.
	ALLIUM STIPITATUM 'WHITE GIANT' WHITE GIANT ORNAMENTAL ONION	1 GAL	12" o.c.
	ARCTOSTAPHYLOS X MEDIA HYBIRD MANZANITA	5 GAL	60" o.c.
	BERBERIS THUNBERGII 'CRIMSON PYGMY' CRIMSON PYGMY JAPANESE BARBERRY	1 GAL	36" o.c.
	BERBERIS THUNBERGII 'TALAGO' SUNJOY® GOLD BERET JAPANESE BARBERRY	1 GAL	36" o.c.
	CEANOTHUS THYRSIFLORUS BLUE BLOSSOM	5 GAL.	60" o.c.
	CHOISYA TERNATA 'SUNDANCE' SUNDANCE MEXICAN MOCK ORANGE	5 GAL	60" o.c.
	CISTUS X HYBRIDUS WHITE ROCKROSE	5 GAL	48" o.c.
	CISTUS X PULVERULENTUS 'SUNSET' SUNSET ROCKROSE	5 GAL.	48" o.c.
	CORNUS SERICEA 'KELSEYI' KELSEY'S DWARF RED TWIG DOGWOOD	5 GAL.	36" o.c.
	DEUTZIA GRACILIS 'NIKKO' NIKKO DEUTZIA	1 GAL	36" o.c.
	HAKONECHLOA MACRA 'AUREOLA' GOLDEN VARIEGATED FOREST GRASS	1 GAL	24" o.c.
	HEMEROCALLIS X 'STELLA DE ORO' STELLA DE ORO DAYLILY	2 GAL.	24" o.c.
	HYDRANGEA QUERCIFOLIA 'RUBY SLIPPERS' RUBY SLIPPERS OAKLEAF HYDRANGEA	---	48" o.c.
	MAHONIA AQUIFOLIUM 'COMPACTA' COMPACT OREGON GRAPE	5 GAL.	60" o.c.
	MISCANTHUS SINENSIS 'MALEPARTUS' MALEPARTUS EULALIA GRASS	5 GAL.	60" o.c.
	NANDINA DOMESTICA 'GULF STREAM' GULF STREAM HEAVENLY BAMBOO	5 GAL	36" o.c.
	NEPETA X 'WALKER'S LOW' WALKER'S LOW CATMINT	5 GAL.	30" o.c.
	PEROVSKIA ATRIPLICIFOLIA 'BLUE JEAN BABY' BLUE JEAN BABY RUSSIAN SAGE	5 GAL	30" o.c.
	PHILADELPHUS LEWISII WILD MOCKORANGE	5 GAL.	60" o.c.
	PINUS MUGO VAR. PUMILIO DWARF MUGO PINE	5 GAL.	36" o.c.
	POLYSTICHUM MUNITUM WESTERN SWORD FERN	5 GAL	48" o.c.
	PRUNUS LAUROCERASUS 'OTTO LUYKEN' CHERRY LAUREL	5 GAL.	48" o.c.
	RHAPHIOLEPIS INDICA 'MONTO' INDIAN PRINCESS INDIAN HAWTHORN	5 GAL.	48" o.c.
	RIBES SANGUINEUM RED FLOWERING CURRANT	5 GAL.	72" o.c.
	ROSA GYMNOCARPA WOOD ROSE	5 GAL.	48" o.c.
	ROSA NUTKANA NOOTKA ROSE	3 GAL.	48" o.c.
	SALIX PURPUREA 'NANA' DWARF PURPLE OSIER WILLOW	5 GAL	48" o.c.
	SARCOCOCCA RUSCIFOLIA FRAGRANT SWEETBOX	5 GAL.	36" o.c.
	SPIRAEA BETULIFOLIA 'TOR GOLD' GLOW GIRL® BIRCHLEAF SPIREA	5 GAL.	36" o.c.
	SPIRAEA BETULIFOLIA VAR. LUCIDA SHINYLEAF SPIREA	5 GAL.	36" o.c.
	SYMPHORICARPOS ALBUS COMMON WHITE SNOWBERRY	5 GAL.	36" o.c.
	THUJA OCCIDENTALIS 'SMARAGD' EMERALD GREEN ARBORVITAE	6' HT. MATCHING	42" o.c.
	VACCINIUM OVATUM EVERGREEN HUCKLEBERRY	5 GAL.	48" o.c.
	VIBURNUM DAVIDII DAVID VIBURNUM	5 GAL.	36" o.c.
	VIBURNUM TINUS 'SPRING BOUQUET' SPRING BOUQUET LAURUSTINUS	5 GAL.	48" o.c.
GROUND COVERS			
	ACHILLEA MILLEFOLIUM 'DESRED' DESERT EVE™ RED COMMON YARROW	---	18" o.c.
	ADIANTUM AETHIOPICUM MAIDENHAIR FERN	---	24" o.c.
	ARCTOSTAPHYLOS UVA-URSI KINNIKINNICK	1 GAL.	24" o.c.
	CEANOTHUS GLORIOSUS POINT REYES CEANOTHUS	1 GAL.	24" o.c.
	GAULTHERIA SHALLON 'GAULSID12' CASCADE SUNRISE™ SALAL	---	
	LIRIOPE MUSCARI 'BIG BLUE' BIG BLUE LILYTURF	1 GAL	12" o.c.
	MAHONIA REPENS CREEPING OREGON GRAPE	1 GAL.	24" o.c.
	NATIVE INTERPLANTING MIX GROUNDCOVER	1 GAL.	24" o.c.
	ROSA X 'NOASCHNEE' FLOWER CARPET® WHITE GROUNDCOVER ROSE	1 GAL	
	RUBUS CALYCINOIDES GREEN CARPET RASPBERRY	1 GAL.	24" o.c.
	SEDUM X 'AUTUMN JOY' AUTUMN JOY SEDUM	1 GAL	24" o.c.
GRASSES			
	BOUTELOUA GRACILIS 'BLONDE AMBITION' BLONDE AMBITION BLUE GRAMA	1 GAL.	18" o.c.
	DESCHAMPSIA CESPITOSA 'NORTHERN LIGHTS' NORTHERN LIGHTS TUFTED HAIR GRASS	1 GAL	12" o.c.
	NASSELLA TENUISSIMA MEXICAN FEATHER GRASS	1 GAL.	18" o.c.
MATERIALS			
	HAZELNUT SHELL MULCH	SEE DETAIL	
STORMWATER			
	STORMWATER ZONE A (BOTTOM) HERBACEOUS PLANTS	6 PLUGS/S.F.	12" o.c.
	STORMWATER ZONE B (SIDE SLOPES) SHRUBS AND GROUNDCOVER	1 GAL.	12" o.c.
	SWALE - ZONE B (FREEBOARD) FREEBOARD AREA	120 LB/AC	

SEED MIX LIST

SEED MIX SYMBOL	BOTANICAL/COMMON NAME	APPLICATION RATE	
	GRASS PAVE MIX HERITAGE SEEDLING, INC (4" HT MIN) CAREX PACHYSTACHYA CAREX TUMULICOLA DANTHONIA CALIFORNICA FESTUCA ROEMERI LUZULA COMOSA ACHILLEA MILLEFOLIUM AGOSERIS GRANDIFLORA ALLIUM AMPLECTENS CAMASSIA QUAMASH ERIOPHYLLUM LANATUM LOMATIUM NUDICAULE PERIDERIDIA OREGANA POTENTILLA GLANDUL	6 PLS LBS / AC	
	NATIVE UPLANDS MIX SUNMARK SEEDS NATIVE DRYLAND MIX, DROUGHT TOLERANT ONCE ESTABLISHED. ELYMUS GLAUCUS 50% FESTUCA RUBRA 30% BROMIUS CARINATIUS 10% AGROSTIS EXARATA 10%	1 PLS LBS / 1000 SF	
	OAK WOODLAND UNDERSTORY MIX HERITAGE SEEDLING, INC (18"H) NO SUPPLEMENTAL IRRIGATION REQUIRED	11 LBS / AC	
	PT 310 PROTIME LUSH LAWN MIX REDUCED WATER NEEDS DROUGHT TOLERANT LOLIUM PERENNE FESTUCA OVINA FESTUCA RUBRA	10 LBS / 1000 SF	
	URBAN MEADOW MIX HERITAGE SEEDLING, INC (18" HT) NO IRRIGATION REQUIRED CAREX PACHYSTACHYA CAREX TUMULICOLA DANTHONIA CALIFORNICA FESTUCA ROEMERI LUZULA COMOSA ACHILLEA MILLEFOLIUM ALLIUM AMPLECTENS COLLINSIA GRANDIFLORA ERIOPHYLLUM LANATUM LOMATIUM NUDICAULE PERIDERIDIA OREGANA	6 PLS LBS / AC	

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REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:

PLANT SCHEDULE

SHEET:

L0.02

JOB NO. **2250180.00**

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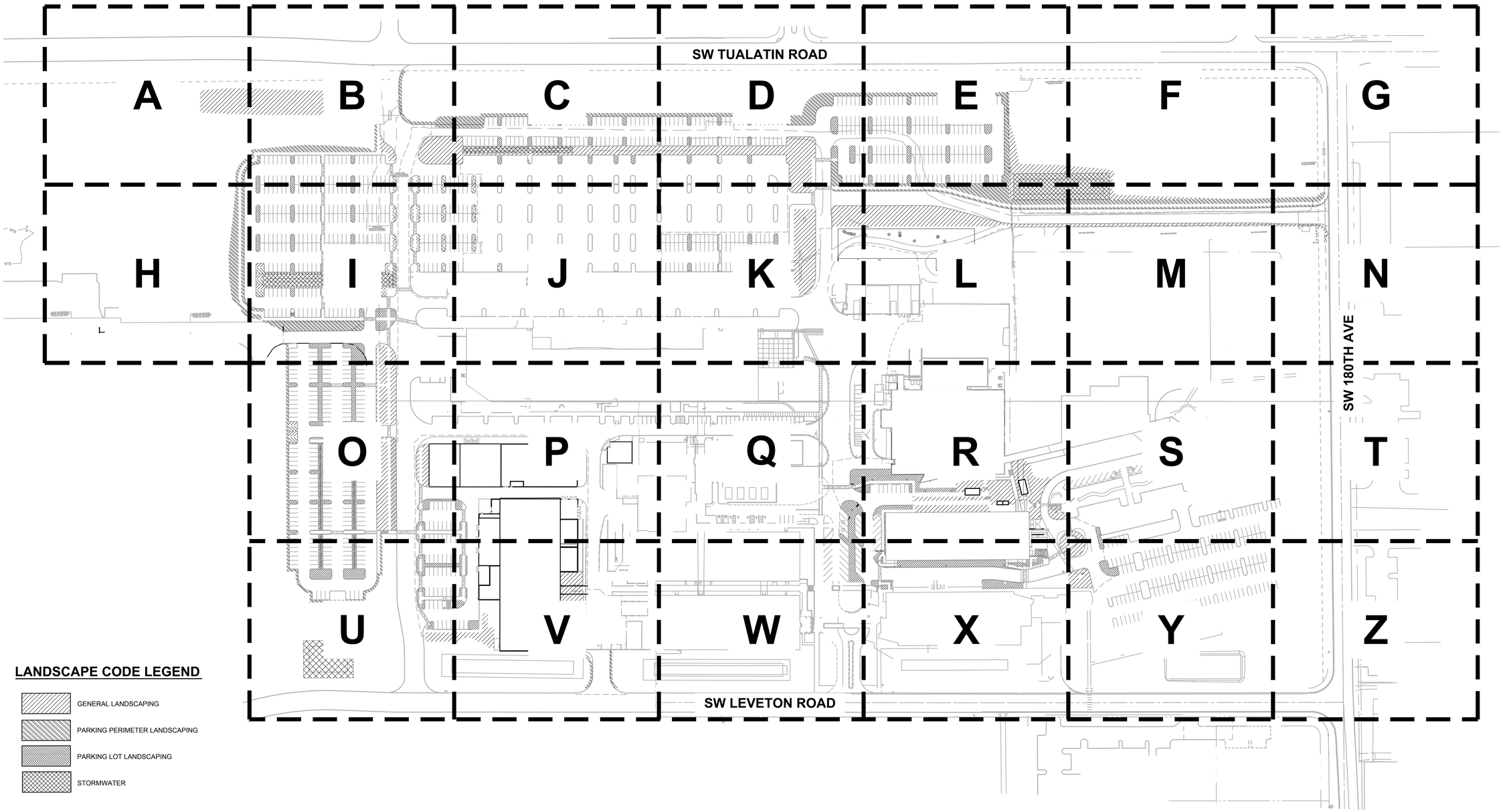
ARCHITECTURAL REVIEW 07/21/2



LANDSCAPE CODE LEGEND

- GENERAL LANDSCAPING
- PARKING PERIMETER LANDSCAPING
- PARKING LOT LANDSCAPING
- STORMWATER

1 / L0.03 LANDSCAPE KEY PLAN

100 0 50 100 200 400
(IN FEET)
1 inch = 100 ft.

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REVISION SCHEDULE

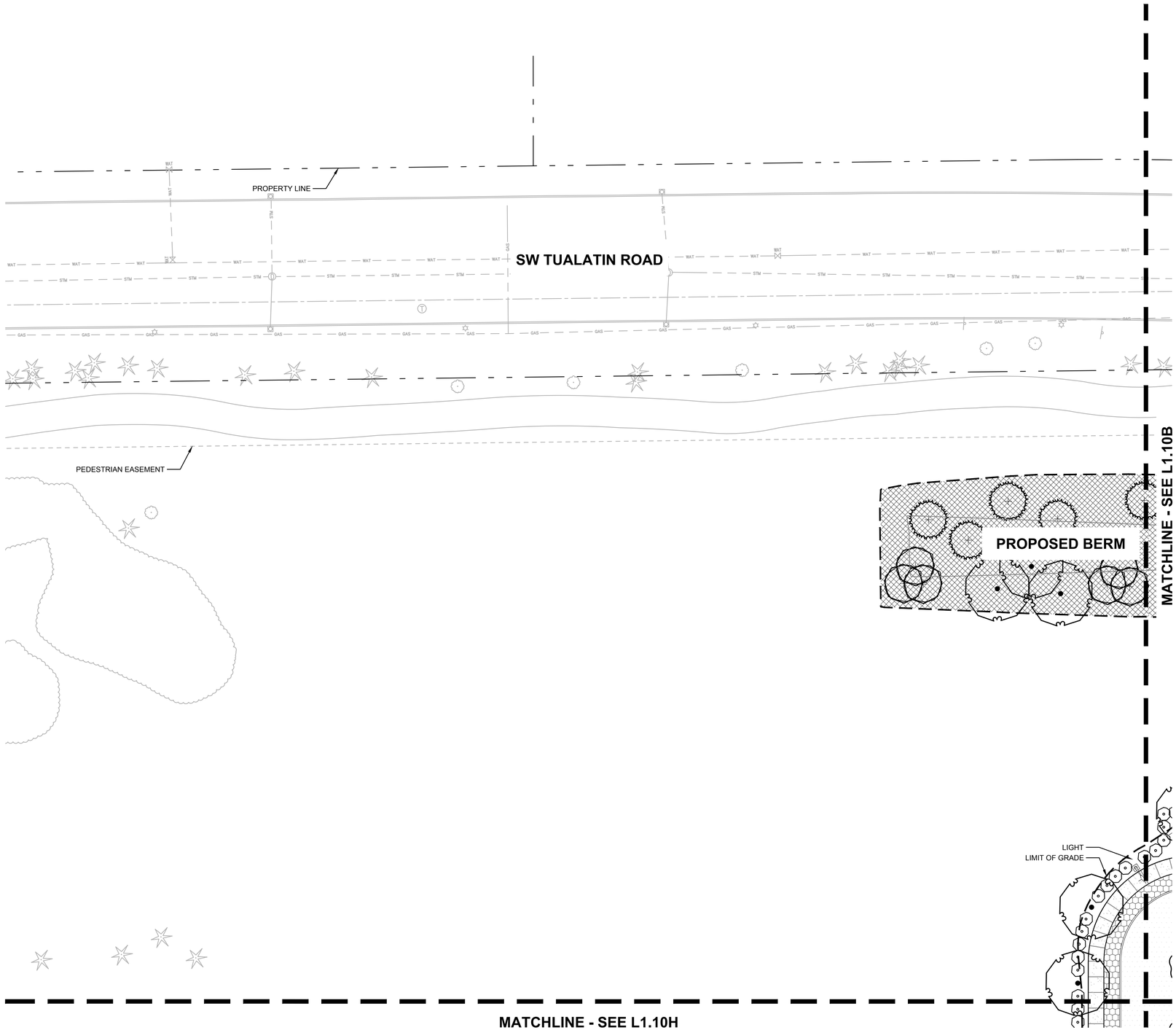
Delta	Issued As	Issue Date

SHEET TITLE:
LANDSCAPE KEY PLAN

SHEET:
L0.03

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



1 L1.10A PLANTING PLAN

20 0 10 20 40 80

(IN FEET)

1 inch = 20 ft.

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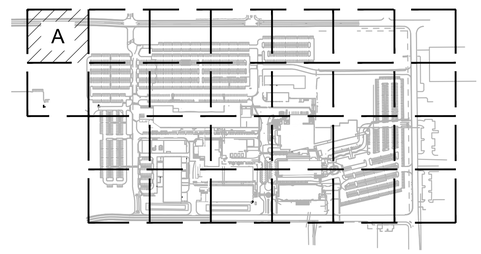
PLANT KEY LEGEND

SYMBOL	BOTANICAL / COMMON NAME
TREES	
	ALNUS RUBRA *RED ALDER*
	PSEUDOTSUGA MENZIESII *DOUGLAS FIR*
	QUERCUS GARRYANA *OREGON WHITE OAK*
SHRUBS	
	ARCTOSTAPHYLOS X MEDIA *HYBIRD MANZANITA*
GROUND COVERS	
	NATIVE INTERPLANTING MIX *GROUNDCOVER*
SEED MIX	
	URBAN MEADOW MIX *HERITAGE SEEDLING, INC*



KEY MAP
SCALE: NTS

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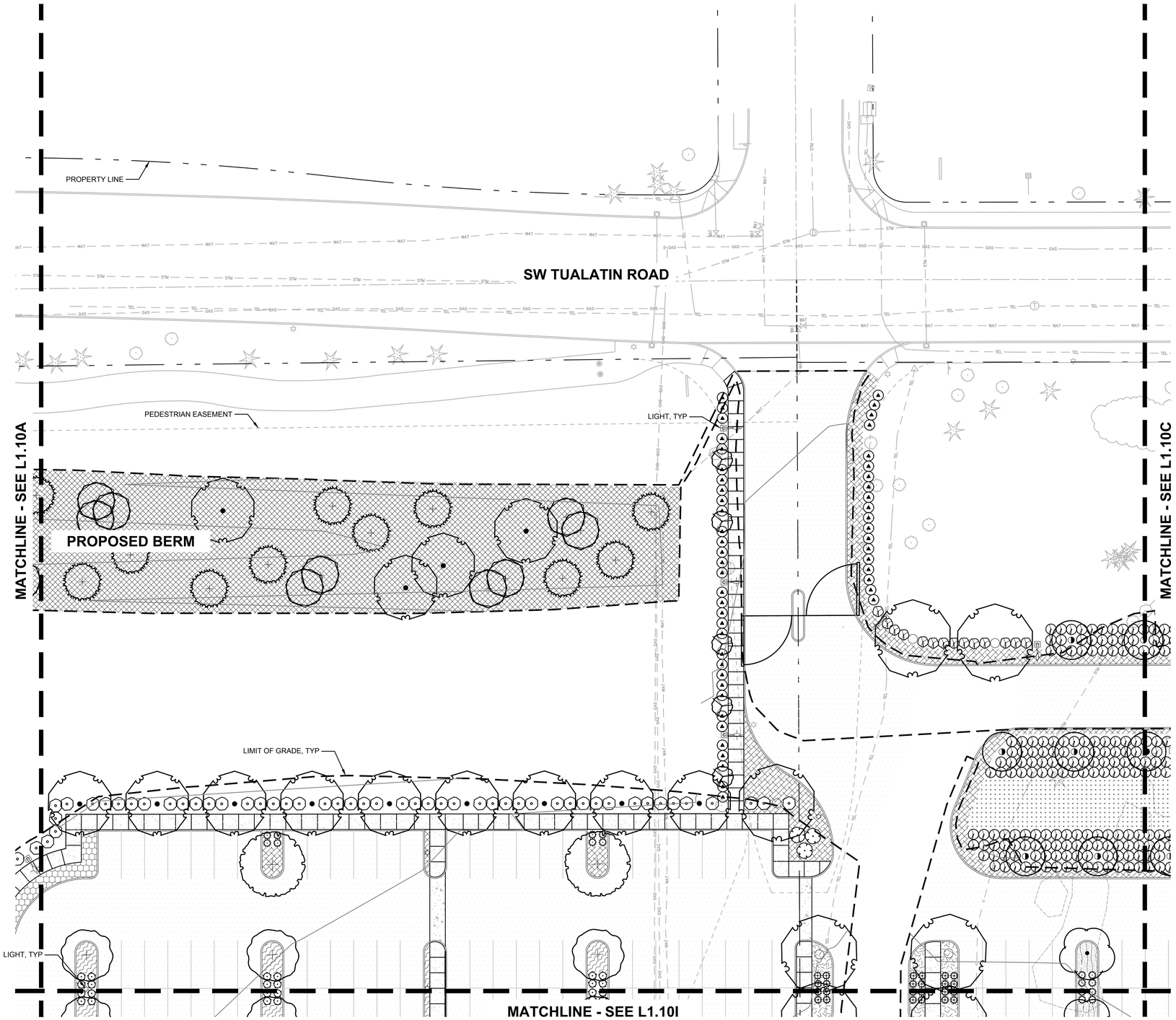
Delta	Issued As	Issue Date

SHEET TITLE:
PLANTING PLAN

SHEET:
L1.10A

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



1 L1.10B PLANTING PLAN

20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

THE SURVEY INFORMATION SHOWN AS A BACKGROUND SCREEN ON THIS SHEET IS SHOWN FOR REFERENCE ONLY AND IS BASED ON A SURVEY BY: HICKMAN & ASSOCIATES DATE:

PLANT KEY LEGEND

SYMBOL | BOTANICAL / COMMON NAME

TREES

- *ACER RUBRUM 'BOWHALL'* / *BOWHALL RED MAPLE*
- *ALNUS RUBRA* / *RED ALDER*
- *CERCIDIPHYLLUM JAPONICUM* / *KATSURA TREE*
- *MALUS X 'PRAIRIFIRE'* / *PRAIRIFIRE CRAB APPLE*
- *OSTRYA VIRGINIANA* / *AMERICAN HOPHORNBEAM*
- *PRUNUS SARGENTII 'JFS KW21PS'* / *PINK MYST® SARGENT CHERRY*
- *PSEUDOTSUGA MENZIESII* / *DOUGLAS FIR*
- *QUERCUS GARRYANA* / *OREGON WHITE OAK*
- *ZELKOVA SERRATA 'GREEN VASE'* / *GREEN VASE JAPANESE ZELKOVA*

SHRUBS

- *ARCTOSTAPHYLOS X MEDIA* / *HYBIRD MANZANITA*
- *BERBERIS THUNBERGII 'CRIMSON PYGMY'* / *CRIMSON PYGMY JAPANESE BARBERRY*
- *CISTUS X PULVERULENTUS 'SUNSET'* / *SUNSET ROCKROSE*
- *PINUS MUGO VAR. PUMILIO* / *DWARF MUGO PINE*
- *RIBES SANGUINEUM* / *RED FLOWERING CURRANT*
- *ROSA GYMNOCARPA* / *WOOD ROSE*
- *SPIRAEA BETULIFOLIA VAR. LUCIDA* / *SHINYLEAF SPIREA*
- *VIBURNUM TINUS 'SPRING BOUQUET'* / *SPRING BOUQUET LAURUSTINUS*

GROUND COVERS

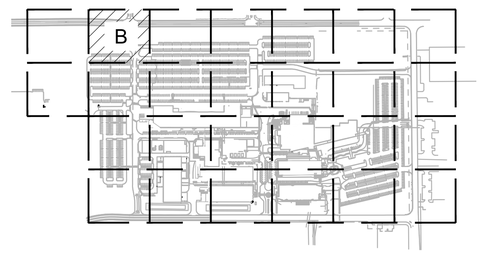
- *ARCTOSTAPHYLOS UVA–URSI* / *KINNIKINNICK*
- *MAHONIA REPENS* / *CREEPING OREGON GRAPE*
- *NATIVE INTERPLANTING MIX* / *GROUNDCOVER*
- *RUBUS CALYCINOIDES* / *GREEN CARPET RASPBERRY*

GRASSES

- *BOUTELOUA GRACILIS 'BLONDE AMBITION'* / *BLONDE AMBITION BLUE GRAMA*
- *NASSELLA TENUISSIMA* / *MEXICAN FEATHER GRASS*

SEED MIX

- *URBAN MEADOW MIX* / *HERITAGE SEEDLING, INC*



KEY MAP
SCALE: NTS

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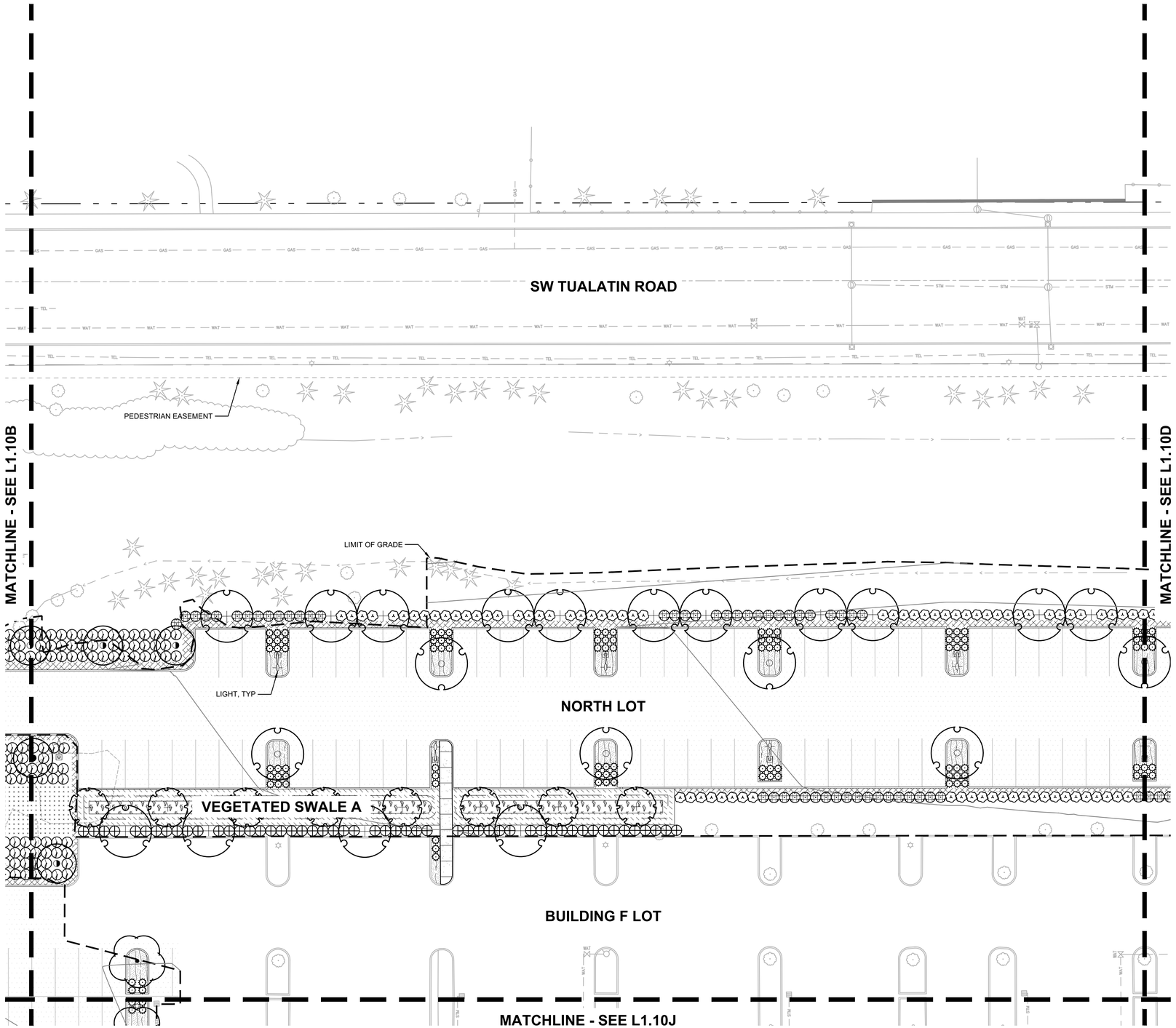
SHEET TITLE:
PLANTING PLAN

SHEET:
L1.10B

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



1 L1.10C PLANTING PLAN

20 0 10 20 40 80

(IN FEET)

1 inch = 20 ft.

THE SURVEY INFORMATION SHOWN AS A BACKGROUND SCREEN ON THIS SHEET IS SHOWN FOR REFERENCE ONLY AND IS BASED ON A SURVEY BY: HICKMAN & ASSOCIATES DATE:

PLANT KEY LEGEND

SYMBOL BOTANICAL / COMMON NAME

TREES

- *ACER RUBRUM 'BOWHALL'* — *BOWHALL RED MAPLE*
- *GLEDITSIA TRIACANTHOS INERMIS 'MORAINE'* — *MORAINE HONEY LOCUST*
- *MALUS X 'PRAIRIFIRE'* — *PRAIRIFIRE CRAB APPLE*
- *NYSSA SYLVATICA 'DAVID ODOM'* — *AFTERBURNER TUPELO*
- *ULMUS 'PATRIOT'* — *PATRIOT ELM*

SHRUBS

- *CISTUS X PULVERULENTUS 'SUNSET'* — *SUNSET ROCKROSE*
- *PINUS MUGO VAR. PUMILIO* — *DWARF MUGO PINE*
- *PRUNUS LAUROCERASUS 'OTTO LUYKEN'* — *CHERRY LAUREL*
- *RHAPHIOLEPIS INDICA 'MONTO'* — *INDIAN PRINCESS INDIAN HAWTHORN*
- *VACCINIUM OVATUM* — *EVERGREEN HUCKLEBERRY*

GROUND COVERS

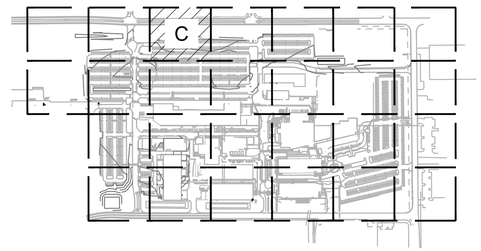
- *ARCTOSTAPHYLOS UVA-URSI* — *KINNIKINNICK*
- *RUBUS CALYCINOIDES* — *GREEN CARPET RASPBERRY*

GRASSES

- *NASSELLA TENUISSIMA* — *MEXICAN FEATHER GRASS*

STORMWATER

- *STORMWATER ZONE A (BOTTOM)* — *HERBACEOUS PLANTS*
- *STORMWATER ZONE B (SIDE SLOPES)* — *SHRUBS AND GROUNDCOVER*



KEY MAP
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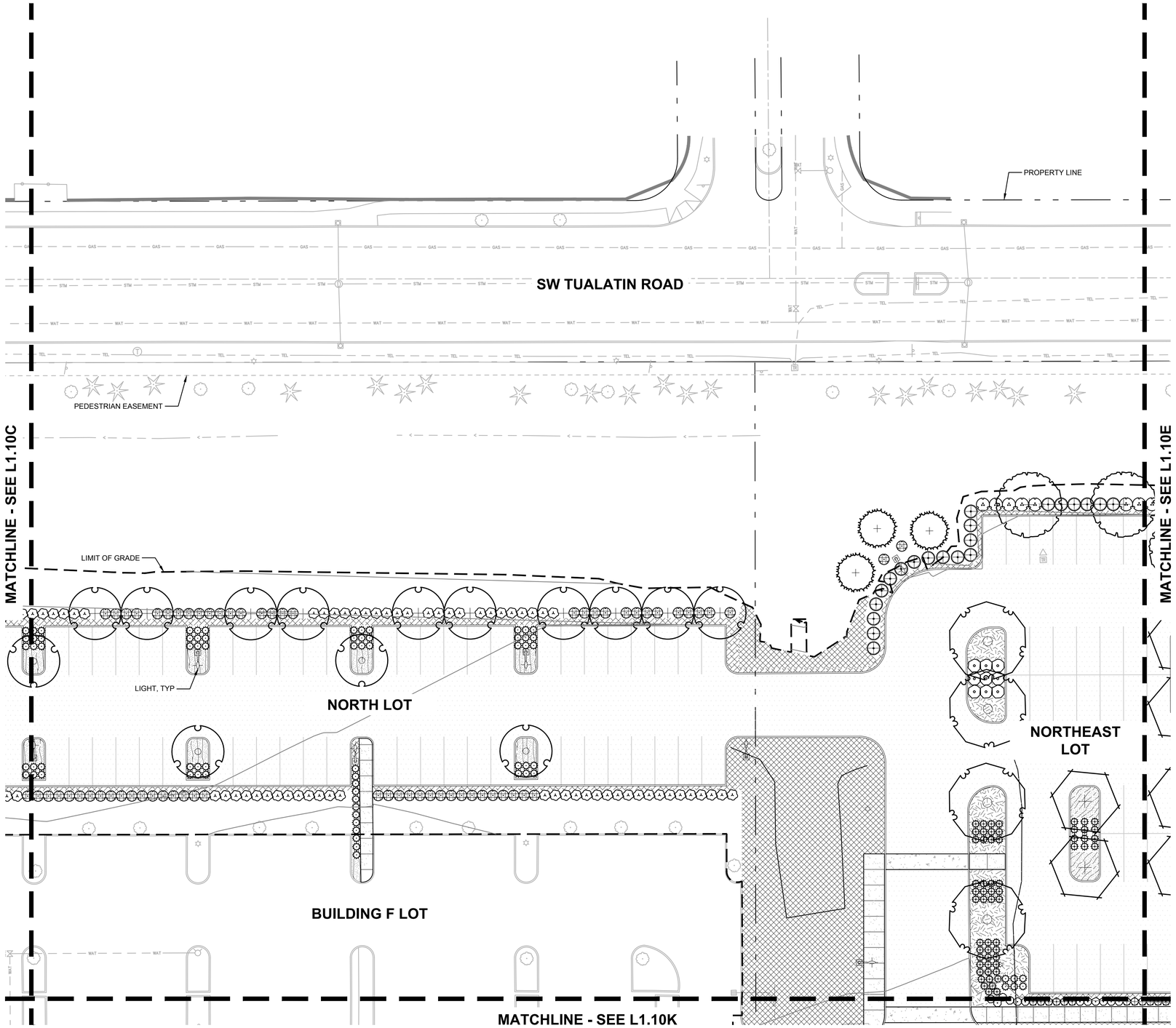
Delta	Issued As	Issue Date

SHEET TITLE:
PLANTING PLAN

SHEET:
L1.10C

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



1 L1.10D PLANTING PLAN

20 0 10 20 40 80

(IN FEET)

1 inch = 20 ft.

THE SURVEY INFORMATION SHOWN AS A BACKGROUND SCREEN ON THIS SHEET IS SHOWN FOR REFERENCE ONLY AND IS BASED ON A SURVEY BY: HICKMAN & ASSOCIATES DATE:

PLANT KEY LEGEND

SYMBOL | BOTANICAL / COMMON NAME

TREES

- *CERCIDIPHYLLUM JAPONICUM*
  KATSURA TREE
- *GLEDITSIA TRIACANTHOS INERMIS 'MORAINE'*
  MORAINE HONEY LOCUST
- *PSEUDOTSUGA MENZIESII*
  DOUGLAS FIR
- *ULMUS 'PATRIOT'*
  PATRIOT ELM
- *ULMUS DAVIDIANA JAPONICA 'MORTON' ACCOLADE® ELM*
- *ZELKOVA SERRATA 'GREEN VASE'*
  GREEN VASE JAPANESE ZELKOVA

SHRUBS

- *ARCTOSTAPHYLOS X MEDIA*
  HYBIRD MANZANITA
- *BERBERIS THUNBERGII 'CRIMSON PYGMY'*
  CRIMSON PYGMY JAPANESE BARBERRY
- *CEANOTHUS THYRSIFLORUS*
  BLUE BLOSSOM
- *MAHONIA AQUIFOLIUM 'COMPACTA'*
  COMPACT OREGON GRAPE
- *PINUS MUGO VAR. PUMILIO*
  DWARF MUGO PINE
- *PRUNUS LAUROCERASUS 'OTTO LUYKEN'*
  CHERRY LAUREL
- *VACCINIUM OVATUM*
  EVERGREEN HUCKLEBERRY

GROUND COVERS

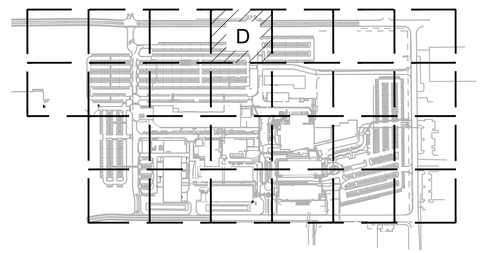
- *ARCTOSTAPHYLOS UVA–URSI*
  KINNIKINNICK
- *CEANOTHUS GLORIOSUS*
  POINT REYES CEANOTHUS
- *RUBUS CALYCINOIDES*
  GREEN CARPET RASPBERRY

GRASSES

- *BOUTELOUA GRACILIS 'BLONDE AMBITION'*
  BLONDE AMBITION BLUE GRAMA

SEED MIX

- *URBAN MEADOW MIX*
  HERITAGE SEEDLING, INC



KEY MAP
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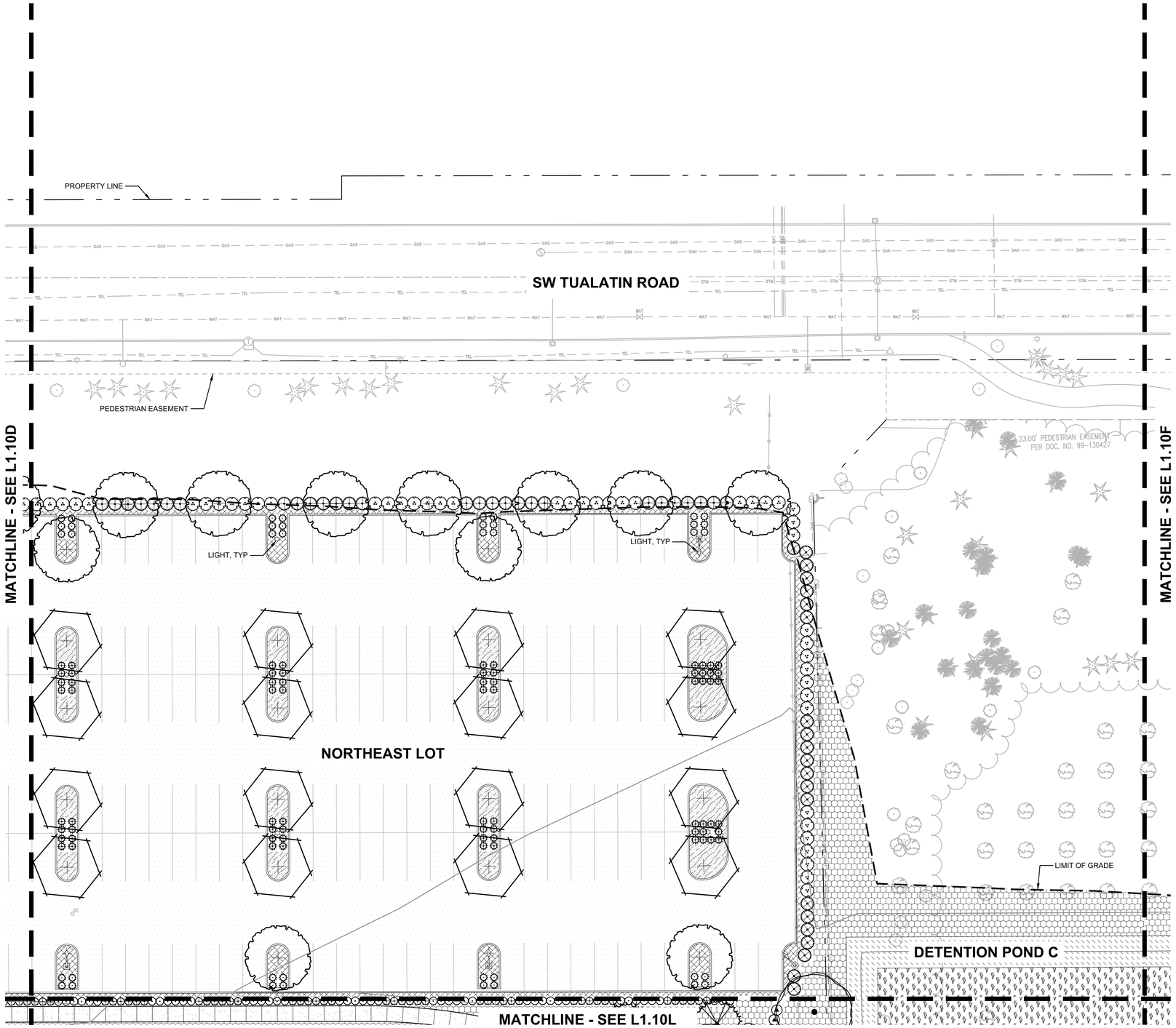
SHEET TITLE:
PLANTING PLAN

SHEET:
L1.10D

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



1 L1.10E PLANTING PLAN

20 0 10 20 40 80

(IN FEET)

1 inch = 20 ft.

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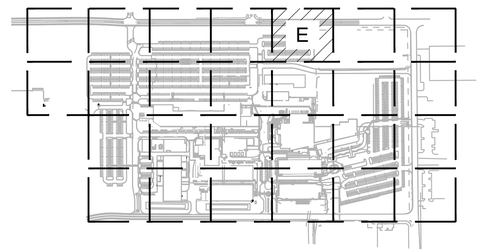
PLANT KEY LEGEND

SYMBOL	BOTANICAL / COMMON NAME
TREES	
	CERCIDIPHYLLUM JAPONICUM *KATSURA TREE*
	GLEDITSIA TRIACANTHOS INERMIS 'MORAINE' *MORAINE HONEY LOCUST*
	PSEUDOTSUGA MENZIESII *DOUGLAS FIR*
	ULMUS 'PATRIOT' *PATRIOT ELM*
	ULMUS DAVIDIANA JAPONICA 'MORTON' ACCOLADE® ELM
	ZELKOVA SERRATA 'GREEN VASE' *GREEN VASE JAPANESE ZELKOVA*
SHRUBS	
	ARCTOSTAPHYLOS X MEDIA *HYBIRD MANZANITA*
	BERBERIS THUNBERGII 'CRIMSON PYGMY' *CRIMSON PYGMY JAPANESE BARBERRY*
	CEANOTHUS THYRSIFLORUS *BLUE BLOSSOM*
	MAHONIA AQUIFOLIUM 'COMPACTA' *COMPACT OREGON GRAPE*
	PINUS MUGO VAR. PUMILIO *DWARF MUGO PINE*
	PRUNUS LAUROCERASUS 'OTTO LUYKEN' *CHERRY LAUREL*
	VACCINIUM OVATUM *EVERGREEN HUCKLEBERRY*
GROUND COVERS	
	ARCTOSTAPHYLOS UVA-URSI *KINNIKINNICK*
	CEANOTHUS GLORIOSUS *POINT REYES CEANOTHUS*
	RUBUS CALYCINOIDES *GREEN CARPET RASPBERRY*
GRASSES	
	BOUTELOUA GRACILIS 'BLONDE AMBITION' *BLONDE AMBITION BLUE GRAMA*
SEED MIX	
	URBAN MEADOW MIX *HERITAGE SEEDLING, INC*



KEY MAP
SCALE: NTS

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REVISION SCHEDULE

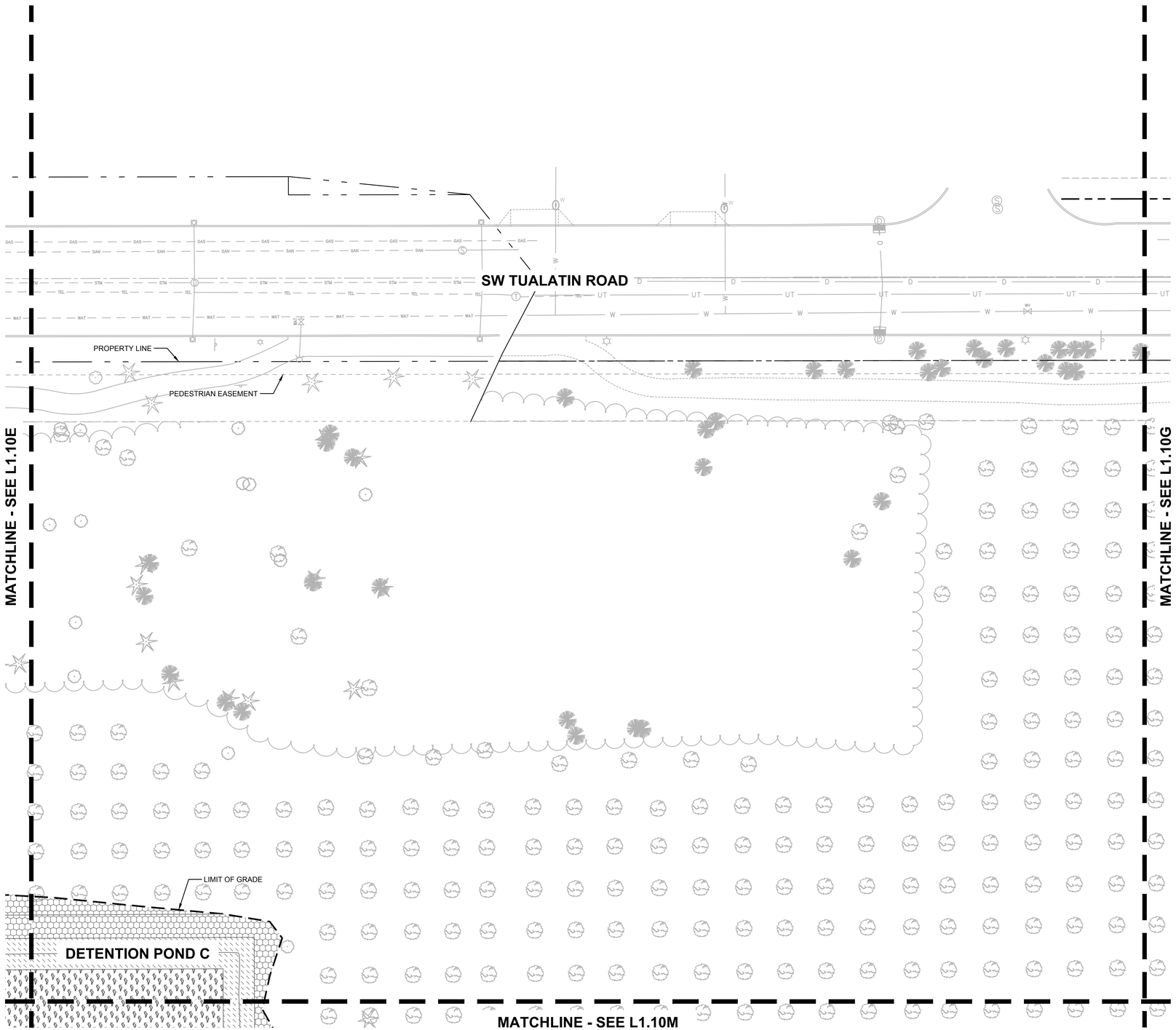
Delta	Issued As	Issue Date

SHEET TITLE:
PLANTING PLAN

SHEET:
L1.10E

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



1 L1.10F PLANTING PLAN

20 0 10 20 (IN FEET) 40 80

1 inch = 20 ft.

THE SURVEY INFORMATION SHOWN AS A BACKGROUND SCREEN ON THIS SHEET IS SHOWN FOR REFERENCE ONLY AND IS BASED ON A SURVEY BY: HICKMAN & ASSOCIATES DATE:

PLANT KEY LEGEND

SYMBOL BOTANICAL / COMMON NAME

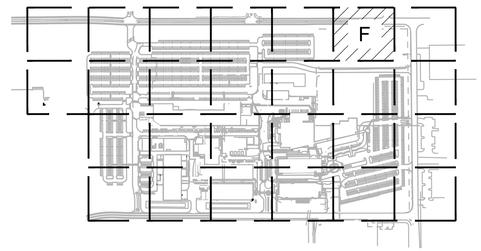
GROUND COVERS

NATIVE INTERPLANTING MIX GROUNDCOVER

STORMWATER

STORMWATER ZONE A (BOTTOM) HERBACEOUS PLANTS

STORMWATER ZONE B (SIDE SLOPES) SHRUBS AND GROUNDCOVER



KEY MAP

SCALE: NTS

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REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:

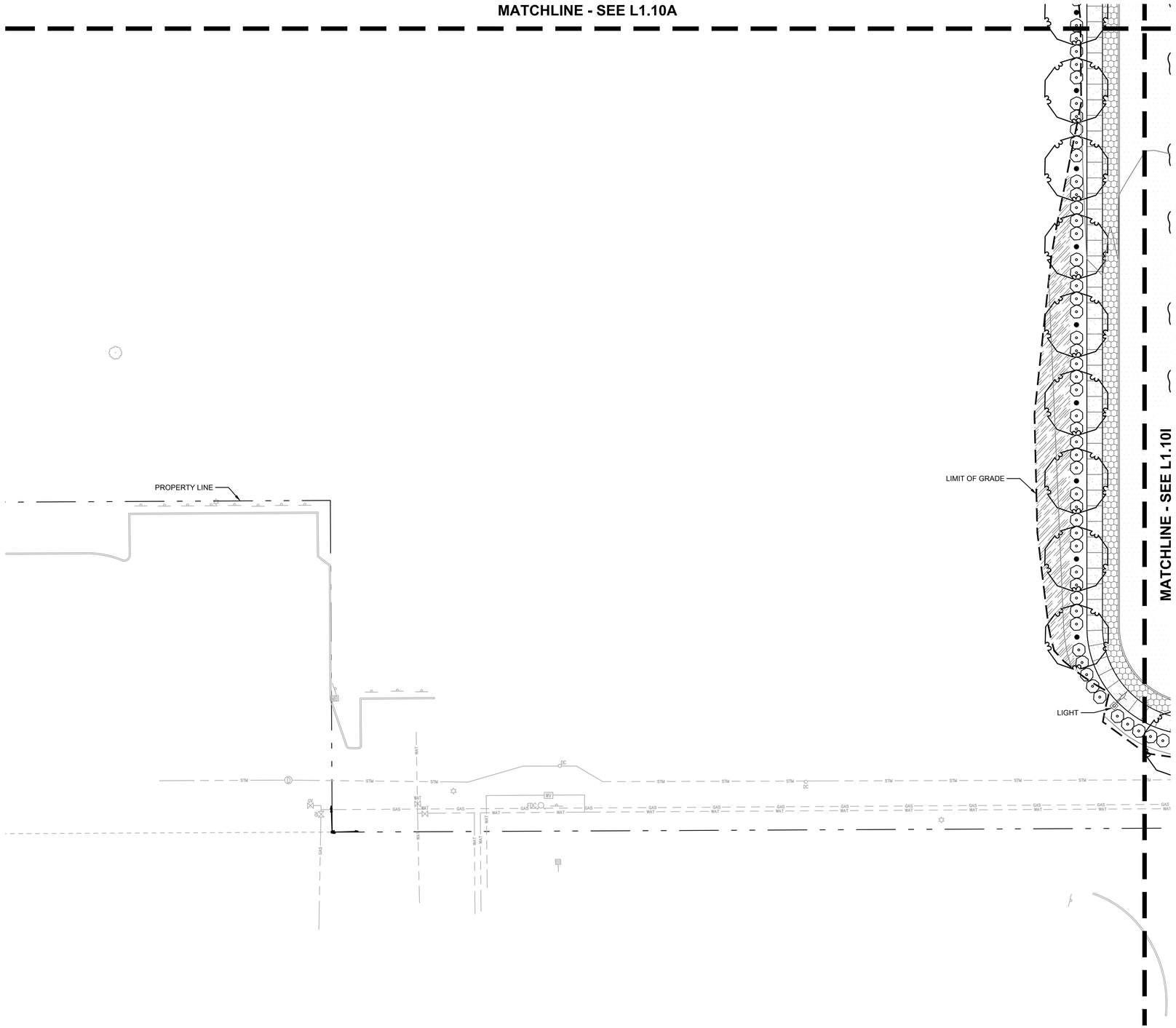
PLANTING PLAN

SHEET:

L1.10F

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



1 L1.10H PLANTING PLAN

20 0 10 20 40 80

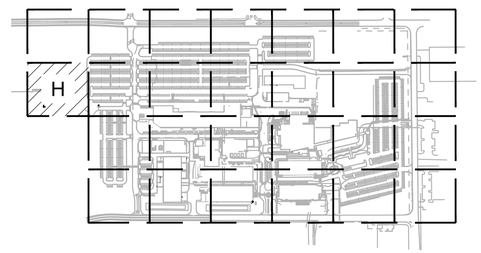
(IN FEET)

1 inch = 20 ft.

THE SURVEY INFORMATION SHOWN AS A BACKGROUND SCREEN ON THIS SHEET IS SHOWN FOR REFERENCE ONLY AND IS BASED ON A SURVEY BY: HICKMAN & ASSOCIATES DATE:

PLANT KEY LEGEND

SYMBOL	BOTANICAL / COMMON NAME
TREES	
	QUERCUS GARRYANA *OREGON WHITE OAK*
SHRUBS	
	ARCTOSTAPHYLOS X MEDIA *HYBIRD MANZANITA*
GROUND COVERS	
	NATIVE INTERPLANTING MIX *GROUNDCOVER*
SEED MIX	
	NATIVE UPLANDS MIX *SUNMARK SEEDS*



KEY MAP
SCALE: NTS

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REVISION SCHEDULE

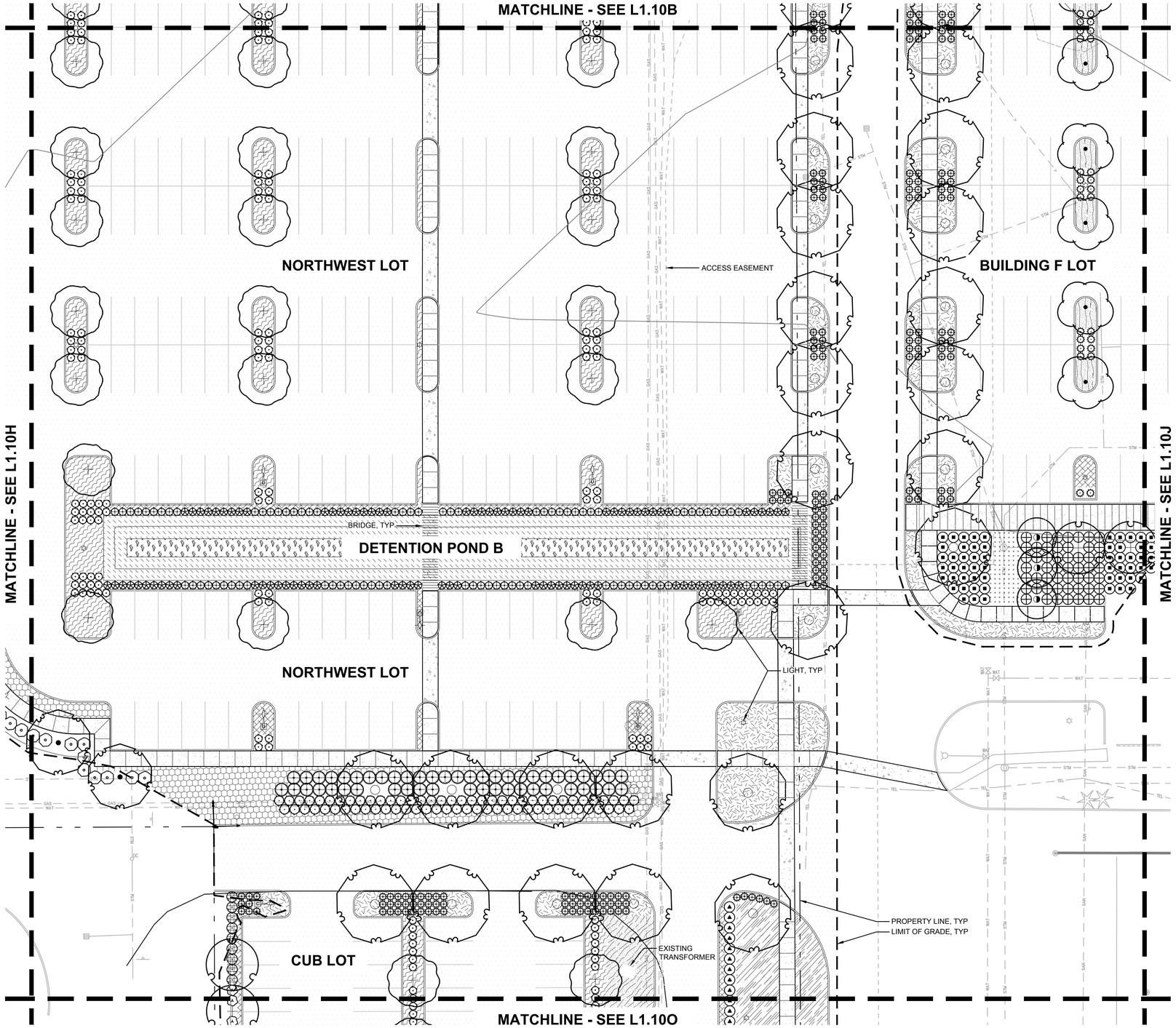
Delta	Issued As	Issue Date

SHEET TITLE:
PLANTING PLAN

SHEET:
L1.10H

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



1 L1.10I PLANTING PLAN

20 0 10 20 40 80

(IN FEET)

1 inch = 20 ft.

THE SURVEY INFORMATION SHOWN AS A BACKGROUND SCREEN ON THIS SHEET IS SHOWN FOR REFERENCE ONLY AND IS BASED ON A SURVEY BY: HICKMAN & ASSOCIATES DATE:

PLANT KEY LEGEND

SYMBOL | BOTANICAL / COMMON NAME

TREES

- *ACER RUBRUM 'BOWHALL'* — *BOWHALL RED MAPLE*
- *CERCIDIPHYLLUM JAPONICUM* — *KATSURA TREE*
- *GLEDITSIA TRIACANTHOS INERMIS 'MORAINE'* — *MORAINE HONEY LOCUST*
- *MALUS X 'PRAIRIFIRE'* — *PRAIRIFIRE CRAB APPLE*
- *OSTRYA VIRGINIANA* — *AMERICAN HOPHORNBEAM*
- *QUERCUS GARRYANA* — *OREGON WHITE OAK*

SHRUBS

- *ARCTOSTAPHYLOS X MEDIA* — *HYBIRD MANZANITA*
- *BERBERIS THUNBERGII 'CRIMSON PYGMY'* — *CRIMSON PYGMY JAPANESE BARBERRY*
- *CEANOTHUS THYRSIFLORUS* — *BLUE BLOSSOM*
- *CISTUS X HYBRIDUS* — *WHITE ROCKROSE*
- *CORNUS SERICEA 'KELSEYI'* — *KELSEY'S DWARF RED TWIG DOGWOOD*
- *PINUS MUGO VAR. PUMILIO* — *DWARF MUGO PINE*
- *PRUNUS LAUROCERASUS 'OTTO LUYKEN'* — *CHERRY LAUREL*
- *RHAPHIOLEPIS INDICA 'MONTO'* — *INDIAN PRINCESS INDIAN HAWTHORN*
- *ROSA NUTKANA* — *NOOTKA ROSE*
- *SPIRAEA BETULIFOLIA VAR. LUCIDA* — *SHINYLEAF SPIREA*
- *SYMPHORICARPOS ALBUS* — *COMMON WHITE SNOWBERRY*
- *VACCINIUM OVATUM* — *EVERGREEN HUCKLEBERRY*
- *VIBURNUM TINUS 'SPRING BOUQUET'* — *SPRING BOUQUET LAURUSTINUS*

GROUND COVERS

- *ARCTOSTAPHYLOS UVA-URSI* — *KINNIKINNICK*
- *CEANOTHUS GLORIOSUS* — *POINT REYES CEANOTHUS*
- *MAHONIA REPENS* — *CREEPING OREGON GRAPE*
- *NATIVE INTERPLANTING MIX* — *GROUNDCOVER*
- *RUBUS CALYCINOIDES* — *GREEN CARPET RASPBERRY*

GRASSES

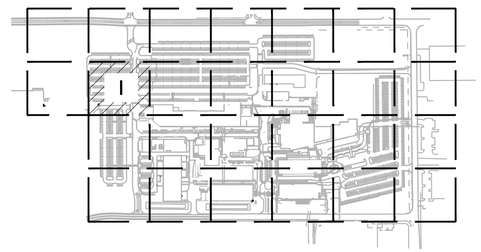
- *BOUTELOUA GRACILIS 'BLONDE AMBITION'* — *BLONDE AMBITION BLUE GRAMA*
- *NASSELLA TENUISSIMA* — *MEXICAN FEATHER GRASS*

SEED MIX

- *NATIVE UPLANDS MIX* — *SUNMARK SEEDS*

STORMWATER

- *STORMWATER ZONE A (BOTTOM)* — *HERBACEOUS PLANTS*
- *STORMWATER ZONE B (SIDE SLOPES)* — *SHRUBS AND GROUNDCOVER*



KEY MAP
SCALE: NTS

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REVISION SCHEDULE

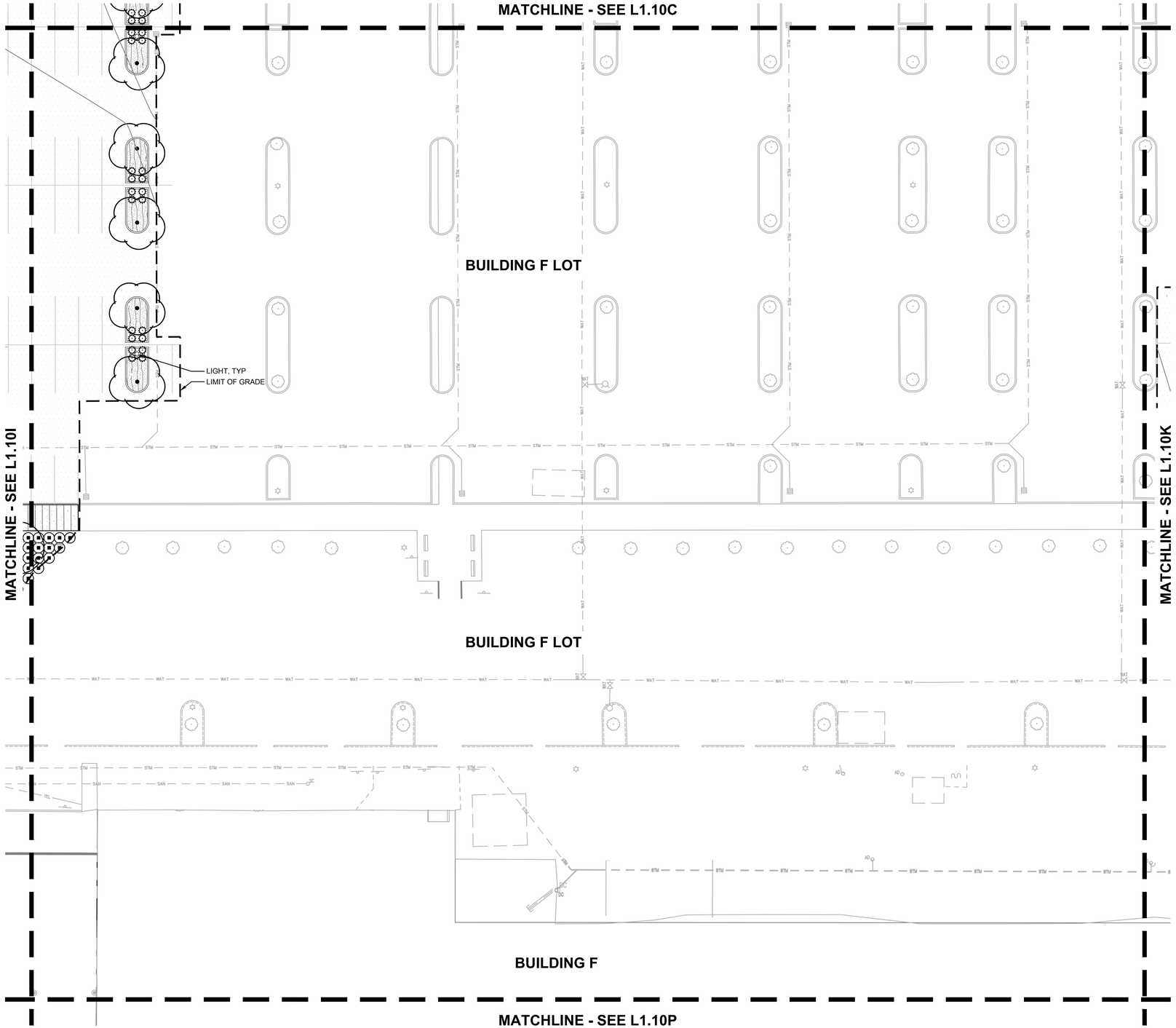
Delta	Issued As	Issue Date

SHEET TITLE:
PLANTING PLAN

SHEET:
L1.10I

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



1 PLANTING PLAN
L1.10J

20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

THE SURVEY INFORMATION SHOWN AS A BACKGROUND SCREEN ON THIS SHEET IS SHOWN FOR REFERENCE ONLY AND IS BASED ON A SURVEY BY: HICKMAN & ASSOCIATES DATE:

PLANT KEY LEGEND

SYMBOL	BOTANICAL / COMMON NAME
TREES	
	ACER RUBRUM 'BOWHALL' *BOWHALL RED MAPLE*
SHRUBS	
	CISTUS X HYBRIDUS *WHITE ROCKROSE*
	PINUS MUGO VAR. PUMILIO *DWARF MUGO PINE*
GROUND COVERS	
	RUBUS CALYCINOIDES *GREEN CARPET RASPBERRY*

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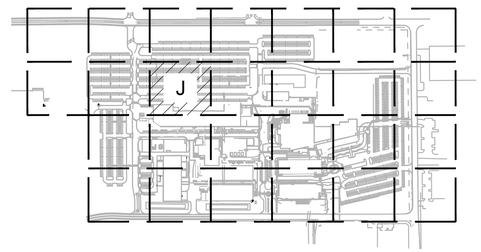
REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:
PLANTING PLAN

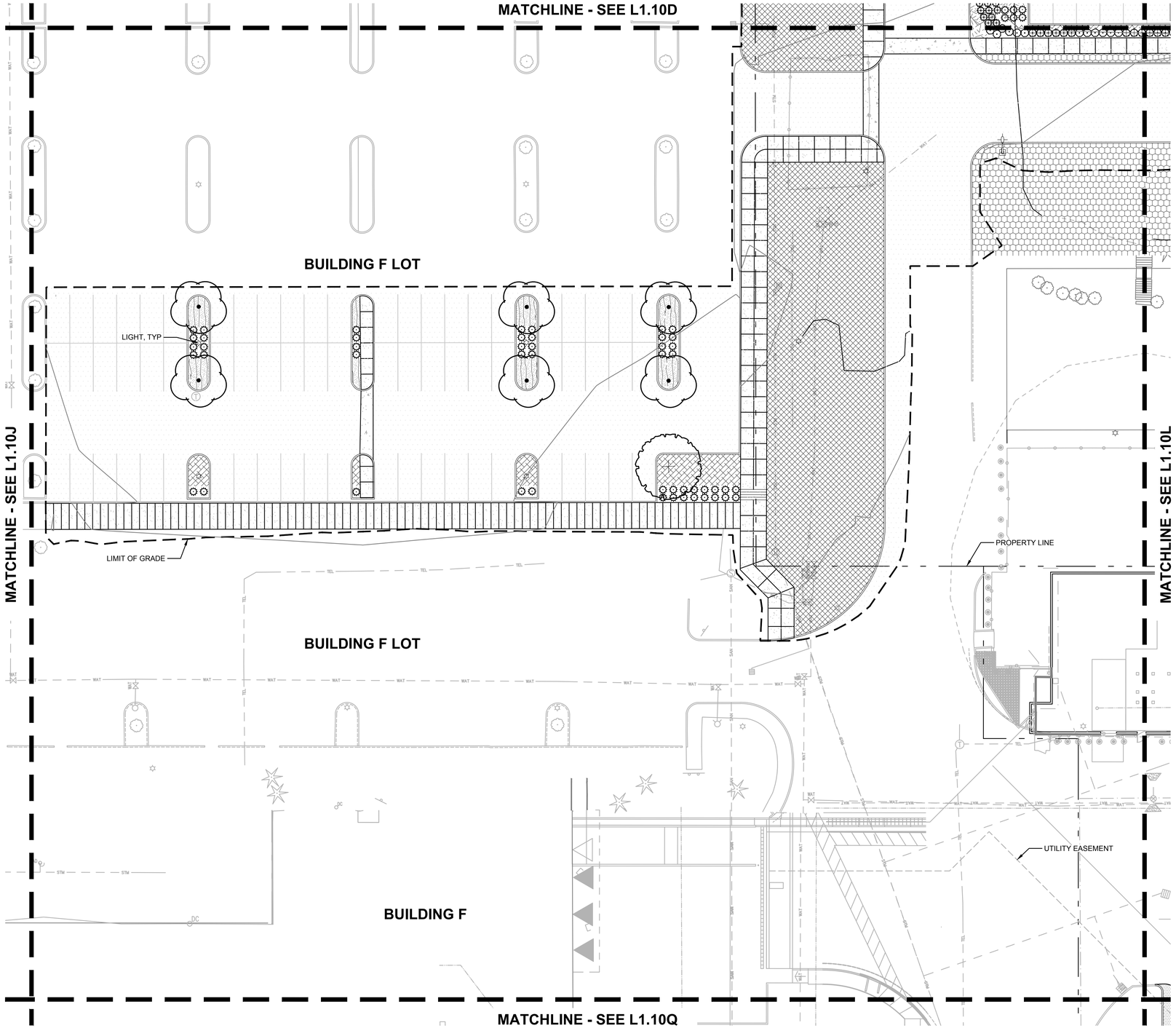


KEY MAP
SCALE: NTS

SHEET:
L1.10J

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



1 L1.10K PLANTING PLAN

20 0 10 20 40 80

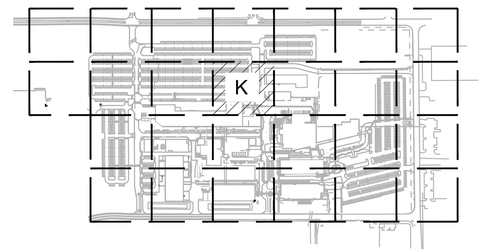
(IN FEET)

1 inch = 20 ft.

THE SURVEY INFORMATION SHOWN AS A BACKGROUND SCREEN ON THIS SHEET IS SHOWN FOR REFERENCE ONLY AND IS BASED ON A SURVEY BY: HICKMAN & ASSOCIATES DATE:

PLANT KEY LEGEND

SYMBOL	BOTANICAL / COMMON NAME
TREES	
	ACER RUBRUM 'BOWHALL' *BOWHALL RED MAPLE*
	ZELKOVA SERRATA 'GREEN VASE' *GREEN VASE JAPANESE ZELKOVA*
SHRUBS	
	PINUS MUGO VAR. PUMILIO *DWARF MUGO PINE*
	SYMPHORICARPOS ALBUS *COMMON WHITE SNOWBERRY*
	VIBURNUM DAVIDII *DAVID VIBURNUM*
GROUND COVERS	
	ARCTOSTAPHYLOS UVA–URSI *KINNIKINNICK*
	NATIVE INTERPLANTING MIX *GROUNDCOVER*
	RUBUS CALYCINOIDES *GREEN CARPET RASPBERRY*
GRASSES	
	BOUTELOUA GRACILIS 'BLONDE AMBITION' *BLONDE AMBITION BLUE GRAMA*
SEED MIX	
	URBAN MEADOW MIX *HERITAGE SEEDLING, INC*



KEY MAP
SCALE: NTS

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REVISION SCHEDULE

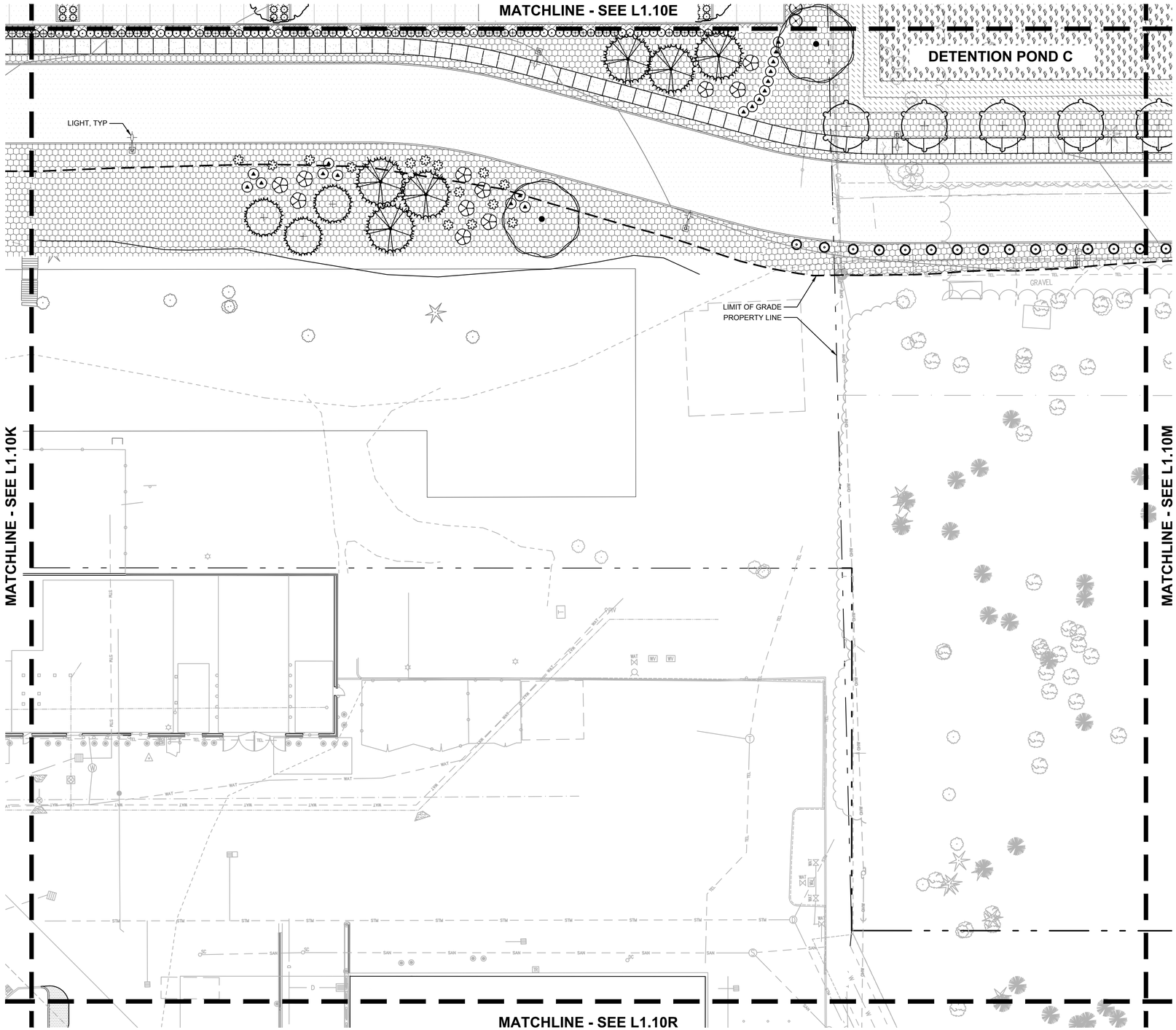
Delta	Issued As	Issue Date

SHEET TITLE:
PLANTING PLAN

SHEET:
L1.10K

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



1 L1.10L PLANTING PLAN

20 0 10 20 40 80

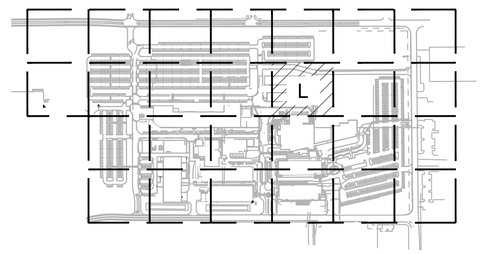
(IN FEET)

1 inch = 20 ft.

THE SURVEY INFORMATION SHOWN AS A BACKGROUND SCREEN ON THIS SHEET IS SHOWN FOR REFERENCE ONLY AND IS BASED ON A SURVEY BY: HICKMAN & ASSOCIATES DATE:

PLANT KEY LEGEND

SYMBOL	BOTANICAL / COMMON NAME
TREES	
	ACER MACROPHYLLUM *BIG LEAF MAPLE*
	PSEUDOTSUGA MENZIESII *DOUGLAS FIR*
	THUJA PLICATA 'HOGAN' *HOGAN WESTERN RED CEDAR*
	TILIA CORDATA 'GREENSPIRE' *GREENSPIRE LITTLELEAF LINDEN*
SHRUBS	
	ACER CIRCINATUM 'PACIFIC FIRE' *PACIFIC FIRE VINE MAPLE*
	POLYSTICHUM MUNITUM *WESTERN SWORD FERN*
	SALIX PURPUREA 'NANA' *DWARF PURPLE OSIER WILLOW*
	SYMPHORICARPOS ALBUS *COMMON WHITE SNOWBERRY*
	VIBURNUM DAVIDII *DAVID VIBURNUM*
	VIBURNUM TINUS 'SPRING BOUQUET' *SPRING BOUQUET LAURUSTINUS*
GROUND COVERS	
	NATIVE INTERPLANTING MIX *GROUNDCOVER*
STORMWATER	
	STORMWATER ZONE A (BOTTOM) *HERBACEOUS PLANTS*
	STORMWATER ZONE B (SIDE SLOPES) *SHRUBS AND GROUNDCOVER*



KEY MAP
SCALE: NTS

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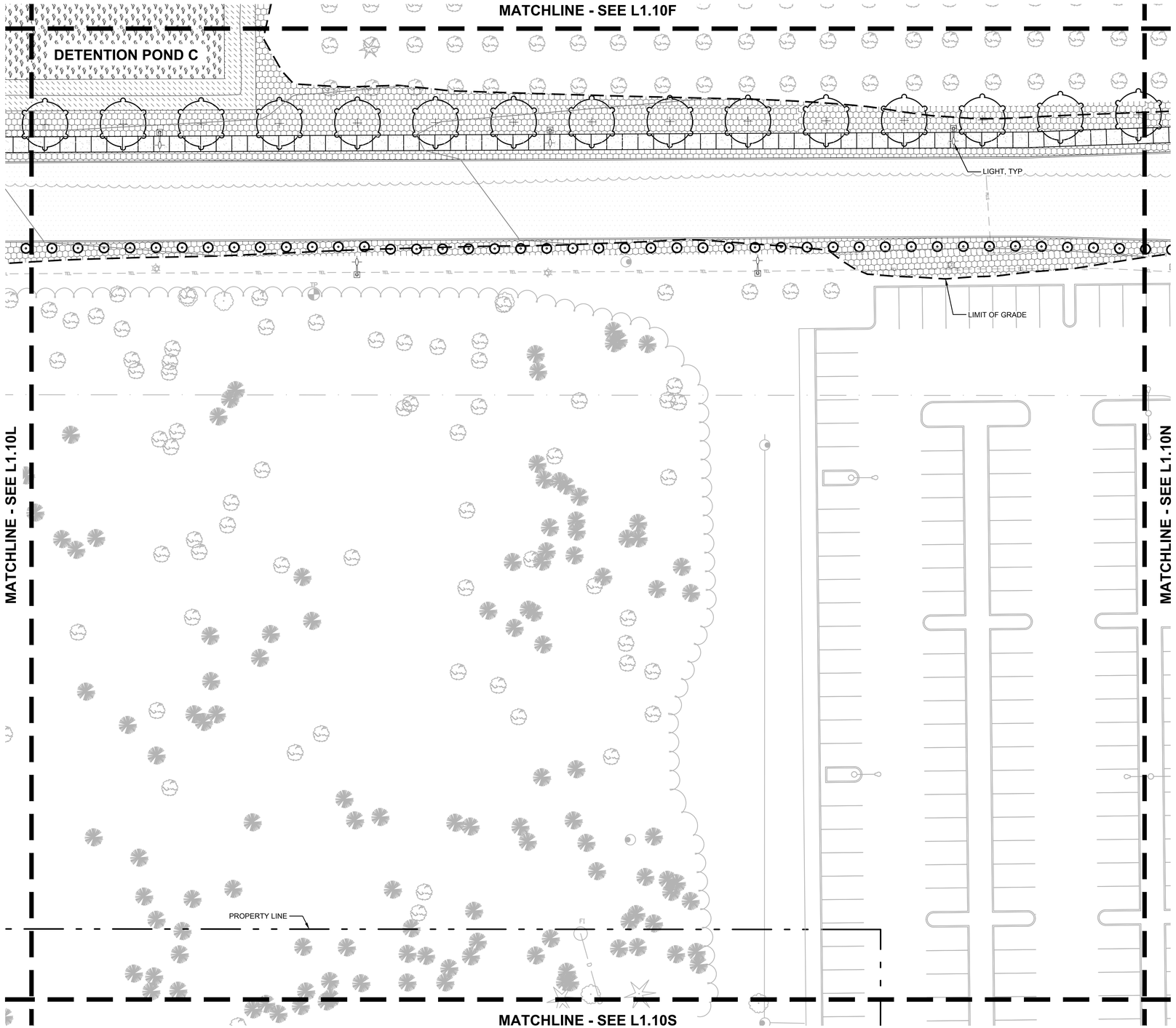
SHEET TITLE:
PLANTING PLAN

SHEET:
L1.10L

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



1 L1.10M PLANTING PLAN

20 0 10 20 40 80

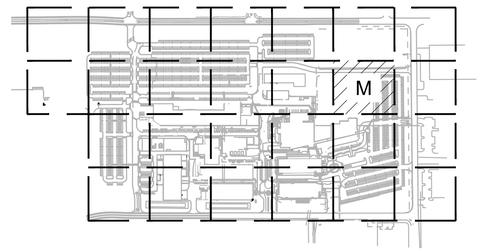
(IN FEET)

1 inch = 20 ft.

THE SURVEY INFORMATION SHOWN AS A BACKGROUND SCREEN ON THIS SHEET IS SHOWN FOR REFERENCE ONLY AND IS BASED ON A SURVEY BY: HICKMAN & ASSOCIATES DATE:

PLANT KEY LEGEND

SYMBOL	BOTANICAL / COMMON NAME
TREES	
	TILIA CORDATA 'GREENSPIRE' GREENSPIRE LITTLELEAF LINDEN
SHRUBS	
	SALIX PURPUREA 'NANA' DWARF PURPLE OSIER WILLOW
GROUND COVERS	
	NATIVE INTERPLANTING MIX GROUNDCOVER
STORMWATER	
	STORMWATER ZONE A (BOTTOM) HERBACEOUS PLANTS
	STORMWATER ZONE B (SIDE SLOPES) SHRUBS AND GROUNDCOVER



KEY MAP
SCALE: NTS

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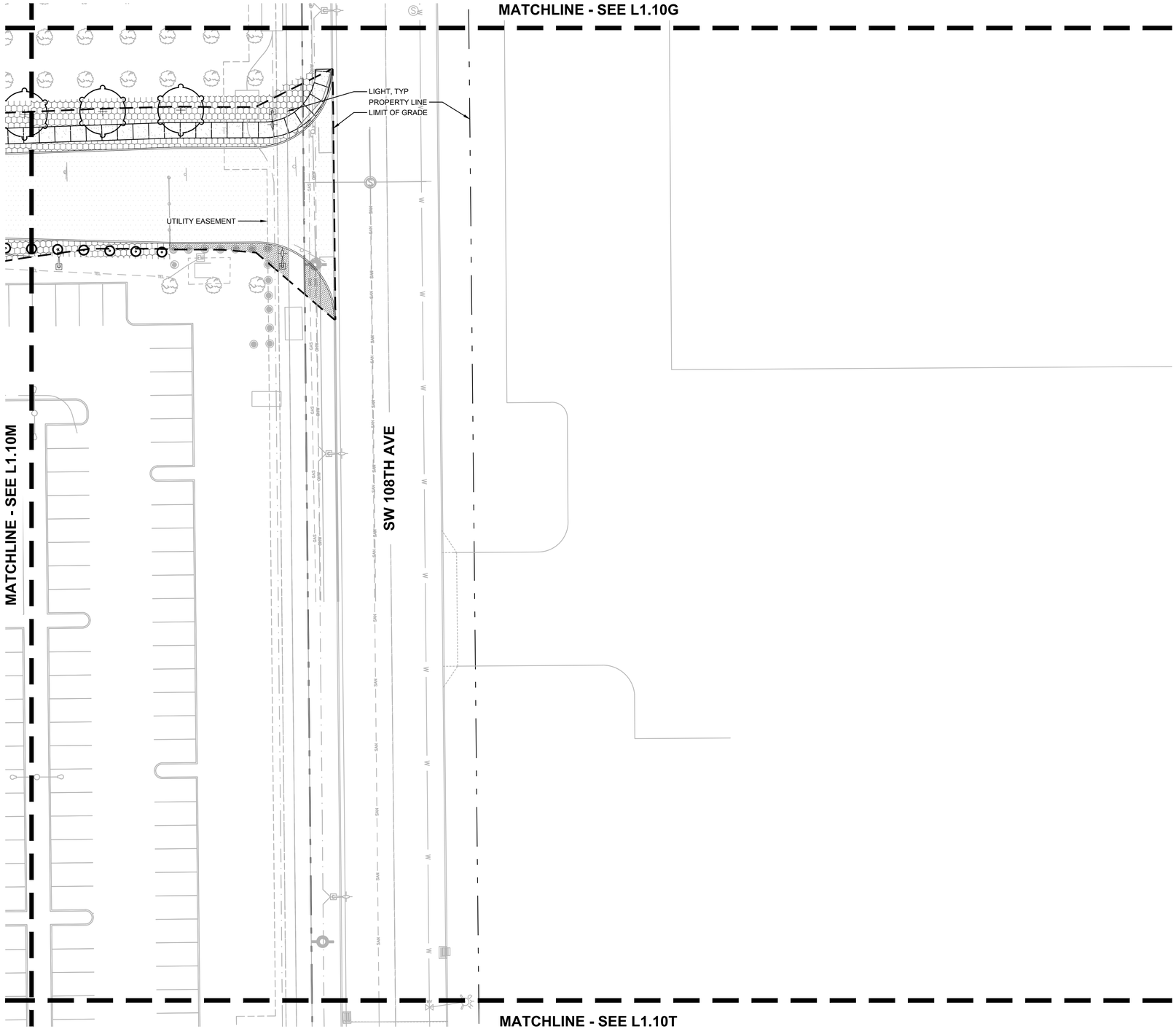
SHEET TITLE:
PLANTING PLAN

SHEET:
L1.10M

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



1 L1.10N PLANTING PLAN

20 0 10 20 40 80

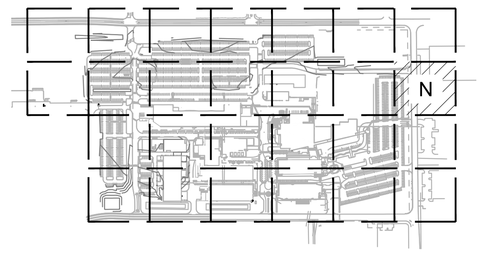
(IN FEET)

1 inch = 20 ft.

THE SURVEY INFORMATION SHOWN AS A BACKGROUND SCREEN ON THIS SHEET IS SHOWN FOR REFERENCE ONLY AND IS BASED ON A SURVEY BY: HICKMAN & ASSOCIATES DATE:

PLANT KEY LEGEND

SYMBOL	BOTANICAL / COMMON NAME
TREES	
	TILIA CORDATA 'GREENSPIRE' *GREENSPIRE LITTLELEAF LINDEN*
SHRUBS	
	SALIX PURPUREA 'NANA' *DWARF PURPLE OSIER WILLOW*
GROUND COVERS	
	NATIVE INTERPLANTING MIX *GROUNDCOVER*



KEY MAP
SCALE: NTS

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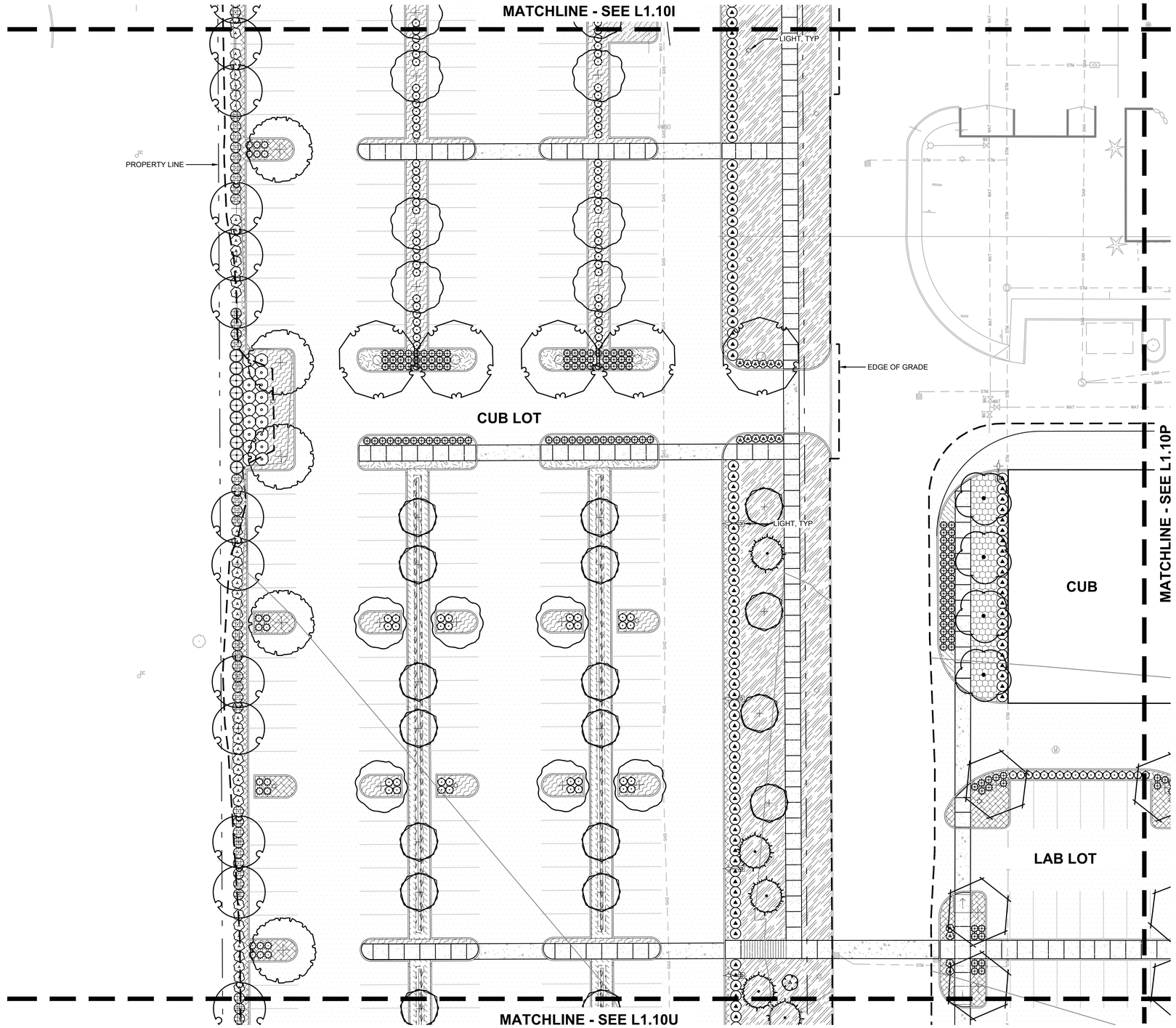
PLANTING PLAN

SHEET:
L1.10N

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



1 L1.10O PLANTING PLAN

20 0 10 20 40 80

(IN FEET)

1 inch = 20 ft.

THE SURVEY INFORMATION SHOWN AS A BACKGROUND SCREEN ON THIS SHEET IS SHOWN FOR REFERENCE ONLY AND IS BASED ON A SURVEY BY: HICKMAN & ASSOCIATES DATE:

PLANT KEY LEGEND

SYMBOL BOTANICAL / COMMON NAME

TREES

- *ACER RUBRUM 'BOWHALL'* — *BOWHALL RED MAPLE*
- *ALNUS RUBRA* — *RED ALDER*
- *AMELANCHIER ALNIFOLIA* — *REGENT SERVICEBERRY*
- *CERCIDIPHYLLUM JAPONICUM* — *KATSURA TREE*
- *GLEDITSIA TRIACANTHOS INERMIS 'MORAINE'* — *MORAINE HONEY LOCUST*
- *OSTRYA VIRGINIANA* — *AMERICAN HOPHORNBEAM*
- *PINUS PONDEROSA WILLAMETTENSIS* — *WILLAMETTE VALLEY PONDEROSA PINE*
- *ULMUS DAVIDIANA JAPONICA 'MORTON'* — *ACCOLADE® ELM*
- *ZELKOVA SERRATA 'GREEN VASE'* — *GREEN VASE JAPANESE ZELKOVA*

SHRUBS

- *ABELIA X GRANDIFLORA 'KALEIDOSCOPE'* — *KALEIDOSCOPE GLOSSY ABELIA*
- *ARCTOSTAPHYLOS X MEDIA* — *HYBIRD MANZANITA*
- *BERBERIS THUNBERGII 'CRIMSON PYGMY'* — *CRIMSON PYGMY JAPANESE BARBERRY*
- *CEANOTHUS THYRSIFLORUS* — *BLUE BLOSSOM*
- *PINUS MUGO VAR. PUMILIO* — *DWARF MUGO PINE*
- *PRUNUS LAUROCERASUS 'OTTO LUYKEN'* — *CHERRY LAUREL*
- *SPIRAEA BETULIFOLIA VAR. LUCIDA* — *SHINYLEAF SPIREA*
- *VACCINIUM OVATUM* — *EVERGREEN HUCKLEBERRY*
- *VIBURNUM TINUS 'SPRING BOUQUET'* — *SPRING BOUQUET LAURUSTINUS*

GROUND COVERS

- *ARCTOSTAPHYLOS UVA-URSI* — *KINNIKINNICK*
- *CEANOTHUS GLORIOSUS* — *POINT REYES CEANOTHUS*
- *MAHONIA REPENS* — *CREEPING OREGON GRAPE*
- *NATIVE INTERPLANTING MIX* — *GROUNDCOVER*

GRASSES

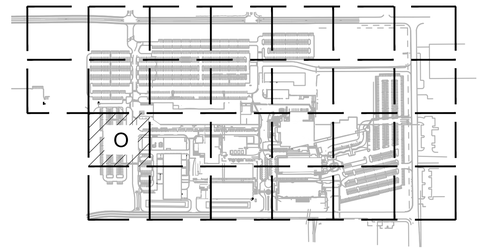
- *BOUTELOUA GRACILIS 'BLONDE AMBITION'* — *BLONDE AMBITION BLUE GRAMA*
- *DESCHAMPSIA CESPITOSA 'NORTHERN LIGHTS'* — *NORTHERN LIGHTS TUFTED HAIR GRASS*

SEED MIX

- *NATIVE UPLANDS MIX* — *SUNMARK SEEDS*

STORMWATER

- *STORMWATER ZONE A (BOTTOM)* — *HERBACEOUS PLANTS*
- *STORMWATER ZONE B (SIDE SLOPES)* — *SHRUBS AND GROUNDCOVER*



KEY MAP

SCALE: NTS

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REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:

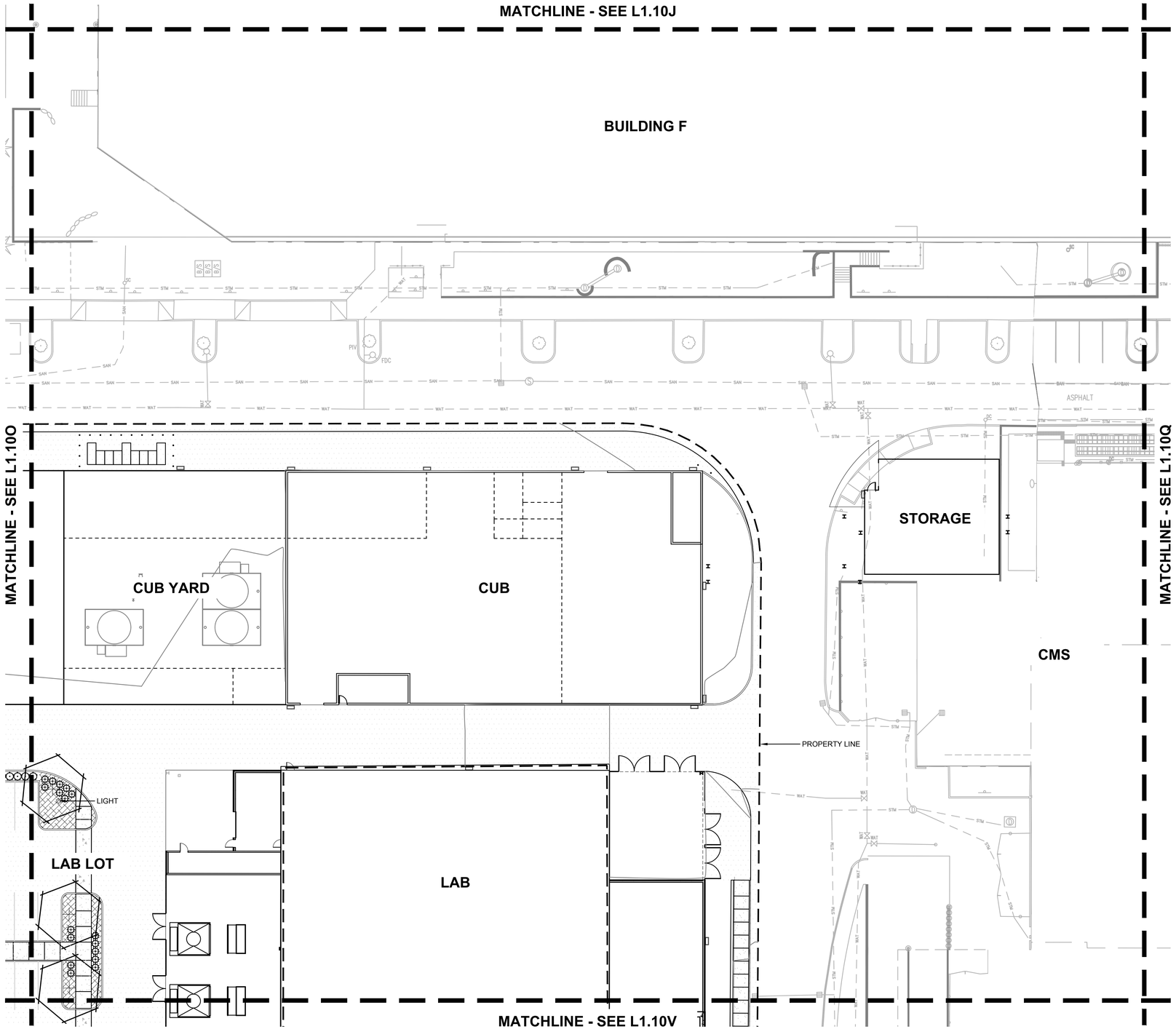
PLANTING PLAN

SHEET:

L1.10O

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



1 L1.10P PLANTING PLAN

20 0 10 20 40 80

(IN FEET)

1 inch = 20 ft.

THE SURVEY INFORMATION SHOWN AS A BACKGROUND SCREEN ON THIS SHEET IS SHOWN FOR REFERENCE ONLY AND IS BASED ON A SURVEY BY: HICKMAN & ASSOCIATES DATE:

PLANT KEY LEGEND

SYMBOL	BOTANICAL / COMMON NAME
TREES	
	ULMUS DAVIDIANA JAPONICA 'MORTON' ACCOLADE® ELM
SHRUBS	
	BERBERIS THUNBERGII 'CRIMSON PYGMY' *CRIMSON PYGMY JAPANESE BARBERRY*
	SPIRAEA BETULIFOLIA VAR. LUCIDA *SHINYLEAF SPIREA*
GROUND COVERS	
	ARCTOSTAPHYLOS UVA–URSI *KINNIKINNICK*

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REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:
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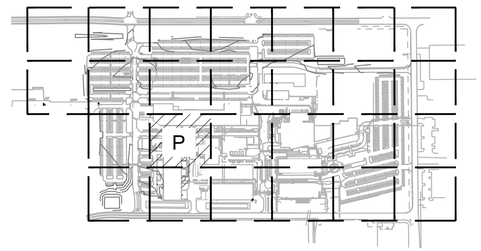
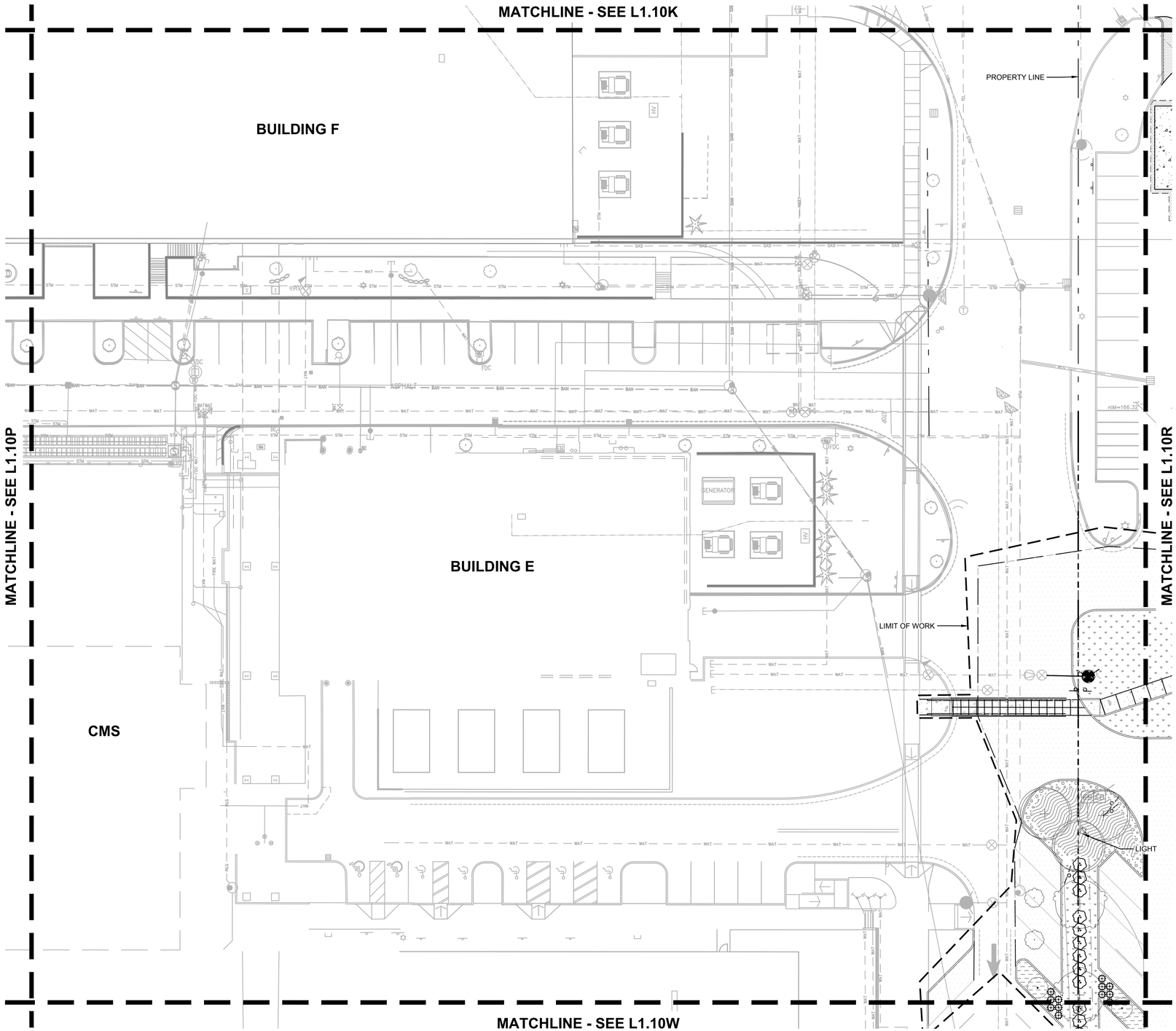


KEY MAP
SCALE: NTS

SHEET:
L1.10P

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



1 L1.10Q PLANTING PLAN

20 0 10 20 40 80

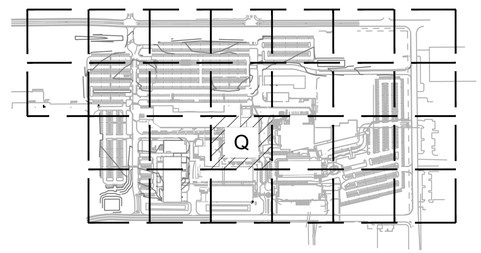
(IN FEET)

1 inch = 20 ft.

THE SURVEY INFORMATION SHOWN AS A BACKGROUND SCREEN ON THIS SHEET IS SHOWN FOR REFERENCE ONLY AND IS BASED ON A SURVEY BY: HICKMAN & ASSOCIATES DATE:

PLANT KEY LEGEND

SYMBOL	BOTANICAL / COMMON NAME
TREES	
	PRUNUS SARGENTII 'JFS KW21PS' *PINK MYST® SARGENT CHERRY*
	PRUNUS SERRULATA 'KWANZAN' *KWANZAN JAPANESE FLOWERING CHERRY*
	TILIA TOMENTOSA 'STERLING' *STERLING SILVER LINDEN*
SHRUBS	
	BERBERIS THUNBERGII 'CRIMSON PYGMY' *CRIMSON PYGMY JAPANESE BARBERRY*
	CHOISYA TERNATA 'SUNDANCE' *SUNDANCE MEXICAN MOCK ORANGE*
GROUND COVERS	
	LIRIOPE MUSCARI 'BIG BLUE' *BIG BLUE LILYTURF*
	MAHONIA REPENS *CREEPING OREGON GRAPE*
	ROSA X 'NOASCHNEE' *FLOWER CARPET® WHITE GROUNDCOVER ROS*
SEED MIX	
	PT 310 *PROTIME LUSH LAWN MIX*



KEY MAP
SCALE: NTS

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SHEET TITLE:
PLANTING PLAN

SHEET:
L1.10Q

JOB NO. **2250180.00**

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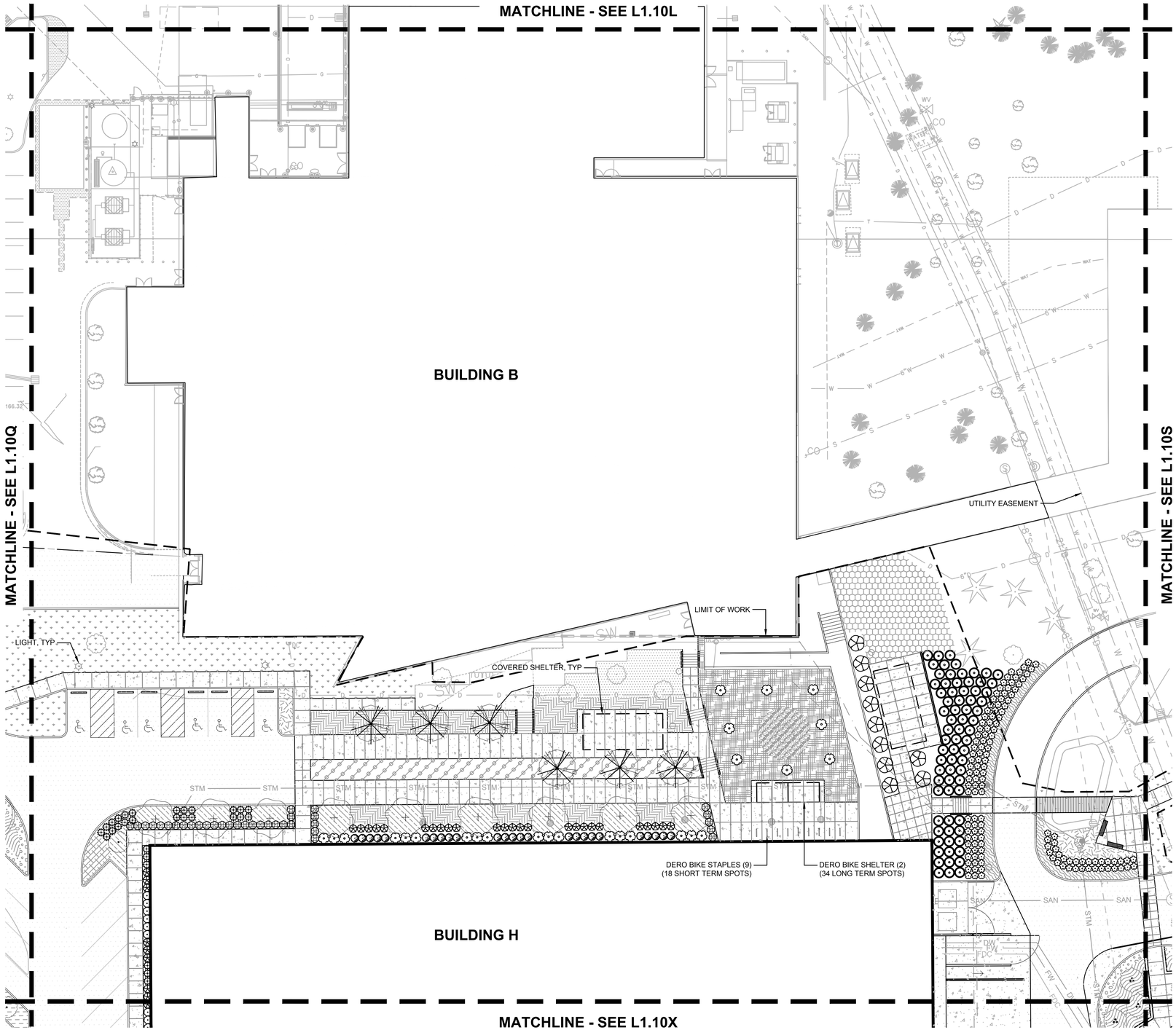


1 L1.10R PLANTING PLAN

20 0 10 20 40 80

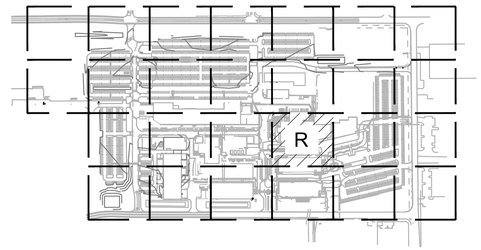
(IN FEET)

1 inch = 20 ft.

THE SURVEY INFORMATION SHOWN AS A BACKGROUND SCREEN ON THIS SHEET IS SHOWN FOR REFERENCE ONLY AND IS BASED ON A SURVEY BY: HICKMAN & ASSOCIATES DATE:

PLANT KEY LEGEND

SYMBOL	BOTANICAL / COMMON NAME
TREES	
	ACER PALMATUM 'SANGO-KAKU' *CORAL BARK JAPANESE MAPLE*
	CERCIS OCCIDENTALIS 'CLAREMONT' *CLAREMONT WESTERN REDBUD*
	PARROTIA PERSICA 'JL COLUMNAR' *PERSIAN SPIRE™ PARROTIA*
	PRUNUS SARGENTII 'JFS KW21PS' *PINK MYST® SARGENT CHERRY*
SHRUBS	
	ACANTHUS MOLLIS 'HOLLARD'S GOLD' *HOLLARD'S GOLD BEAR'S BREECH*
	ACER CIRCINATUM 'PACIFIC FIRE' *PACIFIC FIRE VINE MAPLE*
	BERBERIS THUNBERGII 'CRIMSON PYGMY' *CRIMSON PYGMY JAPANESE BARBERRY*
	CORNUS SERICEA 'KELSEYI' *KELSEY'S DWARF RED TWIG DOGWOOD*
	PEROVSKIA ATRIPLICIFOLIA 'BLUE JEAN BABY' *BLUE JEAN BABY RUSSIAN SAGE*
	SALIX PURPUREA 'NANA' *DWARF PURPLE OSIER WILLOW*
	SARCOCOCCA RUSCIFOLIA *FRAGRANT SWEETBOX*
	SPIRAEA BETULIFOLIA 'TOR GOLD' *GLOW GIRL® BIRCHLEAF SPIREA*
	VIBURNUM DAVIDII *DAVID VIBURNUM*
GROUND COVERS	
	ACHILLEA MILLEFOLIUM 'DESRED' *DESERT EVE™ RED COMMON YARROW*
	ADIANTUM AETHIOPICUM *MAIDENHAIR FERN*
	ARCTOSTAPHYLOS UVA-URSI *KINNIKINNICK*
	GAULTHERIA SHALLON 'GAULSID12' *CASCADE SUNRISE™ SALAL*
	LIRIOPE MUSCARI 'BIG BLUE' *BIG BLUE LILYTURF*
	NATIVE INTERPLANTING MIX *GROUNDCOVER*
	ROSA X 'NOASCHNEE' *FLOWER CARPET® WHITE GROUNDCOVER ROSE*
GRASSES	
	BOUTELOUA GRACILIS 'BLONDE AMBITION' *BLONDE AMBITION BLUE GRAMA*
	DESCHAMPSIA CESPITOSA 'NORTHERN LIGHTS' *NORTHERN LIGHTS TUFTED HAIR GRASS*
MATERIALS	
	HAZELNUT SHELL MULCH
SEED MIX	
	GRASS PAVE MIX *HERITAGE SEEDLING, INC*
	OAK WOODLAND UNDERSTORY MIX *HERITAGE SEEDLING, INC*
	PT 310 *PROTIME LUSH LAWN MIX*



KEY MAP
SCALE: NTS

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SHEET TITLE:
PLANTING PLAN

SHEET:
L1.10R

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2

MATCHLINE - SEE L1.10M

BUILDING A

MATCHLINE - SEE L1.10R

MATCHLINE - SEE L1.10T

PROPERTY LINE

LIMIT OF WORK

BENCH

MATCHLINE - SEE L1.10Y

1 L1.10S PLANTING PLAN

20 0 10 20 40 80

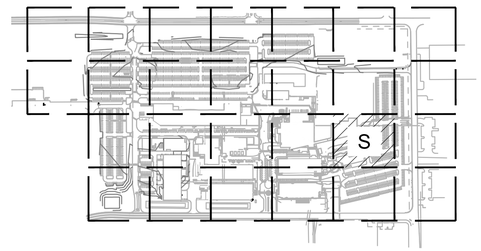
(IN FEET)

1 inch = 20 ft.

THE SURVEY INFORMATION SHOWN AS A BACKGROUND SCREEN ON THIS SHEET IS SHOWN FOR REFERENCE ONLY AND IS BASED ON A SURVEY BY: HICKMAN & ASSOCIATES DATE:

PLANT KEY LEGEND

SYMBOL	BOTANICAL / COMMON NAME
TREES	
	CERCIDIPHYLLUM JAPONICUM
	KATSURA TREE
	PRUNUS SERRULATA 'KWANZAN'
	KWANZAN JAPANESE FLOWERING CHERRY
SHRUBS	
	ABELIA X GRANDIFLORA 'KALEIDOSCOPE'
	KALEIDOSCOPE GLOSSY ABELIA
GROUND COVERS	
	LIRIOPE MUSCARI 'BIG BLUE'
	BIG BLUE LILYTURF
	ROSA X 'NOASCHNEE'
	FLOWER CARPET® WHITE GROUNDCOVER ROSE
	RUBUS CALYCINOIDES
	GREEN CARPET RASPBERRY
SEED MIX	
	PT 310
	PROTIME LUSH LAWN MIX



KEY MAP
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Delta	Issued As	Issue Date

SHEET TITLE:
PLANTING PLAN

SHEET:
L1.10S

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2

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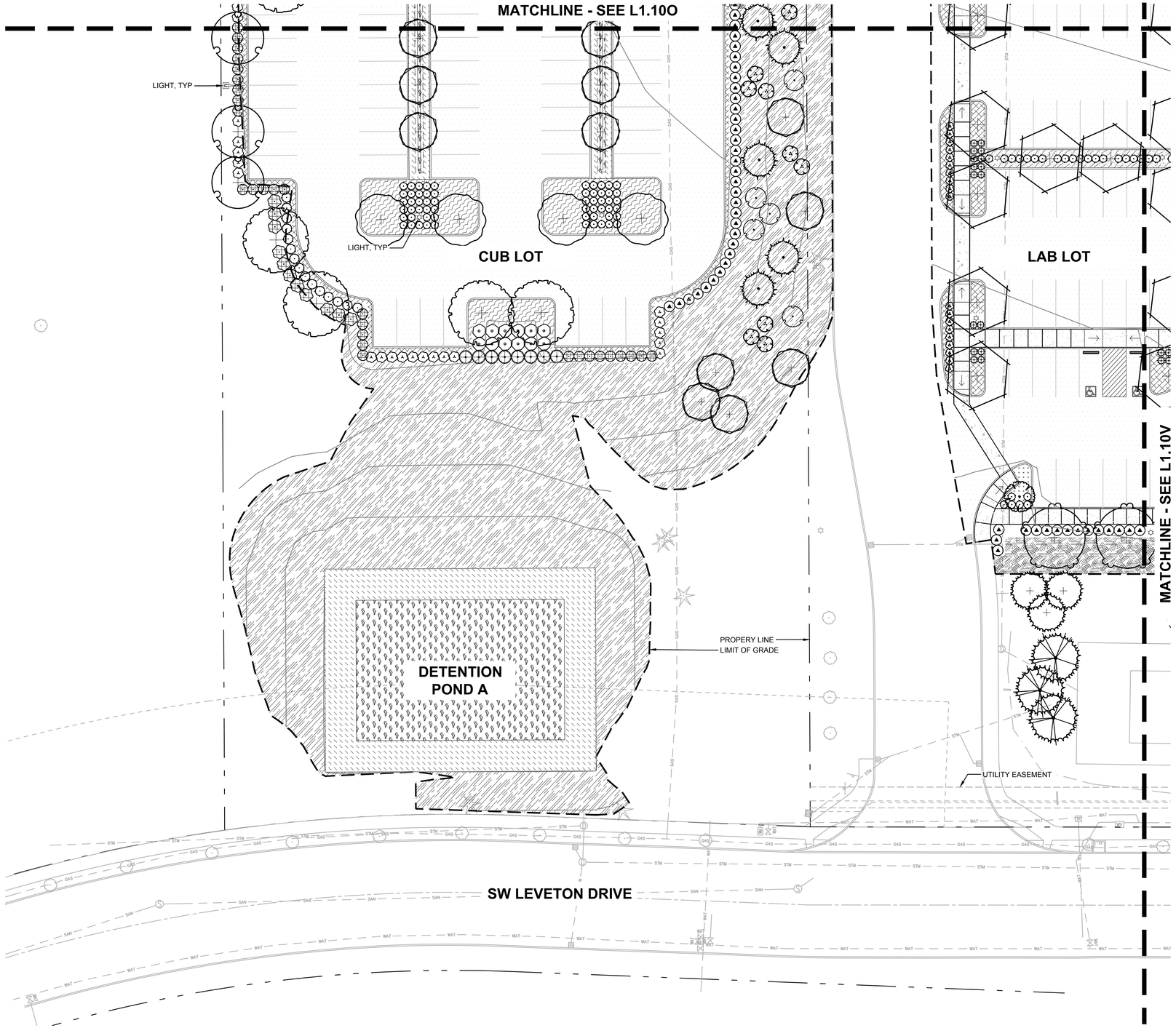


1 L1.10U PLANTING PLAN

20 0 10 20 40 80

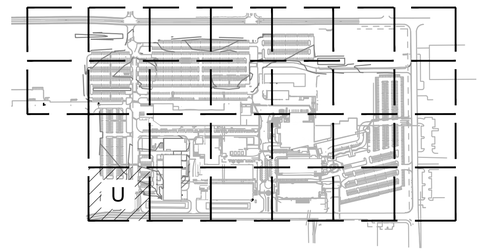
(IN FEET)

1 inch = 20 ft.

THE SURVEY INFORMATION SHOWN AS A BACKGROUND SCREEN ON THIS SHEET IS SHOWN FOR REFERENCE ONLY AND IS BASED ON A SURVEY BY: HICKMAN & ASSOCIATES DATE:

PLANT KEY LEGEND

SYMBOL	BOTANICAL / COMMON NAME
TREES	
	ALNUS RUBRA *RED ALDER*
	AMELANCHIER ALNIFOLIA *REGENT SERVICEBERRY*
	ARBUTUS UNEDO *STRAWBERRY TREE*
	GLEDITSIA TRIACANTHOS INERMIS 'MORAINE' *MORAINE HONEY LOCUST*
	OSTRYA VIRGINIANA *AMERICAN HOPHORNBEAM*
	PINUS PONDEROSA WILLAMETTENSIS *WILLAMETTE VALLEY PONDEROSA PINE*
	PSEUDOTSUGA MENZIESII *DOUGLAS FIR*
	THUJA PLICATA 'HOGAN' *HOGAN WESTERN RED CEDAR*
	TILIA TOMENTOSA 'STERLING' *STERLING SILVER LINDEN*
	ULMUS DAVIDIANA JAPONICA 'MORTON' ACCOLADE® ELM
	ZELKOVA SERRATA 'GREEN VASE' *GREEN VASE JAPANESE ZELKOVA*
SHRUBS	
	ABELIA X GRANDIFLORA 'KALEIDOSCOPE' *KALEIDOSCOPE GLOSSY ABELIA*
	ACER CIRCINATUM *VINE MAPLE*
	ARCTOSTAPHYLOS X MEDIA *HYBIRD MANZANITA*
	BERBERIS THUNBERGII 'CRIMSON PYGMY' *CRIMSON PYGMY JAPANESE BARBERRY*
	CEANOTHUS THYRSIFLORUS *BLUE BLOSSOM*
	PHILADELPHUS LEWISII *WILD MOCKORANGE*
	PRUNUS LAUROCERASUS 'OTTO LUYKEN' *CHERRY LAUREL*
	ROSA NUTKANA *NOOTKA ROSE*
	SPIRAEA BETULIFOLIA VAR. LUCIDA *SHINYLEAF SPIREA*
	VACCINIUM OVATUM *EVERGREEN HUCKLEBERRY*
	VIBURNUM TINUS 'SPRING BOUQUET' *SPRING BOUQUET LAURUSTINUS*
GROUND COVERS	
	ARCTOSTAPHYLOS UVA–URSI *KINNIKINNICK*
	CEANOTHUS GLORIOSUS *POINT REYES CEANOTHUS*
	MAHONIA REPENS *CREEPING OREGON GRAPE*
GRASSES	
	NASSELLA TENUISSIMA *MEXICAN FEATHER GRASS*
SEED MIX	
	NATIVE UPLANDS MIX *SUNMARK SEEDS*
STORMWATER	
	STORMWATER ZONE A (BOTTOM) *HERBACEOUS PLANTS*
	STORMWATER ZONE B (SIDE SLOPES) *SHRUBS AND GROUNDCOVER*
	SWALE – ZONE B (FREEBOARD) *FREEBOARD AREA*



KEY MAP
SCALE: NTS

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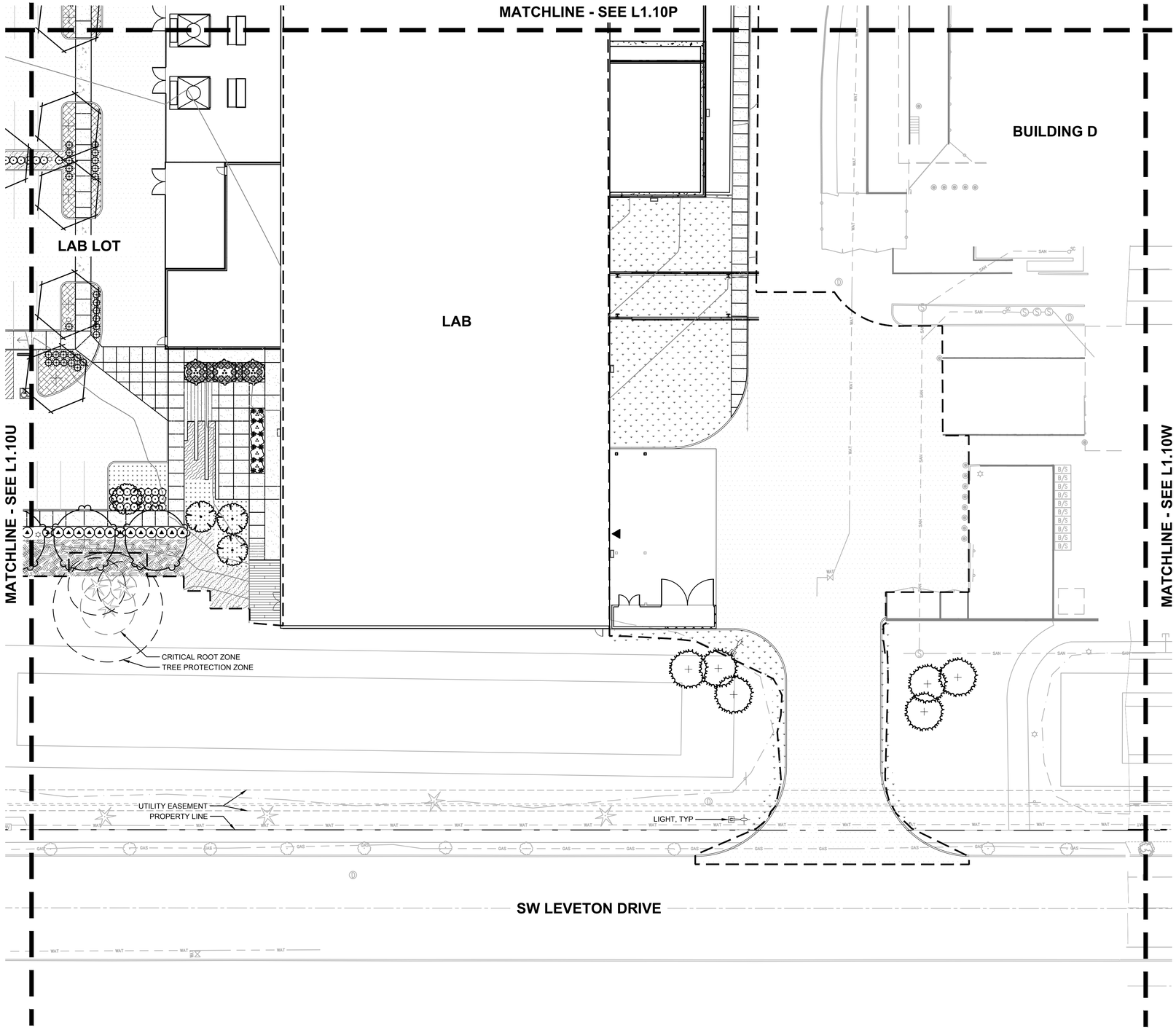
Delta	Issued As	Issue Date

SHEET TITLE:
PLANTING PLAN

SHEET:
L1.10U

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



1 L1.10V PLANTING PLAN

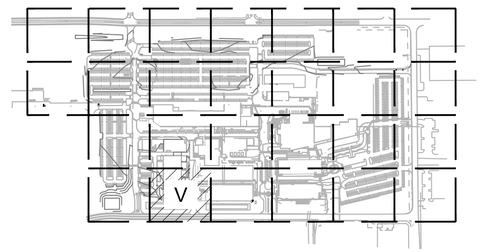
20 0 10 20 (IN FEET) 40 80

1 inch = 20 ft.

THE SURVEY INFORMATION SHOWN AS A BACKGROUND SCREEN ON THIS SHEET IS SHOWN FOR REFERENCE ONLY AND IS BASED ON A SURVEY BY: HICKMAN & ASSOCIATES DATE:

PLANT KEY LEGEND

SYMBOL	BOTANICAL / COMMON NAME
TREES	
	ARBUTUS UNEDO
	STRAWBERRY TREE
	CERCIS OCCIDENTALIS 'CLAREMONT'
	CLAREMONT WESTERN REDBUD
	PSEUDOTSUGA MENZIESII
	DOUGLAS FIR
	TILIA TOMENTOSA 'STERLING'
	STERLING SILVER LINDEN
	ULMUS DAVIDIANA JAPONICA 'MORTON'
	ACCOLADE® ELM
SHRUBS	
	BERBERIS THUNBERGII 'CRIMSON PYGMY'
	CRIMSON PYGMY JAPANESE BARBERRY
	CHOISYA TERNATA 'SUNDANCE'
	SUNDANCE MEXICAN MOCK ORANGE
	HEMEROCALLIS X 'STELLA DE ORO'
	STELLA DE ORO DAYLILY
	NEPETA X 'WALKER'S LOW'
	WALKER'S LOW CATMINT
	SPIRAEA BETULIFOLIA VAR. LUCIDA
	SHINYLEAF SPIREA
	VIBURNUM TINUS 'SPRING BOUQUET'
	SPRING BOUQUET LAURUSTINUS
GROUND COVERS	
	ARCTOSTAPHYLOS UVA–URSI
	KINNIKINNICK
	CEANOTHUS GLORIOSUS
	POINT REYES CEANOTHUS
	SEDUM X 'AUTUMN JOY'
	AUTUMN JOY SEDUM
GRASSES	
	NASSELLA TENUISSIMA
	MEXICAN FEATHER GRASS
SEED MIX	
	PT 310
	PROTIME LUSH LAWN MIX
STORMWATER	
	SWALE – ZONE B (FREEBOARD)
	FREEBOARD AREA



KEY MAP
SCALE: NTS

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SHEET TITLE:
PLANTING PLAN

SHEET:
L1.10V

JOB NO. **2250180.00**

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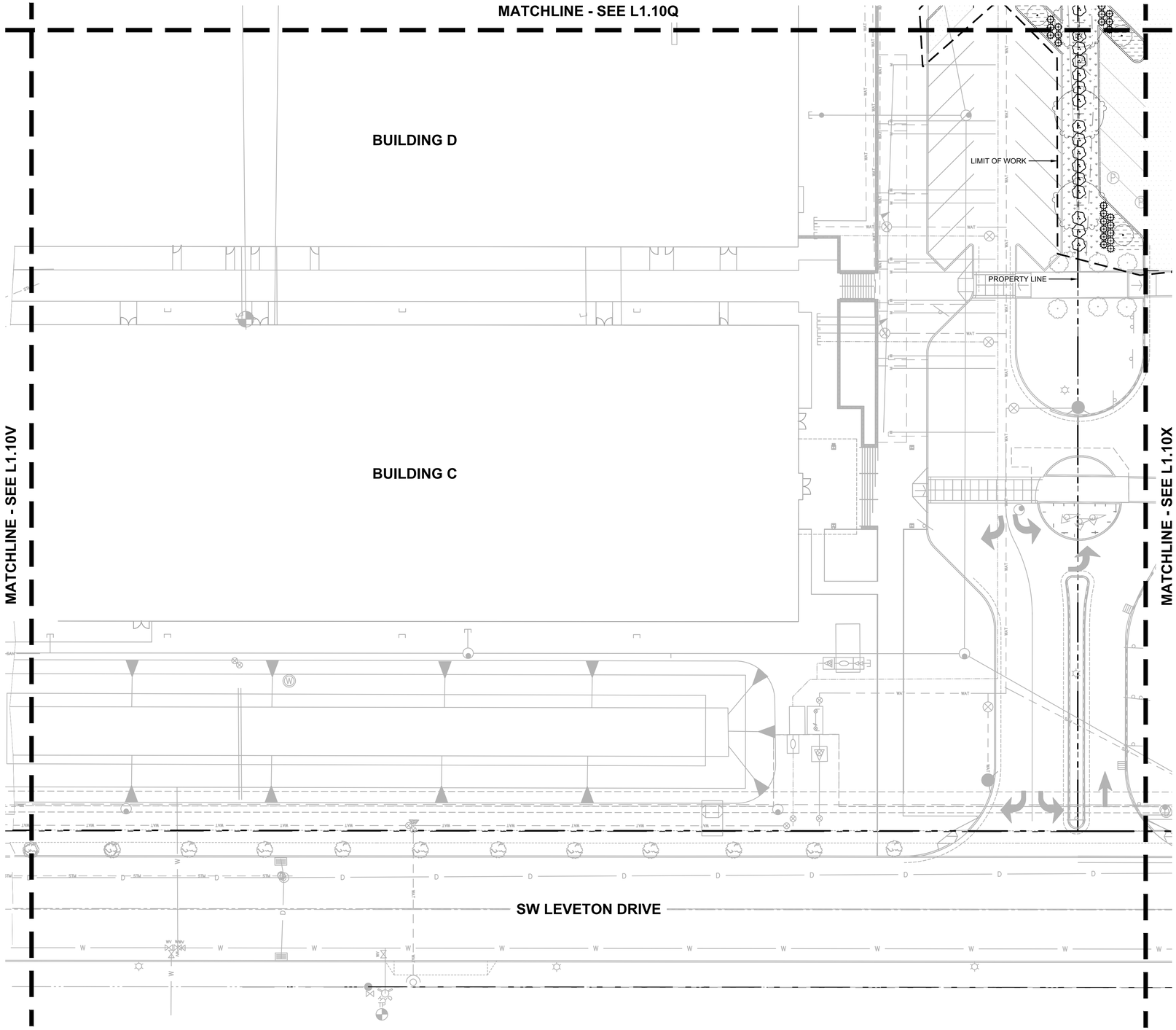


1 L1.10W PLANTING PLAN

20 0 10 20 40 80

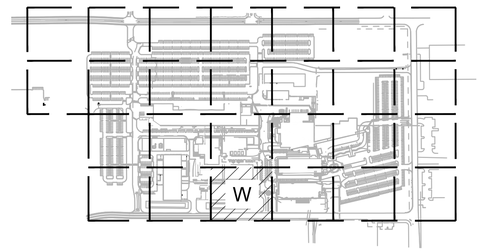
(IN FEET)

1 inch = 20 ft.

THE SURVEY INFORMATION SHOWN AS A BACKGROUND SCREEN ON THIS SHEET IS SHOWN FOR REFERENCE ONLY AND IS BASED ON A SURVEY BY: HICKMAN & ASSOCIATES DATE:

PLANT KEY LEGEND

SYMBOL	BOTANICAL / COMMON NAME
TREES	
	PRUNUS SARGENTII 'JFS KW21PS' *PINK MYST® SARGENT CHERRY*
	TILIA TOMENTOSA 'STERLING' *STERLING SILVER LINDEN*
SHRUBS	
	BERBERIS THUNBERGII 'CRIMSON PYGMY' *CRIMSON PYGMY JAPANESE BARBERRY*
	CHOISYA TERNATA 'SUNDANCE' *SUNDANCE MEXICAN MOCK ORANGE*
GROUND COVERS	
	MAHONIA REPENS *CREEPING OREGON GRAPE*



KEY MAP
SCALE: NTS

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REVISION SCHEDULE

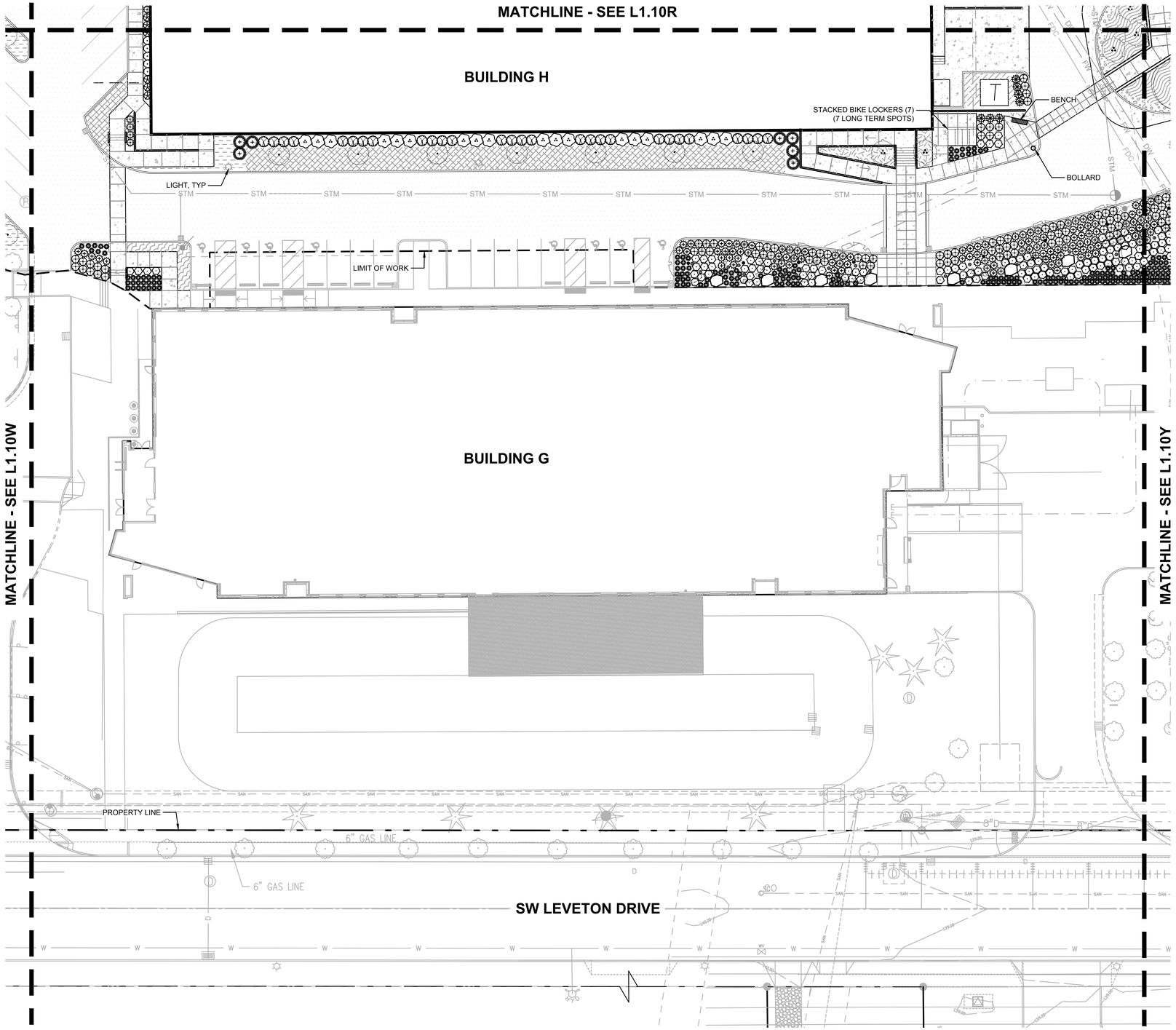
Delta	Issued As	Issue Date

SHEET TITLE:
PLANTING PLAN

SHEET:
L1.10W

JOB NO. **2250180.00**

ARCHITECTURAL REVIEW 07/21/2



1 L1.10X PLANTING PLAN

20 0 10 20 40 80

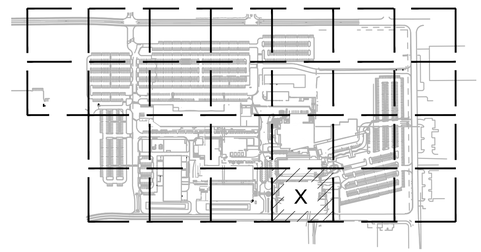
(IN FEET)

1 inch = 20 ft.

THE SURVEY INFORMATION SHOWN AS A BACKGROUND SCREEN ON THIS SHEET IS SHOWN FOR REFERENCE ONLY AND IS BASED ON A SURVEY BY: HICKMAN & ASSOCIATES DATE:

PLANT KEY LEGEND

SYMBOL	BOTANICAL / COMMON NAME
TREES	
	CERCIS OCCIDENTALIS 'CLAREMONT' *CLAREMONT WESTERN REDBUD*
	PRUNUS SARGENTII 'JFS KW21PS' *PINK MYST® SARGENT CHERRY*
	ZELKOVA SERRATA 'HALKA' *HALKA ZELKOVA*
SHRUBS	
	ALLIUM STIPITATUM 'WHITE GIANT' *WHITE GIANT ORNAMENTAL ONION*
	BERBERIS THUNBERGII 'CRIMSON PYGMY' *CRIMSON PYGMY JAPANESE BARBERRY*
	BERBERIS THUNBERGII 'TALAGO' *SUNJOY® GOLD BERET JAPANESE BARBERRY*
	CHOISYA TERNATA 'SUNDANCE' *SUNDANCE MEXICAN MOCK ORANGE*
	CORNUS SERICEA 'KELSEYI' *KELSEY'S DWARF RED TWIG DOGWOOD*
	DEUTZIA GRACILIS 'NIKKO' *NIKKO DEUTZIA*
	HAKONECHLOA MACRA 'AUREOLA' *GOLDEN VARIEGATED FOREST GRASS*
	HYDRANGEA QUERCIFOLIA 'RUBY SLIPPERS' *RUBY SLIPPERS OAKLEAF HYDRANGEA*
	MISCANTHUS SINENSIS 'MALEPARTUS' *MALEPARTUS EULALIA GRASS*
	NANDINA DOMESTICA 'GULF STREAM' *GULF STREAM HEAVENLY BAMBOO*
	THUJA OCCIDENTALIS 'SMARAGD' *EMERALD GREEN ARBORVITAE*
	VIBURNUM DAVIDII *DAVID VIBURNUM*
GROUND COVERS	
	ARCTOSTAPHYLOS UVA–URSI *KINNIKINNICK*
	LIRIOPE MUSCARI 'BIG BLUE' *BIG BLUE LILYTURF*
	MAHONIA REPENS *CREEPING OREGON GRAPE*
	ROSA X 'NOASCHNEE' *FLOWER CARPET® WHITE GROUNDCOVER ROSE*
GRASSES	
	BOUTELOUA GRACILIS 'BLONDE AMBITION' *BLONDE AMBITION BLUE GRAMA*



KEY MAP

SCALE: NTS

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Seattle, WA 206.749.9993
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Client

Lam RESEARCH

Project

LAM RESEARCH TUALATIN

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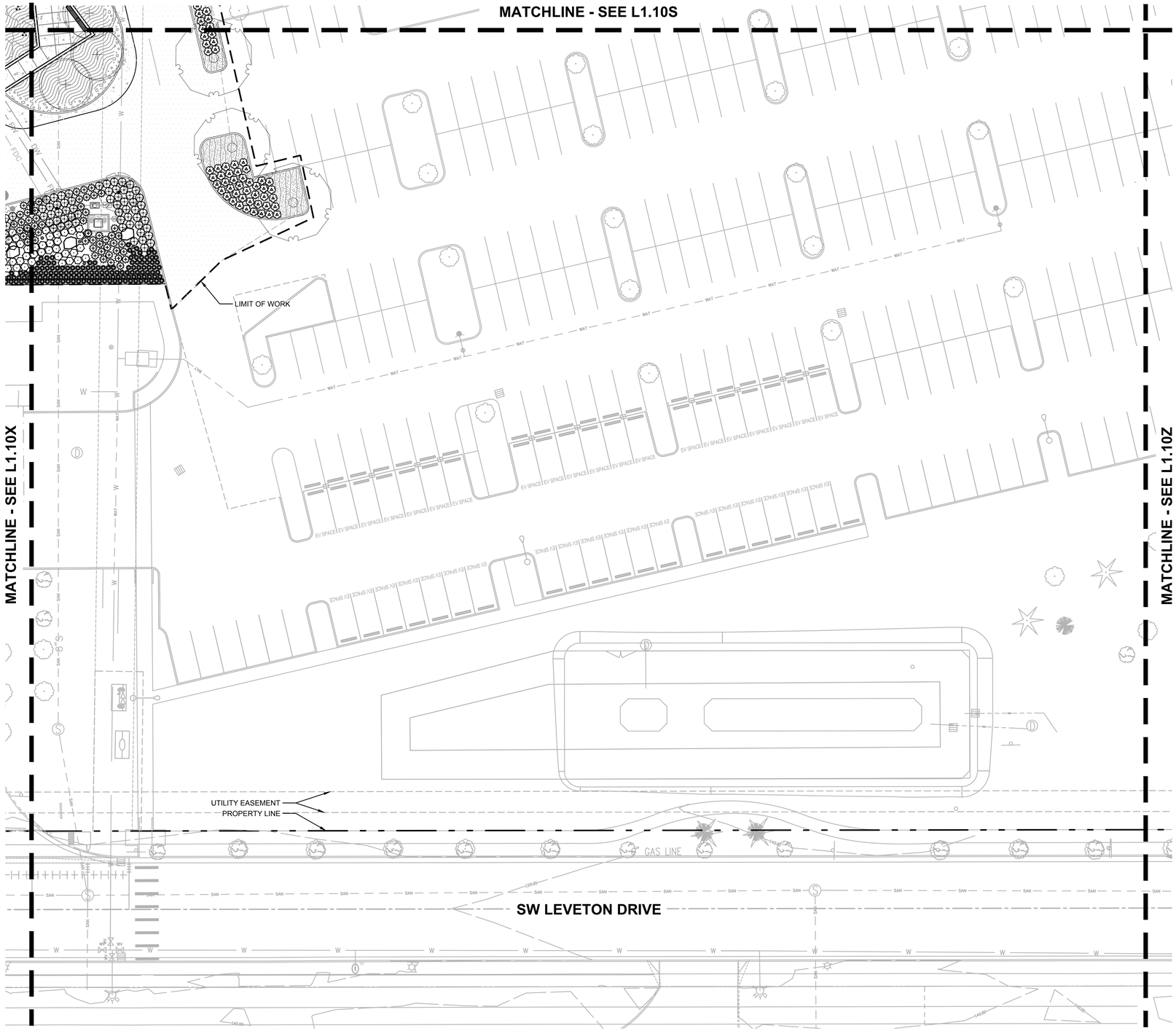


1 L1.10Y PLANTING PLAN

20 0 10 20 40 80

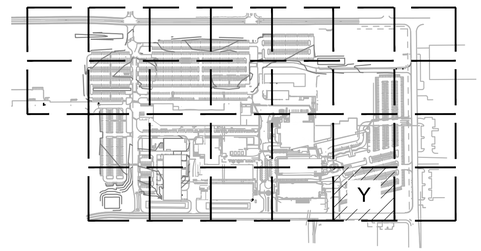
(IN FEET)

1 inch = 20 ft.

THE SURVEY INFORMATION SHOWN AS A BACKGROUND SCREEN ON THIS SHEET IS SHOWN FOR REFERENCE ONLY AND IS BASED ON A SURVEY BY: HICKMAN & ASSOCIATES DATE:

PLANT KEY LEGEND

SYMBOL	BOTANICAL / COMMON NAME
TREES	
	CERCIDIPHYLLUM JAPONICUM *KATSURA TREE*
	PRUNUS SERRULATA 'KWANZAN' *KWANZAN JAPANESE FLOWERING CHERRY*
	ZELKOVA SERRATA 'HALKA' *HALKA ZELKOVA*
SHRUBS	
	ABELIA X GRANDIFLORA 'KALEIDOSCOPE' *KALEIDOSCOPE GLOSSY ABELIA*
	ALLIUM STIPITATUM 'WHITE GIANT' *WHITE GIANT ORNAMENTAL ONION*
	BERBERIS THUNBERGII 'TALAGO' *SUNJOY® GOLD BERET JAPANESE BARBERRY*
	DEUTZIA GRACILIS 'NIKKO' *NIKKO DEUTZIA*
	HAKONECHLOA MACRA 'AUREOLA' *GOLDEN VARIEGATED FOREST GRASS*
	NANDINA DOMESTICA 'GULF STREAM' *GULF STREAM HEAVENLY BAMBOO*
GROUND COVERS	
	ROSA X 'NOASCHNEE' *FLOWER CARPET® WHITE GROUNDCOVER ROSE*
	RUBUS CALYCINOIDES *GREEN CARPET RASPBERRY*



KEY MAP

SCALE: NTS

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ARCHITECTURAL REVIEW 07/21/2

Todd Prager & Associates LLC

MEMORANDUM

DATE: July 18, 2025

TO: Aisha Bouziane (Mackenzie)

FROM: Christine Johnson, ASCA Registered Consulting Arborist® #823

RE: Tree Removal and Protection Plan for Lam Research

Summary

This report includes tree removal and protection recommendations for new buildings, expanded drive aisles, new and expanded parking, and associated improvements at the Lam Research campus at 11361 SW Leveton Drive in Tualatin. Seven hundred and ninety-two (792) trees have bee inventoried over the past several years in preparation for campus expansion projects. For this phase of expansion. One hundred and eighty-four (184) trees *over* 8-inch diameter (DSH) are proposed for removal and 197 trees *less* than 8-inch DSH are proposed for removal. Three hundred and seventy-three (373) trees will be retained and protected. Tree protection fencing and limits of construction fencing is recommended to protect existing parking lot and landscape trees from construction impacts.

Background

The property is zone manufacturing park (MP). The campus is expanding to the north, west, and interior. Proposed development includes new buildings, drive aisle widening, and new parking lots, and the expansion of an existing parking lot. The proposed site plan is provided in Attachment 1.

The project is within an insect pest quarantine aera for Emerald Ash Borer (EAB).[1] Ash wood should be disposed of using approved tree care services and wood disposal sites. Oregon Department of Agriculture approved tree removal services are provided in this report.

Assignment

The purpose of this report is to:

1. Provide tree removal findings and recommendations based on the proposed site and grading plan; and

[1] "Quarantines and Control Areas," Oregon Department of Agriculture, accessed July 18, 2025, https://www.oregon.gov/oda/ippm/Pages/quarantines.aspx?wp4787=se:%22ash%22

2. Provide recommendations for adequately protecting the trees to be retained during construction.

Tree Inventory

The inventory was completed over several dates within the past two to three years. A total of 792 trees on or adjacent to the areas of proposed development were inventoried and considered when designing the expansion. The following information was collected for each tree: tree number, common name, scientific name, DSH (diameter at standard height, 4.5 feet above ground level), single-stem DSH, approximate crown radius, health condition, structural condition, pertinent comments, exemption status, inventory date, and treatment (Attachment 2). The tree numbers on the site plan in Attachment 1 correspond to the tree numbers in the inventory in Attachment 2.[2]

Tree Preservation

Trees 8-inches in diameter and greater are subject to tree preservation and removal requirements outlined in Tualatin Development Code 33.110. A Tree Preservation Plan and Tree Assessment Report prepared by a certified arborist is required with the land use application. Table 1 provides a summary of the number of trees proposed for removal and retention.

Table 1 Summary of tree removal and tree retention.

	Non-exempt	Exempt	Total
Remove	184	197	381
Retain	239	134	373
n/a	-	-	38
Total	423	331	792

*Trees listed as "n/a" were inventoried trees that were either old stumps or trees previously removed from past projects.

A typical minimum root protection zone allows encroachments no closer than a radius from a tree of 0.5 feet per inch of DSH if no more than 25 percent of the root protection zone area (estimated at one foot radius per inch of DSH) is impacted. Figure 1 illustrates this concept. This standard may need to be adjusted on a case-by-case basis due to tree health, species, root distribution, whether the tree will be impacted on multiple sides, the specific development proposed, and other factors.

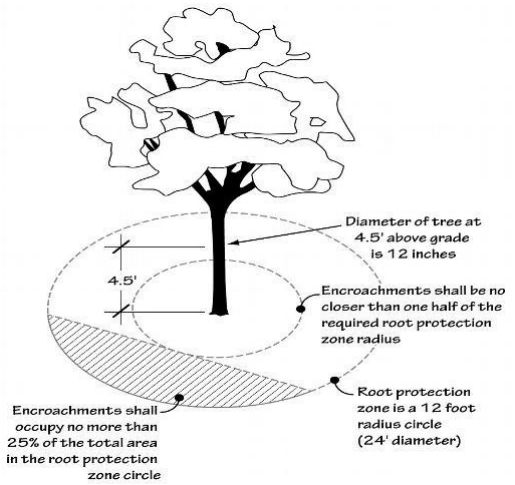


Figure 1: Typical minimum protection zone

Attachment 1 illustrates the proposed construction impacts in relation to the existing trees. Based on the construction impacts, 184 trees over 8-inch DSH are proposed for removal because they are either within the construction footprint or their root zones would be severely impacted by construction. Additional tree removal findings are provided in the next section of this report.

[2] There are trees outside the limits of construction shown on the site plan that are included in the inventory.

Tree protection recommendations

Protection recommendations for the 373 trees to be retained at the edges of the construction and beyond the construction site are listed below:

1. **Tree protection fencing.**
    a. *Height*: Provide a minimum 6-foot-high metal fence (chain-link, chain-link panels, or heavy gage wire).
    b. *Posts & Spacing:* Place fence posts no more than 10 feet apart.
    c. *Existing Grade*: Install fencing flush with the initial undisturbed grade of the protection zone.
    d. *Locations:* Install fencing in the locations shown in Attachment 1.
    e. Limits of construction fencing may act as tree protection fencing if it meets the above criteria.
2. **Tree protection signage.**
    a. Weatherproof tree protection signage shall be placed on tree protection fencing.
    b. Signage should be placed at intervals of every third fence panel/section.
    c. See Attachment 3 for an example tree protection sign.
3. **Prevent tree protection zone impacts.** The following activities are prohibited within a tree protection zone:
    a. Dumping of harmful chemicals and materials, such as paints, thinners, cleaning solutions, petroleum products, concrete or dry wall excess, construction debris, or run-off;
    b. Storage of materials such as building supplies, soil, rocks, or waste items;
    c. Placement of portable toilets, drop-boxes, or similar temporary items;
    d. Parking of vehicles or equipment; and,
    e. Excavation, trenching, grading, root pruning, or similar activities unless directed by an arborist present on site.
4. **Tree protection fencing maintenance and removal.**
    a. *Maintenance*: Maintain protection fencing in good effective condition at the approved and inspected location. Fencing that is damaged during site work shall be repaired and placed in the approved location prior to resuming work in the area. Failure to maintain tree protection fencing in the approved locations may result in a code violation.
    b. *Removal*: Fencing may be removed when all construction activity that could cause damage or harm to trees and other vegetation has been completed and is no longer occurring on site (i.e., no use of heavy equipment; no delivery trucks and contractor vehicles driving or parking off driveway; no utility trenching; etc.)
5. **Pruning.** Some of the trees may need to be clearance and/or reduction pruned to allow for construction access. Pruning should be performed by a qualified arborist.[3] The following limitations apply to these pruning specifications:
    a. Climbing spurs shall not be used.

[3] The ANSI Z133 (American National Standard for Arboricultural Operations – Safety Requirements) defines a *qualified arborist* as, "an individual who, by possession of a recognized degree, certification, or professional standing, or through related training and on-the-job experience, is familiar with the equipment and hazards involved in arboricultural operations and who has demonstrated ability in the performance of the special techniques involved."

b. All pruning cuts shall be made in a matter that is consistent with the ANSI A300 Part 1 pruning cuts section 7.
c. Cuts should be 2 to 4-inches in diameter, not to exceed 4-inches.
d. Any reduction and/or clearance pruning shall occur prior to construction in accordance with ANSI A300 pruning standards the minimum necessary to allow for construction.
e. Reduction cuts shall be made to lateral branches that are at least one-third to one-half the sizes of the parent branches.
f. All cuts shall be made just outside the branch collars.
g. No more than one-fourth of the live crown of the tree shall be pruned in an annual growing season. If more than one-fourth of the live crown of the tree needs to be pruned to accomplish the pruning objectives, the additional pruning shall be delayed until the following annual growing season.
h. Work practices shall be consistent with the current ANSI A300 Part 1 pruning practices section 8 and the ANSI Z133 standard.

6. **Project arborist oversight.** The project arborist shall oversee the demolition and grading for the new stairs and sidewalk near trees 22830, 22833, and 22837.
7. **Erosion control.** Any required sediment fencing shall be routed outside the tree protection zones to protect the root systems of the trees to be retained. If erosion control is required within the tree protection zones, straw wattles shall be used if approved by the City of Tualatin.

Existing parking lots that will be in use for non-construction parking do not have tree protection fencing at this time. Additional tree protection recommendations that are consistent with City of Tualatin standards are provided in Attachment 6.

Tree Removal

This section of the report provides findings for the Tree Assessment Report criteria in Section 33.110(4)(b) of the Tualatin Development Code. The code criteria are listed followed by my findings in *italics*.

(b) Tree Assessment Report. A tree assessment prepared by a certified arborist must include:

This report has been prepared by Christine Johnson, an ISA Board Certified Master Arborist. This criterion is met.

(i) An analysis as to whether trees proposed for preservation may be preserved in light of the development proposed, are healthy specimens, and do not pose an imminent hazard to persons or property if preserved;

The health and structural conditions of the trees to be preserved in the vicinity of the proposed development have been evaluated by our firm. A summary of the tree conditions is provided in the tree inventory in Attachment 2. The preserved trees are healthy specimens and are not imminent hazards to persons or property as of our assessment dates. There are several small diameter trees (less than 8-inch DBH) that have died and may be suitable for replacement. The preserved trees will need to be protected during construction as detailed in the Tree Protection

Recommendations Section of this report (above), so they remain healthy and viable for the foreseeable future. This criterion is met.

(ii) An analysis as to whether any trees proposed for removal could reasonably be preserved in light of the development proposed and health of the tree;

Our firm coordinated with the project design team at Mackenzie to consider design options for preserving healthy trees. Based on the project design along with site constraints, stormwater requirements, utility and site access connections, parking requirements, and client needs, tree preservation has been maximized to the extent practicable. This criterion is met.

(iii) a statement addressing the approval criteria set forth in TDC 33.110(5);

The reason for the proposed tree removals is to construct proposed improvements based on Architectural Review approval (TDC Subsection 33.110(5)(iii)). This criterion is met.

(iv) the name, contact information, and signature of the arborist preparing the report; and

The name, contact information, and signatures of the arborist that prepared this report is provided. This criterion is met.

(v) The tree assessment report must have been prepared and dated no more than one calendar year preceding the date the development or Tree Removal Permit application is deemed complete by the City.

This report has been prepared and provided less than one calendar year preceding the date the development application has been deemed complete. There are several trees that were inventoried in 2022; however, their size, health, and condition is not expected to have changed significantly in the past two years and the project arborist has updated information on the trees if they were considered for preservation. This criterion is met.

Ash disposal
Ash trees (*Fraxinus spp.*) should be removed by an Oregon Department of Agriculture approved tree removal service (Attachment 5) and disposed of at a wood processing site that is equipped to properly dispose of infected wood, such as Allwood Recyclers (Fairview), McFarlane's Bark Inc. (Milwaukie), and Wood Waste Management (Portland).

Conclusion
Four hundred and twenty-three (423) trees over 8-inches in diameter are subject to tree preservation standards for the Lam Research expansion project. One-hundred and eighty-four (184) trees over 8-inches in diameter are proposed for removal to facilitate several new buildings, new parking lots, an expanded parking lot, and expanded drive aisles. The remaining trees will be protected with tree protection fencing and project arborist oversight.

Please let me know if you have any questions about the information provided in this report.

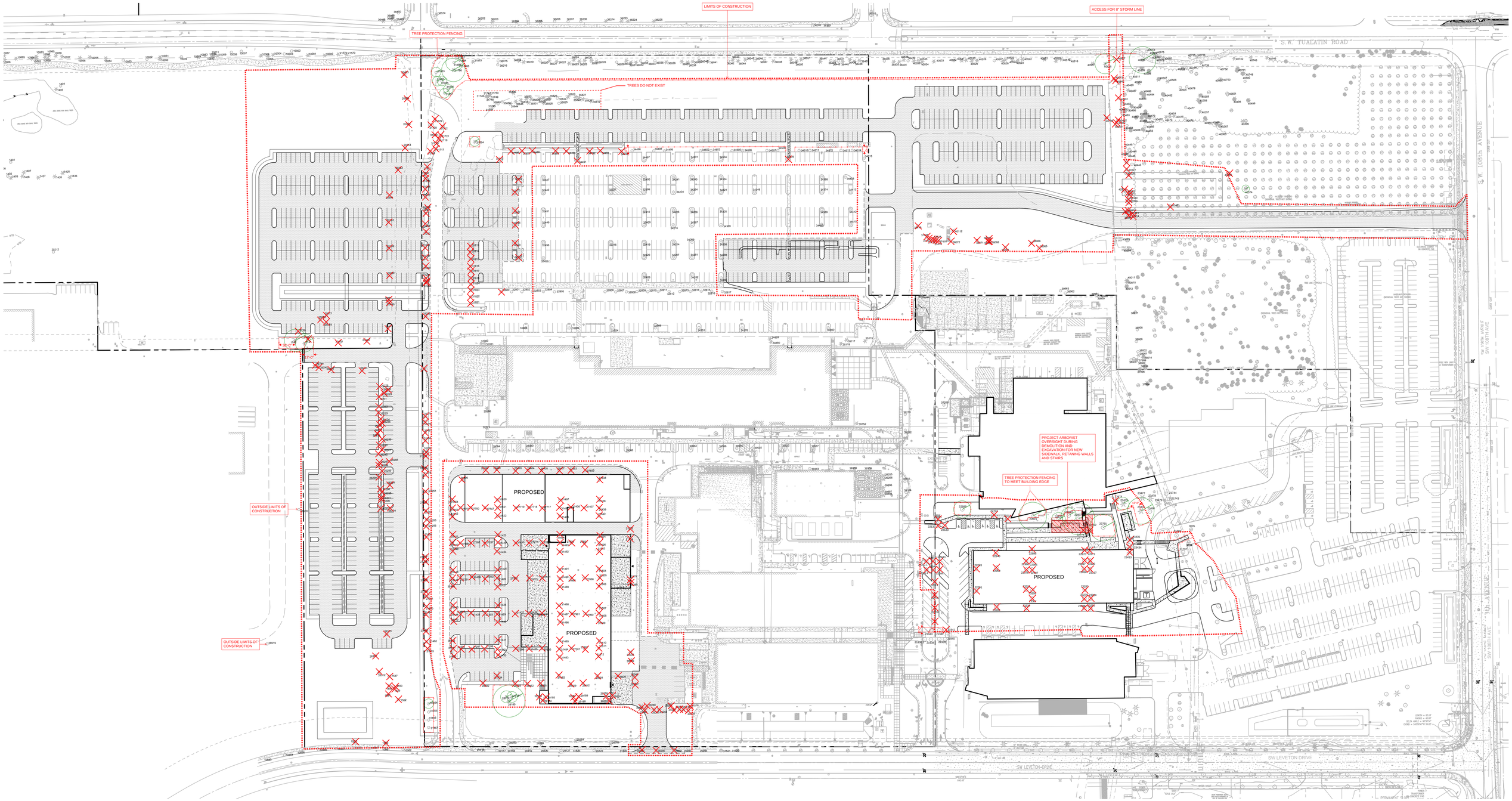
Sincerely,

Christine Johnson

Christine Johnson
ASCA Registered Consulting Arborist ® #823
ISA Board Certified Master Arborist®, PN-8730B
ISA Qualified Tree Risk Assessor
ASCA Tree & Plant Appraisal Qualified
Member, American Society of Consulting Arborists
christine@toddprager.com |971.978.9381

Enclosures:
Attachment 1 – Site Plan
Attachment 2 – Tree Inventory
Attachment 3 – Example Tree Protection Signage
Attachment 4 – ODA Emerald Ash Borer Quarantine Alert
Attachment 5 – ODA Approved Ash Tree Removal Service
Attachment 6 – Tree Protection Recommendations
Attachment 7 – Assumptions and Limiting Conditions

Attachment 1 - Tree Removal and Protection Plan



1 EX 1 OVERALL SITE PLAN

1" = 60'-0"

60 0 30 60 120 240 1:1

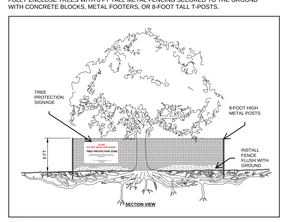
(IN FEET)
1 inch = **60** ft.

EMERALD ASH BORER QUARANTINE ALERT

NOTE: WASHINGTON, YAMHILL, MARION AND CLACKAMAS COUNTIES ARE UNDER A PERMANENT EMERALD ASH BORER QUARANTINE. TREE MATERIALS OF ASH, OLIVE, AND WHITE FRINGE TREE MUST REMAIN WITHIN QUARANTINED COUNTIES. WOOD WASTE MUST BE PROCESSED ACCORDINGLY AND DISPOSED OF. SEE OREGON DEPARTMENT OF AGRICULTURE EMERALD ASH BORER QUARANTINE ALERT FACT SHEET FOR ADDITIONAL INFORMATION.

TREE PROTECTION FENCING DETAIL

FULLY ENCLOSE TREES WITH 6 FT TALL METAL FENCING SECURED TO THE GROUND WITH CONCRETE BLOCKS, METAL FOOTERS, OR 8-FOOT TALL T-POSTS.



NOTES:

1. THE FENCE SHALL BE INSTALLED BEFORE ANY GROUND DISTURBING ACTIVITIES INCLUDING CLEARING AND GRADING, OR CONSTRUCTION STARTS, AND SHALL REMAIN IN PLACE UNTIL FINAL INSPECTION.
2. FENCING SHALL BE 6 FT TALL METAL FENCING. FENCING SHALL BE SECURED WITH METAL POSTS SHALL BE ESTABLISHED AT THE EDGE OF THE ROOT PROTECTION ZONE AND PERMISSIBLE ENCROACHMENT AREA ON THE DEVELOPMENT SITE AS INDICATED ON THE TREE PROTECTION PLAN.
3. SIGNAGE DESIGNATING THE PROTECTION ZONE AND PENALTIES FOR VIOLATIONS SHALL BE SECURED IN A PROMINENT LOCATION ON EACH PROTECTION FENCE AT A MINIMUM OF EVERY 30 FT OR EVERY THIRD FENCE PANEL.
4. THE FOLLOWING IS PROHIBITED WITHIN THE ROOT PROTECTION ZONE OF EACH TREE OR OUTSIDE THE LIMITS OF THE DEVELOPMENT IMPACT AREA: GROUND DISTURBANCE OR CONSTRUCTION ACTIVITY INCLUDING VEHICLE OR EQUIPMENT ACCESS (BUT EXCLUDING ACCESS ON EXISTING STREETS OR DRIVEWAYS), STORAGE OF EQUIPMENT OR MATERIALS INCLUDING SOIL, TEMPORARY OR PERMANENT STOCKPILING, PROPOSED BUILDINGS, IMPERVIOUS SURFACES, UNDERGROUND UTILITIES, EXCAVATION OR FILL, TRENCHING OR OTHER WORK ACTIVITIES.

TREE PLAN PREPARED BY:
Todd Prager & Associates, LLC
Christine Johnson
ISA Board Certified Master Arborist® PN-8730B
ASCA Registered Consulting Arborist ® #823
christine@toddprager.com | 971-978-9381

ASCA RCA #823
Registered Consulting Arborist®

Todd Prager & Associates LLC

Attachment 2 - Tree Inventory
Lam Research Expansion

Tree No	Common name	Scientific name	DSH[1] (in)	Single[2] DSH (in)	C- Rad[3] (ft)	Health condition[4]	Structure condition[4]	Comments	Exempt status	Inventory Date	Treatment
1401	black cottonwood	*Populus trichocarpa*	18	18	15	good	good		non-exempt	2/13/2024	RETAIN - 2025
1402	black cottonwood	*Populus trichocarpa*	14.14	20	15	good	fair	codominant leaders	non-exempt	2/13/2024	RETAIN - 2025
1403	Douglas-fir	*Pseudotsuga menziesii*	25	25	20	fair	fair	thin, slight lean	non-exempt	2/13/2024	RETAIN - 2025
1404	Pacific madrone	*Arbutus menziesii*	9,9	13	10	good	fair	codominant leaders, extreme phototropic lean	non-exempt	2/20/2024	RETAIN - 2025
1405	Douglas-fir	*Pseudotsuga menziesii*	19	19	18	good	fair	asymmetrical crown	non-exempt	2/20/2024	RETAIN - 2025
1406	Douglas-fir	*Pseudotsuga menziesii*	10	10	12	fair	fair	self-corrected phototropic lean, asymmetrical crown	non-exempt	2/13/2024	RETAIN - 2025
1407	Douglas-fir	*Pseudotsuga menziesii*	17	17	15	good	fair	poor taper, side lateral leader	non-exempt	2/13/2024	RETAIN - 2025
1408	Douglas-fir	*Pseudotsuga menziesii*	13	13	12	fair	good	thin	non-exempt	2/13/2024	RETAIN - 2025
1409	black cottonwood	*Populus trichocarpa*	14,6	15	12	good	fair	codominant leaders	non-exempt	2/13/2024	RETAIN - 2025
1410	black pine	*Pinus nigra*	18	18	10	poor	fair	high crown, thin, multiple tops	non-exempt	2/13/2024	RETAIN - 2025
1411	Douglas-fir	*Pseudotsuga menziesii*	10,8	13	15	fair	fair	thin, asymmetrical crown, codominant leaders	non-exempt	2/13/2024	RETAIN - 2025
1412	Douglas-fir	*Pseudotsuga menziesii*	8	8	12	fair	fair	self-corrected phototropic lean, high crown, thin	non-exempt	2/13/2024	RETAIN - 2025
1413	Douglas-fir	*Pseudotsuga menziesii*	8	8	12	fair	fair	self-corrected phototropic lean, high crown, thin	non-exempt	2/13/2024	RETAIN - 2025
1414	black cottonwood	*Populus trichocarpa*	13	13	10	good	fair	self-corrected phototropic lean, high crown	non-exempt	2/13/2024	RETAIN - 2025
1415	black cottonwood	*Populus trichocarpa*	16	16	10	fair	fair	self-corrected phototropic lean, high crown	non-exempt	2/13/2024	RETAIN - 2025
1416	Douglas-fir	*Pseudotsuga menziesii*	28	28	18	good	fair	asymmetrical crown	non-exempt	2/13/2024	RETAIN - 2025
1417	Douglas-fir	*Pseudotsuga menziesii*	11	11	10	fair	fair	thin, self-correcte phototropic lean	non-exempt	2/13/2024	RETAIN - 2025
1418	Douglas-fir	*Pseudotsuga menziesii*	5	5	5	poor	poor	suppressed, thin	exempt (<8-inch dbh)	2/13/2024	RETAIN - 2025
1419	Douglas-fir	*Pseudotsuga menziesii*	20	20	18	fair	fair	asymmetrical crown	non-exempt	2/13/2024	RETAIN - 2025
1420	juniper	*Juniperus spp.*	13	13	10	fair	fair	thin, discolored foliage	non-exempt	2/13/2024	RETAIN - 2025
1421	Douglas-fir	*Pseudotsuga menziesii*	12	12	15	fair	fair	asymmetrical crown	non-exempt	2/13/2024	RETAIN - 2025
1422	Douglas-fir	*Pseudotsuga menziesii*	11	11	615	good	fair	asymmetrical crown	non-exempt	2/13/2024	RETAIN - 2025
1423	Douglas-fir	*Pseudotsuga menziesii*	11	11	6	fair	fair	high crown, suppressed	non-exempt	2/13/2024	RETAIN - 2025
1424	Douglas-fir	*Pseudotsuga menziesii*	10	10	6	fair	fair	high crown, suppressed	non-exempt	2/13/2024	RETAIN - 2025
1425	Douglas-fir	*Pseudotsuga menziesii*	9	9	15	good	good		non-exempt	2/13/2024	RETAIN - 2025
1426	Western redcedar	*Thuja plicata*	9,5,5,6	13	12	fair	fair	codominant leaders, trunk decay	non-exempt	2/13/2024	RETAIN - 2025
1427	Douglas-fir	*Pseudotsuga menziesii*	24	24	20	good	good	DBH approximated	non-exempt	2/13/2024	RETAIN - 2025
1428	Douglas-fir	*Pseudotsuga menziesii*	17	17	15	good	fair	embedded planting wire	non-exempt	2/13/2024	RETAIN - 2025
1429	Douglas-fir	*Pseudotsuga menziesii*	11	11	15	good	fair	asymmetrical crown, poor taper	non-exempt	2/13/2024	RETAIN - 2025
1430	Douglas-fir	*Pseudotsuga menziesii*	14	14	10	fair	fair	high crown	non-exempt	2/13/2024	RETAIN - 2025
1431	Douglas-fir	*Pseudotsuga menziesii*	14	14	12	fair	fair	asymmetrical crown, self-corrected phototropic lean	non-exempt	2/13/2024	RETAIN - 2025
1432	Douglas-fir	*Pseudotsuga menziesii*	15	15	15	good	fair	asymmetical crown	non-exempt	2/13/2024	RETAIN - 2025

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Attachment 2 - Tree Inventory
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Tree No	Common name	Scientific name	DSH[1] (in)	Single[2] DSH (in)	C- Rad[3] (ft)	Health condition[4]	Structure condition[4]	Comments	Exempt status	Inventory Date	Treatment
1433	Douglas-fir	*Pseudotsuga menziesii*	27	27	20	good	good	DBH estimated	non-exempt	2/13/2024	RETAIN - 2025
1434	sweet cherry	*Prunus avium*	6,6	8	8	good	fair	codominant leaders, asymmetrical crown	non-exempt	2/13/2024	RETAIN - 2025
1436	Western redcedar	*Thuja plicata*	13,7	15	12	good	fair	codominant leaders	non-exempt	2/13/2024	RETAIN - 2025
1437	Douglas-fir	*Pseudotsuga menziesii*	20	20	18	fair	fair	asymmetical crown, codominant leaders	non-exempt	2/13/2024	RETAIN - 2025
1438	Douglas-fir	*Pseudotsuga menziesii*	20	20	18	good	fair	asymmetrical crown	non-exempt	2/13/2024	RETAIN - 2025
1439	Douglas-fir	*Pseudotsuga menziesii*	20	20	18	good	good		non-exempt	2/13/2024	RETAIN - 2025
1440	Douglas-fir	*Pseudotsuga menziesii*	25	25	20	good	good		non-exempt	2/13/2024	RETAIN - 2025
1441	Douglas-fir	*Pseudotsuga menziesii*	13	13	15	fair	fair	high crown, asymmetrical crown, thin	non-exempt	2/13/2024	RETAIN - 2025
1442	Douglas-fir	*Pseudotsuga menziesii*	10	10	8	fair	fair	high crown, asymmetrical crown, thin	non-exempt	2/13/2024	RETAIN - 2025
1443	Western redcedar	*Thuja plicata*	17	17	12	good	fair	asymmetrical crown	non-exempt	2/13/2024	RETAIN - 2025
1444	Douglas-fir	*Pseudotsuga menziesii*	12	12	10	fair	fair	high crown, asymmetrical crown, thin	non-exempt	2/13/2024	RETAIN - 2025
1445	Douglas-fir	*Pseudotsuga menziesii*	15	15	10	fair	fair	high crown, asymmetrical crown, thin	non-exempt	2/13/2024	RETAIN - 2025
1471	Douglas-fir	*Pseudotsuga menziesii*	18	18	15	fair	fair	codominant leaders at 6' with inclusion, thin	non-exempt	2/13/2024	RETAIN - 2025
1501	Douglas-fir	*Pseudotsuga menziesii*	7	7	6	fair	fair	high crown, suppressed	exempt (<8-inch dbh)	2/13/2024	RETAIN - 2025
1502	Douglas-fir	*Pseudotsuga menziesii*	12	12	15	good	fair	asymmetrical crown, poor taper	non-exempt	2/13/2024	RETAIN - 2025
1527	Douglas-fir	*Pseudotsuga menziesii*	10	10	12	good	good		non-exempt	12/4/2023	REMOVE - 2025
1528	sweet cherry	*Prunus avium*	8	8	6	fair	fair	thin, self-correcte phototropic lean	non-exempt	2/13/2024	RETAIN - 2025
1529	Douglas-fir	*Pseudotsuga menziesii*	26	26	18	good	good		non-exempt	2/13/2024	RETAIN - 2025
1530	Western redcedar	*Thuja plicata*	16,15,14,10,8	29	18	good	fair	multiple leaders	non-exempt	2/13/2024	RETAIN - 2025
1531	Douglas-fir	*Pseudotsuga menziesii*	28	28	20	fair	good	thin, DBH estimated	non-exempt	2/13/2024	RETAIN - 2025
1532	Douglas-fir	*Pseudotsuga menziesii*	18	18	18	good	good	DBH estimated	non-exempt	2/13/2024	RETAIN - 2025
1533	Douglas-fir	*Pseudotsuga menziesii*	17	17	16	good	good	DBH estimated	non-exempt	2/13/2024	RETAIN - 2025
1534	Douglas-fir	*Pseudotsuga menziesii*	22	22	18	good	good		non-exempt	2/13/2024	RETAIN - 2025
1535	Douglas-fir	*Pseudotsuga menziesii*	24	24	16	good	good		non-exempt	2/13/2024	RETAIN - 2025
1547	Douglas-fir	*Pseudotsuga menziesii*	11	11	12	good	good		non-exempt	12/4/2023	REMOVE - 2025
1548	Douglas-fir	*Pseudotsuga menziesii*	8	8	10	good	good		non-exempt	12/4/2023	REMOVE - 2025
1549	Douglas-fir	*Pseudotsuga menziesii*	10	10	12	good	good		non-exempt	12/4/2023	REMOVE - 2025
1550	Douglas-fir	*Pseudotsuga menziesii*	10	10	12	good	good		non-exempt	12/4/2023	REMOVE - 2025
1551	Douglas-fir	*Pseudotsuga menziesii*	13	13	12	good	good		non-exempt	12/4/2023	REMOVE - 2025
1552	Douglas-fir	*Pseudotsuga menziesii*	6	6		good	good		exempt (<8-inch dbh)	12/4/2023	REMOVE - 2025
1553	Douglas-fir	*Pseudotsuga menziesii*	18	18	16	good	good		non-exempt	12/4/2023	REMOVE - 2025
1554	Douglas-fir	*Pseudotsuga menziesii*	17	17	15	good	good		non-exempt	12/4/2023	REMOVE - 2025

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Attachment 2 - Tree Inventory
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Tree No	Common name	Scientific name	DSH[1] (in)	Single[2] DSH (in)	C- Rad[3] (ft)	Health condition[4]	Structure condition[4]	Comments	Exempt status	Inventory Date	Treatment
1739	Douglas-fir	*Pseudotsuga menziesii*	22	22	18	good	good	DBH approximated by arborist	non-exempt	12/4/2023	REMOVE - 2025
1740	Douglas-fir	*Pseudotsuga menziesii*	25	25	20	good	good	DBH approximated by arborist	non-exempt	12/4/2023	REMOVE - 2025
1741	Douglas-fir	*Pseudotsuga menziesii*	17	17	16	good	good		non-exempt	12/4/2023	RETAIN - 2025
1742	Douglas-fir	*Pseudotsuga menziesii*	21	21	16	good	good		non-exempt	12/4/2023	RETAIN - 2025
10000	Douglas-fir	*Pseudotsuga menziesii*	56	56	28	good	good	butt swell	non-exempt	12/4/2023	RETAIN - 2025
10001	Douglas-fir	*Pseudotsuga menziesii*	46	46	28	good	good	epicormic branches	non-exempt	12/4/2023	RETAIN - 2025
10002	n/a	n/a	n/a	n/a	n/a	n/a	n/a	likely red alder, tree has been removed, stump remains	n/a	12/4/2023	N/A (DNE)
10003	n/a	n/a	n/a	n/a	n/a	n/a	n/a	likely red alder, tree has been removed, stump remains	n/a	12/4/2023	N/A (DNE)
10004	Douglas-fir	*Pseudotsuga menziesii*	37	37	20	good	fair	asymmetrical crown	non-exempt	12/4/2023	RETAIN - 2025
10005	Douglas-fir	*Pseudotsuga menziesii*	41	41	18	good	fair	asymmetrical crown, narrow crown	non-exempt	12/4/2023	RETAIN - 2025
10006	Douglas-fir	*Pseudotsuga menziesii*	54	54	30	good	fair	asymmetrical crown, stump to east	non-exempt	12/4/2023	RETAIN - 2025
10007	n/a	n/a	n/a	n/a	n/a	n/a	n/a	likely red alder, tree has been removed, stump remains	n/a	12/4/2023	N/A (DNE)
10008	n/a	n/a	n/a	n/a	n/a	n/a	n/a	likely red alder, tree has been removed, stump remains	n/a	12/4/2023	N/A (DNE)
10009	Douglas-fir	*Pseudotsuga menziesii*	44	44	30	good	fair	asymmetrical crown, girdling root	non-exempt	12/4/2023	RETAIN - 2025
10010	Douglas-fir	*Pseudotsuga menziesii*	27	27	20	good	fair	asymmetrical crown, narrow crown	non-exempt	12/4/2023	RETAIN - 2025
10011	Douglas-fir	*Pseudotsuga menziesii*	31	31	18	good	fair	asymmetrical crown, narrow crown	non-exempt	12/4/2023	RETAIN - 2025
10012	Douglas-fir	*Pseudotsuga menziesii*	42	42	20	good	fair	narrow crown	non-exempt	12/4/2023	RETAIN - 2025
10013	Douglas-fir	*Pseudotsuga menziesii*	36	36	20	fair	fair	trunk abnormally on east and west sides, pitch on east side	non-exempt	12/4/2023	RETAIN - 2025
10014	Douglas-fir	*Pseudotsuga menziesii*	44	44	22	good	fair	dead branches 0 to 2" diameter, asymmetrical crown	non-exempt	12/4/2023	RETAIN - 2025
10049	red alder	*Alnus rubra*	15	15	15	fair	fair	dead top	non-exempt	12/4/2023	RETAIN - 2025
10050	Douglas-fir	*Pseudotsuga menziesii*	20	20	18	fair	good	discolored foliage	non-exempt	12/4/2023	RETAIN - 2025
10051	Douglas-fir	*Pseudotsuga menziesii*	17	17	18	good	good		non-exempt	12/4/2023	RETAIN - 2025
10052	red alder	*Alnus rubra*	13	13	10	good	fair	dead buttress roots, trunk wound	non-exempt	12/4/2023	RETAIN - 2025
10053	red alder	*Alnus rubra*	18	18	20	fair	fair	diameter measured at 2', dead buttress roots, trunk wound	non-exempt	12/4/2023	RETAIN - 2025
10054	Douglas-fir	*Pseudotsuga menziesii*	19	19	18	good	good		non-exempt	12/4/2023	RETAIN - 2025
10055	Douglas-fir	*Pseudotsuga menziesii*	43	43	28	good	good		non-exempt	12/4/2023	RETAIN - 2025
10056	Douglas-fir	*Pseudotsuga menziesii*	31	31	20	good	fair	asymmetrical crown, sweeping trunk, lower trunk oddity	non-exempt	12/4/2023	RETAIN - 2025
10057	Douglas-fir	*Pseudotsuga menziesii*	33	33	28	fair	fair	discolored foliage, asymmetrical crown, sweeping trunk	non-exempt	12/4/2023	RETAIN - 2025
10058	Douglas-fir	*Pseudotsuga menziesii*	44	44	30	fair	fair	thinning foliage, discolored foliage, codominant leader cut out at 15'	non-exempt	12/4/2023	RETAIN - 2025
10059	Douglas-fir	*Pseudotsuga menziesii*	33	33	30	fair	poor	asymmetrical crown, lean, suspected *Phaeolus schweinitzii*	non-exempt	12/4/2023	RETAIN - 2025
10060	Douglas-fir	*Pseudotsuga menziesii*	44	44	25	fair	poor	thinning foliage, discolored foliage, asymmetrical crown, suspected *Phaeolus schweinitzii*	non-exempt	12/4/2023	RETAIN - 2025

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Attachment 2 - Tree Inventory
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Tree No	Common name	Scientific name	DSH[1] (in)	Single[2] DSH (in)	C- Rad[3] (ft)	Health condition[4]	Structure condition[4]	Comments	Exempt status	Inventory Date	Treatment
10061	Douglas-fir	*Pseudotsuga menziesii*	27	27	16	fair	poor	thinning foliage, discolored foliage, narrow crown, suspected *Phaeolus schweinitzii*	non-exempt	12/4/2023	RETAIN - 2025
10062	Douglas-fir	*Pseudotsuga menziesii*	37	37	28	fair	fair	dead branches 0 to 2" diameter, discolored foliage, asymmetrical crown	non-exempt	12/4/2023	RETAIN - 2025
10063	Douglas-fir	*Pseudotsuga menziesii*	33	33	24	fair	fair	asymmetrical crown	non-exempt	12/4/2023	RETAIN - 2025
10064	Douglas-fir	*Pseudotsuga menziesii*	28	28	20	fair	fair	discolored foliage, suppressed, sweeping trunk	non-exempt	12/4/2023	RETAIN - 2025
10065	Douglas-fir	*Pseudotsuga menziesii*	40	40	20	fair	fair	discolored foliage, narrow crown, epicormic branches	non-exempt	12/4/2023	RETAIN - 2025
10553	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	3	3	4	poor	very poor	suppressed, epicormic branches, trunk wound 0.5' to 6'	exempt (<8-inch dbh)	12/4/2023	RETAIN - 2025
10554	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	3	3	4	poor	very poor	epicormic branches, dead central leader, missing bark	exempt (<8-inch dbh)	12/4/2023	RETAIN - 2025
10555	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	5	5	5	fair	poor	dead branches greater than 4" diameter, asymmetrical crown, lean, trunk wound, lost central leader	exempt (<8-inch dbh)	12/4/2023	RETAIN - 2025
10556	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	7	7	7	poor	poor	dead branches greater than 4" diameter, dying from the top down, asymmetrical crown, suppressed, trunk wound at 10'	exempt (<8-inch dbh)	12/4/2023	RETAIN - 2025
10557	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	9	9	7	fair	fair	dead branches 0 to 2" diameter, dead branches 2 to 4" diameter, asymmetrical crown, no crown on north side	non-exempt	12/4/2023	RETAIN - 2025
10558	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	9	9	8	fair	fair	dead branches 0 to 2" diameter, dead branches 2 to 4" diameter, asymmetrical crown	non-exempt	12/4/2023	RETAIN - 2025
10560	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	10	10	10	fair	good	dead branches 2 to 4" diameter	non-exempt	12/4/2023	RETAIN - 2025
10561	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	7	7	6	fair	fair	dead branches 0 to 2" diameter, dead branches 2 to 4" diameter, asymmetrical crown	exempt (<8-inch dbh)	12/4/2023	RETAIN - 2025
10562	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	7	7	7	fair	fair	dead branches 0 to 2" diameter, dead branches 2 to 4" diameter, lean	exempt (<8-inch dbh)	12/4/2023	RETAIN - 2025
20290	dogwood	*Cornus florida*	3	3	4	good	fair	not tagged, trunk wound	exempt (<8-inch dbh)	12/4/2023	REMOVE - 2025
20292	n/a	does not exist	n/a	n/a	n/a	n/a	n/a	does not exist	n/a	12/4/2023	N/A (DNE)
20293	dogwood	*Cornus florida*	3	3	5	good	fair	not tagged, trunk wound	exempt (<8-inch dbh)	12/4/2023	REMOVE - 2025
20294	dogwood	*Cornus florida*	5	5	6	good	fair	epicormic branches, not tagged	exempt (<8-inch dbh)	12/4/2023	REMOVE - 2025
20323	dogwood	*Cornus florida*	5	5	4	good	good		exempt (<8-inch dbh)	12/4/2023	REMOVE - 2025
20343	dogwood	*Cornus florida*	4	4	4	good	good		exempt (<8-inch dbh)	12/4/2023	REMOVE - 2025
20360	dogwood	*Cornus florida*	4	4	5	fair	fair	multi-stem	exempt (<8-inch dbh)	12/4/2023	REMOVE - 2025
20384	dogwood	*Cornus florida*	4	4	4	good	good		exempt (<8-inch dbh)	12/4/2023	REMOVE - 2025
20403	dogwood	*Cornus florida*	5	5	5	good	good		exempt (<8-inch dbh)	12/4/2023	REMOVE - 2025
20433	dogwood	*Cornus florida*	3	3	4	poor	poor	dead branches 0 to 2" diameter, dying from the top down, not tagged	exempt (<8-inch dbh)	12/4/2023	REMOVE - 2025
20448	dogwood	*Cornus florida*	3	3	4	good	fair	epicormic branches, not tagged	exempt (<8-inch dbh)	12/4/2023	REMOVE - 2025
20470	dogwood	*Cornus florida*	3	3	4	fair	fair	dead branches 0 to 2" diameter, epicormic branches, not tagged	exempt (<8-inch dbh)	12/4/2023	REMOVE - 2025
20490	dogwood	*Cornus florida*	4	4	6	good	fair	asymmetrical crown, not tagged	exempt (<8-inch dbh)	12/4/2023	REMOVE - 2025
21570	Douglas-fir	*Pseudotsuga menziesii*	19	19	12	good	good		non-exempt	12/4/2023	RETAIN - 2025
21571	Douglas-fir	*Pseudotsuga menziesii*	18	18	18	good	good		non-exempt	12/4/2023	RETAIN - 2025
21743	flowering cherry	Prunus serrulata	21	21	25	fair	fair	deadwood, one-sided, thin, lacks trunk flare on north side	non-exempt	5/23/2025	RETAIN - 2025

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Tree No	Common name	Scientific name	DSH[1] (in)	Single[2] DSH (in)	C- Rad[3] (ft)	Health condition[4]	Structure condition[4]	Comments	Exempt status	Inventory Date	Treatment
21744	northern red oak	Quercus rubra	23	23	25	very poor	poor	deadwood, lean, one-sided, thin, irreversible state of decline, wet soil	non-exempt	5/23/2025	RETAIN - 2025
21933.1	Honey locust	Gleditsia tricanthos	6	6	7	fair	fair	thin, suppressed	exempt (<8-inch dbh)	5/23/2025	REMOVE - 2025
21935	Honey locust	Gleditsia tricanthos	5	5	7	fair	fair	thin, suppressed, exposed root ball	exempt (<8-inch dbh)	5/23/2025	RETAIN - 2025
21938	Honey locust	Gleditsia tricanthos	3	3	6	fair	fair	thin, suppressed	exempt (<8-inch dbh)	5/23/2025	RETAIN - 2025
21938.1	Honey locust	Gleditsia tricanthos	4	4	6	fair	fair	thin, suppressed	exempt (<8-inch dbh)	5/23/2025	RETAIN - 2025
21939	Honey locust	Gleditsia tricanthos	4	4	7	good	fair	lean	exempt (<8-inch dbh)	5/23/2025	RETAIN - 2025
21940	Honey locust	Gleditsia tricanthos	5	5	8	good	fair	lean	exempt (<8-inch dbh)	5/23/2025	RETAIN - 2025
21941	Honey locust	Gleditsia tricanthos	4	4	6	poor	fair	thin, suppressed, dead branches 0 to 2 inches in diameter	exempt (<8-inch dbh)	5/23/2025	REMOVE - 2025
21942	Honey locust	Gleditsia tricanthos	5	5	7	fair	fair	thin, suppressed, exposed fine root hairs	exempt (<8-inch dbh)	5/23/2025	RETAIN - 2025
22042	Honey locust	Gleditsia tricanthos	3	3	1	very poor	very poor	deadwood, lean, trunk decay, Irreversible state of decline, root ball unstable	exempt (<8-inch dbh)	5/23/2025	REMOVE - 2025
22042.1	Honey locust	Gleditsia tricanthos	6	6	6	good	fair	girdling roots	exempt (<8-inch dbh)	5/23/2025	REMOVE - 2025
22043	Honey locust	Gleditsia tricanthos	6	6	8	good	good		exempt (<8-inch dbh)	5/23/2025	REMOVE - 2025
22044	Honey locust	Gleditsia tricanthos	6	6	8	fair	fair	deadwood, lean	exempt (<8-inch dbh)	5/23/2025	REMOVE - 2025
22045	Honey locust	Gleditsia tricanthos	3	3	4	poor	poor	deadwood, lean, thin	exempt (<8-inch dbh)	5/23/2025	REMOVE - 2025
22045.1	Honey locust	Gleditsia tricanthos	5	5	7	fair	fair	thin, suppressed	exempt (<8-inch dbh)	5/23/2025	REMOVE - 2025
22074	Raywood ash	Fraxinus oxycarpa 'Raywood'	12	13	15	good	good	deadwood, lean, thin, lacks trunk flare	non-exempt	5/23/2025	REMOVE - 2025
22075	Raywood ash	Fraxinus oxycarpa 'Raywood'	11	12	15	fair	good	deadwood, thin, plugs	non-exempt	5/23/2025	REMOVE - 2025
22076	Raywood ash	Fraxinus oxycarpa 'Raywood'	9	10	15	good	good	closed trunk wound, deadwood, thin, missing bark on west side	non-exempt	5/23/2025	REMOVE - 2025
22077	Raywood ash	Fraxinus oxycarpa 'Raywood'	13	14	16	good	good		non-exempt	5/23/2025	REMOVE - 2025
22131	Honey locust	Gleditsia tricanthos	5	5	7	fair	poor	deadwood, lean, thin	exempt (<8-inch dbh)	5/23/2025	REMOVE - 2025
22132	Honey locust	Gleditsia tricanthos	4	5	10	poor	poor	deadwood, lean, thin, cut/exposed roots	exempt (<8-inch dbh)	5/23/2025	REMOVE - 2025
22133	Honey locust	Gleditsia tricanthos	6	7	10	fair	fair	deadwood, lean, thin	exempt (<8-inch dbh)	5/23/2025	REMOVE - 2025
22233	London planetree	Platanus × acerifolia	16	16	25	good	good		non-exempt	5/23/2025	REMOVE - 2025
22291	London planetree	Platanus × acerifolia	19	19	20	good	good		non-exempt	5/23/2025	REMOVE - 2025
22688	littleleaf linden	Tilia cordata	16	17	16	good	good		non-exempt	5/23/2025	RETAIN - 2025
22701	northern red oak	Quercus rubra	26	26	25	fair	fair	thin, epicormic branches, one-sided	non-exempt	5/23/2025	REMOVE - 2025
22702	northern red oak	Quercus rubra	27	28	30	good	fair	one-sided	non-exempt	5/23/2025	REMOVE - 2025
22774	littleleaf linden	Tilia cordata	11	12	20	good	fair	one-sided	non-exempt	5/23/2025	REMOVE - 2025
22791	northern red oak	Quercus rubra	25	27	18	good	good		non-exempt	5/23/2025	RETAIN - 2025
22792	littleleaf linden	Tilia cordata	16	16	26	good	fair	codominant leaders	non-exempt	5/23/2025	REMOVE - 2025
22819	northern red oak	Quercus rubra	26	27	20	fair	fair	one-sided, crown dieback	non-exempt	5/23/2025	RETAIN - 2025

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Tree No	Common name	Scientific name	DSH[1] (in)	Single[2] DSH (in)	C- Rad[3] (ft)	Health condition[4]	Structure condition[4]	Comments	Exempt status	Inventory Date	Treatment
22830	northern red oak	Quercus rubra	13	15	20	good	fair	uneven bark on northwest side, three codominant leaders at 10', one-sided	non-exempt	5/23/2025	RETAIN - 2025
22833	northern red oak	Quercus rubra	14	15	20	fair	fair	lean, one-sided, dead branches	non-exempt	5/23/2025	RETAIN - 2025
22837	northern red oak	Quercus rubra	30	31	32	good	fair	girdling root northwest side, large diameter lateral leaders	non-exempt	5/23/2025	RETAIN - 2025
22870	littleleaf linden	Tilia cordata	13	13	20	good	fair	lean	non-exempt	5/23/2025	REMOVE - 2025
22871	littleleaf linden	Tilia cordata	14	15	20	good	good		non-exempt	5/23/2025	REMOVE - 2025
22898	littleleaf linden	Tilia cordata	15	15	18	good	fair	lean	non-exempt	5/23/2025	REMOVE - 2025
22940	London planetree	Platanus × acerifolia	10	10	15	fair	fair	twig dieback, one-sided	non-exempt	5/23/2025	REMOVE - 2025
22959	London planetree	Platanus × acerifolia	12	12	18	poor	fair	thin, twig dieback	non-exempt	5/23/2025	REMOVE - 2025
22976	littleleaf linden	Tilia cordata	15	17	18	good	fair	one-sided	non-exempt	5/23/2025	REMOVE - 2025
22980	littleleaf linden	Tilia cordata	16	16	20	good	fair	codominant leaders	non-exempt	5/23/2025	REMOVE - 2025
22985	littleleaf linden	Tilia cordata	14	15	16	good	good		non-exempt	5/23/2025	REMOVE - 2025
22987	littleleaf linden	Tilia cordata	15	16	18	good	fair	one-sided	non-exempt	5/23/2025	REMOVE - 2025
23096	Honey locust	Gleditsia tricanthos	15	15	12	good	fair	girdling roots, codominant with inclusion, one-sided	non-exempt	5/23/2025	REMOVE - 2025
23097	littleleaf linden	Tilia cordata	14	16	20	good	fair	codominant leaders with inclusion, lean, one-sided	non-exempt	5/23/2025	REMOVE - 2025
23098	littleleaf linden	Tilia cordata	14	14	22	good	fair	codominant leaders with inclusion, one-sided	non-exempt	5/23/2025	REMOVE - 2025
23117	littleleaf linden	Tilia cordata	14	14	20	good	fair	one-sided, lacks trunk flare	non-exempt	5/23/2025	REMOVE - 2025
23120	littleleaf linden	Tilia cordata	13	14	18	good	good		non-exempt	5/23/2025	REMOVE - 2025
23199	n/a	n/a	n/a	n/a	n/a	n/a	n/a	does not exist	n/a	5/23/2025	N/A (DNE)
23276	littleleaf linden	Tilia cordata	16	16	22	good	fair	lean, one-sided, girdling roots, epicormic branches	non-exempt	5/23/2025	REMOVE - 2025
23283	littleleaf linden	Tilia cordata	13	13	15	good	fair	codominant leaders, lean	non-exempt	5/23/2025	REMOVE - 2025
23284	littleleaf linden	Tilia cordata	13	14	20	good	fair	overextended limb, heavy epicormic branches	non-exempt	5/23/2025	REMOVE - 2025
23285	n/a	does not exist	n/a	n/a	n/a	n/a	n/a	does not exist	n/a	5/23/2025	N/A (DNE)
23286	n/a	does not exist	n/a	n/a	n/a	n/a	n/a	does not exist	n/a	5/23/2025	N/A (DNE)
23307	littleleaf linden	Tilia cordata	15	15	20	good	fair	fused and crossing leaders	non-exempt	5/23/2025	REMOVE - 2025
23308	littleleaf linden	Tilia cordata	13	14	18	good	fair	girdling roots	non-exempt	5/23/2025	REMOVE - 2025
23326	littleleaf linden	Tilia cordata	15	16	18	good	fair	one-sided	non-exempt	5/23/2025	REMOVE - 2025
23339	littleleaf linden	Tilia cordata	12	12	18	good	fair	codominant leaders, one-sided	non-exempt	5/23/2025	REMOVE - 2025
23433	Douglas-fir	Pseudotsuga menziesii	44	47	28	good	fair	suspects Phaeolus on north side	non-exempt	5/23/2025	REMOVE - 2025
23434	Douglas-fir	Pseudotsuga menziesii	45	46	28	good	good		non-exempt	5/23/2025	REMOVE - 2025
23435	Douglas-fir	Pseudotsuga menziesii	31	32	30	good	good		non-exempt	5/23/2025	REMOVE - 2025
23474	Douglas-fir	Pseudotsuga menziesii	20	21	20	good	good		non-exempt	5/23/2025	REMOVE - 2025
23475	Douglas-fir	Pseudotsuga menziesii	12	13	15	good	fair	one-sided	non-exempt	5/23/2025	RETAIN - 2025

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Attachment 2 - Tree Inventory
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Tree No	Common name	Scientific name	DSH[1] (in)	Single[2] DSH (in)	C- Rad[3] (ft)	Health condition[4]	Structure condition[4]	Comments	Exempt status	Inventory Date	Treatment
23476	Douglas-fir	Pseudotsuga menziesii	24	25	18	poor	good	thin	non-exempt	5/23/2025	RETAIN - 2025
23477	Douglas-fir	Pseudotsuga menziesii	20	21	18	good	good		non-exempt	5/23/2025	RETAIN - 2025
23478	Douglas-fir	Pseudotsuga menziesii	26	27	20	good	good		non-exempt	5/23/2025	RETAIN - 2025
23479	flowering cherry	Prunus serrulata	17	17	15	poor	poor	basal decay, deadwood, one-sided, thin, three leaders, change icon to deciduous	non-exempt	5/23/2025	RETAIN - 2025
23480	flowering cherry	Prunus serrulata	25	25	15	fair	fair	one-sided, thin	non-exempt	5/23/2025	RETAIN - 2025
25019	pear	*Pyrus spp.*	9,8,6,4	13	14	good	fair	codominant leaders at ground level	non-exempt	12/4/2023	REMOVE - 2025
25020	pear	*Pyrus spp.*	10	10	12	good	good		non-exempt	12/4/2023	REMOVE - 2025
25021	pear	*Pyrus spp.*	10	10	12	good	good		non-exempt	12/4/2023	REMOVE - 2025
25212	apple	*Malus domestica*	8	8	8	fair	fair	multiple leaders	non-exempt	2/13/2024	RETAIN - 2025
26228	western redcedar	*Thuja plicata*	12,12,8,7	22	10	fair	fair	thin, sparse branches	non-exempt	9/11/2024	REMOVE - 2025
26229	incense cedar	*Calocedrus decurrens*	16	16	8	good	good		non-exempt	9/11/2024	REMOVE - 2025
26230	northern red oak	*Quercus rubra*	7	7	7	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
26231	western redcedar	*Thuja plicata*	13,12,7	16	10	fair	fair	thin, sparse branches, multistem	non-exempt	9/11/2024	REMOVE - 2025
26232	English holly	*Ilex aquifolium*	13	13	6	good	good		non-exempt	9/11/2024	REMOVE - 2025
26233	English holly	*Ilex aquifolium*	12	12	6	good	good		non-exempt	9/11/2024	REMOVE - 2025
26234	western redcedar	*Thuja plicata*	10,10,9,8	12	10	fair	fair	thin, sparse branches, multistem	non-exempt	9/11/2024	REMOVE - 2025
26235	western redcedar	*Thuja plicata*	9,9	13	10	fair	fair	thin, sparse branches, multistem	non-exempt	9/11/2024	REMOVE - 2025
26236	northern red oak	*Quercus rubra*	11,7,6	15	12	good	fair	codominant leaders	non-exempt	9/11/2024	REMOVE - 2025
26237	Douglas-fir	*Pseudotsuga menziesii*	19	19	16	good	good		non-exempt	9/11/2024	REMOVE - 2025
26238	Douglas-fir	*Pseudotsuga menziesii*	22	22	16	good	good		non-exempt	9/11/2024	REMOVE - 2025
26239	Douglas-fir	*Pseudotsuga menziesii*	18	18	18	good	good		non-exempt	9/11/2024	REMOVE - 2025
26240	Douglas-fir	*Pseudotsuga menziesii*	20	20	18	good	good		non-exempt	9/11/2024	REMOVE - 2025
26241	Douglas-fir	*Pseudotsuga menziesii*	20	20	18	good	good		non-exempt	9/11/2024	REMOVE - 2025
26242	western redcedar	*Thuja plicata*	8,7,6	12	10	fair	fair	thin, sparse branches, multistem	non-exempt	9/11/2024	REMOVE - 2025
26243	Douglas-fir	*Pseudotsuga menziesii*	16	16	16	good	good		non-exempt	9/11/2024	REMOVE - 2025
26244	Douglas-fir	*Pseudotsuga menziesii*	8	8	6	good	good		non-exempt	9/11/2024	REMOVE - 2025
26245	Douglas-fir	*Pseudotsuga menziesii*	7,6	10	6	good	fair	codominant leaders	non-exempt	9/11/2024	REMOVE - 2025
26246	Douglas-fir	*Pseudotsuga menziesii*	7	7	8	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
26285	northern red oak	*Quercus rubra*	9,6	11	10	good	fair	codominant leaders	non-exempt	9/11/2024	REMOVE - 2025
26287	red alder	*Alnus rubra*	9	9	8	fair	fair		non-exempt	9/11/2024	REMOVE - 2025
26288	western redcedar	*Thuja plicata*	11,8,7	16	10	fair	fair	thin, sparse branches, multistem	non-exempt	9/11/2024	REMOVE - 2025
26289	western redcedar	*Thuja plicata*	10,7	12	10	fair	fair	thin, sparse branches, multistem	non-exempt	9/11/2024	REMOVE - 2025

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Attachment 2 - Tree Inventory
Lam Research Expansion

Tree No	Common name	Scientific name	DSH[1] (in)	Single[2] DSH (in)	C- Rad[3] (ft)	Health condition[4]	Structure condition[4]	Comments	Exempt status	Inventory Date	Treatment
26290	western redcedar	*Thuja plicata*	10,10,8	16	12	fair	fair	thin, sparse branches, multistem	non-exempt	9/11/2024	REMOVE - 2025
26294	northern red oak	*Quercus rubra*	16	16	15	fair	fair		non-exempt	9/11/2024	REMOVE - 2025
26295	western redcedar	*Thuja plicata*	9,7	14	10	fair	fair	thin, sparse branches, multistem	non-exempt	9/11/2024	REMOVE - 2025
26296	English holly	*Ilex aquifolium*	9,7	11	8	good	fair	codominant leaders	non-exempt	9/11/2024	REMOVE - 2025
26300	incense cedar	*Calocedrus decurrens*	14	14	8	good	good		non-exempt	9/11/2024	REMOVE - 2025
26301	western redcedar	*Thuja plicata*	9,9	13	8	fair	fair	thin, sparse branches, multistem	non-exempt	9/11/2024	REMOVE - 2025
26303	western redcedar	*Thuja plicata*	10,10,8	19	10	fair	fair	thin, sparse branches, multistem	non-exempt	9/11/2024	REMOVE - 2025
26304	northern red oak	*Quercus rubra*	9,7	11	12	good	fair	codominant leaders	non-exempt	9/11/2024	REMOVE - 2025
26310	Douglas-fir	*Pseudotsuga menziesii*	7	7	15	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
26311	Douglas-fir	*Pseudotsuga menziesii*	10,6	12	15	good	fair		non-exempt	9/11/2024	REMOVE - 2025
26312	Douglas-fir	*Pseudotsuga menziesii*	7	7	15	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
26396	London planetree	*Platanus × acerifolia*	12	12	20	good	good		non-exempt	9/11/2024	REMOVE - 2025
26398	London planetree	*Platanus × acerifolia*	7	7	10	fair	fair	thin, dead branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
26400	purple leaf plum	*Prunus cerasifera*	9	9	10	good	good		non-exempt	9/11/2024	REMOVE - 2025
26403	London planetree	*Platanus × acerifolia*	7	7	10	fair	fair	thin, dead branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
26404	London planetree	*Platanus × acerifolia*	8	8	12	good	good		non-exempt	9/11/2024	REMOVE - 2025
26405	London planetree	*Platanus × acerifolia*	8	8	10	fair	fair	thin, dead branches	non-exempt	9/11/2024	REMOVE - 2025
26407	purple leaf plum	*Prunus cerasifera*	7	7	8	poor	poor	thin, dead branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
27251	incense cedar	*Calocedrus decurrens*	24	24	10	good	good		non-exempt	9/11/2024	REMOVE - 2025
27252	purple leaf plum	*Prunus cerasifera*	7,6	9	6	fair	fair	thin, crossing branches, dead branches	non-exempt	9/11/2024	REMOVE - 2025
27253	purple leaf plum	*Prunus cerasifera*	7,6	9	6	fair	fair	thin, crossing branches, dead branches	non-exempt	9/11/2024	REMOVE - 2025
27255	Douglas-fir	*Pseudotsuga menziesii*	9	9	10	good	good		non-exempt	9/11/2024	REMOVE - 2025
27256	western redcedar	*Thuja plicata*	13	13	12	fair	good	thin	non-exempt	9/11/2024	REMOVE - 2025
27257	incense cedar	*Calocedrus decurrens*	9	9	6	fair	good	thin	non-exempt	9/11/2024	REMOVE - 2025
27258	western redcedar	*Thuja plicata*	7	7	7	fair	fair	thin, discolored foliage	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
27260	western redcedar	*Thuja plicata*	7	7	8	poor	fair	multi-stem, thin, dying from top down	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
27261	incense cedar	*Calocedrus decurrens*	15	15	12	good	good		non-exempt	9/11/2024	REMOVE - 2025
27262	western redcedar	*Thuja plicata*	8	8	10	poor	poor	dead top	non-exempt	9/11/2024	REMOVE - 2025
27287	London planetree	*Platanus × acerifolia*	7	7	10	fair	fair	thin, sparse branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
27288	London planetree	*Platanus × acerifolia*	8	8	10	fair	fair	thin, sparse branches	non-exempt	9/11/2024	REMOVE - 2025
27290	London planetree	*Platanus × acerifolia*	7	7	10	fair	fair	thin, sparse branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
27291	London planetree	*Platanus × acerifolia*	7	7	10	fair	fair	thin, sparse branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025

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Attachment 2 - Tree Inventory
Lam Research Expansion

Tree No	Common name	Scientific name	DSH[1] (in)	Single[2] DSH (in)	C- Rad[3] (ft)	Health condition[4]	Structure condition[4]	Comments	Exempt status	Inventory Date	Treatment
27292	London planetree	*Platanus × acerifolia*	7	7	10	fair	fair	thin, sparse branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
27293	London planetree	*Platanus × acerifolia*	6	6	9	fair	fair	thin, sparse branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
27295	London planetree	*Platanus × acerifolia*	7	7	10	fair	fair	thin, sparse branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
27296	London planetree	*Platanus × acerifolia*	7	7	10	fair	fair	thin, sparse branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
27297	London planetree	*Platanus × acerifolia*	6	6	8	fair	fair	thin, sparse branches, one sided	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
27298	London planetree	*Platanus × acerifolia*	7	7	10	fair	fair	thin, sparse branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
27299	London planetree	*Platanus × acerifolia*	6	6	10	fair	fair	thin, sparse branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
27300	London planetree	*Platanus × acerifolia*	6	6	12	fair	fair	one sided, thin, small dead	exempt (<8-inch dbh)	9/10/2024	REMOVE - 2025
27301	London planetree	*Platanus × acerifolia*	6	6	8	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
27302	London planetree	*Platanus × acerifolia*	7	7	8	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
27306	London planetree	*Platanus × acerifolia*	6	6	8	fair	fair	thin, sparse branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
27312	London planetree	*Platanus × acerifolia*	7	7	8	fair	fair	thin, dead branches, sparse branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
27313	London planetree	*Platanus × acerifolia*	6	6	8	fair	fair	thin, dead branches, sparse branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
27314	London planetree	*Platanus × acerifolia*	7	7	8	fair	fair	thin, dead branches, sparse branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
27436	London planetree	*Platanus × acerifolia*	7	7	12	fair	fair	thin, sparse branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
27437	London planetree	*Platanus × acerifolia*	7	7	10	fair	fair	thin, sparse branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
27438	purple leaf plum	*Prunus cerasifera*	6	6	6	poor	poor	thin, sparse branches, trunk wounds, dead branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
27439	purple leaf plum	*Prunus cerasifera*	6	6	6	poor	poor	thin, sparse branches, trunk wounds, dead branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
27440	purple leaf plum	*Prunus cerasifera*	6	6	6	poor	poor	thin, sparse branches, trunk wounds, dead branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
27623	London planetree	*Platanus × acerifolia*	6	6	12	fair	fair	thin, sparse branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
27624	London planetree	*Platanus × acerifolia*	6	6	10	fair	fair	thin, sparse branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
27626	purple leaf plum	*Prunus cerasifera*	7	7	12	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
27663	London planetree	*Platanus × acerifolia*	8	8	12	fair	fair	thin, sparse branches, small dead branches	non-exempt	9/11/2024	REMOVE - 2025
27668	London planetree	*Platanus × acerifolia*	6	6	8	fair	fair	thin, sparse branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
27717	London planetree	*Platanus × acerifolia*	7	7	10	fair	fair	thin, sparse branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
27718	London planetree	*Platanus × acerifolia*	7	7	10	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
27719	London planetree	*Platanus × acerifolia*	9	9	15	good	good		non-exempt	9/11/2024	REMOVE - 2025
27747	London planetree	*Platanus × acerifolia*	13	13	18	good	good		non-exempt	9/11/2024	REMOVE - 2025
27750	London planetree	*Platanus × acerifolia*	12	12	15	good	good		non-exempt	9/11/2024	REMOVE - 2025
27751	London planetree	*Platanus × acerifolia*	13	13	15	good	good		non-exempt	9/11/2024	REMOVE - 2025
27848	London planetree	*Platanus × acerifolia*	10	10	8	good	good		non-exempt	9/11/2024	REMOVE - 2025
27850	London planetree	*Platanus × acerifolia*	6	6	10	fair	fair	thin, sparse branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025

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Attachment 2 - Tree Inventory
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Tree No	Common name	Scientific name	DSH[1] (in)	Single[2] DSH (in)	C- Rad[3] (ft)	Health condition[4]	Structure condition[4]	Comments	Exempt status	Inventory Date	Treatment
27853	London planetree	*Platanus × acerifolia*	8	8	12	good	good		non-exempt	9/11/2024	REMOVE - 2025
27960	London planetree	*Platanus × acerifolia*	6	6	12	fair	fair	thin, sparse branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
27961	London planetree	*Platanus × acerifolia*	7	7	10	fair	fair	thin, sparse branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
28080	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	6	6	8	fair	poor	trunk wound, thin	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
28081	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	8	8	12	fair	fair	thin, dieback	non-exempt	9/11/2024	RETAIN - 2025
28082	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	8	8	10	fair	fair	crowded branches, high crown	non-exempt	9/11/2024	RETAIN - 2025
28083	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	5	5	6	poor	very poor	trunk wound, thin, dead branches, one sided	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
28084	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	6	6	6	fair	fair	one-sided, dieback	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
28591	purple leaf plum	*Prunus cerasifera*	7	7	7	poor	poor	thin, dead branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
28605	London planetree	*Platanus × acerifolia*	13	13	22	good	good		non-exempt	9/11/2024	REMOVE - 2025
28609	London planetree	*Platanus × acerifolia*	14	14	20	good	good		non-exempt	9/11/2024	REMOVE - 2025
28612	London planetree	*Platanus × acerifolia*	16	16	20	good	good		non-exempt	9/11/2024	REMOVE - 2025
28626	London planetree	*Platanus × acerifolia*	16	16	20	fair	good	thin, small dead	non-exempt	9/11/2024	REMOVE - 2025
28862	London planetree	*Platanus × acerifolia*	14	14	20	good	fair	thin, sparse branches	non-exempt	9/11/2024	REMOVE - 2025
28865	London planetree	*Platanus × acerifolia*	16	16	15	good	fair	thin, one-sided	non-exempt	9/11/2024	REMOVE - 2025
28882	London planetree	*Platanus × acerifolia*	14	14	25	good	good		non-exempt	9/11/2024	REMOVE - 2025
29116	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	9	9	6	fair	fair	thin, high crown	non-exempt	9/11/2024	RETAIN - 2025
29117	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	9	9	6	fair	fair	thin, high crown	non-exempt	9/11/2024	RETAIN - 2025
29118	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	8	8	5	poor	poor	thin, high crown, dead branches	non-exempt	9/11/2024	RETAIN - 2025
29119	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	7	7	5	poor	poor	thin, high crown, dead branches	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
29120	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	8	8	7	poor	poor	thin, high crown, dead branches	non-exempt	9/11/2024	RETAIN - 2025
29121	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	8	8	8	fair	fair	thin, high crown	non-exempt	9/11/2024	RETAIN - 2025
29122	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	6	6	8	good	fair	high crown	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
29179	western redcedar	*Thuja plicata*	11	11	9	good	fair	multiple leaders	non-exempt	9/11/2024	RETAIN - 2025
29180	incense cedar	*Calocedrus decurrens*	21	21	10	good	fair	multiple leaders	non-exempt	9/11/2024	RETAIN - 2025
29181	western redcedar	*Thuja plicata*	10	10	11	good	fair	multiple leaders	non-exempt	9/11/2024	RETAIN - 2025
29183	incense cedar	*Calocedrus decurrens*	17	17	12	good	fair	one-sided, multiple leaders	non-exempt	9/11/2024	REMOVE - 2025
29184	western redcedar	*Thuja plicata*	11	11	12	good	fair	multiple leaders	non-exempt	9/11/2024	REMOVE - 2025
29185	western redcedar	*Thuja plicata*	7	7	15	good	fair	multiple leaders	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
29187	incense cedar	*Calocedrus decurrens*	20	20	15	good	good		non-exempt	9/11/2024	REMOVE - 2025
29188	western redcedar	*Thuja plicata*	9	9	12	good	fair	one-sided, multiple leaders	non-exempt	9/11/2024	REMOVE - 2025
29189	western redcedar	*Thuja plicata*	9	9	15	good	fair	side leaders	non-exempt	9/11/2024	REMOVE - 2025

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Tree No	Common name	Scientific name	DSH[1] (in)	Single[2] DSH (in)	C- Rad[3] (ft)	Health condition[4]	Structure condition[4]	Comments	Exempt status	Inventory Date	Treatment
29262	incense cedar	*Calocedrus decurrens*	19	19	8	good	good		non-exempt	9/11/2024	RETAIN - 2025
29263	incense cedar	*Calocedrus decurrens*	19	19	8	good	good		non-exempt	9/11/2024	RETAIN - 2025
29264	incense cedar	*Calocedrus decurrens*	17	17	8	poor	fair	dead branches, flagging	non-exempt	9/11/2024	RETAIN - 2025
29266	incense cedar	*Calocedrus decurrens*	21	21	10	good	good		non-exempt	9/11/2024	RETAIN - 2025
29278	incense cedar	*Calocedrus decurrens*	12	12	6	good	good		non-exempt	9/11/2024	RETAIN - 2025
29278.1	incense cedar	*Calocedrus decurrens*	14	14	10	good	good		non-exempt	9/11/2024	REMOVE - 2025
29279	incense cedar	*Calocedrus decurrens*	9	9	6	good	good		non-exempt	9/11/2024	REMOVE - 2025
29280	incense cedar	*Calocedrus decurrens*	9	9	6	fair	fair	side leader, thin	non-exempt	9/11/2024	REMOVE - 2025
29281	incense cedar	*Calocedrus decurrens*	11	11	7	fair	fair	thin, discolored foliage, one-sided	non-exempt	9/11/2024	REMOVE - 2025
29282	incense cedar	*Calocedrus decurrens*	15	15	7	good	good	thin, discolored foliage, one-sided	non-exempt	9/11/2024	REMOVE - 2025
29284	incense cedar	*Calocedrus decurrens*	6	6	7	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
29285	incense cedar	*Calocedrus decurrens*	9	9	7	poor	fair	thin, browning foliage	non-exempt	9/11/2024	REMOVE - 2025
29286	incense cedar	*Calocedrus decurrens*	18	18	8	good	good		non-exempt	9/11/2024	REMOVE - 2025
29287	incense cedar	*Calocedrus decurrens*	20	20	10	good	good		non-exempt	9/11/2024	REMOVE - 2025
29288	western redcedar	*Thuja plicata*	13	13	12	good	good		non-exempt	9/11/2024	REMOVE - 2025
29289	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	14	14	12	good	fair	high crown	non-exempt	9/12/2024	REMOVE - 2025
29290	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	9	9	10	poor	poor	thin, trunk would, high crown	non-exempt	9/13/2024	REMOVE - 2025
29291	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	12	12	12	good	fair	high crown	non-exempt	9/14/2024	REMOVE - 2025
29292	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	6	6	10	fair	fair	thin, high crown	exempt (<8-inch dbh)	9/15/2024	RETAIN - 2025
29293	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	16	16	15	fair	fair	thin, dead branches, one sided	non-exempt	9/16/2024	RETAIN - 2025
29352	incense cedar	*Calocedrus decurrens*	22	22	10	good	fair	one-sided	non-exempt	9/11/2024	REMOVE - 2025
29359	western redcedar	*Thuja plicata*	8	8	12	good	fair	multiple side leaders	non-exempt	9/11/2024	REMOVE - 2025
29360	western redcedar	*Thuja plicata*	10	10	12	good	good		non-exempt	9/11/2024	REMOVE - 2025
29361	western redcedar	*Thuja plicata*	9	9	10	good	good		non-exempt	9/11/2024	REMOVE - 2025
30038	western redcedar	*Thuja plicata*	16	16	8	fair	poor	thin, dead branches	non-exempt	9/11/2024	REMOVE - 2025
30039	incense cedar	*Calocedrus decurrens*	24	24	10	good	good		non-exempt	9/11/2024	REMOVE - 2025
30040	western redcedar	*Thuja plicata*	12	12	15	good	fair	multiple side leaders	non-exempt	9/11/2024	REMOVE - 2025
30379	Douglas-fir	*Pseudotsuga menziesii*	9	9	12	good	good		non-exempt	9/11/2024	REMOVE - 2025
30380	western redcedar	*Thuja plicata*	7	7	7	poor	poor	dying from top down	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
30663	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	6	6	4	fair	fair	thin, dead branches	exempt (<8-inch dbh)	8/23/2024	REMOVE - 2025
30771	western redcedar	*Thuja plicata*	11	11	12	good	good		non-exempt	9/11/2024	RETAIN - 2025
30986	western redcedar	*Thuja plicata*	18	18	10	good	good		non-exempt	9/11/2024	RETAIN - 2025

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Tree No	Common name	Scientific name	DSH[1] (in)	Single[2] DSH (in)	C- Rad[3] (ft)	Health condition[4]	Structure condition[4]	Comments	Exempt status	Inventory Date	Treatment
31050	Douglas-fir	*Pseudotsuga menziesii*	7	7	8	good	fair	one-sided	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
31051	incense cedar	*Calocedrus decurrens*	18	18	8	good	good		non-exempt	9/11/2024	RETAIN - 2025
31274	purple leaf plum	*Prunus cerasifera*	7,6	9	12	poor	poor		non-exempt	9/11/2024	REMOVE - 2025
31276	western redcedar	*Thuja plicata*	8,7,6	15	15	good	fair	multistems	non-exempt	9/11/2024	REMOVE - 2025
31277	western redcedar	*Thuja plicata*	10	10	12	good	good		non-exempt	9/11/2024	REMOVE - 2025
31278	western redcedar	*Thuja plicata*	7	7	8	poor	poor	thin, discolored foliage	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31279	western redcedar	*Thuja plicata*	10,6	12	10	fair	fair	thin, discolored foliage	non-exempt	9/11/2024	REMOVE - 2025
31279.1	purple leaf plum	*Prunus cerasifera*	4	4	4	poor	poor	location approximated by arborist, thin, dead branches, not shown on site plan	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31279.2	purple leaf plum	*Prunus cerasifera*	5	5	2	poor	poor	location approximated by arborist, thin, dead branches, not shown on site plan	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31281	deodar cedar	*Cedrus deodara*	7	7	7	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31281.1	purple leaf plum	*Prunus cerasifera*	4	4	4	poor	very poor	central leader topped, trunk wound, not shown on site plan	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31281.2	purple leaf plum	*Prunus cerasifera*	4	4	4	poor	poor	thin, trunk wound, not shown on site plan	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31286	western redcedar	*Thuja plicata*	8	8	12	fair	fair	thin, sparse branches	non-exempt	9/11/2024	REMOVE - 2025
31286.1	purple leaf plum	*Prunus cerasifera*	4	4	4	poor	poor	thin, trunk wound,not shown on site plan	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31286.2	purple leaf plum	*Prunus cerasifera*	4	4	4	poor	poor	thin, trunk wound, not shown on site plan	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31287	western redcedar	*Thuja plicata*	10	10	10	good	fair	multistems	non-exempt	9/11/2024	REMOVE - 2025
31288	western redcedar	*Thuja plicata*	6	6	10	good	fair	multistems	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31289	western redcedar	*Thuja plicata*	10,7	13	10	good	fair	multistems	non-exempt	9/11/2024	REMOVE - 2025
31290	purple leaf plum	*Prunus cerasifera*	13	13	4	poor	poor	one-sided, dead branches, epicormic branches	non-exempt	9/11/2024	REMOVE - 2025
31291	purple leaf plum	*Prunus cerasifera*	7,6	9	4	fair	fair	thin, dead branches	non-exempt	9/11/2024	REMOVE - 2025
31292	western redcedar	*Thuja plicata*	15	15	12	good	fair	one-sided	non-exempt	9/11/2024	REMOVE - 2025
31293	purple leaf plum	*Prunus cerasifera*	10	10	8	fair	fair	thin	non-exempt	9/11/2024	REMOVE - 2025
31294	purple leaf plum	*Prunus cerasifera*	10	10	8	fair	fair	thin	non-exempt	9/11/2024	REMOVE - 2025
31295	western redcedar	*Thuja plicata*	15	15	10	good	fair	one-sided, thin	non-exempt	9/11/2024	REMOVE - 2025
31296	western redcedar	*Thuja plicata*	12,10	16	10	good	fair	one-sided, thin	non-exempt	9/11/2024	REMOVE - 2025
31297	purple leaf plum	*Prunus cerasifera*	10	10	5	fair	fair	one-sided, thin	non-exempt	9/11/2024	REMOVE - 2025
31298	purple leaf plum	*Prunus cerasifera*	10	10	5	poor	poor	one-sided, thin	non-exempt	9/11/2024	REMOVE - 2025
31299	western redcedar	*Thuja plicata*	15,15	25	10	fair	fair	thin, multiple stems	non-exempt	9/11/2024	REMOVE - 2025
31300	western redcedar	*Thuja plicata*	15,6	17	10	fair	good	thin, multiple stems	non-exempt	9/11/2024	REMOVE - 2025
31301	black cottonwood	*Populus trichocarpa*	9	9	8	good	good		non-exempt	9/11/2024	REMOVE - 2025
31416	London planetree	*Platanus × acerifolia*	8	8	12	fair	fair	thin, sparse branches	non-exempt	9/11/2024	REMOVE - 2025

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Tree No	Common name	Scientific name	DSH[1] (in)	Single[2] DSH (in)	C- Rad[3] (ft)	Health condition[4]	Structure condition[4]	Comments	Exempt status	Inventory Date	Treatment
31417	London planetree	*Platanus × acerifolia*	8	8	15	fair	fair	thin, sparse branches	non-exempt	9/11/2024	REMOVE - 2025
31418	London planetree	*Platanus × acerifolia*	10	10	15	good	good		non-exempt	9/11/2024	REMOVE - 2025
31419	ginkgo	*Ginkgo biloba*	2	2	3	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31420	ginkgo	*Ginkgo biloba*	2	2	3	good	fair	lean	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31421	ginkgo	*Ginkgo biloba*	2	2	4	good	fair	lean	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31422	ginkgo	*Ginkgo biloba*	2	2	3	good	fair	lean	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31423	ginkgo	*Ginkgo biloba*	2	2	4	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31424	ginkgo	*Ginkgo biloba*	2	2	4	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31425	ginkgo	*Ginkgo biloba*	2	2	3	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31426	ginkgo	*Ginkgo biloba*	2	2	3	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31427	ginkgo	*Ginkgo biloba*	2	2	3	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31428	ginkgo	*Ginkgo biloba*	2	2	3	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31429	ginkgo	*Ginkgo biloba*	1	1	3	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31430	ginkgo	*Ginkgo biloba*	1	1	3	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31431	ginkgo	*Ginkgo biloba*	2	2	3	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31432	ginkgo	*Ginkgo biloba*	2	2	3	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31433	ginkgo	*Ginkgo biloba*	2	2	3	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31434	purple leaf plum	*Prunus cerasifera*	3	3	3	poor	poor	thin, dead branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31435	London planetree	*Platanus × acerifolia*	4	4	7	fair	fair	thin, sparse branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31436	London planetree	*Platanus × acerifolia*	4	4	8	fair	fair	thin, sparse branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31437	London planetree	*Platanus × acerifolia*	5	5	8	fair	fair	thin, sparse branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31438	London planetree	*Platanus × acerifolia*	5	5	10	fair	fair	thin, sparse branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31439	London planetree	*Platanus × acerifolia*	5	5	10	fair	fair	thin, sparse branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31440	purple leaf plum	*Prunus cerasifera*	3	3	4	poor	poor	thin, dead branches, trunk wounds	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31441	purple leaf plum	*Prunus cerasifera*	3	3	4	poor	poor	thin, dead branches, trunk wounds	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31442	purple leaf plum	*Prunus cerasifera*	3	3	4	poor	poor	thin, dead branches, trunk wounds	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31443	purple leaf plum	*Prunus cerasifera*	3	3	3	very poor	very poor	thin, dead branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31444	purple leaf plum	*Prunus cerasifera*	3	3	5	very poor	very poor	thin, dead branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31445	purple leaf plum	*Prunus cerasifera*	4	4	6	poor	poor	thin, dead branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31446	purple leaf plum	*Prunus cerasifera*	5	5	4	poor	poor	thin, dead branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31447	purple leaf plum	*Prunus cerasifera*	1	1	2	poor	poor	thin, dead branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31448	purple leaf plum	*Prunus cerasifera*	4	4	7	fair	fair	thin, sparse branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025

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Attachment 2 - Tree Inventory
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Tree No	Common name	Scientific name	DSH[1] (in)	Single[2] DSH (in)	C- Rad[3] (ft)	Health condition[4]	Structure condition[4]	Comments	Exempt status	Inventory Date	Treatment
31449	purple leaf plum	*Prunus cerasifera*	4	4	4	poor	poor	thin, dead branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31450	purple leaf plum	*Prunus cerasifera*	4	4	3	fair	fair	thin, sparse branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31451	purple leaf plum	*Prunus cerasifera*	6	6	5	fair	fair	thin, sparse branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31452	purple leaf plum	*Prunus cerasifera*	6,5	8	5	poor	poor	thin, dead branches	non-exempt	9/11/2024	REMOVE - 2025
31453	purple leaf plum	*Prunus cerasifera*	5	5	5	fair	fair	thin, sparse branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31454	purple leaf plum	*Prunus cerasifera*	6	6	5	fair	fair	thin, sparse branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31455	purple leaf plum	*Prunus cerasifera*	5	5	6	very poor	very poor	thin, dead branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31456	purple leaf plum	*Prunus cerasifera*	6	6	6	very poor	very poor	thin, dead branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31457	purple leaf plum	*Prunus cerasifera*	5	5	6	very poor	very poor	thin, dead branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31458	purple leaf plum	*Prunus cerasifera*	3	3	3	poor	poor	thin, topped central leader	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31459	purple leaf plum	*Prunus cerasifera*	3	3	3	poor	very poor	topped central leader, thin	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31460	purple leaf plum	*Prunus cerasifera*	3	3	2	very poor	very poor	topped central leader, one live branch	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31461	purple leaf plum	*Prunus cerasifera*	3	3	2	very poor	very poor	topped central leader, one live branch	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31462	purple leaf plum	*Prunus cerasifera*	3	3	3	very poor	very poor	topped central leader, one live branch	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31463	purple leaf plum	*Prunus cerasifera*	4,3	9	7	fair	fair	thin, crossing branches, epicormic branches	non-exempt	9/11/2024	REMOVE - 2025
31464	Japanese maple	*Acer palmatum*	9	9	6	good	good	red upright variety	non-exempt	9/11/2024	RETAIN - 2025
31465	Japanese maple	*Acer palmatum*	7	7	6	good	good	red upright variety	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
31466	Japanese maple	*Acer palmatum*	5	5	6	good	good	red upright variety	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
31467	Japanese maple	*Acer palmatum*	5	5	6	good	good	red upright variety	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
31482	purple leaf plum	*Prunus cerasifera*	5	5	5	fair	fair	thin, epicormic	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31483	ginkgo	*Ginkgo biloba*	2	2	4	good	fair	lean	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31484	ginkgo	*Ginkgo biloba*	2	2	4	good	fair	lean	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31485	ginkgo	*Ginkgo biloba*	2	2	4	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31486	ginkgo	*Ginkgo biloba*	1	1	3	fair	fair	thin, lean	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31487	ginkgo	*Ginkgo biloba*	2	2	3	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31488	ginkgo	*Ginkgo biloba*	2	2	4	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31489	ginkgo	*Ginkgo biloba*	2	2	3	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31490	ginkgo	*Ginkgo biloba*	2	2	4	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31491	ginkgo	*Ginkgo biloba*	2	2	3	good	poor	lean	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31492	ginkgo	*Ginkgo biloba*	2	2	4	good	very poor	severe lean	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31493	ginkgo	*Ginkgo biloba*	2	2	4	fair	fair	lean	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31494	ginkgo	*Ginkgo biloba*	2	2	3	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025

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Tree No	Common name	Scientific name	DSH[1] (in)	Single[2] DSH (in)	C- Rad[3] (ft)	Health condition[4]	Structure condition[4]	Comments	Exempt status	Inventory Date	Treatment
31495	ginkgo	*Ginkgo biloba*	2	2	4	good	fair	lean	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31496	ginkgo	*Ginkgo biloba*	2	2	2	poor	poor	thin, lean	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31497	ginkgo	*Ginkgo biloba*	2	2	4	good	fair	lean	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31501	purple leaf plum	*Prunus cerasifera*	5	5	4	very poor	very poor	thin, dead branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31503	purple leaf plum	*Prunus cerasifera*	5	5	6	poor	poor	thin, epicormic branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31504	purple leaf plum	*Prunus cerasifera*	4	4	5	very poor	very poor	thin, dead branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31505	purple leaf plum	*Prunus cerasifera*	6	6	6	poor	poor	trunk wound, thin, epicormic branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31506	purple leaf plum	*Prunus cerasifera*	5	5	5	very poor	very poor	thin, dead branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31507	purple leaf plum	*Prunus cerasifera*	5	5	8	poor	poor	trunk wound, thin, epicormic branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31508	purple leaf plum	*Prunus cerasifera*	6	6	8	poor	poor	trunk wound, thin, epicormic branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31509	purple leaf plum	*Prunus cerasifera*	5	5	8	poor	poor	trunk wound, thin, epicormic branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31510	purple leaf plum	*Prunus cerasifera*	5	5	5	poor	poor	thin, dead branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31511	purple leaf plum	*Prunus cerasifera*	6	6	5	poor	poor	thin, dead branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31512	purple leaf plum	*Prunus cerasifera*	6	6	5	poor	poor	thin, dead branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31513	London planetree	*Platanus × acerifolia*	4	4	6	fair	fair	thin	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31514	ginkgo	*Ginkgo biloba*	1	1	2	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31515	ginkgo	*Ginkgo biloba*	1	1	2	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31516	incense cedar	*Calocedrus decurrens*	16	16	8	good	good		non-exempt	9/11/2024	REMOVE - 2025
31520	paperbark maple	*Acer griseum*	1	1	0	dead	dead		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
31521	paperbark maple	*Acer griseum*	1	1	3	good	poor	planted too high	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
31522	paperbark maple	*Acer griseum*	1	1	0	dead	dead		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
31523	paperbark maple	*Acer griseum*	1	1	0	dead	dead		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
31694	Douglas-fir	*Pseudotsuga menziesii*	9	9	10	good	good		non-exempt	9/11/2024	RETAIN - 2025
31717	black cottonwood	*Populus trichocarpa*	11	11	10	good	fair	trunk wound, burn on trunk	non-exempt	9/11/2024	REMOVE - 2025
31718	red alder	*Alnus rubra*	7	7	10	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31719	western redcedar	*Thuja plicata*	3	3	4	fair	fair	thin, sparse branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31720	red alder	*Alnus rubra*	2	2	8	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31721	western redcedar	*Thuja plicata*	2	2	4	fair	fair	thin, sparse branches	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31722	western redcedar	*Thuja plicata*	3	3	5	good	fair	thin, multiple stems	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31726	black cottonwood	*Populus trichocarpa*	7	7	8	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31728	western redcedar	*Thuja plicata*	3	3	5	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31729	Japanese maple	*Acer palmatum*	9	9	18	good	good		non-exempt	9/11/2024	REMOVE - 2025

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Attachment 2 - Tree Inventory
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Tree No	Common name	Scientific name	DSH[1] (in)	Single[2] DSH (in)	C- Rad[3] (ft)	Health condition[4]	Structure condition[4]	Comments	Exempt status	Inventory Date	Treatment
31744	n/a	n/a	n/a	n/a	n/a	n/a	n/a	tree does not exist	n/a	confirmed 9/11/2024	N/A (DNE)
31745	n/a	n/a	n/a	n/a	n/a	n/a	n/a	tree does not exist	n/a	confirmed 9/11/2024	N/A (DNE)
31746	n/a	n/a	n/a	n/a	n/a	n/a	n/a	tree does not exist	n/a	confirmed 9/11/2024	N/A (DNE)
31747	n/a	n/a	n/a	n/a	n/a	n/a	n/a	tree does not exist	n/a	confirmed 9/11/2024	N/A (DNE)
31748	n/a	n/a	n/a	n/a	n/a	n/a	n/a	tree does not exist	n/a	confirmed 9/11/2024	N/A (DNE)
31749	n/a	n/a	n/a	n/a	n/a	n/a	n/a	tree does not exist	n/a	confirmed 9/11/2024	N/A (DNE)
31750	n/a	n/a	n/a	n/a	n/a	n/a	n/a	tree does not exist	n/a	confirmed 9/11/2024	N/A (DNE)
31766	Douglas-fir	*Pseudotsuga menziesii*	22	22	18	good	good		non-exempt	9/11/2024	RETAIN - 2025
31812	zelkova	*Zelkova serrulata*	3	3	0	dead	dead		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31813	prairiefire crabapple	*Malus* × 'Prairifire'	2	2	5	fair	fair	thin	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31814	prairiefire crabapple	*Malus* × 'Prairifire'	2	2	5	fair	fair	thin	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31815	prairiefire crabapple	*Malus* × 'Prairifire'	2	2	5	fair	fair	thin	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31816	prairiefire crabapple	*Malus* × 'Prairifire'	2	2	5	fair	fair	thin	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31817	prairiefire crabapple	*Malus* × 'Prairifire'	2	2	5	fair	fair	thin	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31818	prairiefire crabapple	*Malus* × 'Prairifire'	2	2	5	fair	fair	thin	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31821	prairiefire crabapple	*Malus* × 'Prairifire'	2	2	5	fair	fair	thin	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31822	prairiefire crabapple	*Malus* × 'Prairifire'	2	2	5	fair	fair	thin	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31823	prairiefire crabapple	*Malus* × 'Prairifire'	2	2	5	fair	fair	thin	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31824	prairiefire crabapple	*Malus* × 'Prairifire'	2	2	5	fair	fair	thin	exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
31853	Japanese maple	*Acer palmatum*	9	9	10	good	good		non-exempt	9/11/2024	RETAIN - 2025
31854	Japanese maple	*Acer palmatum*	9	9	10	good	good		non-exempt	9/11/2024	RETAIN - 2025
31855	Japanese maple	*Acer palmatum*	9	9	10	good	good		non-exempt	9/11/2024	RETAIN - 2025
31856	Japanese maple	*Acer palmatum*	9	9	10	good	good		non-exempt	9/11/2024	RETAIN - 2025
31857	Japanese maple	*Acer palmatum*	9	9	10	good	good		non-exempt	9/11/2024	RETAIN - 2025
31863	Douglas-fir	*Pseudotsuga menziesii*	26	26	15	good	good		non-exempt	9/11/2024	RETAIN - 2025
31864	red alder	*Alnus rubra*	13	13	8	poor	poor	thin, leaf damage	non-exempt	9/11/2024	RETAIN - 2025
31865	Douglas-fir	*Pseudotsuga menziesii*	23	23	16	good	good		non-exempt	9/11/2024	RETAIN - 2025
31866	red alder	*Alnus rubra*	16	16	12	good	fair	one-sided, thin	non-exempt	9/11/2024	RETAIN - 2025
31867	sweet cherry	*Prunus avium*	7	7	8	good	fair	one-sided, lean	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32316	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	3	3	4	fair	fair	trunk wound, thin	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32327	zelkova	*Zelkova serrulata*	4	4	0	dead	dead		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32399	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	3	3	4	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025

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Attachment 2 - Tree Inventory
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Tree No	Common name	Scientific name	DSH[1] (in)	Single[2] DSH (in)	C- Rad[3] (ft)	Health condition[4]	Structure condition[4]	Comments	Exempt status	Inventory Date	Treatment
32400	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	3	3	5	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32409	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	3	3	6	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32410	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	3	3	5	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32419	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	3	3	5	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32420	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	3	3	6	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32426	zelkova	*Zelkova serrulata*	4	4	7	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32427	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	3	3	5	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32440	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	4	4	5	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32449	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	3	3	5	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32451	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	3	3	4	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32456	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	3	3	4	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32456.1	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	3	3	5	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32466	red maple	*Acer rubrum*	3	3	6	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
32467	red maple	*Acer rubrum*	3	3	8	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
32473	red maple	*Acer rubrum*	6	6	8	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
32482	red maple	*Acer rubrum*	6	6	8	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
32549	red maple	*Acer rubrum*	3	3	6	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
32557	red maple	*Acer rubrum*	3	3	8	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
32800	Honey locust	*Gleditsia tricanthos*	3	3	8	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
32801	Honey locust	*Gleditsia tricanthos*	4	4	8	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32802	Honey locust	*Gleditsia tricanthos*	3	3	8	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32803	Honey locust	*Gleditsia tricanthos*	3	3	0	dead	dead		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32804	Honey locust	*Gleditsia tricanthos*	1	1	1	poor	poor	thin, yellowing foliage	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32805	Honey locust	*Gleditsia tricanthos*	4	4	12	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32806	Honey locust	*Gleditsia tricanthos*	4	4	8	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32807	Honey locust	*Gleditsia tricanthos*	4	4	8	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32808	Honey locust	*Gleditsia tricanthos*	1	1	1	very poor	very poor	thin, discolored foliage	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32809	Honey locust	*Gleditsia tricanthos*	1	1	1	very poor	very poor	thin, discolored foliage	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32810	Honey locust	*Gleditsia tricanthos*	1	1	1	very poor	very poor	thin, discolored foliage	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32811	Honey locust	*Gleditsia tricanthos*	1	1	1	very poor	very poor	thin, discolored foliage	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32812	Honey locust	*Gleditsia tricanthos*	4	4	8	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32813	Honey locust	*Gleditsia tricanthos*	1	1	1	poor	poor	thin, discolored foliage	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025

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Attachment 2 - Tree Inventory
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Tree No	Common name	Scientific name	DSH[1] (in)	Single[2] DSH (in)	C- Rad[3] (ft)	Health condition[4]	Structure condition[4]	Comments	Exempt status	Inventory Date	Treatment
32814	Honey locust	*Gleditsia tricanthos*	4	4	10	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32815	Honey locust	*Gleditsia tricanthos*	4	4	10	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32816	Honey locust	*Gleditsia tricanthos*	1	1	1	poor	poor	thin, discolored foliage	exempt (<8-inch dbh)	9/12/2024	RETAIN - 2025
32817	Honey locust	*Gleditsia tricanthos*	4	4	8	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
33806	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	8	8	10	good	fair	crooked trunk	non-exempt	9/11/2024	RETAIN - 2025
33886	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	6	6	10	fair	fair	thin, lean, trunk wound	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
33924	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	5	5	4	poor	poor	50 % dead, trunk wound	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
33956	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	4	4	5	poor	poor	thin, dead branches, high crown	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34151	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	6	6	5	poor	fair	thin, dead branches, high crown	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34176	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	6	6	5	fair	fair	thin, dead branches, high crown	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34207	red maple	*Acer rubrum*	4	4	8	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34214	red maple	*Acer rubrum*	4	4	9	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34216	red maple	*Acer rubrum*	4	4	10	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34226	red maple	*Acer rubrum*	4	4	11	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34234	red maple	*Acer rubrum*	4	4	4	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34241	red maple	*Acer rubrum*	4	4	5	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34243	red maple	*Acer rubrum*	4	4	6	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34254	red maple	*Acer rubrum*	4	4	7	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34256	red maple	*Acer rubrum*	4	4	8	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34267	red maple	*Acer rubrum*	6	6	10	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34269	red maple	*Acer rubrum*	4	4	8	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34281	red maple	*Acer rubrum*	7	7	10	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34282	red maple	*Acer rubrum*	4	4	8	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34296	zelkova	*Zelkova serrulata*	6	6	10	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34298	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	3	3	8	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34308	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	3	3	5	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34309	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	3	3	4	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34320	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	3	3	4	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34321	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	3	3	5	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34334	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	3	3	5	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34348	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	4	4	5	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34374	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	3	3	5	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025

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Attachment 2 - Tree Inventory
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Tree No	Common name	Scientific name	DSH[1] (in)	Single[2] DSH (in)	C- Rad[3] (ft)	Health condition[4]	Structure condition[4]	Comments	Exempt status	Inventory Date	Treatment
34388	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	3	3	5	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34389	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	3	3	5	poor	poor	dead top	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34400	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	3	3	4	poor	poor	dead top	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34410	red maple	*Acer rubrum*	4	4	8	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34412	red maple	*Acer rubrum*	4	4	8	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34413	red maple	*Acer rubrum*	4	4	8	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34428	red maple	*Acer rubrum*	6	6	9	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34486	Honey locust	*Gleditsia tricanthos*	3	3	6	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
34487	Honey locust	*Gleditsia tricanthos*	4	4	8	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
34488	Honey locust	*Gleditsia tricanthos*	4	4	6	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
34489	Honey locust	*Gleditsia tricanthos*	7	7	10	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
34490	Honey locust	*Gleditsia tricanthos*	6	6	10	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
34491	zelkova	*Zelkova serrulata*	4	4	6	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
34492	Honey locust	*Gleditsia tricanthos*	7	7	12	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
34493	Honey locust	*Gleditsia tricanthos*	7	7	12	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
34495	Honey locust	*Gleditsia tricanthos*	6	6	10	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
34496	Honey locust	*Gleditsia tricanthos*	6	6	10	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34497	zelkova	*Zelkova serrulata*	4	4	0	dead	dead		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34498	Honey locust	*Gleditsia tricanthos*	6	6	10	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34499	Honey locust	*Gleditsia tricanthos*	6	6	10	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34501	red maple	*Acer rubrum*	5	5	8	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34502	Honey locust	*Gleditsia tricanthos*	4	4	10	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34503	Honey locust	*Gleditsia tricanthos*	4	4	12	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34504	zelkova	*Zelkova serrulata*	7	7	6	fair	fair	trunk wound, thin	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34505	Honey locust	*Gleditsia tricanthos*	6	6	10	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34506	Honey locust	*Gleditsia tricanthos*	6	6	10	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34507	Honey locust	*Gleditsia tricanthos*	6	6	10	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34508	Honey locust	*Gleditsia tricanthos*	6	6	10	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34509	zelkova	*Zelkova serrulata*	6	6	12	good	good		exempt (<8-inch dbh)	9/11/2024	REMOVE - 2025
34510	Honey locust	*Gleditsia tricanthos*	5	5	8	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34511	Honey locust	*Gleditsia tricanthos*	4	4	8	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34512	Honey locust	*Gleditsia tricanthos*	3	3	6	fair	fair	thin	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025

Todd Prager & Associates LLC

Attachment 2 - Tree Inventory
Lam Research Expansion

Tree No	Common name	Scientific name	DSH[1] (in)	Single[2] DSH (in)	C- Rad[3] (ft)	Health condition[4]	Structure condition[4]	Comments	Exempt status	Inventory Date	Treatment
34513	Honey locust	*Gleditsia tricanthos*	4	4	10	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34514	Honey locust	*Gleditsia tricanthos*	4	4	10	good	good		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34515	zelkova	*Zelkova serrulata*	3	3	6	fair	poor	thin, dead branches	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34859	western redcedar	*Thuja plicata*	11	11	15	good	good		non-exempt	9/11/2024	RETAIN - 2025
34860	western redcedar	*Thuja plicata*	17	17	10	good	good		non-exempt	9/11/2024	RETAIN - 2025
35060	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	9	9	7	fair	fair	thin, dead branches	non-exempt	9/11/2024	RETAIN - 2025
35060.1	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	7	7	7	fair	fair	thin, dead branches	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
35115	western redcedar	*Thuja plicata*	11	11	6	poor	poor	dead top	non-exempt	9/11/2024	RETAIN - 2025
35117	western redcedar	*Thuja plicata*	8,7,5	12	7	good	fair	thin, dead branches	non-exempt	9/11/2024	RETAIN - 2025
35117.1	zelkova	*Zelkova serrulata*	2	2	0	dead	dead		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
35119	western redcedar	Thuja plicata	6	6	6	fair	fair	thin, dead branches	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
35819	n/a	n/a	n/a	n/a	n/a	n/a	n/a	tree does not exist	n/a	confirmed 9/11/2024	N/A (DNE)
35820	n/a	n/a	n/a	n/a	n/a	n/a	n/a	tree does not exist	n/a	confirmed 9/11/2024	N/A (DNE)
35821	n/a	n/a	n/a	n/a	n/a	n/a	n/a	tree does not exist	n/a	confirmed 9/11/2024	N/A (DNE)
35822	n/a	n/a	n/a	n/a	n/a	n/a	n/a	tree does not exist	n/a	confirmed 9/11/2024	N/A (DNE)
35823	n/a	n/a	n/a	n/a	n/a	n/a	n/a	tree does not exist	n/a	confirmed 9/11/2024	N/A (DNE)
35824	n/a	n/a	n/a	n/a	n/a	n/a	n/a	tree does not exist	n/a	confirmed 9/11/2024	N/A (DNE)
35825	n/a	n/a	n/a	n/a	n/a	n/a	n/a	tree does not exist	n/a	confirmed 9/11/2024	N/A (DNE)
35826	n/a	n/a	n/a	n/a	n/a	n/a	n/a	tree does not exist	n/a	confirmed 9/11/2024	N/A (DNE)
35827	n/a	n/a	n/a	n/a	n/a	n/a	n/a	tree does not exist	n/a	confirmed 9/11/2024	N/A (DNE)
35828	n/a	n/a	n/a	n/a	n/a	n/a	n/a	tree does not exist	n/a	confirmed 9/11/2024	N/A (DNE)
35829	n/a	n/a	n/a	n/a	n/a	n/a	n/a	tree does not exist	n/a	confirmed 9/11/2024	N/A (DNE)
35830	n/a	n/a	n/a	n/a	n/a	n/a	n/a	tree does not exist	n/a	confirmed 9/11/2024	N/A (DNE)
35831	n/a	n/a	n/a	n/a	n/a	n/a	n/a	tree does not exist	n/a	confirmed 9/11/2024	N/A (DNE)
35832	n/a	n/a	n/a	n/a	n/a	n/a	n/a	tree does not exist	n/a	confirmed 9/11/2024	N/A (DNE)
35833	n/a	n/a	n/a	n/a	n/a	n/a	n/a	tree does not exist	n/a	confirmed 9/11/2024	N/A (DNE)
35844	n/a	n/a	n/a	n/a	n/a	n/a	n/a	tree does not exist	n/a	confirmed 9/11/2024	N/A (DNE)
35845	n/a	n/a	n/a	n/a	n/a	n/a	n/a	tree does not exist	n/a	confirmed 9/11/2024	N/A (DNE)
35846	n/a	n/a	n/a	n/a	n/a	n/a	n/a	tree does not exist	n/a	confirmed 9/11/2024	N/A (DNE)
35853	n/a	n/a	n/a	n/a	n/a	n/a	n/a	tree does not exist	n/a	confirmed 9/11/2024	N/A (DNE)
35854	n/a	n/a	n/a	n/a	n/a	n/a	n/a	tree does not exist	n/a	confirmed 9/11/2024	N/A (DNE)
37259	London planetree	*Platanus × acerifolia*	17	17	20	good	good		non-exempt	9/11/2024	RETAIN - 2025

Todd Prager & Associates LLC

Attachment 2 - Tree Inventory
Lam Research Expansion

Tree No	Common name	Scientific name	DSH[1] (in)	Single[2] DSH (in)	C- Rad[3] (ft)	Health condition[4]	Structure condition[4]	Comments	Exempt status	Inventory Date	Treatment
37406	black cottonwood	*Populus trichocarpa*	17,15,10,7	30	20	good	fair	multi-stem, asymmetrical crown	non-exempt	8/23/2024	REMOVE - 2025
37407	black cottonwood	*Populus trichocarpa*	6	6	6	fair	fair	suppressed	exempt (<8-inch dbh)	8/23/2024	REMOVE - 2025
37413	black cottonwood	*Populus trichocarpa*	14,9	17	12	good	fair	codominant leaders, narrow crown	non-exempt	8/23/2024	REMOVE - 2025
37414	black cottonwood	*Populus trichocarpa*	11	11	7	good	fair	narrow crown	non-exempt	8/23/2024	REMOVE - 2025
37415	black cottonwood	*Populus trichocarpa*	10,10	14	12	good	fair	codominant leaders	non-exempt	8/23/2024	REMOVE - 2025
37416	black cottonwood	*Populus trichocarpa*	15	15	13	good	good		non-exempt	8/23/2024	REMOVE - 2025
37994	Douglas-fir	*Pseudotsuga menziesii*	22,16	41	18	good	fair	codominant leaders	non-exempt	9/11/2024	RETAIN - 2025
37996	black cottonwood	*Populus trichocarpa*	20	20	0	dead	dead	DBH estimated	non-exempt	9/11/2024	RETAIN - 2025
37999	Douglas-fir	*Pseudotsuga menziesii*	10	10	8	good	fair	DBH approximated, one-sided, crooked top	non-exempt	9/11/2024	RETAIN - 2025
38000	Douglas-fir	*Pseudotsuga menziesii*	10	10	8	good	fair	DBH approximated, one-sided, crooked top	non-exempt	9/11/2024	RETAIN - 2025
38002	Pacific madrone	*Arbutus menziesii*	12	12	8	fair	poor	significant lean, one sided, trunk wound	non-exempt	9/11/2024	RETAIN - 2025
38006	sweet cherry	*Prunus avium*	11,12	14	10	poor	poor	lean, thin	non-exempt	9/11/2024	RETAIN - 2025
38008	sweet cherry	*Prunus avium*	12	12	15	poor	poor	lean, thin	non-exempt	9/11/2024	RETAIN - 2025
38011	bigleaf maple	*Acer macrophyllum*	31,18	41	25	good	good	DBH approximated	non-exempt	9/11/2024	RETAIN - 2025
38014	Douglas-fir	*Pseudotsuga menziesii*	32	32	18	good	fair	DBH approximated, one-sided	non-exempt	9/11/2024	RETAIN - 2025
38016	black cottonwood	*Populus trichocarpa*	35	35	20	good	fair	DBH estimated, weeping trunk	non-exempt	9/11/2024	RETAIN - 2025
38065	black cottonwood	*Populus trichocarpa*	16,15	22	18	good	fair	codominant leaders	non-exempt	8/23/2024	REMOVE - 2025
38066	Douglas-fir	*Pseudotsuga menziesii*	12	12	12	good	good		non-exempt	8/23/2024	REMOVE - 2025
38067	black cottonwood	*Populus trichocarpa*	12,12,11	20	15	good	fair	codominant leaders	non-exempt	8/23/2024	REMOVE - 2025
38068	black cottonwood	*Populus trichocarpa*	10	10	9	good	fair	asymmetrical crown, self-corrected phototropic lean	non-exempt	8/23/2024	REMOVE - 2025
38069	black cottonwood	*Populus trichocarpa*	8	8	8	fair	fair	asymmetrical crown, suppressed, self-corrected phototropic lean	non-exempt	8/23/2024	REMOVE - 2025
38070	black cottonwood	*Populus trichocarpa*	14,9	18	15	good	fair	codominant leaders	non-exempt	8/23/2024	REMOVE - 2025
38071	black cottonwood	*Populus trichocarpa*	12,13,13	14	17	good	fair	codominant leaders, crossing trunks	non-exempt	8/23/2024	REMOVE - 2025
38072	black cottonwood	*Populus trichocarpa*	13,9	24	14	good	fair	codominant leaders	non-exempt	8/23/2024	REMOVE - 2025
38418	black cottonwood	*Populus trichocarpa*	12,12,10,10	22	18	good	fair	codominant leaders	non-exempt	8/23/2024	REMOVE - 2025
39101	eastern redbud	*Cercis canadensis*	1	1	4	good	good		exempt (<8-inch dbh)	8/23/2024	RETAIN - 2025
39104	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	7	7	10	fair	good	dead branches 0 to 2" diameter	exempt (<8-inch dbh)	8/23/2024	RETAIN - 2025
39152	incense cedar	*Calocedrus decurrens*	26	26	12	good	good		non-exempt	8/23/2024	RETAIN - 2025
39210	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	11	11	12	good	good		non-exempt	8/23/2024	RETAIN - 2025
39212	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	10	10	12	fair	fair	dead branches 0 to 2" diameter, thinning foliage, trunk wound	non-exempt	8/23/2024	RETAIN - 2025
39255	western redcedar	*Thuja plicata*	17	17	10	fair	fair	thin, sparse branches	non-exempt	9/11/2024	RETAIN - 2025
39256	western redcedar	*Thuja plicata*	13	13	10	fair	fair	thin, sparse branches	non-exempt	9/11/2024	RETAIN - 2025

Todd Prager & Associates LLC

Attachment 2 - Tree Inventory
Lam Research Expansion

Tree No	Common name	Scientific name	DSH[1] (in)	Single[2] DSH (in)	C- Rad[3] (ft)	Health condition[4]	Structure condition[4]	Comments	Exempt status	Inventory Date	Treatment
39343	vine maple	*Acer circinatum*	6	6	9	good	fair	multi-stem, 2, 2, 3, 3, diameter at ground level	exempt (<8-inch dbh)	8/23/2024	RETAIN - 2025
39358	Japanese maple	*Acer palmatum*	5,4,5,3	8	12	good	fair	multi-stem	non-exempt	8/23/2024	RETAIN - 2025
39359	vine maple	*Acer circinatum*	2,2,2,2	26	10	good	fair	multi-stem	non-exempt	8/23/2024	RETAIN - 2025
39517	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	5	5	7	poor	poor	suppressed, lean, discolored bark	exempt (<8-inch dbh)	8/23/2024	RETAIN - 2025
39532	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	5	5	7	poor	poor	thinning foliage, asymmetrical crown, suppressed, lean, sunscald	exempt (<8-inch dbh)	8/23/2024	RETAIN - 2025
39535	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	6	6	8	poor	poor	dead branches 0 to 2" diameter, thinning foliage, asymmetrical crown, sunscald	exempt (<8-inch dbh)	8/23/2024	RETAIN - 2025
39555	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	5	5	8	fair	fair	asymmetrical crown, lean, sunscald	exempt (<8-inch dbh)	8/23/2024	RETAIN - 2025
39556	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	5	5	8	fair	fair	dead branches 0 to 2" diameter, thinning foliage, sunscald	exempt (<8-inch dbh)	8/23/2024	RETAIN - 2025
39896	western redcedar	*Thuja plicata*	7	7	6	poor	poor	thin, sparse branches, discolored foliage	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
39897	western redcedar	*Thuja plicata*	13	13	10	fair	fair	thin, sparse branches	non-exempt	9/11/2024	RETAIN - 2025
39898	western redcedar	*Thuja plicata*	13	13	10	fair	fair	thin, sparse branches	non-exempt	9/11/2024	RETAIN - 2025
39959	black cottonwood	*Populus trichocarpa*	16	16	15	good	good		non-exempt	8/23/2024	RETAIN - 2025
39960	black cottonwood	*Populus trichocarpa*	12,7	14	10	fair	fair	asymmetrical crown, suppressed, codominant leaders, self-corrected phototropic lean	non-exempt	8/23/2024	RETAIN - 2025
39961	black cottonwood	*Populus trichocarpa*	10	10	12	fair	fair	asymmetrical crown, suppressed, self-corrected phototropic lean	non-exempt	8/23/2024	RETAIN - 2025
39962	northern red oak	*Quercus rubra*	8,8	11	15	good	fair	asymmetrical crown, codominant leaders with inclusion	non-exempt	8/23/2024	RETAIN - 2025
39963	northern red oak	*Quercus rubra*	8	8	10	good	fair	asymmetrical crown	non-exempt	8/23/2024	RETAIN - 2025
40001	northern red oak	Quercus rubra	26	26	18	good	good		non-exempt	5/23/2025	RETAIN - 2025
40002	Douglas-fir	Pseudotsuga menziesii	17	17	15	good	fair	one-sided crown	non-exempt	5/23/2025	RETAIN - 2025
40003	bigleaf maple	*Acer macrophyllum*	28	28	22	fair	fair	asymmetrical crown, crowded branches at 20', heavy ivy load	non-exempt	8/23/2024	RETAIN - 2025
40003.1	Douglas-fir	Pseudotsuga menziesii	26	26	20	good	fair	one-sided crown	non-exempt	5/23/2025	RETAIN - 2025
40004	willow	*Salix spp.*	7	7	8	fair	fair	thinning foliage, asymmetrical crown, trunk wounds	exempt (<8-inch dbh)	8/23/2024	RETAIN - 2025
40004.1	Douglas-fir	Pseudotsuga menziesii	19	19	12	good	fair	high crown, narrow crown	non-exempt	5/23/2025	RETAIN - 2025
40005	Douglas-fir	Pseudotsuga menziesii	24	24	18	good	good		non-exempt	5/23/2025	RETAIN - 2025
40006	Douglas-fir	Pseudotsuga menziesii	24	24	16	good	fair	codominant leaders at 25' with inclusion	non-exempt	5/23/2025	RETAIN - 2025
40007	Douglas-fir	Pseudotsuga menziesii	21	21	15	good	good		non-exempt	5/23/2025	RETAIN - 2025
40008	northern red oak	Quercus rubra	29	29	18	good	good		non-exempt	5/23/2025	RETAIN - 2025
40009	Douglas-fir	Pseudotsuga menziesii	22	22	16	good	fair	one-sided	non-exempt	5/23/2025	RETAIN - 2025
40010	n/a	n/a	n/a	n/a	n/a	n/a	n/a	tree does not exist	n/a	confirmed 8/23/2024	N/A (DNE)
40010.1	Douglas-fir	Pseudotsuga menziesii	18	18	16	fair	fair	one-sided crown, thin, poor trunk taper	non-exempt	5/23/2025	RETAIN - 2025
40011	Douglas-fir	*Pseudotsuga menziesii*	12	12	10	good	good	DBH approximated	non-exempt	9/11/2024	RETAIN - 2025
40011.1	Douglas-fir	Pseudotsuga menziesii	20	20	16	fair	fair	one-sided crown, thin	non-exempt	5/23/2025	RETAIN - 2025
40012	Douglas-fir	*Pseudotsuga menziesii*	12	12	10	good	good	DBH approximated	non-exempt	9/11/2024	RETAIN - 2025

Todd Prager & Associates LLC

Attachment 2 - Tree Inventory
Lam Research Expansion

Tree No	Common name	Scientific name	DSH[1] (in)	Single[2] DSH (in)	C- Rad[3] (ft)	Health condition[4]	Structure condition[4]	Comments	Exempt status	Inventory Date	Treatment
40012.1	Douglas-fir	Pseudotsuga menziesii	24	24	20	good	fair	one-sided crown	non-exempt	5/23/2025	RETAIN - 2025
40013	Douglas-fir	Pseudotsuga menziesii	24	24	20	good	fair	one-sided crown	non-exempt	5/23/2025	RETAIN - 2025
40015	Douglas-fir	Pseudotsuga menziesii	25	25	22	good	good	wounds on surface roots	non-exempt	5/23/2025	RETAIN - 2025
40016	Douglas-fir	Pseudotsuga menziesii	24	24	20	good	fair	one-sided crown	non-exempt	5/23/2025	RETAIN - 2025
40017	Douglas-fir	Pseudotsuga menziesii	23	23	18	good	fair	one-sided crown	non-exempt	5/23/2025	RETAIN - 2025
40018	Douglas-fir	Pseudotsuga menziesii	22	22	18	good	fair	one-sided crown	non-exempt	5/23/2025	RETAIN - 2025
40111	n/a	n/a	n/a	n/a	n/a	n/a	n/a	tree does not exist	n/a	confirmed 8/23/2025	N/A (DNE)
40112	Douglas-fir	*Pseudotsuga menziesii*	8	8	8	good	good		non-exempt	8/23/2024	REMOVE - 2025
40199	Douglas-fir	*Pseudotsuga menziesii*	6	6	6	fair	fair	asymmetrical crown, suppressed, self-corrected phototropic lean	exempt (<8-inch dbh)	8/23/2024	REMOVE - 2025
40313	bigleaf maple	*Acer macrophyllum*	19	19	17	fair	fair	asymmetrical crown, suppressed, self-corrected phototropic lean, heavy ivy	non-exempt	8/23/2024	REMOVE - 2025
40314	bigleaf maple	*Acer macrophyllum*	13	13	13	fair	fair	asymmetrical crown, suppressed, self-corrected phototropic lean	non-exempt	8/23/2024	REMOVE - 2025

Attachment 3 - Example Tree Protection Signage

STOP!
DO NOT MOVE THIS FENCE.

TREE PROTECTION ZONE

Inside the fencing is a tree protection zone, not to be disturbed unless prior approval has been obtained from the project arborist.

For questions regarding tree protection please call the project arborist:
Todd Prager & Associates, LLC
todd@toddprager.com
971.295.4835

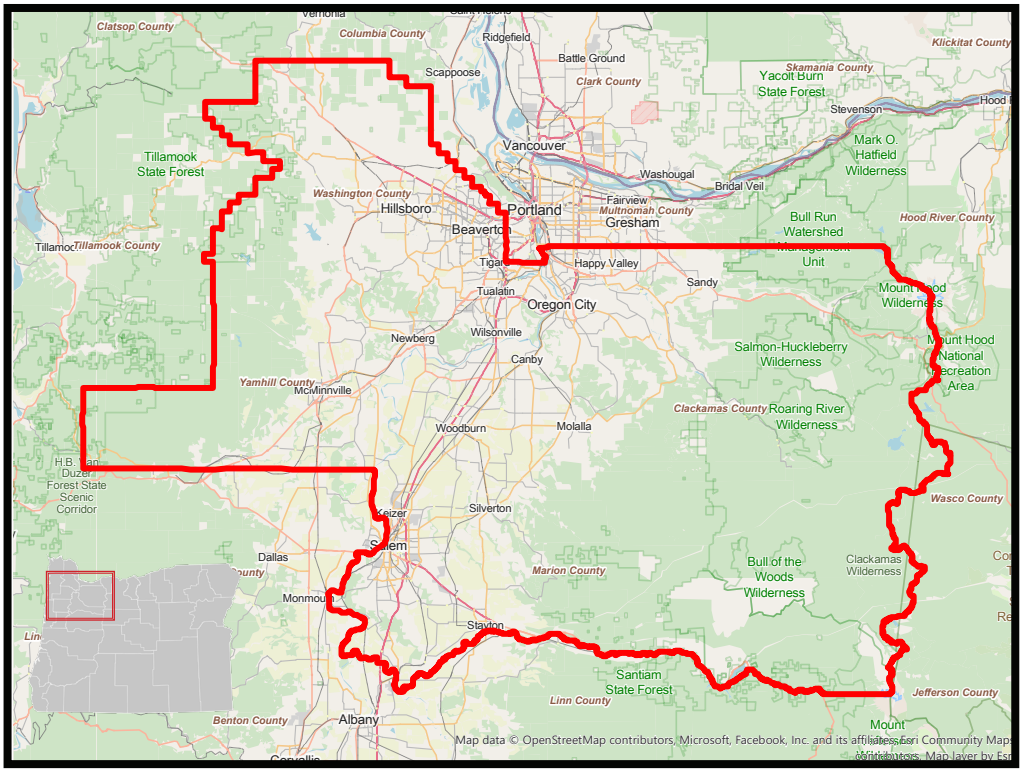
EMERALD ASH BORER QUARANTINE ALERT

OREGON DEPARTMENT OF AGRICULTURE

WASHINGTON, YAMHILL, MARION, CLACKAMAS COUNTIES, OREGON

A permanent quarantine is now in effect. Emerald ash borer (EAB) has been confirmed in three new counties, triggering an expansion of the quarantine. Tree materials of ash, olive, and white fringe tree, must remain within quarantined counties (Washington, Yamhill, Marion, Clackamas). Wood waste must be processed accordingly and disposed of.





Quarantine Boundary Map: ***Quarantine applies to all of the infested counties, including federal, state, commercial, and private lands.***

Treatment Options for Regulated Materials

- Live plant material is eligible for complaince agreements with ODA if one of the following conditions is met:
  - Diameter at the base of the plants is less than 0.75 inches
  - Plants were grown in a screenhouse approved by the ODA
  - Plants have been properly treated with an approved insecticide
- Debark wood and remove at least 1 inch of underlying wood
- Grind or chip to 1 inch or less
- Heat wood to a minumum of 160°F for at least 60 minutes
- Bury under at least 12 inches of topsoil
- Incinerate wood materials
- Secondary processing to produce wood by-products (i.e. paper)
- Other methods specified within a complaince agreement with ODA

Regulated Ash, Olive, & White Fringe Tree Materials

- Nursery stock
- Scion wood
- Bud wood
- Logs
- Roots and branches
- Stumps
- Green lumber
- Chips and mulch
- Firewood of hardwood species

Quarantine Exceptions

- Nurseries or groups that have a formal compliance agreement with ODA
- Seeds and leaves
- Processed lumber kiln dried, free of bark and material 1 inch below bark.
- Finished wood products without bark, including furniture, baskets, and baseball bats

April 1 - September 30

Avoid felling ash, olive and white fringe trees, including branches,and stumps. Hazardous trees can be mitigated at any time. Chip or process as soon as possible on site. Avoid moving any woody material.

October 1 - March 31

Conduct tree removal and pruning during this time period. Transport trees and parts of trees to a facility within the quarantine zone where it will be processed before April 1st.

For more information please visit www.OregonEAB.com,
To suscribe to the EAB email list visit ODA.FYI/subscribe
For questions please email us at EAB@oda.oregon.gov or call 503-986-4636
Oregon Department of Agriculture • 635 Capitol St NE, Salem, OR 97301 • 1-800-525-0137

August 2024

EMERALD ASH BORER (EAB) PERMANENT QUARANTINE

OREGON DEPARTMENT OF AGRICULTURE

EAB Quarantine Frequently Asked Questions.

- **Can regulated material be moved within the quarantine?**
  Movement of EAB hosts within the quarantine area (Washington, Yamhill, Marion and Clackamas counties) is permitted. Ash, olive, and white fringe trees can be sold, given away, or planted, as long as they remain within the quarantine boundaries.
- **Why are we concerned?**
  EAB kills ash and white fringe trees and can damage olive trees. To slow the spread of EAB, ODA is placing a quarantine on infested Counties to restrict the movement of tree materials that may spread EAB to new areas in the state.
- **What is a quarantine? What are the consequences for not adhering to the quarantine?**
  Quarantine is the legal enforcement of actions that help slow the spread of pests to new areas or that prevent them from multiplying where they have already gained entry. For this reason, ODA is implementing a permanent EAB quarantine as per Oregon Administrative Rule (OAR 603-052-1075). Non-compliance will result in the spread of EAB and civil penalties of up to $10,000 as provided by ORS 570.995
- **What do I need to do?**
  Nurseries train staff to identify signs of EAB and report sightings to ODA. Communicate clearly to the purchaser that host plants are required to remain within the quarantine boundaries. Inspect EAB host plants prior to moving them within the quarnatine zones, and inspect mother trees.

  If you see symptoms or signs of EAB infestation please call 1-866-INVADER or contact ODA at: EAB@oda.oregon.gov

Ash Tree ID

- Compound leaves with 5-11 leaflets
- Unstaggered opposite branching
- Diamond shape bark pattern
- Seeds are oar-shaped samaras



Oregon Ash leaf
Photo: Jordon Bartosz

Signs & Symptoms of EAB

- Crown dieback in heavily infested trees
- D-shaped emergence holes in bark about 0.118 inch (3mm) in size.
- Sucker shoots emerging from trunk
- S-shaped galleries underneath the bark
- Bark splitting found on trunk or branches
- Woodpecker activity
- The tree is dying from top down



D-shaped emergence hole



Bark splitting



S-shaped galleries

Additional Resources

Example compliance agreement
ODA.direct/EABComplianceAgreement

Pesticides approved for use against EAB
ODA.direct/EABpesticides

For more information please visit www.OregonEAB.com
To suscribe to the EAB email list visit ODA.FYI/subscribe
For questions please email us at EAB@oda.oregon.gov or call 503-986-4636
Oregon Department of Agriculture • 635 Capitol St NE, Salem, OR 97301 • 1-800-525-0137

August 2024

Attachment 5 - ODA Approved Ash Tree Removal Service

The following is a list put together by the Oregon Department of Agriculture (ODA). The list is intended to help guide residents and businesses to resources that can handle ash, olive, and white fringe tree materials in accordance with the temporary quarantine adopted in Washington County. **ODA will continue to add and update this list as more businesses are identified.**

-It is important to confirm that any business contacted, on or off this list, knows about the temporary quarantine, and can properly handle the wood materials.

Tree removal service/wood processing

Eduardo's Tree Service	41821 NW Kemper Rd Forest Grove , OR 97116	https://www.eduardostree.com/ (503) 360-1923
General Tree Service	6795 SW 111th ave, Beaverton, OR 97008	https://www.generaltree.com (503) 902-7932
Watts Tree Service	10580 NW 309th Ave, North Plains, OR 97133	https://wattstreeservice.com/ (503) 260-1510, (971) 770-7011
Burl & Grain	223 SW Wood St Hillboro, OR 97123	https://www.burlandgrain.com/ (503) 610-3325
For The Love of Trees	PO Box 1996 Beaverton, OR 97075	Fortheloveoftrees.com (503) 515-9520
The Davey Tree Expert Company	5838 NE Columbia Blvd Portland, OR 97218	https://www.davey.com/residential-tree-services/local-offices/portland-tree-service/ (503) 205-6383

Duran Tree Service	2459 SE Tualatin Valley Hwy #355, Hillsboro, OR 97123	https://www.durantreeservice.com/ (503) 405-6720
Halstead	P.O. Box 1182 Tualatin, OR 97062	https://halsteadsarbor.com (503) 245-1383
Marble Tree service	Forest Grove	https://www.marbletreeservice.com/forestry-mulching (503) 303-0726
TRG Tree Service	2820 SE 39th Loop unit c, Hillsboro, OR 97123	www.trgtree.com (971) 228-9975
Arbor Pro Tree Experts	121 fooothills Rd, Lake Oswego, OR 97034	www.arborpronw.com (503) 473-8733

Drop off

S&H Landscape Supply and Recycling	1045 N 4th Ave, Cornelius, OR 97113	https://www.shbark.com/ (503) 357-6090

Attachment 6 - Tree Protection Recommendations

The following recommendations will help to ensure that the trees to be retained are adequately protected:

Before Construction Begins

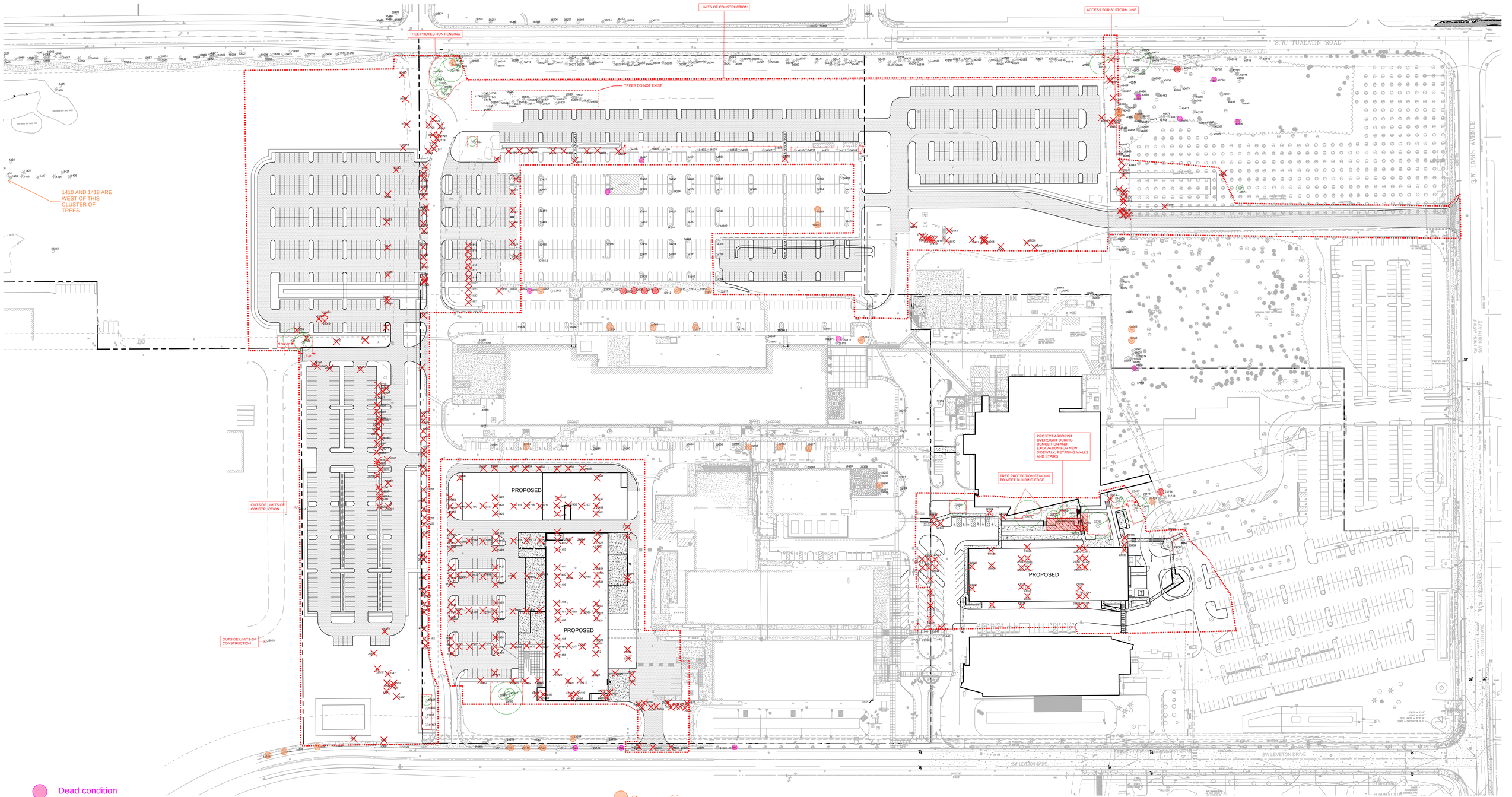
1. **Notify all contractors of the tree protection procedures.** For successful tree protection on a construction site, all contractors must know and understand the goals of tree protection.
    a. Hold a tree protection meeting with all contractors to explain the goals of tree protection.
    b. Have all contractors sign memoranda of understanding regarding the goals of tree protection. The memoranda should include a penalty for violating the tree protection plan. The penalty should equal the appraised value of the tree(s) within the violated tree protection zone per the current Trunk Formula Method as outlined in the current edition of the ***Guide for Plant Appraisal*** plus any resulting fines by government agencies.
    c. The penalty should be paid to the owner of the property.
2. **Fencing.**
    a. Establish fencing around each tree or group of trees to be retained.
    b. The fencing should be put in place before the ground is cleared to protect the trees and the soil around the trees from disturbances.
    c. Fencing should be established by the project arborist based on the needs of the trees to be protected and to facilitate construction.
    d. Fencing should consist of 6-foot-high steel fencing on concrete blocks or 6-foot-high steel fencing secured to the ground with 8-foot metal posts to prevent it from being moved by contractors, sagging or falling down.
    e. Fencing should remain in the position that is established by the project arborist and not be moved without approval from the project arborist until final project approval.
3. **Signage**.
    a. All tree protection fencing should be provided with signage so that all contractors understand the purpose of the fencing.
    b. Signage should be placed on every other fence panel.
    c. Signage should be weathered and secured to fencing.
    d. Signage has been included in Attachment 3.

During Construction

1. **Protection Guidelines Within the Tree Protection Zones.**
    a. No traffic should be allowed within the tree protection zones. This includes but is not limited to vehicle, heavy equipment, or even repeated foot traffic.
    b. No storage of materials including but not limiting to soil, construction material, or waste from the site should be permitted within the tree protection zones. Waste includes but is not limited to concrete wash out, gasoline, diesel, paint, cleaner, thinners, etc.
    c. Construction trailers should not to be parked/placed within the tree protection zones.
    d. No vehicles should be allowed to park within the tree protection zones.
    e. No activity should be allowed that will cause soil compaction within the tree protection zones.
2. The trees should be protected from any cutting, skinning or breaking of branches, trunks, or woody roots.
3. The project arborist should be notified prior to the cutting of woody roots from trees that are to be retained to evaluate and oversee the proper cutting of roots with sharp cutting tools. Cut roots should be immediately covered with soil or mulch to prevent them from drying out.
4. No grade changes should be allowed within the tree protection zones.
5. Trees that have woody roots cut should be provided supplemental water during the summer months.
6. Any necessary passage of utilities through the tree protection zones should be by means of tunneling under woody roots by hand digging or boring with oversight by the project arborist.
7. Any deviation from the recommendations in this section should receive prior approval from the project arborist.

After Construction

1. **Carefully landscape the areas within the tree protection zones.** Do not allow trenching for irrigation or other utilities within the tree protection zones.
2. **Carefully plant new plants within the tree protection zones.** Avoid cutting the woody roots of trees that are retained.
3. **Irrigation**. Do not install permanent irrigation within the tree protection zones unless it is drip irrigation to support a specific planting, or the irrigation is approved by the project arborist.
4. **Drainage**. Provide adequate drainage within the tree protection zones and do not alter soil hydrology significantly from existing conditions for the trees to be retained.
5. **Inspect landscape for pests and disease.** Provide for the ongoing inspection and treatment of insect and disease populations that can damage the retained trees and plants.
6. **Fertilization**. The retained trees may need to be fertilized if recommended by the project arborist.
7. Any deviation from the recommendations in this section should receive prior approval from the project arborist.



Dead condition

Tree No	Common name	Scientific name	DBH[1] (in)	Single[2] DBH (in)	C- Rad[3] (ft)	Health condition[4]	Structure condition[4]	Comments	Exempt status	Inventory Date	Treatment
31520	paperbark maple	*Acer griseum*	1	1	0	dead	dead		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
31522	paperbark maple	*Acer griseum*	1	1	0	dead	dead		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
31523	paperbark maple	*Acer griseum*	1	1	0	dead	dead		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32327	zelkova	*Zelkova serrulata*	4	4	0	dead	dead		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32803	Honey locust	*Gleditsia tricanthos*	3	3	0	dead	dead		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34497	zelkova	*Zelkova serrulata*	4	4	0	dead	dead		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
35117.1	zelkova	*Zelkova serrulata*	2	2	0	dead	dead		exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
37996	black cottonwood	*Populus trichocarpa*	20	20	0	dead	dead	DBH estimated	non-exempt	9/11/2024	RETAIN - 2025
40476	white birch	*Betula pendula*	13	13	0	dead	dead		non-exempt	8/23/2024	RETAIN - 2025
40485	Douglas-fir	*Pseudotsuga menziesii*	13	13	0	dead	dead		non-exempt	8/23/2024	RETAIN - 2025
40496	Western redcedar	*Thuja plicata*	24	24	0	dead	dead		non-exempt	8/23/2024	RETAIN - 2025
40502	bigleaf maple	*Acer macrophyllum*	12	12	0	dead	dead	choked by ivy	non-exempt	8/23/2024	RETAIN - 2025

Very poor condition

Tree No	Common name	Scientific name	DBH[1] (in)	Single[2] DBH (in)	C- Rad[3] (ft)	Health condition[4]	Structure condition[4]	Comments	Exempt status	Inventory Date	Treatment
32808	Honey locust	*Gleditsia tricanthos*	1	1	1	very poor	very poor	thin, discolored foliage	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32809	Honey locust	*Gleditsia tricanthos*	1	1	1	very poor	very poor	thin, discolored foliage	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32810	Honey locust	*Gleditsia tricanthos*	1	1	1	very poor	very poor	thin, discolored foliage	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32811	Honey locust	*Gleditsia tricanthos*	1	1	1	very poor	very poor	thin, discolored foliage	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
21744	northern red oak	Quercus rubra	23	23	25	very poor	poor	deadwood, lean, one-sided, thin, irreversible state of decline, wet soil	non-exempt	5/23/2025	RETAIN - 2025
40733	willow	*Salix spp.*	16	16	5	very poor	very poor	dead branches 0 to 2" diameter, dying from the top down, suppressed, not tagged	non-exempt	8/23/2024	RETAIN - 2025

Poor condition

Tree No	Common name	Scientific name	DBH[1] (in)	Single[2] DBH (in	C- Rad[3] (ft)	Health condition[4]	Structure condition[4]	Comments	Exempt status	Inventory Date	Treatment
1410	black pine	*Pinus nigra*	18	18	10	poor	fair	high crown, thin, multiple tops	non-exempt	2/13/2024	RETAIN - 2025
1418	Douglas-fir	*Pseudotsuga menziesii*	5	5	5	poor	poor	suppressed, thin	exempt (<8-inch dbh)	2/13/2024	RETAIN - 2025
10553	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	3	3	4	poor	very poor	suppressed, epicormic branches, trunk wound 0.5' to 6'	exempt (<8-inch dbh)	12/4/2023	RETAIN - 2025
10554	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	3	3	4	poor	very poor	epicormic branches, dead central leader, missing bark	exempt (<8-inch dbh)	12/4/2023	RETAIN - 2025
10556	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	7	7	7	poor	poor	dead branches greater than 4" diameter, dying from the top down, asymmetrical crown, suppressed, trunk wound at 10'	exempt (<8-inch dbh)	12/4/2023	RETAIN - 2025
23479	flowering cherry	Prunus serrulata	17	17	15	poor	poor	basal decay, deadwood, one-sided, thin, three leaders, change icon to deciduous	non-exempt	5/23/2025	RETAIN - 2025
28083	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	5	5	6	poor	very poor	trunk wound, thin, dead branches, one sided	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
29118	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	8	8	5	poor	poor	thin, high crown, dead branches	non-exempt	9/11/2024	RETAIN - 2025
29119	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	7	7	5	poor	poor	thin, high crown, dead branches	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
29120	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	8	8	7	poor	poor	thin, high crown, dead branches	non-exempt	9/11/2024	RETAIN - 2025
29264	incense cedar	*Calocedrus decurrens*	17	17	8	poor	fair	dead branches, flagging	non-exempt	9/11/2024	RETAIN - 2025
31864	red alder	*Alnus rubra*	13	13	8	poor	poor	thin, leaf damage	non-exempt	9/11/2024	RETAIN - 2025
32804	Honey locust	*Gleditsia tricanthos*	1	1	1	poor	poor	thin, yellowing foliage	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32813	Honey locust	*Gleditsia tricanthos*	1	1	1	poor	poor	thin, discolored foliage	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
32816	Honey locust	*Gleditsia tricanthos*	1	1	1	poor	poor	thin, discolored foliage	exempt (<8-inch dbh)	9/12/2024	RETAIN - 2025
33924	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	5	5	4	poor	poor	50 % dead, trunk wound	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
33956	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	4	4	5	poor	poor	thin, dead branches, high crown	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34151	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	6	6	5	poor	fair	thin, dead branches, high crown	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34389	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	3	3	5	poor	poor	dead top	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
34400	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	3	3	4	poor	poor	dead top	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
35115	western redcedar	*Thuja plicata*	11	11	6	poor	poor	dead top	non-exempt	9/11/2024	RETAIN - 2025
38006	sweet cherry	*Prunus avium*	11,12	14	10	poor	poor	lean, thin	non-exempt	9/11/2024	RETAIN - 2025
38008	sweet cherry	*Prunus avium*	12	12	15	poor	poor	lean, thin	non-exempt	9/11/2024	RETAIN - 2025
39517	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	5	5	7	poor	poor	suppressed, lean, discolored bark	exempt (<8-inch dbh)	8/23/2024	RETAIN - 2025
39532	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	5	5	7	poor	poor	thinning foliage, asymmetrical crown, suppressed, lean, sunscald	exempt (<8-inch dbh)	8/23/2024	RETAIN - 2025
39535	Raywood ash	*Fraxinus oxycarpa* 'Raywood'	6	6	8	poor	poor	dead branches 0 to 2" diameter, thinning foliage, asymmetrical crown, sunscald	exempt (<8-inch dbh)	8/23/2024	RETAIN - 2025
39896	western redcedar	*Thuja plicata*	7	7	6	poor	poor	thin, sparse branches, discolored foliage	exempt (<8-inch dbh)	9/11/2024	RETAIN - 2025
40463	sweet cherry	*Prunus avium*	14	14	16	poor	fair	thinning foliage, discolored foliage, self-corrected phototropic lean	non-exempt	8/23/2024	RETAIN - 2025
40465	sweet cherry	*Prunus avium*	14	14	8	poor	poor	thinning foliage, asymmetrical crown, suppressed, lean, ivy	non-exempt	8/23/2024	RETAIN - 2025
40469	Douglas-fir	*Pseudotsuga menziesii*	6	6	5	poor	poor	asymmetrical crown, suppressed, high crown	exempt (<8-inch dbh)	8/23/2024	RETAIN - 2025

1 EX 1 OVERALL SITE PLAN

1" = 60'-0"

60 0 30 60 120 240 1:1

(IN FEET)
1 inch = 60 ft.

Attachment 7 – Assumptions and Limiting Conditions

1. Any legal description provided to the consultant is assumed to be correct. The site plans and construction information provided by Mackenzie was the basis of the information provided in this report.
2. It is assumed that this property is not in violation of any codes, statutes, ordinances, or other governmental regulations.
3. The client is advised to ensure compliance with applicable local, state, and federal laws and regulations that could relate to this project, i.e., Local and State Tree or Natural Resource Regulations, Local and State Development Regulations, Migratory Bird Treaty Act, Endangered Species Act, Clean Water Act, Americans with Disabilities Act, etc. The consultant may advise the client of issues regarding local, state, and federal laws that the consultant believes would be helpful to the client, but any such advice or comment is not a determination or interpretation of local, state, or federal law or regulation.
4. The consultant is not responsible for information gathered from others involved in various activities pertaining to this project. Care has been taken to obtain information from reliable sources.
5. Loss or alteration of any part of this delivered report invalidates the entire report.
6. Drawings and information contained in this report may not be to scale and are intended to be used as display points of reference only.
7. The consultant's role is only to make recommendations. Inaction on the part of those receiving the report is not the responsibility of the consultant.
8. The purpose of this report is to:
    a. Provide tree removal findings and recommendations based on the proposed site and grading plan; and
    b. Provide recommendations for adequately protecting the trees to be retained during construction.

August 19, 2025

City of Tualatin
Attention: Mike McCarthy
18880 SW Martinazzi Avenue
Tualatin, OR 97062

Re: **Lam TUX**
TIA Supplemental Letter
Project Number 2250180.00

Dear Mike:

Mackenzie has prepared this supplemental letter to address comments and questions related to and to correct a few items in the revised Traffic Impact Analysis (TIA) dated July 21, 2025, for the proposed laboratory/research and development building, office building, and utility building at the Lam Research campus in Tualatin, Oregon. The updated information does not change the overall analysis and conclusion that the existing transportation system is adequate to accommodate the proposed development with the recommended improvements.

CORRECTIONS

Page 3
The list of Analysis Scenarios includes an extra year of 2027. The third scenario in the list should read "2030 Pre-Development without the TUX project."

Page 9
In the Background Traffic Growth, the rate was applied over five years, not three. The second sentence should read "a linear 1% annual growth rate over five years" and the last sentence should be corrected to read "background growth from 2025 to 2030." These volume adjustments are correct in the analysis.

Page 11
The trip generation table did not include the correct Employee number and volumes generated by the project, which are in the corrected trip generation table provided below. The correct numbers below were used in the analysis and are noted elsewhere in the TIA, including the text directly below the incorrect table. This correction does not change results.

TABLE 3 – PROPOSED TRIP GENERATION

ITE Land Use	Employees	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	
Research and Development Center (LUC 860)	600	207	37	244	28	205	233	2,036

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Page 14
In the third paragraph of the Sight Distance Evaluation, the posted speed on SW Leveton Drive needs to be corrected to 40 mph. The posted speed on SW Leveton Drive is 35 MPH to the west of SW 118th Avenue, but 40 MPH along the project frontage. This error has no significant impact on the analysis because sight distance was measured for a 40 MPH speed.

Page 20
In Table 7 for the intersection of SW 115th Avenue/SW Tualatin Road, a storage length of 60' was listed for the Eastbound and Westbound Left (EBL and WBL) turning movements but the effective length is closer to 400'. Queues do not exceed 50' for these movements in any scenario.

The westbound left turn queue for the 2030 Pre-Development Scenario is incorrectly listed as 350'; It should be 50'.

Page 21
In Table 7 for the intersection of SW Leveton/New Access, the storage length for southbound movements should be 100'. It is listed as "TBD". As noted in the table, this length is not exceeded by queues in any scenario.

Page 21
In Table 7 for the for the intersection of SW Tualatin Road/SW Teton Avenue, the striped storage listed for the northbound (NB) movement should be an effective length of 1,000'. The through lane terminates as a right turn lane and has no striped storage length.

CLARIFICATIONS AND NEW INFORMATION

Page 7
Though all required crash data is available in the individual intersection summaries, the City requested adding summary language to capture key details. The requested crash summary is provided below:

> A review of the last five years of available crash data between 2019 and 2023 showed that there were no fatalities and minimal serious injuries (Injury Type A or B) reported in the study area. There were five crashes involving pedestrians and bicycles including one pedestrian crash at SW Tualatin Road/SW 124th Avenue resulting in a Type C injury and one bicycle crash at the Center Access on SW Leveton Drive resulting in a Type A injury. At the intersection of OR 99W/SW Durham Road two pedestrian crashes and a bicycle crash were reported. All intersection crash rates are below the rate of 1.00 crashes per million entering vehicles, as well as below ODOT's 90th percentile crash rate. ODOT's Analysis Procedures Manual Chapter 4, notes further analysis should be provided when the 90th percentile is exceeded.

Page 7
The language about protected left turns at SW 124th Avenue/SW Tualatin Road could be misinterpreted because the southbound left turn movement has both protected and permitted phases. While the majority of crashes are related to this movement, it also involves two of the highest volume movements at the intersection. Overall, the crash rate is well below 1.00 crashes/MEV and also below the ODOT threshold for further analysis.

Page 9
Under the Planned Transportation Improvements section, it should be clarified that the City's plans at the intersection of SW Tualatin Road/SW 115th Avenue could also include a roundabout in addition to a signal.

Page 9
We noted with SW Tualatin-Sherwood Road currently under construction for a widening project, there appears to be an increase in volumes on Tualatin Road. Looking at volumes on Tualatin Road prior to the start of construction, it appears the volumes during the peak hour can be as high as 100-200 in one direction, but it is difficult to determine because of volume fluctuations due to the pandemic. When this construction is complete, some drivers are anticipated to shift back to using Tualatin-Sherwood instead of Tualatin Road, resulting in volumes lower than experienced today, even with the addition of this project.

Page 11
City staff requested a summary of the parking changes with the project be included in the TIA. A similar summary was provided in the prior version of the TIA. The following summarizes the changes:

> There are approximately 1,784 parking spaces existing at the Lam campus after construction of Building G and its new parking spaces at the southeast corner of the campus. A net increase of 544 spaces is proposed, bringing the total to 2,328 spaces. With the construction of the new buildings, 468 existing spaces will be removed. New parking spaces total 1012, including 23 spaces added back next to Building H, with the remainder spread out along the north and west sides of the campus in new lots and an expansion of the north lot.

Page 13
The existing north driveway on SW 108th Avenue has been in use for access to the north end of the campus and will be used by vehicles parking in the new northeast lot, resulting in it serving approximately 6% of total campus trips after development of the project. The driveway is located approximately 300' south of Tualatin Road and is on a lower classification minor arterial road, so meets City of Tualatin standards. As shown in the TIA, the driveway will not result in adverse impacts to the functionality of adjacent roadways and intersections.

Page 16
HCM 7 was used as the default methodology/output, but for some situations, such as unique signal phasing, results will not print. When this happens, HCM 2000 results are used.

Overall v/c ratios for signalized intersections under ODOT jurisdiction were calculated using ODOT's calculator tool when the required information from HCM 7 would print. When HCM 7 results were not available, intersection v/c results were obtained from HCM 2000.

At two intersections, we found the modeling results were significantly different from existing conditions, and utilized alternate methods as noted below to better reflect actual conditions:

- At the intersection of SW Hazelbrook Road/OR 99W, we found much lower levels of delay and queuing for the right turn movement from Hazelbrook, so we measured gap acceptance and found it was closer to six seconds than the seven seconds used in the model. Because HCM 7 does not allow for adjusting the gap acceptance, HCM 2000 results were reported instead.
- At the intersection of SW 115th Avenue/SW Tualatin Road, SimTraffic delay outputs were found to be more consistent with observed conditions.
- At the intersection of SW 115th Avenue/SW Tualatin Road, HCM 2000 outputs were found to be more consistent with observed conditions.

Page 19
We found that SimTraffic results showed queues backing up from OR 99W along SW Hazelbrook Road to SW 115th Avenue. This is inconsistent with observed queuing for existing conditions. Queuing results from HCM 7 are much closer to observed conditions and are reported. The analysis methods were calibrated as allowed per City standards.

Page 19
Queuing results in Table 7 for the southbound left turn lane on SW 124th Avenue at SW Tualatin Road show inconsistent results, where queues appear to decrease when volumes increase from Existing to Pre-Development and Post-Development scenarios. It should be noted the change in left turn volume between scenarios is small in comparison with the total volume, so little variation would be expected. Because SimTraffic results can fluctuate between runs and with rounding to the nearest 25 feet, a difference of one vehicle in the queue is common. Overall, the queue length is estimated to be 425' or less regardless of the scenario.

Page 19
City staff noted vehicle queues reported in Table 7 for the northbound right turn lane and southbound left turn lane on SW 124th Avenue at SW Tualatin Road are longer than available storage lengths.

For the northbound right turn lane, the value reported in the table reflects the location of a right turning vehicle stuck in a queue in the through lane beyond the beginning of the right turn lane, which occurs in the PM peak hour when northbound volumes are highest. Because there is no capacity constraint nor safety concern, there is no need to lengthen the turn lane for an occasional vehicle that must wait in the through lane.

For the left turn lane, this high volume movement may at times spill back towards Highway 99W. While the Lam project will add few left turns, it will add more trips to the southbound through movement at the Tualatin Road intersection. We found the vehicle queues can be reduced below the current 425' experienced in the AM peak hour by coordinating the signal at Tualatin Road with the Highway 99W signal to provide a green light for the southbound left turn to Tualatin Road when vehicles arrive from the westbound to southbound left turn movement from Highway 99W.

Page 23
The City has noted that the pedestrian volumes reported along Tualatin Road and adjacent to the Lam campus seem low, citing observations of Lam employees walking on the adjacent sidewalks during the day. The observed pedestrian activity is likely at lunchtime and not during the peak commute times that are addressed in the report. Further the reported pedestrian volumes are those crossing an intersection or driveway approach during AM or PM peak hour. Reported results for a single hour include 14 pedestrians on one side of SW Tualatin Road and 12 pedestrians crossing the East Lam Access on SW Leveton Drive. It is possible that pedestrian volumes are higher at other locations and at different times.

Page 24
We included a recommendation to coordinate left turn movements from OR 99W to SW Tualatin Road but did not include any analysis showing the benefit. We have since prepared an analysis of the coordination.

Without coordination, the southbound left turn lane queue was found to extend back to the Highway 99W intersection, or about 425' in all scenarios. The TUX project only adds 20 trips to this left turn movement from SW 124th Avenue to Tualatin Road, so volumes don’t change much between the scenarios. Vehicles turning left from SW 124th Avenue onto Tualatin Road are primarily arriving from Highway 99W in the southbound (westbound at this intersection) direction. Travel time between the left turn lane stop bars is estimated to be 13-16 seconds.

We found that allowing for a short amount of green time ahead of vehicles arriving allows for queued vehicles to begin clearing the lane first. An offset of 10 seconds between the start of green for these two left turn movements results in the shortened queue of 350' for the AM peak hour, near the effective length of the striped turn lane and better than existing conditions. A queue of 250' is expected in the PM peak hour.

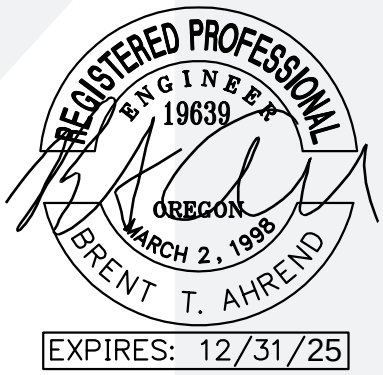
The coordinated queuing results are attached (Attachment A).

Page 24
We wanted to provide a clear statement addressing the approval criteria, that the existing transportation system is adequate to accommodate the proposed development with the recommended improvements. See the attached email from Tualatin City Engineer Mike McCarthy (Attachment B).

Please let us know if you have any further questions.

Sincerely,

Brent Ahrend, PE
Associate Principal | Traffic Engineer



Enclosure(s): Attachment A – Coordinated Queuing results
Attachment B – Mike McCarthy Email

c: Steve Koper, Kim McMillan, Mike McCarthy, Abby McFetridge, Tony Doran, Hayden Ausland – City of Tualatin
Jinde Zhu – Washington County
John Russell – ODOT
Jennifer Otterness Majid, Mike Halvorson, Stefanie McEvers, Danielle Nonamaker, Paul Roessler, Todd Fosler – Lam Research
Joel Rabinovitz, Garth Appanaitis – DKS Associates
Suzannah Stanley, Bill Bezio, Megan Diaz, Mike Rueter, Clara Layton, Nicole Burrell – Mackenzie

Lanes, Volumes, Timings
2: SW 124th Avenue & SW Tualatin Road

08/13/2025



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø8
Lane Configurations							
Traffic Volume (vph)	42	224	274	41	860	922	
Future Volume (vph)	42	224	274	41	860	922	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	25	300		150	200		
Storage Lanes	1	0		1	1		
Taper Length (ft)	100				200		
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95	
Ped Bike Factor				0.98	1.00		
Frt		0.850		0.850			
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1597	1524	3195	1495	1752	3505	
Flt Permitted	0.950				0.384		
Satd. Flow (perm)	1597	1524	3195	1458	706	3505	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		157		47			
Link Speed (mph)	35		45			30	
Link Distance (ft)	615		1078			583	
Travel Time (s)	12.0		16.3			13.3	
Confl. Peds. (#/hr)				2	2		
Peak Hour Factor	0.87	0.87	0.87	0.87	0.87	0.87	
Heavy Vehicles (%)	13%	6%	13%	8%	3%	3%	
Adj. Flow (vph)	48	257	315	47	989	1060	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	48	257	315	47	989	1060	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(ft)	12		12			12	
Link Offset(ft)	0		0			0	
Crosswalk Width(ft)	12		12			12	
Two way Left Turn Lane	Yes						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Number of Detectors	3	3	2	3	2	3	
Detector Template							
Leading Detector (ft)	81	81	326	81	21	326	
Trailing Detector (ft)	5	5	160	5	5	75	
Detector 1 Position(ft)	5	5	160	5	5	160	
Detector 1 Size(ft)	6	6	6	6	6	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	15	15	320	15	15	320	
Detector 2 Size(ft)	6	6	6	6	6	6	
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 2 Channel							
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 3 Position(ft)	75	75		75		75	

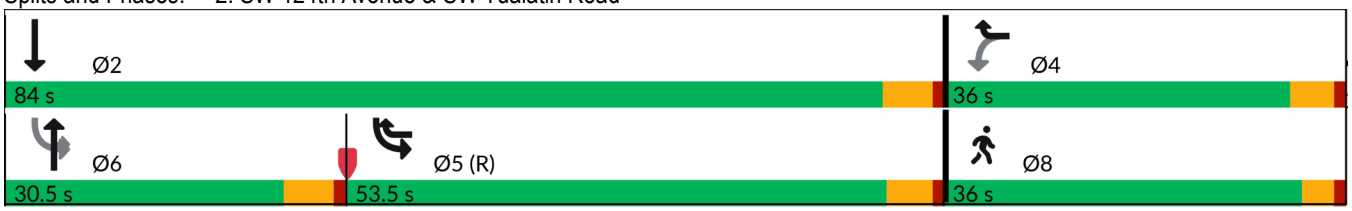
Lanes, Volumes, Timings
2: SW 124th Avenue & SW Tualatin Road

08/13/2025

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø8
Detector 3 Size(ft)	6	6		6		6	
Detector 3 Type	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	
Detector 3 Channel							
Detector 3 Extend (s)	0.0	0.0		0.0		0.0	
Turn Type	Perm	pt+ov	NA	Perm	D.P+P	NA	
Protected Phases		4 5	6		5	2	8
Permitted Phases	4			6	6		
Detector Phase	4	4 5	6	6	5	2	
Switch Phase							
Minimum Initial (s)	5.0		10.0	10.0	10.0	10.0	1.0
Minimum Split (s)	10.0		30.5	30.5	15.0	15.5	36.0
Total Split (s)	36.0		30.5	30.5	53.5	84.0	36.0
Total Split (%)	30.0%		25.4%	25.4%	44.6%	70.0%	30%
Maximum Green (s)	31.0		25.0	25.0	48.5	78.5	32.0
Yellow Time (s)	4.0		4.5	4.5	4.0	4.5	3.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0		4.5	4.5	4.0	4.5	
Lead/Lag			Lead	Lead	Lag		
Lead-Lag Optimize?			Yes	Yes	Yes		
Vehicle Extension (s)	4.0		4.5	4.5	4.0	4.5	2.0
Recall Mode	None		Min	Min	C-Max	Max	None
Walk Time (s)			10.0	10.0			9.0
Flash Don't Walk (s)			15.0	15.0			23.0
Pedestrian Calls (#/hr)			5	5			2
Act Effct Green (s)	14.4	97.1	18.4	18.4	93.6	97.1	
Actuated g/C Ratio	0.12	0.81	0.15	0.15	0.78	0.81	
v/c Ratio	0.25	0.20	0.64	0.18	0.82	0.37	
Control Delay (s/veh)	47.4	1.7	53.3	12.8	14.1	2.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2	
Total Delay (s/veh)	47.4	1.7	53.3	12.8	14.1	2.8	
LOS	D	A	D	B	B	A	
Approach Delay (s/veh)	8.9		48.0			8.3	
Approach LOS	A		D			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 10 (8%), Referenced to phase 5:SBL, Start of Green			
Natural Cycle: 115			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.82			
Intersection Signal Delay (s/veh): 13.6		Intersection LOS: B	
Intersection Capacity Utilization 71.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 2: SW 124th Avenue & SW Tualatin Road



Queuing and Blocking Report
2030 Post-Development

08/13/2025

Intersection: 2: SW 124th Avenue & SW Tualatin Road

Movement	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	T	T	R	L	T	T
Maximum Queue (ft)	113	178	215	304	84	399	461	160
Average Queue (ft)	49	60	86	159	30	189	66	56
95th Queue (ft)	98	138	169	269	69	358	269	131
Link Distance (ft)		560	1066	1066			478	478
Upstream Blk Time (%)							0	
Queuing Penalty (veh)							2	
Storage Bay Dist (ft)	25				150	200		
Storage Blk Time (%)	43	12		14		9	0	
Queuing Penalty (veh)	96	5		6		43	2	

Lanes, Volumes, Timings
2: SW 124th Avenue & SW Tualatin Road

08/13/2025

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø8
Lane Configurations							
Traffic Volume (vph)	39	649	986	49	423	419	
Future Volume (vph)	39	649	986	49	423	419	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	25	300		150	200		
Storage Lanes	1	0		1	1		
Taper Length (ft)	100				200		
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95	
Ped Bike Factor				0.96			
Frt		0.850		0.850			
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1770	1583	3539	1583	1770	3471	
Flt Permitted	0.950				0.095		
Satd. Flow (perm)	1770	1583	3539	1526	177	3471	
Right Turn on Red		Yes		Yes			
Satd. Flow (RTOR)		13		29			
Link Speed (mph)	35		45			30	
Link Distance (ft)	615		1082			583	
Travel Time (s)	12.0		16.4			13.3	
Confl. Peds. (#/hr)				7	7		
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	4%	
Adj. Flow (vph)	41	690	1049	52	450	446	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	41	690	1049	52	450	446	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(ft)	12		12			12	
Link Offset(ft)	0		0			0	
Crosswalk Width(ft)	12		12			12	
Two way Left Turn Lane	Yes						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Number of Detectors	3	3	2	3	2	3	
Detector Template							
Leading Detector (ft)	81	81	326	81	21	326	
Trailing Detector (ft)	5	5	160	5	5	75	
Detector 1 Position(ft)	5	5	160	5	5	160	
Detector 1 Size(ft)	6	6	6	6	6	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)	15	15	320	15	15	320	
Detector 2 Size(ft)	6	6	6	6	6	6	
Detector 2 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 2 Channel							
Detector 2 Extend (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 3 Position(ft)	75	75		75		75	

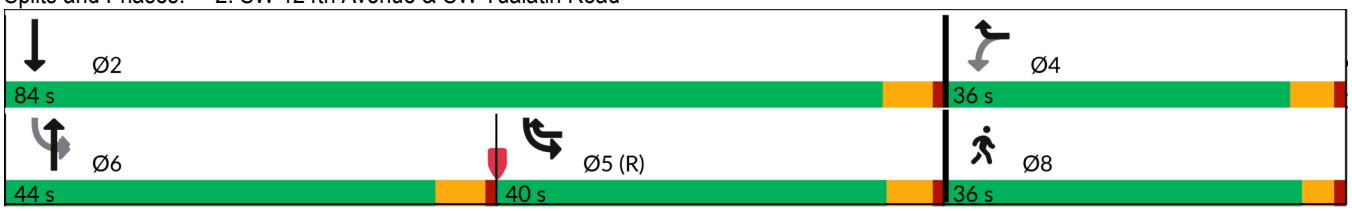
Lanes, Volumes, Timings
2: SW 124th Avenue & SW Tualatin Road

08/13/2025

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø8
Detector 3 Size(ft)	6	6		6		6	
Detector 3 Type	Cl+Ex	Cl+Ex		Cl+Ex		Cl+Ex	
Detector 3 Channel							
Detector 3 Extend (s)	0.0	0.0		0.0		0.0	
Turn Type	Perm	pt+ov	NA	Perm	D.P+P	NA	
Protected Phases		4 5	6		5	2	8
Permitted Phases	4			6	6		
Detector Phase	4	4 5	6	6	5	2	
Switch Phase							
Minimum Initial (s)	5.0		10.0	10.0	10.0	10.0	1.0
Minimum Split (s)	10.0		30.5	30.5	15.0	15.5	36.0
Total Split (s)	36.0		44.0	44.0	40.0	84.0	36.0
Total Split (%)	30.0%		36.7%	36.7%	33.3%	70.0%	30%
Maximum Green (s)	31.0		38.5	38.5	35.0	78.5	32.0
Yellow Time (s)	4.0		4.5	4.5	4.0	4.5	3.0
All-Red Time (s)	1.0		1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)	-1.0		-1.0	-1.0	-1.0	-1.0	
Total Lost Time (s)	4.0		4.5	4.5	4.0	4.5	
Lead/Lag			Lead	Lead	Lag		
Lead-Lag Optimize?			Yes	Yes	Yes		
Vehicle Extension (s)	4.0		4.5	4.5	4.0	4.5	2.0
Recall Mode	None		Min	Min	C-Max	Max	None
Walk Time (s)			10.0	10.0			9.0
Flash Don't Walk (s)			15.0	15.0			23.0
Pedestrian Calls (#/hr)			5	5			2
Act Effct Green (s)	22.0	73.4	42.1	42.1	86.0	89.5	
Actuated g/C Ratio	0.18	0.61	0.35	0.35	0.72	0.75	
v/c Ratio	0.13	0.71	0.84	0.09	0.64	0.17	
Control Delay (s/veh)	37.3	20.7	43.6	15.1	10.0	2.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay (s/veh)	37.3	20.7	43.6	15.1	10.0	2.3	
LOS	D	C	D	B	B	A	
Approach Delay (s/veh)	21.6		42.2			6.2	
Approach LOS	C		D			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 120			
Actuated Cycle Length: 120			
Offset: 10 (8%), Referenced to phase 5:SBL, Start of Green			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.84			
Intersection Signal Delay (s/veh): 24.9		Intersection LOS: C	
Intersection Capacity Utilization 74.5%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 2: SW 124th Avenue & SW Tualatin Road



Queuing and Blocking Report
2025 Post-Development

08/13/2025

Intersection: 2: SW 124th Avenue & SW Tualatin Road

Movement	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	T	T	R	L	T	T
Maximum Queue (ft)	124	588	799	874	335	300	220	126
Average Queue (ft)	40	386	409	535	118	156	25	45
95th Queue (ft)	104	602	841	966	350	252	110	102
Link Distance (ft)		560	1070	1070			478	478
Upstream Blk Time (%)		5	1	5			0	
Queuing Penalty (veh)		0	0	0			0	
Storage Bay Dist (ft)	25				150	200		
Storage Blk Time (%)	26	45		53		4	0	
Queuing Penalty (veh)	171	18		26		9	0	

From: Mike McCarthy
Sent: Tuesday, August 5, 2025 8:44 AM
To: Keith Leonard
Cc: Hayden Ausland
Subject: IMP 24-0001 Analysis and Findings

Hi Keith,

The existing utilities and transportation system are adequate, or can be made adequate through conditions, to support the proposed Lam development.

Mike McCarthy
Tualatin City Engineer
Phone: 503.691.3674
Cell: 971.666.0000

MACKENZIE.



LAM TUX TRANSPORTATION IMPACT ANALYSIS

To
City of Tualatin

For
Lam Research

Dated
July 8, 2024
(Revised October 10, 2024)
(Revised July 21, 2025)

Project Number
2250180.00

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Figure 1 – Vicinity Map

Figure 2 – Site Plan

Figure 3 – Existing Traffic Control Devices + Lane Configurations

Figure 4 – 2025 Existing Traffic Volumes

Figure 5 – 2025 Seasonally Adjusted Traffic Volumes

Figure 6 – Background Growth, 5 Years at 1% per Year

Figure 7 – In-Process Traffic

Figure 8 – Building G – New Trips

Figure 9 – 2027 Pre-Development Traffic Volumes

Figure 10 – Leveton Access Rerouted Traffic

Figure 11 – Trip Distribution

Figure 12 – Trip Assignment

Figure 13 – 2030 Post-Development Traffic Volumes

I. EXECUTIVE SUMMARY

1. Three new buildings are proposed on both the east side and at the southwest corner of the Lam campus in Tualatin, Oregon.
2. TUX project includes a four-story office building with an area of up to 120,000 square feet (SF) at the southeast corner of the campus and a two-story utility building with approximately 29,000 SF and a laboratory building with approximately 85,000 SF at the southwest corner of the campus.
3. At full occupancy, the proposed campus expansion is estimated to generate an additional 244 AM peak hour, 233 PM peak hour, and 2036 daily trips.
4. A safety review, capacity analysis, and queuing analysis was conducted for all City intersections within a 1/4-mile of the project site, all ODOT facilities anticipated to be impacted by 50 or more peak hour trips, and intersections of concern as noted by ODOT or the City.
5. No study area intersections were found to have a crash rate higher than 1.0 for the five-year crash data from 2019 through 2023, nor were significant patterns found that could be addressed by improvements to the intersections.
6. All public street intersections but one are projected to meet City of Tualatin and ODOT mobility standards with the proposed TUX project. The intersection of SW Hazelbrook Road/OR 99W experiences long delays in the PM peak hour for vehicles turning right onto OR 99W.
7. Queuing for all study area intersections is currently estimated to be accommodated by existing storage areas except for intersections along OR 99W.
8. Based on a review of safety, capacity, and queuing, the following mitigation measures are recommended:
    A. Coordinate left turn movements from OR 99W to SW Tualatin Road at the intersections with SW 124th Avenue. This will minimize the queue lengths and delays for southbound left turns on SW 124th Avenue and avoid potential spill back to OR 99W.
    B. Trim vegetation at the site access locations as needed to provide the recommended intersection sight distances.

II. INTRODUCTION

This Transportation Impact Analysis (TIA) has been prepared in support of an Architectural Review for the proposed laboratory/research and development building, office building, and utility building at the Lam Research campus in Tualatin, Oregon. Figure 1 in Appendix A presents a vicinity map indicating the project location.

Project Description

The TUX project includes the addition of three buildings. Building H is a four-story office building with an area of up to 120,000 square feet (SF), Building U is a two-story utility building with approximately 29,000 SF, and Building X is a laboratory building with approximately 85,000 SF. The total area of the TUX projects adds up to approximately 234,000 SF with an estimated net gain of 600 employees to the campus when the new buildings are at full occupancy.

The new office will be located on the east side of campus replacing the existing parking between Building G and Building B. The new lab and utility buildings will be located at the southwest corner of the site, replacing the existing surface parking. The existing access to SW Leveton Drive will remain and an additional driveway adjacent to the access road and loading dock at building C will serve as truck access for deliveries to the existing and proposed buildings.

The parking areas along the north side of the campus will be expanded and additional parking will be added to the adjacent west property to offset the loss of the southwest lot and to accommodate additional need with the TUX project. The permanent access to the expanded employee parking lots is proposed at the existing West Access from SW Leveton Drive and the North Access from SW 108th Avenue. North Access has previously been used for access to Lam's existing utility yard north of Building B and has served low volumes of employee trips. With this proposal, the driveway will be convenient for employees in the north lots, but no connection is planned to the parking lot constructed with Building G.

Scope of Analysis

This TIA has been prepared in accordance with the City of Tualatin Traffic Study Requirements (updated March 16, 2022), Tualatin Development Code (TDC) Section 74.440, and the Oregon Department of Transportation's (ODOT) Analysis Procedures Manual (APM) Version 2. This study includes a summary of existing traffic conditions, crash review, proposed trip generation, and an analysis of intersection operations, sight distance, queuing, and signal and turn-lane warrants.

Appendix B includes the scoping documents including a TIA scoping letter dated June 25,2025, and email requests from City of Tualatin and ODOT staff.

Study Area

The City's Traffic Study Requirements document requires all intersections along the frontage of the site and any intersection where the site is anticipated to generate more than 500 daily or 60 peak hour trips be included as part of the study area. Washington County requires analysis for all intersections where project trips will exceed 10% of the existing average daily traffic (ADT). No Washington County intersections were found to meet this threshold. In general, ODOT intersections impacted with 50 or more site peak hour trips or with specific concerns were included in the study area.

These public intersections are included in the study area:

- SW Leveton Drive/SW 118th Avenue
- SW Leveton Drive/SW 108th Avenue
- SW Tualatin Road/SW Teton Avenue
- SW Tualatin Road/SW 108th Avenue
- SW Tualatin Road/SW 112th Avenue
- SW Tualatin Road/SW 115th Avenue
- SW 124th Avenue/SW Leveton Road
- SW 124th Avenue/SW Tualatin Road
- SW 124th Avenue/OR 99W
- SW Herman Road/SW 108th Avenue
- SW Hazelbrook Road/SW 115th Avenue
- SW Hazelbrook Road/OR 99W
- SW Herman Road/SW Teton Avenue
- OR 99W/SW Fischer Road
- OR 99W/SW Durham Road

The following site driveways will also be studied (includes those opposite public streets listed above):

- SW Leveton Drive/West Access
- SW Leveton Drive/New Access (trucks only)
- SW Leveton Drive/Center Access
- SW Leveton Drive/East Access
- SW 108th Avenue/North Access
- SW 108th Avenue/Center Access (approved with Building G)
- SW 108th Avenue/South Access (approved with Building G)
- SW Tualatin Road/SW 115th Avenue

All study area intersections are located within City of Tualatin jurisdiction or are along OR 99W, an ODOT facility.

Analysis Scenarios

This TIA addresses AM and PM peak hour conditions for the following scenarios:

- 2025 Seasonally Adjusted Existing Volumes
- 2027 2030 Pre-Development without the TUX project
- 2030 Post-Development with the TUX project

III. EXISTING CONDITIONS

The existing conditions analysis is based on a current year 2025 inventory of transportation facilities and traffic data.

Site Conditions

The project site is in Tualatin, Oregon, within the Portland metropolitan area. The site is approximately 75.95 acres and consists of tax lot 100 of Washington County tax map 2S1 22BA, lot 100 of map 2S1 22AB, and lots 500 and 800 of map 2S1 22AA. The site is part of the City's Manufacturing Park (MP) Planning District. The Novellus Industrial Master Plan (IMP) was approved in 2001 as a four-phase development consisting of 1,440,000 SF. The proposed site plan for the TUX project is presented in Figure 2 in Appendix A.

Vehicular Transportation Facilities

Figure 3 in Appendix A presents existing lane configurations and traffic control devices for all study area intersections. Table 1 below summarizes roadway characteristics within the study area.

TABLE 1 – ROADWAY CHARACTERISTICS

Roadway	Functional Classification	Posted Speed	Travel Lanes	Bike Lanes	On-Street Parking	Sidewalks
OR 99W (Pacific Highway W)	Major Arterial/ (Urban Principal Arterial)	45/55 mph	4	Yes	None	Intermittent
SW 124th Avenue	Major Arterial	45 mph	4/5	Yes	None	Yes
SW Tualatin Road	Major Collector	35 mph	3	Yes	None	Yes
SW Leveton Drive	Minor Arterial	35 mph	2	Yes	None	Yes
SW 108th Avenue	Minor Collector (north of SW Leveton Drive)	35 mph	2	Yes	None	Yes
SW Herman Road	Minor Arterial	35 mph	2	Yes	None	North Side
SW Teton Avenue	Minor Arterial	35 mph	2	Yes	None	Yes
SW 115th Avenue	Minor Collector	35 mph	2	Yes	None	Yes
SW Hazelbrook Road	Minor Collector	35 mph	2	No	None	South Side

Pedestrian and Bicycle Facilities

The study area has nearly complete bicycle and pedestrian networks. Clearly marked bike lanes are provided on all study area roadways. Curb-tight sidewalks are provided on SW 108th Avenue and SW Tualatin Road, as well as some segments of the north side of SW Herman Road. Separated sidewalks are provided on all other study roadways and segments.

Transit Facilities

The study area is served by TriMet Bus Lines 94 and 97 with stops on OR 99W (Pacific Highway W) and SW Tualatin Road. The Tualatin Shuttle Blue Line has two stops on SW Leveton Drive just south of the site and a stop on SW Tualatin Road east of SW Teton Avenue. Transit maps and bus schedules are provided in Appendix C for reference.

Existing Traffic Counts

Traffic counts were conducted at the intersections listed above on Tuesday, May 13, 2025, for standard peak periods of 7:00-9:00 AM and 4:00-6:00 PM. An extended PM time period from 3:00-6:00 PM was counted at five intersections where the nearby Hazelbrook Middle School might cause an earlier peak.

Per ODOT standards, system peak hours from 7:30 AM to 8:30 AM and 4:30 PM to 5:30 PM are proposed for the OR 99W intersections in the AM and PM. The observed site peaks from 8:00 AM to 9:00 AM and 4:45 PM to 5:45 PM are proposed as a system peak for all site driveways. The remaining intersections will be analyzed at individual intersection peaks. The site volumes are 449 (391 enter/58 exit) in the AM and 430 (67 enter/363 exit) in the PM, which is approximately 7% higher than 2024 counts, mostly due to construction activity for Building G with 85 contractors.

A summary of all intersection turning movement counts collected in 2025 is presented in Figure 4 in Appendix A.

Tualatin-Sherwood Road Construction

Traffic volumes on Tualatin Road have increased since 2024, which may be in part to construction activity on SW Tualatin-Sherwood Road and the small increase in site trips. No adjustments are proposed for this analysis.

Seasonal Adjustment

OR 99W is a state facility which requires a seasonal adjustment as specified in ODOT's Analysis Procedures Manual (APM). There is no seasonal adjustment data available for this location as there is no nearby Automatic Traffic Recorder (ATR). Therefore, a seasonal adjustment of 1.03 derived from data presented in ODOT's 2023 Seasonal Trend Table for the "Commuter" trend was applied to 2025 existing through volumes on OR 99W. The 2025 seasonally adjusted traffic volumes are presented in Figure 5 in Appendix A. The seasonal adjustment calculation is provided in Appendix E for reference.

Crash Analysis

Historical crash data reported for the study area intersections were evaluated to identify patterns that might indicate a safety concern. Crash data for the most recent available 5-year period of 2019 through 2023 were obtained from ODOT's online crash data system and used to review crash patterns and estimate intersection crash rates.

Intersection Crash Rates

Intersection crash rates were calculated as a measure of the number of crashes occurring per one million entering vehicles (MEV) per year. The intersection crash rate is calculated by dividing the average number

of crashes per year by the MEV per year. An average daily traffic (ADT) volume was estimated by dividing the PM peak hour volume at each intersection by a peak-to-daily factor, or k-factor, of 0.09 obtained from ODOT's 2023 traffic flow data on OR 99W just west of SW 124th Avenue.

A crash rate of 1.0 crashes per MEV is typically used as a threshold above which additional traffic safety analysis is warranted. In addition, per Chapter 4 of the ODOT APM, any intersection that exceeds the 90th percentile values provided in Exhibit 4-1 of the APM should be flagged for further analysis. The ODOT 90th percentile crash rates have been provided for each intersection type in Table 2.

ODOT's Safety Priority Index System (SPIS) is a method developed to identify highway segments or locations with crash frequency, rates or severity that are in the highest 10 percent of locations statewide. We found that none of the study area intersections appear on either the ODOT or Washington County SPIS lists.

All intersections have crash rates below 1.0/MEV and below the ODOT 90th percentile crash rate threshold for intersection type. No further analysis is recommended.

The crash evaluation is summarized in Table 2. The raw crash data are provided in Appendix F.

TABLE 2 – INTERSECTION CRASH RATES

Intersection (Traffic Control Type)	Year					Total Crashes	ADT	Crash Rate (Crashes/ MEV)	ODOT 90th Percentile Crash Rate
	2019	2020	2021	2022	2023				
OR 99W/ SW 124th Avenue (3SG)	4	1	4	3	1	13	44,800	0.13	0.509
SW Tualatin Road/ SW 124th Avenue (3SG)	3	1	4	5	3	16	24,889	0.29	0.509
SW Tualatin Road/ SW 115th Avenue (3ST)	0	0	0	0	1	1	14,844	0.03	0.293
SW Tualatin Road/ SW 112th Avenue (3ST)	0	0	0	0	0	0	14,456	0.00	0.293
SW Tualatin Road/ SW 108th Avenue (3ST)	0	1	1	1	2	5	14,744	0.15	0.293
SW Leveton Drive/ SW 124th Avenue (4SG)	4	1	0	1	2	8	15,533	0.24	0.860
SW Leveton Drive/ SW 118th Avenue (3ST)	0	0	0	0	0	0	4,533	0.00	0.293
SW Leveton Drive/ Center Site Access (3ST)	0	0	0	2	0	2	3,233	0.28	0.293
SW Leveton Drive/ SW 108th Avenue (3ST)	0	0	0	0	1	1	4,000	0.11	0.293

TABLE 2 – INTERSECTION CRASH RATES									
Intersection (Traffic Control Type)	Year					Total Crashes	ADT	Crash Rate (Crashes/ MEV)	ODOT 90th Percentile Crash Rate
	2019	2020	2021	2022	2023				
SW Herman Road/ SW 108th Avenue (3SG)	0	1	0	0	0	1	11,967	0.04	0.509
SW Tualatin Road/ SW Teton Avenue (3ST)	2	0	0	0	1	3	15,011	0.09	0.293
SW Hazelbrook Road/ SW 115th Avenue (3ST)	0	0	0	0	0	0	4,267	0.00	0.293
SW Hazelbrook Road/ OR 99W (3ST)	1	1	0	2	0	4	38,067	0.05	0.293
SW Herman Road/ SW Teton Avenue (4SG)	2	0	2	1	1	6	15,478	0.18	0.860
OR 99W/ SW Fischer Road (3SG)	6	2	3	5	7	23	43,211	0.24	0.509
OR 99W/ SW Durham Road (4SG)	4	4	6	4	15	33	46,044	0.33	0.860

3SG: Three-legged signalized intersection
3ST: Three-legged stop-controlled intersection
4SG: Four-legged signalized intersection

Crash Data Summary

All study area intersections had crash rates below the ODOT 90th percentile crash rates, and no fatal crashes have occurred at the study area intersections within the five-year study period. Collisions that involve pedestrians and bicyclists, as well as any consistent crash patterns, are detailed below.

OR 99W/SW 124th Avenue

At the intersection of OR 99W and SW 124th Avenue, 13 crashes were reported. Eight of these were rear-end crashes, the most common crash type. These are largely due to inattention, and none resulted in serious injury (Injury Type A or B) being reported.

SW Tualatin Road/SW 124th Avenue

One crash involving a pedestrian occurred at the intersection of SW Tualatin Road and SW 124th Avenue in 2019, resulting in a possible injury (Injury C).

There were 16 crashes reported at the intersection. Of these, 13 were turning movement crashes mostly caused by a failure to yield right-of-way. All left turn movements already have protected turning phases.

SW Leveton Drive/SW 124th Avenue

There were eight crashes reported at the intersection of SW Leveton Drive and SW 124th Avenue. Of these, five were turning movement crashes, mostly in the southbound and westbound directions. The remainder of the crashes were rear-ends or "non-collisions."

SW Leveton Drive/Center Site Access

One crash involving a bicyclist occurred at the center Lam site access on SW Leveton Drive in 2022, resulting in a suspected serious injury (Injury A) to the cyclist. The crash was caused by a failure to yield. One other crash was reported at the driveway: a turning movement crash which did not result in an injury (PDO only).

OR 99W/SW Fischer Road

There were 23 crashes reported at the intersection of OR 99W and SW Fischer Road. Nine of these were turning movement crashes, and ten of them were rear-ends. The remaining collisions include two fixed-object collisions and two crashes involving pedestrians at the crosswalk, resulting in a possible and suspected minor injury (Injury C and B), caused by a failure to yield and/or disregard for the traffic control.

OR 99W/SW Durham Road

There were two crashes involving pedestrians at the crosswalk at the intersection of OR 99W and SW Durham Road in 2020 and 2023, both resulting in a suspected minor injury (Injury B) and both caused by a driver's failure to yield. There was one crash involving a bicycle in 2023, caused by driver inattention and resulting in a suspected minor injury (Injury B).

There were 33 crashes reported at the intersection. Of these, 17 were rear-ends and most of the remainder were either sideswipe or turning movement crashes.

IV. PRE-DEVELOPMENT CONDITIONS

The pre-development conditions reflect build-out year conditions without the proposed development. This scenario includes existing year 2025 traffic volumes, a seasonal adjustment to traffic on OR 99W, a background growth to 2030, and in-process trips from nearby approved developments. The pre-development traffic without project trips will indicate if traffic issues are present before the addition of the proposed development.

Planned Transportation Improvements

The City of Tualatin Capital Improvement Plan 2025-2029 (CIP) was reviewed for any planned transportation improvements in the area that may affect capacity. SW Herman Road will be improved from SW Cipole Road to SW 124th Avenue; however, none of these improvements will affect any of the study area intersections.

SW Tualatin-Sherwood Road is currently under construction for a widening project, and appears to have resulted in an increase in volumes on Tualatin Road. For purposes of this analysis, we have not adjusted the volumes due to uncertainty in the amount of the increase attributable to the construction project. For this reason, actual intersection operation is expected to be better than presented in this report.

The City of Tualatin Transportation System Plan (TSP) has planned for a future traffic signal at the intersection of SW Tualatin Road with SW 115th Avenue, but no funding or schedule has been determined.

To our knowledge, no mitigations or improvements have been required for development of the other in-process projects at any study area intersections included in this analysis.

Background Traffic Growth

Background traffic growth was applied to adjusted year 2025 traffic volumes to forecast future traffic demand. A linear 1% annual growth rate over three years was applied to year 2025 traffic volumes to estimate 2030 background traffic volumes. This growth adjustment was based on ODOT traffic volume projections for OR 99W just south of SW 124th Avenue between years 2019 and 2040. Background growth was applied to all movements at all intersections, except driveways. Figure 6 in Attachment A presents the background growth from 2024 to 2030 for the AM and PM peak hours.

In-Process Traffic

In-process traffic volumes account for developments that have been approved or that are under construction at the time of a traffic study. These traffic volumes account for traffic that will be added to the external roadway network before buildout of the proposed development. Traffic volumes for the following developments were included as in-process:

- Lam Building G
- 124th Business Park
- KAI USA Warehouse Expansion
- Fujimi Expansion

Figure 7 in Attachment A presents the total trip assignment for the 124th Business Park, KAI USA Warehouse Expansion, and Fujimi Expansion.

The Lam Building G project was approved with two new driveways on SW 108th Avenue and a change in use of the existing East Access on SW Leveton Drive to be exclusive for trucks. Figure 8 in Attachment A presents the Lam Building G trip assignment as approved for that project. These Lam Building G trips have been decreased by 34 trips in the AM and 32 trips in the PM to account for current Building G construction traffic showing up in the counts. This is based on the trip rate for 85 Research and Development employees. Detailed copies of the respective project trip assignment sheets are included in Appendix G.

Pre-Development Traffic

The 2030 pre-development analysis scenario is a combination of existing year 2025 traffic volumes, a seasonal adjustment factor on OR 99W, background growth of 1% over five years, and in-process trips from nearby approved developments. Figure 9 in Attachment A presents the 2030 pre-development traffic volumes during the AM and PM peak hours.

V. SITE DEVELOPMENT

The trip-making characteristics of the proposed development are described below.

Trip Generation

Trip generation estimates for the full occupancy of approximately 600 employees were prepared utilizing rates for a Research and Development Center from the Institute of Transportation Engineers' (ITE) Trip Generation Manual, 11th Edition. This land use was found to best match the existing campus trip generation based on employees. Trip generation estimates for the planned expansion are presented in Table 3.

TABLE 3 – PROPOSED TRIP GENERATION

ITE Land Use	Employees	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	
Research and Development Center (LUC 860)	360	124	22	146	17	123	140	1222

As shown in Table 3, the planned campus expansion is estimated to generate an additional 244 AM peak hour, 233 PM peak hour, and 2036 daily trips with both phases of development.

Transportation Demand Management

According to Lam Research, there are currently no Transportation Demand Management (TDM) programs on site. Carpool and bicycle parking are provided per requirements. No other TDM programs are proposed with this project.

Leveton Access Reroutes

Construction of the TUX project will result in changes to existing campus traffic patterns. The location of Building H will displace approximately 82 parking spaces, which are conveniently accessed from the Center Leveton Access and a new truck only access between the existing Center and West Leveton Accesses will shift truck traffic away from the West Leveton Access.

The displaced parking spaces represent approximately 6% of campus trips during the peak hours, so we have shifted these trips away from the Center Leveton Access and relocated them to the recently contstructed accesses on SW 108th Avenue.

All peak hour existing truck trips at the West Access on SW Leveton Drive have been routed to the new access between the West Access and the Center Access.

Figure 10 in Attachment A presents both reroutes of existing volumes.

Trip Distribution and Assignment

Site trip distribution has been modified slightly from the original master plan based on employee zip code information provided by Lam, as well as counts conducted in May 2025 at the active site driveways on SW Leveton Drive and SW 108th Avenue and the surrounding intersections. Employee zip code information provides more granular and accurate trip distribution assumptions than modeling or other methods. The following general percentages apply to both the AM and PM Peak hours.

- 24.5% to/from the north on Highway 99W
- 26.5% to/from the south on Highway 99W
- 13.5% to/from the east on SW Tualatin Road and SW Herman Road
  - 8.5% on SW Tualatin Road and 5% on SW Herman Road in the AM peak hour
  - 4% on SW Tualatin Road and 9.5% on SW Herman Road in the PM peak hour
- 4.5% to/from the south on SW 118th Avenue
- 10% to/from the south on SW 124th Avenue
- 21% to/from the south on SW Teton Avenue

New trips generated by the project are expected to follow a similar distribution on the roadway network, but the driveways being used will differ from existing campus traffic. Because most new employees will be assigned to Building H, available parking in its proximity will attract the employees. The expanded southeast campus lot with Building G is expected to accommodate up to 30% of the building H demand. Remaining parking demand will be primarily located to new and expanded lots at the north end of the campus. The detailed site trip distribution is based on the following assumptions:

- 30% of new site trips are expected to utilize the West Leveton Access, 20% at the Center Leveton Access, 30% split evenly between the Center and South 108th Accesses, and the remaining 20% at the North 108th Access.
- 10% of new site trips will use SW Tualatin Road to access the North 108th Access.
  - Half of these trips, or 5% total, are expected to use SW 115th Avenue and SW Hazelbrook Road to access Highway 99W when exiting the site.

At ODOT's request, trip distribution estimates were carried out to the Nyberg and Boones Ferry interchanges with Interstate 5 in order to address the anticipated number of vehicles that would be added at these locations.

Figure 11 in Attachment A presents the overall trip distribution at the study area intersections and routes to Interstate 5. Figure 12 in Attachment A presents the trip assignment for TUX project trips.

Post-Development Traffic

Post-Development traffic volumes are the sum of the pre-development traffic volumes, project-related reroutes, and project trips. Figure 13 presents the 2030 post-development traffic volumes for the AM and PM peak hours.

VI. SITE ACCESS AND CIRCULATION

The on-site evaluation of traffic access and circulation and a review of sight distance at the proposed site driveways are presented below.

Site Access

To accommodate added TUX employee traffic to the new parking lots at the north side of the site, existing North Access on SW 108th Avenue is proposed to be opened for Lam employee access. A new access is proposed on SW Leveton Drive between the existing West and Center Accesses for trucks only.

Access Standards

The TDC includes several sections related to access standards. Chapter 75 of the TDC presents access standards relative to driveway widths and spacing on the site. Per Table 75-1 of the TDC, minimum driveway approach width for industrial driveways is 36' and the maximum is 40' for driveways providing access for over 250 parking spaces. The existing driveways for the site meet these standards. The proposed New Access on SW Leveton Drive will meet these standards at a proposed width of 36'.

Per TDC 75.120, driveways on Minor Collectors must be spaced at a minimum of 100'. Driveways must be located at least 150' from the intersection of Collector or Arterial streets, as measured from the stop bar, per TDC 75.040(11)(a). Additionally, driveways must provide a minimum distance of 40' between on-site driveways per TDC 75.040(10). Table 4 below presents a summary of required and proposed access spacing.

TABLE 4 – ACCESS SPACING SUMMARY

Access	Roadway	Functional Classification	Spacing Standard (feet)	Access Spacing Measured Edge-to-Edge (feet)	
				To South/East	To North/West
North Access	SW 108th Avenue	Minor Collector	100' from nearest driveway	100'	100'
New Access	SW Leveton Drive	Minor Arterial	150' from intersection with Arterial or Collector	>600'	>600'

On-Site Circulation

The parking areas along the north side of the campus will be expanded and additional parking will be added to the adjacent west property to offset the loss of the southwest lot and to accommodate additional need with the TUX project. The permanent access to the expanded employee parking lots is proposed at the existing West Access from SW Leveton Drive and the North Access from SW 108th Avenue. North Access has previously been used for access to Lam's existing utility yard north of Building B and has served low volumes of employee trips. With this proposal, the driveway will be convenient for employees in the north lots, but no connection is planned to the parking lot constructed with Building G.

The new driveway to SW Leveton Drive is intended to serve trucks to and from the existing and new buildings.

The existing JAE access to Tualatin Road will remain available for JAE vehicles only per agreement with JAE. Because these vehicles will be traveling through the project site instead of a dedicated driveway, a gate will be used to limit access to JAE. No Lam vehicles will be allowed access through the gate. Only emergency access is allowed for Lam

Sight Distance Evaluation

Intersection sight distance was evaluated for the proposed site driveway locations. The American Association of State Highway and Transportation Officials' (AASHTO) A Policy on Geometric Design of Highways and Streets, 7th Edition provides recommendations for intersection sight distance (ISD) based on roadway design speed. At minimum, stopping sight distance (SSD), also based on roadway design speed, must be provided.

One existing access north of the two recently constructed accesses on SW 108th Avenue will be opened and used by employees. One new access is proposed on SW Leveton Drive between the existing West and Center Accesses, intended for trucks only.

The posted speed on SW Leveton Drive is 35 mph, for a design speed of 40 mph. There is no posted speed on SW 108th Avenue north of SW Herman Road. Therefore, the design speed on SW 108th Avenue is assumed to be 5 mph over the posted speed of 35 mph for other Minor Collectors in the area, or 40 mph. A time gap of 7.5 seconds and 11.5 seconds were assumed for passenger vehicles and combination trucks completing a left turn from stop, respectively. The recommendations for ISD have been noted for left turns from stop on a stop-controlled minor approach (driveway). The sight distance evaluation for the proposed site driveways is presented in Table 5.

TABLE 5 – SIGHT DISTANCE EVALUATION

Access/ Intersection	Design Speed (mph)	Design Vehicle	Recommended Intersection Sight Distance (feet)	Required Stopping Sight Distance (feet)	Available Sight Distance (feet)	
					To North/West	To South/East
North Access SW 108th Avenue	40	Passenger Car	445'	305'	305'	500'
New Access SW Leveton Drive	40	Combination Truck	680'	305'	680'	680'

As presented in Table 5, sight distances for the North Access on SW 108th Avenue were reviewed and found to be met to the south. To the north, the access is spaced about 305' from the intersection with SW Tualatin Road, meeting required SSD and meaning that approaching vehicles are unlikely to be travelling at full speed as they make the turn from SW Tualatin Road. At the proposed New Access on SW Leveton Drive, sight distance can be made available up to 680', meeting the standards for intersection sight distance, though some landscaping and street trees may need to be trimmed.

VII. OPERATIONAL ANALYSIS

Two aspects of operational analysis were evaluated for the study area intersections: 1) intersection operations analysis, which evaluates how well an intersection processes traffic demand; and 2) queuing analysis, which compares intersection queues with available storage for different travel lanes.

Intersection Operation Analysis

Intersection operations are generally measured by three mobility standards: volume-to-capacity (v/c) ratio, level-of-service (LOS), and delay (measured in seconds). Signalized and all-way, stop-controlled (AWSC) intersections are measured by one overall v/c ratio, LOS, and delay. Two-way, stop-controlled (TWSC) intersections are typically measured by a single v/c ratio, LOS, and delay representative of the worst stopped movement.

Performance Measures

Most study area intersections are located within the City of Tualatin jurisdiction with the exception of the intersections on OR 99W which are under ODOT jurisdiction.

City of Tualatin

The TDC Section 74.440(3)(e) requires the following mobility standards for intersections within City jurisdiction:

- LOS D or better for signalized intersections
- LOS E or better for unsignalized intersections

ODOT

The *Oregon Highway Plan* (OHP) designates OR 99W as a Principal Arterial Route. Table 7 of the OHP establishes a v/c target of 0.99 for the OR 99W intersections with SW 124th Avenue, SW Fischer Road, and SW Durham Road.

Methodology

Intersection operations were analyzed with the use of Synchro 12 software, which utilizes the Transportation Research Board's *Highway Capacity Manual* (HCM) 2000, HCM 2010, and HCM 7 methodologies. Signalized study area intersections were reported using the v/c calculator tool from ODOT when possible and HCM 2000 reports when not for overall v/c ratio and HCM 7 reports for delay and LOS. Two-way, stop-controlled (TWSC) and AWSC intersections were reported using HCM 7 reports. Signal timing plans were obtained from the Washington County traffic plans database, as well as from ODOT staff, and are provided in Appendix H for reference.

Calibration

For 2024 Existing conditions at several intersections, Synchro and SimTraffic delay and queue results were not consistent with field observations. The City's Traffic Study Requirements document states that the existing conditions calculations shall be calibrated to reflect observed site conditions through delay studies and other observations, so queue and delay studies were conducted in order to determine the methodology and any calibration needed to best match observed conditions in the field.

In order to calibrate the model for consistency with existing conditions, the critical gap setting was adjusted from 7 seconds to 6 seconds for right turns onto OR 99W from SW Hazelbrook Road. HCM 2000 results are reported for this intersection to show the impact of this calibration.

In some cases, alternate results were reported in all scenarios as they proved to be more consistent with existing conditions: SimTraffic delay are reported for the intersection of SW 115th Avenue/SW Tualatin Road, and HCM 2000 results are reported for SW Tualatin Road/SW Teton Avenue.

Findings

Table 6 below summarizes the AM and PM peak hour capacity results. For signalized intersections, the overall intersection performance (v/c ratio, LOS, delay) is reported. For unsignalized intersections, the intersection movement with the maximum v/c ratio and delay is reported. The Synchro output reports and summary tables of all lane groups are provided in Appendix I.

TABLE 6 – PEAK HOUR INTERSECTION OPERATIONS

Intersection (Control)	Peak Hour	Analysis Results (v/c-LOS-Delay in seconds)		
		2025 Existing	2030 Pre-Development	2030 Post-Development
OR 99W/ SW 124th (Signalized)	AM	0.85-C-32.9	0.91-D-43.8	0.94-D-49.8
	PM	0.75-C-28.6	0.80-C-30.4	0.82-C-31.3
SW Tualatin/ SW 124th (Signalized)	AM	0.69-B-12.8	0.72-B-14.8	0.77-B-14.9
	PM	0.70-B-19.9	0.77-C-21.8	0.81-C-23.1
SW Tualatin/ SW 115th/ JAE Access (TWSC)	AM	0.44 (SB) C-19.1 (SB)	0.51 (EBL) C-18.8 (SB)	0.53 (SB) C-19.9 (NBL)
	PM	0.20 (SB) C-19.6 (SBL)	0.23 (SB) D-22.2 (NB)	0.24 (SB) D-29.1 (NB)
SW Tualatin/ SW 112th (TWSC)	AM	0.09-C-17.0 (SB)	0.10-C-17.9 (SB)	0.10-C-18.2 (SB)
	PM	0.05-C-17.9 (SB)	0.05-C-18.8 (SB)	0.05-C-19.2 (SB)
SW Tualatin/ SW 108th (TWSC)	AM	0.07-C-18.9 (NB)	0.10-C-20.3 (NB)	0.13-C-21.4 (NB)
	PM	0.16-C-16.1 (NB)	0.22-C-17.5 (NB)	0.31-C-19.7 (NB)
SW 108th/ North Access (TWSC)	AM	0.01-A-9.6 (EB)	0.01-A-9.8 (EB)	0.02 (NBL) B-10.2 (EB)
	PM	0.01-A-8.69 (EB)	0.01-A-9.0 (EB)	0.05-A-9.0 (EB)
SW 108th/ Center Access (TWSC)	AM	0.02 (NBL) A-9.1 (EB)	0.11 (NBL) A-9.4 (EB)	0.13 (NBL) B-10.0 (EB)
	PM	0.04-A-8.7 (EB)	0.13-A-9.1 (EB)	0.17-A-9.4 (EB)
SW 108th/ South Access (TWSC)	AM	0.05 (NBL) A-8.8 (EB)	0.08 (NBL) A-9.3 (EB)	0.11 (NBL) A-9.6 (EB)
	PM	0.06-A-8.7 (EB)	0.11-A-9.6 (EB)	0.19-B-10.5 (EB)

TABLE 6 – PEAK HOUR INTERSECTION OPERATIONS				
Intersection (Control)	Peak Hour	Analysis Results (v/c-LOS-Delay in seconds)		
		2025 Existing	2030 Pre-Development	2030 Post-Development
SW 124th/ SW Leveton (Signalized)	AM	0.37-B-13.2	0.46-B-14.3	0.53-B-15.4
	PM	0.43-B-16.8	0.51-B-19.7	0.59-C-23.0
SW Leveton/ SW 118th (AWSC)	AM	0.43-A-10.0 (EB)	0.58-B-12.4 (EB)	0.72-C-17.6 (EB)
	PM	0.44-B-10.7 (WB)	0.61-B-14.3 (WB)	0.79-C-22.3 (WB)
SW Leveton/ West Access (TWSC)	AM	0.12 (EBL) B-14.4 (SBL)	0.13 (EBL) C-16.9 (SBL)	0.17 (EBL) C-22.7 (SBL)
	PM	0.11-B-10.8 (SBL)	0.26 (SBR) B-12.3 (SBL)	0.38 (SBR) B-14.4 (SBL)
SW Leveton/ New Access (TWSC)	AM	N/A	N/A	0.03 (EBL) B-10.6 (SB)
	PM	N/A	N/A	0.01-B-12.1 (SB)
SW Leveton/ Center Access (TWSC)	AM	0.02-B-10.9 (SBL)	0.03-B-12.6 (SBL)	0.04-B-14.6 (SBL)
	PM	0.06-B-10.5 (SBL)	0.08-B-11.8 (SBL)	0.10 (SBR) B-13.0 (SBL)
SW Leveton/ East Access (TWSC)	AM	No minor road volume	0.04-B-12.2 (NB)	0.04-B-13.3 (NB)
	PM	0.01-B-11.4 (NB)	0.09-B-12.3 (NB)	0.10-B-13.4 (NB)
SW Leveton/ SW 108th (TWSC)	AM	0.22-B-11.7 (EB)	0.46-C-17.3 (EB)	0.69-D-28.9 (EB)
	PM	0.16-A-9.7 (EB)	0.24-B-11.3 (EB)	0.32-B-12.9 (EB)
SW Herman/ SW 108th (Signalized)	AM	0.39-A-5.9	0.47-A-6.5	0.53-A-7.0
	PM	0.51-A-9.6	0.59-B-12.0	0.64-B-14.3
SW Tualatin/ SW Teton (TWSC)	AM	0.51 (EB) C-17.3 (NBL)	0.53 (EB) C-18.4 (NBL)	0.53 (EB) C-18.6 (NBL)
	PM	0.46 (WBT) C-20.7 (NBL)	0.49 (WBT) C-22.8 (NBL)	0.49 (WBT) C-22.9 (NBL)
SW Hazelbrook/ SW 115th (TWSC)	AM	0.44-B-14.2 (NB)	0.47-B-14.6 (NB)	0.47-C-15.0 (NB)
	PM	0.35-B-11.6 (NB)	0.37-B-11.9 (NB)	0.39-B-12.0 (NB)

TABLE 6 – PEAK HOUR INTERSECTION OPERATIONS				
Intersection (Control)	Peak Hour	Analysis Results (v/c-LOS-Delay in seconds)		
		2025 Existing	2030 Pre-Development	2030 Post-Development
SW Hazelbrook/ OR 99W (TWSC)	AM	0.47-C-20.3 (WBR)	0.52-C-22.7 (WBR)	0.53-C-23.1 (WBR)
	PM	0.80-E-39.1 (WBR)	**0.86-F-50.4 (WBR)**	**0.91-F-59.5 (WBR)**
SW Herman/ SW Teton (Signalized)	AM	0.64-C-20.9	0.70-C-23.6	0.74-C-26.3
	PM	0.73-C-24.3	0.82-C-31.3	0.88-D-37.8
OR 99W/ SW Fischer (Signalized)	AM	0.67-C-27.2	0.72-C-30.1	0.73-C-30.4
	PM	0.77-D-41.7	0.80-D-45.4	0.80-D-45.0
OR 99W/ SW Durham (Signalized)	AM	0.70-C-33.8	0.74-D-35.0	0.74-D-35.4
	PM	0.88-E-55.8	0.93-E-64.4	0.95-E-67.9

*Capacity results which exceed the City or ODOT performance thresholds are **bolded**.

As shown in Table 6, all but one of the study area intersections will meet operational standards with the addition of site trips:

- SW Hazelbrook Road/OR 99W – long delays are expected on the stop-controlled approach to OR 99W during the PM peak hour. Mitigation is not recommended because it would encourage vehicles to travel this route from SW Tualatin Road instead of using SW 124th Avenue to access OR 99W northbound.

Intersection Queuing Analysis

An intersection queuing analysis was conducted for the study area intersections for both the AM and PM peak hours to evaluate any potential queue spillbacks.

Methodology

The 95th percentile queues during the AM and PM peak hours were estimated using Synchro and SimTraffic software. The 95th percentile queue is not indicative of a typical queue experienced by drivers and is instead a reasonable worst-case queue possible and is measured by a calculation of 1.65 standard deviations of the average queue and is sometimes longer than the maximum queue observed in traffic modelling. Queue demand results were rounded to the nearest 25' to represent average vehicle lengths. Because queues are based on an average of five traffic simulations using random arrivals, some fluctuation in results can be anticipated, particularly for movements that are near or over-capacity.

For intersections on OR 99W, SimTraffic modelling results were reviewed against traffic count video and found to be inconsistent with existing conditions. Synchro HCM 2000 queuing results were found to match observed queuing for the 2025 Existing scenario and are reported instead for all scenarios. Synchro HCM

2000 results were also used for the SW 115th Avenue/SW Hazelbrook Road intersection, as inaccurate SimTraffic queues were shown backing up to this intersection and creating unreliable results.

Available queue lengths were estimated using Google Earth Pro software and rounded to the nearest 5'. For turn lanes, two available storage values are stated: the first represents the striped storage and the second is the effective storage, or the length physically available regardless of striping, such as a center turn lane upstream of a striped left-turn lane at an intersection. Although travel lanes have no storage defined by striping at signalized locations, we note the distance to an upstream public street intersection.

Findings

The 95th percentile queues obtained from SimTraffic or Synchro as described above for the AM and PM peak hours are presented in Table 7. The detailed SimTraffic reports are provided in Appendix J for reference. Queue lengths in **bold** type show movements which exceed the effective storage length.

TABLE 7 – 95TH PERCENTILE QUEUING ANALYSIS

Intersection (Control)	Approach/ Movement	Striped/ Effective Storage (feet)	AM/PM Peak Hour Queue (feet)		
			2025 Existing	2030 Pre-Development	2030 Post-Development
OR 99W/ SW 124th (Signalized)	EBT1	>1,000	700/400	750/425	750/425
	EBT2	>1,000	700/400	750/425	750/425
	EBR	225/305	300/50	400/50	500/50
	WBL1	550/770	575/300	675/325	725/325
	WBL2	550/690	575/300	675/325	725/325
	WBT1	>1,000	200/325	225/325	225/325
	WBT2	>1,000	200/325	225/325	225/325
	NBL1	315/475	75/300	75/350	75/375
	NBL2	315/475	75/300	75/350	75/375
	NBR1	295/330	125/300	125/350	125/350
	NBR2	295/315	125/300	125/350	125/350
SW 124th/ SW Tualatin (Signalized)	WBL	310/350	75/100	100/100	100/100
	WBR	300/>1,000	125/400	125/500	125/500
	NBT1	995	100/275	150/425	125/600
	NBT2	995	200/375	275/600	225/825
	NBR	145/250	50/100	100/**275**	75/**325**
	SBL	200/300	**425/425**	**400/425**	**375/425**
	SBT1	450	325/150	325/200	275/225
	SBT2	450	125/125	125/175	125/150

TABLE 7 – 95TH PERCENTILE QUEUING ANALYSIS					
Intersection (Control)	Approach/ Movement	Striped/ Effective Storage (feet)	AM/PM Peak Hour Queue (feet)		
			2025 Existing	2030 Pre-Development	2030 Post-Development
SW Tualatin/ SW 115th/ JAE Access (TWSC)	EBL	60	50/50	50/50	50/50
	WBL	60	25/25	25/350	25/25
	NBL	100	25/25	25/25	25/25
	NB	100	25/50	25/25	25/50
	SB	630	100/75	75/75	75/75
SW Tualatin/ SW 112th (TWSC)	EBL	750	25/25	25/25	25/25
	SBL+R	95	50/50	50/50	50/50
SW Tualatin/ SW 108th (TWSC)	WBL	140	50/25	50/25	50/25
	NB	330	50/75	50/125	75/125
SW 108th/ North Access (TWSC)	EB L+R	TBD	25/25	25/25	50/75
SW 108th/ Center Access (TWSC)	EB L+R	60	25/50	50/75	50/75
SW 108th/ South Access (TWSC)	EB L+R	60	25/50	50/75	50/75
SW 124th/ SW Leveton (Signalized)	EBL	100/130	50/50	50/50	50/75
	EBT+R	580	150/75	175/100	200/125
	WBL	145/185	50/75	75/75	75/125
	WBT+R	>1,000	50/100	75/125	100/175
	NBL	155/230	25/25	25/25	50/25
	NBT	>1,000	100/150	100/150	100/175
	NBT+R	>1,000	175/175	175/225	200/250
	SBL	165/245	125/50	125/75	150/75
	SBT	>1,000	100/125	100/125	125/150
	SBT+R	995	125/150	150/150	125/175
SW Leveton/ SW 118th (AWSC)	EB	>1,000	100/50	125/50	150/75
	WB	>1,000	75/75	50/100	75/225
	NB	>1,000	50/50	50/50	50/50

TABLE 7 – 95TH PERCENTILE QUEUING ANALYSIS					
Intersection (Control)	Approach/ Movement	Striped/ Effective Storage (feet)	AM/PM Peak Hour Queue (feet)		
			2025 Existing	2030 Pre-Development	2030 Post-Development
	SB	650	25/50	25/50	25/25
SW Leveton/ West Access (TWSC)	EBL	>1,000	50/25	50/25	75/25
	SBL	135	25/50	25/75	25/75
	SBR	135	50/75	50/75	50/100
SW Leveton/ New Access (TWSC)	EBL	400	N/A	N/A	50/25
	SBL	TBD	N/A	N/A	50/25
SW Leveton/ Center Access (TWSC)	EBL	450	25/25	25/25	50/25
	SBL	125	25/50	25/50	50/50
	SBR	125	25/50	25/50	50/75
SW Leveton/ East Access (TWSC)	EBL	425	25/25	25/25	25/25
	SB	105	25/25	25/25	50/25
SW Leveton/ SW 108th (TWSC)	EB	270	75/25	100/75	125/75
	NB	175	25/25	50/50	50/50
SW Herman/ SW 108th (Signalized)	EBL	100/390	25/25	50/25	50/25
	EB	>1,000	125/125	125/150	150/150
	WB	435	175/200	200/225	225/325
	SBL	135/200	50/100	50/125	75/175
	SBR	115/790	25/25	25/25	25/75
SW Tualatin/ SW Teton (TWSC)	WBL	260	75/50	75/50	75/50
	NBL	95/175	100/150	125/200	125/175
	NBR	30/>1,000	75/100	75/250	100/200
SW 115th/SW Hazelbrook (TWSC)	NB	215	50/50	50/50	75/50
OR 99W/ SW Hazelbrook	WBR	325	50/175	75/200	75/250
SW Teton/	EBL	>1,000	50/25	25/25	50/25
	EB T+R	>1,000	300/400	325/600	400/775

TABLE 7 – 95TH PERCENTILE QUEUING ANALYSIS					
Intersection (Control)	Approach/ Movement	Striped/ Effective Storage (feet)	AM/PM Peak Hour Queue (feet)		
			2025 Existing	2030 Pre-Development	2030 Post-Development
SW Herman (Signalized)	WBL	100/150	75/100	50/100	75/100
	WB T+R	500	200/225	225/275	225/275
	NBL	>1,000	150/150	175/175	175/175
	NB T+R	800	175/225	275/325	300/425
	SBL	50/100	50/25	50/50	50/50
	SB T+R	>1,000	175/150	175/175	175/200
OR 99W/ SW Fischer (Signalized)	EBL	290/400	300/250	325/300	325/275
	EBR	300/>1,000	275/125	350/175	350/175
	NBL	270/475	225/450	225/450	225/475
	NBT1	80/>1,000	525/450	575/525	600/575
	NBT2	80/>1,000	525/450	575/525	600/575
	SBU	300/425	25/25	25/25	25/25
	SBT1	330/>1,000	700/800	775/850	825/850
	SBT2	330/>1,000	700/800	775/850	825/850
	SBR	200/725	25/75	25/75	25/75
OR 99W/ SW Durham (Signalized)	EB LT	275	50/100	50/100	50/100
	EB TR	175/440	50/100	50/100	50/100
	WBL	310/440	225/**475**	250/**500**	275/**500**
	WB LT	440	225/**475**	250/**500**	250/**500**
	WBR	310/440	75/100	75/125	75/125
	NBL	550/600	100/250	100/250	100/250
	NBT1	350/>1,000	600/800	650/900	650/950
	NBT2	350/>1,000	600/800	650/900	650/950
	NBR	230/260	25/75	25/75	25/75
	SBL1	240/300	225/300	250/**325**	250/**325**
	SBL2	240/300	225/300	250/**325**	250/**325**
	SBT1	890/1,300	450/500	500/550	525/550
	SBT2	890/1,300	450/500	500/550	525/550
	SBR	400/425	25/25	25/25	25/25

TABLE 7 – 95TH PERCENTILE QUEUING ANALYSIS					
Intersection (Control)	Approach/ Movement	Striped/ Effective Storage (feet)	AM/PM Peak Hour Queue (feet)		
			2025 Existing	2030 Pre-Development	2030 Post-Development

*Queues exceeding effective storage lengths are **bolded**.

Recommendations

As shown in Table 7, queues at some intersections along OR 99W appear to be longer than available storage lengths. These intersections are built out to their full capacity, and little can be done to mitigate these queues. At the intersections of OR 99W and SW Tualatin Road with SW 124th Avenue, we are recommending coordination of the left turn movement from OR 99W with the left turn movement to SW Tualatin Road in order to minimize queuing and delays in the short segment between the two intersections, especially during the AM commute times.

Pedestrian and Bicycle Facilities

Pedestrian and bicycle facilities are currently provided in the study area and along the frontages of the campus. With development of the TUX project, these facilities will remain and will be enhanced as appropriate with any required frontage or intersection improvements, especially where curb ramps are replaced. There are no gaps in the bicycle or pedestrian facilities that need to be addressed along the site frontage or nearby roadways.

Existing bicycle volumes along SW Tualatin Road are less than 10 per hour.

Pedestrian volumes on the SW Tualatin Road frontage are currently low with a maximum of 10 per hour. SW Leveton Avenue has higher pedestrian volumes including less than 15 pedestrians crossing at the Center and West Accesses during peak hours.

Transit Facilities

No changes are proposed to existing transit facilities or locations of stops.

VIII. RECOMMENDATIONS

The following recommendations for mitigation are made to address impacts of the project on the transportation system:

1. Coordinate left turn movements from OR 99W to SW Tualatin Road at the intersections with SW 124th Avenue. This will minimize the queue lengths and delays for southbound left turns on SW 124th Avenue and avoid potential spill back to OR 99W.
2. Trim vegetation at the site access locations as needed to provide the recommended intersection sight distances.

IX. APPENDIX

Appendix A. Figures

Appendix B. Scoping Material

Appendix C. Transit Information

Appendix D. Traffic Count Summaries

Appendix E. Seasonal Adjustment Data

Appendix F. Crash Data

Appendix G. In-Process Data

Appendix H. Signal Information

Appendix I. Operations Calculations

Appendix J. Queuing Analysis

APPENDIX A.

FIGURES



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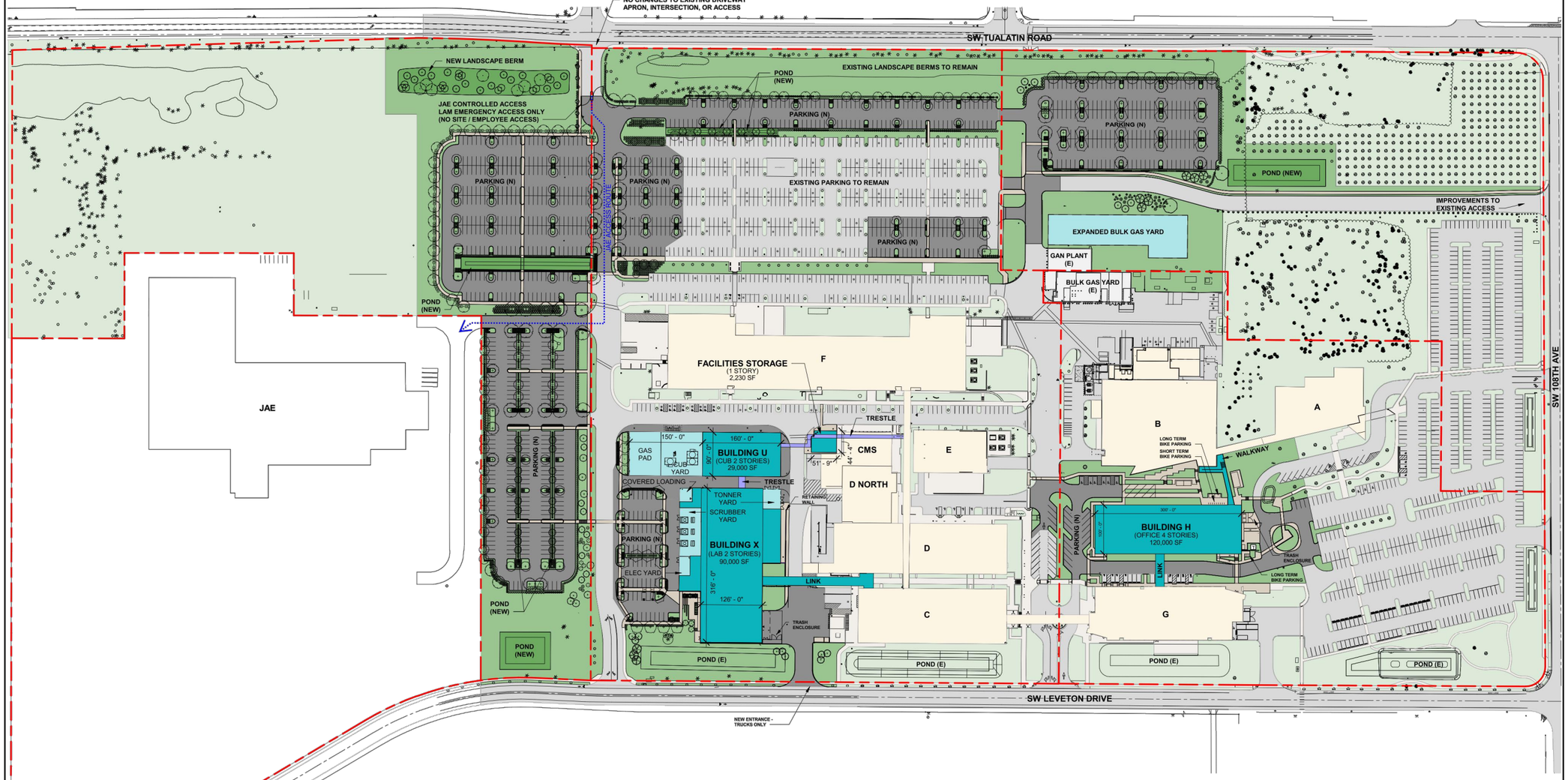
VICINITY MAP

LAM TUX
TUALATIN, OR

FIGURE
1



1 A0.01 ARCHITECTURAL SITE PLAN
1" = 100'-0"

LEGEND

- EXISTING BUILDINGS
- NEW BUILDINGS (TOTAL: 241,230 SQ FT)
- NEW YARDS
- NEW TRESTLE
- NEW PEDESTRIAN
- NEW PARKING AND DRIVE AISLES
- NEW DETENTION POND
- RETAINING WALL
- PROPERTY LINE

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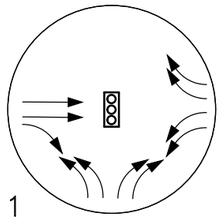
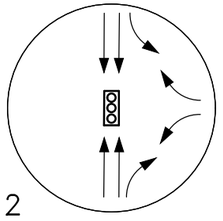
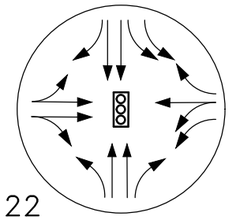
SITE PLAN

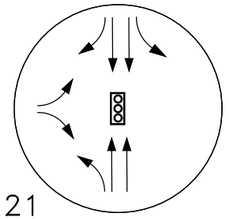
LAM TUX
TUALATIN, OR

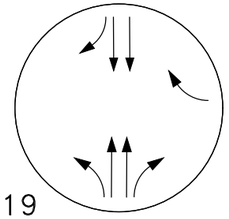
FIGURE
2

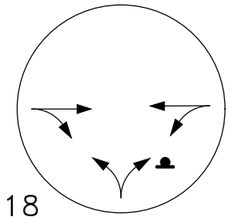


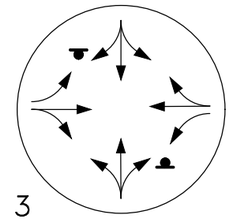


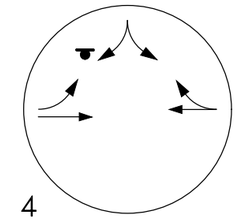


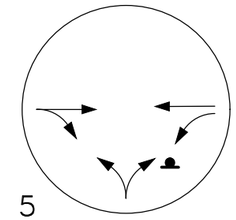


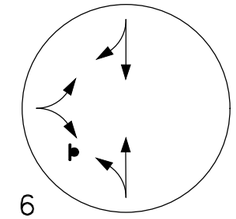


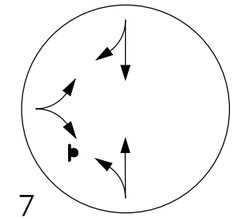


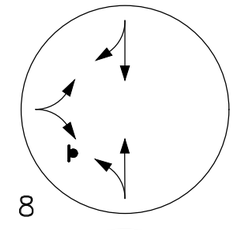


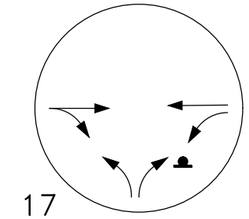


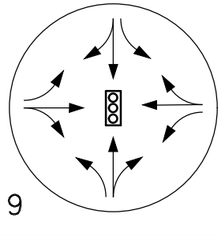


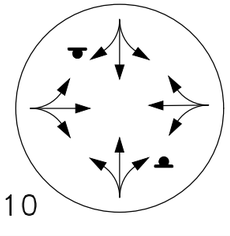


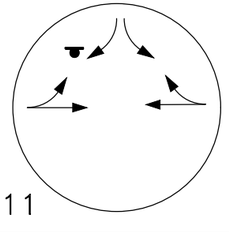


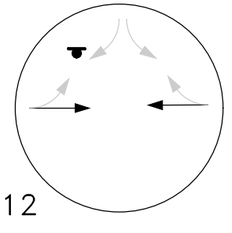


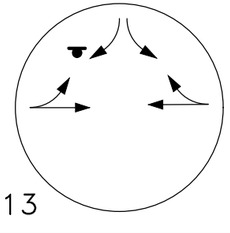


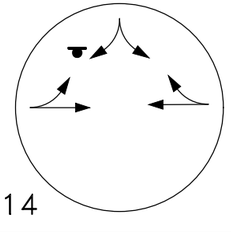


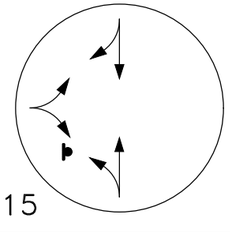


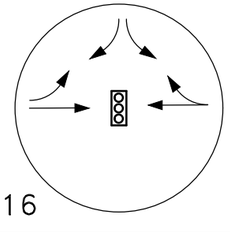


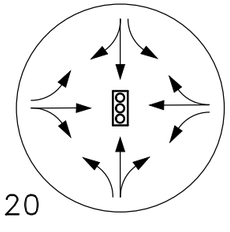


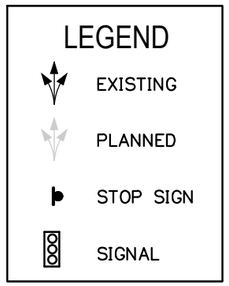












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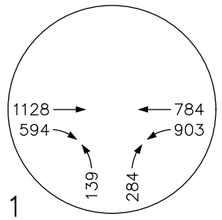
DRAWN BY: CNL
CHECKED BY: BTA
JOB NO: 225018000

EXISTING + PLANNED TRAFFIC CONTROL DEVICES + LANE CONFIGURATIONS

LAM TUX
TUALATIN, OR

FIGURE
3



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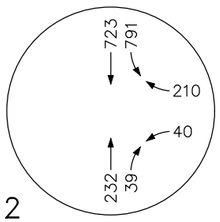

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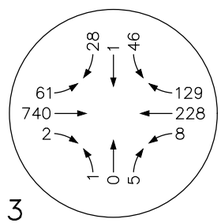

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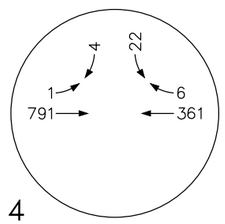

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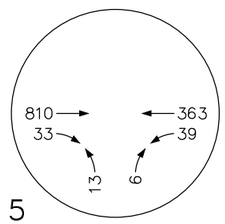

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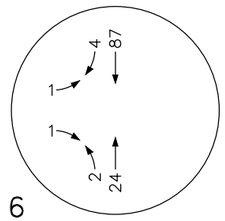

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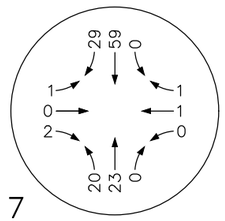

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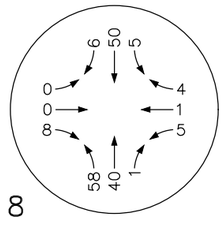

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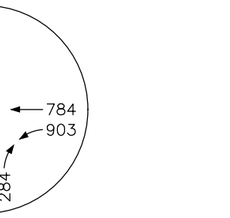

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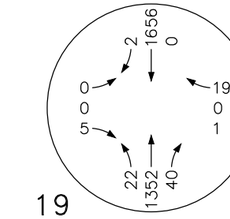

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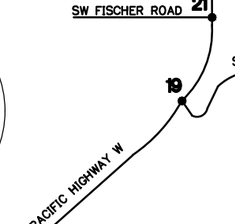

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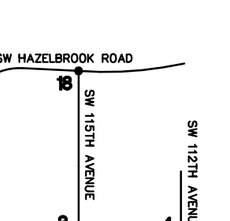

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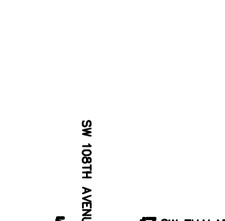

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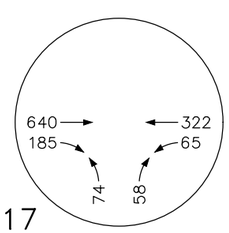

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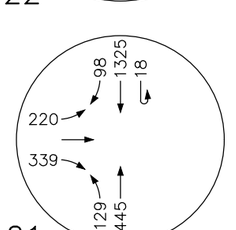

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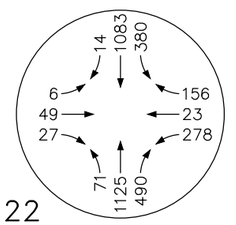

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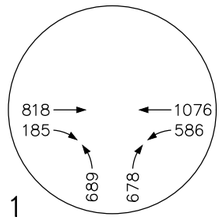
2025 EXISTING TRAFFIC VOLUMES - AM PEAK HOUR

LAM TUX
TUALATIN, OR

FIGURE
4A



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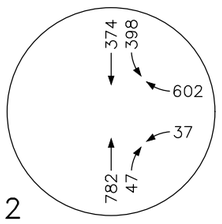

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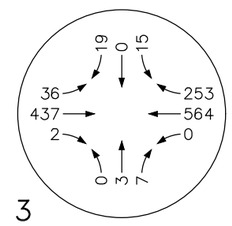

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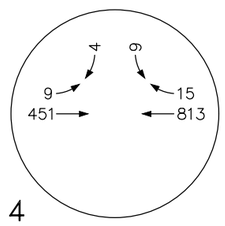

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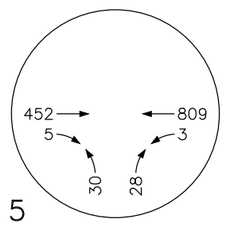

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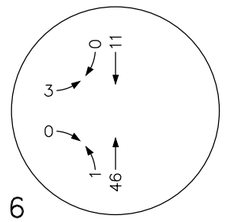

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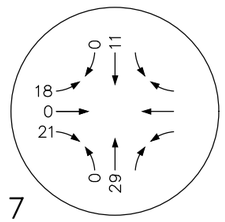

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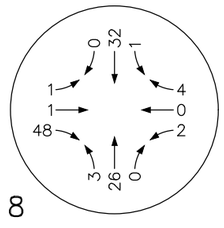

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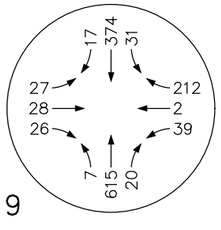

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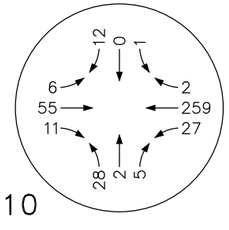

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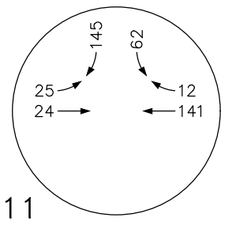

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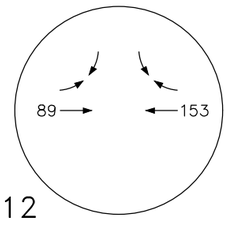

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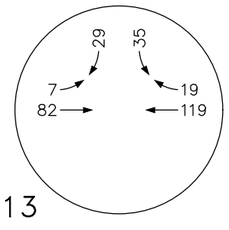

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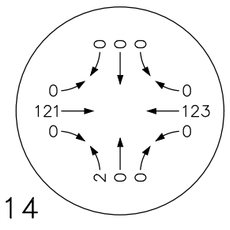

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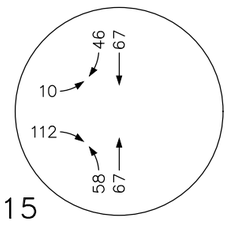

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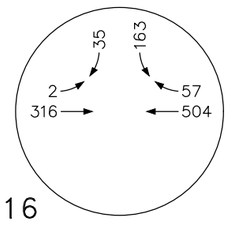

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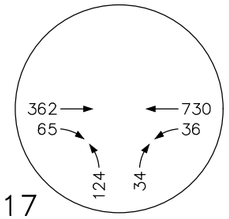

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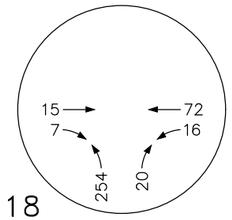

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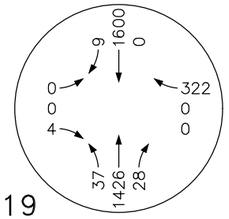

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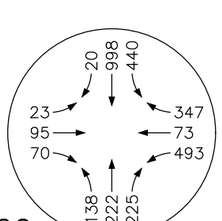

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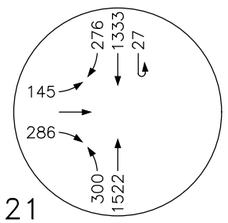

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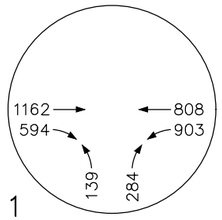
2025 EXISTING TRAFFIC VOLUMES - PM PEAK HOUR

LAM TUX
TUALATIN, OR

FIGURE
4B



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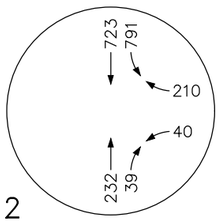

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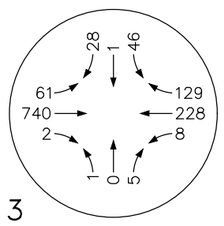

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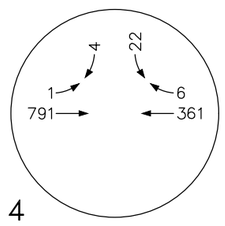

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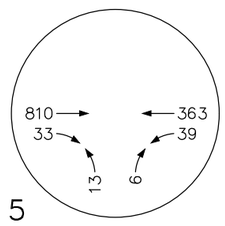

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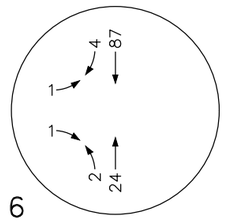

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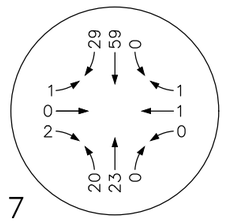

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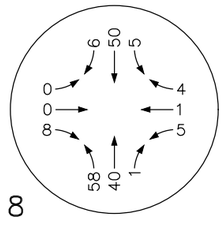

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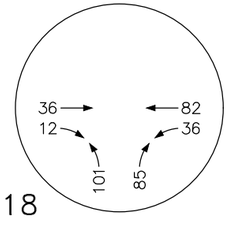

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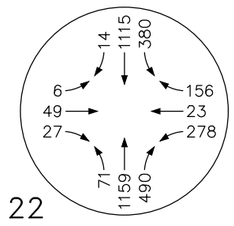

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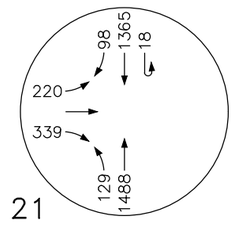

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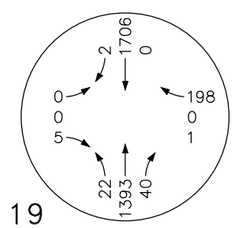

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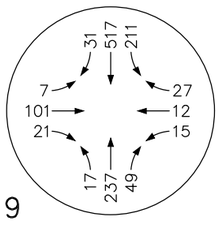

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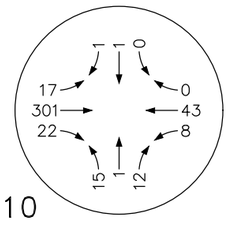

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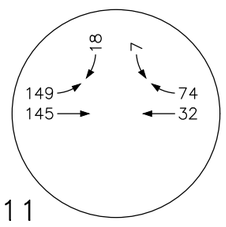

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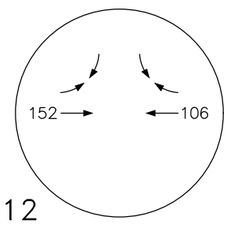

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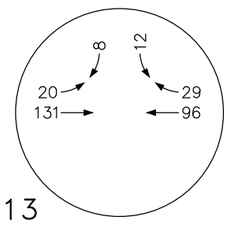

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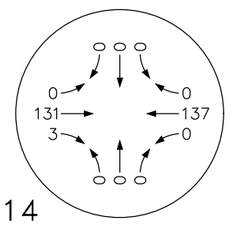

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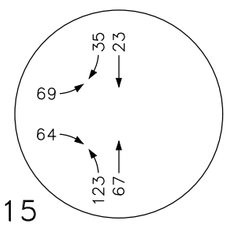

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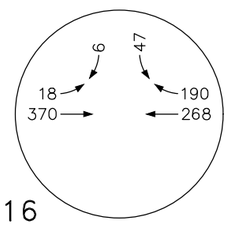

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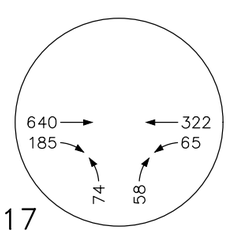

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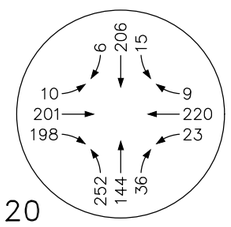

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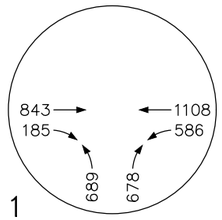
CHECKED BY: BTA
JOB NO: 225018000

2025 SEASONALLY ADJUSTED TRAFFIC VOLUMES - AM PEAK HOUR

LAM TUX
TUALATIN, OR

FIGURE
5A



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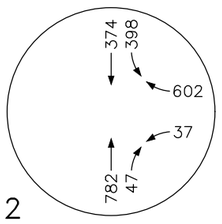

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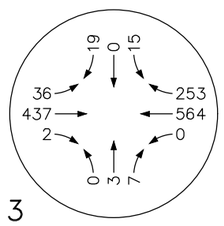

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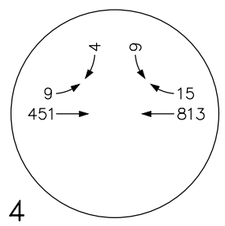

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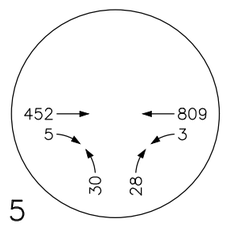

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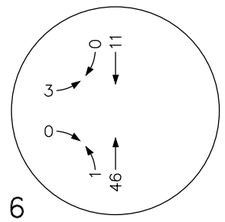

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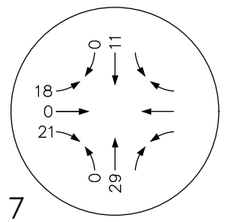

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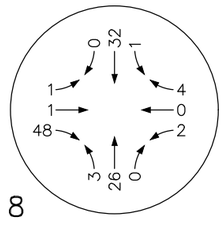

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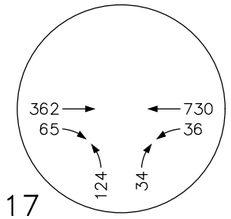

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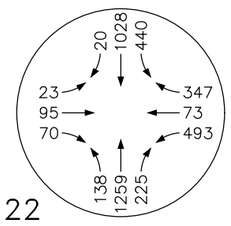

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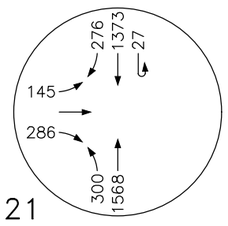

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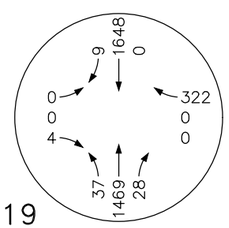

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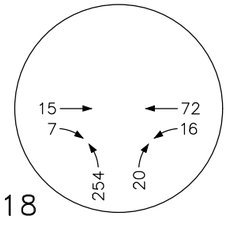

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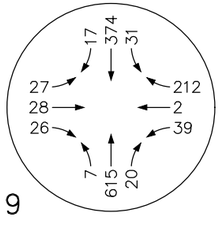

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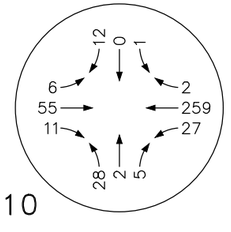

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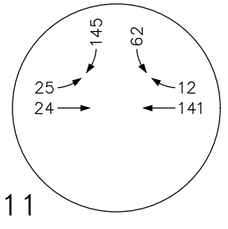

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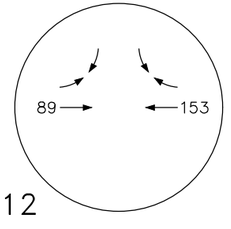

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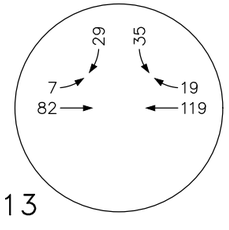

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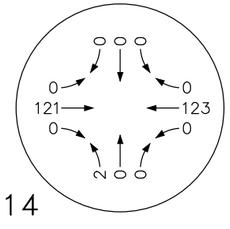

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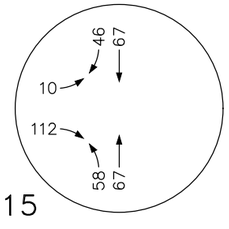

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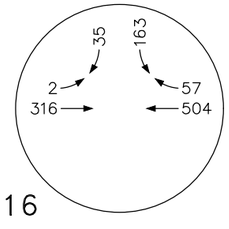

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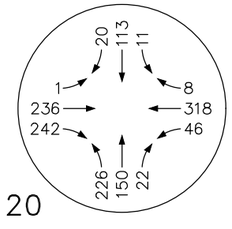

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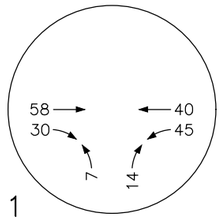
JOB NO: 225018000

2025 SEASONALLY ADJUSTED TRAFFIC VOLUMES - PM PEAK HOUR

LAM TUX
TUALATIN, OR

FIGURE
5B



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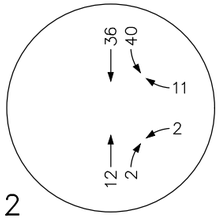

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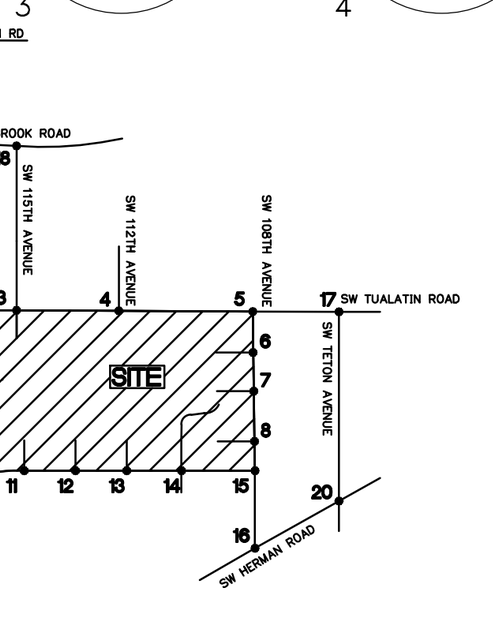

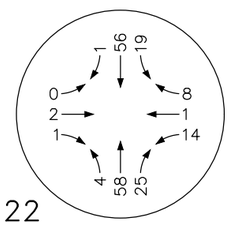

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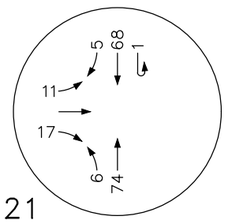

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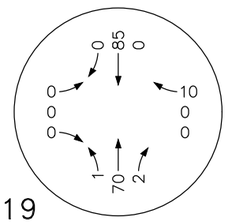

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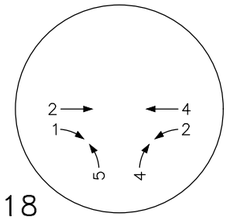

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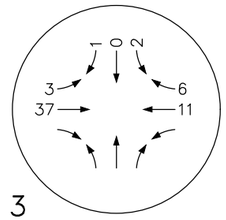

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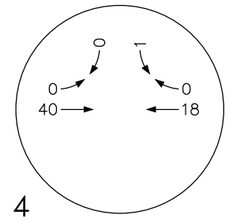

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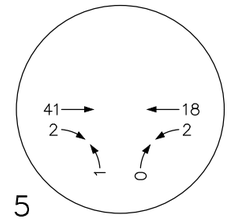

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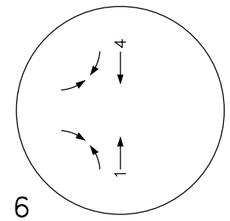

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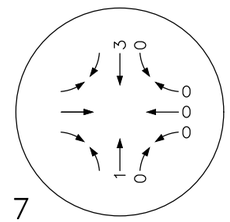

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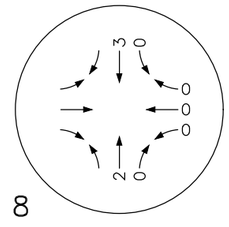

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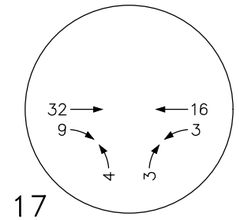

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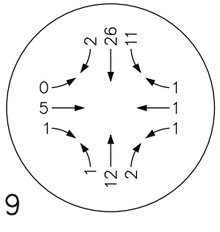

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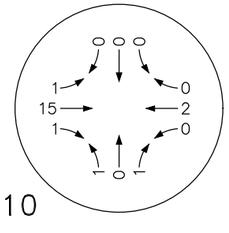

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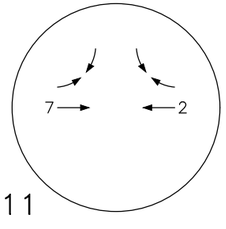

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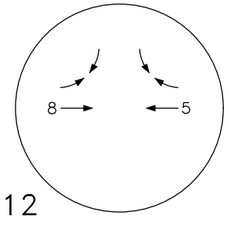

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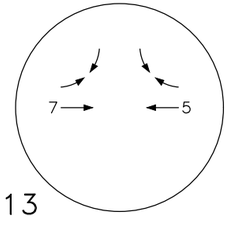

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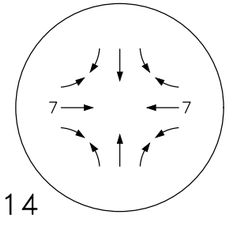

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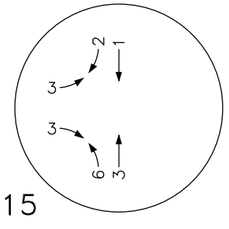

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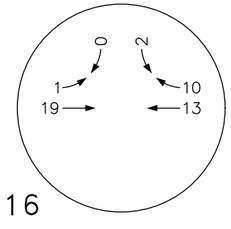

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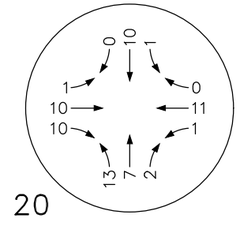

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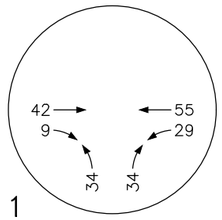
BACKGROUND GROWTH TO 2030, 5 YEARS AT 1% PER YEAR – AM PEAK HOUR

LAM TUX
TUALATIN, OR

FIGURE 6A



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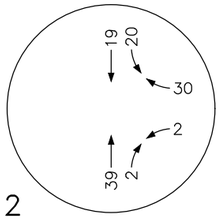

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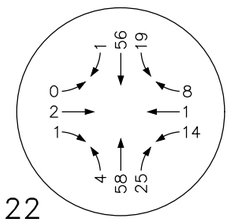

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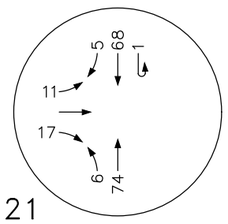

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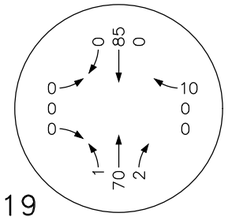

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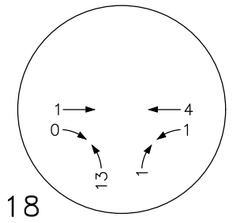

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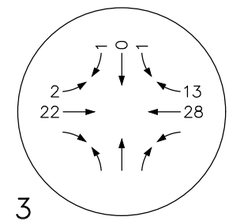

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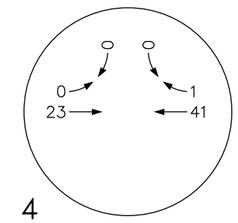

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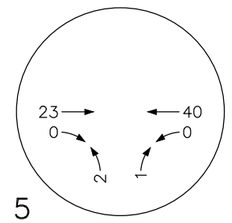

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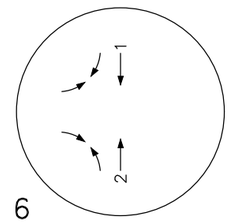

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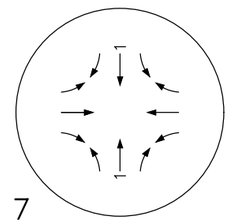

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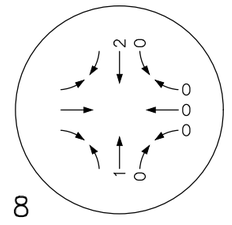

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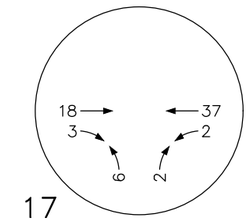

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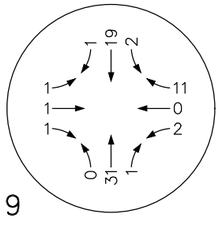

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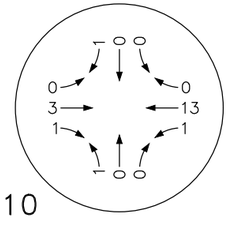

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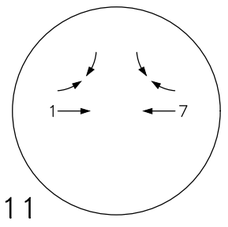

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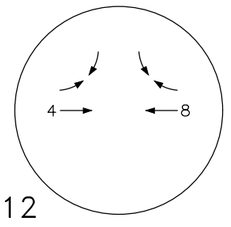

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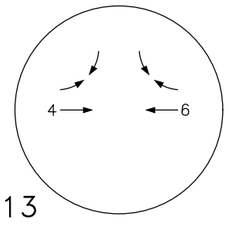

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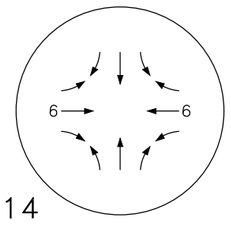

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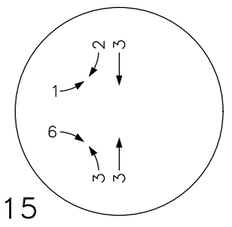

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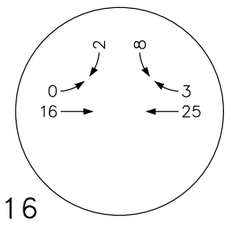

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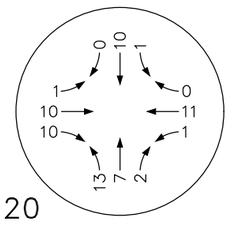

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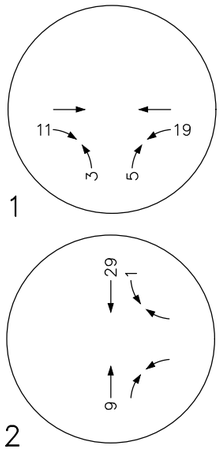
DATE: 7.21.2025
DRAWN BY: CNL
CHECKED BY: BTA
JOB NO: 225018000

BACKGROUND GROWTH TO 2030, 5 YEARS AT 1% PER YEAR - PM PEAK HOUR

LAM TUX
TUALATIN, OR

FIGURE 6B



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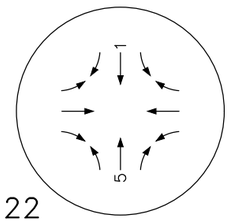

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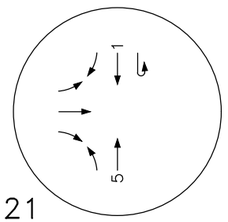

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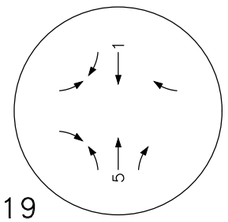

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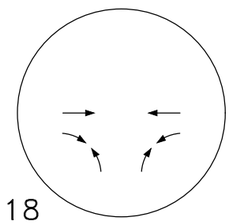

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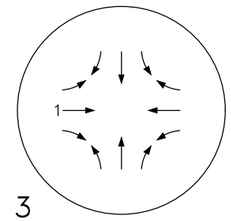

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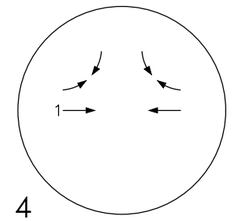

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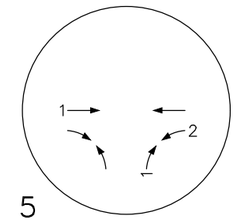

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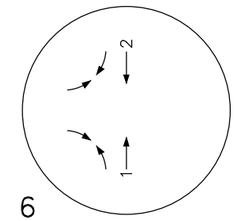

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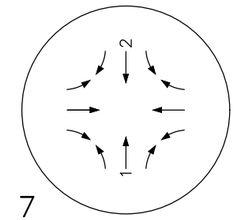

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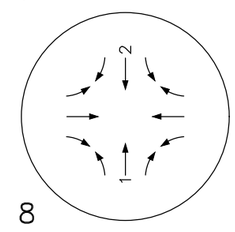

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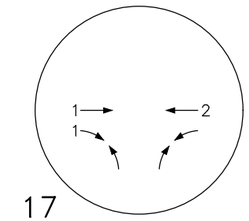

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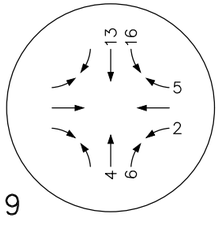

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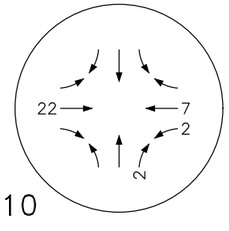

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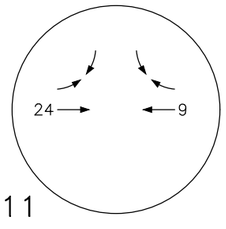

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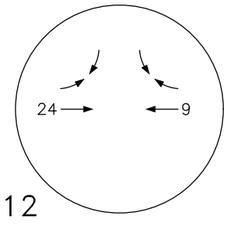

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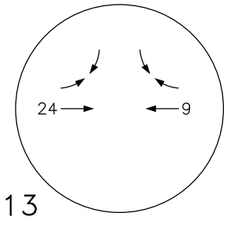

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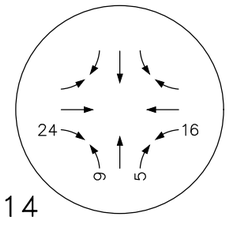

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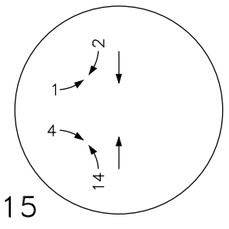

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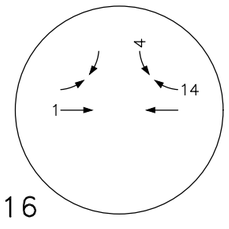

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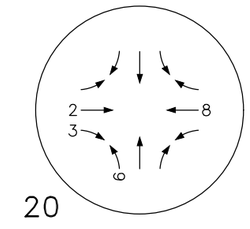

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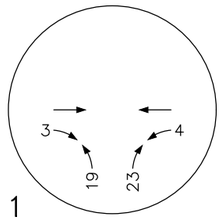
JOB NO: 225018000

IN-PROCESS PROJECTS TRAFFIC VOLUMES - AM PEAK HOUR

LAM TUX
TUALATIN, OR

FIGURE
7A



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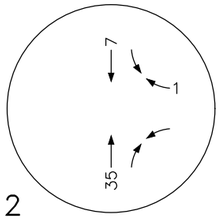

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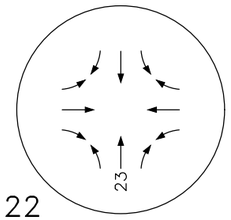

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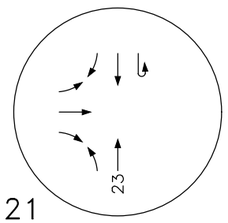

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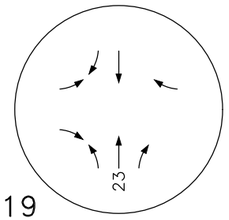

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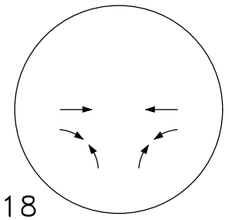

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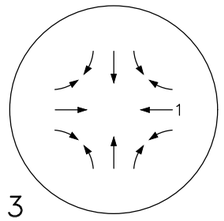

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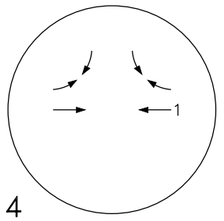

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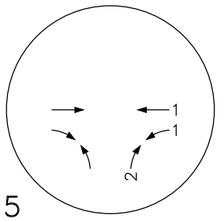

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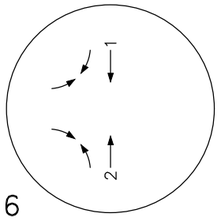

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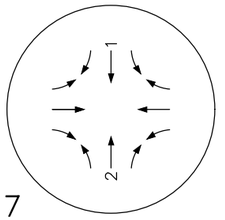

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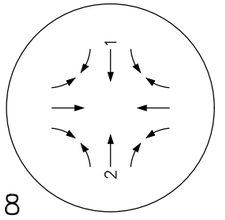

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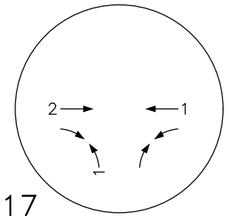

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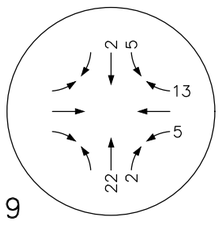

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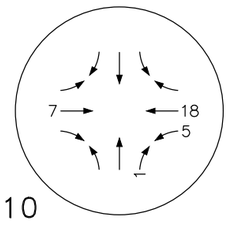

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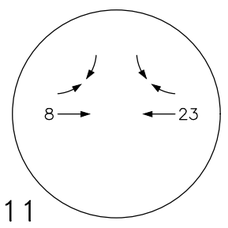

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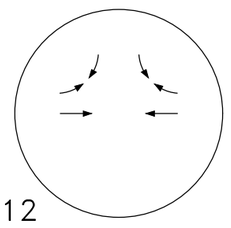

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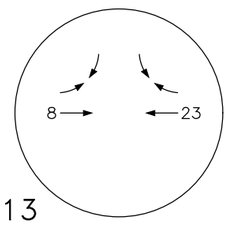

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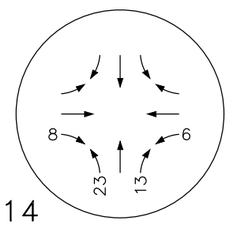

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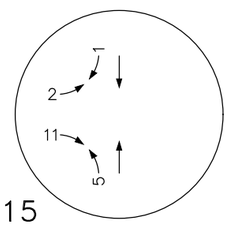

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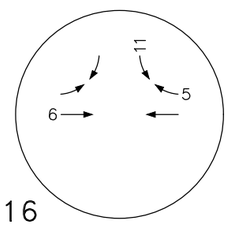

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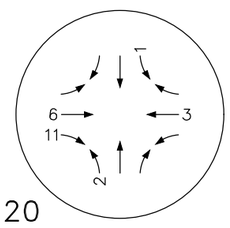

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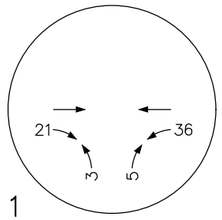
JOB NO: 225018000

IN-PROCESS PROJECTS TRAFFIC VOLUMES - PM PEAK HOUR

LAM TUX
TUALATIN, OR

FIGURE
7B



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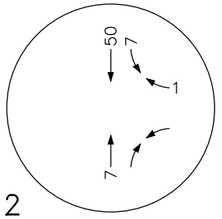

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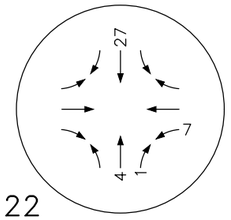

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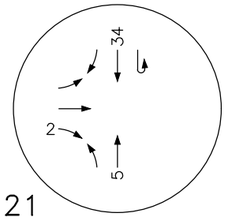

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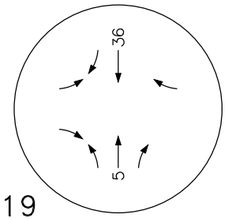

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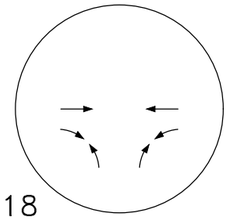

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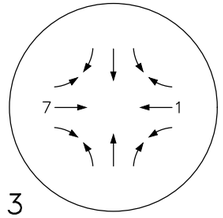

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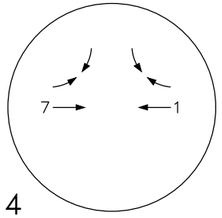

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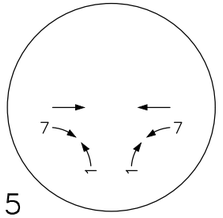

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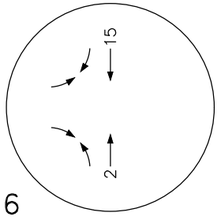

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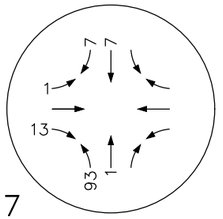

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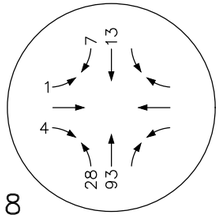

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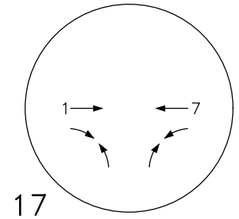

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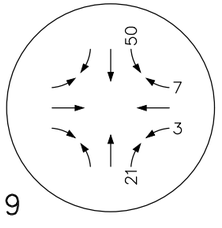

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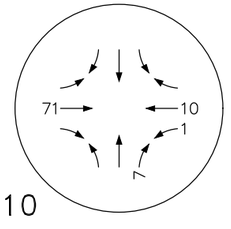

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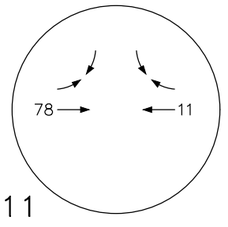

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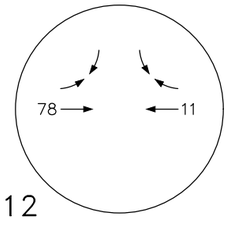

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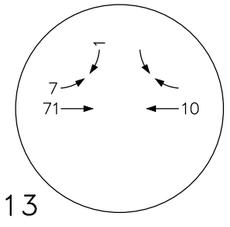

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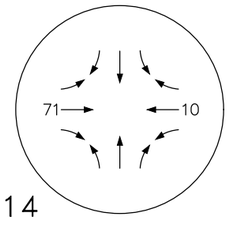

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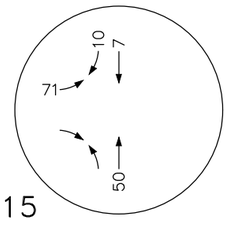

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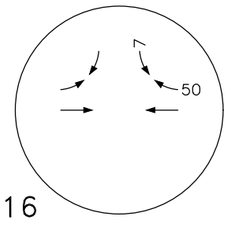

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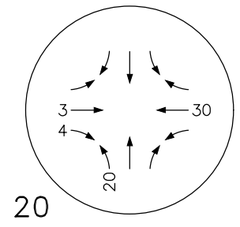

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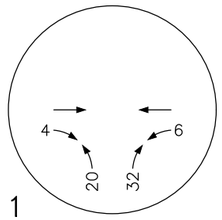
IN-PROCESS
NEW BUILDING G TRIPS -
AM PEAK HOUR

LAM TUX
TUALATIN, OR

FIGURE
8A



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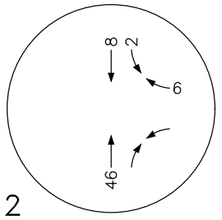

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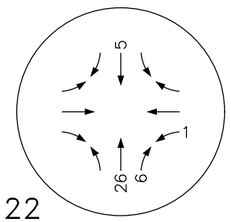

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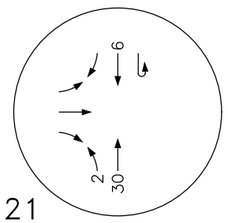

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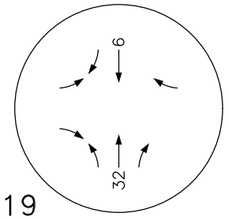

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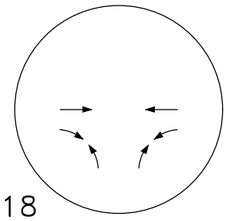

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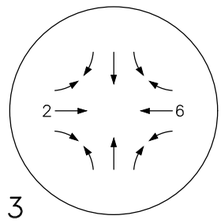

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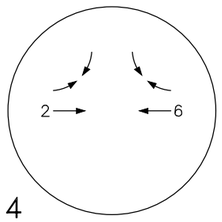

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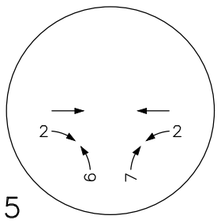

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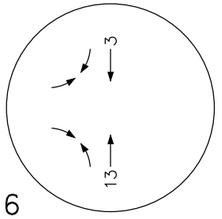

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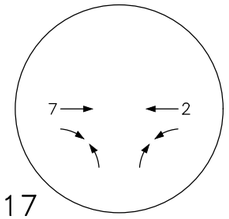

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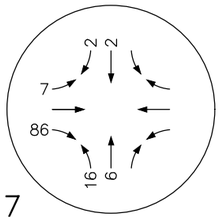

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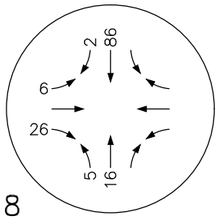

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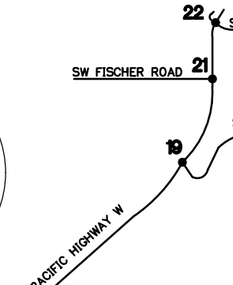

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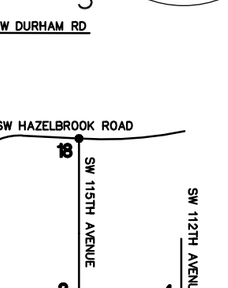

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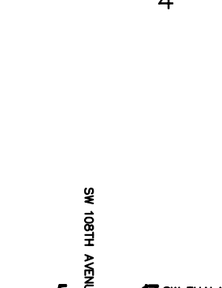

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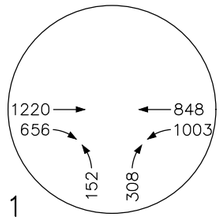

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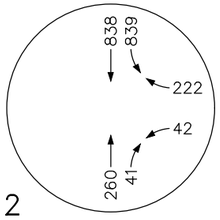

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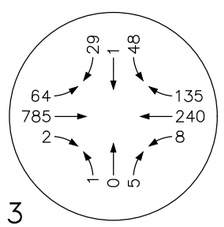

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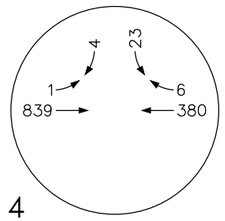

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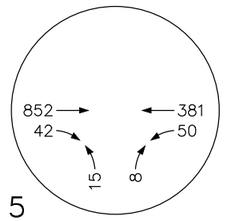

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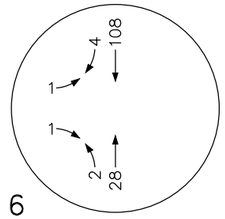

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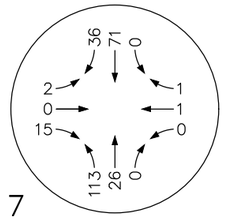

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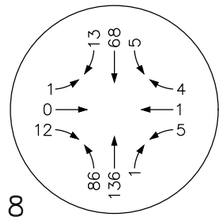

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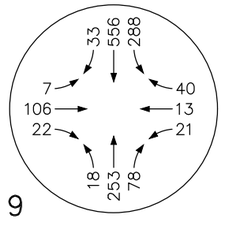

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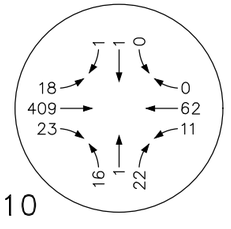

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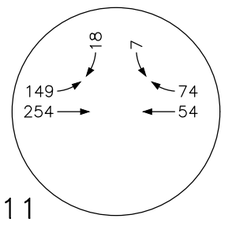

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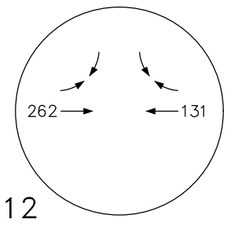

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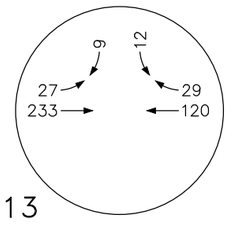

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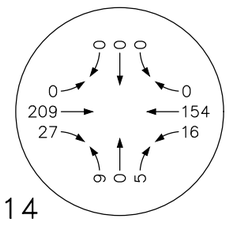

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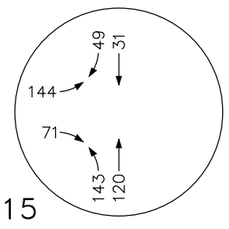

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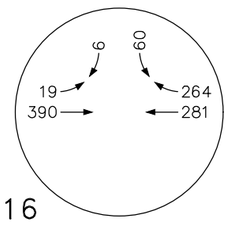

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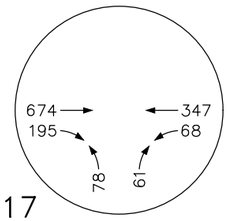

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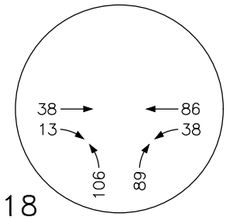

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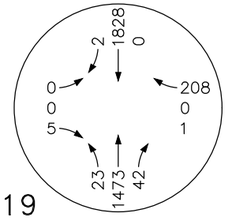

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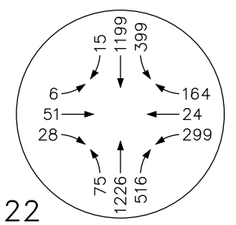

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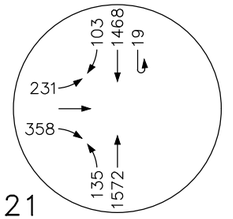

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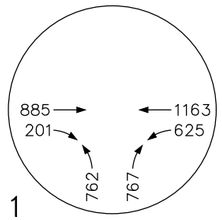
DRAWN BY: CNL
CHECKED BY: BTA
JOB NO: 225018000

2030 PRE-DEVELOPMENT TRAFFIC VOLUMES - AM PEAK HOUR

LAM TUX
TUALATIN, OR

FIGURE
9A



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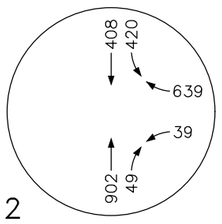

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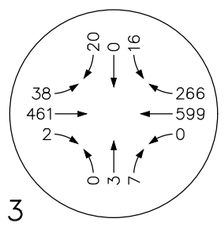

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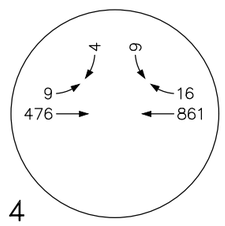

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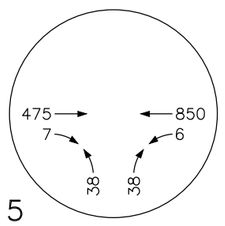

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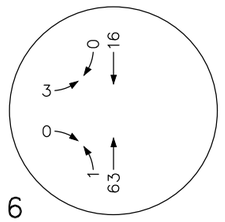

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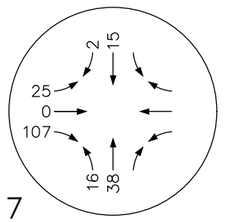

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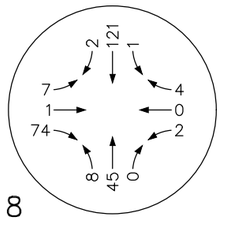

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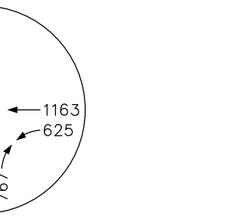

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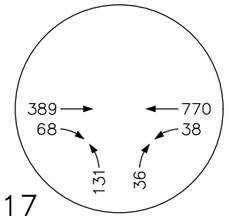

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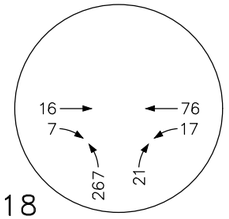

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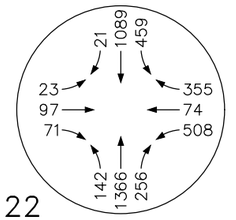

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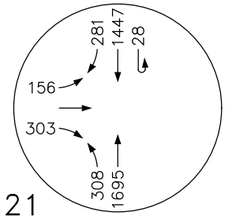

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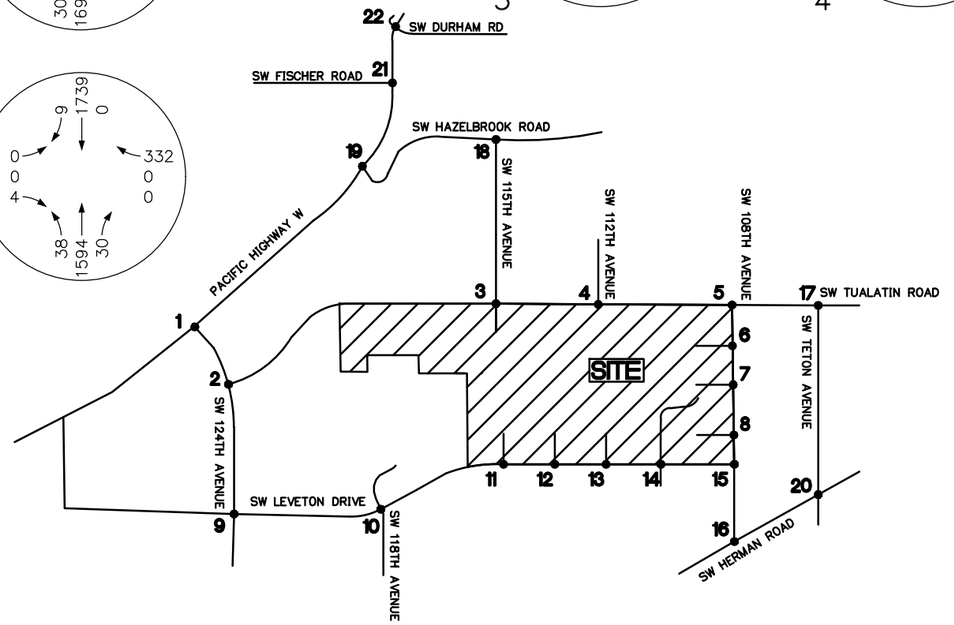

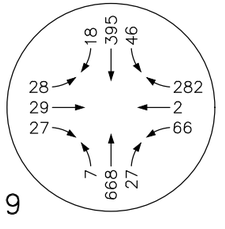

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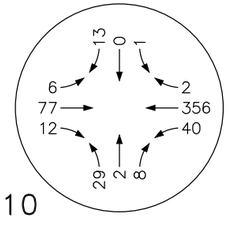

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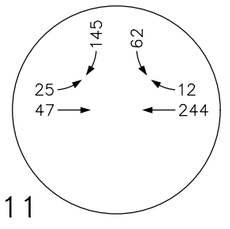

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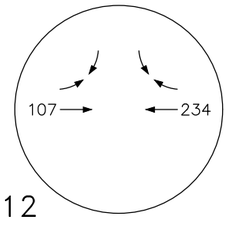

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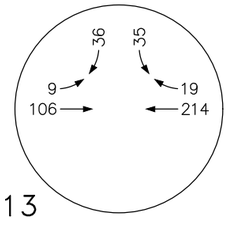

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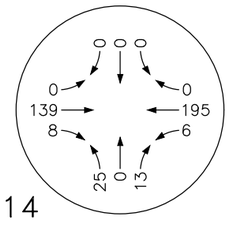

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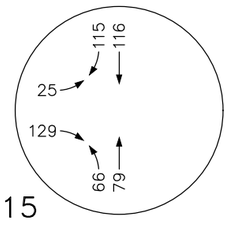

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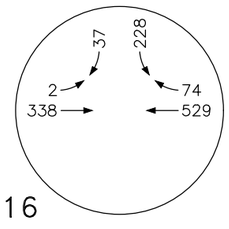

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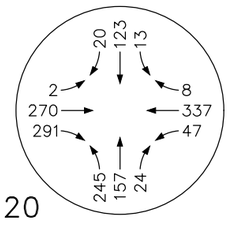

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2030 PRE-DEVELOPMENT TRAFFIC VOLUMES - PM PEAK HOUR

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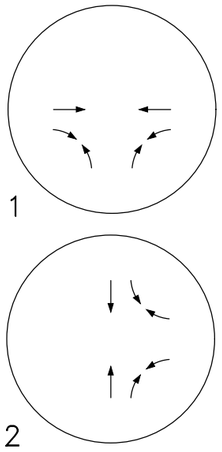

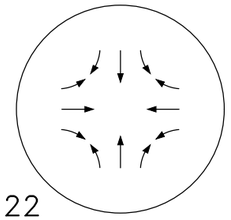

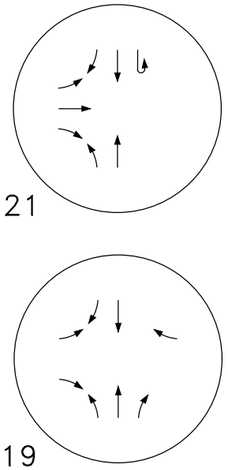

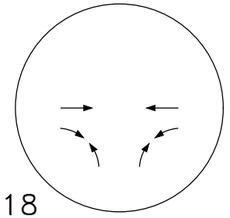

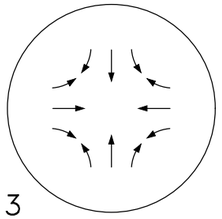

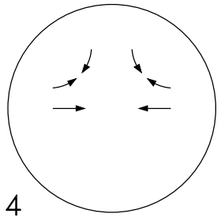

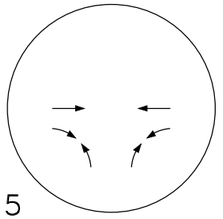

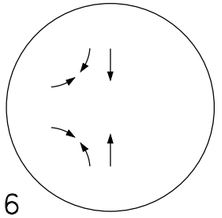

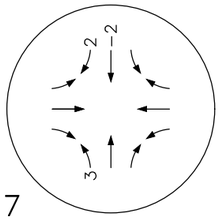

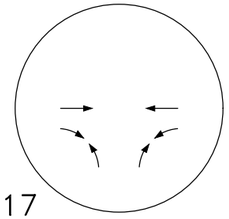

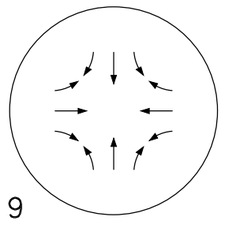

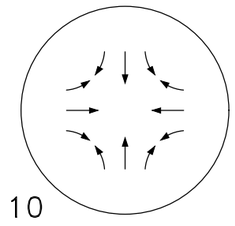

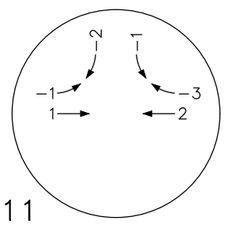

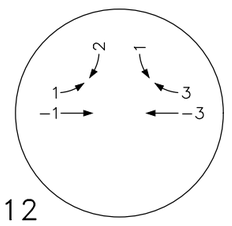

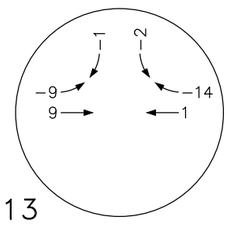

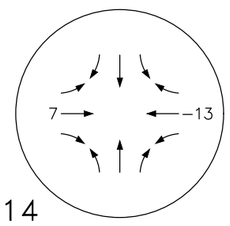

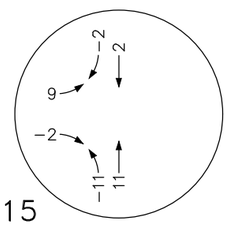

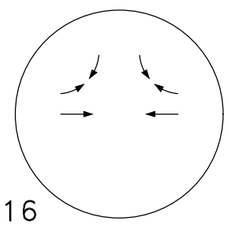

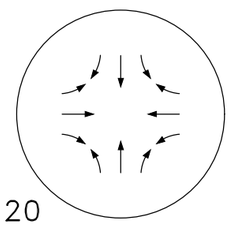

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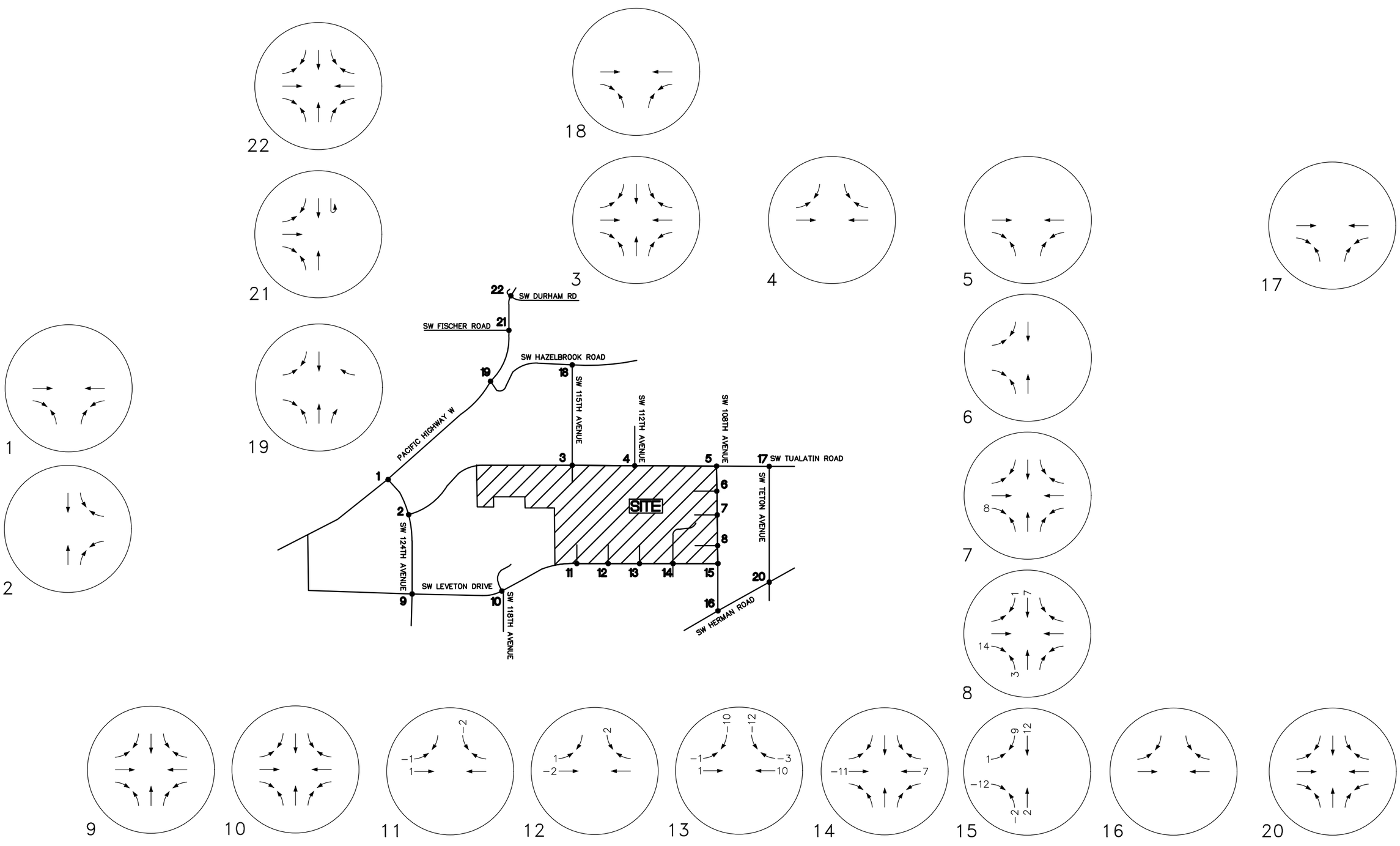
LEVETON ACCESS REROUTED VOLUMES - AM PEAK HOUR

LAM TUX
TUALATIN, OR

FIGURE
10A



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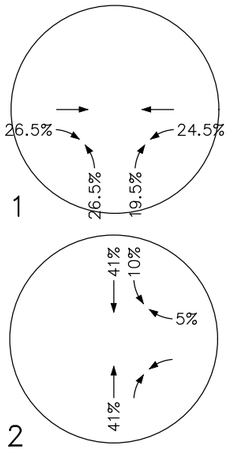
LEVETON ACCESS REROUTED VOLUMES - PM PEAK HOUR

LAM TUX
TUALATIN, OR

FIGURE
10B



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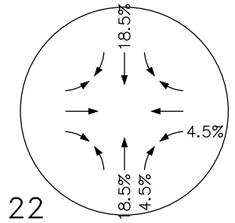

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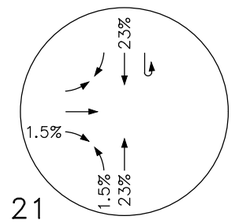

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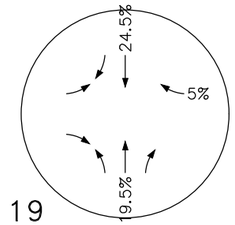

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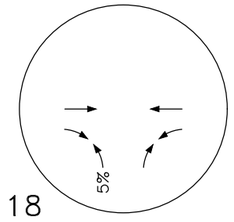

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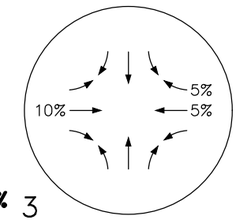

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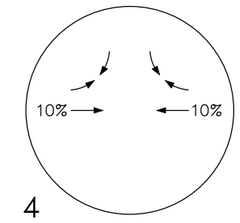

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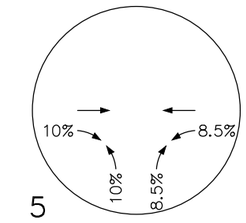

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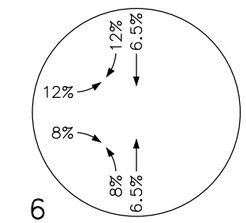

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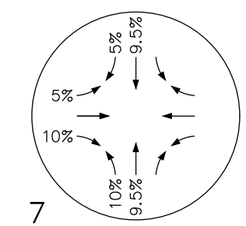

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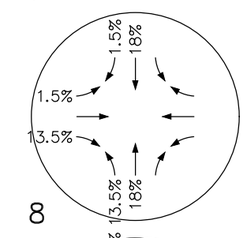

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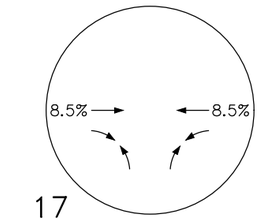

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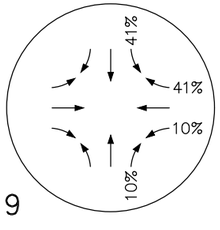

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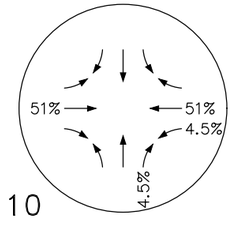

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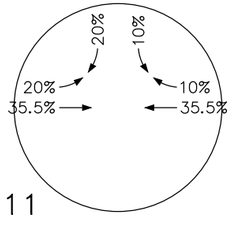

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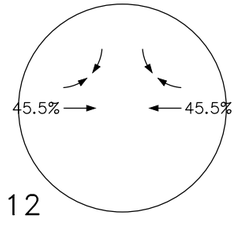

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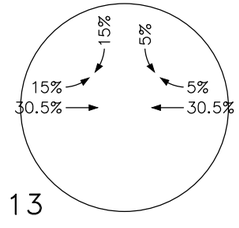

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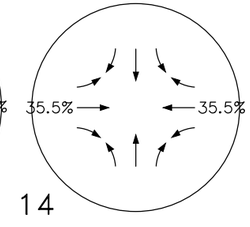

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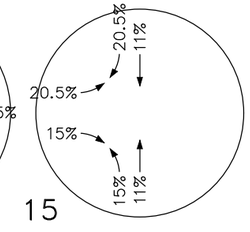

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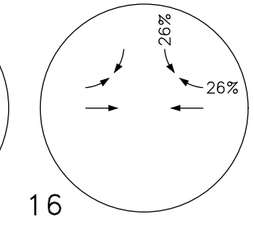

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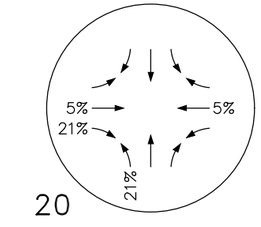

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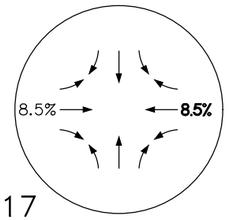

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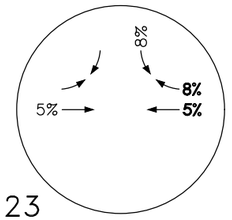

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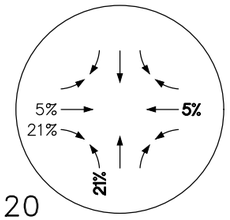

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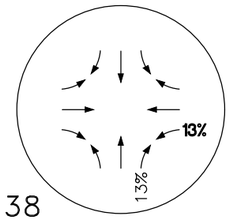

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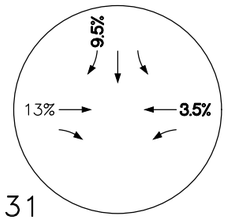

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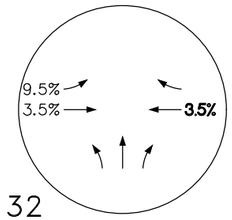

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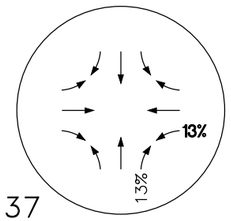

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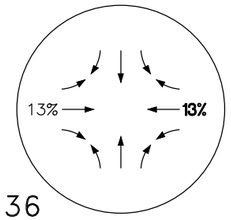

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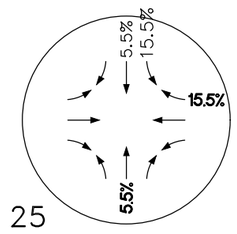

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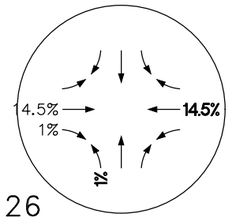

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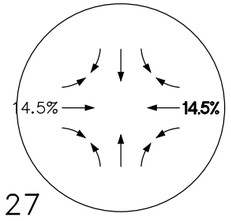

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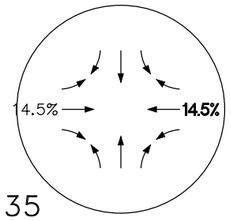

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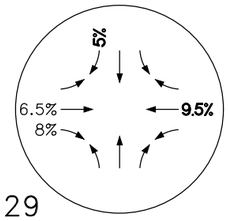

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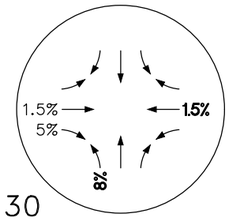

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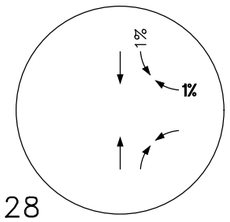

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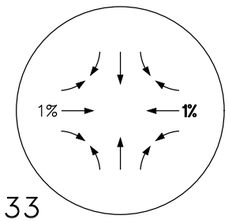

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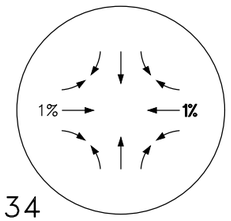

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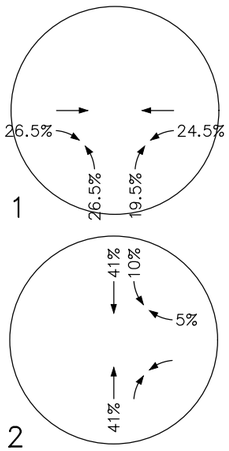

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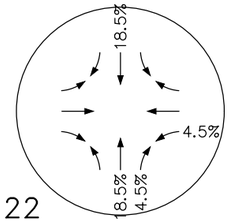

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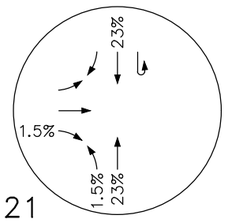

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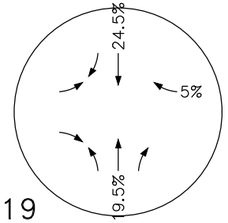

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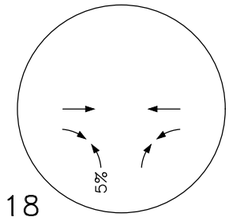

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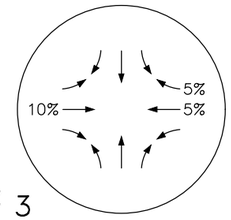

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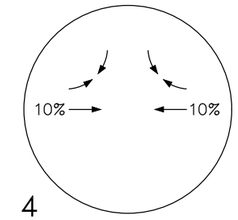

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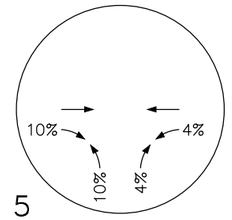

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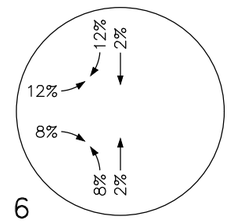

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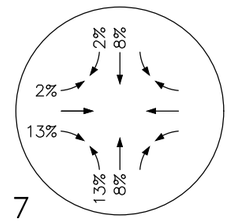

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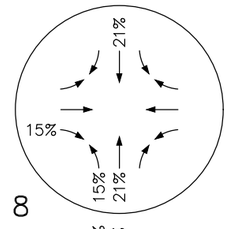

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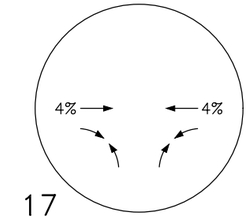

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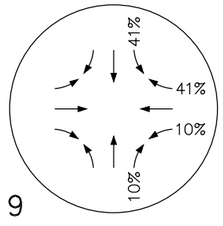

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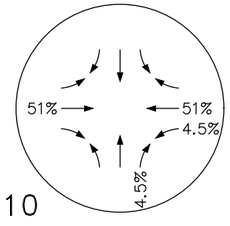

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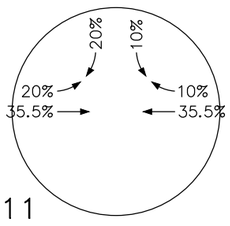

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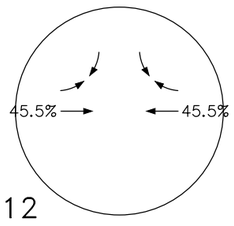

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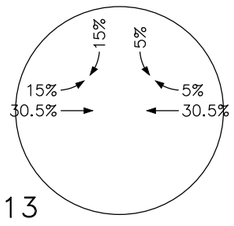

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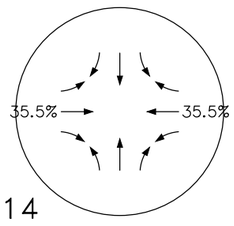

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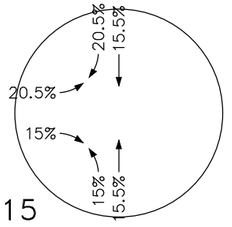

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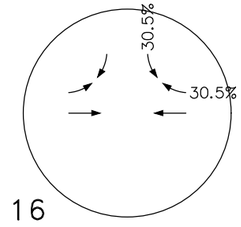

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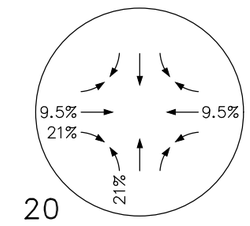

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TUALATIN, OR

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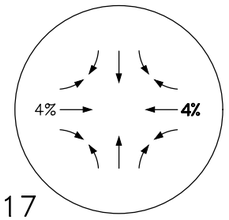
11C



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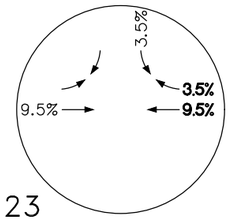

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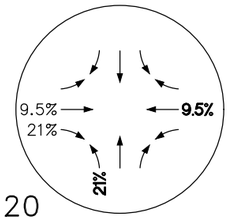

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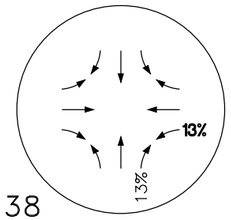

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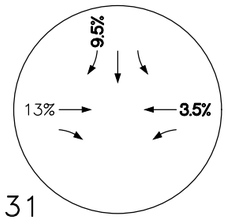

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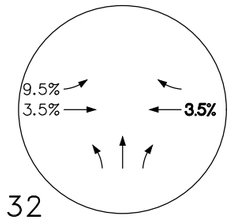

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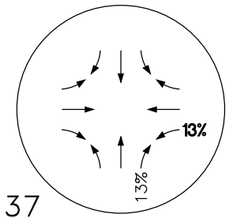

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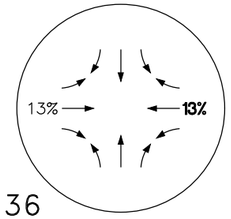

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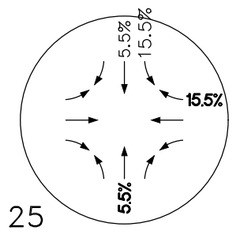

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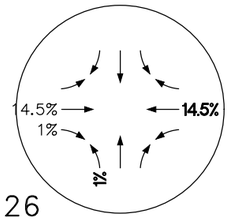

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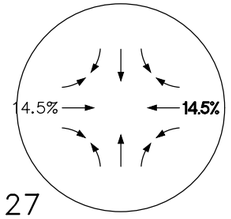

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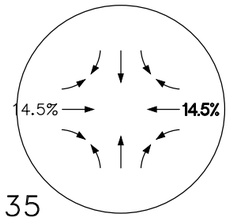

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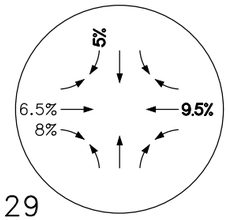

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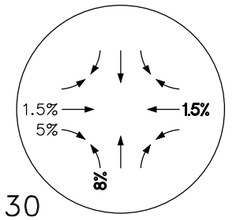

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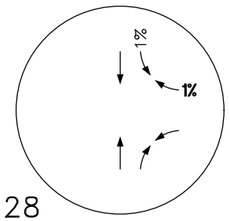

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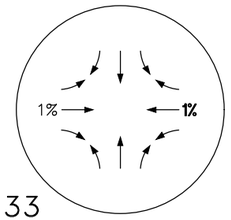

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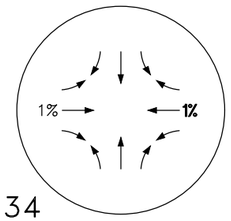

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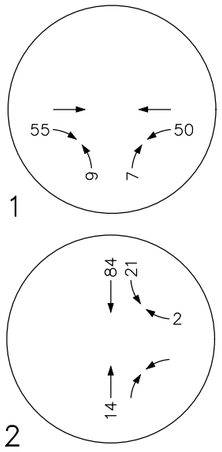
11D



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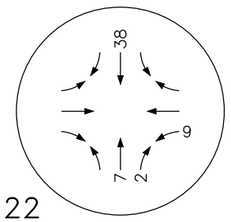

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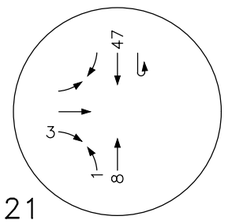

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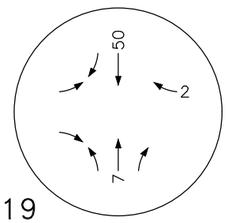

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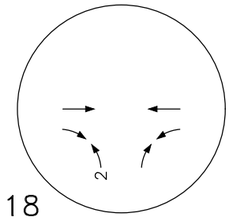

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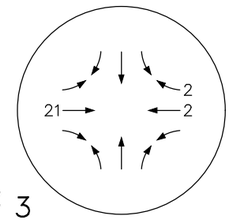

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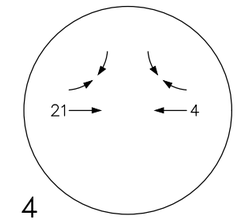

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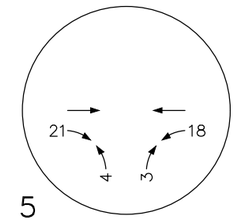

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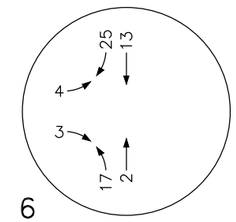

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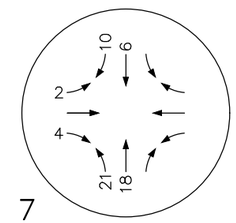

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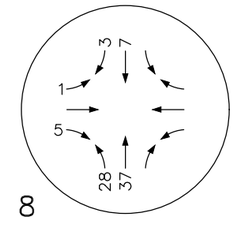

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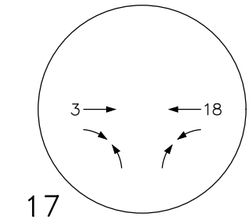

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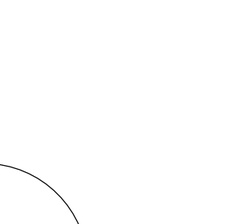

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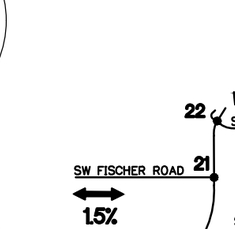

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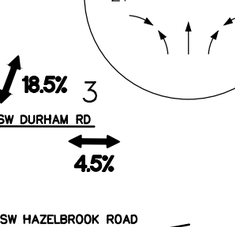

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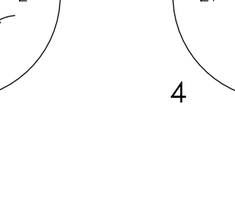

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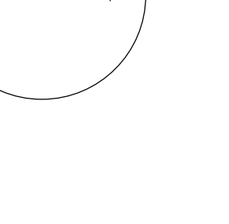

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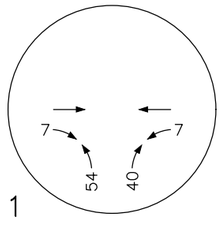

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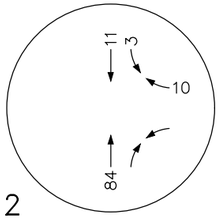

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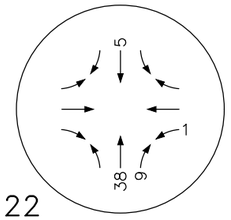

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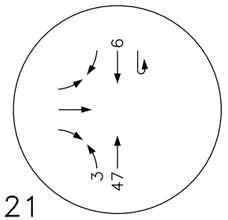

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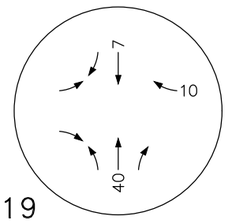

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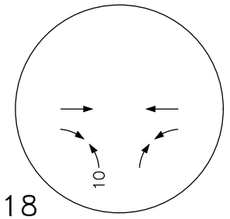

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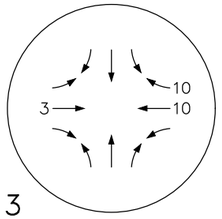

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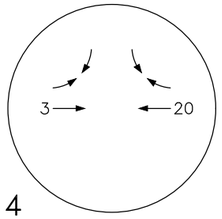

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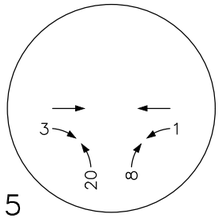

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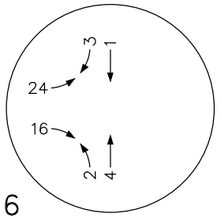

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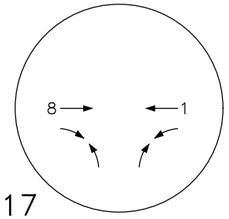

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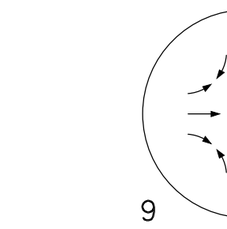

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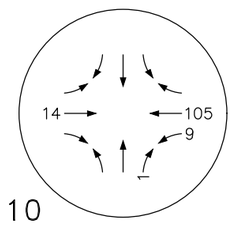

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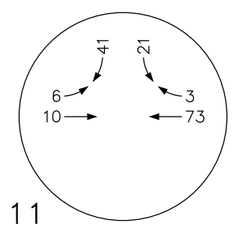

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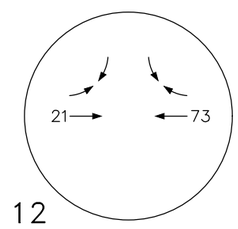

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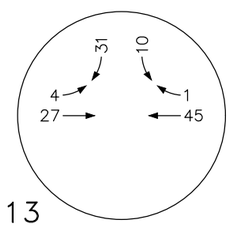

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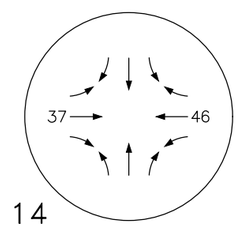

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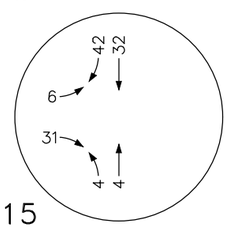

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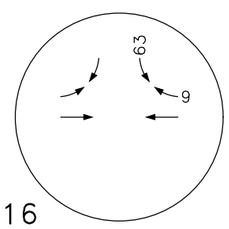

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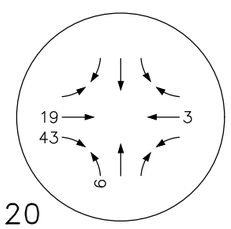

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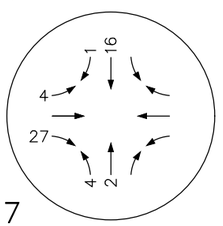

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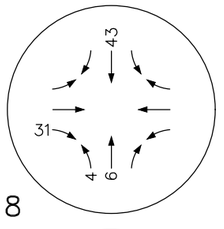

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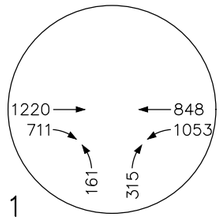
DRAWN BY: CNL
CHECKED BY: BTA
JOB NO: 225018000

NEW TUX
TRIP ASSIGNMENT - PM PEAK HOUR

LAM TUX
TUALATIN, OR

FIGURE
12B



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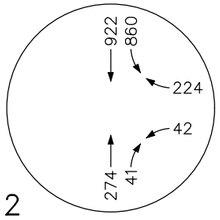

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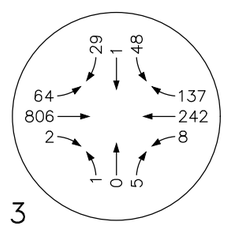

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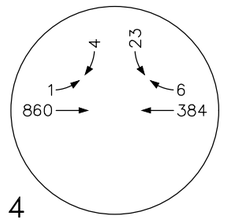

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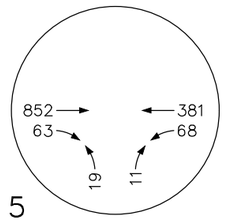

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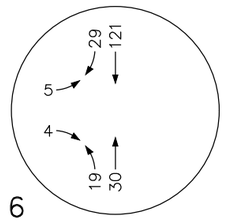

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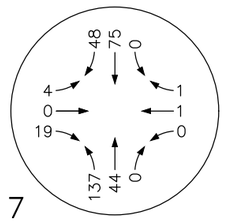

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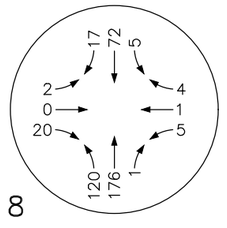

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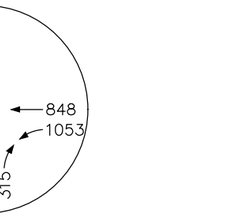

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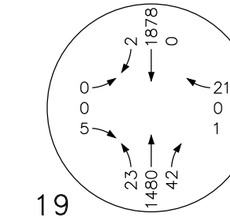

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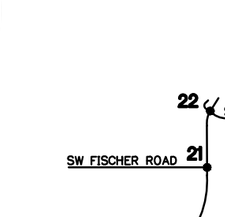

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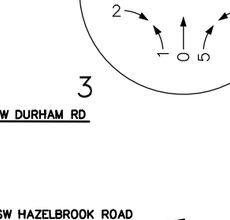

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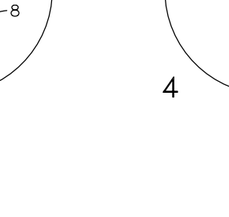

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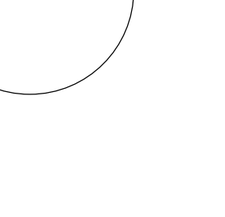

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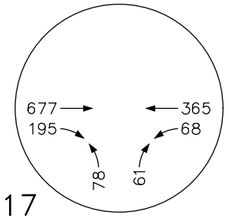

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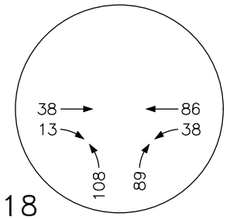

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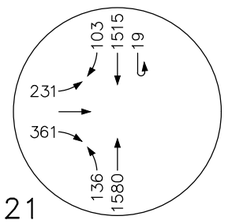

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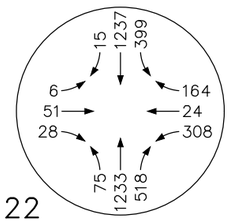

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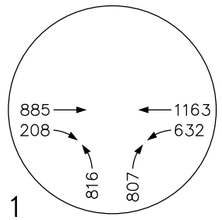
CHECKED BY: BTA
JOB NO: 225018000

2030 POST-DEVELOPMENT TRAFFIC VOLUMES - AM PEAK HOUR

LAM TUX
TUALATIN, OR

FIGURE
13A



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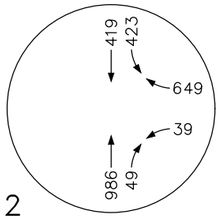

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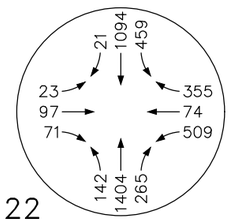

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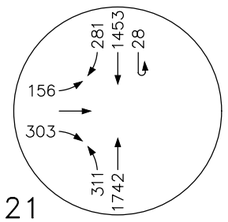

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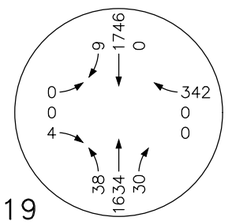

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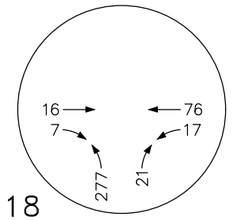

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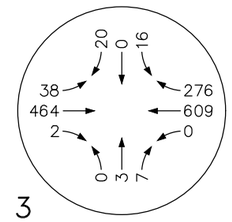

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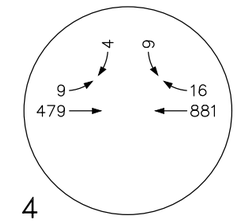

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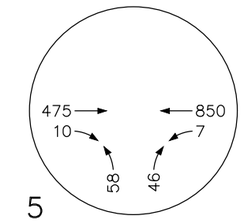

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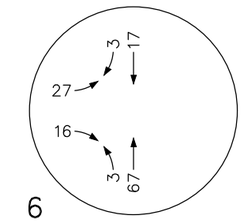

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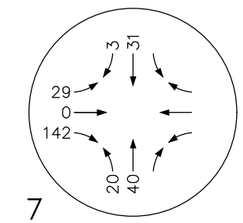

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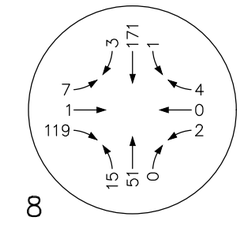

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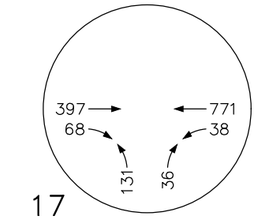

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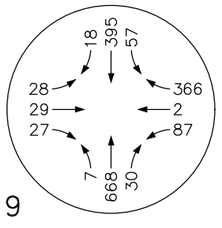

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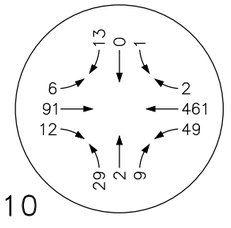

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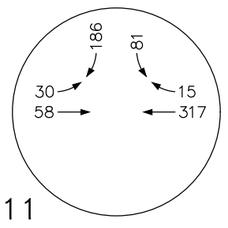

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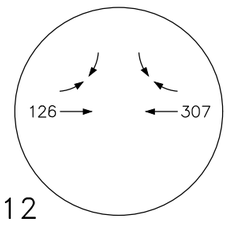

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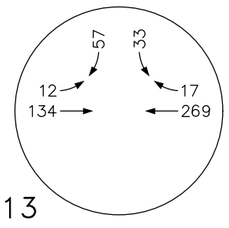

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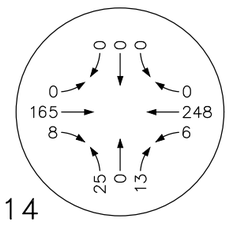

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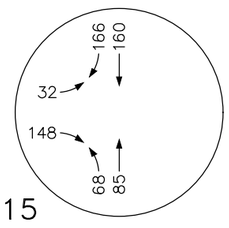

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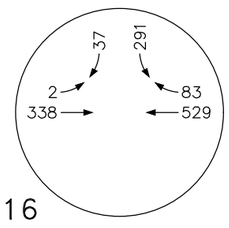

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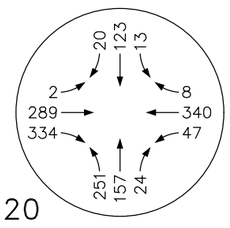

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DATE: 7.21.2025
DRAWN BY: CNL
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JOB NO: 225018000

2030 POST-DEVELOPMENT TRAFFIC VOLUMES - PM PEAK HOUR

LAM TUX
TUALATIN, OR

FIGURE
13B

APPENDIX B.

SCOPING MATERIAL

June 25, 2025

City of Tualatin
Attention: Mike McCarthy
18880 SW Martinazzi Avenue
Tualatin, OR 97062

Re: **Lam TUX**
Updated Transportation Impact Analysis Scoping
Project Number 2250180.00

Dear Mike:

Mackenzie has prepared this updated scoping letter reflecting the updated site plan described below and planned changes to the required Transportation Impact Analysis (TIA) for the proposed laboratory/research and development building, office building, and utility building at the Lam Research campus in Tualatin, Oregon.

TUX Proposal

The TUX project includes the addition of three buildings. Building H is a four-story office building with an area of up to 120,000 square feet (SF), Building U is a two-story utility building with approximately 29,000 SF, and Building X is a laboratory building with approximately 85,000 SF. The total area of the TUX projects adds up to approximately 234,000 SF with an estimated net gain of 600 employees to the campus when the new buildings are at full occupancy.

The new office will be located on the east side of campus replacing the existing parking between Building G and Building B. The new lab and utility buildings will be located at the southwest corner of the site, replacing the existing surface parking. The existing access to SW Leveton Drive will remain and an additional driveway adjacent to the access road and loading dock at building C will serve as truck access for deliveries to the existing and proposed buildings.

The parking areas along the north side of the campus will be expanded and additional parking will be added to the adjacent west property to offset the loss of the southwest lot and to accommodate additional need with the TUX project. The permanent access to the expanded employee parking lots is proposed at the existing West Access from SW Leveton Drive and the North Access from SW 108th Avenue. North Access has previously been used for access to Lam's existing utility yard north of Building B and has served low volumes of employee trips. With this proposal, the driveway will be convenient for employees in the north lots, but no connection is planned to the parking lot constructed with Building G.

Two phases of development are proposed, with all buildings in Phase 1. Phase 2 will add infrastructure such as additional parking and utilities. For this reason, we propose to analyze both phases in a single buildout year.

PARKING AND ACCESS

The project will increase the available parking spaces from 1,728 to approximately 2,384. This includes a net loss of 82 parking spaces in the center of the campus with Building H (105 removed and 23 added back) and 286 spaces in the southwest lot for the lab and CUB buildings (347 removed and 61 added back).

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The impact of these parking changes is that approximately 6% of vehicles at the site that currently park in the central area would instead use the parking lot constructed with Building G, shifting trips from the Center Access on SW Leveton Drive to the two accesses on SW 108th Avenue.

The additional parking added with the project will primarily be served by opening the North Access on SW 108th Avenue and the existing West Access on SW Leveton Drive. A smaller number of vehicles may access the new parking areas from the Center Access on SW Leveton Drive.

The attached site plan presents the proposed site plan with new parking areas identified (Attachment A).

TRIP GENERATION

The three buildings operate in conjunction with each other and best match the description of a "Research and Development Center" (LUC 760) from the Institute of Transportation Engineers' (ITE) Trip Generation Manual, 11th Edition.

The appropriateness of this land use was confirmed by comparing campus conditions in 2024. Due to current construction on site, we are presenting a comparison to observed employment and trips in 2024. In 2024, the campus had approximately 1,160 office and lab employees assigned and working a day shift (generally 8-5) plus 400 manufacturing staff who worked 12-hour shifts with changes outside the peak hours (7-7 shift schedule). The 2024 campus driveway counts during the peak hours of the site (8-9 AM, 4:45-5:45 PM) were 371 and 378, respectively. Applying the R&D trip rate to the 1,160 employees working a typical day shift results in an estimate of 418 AM, 402 PM and 3,609 daily trips, indicating actual trip generation was about 10% lower than predicted using this approach.

The proposed trip generation for the TUX project is presented in Table 1 below. We utilized the trip generation equations for each time period based on the full occupancy of 600 net new employees.

TABLE 1 – PROPOSED TRIP GENERATION

ITE LUC	ITE Land Use	Employees	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
860	Research and Development Center	600	207	37	244	28	205	233	2,036

As shown in Table 1, the planned campus expansion is estimated to generate an additional 244 AM peak hour, 233 PM peak hour, and 2,036 daily trips with both phases of development.

TRIP DISTRIBUTION

Site trip distribution has been modified slightly from the original master plan based on counts conducted in May 2025 at the active site driveways on SW Leveton Drive. With access now provided on SW 108th Avenue, there has been a small increase in trips on SW Tualatin Road. The overall distribution onto the greater roadway network remains consistent with employee zip code data provided by Lam. Unless otherwise noted, the following percentages apply to both the AM and PM peak hours.

- 24.5% to/from the north on Highway 99W.
- 26.5% to/from the south on Highway 99W.
- 13.5% to/from the east on SW Tualatin Road and SW Herman Road.
  - 8.5% on SW Tualatin Road and 5% on SW Herman Road in the AM peak hour.
  - 4% on SW Tualatin Road and 9.5% on SW Herman Road in the PM peak hour.
- 4.5% to/from the south on SW 118th Avenue.
- 10% to/from the south on SW 124th Avenue.
- 21% to/from the south on SW Teton Avenue.

The attached trip distribution figure (Attachment B) presents the percentage of trips at each study area intersection based on the locations of proposed parking and access points. Trip distribution near the site will reflect the following assumptions:

- 30% of new site trips are expected to utilize the West Leveton Access, 20% at the Center Leveton Access, 30% split evenly between the Center and South 108th Accesses, and the remaining 20% at the North 108th Access.
- 10% of new site trips will use SW Tualatin Road to access the North 108th Access.
  - Half of these trips, or 5% total, are expected to use SW 115th Avenue and SW Hazelbrook Road to access Highway 99W when exiting the site.

STUDY AREA

Based on previous studies, as well as the City's *Traffic Study Requirements* document requiring that all intersections within a 1/4-mile radius of the project site be included as part of the study area and City and neighborhood concerns, the following public intersections are included in the study area:

- SW Leveton Drive/SW 118th Avenue.
- SW Leveton Drive/SW 108th Avenue.
- SW Tualatin Road/SW Teton Road.
- SW Tualatin Road/SW 108th Avenue.
- SW Tualatin Road/SW 112th Avenue.
- SW Tualatin Road/SW 115th Avenue.
- SW 124th Avenue/SW Leveton Road.
- SW 124th Avenue/SW Tualatin Road.
- SW 124th Avenue/OR 99W.
- SW Herman Road/SW 108th Avenue.
- SW Hazelbrook Road/SW 115th Avenue.
- SW Hazelbrook Road/OR 99W.

The following site driveways will also be studied (includes those opposite public streets listed above):

- SW Leveton Drive/West Access.
- SW Leveton Drive/Proposed New Access (between existing West and Center Accesses).
- SW Leveton Drive/Center Access.
- SW Leveton Drive/East Access.
- SW 108th Avenue/North Access.

- SW 108th Avenue/Center Access (constructed with Building G).
- SW 108th Avenue/South Access (constructed with Building G).

No additional Washington County intersections are proposed because projected trips are not expected to meet the threshold of 10% impact of the roadway's average daily traffic (ADT).

TRAFFIC COUNTS

Traffic counts were conducted at the intersections listed above for standard peak periods of 7:00-9:00 AM and 4:00-6:00 PM. An extended PM time period from 3:00-6:00 PM was counted at five intersections where the nearby Hazelbrook Middle School might cause an earlier peak. Intersections were counted on Tuesday, May 13, 2025. Raw traffic counts as well as 2025 existing traffic figures are enclosed with this letter (Attachments C and D).

Per ODOT standards, system peak hours from 7:30 AM to 8:30 AM and 4:30 PM to 5:30 PM are proposed for the OR 99W intersections in the AM and PM.

The observed site peaks from 8:00 AM to 9:00 AM and 4:45 PM to 5:45 PM are proposed as a system peak for all site driveways. The remaining intersections will be analyzed at individual intersection peaks. The site volumes are 449 (391 enter/58 exit) in the AM and 430 (67 enter/363 exit) in the PM, which is approximately 7% higher than 2024 counts, mostly due to construction activity for Building G with 85 contractors.

Traffic volumes on Tualatin Road have increased since 2024, which may be in part to construction activity on SW Tualatin-Sherwood Road and the small increase in site trips. No adjustments are proposed for this analysis.

TRANSPORTATION IMPACT ANALYSIS

Based on the City's traffic study requirements, as well as the required scope for the new Lam Research office building, the TIA will review AM and PM peak hour conditions at the study area intersections for the following scenarios:

- 2025 Existing.
- 2030 Pre-Development without project.
- 2030 Post-Development with project.

The TIA will also include the following analysis components:

- 1% annual background growth per ODOT's 2040 Future Volumes table for OR 99W south of 124th Avenue.
- Seasonal adjustment factor of 1.03 applied to through volumes on OR 99W per ODOT's Seasonal Trend Table for count date of May 13, 2025.
- 6% of existing site trips rerouted from the Center Leveton Access to the South and Center 108th Accesses due to proposed changes to parking as noted above.
- Intersection capacity analyses will be conducted at the study area intersections using Synchro 12 software which implements the methodologies of the *Highway Capacity Manual* (HCM) 7th Edition, with v/c calculated using ODOT methodology in the APM for ODOT intersections and HCM 2000 for all other intersections.
- Trips from the approved Lam Building G project will be included as in-process volumes.

- We reviewed the prior and any new in-process project trips to include. We propose to add the KAI USA Warehouse Expansion on SW Herman Road. The land use approval has expired for Tualatin Logistics Park so it will not be included. The proposed in-process projects include the following:
  - Lam Building G.
  - Fujimi Expansion.
  - 124th Business Park.
  - KAI USA Warehouse Expansion.
  - An adjustment of site trips will be made for the existing contractors on site and is estimated to be 34 AM and 32 PM trips. Because these contractors are parking in the lot for Building G, we propose reducing the in-process trips for Building G by these amounts.
- Crash data for the most recent five years will be compiled and evaluated for safety concerns.
- Intersection sight distance evaluations will be based on AASHTO methodology for the proposed site access points.
- Intersection queuing, turn-lane warrants, and signal warrants will also be evaluated where appropriate. Queueing will be estimated using SimTraffic, with adjustments as needed to calibrate to observed conditions and/or Synchro output. Signal warrants will follow MUTCD standards and TTI for turn lane warrants.

Please confirm the proposed trip generation, trip distribution, study area, TIA analysis components, and in-process project list are acceptable for the required TIA.

Please contact me at bahrend@mcknze.com or 971-346-3781 if you have any questions or comments regarding the information presented in this scoping letter.

Sincerely,

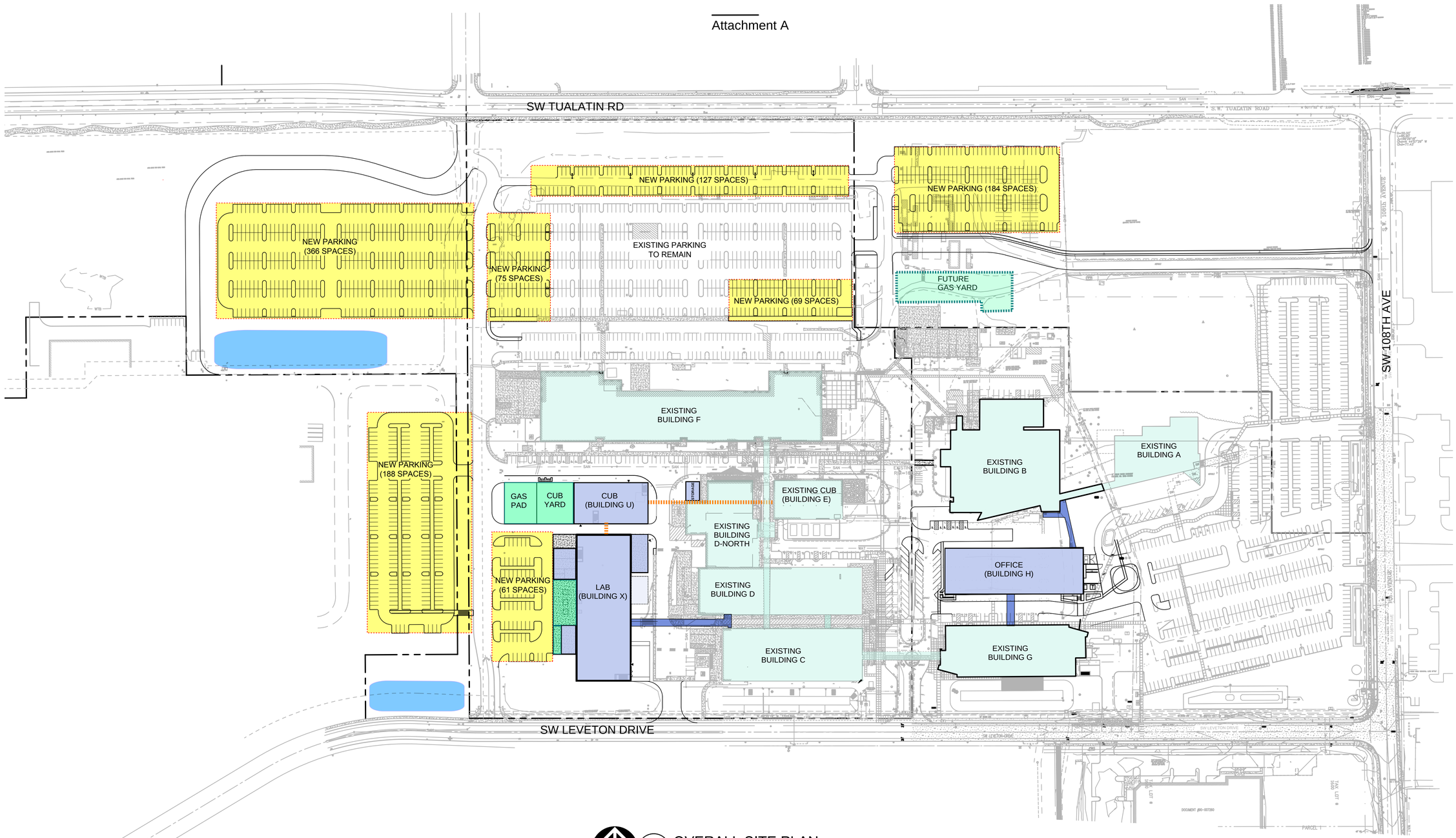


Brent Ahrend, PE
Associate Principal | Traffic Engineer

Enclosure(s): Attachment A – Site Plan
Attachment B – Existing Parking Rerouted Volumes
Attachment C – New TUX Trip Distribution
Attachment D – 2025 Existing Traffic Volumes
Attachment E – 2025 Turning Movement Counts

c: Steve Koper, Kim McMillan, Mike McCarthy, Abby McFetridge, Tony Doran, Hayden Ausland – City of Tualatin
Jinde Zhu – Washington County
John Russell – ODOT
Jennifer Otterness Majid, Mike Halvorson, Stefanie McEvers, Danielle Nonamaker, Paul Roessler, Todd Fosler – Lam Research
Joel Rabinovitz, Garth Appanaitis – DKS Associates
Suzannah Stanley, Bill Bezio, Megan Diaz, Mike Rueter, Clara Layton, Nicole Burrell – Mackenzie

Attachment A



1 / EX 2 OVERALL SITE PLAN

1" = 100'-0"

100 0 50 100 200 400 1:1

(IN FEET)

1 inch = **100** ft.

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Client

Lam RESEARCH

Project

LAM RESEARCH TUALATIN

TUX

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SHEET TITLE:

OVERALL SITE PLAN

SHEET:

EX 2

JOB NO. **2250180.00**

PRELIMINARY ONLY

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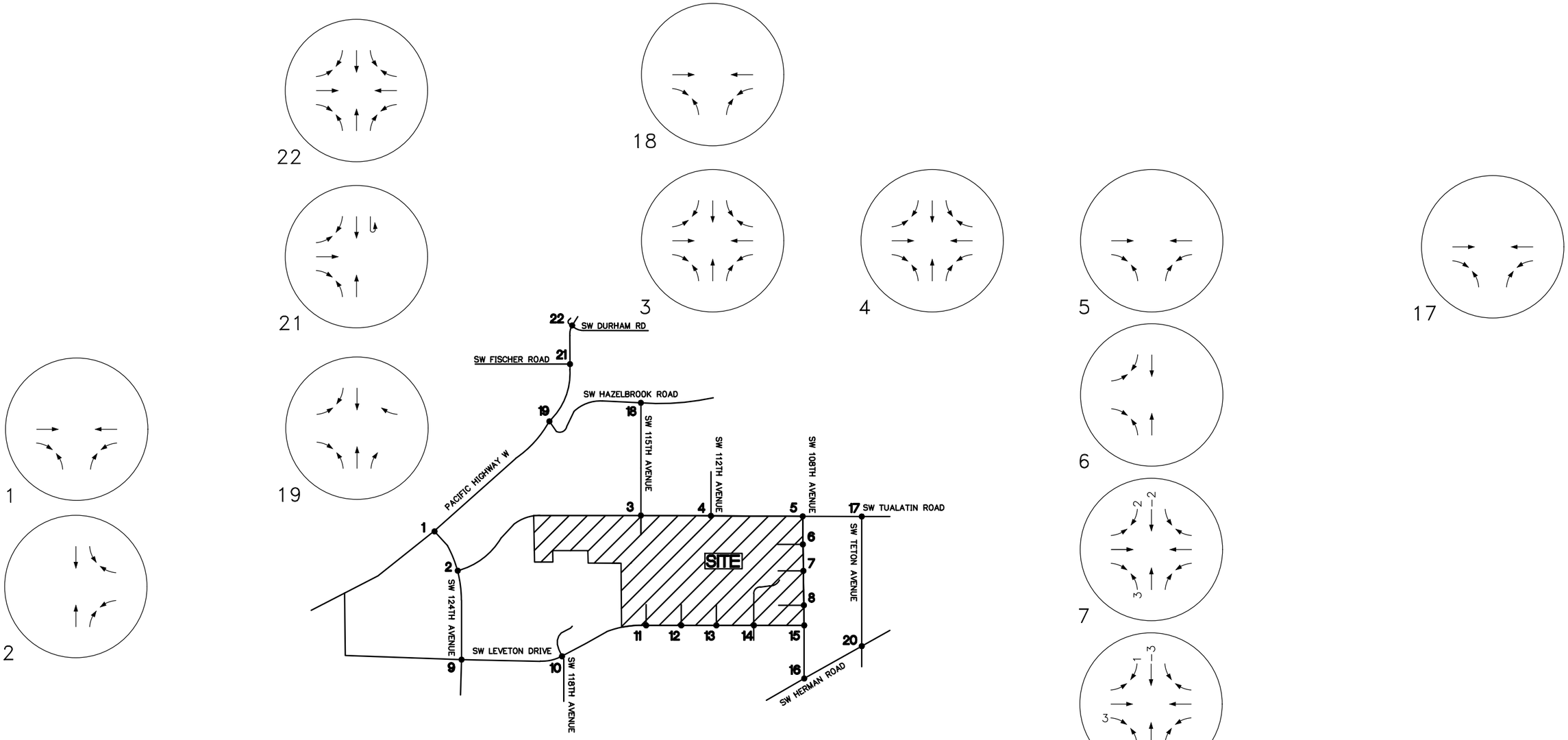

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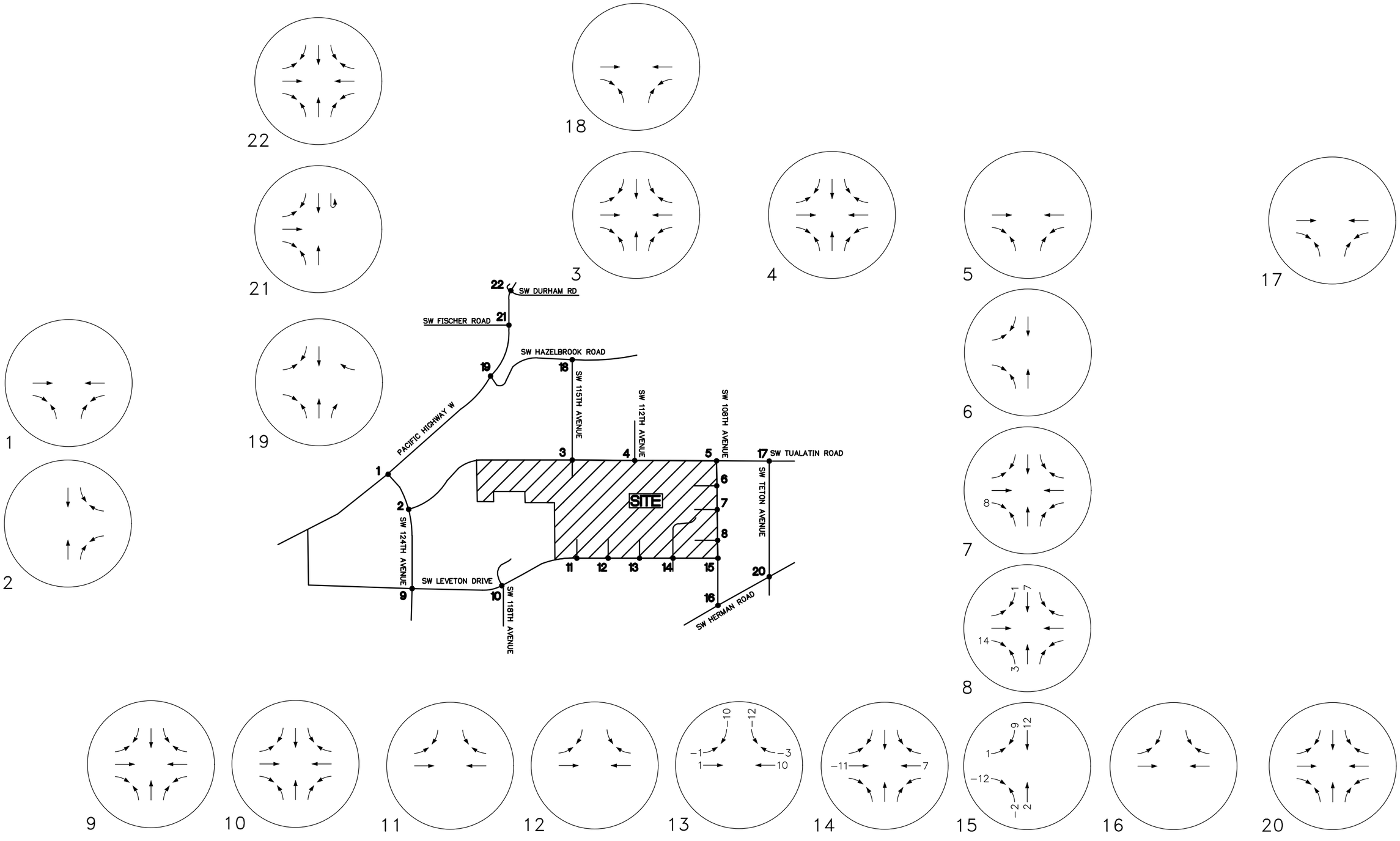
CHECKED BY: BTA
JOB NO: 225018000

EXISTING PARKING REROUTED VOLUMES - AM PEAK HOUR

LAM TUX
TUALATIN, OR

FIGURE
1A



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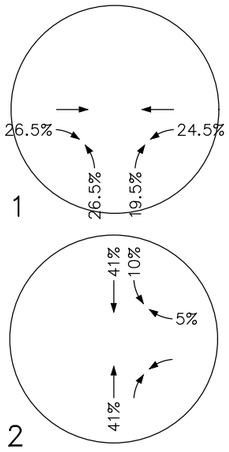
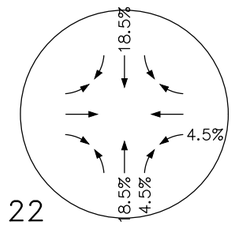
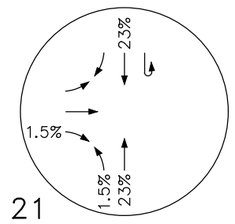
EXISTING PARKING REROUTED VOLUMES - PM PEAK HOUR

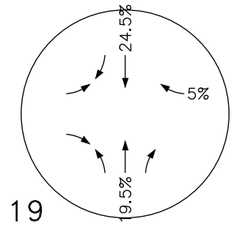
LAM TUX
TUALATIN, OR

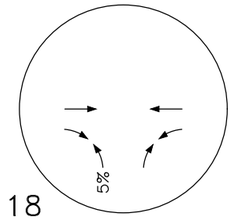
FIGURE
1B

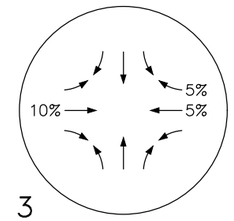


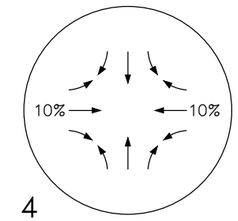


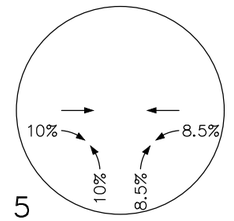


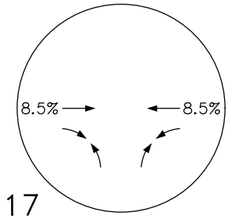


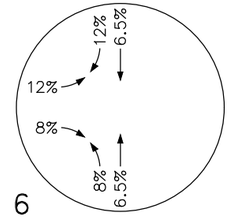


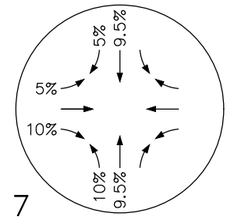


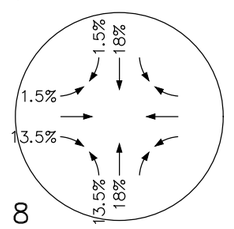


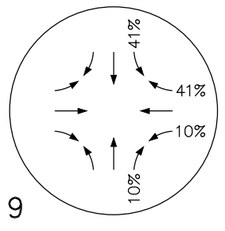


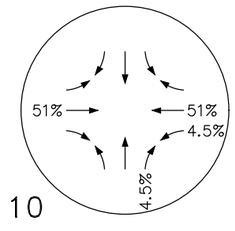


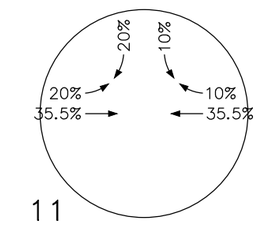


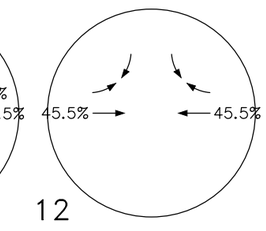


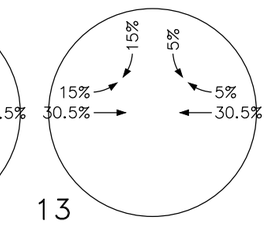


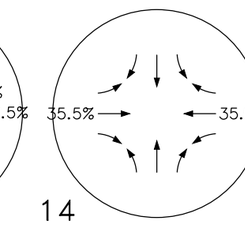


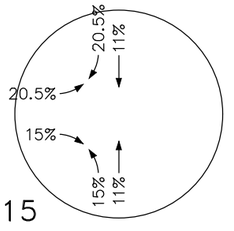


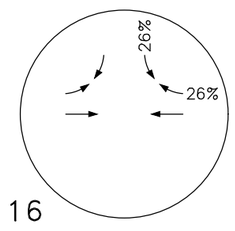


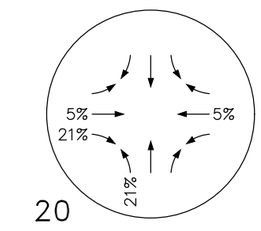












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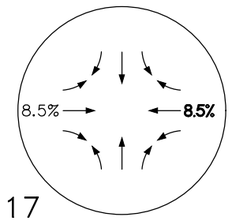
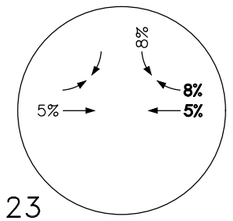
DATE: 6.24.2025
DRAWN BY: CNL
CHECKED BY: BTA
JOB NO: 225018000

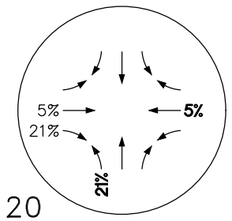
NEW TUX
TRIP DISTRIBUTION -
AM PEAK HOUR

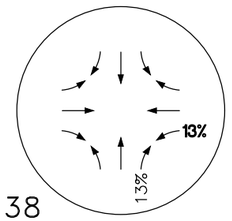
LAM TUX
TUALATIN, OR

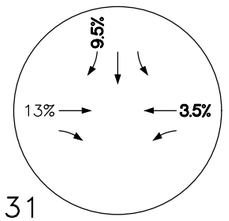
FIGURE
2A

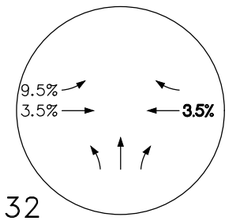


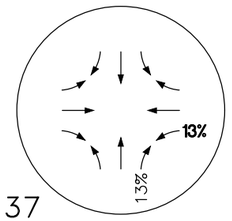


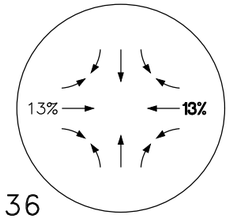


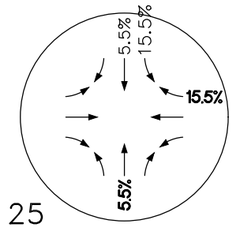


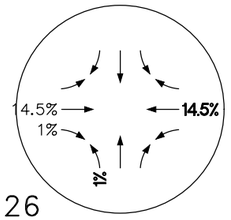


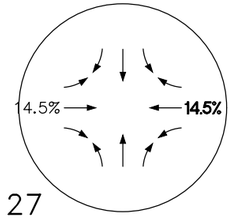


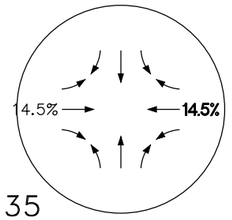


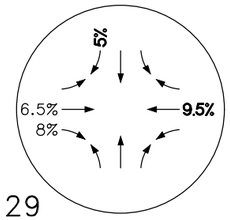


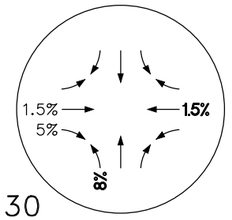


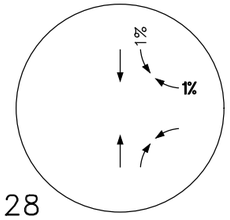


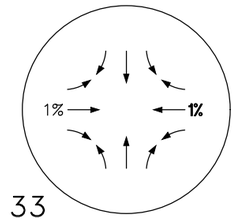


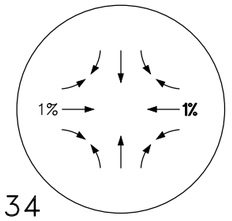












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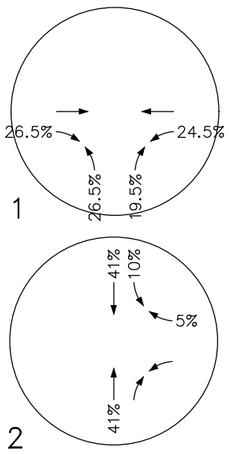

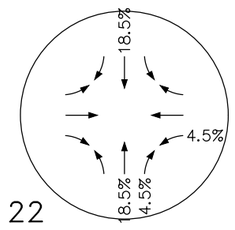

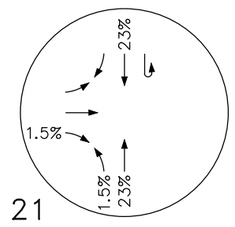

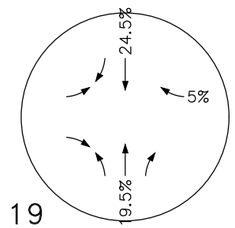

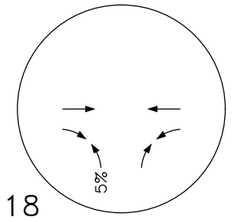

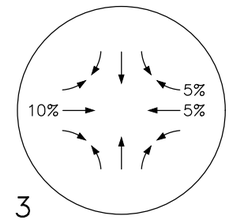

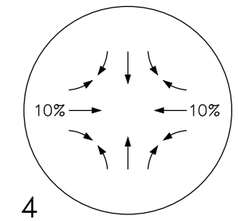

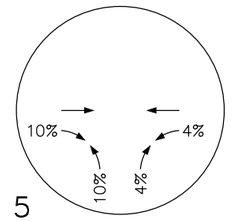

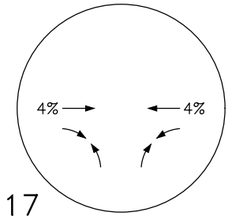

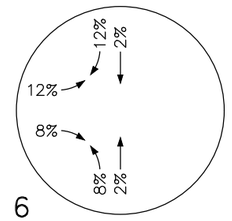

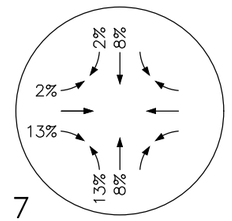

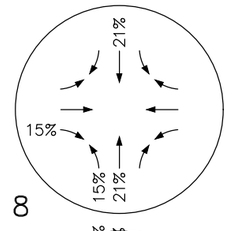

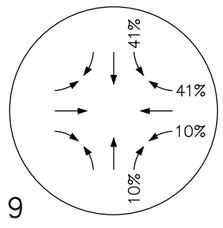

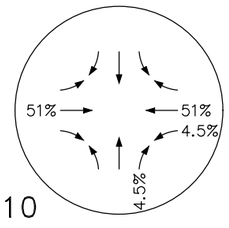

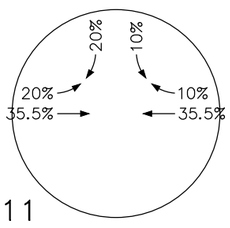

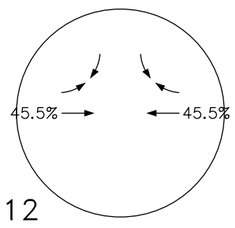

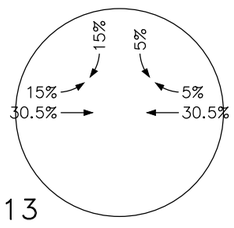

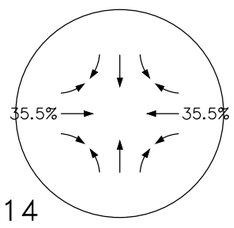

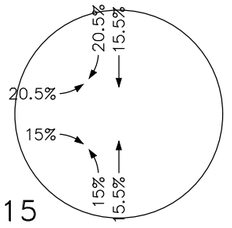

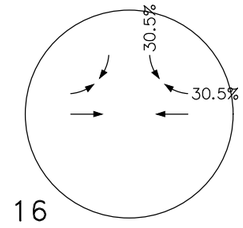

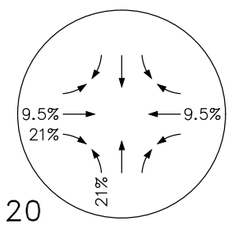

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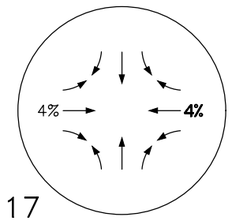

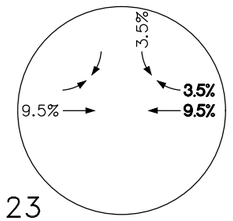

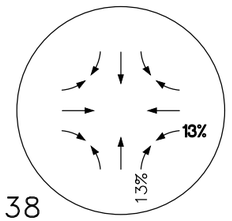

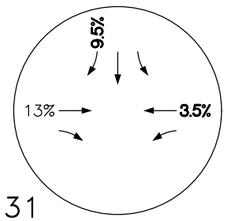

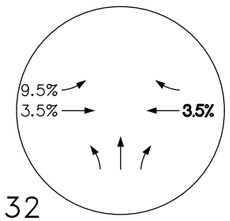

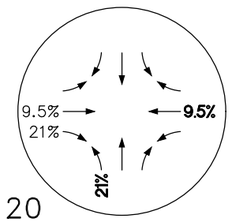

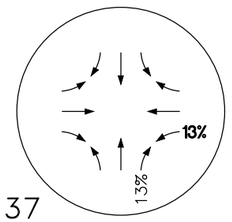

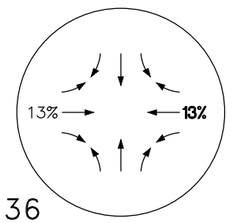

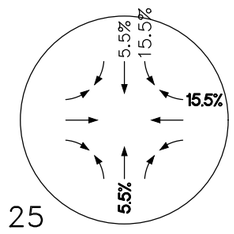

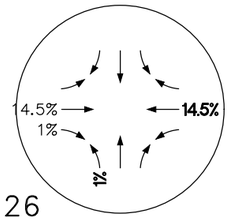

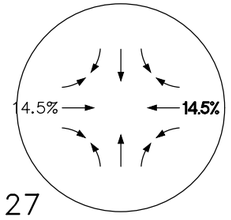

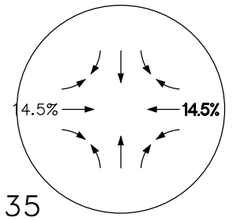

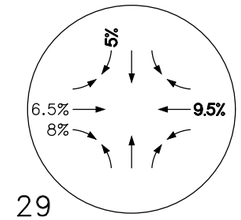

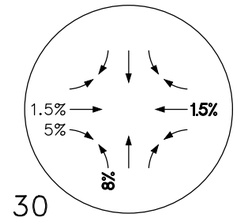

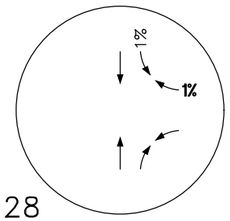

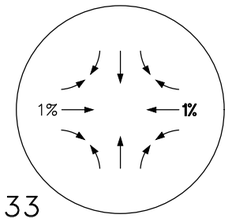

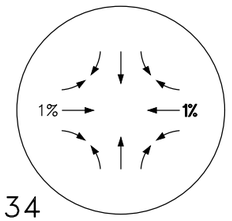

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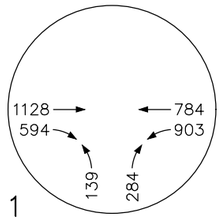
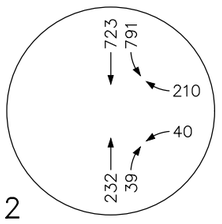
DATE: 6.24.2025
DRAWN BY: CNL
CHECKED BY: BTA
JOB NO: 225018000

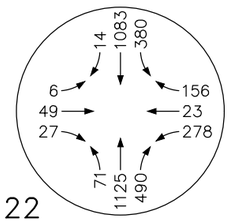
NEW TUX
TRIP DISTRIBUTION - PM PEAK HOUR

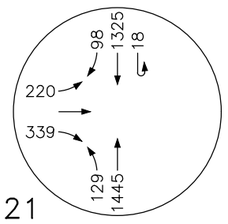
LAM TUX
TUALATIN, OR

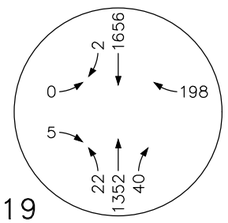
FIGURE
2D

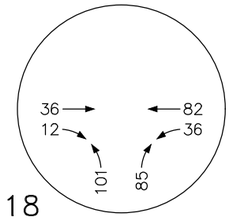


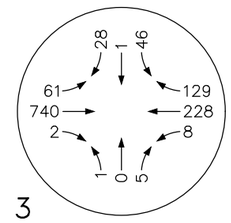


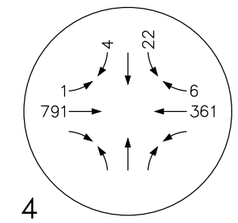


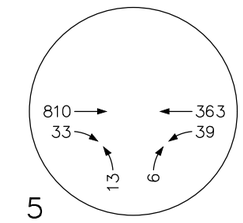


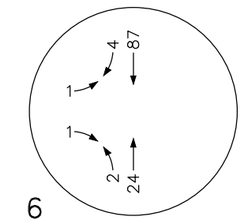


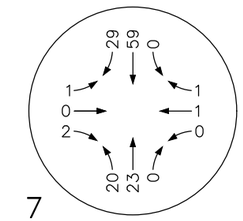


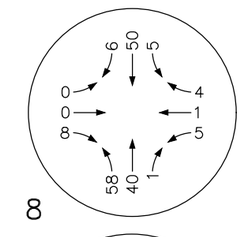


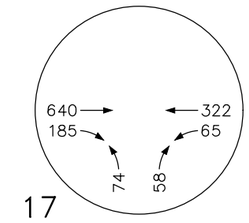


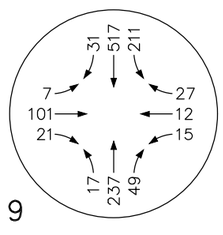


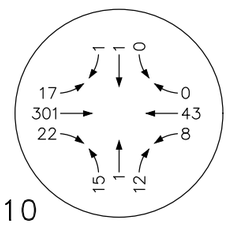


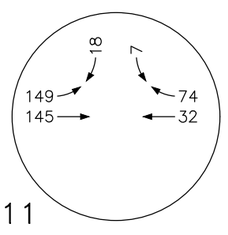


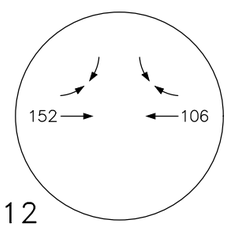


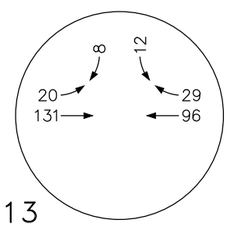


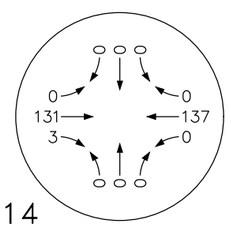


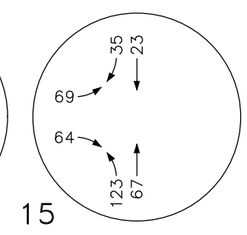


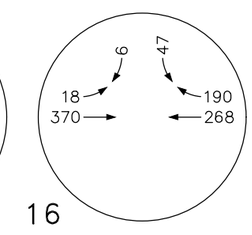


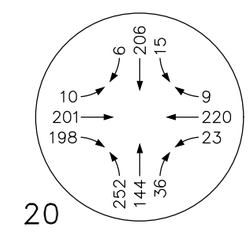












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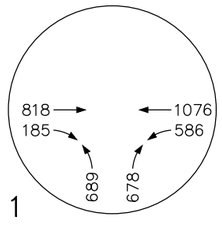
2025 EXISTING TRAFFIC VOLUMES - AM PEAK HOUR

LAM TUX
TUALATIN, OR

FIGURE
3A



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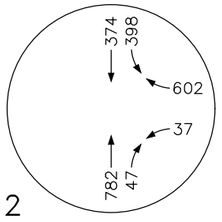

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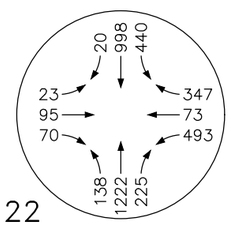

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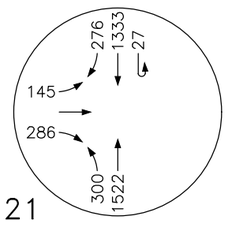

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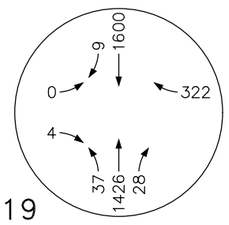

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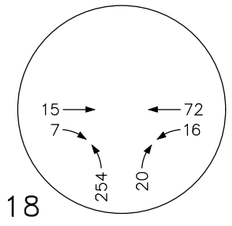

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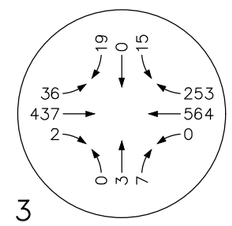

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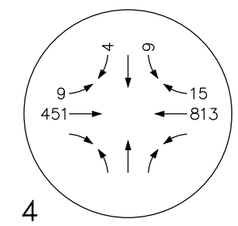

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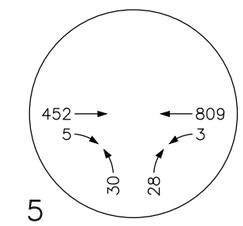

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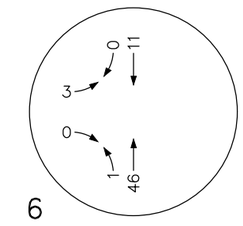

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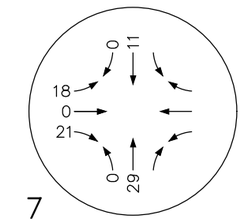

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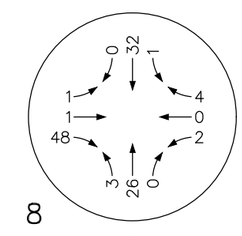

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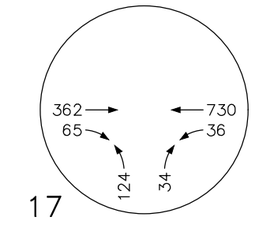

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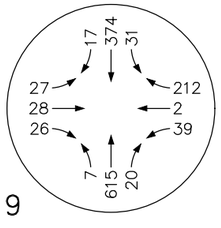

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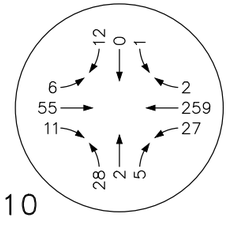

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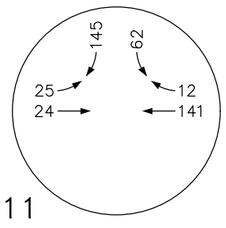

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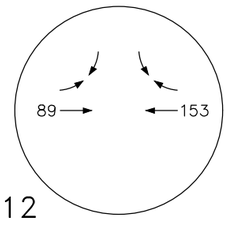

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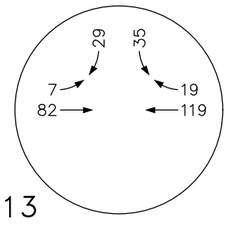

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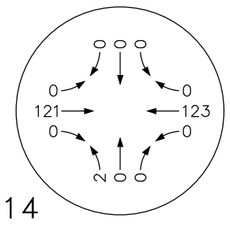

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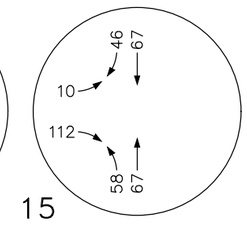

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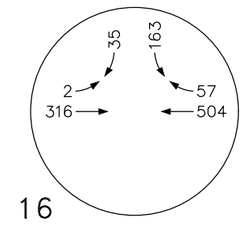

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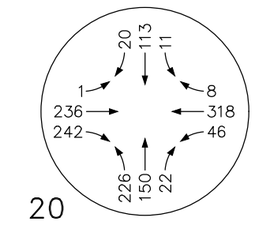

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CHECKED BY: BTA
JOB NO: 225018000

2025 EXISTING TRAFFIC VOLUMES - PM PEAK HOUR

LAM TUX
TUALATIN, OR

FIGURE
3B

Clara Layton

From: Mike McCarthy <mmccarthy@tualatin.gov>
Sent: Thursday, July 3, 2025 10:06 AM
To: Brent Ahrend; Clara Layton
Cc: Bill Bezio; Mike Rueter; Nicole Burrell; Suzannah Stanley; Megan Diaz; Hayden Ausland; Majid, Jen Otterness; Michael.Halvorson@lamresearch.com; McEvers, Stefanie; Nonamaker, Danielle; Roessler, Paul; Fosler, Todd; Joel Rabinovitz; Garth Appanaitis; Tony Doran; Abby McFetridge; Steve Koper; Aquilla Hurd-Ravich
Subject: RE: Tualatin Exp Lab/CUB/Bldg H
Attachments: 00LTR-City of Tualatin-LAM SMP Update TIA Scoping-250625.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Brent and Clara,

Thank you for submitting this draft scoping letter. We would not object to proceeding as planned with the following notes, modifications, and questions:

As we discussed at our meeting, please include the intersections of Hwy 99W with Fisher Rd and Durham Rd, which were included in the previous study area.

If Phase 1 is the buildings and Phase 2 is the parking and utilities, please describe where people will park for Phase 1 before Phase 2 is constructed, and show how this will be adequate parking for the demand without affecting traffic on public streets.

Table 1 ITE code lists 860 and should be corrected to 760 as reflected in the text. This does not change any assumptions/analysis

Trip Distribution/Routing - The overall distribution assumptions seem reasonable as based on zip code data. However for localized routing, it seems like more traffic leaving the site and heading north on Highway 99W might do so via Hazelbrook, especially with the internal drive aisle connecting to 115th. For traffic leaving the site and heading north on Highway 99W, the current assumption shows out of direction travel to 124th Avenue. Clarification on the traffic routing between these options should be provided.

Analysis Period - The narrative notes that the periods of 7:30 to 8:30 AM and 4:30 to 5:30 PM are proposed for the ODOT intersections based on "ODOT standards". It appears that this is just based on the system (and individual) intersection peaks for these locations, but can you include which ODOT document and standard you are referring to?

Intersection crash data - Should be analyzed generally following APM procedures including comparison to critical crash rates

Intersection queuing analysis - The narrative notes that it will be provided using a combination of SimTraffic and Synchro. SimTraffic outputs should be used unless there is a limitation that impacts the results, in which case other methods can be used as appropriate.

Analysis should use procedures from the current version of the Highway Capacity Manual (HCM 7 with ODOT-approved methodology) unless a good reason is documented for using different procedures.

Please include explanations of any Transportation Demand Management / Employee Commute Options programs that Lam uses or plans to use to help employees find options such as carpooling, transit, walking, or cycling in order to commute to work by means other than driving themselves.

Please include complete explanations for all assumptions made – such as the direction of trips, and estimates about which driveways they would use.

Our correspondence with ODOT and Washington County have not indicated a need for any further adjustments to this scope.

While we have attempted to find all the items that would need adjusting, it is possible that additional adjustments may need to be made to the final study as we see the results and/or as additional issues/questions come to light.

Thanks,

Mike McCarthy
Tualatin City Engineer
Phone: 503.691.3674
Cell: 971.666.0000

From: Brent Ahrend <BAhrend@mcknze.com>
Sent: Wednesday, June 25, 2025 1:24 PM
To: Mike McCarthy <mmccarthy@tualatin.gov>; Steve Koper <skoper@tualatin.gov>; Kim McMillan <kmcmillan@tualatin.gov>; Abby McFetridge <Amcfetridge@tualatin.gov>; Tony Doran <TDORAN@tualatin.gov>; Hayden Ausland <hausland@tualatin.gov>
Cc: Bill Bezio <WBezio@mcknze.com>; Mike Rueter <MRueter@mcknze.com>; Nicole Burrell <NBurrell@mcknze.com>; Suzannah Stanley <SStanley@mcknze.com>; Megan Diaz <MDiaz@mcknze.com>; Clara Layton <CLayton@mcknze.com>; Majid, Jen Otterness <jennifer.otterness@lamresearch.com>; Michael.Halvorson@lamresearch.com; McEvers, Stefanie <stefanie.mcevers@lamresearch.com>; Nonamaker, Danielle <danielle.nonamaker@lamresearch.com>; Roessler, Paul <paul.roessler@lamresearch.com>; Fosler, Todd <todd.fosler@lamresearch.com>; Joel Rabinovitz <joel.rabinovitz@dksassociates.com>; Garth Appanaitis <gaa@dksassociates.com>
Subject: Tualatin Exp Lab/CUB/Bldg H

Mike,

Please see the attached scoping letter for the updated Lam TUX site plan. Our traffic analysis will be based on this updated scoping.

We understand you will forward this to Washington County and ODOT staff for their review and input.

Let us know if you have any questions.

Thanks,

Brent Ahrend PE
D 971-346-3781 **C** 503-705-7554

Transportation Planning
Associate Principal
Professional Licenses & Certifications

Clara Layton

From: Abby McFetridge <Amcfetridge@tualatin.gov>
Sent: Tuesday, July 15, 2025 4:02 PM
To: Clara Layton; Brent Ahrend
Cc: Mike McCarthy; Rabinovitz, Joel
Subject: FW: Tualatin Exp Lab/CUB/Bldg H

Follow Up Flag: Follow up
Flag Status: Flagged

Abby McFetridge, EI
Engineering Associate
Phone: 503.691.3020

From: RUSSELL John <John.RUSSELL@odot.oregon.gov>
Sent: Monday, June 30, 2025 12:29 PM
To: Mike McCarthy <mmccarthy@tualatin.gov>; Jinde Zhu <jinde_zhu@washingtoncountyor.gov>; ODOT_R1_DevRev <ODOT_R1_DevRev@odot.oregon.gov>
Cc: Abby McFetridge <Amcfetridge@tualatin.gov>; Samuel Banceu <sbanceu@tualatin.gov>; Joel Rabinovitz <joel.rabinovitz@dksassociates.com>; Garth Appanaitis <gaa@dksassociates.com>
Subject: RE: Tualatin Exp Lab/CUB/Bldg H

Mike,

I've reviewed the scoping memo and **ODOT does not have any concerns with the proposed scope**. The only significant changes related to ODOT facilities are covered with the analysis of OR 99W at both SW 124th Ave and SW Hazelbrook Rd.

Thank you for taking the time to keep ODOT involved with this process.

John Russell, PE [he/him]
Traffic Analysis Engineer
Oregon Dept of Transportation
John.Russell@odot.oregon.gov
503.731.8282

From: Mike McCarthy <mmccarthy@tualatin.gov>
Sent: Friday, June 27, 2025 5:24 PM
To: RUSSELL John <John.RUSSELL@odot.oregon.gov>; Jinde Zhu <jinde_zhu@washingtoncountyor.gov>; ODOT_R1_DevRev <ODOT_R1_DevRev@odot.oregon.gov>
Cc: Abby McFetridge <Amcfetridge@tualatin.gov>; Samuel Banceu <sbanceu@tualatin.gov>; Joel Rabinovitz <joel.rabinovitz@dksassociates.com>; Garth Appanaitis <gaa@dksassociates.com>
Subject: FW: Tualatin Exp Lab/CUB/Bldg H

This message was sent from outside the organization. Treat attachments, links and requests with caution. Be conscious of the information you share if you respond.

Hello,

Attached is a scoping letter from Mackenzie for the updated traffic study for their revised layout. Please get us any comments you have next week.

Thanks,

Mike McCarthy
Tualatin City Engineer
Phone: 503.691.3674
Cell: 971.666.0000

From: Mike McCarthy
Sent: Wednesday, June 25, 2025 2:27 PM
To: Brent Ahrend <BAhrend@mcknze.com>; Steve Koper <skoper@tualatin.gov>; Aquilla Hurd-Ravich <ahurd-ravich@tualatin.gov>; Abby McFetridge <Amcfetridge@tualatin.gov>; Tony Doran <TDORAN@tualatin.gov>; Hayden Ausland <hausland@tualatin.gov>
Cc: Bill Bezio <WBezio@mcknze.com>; Mike Rueter <MRueter@mcknze.com>; Nicole Burrell <NBurrell@mcknze.com>; Suzannah Stanley <SStanley@mcknze.com>; Megan Diaz <MDiaz@mcknze.com>; Clara Layton <CLayton@mcknze.com>; Majid, Jen Otterness <jennifer.otterness@lamresearch.com>; Michael.Halvorson@lamresearch.com; McEvers, Stefanie <stefanie.mcevers@lamresearch.com>; Nonamaker, Danielle <danielle.nonamaker@lamresearch.com>; Roessler, Paul <paul.roessler@lamresearch.com>; Fosler, Todd <todd.fosler@lamresearch.com>; Joel Rabinovitz <joel.rabinovitz@dksassociates.com>; Garth Appanaitis <gaa@dksassociates.com>
Subject: RE: Tualatin Exp Lab/CUB/Bldg H

Thanks Brent – We've received this and will be reviewing it.

Mike McCarthy
Tualatin City Engineer
Phone: 503.691.3674
Cell: 971.666.0000

From: Brent Ahrend <BAhrend@mcknze.com>
Sent: Wednesday, June 25, 2025 1:24 PM
To: Mike McCarthy <mmccarthy@tualatin.gov>; Steve Koper <skoper@tualatin.gov>; Kim McMillan <kmcmillan@tualatin.gov>; Abby McFetridge <Amcfetridge@tualatin.gov>; Tony Doran <TDORAN@tualatin.gov>; Hayden Ausland <hausland@tualatin.gov>
Cc: Bill Bezio <WBezio@mcknze.com>; Mike Rueter <MRueter@mcknze.com>; Nicole Burrell <NBurrell@mcknze.com>; Suzannah Stanley <SStanley@mcknze.com>; Megan Diaz <MDiaz@mcknze.com>; Clara Layton <CLayton@mcknze.com>; Majid, Jen Otterness <jennifer.otterness@lamresearch.com>; Michael.Halvorson@lamresearch.com; McEvers, Stefanie <stefanie.mcevers@lamresearch.com>; Nonamaker, Danielle <danielle.nonamaker@lamresearch.com>; Roessler, Paul <paul.roessler@lamresearch.com>; Fosler, Todd <todd.fosler@lamresearch.com>; Joel Rabinovitz <joel.rabinovitz@dksassociates.com>; Garth Appanaitis <gaa@dksassociates.com>
Subject: Tualatin Exp Lab/CUB/Bldg H

Mike,

Please see the attached scoping letter for the updated Lam TUX site plan. Our traffic analysis will be based on this updated scoping.

We understand you will forward this to Washington County and ODOT staff for their review and input.

Let us know if you have any questions.

Thanks,

Brent Ahrend PE
D 971-346-3781 **C** 503-705-7554

Transportation Planning
Associate Principal
Professional Licenses & Certifications

Mackenzie.
ARCHITECTURE ▪ INTERIORS ▪ STRUCTURAL ENGINEERING
CIVIL ENGINEERING ▪ LAND USE PLANNING ▪ LANDSCAPE ARCHITECTURE
PORTLAND, OR | VANCOUVER, WA | SEATTLE, WA | SACRAMENTO, CA www.MACKENZIE.inc

Disclaimer

APPENDIX C.

TRANSIT INFORMATION

97-Tualatin-Sherwood Rd

NORTH

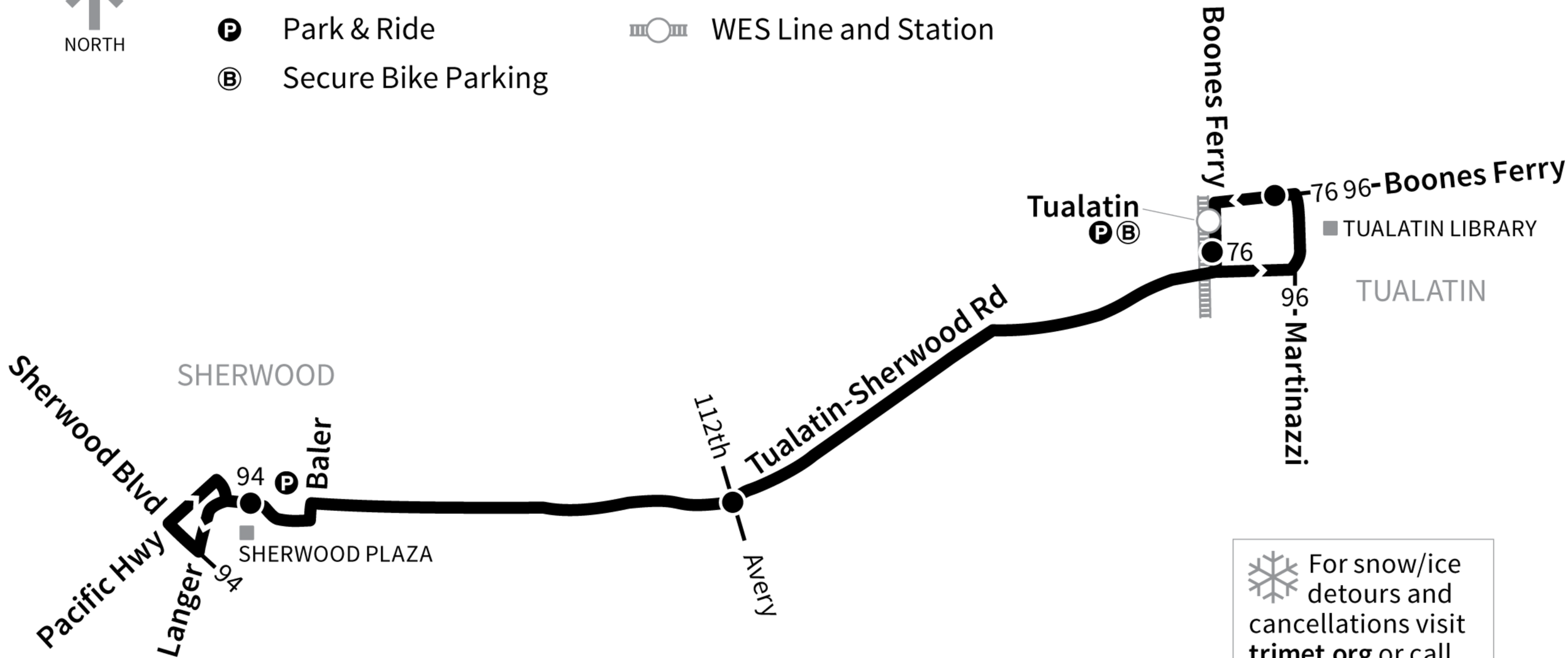
Route/Schedule Stop

Park & Ride

Secure Bike Parking

–35– Transfer Nearby

WES Line and Station



For snow/ice detours and cancellations visit **trimet.org** or call **503-238-7433** (RIDE).

TRIMET

97-Tualatin-Sherwood Rd

Weekday **To SW Langer Dr/Sherwood Plaza**

SW Boones Ferry Rd & Nyberg Stop ID 13079	SW Tualatin-Sherwood Rd & 112th Stop ID 13830	SW Langer & Sherwood Plaza Stop ID 9188
6:18	6:23	6:32
7:18	7:23	7:32
8:18	8:23	8:32
9:18	9:23	9:32
3:33	**3:39**	**3:50**
4:43	**4:49**	**5:00**
5:53	**5:59**	**6:10**

Times in darker print are p.m.

Please note: Schedules may change without notice by up to three minutes to relieve overcrowding or adjust to traffic conditions. Service can also be affected by construction, accidents and weather conditions. You can check for any current detours or service disruptions at *trimet.org/alerts* or call 503-238-RIDE (7433) for real-time arrival information from TransitTracker™. All buses, MAX trains and streetcars are accessible to people with disabilities.

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97-Tualatin-Sherwood Rd

Weekday **To Tualatin WES Station**

16100 Block SW Langer Stop ID 9190	SW Tualatin-Sherwood Rd & Avery Stop ID 13843	SW Boones Ferry Rd & Martinazzi Stop ID 13078	SW Boones Ferry Rd & Nyberg Stop ID 13079
6:58	7:06	7:16	7:18
8:00	8:08	8:16	8:18
9:00	9:08	9:16	9:18
3:12	**3:20**	**3:31**	**3:33**
4:21	**4:29**	**4:41**	**4:43**
5:30	**5:38**	**5:51**	**5:53**
6:42	**6:50**	**7:01**	**7:03**

Times in darker print are p.m.

Please note: Schedules may change without notice by up to three minutes to relieve overcrowding or adjust to traffic conditions. Service can also be affected by construction, accidents and weather conditions. You can check for any current detours or service disruptions at *trimet.org/alerts* or call 503-238-RIDE (7433) for real-time arrival information from TransitTracker™. All buses, MAX trains and streetcars are accessible to people with disabilities.

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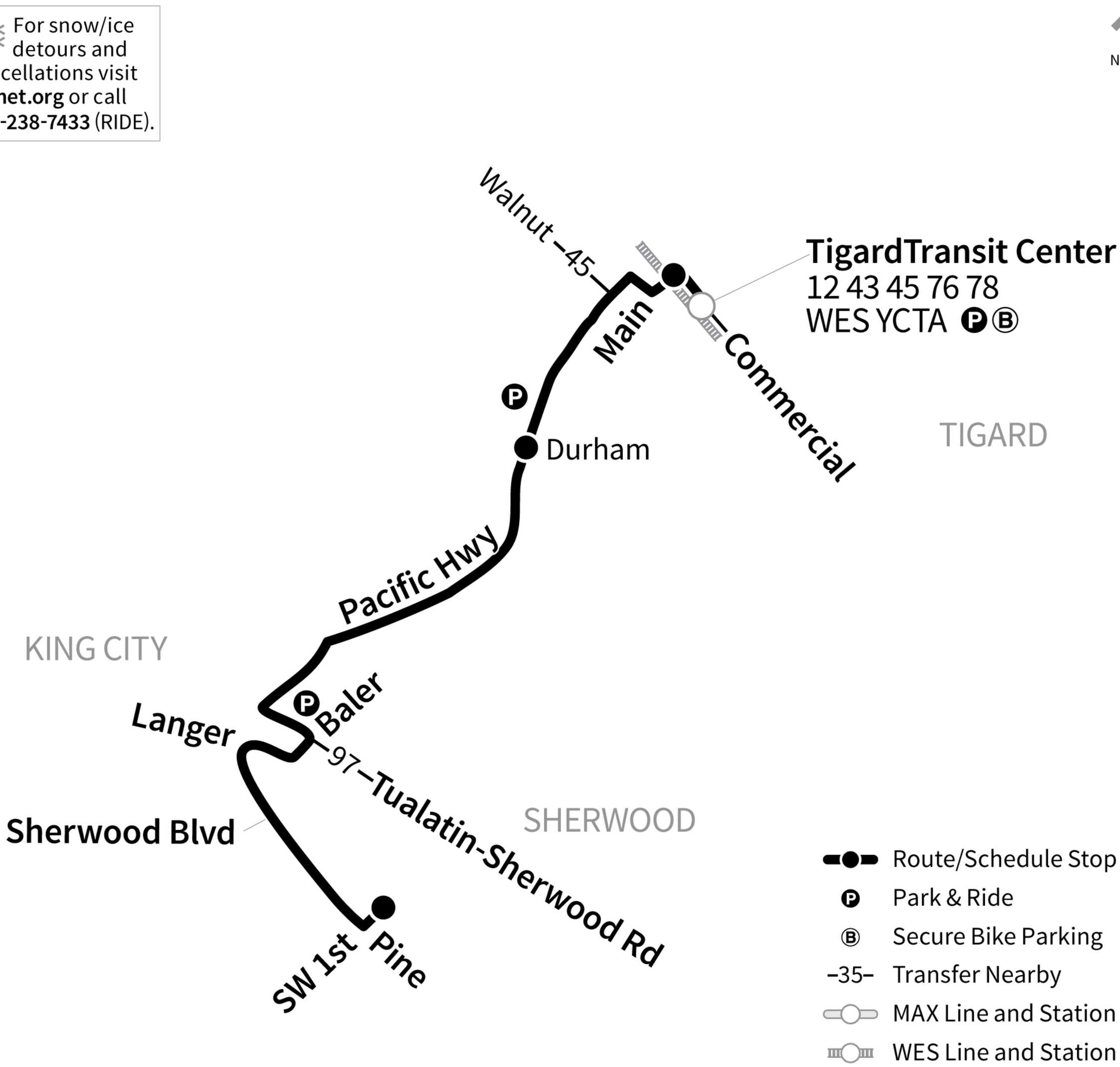
94-Tigard/Sherwood

For snow/ice detours and cancellations visit **trimet.org** or call **503-238-7433** (RIDE).



TRIMET

94-Tigard/Sherwood

Weekday — **To Tigard Transit Center**

SW 1st & Pine Stop ID 14108	SW Pacific Hwy & Durham Stop ID 8792	Tigard Transit Center
4:32	4:46	4:53
5:12	5:26	5:33
5:47	6:01	—
6:08	6:23	—
6:27	6:43	—
6:47	7:03	—
7:07	7:23	—
7:27	7:43	—
7:47	8:03	—
8:07	8:23	—
8:27	8:43	—
8:47	9:03	—
9:07	9:23	—
9:27	9:43	—
9:47	10:03	—
10:07	10:23	—
10:27	10:43	—
10:47	11:03	—
11:07	11:23	—
11:27	11:44	—
11:47	**12:04**	—
12:07	**12:24**	—
12:27	**12:44**	—
12:47	**1:04**	—
1:07	**1:24**	—
1:27	**1:44**	—
1:47	**2:04**	—
2:07	**2:24**	—
2:27	**2:44**	—
2:47	**3:05**	—
3:07	**3:25**	—
3:27	**3:45**	—
3:47	**4:05**	—
4:07	**4:25**	—
4:27	**4:45**	—
4:47	**5:05**	—
5:07	**5:25**	—
5:27	**5:45**	—
5:47	**6:05**	—
6:07	**6:25**	—
6:27	**6:44**	—
6:47	**7:03**	—
7:07	**7:23**	—
7:37	**7:53**	—
8:07	**8:23**	—
8:36	**8:51**	—
9:07	**9:22**	—
9:37	**9:52**	**10:00**
10:09	**10:22**	—
11:22	**11:35**	—

Times in darker print are p.m.

Please note: Schedules may change without notice by up to three minutes to relieve overcrowding or adjust to traffic conditions. Service can also be affected by construction, accidents and weather conditions. You can check for any current detours or service disruptions at *trimet.org/alerts* or call 503-238-RIDE (7433) for real-time arrival information from TransitTracker™. All buses, MAX trains and streetcars are accessible to people with disabilities.

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TRIMET

94-Tigard/Sherwood

Weekday **To Sherwood**

Tigard Transit Center Stop ID 10180	SW Pacific Hwy & Durham Stop ID 8644	SW 1st & Pine Stop ID 14108
6:04	6:12	6:27
6:23	6:31	6:47
6:43	6:51	7:07
7:02	7:10	7:27
7:21	7:29	7:47
7:40	7:49	8:07
8:00	8:09	8:27
8:20	8:29	8:47
8:40	8:49	9:07
8:59	9:09	9:27
9:19	9:29	9:47
9:39	9:49	10:07
9:59	10:09	10:27
10:18	10:29	10:47
10:38	10:49	11:07
10:58	11:09	11:27
11:18	11:29	11:47
11:38	11:49	**12:07**
11:58	**12:09**	**12:27**
12:18	**12:29**	**12:47**
12:38	**12:49**	**1:07**
12:58	**1:09**	**1:27**
1:18	**1:29**	**1:47**
1:38	**1:49**	**2:07**
1:58	**2:09**	**2:27**
2:18	**2:29**	**2:47**
2:38	**2:49**	**3:07**
2:58	**3:09**	**3:27**
3:18	**3:29**	**3:47**
3:38	**3:49**	**4:07**
3:58	**4:09**	**4:27**
4:18	**4:29**	**4:47**
4:38	**4:49**	**5:07**
4:57	**5:08**	**5:27**
5:17	**5:28**	**5:47**
5:38	**5:49**	**6:07**
5:59	**6:10**	**6:27**
6:19	**6:30**	**6:47**
6:39	**6:50**	**7:07**
7:09	**7:20**	**7:37**
7:40	**7:51**	**8:07**
8:11	**8:21**	**8:36**
8:42	**8:52**	**9:07**
9:14	**9:23**	**9:37**
9:47	**9:56**	**10:09**
10:19	**10:27**	**10:40**
11:01	**11:09**	**11:22**
11:47	**11:54**	12:07
12:18	12:25	—
1:04	1:11	—

Times in darker print are p.m.

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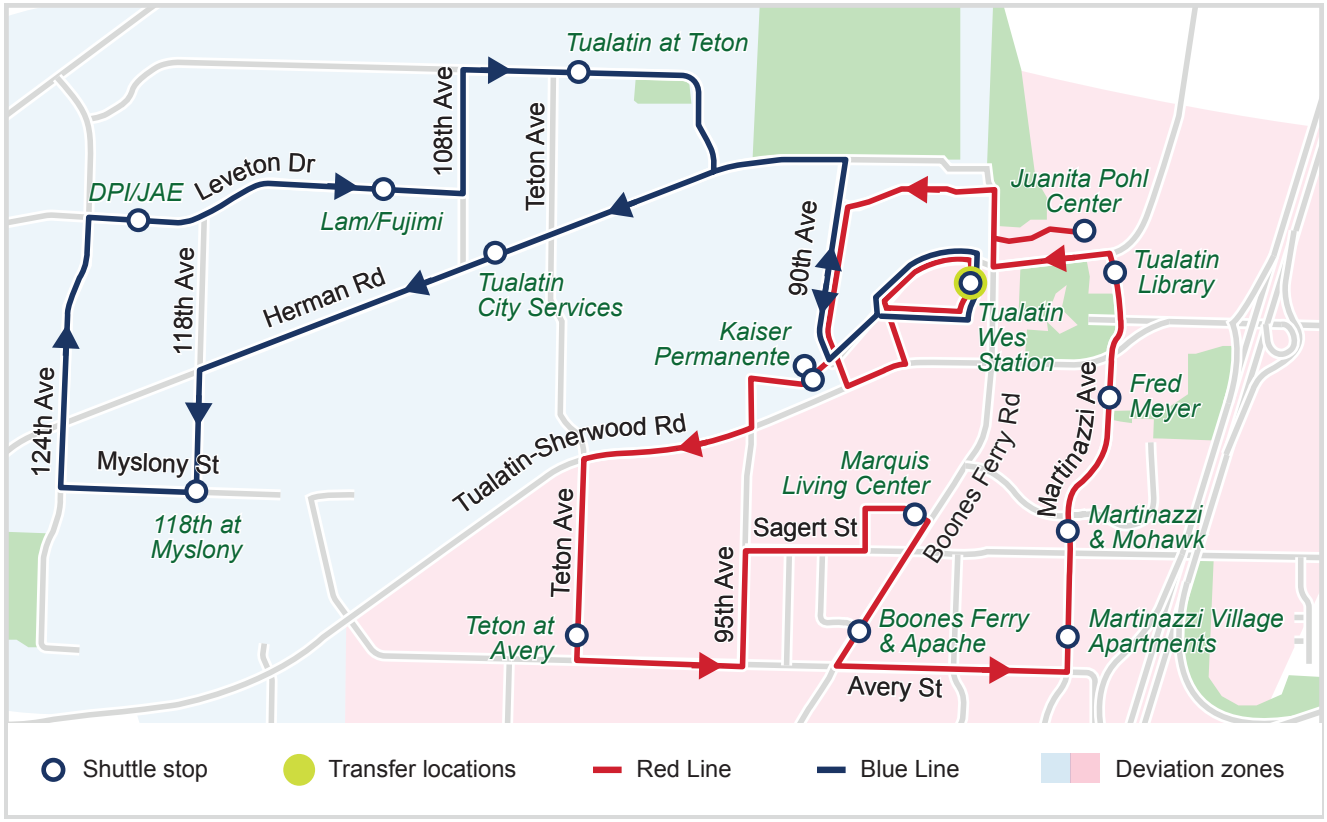


CAR SEAT REQUIREMENT

Child passengers must be restrained in child safety seats until they weigh forty pounds or reach the upper weight limit for the car seat in use. Infants must ride rear-facing until they reach two years of age. Ride Connection does not provide/ install child safety seats.

HOLIDAY CLOSURES

Service will not be available on: New Year's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving Day, Christmas Day. Limited service on Christmas and New Year's Eve. If a holiday falls on Saturday, there is no service on Friday; if a holiday falls on Sunday, there is no service on Monday. Information about closures available at **rideconnection.org**

SEVERE WEATHER

Information about closures available at **rideconnection.org**

COVID-19 SAFETY

All our vehicles and drivers follow CDC protocols for COVID safe practices.

CONTACT US

503-226-0700 | TTY: 711
info@rideconnection.org

Tualatin Shuttle is operated by: Ride Connection

To link accessible, responsive transportation alternatives with community and individual needs.

We respect civil rights. For a copy of our policy or to request a brochure in an alternate format call the number above.

Updated December 2022



We'll get you there.

Connect with

Tualatin Shuttle Blue & Red Line

Free weekday service open to the public

Ride CONNECTION

Tualatin Shuttle

PM times in bold
Transfers TM TriMet

Blue Line Schedule

Southbound WES Arrival Time TM	Tualatin WES Station TM	Tualatin City Services	118th at Myslony	DPI/JAE	SW Leveton (Fujimi & LAM Research)	SW Tualatin Rd & SW Teton Ave	Tualatin WES Station TM	Northbound WES Depart Time TM
	5:41	5:46	5:51	5:54	5:55	5:57	6:17	6:11
6:25	6:26	6:31	6:36	6:39	6:40	6:42	7:02	6:56
7:10	7:11	7:16	7:21	7:24	7:25	7:27	7:47	
7:55	7:56	8:01	8:06	8:09	8:10	8:12	8:32	
8:40	8:41	8:46	8:51	8:54	8:55	8:57	9:17	
9:25	9:26	9:31	9:36	9:39	9:40	9:42	10:02	
	3:03	**3:08**	**3:13**	**3:16**	**3:17**	**3:19**	**3:24**	**3:38**
	3:33	**3:38**	**3:43**	**3:46**	**3:47**	**3:49**	**4:09**	**4:23**
	4:18	**4:23**	**4:28**	**4:31**	**4:32**	**4:34**	**4:54**	**5:08**
	5:03	**5:08**	**5:13**	**5:16**	**5:17**	**5:19**	**5:39**	**5:53**
	5:48	**5:53**	**5:58**	**6:01**	**6:02**	**6:04**	**6:24**	**6:38**
6:07	**6:33**	**6:38**	**6:43**	**6:46**	**6:47**	**6:49**	**7:09**	

Red Line Schedule

Southbound WES Arrival Time TM	Tualatin WES Station TM	Kaiser Permanente	SW Teton Ave & SW Avery St	Marquis Living Center	Fred Meyer	Tualatin Library	Juanita Pohl Center	Tualatin WES Station TM	Northbound WES Depart Time TM
	5:02	5:06	5:10	5:18	5:24	5:25	5:30	5:38	
	5:47	5:51	5:55	6:03	6:09	6:10	6:15	6:23	
6:25	6:32	6:36	6:40	6:48	6:54	6:55	7:00	7:08	
7:10	7:17	7:21	7:25	7:33	7:39	7:40	7:45	7:53	
7:55	8:02	8:06	8:10	8:18	8:24	8:25	8:30	8:38	
	8:53	8:57	9:01	9:09	9:15	9:16	9:21	9:29	
	12:15	**12:19**	**12:23**	**12:31**	**12:37**	**12:38**	**12:43**	**12:51**	
	1:00	**1:04**	**1:08**	**1:16**	**1:22**	**1:23**	**1:28**	**1:36**	
	1:50	**1:54**	**1:58**	**2:06**	**2:12**	**2:13**	**2:18**	**2:26**	
	3:00	**3:04**	**3:08**	**3:16**	**3:22**	**3:23**	**3:28**	**3:36**	**3:38**
	3:42	**3:46**	**3:50**	**3:58**	**4:04**	**4:05**	**4:10**	**4:18**	**4:23**
	4:24	**4:28**	**4:32**	**4:40**	**4:46**	**4:47**	**4:52**	**5:00**	**5:08**
	5:14	**5:18**	**5:22**	**5:30**	**5:36**	**5:37**	**5:42**	**5:50**	**5:53**
	5:56	**6:00**	**6:04**	**6:12**	**6:18**	**6:19**	**6:24**	**6:32**	**6:38**
	6:38	**6:42**	**6:46**	**6:54**	**7:00**	**7:01**	**7:06**	**7:14**	

FLAG TUALATIN SHUTTLE DOWN

If you are on a residential street along the route, and not near a designated stop, you can “flag” or simply wave using your full arm to signal the Tualatin Shuttle bus driver to stop. Be sure to stand on the same side of the road as the bus’ direction of travel. Please identify a safe location, where the bus can stop without creating a hazard, and where the driver can see you in plenty of time to stop.

DEVIATIONS

We will deviate off the route to pick you up or drop you off for one leg of your trip. Deviation requests must be called in one day in advance. To call in for a deviation, please call 503-226-0700 between 7:30am and 5pm Monday-Friday. TTY: 711.

Deviations are not reservations. If the shuttle reaches capacity, we will make every effort to accomodate you.

The service operates **Monday through Friday** and it´s **free**.

Ride CONNECTION

APPENDIX D.

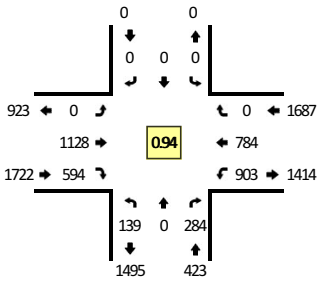
TRAFFIC COUNT SUMMARIES

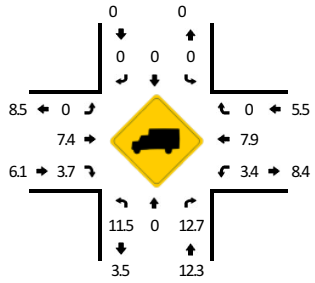
Type of peak hour being reported: System-wide Peak | Method for determining peak hour: Total Entering Volume

LOCATION: SW 124th Ave -- SW Pacific Hwy
CITY/STATE: Tualatin, OR

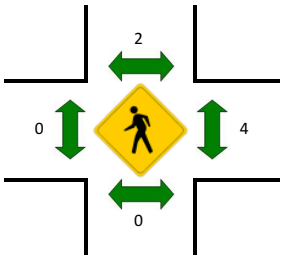
QC JOB #: 17042801
DATE: Tue, May 13 2025

Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

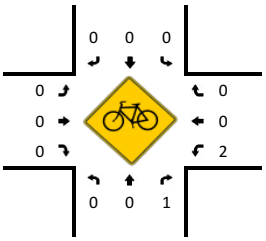


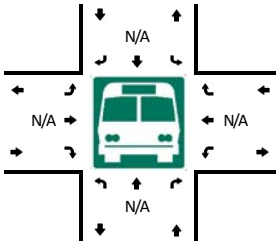


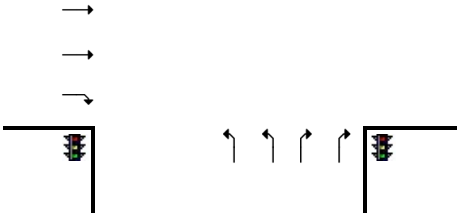
TRUE DATA TO IMPROVE MOBILITY

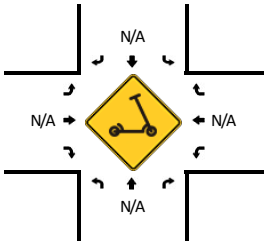












15-Min Count Period Beginning At	SW 124th Ave (Northbound)				SW 124th Ave (Southbound)				SW Pacific Hwy (Eastbound)				SW Pacific Hwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	29	0	50	0	0	0	0	0	0	307	76	0	145	196	0	0	803	
7:15 AM	33	0	68	0	0	0	0	0	0	339	121	0	198	199	0	0	958	
7:30 AM	34	0	76	0	0	0	0	0	0	282	146	0	164	214	0	0	916	
7:45 AM	41	0	65	0	0	0	0	0	0	252	178	0	286	193	0	0	1015	3692
8:00 AM	27	0	67	0	0	0	0	0	0	312	148	0	228	171	0	2	955	3844
8:15 AM	37	0	76	0	0	0	0	0	0	282	122	0	223	206	0	0	946	3832
8:30 AM	41	0	79	1	0	0	0	0	0	268	136	0	185	176	0	0	886	3802
8:45 AM	49	0	81	0	0	0	0	0	0	235	98	0	177	176	0	0	816	3603

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	164	0	260	0	0	0	0	0	0	1008	712	0	1144	772	0	0	4060
Heavy Trucks	24	0	20		0	0	0		0	88	32		24	44	0		232
Buses																	
Pedestrians		0				8				0				8			16
Bicycles	0	0	0		0	0	0		0	0	0		4	0	0		4
Scooters																	

Comments:

Report generated on 6/2/2025 1:03 PM

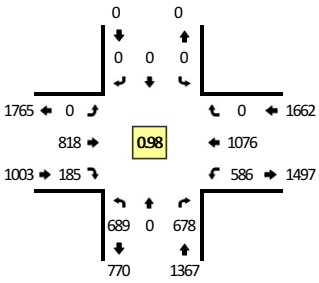
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

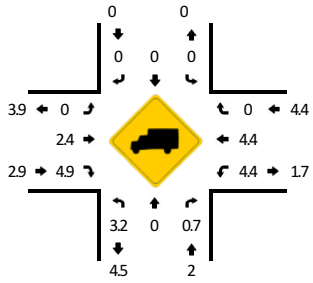
Type of peak hour being reported: System-wide Peak | Method for determining peak hour: Total Entering Volume

LOCATION: SW 124th Ave -- SW Pacific Hwy
CITY/STATE: Tualatin, OR

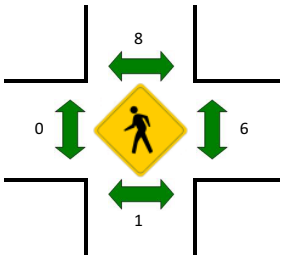
QC JOB #: 17042802
DATE: Tue, May 13 2025

Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 4:30 PM -- 4:45 PM

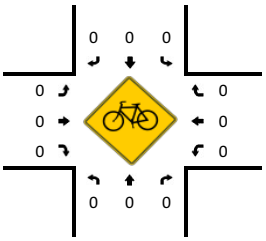


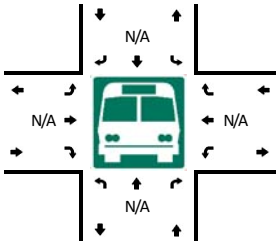


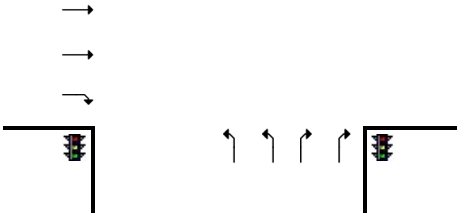


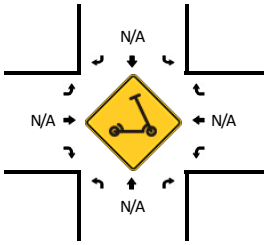












15-Min Count Period Beginning At	SW 124th Ave (Northbound)				SW 124th Ave (Southbound)				SW Pacific Hwy (Eastbound)				SW Pacific Hwy (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	156	0	207	0	0	0	0	0	0	223	73	0	119	259	0	1	1038	
4:15 PM	159	0	158	0	0	0	0	0	0	185	55	0	143	240	0	0	940	
4:30 PM	180	0	169	0	0	0	0	0	0	202	40	0	166	271	0	0	1028	
4:45 PM	155	0	152	0	0	0	0	0	0	203	48	0	143	264	0	0	965	3971
5:00 PM	188	0	190	0	0	0	0	0	0	213	44	0	139	250	0	1	1025	3958
5:15 PM	166	0	167	0	0	0	0	0	0	200	53	0	137	291	0	0	1014	4032
5:30 PM	125	0	158	0	0	0	0	0	0	197	38	0	105	237	0	0	860	3864
5:45 PM	83	0	118	0	0	0	0	0	0	214	35	0	91	231	0	2	774	3673

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	720	0	676	0	0	0	0	0	0	808	160	0	664	1084	0	0	4112
Heavy Trucks	4	0	4		0	0	0		0	16	12		36	72	0		144
Buses																	
Pedestrians		0				16				0				12			28
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 6/2/2025 1:04 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak

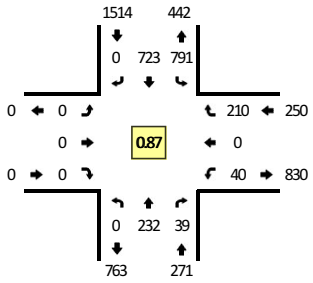
Method for determining peak hour: Total Entering Volume

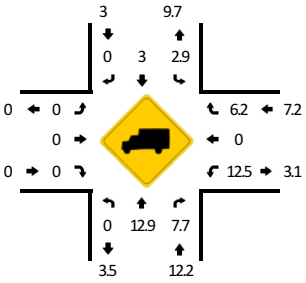
LOCATION: SW 124th Ave -- SW Tualatin Rd
CITY/STATE: Tualatin, OR

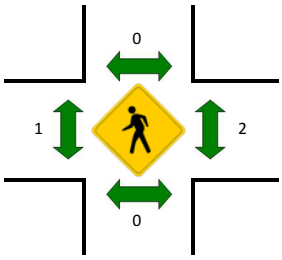
QC JOB #: 17042803
DATE: Tue, May 13 2025

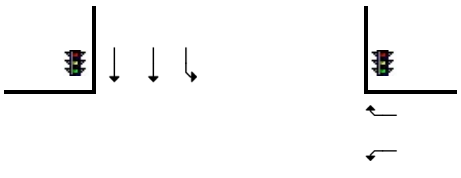
Peak-Hour: 7:45 AM -- 8:45 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

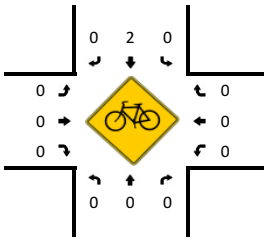
TRUE DATA TO IMPROVE MOBILITY

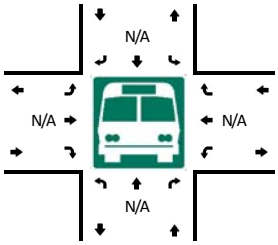


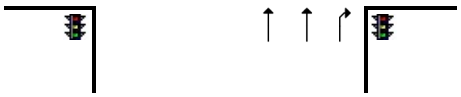


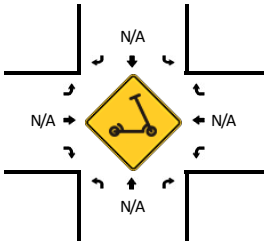












15-Min Count Period Beginning At	SW 124th Ave (Northbound)				SW 124th Ave (Southbound)				SW Tualatin Rd (Eastbound)				SW Tualatin Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	58	3	0	106	114	0	0	0	0	0	0	3	0	31	0	315	
7:15 AM	0	57	6	0	158	160	0	0	0	0	0	0	7	0	40	0	428	
7:30 AM	0	54	8	0	187	127	0	0	0	0	0	0	9	0	47	0	432	
7:45 AM	0	50	8	0	241	219	0	0	0	0	0	0	13	0	57	0	588	1763
8:00 AM	0	52	16	0	215	173	0	0	0	0	0	0	6	0	48	0	510	1958
8:15 AM	0	68	9	0	165	174	0	0	0	0	0	0	10	0	49	0	475	2005
8:30 AM	0	62	6	0	170	157	0	0	0	0	0	0	11	0	56	0	462	2035
8:45 AM	0	70	14	0	132	143	0	0	0	0	0	0	3	0	54	0	416	1863

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	200	32	0	964	876	0	0	0	0	0	0	52	0	228	0	2352
Heavy Trucks	0	16	8		36	16	0		0	0	0		0	0	20		96
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	4	0		0	0	0		0	0	0		4
Scooters																	

Comments:

Report generated on 6/2/2025 1:12 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

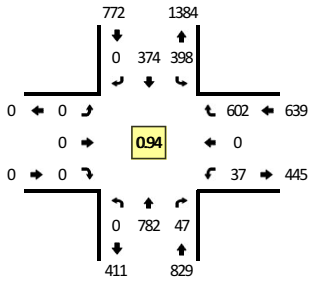
Type of peak hour being reported: Intersection Peak

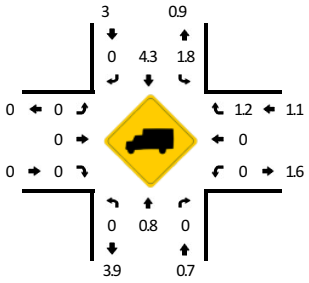
Method for determining peak hour: Total Entering Volume

LOCATION: SW 124th Ave -- SW Tualatin Rd
CITY/STATE: Tualatin, OR

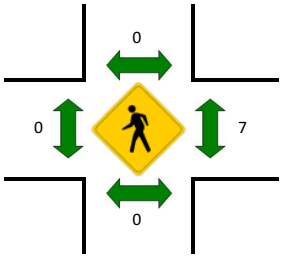
QC JOB #: 17042804
DATE: Tue, May 13 2025

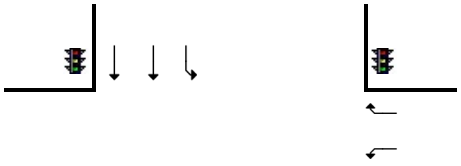
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 4:30 PM -- 4:45 PM

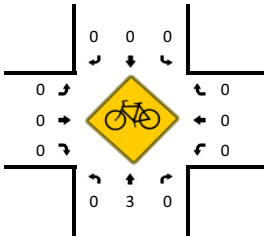


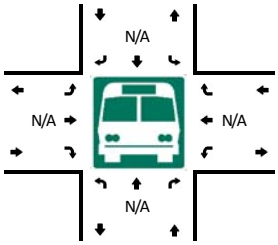


TRUE DATA TO IMPROVE MOBILITY

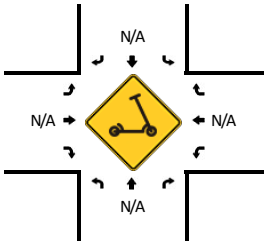












15-Min Count Period Beginning At	SW 124th Ave (Northbound)				SW 124th Ave (Southbound)				SW Tualatin Rd (Eastbound)				SW Tualatin Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	228	14	0	105	89	0	0	0	0	0	0	13	0	141	0	590	
4:15 PM	0	177	4	0	102	96	0	0	0	0	0	0	9	0	133	0	521	
4:30 PM	0	214	13	0	102	108	0	0	0	0	0	0	6	0	155	0	598	
4:45 PM	0	177	9	0	91	94	0	0	0	0	0	0	6	0	142	0	519	2228
5:00 PM	0	202	12	0	89	86	0	0	0	0	0	0	16	0	162	0	567	2205
5:15 PM	0	189	13	0	116	86	0	0	0	0	0	0	9	0	143	0	556	2240
5:30 PM	0	161	4	0	80	62	0	0	0	0	0	0	4	0	116	0	427	2069
5:45 PM	0	110	9	0	79	48	0	0	0	0	0	0	3	0	80	0	329	1879

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	856	52	0	408	432	0	0	0	0	0	0	24	0	620	0	2392
Heavy Trucks	0	4	0		8	32	0		0	0	0		0	0	0		44
Buses																	
Pedestrians		0				0				0				12			12
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

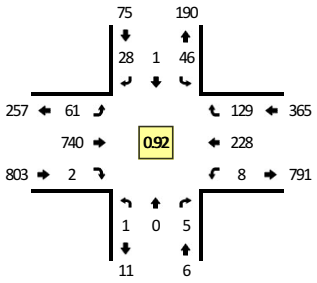
Report generated on 6/2/2025 1:12 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

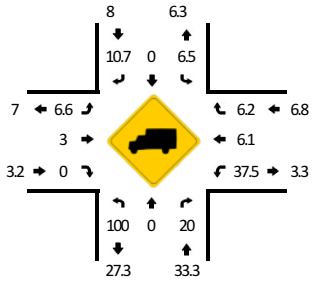
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

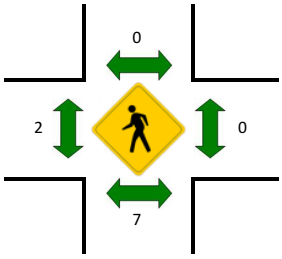
LOCATION: SW 115th Ave -- SW Tualatin Rd | **QC JOB #:** 17042831
CITY/STATE: Tualatin, OR | **DATE:** Tue, May 13 2025

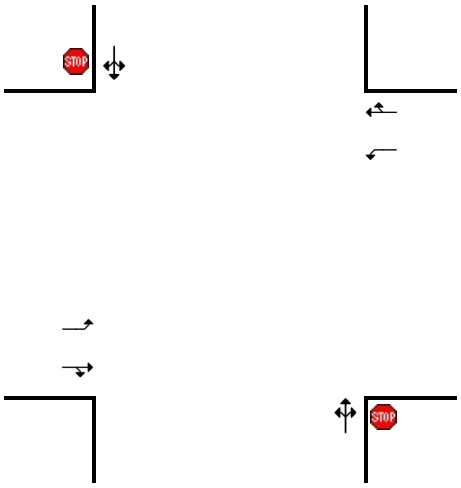
Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

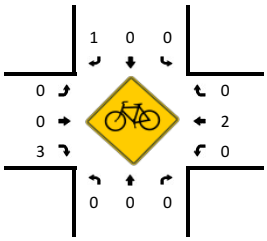


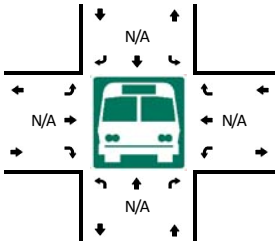


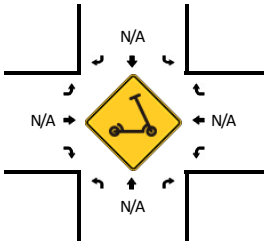












15-Min Count Period Beginning At	SW 115th Ave (Northbound)				SW 115th Ave (Southbound)				SW Tualatin Rd (Eastbound)				SW Tualatin Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	3	0	3	0	6	90	0	0	2	24	7	0	135	
7:15 AM	0	0	0	0	11	0	7	0	10	138	1	0	1	27	14	0	209	
7:30 AM	0	0	1	0	11	0	6	0	8	179	1	0	3	50	24	0	283	
7:45 AM	0	0	0	0	13	1	2	0	10	225	0	0	1	70	19	0	341	968
8:00 AM	0	0	1	0	8	0	6	0	19	190	0	0	3	54	45	0	326	1159
8:15 AM	1	0	3	0	14	0	14	0	24	146	1	0	1	54	41	0	299	1249
8:30 AM	0	1	1	0	10	0	9	0	13	145	0	0	2	64	24	0	269	1235
8:45 AM	0	1	0	0	6	0	1	0	3	138	0	0	0	59	31	0	239	1133

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	52	4	8	0	40	900	0	0	4	280	76	0	1364
Heavy Trucks	0	0	0		0	0	0		8	36	0		0	24	0		68
Buses																	
Pedestrians		12				0				8				0			20
Bicycles	0	0	0		0	0	4		0	0	8		0	4	0		16
Scooters																	

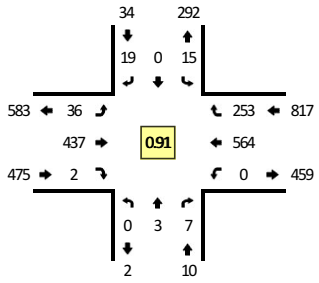
Comments:

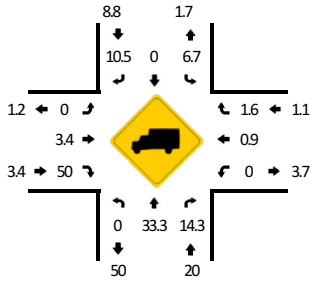
Report generated on 6/2/2025 1:12 PM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

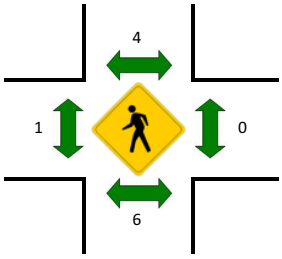
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

LOCATION: SW 115th Ave -- SW Tualatin Rd | **QC JOB #:** 17042832
CITY/STATE: Tualatin, OR | **DATE:** Tue, May 13 2025

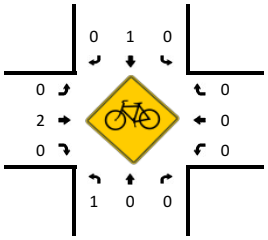
Peak-Hour: 3:45 PM -- 4:45 PM
Peak 15-Min: 4:30 PM -- 4:45 PM

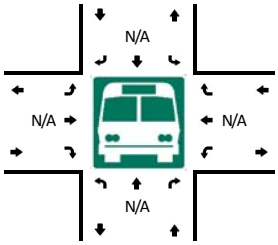




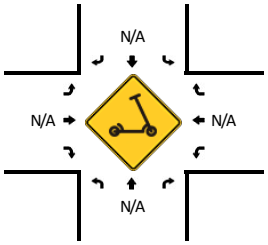












15-Min Count Period Beginning At	SW 115th Ave (Northbound)				SW 115th Ave (Southbound)				SW Tualatin Rd (Eastbound)				SW Tualatin Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	2	1	1	0	9	0	5	0	17	93	0	0	0	104	54	0	286	
3:15 PM	0	1	0	0	11	0	18	0	6	85	1	0	0	103	43	0	268	
3:30 PM	1	1	1	0	7	0	8	0	6	89	0	0	0	112	57	0	282	
3:45 PM	0	1	2	0	6	0	6	0	9	124	2	0	0	122	60	0	332	1168
4:00 PM	0	1	4	0	2	0	7	0	6	100	0	0	0	130	76	0	326	1208
4:15 PM	0	1	0	0	3	0	3	0	6	105	0	0	0	135	58	0	311	1251
4:30 PM	0	0	1	0	4	0	3	0	15	108	0	0	0	177	59	0	367	1336
4:45 PM	0	2	1	0	7	0	3	0	14	77	0	0	2	144	48	0	298	1302
5:00 PM	0	1	1	0	8	0	5	0	14	103	0	0	0	125	77	0	334	1310
5:15 PM	0	1	1	0	8	0	6	0	9	94	0	0	1	124	74	0	318	1317
5:30 PM	1	0	3	0	5	0	3	0	9	77	2	0	2	99	53	0	254	1204
5:45 PM	0	0	1	0	1	0	3	0	4	68	1	0	0	75	56	0	209	1115

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	4	0	16	0	12	0	60	432	0	0	0	708	236	0	1468
Heavy Trucks	0	0	0		0	0	0		0	8	0		0	0	0		8
Buses																	
Pedestrians		4				0				0				0			4
Bicycles	0	0	0		0	0	0		0	4	0		0	0	0		4
Scooters																	

Comments:

Report generated on 6/2/2025 1:12 PM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

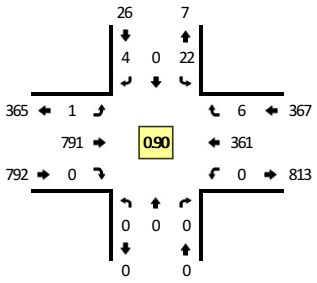
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

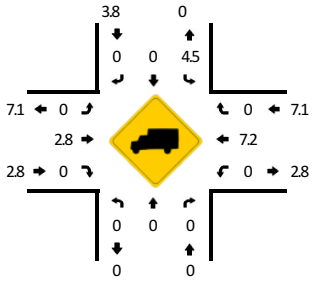
LOCATION: SW 112th Ave -- SW Tualatin Rd
CITY/STATE: Tualatin, OR

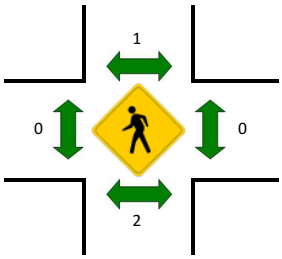
QC JOB #: 17042839
DATE: Tue, May 13 2025

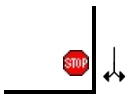
Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

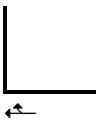


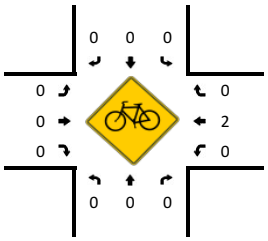


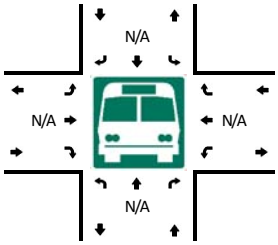


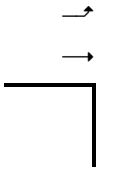




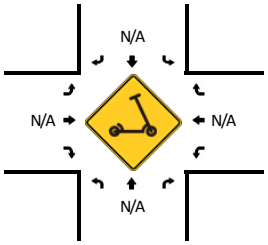












15-Min Count Period Beginning At	SW 112th Ave (Northbound)				SW 112th Ave (Southbound)				SW Tualatin Rd (Eastbound)				SW Tualatin Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	1	0	1	0	0	90	0	0	0	31	2	0	125	
7:15 AM	0	0	0	0	11	0	1	0	3	148	0	0	0	41	1	0	205	
7:30 AM	0	0	0	0	12	0	2	0	0	191	0	0	0	75	1	0	281	
7:45 AM	0	0	0	0	2	0	0	0	1	233	0	0	0	90	2	0	328	939
8:00 AM	0	0	0	0	4	0	2	0	0	201	0	0	0	100	0	0	307	1121
8:15 AM	0	0	0	0	4	0	0	0	0	166	0	0	0	96	3	0	269	1185
8:30 AM	0	0	0	0	7	0	2	0	0	156	0	0	0	85	1	0	251	1155
8:45 AM	0	0	0	0	5	0	2	0	1	140	0	0	0	89	2	0	239	1066

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	8	0	0	0	4	932	0	0	0	360	8	0	1312
Heavy Trucks	0	0	0		0	0	0		0	28	0		0	24	0		52
Buses																	
Pedestrians		0				4				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	4	0		4
Scooters																	

Comments:

Report generated on 6/2/2025 1:12 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

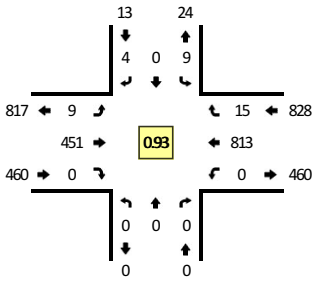
Type of peak hour being reported: Intersection Peak

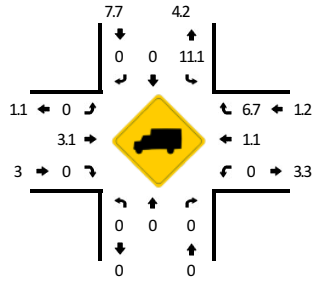
Method for determining peak hour: Total Entering Volume

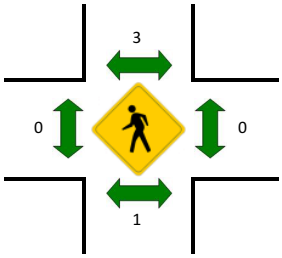
LOCATION: SW 112th Ave -- SW Tualatin Rd
CITY/STATE: Tualatin, OR

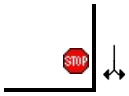
QC JOB #: 17042840
DATE: Tue, May 13 2025

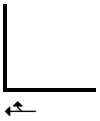
Peak-Hour: 3:45 PM -- 4:45 PM
Peak 15-Min: 4:30 PM -- 4:45 PM

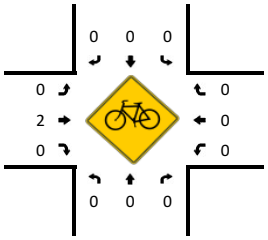


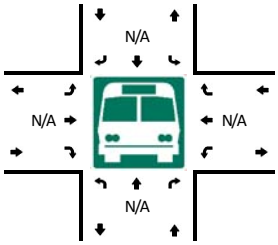


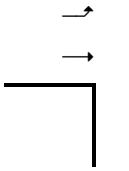




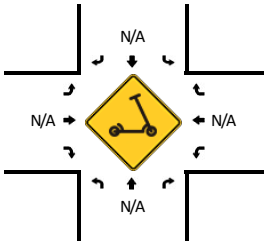












15-Min Count Period Beginning At	SW 112th Ave (Northbound)				SW 112th Ave (Southbound)				SW Tualatin Rd (Eastbound)				SW Tualatin Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	0	0	0	0	2	0	1	0	1	100	0	0	0	163	5	0	272	
3:15 PM	0	0	0	0	1	0	0	0	1	97	0	0	0	142	3	0	244	
3:30 PM	0	0	0	0	4	0	1	0	2	95	0	0	0	169	3	0	274	
3:45 PM	0	0	0	0	3	0	0	0	2	132	0	0	0	182	7	0	326	1116
4:00 PM	0	0	0	0	2	0	1	0	3	103	0	0	0	207	1	0	317	1161
4:15 PM	0	0	0	0	3	0	2	0	1	106	0	0	0	190	6	0	308	1225
4:30 PM	0	0	0	0	1	0	1	0	3	110	0	0	0	234	1	0	350	1301
4:45 PM	0	0	0	0	8	0	2	0	3	81	0	0	0	191	9	0	294	1269
5:00 PM	0	0	0	0	2	0	1	0	3	109	0	0	0	200	7	0	322	1274
5:15 PM	0	0	0	0	2	0	0	0	5	97	0	0	0	201	10	0	315	1281
5:30 PM	0	0	0	0	3	0	2	0	3	81	0	0	0	151	9	0	249	1180
5:45 PM	0	0	0	0	0	0	1	0	0	72	0	0	0	127	2	0	202	1088

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	4	0	4	0	12	440	0	0	0	936	4	0	1400
Heavy Trucks	0	0	0		0	0	0		0	8	0		0	0	0		8
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	4	0		0	0	0		4
Scooters																	

Comments:

Report generated on 6/2/2025 1:12 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

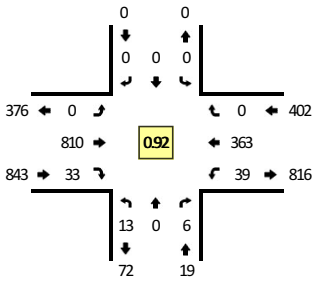
Type of peak hour being reported: Intersection Peak

Method for determining peak hour: Total Entering Volume

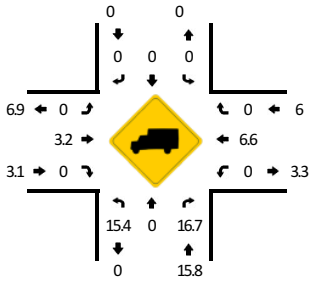
LOCATION: SW 108th Ave -- SW Tualatin Rd
CITY/STATE: Tualatin, OR

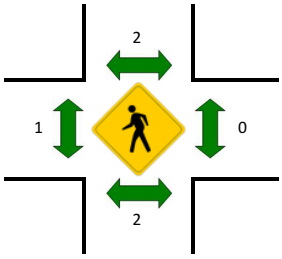
QC JOB #: 17042833
DATE: Tue, May 13 2025

Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

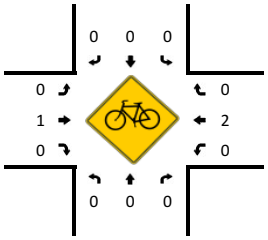


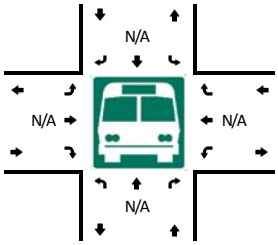




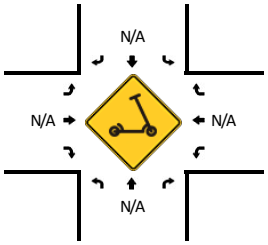












15-Min Count Period Beginning At	SW 108th Ave (Northbound)				SW 108th Ave (Southbound)				SW Tualatin Rd (Eastbound)				SW Tualatin Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	1	0	0	0	0	0	0	91	2	0	3	37	0	0	134	
7:15 AM	1	0	2	0	0	0	0	0	0	151	6	0	8	40	0	0	208	
7:30 AM	2	0	0	0	0	0	0	0	0	221	2	0	4	75	0	0	304	
7:45 AM	1	0	1	0	0	0	0	0	0	231	7	0	8	95	0	0	343	989
8:00 AM	1	0	3	0	0	0	0	0	0	194	11	0	15	103	0	0	327	1182
8:15 AM	9	0	2	0	0	0	0	0	0	164	13	0	12	90	0	0	290	1264
8:30 AM	3	0	4	0	0	0	0	0	0	156	8	0	9	83	0	0	263	1223
8:45 AM	2	0	2	0	0	0	0	0	0	135	12	0	10	85	0	0	246	1126

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	0	4	0	0	0	0	0	0	924	28	0	32	380	0	0	1372
Heavy Trucks	0	0	0		0	0	0		0	36	0		0	24	0		60
Buses																	
Pedestrians		0				8				0				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

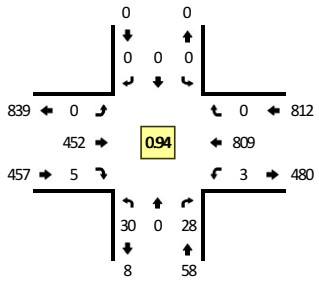
Report generated on 6/2/2025 1:12 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

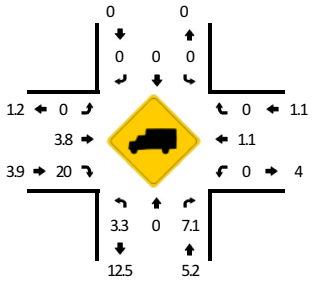
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

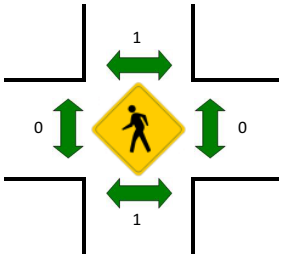
LOCATION: SW 108th Ave -- SW Tualatin Rd | **QC JOB #:** 17042834
CITY/STATE: Tualatin, OR | **DATE:** Tue, May 13 2025

Peak-Hour: 3:45 PM -- 4:45 PM
Peak 15-Min: 4:30 PM -- 4:45 PM

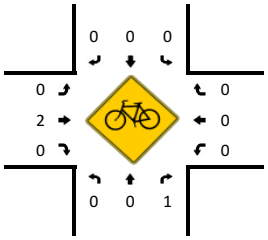


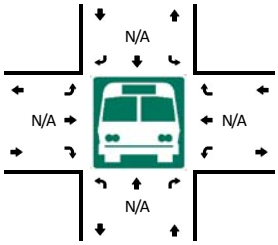




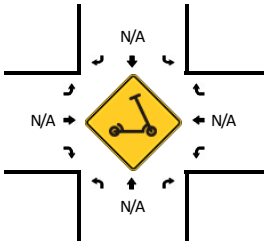












15-Min Count Period Beginning At	SW 108th Ave (Northbound)				SW 108th Ave (Southbound)				SW Tualatin Rd (Eastbound)				SW Tualatin Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	9	0	6	0	0	0	0	0	0	100	2	0	1	158	0	0	276	
3:15 PM	2	0	3	0	0	0	0	0	0	100	2	0	2	148	0	0	257	
3:30 PM	7	0	4	0	0	0	0	0	0	99	0	0	0	171	0	0	281	
3:45 PM	5	0	11	0	0	0	0	0	0	129	2	0	0	188	0	0	335	1149
4:00 PM	7	0	6	0	0	0	0	0	0	109	2	0	0	202	0	0	326	1199
4:15 PM	6	0	3	0	0	0	0	0	0	107	1	0	2	194	0	0	313	1255
4:30 PM	12	0	8	0	0	0	0	0	0	107	0	0	1	225	0	0	353	1327
4:45 PM	5	0	4	0	0	0	0	0	0	89	1	0	4	200	0	0	303	1295
5:00 PM	6	0	7	0	0	0	0	0	0	101	3	0	0	209	0	0	326	1295
5:15 PM	5	0	10	0	0	0	0	0	0	100	0	0	1	204	0	0	320	1302
5:30 PM	6	0	6	0	0	0	0	0	0	80	2	0	1	161	0	0	256	1205
5:45 PM	2	0	3	0	0	0	0	0	0	75	0	0	2	132	0	0	214	1116

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	48	0	32	0	0	0	0	0	0	428	0	0	4	900	0	0	1412
Heavy Trucks	0	0	4		0	0	0		0	8	0		0	0	0		12
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	4	0		0	0	0		4
Scooters																	

Comments:

Report generated on 6/2/2025 1:12 PM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering Volume

LOCATION: SW 108th Ave -- North Lam Access

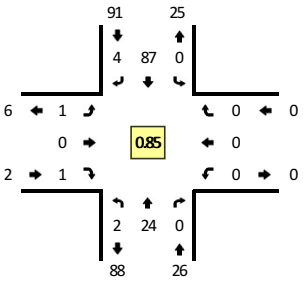
CITY/STATE: Tualatin, OR

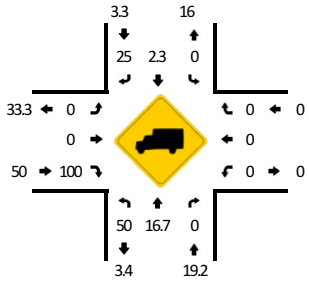
QC JOB #: 17042841

DATE: Tue, May 13 2025

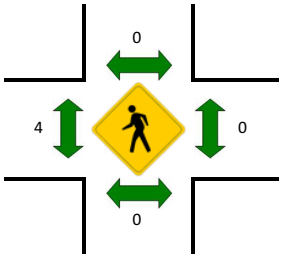
Peak-Hour: 8:00 AM -- 9:00 AM

Peak 15-Min: 8:15 AM -- 8:30 AM

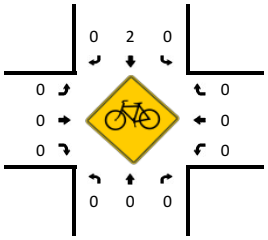


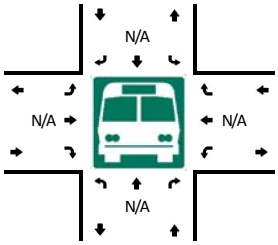


TRUE DATA TO IMPROVE MOBILITY

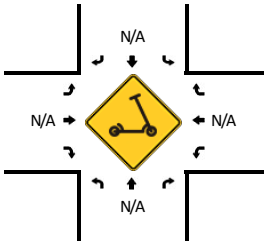












15-Min Count Period Beginning At	SW 108th Ave (Northbound)				SW 108th Ave (Southbound)				North Lam Access (Eastbound)				North Lam Access (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	2	1	0	0	0	5	0	0	0	0	2	1	0	0	0	0	11	
7:15 AM	2	2	0	0	0	13	1	0	1	0	1	0	0	0	0	0	20	
7:30 AM	0	1	0	0	0	6	1	0	1	0	2	0	0	0	0	0	11	
7:45 AM	0	2	0	0	0	12	1	0	0	0	0	0	0	0	0	0	15	57
8:00 AM	1	2	0	0	0	28	0	0	1	0	0	0	0	0	0	0	32	78
8:15 AM	0	11	0	0	0	24	0	0	0	0	0	0	0	0	0	0	35	93
8:30 AM	0	7	0	0	0	17	0	0	0	0	0	0	0	0	0	0	24	106
8:45 AM	1	4	0	0	0	18	4	0	0	0	1	0	0	0	0	0	28	119

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	44	0	0	0	96	0	0	0	0	0	0	0	0	0	0	140
Heavy Trucks	0	4	0		0	0	0		0	0	0		0	0	0		4
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	4	0		0	0	0		0	0	0		4
Scooters																	

Comments:

Report generated on 6/2/2025 1:08 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

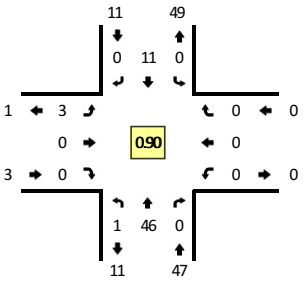
Type of peak hour being reported: User-Defined

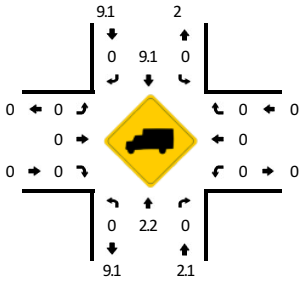
Method for determining peak hour: Total Entering Volume

LOCATION: SW 108th Ave -- North Lam Access
CITY/STATE: Tualatin, OR

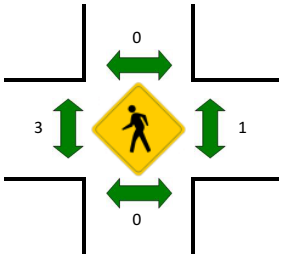
QC JOB #: 17042842
DATE: Tue, May 13 2025

Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

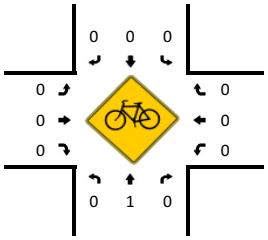


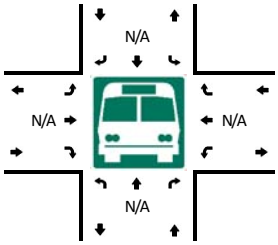


TRUE DATA TO IMPROVE MOBILITY

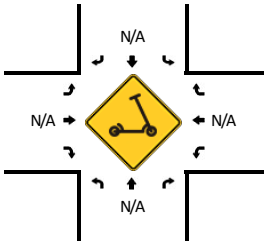












15-Min Count Period Beginning At	SW 108th Ave (Northbound)				SW 108th Ave (Southbound)				North Lam Access (Eastbound)				North Lam Access (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	11	0	0	0	2	0	0	1	0	1	0	0	0	0	0	15	
4:15 PM	0	9	0	0	0	2	1	0	0	0	0	0	0	0	0	0	12	
4:30 PM	0	19	0	0	0	1	0	0	1	0	1	0	0	0	0	0	22	
4:45 PM	0	10	0	0	0	5	0	0	0	0	0	0	0	0	0	0	15	64
5:00 PM	0	10	0	0	0	3	0	0	2	0	0	0	0	0	0	0	15	64
5:15 PM	1	14	0	0	0	1	0	0	1	0	0	0	0	0	0	0	17	69
5:30 PM	0	12	0	0	0	2	0	0	0	0	0	0	0	0	0	0	14	61
5:45 PM	0	6	0	0	0	3	0	0	0	0	0	0	0	0	0	0	9	55

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	56	0	0	0	4	0	0	4	0	0	0	0	0	0	0	68
Heavy Trucks	0	4	0		0	0	0		0	0	0		0	0	0		4
Buses																	
Pedestrians		0				0				4				0			4
Bicycles	0	4	0		0	0	0		0	0	0		0	0	0		4
Scooters																	

Comments:

Report generated on 6/2/2025 1:10 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

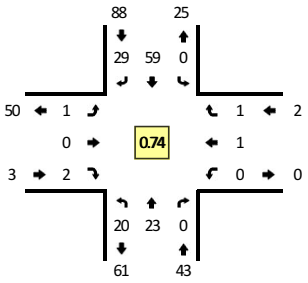
Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering Volume

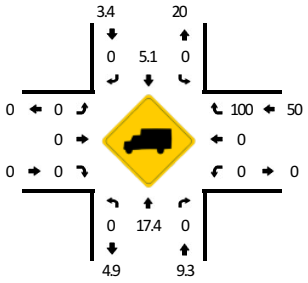
LOCATION: SW 108th Ave -- Central Lam Access/North 18220 Access
CITY/STATE: Tualatin, OR

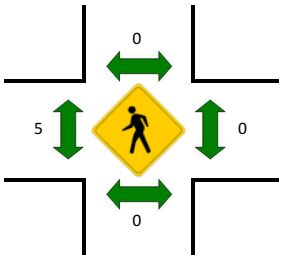
QC JOB #: 17042829
DATE: Tue, May 13 2025

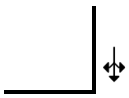
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:15 AM -- 8:30 AM

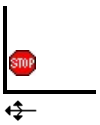


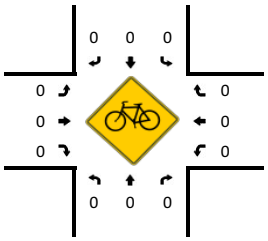
TRUE DATA TO IMPROVE MOBILITY

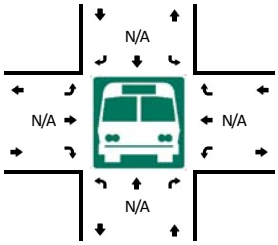


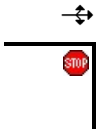


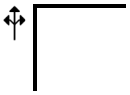


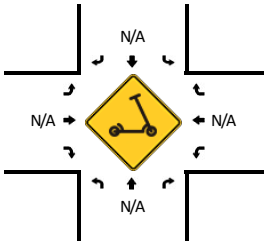












15-Min Count Period Beginning At	SW 108th Ave (Northbound)				SW 108th Ave (Southbound)				Central Lam Access/North 18220 Access (Eastbound)				Central Lam Access/North 18220 Access (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	3	2	0	0	3	4	2	0	0	0	1	0	0	0	1	0	16	
7:15 AM	0	4	0	0	1	10	3	0	0	0	0	0	0	0	0	1	19	
7:30 AM	5	1	0	0	0	6	2	0	0	0	0	0	0	0	0	0	14	
7:45 AM	5	2	0	0	0	6	5	0	0	0	0	0	0	0	0	0	18	67
8:00 AM	4	2	0	0	0	18	10	0	1	0	1	0	0	0	0	0	36	87
8:15 AM	9	11	0	0	0	21	4	0	0	0	0	0	0	1	0	0	46	114
8:30 AM	4	6	0	0	0	6	10	0	0	0	1	0	0	0	0	0	27	127
8:45 AM	3	4	0	0	0	14	5	0	0	0	0	0	0	0	1	0	27	136

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	36	44	0	0	0	84	16	0	0	0	0	0	0	4	0	0	184
Heavy Trucks	0	4	0		0	0	0		0	0	0		0	0	0		4
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 6/2/2025 1:08 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

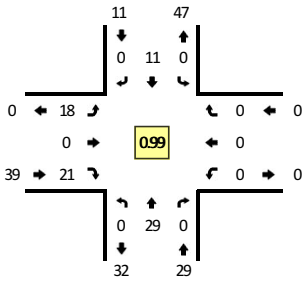
Type of peak hour being reported: User-Defined

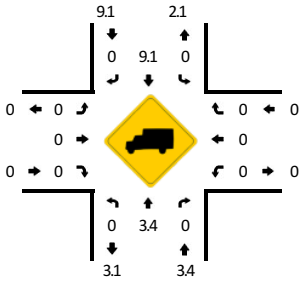
Method for determining peak hour: Total Entering Volume

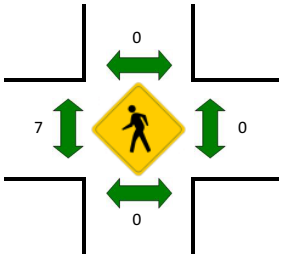
LOCATION: SW 108th Ave -- Central Lam Access/North 18220 Access
CITY/STATE: Tualatin, OR

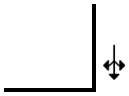
QC JOB #: 17042830
DATE: Tue, May 13 2025

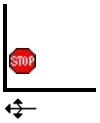
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 4:45 PM -- 5:00 PM

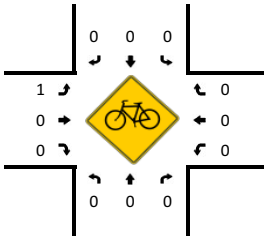


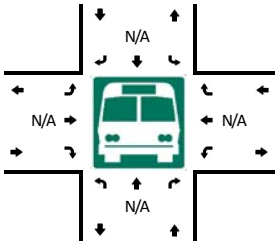


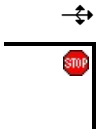


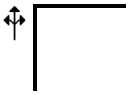


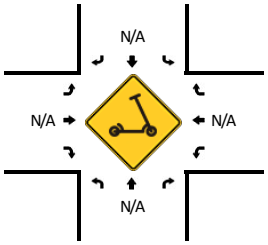












15-Min Count Period Beginning At	SW 108th Ave (Northbound)				SW 108th Ave (Southbound)				Central Lam Access/North 18220 Access (Eastbound)				Central Lam Access/North 18220 Access (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	8	0	0	0	1	1	0	2	0	1	0	0	0	0	0	14	
4:15 PM	1	7	0	0	0	1	1	0	2	0	2	0	0	0	0	0	14	
4:30 PM	0	12	0	0	0	2	0	0	7	0	2	0	0	0	0	0	23	
4:45 PM	0	7	0	0	0	5	0	0	3	0	5	0	0	0	0	0	20	71
5:00 PM	0	8	0	0	0	3	0	0	2	0	6	0	0	0	0	0	19	76
5:15 PM	0	8	0	0	0	1	0	0	7	0	4	0	0	0	0	0	20	82
5:30 PM	0	6	0	0	0	2	0	0	6	0	6	0	0	0	0	0	20	79
5:45 PM	0	3	0	0	0	3	0	0	3	0	3	0	0	0	0	0	12	71

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	28	0	0	0	20	0	0	12	0	20	0	0	0	0	0	80
Heavy Trucks	0	0	0		0	4	0		0	0	0		0	0	0		4
Buses																	
Pedestrians		0				0				4				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 6/2/2025 1:10 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering Volume

LOCATION: SW 108th Ave -- South Lam Access/Ascentec North Access

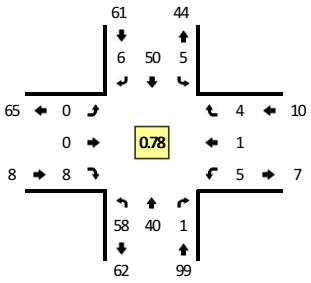
CITY/STATE: Tualatin, OR

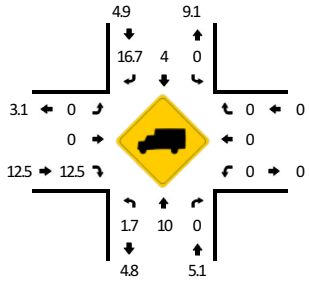
QC JOB #: 17042827

DATE: Tue, May 13 2025

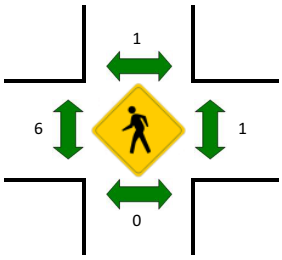
Peak-Hour: 8:00 AM -- 9:00 AM

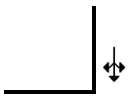
Peak 15-Min: 8:15 AM -- 8:30 AM

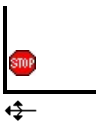


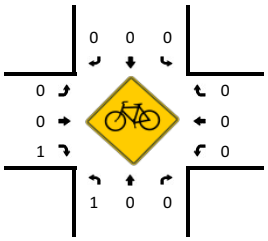


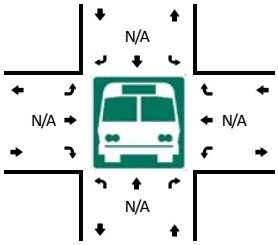
TRUE DATA TO IMPROVE MOBILITY

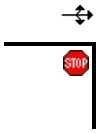


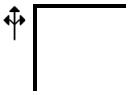


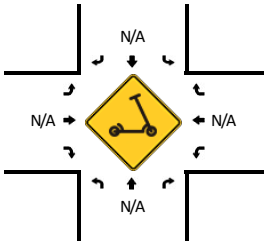












15-Min Count Period Beginning At	SW 108th Ave (Northbound)				SW 108th Ave (Southbound)				South Lam Access/Ascentec North Access (Eastbound)				South Lam Access/Ascentec North Access (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	1	5	2	0	0	7	1	0	1	0	0	0	0	0	0	0	17	
7:15 AM	3	3	0	0	1	7	2	0	1	0	2	0	0	0	0	0	19	
7:30 AM	3	6	0	0	2	5	0	0	0	0	0	0	1	0	0	0	17	
7:45 AM	9	7	0	0	0	7	0	0	0	0	0	0	1	0	0	0	24	77
8:00 AM	12	7	1	0	1	16	2	0	0	0	2	0	1	0	0	0	42	102
8:15 AM	12	18	0	0	2	19	0	0	0	0	3	0	0	0	2	1	57	140
8:30 AM	18	9	0	0	1	5	1	0	0	0	2	0	2	0	2	0	40	163
8:45 AM	16	6	0	0	1	10	3	0	0	0	1	0	1	1	0	0	39	178

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	48	72	0	0	8	76	0	0	0	0	12	0	0	0	8	4	228
Heavy Trucks	0	4	0		0	0	0		0	0	4		0	0	0		8
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 6/2/2025 1:08 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

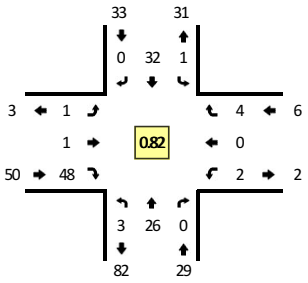
Type of peak hour being reported: User-Defined

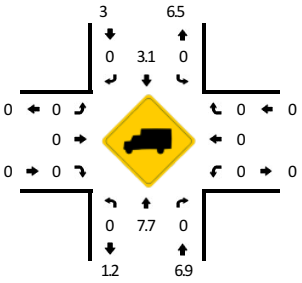
Method for determining peak hour: Total Entering Volume

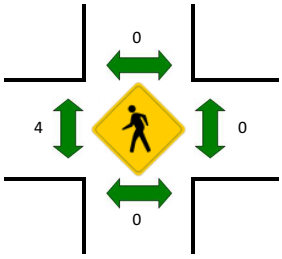
LOCATION: SW 108th Ave -- South Lam Access/Ascentec North Access
CITY/STATE: Tualatin, OR

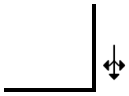
QC JOB #: 17042828
DATE: Tue, May 13 2025

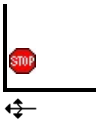
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

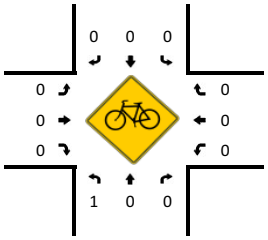


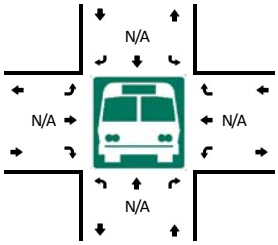


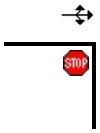


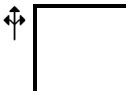


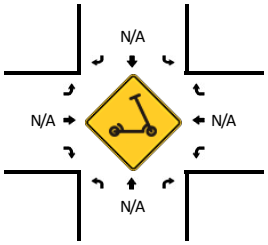












15-Min Count Period Beginning At	SW 108th Ave (Northbound)				SW 108th Ave (Southbound)				South Lam Access/Ascentec North Access (Eastbound)				South Lam Access/Ascentec North Access (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	2	9	0	0	0	2	0	0	0	0	8	0	0	0	0	0	21	
4:15 PM	1	6	1	0	0	3	0	0	0	0	6	0	0	0	2	0	19	
4:30 PM	0	11	1	0	0	4	0	0	0	0	2	0	3	0	1	0	22	
4:45 PM	0	5	0	0	0	10	0	0	0	0	5	0	1	0	2	0	23	85
5:00 PM	1	8	0	0	1	8	0	0	0	1	16	0	1	0	0	0	36	100
5:15 PM	1	6	0	0	0	5	0	0	1	0	11	0	0	0	1	0	25	106
5:30 PM	1	7	0	0	0	9	0	0	0	0	16	0	0	0	1	0	34	118
5:45 PM	1	2	0	0	0	8	0	0	1	0	12	0	0	0	0	0	24	119

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	32	0	0	4	32	0	0	0	4	64	0	4	0	0	0	144
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Buses																	
Pedestrians		0				0				8				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

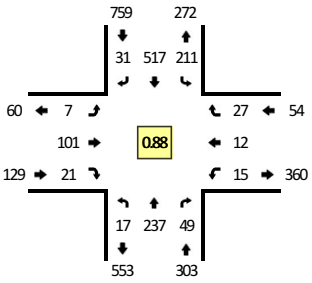
Report generated on 6/2/2025 1:10 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

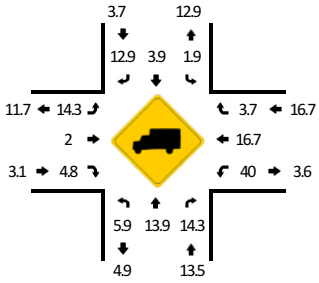
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

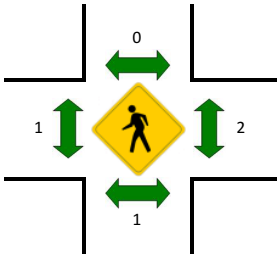
LOCATION: SW 124th Ave -- SW Leveton Dr | **QC JOB #:** 17042805
CITY/STATE: Tualatin, OR | **DATE:** Tue, May 13 2025

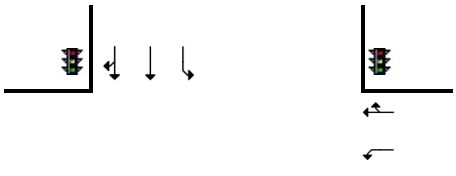
Peak-Hour: 7:45 AM -- 8:45 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

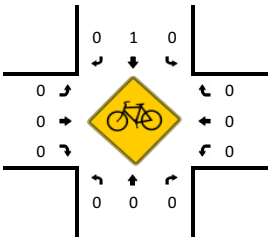


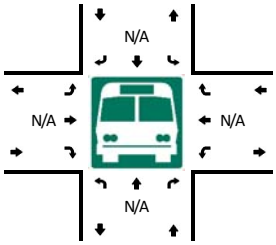
TRUE DATA TO IMPROVE MOBILITY

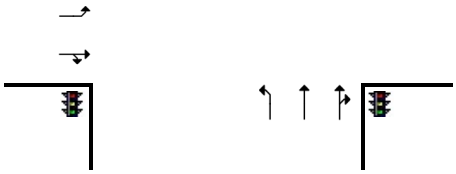


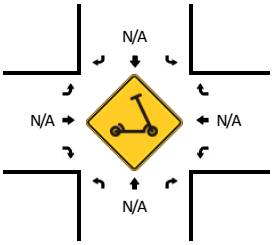












15-Min Count Period Beginning At	SW 124th Ave (Northbound)				SW 124th Ave (Southbound)				SW Leveton Dr (Eastbound)				SW Leveton Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	6	46	7	0	26	89	4	0	7	13	3	0	0	2	10	0	213	
7:15 AM	3	47	5	0	31	126	9	0	5	17	11	0	3	1	9	0	267	
7:30 AM	8	54	14	0	33	98	6	0	2	18	6	0	1	0	7	0	247	
7:45 AM	5	53	13	0	57	158	11	1	0	41	5	0	1	4	5	0	354	1081
8:00 AM	5	59	9	0	52	124	7	0	2	28	9	0	5	2	9	0	311	1179
8:15 AM	3	69	17	0	60	118	4	0	1	16	2	0	5	2	5	0	302	1214
8:30 AM	4	56	10	0	41	117	9	0	4	16	5	0	4	4	8	0	278	1245
8:45 AM	2	83	10	0	44	100	4	0	0	16	9	0	4	2	5	0	279	1170

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	20	212	52	0	228	632	44	4	0	164	20	0	4	16	20	0	1416
Heavy Trucks	0	24	4		4	16	0		0	4	0		4	0	4		60
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	4	0		0	0	0		0	0	0		4
Scooters																	

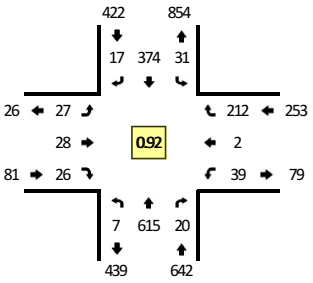
Comments:

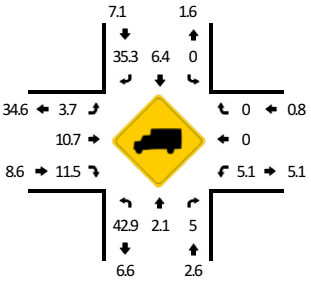
Report generated on 6/2/2025 1:12 PM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

LOCATION: SW 124th Ave -- SW Leveton Dr | **QC JOB #:** 17042806
CITY/STATE: Tualatin, OR | **DATE:** Tue, May 13 2025

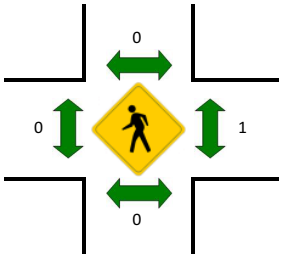
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:30 PM -- 4:45 PM

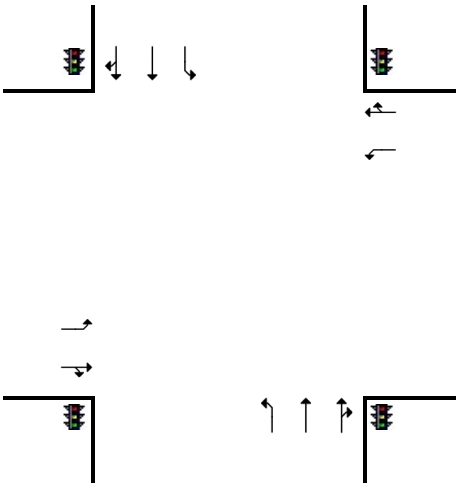


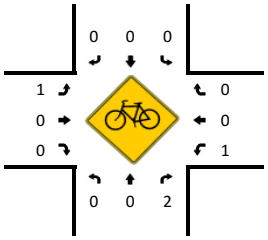


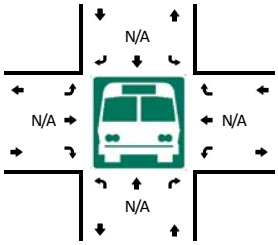


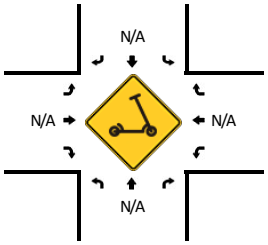
TRUE DATA TO IMPROVE MOBILITY











15-Min Count Period Beginning At	SW 124th Ave (Northbound)				SW 124th Ave (Southbound)				SW Leveton Dr (Eastbound)				SW Leveton Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	1	191	6	0	4	94	3	0	5	7	4	0	5	0	56	0	376	
4:15 PM	3	129	3	0	6	94	7	0	5	8	10	0	12	0	48	0	325	
4:30 PM	1	162	5	0	8	96	5	0	9	8	7	0	12	2	63	0	378	
4:45 PM	2	133	6	0	13	90	2	0	8	5	5	0	10	0	45	0	319	1398
5:00 PM	3	130	2	0	4	90	1	0	3	5	12	0	15	0	88	0	353	1375
5:15 PM	3	115	2	0	12	85	0	0	4	2	2	0	8	0	74	0	307	1357
5:30 PM	0	97	0	0	5	60	1	0	3	2	5	0	6	0	58	0	237	1216
5:45 PM	0	78	2	0	2	47	2	0	2	2	2	0	5	0	35	0	177	1074

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	648	20	0	32	384	20	0	36	32	28	0	48	8	252	0	1512
Heavy Trucks	4	0	4		0	24	4		0	0	0		4	0	0		40
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

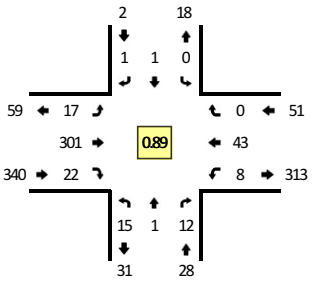
Comments:

Report generated on 6/2/2025 1:12 PM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

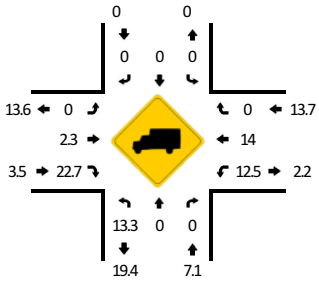
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

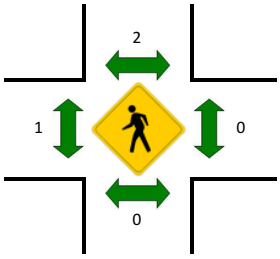
LOCATION: SW 118th Ave -- SW Leveton Dr | **QC JOB #:** 17042807
CITY/STATE: Tualatin, OR | **DATE:** Tue, May 13 2025

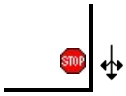
Peak-Hour: 7:45 AM -- 8:45 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

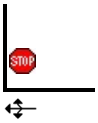


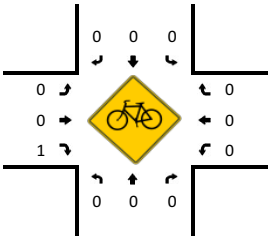


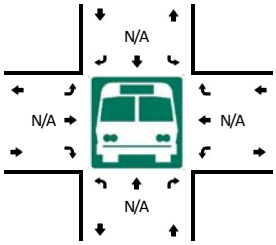


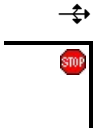


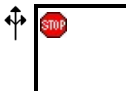


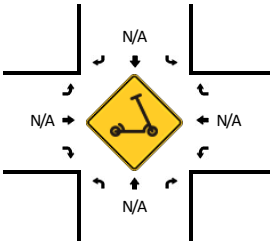












15-Min Count Period Beginning At	SW 118th Ave (Northbound)				SW 118th Ave (Southbound)				SW Leveton Dr (Eastbound)				SW Leveton Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	3	1	1	0	0	0	0	0	5	36	5	0	1	9	0	0	61	
7:15 AM	5	2	1	0	0	0	2	0	7	30	10	0	2	8	0	0	67	
7:30 AM	2	1	5	0	0	1	0	0	2	59	1	0	1	6	0	0	78	
7:45 AM	4	0	5	0	0	0	0	0	6	85	7	0	2	9	0	0	118	324
8:00 AM	4	0	1	0	0	1	1	0	5	77	8	0	1	14	0	0	112	375
8:15 AM	5	1	4	0	0	0	0	0	5	74	4	0	3	8	0	0	104	412
8:30 AM	2	0	2	0	0	0	0	0	1	65	3	0	2	12	0	0	87	421
8:45 AM	3	1	3	0	1	0	0	0	0	68	2	0	2	8	0	0	88	391

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	16	0	20	0	0	0	0	0	24	340	28	0	8	36	0	0	472
Heavy Trucks	4	0	0		0	0	0		0	8	4		4	4	0		24
Buses																	
Pedestrians		0				8				0				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

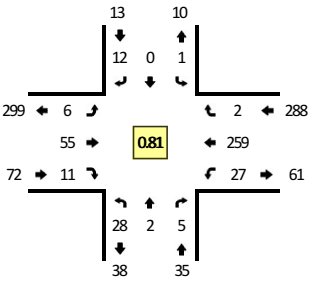
Comments:

Report generated on 6/2/2025 1:12 PM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

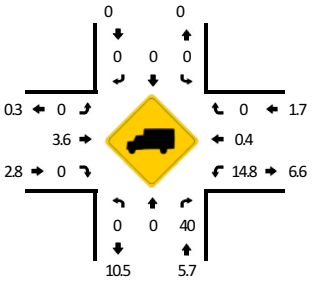
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

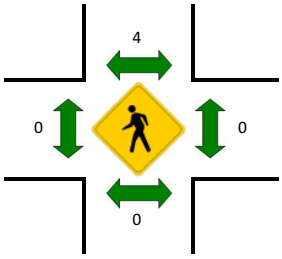
LOCATION: SW 118th Ave -- SW Leveton Dr | **QC JOB #:** 17042808
CITY/STATE: Tualatin, OR | **DATE:** Tue, May 13 2025

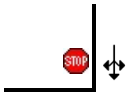
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

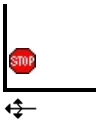


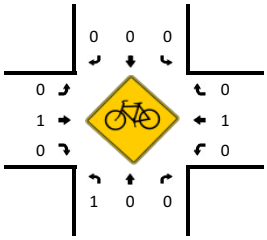


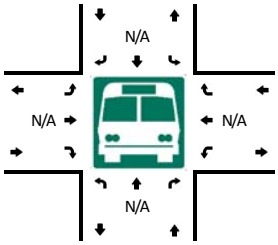


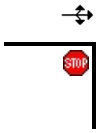


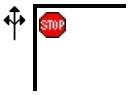


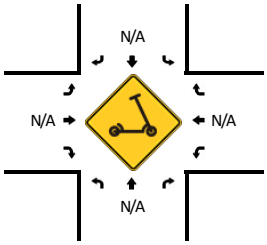












15-Min Count Period Beginning At	SW 118th Ave (Northbound)				SW 118th Ave (Southbound)				SW Leveton Dr (Eastbound)				SW Leveton Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	15	0	2	0	2	1	5	0	0	14	4	0	8	37	0	0	88	
4:15 PM	4	0	2	0	0	1	0	0	0	14	4	0	6	47	0	0	78	
4:30 PM	8	0	1	0	0	0	4	0	1	14	4	0	3	61	1	0	97	
4:45 PM	3	0	1	0	0	0	2	0	0	24	1	0	4	41	1	0	77	340
5:00 PM	6	1	2	0	0	0	5	0	2	10	3	0	9	88	0	0	126	378
5:15 PM	11	1	1	0	1	0	1	0	3	7	3	0	11	69	0	0	108	408
5:30 PM	3	0	0	0	0	0	2	0	2	3	4	0	1	59	0	0	74	385
5:45 PM	2	1	1	0	0	0	1	0	0	5	1	0	1	34	1	0	47	355

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	24	4	8	0	0	0	20	0	8	40	12	0	36	352	0	0	504
Heavy Trucks	0	0	0		0	0	0		0	0	0		4	0	0		4
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	4	0	0		0	0	0		0	0	0		0	0	0		4
Scooters																	

Comments:

Report generated on 6/2/2025 1:12 PM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

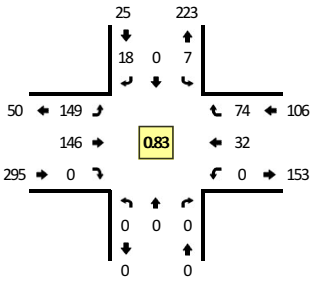
Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering Volume

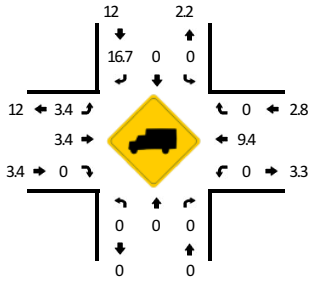
LOCATION: West Lam Access -- SW Leveton Dr
CITY/STATE: Tualatin, OR

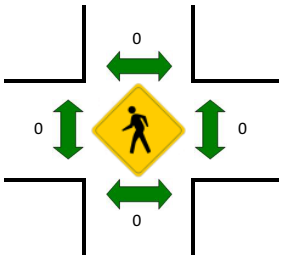
QC JOB #: 17042809
DATE: Tue, May 13 2025

Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:15 AM -- 8:30 AM

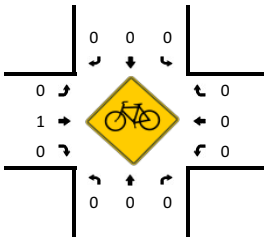


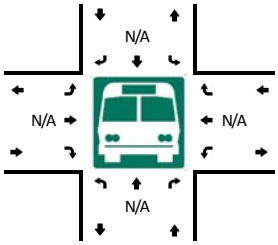




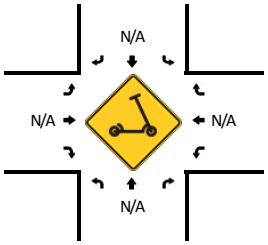












15-Min Count Period Beginning At	West Lam Access (Northbound)				West Lam Access (Southbound)				SW Leveton Dr (Eastbound)				SW Leveton Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	2	0	4	0	14	21	0	0	0	8	9	0	58	
7:15 AM	0	0	0	0	0	0	6	0	15	20	0	0	0	2	9	0	52	
7:30 AM	0	0	0	0	1	0	3	0	33	31	0	0	0	4	8	0	80	
7:45 AM	0	0	0	0	1	0	2	0	34	53	0	0	0	9	22	0	121	311
8:00 AM	0	0	0	0	3	0	4	0	30	45	0	0	0	11	14	0	107	360
8:15 AM	0	0	0	0	2	0	5	0	42	41	0	0	0	7	31	0	128	436
8:30 AM	0	0	0	0	1	0	3	0	39	29	0	0	0	10	18	0	100	456
8:45 AM	0	0	0	0	1	0	6	0	38	31	0	0	0	4	11	0	91	426

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	8	0	20	0	168	164	0	0	0	28	124	0	512
Heavy Trucks	0	0	0		0	0	4		4	4	0		0	4	0		16
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 6/2/2025 1:08 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

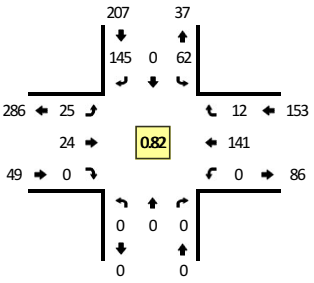
Type of peak hour being reported: User-Defined

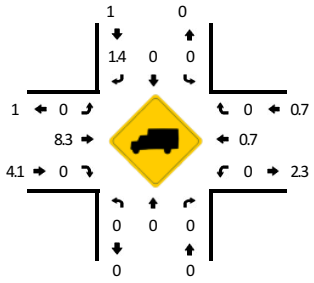
Method for determining peak hour: Total Entering Volume

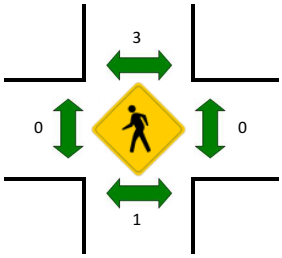
LOCATION: West Lam Access -- SW Leveton Dr
CITY/STATE: Tualatin, OR

QC JOB #: 17042810
DATE: Tue, May 13 2025

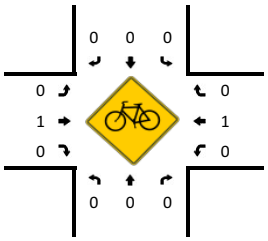
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

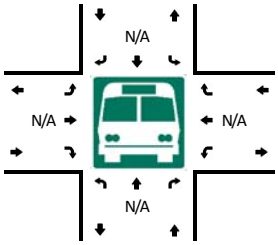




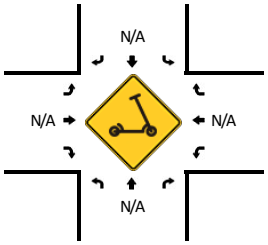












15-Min Count Period Beginning At	West Lam Access (Northbound)				West Lam Access (Southbound)				SW Leveton Dr (Eastbound)				SW Leveton Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	8	0	27	0	4	14	0	0	0	23	6	0	82	
4:15 PM	0	0	0	0	8	0	26	0	5	10	0	0	0	21	4	0	74	
4:30 PM	0	0	0	0	17	0	33	0	10	6	0	0	0	31	8	0	105	
4:45 PM	0	0	0	0	6	0	25	0	18	7	0	0	0	24	8	0	88	349
5:00 PM	0	0	0	0	14	0	45	0	6	6	0	0	0	53	1	0	125	392
5:15 PM	0	0	0	0	27	0	44	0	1	8	0	0	0	36	2	0	118	436
5:30 PM	0	0	0	0	15	0	31	0	0	3	0	0	0	28	1	0	78	409
5:45 PM	0	0	0	0	14	0	23	0	1	5	0	0	0	10	1	0	54	375

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	56	0	180	0	24	24	0	0	0	212	4	0	500
Heavy Trucks	0	0	0		0	0	4		0	0	0		0	0	0		4
Buses																	
Pedestrians		4				0				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 6/2/2025 1:10 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

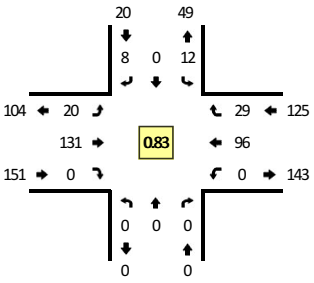
Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering Volume

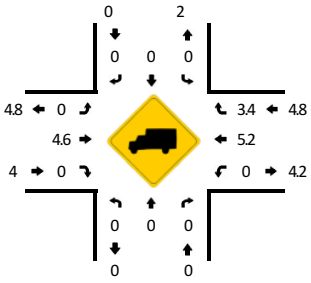
LOCATION: Central Lam Access -- SW Leveton Dr
CITY/STATE: Tualatin, OR

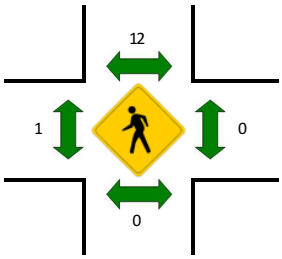
QC JOB #: 17042811
DATE: Tue, May 13 2025

Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:15 AM -- 8:30 AM

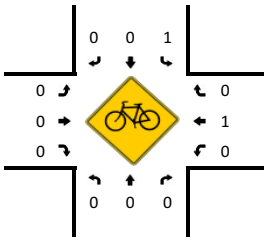


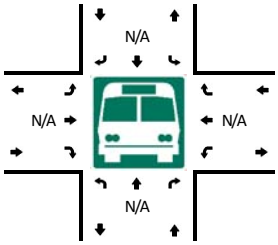




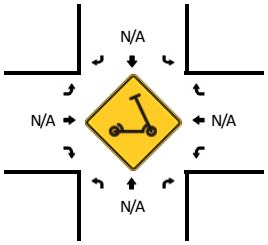












15-Min Count Period Beginning At	Central Lam Access (Northbound)				Central Lam Access (Southbound)				SW Leveton Dr (Eastbound)				SW Leveton Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	3	0	5	0	7	14	0	0	0	13	5	0	47	
7:15 AM	0	0	0	0	2	0	1	0	2	21	0	0	0	13	3	0	42	
7:30 AM	0	0	0	0	1	0	2	0	5	26	0	0	0	10	5	0	49	
7:45 AM	0	0	0	0	3	0	1	0	8	45	0	0	0	32	7	0	96	234
8:00 AM	0	0	0	0	5	0	4	0	10	36	0	0	0	22	8	0	85	272
8:15 AM	0	0	0	0	3	0	1	0	2	43	0	0	0	37	3	0	89	319
8:30 AM	0	0	0	0	1	0	3	0	3	27	0	0	0	24	10	0	68	338
8:45 AM	0	0	0	0	3	0	0	0	5	25	0	0	0	13	8	0	54	296

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	12	0	4	0	8	172	0	0	0	148	12	0	356
Heavy Trucks	0	0	0		0	0	0		0	4	0		0	8	0		12
Buses																	
Pedestrians		0				24				0				0			24
Bicycles	0	0	0		4	0	0		0	0	0		0	0	0		4
Scooters																	

Comments:

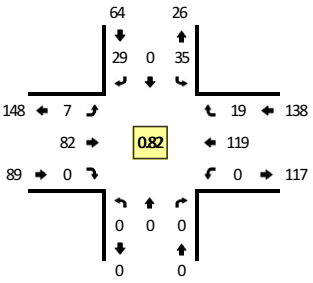
Report generated on 6/2/2025 1:08 PM

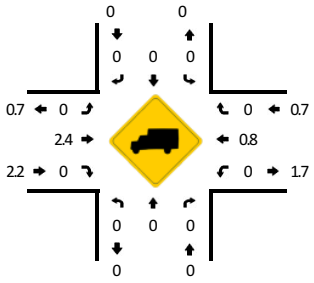
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

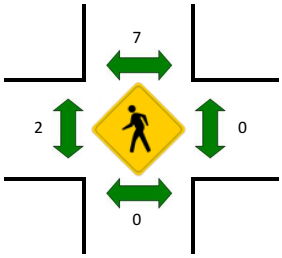
Type of peak hour being reported: User-Defined | Method for determining peak hour: Total Entering Volume

LOCATION: Central Lam Access -- SW Leveton Dr | **QC JOB #:** 17042812
CITY/STATE: Tualatin, OR | **DATE:** Tue, May 13 2025

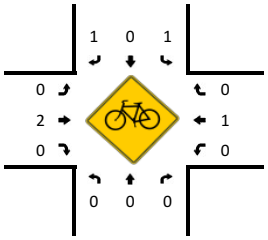
Peak-Hour: 4:45 PM -- 5:45 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

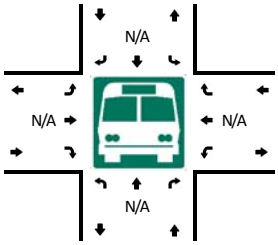




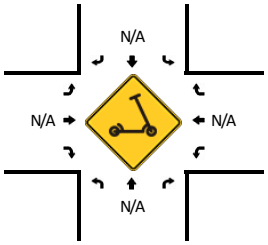












15-Min Count Period Beginning At	Central Lam Access (Northbound)				Central Lam Access (Southbound)				SW Leveton Dr (Eastbound)				SW Leveton Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	5	0	6	0	1	21	0	0	0	22	6	0	61	
4:15 PM	0	0	0	0	4	0	6	0	2	18	0	0	0	19	4	0	53	
4:30 PM	0	0	0	0	1	0	6	0	0	24	0	0	0	28	6	0	65	
4:45 PM	0	0	0	0	7	0	7	0	2	10	0	0	0	25	6	0	57	236
5:00 PM	0	0	0	0	4	0	9	0	1	23	0	0	0	43	4	0	84	259
5:15 PM	0	0	0	0	12	0	8	0	4	30	0	0	0	29	6	0	89	295
5:30 PM	0	0	0	0	12	0	5	0	0	19	0	0	0	22	3	0	61	291
5:45 PM	0	0	0	0	7	0	3	0	3	18	0	0	0	7	1	0	39	273

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	48	0	32	0	16	120	0	0	0	116	24	0	356
Heavy Trucks	0	0	0		0	0	0		0	8	0		0	0	0		8
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		4	0	4		0	4	0		0	0	0		12
Scooters																	

Comments:

Report generated on 6/2/2025 1:10 PM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

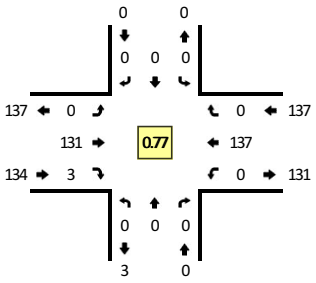
Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering Volume

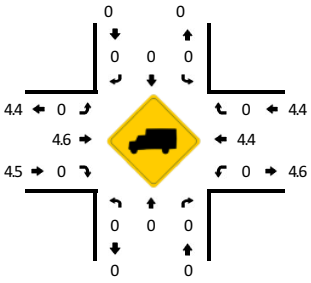
LOCATION: East Lam Access -- SW Leveton Dr
CITY/STATE: Tualatin, OR

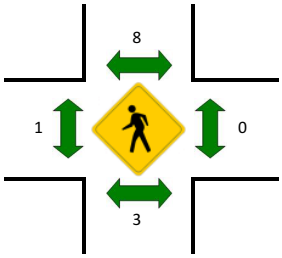
QC JOB #: 17042813
DATE: Tue, May 13 2025

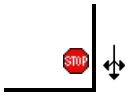
Peak-Hour: 8:00 AM -- 9:00 AM
Peak 15-Min: 8:15 AM -- 8:30 AM

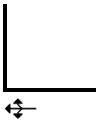


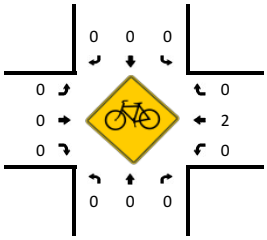


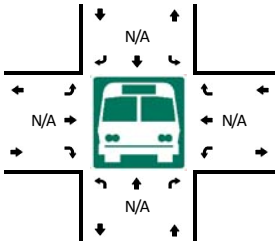


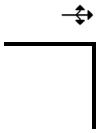


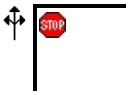


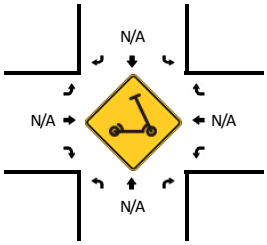












15-Min Count Period Beginning At	East Lam Access (Northbound)				East Lam Access (Southbound)				SW Leveton Dr (Eastbound)				SW Leveton Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	0	0	0	0	0	13	2	0	0	20	0	0	35	
7:15 AM	0	0	0	0	0	0	0	0	0	15	1	0	0	16	0	0	32	
7:30 AM	0	0	0	0	0	0	0	0	0	21	0	0	0	16	0	0	37	
7:45 AM	0	0	0	0	0	0	0	0	0	43	0	0	1	41	0	0	85	189
8:00 AM	0	0	0	0	0	0	0	0	0	34	1	0	0	36	0	0	71	225
8:15 AM	0	0	0	0	0	0	0	0	0	42	1	0	0	45	0	0	88	281
8:30 AM	0	0	0	0	0	0	0	0	0	26	1	0	0	36	0	0	63	307
8:45 AM	0	0	0	0	0	0	0	0	0	29	0	0	0	20	0	0	49	271

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	0	0	0	0	0	168	4	0	0	180	0	0	352
Heavy Trucks	0	0	0		0	0	0		0	4	0		0	8	0		12
Buses																	
Pedestrians		4				8				4				0			16
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 6/2/2025 1:08 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: User-Defined

Method for determining peak hour: Total Entering Volume

LOCATION: East Lam Access -- SW Leveton Dr

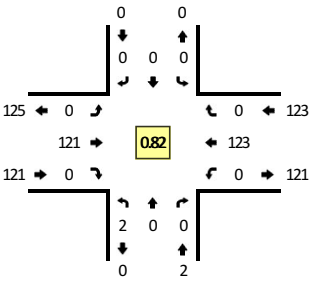
CITY/STATE: Tualatin, OR

QC JOB #: 17042814

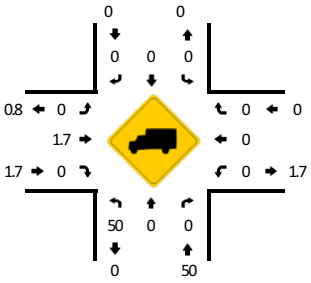
DATE: Tue, May 13 2025

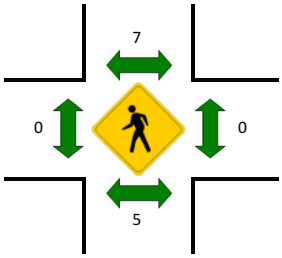
Peak-Hour: 4:45 PM -- 5:45 PM

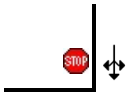
Peak 15-Min: 5:15 PM -- 5:30 PM

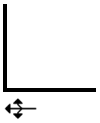


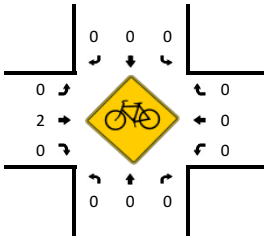


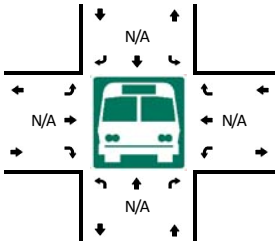


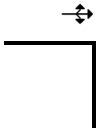


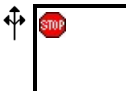


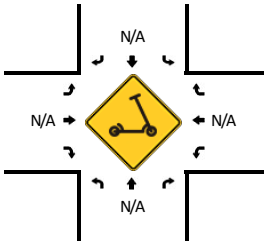












15-Min Count Period Beginning At	East Lam Access (Northbound)				East Lam Access (Southbound)				SW Leveton Dr (Eastbound)				SW Leveton Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	0	0	0	0	0	30	0	0	0	26	0	0	56	
4:15 PM	0	0	0	0	0	0	0	0	0	21	0	0	0	21	0	0	42	
4:30 PM	0	0	1	0	0	0	0	0	0	27	1	0	0	33	0	0	62	
4:45 PM	1	0	0	0	0	0	0	0	0	18	0	0	0	29	0	0	48	208
5:00 PM	1	0	0	0	0	0	0	0	0	27	0	0	0	44	0	0	72	224
5:15 PM	0	0	0	0	0	0	0	0	0	45	0	0	0	30	0	0	75	257
5:30 PM	0	0	0	0	0	0	0	0	0	31	0	0	0	20	0	0	51	246
5:45 PM	0	0	0	0	0	0	0	0	0	26	0	0	0	8	0	0	34	232

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	0	0	0	0	0	180	0	0	0	120	0	0	300
Heavy Trucks	0	0	0		0	0	0		0	8	0		0	0	0		8
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

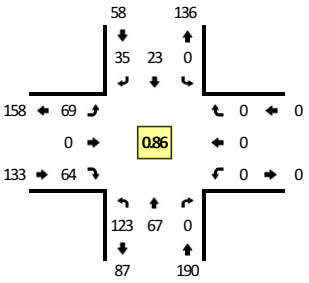
Report generated on 6/2/2025 1:10 PM

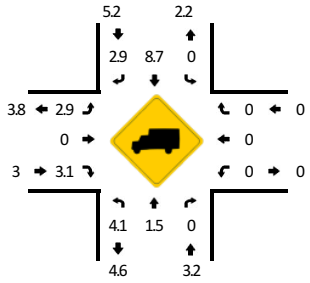
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

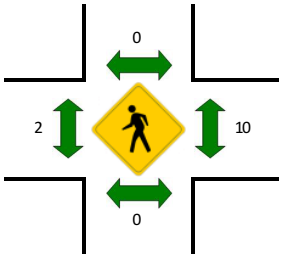
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

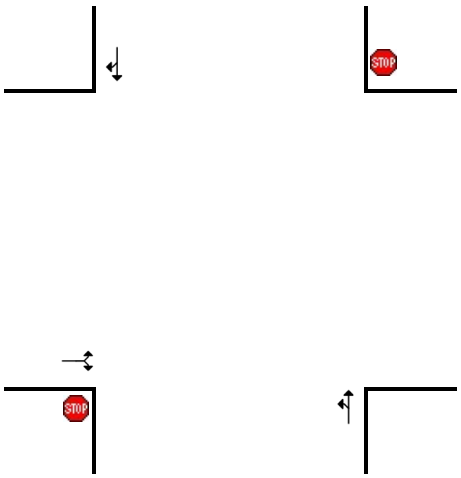
LOCATION: SW 108th Ave -- SW Leveton Dr | **QC JOB #:** 17042815
CITY/STATE: Tualatin, OR | **DATE:** Tue, May 13 2025

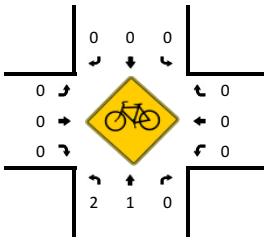
Peak-Hour: 7:45 AM -- 8:45 AM
Peak 15-Min: 8:15 AM -- 8:30 AM

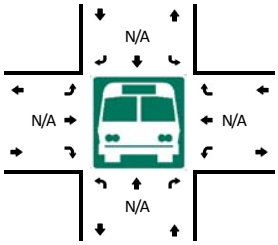


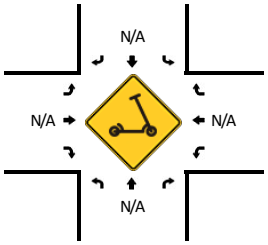












15-Min Count Period Beginning At	SW 108th Ave (Northbound)				SW 108th Ave (Southbound)				SW Leveton Dr (Eastbound)				SW Leveton Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	17	9	0	0	0	2	5	0	2	0	9	0	0	0	0	0	44	
7:15 AM	13	10	0	0	0	6	2	0	3	0	12	0	0	0	0	0	46	
7:30 AM	13	17	0	0	0	5	3	0	5	0	14	0	0	0	0	0	57	
7:45 AM	38	11	0	0	0	3	5	0	20	0	23	0	0	0	0	0	100	247
8:00 AM	22	17	0	0	0	5	12	0	13	0	15	0	0	0	0	0	84	287
8:15 AM	31	22	0	0	0	8	13	0	19	0	18	0	0	0	0	0	111	352
8:30 AM	32	17	0	0	0	7	5	0	17	0	8	0	0	0	0	0	86	381
8:45 AM	14	16	0	0	0	9	6	0	11	0	15	0	0	0	0	0	71	352

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	124	88	0	0	0	32	52	0	76	0	72	0	0	0	0	0	444
Heavy Trucks	4	4	0		0	0	4		0	0	4		0	0	0		16
Buses																	
Pedestrians		0				0				0				24			24
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

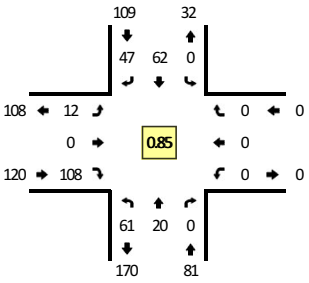
Comments:

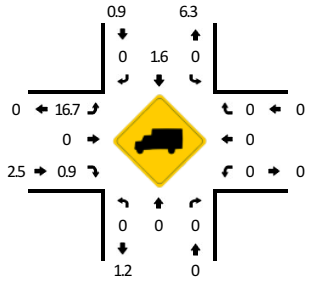
Report generated on 6/2/2025 1:12 PM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

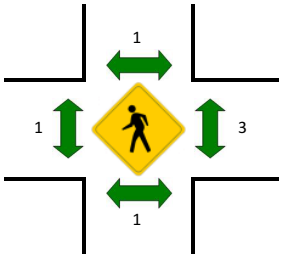
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

LOCATION: SW 108th Ave -- SW Leveton Dr | **QC JOB #:** 17042816
CITY/STATE: Tualatin, OR | **DATE:** Tue, May 13 2025

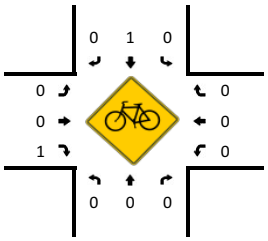
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

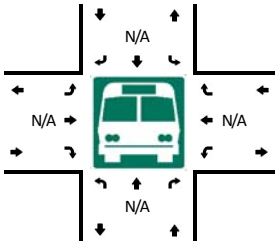




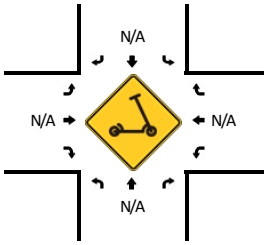












15-Min Count Period Beginning At	SW 108th Ave (Northbound)				SW 108th Ave (Southbound)				SW Leveton Dr (Eastbound)				SW Leveton Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	12	9	0	0	0	20	4	0	8	0	22	0	0	0	0	0	75	
4:15 PM	14	2	0	0	0	10	4	0	3	0	18	0	0	0	0	0	51	
4:30 PM	20	9	0	0	0	16	7	0	5	0	23	0	0	0	0	0	80	
4:45 PM	15	2	0	0	0	13	8	0	2	0	19	0	0	0	0	0	59	265
5:00 PM	15	8	0	0	0	22	19	0	1	0	26	0	0	0	0	0	91	281
5:15 PM	11	1	0	0	0	11	13	0	4	0	40	0	0	0	0	0	80	310
5:30 PM	3	7	0	0	0	20	11	0	1	0	31	0	0	0	0	0	73	303
5:45 PM	2	1	0	0	0	20	6	0	1	0	25	0	0	0	0	0	55	299

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	60	32	0	0	0	88	76	0	4	0	104	0	0	0	0	0	364
Heavy Trucks	0	0	0		0	0	0		0	0	0		0	0	0		0
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	4		0	0	0		4
Scooters																	

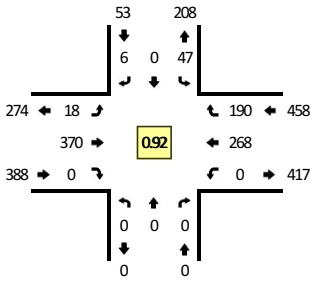
Comments:

Report generated on 6/2/2025 1:12 PM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

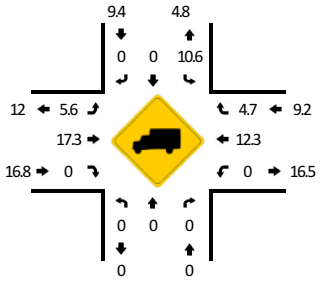
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

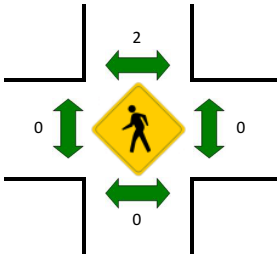
LOCATION: SW 108th Ave -- SW Herman Rd | **QC JOB #:** 17042817
CITY/STATE: Tualatin, OR | **DATE:** Tue, May 13 2025

Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

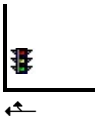


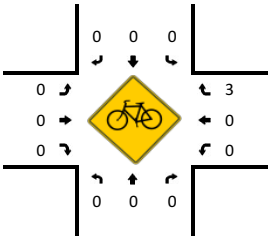
TRUE DATA TO IMPROVE MOBILITY

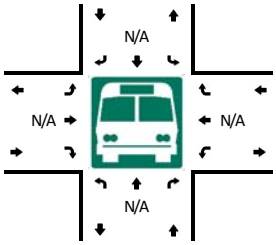


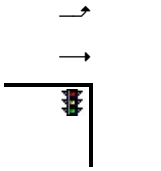




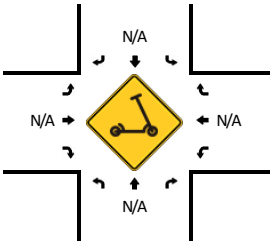












15-Min Count Period Beginning At	SW 108th Ave (Northbound)				SW 108th Ave (Southbound)				SW Herman Rd (Eastbound)				SW Herman Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	0	0	0	6	0	1	0	4	69	0	0	0	59	28	0	167	
7:15 AM	0	0	0	0	11	0	1	0	4	78	0	0	0	68	30	0	192	
7:30 AM	0	0	0	0	10	0	1	0	3	101	0	0	0	78	35	0	228	
7:45 AM	0	0	0	0	15	0	1	0	5	95	0	0	0	74	53	0	243	830
8:00 AM	0	0	0	0	13	0	1	0	8	86	0	0	0	63	43	0	214	877
8:15 AM	0	0	0	0	9	0	3	0	2	88	0	0	0	53	59	0	214	899
8:30 AM	0	0	0	0	10	0	2	0	3	68	0	0	0	53	57	0	193	864
8:45 AM	0	0	0	0	13	0	0	0	3	77	0	0	0	55	39	0	187	808

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	60	0	4	0	20	380	0	0	0	296	212	0	972
Heavy Trucks	0	0	0		4	0	0		0	88	0		0	48	4		144
Buses																	
Pedestrians		0				4				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 6/2/2025 1:12 PM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

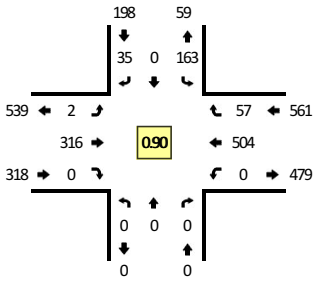
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

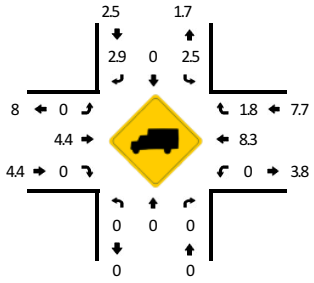
LOCATION: SW 108th Ave -- SW Herman Rd | **QC JOB #:** 17042818

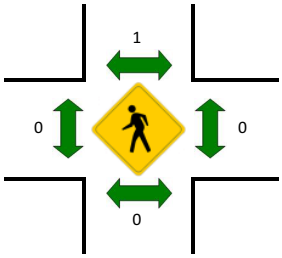
CITY/STATE: Tualatin, OR | **DATE:** Tue, May 13 2025

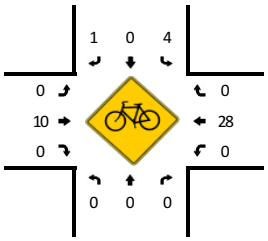
Peak-Hour: 4:00 PM -- 5:00 PM

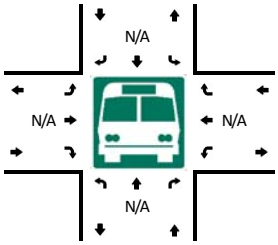
Peak 15-Min: 4:30 PM -- 4:45 PM

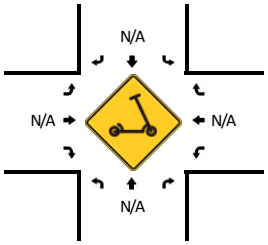












15-Min Count Period Beginning At	SW 108th Ave (Northbound)				SW 108th Ave (Southbound)				SW Herman Rd (Eastbound)				SW Herman Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	0	0	0	0	54	0	7	0	2	94	0	0	0	121	13	0	291	
4:15 PM	0	0	0	0	35	0	6	0	0	79	0	0	0	119	7	0	246	
4:30 PM	0	0	0	0	38	0	9	0	0	75	0	0	0	155	23	0	300	
4:45 PM	0	0	0	0	36	0	13	0	0	68	0	0	0	109	14	0	240	1077
5:00 PM	0	0	0	0	55	0	9	0	2	67	0	0	0	98	11	0	242	1028
5:15 PM	0	0	0	0	63	0	3	0	0	59	0	0	0	102	10	0	237	1019
5:30 PM	0	0	0	0	56	0	7	0	2	48	0	0	0	81	7	0	201	920
5:45 PM	0	0	0	0	46	0	5	0	0	28	0	0	0	51	4	0	134	814

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	0	0	0	152	0	36	0	0	300	0	0	0	620	92	0	1200
Heavy Trucks	0	0	0		0	0	0		0	12	0		0	40	4		56
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		4	0	0		0	0	0		0	108	0		112
Scooters																	

Comments:

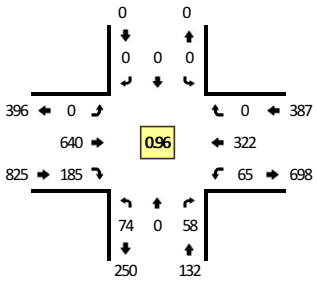
Report generated on 6/2/2025 1:12 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

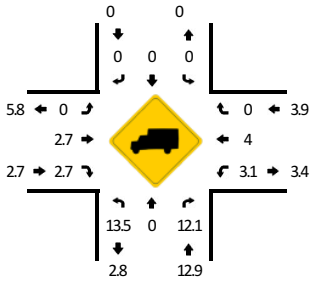
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

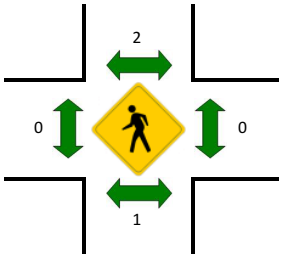
LOCATION: Teton Ave -- SW Tualatin Rd | **QC JOB #:** 17042821
CITY/STATE: Tualatin, OR | **DATE:** Tue, May 13 2025

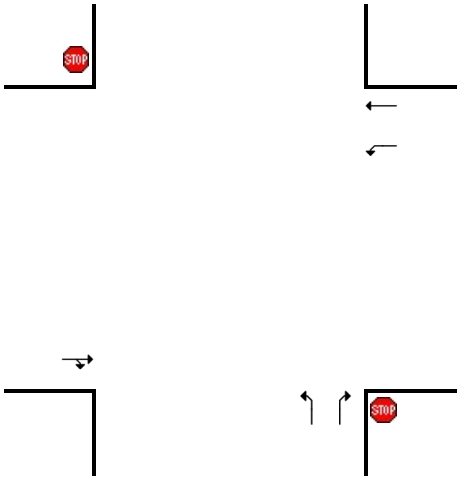
Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 8:00 AM -- 8:15 AM

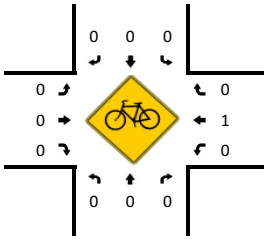


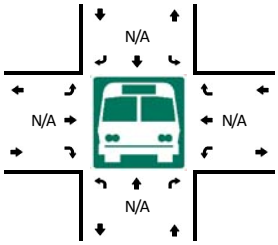
TRUE DATA TO IMPROVE MOBILITY

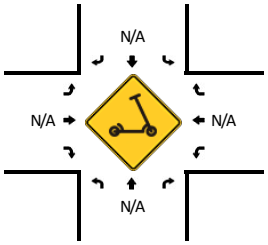












15-Min Count Period Beginning At	Teton Ave (Northbound)				Teton Ave (Southbound)				SW Tualatin Rd (Eastbound)				SW Tualatin Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	8	0	3	0	0	0	0	0	0	79	17	0	3	39	0	0	149	
7:15 AM	5	0	7	0	0	0	0	0	0	116	33	0	5	40	0	0	206	
7:30 AM	14	0	3	0	0	0	0	0	0	175	49	0	4	64	0	0	309	
7:45 AM	17	0	7	0	0	0	0	0	0	174	57	0	8	85	0	0	348	1012
8:00 AM	21	0	19	0	0	0	0	0	0	155	44	0	17	94	0	0	350	1213
8:15 AM	22	0	29	0	0	0	0	0	0	136	35	0	36	79	0	0	337	1344
8:30 AM	15	0	5	0	0	0	0	0	0	124	39	0	18	74	0	0	275	1310
8:45 AM	19	0	6	0	0	0	0	0	0	108	31	0	4	76	0	0	244	1206

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	84	0	76	0	0	0	0	0	0	620	176	0	68	376	0	0	1400
Heavy Trucks	0	0	16		0	0	0		0	4	8		4	8	0		40
Buses																	
Pedestrians		4				4				0				0			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

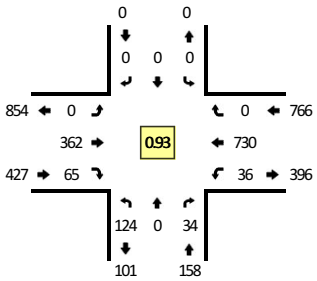
Comments:

Report generated on 6/2/2025 1:12 PM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

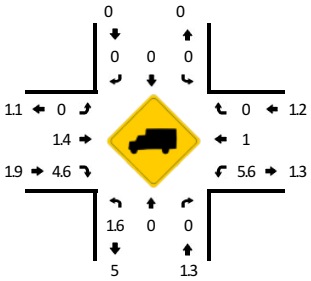
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

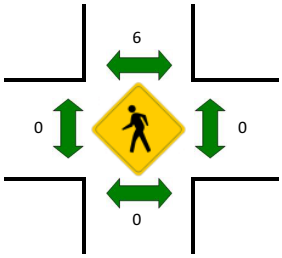
LOCATION: Teton Ave -- SW Tualatin Rd | **QC JOB #:** 17042822
CITY/STATE: Tualatin, OR | **DATE:** Tue, May 13 2025

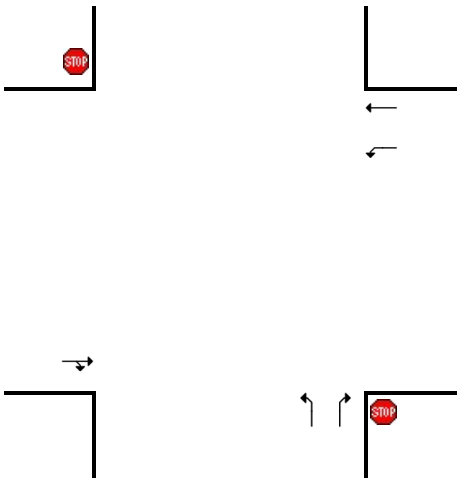
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 4:30 PM -- 4:45 PM

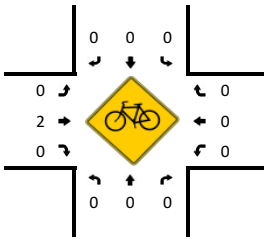


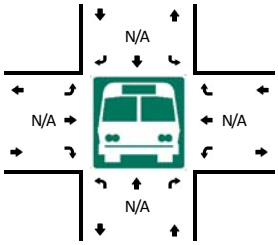
TRUE DATA TO IMPROVE MOBILITY

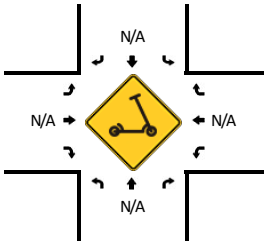












15-Min Count Period Beginning At	Teton Ave (Northbound)				Teton Ave (Southbound)				SW Tualatin Rd (Eastbound)				SW Tualatin Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	41	0	12	0	0	0	0	0	0	93	25	0	7	164	0	0	342	
4:15 PM	31	0	14	0	0	0	0	0	0	91	22	0	12	163	0	0	333	
4:30 PM	43	0	12	0	0	0	0	0	0	92	21	0	8	188	0	0	364	
4:45 PM	23	0	5	0	0	0	0	0	0	81	14	0	10	176	0	0	309	1348
5:00 PM	39	0	8	0	0	0	0	0	0	98	12	0	9	173	0	0	339	1345
5:15 PM	19	0	9	0	0	0	0	0	0	91	18	0	9	193	0	0	339	1351
5:30 PM	37	0	7	0	0	0	0	0	0	74	13	0	5	125	0	0	261	1248
5:45 PM	20	0	5	0	0	0	0	0	0	63	11	0	3	112	0	0	214	1153

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	172	0	48	0	0	0	0	0	0	368	84	0	32	752	0	0	1456
Heavy Trucks	0	0	0		0	0	0		0	8	4		0	0	0		12
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 6/2/2025 1:12 PM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

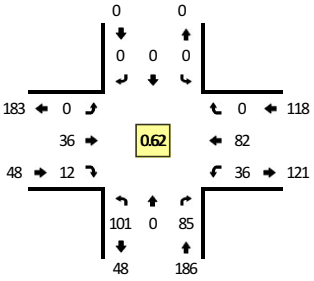
Type of peak hour being reported: Intersection Peak

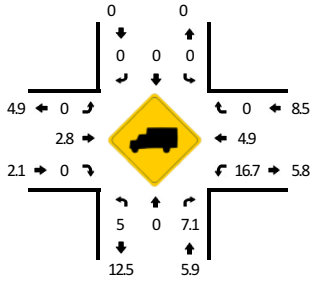
Method for determining peak hour: Total Entering Volume

LOCATION: SW 115th Ave -- SW Hazelbrook Rd
CITY/STATE: Tualatin, OR

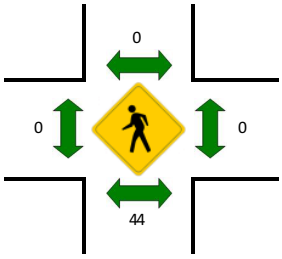
QC JOB #: 17042835
DATE: Tue, May 13 2025

Peak-Hour: 7:45 AM -- 8:45 AM
Peak 15-Min: 8:15 AM -- 8:30 AM

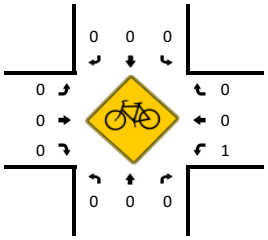


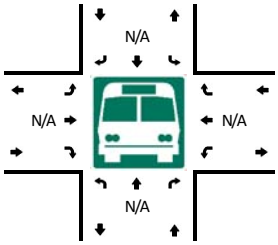


TRUE DATA TO IMPROVE MOBILITY

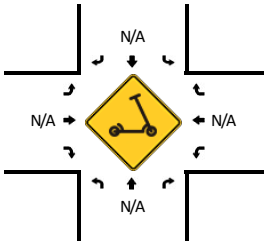












15-Min Count Period Beginning At	SW 115th Ave (Northbound)				SW 115th Ave (Southbound)				SW Hazelbrook Rd (Eastbound)				SW Hazelbrook Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	15	0	3	0	0	0	0	0	0	3	2	0	1	11	0	0	35	
7:15 AM	21	0	7	0	0	0	0	0	0	8	8	0	2	8	0	0	54	
7:30 AM	31	0	6	0	0	0	0	0	0	5	2	0	1	10	0	0	55	
7:45 AM	24	0	3	0	0	0	0	0	0	11	3	0	2	9	0	0	52	196
8:00 AM	27	0	30	0	0	0	0	0	0	10	2	0	11	17	0	0	97	258
8:15 AM	27	0	41	0	0	0	0	0	0	12	3	0	16	43	0	0	142	346
8:30 AM	23	0	11	0	0	0	0	0	0	3	4	0	7	13	0	0	61	352
8:45 AM	33	0	3	0	0	0	0	0	0	0	5	0	2	8	0	0	51	351

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	108	0	164	0	0	0	0	0	0	48	12	0	64	172	0	0	568
Heavy Trucks	12	0	12		0	0	0		0	4	0		12	16	0		56
Buses																	
Pedestrians		92				0				0				0			92
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

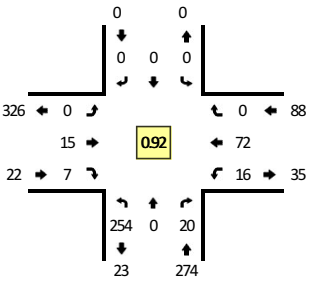
Report generated on 6/2/2025 1:12 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

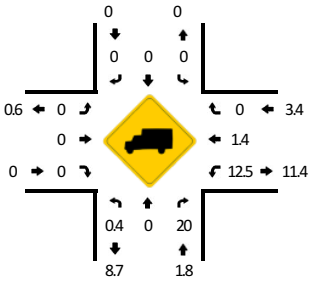
Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

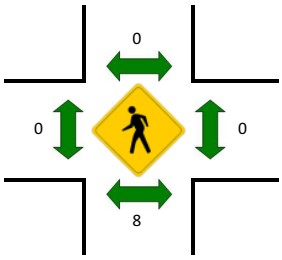
LOCATION: SW 115th Ave -- SW Hazelbrook Rd | **QC JOB #:** 17042836
CITY/STATE: Tualatin, OR | **DATE:** Tue, May 13 2025

Peak-Hour: 3:45 PM -- 4:45 PM
Peak 15-Min: 4:30 PM -- 4:45 PM

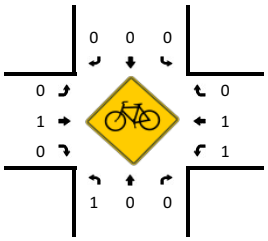


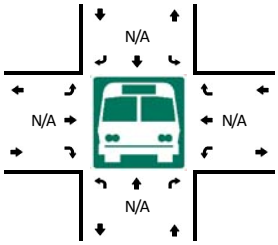




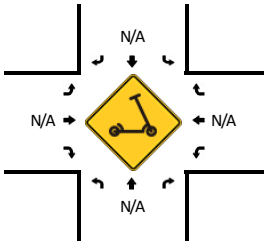












15-Min Count Period Beginning At	SW 115th Ave (Northbound)				SW 115th Ave (Southbound)				SW Hazelbrook Rd (Eastbound)				SW Hazelbrook Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	42	0	17	0	0	0	0	0	0	11	3	0	8	9	0	0	90	
3:15 PM	44	0	3	0	0	0	0	0	0	4	5	0	20	28	0	0	104	
3:30 PM	56	0	3	0	0	0	0	0	0	4	3	0	5	7	0	0	78	
3:45 PM	58	0	5	0	0	0	0	0	0	1	5	0	8	11	0	0	88	360
4:00 PM	71	0	6	0	0	0	0	0	0	6	2	0	4	11	0	0	100	370
4:15 PM	60	0	3	0	0	0	0	0	0	4	0	0	4	21	0	0	92	358
4:30 PM	65	0	6	0	0	0	0	0	0	4	0	0	0	29	0	0	104	384
4:45 PM	52	0	3	0	0	0	0	0	0	4	2	0	2	8	0	0	71	367
5:00 PM	75	0	0	0	0	0	0	0	0	3	3	0	2	9	0	0	92	359
5:15 PM	70	0	3	0	0	0	0	0	0	4	3	0	2	11	0	0	93	360
5:30 PM	61	0	0	0	0	0	0	0	0	1	1	0	1	6	0	0	70	326
5:45 PM	51	0	2	0	0	0	0	0	0	2	3	0	1	4	0	0	63	318

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	260	0	24	0	0	0	0	0	0	16	0	0	0	116	0	0	416
Heavy Trucks	0	0	4		0	0	0		0	0	0		0	4	0		8
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

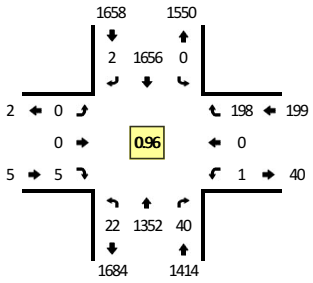
Report generated on 6/2/2025 1:12 PM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

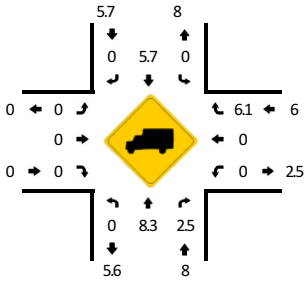
Type of peak hour being reported: System-wide Peak | Method for determining peak hour: Total Entering Volume

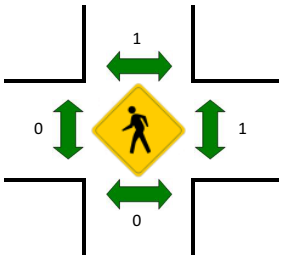
LOCATION: SW Pacific Hwy -- SW Hazelbrook Rd
CITY/STATE: Tualatin, OR

QC JOB #: 17042837
DATE: Tue, May 13 2025

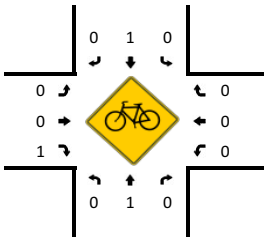
Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 8:15 AM -- 8:30 AM

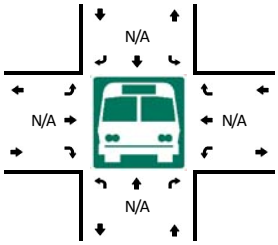




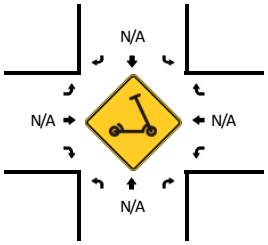












15-Min Count Period Beginning At	SW Pacific Hwy (Northbound)				SW Pacific Hwy (Southbound)				SW Hazelbrook Rd (Eastbound)				SW Hazelbrook Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	0	336	2	5	0	317	0	0	0	0	3	0	0	0	37	0	700	
7:15 AM	0	401	14	1	0	368	0	0	0	0	0	0	0	0	33	0	817	
7:30 AM	0	355	8	2	0	415	1	0	0	0	1	0	0	0	42	0	824	
7:45 AM	0	308	11	7	0	475	1	0	0	0	1	0	0	0	43	0	846	3187
8:00 AM	0	340	9	8	0	346	0	0	0	0	2	0	1	0	48	0	754	3241
8:15 AM	0	349	12	5	0	420	0	0	0	0	1	0	0	0	65	0	852	3276
8:30 AM	0	341	3	5	0	357	0	0	0	0	3	0	0	0	44	0	753	3205
8:45 AM	0	326	2	8	0	378	2	0	0	0	1	0	0	0	44	0	761	3120

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	0	1396	48	20	0	1680	0	0	0	0	4	0	0	0	260	0	3408
Heavy Trucks	0	140	4		0	140	0		0	0	0		0	0	32		316
Buses																	
Pedestrians		0				0				0				0			0
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 6/2/2025 1:03 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

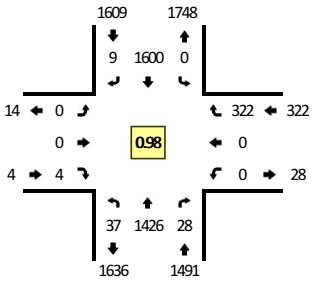
Type of peak hour being reported: User-Defined

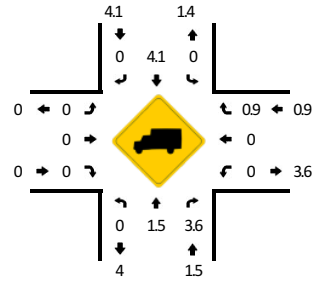
Method for determining peak hour: Total Entering Volume

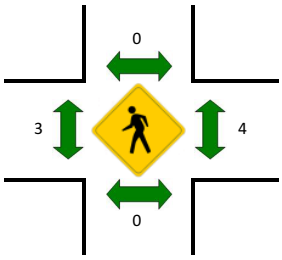
LOCATION: SW Pacific Hwy -- SW Hazelbrook Rd
CITY/STATE: Tualatin, OR

QC JOB #: 17042838
DATE: Tue, May 13 2025

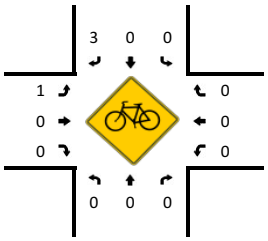
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:00 PM -- 5:15 PM

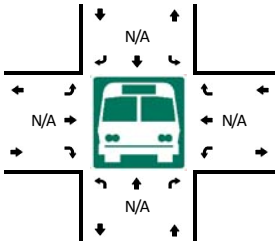




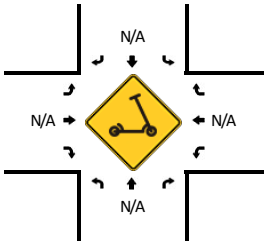












15-Min Count Period Beginning At	SW Pacific Hwy (Northbound)				SW Pacific Hwy (Southbound)				SW Hazelbrook Rd (Eastbound)				SW Hazelbrook Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
3:00 PM	1	374	12	5	0	449	2	0	0	0	1	0	0	0	50	0	894	
3:15 PM	1	336	5	8	0	404	1	0	0	0	1	0	0	0	72	0	828	
3:30 PM	3	358	6	5	0	413	2	0	0	0	1	0	0	0	64	0	852	
3:45 PM	5	367	4	2	0	381	1	0	0	0	2	0	0	0	65	0	827	3401
4:00 PM	0	407	6	11	0	375	0	0	0	0	1	0	0	0	73	0	873	3380
4:15 PM	0	333	4	5	0	407	0	0	0	0	1	0	0	0	97	0	847	3399
4:30 PM	1	361	4	7	0	387	2	0	0	0	0	0	0	0	90	0	852	3399
4:45 PM	2	338	13	6	0	395	3	0	0	0	2	0	0	0	67	0	826	3398
5:00 PM	1	380	5	7	0	402	2	0	0	0	2	0	0	0	78	0	877	3402
5:15 PM	1	347	6	12	0	416	2	0	0	0	0	0	0	0	87	0	871	3426
5:30 PM	2	337	1	15	0	351	1	0	0	0	2	0	0	0	73	0	782	3356
5:45 PM	2	311	6	9	0	295	0	0	0	0	5	0	0	0	53	0	681	3211

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	4	1520	20	28	0	1608	8	0	0	0	8	0	0	0	312	0	3508
Heavy Trucks	0	12	0		0	36	0		0	0	0		0	0	4		52
Buses																	
Pedestrians		0				0				8				0			8
Bicycles	0	0	0		0	0	12		0	0	0		0	0	0		12
Scooters																	

Comments:

Report generated on 6/2/2025 1:07 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

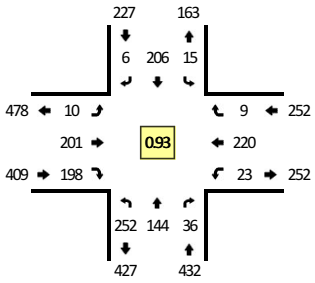
Type of peak hour being reported: Intersection Peak

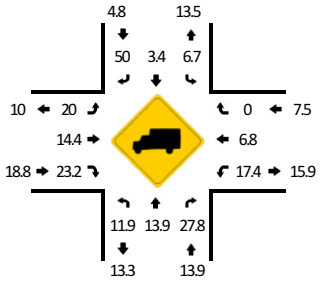
Method for determining peak hour: Total Entering Volume

LOCATION: Teton Ave -- SW Herman Rd
CITY/STATE: Tualatin, OR

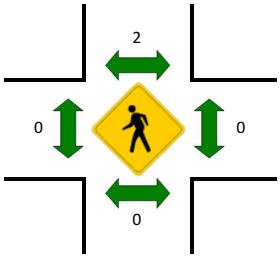
QC JOB #: 17042819
DATE: Tue, May 13 2025

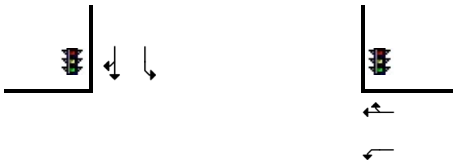
Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

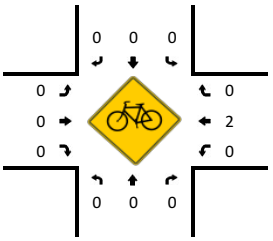


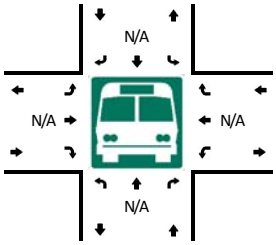


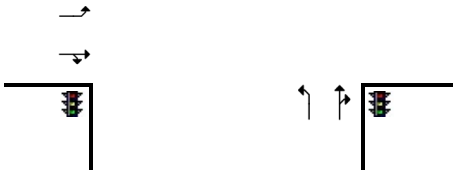
TRUE DATA TO IMPROVE MOBILITY

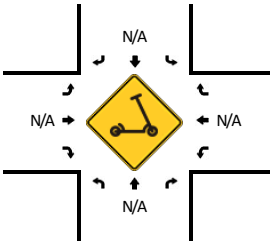












15-Min Count Period Beginning At	Teton Ave (Northbound)				Teton Ave (Southbound)				SW Herman Rd (Eastbound)				SW Herman Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	40	13	2	0	1	17	1	0	1	41	31	0	3	41	0	0	191	
7:15 AM	47	10	5	0	2	33	1	0	2	42	49	0	6	55	1	0	253	
7:30 AM	64	18	8	0	5	41	0	0	1	42	56	0	6	53	3	0	297	
7:45 AM	69	28	6	0	2	47	4	0	4	62	52	0	9	66	4	0	353	1094
8:00 AM	54	52	9	0	5	52	1	0	1	50	47	0	4	54	1	0	330	1233
8:15 AM	65	46	13	0	3	66	1	0	4	47	43	0	4	47	1	0	340	1320
8:30 AM	61	20	4	0	2	57	1	0	0	58	31	0	4	51	2	0	291	1314
8:45 AM	45	28	9	0	4	32	3	0	1	46	42	0	3	54	2	0	269	1230

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	276	112	24	0	8	188	16	0	16	248	208	0	36	264	16	0	1412
Heavy Trucks	36	8	8		0	4	4		4	64	56		8	16	0		208
Buses																	
Pedestrians		0				4				0				0			4
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

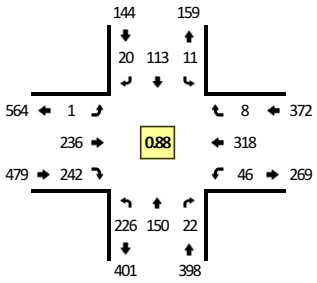
Report generated on 6/2/2025 1:12 PM

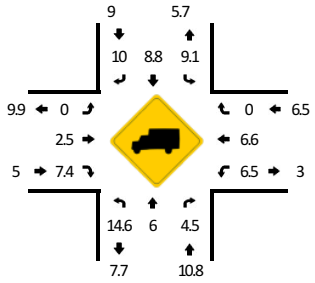
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: Intersection Peak | Method for determining peak hour: Total Entering Volume

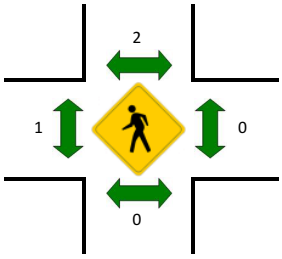
LOCATION: Teton Ave -- SW Herman Rd | **QC JOB #:** 17042820
CITY/STATE: Tualatin, OR | **DATE:** Tue, May 13 2025

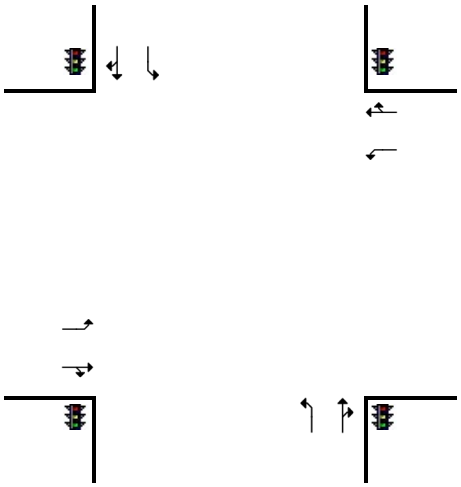
Peak-Hour: 4:00 PM -- 5:00 PM
Peak 15-Min: 4:30 PM -- 4:45 PM

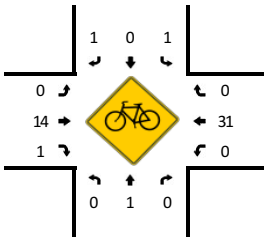


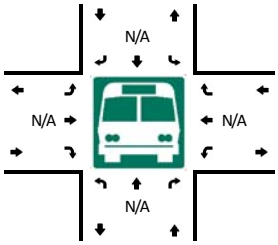


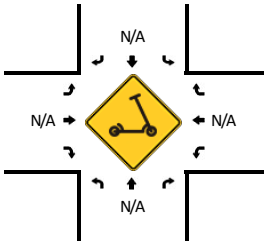
TRUE DATA TO IMPROVE MOBILITY











15-Min Count Period Beginning At	Teton Ave (Northbound)				Teton Ave (Southbound)				SW Herman Rd (Eastbound)				SW Herman Rd (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	48	50	4	0	2	30	5	0	0	79	66	0	5	85	3	0	377	
4:15 PM	53	43	7	0	1	28	5	0	0	63	58	0	8	72	2	0	340	
4:30 PM	73	34	5	0	4	28	9	0	0	45	69	0	30	96	3	0	396	
4:45 PM	52	23	6	0	4	27	1	0	1	49	49	0	3	65	0	0	280	1393
5:00 PM	36	46	8	0	1	23	3	0	0	79	66	0	8	62	3	0	335	1351
5:15 PM	26	25	3	0	3	21	3	0	0	58	63	0	7	80	0	0	289	1300
5:30 PM	39	39	3	0	2	23	0	0	1	47	54	0	4	49	2	0	263	1167
5:45 PM	23	18	4	0	0	16	2	0	0	34	44	0	5	28	4	0	178	1065

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	292	136	20	0	16	112	36	0	0	180	276	0	120	384	12	0	1584
Heavy Trucks	32	4	0		0	4	0		0	4	24		8	28	0		104
Buses																	
Pedestrians		0				4				0				0			4
Bicycles	0	0	0		0	0	4		0	8	0		0	120	0		132
Scooters																	

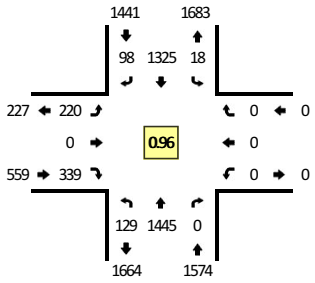
Comments:

Report generated on 6/2/2025 1:12 PM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

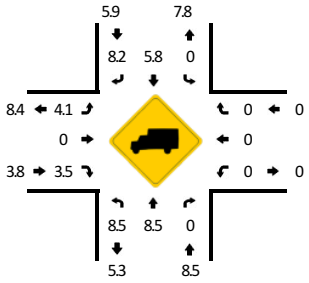
Type of peak hour being reported: System-wide Peak | Method for determining peak hour: Total Entering Volume

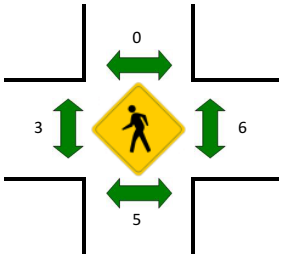
LOCATION: SW Pacific Hwy -- SW Fischer Dr | **QC JOB #:** 17042825
CITY/STATE: Washington County, OR | **DATE:** Tue, May 13 2025

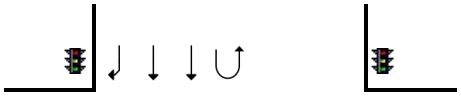
Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 7:45 AM -- 8:00 AM

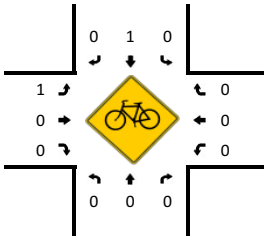


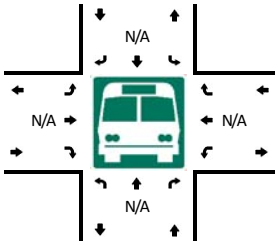
TRUE DATA TO IMPROVE MOBILITY

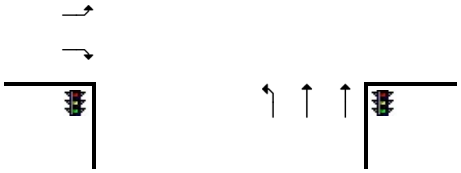


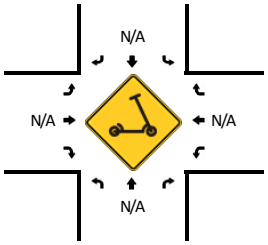












15-Min Count Period Beginning At	SW Pacific Hwy (Northbound)				SW Pacific Hwy (Southbound)				SW Fischer Dr (Eastbound)				SW Fischer Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	28	336	0	0	0	245	18	4	47	0	58	0	0	0	0	0	736	
7:15 AM	27	441	0	0	0	307	20	1	49	0	63	0	0	0	0	0	908	
7:30 AM	32	346	0	0	0	360	21	6	52	0	62	0	0	0	0	0	879	
7:45 AM	26	338	0	0	0	382	22	1	50	0	108	0	0	0	0	0	927	3450
8:00 AM	33	376	0	0	0	260	31	8	62	0	80	0	0	0	0	0	850	3564
8:15 AM	38	385	0	0	0	323	24	3	56	0	89	0	0	0	0	0	918	3574
8:30 AM	29	366	0	0	0	284	30	5	51	0	84	0	0	0	0	0	849	3544
8:45 AM	35	308	0	0	0	290	30	10	31	0	75	0	0	0	0	0	779	3396

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	104	1352	0	0	0	1528	88	4	200	0	432	0	0	0	0	0	3708
Heavy Trucks	0	112	0		0	60	12		4	0	8		0	0	0		196
Buses																	
Pedestrians		8				0				0				12			20
Bicycles	0	0	0		0	0	0		4	0	0		0	0	0		4
Scooters																	

Comments:

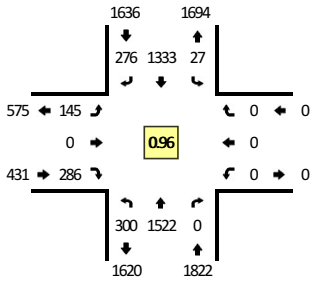
Report generated on 6/2/2025 1:03 PM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

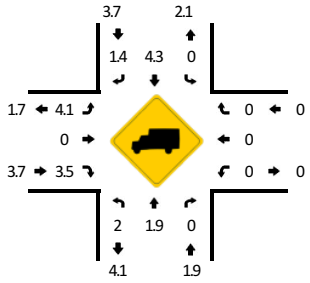
Type of peak hour being reported: System-wide Peak | Method for determining peak hour: Total Entering Volume

LOCATION: SW Pacific Hwy -- SW Fischer Dr
CITY/STATE: Washington County, OR

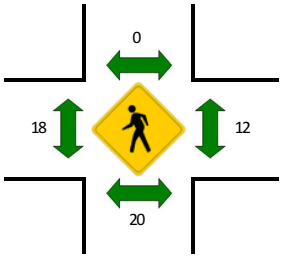
QC JOB #: 17042826
DATE: Tue, May 13 2025

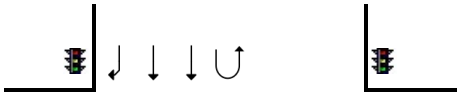
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 5:15 PM -- 5:30 PM

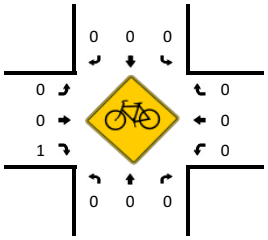


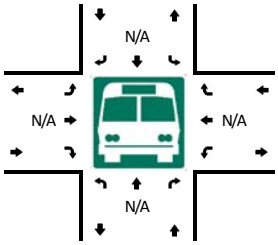


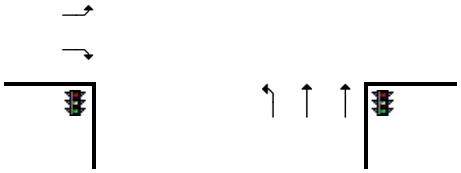
TRUE DATA TO IMPROVE MOBILITY

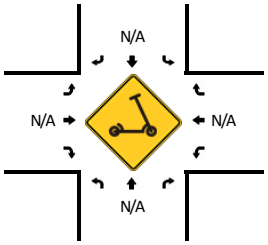












15-Min Count Period Beginning At	SW Pacific Hwy (Northbound)				SW Pacific Hwy (Southbound)				SW Fischer Dr (Eastbound)				SW Fischer Dr (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	64	357	0	0	0	293	72	11	50	0	75	0	0	0	0	0	922	
4:15 PM	76	369	0	0	0	348	45	10	20	0	67	0	0	0	0	0	935	
4:30 PM	68	401	0	0	0	312	73	5	40	0	75	0	0	0	0	0	974	
4:45 PM	67	346	0	1	0	323	72	6	39	0	62	0	0	0	0	0	916	3747
5:00 PM	75	388	0	0	0	328	64	9	32	0	86	0	0	0	0	0	982	3807
5:15 PM	89	387	0	0	0	370	67	7	34	0	63	0	0	0	0	0	1017	3889
5:30 PM	79	324	0	0	0	303	68	14	41	0	56	0	0	0	0	0	885	3800
5:45 PM	78	290	0	0	0	236	51	13	39	0	43	0	0	0	0	0	750	3634

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	356	1548	0	0	0	1480	268	28	136	0	252	0	0	0	0	0	4068
Heavy Trucks	8	16	0		0	72	8		0	0	12		0	0	0		116
Buses																	
Pedestrians		0				0				0				8			8
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

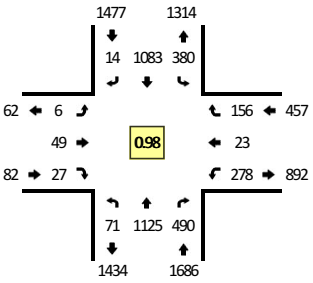
Report generated on 6/2/2025 1:04 PM

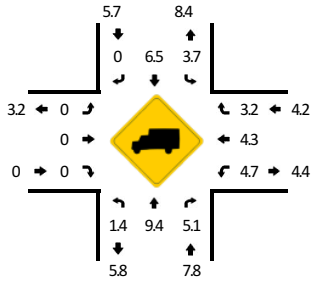
SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

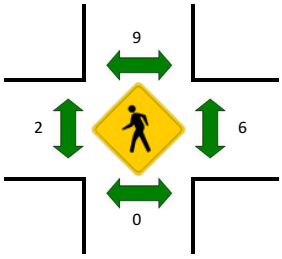
Type of peak hour being reported: System-wide Peak | Method for determining peak hour: Total Entering Volume

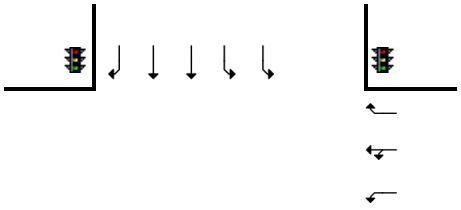
LOCATION: SW Pacific Hwy -- SW 116th Ave | **QC JOB #:** 17042823
CITY/STATE: King City, OR | **DATE:** Tue, May 13 2025

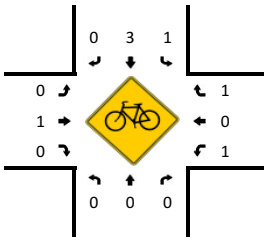
Peak-Hour: 7:30 AM -- 8:30 AM
Peak 15-Min: 7:30 AM -- 7:45 AM

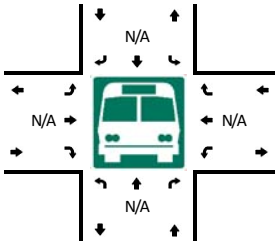


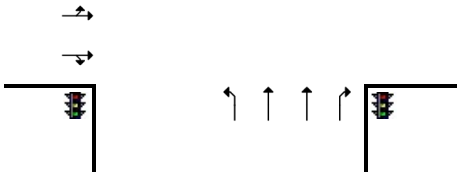


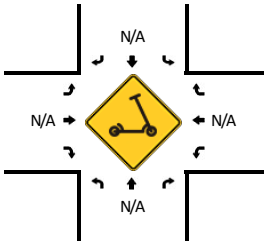












15-Min Count Period Beginning At	SW Pacific Hwy (Northbound)				SW Pacific Hwy (Southbound)				SW 116th Ave (Eastbound)				SW 116th Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
7:00 AM	2	288	118	5	66	230	4	1	0	8	5	0	46	0	32	0	805	
7:15 AM	6	301	131	7	56	257	0	6	0	9	3	0	65	7	34	0	882	
7:30 AM	6	295	126	8	72	297	3	8	0	9	6	0	75	3	32	0	940	
7:45 AM	4	269	103	14	87	309	3	14	2	14	8	0	66	3	39	0	935	3562
8:00 AM	8	274	139	14	79	224	3	1	2	12	8	0	71	9	43	0	887	3644
8:15 AM	7	287	122	10	115	253	5	4	2	14	5	0	66	8	42	0	940	3702
8:30 AM	14	268	103	8	133	240	2	4	1	18	5	0	65	12	50	0	923	3685
8:45 AM	11	260	96	14	117	220	4	6	0	16	10	0	88	7	49	0	898	3648

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	24	1180	504	32	288	1188	12	32	0	36	24	0	300	12	128	0	3760
Heavy Trucks	0	120	20		8	80	0		0	0	0		12	0	4		244
Buses																	
Pedestrians		0				16				4				12			32
Bicycles	0	0	0		4	4	0		0	0	0		0	0	0		8
Scooters																	

Comments:

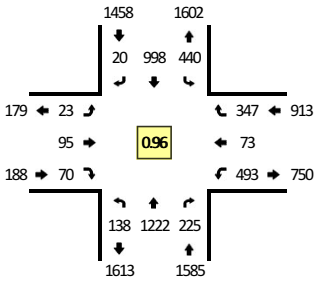
Report generated on 6/2/2025 1:03 PM | SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

Type of peak hour being reported: System-wide Peak | Method for determining peak hour: Total Entering Volume

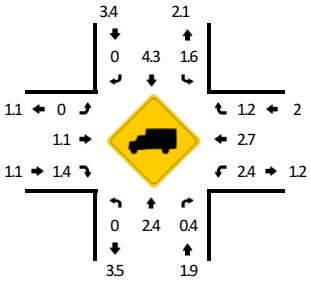
LOCATION: SW Pacific Hwy -- SW 116th Ave
CITY/STATE: King City, OR

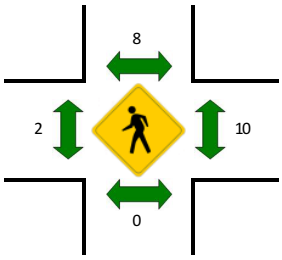
QC JOB #: 17042824
DATE: Tue, May 13 2025

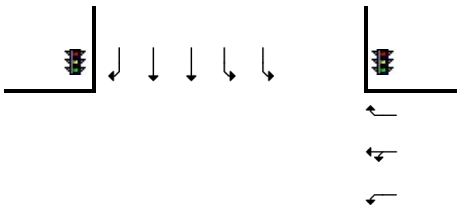
Peak-Hour: 4:30 PM -- 5:30 PM
Peak 15-Min: 4:30 PM -- 4:45 PM

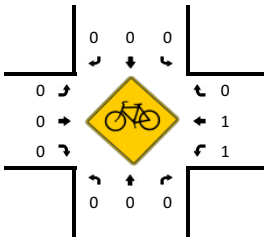


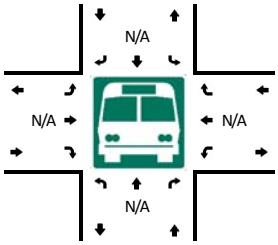


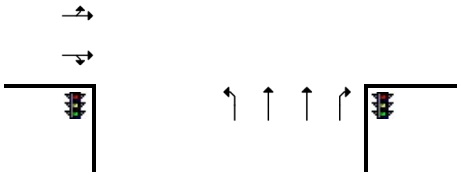


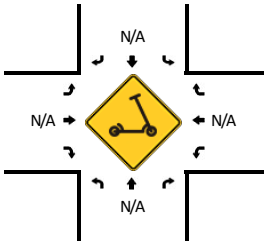












15-Min Count Period Beginning At	SW Pacific Hwy (Northbound)				SW Pacific Hwy (Southbound)				SW 116th Ave (Eastbound)				SW 116th Ave (Westbound)				Total	Hourly Totals
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U		
4:00 PM	30	299	49	6	92	247	10	3	4	22	13	0	123	22	89	0	1009	
4:15 PM	28	258	52	11	90	227	6	3	6	30	14	0	138	29	79	0	971	
4:30 PM	23	315	67	17	119	280	11	2	5	22	17	0	117	15	74	0	1084	
4:45 PM	22	275	53	15	109	201	4	5	7	24	13	0	132	23	85	0	968	4032
5:00 PM	28	315	54	9	94	251	1	2	7	24	24	0	108	18	86	0	1021	4044
5:15 PM	13	317	51	11	108	266	4	1	4	25	16	0	136	17	102	0	1071	4144
5:30 PM	22	262	52	8	92	230	6	7	12	16	12	0	132	19	81	0	951	4011
5:45 PM	18	275	71	10	102	195	7	3	5	12	12	0	103	22	80	0	915	3958

Peak 15-Min Flowrates	Northbound				Southbound				Eastbound				Westbound				Total
	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	Left	Thru	Right	U	
All Vehicles	92	1260	268	68	476	1120	44	8	20	88	68	0	468	60	296	0	4336
Heavy Trucks	0	40	0		4	64	0		0	4	0		20	4	0		136
Buses																	
Pedestrians		0				16				4				8			28
Bicycles	0	0	0		0	0	0		0	0	0		0	0	0		0
Scooters																	

Comments:

Report generated on 6/2/2025 1:04 PM

SOURCE: Quality Counts, LLC (http://www.qualitycounts.net) 1-877-580-2212

APPENDIX E.

SEASONAL ADJUSTMENT DATA

SEASONAL TREND TABLE (Updated: 11/08/2023)																								Seasonal Trend Peak Period Factor
TREND	1-Jan	15-Jan	1-Feb	15-Feb	1-Mar	15-Mar	1-Apr	15-Apr	1-May	15-May	1-Jun	15-Jun	1-Jul	15-Jul	1-Aug	15-Aug	1-Sep	15-Sep	1-Oct	15-Oct	1-Nov	15-Nov	1-Dec	15-Dec	
INTERSTATE URBANIZED	1.0869	1.1041	1.0688	1.0335	1.0182	1.0028	0.9995	0.9962	0.9901	0.9840	0.9641	0.9443	0.9502	0.9562	0.9510	0.9458	0.9575	0.9692	0.9791	0.9891	1.0107	1.0324	1.0532	1.0739	0.9443
INTERSTATE NONURBANIZED	1.2459	1.2915	1.2286	1.1657	1.0907	1.0158	1.0059	0.9960	0.9728	0.9496	0.9128	0.8760	0.8650	0.8540	0.8612	0.8684	0.8905	0.9126	0.9488	0.9850	1.0336	1.0822	1.1717	1.2612	0.8540
COMMUTER	1.0905	1.0986	1.0636	1.0285	1.0162	1.0038	0.9959	0.9879	0.9814	0.9749	0.9631	0.9512	0.9614	0.9717	0.9608	0.9500	0.9548	0.9595	0.9634	0.9673	1.0090	1.0507	1.0733	1.0958	0.9500
COASTAL DESTINATION	1.2064	1.1715	1.1234	1.0753	1.0545	1.0337	1.0372	1.0407	1.0216	1.0024	0.9586	0.9147	0.8760	0.8372	0.8371	0.8370	0.8678	0.8985	0.9578	1.0170	1.0730	1.1290	1.1823	1.2357	0.8370
COASTAL DESTINATION ROUTE	1.3937	1.2897	1.2245	1.1594	1.1247	1.0901	1.0911	1.0921	1.0516	1.0111	0.9493	0.8875	0.8172	0.7469	0.7455	0.7440	0.7916	0.8391	0.9274	1.0158	1.1126	1.2094	1.3193	1.4291	0.7440
AGRICULTURE	1.4537	1.4624	1.3705	1.2786	1.2139	1.1492	1.1207	1.0923	1.0075	0.9226	0.8742	0.8258	0.8348	0.8439	0.8422	0.8405	0.7976	0.7547	0.8073	0.8598	1.0041	1.1484	1.3339	1.5194	0.7547
RECREATIONAL SUMMER	1.6049	1.5814	1.4924	1.4034	1.3208	1.2382	1.2380	1.2377	1.0939	0.9500	0.8669	0.7839	0.7392	0.6945	0.7065	0.7185	0.7404	0.7624	0.8468	0.9311	1.1270	1.3230	1.5054	1.6879	0.6945
RECREATIONAL SUMMER WINTER	1.0075	0.9570	0.9184	0.8799	0.9701	1.0603	1.0675	1.0747	1.0843	1.0939	1.0045	0.9151	0.8244	0.7336	0.7795	0.8254	0.9368	1.0482	1.1794	1.3105	1.4969	1.6833	1.3470	1.0108	0.7336
RECREATIONAL WINTER**	0.8059	0.6710	0.6475	0.6240	0.7462	0.8685	0.9307	0.9928	1.1496	1.3064	1.2173	1.1282	0.9996	0.8709	0.9526	1.0342	1.1225	1.2108	1.4061	1.6013	1.9826	2.3639	1.6332	0.9026	0.6240
SUMMER	1.2374	1.2352	1.1733	1.1114	1.0786	1.0459	1.0330	1.0202	0.9851	0.9500	0.9160	0.8819	0.8660	0.8501	0.8561	0.8620	0.8891	0.9161	0.9430	0.9698	1.0525	1.1352	1.2002	1.2653	0.8501
SUMMER < 2500	1.2836	1.2576	1.1943	1.1310	1.1011	1.0712	1.0448	1.0184	0.9633	0.9082	0.8861	0.8641	0.8609	0.8578	0.8695	0.8813	0.8874	0.8936	0.9165	0.9394	1.0500	1.1607	1.2535	1.3463	0.8578
										May 13th															

*** Seasonal Trend Table factors are based on previous year ATR data. The table is updated yearly.**

*** Grey shading indicates months were seasonal factor is greater than or less than 30%**

****Use Recreation Winter Trend with Caution! ATR site was down for most of of 2022 due to loop issues and was estimated while the site was down**

Seasonal Adjustment Factor (May 13th):	1.03

APPENDIX F.

CRASH DATA

CITY OF TUALATIN, WASHINGTON COUNTY

124TH AVE at PACIFIC HY 99W, City of Tualatin, Washington County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023

1 - 4 of 13 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R U G	J N S	S H V	W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES / LOC	PED ERROR	ACT EVENT	CAUSE
06440	Y	N	N	N			12/09/2023	14	SW PACIFIC HY 99W	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT									01,07,29
NONE							SA		SW 124TH AVE	NE		TRF SIGNAL	N	WET	REAR		PRVTE	NE-SW								000	00
N							UNK			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	45	M	OR-Y		047,026	000	01,07,29
N							45 23 21.44	-122 48 20.25	009100100S00															OR<25			
																02	NONE 0	STOP									
																	PRVTE	NE-SW								011	00
																	PSNGR CAR		01	DRVR	NONE	44	M	OR-Y		000	00
																								OR<25			
																02	NONE 0	STOP									
																	PRVTE	NE-SW								011	00
																	PSNGR CAR		02	PSNG	INJC	45	F		000	000	00
																02	NONE 0	STOP									
																	PRVTE	NE-SW								011	00
																	PSNGR CAR		03	PSNG	INJC	10	F		000	000	00
04948	N	N	N	N	N	N	09/26/2019	16	SW PACIFIC HY 99W	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 9	TURN-R									08
CITY							TH	0	SW 124TH AVE	E		TRF SIGNAL	N	DRY	SS-O		N/A	SE-NE								000	00
N							6A			09	1		N	DAWN	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK	000	000	00
N							45 23 20.82	-122 48 19.67																UNK			
																02	NONE 9	STOP									
																	N/A	SE-NE								011	00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK	000	000	00
																								UNK			
06351	N	N	N	N			12/02/2019	16	SW PACIFIC HY 99W	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT									29
NONE							MO	0	SW 124TH AVE	SE		TRF SIGNAL	N	DRY	REAR		PRVTE	SE-NW								000	00
N							5P			09	1		N	DUSK	INJ		PSNGR CAR		01	DRVR	NONE	49	M	OR-Y	026	000	29
N							45 23 20.82	-122 48 19.67																OR<25			
																02	NONE 0	STOP									
																	PRVTE	SE-NW								011	00
																	PSNGR CAR		01	DRVR	INJC	47	M	OR-Y	000	000	00
																								OR<25			
00515	Y	N	N	N			02/14/2021	16	SW PACIFIC HY 99W	INTER	3-LEG	N	N	SNOW	S-1STOP	01	NONE	STRGHT									01,07
NONE							SU	0	SW 124TH AVE	SE		TRF SIGNAL	N	SNO	REAR		PRVTE	SE-NW								000	00
N							9A			09	1		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	00	M	OR-Y	026	000	01,07
N							45 23 20.84	-122 48 19.67																UNK			
																02	NONE	STOP									
																	PRVTE	SE-NW								012	00
																	PSNGR CAR		01	DRVR	INJC	66	F	OR-Y	000	000	00
																								OR<25			

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CITY OF TUALATIN, WASHINGTON COUNTY

124TH AVE at PACIFIC HY 99W, City of Tualatin, Washington County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023

5 - 8 of 13 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R U G	J N V	S I H	C L	W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
01866	N	N	N	N	N	N	N	04/26/2022	16	SW PACIFIC HY 99W	INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 9	STRGHT										07
CITY			TU		0				SW 124TH AVE	SE		TRF SIGNAL	N	WET	REAR			N/A	SE-NW									000		00
N			11A							06	1		N	DAY	PDO			PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N			45 23 20.82		-122 48 19.67														UNK										
																	02	NONE 9	STOP										
																		N/A	SE-NW								011		00
																		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																			UNK										
05197	N	N	N	N				10/10/2019	14	SW PACIFIC HY 99W	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT									013	29
NONE			TH						SW 124TH AVE	SW		TRF SIGNAL	N	DRY	REAR			PRVTE	SW-NE								000		00
N			5P							06	1		N	DAY	INJ			PSNGR CAR		01	DRVR	INJC	43	F	OR-Y		026	000		29
N			45 23 20.82		-122 48 19.67				009100200S00										OR<25										
																	02	NONE 0	STOP										
																		PRVTE	SW-NE								011	013	00
																		PSNGR CAR		01	DRVR	NONE	51	M	OTH-Y		000	000		00
																			N-RES										
																	03	NONE 0	STOP										
																		PRVTE	SW-NE								022		00
																		PSNGR CAR		01	DRVR	NONE	26	F	OR-Y		000	000		00
																			OR<25										
02288	N	N	N	N				05/08/2019	14	SW PACIFIC HY 99W	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 9	STRGHT										29
NONE			WE						SW 124TH AVE	SW		TRF SIGNAL	N	DRY	REAR			N/A	SW-NE								000		00
N			5P							06	1		N	DAY	PDO			PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N			45 23 20.82		-122 48 19.67				009100200S00										UNK										
																	02	NONE 9	STOP										
																		N/A	SW-NE								011		00
																		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																			UNK										
03031	Y	N	N	N	N	N		08/17/2020	14	SW PACIFIC HY 99W	INTER	3-LEG	N	Y	CLR	FIX OBJ	01	NONE 9	TURN-L									058	01
CITY			MO						SW 124TH AVE	SW		TRF SIGNAL	N	DRY	FIX			N/A	SE-SW								000		00
N			4P							05	0		N	DAY	PDO			PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N			45 23 21.43		-122 48 20.24				009100100S00										UNK										
00854	N	Y	N	N				03/12/2021	14	SW PACIFIC HY 99W	INTER	3-LEG	N	N	CLD	S-1STOP	01	NONE	STRGHT										29,07
CITY			FR						SW 124TH AVE	SW		TRF SIGNAL	N	DRY	REAR			PRVTE	SW-NE								000		00
N			10P							06	1		N	DLIT	INJ			PSNGR CAR		01	DRVR	NONE	33	F	OR-Y		000,026	000		29,07
N			45 23 20.83		-122 48 19.67				009100200S00										OR<25										
																	02	NONE	STOP										
																		PRVTE	SW-NE								012		00
																		PSNGR CAR		01	DRVR	INJC	36	M	OTH-Y		000	000		00
																			N-RES										

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CITY OF TUALATIN, WASHINGTON COUNTY

124TH AVE at PACIFIC HY 99W, City of Tualatin, Washington County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023

9 - 13 of 13 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R U G S	J N S	S H V	W O R L	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
																02	NONE PRVTE PSNGR CAR	STOP SW-NE	02	PSNG	INJC	26	F			000	012 000		00 00
05702	N	N	N	N	N	N	12/17/2021	14	SW PACIFIC HY 99W	INTER	3-LEG	N	N	CLD	S-OTHER	01	NONE 9	TURN-L											08
CITY			FR						SW 124TH AVE	SW		TRF SIGNAL	N	WET	TURN		N/A	SE-SW									000		00
N N			5A 45 23 20.82				-122 48 19.67		009100200S00	05	1		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK UNK		000	000		00
																02	NONE 9 N/A PSNGR CAR	TURN-L SE-SW	01	DRVR	NONE	00	Unk	UNK UNK		000	000 000		00 00
03539	N	N	N	N	N	N	08/30/2021	14	SW PACIFIC HY 99W	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 9	STRGHT											07
CITY			MO						SW 124TH AVE	SW		TRF SIGNAL	N	DRY	REAR		N/A	SW-NE									000		00
N N			6P 45 23 20.58				-122 48 20.24		009100200S00	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK UNK		000	000		00
																02	NONE 9 N/A PSNGR CAR	STOP SW-NE	01	DRVR	NONE	00	Unk	UNK UNK		000	011 000		00 00
04025	N	N	N	N	N	N	09/06/2022	14	SW PACIFIC HY 99W	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											04
CITY			TU						SW 124TH AVE	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	SE-NW									019		00
N N			8A 45 23 21.44				-122 48 20.25		009100100S00	02	1		Y	DAY	INJ		PSNGR CAR		01	DRVR	NONE	68	F	OR-Y OR<25		000	000		00
																02	NONE 0 PRVTE PSNGR CAR	TURN-L NE-SE	01	DRVR	INJC	40	M	OR-Y OR<25		003	000 000		00 04
91096	N	N	N	N			04/14/2022	14	SW PACIFIC HY 99W	INTER	3-LEG	N	N	CLR	S-OTHER	01	NONE 9	TURN-L											05,08
NO RPT			TH						SW 124TH AVE	CN		TRF SIGNAL	N	DRY	TURN		N/A	SE-SW									000		00
N N			9A 45 23 20.82				-122 48 19.67		009100200S00	03	0		N	DAY	PDO		SEMI TOW		01	DRVR	NONE	00	Unk	UNK UNK		000	000		00
																02	NONE 9 N/A PSNGR CAR	TURN-L SE-SW	01	DRVR	NONE	00	Unk	UNK UNK		000	000 000		00 00

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091: PACIFIC HIGHWAY WEST

Highway 091 MAINLINE, MP 11.45 to 11.49 01/01/2019 to 12/31/2023, Both Add and Non-Add mileage, ALL Crashes Severity, ALL Crashes Circumstance

1 - 4 of 33 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D R G S	M J N V	S I H L	C N R K	O W	DATE / DAY / TIME / LAT	COUNTY / CITY / URBAN AREA / LONG	RD# / COMPNT / MLG / MILEPNT	FC	CONN# / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE / (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF-CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TYPE / TRLR QTY / OWNER	MOVE / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
00635	N	N	N	N	N	N	N	02/24/2021	WASHINGTON	1	14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	STRGHT									013	07,27
CITY								WE	TIGARD	MN 0		SW PACIFIC HY 99W	NE		TRF SIGNAL	N	WET	REAR		PRVTE	NE-SW							000		00
N								7P	PORTLAND UA	11.46		SW 116TH AVE	05	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	31	M	OR-Y		026	000		07,27
N								45 24 16.39	-122 47 49.13			009100100S00															OR<25					
																			02	NONE	STOP								012	013	00
																				PRVTE	NE-SW										
																				PSNGR CAR		01	DRVR	INJC	83	F	OR-Y		000	000		00
																											OR<25					
																			03	NONE	STOP										
																				PRVTE	NE-SW								022		00
																				PSNGR CAR		01	DRVR	NONE	00	M	UNK		000	000		00
																											UNK					
03418	N	N	N	N				07/03/2019	WASHINGTON	1	14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 9	STRGHT											29
NONE								WE	TIGARD	MN 0		SW PACIFIC HY 99W	NE		TRF SIGNAL	N	DRY	REAR		N/A	NE-SW							000		00
N								8A	PORTLAND UA	11.46		SW 116TH AVE	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N								45 24 16.38	-122 47 49.12			009100100S00															UNK					
																			02	NONE 9	STOP										
																				N/A	NE-SW								012		00
																				PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																											UNK					
05377	N	N	N	N				12/06/2021	WASHINGTON	1	14		INTER	CROSS	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT									013	29
CITY								MO	TIGARD	MN 0		SW DURHAM RD	NE		TRF SIGNAL	N	WET	REAR		UNKN	NE-SW							000		00
N								3P	PORTLAND UA	11.46		SW PACIFIC HY 99W	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		026	000		29
N								45 24 16.37	-122 47 49.13			009100100S00															UNK					
																			02	NONE 0	STOP										
																				PRVTE	NE-SW								011	013	00
																				PSNGR CAR		01	DRVR	INJC	49	M	OR-Y		000	000		00
																											OR>25					
																			03	NONE 0	STOP										
																				UNKN	NE-SW								011		00
																				PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																											UNK					
04966	N	N	N	N				10/24/2022	WASHINGTON	1	14		INTER	CROSS	N	N	CLR	S-STRGHT	01	NONE 0	STRGHT											13
NONE								MO	TIGARD	MN 0		SW DURHAM RD	NE		TRF SIGNAL	N	DRY	SS-O		UNKN	NE-SW							022		00
N								4P	PORTLAND UA	11.46		SW PACIFIC HY 99W	06	0		N	DAY	INJ		UNKNOWN		01	DRVR	NONE	00	Unk	UNK		045	000		13
N								45 24 16.38	-122 47 49.12			009100100S00															UNK					
																			02	NONE 0	STRGHT										
																				PRVTE	NE-SW								000		00
																				PSNGR CAR		01	DRVR	INJC	27	M	OR-Y		000	000		00
																											OR<25					
																			03	NONE 0	STOP										
																				PRVTE	NE-SW								011		00
																				PSNGR CAR		01	DRVR	NONE	26	M	OR-Y		000	000		00
																											OR<25					

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091: PACIFIC HIGHWAY WEST

Highway 091 MAINLINE, MP 11.45 to 11.49 01/01/2019 to 12/31/2023, Both Add and Non-Add mileage, ALL Crashes Severity, ALL Crashes Circumstance

5 - 9 of 33 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R U G S	J N V	S H L	W R K	DATE / DAY / TIME / LAT	COUNTY / CITY / URBAN AREA / LONG	RD# FC / COMPNT / MLG TYP / MILEPNT	CONN# / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE / (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF-CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
05744	N	N	N	N	N	N	11/07/2023	WASHINGTON	1 14		INTER	CROSS	N	N	CLD	S-1STOP	01	NONE 0	STRGHT										001	07,29
CITY			TU				TIGARD		MN 0	SW PACIFIC HY 99W	NE		TRF SIGNAL	N	WET	REAR		PRVTE	NE-SW								006		00
N			8A				PORTLAND UA		11.46	SW 116TH AVE	06	0		N	DAY	INJ		MTRCYCLE		01	DRVR	INJA	35		OR-Y		043,026	000	001	07,29
N			45 24 16.38				-122 47 49.12			009100100S00															OR<25					
																	02	NONE 0	STOP											
																		PRVTE	NE-SW								011		00
																		PSNGR CAR		01	DRVR	NONE	57	M	OR-Y		000	000		00
																									OR<25					
01817	N	N	N	N			04/14/2023	WASHINGTON	1 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 9	STRGHT											29
NONE			FR				TIGARD		MN 0	SW PACIFIC HY 99W	NE		TRF SIGNAL	N	DRY	REAR		N/A	NE-SW								000		00
N			UNK				PORTLAND UA		11.46	SW 116TH AVE	06	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N			45 24 16.38				-122 47 49.12			009100100S00															UNK					
																	02	NONE 9	STOP											
																		N/A	NE-SW								011		00
																		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																									UNK					
02454	N	N	N	N			05/18/2023	WASHINGTON	1 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 9	STRGHT											29
NONE			TH				TIGARD		MN 0	SW PACIFIC HY 99W	NE		TRF SIGNAL	N	DRY	REAR		N/A	NE-SW								000		00
N			12P				PORTLAND UA		11.46	SW 116TH AVE	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N			45 24 16.38				-122 47 49.12			009100100S00															UNK					
																	02	NONE 9	STOP											
																		N/A	NE-SW								012		00
																		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																									UNK					
02737	N	N	N	N			06/02/2023	WASHINGTON	1 14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 9	STRGHT											27,29
NONE			FR				TIGARD		MN 0	SW PACIFIC HY 99W	NE		TRF SIGNAL	N	DRY	REAR		N/A	NE-SW								000		00
N			1P				PORTLAND UA		11.46	SW 116TH AVE	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N			45 24 16.38				-122 47 49.12			009100100S00															UNK					
04165	N	N	N	N	N	N	08/21/2023	WASHINGTON	1 14		INTER	CROSS	N	N	CLR	S-STRGHT	01	NONE 9	STRGHT											07,13
CITY			MO				TIGARD		MN 0	SW PACIFIC HY 99W	NE		TRF SIGNAL	N	DRY	REAR		N/A	NE-SW								000		00
N			4A				PORTLAND UA		11.46	SW 116TH AVE	06	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N			45 24 16.38				-122 47 49.12			009100100S00															UNK					
																	02	NONE 9	STRGHT											
																		N/A	NE-SW								006		00
																		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																									UNK					
01119	N	N	N	N			03/11/2021	WASHINGTON	1 14		INTER	CROSS	N	N	CLR	S-1TURN	01	NONE 9	TURN-R											08,14
NONE			TH				TIGARD		MN 0	SW PACIFIC HY 99W	CN		R-GRN-SIG	N	DRY	TURN		N/A	NE-NW								000		00
N			8A				PORTLAND UA		11.46	SW 116TH AVE	03	0		N	DAY	PDO		SEMI TOW		01	DRVR	NONE	00	Unk	UNK		000	000		00
N			45 24 16.39				-122 47 49.12			009100100S00															UNK					

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091: PACIFIC HIGHWAY WEST

Highway 091 MAINLINE, MP 11.45 to 11.49 01/01/2019 to 12/31/2023, Both Add and Non-Add mileage, ALL Crashes Severity, ALL Crashes Circumstance

10 - 14 of 33 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D R U G	M J I N	S C H V	W O R L	DATE / DAY / TIME / LAT	COUNTY / CITY / URBAN AREA / LONG	RD# FC / COMPNT / MLG TYP / MILEPNT	CONN# / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE / (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS / RES	PED LOC	ERROR	ACT	EVENT	CAUSE
																	02	NONE 9	TURN-R										
																		N/A	NE-NW									000		00
																		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																									UNK					
06279	N	N	N	N			12/04/2023	WASHINGTON	1 14		INTER	CROSS	N	N	RAIN	ANGL-OTH	01	NONE 9	U-TURN										08
NONE							MO	TIGARD	MN 0	SW PACIFIC HY 99W	CN		TRF SIGNAL	N	WET	TURN		N/A	SW-SW									000		00
N							6P	PORTLAND UA	11.46	SW 116TH AVE	03	0		N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N							45 24 16.38	-122 47 49.12		009100100S00															UNK					
																	02	NONE 9	TURN-R										
																		N/A	NW-SW									016		00
																		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																									UNK					
06946	N	N	N	N	N	N	12/29/2019	WASHINGTON	1 14		STRGHT		N	N	RAIN	S-STRGHT	01	NONE 9	STRGHT										13
CITY							SU		MN 0		UN	(DIVMD)	UNKNOWN	N	WET	SS-O		N/A	N -S									000		00
N							5A	PORTLAND UA	11.49		03			N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N							45 24 14.92	-122 47 49.93		009100100S00		(04)													UNK					
																	02	NONE 9	STRGHT										
																		N/A	N -S									000		00
																		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																									UNK					
02017	N	N	N	N	N	N	05/27/2020	WASHINGTON	2 14		INTER	CROSS	N	N	CLR	PED	01	NONE 0	TURN-L										02
CITY							WE	TIGARD	MN 0	SW DURHAM RD	NE		TRF SIGNAL	N	DRY	PED		PRVTE	NW-NE									000		00
N							6A	PORTLAND UA	11.46	SW PACIFIC HY 99W	05	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	37	M	OR-Y		029	026		02
N							45 24 16.02	-122 47 47.92		009100200S00															OR<25					
																			-											
																			STRGHT		01	PED	INJB	36	M		I XWLK	000	035		00
																			SE NW											
05590	N	N	N	N	N	N	11/01/2023	WASHINGTON	2 14		INTER	CROSS	N	N	RAIN	PED	01	NONE 0	TURN-L										107	02
CITY							WE	TIGARD	MN 0	SW DURHAM RD	NE		L-GRN-SIG	N	WET	PED		PRVTE	NW-NE									000		00
N							2P	PORTLAND UA	11.46	SW PACIFIC HY 99W	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	41	F	NONE		029	000		02
N							45 24 16.02	-122 47 47.92		009100200S00															OR<25					
																			-											
																			STRGHT		01	CONV	INJB	58	M		I XWLK	000	000		00
																			SE NW											
06457	N	N	N	N			12/08/2023	WASHINGTON	2 14		INTER	CROSS	N	N	CLD	BIKE	01	NONE 0	TURN-R										27,02,15
CITY							FR	TIGARD	MN 0	SW DURHAM RD	SE		TRF SIGNAL	N	DRY	TURN		PRVTE	SE-NE									015		00
N							10P	PORTLAND UA	11.46	SW PACIFIC HY 99W	06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	17	F	OR-Y		027	038		27,02
N							45 24 16.02	-122 47 47.92		009100200S00															OR<25					

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091: PACIFIC HIGHWAY WEST

Highway 091 MAINLINE, MP 11.45 to 11.49 01/01/2019 to 12/31/2023, Both Add and Non-Add mileage, ALL Crashes Severity, ALL Crashes Circumstance

15 - 19 of 33 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D R G S	M J N V	S I H L	W C O K	DATE / DAY / TIME / LAT	COUNTY / CITY / URBAN AREA / LONG	RD# / COMPNT / MLG / MILEPNT	FC / TYP	CONN# / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF-CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
																				- STRGHT NE SW	01	BIKE	INJB	49	M		UNK	046	047		15
05771	N	N	N	N			11/10/2023	WASHINGTON	2	14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE							FR	TIGARD	MN 0		SW DURHAM RD	SE		TRF SIGNAL	N	DRY	REAR		PRVTE	SE-NW								000		00
N							8A	PORTLAND UA	11.46		SW PACIFIC HY 99W	06	0		N	DAWN	INJ		PSNGR CAR		01	DRVR	NONE	19	M	OR-Y		026	000		29
N							45 24 16.02	-122 47 47.92			009100200S00															OR<25					
																		02	NONE 0	STOP										
																			PRVTE	SE-NW								012		00
																			PSNGR CAR		01	DRVR	INJC	33	M	OR-Y		000	000		00
																										OR<25				
02933	N	N	N	N			08/14/2020	WASHINGTON	2	14		INTER	CROSS	N	N	CLR	S-STRGHT	01	NONE 9	STRGHT										13
NONE							FR	TIGARD	MN 0		SW DURHAM RD	SW		UNKNOWN	N	DRY	SS-O		N/A	SW-NE								000		00
N							12P	PORTLAND UA	11.46		SW PACIFIC HY 99W	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N							45 24 16.04	-122 47 47.92			009100200S00															UNK					
																		02	NONE 9	STRGHT										
																			N/A	SW-NE								000		00
																			PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																										UNK				
01980	N	N	N	N			04/24/2023	WASHINGTON	2	14		INTER	CROSS	N	N	CLR	S-1TURN	01	NONE 9	STRGHT										29
NONE							MO	TIGARD	MN 0		SW DURHAM RD	SW		TRF SIGNAL	N	DRY	REAR		N/A	SW-NE								000		00
N							9A	PORTLAND UA	11.46		SW PACIFIC HY 99W	06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N							45 24 16.02	-122 47 47.92			009100200S00															UNK					
																		02	NONE 9	U-TURN										
																			N/A	SW-SW								000		00
																			PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																										UNK				
02317	N	N	N	N			05/11/2023	WASHINGTON	2	14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 0	STRGHT									013	29
NONE							TH	TIGARD	MN 0		SW DURHAM RD	SW		TRF SIGNAL	N	DRY	REAR		PRVTE	SW-NE								000		00
N							5P	PORTLAND UA	11.46		SW PACIFIC HY 99W	06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	34	M	OR-Y		026	000		29
N							45 24 16.02	-122 47 47.92			009100200S00															OR<25					
																		02	NONE 0	STOP										
																			PRVTE	SW-NE								011	013	00
																			PSNGR CAR		01	DRVR	INJB	39	M	OR-Y		000	000		00
																										OR<25				
																		03	NONE 0	STOP										
																			PRVTE	SW-NE								022		00
																			PSNGR CAR		01	DRVR	NONE	43	M	OR-Y		000	000		00
																										OR<25				

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SER# / INVEST / RD DPT / UNLOC?	S P E D	D R A L	M J U G	S V N H	W L R K	DATE / DAY / TIME / LAT	COUNTY / CITY / URBAN AREA / LONG	RD# / COMPNT / MLG / MILEPNT	FC	CONN# / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE / (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF-CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
02345	N	N	N	N	N	06/29/2020	WASHINGTON	2	14		INTER	CROSS	N	N	CLD	ANGL-OTH	01	NONE 0	TURN-L										04
CITY						MO	TIGARD	MN 0		SW DURHAM RD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	SE-SW								000		00
N						9P	PORTLAND UA	11.46		SW PACIFIC HY 99W	02	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJC	28	M	OR-Y		097	000		00
N						45 24 16.02	-122 47 47.92			009100200S00															OR<25					
																	02	NONE 0	STRGHT									000		00
																		PRVTE	SW-NE											
																		PSNGR CAR		01	DRVR	NONE	18	M	OR-Y		097	000		00
																									OR<25					
																	02	NONE 0	STRGHT									000		00
																		PRVTE	SW-NE											
																		PSNGR CAR		02	PSNG	INJC	15	M			000	000		00
03133	N	N	N	N	N	08/03/2021	WASHINGTON	2	14		INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT											04
CITY						TU	TIGARD	MN 0		SW DURHAM RD	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	SW-NE								000		00
N						9A	PORTLAND UA	11.46		SW PACIFIC HY 99W	02	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	42	M	SUSP		020	000		04
N						45 24 16.04	-122 47 47.93			009100200S00															OR>25					
																	02	NONE 0	TURN-L									000		00
																		PRVTE	SE-SW											
																		PSNGR CAR		01	DRVR	INJC	42	M	OR-Y		000	000		00
																									OR<25					
00175	N	N	N	N		01/09/2020	WASHINGTON	2	14		INTER	CROSS	N	N	CLR	O-OTHER	01	NONE 9	TURN-L											02
NO RPT						TH	TIGARD	MN 0		SW PACIFIC HY 99W	CN		TRF SIGNAL	N	DRY	TURN		N/A	SE-SW								000		00
N						3P	PORTLAND UA	11.46		SW 116TH AVE	03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N						45 24 16.02	-122 47 47.92			009100200S00															UNK					
																	02	NONE 9	TURN-R									000		00
																		N/A	NW-SW											
																		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																									UNK					
01165	Y	N	N	N		03/13/2022	WASHINGTON	2	14		INTER	CROSS	N	N	RAIN	O-1 L-TURN	01	NONE	STRGHT										040,053,100	01,04
CITY						SU	TIGARD	MN 0		SW DURHAM RD	CN		L-GRN-SIG	N	WET	TURN		PRVTE	SW-NE								000	040,053,100	00
N						4A	PORTLAND UA	11.46		SW PACIFIC HY 99W	04	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJC	24	M	OR-Y		047,020	000		01,04
N						45 24 16.04	-122 47 47.93			009100200S00															OR<25					
																	02	NONE	TURN-L											
																		PRVTE	NE-SE								000		00
																		PSNGR CAR		01	DRVR	INJB	20	F	OR-Y		000	000		00
																									OR<25					
																	02	NONE	TURN-L											
																		PRVTE	NE-SE								000		00
																		PSNGR CAR		02	PSNG	INJA	20	F			000	000		00

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091: PACIFIC HIGHWAY WEST

Highway 091 MAINLINE, MP 11.45 to 11.49 01/01/2019 to 12/31/2023, Both Add and Non-Add mileage, ALL Crashes Severity, ALL Crashes Circumstance

24 - 28 of 33 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	D R A C	M J U S	S I N V	W C H L	O R K	DATE / DAY / TIME / LAT	COUNTY / CITY / URBAN AREA / LONG	RD# / COMPNT / MLG / MILEPNT	FC	CONN# / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE / (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF-CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
04861	N	N	N	N			09/27/2023	WASHINGTON	2	14		STRGHT		N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29,10
NONE							WE		MN 0			UN	(DIVMD)	UNKNOWN	N	DRY	REAR		PRVTE	S -N									000		00
N							12P	PORTLAND UA	11.48			00			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	54	M	OR-Y		026	000		29
N							45 24 15.05	-122 47 48.48			009100200S00		(04)													OR>25					
																		02	NONE 0	STOP										
																			PRVTE	S -N									011		00
																			PSNGR CAR		01	DRVR	INJC	63	F	OR-Y		000	000		00
																										OR<25					
05669	N	N	N	N			10/30/2019	WASHINGTON	2	14		STRGHT		N	N	CLR	S-STRGHT	01	NONE 9	STRGHT										13
NO RPT							WE		MN 0			UN	(DIVMD)	UNKNOWN	N	DRY	SS-O		N/A	S -N									000		00
N							3P	PORTLAND UA	11.48			03			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N							45 24 15.04	-122 47 48.46			009100200S00		(04)													UNK					
																		02	NONE 9	STRGHT										
																			N/A	S -N									000		00
																			PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																										UNK					
03354	N	N	N	N			08/18/2021	WASHINGTON	2	14		STRGHT		N	N	CLR	S-STRGHT	01	NONE 9	STRGHT										27,29
NONE							WE		MN 0			UN	(DIVMD)	UNKNOWN	N	DRY	REAR		N/A	S -N									000		00
N							2P	PORTLAND UA	11.48			04			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N							45 24 15.06	-122 47 48.47			009100200S00		(04)													UNK					
																		02	NONE 9	STRGHT										
																			N/A	S -N									000		00
																			PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																										UNK					
02733	N	N	N	N			06/01/2023	WASHINGTON	2	14		STRGHT		Y	N	CLR	S-1STOP	01	NONE 0	STRGHT										27,29
NO RPT							TH		MN 0			UN	(DIVMD)	TRF SIGNAL	N	DRY	REAR		PRVTE	S -N									000		00
N							2P	PORTLAND UA	11.48			04			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	36	F	OR-Y		014,026	038		27,29
N							45 24 15.05	-122 47 48.48			009100200S00		(02)													OR<25					
																		02	NONE 0	STOP										
																			PRVTE	S -N									011		00
																			PSNGR CAR		01	DRVR	INJC	82	M	OTH-Y		000	000		00
																										N-RES					
																		02	NONE 0	STOP										
																			PRVTE	S -N									011		00
																			PSNGR CAR		02	PSNG	INJB	73	F			000	000		00
01367	Y	N	N	N			03/28/2022	WASHINGTON	2	14		STRGHT		Y	N	RAIN	S-1STOP	01	NONE 9	STRGHT										01,29
NONE							MO		MN 0			SW	(DIVMD)	TRF SIGNAL	N	WET	REAR		N/A	SW-NE									000		00
N							3P	PORTLAND UA	11.48			03			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N							45 24 15.05	-122 47 48.48			009100200S00		(02)													UNK					
																		02	NONE 9	STOP										
																			N/A	SW-NE									011		00
																			PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																										UNK					
03158	N	N	N	N			08/05/2021	WASHINGTON	2	14		STRGHT		Y	N	CLR	S-1STOP	01	NONE 9	STRGHT										29
NO RPT							TH		MN 0			SW	(DIVMD)	TRF SIGNAL	N	DRY	REAR		N/A	SW-NE									000		00
N							12P	PORTLAND UA	11.48			04			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N							45 24 15.1	-122 47 48.5			009100200S00		(02)													UNK					

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091: PACIFIC HIGHWAY WEST

Highway 091 MAINLINE, MP 11.45 to 11.49 01/01/2019 to 12/31/2023, Both Add and Non-Add mileage, ALL Crashes Severity, ALL Crashes Circumstance

29 - 33 of 33 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	D R A L C	M J U G S	S N I V	W H C L	O R K	DATE / DAY / TIME / LAT	COUNTY / CITY / URBAN AREA / LONG	RD# / COMPNT / MLG / MILEPNT	FC	CONN# / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE / (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
																		02	NONE 9	STOP										
																			N/A	SW-NE									011		00
																			PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																										UNK					
06407	N	N	N	N			12/05/2019	WASHINGTON	2	14		STRGHT		N	N	CLR	S-STRGHT	01	NONE 9	STRGHT										13
NO RPT							TH		MN 0			UN	(DIVMD)	UNKNOWN	N	DRY	SS-O		N/A	S -N								000		00
N							4P	PORTLAND UA	11.49			03			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N							45 24 14.56	-122 47 48.76			009100200S00		(04)													UNK					
																		02	NONE 9	STRGHT										
																			N/A	S -N									000		00
																			PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																										UNK					
00245	N	N	N	N	N	N	01/13/2023	WASHINGTON	2	14		STRGHT		N	N	RAIN	S-STRGHT	01	NONE 9	STRGHT										13
CITY							FR		MN 0			UN	(DIVMD)	UNKNOWN	N	WET	SS-O		N/A	S -N								000		00
N							4P	PORTLAND UA	11.49			03			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N							45 24 14.56	-122 47 48.76			009100200S00		(04)													UNK					
																		02	NONE 9	STRGHT										
																			N/A	S -N									000		00
																			PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																										UNK					
04193	N	N	N	N			07/24/2023	WASHINGTON	2	14		STRGHT		N	N	CLR	S-STRGHT	01	NONE 9	STRGHT										13
NONE							MO		MN 0			UN	(DIVMD)	UNKNOWN	N	DRY	SS-O		N/A	S -N								000		00
N							5P	PORTLAND UA	11.49			03			N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N							45 24 14.56	-122 47 48.76			009100200S00		(05)													UNK					
																		02	NONE 9	STRGHT										
																			N/A	S -N									000		00
																			PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																										UNK					
02096	N	N	N	N			05/11/2022	WASHINGTON	2	14		STRGHT		Y	N	CLR	S-1STOP	01	NONE	STRGHT										29
COUNTY							WE		MN 0			UN	(DIVMD)	TRF SIGNAL	N	DRY	REAR		UNKN	S -N								000		00
N							4P	PORTLAND UA	11.49			04			N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	00	M	UNK		026	000		29
N							45 24 14.56	-122 47 48.76			009100200S00		(02)													UNK					
																		02	NONE	STOP										
																			PRVTE	S -N									011		00
																			PSNGR CAR		01	DRVR	INJB	34	F	OR-Y		000	000		00
																										OR<25					
																		02	NONE	STOP										
																			PRVTE	S -N									011		00
																			PSNGR CAR		02	PSNG	INJB	12	F			000	000		00
																		02	NONE	STOP										
																			PRVTE	S -N									011		00
																			PSNGR CAR		03	PSNG	INJC	03	F			000	000		00

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091: PACIFIC HIGHWAY WEST

Highway 091 MAINLINE, MP 11.91 to 11.93 01/01/2019 to 12/31/2023, Both Add and Non-Add mileage, ALL Crashes Severity, ALL Crashes Circumstance

1 - 6 of 23 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D R G S	M J N V	S I H L	C O R K	W	DATE / DAY / TIME / LAT	COUNTY / CITY / URBAN AREA / LONG	RD# FC / COMPNT / MLG TYP / MILEPNT	CONN# / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE / (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF-CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
01876	N	N	N	N				05/20/2021	WASHINGTON	1 14		STRGHT		Y	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE								TH		MN 0		UN	(DIVMD)	R-GRN-SIG	N	DRY	REAR		PRVTE	N -S									000	00
N								4P	PORTLAND UA	11.91		03			N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	39	F	OR-Y		026	000		29,07
N								45 23 53.26	-122 47 55.79		009100100S00		(04)							OR<25										
																		02	NONE 0	STOP										
																			PRVTE	N -S									011	00
																			PSNGR CAR		01	DRVR	INJC	53	F	OR-Y		000	000		00
																				OR<25										
04923	Y	N	N	N	N	N		09/29/2023	WASHINGTON	1 14		STRGHT		Y	N	CLD	S-STRGHT	01	NONE 0	STRGHT										01,29
COUNTY								FR		MN 0		N	(DIVMD)	TRF SIGNAL	N	WET	REAR		PRVTE	N -S									000	00
N								5A	PORTLAND UA	11.91		06			N	DAWN	INJ		PSNGR CAR		01	DRVR	NONE	32	F	OR-Y		047,042	000		01,29
N								45 23 53.25	-122 47 55.79		009100100S00		(02)							OR<25										
																		02	NONE 0	STRGHT										
																			PRVTE	N -S									000	00
																			PSNGR CAR		01	DRVR	INJB	25	F	OR-Y		000	000		00
																				OR<25										
																		02	NONE 0	STRGHT										
																			PRVTE	N -S									000	00
																			PSNGR CAR		02	PSNG	INJB	25	F			000	000		00
04851	N	N	N	N				09/20/2019	WASHINGTON	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NO RPT								FR		MN 0		N		TRF SIGNAL	N	DRY	REAR		PRVTE	N -S									000	00
N								2P	PORTLAND UA	11.92		06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	23	F	OR-Y		026	000		29
N								45 23 52.73	-122 47 55.84		009100100S00									OR<25										
																		02	NONE 0	STOP										
																			PRVTE	N -S									011	00
																			PSNGR CAR		01	DRVR	INJC	29	F	OR-Y		000	000		00
																				OR<25										
06706	N	N	N	N				12/21/2023	WASHINGTON	1 14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 9	STRGHT										29
NONE								TH		MN 0		N		TRF SIGNAL	N	DRY	REAR		N/A	N -S									000	00
N								11A	PORTLAND UA	11.92		06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N								45 23 52.73	-122 47 55.84		009100100S00									UNK										
																		02	NONE 9	STOP										
																			N/A	N -S									011	00
																			PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																				UNK										
00352	N	N	N	N				01/20/2019	WASHINGTON	1 14		INTER	3-LEG	N	N	UNK	PED	01	NONE 0	TURN-R										02
COUNTY								SU		MN 0		S		TRF SIGNAL	N	WET	PED		PRVTE	W -S									000	00
N								6A	PORTLAND UA	11.92		05	1		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	31	M	OR-Y		000	000		00
N								45 23 52.73	-122 47 55.84		009100100S00									OR>25										
																				-										
																				STRGHT		01	PED	INJB	23	M		I XWLK	028	035		02
																				W E										
04005	N	N	N	N				09/04/2022	WASHINGTON	1 14		INTER	CROSS	N	Y	CLR	FIX OBJ	01	NONE	TURN-L										092,079	26,40,08
NONE								SU		MN 0		S		TRF SIGNAL	N	DRY	FIX		PRVTE	E -S									000	092,079	00
N								9P	PORTLAND UA	11.92		05	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJC	60	M	OR-Y		080,081	027		26,40,08
N								45 23 52.73	-122 47 55.84		009100100S00									OR>25										

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091: PACIFIC HIGHWAY WEST

Highway 091 MAINLINE, MP 11.91 to 11.93 01/01/2019 to 12/31/2023, Both Add and Non-Add mileage, ALL Crashes Severity, ALL Crashes Circumstance

7 - 12 of 23 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D R U G	M J I N	S C H	W O R K	DATE / DAY / TIME / LAT	COUNTY / CITY / URBAN AREA / LONG	RD# / COMPNT / MLG / MILEPNT	FC / TYP	CONN# / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE / (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF-CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
02462	N	N	N	N			05/15/2019	WASHINGTON	1	14		INTER	CROSS	N	N	CLD	PED	01	NONE 0	TURN-L											04
COUNTY							WE		MN 0			S		TRF SIGNAL	N	WET	PED		PRVTE	S -W									000		00
N							12P	PORTLAND UA	11.92			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	75	F	OR-Y		000	000		00
N							45 23 52.73	-122 47 55.84			009100100S00															OR<25					
																				-										
																				STRGHT	01	CONV	INJC	77	M		I XWLK	020	035		04
																				E W										
05923	N	N	N	N			11/12/2019	WASHINGTON	1	14		INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT											27,29
NONE							TU		MN 0			S		TRF SIGNAL	N	WET	REAR		PRVTE	S -N									000		00
N							11A	PORTLAND UA	11.92			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	63	M	OR-Y		016,026	038		27,29
N							45 23 52.73	-122 47 55.84			009100100S00															OR>25					
																		02	NONE 0	STOP											
																			PRVTE	S -N									011		00
																			PSNGR CAR		01	DRVR	INJC	49	M	OR-Y		000	000		00
																										OR<25					
03096	N	N	N	N			08/04/2021	WASHINGTON	1	14		INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 9	STRGHT											29
NONE							WE		MN 0			S		TRF SIGNAL	N	DRY	REAR		N/A	S -N									000		00
N							6P	PORTLAND UA	11.92			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N							45 23 52.73	-122 47 55.84			009100100S00															UNK					
																		02	NONE 9	STOP											
																			N/A	S -N									011		00
																			PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																										UNK					
00550	N	Y	N	N	N	N	02/04/2022	WASHINGTON	1	14		INTER	CROSS	N	N	CLR	S-1STOP	01	NONE	STRGHT											07,29
COUNTY							FR		MN 0			S		L-GRN-SIG	N	DRY	REAR		PRVTE	S -N									000		00
N							7P	PORTLAND UA	11.92			06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	36	M	NONE		043,026	000		07,29
N							45 23 52.75	-122 47 55.84			009100100S00															OR<25					
																		02	NONE	STOP											
																			PRVTE	S -N									012		00
																			PSNGR CAR		01	DRVR	INJC	28	M	OR-Y		000	000		00
																										OR<25					
																		02	NONE	STOP											
																			PRVTE	S -N									012		00
																			PSNGR CAR		02	PSNG	INJC	29	F			000	000		00
01777	N	N	N	N	N	N	05/03/2020	WASHINGTON	1	14		INTER	3-LEG	N	Y	RAIN	FIX OBJ	01	NONE 9	TURN-R										100		27,08
COUNTY							SU		MN 0			W		TRF SIGNAL	N	WET	FIX		N/A	N -W									000		00
N							8A	PORTLAND UA	11.92			05	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N							45 23 52.74	-122 47 55.84			009100100S00															UNK					
00942	N	N	N	N			02/23/2023	WASHINGTON	1	14		INTER	3-LEG	N	N	SNOW	ANGL-STP	01	NONE 0	TURN-R										124		08
NONE							TH		MN 0			W		TRF SIGNAL	N	ICE	TURN		PRVTE	N -W									000	124	00
N							8A	PORTLAND UA	11.92			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	38	M	OR-Y		007	000		08
N							45 23 52.73	-122 47 55.84			009100100S00															OR<25					
																		02	NONE 0	STOP											
																			PRVTE	W -E									011		00
																			PSNGR CAR		01	DRVR	INJC	52	M	OR-Y		000	000		00
																										OR<25					

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091: PACIFIC HIGHWAY WEST **Highway 091 MAINLINE, MP 11.91 to 11.93 01/01/2019 to 12/31/2023, Both Add and Non-Add mileage, ALL Crashes Severity, ALL Crashes Circumstance**

13 - 17 of 23 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P / E D	A	L G / C S	D M R / U N / G V	J / I / H / L	S / C / K	W / O / R	DATE / DAY / TIME / LAT	COUNTY / CITY / URBAN AREA / LONG	RD# / COMPNT / MLG / MILEPNT	FC / TYP / PNT	CONN# / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE / (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF-CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A GE	S EX	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
06740	Y	N	N	N				12/23/2023	WASHINGTON	1	14		INTER	CROSS	N	N	CLR	ANGL-STP	01	NONE 0	TURN-R										080	08,05,01
NO RPT								SA		MN 0			W		TRF SIGNAL	N	DRY	TURN		PRVTE	N -W									000		00
N								2P	PORTLAND UA	11.92			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		001,080,047	000		08,05,01
N								45 23 52.73	-122 47 55.84			009100100S00															UNK					
																			02	NONE 0	STOP										012		00
																				PRVTE	W -E											
																				PSNGR CAR		01	DRVR	INJB	29	F	OR-Y		000	000		00
																											OR<25					
																			03	NONE 0	STOP										012	080	00
																				PRVTE	W -E											
																				PSNGR CAR		01	DRVR	NONE	46	F	OR-Y		000	000		00
																											OR<25					
03527	N	N	N	N	N	N		08/07/2022	WASHINGTON	1	14		INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 9	STRGHT												04,27
COUNTY								SU		MN 0			CN		TRF SIGNAL	N	DRY	TURN		N/A	N -S									000		00
N								9P	PORTLAND UA	11.92			01	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N								45 23 52.73	-122 47 55.84			009100100S00															UNK					
																			02	NONE 9	TURN-L												
																				N/A	S -W										000		00
																				PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																											UNK					
04734	N	N	N	N				08/22/2023	WASHINGTON	1	14		INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT												04
NONE								TU		MN 0			CN		L-GRN-SIG	N	DRY	TURN		PRVTE	N -S									000		00
N								UNK	PORTLAND UA	11.92			01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	38	F	OR-Y		020,097	000		04
N								45 23 52.73	-122 47 55.84			009100100S00															OR<25					
																			02	NONE 0	TURN-L												
																				PRVTE	S -W										000		00
																				PSNGR CAR		01	DRVR	NONE	69	M	OR-Y		020,097	000		04
																											OR<25					
02689	N	N	N	N				05/29/2019	WASHINGTON	1	14		INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT												04
COUNTY								WE		MN 0			CN		TRF SIGNAL	N	DRY	TURN		PRVTE	S -N									000		00
N								11P	PORTLAND UA	11.92			02	1		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	45	M	OR-Y		020	000		04
N								45 23 52.73	-122 47 55.84			009100100S00															OR<25					
																			02	NONE 0	U-TURN												
																				PRVTE	N -N										000		00
																				PSNGR CAR		01	DRVR	INJC	26	M	OR-Y		000	000		00
																											OR<25					
02954	N	N	N	N	N	N		07/03/2022	WASHINGTON	1	14		INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 9	STRGHT												02
COUNTY								SU		MN 0			CN		TRF SIGNAL	N	DRY	TURN		N/A	E -W									000		00
N								7P	PORTLAND UA	11.92			02	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N								45 23 52.73	-122 47 55.84			009100100S00															UNK					
																			02	NONE 9	TURN-L												
																				N/A	W -N										000		00
																				PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																											UNK					
01353	N	N	N	N				03/17/2019	WASHINGTON	1	14		INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 9	STRGHT												02
NONE								SU		MN 0			CN		TRF SIGNAL	N	DRY	TURN		N/A	N -S									000		00
N								12P	PORTLAND UA	11.92			03	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N								45 23 52.73	-122 47 55.84			009100100S00															UNK					

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091: PACIFIC HIGHWAY WEST

Highway 091 MAINLINE, MP 11.91 to 11.93 01/01/2019 to 12/31/2023, Both Add and Non-Add mileage, ALL Crashes Severity, ALL Crashes Circumstance

18 - 22 of 23 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R J U G	S N I V	C H L	W O R K	DATE / DAY / TIME / LAT	COUNTY / CITY / URBAN AREA / LONG	RD# / COMPNT / MLG TYP / MILEPNT	FC	CONN# / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE / (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF-CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
																		02	NONE 9 N/A PSNGR CAR	TURN-R W -S	01	DRVR	NONE	00	Unk	UNK UNK		000	000		00 00
04228 COUNTY N N	N	N	N	N			09/17/2022 SA 12P 45 23 52.73	WASHINGTON PORTLAND UA -122 47 55.84	1 14 MN 0 11.92		 009100100S00	INTER CN 03	CROSS 0	N TRF SIGNAL	N N N	CLR DRY DAY	ANGL-OTH TURN INJ	01	NONE PRVTE PSNGR CAR	TURN-R W -S	01	DRVR	NONE	19	M	OR-Y OR<25		020	000 038		04,02,27 00 04,02,27
																		02	NONE PRVTE MTRCYCLE	STRGHT N -S	01	DRVR	INJA	47	M	OTH-Y N-RES		000	000 000		00 00
03891 COUNTY N N	N	N	N	N	N	N	10/01/2020 TH 8A 45 23 52.71	WASHINGTON PORTLAND UA -122 47 54.8	2 14 MN 0 11.92		 SW FISCHER RD SW PACIFIC HY 99W 009100200S00	INTER S 06	CROSS 0	N UNKNOWN	N N N	CLD DRY DAY	S-STRGHT REAR PDO	01	NONE 9 N/A PSNGR CAR	STRGHT S -N	01	DRVR	NONE	00	Unk	UNK UNK		000	000 000		27,29 00 00
																		02	NONE 9 N/A PSNGR CAR	STRGHT S -N	01	DRVR	NONE	00	Unk	UNK UNK		006	000		00 00
06106 NONE N N	N	N	N	N			11/25/2023 SA 2P 45 23 53.07	WASHINGTON PORTLAND UA -122 47 54.78	2 14 MN 0 11.92		 009100200S00	INTER S 06	CROSS 0	N TRF SIGNAL	N N N	CLR DRY DAY	S-1STOP REAR INJ	01	NONE PRVTE PSNGR CAR	STRGHT S -N	01	DRVR	INJC	47	F	OR-Y OR<25		014,026	000 026		40,10,29 00 40,10,29
																		01	NONE PRVTE PSNGR CAR	STRGHT S -N	02	PSNG	INJC	38	F			000	000 000		00 00
																		02	NONE 0 PRVTE PSNGR CAR	STOP S -N	01	DRVR	NONE	41	M	OR-Y OR>25		000	011 000		00 00
05263 COUNTY N N	Y	N	N	N			10/16/2023 MO 6A 45 23 53.07	WASHINGTON PORTLAND UA -122 47 54.78	2 14 MN 0 11.92		 009100200S00	INTER CN 02	CROSS 0	N TRF SIGNAL	N N N	RAIN WET DLIT	S-1STOP REAR INJ	01	NONE 0 PRVTE PSNGR CAR	STRGHT S -N	01	DRVR	NONE	22	M	OR-Y OR<25		047,026	000 000		01,07,29 00 01,07,29
																		02	NONE 0 RENTL PSNGR CAR	STOP S -N	01	DRVR	INJC	21	F	OR-Y OR<25		000	011 000		00 00
05097 COUNTY N N	N	N	N	N	N	N	11/20/2021 SA 11A 45 23 52.75	WASHINGTON PORTLAND UA -122 47 54.8	2 14 MN 0 11.93		 009100200S00	INTER CN 04	CROSS 0	N TRF SIGNAL	N N N	CLR DRY DAY	ANGL-OTH TURN INJ	01	NONE 0 PRVTE PSNGR CAR	STRGHT S -N	01	DRVR	INJB	22	M	OR-Y OR<25		000	000 000		02,04 00 00
																		02	NONE 0 PRVTE PSNGR CAR	TURN-L W -N	01	DRVR	INJC	23	F	OR-Y OR<25		028,020	000 000		00 02,04

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091: PACIFIC HIGHWAY WEST

Highway 091 MAINLINE, MP 11.91 to 11.93 01/01/2019 to 12/31/2023, Both Add and Non-Add mileage, ALL Crashes Severity, ALL Crashes Circumstance

23 - 23 of 23 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P / E / D	A / L / C	D R / U / G / S	M J / I / N / V	S / C / H / L	W / O / R / K	DATE / DAY / TIME / LAT	COUNTY / CITY / URBAN AREA / LONG	RD# FC / COMPNT / MLG TYP / MILEPNT	CONN# / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE / (MEDIAN) / LEGS / (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC / TYPE	INJ / SVRTY	A / G / E	S / E / X	LICNS / RES	PED / LOC	ERROR	ACT	EVENT	CAUSE
																	02	NONE 0	TURN-L										
																		PRVTE	W -N								000		00
																		PSNGR CAR		02	PSNG	INJC	23	M			000	000		00

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OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANAYLYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING

CITY OF TUALATIN, WASHINGTON COUNTY

108TH AVE at HERMAN RD, City of Tualatin, Washington County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023

1 - 1 of 1 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D R U G S	M J I N V	S C H L	W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF-CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT EVENT	CAUSE
00130	N	N	N	N			01/07/2020	17	SW HERMAN RD	INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 9	STRGHT										29
NONE							TU	0	SW 108TH AVE	NE		TRF SIGNAL	N	WET	REAR		N/A	NE-SW									000	00
N							4P			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N							45 23 1.12	-122 47 15.52																UNK				
																02	NONE 9	STOP										
																	N/A	NE-SW									011	00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																								UNK				

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CITY OF TUALATIN, WASHINGTON COUNTY

TETON AVE at HERMAN RD, City of Tualatin, Washington County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023

1 - 5 of 6 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R J U G	S N H V	W O R L	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
03890	N	N	N N	N N	N	08/01/2019	17	SW HERMAN RD	INTER	CROSS	N	N	CLR	S-OTHER	01	NONE 1	TURN-L										05
CITY			TH				0	SW TETON AVE	N		L-GRN-SIG	N	DRY	TURN		PRVTE	N -NE									000		00
N			12P						06	2		N	DAY	INJ		SEMI TOW		01	DRVR	NONE	51	M	OR-Y		080	000		05
N			45 23 5.35				-122 47 1.5																OR<25					
															02	NONE 0	STOP											
																PRVTE	N -S									011		00
																PSNGR CAR		01	DRVR	INJC	60	F	OR-Y		000	000		00
																							OR<25					
00751	Y	N	N N			02/16/2022	17	SW HERMAN RD	INTER	CROSS	N	N	FOG	S-1STOP	01	NONE	STRGHT										124,015	01,07
NONE			WE				0	SW TETON AVE	S		TRF SIGNAL	N	WET	REAR		PRVTE	S -N									001	124	00
N			6A						06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	32	M	OR-Y		026	000		01,07
N			45 23 5.37				-122 47 1.51																OR<25					
															02	NONE	STOP											
																PRVTE	S -N									011		00
																PSNGR CAR		01	DRVR	INJC	43	M	OR-Y		000	000		00
																							OR>25					
01792	N	N	N N	N N	N	04/11/2023	17	SW HERMAN RD	INTER	CROSS	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT											27
CITY			TU				0	SW TETON AVE	S		TRF SIGNAL	N	WET	REAR		PRVTE	S -N									000		00
N			7A						06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	46	F	OR-Y		016,026	038		27
N			45 23 5.35				-122 47 1.5																OR<25					
															02	NONE 0	STOP											
																PRVTE	S -N									011		00
																PSNGR CAR		01	DRVR	NONE	30	F	OR-Y		000	000		00
																							OR<25					
															02	NONE 0	STOP											
																PRVTE	S -N									011		00
																PSNGR CAR		02	PSNG	INJC	39	F			000	000		00
03558	Y	Y	N N	N N	N	09/01/2021	17	SW HERMAN RD	INTER	CROSS	N	Y	CLR	FIX OBJ	01	NONE 9	TURN-R										043	01,08
CITY			WE				0	SW TETON AVE	W		UNKNOWN	N	DRY	FIX		N/A	SW-S									000		00
N			8P						09	2		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N			45 23 5.35				-122 47 1.5																UNK					
05774	N	N	N N	N N	N	11/04/2019	17	SW HERMAN RD	INTER	CROSS	N	N	CLD	ANGL-OTH	01	NONE 0	STRGHT											27,04
CITY			MO				0	SW TETON AVE	CN		TRF SIGNAL	N	DRY	ANGL		PRVTE	N -S									000		00
N			11A						03	2		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	33	M	OR-Y		000	000		00
N			45 23 5.35				-122 47 1.5																OR<25					
															02	NONE 0	STRGHT											
																RENTL	SW-NE									000		00
																PSNGR CAR		01	DRVR	INJC	33	F	OR-Y		016,020	038		27,04
																							OR>25					

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CITY OF TUALATIN, WASHINGTON COUNTY

TETON AVE at HERMAN RD, City of Tualatin, Washington County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023

6 - 6 of 6 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R U G S	J I N V	S C H L	W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF-CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT EVENT	CAUSE
00417	N	N	N	N			02/06/2021	17	SW HERMAN RD	INTER	CROSS	N	N	RAIN	O-1 L-TURN	01	NONE 9	STRGHT										02
CITY							SA	0	SW TETON AVE	CN		L-GRN-SIG	N	WET	TURN		N/A	N -S									000	00
N							1P			01	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N							45 23 5.39	-122 47 1.52																UNK				
																02	NONE 9	TURN-L										
																	N/A	S -SW									000	00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																								UNK				

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CITY OF TUALATIN, WASHINGTON COUNTY

HAZELBROOK RD at PACIFIC HY 99W, City of Tualatin, Washington County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023

1 - 4 of 4 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R G S	J N V	I H L	C O R K	W	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC / INJ / SVRTY	A G E	S E X	LICNS / RES	PED LOC	ERROR	ACT	EVENT	CAUSE
04361	N	N	N	N	N	N	N	06/13/2019	14	SW HAZELBROOK RD	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 9	TURN-R									07
CITY			TH							SW PACIFIC HY 99W	E		STOP SIGN	N	DRY	REAR		N/A	E -N								000	00
N			7A								09	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N			45 23 33.16					-122 47 59.48		009100200S00															UNK				
																	02	NONE 9	STOP										
																		N/A	E -N								011	00
																		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																									UNK				
04015	N	N	N	N				09/05/2022	18	SW HAZELBROOK RD	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE	STRGHT									07
CITY			MO						0	SW PACIFIC HY 99W	E		STOP SIGN	N	DRY	REAR		PRVTE	E -W								000	00
N			3P								06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	21	M	NONE		043	000	07
N			45 23 33.45					-122 47 59.22																	OR>25				
																	02	NONE	STOP										
																		PRVTE	E -W								011	00
																		PSNGR CAR		01	DRVR	INJB	49	F	OR-Y		000	000	00
																									OR<25				
04025	N	N	N	N	N	N	N	11/03/2020	14	SW HAZELBROOK RD	INTER	3-LEG	N	N	RAIN	ANGL-OTH	01	NONE 0	TURN-R									08
CITY			TU							SW PACIFIC HY 99W	CN		STOP SIGN	N	WET	TURN		PRVTE	E -N								000	00
N			8P								02	0		N	DARK	INJ		PSNGR CAR		01	DRVR	INJC	23	F	OR-Y		007	000	08
N			45 23 33.16					-122 47 59.48		009100200S00															OR<25				
																	02	NONE 0	STRGHT										
																		PRVTE	S -N								000	00
																		PSNGR CAR		01	DRVR	INJC	24	F	OR-Y		000	000	00
																									OR<25				
05919	N	N	N	N	N	N	N	12/13/2022	14	SW HAZELBROOK RD	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 9	STRGHT									02
CITY			TU							SW PACIFIC HY 99W	CN		STOP SIGN	N	DRY	TURN		N/A	W -E								000	00
N			5A								02	1		N	DARK	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N			45 23 33.62					-122 47 59.07		009100200S00															UNK				
																	02	NONE 9	TURN-R										
																		N/A	S -E								015	00
																		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																									UNK				

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CITY OF TUALATIN, WASHINGTON COUNTY

LEVETON DR at 124TH AVE, City of Tualatin, Washington County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023

1 - 5 of 8 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R U G	J N S	S H V	W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC / INJ / SVRTY	A G E	S E X	LICNS / RES / LOC	PED / ERROR	ACT EVENT	CAUSE
05935	N	N	N	N			11/12/2019	16	SW LEVETON DR	INTER	CROSS	N	N	RAIN	S-1STOP	01	NONE 9	STRGHT								29
NONE							TU	0	124TH AVE	N		TRF SIGNAL	N	WET	REAR		N/A	N -S							000	00
N							8A			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK	000	000	00
N							45 23 5.63	-122 48 14.95																UNK			
																02	NONE 9	STOP								
																	N/A	N -S							011	00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK	000	000	00
																								UNK			
04719	N	N	N	N			12/22/2020	16	SW LEVETON DR	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 9	STRGHT								29
NONE							TU	0	124TH AVE	N		TRF SIGNAL	N	DRY	REAR		N/A	N -S							000	00
N							12P			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK	000	000	00
N							45 23 5.63	-122 48 14.95																UNK			
																02	NONE 9	STOP								
																	N/A	N -S							011	00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK	000	000	00
																								UNK			
06451	N	N	N	N			11/21/2023	16	SW LEVETON DR	INTER	CROSS	N	N	CLR	O-OTHER	01	NONE 9	TURN-L								08
NONE							TU	0	124TH AVE	N		TRF SIGNAL	N	DRY	TURN		N/A	W -N							000	00
N							4P			05	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK	000	000	00
N							45 23 5.63	-122 48 14.95																UNK			
																02	NONE 9	TURN-R								
																	N/A	E -N							000	00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK	000	000	00
																								UNK			
04159	Y	N	N	N	N	N	08/16/2019	16	SW LEVETON DR	INTER	CROSS	N	N	CLR	OVERTURN	01	NONE 0	TURN-L								01
CITY							FR	0	124TH AVE	E		TRF SIGNAL	N	DRY	NCOL		PRVTE	N -E							000	00
N							6P			05	0		N	DAY	INJ		TRUCK		01	DRVR	INJB	25	M	OTH-Y	047	000	01
N							45 23 5.63	-122 48 14.95																N-RES			
05424	N	N	N	N			10/04/2019	16	SW LEVETON DR	INTER	CROSS	N	N	RAIN	ANGL-OTH	01	NONE 0	STRGHT								04
NO RPT							FR	0	124TH AVE	CN		TRF SIGNAL	N	WET	TURN		PRVTE	W -E							000	00
N							11A			04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	57	M	OR-Y	020	000	04
N							45 23 5.63	-122 48 14.95																OR<25			
																02	NONE 0	TURN-L								
																	PRVTE	S -W							000	00
																	PSNGR CAR		01	DRVR	INJC	63	F	OR-Y	000	000	00
																								OR<25			

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SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R G S	J N V	S H L	W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC / TYPE	INJ / SVRTY	A G E	S E X	LICNS / RES	PED LOC	ERROR	ACT EVENT	CAUSE
01884	N	N	N	N			04/15/2019	16	SW LEVETON DR	INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 9	TURN-L										02
NO RPT							MO	0	124TH AVE	CN		TRF SIGNAL	N	DRY	TURN		N/A	N -E									000	00
N							2P			04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N							45 23 5.63	-122 48 14.95																UNK				
																02	NONE 9	STRGHT										
																	N/A	S -N									000	00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																								UNK				
01646	N	N	N	N			04/14/2022	16	SW LEVETON DR	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 9	TURN-L										08
CITY							TH	0	124TH AVE	CN		TRF SIGNAL	N	DRY	TURN		N/A	E -S									000	00
N							9A			04	0		N	DAY	PDO		SEMI TOW		01	DRVR	NONE	00	Unk	UNK		000	000	00
N							45 23 5.63	-122 48 14.95																UNK				
																02	NONE 9	TURN-R										
																	N/A	S -E									000	00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																								UNK				
03841	N	N	N	N	N	N	08/03/2023	16	SW LEVETON DR	INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE	STRGHT										32,04,02
CITY							TH	0	124TH AVE	CN		L-GRN-SIG	N	DRY	TURN		PRVTE	N -S									000	00
N							2P			01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	41	F	OR-Y	000	000	00
N							45 23 5.63	-122 48 14.95																OR<25				
																01	NONE	STRGHT										
																	PRVTE	N -S									000	00
																	PSNGR CAR		02	PSNG	INJA	55	M		000	000	00
																01	NONE	STRGHT										
																	PRVTE	N -S									000	00
																	PSNGR CAR		03	PSNG	INJB	13	F		000	000	00
																02	NONE	TURN-L										
																	PRVTE	S -W									000	00
																	PSNGR CAR		01	DRVR	INJC	21	F	OR-Y	052	000	32,04,02
																								OR<25				

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OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANAYLYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING

CITY OF TUALATIN, WASHINGTON COUNTY

LEVETON DR and Intersectional Crashes at LEVETON DR, City of Tualatin, Washington County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023

1 - 5 of 13 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R G	J N H	S V L	W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / TYPE / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
01547	N	N	N	N			03/28/2023	17	SW LEVETON DR	INTER	3-LEG	N	N	RAIN	ANGL-OTH	01	NONE	TURN-R										03,02
CITY			TU				0	SW 108TH AVE	CN		STOP SIGN	N	WET	TURN			PRVTE	W -S									015	00
N			3P						03	0		N	DAY	INJ			PSNGR CAR		01	DRVR	NONE	53	F	OR-Y		021,028	000		03,02
N			45 23 9.64				-122 47 15.67																	OR<25					
																02	NONE	STRGHT											
																	PRVTE	N -S									000		00
																	PSNGR CAR		01	DRVR	INJC	56	M	OR-Y		000	000		00
																								OR<25					
05415	N	N	N	N	N	N	11/15/2022	17	SW LEVETON DR	ALLEY		N	N	CLR	O-1 L-TURN	01	NONE 9	STRGHT											02
CITY			TU				995	SW 108TH AVE	W	(NONE)	UNKNOWN	N	DRY	TURN			N/A	E -W									000		00
N			5P						07			N	DLIT	PDO			PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N			45 23 9.71				-122 47 29.92				(02)													UNK					
																02	NONE 9	TURN-L											
																	N/A	W -N									019		00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																								UNK					
04242	N	N	N	N	N	N	09/18/2022	17	SW LEVETON DR	ALLEY		N	Y	CLR	BIKE	01	NONE	TURN-R											02
CITY			SU				1013	SW 108TH AVE	W	(NONE)	UNKNOWN	N	DRY	ANGL			PRVTE	N -W									018		00
Y			11A						07			Y	DAY	INJ			PSNGR CAR		01	DRVR	NONE	33	F	OR-Y		027	000		02
N			45 23 9.72				-122 47 30.44				(02)													OR>25					
																		- STRGHT	01	BIKE	INJA	72	F		SIDEWK	000	000		00
																		E W											
05211	N	N	N	N			10/12/2023	17	SW LEVETON DR	ALLEY		N	N	CLR	ANGL-OTH	01	NONE 0	TURN-L											02
NONE			TH				252	SW 118TH AVE	W	(NONE)	UNKNOWN	N	DRY	TURN			PRVTE	S -W									018		00
N			5P						07			N	DAY	INJ			PSNGR CAR		01	DRVR	NONE	37	M	OR-Y		028	000		02
N			45 23 5.47				-122 48 .99				(02)													OR>25					
																02	NONE 0	TURN-L											
																	PRVTE	E -S									019		00
																	PSNGR CAR		01	DRVR	INJC	27	M	OR-Y		000	000		00
																								OR>25					
01340	N	N	N	N	N	N	03/16/2019	17	SW LEVETON DR	STRGHT		N	Y	CLR	FIX OBJ	01	NONE 9	STRGHT										059,003	10
CITY			SA				240	SW 118TH AVE	W	(NONE)	UNKNOWN	N	DRY	FIX			N/A	W -E									000		00
Y			5P						08			N	DAY	PDO			PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N			45 23 5.51				-122 48 .59				(02)													UNK					

Leveton & 108th

Center Access

Center Access

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CITY OF TUALATIN, WASHINGTON COUNTY

LEVETON DR and Intersectional Crashes at LEVETON DR, City of Tualatin, Washington County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023

6 - 10 of 13 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R J U G S V	I N H L	C S O R K	W	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT EVENT	CAUSE
05935	N	N	N N				11/12/2019	16	SW LEVETON DR	INTER	CROSS	N	N	RAIN	S-1STOP	01	NONE 9	STRGHT										29
NONE							TU	0	124TH AVE	N		TRF SIGNAL	N	WET	REAR		N/A	N -S									000	00
N							8A			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N							45 23 5.63	-122 48 14.95																UNK				
																02	NONE 9	STOP										
																	N/A	N -S									011	00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																								UNK				
04719	N	N	N N				12/22/2020	16	SW LEVETON DR	INTER	CROSS	N	N	CLR	S-1STOP	01	NONE 9	STRGHT										29
NONE							TU	0	124TH AVE	N		TRF SIGNAL	N	DRY	REAR		N/A	N -S									000	00
N							12P			06	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N							45 23 5.63	-122 48 14.95																UNK				
																02	NONE 9	STOP										
																	N/A	N -S									011	00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																								UNK				
06451	N	N	N N				11/21/2023	16	SW LEVETON DR	INTER	CROSS	N	N	CLR	O-OTHER	01	NONE 9	TURN-L										08
NONE							TU	0	124TH AVE	N		TRF SIGNAL	N	DRY	TURN		N/A	W -N									000	00
N							4P			05	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N							45 23 5.63	-122 48 14.95																UNK				
																02	NONE 9	TURN-R										
																	N/A	E -N									000	00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																								UNK				
04159	Y	N	N N	N	N	N	08/16/2019	16	SW LEVETON DR	INTER	CROSS	N	N	CLR	OVERTURN	01	NONE 0	TURN-L										01
CITY							FR	0	124TH AVE	E		TRF SIGNAL	N	DRY	NCOL		PRVTE	N -E									000	00
N							6P			05	0		N	DAY	INJ		TRUCK		01	DRVR	INJB	25	M	OTH-Y		047	000	01
N							45 23 5.63	-122 48 14.95																N-RES				
05424	N	N	N N				10/04/2019	16	SW LEVETON DR	INTER	CROSS	N	N	RAIN	ANGL-OTH	01	NONE 0	STRGHT										04
NO RPT							FR	0	124TH AVE	CN		TRF SIGNAL	N	WET	TURN		PRVTE	W -E									000	00
N							11A			04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	57	M	OR-Y		020	000	04
N							45 23 5.63	-122 48 14.95																OR<25				
																02	NONE 0	TURN-L										
																	PRVTE	S -W									000	00
																	PSNGR CAR		01	DRVR	INJC	63	F	OR-Y		000	000	00
																								OR<25				

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CITY OF TUALATIN, WASHINGTON COUNTY

LEVETON DR and Intersectional Crashes at LEVETON DR, City of Tualatin, Washington County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023

11 - 13 of 13 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D R G S	M J N V	S I H L	W C O K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC / TYPE	INJ / SVRTY	A G E	S E X	LICNS / RES	PED LOC	ERROR	ACT	EVENT	CAUSE
01884	N	N	N	N			04/15/2019	16	SW LEVETON DR	INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE 9	TURN-L										02
NO RPT							MO	0	124TH AVE	CN		TRF SIGNAL	N	DRY	TURN		N/A	N -E									000	00
N							2P			04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N							45 23 5.63	-122 48 14.95																UNK				
																02	NONE 9	STRGHT										
																	N/A	S -N									000	00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																								UNK				
01646	N	N	N	N			04/14/2022	16	SW LEVETON DR	INTER	CROSS	N	N	CLR	ANGL-OTH	01	NONE 9	TURN-L										08
CITY							TH	0	124TH AVE	CN		TRF SIGNAL	N	DRY	TURN		N/A	E -S									000	00
N							9A			04	0		N	DAY	PDO		SEMI TOW		01	DRVR	NONE	00	Unk	UNK		000	000	00
N							45 23 5.63	-122 48 14.95																UNK				
																02	NONE 9	TURN-R										
																	N/A	S -E									000	00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																								UNK				
03841	N	N	N	N	N	N	08/03/2023	16	SW LEVETON DR	INTER	CROSS	N	N	CLR	O-1 L-TURN	01	NONE	STRGHT										32,04,02
CITY							TH	0	124TH AVE	CN		L-GRN-SIG	N	DRY	TURN		PRVTE	N -S									000	00
N							2P			01	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	41	F	OR-Y	000	000	000	00
N							45 23 5.63	-122 48 14.95																OR<25				
																01	NONE	STRGHT										
																	PRVTE	N -S									000	00
																	PSNGR CAR		02	PSNG	INJA	55	M		000	000	000	00
																01	NONE	STRGHT										
																	PRVTE	N -S									000	00
																	PSNGR CAR		03	PSNG	INJB	13	F		000	000	000	00
																02	NONE	TURN-L										
																	PRVTE	S -W									000	00
																	PSNGR CAR		01	DRVR	INJC	21	F	OR-Y	052	000	000	32,04,02
																								OR<25				

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CITY OF TUALATIN, WASHINGTON COUNTY

TUALATIN RD at 108TH AVE, City of Tualatin, Washington County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023

1 - 5 of 5 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R G S	J N V	S H L	W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT EVENT	CAUSE
00057	Y	N	N N				01/04/2023	17	SW TUALATIN RD	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE	STRGHT										01
NONE							WE	0	SW 108TH AVE	S		STOP SIGN	N	DRY	REAR		PRVTE	S -N									000	00
N							5P			06	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	52	M	OR-Y		047,026	000	01
N							45 23 23.11	-122 47 15.82																OR<25				
																02	NONE	STOP										
																	PRVTE	S -N									011	00
																	PSNGR CAR		01	DRVR	INJC	65	M	OR-Y		000	000	00
																								OR<25				
01097	N	N	N N	N	N	N	02/25/2020	17	SW TUALATIN RD	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 0	STRGHT										02
CITY							TU	0	SW 108TH AVE	CN		STOP SIGN	N	DRY	TURN		PRVTE	W -E									000	00
N							11P			04	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	NONE	55	M	OR-Y		000	000	00
N							45 23 23.11	-122 47 15.82																OR<25				
																02	NONE 0	TURN-L										
																	PRVTE	S -W									015	00
																	PSNGR CAR		01	DRVR	INJC	22	M	OR-Y		028	000	02
																								OR<25				
05023	N	N	N N	N	N	N	11/17/2021	17	SW TUALATIN RD	INTER	3-LEG	N	N	CLR	S-1TURN	01	NONE 0	STRGHT										08
CITY							WE	0	SW 108TH AVE	CN		STOP SIGN	N	DRY	TURN		PRVTE	W -E									000	00
N							10A			04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	16	M	OR-Y		000	000	00
N							45 23 23.11	-122 47 15.82																OR<25				
																02	NONE 0	U-TURN										
																	PRVTE	W -W									000	00
																	PSNGR CAR		01	DRVR	NONE	92	M	OR-Y		008	000	08
																								OR<25				
04259	N	N	N N				08/15/2022	17	SW TUALATIN RD	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 9	STRGHT										02
NONE							MO	0	SW 108TH AVE	CN		STOP SIGN	N	DRY	TURN		N/A	W -E									000	00
N							8A			04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N							45 23 23.11	-122 47 15.82																UNK				
																02	NONE 9	TURN-L										
																	N/A	S -W									000	00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																								UNK				
01471	Y	N	N N	N	N	N	03/24/2023	17	SW TUALATIN RD	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE	STRGHT										03,02,30
CITY							FR	0	SW 108TH AVE	CN		STOP SIGN	N	WET	TURN		PRVTE	W -E									000	00
N							4P			04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJC	31	M	OR-Y		050	000	30
N							45 23 23.11	-122 47 15.82																OR<25				
																02	NONE	TURN-L										
																	PRVTE	S -W									015	00
																	PSNGR CAR		01	DRVR	INJB	73	M	OR-Y		021,028	000	03,02
																								OR<25				

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OREGON.. DEPARTMENT OF TRANSPORTATION - TRANSPORTATION DEVELOPMENT DIVISION
TRANSPORTATION DATA SECTION - CRASH ANAYLYSIS AND REPORTING UNIT
URBAN NON-SYSTEM CRASH LISTING

CITY OF TUALATIN, WASHINGTON COUNTY

TUALATIN RD at 115TH AVE, City of Tualatin, Washington County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023

1 - 1 of 1 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D R U G S	M J I N V	S C H L	W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF-CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT EVENT	CAUSE
06703	N	N	N	N	N	N	12/22/2023	17	SW TUALATIN RD	INTER	3-LEG	N	N	CLD	ANGL-OTH	01	NONE 9	TURN-L										03
CITY			FR				0	SW 115TH AVE	CN		STOP SIGN	N	WET	TURN			N/A	N -E									000	00
N			4P						01	0		N	DUSK	PDO			PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N			45 23 23.12				-122 47 43.4																	UNK				
																02	NONE 9	STRGHT										
																	N/A	E -W									000	00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																								UNK				

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CITY OF TUALATIN, WASHINGTON COUNTY

TUALATIN RD at 124TH AVE, City of Tualatin, Washington County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023

1 - 5 of 16 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R J U G	S N I V	W H L	O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT EVENT	CAUSE
01730	N	N	N	N			02/01/2019	16	SW TUALATIN RD	INTER	3-LEG	N	N	RAIN	S-1STOP	01	NONE 0	STRGHT										29
NONE							FR	0	SW 124TH AVE	E		TRF SIGNAL	N	WET	REAR		PRVTE	E -W									000	00
N							UNK			06	0		N	UNK	INJ		PSNGR CAR		01	DRVR	INJC	34	M	OR-Y		026	000	29
N							45 23 16.36	-122 48 15.23																OR<25				
																02	NONE 0	STOP										
																	UNKN	E -W									011	00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																								UNK				
02835	N	N	N	N			08/07/2020	16	SW TUALATIN RD	INTER	3-LEG	N	N	CLR	S-1STOP	01	NONE 0	STRGHT										29
NONE							FR	0	SW 124TH AVE	E		TRF SIGNAL	N	DRY	REAR		PRVTE	E -W									000	00
N							3P			06	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	18	F	OR-Y		026	000	29
N							45 23 16.36	-122 48 15.23																OR<25				
																02	NONE 0	STOP										
																	PRVTE	E -W									012	00
																	PSNGR CAR		01	DRVR	INJC	53	M	OR-Y		000	000	00
																								OR<25				
04115	N	N	N	N			08/13/2019	16	SW TUALATIN RD	INTER	3-LEG	N	N	CLR	PED	01	NONE 0	TURN-R										02
NONE							TU	0	SW 124TH AVE	CN		TRF SIGNAL	N	DRY	PED		PRVTE	E -N									000	00
N							6A			02	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	38	M	OTH-Y		029	000	02
N							45 23 16.36	-122 48 15.23																N-RES				
																		- STRGHT		01	PED	INJC	28	M		I XWLK	000	035	00
																		N S										
01501	N	N	N	N	N	N	03/26/2019	16	SW TUALATIN RD	INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 9	TURN-L										02
CITY							TU	0	SW 124TH AVE	CN		TRF SIGNAL	N	DRY	TURN		N/A	N -E									000	00
N							3P			04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N							45 23 16.36	-122 48 15.23																UNK				
																02	NONE 9	STRGHT										
																	N/A	S -N									000	00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																								UNK				
02476	N	N	N	N	N	N	06/25/2021	16	SW TUALATIN RD	INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE	STRGHT										04,08,27
CITY							FR	0	SW 124TH AVE	CN		L-GRN-SIG	N	DRY	TURN		PRVTE	S -N									000	00
N							8A			04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	38	M	OR-Y		000	000	00
N							45 23 16.39	-122 48 15.25																OR<25				
																02	NONE	TURN-L										
																	PRVTE	N -E									000	00
																	PSNGR CAR		01	DRVR	INJC	75	F	OR-Y		004,028	000	04,07,27
																								OR<25				

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CITY OF TUALATIN, WASHINGTON COUNTY

TUALATIN RD at 124TH AVE, City of Tualatin, Washington County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023

6 - 9 of 16 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R G S	J N V	S H L	W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF-CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
02512	N	N	N	N			06/27/2021	16	SW TUALATIN RD	INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE	STRGHT											02
NO RPT							SU	0	SW 124TH AVE	CN		L-GRN-SIG	N	DRY	TURN		PRVTE	S -N									000	00
N							11A			04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	NONE	00	M	UNK		000	000	00
N							45 23 16.38	-122 48 15.24																OR<25				
																02	NONE	TURN-L										
																	PRVTE	N -E									000	00
																	PSNGR CAR		01	DRVR	INJB	34	F	OR-Y		004,028	000	02
																								OR<25				
03913	N	N	N	N	N	N	09/20/2021	16	SW TUALATIN RD	INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT											02
CITY							MO	0	SW 124TH AVE	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	S -N									000	00
N							5P			04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	22	M	OR-Y		000	000	00
N							45 23 16.36	-122 48 15.23																OR<25				
																02	NONE 0	TURN-L										
																	PRVTE	N -E									000	00
																	PSNGR CAR		01	DRVR	INJC	19	M	OR-Y		028,004	000	02
																								OR<25				
92512	N	N	N	N			06/27/2021	16	SW TUALATIN RD	INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 9	STRGHT											08,02
CITY							SU	0	SW 124TH AVE	CN		L-GRN-SIG	N	DRY	TURN		N/A	S -N									000	00
N							11A			04	0		N	DAY	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
N							45 23 16.39	-122 48 15.24																UNK				
																02	NONE 9	TURN-L										
																	N/A	N -E									000	00
																	PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000	00
																								UNK				
03078	N	N	N	N	N	N	07/11/2022	18	SW TUALATIN RD	INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE	STRGHT											02
CITY							MO	0	SW 124TH AVE	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	S -N									000	00
N							2P			04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	42	M	OR-Y		000	000	00
N							45 23 16.36	-122 48 15.23																OR<25				
																01	NONE	STRGHT										
																	PRVTE	S -N									000	00
																	PSNGR CAR		02	PSNG	INJB	51	F			000	000	00
																02	NONE	TURN-L										
																	PRVTE	N -E									000	00
																	PSNGR CAR		01	DRVR	INJA	92	F	OR-Y		004,028	000	02
																								OR<25				
03835	N	Y	N	N	N	N	08/24/2022	16	SW TUALATIN RD	INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT											02,04
CITY							WE	0	SW 124TH AVE	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	S -N									000	00
N							8P			04	0		N	DUSK	INJ		PSNGR CAR		01	DRVR	NONE	33	M	OR-Y		000	000	00
N							45 23 16.36	-122 48 15.23																OR<25				

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SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R U G S	J N S	I H V	S C L	W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
																	02	NONE 0	TURN-L										
																		PRVTE	N -E									000		00
																		PSNGR CAR		01	DRVR	NONE	29	M	SUSP		028,004,020	000		02,04
																									OR<25					
																	02	NONE 0	TURN-L										
																		PRVTE	N -E									000		00
																		PSNGR CAR		02	PSNG	INJB	29	F			000	000		00
04348	N	N	N	N	N	N	09/23/2022	16	SW TUALATIN RD	INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 0	TURN-L										013	02,04
CITY			FR					0	SW 124TH AVE	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	N -E									000		00
N			3P							04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	43	F	OR-Y		028,004,020	000		02,04
N			45 23 16.36					-122 48 15.23																	OR<25					
																	02	NONE 0	STRGHT										
																		PRVTE	S -N									000	013	00
																		PSNGR CAR		01	DRVR	INJB	49	M	OR-Y		000	000		00
																									OR<25					
																	02	NONE 0	STRGHT										
																		PRVTE	S -N									000	013	00
																		PSNGR CAR		02	PSNG	INJB	29	F			000	000		00
																	03	NONE 0	STOP										
																		PRVTE	E -W									011		00
																		PSNGR CAR		01	DRVR	INJB	31	M	OR-Y		000	000		00
																									OR<25					
00497	N	N	N	N	N	N	02/01/2022	16	SW TUALATIN RD	INTER	3-LEG	N	N	RAIN	O-1 L-TURN	01	NONE 9	STRGHT												02,04
CITY			TU					0	SW 124TH AVE	CN		TRF SIGNAL	N	WET	TURN		N/A	S -N									000		00
N			6P							04	0		N	DLIT	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N			45 23 16.36					-122 48 15.23																	UNK					
																	02	NONE 9	TURN-L										
																		N/A	N -E									000		00
																		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																									UNK					
05431	N	N	N	N	N	N	11/16/2022	16	SW TUALATIN RD	INTER	3-LEG	N	N	CLR	O-1 L-TURN	01	NONE 0	STRGHT												02,04
CITY			WE					0	SW 124TH AVE	CN		TRF SIGNAL	N	DRY	TURN		PRVTE	S -N									000		00
N			5A							04	0		N	DLIT	INJ		PSNGR CAR		01	DRVR	INJB	50	F	OR-Y		000	000		00
N			45 23 16.36					-122 48 15.23																	OR<25					
																	02	NONE 0	TURN-L										
																		PRVTE	N -E									000		00
																		PSNGR CAR		01	DRVR	INJC	22	M	OR-Y		028,004,020	000		02,04
																									OR<25					

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CITY OF TUALATIN, WASHINGTON COUNTY

TUALATIN RD at 124TH AVE, City of Tualatin, Washington County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023

14 - 16 of 16 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R U G	J N V	S I H L	C O R K	W	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF-CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR QTY / OWNER / TYPE	MOVE / FROM / TO	P#	PRTC / TYPE	INJ / SVRTY	AGE	SEX	LICNS / RES	PED LOC	ERROR	ACT	EVENT	CAUSE
01759	N	N	N	N				04/11/2023	16	SW TUALATIN RD	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE 9	TURN-R										04
NONE								TU	0	SW 124TH AVE	CN		TRF SIGNAL	N	DRY	TURN		N/A	E -N									000		00
N								6A			02	0		N	DAWN	PDO		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
N								45 23 16.36	-122 48 15.23																UNK					
																	02	NONE 9	STRGHT											
																		N/A	S -N									000		00
																		PSNGR CAR		01	DRVR	NONE	00	Unk	UNK		000	000		00
																									UNK					
04866	N	N	N	N	N	N	N	09/26/2023	18	SW TUALATIN RD	INTER	3-LEG	N	N	CLD	O-1 L-TURN	01	NONE 0	STRGHT											04,02,08
CITY								TU	0	SW 124TH AVE	CN		L-GRN-SIG	N	WET	TURN		PRVTE	S -N									000		00
N								9A			04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	70	M	OR-Y		000	000		00
N								45 23 16.36	-122 48 15.23																OR<25					
																	02	NONE 0	TURN-L											
																		PRVTE	N -E									000		00
																		PSNGR CAR		01	DRVR	NONE	46	M	OR-Y		020,028,004	000		04,02,08
																									OR<25					
01043	N	N	N	N	N	N	N	02/27/2023	16	SW TUALATIN RD	INTER	3-LEG	N	N	SNOW	O-1 L-TURN	01	NONE 0	STRGHT											02,04,22
CITY								MO	0	SW 124TH AVE	CN		TRF SIGNAL	N	WET	TURN		PRVTE	S -N									000		22
N								4P			04	0		N	DAY	INJ		PSNGR CAR		01	DRVR	INJB	41	M	OR-Y		028,020	000		02,04
N								45 23 16.36	-122 48 15.23																OR<25					
																	02	NONE 0	TURN-L											
																		PRVTE	N -E									000		00
																		PSNGR CAR		01	DRVR	NONE	37	M	OR-Y		000	000		00
																									OR>25					

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CITY OF TUALATIN, WASHINGTON COUNTY

TUALATIN RD at TETON AVE, City of Tualatin, Washington County, ALL Crashes Severity, ALL Crashes Circumstance, 01/01/2019 to 12/31/2023

1 - 3 of 3 Crash records shown.

SER# / INVEST / RD DPT / UNLOC?	S P E D	A L C	D M R U G S	J N V	S H L	W O R K	DATE / DAY / TIME / LAT	CLASS / DIST / FROM / LONG	CITY STREET / FIRST STREET / SECOND STREET / LRS	RD CHAR / DIRECT / LOCTN	INT-TYPE (MEDIAN) / LEGS (#LANES)	INT-REL / TRAF- / CONTL	OFFRD / RNDBT / DRVWY	WTHR / SURF / LIGHT	CRASH / COLL / SVRTY	V#	SPCL USE / TRLR / OWNER / TYPE	QTY	MOVE / FROM / TO	P#	PRTC TYPE	INJ SVRTY	A G E	S E X	LICNS RES	PED LOC	ERROR	ACT	EVENT	CAUSE
05073	N	N	N N N	N	N	N	10/05/2019	17	SW TUALATIN RD	INTER	3-LEG	N	Y	CLR	FIX OBJ	01	NONE	0	TURN-L										091	27,16,32
CITY			SA	0	SW TETON AVE	S		STOP SIGN	N	DRY	FIX		PRVTE		E -S												000	091	00
N			3A			05	0		N	DARK	INJ		PSNGR CAR			01	DRVR	INJC	30	M	OR-Y		016,081,052	038		27,16,32
N			45 23 23.07	-122 47 1.88																		OR>25						
00851	N	N	N N N	N	N	N	02/19/2019	17	SW TUALATIN RD	INTER	3-LEG	N	N	CLD	ANGL-OTH	01	NONE	9	TURN-L											02
CITY			TU	0	SW TETON AVE	CN		STOP SIGN	N	DRY	TURN		N/A		S -W												015		00
N			4P			04	0		N	DUSK	PDO		PSNGR CAR			01	DRVR	NONE	00	Unk	UNK		000	000		00
N			45 23 23.07	-122 47 1.88																		UNK						
																02	NONE	9	STRGHT										
																	N/A		W -E								000		00
																	PSNGR CAR			01	DRVR	NONE	00	Unk	UNK		000	000		00
																									UNK					
03228	N	N	N N N	N	N	N	06/28/2023	17	SW TUALATIN RD	INTER	3-LEG	N	N	CLR	ANGL-OTH	01	NONE	0	STRGHT											03,02,08
CITY			WE	0	SW TETON AVE	CN		STOP SIGN	N	DRY	TURN		PRVTE		W -E												000		00
N			1P			03	0		N	DAY	INJ		PSNGR CAR			01	DRVR	INJB	16	F	OR-Y		000	000		00
N			45 23 23.07	-122 47 1.88																		OR<25						
																02	NONE	0	TURN-L										
																	PRVTE		S -W								015		00
																	PSNGR CAR			01	DRVR	NONE	18	F	OR-Y		021,028,004	000		00
																									OR>25					

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APPENDIX G.

IN-PROCESS DATA

124th Business Park

Transportation Impact Analysis

Tualatin, Oregon

Date:
April 18, 2023
Prepared for:
VLMK Engineering & Design
Prepared by:
Myla Cross
Jennifer Danziger, PE



RENEWS: 12/31/2023

Site Trips

Trip Generation

To estimate trips that will be generated by the development, trip rates from the *Trip Generation Manual*[1] were used. Specifically, data from the land use code 110, *General Light Industrial*, was used based on the square footage of the development. The 124th Business Park proposes to develop the site with three industrial buildings enclosing a total of 199,170 SF of gross floor area.

The trip generation calculations show that the 124th Business Park site is projected to generate 147 trips during the morning peak hour, 129 trips during the evening peak hour, and 970 trips during the average weekday. Table 3 summarizes the estimated net trip generation of the site with the land use assumptions discussed above.

Table 3: Trip Generation Summary

Land Use	ITE Code	Size	AM Peak Hour			PM Peak Hour			Weekday Total
			In	Out	Total	In	Out	Total	
General Light Industrial (All Vehicles)	110	199,170 SF	129	18	147	18	111	129	970
General Light Industrial (Trucks)	110	199,170 SF	1	1	2	1	1	2	50

Trip Distribution and Assignment

The directional distribution of site trips to/from the project site is necessary to identify intersections to be included in the study area of the TIA. The following trip distribution was estimated based on the locations of likely trip destinations and locations of major transportation facilities in the site vicinity:

- Approximately 30 percent of site trips will travel to/from the south along SW 124th Avenue
- Approximately 20 percent of site trips will travel to/from the west along SW Tualatin-Sherwood Road
- Approximately 30 percent of site trips will travel to/from the east along SW Tualatin-Sherwood Road
- Approximately 20 percent of site trips will travel to/from the north along SW 124th Avenue

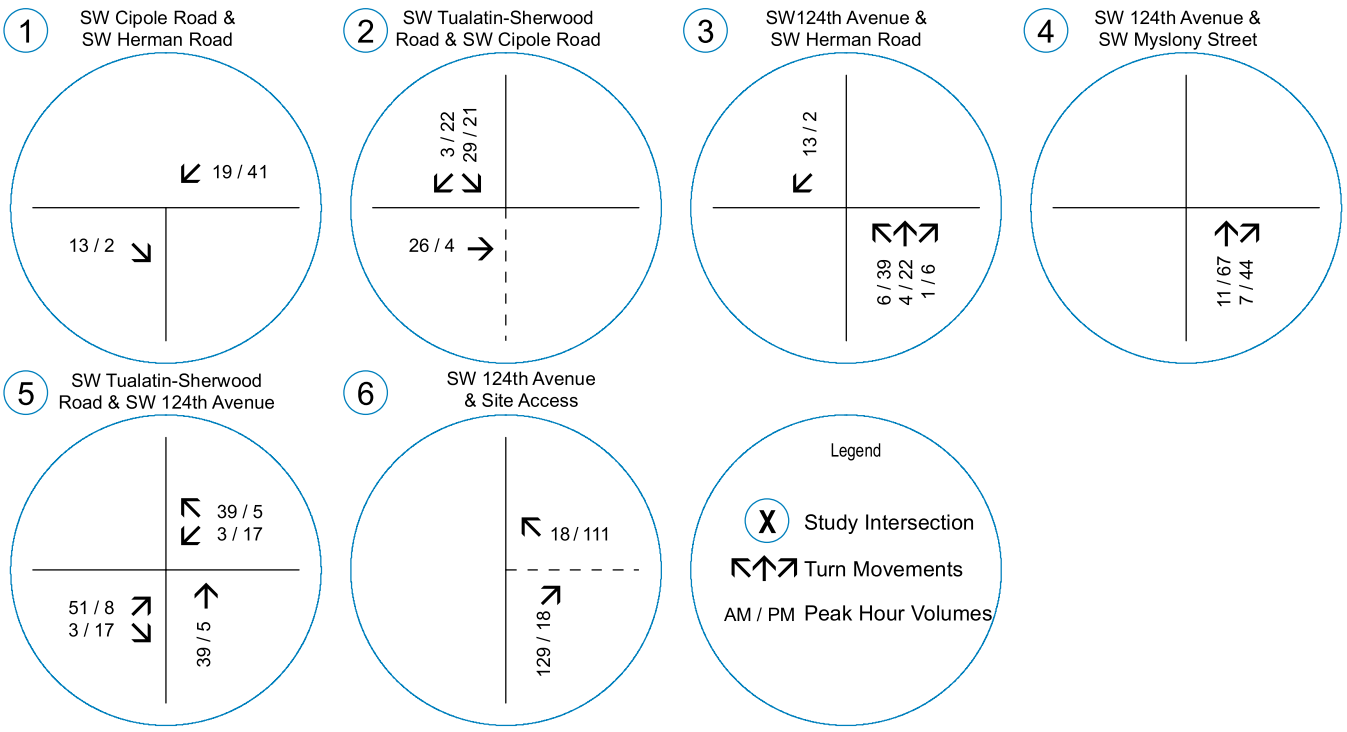
To address the right-in/right-out access on SW 124th Avenue, some of the traffic will not be able to travel along the most direct route to the site. Inbound traffic from the north will need to travel southward to SW Tualatin-Sherwood Road by another route and then turn northward on SW 124th Avenue. Outbound traffic destined for locations south, west, or east of the site will need to travel northward on SW 124th Avenue and then travel southward to SW Tualatin-Sherwood Road by an alternate route.

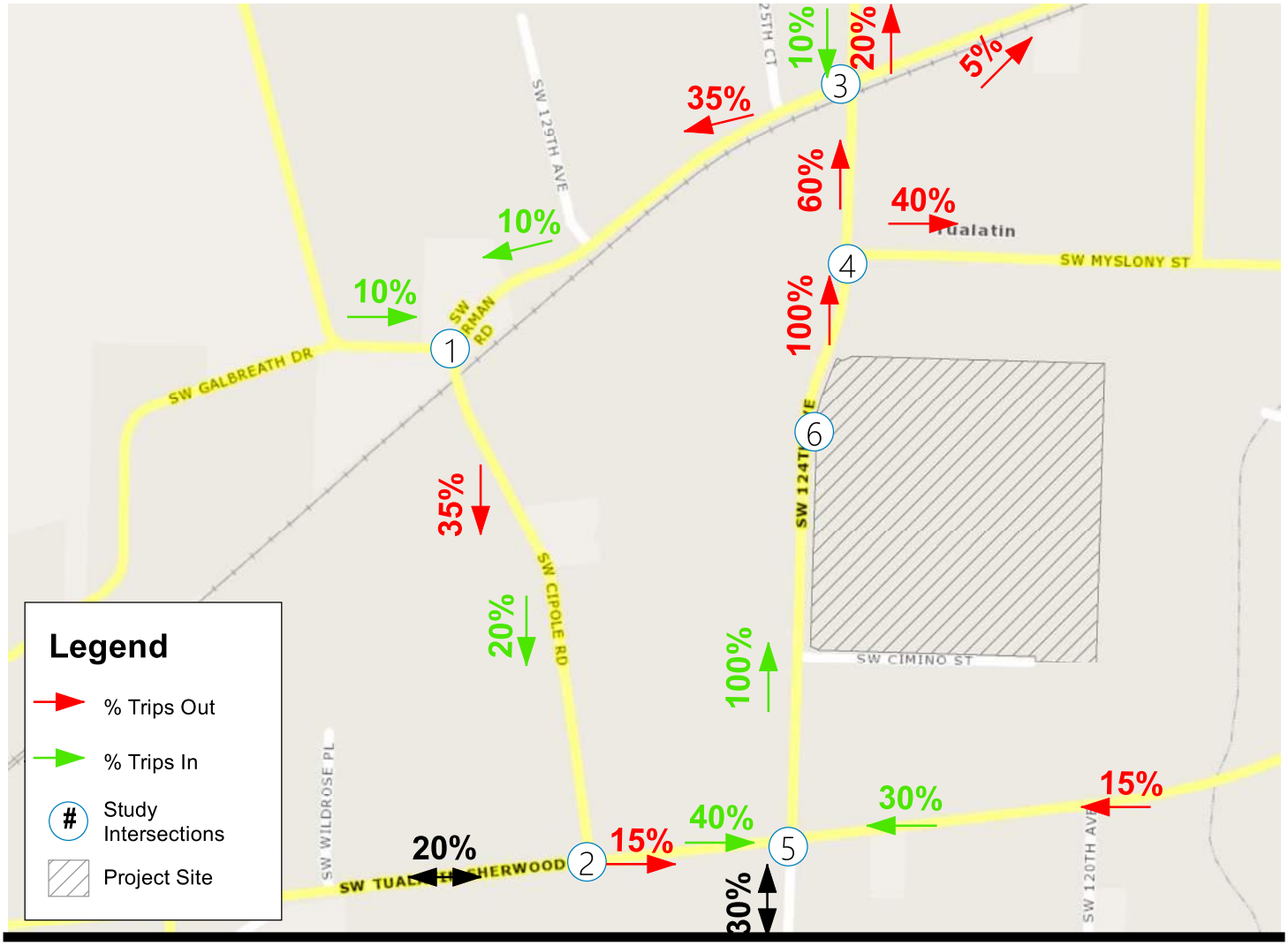
[1] Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 11th Edition, 2022.

The following indirect routes are assumed:

- Approximately half, 10 percent, of the inbound traffic from the north is assumed to use to SW Cipole Road from OR 99E instead of SW 124th Avenue.
- The remaining 10 percent from the north is assumed to travel along SW 124th Avenue to SW Herman Road to SW Cipole Road.
- Approximately 40 percent of the outbound traffic is assumed to travel northward along SW 124th Avenue, turn right onto SW Myslony Street, and travel to SW Tualatin-Sherwood Road.
- Approximately 5 percent of the outbound traffic is assumed to travel northward on SW 124th Avenue and turn east on SW Herman Road to access SW Tualatin-Sherwood Road via SW Teton Avenue or other connecting roadways.
- Approximately 35 percent of the outbound traffic is assumed to travel northward on SW 124th Avenue and turn west on SW Herman Road and turn south on SW Cipole Road to SW Tualatin-Sherwood Road.

The resulting trip assignment is shown in Figure 3.





Traffic Volumes Trip Distribution & Assignment

NOT TO SCALE

Figure 3
124th Business Park TIA
7/25/2022

MACKENZIE.



TRANSPORTATION IMPACT ANALYSIS

To
City of Tualatin

For
Lam Research

Dated
August 12, 2022

Project Number
2220087.00

MACKENZIE
Since 1960

RiverEast Center | 1515 SE Water Avenue, Suite 100, Portland, OR 97214
PO Box 14310, Portland, OR 97293 | T 503.224.9560 | www.mcknze.com

IV. SITE DEVELOPMENT

The trip-making characteristics of the proposed development are described below.

Trip Generation

The proposed 120,000 SF office building will provide space for office staff generally working between 8 AM and 5 PM. Up to 600 employees will be added to the campus with the new office building. Most new office staff are anticipated to work from the office in the future. Trip generation estimates were developed with the use of the Institute of Transportation Engineers' (ITE) *Trip Generation Manual,* 11th Edition. The City requires the reasonable worst case for trip generation be analyzed. Therefore, trip rates for ITE's "General Office Building" (LUC 710) using building area were utilized in this study.

Table 4 presents the trip generation estimates for the proposed office building.

TABLE 4 – TRIP GENERATION

ITE Code	ITE Land Use	Size	Trip Type	AM Peak Hour			PM Peak Hour			Daily
				In	Out	Total	In	Out	Total	
710	General Office Building	120.0 KSF	Total	172	24	196	33	160	193	1,360

Trip Distribution and Assignment

Trip distribution for the proposed office building was estimated by reviewing the existing distribution from recent and existing counts at the site driveways in conjunction with review of previous trip distribution assumptions for the Lam Research campus. The following trip distribution was assumed:

- 15% to/from the south on Highway 99W
- 25% to/from the north on Highway 99W
- 5% to/from the east on SW Tualatin Road
- 15% to/from the south on SW 124th Avenue
- 5% to/from the south on SW 118th Avenue
- 35% to/from the east on SW Herman Road

Figure 10 presents the trip distribution and traffic assignment for the AM and PM peak hours.

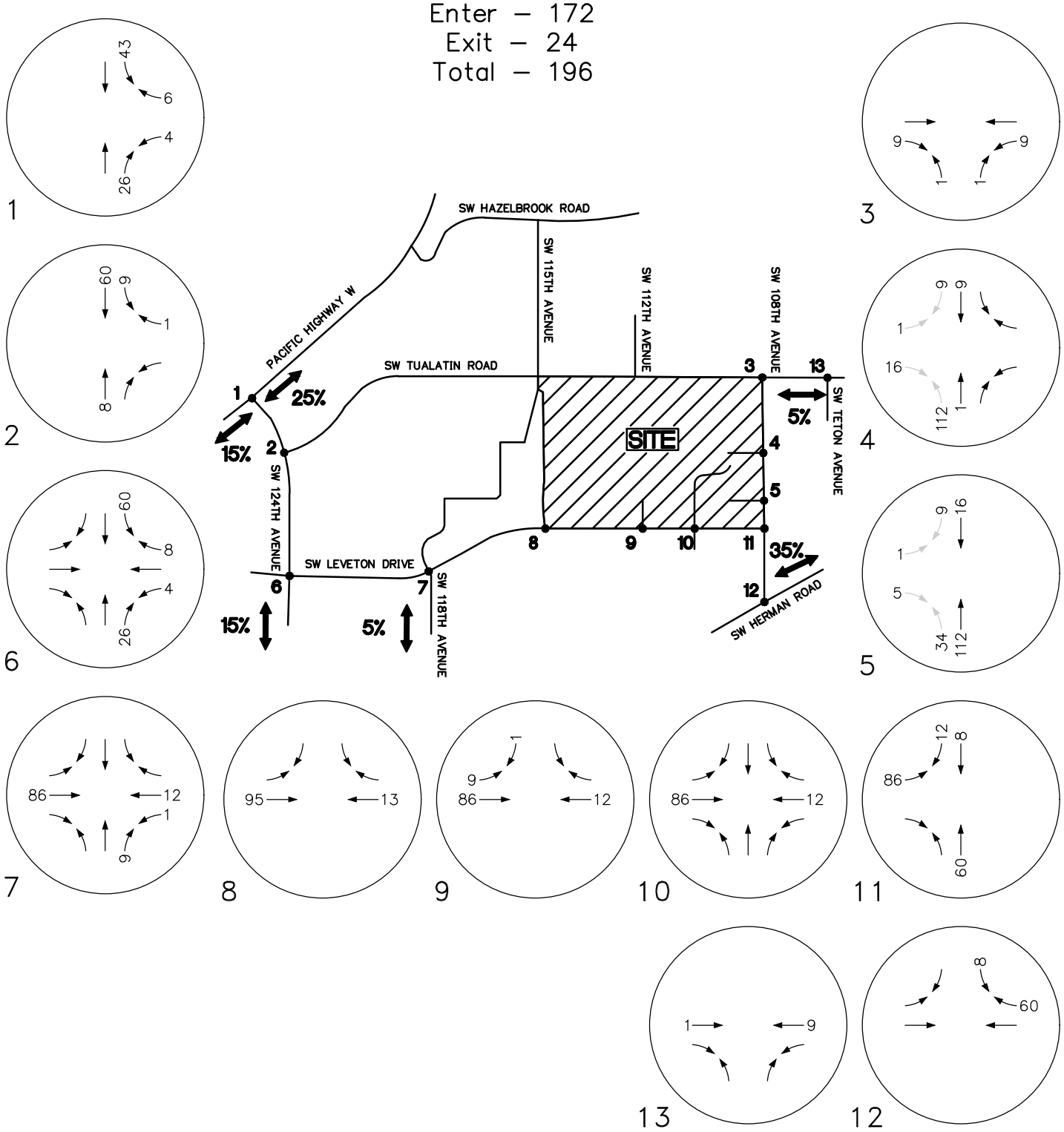
East Access Reroutes

With the proposed building, other site changes including additional parking along SW 108th Avenue, two (2) new driveways on SW 108th Avenue, and limiting the East Access on SW Leveton Drive to trucks are proposed. With the closure of the East Access to passenger vehicle traffic, existing site trips that currently utilize this driveway are anticipated to reroute to the proposed driveways on SW 108th Avenue to access the expanded parking area. Figure 11 presents the East Access trip reroutes for the AM and PM peak hours.

NOT TO SCALE

AM PEAK HOUR

Enter – 172
Exit – 24
Total – 196



Portland 503.224.9560	Vancouver 360.695.7879	Seattle 206.749.9993	
www.mcknze.com			
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MACKENZIE

DATE: 08.10.22
DRAWN BY: CNL
CHECKED BY: JTJ
JOB NO: 222008700

PRIMARY TRIP DISTRIBUTION + TRAFFIC ASSIGNMENT - AM PEAK HOUR

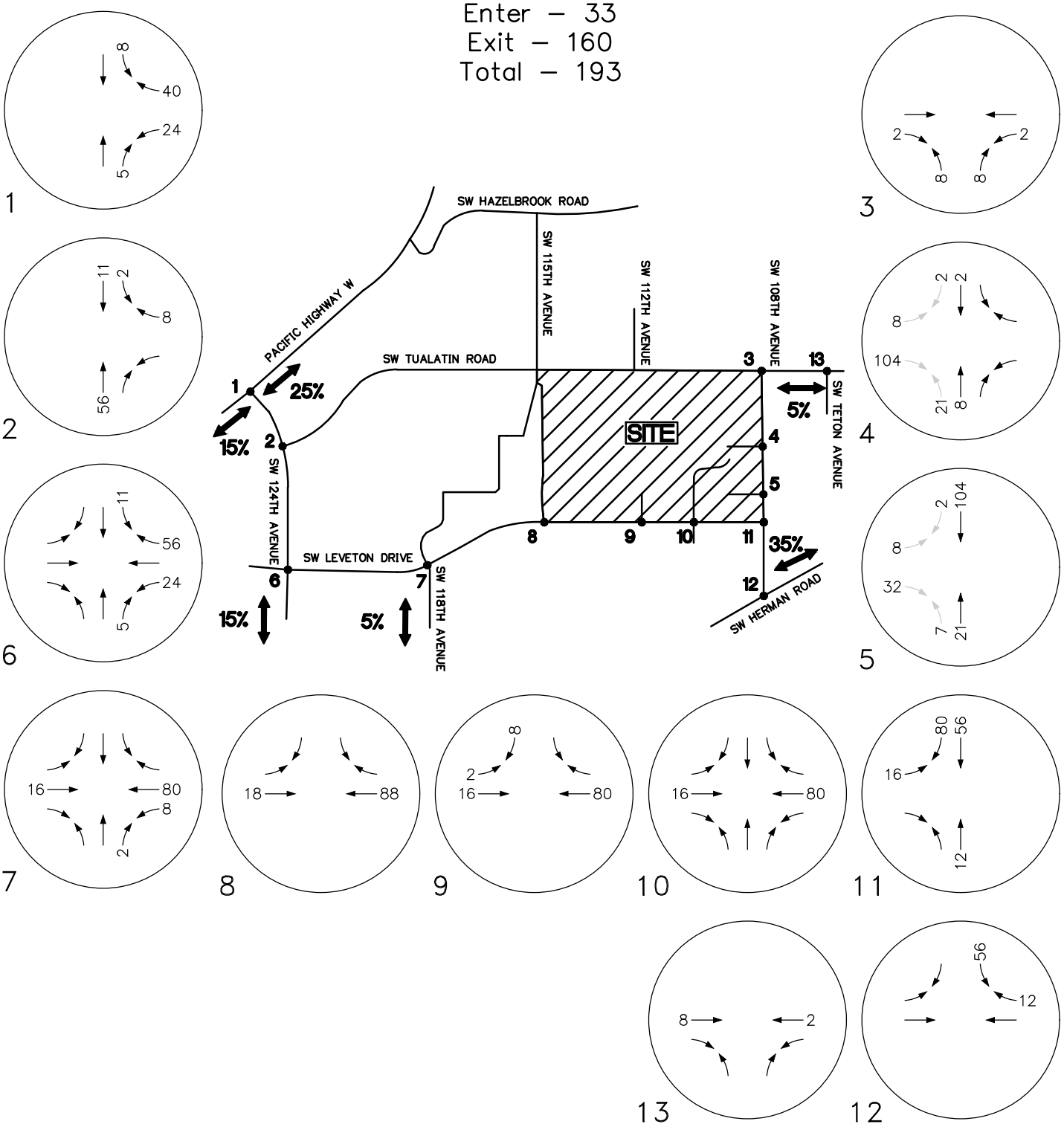
LAM RESEARCH NEW OFFICE BUILDING
TUALATIN, OREGON

FIGURE
11A

NOT TO SCALE

PM PEAK HOUR

Enter – 33
Exit – 160
Total – 193



Portland 503.224.9560	Vancouver 360.695.7879	Seattle 206.749.9993	
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MACKENZIE

DATE: 08.10.22
DRAWN BY: CNL
CHECKED BY: JTJ
JOB NO: 222008700

PRIMARY TRIP DISTRIBUTION + TRAFFIC ASSIGNMENT - PM PEAK HOUR

LAM RESEARCH NEW OFFICE BUILDING
TUALATIN, OREGON

FIGURE
11B

lancaster mobley

1130 SW Morrison St., Suite 318
Portland, OR 97205
503.248.0313
lancastermobley.com

Memorandum

To: Mike McCarthy, Tony Doran, City of Tualatin

Copy: Chris Walker, CIDA

From: Ken Kim, PE

Date: December 16, 2024

Subject: KAI USA Warehouse Expansion
Trip Generation and Distribution Memorandum



Introduction

This memorandum provides trip generation and distribution for the proposed KAI USA Warehouse Expansion located at 18600 SW Teton Avenue in Tualatin, Oregon. The results are compared with City standards to demonstrate that no further analysis is necessary.

Project Location and Description

The project site is located on Tax Lot 2S123B0-00701 in Tualatin, Oregon. A vicinity map is shown in Figure 1 with the subject site highlighted in yellow.



Figure 1: Project Location (image from Google Earth)

The site is currently developed with a KAI USA Warehouse building. The project proposes the construction of an 18,430-square foot (SF) addition to the existing building. As shown in Figure 1, access to the site is provided via three existing roadway connections (yellow arrows) along SW Teton Avenue and SW Herman Road. A site plan is attached to this memo.

Trip Generation

The proposed development will include the construction of an 18,430-SF addition to the KAI USA Warehouse building. To estimate the number of trips that will be generated by the proposed use, rates from the *Trip Generation Manual*[1] were used. Data from Land Use Code (LUC) 150, *Warehousing* was used to estimate trip generation of the existing use.

The trip generation calculations show that the proposed project is projected to generate an additional 3 morning peak hour trips, 3 evening peak hour trips, and 32 average weekday trips. The trip generation estimates are summarized in Table 1. Detailed trip generation calculations are included as an attachment to this memorandum.

Table 1: Trip Generation Summary

Land Use Assumption (ITE Code)	Intensity	Morning Peak Hour			Evening Peak Hour			Weekday Trips
		In	Out	Total	In	Out	Total	
Warehousing (150) – Truck	18,430 SF	0	0	0	1	0	1	12
Warehousing (150) – Total	18,430 SF	2	1	3	1	2	3	32

Trip Distribution

A preliminary directional distribution of site trips was estimated based on locations of likely trip origins and destinations, and locations of major transportation facilities in the site vicinity.

The following trip distribution was estimated and applied to the proposed development:

- Approximately 35% of site trips will travel to/from the east along SW Herman Road.
- Approximately 30% of site trips will travel to/from the north along SW Teton Avenue
- Approximately 20% of site trips will travel to/from the west along SW Herman Road.
- Approximately 15% of site trips will travel to/from the south along SW Teton Avenue.

[1] Institute of Transportation Engineers (ITE), *Trip Generation Manual*, 11th Edition, 2021.

Comparison to Agency TIA Standards

Tualatin Traffic Study Requirements outlines two levels of traffic analysis that may be required based on the development type and size.

A Trip Generation and Distribution Description is required for any development that, in the judgement of City staff, would generate 100 or more new daily trips. Developments anticipated to generate this level of traffic, and thus require a Trip Generation and Distribution Description, include:

a. 10 or more single-family homes
b. 15 or more multi-family units
c. Industrial buildings 15,000 SF or larger
d. Office buildings 8,000 SF or larger
e. Any use with customers or public coming to the site (such as retail, restaurant, school, medical office, recreation, etc.)

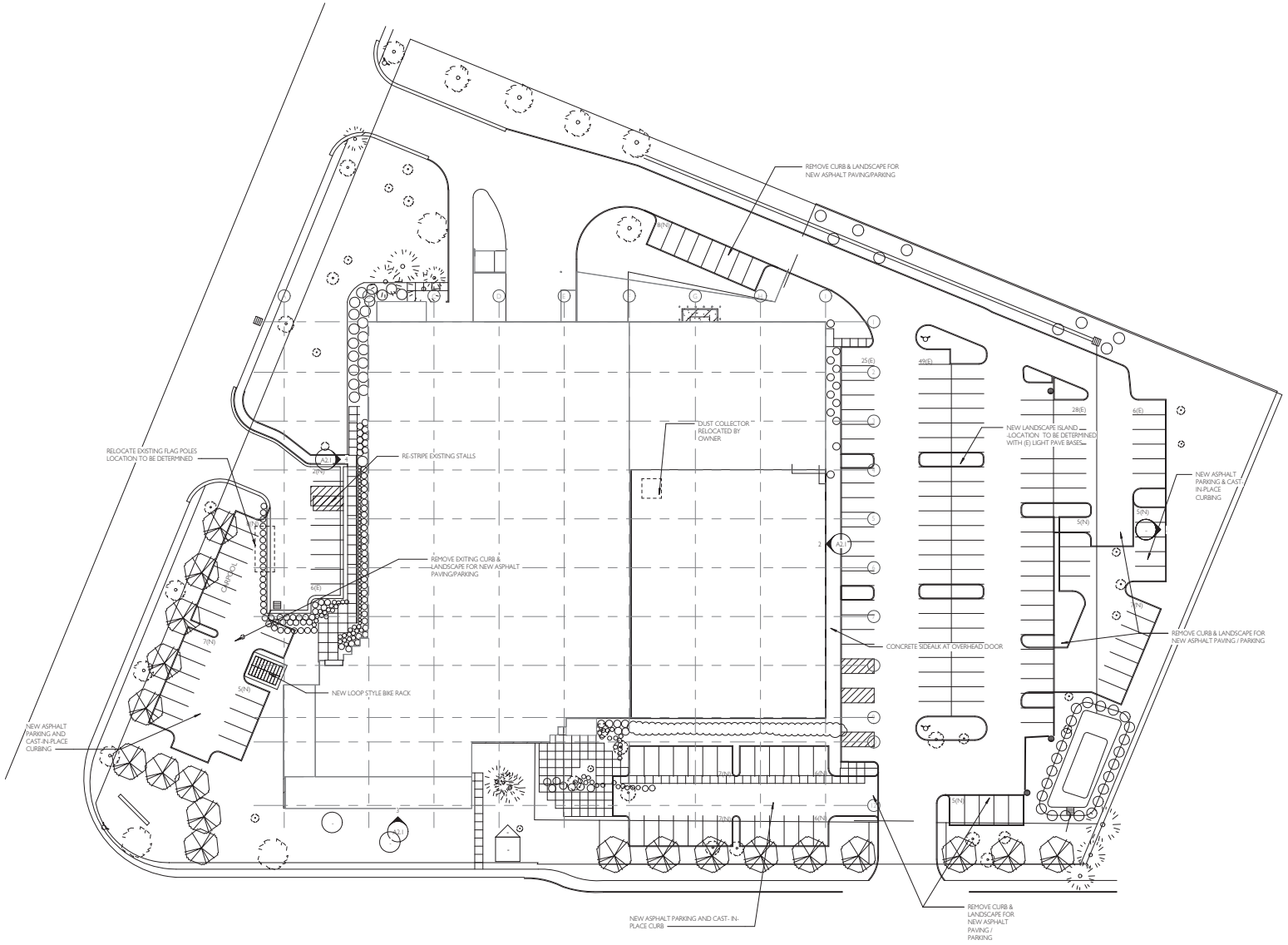
A full Transportation Impact Analysis is required for cases (in staff's judgement) that would be anticipated to generate more than 500 vehicle trip ends per day and/or more than 60 vehicle trip ends in the morning or evening peak hour and/or more than 100 vehicle trip ends during the peak hour of development traffic. Developments anticipated to generate this amount of traffic (and thus require a Transportation Impact Analysis) include:

a. 50 or more single-family residences
b. 80 or more multi-family residences
c. 75,000 SF or more of industrial space
d. 40,000 SF or more of office space
e. 10,000 SF or more of retail space
f. Any restaurant, convenience market, or gas station
g. Any development with a drive-through

Although the size of development will be above the 15,000-SF threshold of industrial building size for a trip generation and distribution requirement, the trip generation for the proposed expansion will fall below any of these trip generation thresholds. However, this memorandum provides the trip generation and trip distribution; therefore, no further traffic study is required beyond the provided analysis in this memo.

Conclusions

Based on the trip generation calculations, the project site with the expansion of the KAI USA Warehouse is projected to generate an additional of 3 morning peak hour trips, 3 evening peak hour trips, and 32 average weekday trips. These estimates fall below the Trip Generation and Distribution threshold of 100 ADT and TIA threshold of 60 morning, evening peak hour trips, and 32 ADT; therefore, no further traffic study is required.



NORTH

1 A0.1 **ARCHITECTURAL SITE PLAN**

1" = 30'-0"

SITE PLAN NOTES

EDIT AS REQUIRED-- SAVE TO YOUR PROJECT LIBRARY

1. RADIUS AT PARKING AREA TO BE 3'-0" UNLESS NOTED OTHERWISE.
2. EXISTING CONDITIONS SHOWN ARE BASED ON SURVEY DONE BY --- AND DATED ---.
3. CONTRACTOR TO CONFIRM EXISTING CONDITION SHOWN ON IMPLIED PRIOR TO START OF CONSTRUCTION AND NOTIFY A/E OF ANY DISCREPANCIES.

KEYNOTES

PRELIMINARY PLAN ONLY- NOT FOR CONSTRUCTION

ISSUE DATE

1 GC ROM PRICING 9/13/22

CIDA
ARCHITECTURE
ENGINEERING
PLANNING
INTERIORS
LANDSCAPE
15895 SW 72ND AVE SUITE 200
PORTLAND, OREGON 97224
TEL: 503.226.1285
FAX: 503.226.1670
WWW.CIDAINC.COM

ADDITIONS FOR:

KIA - USA

PROJECT ADDRESS - TUALATIN, OREGON

SITE PLAN

A0.1

220127.01

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9/13/2022 4:06:09 PM

TRIP GENERATION CALCULATIONS

Source: Trip Generation Manual, 11th Edition

Land Use:	Warehousing
Land Use Code:	150
Land Use Subcategory:	All Sites
Setting/Location	General Urban/Suburban
Variable:	1000 SF GFA
Trip Type:	Vehicle
Formula Type:	Rate
Variable Quantity:	18.43

AM PEAK HOUR

Trip Rate: 0.17

	Enter	Exit	Total
Directional Split	77%	23%	
Trip Ends	2	1	3

PM PEAK HOUR

Trip Rate: 0.18

	Enter	Exit	Total
Directional Split	28%	72%	
Trip Ends	1	2	3

WEEKDAY

Trip Rate: 1.71

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	16	16	32

SATURDAY

Trip Rate: 0.15

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	1	1	2

TRIP GENERATION CALCULATIONS

Source: Trip Generation Manual, 11th Edition

Land Use:	Warehousing
Land Use Code:	150
Land Use Subcategory:	All Sites
Setting/Location	General Urban/Suburban
Variable:	1000 SF GFA
Trip Type:	Truck
Formula Type:	Rate
Variable Quantity:	18.43

AM PEAK HOUR

Trip Rate: 0.02

	Enter	Exit	Total
Directional Split	52%	48%	
Trip Ends	0	0	0

PM PEAK HOUR

Trip Rate: 0.03

	Enter	Exit	Total
Directional Split	52%	48%	
Trip Ends	1	0	1

WEEKDAY

Trip Rate: 0.6

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	6	6	12

SATURDAY

Trip Rate: 0

	Enter	Exit	Total
Directional Split	50%	50%	
Trip Ends	NA	NA	NA

MACKENZIE.

September 14, 2023 ***(Revised October 11, 2023)***

City of Tualatin
Attention: Tony Doran
18880 SW Martinazzi Avenue
Tualatin, OR 97062

Re: **Fujimi Facility Expansion**
Trip Generation and Distribution
Project Number 2210148.00

Dear Tony:

Mackenzie has prepared this trip generation letter for the proposed two-story, 70,000-square-foot (SF) expansion of the existing Fujimi facility located at 11200 SW Leveton Drive in Tualatin, Oregon.

PROJECT DESCRIPTION

The proposed building addition, located at the southeast corner of the existing Fujimi building, will be two stories with a gross floor area of up to 70,000 SF. The proposed addition will include manufacturing space, clean rooms, laboratories, and some office area. With the expansion, approximately 10-20 new employees will be added over time. This project will include associated site work, including approximately 30 additional parking spaces. The project will also add a new hammerhead fire turnaround at the southeast corner of the site. Per the City of Tualatin Traffic Study Requirements, a full Transportation Impact Analysis (TIA) is required for any development that generates 500 or more new daily trips. The proposed expansion is estimated to add approximately 333 new daily trips, so this letter presents the information required for a Trip Generation and Distribution Description letter.

TRIP GENERATION

Trip generation estimates were reviewed using trip rates published in the Institute of Transportation Engineers' (ITE) *Trip Generation Manual,* 11th Edition for the "General Light Industrial" (LUC 110) land use, as required by the "Tualatin Traffic Study Requirements" document (updated March 16, 2022). In addition, we surveyed the existing Fujimi site to better understand the site's actual trip generation compared with existing ITE data for not only the "General Light Industrial" use, but also the "Manufacturing" (LUC 140) use.

Existing Site Trips

The existing Fujimi site on SW Leveton Drive was surveyed for trip generation on Tuesday, October 3, 2023 during the AM and PM peak hours of the street. The generation summary for the existing 175,000 SF building is summarized in Table 1.

TABLE 1 – EXISTING TRIP GENERATION SUMMARY								
Trip Type	Size (KSF)	AM Peak Hour			PM Peak Hour			Daily
		In	Out	Total	In	Out	Total	
Total	175.0	40	6	46	10	24	34	238[a]
Trucks		2	0	2	0	0	0	24[b]
Passenger Cars		38	6	44	10	24	34	214

As presented in Table 1, the site currently generates 46 AM peak hour and 34 PM peak hour. A total daily trip estimate of 238 was derived by assuming a 7x ratio to the PM peak hour trips comparable to ITE trip data for the "General Light Industrial" and "Manufacturing" uses. Fujimi notes they have on average 8-12 trucks per day for deliveries. Based on the trip data above, the site-specific trip rates for all vehicles are 0.26 AM trips/KSF, 0.19 PM trips/KSF, and 1.36 daily trips/KSF.

Proposed Site Trips

We reviewed the proposed building expansion's trip generation utilizing the site-specific trip rates noted above, as well as ITE trip rates for "General Light Industrial" and "Manufacturing" uses. The trip generation comparison is presented in Table 2 below.

TABLE 2 – TOTAL TRIP GENERATION COMPARISON FOR EXPANSION									
ITE Code	Land Use	Size (KSF)	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
N/A	Fujimi Site	70.0	16	2	18	4	9	13	91
110	General Light Industrial		45	6	51	6	40	46	341
140	**Manufacturing**		**40**	**12**	**52**	**13**	**30**	**43**	**333**

As presented in Table 2, the ITE trip rates for the "General Light Industrial" and "Manufacturing" uses likely overestimate the site's trip impact for the proposed expansion by a factor of 2-3 times. We note the ITE trip generation estimates grossly overestimate the expected trip generation with the expansion as only 10-20 employees will be added with the proposal; however, as a worst-case scenario, we propose estimating the site's trip generation using ITE trip data for the "Manufacturing" (LUC 140) use for purposes of calculating the proposed expansion's Transportation Development Tax (TDT) imposed by Washington County.

The existing site trip rates yield an expected impact of only 18 AM peak hour and 13 PM peak hour trips forecasted with the expansion. Therefore, a Transportation Impact Analysis (TIA) is not warranted with the approximately 70,000 SF addition.

[a] Assumes total daily trips are 7x PM peak hour trips based on ITE data for "General Light Industrial" and "Manufacturing."
[b] Based on existing Fujimi delivery activity consisting of 8-12 trucks per day, on average.

Truck Trips

Table 3 presents the truck trip generation estimates associated with the proposed expansion utilizing ITE "Manufacturing" truck trip rates.

TABLE 3 – TRUCK TRIP GENERATION COMPARISON FOR EXPANSION

ITE Code	Land Use	Size (KSF)	AM Peak Hour			PM Peak Hour			Daily
			In	Out	Total	In	Out	Total	
110	General Light Industrial	70.0	0	1	1	0	1	1	18
140	Manufacturing		1	1	2	1	1	2	32

The additional truck trips associated with the expansion are estimated to be 2 AM peak hour, 2 PM peak hour, and 32 daily trips, per trip data for ITE's "Manufacturing" land use. Note these truck trip estimates are included in the total trip estimates presented in Table 2 and are not in addition to those estimates. The truck trip generation estimates for the "Manufacturing" use are significantly higher than those based on ITE's "General Light Industrial" use. Similar to the total site-specific trip estimates, ITE truck trip generation estimates grossly overestimate the expected growth in truck trips associated with the expansion. Therefore, we do not recommend further analysis based on truck trip generation.

Pedestrians, Bicycles, and Transit

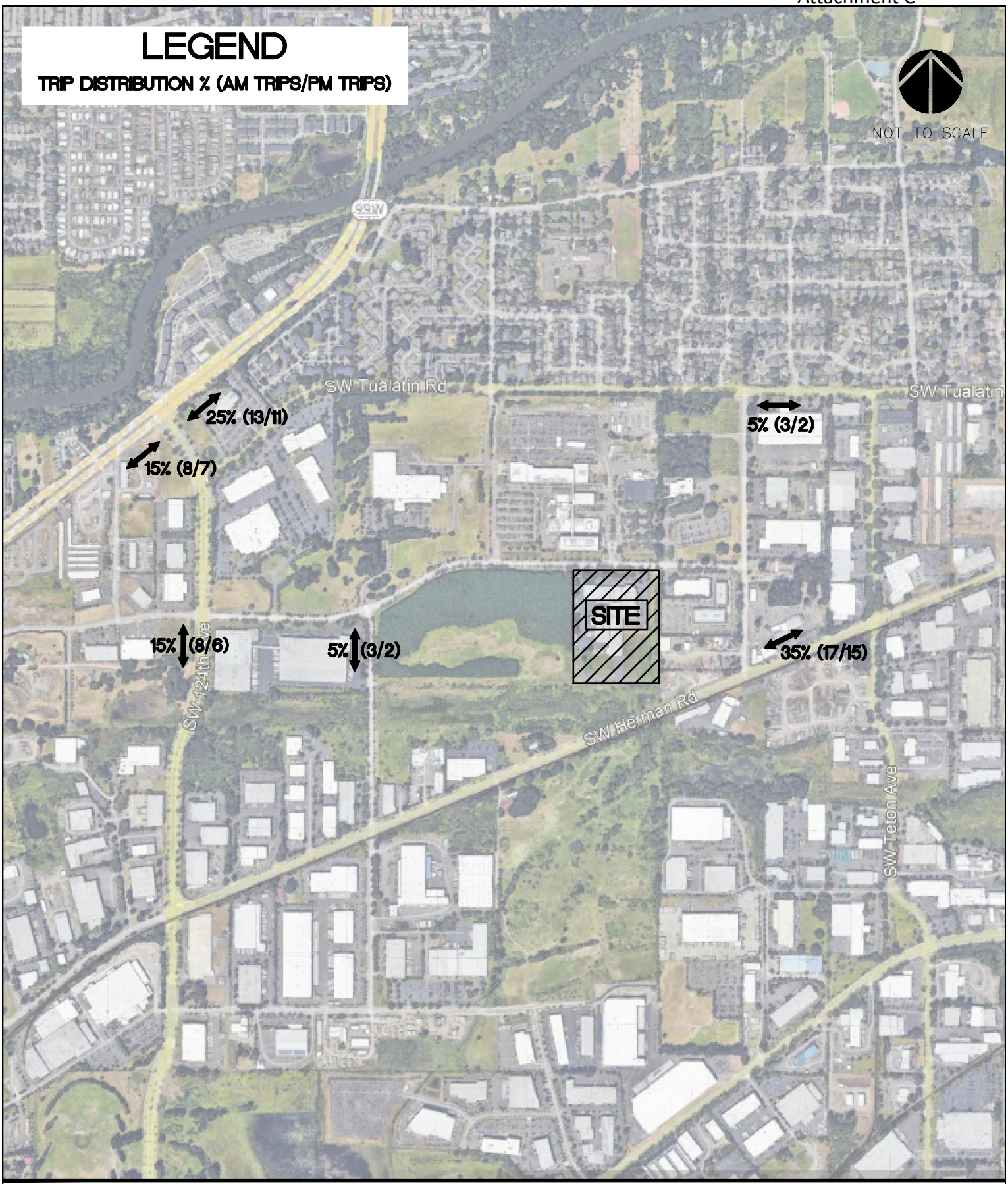
Sidewalks are provided along the site's SW Leveton Drive frontage. Sidewalks continue along SW 108th Avenue which provides a pedestrian connection to the nearby Hazelbrook neighborhood located north of SW Tualatin Road, and to SW Herman Road which has a Tualatin Ride Connection Blue Line Shuttle stop east of SW 108th Avenue. Data provided by Fujimi shows that their current workforce has a 0% pedestrian mode share. This is not expected to change with the proposed expansion.

The Tualatin Ride Connection Blue Line Shuttle provides transit service to the site, with a stop along the site's SW Leveton Drive frontage. The Blue Line runs only during weekday peak hours, with a headway of approximately 45 minutes. Data provided by Fujimi shows that their current workforce has a 0% transit mode share. This is not expected to change with the proposed expansion.

Bike lanes are provided on all non-residential roads in the site vicinity. There is currently an outdoor 5-position bicycle rack on the site, in addition to available indoor bike parking. Data provided by Fujimi shows that their current workforce has a 5% bicycle mode share. This is not expected to change with the proposed expansion, which corresponds to a maximum of 2 additional daily bike trips with the addition of 20 employees. Based on this estimate, it is not expected the proposed expansion will have a significant impact on the bicycle infrastructure in the vicinity of the site.

TRIP DISTRIBUTION

Trip distribution for the new trips generated by the proposed expansion was estimated by reviewing the existing distribution from recent and existing counts at surrounding intersections in conjunction with review of previous trip



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DATE: 9.14.2023
DRAWN BY: LCB
CHECKED BY: JTJ
JOB NO: 221014800

TRIP DISTRIBUTION + ASSIGNMENT

FUJIMI FACILITY EXPANSION
TUALATIN, OR

FIGURE 1

APPENDIX H.

SIGNAL INFORMATION

14329

ENGLISH

SIGNAL MODIFICATION PLAN
PACIFIC HWY WEST AT SW 124TH AVE
OR 99W, M.P. 12.66

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING/TRAFFIC ENGINEERING

9+79

PACIFIC HIGHWAY WEST
(OR 99W)

NOTE: ALL EXISTING WIRING WILL BE REMOVED AND REPLACED AS SHOWN.

POLE NO. 4
STA. 10+05, 18'RT

EX. POLE NO. 3

POLE NO. 5
STA. 9+20, 24'RT

EX. POLE NO. 2

9+00

POLE NO. 8
STA. 8+72, 23'RT

POLE NO. 9
STA. 8+59, 12'RT

EX. POLE NO. 1

POLE NO. 1
STA. 8+41, 98'LT

POLE NO. 6
STA. 8+55, 93'RT

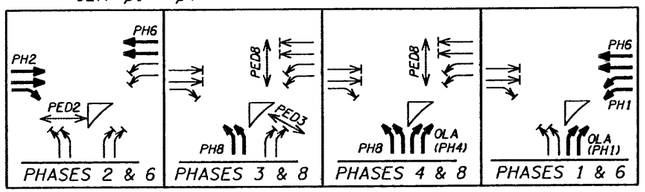
POLE NO. 7
STA. 8+31, 59'RT

SW 124TH AVE.

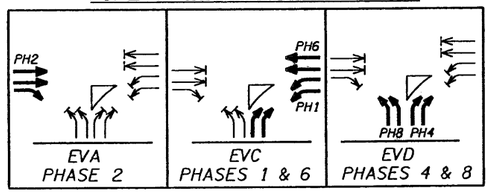
SCALE 0 10 20 40 FEET

NORMAL PHASE ROTATION
(STATE SUPPLIED W41KS SOFTWARE)

OLA= Ø1 + Ø4



FIRE PREEMPTION OPERATION



Thomas Sahlin
Traffic Engineering Operation Section Approval

ODOT TEOS DWG NO. 14329

REGISTERED PROFESSIONAL ENGINEER
19283PE
OREGON
JULY 17, 1997
CHARLES W RADOSTA
EXPIRES 12/31/06
8/2/06

TUALATIN DEVELOPMENT COMMISSION

SW 124TH AVE TURN LANE AT 99W
CITY OF TUALATIN
WASHINGTON COUNTY

Reviewed By - C. Radosta
Designed By - M. Stansell
Drafted By - M. Stansell

SIGNAL MODIFICATION PLAN

SHEET NO. S-2

TS&L PLANS

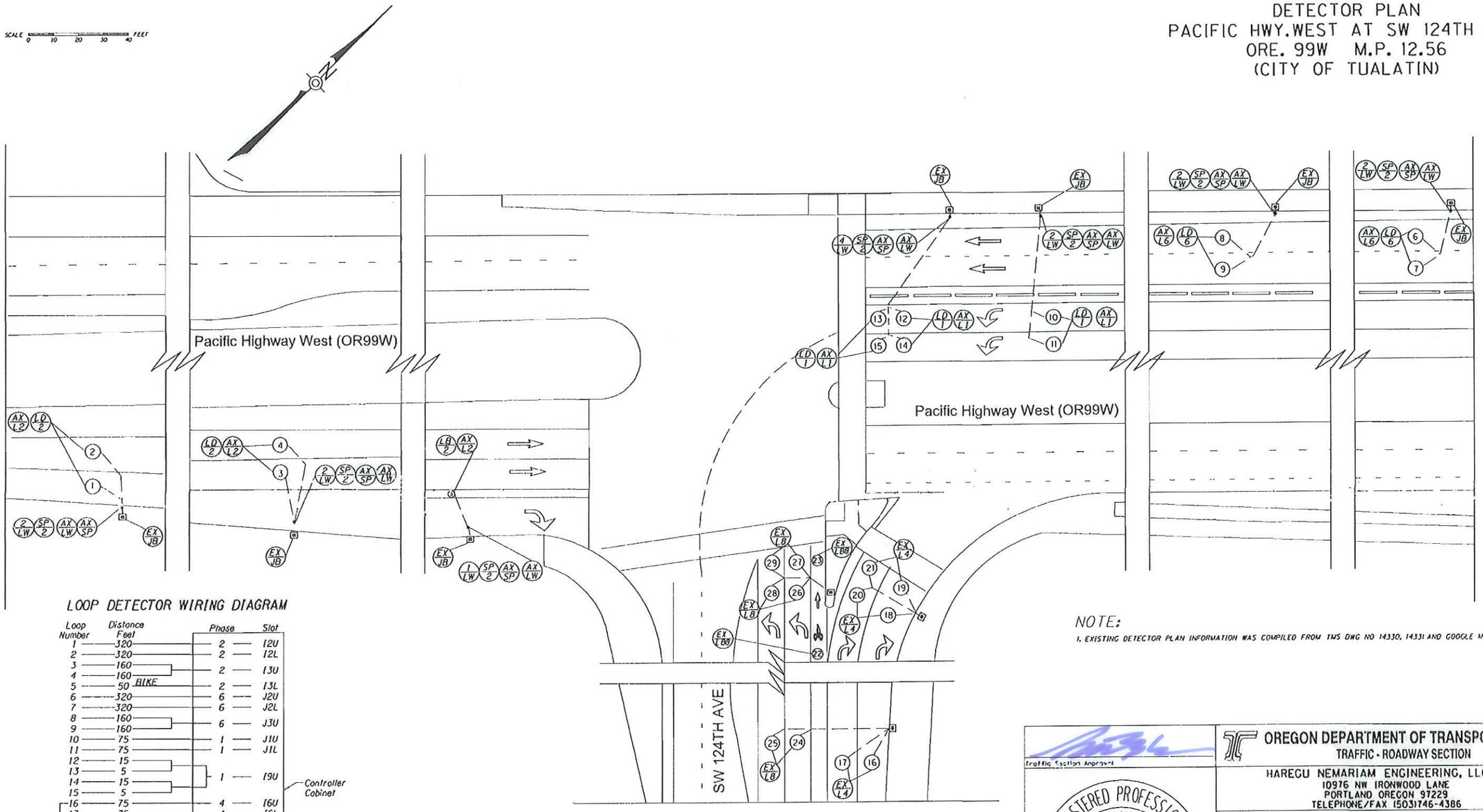
H:\proj\file\6562\dgn\6562ts-1.dgn 8/2/2006 8:15:02 AM

VIEW 1

16698

DETECTOR PLAN
PACIFIC HWY.WEST AT SW 124TH AVE.
ORE. 99W M.P. 12.56
(CITY OF TUALATIN)

SCALE 0 10 20 30 40 FEET



LOOP DETECTOR WIRING DIAGRAM

Loop Number	Distance Feet		Phase	Slot	
1	320		2	12U	
2	320		2	12L	
3	160		2	13U	
4	160	BIKE	2	13L	
5	50		6	J2U	
6	320		6	J2L	
7	320		6	J3U	
8	160		1	J1U	
9	160		1	J1L	
10	75		1	19U	Controller Cabinet
11	75				
12	15				
13	5				
14	15				
15	5				
16	75		4	16U	
17	75		4	16L	
18	15		4	17U	
19	5				
20	15		4	17L	
21	5				
22	50	BIKE	8	J7L	No-Work
23	5				
24	75		8	J6U	
25	75		8	J6L	
26	15		8	J8U	
27	5				
28	15		8	J7U	
29	5				

NOTE:
1. EXISTING DETECTOR PLAN INFORMATION WAS COMPILED FROM TMS DWG NO 14330, 14331 AND GOOGLE MAP.

"UTILITIES NOT SHOWN"
Contractor to contact utility companies for field locations.

NOTE:
See T.R.S. Dwg. 16697 for Legend

NOTE:
Field Verify Measurements Before Construction

Traffic Section Approval

REGISTERED PROFESSIONAL ENGINEER
67133
Haregu Nemariam
OREGON
May 10, 2005
HAREGU NEMARIAM
Expires Dec. 31, 2012

OREGON DEPARTMENT OF TRANSPORTATION
TRAFFIC - ROADWAY SECTION

HAREGU NEMARIAM ENGINEERING, LLC.
10976 NW IRONWOOD LANE
PORTLAND OREGON 97229
TELEPHONE/FAX (503)746-4386

OR99W: TUALATIN RIVER BR-SUNSET BLVD. SEC.
PACIFIC HIGHWAY WEST
WASHINGTON COUNTY

DESIGNED BY: TN
REVIEWED BY: HN
DRAWN BY: TN
FC: 91 MP: 12.56

DETECTOR PLAN

ISSUE No. ____ T.R.S. DWG. NO. 16698

C:\user\Haregu\Contract 29885 Projects\TA2 Loop Replacement\SW 124th_St_08-08-2012

Table: Phase Timing Plans [Timing Plan: 1]

Phase	1	2	3	4	6	8
Walk	0	9	7	0	0	8
Ped Clear	0	22	6	0	0	27
Min Green	4	10	4	6	10	6
Passage	2.3	5.4	0.2	2.3	5.4	2.3
Max 1	30	50	10	20	50	20
Max 2	40	60	10	20	60	20
Max 3	0	0	0	0	0	0
Yellow Change	4.5	5	4	4	5	4
Red Clear	1.1	1	0	1	1	2
Added Initial	0	1.2	0	0	1.2	0
Maximum Initial	4	21	4	6	21	6
Time Before Reduction	8	10	0	8	10	8
Time To Reduce	3	20	0	3	20	3
Minimum Gap	0.5	3.4	0.2	0.5	3.4	0.5
Dynamic Max Limit	45	0	0	0	0	0
Dynamic Max Step	5	0	0	0	0	0

Table: Phase Options Plans [Phase Plan: 1]

Phase	1	2	3	4	5	6	7	8
Enable	TRUE	TRUE	TRUE	TRUE	FALSE	TRUE	FALSE	TRUE
Auto Flash Entry	FALSE	FALSE	FALSE	TRUE	FALSE	FALSE	FALSE	TRUE
Auto Flash Exit	FALSE	TRUE	FALSE	FALSE	FALSE	TRUE	FALSE	FALSE
Non Actuated 1	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
Non Actuated 2	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
Non Lock Detector	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE	TRUE
Min Vehicle Recall	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
Max Vehicle Recall	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
Ped Recall	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
Soft Vehicle Recall	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
Dual Entry	FALSE	FALSE	FALSE	TRUE	FALSE	FALSE	FALSE	TRUE
Disable Simultaneous Gap	TRUE	FALSE	TRUE	TRUE	TRUE	FALSE	TRUE	TRUE
Guaranteed Passage	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
Actuated Rest in Walk	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
Conditional Service Enable	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE
Add Initial Calculation	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE	FALSE

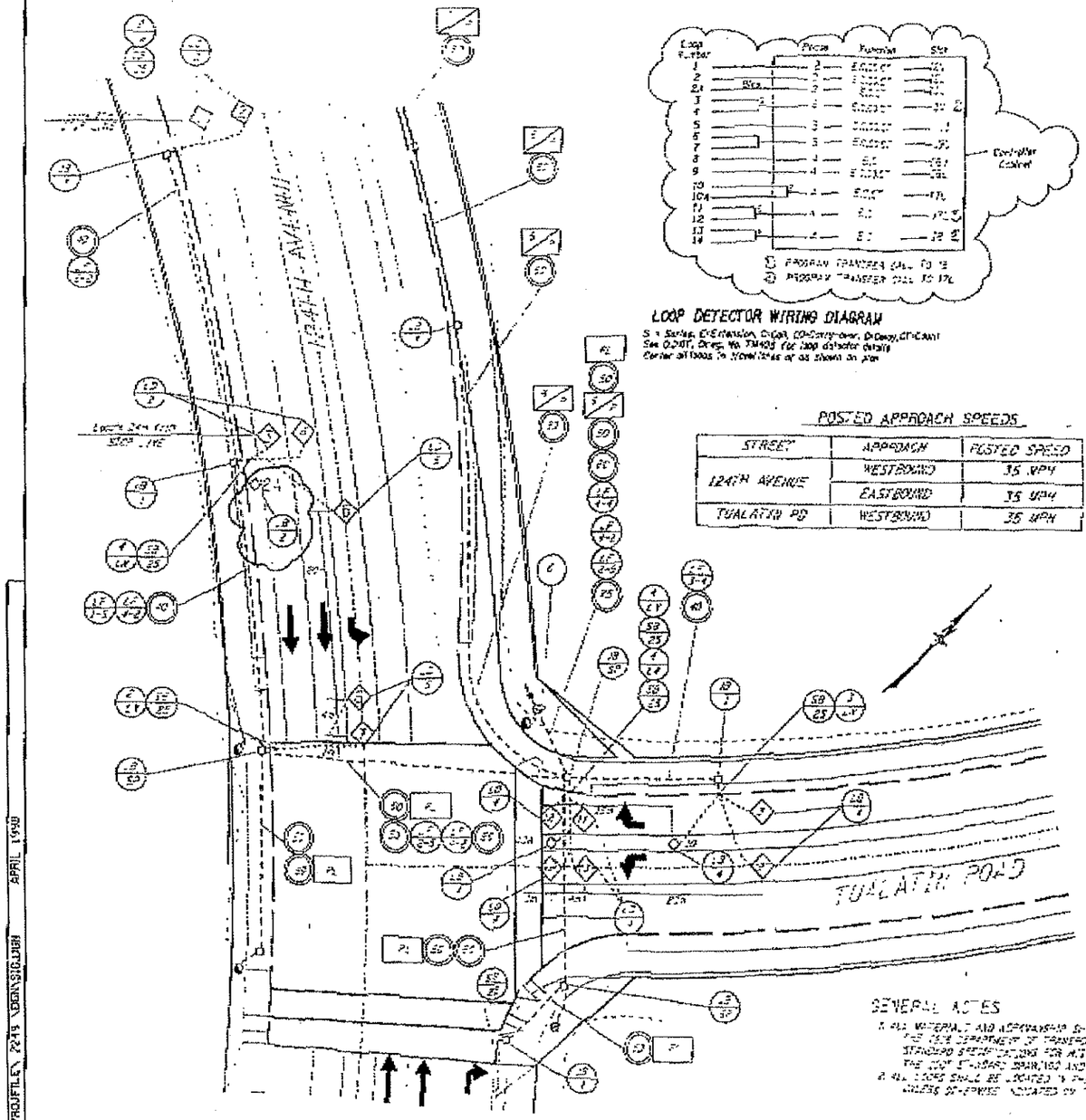
Table: Global Phase Recalls

Phase	2	6
Min	TRUE	TRUE
Max	FALSE	FALSE
Ped	FALSE	FALSE
Act. Walk Re	FALSE	FALSE

Table: Day Plan Events [Day Plan: 1]

Event	Hour	Minute	Action	Description
1	0	0	21	Coord Free - Max 1
2	5	45	22	Coord Free - Max 2
3	8	0	21	Coord Free - Max 1
4	15	0	22	Coord Free - Max 2
5	18	0	21	Coord Free - Max 1

124TH AT TUALATIN RD
DETECTOR & INTERCONNECT PLAN



LOOP DETECTOR WIRING DIAGRAM

S = Series, E=Extension, D=Diff, C=Carry-over, D-Delay, CH=Chan
See D.D.&T. Dwg. No. TM-909 for loop detector details
Center all loops in travel lanes or as shown on plan

POSTED APPROACH SPEEDS

STREET	APPROACH	POSTED SPEED
124TH AVENUE	WESTBOUND	35 MPH
	EASTBOUND	35 MPH
TUALATIN RD	WESTBOUND	35 MPH

LEGEND

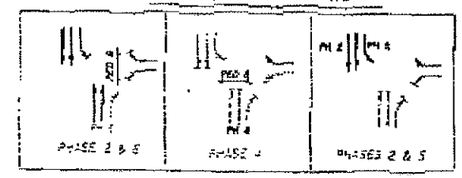
- C — CONTROLLER (See Signal Plan)
- JB — Junction box (See Signal Plan)
- 2#14 on 1#8 on 1-2IC on 1#10 on 1#14 Grounded — Install #10 on 1 2IC on 1 3IS on 1#14 Grounded Around concrete Junction box
- 6 — Install 6 feet of diamond vehicle detector loop
- 6P — Install 6 feet (PAT) of diamond bicycle detector loop
- 2S — Install (2) 2 pole Terminal Facility Socket
- 2#14 — Install (2) pair of loop wires
- C — Install (1) one electrical conduit
- 2C — Electrical conduit (See Signal Plan)
- 2#14 — Install (2) twisted pair interconnect cable
- PE — Install only pull line if no wire is to be placed

ABBREVIATIONS

3 = TYPE SHOWN	6 = #6 SIZE SHOWN
P4 = 4-PAIR SHOWN	S = SIZE SHOWN
4 = NUMBER OF CABLES SHOWN	R = STANDARD FOUNDATION
E = ELEVATED FOUNDATION	CH = CHANNEL SHOWN
H = HORNS SHOWN	L = LENGTH SHOWN
# = NUMBER SHOWN	PW = PEDESTRIAN WIDTH

REVISED AS CONSTRUCTED
28-June-1999 CONTRACT 12044
8/16/99 Add Bike Loop

NORMAL PHASE ROTATION



GENERAL NOTES

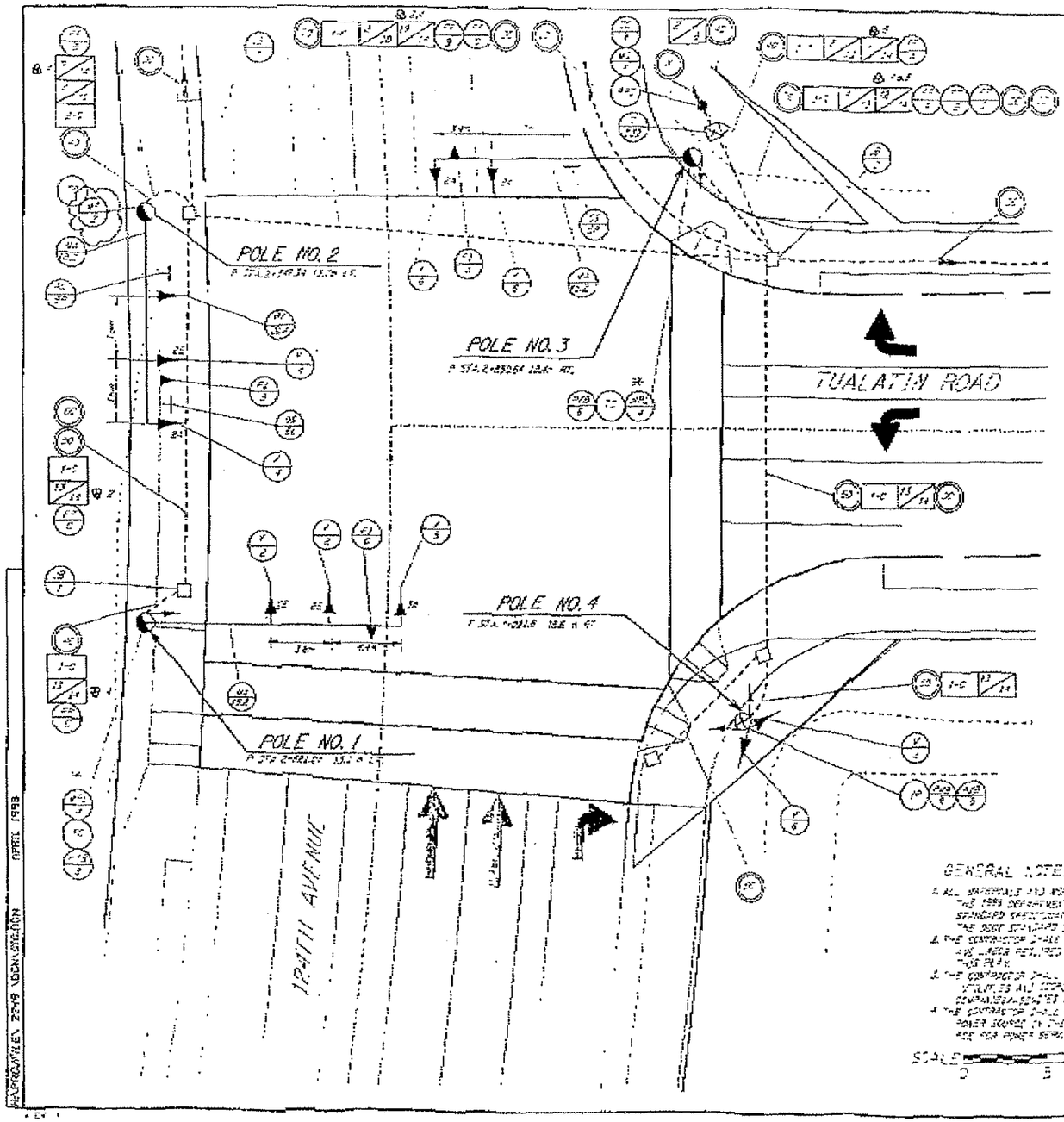
1. ALL MATERIALS AND WORKMANSHIP SHALL BE GOVERNED BY THE OREGON DEPARTMENT OF TRANSPORTATION (ODOT) STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION AND THE ODOT STANDARD DRAWINGS AND SPECIAL PROVISIONS.
2. ALL LOOPS SHALL BE LOCATED IN THE CENTER OF THE LANE UNLESS OTHERWISE INDICATED ON THE DETECTOR PLAN

TRAFFIC SIGNAL INSTALLATION
124TH AVENUE & TUALATIN-SHERWOOD RD
PACIFIC HIGHWAY WEST
WASHINGTON COUNTY

FEDERAL HIGHWAY ADMINISTRATION		PROJECT NUMBER	SHEET NO.
REGION 10	OREGON DIVISION		TS 5

N:\PROJFILE\ 2245 \DGN\SIG1.DGN APRIL 1998

01/25/00 15:37 P.003/006



LEGEND

- Install mast arm assembly in pedestal as shown with 4 feet arm, 4 meter mast (Cantilever as shown)
- Install type 9 standard traffic signal mast arm pole
- Install 1 way traffic signal mast arm
- Install pedestrian push pedestal with tangible type
- Install conduit (GALVD) or rigid fibre bituminous conduit
- Install weather power service post
- Install phase (PH) vehicle signal with LED's
  R = 300mm R 305mm Y 305mm G
  S = 305mm R STA 305mm Y STA 305mm G STA
- Install phase (PH) pedestrian signal with LED retrofit kit
- Install phase (PH) pedestrian signal with LED retrofit with pushbutton and pushbutton decal
- Install functional address
- Install vehicle detector loop
- Install 100 watt meter base
- Install 440 mm x 265 mm x 305 mm (min. dimension) precast concrete junction box
- Install 560 mm x 305 mm x 356 mm (min. dimension) precast concrete junction box
- Install (4) No. 8 type THWN (Signal system common)
- Install (4) No. 12 type THWN wires
- Include 3 spare wires for phase (PH)
- Install (5) 4mm electrical conduit
- Controller cabinet (See Controller Plan)
- Interconnect conduit (See Controller Plan)
- Install standard (GALVD) pre-emption detector (radio unit)
- Install standard unit wire as required by power company
- Install standard illuminated 250 mm x 900 mm right arrow "ONLY" sign
- Install standard illuminated 750 mm x 900 mm right arrow "ONLY" sign
- Install vehicle signal pedestal with transformer base

SEE LIGHTING PLAN FOR ANY ILLUMINATION INSTALLATION DETAILS

ABBREVIATIONS

T = TYPE SHOWN	S = ANC SIZE SHOWN
PH = PHASE SHOWN	S = SIZE SHOWN
J = WIDTH OF CABLE SHOWN	A = SERVICED FLUORIZER
E = ELEVATION NUMBER	CH = CHANGE SHOWN
H = HEIGHT SHOWN	L = LENGTH SHOWN
N = NUMBER SHOWN	PM = POLE MOUNTED

GENERAL NOTES

1. ALL MATERIALS AND WORKMANSHIP SHALL BE CONFORM TO THE 1996 DEPARTMENT OF TRANSPORTATION OREGON STANDARD SPECIFICATION FOR HIGHWAY CONSTRUCTION AND THE SIGNAL STANDARD DRAWINGS AND SPECIAL PROVISIONS.
2. THE CONTRACTOR SHALL CLEAR ALL EXISTING MATERIALS AND LABOR REQUIRED FOR THE FINAL OPERATIONS SHOWN ON THIS PLAN.
3. THE CONTRACTOR SHALL NOTIFY THE CITY 24 HR PRIOR TO STARTING WORK UNLESS ALL WORK IS COMPLETED WITHIN THE CITY'S NORMAL WORKING HOURS.
4. THE CONTRACTOR SHALL CONTACT PGE TO INSTALL THE POWER SERVICE IN THE FIELD AND COORDINATE A TIME WITH PGE FOR POWER SERVICE "TURN ON".

SCALE 0 5 10 20 METERS

124TH AT TUALATIN RD
SIGNAL PLAN

KEEP

KITTELSON & ASSOCIATES, INC.
610 SW ALDER, SUITE 700
PORTLAND, OREGON 97205
(503) 228-5230

POLE ENTRANCE CHART

POLE NUMBER	1	2	3	4
LUMINAIRE ARM	90	—	—	—
MAST ARM	3	3	7	—
PEDESTRIAN SIGNAL PLAN SHEET	1	—	3	33
PEDESTRIAN PSE DETAIL	38	—	35	41,5L
PEDESTAL CABINET	2	1	3	—

REVISED AS CONSTRUCTED
28-June-1999 CONTRACT 12044

TRAFFIC SIGNAL INSTALLATION
124th AT 124TH AVENUE & TUALATIN RD RELIGHT
PACIFIC HIGHWAY WEST
WASHINGTON COUNTY

FEDERAL HIGHWAY ADMINISTRATION		PROJECT NUMBER	SHEET NO.
REGION 10	OREGON DIVISION		TS 4

APPROVED 2000 WORKSTATION APRIL 1998

01/25/00 15:36 P.002/005

Q-Free MAXTIME Database Print Out

338 - 124th Avenue (PRE/PRI) & Tualatin Road

Agency Washington County

Database Description 332_WashCo_FYA-NotPed

Basic Timing Parameters - Phase Plan 1

Timings

Phases	1	2	3	4	5	6	7	8
Enable		X		X	X	X		X
Walk Time	0	0	0	0	0	10	0	9
Clear Time	0	0	0	0	0	15	0	23
Stdy Don't Walk	0	0	0	0	0	0	0	0
Min Green	5	10	5	5	10	10	5	0
Min Green 2	0	0	0	0	0	0	0	0
Min B4 FO	0	0	0	0	0	0	0	0
Passage	1.5	4.5	1.5	4.0	4.0	4.5	1.5	2.0
Passage 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max 1	15	50	15	15	40	50	15	30
Max 2	15	50	15	15	40	50	15	30
Max 3	0	0	0	0	0	0	0	0
Conditional Max	0	0	0	0	0	0	0	0
Yel Change	3.5	4.5	3.5	4.0	4.0	4.5	3.5	3.0
Red Clear	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Add Red Clear	0	0	0	0	0	0	0	0
Red Revert	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Added Initial	0.0	1.0	0.0	0.0	1.0	1.0	0.0	0.0
Max Initial	0	10	0	0	10	10	0	0
Time B4 Reduce	0	0	0	0	0	0	0	0
Cars B4 Reduce	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0
Reduce By	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	0.0	3.0	0.0	0.0	3.0	3.0	0.0	0.0
Dyn Max Limit	0	0	0	0	0	0	0	0
Dyn Max Step	0.0	0.0	5.0	0.0	0.0	0.0	0.0	0.0
Advance Walk	0	0	0	0	0	0	0	0
Delayed Walk	0	0	0	0	0	0	0	0
Alt Walk	0	0	0	0	0	0	0	0
Alt Ped Clr	0	0	0	0	0	0	0	0
Ped Service Limit	0	0	0	0	0	0	0	0
Pre Green	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pre Clearance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pre Clearance 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Clear Ext Pass	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Clear Ext Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Jump	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Adv Warning Ext	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pri Walk	0	0	0	0	0	0	0	0
Call Phases								
Walk Ext	0	0	0	0	0	0	0	0
Walk Max	0	0	0	0	0	0	0	0
Wait Cars B4 Sev	0	0	0	0	0	0	0	0
Ped Clear Thru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Options

Phases	1	2	3	4	5	6	7	8
Enable		X		X	X	X		X
Auto Flash Ent.		X				X		
Auto Flash Exit		X				X		
Non Actuated I								
Non Actuated II								
Non Lock Mem	X	X	X	X	X	X	X	X
Min Veh Recall		X				X		
Max Veh Recall								
Ped Recall								
Soft Veh Recall								
Dual Entry		X		X		X		X
Sim Gap Dis	X		X		X		X	
Guaranteed Pass								
Act Rest Walk								
Cond Service								
Add Initial								
Ped Clr During Yel								
Ped Clr During Red								
Cond Reservice								
Yel Min Override								
No Startup Call								
Adv. Warn Flasher								
No Ped Str Up Call								
Ped Clr OVTG								
Flash Exit Call								
Flash Exit Ped Call								
MinGreen2								
MaxGreen2								
MaxGreen3								
Ped2								
Ped Clear Pre Clear								
Ped NA+ Mode								
Red Rest								
Serve Evy Oth Even								
Serve Evy Oth Odd								
Coord Ped Yield								
Ped Recycle								
Coutdown								
Simult Start								
Simult Ped Term								

Phase Parameters - Plan 1 (Extended Phases)

Timings

Phases	9	10	11	12	13	14	15	16
Enable								
Walk Time	0	0	0	0	0	0	0	0
Clear Time	0	0	0	0	0	0	0	0
Stdy Don't Walk	0	0	0	0	0	0	0	0
Min Green	5	1	1	1	1	1	1	1
Min Green 2	0	0	0	0	0	0	0	0
Min B4 FO	0	0	0	0	0	0	0	0
Passage	1.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Passage 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max 1	15	0	0	0	0	0	0	0
Max 2	15	0	0	0	0	0	0	0
Max 3	0	0	0	0	0	0	0	0
Conditional Max	0	0	0	0	0	0	0	0
Yel Change	3.5	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Red Clear	1.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Add Red Clear	0	0	0	0	0	0	0	0
Red Revert	5.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Initial	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Initial	0	0	0	0	0	0	0	0
Time B4 Reduce	0	0	0	0	0	0	0	0
Cars B4 Reduce	0	0	0	0	0	0	0	0
Time To Reduce	0	0	0	0	0	0	0	0
Reduce By	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Dyn Max Limit	0	0	0	0	0	0	0	0
Dyn Max Step	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Advance Walk	0	0	0	0	0	0	0	0
Delayed Walk	0	0	0	0	0	0	0	0
Alt Walk	0	0	0	0	0	0	0	0
Alt Ped Clr	0	0	0	0	0	0	0	0
Ped Service Limit	0	0	0	0	0	0	0	0
Pre Green	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pre Clearance	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pre Clearance 2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Clear Ext Pass	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Clear Ext Max	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Queue Jump	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Adv Warning Ext	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Pri Walk	0	0	0	0	0	0	0	0
Call Phases								
Walk Ext	0	0	0	0	0	0	0	0
Walk Max	0	0	0	0	0	0	0	0
Wait Cars B4 Sev	0	0	0	0	0	0	0	0
Ped Clear Thru	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

Options

Phases	9	10	11	12	13	14	15	16
Enable								
Auto Flash Ent.								
Auto Flash Exit								
Non Actuated I								
Non Actuated II								
Non Lock Mem								
Min Veh Recall								
Max Veh Recall								
Ped Recall								
Soft Veh Recall								
Dual Entry								
Sim Gap Dis								
Guaranteed Pass								
Act Rest Walk								
Cond Service								
Add Initial								
Ped Clr During Yel								
Ped Clr During Red								
Cond Reservice								
Yel Min Override								
No Startup Call								
Adv. Warn Flasher								
No Ped Str Up Call								
Ped Clr OVTG								
Flash Exit Call								
Flash Exit Ped Call								
MinGreen2								
MaxGreen2								
MaxGreen3								
Ped2								
Ped Clear Pre Clear								
Ped NA+ Mode								
Red Rest								
Serve Evy Oth Even								
Serve Evy Oth Odd								
Coord Ped Yield								
Ped Recycle								
Coutdown								
Simult Start								
Simult Ped Term								

IP Settings

Adapter	IP Address	Subnet Mask	Default Gateway	ARP	Mode
1				Disable	Static
2				Disable	Static

Default Free Parameters

Seq	Phs Pln	Det Pln	Ped Pln	Ovlp Pln	Pri Pln
1	1	1	1	1	1

Serial Ports

Port	Description	Function	Address	Baud	Bits	Stop	Parity	Flow	CTS	RTS
1	Port 2/C21S	None	1	9600	8	1	None	None	0	0
2	Aux_P3/C22S	None	1	9600	8	1	None	None	0	0
3	SDLC Port 1	None	1	9600	8	1	None	None	0	0
4	Com A/C50S	None	1	9600	8	1	None	None	0	0
5	FIO	None	1	9600	8	1	None	None	0	0
6	DISPLAY/C60M	None	1	9600	8	1	None	None	0	0
7	SP7	None	1	9600	8	1	None	None	0	0
8	SP8/Com B	None	1	9600	8	1	None	None	0	0

Unit Parameters

Startup Parameters

Start Fls Mode	Cabinet
Start Fls Time	0
Clearce Hold	6
Start Yellow	0.0
Start Red	6.0

Timing/Freq Parameters

Backup Time	600
Red Revert	4.0
Master By TOD	Disable
Grn Flash Freq.	60
Yel Flash Freq.	60

Flash Parameters

All Red Entry	0
All Red Exit	8
Auto Flash CVM	Disable
AR Flsh Sense	Enable
Dk Flsh Sense	Disable

Other Parameters

Preempt Lock	0
3 Phs Dia Seq	
4 Phs Dia Seq	
Sep Dia Seq	

Manual Control

MCE Enab	Enable
MCE Seq.	1
Auto Ped	Enable

Sequence Configuration

Sequence 1

Ring	Phases
1	2,a,4,b
2	5,6,a,8,b
3	
4	

Sequence 2

Ring	Phases
1	2,a,4,b
2	6,5,a,8,b
3	
4	

Sequence 3

Ring	Phases
1	1,2,a,3,4,b
2	6,5,a,8,7,b
3	
4	

Sequence 4

Ring	Phases
1	2,1,a,4,3,b
2	5,6,a,7,8,b
3	
4	

Sequence 5

Ring	Phases
1	1,2,a,3,4,b
2	6,5,a,7,8,b
3	
4	

Sequence 6

Ring	Phases
1	2,1,a,4,b,8,c
2	6,5,a,b,c
3	
4	

Sequence 7

Ring	Phases
1	1,2,a,4,3,b
2	6,5,a,7,8,b
3	
4	

Sequence 8

Ring	Phases
1	2,1,a,4,3,b
2	6,5,a,7,8,b
3	
4	

Sequence 9

Ring	Phases
1	1,2,a,3,4,b
2	5,6,a,8,7,b
3	
4	

Sequence 10

Ring	Phases
1	2,1,a,3,4,b
2	5,6,a,8,7,b
3	
4	

Sequence 11

Ring	Phases
1	1,2,a,4,3,b
2	5,6,a,8,7,b
3	
4	

Sequence 12

Ring	Phases
1	2,1,a,4,3,b
2	5,6,a,8,7,b
3	
4	

Sequence 13

Ring	Phases
1	1,2,a,3,4,b
2	6,5,a,8,7,b
3	
4	

Sequence 14

Ring	Phases
1	2,1,a,3,4,b
2	6,5,a,8,7,b
3	
4	

Sequence 15

Ring	Phases
1	1,2,a,4,3,b
2	6,5,a,8,7,b
3	
4	

Sequence 16

Ring	Phases
1	2,1,a,4,3,b
2	6,5,a,8,7,b
3	
4	

Phase Configuration

Ph.	Startup	Ring	Concurrent	Startup Min	Description
1	Phase Not On	0		0	NBL
2	Green No Walk	1	5,6	0	SB
3	Phase Not On	0		0	EBL
4	Phase Not On	1	8	0	WB

5	Phase Not On	2	2	0	SBL
6	Green No Walk	2	2	0	NB
7	Phase Not On	0		0	WBL
8	Phase Not On	2	4	0	EB

No Serve Phases

Sequence 1	
P	No Srv P
1	
2	
3	
4	
5	
6	
7	
8	

Sequence 2	
P	No Srv P
1	
2	
3	
4	
5	
6	
7	
8	

Sequence 3	
P	No Srv P
1	
2	
3	
4	
5	
6	
7	
8	

Sequence 4	
P	No Srv P
1	
2	
3	
4	
5	
6	
7	
8	

Sequence 5	
P	No Srv P
1	
2	
3	
4	
5	
6	
7	
8	

Sequence 6	
P	No Srv P
1	
2	
3	
4	
5	
6	
7	
8	

Sequence 7	
P	No Srv P
1	
2	
3	
4	
5	
6	
7	
8	

Sequence 8	
P	No Srv P
1	
2	
3	
4	
5	
6	
7	
8	

Backup Prevent

Sequence 1

	No Backup Phase								Call
	1	2	3	4	5	6	7	8	
1									
2									
3									
4									
5									
6									
7									
8									
All Red 2 BU				No					

Sequence 2

	No Backup Phase								Call
	1	2	3	4	5	6	7	8	
1									
2									
3									
4									
5									
6									
7									
8									
All Red 2BU				No					

Sequence 3

	No Backup Phase								Call
	1	2	3	4	5	6	7	8	
1									
2									
3									
4									
5									
6									
7									
8									
All Red 2BU				No					

Sequence 4

	No Backup Phase								Call
	1	2	3	4	5	6	7	8	
1									
2									
3									
4									
5									
6									
7									
8									
All Red 2BU				No					

Global Phase Recalls

Phase	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Min		X				X														
Max																				
Ped																				
Act Walk Rest																				

Global Veh Det Diagnostics

Global No Activity	0
Global Max Presence	0
Global Erractic Count	0
Global Failed Recall	Max Recall
Detector Reset Enable	Enabled

Global Ped Det Diagnostics

Global No Activity	0
Global Max Pres	60
Global Err Count	0

Global Pri/Pre Det Diag

Global No Activity	0
Global Max Presence	0
Global Erractic Count	0

Data Collection

Vehicle Coll. Period	0
Comb. Veh Periods	1
Vehicle Period V3	0
Ped Coll. Period	0

Vehicle Detection Parameters

Plan 1

Det.	Call Phs	Call Ped	Call Ovl	Add Call Phases	Sw Phs	+Call Ovl	Dly Ovl	Delay	Extend	Queue Limit	Ext Hold	No Act.	Max Pres	Errat Count	Fail Time	Fail Recal	Fail Link	Description
1	1	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	I1U
2	2	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	I2U
3	2	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	I2L
4	2	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	I3U
5	2	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	I3L

Det.	Call Phs	Call Ped	Call Ovl	Add Call Phases	Sw Phs	+Call Ovl	Dly Ovl	Delay	Extend	Queue Limit	Ext Hold	No Act.	Max Pres	Errat Count	Fail Time	Fail Recall	Fail Link	Description
6	2	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	I4U
7	3	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	I5U
8	4	0	0		0			8.0	0.0	0	0.0	0	0	0	0	None	0	I6U
9	4	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	I6L
10	4	0	0		0			8.0	0.0	0	0.0	0	0	0	0	None	0	I7U
11	4	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	I7L
12	4	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	I8U
13	1	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	I9U
14	3	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	I9L
15	5	0	0		0			10.0	0.0	0	0.0	0	0	0	0	None	0	J1U
16	6	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	J2U
17	6	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	J2L
18	6	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	J3U
19	6	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	J3L
20	6	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	J4U
21	7	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	J5U
22	8	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	J6U
23	8	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	J6L
24	8	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	J7U
25	8	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	J7L
26	8	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	J8U
27	5	0	0		0			10.0	0.0	0	0.0	0	0	0	0	None	0	J9U
28	7	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	J9L
29	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	
30	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	
31	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	
32	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	
33	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	
34	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	
35	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	
36	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	
37	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	
38	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	
39	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	
40	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	
41	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	
42	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	
43	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	
44	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	
45	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	
46	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	
47	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	
48	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	

Vehicle Detectors (Continued) Plan 1

Det.	Call Phs	Call Ped	Call Ovl	Add Call Phases	Sw Phs	+Call Ovl	Dly Ovl	Delay	Extend	Queue Limit	Ext Hold	No Act.	Max Pres	Errat Count	Fail Time	Fail Recall	Fail Link	Description
49	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	
50	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	
51	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	
52	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	
53	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	
54	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	
55	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0	

56	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0			
57	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0			
58	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0			
59	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0			
60	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0			
61	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0			
62	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0			
63	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0			
64	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0			
65	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0			
66	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0			
67	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0			
68	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0			
69	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0			
70	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0			
71	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0			
72	0	0	0		0			0.0	0.0	0	0.0	0	0	0	0	None	0			

Vehicle Detection Options Plan 1

Detector	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Volume Detector																				
Occupancy																				
Yellow Lock Call																				
Red Lock Call																				
Extend	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Added Initial																				
Queue																				
Call	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Terminate																				
Min Green 2																				
Protected Perm																				
Disable Dly Lead																				
Disable TS2 Diag																				
Disable Det Diag																				
Passage 2																				
Red Clear Ext																				
Ovl Add Int Delay																				
Ovl Gap Delay																				
Wait Car Count																				
Dly During Green																				

Vehicle Detection Options (Continued) Plan 1

Detector	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
Volume Detector																				
Occupancy																				
Yellow Lock Call																				
Red Lock Call																				
Extend	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Added Initial																				
Queue																				
Call	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Terminate																				
Min Green 2																				
Protected Perm																				

Disable Dly Lead																			
Disable TS2 Diag																			
Disable Det Diag																			
Passage 2																			
Red Clear Ext																			
Ovl Add Int Delay																			
Ovl Gap Delay																			
Wait Car Count																			
Dly During Green																			

Detector	41	42	43	44	45	46	47	48	49	50	51	52	53	54	55	56	57	58	59	60
Volume Detector	X	X	X	X	X	X	X	X												
Occupancy	X	X	X	X	X	X	X	X												
Yellow Lock Call																				
Red Lock Call																				
Extend									X	X	X	X	X	X	X	X				
Added Initial																				
Queue																				
Call																				
Terminate																				
Min Green 2																				
Protected Perm																				
Disable Dly Lead																				
Disable TS2 Diag																				
Disable Det Diag																				
Passage 2																				
Red Clear Ext																				
Ovl Add Int Delay																				
Ovl Gap Delay																				
Wait Car Count																				
Dly During Green																				

Vehicle Detection Options (Continued) Plan 1

Detector	61	62	63	64	65	66	67	68	69	70	71	72
Volume Detector												
Occupancy												
Yellow Lock Call												
Red Lock Call												
Extend												
Added Initial												
Queue												
Call												
Terminate												
Min Green 2												
Protected Perm												
Disable Dly Lead												
Disable TS2 Diag												

Disable Det Diag												
Passage 2												
Red Clear Ext												
Ovl Add Int Delay												
Ovl Gap Delay												
Wait Car Count												
Dly During Green												

Speed Detectors

Det	Enable	Type	Units	Min Log	Max Log	Car Length	Det Length	Trail Det	Trap Length
1		Single	Inches	5	80	0	0	0	0
2		Single	Inches	5	80	0	0	0	0
3		Single	Inches	5	80	0	0	0	0
4		Single	Inches	5	80	0	0	0	0
5		Single	Inches	5	80	0	0	0	0
6		Single	Inches	5	80	0	0	0	0
7		Single	Inches	5	80	0	0	0	0
8		Single	Inches	5	80	0	0	0	0

Pedestrian Detectors

Det	Call Phs	Call Ovlp	Cancel Phs	Add Call Phs	Add Call Ovlp	Walk 2	Clear 2	No Act	Max Pres	Erratic Count	Walk Extension
1	0	0				0	0	0	0	0	
2	2	0				0	0	0	0	0	
3	0	0				0	0	0	0	0	
4	4	0				0	0	0	0	0	
5	0	0				0	0	0	0	0	
6	6	0				0	0	0	0	0	
7	0	0				0	0	0	0	0	
8	8	0				0	0	0	0	0	
9	0	0				0	0	0	0	0	
10	0	0				0	0	0	0	0	
11	0	0				0	0	0	0	0	
12	0	0				0	0	0	0	0	
13	0	0				0	0	0	0	0	
14	0	0				0	0	0	0	0	

Overlaps Plan 1

OLP	Enabled	Type	Included Phs	Modifier Phs	Modifier Ovlps	Neg Phases	Description
1	Disabled	FYA - 4 Sec	2	1			FYA - 4 Section
2	Disabled	Thru FYA Ped	2		1		Thru FYA Ped
3	Disabled	Off					FYA - 4 Section
4	Disabled	Off					Thru FYA Ped
5	Enabled	FYA - 4 Sec	6	5			FYA - 4 Section
6	Enabled	Thru FYA Ped	6		5		Thru FYA Ped
7	Disabled	Off					
8	Disabled	Off					
9	Enabled	Normal	4,5				
10	Disabled	Off					
11	Disabled	Off					
12	Disabled	Off					

	1	2	3	4	5	6	7	8	9	10	11	12

	Enabled	Disabled	Disabled	Disabled	Disabled	Enabled	Enabled	Disabled	Disabled	Enabled	Disabled	Disabled	Disabled
Trail Green	0	0	0	0	0	0	0	0	0	0	0	0	
Add Trail Green	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Trail Yellow	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Trail Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Walk	0	0	0	0	0	0	0	0	0	0	0	0	
Ped Clear	0	0	0	0	0	0	0	0	0	0	0	0	
Delay	3.0	0.0	3.0	0.0	3.0	0.0	3.0	0.0	0.0	0.0	0.0	0.0	
Flash	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	
Inhibit Neg Phs													
Neg Ovlps													
TrG Omit Phs													
Negitive Peds	2				6		8		4				
Neg Ped Ovlps													
Grn Sup Phs													
N Ped Phs Calls													
Call Phases													
Walk 2	0	0	0	0	0	0	0	0	0	0	0	0	
Ped Clear 2	0	0	0	0	0	0	0	0	0	0	0	0	
Min Green	0	0	0	0	0	0	0	0	5	0	0	0	
Max Green Ext	0	0	0	0	0	0	0	0	0	0	0	0	
Red Revert	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
LRT P2G Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
FYA Ped Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Add Init Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Gap Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Max Delay	0	0	0	0	0	0	0	0	0	0	0	0	
Flash Inactive	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	
Flash Alt	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	
Grn Flash Freq	0	0	0	0	0	0	0	0	0	0	0	0	
Ylw Flash Freq	0	0	0	0	0	0	0	0	0	0	0	0	
Walk Rest	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	

Overlap Settings Plan 1

	1	2	3	4	5	6	7	8	9	10	11	12
Startup Call												
Recall												
No Veh Reserv												
No Hold Trail Exit												
Ped Recycle		X				X						
No Yellow Protect												
No Bridging												
LRT Prepare Go												
Call for Service												
Trail Grn Bridge												
FYA Prot. Red Cl												
Phs Intvl Override												
Queue Jump												
No FYA Ped Wlk												
Term After Call												
FYA Ped No Prt Rtn												
Neg Ped Allow												
All Include Start												

Queue Jump Ext												
Disable Sim Gap												
Thru FYA Ped Term												

Custom Overlap Rules

Rule	Custom Ovlp	Incl. State	Mod. Phase State	Mod. OL State	Neg. State	Output	Flash
1	Cust 1	Green	Any	Any	Any	Blank	Not Set
2	Disable	Any	Any	Any	Any	Not Set	Not Set
3	Disable	Any	Any	Any	Any	Not Set	Not Set
4	Disable	Any	Any	Any	Any	Not Set	Not Set
5	Disable	Any	Any	Any	Any	Not Set	Not Set
6	Disable	Any	Any	Any	Any	Not Set	Not Set
7	Disable	Any	Any	Any	Any	Not Set	Not Set
8	Disable	Any	Any	Any	Any	Not Set	Not Set
9	Disable	Any	Any	Any	Any	Not Set	Not Set
10	Disable	Any	Any	Any	Any	Not Set	Not Set

Coordination Parameters

Operational Mode	Automatic
Coordination Mode	Auto Permissive
Correction Mode	Shortway (Auto)

Maximum Mode	Per Pattern
Force Mode	Fixed
Transition Cover Ped	Pattern

Max Cyc Limit %	20
Min Cyc Limit %	20
Max Dwell	0

Patterns

		Offset					Ref	Coord	Force	Max	Trans	Min	Phs	Det	Ped	Ovlp	Pri	
Patt.	Cycle	1	2	3	Split	Seq	Col	Mode	Mode	Mode	Ped	Perm	Pln	Pln	Pln	Pln	Pln	Description
1	0	0	0	0	1	1	Grn	Auto	Fixed	Max1	None	Phs Only	1	1	1	1	1	Stgandard Phasing
2	0	0	0	0	1	2	Grn	Auto	Fixed	Max1	None	Phs Only	1	1	1	1	1	Lag Ph5
3	0	0	0	0	3	1	Grn	Auto	Fixed	Max1	None	Phs Only	1	1	1	1	1	
4	0	0	0	0	4	1	Grn	Auto	Fixed	Max1	None	Phs Only	1	1	1	1	1	
5	0	0	0	0	5	1	Grn	Auto	Fixed	Max1	None	Phs Only	1	1	1	1	1	
6	0	0	0	0	0	0	Yel	Auto	Fixed	Inh	Phase	Phs Only	1	1	1	1	1	
7	0	0	0	0	0	0	Yel	Auto	Fixed	Inh	Phase	Phs Only	1	1	1	1	1	
8	0	0	0	0	0	0	Yel	Auto	Fixed	Inh	Phase	Phs Only	1	1	1	1	1	
9	0	0	0	0	0	0	Yel	Auto	Fixed	Inh	Phase	Phs Only	1	1	1	1	1	
10	0	0	0	0	0	0	Yel	Auto	Fixed	Inh	Phase	Phs Only	1	1	1	1	1	
11	0	0	0	0	0	0	Yel	Auto	Fixed	Inh	Phase	Phs Only	1	1	1	1	1	
12	0	0	0	0	0	0	Yel	Auto	Fixed	Inh	Phase	Phs Only	1	1	1	1	1	
13	0	0	0	0	0	0	Yel	Auto	Fixed	Inh	Phase	Phs Only	1	1	1	1	1	
14	0	0	0	0	0	0	Yel	Auto	Fixed	Inh	Phase	Phs Only	1	1	1	1	1	
15	0	0	0	0	0	0	Yel	Auto	Fixed	Inh	Phase	Phs Only	1	1	1	1	1	

16	0	0	0	0	0	0	Yel	Auto	Fixed	Inh	Phase	Phs Only	1	1	1	1	1	
17	0	0	0	0	0	0	Yel	Auto	Fixed	Inh	Phase	Phs Only	1	1	1	1	1	
18	0	0	0	0	0	0	Yel	Auto	Fixed	Inh	Phase	Phs Only	1	1	1	1	1	
19	0	0	0	0	0	0	Yel	Auto	Fixed	Inh	Phase	Phs Only	1	1	1	1	1	
20	0	0	0	0	0	0	Yel	Auto	Fixed	Inh	Phase	Phs Only	1	1	1	1	1	Free Operation

Split Parameters

Split 1				Coord	Ref	Cover	Force Off		Pri	Pri	Pri
PH.	Time	Min	Max	PH	PH	Ped	Mode	Mode	Min	Max	F. Off
1	0	0	0				Fix	None	0	0	Float
2	0	0	0	X	X		Fix	Min Rcl	0	0	Float
3	0	0	0				Fix	None	0	0	Float
4	0	0	0				Fix	None	0	0	Float
5	0	0	0				Fix	None	0	0	Float
6	0	0	0	X	X		Fix	Min Rcl	0	0	Float
7	0	0	0				Fix	None	0	0	Float
8	0	0	0				Fix	None	0	0	Float

Split 2				Coord	Ref	Cover	Force Off		Pri	Pri	Pri
PH.	Time	Min	Max	PH	PH	Ped	Mode	Mode	Min	Max	F. Off
1	0	0	0				Fix	None	0	0	Float
2	0	0	0				Fix	Min Rcl	0	0	Float
3	0	0	0				Fix	None	0	0	Float
4	0	0	0	X	X		Fix	None	0	0	Float
5	0	0	0				Fix	None	0	0	Float
6	0	0	0				Fix	Min Rcl	0	0	Float
7	0	0	0				Fix	None	0	0	Float
8	0	0	0	X	X		Fix	None	0	0	Float

Split Tables (continued)

Split 3				Coord	Ref	Cover	Force Off		Pri	Pri	Pri
PH.	Time	Min	Max	PH	PH	Ped	Mode	Mode	Min	Max	F. Off
1	0	0	0				Fix	None	0	0	Float
2	0	0	0	X	X		Fix	Min Rcl	0	0	Float
3	0	0	0				Fix	None	0	0	Float
4	0	0	0				Fix	None	0	0	Float
5	0	0	0				Fix	None	0	0	Float
6	0	0	0	X	X		Fix	Min Rcl	0	0	Float
7	0	0	0				Fix	None	0	0	Float
8	0	0	0				Fix	None	0	0	Float

Split 4				Coord	Ref	Cover	Force Off		Pri	Pri	Pri
PH.	Time	Min	Max	PH	PH	Ped	Mode	Mode	Min	Max	F. Off
1	0	0	0				Fix	None	0	0	Float
2	0	0	0				Fix	None	0	0	Float
3	0	0	0				Fix	None	0	0	Float
4	0	0	0	X	X		Fix	None	0	0	Float
5	0	0	0				Fix	None	0	0	Float
6	0	0	0				Fix	None	0	0	Float
7	0	0	0				Fix	None	0	0	Float
8	0	0	0	X	X		Fix	None	0	0	Float

Split 5				Coord	Ref	Cover	Force Off		Pri	Pri	Pri

PH.	Time	Min	Max	PH	PH	Ped	Mode	Mode	Min	Max	F. Off
1	14	0	0				Fix	None	0	0	Float
2	38	0	0				Fix	None	0	0	Float
3	17	0	0				Fix	None	0	0	Float
4	31	0	0	X	X		Fix	Min Rcl	0	0	Float
5	14	0	0				Fix	None	0	0	Float
6	38	0	0				Fix	None	0	0	Float
7	14	0	0				Fix	None	0	0	Float
8	34	0	0	X	X		Fix	Min Rcl	0	0	Float

Split 6				Coord	Ref	Cover	Force Off		Pri	Pri	Pri
PH.	Time	Min	Max	PH	PH	Ped	Mode	Mode	Min	Max	F. Off
1	0	0	0				Fix	None	0	0	Float
2	0	0	0				Fix	None	0	0	Float
3	0	0	0				Fix	None	0	0	Float
4	0	0	0				Fix	None	0	0	Float
5	0	0	0				Fix	None	0	0	Float
6	0	0	0				Fix	None	0	0	Float
7	0	0	0				Fix	None	0	0	Float
8	0	0	0				Fix	None	0	0	Float

Split Tables (continued)

Split 7				Coord	Ref	Cover	Force Off		Pri	Pri	Pri
PH.	Time	Min	Max	PH	PH	Ped	Mode	Mode	Min	Max	F. Off
1	0	0	0				Fix	None	0	0	Float
2	0	0	0				Fix	None	0	0	Float
3	0	0	0				Fix	None	0	0	Float
4	0	0	0				Fix	None	0	0	Float
5	0	0	0				Fix	None	0	0	Float
6	0	0	0				Fix	None	0	0	Float
7	0	0	0				Fix	None	0	0	Float
8	0	0	0				Fix	None	0	0	Float

Split 8				Coord	Ref	Cover	Force Off		Pri	Pri	Pri
PH.	Time	Min	Max	PH	PH	Ped	Mode	Mode	Min	Max	F. Off
1	0	0	0				Fix	None	0	0	Float
2	0	0	0				Fix	None	0	0	Float
3	0	0	0				Fix	None	0	0	Float
4	0	0	0				Fix	None	0	0	Float
5	0	0	0				Fix	None	0	0	Float
6	0	0	0				Fix	None	0	0	Float
7	0	0	0				Fix	None	0	0	Float
8	0	0	0				Fix	None	0	0	Float

Split 9				Coord	Ref	Cover	Force Off		Pri	Pri	Pri
PH.	Time	Min	Max	PH	PH	Ped	Mode	Mode	Min	Max	F. Off
1	0	0	0				Fix	None	0	0	Float
2	0	0	0				Fix	None	0	0	Float

3	0	0	0				Fix	None	0	0	Float
4	0	0	0				Fix	None	0	0	Float
5	0	0	0				Fix	None	0	0	Float
6	0	0	0				Fix	None	0	0	Float
7	0	0	0				Fix	None	0	0	Float
8	0	0	0				Fix	None	0	0	Float

Split 10				Coord	Ref	Cover	Force Off		Pri	Pri	Pri
PH.	Time	Min	Max	PH	PH	Ped	Mode	Mode	Min	Max	F. Off
1	0	0	0				Fix	None	0	0	Float
2	0	0	0				Fix	None	0	0	Float
3	0	0	0				Fix	None	0	0	Float
4	0	0	0				Fix	None	0	0	Float
5	0	0	0				Fix	None	0	0	Float
6	0	0	0				Fix	None	0	0	Float
7	0	0	0				Fix	None	0	0	Float
8	0	0	0				Fix	None	0	0	Float

Pattern Advanced Options

Pattern	1	2	3	4	5	6	7	8	9	10
Ring Plan	1	1	1	1	1	0	0	0	0	0
Allow Split Underrun	X	X	X	X	X					
Allow Split Overrun	X	X	X	X	X					
Allow No Coord Ph										
Coord Now										

Ring Plans

Plan 1

Ring	1	2	3	4
Offset	0	0	0	0
Early Coord Gap Out	0	0	0	0
Early Coord FO	0	0	0	0

Plan 2

Ring	1	2	3	4
Offset	0	0	0	0
Early Coord Gap Out	5	5	0	0
Early Coord FO	5	5	0	0

Plan 3

Ring	1	2	3	4
Offset	0	0	0	0
Early Coord Gap Out	7	7	0	0
Early Coord FO	7	0	0	0

Plan 4

Ring	1	2	3	4
Offset	0	0	0	0
Early Coord Gap Out	5	5	0	0
Early Coord FO	5	0	0	0

Schedules

Schedule 1 Enable On Day Plan 1 Description Weekday Day Plan

Month of Year

J	F	M	A	M	J
X	X	X	X	X	X
J	A	S	O	N	D
X	X	X	X	X	X

Days of Week

S	M	T	W	T	F	S
	X	X	X	X	X	

Days of Month

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

Schedule 2 Enable On Day Plan 2 Description Weekend Day Plan

Month of Year

J	F	M	A	M	J
X	X	X	X	X	X
J	A	S	O	N	D
X	X	X	X	X	X

Days of Week

S	M	T	W	T	F	S
X						X

Days of Month

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

Schedule 3 Enable On Day Plan 3 Description

Month of Year

J	F	M	A	M	J
X	X	X	X	X	X
J	A	S	O	N	D
X	X	X	X	X	X

Days of Week

S	M	T	W	T	F	S
X	X	X	X	X	X	X

Days of Month

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

Schedule 4 Enable On Day Plan 4 Description

Month of Year

J	F	M	A	M	J
X	X	X	X	X	X
J	A	S	O	N	D
X	X	X	X	X	X

Days of Week

S	M	T	W	T	F	S
X	X	X	X	X	X	X

Days of Month

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

Schedule 5 Enable On Day Plan 5 Description

Month of Year

J	F	M	A	M	J
X	X	X	X	X	X
J	A	S	O	N	D
X	X	X	X	X	X

Days of Week

S	M	T	W	T	F	S
X	X	X	X	X	X	X

Days of Month

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

Schedules (continued)

Schedule 6 Enable On Day Plan 6 Description

Month of Year

J	F	M	A	M	J
X	X	X	X	X	X
J	A	S	O	N	D
X	X	X	X	X	X

Days of Week

S	M	T	W	T	F	S
X	X	X	X	X	X	X

Days of Month

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

Schedule 7 Enable On Day Plan 7 Description

Month of Year

J	F	M	A	M	J
X	X	X	X	X	X
J	A	S	O	N	D
X	X	X	X	X	X

Days of Week

S	M	T	W	T	F	S
X	X	X	X	X	X	X

Days of Month

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

Schedule 8 Enable On Day Plan 8 Description

Month of Year

J	F	M	A	M	J
X	X	X	X	X	X
J	A	S	O	N	D
X	X	X	X	X	X

Days of Week

S	M	T	W	T	F	S
X	X	X	X	X	X	X

Days of Month

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

Schedule 9 Enable On Day Plan 9 Description

Month of Year

J	F	M	A	M	J
X	X	X	X	X	X
J	A	S	O	N	D
X	X	X	X	X	X

Days of Week

S	M	T	W	T	F	S
X	X	X	X	X	X	X

Days of Month

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

Schedule 10 Enable On Day Plan 10 Description

Month of Year

Days of Week

Days of Month

J	F	M	A	M	J
X	X	X	X	X	X
J	A	S	O	N	D
X	X	X	X	X	X

S	M	T	W	T	F	S
X	X	X	X	X	X	X

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	

Schedule 11 Enable On Day Plan 0 Description

Month of Year

J	F	M	A	M	J
J	A	S	O	N	D

Days of Week

S	M	T	W	T	F	S

Days of Month

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	

Schedule 12 Enable On Day Plan 0 Description

Month of Year

J	F	M	A	M	J
J	A	S	O	N	D

Days of Week

S	M	T	W	T	F	S

Days of Month

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	

Day Plan 1

Event	Hour	Min.	Act
1	6	0	20
2	20	0	20
3	0	0	
4	0	0	
5	0	0	
6	0	0	
7	0	0	
8	0	0	
9	0	0	
10	0	0	

Day Plan 2

Event	Hour	Min.	Act
1	6	0	2
2	20	0	20
3	0	0	
4	0	0	
5	0	0	
6	0	0	
7	0	0	
8	0	0	
9	0	0	
10	0	0	

Day Plan 3

Event	Hour	Min.	Act
1	0	0	
2	0	0	
3	0	0	
4	0	0	
5	0	0	
6	0	0	
7	0	0	
8	0	0	
9	0	0	
10	0	0	

Day Plan 4

Event	Hour	Min.	Act
1	0	0	
2	0	0	
3	0	0	
4	0	0	
5	0	0	
6	0	0	
7	0	0	
8	0	0	
9	0	0	
10	0	0	

Day Plan 5

Event	Hour	Min.	Act
1	0	0	
2	0	0	
3	0	0	
4	0	0	
5	0	0	
6	0	0	
7	0	0	
8	0	0	
9	0	0	
10	0	0	

Day Plan 6

Event	Hour	Min.	Act
1	0	0	
2	0	0	
3	0	0	
4	0	0	
5	0	0	
6	0	0	
7	0	0	
8	0	0	
9	0	0	
10	0	0	

Day Plan 7

Event	Hour	Min.	Act
1	0	0	
2	0	0	
3	0	0	
4	0	0	
5	0	0	
6	0	0	
7	0	0	
8	0	0	
9	0	0	
10	0	0	

Day Plan 8

Event	Hour	Min.	Act
1	0	0	
2	0	0	
3	0	0	
4	0	0	
5	0	0	
6	0	0	
7	0	0	
8	0	0	
9	0	0	
10	0	0	

Day Plan 9

Event	Hour	Min.	Act
1	0	0	
2	0	0	
3	0	0	
4	0	0	
5	0	0	
6	0	0	
7	0	0	

Day Plan 10

Event	Hour	Min.	Act
1	0	0	
2	0	0	
3	0	0	
4	0	0	
5	0	0	
6	0	0	
7	0	0	

Day Plan 11

Event	Hour	Min.	Act
1	0	0	
2	0	0	
3	0	0	
4	0	0	
5	0	0	
6	0	0	
7	0	0	

Day Plan 12

Event	Hour	Min.	Act
1	0	0	
2	0	0	
3	0	0	
4	0	0	
5	0	0	
6	0	0	
7	0	0	

8	0	0		8	0	0		8	0	0		8	0	0	
9	0	0		9	0	0		9	0	0		9	0	0	
10	0	0		10	0	0		10	0	0		10	0	0	

Actions

		Aux.			Special Functions						
Act	Pattern	1	2	3	1	2	3	4	5	6	7	8
1	Pattern 1											
2	Pattern 2											
3	Pattern 3											
4	Pattern 4											
5	Pattern 5											
6	Pattern 6											
7	Pattern 7											
8	Pattern 8											
9	Pattern 9											
10	Pattern 10											

Actions

		Aux.			Special Functions						
Act	Pattern	1	2	3	1	2	3	4	5	6	7	8
11	None											
12	None											
13	Free											
14	None											
15	None											
16	None											
17	None											
18	None											
19	None											
20	Free	X										

Actions

		Aux.			Special Functions						
Act	Pattern	1	2	3	1	2	3	4	5	6	7	8
21	None											
22	None											
23	None											
24	None											
25	None											
26	None											
27	None											
28	None											
29	None											
30	None											
31	None											
32	None											
33	None											
34	None											
35	None											

Actions

		Aux.			Special Functions						
Act	Pattern	1	2	3	1	2	3	4	5	6	7	8
36	None											
37	None											
38	None											
39	None											
40	None											
41	None											
42	None											
43	None											
44	None											
45	None											
46	None											
47	None											
48	None											
49	None											
50	None											

Action Commands

Action 1

Cmd	Command	Indexes
1	None	
2	None	
3	None	
4	None	
5	None	
6	None	
7	None	
8	None	

Action 2

Cmd	Command	Indexes
1	None	
2	None	
3	None	
4	None	
5	None	
6	None	
7	None	
8	None	

Action 3

Cmd	Command	Indexes
1	None	
2	None	
3	None	

Action 4

Cmd	Command	Indexes
1	None	
2	None	
3	None	

4	None	

4	None	

Action 5

Cmd	Command	Indexes
1	None	
2	None	
3	None	
4	None	

Action 6

Cmd	Command	Indexes
1	None	
2	None	
3	None	
4	None	

Action 7

Cmd	Command	Indexes
1	None	
2	None	
3	None	
4	None	

Action 8

Cmd	Command	Indexes
1	None	
2	None	
3	None	
4	None	

Master Sections By TOD

Action	1	2	3	4	5	6	7	8	9	10
Master Section 1										
Master Section 2										
Master Section 3										
Master Section 4										
Master Section 5										
Master Section 6										
Master Section 7										
Master Section 8										
Master Section 9										
Master Section 10										
Master Section 11										
Master Section 12										
Master Section 13										
Master Section 14										
Master Section 15										
Master Section 16										

Queue Responsive By TOD

Action	1	2	3	4	5	6	7	8	9	10
Queue Resp Plan 1										
Queue Resp Plan 2										
Queue Resp Plan 3										
Queue Resp Plan 4										
Queue Resp Plan 5										
Queue Resp Plan 6										
Queue Resp Plan 7										
Queue Resp Plan 8										
Queue Resp Plan 9										
Queue Resp Plan 10										
Queue Resp Plan 11										
Queue Resp Plan 12										
Queue Resp Plan 13										
Queue Resp Plan 14										
Queue Resp Plan 15										
Queue Resp Plan 16										

Preemption Parameters

Preempt	1	2	3	4	5	6	7	8
Enabled	Disabled	Disabled	Enabled	Enabled	Enabled	Enabled	Disabled	Disabled
Type	Rail Road	Rail Road	Emerg Veh	Emerg Veh	Emerg Veh	Emerg Veh	Emerg Veh	Emerg Veh
Description			Phases 2 & 5	Phase 4	Phases 6	Phase 8		
Gate Description								
Hold Delay Phases								
Entry Override Phs								
Track Phases								
Track Peds								
Track Overlaps								
Track 2 Phases								
Track 2 Peds								
Track 2 Overlaps								
Dwell Phase			2,5	4	6	8		
Dwell Ped								
Dwell Overlaps			2,5		5,6			
Cycling Phases								
Cycling Peds								

Cycling Overlaps								
Exit Phases			2,5	4	6	8		
Exit Overlaps					5,6			
Recovery Omit Phs								
Max Pres Action	255	255	255	255	255	255	0	0
Normal Input Fault	Flash	Flash	Flash	Flash	Flash	Flash	Flash	Flash
Exit Type	Exit Phases	Exit Phases	Exit Phases	Exit Phases	Exit Phases	Exit Phases	Exit Phases	Exit Phases
Exit Max Mode	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled	Disabled
Exit Veh Calls								
Exit Ped Calls								

Preemption Parameters (Continued)

Preempt	1	2	3	4	5	6	7	8
Link	0	0	0	0	0	0	0	0
Delay	0	0	0	0	0	0	0	0
Min Duration	1	1	1	1	1	1	0	0
Min Presence	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Max Presence	255	255	255	255	255	255	0	0
Reservice Lockout	0	0	0	0	0	0	0	0
Sequence	0	0	0	0	0	0	0	0
Enter Min Green	5	5	5	5	5	5	0	0
Enter Walk	1	1	1	1	1	1	0	0
Ent. Ped Clear	255	255	255	255	255	255	255	255
Enter Yellow	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5
Ent. Red Clear	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5
Track Green	0	0	0	0	0	0	0	0
Max Track Grn	0	0	0	0	0	0	0	0
Track Walk	255	255	255	255	255	255	255	255
Track Ped Clr	255	255	255	255	255	255	255	255
Track Yellow	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5
Track Red Clear	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5

Preempt	1	2	3	4	5	6	7	8
Hold Delay Time	0	0	0	0	0	0	0	0
Track 2 Green	0	0	0	0	0	0	0	0
Track 2 Walk	255	255	255	255	255	255	255	255
Track 2 Ped Clr	255	255	255	255	255	255	255	255
Track 2 Yellow	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5
Track 2 Red	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5
Track Ext Gate Dn	0	0	0	0	0	0	0	0
Dwell Green	5	5	5	5	5	5	0	0
Exit Min Green	255	255	255	255	255	255	255	255
Exit Walk	255	255	255	255	255	255	255	255
Exit Ped Clear	255	255	255	255	255	255	255	255
Exit Yellow	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5
Exit Red	25.5	25.5	25.5	25.5	25.5	25.5	25.5	25.5
Dwell Ext Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Exit Max Green	0	0	0	0	0	0	0	0
Exit Max Mode Time	0	0	0	0	0	0	0	0
Exit Free Time	0	0	0	0	0	0	0	0

Preemption Options

Preempt	1	2	3	4	5	6	7	8
Non Lock Mem	X	X	X	X	X	X		
Not Overide Flash								
NotOverideNextPre	X	X	X	X	X	X		
Flash Dwell								
Ped Recycle in Dwell								
Imm Ped Clear							X	X
Dwell Only Status								
All Red Flash Dwell								
Allow All Overlaps								
Req All Red Entry								
Req Gate Dwn Trck Exit								
Req Gate Up Dwl Exit								
Normal On/Off Input								
Track Clear Override								
Non-Locking Gate Down								
Ped Clear During Yellow								

Aux Function 1								
Aux Function 2								
Aux Function 3								
Special Function 1								
Special Function 2								
Special Function 3								
Special Function 4								
Special Function 5								
Special Function 6								
Special Function 7								
Special Function 8								
Special Function 9								
Special Function 10								
Special Function 11								
Special Function 12								
Special Function 13								
Special Function 14								

Require CRC
Disabled

Entry Override All-Red							
Sep Entry Phase/Ped							
Latching Flash Dwell							
Entry Omit OLTG							

Special Function 15							
Special Function 16							

Channel Configuration

Channel	Control Type	Cntrl Src	Flash Ylw	Flash Red	Flash Alt	MMU Channel	Green Type	Grn Included
1	Phs Veh	1		X	X	1	Other	
2	Phs Veh	2		X		2	Other	
3	Phs Veh	3		X		3	Other	
4	Phs Veh	4		X	X	4	Other	
5	Olp	5		X	X	5	Other	
6	Olp	6		X		6	Other	
7	Phs Veh	7		X		7	Other	
8	Phs Veh	8		X	X	8	Other	
9	Olp	9		X	X	9	Other	
10	Olp	10		X		10	Other	
11	Olp	11		X	X	11	Other	
12	Olp	12		X		12	Other	
13	Phs Ped	2				13	Other	
14	Phs Ped	4				14	Other	
15	Phs Ped	6				15	Other	
16	Phs Ped	8				16	Other	

Cabinet Configuration

IO Modul	Type
1	ODOT 332
2	None
3	None
4	None
5	None
6	None
7	None
8	None
9	None
10	None

Advanced Cabinet Options

ITS Cabinet on Port 1	No	Enable TS2/ATC St Time	
ITS Cabinet on Port C13S	No	Disable TS2 Startup Call	
33X Input Leading Edge Filter	5	Disable TS2 Fault Flash	
33X Input Trailing Edge Filter	5	Disable TS2 Cabinet Alarms	
		Disable ATC Cabinet Alarms	

Phase Intervals

Interval	Description	Red	Yel	Grn	Type
1	Not Act	On	Off	Off	Red
2	Adv Wlk	On	Off	Off	Red
3	Pre Grn	Off	Off	On	Green
4	Min Grn	Off	Off	On	Green
5	Grn Ext	Off	Off	On	Green
6	Grn Dwell	Off	Off	On	Green

Interval	Description	Red	Yel	Grn	Type
7	Pre Clr	Off	Off	On	Green
8	Yel Change	Off	On	Off	Yellow
9	Red Clr	On	Off	Off	Red
10	Red Dwell	On	Off	Off	Red
11	Barrier	On	Off	Off	Red
12	Pre Clr 2	Off	Off	Off	Not Def.

Pedestrian Intervals

Interval	Description	DWK	CLR	Wlk	Type

Alarm Config

Alarm	Name

Alarm	Name

1	Not Active	On	Off	Off	Dont Walk
2	Dly Walk	On	Off	Off	Dont Walk
3	Walk	Off	Off	On	Walk
4	Walk Dwell	Off	Off	On	Walk
5	Flsh DWalk	Flash	On	Off	Ped Clear
6	DWalk	On	Off	Off	Dont Walk

1	
2	
3	
4	
5	

6	
7	
8	
9	
10	

Manual Control Phase Groups

Grp 1		Grp 2		Grp 3		Grp 4		Grp 5		Grp 6		Grp 7		Grp 8	
Ring	Ph	Ring	Ph	Ring	Ph	Ring	Ph	Ring	Ph	Ring	Ph	Ring	Ph	Ring	Ph
1	0	1	0	1	0	1	0	1	0	1	0	1	0	1	0
2	0	2	0	2	0	2	0	2	0	2	0	2	0	2	0
3	0	3	0	3	0	3	0	3	0	3	0	3	0	3	0
4	0	4	0	4	0	4	0	4	0	4	0	4	0	4	0
5	0	5	0	5	0	5	0	5	0	5	0	5	0	5	0
6	0	6	0	6	0	6	0	6	0	6	0	6	0	6	0
7	0	7	0	7	0	7	0	7	0	7	0	7	0	7	0
8	0	8	0	8	0	8	0	8	0	8	0	8	0	8	0
9	0	9	0	9	0	9	0	9	0	9	0	9	0	9	0
10	0	10	0	10	0	10	0	10	0	10	0	10	0	10	0
11	0	11	0	11	0	11	0	11	0	11	0	11	0	11	0
12	0	12	0	12	0	12	0	12	0	12	0	12	0	12	0
13	0	13	0	13	0	13	0	13	0	13	0	13	0	13	0
14	0	14	0	14	0	14	0	14	0	14	0	14	0	14	0
15	0	15	0	15	0	15	0	15	0	15	0	15	0	15	0
16	0	16	0	16	0	16	0	16	0	16	0	16	0	16	0

Prioritor Settings

Enabled	Lock Out Time	PRS Time to Live
Yes	0	300

Prioritor	Enabled	Priority	Priority Phs	Skipped Phs	Skip Peds	Dly Time	Arrv Time	Mx Presence	Flush/Veh	Max Flush
1	On	1	2,6	4,5,8	8	0	0	30	0.0	0
2	On	0				0	0	0	0.0	0
3	On	0				0	0	0	0.0	0
4	On	0				0	0	0	0.0	0
5	On	0				0	0	0	0.0	0
6	On	0				0	0	0	0.0	0
7	On	0				0	0	0	0.0	0
8	On	0				0	0	0	0.0	0

Prioritor	Res. Lockout	Free Pri Min	Free Pri Max	Description
1	0	Min Green	Max Green	
2	0	Min Green	Max Green	
3	0	Min Green	Max Green	
4	0	Min Green	Max Green	
5	0	Min Green	Max Green	
6	0	Min Green	Max Green	
7	0	Min Green	Max Green	
8	0	Min Green	Max Green	

Prioritor	1	2	3	4	5	6	7	8
Lock After First Serve								
Pres. Only Check-in	X							
Extend Walk Rest								
Use Phase History								

PRS Reservice Times

Class	1	2	3	4	5	6	7	8	9	10
Time	0	0	0	0	0	0	0	0	0	0

Peer Configuration

Ctrl	Peer ID	Device Type	IP address	IP Port	Http Port	Serial Port	Serial Addr.	Master Sect.	P2P TO	Description
1	0	Peer MaxTime		161	80	0	0	0	15	
2	0	Peer MaxTime		161	80	0	0	0	15	
3	0	Peer MaxTime		161	80	0	0	0	15	
4	0	Peer MaxTime		161	80	0	0	0	15	
5	0	Peer MaxTime		161	80	0	0	0	15	
6	0	Peer MaxTime		161	80	0	0	0	15	
7	0	Peer MaxTime		161	80	0	0	0	15	
8	0	Peer MaxTime		161	80	0	0	0	15	
9	0	Peer MaxTime		161	80	0	0	0	15	
10	0	Peer MaxTime		161	80	0	0	0	15	

Master Section Configuration

Section	Control	Poll	Req #	Fail Time	Algorithm Period	Description
1	None	60	1	300	240	
2	None	60	1	300	240	
3	None	60	1	300	240	
4	None	60	1	300	240	
5	None	60	1	300	240	
6	None	60	1	300	240	
7	None	60	1	300	240	
8	None	60	1	300	240	
9	None	60	1	300	240	
10	None	60	1	300	240	
11	None	60	1	300	240	
12	None	60	1	300	240	
13	None	60	1	300	240	
14	None	60	1	300	240	
15	None	60	1	300	240	
16	None	60	1	300	240	

User Program Info

Pgrm	Description
1	
2	
3	
4	
5	
6	
7	
8	
9	
10	
11	
12	
13	

Pgrm	Description
17	
18	
19	
20	
21	
22	
23	
24	
25	
26	
27	
28	
29	

14	
15	
16	

30	
31	
32	

SIGNAL PLAN
124TH AVENUE AT LEVETON DRIVE
WORK CHANGE DIRECTIVE NO. 1

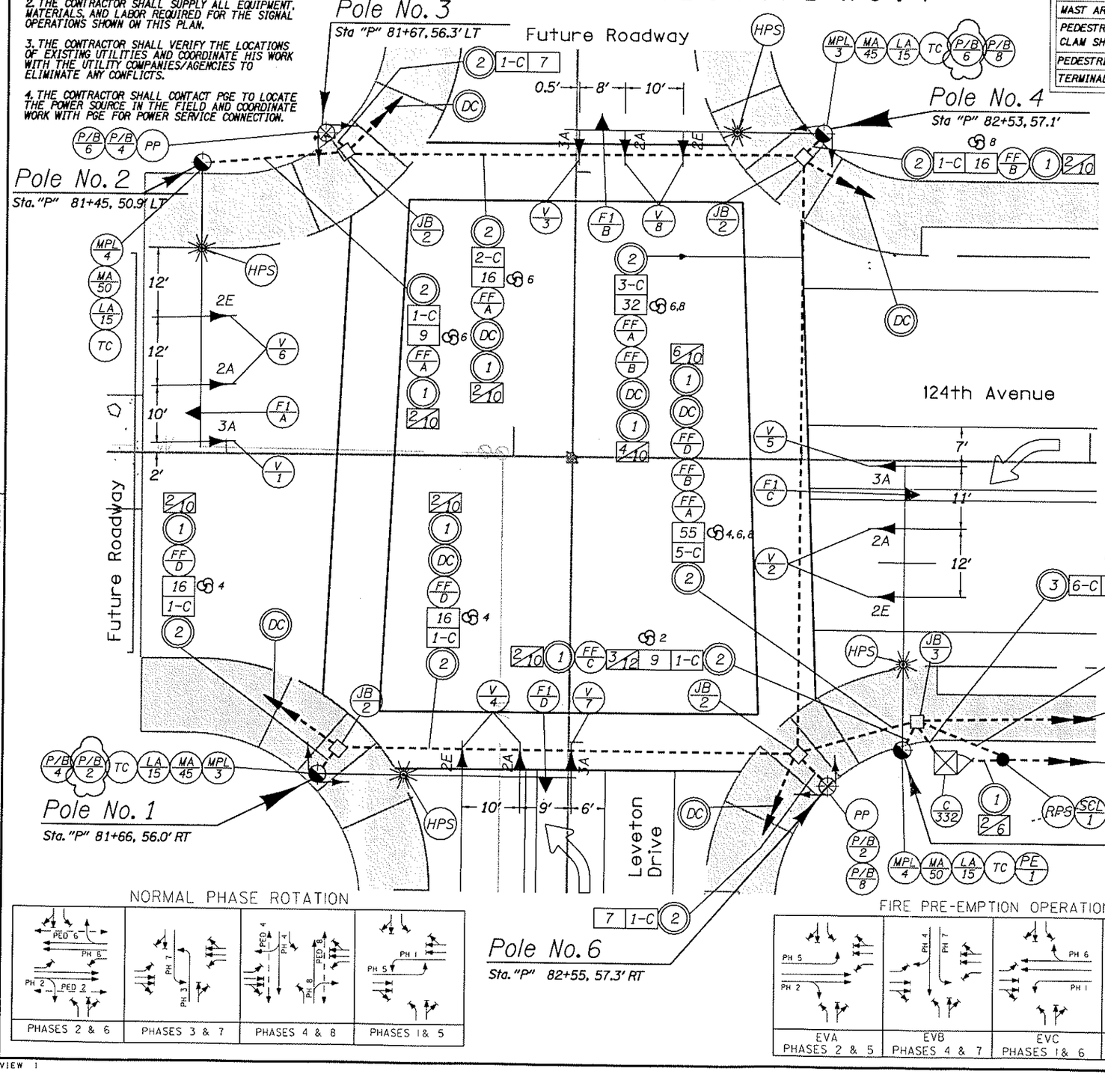
GENERAL NOTES:

1. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO THE 1996 OREGON DEPARTMENT OF TRANSPORTATION (ODOT) STANDARD SPECIFICATIONS FOR HIGHWAY CONSTRUCTION AND THE ODOT STANDARD DRAWINGS.

2. THE CONTRACTOR SHALL SUPPLY ALL EQUIPMENT, MATERIALS, AND LABOR REQUIRED FOR THE SIGNAL OPERATIONS SHOWN ON THIS PLAN.

3. THE CONTRACTOR SHALL VERIFY THE LOCATIONS OF EXISTING UTILITIES AND COORDINATE HIS WORK WITH THE UTILITY COMPANIES/AGENCIES TO ELIMINATE ANY CONFLICTS.

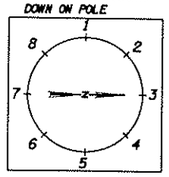
4. THE CONTRACTOR SHALL CONTACT PGE TO LOCATE THE POWER SOURCE IN THE FIELD AND COORDINATE WORK WITH PGE FOR POWER SERVICE CONNECTION.



POLE ENTRANCE CHART

POLE NUMBER	1	2	3	4	5	6
LUMINARE ARM	3	5	-	7	1	-
MAST ARM	3	5	-	7	1	-
PEDESTRIAN SIGNAL CLAM SHELL	5,7	-	1,7	1,3	-	3,5
PEDESTRIAN PB/DECAL	1,3	-	3,5	5,7	-	1,7
TERMINAL CABINET	7	1	-	3	5	-

ORIENTATION LOOKING DOWN ON POLE



ABBREVIATIONS:

T = Type shown
Ph = Phase shown
N = Number shown
H = Height shown
L = Length shown
S = Size shown
G = AWG size shown
Ch = Channel shown
A = Standard plumbizer
E = Elevator plumbizer
X = Number of cables shown

NORMAL PHASE ROTATION

FIRE PRE-EMPTION OPERATION

CH2MHILL
L E G E N D

- (C/332) Install model 170 controller in model 332 cabinet with riser frame, orient front(louvered) door as shown
- (MPL/T) Install type (T) standard traffic signal mast arm pole with luminaire pole extension (40 ft. mounting ht.)
- (MA/L) Install (L) feet traffic signal mast arm
- (LA/L) Install (L) feet luminaire arm
- (PP) Install pedestrian signal pedestal
- (RPS) Install remote power service post
- (HPS) Install 400 watt high pressure sodium luminaire, type M-N-IV, 120, 208, 240, 277 multi-volt mag-regulator ballast
- (PE/1) Install photoelectric cell on pole (20' – 35' above pole base)
- (TC) Install terminal cabinet
- (SCL/1) Install service cabinet, 120 volt, for both signal and illumination circuits
- (MS/1) Install 120 volt meter base
- (V/Ph) Install phase (Ph) vehicle signal with LED's
  2 = 12" R, 12" Y, 12" G
  3 = 12" RLTA, 12" YLTA, 12" GLTA
- (Ph) Includes 3 spare wires for phase (Ph) as per table
- (P/B Ph) Install phase (Ph) pedestrian signal with LED's, pushbutton and instruction decal
- (JB/2) Install 22" x 12" x 12" (min. dimension) precast concrete junction box
- (JB/2A) Install 22" x 12" x 12" (min. dimension) precast concrete junction box with concrete apron
- (JB/3) Install 30" x 17" x 12" (min. dimension) precast concrete junction box with concrete apron
- (S) Install (S) inch electrical conduit
- (DC) Detector conduit (See Detector Plan)
- (IC) Interconnect conduit (See Interconnect Plan)
- (W) Install conduit and wire as required by power company
- (N-C) Install (N) No. 8 type THWN (Signal system common)
- (N) Install (N) No. 14 type THWN wires
- (N/G) Install (N) No. (G) type THWN wires
- (FF/Ch) Install channel (Ch) fire pre-emption detector feeder cable
- (FN/Ch) Install channel(Ch), (N) barrel fire pre-emption detector unit

0 10 20 30 40 50
FEET

Revised June 30, 1999

SIGNAL PLANS & DETAILS

The Contract Document Drawings are the printed documents dated May 1999 as subsequently officially amended, which define the scope, extent, and character of the work. This originally issued Contract Document Drawing was sealed and signed by Belying Wang P.E. No. 17,847

Jennifer Ringert - Designed
Gary D. Gray - Drafter
Belying Wang - Checked

S.W. 124TH AVENUE / S.W. LEVETON DRIVE
TRAFFIC SIGNAL PLAN
S.W. 124TH AVE. AND W. LEVETON DRIVE
WASHINGTON COUNTY

TUALATIN DEVELOPMENT COMMISSION

SHEET NO. 15

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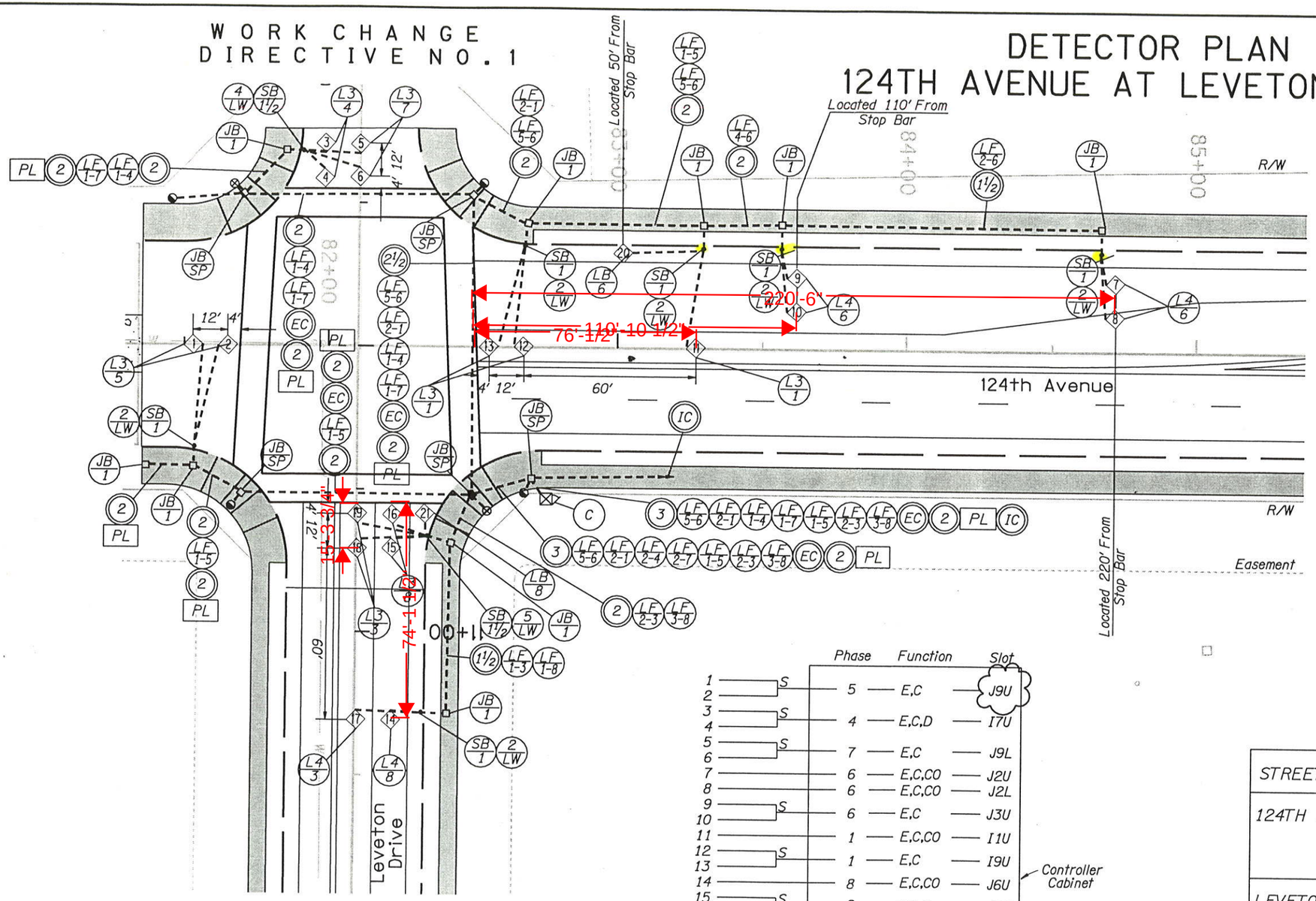
VIEW 1

WORK CHANGE DIRECTIVE NO. 1

DETECTOR PLAN
124TH AVENUE AT LEVETON DRIVE

CH2MHILL



LEGEND

C	Controller (See Signal Plan)
S	Install (S) inch electrical conduit
EC	Electrical conduit (See Signal Plan)
IC	Interconnect conduit (See Interconnect Plan)
LB Ph	Install phase (Ph) 2½FT. diamond bicycle detector loop
L3 Ph	Install phase (Ph) 3 FT. diamond vehicle detector loop
L4 Ph	Install phase (Ph) 4 FT. diamond vehicle detector loop
LF X-Ph	Install (X) phase (Ph) loop feeder cables
N LW	Install (N) pair of loop wires
SB S	Install 4" x4" x4" galv. cast iron street box with (S) inch conduit to junction box
JB 1	Install 17" x 10" x 12" (min. dimension) precast concrete junction box
JB 1A	Install 17" x 10" x 12" (min. dimension) precast concrete junction box with concrete apron
JB SP	Junction box (See Signal Plan)
PL	Install poly pull line (1 kn min-strength)

ABBREVIATIONS:
PH= Phase Shown
S = Size Shown
X = Number Of Cables Shown
N = Number Shown

Phase	Function	Slot
1 S 2	5 — E,C	J9U
3 S 4	4 — E,C,D	I7U
5 S 6	7 — E,C	J9L
7	6 — E,C,CO	J2U
8	6 — E,C,CO	J2L
9 S 10	6 — E,C	J3U
11	1 — E,C,CO	I1U
12 S 13	1 — E,C	I9U
14	8 — E,C,CO	J6U
15 S 16	8 — E,C,D	J7U
17	3 — E,C,CO	I5U
18 S 19	3 — E,C	I9L
20	6 — E	J3L
21	8 — E,C	J7L*

Controller Cabinet

* PROGRAM TRANSFER CALL TO J8U

POSTED APPROACH SPEEDS

STREET	APPROACH	POSTED SPEED
124TH AVENUE	NORTHBOUND	35 MPH
	SOUTHBOUND	35 MPH
LEVETON DRIVE	WESTBOUND	35 MPH

N

0 20 40 60 80 100
FEET

Revised June 30, 1999

GENERAL NOTES:

1. All Loops Are To Be Individually Wound Clockwise And Series Wired At Junction Boxes Or Controller, As Shown On The Loop Detector Wiring Diagram.
2. All Detector Loops Shall Be Located In The Center Of The Lane Unless Otherwise Indicated On The Detector Plan.
3. All Materials And Workmanship Shall Conform To The 1996 Oregon Department Of Transportation (ODOT) Standard Specifications For Highway Construction And The ODOT Standard Drawings And Special Provisions.

LOOP DETECTOR WIRING DIAGRAM

S = Series, E=Extension, C=Call, CO=Carry-over, D=Delay
See T.E.S. Drwg. No. TM408 for loop detector details
Center all loops in travel lanes or as shown on plan

STATE is using cold mix, epoxy boxes.

TRAFFIC ENGINEER	S.W. 124TH AVENUE / S.W. LEVETON DRIVE DETECTOR PLAN S.W. 124TH AVE. AND W. LEVETON DRIVE WASHINGTON COUNTY
The Contract Document Drawings are the printed documents dated May 1999 as subsequently officially amended, which define the scope, extent, and character of the work. This originally issued Contract Document Drawing was sealed and signed by Beiying Wang P.T.E. No. 17,047	TUALATIN DEVELOPMENT COMMISSION
	SHEET NO. 15A

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VIEW 1

CH2MHILL

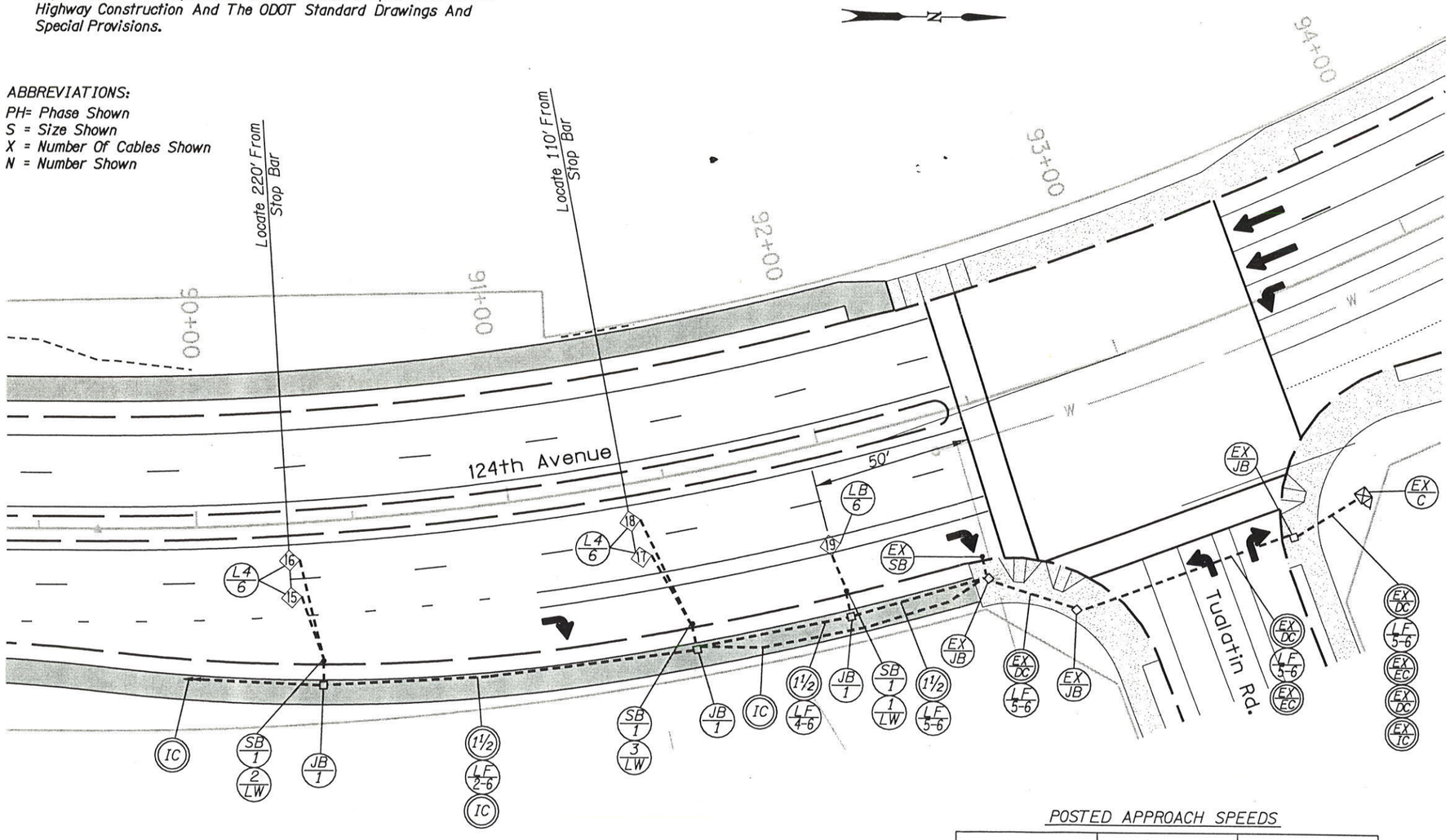
DETECTOR PLAN
124TH AVENUE AT TUALATIN ROAD

GENERAL NOTES:

1. All Loops Are To Be Individually Wound Clockwise And Series Wired At Junction Boxes Or Controller, As Shown On The Loop Detector Wiring Diagram.
2. All Detector Loops Shall Be Located In The Center Of The Lane Unless Otherwise Indicated On The Detector Plan.
3. All Materials And Workmanship Shall Conform To The 1996 Oregon Department Of Transportation (ODOT) Standard Specifications For Highway Construction And The ODOT Standard Drawings And Special Provisions.

ABBREVIATIONS:

PH= Phase Shown
S = Size Shown
X = Number Of Cables Shown
N = Number Shown



LEGEND

C	Controller (See Signal Plan)
S	Install (S) inch electrical conduit
IC	Interconnect conduit (See Interconnect Plan)
L3/Ph	Install phase (Ph) 3 FT. diamond vehicle detector loop
L4/Ph	Install phase (Ph) 4 FT. diamond vehicle detector loop
LF/X-Ph	Install (X) phase (Ph) loop feeder cables
N/LW	Install (N) pair of loop wires
SB/S	Install 4" x4" x4" galv. cast iron street box with (S) inch conduit to junction box
JB/1	Install 17" x 10" x 12" (min. dimension) precast concrete junction box
JB/1A	Install 17" x 10" x 12" (min. dimension) precast concrete junction box with concrete apron
JB/SP	Junction box (See Signal Plan)
EX/JB	Retain and protect existing junction box
EX/C	Retain and protect existing Model 170 controller and Model 332 cabinet
EX/EC	Retain and protect existing electrical conduit
EX/DC	Retain and protect existing detector conduit
EX/IC	Retain and protect existing interconnect conduit
EX/SB	Retain and protect existing galv. cast iron street box with 1" conduit to junction box

	Phase	Function	Slot
15	6	E,C,CO	J2U
16	6	E,C,CO	J2L
17 (S)	6	E,C	J3U
18	6	E	J3L
19			

Controller Cabinet

LOOP DETECTOR WIRING DIAGRAM

S = Series, E=Extension, C=Call, CO=Carry-over, D=Delay
See T.E.S. Drwg. No. TM408 for loop detector details
Center all loops in travel lanes or as shown on plan

Cold mix in Expory Boxes ?

POSTED APPROACH SPEEDS

STREET	APPROACH	POSTED SPEED
124TH AVENUE	NORTHBOUND	35 MPH
	SOUTHBOUND	35 MPH
TUALATIN ROAD	WESTBOUND	35 MPH

0 20 40 60 80 100
FEET

TRAFFIC ENGINEER
OREGON PROFESSIONAL PTE 17047 Benjamin Wang Jan. 18 1994 TRAFFIC ENGINEER
Benjamin Wang 4/30/99
Exp. 6/30/00

S.W. 124TH AVENUE / S.W. LEVETON DRIVE
DETECTOR PLAN
S.W. 124TH AVE. AND TUALATIN ROAD
WASHINGTON COUNTY

TUALATIN DEVELOPMENT COMMISSION

SHEET NO. 15B

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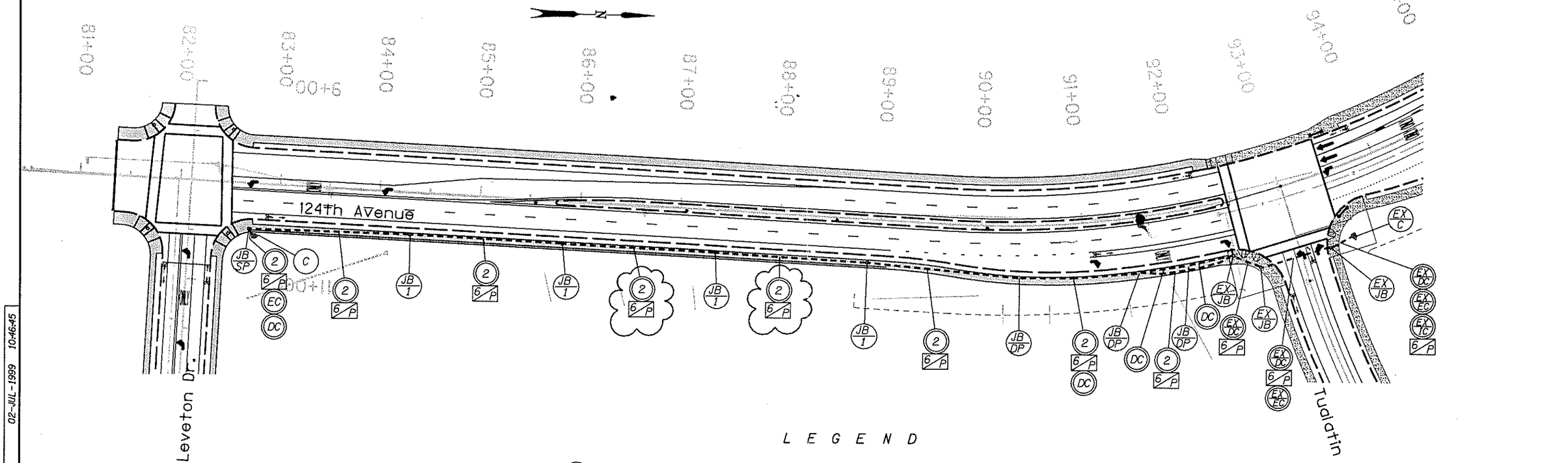
VIEW 1

CH2MHILL

INTERCONNECT PLAN
124TH AVENUE AT LEVETON DRIVE
WORK CHANGE DIRECTIVE NO. 1



GENERAL NOTES

1. All Material And Workmanship Shall Conform To The 1996 Standard Specifications For Highway Construction Of The Oregon Department Of Transportation And The Special Provisions.
2. All Electrical Equipment Shall Conform To The Current Standards Of the National Electrical Manufacturers Association (NEMA) And The Underwriters Laboratories, Inc. (U.L.). Wherever Applicable. In Addition To The Requirements Of All The Plans, Standars Specifications, And The Special Provisions, All Materials and Workmanship Shall Conform To The Current Requirements Of The National Electrical Code (NEC) The National Electrical Safety Code, Standards Of The American National Standards Institute (ANSI), And Any Local Ordinances Which May Apply.
3. Location Of Interconnect Conduits And Junction Boxes Are Approximate. Contractor Shall Coordinate With Other Utilities To Proper Installation.
4. Rigid Non-metallic Electrical Conduit Shall Be Acceptable For Interconnect Conduit

L E G E N D

- (C) Controller (See Signal Plan)
- (S) Install (S) inch electrical conduit
- (DC) Detector conduit (See Detector Plan)
- (EC) Electrical conduit (See Signal Plan)
- (JB/1) Install 17" x 10" x 12" (min. dimension) precast concrete junction box
- (JB/1A) Install 17" x 10" x 12" (min. dimension) precast concrete junction box with concrete apron
- (JB/SP) Junction box (See Signal Plan)
- (JB/DP) Junction box (See Detector Plan)
- (EX/JB) Retain and protect existing junction box
- (EX/EC) Retain and protect existing electrical conduit
- (EX/DC) Retain and protect existing detector conduit
- (EX/TC) Retain and protect existing interconnect conduit
- (N/G) Install (N) No. (G) type THWN wires
- (EX/C) Retain and protect existing controller and cabinet

0' 50' 100' 150'

Revised June 30, 1999

TRAFFIC ENGINEER

The Contract Document Drawings are the printed documents dated May 1999 as subsequently officially amended, which define the scope, extent, and character of the work. This originally issued Contract Document Drawing was sealed and signed by Beiying Wang P.T.E. No. 17,047

S.W. 124TH AVENUE / S.W. LEVETON DRIVE
SYSTEM INTERCONNECT PLAN
124th AVE. @ LEVETON DR.
WASHINGTON COUNTY

TUALATIN DEVELOPMENT COMMISSION

SHEET NO. 15C

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VIEW 1

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11/6/13 Timing Changes

W4IKS Table 1 Page 0
Date: Wednesday, February 06, 2013 Time: 07:36 AM
Intersection #139 124th @ Leviton

(0+KEY)

FUNCTIONS	KEY	12345678
Veh Recall	0	_2___6__
Ped Recall	1	_____
Red Lock	2	_____
Yellow Lock	3	_____
Permit	4	12345678
Ped Phases	5	_2_4_6_8
Lead Phases	6	1_3_5_7_
Double Entry	7	___4___8
Sequential Timing	8	_____
Startup Green	9	_2___6__
Overlap A	A	12_____
Overlap B	B	_____
Overlap C	C	____56__
Overlap D	D	_____
Exclusive	E	_____
Simultaneous Gap	F	_2___6__

(PHASE+KEY)

FUNCTIONS	KEY	PH1	PH2	PH3	PH4	PH5	PH6	PH7	PH8
Max I	0	25	25	10	30	20	40	15	30
Max II	1	25	25	10	30	20	40	15	30
Walk	2	0	7	0	8 X	0	7	0	8 X
Flash DW	3	0	~~17~~ 14	0	~~20~~ 23	0	~~16~~ 14	0	23
Max Initial	4	0	0	0	0	5	0	0	0
Min Green	5	8	~~12~~ 10	7	6	5	~~12~~ 10	4	6
TBR	6	0	0	0	0	0	0	0	0
TTR	7	0	0	0	0	0	0	0	0
Observe Gap	8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Passage	9	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0
Min Gap	A	1.0	3.0	1.0	1.0	1.0	3.0	1.0	1.0
Added Actuation	B	1.0	0.0	0.0	0.0	0.0	1.0	0.0	0.0
Yellow	C	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Red Clear	D	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Red Revert	E	5.0	5.0	5.0	5.0	0.0	5.0	5.0	5.0
Walk II	F	0	0	0	0	0	0	0	0

W4IKS Table 1 Page 1
Date: Wednesday, February 06, 2013 Time: 07:36 AM
Intersection #139 124th @ Leviton

(D+C+0+KEY)

FUNCTIONS	KEY	12345678
Veh Recall	0	_____
Ped Recall	1	_____
Red Lock	2	_____
Yellow Lock	3	_____
Permit	4	_____
Ped Phases	5	_____
Lead Phases	6	_____
Double Entry	7	_____
Sequential Timing	8	_____
Startup Green	9	_____
Overlap A	A	_____
Overlap B	B	_____
Overlap C	C	_____
Overlap D	D	_____
Exclusive	E	_____
Simultaneous Gap	F	_____

(D+C+PHASE+KEY)

FUNCTIONS	KEY	PH1	PH2	PH3	PH4	PH5	PH6	PH7	PH8
Max I	0	0	0	0	0	0	0	0	0
Max II	1	0	0	0	0	0	0	0	0
Walk	2	0	0	0	0	0	0	0	0
Flash DW	3	0	0	0	0	0	0	0	0
Max Initial	4	0	0	0	0	0	0	0	0
Min Green	5	0	0	0	0	0	0	0	0
TBR	6	0	0	0	0	0	0	0	0
TTR	7	0	0	0	0	0	0	0	0
Observe Gap	8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Passage	9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Actuation	B	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Clear	D	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Revert	E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk II	F	0	0	0	0	0	0	0	0

W4IKS Table 1 Page 2
Date: Wednesday, February 06, 2013 Time: 07:36 AM
Intersection #139 124th @ Leviton

(D+D+0+KEY)

FUNCTIONS	KEY	12345678
Veh Recall	0	_____
Ped Recall	1	_____
Red Lock	2	_____
Yellow Lock	3	_____
Permit	4	_____
Ped Phases	5	_____
Lead Phases	6	_____
Double Entry	7	_____
Sequential Timing	8	_____
Startup Green	9	_____
Overlap A	A	_____
Overlap B	B	_____
Overlap C	C	_____
Overlap D	D	_____
Exclusive	E	_____
Simultaneous Gap	F	_____

(D+D+PHASE+KEY)

FUNCTIONS	KEY	PH1	PH2	PH3	PH4	PH5	PH6	PH7	PH8
Max I	0	0	0	0	0	0	0	0	0
Max II	1	0	0	0	0	0	0	0	0
Walk	2	0	0	0	0	0	0	0	0
Flash DW	3	0	0	0	0	0	0	0	0
Max Initial	4	0	0	0	0	0	0	0	0
Min Green	5	0	0	0	0	0	0	0	0
TBR	6	0	0	0	0	0	0	0	0
TTR	7	0	0	0	0	0	0	0	0
Observe Gap	8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Passage	9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Actuation	B	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Clear	D	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Revert	E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk II	F	0	0	0	0	0	0	0	0

ENGLISH

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING/TRAFFIC ENGINEERING

LEGEND

CONTROLLERS

EX C — Retain and protect existing 332 cabinet

POLES

EX MP — Retain and protect existing traffic signal mast arm pole

EX MPL — Retain and protect existing traffic signal mast arm pole with luminaire arm extension

EX MA — Retain and protect existing traffic signal mast arm

EX LA — Retain and protect existing luminaire arm

RR PP — Remove and relocate existing pedestrian signal pedestal with frangible base

RI PP — Remove and relocate existing pedestrian signal pedestal with frangible base

SIGNALS

EX VPh — Retain and protect existing phase (Ph=phase) vehicle signal

EX P/B — Retain and protect existing pedestrian signal, pushbutton and instructions

V Ph — Install phase (Ph=phase) vehicle signal

RR VPh — Remove and relocate existing phase (Ph=phase) vehicle signal

RR P/B — Remove and relocate existing pedestrian signal, pushbutton and instructions

RI VPh — Reinstall existing phase (Ph=phase) vehicle signal

RI P/B — Reinstall existing pedestrian signal, pushbutton and instructions

SIGNS

EX AL — Retain and protect existing aluminum sign

EX SNS — Retain and protect existing street name sign

LEGEND CONTINUED

CABINETS

EX RPS — Retain and protect existing remote power source

EX SC — Retain and protect existing service cabinet

EX MS — Retain and protect existing meter base

EX TC — Retain and protect existing terminal cabinet

JUNCTION BOXES

EX JB — Retain and protect existing junction box

RX JB — Remove existing junction box

JB 2 — Install 22"x12"x12" (min. dimension) precast concrete junction box

JB 3A — Install 30"x17"x12" (min. dimension) precast concrete junction box with concrete apron

VIDEO DETECTION

VDZ PH — Video detection zone for phase (PH).

EX VDC — Retain and protect existing video detection camera

WIRES

EX W — Retain and protect existing wiring

RX W — Remove existing wiring

RI W — Reinstall existing wiring

#-12C — Install (N=number) No. 12 type THWN (Pedestrian signal system common)

N/G — Install (N=number) No. (G=AWG wire size) type THWN wires

LEGEND CONTINUED

CONDUITS

EX EC — Retain and protect existing electrical conduit

AX EC — Abandon existing electrical conduit

S — Install (S=size) inch electrical conduit

IC — Interconnect conduit (See Interconnect Plan)

CJ — Splice new electrical conduit to existing electrical conduit

FIRE PREEMPTION

EX FD — Retain and protect existing fire preemption detector

MISCELLANEOUS

EX HPS — Retain and protect existing high pressure sodium luminaire

EX PE — Retain and protect existing photoelectric control

CW — Install crosswalk closure barricades with signs (both sides of barricade)

SIGNAL MOUNTING OPTIONS
B = Adjustable bracket assembly w/rain cap(s) (install 1" metallic chase nipple in lieu of tenon when required for wiring)

SIGNAL HEAD TYPES
2 = 12" R, 12" Y, 12" G
6L = 12" GLTA, 12" YLTA, 12" FYLTA, 12" GLTA

6L = 

CONSTRUCTION NOTES:

1. Remove existing wiring for existing pedestrian post. Retain all other existing wiring.
2. Install 4-#14 wires to operate the Eastbound left-turn signal.
3. Intercept existing conduit and install junction box. Relocate existing wiring into new conduit as shown. Abandon existing unused conduit.
4. Replace existing controller unit with a new 2070L unit.
5. Terminate phase 5 flashing yellow indication to phase 6 pedestrian yellow switchpack output. Terminate Conflict Monitor channel 11 (pin 5) wire to Output File terminal 120.
6. Re-establish telephone connection with local company after completion of utility pole relocation.

REGISTERED PROFESSIONAL ENGINEER
19283PE
OREGON
JULY 17, 1997
CHARLES W RADOSTA
8/27/08
EXPIRES 12/31/08

TUALATIN DEVELOPMENT COMMISSION

S.W. HERMAN RD. - S.W. 124TH AVE. TO S.W. TETON AVE.
WASHINGTON COUNTY

Reviewed By - C. Radosta
Designed By - C. Tiesler
Drafted By - J. Henriksen

SW HERMAN RD/SW 108TH AVE
LEGEND SHEET

SHEET NO. TS-11

$DATE$ $FILE$ $TIME$ $FILEABBREV$ $USER$

ENGLISH

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING/TRAFFIC ENGINEERING

59+00

60+00

61+00

SW 108TH AVE

HR.

SW HERMAN ROAD

P&W RR

POLE #C3
"HR" 60+14
47' LT

EX. POLE #C2

EX. POLE #C1

EX. POLE #C4

0 10 20 30
Scale In Feet

N

REGISTERED PROFESSIONAL ENGINEER
19283PE
OREGON
JULY 17, 1997
CHARLES W RADOSTA
EXPIRES 12/31/08
8/27/08

TUALATIN DEVELOPMENT COMMISSION

S.W. HERMAN RD. - S.W. 124TH AVE. TO S.W. TETON AVE.

WASHINGTON COUNTY

Reviewed By - C. Radosta
Designed By - C. Tiesler
Drafted By - J. Henriksen

SW HERMAN RD/SW 108TH AVE SIGNAL PLAN

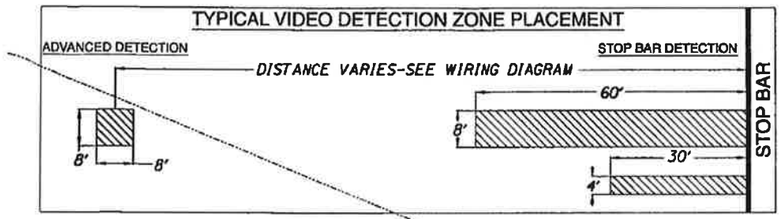
SHEET NO. TS-12

$DATE$ $FILE$ $TIME$ $FILEABBREV$ $USER$

ENGLISH

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING/TRAFFIC ENGINEERING

TYPICAL VIDEO DETECTION ZONE PLACEMENT



VIDEO DETECTION WIRING DIAGRAM

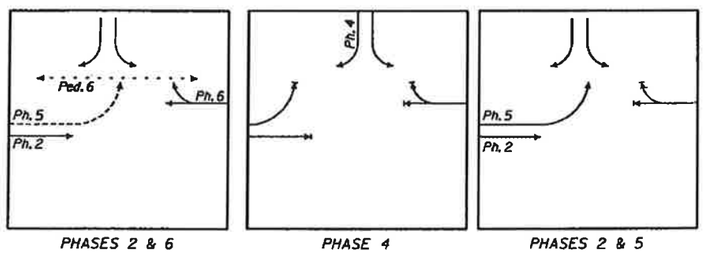
CAMERA	DETECTION ZONE	DISTANCE (FEET)
1	1	320
2	2	160
2	3	
2	4	
3	5	
3	6	
4	7	320
5	8	160
5	9	

PHASE	SLOT
2	I2U
2	I2L
2	I3U
5	J1
4	I6U
4	I6L
6	J2U
6	J2L
6	J3U

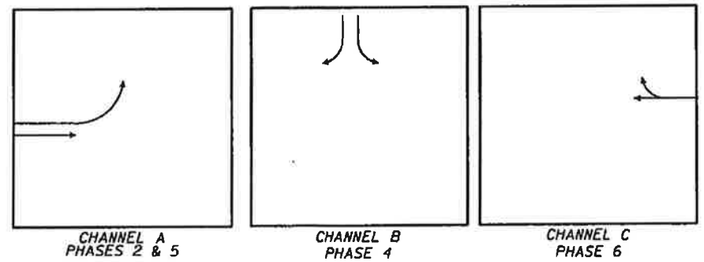
DETECTION ZONE

DESIGN APPROACH SPEEDS

STREET	APPROACH	OPERATING SPEED
HERMAN RD	EASTBOUND	45 M.P.H.
	WESTBOUND	45 M.P.H.
108TH AVE	SOUTHBOUND	35 M.P.H.



NORMAL PHASE ROTATION



FIRE PREEMPTION DIAGRAM

REGISTERED PROFESSIONAL ENGINEER
19283PE
OREGON
JULY 17, 1997
CHARLES W RADOSTA
5/27/08
EXPIRES 12/31/08

TUALATIN DEVELOPMENT COMMISSION

S.W. HERMAN RD. - S.W. 124TH AVE. TO S.W. TETON AVE.

WASHINGTON COUNTY

Reviewed By - C. Radosta
Designed By - C. Tiesler
Drafted By - J. Henriksen

SW HERMAN RD/SW 108TH AVE DETECTOR PLAN

SHEET NO. TS-13

$DATE$ $FILE$ $TIME$ $FILEABBREV$ $USER$

W4IKS Table 1 Page 0
Date: Wednesday, July 25, 2012 Time: 09:52 AM
Intersection #125 HERMAN RD @ 108TH

(0+KEY)

FUNCTIONS	KEY	12345678
Veh Recall	0	_2___6__
Ped Recall	1	________
Red Lock	2	________
Yellow Lock	3	________
Permit	4	_2_456__
Ped Phases	5	_____6__
Lead Phases	6	_2_4_6__
Double Entry	7	_2___6__
Sequential Timing	8	________
Startup Green	9	_2___6__
Overlap A	A	________
Overlap B	B	________
Overlap C	C	____56__
Overlap D	D	________
Exclusive	E	________
Simultaneous Gap	F	_2___6__

(PHASE+KEY)

FUNCTIONS	KEY	PH1	PH2	PH3	PH4	PH5	PH6	PH7	PH8
Max I	0	0	45	0	30	10	45	0	0
Max II	1	0	45	0	30	10	45	0	0
Walk	2	0	0	0	0	0	7	0	0
Flash DW	3	0	0	0	0	0	12	0	0
Max Initial	4	0	0	0	0	0	0	0	0
Min Green	5	0	5	0	5	5	10	0	0
TBR	6	0	10	0	5	5	10	0	0
TTR	7	0	15	0	10	5	15	0	0
Observe Gap	8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Passage	9	0.0	3.1	0.0	2.6	2.0	3.1	0.0	0.0
Min Gap	A	0.0	1.1	0.0	1.0	1.1	1.1	0.0	0.0
Added Actuation	B	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	C	0.0	4.0	0.0	4.0	4.0	4.0	0.0	0.0
Red Clear	D	0.0	1.4	0.0	2.5	1.4	1.4	0.0	0.0
Red Revert	E	0.0	5.0	0.0	5.0	5.0	5.0	0.0	0.0
Walk II	F	0	0	0	0	0	0	0	0

W4IKS Table 1 Page 1
Date: Wednesday, July 25, 2012 Time: 09:52 AM
Intersection #125 HERMAN RD @ 108TH

(D+C+0+KEY)

FUNCTIONS	KEY	12345678
Veh Recall	0	________
Ped Recall	1	________
Red Lock	2	________
Yellow Lock	3	________
Permit	4	________
Ped Phases	5	________
Lead Phases	6	________
Double Entry	7	________
Sequential Timing	8	________
Startup Green	9	________
Overlap A	A	________
Overlap B	B	________
Overlap C	C	________
Overlap D	D	________
Exclusive	E	________
Simultaneous Gap	F	________

(D+C+PHASE+KEY)

FUNCTIONS	KEY	PH1	PH2	PH3	PH4	PH5	PH6	PH7	PH8
Max I	0	0	0	0	0	0	0	0	0
Max II	1	0	0	0	0	0	0	0	0
Walk	2	0	0	0	0	0	0	0	0
Flash DW	3	0	0	0	0	0	0	0	0
Max Initial	4	0	0	0	0	0	0	0	0
Min Green	5	0	0	0	0	0	0	0	0
TBR	6	0	0	0	0	0	0	0	0
TTR	7	0	0	0	0	0	0	0	0
Observe Gap	8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Passage	9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Actuation	B	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Clear	D	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Revert	E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk II	F	0	0	0	0	0	0	0	0

W4IKS Table 1 Page 2
Date: Wednesday, July 25, 2012 Time: 09:52 AM
Intersection #125 HERMAN RD @ 108TH

(D+D+0+KEY)

FUNCTIONS	KEY	12345678
Veh Recall	0	________
Ped Recall	1	________
Red Lock	2	________
Yellow Lock	3	________
Permit	4	________
Ped Phases	5	________
Lead Phases	6	________
Double Entry	7	________
Sequential Timing	8	________
Startup Green	9	________
Overlap A	A	________
Overlap B	B	________
Overlap C	C	________
Overlap D	D	________
Exclusive	E	________
Simultaneous Gap	F	________

(D+D+PHASE+KEY)

FUNCTIONS	KEY	PH1	PH2	PH3	PH4	PH5	PH6	PH7	PH8
Max I	0	0	0	0	0	0	0	0	0
Max II	1	0	0	0	0	0	0	0	0
Walk	2	0	0	0	0	0	0	0	0
Flash DW	3	0	0	0	0	0	0	0	0
Max Initial	4	0	0	0	0	0	0	0	0
Min Green	5	0	0	0	0	0	0	0	0
TBR	6	0	0	0	0	0	0	0	0
TTR	7	0	0	0	0	0	0	0	0
Observe Gap	8	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Passage	9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Min Gap	A	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Added Actuation	B	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Yellow	C	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Clear	D	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Red Revert	E	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Walk II	F	0	0	0	0	0	0	0	0

W4IKS Table 2 Page 0
Date: Wednesday, July 25, 2012 Time: 09:52 AM
Intersection #125 HERMAN RD @ 108TH

(9+KEY)

FUNCTIONS	KEY	VALUE
Short Power Down	0	0
Long Power Down	1	0
EVA Delay Type	2	1
EVB Delay Type	3	1
EVC Delay Type	4	1
EVD Delay Type	5	0
RR Delay Type	6	0
Ped Inhibit	7	0
OLA Green	8	0.0
OLA Yellow	9	0.0
OLB Green	A	0.0
OLB Yellow	B	0.0
OLC Green	C	0.0
OLC Yellow	D	0.0
OLD Green	E	0.0
OLD Yellow	F	0.0

(C+F+KEY)

FUNCTIONS	KEY	VALUE
Page ID	0	0
Future	1	0
Future	2	0
Future	3	0
OLA Red	4	0.0
OLB Red	5	0.0
OLC Red	6	0.0
OLD Red	7	0.0
Overlap E	8	
Overlap F	9	
Red Rest	A	
Max Recall	B	
Flash Green	C	
Flash Walk	D	
Advance Walk	E	
Restrictive Phase	F	

W4IKS Table 2 Page 1
Date: Wednesday, July 25, 2012 Time: 09:52 AM
Intersection #125 HERMAN RD @ 108TH

(D+C+9+KEY)

FUNCTIONS	KEY	VALUE
Short Power Down	0	0
Long Power Down	1	0
EVA Delay Type	2	0
EVB Delay Type	3	0
EVC Delay Type	4	0
EVD Delay Type	5	0
RR Delay Type	6	0
Ped Inhibit	7	0
OLA Green	8	0.0
OLA Yellow	9	0.0
OLB Green	A	0.0
OLB Yellow	B	0.0
OLC Green	C	0.0
OLC Yellow	D	0.0
OLD Green	E	0.0
OLD Yellow	F	0.0

(D+C+B+KEY)

FUNCTIONS	KEY	VALUE
Page ID	0	1
Future	1	0
Future	2	0
Future	3	0
OLA Red	4	0.0
OLB Red	5	0.0
OLC Red	6	0.0
OLD Red	7	0.0
Overlap E	8	
Overlap F	9	
Red Rest	A	
Max Recall	B	
Flash Green	C	
Flash Walk	D	
Advance Walk	E	
Restrictive Phase	F	

W4IKS Table 2 Page 2
Date: Wednesday, July 25, 2012 Time: 09:52 AM
Intersection #125 HERMAN RD @ 108TH

(D+D+9+KEY)

FUNCTIONS	KEY	VALUE
Short Power Down	0	0
Long Power Down	1	0
EVA Delay Type	2	0
EVB Delay Type	3	0
EVC Delay Type	4	0
EVD Delay Type	5	0
RR Delay Type	6	0
Ped Inhibit	7	0
OLA Green	8	0.0
OLA Yellow	9	0.0
OLB Green	A	0.0
OLB Yellow	B	0.0
OLC Green	C	0.0
OLC Yellow	D	0.0
OLD Green	E	0.0
OLD Yellow	F	0.0

(D+D+B+KEY)

FUNCTIONS	KEY	VALUE
Page ID	0	2
Future	1	0
Future	2	0
Future	3	0
OLA Red	4	0.0
OLB Red	5	0.0
OLC Red	6	0.0
OLD Red	7	0.0
Overlap E	8	
Overlap F	9	
Red Rest	A	
Max Recall	B	
Flash Green	C	
Flash Walk	D	
Advance Walk	E	
Restrictive Phase	F	

W4IKS Table 3
Date: Wednesday, July 25, 2012 Time: 09:52 AM
Intersection #125 HERMAN RD @ 108TH

(C+KEY)

FUNCTIONS	KEY	VALUE
Year	0	12
Month	1	7
Day of Month	2	24
Day of Week	3	4
Hour	4	9
Minute	5	47
Second	6	13
Reserved	7	4
Trigs On In Flash	8	0
Startup Yellow	9	
EVA Phases	A	2 5
EVB Phases	B	4 7
EVC Phases	C	1 6
EVD Phases	D	3 8
Handicap Ped	E	

(E+KEY)

FUNCTIONS	KEY	VALUE
EVA Delay	0	0
EVA Min	1	1
EVB Delay	2	0
EVB Min	3	1
EVC Delay	4	0
EVC Min	5	1
EVD Delay	6	0
EVD Min	7	1
OL Red Revert	8	5.0
RR Delay	9	0
RR Clear	A	0
RR Clear Phases	B	
RR Permit	C	
RR OL Permit	D	
NEMA Hold Phases	E	

W4IKS Table 4 Part 1
Date: Wednesday, July 25, 2012 Time: 09:52 AM
Intersection #125 HERMAN RD @ 108TH

(D+COL+KEY)

DETECTOR TYPE		DELAY				CARRYOVER			
COLUMN NUM		2		3		4		5	
FUNCTIONS	KEY	PH	TIME	PH	TIME	PH	TIME	PH	TIME
------	(1)0	1	0.0	5	10.0	1	0.0	5	0.0
Upper	(9)1	1	0.0	5	5.0	1	0.0	5	0.0
Upper	(2)2	2	0.0	6	0.0	2	2.0	6	2.0
Lower	(2)3	2	0.0	6	0.0	2	0.0	6	0.0
Upper	(3)4	2	0.0	6	0.0	2	0.0	6	0.0
Lower	(3)5		0.0		0.0	2	0.0	6	0.0
------	(4)6	2	0.0	6	0.0	2*	0.0	6*	0.0
------	(5)7	3	0.0	7	0.0	3	0.0	7	0.0
Lower	(9)8	3	0.0	7	0.0	3	0.0	7	0.0
Upper	(6)9	4	0.0	8	0.0	4	1.6	8	0.0
Lower	(6)A	4	0.0	8	0.0	4	0.0	8	0.0
Upper	(7)B	4	0.0	8	0.0	4	0.0	8	0.0
Lower	(7)C		0.0		0.0	4	0.0	8	0.0
------	(8)D	4	0.0	8	0.0	4*	0.0	8*	0.0
CABINET FILE		I		J		I		J	

Note: () = Slot Number * = Set Type 3 Detector

W4IKS Table 4 Part 2
Date: Wednesday, July 25, 2012 Time: 09:52 AM
Intersection #125 HERMAN RD @ 108TH

(D+9+4+KEY)

FUNCTIONS	KEY	VALUE
Detector Fail On	0	0
Detector Fail Off	1	0
Fail Det Backup	2	0
Max II In Delay	3	0
Max II In Carryover	4	0
Plan 9 In Delay	5	0
Plan 9 In Carryover	6	0
Plan 18 In Delay	7	0
Plan 18 In Carryover	8	0
TT Page 1 Delay	9	0
TT Page 1 Carryover	A	0
TT Page 2 Delay	B	0
TT Page 2 Carryover	C	0
NOVRAM	D	0
Computran	E	217
Release	F	0

(D+9+5+KEY)

FUNCTIONS	KEY	VALUE
DF 01 Min	0	0
DF 02 Min	1	0
DF 03 Min	2	0
DF 04 Min	3	0
DF 05 Min	4	0
DF 06 Min	5	0
DF 07 Min	6	0
DF 08 Min	7	0
DF 01 Max	8	0
DF 02 Max	9	0
DF 03 Max	A	0
DF 04 Max	B	0
DF 05 Max	C	0
DF 06 Max	D	0
DF 07 Max	E	0
DF 08 Max	F	0

W4IKS Table 5 Sheet 1
Date: Wednesday, July 25, 2012 Time: 09:52 AM
Intersection #125 HERMAN RD @ 108TH

(A+CODE)

EVENT	1234567	HR	MIN	FUNC	CODE	EVENT	1234567	HR	MIN	FUNC	CODE
1	_____	0	0	0	80-83	17	_____	0	0	0	C0-C3
2	_____	0	0	0	84-87	18	_____	0	0	0	C4-C7
3	_____	0	0	0	88-8B	19	_____	0	0	0	C8-CB
4	_____	0	0	0	8C-8F	20	_____	0	0	0	CC-CF
5	_____	0	0	0	90-93	21	_____	0	0	0	D0-D3
6	_____	0	0	0	94-97	22	_____	0	0	0	D4-D7
7	_____	0	0	0	98-9B	23	_____	0	0	0	D8-DB
8	_____	0	0	0	9C-9F	24	_____	0	0	0	DC-DF
9	_____	0	0	0	A0-A3	25	_____	0	0	0	E0-E3
10	_____	0	0	0	A4-A7	26	_____	0	0	0	E4-E7
11	_____	0	0	0	A8-AB	27	_____	0	0	0	E8-EB
12	_____	0	0	0	AC-AF	28	_____	0	0	0	EC-EF
13	_____	0	0	0	B0-B3	29	_____	0	0	0	F0-F3
14	_____	0	0	0	B4-B7	30	_____	0	0	0	F4-F7
15	_____	0	0	0	B8-BB	31	_____	0	0	0	F8-FB
16	_____	0	0	0	BC-BF	32	_____	0	0	0	FC-FF

W4IKS Table 5 Sheet 2
Date: Wednesday, July 25, 2012 Time: 09:52 AM
Intersection #125 HERMAN RD @ 108TH

(D+8+CODE)

EVENT	1234567	HR	MIN	FUNC	CODE	EVENT	1234567	HR	MIN	FUNC	CODE
33	_____	0	0	0	80-83	49	_____	0	0	0	C0-C3
34	_____	0	0	0	84-87	50	_____	0	0	0	C4-C7
35	_____	0	0	0	88-8B	51	_____	0	0	0	C8-CB
36	_____	0	0	0	8C-8F	52	_____	0	0	0	CC-CF
37	_____	0	0	0	90-93	53	_____	0	0	0	D0-D3
38	_____	0	0	0	94-97	54	_____	0	0	0	D4-D7
39	_____	0	0	0	98-9B	55	_____	0	0	0	D8-DB
40	_____	0	0	0	9C-9F	56	_____	0	0	0	DC-DF
41	_____	0	0	0	A0-A3	57	_____	0	0	0	E0-E3
42	_____	0	0	0	A4-A7	58	_____	0	0	0	E4-E7
43	_____	0	0	0	A8-AB	59	_____	0	0	0	E8-EB
44	_____	0	0	0	AC-AF	60	_____	0	0	0	EC-EF
45	_____	0	0	0	B0-B3	61	_____	0	0	0	F0-F3
46	_____	0	0	0	B4-B7	62	_____	0	0	0	F4-F7
47	_____	0	0	0	B8-BB	63	_____	0	0	0	F8-FB
48	_____	0	0	0	BC-BF	64	_____	0	0	0	FC-FF

W4IKS Table 6
Date: Wednesday, July 25, 2012 Time: 09:52 AM
Intersection #125 HERMAN RD @ 108TH

(B+0+KEY)

FUNCTIONS	KEY	VALUE
Present Plan	0	0
TOD/DOW Plan	1	0
Hardwire Plan	2	0
Modem Plan	3	0
Mode (0-4)	4	0
Master (0-OFF)	5	0
Master Clock	6	0
Local Clock	7	0
Dwell Clock	8	0
Future	9	0
Future	A	0
Future	B	0
Future	C	_____
NEMA CNA Phases	D	_____
Adv Warning Phases	E	_____
MRI Phases	F	_2_4_6__

(D+KEY1+KEY2)

FUNCTIONS	KEY	VALUE
Floating Ped	2E	0
ID Number	2F	125
No Coord Ped Recall	3E	0
Rest In Walk	3F	0
Adv Warning EOG	4E	0
Adv Warning SOG	4F	0
RR Red Clear	5E	0
RR Clear Color	5F	0
Bus Delay	6D	0.0
Bus Free T1	6E	0
Bus Free T3	6F	0
EV Min Aft Clear	7E	0
EV Indicators	7F	0
NEMA Inputs	66	0.0

W4IKS Table 7 Sheet 1
Date: Wednesday, July 25, 2012 Time: 09:52 AM
Intersection #125 HERMAN RD @ 108TH

(B+PLAN+KEY)

FUNCTION	KEY	Plan 1	Plan 2	Plan 3	Plan 4	Plan 5	Plan 6	Plan 7	Plan 8	Plan 9
Cycle Length	0	0	0	0	0	0	0	0	0	0
Forceoff 01	1	0	0	0	0	0	0	0	0	0
Forceoff 02	2	0	0	0	0	0	0	0	0	0
Forceoff 03	3	0	0	0	0	0	0	0	0	0
Forceoff 04	4	0	0	0	0	0	0	0	0	0
Forceoff 05	5	0	0	0	0	0	0	0	0	0
Forceoff 06	6	0	0	0	0	0	0	0	0	0
Forceoff 07	7	0	0	0	0	0	0	0	0	0
Forceoff 08	8	0	0	0	0	0	0	0	0	0
Offset	9	0	0	0	0	0	0	0	0	0
Perm Length	A	0	0	0	0	0	0	0	0	0
Max Dwell	B	0	0	0	0	0	0	0	0	0
Lead Phases	C									
Coord Phases	D									
Perm 2 Phases	E									
Min Recall	F									

W4IKS Table 7 Sheet 2
Date: Wednesday, July 25, 2012 Time: 09:52 AM
Intersection #125 HERMAN RD @ 108TH

(B+D+KEY1+KEY2)

	KEY1	7	8	9	A	B	C	D	E	F
FUNCTION	KEY2	Plan 10	Plan 11	Plan 12	Plan 13	Plan 14	Plan 15	Plan 16	Plan 17	Plan 18
Cycle Length	0	0	0	0	0	0	0	0	0	0
Forceoff 01	1	0	0	0	0	0	0	0	0	0
Forceoff 02	2	0	0	0	0	0	0	0	0	0
Forceoff 03	3	0	0	0	0	0	0	0	0	0
Forceoff 04	4	0	0	0	0	0	0	0	0	0
Forceoff 05	5	0	0	0	0	0	0	0	0	0
Forceoff 06	6	0	0	0	0	0	0	0	0	0
Forceoff 07	7	0	0	0	0	0	0	0	0	0
Forceoff 08	8	0	0	0	0	0	0	0	0	0
Offset	9	0	0	0	0	0	0	0	0	0
Perm Length	A	0	0	0	0	0	0	0	0	0
Max Dwell	B	0	0	0	0	0	0	0	0	0
Lead Phases	C									
Coord Phases	D									
Perm 2 Phases	E									
Min Recall	F									

W4IKS Table 8
Date: Wednesday, July 25, 2012 Time: 09:52 AM
Intersection #125 HERMAN RD @ 108TH

(B+A+KEY)

FUNCTIONS	KEY	VALUE
Bus P1 T1	0	0
Bus P1 T2	1	0
Bus P1 T3	2	0
Bus P2 T1	3	0
Bus P2 T2	4	0
Bus P2 T3	5	0
Bus P3 T1	6	0
Bus P3 T2	7	0
Bus P3 T3	8	0
Perm 2 P1	9	0
Perm 2 P2	A	0
Perm 2 P3	B	0
Flash Yellow	C	
Flash Circuit	D	
TOD/DOW Max	E	
OLB Switchpack	F	

(B+B+KEY)

FUNCTIONS	KEY	VALUE
Bus P4 T1	0	0
Bus P4 T2	1	0
Bus P4 T3	2	0
Bus P5 T1	3	0
Bus P5 T2	4	0
Bus P5 T3	5	0
Bus P6 T1	6	0
Bus P6 T2	7	0
Bus P6 T3	8	0
Perm 2 P4	9	0
Perm 2 P5	A	0
Perm 2 P6	B	0
OL Flash Yellow	C	
OL Flash Clear	D	
TOD/DOW Ped	E	
OLC Switchpack	F	

(B+C+KEY)

FUNCTIONS	KEY	VALUE
Bus P7 T1	0	0
Bus P7 T2	1	0
Bus P7 T3	2	0
Bus P8 T1	3	0
Bus P8 T2	4	0
Bus P8 T3	5	0
Bus P9 T1	6	0
Bus P9 T2	7	0
Bus P9 T3	8	0
Perm 2 P7	9	0
Perm 2 P8	A	0
Perm 2 P9	B	0
Coord Max	C	
TOD Red Rest	D	
OLA Switchpack	E	
OLD Switchpack	F	

W4IKS Table 9 Page 0
Date: Wednesday, July 25, 2012 Time: 09:52 AM
Intersection #125 HERMAN RD @ 108TH

(A+4+KEY)

C1 PIN	KEY	CODE
39	0	0
40	1	0
41	2	0
42	3	0
43	4	0
44	5	0
45	6	0
46	7	0
47	8	0
48	9	0
49	A	0
50	B	0
51	C	0
52	D	0
53	E	0
54	F	0

(A+5+KEY)

C1 PIN	KEY	CODE
55	0	0
56	1	0
57	2	0
58	3	0
59	4	0
60	5	0
61	6	0
62	7	0
	8	0
	9	0
	A	0
	B	0
63	C	0
64	D	0
65	E	0
66	F	0

(A+6+KEY)

C1 PIN	KEY	CODE
67	0	0
68	1	0
69	2	0
70	3	0
71	4	0
72	5	0
73	6	0
74	7	0
75	8	0
76	9	0
77	A	0
78	B	0
79	C	0
80	D	0
81	E	0
82	F	0

W4IKS Table 9 Page 1
Date: Wednesday, July 25, 2012 Time: 09:52 AM
Intersection #125 HERMAN RD @ 108TH

(D+A+4+KEY)

C1 PIN	KEY	CODE
39	0	0
40	1	0
41	2	0
42	3	0
43	4	0
44	5	0
45	6	0
46	7	0
47	8	0
48	9	0
49	A	0
50	B	0
51	C	0
52	D	0
53	E	0
54	F	0

(D+A+5+KEY)

C1 PIN	KEY	CODE
55	0	0
56	1	0
57	2	0
58	3	0
59	4	0
60	5	0
61	6	0
62	7	0
	8	0
	9	0
	A	0
	B	0
63	C	0
64	D	0
65	E	0
66	F	0

(D+A+6+KEY)

C1 PIN	KEY	CODE
67	0	0
68	1	0
69	2	0
70	3	0
71	4	0
72	5	0
73	6	0
74	7	0
75	8	0
76	9	0
77	A	0
78	B	0
79	C	0
80	D	0
81	E	0
82	F	0

W4IKS Table 9 Page 2
Date: Wednesday, July 25, 2012 Time: 09:52 AM
Intersection #125 HERMAN RD @ 108TH

(D+A+B+KEY)

C1 PIN	KEY	CODE
39	0	0
40	1	0
41	2	0
42	3	0
43	4	0
44	5	0
45	6	0
46	7	0
47	8	0
48	9	0
49	A	0
50	B	0
51	C	0
52	D	0
53	E	0
54	F	0

(D+A+C+KEY)

C1 PIN	KEY	CODE
55	0	0
56	1	0
57	2	0
58	3	0
59	4	0
60	5	0
61	6	0
62	7	0
	8	0
	9	0
	A	0
	B	0
63	C	0
64	D	0
65	E	0
66	F	0

(D+A+D+KEY)

C1 PIN	KEY	CODE
67	0	0
68	1	0
69	2	0
70	3	0
71	4	0
72	5	0
73	6	0
74	7	0
75	8	0
76	9	0
77	A	0
78	B	0
79	C	0
80	D	0
81	E	0
82	F	0

W4IKS Table 10 Page 0
Date: Wednesday, July 25, 2012 Time: 09:52 AM
Intersection #125 HERMAN RD @ 108TH

(A+0+KEY)

FUNCTION	KEY	CODE
04 D/W	0	0
04 Walk	1	0
04 Red	2	0
04 Yellow	3	0
04 Green	4	0
03 Red	5	0
03 Yellow	6	0
03 Green	7	0
02 D/W	8	0
02 Walk	9	0
02 Red	A	0
02 Yellow	B	0
02 Green	C	0
01 Red	D	0
01 Yellow	E	0
01 Green	F	0

(A+1+KEY)

FUNCTION	KEY	CODE
08 D/W	0	0
08 Walk	1	0
08 Red	2	0
08 Yellow	3	0
08 Green	4	0
07 Red	5	0
07 Yellow	6	0
07 Green	7	0
06 D/W	8	0
06 Walk	9	0
06 Red	A	0
06 Yellow	B	0
06 Green	C	0
05 Red	D	99
05 Yellow	E	99
05 Green	F	99

(A+2+KEY)

FUNCTION	KEY	CODE
02 Ped Y	0	0
06 Ped Y	1	99
04 Ped Y	2	0
08 Ped Y	3	0
03 Ped Y	4	0
01 Ped Y	5	0
Flash	6	0
Watchdog	7	0
03 D/W	8	0
03 Walk	9	0
OLD Red	A	0
OLD Yellow	B	0
OLD Green	C	0
OLC Red	D	0
OLC Yellow	E	0
OLC Green	F	0

(A+3+KEY)

FUNCTION	KEY	CODE
01 D/W	0	0
01 Walk	1	0
OLB Red	2	0
OLB Yellow	3	0
OLB Green	4	0
OLA Red	5	0
OLA Yellow	6	0
OLA Green	7	0
	8	0
SD	9	0
LTT	A	0
High Byte IDC		0

W4IKS Table 10 Page 1
Date: Wednesday, July 25, 2012 Time: 09:52 AM
Intersection #125 HERMAN RD @ 108TH

(D+A+0+KEY)

FUNCTION	KEY	CODE
04 D/W	0	0
04 Walk	1	0
04 Red	2	0
04 Yellow	3	0
04 Green	4	0
03 Red	5	0
03 Yellow	6	0
03 Green	7	0
02 D/W	8	0
02 Walk	9	0
02 Red	A	0
02 Yellow	B	0
02 Green	C	0
01 Red	D	0
01 Yellow	E	0
01 Green	F	0

(D+A+1+KEY)

FUNCTION	KEY	CODE
08 D/W	0	0
08 Walk	1	0
08 Red	2	0
08 Yellow	3	0
08 Green	4	0
07 Red	5	0
07 Yellow	6	0
07 Green	7	0
06 D/W	8	0
06 Walk	9	0
06 Red	A	0
06 Yellow	B	0
06 Green	C	0
05 Red	D	0
05 Yellow	E	0
05 Green	F	0

(D+A+2+KEY)

FUNCTION	KEY	CODE
02 Ped Y	0	0
06 Ped Y	1	0
04 Ped Y	2	0
08 Ped Y	3	0
03 Ped Y	4	0
01 Ped Y	5	0
Flash	6	0
Watchdog	7	0
03 D/W	8	0
03 Walk	9	0
OLD Red	A	0
OLD Yellow	B	0
OLD Green	C	0
OLC Red	D	0
OLC Yellow	E	0
OLC Green	F	0

(D+A+3+KEY)

FUNCTION	KEY	CODE
01 D/W	0	0
01 Walk	1	0
OLB Red	2	0
OLB Yellow	3	0
OLB Green	4	0
OLA Red	5	0
OLA Yellow	6	0
OLA Green	7	0
	8	0
SD	9	0
LTT	A	0

W4IKS Table 10 Page 2
Date: Wednesday, July 25, 2012 Time: 09:52 AM
Intersection #125 HERMAN RD @ 108TH

(D+A+7+KEY)

FUNCTION	KEY	CODE
04 D/W	0	0
04 Walk	1	0
04 Red	2	0
04 Yellow	3	0
04 Green	4	0
03 Red	5	0
03 Yellow	6	0
03 Green	7	0
02 D/W	8	0
02 Walk	9	0
02 Red	A	0
02 Yellow	B	0
02 Green	C	0
01 Red	D	0
01 Yellow	E	0
01 Green	F	0

(D+A+8+KEY)

FUNCTION	KEY	CODE
08 D/W	0	0
08 Walk	1	0
08 Red	2	0
08 Yellow	3	0
08 Green	4	0
07 Red	5	0
07 Yellow	6	0
07 Green	7	0
06 D/W	8	0
06 Walk	9	0
06 Red	A	0
06 Yellow	B	0
06 Green	C	0
05 Red	D	0
05 Yellow	E	0
05 Green	F	0

(D+A+9+KEY)

FUNCTION	KEY	CODE
02 Ped Y	0	0
06 Ped Y	1	0
04 Ped Y	2	0
08 Ped Y	3	0
03 Ped Y	4	0
01 Ped Y	5	0
Flash	6	0
Watchdog	7	0
03 D/W	8	0
03 Walk	9	0
OLD Red	A	0
OLD Yellow	B	0
OLD Green	C	0
OLC Red	D	0
OLC Yellow	E	0
OLC Green	F	0

(D+A+A+KEY)

FUNCTION	KEY	CODE
01 D/W	0	0
01 Walk	1	0
OLB Red	2	0
OLB Yellow	3	0
OLB Green	4	0
OLA Red	5	0
OLA Yellow	6	0
OLA Green	7	0
	8	0
SD	9	0
LTT	A	0

W4IKS Table 11 Page 0
Date: Wednesday, July 25, 2012 Time: 09:52 AM
Intersection #125 HERMAN RD @ 108TH

(D+B+0+KEY)

FUNCTIONS	KEY	VALUE
05 D/W	0	0
05 Walk	1	0
OLL Red	2	0
OLL Yellow	3	0
OLL Green	4	0
OLK Red	5	0
OLK Yellow	6	0
OLK Green	7	0
07 D/W	8	0
07 Walk	9	0
OLJ Red	A	0
OLJ Yellow	B	0
OLJ Green	C	0
OLH Red	D	0
OLH Yellow	E	0
OLH Green	F	0

(D+B+1+KEY)

FUNCTIONS	KEY	VALUE
OLE Green	0	0
OLF Green	1	0
OLE Yellow	2	0
OLF Yellow	3	0
Adv Warning	4	0
RR Fl Yellow	5	0
Det Reset	6	0
RR On	7	0
EVA On	8	0
EVB On	9	0
EVC On	A	0
EVD On	B	0
Ring 1 Bit B	C	0
Ring 1 Bit C	D	0
Ring 2 Bit B	E	0
Ring 2 Bit C	F	0

(D+B+2+KEY)

FUNCTIONS	KEY	VALUE
Cycle 2	0	0
Cycle 3	1	0
Offset 1	2	0
Offset 2	3	0
Offset 3	4	0
------	5	0
Free	6	0
Flash	7	0
Coord Plan 1 2 3	8	0
Coord Plan 4 5 6	9	0
Coord Plan 7 8 9	A	0
Coord Plan 10 11 12	B	0
Coord Plan 13 14 15	C	0
Coord Plan 16 17 18	D	0
Future	E	0
Future	F	0

W4IKS Table 11 Page 1
Date: Wednesday, July 25, 2012 Time: 09:52 AM
Intersection #125 HERMAN RD @ 108TH

(D+B+4+KEY)

FUNCTIONS	KEY	VALUE
05 D/W	0	0
05 Walk	1	0
OLL Red	2	0
OLL Yellow	3	0
OLL Green	4	0
OLK Red	5	0
OLK Yellow	6	0
OLK Green	7	0
07 D/W	8	0
07 Walk	9	0
OLJ Red	A	0
OLJ Yellow	B	0
OLJ Green	C	0
OLH Red	D	0
OLH Yellow	E	0
OLH Green	F	0

(D+B+5+KEY)

FUNCTIONS	KEY	VALUE
OLE Green	0	0
OLF Green	1	0
OLE Yellow	2	0
OLF Yellow	3	0
Adv Warning	4	0
RR Fl Yellow	5	0
Det Reset	6	0
RR On	7	0
EVA On	8	0
EVB On	9	0
EVC On	A	0
EVD On	B	0
Ring 1 Bit B	C	0
Ring 1 Bit C	D	0
Ring 2 Bit B	E	0
Ring 2 Bit C	F	0

(D+B+6+KEY)

FUNCTIONS	KEY	VALUE
Cycle 2	0	0
Cycle 3	1	0
Offset 1	2	0
Offset 2	3	0
Offset 3	4	0
------	5	0
Free	6	0
Flash	7	0
Coord Plan 1 2 3	8	0
Coord Plan 4 5 6	9	0
Coord Plan 7 8 9	A	0
Coord Plan 10 11 12	B	0
Coord Plan 13 14 15	C	0
Coord Plan 16 17 18	D	0
Future	E	0
Future	F	0

W4IKS Table 11 Page 2
Date: Wednesday, July 25, 2012 Time: 09:52 AM
Intersection #125 HERMAN RD @ 108TH

(D+B+8+KEY)

FUNCTIONS	KEY	VALUE
05 D/W	0	0
05 Walk	1	0
OLL Red	2	0
OLL Yellow	3	0
OLL Green	4	0
OLK Red	5	0
OLK Yellow	6	0
OLK Green	7	0
07 D/W	8	0
07 Walk	9	0
OLJ Red	A	0
OLJ Yellow	B	0
OLJ Green	C	0
OLH Red	D	0
OLH Yellow	E	0
OLH Green	F	0

(D+B+9+KEY)

FUNCTIONS	KEY	VALUE
OLE Green	0	0
OLF Green	1	0
OLE Yellow	2	0
OLF Yellow	3	0
Adv Warning	4	0
RR Fl Yellow	5	0
Det Reset	6	0
RR On	7	0
EVA On	8	0
EVB On	9	0
EVC On	A	0
EVD On	B	0
Ring 1 Bit B	C	0
Ring 1 Bit C	D	0
Ring 2 Bit B	E	0
Ring 2 Bit C	F	0

(D+B+A+KEY)

FUNCTIONS	KEY	VALUE
Cycle 2	0	0
Cycle 3	1	0
Offset 1	2	0
Offset 2	3	0
Offset 3	4	0
------	5	0
Free	6	0
Flash	7	0
Coord Plan 1 2 3	8	0
Coord Plan 4 5 6	9	0
Coord Plan 7 8 9	A	0
Coord Plan 10 11 12	B	0
Coord Plan 13 14 15	C	0
Coord Plan 16 17 18	D	0
Future	E	0
Future	F	0

W4IKS Table 12
Date: Wednesday, July 25, 2012 Time: 09:52 AM
Intersection #125 HERMAN RD @ 108TH

(D+8+KEY1+KEY2)

KEY1 = 0			KEY1 = 1			KEY1 = 2			KEY1 = 3		
FUNCTION	KEY2	VALUE	FUNCTION	KEY2	VALUE	FUNCTION	KEY2	VALUE	FUNCTION	KEY2	VALUE
1/Month	0	0	3/Hour On	0	0	5/Hour Off	0	0	7/Plan	0	0
1/DOM	1	0	3/Min On	1	0	5/Min Off	1	0	8/Month	1	0
1/Hour On	2	0	3/Hour Off	2	0	5/Plan	2	0	8/DOM	2	0
1/Min On	3	0	3/Min Off	3	0	6/Month	3	0	8/Hour On	3	0
1/Hour Off	4	0	3/Plan	4	0	6/DOM	4	0	8/Min On	4	0
1/Min Off	5	0	4/Month	5	0	6/Hour On	5	0	8/Hour Off	5	0
1/Plan	6	0	4/DOM	6	0	6/Min On	6	0	8/Min Off	6	0
2/Month	7	0	4/Hour On	7	0	6/Hour Off	7	0	8/Plan	7	0
2/DOM	8	0	4/Min On	8	0	6/Min Off	8	0	9/Month	8	0
2/Hour On	9	0	4/Hour Off	9	0	6/Plan	9	0	9/DOM	9	0
2/Min On	A	0	4/Min Off	A	0	7/Month	A	0	9/Hour On	A	0
2/Hour Off	B	0	4/Plan	B	0	7/DOM	B	0	9/Min On	B	0
2/Min Off	C	0	5/Month	C	0	7/Hour On	C	0	9/Hour Off	C	0
2/Plan	D	0	5/DOM	D	0	7/Min On	D	0	9/Min Off	D	61
3/Month	E	0	5/Hour On	E	0	7/Hour Off	E	0	9/Plan	E	0
3/DOM	F	0	5/Min On	F	0	7/Min Off	F	0			

W4IKS Table 13
Date: Wednesday, July 25, 2012 Time: 09:52 AM
Intersection #125 HERMAN RD @ 108TH

(D+9+0+KEY)

FUNCTION	KEY	VALUE
Overlap H	0	_____
Overlap J	1	_____
Overlap K	2	_____
Overlap L	3	_____
OLH Switchpack	4	_____
OLJ Switchpack	5	_____
OLK Switchpack	6	_____
OLL Switchpack	7	_____
Reserved	8	_____
Reserved	9	_____
All Red Before EV	A	_____

(D+9+3+KEY)

FUNCTION	KEY	VALUE
OLH Green	0	0.0
OLH Yellow	1	0.0
OLH Red	2	0.0
OLJ Green	3	0.0
OLJ Yellow	4	0.0
OLJ Red	5	0.0
OLK Green	6	0.0
OLK Yellow	7	0.0
OLK Red	8	0.0
OLL Green	9	0.0
OLL Yellow	A	0.0
OLL Red	B	0.0

(E+F+KEY)

FUNCTION	KEY	VALUE
RR Max II	0	0
Ped Perm Pl 1	1	0
Ped Perm Pl 2	2	0
Ped Perm Pl 3	3	0
Ped Perm Pl 4	4	0
Ped Perm Pl 5	5	0
Ped Perm Pl 6	6	0
Ped Perm Pl 7	7	0
Ped Perm Pl 8	8	0
Ped Perm Pl 9	9	0
# of Lng Pwrouts	A	0
# pf Sht Pwrouts	B	0
Failed Det	C	0
Max II On	D	0
No Daylite Save	E	0
Revision Level	F	17

W4IKS Table 14 Sheet 1
Date: Wednesday, July 25, 2012 Time: 09:52 AM
Intersection #125 HERMAN RD @ 108TH

(D+9+KEY1+KEY2)

KEY1 = 8		KEY1 = 9		KEY1 = A		KEY1 = B	
KEY2	CODE	KEY2	CODE	KEY2	CODE	KEY	CODE
0	205	0	205	0	6	0	23
1	146	1	146	1	14	1	67
2	23	2	23	2	20	2	20
3	45	3	66	3	23	3	26
4	20	4	205	4	68	4	6
5	27	5	146	5	20	5	205
6	5	6	21	6	24	6	148
7	205	7	5	7	27	7	21
8	146	8	14	8	5	8	5
9	21	9	20	9	205	9	11
A	6	A	21	A	147	A	209
B	14	B	5	B	21	B	5
C	20	C	13	C	5	C	24
D	24	D	205	D	12	D	21
E	26	E	11	E	205	E	6
F	6	F	21	F	147	F	14

W4IKS Table 14 Sheet 2
Date: Wednesday, July 25, 2012 Time: 09:52 AM
Intersection #125 HERMAN RD @ 108TH

(D+9+KEY1+KEY2)

KEY1 = C		KEY1 = D		KEY1 = E		KEY1 = F	
KEY2	CODE	KEY2	CODE	KEY2	CODE	KEY	CODE
0	209	0	29	0	0	0	0
1	6	1	7	1	0	1	0
2	24	2	20	2	0	2	0
3	27	3	24	3	0	3	0
4	5	4	25	4	0	4	0
5	208	5	6	5	0	5	0
6	5	6	210	6	0	6	0
7	30	7	6	7	0	7	0
8	26	8	24	8	0	8	0
9	5	9	21	9	0	9	0
A	210	A	6	A	0	A	0
B	5	B	14	B	0	B	0
C	23	C	0	C	0	C	0
D	45	D	0	D	0	D	0
E	20	E	0	E	0	E	0
F	24	F	0	F	0	F	0

W4IKS Table 14 Sheet 3
Date: Wednesday, July 25, 2012 Time: 09:52 AM
Intersection #125 HERMAN RD @ 108TH

(D+E+KEY1+KEY2)

KEY1 = 0		KEY1 = 1		KEY1 = 2		KEY1 = 3	
KEY2	CODE	KEY2	CODE	KEY2	CODE	KEY	CODE
0	0	0	0	0	0	0	0
1	0	1	0	1	0	1	0
2	0	2	0	2	0	2	0
3	0	3	0	3	0	3	0
4	0	4	0	4	0	4	0
5	0	5	0	5	0	5	0
6	0	6	0	6	0	6	0
7	0	7	0	7	0	7	0
8	0	8	0	8	0	8	0
9	0	9	0	9	0	9	0
A	0	A	0	A	0	A	0
B	0	B	0	B	0	B	0
C	0	C	0	C	0	C	0
D	0	D	0	D	0	D	0
E	0	E	0	E	0	E	0
F	0	F	0	F	0	F	0

W4IKS Table 14 Sheet 4
Date: Wednesday, July 25, 2012 Time: 09:52 AM
Intersection #125 HERMAN RD @ 108TH

(D+E+KEY1+KEY2)

KEY1 = 4		KEY1 = 5		KEY1 = 6		KEY1 = 7	
KEY2	CODE	KEY2	CODE	KEY2	CODE	KEY	CODE
0	0	0	0	0	0	0	0
1	0	1	0	1	0	1	0
2	0	2	0	2	0	2	0
3	0	3	0	3	0	3	0
4	0	4	0	4	0	4	0
5	0	5	0	5	0	5	0
6	0	6	0	6	0	6	0
7	0	7	0	7	0	7	0
8	0	8	0	8	0	8	0
9	0	9	0	9	0	9	0
A	0	A	0	A	0	A	0
B	0	B	0	B	0	B	0
C	0	C	0	C	0	C	0
D	0	D	0	D	0	D	0
E	0	E	0	E	0	E	0
F	0	F	0	F	0	F	0

W4IKS Table 14 Sheet 5
Date: Wednesday, July 25, 2012 Time: 09:52 AM
Intersection #125 HERMAN RD @ 108TH

(D+E+KEY1+KEY2)

KEY1 = 8		KEY1 = 9		KEY1 = A		KEY1 = B	
KEY2	CODE	KEY2	CODE	KEY2	CODE	KEY	CODE
0	0	0	0	0	0	0	0
1	0	1	0	1	0	1	0
2	0	2	0	2	0	2	0
3	0	3	0	3	0	3	0
4	0	4	0	4	0	4	0
5	0	5	0	5	0	5	0
6	0	6	0	6	0	6	0
7	0	7	0	7	0	7	0
8	0	8	0	8	0	8	0
9	0	9	0	9	0	9	0
A	0	A	0	A	0	A	0
B	0	B	0	B	0	B	0
C	0	C	0	C	0	C	0
D	0	D	0	D	0	D	0
E	0	E	0	E	0	E	0
F	0	F	0	F	0	F	0

W4IKS Table 14 Sheet 6
Date: Wednesday, July 25, 2012 Time: 09:52 AM
Intersection #125 HERMAN RD @ 108TH

(D+E+KEY1+KEY2)

KEY1 = C		KEY1 = D		KEY1 = E		KEY1 = F	
KEY2	CODE	KEY2	CODE	KEY2	CODE	KEY	CODE
0	0	0	0	0	0	0	0
1	0	1	0	1	0	1	0
2	0	2	0	2	0	2	0
3	0	3	0	3	0	3	0
4	0	4	0	4	0	4	0
5	0	5	0	5	0	5	0
6	0	6	0	6	0	6	0
7	0	7	0	7	0	7	0
8	0	8	0	8	0	8	0
9	0	9	0	9	0	9	0
A	0	A	0	A	0	A	0
B	0	B	0	B	0	B	0
C	0	C	0	C	0	C	0
D	0	D	0	D	0	D	0
E	0	E	0	E	0	E	0
F	0	F	0	F	0	F	0

W4IKS Table 15
Date: Wednesday, July 25, 2012 Time: 09:52 AM
Intersection #125 HERMAN RD @ 108TH

(D+B+3+KEY)

FUNCTION	KEY	VALUE
CB Output #1	0	0
CB Output #2	1	0
CB Output #3	2	0
CB Output #4	3	0
CB Output #5	4	0
CB Output #6	5	0
CB Output #7	6	0
CB Output #8	7	0
CB Flash Out #9	8	0
CB Flash Out #10	9	0
CB Flash Out #11	A	52
CB Flash Out #12	B	0

Page ID - 0

(D+B+7+KEY)

FUNCTION	KEY	VALUE
CB Output #1	0	0
CB Output #2	1	0
CB Output #3	2	0
CB Output #4	3	0
CB Output #5	4	0
CB Output #6	5	0
CB Output #7	6	0
CB Output #8	7	0
CB Flash Out #9	8	0
CB Flash Out #10	9	0
CB Flash Out #11	A	0
CB Flash Out #12	B	0

Page ID - 1

(D+B+B+KEY)

FUNCTION	KEY	VALUE
CB Output #1	0	0
CB Output #2	1	0
CB Output #3	2	0
CB Output #4	3	0
CB Output #5	4	0
CB Output #6	5	0
CB Output #7	6	0
CB Output #8	7	0
CB Flash Out #9	8	0
CB Flash Out #10	9	0
CB Flash Out #11	A	0
CB Flash Out #12	B	0

Page ID - 2

ENGLISH

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING/TRAFFIC ENGINEERING

LEGEND

CONTROLLERS

(C / 332) Install model 2070L controller in model 332 cabinet & control equipment with riser frame, orient louvered door as shown

POLES

(MA / L) Install (L=length) foot mast arm

(MPL / X) Install special (X = non-standard) traffic signal mast arm pole with luminaire pole extension (See, "Pole Entrance Chart)

(LA / L) Install (L=length) foot luminaire arm

(VP) Install vehicle signal pedestal with transformer base

(PP) Install pedestrian signal pedestal with frangible base

SIGNALS

(V / Ph) Install phase (Ph=phase) vehicle signal

(C/B / Ph) Install phase (Ph=phase) countdown pedestrian signal with clamshell mount and pushbutton with 'H' mount

SIGNS

(AL / 3) Install aluminum (30"x36", type "W7") "NO TURN ON RED" sign

(PR / 3) Install (30" x 36") "NO RIGHT TURN" part time restriction sign

(SNS / N) Install street name sign (N) on mast arm pole, use 12" 0.125mm flat blade aluminum blanks mounted to mast arm with stainless steel bands and hardware (Diamond Grade Sheeting).
1 = SW Herman Rd 4 = SW Teton Ave

LEGEND CONTINUED

CABINETS

(TC) Install terminal cabinet

(BMCL) Install base mounted service cabinet, 120/240 volt metered, for signal and signal pole mounted illumination systems

JUNCTION BOXES

(JB / 2) Install 22"x12"x12" (min. dimension) precast concrete junction box

(JB / 2A) Install 22"x12"x12" (min. dimension) precast concrete junction box with concrete apron

(JB / 3) Install 30"x17"x12" (min. dimension) precast concrete junction box

VIDEO DETECTION

(VDC / N) Install video camera (N), mounting bracket and post

(VDF / N) Install video camera feeder (N)

(VDZ / PH) Video detection zone for phase (PH).

WIRES

[N-C] Install (N=number) No. 8 type THWN (Signal system common)

[N-12C] Install (N=number) No. 12 type THWN (Pedestrian signal system common)

[N / G] Install (N=number) No. (G=AWG wire size) type THWN wires

[N G] Install (N=number) No. (G=AWG wire size) type XHHW wires

(Ph) Includes 3 spare wires for phase (Ph=phase) as per table

LEGEND CONTINUED

CONDUITS

(S) Install (S=size) inch electrical conduit

(IC) Interconnect conduit (See Interconnect Plan)

FIRE PREEMPTION

(FN / Ch) Install channel (Ch=channel), (N=number) barrel fire preemption detector unit

(FF / Ch) Install channel (Ch=channel) fire preemption detector feeder cable

MISCELLANEOUS

(PE / 1) Install photocontrol electronic relay on pole, as per T.M.S. Drg. No. TM465

(HPS) Install 200 watt high pressure sodium luminaire, type M-C-III, 120/240 dual voltage ballast

SIGNAL MOUNTING OPTIONS
B = Adjustable bracket assembly w/rain cap(s) (install 1" metallic chase nipple in lieu of tenon when required for wiring)
P = Side pole mount
T = Pole top mount

SIGNAL HEAD TYPES
2 = 12" R, 12" Y, 12" G
6L = 12" FLTA, 12" YLTA, 12" FYLTA, 12" GLTA

CAMERA MOUNTING OPTIONS
LA = Luminaire arm mount
MA = Mast arm mount

CONSTRUCTION NOTE:

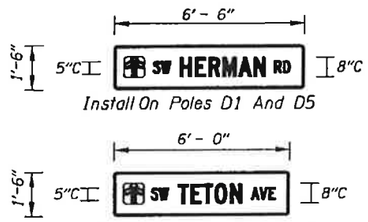
(1) Terminate phase 1 flashing yellow indication to phase 2 pedestrian yellow switchpack output. Terminate Conflict Monitor channel 9 (pin 13) wire to Output File terminal 114.

Terminate phase 3 flashing yellow indication to phase 4 pedestrian yellow switchpack output. Terminate Conflicting Monitor channel 10 (pin R) wire to Output File terminal 105.

Terminate phase 5 flashing yellow indication to phase 6 pedestrian yellow switchpack output. Terminate Conflict Monitor channel 11 (pin S) wire to Output File terminal 120.

Terminate phase 7 flashing yellow indication to phase 8 pedestrian yellow switchpack output. Terminate Conflicting Monitor channel 12 (pin V) wire to Output File terminal 111.

STREET NAME SIGNS



NOTES:
1. All signs shall be type "G2".
2. Contact Traffic Safety Supply Co. at (503)-235-8531 for size and layout information.

6L =



REGISTERED PROFESSIONAL ENGINEER
19283PE
OREGON
JULY 17, 1997
CHARLES W RADOSTA
8/27/98
EXPIRES 12/31/08

TUALATIN DEVELOPMENT COMMISSION

S.W. HERMAN RD. - S.W. 124TH AVE. TO S.W. TETON AVE.
WASHINGTON COUNTY

Reviewed By - C. Radosta
Designed By - C. Tiesler
Drafted By - J. Henriksen

SW HERMAN RD/SW TETON AVE
LEGEND SHEET

SHEET NO. TS-15

DATE *FILE* *TIME* *FILEABBREV* *USER*

ENGLISH

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING/TRAFFIC ENGINEERING

69+00

SW TETON AVENUE

SW HERMAN ROAD

P&W RR

POLE #D3 "HR" 69+91 35.0' LT

POLE #D4 "HR" 70+22 48.5' LT

POLE #D5 "HR" 70+75 36.5' LT

POLE #D6 "HR" 70+65 38.0' RT

POLE #D7 "HR" 70+55 41.0' RT

POLE #D2 "HR" 69+88 31.5' RT

POLE #D1 "HR" 39+58 72.3' RT

RAILROAD TO INSTALL RIGID CONDUITS FOR SIGNAL BENEATH TRACKS. CONNECT TO CONDUITS 15' EITHER SIDE OF CENTERLINE OF TRACKS.

RR CONTROLLER

ESMT

R/W

Scale In Feet 0 10 20 30

N

Revised	DATE	APPROVED	REVISION
1	11/21	CWR	Revised by Addendum #1

REGISTERED PROFESSIONAL ENGINEER
19283PE
OREGON
JULY 17, 1997
CHARLES W RADOSTA
11/21/08
EXPIRES 12/31/08

TUALATIN DEVELOPMENT COMMISSION

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WASHINGTON COUNTY

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Drafted By - J. Henriksen

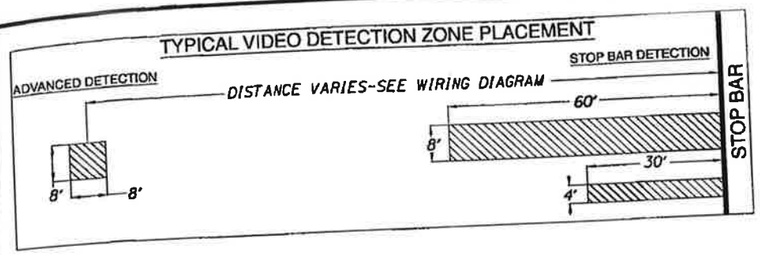
SW HERMAN RD/SW TETON AVE SIGNAL PLAN

SHEET NO. TS-16

ENGLISH

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING/TRAFFIC ENGINEERING

TYPICAL VIDEO DETECTION ZONE PLACEMENT



VIDEO DETECTION WIRING DIAGRAM

CAMERA	DETECTION ZONE	DISTANCE (FEET)
1	1	320
2	2	160
2	3	
2	4	
3	5	220
3	6	110
3	7	
3	8	
4	9	320
5	10	180
5	11	
5	12	
6	13	220
6	14	110
6	15	
6	16	

PHASE	SLOT
2	I2U
2	I2L
2	I3U
5	J1
4	I6U
4	I6L
4	I7U
7	J5
8	J2U
8	J2L
1	J3U
1	J1
8	J6U
8	J6L
3	J7U
3	I5

N DETECTION ZONE

DESIGN APPROACH SPEEDS

STREET	APPROACH	OPERATING SPEED
HERMAN RD	EASTBOUND	45 M.P.H.
	WESTBOUND	45 M.P.H.
TETON AVE	NORTHBOUND	35 M.P.H.
	SOUTHBOUND	35 M.P.H.

'HR' 68+00

'HR' 69+00

'HR' 70+00

SW TETON AVENUE

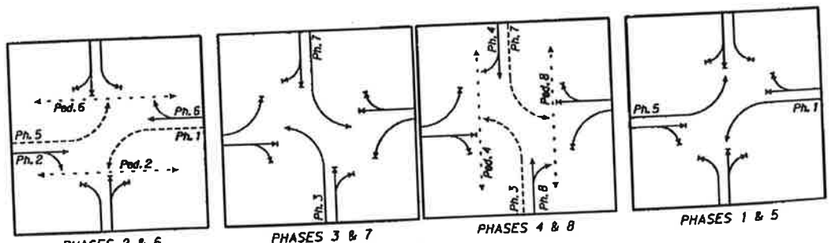
END Sta. 'HR' 70+87.50

SW HERMAN ROAD

P&W RR

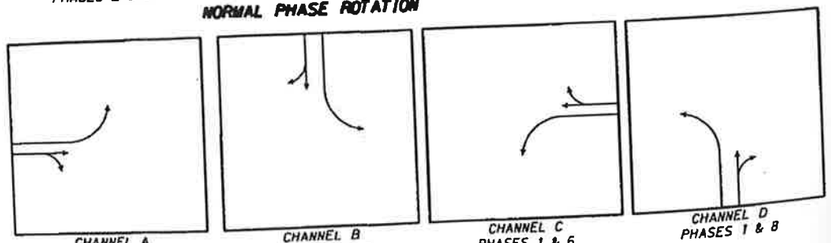
320

160



PHASES 2 & 6 | PHASES 3 & 7 | PHASES 4 & 8 | PHASES 1 & 5

NORMAL PHASE ROTATION



CHANNEL A PHASES 2 & 5 | CHANNEL B PHASES 4 & 7 | CHANNEL C PHASES 1 & 6 | CHANNEL D PHASES 1 & 8

FIRE PREEMPTION DIAGRAM

0 20 40 60
Scale in Feet

REGISTERED PROFESSIONAL ENGINEER
19283PE
OREGON
JULY 17, 1997
CHARLES W RADOSTA
EXPIRES 12/31/08
6/27/08

TUALATIN DEVELOPMENT COMMISSION

S.W. HERMAN RD. - S.W. 124TH AVE. TO S.W. TETON AVE.

WASHINGTON COUNTY

Reviewed By - C. Radosta
Designed By - C. Tiesler
Drafted By - J. Henriksen

SW HERMAN RD/SW TETON AVE DETECTOR PLAN

SHEET NO. TS-17

DATE *FILE* *TIME* *FILEABBREV* *USER*

ENGLISH

RETURN TO NORMAL PHASE ROTATION AFTER PREEMPTION

SIGNAL INDICATION ACTIVE WHEN PED INHIBIT IS INITIATED

Ph. No.	NORMAL PHASE ROTATION									
2	G	G	Y	R	R	R	R	R	R	R
6	G	G	Y	R	R	R	R	R	R	R
3	R	R	R	G	Y	FY	FY	Y	R	R
7	R	R	R	G	Y	FY	FY	Y	R	R
4	R	R	R	R	R	G	G	Y	R	R
8	R	R	R	R	R	G	G	Y	R	R
1	FY	FY	Y	R	R	R	R	R	G	Y
5	FY	FY	Y	R	R	R	R	R	G	Y
Ped. 2+6	W	FDW	DW	DW	DW	DW	DW	DW	DW	DW
Ped. 4+8	DW	DW	DW	DW	DW	W	FDW	DW	DW	DW
PTR	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

SIGNAL INDICATION ACTIVE WHEN RAILROAD PREEMPTION INITIATED

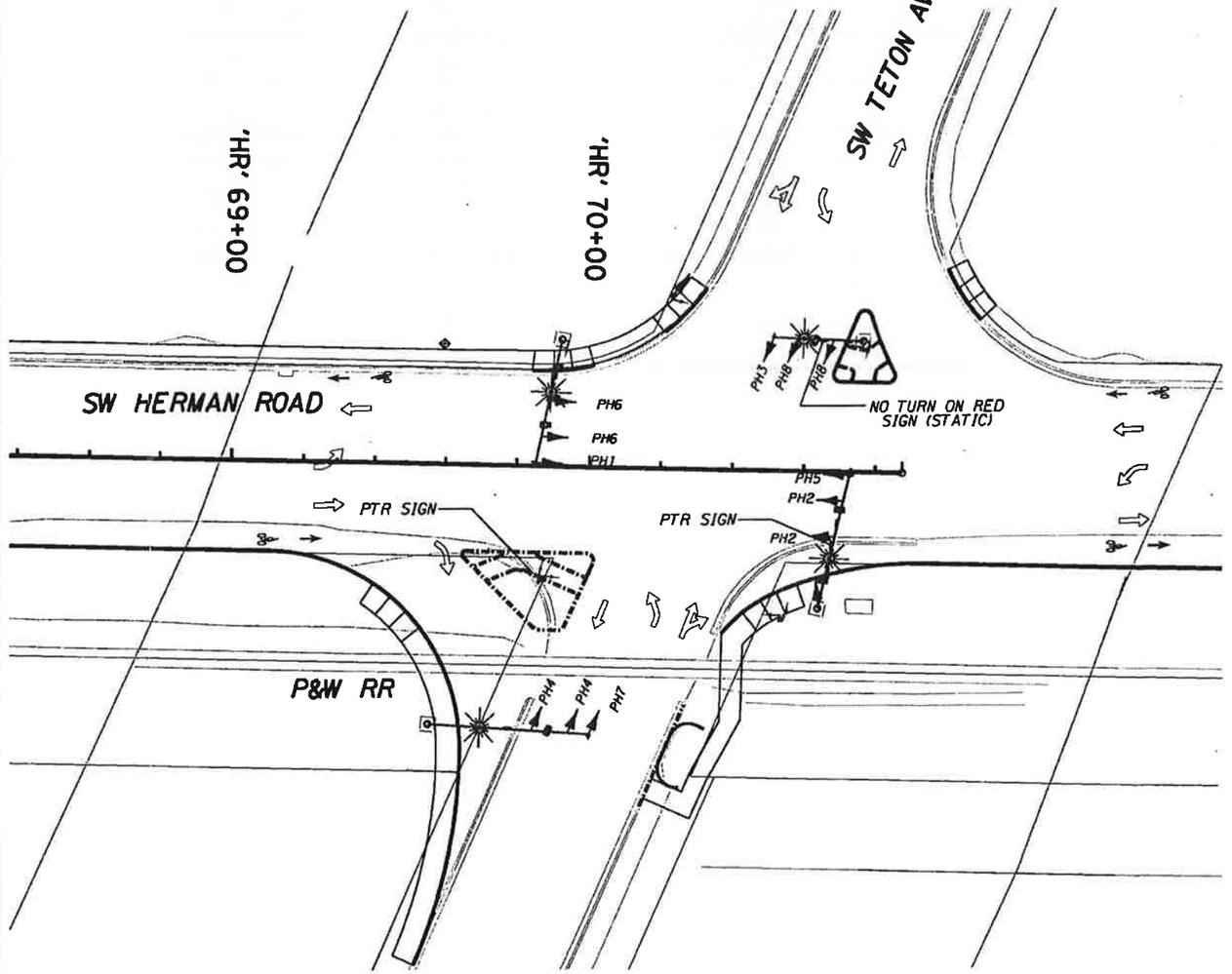
Ph. No.									
2	G	Y	R	R	R	R	R	R	R
6	G	Y	R	R	R	R	R	R	R
3	R	R	G	Y	FY	Y	R	R	
7	R	R	G	Y	FY	Y	R	R	
4	R	R	R	R	G	Y	R	R	
8	R	R	R	R	G	Y	R	R	
1	FY	Y	R	R	R	R	G	Y	
5	FY	Y	R	R	R	R	G	Y	
Ped. 2+6	FDW	DW	DW	DW	DW	DW	DW	DW	DW
Ped. 4+8	DW	DW	DW	DW	FDW	DW	DW	DW	
PTR	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

SERVE ALL NON-CONFLICTING PHASES (PHASES 2,5,6,&7), ALL FLASHING YELLOW ARROWS INHIBITED

2	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
6	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
3	R	G	Y	G	G	Y	Y	R	G	Y	R	G	Y	R	G	Y	R	G	Y	R	G	Y	R	G	Y
7	R	R	R	Y	R	R	Y	R	R	Y	R	R	Y	R	R	R	R	R	R	R	R	R	R	R	R
4	R	R	R	R	R	R	R	R	R	R	R	R	G	G	Y	R	R	R	R	R	R	R	R	R	R
8	R	G	Y	R	G	Y	R	R	G	Y	R	G	Y	R	G	Y	R	G	Y	R	G	Y	R	G	Y
1	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
5	Y	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Ped. 2+6	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW
Ped. 4+8	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW	DW
PTR	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON	ON

8 PHASE

RAILROAD PREEMPTION MATRIX



P.C.O.I. Time Required: 14 Seconds

0 20 40 60
Scale In Feet

N

KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING/TRAFFIC ENGINEERING

REGISTERED PROFESSIONAL ENGINEER
19283PE
OREGON
JULY 17, 1997
CHARLES W RADOSTA
EXPIRES 12/31/08
8/27/08

TUALATIN DEVELOPMENT COMMISSION

S.W. HERMAN RD. - S.W. 124TH AVE. TO S.W. TETON AVE.

WASHINGTON COUNTY

Reviewed By - C. Radosta
Designed By - C. Tiesler
Drafted By - J. Henriksen

SW HERMAN RD/SW TETON AVE RAILROAD PREEMPTION PLAN

SHEET NO. TS-18

ENGLISH

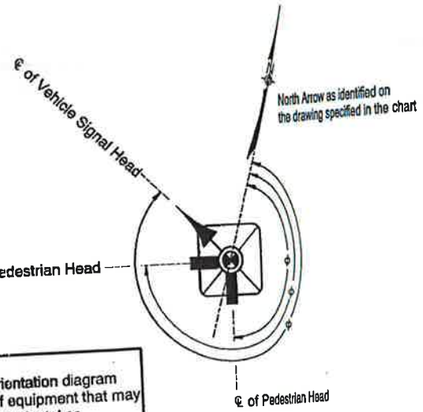
KITTELSON & ASSOCIATES, INC.
TRANSPORTATION PLANNING/TRAFFIC ENGINEERING

POLE ENTRANCE CHART

EQUIPMENT ON POLE					EQUIPMENT ON MAST ARM (Length in Feet and Equipment Type)									LUMINAIRES					
																		FIXTURE	
PED. SIGNAL DEG.	TERM. CABINET DEG.	SIGN DEG.	TRAFFIC SIGNAL DEG.	PHOTO ELECTRIC CELL	ARM LENGTH	D1	D2	D3	D4	D5	D6	D7	D8	ARM LENGTH	ARM DEG.	MOUNTING HEIGHT	TYPE	TYPE	WATTAGE
	180				45	0.5 / V6L	0.5 / F	8.0 / V2	11.0 / C	16.0 / V2	22.5 / ST	———	———	15	0	35	HPS	M-C-III	200
						———	———	———	———	———	———	———	———						
250 & 340		250			35	0.5 / V6L	0.5 / F	8.0 / V2	11.0 / C	18.0 / V2	25.0 / ST	27.5 / C	———	15	0	35	HPS	M-C-III	200
270	180			180		———	———	———	———	———	———	———	———						
180			0		25	0.5 / V6L	0.5 / F	7.0 / V2	12.0 / C	14.0 / SA	17.0 / V2	21.0 / ST	———	15	0	35	HPS	M-C-III	200
195 & 285	180				40	0.5 / F	2.0 / V6L	9.0 / V2	12.0 / C	16.0 / ST	19.0 / V2	22.0 / PR	32.0 / C	15	0	35	HPS	M-C-III	200
-	180		345			———	———	———	———	———	———	———	———						
90 & 345																			

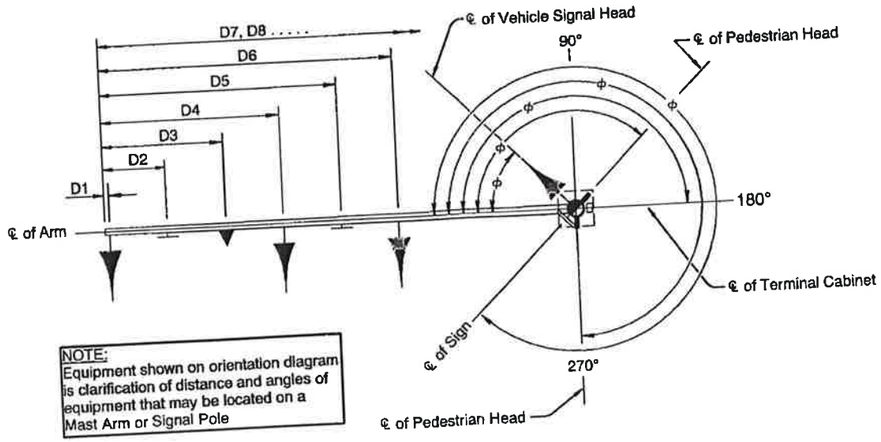
djustable Bracket Mount Tenon Not Required (See Std. Dwg. TM462)
Adjustable Bracket Mount Tenon Not Required (See Std. Dwg. TM462)
m w/Adjustable Bracket Mount Tenon Not Required (See Std Dwg TM465)
minum w/Stainless Steel Bands

. Dwg. TM465)
I.S. Dwg. 00000)
Sign (see Std. Dwg. TM465)



NOTE:
Equipment shown on the orientation diagram is a clarification of angles of equipment that may be located on a Pedestrian Pedestal or Vehicle Pedestal

PEDESTRIAN PEDESTAL / VEHICLE PEDESTAL ORIENTATION DIAGRAM



NOTE:
Equipment shown on orientation diagram is clarification of distance and angles of equipment that may be located on a Mast Arm or Signal Pole

MAST ARM POLE ORIENTATION DIAGRAM

REGISTERED PROFESSIONAL ENGINEER
19283PE
OREGON
JULY 17, 1997
CHARLES W RADOSTA
6/27/08
EXPIRES 12/31/08

TUALATIN DEVELOPMENT COMMISSION

S.W. HERMAN RD. - S.W. 124TH AVE. TO S.W. TETON AVE.

WASHINGTON COUNTY

Reviewed By - C. Radosta
Designed By - C. Tiesler
Drafted By - J. Henriksen

SW HERMAN RD/SW TETON AVE SIGNAL PLAN DETAILS

SHEET NO. TS-19

$TIME$ $FILEABBREV$ $USER$

WASHI

Wednesday, October 02, 2013 15:53

Intersection Name	*6 - Herman_Teton*	**Local ID**	*6*
Intersection Telephone Number			
System Name	*102 - City of Tualatin*	**System ID**	*102*
Controller Type	*Voyage - C1-C11*		
Controller Serial Number		**Installation Date**	
Programmed by		**Programmed Date**	

Graphic Map Background	**Phase Rotation Diagram**

Control Data (next/2/2)

Controller Function and Timing (next/2/1, next/2/2)

Security, Sequence, Initialization

Security Code	****	0 = disabled, or 1000-9999
Sequence	*7*	0 = sequential, 1 = quad left turn, 2-6 = special A-E, 7 = lead lag

Lead Lag (next/2/2/3)			
Phases 1 - 2	**Phases 3 - 4**	**Phases 5 - 6**	**Phases 7 - 8**
0	*0*	*0*	*0*
0 = no reversal, 1 = reversal, 2 = by coord plan or clock			

Initialization and Flash (next/2/2/5)

	Initialization	**Flash Entry**	**Flash Exit**	
Ring 1 Phase	*1*	*0*	*1*	phase 1-8
Ring 2 Phase	*5*	*0*	*5*	phase 1-8
Interval	*0*	*0*	*0*	0 = red, 1 = yellow, 2 = green

Power up Flash	*0.0*	0.0 - 25.5 seconds		**First All Red**	*6.0*	0.0 - 25.5 seconds

Soft Flash (next/2/2/5)

Phase	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	0 = dark, 1=flash yel WIG, 2 = flash yel WAG, 3 = flash red WIG, 4 = flash red WAG				
	3	*4*	*3*	*4*	*3*	*4*	*3*	*4*					
Overlap	**A**	**B**	**C**	**D**	**E**	**F**	**G**	**H**	**I**	**J**	**K**	**L**	
	3	*4*	*3*	*4*	*3*	*4*	*3*	*4*	*3*	*4*	*3*	*4*	same as phase
Internal Logic Output	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	
	0	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 = normal, 1 = dark, 2 = flash WIG

Per Phase Functions (next/2/2/3, next/2/2/1)

	1	2	3	4	5	6	7	8	
Phases Used	X	X	X	X	X	X	X	X	X = on
Restricted Phases									X = on (Sequence 2, 6, 7 only)
Exclusive Phases									X = on (Sequence 7 only)
Yellow Lock									
Min Recall		X				X			
Max Recall									
Ped Recall									
Red Lock									
Max Out Recall Inhibit	X		X	X	X		X	X	X = on
Soft Recall									
Free Walk Rest									
Conditional Ped									
Disable Inhibit Max Termination									
Call to Non Act 1									
Call to Non Act 2									

Dual Entry (next/2/2/9/3)

Mode	1	0 = off, 1 = on, 2 = Not Used, 3 = by coord plan, 4 = by time clock circuit 61

Dual Entry Phase -->	1	2	3	4	5	6	7	8	
Phase	0	0	0	8	0	0	0	4	0 = none, 1-8 = phase 1-8

Conditional Service, Five Section Head

Conditional Service (next/2/2/9/3)

	Mode	CS Max Time
Phase 1	0	0
Phase 3	0	0
Phase 5	0	0
Phase 7	0	0

0 = off, 1 = C.S.On. 2 = C.S. on by TOD circuit 57, 3 = N/A, 4 = C.S. and C.R. On, 5 = C.R. on by TOD circuit 57.

5 Section Head Logic (next/2/2/9/4)

X Omits Y		Anti-Trap			Yellow Blanking LT	
		Trap Protected Phase		Next Phase	Phase	
X : Y						
6 : 1	0	1		< (5)	1	
8 : 3	0	3		< (7)	3	
2 : 5	0	5		< (1)	5	
4 : 7	0	7		< (3)	7	
0=off, 1=side call, 2=no side call		X = On				

Phase Times (next/2/2/2, next/2/2/9/5)									
	1	2	3	4	5	6	7	8	
Movement									
Minimum Green	5	10	5	10	5	10	5	10	0 - 255 sec
Passage	2.0	3.2	2.0	3.2	2.0	3.2	2.0	3.2	0.0 - 25.5 sec
Yellow	3.0	4.5	3.0	4.0	3.0	4.5	3.0	4.0	0.0 - 25.5 sec
Red Clearance	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	0.0 - 25.5 sec or 0 - 255 sec
Max 1	20	40	20	40	20	40	20	40	0 - 255 sec
Max 2	20	40	20	40	20	40	20	40	0 - 255 sec
Walk	0	5	0	5	0	5	0	5	0 - 255 sec
Ped Clear	0	8	0	9	0	7	0	12	0 - 255 sec
Seconds Per Actuation	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 25.5 sec
Time Before Reduction	0	0	0	0	0	0	0	0	0 - 255 sec
Time to Reduce	0	0	0	0	0	0	0	0	0 - 255 sec
Minimum Gap	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 25.5 sec
Max Variable Initial	0	0	0	0	0	0	0	0	0 - 255 sec
Auto Max Adjust	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 25.5 sec
Auto Max Limit	0	0	0	0	0	0	0	0	0 - 255 sec
Inhibit Min Yellow									X = On
Red Decimal Off									X = On
Advance Walk	0	0	0	0	0	0	0	0	0 - 255 sec
Other Controller Functions (next/2/2/9)									
Phase -->	1	2	3	4	5	6	7	8	
Inhibit Simultaneous Gap Out	X		X		X		X		X = On
Last Car Passage	2	0 = recall phase, 1 = last car passage, 2 = NOT recall - Not last car passage							
Red Revert (+2 seconds)	3.0	0 - 25.5 sec							
Auto Ped Clear		X = On							
Flashing Don't Walk Into Yellow		X = On							
Soft Recall / Red Rest Delay	0.0	0 - 25.5 sec							
Ped Pushbutton	0	0 - 5 sec, 0 = disable							
Advance Flash Rate	0	0 = disable, 1 = 120 FPM							
Change Sequence		X = On (After a download with a power on - off cycle)							
Phase -->	1	2	3	4	5	6	7	8	
Red Clear Extension Detector	0	0	0	0	0	0	0	0	0 = none 1 - 32 = detector 1 - 32
Red Clear Extension Red Time	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0 - 25.5 sec.

Local Detectors (next/2/2/4)

Detector Data

	Yellow Lock	Detector Inhibit	Call Phase	Extend Phase	Switch Phase	Delay Time	Stretch / Disconnect Time	Delay or Disconnect Mode
Detector 1 - I1			*1*	*1*	*0*	*0*	*0.0*	*0*
Detector 2 - I9U			*1*	*1*	*0*	*0*	*0.0*	*0*
Detector 3 - I5			*3*	*3*	*0*	*0*	*0.0*	*0*
Detector 4 - I9L			*3*	*3*	*0*	*0*	*0.0*	*0*
Detector 5 - J1			*5*	*5*	*0*	*0*	*0.0*	*0*
Detector 6 - J9U			*5*	*5*	*0*	*0*	*0.0*	*0*
Detector 7 - J5			*7*	*7*	*0*	*0*	*0.0*	*0*
Detector 8 - J9L			*7*	*7*	*0*	*0*	*0.0*	*0*
Detector 9 - I2U			*2*	*2*	*0*	*0*	*0.0*	*0*
Detector 10 - I2L			*2*	*2*	*0*	*0*	*0.0*	*0*
Detector 11 - I3U			*2*	*2*	*0*	*0*	*0.0*	*0*
Detector 12 - I3L			*0*	*2*	*0*	*0*	*0.0*	*0*
Detector 13 - I4			*2*	*0*	*0*	*0*	*0.0*	*0*
Detector 14 - I6U			*4*	*4*	*0*	*5*	*0.0*	*0*
Detector 15 - I6L			*4*	*4*	*0*	*0*	*0.0*	*0*
Detector 16 - I7U			*4*	*4*	*0*	*0*	*0.0*	*0*
Detector 17 - I7L			*0*	*4*	*0*	*0*	*0.0*	*0*
Detector 18 - I8			*4*	*0*	*0*	*0*	*0.0*	*0*
Detector 19 - J2U			*6*	*6*	*0*	*0*	*0.0*	*0*
Detector 20 - J2L			*6*	*6*	*0*	*0*	*0.0*	*0*
Detector 21 - J3U			*6*	*6*	*0*	*0*	*0.0*	*0*
Detector 22 - J3L			*0*	*6*	*0*	*0*	*0.0*	*0*
Detector 23 - J4			*6*	*0*	*0*	*0*	*0.0*	*0*
Detector 24 - J6U			*8*	*8*	*0*	*5*	*0.0*	*0*
Detector 25 - J6L			*8*	*8*	*0*	*0*	*0.0*	*0*
Detector 26 - J7U			*8*	*8*	*0*	*0*	*0.0*	*0*
Detector 27 - J7L			*0*	*8*	*0*	*0*	*0.0*	*0*
Detector 28 - J8			*8*	*0*	*0*	*0*	*0.0*	*0*
Detector 29 -			*0*	*0*	*0*	*0*	*0.0*	*0*
Detector 30 -			*0*	*0*	*0*	*0*	*0.0*	*0*
Detector 31 -			*0*	*0*	*0*	*0*	*0.0*	*0*
Detector 32 -			*0*	*0*	*0*	*0*	*0.0*	*0*

yellow lock, detector inhibit, - X = On; call, extend, phase - 0 = none 1 - 8 = phase 1 - 8 ; delay time - 0 - 255 sec
stretch / disconnect time - 0.0 - 25.5 sec.; delay or disconnect Mode - 0 -13

Detector Plans (next/2/2/4/5)

	Loop Number									
	Plan Detectors	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 - 32, 0 = none, 1 -3 2 = detectors 1 - 32
Detector Plan 1	**Call Phase**									0 - 8, 0 = none, 1 - 8 = phase 1 - 8
	Extend Phase	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
	Switch Phase	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
	Delay Time	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 - 255 sec
	Stretch/Disconnect Time	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	0.0 - 25.5 sec
	Delay/ Disconnect Mode	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 - 13
Detector Plan 2	**Call Phase**									0 - 8, 0 = none, 1 - 8 = phase 1 - 8
	Extend Phase	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
	Switch Phase	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
	Delay Time	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 - 255 sec
	Stretch/Disconnect Time	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	0.0 - 25.5 sec
	Delay/ Disconnect Mode	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 - 13
Detector Plan 3	**Call Phase**									0 - 8, 0 = none, 1 - 8 = phase 1 - 8
	Extend Phase	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
	Switch Phase	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
	Delay Time	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 - 255 sec
	Stretch/Disconnect Time	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	0.0 - 25.5 sec
	Delay/ Disconnect Mode	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 - 13

Detector Fail Monitor (next/2/2/4/3)					Detectors 33-64 (next/2/2/4/6)		
	Fail Monitor Enable	Recall Phase	Min Counts	Max Counts		Call Phase	Extend Phase
Detector 1 - I1		*0*	*0*	*0*	Detector 33 -	0	0
Detector 2 - I9U		*0*	*0*	*0*	Detector 34 -	0	0
Detector 3 - I5		*0*	*0*	*0*	Detector 35 -	0	0
Detector 4 - I9L		*0*	*0*	*0*	Detector 36 -	0	0
Detector 5 - J1		*0*	*0*	*0*	Detector 37 -	0	0
Detector 6 - J9U		*0*	*0*	*0*	Detector 38 -	0	0
Detector 7 - J5		*0*	*0*	*0*	Detector 39 -	0	0
Detector 8 - J9L		*0*	*0*	*0*	Detector 40 -	0	0
Detector 9 - I2U		*0*	*0*	*0*	Detector 41 -	0	0
Detector 10 - I2L		*0*	*0*	*0*	Detector 42 -	0	0
Detector 11 - I3U		*0*	*0*	*0*	Detector 43 -	0	0
Detector 12 - I3L		*0*	*0*	*0*	Detector 44 -	0	0
Detector 13 - I4		*0*	*0*	*0*	Detector 45 -	0	0
Detector 14 - I6U		*0*	*0*	*0*	Detector 46 -	0	0
Detector 15 - I6L		*0*	*0*	*0*	Detector 47 -	0	0
Detector 16 - I7U		*0*	*0*	*0*	Detector 48 -	0	0
Detector 17 - I7L		*0*	*0*	*0*	Detector 49 -	0	0
Detector 18 - I8		*0*	*0*	*0*	Detector 50 -	0	0
Detector 19 - J2U		*0*	*0*	*0*	Detector 51 -	0	0
Detector 20 - J2L		*0*	*0*	*0*	Detector 52 -	0	0
Detector 21 - J3U		*0*	*0*	*0*	Detector 53 -	0	0
Detector 22 - J3L		*0*	*0*	*0*	Detector 54 -	0	0
Detector 23 - J4		*0*	*0*	*0*	Detector 55 -	0	0
Detector 24 - J6U		*0*	*0*	*0*	Detector 56 -	0	0
Detector 25 - J6L		*0*	*0*	*0*	Detector 57 -	0	0
Detector 26 - J7U		*0*	*0*	*0*	Detector 58 -	0	0
Detector 27 - J7L		*0*	*0*	*0*	Detector 59 -	0	0
Detector 28 - J8		*0*	*0*	*0*	Detector 60 -	0	0
Detector 29 -		*0*	*0*	*0*	Detector 61 -	0	0
Detector 30 -		*0*	*0*	*0*	Detector 62 -	0	0
Detector 31 -		*0*	*0*	*0*	Detector 63 -	0	0
Detector 32 -		*0*	*0*	*0*	Detector 64 -	0	0
fail monitor enable - X = On, recall phase - 0 = none 1 - 8 = phase 1 - 8, min, max					call / extend phase - 0 = none 1 - 8 = phase 1 - 8		

Detector Fail Sample Period (all detectors)	*0*	0 - 255 minutes

Video Fail Inputs (next/2/2/4/3) -->	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	
Phase Recalled	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 = none, 1 - 8 = phase 1 - 8

System Detectors (next/2/2/4/4)

System Detectors -->	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	
Local Detector	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 = none, 1 - 32 = phase 1 - 32

Overlaps / FYLTA (next/2/2/8)

Vehicle Overlaps		Phase or Movement	Phases 1	2	3	4	5	6	7	8	Extension Green	Clearance Yellow	Red
Overlaps	A		0	0	0	0	0	0	0	0	0.0	0.0	0.0
	B		0	0	0	0	0	0	0	0	0.0	0.0	0.0
	C		0	0	0	0	0	0	0	0	0.0	0.0	0.0
	D		0	0	0	0	0	0	0	0	0.0	0.0	0.0
	E		0	0	0	0	0	0	0	0	0.0	0.0	0.0
	F		0	0	0	0	0	0	0	0	0.0	0.0	0.0
	G		0	0	0	0	0	0	0	0	0.0	0.0	0.0
	H		0	0	0	0	0	0	0	0	0.0	0.0	0.0
	I		0	0	0	0	0	0	0	0	0.0	0.0	0.0
	J		0	0	0	0	0	0	0	0	0.0	0.0	0.0
	K		0	0	0	0	0	0	0	0	0.0	0.0	0.0
	L		0	0	0	0	0	0	0	0	0.0	0.0	0.0

A - D
0 = none
1 = overlap
2 = 60 FPM
3 = Not ped
4=Comp. Ph.
5=Prevent. Ext.
6=Not Veh.
7=Adv. FF

E - L
0 = no Overlap
1 = Overlap

Green,Yellow Red

Not Ped - Ped Overlaps (next/2/2/8/5)

Ped Overlaps ->		A	B	C	D	E	F	G	H
Overlaps	A								
	B								
	C								
	D								

X = Nor Ped Ped Overlap

Advance Warning (next/2/2/8/3)

	E	F	G	H	I	J	K	L	
Enable	0	0	0	0	0	0	0	0	0 = disabled, 1 = enabled
1st Conditional Overlap	0	0	0	0	0	0	0	0	0 = none, 1 - overlap E, 2 = overlap F, etc.
2nd Conditional Overlap	0	0	0	0	0	0	0	0	
Advance Deactivation Delay	0	0	0	0	0	0	0	0	0 - 99 seconds

Ped Overlaps (next/2/2/8/5)

Phase -->		1	2	3	4	5	6	7	8	Walk	Ped Clear	Ped Recall
Ped Overlap	A									0	0	
	B									0	0	
	C									0	0	
	D									0	0	
	E									0	0	
	F									0	0	
	G									0	0	
	H									0	0	

Phase, Ped Recall: X = on

Walk, Ped Clear: 0 - 255 seconds

Flashing Yellow Left Turn Arrow (FYLTA) (next/2/2/8/6)

Phase Pairs -->	1 - 2	3 - 4	5 - 6	7 - 8	
Enable	4	4	4	4	0 = off, 3 = 3 outputs, 4 = 4 outputs, 5 = 5 outputs
Even Omits Odd	1	1	1	1	0 = off, 1 = on, 2 = on, place call across barrier
Detector Switch Odd / Even	X	X	X	X	X = on, odd phase must be omitted
Red Transition	3.0	3.0	3.0	3.0	0.0 or 2.0 - 25.5 sec
Red Extension	3.0	3.0	3.0	3.0	0.0 - 25.5 sec
Return to GLTA	0	0	0	0	0 = off, 1 = max out, 2 = yellow lock

Flashing Yellow Left Turn Arrow (FYLTA) - Continued on last page

Service Plans (next/2/2/6)

		1	2	3	4	5	6	7	8	
	Phase -->	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	
Service Plan 1	**Call Mode**	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
	0 = actuated, 1 = omit, 2 = CNA, 3 = min recall, 4 = max recall, 5 = soft recall, 6 = ped recall, 7 = omit ped, 8 = red rest									
	Minimum Green	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 - 255 sec.
	Passage	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	0.0 - 25.5 sec.
	Yellow	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	0.0 - 25.5 or 3.0 - 25.5
	Red	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	0.0 - 25.5 sec.
	Walk	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 - 255 sec.
	Pedestrian Clearance	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 - 255 sec.
	Phase -->	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	
Service Plan 2	**Call Mode**	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
	0 = actuated, 1 = omit, 2 = CNA, 3 = min recall, 4 = max recall, 5 = soft recall, 6 = ped recall, 7 = omit ped, 8 = red rest									
	Minimum Green	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 - 255 sec.
	Passage	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	0.0 - 25.5 sec.
	Yellow	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	0.0 - 25.5 or 3.0 - 25.5
	Red	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	0.0 - 25.5 sec.
	Walk	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 - 255 sec.
	Pedestrian Clearance	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 - 255 sec.
	Phase -->	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	
Service Plan 3	**Call Mode**	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
	0 = actuated, 1 = omit, 2 = CNA, 3 = min recall, 4 = max recall, 5 = soft recall, 6 = ped recall, 7 = omit ped, 8 = red rest									
	Minimum Green	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 - 255 sec.
	Passage	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	0.0 - 25.5 sec.
	Yellow	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	0.0 - 25.5 or 3.0 - 25.5
	Red	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	0.0 - 25.5 sec.
	Walk	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 - 255 sec.
	Pedestrian Clearance	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 - 255 sec.
	Phase -->	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	
Service Plan 4	**Call Mode**	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
	0 = actuated, 1 = omit, 2 = CNA, 3 = min recall, 4 = max recall, 5 = soft recall, 6 = ped recall, 7 = omit ped, 8 = red rest									
	Minimum Green	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 - 255 sec.
	Passage	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	0.0 - 25.5 sec.
	Yellow	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	0.0 - 25.5 or 3.0 - 25.5
	Red	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	0.0 - 25.5 sec.
	Walk	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 - 255 sec.
	Pedestrian Clearance	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 - 255 sec.
	Phase -->	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	
Service Plan 5	**Call Mode**	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
	0 = actuated, 1 = omit, 2 = CNA, 3 = min recall, 4 = max recall, 5 = soft recall, 6 = ped recall, 7 = omit ped, 8 = red rest									
	Minimum Green	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 - 255 sec.
	Passage	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	0.0 - 25.5 sec.
	Yellow	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	0.0 - 25.5 or 3.0 - 25.5
	Red	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	0.0 - 25.5 sec.
	Walk	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 - 255 sec.
	Pedestrian Clearance	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 - 255 sec.
	Phase -->	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	
Service Plan 6	**Call Mode**	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
	0 = actuated, 1 = omit, 2 = CNA, 3 = min recall, 4 = max recall, 5 = soft recall, 6 = ped recall, 7 = omit ped, 8 = red rest									
	Minimum Green	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 - 255 sec.
	Passage	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	0.0 - 25.5 sec.
	Yellow	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	0.0 - 25.5 or 3.0 - 25.5
	Red	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	0.0 - 25.5 sec.
	Walk	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 - 255 sec.
	Pedestrian Clearance	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 - 255 sec.

Service Plans Cont.

	Phase -->	1	2	3	4	5	6	7	8	
Service Plan 7	Call Mode	0	0	0	0	0	0	0	0	
	0 = actuated, 1 = omit, 2 = CNA, 3 = min recall, 4 = max recall, 5 = soft recall, 6 = ped recall, 7 = omit ped, 8 = red rest									
	Minimum Green	0	0	0	0	0	0	0	0	0 - 255 sec.
	Passage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 25.5 sec.
	Yellow	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 25.5 or 3.0 - 25.5
	Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 25.5 sec.
	Walk	0	0	0	0	0	0	0	0	0 - 255 sec.
	Pedestrian Clearance	0	0	0	0	0	0	0	0	0 - 255 sec.

	Phase -->	1	2	3	4	5	6	7	8	
Service Plan 8	Call Mode	0	0	0	0	0	0	0	0	
	0 = actuated, 1 = omit, 2 = CNA, 3 = min recall, 4 = max recall, 5 = soft recall, 6 = ped recall, 7 = omit ped, 8 = red rest									
	Minimum Green	0	0	0	0	0	0	0	0	0 - 255 sec.
	Passage	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 25.5 sec.
	Yellow	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 25.5 or 3.0 - 25.5
	Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 25.5 sec.
	Walk	0	0	0	0	0	0	0	0	0 - 255 sec.
	Pedestrian Clearance	0	0	0	0	0	0	0	0	0 - 255 sec.

Max Plans (next/2/2/7)

	Phase -->	1	2	3	4	5	6	7	8	
Max Plan 1	Normal Max	0	0	0	0	0	0	0	0	0 - 255 sec
	Fail Max	0	0	0	0	0	0	0	0	
	Auto Max Adjust	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0 - 25.5 sec
	Auto Max Limit	0	0	0	0	0	0	0	0	0 - 255 sec
Max Plan 2	Normal Max	0	0	0	0	0	0	0	0	0 - 255 sec
	Fail Max	0	0	0	0	0	0	0	0	
	Auto Max Adjust	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0 - 25.5 sec
	Auto Max Limit	0	0	0	0	0	0	0	0	0 - 255 sec
Max Plan 3	Normal Max	0	0	0	0	0	0	0	0	0 - 255 sec
	Fail Max	0	0	0	0	0	0	0	0	
	Auto Max Adjust	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0 - 25.5 sec
	Auto Max Limit	0	0	0	0	0	0	0	0	0 - 255 sec
Max Plan 4	Normal Max	0	0	0	0	0	0	0	0	0 - 255 sec
	Fail Max	0	0	0	0	0	0	0	0	
	Auto Max Adjust	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0 - 25.5 sec
	Auto Max Limit	0	0	0	0	0	0	0	0	0 - 255 sec
Max Plan 5	Normal Max	0	0	0	0	0	0	0	0	0 - 255 sec
	Fail Max	0	0	0	0	0	0	0	0	
	Auto Max Adjust	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0 - 25.5 sec
	Auto Max Limit	0	0	0	0	0	0	0	0	0 - 255 sec
Max Plan 6	Normal Max	0	0	0	0	0	0	0	0	0 - 255 sec
	Fail Max	0	0	0	0	0	0	0	0	
	Auto Max Adjust	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0 - 25.5 sec
	Auto Max Limit	0	0	0	0	0	0	0	0	0 - 255 sec
Max Plan 7	Normal Max	0	0	0	0	0	0	0	0	0 - 255 sec
	Fail Max	0	0	0	0	0	0	0	0	
	Auto Max Adjust	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0 - 25.5 sec
	Auto Max Limit	0	0	0	0	0	0	0	0	0 - 255 sec
Max Plan 8	Normal Max	0	0	0	0	0	0	0	0	0 - 255 sec
	Fail Max	0	0	0	0	0	0	0	0	
	Auto Max Adjust	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0 - 25.5 sec
	Auto Max Limit	0	0	0	0	0	0	0	0	0 - 255 sec

Coordination Data (next/2/3)

Coordination Modes (next/2/3/1, next/2/3/4/1, next/2/3/4/3)

Flash Mode	*33*	0=off, 1=on, 33=time clock, 34=comm, 35=hardwire
Coordination Plan Mode	*33*	0=free, 1-32 = coord plan 1-32, 33=time clock, 34=comm, 35=hardwire
Offset Seeking Mode	*2*	0=add only, 1=dwell, 2=fastway
Late Ped	*0*	0 = off, 1 = on
Coord Walk Rest	*0*	0 = off, 1 = on, 2 = by TOD circuit 160, 3 = end of walk, 4 = coord ped during perms
Repeated Phase Service	*0*	0=off, 1=on (no coord ped), 2=on (beginning green coord ped), 3=on (coord ped always)
Zero Mode (TS2 only)	*1*	0=start of main street, 1=end of main street, 2=by TOD circuit 144

Phase -->	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	0 = service allowed 1 = service prevented
Omit Phase During Repeated Phase Service	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	
Auto Permissive Min Green	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 - 255 seconds

Coordination Plans (next/2/3/2)

Coord Plan	**Coordination Phases**		**Cycle Length**	**Offset Time**	**Min Cycle Length Dwell Time**	**Permissive**	**Service Plan**	**Max Plan**
	Ring 1	**Ring 2**						
1 -	*2*	*6*	*90*	*0*	*0*	*0*	*0*	*0*
2 -	*2*	*6*	*100*	*0*	*0*	*0*	*0*	*0*
3 -	*2*	*6*	*110*	*0*	*0*	*0*	*0*	*0*
4 -	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
5 -	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
6 -	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
7 -	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
8 -	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
9 -	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
10 -	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
11 -	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
12 -	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
13 -	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
14 -	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
15 -	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
16 -	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
17 -	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
18 -	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
19 -	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
20 -	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
21 -	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
22 -	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
23 -	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
24 -	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
25 -	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
26 -	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
27 -	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
28 -	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
29 -	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
30 -	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
31 -	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
32 -	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
	0 - 8		0 - 255 sec.				0 - 8	

Coordination Plans cont.

Coord Plan	* = Force Offs / Split Times (TS2)								* = Yield Points / Actuated Times (TS2)	
	1	2	3	4	5	6	7	8	Ring 1	Ring 2
1 -	12	32	19	27	12	32	19	27	0	0
2 -	15	35	20	30	15	35	20	30	0	0
3 -	16	40	21	33	16	40	21	33	0	0
4 -	0	0	0	0	0	0	0	0	0	0
5 -	0	0	0	0	0	0	0	0	0	0
6 -	0	0	0	0	0	0	0	0	0	0
7 -	0	0	0	0	0	0	0	0	0	0
8 -	0	0	0	0	0	0	0	0	0	0
9 -	0	0	0	0	0	0	0	0	0	0
10 -	0	0	0	0	0	0	0	0	0	0
11 -	0	0	0	0	0	0	0	0	0	0
12 -	0	0	0	0	0	0	0	0	0	0
13 -	0	0	0	0	0	0	0	0	0	0
14 -	0	0	0	0	0	0	0	0	0	0
15 -	0	0	0	0	0	0	0	0	0	0
16 -	0	0	0	0	0	0	0	0	0	0
17 -	0	0	0	0	0	0	0	0	0	0
18 -	0	0	0	0	0	0	0	0	0	0
19 -	0	0	0	0	0	0	0	0	0	0
20 -	0	0	0	0	0	0	0	0	0	0
21 -	0	0	0	0	0	0	0	0	0	0
22 -	0	0	0	0	0	0	0	0	0	0
23 -	0	0	0	0	0	0	0	0	0	0
24 -	0	0	0	0	0	0	0	0	0	0
25 -	0	0	0	0	0	0	0	0	0	0
26 -	0	0	0	0	0	0	0	0	0	0
27 -	0	0	0	0	0	0	0	0	0	0
28 -	0	0	0	0	0	0	0	0	0	0
29 -	0	0	0	0	0	0	0	0	0	0
30 -	0	0	0	0	0	0	0	0	0	0
31 -	0	0	0	0	0	0	0	0	0	0
32 -	0	0	0	0	0	0	0	0	0	0
	0 - 255 sec * = force offs and yield points									

Circuit Mapping (next/2/3/3)

Circuit Map	Coord Plan	Time Clock Circuit		Time Clock Circuit		Time Clock Circuit		Time Clock Circuit		Time Clock Circuit		Time Clock Circuit		Time Clock Circuit		Time Clock Circuit	
1	34	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U
2	34	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U
3	34	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U
4	34	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U
5	34	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U
6	34	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U
7	34	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U
8	34	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U
9	34	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U
10	34	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U
11	34	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U
12	34	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U
13	34	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U
14	34	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U
15	34	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U
16	34	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U
17	34	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U
18	34	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U
19	34	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U
20	34	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U	0	N/U

coord plan - 0 = free, 1 - 32 = coord plan 1 - 32, 33 = any, 34 none selected
time clock circuits - 0 = not used, or circuits 6 - 196

Dynamic Phase Length (next/2/3/4/4)

Phase -->		1	2	3	4	5	6	7	8	
Back Detector		0	0	0	0	0	0	0	0	0 = none, 1-32 = detector 1-32
Lane Factor		0	0	0	0	0	0	0	0	0 = none, 1.0 - 5.0
Check Out Detector		0	0	0	0	0	0	0	0	0 = none, 1-32 = detector 1-32
Coord Delta Force Off	Set A	0	0	0	0	0	0	0	0	0 - 255 sec
	Set B	0	0	0	0	0	0	0	0	
	Set C	0	0	0	0	0	0	0	0	
	Set D	0	0	0	0	0	0	0	0	
Free Delta Max	Set A	0	0	0	0	0	0	0	0	
	Set B	0	0	0	0	0	0	0	0	
	Set C	0	0	0	0	0	0	0	0	
	Set D	0	0	0	0	0	0	0	0	

Platoon Progression (next/2/3/4/5)

Entry Local Only			Master Local Only		
Platoon Max	0	0 - 255 sec	Smoothing Factor	0.0	0.0 - 1.0
Min Platoon Green	0	0 - 255 sec			
Entry Detector Gap	0.0	0.0 - 25.5			
Min Platoon Cycle	0	0 - 255 sec			

Inbound			Outbound		
Only for Entry Inbound Local or Master Local			Only for Entry Outbound Local or Master Local		
Entry IB Local also Last OB Local	0	0 - 50	Entry OB Local also Last IB Local	0	0 - 50
Speed	0	0 - 55 mph	Speed	0	0 - 55 mph
Distance from Entry Local	0	0 - 65000 feet	Distance from Entry Local	0	0 - 65000 feet

Entry Local Only				Entry Local Only			
Distance from Entry Local Detector	0	0 - 999 feet		Distance from Entry Local Detector	0	0 - 999 feet	
Entry Local Detector	0	0	0 - 32	Entry Local Detector	0	0	0 - 32

Master Local				Master Local			
Master Mid - System Critical Detectors	0	0	0 - 16	Master Mid - System Critical Detectors	0	0	0 - 16

Force Off Percents

Inbound	1	3	4	5	7	8	Outbound	1	3	4	5	7	8
Split 1	0	0	0	0	0	0	Split 1	0	0	0	0	0	0
Split 2	0	0	0	0	0	0	Split 2	0	0	0	0	0	0
	0 - 100 %							0 - 100 %					

Time of Day Data (next/2/4)

Day Program (next/2/4/1)

	Day Prog.	Time	Coord Plan	Coord Plan or Circuit		State On / Off		Day Prog.	Time	Coord Plan	Coord Plan or Circuit		State On/Off
1							51						
2							52						
3							53						
4							54						
5							55						
6							56						
7							57						
8							58						
9							59						
10							60						
11							61						
12							62						
13							63						
14							64						
15							65						
16							66						
17							67						
18							68						
19							69						
20							70						
21							71						
22							72						
23							73						
24							74						
25							75						
26							76						
27							77						
28							78						
29							79						
30							80						
31							81						
32							82						
33							83						
34							84						
35							85						
36							86						
37							87						
38							88						
39							89						
40							90						
41							91						
42							92						
43							93						
44							94						
45							95						
46							96						
47							97						
48							98						
49							99						
50							100						
	1 - 15	hh : mm	X = on	coord plan 0 - 32 or circuit 1-196		X = on		1 - 15	hh : mm	X = on	coord plan 0 - 32 or circuit 1-196		X = on

Day Program cont.														
	Day Prog.	Time	Coord Plan	Coord Plan or Circuit		State On / Off		Day Prog.	Time	Coord Plan	Coord Plan or Circuit		State On / Off
101							151						
102							152						
103							153						
104							154						
105							155						
106							156						
107							157						
108							158						
109							159						
110							160						
111							161						
112							162						
113							163						
114							164						
115							165						
116							166						
117							167						
118							168						
119							169						
120							170						
121							171						
122							172						
123							173						
124							174						
125							175						
126							176						
127							177						
128							178						
129							179						
130							180						
131							181						
132							182						
133							183						
134							184						
135							185						
136							186						
137							187						
138							188						
139							189						
140							190						
141							191						
142							192						
143							193						
144							194						
145							195						
146							196						
147							197						
148							198						
149							199						
150							200						
	1 - 15	hh : mm	X = on	coord plan 0 - 32 or circuit 1-196		X = on		1 - 15	hh : mm	X = on	coord plan 0 - 32 or circuit 1-196		X = on

Week Program (next/2/4/2)

	Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	1	1	1	1	1	2
2	1	1	1	1	1	1	1
3	1	1	1	1	1	1	1
4	1	1	1	1	1	1	1
5	1	1	1	1	1	1	1
6	1	1	1	1	1	1	1
7	1	1	1	1	1	1	1
8	1	1	1	1	1	1	1
9	1	1	1	1	1	1	1
10	1	1	1	1	1	1	1

0 = none, 1 - 15 = day plan

Exception Days (next/2/4/6)

	DOW	WOM	DOM	MOY	Day Prog.
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					
	0-10	0 - 5	0-31	0-12	0 - 15

Year Program (next/2/4/3)

From Date	To Date	Week Program
01/01/2013	12/31/2013	1

New Years Day - Date - January 1st

Martin Luther King Day - DOW WOM - 3rd Monday of January

President's Day - DOW WOM - 3rd Monday February

Memorial Day - DOW WOM - Last Monday May

Fourth of July - Date - July 4th

Labor Day - DOW WOM - 1st Monday September

Columbus Day - DOW WOM - 2nd Monday October

Veteran's Day - Date - November 11th

Thanksgiving - DOW WOM - 4th Thursday November

Christmas - Date - December 25th

Time Clock References (next/2/4/5)

Synch reference Mode	0	0 = timed, 1 = by event
Synch Reference Time	00:00	00:00 - 23:59
Daylight Savings Enable	X	X = on
Reset Time	00:00	00:00 - 23:59

Exception day headings - DOW = Day of Week, WOM = Week of Month, DOM = Day of Month, MOY = Month of Year

Circuit Overrides (next/2/4/4)							
1 - Coord Line 1	**CL1**	*TOD*		**51 - Ped Omit 3**	**PO3**	*TOD*	
2 - Coord Line 2	**CL2**	*TOD*		**52 - Ped Omit 4**	**PO4**	*TOD*	
3 - Coord Line 4	**CL4**	*TOD*		**53 - Ped Omit 5**	**PO5**	*TOD*	
4 - Coord Line 8	**CL8**	*TOD*		**54 - Ped Omit 6**	**PO6**	*TOD*	
5 - Coord Line 16	**C16**	*TOD*		**55 - Ped Omit 7**	**PO7**	*TOD*	
6 - Coord Operation	**CRD**	*TOD*		**56 - Ped Omit 8**	**PO8**	*TOD*	
7 - Soft Flash	**SFL**	*TOD*		**57 - Conditional Service**	**CVS**	*TOD*	
8 - Enable System Relays	**ESR**	*TOD*		**58 - Inhibit Simultaneous Gap Out**	**ISG**	***On***	
9 - Call to Non Act 1	**CN1**	*TOD*		**59 - Inhibit Hardwire**	**HWI**	*TOD*	
10 - Call to Non Act 2	**CN2**	*TOD*		**60 - Ped Override Mode**	**POM**	***On***	
11 - Walk Rest Modifier	**WRM**	*TOD*		**61 - Dual Entry**	**DLE**	***On***	
12 - Min Recall	**MIN**	*TOD*		**62 - Exclusive Ped**	**EPD**	*TOD*	
13 - Max 2 Both Rings	**MX2**	*TOD*		**63 - Call to Time Clock Mode**	**CTC**	*TOD*	
14 - Coord Inhibit Max Ring 1, 2	**IMT**	*TOD*		**64 - Dual Enhanced Ped**	**DEP**	*TOD*	
15 - Not Used	**N/U**	*TOD*		**65 - Service Plan 1**	**SP1**	*TOD*	
16 - Call to Free	**CTF**	*TOD*		**66 - Service Plan 2**	**SP2**	*TOD*	
17 - TOD Output 1	**TO1**	*TOD*		**67 - Service Plan 3**	**SP3**	*TOD*	
18 - TOD Output 2	**TO2**	*TOD*		**68 - Service Plan 4**	**SP4**	*TOD*	
19 - TOD Output 3	**TO3**	*TOD*		**69 - Service Plan 5**	**SP5**	*TOD*	
20 - TOD Output 4	**TO4**	*TOD*		**70 - Service Plan 6**	**SP6**	*TOD*	
21 - TOD Output 5	**TO5**	*TOD*		**71 - Service Plan 7**	**SP7**	*TOD*	
22 - TOD Output 6	**TO6**	*TOD*		**72 - Service Plan 8**	**SP8**	*TOD*	
23 - TOD Output 7	**TO7**	*TOD*		**73 - Max Plan 1**	**MP1**	*TOD*	
24 - TOD Output 8	**TO8**	*TOD*		**74 - Max Plan 2**	**MP2**	*TOD*	
25 - Vehicle Call Phase 1	**VC1**	*TOD*	On / Off / TOD	**75 - Max Plan 3**	**MP3**	*TOD*	On / Off / TOD
26 - Vehicle Call Phase 2	**VC2**	*TOD*		**76 - Max Plan 4**	**MP4**	*TOD*	
27 - Vehicle Call Phase 3	**VC3**	*TOD*		**77 - Max Plan 5**	**MP5**	*TOD*	
28 - Vehicle Call Phase 4	**VC4**	*TOD*		**78 - Max Plan 6**	**MP6**	*TOD*	
29 - Vehicle Call Phase 5	**VC5**	*TOD*		**79 - Max Plan 7**	**MP7**	*TOD*	
30 - Vehicle Call Phase 6	**VC6**	*TOD*		**80 - Max Plan 8**	**MP8**	*TOD*	
31 - Vehicle Call Phase 7	**VC7**	*TOD*		**81 - Transit Priority Max Group 1**	**TG1**	*TOD*	
32 - Vehicle Call Phase 8	**VC8**	*TOD*		**82 - Transit Priority Max Group 2**	**TG2**	*TOD*	
33 - Ped Call Phase 1	**PC1**	*TOD*		**83 - Transit Priority Max Group 3**	**TG3**	*TOD*	
34 - Ped Call Phase 2	**PC2**	*TOD*		**84 - Transit Priority Max Group 4**	**TG4**	*TOD*	
35 - Ped Call Phase 3	**PC3**	*TOD*		**85 - Transit Priority Max Group 5**	**TG5**	*TOD*	
36 - Ped Call Phase 4	**PC4**	*TOD*		**86 - Transit Priority Max Group 6**	**TG6**	*TOD*	
37 - Ped Call Phase 5	**PC5**	*TOD*		**87 - Transit Priority Max Group 7**	**TG7**	*TOD*	
38 - Ped Call Phase 6	**PC6**	*TOD*		**88 - Transit Priority Max Group 8**	**TG8**	*TOD*	
39 - Ped Call Phase 7	**PC7**	*TOD*		**89 - Inhibit Volume Density 1**	**IV1**	*TOD*	
40 - Ped Call Phase 8	**PC8**	*TOD*		**90 - Inhibit Volume Density 2**	**IV2**	*TOD*	
41 - Vehicle Omit 1	**VO1**	*TOD*		**91 - Inhibit Volume Density 3**	**Iv3**	*TOD*	
42 - Vehicle Omit 2	**VO2**	*TOD*		**92 - Inhibit Volume Density 4**	**IV4**	*TOD*	
43 - Vehicle Omit 3	**VO3**	*TOD*		**93 - Inhibit Volume Density 5**	**IV5**	*TOD*	
44 - Vehicle Omit 4	**VO4**	*TOD*		**94 - Inhibit Volume Density 6**	**IV6**	*TOD*	
45 - Vehicle Omit 5	**VO5**	*TOD*		**95 - Inhibit Volume Density 7**	**IV7**	*TOD*	
46 - Vehicle Omit 6	**VO6**	*TOD*		**96 - Inhibit Volume Density 8**	**IV8**	*TOD*	
47 - Vehicle Omit 7	**VO7**	*TOD*		**97 - Lag 1**	**LG1**	*TOD*	
48 - Vehicle Omit 8	**VO8**	*TOD*		**98 - Lag 3**	**LG3**	*TOD*	
49 - Ped Omit 1	**PO1**	*TOD*		**99 - Lag 5**	**LG5**	*TOD*	
50 - Ped Omit 2	**PO2**	*TOD*		**100 - Lag 7**	**LG7**	*TOD*	

Circuit Overrides cont.							
101 - Inhibit Overlap A	**OLA**	*TOD*		**151 - Coord Hold 7**	**HD7**	*TOD*	
102 - Inhibit Overlap B	**OLB**	*TOD*		**152 - Coord Hold 8**	**HD8**	*TOD*	
103 - Inhibit Overlap C	**OLC**	*TOD*		**153 - PE Priority Return B**	**PRB**	*TOD*	
104 - Inhibit Overlap D	**OLD**	*TOD*		**154 - PE Priority Return C**	**PRC**	*TOD*	
105 - Enable Schedule A Phone 1	**AT1**	*TOD*		**155 - PE Priority Return D**	**PRD**	*TOD*	
106 - Enable Schedule A Phone 2	**AT2**	*TOD*		**156 - PE Priority Return E**	**PRE**	*TOD*	
107 - Enable Schedule B Phone 1	**BT1**	*TOD*		**157 - Platoon Inbound**	**PPI**	*TOD*	
108 - Enable Schedule B Phone 2	**BT2**	*TOD*		**158 - Platoon Outbound**	**PPO**	*TOD*	
109 - Enable Schedule C Phone 1	**CT1**	*TOD*		**159 - Platoon Spl 2**	**PS2**	*TOD*	
110 - Enable Schedule C Phone 2	**CT2**	*TOD*		**160 - Coord Walk Rest**	**CWR**	*TOD*	
111 - Enable Volume to Call Phone 1	**VT1**	*TOD*		**161 - Dynamic Phase Length Short Inhibit 1**	**SI1**	*TOD*	
112 - Enable Volume to Call Phone 2	**VT2**	*TOD*		**162 - Dynamic Phase Length Short Inhibit 2**	**SI2**	*TOD*	
113 - Enable Volume Logging	**EVL**	***On***		**163 - Dynamic Phase Length Short Inhibit 3**	**SI3**	*TOD*	
114 - Enable MOE Logging	**EML**	***On***		**164 - Dynamic Phase Length Short Inhibit 4**	**SI4**	*TOD*	
115 - Detector Low Threshold Inhibit	**DLI**	*TOD*		**165 - Dynamic Phase Length Short Inhibit 5**	**SI5**	*TOD*	
116 - Detector Continue Presence Inhibit	**DPI**	*TOD*		**166 - Dynamic Phase Length Short Inhibit 6**	**SI6**	*TOD*	
117 - Inhibit Detector Based on Programming	**IND**	*TOD*		**167 - Dynamic Phase Length Short Inhibit 7**	**SI7**	*TOD*	
118 - Inhibit Detector Delay	**IDD**	*TOD*		**168 - Dynamic Phase Length Short Inhibit 8**	**SI8**	*TOD*	
119 - Inhibit Conditional Ped	**ICP**	*TOD*		**169 - Coord Late Left Turn 1**	**CT1**	*TOD*	
120 - Inhibit Transit Priority	**ITP**	*TOD*		**170 - Coord Late Left Turn 3**	**CT3**	*TOD*	
121 - Red Rest Ring 1,2	**RRM**	*TOD*		**171 - Coord Late Left Turn 5**	**CT5**	*TOD*	
122 - Not Used	**N/U**	*TOD*		**172 - Coord Late Left Turn 7**	**CT7**	*TOD*	
123 - Omit Red Clear Ring 1,2	**ORC**	*TOD*		**173 - Dynamic Phase Length Enable A**	**DPA**	*TOD*	
124 - Not Used	**N/U**	*TOD*		**174 - Dynamic Phase Length Enable B**	**DPB**	*TOD*	
125 - Ped Recycle Ring 1,2	**PCY**	*TOD*	On / Off / TOD	**175 - Dynamic Phase Length Enable C**	**DPC**	*TOD*	On / Off / TOD
126 - Not Used	**N/U**	*TOD*		**176 - Dynamic Phase Length Enable D**	**DPD**	*TOD*	
127 - Enable MOE Log to Call Phone 1	**MT1**	*TOD*		**177 - Proactive Plan Select Average**	**PSA**	*TOD*	
128 - Enable MOE Log to Call Phone 2	**MT2**	*TOD*		**178 - Proactive Plan Select Inbound**	**PSI**	*TOD*	
129 - Transit Inhibit Short Time 1	**IS1**	*TOD*		**179 - Proactive Plan Select Outbound**	**PSO**	*TOD*	
130 - Transit Inhibit Short Time 2	**IS2**	*TOD*		**180 - Split Variant Inbound**	**SVI**	*TOD*	
131 - Transit Inhibit Short Time 3	**IS3**	*TOD*		**181 - Split Variant Outbound**	**SVO**	*TOD*	
132 - Transit Inhibit Short Time 4	**IS4**	*TOD*		**182 - Disable Coord Walk Rest Ring 1**	**DW1**	*TOD*	
133 - Transit Inhibit Short Time 5	**IS5**	*TOD*		**183 - Disable Coord Walk Rest Ring 2**	**DW2**	*TOD*	
134 - Transit Inhibit Short Time 6	**IS6**	*TOD*		**184 - Proactive Plan Select New Look**	**NLK**	*TOD*	
135 - Transit Inhibit Short Time 7	**IS7**	*TOD*		**185 - Disable Red Clearance Extension**	**DRX**	*TOD*	
136 - Transit Inhibit Short Time 8	**IS8**	*TOD*		**186 - Detector Plan Line 1**	**DL1**	*TOD*	
137 - Enable Transit Priority Logging	**ETL**	*TOD*		**187 - Detector Plan Line 2**	**DL2**	*TOD*	
138 - Disable Flashing Yellow Arrow 1	**DF1**	*TOD*		**188 - Disable LRT 1 Vertical Flashing Bar**	**DV1**	*TOD*	
139 - Disable Flashing Yellow Arrow 3	**DF3**	*TOD*		**189 - Disable LRT 2 Vertical Flashing Bar**	**DV2**	*TOD*	
140 - Disable Flashing Yellow Arrow 5	**DF5**	*TOD*		**190 - Disable LRT 3 Vertical Flashing Bar**	**DV3**	*TOD*	
141 - Disable Flashing Yellow Arrow 7	**DF7**	*TOD*		**191 - Disable LRT 4 Vertical Flashing Bar**	**DV4**	*TOD*	
142 - Disable Auto Max	**DAM**	*TOD*		**192 - Datakey Enable**	**DKE**	***On***	
143 - Disable Repeat Phase Service	**DRS**	*TOD*		**193 - Dynamic Phase Reversal Enable 1**	**DR1**	*TOD*	
144 - Coord End of Main Street	**EMS**	*TOD*		**194 - Dynamic Phase Reversal Enable 3**	**DR3**	*TOD*	
145 - Coord Hold 1	**HD1**	*TOD*		**195 - Dynamic Phase Reversal Enable 5**	**DR5**	*TOD*	
146 - Coord Hold 2	**HD2**	*TOD*		**196 - Dynamic Phase Reversal Enable 7**	**DR7**	*TOD*	
147 - Coord Hold 3	**HD3**	*TOD*		**197 - Enable Coord Logging**	**ECL**	***On***	
148 - Coord Hold 4	**HD4**	*TOD*		**198 - Disable Gap FYLTA 1,3,5,7**	**DGF**	*TOD*	
149 - Coord Hold 5	**HD5**	*TOD*		**199 - Coordination Auto Walk**	**CAW**	*TOD*	
150 - Coord Hold 6	**HD6**	*TOD*		**200 - Enable Coordinated Auto Max**	**ECM**	*TOD*	

Preemption Data (next/2/5)

Sequence (next/2/5/1 - 8)

Sequences / Intervals		Instruction	Phases Serviced	Interval Time	Hold On Input	Outputs On	Output Mode
1	1	0	25	0	X		0
	2	98		0			0
	3	0		0			0
	4	0		0			0
	5	0		0			0
	6	0		0			0
	7	0		0			0
	8	0		0			0
	9	0		0			0
	10	0		0			0
2	1	0	47	0	X		0
	2	98		0			0
	3	0		0			0
	4	0		0			0
	5	0		0			0
	6	0		0			0
	7	0		0			0
	8	0		0			0
	9	0		0			0
	10	0		0			0
3	1	0	16	0	X		0
	2	98		0			0
	3	0		0			0
	4	0		0			0
	5	0		0			0
	6	0		0			0
	7	0		0			0
	8	0		0			0
	9	0		0			0
	10	0		0			0
4	1	0	38	0	X		0
	2	98		0			0
	3	0		0			0
	4	0		0			0
	5	0		0			0
	6	0		0			0
	7	0		0			0
	8	0		0			0
	9	0		0			0
	10	0		0			0
5	1	0	38	8			0
	2	0	256	0	X		0
	3	98		0			0
	4	0		0			0
	5	0		0			0
	6	0		0			0
	7	0		0			0
	8	0		0			0
	9	0		0			0
	10	0		0			0

Instructions
0 - Service Phases
1-9 = Special Interval 1-9
10 - Preempt Sequence Allows FYLTA
11 - Preempt Interval Disables FYLTA
15 - Alternate Trap Protection
90 - Go to all Red
91 - Soft Flash On
92 - Soft Flash Off
93 - Enable Ped
94 - Disable Peds
95 - Priority Return
96 - Enable Coordination with peds
97 - Enable Coordination without peds
98 - Return with NO Calls
99 - Return with Vehicle Calls
100 - jump to step in Interval Time
101 - Use Interval Time as Resetable Gap Timer
196 - Coord Re-synch with Peds
197 - Coord Re-synch without Peds
200 - Light Rail Train phase without Peds
201 - Light Rail Train phase with Peds
202 - Return to highest queue/delay phase (this uses the Dynamic Phase Length Back Detectors)
216 - Light Rail Train Coord Re-synch with Peds
217 - Light Rail Train Coord Re-synch without Peds

Phases Serviced - phases 1 - 8
Interval Time - 0 - 255 sec or interval 1 - 10
Hold on Input - X = on
Outputs On - output 1 - 8

Output Modes -
0 = all steady on
1 = all flash together
2 = odd flashes WIG, even flashes WAG
3 = 1 - 4 steady on, 5 - 8 all flash together

Sequence cont.

Sequences / Intervals		Instruction	Phases Serviced	Interval Time	Hold On Input	Outputs On	Output Mode
6	1	0		0			0
	2	0		0			0
	3	0		0			0
	4	0		0			0
	5	0		0			0
	6	0		0			0
	7	0		0			0
	8	0		0			0
	9	0		0			0
	10	0		0			0
7	1	0		0			0
	2	0		0			0
	3	0		0			0
	4	0		0			0
	5	0		0			0
	6	0		0			0
	7	0		0			0
	8	0		0			0
	9	0		0			0
	10	0		0			0
8	1	0		0			0
	2	0		0			0
	3	0		0			0
	4	0		0			0
	5	0		0			0
	6	0		0			0
	7	0		0			0
	8	0		0			0
	9	0		0			0
	10	0		0			0

Sequence Timing (next/2/5/0)

	Sequence -- >	1	2	3	4	5	6	7	8	
	Input Memory									X = on
	Input Priority	6	6	6	6	8	0	0	0	0 = lowest, - 8 = highest
Entry (Transition) Parameters	Min Green	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 25.5 sec
	Walk	0.1	0.1	0.1	0.1	0.1	0.0	0.0	0.0	0.0 would time the normal function time
	Ped Clear	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Overlap Yellow	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0 - 25.5 sec
	Overlap Red	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
	Delay to Preempt	0	0	0	0	0	0	0	0	0 - 255 sec
	Delay Ped Omit	0	0	0	0	0	0	0	0	
	Delay Phase Omit	0	0	0	0	0	0	0	0	
	Min Reservice	0	0	0	0	0	0	0	0	0 - 255 min
Overlap Inhibits	A									X = inhibit
	B									
	C									
	D									
Exit Parameters	Exit to Coord Plan Offset by X	0	0	0	0	0	0	0	0	0 - 20
	Exit Coord Plan Time	0	0	0	0	0	0	0	0	0 - 60 min
	Exit to Max Plan	0	0	0	0	0	0	0	0	0 - 8
	Exit Free Time	0	0	0	0	0	0	0	0	0 - 60 min
	Override Time	0	0	0	0	0	0	0	0	
	Fail Time	0	0	0	0	0	0	0	0	
	Exit Mode Time	0	0	0	0	0	0	0	0	

Priority Return and Special Intervals (next/2/5/0/6, next/2/5/9)													
Phase / Overlap -->		**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**A**	**B**	**C**	**D**
Priority Return	**Enable**	*0*	0 = disabled, 1 = enabled, 2 = enabled, skip preemption phases on exit										
	A (max)	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 - 100% of currently used max			
	B (max)	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*				
	C (max)	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*				
	D (max)	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*				
	E (max)	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*				
	Ped Clear	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 - 100% of currently used ped clearance			
Queue Delay Recovery		*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 - 255 sec.			
Special Intervals	**1**	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
	2	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
	3	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
	4	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
	5	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
	6	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
	7	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
	8	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
	9	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*

0 = Dark
1 = green don't walk
2 = green walk
3 = green flashing don't walk
4 = yellow
5 = red
6 = flashing yellow WIG
7 = flashing yellow WAG
8 = flashing red WIG
9 = flashing red WAG
10 = walk only
11=flashing don't walk only

Light Rail Train (next/2/5/0/7)						
Light Rail Train -->	**1**	**2**	**3**	**4**	
Associated Preempt	*0*	*0*	*0*	*0*	0 = none, preempt 1 - 8
Time to Green	*0*	*0*	*0*	*0*	0 - 255 sec
Horizontal Bar Flash Time	*0.0*	*0.0*	*0.0*	*0.0*	0.0 - 25.5 sec
Vertical Bar Flash Time	*0.0*	*0.0*	*0.0*	*0.0*	
Min Duration	*0*	*0*	*0*	*0*	0 - 255 sec

Communications Data (next/2/6)

1st Central Phone Number		**2nd Central Phone Number**	
Modem Setup String		**Intersection Name**	*Herman and Teton*
Subnet Mask	*0.0.0.0*		
IP (ethernet) Port	*0*		
Central Port	*0*		
System Mode	*0*		
System Port	*1*	**Alternate System Port**	*0*

System ID	*0*	**AB3418e Physical Address**	*0*		**IP Address**	*0.0.0.0*	
Local ID	*0*	**AB3418e Group Address**	*0*		**Gateway Address**	*0.0.0.0*	

Baud Rates		**Flow Control**	**Port Use**
Port 1 (Slot A2 Upper)	*0*	*1*	*Suggested Use - FSK*
Port 2 (Slot A2 Lower)	*0*	*1*	*Suggested Use - Not Used*
Port 3 (Slot A1 Upper)	*0*	*0*	*Suggested Use - Modem to Central*
Port 4 (Slot A1 Lower or C50S)	*2*	*N\U*	*Suggested Use - RS232 to Laptop*
0 = 1200, 1 = 2400, 2 = 9600, 3 = 19200 baud		0 = off, 1 = on	

Reports

Volume Log Period	*15*	0-255 min. or below	**MOE Log Period**	*15*	below

0 = disabled, 1,2,3,4,5,6,10,12,15,20,30,60 minutes

Function Schedule Mapping (next/2/6/7)

Alarm 1	*0*		**Soft Flash**	*1*	
Alarm 2	*0*		**Manual Control Enable (MCE)**	*4*	
Alarm 3	*0*		**Emergency or Railroad Preempt**	*1*	
Alarm 4	*0*		**Not Used**	*0*	
Alarm 5	*0*	0 = none	**Cycle Failure**	*2*	0 = none
Not Used	*0*	1 = schedule A	**Coordination Failure**	*2*	1 = schedule A
Not Used	*0*	2 = schedule B	**Keyboard use / Data Changed**	*3*	2 = schedule B
Not Used	*0*	3 = schedule C	**Coord Running / Free**	*2*	3 = schedule C
Power On / Off	*1*	4 = schedule R	**Cabinet Door**	*3*	4 = schedule R
Checksum Failure	*4*		**Extended Ped Pushbutton**	*0*	
Video / Detector Failure	*4*		**Monitor Status**	*4*	
Master to Local Comm Lost	*0*				

Miscellaneous Data

Transit Priority (next/2/7)

	1	2	3	4	5	6	7	8	
Phases									Phases 1 - 8 (max of 2 compatible phases)
PE Enable (6.25Hz TP call on PE)									X = 6.25 Hz signal will activate TP
Priority	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 - 8, 8 = highest
Memory									X = on
Delay Time	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 - 255 sec
Minimum Reservice Time (per input)	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 - 255 min
Override Time	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 - 255 sec
Bus Extend	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*	0 - 255 sec
Minimum Reservice Time (all inputs)	*0*	0 - 255 min							
Free Operation Mode	*0*	0 = use shortest of max 1 or 2, 1 - 8 = use max time of group 1 - 8, 9 = use time of day							

Transit Priority Alternate Force Off Plans

Current Coord Plan	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Alternate TP Force Off Plan	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Current Coord Plan	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Alternate TP Force Off Plan	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*

0 = none
17 - 32 = coord plan 17 - 32

Group Timing

	Phase -->	1	2	3	4	5	6	7	8
Group 1	**Max Times**	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
	Walk Times	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Group 2	**Max Times**	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
	Walk Times	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Group 3	**Max Times**	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
	Walk Times	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Group 4	**Max Times**	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
	Walk Times	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Group 5	**Max Times**	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
	Walk Times	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Group 6	**Max Times**	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
	Walk Times	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Group 7	**Max Times**	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
	Walk Times	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
Group 8	**Max Times**	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*
	Walk Times	*0*	*0*	*0*	*0*	*0*	*0*	*0*	*0*

0 - 255 sec
0 would time the normal function time

Truck Priority (next/2/7/9)

Truck Priority-->	**1**	**2**	**3**	**4**	
Associated Transit Priority	*0*	*0*	*0*	*0*	0 = none 1 - 8 = transit priority 1 - 8
Leading Detector	*0*	*0*	*0*	*0*	0 = none, 1 - 32 = detector 1 - 32
Trailing Detector	*0*	*0*	*0*	*0*	
Stop Bar Distance	*0*	*0*	*0*	*0*	0 - 999 feet
Trap Distance	*0*	*0*	*0*	*0*	0.0 - 99.9 feet
Minimum Speed	*0*	*0*	*0*	*0*	0 - 100 mph
Minimum Length	*0*	*0*	*0*	*0*	0 - 255 feet
Downhill Grade	*0*	*0*	*0*	*0*	0 - 20 %
Uphill Grade	*0*	*0*	*0*	*0*	
Undersized Vehicle					X = Enabled

Change I/O		X = On (After a download with a power on - off cycle)

Inputs (Non Default I/O is offset to the right) (next/2/8/1)

C1-39	*101*	*VD9*	**C1-55**	*15*	*VD5*	**C1-67**	*22*	*PED2*	**C11-15**	*254*	*N/U*
C1-40	*113*	*VD19*	**C1-56**	*11*	*VD1*	**C1-68**	*26*	*PED6*	**C11-16**	*254*	*N/U*
C1-41	*106*	*VD14*	**C1-57**	*17*	*VD7*	**C1-69**	*24*	*PED4*	**C11-17**	*254*	*N/U*
C1-42	*118*	*VD24*	**C1-58**	*13*	*VD3*	**C1-70**	*28*	*PED8*	**C11-18**	*254*	*N/U*
C1-43	*102*	*VD10*	**C1-59**	*16*	*VD6*	**C1-71**	*151*	*PE1*	**C11-19**	*254*	*N/U*
C1-44	*114*	*VD20*	**C1-60**	*12*	*VD2*	**C1-72**	*152*	*PE2*	**C11-20**	*254*	*N/U*
C1-45	*107*	*VD15*	**C1-61**	*18*	*VD8*	**C1-73**	*153*	*PE3*	**C11-21**	*254*	*N/U*
C1-46	*161*	*VD25*	**C1-62**	*14*	*VD4*	**C1-74**	*154*	*PE4*	**C11-22**	*254*	*N/U*
C1-47	*105*	*VD13*	**C11-10**	*254*	*N/U*	**C1-75**	*254*	*N/U*	**C11-23**	*254*	*N/U*
C1-48	*117*	*VD23*	**C11-11**	*254*	*N/U*	**C1-76**	*104*	*VD12*	**C11-24**	*254*	*N/U*
C1-49	*112*	*VD18*	**C11-12**	*254*	*N/U*	**C1-77**	*116*	*VD22*	**C11-25**	*254*	*N/U*
C1-50	*164*	*VD28*	**C11-13**	*254*	*N/U*	**C1-78**	*111*	*VD17*	**C11-26**	*254*	*N/U*
C1-51	*199*	*PEDI*	**C1-63**	*103*	*VD11*	**C1-79**	*163*	*VD27*	**C11-27**	*254*	*N/U*
C1-52	*155*	*PE5*	**C1-64**	*115*	*VD21*	**C1-80**	*82*	*IADV*	**C11-28**	*254*	*N/U*
C1-53	*85*	*MCE*	**C1-65**	*108*	*VD16*	**C1-81**	*137*	*MONS*	**C11-29**	*254*	*N/U*
C1-54	*254*	*N/U*	**C1-66**	*162*	*VD26*	**C1-82**	*62*	*ST1*	**C11-30**	*254*	*N/U*

Outputs (Non Default I/O is offset to the right) (next/2/8/2)

C1-2	*44*	*4DWK*	**C1-19**	*48*	*8DWK*	**C1-35**	*215*	*FYA1*	**C1-91**	*41*	*1DWK*
C1-3	*64*	*4WLK*	**C1-20**	*68*	*8WLK*	**C1-36**	*217*	*FYA5*	**C1-93**	*61*	*1WLK*
C1-4	*14*	*4RED*	**C1-21**	*18*	*8RED*	**C1-37**	*216*	*FYA3*	**C1-94**	*106*	*OLBR*
C1-5	*24*	*4YEL*	**C1-22**	*28*	*8YEL*	**C1-38**	*218*	*FYA7*	**C1-95**	*105*	*OLBY*
C1-6	*34*	*4GRN*	**C1-23**	*38*	*8GRN*	**C1-100**	*53*	*3PCL*	**C1-96**	*104*	*OLBG*
C1-7	*13*	*3RED*	**C1-24**	*17*	*7RED*	**C1-101**	*51*	*1PCL*	**C1-97**	*103*	*OLAR*
C1-8	*222*	*FYC3*	**C1-25**	*224*	*FYC7*	**C1-102**	*187*	*SFL*	**C1-98**	*102*	*OLAY*
C1-9	*33*	*3GRN*	**C1-26**	*37*	*7GRN*	**C1-103**	*147*	*WDOG*	**C1-99**	*101*	*OLAG*
C1-10	*42*	*2DWK*	**C1-27**	*46*	*6DWK*	**C1-83**	*43*	*3DWK*	**C11-1**	*254*	*N/U*
C1-11	*62*	*2WLK*	**C1-28**	*66*	*6WLK*	**C1-84**	*63*	*3WLK*	**C11-2**	*254*	*N/U*
C1-12	*12*	*2RED*	**C1-29**	*16*	*6RED*	**C1-85**	*116*	*OLDR*	**C11-3**	*254*	*N/U*
C1-13	*22*	*2YEL*	**C1-30**	*26*	*6YEL*	**C1-86**	*115*	*OLDY*	**C11-4**	*254*	*N/U*
C1-15	*32*	*2GRN*	**C1-31**	*36*	*6GRN*	**C1-87**	*114*	*OLDG*	**C11-5**	*254*	*N/U*
C1-16	*11*	*1RED*	**C1-32**	*15*	*5RED*	**C1-88**	*113*	*OLCR*	**C11-6**	*254*	*N/U*
C1-17	*221*	*FYC1*	**C1-33**	*223*	*FYC5*	**C1-89**	*112*	*OLCY*	**C11-7**	*254*	*N/U*
C1-18	*31*	*1GRN*	**C1-34**	*35*	*5GRN*	**C1-90**	*111*	*OLCG*	**C11-8**	*254*	*N/U*

Internal Logic (next/2/9)			
Step	**Inst.**	**Description**	**Comment**
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Internal Logic cont.			
Step	**Inst.**	**Description**	**Comment**
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Internal Logic cont.			
Step	**Inst.**	**Description**	**Comment**
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Internal Logic cont.			
Step	**Inst.**	**Description**	**Comment**
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Internal Logic cont.			
Step	**Inst.**	**Description**	**Comment**
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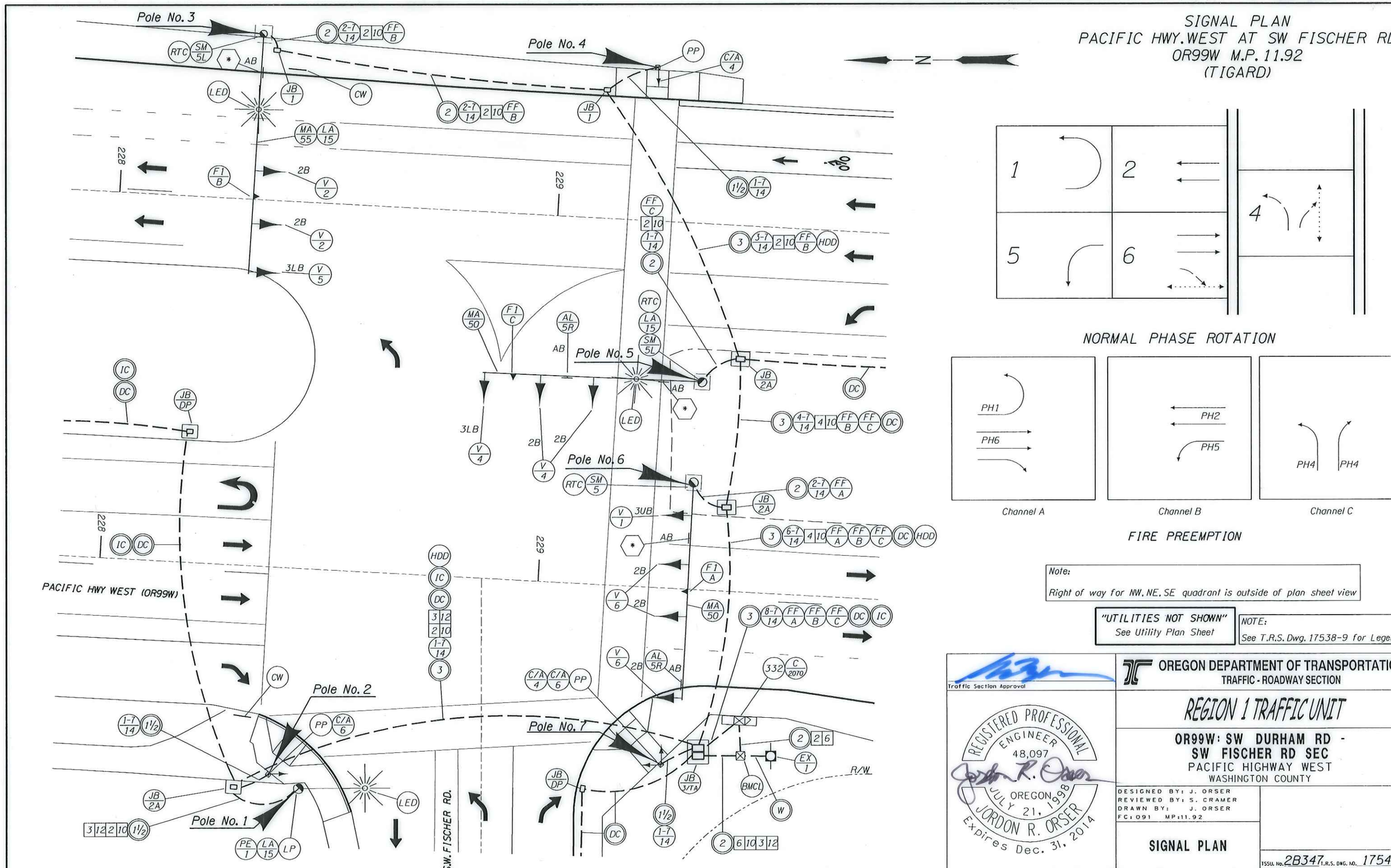
FYLTA - Continued (next/2/2/8/6)						
	Phase Pairs -->	**1 - 2**	**3 - 4**	**5 - 6**	**7 - 8**	
Gap-Dependent FYLTA (next/2/2/8/6-A)	**Detector Input**	*0*	*0*	*0*	*0*	0 = disable, 1 - 64 detectors
	Min Delay	*0.0*	*0.0*	*0.0*	*0.0*	0 - 255 sec
	Detector Gap	*255*	*255*	*255*	*255*	0 - 25.5 sec
	Max Delay	*3*	*3*	*3*	*3*	0 - 255 sec
	Not Ped	*4*	*4*	*4*	*4*	0 - 255 sec

FYLTA Gap-Dependent Plans (next/2/2/8/6)						
	Phase Pairs -->	**1 - 2**	**3 - 4**	**5 - 6**	**7 - 8**	
FYLTA Gap-Dependent Plan A	**Detector Input**	*0*	*0*	*0*	*0*	0 = disable, 1 - 64 detectors
	Min Delay	*0*	*0*	*0*	*0*	0 - 255 sec
	Detector Gap	*0.0*	*0.0*	*0.0*	*0.0*	0 - 25.5 sec
	Max Delay	*0*	*0*	*0*	*0*	0 - 255 sec
	Not Ped	*0*	*0*	*0*	*0*	0 - 255 sec
FYLTA Gap-Dependent Plan B	**Detector Input**	*0*	*0*	*0*	*0*	0 = disable, 1 - 64 detectors
	Min Delay	*0*	*0*	*0*	*0*	0 - 255 sec
	Detector Gap	*0.0*	*0.0*	*0.0*	*0.0*	0 - 25.5 sec
	Max Delay	*0*	*0*	*0*	*0*	0 - 255 sec
	Not Ped	*0*	*0*	*0*	*0*	0 - 255 sec
FYLTA Gap-Dependent Plan C	**Detector Input**	*0*	*0*	*0*	*0*	0 = disable, 1 - 64 detectors
	Min Delay	*0*	*0*	*0*	*0*	0 - 255 sec
	Detector Gap	*0.0*	*0.0*	*0.0*	*0.0*	0 - 25.5 sec
	Max Delay	*0*	*0*	*0*	*0*	0 - 255 sec

	Not Ped	*0*	*0*	*0*	*0*	0 - 255 sec
FYLTA Gap-Dependent Plan D	**Detector Input**	*0*	*0*	*0*	*0*	0 = disable, 1 - 64 detectors
	Min Delay	*0*	*0*	*0*	*0*	0 - 255 sec
	Detector Gap	*0.0*	*0.0*	*0.0*	*0.0*	0 - 25.5 sec
	Max Delay	*0*	*0*	*0*	*0*	0 - 255 sec
	Not Ped	*0*	*0*	*0*	*0*	0 - 255 sec

17540

SIGNAL PLAN
PACIFIC HWY. WEST AT SW FISCHER RD
OR99W M.P. 11.92
(TIGARD)



NORMAL PHASE ROTATION

Channel A | Channel B | Channel C

FIRE PREEMPTION

Note:
Right of way for NW, NE, SE quadrant is outside of plan sheet view

"UTILITIES NOT SHOWN"
See Utility Plan Sheet

NOTE:
See T.R.S. Dwg. 17538-9 for Legend

Traffic Section Approval

REGISTERED PROFESSIONAL ENGINEER 48,097 OREGON JULY 21, 1998 JORDON R. ORSER Expires Dec. 31, 2014

OREGON DEPARTMENT OF TRANSPORTATION
TRAFFIC - ROADWAY SECTION

REGION 1 TRAFFIC UNIT

OR99W: SW DURHAM RD - SW FISCHER RD SEC
PACIFIC HIGHWAY WEST
WASHINGTON COUNTY

DESIGNED BY: J. ORSER
REVIEWED BY: S. CRAMER
DRAWN BY: J. ORSER
FC: 091 MP: 11.92

SIGNAL PLAN

ISSU. No. 2B347 T.R.S. DWG. NO. 17540

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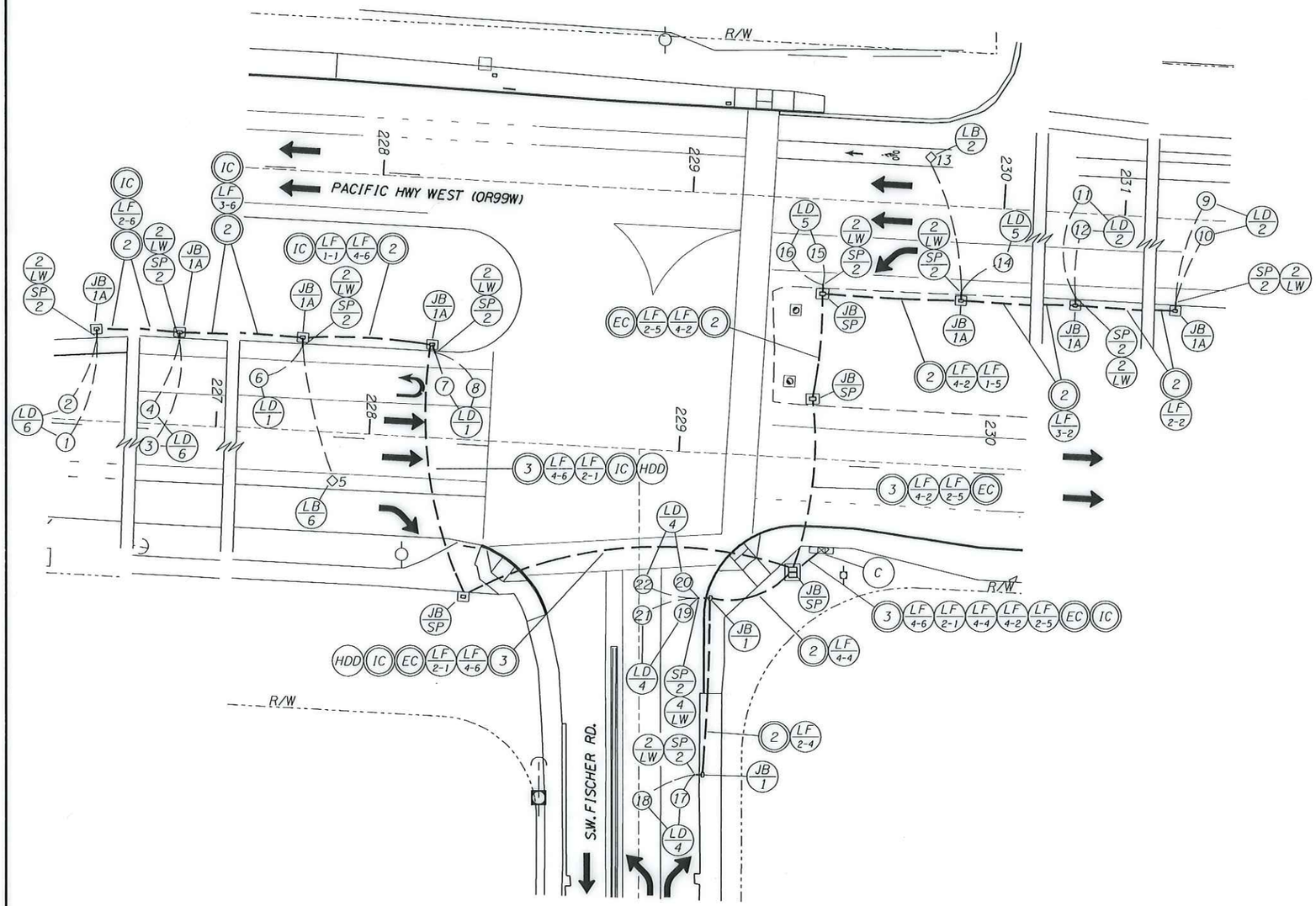
Rotation: 0° Scale: 1"=100'

17542

DETECTOR PLAN
PACIFIC HWY. WEST AT SW FISCHER RD
OR99W M.P. 11.92
(TIGARD)



Loop Number	Distance Feet	Phase	Slot	Voyage
1	320	6	J2U	19
2	320	6	J2L	20
3	160	6	J3U	21
4	160			
5 BIKE	50	6	J3L	22
6	75	1	I1	1
7	15	1	I9U	2
8	5			
9	320	2	I2U	9
10	320	2	I2L	10
11	160	2	I3U	11
12	160			
13 BIKE	50	2	I3L	12
14	75	5	J1	5
15	15	5	J9U	6
16	5			
17	75	4	I6U	14
18	75	4	I6L	15
19	15	4	I7U	16
20	5			
21	15	4	I7L	17
22	5			

Controller Cabinet

LOOP DETECTOR WIRING DIAGRAM
"Distance" is from Stop Line to center of loop in feet

"UTILITIES NOT SHOWN"
See Utility Plan Sheet

NOTE:
See T.R.S. Dwg. 17538-9 for Legend

Traffic Section Approval

REGISTERED PROFESSIONAL ENGINEER
48,097
OREGON
JULY 21, 1998
JORDON R. ORSER
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OR99W: SW DURHAM RD - SW FISCHER RD SEC
PACIFIC HIGHWAY WEST
WASHINGTON COUNTY

DESIGNED BY: J. ORSER
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DRAWN BY: J. ORSER
FC: 091 MP: 11.92

DETECTOR PLAN

ISSU. No. 2B347 T.R.S. DWG. NO. 17542

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Rotation: 0° Scale: 1"=100'

Table: Phase Timing Plans [Timing Plan: 1]

Phase	1	2	4	5	6
Walk	0	0	7	0	7
Ped Clear	0	0	43	0	16
Min Green	4	10	6	4	10
Passage	2.3	4.5	2.5	2.3	4.5
Max 1	25	90	35	25	90
Max 2	23	82	30	23	82
Max 3	25	92	33	40	86
Yellow Chang	3.5	5	3.5	4	5
Red Clear	1	1	1.5	1.5	1
Added Initial	0	1.2	0	0	1.2
Maximum Ini	4	17	6	4	17
Time Before I	8	10	8	8	10
Time To Redu	3	20	3	3	20
Minimum Ga	0.5	2.5	0.5	0.5	2.5

Table: Sequence Parameters [Sequence: 1]

Ring	Sequence Data
1	1,2,a,4,b
2	5,6,a,b

Table: Sequence Parameters [Sequence: 5]

Ring	Sequence Data
1	1,2,a,4,b
2	6,5,a,b

Table: Global Phase Recalls

Phase	2	6
Min	TRUE	TRUE
Max	FALSE	FALSE
Ped	FALSE	FALSE
Act. Walk Re:	FALSE	FALSE

Table: Pattern Parameters

Pattern	Cycle Time	Offset 1	Offset 2	Offset 3	Split Number	Seq Number	Ref Point	Coord Mode	Force Off
1	140	88	0	0	1	5	Green	Full Permissiv	Phase
2	120	1	0	0	2	1	Green	Full Permissiv	Phase
3	140	81	0	0	3	1	Green	Full Permissiv	Phase
4	120	85	0	0	4	1	Green	Full Permissiv	Phase

Max Mode	Trans Ped Mo	Min Permissi	Correction M	Single Perm	Phase Plan	Overlap Plan	Veh Detector	Veh Detector	Ped Detector
Max 1	Phase	Phase Only	Shortway (Au	0	1	1	1	1	1
Max 2	Phase	Phase Only	Shortway (Au	0	1	1	1	1	1
Max 3	Phase	Phase Only	Shortway (Au	0	1	1	1	1	1
Max 1	Phase	Phase Only	Shortway (Au	0	2	1	1	1	1

Ped Detector	Pri/Pre Detec	Description
1	1	Coord Plan #1
1	1	Coord Plan #2
1	1	Coord Plan #3
1	1	Coord Plan #4

Table: Split Parameters [Split: 1]

Phase	Time	Min	Max	Coord Phase	Ref Point	Trans Cover P	Force Off Mo	Mode	Pri Min
1	20	0	0	0	0	0	Fixed	None	0
2	90	0	0	TRUE	TRUE	0	Fixed	None	0
4	30	0	0	0	0	0	Fixed	None	0
5	20	0	0	0	0	0	Fixed	None	0
6	90	0	0	TRUE	0	0	Fixed	None	0

Pri Max	Pri Force Off Mode
0	Float
0	Float
0	Float
0	Float
0	Float

Table: Split Parameters [Split: 3]

Phase	Time	Min	Max	Coord Phase	Ref Point	Trans Cover F	Force Off Mo	Mode	Pri Min
1	20	0	0	0	0	0	Fixed	None	0
2	100	0	0	TRUE	TRUE	0	Fixed	None	0
4	20	0	0	0	0	0	Fixed	None	0
5	35	0	0	0	0	0	Fixed	None	0
6	85	0	0	TRUE	0	0	Fixed	None	0

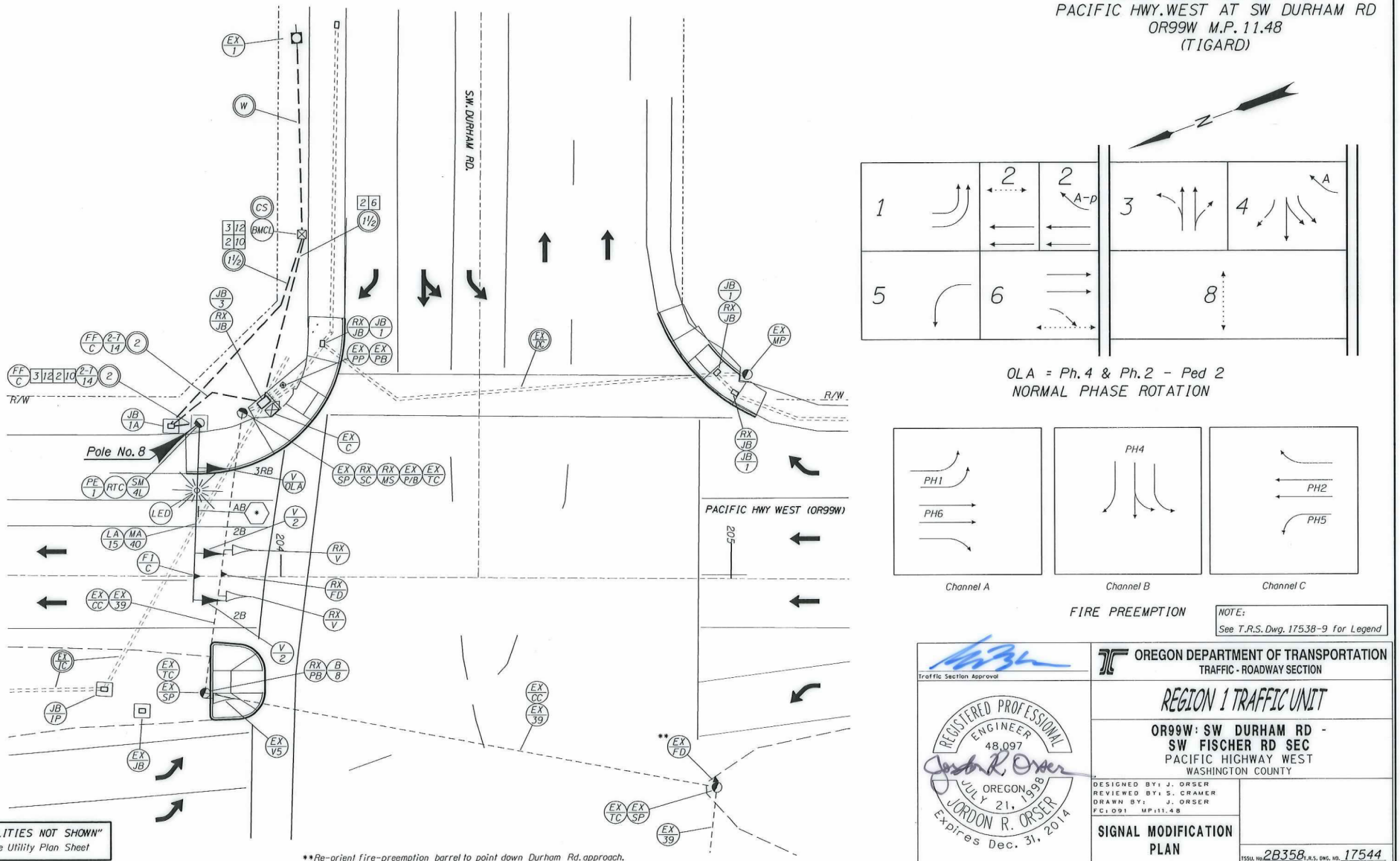
Pri Max	Pri Force Off Mode
0	Float
0	Float
0	Float
0	Float
0	Float

Table: Day Plan Events [Day Plan: 1]

Event	Hour	Minute	Action	Description
1	0	0	21	Coord Free
2	5	30	1	Coord Plan #1
3	10	0	2	Coord Plan #2
4	14	30	3	Coord Plan #3
5	18	30	2	Coord Plan #2
6	22	0	21	Coord Free

17544

SIGNAL MODIFICATION PLAN
PACIFIC HWY. WEST AT SW DURHAM RD
OR99W M.P. 11.48
(TIGARD)



OLA = Ph. 4 & Ph. 2 - Ped 2
NORMAL PHASE ROTATION

Channel A | Channel B | Channel C

FIRE PREEMPTION

NOTE:
See T.R.S. Dwg. 17538-9 for Legend

Traffic Section Approval

REGISTERED PROFESSIONAL ENGINEER
48,097
OREGON
JULY 21, 1998
JORDON R. ORSER
Expires Dec. 31, 2014

OREGON DEPARTMENT OF TRANSPORTATION
TRAFFIC - ROADWAY SECTION

REGION 1 TRAFFIC UNIT

OR99W: SW DURHAM RD - SW FISCHER RD SEC
PACIFIC HIGHWAY WEST
WASHINGTON COUNTY

DESIGNED BY: J. ORSER
REVIEWED BY: S. CRAMER
DRAWN BY: J. ORSER
FC: 091 MP: 11.48

SIGNAL MODIFICATION PLAN

ISSU. No. 2B358 T.R.S. DWG. NO. 17544

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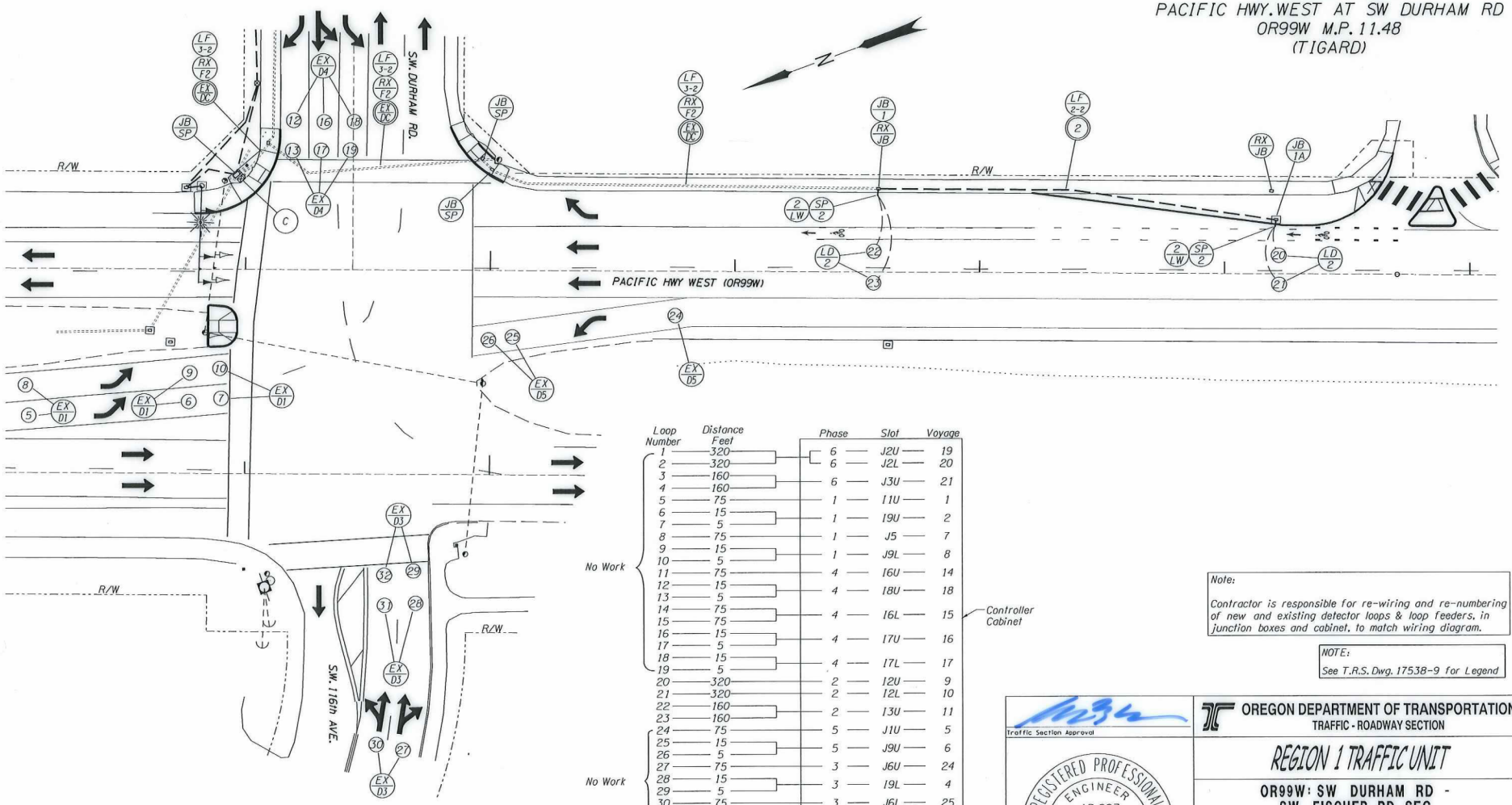
Rotation: 0° Scale: 1"=100'

17545

DETECTOR PLAN
PACIFIC HWY. WEST AT SW DURHAM RD
OR99W M.P. 11.48
(TIGARD)



Loop Number	Distance Feet	Phase	Slot	Voyage	
1	320	6	J2U	19	No Work
2	320	6	J2L	20	
3	160	6	J3U	21	
4	160				
5	75	1	I1U	1	
6	15	1	I9U	2	
7	5				
8	75	1	J5	7	
9	15	1	J9L	8	
10	5				
11	75	4	I6U	14	
12	15	4	I8U	18	
13	5				
14	75	4	I6L	15	Controller Cabinet
15	75				
16	15	4	I7U	16	
17	5				
18	15	4	I7L	17	
19	5				
20	320	2	I2U	9	
21	320	2	I2L	10	
22	160	2	I3U	11	
23	160				
24	75	5	J1U	5	No Work
25	15	5	J9U	6	
26	5				
27	75	3	J6U	24	
28	15	3	I9L	4	
29	5				
30	75	3	J6L	25	
31	15	3	I5U	3	
32	5				

LOOP DETECTOR WIRING DIAGRAM
"Distance" is from Stop Line to center of loop in feet

Note:
Contractor is responsible for re-wiring and re-numbering of new and existing detector loops & loop feeders, in junction boxes and cabinet, to match wiring diagram.

NOTE:
See T.R.S. Dwg. 17538-9 for Legend

"UTILITIES NOT SHOWN"
See Utility Plan Sheet

Traffic Section Approval

REGISTERED PROFESSIONAL ENGINEER
48,097
OREGON
JULY 21, 1998
JORDON R. ORSER
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OREGON DEPARTMENT OF TRANSPORTATION
TRAFFIC - ROADWAY SECTION

REGION 1 TRAFFIC UNIT

OR99W: SW DURHAM RD - SW FISCHER RD SEC
PACIFIC HIGHWAY WEST
WASHINGTON COUNTY

DESIGNED BY: J. ORSER
REVIEWED BY: S. CRAMER
DRAWN BY: J. ORSER
FC: 091 MP: 11.92

DETECTOR PLAN

TSSU No. 28358 T.R.S. DWG. NO. 17545

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Rotation: 0° Scale: 1"=100'

Table: Phase Timing Plans [Timing Plan: 1]

Phase	1	2	3	4	5	6	7	8
Walk	0	7	0	0	0	7	0	5
Ped Clear	0	22	0	0	0	16	0	35
Min Green	4	10	12	12	4	10	0	4
Passage	2.3	4.5	2.3	2.3	2.3	4.8	0	0.2
Max 1	29	72	17	26	17	84	0	42
Max 2	20	52	25	27	22	50	0	51
Max 3	29	60	16	45	18	71	0	54
Yellow Change	4	4.7	4	4	4.4	4.3	0	0
Red Clear	1.3	0.7	2	2	1	0.7	0	0
Added Initial	0	1.2	0	0	0	1.2	0	0
Maximum Initial	4	17	6	6	4	17	0	4
Time Before Reduction	8	10	8	8	8	10	0	1
Time To Reduce	3	20	3	3	3	20	0	1
Minimum Gap	0.5	2.5	1	0.5	1	2.8	0	0.2
Advance Walk	0	0	0	0	0	0	0	5
Walk 2	0	0	0	0	0	0	0	16

Table: Sequence Parameters [Sequence: 1]

Ring	Sequence Data
1	1,2,a,3,4,b
2	5,6,a,8,b

Table: Sequence Parameters [Sequence: 2]

Ring	Sequence Data
1	2,1,a,3,4,b
2	5,6,a,8,b

Table: Pattern Parameters

Pattern	Cycle Time	Offset 1	Offset 2	Offset 3	Split Number	Seq Number	Ref Point	Coord Mode	Force Off
1	140	24	0	0	1	2	Green	Full Permissive	Phase
2	120	83	0	0	2	2	Green	Full Permissive	Phase
3	140	49	0	0	3	1	Green	Full Permissive	Phase
4	120	117	0	0	4	2	Green	Full Permissive	Phase

Max Mode	Trans Ped Mo	Min Permissi	Correction M	Single Perm	Phase Plan	Overlap Plan	Veh Detector	Veh Detector	Ped Detector
Max 1	Phase	Phase Only	Shortway (Au	0	1	1	1	1	1
Max 2	Phase	Phase Only	Shortway (Au	0	1	1	1	1	1
Max 3	Phase	Phase Only	Shortway (Au	0	1	1	1	1	1
Max 1	Phase	Phase Only	Shortway (Au	0	2	1	1	1	1

Ped Detector	Pri/Pre Detec	Description
1	1	Coord Plan #1
1	1	Coord Plan #2
1	1	Coord Plan #3
1	1	Coord Plan #4

Table: Split Parameters [Split: 1]

Phase	Time	Min	Max	Coord Phase	Ref Point	Trans Cover F	Force Off Mo	Mode	Pri Min
1	28	0	0	0	0	0	Fixed	None	0
2	68	0	0	TRUE	0	0	Fixed	None	0
3	19	0	0	0	0	0	Fixed	None	0
4	25	0	0	0	0	0	Fixed	None	0
5	16	0	0	0	0	0	Fixed	None	0
6	80	0	0	TRUE	TRUE	0	Fixed	None	0
8	44	0	0	0	0	0	Fixed	None	0

Pri Max	Pri Force Off Mode
0	Float
0	Float
0	Float
0	Float
0	Float
0	Float
0	Float

Table: Split Parameters [Split: 2]

Phase	Time	Min	Max	Coord Phase	Ref Point	Trans Cover F	Force Off Mo	Mode	Pri Min
1	19	0	0	0	0	0	Fixed	None	0
2	51	0	0	TRUE	0	0	Fixed	None	0
3	24	0	0	0	0	0	Fixed	None	0
4	26	0	0	0	0	0	Fixed	None	0
5	21	0	0	0	0	0	Fixed	None	0
6	49	0	0	TRUE	TRUE	0	Fixed	None	0
8	50	0	0	0	0	0	Fixed	None	0

Pri Max	Pri Force Off Mode
0	Float
0	Float
0	Float
0	Float
0	Float
0	Float
0	Float

Table: Day Plan Events [Day Plan: 1]

Event	Hour	Minute	Action	Description
1	0	0	21	Coord Free
2	5	30	1	Coord Plan #1
3	10	0	2	Coord Plan #2
4	14	30	3	Coord Plan #3
5	18	30	2	Coord Plan #2
6	22	0	21	Coord Free

APPENDIX I.

OPERATIONS CALCULATIONS



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1162	594	903	808	139	284
Future Volume (vph)	1162	594	903	808	139	284
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	5.6
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	0.88
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3374	1553	3400	3343	3127	2515
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3374	1553	3400	3343	3127	2515
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	1236	632	961	860	148	302
RTOR Reduction (vph)	0	265	0	0	0	0
Lane Group Flow (vph)	1236	367	961	860	148	302
Confl. Peds. (#/hr)						4
Heavy Vehicles (%)	7%	4%	3%	8%	12%	13%
Turn Type	NA	Perm	Prot	NA	Prot	pt+ov
Protected Phases	2		1	6	8	1 4
Permitted Phases		2				
Actuated Green, G (s)	39.4	39.4	28.7	73.7	17.6	46.1
Effective Green, g (s)	41.4	41.4	30.3	75.7	19.6	41.1
Actuated g/C Ratio	0.40	0.40	0.29	0.73	0.19	0.40
Clearance Time (s)	6.0	6.0	5.6	6.0	6.0	
Vehicle Extension (s)	5.4	5.4	2.3	5.4	2.3	
Lane Grp Cap (vph)	1352	622	997	2449	593	1000
v/s Ratio Prot	c0.37		c0.28	0.26	c0.05	0.12
v/s Ratio Perm		0.24				
v/c Ratio	0.91	0.59	0.96	0.35	0.25	0.30
Uniform Delay, d1	29.3	24.3	36.0	5.0	35.6	21.3
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	10.3	2.5	20.1	0.4	0.1	0.1
Delay (s)	39.6	26.8	56.1	5.4	35.7	21.4
Level of Service	D	C	E	A	D	C
Approach Delay (s/veh)	35.3			32.1	26.1	
Approach LOS	D			C	C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	32.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.85		
Actuated Cycle Length (s)	103.3	Sum of lost time (s)	18.6
Intersection Capacity Utilization	75.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Edition methodology does not support exclusive ped or hold phases.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	40	210	232	39	791	723
Future Volume (vph)	40	210	232	39	791	723
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	0.0	4.5	4.5	4.0	4.5
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1597	1524	3195	1459	1750	3505
Flt Permitted	0.95	1.00	1.00	1.00	0.48	1.00
Satd. Flow (perm)	1597	1524	3195	1459	883	3505
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	46	241	267	45	909	831
RTOR Reduction (vph)	0	47	0	38	0	0
Lane Group Flow (vph)	46	194	267	7	909	831
Confl. Peds. (#/hr)				2	2	
Heavy Vehicles (%)	13%	6%	13%	8%	3%	3%
Turn Type	Perm	pt+ov	NA	Perm	D.P+P	NA
Protected Phases		4 5	6		5	2
Permitted Phases	4			6	6	
Actuated Green, G (s)	12.3	77.0	14.4	14.4	74.1	79.1
Effective Green, g (s)	13.3	82.0	15.4	15.4	76.1	80.1
Actuated g/C Ratio	0.13	0.80	0.15	0.15	0.75	0.79
Clearance Time (s)	5.0		5.5	5.5	5.0	5.5
Vehicle Extension (s)	4.0		4.5	4.5	4.0	4.5
Lane Grp Cap (vph)	208	1226	482	220	1175	2755
v/s Ratio Prot		0.13	0.08		c0.46	0.24
v/s Ratio Perm	c0.03			0.00	c0.12	
v/c Ratio	0.22	0.16	0.55	0.03	0.77	0.30
Uniform Delay, d1	39.7	2.2	40.1	36.9	9.5	3.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.7	0.1	2.0	0.1	3.4	0.3
Delay (s)	40.4	2.3	42.1	37.0	12.9	3.3
Level of Service	D	A	D	D	B	A
Approach Delay (s/veh)	8.4		41.4			8.3
Approach LOS	A		D			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	12.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	101.9	Sum of lost time (s)	12.5
Intersection Capacity Utilization	67.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Edition methodology does not support exclusive ped or hold phases.

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	61	740	2	8	228	129	1	0	5	46	1	28
Future Vol, veh/h	61	740	2	8	228	129	1	0	5	46	1	28
Conflicting Peds, #/hr	0	0	7	7	0	0	2	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	25	-	-	25	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	7	3	2	38	6	6	100	2	20	7	2	11
Mvmt Flow	66	804	2	9	248	140	1	0	5	50	1	30

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	388	0	0	814	0	0	1213	1350	812	1272	1281	320
Stage 1	-	-	-	-	-	-	945	945	-	335	335	-
Stage 2	-	-	-	-	-	-	268	405	-	937	946	-
Critical Hdwy	4.17	-	-	4.48	-	-	8.1	6.52	6.4	7.17	6.52	6.31
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	5.52	-	6.17	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	5.52	-	6.17	5.52	-
Follow-up Hdwy	2.263	-	-	2.542	-	-	4.4	4.018	3.48	3.563	4.018	3.399
Pot Cap-1 Maneuver	1144	-	-	676	-	-	102	150	352	141	165	700
Stage 1	-	-	-	-	-	-	214	340	-	668	642	-
Stage 2	-	-	-	-	-	-	566	598	-	311	340	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1144	-	-	672	-	-	90	139	350	129	153	699
Mov Cap-2 Maneuver	-	-	-	-	-	-	90	139	-	129	153	-
Stage 1	-	-	-	-	-	-	200	319	-	660	634	-
Stage 2	-	-	-	-	-	-	532	590	-	289	318	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.63	0.23	20.48	38.63
HCM LOS			C	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	90	350	1144	-	-	672	-	-	186
HCM Lane V/C Ratio	0.012	0.016	0.058	-	-	0.013	-	-	0.438
HCM Control Delay (s/veh)	45.6	15.4	8.3	-	-	10.4	-	-	38.6
HCM Lane LOS	E	C	A	-	-	B	-	-	E
HCM 95th %tile Q(veh)	0	0	0.2	-	-	0	-	-	2

3: JAE Access/SW 115th Avenue & SW Tualatin Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.0
Total Delay (hr)	0.1	0.5	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.0	0.0	1.0
Total Del/Veh (s)	5.3	3.0	1.1	6.3	1.5	1.0	14.9	6.8	14.1	19.1	6.9	3.2
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.2
Stop Del/Veh (s)	1.5	0.0	0.0	3.7	0.0	0.0	13.9	5.3	12.0	15.4	4.9	0.7

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	791	361	6	22	4
Future Vol, veh/h	1	791	361	6	22	4
Conflicting Peds, #/hr	1	0	0	1	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	25	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	3	7	2	5	2
Mvmt Flow	1	879	401	7	24	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	409	0	-	0	1287	405
Stage 1	-	-	-	-	405	-
Stage 2	-	-	-	-	881	-
Critical Hdwy	4.12	-	-	-	6.45	6.22
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.218	-	-	-	3.545	3.318
Pot Cap-1 Maneuver	1150	-	-	-	179	645
Stage 1	-	-	-	-	667	-
Stage 2	-	-	-	-	400	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1149	-	-	-	178	645
Mov Cap-2 Maneuver	-	-	-	-	302	-
Stage 1	-	-	-	-	665	-
Stage 2	-	-	-	-	400	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.01	0	17.01
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1149	-	-	-	329
HCM Lane V/C Ratio	0.001	-	-	-	0.088
HCM Control Delay (s/veh)	8.1	-	-	-	17
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Intersection	
Int Delay, s/veh	0.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	810	33	39	363	13	6
Future Vol, veh/h	810	33	39	363	13	6
Conflicting Peds, #/hr	0	2	2	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	2	2	7	15	17
Mvmt Flow	880	36	42	395	14	7

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	918	0	1381	900
Stage 1	-	-	-	-	900	-
Stage 2	-	-	-	-	480	-
Critical Hdwy	-	-	4.12	-	6.55	6.37
Critical Hdwy Stg 1	-	-	-	-	5.55	-
Critical Hdwy Stg 2	-	-	-	-	5.55	-
Follow-up Hdwy	-	-	2.218	-	3.635	3.453
Pot Cap-1 Maneuver	-	-	743	-	149	316
Stage 1	-	-	-	-	376	-
Stage 2	-	-	-	-	596	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	742	-	140	316
Mov Cap-2 Maneuver	-	-	-	-	266	-
Stage 1	-	-	-	-	376	-
Stage 2	-	-	-	-	561	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.98	18.89
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	280	-	-	742	-
HCM Lane V/C Ratio	0.074	-	-	0.057	-
HCM Control Delay (s/veh)	18.9	-	-	10.1	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.2	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	1	2	24	87	4
Future Vol, veh/h	1	1	2	24	87	4
Conflicting Peds, #/hr	0	0	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	100	50	17	2	25
Mvmt Flow	1	1	2	28	102	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	142	109	111	0	-	0
Stage 1	109	-	-	-	-	-
Stage 2	33	-	-	-	-	-
Critical Hdwy	6.42	7.2	4.6	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	4.2	2.65	-	-	-
Pot Cap-1 Maneuver	851	734	1228	-	-	-
Stage 1	916	-	-	-	-	-
Stage 2	990	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	843	732	1223	-	-	-
Mov Cap-2 Maneuver	843	-	-	-	-	-
Stage 1	911	-	-	-	-	-
Stage 2	986	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.61	0.61	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	138	-	783	-	-
HCM Lane V/C Ratio	0.002	-	0.003	-	-
HCM Control Delay (s/veh)	7.9	0	9.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	2	20	23	59	29
Future Vol, veh/h	1	2	20	23	59	29
Conflicting Peds, #/hr	0	0	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	2	2	2	17	5	2
Mvmt Flow	1	3	27	31	80	39

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	189	104	124	0	-	0
Stage 1	104	-	-	-	-	-
Stage 2	85	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	800	950	1463	-	-	-
Stage 1	920	-	-	-	-	-
Stage 2	938	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	777	946	1456	-	-	-
Mov Cap-2 Maneuver	777	-	-	-	-	-
Stage 1	898	-	-	-	-	-
Stage 2	934	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.1	3.5	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	837	-	882	-	-
HCM Lane V/C Ratio	0.019	-	0.005	-	-
HCM Control Delay (s/veh)	7.5	0	9.1	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0	-	-

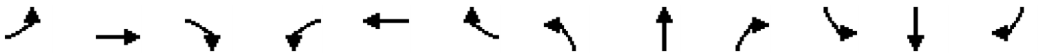
Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	0	8	58	40	50	6
Future Vol, veh/h	0	8	58	40	50	6
Conflicting Peds, #/hr	1	0	6	0	0	6
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	2	13	2	10	4	17
Mvmt Flow	0	10	74	51	64	8

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	275	74	78	0	-	0
Stage 1	74	-	-	-	-	-
Stage 2	201	-	-	-	-	-
Critical Hdwy	6.42	6.33	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.417	2.218	-	-	-
Pot Cap-1 Maneuver	715	958	1521	-	-	-
Stage 1	949	-	-	-	-	-
Stage 2	833	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	671	952	1512	-	-	-
Mov Cap-2 Maneuver	671	-	-	-	-	-
Stage 1	896	-	-	-	-	-
Stage 2	828	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	8.82	4.44	0
HCM LOS	A		

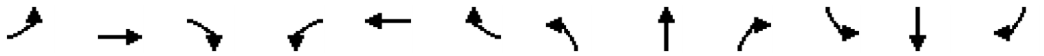
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1065	-	952	-	-
HCM Lane V/C Ratio	0.049	-	0.011	-	-
HCM Control Delay (s/veh)	7.5	0	8.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	101	21	15	12	27	17	237	49	211	517	31
Future Volume (vph)	7	101	21	15	12	27	17	237	49	211	517	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.90		1.00	0.97		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1583	1801		1289	1577		1702	3073		1768	3421	
Flt Permitted	0.95	1.00		0.95	1.00		0.39	1.00		0.55	1.00	
Satd. Flow (perm)	1583	1801		1289	1577		703	3073		1020	3421	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	8	115	24	17	14	31	19	269	56	240	588	35
RTOR Reduction (vph)	0	7	0	0	26	0	0	13	0	0	3	0
Lane Group Flow (vph)	8	132	0	17	19	0	19	312	0	240	621	0
Confl. Peds. (#/hr)			1	1			1		2	2		1
Heavy Vehicles (%)	14%	2%	5%	40%	17%	4%	6%	14%	14%	2%	4%	13%
Turn Type	Prot	NA		Prot	NA		D.P+P	NA		D.P+P	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							6			2		
Actuated Green, G (s)	0.7	8.8		0.9	9.0		31.1	19.3		31.1	30.4	
Effective Green, g (s)	1.7	9.8		1.9	10.0		33.1	20.3		31.1	30.4	
Actuated g/C Ratio	0.03	0.16		0.03	0.16		0.54	0.33		0.51	0.50	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	44	290		40	259		410	1026		666	1710	
v/s Ratio Prot	0.01	c0.07		c0.01	0.01		0.00	0.10		c0.07	c0.18	
v/s Ratio Perm							0.02			0.11		
v/c Ratio	0.18	0.46		0.43	0.07		0.05	0.30		0.36	0.36	
Uniform Delay, d1	28.9	23.1		28.9	21.5		6.4	15.0		8.4	9.3	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.0	1.1		7.1	0.1		0.0	0.2		0.3	0.1	
Delay (s)	30.9	24.2		36.0	21.6		6.5	15.2		8.7	9.4	
Level of Service	C	C		D	C		A	B		A	A	
Approach Delay (s/veh)		24.6			25.6			14.7			9.2	
Approach LOS		C			C			B			A	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	12.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.40		
Actuated Cycle Length (s)	60.8	Sum of lost time (s)	17.0
Intersection Capacity Utilization	43.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	101	21	15	12	27	17	237	49	211	517	31
Future Volume (veh/h)	7	101	21	15	12	27	17	237	49	211	517	31
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1693	1870	1826	1307	1648	1841	1811	1693	1693	1870	1841	1707
Adj Flow Rate, veh/h	8	115	24	17	14	31	19	269	56	240	588	35
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	14	2	5	40	17	4	6	14	14	2	4	13
Cap, veh/h	59	240	50	65	80	176	435	653	134	602	1234	73
Arrive On Green	0.04	0.16	0.14	0.05	0.17	0.15	0.05	0.25	0.22	0.17	0.37	0.37
Sat Flow, veh/h	1612	1500	313	1245	456	1009	1725	2656	544	1781	3354	199
Grp Volume(v), veh/h	8	0	139	17	0	45	19	161	164	240	306	317
Grp Sat Flow(s),veh/h/ln	1612	0	1813	1245	0	1464	1725	1608	1592	1781	1749	1804
Q Serve(g_s), s	0.2	0.0	3.2	0.6	0.0	1.2	0.3	3.8	3.9	4.3	6.1	6.1
Cycle Q Clear(g_c), s	0.2	0.0	3.2	0.6	0.0	1.2	0.3	3.8	3.9	4.3	6.1	6.1
Prop In Lane	1.00		0.17	1.00		0.69	1.00		0.34	1.00		0.11
Lane Grp Cap(c), veh/h	59	0	289	65	0	256	435	395	391	602	644	664
V/C Ratio(X)	0.13	0.00	0.48	0.26	0.00	0.18	0.04	0.41	0.42	0.40	0.48	0.48
Avail Cap(c_a), veh/h	569	0	1240	302	0	1001	1156	1099	1088	1285	1543	1592
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.1	0.0	17.4	20.7	0.0	16.2	7.7	14.3	14.5	9.9	11.0	11.0
Incr Delay (d2), s/veh	1.0	0.0	1.2	2.1	0.0	0.3	0.0	0.7	0.7	0.4	0.5	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	1.2	0.2	0.0	0.4	0.1	1.1	1.2	1.2	1.7	1.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	22.2	0.0	18.7	22.8	0.0	16.6	7.8	15.0	15.2	10.4	11.5	11.5
LnGrp LOS	C		B	C		B	A	B	B	B	B	B
Approach Vol, veh/h		147			62			344			863	
Approach Delay, s/veh		18.8			18.3			14.7			11.2	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	12.6	15.1	6.3	11.2	6.1	21.7	5.7	11.9
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	25.0	30.0	10.0	30.0	20.0	40.0	15.0	30.0
Max Q Clear Time (g_c+I1), s	6.3	5.9	2.6	5.2	2.3	8.1	2.2	3.2
Green Ext Time (p_c), s	1.0	1.5	0.0	1.3	0.0	3.1	0.0	0.3

Intersection Summary	
HCM 7th Control Delay, s/veh	13.2
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Intersection Delay, s/veh	9.6
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	17	301	22	8	43	0	15	1	12	0	1	1
Future Vol, veh/h	17	301	22	8	43	0	15	1	12	0	1	1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	2	2	23	13	14	2	13	2	2	2	2	2
Mvmt Flow	19	338	25	9	48	0	17	1	13	0	1	1
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	10	8	8.2	7.6
HCM LOS	A	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	54%	5%	16%	0%
Vol Thru, %	4%	89%	84%	50%
Vol Right, %	43%	6%	0%	50%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	28	340	51	2
LT Vol	15	17	8	0
Through Vol	1	301	43	1
RT Vol	12	22	0	1
Lane Flow Rate	31	382	57	2
Geometry Grp	1	1	1	1
Degree of Util (X)	0.043	0.425	0.073	0.003
Departure Headway (Hd)	4.928	4.007	4.602	4.629
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	731	894	782	777
Service Time	2.929	2.057	2.606	2.633
HCM Lane V/C Ratio	0.042	0.427	0.073	0.003
HCM Control Delay, s/veh	8.2	10	8	7.6
HCM Lane LOS	A	A	A	A
HCM 95th-tile Q	0.1	2.1	0.2	0

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	149	145	32	74	7	18
Future Vol, veh/h	149	145	32	74	7	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	3	3	9	2	2	17
Mvmt Flow	180	175	39	89	8	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	128	0	-	0	617	83
Stage 1	-	-	-	-	83	-
Stage 2	-	-	-	-	534	-
Critical Hdwy	4.13	-	-	-	6.42	6.37
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.227	-	-	-	3.518	3.453
Pot Cap-1 Maneuver	1452	-	-	-	454	936
Stage 1	-	-	-	-	940	-
Stage 2	-	-	-	-	588	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1452	-	-	-	391	936
Mov Cap-2 Maneuver	-	-	-	-	391	-
Stage 1	-	-	-	-	811	-
Stage 2	-	-	-	-	588	-

Approach	EB	WB	SB
HCM Control Delay, s/v	3.97	0	10.47
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	912	-	-	-	391	936
HCM Lane V/C Ratio	0.124	-	-	-	0.022	0.023
HCM Control Delay (s/veh)	7.8	0	-	-	14.4	8.9
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0.4	-	-	-	0.1	0.1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	152	106	0	0	0
Future Vol, veh/h	0	152	106	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	5	5	2	2	2
Mvmt Flow	0	185	129	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	129	0	-	0	315	129
Stage 1	-	-	-	-	129	-
Stage 2	-	-	-	-	185	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1456	-	-	-	678	921
Stage 1	-	-	-	-	897	-
Stage 2	-	-	-	-	846	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1456	-	-	-	678	921
Mov Cap-2 Maneuver	-	-	-	-	678	-
Stage 1	-	-	-	-	897	-
Stage 2	-	-	-	-	846	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1456	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	20	131	96	29	12	8
Future Vol, veh/h	20	131	96	29	12	8
Conflicting Peds, #/hr	12	0	0	12	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	5	5	4	2	2
Mvmt Flow	24	158	116	35	14	10

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	163	0	-	0	351	146
Stage 1	-	-	-	-	145	-
Stage 2	-	-	-	-	206	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1416	-	-	-	646	901
Stage 1	-	-	-	-	882	-
Stage 2	-	-	-	-	828	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1400	-	-	-	620	890
Mov Cap-2 Maneuver	-	-	-	-	620	-
Stage 1	-	-	-	-	856	-
Stage 2	-	-	-	-	819	-

Approach	EB	WB	SB
HCM Control Delay, s/v	1.01	0	10.2
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	238	-	-	-	620	890
HCM Lane V/C Ratio	0.017	-	-	-	0.023	0.011
HCM Control Delay (s/veh)	7.6	0	-	-	10.9	9.1
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1	0

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	131	3	0	137	0	0	0	0	0	0	0
Future Vol, veh/h	0	131	3	0	137	0	0	0	0	0	0	0
Conflicting Peds, #/hr	8	0	3	3	0	8	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	77	77	77	77	77	77	77	77	77
Heavy Vehicles, %	2	5	2	2	4	2	2	2	2	2	2	2
Mvmt Flow	0	170	4	0	178	0	0	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	186	0	0	177	0	0	354	361	175	356	363	187
Stage 1	-	-	-	-	-	-	175	175	-	186	186	-
Stage 2	-	-	-	-	-	-	179	186	-	170	177	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1389	-	-	1399	-	-	601	566	868	599	565	855
Stage 1	-	-	-	-	-	-	827	754	-	816	746	-
Stage 2	-	-	-	-	-	-	823	746	-	832	753	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1378	-	-	1395	-	-	599	560	866	595	559	848
Mov Cap-2 Maneuver	-	-	-	-	-	-	599	560	-	595	559	-
Stage 1	-	-	-	-	-	-	824	752	-	810	740	-
Stage 2	-	-	-	-	-	-	822	740	-	832	751	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0	0	0
HCM LOS			A	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	1378	-	-	1395	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-	-	-	-
HCM Control Delay (s/veh)	0	0	-	-	0	-	-	0
HCM Lane LOS	A	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	-	0	-	-	0	-	-	-

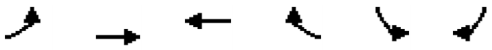
Intersection	
Int Delay, s/veh	6.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	69	64	123	67	23	35
Future Vol, veh/h	69	64	123	67	23	35
Conflicting Peds, #/hr	0	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	3	2	4	2	9	3
Mvmt Flow	80	74	143	78	27	41

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	413	49	69	0	-	0
Stage 1	49	-	-	-	-	-
Stage 2	364	-	-	-	-	-
Critical Hdwy	6.43	6.22	4.14	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.318	2.236	-	-	-
Pot Cap-1 Maneuver	593	1019	1519	-	-	-
Stage 1	971	-	-	-	-	-
Stage 2	701	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	533	1018	1516	-	-	-
Mov Cap-2 Maneuver	533	-	-	-	-	-
Stage 1	873	-	-	-	-	-
Stage 2	700	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	11.7	4.93	0
HCM LOS	B		

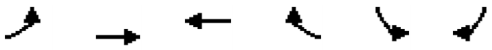
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1165	-	691	-	-
HCM Lane V/C Ratio	0.094	-	0.224	-	-
HCM Control Delay (s/veh)	7.6	0	11.7	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.3	-	0.9	-	-



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	18	370	268	190	47	6
Future Volume (vph)	18	370	268	190	47	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.99		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.94		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1702	1624	1629		1626	1583
Flt Permitted	0.41	1.00	1.00		0.95	1.00
Satd. Flow (perm)	738	1624	1629		1626	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	20	402	291	207	51	7
RTOR Reduction (vph)	0	0	20	0	0	6
Lane Group Flow (vph)	20	402	478	0	51	1
Confl. Peds. (#/hr)	2			2		
Heavy Vehicles (%)	6%	17%	12%	5%	11%	2%
Turn Type	D.P+P	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	6					4
Actuated Green, G (s)	26.6	32.0	25.9		4.1	4.1
Effective Green, g (s)	29.4	33.4	27.3		6.6	6.6
Actuated g/C Ratio	0.61	0.70	0.57		0.14	0.14
Clearance Time (s)	5.4	5.4	5.4		6.5	6.5
Vehicle Extension (s)	2.0	3.1	3.1		2.6	2.6
Lane Grp Cap (vph)	494	1130	926		223	217
v/s Ratio Prot	0.00	c0.25	c0.29		c0.03	
v/s Ratio Perm	0.02					0.00
v/c Ratio	0.04	0.36	0.52		0.23	0.00
Uniform Delay, d1	5.4	3.0	6.3		18.4	17.9
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.2	0.5		0.4	0.0
Delay (s)	5.4	3.2	6.8		18.8	17.9
Level of Service	A	A	A		B	B
Approach Delay (s/veh)		3.3	6.8		18.7	
Approach LOS		A	A		B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	6.0	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.48		
Actuated Cycle Length (s)	48.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	36.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	18	370	268	190	47	6
Future Volume (veh/h)	18	370	268	190	47	6
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1811	1648	1722	1826	1737	1870
Adj Flow Rate, veh/h	20	402	291	207	51	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	17	12	5	11	2
Cap, veh/h	578	1177	535	380	184	177
Arrive On Green	0.06	0.71	0.57	0.54	0.11	0.11
Sat Flow, veh/h	1725	1648	935	665	1654	1585
Grp Volume(v), veh/h	20	402	0	498	51	7
Grp Sat Flow(s),veh/h/ln	1725	1648	0	1601	1654	1585
Q Serve(g_s), s	0.0	4.2	0.0	9.0	1.3	0.2
Cycle Q Clear(g_c), s	0.0	4.2	0.0	9.0	1.3	0.2
Prop In Lane	1.00			0.42	1.00	1.00
Lane Grp Cap(c), veh/h	578	1177	0	915	184	177
V/C Ratio(X)	0.03	0.34	0.00	0.54	0.28	0.04
Avail Cap(c_a), veh/h	912	1669	0	2285	1173	1124
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	7.6	2.5	0.0	6.3	18.7	18.2
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.5	0.6	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.3	0.0	1.9	0.5	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	7.6	2.7	0.0	6.9	19.3	18.2
LnGrp LOS	A	A		A	B	B
Approach Vol, veh/h		422	498		58	
Approach Delay, s/veh		2.9	6.9		19.2	
Approach LOS		A	A		B	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		36.7		9.1	6.5	30.2
Change Period (Y+Rc), s		5.4		6.5	5.4	5.4
Max Green Setting (Gmax), s		45.0		30.0	10.0	64.0
Max Q Clear Time (g_c+I1), s		6.2		3.3	2.0	11.0
Green Ext Time (p_c), s		9.2		0.1	0.0	13.8

Intersection Summary		
HCM 7th Control Delay, s/veh	5.9	
HCM 7th LOS	A	

Intersection	
Int Delay, s/veh	3.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	640	185	65	322	74	58
Future Vol, veh/h	640	185	65	322	74	58
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	3	4	3	14	12
Mvmt Flow	667	193	68	335	77	60

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	860	0	1235	764
Stage 1	-	-	-	-	764	-
Stage 2	-	-	-	-	471	-
Critical Hdwy	-	-	4.14	-	6.54	6.32
Critical Hdwy Stg 1	-	-	-	-	5.54	-
Critical Hdwy Stg 2	-	-	-	-	5.54	-
Follow-up Hdwy	-	-	2.236	-	3.626	3.408
Pot Cap-1 Maneuver	-	-	773	-	184	388
Stage 1	-	-	-	-	439	-
Stage 2	-	-	-	-	604	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	772	-	168	388
Mov Cap-2 Maneuver	-	-	-	-	168	-
Stage 1	-	-	-	-	439	-
Stage 2	-	-	-	-	551	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	1.7	31.41
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	168	388	-	-	772	-
HCM Lane V/C Ratio	0.459	0.156	-	-	0.088	-
HCM Control Delay (s/veh)	43.5	16	-	-	10.1	-
HCM Lane LOS	E	C	-	-	B	-
HCM 95th %tile Q(veh)	2.1	0.5	-	-	0.3	-



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	640	185	65	322	74	58
Future Volume (Veh/h)	640	185	65	322	74	58
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	667	193	68	335	77	60
Pedestrians					1	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			861		1236	765
vC1, stage 1 conf vol					765	
vC2, stage 2 conf vol					471	
vCu, unblocked vol			861		1236	765
tC, single (s)			4.1		6.5	6.3
tC, 2 stage (s)					5.5	
tF (s)			2.2		3.6	3.4
p0 queue free %			91		79	85
cM capacity (veh/h)			772		368	387

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total	860	68	335	77	60
Volume Left	0	68	0	77	0
Volume Right	193	0	0	0	60
cSH	1700	772	1700	368	387
Volume to Capacity	0.51	0.09	0.20	0.21	0.15
Queue Length 95th (ft)	0	7	0	19	14
Control Delay (s/veh)	0.0	10.1	0.0	17.3	16.0
Lane LOS		B		C	C
Approach Delay (s/veh)	0.0	1.7		16.7	
Approach LOS				C	

Intersection Summary			
Average Delay	2.1		
Intersection Capacity Utilization	62.7%	ICU Level of Service	B
Analysis Period (min)	15		

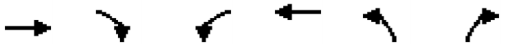
Intersection	
Int Delay, s/veh	8.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	36	12	36	82	101	85
Future Vol, veh/h	36	12	36	82	101	85
Conflicting Peds, #/hr	0	44	44	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	62	62	62	62	62	62
Heavy Vehicles, %	3	2	17	5	5	7
Mvmt Flow	58	19	58	132	163	137

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	121	0	360	112
Stage 1	-	-	-	-	112	-
Stage 2	-	-	-	-	248	-
Critical Hdwy	-	-	4.27	-	6.45	6.27
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	-	-	2.353	-	3.545	3.363
Pot Cap-1 Maneuver	-	-	1378	-	633	928
Stage 1	-	-	-	-	906	-
Stage 2	-	-	-	-	786	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1320	-	577	889
Mov Cap-2 Maneuver	-	-	-	-	577	-
Stage 1	-	-	-	-	868	-
Stage 2	-	-	-	-	749	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	2.4	14.23
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	688	-	-	549	-
HCM Lane V/C Ratio	0.436	-	-	0.044	-
HCM Control Delay (s/veh)	14.2	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	2.2	-	-	0.1	-



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	36	12	36	82	101	85
Future Volume (Veh/h)	36	12	36	82	101	85
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.62	0.62	0.62	0.62	0.62	0.62
Hourly flow rate (vph)	58	19	58	132	163	137
Pedestrians					44	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					4	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			121		360	112
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			121		360	112
tC, single (s)			4.3		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.4		3.5	3.4
p0 queue free %			96		72	85
cM capacity (veh/h)			1321		580	889

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	77	190	300
Volume Left	0	58	163
Volume Right	19	0	137
cSH	1700	1321	690
Volume to Capacity	0.05	0.04	0.44
Queue Length 95th (ft)	0	3	55
Control Delay (s/veh)	0.0	2.7	14.2
Lane LOS		A	B
Approach Delay (s/veh)	0.0	2.7	14.2
Approach LOS			B

Intersection Summary			
Average Delay	8.4		
Intersection Capacity Utilization	30.4%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	1.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	198	1393	40	0	1706
Future Vol, veh/h	0	198	1393	40	0	1706
Conflicting Peds, #/hr	0	1	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	Free	-	None
Storage Length	-	0	-	335	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	6	8	3	2	6
Mvmt Flow	0	206	1451	42	0	1777

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	727	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.02	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.36	-	-	-	-
Pot Cap-1 Maneuver	0	358	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	357	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	27.94	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	357	-
HCM Lane V/C Ratio	-	0.577	-
HCM Control Delay (s/veh)	-	27.9	-
HCM Lane LOS	-	D	-
HCM 95th %tile Q(veh)	-	3.5	-

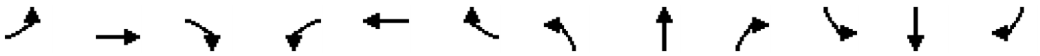


Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	198	1393	40	0	1706
Future Volume (Veh/h)	0	198	1393	40	0	1706
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	0	206	1451	42	0	1777
Pedestrians	1					1
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	3.5					3.5
Percent Blockage	0					0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2341	728			1452	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2341	728			1452	
tC, single (s)	6.8	*6.0			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.2	
p0 queue free %	100	53			100	
cM capacity (veh/h)	30	438			462	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	206	726	726	42	889	889
Volume Left	0	0	0	0	0	0
Volume Right	206	0	0	42	0	0
cSH	438	1700	1700	1700	1700	1700
Volume to Capacity	0.47	0.43	0.43	0.02	0.52	0.52
Queue Length 95th (ft)	61	0	0	0	0	0
Control Delay (s/veh)	20.3	0.0	0.0	0.0	0.0	0.0
Lane LOS	C					
Approach Delay (s/veh)	20.3	0.0			0.0	
Approach LOS	C					

Intersection Summary			
Average Delay	1.2		
Intersection Capacity Utilization	57.6%	ICU Level of Service	B
Analysis Period (min)	15		

* User Entered Value



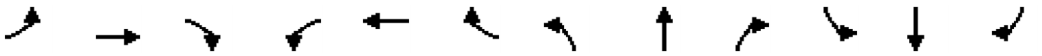
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	201	198	23	220	9	252	144	36	15	206	6
Future Volume (vph)	10	201	198	23	220	9	252	144	36	15	206	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0		4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	0.99		1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1500	1484		1543	1766		1612	1577		1687	1799	
Flt Permitted	0.57	1.00		0.28	1.00		0.41	1.00		0.64	1.00	
Satd. Flow (perm)	904	1484		459	1766		700	1577		1129	1799	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	11	216	213	25	237	10	271	155	39	16	222	6
RTOR Reduction (vph)	0	20	0	0	1	0	0	0	0	0	1	0
Lane Group Flow (vph)	11	409	0	25	246	0	271	194	0	16	227	0
Confl. Peds. (#/hr)	2					2						
Heavy Vehicles (%)	20%	14%	23%	17%	7%	2%	12%	14%	28%	7%	4%	50%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	32.5	31.7		36.7	33.8		40.3	34.5		24.2	22.4	
Effective Green, g (s)	32.5	32.2		36.7	34.3		40.3	35.0		24.2	22.9	
Actuated g/C Ratio	0.36	0.36		0.41	0.38		0.45	0.39		0.27	0.25	
Clearance Time (s)	4.0	5.5		4.0	5.5		4.0	5.5		4.0	5.5	
Vehicle Extension (s)	2.0	3.2		2.0	3.2		2.0	3.2		2.0	3.2	
Lane Grp Cap (vph)	332	531		222	673		454	613		315	458	
v/s Ratio Prot	0.00	c0.28		c0.00	0.14		c0.09	0.12		0.00	0.13	
v/s Ratio Perm	0.01			0.04			c0.17			0.01		
v/c Ratio	0.03	0.77		0.11	0.37		0.60	0.32		0.05	0.50	
Uniform Delay, d1	18.5	25.6		17.3	20.0		17.0	19.1		24.2	28.6	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	6.9		0.1	0.4		1.4	0.3		0.0	0.9	
Delay (s)	18.5	32.5		17.4	20.3		18.4	19.4		24.3	29.5	
Level of Service	B	C		B	C		B	B		C	C	
Approach Delay (s/veh)		32.1			20.1			18.9			29.1	
Approach LOS		C			C			B			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	25.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.68		
Actuated Cycle Length (s)	89.9	Sum of lost time (s)	18.0
Intersection Capacity Utilization	59.5%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Signalized Intersection Summary
20: SW Teton Avenue & SW Herman Road

07/15/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	10	201	198	23	220	9	252	144	36	15	206	6
Future Volume (veh/h)	10	201	198	23	220	9	252	144	36	15	206	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1604	1693	1559	1648	1796	1870	1722	1693	1485	1796	1841	1159
Adj Flow Rate, veh/h	11	216	213	25	237	10	271	155	39	16	222	6
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	20	14	23	17	7	2	12	14	28	7	4	50
Cap, veh/h	418	308	303	275	697	29	407	401	101	314	295	8
Arrive On Green	0.01	0.39	0.39	0.03	0.41	0.40	0.16	0.31	0.30	0.02	0.17	0.16
Sat Flow, veh/h	1527	781	770	1570	1711	72	1640	1305	328	1711	1784	48
Grp Volume(v), veh/h	11	0	429	25	0	247	271	0	194	16	0	228
Grp Sat Flow(s),veh/h/ln	1527	0	1552	1570	0	1783	1640	0	1633	1711	0	1832
Q Serve(g_s), s	0.3	0.0	16.5	0.7	0.0	6.8	9.2	0.0	6.7	0.6	0.0	8.5
Cycle Q Clear(g_c), s	0.3	0.0	16.5	0.7	0.0	6.8	9.2	0.0	6.7	0.6	0.0	8.5
Prop In Lane	1.00		0.50	1.00		0.04	1.00		0.20	1.00		0.03
Lane Grp Cap(c), veh/h	418	0	611	275	0	726	407	0	502	314	0	302
V/C Ratio(X)	0.03	0.00	0.70	0.09	0.00	0.34	0.67	0.00	0.39	0.05	0.00	0.75
Avail Cap(c_a), veh/h	826	0	1188	672	0	1340	604	0	1319	762	0	1428
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	13.1	0.0	18.2	14.4	0.0	14.5	19.2	0.0	19.4	24.3	0.0	28.3
Incr Delay (d2), s/veh	0.0	0.0	1.6	0.1	0.0	0.3	0.7	0.0	0.5	0.0	0.0	4.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	5.3	0.2	0.0	2.5	3.2	0.0	2.4	0.2	0.0	3.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	13.1	0.0	19.8	14.5	0.0	14.8	19.9	0.0	20.0	24.4	0.0	32.5
LnGrp LOS	B		B	B		B	B		B	C		C
Approach Vol, veh/h		440			272			465			244	
Approach Delay, s/veh		19.6			14.8			19.9			31.9	
Approach LOS		B			B			B			C	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.0	33.0	15.5	16.8	5.0	34.0	5.4	26.9
Change Period (Y+Rc), s	4.0	5.5	4.0	5.5	4.0	5.5	4.0	5.5
Max Green Setting (Gmax), s	20.0	54.0	20.0	55.0	20.0	53.0	20.0	57.0
Max Q Clear Time (g_c+I1), s	2.7	18.5	11.2	10.5	2.3	8.8	2.6	8.7
Green Ext Time (p_c), s	0.0	9.0	0.3	0.8	0.0	5.4	0.0	2.8

Intersection Summary	
HCM 7th Control Delay, s/veh	20.9
HCM 7th LOS	C



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	220	339	129	1488	18	1365	98
Future Volume (vph)	220	339	129	1488	18	1365	98
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1736	1528	1656	3312	1770	3406	1452
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1736	1528	1656	3312	1770	3406	1452
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	229	353	134	1550	19	1422	102
RTOR Reduction (vph)	0	171	0	0	0	0	31
Lane Group Flow (vph)	229	182	134	1550	19	1422	71
Confl. Peds. (#/hr)		5	3				3
Heavy Vehicles (%)	4%	4%	9%	9%	2%	6%	8%
Turn Type	Prot	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	4		5	2	1	6	
Permitted Phases		4					6
Actuated Green, G (s)	21.7	21.7	16.3	98.4	4.4	85.5	85.5
Effective Green, g (s)	22.7	22.7	17.8	100.4	4.9	87.5	87.5
Actuated g/C Ratio	0.16	0.16	0.13	0.72	0.04	0.63	0.63
Clearance Time (s)	5.0	5.0	5.5	6.0	4.5	6.0	6.0
Vehicle Extension (s)	2.5	2.5	2.3	4.5	2.3	4.5	4.5
Lane Grp Cap (vph)	281	247	210	2375	61	2128	907
v/s Ratio Prot	c0.13		0.08	c0.47	0.01	c0.42	
v/s Ratio Perm		0.12					0.05
v/c Ratio	0.81	0.74	0.64	0.65	0.31	0.67	0.08
Uniform Delay, d1	56.6	55.8	58.0	10.5	65.9	16.9	10.4
Progression Factor	1.00	1.00	1.00	1.00	1.13	1.25	0.90
Incremental Delay, d2	16.0	10.3	5.1	1.4	1.4	1.4	0.1
Delay (s)	72.7	66.1	63.2	11.9	76.1	22.6	9.4
Level of Service	E	E	E	B	E	C	A
Approach Delay (s/veh)	68.7			16.0		22.4	
Approach LOS	E			B		C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	26.7	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Signalized Intersection Summary
21: OR 99W (Pacific Highway) & SW Fischer Road

07/15/2025



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	220	339	129	1488	18	1365	98
Future Volume (veh/h)	220	339	129	1488	18	1365	98
Initial Q (Qb), veh	0	0	0	0		0	0
Lane Width Adj.	1.00	1.00	1.00	1.00		1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00				1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00		1.00	1.00
Work Zone On Approach	No			No		No	
Adj Sat Flow, veh/h/ln	1841	1841	1767	1767		1811	1781
Adj Flow Rate, veh/h	229	176	134	1550		1422	102
Peak Hour Factor	0.96	0.96	0.96	0.96		0.96	0.96
Percent Heavy Veh, %	4	4	9	9		6	8
Cap, veh/h	271	241	238	2645		2114	925
Arrive On Green	0.15	0.15	0.14	0.79		1.00	1.00
Sat Flow, veh/h	1753	1560	1682	3445		3532	1506
Grp Volume(v), veh/h	229	176	134	1550		1422	102
Grp Sat Flow(s),veh/h/ln	1753	1560	1682	1678		1721	1506
Q Serve(g_s), s	17.8	15.0	10.4	25.5		0.0	0.0
Cycle Q Clear(g_c), s	17.8	15.0	10.4	25.5		0.0	0.0
Prop In Lane	1.00	1.00	1.00				1.00
Lane Grp Cap(c), veh/h	271	241	238	2645		2114	925
V/C Ratio(X)	0.84	0.73	0.56	0.59		0.67	0.11
Avail Cap(c_a), veh/h	326	290	238	2645		2114	925
HCM Platoon Ratio	1.00	1.00	1.00	1.00		2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00		0.77	0.77
Uniform Delay (d), s/veh	57.5	56.4	56.0	5.8		0.0	0.0
Incr Delay (d2), s/veh	14.9	6.5	2.3	1.0		1.3	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(50%),veh/ln	9.1	13.1	4.5	7.1		0.4	0.0
Unsig. Movement Delay, s/veh							
LnGrp Delay(d), s/veh	72.4	62.9	58.3	6.8		1.3	0.2
LnGrp LOS	E	E	E	A		A	A
Approach Vol, veh/h	405			1684		1524	
Approach Delay, s/veh	68.2			10.9		1.3	
Approach LOS	E			B		A	

Timer - Assigned Phs		2		4	5	6	
Phs Duration (G+Y+Rc), s		114.3		25.7	24.3	90.0	
Change Period (Y+Rc), s		6.0		5.0	6.0	* 6	
Max Green Setting (Gmax), s		84.0		25.0	14.5	* 84	
Max Q Clear Time (g_c+I1), s		27.5		19.8	12.4	2.0	
Green Ext Time (p_c), s		50.8		0.9	0.1	64.8	

Intersection Summary	
HCM 7th Control Delay, s/veh	13.3
HCM 7th LOS	B

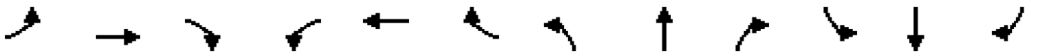
Notes

User approved pedestrian interval to be less than phase max green.
User approved ignoring U-Turning movement.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

HCM Signalized Intersection Capacity Analysis
22: OR 99W (Pacific Highway) & SW 116th Avenue/SW Durham Road

07/15/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	49	27	278	23	156	71	1159	490	380	1115	14
Future Volume (vph)	6	49	27	278	23	156	71	1159	490	380	1115	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0	6.0	5.4	5.4	6.0	5.3	5.0	5.0
Lane Util. Factor		0.95		0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes		1.00		1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.97
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.95		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00		0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		3350		1633	1651	1515	1770	3312	1513	3367	3374	1542
Flt Permitted		1.00		0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3350		1633	1651	1515	1770	3312	1513	3367	3374	1542
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	6	50	28	284	23	159	72	1183	500	388	1138	14
RTOR Reduction (vph)	0	26	0	0	0	140	0	0	94	0	0	6
Lane Group Flow (vph)	0	58	0	153	154	19	72	1183	406	388	1138	8
Confl. Peds. (#/hr)	9					9	2		6	6		2
Heavy Vehicles (%)	2%	2%	2%	5%	4%	3%	2%	9%	5%	4%	7%	2%
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	3	3		4	4		5	2	4	1	6	
Permitted Phases						4			2			6
Actuated Green, G (s)		12.0		17.1	17.1	17.1	8.0	64.5	81.6	23.7	80.5	80.5
Effective Green, g (s)		12.0		17.1	17.1	17.1	8.0	64.5	81.6	23.7	80.5	80.5
Actuated g/C Ratio		0.09		0.12	0.12	0.12	0.06	0.46	0.58	0.17	0.57	0.57
Clearance Time (s)		6.0		6.0	6.0	6.0	5.4	5.4	6.0	5.3	5.0	5.0
Vehicle Extension (s)		2.3		2.3	2.3	2.3	2.3	4.5	2.3	2.3	4.8	4.8
Lane Grp Cap (vph)		287		199	201	185	101	1525	946	569	1940	886
v/s Ratio Prot		c0.02		c0.09	0.09		0.04	c0.36	0.05	c0.12	0.34	
v/s Ratio Perm						0.01			0.22			0.01
v/c Ratio		0.20		0.77	0.77	0.10	0.71	0.78	0.43	0.68	0.59	0.01
Uniform Delay, d1		59.6		59.5	59.5	54.6	64.9	31.7	16.2	54.6	19.1	12.7
Progression Factor		1.00		1.00	1.00	1.00	0.90	0.92	0.54	1.00	1.00	1.00
Incremental Delay, d2		0.2		15.3	14.9	0.1	14.9	3.0	0.1	2.9	1.3	0.0
Delay (s)		59.8		74.8	74.5	54.8	73.2	32.1	8.9	57.5	20.4	12.7
Level of Service		E		E	E	D	E	C	A	E	C	B
Approach Delay (s/veh)		59.8			67.9			27.2			29.7	
Approach LOS		E			E			C			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	33.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.7
Intersection Capacity Utilization	71.8%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Edition methodology does not support exclusive ped or hold phases.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	843	185	586	1108	689	678
Future Volume (vph)	843	185	586	1108	689	678
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	5.6
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	0.88
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1518	3367	3471	3400	2787
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1518	3367	3471	3400	2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	860	189	598	1131	703	692
RTOR Reduction (vph)	0	114	0	0	0	0
Lane Group Flow (vph)	860	75	598	1131	703	692
Confl. Peds. (#/hr)		1	1			6
Heavy Vehicles (%)	2%	5%	4%	4%	3%	2%
Turn Type	NA	Perm	Prot	NA	Prot	pt+ov
Protected Phases	2		1	6	8	1 4
Permitted Phases		2				
Actuated Green, G (s)	44.0	44.0	23.6	73.2	31.3	54.5
Effective Green, g (s)	46.0	46.0	25.2	75.2	33.3	49.5
Actuated g/C Ratio	0.39	0.39	0.22	0.65	0.29	0.42
Clearance Time (s)	6.0	6.0	5.6	6.0	6.0	
Vehicle Extension (s)	5.4	5.4	2.3	5.4	2.3	
Lane Grp Cap (vph)	1397	599	728	2240	971	1184
v/s Ratio Prot	c0.24		c0.18	0.33	c0.21	0.25
v/s Ratio Perm		0.05				
v/c Ratio	0.62	0.12	0.82	0.50	0.72	0.58
Uniform Delay, d1	28.2	22.4	43.5	10.9	37.5	25.6
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	1.3	0.2	7.2	0.8	2.4	0.6
Delay (s)	29.5	22.7	50.7	11.7	39.9	26.2
Level of Service	C	C	D	B	D	C
Approach Delay (s/veh)	28.2			25.2	33.1	
Approach LOS	C			C	C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	28.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	116.5	Sum of lost time (s)	18.6
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Edition methodology does not support exclusive ped or hold phases.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	37	602	782	47	398	374
Future Volume (vph)	37	602	782	47	398	374
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	0.0	4.5	4.5	4.0	4.5
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.97	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	3539	1529	1769	3471
Flt Permitted	0.95	1.00	1.00	1.00	0.15	1.00
Satd. Flow (perm)	1770	1583	3539	1529	277	3471
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	39	640	832	50	423	398
RTOR Reduction (vph)	0	12	0	25	0	0
Lane Group Flow (vph)	39	628	832	25	423	398
Confl. Peds. (#/hr)				7	7	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	4%
Turn Type	Perm	pt+ov	NA	Perm	D.P+P	NA
Protected Phases		4 5	6		5	2
Permitted Phases	4			6	6	
Actuated Green, G (s)	13.4	61.0	31.4	31.4	74.0	79.0
Effective Green, g (s)	14.4	66.0	32.4	32.4	76.0	80.0
Actuated g/C Ratio	0.14	0.64	0.31	0.31	0.74	0.78
Clearance Time (s)	5.0		5.5	5.5	5.0	5.5
Vehicle Extension (s)	4.0		4.5	4.5	4.0	4.5
Lane Grp Cap (vph)	247	1015	1114	481	836	2698
v/s Ratio Prot		c0.40	c0.24		0.21	0.11
v/s Ratio Perm	0.02			0.02	0.16	
v/c Ratio	0.16	0.62	0.75	0.05	0.51	0.15
Uniform Delay, d1	38.9	11.0	31.6	24.6	15.3	2.9
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	1.3	3.1	0.1	0.7	0.1
Delay (s)	39.3	12.3	34.7	24.6	15.9	3.0
Level of Service	D	B	C	C	B	A
Approach Delay (s/veh)	13.8		34.1			9.7
Approach LOS	B		C			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	19.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.70		
Actuated Cycle Length (s)	102.9	Sum of lost time (s)	12.5
Intersection Capacity Utilization	66.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Edition methodology does not support exclusive ped or hold phases.

Intersection	
Int Delay, s/veh	1.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	36	437	2	0	564	253	0	3	7	15	0	19
Future Vol, veh/h	36	437	2	0	564	253	0	3	7	15	0	19
Conflicting Peds, #/hr	4	0	6	6	0	4	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	25	-	-	25	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	3	50	2	2	2	2	33	14	7	2	11
Mvmt Flow	40	480	2	0	620	278	0	3	8	16	0	21

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	902	0	0	488	0	0	1187	1468	487	1324	1330	764
Stage 1	-	-	-	-	-	-	566	566	-	763	763	-
Stage 2	-	-	-	-	-	-	621	902	-	561	568	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.83	6.34	7.17	6.52	6.31
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.83	-	6.17	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.83	-	6.17	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.297	3.426	3.563	4.018	3.399
Pot Cap-1 Maneuver	754	-	-	1075	-	-	165	110	557	130	155	390
Stage 1	-	-	-	-	-	-	509	461	-	389	413	-
Stage 2	-	-	-	-	-	-	475	318	-	503	507	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	751	-	-	1069	-	-	147	103	554	117	145	388
Mov Cap-2 Maneuver	-	-	-	-	-	-	147	103	-	117	145	-
Stage 1	-	-	-	-	-	-	479	434	-	388	412	-
Stage 2	-	-	-	-	-	-	449	316	-	467	477	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.76	0	20.78	28.22
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	239	751	-	-	1069	-	-	192
HCM Lane V/C Ratio	-	0.046	0.053	-	-	-	-	-	0.195
HCM Control Delay (s/veh)	0	20.8	10.1	-	-	0	-	-	28.2
HCM Lane LOS	A	C	B	-	-	A	-	-	D
HCM 95th %tile Q(veh)	-	0.1	0.2	-	-	0	-	-	0.7

3: JAE Access/SW 115th Avenue & SW Tualatin Road Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBT	NBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	3.3	0.4	0.6	0.0	0.0	0.1	0.1	0.1	0.0	0.2
Total Delay (hr)	0.1	0.1	0.0	0.5	0.2	0.0	0.0	0.1	0.1	1.0
Total Del/Veh (s)	8.6	0.8	0.6	3.1	2.4	11.9	6.6	19.6	9.2	2.6
Stop Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2
Stop Del/Veh (s)	6.7	0.0	0.0	0.0	0.0	8.4	4.7	17.8	7.5	0.5

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	9	451	813	15	9	4
Future Vol, veh/h	9	451	813	15	9	4
Conflicting Peds, #/hr	3	0	0	3	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	25	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	3	7	2	11	2
Mvmt Flow	10	485	874	16	10	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	893	0	-	0	1390	885
Stage 1	-	-	-	-	885	-
Stage 2	-	-	-	-	504	-
Critical Hdwy	4.12	-	-	-	6.51	6.22
Critical Hdwy Stg 1	-	-	-	-	5.51	-
Critical Hdwy Stg 2	-	-	-	-	5.51	-
Follow-up Hdwy	2.218	-	-	-	3.599	3.318
Pot Cap-1 Maneuver	759	-	-	-	150	344
Stage 1	-	-	-	-	389	-
Stage 2	-	-	-	-	589	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	757	-	-	-	147	343
Mov Cap-2 Maneuver	-	-	-	-	274	-
Stage 1	-	-	-	-	383	-
Stage 2	-	-	-	-	587	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.19	0	17.93
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	757	-	-	-	292
HCM Lane V/C Ratio	0.013	-	-	-	0.048
HCM Control Delay (s/veh)	9.8	-	-	-	17.9
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.1

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	452	5	3	809	30	28
Future Vol, veh/h	452	5	3	809	30	28
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	4	20	2	2	3	7
Mvmt Flow	481	5	3	861	32	30

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	487	0	1352	485
Stage 1	-	-	-	-	485	-
Stage 2	-	-	-	-	867	-
Critical Hdwy	-	-	4.12	-	6.43	6.27
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.218	-	3.527	3.363
Pot Cap-1 Maneuver	-	-	1076	-	165	572
Stage 1	-	-	-	-	617	-
Stage 2	-	-	-	-	410	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1075	-	164	572
Mov Cap-2 Maneuver	-	-	-	-	295	-
Stage 1	-	-	-	-	617	-
Stage 2	-	-	-	-	408	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.03	16.14
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	385	-	-	1075	-
HCM Lane V/C Ratio	0.16	-	-	0.003	-
HCM Control Delay (s/veh)	16.1	-	-	8.4	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.6	-	-	0	-

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	0	1	46	11	0
Future Vol, veh/h	3	0	1	46	11	0
Conflicting Peds, #/hr	0	0	3	0	0	3
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	9	2
Mvmt Flow	3	0	1	51	12	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	69	15	15	0	-	0
Stage 1	15	-	-	-	-	-
Stage 2	53	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	936	1064	1603	-	-	-
Stage 1	1008	-	-	-	-	-
Stage 2	969	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	930	1061	1598	-	-	-
Mov Cap-2 Maneuver	930	-	-	-	-	-
Stage 1	1004	-	-	-	-	-
Stage 2	966	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	8.88	0.15	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	38	-	930	-	-
HCM Lane V/C Ratio	0.001	-	0.004	-	-
HCM Control Delay (s/veh)	7.3	0	8.9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	18	21	0	29	11	0
Future Vol, veh/h	18	21	0	29	11	0
Conflicting Peds, #/hr	0	0	7	0	0	7
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	3	9	2
Mvmt Flow	18	21	0	29	11	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	47	18	18	0	-	0
Stage 1	18	-	-	-	-	-
Stage 2	29	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	962	1060	1599	-	-	-
Stage 1	1005	-	-	-	-	-
Stage 2	993	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	950	1053	1588	-	-	-
Mov Cap-2 Maneuver	950	-	-	-	-	-
Stage 1	998	-	-	-	-	-
Stage 2	987	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	8.74	0	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1588	-	1003	-	-
HCM Lane V/C Ratio	-	-	0.039	-	-
HCM Control Delay (s/veh)	0	-	8.7	-	-
HCM Lane LOS	A	-	A	-	-
HCM 95th %tile Q(veh)	0	-	0.1	-	-

Intersection	
Int Delay, s/veh	4.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	48	3	26	32	0
Future Vol, veh/h	1	48	3	26	32	0
Conflicting Peds, #/hr	0	0	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	8	3	2
Mvmt Flow	1	59	4	32	39	0

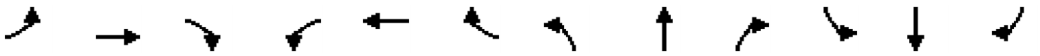
Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	82	43	43	0	-	0
Stage 1	43	-	-	-	-	-
Stage 2	39	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	920	1027	1566	-	-	-
Stage 1	979	-	-	-	-	-
Stage 2	983	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	911	1023	1560	-	-	-
Mov Cap-2 Maneuver	911	-	-	-	-	-
Stage 1	973	-	-	-	-	-
Stage 2	980	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	8.75	0.76	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	186	-	1021	-	-
HCM Lane V/C Ratio	0.002	-	0.059	-	-
HCM Control Delay (s/veh)	7.3	0	8.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

HCM Signalized Intersection Capacity Analysis
9: SW 124th Avenue & SW Leveton Drive

07/16/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	28	26	39	2	212	7	615	20	31	374	17
Future Volume (vph)	27	28	26	39	2	212	7	615	20	31	374	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	0.85		1.00	1.00		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1581		1719	1563		1262	3519		1770	3345	
Flt Permitted	0.95	1.00		0.95	1.00		0.50	1.00		0.29	1.00	
Satd. Flow (perm)	1736	1581		1719	1563		666	3519		535	3345	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	30	28	42	2	230	8	668	22	34	407	18
RTOR Reduction (vph)	0	22	0	0	173	0	0	2	0	0	3	0
Lane Group Flow (vph)	29	36	0	42	59	0	8	688	0	34	422	0
Confl. Peds. (#/hr)	4					4						
Heavy Vehicles (%)	4%	11%	12%	5%	2%	2%	43%	2%	5%	2%	6%	35%
Turn Type	Prot	NA		Prot	NA		D.P+P	NA		D.P+P	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							6			2		
Actuated Green, G (s)	2.2	11.4		4.0	13.2		22.2	20.0		22.2	21.5	
Effective Green, g (s)	3.2	12.4		5.0	14.2		24.2	21.0		22.2	21.5	
Actuated g/C Ratio	0.06	0.22		0.09	0.25		0.42	0.36		0.39	0.37	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	96	340		149	385		297	1282		253	1248	
v/s Ratio Prot	0.02	0.02		c0.02	c0.04		0.00	c0.20		c0.01	0.13	
v/s Ratio Perm							0.01			0.05		
v/c Ratio	0.30	0.11		0.28	0.15		0.03	0.54		0.13	0.34	
Uniform Delay, d1	26.1	18.1		24.6	17.0		9.7	14.5		11.3	12.9	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	1.8	0.1		1.0	0.2		0.0	0.4		0.2	0.2	
Delay (s)	27.9	18.3		25.7	17.2		9.8	14.9		11.6	13.1	
Level of Service	C	B		C	B		A	B		B	B	
Approach Delay (s/veh)		21.5			18.5			14.8			13.0	
Approach LOS		C			B			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	15.3	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.37		
Actuated Cycle Length (s)	57.6	Sum of lost time (s)	17.0
Intersection Capacity Utilization	55.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	27	28	26	39	2	212	7	615	20	31	374	17
Future Volume (veh/h)	27	28	26	39	2	212	7	615	20	31	374	17
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		0.99	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1737	1722	1826	1870	1870	1263	1870	1826	1870	1811	1381
Adj Flow Rate, veh/h	29	30	28	42	2	230	8	668	22	34	407	18
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	11	12	5	2	2	43	2	5	2	6	35
Cap, veh/h	115	198	185	141	3	401	334	1012	33	323	1068	47
Arrive On Green	0.07	0.24	0.22	0.08	0.26	0.24	0.03	0.29	0.27	0.06	0.32	0.32
Sat Flow, veh/h	1753	824	769	1739	14	1566	1203	3511	116	1781	3357	148
Grp Volume(v), veh/h	29	0	58	42	0	232	8	338	352	34	208	217
Grp Sat Flow(s),veh/h/ln	1753	0	1594	1739	0	1579	1203	1777	1850	1781	1721	1784
Q Serve(g_s), s	0.8	0.0	1.5	1.2	0.0	6.7	0.2	8.6	8.6	0.7	4.8	4.9
Cycle Q Clear(g_c), s	0.8	0.0	1.5	1.2	0.0	6.7	0.2	8.6	8.6	0.7	4.8	4.9
Prop In Lane	1.00		0.48	1.00		0.99	1.00		0.06	1.00		0.08
Lane Grp Cap(c), veh/h	115	0	383	141	0	404	334	512	533	323	547	568
V/C Ratio(X)	0.25	0.00	0.15	0.30	0.00	0.57	0.02	0.66	0.66	0.11	0.38	0.38
Avail Cap(c_a), veh/h	545	0	960	372	0	952	789	1071	1115	1082	1338	1388
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.8	0.0	15.6	22.3	0.0	17.2	10.6	16.1	16.1	12.6	13.6	13.6
Incr Delay (d2), s/veh	1.1	0.0	0.2	1.2	0.0	1.3	0.0	1.5	1.4	0.1	0.4	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.3	0.0	0.5	0.5	0.0	2.2	0.0	3.0	3.1	0.2	1.5	1.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	24.0	0.0	15.8	23.4	0.0	18.4	10.6	17.6	17.5	12.7	14.0	14.0
LnGrp LOS	C		B	C		B	B	B	B	B	B	B
Approach Vol, veh/h		87			274			698			459	
Approach Delay, s/veh		18.5			19.2			17.5			13.9	
Approach LOS		B			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.1	18.8	8.2	16.4	5.5	21.4	7.4	17.2
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	25.0	30.0	10.0	30.0	20.0	40.0	15.0	30.0
Max Q Clear Time (g_c+I1), s	2.7	10.6	3.2	3.5	2.2	6.9	2.8	8.7
Green Ext Time (p_c), s	0.1	3.2	0.0	0.5	0.0	2.0	0.0	2.5

Intersection Summary	
HCM 7th Control Delay, s/veh	16.8
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Intersection Delay, s/veh	9.9
Intersection LOS	A

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	55	11	27	259	2	28	2	5	1	0	12
Future Vol, veh/h	6	55	11	27	259	2	28	2	5	1	0	12
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	2	4	2	15	2	2	2	2	40	2	2	2
Mvmt Flow	7	68	14	33	320	2	35	2	6	1	0	15
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	7.9	10.7	8.4	7.6
HCM LOS	A	B	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	80%	8%	9%	8%
Vol Thru, %	6%	76%	90%	0%
Vol Right, %	14%	15%	1%	92%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	35	72	288	13
LT Vol	28	6	27	1
Through Vol	2	55	259	0
RT Vol	5	11	2	12
Lane Flow Rate	43	89	356	16
Geometry Grp	1	1	1	1
Degree of Util (X)	0.061	0.108	0.429	0.02
Departure Headway (Hd)	5.044	4.379	4.339	4.468
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	713	821	818	804
Service Time	3.052	2.389	2.422	2.479
HCM Lane V/C Ratio	0.06	0.108	0.435	0.02
HCM Control Delay, s/veh	8.4	7.9	10.7	7.6
HCM Lane LOS	A	A	B	A
HCM 95th-tile Q	0.2	0.4	2.2	0.1

Intersection	
Int Delay, s/veh	5.9

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	24	141	12	62	145
Future Vol, veh/h	25	24	141	12	62	145
Conflicting Peds, #/hr	3	0	0	3	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	82	82	82	82	82	76
Heavy Vehicles, %	2	8	2	2	2	2
Mvmt Flow	30	29	172	15	76	191

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	190	0	-	0	273	182
Stage 1	-	-	-	-	182	-
Stage 2	-	-	-	-	90	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1384	-	-	-	717	860
Stage 1	-	-	-	-	849	-
Stage 2	-	-	-	-	933	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1380	-	-	-	697	858
Mov Cap-2 Maneuver	-	-	-	-	697	-
Stage 1	-	-	-	-	828	-
Stage 2	-	-	-	-	931	-

Approach	EB	WB	SB
HCM Control Delay, s/v	3.91	0	10.51
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	918	-	-	-	697	858
HCM Lane V/C Ratio	0.022	-	-	-	0.109	0.222
HCM Control Delay (s/veh)	7.7	0	-	-	10.8	10.4
HCM Lane LOS	A	A	-	-	B	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.4	0.8

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	89	153	0	0	0
Future Vol, veh/h	0	89	153	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	5	5	2	2	2
Mvmt Flow	0	109	187	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	187	0	-	0	295	187
Stage 1	-	-	-	-	187	-
Stage 2	-	-	-	-	109	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1388	-	-	-	696	856
Stage 1	-	-	-	-	845	-
Stage 2	-	-	-	-	916	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1388	-	-	-	696	856
Mov Cap-2 Maneuver	-	-	-	-	696	-
Stage 1	-	-	-	-	845	-
Stage 2	-	-	-	-	916	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1388	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	2.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	7	82	119	19	35	29
Future Vol, veh/h	7	82	119	19	35	29
Conflicting Peds, #/hr	7	0	0	7	0	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	9	100	145	23	43	35

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	175	0	-	0	281	166
Stage 1	-	-	-	-	164	-
Stage 2	-	-	-	-	117	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1401	-	-	-	709	879
Stage 1	-	-	-	-	865	-
Stage 2	-	-	-	-	908	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1392	-	-	-	695	871
Mov Cap-2 Maneuver	-	-	-	-	695	-
Stage 1	-	-	-	-	854	-
Stage 2	-	-	-	-	902	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.6	0	9.97
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	142	-	-	-	695	871
HCM Lane V/C Ratio	0.006	-	-	-	0.061	0.041
HCM Control Delay (s/veh)	7.6	0	-	-	10.5	9.3
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0	-	-	-	0.2	0.1

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	121	0	0	123	0	2	0	0	0	0	0
Future Vol, veh/h	0	121	0	0	123	0	2	0	0	0	0	0
Conflicting Peds, #/hr	7	0	5	5	0	7	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2	50	2	2	2	2	2
Mvmt Flow	0	148	0	0	150	0	2	0	0	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	157	0	0	153	0	0	303	310	153	305	310	157
Stage 1	-	-	-	-	-	-	153	153	-	157	157	-
Stage 2	-	-	-	-	-	-	150	157	-	148	153	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.6	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.6	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.6	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.95	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1423	-	-	1428	-	-	565	605	894	648	605	889
Stage 1	-	-	-	-	-	-	748	771	-	845	768	-
Stage 2	-	-	-	-	-	-	751	768	-	855	771	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1413	-	-	1421	-	-	563	598	889	643	598	883
Mov Cap-2 Maneuver	-	-	-	-	-	-	563	598	-	643	598	-
Stage 1	-	-	-	-	-	-	745	767	-	840	763	-
Stage 2	-	-	-	-	-	-	751	763	-	855	767	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0	11.42	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	563	1413	-	-	1421	-	-	-
HCM Lane V/C Ratio	0.004	-	-	-	-	-	-	-
HCM Control Delay (s/veh)	11.4	0	-	-	0	-	-	0
HCM Lane LOS	B	A	-	-	A	-	-	A
HCM 95th %tile Q(veh)	0	0	-	-	0	-	-	-

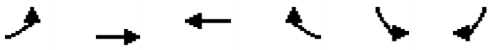
Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	10	112	58	67	67	46
Future Vol, veh/h	10	112	58	67	67	46
Conflicting Peds, #/hr	1	1	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	17	2	2	2	2	2
Mvmt Flow	12	132	68	79	79	54

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	323	108	134	0	-	0
Stage 1	107	-	-	-	-	-
Stage 2	216	-	-	-	-	-
Critical Hdwy	6.57	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.57	-	-	-	-	-
Critical Hdwy Stg 2	5.57	-	-	-	-	-
Follow-up Hdwy	3.653	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	641	946	1451	-	-	-
Stage 1	881	-	-	-	-	-
Stage 2	785	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	608	944	1449	-	-	-
Mov Cap-2 Maneuver	608	-	-	-	-	-
Stage 1	837	-	-	-	-	-
Stage 2	785	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.74	3.53	0
HCM LOS	A		

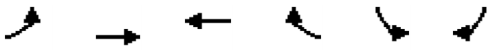
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	835	-	903	-	-
HCM Lane V/C Ratio	0.047	-	0.159	-	-
HCM Control Delay (s/veh)	7.6	0	9.7	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.1	-	0.6	-	-



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	2	316	504	57	163	35
Future Volume (vph)	2	316	504	57	163	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.99		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1769	1827	1741		1752	1568
Flt Permitted	0.25	1.00	1.00		0.95	1.00
Satd. Flow (perm)	465	1827	1741		1752	1568
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	2	351	560	63	181	39
RTOR Reduction (vph)	0	0	4	0	0	29
Lane Group Flow (vph)	2	351	619	0	181	10
Confl. Peds. (#/hr)	1			1		
Heavy Vehicles (%)	2%	4%	8%	2%	3%	3%
Turn Type	D.P+P	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	6					4
Actuated Green, G (s)	25.9	31.3	25.3		12.1	12.1
Effective Green, g (s)	28.7	32.7	26.7		14.6	14.6
Actuated g/C Ratio	0.52	0.59	0.48		0.26	0.26
Clearance Time (s)	5.4	5.4	5.4		6.5	6.5
Vehicle Extension (s)	2.0	3.1	3.1		2.6	2.6
Lane Grp Cap (vph)	288	1080	840		462	413
v/s Ratio Prot	0.00	c0.19	c0.36		c0.10	
v/s Ratio Perm	0.00					0.01
v/c Ratio	0.01	0.33	0.74		0.39	0.02
Uniform Delay, d1	12.9	5.7	11.5		16.7	15.1
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.2	3.4		0.4	0.0
Delay (s)	12.9	5.9	14.9		17.1	15.1
Level of Service	B	A	B		B	B
Approach Delay (s/veh)		5.9	14.9		16.8	
Approach LOS		A	B		B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	12.6	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.62		
Actuated Cycle Length (s)	55.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	316	504	57	163	35
Future Volume (veh/h)	2	316	504	57	163	35
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1841	1781	1870	1856	1856
Adj Flow Rate, veh/h	2	351	560	63	181	39
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	4	8	2	3	3
Cap, veh/h	463	1264	930	105	311	277
Arrive On Green	0.03	0.69	0.59	0.57	0.18	0.18
Sat Flow, veh/h	1781	1841	1573	177	1767	1572
Grp Volume(v), veh/h	2	351	0	623	181	39
Grp Sat Flow(s),veh/h/ln	1781	1841	0	1749	1767	1572
Q Serve(g_s), s	0.0	4.3	0.0	13.2	5.5	1.2
Cycle Q Clear(g_c), s	0.0	4.3	0.0	13.2	5.5	1.2
Prop In Lane	1.00			0.10	1.00	1.00
Lane Grp Cap(c), veh/h	463	1264	0	1034	311	277
V/C Ratio(X)	0.00	0.28	0.00	0.60	0.58	0.14
Avail Cap(c_a), veh/h	764	1465	0	1962	985	876
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	10.8	3.5	0.0	7.6	22.0	20.3
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.6	1.4	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.9	0.0	3.6	2.2	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	10.8	3.7	0.0	8.2	23.4	20.5
LnGrp LOS	B	A		A	C	C
Approach Vol, veh/h		353	623		220	
Approach Delay, s/veh		3.7	8.2		22.9	
Approach LOS		A	A		C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		44.0		14.3	5.6	38.5
Change Period (Y+Rc), s		5.4		6.5	5.4	5.4
Max Green Setting (Gmax), s		45.0		30.0	10.0	64.0
Max Q Clear Time (g_c+I1), s		6.3		7.5	2.0	15.2
Green Ext Time (p_c), s		7.7		0.5	0.0	17.8

Intersection Summary	
HCM 7th Control Delay, s/veh	9.6
HCM 7th LOS	A

Intersection	
Int Delay, s/veh	7.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	362	65	36	730	124	34
Future Vol, veh/h	362	65	36	730	124	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	5	6	2	2	2
Mvmt Flow	389	70	39	785	133	37

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	459	0	1287	424
Stage 1	-	-	-	-	424	-
Stage 2	-	-	-	-	862	-
Critical Hdwy	-	-	4.16	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.254	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1081	-	181	630
Stage 1	-	-	-	-	660	-
Stage 2	-	-	-	-	413	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1081	-	175	630
Mov Cap-2 Maneuver	-	-	-	-	175	-
Stage 1	-	-	-	-	660	-
Stage 2	-	-	-	-	399	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.4	58.75
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	175	630	-	-	1081	-
HCM Lane V/C Ratio	0.763	0.058	-	-	0.036	-
HCM Control Delay (s/veh)	71.8	11.1	-	-	8.5	-
HCM Lane LOS	F	B	-	-	A	-
HCM 95th %tile Q(veh)	4.9	0.2	-	-	0.1	-



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	362	65	36	730	124	34
Future Volume (Veh/h)	362	65	36	730	124	34
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	389	70	39	785	133	37
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			459		1287	424
vC1, stage 1 conf vol					424	
vC2, stage 2 conf vol					863	
vCu, unblocked vol			459		1287	424
tC, single (s)			4.2		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.3		3.5	3.3
p0 queue free %			96		63	94
cM capacity (veh/h)			1081		361	630

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total	459	39	785	133	37
Volume Left	0	39	0	133	0
Volume Right	70	0	0	0	37
cSH	1700	1081	1700	361	630
Volume to Capacity	0.27	0.04	0.46	0.37	0.06
Queue Length 95th (ft)	0	3	0	41	5
Control Delay (s/veh)	0.0	8.5	0.0	20.7	11.1
Lane LOS		A		C	B
Approach Delay (s/veh)	0.0	0.4		18.6	
Approach LOS				C	

Intersection Summary			
Average Delay	2.4		
Intersection Capacity Utilization	52.0%	ICU Level of Service	A
Analysis Period (min)	15		

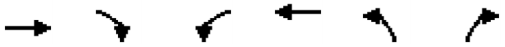
Intersection	
Int Delay, s/veh	8.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	15	7	16	72	254	20
Future Vol, veh/h	15	7	16	72	254	20
Conflicting Peds, #/hr	0	8	8	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	13	2	2	20
Mvmt Flow	16	8	17	78	276	22

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	32	0	141	28
Stage 1	-	-	-	-	28	-
Stage 2	-	-	-	-	113	-
Critical Hdwy	-	-	4.23	-	6.42	6.4
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.317	-	3.518	3.48
Pot Cap-1 Maneuver	-	-	1512	-	852	997
Stage 1	-	-	-	-	994	-
Stage 2	-	-	-	-	912	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1500	-	835	990
Mov Cap-2 Maneuver	-	-	-	-	835	-
Stage 1	-	-	-	-	987	-
Stage 2	-	-	-	-	901	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	1.35	11.57
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	845	-	-	327	-
HCM Lane V/C Ratio	0.353	-	-	0.012	-
HCM Control Delay (s/veh)	11.6	-	-	7.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.6	-	-	0	-



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	17	7	13	73	259	19
Future Volume (Veh/h)	17	7	13	73	259	19
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	18	8	14	79	282	21
Pedestrians					8	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			34		137	30
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			34		137	30
tC, single (s)			4.2		6.4	6.4
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.5
p0 queue free %			99		67	98
cM capacity (veh/h)			1498		842	987

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	26	93	303
Volume Left	0	14	282
Volume Right	8	0	21
cSH	1700	1498	851
Volume to Capacity	0.02	0.01	0.36
Queue Length 95th (ft)	0	1	41
Control Delay (s/veh)	0.0	1.2	11.6
Lane LOS		A	B
Approach Delay (s/veh)	0.0	1.2	11.6
Approach LOS			B

Intersection Summary			
Average Delay	8.6		
Intersection Capacity Utilization	33.4%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	6.3

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	322	1469	28	0	1648
Future Vol, veh/h	0	322	1469	28	0	1648
Conflicting Peds, #/hr	0	0	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	Free	-	None
Storage Length	-	0	-	335	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	3	3	4	2	2
Mvmt Flow	0	329	1499	29	0	1682

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	749	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.96	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.33	-	-	-	-
Pot Cap-1 Maneuver	0	352	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	352	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	67.54	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	352	-
HCM Lane V/C Ratio	-	0.934	-
HCM Control Delay (s/veh)	-	67.5	-
HCM Lane LOS	-	F	-
HCM 95th %tile Q(veh)	-	9.7	-

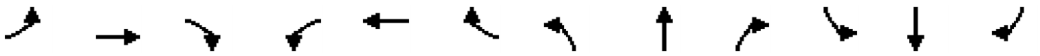


Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	332	1468	28	0	1649
Future Volume (Veh/h)	0	332	1468	28	0	1649
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	0	339	1498	29	0	1683
Pedestrians	4					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2344	753			1502	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2344	753			1502	
tC, single (s)	6.8	*6.0			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	20			100	
cM capacity (veh/h)	30	426			440	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	339	749	749	29	842	842
Volume Left	0	0	0	0	0	0
Volume Right	339	0	0	29	0	0
cSH	426	1700	1700	1700	1700	1700
Volume to Capacity	0.80	0.44	0.44	0.02	0.50	0.50
Queue Length 95th (ft)	177	0	0	0	0	0
Control Delay (s/veh)	39.1	0.0	0.0	0.0	0.0	0.0
Lane LOS	E					
Approach Delay (s/veh)	39.1	0.0			0.0	
Approach LOS	E					

Intersection Summary			
Average Delay	3.7		
Intersection Capacity Utilization	67.8%	ICU Level of Service	C
Analysis Period (min)	15		

* User Entered Value



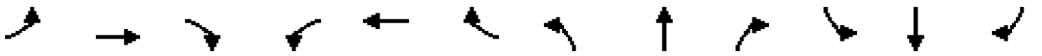
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	236	242	46	318	8	226	150	22	11	113	20
Future Volume (vph)	1	236	242	46	318	8	226	150	22	11	113	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0		4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	1.00		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1543	1671		1626	1821		1596	1749		1703	1620	
Flt Permitted	0.46	1.00		0.23	1.00		0.40	1.00		0.62	1.00	
Satd. Flow (perm)	741	1671		388	1821		673	1749		1117	1620	
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	1	295	302	58	398	10	282	188	28	14	141	25
RTOR Reduction (vph)	0	16	0	0	0	0	0	0	0	0	5	0
Lane Group Flow (vph)	1	582	0	58	408	0	283	216	0	14	161	0
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	17%	2%	8%	11%	4%	2%	13%	6%	10%	6%	16%	4%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	57.8	56.9		66.2	61.3		41.3	35.1		21.6	19.4	
Effective Green, g (s)	57.8	57.4		66.2	61.8		41.3	35.6		21.6	19.9	
Actuated g/C Ratio	0.49	0.48		0.56	0.52		0.35	0.30		0.18	0.17	
Clearance Time (s)	4.0	5.5		4.0	5.5		4.0	5.5		4.0	5.5	
Vehicle Extension (s)	2.0	3.2		2.0	3.2		2.0	3.2		2.0	3.2	
Lane Grp Cap (vph)	367	809		272	949		373	525		214	272	
v/s Ratio Prot	0.00	c0.35		c0.01	c0.22		c0.11	0.12		0.00	0.10	
v/s Ratio Perm	0.00			0.11			c0.15			0.01		
v/c Ratio	0.00	0.72		0.21	0.43		0.76	0.41		0.07	0.59	
Uniform Delay, d1	15.8	24.2		15.9	17.5		31.0	33.1		39.9	45.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	3.1		0.1	0.3		7.7	0.6		0.0	3.5	
Delay (s)	15.8	27.3		16.1	17.8		38.7	33.7		40.0	49.1	
Level of Service	B	C		B	B		D	C		D	D	
Approach Delay (s/veh)		27.3			17.6			36.5			48.4	
Approach LOS		C			B			D			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	29.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.73		
Actuated Cycle Length (s)	118.5	Sum of lost time (s)	18.0
Intersection Capacity Utilization	67.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Signalized Intersection Summary
20: SW Teton Avenue & SW Herman Road

07/16/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	1	236	242	46	318	8	226	150	22	11	113	20
Future Volume (veh/h)	1	236	242	46	318	8	226	150	22	11	113	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1648	1870	1781	1737	1841	1870	1707	1811	1752	1811	1663	1841
Adj Flow Rate, veh/h	1	295	302	58	398	10	282	188	28	14	141	25
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	17	2	8	11	4	2	13	6	10	6	16	4
Cap, veh/h	378	383	392	268	882	22	388	441	66	255	185	33
Arrive On Green	0.00	0.45	0.45	0.04	0.49	0.49	0.17	0.29	0.28	0.02	0.13	0.13
Sat Flow, veh/h	1570	847	867	1654	1788	45	1626	1540	229	1725	1374	244
Grp Volume(v), veh/h	1	0	597	58	0	408	282	0	216	14	0	166
Grp Sat Flow(s),veh/h/ln	1570	0	1714	1654	0	1833	1626	0	1769	1725	0	1618
Q Serve(g_s), s	0.0	0.0	26.0	1.6	0.0	12.9	12.7	0.0	8.8	0.6	0.0	8.8
Cycle Q Clear(g_c), s	0.0	0.0	26.0	1.6	0.0	12.9	12.7	0.0	8.8	0.6	0.0	8.8
Prop In Lane	1.00		0.51	1.00		0.02	1.00		0.13	1.00		0.15
Lane Grp Cap(c), veh/h	378	0	774	268	0	904	388	0	506	255	0	218
V/C Ratio(X)	0.00	0.00	0.77	0.22	0.00	0.45	0.73	0.00	0.43	0.05	0.00	0.76
Avail Cap(c_a), veh/h	730	0	1053	570	0	1105	481	0	1147	615	0	1012
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.0	0.0	20.6	15.8	0.0	14.7	25.7	0.0	25.8	32.6	0.0	37.0
Incr Delay (d2), s/veh	0.0	0.0	2.6	0.1	0.0	0.4	2.9	0.0	0.6	0.0	0.0	5.9
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	9.7	0.5	0.0	5.0	4.9	0.0	3.7	0.3	0.0	3.7
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.0	0.0	23.2	16.0	0.0	15.0	28.6	0.0	26.4	32.7	0.0	42.9
LnGrp LOS	B		C	B		B	C		C	C		D
Approach Vol, veh/h		598			466			498			180	
Approach Delay, s/veh		23.1			15.2			27.6			42.1	
Approach LOS		C			B			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	7.8	45.1	18.9	16.9	4.1	48.7	5.5	30.4
Change Period (Y+Rc), s	4.0	5.5	4.0	5.5	4.0	5.5	4.0	5.5
Max Green Setting (Gmax), s	20.0	54.0	20.0	55.0	20.0	53.0	20.0	57.0
Max Q Clear Time (g_c+I1), s	3.6	28.0	14.7	10.8	2.0	14.9	2.6	10.8
Green Ext Time (p_c), s	0.1	11.5	0.2	0.6	0.0	9.5	0.0	3.1

Intersection Summary	
HCM 7th Control Delay, s/veh	24.3
HCM 7th LOS	C



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	145	286	300	1568	27	1373	276
Future Volume (vph)	145	286	300	1568	27	1373	276
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.97	1.00	1.00	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1493	1770	3539	1770	3438	1509
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1493	1770	3539	1770	3438	1509
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	158	311	326	1704	29	1492	300
RTOR Reduction (vph)	0	256	0	0	0	0	85
Lane Group Flow (vph)	158	55	326	1704	29	1492	215
Confl. Peds. (#/hr)		21	9				9
Heavy Vehicles (%)	2%	5%	2%	2%	2%	5%	2%
Turn Type	Prot	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	4		5	2	1	6	
Permitted Phases		4					6
Actuated Green, G (s)	14.3	14.3	27.6	105.2	5.0	81.6	81.6
Effective Green, g (s)	15.3	15.3	29.1	107.2	5.5	83.6	83.6
Actuated g/C Ratio	0.11	0.11	0.21	0.77	0.04	0.60	0.60
Clearance Time (s)	5.0	5.0	5.5	6.0	4.5	6.0	6.0
Vehicle Extension (s)	2.5	2.5	2.3	4.5	2.3	4.5	4.5
Lane Grp Cap (vph)	193	163	367	2709	69	2052	901
v/s Ratio Prot	c0.09		c0.18	0.48	0.02	c0.43	
v/s Ratio Perm		0.04					0.14
v/c Ratio	0.82	0.34	0.89	0.63	0.42	0.73	0.24
Uniform Delay, d1	61.0	57.7	53.9	7.4	65.7	20.1	13.3
Progression Factor	1.00	1.00	1.00	1.00	0.97	1.32	1.43
Incremental Delay, d2	22.4	0.9	21.7	1.1	1.7	1.6	0.4
Delay (s)	83.4	58.6	75.6	8.5	65.7	28.2	19.4
Level of Service	F	E	E	A	E	C	B
Approach Delay (s/veh)	66.9			19.3		27.3	
Approach LOS	E			B		C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	27.9	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	89.5%	ICU Level of Service	E
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Signalized Intersection Summary
21: OR 99W (Pacific Highway) & SW Fischer Road

07/16/2025



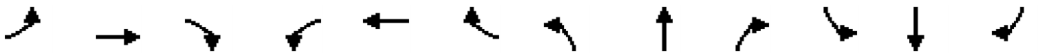
Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	145	286	300	1568	27	1373	276
Future Volume (veh/h)	145	286	300	1568	27	1373	276
Initial Q (Qb), veh	0	0	0	0		0	0
Lane Width Adj.	1.00	1.00	1.00	1.00		1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00				0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00		1.00	1.00
Work Zone On Approach	No			No		No	
Adj Sat Flow, veh/h/ln	1870	1826	1870	1870		1826	1870
Adj Flow Rate, veh/h	158	153	326	1704		1492	300
Peak Hour Factor	0.92	0.92	0.92	0.92		0.92	0.92
Percent Heavy Veh, %	2	5	2	2		5	2
Cap, veh/h	204	177	365	2944		2064	936
Arrive On Green	0.11	0.11	0.21	0.83		1.00	1.00
Sat Flow, veh/h	1781	1547	1781	3647		3561	1573
Grp Volume(v), veh/h	158	153	326	1704		1492	300
Grp Sat Flow(s),veh/h/ln	1781	1547	1781	1777		1735	1573
Q Serve(g_s), s	12.1	13.6	24.9	22.1		0.0	0.0
Cycle Q Clear(g_c), s	12.1	13.6	24.9	22.1		0.0	0.0
Prop In Lane	1.00	1.00	1.00				1.00
Lane Grp Cap(c), veh/h	204	177	365	2944		2064	936
V/C Ratio(X)	0.78	0.87	0.89	0.58		0.72	0.32
Avail Cap(c_a), veh/h	204	177	394	2944		2064	936
HCM Platoon Ratio	1.00	1.00	1.00	1.00		2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00		0.60	0.60
Uniform Delay (d), s/veh	60.3	60.9	54.1	4.0		0.0	0.0
Incr Delay (d2), s/veh	16.4	32.8	20.1	0.8		1.4	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(50%),veh/ln	6.4	12.8	12.9	5.4		0.4	0.1
Unsig. Movement Delay, s/veh							
LnGrp Delay(d), s/veh	76.7	93.7	74.2	4.8		1.4	0.5
LnGrp LOS	E	F	E	A		A	A
Approach Vol, veh/h	311			2030		1792	
Approach Delay, s/veh	85.1			15.9		1.2	
Approach LOS	F			B		A	

Timer - Assigned Phs		2		4	5	6	
Phs Duration (G+Y+Rc), s		120.0		20.0	32.7	87.3	
Change Period (Y+Rc), s		6.0		5.0	5.5	6.0	
Max Green Setting (Gmax), s		94.0		15.0	29.5	79.0	
Max Q Clear Time (g_c+I1), s		24.1		15.6	26.9	2.0	
Green Ext Time (p_c), s		64.4		0.0	0.3	62.4	

Intersection Summary	
HCM 7th Control Delay, s/veh	14.8
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.
User approved ignoring U-Turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	95	70	493	73	347	138	1259	225	440	1028	20
Future Volume (vph)	23	95	70	493	73	347	138	1259	225	440	1028	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0	6.0	5.4	5.4	6.0	5.3	5.0	5.0
Lane Util. Factor		0.95		0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes		1.00		1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.94		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.99		0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		3310		1681	1702	1533	1770	3505	1560	3433	3438	1547
Flt Permitted		0.99		0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3310		1681	1702	1533	1770	3505	1560	3433	3438	1547
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	24	101	74	524	78	369	147	1339	239	468	1094	21
RTOR Reduction (vph)	0	62	0	0	0	289	0	0	54	0	0	11
Lane Group Flow (vph)	0	137	0	299	303	80	147	1339	185	468	1094	10
Confl. Peds. (#/hr)	7					7	1		7	7		1
Heavy Vehicles (%)	2%	2%	3%	2%	3%	3%	2%	3%	2%	2%	5%	2%
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	3	3		4	4		5	2	4	1	6	
Permitted Phases						4			2			6
Actuated Green, G (s)		12.4		27.5	27.5	27.5	13.2	55.8	83.3	21.6	64.5	64.5
Effective Green, g (s)		12.4		27.5	27.5	27.5	13.2	55.8	83.3	21.6	64.5	64.5
Actuated g/C Ratio		0.09		0.20	0.20	0.20	0.09	0.40	0.60	0.15	0.46	0.46
Clearance Time (s)		6.0		6.0	6.0	6.0	5.4	5.4	6.0	5.3	5.0	5.0
Vehicle Extension (s)		2.3		2.3	2.3	2.3	2.3	4.5	2.3	2.3	4.8	4.8
Lane Grp Cap (vph)		293		330	334	301	166	1396	928	529	1583	712
v/s Ratio Prot		c0.04		0.18	c0.18		0.08	c0.38	0.04	c0.14	0.32	
v/s Ratio Perm						0.05			0.08			0.01
v/c Ratio		0.47		0.91	0.91	0.26	0.89	0.96	0.20	0.88	0.69	0.01
Uniform Delay, d1		60.7		55.0	55.0	47.7	62.7	41.0	13.0	58.0	29.9	20.5
Progression Factor		1.00		1.00	1.00	1.00	0.93	1.18	1.41	1.00	1.00	1.00
Incremental Delay, d2		0.7		26.8	26.7	0.3	32.1	13.6	0.0	15.9	2.5	0.0
Delay (s)		61.4		81.8	81.7	48.0	90.6	61.9	18.4	73.9	32.4	20.5
Level of Service		E		F	F	D	F	E	B	E	C	C
Approach Delay (s/veh)		61.4			68.9			58.3			44.5	
Approach LOS		E			E			E			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	55.8	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.88		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.7
Intersection Capacity Utilization	91.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Edition methodology does not support exclusive ped or hold phases.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1220	656	1003	848	152	308
Future Volume (vph)	1220	656	1003	848	152	308
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	5.6
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	0.88
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3374	1553	3400	3343	3127	2515
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3374	1553	3400	3343	3127	2515
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	1298	698	1067	902	162	328
RTOR Reduction (vph)	0	280	0	0	0	0
Lane Group Flow (vph)	1298	418	1067	902	162	328
Confl. Peds. (#/hr)						4
Heavy Vehicles (%)	7%	4%	3%	8%	12%	13%
Turn Type	NA	Perm	Prot	NA	Prot	pt+ov
Protected Phases	2		1	6	8	1 4
Permitted Phases		2				
Actuated Green, G (s)	39.4	39.4	28.7	73.7	18.2	46.7
Effective Green, g (s)	41.4	41.4	30.3	75.7	20.2	41.7
Actuated g/C Ratio	0.40	0.40	0.29	0.73	0.19	0.40
Clearance Time (s)	6.0	6.0	5.6	6.0	6.0	
Vehicle Extension (s)	5.4	5.4	2.3	5.4	2.3	
Lane Grp Cap (vph)	1344	618	991	2435	607	1009
v/s Ratio Prot	c0.38		c0.31	0.27	c0.05	0.13
v/s Ratio Perm		0.27				
v/c Ratio	0.97	0.68	1.08	0.37	0.27	0.33
Uniform Delay, d1	30.6	25.7	36.8	5.2	35.6	21.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	17.2	4.1	51.6	0.4	0.1	0.1
Delay (s)	47.8	29.8	88.4	5.7	35.7	21.5
Level of Service	D	C	F	A	D	C
Approach Delay (s/veh)	41.5			50.5	26.2	
Approach LOS	D			D	C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	43.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.91		
Actuated Cycle Length (s)	103.9	Sum of lost time (s)	18.6
Intersection Capacity Utilization	80.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Edition methodology does not support exclusive ped or hold phases.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	42	222	260	41	839	838
Future Volume (vph)	42	222	260	41	839	838
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	0.0	4.5	4.5	4.0	4.5
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1597	1524	3195	1458	1751	3505
Flt Permitted	0.95	1.00	1.00	1.00	0.40	1.00
Satd. Flow (perm)	1597	1524	3195	1458	740	3505
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	48	255	299	47	964	963
RTOR Reduction (vph)	0	48	0	40	0	0
Lane Group Flow (vph)	48	207	299	7	964	963
Confl. Peds. (#/hr)				2	2	
Heavy Vehicles (%)	13%	6%	13%	8%	3%	3%
Turn Type	Perm	pt+ov	NA	Perm	D.P+P	NA
Protected Phases		4 5	6		5	2
Permitted Phases	4			6	6	
Actuated Green, G (s)	13.4	92.6	16.9	16.9	91.1	96.1
Effective Green, g (s)	14.4	97.6	17.9	17.9	93.1	97.1
Actuated g/C Ratio	0.12	0.81	0.15	0.15	0.78	0.81
Clearance Time (s)	5.0		5.5	5.5	5.0	5.5
Vehicle Extension (s)	4.0		4.5	4.5	4.0	4.5
Lane Grp Cap (vph)	191	1239	476	217	1207	2836
v/s Ratio Prot		0.14	0.09		c0.50	0.27
v/s Ratio Perm	c0.03			0.00	c0.12	
v/c Ratio	0.25	0.17	0.63	0.03	0.80	0.34
Uniform Delay, d1	47.9	2.4	47.9	43.6	11.0	3.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.9	0.1	3.3	0.1	4.2	0.3
Delay (s)	48.9	2.5	51.2	43.8	15.2	3.3
Level of Service	D	A	D	D	B	A
Approach Delay (s/veh)	9.8		50.2			9.3
Approach LOS	A		D			A

Intersection Summary			
HCM 2000 Control Delay (s/veh)	14.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	120.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	70.2%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Edition methodology does not support exclusive ped or hold phases.

Intersection	
Int Delay, s/veh	3.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	64	785	2	8	240	135	1	0	5	48	1	29
Future Vol, veh/h	64	785	2	8	240	135	1	0	5	48	1	29
Conflicting Peds, #/hr	0	0	7	7	0	0	2	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	25	-	-	25	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	7	3	2	38	6	6	100	2	20	7	2	11
Mvmt Flow	70	853	2	9	261	147	1	0	5	52	1	32

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	408	0	0	862	0	0	1281	1425	861	1344	1353	336
Stage 1	-	-	-	-	-	-	1000	1000	-	352	352	-
Stage 2	-	-	-	-	-	-	281	425	-	992	1002	-
Critical Hdwy	4.17	-	-	4.48	-	-	8.1	6.52	6.4	7.17	6.52	6.31
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	5.52	-	6.17	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	5.52	-	6.17	5.52	-
Follow-up Hdwy	2.263	-	-	2.542	-	-	4.4	4.018	3.48	3.563	4.018	3.399
Pot Cap-1 Maneuver	1125	-	-	646	-	-	91	135	330	126	150	686
Stage 1	-	-	-	-	-	-	197	321	-	655	632	-
Stage 2	-	-	-	-	-	-	556	586	-	290	320	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1125	-	-	642	-	-	79	124	327	114	138	684
Mov Cap-2 Maneuver	-	-	-	-	-	-	79	124	-	114	138	-
Stage 1	-	-	-	-	-	-	184	299	-	646	623	-
Stage 2	-	-	-	-	-	-	521	578	-	267	299	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.63	0.22	22.04	47.29
HCM LOS			C	E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	79	327	1125	-	-	642	-	-	166
HCM Lane V/C Ratio	0.014	0.017	0.062	-	-	0.014	-	-	0.51
HCM Control Delay (s/veh)	51.3	16.2	8.4	-	-	10.7	-	-	47.3
HCM Lane LOS	F	C	A	-	-	B	-	-	E
HCM 95th %tile Q(veh)	0	0.1	0.2	-	-	0	-	-	2.5

3: JAE Access/SW 115th Avenue & SW Tualatin Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0		0.1	0.0	0.0	0.1	0.0
Total Delay (hr)	0.1	0.5	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.0	0.1	1.1
Total Del/Veh (s)	6.1	2.9	3.0	5.6	1.8	1.1		9.5	18.8	6.8	7.4	3.4
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.3
Stop Del/Veh (s)	1.9	0.0	0.0	3.0	0.0	0.0		7.6	16.8	4.0	5.4	1.0

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	839	380	6	23	4
Future Vol, veh/h	1	839	380	6	23	4
Conflicting Peds, #/hr	1	0	0	1	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	25	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	3	7	2	5	2
Mvmt Flow	1	932	422	7	26	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	430	0	-	0	1361	427
Stage 1	-	-	-	-	427	-
Stage 2	-	-	-	-	934	-
Critical Hdwy	4.12	-	-	-	6.45	6.22
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.218	-	-	-	3.545	3.318
Pot Cap-1 Maneuver	1130	-	-	-	161	628
Stage 1	-	-	-	-	652	-
Stage 2	-	-	-	-	377	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1129	-	-	-	160	627
Mov Cap-2 Maneuver	-	-	-	-	284	-
Stage 1	-	-	-	-	651	-
Stage 2	-	-	-	-	377	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.01	0	17.91
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1129	-	-	-	309
HCM Lane V/C Ratio	0.001	-	-	-	0.097
HCM Control Delay (s/veh)	8.2	-	-	-	17.9
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Intersection	
Int Delay, s/veh	0.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	852	42	50	381	15	8
Future Vol, veh/h	852	42	50	381	15	8
Conflicting Peds, #/hr	0	2	2	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	2	2	7	15	17
Mvmt Flow	926	46	54	414	16	9

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	974	0	1475	951
Stage 1	-	-	-	-	951	-
Stage 2	-	-	-	-	524	-
Critical Hdwy	-	-	4.12	-	6.55	6.37
Critical Hdwy Stg 1	-	-	-	-	5.55	-
Critical Hdwy Stg 2	-	-	-	-	5.55	-
Follow-up Hdwy	-	-	2.218	-	3.635	3.453
Pot Cap-1 Maneuver	-	-	708	-	130	295
Stage 1	-	-	-	-	356	-
Stage 2	-	-	-	-	569	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	707	-	120	295
Mov Cap-2 Maneuver	-	-	-	-	245	-
Stage 1	-	-	-	-	355	-
Stage 2	-	-	-	-	524	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	1.22	20.29
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	260	-	-	707	-
HCM Lane V/C Ratio	0.096	-	-	0.077	-
HCM Control Delay (s/veh)	20.3	-	-	10.5	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.3	-	-	0.2	-

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	1	2	28	108	4
Future Vol, veh/h	1	1	2	28	108	4
Conflicting Peds, #/hr	0	0	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	100	50	17	2	25
Mvmt Flow	1	1	2	33	127	5

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	171	133	136	0	-	0
Stage 1	133	-	-	-	-	-
Stage 2	38	-	-	-	-	-
Critical Hdwy	6.42	7.2	4.6	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	4.2	2.65	-	-	-
Pot Cap-1 Maneuver	819	709	1200	-	-	-
Stage 1	893	-	-	-	-	-
Stage 2	985	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	811	706	1196	-	-	-
Mov Cap-2 Maneuver	811	-	-	-	-	-
Stage 1	888	-	-	-	-	-
Stage 2	981	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.78	0.53	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	120	-	755	-	-
HCM Lane V/C Ratio	0.002	-	0.003	-	-
HCM Control Delay (s/veh)	8	0	9.8	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	15	113	26	71	36
Future Vol, veh/h	2	15	113	26	71	36
Conflicting Peds, #/hr	0	0	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	2	2	2	17	5	2
Mvmt Flow	3	20	153	35	96	49

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	466	125	150	0	-	0
Stage 1	125	-	-	-	-	-
Stage 2	341	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	555	925	1432	-	-	-
Stage 1	900	-	-	-	-	-
Stage 2	720	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	490	921	1425	-	-	-
Mov Cap-2 Maneuver	490	-	-	-	-	-
Stage 1	798	-	-	-	-	-
Stage 2	717	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.44	6.37	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1397	-	834	-	-
HCM Lane V/C Ratio	0.107	-	0.028	-	-
HCM Control Delay (s/veh)	7.8	0	9.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.4	-	0.1	-	-

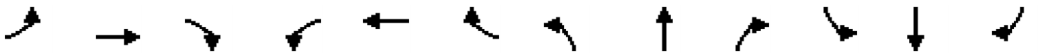
Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	1	12	86	136	68	13
Future Vol, veh/h	1	12	86	136	68	13
Conflicting Peds, #/hr	1	0	6	0	0	6
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	2	13	2	10	4	17
Mvmt Flow	1	15	110	174	87	17

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	497	102	110	0	-	0
Stage 1	102	-	-	-	-	-
Stage 2	396	-	-	-	-	-
Critical Hdwy	6.42	6.33	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.417	2.218	-	-	-
Pot Cap-1 Maneuver	532	924	1480	-	-	-
Stage 1	923	-	-	-	-	-
Stage 2	680	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	482	919	1472	-	-	-
Mov Cap-2 Maneuver	482	-	-	-	-	-
Stage 1	841	-	-	-	-	-
Stage 2	676	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.27	2.96	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	697	-	859	-	-
HCM Lane V/C Ratio	0.075	-	0.019	-	-
HCM Control Delay (s/veh)	7.6	0	9.3	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.2	-	0.1	-	-



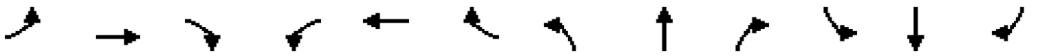
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	106	22	21	13	40	18	253	78	288	556	33
Future Volume (vph)	7	106	22	21	13	40	18	253	78	288	556	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.89		1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1583	1801		1289	1572		1703	3038		1768	3421	
Flt Permitted	0.95	1.00		0.95	1.00		0.35	1.00		0.47	1.00	
Satd. Flow (perm)	1583	1801		1289	1572		624	3038		882	3421	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	8	120	25	24	15	45	20	288	89	327	632	38
RTOR Reduction (vph)	0	6	0	0	35	0	0	23	0	0	3	0
Lane Group Flow (vph)	8	139	0	24	25	0	20	354	0	327	667	0
Confl. Peds. (#/hr)			1	1			1		2	2		1
Heavy Vehicles (%)	14%	2%	5%	40%	17%	4%	6%	14%	14%	2%	4%	13%
Turn Type	Prot	NA		Prot	NA		D.P+P	NA		D.P+P	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							6			2		
Actuated Green, G (s)	0.8	12.5		2.5	14.2		33.2	19.1		33.2	31.3	
Effective Green, g (s)	1.8	13.5		3.5	15.2		35.2	20.1		33.2	31.3	
Actuated g/C Ratio	0.03	0.20		0.05	0.22		0.52	0.29		0.49	0.46	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	41	356		66	350		367	895		612	1570	
v/s Ratio Prot	0.01	c0.08		c0.02	0.02		0.00	0.12		c0.11	0.20	
v/s Ratio Perm							0.03			c0.15		
v/c Ratio	0.20	0.39		0.36	0.07		0.05	0.40		0.53	0.43	
Uniform Delay, d1	32.5	23.8		31.3	20.9		8.2	19.2		11.1	12.4	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.3	0.7		3.4	0.1		0.1	0.3		0.9	0.2	
Delay (s)	34.8	24.5		34.7	21.0		8.3	19.5		12.0	12.6	
Level of Service	C	C		C	C		A	B		B	B	
Approach Delay (s/veh)		25.0			24.9			18.9			12.4	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	15.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	68.2	Sum of lost time (s)	17.0
Intersection Capacity Utilization	52.7%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Signalized Intersection Summary
9: SW 124th Avenue & SW Leveton Drive

07/15/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	106	22	21	13	40	18	253	78	288	556	33
Future Volume (veh/h)	7	106	22	21	13	40	18	253	78	288	556	33
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1693	1870	1826	1307	1648	1841	1811	1693	1693	1870	1841	1707
Adj Flow Rate, veh/h	8	120	25	24	15	45	20	288	89	327	632	38
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	14	2	5	40	17	4	6	14	14	2	4	13
Cap, veh/h	57	243	51	75	68	203	419	556	168	606	1287	77
Arrive On Green	0.04	0.16	0.14	0.06	0.19	0.17	0.04	0.23	0.21	0.20	0.38	0.38
Sat Flow, veh/h	1612	1501	313	1245	362	1087	1725	2428	735	1781	3351	201
Grp Volume(v), veh/h	8	0	145	24	0	60	20	189	188	327	329	341
Grp Sat Flow(s),veh/h/ln	1612	0	1813	1245	0	1450	1725	1608	1556	1781	1749	1804
Q Serve(g_s), s	0.2	0.0	3.6	0.9	0.0	1.7	0.3	5.0	5.2	6.5	7.0	7.0
Cycle Q Clear(g_c), s	0.2	0.0	3.6	0.9	0.0	1.7	0.3	5.0	5.2	6.5	7.0	7.0
Prop In Lane	1.00		0.17	1.00		0.75	1.00		0.47	1.00		0.11
Lane Grp Cap(c), veh/h	57	0	294	75	0	271	419	368	356	606	672	693
V/C Ratio(X)	0.14	0.00	0.49	0.32	0.00	0.22	0.05	0.51	0.53	0.54	0.49	0.49
Avail Cap(c_a), veh/h	529	0	1153	281	0	922	1085	1023	990	1163	1435	1480
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	22.8	0.0	18.7	21.9	0.0	17.1	8.0	16.4	16.7	10.9	11.4	11.4
Incr Delay (d2), s/veh	1.1	0.0	1.3	2.4	0.0	0.4	0.0	1.1	1.2	0.7	0.6	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	1.4	0.3	0.0	0.5	0.1	1.6	1.6	1.9	2.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	23.9	0.0	20.0	24.3	0.0	17.5	8.0	17.5	17.9	11.6	11.9	11.9
LnGrp LOS	C		B	C		B	A	B	B	B	B	B
Approach Vol, veh/h		153			84			397			997	
Approach Delay, s/veh		20.2			19.5			17.2			11.8	
Approach LOS		C			B			B			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	14.8	15.2	6.9	11.9	6.2	23.7	5.7	13.1
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	25.0	30.0	10.0	30.0	20.0	40.0	15.0	30.0
Max Q Clear Time (g_c+I1), s	8.5	7.2	2.9	5.6	2.3	9.0	2.2	3.7
Green Ext Time (p_c), s	1.4	1.7	0.0	1.4	0.0	3.4	0.0	0.5

Intersection Summary	
HCM 7th Control Delay, s/veh	14.3
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Intersection Delay, s/veh	11.6
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	18	409	23	11	62	0	16	1	22	0	1	1
Future Vol, veh/h	18	409	23	11	62	0	16	1	22	0	1	1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	2	2	23	13	14	2	13	2	2	2	2	2
Mvmt Flow	20	460	26	12	70	0	18	1	25	0	1	1
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	12.4	8.4	8.5	8
HCM LOS	B	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	41%	4%	15%	0%
Vol Thru, %	3%	91%	85%	50%
Vol Right, %	56%	5%	0%	50%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	39	450	73	2
LT Vol	16	18	11	0
Through Vol	1	409	62	1
RT Vol	22	23	0	1
Lane Flow Rate	44	506	82	2
Geometry Grp	1	1	1	1
Degree of Util (X)	0.063	0.569	0.109	0.003
Departure Headway (Hd)	5.147	4.054	4.763	4.98
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	699	880	755	721
Service Time	3.154	2.134	2.772	2.992
HCM Lane V/C Ratio	0.063	0.575	0.109	0.003
HCM Control Delay, s/veh	8.5	12.4	8.4	8
HCM Lane LOS	A	B	A	A
HCM 95th-tile Q	0.2	3.7	0.4	0

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	149	254	54	74	7	18
Future Vol, veh/h	149	254	54	74	7	18
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	3	3	9	2	2	17
Mvmt Flow	180	306	65	89	8	22

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	154	0	-	0	775	110
Stage 1	-	-	-	-	110	-
Stage 2	-	-	-	-	665	-
Critical Hdwy	4.13	-	-	-	6.42	6.37
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.227	-	-	-	3.518	3.453
Pot Cap-1 Maneuver	1420	-	-	-	367	905
Stage 1	-	-	-	-	915	-
Stage 2	-	-	-	-	511	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1420	-	-	-	311	905
Mov Cap-2 Maneuver	-	-	-	-	311	-
Stage 1	-	-	-	-	776	-
Stage 2	-	-	-	-	511	-

Approach	EB	WB	SB
HCM Control Delay, s/v	2.92	0	11.27
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	666	-	-	-	311	905
HCM Lane V/C Ratio	0.126	-	-	-	0.027	0.024
HCM Control Delay (s/veh)	7.9	0	-	-	16.9	9.1
HCM Lane LOS	A	A	-	-	C	A
HCM 95th %tile Q(veh)	0.4	-	-	-	0.1	0.1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	262	131	0	0	0
Future Vol, veh/h	0	262	131	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	5	5	2	2	2
Mvmt Flow	0	320	160	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	160	0	-	0	479	160
Stage 1	-	-	-	-	160	-
Stage 2	-	-	-	-	320	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1420	-	-	-	545	885
Stage 1	-	-	-	-	869	-
Stage 2	-	-	-	-	736	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1420	-	-	-	545	885
Mov Cap-2 Maneuver	-	-	-	-	545	-
Stage 1	-	-	-	-	869	-
Stage 2	-	-	-	-	736	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1420	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	27	233	120	29	12	9
Future Vol, veh/h	27	233	120	29	12	9
Conflicting Peds, #/hr	12	0	0	12	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	5	5	4	2	2
Mvmt Flow	33	281	145	35	14	11

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	192	0	-	0	520	175
Stage 1	-	-	-	-	174	-
Stage 2	-	-	-	-	346	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1382	-	-	-	516	868
Stage 1	-	-	-	-	856	-
Stage 2	-	-	-	-	717	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1366	-	-	-	491	857
Mov Cap-2 Maneuver	-	-	-	-	491	-
Stage 1	-	-	-	-	823	-
Stage 2	-	-	-	-	708	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.8	0	11.14
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	187	-	-	-	491	857
HCM Lane V/C Ratio	0.024	-	-	-	0.029	0.013
HCM Control Delay (s/veh)	7.7	0	-	-	12.6	9.3
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1	0

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	209	27	16	154	0	9	0	5	0	0	0
Future Vol, veh/h	0	209	27	16	154	0	9	0	5	0	0	0
Conflicting Peds, #/hr	8	0	3	3	0	8	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	77	77	77	77	77	77	77	77	77
Heavy Vehicles, %	2	5	2	2	4	2	2	2	2	2	2	2
Mvmt Flow	0	271	35	21	200	0	12	0	6	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	208	0	0	309	0	0	535	542	292	521	559	209
Stage 1	-	-	-	-	-	-	292	292	-	250	250	-
Stage 2	-	-	-	-	-	-	243	250	-	271	309	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1363	-	-	1251	-	-	456	448	747	466	438	831
Stage 1	-	-	-	-	-	-	716	671	-	754	700	-
Stage 2	-	-	-	-	-	-	761	700	-	734	659	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1353	-	-	1247	-	-	446	435	745	450	425	824
Mov Cap-2 Maneuver	-	-	-	-	-	-	446	435	-	450	425	-
Stage 1	-	-	-	-	-	-	714	669	-	735	682	-
Stage 2	-	-	-	-	-	-	746	682	-	728	657	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0.75	12.16	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	521	1353	-	-	169	-	-	-
HCM Lane V/C Ratio	0.035	-	-	-	0.017	-	-	-
HCM Control Delay (s/veh)	12.2	0	-	-	7.9	0	-	0
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	-

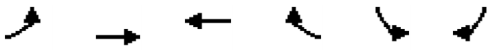
Intersection	
Int Delay, s/veh	8.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	144	71	143	120	31	49
Future Vol, veh/h	144	71	143	120	31	49
Conflicting Peds, #/hr	0	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	3	2	4	2	9	3
Mvmt Flow	167	83	166	140	36	57

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	539	67	95	0	-	0
Stage 1	67	-	-	-	-	-
Stage 2	472	-	-	-	-	-
Critical Hdwy	6.43	6.22	4.14	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.318	2.236	-	-	-
Pot Cap-1 Maneuver	502	997	1486	-	-	-
Stage 1	954	-	-	-	-	-
Stage 2	625	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	439	995	1484	-	-	-
Mov Cap-2 Maneuver	439	-	-	-	-	-
Stage 1	836	-	-	-	-	-
Stage 2	624	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	17.34	4.2	0
HCM LOS	C		

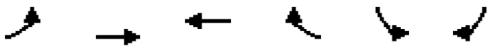
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	979	-	539	-	-
HCM Lane V/C Ratio	0.112	-	0.464	-	-
HCM Control Delay (s/veh)	7.7	0	17.3	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.4	-	2.4	-	-



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	19	390	281	264	60	6
Future Volume (vph)	19	390	281	264	60	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.99		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.93		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1702	1624	1617		1626	1583
Flt Permitted	0.35	1.00	1.00		0.95	1.00
Satd. Flow (perm)	622	1624	1617		1626	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	424	305	287	65	7
RTOR Reduction (vph)	0	0	25	0	0	6
Lane Group Flow (vph)	21	424	567	0	65	1
Confl. Peds. (#/hr)	2			2		
Heavy Vehicles (%)	6%	17%	12%	5%	11%	2%
Turn Type	D.P+P	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	6					4
Actuated Green, G (s)	29.5	34.9	28.8		4.7	4.7
Effective Green, g (s)	32.3	36.3	30.2		7.2	7.2
Actuated g/C Ratio	0.63	0.70	0.59		0.14	0.14
Clearance Time (s)	5.4	5.4	5.4		6.5	6.5
Vehicle Extension (s)	2.0	3.1	3.1		2.6	2.6
Lane Grp Cap (vph)	434	1144	948		227	221
v/s Ratio Prot	0.00	c0.26	c0.35		c0.04	
v/s Ratio Perm	0.03					0.00
v/c Ratio	0.05	0.37	0.60		0.29	0.00
Uniform Delay, d1	6.6	3.0	6.8		19.8	19.1
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.2	1.0		0.5	0.0
Delay (s)	6.6	3.2	7.8		20.4	19.1
Level of Service	A	A	A		C	B
Approach Delay (s/veh)		3.4	7.8		20.3	
Approach LOS		A	A		C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	6.9	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.55		
Actuated Cycle Length (s)	51.5	Sum of lost time (s)	12.0
Intersection Capacity Utilization	41.9%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	19	390	281	264	60	6
Future Volume (veh/h)	19	390	281	264	60	6
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1811	1648	1722	1826	1737	1870
Adj Flow Rate, veh/h	21	424	305	287	65	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	17	12	5	11	2
Cap, veh/h	529	1224	503	474	179	171
Arrive On Green	0.05	0.74	0.62	0.59	0.11	0.11
Sat Flow, veh/h	1725	1648	815	767	1654	1585
Grp Volume(v), veh/h	21	424	0	592	65	7
Grp Sat Flow(s),veh/h/ln	1725	1648	0	1583	1654	1585
Q Serve(g_s), s	0.0	4.8	0.0	12.5	2.0	0.2
Cycle Q Clear(g_c), s	0.0	4.8	0.0	12.5	2.0	0.2
Prop In Lane	1.00			0.48	1.00	1.00
Lane Grp Cap(c), veh/h	529	1224	0	977	179	171
V/C Ratio(X)	0.04	0.35	0.00	0.61	0.36	0.04
Avail Cap(c_a), veh/h	807	1426	0	1929	1002	960
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	8.8	2.4	0.0	6.5	22.2	21.4
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.6	1.0	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.5	0.0	2.8	0.7	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	8.8	2.6	0.0	7.2	23.2	21.5
LnGrp LOS	A	A		A	C	C
Approach Vol, veh/h		445	592		72	
Approach Delay, s/veh		2.9	7.2		23.0	
Approach LOS		A	A		C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		43.9		9.8	6.7	37.1
Change Period (Y+Rc), s		5.4		6.5	5.4	5.4
Max Green Setting (Gmax), s		45.0		30.0	10.0	64.0
Max Q Clear Time (g_c+I1), s		6.8		4.0	2.0	14.5
Green Ext Time (p_c), s		9.8		0.1	0.0	17.2

Intersection Summary	
HCM 7th Control Delay, s/veh	6.5
HCM 7th LOS	A

Intersection	
Int Delay, s/veh	4.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	674	195	68	347	78	61
Future Vol, veh/h	674	195	68	347	78	61
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	3	4	3	14	12
Mvmt Flow	702	203	71	361	81	64

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	906	0	1308	805
Stage 1	-	-	-	-	805	-
Stage 2	-	-	-	-	503	-
Critical Hdwy	-	-	4.14	-	6.54	6.32
Critical Hdwy Stg 1	-	-	-	-	5.54	-
Critical Hdwy Stg 2	-	-	-	-	5.54	-
Follow-up Hdwy	-	-	2.236	-	3.626	3.408
Pot Cap-1 Maneuver	-	-	743	-	166	368
Stage 1	-	-	-	-	420	-
Stage 2	-	-	-	-	583	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	742	-	150	367
Mov Cap-2 Maneuver	-	-	-	-	150	-
Stage 1	-	-	-	-	420	-
Stage 2	-	-	-	-	528	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	1.7	37.84
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	150	367	-	-	742	-
HCM Lane V/C Ratio	0.542	0.173	-	-	0.095	-
HCM Control Delay (s/veh)	54.3	16.8	-	-	10.4	-
HCM Lane LOS	F	C	-	-	B	-
HCM 95th %tile Q(veh)	2.7	0.6	-	-	0.3	-



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	674	195	68	347	78	61
Future Volume (Veh/h)	674	195	68	347	78	61
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	702	203	71	361	81	64
Pedestrians					1	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			906		1308	805
vC1, stage 1 conf vol					805	
vC2, stage 2 conf vol					503	
vCu, unblocked vol			906		1308	805
tC, single (s)			4.1		6.5	6.3
tC, 2 stage (s)					5.5	
tF (s)			2.2		3.6	3.4
p0 queue free %			90		77	83
cM capacity (veh/h)			742		349	367

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total	905	71	361	81	64
Volume Left	0	71	0	81	0
Volume Right	203	0	0	0	64
cSH	1700	742	1700	349	367
Volume to Capacity	0.53	0.10	0.21	0.23	0.17
Queue Length 95th (ft)	0	8	0	22	16
Control Delay (s/veh)	0.0	10.4	0.0	18.4	16.9
Lane LOS		B		C	C
Approach Delay (s/veh)	0.0	1.7		17.7	
Approach LOS				C	

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	65.4%	ICU Level of Service	C
Analysis Period (min)	15		

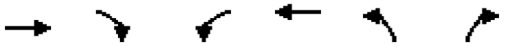
Intersection	
Int Delay, s/veh	8.7

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	38	13	38	86	106	89
Future Vol, veh/h	38	13	38	86	106	89
Conflicting Peds, #/hr	0	44	44	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	62	62	62	62	62	62
Heavy Vehicles, %	3	2	17	5	5	7
Mvmt Flow	61	21	61	139	171	144

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	126	0	377	116
Stage 1	-	-	-	-	116	-
Stage 2	-	-	-	-	261	-
Critical Hdwy	-	-	4.27	-	6.45	6.27
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	-	-	2.353	-	3.545	3.363
Pot Cap-1 Maneuver	-	-	1372	-	619	923
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	775	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1315	-	563	884
Mov Cap-2 Maneuver	-	-	-	-	563	-
Stage 1	-	-	-	-	864	-
Stage 2	-	-	-	-	736	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	2.41	14.91
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	675	-	-	552	-
HCM Lane V/C Ratio	0.466	-	-	0.047	-
HCM Control Delay (s/veh)	14.9	-	-	7.9	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	2.5	-	-	0.1	-



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	38	13	38	86	106	89
Future Volume (Veh/h)	38	13	38	86	106	89
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.62	0.62	0.62	0.62	0.62	0.62
Hourly flow rate (vph)	61	21	61	139	171	144
Pedestrians					44	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					4	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			126		377	116
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			126		377	116
tC, single (s)			4.3		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.4		3.5	3.4
p0 queue free %			95		70	84
cM capacity (veh/h)			1315		566	885

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	82	200	315
Volume Left	0	61	171
Volume Right	21	0	144
cSH	1700	1315	677
Volume to Capacity	0.05	0.05	0.47
Queue Length 95th (ft)	0	4	62
Control Delay (s/veh)	0.0	2.7	14.9
Lane LOS		A	B
Approach Delay (s/veh)	0.0	2.7	14.9
Approach LOS			B

Intersection Summary			
Average Delay	8.7		
Intersection Capacity Utilization	31.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	208	1473	42	0	1828
Future Vol, veh/h	0	208	1473	42	0	1828
Conflicting Peds, #/hr	0	1	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	Free	-	None
Storage Length	-	0	-	335	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	6	8	3	2	6
Mvmt Flow	0	217	1534	44	0	1904

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	768	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.02	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.36	-	-	-	-
Pot Cap-1 Maneuver	0	336	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	335	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	33.39	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	335	-
HCM Lane V/C Ratio	-	0.646	-
HCM Control Delay (s/veh)	-	33.4	-
HCM Lane LOS	-	D	-
HCM 95th %tile Q(veh)	-	4.3	-

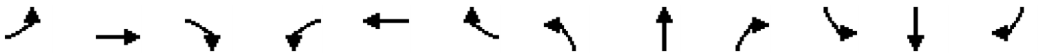


Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	208	1473	42	0	1828
Future Volume (Veh/h)	0	208	1473	42	0	1828
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	0	217	1534	44	0	1904
Pedestrians	1					1
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	3.5					3.5
Percent Blockage	0					0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2487	769			1535	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2487	769			1535	
tC, single (s)	6.8	*6.0			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.2	
p0 queue free %	100	48			100	
cM capacity (veh/h)	24	416			429	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	217	767	767	44	952	952
Volume Left	0	0	0	0	0	0
Volume Right	217	0	0	44	0	0
cSH	416	1700	1700	1700	1700	1700
Volume to Capacity	0.52	0.45	0.45	0.03	0.56	0.56
Queue Length 95th (ft)	73	0	0	0	0	0
Control Delay (s/veh)	22.7	0.0	0.0	0.0	0.0	0.0
Lane LOS	C					
Approach Delay (s/veh)	22.7	0.0			0.0	
Approach LOS	C					

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	60.9%	ICU Level of Service	B
Analysis Period (min)	15		

* User Entered Value



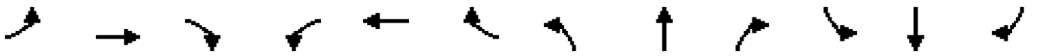
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	216	215	24	269	9	291	151	38	16	216	6
Future Volume (vph)	11	216	215	24	269	9	291	151	38	16	216	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0		4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	0.99		1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1501	1484		1543	1768		1612	1577		1687	1800	
Flt Permitted	0.51	1.00		0.28	1.00		0.37	1.00		0.63	1.00	
Satd. Flow (perm)	805	1484		451	1768		633	1577		1120	1800	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	12	232	231	26	289	10	313	162	41	17	232	6
RTOR Reduction (vph)	0	19	0	0	1	0	0	0	0	0	1	0
Lane Group Flow (vph)	12	444	0	26	298	0	313	203	0	17	237	0
Confl. Peds. (#/hr)	2					2						
Heavy Vehicles (%)	20%	14%	23%	17%	7%	2%	12%	14%	28%	7%	4%	50%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	40.1	39.2		44.3	41.3		43.5	37.6		25.4	23.5	
Effective Green, g (s)	40.1	39.7		44.3	41.8		43.5	38.1		25.4	24.0	
Actuated g/C Ratio	0.40	0.39		0.44	0.42		0.43	0.38		0.25	0.24	
Clearance Time (s)	4.0	5.5		4.0	5.5		4.0	5.5		4.0	5.5	
Vehicle Extension (s)	2.0	3.2		2.0	3.2		2.0	3.2		2.0	3.2	
Lane Grp Cap (vph)	326	585		230	733		428	596		293	428	
v/s Ratio Prot	0.00	c0.30		c0.00	0.17		c0.12	0.13		0.00	0.13	
v/s Ratio Perm	0.01			0.05			c0.20			0.01		
v/c Ratio	0.04	0.76		0.11	0.41		0.73	0.34		0.06	0.55	
Uniform Delay, d1	18.5	26.4		17.8	20.7		21.0	22.3		28.4	33.7	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	5.7		0.1	0.4		5.5	0.4		0.0	1.6	
Delay (s)	18.5	32.1		17.8	21.1		26.4	22.7		28.5	35.3	
Level of Service	B	C		B	C		C	C		C	D	
Approach Delay (s/veh)		31.7			20.9			25.0			34.8	
Approach LOS		C			C			C			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	27.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	100.7	Sum of lost time (s)	18.0
Intersection Capacity Utilization	64.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Signalized Intersection Summary
20: SW Teton Avenue & SW Herman Road

07/15/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	216	215	24	269	9	291	151	38	16	216	6
Future Volume (veh/h)	11	216	215	24	269	9	291	151	38	16	216	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1604	1693	1559	1648	1796	1870	1722	1693	1485	1796	1841	1159
Adj Flow Rate, veh/h	12	232	231	26	289	10	313	162	41	17	232	6
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	20	14	23	17	7	2	12	14	28	7	4	50
Cap, veh/h	383	313	312	250	718	25	420	424	107	305	297	8
Arrive On Green	0.01	0.40	0.40	0.03	0.42	0.41	0.18	0.33	0.32	0.02	0.17	0.16
Sat Flow, veh/h	1527	777	774	1570	1726	60	1640	1303	330	1711	1786	46
Grp Volume(v), veh/h	12	0	463	26	0	299	313	0	203	17	0	238
Grp Sat Flow(s),veh/h/ln	1527	0	1551	1570	0	1785	1640	0	1633	1711	0	1832
Q Serve(g_s), s	0.4	0.0	20.4	0.8	0.0	9.4	12.0	0.0	7.7	0.7	0.0	10.0
Cycle Q Clear(g_c), s	0.4	0.0	20.4	0.8	0.0	9.4	12.0	0.0	7.7	0.7	0.0	10.0
Prop In Lane	1.00		0.50	1.00		0.03	1.00		0.20	1.00		0.03
Lane Grp Cap(c), veh/h	383	0	625	250	0	743	420	0	531	305	0	305
V/C Ratio(X)	0.03	0.00	0.74	0.10	0.00	0.40	0.74	0.00	0.38	0.06	0.00	0.78
Avail Cap(c_a), veh/h	741	0	1054	598	0	1191	536	0	1171	698	0	1268
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	14.4	0.0	20.5	16.2	0.0	16.4	21.3	0.0	20.9	27.3	0.0	32.0
Incr Delay (d2), s/veh	0.0	0.0	1.9	0.1	0.0	0.4	2.9	0.0	0.5	0.0	0.0	4.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	6.8	0.3	0.0	3.6	4.6	0.0	2.8	0.3	0.0	4.6
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	14.4	0.0	22.4	16.3	0.0	16.8	24.1	0.0	21.4	27.3	0.0	36.8
LnGrp LOS	B		C	B		B	C		C	C		D
Approach Vol, veh/h		475			325			516			255	
Approach Delay, s/veh		22.2			16.8			23.0			36.1	
Approach LOS		C			B			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.2	37.3	18.3	18.3	5.2	38.4	5.6	31.1
Change Period (Y+Rc), s	4.0	5.5	4.0	5.5	4.0	5.5	4.0	5.5
Max Green Setting (Gmax), s	20.0	54.0	20.0	55.0	20.0	53.0	20.0	57.0
Max Q Clear Time (g_c+I1), s	2.8	22.4	14.0	12.0	2.4	11.4	2.7	9.7
Green Ext Time (p_c), s	0.0	9.4	0.3	0.8	0.0	6.7	0.0	2.9

Intersection Summary	
HCM 7th Control Delay, s/veh	23.6
HCM 7th LOS	C



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	231	358	135	1572	19	1468	103
Future Volume (vph)	231	358	135	1572	19	1468	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1736	1528	1656	3312	1770	3406	1452
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1736	1528	1656	3312	1770	3406	1452
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	241	373	141	1638	20	1529	107
RTOR Reduction (vph)	0	162	0	0	0	0	30
Lane Group Flow (vph)	241	211	141	1638	20	1529	77
Confl. Peds. (#/hr)		5	3				3
Heavy Vehicles (%)	4%	4%	9%	9%	2%	6%	8%
Turn Type	Prot	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	4		5	2	1	6	
Permitted Phases		4					6
Actuated Green, G (s)	22.5	22.5	16.3	97.6	4.4	84.7	84.7
Effective Green, g (s)	23.5	23.5	17.8	99.6	4.9	86.7	86.7
Actuated g/C Ratio	0.17	0.17	0.13	0.71	0.04	0.62	0.62
Clearance Time (s)	5.0	5.0	5.5	6.0	4.5	6.0	6.0
Vehicle Extension (s)	2.5	2.5	2.3	4.5	2.3	4.5	4.5
Lane Grp Cap (vph)	291	256	210	2356	61	2109	899
v/s Ratio Prot	c0.14		0.09	c0.49	0.01	c0.45	
v/s Ratio Perm		0.14					0.05
v/c Ratio	0.83	0.82	0.67	0.70	0.33	0.72	0.09
Uniform Delay, d1	56.3	56.2	58.3	11.5	65.9	18.4	10.7
Progression Factor	1.00	1.00	1.00	1.00	1.16	1.19	0.85
Incremental Delay, d2	17.0	18.5	7.1	1.7	1.4	1.8	0.1
Delay (s)	73.3	74.7	65.4	13.3	78.2	23.7	9.2
Level of Service	E	E	E	B	E	C	A
Approach Delay (s/veh)	74.2			17.4		23.4	
Approach LOS	E			B		C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	28.5	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.75		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	75.3%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Signalized Intersection Summary
21: OR 99W (Pacific Highway) & SW Fischer Road

07/15/2025



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	231	358	135	1572	19	1468	103
Future Volume (veh/h)	231	358	135	1572	19	1468	103
Initial Q (Qb), veh	0	0	0	0		0	0
Lane Width Adj.	1.00	1.00	1.00	1.00		1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00				1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00		1.00	1.00
Work Zone On Approach	No			No		No	
Adj Sat Flow, veh/h/ln	1841	1841	1767	1767		1811	1781
Adj Flow Rate, veh/h	241	187	141	1638		1529	107
Peak Hour Factor	0.96	0.96	0.96	0.96		0.96	0.96
Percent Heavy Veh, %	4	4	9	9		6	8
Cap, veh/h	282	251	228	2624		2114	925
Arrive On Green	0.16	0.16	0.14	0.78		1.00	1.00
Sat Flow, veh/h	1753	1560	1682	3445		3532	1506
Grp Volume(v), veh/h	241	187	141	1638		1529	107
Grp Sat Flow(s),veh/h/ln	1753	1560	1682	1678		1721	1506
Q Serve(g_s), s	18.7	16.0	11.1	29.1		0.0	0.0
Cycle Q Clear(g_c), s	18.7	16.0	11.1	29.1		0.0	0.0
Prop In Lane	1.00	1.00	1.00				1.00
Lane Grp Cap(c), veh/h	282	251	228	2624		2114	925
V/C Ratio(X)	0.85	0.74	0.62	0.62		0.72	0.12
Avail Cap(c_a), veh/h	326	290	228	2624		2114	925
HCM Platoon Ratio	1.00	1.00	1.00	1.00		2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00		0.69	0.69
Uniform Delay (d), s/veh	57.1	56.0	57.1	6.5		0.0	0.0
Incr Delay (d2), s/veh	16.7	7.9	4.2	1.1		1.5	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(50%),veh/ln	9.7	13.9	4.9	8.3		0.4	0.0
Unsig. Movement Delay, s/veh							
LnGrp Delay(d), s/veh	73.9	63.9	61.3	7.6		1.5	0.2
LnGrp LOS	E	E	E	A		A	A
Approach Vol, veh/h	428			1779		1636	
Approach Delay, s/veh	69.5			11.9		1.4	
Approach LOS	E			B		A	

Timer - Assigned Phs		2		4	5	6	
Phs Duration (G+Y+Rc), s		113.5		26.5	23.5	90.0	
Change Period (Y+Rc), s		6.0		5.0	6.0	* 6	
Max Green Setting (Gmax), s		84.0		25.0	14.5	* 84	
Max Q Clear Time (g_c+I1), s		31.1		20.7	13.1	2.0	
Green Ext Time (p_c), s		48.9		0.8	0.1	68.9	

Intersection Summary	
HCM 7th Control Delay, s/veh	13.9
HCM 7th LOS	B

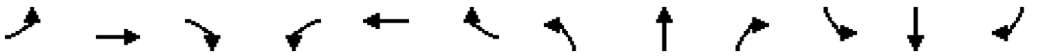
Notes

User approved pedestrian interval to be less than phase max green.
User approved ignoring U-Turning movement.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.

HCM Signalized Intersection Capacity Analysis
22: OR 99W (Pacific Highway) & SW 116th Avenue/SW Durham Road

07/15/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	51	28	299	24	164	75	1226	516	399	1199	15
Future Volume (vph)	6	51	28	299	24	164	75	1226	516	399	1199	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0	6.0	5.4	5.4	6.0	5.3	5.0	5.0
Lane Util. Factor		0.95		0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes		1.00		1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.97
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.95		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00		0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		3351		1633	1651	1517	1770	3312	1513	3367	3374	1542
Flt Permitted		1.00		0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3351		1633	1651	1517	1770	3312	1513	3367	3374	1542
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	6	52	29	305	24	167	77	1251	527	407	1223	15
RTOR Reduction (vph)	0	27	0	0	0	146	0	0	89	0	0	7
Lane Group Flow (vph)	0	60	0	165	164	21	77	1251	438	407	1223	8
Confl. Peds. (#/hr)	9					9	2		6	6		2
Heavy Vehicles (%)	2%	2%	2%	5%	4%	3%	2%	9%	5%	4%	7%	2%
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	3	3		4	4		5	2	4	1	6	
Permitted Phases						4			2			6
Actuated Green, G (s)		12.0		17.8	17.8	17.8	9.4	64.8	82.6	22.7	78.4	78.4
Effective Green, g (s)		12.0		17.8	17.8	17.8	9.4	64.8	82.6	22.7	78.4	78.4
Actuated g/C Ratio		0.09		0.13	0.13	0.13	0.07	0.46	0.59	0.16	0.56	0.56
Clearance Time (s)		6.0		6.0	6.0	6.0	5.4	5.4	6.0	5.3	5.0	5.0
Vehicle Extension (s)		2.3		2.3	2.3	2.3	2.3	4.5	2.3	2.3	4.8	4.8
Lane Grp Cap (vph)		287		207	209	192	118	1532	957	545	1889	863
v/s Ratio Prot		c0.02		c0.10	0.10		0.04	c0.38	0.06	c0.12	0.36	
v/s Ratio Perm						0.01			0.23			0.01
v/c Ratio		0.21		0.80	0.78	0.11	0.65	0.82	0.46	0.75	0.65	0.01
Uniform Delay, d1		59.6		59.3	59.2	54.1	63.7	32.5	16.1	55.9	21.3	13.6
Progression Factor		1.00		1.00	1.00	1.00	0.92	0.90	0.50	1.00	1.00	1.00
Incremental Delay, d2		0.2		18.1	16.5	0.1	7.6	3.6	0.1	5.1	1.7	0.0
Delay (s)		59.8		77.4	75.8	54.2	66.4	32.7	8.3	61.0	23.0	13.6
Level of Service		E		E	E	D	E	C	A	E	C	B
Approach Delay (s/veh)		59.8			69.1			27.2			32.3	
Approach LOS		E			E			C			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	35.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.7
Intersection Capacity Utilization	74.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Edition methodology does not support exclusive ped or hold phases.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	885	201	625	1163	762	767
Future Volume (vph)	885	201	625	1163	762	767
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	5.6
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	0.88
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1518	3367	3471	3400	2787
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1518	3367	3471	3400	2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	903	205	638	1187	778	783
RTOR Reduction (vph)	0	123	0	0	0	0
Lane Group Flow (vph)	903	82	638	1187	778	783
Confl. Peds. (#/hr)		1	1			6
Heavy Vehicles (%)	2%	5%	4%	4%	3%	2%
Turn Type	NA	Perm	Prot	NA	Prot	pt+ov
Protected Phases	2		1	6	8	1 4
Permitted Phases		2				
Actuated Green, G (s)	42.7	42.7	24.9	73.2	33.7	58.2
Effective Green, g (s)	44.7	44.7	26.5	75.2	35.7	53.2
Actuated g/C Ratio	0.38	0.38	0.22	0.63	0.30	0.45
Clearance Time (s)	6.0	6.0	5.6	6.0	6.0	
Vehicle Extension (s)	5.4	5.4	2.3	5.4	2.3	
Lane Grp Cap (vph)	1330	570	750	2195	1020	1247
v/s Ratio Prot	c0.26		c0.19	0.34	c0.23	0.28
v/s Ratio Perm		0.05				
v/c Ratio	0.68	0.14	0.85	0.54	0.76	0.63
Uniform Delay, d1	31.1	24.5	44.3	12.2	37.8	25.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.0	0.3	9.0	1.0	3.2	0.8
Delay (s)	33.0	24.8	53.3	13.2	41.0	26.0
Level of Service	C	C	D	B	D	C
Approach Delay (s/veh)	31.5			27.2	33.5	
Approach LOS	C			C	C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	30.4	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	118.9	Sum of lost time (s)	18.6
Intersection Capacity Utilization	75.4%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Edition methodology does not support exclusive ped or hold phases.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	39	639	902	49	420	408
Future Volume (vph)	39	639	902	49	420	408
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	0.0	4.5	4.5	4.0	4.5
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.97	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	3539	1529	1769	3471
Flt Permitted	0.95	1.00	1.00	1.00	0.11	1.00
Satd. Flow (perm)	1770	1583	3539	1529	214	3471
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	41	680	960	52	447	434
RTOR Reduction (vph)	0	7	0	21	0	0
Lane Group Flow (vph)	41	673	960	31	447	434
Confl. Peds. (#/hr)				7	7	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	4%
Turn Type	Perm	pt+ov	NA	Perm	D.P+P	NA
Protected Phases		4 5	6		5	2
Permitted Phases	4			6	6	
Actuated Green, G (s)	14.2	58.4	34.8	34.8	74.0	79.0
Effective Green, g (s)	15.2	63.4	35.8	35.8	76.0	80.0
Actuated g/C Ratio	0.15	0.61	0.35	0.35	0.73	0.77
Clearance Time (s)	5.0		5.5	5.5	5.0	5.5
Vehicle Extension (s)	4.0		4.5	4.5	4.0	4.5
Lane Grp Cap (vph)	259	967	1221	527	759	2677
v/s Ratio Prot		c0.42	c0.27		0.23	0.13
v/s Ratio Perm	0.02			0.02	0.20	
v/c Ratio	0.16	0.70	0.79	0.06	0.59	0.16
Uniform Delay, d1	38.7	13.6	30.5	22.7	18.8	3.1
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	2.4	3.8	0.1	1.4	0.1
Delay (s)	39.1	16.0	34.3	22.8	20.2	3.2
Level of Service	D	B	C	C	C	A
Approach Delay (s/veh)	17.3		33.7			11.8
Approach LOS	B		C			B

Intersection Summary			
HCM 2000 Control Delay (s/veh)	21.8	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	103.7	Sum of lost time (s)	12.5
Intersection Capacity Utilization	71.6%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Edition methodology does not support exclusive ped or hold phases.

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	38	461	2	0	599	266	0	3	7	16	0	20
Future Vol, veh/h	38	461	2	0	599	266	0	3	7	16	0	20
Conflicting Peds, #/hr	4	0	6	6	0	4	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	25	-	-	25	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	3	50	2	2	2	2	33	14	7	2	11
Mvmt Flow	42	507	2	0	658	292	0	3	8	18	0	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	955	0	0	515	0	0	1256	1552	514	1400	1407	809
Stage 1	-	-	-	-	-	-	597	597	-	808	808	-
Stage 2	-	-	-	-	-	-	659	955	-	592	598	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.83	6.34	7.17	6.52	6.31
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.83	-	6.17	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.83	-	6.17	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.297	3.426	3.563	4.018	3.399
Pot Cap-1 Maneuver	720	-	-	1051	-	-	148	97	538	115	139	367
Stage 1	-	-	-	-	-	-	489	445	-	367	394	-
Stage 2	-	-	-	-	-	-	453	299	-	484	491	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	717	-	-	1045	-	-	130	90	535	103	130	365
Mov Cap-2 Maneuver	-	-	-	-	-	-	130	90	-	103	130	-
Stage 1	-	-	-	-	-	-	458	417	-	366	392	-
Stage 2	-	-	-	-	-	-	425	298	-	446	460	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.78	0	22.55	32.33
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	216	717	-	-	1045	-	-	171
HCM Lane V/C Ratio	-	0.051	0.058	-	-	-	-	-	0.232
HCM Control Delay (s/veh)	0	22.6	10.3	-	-	0	-	-	32.3
HCM Lane LOS	A	C	B	-	-	A	-	-	D
HCM 95th %tile Q(veh)	-	0.2	0.2	-	-	0	-	-	0.9

3: JAE Access/SW 115th Avenue & SW Tualatin Road Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBT	NBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.3	0.1	0.2	0.1	0.1	0.1	0.1	0.0	0.1	0.1
Total Delay (hr)	0.1	0.4	0.0	0.6	0.2	0.0	0.0	0.1	0.0	1.5
Total Del/Veh (s)	12.4	3.2	1.9	3.4	2.4	22.2	8.0	21.5	6.9	3.7
Stop Delay (hr)	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0	0.2
Stop Del/Veh (s)	8.2	0.0	0.0	0.0	0.0	19.4	6.2	19.8	5.4	0.5

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	9	476	861	16	9	4
Future Vol, veh/h	9	476	861	16	9	4
Conflicting Peds, #/hr	3	0	0	3	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	25	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	3	7	2	11	2
Mvmt Flow	10	512	926	17	10	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	946	0	-	0	1469	937
Stage 1	-	-	-	-	937	-
Stage 2	-	-	-	-	531	-
Critical Hdwy	4.12	-	-	-	6.51	6.22
Critical Hdwy Stg 1	-	-	-	-	5.51	-
Critical Hdwy Stg 2	-	-	-	-	5.51	-
Follow-up Hdwy	2.218	-	-	-	3.599	3.318
Pot Cap-1 Maneuver	725	-	-	-	134	321
Stage 1	-	-	-	-	367	-
Stage 2	-	-	-	-	572	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	723	-	-	-	131	320
Mov Cap-2 Maneuver	-	-	-	-	258	-
Stage 1	-	-	-	-	361	-
Stage 2	-	-	-	-	570	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.19	0	18.84
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	723	-	-	-	274
HCM Lane V/C Ratio	0.013	-	-	-	0.051
HCM Control Delay (s/veh)	10	-	-	-	18.8
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	475	7	6	850	38	38
Future Vol, veh/h	475	7	6	850	38	38
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	4	20	2	2	3	7
Mvmt Flow	505	7	6	904	40	40

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	514	0	1427	510
Stage 1	-	-	-	-	510	-
Stage 2	-	-	-	-	917	-
Critical Hdwy	-	-	4.12	-	6.43	6.27
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.218	-	3.527	3.363
Pot Cap-1 Maneuver	-	-	1052	-	148	554
Stage 1	-	-	-	-	601	-
Stage 2	-	-	-	-	388	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1051	-	147	553
Mov Cap-2 Maneuver	-	-	-	-	277	-
Stage 1	-	-	-	-	600	-
Stage 2	-	-	-	-	386	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.06	17.47
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	369	-	-	1051	-
HCM Lane V/C Ratio	0.219	-	-	0.006	-
HCM Control Delay (s/veh)	17.5	-	-	8.4	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.8	-	-	0	-

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	3	0	1	63	16	0
Future Vol, veh/h	3	0	1	63	16	0
Conflicting Peds, #/hr	0	0	3	0	0	3
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	9	2
Mvmt Flow	3	0	1	70	18	0

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	93	21	21	0	-	0
Stage 1	21	-	-	-	-	-
Stage 2	72	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	907	1057	1595	-	-	-
Stage 1	1002	-	-	-	-	-
Stage 2	951	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	901	1054	1591	-	-	-
Mov Cap-2 Maneuver	901	-	-	-	-	-
Stage 1	998	-	-	-	-	-
Stage 2	948	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.01	0.11	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	28	-	901	-	-
HCM Lane V/C Ratio	0.001	-	0.004	-	-
HCM Control Delay (s/veh)	7.3	0	9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0	-	-

Intersection	
Int Delay, s/veh	6.5

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	25	107	16	38	15	2
Future Vol, veh/h	25	107	16	38	15	2
Conflicting Peds, #/hr	0	0	7	0	0	7
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	3	9	2
Mvmt Flow	25	108	16	38	15	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	94	23	24	0	-	0
Stage 1	23	-	-	-	-	-
Stage 2	71	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	906	1054	1591	-	-	-
Stage 1	999	-	-	-	-	-
Stage 2	952	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	885	1047	1580	-	-	-
Mov Cap-2 Maneuver	885	-	-	-	-	-
Stage 1	982	-	-	-	-	-
Stage 2	946	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.1	2.16	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	533	-	1011	-	-
HCM Lane V/C Ratio	0.01	-	0.132	-	-
HCM Control Delay (s/veh)	7.3	0	9.1	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.5	-	-

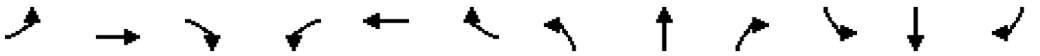
Intersection	
Int Delay, s/veh	3.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	74	8	45	121	2
Future Vol, veh/h	7	74	8	45	121	2
Conflicting Peds, #/hr	0	0	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	8	3	2
Mvmt Flow	9	90	10	55	148	2

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	227	153	154	0	-	0
Stage 1	153	-	-	-	-	-
Stage 2	74	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	761	893	1426	-	-	-
Stage 1	875	-	-	-	-	-
Stage 2	949	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	750	890	1421	-	-	-
Mov Cap-2 Maneuver	750	-	-	-	-	-
Stage 1	866	-	-	-	-	-
Stage 2	945	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.63	1.14	0
HCM LOS	A		

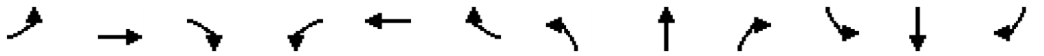
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	272	-	876	-	-
HCM Lane V/C Ratio	0.007	-	0.113	-	-
HCM Control Delay (s/veh)	7.6	0	9.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.4	-	-



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	29	27	66	2	282	7	668	27	46	395	18
Future Volume (vph)	28	29	27	66	2	282	7	668	27	46	395	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	0.85		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1583		1719	1562		1262	3515		1770	3342	
Flt Permitted	0.95	1.00		0.95	1.00		0.47	1.00		0.24	1.00	
Satd. Flow (perm)	1736	1583		1719	1562		629	3515		438	3342	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	30	32	29	72	2	307	8	726	29	50	429	20
RTOR Reduction (vph)	0	23	0	0	224	0	0	2	0	0	2	0
Lane Group Flow (vph)	30	38	0	72	85	0	8	753	0	50	447	0
Confl. Peds. (#/hr)	4					4						
Heavy Vehicles (%)	4%	11%	12%	5%	2%	2%	43%	2%	5%	2%	6%	35%
Turn Type	Prot	NA		Prot	NA		D.P+P	NA		D.P+P	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							6			2		
Actuated Green, G (s)	2.4	12.5		6.5	16.6		26.4	22.3		26.4	25.6	
Effective Green, g (s)	3.4	13.5		7.5	17.6		28.4	23.3		26.4	25.6	
Actuated g/C Ratio	0.05	0.21		0.11	0.27		0.43	0.36		0.40	0.39	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	90	326		197	420		290	1252		260	1308	
v/s Ratio Prot	0.02	0.02		c0.04	c0.05		0.00	c0.21		c0.01	c0.13	
v/s Ratio Perm							0.01			0.07		
v/c Ratio	0.33	0.12		0.37	0.20		0.03	0.60		0.19	0.34	
Uniform Delay, d1	29.9	21.1		26.8	18.5		10.5	17.2		12.5	14.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.2	0.2		1.2	0.2		0.0	0.8		0.4	0.2	
Delay (s)	32.1	21.3		27.9	18.7		10.6	18.1		12.8	14.1	
Level of Service	C	C		C	B		B	B		B	B	
Approach Delay (s/veh)		24.8			20.4			18.0			14.0	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	17.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.43		
Actuated Cycle Length (s)	65.4	Sum of lost time (s)	17.0
Intersection Capacity Utilization	60.1%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	29	27	66	2	282	7	668	27	46	395	18
Future Volume (veh/h)	28	29	27	66	2	282	7	668	27	46	395	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		0.99	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1737	1722	1826	1870	1870	1263	1870	1826	1870	1811	1381
Adj Flow Rate, veh/h	30	32	29	72	2	307	8	726	29	50	429	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	11	12	5	2	2	43	2	5	2	6	35
Cap, veh/h	109	214	194	169	3	457	315	1017	41	315	1139	53
Arrive On Green	0.06	0.26	0.24	0.10	0.29	0.27	0.03	0.29	0.28	0.08	0.34	0.34
Sat Flow, veh/h	1753	837	759	1739	10	1570	1203	3483	139	1781	3348	156
Grp Volume(v), veh/h	30	0	61	72	0	309	8	370	385	50	220	229
Grp Sat Flow(s),veh/h/ln	1753	0	1596	1739	0	1580	1203	1777	1845	1781	1721	1783
Q Serve(g_s), s	1.0	0.0	1.8	2.4	0.0	10.6	0.3	11.3	11.4	1.1	5.9	5.9
Cycle Q Clear(g_c), s	1.0	0.0	1.8	2.4	0.0	10.6	0.3	11.3	11.4	1.1	5.9	5.9
Prop In Lane	1.00		0.48	1.00		0.99	1.00		0.08	1.00		0.09
Lane Grp Cap(c), veh/h	109	0	409	169	0	460	315	519	539	315	585	607
V/C Ratio(X)	0.28	0.00	0.15	0.43	0.00	0.67	0.03	0.71	0.71	0.16	0.38	0.38
Avail Cap(c_a), veh/h	461	0	813	314	0	805	698	905	940	913	1131	1172
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	27.2	0.0	17.7	25.9	0.0	19.5	11.9	19.3	19.3	14.3	15.2	15.2
Incr Delay (d2), s/veh	1.3	0.0	0.2	1.7	0.0	1.7	0.0	1.8	1.8	0.2	0.4	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.4	0.0	0.6	1.0	0.0	3.6	0.1	4.2	4.4	0.4	2.0	2.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	28.6	0.0	17.9	27.5	0.0	21.2	12.0	21.1	21.1	14.6	15.6	15.6
LnGrp LOS	C		B	C		C	B	C	C	B	B	B
Approach Vol, veh/h		91			381			763			499	
Approach Delay, s/veh		21.4			22.4			21.0			15.5	
Approach LOS		C			C			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	9.6	21.8	9.9	19.6	5.6	25.7	7.8	21.7
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	25.0	30.0	10.0	30.0	20.0	40.0	15.0	30.0
Max Q Clear Time (g_c+I1), s	3.1	13.4	4.4	3.8	2.3	7.9	3.0	12.6
Green Ext Time (p_c), s	0.1	3.4	0.1	0.5	0.0	2.1	0.0	3.2

Intersection Summary	
HCM 7th Control Delay, s/veh	19.7
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Intersection Delay, s/veh	12.7
Intersection LOS	B

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	77	12	40	356	2	29	2	8	1	0	13
Future Vol, veh/h	6	77	12	40	356	2	29	2	8	1	0	13
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	2	4	2	15	2	2	2	2	40	2	2	2
Mvmt Flow	7	95	15	49	440	2	36	2	10	1	0	16
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8.4	14.3	8.8	8
HCM LOS	A	B	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	74%	6%	10%	7%
Vol Thru, %	5%	81%	89%	0%
Vol Right, %	21%	13%	1%	93%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	39	95	398	14
LT Vol	29	6	40	1
Through Vol	2	77	356	0
RT Vol	8	12	2	13
Lane Flow Rate	48	117	491	17
Geometry Grp	1	1	1	1
Degree of Util (X)	0.072	0.149	0.613	0.023
Departure Headway (Hd)	5.376	4.563	4.488	4.857
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	665	786	811	734
Service Time	3.42	2.592	2.488	2.905
HCM Lane V/C Ratio	0.072	0.149	0.605	0.023
HCM Control Delay, s/veh	8.8	8.4	14.3	8
HCM Lane LOS	A	A	B	A
HCM 95th-tile Q	0.2	0.5	4.3	0.1

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	25	47	244	12	62	145
Future Vol, veh/h	25	47	244	12	62	145
Conflicting Peds, #/hr	3	0	0	3	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	82	82	82	82	82	76
Heavy Vehicles, %	2	8	2	2	2	2
Mvmt Flow	30	57	298	15	76	191

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	315	0	-	0	426	308
Stage 1	-	-	-	-	308	-
Stage 2	-	-	-	-	118	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1245	-	-	-	585	732
Stage 1	-	-	-	-	745	-
Stage 2	-	-	-	-	907	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1241	-	-	-	567	730
Mov Cap-2 Maneuver	-	-	-	-	567	-
Stage 1	-	-	-	-	724	-
Stage 2	-	-	-	-	904	-

Approach	EB	WB	SB
HCM Control Delay, s/v	2.77	0	11.85
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	625	-	-	-	567	730
HCM Lane V/C Ratio	0.025	-	-	-	0.133	0.261
HCM Control Delay (s/veh)	8	0	-	-	12.3	11.7
HCM Lane LOS	A	A	-	-	B	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.5	1

Intersection	
Int Delay, s/veh	0

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	0	107	234	0	0	0
Future Vol, veh/h	0	107	234	0	0	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	5	5	2	2	2
Mvmt Flow	0	130	285	0	0	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	285	0	-	0	416	285
Stage 1	-	-	-	-	285	-
Stage 2	-	-	-	-	130	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1277	-	-	-	593	754
Stage 1	-	-	-	-	763	-
Stage 2	-	-	-	-	896	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1277	-	-	-	593	754
Mov Cap-2 Maneuver	-	-	-	-	593	-
Stage 1	-	-	-	-	763	-
Stage 2	-	-	-	-	896	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0	0	0
HCM LOS			A

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1277	-	-	-	-
HCM Lane V/C Ratio	-	-	-	-	-
HCM Control Delay (s/veh)	0	-	-	-	0
HCM Lane LOS	A	-	-	-	A
HCM 95th %tile Q(veh)	0	-	-	-	-

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	9	106	214	19	35	36
Future Vol, veh/h	9	106	214	19	35	36
Conflicting Peds, #/hr	7	0	0	7	0	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	11	129	261	23	43	44

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	291	0	-	0	431	282
Stage 1	-	-	-	-	280	-
Stage 2	-	-	-	-	151	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1271	-	-	-	582	757
Stage 1	-	-	-	-	768	-
Stage 2	-	-	-	-	877	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1262	-	-	-	568	751
Mov Cap-2 Maneuver	-	-	-	-	568	-
Stage 1	-	-	-	-	755	-
Stage 2	-	-	-	-	871	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.62	0	10.96
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	141	-	-	-	568	751
HCM Lane V/C Ratio	0.009	-	-	-	0.075	0.058
HCM Control Delay (s/veh)	7.9	0	-	-	11.8	10.1
HCM Lane LOS	A	A	-	-	B	B
HCM 95th %tile Q(veh)	0	-	-	-	0.2	0.2

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	139	8	6	195	0	25	0	13	0	0	0
Future Vol, veh/h	0	139	8	6	195	0	25	0	13	0	0	0
Conflicting Peds, #/hr	7	0	5	5	0	7	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2	50	2	2	2	2	2
Mvmt Flow	0	170	10	7	238	0	30	0	16	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	245	0	0	184	0	0	432	439	179	429	444	245
Stage 1	-	-	-	-	-	-	179	179	-	259	259	-
Stage 2	-	-	-	-	-	-	252	259	-	170	184	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.6	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.6	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.6	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.95	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1321	-	-	1391	-	-	460	512	863	536	509	794
Stage 1	-	-	-	-	-	-	723	751	-	745	693	-
Stage 2	-	-	-	-	-	-	657	693	-	832	747	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1313	-	-	1384	-	-	455	503	859	520	500	789
Mov Cap-2 Maneuver	-	-	-	-	-	-	455	503	-	520	500	-
Stage 1	-	-	-	-	-	-	719	747	-	736	684	-
Stage 2	-	-	-	-	-	-	653	684	-	817	744	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0.23	12.26	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	542	1313	-	-	54	-	-	-
HCM Lane V/C Ratio	0.085	-	-	-	0.005	-	-	-
HCM Control Delay (s/veh)	12.3	0	-	-	7.6	0	-	0
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	-

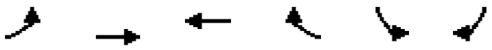
Intersection	
Int Delay, s/veh	4.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	25	129	66	79	116	115
Future Vol, veh/h	25	129	66	79	116	115
Conflicting Peds, #/hr	1	1	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	17	2	2	2	2	2
Mvmt Flow	29	152	78	93	136	135

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	454	206	273	0	-	0
Stage 1	205	-	-	-	-	-
Stage 2	249	-	-	-	-	-
Critical Hdwy	6.57	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.57	-	-	-	-	-
Critical Hdwy Stg 2	5.57	-	-	-	-	-
Follow-up Hdwy	3.653	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	537	834	1290	-	-	-
Stage 1	795	-	-	-	-	-
Stage 2	758	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	502	833	1289	-	-	-
Mov Cap-2 Maneuver	502	-	-	-	-	-
Stage 1	744	-	-	-	-	-
Stage 2	758	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	11.3	3.63	0
HCM LOS	B		

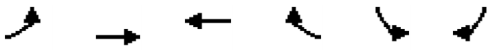
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	819	-	752	-	-
HCM Lane V/C Ratio	0.06	-	0.241	-	-
HCM Control Delay (s/veh)	8	0	11.3	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.9	-	-



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	2	338	529	74	228	37
Future Volume (vph)	2	338	529	74	228	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1769	1827	1737		1752	1568
Flt Permitted	0.20	1.00	1.00		0.95	1.00
Satd. Flow (perm)	373	1827	1737		1752	1568
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	2	376	588	82	253	41
RTOR Reduction (vph)	0	0	5	0	0	29
Lane Group Flow (vph)	2	376	665	0	253	12
Confl. Peds. (#/hr)	1			1		
Heavy Vehicles (%)	2%	4%	8%	2%	3%	3%
Turn Type	D.P+P	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	6					4
Actuated Green, G (s)	29.0	34.4	28.4		16.0	16.0
Effective Green, g (s)	31.8	35.8	29.8		18.5	18.5
Actuated g/C Ratio	0.51	0.57	0.48		0.30	0.30
Clearance Time (s)	5.4	5.4	5.4		6.5	6.5
Vehicle Extension (s)	2.0	3.1	3.1		2.6	2.6
Lane Grp Cap (vph)	235	1049	830		520	465
v/s Ratio Prot	0.00	c0.21	c0.38		c0.14	
v/s Ratio Perm	0.00					0.01
v/c Ratio	0.01	0.36	0.80		0.49	0.03
Uniform Delay, d1	16.9	7.1	13.7		18.0	15.5
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.2	5.6		0.6	0.0
Delay (s)	16.9	7.3	19.4		18.6	15.5
Level of Service	B	A	B		B	B
Approach Delay (s/veh)		7.4	19.4		18.1	
Approach LOS		A	B		B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	15.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.69		
Actuated Cycle Length (s)	62.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	51.6%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	338	529	74	228	37
Future Volume (veh/h)	2	338	529	74	228	37
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1841	1781	1870	1856	1856
Adj Flow Rate, veh/h	2	376	588	82	253	41
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	4	8	2	3	3
Cap, veh/h	404	1238	902	126	369	328
Arrive On Green	0.02	0.67	0.59	0.57	0.21	0.21
Sat Flow, veh/h	1781	1841	1530	213	1767	1572
Grp Volume(v), veh/h	2	376	0	670	253	41
Grp Sat Flow(s),veh/h/ln	1781	1841	0	1743	1767	1572
Q Serve(g_s), s	0.0	5.7	0.0	17.3	8.9	1.4
Cycle Q Clear(g_c), s	0.0	5.7	0.0	17.3	8.9	1.4
Prop In Lane	1.00			0.12	1.00	1.00
Lane Grp Cap(c), veh/h	404	1238	0	1028	369	328
V/C Ratio(X)	0.00	0.30	0.00	0.65	0.69	0.12
Avail Cap(c_a), veh/h	663	1266	0	1690	852	758
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	14.0	4.5	0.0	9.3	24.6	21.7
Incr Delay (d2), s/veh	0.0	0.1	0.0	0.7	1.8	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	1.5	0.0	5.2	3.6	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	14.0	4.7	0.0	10.0	26.5	21.8
LnGrp LOS	B	A		B	C	C
Approach Vol, veh/h		378	670		294	
Approach Delay, s/veh		4.7	10.0		25.8	
Approach LOS		A	B		C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		49.4		18.1	5.6	43.8
Change Period (Y+Rc), s		5.4		6.5	5.4	5.4
Max Green Setting (Gmax), s		45.0		30.0	10.0	64.0
Max Q Clear Time (g_c+I1), s		7.7		10.9	2.0	19.3
Green Ext Time (p_c), s		8.3		0.7	0.0	19.1

Intersection Summary	
HCM 7th Control Delay, s/veh	12.0
HCM 7th LOS	B

Intersection	
Int Delay, s/veh	10.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	389	68	38	770	131	36
Future Vol, veh/h	389	68	38	770	131	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	5	6	2	2	2
Mvmt Flow	418	73	41	828	141	39

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	491	0	1365	455
Stage 1	-	-	-	-	455	-
Stage 2	-	-	-	-	910	-
Critical Hdwy	-	-	4.16	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.254	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1052	-	163	605
Stage 1	-	-	-	-	639	-
Stage 2	-	-	-	-	393	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1052	-	156	605
Mov Cap-2 Maneuver	-	-	-	-	156	-
Stage 1	-	-	-	-	639	-
Stage 2	-	-	-	-	377	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.4	84.86
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	156	605	-	-	1052	-
HCM Lane V/C Ratio	0.901	0.064	-	-	0.039	-
HCM Control Delay (s/veh)	105.1	11.4	-	-	8.6	-
HCM Lane LOS	F	B	-	-	A	-
HCM 95th %tile Q(veh)	6.4	0.2	-	-	0.1	-



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	389	68	38	770	131	36
Future Volume (Veh/h)	389	68	38	770	131	36
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	418	73	41	828	141	39
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			491		1365	455
vC1, stage 1 conf vol					455	
vC2, stage 2 conf vol					910	
vCu, unblocked vol			491		1365	455
tC, single (s)			4.2		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.3		3.5	3.3
p0 queue free %			96		59	94
cM capacity (veh/h)			1052		341	606

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total	491	41	828	141	39
Volume Left	0	41	0	141	0
Volume Right	73	0	0	0	39
cSH	1700	1052	1700	341	606
Volume to Capacity	0.29	0.04	0.49	0.41	0.06
Queue Length 95th (ft)	0	3	0	49	5
Control Delay (s/veh)	0.0	8.6	0.0	22.8	11.4
Lane LOS		A		C	B
Approach Delay (s/veh)	0.0	0.4		20.3	
Approach LOS				C	

Intersection Summary				
Average Delay	2.6			
Intersection Capacity Utilization	54.5%	ICU Level of Service		A
Analysis Period (min)	15			

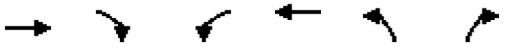
Intersection	
Int Delay, s/veh	8.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	16	7	17	76	267	21
Future Vol, veh/h	16	7	17	76	267	21
Conflicting Peds, #/hr	0	8	8	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	13	2	2	20
Mvmt Flow	17	8	18	83	290	23

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	33	0	149	29
Stage 1	-	-	-	-	29	-
Stage 2	-	-	-	-	120	-
Critical Hdwy	-	-	4.23	-	6.42	6.4
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.317	-	3.518	3.48
Pot Cap-1 Maneuver	-	-	1511	-	843	996
Stage 1	-	-	-	-	993	-
Stage 2	-	-	-	-	906	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1499	-	826	988
Mov Cap-2 Maneuver	-	-	-	-	826	-
Stage 1	-	-	-	-	986	-
Stage 2	-	-	-	-	894	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	1.36	11.86
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	836	-	-	329	-
HCM Lane V/C Ratio	0.374	-	-	0.012	-
HCM Control Delay (s/veh)	11.9	-	-	7.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.7	-	-	0	-



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	16	7	17	76	267	21
Future Volume (Veh/h)	16	7	17	76	267	21
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	17	8	18	83	290	23
Pedestrians					8	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			33		148	29
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			33		148	29
tC, single (s)			4.2		6.4	6.4
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.5
p0 queue free %			99		65	98
cM capacity (veh/h)			1499		828	989

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	25	101	313
Volume Left	0	18	290
Volume Right	8	0	23
cSH	1700	1499	838
Volume to Capacity	0.01	0.01	0.37
Queue Length 95th (ft)	0	1	44
Control Delay (s/veh)	0.0	1.4	11.8
Lane LOS		A	B
Approach Delay (s/veh)	0.0	1.4	11.8
Approach LOS			B

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	34.3%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	9.5

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	332	1594	30	0	1739
Future Vol, veh/h	0	332	1594	30	0	1739
Conflicting Peds, #/hr	0	0	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	Free	-	None
Storage Length	-	0	-	335	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	3	3	4	2	2
Mvmt Flow	0	339	1627	31	0	1774

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	813	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.96	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.33	-	-	-	-
Pot Cap-1 Maneuver	0	~ 319	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	~ 319	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/veh	104.66	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	319	-
HCM Lane V/C Ratio	-	1.061	-
HCM Control Delay (s/veh)	-	104.7	-
HCM Lane LOS	-	F	-
HCM 95th %tile Q(veh)	-	12.6	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	332	1594	30	0	1739
Future Volume (Veh/h)	0	332	1594	30	0	1739
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	0	339	1627	31	0	1774
Pedestrians	4					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2518	818			1631	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2518	818			1631	
tC, single (s)	6.8	*6.0			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	14			100	
cM capacity (veh/h)	23	393			393	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	339	814	814	31	887	887
Volume Left	0	0	0	0	0	0
Volume Right	339	0	0	31	0	0
cSH	393	1700	1700	1700	1700	1700
Volume to Capacity	0.86	0.48	0.48	0.02	0.52	0.52
Queue Length 95th (ft)	210	0	0	0	0	0
Control Delay (s/veh)	50.4	0.0	0.0	0.0	0.0	0.0
Lane LOS	F					
Approach Delay (s/veh)	50.4	0.0			0.0	
Approach LOS	F					

Intersection Summary			
Average Delay	4.5		
Intersection Capacity Utilization	71.3%	ICU Level of Service	C
Analysis Period (min)	15		

* User Entered Value

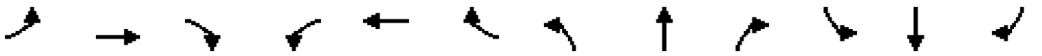
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	270	291	47	337	8	245	157	24	13	123	20
Future Volume (vph)	2	270	291	47	337	8	245	157	24	13	123	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0		4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	1.00		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1543	1667		1626	1821		1596	1748		1703	1622	
Flt Permitted	0.43	1.00		0.14	1.00		0.38	1.00		0.62	1.00	
Satd. Flow (perm)	702	1667		244	1821		639	1748		1107	1622	
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	2	338	364	59	421	10	306	196	30	16	154	25
RTOR Reduction (vph)	0	18	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	3	684	0	59	431	0	306	226	0	16	175	0
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	17%	2%	8%	11%	4%	2%	13%	6%	10%	6%	16%	4%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	57.8	56.9		66.3	61.4		42.8	36.6		22.5	20.3	
Effective Green, g (s)	57.8	57.4		66.3	61.9		42.8	37.1		22.5	20.8	
Actuated g/C Ratio	0.48	0.48		0.55	0.52		0.36	0.31		0.19	0.17	
Clearance Time (s)	4.0	5.5		4.0	5.5		4.0	5.5		4.0	5.5	
Vehicle Extension (s)	2.0	3.2		2.0	3.2		2.0	3.2		2.0	3.2	
Lane Grp Cap (vph)	344	796		196	938		375	539		218	280	
v/s Ratio Prot	0.00	c0.41		c0.01	0.24		c0.13	0.13		0.00	0.11	
v/s Ratio Perm	0.00			0.15			c0.17			0.01		
v/c Ratio	0.01	0.86		0.30	0.46		0.82	0.42		0.07	0.62	
Uniform Delay, d1	16.5	27.8		19.5	18.5		31.4	32.9		40.0	46.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	9.3		0.3	0.4		12.2	0.6		0.1	4.4	
Delay (s)	16.5	37.1		19.8	18.9		43.6	33.5		40.1	50.4	
Level of Service	B	D		B	B		D	C		D	D	
Approach Delay (s/veh)		37.0			19.0			39.3			49.6	
Approach LOS		D			B			D			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	34.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.83		
Actuated Cycle Length (s)	120.1	Sum of lost time (s)	18.0
Intersection Capacity Utilization	72.7%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Signalized Intersection Summary
20: SW Teton Avenue & SW Herman Road

07/15/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	270	291	47	337	8	245	157	24	13	123	20
Future Volume (veh/h)	2	270	291	47	337	8	245	157	24	13	123	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1648	1870	1781	1737	1841	1870	1707	1811	1752	1811	1663	1841
Adj Flow Rate, veh/h	2	338	364	59	421	10	306	196	30	16	154	25
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	17	2	8	11	4	2	13	6	10	6	16	4
Cap, veh/h	374	391	421	206	915	22	383	453	69	248	192	31
Arrive On Green	0.00	0.47	0.47	0.04	0.51	0.51	0.18	0.30	0.29	0.02	0.14	0.13
Sat Flow, veh/h	1570	824	887	1654	1791	43	1626	1534	235	1725	1395	226
Grp Volume(v), veh/h	2	0	702	59	0	431	306	0	226	16	0	179
Grp Sat Flow(s),veh/h/ln	1570	0	1711	1654	0	1833	1626	0	1768	1725	0	1621
Q Serve(g_s), s	0.1	0.0	38.1	1.8	0.0	15.7	16.2	0.0	10.8	0.8	0.0	11.2
Cycle Q Clear(g_c), s	0.1	0.0	38.1	1.8	0.0	15.7	16.2	0.0	10.8	0.8	0.0	11.2
Prop In Lane	1.00		0.52	1.00		0.02	1.00		0.13	1.00		0.14
Lane Grp Cap(c), veh/h	374	0	812	206	0	937	383	0	523	248	0	223
V/C Ratio(X)	0.01	0.00	0.86	0.29	0.00	0.46	0.80	0.00	0.43	0.06	0.00	0.80
Avail Cap(c_a), veh/h	671	0	895	458	0	941	409	0	976	548	0	863
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.2	0.0	24.5	20.5	0.0	16.3	30.1	0.0	29.7	38.0	0.0	43.6
Incr Delay (d2), s/veh	0.0	0.0	8.4	0.3	0.0	0.4	9.1	0.0	0.6	0.0	0.0	7.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	15.8	0.7	0.0	6.3	7.1	0.0	4.6	0.3	0.0	4.8
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	15.2	0.0	32.9	20.8	0.0	16.7	39.1	0.0	30.3	38.0	0.0	50.8
LnGrp LOS	B		C	C		B	D		C	D		D
Approach Vol, veh/h		704			490			532			195	
Approach Delay, s/veh		32.8			17.2			35.4			49.8	
Approach LOS		C			B			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.1	54.5	22.4	19.3	4.3	58.3	5.9	35.8
Change Period (Y+Rc), s	4.0	5.5	4.0	5.5	4.0	5.5	4.0	5.5
Max Green Setting (Gmax), s	20.0	54.0	20.0	55.0	20.0	53.0	20.0	57.0
Max Q Clear Time (g_c+I1), s	3.8	40.1	18.2	13.2	2.1	17.7	2.8	12.8
Green Ext Time (p_c), s	0.1	8.8	0.1	0.6	0.0	9.8	0.0	3.2

Intersection Summary	
HCM 7th Control Delay, s/veh	31.3
HCM 7th LOS	C



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	156	303	308	1695	28	1447	281
Future Volume (vph)	156	303	308	1695	28	1447	281
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.97	1.00	1.00	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1493	1770	3539	1770	3438	1509
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1493	1770	3539	1770	3438	1509
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	170	329	335	1842	30	1573	305
RTOR Reduction (vph)	0	251	0	0	0	0	82
Lane Group Flow (vph)	170	78	335	1842	30	1573	223
Confl. Peds. (#/hr)		21	9				9
Heavy Vehicles (%)	2%	5%	2%	2%	2%	5%	2%
Turn Type	Prot	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	4		5	2	1	6	
Permitted Phases		4					6
Actuated Green, G (s)	14.6	14.6	28.0	104.8	5.1	80.9	80.9
Effective Green, g (s)	15.6	15.6	29.5	106.8	5.6	82.9	82.9
Actuated g/C Ratio	0.11	0.11	0.21	0.76	0.04	0.59	0.59
Clearance Time (s)	5.0	5.0	5.5	6.0	4.5	6.0	6.0
Vehicle Extension (s)	2.5	2.5	2.3	4.5	2.3	4.5	4.5
Lane Grp Cap (vph)	197	166	372	2699	70	2035	893
v/s Ratio Prot	c0.10		c0.19	0.52	0.02	c0.46	
v/s Ratio Perm		0.05					0.15
v/c Ratio	0.86	0.47	0.90	0.68	0.43	0.77	0.25
Uniform Delay, d1	61.1	58.3	53.8	8.2	65.6	21.5	13.7
Progression Factor	1.00	1.00	1.00	1.00	0.97	1.29	1.32
Incremental Delay, d2	29.8	1.5	23.8	1.4	1.6	2.0	0.4
Delay (s)	90.9	59.9	77.6	9.6	65.3	29.6	18.5
Level of Service	F	E	E	A	E	C	B
Approach Delay (s/veh)	70.5			20.1		28.4	
Approach LOS	E			C		C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	29.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	92.3%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Signalized Intersection Summary
21: OR 99W (Pacific Highway) & SW Fischer Road

07/15/2025



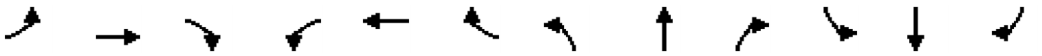
Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	156	303	308	1695	28	1447	281
Future Volume (veh/h)	156	303	308	1695	28	1447	281
Initial Q (Qb), veh	0	0	0	0		0	0
Lane Width Adj.	1.00	1.00	1.00	1.00		1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00				0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00		1.00	1.00
Work Zone On Approach	No			No		No	
Adj Sat Flow, veh/h/ln	1870	1826	1870	1870		1826	1870
Adj Flow Rate, veh/h	170	164	335	1842		1573	305
Peak Hour Factor	0.92	0.92	0.92	0.92		0.92	0.92
Percent Heavy Veh, %	2	5	2	2		5	2
Cap, veh/h	204	177	374	2944		2048	928
Arrive On Green	0.11	0.11	0.21	0.83		1.00	1.00
Sat Flow, veh/h	1781	1547	1781	3647		3561	1573
Grp Volume(v), veh/h	170	164	335	1842		1573	305
Grp Sat Flow(s),veh/h/ln	1781	1547	1781	1777		1735	1573
Q Serve(g_s), s	13.1	14.7	25.6	25.8		0.0	0.0
Cycle Q Clear(g_c), s	13.1	14.7	25.6	25.8		0.0	0.0
Prop In Lane	1.00	1.00	1.00				1.00
Lane Grp Cap(c), veh/h	204	177	374	2944		2048	928
V/C Ratio(X)	0.84	0.93	0.90	0.63		0.77	0.33
Avail Cap(c_a), veh/h	204	177	394	2944		2048	928
HCM Platoon Ratio	1.00	1.00	1.00	1.00		2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00		0.54	0.54
Uniform Delay (d), s/veh	60.7	61.4	53.8	4.3		0.0	0.0
Incr Delay (d2), s/veh	24.4	46.9	21.2	1.0		1.5	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(50%),veh/ln	7.3	14.3	13.4	6.4		0.4	0.1
Unsig. Movement Delay, s/veh							
LnGrp Delay(d), s/veh	85.1	108.3	75.1	5.3		1.5	0.5
LnGrp LOS	F	F	E	A		A	A
Approach Vol, veh/h	334			2177		1878	
Approach Delay, s/veh	96.5			16.0		1.4	
Approach LOS	F			B		A	

Timer - Assigned Phs		2		4	5	6	
Phs Duration (G+Y+Rc), s		120.0		20.0	33.4	86.6	
Change Period (Y+Rc), s		6.0		5.0	5.5	6.0	
Max Green Setting (Gmax), s		94.0		15.0	29.5	79.0	
Max Q Clear Time (g_c+I1), s		27.8		16.7	27.6	2.0	
Green Ext Time (p_c), s		63.0		0.0	0.2	65.3	

Intersection Summary	
HCM 7th Control Delay, s/veh	15.9
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.
User approved ignoring U-Turning movement.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	97	71	508	74	355	142	1366	256	459	1089	21
Future Volume (vph)	23	97	71	508	74	355	142	1366	256	459	1089	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0	6.0	5.4	5.4	6.0	5.3	5.0	5.0
Lane Util. Factor		0.95		0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes		1.00		1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.94		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.99		0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		3309		1681	1702	1533	1770	3505	1560	3433	3438	1547
Flt Permitted		0.99		0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3309		1681	1702	1533	1770	3505	1560	3433	3438	1547
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	24	103	76	540	79	378	151	1453	272	488	1159	22
RTOR Reduction (vph)	0	64	0	0	0	287	0	0	56	0	0	12
Lane Group Flow (vph)	0	139	0	308	311	91	151	1453	216	488	1159	10
Confl. Peds. (#/hr)	7					7	1		7	7		1
Heavy Vehicles (%)	2%	2%	3%	2%	3%	3%	2%	3%	2%	2%	5%	2%
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	3	3		4	4		5	2	4	1	6	
Permitted Phases						4			2			6
Actuated Green, G (s)		12.4		27.9	27.9	27.9	13.4	55.0	82.9	22.0	63.9	63.9
Effective Green, g (s)		12.4		27.9	27.9	27.9	13.4	55.0	82.9	22.0	63.9	63.9
Actuated g/C Ratio		0.09		0.20	0.20	0.20	0.10	0.39	0.59	0.16	0.46	0.46
Clearance Time (s)		6.0		6.0	6.0	6.0	5.4	5.4	6.0	5.3	5.0	5.0
Vehicle Extension (s)		2.3		2.3	2.3	2.3	2.3	4.5	2.3	2.3	4.8	4.8
Lane Grp Cap (vph)		293		334	339	305	169	1376	923	539	1569	706
v/s Ratio Prot		c0.04		c0.18	0.18		0.09	c0.41	0.05	c0.14	0.34	
v/s Ratio Perm						0.06			0.09			0.01
v/c Ratio		0.48		0.92	0.92	0.30	0.89	1.06	0.23	0.91	0.74	0.01
Uniform Delay, d1		60.7		55.0	54.9	47.7	62.6	42.5	13.5	58.0	31.2	20.8
Progression Factor		1.00		1.00	1.00	1.00	0.92	1.18	1.30	1.00	1.00	1.00
Incremental Delay, d2		0.7		29.8	28.4	0.3	31.8	37.3	0.1	18.5	3.2	0.0
Delay (s)		61.4		84.8	83.3	48.1	89.5	87.3	17.6	76.5	34.4	20.9
Level of Service		E		F	F	D	F	F	B	E	C	C
Approach Delay (s/veh)		61.4			70.4			77.3			46.5	
Approach LOS		E			E			E			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	64.4	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.93		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.7
Intersection Capacity Utilization	95.8%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Edition methodology does not support exclusive ped or hold phases.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1220	711	1053	848	161	315
Future Volume (vph)	1220	711	1053	848	161	315
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	5.6
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	0.88
Frpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3374	1553	3400	3343	3127	2515
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3374	1553	3400	3343	3127	2515
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	1298	756	1120	902	171	335
RTOR Reduction (vph)	0	304	0	0	0	0
Lane Group Flow (vph)	1298	452	1120	902	171	335
Confl. Peds. (#/hr)						4
Heavy Vehicles (%)	7%	4%	3%	8%	12%	13%
Turn Type	NA	Perm	Prot	NA	Prot	pt+ov
Protected Phases	2		1	6	8	1 4
Permitted Phases		2				
Actuated Green, G (s)	39.4	39.4	28.7	73.7	18.4	46.9
Effective Green, g (s)	41.4	41.4	30.3	75.7	20.4	41.9
Actuated g/C Ratio	0.40	0.40	0.29	0.73	0.20	0.40
Clearance Time (s)	6.0	6.0	5.6	6.0	6.0	
Vehicle Extension (s)	5.4	5.4	2.3	5.4	2.3	
Lane Grp Cap (vph)	1341	617	989	2430	612	1012
v/s Ratio Prot	c0.38		c0.33	0.27	c0.05	0.13
v/s Ratio Perm		0.29				
v/c Ratio	0.97	0.73	1.13	0.37	0.28	0.33
Uniform Delay, d1	30.7	26.7	36.9	5.3	35.6	21.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	17.6	5.7	72.4	0.4	0.1	0.1
Delay (s)	48.3	32.4	109.3	5.7	35.7	21.6
Level of Service	D	C	F	A	D	C
Approach Delay (s/veh)	42.5			63.1	26.3	
Approach LOS	D			E	C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	49.8	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.94		
Actuated Cycle Length (s)	104.1	Sum of lost time (s)	18.6
Intersection Capacity Utilization	81.8%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Edition methodology does not support exclusive ped or hold phases.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	42	224	274	41	860	922
Future Volume (vph)	42	224	274	41	860	922
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	0.0	4.5	4.5	4.0	4.5
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.98	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1597	1524	3195	1459	1751	3505
Flt Permitted	0.95	1.00	1.00	1.00	0.42	1.00
Satd. Flow (perm)	1597	1524	3195	1459	772	3505
Peak-hour factor, PHF	0.87	0.87	0.87	0.87	0.87	0.87
Adj. Flow (vph)	48	257	315	47	989	1060
RTOR Reduction (vph)	0	53	0	39	0	0
Lane Group Flow (vph)	48	204	315	8	989	1060
Confl. Peds. (#/hr)				2	2	
Heavy Vehicles (%)	13%	6%	13%	8%	3%	3%
Turn Type	Perm	pt+ov	NA	Perm	D.P+P	NA
Protected Phases		4 5	6		5	2
Permitted Phases	4			6	6	
Actuated Green, G (s)	12.4	76.0	15.5	15.5	74.1	79.1
Effective Green, g (s)	13.4	81.0	16.5	16.5	76.1	80.1
Actuated g/C Ratio	0.13	0.79	0.16	0.16	0.75	0.79
Clearance Time (s)	5.0		5.5	5.5	5.0	5.5
Vehicle Extension (s)	4.0		4.5	4.5	4.0	4.5
Lane Grp Cap (vph)	209	1210	516	236	1148	2752
v/s Ratio Prot		0.13	0.10		c0.50	0.30
v/s Ratio Perm	c0.03			0.01	c0.14	
v/c Ratio	0.23	0.17	0.61	0.03	0.86	0.39
Uniform Delay, d1	39.7	2.5	39.8	36.0	11.9	3.4
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.8	0.1	2.8	0.1	7.0	0.4
Delay (s)	40.4	2.6	42.5	36.1	18.9	3.8
Level of Service	D	A	D	D	B	A
Approach Delay (s/veh)	8.5		41.7			11.1
Approach LOS	A		D			B

Intersection Summary			
HCM 2000 Control Delay (s/veh)	14.9	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	102.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	71.4%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Edition methodology does not support exclusive ped or hold phases.

Intersection	
Int Delay, s/veh	3.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	64	806	2	8	242	137	1	0	5	48	1	29
Future Vol, veh/h	64	806	2	8	242	137	1	0	5	48	1	29
Conflicting Peds, #/hr	0	0	7	7	0	0	2	0	0	0	0	2
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	25	-	-	25	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	7	3	2	38	6	6	100	2	20	7	2	11
Mvmt Flow	70	876	2	9	263	149	1	0	5	52	1	32

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	412	0	0	885	0	0	1306	1453	884	1370	1379	340
Stage 1	-	-	-	-	-	-	1023	1023	-	355	355	-
Stage 2	-	-	-	-	-	-	283	429	-	1015	1024	-
Critical Hdwy	4.17	-	-	4.48	-	-	8.1	6.52	6.4	7.17	6.52	6.31
Critical Hdwy Stg 1	-	-	-	-	-	-	7.1	5.52	-	6.17	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	7.1	5.52	-	6.17	5.52	-
Follow-up Hdwy	2.263	-	-	2.542	-	-	4.4	4.018	3.48	3.563	4.018	3.399
Pot Cap-1 Maneuver	1120	-	-	633	-	-	87	130	320	121	144	683
Stage 1	-	-	-	-	-	-	191	313	-	652	630	-
Stage 2	-	-	-	-	-	-	554	584	-	281	313	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1120	-	-	629	-	-	75	120	317	110	133	681
Mov Cap-2 Maneuver	-	-	-	-	-	-	75	120	-	110	133	-
Stage 1	-	-	-	-	-	-	178	292	-	643	621	-
Stage 2	-	-	-	-	-	-	519	576	-	259	291	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.62	0.22	22.71	50.51
HCM LOS			C	F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	75	317	1120	-	-	629	-	-	160
HCM Lane V/C Ratio	0.014	0.017	0.062	-	-	0.014	-	-	0.531
HCM Control Delay (s/veh)	53.6	16.5	8.4	-	-	10.8	-	-	50.5
HCM Lane LOS	F	C	A	-	-	B	-	-	F
HCM 95th %tile Q(veh)	0	0.1	0.2	-	-	0	-	-	2.6

3: JAE Access/SW 115th Avenue & SW Tualatin Road Performance by movement

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBR	SBL	SBT	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Denied Del/Veh (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.1	0.1	0.0	0.1	0.0
Total Delay (hr)	0.1	0.5	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.0	0.1	1.1
Total Del/Veh (s)	6.1	2.9	2.6	4.5	1.7	1.1	19.9	8.1	14.9	9.0	7.4	3.3
Stop Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.0	0.0	0.3
Stop Del/Veh (s)	2.3	0.0	0.0	2.2	0.0	0.0	19.2	6.4	12.8	6.4	5.2	0.9

Intersection	
Int Delay, s/veh	0.4

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	860	384	6	23	4
Future Vol, veh/h	1	860	384	6	23	4
Conflicting Peds, #/hr	1	0	0	1	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	25	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	3	7	2	5	2
Mvmt Flow	1	956	427	7	26	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	434	0	-	0	1389	431
Stage 1	-	-	-	-	431	-
Stage 2	-	-	-	-	958	-
Critical Hdwy	4.12	-	-	-	6.45	6.22
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	2.218	-	-	-	3.545	3.318
Pot Cap-1 Maneuver	1125	-	-	-	155	624
Stage 1	-	-	-	-	649	-
Stage 2	-	-	-	-	368	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1124	-	-	-	154	624
Mov Cap-2 Maneuver	-	-	-	-	277	-
Stage 1	-	-	-	-	648	-
Stage 2	-	-	-	-	368	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.01	0	18.25
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	1124	-	-	-	302
HCM Lane V/C Ratio	0.001	-	-	-	0.099
HCM Control Delay (s/veh)	8.2	-	-	-	18.2
HCM Lane LOS	A	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.3

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	852	63	68	381	19	11
Future Vol, veh/h	852	63	68	381	19	11
Conflicting Peds, #/hr	0	2	2	0	1	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	3	2	2	7	15	17
Mvmt Flow	926	68	74	414	21	12

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	997	0	1525	962
Stage 1	-	-	-	-	962	-
Stage 2	-	-	-	-	563	-
Critical Hdwy	-	-	4.12	-	6.55	6.37
Critical Hdwy Stg 1	-	-	-	-	5.55	-
Critical Hdwy Stg 2	-	-	-	-	5.55	-
Follow-up Hdwy	-	-	2.218	-	3.635	3.453
Pot Cap-1 Maneuver	-	-	694	-	121	291
Stage 1	-	-	-	-	351	-
Stage 2	-	-	-	-	545	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	693	-	108	290
Mov Cap-2 Maneuver	-	-	-	-	233	-
Stage 1	-	-	-	-	351	-
Stage 2	-	-	-	-	486	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	1.64	21.44
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	251	-	-	693	-
HCM Lane V/C Ratio	0.13	-	-	0.107	-
HCM Control Delay (s/veh)	21.4	-	-	10.8	-
HCM Lane LOS	C	-	-	B	-
HCM 95th %tile Q(veh)	0.4	-	-	0.4	-

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	5	4	19	30	121	29
Future Vol, veh/h	5	4	19	30	121	29
Conflicting Peds, #/hr	0	0	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	2	100	50	17	2	25
Mvmt Flow	6	5	22	35	142	34

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	243	163	180	0	-	0
Stage 1	163	-	-	-	-	-
Stage 2	80	-	-	-	-	-
Critical Hdwy	6.42	7.2	4.6	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	4.2	2.65	-	-	-
Pot Cap-1 Maneuver	745	679	1152	-	-	-
Stage 1	866	-	-	-	-	-
Stage 2	943	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	725	676	1148	-	-	-
Mov Cap-2 Maneuver	725	-	-	-	-	-
Stage 1	845	-	-	-	-	-
Stage 2	940	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	10.2	3.18	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	698	-	702	-	-
HCM Lane V/C Ratio	0.019	-	0.015	-	-
HCM Control Delay (s/veh)	8.2	0	10.2	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.1	-	0	-	-

Intersection	
Int Delay, s/veh	4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	4	19	137	44	75	48
Future Vol, veh/h	4	19	137	44	75	48
Conflicting Peds, #/hr	0	0	5	0	0	5
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	74	74	74	74	74	74
Heavy Vehicles, %	2	2	2	17	5	2
Mvmt Flow	5	26	185	59	101	65

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	569	139	171	0	-	0
Stage 1	139	-	-	-	-	-
Stage 2	430	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	484	909	1406	-	-	-
Stage 1	888	-	-	-	-	-
Stage 2	656	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	414	905	1399	-	-	-
Mov Cap-2 Maneuver	414	-	-	-	-	-
Stage 1	763	-	-	-	-	-
Stage 2	653	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	10.01	6.03	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1353	-	750	-	-
HCM Lane V/C Ratio	0.132	-	0.041	-	-
HCM Control Delay (s/veh)	8	0	10	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.5	-	0.1	-	-

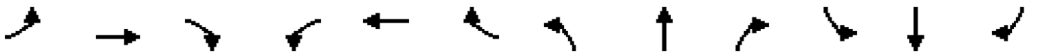
Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	2	20	120	176	72	17
Future Vol, veh/h	2	20	120	176	72	17
Conflicting Peds, #/hr	1	0	6	0	0	6
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	78	78	78	78	78	78
Heavy Vehicles, %	2	13	2	10	4	17
Mvmt Flow	3	26	154	226	92	22

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	644	109	120	0	-	0
Stage 1	109	-	-	-	-	-
Stage 2	534	-	-	-	-	-
Critical Hdwy	6.42	6.33	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.417	2.218	-	-	-
Pot Cap-1 Maneuver	438	915	1468	-	-	-
Stage 1	915	-	-	-	-	-
Stage 2	588	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	380	910	1459	-	-	-
Mov Cap-2 Maneuver	380	-	-	-	-	-
Stage 1	800	-	-	-	-	-
Stage 2	584	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.62	3.14	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	730	-	808	-	-
HCM Lane V/C Ratio	0.105	-	0.035	-	-
HCM Control Delay (s/veh)	7.8	0	9.6	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0.4	-	0.1	-	-



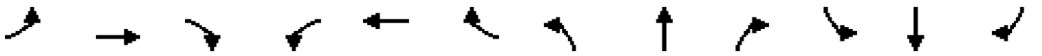
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	7	106	22	25	13	54	18	253	99	372	556	33
Future Volume (vph)	7	106	22	25	13	54	18	253	99	372	556	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	0.99		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.97		1.00	0.88		1.00	0.96		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1583	1801		1289	1568		1703	3013		1768	3421	
Flt Permitted	0.95	1.00		0.95	1.00		0.35	1.00		0.45	1.00	
Satd. Flow (perm)	1583	1801		1289	1568		628	3013		829	3421	
Peak-hour factor, PHF	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Adj. Flow (vph)	8	120	25	28	15	61	20	288	112	423	632	38
RTOR Reduction (vph)	0	6	0	0	48	0	0	33	0	0	3	0
Lane Group Flow (vph)	8	139	0	28	28	0	20	368	0	423	667	0
Confl. Peds. (#/hr)			1	1			1		2	2		1
Heavy Vehicles (%)	14%	2%	5%	40%	17%	4%	6%	14%	14%	2%	4%	13%
Turn Type	Prot	NA		Prot	NA		D.P+P	NA		D.P+P	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							6			2		
Actuated Green, G (s)	0.9	12.8		2.6	14.5		35.9	19.8		35.9	34.0	
Effective Green, g (s)	1.9	13.8		3.6	15.5		37.9	20.8		35.9	34.0	
Actuated g/C Ratio	0.03	0.19		0.05	0.22		0.53	0.29		0.50	0.48	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	42	348		65	340		377	878		629	1631	
v/s Ratio Prot	0.01	c0.08		c0.02	0.02		0.00	0.12		c0.15	0.20	
v/s Ratio Perm							0.03			c0.19		
v/c Ratio	0.19	0.40		0.43	0.08		0.05	0.42		0.67	0.41	
Uniform Delay, d1	33.9	25.1		32.9	22.2		8.0	20.4		11.6	12.1	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.2	0.8		4.5	0.1		0.1	0.3		2.8	0.2	
Delay (s)	36.2	25.9		37.4	22.3		8.1	20.7		14.5	12.3	
Level of Service	D	C		D	C		A	C		B	B	
Approach Delay (s/veh)		26.4			26.4			20.1			13.1	
Approach LOS		C			C			C			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	16.7	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.57		
Actuated Cycle Length (s)	71.3	Sum of lost time (s)	17.0
Intersection Capacity Utilization	58.0%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Signalized Intersection Summary
9: SW 124th Avenue & SW Leveton Drive

07/15/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	7	106	22	25	13	54	18	253	99	372	556	33
Future Volume (veh/h)	7	106	22	25	13	54	18	253	99	372	556	33
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		0.99	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1693	1870	1826	1307	1648	1841	1811	1693	1693	1870	1841	1707
Adj Flow Rate, veh/h	8	120	25	28	15	61	20	288	112	423	632	38
Peak Hour Factor	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Percent Heavy Veh, %	14	2	5	40	17	4	6	14	14	2	4	13
Cap, veh/h	54	237	49	79	53	217	431	484	184	647	1391	84
Arrive On Green	0.03	0.16	0.14	0.06	0.19	0.17	0.04	0.21	0.19	0.25	0.42	0.42
Sat Flow, veh/h	1612	1501	313	1245	284	1154	1725	2275	864	1781	3351	201
Grp Volume(v), veh/h	8	0	145	28	0	76	20	202	198	423	329	341
Grp Sat Flow(s),veh/h/ln	1612	0	1813	1245	0	1438	1725	1608	1532	1781	1749	1804
Q Serve(g_s), s	0.3	0.0	3.9	1.1	0.0	2.4	0.3	6.0	6.3	9.3	7.2	7.2
Cycle Q Clear(g_c), s	0.3	0.0	3.9	1.1	0.0	2.4	0.3	6.0	6.3	9.3	7.2	7.2
Prop In Lane	1.00		0.17	1.00		0.80	1.00		0.56	1.00		0.11
Lane Grp Cap(c), veh/h	54	0	286	79	0	270	431	342	326	647	726	749
V/C Ratio(X)	0.15	0.00	0.51	0.35	0.00	0.28	0.05	0.59	0.61	0.65	0.45	0.45
Avail Cap(c_a), veh/h	486	0	1060	258	0	841	1040	940	895	1050	1319	1361
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	24.9	0.0	20.5	23.8	0.0	18.8	7.8	18.8	19.2	11.6	11.2	11.2
Incr Delay (d2), s/veh	1.2	0.0	1.4	2.7	0.0	0.6	0.0	1.6	1.8	1.1	0.4	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	1.5	0.4	0.0	0.7	0.1	2.0	2.0	2.8	2.1	2.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	26.1	0.0	21.9	26.5	0.0	19.4	7.9	20.4	21.0	12.7	11.6	11.6
LnGrp LOS	C		C	C		B	A	C	C	B	B	B
Approach Vol, veh/h		153			104			420			1093	
Approach Delay, s/veh		22.1			21.3			20.1			12.0	
Approach LOS		C			C			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	18.0	15.3	7.4	12.4	6.3	27.0	5.8	14.0
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	25.0	30.0	10.0	30.0	20.0	40.0	15.0	30.0
Max Q Clear Time (g_c+I1), s	11.3	8.3	3.1	5.9	2.3	9.2	2.3	4.4
Green Ext Time (p_c), s	1.8	1.9	0.0	1.4	0.0	3.4	0.0	0.7

Intersection Summary	
HCM 7th Control Delay, s/veh	15.4
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Intersection Delay, s/veh	15.8
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	18	514	23	13	80	0	16	1	31	0	1	1
Future Vol, veh/h	18	514	23	13	80	0	16	1	31	0	1	1
Peak Hour Factor	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89	0.89
Heavy Vehicles, %	2	2	23	13	14	2	13	2	2	2	2	2
Mvmt Flow	20	578	26	15	90	0	18	1	35	0	1	1
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	17.6	8.8	8.9	8.4
HCM LOS	C	A	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	33%	3%	14%	0%
Vol Thru, %	2%	93%	86%	50%
Vol Right, %	65%	4%	0%	50%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	48	555	93	2
LT Vol	16	18	13	0
Through Vol	1	514	80	1
RT Vol	31	23	0	1
Lane Flow Rate	54	624	104	2
Geometry Grp	1	1	1	1
Degree of Util (X)	0.081	0.728	0.143	0.003
Departure Headway (Hd)	5.394	4.204	4.918	5.318
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	663	867	729	670
Service Time	3.438	2.204	2.948	3.371
HCM Lane V/C Ratio	0.081	0.72	0.143	0.003
HCM Control Delay, s/veh	8.9	17.6	8.8	8.4
HCM Lane LOS	A	C	A	A
HCM 95th-tile Q	0.3	6.6	0.5	0

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	189	328	69	92	10	22
Future Vol, veh/h	189	328	69	92	10	22
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	3	3	9	2	2	17
Mvmt Flow	228	395	83	111	12	27

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	194	0	-	0	989	139
Stage 1	-	-	-	-	139	-
Stage 2	-	-	-	-	851	-
Critical Hdwy	4.13	-	-	-	6.42	6.37
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.227	-	-	-	3.518	3.453
Pot Cap-1 Maneuver	1373	-	-	-	274	871
Stage 1	-	-	-	-	888	-
Stage 2	-	-	-	-	419	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1373	-	-	-	215	871
Mov Cap-2 Maneuver	-	-	-	-	215	-
Stage 1	-	-	-	-	699	-
Stage 2	-	-	-	-	419	-

Approach	EB	WB	SB
HCM Control Delay, s/v	2.98	0	13.46
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	658	-	-	-	215	871
HCM Lane V/C Ratio	0.166	-	-	-	0.056	0.03
HCM Control Delay (s/veh)	8.1	0	-	-	22.7	9.3
HCM Lane LOS	A	A	-	-	C	A
HCM 95th %tile Q(veh)	0.6	-	-	-	0.2	0.1

Intersection	
Int Delay, s/veh	0.7

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	32	307	157	13	3	8
Future Vol, veh/h	32	307	157	13	3	8
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	5	5	2	2	2
Mvmt Flow	39	374	191	16	4	10

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	207	0	-	0	652	199
Stage 1	-	-	-	-	199	-
Stage 2	-	-	-	-	452	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1364	-	-	-	433	842
Stage 1	-	-	-	-	834	-
Stage 2	-	-	-	-	641	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1364	-	-	-	417	842
Mov Cap-2 Maneuver	-	-	-	-	417	-
Stage 1	-	-	-	-	804	-
Stage 2	-	-	-	-	641	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.73	0	10.58
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	170	-	-	-	659
HCM Lane V/C Ratio	0.029	-	-	-	0.02
HCM Control Delay (s/veh)	7.7	0	-	-	10.6
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	49	288	150	25	12	14
Future Vol, veh/h	49	288	150	25	12	14
Conflicting Peds, #/hr	12	0	0	12	0	1
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	83	83	83	83	83	83
Heavy Vehicles, %	2	5	5	4	2	2
Mvmt Flow	59	347	181	30	14	17

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	223	0	-	0	673	209
Stage 1	-	-	-	-	208	-
Stage 2	-	-	-	-	465	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1346	-	-	-	421	832
Stage 1	-	-	-	-	827	-
Stage 2	-	-	-	-	632	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1331	-	-	-	388	821
Mov Cap-2 Maneuver	-	-	-	-	388	-
Stage 1	-	-	-	-	773	-
Stage 2	-	-	-	-	625	-

Approach	EB	WB	SB
HCM Control Delay, s/v	1.14	0	11.85
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	262	-	-	-	388	821
HCM Lane V/C Ratio	0.044	-	-	-	0.037	0.021
HCM Control Delay (s/veh)	7.8	0	-	-	14.6	9.5
HCM Lane LOS	A	A	-	-	B	A
HCM 95th %tile Q(veh)	0.1	-	-	-	0.1	0.1

Intersection	
Int Delay, s/veh	0.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	264	27	16	180	0	9	0	5	0	0	0
Future Vol, veh/h	0	264	27	16	180	0	9	0	5	0	0	0
Conflicting Peds, #/hr	8	0	3	3	0	8	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	77	77	77	77	77	77	77	77	77	77	77	77
Heavy Vehicles, %	2	5	2	2	4	2	2	2	2	2	2	2
Mvmt Flow	0	343	35	21	234	0	12	0	6	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	242	0	0	381	0	0	640	647	363	626	664	243
Stage 1	-	-	-	-	-	-	363	363	-	283	283	-
Stage 2	-	-	-	-	-	-	276	283	-	343	381	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1325	-	-	1178	-	-	388	390	681	397	381	796
Stage 1	-	-	-	-	-	-	655	624	-	724	677	-
Stage 2	-	-	-	-	-	-	730	677	-	672	613	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1315	-	-	1174	-	-	379	378	680	382	369	789
Mov Cap-2 Maneuver	-	-	-	-	-	-	379	378	-	382	369	-
Stage 1	-	-	-	-	-	-	654	623	-	704	658	-
Stage 2	-	-	-	-	-	-	714	658	-	666	612	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0.66	13.33	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	450	1315	-	-	147	-	-	-
HCM Lane V/C Ratio	0.04	-	-	-	0.018	-	-	-
HCM Control Delay (s/veh)	13.3	0	-	-	8.1	0	-	0
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.1	0	-	-	0.1	-	-	-

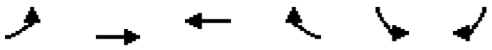
Intersection	
Int Delay, s/veh	13.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	195	75	163	154	37	55
Future Vol, veh/h	195	75	163	154	37	55
Conflicting Peds, #/hr	0	0	2	0	0	2
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	86	86	86	86	86	86
Heavy Vehicles, %	3	2	4	2	9	3
Mvmt Flow	227	87	190	179	43	64

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	635	77	109	0	-	0
Stage 1	77	-	-	-	-	-
Stage 2	558	-	-	-	-	-
Critical Hdwy	6.43	6.22	4.14	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.43	-	-	-	-	-
Follow-up Hdwy	3.527	3.318	2.236	-	-	-
Pot Cap-1 Maneuver	441	984	1469	-	-	-
Stage 1	943	-	-	-	-	-
Stage 2	571	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	376	982	1466	-	-	-
Mov Cap-2 Maneuver	376	-	-	-	-	-
Stage 1	807	-	-	-	-	-
Stage 2	570	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	28.88	4.02	0
HCM LOS	D		

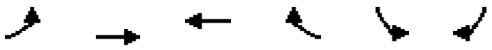
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	926	-	454	-	-
HCM Lane V/C Ratio	0.129	-	0.692	-	-
HCM Control Delay (s/veh)	7.8	0	28.9	-	-
HCM Lane LOS	A	A	D	-	-
HCM 95th %tile Q(veh)	0.4	-	5.2	-	-



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	19	390	281	318	70	6
Future Volume (vph)	19	390	281	318	70	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00	0.99		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.93		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1702	1624	1609		1626	1583
Flt Permitted	0.29	1.00	1.00		0.95	1.00
Satd. Flow (perm)	525	1624	1609		1626	1583
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	21	424	305	346	76	7
RTOR Reduction (vph)	0	0	31	0	0	6
Lane Group Flow (vph)	21	424	620	0	76	1
Confl. Peds. (#/hr)	2			2		
Heavy Vehicles (%)	6%	17%	12%	5%	11%	2%
Turn Type	D.P+P	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	6					4
Actuated Green, G (s)	32.8	38.2	31.3		6.9	6.9
Effective Green, g (s)	35.6	39.6	32.7		9.4	9.4
Actuated g/C Ratio	0.62	0.69	0.57		0.16	0.16
Clearance Time (s)	5.4	5.4	5.4		6.5	6.5
Vehicle Extension (s)	2.0	3.1	3.1		2.6	2.6
Lane Grp Cap (vph)	387	1128	923		268	261
v/s Ratio Prot	0.00	c0.26	c0.39		c0.05	
v/s Ratio Perm	0.03					0.00
v/c Ratio	0.05	0.38	0.67		0.28	0.00
Uniform Delay, d1	8.8	3.6	8.4		20.9	19.9
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.2	2.0		0.5	0.0
Delay (s)	8.8	3.8	10.4		21.3	19.9
Level of Service	A	A	B		C	B
Approach Delay (s/veh)		4.0	10.4		21.2	
Approach LOS		A	B		C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	8.8	HCM 2000 Level of Service	A
HCM 2000 Volume to Capacity ratio	0.59		
Actuated Cycle Length (s)	57.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	45.2%	ICU Level of Service	A
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	19	390	281	318	70	6
Future Volume (veh/h)	19	390	281	318	70	6
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1811	1648	1722	1826	1737	1870
Adj Flow Rate, veh/h	21	424	305	346	76	7
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	6	17	12	5	11	2
Cap, veh/h	496	1251	473	536	174	167
Arrive On Green	0.05	0.76	0.64	0.62	0.11	0.11
Sat Flow, veh/h	1725	1648	736	835	1654	1585
Grp Volume(v), veh/h	21	424	0	651	76	7
Grp Sat Flow(s),veh/h/ln	1725	1648	0	1570	1654	1585
Q Serve(g_s), s	0.0	4.9	0.0	15.2	2.5	0.2
Cycle Q Clear(g_c), s	0.0	4.9	0.0	15.2	2.5	0.2
Prop In Lane	1.00			0.53	1.00	1.00
Lane Grp Cap(c), veh/h	496	1251	0	1009	174	167
V/C Ratio(X)	0.04	0.34	0.00	0.65	0.44	0.04
Avail Cap(c_a), veh/h	746	1297	0	1742	912	874
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	9.8	2.3	0.0	6.7	24.7	23.7
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.7	1.4	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.5	0.0	3.4	1.0	0.2
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	9.8	2.5	0.0	7.4	26.1	23.8
LnGrp LOS	A	A		A	C	C
Approach Vol, veh/h		445	651		83	
Approach Delay, s/veh		2.8	7.4		25.9	
Approach LOS		A	A		C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		48.7		10.2	6.9	41.9
Change Period (Y+Rc), s		5.4		6.5	5.4	5.4
Max Green Setting (Gmax), s		45.0		30.0	10.0	64.0
Max Q Clear Time (g_c+I1), s		6.9		4.5	2.0	17.2
Green Ext Time (p_c), s		9.8		0.2	0.0	19.2

Intersection Summary	
HCM 7th Control Delay, s/veh	7.0
HCM 7th LOS	A

Intersection	
Int Delay, s/veh	4.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	677	195	68	365	78	61
Future Vol, veh/h	677	195	68	365	78	61
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	3	3	4	3	14	12
Mvmt Flow	705	203	71	380	81	64

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	909	0	1330	808
Stage 1	-	-	-	-	808	-
Stage 2	-	-	-	-	522	-
Critical Hdwy	-	-	4.14	-	6.54	6.32
Critical Hdwy Stg 1	-	-	-	-	5.54	-
Critical Hdwy Stg 2	-	-	-	-	5.54	-
Follow-up Hdwy	-	-	2.236	-	3.626	3.408
Pot Cap-1 Maneuver	-	-	741	-	161	366
Stage 1	-	-	-	-	419	-
Stage 2	-	-	-	-	572	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	740	-	145	366
Mov Cap-2 Maneuver	-	-	-	-	145	-
Stage 1	-	-	-	-	418	-
Stage 2	-	-	-	-	517	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	1.63	39.58
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	145	366	-	-	740	-
HCM Lane V/C Ratio	0.559	0.174	-	-	0.096	-
HCM Control Delay (s/veh)	57.3	16.9	-	-	10.4	-
HCM Lane LOS	F	C	-	-	B	-
HCM 95th %tile Q(veh)	2.8	0.6	-	-	0.3	-



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	677	195	68	365	78	61
Future Volume (Veh/h)	677	195	68	365	78	61
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	705	203	71	380	81	64
Pedestrians					1	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					0	
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			909		1330	808
vC1, stage 1 conf vol					808	
vC2, stage 2 conf vol					522	
vCu, unblocked vol			909		1330	808
tC, single (s)			4.1		6.5	6.3
tC, 2 stage (s)					5.5	
tF (s)			2.2		3.6	3.4
p0 queue free %			90		77	83
cM capacity (veh/h)			740		345	366

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total	908	71	380	81	64
Volume Left	0	71	0	81	0
Volume Right	203	0	0	0	64
cSH	1700	740	1700	345	366
Volume to Capacity	0.53	0.10	0.22	0.23	0.17
Queue Length 95th (ft)	0	8	0	22	16
Control Delay (s/veh)	0.0	10.4	0.0	18.6	16.9
Lane LOS		B		C	C
Approach Delay (s/veh)	0.0	1.6		17.9	
Approach LOS				C	

Intersection Summary			
Average Delay	2.2		
Intersection Capacity Utilization	65.6%	ICU Level of Service	C
Analysis Period (min)	15		

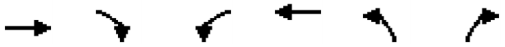
Intersection	
Int Delay, s/veh	8.8

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	38	13	38	86	108	89
Future Vol, veh/h	38	13	38	86	108	89
Conflicting Peds, #/hr	0	44	44	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	62	62	62	62	62	62
Heavy Vehicles, %	3	2	17	5	5	7
Mvmt Flow	61	21	61	139	174	144

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	126	0	377	116
Stage 1	-	-	-	-	116	-
Stage 2	-	-	-	-	261	-
Critical Hdwy	-	-	4.27	-	6.45	6.27
Critical Hdwy Stg 1	-	-	-	-	5.45	-
Critical Hdwy Stg 2	-	-	-	-	5.45	-
Follow-up Hdwy	-	-	2.353	-	3.545	3.363
Pot Cap-1 Maneuver	-	-	1372	-	619	923
Stage 1	-	-	-	-	902	-
Stage 2	-	-	-	-	775	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1315	-	563	884
Mov Cap-2 Maneuver	-	-	-	-	563	-
Stage 1	-	-	-	-	864	-
Stage 2	-	-	-	-	736	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	2.41	15.03
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	673	-	-	552	-
HCM Lane V/C Ratio	0.472	-	-	0.047	-
HCM Control Delay (s/veh)	15	-	-	7.9	0
HCM Lane LOS	C	-	-	A	A
HCM 95th %tile Q(veh)	2.5	-	-	0.1	-



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	38	13	38	86	108	89
Future Volume (Veh/h)	38	13	38	86	108	89
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.62	0.62	0.62	0.62	0.62	0.62
Hourly flow rate (vph)	61	21	61	139	174	144
Pedestrians					44	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					4	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			126		377	116
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			126		377	116
tC, single (s)			4.3		6.4	6.3
tC, 2 stage (s)						
tF (s)			2.4		3.5	3.4
p0 queue free %			95		69	84
cM capacity (veh/h)			1315		566	885

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	82	200	318
Volume Left	0	61	174
Volume Right	21	0	144
cSH	1700	1315	676
Volume to Capacity	0.05	0.05	0.47
Queue Length 95th (ft)	0	4	63
Control Delay (s/veh)	0.0	2.7	15.0
Lane LOS		A	B
Approach Delay (s/veh)	0.0	2.7	15.0
Approach LOS			B

Intersection Summary			
Average Delay	8.8		
Intersection Capacity Utilization	31.4%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	2

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	210	1480	42	0	1878
Future Vol, veh/h	0	210	1480	42	0	1878
Conflicting Peds, #/hr	0	1	0	1	1	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	Free	-	None
Storage Length	-	0	-	335	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	96	96	96	96	96	96
Heavy Vehicles, %	2	6	8	3	2	6
Mvmt Flow	0	219	1542	44	0	1956

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	772	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	7.02	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.36	-	-	-	-
Pot Cap-1 Maneuver	0	334	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	333	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/v	34.21	0	0
HCM LOS	D		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	333	-
HCM Lane V/C Ratio	-	0.656	-
HCM Control Delay (s/veh)	-	34.2	-
HCM Lane LOS	-	D	-
HCM 95th %tile Q(veh)	-	4.4	-

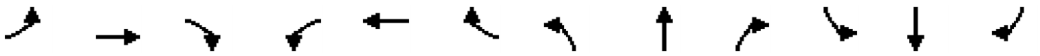


Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	210	1480	42	0	1878
Future Volume (Veh/h)	0	210	1480	42	0	1878
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.96	0.96	0.96	0.96	0.96	0.96
Hourly flow rate (vph)	0	219	1542	44	0	1956
Pedestrians	1					1
Lane Width (ft)	12.0					12.0
Walking Speed (ft/s)	3.5					3.5
Percent Blockage	0					0
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2521	773			1543	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2521	773			1543	
tC, single (s)	6.8	*6.0			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.4			2.2	
p0 queue free %	100	47			100	
cM capacity (veh/h)	23	414			426	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	219	771	771	44	978	978
Volume Left	0	0	0	0	0	0
Volume Right	219	0	0	44	0	0
cSH	414	1700	1700	1700	1700	1700
Volume to Capacity	0.53	0.45	0.45	0.03	0.58	0.58
Queue Length 95th (ft)	75	0	0	0	0	0
Control Delay (s/veh)	23.1	0.0	0.0	0.0	0.0	0.0
Lane LOS	C					
Approach Delay (s/veh)	23.1	0.0			0.0	
Approach LOS	C					

Intersection Summary			
Average Delay	1.3		
Intersection Capacity Utilization	62.2%	ICU Level of Service	B
Analysis Period (min)	15		

* User Entered Value



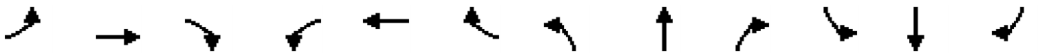
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	218	223	24	279	9	334	151	38	16	216	6
Future Volume (vph)	11	218	223	24	279	9	334	151	38	16	216	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0		4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	1.00		1.00	0.97		1.00	1.00	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1501	1481		1543	1768		1612	1577		1687	1800	
Flt Permitted	0.50	1.00		0.27	1.00		0.36	1.00		0.63	1.00	
Satd. Flow (perm)	789	1481		445	1768		612	1577		1120	1800	
Peak-hour factor, PHF	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Adj. Flow (vph)	12	234	240	26	300	10	359	162	41	17	232	6
RTOR Reduction (vph)	0	19	0	0	1	0	0	0	0	0	1	0
Lane Group Flow (vph)	12	455	0	26	309	0	359	203	0	17	237	0
Confl. Peds. (#/hr)	2					2						
Heavy Vehicles (%)	20%	14%	23%	17%	7%	2%	12%	14%	28%	7%	4%	50%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	42.8	41.9		47.2	44.1		44.8	38.8		25.6	23.6	
Effective Green, g (s)	42.8	42.4		47.2	44.6		44.8	39.3		25.6	24.1	
Actuated g/C Ratio	0.41	0.40		0.45	0.43		0.43	0.38		0.24	0.23	
Clearance Time (s)	4.0	5.5		4.0	5.5		4.0	5.5		4.0	5.5	
Vehicle Extension (s)	2.0	3.2		2.0	3.2		2.0	3.2		2.0	3.2	
Lane Grp Cap (vph)	328	599		232	752		425	591		284	413	
v/s Ratio Prot	0.00	c0.31		c0.00	0.17		c0.14	0.13		0.00	0.13	
v/s Ratio Perm	0.01			0.05			c0.22			0.01		
v/c Ratio	0.04	0.76		0.11	0.41		0.84	0.34		0.06	0.57	
Uniform Delay, d1	18.6	26.8		18.0	21.0		23.0	23.5		30.2	35.8	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	5.6		0.1	0.4		13.7	0.4		0.0	2.0	
Delay (s)	18.6	32.4		18.1	21.4		36.7	23.9		30.3	37.8	
Level of Service	B	C		B	C		D	C		C	D	
Approach Delay (s/veh)		32.1			21.1			32.1			37.3	
Approach LOS		C			C			C			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	30.6	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.80		
Actuated Cycle Length (s)	104.8	Sum of lost time (s)	18.0
Intersection Capacity Utilization	67.0%	ICU Level of Service	C
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Signalized Intersection Summary
20: SW Teton Avenue & SW Herman Road

07/15/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	11	218	223	24	279	9	334	151	38	16	216	6
Future Volume (veh/h)	11	218	223	24	279	9	334	151	38	16	216	6
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1604	1693	1559	1648	1796	1870	1722	1693	1485	1796	1841	1159
Adj Flow Rate, veh/h	12	234	240	26	300	10	359	162	41	17	232	6
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93	0.93
Percent Heavy Veh, %	20	14	23	17	7	2	12	14	28	7	4	50
Cap, veh/h	367	307	315	232	716	24	445	448	113	295	292	8
Arrive On Green	0.01	0.40	0.40	0.03	0.41	0.41	0.20	0.34	0.34	0.02	0.16	0.16
Sat Flow, veh/h	1527	765	784	1570	1728	58	1640	1303	330	1711	1786	46
Grp Volume(v), veh/h	12	0	474	26	0	310	359	0	203	17	0	238
Grp Sat Flow(s),veh/h/ln	1527	0	1549	1570	0	1786	1640	0	1633	1711	0	1832
Q Serve(g_s), s	0.4	0.0	22.8	0.8	0.0	10.6	15.0	0.0	8.1	0.7	0.0	10.8
Cycle Q Clear(g_c), s	0.4	0.0	22.8	0.8	0.0	10.6	15.0	0.0	8.1	0.7	0.0	10.8
Prop In Lane	1.00		0.51	1.00		0.03	1.00		0.20	1.00		0.03
Lane Grp Cap(c), veh/h	367	0	622	232	0	739	445	0	561	295	0	300
V/C Ratio(X)	0.03	0.00	0.76	0.11	0.00	0.42	0.81	0.00	0.36	0.06	0.00	0.79
Avail Cap(c_a), veh/h	699	0	978	554	0	1106	498	0	1088	658	0	1178
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.7	0.0	22.4	17.7	0.0	17.9	22.5	0.0	21.3	29.5	0.0	34.7
Incr Delay (d2), s/veh	0.0	0.0	2.1	0.1	0.0	0.4	7.6	0.0	0.4	0.0	0.0	5.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.1	0.0	7.8	0.3	0.0	4.2	6.3	0.0	3.0	0.3	0.0	5.1
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	15.7	0.0	24.5	17.8	0.0	18.4	30.1	0.0	21.7	29.6	0.0	39.9
LnGrp LOS	B		C	B		B	C		C	C		D
Approach Vol, veh/h		486			336			562			255	
Approach Delay, s/veh		24.3			18.3			27.0			39.2	
Approach LOS		C			B			C			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	6.3	39.7	21.2	19.1	5.3	40.8	5.7	34.7
Change Period (Y+Rc), s	4.0	5.5	4.0	5.5	4.0	5.5	4.0	5.5
Max Green Setting (Gmax), s	20.0	54.0	20.0	55.0	20.0	53.0	20.0	57.0
Max Q Clear Time (g_c+I1), s	2.8	24.8	17.0	12.8	2.4	12.6	2.7	10.1
Green Ext Time (p_c), s	0.0	9.4	0.2	0.8	0.0	6.9	0.0	2.9

Intersection Summary	
HCM 7th Control Delay, s/veh	26.3
HCM 7th LOS	C



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	231	361	136	1580	19	1515	103
Future Volume (vph)	231	361	136	1580	19	1515	103
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.98	1.00	1.00	1.00	1.00	0.97
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1736	1528	1656	3312	1770	3406	1452
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1736	1528	1656	3312	1770	3406	1452
Peak-hour factor, PHF	0.96	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	241	376	142	1646	20	1578	107
RTOR Reduction (vph)	0	160	0	0	0	0	29
Lane Group Flow (vph)	241	216	142	1646	20	1578	78
Confl. Peds. (#/hr)		5	3				3
Heavy Vehicles (%)	4%	4%	9%	9%	2%	6%	8%
Turn Type	Prot	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	4		5	2	1	6	
Permitted Phases		4					6
Actuated Green, G (s)	22.5	22.5	16.3	97.6	4.4	84.7	84.7
Effective Green, g (s)	23.5	23.5	17.8	99.6	4.9	86.7	86.7
Actuated g/C Ratio	0.17	0.17	0.13	0.71	0.04	0.62	0.62
Clearance Time (s)	5.0	5.0	5.5	6.0	4.5	6.0	6.0
Vehicle Extension (s)	2.5	2.5	2.3	4.5	2.3	4.5	4.5
Lane Grp Cap (vph)	291	256	210	2356	61	2109	899
v/s Ratio Prot	0.14		0.09	c0.50	0.01	c0.46	
v/s Ratio Perm		c0.14					0.05
v/c Ratio	0.83	0.84	0.68	0.70	0.33	0.75	0.09
Uniform Delay, d1	56.3	56.5	58.3	11.6	65.9	18.9	10.7
Progression Factor	1.00	1.00	1.00	1.00	1.17	1.18	0.82
Incremental Delay, d2	17.0	21.4	7.2	1.7	1.4	1.9	0.1
Delay (s)	73.3	77.9	65.5	13.3	78.7	24.3	9.0
Level of Service	E	E	E	B	E	C	A
Approach Delay (s/veh)	76.1			17.5		24.0	
Approach LOS	E			B		C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	29.0	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.77		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	76.6%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Signalized Intersection Summary
21: OR 99W (Pacific Highway) & SW Fischer Road

07/15/2025



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	231	361	136	1580	19	1515	103
Future Volume (veh/h)	231	361	136	1580	19	1515	103
Initial Q (Qb), veh	0	0	0	0		0	0
Lane Width Adj.	1.00	1.00	1.00	1.00		1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00				1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00		1.00	1.00
Work Zone On Approach	No			No		No	
Adj Sat Flow, veh/h/ln	1841	1841	1767	1767		1811	1781
Adj Flow Rate, veh/h	241	189	142	1646		1578	107
Peak Hour Factor	0.96	0.96	0.96	0.96		0.96	0.96
Percent Heavy Veh, %	4	4	9	9		6	8
Cap, veh/h	282	251	228	2624		2114	925
Arrive On Green	0.16	0.16	0.14	0.78		1.00	1.00
Sat Flow, veh/h	1753	1560	1682	3445		3532	1506
Grp Volume(v), veh/h	241	189	142	1646		1578	107
Grp Sat Flow(s),veh/h/ln	1753	1560	1682	1678		1721	1506
Q Serve(g_s), s	18.7	16.2	11.2	29.4		0.0	0.0
Cycle Q Clear(g_c), s	18.7	16.2	11.2	29.4		0.0	0.0
Prop In Lane	1.00	1.00	1.00				1.00
Lane Grp Cap(c), veh/h	282	251	228	2624		2114	925
V/C Ratio(X)	0.85	0.75	0.62	0.63		0.75	0.12
Avail Cap(c_a), veh/h	326	290	228	2624		2114	925
HCM Platoon Ratio	1.00	1.00	1.00	1.00		2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00		0.67	0.67
Uniform Delay (d), s/veh	57.1	56.1	57.2	6.5		0.0	0.0
Incr Delay (d2), s/veh	16.7	8.4	4.4	1.1		1.7	0.2
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(50%),veh/ln	9.7	14.1	4.9	8.4		0.5	0.0
Unsig. Movement Delay, s/veh							
LnGrp Delay(d), s/veh	73.8	64.5	61.6	7.7		1.7	0.2
LnGrp LOS	E	E	E	A		A	A
Approach Vol, veh/h	430			1788		1685	
Approach Delay, s/veh	69.7			12.0		1.6	
Approach LOS	E			B		A	

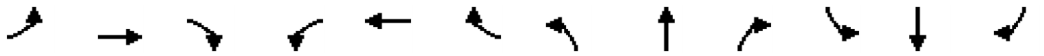
Timer - Assigned Phs		2		4	5	6	
Phs Duration (G+Y+Rc), s		113.5		26.5	23.5	90.0	
Change Period (Y+Rc), s		6.0		5.0	6.0	* 6	
Max Green Setting (Gmax), s		84.0		25.0	14.5	* 84	
Max Q Clear Time (g_c+I1), s		31.4		20.7	13.2	2.0	
Green Ext Time (p_c), s		48.8		0.8	0.0	70.6	

Intersection Summary	
HCM 7th Control Delay, s/veh	13.8
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.
User approved ignoring U-Turning movement.

* HCM 7th computational engine requires equal clearance times for the phases crossing the barrier.



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	51	28	308	24	164	75	1233	518	399	1237	15
Future Volume (vph)	6	51	28	308	24	164	75	1233	518	399	1237	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0	6.0	5.4	5.4	6.0	5.3	5.0	5.0
Lane Util. Factor		0.95		0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes		1.00		1.00	1.00	0.97	1.00	1.00	0.98	1.00	1.00	0.97
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.95		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		1.00		0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		3351		1633	1651	1517	1770	3312	1513	3367	3374	1542
Flt Permitted		1.00		0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3351		1633	1651	1517	1770	3312	1513	3367	3374	1542
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	6	52	29	314	24	167	77	1258	529	407	1262	15
RTOR Reduction (vph)	0	27	0	0	0	146	0	0	89	0	0	7
Lane Group Flow (vph)	0	60	0	170	168	21	77	1258	440	407	1262	8
Confl. Peds. (#/hr)	9					9	2		6	6		2
Heavy Vehicles (%)	2%	2%	2%	5%	4%	3%	2%	9%	5%	4%	7%	2%
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	3	3		4	4		5	2	4	1	6	
Permitted Phases						4			2			6
Actuated Green, G (s)		12.0		17.9	17.9	17.9	9.4	64.7	82.6	22.7	78.3	78.3
Effective Green, g (s)		12.0		17.9	17.9	17.9	9.4	64.7	82.6	22.7	78.3	78.3
Actuated g/C Ratio		0.09		0.13	0.13	0.13	0.07	0.46	0.59	0.16	0.56	0.56
Clearance Time (s)		6.0		6.0	6.0	6.0	5.4	5.4	6.0	5.3	5.0	5.0
Vehicle Extension (s)		2.3		2.3	2.3	2.3	2.3	4.5	2.3	2.3	4.8	4.8
Lane Grp Cap (vph)		287		208	211	193	118	1530	957	545	1887	862
v/s Ratio Prot		c0.02		c0.10	0.10		0.04	c0.38	0.06	0.12	c0.37	
v/s Ratio Perm						0.01			0.23			0.01
v/c Ratio		0.21		0.82	0.80	0.11	0.65	0.82	0.46	0.75	0.67	0.01
Uniform Delay, d1		59.6		59.5	59.3	54.0	63.7	32.7	16.1	55.9	21.7	13.7
Progression Factor		1.00		1.00	1.00	1.00	0.93	0.89	0.50	1.00	1.00	1.00
Incremental Delay, d2		0.2		20.7	17.7	0.1	7.5	3.7	0.1	5.1	1.9	0.0
Delay (s)		59.8		80.2	77.0	54.2	66.6	32.9	8.2	61.0	23.6	13.7
Level of Service		E		F	E	D	E	C	A	E	C	B
Approach Delay (s/veh)		59.8			70.5			27.3			32.6	
Approach LOS		E			E			C			C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	35.4	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.74		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.7
Intersection Capacity Utilization	75.2%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Edition methodology does not support exclusive ped or hold phases.



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	885	208	632	1163	816	807
Future Volume (vph)	885	208	632	1163	816	807
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	5.6
Lane Util. Factor	0.95	1.00	0.97	0.95	0.97	0.88
Frpb, ped/bikes	1.00	0.99	1.00	1.00	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	0.85
Flt Protected	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (prot)	3539	1518	3367	3471	3400	2787
Flt Permitted	1.00	1.00	0.95	1.00	0.95	1.00
Satd. Flow (perm)	3539	1518	3367	3471	3400	2787
Peak-hour factor, PHF	0.98	0.98	0.98	0.98	0.98	0.98
Adj. Flow (vph)	903	212	645	1187	833	823
RTOR Reduction (vph)	0	129	0	0	0	0
Lane Group Flow (vph)	903	83	645	1187	833	823
Confl. Peds. (#/hr)		1	1			6
Heavy Vehicles (%)	2%	5%	4%	4%	3%	2%
Turn Type	NA	Perm	Prot	NA	Prot	pt+ov
Protected Phases	2		1	6	8	1 4
Permitted Phases		2				
Actuated Green, G (s)	42.0	42.0	25.5	73.1	35.2	60.2
Effective Green, g (s)	44.0	44.0	27.1	75.1	37.2	55.2
Actuated g/C Ratio	0.37	0.37	0.23	0.62	0.31	0.46
Clearance Time (s)	6.0	6.0	5.6	6.0	6.0	
Vehicle Extension (s)	5.4	5.4	2.3	5.4	2.3	
Lane Grp Cap (vph)	1294	555	758	2166	1051	1278
v/s Ratio Prot	c0.26		c0.19	0.34	c0.25	0.30
v/s Ratio Perm		0.05				
v/c Ratio	0.70	0.15	0.85	0.55	0.79	0.64
Uniform Delay, d1	32.5	25.6	44.7	12.9	38.0	25.0
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	2.3	0.3	8.9	1.0	4.0	0.9
Delay (s)	34.8	25.9	53.5	13.9	42.0	25.9
Level of Service	C	C	D	B	D	C
Approach Delay (s/veh)	33.1			27.9	34.0	
Approach LOS	C			C	C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	31.3	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	120.3	Sum of lost time (s)	18.6
Intersection Capacity Utilization	76.9%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Edition methodology does not support exclusive ped or hold phases.



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	39	649	986	49	423	419
Future Volume (vph)	39	649	986	49	423	419
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	0.0	4.5	4.5	4.0	4.5
Lane Util. Factor	1.00	1.00	0.95	1.00	1.00	0.95
Frpb, ped/bikes	1.00	1.00	1.00	0.97	1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	0.85	1.00	1.00
Flt Protected	0.95	1.00	1.00	1.00	0.95	1.00
Satd. Flow (prot)	1770	1583	3539	1529	1769	3471
Flt Permitted	0.95	1.00	1.00	1.00	0.11	1.00
Satd. Flow (perm)	1770	1583	3539	1529	197	3471
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	41	690	1049	52	450	446
RTOR Reduction (vph)	0	5	0	18	0	0
Lane Group Flow (vph)	41	685	1049	34	450	446
Confl. Peds. (#/hr)				7	7	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	4%
Turn Type	Perm	pt+ov	NA	Perm	D.P+P	NA
Protected Phases		4 5	6		5	2
Permitted Phases	4			6	6	
Actuated Green, G (s)	14.5	56.6	36.9	36.9	74.0	79.0
Effective Green, g (s)	15.5	61.6	37.9	37.9	76.0	80.0
Actuated g/C Ratio	0.15	0.59	0.36	0.36	0.73	0.77
Clearance Time (s)	5.0		5.5	5.5	5.0	5.5
Vehicle Extension (s)	4.0		4.5	4.5	4.0	4.5
Lane Grp Cap (vph)	263	937	1289	557	719	2670
v/s Ratio Prot		c0.43	c0.30		0.23	0.13
v/s Ratio Perm	0.02			0.02	0.23	
v/c Ratio	0.16	0.73	0.81	0.06	0.63	0.17
Uniform Delay, d1	38.6	15.2	29.9	21.5	20.8	3.2
Progression Factor	1.00	1.00	1.00	1.00	1.00	1.00
Incremental Delay, d2	0.4	3.2	4.5	0.1	1.9	0.1
Delay (s)	38.9	18.4	34.3	21.6	22.7	3.3
Level of Service	D	B	C	C	C	A
Approach Delay (s/veh)	19.6		33.7			13.1
Approach LOS	B		C			B

Intersection Summary			
HCM 2000 Control Delay (s/veh)	23.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.81		
Actuated Cycle Length (s)	104.0	Sum of lost time (s)	12.5
Intersection Capacity Utilization	74.5%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Edition methodology does not support exclusive ped or hold phases.

Intersection	
Int Delay, s/veh	1.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	38	464	2	0	609	276	0	3	7	16	0	20
Future Vol, veh/h	38	464	2	0	609	276	0	3	7	16	0	20
Conflicting Peds, #/hr	4	0	6	6	0	4	1	0	0	0	0	1
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	25	-	-	25	-	-	0	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	91	91	91	91	91	91	91	91	91
Heavy Vehicles, %	2	3	50	2	2	2	2	33	14	7	2	11
Mvmt Flow	42	510	2	0	669	303	0	3	8	18	0	22

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	977	0	0	518	0	0	1271	1577	517	1420	1426	826
Stage 1	-	-	-	-	-	-	601	601	-	825	825	-
Stage 2	-	-	-	-	-	-	670	977	-	595	602	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.12	6.83	6.34	7.17	6.52	6.31
Critical Hdwy Stg 1	-	-	-	-	-	-	6.12	5.83	-	6.17	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.12	5.83	-	6.17	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.518	4.297	3.426	3.563	4.018	3.399
Pot Cap-1 Maneuver	706	-	-	1048	-	-	145	93	535	111	135	359
Stage 1	-	-	-	-	-	-	487	444	-	360	387	-
Stage 2	-	-	-	-	-	-	446	292	-	482	489	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	704	-	-	1042	-	-	127	87	532	99	126	357
Mov Cap-2 Maneuver	-	-	-	-	-	-	127	87	-	99	126	-
Stage 1	-	-	-	-	-	-	456	415	-	358	385	-
Stage 2	-	-	-	-	-	-	418	291	-	443	457	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0.79	0	23.1	33.46
HCM LOS			C	D

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	-	210	704	-	-	1042	-	-	165
HCM Lane V/C Ratio	-	0.052	0.059	-	-	-	-	-	0.239
HCM Control Delay (s/veh)	0	23.1	10.4	-	-	0	-	-	33.5
HCM Lane LOS	A	C	B	-	-	A	-	-	D
HCM 95th %tile Q(veh)	-	0.2	0.2	-	-	0	-	-	0.9

3: JAE Access/SW 115th Avenue & SW Tualatin Road Performance by movement

Movement	EBL	EBT	EBR	WBT	WBR	NBT	NBR	SBL	SBR	All
Denied Delay (hr)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1
Denied Del/Veh (s)	0.4	0.1	0.0	0.2	0.2	0.1	0.1	0.0	0.1	0.2
Total Delay (hr)	0.2	0.4	0.0	1.0	0.4	0.0	0.0	0.1	0.1	2.3
Total Del/Veh (s)	21.6	3.1	0.9	5.7	5.3	29.1	9.0	27.6	11.0	5.6
Stop Delay (hr)	0.2	0.0	0.0	0.4	0.2	0.0	0.0	0.1	0.0	1.0
Stop Del/Veh (s)	17.6	0.0	0.0	2.1	2.8	26.4	7.5	25.9	9.0	2.4

Intersection	
Int Delay, s/veh	0.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	9	479	881	16	9	4
Future Vol, veh/h	9	479	881	16	9	4
Conflicting Peds, #/hr	3	0	0	3	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	25	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	3	7	2	11	2
Mvmt Flow	10	515	947	17	10	4

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	968	0	-	0	1493	959
Stage 1	-	-	-	-	959	-
Stage 2	-	-	-	-	534	-
Critical Hdwy	4.12	-	-	-	6.51	6.22
Critical Hdwy Stg 1	-	-	-	-	5.51	-
Critical Hdwy Stg 2	-	-	-	-	5.51	-
Follow-up Hdwy	2.218	-	-	-	3.599	3.318
Pot Cap-1 Maneuver	712	-	-	-	129	312
Stage 1	-	-	-	-	358	-
Stage 2	-	-	-	-	570	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	710	-	-	-	127	311
Mov Cap-2 Maneuver	-	-	-	-	252	-
Stage 1	-	-	-	-	353	-
Stage 2	-	-	-	-	568	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.19	0	19.19
HCM LOS			C

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	710	-	-	-	268
HCM Lane V/C Ratio	0.014	-	-	-	0.052
HCM Control Delay (s/veh)	10.1	-	-	-	19.2
HCM Lane LOS	B	-	-	-	C
HCM 95th %tile Q(veh)	0	-	-	-	0.2

Intersection	
Int Delay, s/veh	1.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	475	10	7	850	58	46
Future Vol, veh/h	475	10	7	850	58	46
Conflicting Peds, #/hr	0	1	1	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	94	94	94	94
Heavy Vehicles, %	4	20	2	2	3	7
Mvmt Flow	505	11	7	904	62	49

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	517	0	1431	512
Stage 1	-	-	-	-	512	-
Stage 2	-	-	-	-	919	-
Critical Hdwy	-	-	4.12	-	6.43	6.27
Critical Hdwy Stg 1	-	-	-	-	5.43	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.218	-	3.527	3.363
Pot Cap-1 Maneuver	-	-	1049	-	147	552
Stage 1	-	-	-	-	600	-
Stage 2	-	-	-	-	387	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1048	-	146	552
Mov Cap-2 Maneuver	-	-	-	-	276	-
Stage 1	-	-	-	-	599	-
Stage 2	-	-	-	-	384	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.07	19.71
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	354	-	-	1048	-
HCM Lane V/C Ratio	0.312	-	-	0.007	-
HCM Control Delay (s/veh)	19.7	-	-	8.5	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	1.3	-	-	0	-

Intersection	
Int Delay, s/veh	3.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	27	16	3	67	17	3
Future Vol, veh/h	27	16	3	67	17	3
Conflicting Peds, #/hr	0	0	3	0	0	3
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	90	90	90	90
Heavy Vehicles, %	2	2	2	2	9	2
Mvmt Flow	30	18	3	74	19	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	105	24	25	0	-	0
Stage 1	24	-	-	-	-	-
Stage 2	81	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	893	1053	1589	-	-	-
Stage 1	999	-	-	-	-	-
Stage 2	942	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	886	1050	1585	-	-	-
Mov Cap-2 Maneuver	886	-	-	-	-	-
Stage 1	994	-	-	-	-	-
Stage 2	939	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.03	0.31	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	77	-	941	-	-
HCM Lane V/C Ratio	0.002	-	0.051	-	-
HCM Control Delay (s/veh)	7.3	0	9	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.2	-	-

Intersection	
Int Delay, s/veh	6.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	29	142	20	40	31	3
Future Vol, veh/h	29	142	20	40	31	3
Conflicting Peds, #/hr	0	0	7	0	0	7
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	2	2	2	3	9	2
Mvmt Flow	29	143	20	40	31	3

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	121	40	41	0	-	0
Stage 1	40	-	-	-	-	-
Stage 2	81	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	875	1032	1568	-	-	-
Stage 1	983	-	-	-	-	-
Stage 2	942	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	852	1025	1557	-	-	-
Mov Cap-2 Maneuver	852	-	-	-	-	-
Stage 1	963	-	-	-	-	-
Stage 2	936	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	9.4	2.45	0
HCM LOS	A		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	600	-	991	-	-
HCM Lane V/C Ratio	0.013	-	0.174	-	-
HCM Control Delay (s/veh)	7.3	0	9.4	-	-
HCM Lane LOS	A	A	A	-	-
HCM 95th %tile Q(veh)	0	-	0.6	-	-

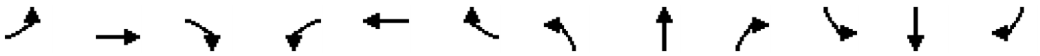
Intersection	
Int Delay, s/veh	3.9

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	7	119	15	51	171	3
Future Vol, veh/h	7	119	15	51	171	3
Conflicting Peds, #/hr	0	0	4	0	0	4
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	8	3	2
Mvmt Flow	9	145	18	62	209	4

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	313	214	216	0	-	0
Stage 1	214	-	-	-	-	-
Stage 2	99	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	680	826	1354	-	-	-
Stage 1	821	-	-	-	-	-
Stage 2	925	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	665	822	1348	-	-	-
Mov Cap-2 Maneuver	665	-	-	-	-	-
Stage 1	807	-	-	-	-	-
Stage 2	922	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	10.47	1.75	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	409	-	812	-	-
HCM Lane V/C Ratio	0.014	-	0.189	-	-
HCM Control Delay (s/veh)	7.7	0	10.5	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0	-	0.7	-	-



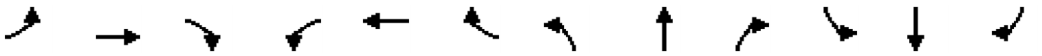
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	28	29	27	87	2	366	7	668	30	57	395	18
Future Volume (vph)	28	29	27	87	2	366	7	668	30	57	395	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0		4.0	4.0		4.0	4.0		5.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	0.95		1.00	0.95	
Frpb, ped/bikes	1.00	1.00		1.00	0.99		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.93		1.00	0.85		1.00	0.99		1.00	0.99	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1736	1583		1719	1562		1262	3512		1770	3342	
Flt Permitted	0.95	1.00		0.95	1.00		0.47	1.00		0.23	1.00	
Satd. Flow (perm)	1736	1583		1719	1562		631	3512		428	3342	
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	30	32	29	95	2	398	8	726	33	62	429	20
RTOR Reduction (vph)	0	23	0	0	295	0	0	3	0	0	2	0
Lane Group Flow (vph)	30	38	0	95	105	0	8	756	0	62	447	0
Confl. Peds. (#/hr)	4					4						
Heavy Vehicles (%)	4%	11%	12%	5%	2%	2%	43%	2%	5%	2%	6%	35%
Turn Type	Prot	NA		Prot	NA		D.P+P	NA		D.P+P	NA	
Protected Phases	7	4		3	8		5	2		1	6	
Permitted Phases							6			2		
Actuated Green, G (s)	2.5	12.4		6.9	16.8		29.4	23.4		29.4	28.6	
Effective Green, g (s)	3.5	13.4		7.9	17.8		31.4	24.4		29.4	28.6	
Actuated g/C Ratio	0.05	0.20		0.11	0.26		0.46	0.36		0.43	0.42	
Clearance Time (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Lane Grp Cap (vph)	88	308		197	404		304	1247		300	1391	
v/s Ratio Prot	0.02	0.02		c0.06	c0.07		0.00	c0.22		c0.02	c0.13	
v/s Ratio Perm							0.01			0.07		
v/c Ratio	0.34	0.12		0.48	0.26		0.03	0.61		0.21	0.32	
Uniform Delay, d1	31.5	22.8		28.5	20.2		10.2	18.2		12.2	13.5	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	2.3	0.2		1.9	0.3		0.0	0.8		0.3	0.1	
Delay (s)	33.8	23.0		30.3	20.6		10.2	19.0		12.6	13.6	
Level of Service	C	C		C	C		B	B		B	B	
Approach Delay (s/veh)		26.5			22.4			19.0			13.5	
Approach LOS		C			C			B			B	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	18.8	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.47		
Actuated Cycle Length (s)	68.7	Sum of lost time (s)	17.0
Intersection Capacity Utilization	60.4%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Signalized Intersection Summary
9: SW 124th Avenue & SW Leveton Drive

07/15/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	28	29	27	87	2	366	7	668	30	57	395	18
Future Volume (veh/h)	28	29	27	87	2	366	7	668	30	57	395	18
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1841	1737	1722	1826	1870	1870	1263	1870	1826	1870	1811	1381
Adj Flow Rate, veh/h	30	32	29	95	2	398	8	726	33	62	429	20
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	11	12	5	2	2	43	2	5	2	6	35
Cap, veh/h	103	244	221	173	3	522	296	976	44	302	1131	53
Arrive On Green	0.06	0.29	0.28	0.10	0.33	0.32	0.02	0.28	0.27	0.08	0.34	0.34
Sat Flow, veh/h	1753	837	759	1739	8	1572	1203	3462	157	1781	3348	156
Grp Volume(v), veh/h	30	0	61	95	0	400	8	373	386	62	220	229
Grp Sat Flow(s),veh/h/ln	1753	0	1596	1739	0	1580	1203	1777	1842	1781	1721	1783
Q Serve(g_s), s	1.1	0.0	2.0	3.6	0.0	15.7	0.3	13.1	13.2	1.6	6.7	6.7
Cycle Q Clear(g_c), s	1.1	0.0	2.0	3.6	0.0	15.7	0.3	13.1	13.2	1.6	6.7	6.7
Prop In Lane	1.00		0.48	1.00		1.00	1.00		0.09	1.00		0.09
Lane Grp Cap(c), veh/h	103	0	465	173	0	525	296	501	519	302	581	602
V/C Ratio(X)	0.29	0.00	0.13	0.55	0.00	0.76	0.03	0.74	0.74	0.21	0.38	0.38
Avail Cap(c_a), veh/h	407	0	718	277	0	710	632	799	828	804	998	1034
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	31.1	0.0	18.2	29.6	0.0	21.1	13.8	22.5	22.5	16.6	17.3	17.4
Incr Delay (d2), s/veh	1.5	0.0	0.1	2.7	0.0	3.4	0.0	2.2	2.1	0.3	0.4	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.5	0.0	0.7	1.5	0.0	5.7	0.1	5.1	5.3	0.6	2.4	2.5
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	32.6	0.0	18.3	32.3	0.0	24.4	13.8	24.7	24.7	16.9	17.7	17.7
LnGrp LOS	C		B	C		C	B	C	C	B	B	B
Approach Vol, veh/h		91			495			767			511	
Approach Delay, s/veh		23.0			25.9			24.6			17.6	
Approach LOS		C			C			C			B	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	10.6	23.5	10.9	24.1	5.7	28.3	8.1	26.9
Change Period (Y+Rc), s	5.0	5.0	5.0	5.0	5.0	5.0	5.0	5.0
Max Green Setting (Gmax), s	25.0	30.0	10.0	30.0	20.0	40.0	15.0	30.0
Max Q Clear Time (g_c+I1), s	3.6	15.2	5.6	4.0	2.3	8.7	3.1	17.7
Green Ext Time (p_c), s	0.2	3.3	0.1	0.5	0.0	2.1	0.0	3.5

Intersection Summary	
HCM 7th Control Delay, s/veh	23.0
HCM 7th LOS	C

Notes

User approved pedestrian interval to be less than phase max green.

Intersection	
Intersection Delay, s/veh	19.1
Intersection LOS	C

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	6	91	12	49	461	2	29	2	9	1	0	13
Future Vol, veh/h	6	91	12	49	461	2	29	2	9	1	0	13
Peak Hour Factor	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81	0.81
Heavy Vehicles, %	2	4	2	15	2	2	2	2	40	2	2	2
Mvmt Flow	7	112	15	60	569	2	36	2	11	1	0	16
Number of Lanes	0	1	0	0	1	0	0	1	0	0	1	0

Approach	EB	WB	NB	SB
Opposing Approach	WB	EB	SB	NB
Opposing Lanes	1	1	1	1
Conflicting Approach Left	SB	NB	EB	WB
Conflicting Lanes Left	1	1	1	1
Conflicting Approach Right	NB	SB	WB	EB
Conflicting Lanes Right	1	1	1	1
HCM Control Delay, s/veh	8.8	22.3	9.3	8.4
HCM LOS	A	C	A	A

Lane	NBLn1	EBLn1	WBLn1	SBLn1
Vol Left, %	73%	6%	10%	7%
Vol Thru, %	5%	83%	90%	0%
Vol Right, %	23%	11%	0%	93%
Sign Control	Stop	Stop	Stop	Stop
Traffic Vol by Lane	40	109	512	14
LT Vol	29	6	49	1
Through Vol	2	91	461	0
RT Vol	9	12	2	13
Lane Flow Rate	49	135	632	17
Geometry Grp	1	1	1	1
Degree of Util (X)	0.079	0.177	0.791	0.025
Departure Headway (Hd)	5.726	4.739	4.504	5.23
Convergence, Y/N	Yes	Yes	Yes	Yes
Cap	624	756	803	680
Service Time	3.78	2.777	2.531	3.293
HCM Lane V/C Ratio	0.079	0.179	0.787	0.025
HCM Control Delay, s/veh	9.3	8.8	22.3	8.4
HCM Lane LOS	A	A	C	A
HCM 95th-tile Q	0.3	0.6	8.2	0.1

Intersection	
Int Delay, s/veh	6

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	30	58	317	15	81	186
Future Vol, veh/h	30	58	317	15	81	186
Conflicting Peds, #/hr	3	0	0	3	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	82	82	82	82	82	76
Heavy Vehicles, %	2	8	2	2	2	2
Mvmt Flow	37	71	387	18	99	245

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	408	0	-	0	543	399
Stage 1	-	-	-	-	399	-
Stage 2	-	-	-	-	144	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1151	-	-	-	501	651
Stage 1	-	-	-	-	678	-
Stage 2	-	-	-	-	883	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1148	-	-	-	482	649
Mov Cap-2 Maneuver	-	-	-	-	482	-
Stage 1	-	-	-	-	654	-
Stage 2	-	-	-	-	881	-

Approach	EB	WB	SB
HCM Control Delay, s/v	2.81	0	14.02
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	614	-	-	-	482	649
HCM Lane V/C Ratio	0.032	-	-	-	0.205	0.377
HCM Control Delay (s/veh)	8.2	0	-	-	14.4	13.9
HCM Lane LOS	A	A	-	-	B	B
HCM 95th %tile Q(veh)	0.1	-	-	-	0.8	1.8

Intersection	
Int Delay, s/veh	0.1

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	1	126	307	0	2	0
Future Vol, veh/h	1	126	307	0	2	0
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	5	5	2	2	2
Mvmt Flow	1	154	374	0	2	0

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	374	0	-	0	530	374
Stage 1	-	-	-	-	374	-
Stage 2	-	-	-	-	156	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1184	-	-	-	509	672
Stage 1	-	-	-	-	695	-
Stage 2	-	-	-	-	872	-
Platoon blocked, %			-	-	-	
Mov Cap-1 Maneuver	1184	-	-	-	509	672
Mov Cap-2 Maneuver	-	-	-	-	509	-
Stage 1	-	-	-	-	695	-
Stage 2	-	-	-	-	872	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.06	0	12.11
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1
Capacity (veh/h)	14	-	-	-	509
HCM Lane V/C Ratio	0.001	-	-	-	0.005
HCM Control Delay (s/veh)	8	0	-	-	12.1
HCM Lane LOS	A	A	-	-	B
HCM 95th %tile Q(veh)	0	-	-	-	0

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Vol, veh/h	12	134	269	17	33	57
Future Vol, veh/h	12	134	269	17	33	57
Conflicting Peds, #/hr	7	0	0	7	0	2
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	-	0	0	-	0	-
Grade, %	-	0	0	-	0	-
Peak Hour Factor	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	15	163	328	21	40	70

Major/Minor	Major1		Major2		Minor2	
Conflicting Flow All	356	0	-	0	538	347
Stage 1	-	-	-	-	345	-
Stage 2	-	-	-	-	193	-
Critical Hdwy	4.12	-	-	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	2.218	-	-	-	3.518	3.318
Pot Cap-1 Maneuver	1203	-	-	-	504	696
Stage 1	-	-	-	-	717	-
Stage 2	-	-	-	-	840	-
Platoon blocked, %		-	-	-		
Mov Cap-1 Maneuver	1195	-	-	-	491	690
Mov Cap-2 Maneuver	-	-	-	-	491	-
Stage 1	-	-	-	-	702	-
Stage 2	-	-	-	-	834	-

Approach	EB	WB	SB
HCM Control Delay, s/v	0.66	0	11.61
HCM LOS			B

Minor Lane/Major Mvmt	EBL	EBT	WBT	WBR	SBLn1	SBLn2
Capacity (veh/h)	148	-	-	-	491	690
HCM Lane V/C Ratio	0.012	-	-	-	0.082	0.101
HCM Control Delay (s/veh)	8.1	0	-	-	13	10.8
HCM Lane LOS	A	A	-	-	B	B
HCM 95th %tile Q(veh)	0	-	-	-	0.3	0.3

Intersection	
Int Delay, s/veh	1.2

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	165	8	6	248	0	25	0	13	0	0	0
Future Vol, veh/h	0	165	8	6	248	0	25	0	13	0	0	0
Conflicting Peds, #/hr	7	0	5	5	0	7	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	82	82	82	82	82	82	82	82	82	82	82	82
Heavy Vehicles, %	2	2	2	2	2	2	50	2	2	2	2	2
Mvmt Flow	0	201	10	7	302	0	30	0	16	0	0	0

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	309	0	0	216	0	0	528	535	211	525	540	309
Stage 1	-	-	-	-	-	-	211	211	-	324	324	-
Stage 2	-	-	-	-	-	-	317	324	-	201	216	-
Critical Hdwy	4.12	-	-	4.12	-	-	7.6	6.52	6.22	7.12	6.52	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-	6.6	5.52	-	6.12	5.52	-
Critical Hdwy Stg 2	-	-	-	-	-	-	6.6	5.52	-	6.12	5.52	-
Follow-up Hdwy	2.218	-	-	2.218	-	-	3.95	4.018	3.318	3.518	4.018	3.318
Pot Cap-1 Maneuver	1251	-	-	1354	-	-	394	451	829	463	449	731
Stage 1	-	-	-	-	-	-	693	728	-	688	650	-
Stage 2	-	-	-	-	-	-	603	650	-	801	724	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	1243	-	-	1347	-	-	389	443	825	448	441	726
Mov Cap-2 Maneuver	-	-	-	-	-	-	389	443	-	448	441	-
Stage 1	-	-	-	-	-	-	690	724	-	679	641	-
Stage 2	-	-	-	-	-	-	599	641	-	785	721	-

Approach	EB	WB	NB	SB
HCM Control Delay, s/v	0	0.18	13.39	0
HCM LOS			B	A

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	475	1243	-	-	43	-	-	-
HCM Lane V/C Ratio	0.098	-	-	-	0.005	-	-	-
HCM Control Delay (s/veh)	13.4	0	-	-	7.7	0	-	0
HCM Lane LOS	B	A	-	-	A	A	-	A
HCM 95th %tile Q(veh)	0.3	0	-	-	0	-	-	-

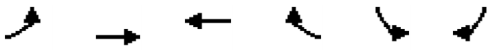
Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	32	148	68	85	160	166
Future Vol, veh/h	32	148	68	85	160	166
Conflicting Peds, #/hr	1	1	1	0	0	1
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	85	85	85	85
Heavy Vehicles, %	17	2	2	2	2	2
Mvmt Flow	38	174	80	100	188	195

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	548	288	385	0	-	0
Stage 1	287	-	-	-	-	-
Stage 2	261	-	-	-	-	-
Critical Hdwy	6.57	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.57	-	-	-	-	-
Critical Hdwy Stg 2	5.57	-	-	-	-	-
Follow-up Hdwy	3.653	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	473	751	1174	-	-	-
Stage 1	729	-	-	-	-	-
Stage 2	749	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	438	750	1173	-	-	-
Mov Cap-2 Maneuver	438	-	-	-	-	-
Stage 1	675	-	-	-	-	-
Stage 2	748	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s/v	12.92	3.69	0
HCM LOS	B		

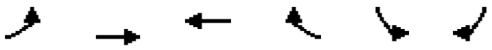
Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	800	-	665	-	-
HCM Lane V/C Ratio	0.068	-	0.318	-	-
HCM Control Delay (s/veh)	8.3	0	12.9	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	1.4	-	-



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	2	338	529	83	291	37
Future Volume (vph)	2	338	529	83	291	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0		4.0	4.0
Lane Util. Factor	1.00	1.00	1.00		1.00	1.00
Frpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Flpb, ped/bikes	1.00	1.00	1.00		1.00	1.00
Frt	1.00	1.00	0.98		1.00	0.85
Flt Protected	0.95	1.00	1.00		0.95	1.00
Satd. Flow (prot)	1770	1827	1735		1752	1568
Flt Permitted	0.19	1.00	1.00		0.95	1.00
Satd. Flow (perm)	355	1827	1735		1752	1568
Peak-hour factor, PHF	0.90	0.90	0.90	0.90	0.90	0.90
Adj. Flow (vph)	2	376	588	92	323	41
RTOR Reduction (vph)	0	0	5	0	0	28
Lane Group Flow (vph)	2	376	675	0	323	13
Confl. Peds. (#/hr)	1			1		
Heavy Vehicles (%)	2%	4%	8%	2%	3%	3%
Turn Type	D.P+P	NA	NA		Prot	Perm
Protected Phases	5	2	6		4	
Permitted Phases	6					4
Actuated Green, G (s)	32.1	37.5	31.5		18.9	18.9
Effective Green, g (s)	34.9	38.9	32.9		21.4	21.4
Actuated g/C Ratio	0.51	0.57	0.48		0.31	0.31
Clearance Time (s)	5.4	5.4	5.4		6.5	6.5
Vehicle Extension (s)	2.0	3.1	3.1		2.6	2.6
Lane Grp Cap (vph)	222	1040	835		548	491
v/s Ratio Prot	0.00	c0.21	c0.39		c0.18	
v/s Ratio Perm	0.00					0.01
v/c Ratio	0.01	0.36	0.81		0.59	0.03
Uniform Delay, d1	19.0	8.0	15.0		19.7	16.2
Progression Factor	1.00	1.00	1.00		1.00	1.00
Incremental Delay, d2	0.0	0.2	5.8		1.4	0.0
Delay (s)	19.0	8.2	20.8		21.2	16.3
Level of Service	B	A	C		C	B
Approach Delay (s/veh)		8.2	20.8		20.6	
Approach LOS		A	C		C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	17.4	HCM 2000 Level of Service	B
HCM 2000 Volume to Capacity ratio	0.72		
Actuated Cycle Length (s)	68.3	Sum of lost time (s)	12.0
Intersection Capacity Utilization	55.7%	ICU Level of Service	B
Analysis Period (min)	15		

c Critical Lane Group



Movement	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (veh/h)	2	338	529	83	291	37
Future Volume (veh/h)	2	338	529	83	291	37
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00			1.00	1.00	1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No	No		No	
Adj Sat Flow, veh/h/ln	1870	1841	1781	1870	1856	1856
Adj Flow Rate, veh/h	2	376	588	92	323	41
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90
Percent Heavy Veh, %	2	4	8	2	3	3
Cap, veh/h	364	1197	864	135	427	380
Arrive On Green	0.02	0.65	0.57	0.56	0.24	0.24
Sat Flow, veh/h	1781	1841	1504	235	1767	1572
Grp Volume(v), veh/h	2	376	0	680	323	41
Grp Sat Flow(s),veh/h/ln	1781	1841	0	1739	1767	1572
Q Serve(g_s), s	0.0	6.6	0.0	20.3	12.6	1.5
Cycle Q Clear(g_c), s	0.0	6.6	0.0	20.3	12.6	1.5
Prop In Lane	1.00			0.14	1.00	1.00
Lane Grp Cap(c), veh/h	364	1197	0	999	427	380
V/C Ratio(X)	0.01	0.31	0.00	0.68	0.76	0.11
Avail Cap(c_a), veh/h	600	1197	0	1536	776	690
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	0.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	17.1	5.7	0.0	11.1	26.0	21.8
Incr Delay (d2), s/veh	0.0	0.2	0.0	0.9	2.2	0.1
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	2.0	0.0	6.6	5.2	0.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	17.1	5.8	0.0	11.9	28.2	21.9
LnGrp LOS	B	A		B	C	C
Approach Vol, veh/h		378	680		364	
Approach Delay, s/veh		5.9	11.9		27.5	
Approach LOS		A	B		C	

Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		52.1		21.9	5.6	46.5
Change Period (Y+Rc), s		5.4		6.5	5.4	5.4
Max Green Setting (Gmax), s		45.0		30.0	10.0	64.0
Max Q Clear Time (g_c+I1), s		8.6		14.6	2.0	22.3
Green Ext Time (p_c), s		8.2		0.9	0.0	18.8

Intersection Summary	
HCM 7th Control Delay, s/veh	14.3
HCM 7th LOS	B

Intersection	
Int Delay, s/veh	10.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	397	68	38	771	131	36
Future Vol, veh/h	397	68	38	771	131	36
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	25	-	100	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	93	93	93	93	93	93
Heavy Vehicles, %	2	5	6	2	2	2
Mvmt Flow	427	73	41	829	141	39

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	500	0	1374	463
Stage 1	-	-	-	-	463	-
Stage 2	-	-	-	-	911	-
Critical Hdwy	-	-	4.16	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.254	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	1044	-	160	599
Stage 1	-	-	-	-	633	-
Stage 2	-	-	-	-	392	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1044	-	154	599
Mov Cap-2 Maneuver	-	-	-	-	154	-
Stage 1	-	-	-	-	633	-
Stage 2	-	-	-	-	377	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	0.4	87.92
HCM LOS			F

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	154	599	-	-	1044	-
HCM Lane V/C Ratio	0.914	0.065	-	-	0.039	-
HCM Control Delay (s/veh)	108.9	11.4	-	-	8.6	-
HCM Lane LOS	F	B	-	-	A	-
HCM 95th %tile Q(veh)	6.5	0.2	-	-	0.1	-



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	397	68	38	771	131	36
Future Volume (Veh/h)	397	68	38	771	131	36
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.93	0.93	0.93	0.93	0.93	0.93
Hourly flow rate (vph)	427	73	41	829	141	39
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type	None			TWLTL		
Median storage veh)				2		
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			500		1375	464
vC1, stage 1 conf vol					464	
vC2, stage 2 conf vol					911	
vCu, unblocked vol			500		1375	464
tC, single (s)			4.2		6.4	6.2
tC, 2 stage (s)					5.4	
tF (s)			2.3		3.5	3.3
p0 queue free %			96		59	93
cM capacity (veh/h)			1044		340	599

Direction, Lane #	EB 1	WB 1	WB 2	NB 1	NB 2
Volume Total	500	41	829	141	39
Volume Left	0	41	0	141	0
Volume Right	73	0	0	0	39
cSH	1700	1044	1700	340	599
Volume to Capacity	0.29	0.04	0.49	0.41	0.07
Queue Length 95th (ft)	0	3	0	49	5
Control Delay (s/veh)	0.0	8.6	0.0	22.9	11.4
Lane LOS		A		C	B
Approach Delay (s/veh)	0.0	0.4		20.4	
Approach LOS				C	

Intersection Summary			
Average Delay	2.6		
Intersection Capacity Utilization	54.5%	ICU Level of Service	A
Analysis Period (min)	15		

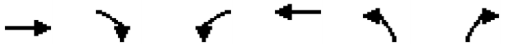
Intersection	
Int Delay, s/veh	8.9

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	16	7	17	76	277	21
Future Vol, veh/h	16	7	17	76	277	21
Conflicting Peds, #/hr	0	8	8	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	13	2	2	20
Mvmt Flow	17	8	18	83	301	23

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	33	0	149	29
Stage 1	-	-	-	-	29	-
Stage 2	-	-	-	-	120	-
Critical Hdwy	-	-	4.23	-	6.42	6.4
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.317	-	3.518	3.48
Pot Cap-1 Maneuver	-	-	1511	-	843	996
Stage 1	-	-	-	-	993	-
Stage 2	-	-	-	-	906	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1499	-	826	988
Mov Cap-2 Maneuver	-	-	-	-	826	-
Stage 1	-	-	-	-	986	-
Stage 2	-	-	-	-	894	-

Approach	EB	WB	NB
HCM Control Delay, s/v	0	1.36	12.01
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	836	-	-	329	-
HCM Lane V/C Ratio	0.388	-	-	0.012	-
HCM Control Delay (s/veh)	12	-	-	7.4	0
HCM Lane LOS	B	-	-	A	A
HCM 95th %tile Q(veh)	1.8	-	-	0	-



Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (veh/h)	16	7	17	76	277	21
Future Volume (Veh/h)	16	7	17	76	277	21
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	17	8	18	83	301	23
Pedestrians					8	
Lane Width (ft)					12.0	
Walking Speed (ft/s)					3.5	
Percent Blockage					1	
Right turn flare (veh)						
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			33		148	29
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			33		148	29
tC, single (s)			4.2		6.4	6.4
tC, 2 stage (s)						
tF (s)			2.3		3.5	3.5
p0 queue free %			99		64	98
cM capacity (veh/h)			1499		828	989

Direction, Lane #	EB 1	WB 1	NB 1
Volume Total	25	101	324
Volume Left	0	18	301
Volume Right	8	0	23
cSH	1700	1499	837
Volume to Capacity	0.01	0.01	0.39
Queue Length 95th (ft)	0	1	46
Control Delay (s/veh)	0.0	1.4	12.0
Lane LOS		A	B
Approach Delay (s/veh)	0.0	1.4	12.0
Approach LOS			B

Intersection Summary			
Average Delay	8.9		
Intersection Capacity Utilization	34.9%	ICU Level of Service	A
Analysis Period (min)	15		

Intersection	
Int Delay, s/veh	11.7

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	342	1634	30	0	1746
Future Vol, veh/h	0	342	1634	30	0	1746
Conflicting Peds, #/hr	0	0	0	4	4	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Stop	-	Free	-	None
Storage Length	-	0	-	335	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	98	98	98	98	98	98
Heavy Vehicles, %	2	3	3	4	2	2
Mvmt Flow	0	349	1667	31	0	1782

Major/Minor	Minor1		Major1		Major2	
Conflicting Flow All	-	834	0	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	6.96	-	-	-	-
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	3.33	-	-	-	-
Pot Cap-1 Maneuver	0	~ 309	-	0	0	-
Stage 1	0	-	-	0	0	-
Stage 2	0	-	-	0	0	-
Platoon blocked, %			-			-
Mov Cap-1 Maneuver	-	~ 309	-	-	-	-
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s/veh	$27.38	0	0
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	WBLn1	SBT
Capacity (veh/h)	-	309	-
HCM Lane V/C Ratio	-	1.128	-
HCM Control Delay (s/veh)	-	127.4	-
HCM Lane LOS	-	F	-
HCM 95th %tile Q(veh)	-	14.2	-

Notes			
~: Volume exceeds capacity	$: Delay exceeds 300s	+: Computation Not Defined	*: All major volume in platoon



Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	0	342	1634	30	0	1746
Future Volume (Veh/h)	0	342	1634	30	0	1746
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.98	0.98	0.98	0.98	0.98	0.98
Hourly flow rate (vph)	0	349	1667	31	0	1782
Pedestrians	4					
Lane Width (ft)	12.0					
Walking Speed (ft/s)	3.5					
Percent Blockage	0					
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	2562	838			1671	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	2562	838			1671	
tC, single (s)	6.8	*6.0			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	100	9			100	
cM capacity (veh/h)	21	383			379	

Direction, Lane #	WB 1	NB 1	NB 2	NB 3	SB 1	SB 2
Volume Total	349	834	834	31	891	891
Volume Left	0	0	0	0	0	0
Volume Right	349	0	0	31	0	0
cSH	383	1700	1700	1700	1700	1700
Volume to Capacity	0.91	0.49	0.49	0.02	0.52	0.52
Queue Length 95th (ft)	238	0	0	0	0	0
Control Delay (s/veh)	59.5	0.0	0.0	0.0	0.0	0.0
Lane LOS	F					
Approach Delay (s/veh)	59.5	0.0			0.0	
Approach LOS	F					

Intersection Summary			
Average Delay	5.4		
Intersection Capacity Utilization	73.0%	ICU Level of Service	D
Analysis Period (min)	15		

* User Entered Value

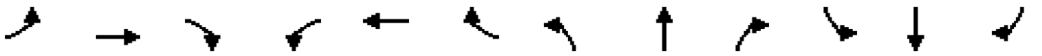
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	2	289	334	47	340	8	251	157	24	13	123	20
Future Volume (vph)	2	289	334	47	340	8	251	157	24	13	123	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	5.0		4.0	5.0		4.0	5.0		4.0	5.0	
Lane Util. Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Flpb, ped/bikes	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Frt	1.00	0.92		1.00	1.00		1.00	0.98		1.00	0.98	
Flt Protected	0.95	1.00		0.95	1.00		0.95	1.00		0.95	1.00	
Satd. Flow (prot)	1543	1660		1626	1821		1596	1748		1703	1622	
Flt Permitted	0.43	1.00		0.08	1.00		0.38	1.00		0.62	1.00	
Satd. Flow (perm)	695	1660		145	1821		640	1748		1107	1622	
Peak-hour factor, PHF	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	2	361	418	59	425	10	314	196	30	16	154	25
RTOR Reduction (vph)	0	19	0	0	0	0	0	0	0	0	4	0
Lane Group Flow (vph)	3	760	0	59	435	0	314	226	0	16	175	0
Confl. Peds. (#/hr)							1					1
Heavy Vehicles (%)	17%	2%	8%	11%	4%	2%	13%	6%	10%	6%	16%	4%
Turn Type	pm+pt	NA		pm+pt	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		3	8		7	4	
Permitted Phases	2			6			8			4		
Actuated Green, G (s)	57.8	56.9		66.3	61.4		43.0	36.8		22.6	20.4	
Effective Green, g (s)	57.8	57.4		66.3	61.9		43.0	37.3		22.6	20.9	
Actuated g/C Ratio	0.48	0.48		0.55	0.51		0.36	0.31		0.19	0.17	
Clearance Time (s)	4.0	5.5		4.0	5.5		4.0	5.5		4.0	5.5	
Vehicle Extension (s)	2.0	3.2		2.0	3.2		2.0	3.2		2.0	3.2	
Lane Grp Cap (vph)	340	792		146	936		376	541		218	281	
v/s Ratio Prot	0.00	c0.46		c0.02	0.24		c0.13	0.13		0.00	0.11	
v/s Ratio Perm	0.00			0.20			c0.17			0.01		
v/c Ratio	0.01	0.96		0.40	0.46		0.84	0.42		0.07	0.62	
Uniform Delay, d1	16.6	30.3		22.7	18.6		31.7	32.9		40.0	46.0	
Progression Factor	1.00	1.00		1.00	1.00		1.00	1.00		1.00	1.00	
Incremental Delay, d2	0.0	22.4		0.7	0.4		14.1	0.6		0.1	4.3	
Delay (s)	16.6	52.7		23.4	19.0		45.8	33.5		40.1	50.4	
Level of Service	B	D		C	B		D	C		D	D	
Approach Delay (s/veh)		52.6			19.5			40.6			49.5	
Approach LOS		D			B			D			D	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	41.0	HCM 2000 Level of Service	D
HCM 2000 Volume to Capacity ratio	0.90		
Actuated Cycle Length (s)	120.3	Sum of lost time (s)	18.0
Intersection Capacity Utilization	73.1%	ICU Level of Service	D
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Signalized Intersection Summary
20: SW Teton Avenue & SW Herman Road

07/15/2025



Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (veh/h)	2	289	334	47	340	8	251	157	24	13	123	20
Future Volume (veh/h)	2	289	334	47	340	8	251	157	24	13	123	20
Initial Q (Qb), veh	0	0	0	0	0	0	0	0	0	0	0	0
Lane Width Adj.	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00		1.00	1.00		1.00	1.00		1.00	1.00		1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach		No			No			No			No	
Adj Sat Flow, veh/h/ln	1648	1870	1781	1737	1841	1870	1707	1811	1752	1811	1663	1841
Adj Flow Rate, veh/h	2	361	418	59	425	10	314	196	30	16	154	25
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Percent Heavy Veh, %	17	2	8	11	4	2	13	6	10	6	16	4
Cap, veh/h	377	383	444	158	931	22	382	456	70	242	189	31
Arrive On Green	0.00	0.48	0.48	0.04	0.52	0.52	0.18	0.30	0.29	0.02	0.14	0.13
Sat Flow, veh/h	1570	790	915	1654	1791	42	1626	1534	235	1725	1395	226
Grp Volume(v), veh/h	2	0	779	59	0	435	314	0	226	16	0	179
Grp Sat Flow(s),veh/h/ln	1570	0	1706	1654	0	1833	1626	0	1768	1725	0	1621
Q Serve(g_s), s	0.1	0.0	47.9	1.9	0.0	16.5	17.8	0.0	11.4	0.9	0.0	11.9
Cycle Q Clear(g_c), s	0.1	0.0	47.9	1.9	0.0	16.5	17.8	0.0	11.4	0.9	0.0	11.9
Prop In Lane	1.00		0.54	1.00		0.02	1.00		0.13	1.00		0.14
Lane Grp Cap(c), veh/h	377	0	827	158	0	953	382	0	525	242	0	220
V/C Ratio(X)	0.01	0.00	0.94	0.37	0.00	0.46	0.82	0.00	0.43	0.07	0.00	0.81
Avail Cap(c_a), veh/h	656	0	840	394	0	953	385	0	919	523	0	813
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00	1.00	0.00	1.00
Uniform Delay (d), s/veh	15.5	0.0	27.2	24.8	0.0	16.7	32.1	0.0	31.4	40.5	0.0	46.5
Incr Delay (d2), s/veh	0.0	0.0	18.4	0.5	0.0	0.4	12.4	0.0	0.6	0.0	0.0	7.7
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	0.0	0.0	21.9	0.7	0.0	6.7	8.1	0.0	4.9	0.4	0.0	5.2
Unsig. Movement Delay, s/veh												
LnGrp Delay(d), s/veh	15.5	0.0	45.6	25.3	0.0	17.1	44.4	0.0	32.0	40.5	0.0	54.2
LnGrp LOS	B		D	C		B	D		C	D		D
Approach Vol, veh/h		781			494			540			195	
Approach Delay, s/veh		45.5			18.1			39.2			53.0	
Approach LOS		D			B			D			D	

Timer - Assigned Phs	1	2	3	4	5	6	7	8
Phs Duration (G+Y+Rc), s	8.2	58.6	23.8	20.0	4.3	62.5	5.9	37.9
Change Period (Y+Rc), s	4.0	5.5	4.0	5.5	4.0	5.5	4.0	5.5
Max Green Setting (Gmax), s	20.0	54.0	20.0	55.0	20.0	53.0	20.0	57.0
Max Q Clear Time (g_c+I1), s	3.9	49.9	19.8	13.9	2.1	18.5	2.9	13.4
Green Ext Time (p_c), s	0.1	3.2	0.0	0.6	0.0	9.8	0.0	3.2

Intersection Summary	
HCM 7th Control Delay, s/veh	37.8
HCM 7th LOS	D



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (vph)	156	303	311	1742	28	1453	281
Future Volume (vph)	156	303	311	1742	28	1453	281
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	0.95	1.00
Frpb, ped/bikes	1.00	0.97	1.00	1.00	1.00	1.00	0.95
Flpb, ped/bikes	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	1.00	0.85	1.00	1.00	1.00	1.00	0.85
Flt Protected	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (prot)	1770	1493	1770	3539	1770	3438	1509
Flt Permitted	0.95	1.00	0.95	1.00	0.95	1.00	1.00
Satd. Flow (perm)	1770	1493	1770	3539	1770	3438	1509
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	170	329	338	1893	30	1579	305
RTOR Reduction (vph)	0	251	0	0	0	0	83
Lane Group Flow (vph)	170	78	338	1893	30	1579	222
Confl. Peds. (#/hr)		21	9				9
Heavy Vehicles (%)	2%	5%	2%	2%	2%	5%	2%
Turn Type	Prot	Perm	Prot	NA	Prot	NA	Perm
Protected Phases	4		5	2	1	6	
Permitted Phases		4					6
Actuated Green, G (s)	14.6	14.6	28.2	104.8	5.1	80.7	80.7
Effective Green, g (s)	15.6	15.6	29.7	106.8	5.6	82.7	82.7
Actuated g/C Ratio	0.11	0.11	0.21	0.76	0.04	0.59	0.59
Clearance Time (s)	5.0	5.0	5.5	6.0	4.5	6.0	6.0
Vehicle Extension (s)	2.5	2.5	2.3	4.5	2.3	4.5	4.5
Lane Grp Cap (vph)	197	166	375	2699	70	2030	891
v/s Ratio Prot	c0.10		c0.19	0.53	0.02	c0.46	
v/s Ratio Perm		0.05					0.15
v/c Ratio	0.86	0.47	0.90	0.70	0.43	0.78	0.25
Uniform Delay, d1	61.1	58.3	53.7	8.5	65.6	21.7	13.8
Progression Factor	1.00	1.00	1.00	1.00	0.97	1.28	1.32
Incremental Delay, d2	29.8	1.5	23.8	1.5	1.6	2.0	0.4
Delay (s)	90.9	59.9	77.5	10.0	65.4	29.9	18.6
Level of Service	F	E	E	B	E	C	B
Approach Delay (s/veh)	70.5			20.2		28.6	
Approach LOS	E			C		C	

Intersection Summary			
HCM 2000 Control Delay (s/veh)	29.1	HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio	0.82		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	12.0
Intersection Capacity Utilization	92.7%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Signalized Intersection Summary
21: OR 99W (Pacific Highway) & SW Fischer Road

07/15/2025



Movement	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Configurations							
Traffic Volume (veh/h)	156	303	311	1742	28	1453	281
Future Volume (veh/h)	156	303	311	1742	28	1453	281
Initial Q (Qb), veh	0	0	0	0		0	0
Lane Width Adj.	1.00	1.00	1.00	1.00		1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00				0.99
Parking Bus, Adj	1.00	1.00	1.00	1.00		1.00	1.00
Work Zone On Approach	No			No		No	
Adj Sat Flow, veh/h/ln	1870	1826	1870	1870		1826	1870
Adj Flow Rate, veh/h	170	150	338	1893		1579	305
Peak Hour Factor	0.92	0.92	0.92	0.92		0.92	0.92
Percent Heavy Veh, %	2	5	2	2		5	2
Cap, veh/h	204	177	376	2944		2043	926
Arrive On Green	0.11	0.11	0.21	0.83		1.00	1.00
Sat Flow, veh/h	1781	1547	1781	3647		3561	1573
Grp Volume(v), veh/h	170	150	338	1893		1579	305
Grp Sat Flow(s),veh/h/ln	1781	1547	1781	1777		1735	1573
Q Serve(g_s), s	13.1	13.3	25.9	27.4		0.0	0.0
Cycle Q Clear(g_c), s	13.1	13.3	25.9	27.4		0.0	0.0
Prop In Lane	1.00	1.00	1.00				1.00
Lane Grp Cap(c), veh/h	204	177	376	2944		2043	926
V/C Ratio(X)	0.84	0.85	0.90	0.64		0.77	0.33
Avail Cap(c_a), veh/h	204	177	394	2944		2043	926
HCM Platoon Ratio	1.00	1.00	1.00	1.00		2.00	2.00
Upstream Filter(I)	1.00	1.00	1.00	1.00		0.53	0.53
Uniform Delay (d), s/veh	60.7	60.8	53.8	4.4		0.0	0.0
Incr Delay (d2), s/veh	24.4	29.6	21.6	1.1		1.6	0.5
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0		0.0	0.0
%ile BackOfQ(50%),veh/ln	7.3	12.4	13.6	6.7		0.4	0.1
Unsig. Movement Delay, s/veh							
LnGrp Delay(d), s/veh	85.1	90.4	75.3	5.5		1.6	0.5
LnGrp LOS	F	F	E	A		A	A
Approach Vol, veh/h	320			2231		1884	
Approach Delay, s/veh	87.6			16.1		1.4	
Approach LOS	F			B		A	

Timer - Assigned Phs		2		4	5	6	
Phs Duration (G+Y+Rc), s		120.0		20.0	33.6	86.4	
Change Period (Y+Rc), s		6.0		5.0	5.5	6.0	
Max Green Setting (Gmax), s		94.0		15.0	29.5	79.0	
Max Q Clear Time (g_c+I1), s		29.4		15.3	27.9	2.0	
Green Ext Time (p_c), s		62.1		0.0	0.2	65.5	

Intersection Summary	
HCM 7th Control Delay, s/veh	15.0
HCM 7th LOS	B

Notes

User approved pedestrian interval to be less than phase max green.
User approved ignoring U-Turning movement.

HCM Signalized Intersection Capacity Analysis
22: OR 99W (Pacific Highway) & SW 116th Avenue/SW Durham Road

07/15/2025

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	97	71	509	74	355	142	1404	265	459	1094	21
Future Volume (vph)	23	97	71	509	74	355	142	1404	265	459	1094	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Total Lost time (s)		6.0		6.0	6.0	6.0	5.4	5.4	6.0	5.3	5.0	5.0
Lane Util. Factor		0.95		0.95	0.95	1.00	1.00	0.95	1.00	0.97	0.95	1.00
Frpb, ped/bikes		1.00		1.00	1.00	0.98	1.00	1.00	0.99	1.00	1.00	0.98
Flpb, ped/bikes		1.00		1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.94		1.00	1.00	0.85	1.00	1.00	0.85	1.00	1.00	0.85
Flt Protected		0.99		0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (prot)		3309		1681	1702	1533	1770	3505	1560	3433	3438	1547
Flt Permitted		0.99		0.95	0.96	1.00	0.95	1.00	1.00	0.95	1.00	1.00
Satd. Flow (perm)		3309		1681	1702	1533	1770	3505	1560	3433	3438	1547
Peak-hour factor, PHF	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	24	103	76	541	79	378	151	1494	282	488	1164	22
RTOR Reduction (vph)	0	64	0	0	0	287	0	0	56	0	0	12
Lane Group Flow (vph)	0	139	0	308	312	91	151	1494	226	488	1164	10
Confl. Peds. (#/hr)	7					7	1		7	7		1
Heavy Vehicles (%)	2%	2%	3%	2%	3%	3%	2%	3%	2%	2%	5%	2%
Turn Type	Split	NA		Split	NA	Perm	Prot	NA	pm+ov	Prot	NA	Perm
Protected Phases	3	3		4	4		5	2	4	1	6	
Permitted Phases						4			2			6
Actuated Green, G (s)		12.4		27.9	27.9	27.9	13.4	55.0	82.9	22.0	63.9	63.9
Effective Green, g (s)		12.4		27.9	27.9	27.9	13.4	55.0	82.9	22.0	63.9	63.9
Actuated g/C Ratio		0.09		0.20	0.20	0.20	0.10	0.39	0.59	0.16	0.46	0.46
Clearance Time (s)		6.0		6.0	6.0	6.0	5.4	5.4	6.0	5.3	5.0	5.0
Vehicle Extension (s)		2.3		2.3	2.3	2.3	2.3	4.5	2.3	2.3	4.8	4.8
Lane Grp Cap (vph)		293		334	339	305	169	1376	923	539	1569	706
v/s Ratio Prot		c0.04		0.18	c0.18		0.09	c0.43	0.05	c0.14	0.34	
v/s Ratio Perm						0.06			0.10			0.01
v/c Ratio		0.48		0.92	0.92	0.30	0.89	1.09	0.24	0.91	0.74	0.01
Uniform Delay, d1		60.7		55.0	55.0	47.7	62.6	42.5	13.6	58.0	31.3	20.8
Progression Factor		1.00		1.00	1.00	1.00	0.91	1.18	1.32	1.00	1.00	1.00
Incremental Delay, d2		0.7		29.8	29.2	0.3	31.2	48.0	0.1	18.5	3.2	0.0
Delay (s)		61.4		84.8	84.2	48.1	88.5	98.2	18.0	76.5	34.5	20.9
Level of Service		E		F	F	D	F	F	B	E	C	C
Approach Delay (s/veh)		61.4			70.7			85.7			46.6	
Approach LOS		E			E			F			D	

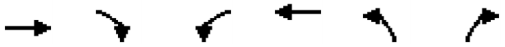
Intersection Summary			
HCM 2000 Control Delay (s/veh)	67.9	HCM 2000 Level of Service	E
HCM 2000 Volume to Capacity ratio	0.95		
Actuated Cycle Length (s)	140.0	Sum of lost time (s)	22.7
Intersection Capacity Utilization	96.9%	ICU Level of Service	F
Analysis Period (min)	15		

c Critical Lane Group

HCM 7th Edition methodology does not support exclusive ped or hold phases.

APPENDIX J.

QUEUING ANALYSIS



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1236	632	961	860	148	302
v/c Ratio	0.89	0.70	0.93	0.34	0.29	0.26
Control Delay (s/veh)	37.3	12.6	51.3	5.6	37.0	17.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	37.3	12.6	51.3	5.6	37.0	17.9
Queue Length 50th (ft)	347	78	286	62	42	60
Queue Length 95th (ft)	#696	298	#574	206	69	119
Internal Link Dist (ft)	1687			1822	503	
Turn Bay Length (ft)		225	550		300	275
Base Capacity (vph)	1396	901	1029	2530	1167	1148
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.89	0.70	0.93	0.34	0.13	0.26

Intersection Summary

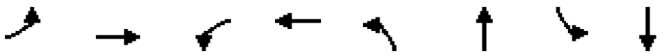
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	46	241	267	45	909	831
v/c Ratio	0.22	0.19	0.55	0.17	0.77	0.30
Control Delay (s/veh)	40.5	0.8	44.5	12.6	18.6	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	40.5	0.8	44.5	12.6	18.6	4.4
Queue Length 50th (ft)	27	0	83	0	217	50
Queue Length 95th (ft)	56	16	130	29	#757	164
Internal Link Dist (ft)	1180		1024			503
Turn Bay Length (ft)	25	300		150	200	
Base Capacity (vph)	504	1459	1246	596	1179	2753
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.09	0.17	0.21	0.08	0.77	0.30

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



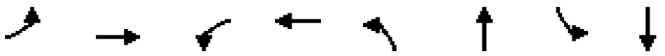
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	8	139	17	45	19	325	240	623
v/c Ratio	0.03	0.32	0.07	0.11	0.03	0.36	0.36	0.29
Control Delay (s/veh)	30.6	20.5	29.7	11.1	9.2	19.4	10.6	11.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	30.6	20.5	29.7	11.1	9.2	19.4	10.6	11.1
Queue Length 50th (ft)	2	27	3	3	1	30	22	31
Queue Length 95th (ft)	19	106	31	29	19	129	146	217
Internal Link Dist (ft)		981		1223		1392		1024
Turn Bay Length (ft)	100		150		150		150	
Base Capacity (vph)	582	1389	325	1108	927	2371	1081	2839
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.10	0.05	0.04	0.02	0.14	0.22	0.22

Intersection Summary



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	20	402	498	51	7
v/c Ratio	0.03	0.32	0.42	0.13	0.02
Control Delay (s/veh)	2.5	4.8	7.3	16.2	10.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	2.5	4.8	7.3	16.2	10.7
Queue Length 50th (ft)	1	42	49	11	0
Queue Length 95th (ft)	7	91	195	39	8
Internal Link Dist (ft)		877	1007	781	
Turn Bay Length (ft)	100			135	
Base Capacity (vph)	892	1624	1626	1336	1302
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.02	0.25	0.31	0.04	0.01

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	11	429	25	247	271	194	16	228
v/c Ratio	0.03	0.77	0.09	0.35	0.58	0.30	0.04	0.55
Control Delay (s/veh)	15.1	34.3	15.5	20.2	23.5	23.9	19.3	38.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	15.1	34.3	15.5	20.2	23.5	23.9	19.3	38.9
Queue Length 50th (ft)	3	200	7	84	99	69	5	114
Queue Length 95th (ft)	15	385	25	199	214	180	21	243
Internal Link Dist (ft)		1007		989		572		1708
Turn Bay Length (ft)	100		100		60		50	
Base Capacity (vph)	564	1043	492	1229	564	1141	655	1301
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.41	0.05	0.20	0.48	0.17	0.02	0.18

Intersection Summary



Lane Group	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Group Flow (vph)	229	353	134	1550	19	1422	102
v/c Ratio	0.81	0.84	0.71	0.64	0.22	0.65	0.11
Control Delay (s/veh)	78.4	41.9	80.4	12.6	76.8	22.0	3.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	78.4	41.9	80.4	12.6	76.8	22.0	3.1
Queue Length 50th (ft)	201	137	120	393	15	596	6
Queue Length 95th (ft)	294	#281	#214	516	m27	700	m15
Internal Link Dist (ft)	1134			1909		2372	
Turn Bay Length (ft)	275		435		300		200
Base Capacity (vph)	322	449	189	2418	202	2172	955
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.71	0.79	0.71	0.64	0.09	0.65	0.11

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	84	153	154	159	72	1183	500	388	1138	14
v/c Ratio	0.27	0.77	0.77	0.49	0.62	0.76	0.51	0.71	0.58	0.01
Control Delay (s/veh)	42.7	83.7	83.2	13.1	74.3	32.0	5.3	63.6	21.2	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	42.7	83.7	83.2	13.1	74.3	32.0	5.3	63.6	21.2	0.0
Queue Length 50th (ft)	25	143	143	0	62	497	25	174	358	0
Queue Length 95th (ft)	53	223	225	66	m98	597	32	232	443	0
Internal Link Dist (ft)	481		939			2372			1326	
Turn Bay Length (ft)		300		315	550		140	265		400
Base Capacity (vph)	336	226	228	347	134	1549	999	545	1964	945
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.25	0.68	0.68	0.46	0.54	0.76	0.50	0.71	0.58	0.01

Intersection Summary

m Volume for 95th percentile queue is metered by upstream signal.

Intersection: 1: SW 124th Avenue & OR 99W (Pacific Highway)

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	T	T	R	L	L	T	T	L	L	R	R
Maximum Queue (ft)	742	741	410	1822	1829	1889	1852	126	124	155	163
Average Queue (ft)	396	394	296	1425	1336	1038	836	52	57	62	66
95th Queue (ft)	673	686	479	2060	2214	2359	2070	103	105	129	133
Link Distance (ft)	1714	1714		1829	1829	1829	1829	496	496		
Upstream Blk Time (%)				1	7	20	7				
Queuing Penalty (veh)				5	28	85	31				
Storage Bay Dist (ft)			225							275	275
Storage Blk Time (%)		27	11								
Queuing Penalty (veh)		162	64								

Intersection: 2: SW 124th Avenue & SW Tualatin Road

Movement	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	T	T	R	L	T	T
Maximum Queue (ft)	107	167	134	234	78	399	488	174
Average Queue (ft)	38	49	49	105	24	220	92	53
95th Queue (ft)	86	117	107	196	59	416	320	132
Link Distance (ft)		1173	1027	1027			496	496
Upstream Blk Time (%)							0	
Queuing Penalty (veh)							2	
Storage Bay Dist (ft)	25				150	200		
Storage Blk Time (%)	30	13		5		11	1	
Queuing Penalty (veh)	64	5		2		42	5	

Intersection: 3: JAE Access/SW 115th Avenue & SW Tualatin Road

Movement	EB	EB	WB	NB	NB	SB
Directions Served	L	TR	L	L	TR	LTR
Maximum Queue (ft)	73	19	48	45	54	94
Average Queue (ft)	18	1	5	1	6	42
95th Queue (ft)	53	14	27	16	32	75
Link Distance (ft)		1193		552	552	1330
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	25		25			
Storage Blk Time (%)	2		1			
Queuing Penalty (veh)	15		3			

Intersection: 4: SW Tualatin Road & SW 112th Avenue

Movement	SB
Directions Served	LR
Maximum Queue (ft)	66
Average Queue (ft)	23
95th Queue (ft)	57
Link Distance (ft)	540
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 5: SW 108th Ave & SW Tualatin Road

Movement	EB	WB	NB
Directions Served	TR	L	LR
Maximum Queue (ft)	18	52	65
Average Queue (ft)	1	18	17
95th Queue (ft)	13	49	50
Link Distance (ft)	1064		285
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		25	
Storage Blk Time (%)		4	
Queuing Penalty (veh)		13	

Intersection: 6: SW 108th Ave & North Access

Movement	EB
Directions Served	LR
Maximum Queue (ft)	43
Average Queue (ft)	3
95th Queue (ft)	19
Link Distance (ft)	593
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 7: SW 108th Ave & Center Access

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	35	28
Average Queue (ft)	2	2
95th Queue (ft)	17	14
Link Distance (ft)	421	252
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: SW 108th Ave & South Access

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	57	39
Average Queue (ft)	8	4
95th Queue (ft)	36	23
Link Distance (ft)	415	207
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9: SW 124th Avenue & SW Leveton Drive

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	81	177	68	76	57	126	208	167	153	166
Average Queue (ft)	9	87	14	22	10	34	80	60	36	56
95th Queue (ft)	44	162	45	57	37	88	168	119	106	125
Link Distance (ft)		1016		1226		1440	1440		1027	1027
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	100		150		150			150		
Storage Blk Time (%)		10		0		0		0	0	
Queuing Penalty (veh)		1		0		0		1	1	

Intersection: 10: SW 118th Drive/JAE Access & SW Leveton Drive

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	99	74	49	26
Average Queue (ft)	62	31	15	2
95th Queue (ft)	90	58	38	13
Link Distance (ft)	1226	1030	498	610
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 11: SW Leveton Drive & West Access

Movement	EB	WB	SB	SB
Directions Served	LT	TR	L	R
Maximum Queue (ft)	65	16	40	65
Average Queue (ft)	17	1	9	17
95th Queue (ft)	51	7	34	52
Link Distance (ft)	1030	399	532	532
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 12: SW Leveton Drive & New Access

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 13: SW Leveton Drive & Center Access

Movement	EB	WB	SB	SB
Directions Served	LT	TR	L	R
Maximum Queue (ft)	34	14	40	35
Average Queue (ft)	3	0	11	11
95th Queue (ft)	17	7	37	37
Link Distance (ft)	413	362	352	352
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 14: Calmax Technology Access/East Access & SW Leveton Drive

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 15: SW 108th Ave & SW Leveton Drive

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	81	48
Average Queue (ft)	41	8
95th Queue (ft)	66	35
Link Distance (ft)	556	796
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 16: SW Herman Road & SW 108th Ave

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (ft)	44	174	172	65	17
Average Queue (ft)	9	40	57	20	2
95th Queue (ft)	36	114	137	49	10
Link Distance (ft)		933	994		796
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	100			135	
Storage Blk Time (%)		1			
Queuing Penalty (veh)		0			

Intersection: 17: SW Teton Avenue & SW Tualatin Road

Movement	EB	WB	WB	NB	NB
Directions Served	TR	L	T	L	R
Maximum Queue (ft)	20	87	83	123	93
Average Queue (ft)	1	34	3	51	40
95th Queue (ft)	12	70	36	100	76
Link Distance (ft)	169		1000		1711
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		25		100	
Storage Blk Time (%)		11		1	0
Queuing Penalty (veh)		36		1	0

Intersection: 18: SW 115th Avenue & SW Hazelbrook Road

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	48	107
Average Queue (ft)	4	52
95th Queue (ft)	25	87
Link Distance (ft)	1163	1330
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 19: OR 99W (Pacific Highway) & SW Hazelbrook Road

Movement	WB	NB	NB	SB	SB
Directions Served	R	T	T	T	T
Maximum Queue (ft)	186	47	35	1804	1752
Average Queue (ft)	31	2	1	559	538
95th Queue (ft)	130	25	16	1872	1852
Link Distance (ft)	1290	1829	1829	1944	1944
Upstream Blk Time (%)				5	4
Queuing Penalty (veh)				40	32
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 20: SW Teton Avenue & SW Herman Road

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	112	370	135	271	159	276	84	218
Average Queue (ft)	11	155	19	100	93	73	10	91
95th Queue (ft)	56	292	69	198	158	187	43	173
Link Distance (ft)		994		1022		604		1711
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100		100		60		50	
Storage Blk Time (%)		16		7	18	6	0	19
Queuing Penalty (veh)		2		2	33	14	0	3

Intersection: 21: OR 99W (Pacific Highway) & SW Fischer Road

Movement	EB	EB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	R	L	T	T	U	T	T	R
Maximum Queue (ft)	447	886	395	694	706	348	1570	1564	400
Average Queue (ft)	271	336	252	287	305	52	473	455	77
95th Queue (ft)	455	743	476	736	740	215	1498	1489	302
Link Distance (ft)		1160		1944	1944		2374	2374	
Upstream Blk Time (%)		0					1	2	
Queuing Penalty (veh)		0					8	11	
Storage Bay Dist (ft)	275		435			300			200
Storage Blk Time (%)	15	23	12	2			18	19	
Queuing Penalty (veh)	52	51	90	2			3	19	

Intersection: 22: OR 99W (Pacific Highway) & SW 116th Avenue/SW Durham Road

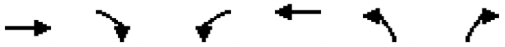
Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	TR	L	LT	R	L	T	T	R	L	L	T
Maximum Queue (ft)	140	165	273	296	201	163	620	662	315	331	415	929
Average Queue (ft)	20	71	143	178	73	76	307	325	198	190	235	306
95th Queue (ft)	89	145	229	260	145	153	506	559	380	296	377	689
Link Distance (ft)		503		959	959		2374	2374				1364
Upstream Blk Time (%)												1
Queuing Penalty (veh)												0
Storage Bay Dist (ft)	275		300			550			140	265	265	
Storage Blk Time (%)			0	0			1	22	6	1	4	11
Queuing Penalty (veh)			0	0			0	109	37	8	23	42

Intersection: 22: OR 99W (Pacific Highway) & SW 116th Avenue/SW Durham Road

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	889	16
Average Queue (ft)	282	3
95th Queue (ft)	649	13
Link Distance (ft)	1364	
Upstream Blk Time (%)	0	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		400
Storage Blk Time (%)	5	
Queuing Penalty (veh)	1	

Network Summary

Network wide Queuing Penalty: 1145



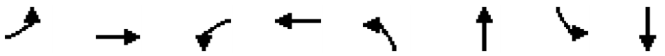
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	860	189	598	1131	703	692
v/c Ratio	0.60	0.26	0.80	0.49	0.78	0.52
Control Delay (s/veh)	30.4	4.9	50.5	11.1	45.0	22.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	30.4	4.9	50.5	11.1	45.0	22.0
Queue Length 50th (ft)	255	0	210	193	244	177
Queue Length 95th (ft)	392	51	292	314	309	289
Internal Link Dist (ft)	1687			1822	503	
Turn Bay Length (ft)		225	550		300	275
Base Capacity (vph)	1435	728	894	2304	1130	1435
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.60	0.26	0.67	0.49	0.62	0.48

Intersection Summary



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	39	640	832	50	423	398
v/c Ratio	0.16	0.62	0.75	0.10	0.50	0.15
Control Delay (s/veh)	38.6	14.5	36.4	11.9	20.7	3.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	38.6	14.5	36.4	11.9	20.7	3.9
Queue Length 50th (ft)	23	216	242	6	111	23
Queue Length 95th (ft)	52	387	370	36	318	77
Internal Link Dist (ft)	1180		1024			503
Turn Bay Length (ft)	25	300		150	200	
Base Capacity (vph)	553	1296	1367	611	838	2698
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.49	0.61	0.08	0.50	0.15

Intersection Summary



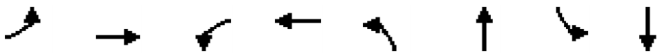
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	29	58	42	232	8	690	34	425
v/c Ratio	0.08	0.16	0.12	0.39	0.02	0.50	0.07	0.31
Control Delay (s/veh)	30.7	15.6	29.6	6.0	11.7	17.3	12.1	13.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	30.7	15.6	29.6	6.0	11.7	17.3	12.1	13.9
Queue Length 50th (ft)	6	7	9	0	1	65	5	38
Queue Length 95th (ft)	44	42	57	52	11	255	30	152
Internal Link Dist (ft)		981		1223		1392		1024
Turn Bay Length (ft)	100		150		150		150	
Base Capacity (vph)	674	1191	459	1165	701	2633	1107	2634
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.04	0.05	0.09	0.20	0.01	0.26	0.03	0.16

Intersection Summary



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	2	351	623	181	39
v/c Ratio	0.00	0.35	0.69	0.36	0.08
Control Delay (s/veh)	4.0	7.7	15.0	19.6	8.2
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	4.0	7.7	15.0	19.6	8.2
Queue Length 50th (ft)	0	46	103	33	0
Queue Length 95th (ft)	3	115	352	141	23
Internal Link Dist (ft)		877	1007	781	
Turn Bay Length (ft)	100			135	
Base Capacity (vph)	669	1804	1656	1206	1091
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.00	0.19	0.38	0.15	0.04

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	1	598	58	408	283	216	14	166
v/c Ratio	0.00	0.72	0.20	0.41	0.73	0.39	0.05	0.66
Control Delay (s/veh)	13.0	29.9	14.0	18.1	40.8	34.0	25.4	57.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	13.0	29.9	14.0	18.1	40.8	34.0	25.4	57.3
Queue Length 50th (ft)	0	340	19	166	162	118	7	115
Queue Length 95th (ft)	3	454	38	268	214	186	19	167
Internal Link Dist (ft)		1007		989		572		1708
Turn Bay Length (ft)	100		100		60		50	
Base Capacity (vph)	567	833	444	998	405	902	478	838
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.00	0.72	0.13	0.41	0.70	0.24	0.03	0.20

Intersection Summary



Lane Group	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Group Flow (vph)	158	311	326	1704	29	1492	300
v/c Ratio	0.82	0.74	0.89	0.62	0.31	0.73	0.30
Control Delay (s/veh)	91.3	20.5	79.2	8.7	67.2	29.4	6.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	91.3	20.5	79.2	8.7	67.2	29.4	6.9
Queue Length 50th (ft)	142	20	286	354	26	697	47
Queue Length 95th (ft)	#257	125	#440	453	m36	790	m74
Internal Link Dist (ft)	1134			1909		2372	
Turn Bay Length (ft)	275		435		300		200
Base Capacity (vph)	202	424	391	2756	202	2052	985
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.78	0.73	0.83	0.62	0.14	0.73	0.30

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	199	299	303	369	147	1339	239	468	1094	21
v/c Ratio	0.56	0.91	0.91	0.63	0.88	0.96	0.25	0.88	0.69	0.03
Control Delay (s/veh)	46.4	85.4	85.5	10.4	95.5	61.8	4.8	76.6	33.1	0.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	46.4	85.4	85.5	10.4	95.5	61.8	4.8	76.6	33.1	0.1
Queue Length 50th (ft)	61	278	283	7	135	613	49	215	416	0
Queue Length 95th (ft)	102	#471	#474	103	m#255	#794	m75	#296	498	0
Internal Link Dist (ft)	481		939			2372			1326	
Turn Bay Length (ft)		300		315	550		140	265		400
Base Capacity (vph)	392	338	342	595	171	1396	983	556	1583	772
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.51	0.88	0.89	0.62	0.86	0.96	0.24	0.84	0.69	0.03

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Intersection: 1: SW 124th Avenue & OR 99W (Pacific Highway)

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	T	T	R	L	L	T	T	L	L	R	R
Maximum Queue (ft)	374	375	202	611	532	441	418	383	396	315	267
Average Queue (ft)	242	225	69	346	230	181	183	252	258	150	149
95th Queue (ft)	353	338	156	547	405	363	366	355	362	266	245
Link Distance (ft)	1714	1714		1829	1829	1829	1829	496	496		
Upstream Blk Time (%)									0		
Queuing Penalty (veh)									0		
Storage Bay Dist (ft)			225							275	275
Storage Blk Time (%)		7							7	0	0
Queuing Penalty (veh)		13							51	1	0

Intersection: 2: SW 124th Avenue & SW Tualatin Road

Movement	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	T	T	R	L	T	T
Maximum Queue (ft)	111	448	316	404	120	379	245	196
Average Queue (ft)	33	236	180	239	29	230	33	45
95th Queue (ft)	91	395	287	366	111	414	142	137
Link Distance (ft)		1173	1027	1027			496	496
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	25				150	200		
Storage Blk Time (%)	23	36		26		18	0	
Queuing Penalty (veh)	138	13		12		35	0	

Intersection: 3: JAE Access/SW 115th Avenue & SW Tualatin Road

Movement	EB	WB	NB	SB
Directions Served	L	TR	TR	LTR
Maximum Queue (ft)	76	40	55	75
Average Queue (ft)	21	4	12	23
95th Queue (ft)	57	28	41	64
Link Distance (ft)		800	552	1330
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)	25			
Storage Blk Time (%)	5	0		
Queuing Penalty (veh)	24	0		

Intersection: 4: SW Tualatin Road & SW 112th Avenue

Movement	EB	WB	SB
Directions Served	L	TR	LR
Maximum Queue (ft)	35	10	66
Average Queue (ft)	6	0	17
95th Queue (ft)	27	5	53
Link Distance (ft)		1064	540
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	25		
Storage Blk Time (%)	1		
Queuing Penalty (veh)	4		

Intersection: 5: SW 108th Ave & SW Tualatin Road

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	21	89
Average Queue (ft)	2	36
95th Queue (ft)	14	71
Link Distance (ft)		285
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	25	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	2	

Intersection: 6: SW 108th Ave & North Access

Movement	EB
Directions Served	LR
Maximum Queue (ft)	35
Average Queue (ft)	3
95th Queue (ft)	20
Link Distance (ft)	593
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 7: SW 108th Ave & Center Access

Movement	EB
Directions Served	LR
Maximum Queue (ft)	63
Average Queue (ft)	26
95th Queue (ft)	56
Link Distance (ft)	421
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: SW 108th Ave & South Access

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	60	12
Average Queue (ft)	30	0
95th Queue (ft)	57	6
Link Distance (ft)	415	207
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9: SW 124th Avenue & SW Leveton Drive

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	77	124	86	107	43	210	206	77	161	198
Average Queue (ft)	24	34	32	52	5	74	93	18	45	66
95th Queue (ft)	58	83	69	92	25	150	174	51	118	147
Link Distance (ft)		1016		1226		1440	1440		1027	1027
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	100		150		150			150		
Storage Blk Time (%)		1				1			0	
Queuing Penalty (veh)		0				0			0	

Intersection: 10: SW 118th Drive/JAE Access & SW Leveton Drive

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	84	107	65	40
Average Queue (ft)	34	50	20	10
95th Queue (ft)	61	80	45	35
Link Distance (ft)	1226	1030	498	610
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 11: SW Leveton Drive & West Access

Movement	EB	SB	SB
Directions Served	LT	L	R
Maximum Queue (ft)	40	72	105
Average Queue (ft)	4	32	51
95th Queue (ft)	22	62	85
Link Distance (ft)	1030	531	531
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 12: SW Leveton Drive & New Access

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 13: SW Leveton Drive & Center Access

Movement	EB	SB	SB
Directions Served	LT	L	R
Maximum Queue (ft)	20	59	64
Average Queue (ft)	1	24	25
95th Queue (ft)	11	52	55
Link Distance (ft)	403	352	352
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 14: Calmax Technology Access/East Access & SW Leveton Drive

Movement	NB
Directions Served	LTR
Maximum Queue (ft)	35
Average Queue (ft)	2
95th Queue (ft)	20
Link Distance (ft)	617
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 15: SW 108th Ave & SW Leveton Drive

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	71	40	13
Average Queue (ft)	38	7	0
95th Queue (ft)	57	29	7
Link Distance (ft)	556	796	207
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 16: SW Herman Road & SW 108th Ave

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (ft)	27	165	262	137	47
Average Queue (ft)	1	71	120	57	10
95th Queue (ft)	12	129	215	107	27
Link Distance (ft)		933	994		796
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	100			135	
Storage Blk Time (%)		2		0	
Queuing Penalty (veh)		0		0	

Intersection: 17: SW Teton Avenue & SW Tualatin Road

Movement	EB	WB	WB	NB	NB
Directions Served	TR	L	T	L	R
Maximum Queue (ft)	10	44	6	190	172
Average Queue (ft)	0	14	0	84	36
95th Queue (ft)	5	42	4	159	105
Link Distance (ft)	169		1000		1711
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		25		100	
Storage Blk Time (%)		2		13	0
Queuing Penalty (veh)		16		4	0

Intersection: 18: SW 115th Avenue & SW Hazelbrook Road

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	19	116
Average Queue (ft)	1	61
95th Queue (ft)	12	98
Link Distance (ft)	1163	1330
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 19: OR 99W (Pacific Highway) & SW Hazelbrook Road

Movement	WB	SB
Directions Served	R	T
Maximum Queue (ft)	484	284
Average Queue (ft)	167	10
95th Queue (ft)	428	208
Link Distance (ft)	1290	1944
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 20: SW Teton Avenue & SW Herman Road

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	14	502	149	271	159	307	65	206
Average Queue (ft)	1	191	35	120	85	92	6	73
95th Queue (ft)	8	394	95	222	157	228	30	158
Link Distance (ft)		994		1022		604		1711
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100		100		60		50	
Storage Blk Time (%)		20	1	9	17	7	1	15
Queuing Penalty (veh)		0	2	4	32	18	1	2

Intersection: 21: OR 99W (Pacific Highway) & SW Fischer Road

Movement	EB	EB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	R	L	T	T	U	T	T	R
Maximum Queue (ft)	395	590	460	1226	1204	354	1066	1076	400
Average Queue (ft)	202	256	417	607	556	54	494	499	155
95th Queue (ft)	365	492	521	1348	1308	190	1039	1062	428
Link Distance (ft)		1160		1944	1944		2374	2374	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	275		435			300			200
Storage Blk Time (%)	7	15	37	1			21	28	0
Queuing Penalty (veh)	19	23	290	2			6	77	1

Intersection: 22: OR 99W (Pacific Highway) & SW 116th Avenue/SW Durham Road

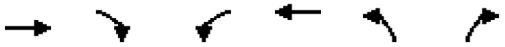
Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	TR	L	LT	R	L	T	T	R	L	L	T
Maximum Queue (ft)	228	292	375	670	458	674	997	1039	315	322	445	492
Average Queue (ft)	69	135	296	376	210	260	635	654	224	212	250	301
95th Queue (ft)	172	240	419	580	387	630	985	1004	429	316	372	443
Link Distance (ft)		503		959	959		2374	2374				1364
Upstream Blk Time (%)												
Queuing Penalty (veh)												
Storage Bay Dist (ft)	275		300			550			140	265	265	
Storage Blk Time (%)	0	1	6	25		0	17	47	0	2	8	12
Queuing Penalty (veh)	0	1	19	61		0	24	106	1	9	41	52

Intersection: 22: OR 99W (Pacific Highway) & SW 116th Avenue/SW Durham Road

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	435	22
Average Queue (ft)	292	4
95th Queue (ft)	425	17
Link Distance (ft)	1364	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		400
Storage Blk Time (%)	1	
Queuing Penalty (veh)	0	

Network Summary

Network wide Queuing Penalty: 1105



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1298	698	1067	902	162	328
v/c Ratio	0.94	0.76	1.04	0.36	0.31	0.28
Control Delay (s/veh)	42.8	15.5	75.6	5.9	37.1	18.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	42.8	15.5	75.6	5.9	37.1	18.0
Queue Length 50th (ft)	380	109	~339	68	46	66
Queue Length 95th (ft)	#756	#391	#670	223	74	130
Internal Link Dist (ft)	1687			1822	503	
Turn Bay Length (ft)		225	550		300	275
Base Capacity (vph)	1387	913	1023	2515	1164	1153
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.76	1.04	0.36	0.14	0.28

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

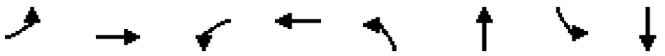
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	48	255	299	47	964	963
v/c Ratio	0.25	0.20	0.63	0.18	0.80	0.34
Control Delay (s/veh)	47.4	0.8	53.3	12.9	20.6	4.4
Queue Delay	0.0	0.0	0.0	0.0	0.1	0.3
Total Delay (s/veh)	47.4	0.8	53.3	12.9	20.8	4.7
Queue Length 50th (ft)	35	0	117	0	313	65
Queue Length 95th (ft)	58	17	145	30	#900	197
Internal Link Dist (ft)	1180		1024			503
Turn Bay Length (ft)	25	300		150	200	
Base Capacity (vph)	425	1449	1051	511	1211	2836
Starvation Cap Reductn	0	0	0	0	15	1088
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.18	0.28	0.09	0.81	0.55

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



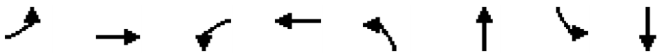
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	8	145	24	60	20	377	327	670
v/c Ratio	0.03	0.38	0.12	0.14	0.04	0.47	0.53	0.39
Control Delay (s/veh)	36.6	26.2	35.7	10.4	10.4	23.6	14.1	14.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	36.6	26.2	35.7	10.4	10.4	23.6	14.1	14.8
Queue Length 50th (ft)	2	36	6	4	2	43	37	40
Queue Length 95th (ft)	21	122	41	36	19	157	203	237
Internal Link Dist (ft)		981		1223		1392		1024
Turn Bay Length (ft)	100		150		150		150	
Base Capacity (vph)	472	1213	264	938	784	2052	913	2537
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.12	0.09	0.06	0.03	0.18	0.36	0.26

Intersection Summary



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	21	424	592	65	7
v/c Ratio	0.03	0.34	0.49	0.17	0.02
Control Delay (s/veh)	2.6	5.0	7.9	18.4	12.3
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	2.6	5.0	7.9	18.4	12.3
Queue Length 50th (ft)	1	48	65	13	0
Queue Length 95th (ft)	8	106	259	54	10
Internal Link Dist (ft)		877	1007	781	
Turn Bay Length (ft)	100			135	
Base Capacity (vph)	815	1624	1604	1275	1243
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.26	0.37	0.05	0.01

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	12	463	26	299	313	203	17	238
v/c Ratio	0.03	0.76	0.09	0.39	0.70	0.32	0.05	0.60
Control Delay (s/veh)	15.1	33.8	15.5	20.9	31.4	26.7	21.5	44.7
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	15.1	33.8	15.5	20.9	31.4	26.7	21.5	44.7
Queue Length 50th (ft)	4	250	9	121	144	88	6	146
Queue Length 95th (ft)	15	431	26	243	#271	200	23	266
Internal Link Dist (ft)		1007		989		572		1708
Turn Bay Length (ft)	100		100		60		50	
Base Capacity (vph)	534	939	460	1114	505	1038	606	1185
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.49	0.06	0.27	0.62	0.20	0.03	0.20

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Group Flow (vph)	241	373	141	1638	20	1529	107
v/c Ratio	0.83	0.89	0.75	0.68	0.23	0.71	0.11
Control Delay (s/veh)	79.3	50.6	83.6	13.9	78.6	23.0	3.2
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	79.3	50.6	83.6	13.9	78.6	23.0	3.2
Queue Length 50th (ft)	210	167	126	455	16	676	7
Queue Length 95th (ft)	#325	#338	#229	576	m26	779	m15
Internal Link Dist (ft)	1134			1909		2372	
Turn Bay Length (ft)	275		435		300		200
Base Capacity (vph)	322	442	189	2399	202	2154	947
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.84	0.75	0.68	0.10	0.71	0.11

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	87	165	164	167	77	1251	527	407	1223	15
v/c Ratio	0.28	0.80	0.78	0.49	0.65	0.82	0.54	0.75	0.65	0.02
Control Delay (s/veh)	42.7	85.6	84.1	12.7	76.8	33.5	5.6	65.3	23.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	42.7	85.6	84.1	12.7	76.8	33.5	5.6	65.3	23.9	0.0
Queue Length 50th (ft)	26	152	151	0	64	548	28	184	413	0
Queue Length 95th (ft)	55	#255	#250	68	m98	645	37	243	494	0
Internal Link Dist (ft)	481		939			2372			1326	
Turn Bay Length (ft)		300		315	550		140	265		400
Base Capacity (vph)	337	228	231	356	134	1533	992	545	1889	913
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.72	0.71	0.47	0.57	0.82	0.53	0.75	0.65	0.02

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Intersection: 1: SW 124th Avenue & OR 99W (Pacific Highway)

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	T	T	R	L	L	T	T	L	L	R	R
Maximum Queue (ft)	1388	1417	410	1824	1829	1887	1868	158	161	228	192
Average Queue (ft)	683	710	354	1578	1541	1375	980	64	74	75	77
95th Queue (ft)	1364	1425	502	2167	2326	2582	2221	129	136	164	160
Link Distance (ft)	1714	1714		1829	1829	1829	1829	496	496		
Upstream Blk Time (%)	2	4		2	15	37	4				
Queuing Penalty (veh)	0	0		8	66	168	18				
Storage Bay Dist (ft)			225							275	275
Storage Blk Time (%)		39	23							0	0
Queuing Penalty (veh)		256	140							0	0

Intersection: 2: SW 124th Avenue & SW Tualatin Road

Movement	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	T	T	R	L	T	T
Maximum Queue (ft)	123	171	198	331	184	395	432	168
Average Queue (ft)	38	48	79	160	34	220	97	49
95th Queue (ft)	92	122	157	277	105	410	334	121
Link Distance (ft)		1173	1027	1027			496	496
Upstream Blk Time (%)							1	
Queuing Penalty (veh)							5	
Storage Bay Dist (ft)	25				150	200		
Storage Blk Time (%)	38	11		12		13	1	
Queuing Penalty (veh)	83	5		5		56	6	

Intersection: 3: JAE Access/SW 115th Avenue & SW Tualatin Road

Movement	EB	EB	WB	NB	NB	SB
Directions Served	L	TR	L	L	TR	LTR
Maximum Queue (ft)	84	30	49	14	56	116
Average Queue (ft)	20	1	5	1	8	44
95th Queue (ft)	58	13	26	12	36	89
Link Distance (ft)		1193		552	552	1330
Upstream Blk Time (%)						
Queuing Penalty (veh)						
Storage Bay Dist (ft)	25		25			
Storage Blk Time (%)	2	0	1			
Queuing Penalty (veh)	19	0	3			

Intersection: 4: SW Tualatin Road & SW 112th Avenue

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	7	66
Average Queue (ft)	0	23
95th Queue (ft)	5	55
Link Distance (ft)		540
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	25	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 5: SW 108th Ave & SW Tualatin Road

Movement	EB	WB	NB
Directions Served	TR	L	LR
Maximum Queue (ft)	23	53	75
Average Queue (ft)	1	21	23
95th Queue (ft)	14	51	57
Link Distance (ft)	1064		285
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)		25	
Storage Blk Time (%)		6	
Queuing Penalty (veh)		22	

Intersection: 6: SW 108th Ave & North Access

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	34	25
Average Queue (ft)	2	1
95th Queue (ft)	16	14
Link Distance (ft)	593	406
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: SW 108th Ave & Center Access

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	41	53
Average Queue (ft)	12	10
95th Queue (ft)	40	38
Link Distance (ft)	421	252
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: SW 108th Ave & South Access

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	50	46
Average Queue (ft)	14	8
95th Queue (ft)	43	33
Link Distance (ft)	415	207
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9: SW 124th Avenue & SW Leveton Drive

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	105	200	90	114	42	140	206	156	146	170
Average Queue (ft)	8	96	21	33	8	43	93	72	40	65
95th Queue (ft)	47	179	64	78	32	101	168	128	110	138
Link Distance (ft)		1016		1226		1440	1440		1027	1027
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	100		150		150			150		
Storage Blk Time (%)		13		0		0		0	0	
Queuing Penalty (veh)		1		0		0		1	0	

Intersection: 10: SW 118th Drive/JAE Access & SW Leveton Drive

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	147	79	41	20
Average Queue (ft)	71	35	19	2
95th Queue (ft)	111	61	40	15
Link Distance (ft)	1226	1030	498	610
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 11: SW Leveton Drive & West Access

Movement	EB	SB	SB
Directions Served	LT	L	R
Maximum Queue (ft)	80	39	62
Average Queue (ft)	19	8	14
95th Queue (ft)	58	31	46
Link Distance (ft)	1030	532	532
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 12: SW Leveton Drive & New Access

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 13: SW Leveton Drive & Center Access

Movement	EB	WB	SB	SB
Directions Served	LT	TR	L	R
Maximum Queue (ft)	49	7	34	35
Average Queue (ft)	4	0	9	12
95th Queue (ft)	24	5	32	39
Link Distance (ft)	413	362	352	352
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 14: Calmax Technology Access/East Access & SW Leveton Drive

Movement	WB	NB
Directions Served	LTR	LTR
Maximum Queue (ft)	40	40
Average Queue (ft)	4	13
95th Queue (ft)	22	40
Link Distance (ft)	556	617
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 15: SW 108th Ave & SW Leveton Drive

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	144	58	5
Average Queue (ft)	60	12	0
95th Queue (ft)	100	42	4
Link Distance (ft)	556	796	207
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 16: SW Herman Road & SW 108th Ave

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (ft)	50	184	221	70	17
Average Queue (ft)	11	49	86	24	2
95th Queue (ft)	40	126	174	54	12
Link Distance (ft)		933	994		796
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	100			135	
Storage Blk Time (%)		1			
Queuing Penalty (veh)		0			

Intersection: 17: SW Teton Avenue & SW Tualatin Road

Movement	EB	WB	NB	NB
Directions Served	TR	L	L	R
Maximum Queue (ft)	45	81	114	106
Average Queue (ft)	3	27	50	42
95th Queue (ft)	22	64	99	83
Link Distance (ft)	169			1711
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		25	100	
Storage Blk Time (%)		9	1	0
Queuing Penalty (veh)		30	1	0

Intersection: 18: SW 115th Avenue & SW Hazelbrook Road

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	47	134
Average Queue (ft)	5	54
95th Queue (ft)	26	98
Link Distance (ft)	1163	1330
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 19: OR 99W (Pacific Highway) & SW Hazelbrook Road

Movement	WB	NB	NB	SB	SB
Directions Served	R	T	T	T	T
Maximum Queue (ft)	201	18	19	1982	1988
Average Queue (ft)	38	1	0	1064	1041
95th Queue (ft)	154	8	9	2571	2571
Link Distance (ft)	1290	1829	1829	1944	1944
Upstream Blk Time (%)				13	12
Queuing Penalty (veh)				118	110
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 20: SW Teton Avenue & SW Herman Road

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	35	380	72	258	159	381	70	209
Average Queue (ft)	5	183	16	119	108	111	11	93
95th Queue (ft)	22	327	48	215	173	275	48	176
Link Distance (ft)		994		1022		604		1711
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100		100		60		50	
Storage Blk Time (%)		19		11	23	8	1	21
Queuing Penalty (veh)		2		3	44	25	1	3

Intersection: 21: OR 99W (Pacific Highway) & SW Fischer Road

Movement	EB	EB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	R	L	T	T	U	T	T	R
Maximum Queue (ft)	460	1214	422	603	568	352	2400	2398	400
Average Queue (ft)	338	605	238	247	269	54	1065	1055	124
95th Queue (ft)	534	1282	440	517	523	249	2671	2671	408
Link Distance (ft)		1160		1944	1944		2374	2374	
Upstream Blk Time (%)		21					11	10	
Queuing Penalty (veh)		0					81	79	
Storage Bay Dist (ft)	275		435			300			200
Storage Blk Time (%)	15	46	5	0			44	45	
Queuing Penalty (veh)	53	105	40	0			8	46	

Intersection: 22: OR 99W (Pacific Highway) & SW 116th Avenue/SW Durham Road

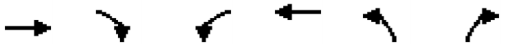
Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	TR	L	LT	R	L	T	T	R	L	L	T
Maximum Queue (ft)	113	146	365	718	498	382	641	693	315	315	465	1404
Average Queue (ft)	14	71	184	255	97	88	348	367	210	152	285	568
95th Queue (ft)	59	134	328	552	324	225	558	611	400	294	495	1323
Link Distance (ft)		503		959	959		2374	2374				1364
Upstream Blk Time (%)				2	1							19
Queuing Penalty (veh)				0	0							0
Storage Bay Dist (ft)	275		300			550			140	265	265	
Storage Blk Time (%)			8	14			1	26	6	1	3	33
Queuing Penalty (veh)			14	21			1	132	37	3	20	131

Intersection: 22: OR 99W (Pacific Highway) & SW 116th Avenue/SW Durham Road

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	1398	465
Average Queue (ft)	549	18
95th Queue (ft)	1311	160
Link Distance (ft)	1364	
Upstream Blk Time (%)	15	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		400
Storage Blk Time (%)	24	
Queuing Penalty (veh)	4	

Network Summary

Network wide Queuing Penalty: 1976



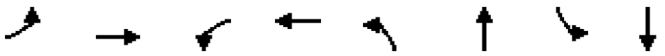
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	903	205	638	1187	778	783
v/c Ratio	0.66	0.29	0.83	0.53	0.82	0.56
Control Delay (s/veh)	33.8	5.6	52.6	12.5	46.3	22.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	33.8	5.6	52.6	12.5	46.3	22.0
Queue Length 50th (ft)	294	4	230	228	278	201
Queue Length 95th (ft)	416	58	314	337	349	338
Internal Link Dist (ft)	1687			1822	503	
Turn Bay Length (ft)		225	550		300	275
Base Capacity (vph)	1365	706	875	2256	1106	1487
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.66	0.29	0.73	0.53	0.70	0.53

Intersection Summary



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	41	680	960	52	447	434
v/c Ratio	0.16	0.70	0.79	0.10	0.59	0.16
Control Delay (s/veh)	38.3	18.5	36.4	13.0	25.9	4.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	38.3	18.5	36.4	13.0	25.9	4.1
Queue Length 50th (ft)	24	295	265	8	157	25
Queue Length 95th (ft)	53	442	443	40	371	84
Internal Link Dist (ft)	1180		1024			503
Turn Bay Length (ft)	25	300		150	200	
Base Capacity (vph)	549	1232	1355	604	761	2676
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.55	0.71	0.09	0.59	0.16

Intersection Summary



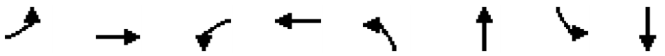
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	30	61	72	309	8	755	50	449
v/c Ratio	0.10	0.19	0.23	0.45	0.02	0.59	0.13	0.31
Control Delay (s/veh)	33.3	17.1	32.4	5.8	11.4	20.9	12.2	14.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	33.3	17.1	32.4	5.8	11.4	20.9	12.2	14.4
Queue Length 50th (ft)	10	11	24	1	1	123	8	44
Queue Length 95th (ft)	46	43	88	59	11	286	40	161
Internal Link Dist (ft)		981		1223		1392		1024
Turn Bay Length (ft)	100		150		150		150	
Base Capacity (vph)	566	1049	385	1054	624	2308	941	2364
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.05	0.06	0.19	0.29	0.01	0.33	0.05	0.19

Intersection Summary



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	2	376	670	253	41
v/c Ratio	0.00	0.39	0.76	0.45	0.08
Control Delay (s/veh)	5.0	9.3	18.8	23.1	8.6
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	5.0	9.3	18.8	23.1	8.6
Queue Length 50th (ft)	0	62	140	59	0
Queue Length 95th (ft)	3	156	460	224	26
Internal Link Dist (ft)		877	1007	781	
Turn Bay Length (ft)	100			135	
Base Capacity (vph)	582	1740	1603	1110	1008
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.00	0.22	0.42	0.23	0.04

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	3	702	59	431	306	226	16	179
v/c Ratio	0.01	0.86	0.27	0.44	0.79	0.40	0.06	0.68
Control Delay (s/veh)	13.0	39.3	16.1	19.3	44.8	34.0	25.2	58.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	13.0	39.3	16.1	19.3	44.8	34.0	25.2	58.3
Queue Length 50th (ft)	1	455	19	182	179	124	8	126
Queue Length 95th (ft)	5	#612	39	292	232	194	21	179
Internal Link Dist (ft)		1007		989		572		1708
Turn Bay Length (ft)	100		100		60		50	
Base Capacity (vph)	544	819	381	985	402	887	482	825
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.86	0.15	0.44	0.76	0.25	0.03	0.22

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Group Flow (vph)	170	329	335	1842	30	1573	305
v/c Ratio	0.86	0.79	0.90	0.67	0.31	0.77	0.31
Control Delay (s/veh)	97.5	25.4	80.5	9.8	66.5	30.7	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	97.5	25.4	80.5	9.8	66.5	30.7	7.0
Queue Length 50th (ft)	154	40	296	416	26	753	49
Queue Length 95th (ft)	#283	#177	#459	532	m36	840	m75
Internal Link Dist (ft)	1134			1909		2372	
Turn Bay Length (ft)	275		435		300		200
Base Capacity (vph)	202	420	391	2746	202	2035	975
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.78	0.86	0.67	0.15	0.77	0.31

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	203	308	311	378	151	1453	272	488	1159	22
v/c Ratio	0.57	0.92	0.92	0.64	0.90	1.06	0.28	0.90	0.74	0.03
Control Delay (s/veh)	46.4	87.6	87.0	11.5	95.5	84.5	5.1	78.9	34.9	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	46.4	87.6	87.0	11.5	95.5	84.5	5.1	78.9	34.9	0.0
Queue Length 50th (ft)	61	289	292	15	139	~764	53	226	453	0
Queue Length 95th (ft)	104	#491	#492	118	m#257	#911	m79	#318	542	0
Internal Link Dist (ft)	481		939			2372			1326	
Turn Bay Length (ft)		300		315	550		140	265		400
Base Capacity (vph)	393	338	342	594	171	1376	977	556	1571	767
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.91	0.91	0.64	0.88	1.06	0.28	0.88	0.74	0.03

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Intersection: 1: SW 124th Avenue & OR 99W (Pacific Highway)

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	T	T	R	L	L	T	T	L	L	R	R
Maximum Queue (ft)	455	404	262	854	734	427	457	478	506	410	333
Average Queue (ft)	279	261	74	493	327	201	205	302	315	219	172
95th Queue (ft)	407	382	159	848	623	394	404	438	463	413	275
Link Distance (ft)	1714	1714		1829	1829	1829	1829	496	496		
Upstream Blk Time (%)								0	0		
Queuing Penalty (veh)								0	3		
Storage Bay Dist (ft)			225							275	275
Storage Blk Time (%)		14							15	1	1
Queuing Penalty (veh)		27							112	3	3

Intersection: 2: SW 124th Avenue & SW Tualatin Road

Movement	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	T	T	R	L	T	T
Maximum Queue (ft)	124	582	469	653	335	396	320	229
Average Queue (ft)	39	287	249	387	85	248	51	60
95th Queue (ft)	104	491	414	603	283	426	194	163
Link Distance (ft)		1173	1027	1027			496	496
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	25				150	200		
Storage Blk Time (%)	24	40		46		21	1	
Queuing Penalty (veh)	155	15		23		43	3	

Intersection: 3: JAE Access/SW 115th Avenue & SW Tualatin Road

Movement	EB	EB	WB	NB	SB
Directions Served	L	TR	TR	TR	LTR
Maximum Queue (ft)	64	50	82	60	77
Average Queue (ft)	26	3	5	11	26
95th Queue (ft)	59	29	37	41	61
Link Distance (ft)		1193	800	552	1330
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	25				
Storage Blk Time (%)	8	0	0		
Queuing Penalty (veh)	36	0	0		

Intersection: 4: SW Tualatin Road & SW 112th Avenue

Movement	EB	WB	SB
Directions Served	L	TR	LR
Maximum Queue (ft)	35	12	73
Average Queue (ft)	7	0	19
95th Queue (ft)	30	7	56
Link Distance (ft)		1064	540
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	25		
Storage Blk Time (%)	1		
Queuing Penalty (veh)	6		

Intersection: 5: SW 108th Ave & SW Tualatin Road

Movement	WB	NB
Directions Served	L	LR
Maximum Queue (ft)	33	112
Average Queue (ft)	2	47
95th Queue (ft)	15	91
Link Distance (ft)		285
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	25	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	1	

Intersection: 6: SW 108th Ave & North Access

Movement	EB
Directions Served	LR
Maximum Queue (ft)	35
Average Queue (ft)	2
95th Queue (ft)	15
Link Distance (ft)	593
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 7: SW 108th Ave & Center Access

Movement	EB
Directions Served	LR
Maximum Queue (ft)	97
Average Queue (ft)	47
95th Queue (ft)	78
Link Distance (ft)	421
Upstream Blk Time (%)	
Queuing Penalty (veh)	
Storage Bay Dist (ft)	
Storage Blk Time (%)	
Queuing Penalty (veh)	

Intersection: 8: SW 108th Ave & South Access

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	68	12
Average Queue (ft)	35	1
95th Queue (ft)	56	8
Link Distance (ft)	415	207
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9: SW 124th Avenue & SW Leveton Drive

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	76	149	105	164	58	224	285	82	160	187
Average Queue (ft)	24	48	45	79	7	79	124	29	47	66
95th Queue (ft)	57	111	87	131	33	159	228	63	115	143
Link Distance (ft)		1016		1226		1440	1440		1027	1027
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	100		150		150			150		
Storage Blk Time (%)		4		0		1			0	
Queuing Penalty (veh)		1		0		0			0	

Intersection: 10: SW 118th Drive/JAE Access & SW Leveton Drive

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	76	121	64	43
Average Queue (ft)	39	64	24	12
95th Queue (ft)	65	99	47	39
Link Distance (ft)	1226	1030	498	610
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 11: SW Leveton Drive & West Access

Movement	EB	WB	SB	SB
Directions Served	LT	TR	L	R
Maximum Queue (ft)	40	6	77	95
Average Queue (ft)	6	0	35	50
95th Queue (ft)	28	5	65	81
Link Distance (ft)	1030	408	531	531
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 12: SW Leveton Drive & New Access

Movement
Directions Served
Maximum Queue (ft)
Average Queue (ft)
95th Queue (ft)
Link Distance (ft)
Upstream Blk Time (%)
Queuing Penalty (veh)
Storage Bay Dist (ft)
Storage Blk Time (%)
Queuing Penalty (veh)

Intersection: 13: SW Leveton Drive & Center Access

Movement	EB	SB	SB
Directions Served	LT	L	R
Maximum Queue (ft)	26	57	56
Average Queue (ft)	2	27	25
95th Queue (ft)	17	54	54
Link Distance (ft)	403	352	352
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 14: Calmax Technology Access/East Access & SW Leveton Drive

Movement	WB	NB
Directions Served	LTR	LTR
Maximum Queue (ft)	25	98
Average Queue (ft)	1	35
95th Queue (ft)	11	79
Link Distance (ft)	556	617
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 15: SW 108th Ave & SW Leveton Drive

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	96	55	12
Average Queue (ft)	48	10	0
95th Queue (ft)	80	39	6
Link Distance (ft)	556	796	207
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 16: SW Herman Road & SW 108th Ave

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (ft)	27	158	330	156	39
Average Queue (ft)	1	78	145	78	10
95th Queue (ft)	12	135	265	132	27
Link Distance (ft)		933	994		796
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	100			135	
Storage Blk Time (%)		2		1	
Queuing Penalty (veh)		0		0	

Intersection: 17: SW Teton Avenue & SW Tualatin Road

Movement	EB	WB	NB	NB
Directions Served	TR	L	L	R
Maximum Queue (ft)	10	61	186	114
Average Queue (ft)	0	15	91	30
95th Queue (ft)	4	47	163	89
Link Distance (ft)	169			1711
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		25	100	
Storage Blk Time (%)		3	15	0
Queuing Penalty (veh)		21	5	0

Intersection: 18: SW 115th Avenue & SW Hazelbrook Road

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	14	242
Average Queue (ft)	1	66
95th Queue (ft)	7	170
Link Distance (ft)	1163	1330
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 19: OR 99W (Pacific Highway) & SW Hazelbrook Road

Movement	WB	NB	SB	SB
Directions Served	R	T	T	T
Maximum Queue (ft)	913	10	170	164
Average Queue (ft)	519	0	12	12
95th Queue (ft)	1066	7	178	172
Link Distance (ft)	1290	1829	1944	1944
Upstream Blk Time (%)	2			
Queuing Penalty (veh)	5			
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 20: SW Teton Avenue & SW Herman Road

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	14	675	135	366	159	524	77	237
Average Queue (ft)	1	285	37	140	106	123	11	83
95th Queue (ft)	6	602	97	266	178	329	45	171
Link Distance (ft)		994		1022		604		1711
Upstream Blk Time (%)		0				0		
Queuing Penalty (veh)		0				0		
Storage Bay Dist (ft)	100		100		60		50	
Storage Blk Time (%)		29	1	12	25	11	1	21
Queuing Penalty (veh)		1	4	6	48	29	1	3

Intersection: 21: OR 99W (Pacific Highway) & SW Fischer Road

Movement	EB	EB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	R	L	T	T	U	T	T	R
Maximum Queue (ft)	460	742	460	1488	1495	363	1334	1338	400
Average Queue (ft)	249	317	436	868	827	73	619	621	177
95th Queue (ft)	442	620	523	1535	1538	225	1264	1280	462
Link Distance (ft)		1160		1944	1944		2374	2374	
Upstream Blk Time (%)									
Queuing Penalty (veh)									
Storage Bay Dist (ft)	275		435			300			200
Storage Blk Time (%)	14	19	42	7			26	31	
Queuing Penalty (veh)	43	31	360	21			7	86	

Intersection: 22: OR 99W (Pacific Highway) & SW 116th Avenue/SW Durham Road

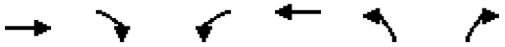
Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	TR	L	LT	R	L	T	T	R	L	L	T
Maximum Queue (ft)	219	281	375	804	753	675	2382	2393	315	351	464	569
Average Queue (ft)	78	148	323	535	401	348	1483	1509	249	229	276	323
95th Queue (ft)	179	240	435	972	921	771	2681	2702	433	332	406	487
Link Distance (ft)		503		959	959		2374	2374				1364
Upstream Blk Time (%)				10	9		1	1				
Queuing Penalty (veh)				0	0		7	13				
Storage Bay Dist (ft)	275		300			550			140	265	265	
Storage Blk Time (%)	0	0	19	40			41	54	1	3	11	15
Queuing Penalty (veh)	0	0	63	101			58	139	4	14	60	67

Intersection: 22: OR 99W (Pacific Highway) & SW 116th Avenue/SW Durham Road

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	482	113
Average Queue (ft)	313	8
95th Queue (ft)	449	74
Link Distance (ft)	1364	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		400
Storage Blk Time (%)	2	
Queuing Penalty (veh)	0	

Network Summary

Network wide Queuing Penalty: 1630



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	1298	756	1120	902	171	335
v/c Ratio	0.94	0.81	1.10	0.36	0.32	0.29
Control Delay (s/veh)	43.2	17.3	93.2	6.0	37.3	18.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	43.2	17.3	93.2	6.0	37.3	18.1
Queue Length 50th (ft)	382	128	~391	70	50	68
Queue Length 95th (ft)	#759	#491	#717	225	77	132
Internal Link Dist (ft)	1687			1822	503	
Turn Bay Length (ft)		225	550		300	275
Base Capacity (vph)	1385	934	1021	2510	1163	1155
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.94	0.81	1.10	0.36	0.15	0.29

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

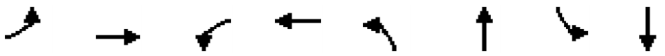
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	48	257	315	47	989	1060
v/c Ratio	0.23	0.20	0.61	0.17	0.86	0.39
Control Delay (s/veh)	40.7	0.8	45.0	12.3	24.6	4.9
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.2
Total Delay (s/veh)	40.7	0.8	45.0	12.3	24.6	5.1
Queue Length 50th (ft)	28	0	97	0	313	70
Queue Length 95th (ft)	58	17	152	30	#929	223
Internal Link Dist (ft)	1180		1024			503
Turn Bay Length (ft)	25	300		150	200	
Base Capacity (vph)	504	1455	1246	597	1150	2751
Starvation Cap Reductn	0	0	0	0	0	873
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.10	0.18	0.25	0.08	0.86	0.56

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



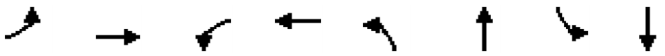
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	8	145	28	76	20	401	423	670
v/c Ratio	0.04	0.39	0.14	0.18	0.04	0.50	0.66	0.37
Control Delay (s/veh)	38.4	28.0	37.2	9.8	10.3	24.2	16.8	14.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	38.4	28.0	37.2	9.8	10.3	24.2	16.8	14.4
Queue Length 50th (ft)	2	40	8	4	2	50	52	41
Queue Length 95th (ft)	21	124	47	39	19	163	272	237
Internal Link Dist (ft)		981		1223		1392		1024
Turn Bay Length (ft)	100		150		150		150	
Base Capacity (vph)	448	1151	251	899	773	1937	892	2423
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.13	0.11	0.08	0.03	0.21	0.47	0.28

Intersection Summary



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	21	424	651	76	7
v/c Ratio	0.04	0.37	0.60	0.21	0.02
Control Delay (s/veh)	3.6	5.5	11.3	22.8	14.7
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	3.6	5.5	11.3	22.8	14.7
Queue Length 50th (ft)	1	50	79	15	0
Queue Length 95th (ft)	8	113	310	67	10
Internal Link Dist (ft)		877	1007	781	
Turn Bay Length (ft)	100			135	
Base Capacity (vph)	701	1624	1559	1096	1069
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.03	0.26	0.42	0.07	0.01

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	12	474	26	310	359	203	17	238
v/c Ratio	0.03	0.75	0.09	0.39	0.81	0.33	0.05	0.62
Control Delay (s/veh)	15.0	33.7	15.5	21.1	39.7	27.4	21.9	46.8
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	15.0	33.7	15.5	21.1	39.7	27.4	21.9	46.8
Queue Length 50th (ft)	4	265	9	129	179	92	7	153
Queue Length 95th (ft)	15	446	26	254	#385	200	23	266
Internal Link Dist (ft)		1007		989		572		1708
Turn Bay Length (ft)	100		100		60		50	
Base Capacity (vph)	529	882	447	1052	483	976	590	1114
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.02	0.54	0.06	0.29	0.74	0.21	0.03	0.21

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Group Flow (vph)	241	376	142	1646	20	1578	107
v/c Ratio	0.83	0.90	0.75	0.69	0.23	0.73	0.11
Control Delay (s/veh)	78.9	52.9	84.1	14.0	79.1	23.7	3.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	78.9	52.9	84.1	14.0	79.1	23.7	3.3
Queue Length 50th (ft)	210	173	127	464	16	714	7
Queue Length 95th (ft)	#325	#348	#231	583	m25	817	m15
Internal Link Dist (ft)	1134			1909		2372	
Turn Bay Length (ft)	275		435		300		200
Base Capacity (vph)	322	440	189	2397	202	2152	945
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.75	0.85	0.75	0.69	0.10	0.73	0.11

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	87	170	168	167	77	1258	529	407	1262	15
v/c Ratio	0.28	0.82	0.80	0.49	0.65	0.82	0.54	0.75	0.67	0.02
Control Delay (s/veh)	42.7	87.8	85.4	12.7	77.0	33.8	5.6	65.3	24.6	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	42.7	87.8	85.4	12.7	77.0	33.8	5.6	65.3	24.6	0.0
Queue Length 50th (ft)	26	157	155	0	64	552	28	184	434	0
Queue Length 95th (ft)	55	#267	#258	68	m98	650	37	243	517	0
Internal Link Dist (ft)	481		939			2372			1326	
Turn Bay Length (ft)		300		315	550		140	265		400
Base Capacity (vph)	337	228	231	356	134	1530	992	545	1887	912
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.26	0.75	0.73	0.47	0.57	0.82	0.53	0.75	0.67	0.02

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Intersection: 1: SW 124th Avenue & OR 99W (Pacific Highway)

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	T	T	R	L	L	T	T	L	L	R	R
Maximum Queue (ft)	1750	1772	410	1823	1829	1889	1864	136	141	181	192
Average Queue (ft)	1133	1199	399	1650	1649	1497	1187	57	67	74	77
95th Queue (ft)	2004	2058	469	2103	2188	2563	2394	113	122	154	154
Link Distance (ft)	1714	1714		1829	1829	1829	1829	496	496		
Upstream Blk Time (%)	6	15		4	13	40	11				
Queuing Penalty (veh)	0	0		17	60	188	51				
Storage Bay Dist (ft)			225							275	275
Storage Blk Time (%)		45	34								
Queuing Penalty (veh)		316	209								

Intersection: 2: SW 124th Avenue & SW Tualatin Road

Movement	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	T	T	R	L	T	T
Maximum Queue (ft)	115	164	160	267	118	399	486	172
Average Queue (ft)	41	52	56	123	31	210	80	45
95th Queue (ft)	95	122	115	230	77	386	283	120
Link Distance (ft)		1173	1027	1027			496	496
Upstream Blk Time (%)							0	
Queuing Penalty (veh)							1	
Storage Bay Dist (ft)	25				150	200		
Storage Blk Time (%)	32	15		8	0	10	1	
Queuing Penalty (veh)	72	6		3	0	50	8	

Intersection: 3: JAE Access/SW 115th Avenue & SW Tualatin Road

Movement	EB	EB	WB	WB	NB	NB	SB
Directions Served	L	TR	L	TR	L	TR	LTR
Maximum Queue (ft)	82	37	34	10	22	59	95
Average Queue (ft)	19	2	2	1	2	8	45
95th Queue (ft)	56	29	19	7	16	37	83
Link Distance (ft)		1193		800	552	552	1330
Upstream Blk Time (%)							
Queuing Penalty (veh)							
Storage Bay Dist (ft)	25		25				
Storage Blk Time (%)	2	0	0	0			
Queuing Penalty (veh)	20	0	1	0			

Intersection: 4: SW Tualatin Road & SW 112th Avenue

Movement	EB	SB
Directions Served	L	LR
Maximum Queue (ft)	7	72
Average Queue (ft)	0	25
95th Queue (ft)	5	59
Link Distance (ft)		540
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)	25	
Storage Blk Time (%)	0	
Queuing Penalty (veh)	0	

Intersection: 5: SW 108th Ave & SW Tualatin Road

Movement	EB	WB	WB	NB
Directions Served	TR	L	T	LR
Maximum Queue (ft)	5	84	20	78
Average Queue (ft)	0	29	1	25
95th Queue (ft)	4	61	14	62
Link Distance (ft)	1064		727	285
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		25		
Storage Blk Time (%)		8		
Queuing Penalty (veh)		31		

Intersection: 6: SW 108th Ave & North Access

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	63	49
Average Queue (ft)	10	2
95th Queue (ft)	43	20
Link Distance (ft)	593	406
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: SW 108th Ave & Center Access

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	46	62
Average Queue (ft)	21	14
95th Queue (ft)	51	46
Link Distance (ft)	421	252
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: SW 108th Ave & South Access

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	65	63
Average Queue (ft)	22	10
95th Queue (ft)	53	42
Link Distance (ft)	415	207
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9: SW 124th Avenue & SW Leveton Drive

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	102	225	111	145	65	126	226	183	179	159
Average Queue (ft)	9	106	29	37	11	45	109	88	40	57
95th Queue (ft)	49	199	82	95	39	100	199	155	117	121
Link Distance (ft)		1016		1226		1440	1440		1027	1027
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	100		150		150			150		
Storage Blk Time (%)		15	0	0		0		1	0	
Queuing Penalty (veh)		1	0	0		0		3	0	

Intersection: 10: SW 118th Drive/JAE Access & SW Leveton Drive

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	194	100	59	27
Average Queue (ft)	87	43	24	3
95th Queue (ft)	151	79	48	19
Link Distance (ft)	1226	1030	498	610
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 11: SW Leveton Drive & West Access

Movement	EB	SB	SB
Directions Served	LT	L	R
Maximum Queue (ft)	94	34	83
Average Queue (ft)	27	8	22
95th Queue (ft)	69	30	61
Link Distance (ft)	1030	532	532
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 12: SW Leveton Drive & New Access

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	34	39
Average Queue (ft)	3	10
95th Queue (ft)	18	36
Link Distance (ft)	399	328
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 13: SW Leveton Drive & Center Access

Movement	EB	SB	SB
Directions Served	LT	L	R
Maximum Queue (ft)	40	45	39
Average Queue (ft)	8	10	15
95th Queue (ft)	34	37	43
Link Distance (ft)	413	352	352
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 14: Calmax Technology Access/East Access & SW Leveton Drive

Movement	EB	WB	NB
Directions Served	LTR	LTR	LTR
Maximum Queue (ft)	7	42	45
Average Queue (ft)	0	5	13
95th Queue (ft)	5	27	41
Link Distance (ft)	362	556	617
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 15: SW 108th Ave & SW Leveton Drive

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	154	94	5
Average Queue (ft)	73	18	0
95th Queue (ft)	128	60	4
Link Distance (ft)	556	796	207
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 16: SW Herman Road & SW 108th Ave

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (ft)	59	226	216	102	17
Average Queue (ft)	11	61	97	30	3
95th Queue (ft)	40	150	189	70	12
Link Distance (ft)		933	994		796
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	100			135	
Storage Blk Time (%)	0	2		0	
Queuing Penalty (veh)	0	0		0	

Intersection: 17: SW Teton Avenue & SW Tualatin Road

Movement	EB	WB	WB	NB	NB
Directions Served	TR	L	T	L	R
Maximum Queue (ft)	12	83	48	142	93
Average Queue (ft)	0	34	2	60	38
95th Queue (ft)	9	69	26	114	75
Link Distance (ft)	169		1000		1711
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)		25		100	
Storage Blk Time (%)		11		2	0
Queuing Penalty (veh)		39		1	0

Intersection: 18: SW 115th Avenue & SW Hazelbrook Road

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	60	136
Average Queue (ft)	6	56
95th Queue (ft)	33	99
Link Distance (ft)	1163	1330
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 19: OR 99W (Pacific Highway) & SW Hazelbrook Road

Movement	WB	NB	NB	SB	SB
Directions Served	R	T	T	T	T
Maximum Queue (ft)	224	23	26	1973	1977
Average Queue (ft)	45	1	1	1229	1219
95th Queue (ft)	166	14	14	2701	2703
Link Distance (ft)	1290	1829	1829	1944	1944
Upstream Blk Time (%)				16	15
Queuing Penalty (veh)				149	141
Storage Bay Dist (ft)					
Storage Blk Time (%)					
Queuing Penalty (veh)					

Intersection: 20: SW Teton Avenue & SW Herman Road

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	78	514	133	290	159	410	85	202
Average Queue (ft)	10	214	16	133	120	135	13	99
95th Queue (ft)	54	400	63	235	178	305	51	182
Link Distance (ft)		994		1022		604		1711
Upstream Blk Time (%)								
Queuing Penalty (veh)								
Storage Bay Dist (ft)	100		100		60		50	
Storage Blk Time (%)		23		14	29	9	0	23
Queuing Penalty (veh)		3		3	56	30	1	4

Intersection: 21: OR 99W (Pacific Highway) & SW Fischer Road

Movement	EB	EB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	R	L	T	T	U	T	T	R
Maximum Queue (ft)	460	1127	417	684	704	348	2405	2411	400
Average Queue (ft)	328	585	249	347	365	69	1289	1285	144
95th Queue (ft)	531	1231	464	889	889	285	2970	2972	445
Link Distance (ft)		1160		1944	1944		2374	2374	
Upstream Blk Time (%)		19					15	16	
Queuing Penalty (veh)		0					115	124	
Storage Bay Dist (ft)	275		435			300			200
Storage Blk Time (%)	14	48	13	2			52	53	
Queuing Penalty (veh)	49	111	101	3			10	54	

Intersection: 22: OR 99W (Pacific Highway) & SW 116th Avenue/SW Durham Road

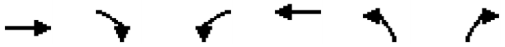
Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	TR	L	LT	R	L	T	T	R	L	L	T
Maximum Queue (ft)	142	174	375	899	688	261	618	697	315	294	465	1411
Average Queue (ft)	18	77	229	374	169	75	345	375	215	156	322	721
95th Queue (ft)	70	142	396	846	611	183	578	649	394	298	545	1552
Link Distance (ft)		503		959	959		2374	2374				1364
Upstream Blk Time (%)				9	5							29
Queuing Penalty (veh)				0	0							0
Storage Bay Dist (ft)	275		300			550			140	265	265	
Storage Blk Time (%)	0	0	24	29			1	25	8	2	5	43
Queuing Penalty (veh)	0	0	43	45			1	131	46	15	31	170

Intersection: 22: OR 99W (Pacific Highway) & SW 116th Avenue/SW Durham Road

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	1402	464
Average Queue (ft)	695	28
95th Queue (ft)	1541	205
Link Distance (ft)	1364	
Upstream Blk Time (%)	22	
Queuing Penalty (veh)	0	
Storage Bay Dist (ft)		400
Storage Blk Time (%)	36	
Queuing Penalty (veh)	5	

Network Summary

Network wide Queuing Penalty: 2521



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Group Flow (vph)	903	212	645	1187	833	823
v/c Ratio	0.68	0.30	0.83	0.53	0.85	0.57
Control Delay (s/veh)	35.2	5.8	52.9	13.0	48.0	22.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	35.2	5.8	52.9	13.0	48.0	22.0
Queue Length 50th (ft)	312	4	236	244	304	208
Queue Length 95th (ft)	416	60	318	337	379	361
Internal Link Dist (ft)	1687			1822	503	
Turn Bay Length (ft)		225	550		300	275
Base Capacity (vph)	1330	697	864	2227	1092	1503
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.68	0.30	0.75	0.53	0.76	0.55

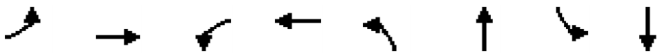
Intersection Summary



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Group Flow (vph)	41	690	1049	52	450	446
v/c Ratio	0.16	0.73	0.81	0.09	0.63	0.17
Control Delay (s/veh)	38.1	20.8	36.6	13.8	28.2	4.3
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	38.1	20.8	36.6	13.8	28.2	4.3
Queue Length 50th (ft)	24	316	294	9	168	26
Queue Length 95th (ft)	53	457	#530	41	383	86
Internal Link Dist (ft)	1180		1024			503
Turn Bay Length (ft)	25	300		150	200	
Base Capacity (vph)	547	1194	1351	600	719	2668
Starvation Cap Reductn	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.07	0.58	0.78	0.09	0.63	0.17

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



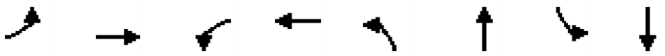
Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	30	61	95	400	8	759	62	449
v/c Ratio	0.11	0.19	0.30	0.55	0.02	0.63	0.16	0.30
Control Delay (s/veh)	33.6	17.3	33.9	6.2	11.6	23.0	12.4	14.1
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	33.6	17.3	33.9	6.2	11.6	23.0	12.4	14.1
Queue Length 50th (ft)	10	11	32	1	1	128	11	46
Queue Length 95th (ft)	46	44	111	66	11	290	47	161
Internal Link Dist (ft)		981		1223		1392		1024
Turn Bay Length (ft)	100		150		150		150	
Base Capacity (vph)	533	984	363	1049	615	2158	897	2208
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.06	0.06	0.26	0.38	0.01	0.35	0.07	0.20

Intersection Summary



Lane Group	EBL	EBT	WBT	SBL	SBR
Lane Group Flow (vph)	2	376	680	323	41
v/c Ratio	0.01	0.39	0.77	0.55	0.07
Control Delay (s/veh)	6.0	10.2	20.4	25.8	8.5
Queue Delay	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	6.0	10.2	20.4	25.8	8.5
Queue Length 50th (ft)	0	73	170	90	0
Queue Length 95th (ft)	3	166	493	295	26
Internal Link Dist (ft)		877	1007	781	
Turn Bay Length (ft)	100			135	
Base Capacity (vph)	533	1729	1566	998	911
Starvation Cap Reductn	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0
Reduced v/c Ratio	0.00	0.22	0.43	0.32	0.05

Intersection Summary



Lane Group	EBL	EBT	WBL	WBT	NBL	NBT	SBL	SBT
Lane Group Flow (vph)	3	779	59	435	314	226	16	179
v/c Ratio	0.01	0.95	0.36	0.44	0.81	0.40	0.06	0.68
Control Delay (s/veh)	13.0	52.2	18.9	19.4	46.3	33.9	25.2	58.4
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	13.0	52.2	18.9	19.4	46.3	33.9	25.2	58.4
Queue Length 50th (ft)	1	553	19	184	185	124	8	126
Queue Length 95th (ft)	5	#756	39	295	239	194	21	179
Internal Link Dist (ft)		1007		989		572		1708
Turn Bay Length (ft)	100		100		60		50	
Base Capacity (vph)	540	816	342	983	403	886	482	824
Starvation Cap Reductn	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.01	0.95	0.17	0.44	0.78	0.26	0.03	0.22

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.



Lane Group	EBL	EBR	NBL	NBT	SBU	SBT	SBR
Lane Group Flow (vph)	170	329	338	1893	30	1579	305
v/c Ratio	0.86	0.79	0.90	0.69	0.31	0.78	0.31
Control Delay (s/veh)	97.5	25.4	81.0	10.2	66.6	30.9	7.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	97.5	25.4	81.0	10.2	66.6	30.9	7.0
Queue Length 50th (ft)	154	40	299	441	26	758	48
Queue Length 95th (ft)	#283	#177	#465	564	m36	842	m75
Internal Link Dist (ft)	1134			1909		2372	
Turn Bay Length (ft)	275		435		300		200
Base Capacity (vph)	202	420	391	2746	202	2032	974
Starvation Cap Reductn	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0
Reduced v/c Ratio	0.84	0.78	0.86	0.69	0.15	0.78	0.31

Intersection Summary

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.



Lane Group	EBT	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Group Flow (vph)	203	308	312	378	151	1494	282	488	1164	22
v/c Ratio	0.57	0.92	0.92	0.64	0.90	1.09	0.29	0.90	0.74	0.03
Control Delay (s/veh)	46.4	87.6	87.5	11.5	94.5	94.3	5.4	78.9	35.0	0.0
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Delay (s/veh)	46.4	87.6	87.5	11.5	94.5	94.3	5.4	78.9	35.0	0.0
Queue Length 50th (ft)	61	289	293	15	139	~806	54	226	457	0
Queue Length 95th (ft)	104	#491	#494	118	m#247	#951	m80	#318	545	0
Internal Link Dist (ft)	481		939			2372			1326	
Turn Bay Length (ft)		300		315	550		140	265		400
Base Capacity (vph)	393	338	342	594	171	1376	977	556	1571	767
Starvation Cap Reductn	0	0	0	0	0	0	0	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0	0	0	0	0
Reduced v/c Ratio	0.52	0.91	0.91	0.64	0.88	1.09	0.29	0.88	0.74	0.03

Intersection Summary

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

m Volume for 95th percentile queue is metered by upstream signal.

Intersection: 1: SW 124th Avenue & OR 99W (Pacific Highway)

Movement	EB	EB	EB	WB	WB	WB	WB	NB	NB	NB	NB
Directions Served	T	T	R	L	L	T	T	L	L	R	R
Maximum Queue (ft)	469	455	258	770	579	404	432	479	496	410	320
Average Queue (ft)	298	279	87	468	332	207	221	327	346	243	188
95th Queue (ft)	428	407	227	787	613	391	417	469	506	428	288
Link Distance (ft)	1714	1714		1829	1829	1829	1829	496	496		
Upstream Blk Time (%)								0	1		
Queuing Penalty (veh)								1	5		
Storage Bay Dist (ft)			225							275	275
Storage Blk Time (%)		15							20	1	1
Queuing Penalty (veh)		32							159	3	2

Intersection: 2: SW 124th Avenue & SW Tualatin Road

Movement	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	R	T	T	R	L	T	T
Maximum Queue (ft)	124	593	719	904	335	398	340	209
Average Queue (ft)	40	300	323	477	100	250	57	55
95th Queue (ft)	105	505	597	824	321	421	222	146
Link Distance (ft)		1173	1027	1027			496	496
Upstream Blk Time (%)			0	0			0	
Queuing Penalty (veh)			0	0			0	
Storage Bay Dist (ft)	25				150	200		
Storage Blk Time (%)	25	41		52		20	0	
Queuing Penalty (veh)	164	16		25		42	1	

Intersection: 3: JAE Access/SW 115th Avenue & SW Tualatin Road

Movement	EB	EB	WB	NB	SB
Directions Served	L	TR	TR	TR	LTR
Maximum Queue (ft)	71	37	412	63	84
Average Queue (ft)	26	2	22	13	30
95th Queue (ft)	60	22	213	48	69
Link Distance (ft)		1193	800	552	1330
Upstream Blk Time (%)			1		
Queuing Penalty (veh)			10		
Storage Bay Dist (ft)	25				
Storage Blk Time (%)	13	0	3		
Queuing Penalty (veh)	61	0	0		

Intersection: 4: SW Tualatin Road & SW 112th Avenue

Movement	EB	WB	SB
Directions Served	L	TR	LR
Maximum Queue (ft)	45	213	63
Average Queue (ft)	6	12	16
95th Queue (ft)	29	177	48
Link Distance (ft)		1064	540
Upstream Blk Time (%)		0	
Queuing Penalty (veh)		0	
Storage Bay Dist (ft)	25		
Storage Blk Time (%)	1		
Queuing Penalty (veh)	4		

Intersection: 5: SW 108th Ave & SW Tualatin Road

Movement	WB	WB	NB
Directions Served	L	T	LR
Maximum Queue (ft)	35	28	129
Average Queue (ft)	3	0	56
95th Queue (ft)	20	0	104
Link Distance (ft)		727	285
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)	25		
Storage Blk Time (%)	1	0	
Queuing Penalty (veh)	6	0	

Intersection: 6: SW 108th Ave & North Access

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	63	7
Average Queue (ft)	26	0
95th Queue (ft)	57	5
Link Distance (ft)	593	406
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 7: SW 108th Ave & Center Access

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	99	7
Average Queue (ft)	51	0
95th Queue (ft)	83	7
Link Distance (ft)	421	252
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 8: SW 108th Ave & South Access

Movement	EB	NB
Directions Served	LR	LT
Maximum Queue (ft)	110	34
Average Queue (ft)	47	3
95th Queue (ft)	80	18
Link Distance (ft)	415	207
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 9: SW 124th Avenue & SW Leveton Drive

Movement	EB	EB	WB	WB	NB	NB	NB	SB	SB	SB
Directions Served	L	TR	L	TR	L	T	TR	L	T	TR
Maximum Queue (ft)	117	189	154	226	45	227	299	100	181	214
Average Queue (ft)	24	53	58	103	5	100	143	40	63	84
95th Queue (ft)	70	134	113	180	26	187	249	81	150	176
Link Distance (ft)		1016		1226		1440	1440		1027	1027
Upstream Blk Time (%)										
Queuing Penalty (veh)										
Storage Bay Dist (ft)	100		150		150			150		
Storage Blk Time (%)	0	4	0	3		2		0	1	
Queuing Penalty (veh)	0	1	0	2		0		0	1	

Intersection: 10: SW 118th Drive/JAE Access & SW Leveton Drive

Movement	EB	WB	NB	SB
Directions Served	LTR	LTR	LTR	LTR
Maximum Queue (ft)	86	224	81	40
Average Queue (ft)	45	88	21	16
95th Queue (ft)	74	163	52	44
Link Distance (ft)	1226	1030	498	610
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)				
Storage Blk Time (%)				
Queuing Penalty (veh)				

Intersection: 11: SW Leveton Drive & West Access

Movement	EB	SB	SB
Directions Served	LT	L	R
Maximum Queue (ft)	50	96	126
Average Queue (ft)	12	42	65
95th Queue (ft)	41	77	107
Link Distance (ft)	1030	531	531
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 12: SW Leveton Drive & New Access

Movement	EB	SB
Directions Served	LT	LR
Maximum Queue (ft)	7	35
Average Queue (ft)	0	3
95th Queue (ft)	5	18
Link Distance (ft)	408	363
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 13: SW Leveton Drive & Center Access

Movement	EB	SB	SB
Directions Served	LT	L	R
Maximum Queue (ft)	40	63	62
Average Queue (ft)	4	24	33
95th Queue (ft)	23	54	59
Link Distance (ft)	403	352	352
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 14: Calmax Technology Access/East Access & SW Leveton Drive

Movement	WB	NB
Directions Served	LTR	LTR
Maximum Queue (ft)	26	81
Average Queue (ft)	1	33
95th Queue (ft)	13	71
Link Distance (ft)	556	617
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 15: SW 108th Ave & SW Leveton Drive

Movement	EB	NB	SB
Directions Served	LR	LT	TR
Maximum Queue (ft)	101	76	34
Average Queue (ft)	53	19	2
95th Queue (ft)	85	57	14
Link Distance (ft)	556	796	207
Upstream Blk Time (%)			
Queuing Penalty (veh)			
Storage Bay Dist (ft)			
Storage Blk Time (%)			
Queuing Penalty (veh)			

Intersection: 16: SW Herman Road & SW 108th Ave

Movement	EB	EB	WB	SB	SB
Directions Served	L	T	TR	L	R
Maximum Queue (ft)	12	228	346	193	136
Average Queue (ft)	1	95	151	100	15
95th Queue (ft)	8	181	271	171	70
Link Distance (ft)		933	994		796
Upstream Blk Time (%)					
Queuing Penalty (veh)					
Storage Bay Dist (ft)	100			135	
Storage Blk Time (%)		6		2	
Queuing Penalty (veh)		0		1	

Intersection: 17: SW Teton Avenue & SW Tualatin Road

Movement	EB	WB	NB	NB
Directions Served	TR	L	L	R
Maximum Queue (ft)	10	63	195	331
Average Queue (ft)	0	11	109	70
95th Queue (ft)	4	41	194	286
Link Distance (ft)	169			1711
Upstream Blk Time (%)				
Queuing Penalty (veh)				
Storage Bay Dist (ft)		25	100	
Storage Blk Time (%)		2	26	0
Queuing Penalty (veh)		16	9	0

Intersection: 18: SW 115th Avenue & SW Hazelbrook Road

Movement	WB	NB
Directions Served	LT	LR
Maximum Queue (ft)	278	1000
Average Queue (ft)	52	205
95th Queue (ft)	313	753
Link Distance (ft)	1163	1330
Upstream Blk Time (%)		3
Queuing Penalty (veh)		9
Storage Bay Dist (ft)		
Storage Blk Time (%)		
Queuing Penalty (veh)		

Intersection: 19: OR 99W (Pacific Highway) & SW Hazelbrook Road

Movement	WB	NB	NB	NB	SB	SB
Directions Served	R	T	T	R	T	T
Maximum Queue (ft)	1300	378	373	85	221	216
Average Queue (ft)	825	34	32	3	8	8
95th Queue (ft)	1490	194	205	62	162	158
Link Distance (ft)	1290	1829	1829		1944	1944
Upstream Blk Time (%)	18					
Queuing Penalty (veh)	62					
Storage Bay Dist (ft)				335		
Storage Blk Time (%)			1			
Queuing Penalty (veh)			0			

Intersection: 20: SW Teton Avenue & SW Herman Road

Movement	EB	EB	WB	WB	NB	NB	SB	SB
Directions Served	L	TR	L	TR	L	TR	L	TR
Maximum Queue (ft)	18	810	149	351	160	563	99	256
Average Queue (ft)	1	348	35	139	109	163	13	90
95th Queue (ft)	9	776	98	269	184	423	51	190
Link Distance (ft)		994		1022		604		1711
Upstream Blk Time (%)		1				1		
Queuing Penalty (veh)		5				0		
Storage Bay Dist (ft)	100		100		60		50	
Storage Blk Time (%)		31	0	13	30	12	0	21
Queuing Penalty (veh)		1	0	7	57	31	0	3

Intersection: 21: OR 99W (Pacific Highway) & SW Fischer Road

Movement	EB	EB	NB	NB	NB	SB	SB	SB	SB
Directions Served	L	R	L	T	T	U	T	T	R
Maximum Queue (ft)	460	690	460	1953	2016	354	1254	1258	400
Average Queue (ft)	245	292	439	1164	1139	53	526	529	172
95th Queue (ft)	433	560	519	2117	2221	201	1097	1100	451
Link Distance (ft)		1160		1944	1944		2374	2374	
Upstream Blk Time (%)				2	20				
Queuing Penalty (veh)				18	192				
Storage Bay Dist (ft)	275		435			300			200
Storage Blk Time (%)	11	21	45	10			21	29	0
Queuing Penalty (veh)	34	33	390	31			6	81	1

Intersection: 22: OR 99W (Pacific Highway) & SW 116th Avenue/SW Durham Road

Movement	EB	EB	WB	WB	WB	NB	NB	NB	NB	SB	SB	SB
Directions Served	LT	TR	L	LT	R	L	T	T	R	L	L	T
Maximum Queue (ft)	228	270	375	576	380	675	2313	2320	315	344	428	544
Average Queue (ft)	74	149	305	370	199	378	1644	1671	224	228	278	324
95th Queue (ft)	183	242	412	537	332	825	2800	2814	425	332	409	474
Link Distance (ft)		503		959	959		2374	2374				1364
Upstream Blk Time (%)							2	2				
Queuing Penalty (veh)							18	24				
Storage Bay Dist (ft)	275		300			550			140	265	265	
Storage Blk Time (%)		0	5	24		0	45	56	0	4	12	14
Queuing Penalty (veh)		0	17	60		0	64	149	2	22	65	64

Intersection: 22: OR 99W (Pacific Highway) & SW 116th Avenue/SW Durham Road

Movement	SB	SB
Directions Served	T	R
Maximum Queue (ft)	513	112
Average Queue (ft)	318	8
95th Queue (ft)	465	73
Link Distance (ft)	1364	
Upstream Blk Time (%)		
Queuing Penalty (veh)		
Storage Bay Dist (ft)		400
Storage Blk Time (%)	2	
Queuing Penalty (veh)	0	

Network Summary

Network wide Queuing Penalty: 2008

MACKENZIE.

PRELIMINARY STORMWATER DRAINAGE REPORT

To
City of Tualatin

For
Lam Campus AR Submittal

Dated
July 16, 2025

Project Number
2250180.00

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A. Stormwater Quality Calculations
B. Stormwater Detention Calculations
C. 2024 LAM Storm Drainage Report

I. PROJECT INTRODUCTION

Lam Research is proposing to construct a new office, Lab (laboratory), and CUB (central utility building) Building, along with additional parking at their existing campus on SW Leveton Drive in Tualatin, Oregon. The new buildings will be located north of Building G, west of Building D, and south of Building F. To support the new buildings, new parking fields will be dispersed throughout the campus. Since the time of the last campus plan, Lam has purchased another approximately 17.9-acre parcel from their neighbor, JAE, to the west of the main campus. This report will focus on the updated areas of the campus only. The approved stormwater report completed with Building G and attached to this report will be used as the existing conditions and to denote a starting point from where changes are occurring. The vicinity map and site plan below show the location and layout of the site relative to nearby geographic features.

Figure 1: Vicinity Map

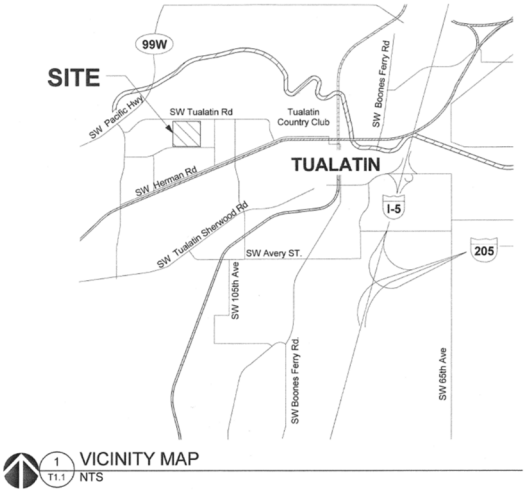
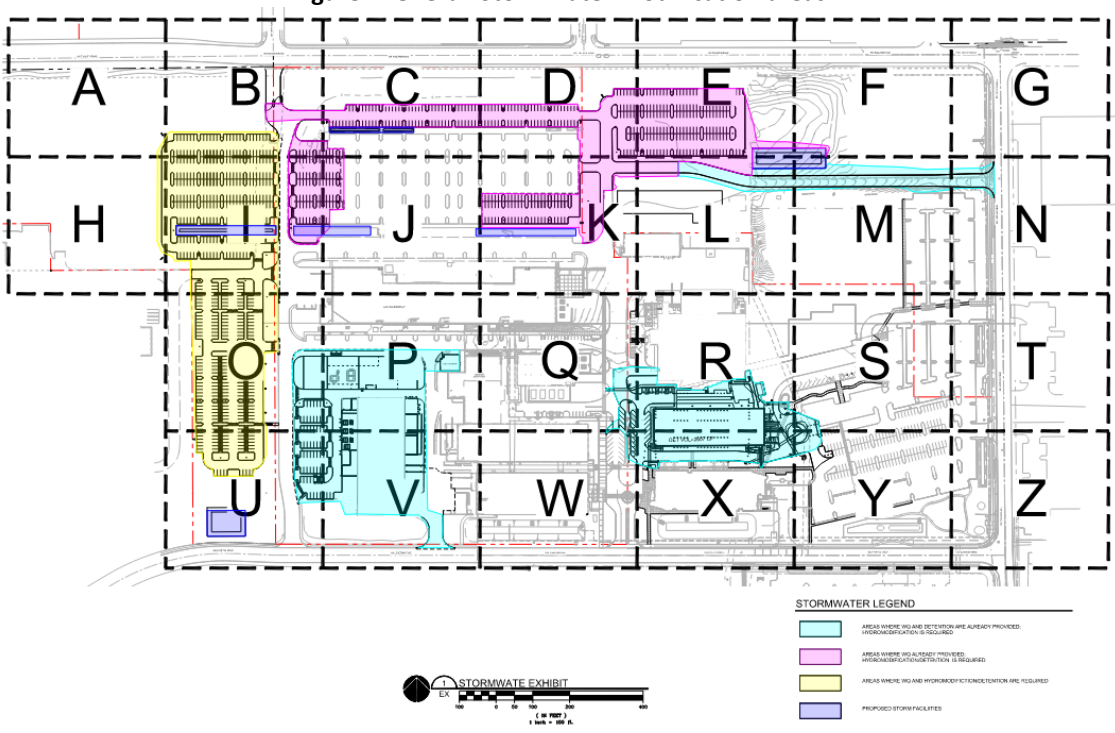


Figure 2: Overall Stormwater Modification areas



Stormwater drainage and treatment will be provided in accordance with current Clean Water Services and City of Tualatin standards through a series of facilities across campus:

Cyan areas (Hydromodification only areas):

- Water Quality accounted for with previous development.
- Areas currently meeting CWS and previously matching 2-, 10-, and 25-year existing runoff rates requirements.
- Hydromodification volume required for these areas to bring them up to code.

Pink(Detention only) areas:

- Water Quality accounted for in existing ponds near Leveton.
- Detention volume not available is existing downstream ponds due to previous development.
- Hydromodification/Detention required.

Yellow (Water Quality and Detention areas) areas:

- Water quality required.
- Hydromodification/Detention required.

Blue proposed new storm:

- Detention and Water Quality Facilities.

The following summarizes the design for the proposed stormwater management approach.

II. STORMWATER QUALITY TREATMENT

Water quality treatment at the new development on the Lam Campus will be provided through a collection of existing, modified, and new facilities. The following summarizes the facilities within each basin type:

Hydromodification Areas Only (Cyan)

Proposed improvements within the cyan areas include new parking, redeveloped parking, new Lab, CUB, and Building H, along with a realigned roadway out to 108th. Runoff from the new/redeveloped impervious surfaces will be routed to existing storm treatment facilities along Leveton. The roadway going out to 108th will be treated in the existing pond in the southeast corner of the site. Therefore, water quality is currently accommodated for these areas.

Detention Areas Only (Pink)

Proposed improvements within the pink areas include new parking and redeveloped parking. Runoff from the new/redeveloped impervious surfaces will be routed to existing storm treatment facilities along Leveton. Therefore, as per the cyan areas, no new proposed water quality treatment is proposed.

Water Quality and Detention Areas (Yellow)

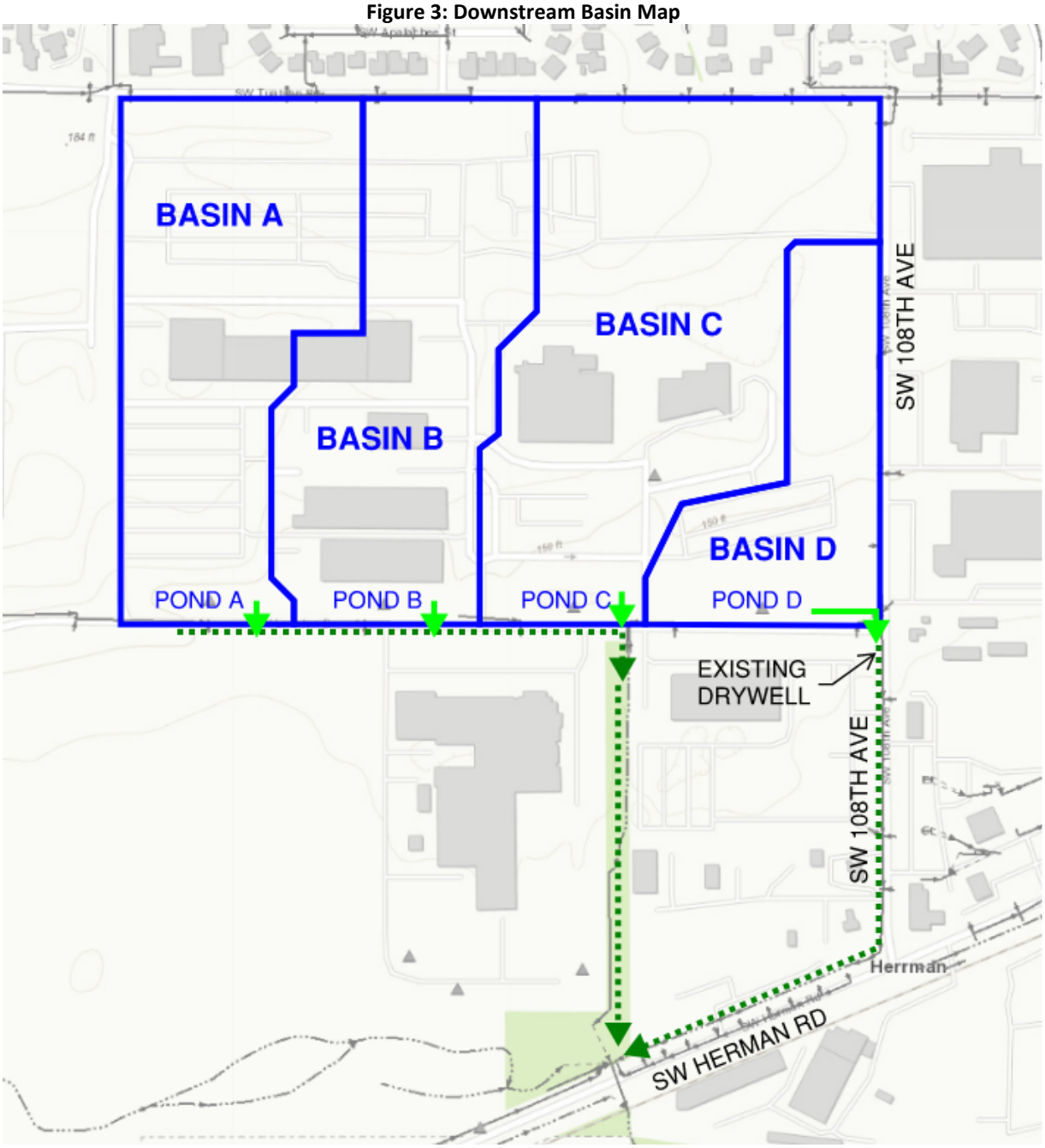
Proposed improvements within the yellow areas include new parking. These areas are in the recently purchased property from JAE and therefore have no existing water quality associated with them. Therefore, water quality treatment for the runoff from these areas will be required. The treatment will be accomplished through newly developed extended dry ponds and swales.

III. STORMWATER QUANTITY MANAGEMENT

Downstream Analysis

The existing Lam Research campus storm drainage system connects to the public storm system along Leveton Drive as depicted below. An additional connection will be required from the new pond on the recently annexed JAE portion of the campus. The full downstream analysis was completed in a prior report attached herein (Appendix C). Since all proposed improvements are designed to release at less than existing runoff rates, due to hydromodification implementation, no increases to existing runoff rates are proposed, and therefore no adverse impacts to downstream infrastructure are anticipated.

Figure 3: Downstream Basin Map



Hydromodification Areas Only (Cyan)

Proposed improvements within the cyan areas include a new Lab, CUB, and Building H, along with modified parking and a realigned access drive aisle out to 108th. Runoff from the new/redeveloped impervious surfaces will be routed to existing storm water facilities located along Leveton. These areas currently have detention meeting the old CWS standards applied to them. Therefore, these areas will be required to meet the new hydromodification requirements for the new or redeveloped impervious surfaces. These areas have been divided into three areas: the areas surrounding proposed Building H; the area surrounding the proposed Lab and CUB Buildings; and the realigned access drive out to 108th. The hydromodification requirements have been previously determined; see previously approved stormwater report attached (Appendix C). The main difference is the release of the developed 2-year storm event is now calculated to be ½ of the existing 2-year runoff rate.

Building H, Lab/CUB, and Access Road

The disturbed redeveloped areas around H, Lab/CUB, and Access Road consists of:

Table 1 – Hydromodification Only			
	Building H	**Lab/CUB**	**Access Road**
Basin area	2.75 ac	3.94 ac	1.10 ac
Proposed Impervious	2.06 ac	3.59 ac	0.73 ac
Proposed Pervious	0.69 ac	0.36 ac	0.37 ac
2-year Detention Volume	4,242 cf	6,443 cf	1,576 cf
Hydrograph½ 2-year Detention Volume	6,849 cf	12,439 cf	2,505 cf
Additional Required Volume	2,607 cf	5,996 cf	923 cf

The areas were routed through the software package Hydraflow meeting existing predeveloped runoff rates for the 2-year event and then rerouted releasing at half the existing predeveloped 2-year runoff rate. The difference in the two volumes is attributed to hydromodification requirements. The additional volume of 2,607 cf for Building H is being proposed to be accomplished by installing 207 lf of 48" detention pipe on the east side of Building H. The additional volume of 5,996 cf for the Lab and CUB redeveloped area is proposed to be accomplished by ensuring the new pond at the Southern portion of the new JAE annexed area has an additional 6,125 cf of detention volume. The access road will be routed to the pond at the southeast corner of the site. An additional 923 cf of detention volume will be added to the system.

Detention Areas Only (Pink)

Proposed improvements within the pink areas include new parking. Runoff from the new impervious surfaces will be routed to new storm water facilities adjacent to the parking fields. These areas currently have no detention allotted them, since the previously approved Building G Expansion utilized the extra volume capacity to meet hydromodification. Therefore, these areas will be required to meet the full hydromodification/detention requirements for the new or redeveloped impervious surfaces. The pink areas have been divided into four areas. Each parking field will be developed with a dry detention basin. The detention/hydromodification numbers have been identified below. These newly developed areas will

be connected to the existing storm system on site and routed through the existing ponds adjacent to Leveton prior to being released to the public storm system in Leveton.

The disturbed redeveloped areas around Parking Areas.

Table 2 – Detention Only Areas				
	Parking Northwest	Parking Northeast	Parking Southwest	Parking Southeast
Basin area	1.80 ac	2.29 ac	0.84 ac	1.30 ac
Proposed Impervious	1.13 ac	1.58 ac	0.69 ac	0.92 ac
Proposed Pervious	0.67 ac	0.71 ac	0.15 ac	0.38 ac
Detention Volume	9,310 cf	11,671 cf	4,827 cf	6,526 cf
WQ Volume	n/a	n/a	n/a	n/a
Total Volume	9,310 cf	11,671 cf	4,827 cf	6,526 cf

The following table summarizes the flow from each pond.

Table 3 – Detention Only Areas Release Rates				
	Parking northwest	Parking northeast	Parking southwest	Parking southeast
Existing 2-year Existing 5-year Existing 10-year	0.26 cfs 0.44 cfs 0.56 cfs	0.34 cfs 0.56 cfs 0.71 cfs	0.12 cfs 0.21 cfs 0.26 cfs	0.19 cfs 0.32 cfs 0.40 cfs
Developed 2-year Developed 5-year Developed 10-year	2-year: 0.73 cfs 5-year: 0.99 cfs 10-year: 1.15 cfs	2-year: 0.98 cfs 5-year: 1.33 cfs 10-year: 1.53 cfs	2-year: 0.43 cfs 5-year: 0.55 cfs 10-year: 0.63 cfs	2-year: 0.59 cfs 5-year: 0.79 cfs 10-year: 0.90 cfs
Release 2-year Release 5-year Release 10-year	½ 2-year: 0.13 cfs 5-year: 0.17 cfs 10-year: 0.19 cfs	½ 2-year: 0.17 cfs 5-year: 0.22 cfs 10-year: 0.24 cfs	½ 2-year: 0.06 cfs 5-year: 0.07 cfs 10-year: 0.07 cfs	½ 2-year: 0.08 cfs 5-year: 0.09 cfs 10-year: 0.09 cfs

Detention Areas (Yellow)

Proposed improvements within the yellow areas include new parking. Runoff from the new impervious surfaces will be routed to new storm water facilities adjacent to the parking fields and adjacent to Leveton. These areas currently have no WQ or detention. Therefore, these areas will be required to meet the full hydromodification/detention requirements for the new or redeveloped impervious surfaces. These areas have been divided into two areas. Each parking field will be developed with a dry detention basin. The detention/hydromodification numbers have been identified below.

Parking Areas

The disturbed redeveloped areas around Parking Areas.

Table 4 – Annexed JAE New Areas		
	Parking North	Parking South
Basin area	2.78 ac	3.68 ac
Proposed Impervious	2.17 ac	2.19 ac
Proposed Pervious	0.61 ac	1.49 ac
Detention Volume	6,904 cf	13,055 cf
WQ Volume	2,835 cf	2,862 cf
Total Volume	9,739 cf	15,917 cf

The following table summarizes the flow from each pond.

Table 5 – Annexed JAE Facility Release Rates		
	Parking North	Parking South
Existing 2-year Existing 5-year Existing 10-year	0.41 cfs 0.69 cfs 0.86 cfs	0.54 cfs 0.91 cfs 1.14 cfs
Developed 2-year Developed 5-year Developed 10-year	2-year: 1.34 cfs 5-year: 1.76 cfs 10-year: 2.01 cfs	2-year: 1.49 cfs 5-year: 2.04 cfs 10-year: 2.36 cfs
Release ½ 2-year Release 5-year Release 10-year	½ 2-year: 0.2 cfs 5-year: 0.27 cfs 10-year: 0.31 cfs	½ 2-year: 0.27 cfs 5-year: 0.36 cfs 10-year: 0.41 cfs

IV. CONCLUSION

The proposed building and parking expansion at the Lam Research campus will increase the impervious area coverage on campus by approximately 2.8 ac. The Stormwater facilities for the developed/redeveloped areas on the original Lam campus have capacity for water quality to be provided for in the existing facilities. In addition, approximately 4.4 ac of impervious area will be added to the newly acquired JAE property. Stormwater runoff treatment from the newly annexed areas will be done through dry detention basins which will discharge to Leveton.

Detention will be provided to new Clean Water Services standards to meet hydromodification requirements for new/redeveloped impervious area. Some areas will only need to provide the upgrade for additional detention to meet hydromodification requirement. Other areas will need to provide the current standard for full hydromodification/detention standards. The proposed modifications to the existing and proposed stormwater facilities will ensure that the campus improvements are in compliance with current CWS standards and requirements.

Appendix A

Water Quality Caclulations- LAM

Project Number: 2250180.00

Date: July 16, 2025

Table 4 Annexed JAE New Areas		
	Parking North	Parking South
Basin area	2.78 ac	3.68 ac
Proposed Impervious	2.17 ac	2.19 ac
Proposed Pervious	0.61 ac	1.49 ac
Detention Volume	6,904	13,055 cf
WQ Volume	2,835 cf	2,862 cf
Total Volume	X cf	X cf

Q=CIA C=1.0

I=0.36"

Parking North= 2836 cf

Parking South= 2862 cf

Appendix B

Hydraflow Rainfall Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	69.8703	13.1000	0.8658	--------
3	0.0000	0.0000	0.0000	--------
5	79.2597	14.6000	0.8369	--------
10	88.2351	15.5000	0.8279	--------
25	102.6072	16.5000	0.8217	--------
50	114.8193	17.2000	0.8199	--------
100	127.1596	17.8000	0.8186	--------

File name: SampleFHA.idf

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	5.69	4.61	3.89	3.38	2.99	2.69	2.44	2.24	2.07	1.93	1.81	1.70
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	6.57	5.43	4.65	4.08	3.65	3.30	3.02	2.79	2.59	2.42	2.27	2.15
10	7.24	6.04	5.21	4.59	4.12	3.74	3.43	3.17	2.95	2.77	2.60	2.46
25	8.25	6.95	6.03	5.34	4.80	4.38	4.02	3.73	3.48	3.26	3.07	2.91
50	9.04	7.65	6.66	5.92	5.34	4.87	4.49	4.16	3.88	3.65	3.44	3.25
100	9.83	8.36	7.30	6.50	5.87	5.36	4.94	4.59	4.29	4.03	3.80	3.60

Tc = time in minutes. Values may exceed 60.

Reports & Calc Templates\Calc Templates\Stormwater\Hydraflow Stormwater Precipitation Data\CWS precipitation.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	2.50	0.00	3.10	3.45	3.90	4.20	4.50
SCS 6-Hr	0.00	1.05	0.00	1.25	1.55	1.70	1.80	1.90
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

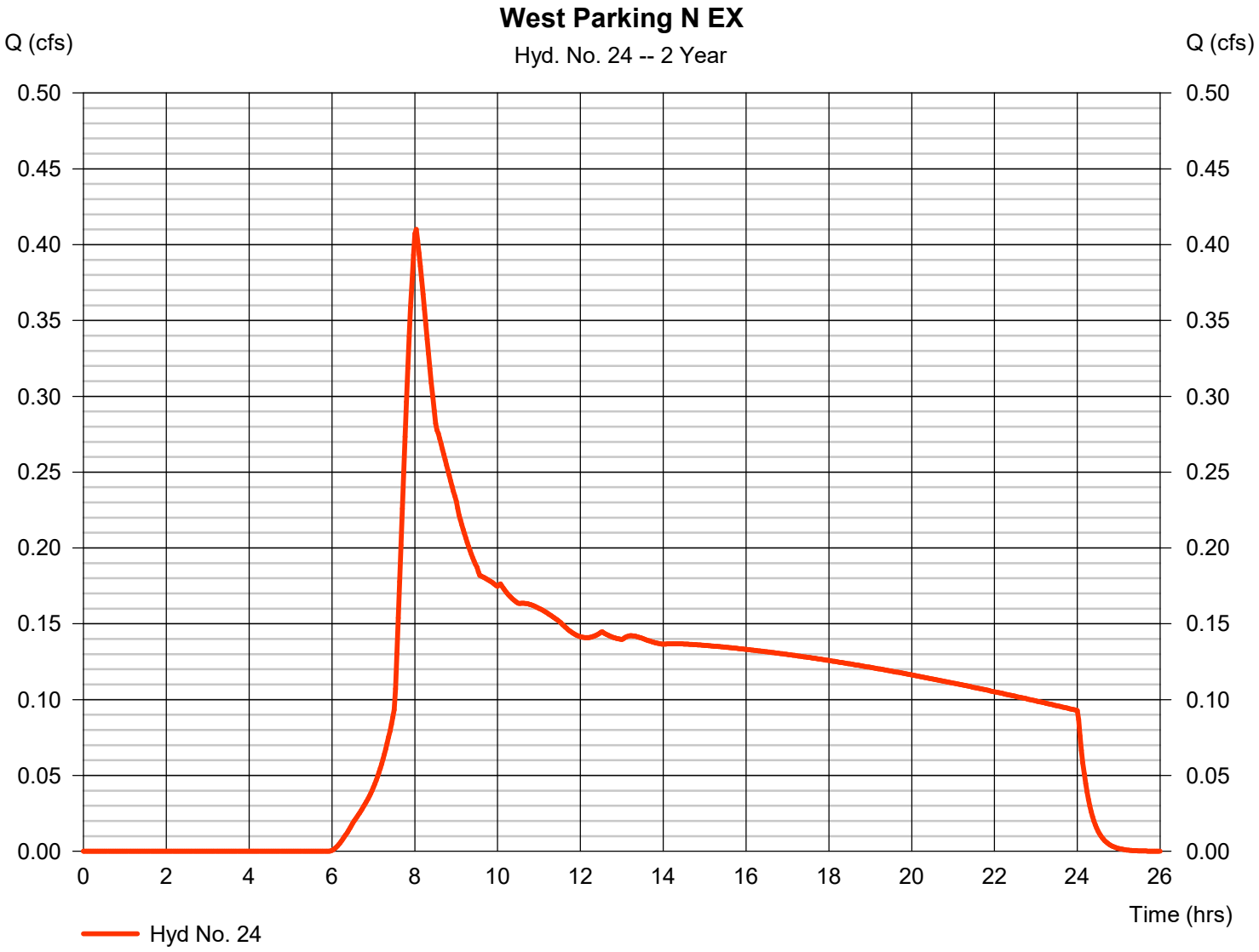
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 24

West Parking N EX

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.410 cfs
Storm frequency	= 2 yrs	Time to peak	= 8.03 hrs
Time interval	= 2 min	Hyd. volume	= 8,970 cuft
Drainage area	= 2.780 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 2.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a



Hydrograph Report

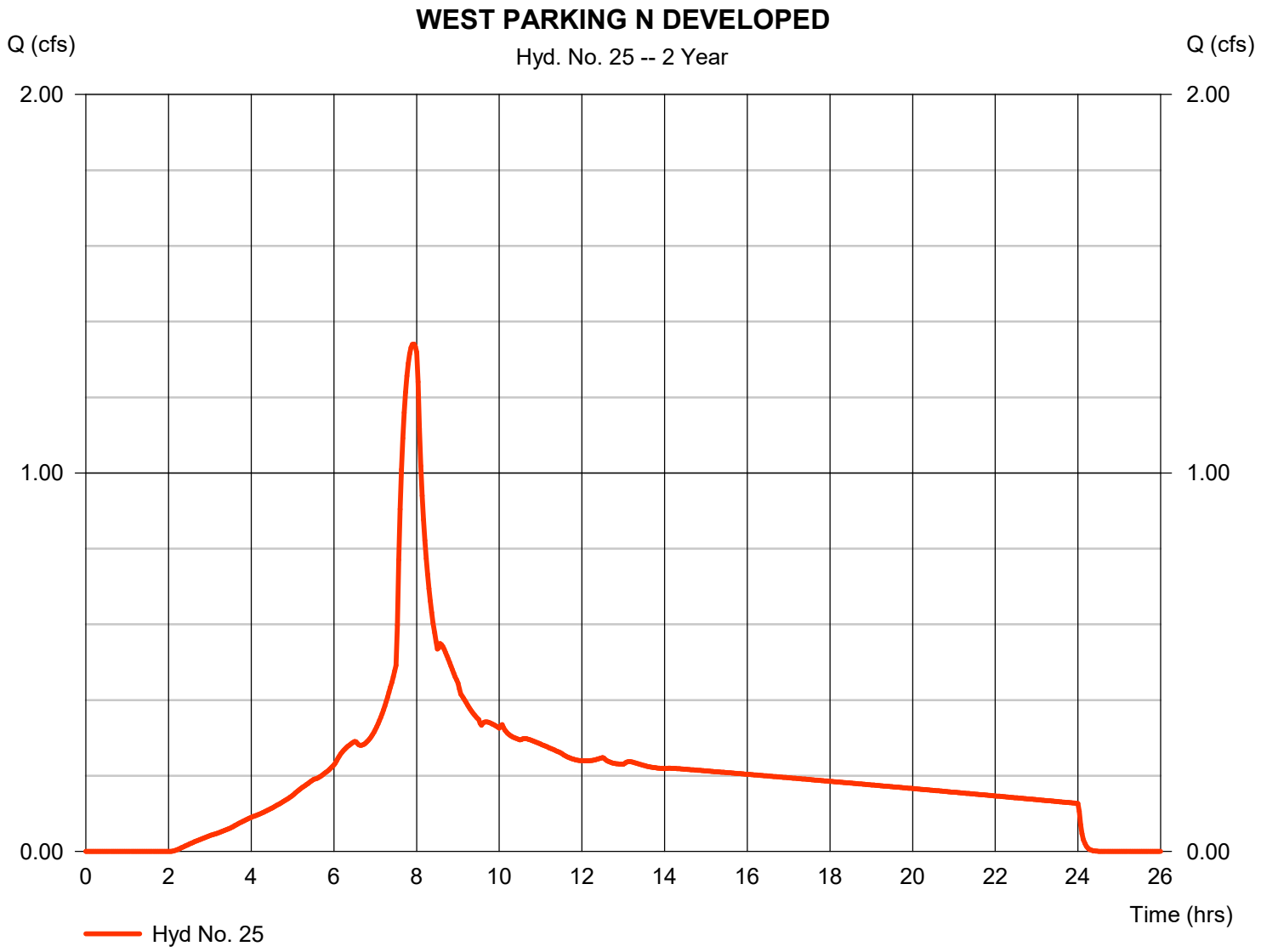
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 25

WEST PARKING N DEVELOPED

Hydrograph type	= SBUH Runoff	Peak discharge	= 1.341 cfs
Storm frequency	= 2 yrs	Time to peak	= 7.93 hrs
Time interval	= 2 min	Hyd. volume	= 18,865 cuft
Drainage area	= 2.780 ac	Curve number	= 94*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

* Composite (Area/CN) = [(2.170 x 98) + (0.610 x 80)] / 2.780



Hydrograph Report

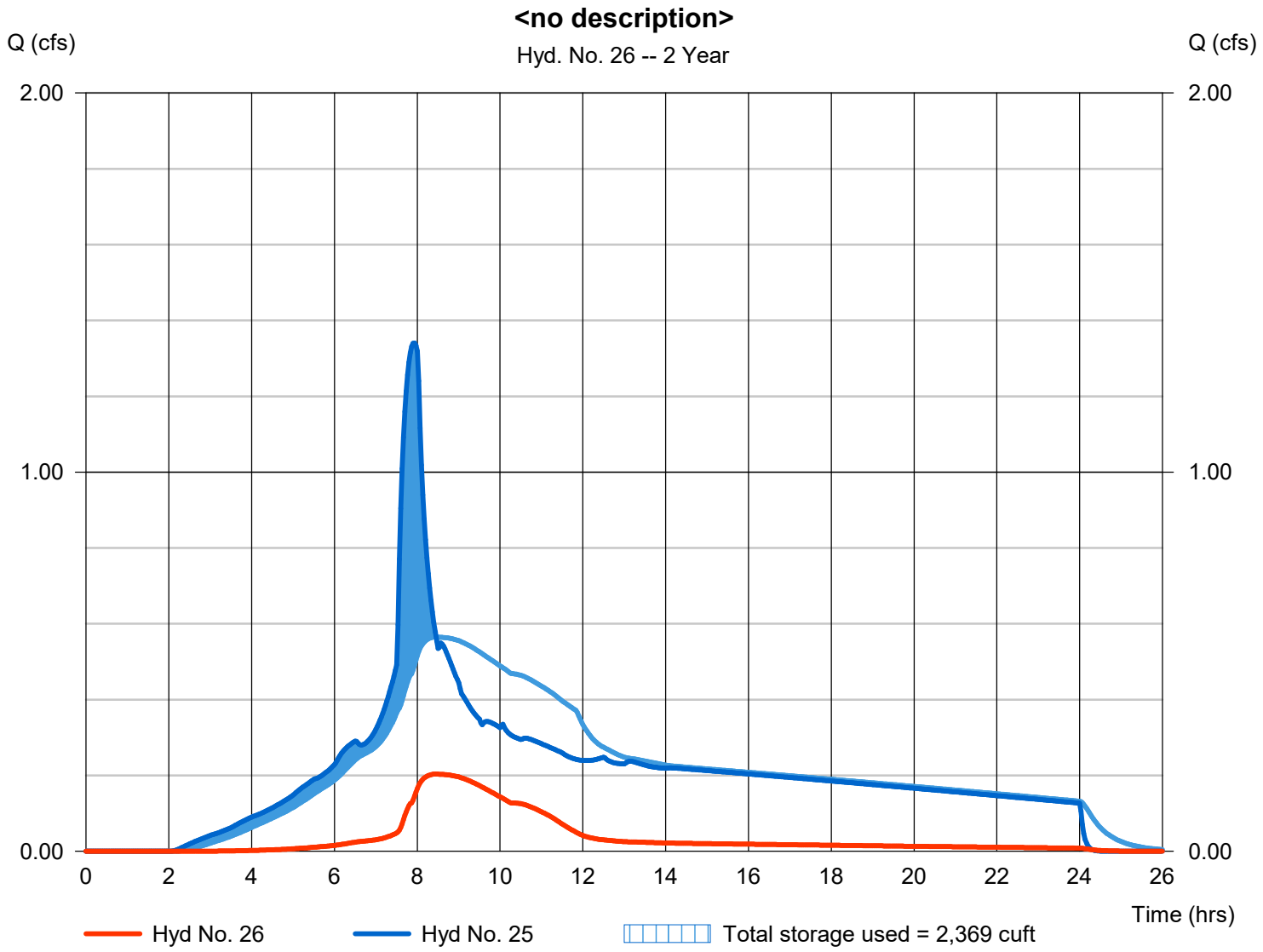
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 26

<no description>

Hydrograph type	=	Reservoir	Peak discharge	=	0.203 cfs
Storm frequency	=	2 yrs	Time to peak	=	8.47 hrs
Time interval	=	2 min	Hyd. volume	=	3,168 cuft
Inflow hyd. No.	=	25 - WEST PARKING N DEVELOPED	Max. Elevation	=	100.49 ft
Reservoir name	=	WEST NORTH DETENTION	Max. Storage	=	2,369 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 — Wednesday, 07 / 16 / 2025

Pond No. 13 - WEST NORTH DETENTION

Pond Data

Trapezoid -Bottom L x W = 16.6 x 263.6 ft, Side slope = 3.00:1, Bottom elev. = 100.00 ft, Depth = 1.50 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	100.00	4,367	0	0
0.15	100.15	4,620	674	674
0.30	100.30	4,875	712	1,386
0.45	100.45	5,131	750	2,137
0.60	100.60	5,389	789	2,926
0.75	100.75	5,648	828	3,753
0.90	100.90	5,909	867	4,620
1.05	101.05	6,172	906	5,526
1.20	101.20	6,436	946	6,472
1.35	101.35	6,702	985	7,457
1.50	101.50	6,970	1,025	8,482

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 3.90	0.00	0.00	0.00
Span (in)	= 3.90	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 100.00	0.00	0.00	0.00
Length (ft)	= 10.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

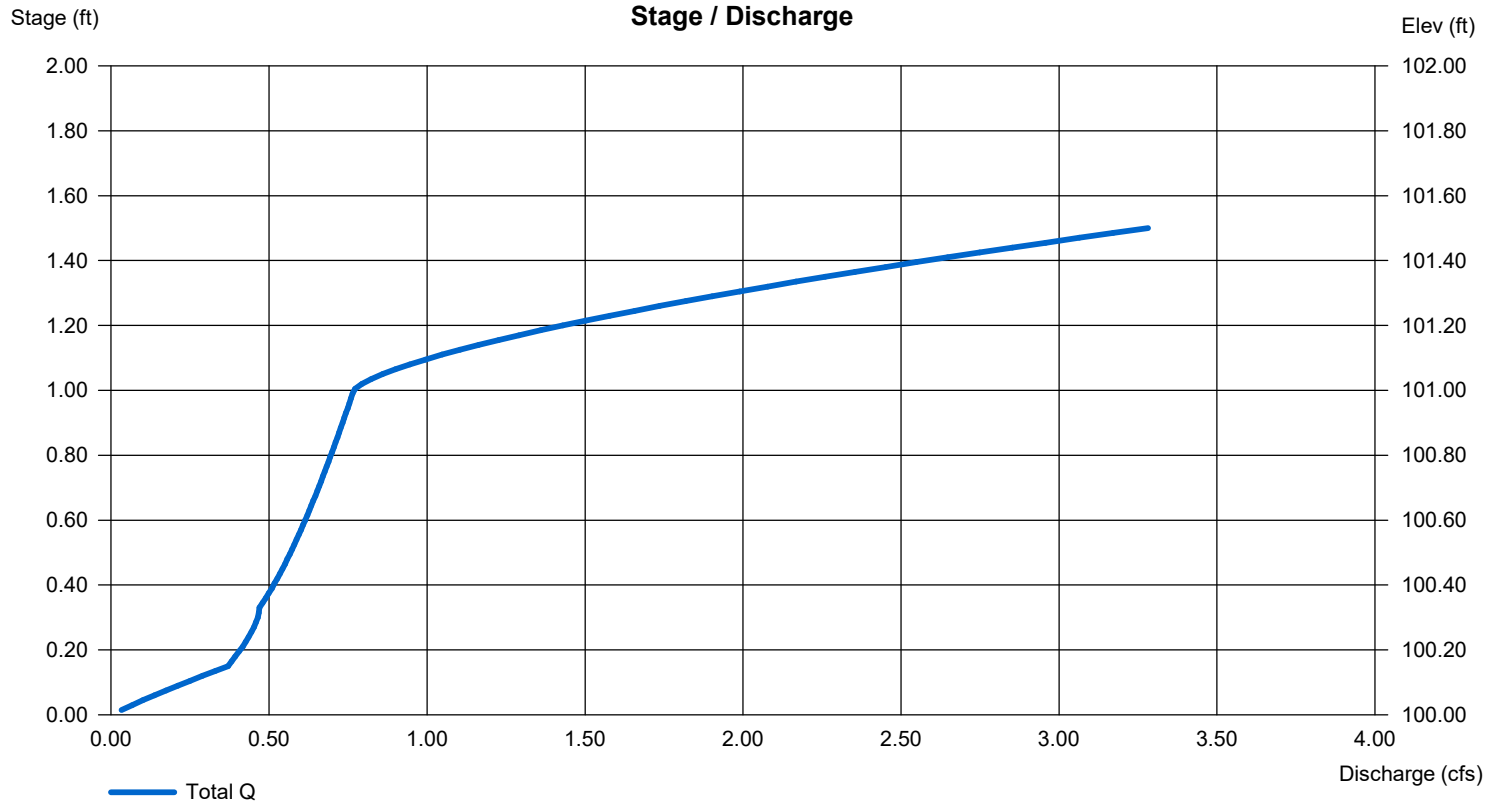
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 2.00	0.00	0.00	0.00
Crest El. (ft)	= 101.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 3.000 (by Contour)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



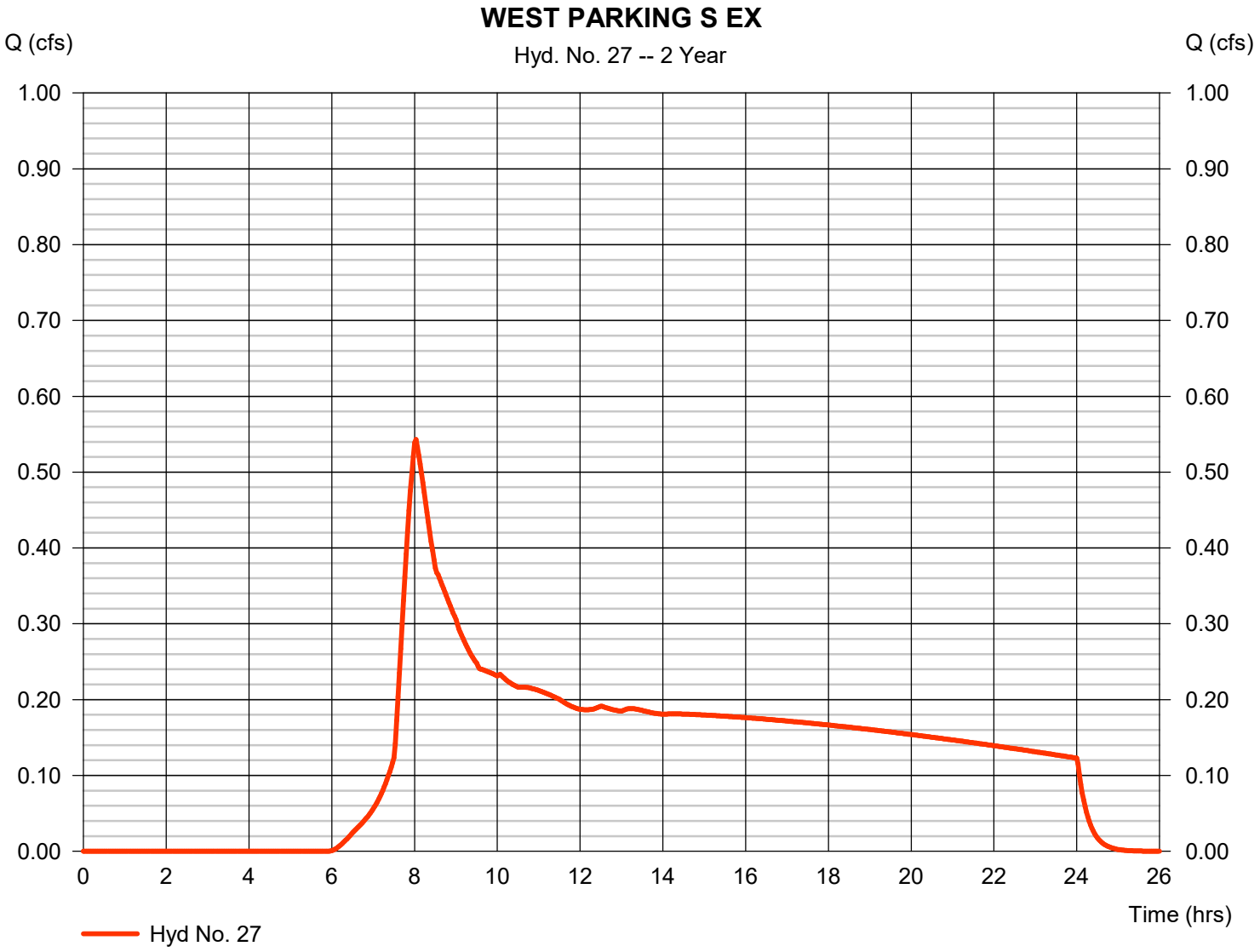
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 27

WEST PARKING S EX

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.543 cfs
Storm frequency	= 2 yrs	Time to peak	= 8.03 hrs
Time interval	= 2 min	Hyd. volume	= 11,874 cuft
Drainage area	= 3.680 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 2.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a



Hydrograph Report

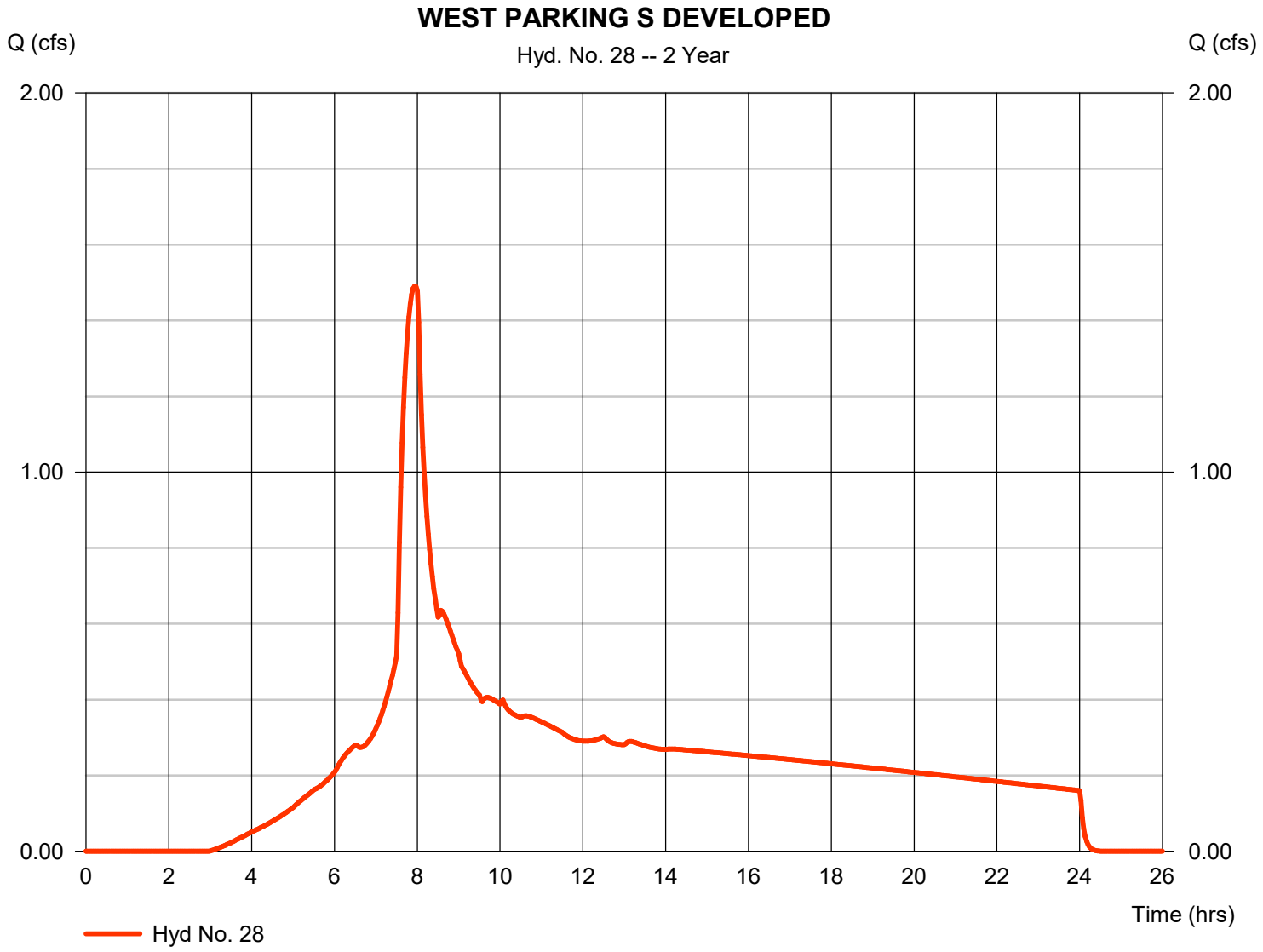
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 28

WEST PARKING S DEVELOPED

Hydrograph type	=	SBUH Runoff	Peak discharge	=	1.491 cfs
Storm frequency	=	2 yrs	Time to peak	=	7.93 hrs
Time interval	=	2 min	Hyd. volume	=	21,512 cuft
Drainage area	=	3.680 ac	Curve number	=	91*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(2.190 x 98) + (1.490 x 80)] / 3.680



Hydrograph Report

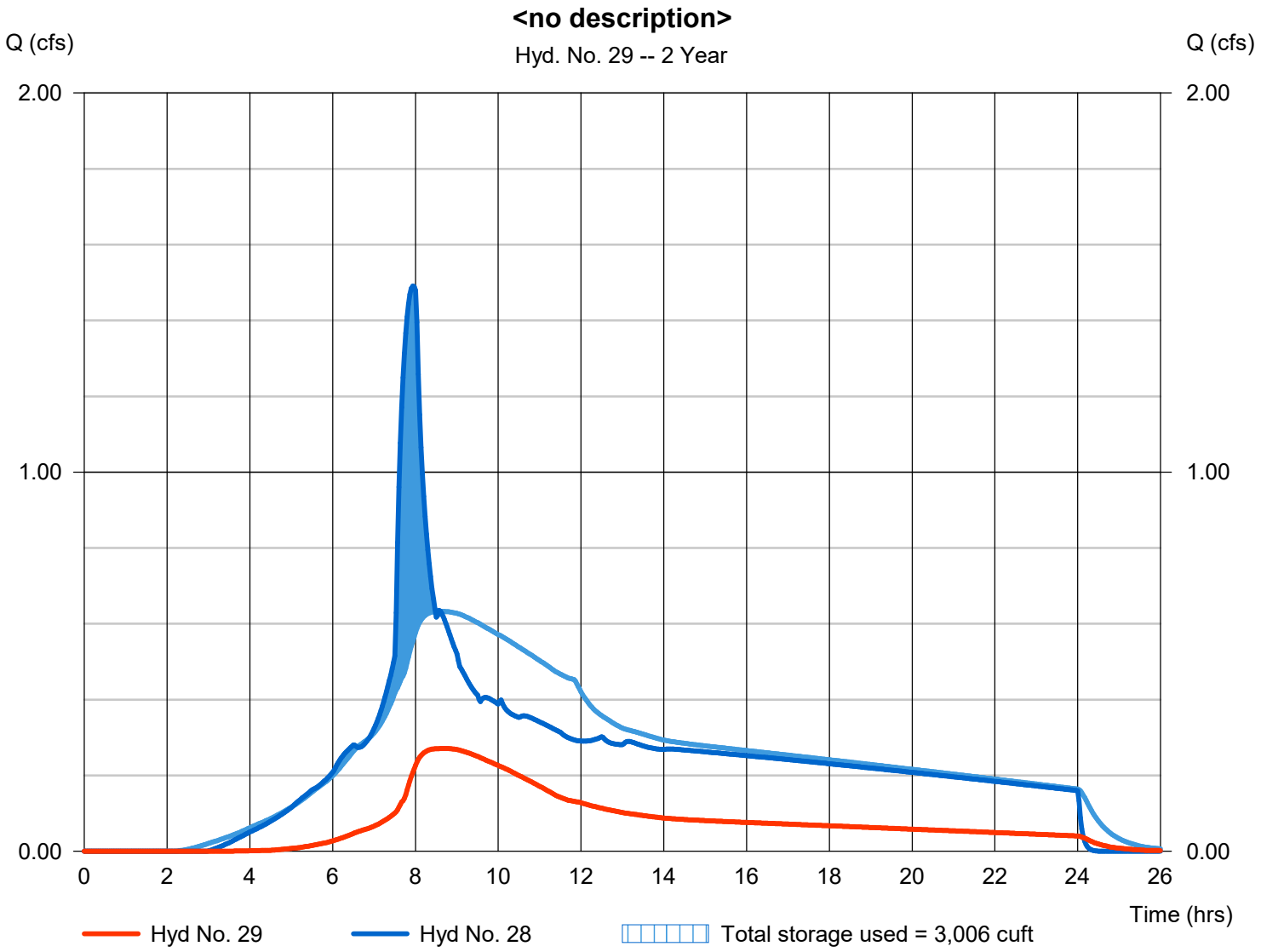
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 29

<no description>

Hydrograph type	=	Reservoir	Peak discharge	=	0.271 cfs
Storm frequency	=	2 yrs	Time to peak	=	8.70 hrs
Time interval	=	2 min	Hyd. volume	=	6,868 cuft
Inflow hyd. No.	=	28 - WEST PARKING S DEVELOPED	Max. Elevation	=	100.66 ft
Reservoir name	=	WEST SOUTH DETENTION	Max. Storage	=	3,006 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 — Wednesday, 07 / 16 / 2025

Pond No. 12 - WEST SOUTH DETENTION

Pond Data

Trapezoid -Bottom L x W = 84.7 x 50.7 ft, Side slope = 3.00:1, Bottom elev. = 100.00 ft, Depth = 3.26 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	100.00	4,290	0	0
0.33	100.33	4,559	1,442	1,442
0.65	100.65	4,835	1,531	2,973
0.98	100.98	5,119	1,622	4,595
1.30	101.30	5,410	1,716	6,311
1.63	101.63	5,710	1,812	8,124
1.96	101.96	6,016	1,911	10,035
2.28	102.28	6,331	2,012	12,047
2.61	102.61	6,653	2,116	14,163
2.93	102.93	6,983	2,222	16,386
3.26	103.26	7,320	2,331	18,717

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 4.00	0.00	0.00	0.00
Span (in)	= 4.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 100.00	0.00	0.00	0.00
Length (ft)	= 10.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

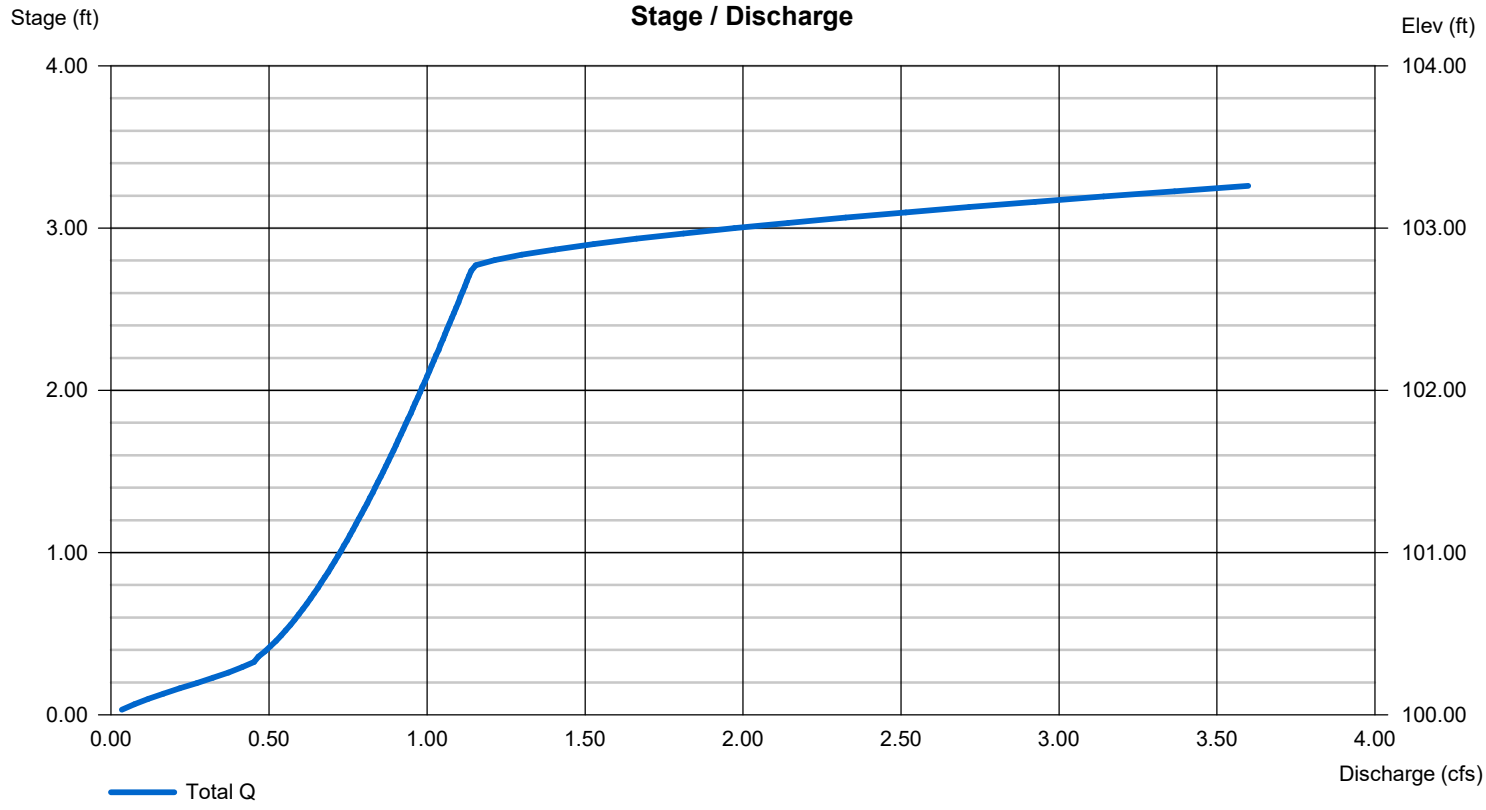
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 2.00	0.00	0.00	0.00
Crest El. (ft)	= 102.76	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 3.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



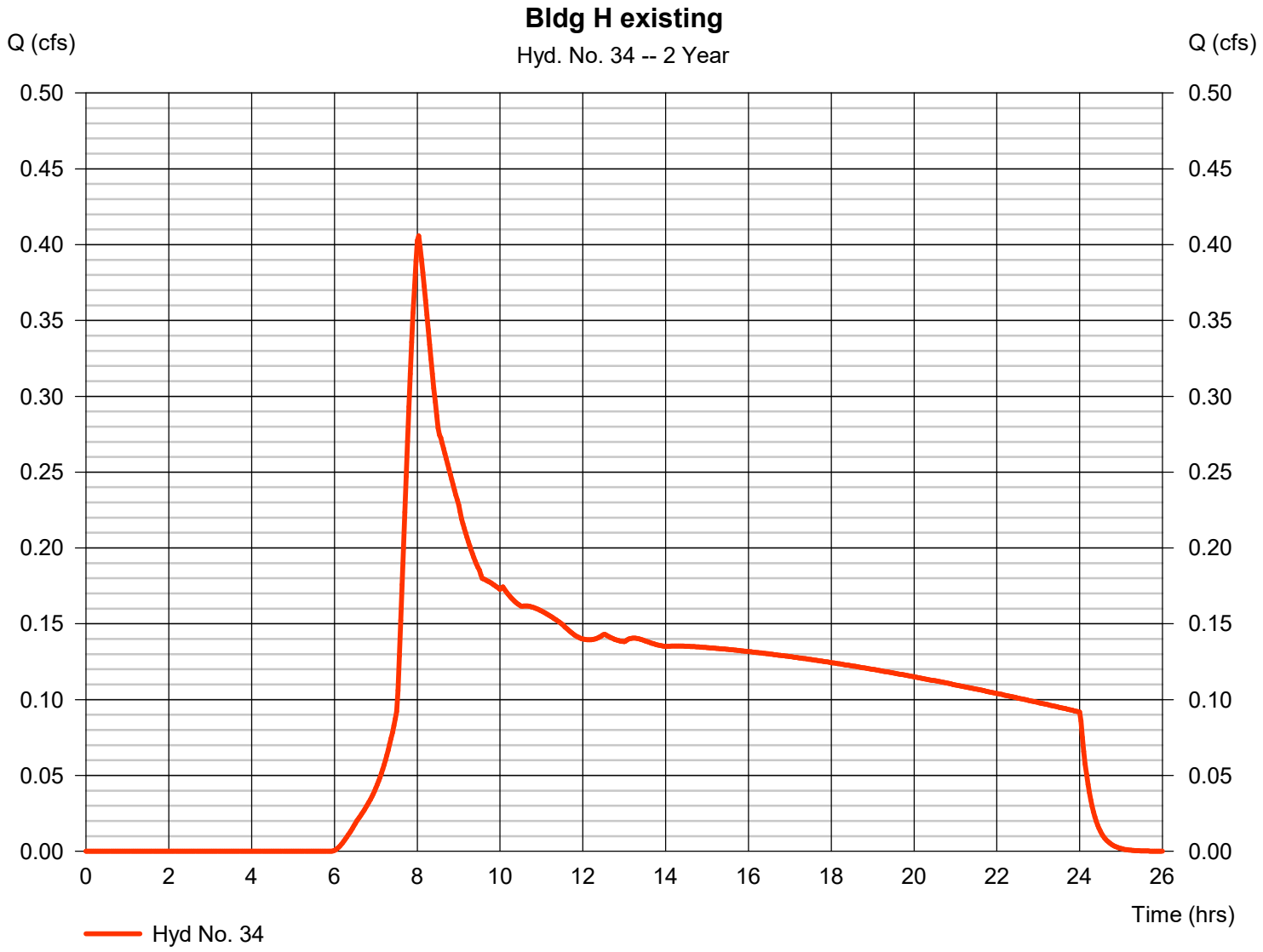
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 34

Bldg H existing

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.406 cfs
Storm frequency	=	2 yrs	Time to peak	=	8.03 hrs
Time interval	=	2 min	Hyd. volume	=	8,873 cuft
Drainage area	=	2.750 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	15.00 min
Total precip.	=	2.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a



Hydrograph Report

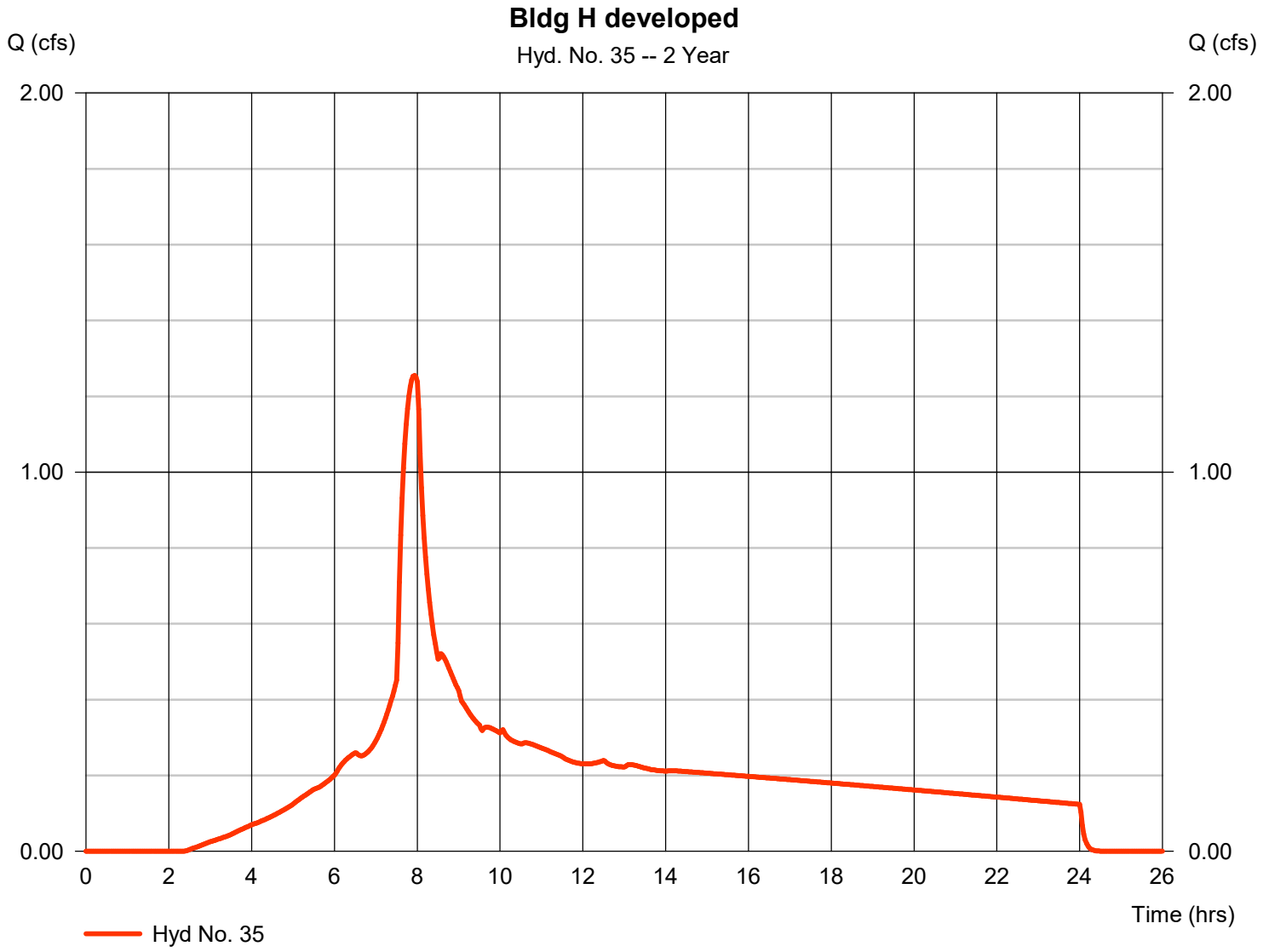
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 35

Bldg H developed

Hydrograph type	=	SBUH Runoff	Peak discharge	=	1.255 cfs
Storm frequency	=	2 yrs	Time to peak	=	7.93 hrs
Time interval	=	2 min	Hyd. volume	=	17,763 cuft
Drainage area	=	2.750 ac	Curve number	=	93*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(2.060 x 98) + (0.690 x 80)] / 2.750



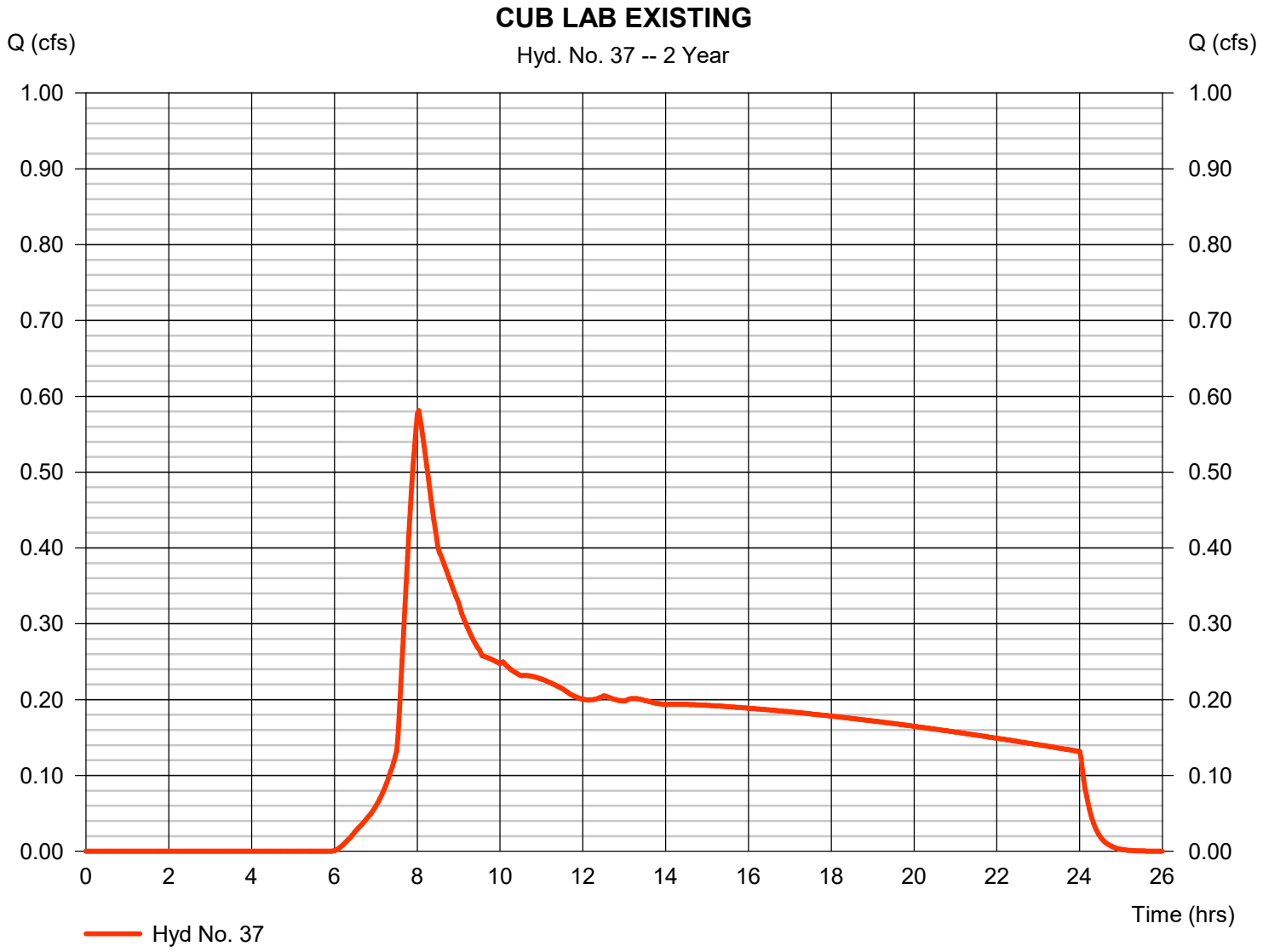
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 37

CUB LAB EXISTING

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.581 cfs
Storm frequency	= 2 yrs	Time to peak	= 8.03 hrs
Time interval	= 2 min	Hyd. volume	= 12,713 cuft
Drainage area	= 3.940 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 2.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a



Hydrograph Report

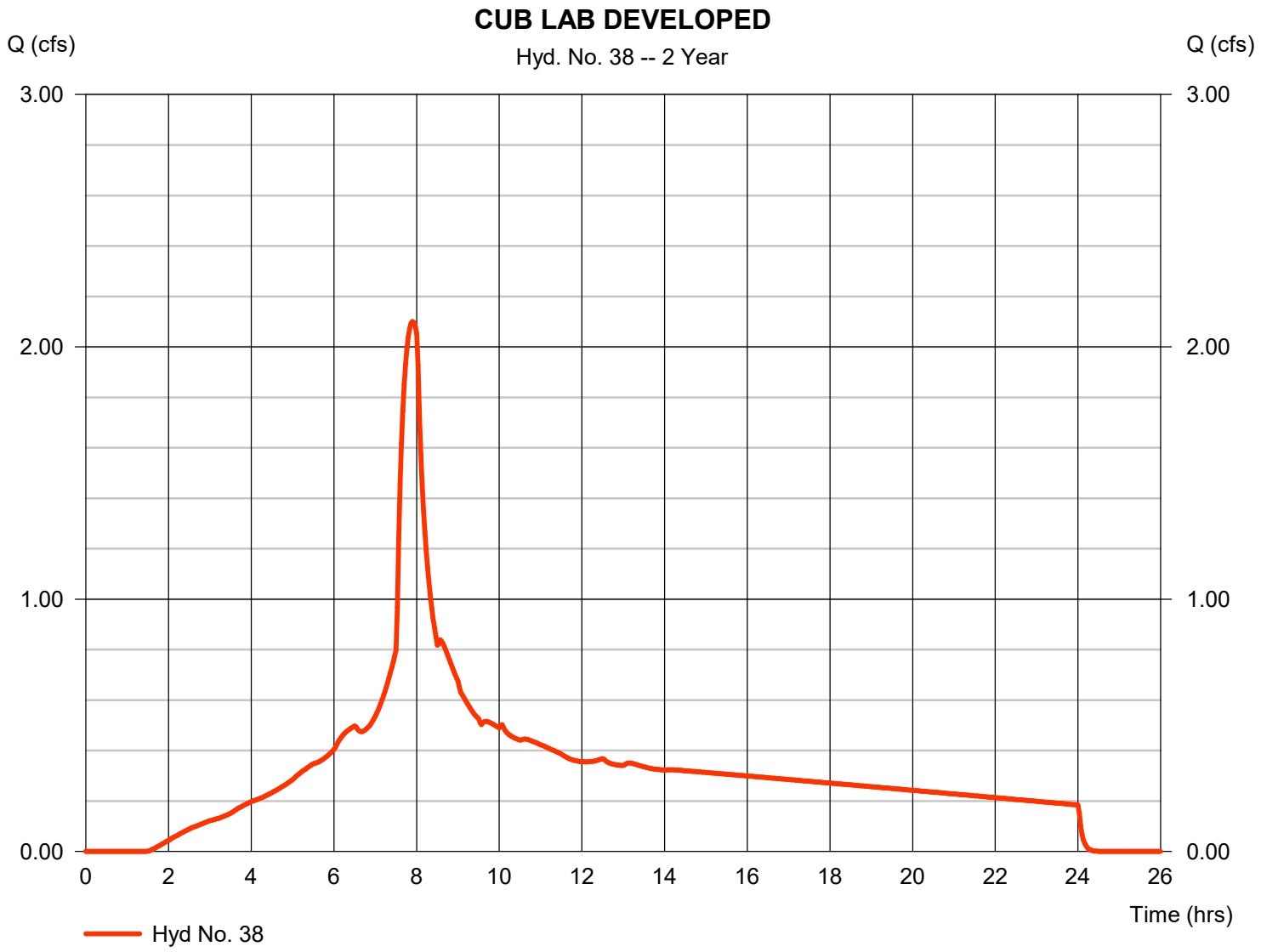
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 38

CUB LAB DEVELOPED

Hydrograph type	=	SBUH Runoff	Peak discharge	=	2.101 cfs
Storm frequency	=	2 yrs	Time to peak	=	7.90 hrs
Time interval	=	2 min	Hyd. volume	=	29,481 cuft
Drainage area	=	3.940 ac	Curve number	=	96*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(3.590 x 98) + (0.350 x 80)] / 3.940



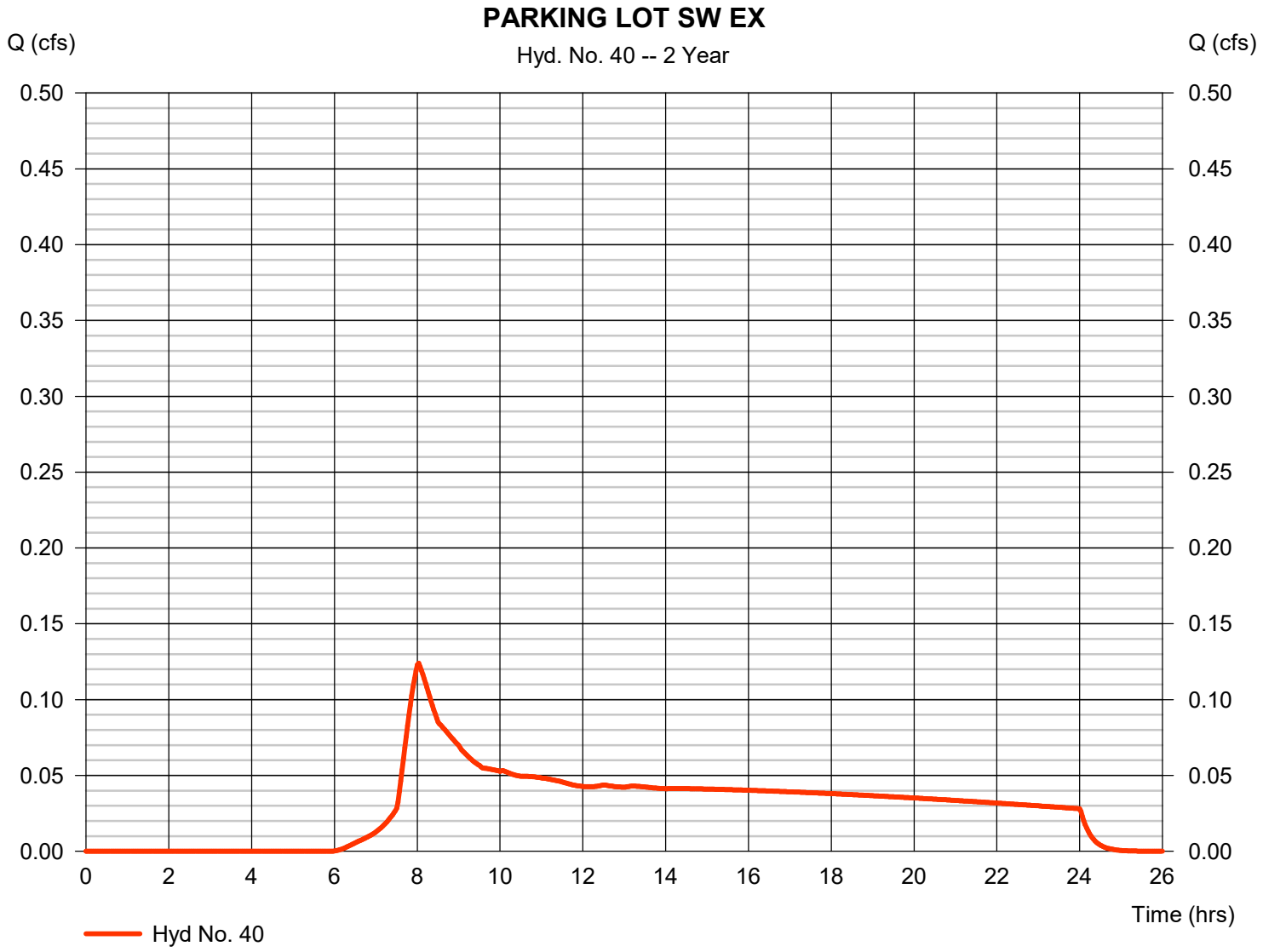
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 40

PARKING LOT SW EX

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.124 cfs
Storm frequency	= 2 yrs	Time to peak	= 8.03 hrs
Time interval	= 2 min	Hyd. volume	= 2,710 cuft
Drainage area	= 0.840 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 2.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a



Hydrograph Report

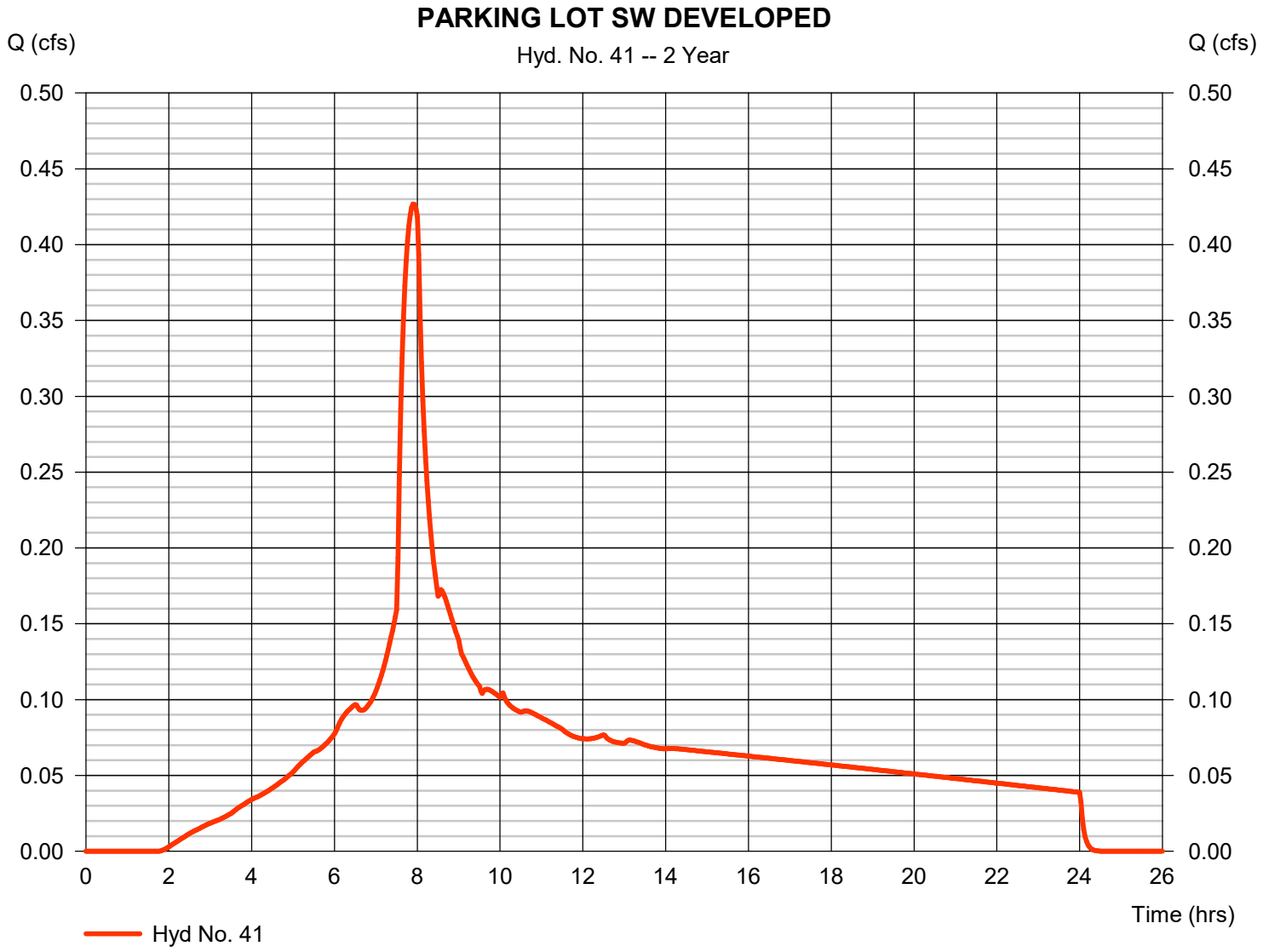
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 41

PARKING LOT SW DEVELOPED

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.427 cfs
Storm frequency	=	2 yrs	Time to peak	=	7.90 hrs
Time interval	=	2 min	Hyd. volume	=	5,986 cuft
Drainage area	=	0.840 ac	Curve number	=	95*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.690 x 98) + (0.150 x 80)] / 0.840



Hydrograph Report

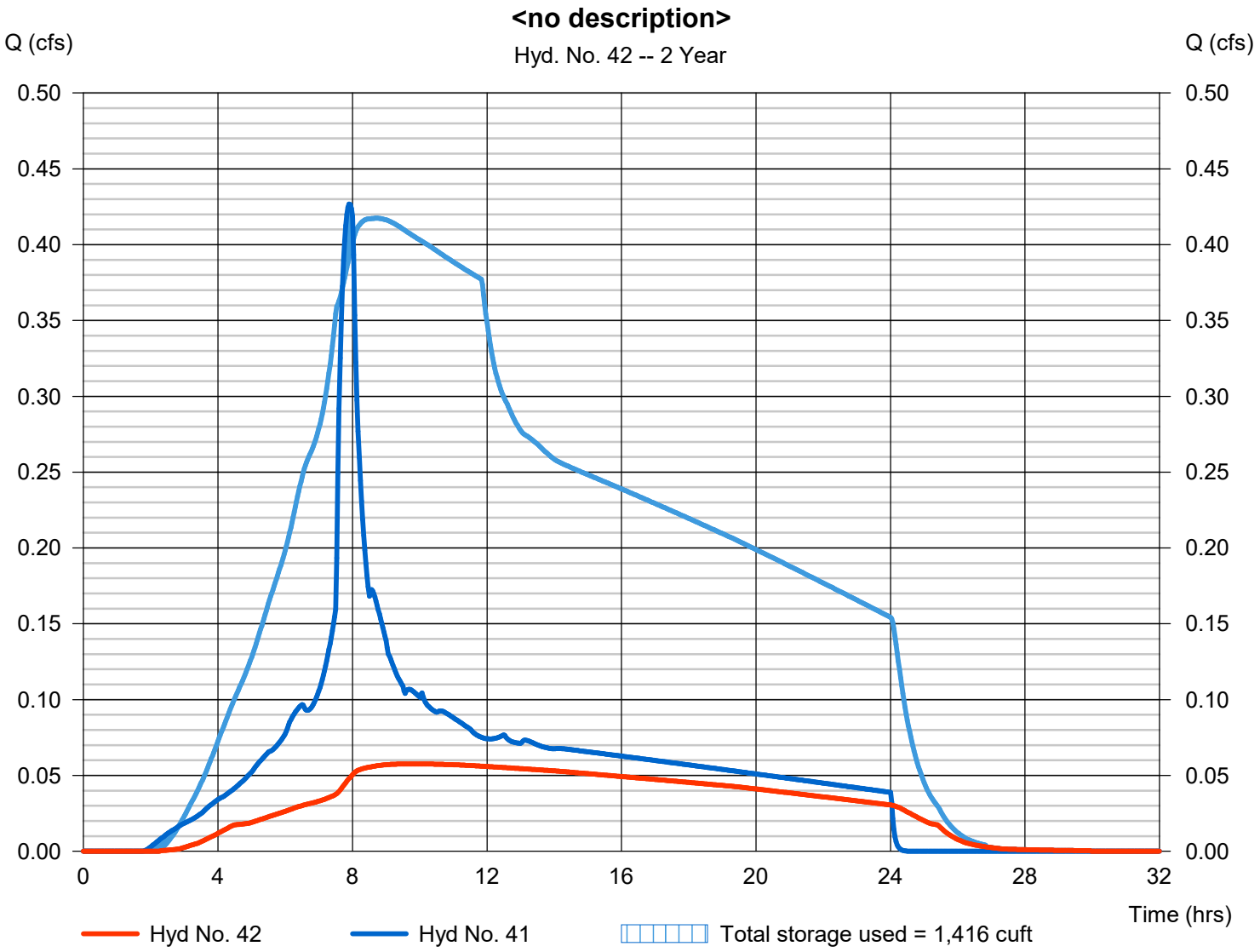
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 42

<no description>

Hydrograph type	=	Reservoir	Peak discharge	=	0.058 cfs
Storm frequency	=	2 yrs	Time to peak	=	9.90 hrs
Time interval	=	2 min	Hyd. volume	=	3,334 cuft
Inflow hyd. No.	=	41 - PARKING LOT SW DEVELOPED	Max. Elevation	=	101.06 ft
Reservoir name	=	SW Parking Lot Detention	Max. Storage	=	1,416 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 — Wednesday, 07 / 16 / 2025

Pond No. 21 - SW Parking Lot Detention

Pond Data

Trapezoid -Bottom L x W = 4.0 x 180.0 ft, Side slope = 3.00:1, Bottom elev. = 100.00 ft, Depth = 3.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	100.00	720	0	0
0.30	100.30	1,054	266	266
0.60	100.60	1,395	367	633
0.90	100.90	1,743	471	1,104
1.20	101.20	2,097	576	1,680
1.50	101.50	2,457	683	2,362
1.80	101.80	2,824	792	3,154
2.10	102.10	3,197	903	4,057
2.40	102.40	3,577	1,016	5,073
2.70	102.70	3,963	1,131	6,204
3.00	103.00	4,356	1,248	7,452

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 1.75	0.00	0.00	0.00
Span (in)	= 1.75	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 100.00	0.00	0.00	0.00
Length (ft)	= 10.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

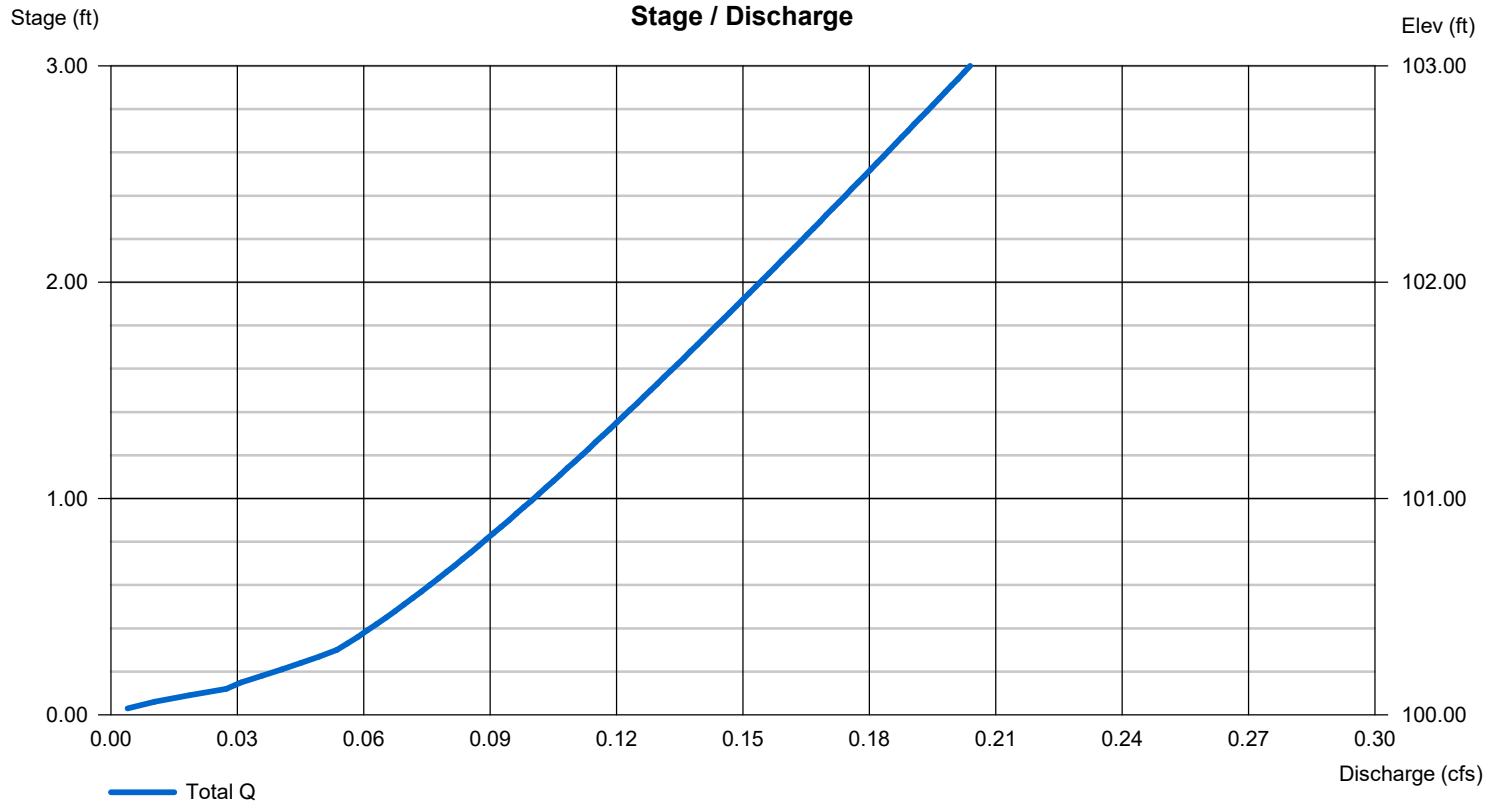
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 1.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 44

PARKING LOT NW EX

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.266 cfs
Storm frequency	= 2 yrs	Time to peak	= 8.03 hrs
Time interval	= 2 min	Hyd. volume	= 5,808 cuft
Drainage area	= 1.800 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 2.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 45

PARKING LOT NW DEVELOPED

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.729 cfs
Storm frequency	= 2 yrs	Time to peak	= 7.93 hrs
Time interval	= 2 min	Hyd. volume	= 10,522 cuft
Drainage area	= 1.800 ac	Curve number	= 91*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

* Composite (Area/CN) = [(1.130 x 98) + (0.670 x 80)] / 1.800



Hydrograph Report

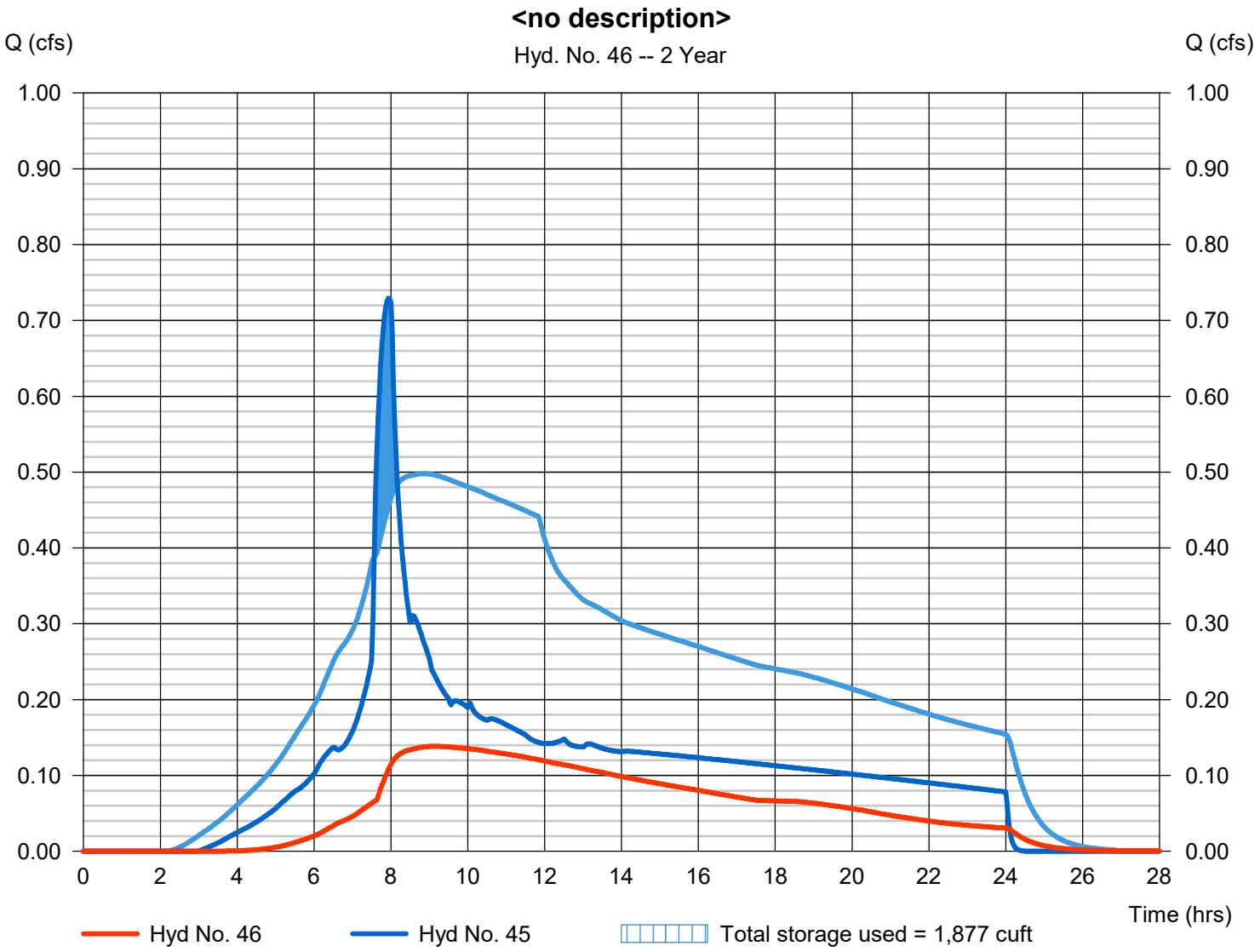
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 46

<no description>

Hydrograph type	=	Reservoir	Peak discharge	=	0.138 cfs
Storm frequency	=	2 yrs	Time to peak	=	9.13 hrs
Time interval	=	2 min	Hyd. volume	=	5,385 cuft
Inflow hyd. No.	=	45 - PARKING LOT NW DEVELOPED	Max. Elevation	=	100.61 ft
Reservoir name	=	NW Parking Lot Detention	Max. Storage	=	1,877 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 — Wednesday, 07 / 16 / 2025

Pond No. 23 - NW Parking Lot Detention

Pond Data

Trapezoid -Bottom L x W = 450.0 x 5.0 ft, Side slope = 3.00:1, Bottom elev. = 100.00 ft, Depth = 1.50 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	100.00	2,250	0	0
0.15	100.15	2,660	368	368
0.30	100.30	3,072	430	798
0.45	100.45	3,486	492	1,290
0.60	100.60	3,901	554	1,844
0.75	100.75	4,318	616	2,460
0.90	100.90	4,736	679	3,139
1.05	101.05	5,156	742	3,881
1.20	101.20	5,578	805	4,686
1.35	101.35	6,001	868	5,555
1.50	101.50	6,426	932	6,487

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 2.95	0.00	0.00	0.00
Span (in)	= 2.95	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 100.00	0.00	0.00	0.00
Length (ft)	= 10.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

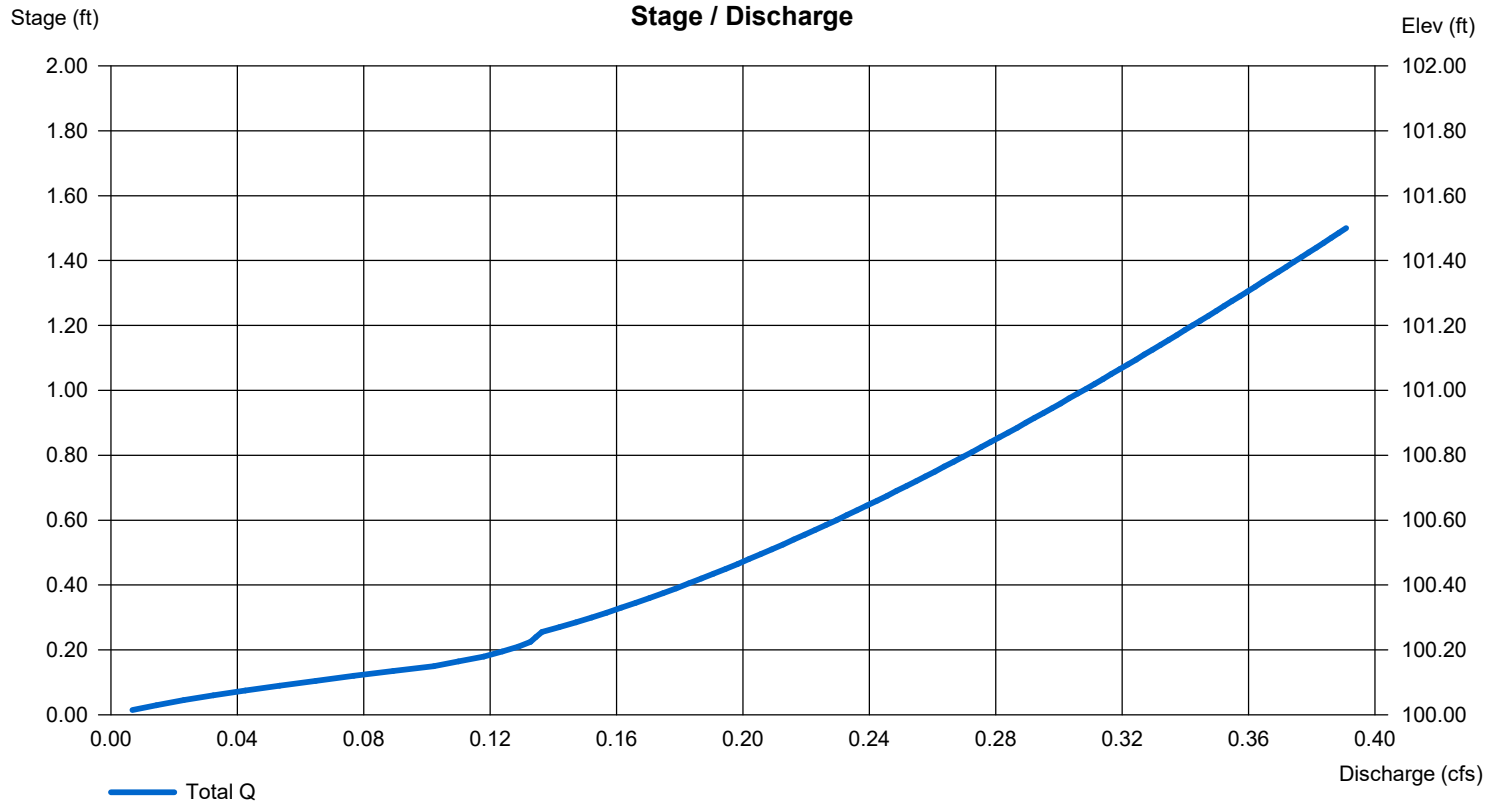
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 1.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



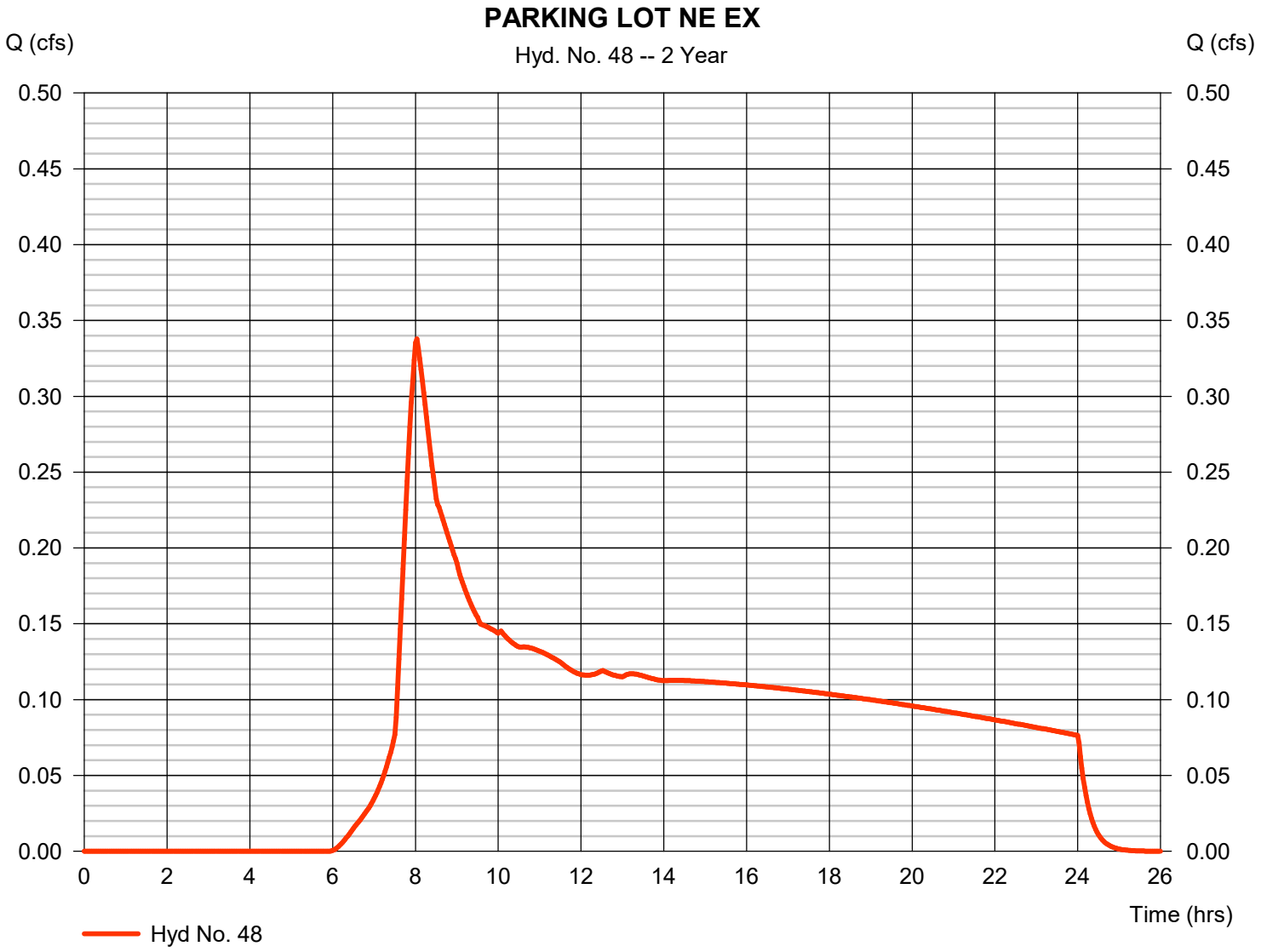
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 48

PARKING LOT NE EX

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.338 cfs
Storm frequency	= 2 yrs	Time to peak	= 8.03 hrs
Time interval	= 2 min	Hyd. volume	= 7,389 cuft
Drainage area	= 2.290 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 2.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a



Hydrograph Report

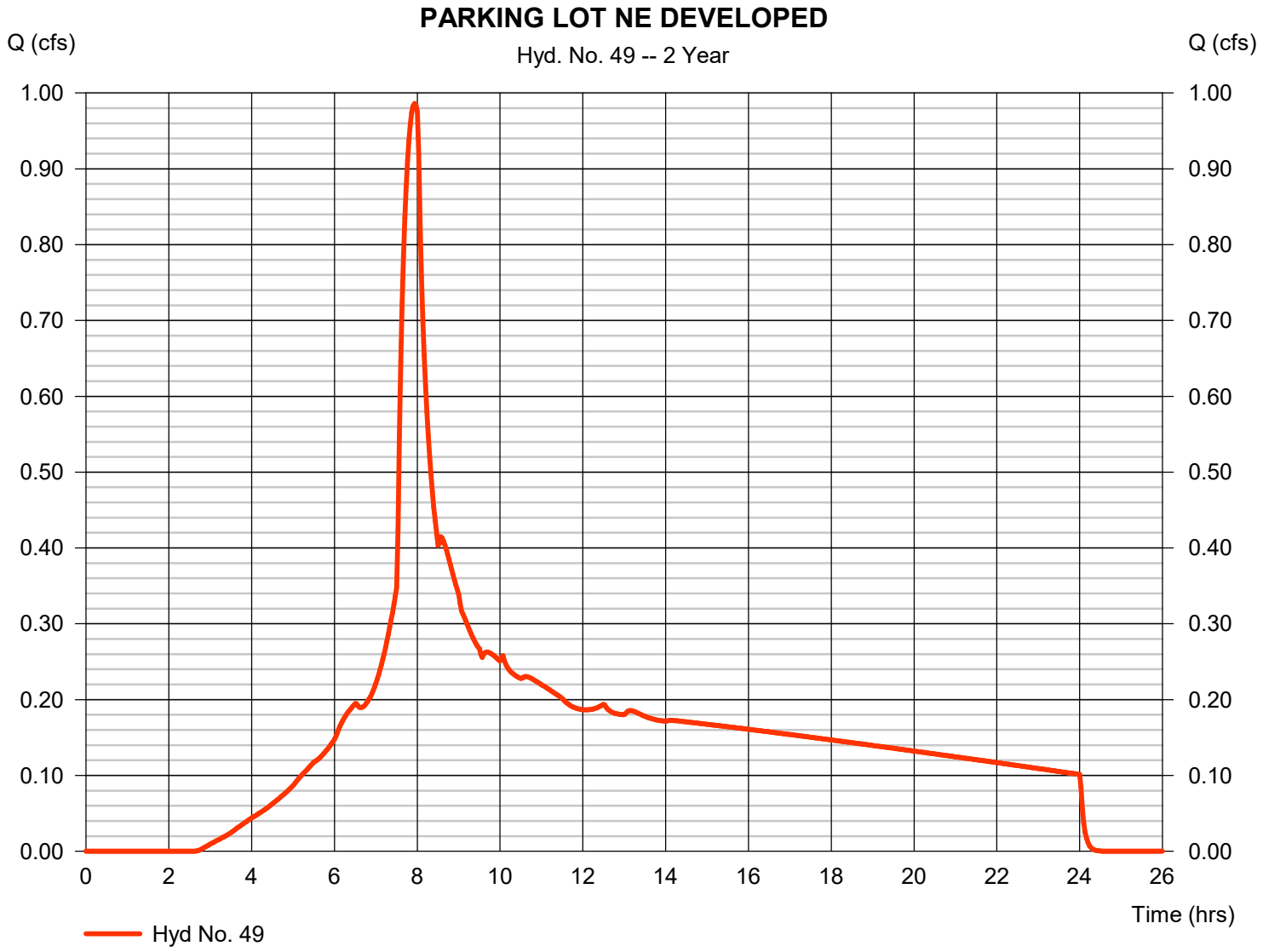
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 49

PARKING LOT NE DEVELOPED

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.986 cfs
Storm frequency	= 2 yrs	Time to peak	= 7.93 hrs
Time interval	= 2 min	Hyd. volume	= 14,075 cuft
Drainage area	= 2.290 ac	Curve number	= 92*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

* Composite (Area/CN) = [(1.580 x 98) + (0.710 x 80)] / 2.290



Hydrograph Report

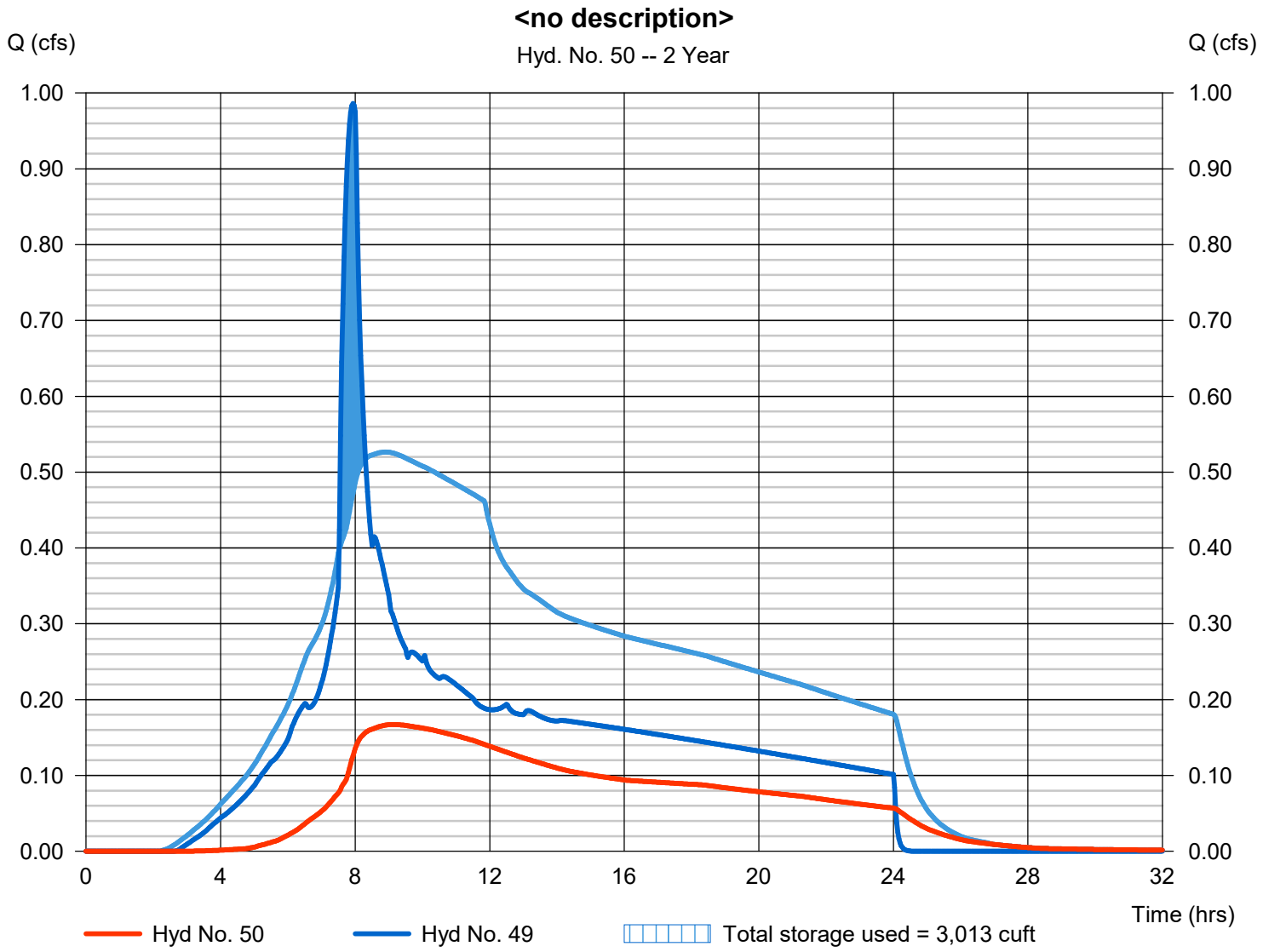
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 50

<no description>

Hydrograph type	=	Reservoir	Peak discharge	=	0.167 cfs
Storm frequency	=	2 yrs	Time to peak	=	9.13 hrs
Time interval	=	2 min	Hyd. volume	=	6,952 cuft
Inflow hyd. No.	=	49 - PARKING LOT NE DEVELOPED	Max. Elevation	=	100.52 ft
Reservoir name	=	NE Parking Lot Detention	Max. Storage	=	3,013 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 — Wednesday, 07 / 16 / 2025

Pond No. 17 - NE Parking Lot Detention

Pond Data

Trapezoid -Bottom L x W = 175.0 x 31.0 ft, Side slope = 3.00:1, Bottom elev. = 100.00 ft, Depth = 4.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	100.00	5,425	0	0
0.40	100.40	5,925	2,270	2,270
0.80	100.80	6,437	2,472	4,742
1.20	101.20	6,960	2,679	7,421
1.60	101.60	7,495	2,891	10,311
2.00	102.00	8,041	3,107	13,418
2.40	102.40	8,599	3,328	16,746
2.80	102.80	9,168	3,553	20,299
3.20	103.20	9,749	3,783	24,082
3.60	103.60	10,341	4,018	28,099
4.00	104.00	10,945	4,257	32,356

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 3.42	0.00	0.00	0.00
Span (in)	= 3.42	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 100.00	0.00	0.00	0.00
Length (ft)	= 10.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

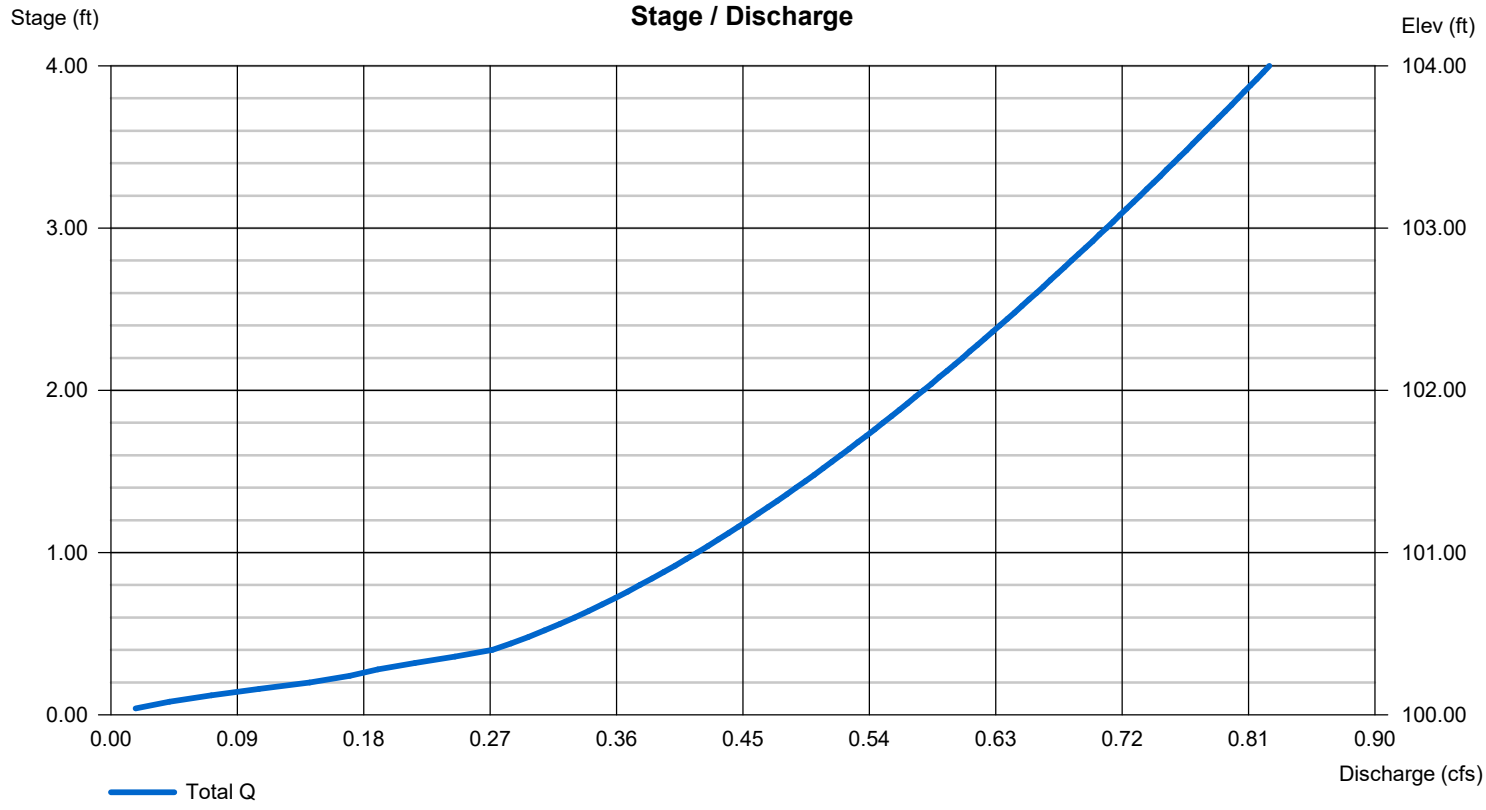
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 1.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



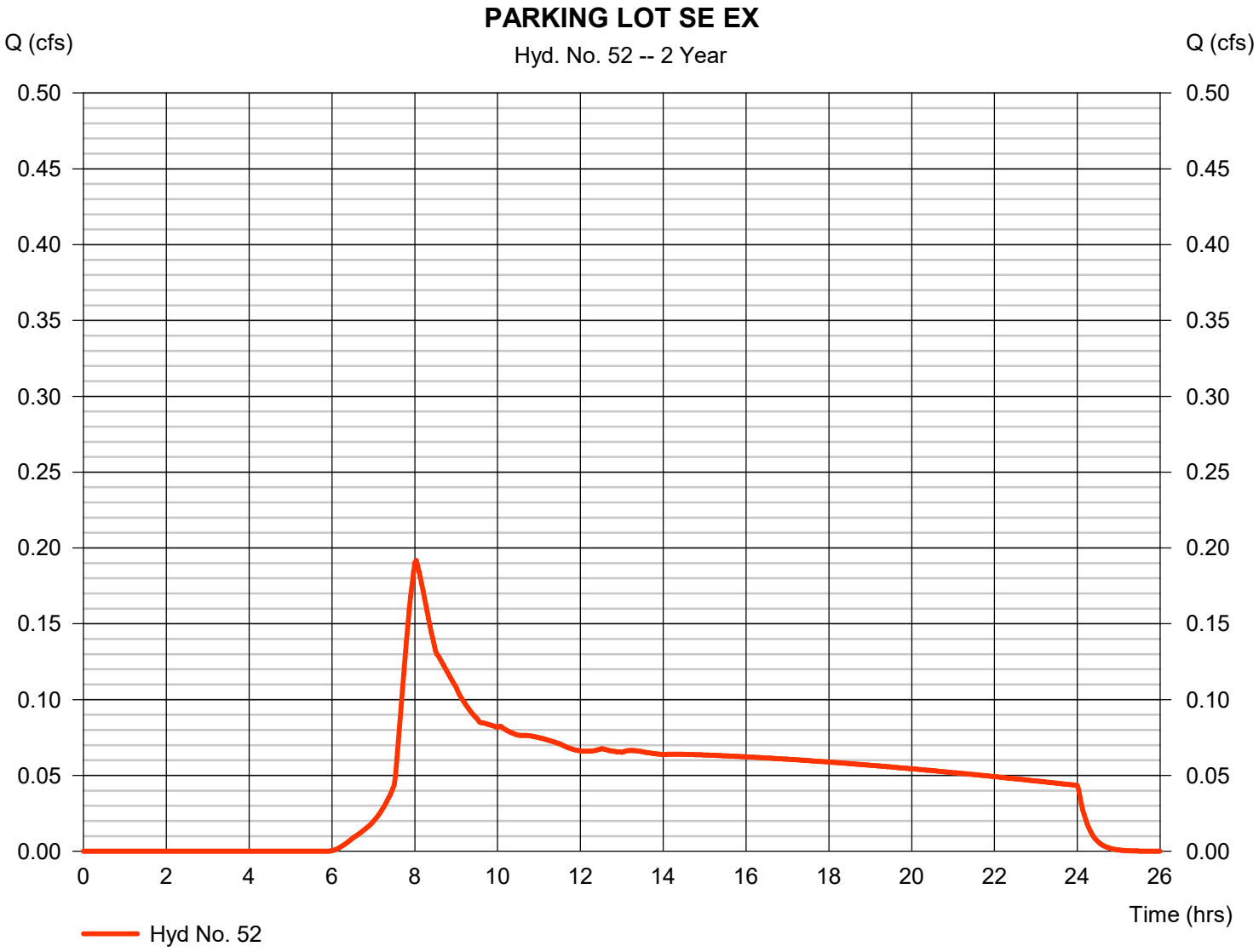
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 52

PARKING LOT SE EX

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.192 cfs
Storm frequency	= 2 yrs	Time to peak	= 8.03 hrs
Time interval	= 2 min	Hyd. volume	= 4,195 cuft
Drainage area	= 1.300 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 2.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 53

PARKING LOT SE DEVELOPED

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.593 cfs
Storm frequency	=	2 yrs	Time to peak	=	7.93 hrs
Time interval	=	2 min	Hyd. volume	=	8,397 cuft
Drainage area	=	1.300 ac	Curve number	=	93*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	2.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.920 x 98) + (0.380 x 80)] / 1.300



Hydrograph Report

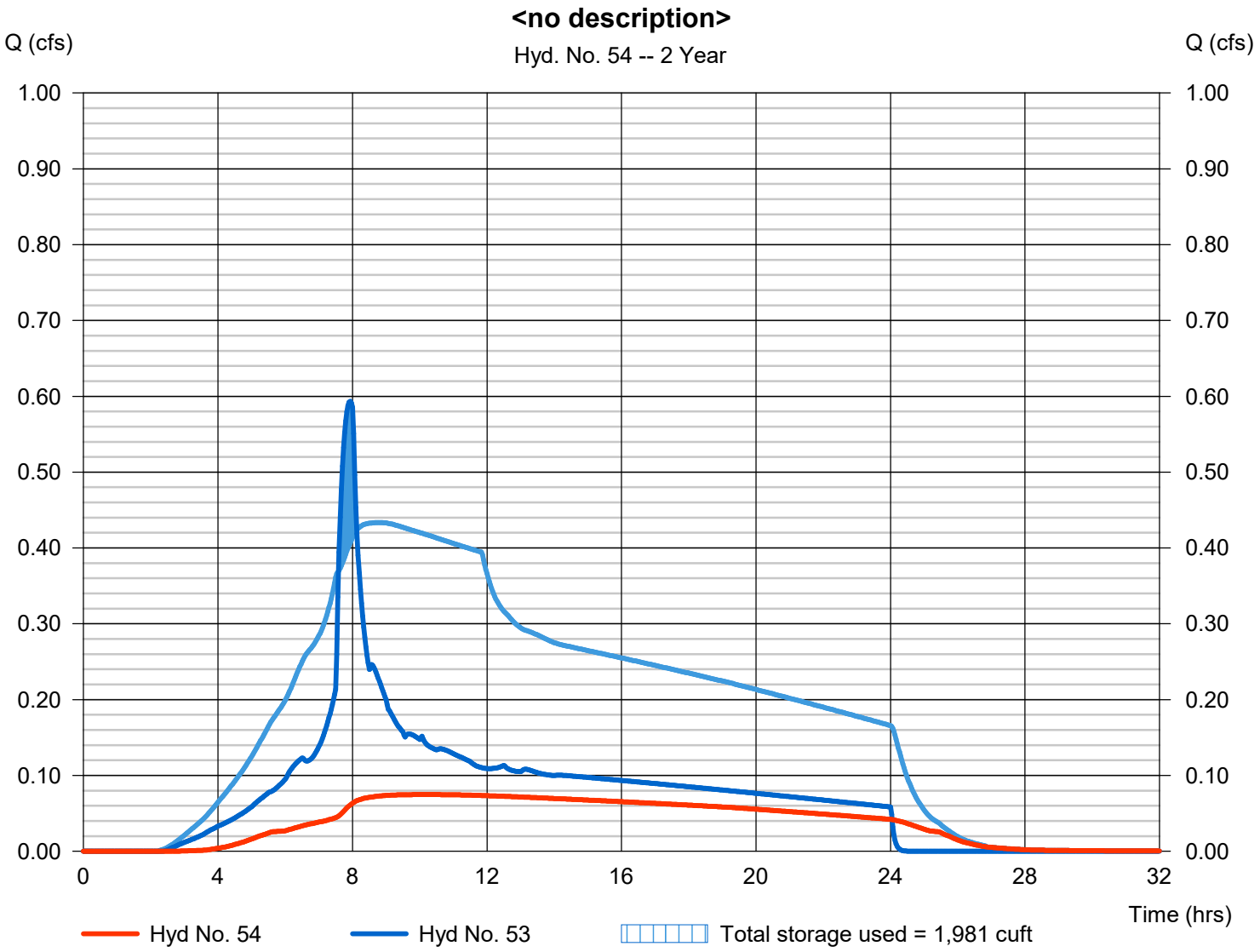
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 54

<no description>

Hydrograph type	= Reservoir	Peak discharge	= 0.075 cfs
Storm frequency	= 2 yrs	Time to peak	= 10.17 hrs
Time interval	= 2 min	Hyd. volume	= 4,319 cuft
Inflow hyd. No.	= 53 - PARKING LOT SE DEVELOPED	Max. Elevation	= 100.95 ft
Reservoir name	= SE Parking Lot Detention	Max. Storage	= 1,981 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 — Wednesday, 07 / 16 / 2025

Pond No. 19 - SE Parking Lot Detention

Pond Data

Trapezoid -Bottom L x W = 5.0 x 260.0 ft, Side slope = 3.00:1, Bottom elev. = 100.00 ft, Depth = 3.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	100.00	1,300	0	0
0.30	100.30	1,780	462	462
0.60	100.60	2,267	607	1,069
0.90	100.90	2,760	754	1,823
1.20	101.20	3,260	903	2,726
1.50	101.50	3,766	1,054	3,779
1.80	101.80	4,279	1,207	4,986
2.10	102.10	4,798	1,361	6,347
2.40	102.40	5,323	1,518	7,865
2.70	102.70	5,855	1,677	9,542
3.00	103.00	6,394	1,837	11,379

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 2.00	0.00	0.00	0.00
Span (in)	= 2.00	0.00	0.00	0.00
No. Barrels	= 1	0	0	0
Invert El. (ft)	= 100.00	0.00	0.00	0.00
Length (ft)	= 10.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

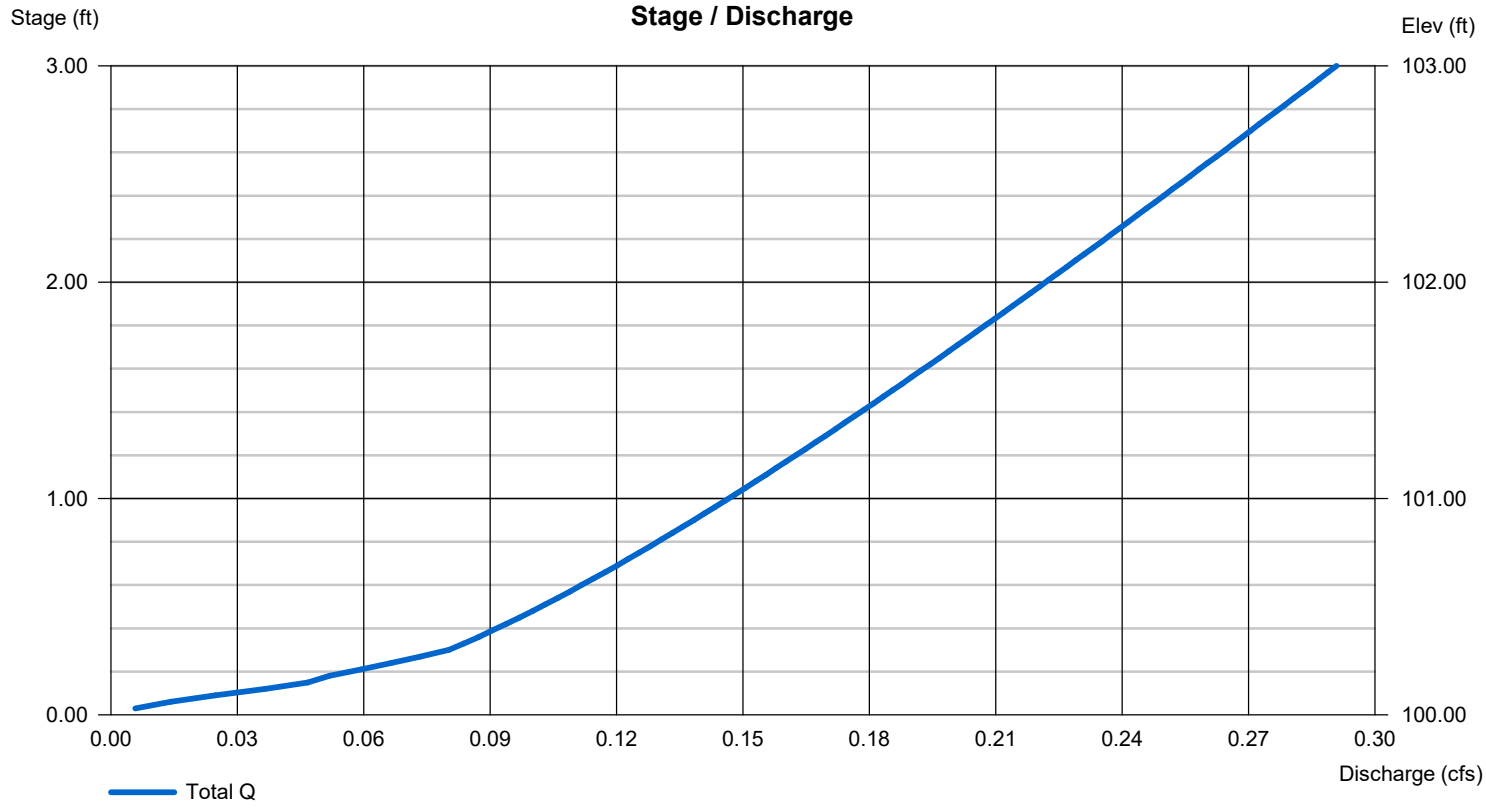
Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 0.00	0.00	0.00	0.00
Crest El. (ft)	= 0.00	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= ---	---	---	---
Multi-Stage	= No	No	No	No

Exfil.(in/hr) = 1.000 (by Wet area)

TW Elev. (ft) = 0.00

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).



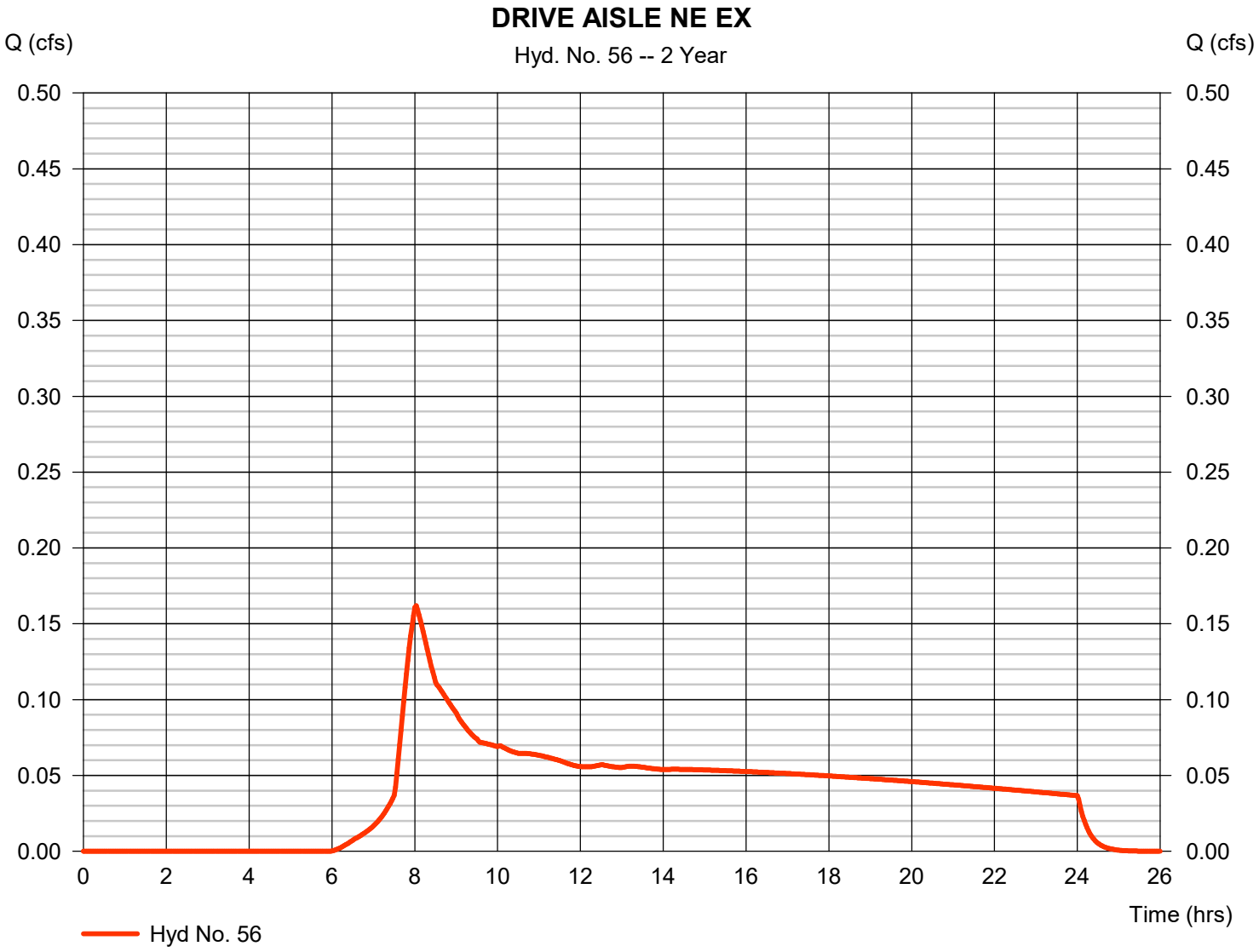
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 56

DRIVE AISLE NE EX

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.162 cfs
Storm frequency	= 2 yrs	Time to peak	= 8.03 hrs
Time interval	= 2 min	Hyd. volume	= 3,543 cuft
Drainage area	= 1.098 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 2.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a



Hydrograph Report

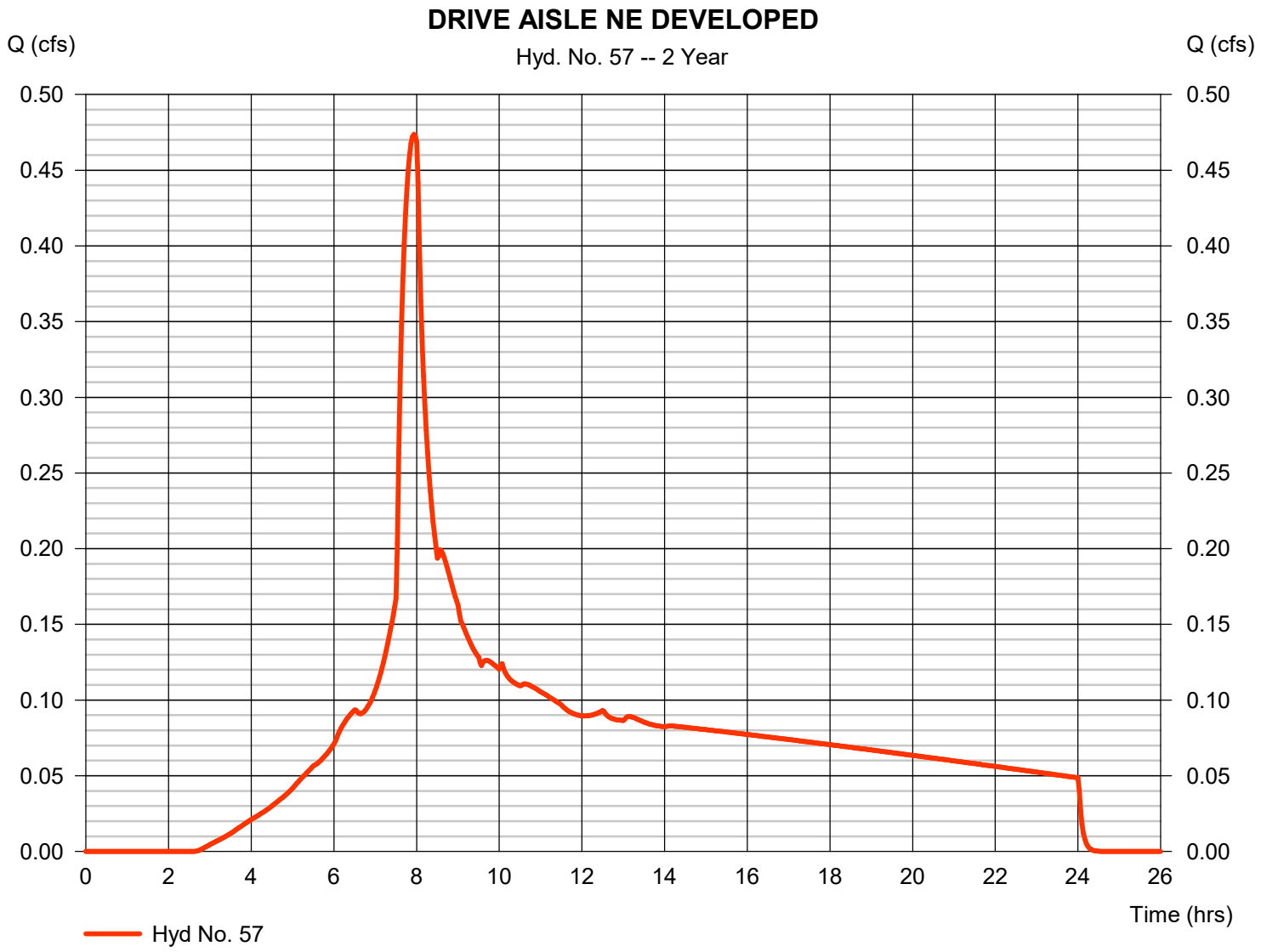
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 57

DRIVE AISLE NE DEVELOPED

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.474 cfs
Storm frequency	= 2 yrs	Time to peak	= 7.93 hrs
Time interval	= 2 min	Hyd. volume	= 6,761 cuft
Drainage area	= 1.100 ac	Curve number	= 92*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 2.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

* Composite (Area/CN) = [(0.733 x 98) + (0.365 x 80)] / 1.100



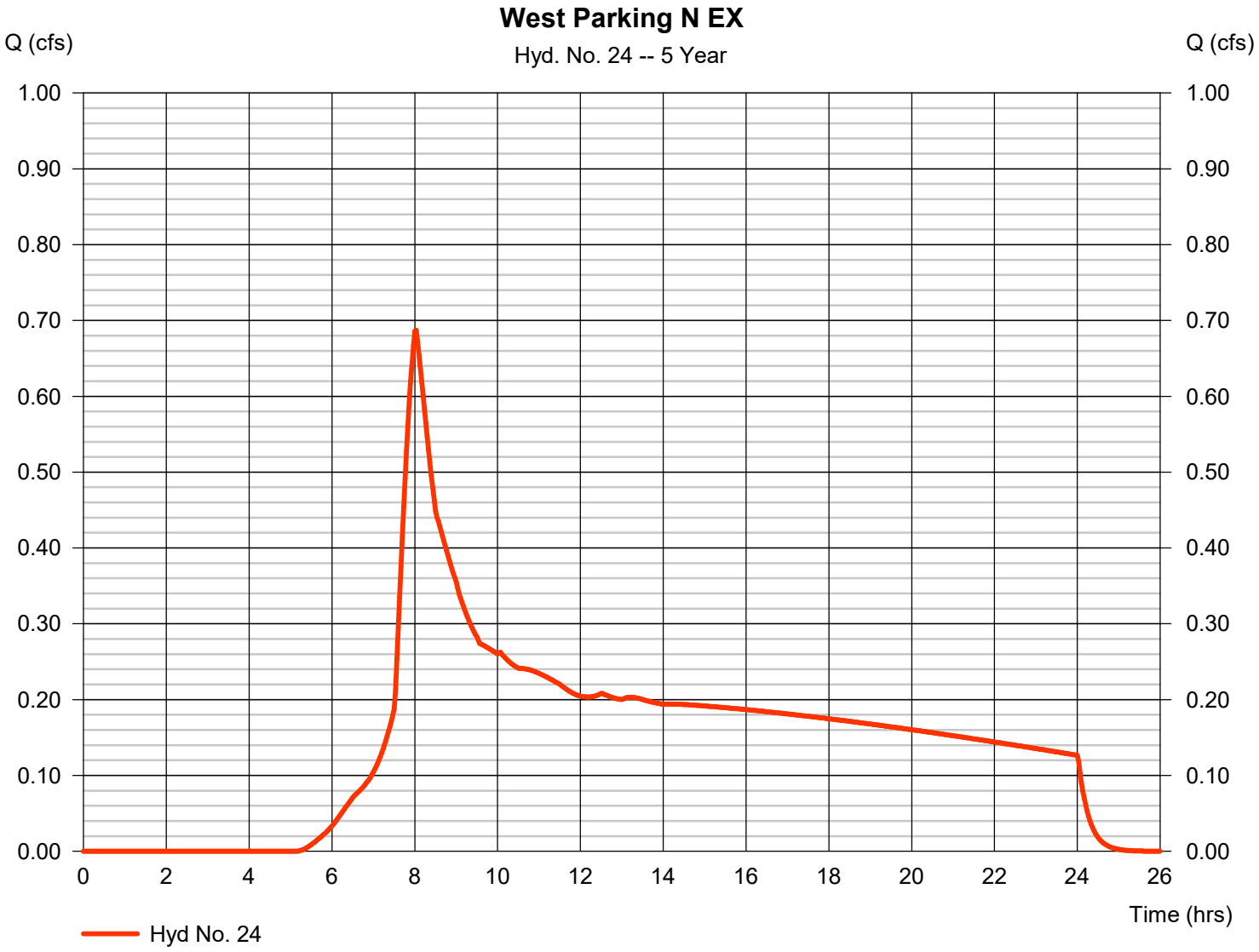
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 24

West Parking N EX

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.687 cfs
Storm frequency	=	5 yrs	Time to peak	=	8.03 hrs
Time interval	=	2 min	Hyd. volume	=	13,376 cuft
Drainage area	=	2.780 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	15.00 min
Total precip.	=	3.10 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a



Hydrograph Report

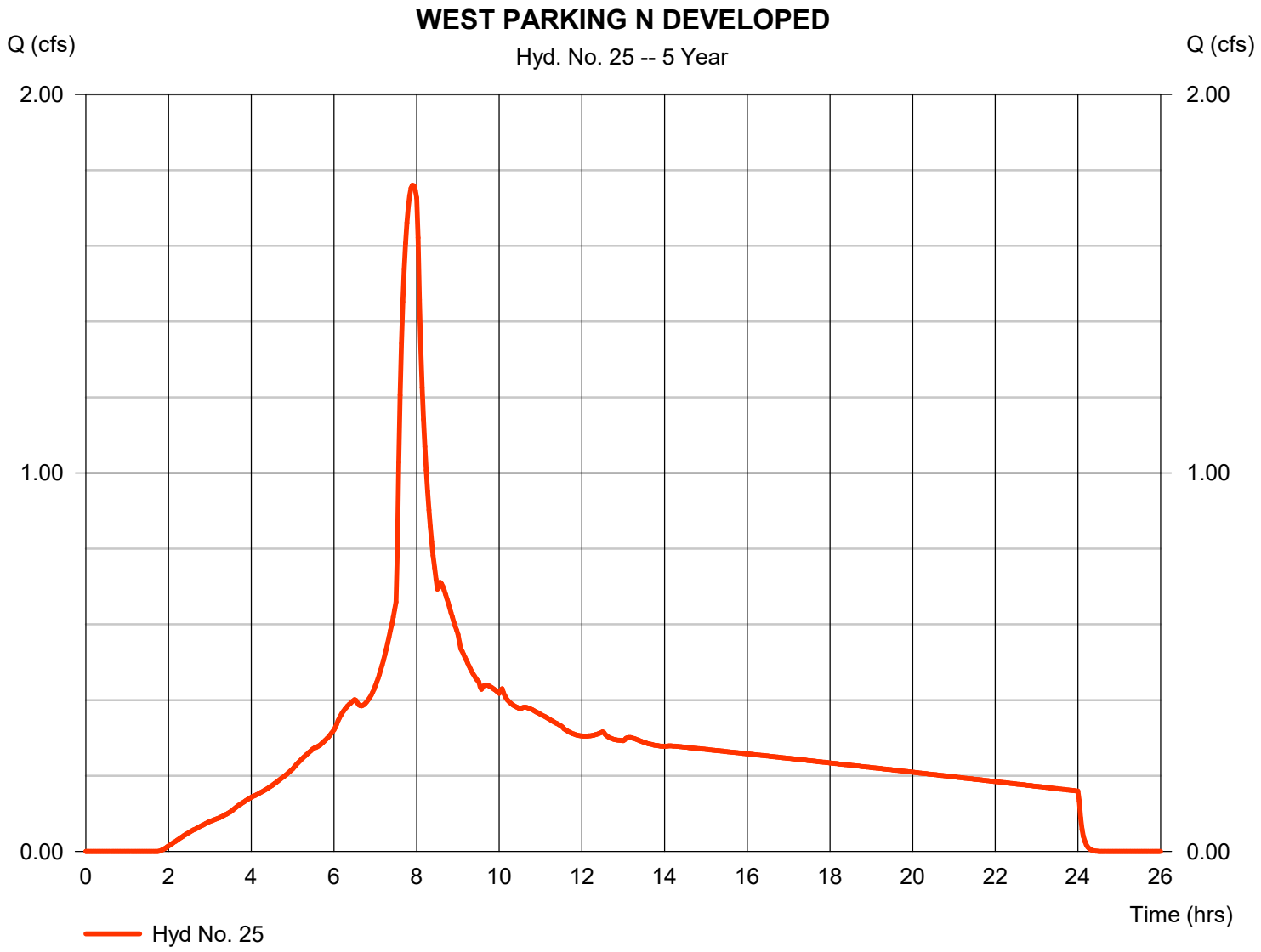
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 25

WEST PARKING N DEVELOPED

Hydrograph type	= SBUH Runoff	Peak discharge	= 1.761 cfs
Storm frequency	= 5 yrs	Time to peak	= 7.90 hrs
Time interval	= 2 min	Hyd. volume	= 24,692 cuft
Drainage area	= 2.780 ac	Curve number	= 94*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.10 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

* Composite (Area/CN) = [(2.170 x 98) + (0.610 x 80)] / 2.780



Hydrograph Report

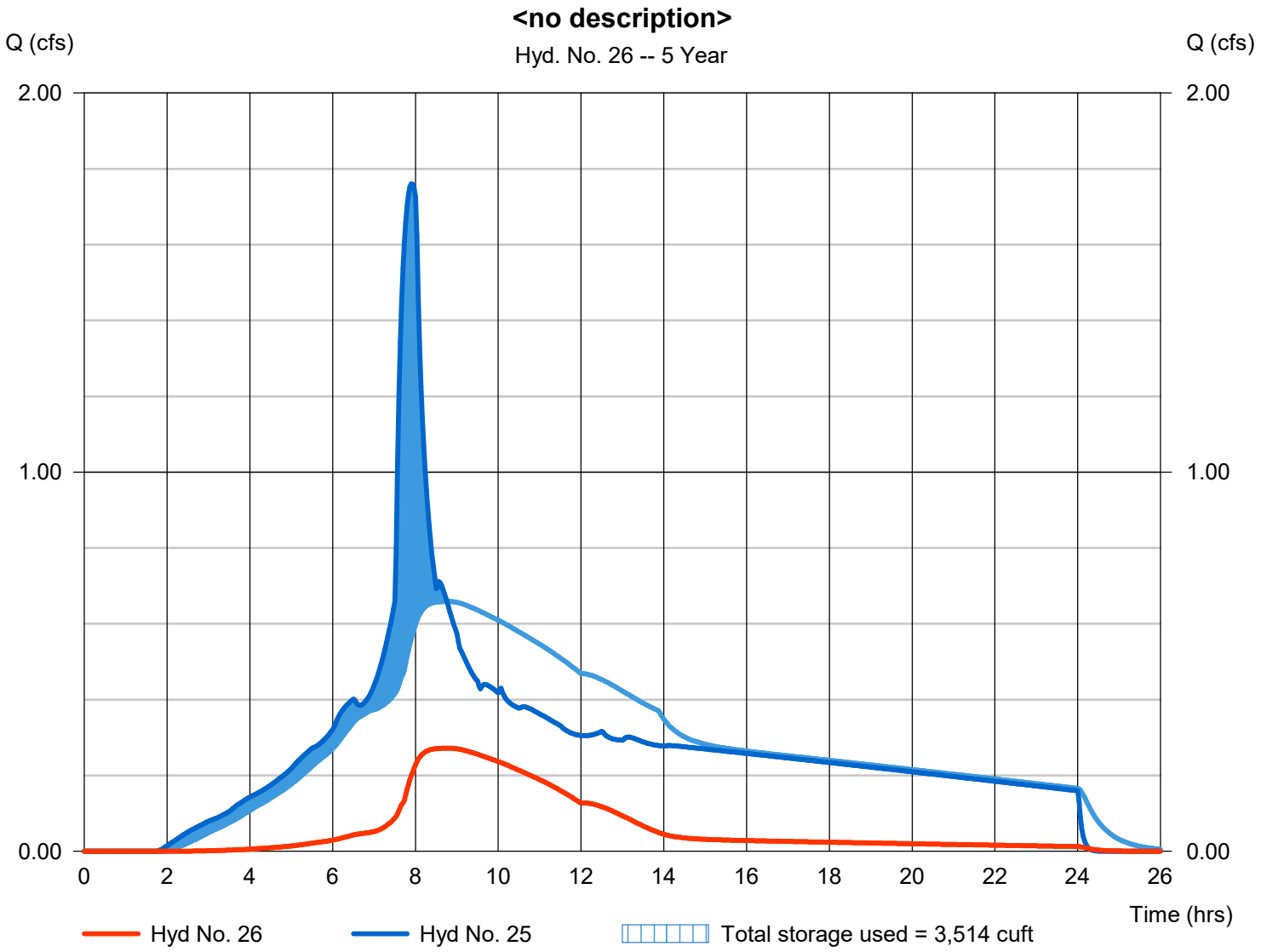
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 26

<no description>

Hydrograph type	=	Reservoir	Peak discharge	=	0.272 cfs
Storm frequency	=	5 yrs	Time to peak	=	8.77 hrs
Time interval	=	2 min	Hyd. volume	=	5,367 cuft
Inflow hyd. No.	=	25 - WEST PARKING N DEVELOPED	Max. Elevation	=	100.71 ft
Reservoir name	=	WEST NORTH DETENTION	Max. Storage	=	3,514 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



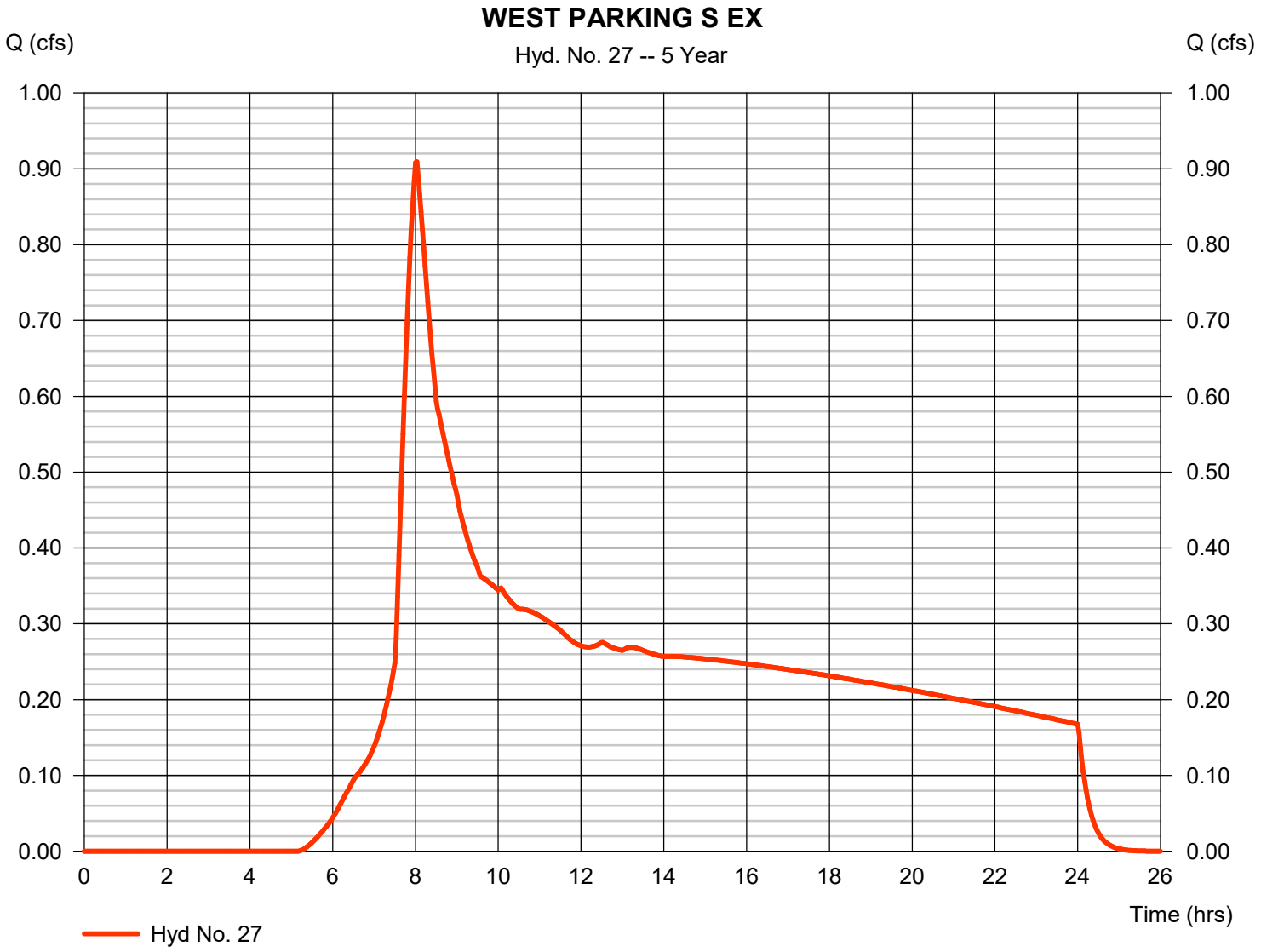
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 27

WEST PARKING S EX

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.909 cfs
Storm frequency	=	5 yrs	Time to peak	=	8.03 hrs
Time interval	=	2 min	Hyd. volume	=	17,706 cuft
Drainage area	=	3.680 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	15.00 min
Total precip.	=	3.10 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a



Hydrograph Report

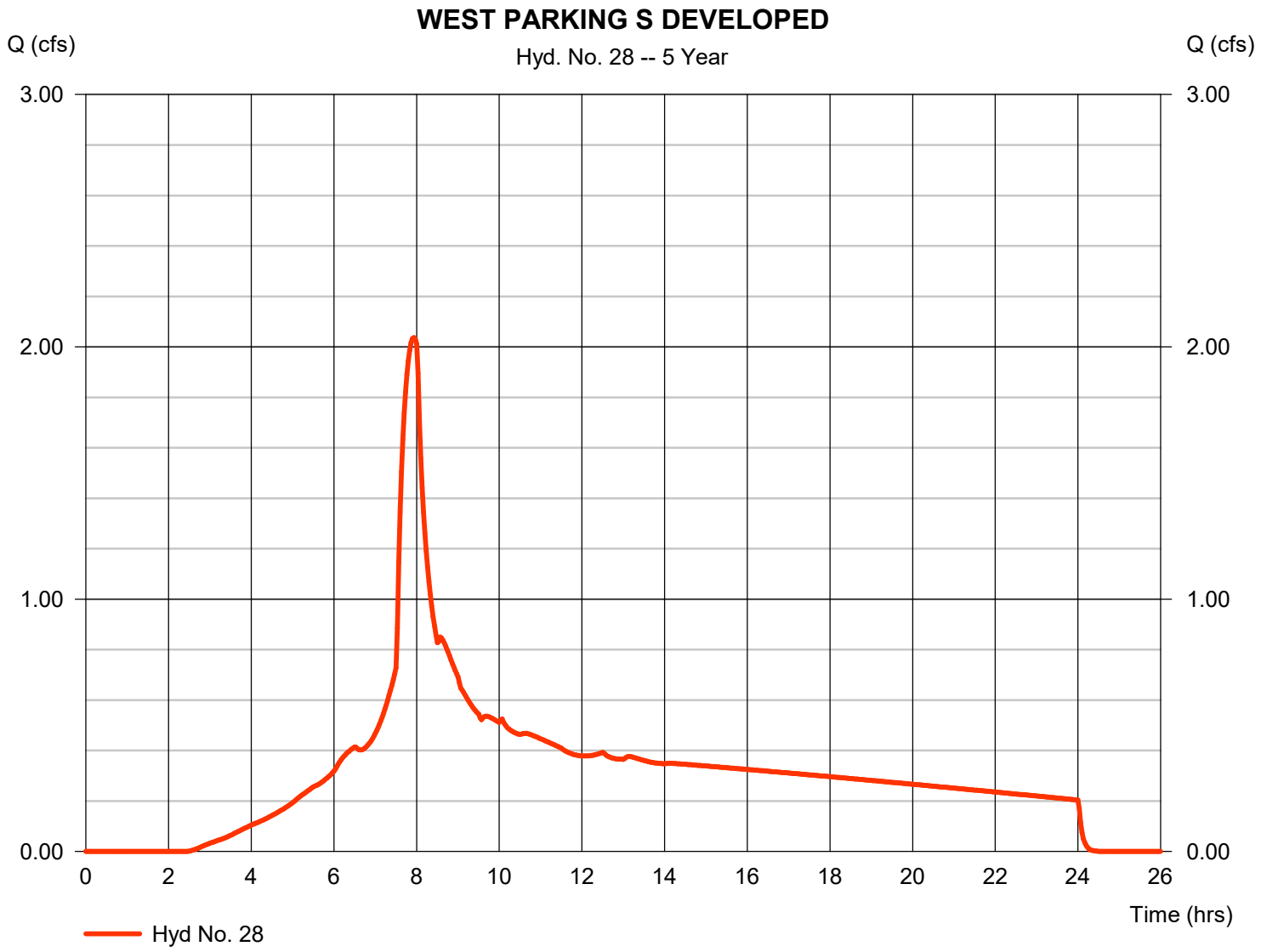
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 28

WEST PARKING S DEVELOPED

Hydrograph type	= SBUH Runoff	Peak discharge	= 2.037 cfs
Storm frequency	= 5 yrs	Time to peak	= 7.93 hrs
Time interval	= 2 min	Hyd. volume	= 28,915 cuft
Drainage area	= 3.680 ac	Curve number	= 91*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.10 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

* Composite (Area/CN) = [(2.190 x 98) + (1.490 x 80)] / 3.680



Hydrograph Report

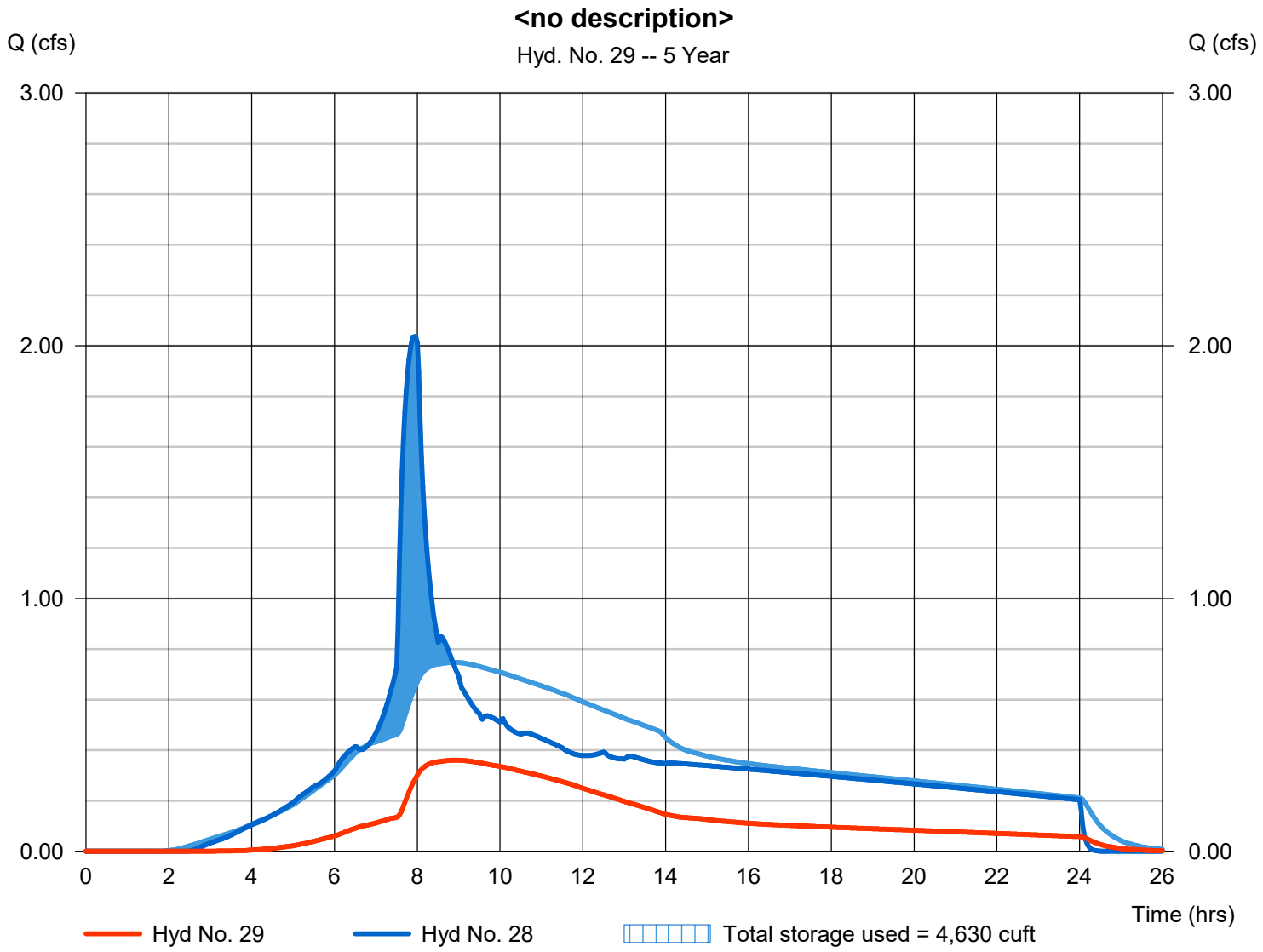
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 29

<no description>

Hydrograph type	=	Reservoir	Peak discharge	=	0.360 cfs
Storm frequency	=	5 yrs	Time to peak	=	8.93 hrs
Time interval	=	2 min	Hyd. volume	=	10,625 cuft
Inflow hyd. No.	=	28 - WEST PARKING S DEVELOPED	Max. Elevation	=	100.98 ft
Reservoir name	=	WEST SOUTH DETENTION	Max. Storage	=	4,630 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



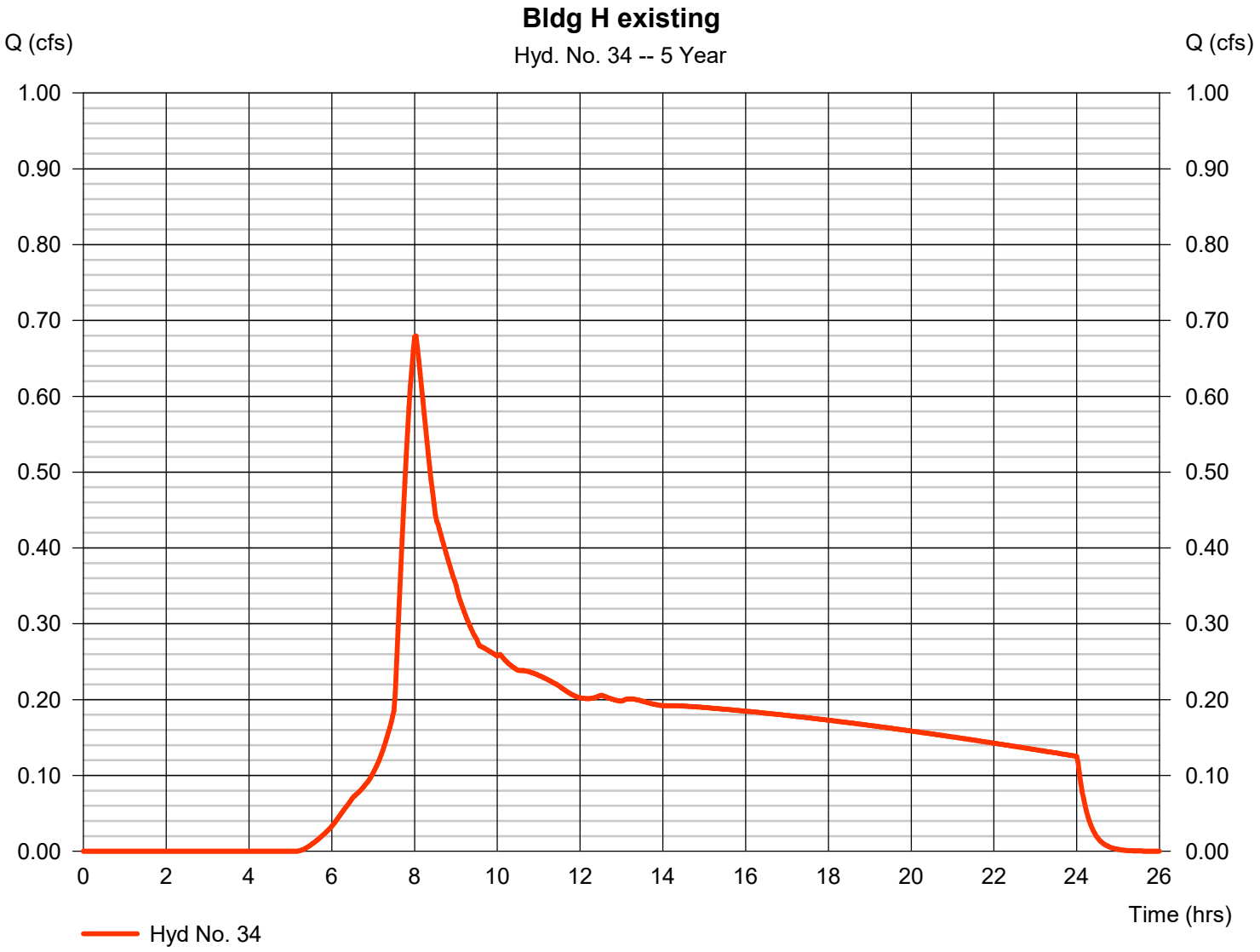
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 34

Bldg H existing

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.680 cfs
Storm frequency	=	5 yrs	Time to peak	=	8.03 hrs
Time interval	=	2 min	Hyd. volume	=	13,232 cuft
Drainage area	=	2.750 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	15.00 min
Total precip.	=	3.10 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a



Hydrograph Report

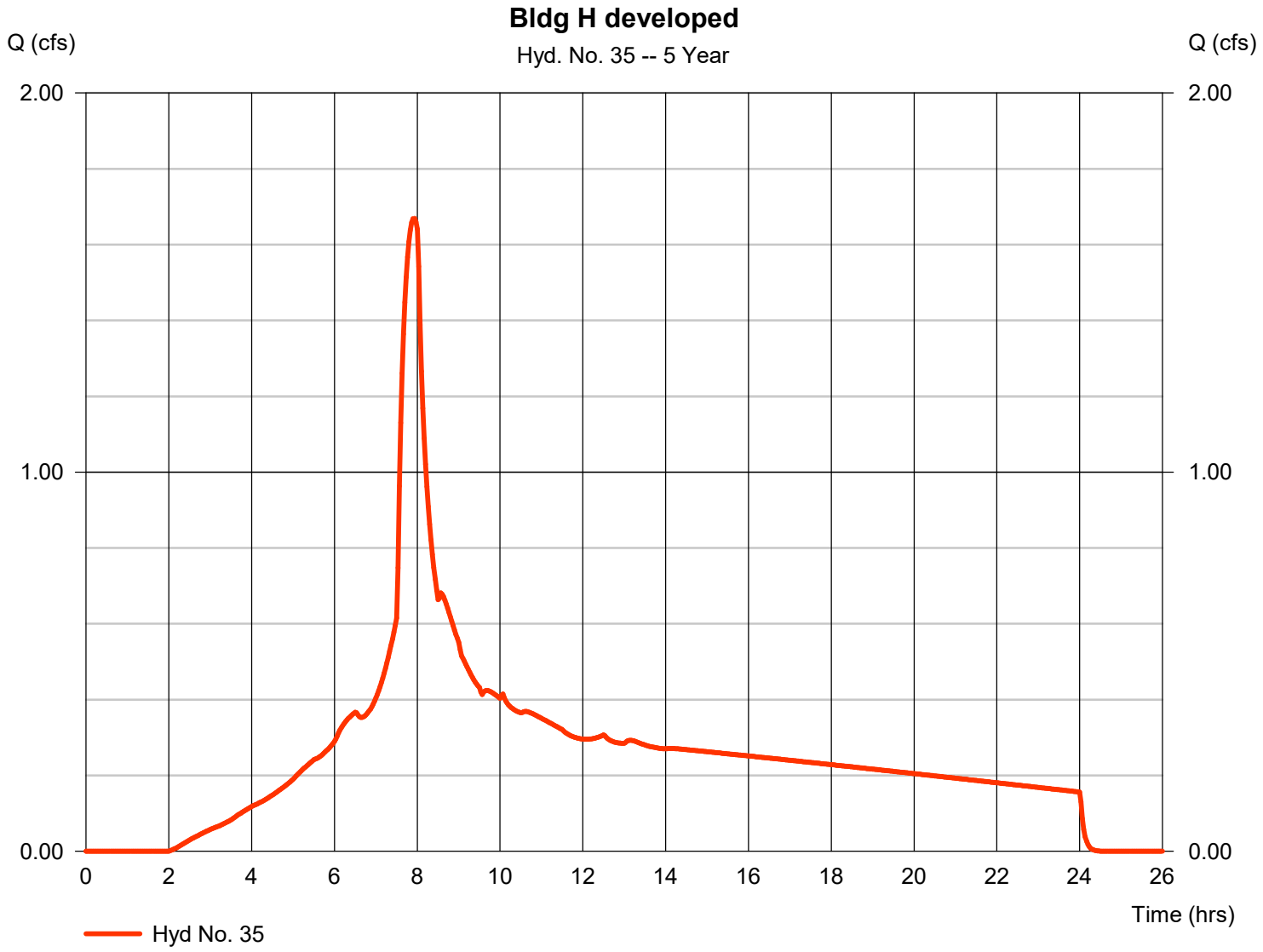
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 35

Bldg H developed

Hydrograph type	=	SBUH Runoff	Peak discharge	=	1.669 cfs
Storm frequency	=	5 yrs	Time to peak	=	7.93 hrs
Time interval	=	2 min	Hyd. volume	=	23,457 cuft
Drainage area	=	2.750 ac	Curve number	=	93*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.10 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(2.060 x 98) + (0.690 x 80)] / 2.750



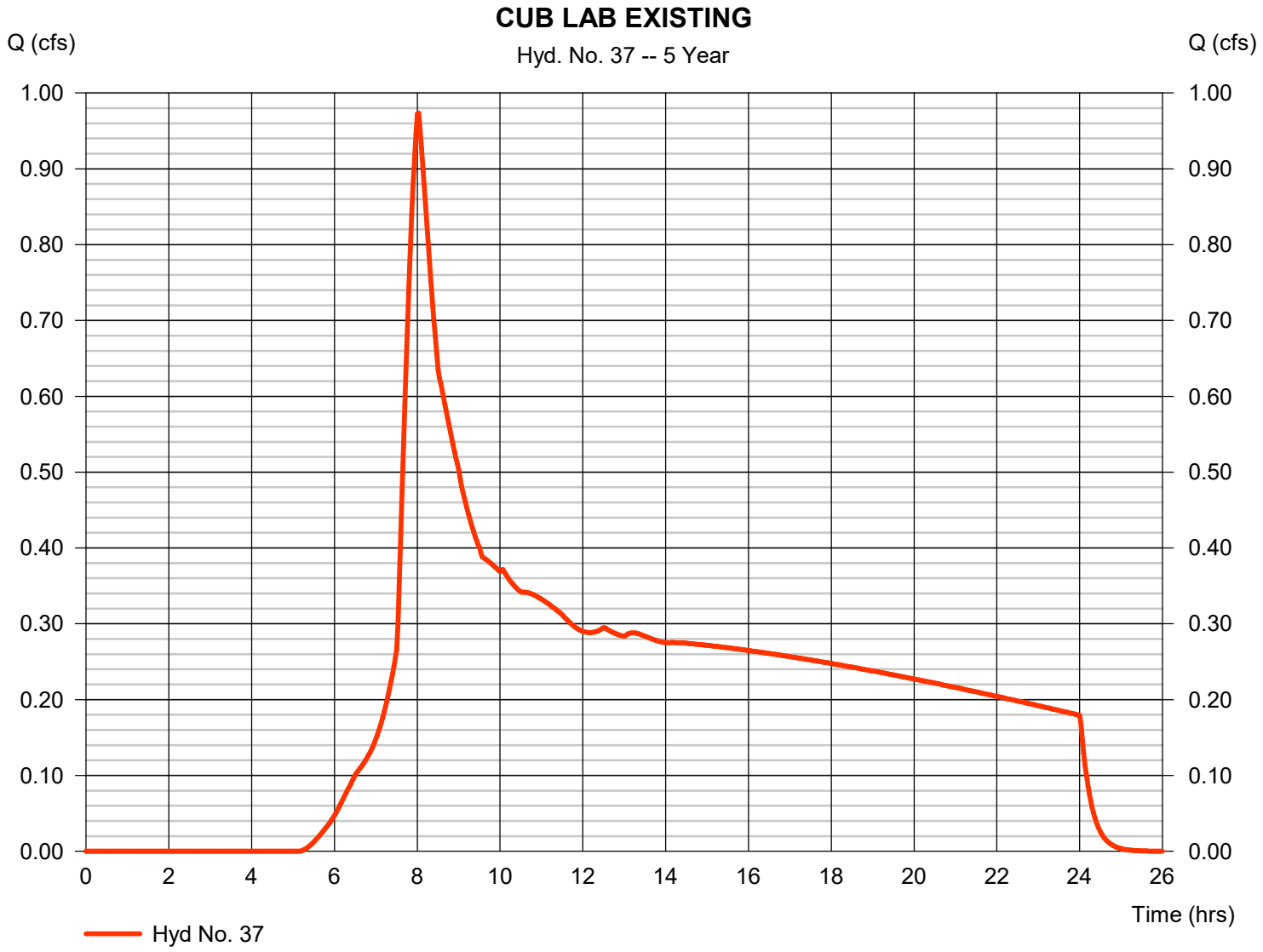
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 37

CUB LAB EXISTING

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.974 cfs
Storm frequency	=	5 yrs	Time to peak	=	8.03 hrs
Time interval	=	2 min	Hyd. volume	=	18,957 cuft
Drainage area	=	3.940 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	15.00 min
Total precip.	=	3.10 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a



Hydrograph Report

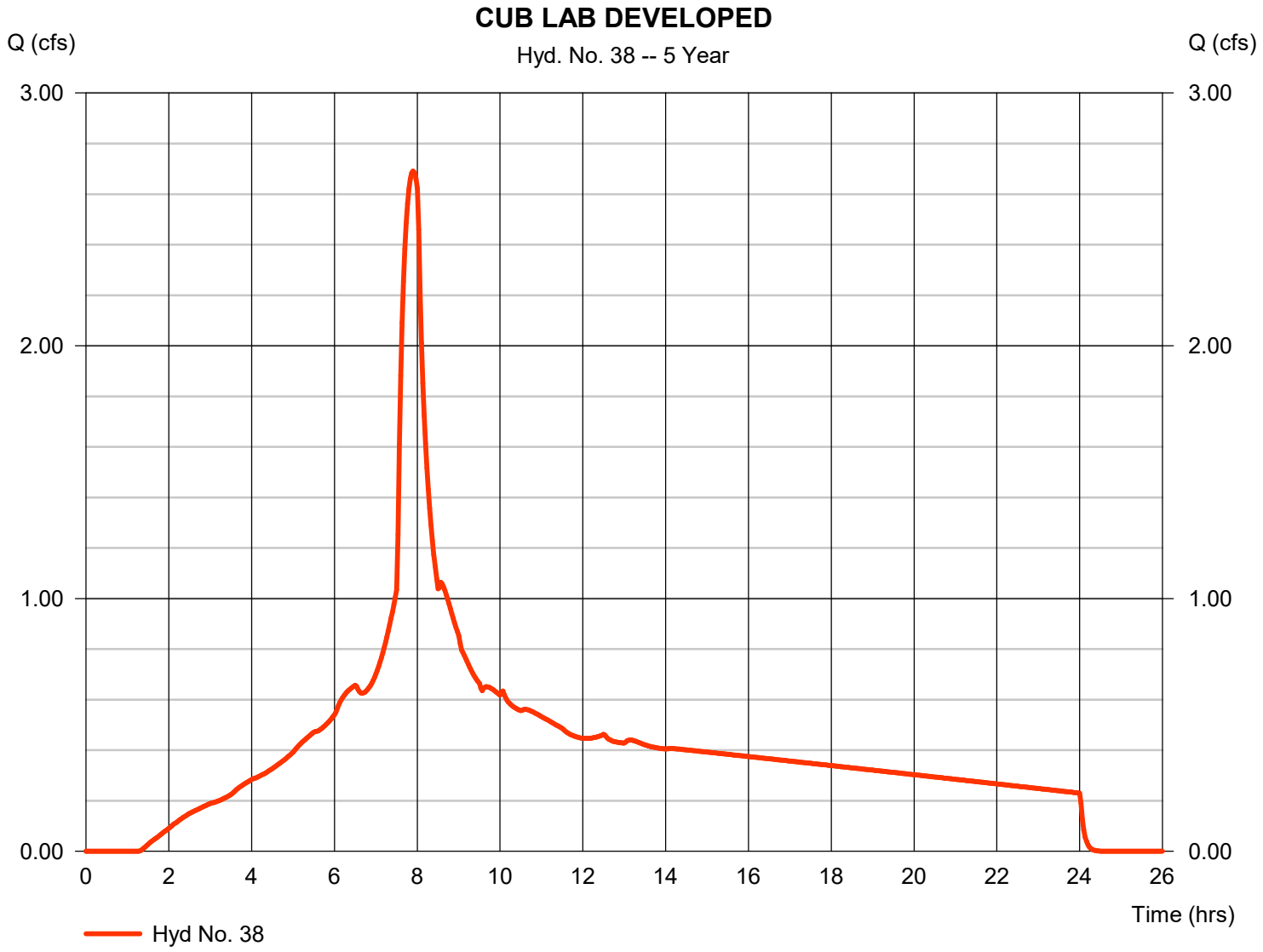
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 38

CUB LAB DEVELOPED

Hydrograph type	=	SBUH Runoff	Peak discharge	=	2.691 cfs
Storm frequency	=	5 yrs	Time to peak	=	7.90 hrs
Time interval	=	2 min	Hyd. volume	=	37,909 cuft
Drainage area	=	3.940 ac	Curve number	=	96*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.10 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(3.590 x 98) + (0.350 x 80)] / 3.940



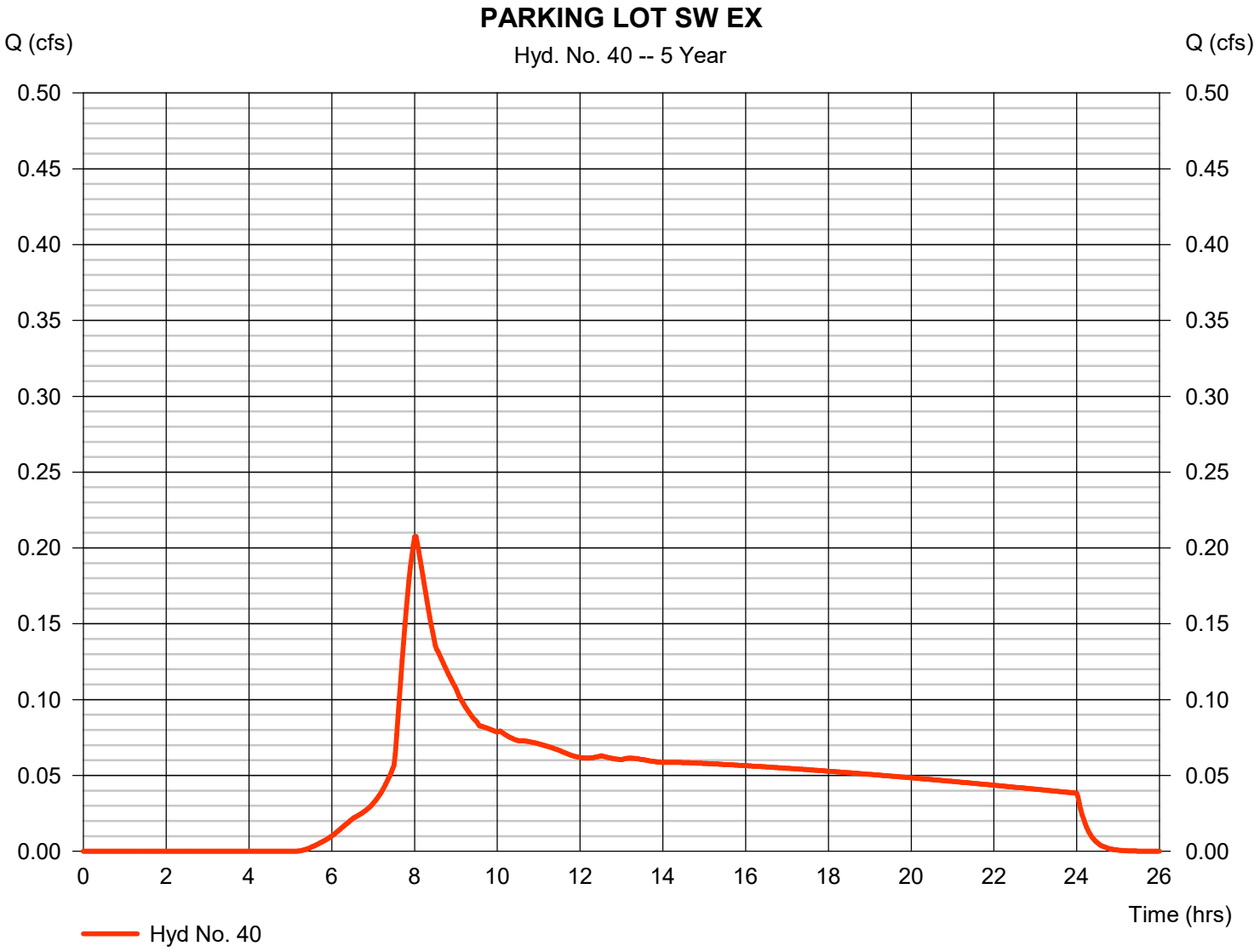
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 40

PARKING LOT SW EX

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.208 cfs
Storm frequency	= 5 yrs	Time to peak	= 8.03 hrs
Time interval	= 2 min	Hyd. volume	= 4,042 cuft
Drainage area	= 0.840 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 3.10 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 41

PARKING LOT SW DEVELOPED

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.554 cfs
Storm frequency	= 5 yrs	Time to peak	= 7.90 hrs
Time interval	= 2 min	Hyd. volume	= 7,767 cuft
Drainage area	= 0.840 ac	Curve number	= 95*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.10 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

* Composite (Area/CN) = [(0.690 x 98) + (0.150 x 80)] / 0.840



Hydrograph Report

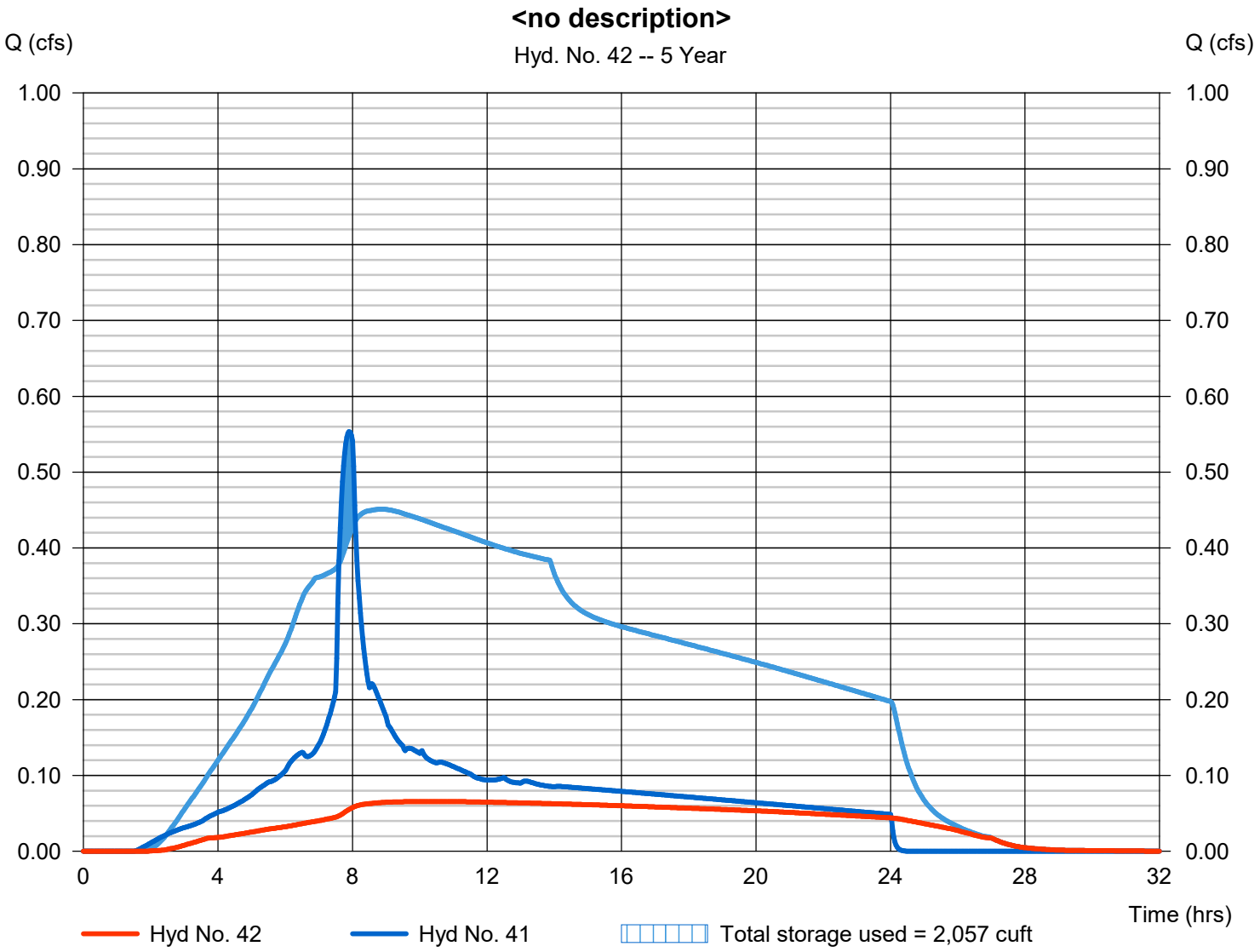
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 42

<no description>

Hydrograph type	= Reservoir	Peak discharge	= 0.066 cfs
Storm frequency	= 5 yrs	Time to peak	= 10.27 hrs
Time interval	= 2 min	Hyd. volume	= 4,288 cuft
Inflow hyd. No.	= 41 - PARKING LOT SW DEVELOPED	Max. Elevation	= 101.37 ft
Reservoir name	= SW Parking Lot Detention	Max. Storage	= 2,057 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 44

PARKING LOT NW EX

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.445 cfs
Storm frequency	= 5 yrs	Time to peak	= 8.03 hrs
Time interval	= 2 min	Hyd. volume	= 8,661 cuft
Drainage area	= 1.800 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 3.10 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 | Wednesday, 07 / 16 / 2025

Hyd. No. 45

PARKING LOT NW DEVELOPED

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.996 cfs
Storm frequency	= 5 yrs	Time to peak	= 7.93 hrs
Time interval	= 2 min	Hyd. volume	= 14,143 cuft
Drainage area	= 1.800 ac	Curve number	= 91*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.10 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

* Composite (Area/CN) = [(1.130 x 98) + (0.670 x 80)] / 1.800



Hydrograph Report

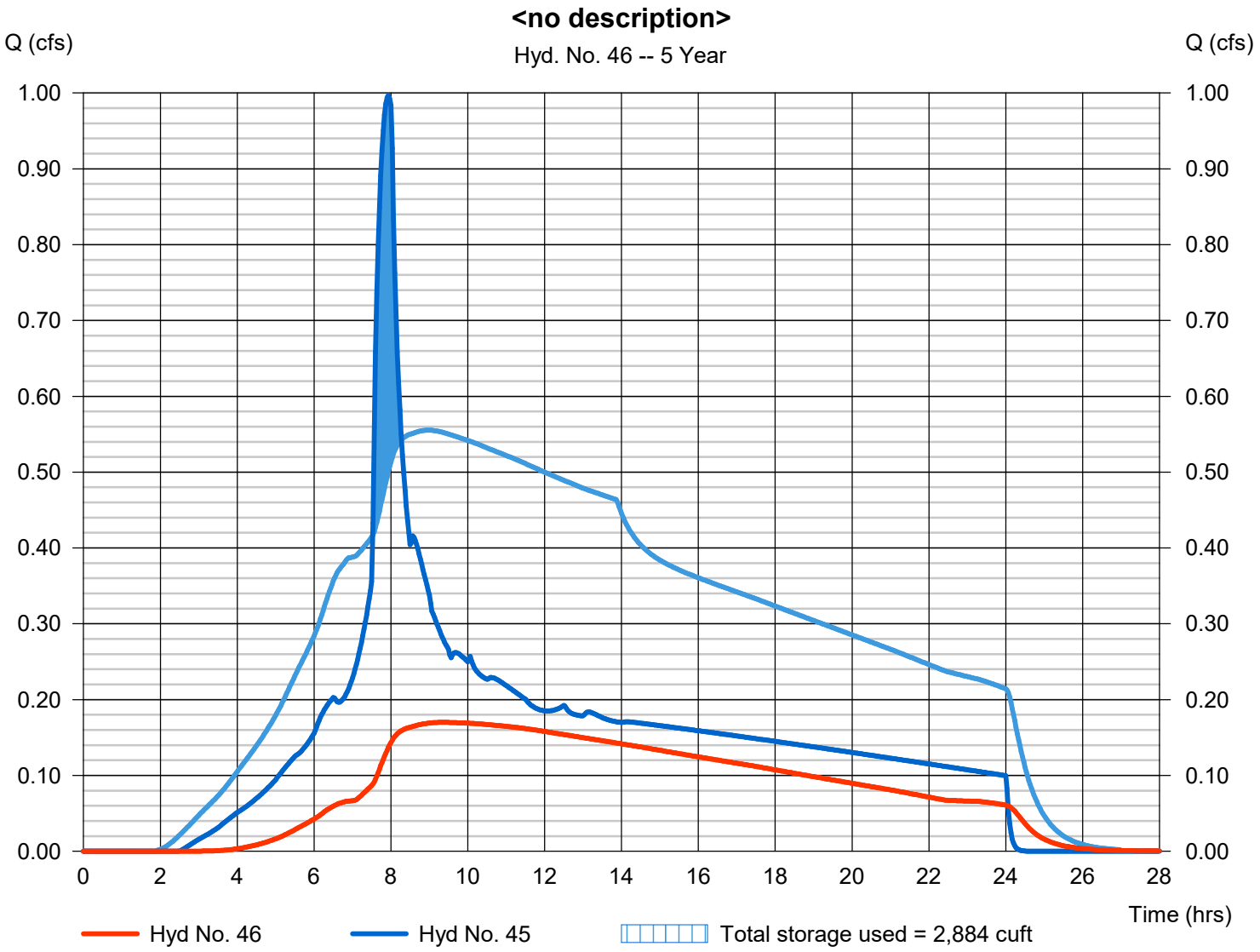
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 46

<no description>

Hydrograph type	=	Reservoir	Peak discharge	=	0.170 cfs
Storm frequency	=	5 yrs	Time to peak	=	9.37 hrs
Time interval	=	2 min	Hyd. volume	=	7,880 cuft
Inflow hyd. No.	=	45 - PARKING LOT NW DEVELOPED	Max. Elevation	=	100.84 ft
Reservoir name	=	NW Parking Lot Detention	Max. Storage	=	2,884 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



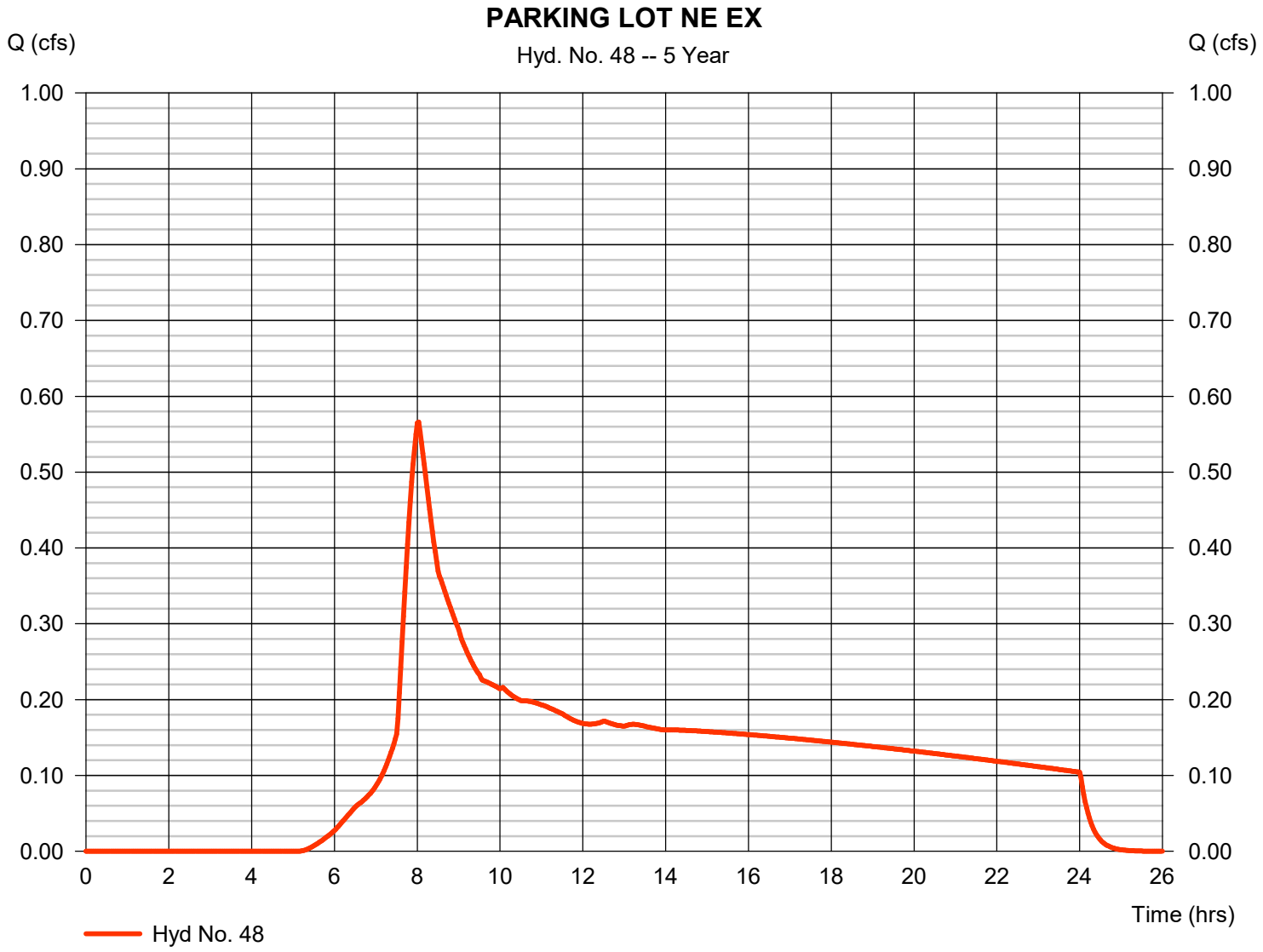
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 48

PARKING LOT NE EX

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.566 cfs
Storm frequency	= 5 yrs	Time to peak	= 8.03 hrs
Time interval	= 2 min	Hyd. volume	= 11,018 cuft
Drainage area	= 2.290 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 3.10 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a



Hydrograph Report

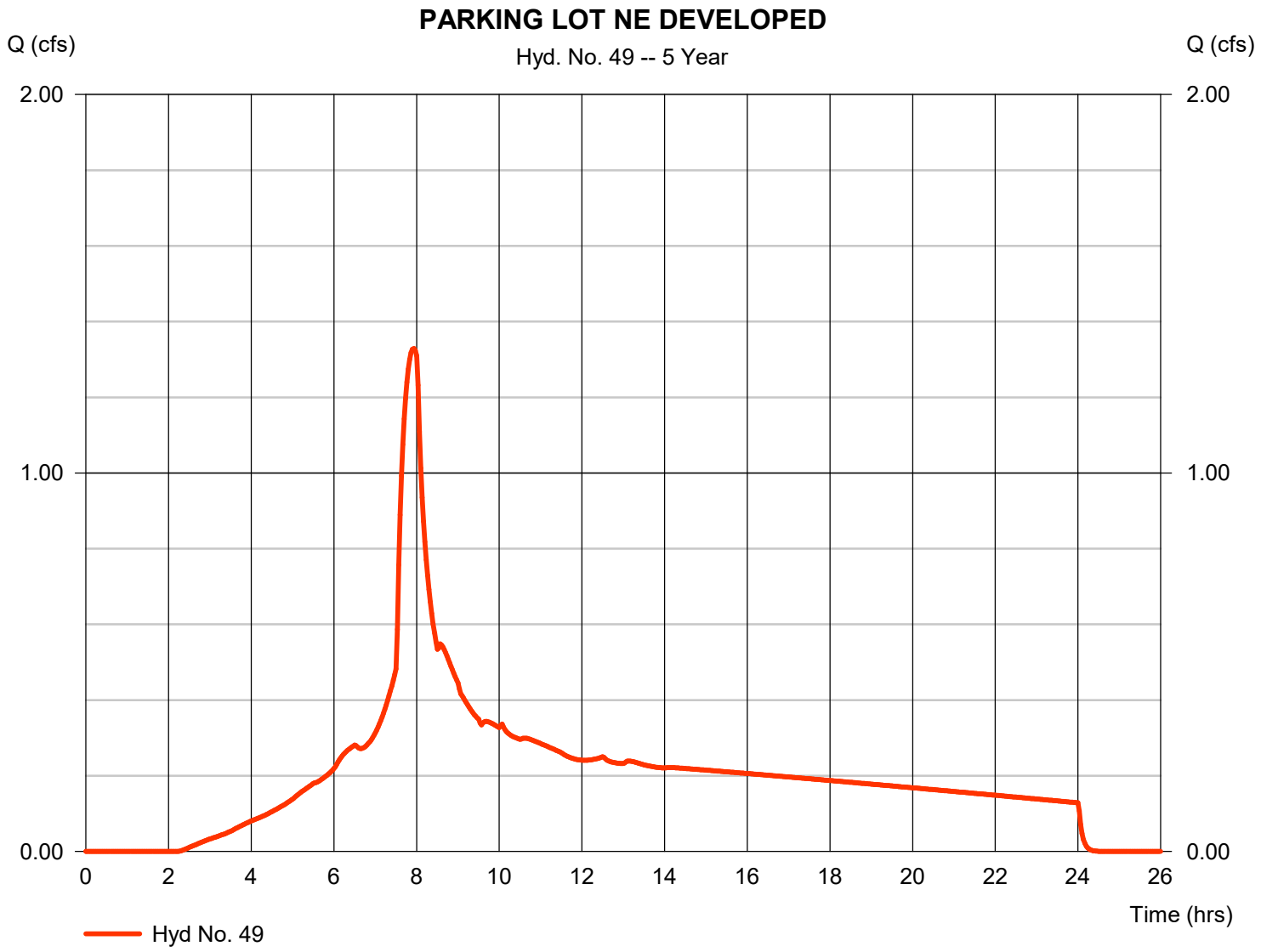
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 49

PARKING LOT NE DEVELOPED

Hydrograph type	= SBUH Runoff	Peak discharge	= 1.329 cfs
Storm frequency	= 5 yrs	Time to peak	= 7.93 hrs
Time interval	= 2 min	Hyd. volume	= 18,751 cuft
Drainage area	= 2.290 ac	Curve number	= 92*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.10 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

* Composite (Area/CN) = [(1.580 x 98) + (0.710 x 80)] / 2.290



Hydrograph Report

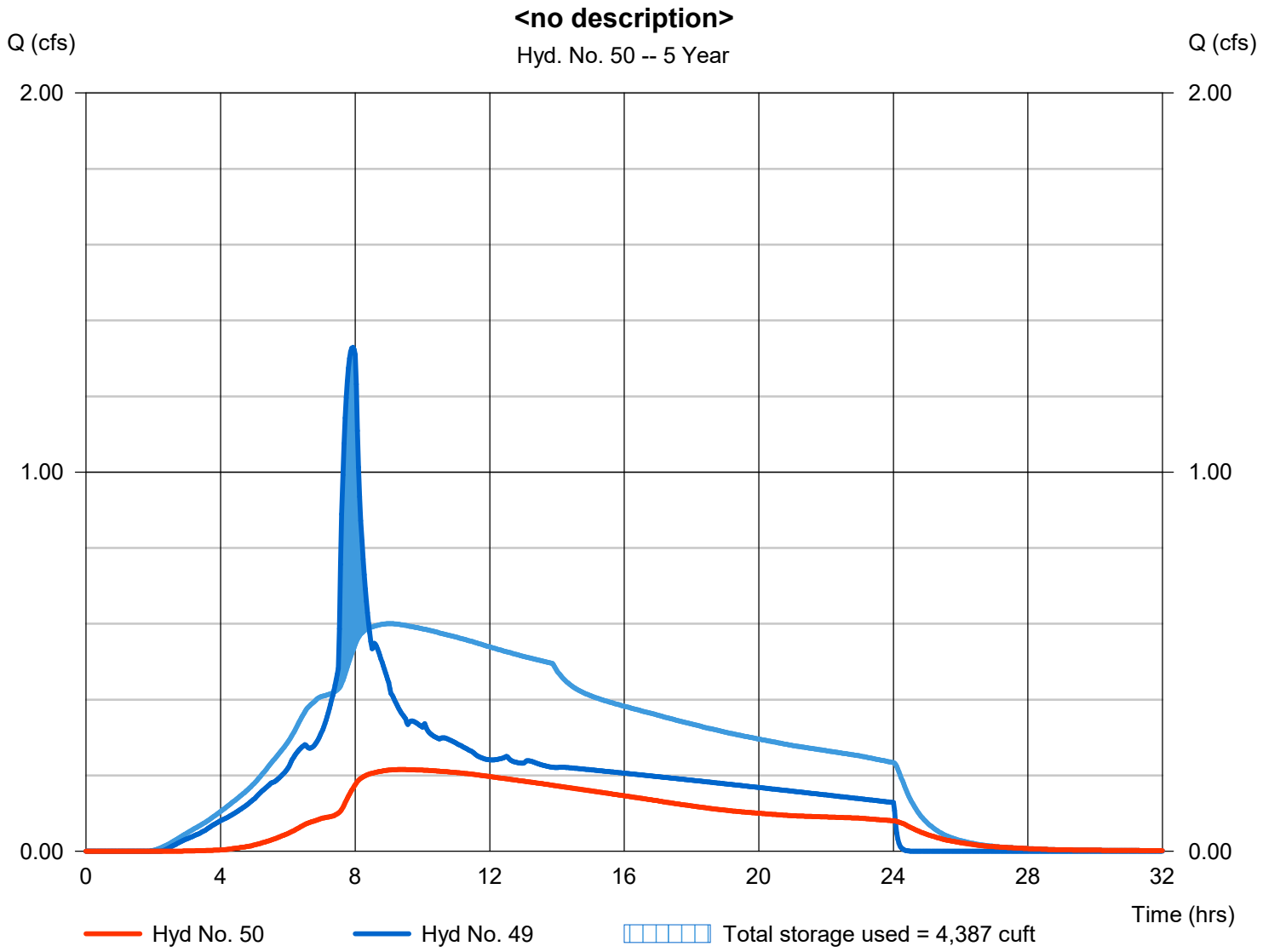
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 50

<no description>

Hydrograph type	=	Reservoir	Peak discharge	=	0.216 cfs
Storm frequency	=	5 yrs	Time to peak	=	9.37 hrs
Time interval	=	2 min	Hyd. volume	=	9,823 cuft
Inflow hyd. No.	=	49 - PARKING LOT NE DEVELOPED	Max. Elevation	=	100.74 ft
Reservoir name	=	NE Parking Lot Detention	Max. Storage	=	4,387 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



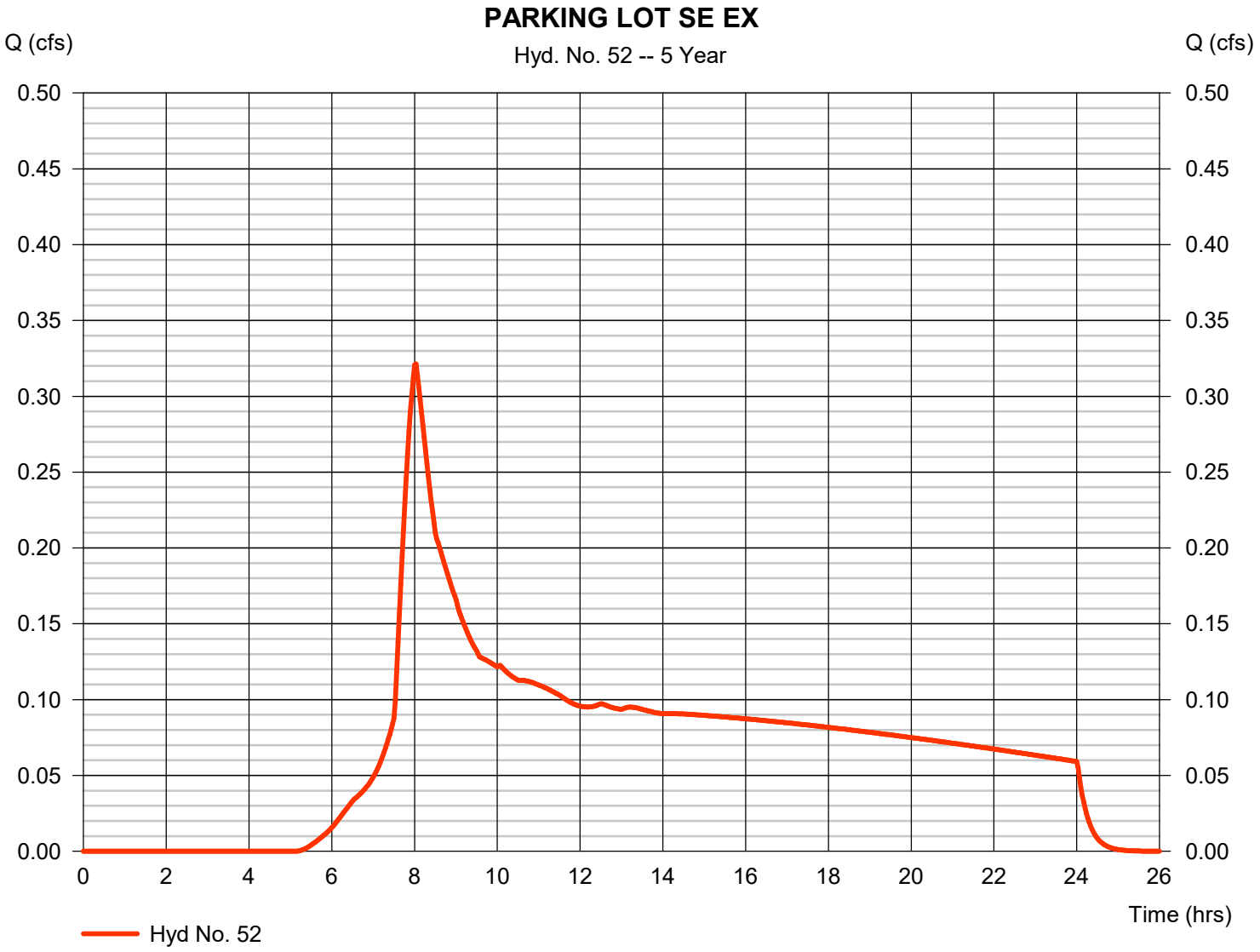
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 52

PARKING LOT SE EX

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.321 cfs
Storm frequency	= 5 yrs	Time to peak	= 8.03 hrs
Time interval	= 2 min	Hyd. volume	= 6,255 cuft
Drainage area	= 1.300 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 3.10 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a



Hydrograph Report

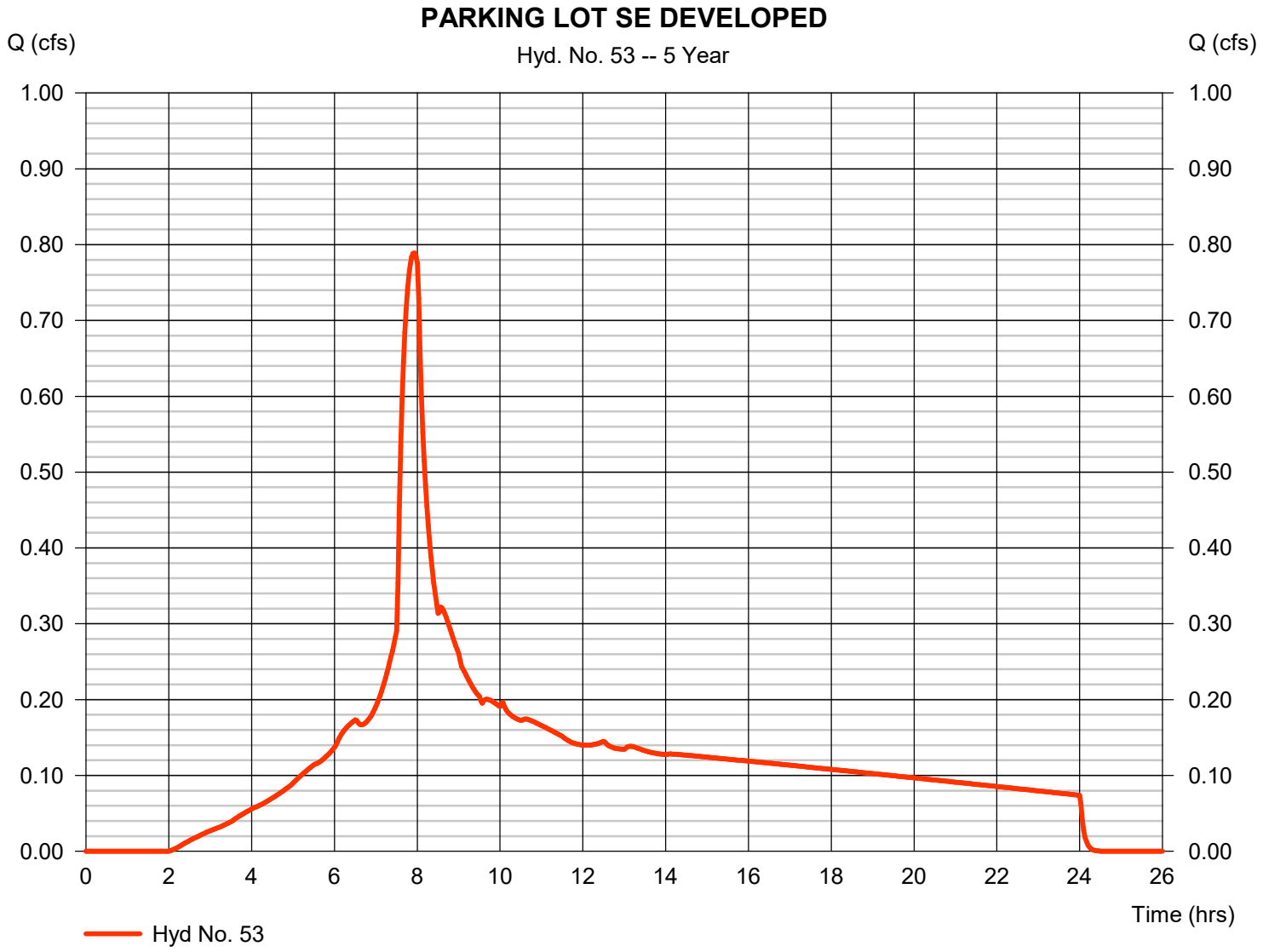
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 53

PARKING LOT SE DEVELOPED

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.789 cfs
Storm frequency	=	5 yrs	Time to peak	=	7.93 hrs
Time interval	=	2 min	Hyd. volume	=	11,089 cuft
Drainage area	=	1.300 ac	Curve number	=	93*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.10 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.920 x 98) + (0.380 x 80)] / 1.300



Hydrograph Report

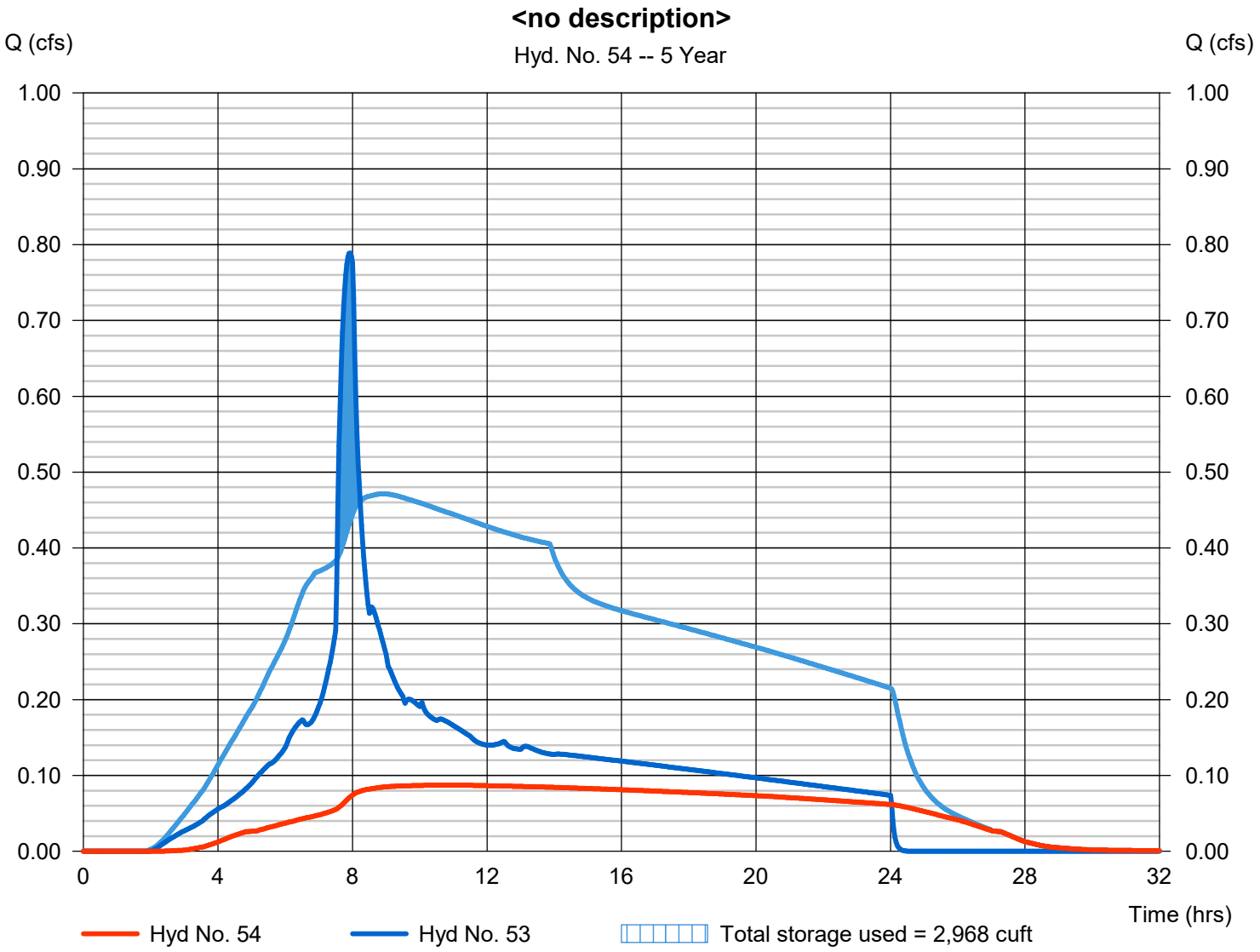
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 54

<no description>

Hydrograph type	=	Reservoir	Peak discharge	=	0.087 cfs
Storm frequency	=	5 yrs	Time to peak	=	10.93 hrs
Time interval	=	2 min	Hyd. volume	=	5,727 cuft
Inflow hyd. No.	=	53 - PARKING LOT SE DEVELOPED	Max. Elevation	=	101.27 ft
Reservoir name	=	SE Parking Lot Detention	Max. Storage	=	2,968 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



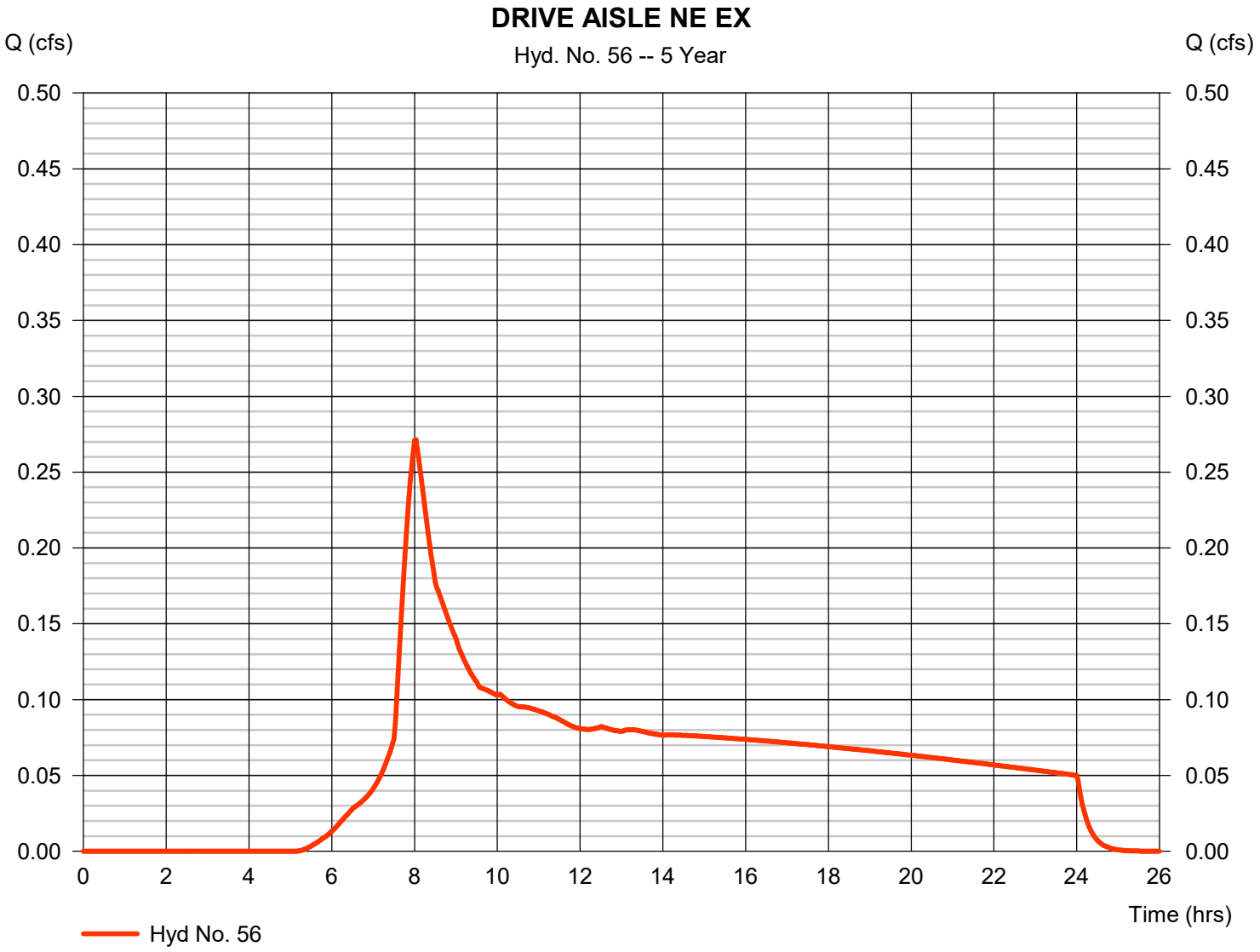
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 56

DRIVE AISLE NE EX

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.271 cfs
Storm frequency	= 5 yrs	Time to peak	= 8.03 hrs
Time interval	= 2 min	Hyd. volume	= 5,283 cuft
Drainage area	= 1.098 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 3.10 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a



Hydrograph Report

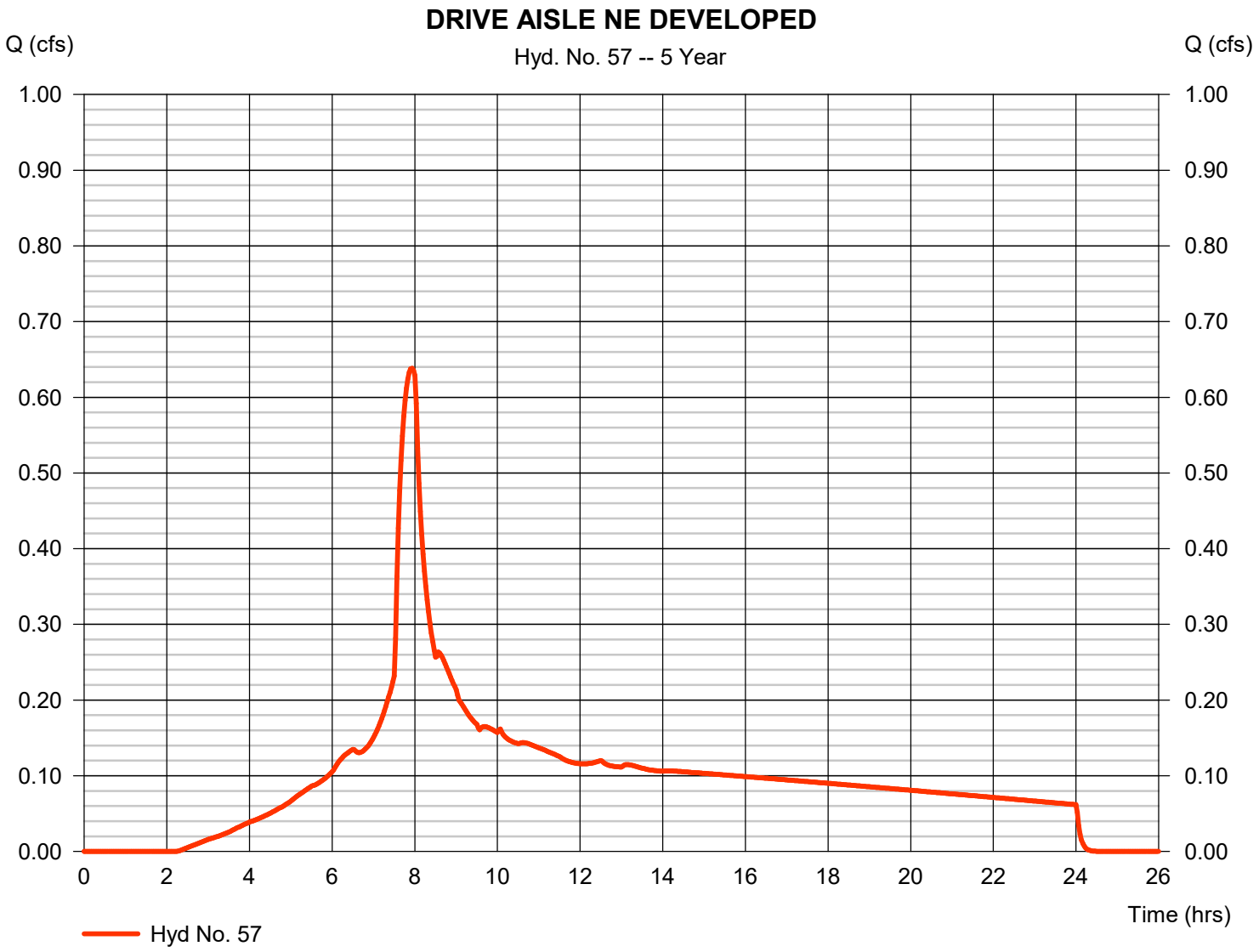
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 57

DRIVE AISLE NE DEVELOPED

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.638 cfs
Storm frequency	=	5 yrs	Time to peak	=	7.93 hrs
Time interval	=	2 min	Hyd. volume	=	9,007 cuft
Drainage area	=	1.100 ac	Curve number	=	92*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.10 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.733 x 98) + (0.365 x 80)] / 1.100



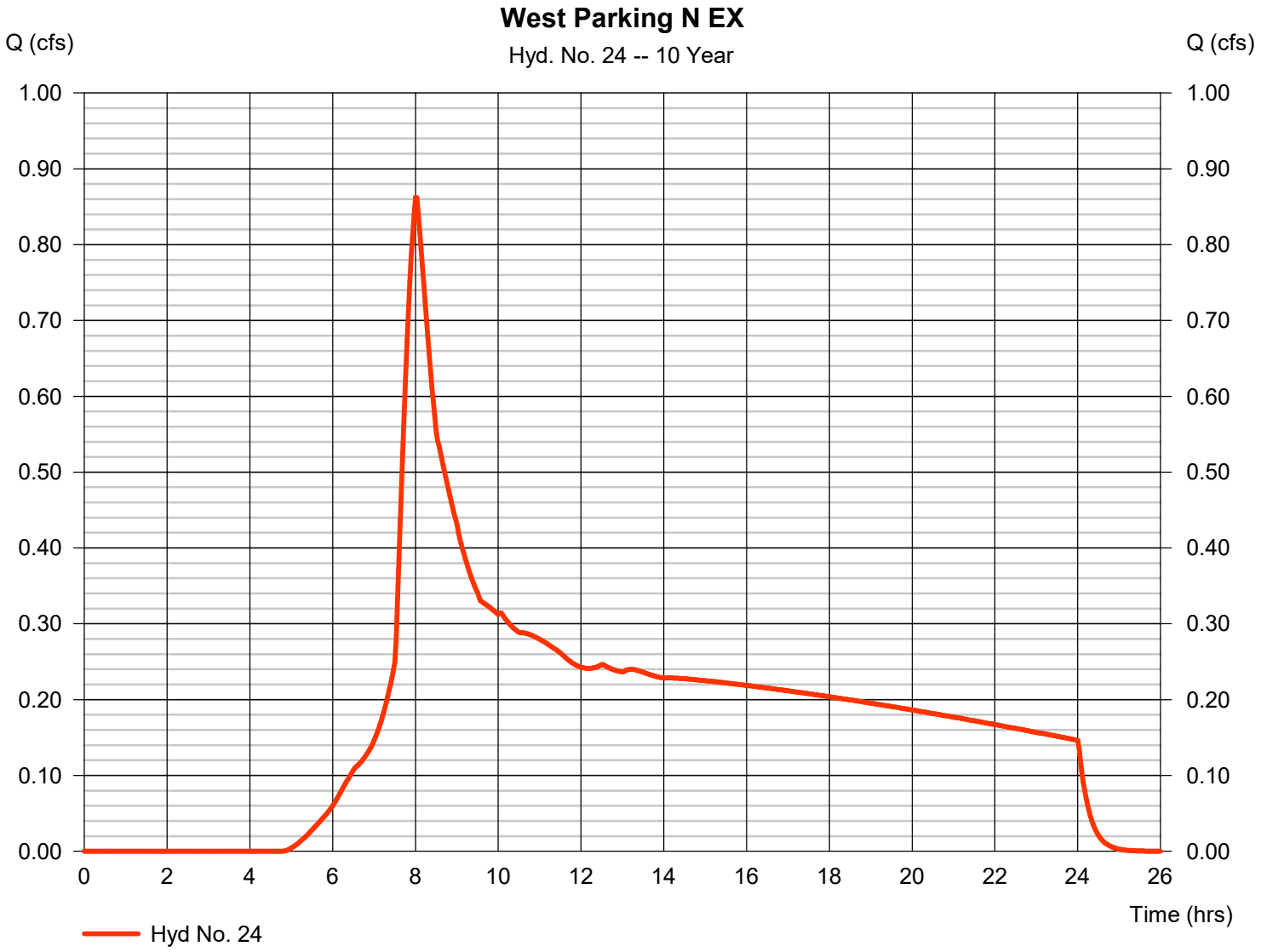
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 24

West Parking N EX

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.863 cfs
Storm frequency	=	10 yrs	Time to peak	=	8.00 hrs
Time interval	=	2 min	Hyd. volume	=	16,114 cuft
Drainage area	=	2.780 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	15.00 min
Total precip.	=	3.45 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a



Hydrograph Report

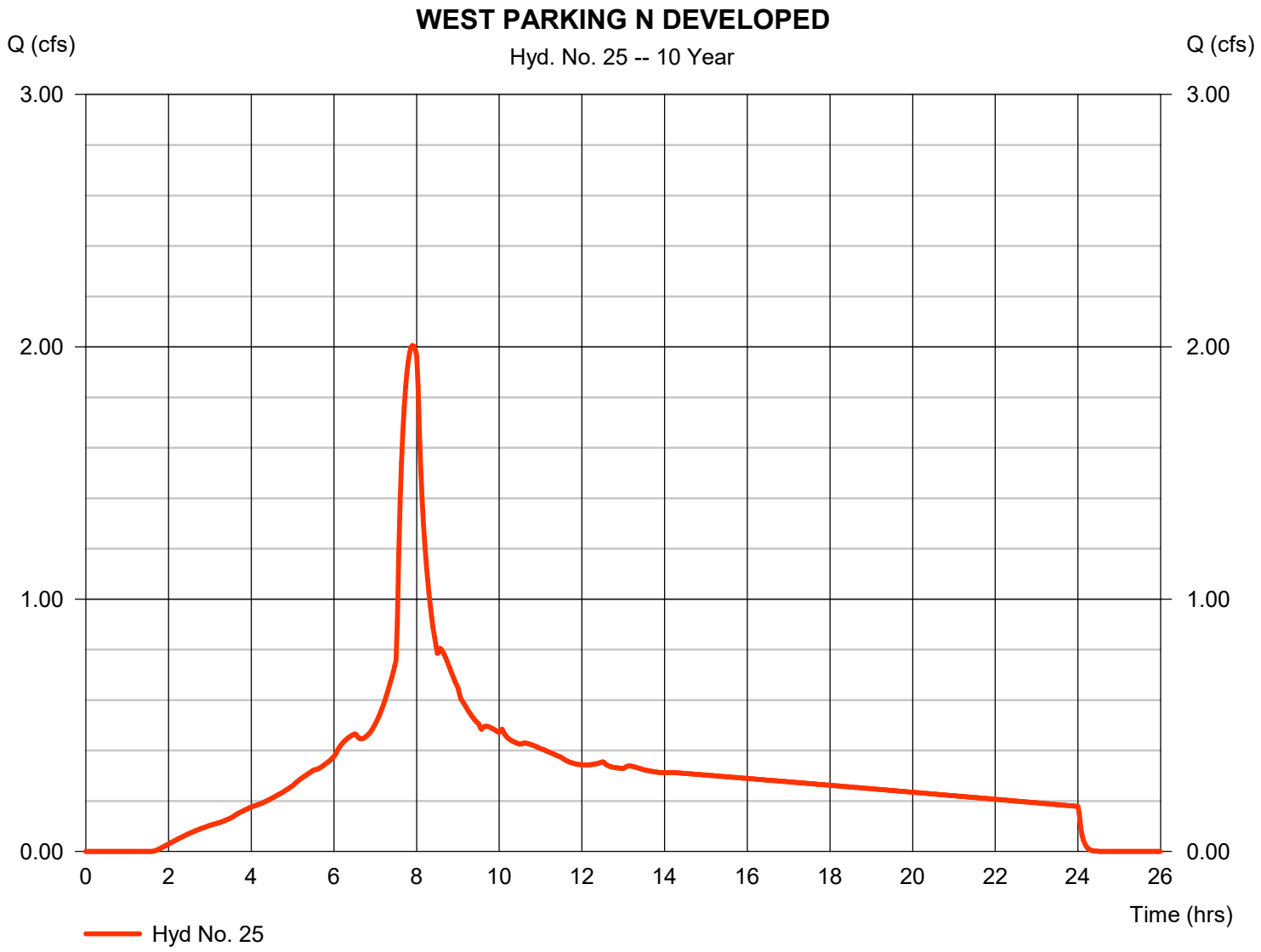
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 25

WEST PARKING N DEVELOPED

Hydrograph type	= SBUH Runoff	Peak discharge	= 2.005 cfs
Storm frequency	= 10 yrs	Time to peak	= 7.90 hrs
Time interval	= 2 min	Hyd. volume	= 28,124 cuft
Drainage area	= 2.780 ac	Curve number	= 94*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.45 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

* Composite (Area/CN) = [(2.170 x 98) + (0.610 x 80)] / 2.780



Hydrograph Report

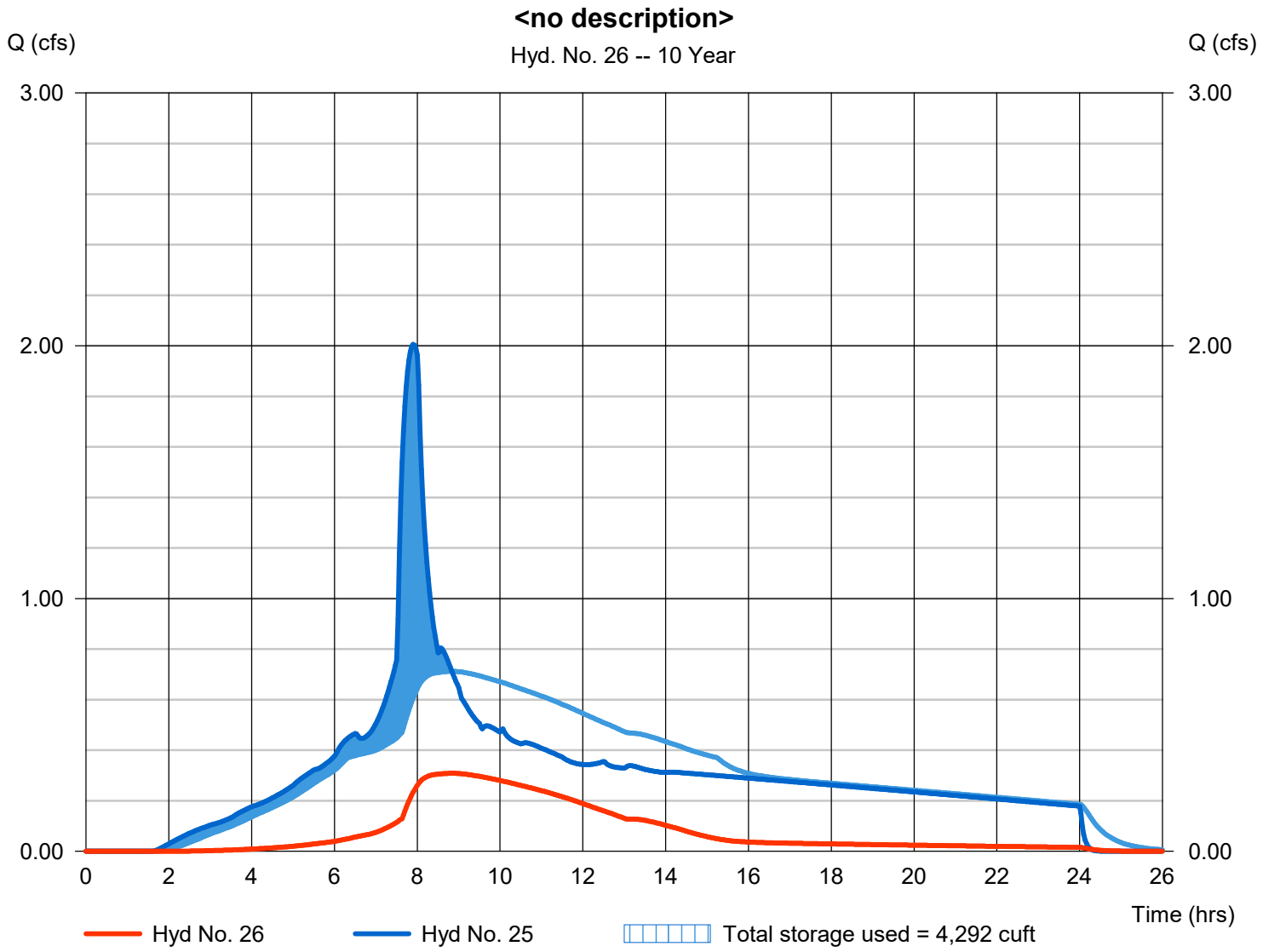
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 26

<no description>

Hydrograph type	=	Reservoir	Peak discharge	=	0.308 cfs
Storm frequency	=	10 yrs	Time to peak	=	8.83 hrs
Time interval	=	2 min	Hyd. volume	=	6,904 cuft
Inflow hyd. No.	=	25 - WEST PARKING N DEVELOPED	Max. Elevation	=	100.84 ft
Reservoir name	=	WEST NORTH DETENTION	Max. Storage	=	4,292 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



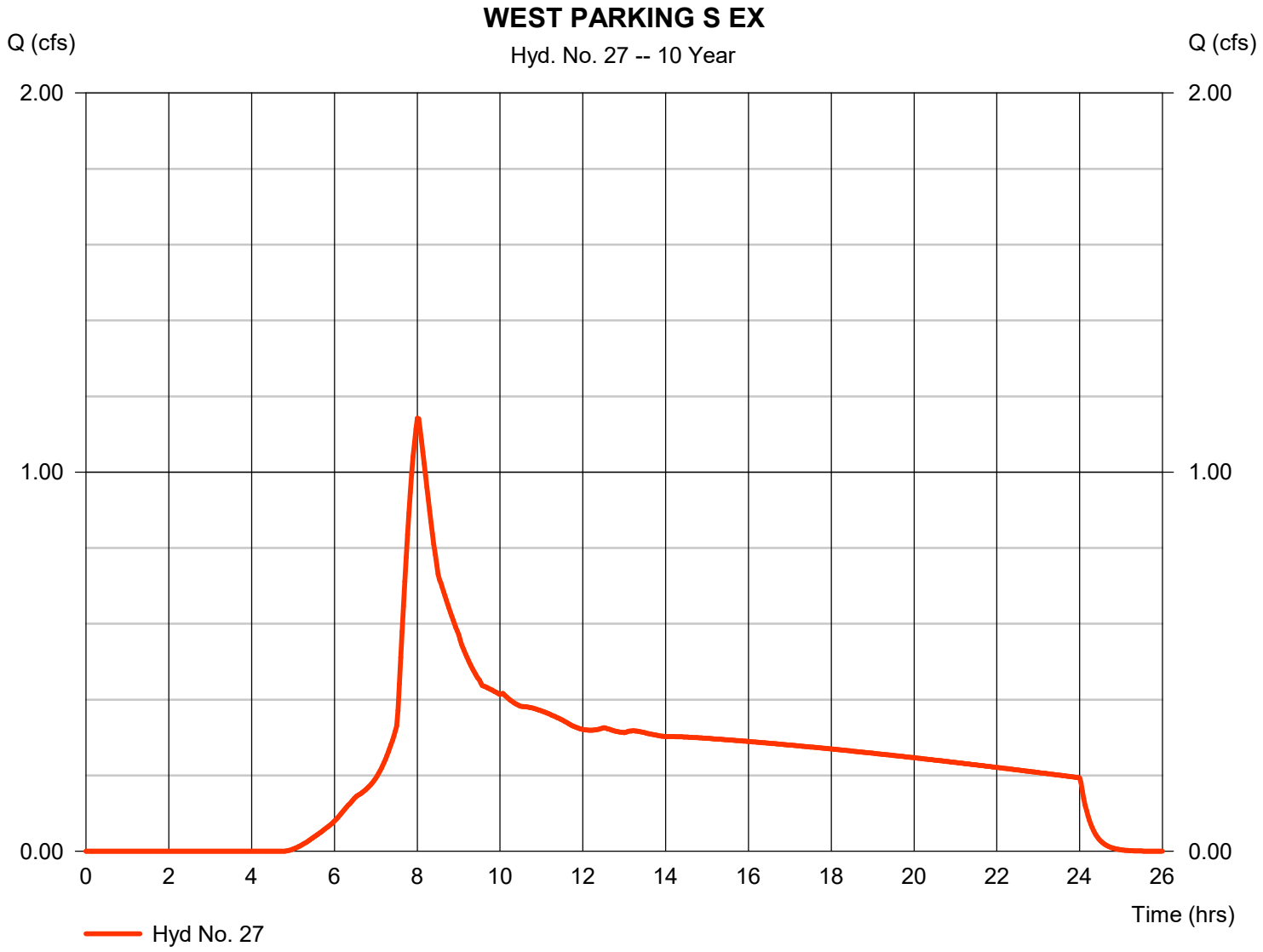
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 27

WEST PARKING S EX

Hydrograph type	= SBUH Runoff	Peak discharge	= 1.142 cfs
Storm frequency	= 10 yrs	Time to peak	= 8.00 hrs
Time interval	= 2 min	Hyd. volume	= 21,331 cuft
Drainage area	= 3.680 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 3.45 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a



Hydrograph Report

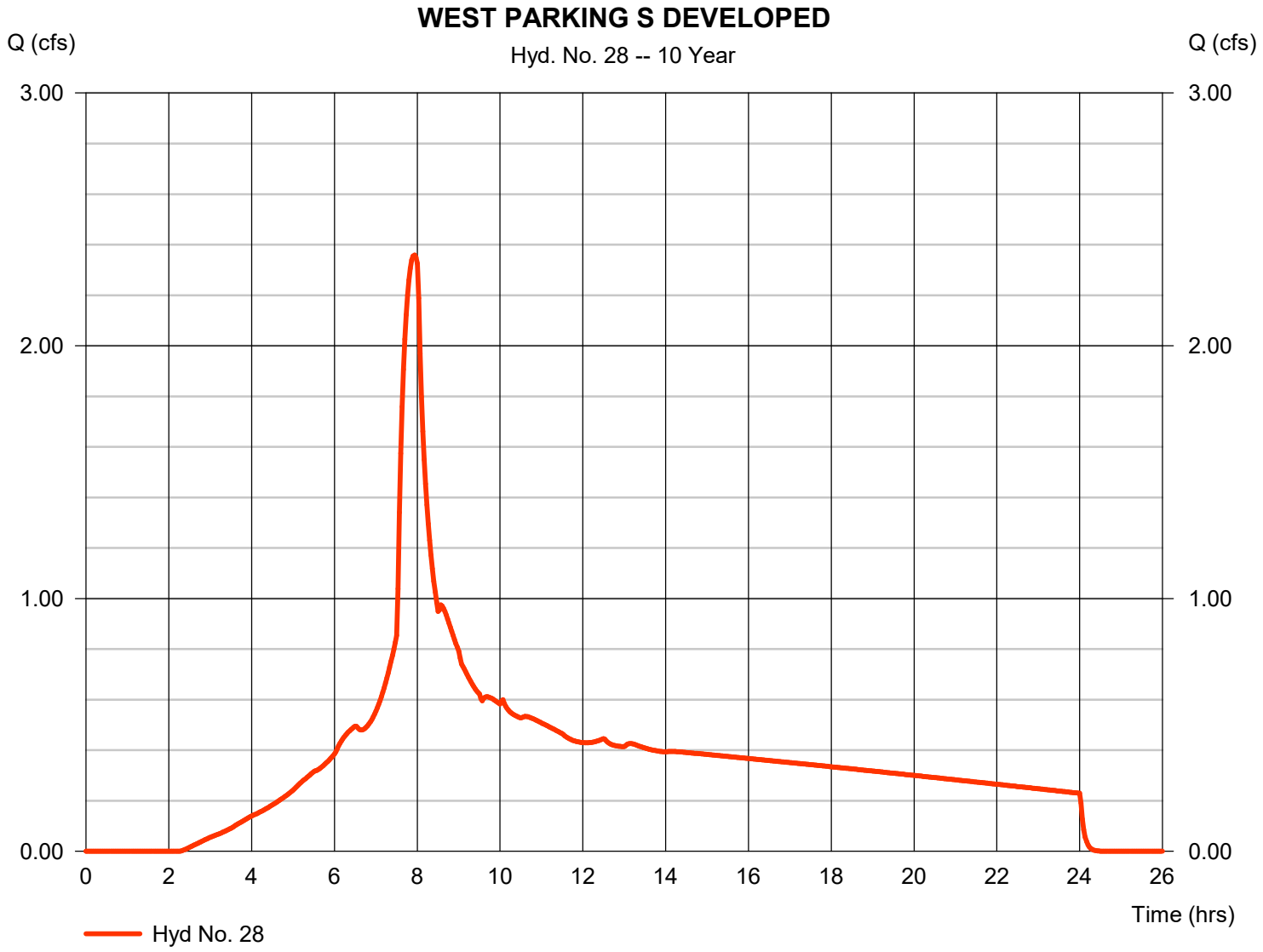
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 28

WEST PARKING S DEVELOPED

Hydrograph type	= SBUH Runoff	Peak discharge	= 2.359 cfs
Storm frequency	= 10 yrs	Time to peak	= 7.93 hrs
Time interval	= 2 min	Hyd. volume	= 33,313 cuft
Drainage area	= 3.680 ac	Curve number	= 91*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.45 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

* Composite (Area/CN) = [(2.190 x 98) + (1.490 x 80)] / 3.680



Hydrograph Report

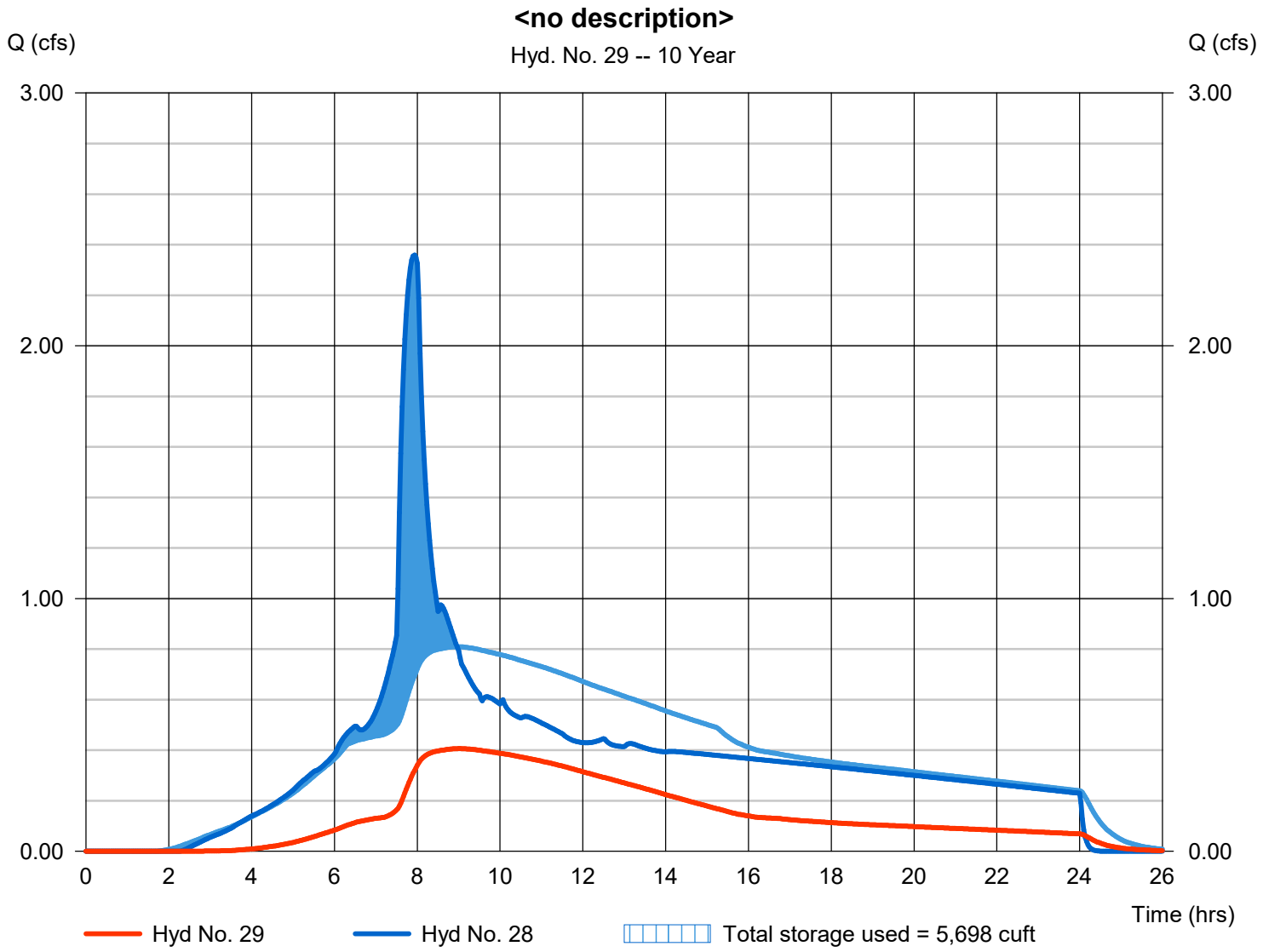
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 29

<no description>

Hydrograph type	=	Reservoir	Peak discharge	=	0.406 cfs
Storm frequency	=	10 yrs	Time to peak	=	9.00 hrs
Time interval	=	2 min	Hyd. volume	=	13,055 cuft
Inflow hyd. No.	=	28 - WEST PARKING S DEVELOPED	Max. Elevation	=	101.19 ft
Reservoir name	=	WEST SOUTH DETENTION	Max. Storage	=	5,698 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



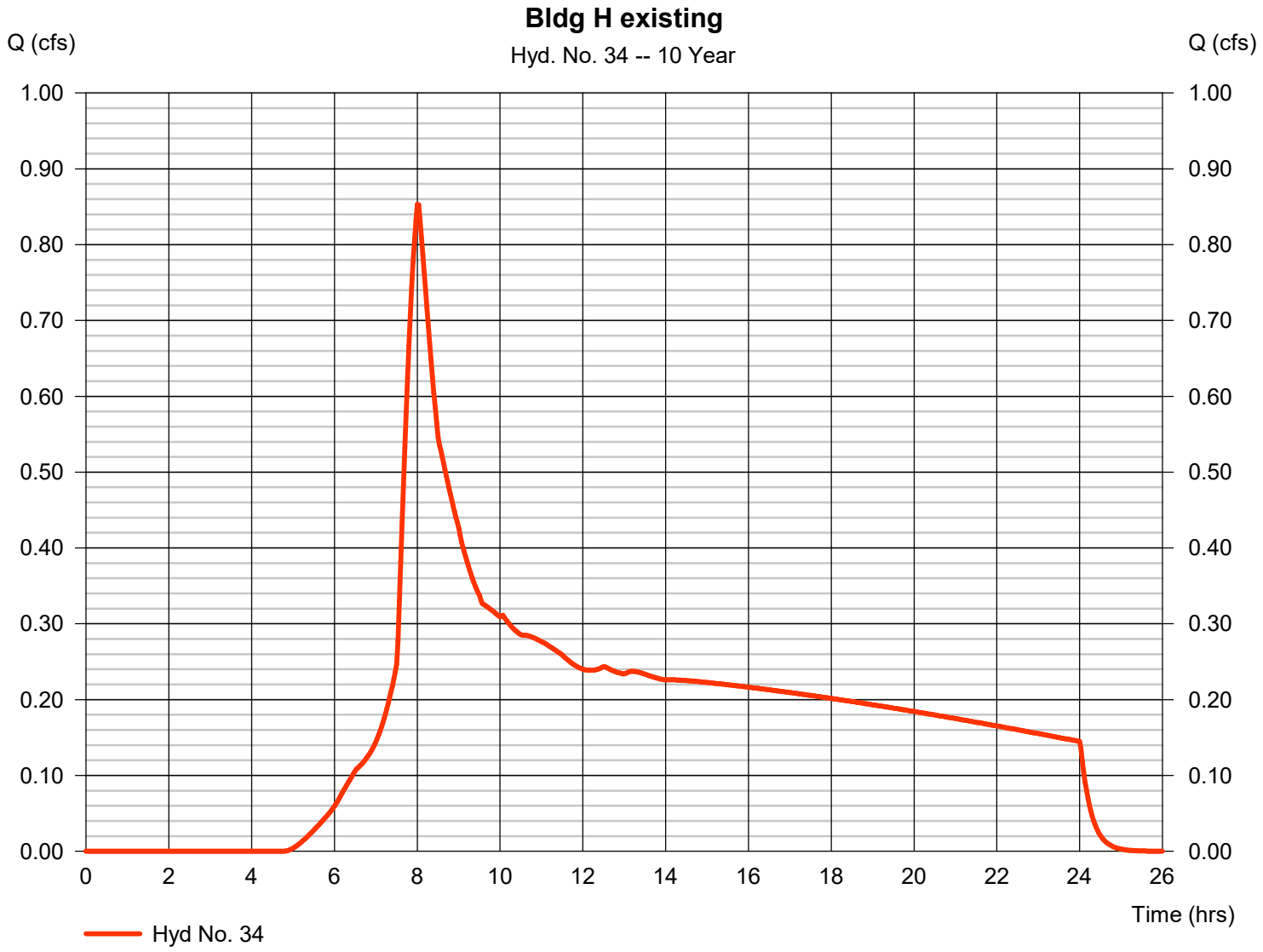
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 34

Bldg H existing

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.853 cfs
Storm frequency	=	10 yrs	Time to peak	=	8.00 hrs
Time interval	=	2 min	Hyd. volume	=	15,940 cuft
Drainage area	=	2.750 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	15.00 min
Total precip.	=	3.45 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a



Hydrograph Report

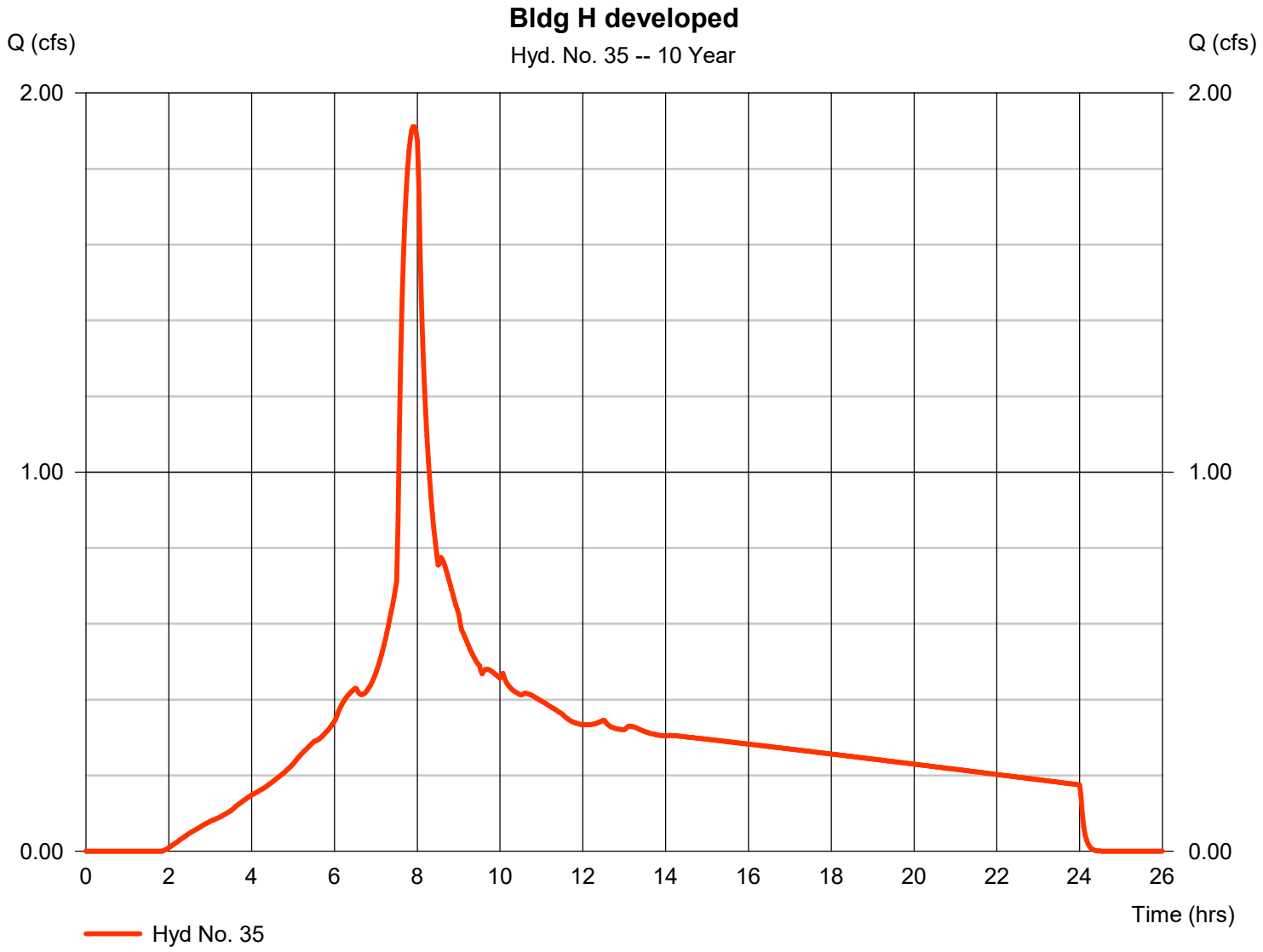
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 35

Bldg H developed

Hydrograph type	=	SBUH Runoff	Peak discharge	=	1.911 cfs
Storm frequency	=	10 yrs	Time to peak	=	7.90 hrs
Time interval	=	2 min	Hyd. volume	=	26,819 cuft
Drainage area	=	2.750 ac	Curve number	=	93*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.45 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(2.060 x 98) + (0.690 x 80)] / 2.750



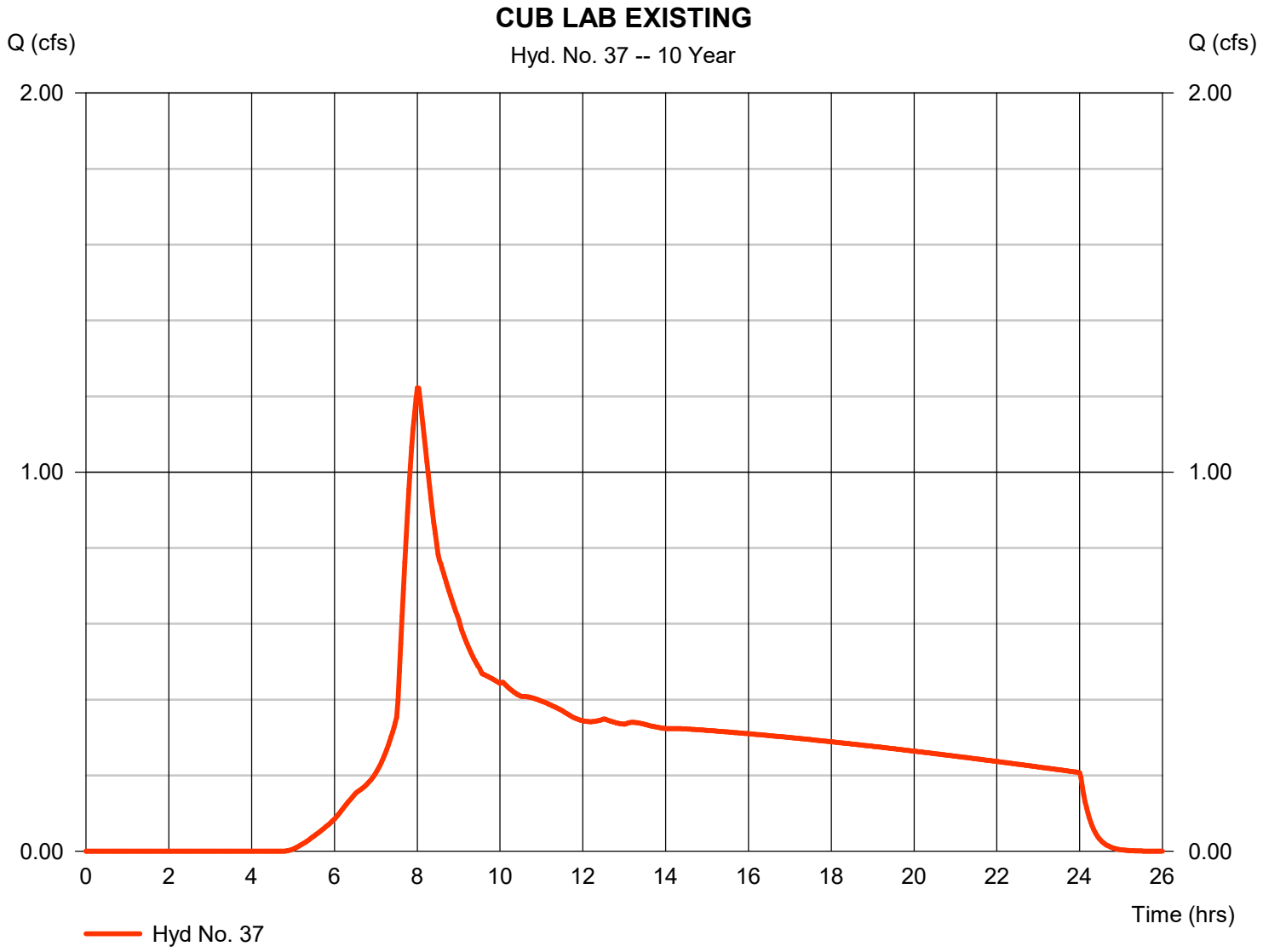
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 37

CUB LAB EXISTING

Hydrograph type	=	SBUH Runoff	Peak discharge	=	1.223 cfs
Storm frequency	=	10 yrs	Time to peak	=	8.00 hrs
Time interval	=	2 min	Hyd. volume	=	22,838 cuft
Drainage area	=	3.940 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	15.00 min
Total precip.	=	3.45 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a



Hydrograph Report

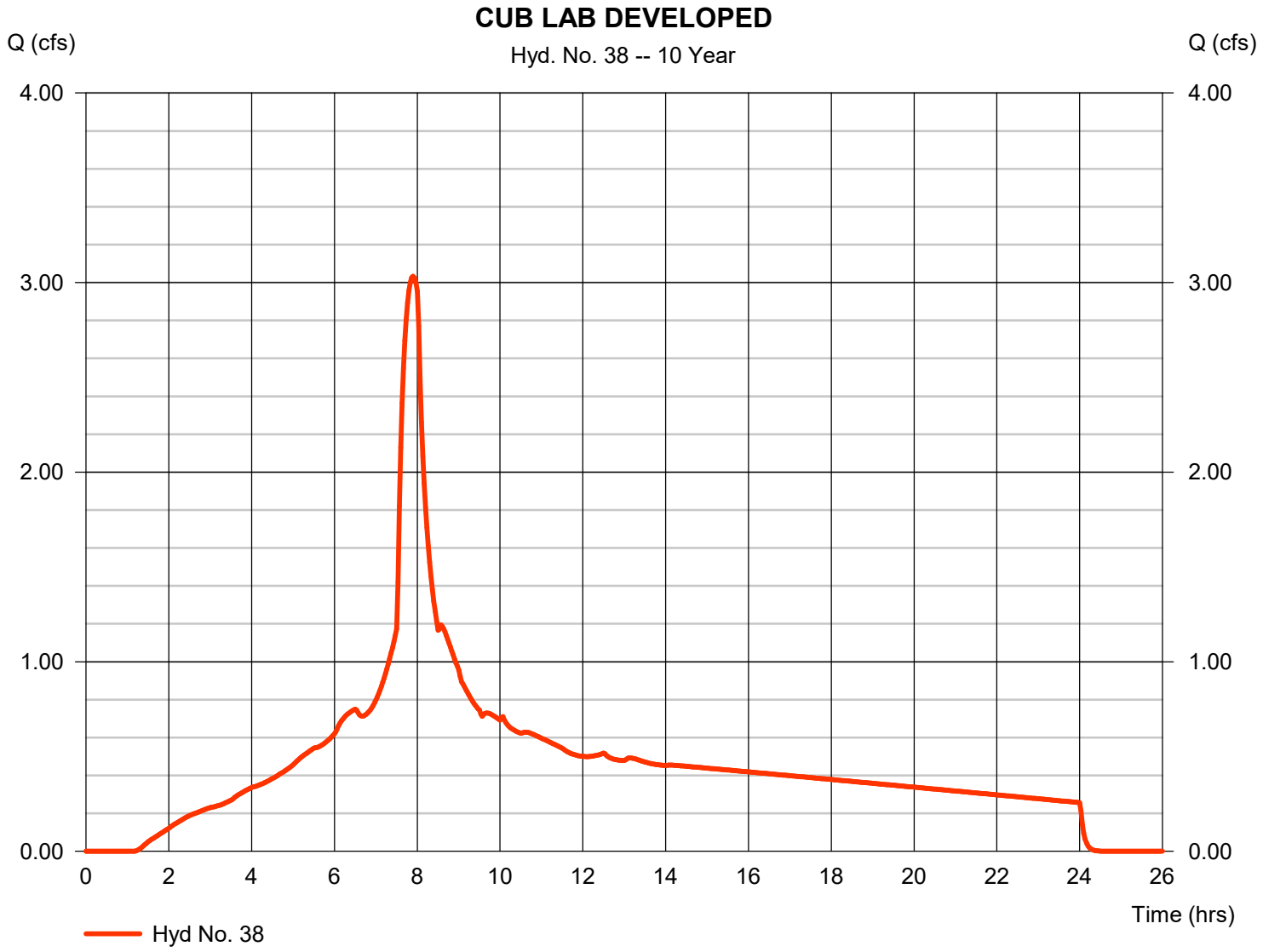
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 38

CUB LAB DEVELOPED

Hydrograph type	=	SBUH Runoff	Peak discharge	=	3.033 cfs
Storm frequency	=	10 yrs	Time to peak	=	7.90 hrs
Time interval	=	2 min	Hyd. volume	=	42,848 cuft
Drainage area	=	3.940 ac	Curve number	=	96*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.45 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(3.590 x 98) + (0.350 x 80)] / 3.940



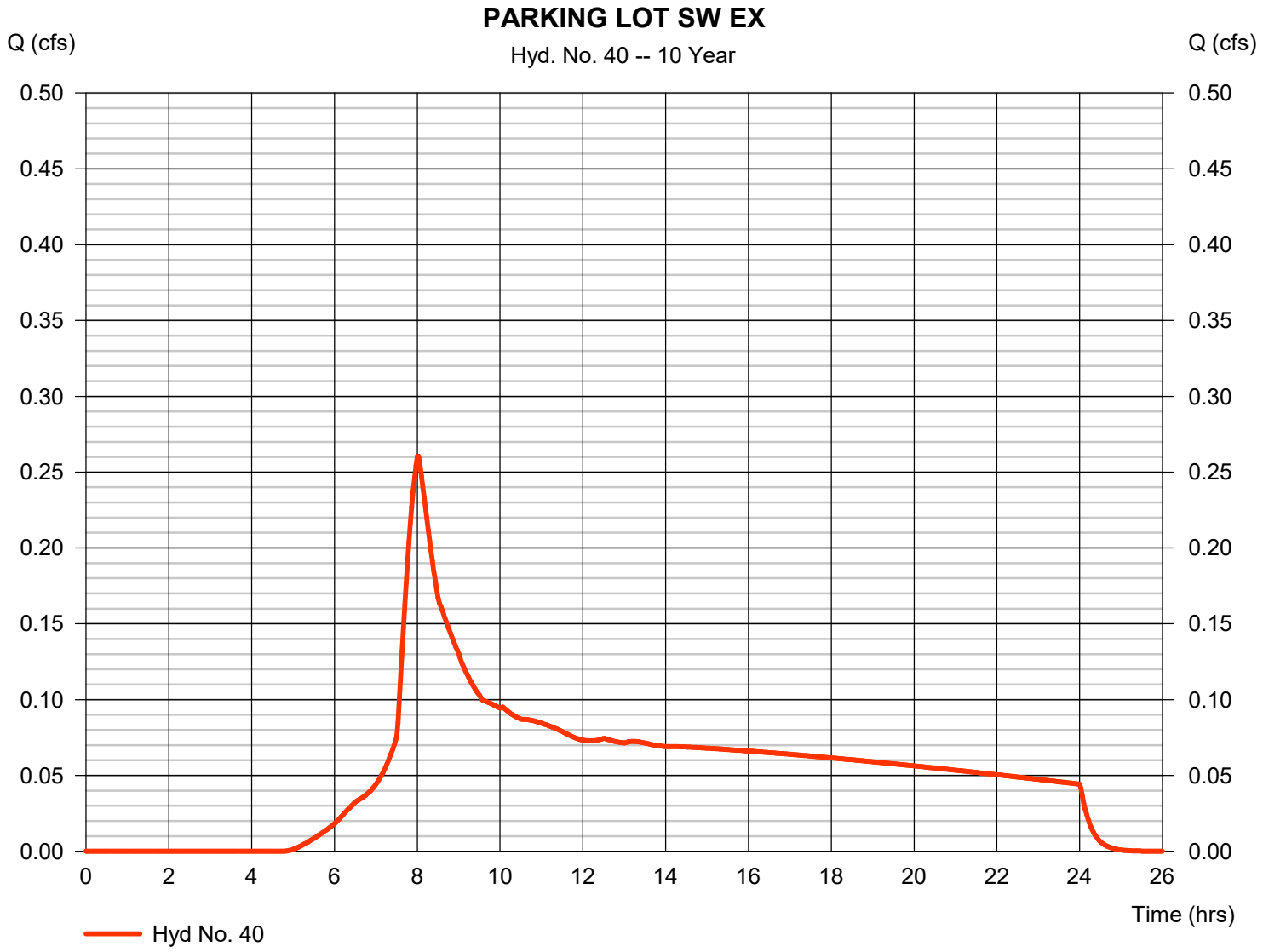
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 40

PARKING LOT SW EX

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.261 cfs
Storm frequency	= 10 yrs	Time to peak	= 8.00 hrs
Time interval	= 2 min	Hyd. volume	= 4,869 cuft
Drainage area	= 0.840 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 3.45 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a



Hydrograph Report

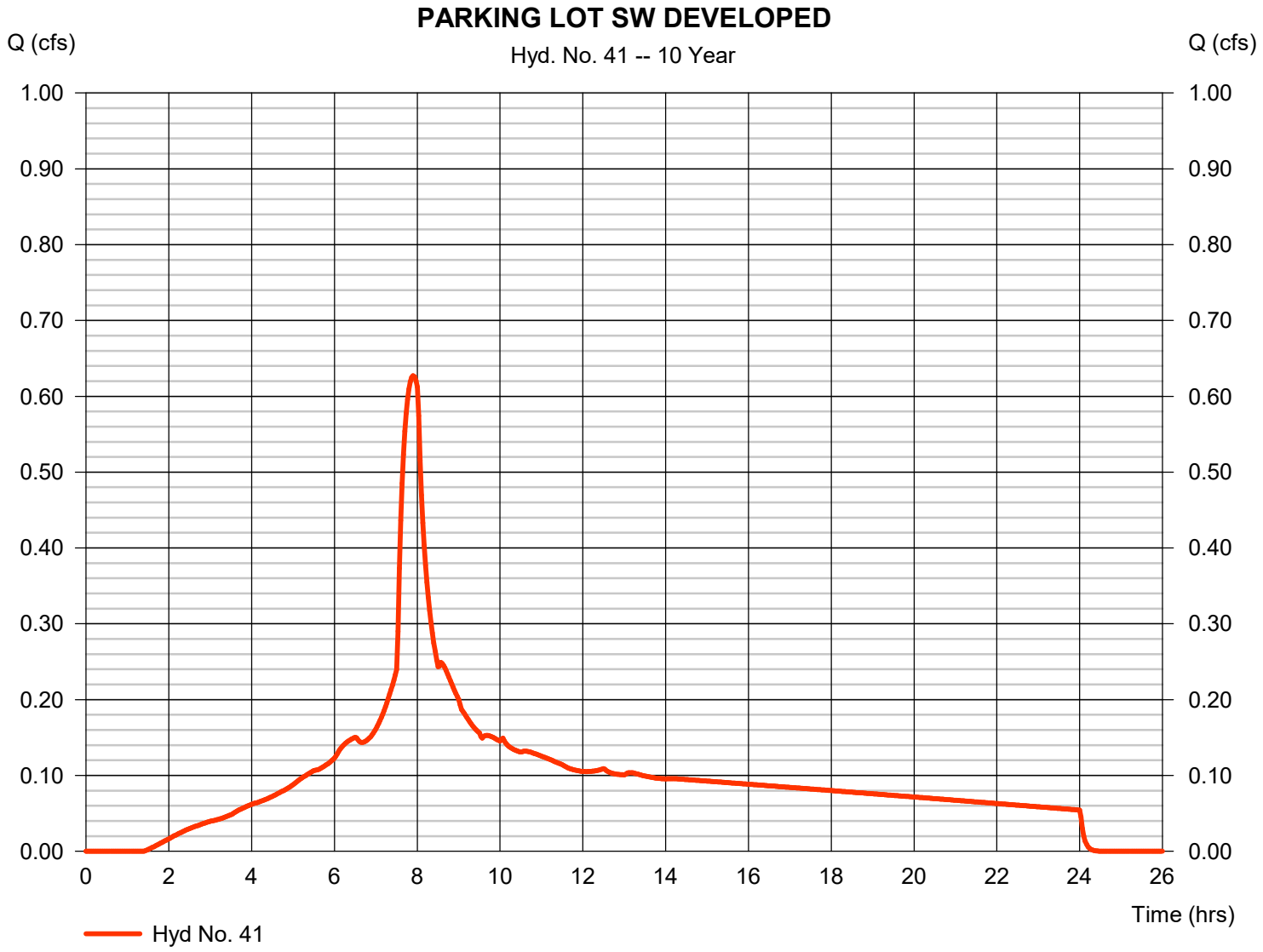
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 41

PARKING LOT SW DEVELOPED

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.627 cfs
Storm frequency	= 10 yrs	Time to peak	= 7.90 hrs
Time interval	= 2 min	Hyd. volume	= 8,812 cuft
Drainage area	= 0.840 ac	Curve number	= 95*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.45 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

* Composite (Area/CN) = [(0.690 x 98) + (0.150 x 80)] / 0.840



Hydrograph Report

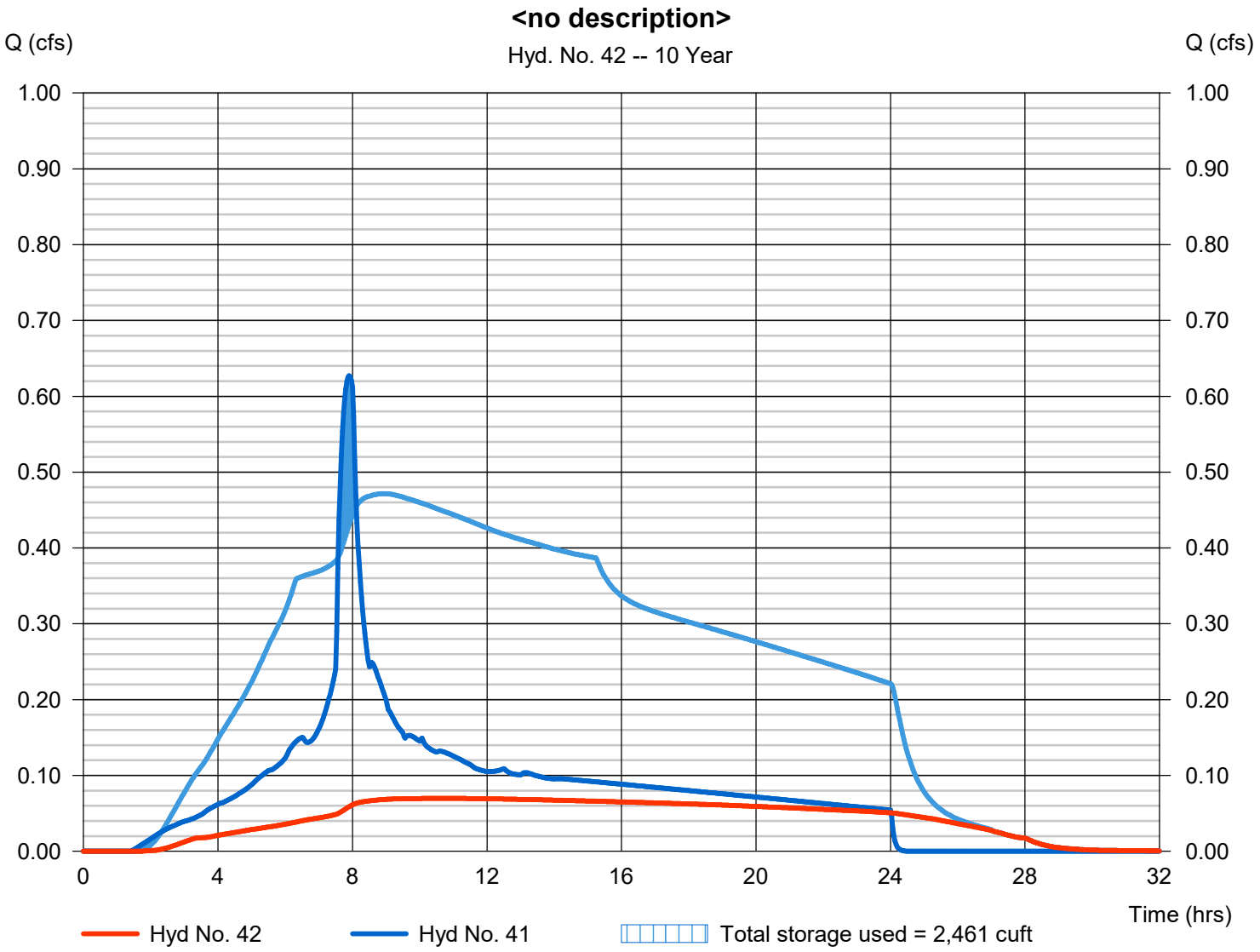
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 42

<no description>

Hydrograph type	= Reservoir	Peak discharge	= 0.070 cfs
Storm frequency	= 10 yrs	Time to peak	= 10.77 hrs
Time interval	= 2 min	Hyd. volume	= 4,827 cuft
Inflow hyd. No.	= 41 - PARKING LOT SW DEVELOPED	Max. Elevation	= 101.54 ft
Reservoir name	= SW Parking Lot Detention	Max. Storage	= 2,461 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



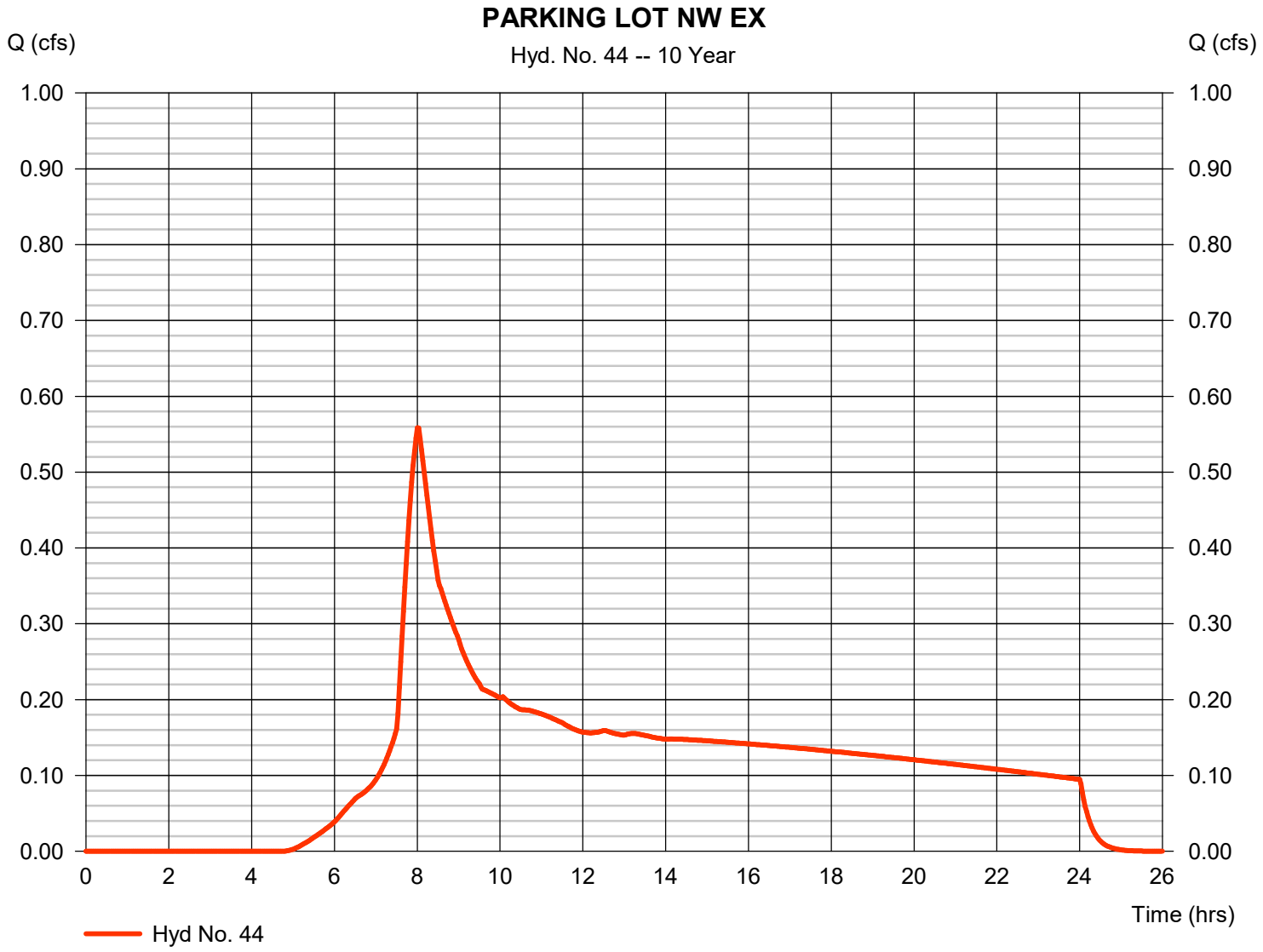
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 44

PARKING LOT NW EX

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.559 cfs
Storm frequency	= 10 yrs	Time to peak	= 8.00 hrs
Time interval	= 2 min	Hyd. volume	= 10,433 cuft
Drainage area	= 1.800 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 3.45 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 45

PARKING LOT NW DEVELOPED

Hydrograph type	=	SBUH Runoff	Peak discharge	=	1.154 cfs
Storm frequency	=	10 yrs	Time to peak	=	7.93 hrs
Time interval	=	2 min	Hyd. volume	=	16,295 cuft
Drainage area	=	1.800 ac	Curve number	=	91*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.45 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(1.130 x 98) + (0.670 x 80)] / 1.800



Hydrograph Report

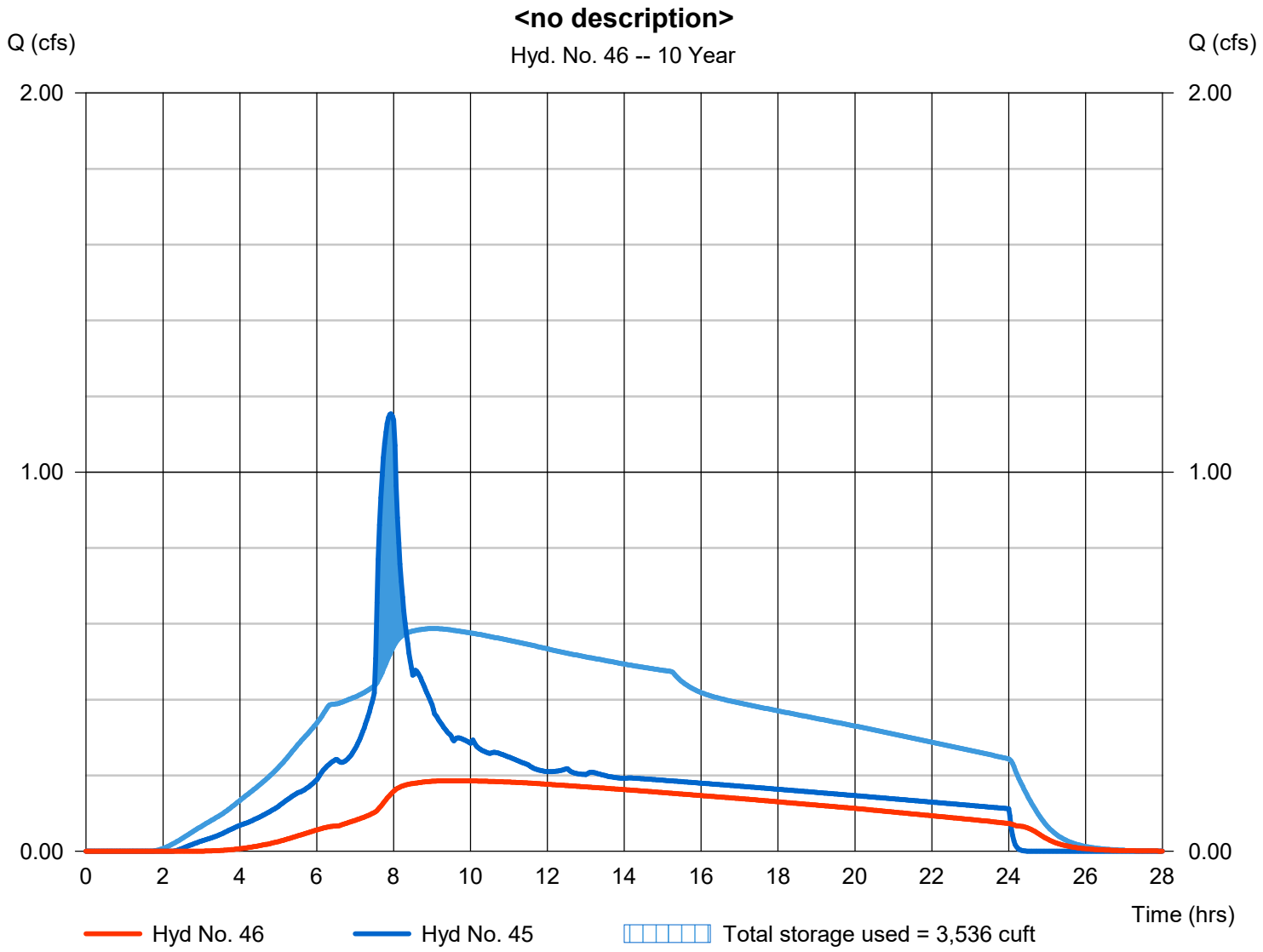
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 46

<no description>

Hydrograph type	=	Reservoir	Peak discharge	=	0.186 cfs
Storm frequency	=	10 yrs	Time to peak	=	9.50 hrs
Time interval	=	2 min	Hyd. volume	=	9,310 cuft
Inflow hyd. No.	=	45 - PARKING LOT NW DEVELOPED	Max. Elevation	=	100.98 ft
Reservoir name	=	NW Parking Lot Detention	Max. Storage	=	3,536 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



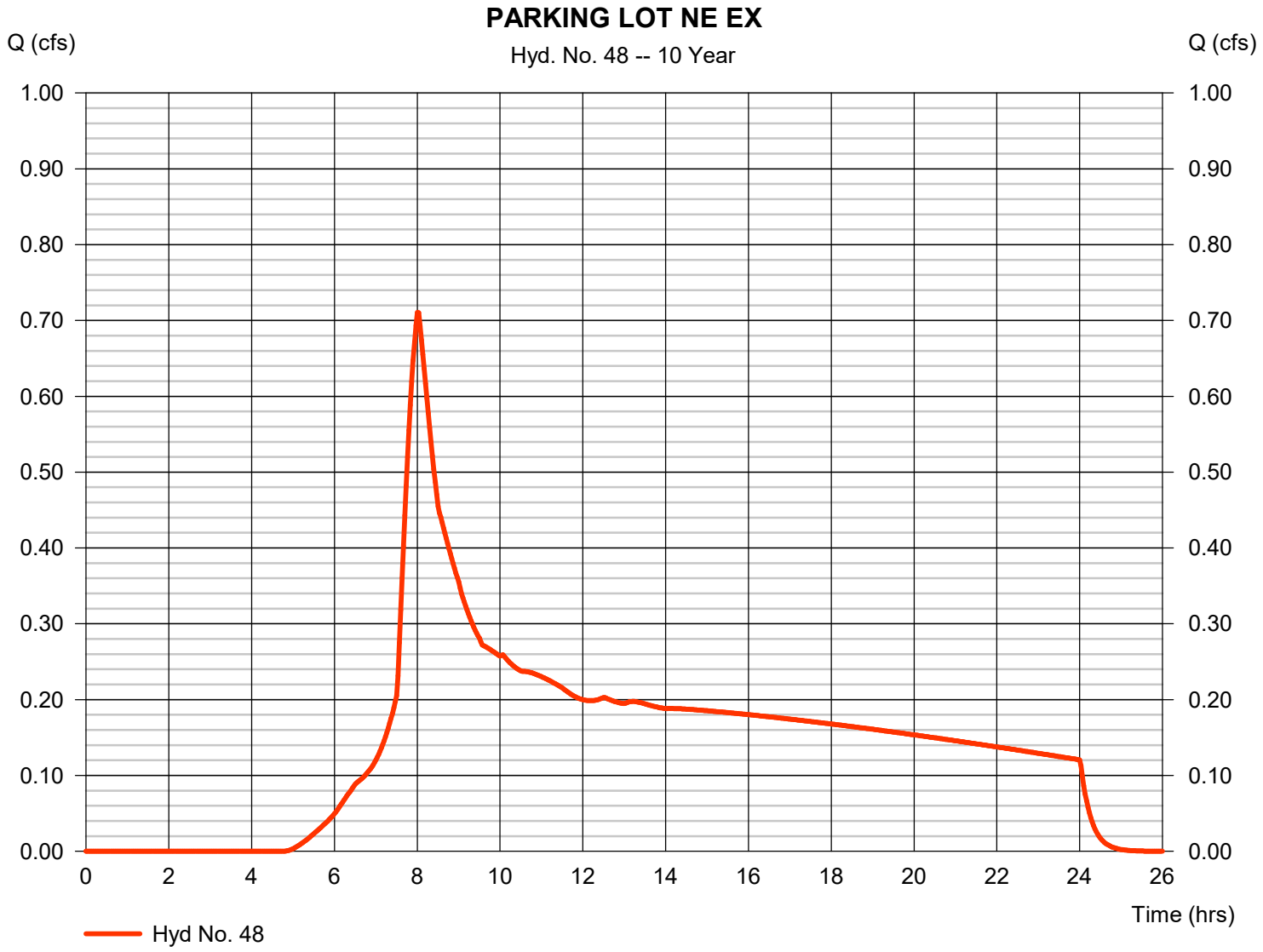
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 48

PARKING LOT NE EX

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.711 cfs
Storm frequency	= 10 yrs	Time to peak	= 8.00 hrs
Time interval	= 2 min	Hyd. volume	= 13,274 cuft
Drainage area	= 2.290 ac	Curve number	= 80
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 3.45 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a



Hydrograph Report

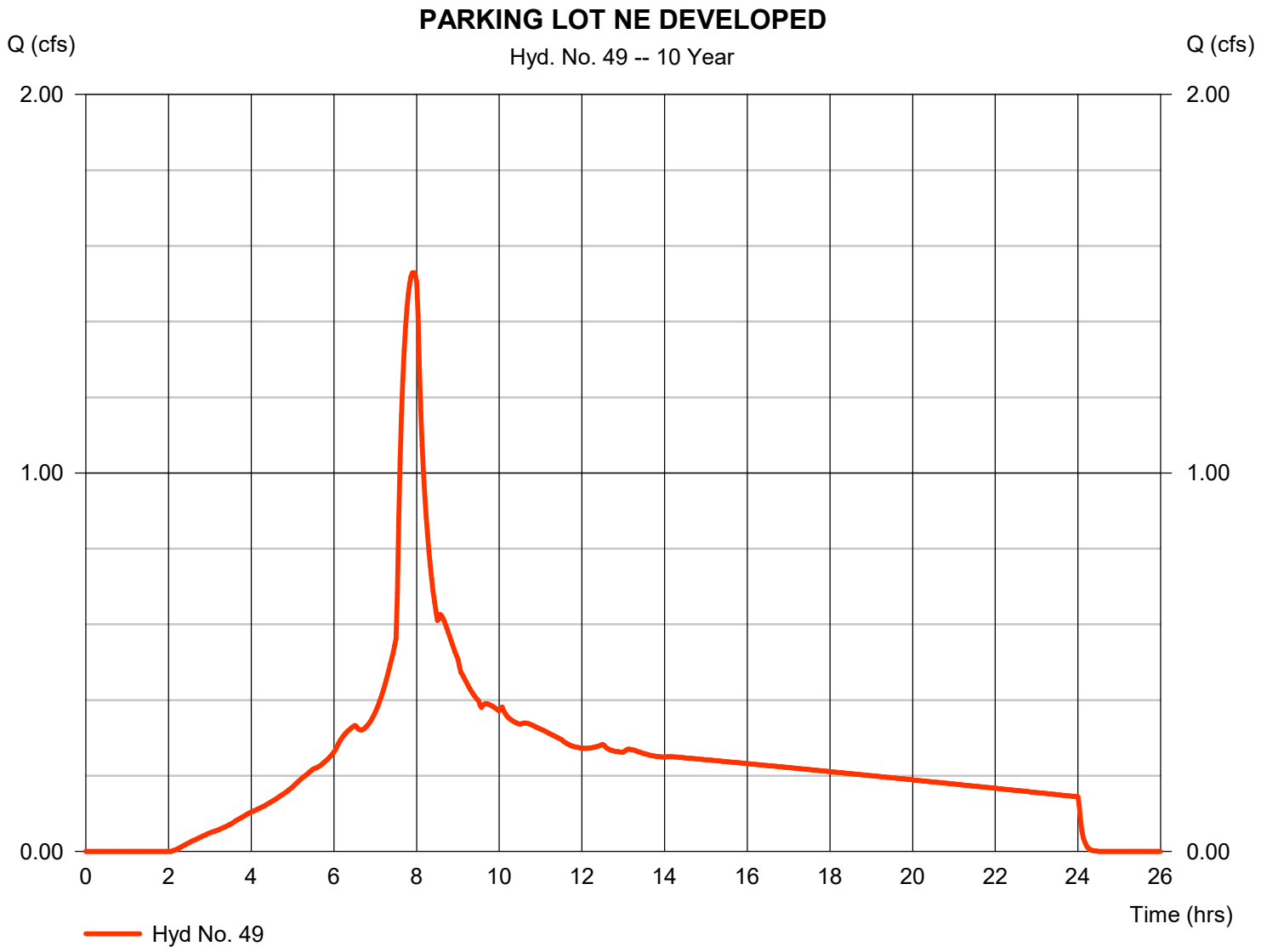
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 49

PARKING LOT NE DEVELOPED

Hydrograph type	= SBUH Runoff	Peak discharge	= 1.530 cfs
Storm frequency	= 10 yrs	Time to peak	= 7.93 hrs
Time interval	= 2 min	Hyd. volume	= 21,521 cuft
Drainage area	= 2.290 ac	Curve number	= 92*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.45 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

* Composite (Area/CN) = [(1.580 x 98) + (0.710 x 80)] / 2.290



Hydrograph Report

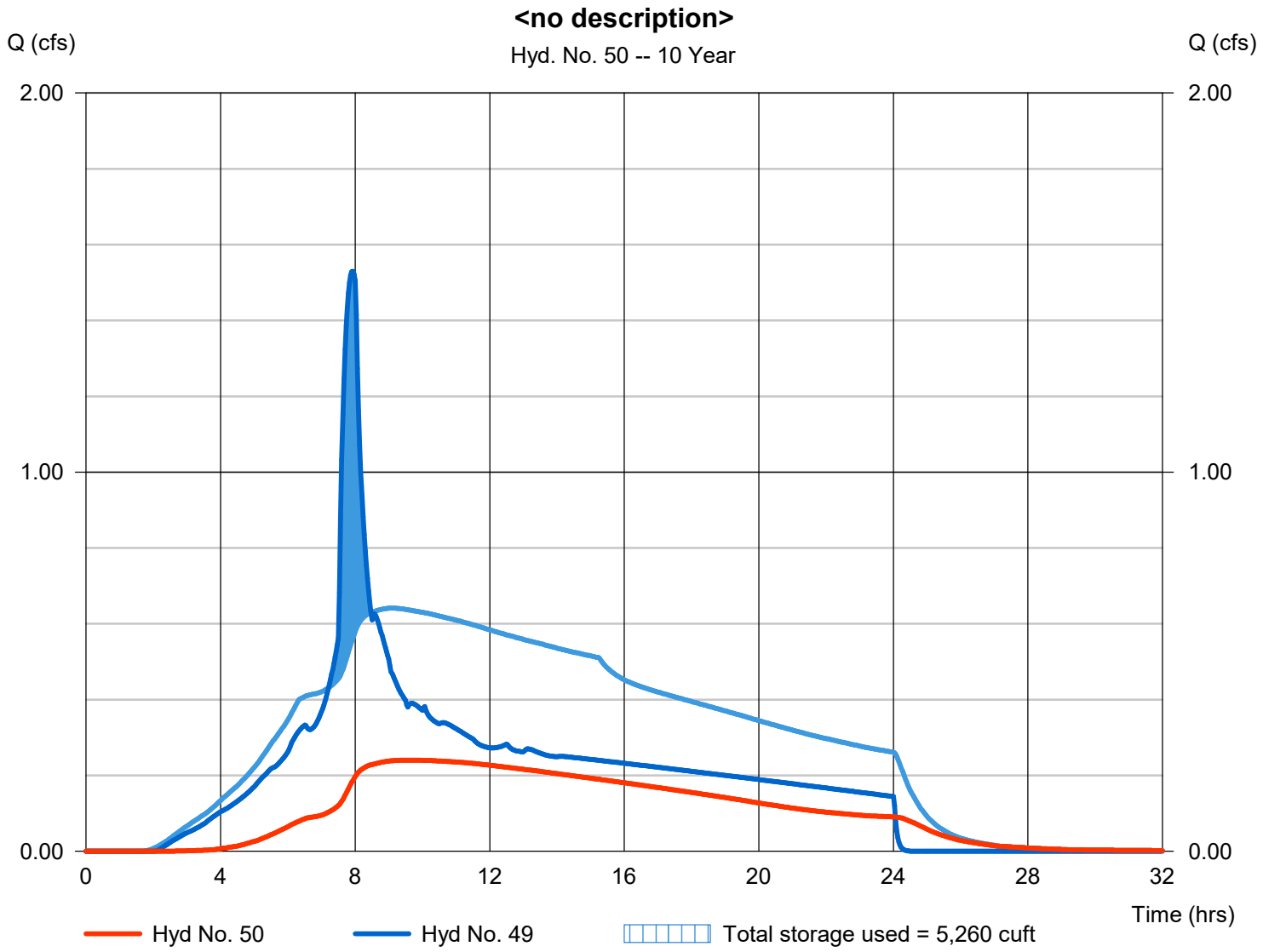
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 50

<no description>

Hydrograph type	=	Reservoir	Peak discharge	=	0.240 cfs
Storm frequency	=	10 yrs	Time to peak	=	9.50 hrs
Time interval	=	2 min	Hyd. volume	=	11,671 cuft
Inflow hyd. No.	=	49 - PARKING LOT NE DEVELOPED	Max. Elevation	=	100.88 ft
Reservoir name	=	NE Parking Lot Detention	Max. Storage	=	5,260 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



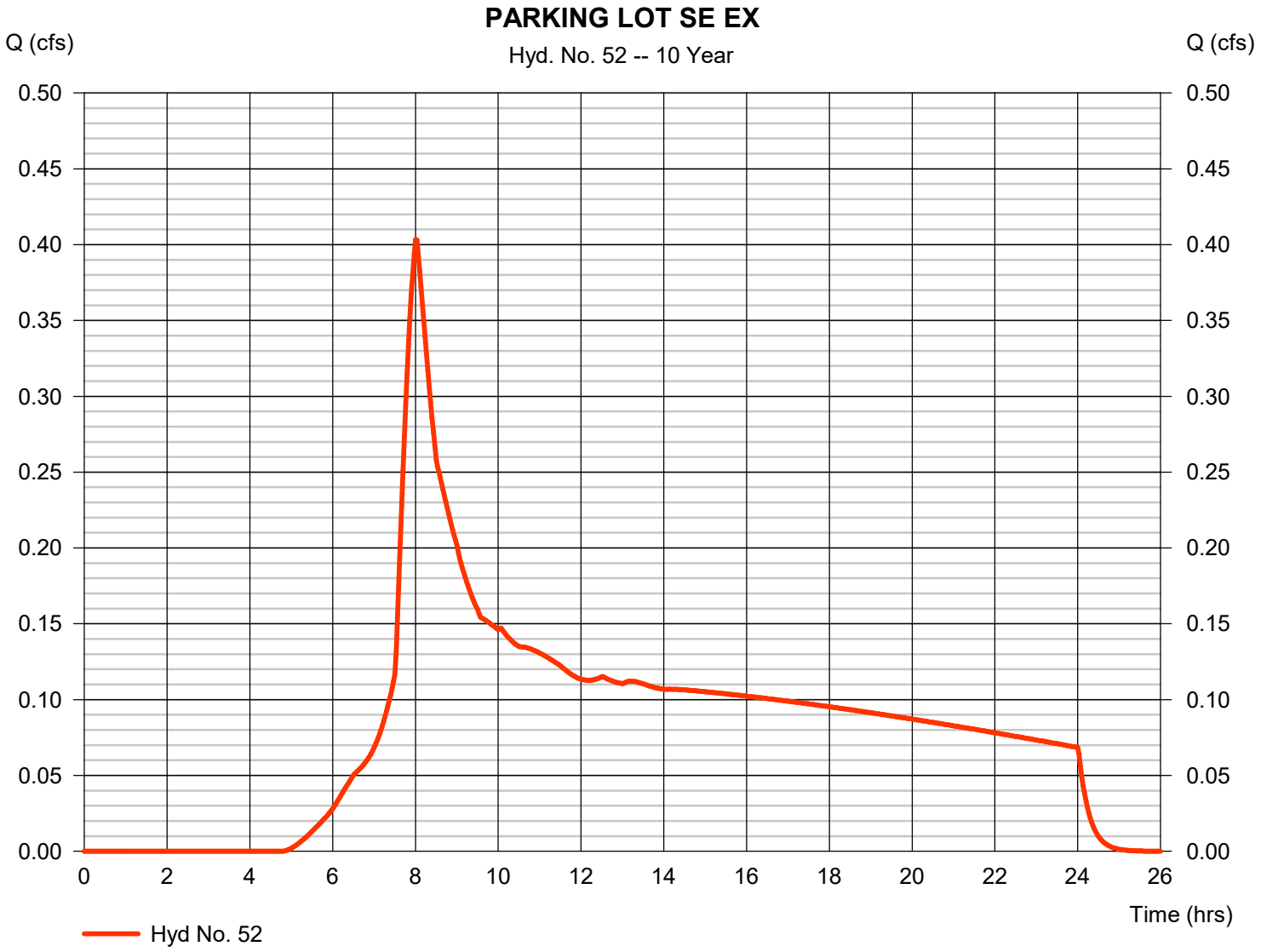
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 52

PARKING LOT SE EX

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.403 cfs
Storm frequency	=	10 yrs	Time to peak	=	8.00 hrs
Time interval	=	2 min	Hyd. volume	=	7,535 cuft
Drainage area	=	1.300 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	15.00 min
Total precip.	=	3.45 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a



Hydrograph Report

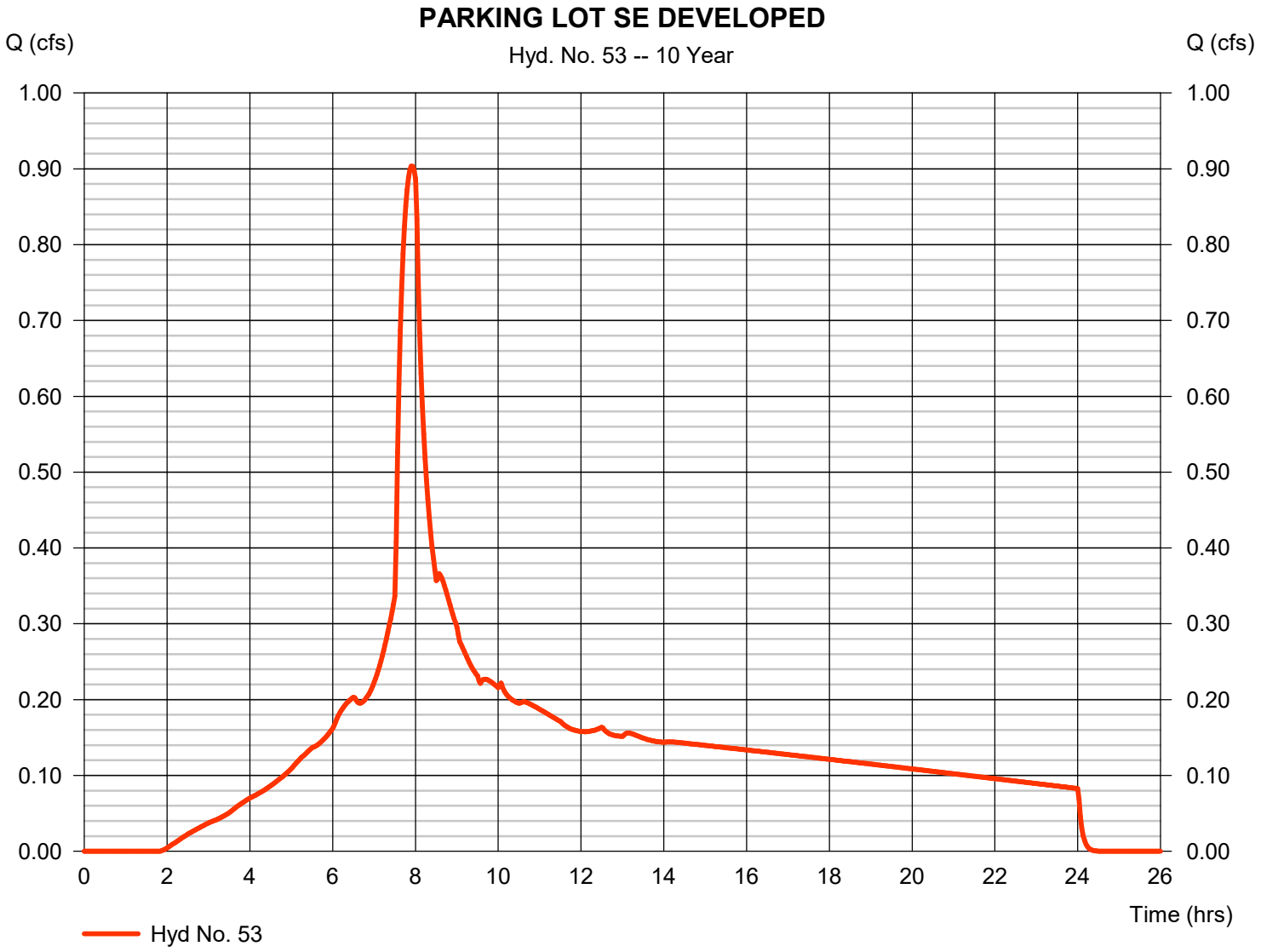
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 53

PARKING LOT SE DEVELOPED

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.903 cfs
Storm frequency	=	10 yrs	Time to peak	=	7.90 hrs
Time interval	=	2 min	Hyd. volume	=	12,678 cuft
Drainage area	=	1.300 ac	Curve number	=	93*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	5.00 min
Total precip.	=	3.45 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a

* Composite (Area/CN) = [(0.920 x 98) + (0.380 x 80)] / 1.300



Hydrograph Report

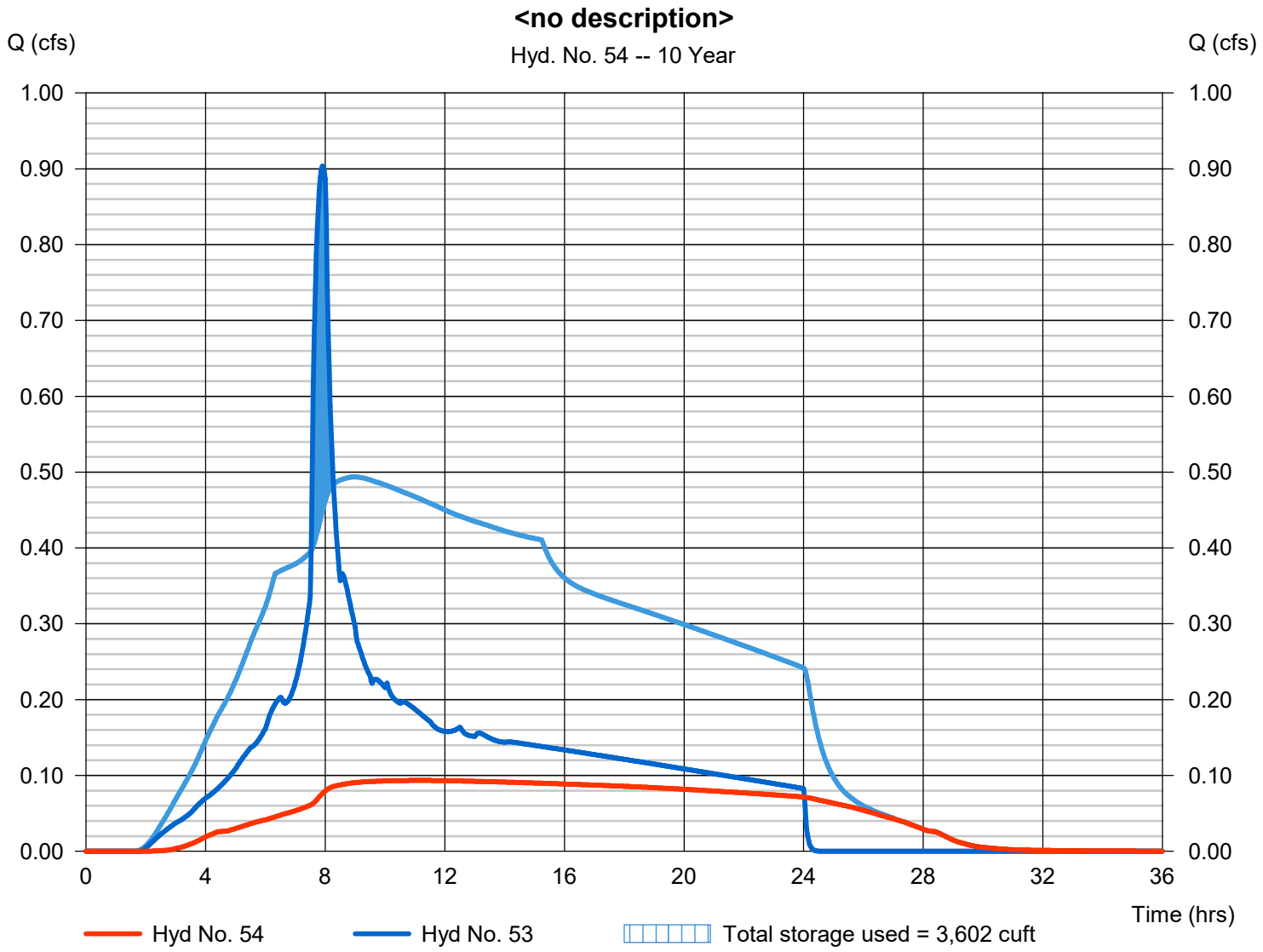
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 54

<no description>

Hydrograph type	=	Reservoir	Peak discharge	=	0.093 cfs
Storm frequency	=	10 yrs	Time to peak	=	11.17 hrs
Time interval	=	2 min	Hyd. volume	=	6,526 cuft
Inflow hyd. No.	=	53 - PARKING LOT SE DEVELOPED	Max. Elevation	=	101.45 ft
Reservoir name	=	SE Parking Lot Detention	Max. Storage	=	3,602 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



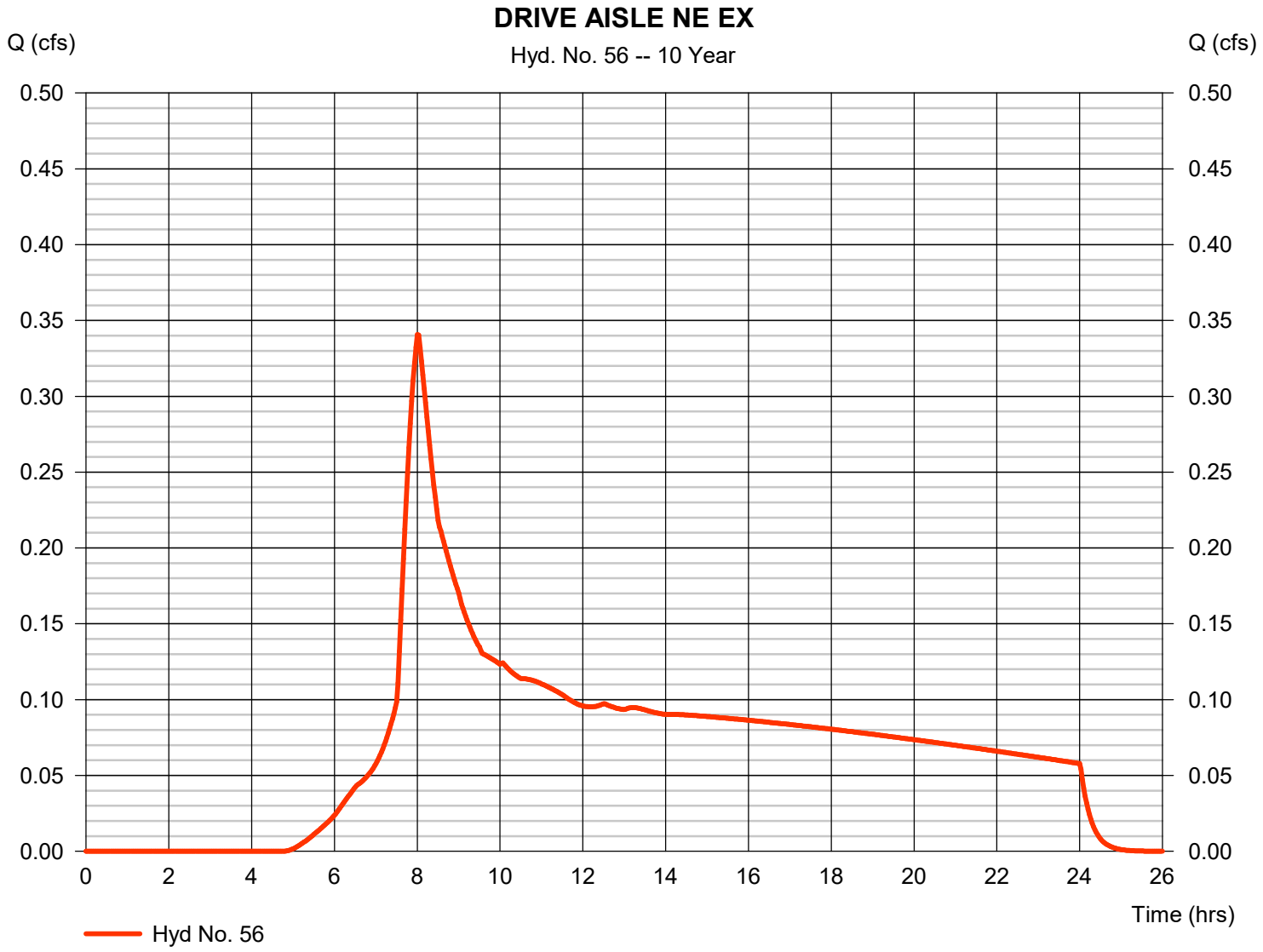
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 56

DRIVE AISLE NE EX

Hydrograph type	=	SBUH Runoff	Peak discharge	=	0.341 cfs
Storm frequency	=	10 yrs	Time to peak	=	8.00 hrs
Time interval	=	2 min	Hyd. volume	=	6,364 cuft
Drainage area	=	1.098 ac	Curve number	=	80
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	15.00 min
Total precip.	=	3.45 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	n/a



Hydrograph Report

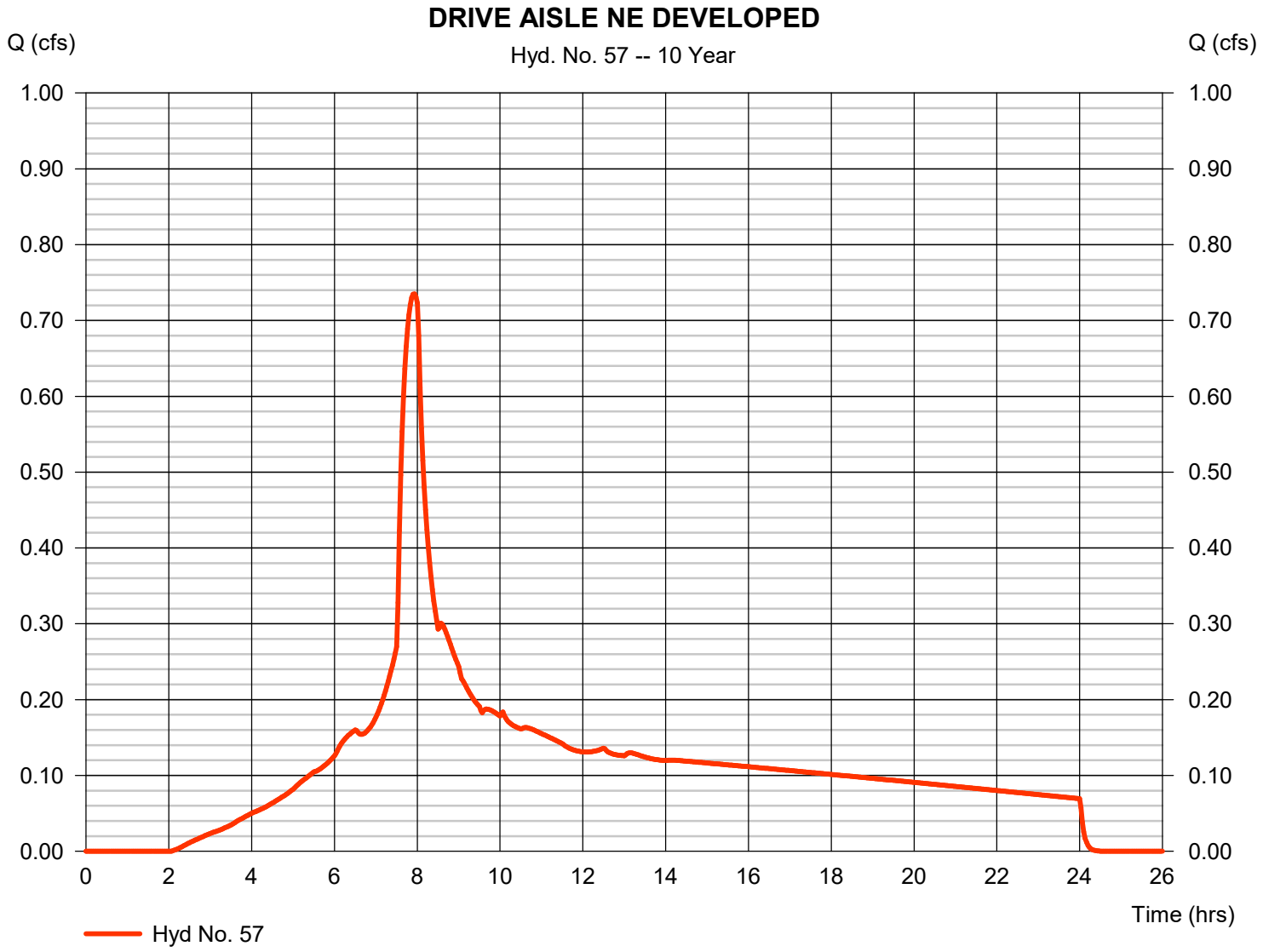
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2024 Wednesday, 07 / 16 / 2025

Hyd. No. 57

DRIVE AISLE NE DEVELOPED

Hydrograph type	= SBUH Runoff	Peak discharge	= 0.735 cfs
Storm frequency	= 10 yrs	Time to peak	= 7.93 hrs
Time interval	= 2 min	Hyd. volume	= 10,338 cuft
Drainage area	= 1.100 ac	Curve number	= 92*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 5.00 min
Total precip.	= 3.45 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= n/a

* Composite (Area/CN) = [(0.733 x 98) + (0.365 x 80)] / 1.100



Appendix C

MACKENZIE.

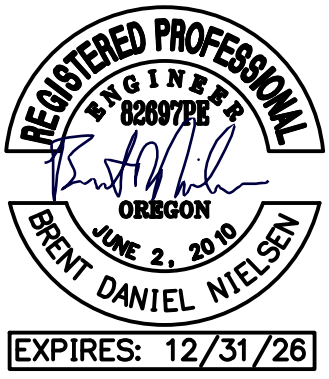
STORMWATER DRAINAGE REPORT

To
City of Tualatin

For
Lam Research Building G

Dated
August 16, 2022
Revised March 14, 2023
Revised September 6, 2023
Revised October 18, 2023
Revised December 15, 2023
Revised July 24, 2024
Revised January 21, 2025

Project Number
2220087.00



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A. Storm Basin Maps
B. Water Quality Sizing
C. Detention Calculations
D. Proposed Site Plans
E. 2001 Novellus Storm Drainage Report
F. Geotechnical report

I. PROJECT INTRODUCTION

Lam Research is proposing to construct a new office building at their existing campus on SW Leveton Drive in Tualatin, Oregon. The new building will be located east of the existing Building C and south of Building B. In support of the expected additional employees on site, Lam also proposes new parking in the east and northwest portions of campus. The vicinity map and site plan below show the location and layout of the site relative to nearby geographic features.

Figure 1: Vicinity Map

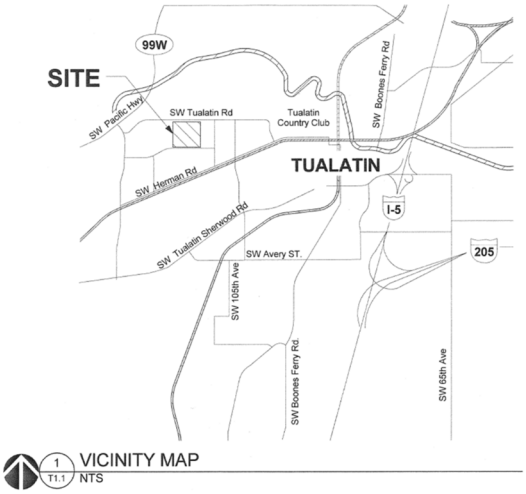
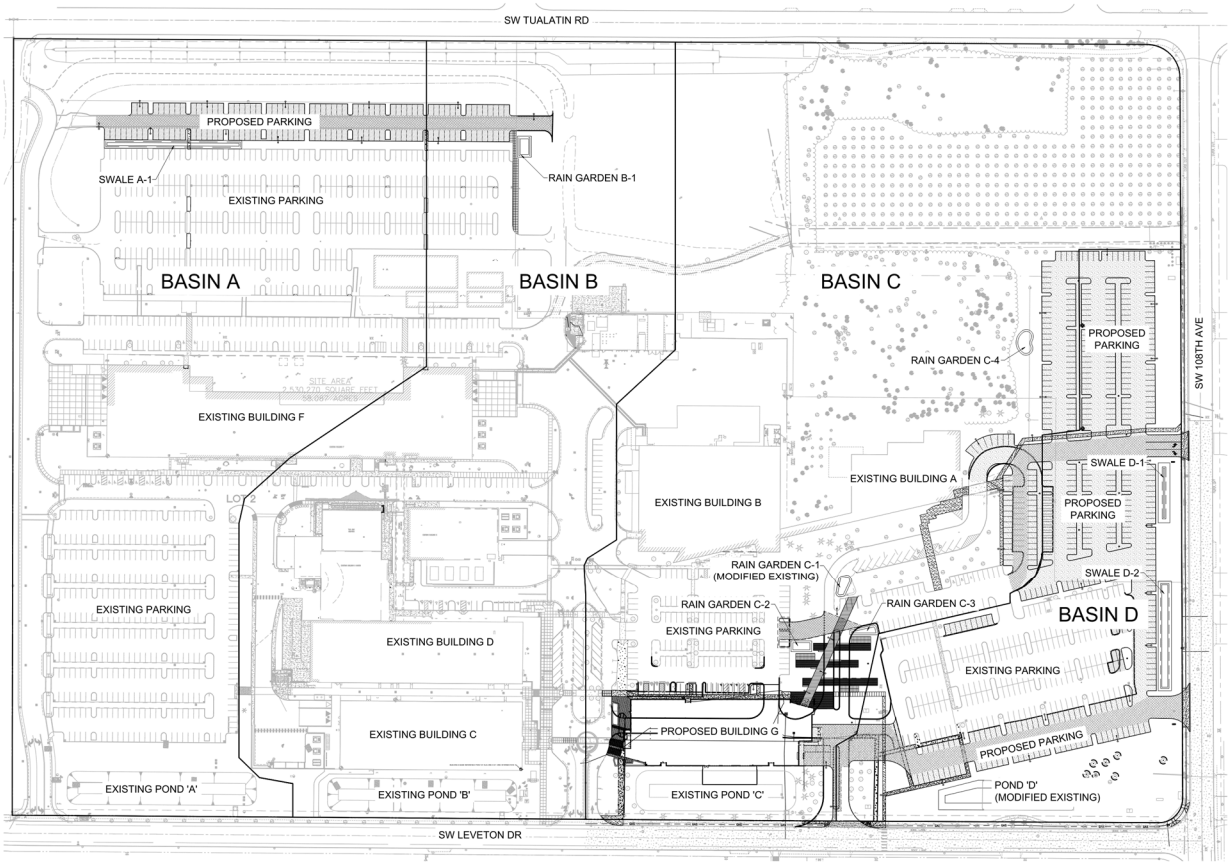


Figure 2: Overall Site Plan



Stormwater drainage and treatment will be provided in accordance with current Clean Water Services and City of Tualatin standards through a series of facilities across campus:

Basin A Water Quality:

- Proposed improvements to Basin A have been removed from the project.

Basin B Water Quality:

- Proposed improvements to Basin B have been removed from the project.

Basin C Water Quality:

- SE Parking expansion: two (2) new vegetated swales and one (1) modified extended dry basin
- New building and pedestrian plaza: existing extended dry basin

Public Sidewalk Water Quality:

- New 108th Avenue sidewalk: one (1) new vegetated planter

Overall Site Detention:

- Three (3) existing extended dry basins to remain and one (1) extended dry basin to be expanded with additional detention storage

The following summarizes the design for the proposed stormwater management approach.

II. STORMWATER QUALITY TREATMENT

Water quality treatment at the new development on the Lam Campus will be provided through a collection of existing, modified, and new facilities. The following summarizes the facilities within each drainage basin on site:

Drainage Basin C

Proposed improvements within Basin C include new parking, re-paved parking, a pedestrian plaza, and the proposed Building G footprint. Runoff from the new impervious surfaces will be routed to existing and new storm treatment facilities.

Basin C Rain Gardens

Existing Rain Garden C-1 was designed circa 2016 to treat runoff from approximately 9,967 sf modified parking south of Building A, which resulted in a facility footprint of approximately 698 sf. The rain garden is proposed to be modified to accommodate a new pedestrian path, and will be reduced to approximately 385 sf, which would result in a treatment capacity of approximately 6,417 sf. This leaves approximately 3,550 sf of existing impervious area capacity to be handled in extended dry basin Pond C.

Rain garden C-1 capacity is based on water quality sizing per the Simplified Method guidelines in Section 4.08.4.b, using a 6-percent sizing factor on the design impervious area. Hydromodification for Basin C is provided in the existing Pond C on site.

The remaining treatment capacity is provided through the existing Pond C, described below.

Existing Pond C Water Quality

The existing Pond C extended dry basin was designed circa 2001 and was sized at the time to accommodate the planned build-out of the campus, which included up to approximately 12.55 acres of total impervious area within Basin C. The water quality design storm has not been changed from the 0.36 inches rainfall that was used in the 2001 calculations.

Current site review indicates the existing Basin C provides water quality treatment for approximately 7.45 acres of existing impervious area, resulting in approximately 5.10 acres of existing impervious area runoff capacity available in the existing Pond C.

The proposed improvements result in an increase in impervious surface summarized as follows:

Existing Basin C impervious surface to remain:	251,428 sf	
New Basin C building roof footprint:	32,824 sf	
New Basin C paving and sidewalk area:	83,228 sf	
Total Basin C Proposed Impervious Area:	367,480 sf	(8.43 ac)

Therefore, the remaining available capacity in Existing Pond C is:

$$Remaining\ Capacity = 12.55\ ac - 8.43\ ac = 4.12\ ac$$

Therefore, the existing Pond C extended dry basin facility has adequate capacity to provide water quality treatment for the proposed Building G and parking development.

Drainage Basin D

Proposed improvements within Basin D include new parking to expand the existing southeast parking lot. Runoff from the new impervious surfaces will be routed to existing and new storm treatment facilities.

Basin D Swales

Proposed Swales D-1 and D-2 will be added to treat runoff from the adjacent parking lots along the east side of the Lam campus.

TABLE 1: SWALE TABLE SIZING SUMMARY		
Development Site	**Swale D-1**	**Swale D-2**
Design Impervious Area (sf)	36,094	86,079
Water Quality Volume (cf)	1,083	2,582
Water Quality Flow (cfs)	0.08	0.18
Residence Time (min)	9.24	16.35

Water quality manholes are provided ahead of Swales D-1 and D-2 per CWS standards. The manholes have been sized based on the contributory inflow up to the 20-year storm.

Existing Pond D

The existing Pond D extended dry basin was designed circa 2016 and was constructed to handle runoff from the new southeast parking lot and adjacent paving area comprising approximately 66,647 sf of existing impervious area.

The proposed improvements will add approximately 39,695 sf resulting in a total impervious area flowing to Pond D of approximately 106,342 sf. The water quality volume for Pond D is calculated as:

$$WQV = A \cdot \frac{0.36\ in}{12\frac{ft}{in}} = 106342 \cdot \frac{0.36\ in}{12\frac{ft}{in}} = 3{,}190\ cf$$

The existing Pond D currently provides approximately 2,003 cf of storage, so the pond will be expanded to the west approximately 80 feet to provide additional water quality storage volume in the pond. The existing outlet structure location at the east end of the pond will remain.

Existing Pond D Water Quality Storage:	2,003 cf
Required Pond D Water Quality Storage:	3,190 cf
Proposed Pond D Water Quality Storage:	3,200 cf

SW 108th Avenue Frontage

Proposed improvements along SW 108th Avenue include new sidewalk and planter strip along the west side of the road. The existing paving and curb will not be modified. Runoff from the new impervious surfaces will be routed to a new storm treatment facility, Planter D-3.

The streetside planter is sided per the Simplified Method guidelines, using a 12-percent water quality and hydromodification sizing factor on the design impervious area.

- New impervious area: 7,205 SF
- 12% minimum facility size: 865 SF
- Provided facility size: 902 SF

Planter calculations are provided in Appendix B of this report.

III. STORMWATER QUANTITY MANAGEMENT

Downstream Analysis

The existing Lam Research campus storm drainage system connects to the public storm system at two primary locations: to SW Leveton Drive south of the existing Pond C, and to SW 108th Avenue to the east of existing Pond D.

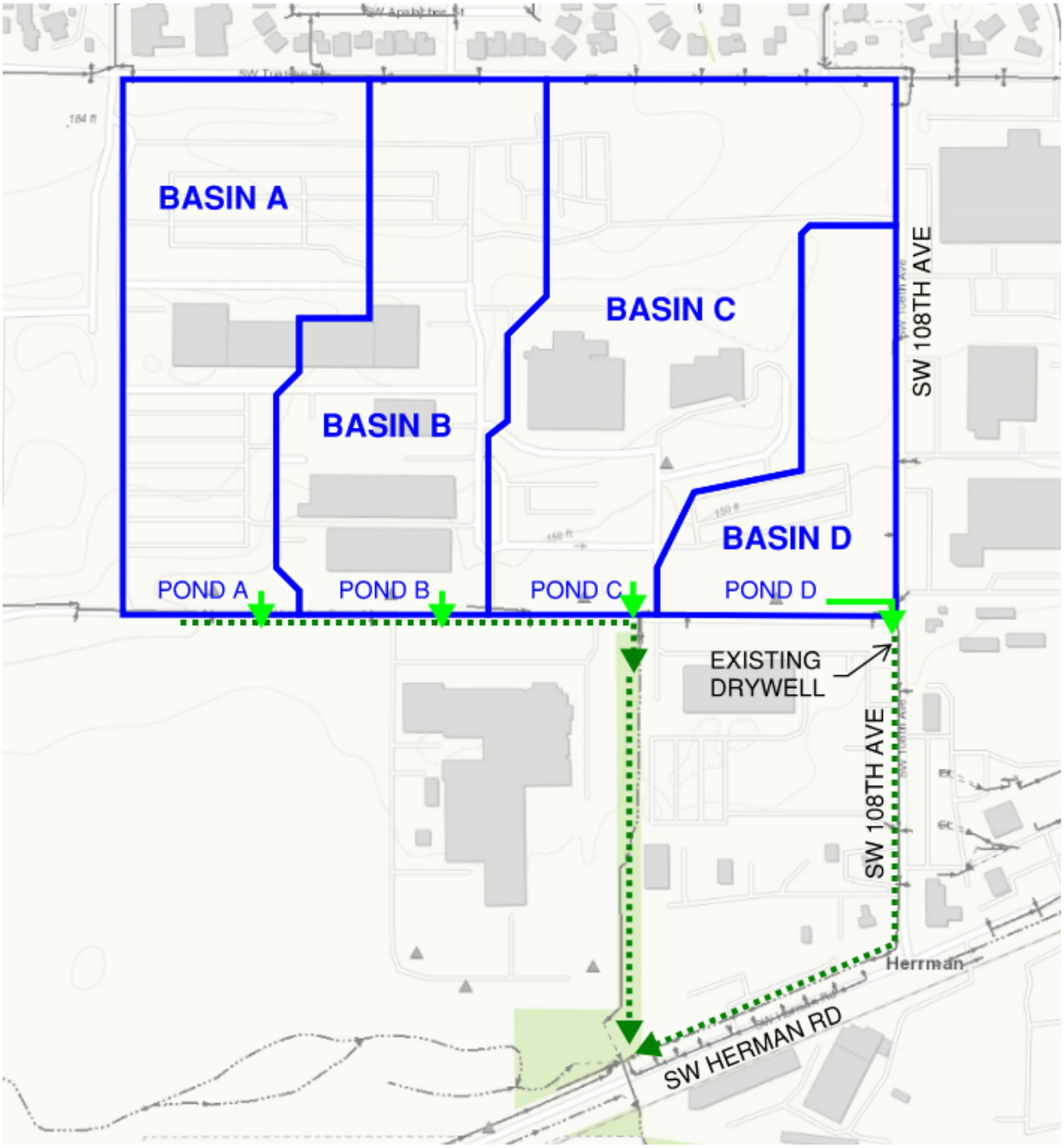
On-site drainage basins A, B, and C drain from the existing Ponds A, B, and C to the public storm pipe in SW Leveton Drive. The storm main conveys stormwater to an existing open channel in a public tract between tax lots 2S1220000400, 2S122AD00400 and 2S122AD01300. The existing channel is approximately 25 feet wide and relatively shallow and is overgrown with vegetation including dense blackberries and other shrubs. Adjacent properties drain to the channel. The flow path of the channel is relatively constrained from the vegetation. The channel leads approximately 560 feet south from Leveton Drive before entering a public conveyance pipe, then outfalls to a small pond north of Herman Road. The pipe outlets to an existing culvert under Herman Road and the adjacent railroad.

On-site drainage basin D drains to existing Pond D and connects to the existing public storm system in SW 108th Avenue near the southeast corner of the Lam Research campus. This storm pipe drains from north to south and collects runoff from the public street, and from properties along the west and east sides of 108th Avenue. At the southern end of SW 108th Avenue, the pipe system discharges to an open channel along SW Herman Road, approximately 900 feet south of the Lam Research property. The pipes transition from 12" diameter at the intersection of 108th Avenue and Leveton Drive up to 30" diameter at the intersection with Herman Road. The Herman Road pipes outfall to an open channel along the north side of the road, which lead to the pond and culvert noted above.

Existing Drywell

The City of Tualatin notes an existing drywell located at the intersection of SW Leveton Drive and SW 108th Avenue. The drywell is noted in public road record drawings (circa 1990) but limited information is provided. Based on our review of the drawings, the existing drywell was incorporated into the SW 108th Avenue storm drainage, but does not appear to have been used for primary stormwater discharge or flow reduction. The public storm piping extends beyond the Leveton Drive intersection. The proposed Lam Research development does not assume any available infiltration capacity in the drywell; therefore, any flow reduction or infiltration capacity which remains continues to be available for public use.

The storm system vicinity map below shows the drainage paths south from the Lam Research storm basins.



Hydromodification Flow Control

The proposed development at the Lam Research campus will add impervious surface to each of the four (4) drainage basins on site. Mitigation of increased peak flows will be provided through increased detention capacity in Pond D, which will be expanded toward the west.

Ponds A, B, and C, and D were designed in 2001 and 2017 under prior Clean Water Services regulations which required that runoff from the developed Lam Research site be mitigated through detention to match the pre-development peak rates for the 2-year through 25-year storm events.

Current standards require assessment of hydromodification risk based on the project site and development footprint. Per Clean Water Services standards, the proposed development falls into Category 2.

Figure 3: Project Site Hydromodification Map

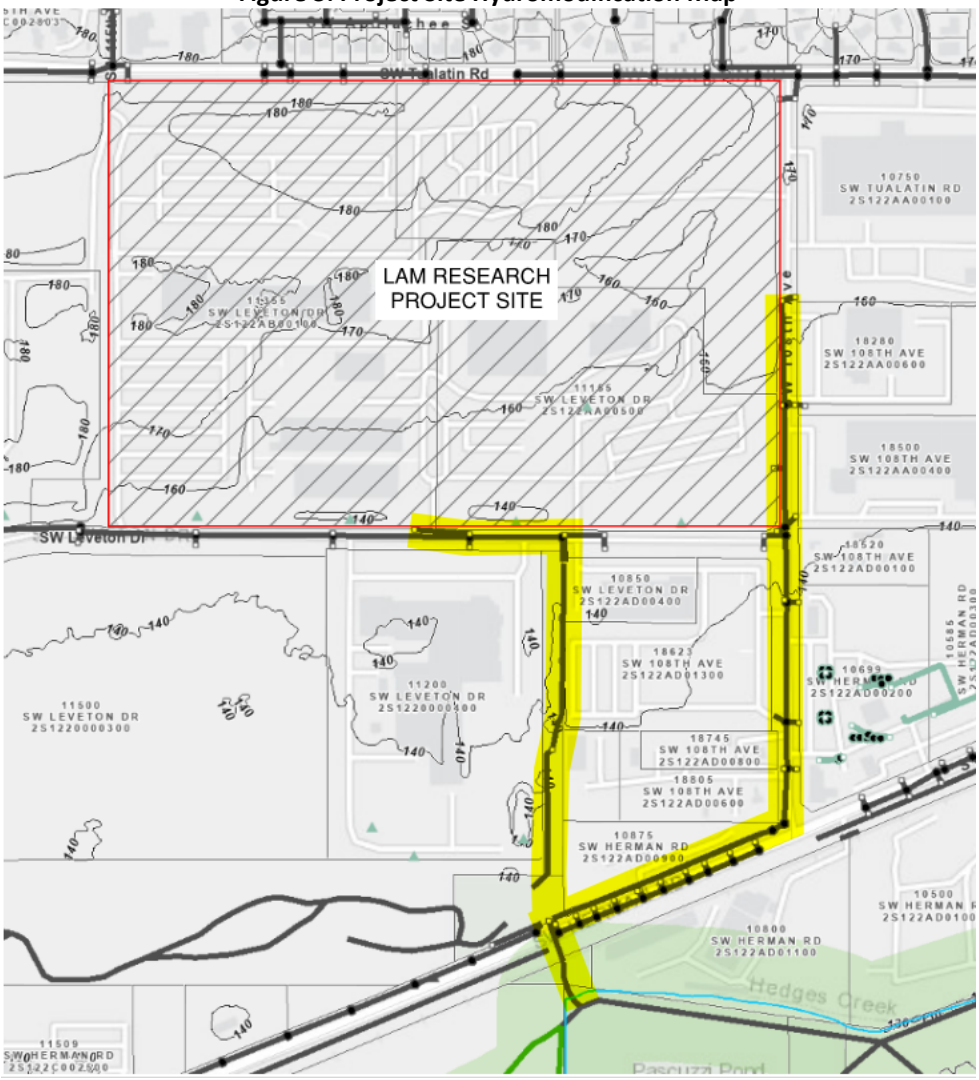


Figure 4: Hydromodification Risk Assessment

<table>
<tr><th>Development Class/ Risk Level</th><th>Small Project 1,000 – 12,000 SF</th><th>Medium Project >12,000 – 80,000 SF</th><th>Large Project > 80,000 SF</th></tr>
<tr><td>Expansion/High</td><td rowspan="6">Category 1</td><td>Category 3</td><td rowspan="3">Category 3</td></tr>
<tr><td>Expansion/ Moderate</td></tr>
<tr><td>Expansion/ Low</td><td>Category 2</td></tr>
<tr><td>Developed/ High</td><td>Category 3</td><td rowspan="2">Category 2</td></tr>
<tr><td>Developed/ Moderate</td><td rowspan="2">Category 2</td></tr>
<tr><td>Developed/ Low</td></tr>
</table>

Under current Clean Water Services Category 2 hydromodification standards, new development shall provide detention to reduce the 2-year storm developed peak flow to match one-half of the pre-developed 2-year storm peak runoff, and to match pre-development peak flows for larger storm events.

In order to calculate the required detention and mitigated release rate from the campus development under blended standards, we calculated the allowable peak flows from existing (pre-2019) development on campus and new (2022 proposed) development. Pre-development peak flows are calculated using on a curve number of 73. The following table summarizes the allowed peak flow from the site.

TABLE 3: PRE-DEVELOPMENT PEAK FLOWS

Site Coverage	Basin Area (ac)	2-year Storm Pre-Developed Maximum Allowed Flow (cfs)	5-year Storm Pre-Developed Peak Flow (cfs)	10-year Storm Pre-Developed Peak Flow (cfs)	25-year Storm Pre-Developed Peak Flow (cfs)
Proposed 2022 Development Area	5.52	0.17 (50% of 2-yr peak pre-development flow, for area subject to hydromodification)	0.75	1.04	1.43
Pre-2019 Existing Campus	52.49	3.243 (2-yr peak pre-development flow, for area subject to peak flow matching)	7.21	9.87	13.63
Total Campus	58.01	3.41 (Blended 2-yr peak allowed flow)	7.96	10.91	15.06

Post-development runoff is calculated using curve numbers of 98 for impervious areas (building roofs, paving, gravel), and 74 for existing and new landscape areas. The runoff from each drainage basin on site is calculated based on the proposed site coverage, and calculated for flow through the existing detention ponds. The hydromodification sizing for the new development is completed by comparing the discharge peak flow to the pre-development peak flow for the entire site.

TABLE 4: POST-DEVELOPMENT SITE COVERAGE SUMMARY						
	Basin A (ac)	Basin B (ac)	Basin C (ac)	Basin D (ac)	Total Private Site (ac)	Road Basin (ac)
Existing Impervious	9.67	10.36	7.45	1.74	29.22	0.17
Existing Pervious	6.35	4.32	12.42	5.70	28.79	0.14
Proposed Impervious	9.67	10.43	8.34	4.50	32.94	0.17
Proposed Pervious	6.35	4.32	11.61	2.79	25.07	0.14
Total Area	16.02	14.78	20.00	7.21	58.01	0.31

The overall site flow is calculated as the combined flow from the four basins, and the Pond D storage will be adjusted to reduce the post-development total flow to match the pre-development limits listed above. Note that the Road Basin treatment planter is sized to meet hydromodification requirements, so its runoff is not included in the overall private site runoff flow control management.

Infiltration is accounted in the flow control design based on field testing performed by NV5 in conjunction with geotechnical investigations on site. Tests performed at 8 feet below existing ground level at two locations within the project area. The tests resulted in measured rates of 1 in/hr and 6 in/hr. The average of these rates is 3.5 in/hr, and we applied a factor of safety of 3 to the measured rates to account for variability in the soil conditions. The detention pond sizing includes use of a design infiltration rate of 1 in/hr from the bottom of each pond.

The following table summarizes the flow from each pond and the total private site outflow.

TABLE 5: DETAINED RELEASE FLOW SUMMARY					
	Pond A (ac)	Pond B (ac)	Pond C (ac)	Pond D	Total Site (ac)
Pre-Development Flow (cfs)[1]					2-yr: 3.41[1] 5-yr: 7.96 10-yr: 10.91 25-yr: 15.07
Post-Development Flow (cfs)	2-yr: 5.17 5-yr: 7.38 10-yr: 8.82 25-yr: 10.45	2-yr: 5.82 5-yr: 7.97 10-yr: 9.23 25-yr: 10.86	2-yr: 4.77 5-yr: 7.27 10-yr: 8.82 25-yr: 10.87	2-yr: 2.49 5-yr: 3.51 10-yr: 4.12 25-yr: 4.90	2-yr: 18.23 5-yr: 26.13 10-yr: 30.88 25-yr: 37.09
Detained Release Flow (cfs)	2-yr: 1.15 5-yr: 1.38 10-yr: 1.7 25-yr: 2.87	2-yr: 1.16 5-yr: 1.38 10-yr: 1.50 25-yr: 1.67	2-yr: 0.81 5-yr: 1.01 10-yr: 1.15 25-yr: 1.16	2-yr: 0.30 5-yr: 0.75 10-yr: 1.24 25-yr: 2.08	2-yr: 3.13 5-yr: 4.55 10-yr: 5.26 25-yr: 7.21

[1] Refer to Table 3 above for mixed peak-matching and hydromodification flow control requirements for the full site, including portions of the site which were constructed under prior CWS standards.

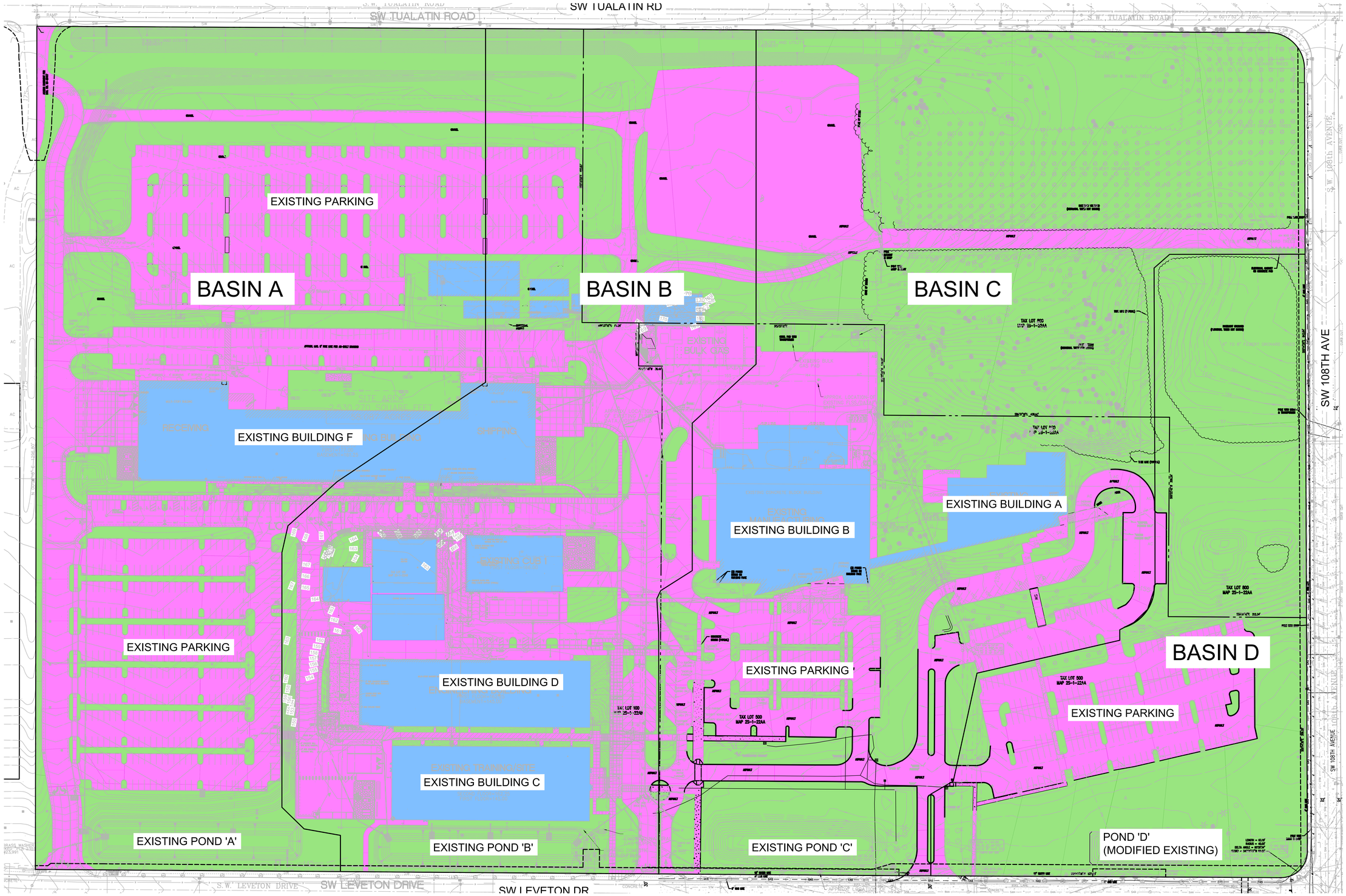
The existing Ponds A and B will remain as-is; Pond C will receive an adjusted outlet orifice; and Pond D will be expanded to provide additional detention storage. Approximately 20,600 cf of additional storage is required within Pond D, which is provided by extending the west edge of the pond approximately 80 feet.

No modifications to the existing Pond D outlet structure or orifice are required. Detailed detention calculations are provided in Appendix C of this report.

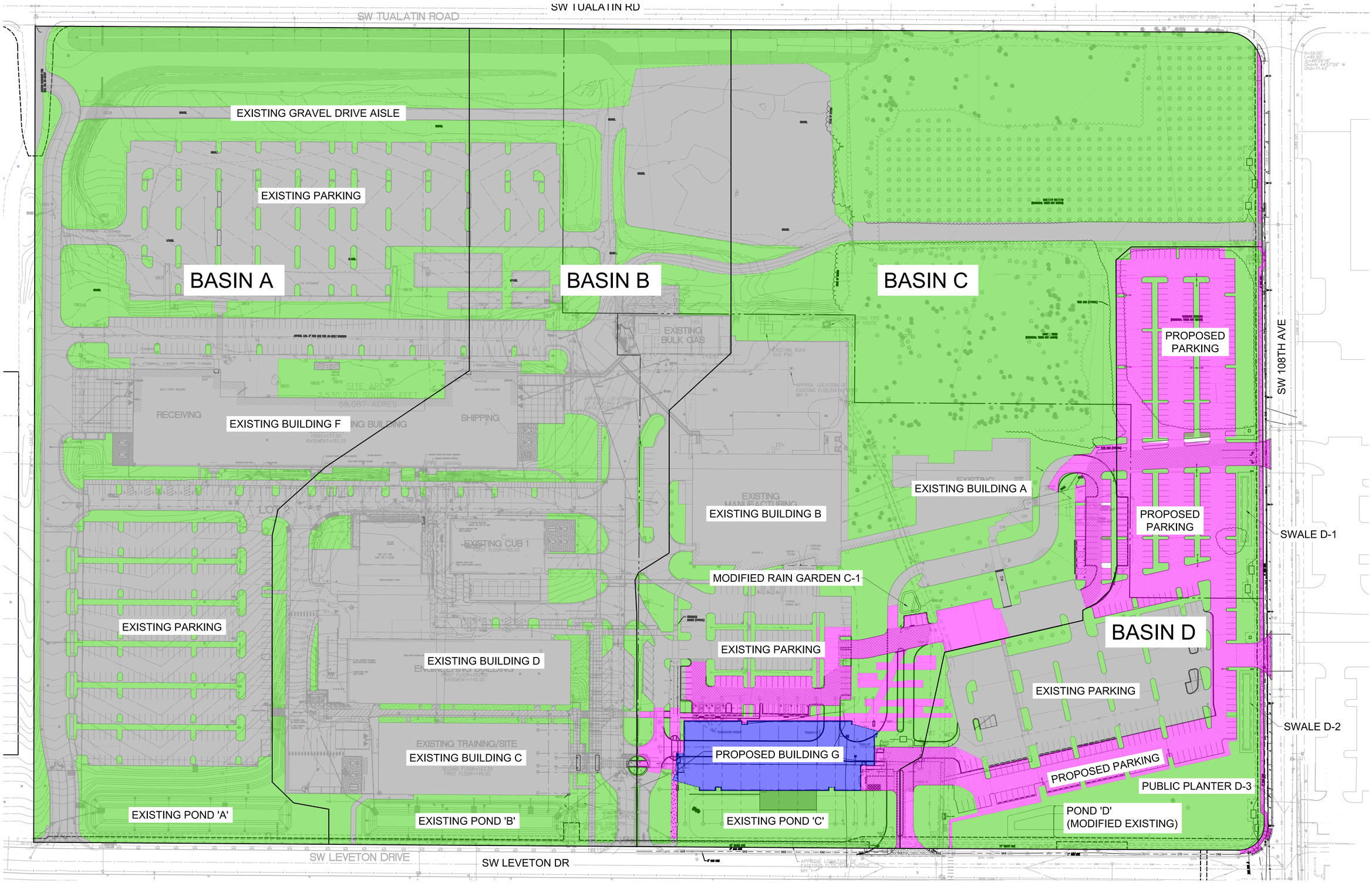
IV. CONCLUSION

The proposed building and parking expansion at Lam Research will increase the impervious area coverage on campus by approximately 4.36 ac. Stormwater runoff from the new impervious area will be treated for water quality through existing extended dry basins, new swales, and new rain gardens.

Detention will be provided to new Clean Water Services standards to meet hydromodification requirements for new impervious area. The existing detention ponds will be supplemented with expansion at Pond D to provide storage to meet new detention requirements.



EXISTING BASIN COVERAGE AREA SUMMARY						
	BASIN A	BASIN B	BASIN C	BASIN D	TOTAL SITE	ROAD BASIN
EXISTING IMPERVIOUS AREA (AC)	9.67	10.36	7.45	1.74	29.22	0.17
EXISTING PERVIOUS AREA (AC)	6.35	4.32	12.42	5.70	28.79	0.14
TOTAL BASIN AREA (AC)	16.02	14.68	19.87	7.45	58.01	0.31



PROPOSED BASIN COVERAGE AREA SUMMARY						
	BASIN A	BASIN B	BASIN C	BASIN D	PRIVATE SITE	ROAD BASIN
EXISTING PERVIOUS AREA TO REMAIN (AC)	6.35	4.32	10.09	1.01	21.77	0.14
NEW PERVIOUS AREA (AC)	0	0	1.52	1.78	3.30	0
TOTAL PERVIOUS AREA (AC)	6.35	4.32	11.61	2.79	25.07	0.14
EXISTING IMPERVIOUS AREA TO REMAIN (AC)	9.67	10.43	5.80	1.57	27.47	0
NEW IMPERVIOUS AREA (AC)	0.00	0.00	2.54	2.93	5.47	0.17
TOTAL IMPERVIOUS AREA (AC)	9.67	10.43	8.34	4.50	32.94	0.17
TOTAL BASIN AREA (AC)	16.02	14.75	19.95	7.29	58.01	0.31

APPENDIX B

WATER QUALITY SIZING

Clean Water Services

Vegetated Swale Calculator

Per 2019 Clean Water Services Design & Construction Standards (D&CS)

Project Name:	**Lam Research - Swale D-1**	By:	SJS	Checked:	BDN
Project Number:	2220087.00	Date:	8/15/2022	Date:	10/18/2023

From WQF and WQV Calculator

Required Treatment Area (A):	A =	36,094	ft^2
Water Quality Volume (WQV):	WQV =	1,083	ft^3
Water Quality Flow (WQF):	WQF =	0.08	ft^3/s

User Entry Variables

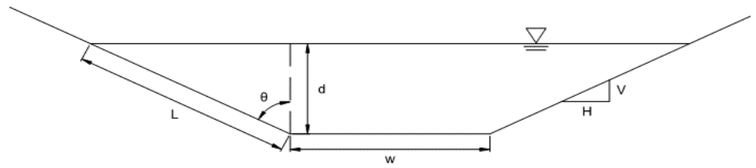
Slope	S =	0.045	ft/ft
Side Slopes	H =	4	
	V =	1	
Swale Length	L_s =	100	ft
Swale Bottom Width	w =	8	ft
Manning's N-Value	n =	0.24	

Calculations

Swale Cross-Sectional Area	A =	0.42	ft^2
	θ =	76	°
	L =	0.06	ft
Water Quality Depth	d =	0.052	ft
Velocity	v =	0.18	ft/s
Residence time	t =	9.24	min.
Manning's Equation	$AR^{2/3}$ =	0.057	
Manning's Equation	$AR^{2/3}$ =	0.058	

Equations

$$AR^{2/3} = \frac{Q * n}{1.49\sqrt{S}} \qquad A = (d * w) + d^2 tan\theta \qquad R = \frac{wd + Hd^2}{w + 2dH}$$



Vegetated Swale Design Criteria

Minimum Slope =	0.005		D&CS 4.09.4.c.4
Maximum Side Slopes =	4	:1	D&CS 4.09.4.c.8A
Minimum Swale Length =	100	feet	D&CS 4.09.4.c.3
Minimum Flat Bottom Width =	2	feet	D&CS 4.09.4.c.5
Manning's n-value =	0.24		D&CS 4.09.4.b.5
Minimum Freeboard =	1	foot	D&CS 4.09.4.b.4
Maximum Depth =	6	inches	D&CS 4.09.4.c.6
Maximum Velocity =	2	ft/s	D&CS 4.09.4.b.6
Minimum Residence Time =	9	minutes	D&CS 4.09.4.b.2

$$AR^{2/3} = \frac{Q * n}{1.49\sqrt{S}}$$

$$AR^{2/3} = dw + d^2 tan\theta \left[\frac{dw + d^2 tan\theta}{\left(w + 2\frac{d}{cos\theta}\right)^{2/3}}\right]$$

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Clean Water Services

Vegetated Swale Calculator

Per 2019 Clean Water Services Design & Construction Standards (D&CS)

Project Name:	**Lam Research - Swale D-2 (REV)**	By:	SJS	Checked:	BDN
Project Number:	2220087.00	Date:	8/15/2022	Date:	1/20/2025

From WQF and WQV Calculator

Required Treatment Area (A):	A =	86,079	ft^2
Water Quality Volume (WQV):	WQV =	2,582	ft^3
Water Quality Flow (WQF):	WQF =	0.18	ft^3/s

User Entry Variables

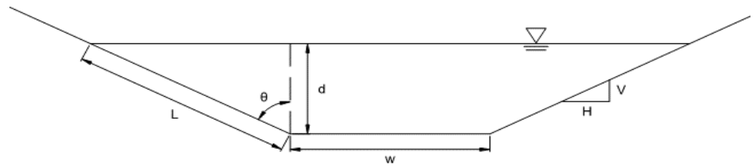
Slope	S =	0.005	ft/ft
Side Slopes	H =	4	
	V =	1	
Swale Length	L_s =	118	ft
Swale Bottom Width	w =	10	ft
Manning's N-Value	n =	0.24	

Calculations

Swale Cross-Sectional Area	A =	1.49	ft^2
	θ =	76	°
	L =	0.17	ft
Water Quality Depth	d =	0.148	ft
Velocity	v =	0.12	ft/s
Residence time	t =	16.35	min.
Manning's Equation	$AR^{2/3}$ =	0.410	
Manning's Equation	$AR^{2/3}$ =	0.410	

Equations

$$AR^{2/3} = \frac{Q * n}{1.49\sqrt{S}} \qquad A = (d * w) + d^2 tan\theta \qquad R = \frac{wd + Hd^2}{w + 2dH}$$



Vegetated Swale Design Criteria

Minimum Slope =	0.005		D&CS 4.09.4.c.4
Maximum Side Slopes =	4	:1	D&CS 4.09.4.c.8A
Minimum Swale Length =	100	feet	D&CS 4.09.4.c.3
Minimum Flat Bottom Width =	2	feet	D&CS 4.09.4.c.5
Manning's n-value =	0.24		D&CS 4.09.4.b.5
Minimum Freeboard =	1	foot	D&CS 4.09.4.b.4
Maximum Depth =	6	inches	D&CS 4.09.4.c.6
Maximum Velocity =	2	ft/s	D&CS 4.09.4.b.6
Minimum Residence Time =	9	minutes	D&CS 4.09.4.b.2

$$AR^{2/3} = \frac{Q * n}{1.49\sqrt{S}}$$

$$AR^{2/3} = dw + d^2 tan\theta \left[\frac{dw + d^2 tan\theta}{\left(w + 2\frac{d}{cos\theta}\right)^{2/3}}\right]$$

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Clean Water Services

Simplified LIDA Sizing

Per 2019 Clean Water Services Design & Construction Standards

Project Name:	**Lam Research - Planter D-3**	By:	SJS	Checked:	BDN
Project Number:	2220087.00	Date:	11/17/2022	Date:	10/18/2023

User Entry Variables

Impervious Area	7,205	ft^2
Infiltration Rate	0.5	in/hr

From WQF and WQV Calculator

Required Treatment Area (A):	7,205	ft^2

Calculations

LIDA Facility Size (WQ ONLY)	432	ft^2
LIDA Facility Size (WQ + Hydromodification)	865	ft^2
Facility Size Provided:	**902**	**ft^2**

Notes/Design Criteria

Maximum Contributing Impervious Area 15,000 ft^2

Sizing factors assume a maximum infiltration rate of 2 in/hr

If infiltration rate exceeds 2 in/hr, the simplified method may be oversizing your facility

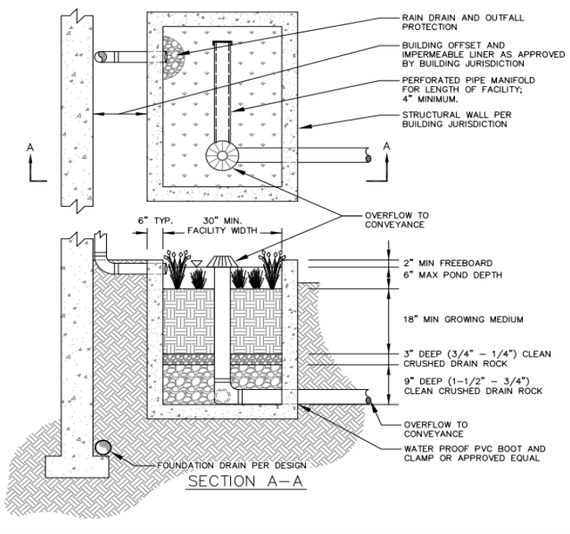
Sizing factor = 6% CWS Design & Construction Standards - Section 4.08.4b

Sizing factor = 12% CWS Design & Construction Standards - Section 4.08.4c

LIDA Facilities to be used with Simplified Sizing

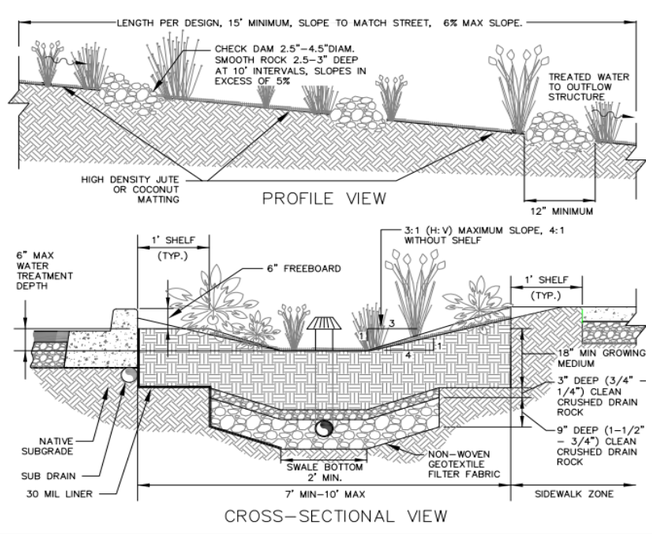
Flow-Through Planter

CWS LIDA Handbook Dwg No 794 (2016)



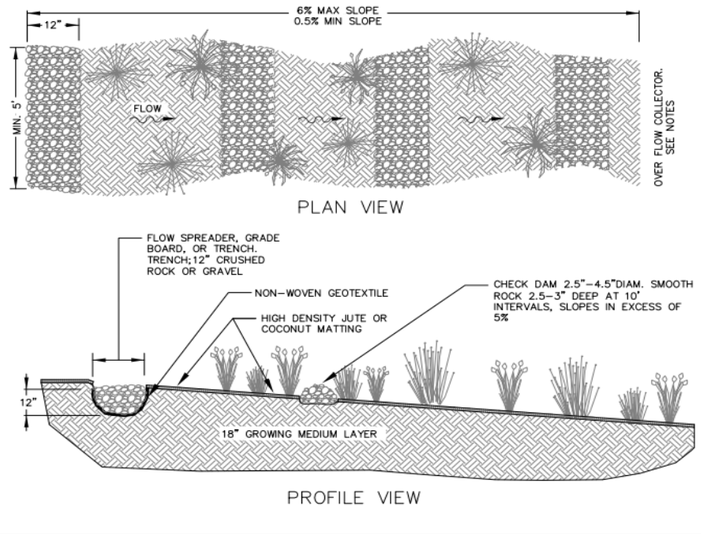
LIDA Swale

CWS LIDA Handbook Dwg No 795 (2016)



Vegetated Filter Strip

CWS LIDA Handbook Dwg No 796 (2016)



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APPENDIX C

DETENTION CALCULATIONS

Hydrograph Return Period Recap

Hyd. No.	Hydrograph type (origin)	Inflow hyd(s)	Peak Outflow (cfs)								Hydrograph Description
			1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr	
1	SCS Runoff	------	-------	3.584	-------	7.964	10.91	15.07	-------	-------	Pre-Dev Overall Site
2	SCS Runoff	------	-------	0.341	-------	0.758	1.038	1.434	-------	-------	Pre-Dev New/Modified Site
3	SCS Runoff	------	-------	3.243	-------	7.206	9.873	13.63	-------	-------	Pre-Dev Undisturbed Site
5	SCS Runoff	------	-------	5.165	-------	7.384	8.716	10.45	-------	-------	Basin A - Dev
6	SCS Runoff	------	-------	5.824	-------	7.968	9.233	10.86	-------	-------	Basin B - Dev
7	SCS Runoff	------	-------	4.771	-------	7.269	8.817	10.87	-------	-------	Basin C - Dev
8	SCS Runoff	------	-------	2.492	-------	3.509	4.115	4.903	-------	-------	Basin D - Dev
10	Combine	5, 6, 7, 8,	-------	18.23	-------	26.13	30.88	37.09	-------	-------	Full Site - Developed
12	Reservoir	5	-------	1.147	-------	1.498	1.701	2.872	-------	-------	Pond A Outflow
13	Reservoir	6	-------	1.157	-------	1.378	1.499	1.674	-------	-------	Pond B Outflow
14	Reservoir	7	-------	0.806	-------	1.014	1.152	1.155	-------	-------	Pond C Outflow
15	Reservoir	8	-------	0.308	-------	0.747	1.241	2.083	-------	-------	Pond D Outflow
17	Combine	12, 13, 14, 15,	-------	3.130	-------	4.554	5.258	7.212	-------	-------	Total site outflow

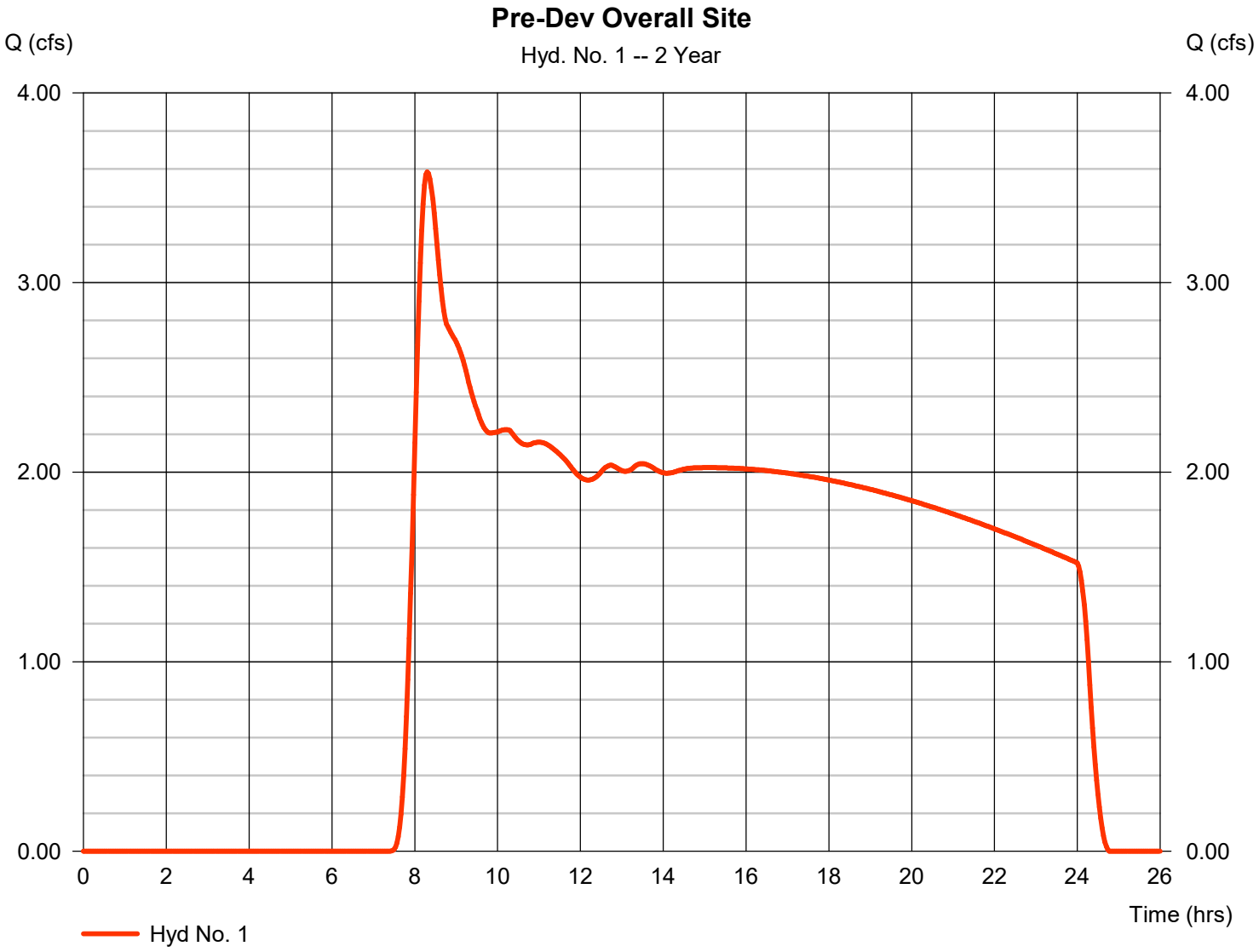
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 1

Pre-Dev Overall Site

Hydrograph type	= SCS Runoff	Peak discharge	= 3.584 cfs
Storm frequency	= 2 yrs	Time to peak	= 8.30 hrs
Time interval	= 2 min	Hyd. volume	= 119,526 cuft
Drainage area	= 58.010 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 30.00 min
Total precip.	= 2.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484



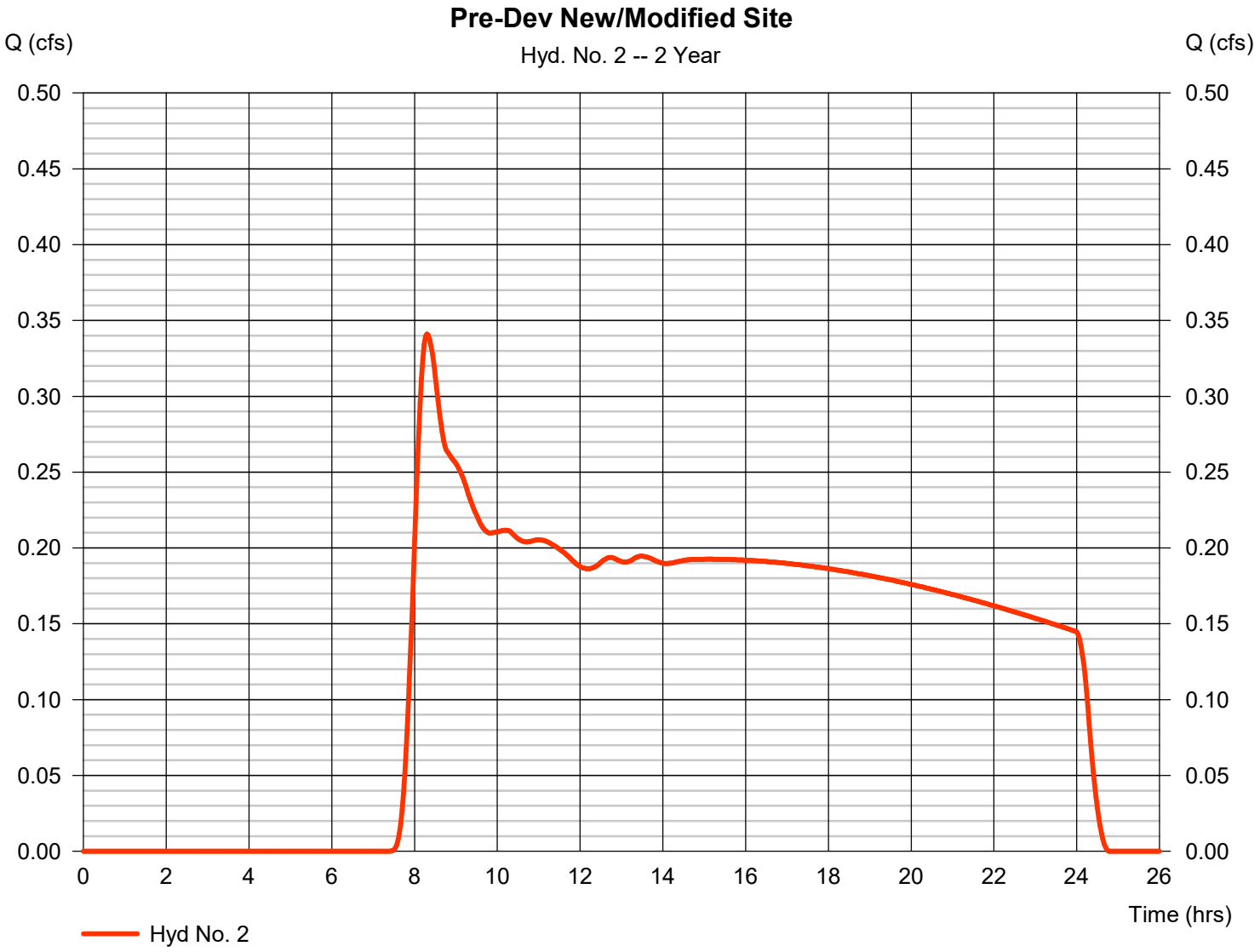
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 2

Pre-Dev New/Modified Site

Hydrograph type	= SCS Runoff	Peak discharge	= 0.341 cfs
Storm frequency	= 2 yrs	Time to peak	= 8.30 hrs
Time interval	= 2 min	Hyd. volume	= 11,374 cuft
Drainage area	= 5.520 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 30.00 min
Total precip.	= 2.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484



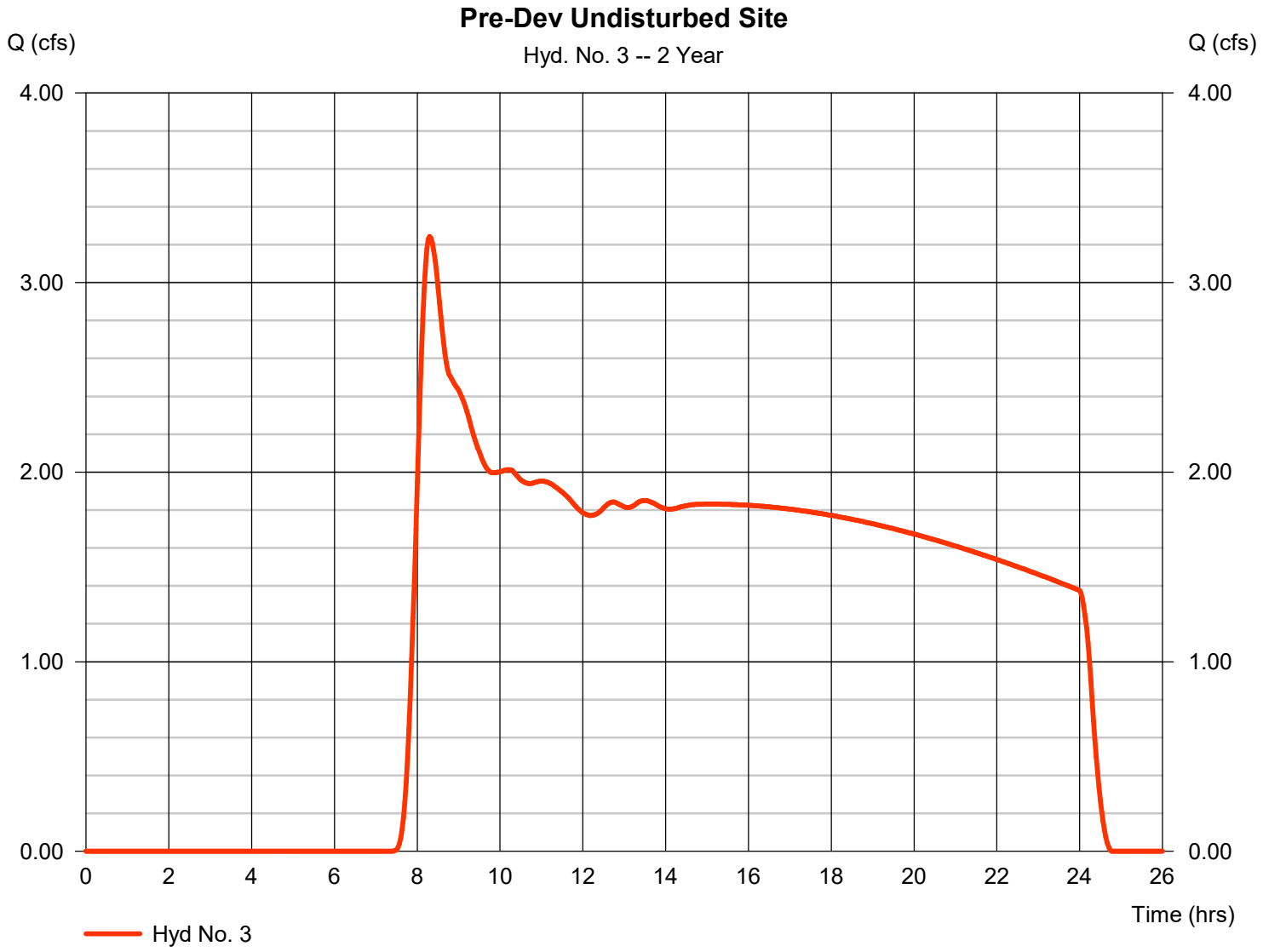
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 3

Pre-Dev Undisturbed Site

Hydrograph type	=	SCS Runoff	Peak discharge	=	3.243 cfs
Storm frequency	=	2 yrs	Time to peak	=	8.30 hrs
Time interval	=	2 min	Hyd. volume	=	108,152 cuft
Drainage area	=	52.490 ac	Curve number	=	73
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	30.00 min
Total precip.	=	2.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

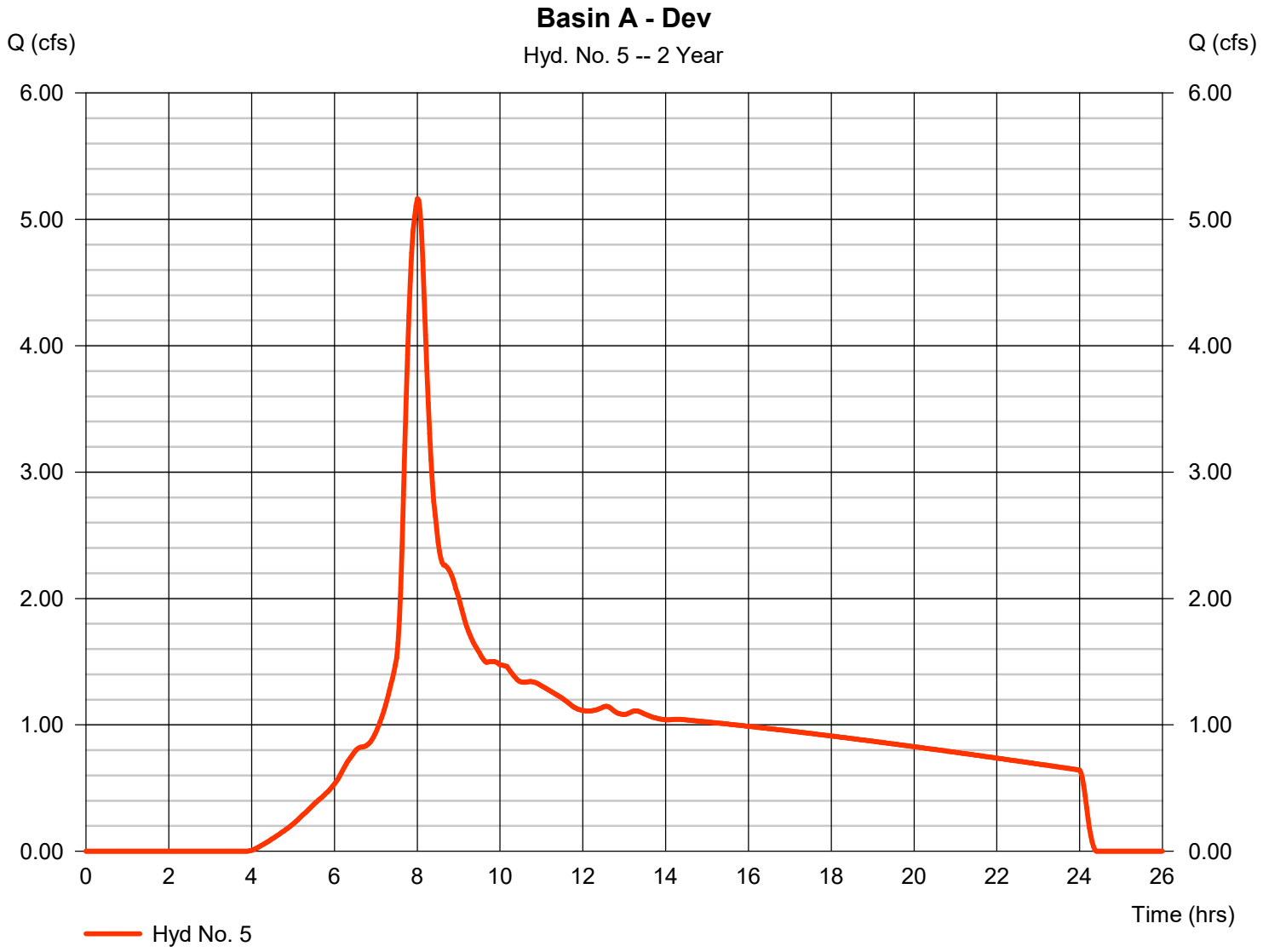
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 5

Basin A - Dev

Hydrograph type	=	SCS Runoff	Peak discharge	=	5.165 cfs
Storm frequency	=	2 yrs	Time to peak	=	8.00 hrs
Time interval	=	2 min	Hyd. volume	=	78,328 cuft
Drainage area	=	16.020 ac	Curve number	=	88*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	15.00 min
Total precip.	=	2.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(1.250 x 98) + (8.150 x 98) + (6.350 x 74) + (0.270 x 98)] / 16.020



Hydrograph Report

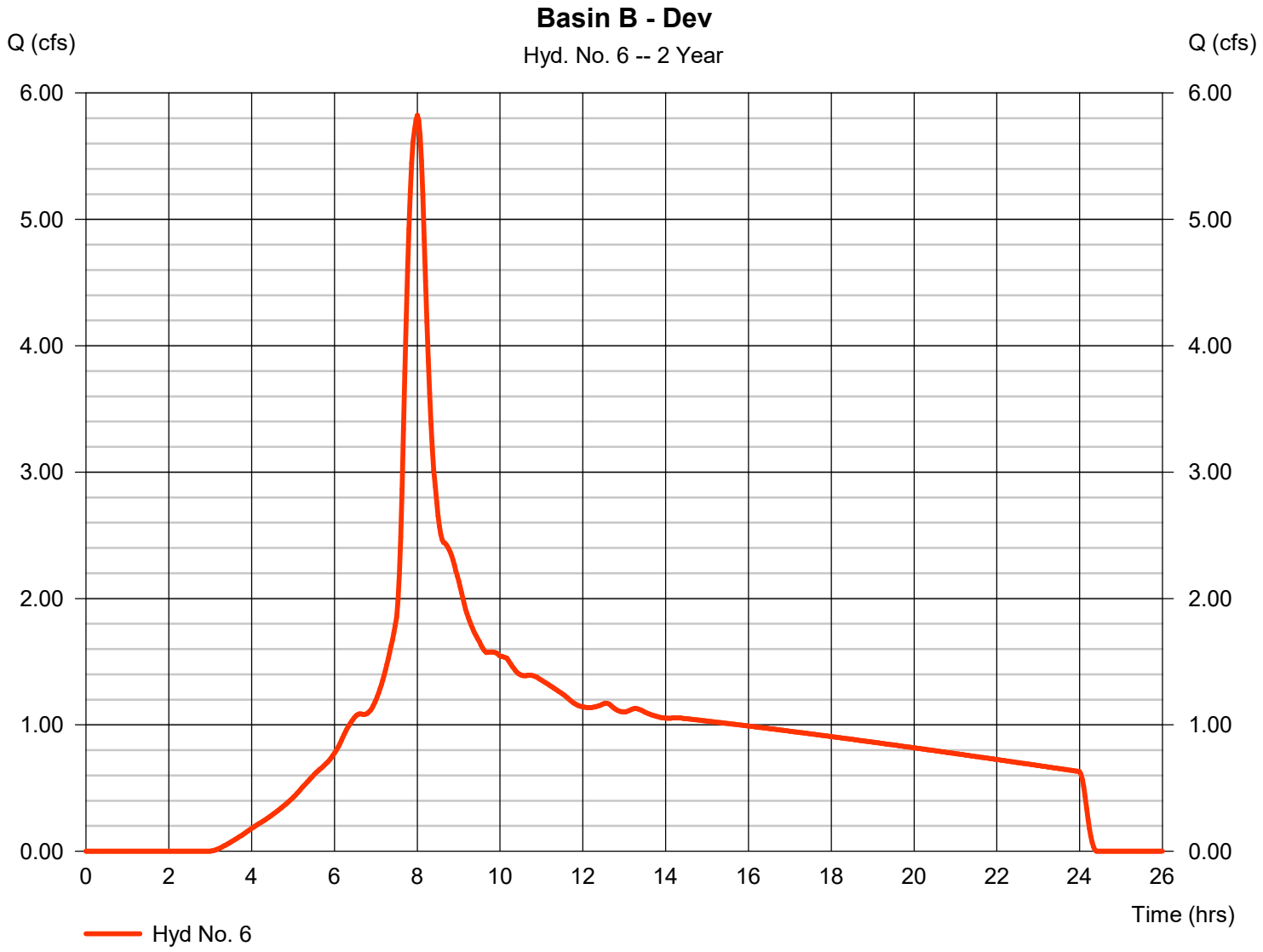
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 6

Basin B - Dev

Hydrograph type	= SCS Runoff	Peak discharge	= 5.824 cfs
Storm frequency	= 2 yrs	Time to peak	= 8.00 hrs
Time interval	= 2 min	Hyd. volume	= 84,239 cuft
Drainage area	= 14.780 ac	Curve number	= 91*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 2.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(3.350 x 98) + (7.110 x 98) + (4.320 x 74)] / 14.780



Hydrograph Report

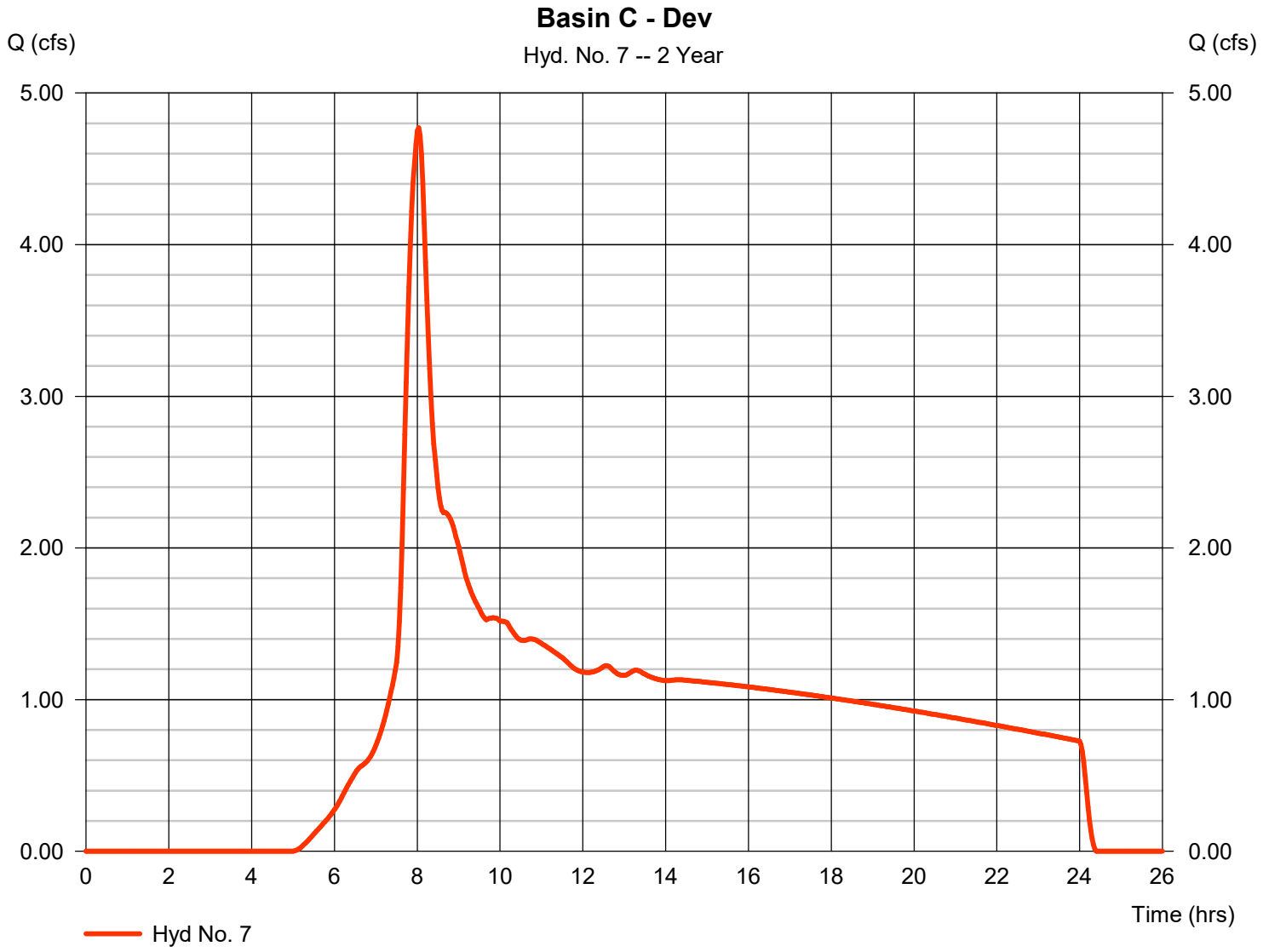
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 7

Basin C - Dev

Hydrograph type	= SCS Runoff	Peak discharge	= 4.771 cfs
Storm frequency	= 2 yrs	Time to peak	= 8.03 hrs
Time interval	= 2 min	Hyd. volume	= 78,992 cuft
Drainage area	= 20.000 ac	Curve number	= 84*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 2.50 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(2.040 x 98) + (4.050 x 98) + (10.090 x 74) + (0.750 x 98) + (1.590 x 98) + (1.430 x 74)] / 20.000



Hydrograph Report

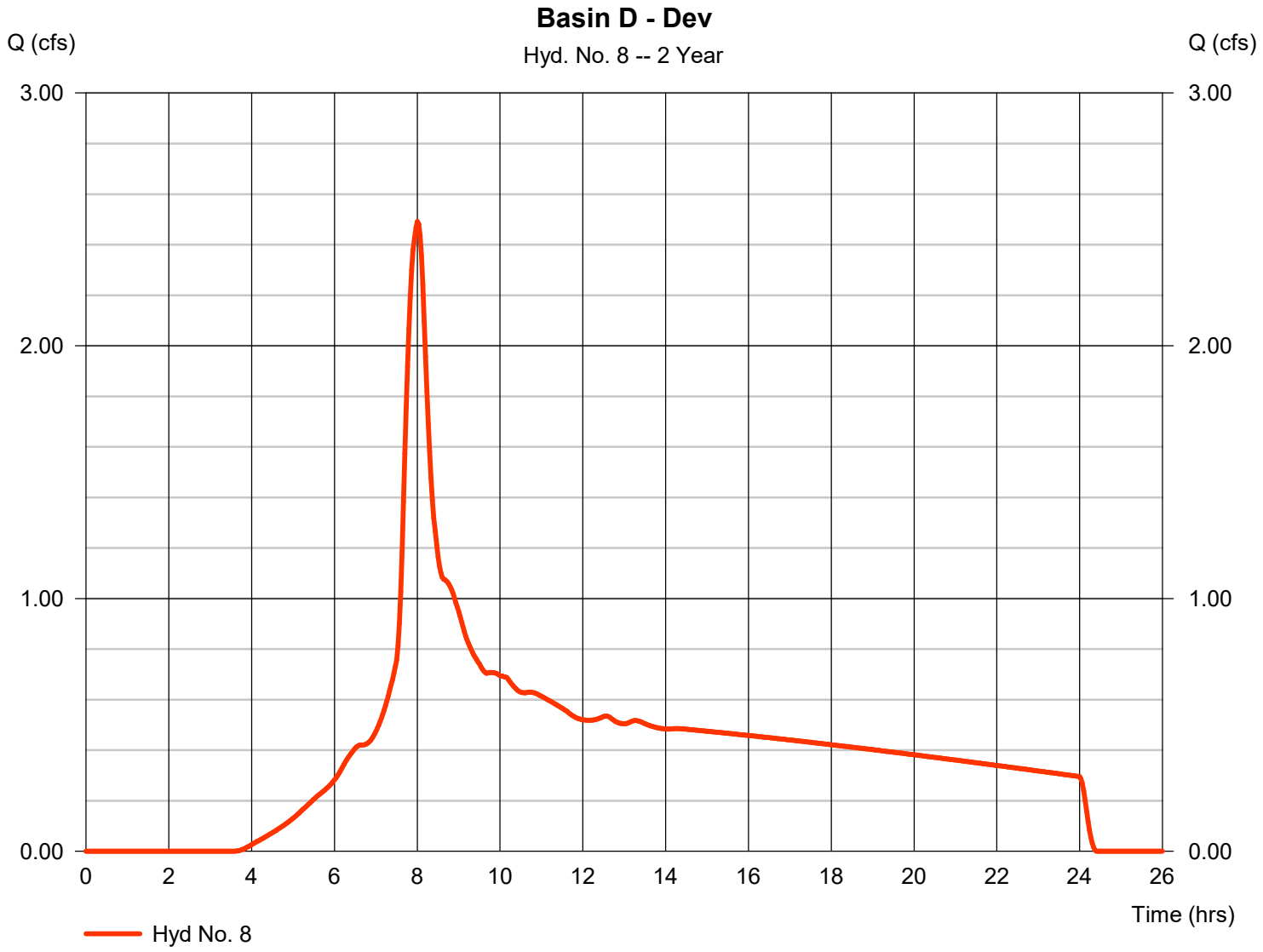
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 8

Basin D - Dev

Hydrograph type	=	SCS Runoff	Peak discharge	=	2.492 cfs
Storm frequency	=	2 yrs	Time to peak	=	8.00 hrs
Time interval	=	2 min	Hyd. volume	=	37,121 cuft
Drainage area	=	7.210 ac	Curve number	=	89*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	15.00 min
Total precip.	=	2.50 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(1.240 x 98) + (1.000 x 74) + (3.180 x 98) + (1.790 x 74)] / 7.210



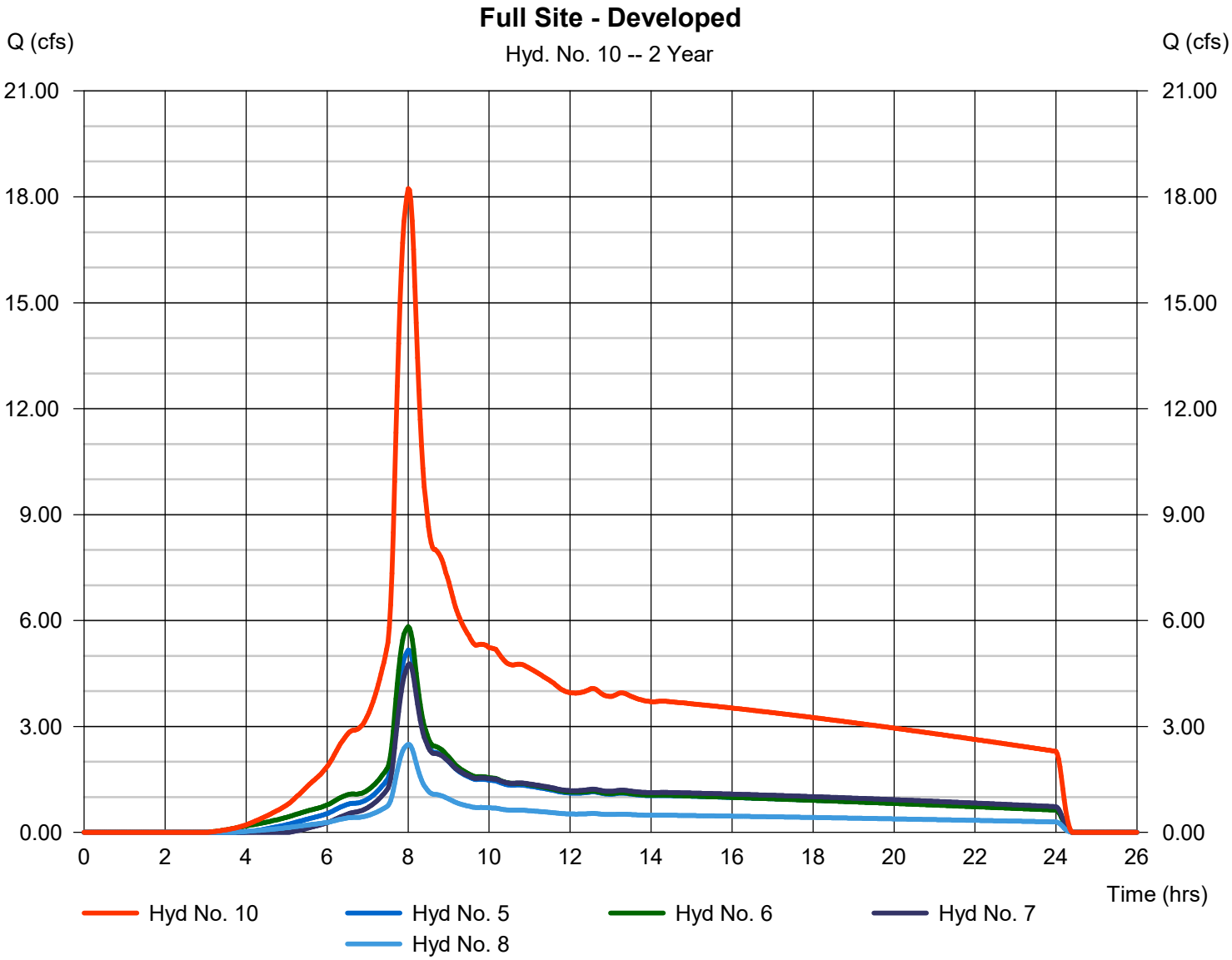
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 10

Full Site - Developed

Hydrograph type	= Combine	Peak discharge	= 18.23 cfs
Storm frequency	= 2 yrs	Time to peak	= 8.00 hrs
Time interval	= 2 min	Hyd. volume	= 278,681 cuft
Inflow hyds.	= 5, 6, 7, 8	Contrib. drain. area	= 58.010 ac



Hydrograph Report

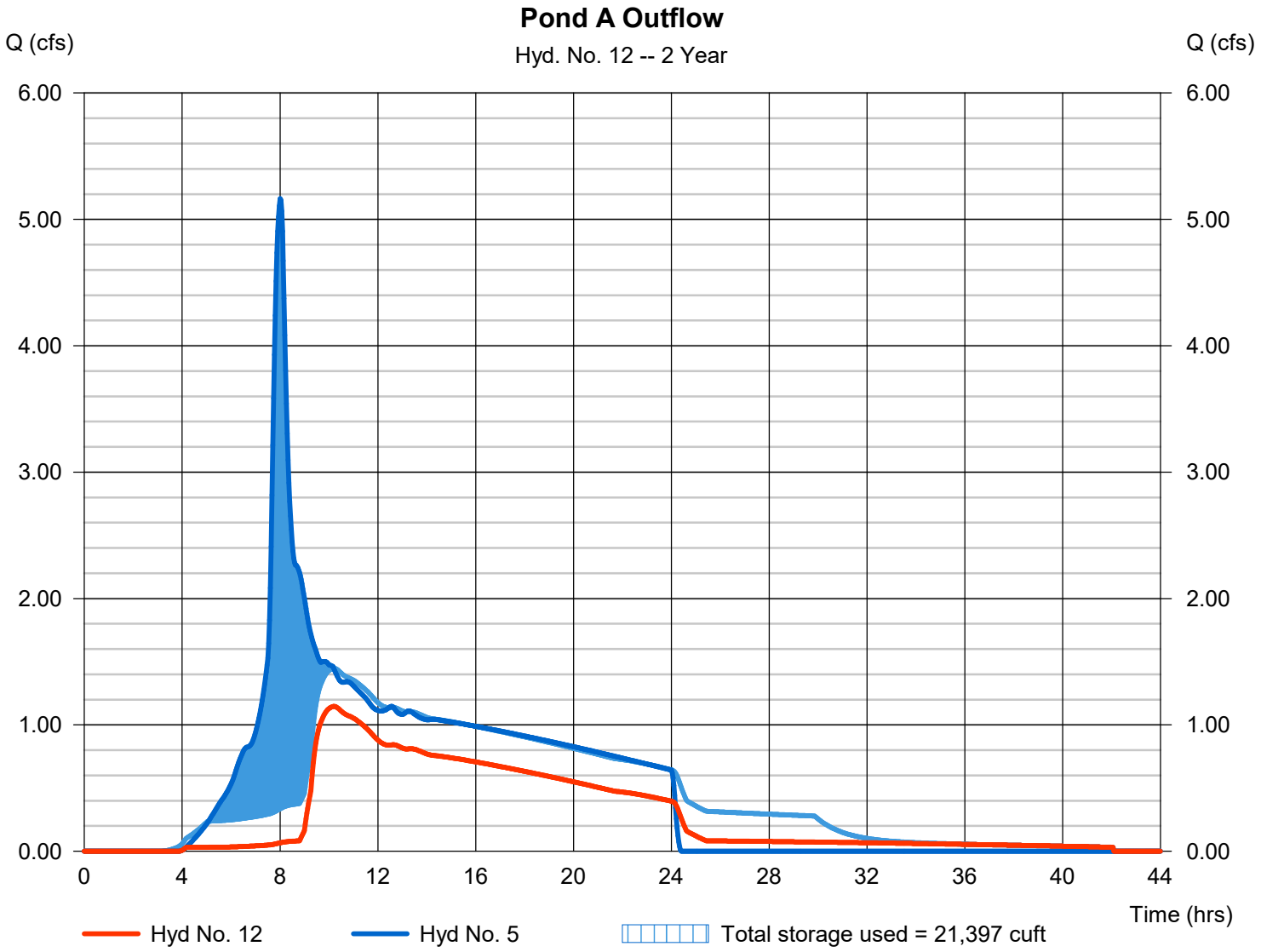
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 12

Pond A Outflow

Hydrograph type	=	Reservoir	Peak discharge	=	1.147 cfs
Storm frequency	=	2 yrs	Time to peak	=	10.20 hrs
Time interval	=	2 min	Hyd. volume	=	42,892 cuft
Inflow hyd. No.	=	5 - Basin A - Dev	Max. Elevation	=	140.70 ft
Reservoir name	=	Existing Pond A	Max. Storage	=	21,397 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 — Tuesday, 07 / 23 / 2024

Pond No. 1 - Existing Pond A

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 137.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	137.00	00	0	0
0.99	137.99	00	0	0
1.00	138.00	8,904	30	30
2.00	139.00	10,849	9,860	9,889
3.00	141.00	12,851	11,835	21,724
4.00	142.00	14,909	13,866	35,590
5.00	143.00	17,024	15,953	51,543

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 5.26	1.50	0.00	0.00
Span (in)	= 5.26	1.50	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 137.55	137.65	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 2.00	2.00	0.00	0.00
Crest El. (ft)	= 139.75	141.92	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	Rect	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 1.000 (by Contour)			
TW Elev. (ft)	= 0.00			

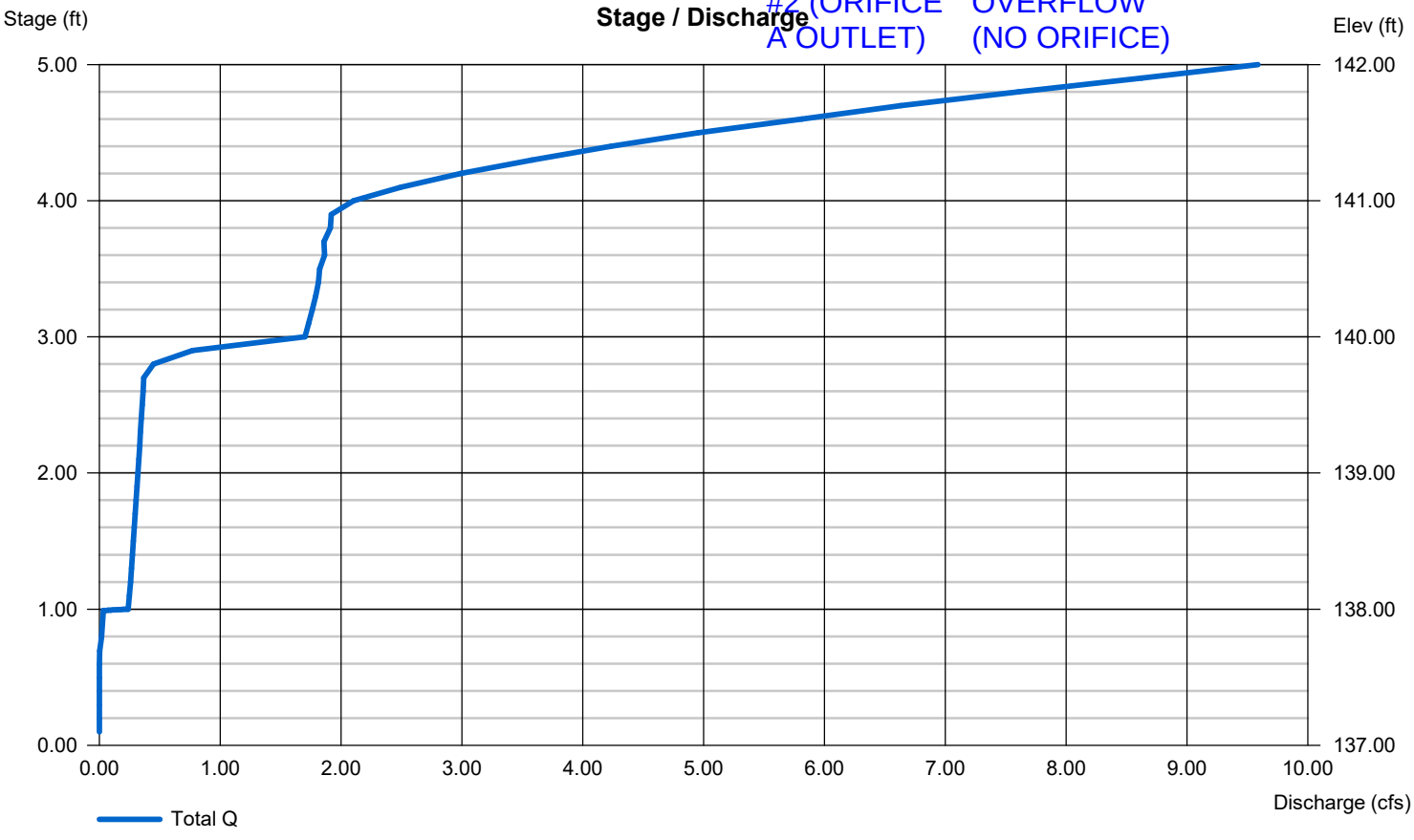
Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

EX. POND A ORIFICE #2

EX. POND A ORIFICE #1

EX. POND A DITCH INLET #2 (ORIFICE A OUTLET)

EX. POND A DITCH INLET OVERFLOW (NO ORIFICE)



Hydrograph Report

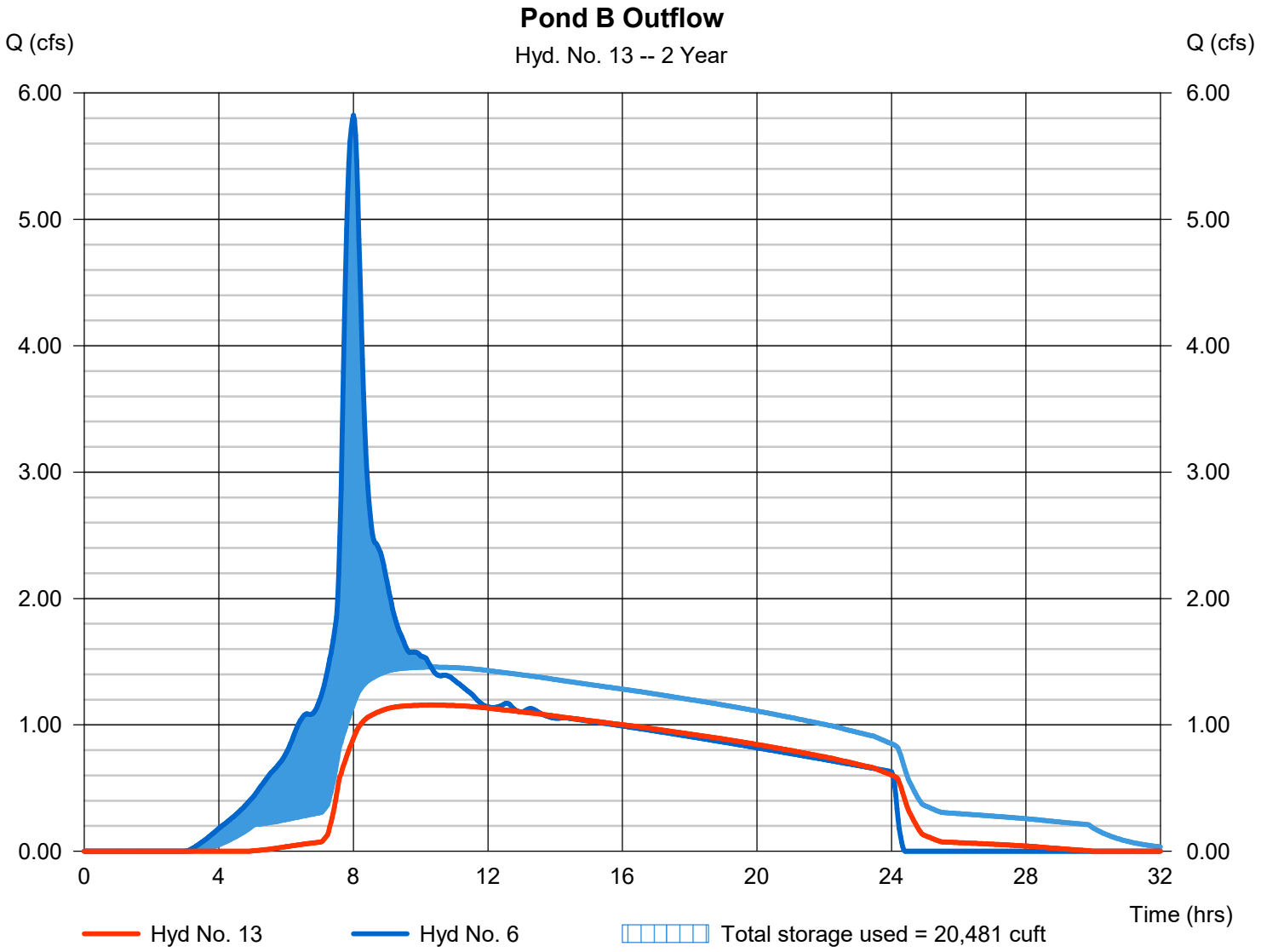
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 13

Pond B Outflow

Hydrograph type	=	Reservoir	Peak discharge	=	1.157 cfs
Storm frequency	=	2 yrs	Time to peak	=	10.30 hrs
Time interval	=	2 min	Hyd. volume	=	59,625 cuft
Inflow hyd. No.	=	6 - Basin B - Dev	Max. Elevation	=	138.06 ft
Reservoir name	=	Existing Pond B	Max. Storage	=	20,481 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 — Tuesday, 07 / 23 / 2024

Pond No. 2 - Existing Pond B

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 135.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	135.00	00	0	0
1.00	136.00	00	0	0
1.30	136.30	8,904	892	892
2.00	137.00	10,849	6,902	7,793
3.00	138.00	12,851	11,835	19,628
4.00	139.00	14,909	13,866	33,494
5.00	140.00	17,023	15,953	49,447

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 5.48	2.14	0.00	0.00
Span (in)	= 5.48	2.14	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 136.20	136.25	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 2.00	2.00	0.00	0.00
Crest El. (ft)	= 136.75	140.97	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	Rect	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 1.000 (by Contour)			
TW Elev. (ft)	= 0.00			

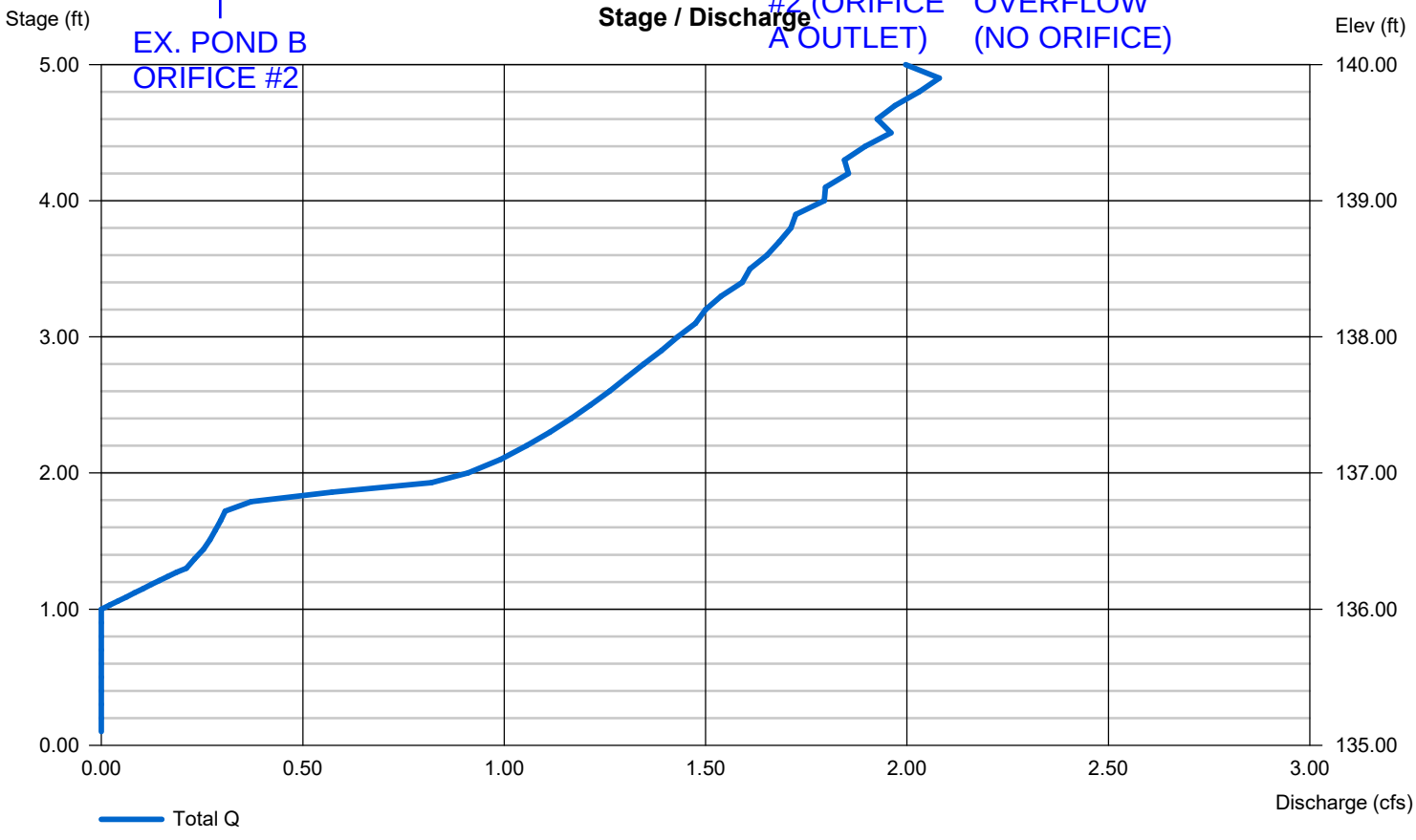
Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

EX. POND B ORIFICE #2

EX. POND B ORIFICE #1

EX. POND B DITCH INLET #2 (ORIFICE A OUTLET)

EX. POND B DITCH INLET OVERFLOW (NO ORIFICE)



Hydrograph Report

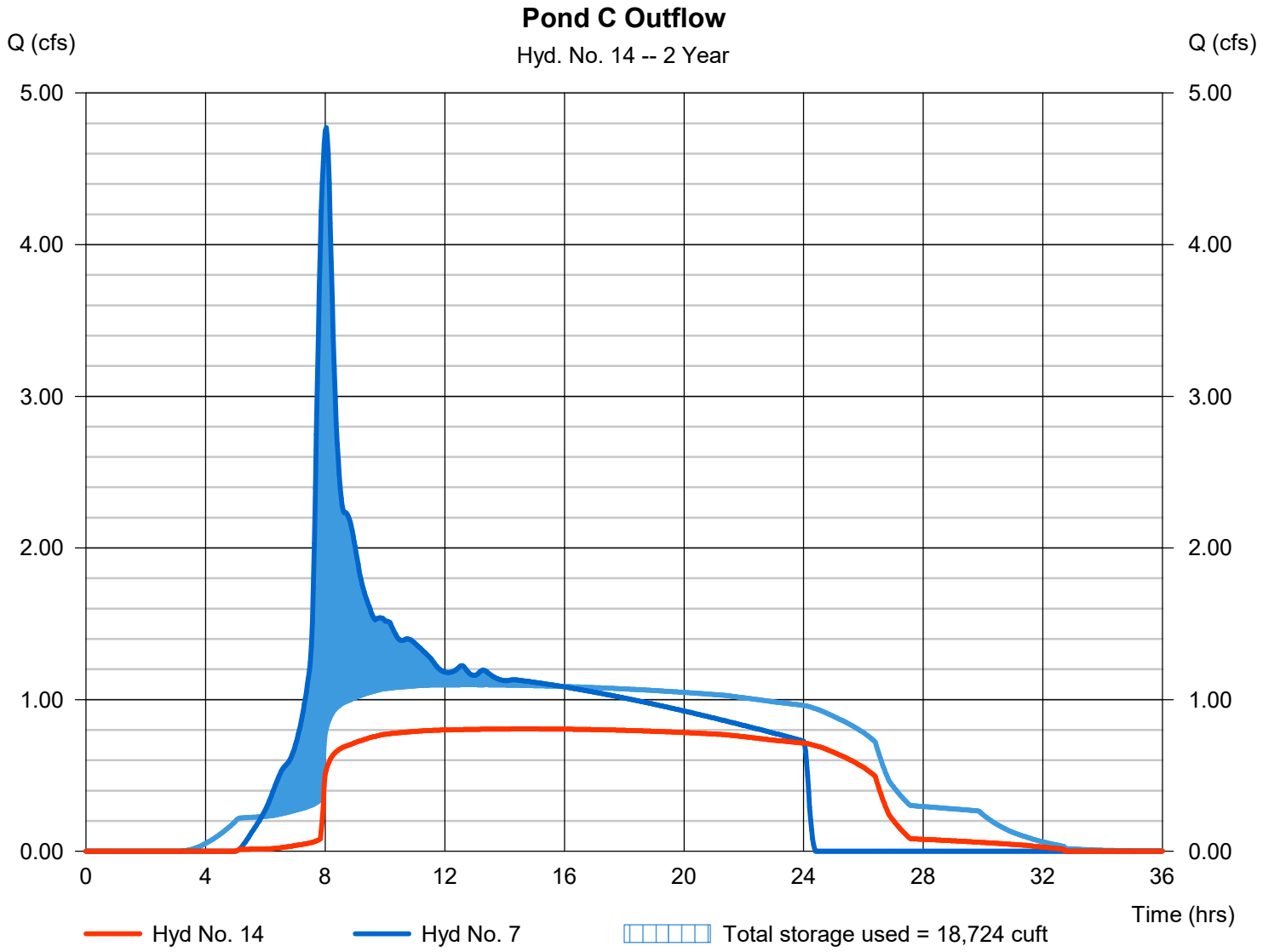
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 14

Pond C Outflow

Hydrograph type	=	Reservoir	Peak discharge	=	0.806 cfs
Storm frequency	=	2 yrs	Time to peak	=	14.70 hrs
Time interval	=	2 min	Hyd. volume	=	52,482 cuft
Inflow hyd. No.	=	7 - Basin C - Dev	Max. Elevation	=	136.69 ft
Reservoir name	=	Existing Pond C	Max. Storage	=	18,724 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 — Tuesday, 07 / 23 / 2024

Pond No. 3 - Existing Pond C

Pond Data

Contours -User-defined contour areas. Conic method used for volume calculation. Begining Elevation = 133.50 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	133.50	00	0	0
1.49	134.99	00	0	0
1.50	135.00	8,904	30	30
2.50	136.00	10,849	9,860	9,889
3.50	137.00	14,909	12,824	22,713
4.50	138.00	17,023	15,953	38,666
5.50	139.00	21,230	19,086	57,752
6.60	140.10	24,200	24,966	82,718

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 4.44	2.10	0.00	0.00
Span (in)	= 4.44	2.10	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 134.85	134.90	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 0.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

	[A]	[B]	[C]	[D]
Crest Len (ft)	= 2.00	2.00	0.00	0.00
Crest El. (ft)	= 135.52	140.06	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= Rect	Rect	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 1.000 (by Contour)			
TW Elev. (ft)	= 0.00			

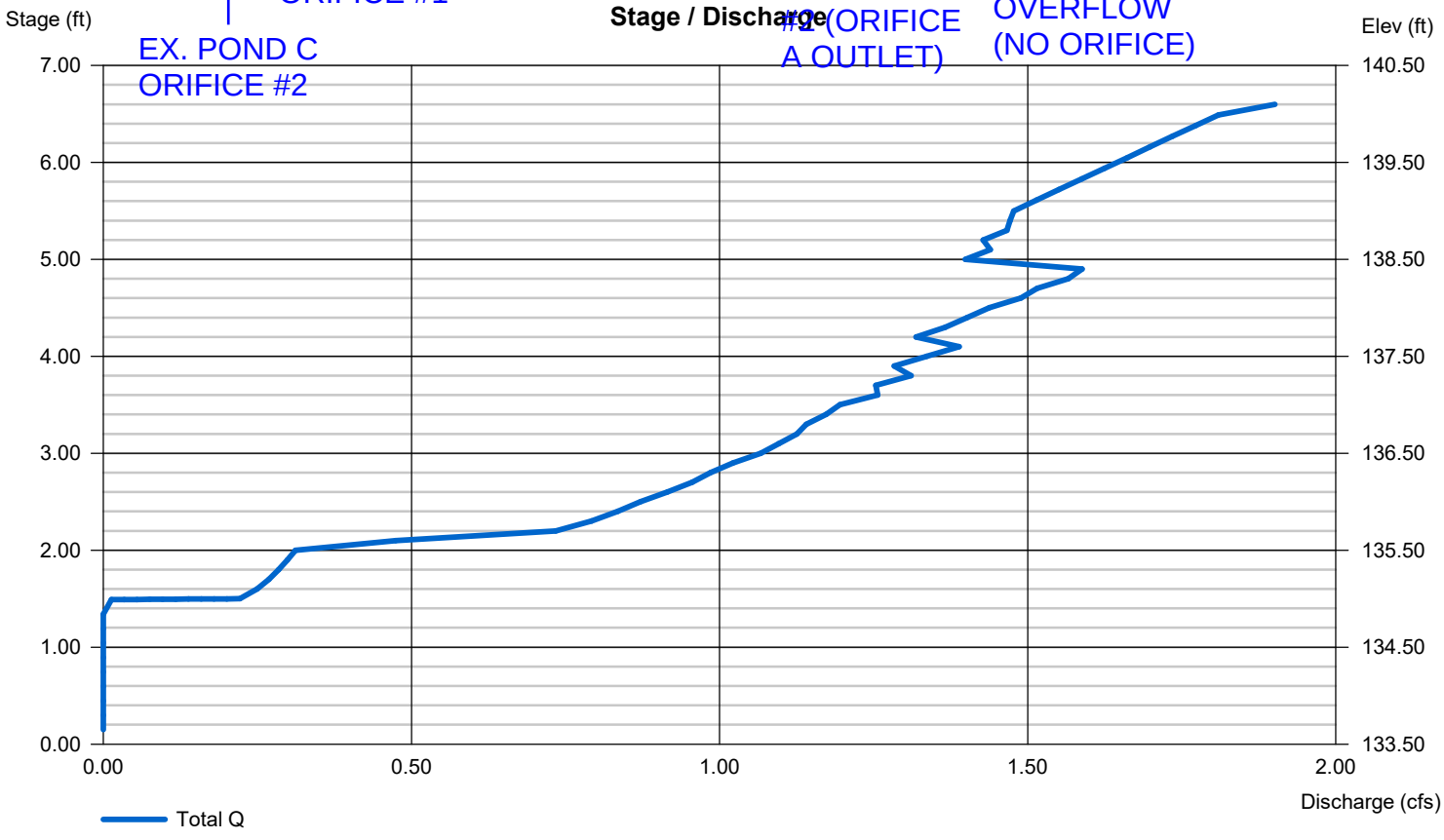
Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

EX. POND C ORIFICE #2

EX. POND C ORIFICE #1

EX. POND C DITCH INLET #2 (ORIFICE A OUTLET)

EX. POND C DITCH INLET OVERFLOW (NO ORIFICE)



Hydrograph Report

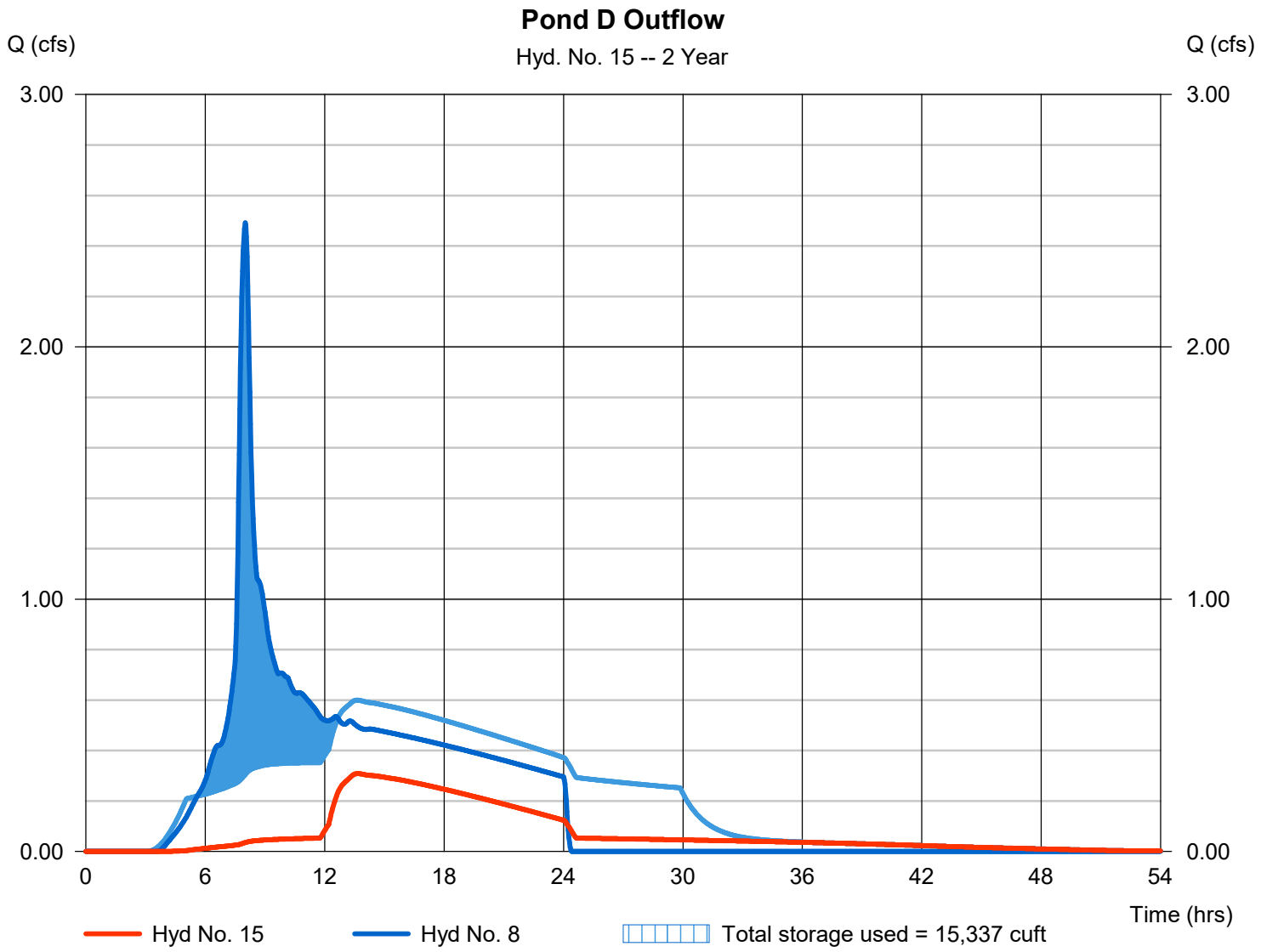
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 15

Pond D Outflow

Hydrograph type	=	Reservoir	Peak discharge	=	0.308 cfs
Storm frequency	=	2 yrs	Time to peak	=	13.67 hrs
Time interval	=	2 min	Hyd. volume	=	13,876 cuft
Inflow hyd. No.	=	8 - Basin D - Dev	Max. Elevation	=	137.03 ft
Reservoir name	=	Modified Pond D	Max. Storage	=	15,337 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Pond Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 — Tuesday, 07 / 23 / 2024

Pond No. 5 - Modified Pond D

Pond Data

Trapezoid -Bottom L x W = 190.0 x 25.0 ft, Side slope = 3.00:1, Bottom elev. = 134.63 ft, Depth = 5.00 ft

Stage / Storage Table

Stage (ft)	Elevation (ft)	Contour area (sqft)	Incr. Storage (cuft)	Total storage (cuft)
0.00	134.63	4,750	0	0
0.50	135.13	5,404	2,538	2,538
1.00	135.63	6,076	2,869	5,407
1.50	136.13	6,766	3,210	8,617
2.00	136.63	7,474	3,559	12,176
2.50	137.13	8,200	3,918	16,094
3.00	137.63	8,944	4,285	20,379
3.50	138.13	9,706	4,662	25,041
4.00	138.63	10,486	5,047	30,088
4.50	139.13	11,284	5,442	35,530
5.00	139.63	12,100	5,845	41,375

Culvert / Orifice Structures

	[A]	[B]	[C]	[PrfRsr]
Rise (in)	= 12.00	1.16	0.00	0.00
Span (in)	= 12.00	1.16	0.00	0.00
No. Barrels	= 1	1	0	0
Invert El. (ft)	= 133.90	134.63	0.00	0.00
Length (ft)	= 0.00	0.00	0.00	0.00
Slope (%)	= 1.00	0.00	0.00	n/a
N-Value	= .013	.013	.013	n/a
Orifice Coeff.	= 0.60	0.60	0.60	0.60
Multi-Stage	= n/a	No	No	No

Weir Structures

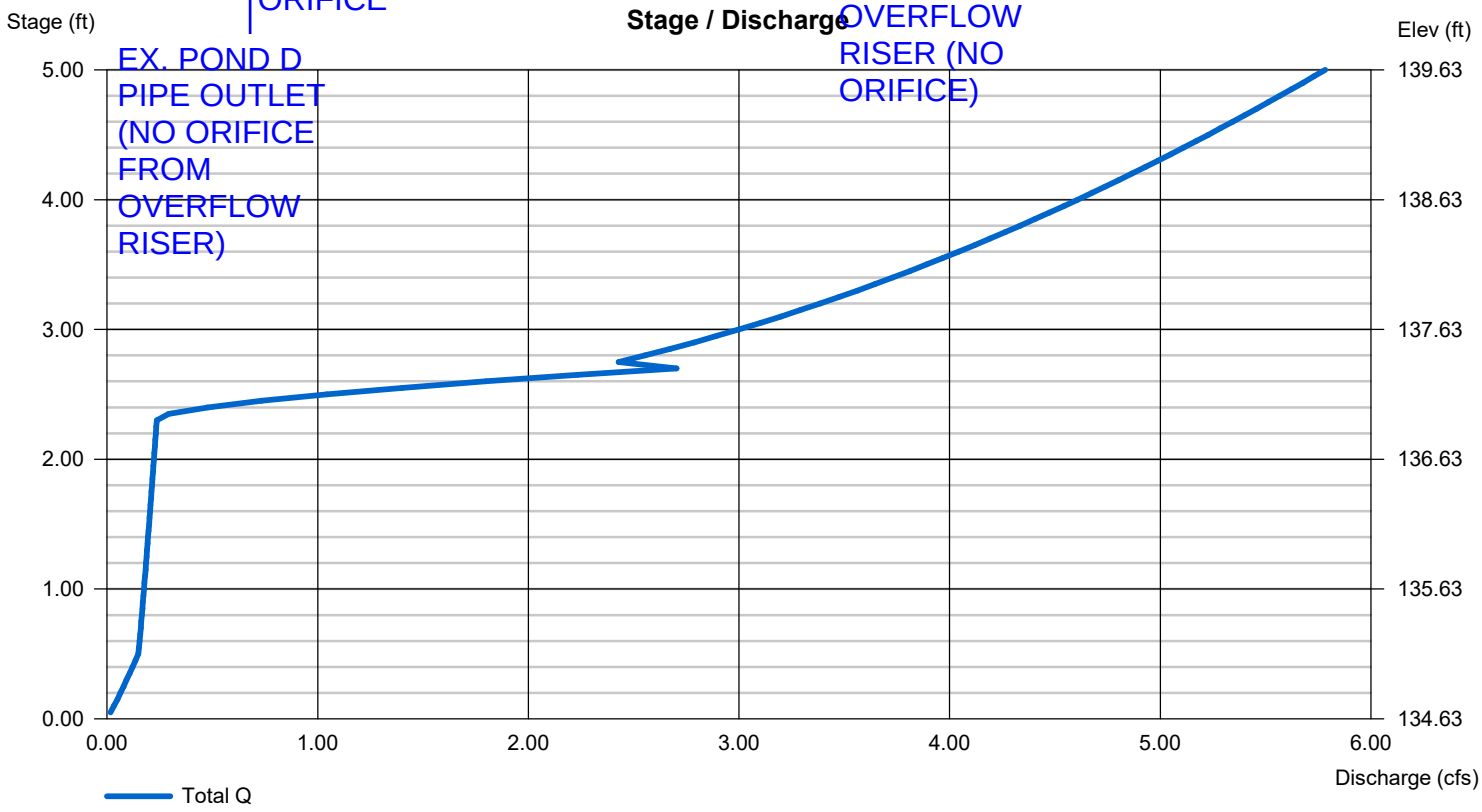
	[A]	[B]	[C]	[D]
Crest Len (ft)	= 3.14	0.00	0.00	0.00
Crest El. (ft)	= 136.95	0.00	0.00	0.00
Weir Coeff.	= 3.33	3.33	3.33	3.33
Weir Type	= 1	---	---	---
Multi-Stage	= Yes	No	No	No
Exfil.(in/hr)	= 1.000 (by Contour)			
TW Elev. (ft)	= 0.00			

Note: Culvert/Orifice outflows are analyzed under inlet (ic) and outlet (oc) control. Weir risers checked for orifice conditions (ic) and submergence (s).

EX. POND D ORIFICE

EX. POND D 12" DIAM OVERFLOW RISER (NO ORIFICE)

EX. POND D PIPE OUTLET (NO ORIFICE FROM OVERFLOW RISER)



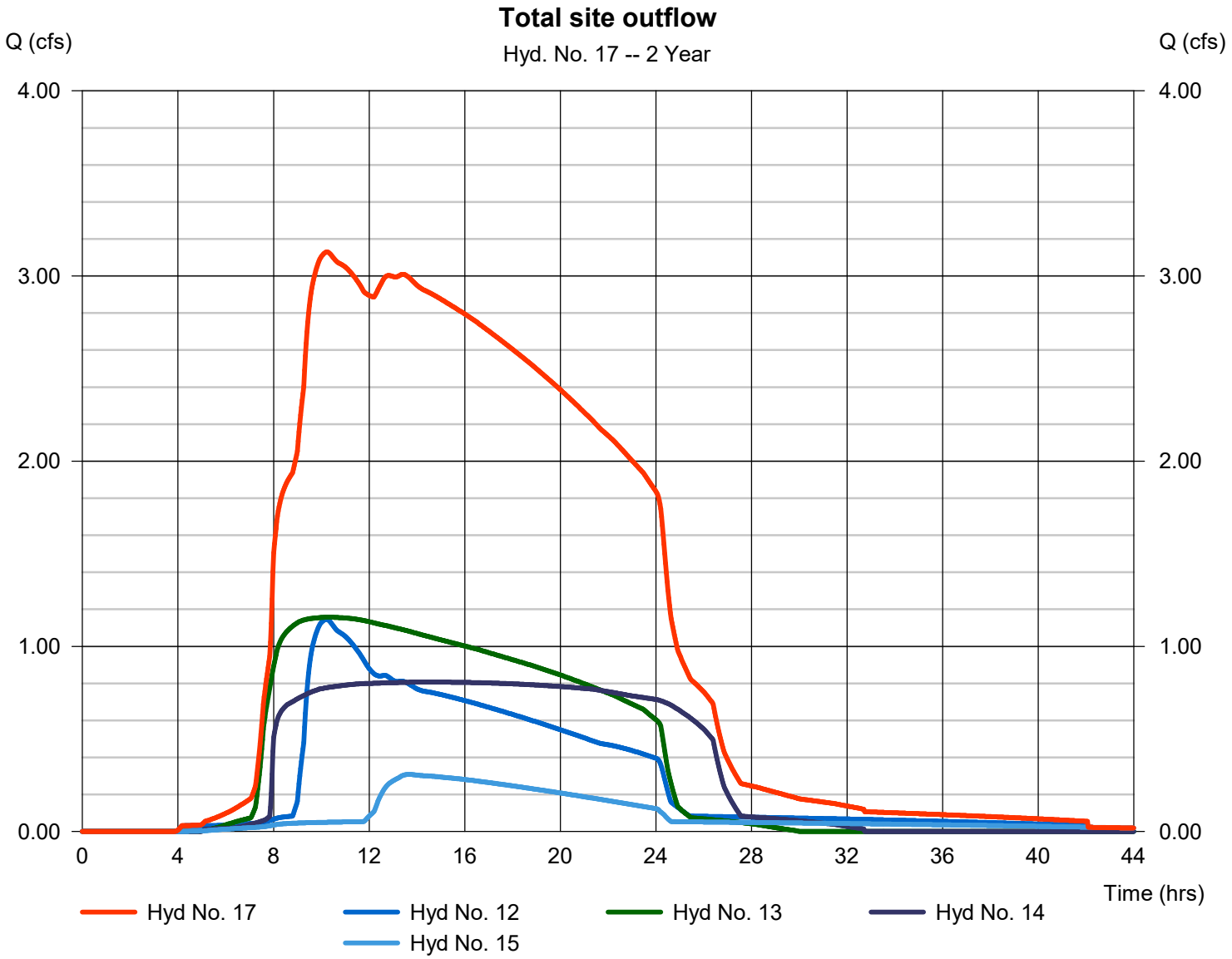
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 17

Total site outflow

Hydrograph type	= Combine	Peak discharge	= 3.130 cfs
Storm frequency	= 2 yrs	Time to peak	= 10.23 hrs
Time interval	= 2 min	Hyd. volume	= 168,876 cuft
Inflow hyds.	= 12, 13, 14, 15	Contrib. drain. area	= 0.000 ac



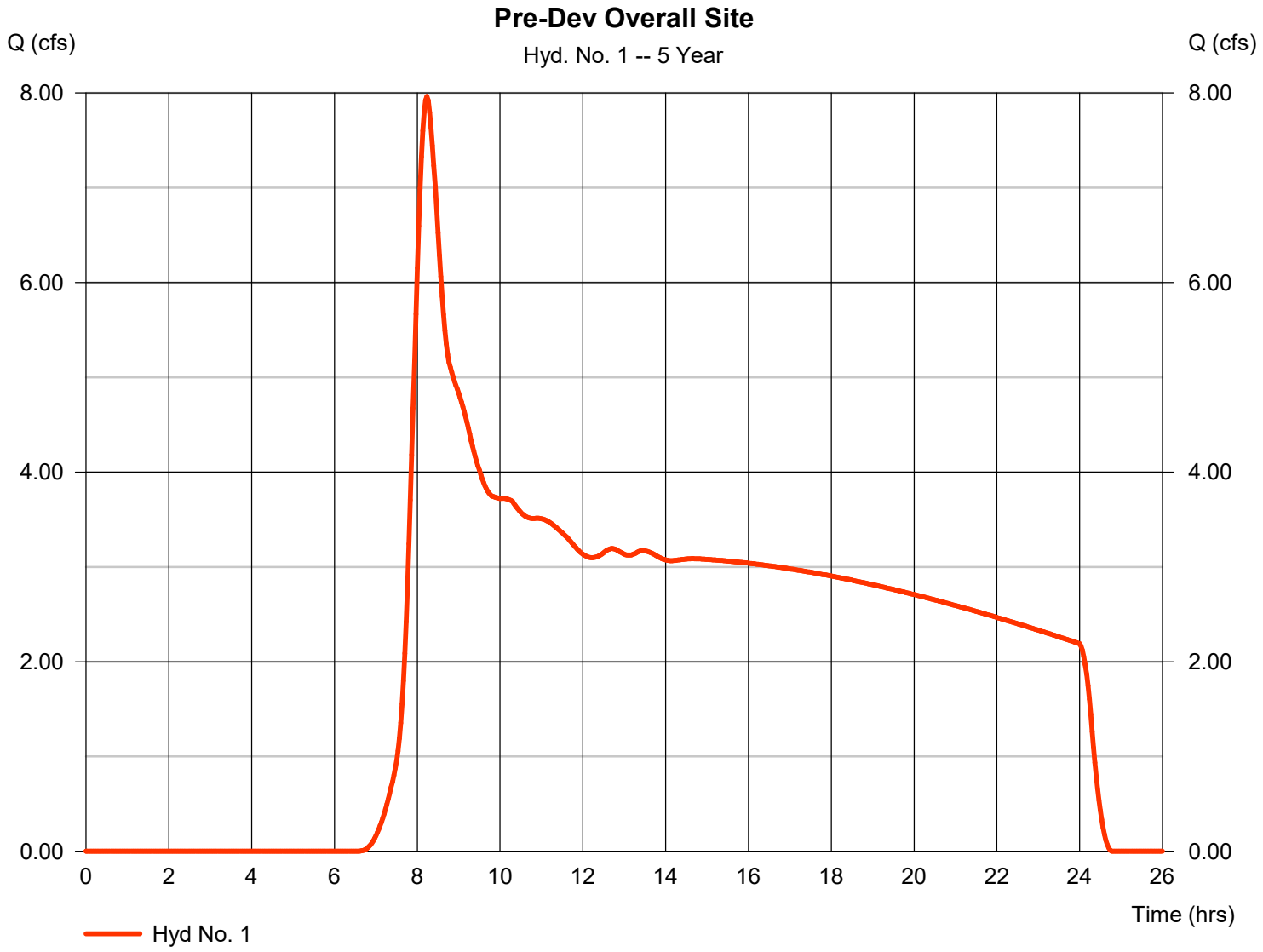
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 1

Pre-Dev Overall Site

Hydrograph type	=	SCS Runoff	Peak discharge	=	7.964 cfs
Storm frequency	=	5 yrs	Time to peak	=	8.23 hrs
Time interval	=	2 min	Hyd. volume	=	193,616 cuft
Drainage area	=	58.010 ac	Curve number	=	73
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	30.00 min
Total precip.	=	3.10 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 2

Pre-Dev New/Modified Site

Hydrograph type	= SCS Runoff	Peak discharge	= 0.758 cfs
Storm frequency	= 5 yrs	Time to peak	= 8.23 hrs
Time interval	= 2 min	Hyd. volume	= 18,424 cuft
Drainage area	= 5.520 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 30.00 min
Total precip.	= 3.10 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 3

Pre-Dev Undisturbed Site

Hydrograph type	=	SCS Runoff	Peak discharge	=	7.206 cfs
Storm frequency	=	5 yrs	Time to peak	=	8.23 hrs
Time interval	=	2 min	Hyd. volume	=	175,192 cuft
Drainage area	=	52.490 ac	Curve number	=	73
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	30.00 min
Total precip.	=	3.10 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

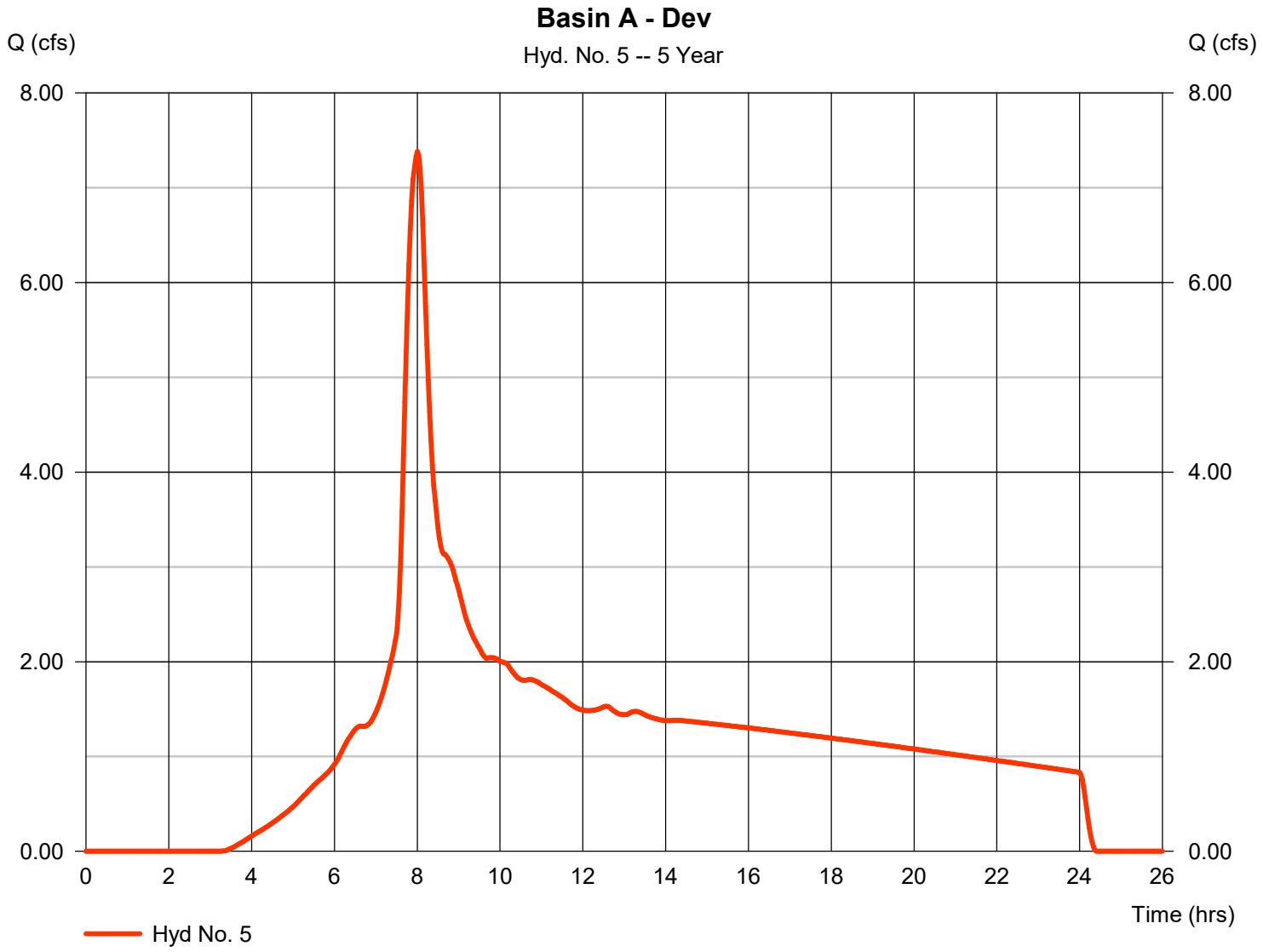
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 5

Basin A - Dev

Hydrograph type	= SCS Runoff	Peak discharge	= 7.384 cfs
Storm frequency	= 5 yrs	Time to peak	= 8.00 hrs
Time interval	= 2 min	Hyd. volume	= 108,144 cuft
Drainage area	= 16.020 ac	Curve number	= 88*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 3.10 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.250 x 98) + (8.150 x 98) + (6.350 x 74) + (0.270 x 98)] / 16.020



Hydrograph Report

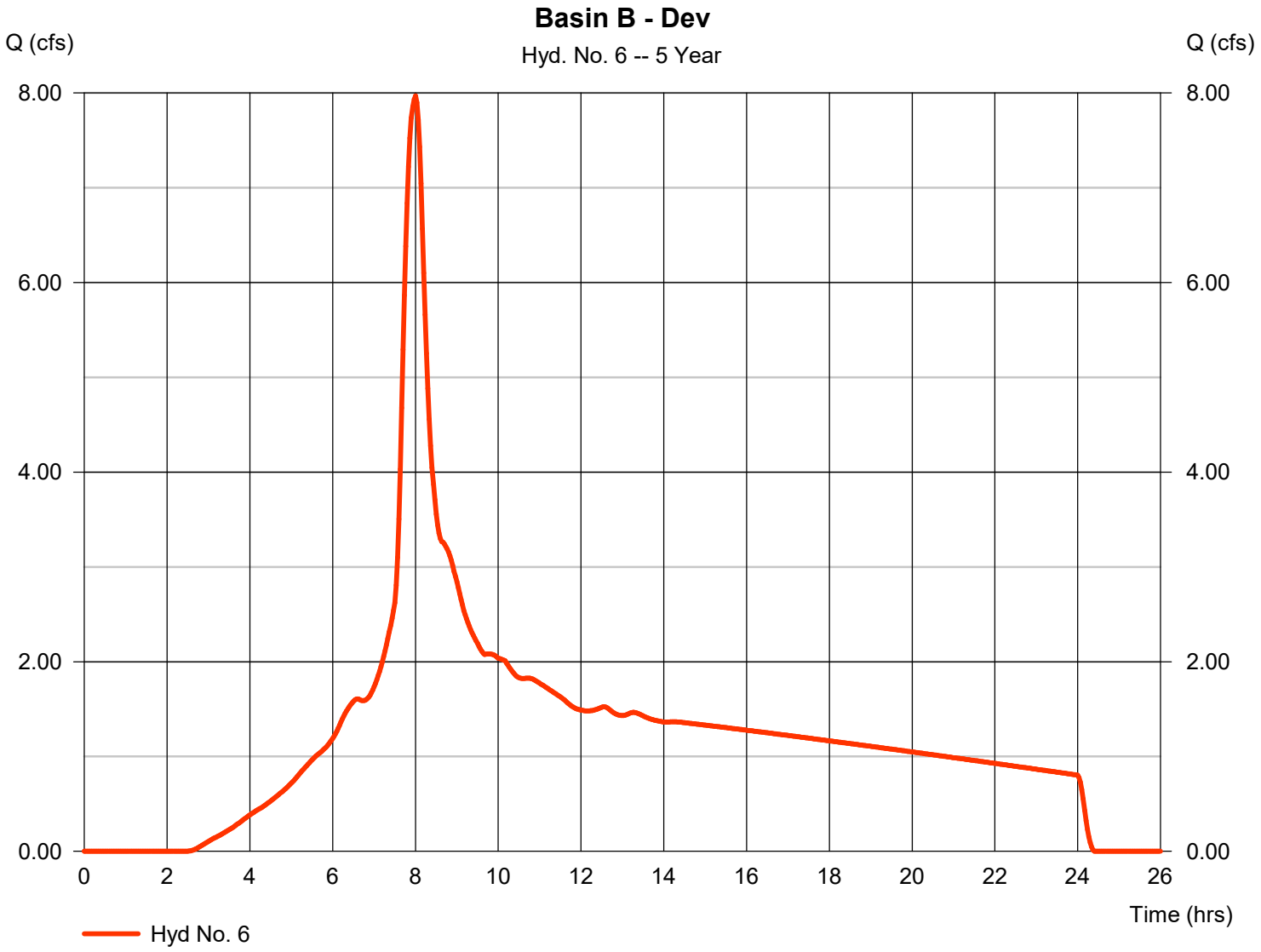
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 6

Basin B - Dev

Hydrograph type	= SCS Runoff	Peak discharge	= 7.968 cfs
Storm frequency	= 5 yrs	Time to peak	= 8.00 hrs
Time interval	= 2 min	Hyd. volume	= 113,228 cuft
Drainage area	= 14.780 ac	Curve number	= 91*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 3.10 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(3.350 x 98) + (7.110 x 98) + (4.320 x 74)] / 14.780



Hydrograph Report

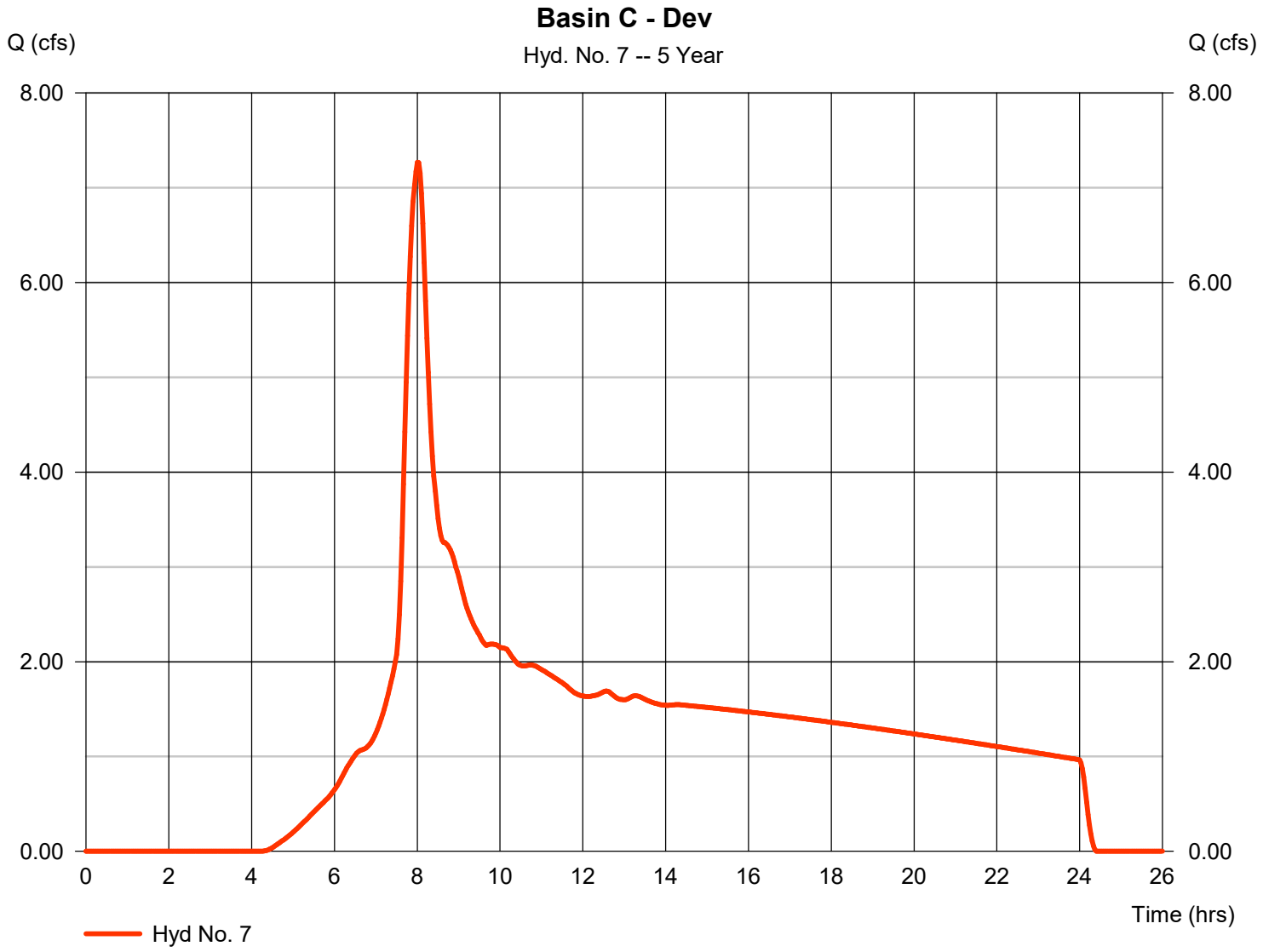
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 7

Basin C - Dev

Hydrograph type	= SCS Runoff	Peak discharge	= 7.269 cfs
Storm frequency	= 5 yrs	Time to peak	= 8.00 hrs
Time interval	= 2 min	Hyd. volume	= 113,181 cuft
Drainage area	= 20.000 ac	Curve number	= 84*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 3.10 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(2.040 x 98) + (4.050 x 98) + (10.090 x 74) + (0.750 x 98) + (1.590 x 98) + (1.430 x 74)] / 20.000



Hydrograph Report

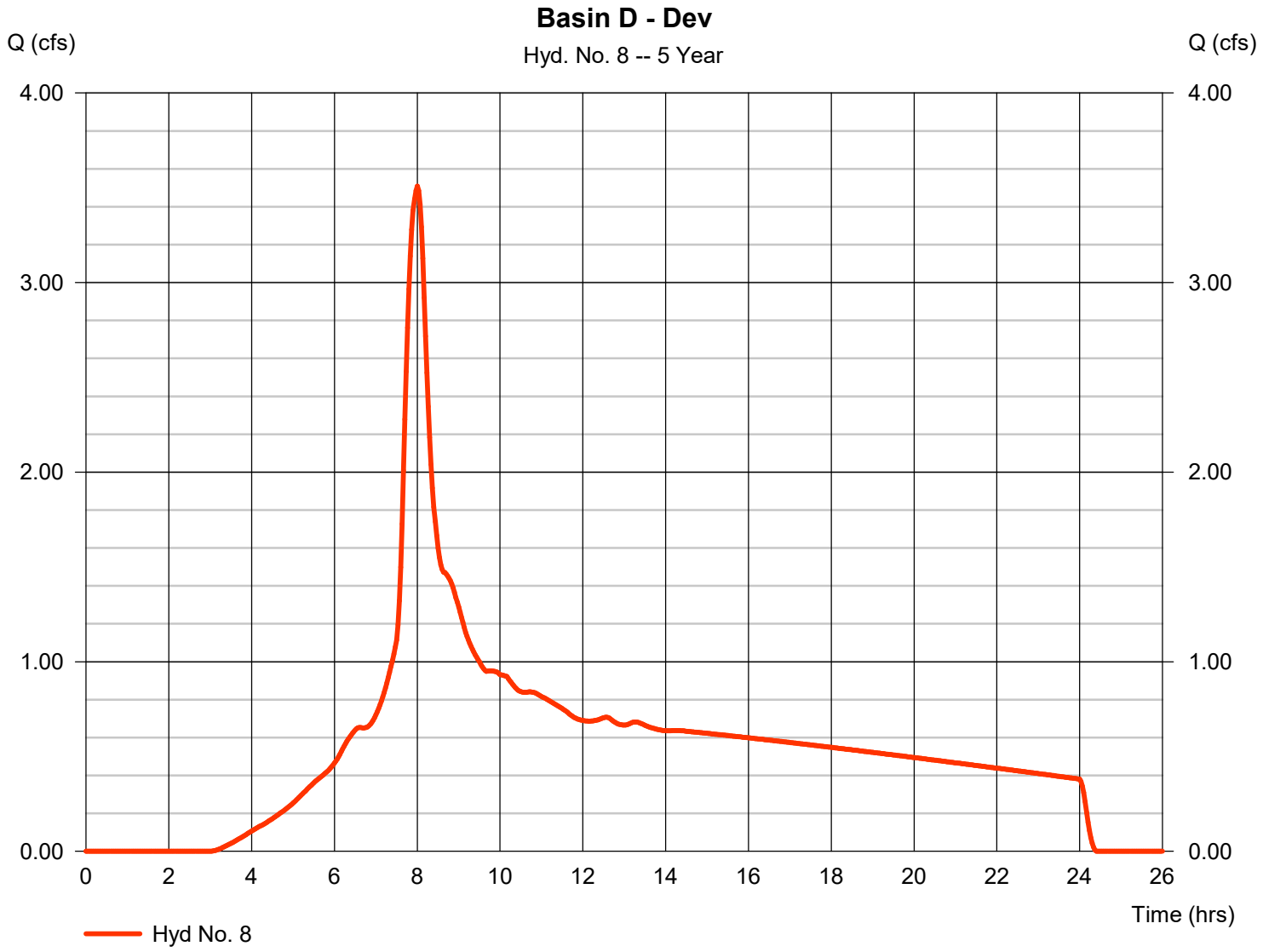
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 8

Basin D - Dev

Hydrograph type	= SCS Runoff	Peak discharge	= 3.509 cfs
Storm frequency	= 5 yrs	Time to peak	= 8.00 hrs
Time interval	= 2 min	Hyd. volume	= 50,793 cuft
Drainage area	= 7.210 ac	Curve number	= 89*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 3.10 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.240 x 98) + (1.000 x 74) + (3.180 x 98) + (1.790 x 74)] / 7.210



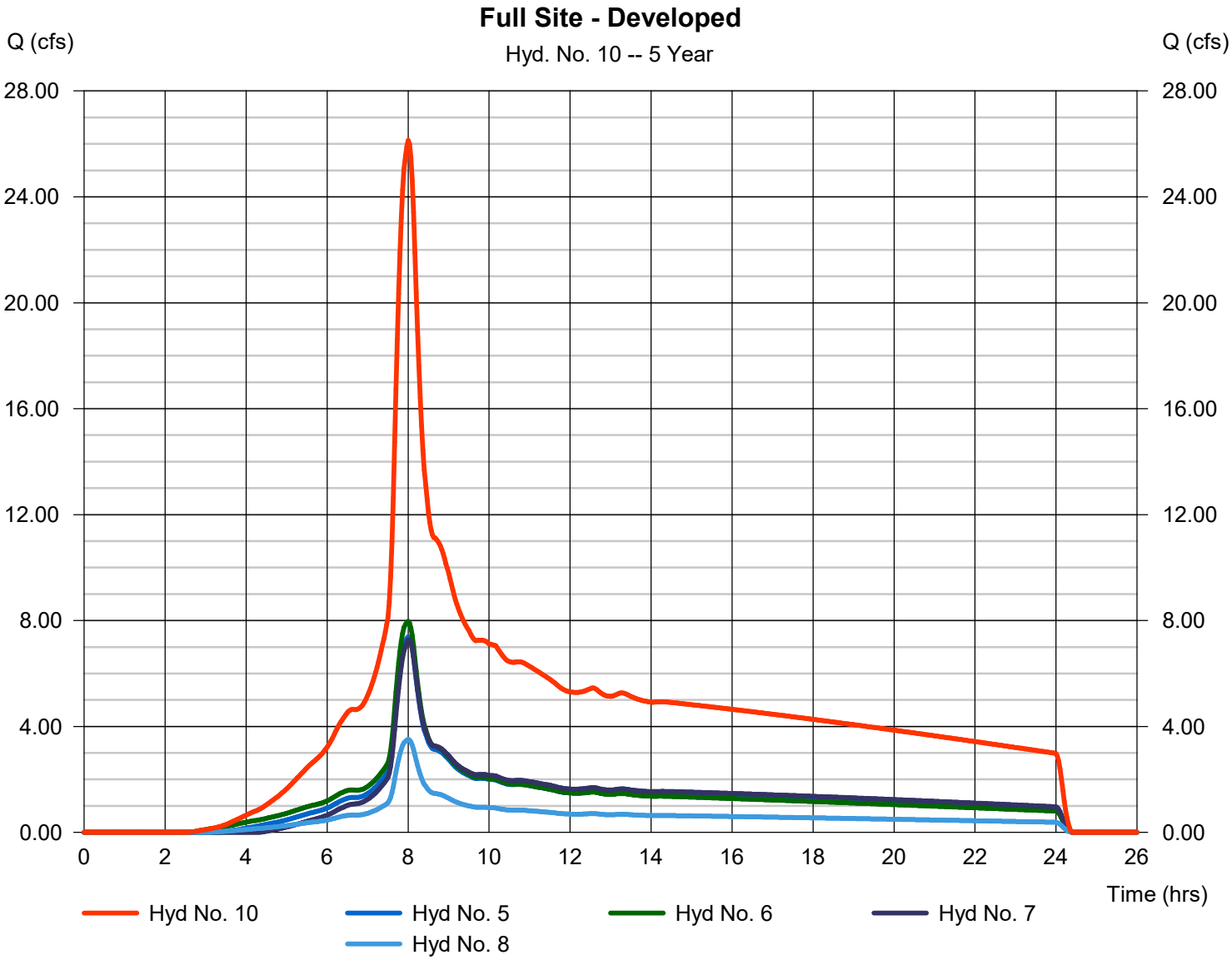
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 10

Full Site - Developed

Hydrograph type	= Combine	Peak discharge	= 26.13 cfs
Storm frequency	= 5 yrs	Time to peak	= 8.00 hrs
Time interval	= 2 min	Hyd. volume	= 385,346 cuft
Inflow hyds.	= 5, 6, 7, 8	Contrib. drain. area	= 58.010 ac



Hydrograph Report

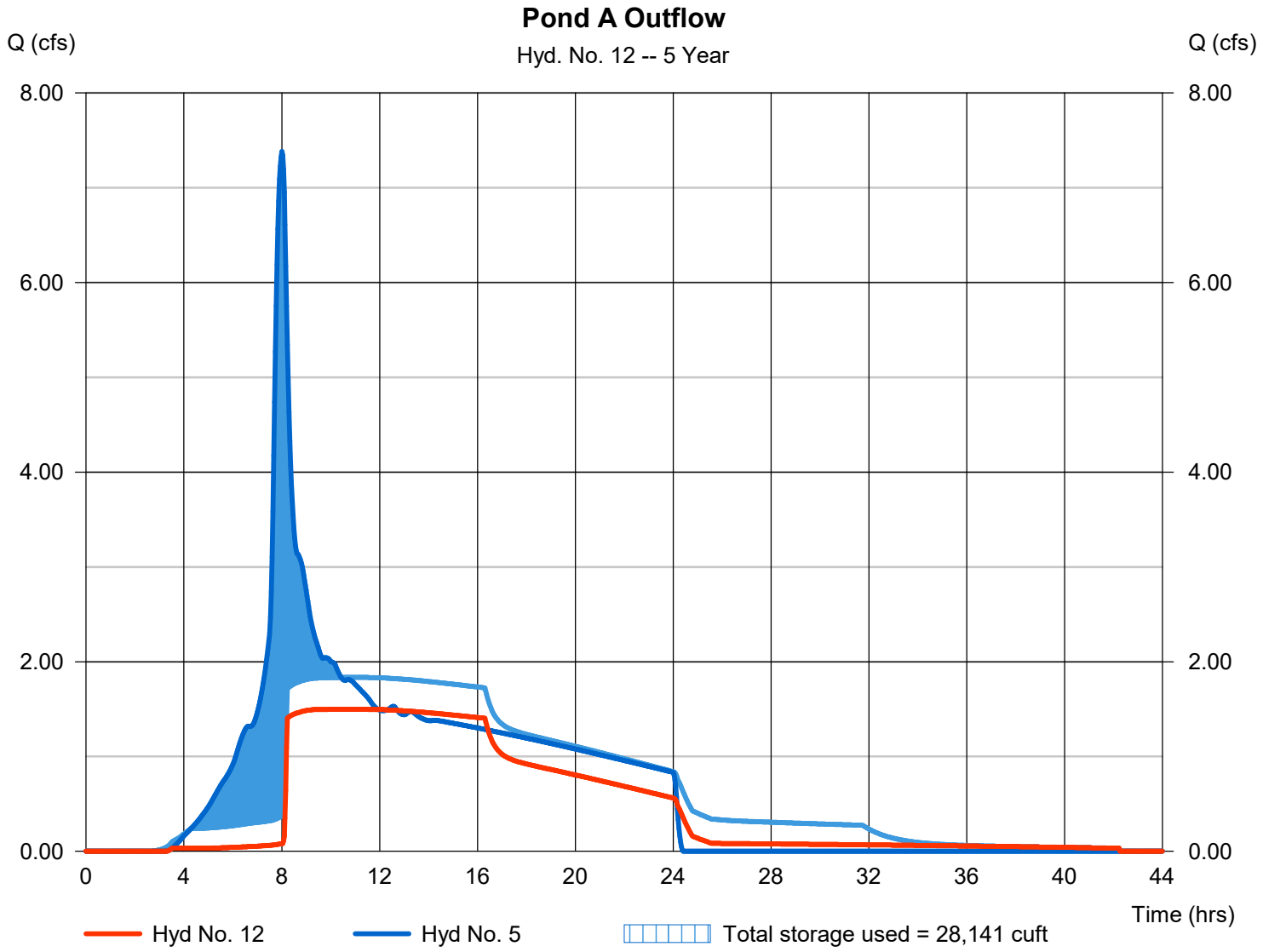
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 12

Pond A Outflow

Hydrograph type	=	Reservoir	Peak discharge	=	1.498 cfs
Storm frequency	=	5 yrs	Time to peak	=	10.47 hrs
Time interval	=	2 min	Hyd. volume	=	71,261 cuft
Inflow hyd. No.	=	5 - Basin A - Dev	Max. Elevation	=	141.46 ft
Reservoir name	=	Existing Pond A	Max. Storage	=	28,141 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

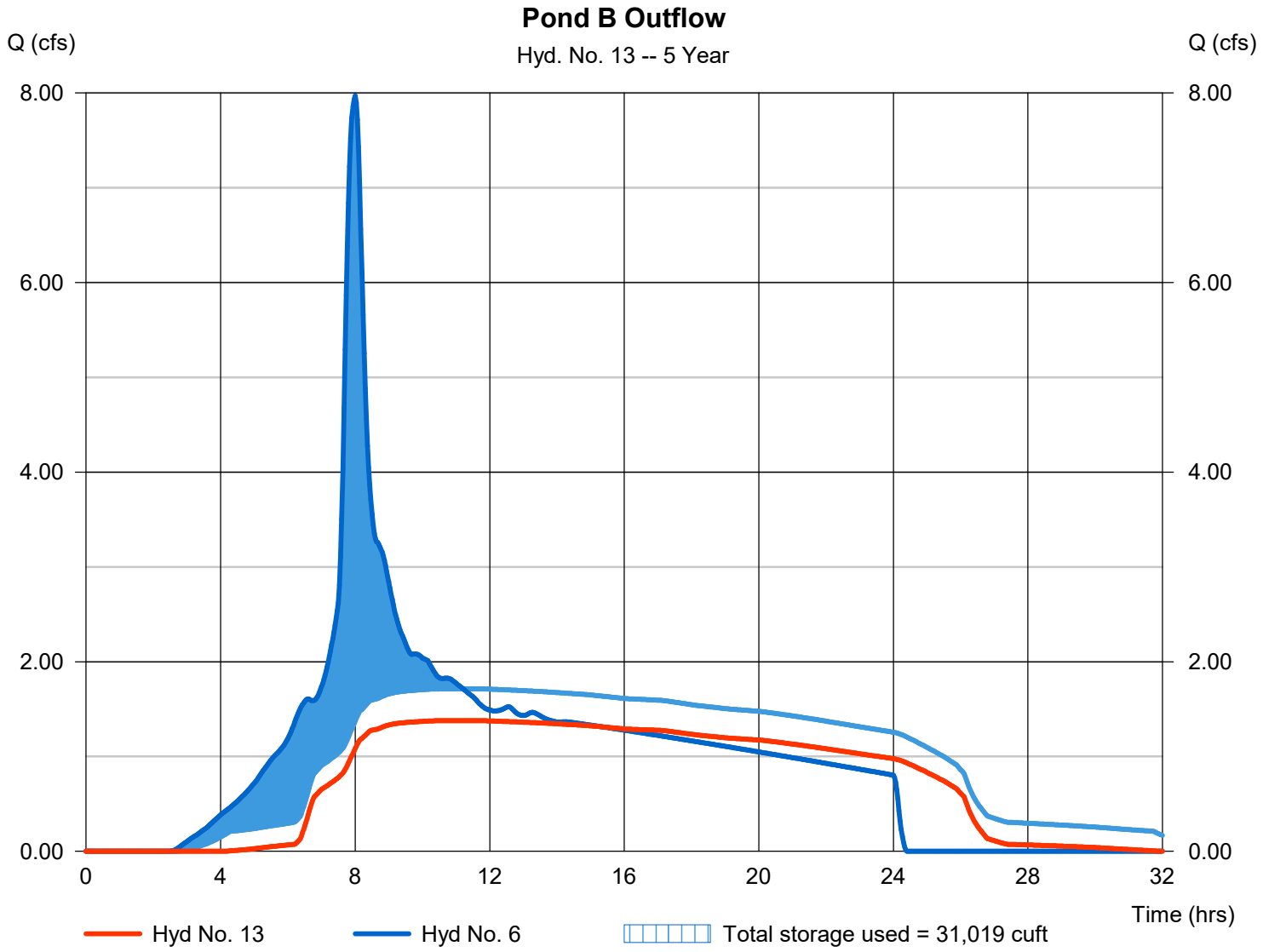
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 13

Pond B Outflow

Hydrograph type	=	Reservoir	Peak discharge	=	1.378 cfs
Storm frequency	=	5 yrs	Time to peak	=	11.20 hrs
Time interval	=	2 min	Hyd. volume	=	84,041 cuft
Inflow hyd. No.	=	6 - Basin B - Dev	Max. Elevation	=	138.82 ft
Reservoir name	=	Existing Pond B	Max. Storage	=	31,019 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

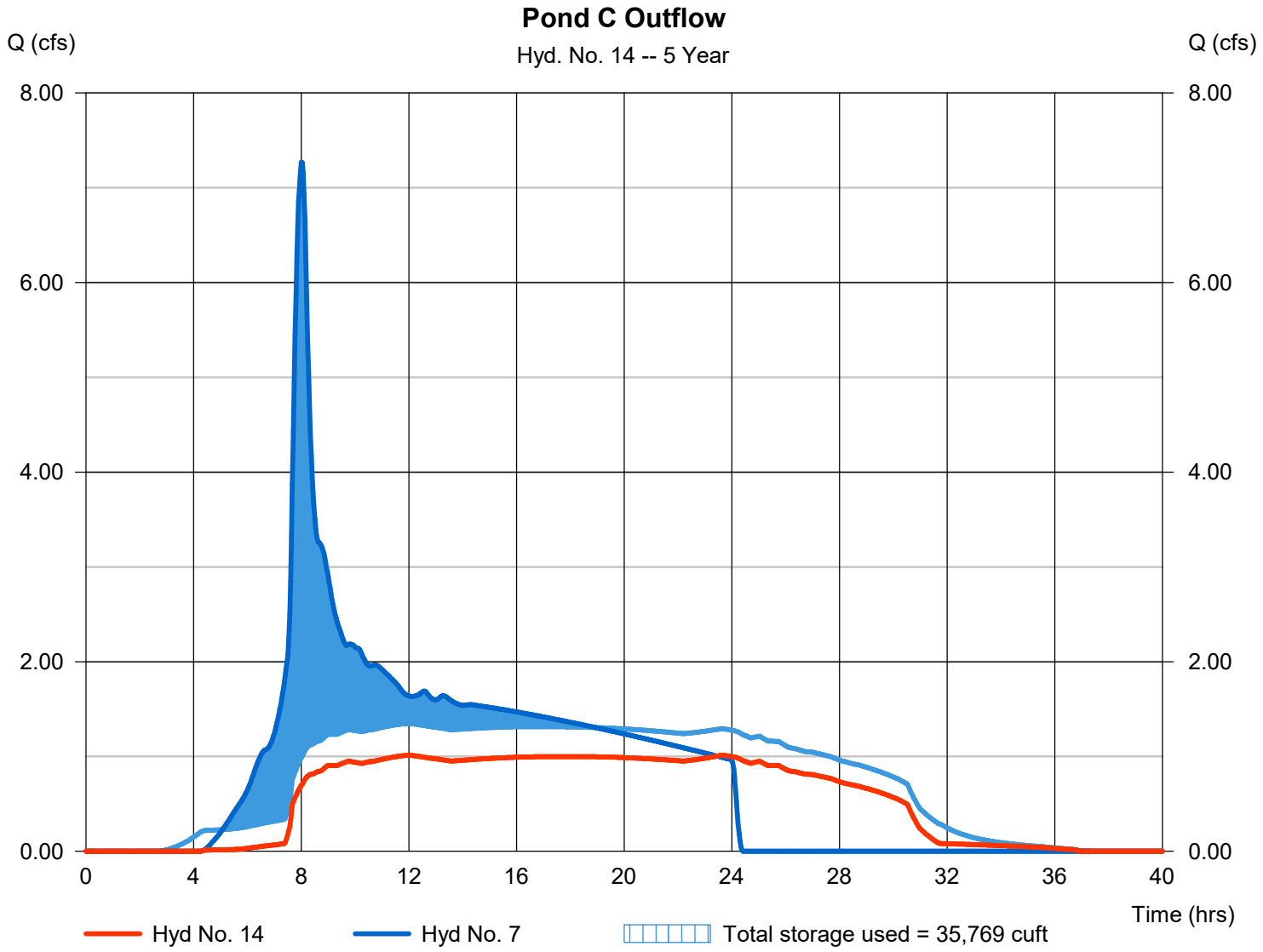
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 14

Pond C Outflow

Hydrograph type	=	Reservoir	Peak discharge	=	1.014 cfs
Storm frequency	=	5 yrs	Time to peak	=	12.00 hrs
Time interval	=	2 min	Hyd. volume	=	77,350 cuft
Inflow hyd. No.	=	7 - Basin C - Dev	Max. Elevation	=	137.60 ft
Reservoir name	=	Existing Pond C	Max. Storage	=	35,769 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

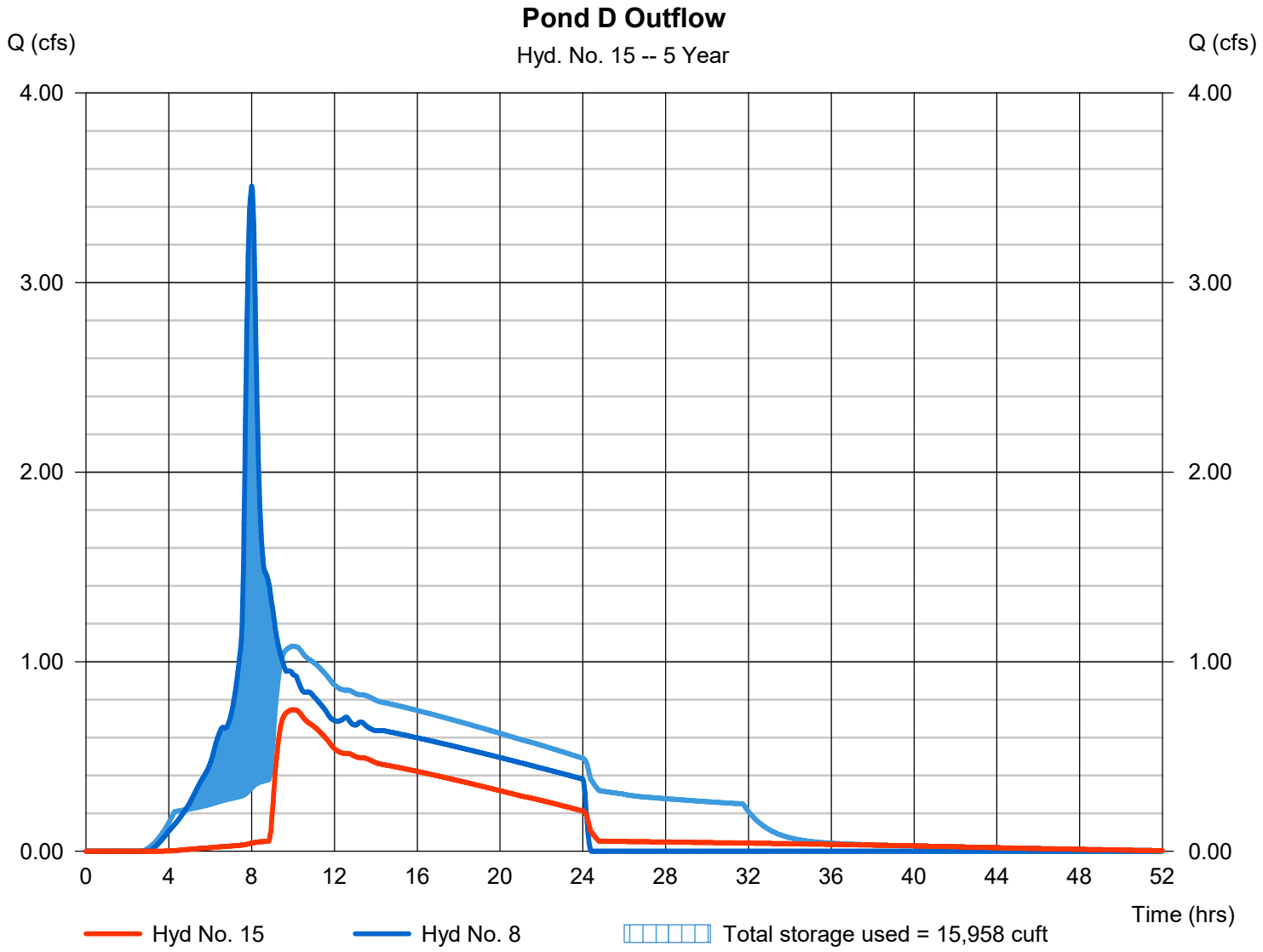
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 15

Pond D Outflow

Hydrograph type	=	Reservoir	Peak discharge	=	0.747 cfs
Storm frequency	=	5 yrs	Time to peak	=	9.97 hrs
Time interval	=	2 min	Hyd. volume	=	26,786 cuft
Inflow hyd. No.	=	8 - Basin D - Dev	Max. Elevation	=	137.11 ft
Reservoir name	=	Modified Pond D	Max. Storage	=	15,958 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



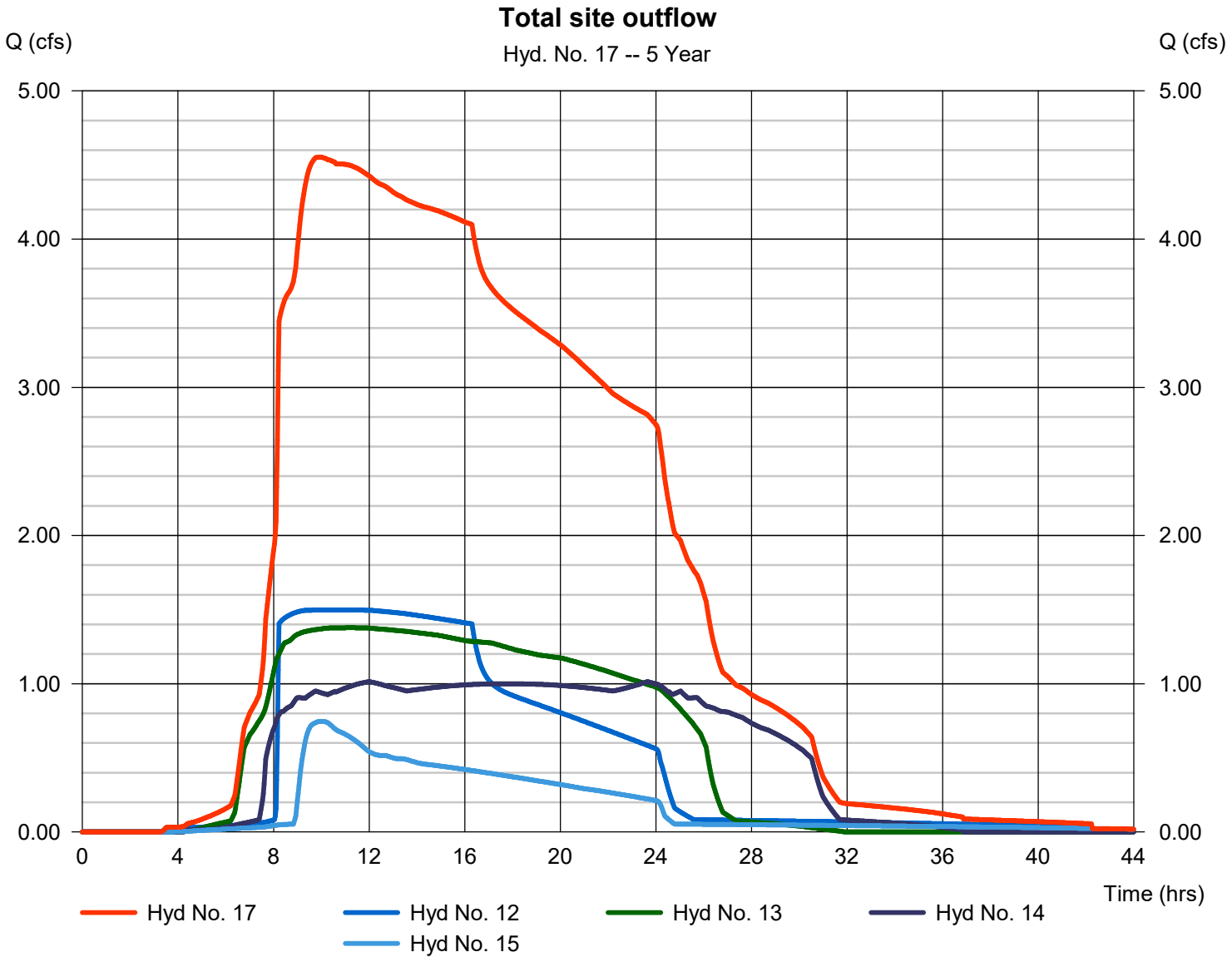
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 17

Total site outflow

Hydrograph type	= Combine	Peak discharge	= 4.554 cfs
Storm frequency	= 5 yrs	Time to peak	= 9.93 hrs
Time interval	= 2 min	Hyd. volume	= 259,437 cuft
Inflow hyds.	= 12, 13, 14, 15	Contrib. drain. area	= 0.000 ac



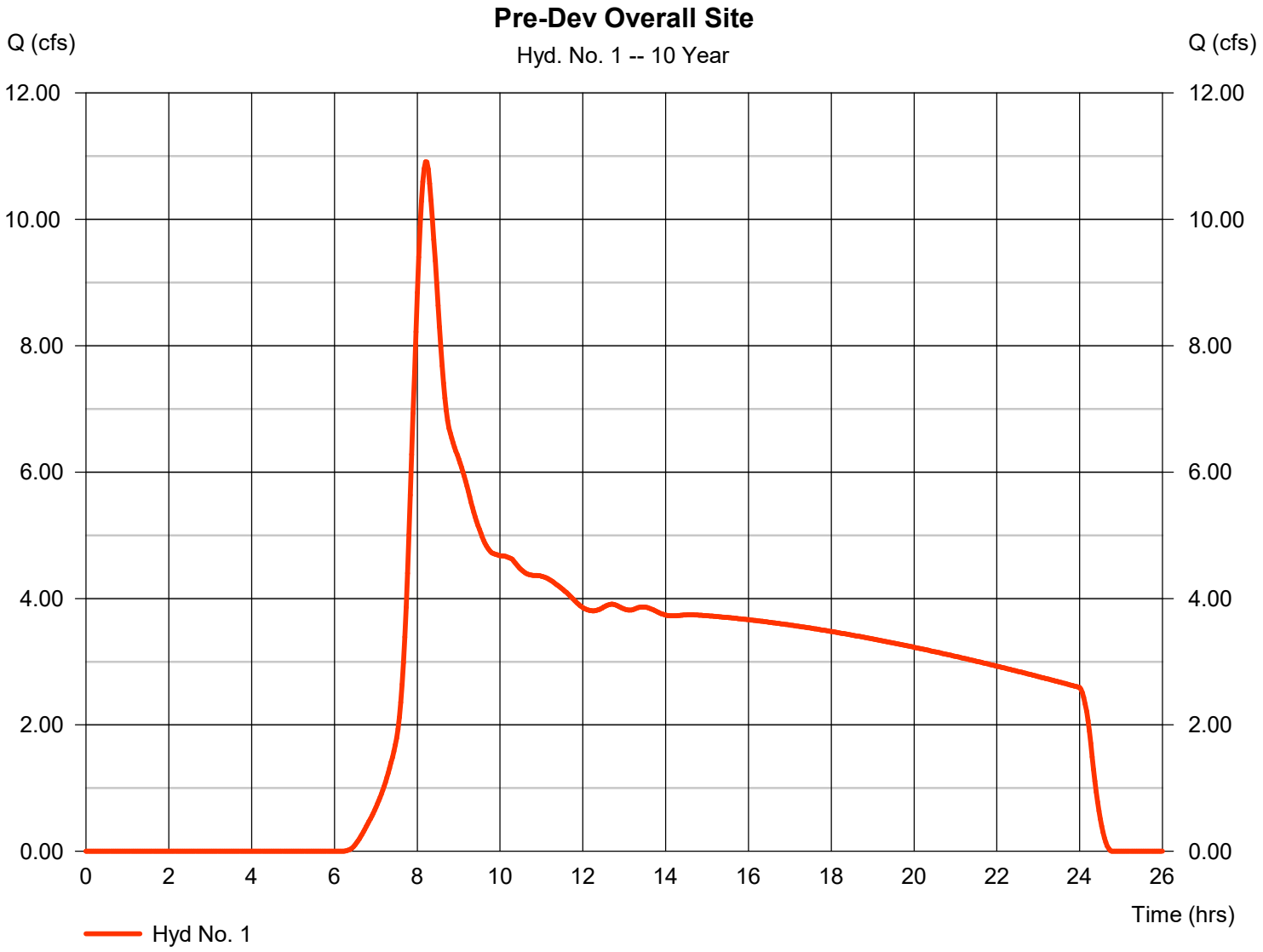
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 1

Pre-Dev Overall Site

Hydrograph type	=	SCS Runoff	Peak discharge	=	10.91 cfs
Storm frequency	=	10 yrs	Time to peak	=	8.20 hrs
Time interval	=	2 min	Hyd. volume	=	241,352 cuft
Drainage area	=	58.010 ac	Curve number	=	73
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	30.00 min
Total precip.	=	3.45 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	484



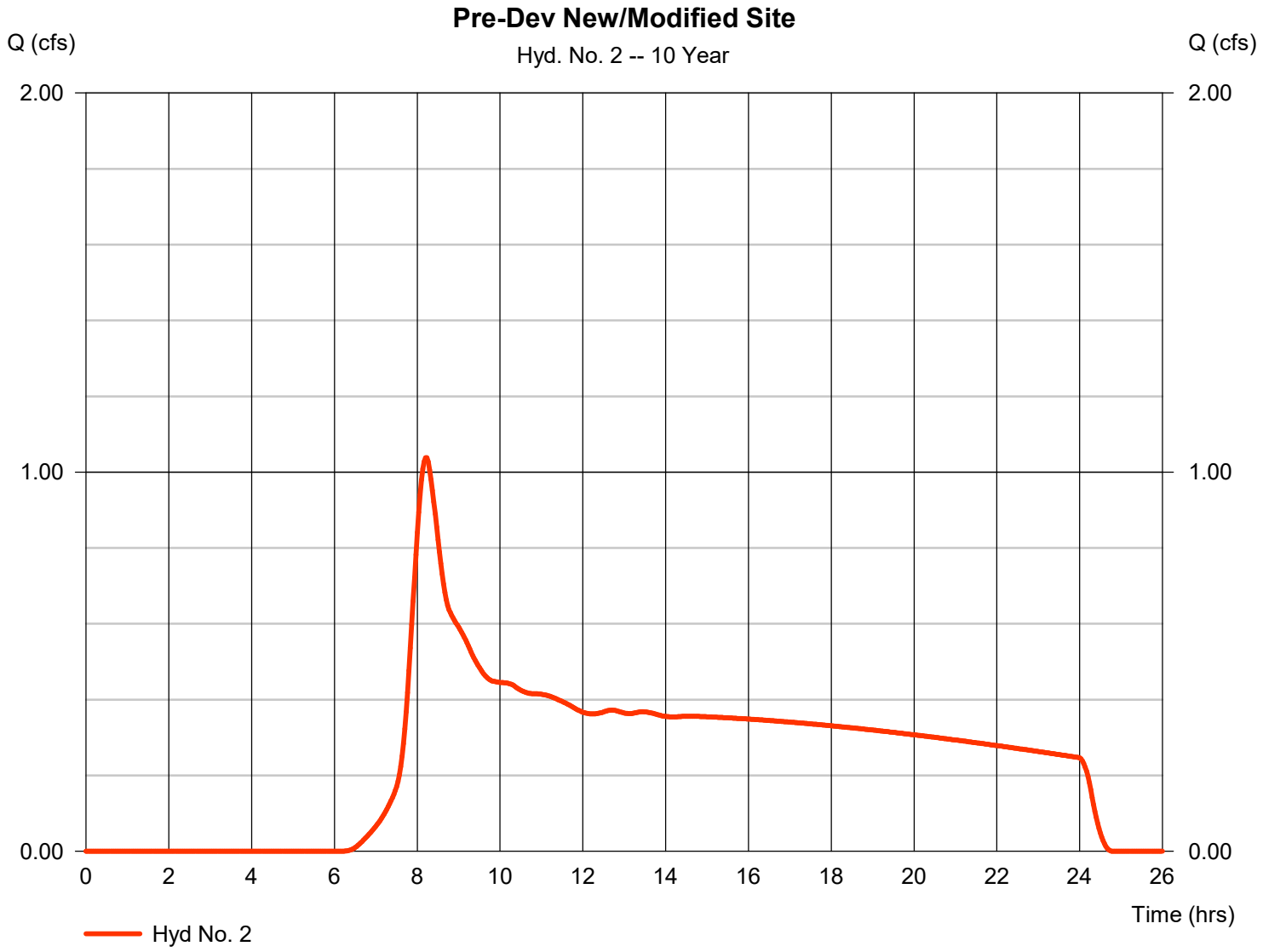
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 2

Pre-Dev New/Modified Site

Hydrograph type	= SCS Runoff	Peak discharge	= 1.038 cfs
Storm frequency	= 10 yrs	Time to peak	= 8.20 hrs
Time interval	= 2 min	Hyd. volume	= 22,966 cuft
Drainage area	= 5.520 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 30.00 min
Total precip.	= 3.45 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 3

Pre-Dev Undisturbed Site

Hydrograph type	=	SCS Runoff	Peak discharge	=	9.873 cfs
Storm frequency	=	10 yrs	Time to peak	=	8.20 hrs
Time interval	=	2 min	Hyd. volume	=	218,386 cuft
Drainage area	=	52.490 ac	Curve number	=	73
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	30.00 min
Total precip.	=	3.45 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	484



Hydrograph Report

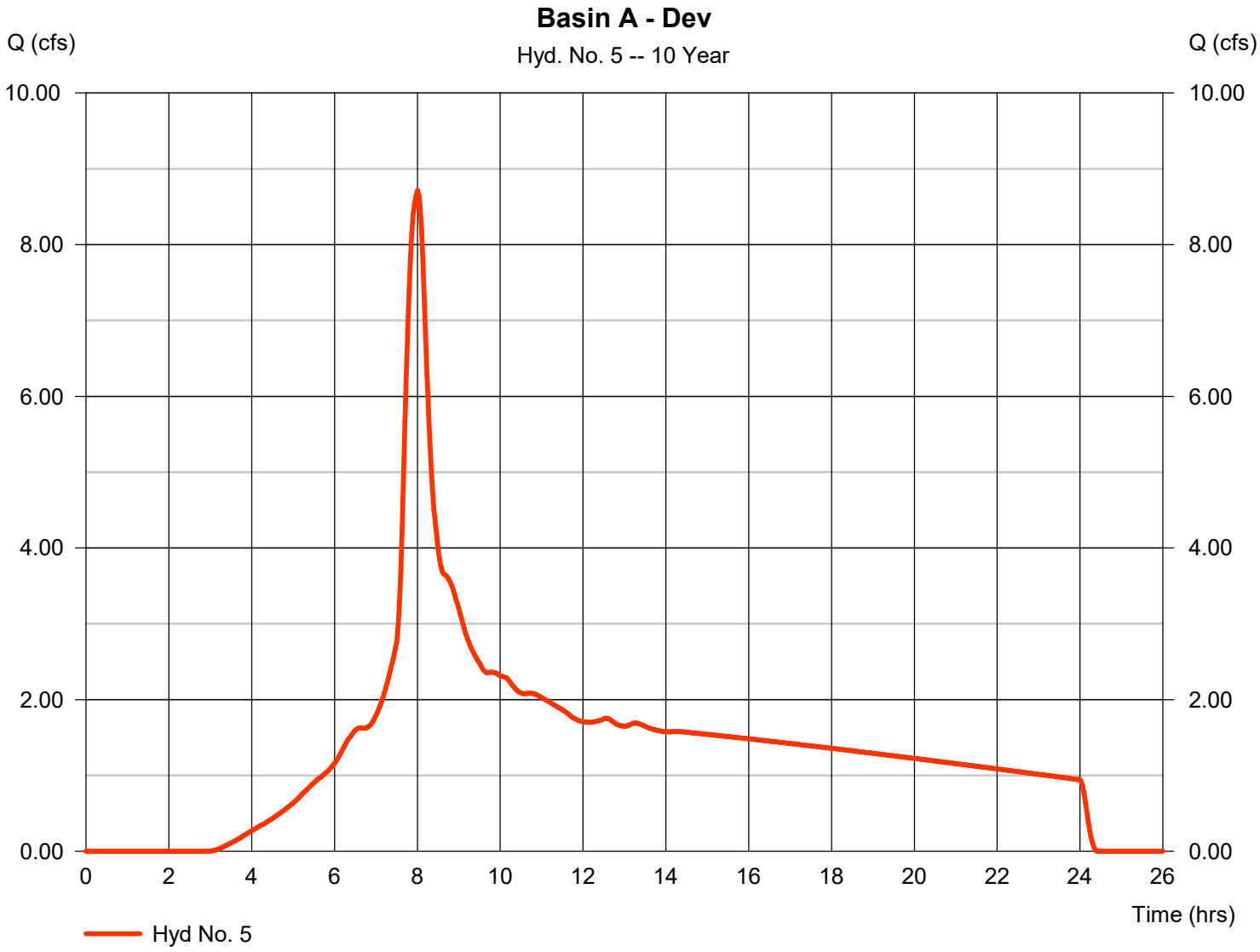
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 5

Basin A - Dev

Hydrograph type	= SCS Runoff	Peak discharge	= 8.716 cfs
Storm frequency	= 10 yrs	Time to peak	= 8.00 hrs
Time interval	= 2 min	Hyd. volume	= 126,049 cuft
Drainage area	= 16.020 ac	Curve number	= 88*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 3.45 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.250 x 98) + (8.150 x 98) + (6.350 x 74) + (0.270 x 98)] / 16.020



Hydrograph Report

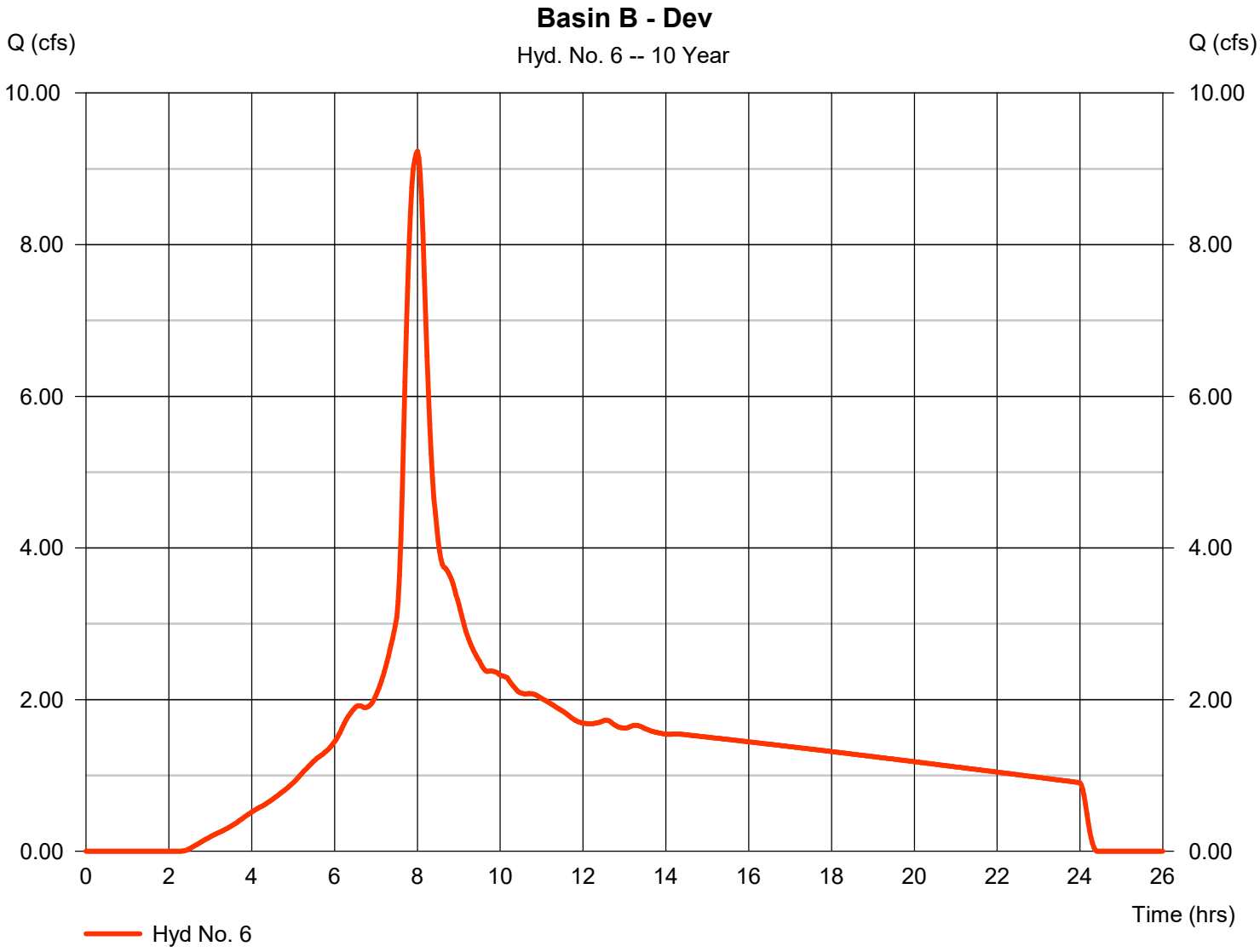
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 6

Basin B - Dev

Hydrograph type	= SCS Runoff	Peak discharge	= 9.233 cfs
Storm frequency	= 10 yrs	Time to peak	= 8.00 hrs
Time interval	= 2 min	Hyd. volume	= 130,452 cuft
Drainage area	= 14.780 ac	Curve number	= 91*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 3.45 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(3.350 x 98) + (7.110 x 98) + (4.320 x 74)] / 14.780



Hydrograph Report

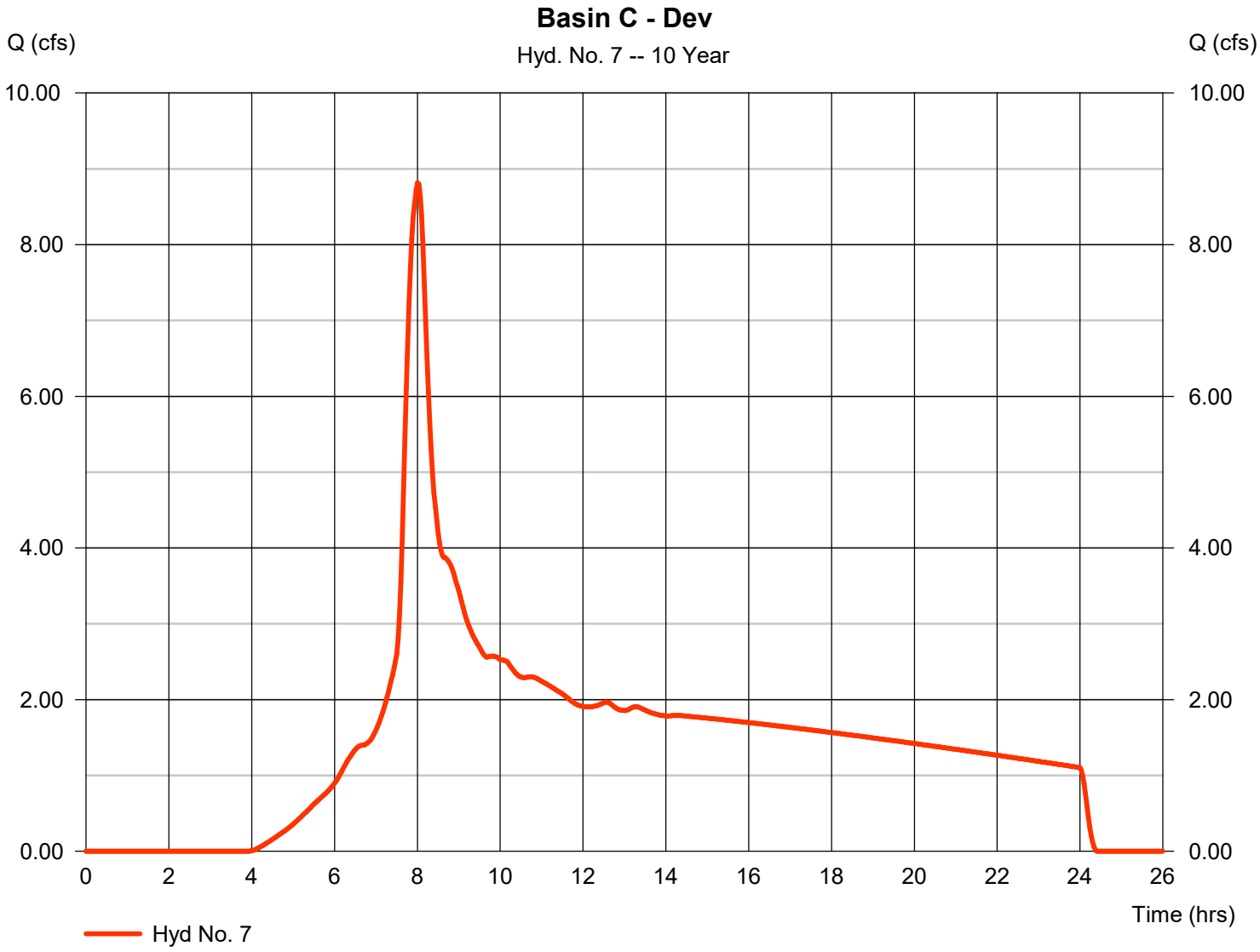
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 7

Basin C - Dev

Hydrograph type	=	SCS Runoff	Peak discharge	=	8.817 cfs
Storm frequency	=	10 yrs	Time to peak	=	8.00 hrs
Time interval	=	2 min	Hyd. volume	=	134,048 cuft
Drainage area	=	20.000 ac	Curve number	=	84*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	15.00 min
Total precip.	=	3.45 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(2.040 x 98) + (4.050 x 98) + (10.090 x 74) + (0.750 x 98) + (1.590 x 98) + (1.430 x 74)] / 20.000



Hydrograph Report

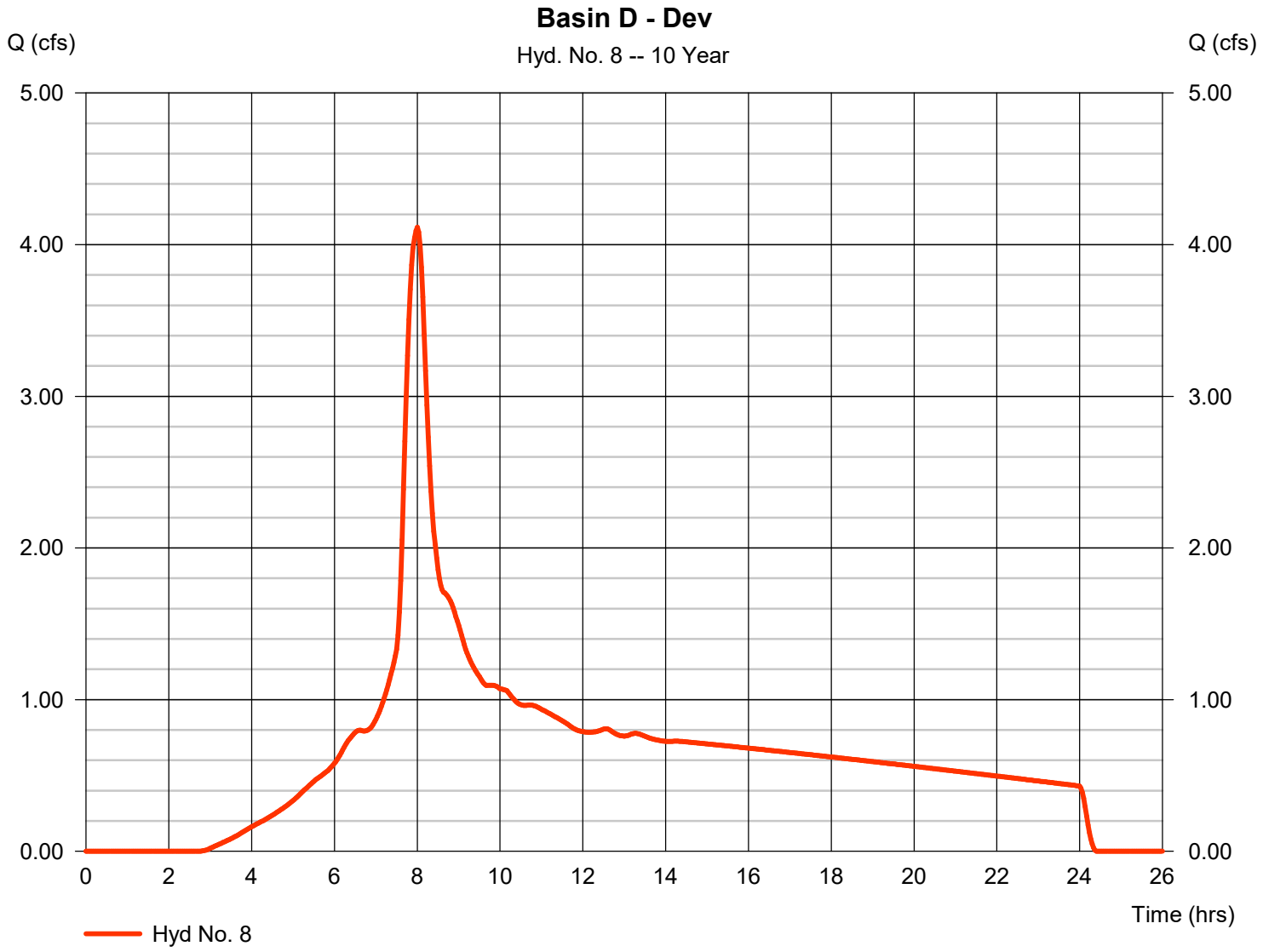
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 8

Basin D - Dev

Hydrograph type	= SCS Runoff	Peak discharge	= 4.115 cfs
Storm frequency	= 10 yrs	Time to peak	= 8.00 hrs
Time interval	= 2 min	Hyd. volume	= 58,972 cuft
Drainage area	= 7.210 ac	Curve number	= 89*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 3.45 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.240 x 98) + (1.000 x 74) + (3.180 x 98) + (1.790 x 74)] / 7.210



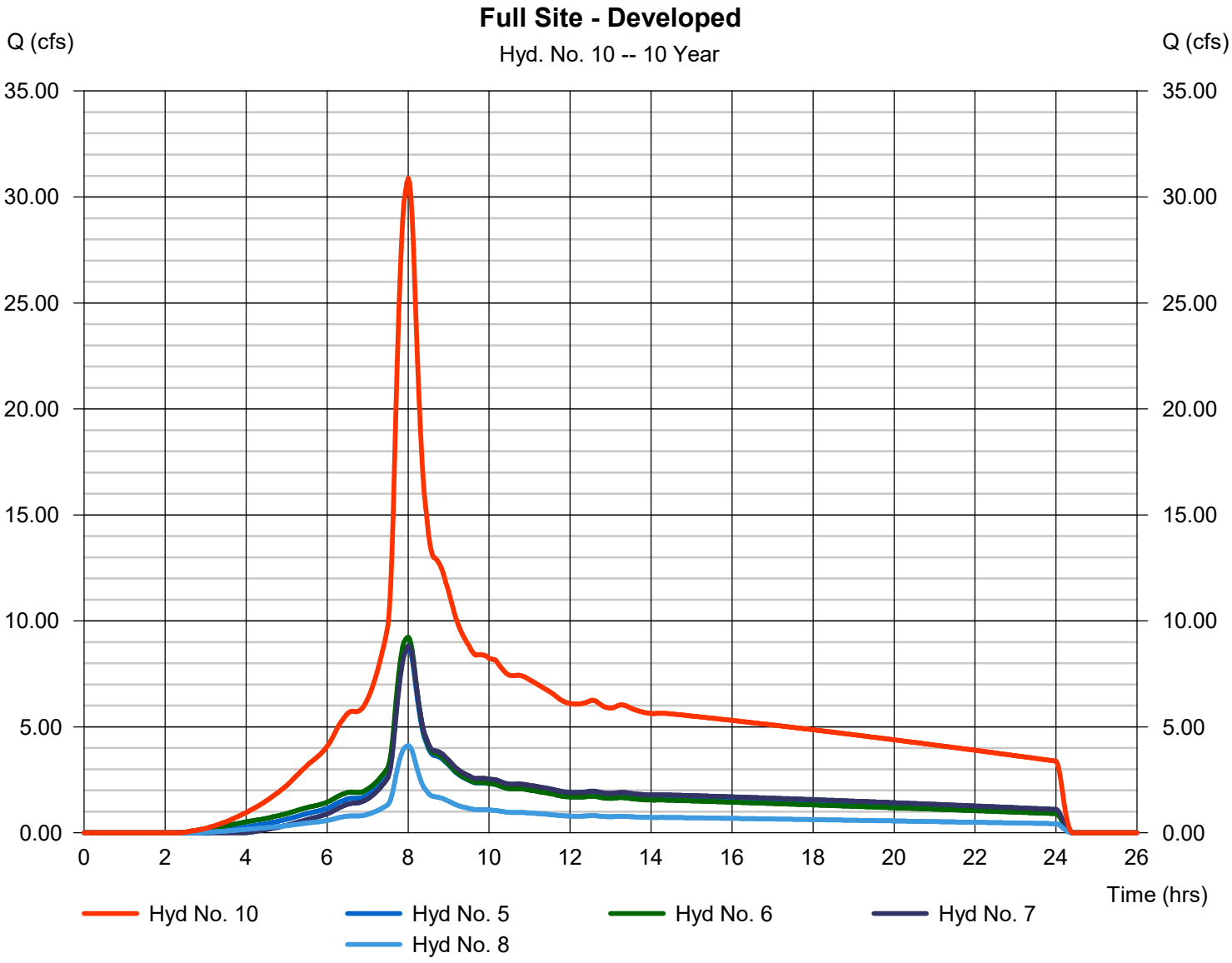
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 10

Full Site - Developed

Hydrograph type	= Combine	Peak discharge	= 30.88 cfs
Storm frequency	= 10 yrs	Time to peak	= 8.00 hrs
Time interval	= 2 min	Hyd. volume	= 449,521 cuft
Inflow hyds.	= 5, 6, 7, 8	Contrib. drain. area	= 58.010 ac



Hydrograph Report

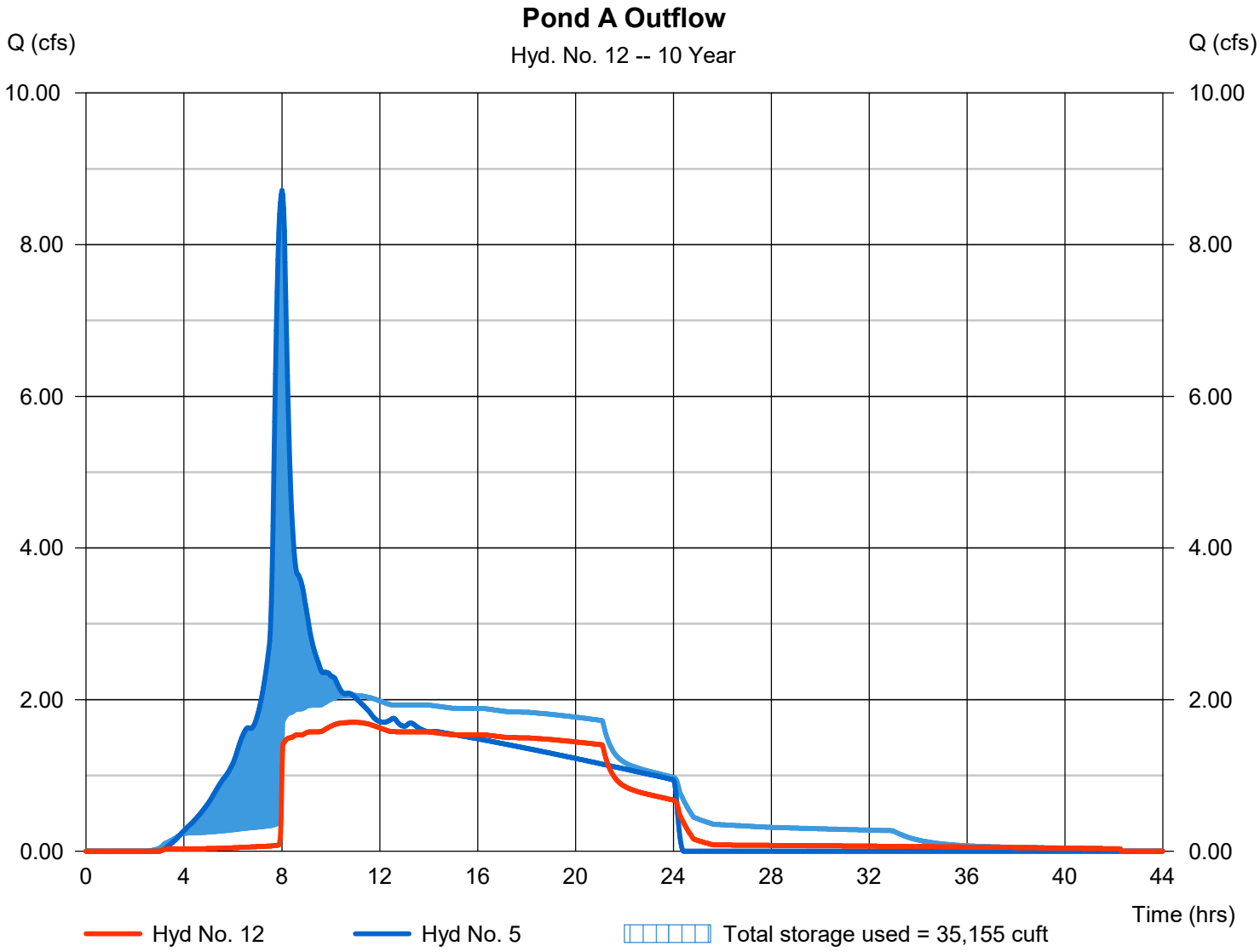
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 12

Pond A Outflow

Hydrograph type	=	Reservoir	Peak discharge	=	1.701 cfs
Storm frequency	=	10 yrs	Time to peak	=	10.93 hrs
Time interval	=	2 min	Hyd. volume	=	87,750 cuft
Inflow hyd. No.	=	5 - Basin A - Dev	Max. Elevation	=	141.97 ft
Reservoir name	=	Existing Pond A	Max. Storage	=	35,155 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

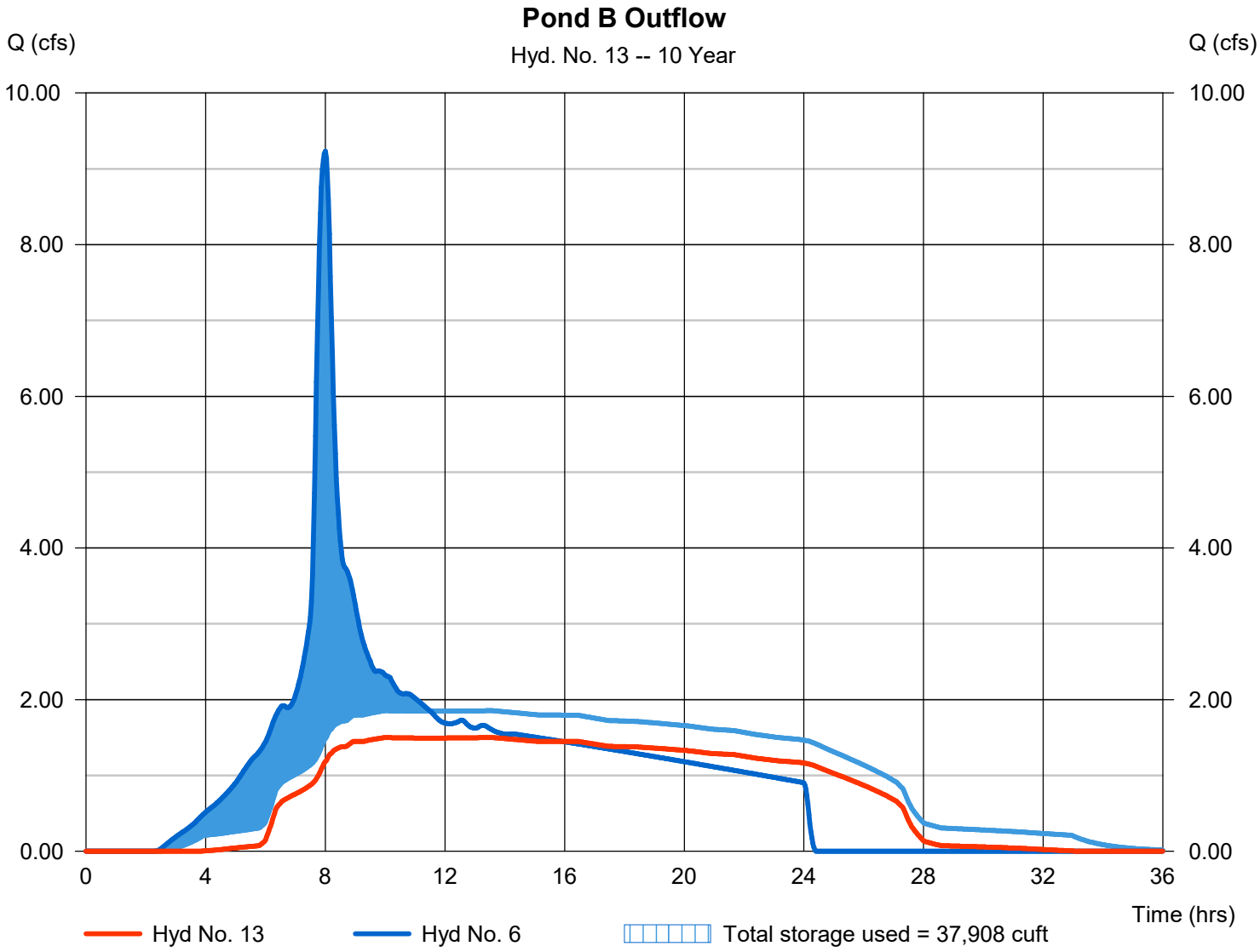
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 13

Pond B Outflow

Hydrograph type	=	Reservoir	Peak discharge	=	1.499 cfs
Storm frequency	=	10 yrs	Time to peak	=	10.00 hrs
Time interval	=	2 min	Hyd. volume	=	98,360 cuft
Inflow hyd. No.	=	6 - Basin B - Dev	Max. Elevation	=	139.20 ft
Reservoir name	=	Existing Pond B	Max. Storage	=	37,908 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

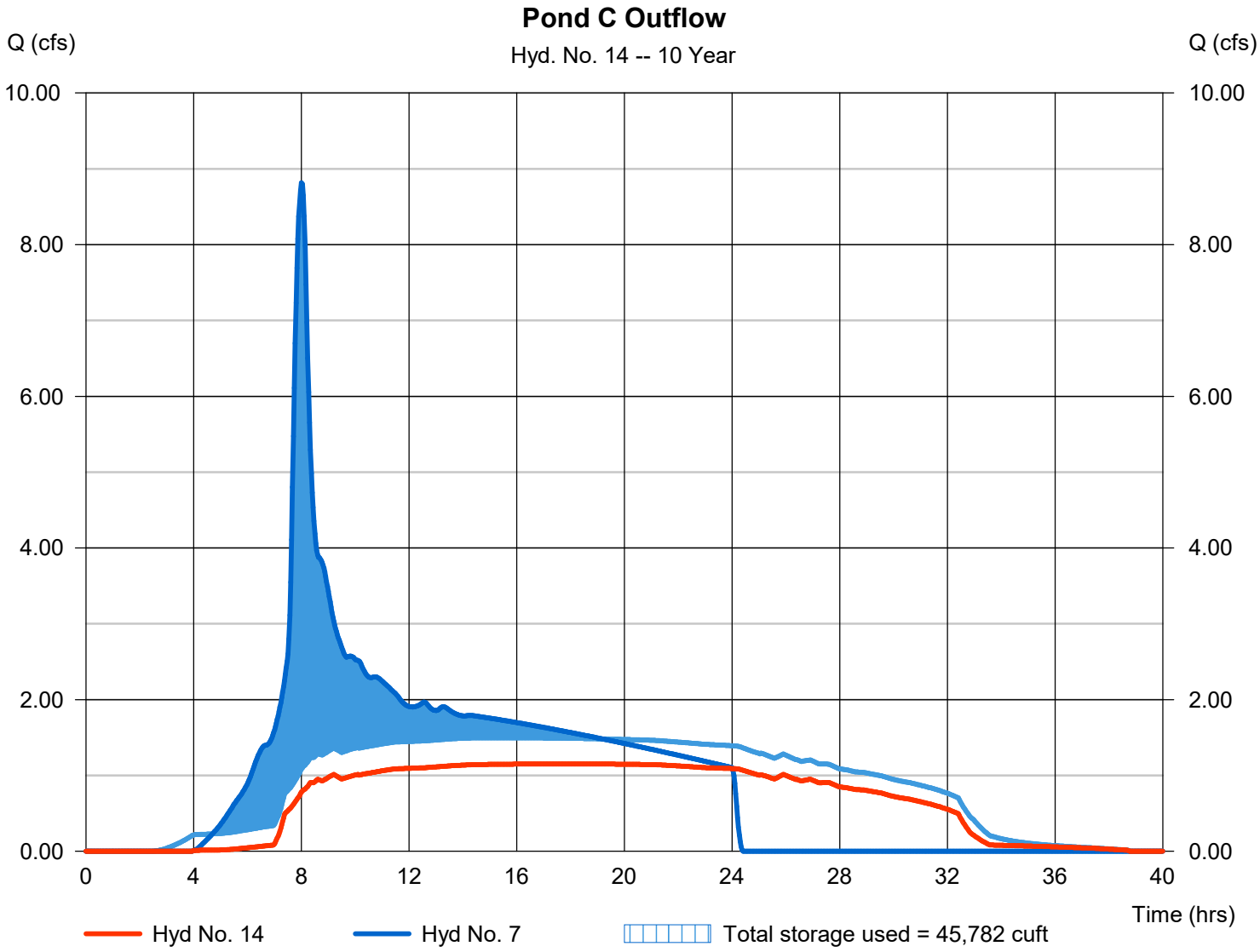
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 14

Pond C Outflow

Hydrograph type	=	Reservoir	Peak discharge	=	1.152 cfs
Storm frequency	=	10 yrs	Time to peak	=	17.77 hrs
Time interval	=	2 min	Hyd. volume	=	92,680 cuft
Inflow hyd. No.	=	7 - Basin C - Dev	Max. Elevation	=	138.37 ft
Reservoir name	=	Existing Pond C	Max. Storage	=	45,782 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

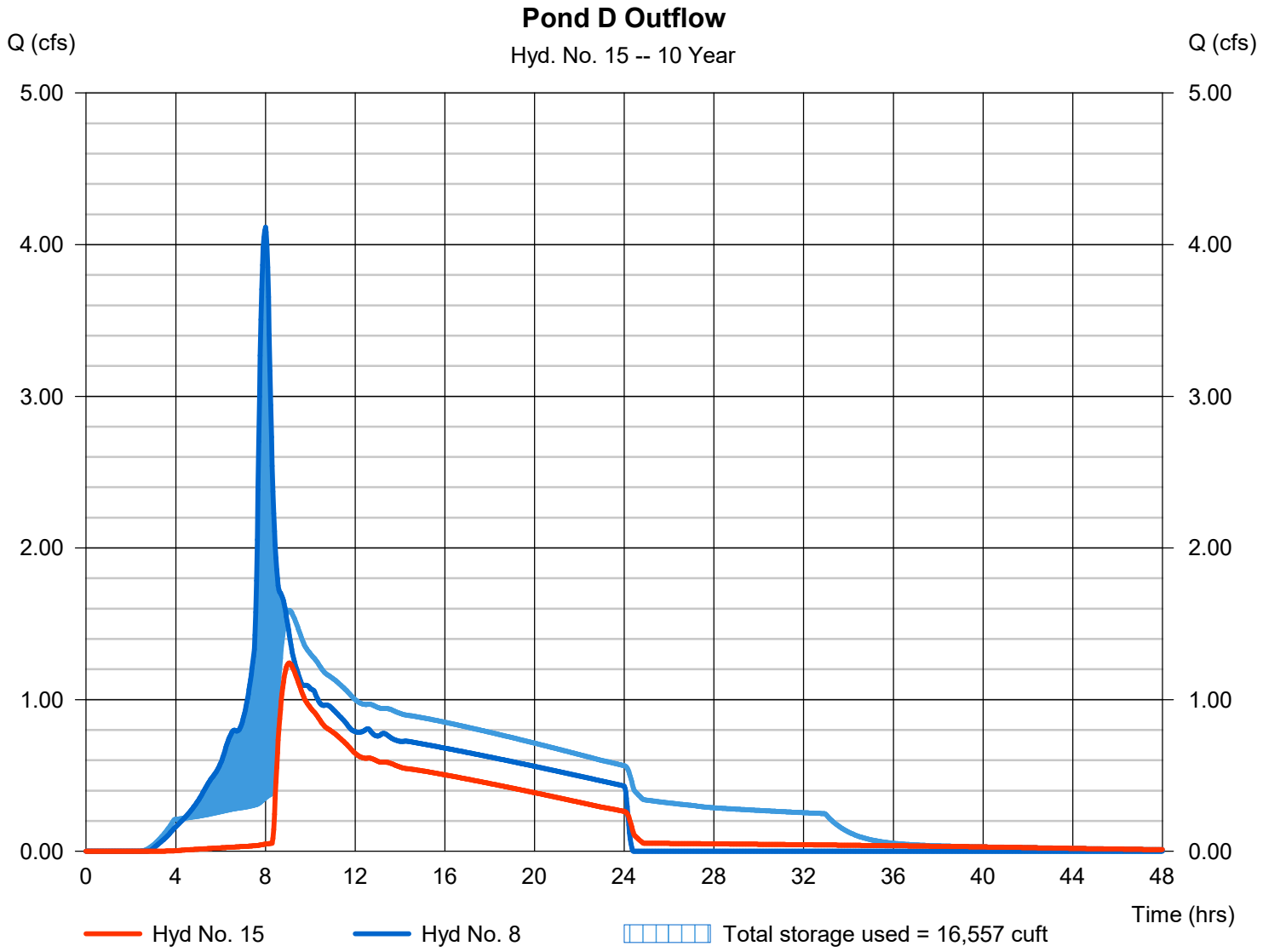
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 15

Pond D Outflow

Hydrograph type	=	Reservoir	Peak discharge	=	1.241 cfs
Storm frequency	=	10 yrs	Time to peak	=	9.07 hrs
Time interval	=	2 min	Hyd. volume	=	34,639 cuft
Inflow hyd. No.	=	8 - Basin D - Dev	Max. Elevation	=	137.18 ft
Reservoir name	=	Modified Pond D	Max. Storage	=	16,557 cuft

Storage Indication method used. Exfiltration extracted from Outflow.

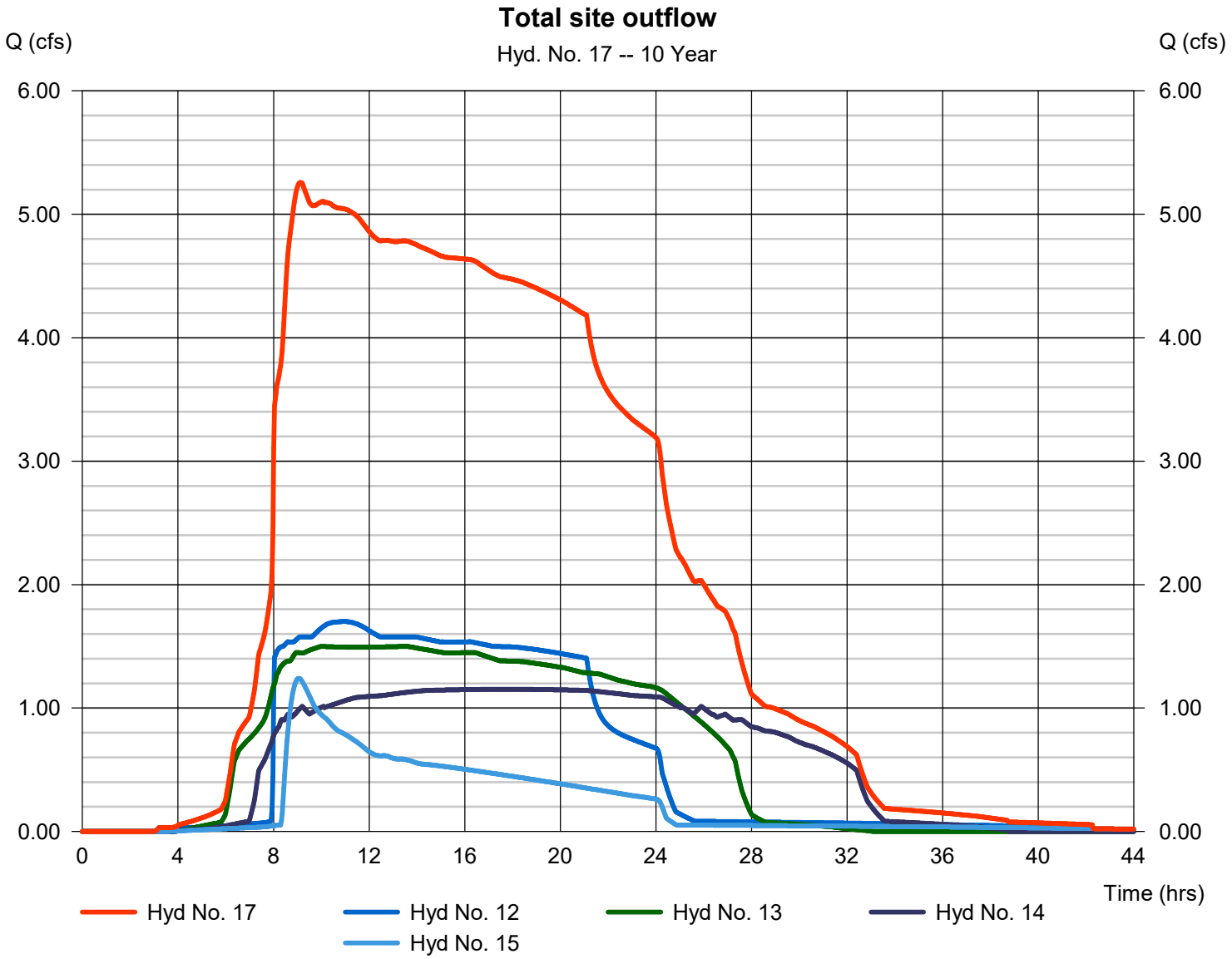


Hydrograph Report

Hyd. No. 17

Total site outflow

Hydrograph type	=	Combine	Peak discharge	=	5.258 cfs
Storm frequency	=	10 yrs	Time to peak	=	9.13 hrs
Time interval	=	2 min	Hyd. volume	=	313,428 cuft
Inflow hyds.	=	12, 13, 14, 15	Contrib. drain. area	=	0.000 ac



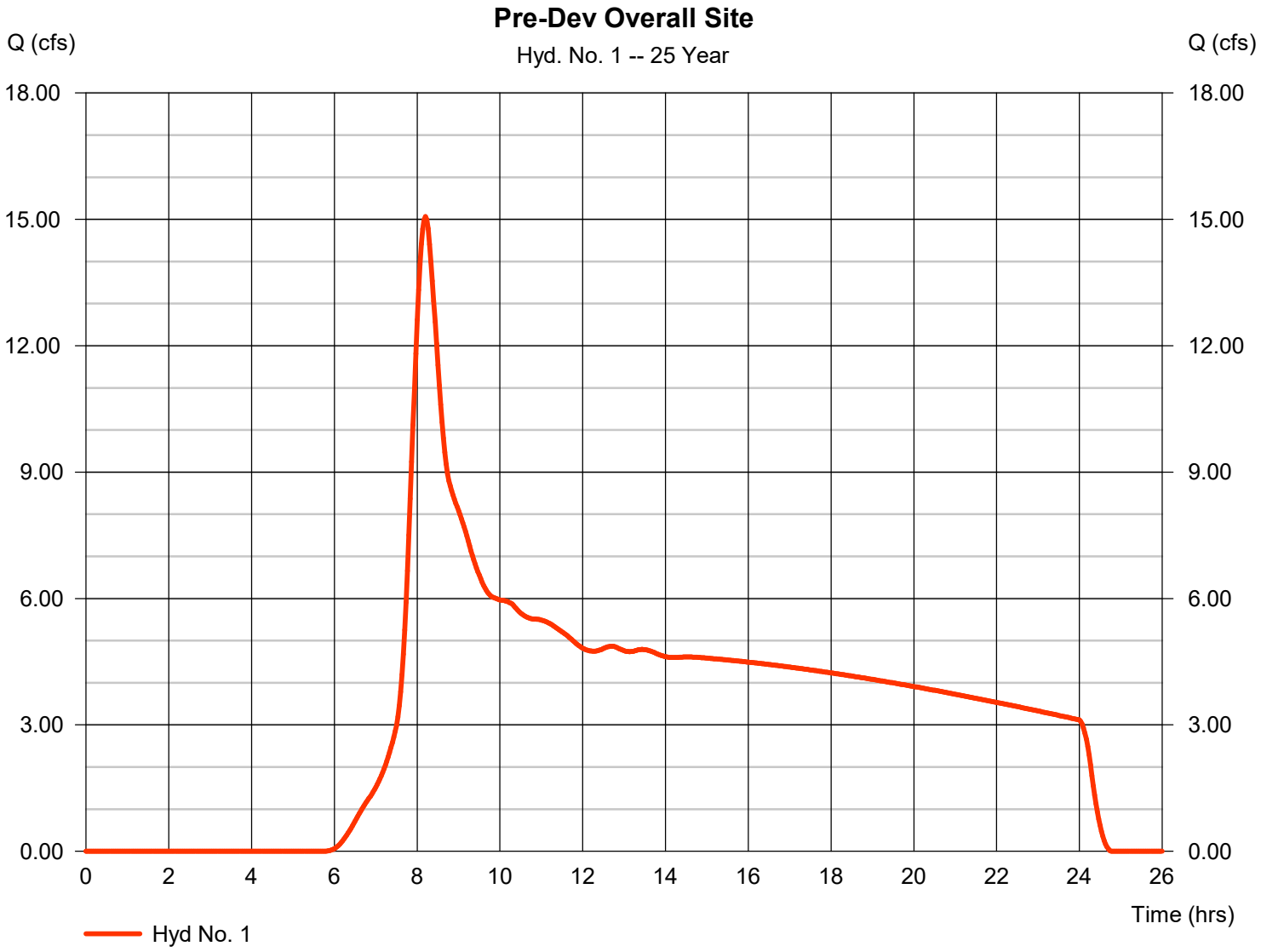
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 1

Pre-Dev Overall Site

Hydrograph type	= SCS Runoff	Peak discharge	= 15.07 cfs
Storm frequency	= 25 yrs	Time to peak	= 8.20 hrs
Time interval	= 2 min	Hyd. volume	= 306,623 cuft
Drainage area	= 58.010 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 30.00 min
Total precip.	= 3.90 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484



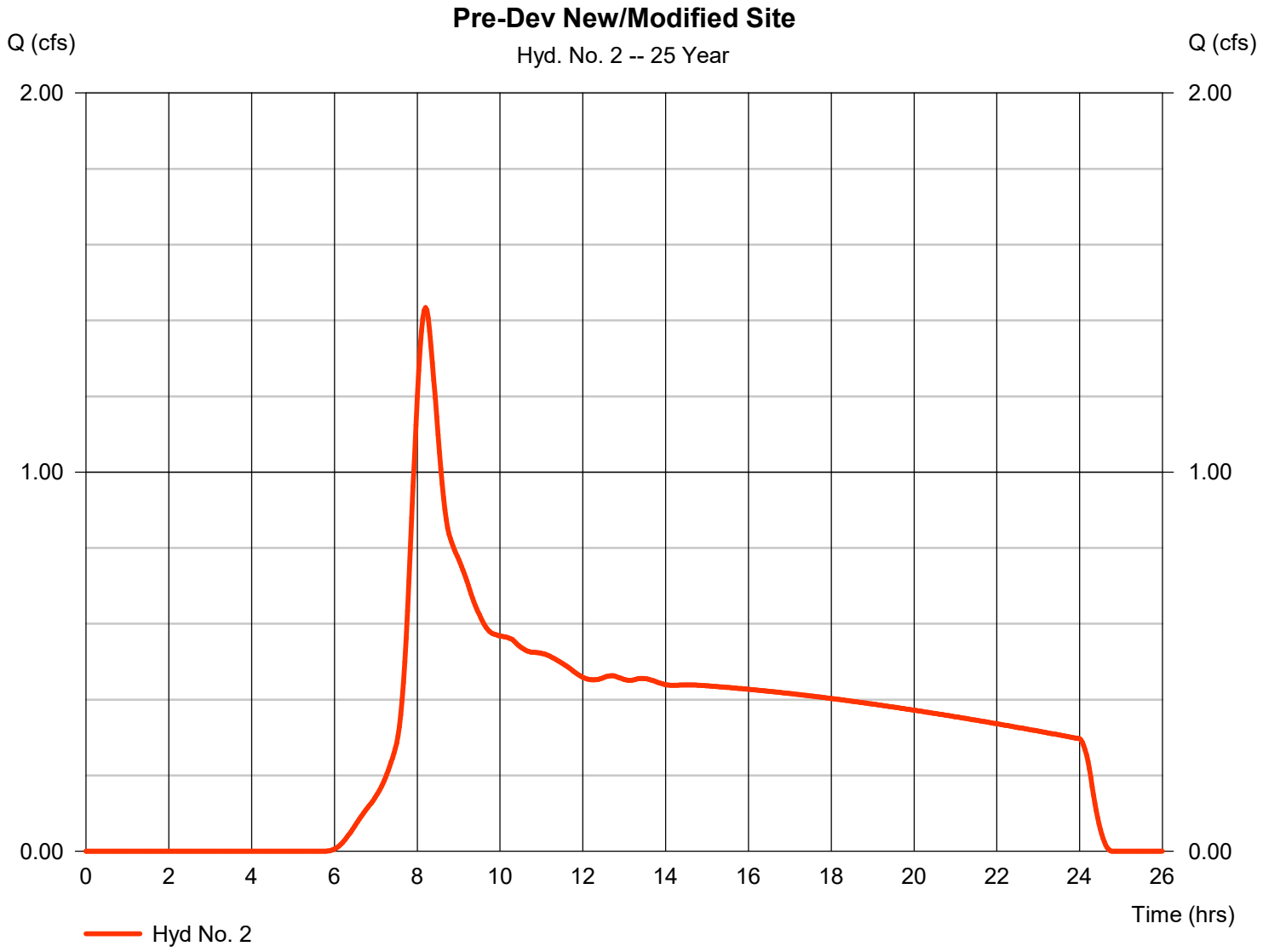
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 2

Pre-Dev New/Modified Site

Hydrograph type	= SCS Runoff	Peak discharge	= 1.434 cfs
Storm frequency	= 25 yrs	Time to peak	= 8.20 hrs
Time interval	= 2 min	Hyd. volume	= 29,177 cuft
Drainage area	= 5.520 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 30.00 min
Total precip.	= 3.90 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 3

Pre-Dev Undisturbed Site

Hydrograph type	= SCS Runoff	Peak discharge	= 13.63 cfs
Storm frequency	= 25 yrs	Time to peak	= 8.20 hrs
Time interval	= 2 min	Hyd. volume	= 277,445 cuft
Drainage area	= 52.490 ac	Curve number	= 73
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 30.00 min
Total precip.	= 3.90 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484



Hydrograph Report

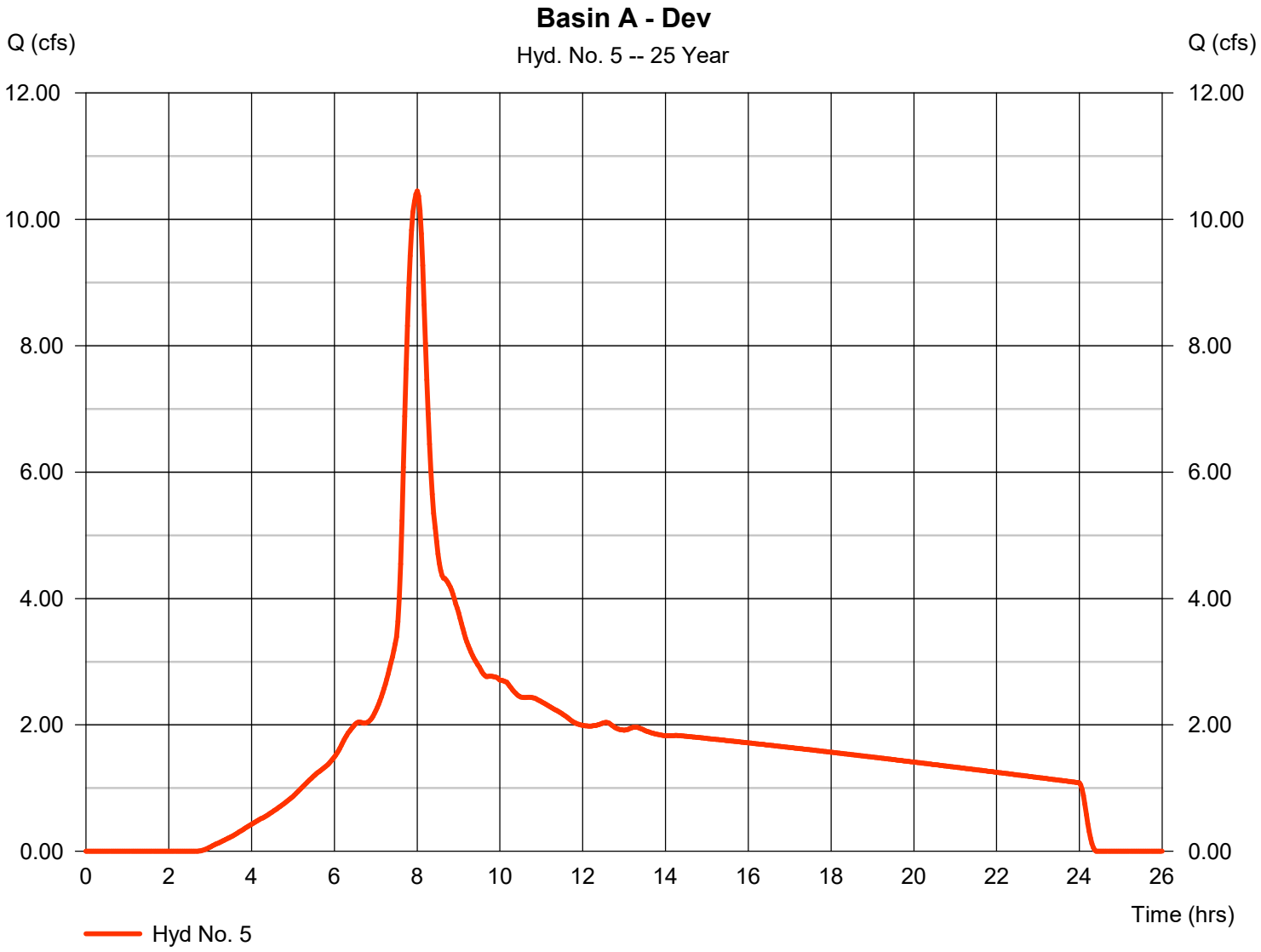
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 5

Basin A - Dev

Hydrograph type	=	SCS Runoff	Peak discharge	=	10.45 cfs
Storm frequency	=	25 yrs	Time to peak	=	8.00 hrs
Time interval	=	2 min	Hyd. volume	=	149,470 cuft
Drainage area	=	16.020 ac	Curve number	=	88*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	15.00 min
Total precip.	=	3.90 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(1.250 x 98) + (8.150 x 98) + (6.350 x 74) + (0.270 x 98)] / 16.020



Hydrograph Report

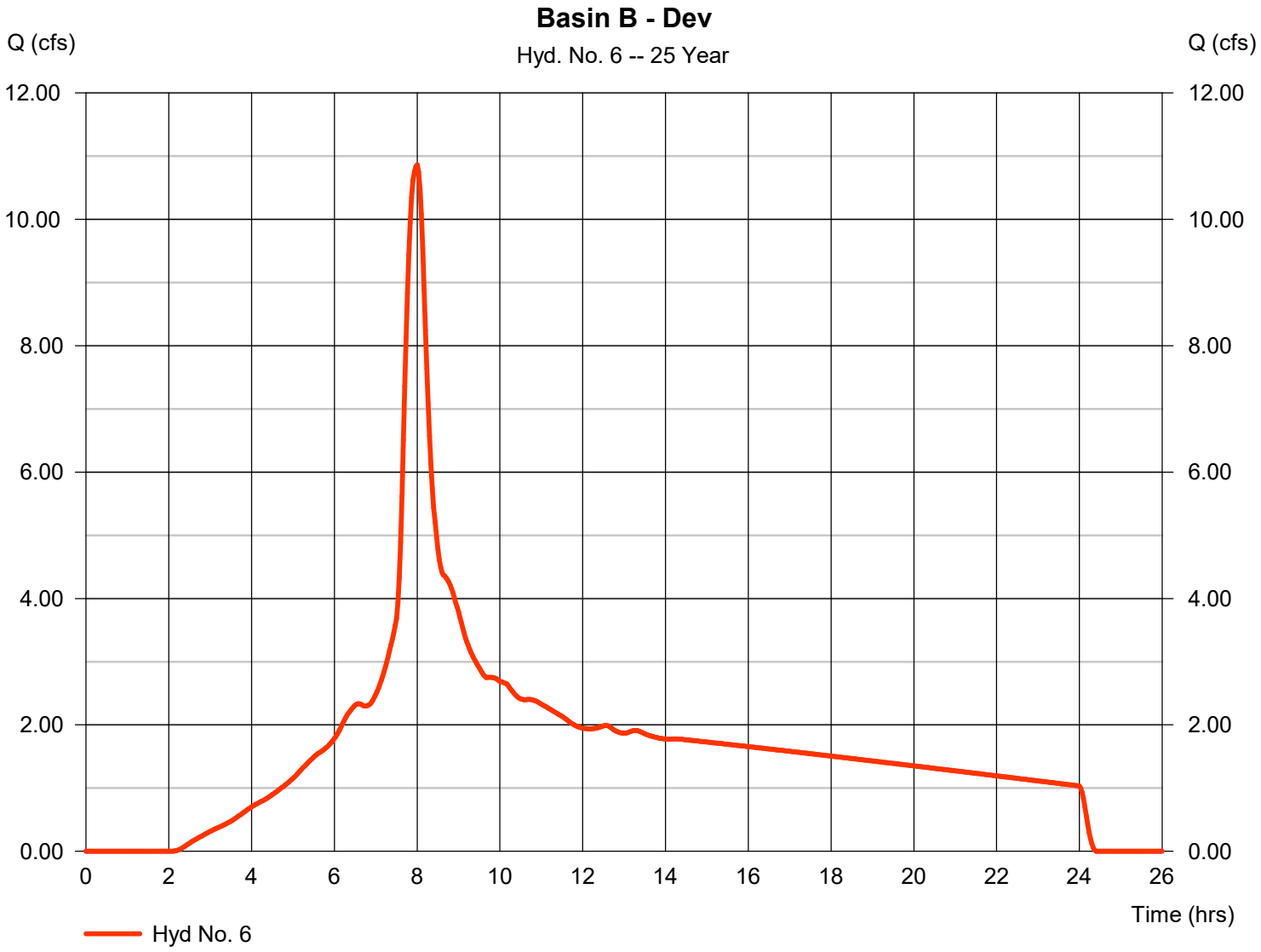
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 6

Basin B - Dev

Hydrograph type	=	SCS Runoff	Peak discharge	=	10.86 cfs
Storm frequency	=	25 yrs	Time to peak	=	8.00 hrs
Time interval	=	2 min	Hyd. volume	=	152,834 cuft
Drainage area	=	14.780 ac	Curve number	=	91*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	15.00 min
Total precip.	=	3.90 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(3.350 x 98) + (7.110 x 98) + (4.320 x 74)] / 14.780



Hydrograph Report

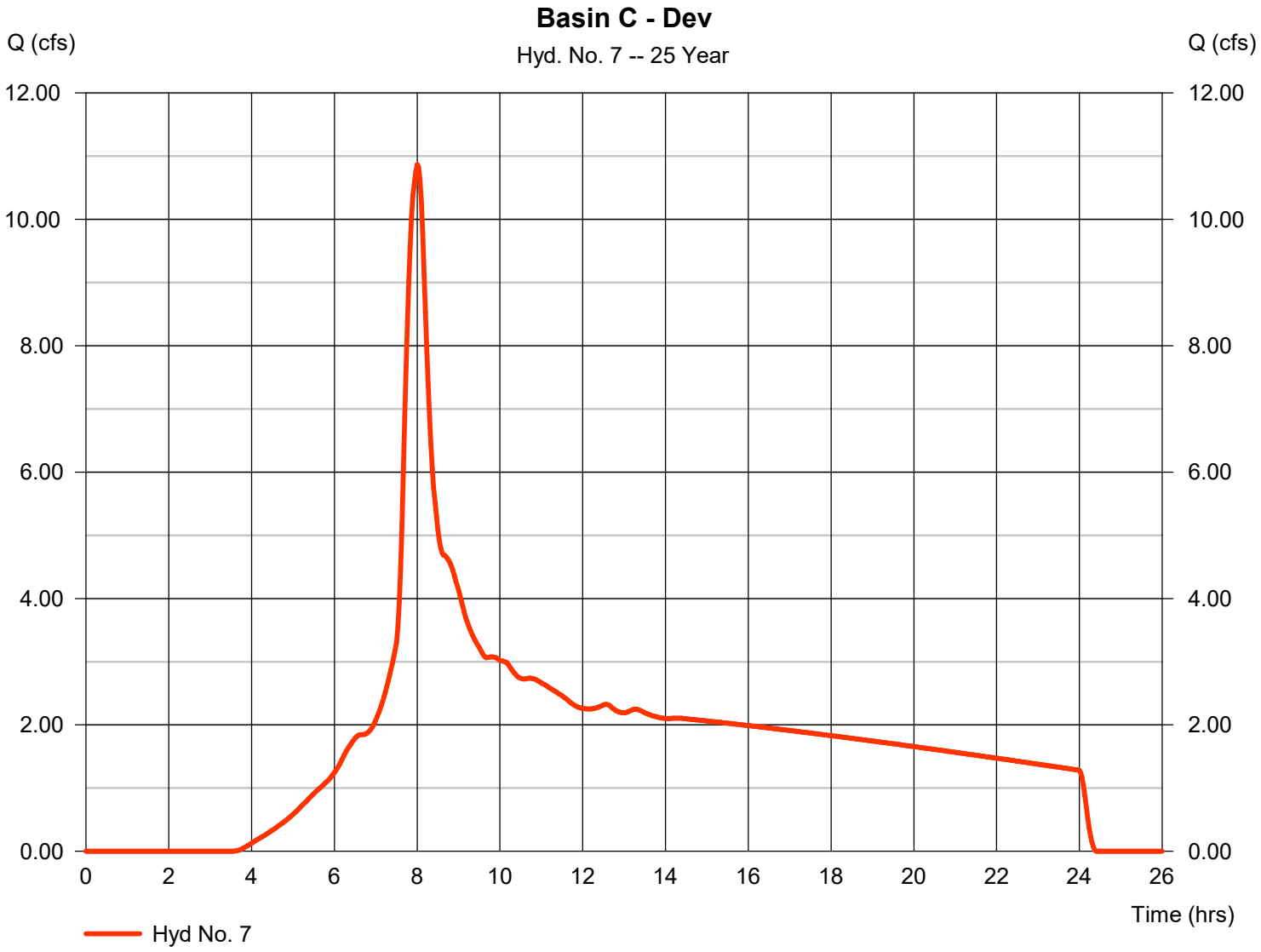
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 7

Basin C - Dev

Hydrograph type	=	SCS Runoff	Peak discharge	=	10.87 cfs
Storm frequency	=	25 yrs	Time to peak	=	8.00 hrs
Time interval	=	2 min	Hyd. volume	=	161,617 cuft
Drainage area	=	20.000 ac	Curve number	=	84*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	15.00 min
Total precip.	=	3.90 in	Distribution	=	Type IA
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(2.040 x 98) + (4.050 x 98) + (10.090 x 74) + (0.750 x 98) + (1.590 x 98) + (1.430 x 74)] / 20.000



Hydrograph Report

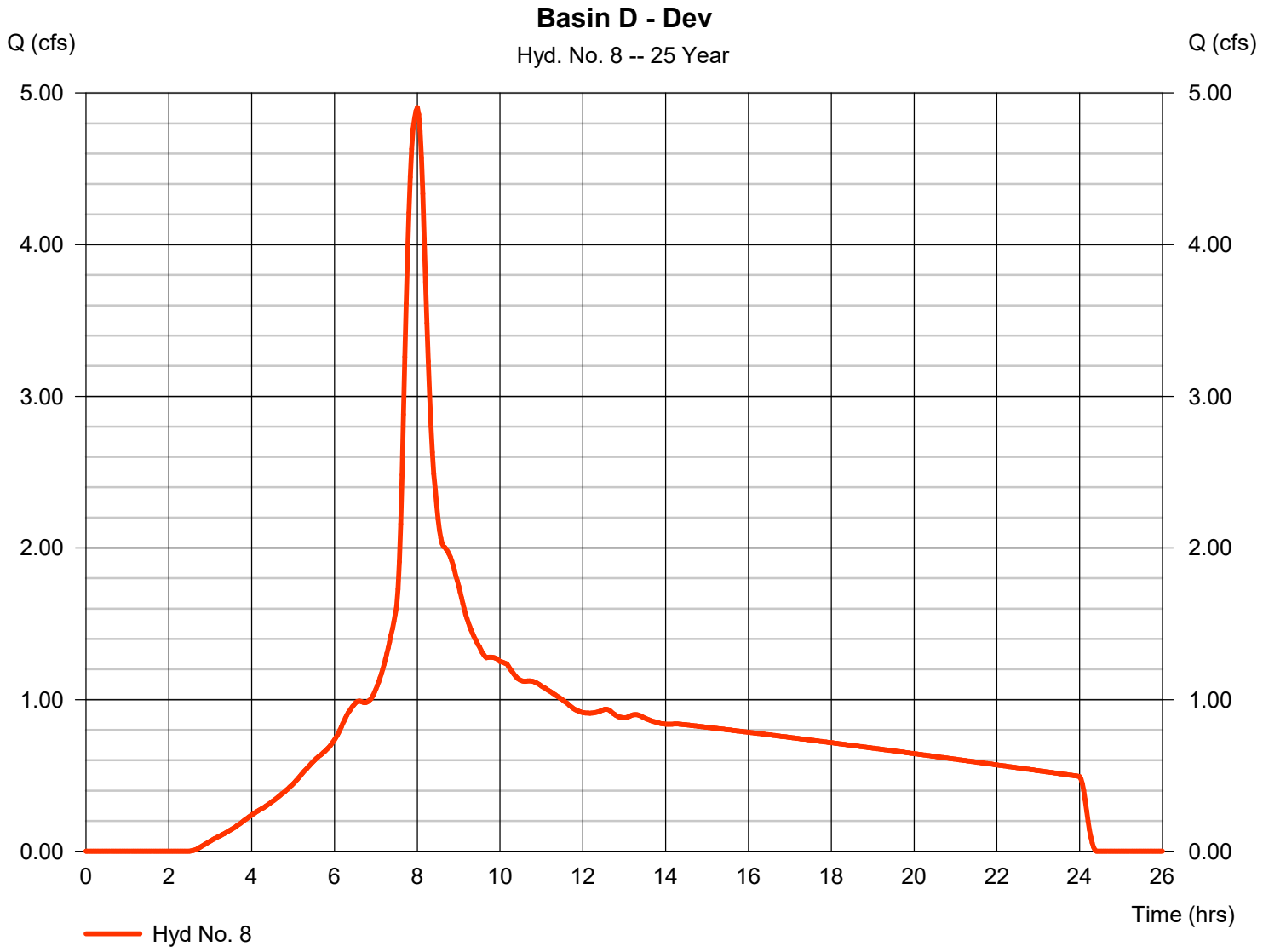
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 8

Basin D - Dev

Hydrograph type	= SCS Runoff	Peak discharge	= 4.903 cfs
Storm frequency	= 25 yrs	Time to peak	= 8.00 hrs
Time interval	= 2 min	Hyd. volume	= 69,647 cuft
Drainage area	= 7.210 ac	Curve number	= 89*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 15.00 min
Total precip.	= 3.90 in	Distribution	= Type IA
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.240 x 98) + (1.000 x 74) + (3.180 x 98) + (1.790 x 74)] / 7.210



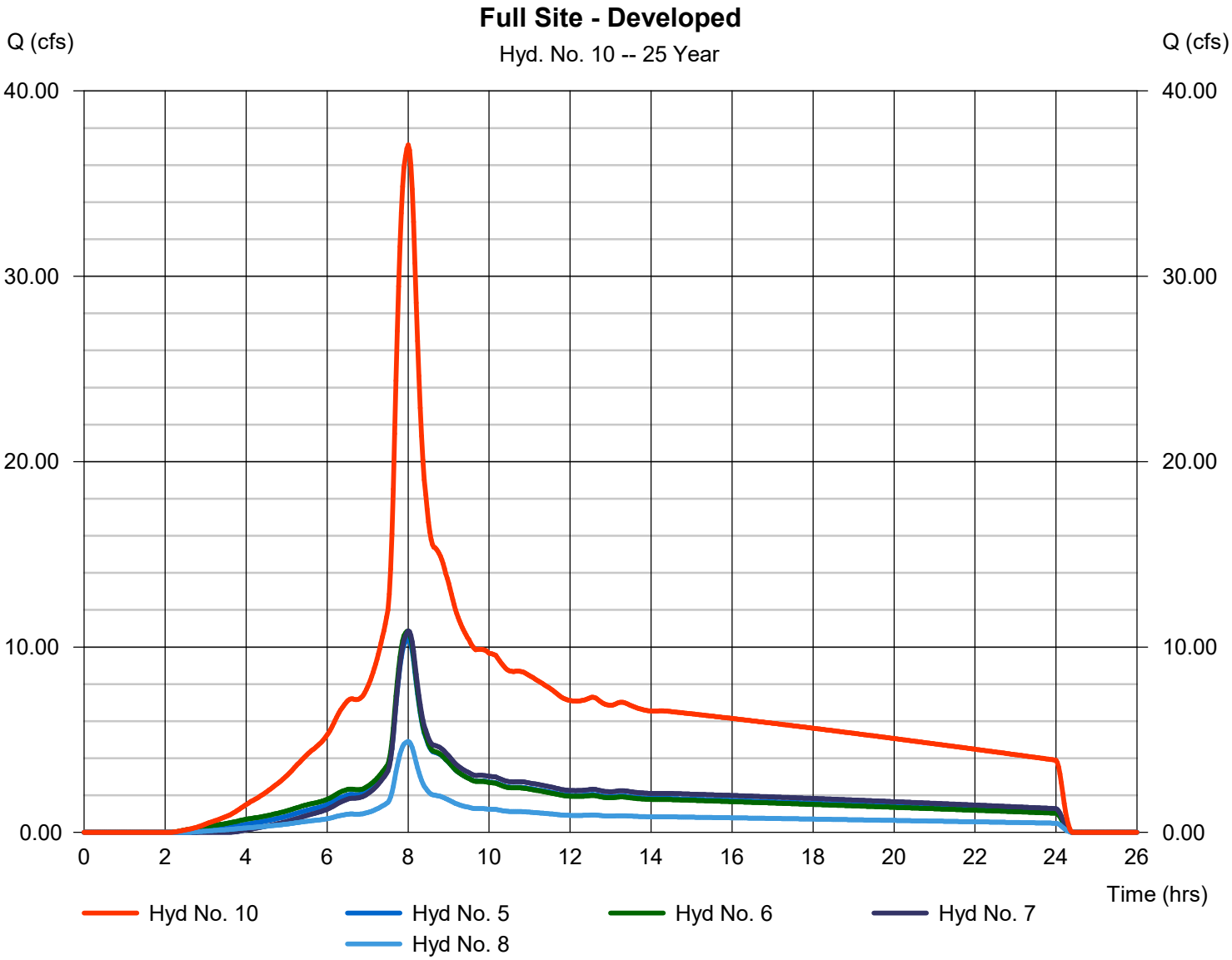
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 10

Full Site - Developed

Hydrograph type	= Combine	Peak discharge	= 37.09 cfs
Storm frequency	= 25 yrs	Time to peak	= 8.00 hrs
Time interval	= 2 min	Hyd. volume	= 533,568 cuft
Inflow hyds.	= 5, 6, 7, 8	Contrib. drain. area	= 58.010 ac



Hydrograph Report

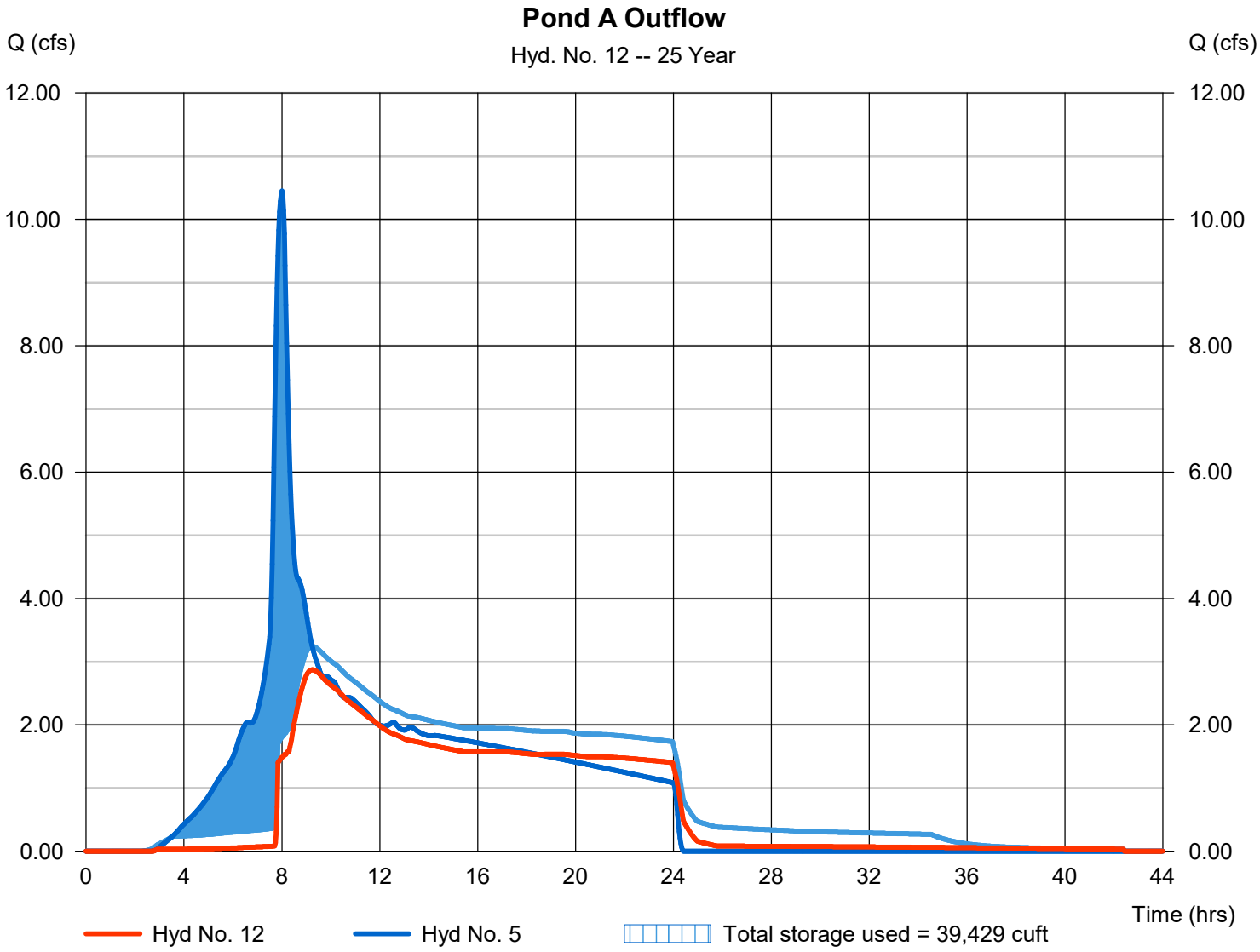
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 12

Pond A Outflow

Hydrograph type	=	Reservoir	Peak discharge	=	2.872 cfs
Storm frequency	=	25 yrs	Time to peak	=	9.27 hrs
Time interval	=	2 min	Hyd. volume	=	109,867 cuft
Inflow hyd. No.	=	5 - Basin A - Dev	Max. Elevation	=	142.24 ft
Reservoir name	=	Existing Pond A	Max. Storage	=	39,429 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

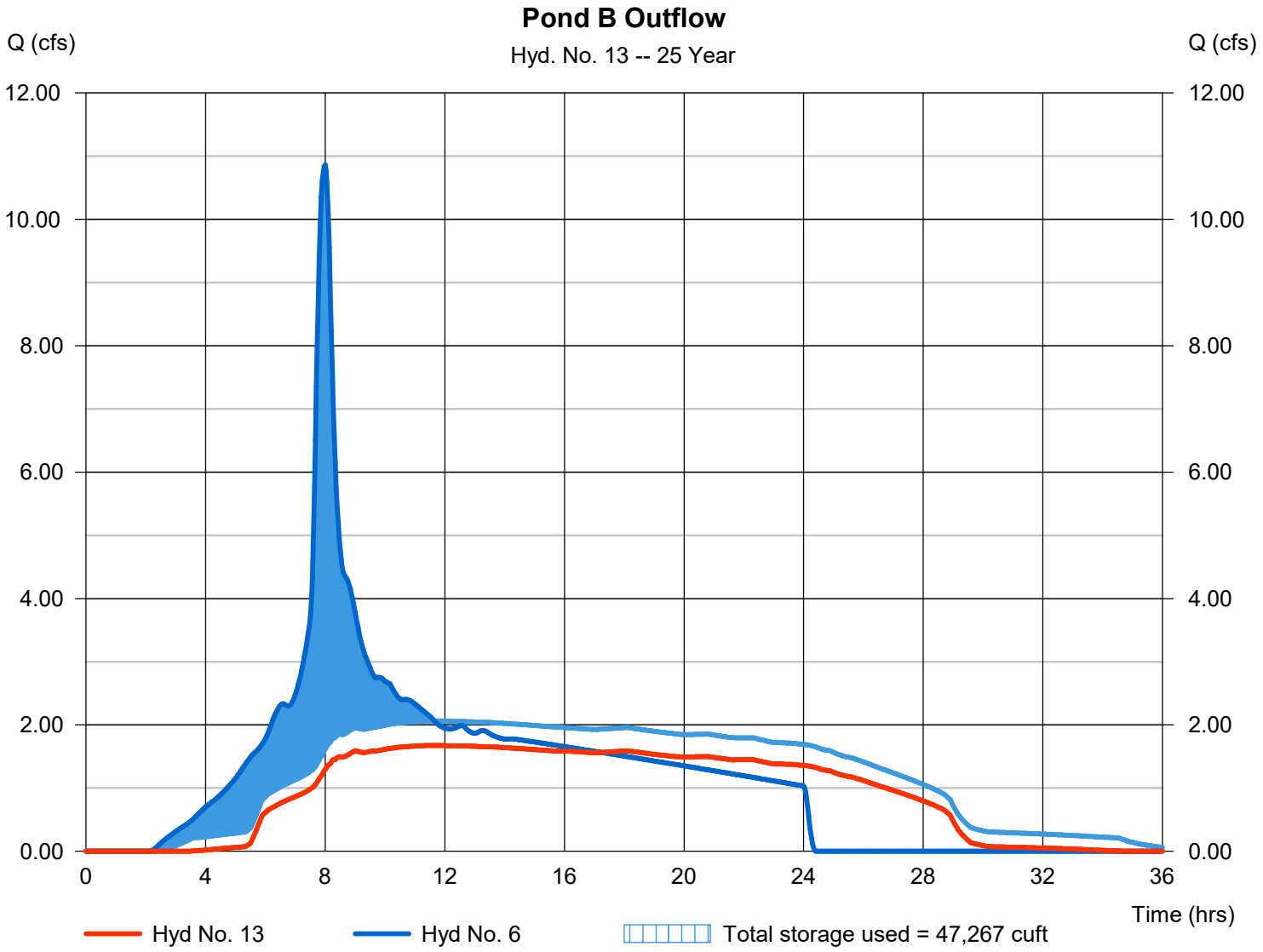
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 13

Pond B Outflow

Hydrograph type	=	Reservoir	Peak discharge	=	1.674 cfs
Storm frequency	=	25 yrs	Time to peak	=	11.67 hrs
Time interval	=	2 min	Hyd. volume	=	116,856 cuft
Inflow hyd. No.	=	6 - Basin B - Dev	Max. Elevation	=	139.86 ft
Reservoir name	=	Existing Pond B	Max. Storage	=	47,267 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

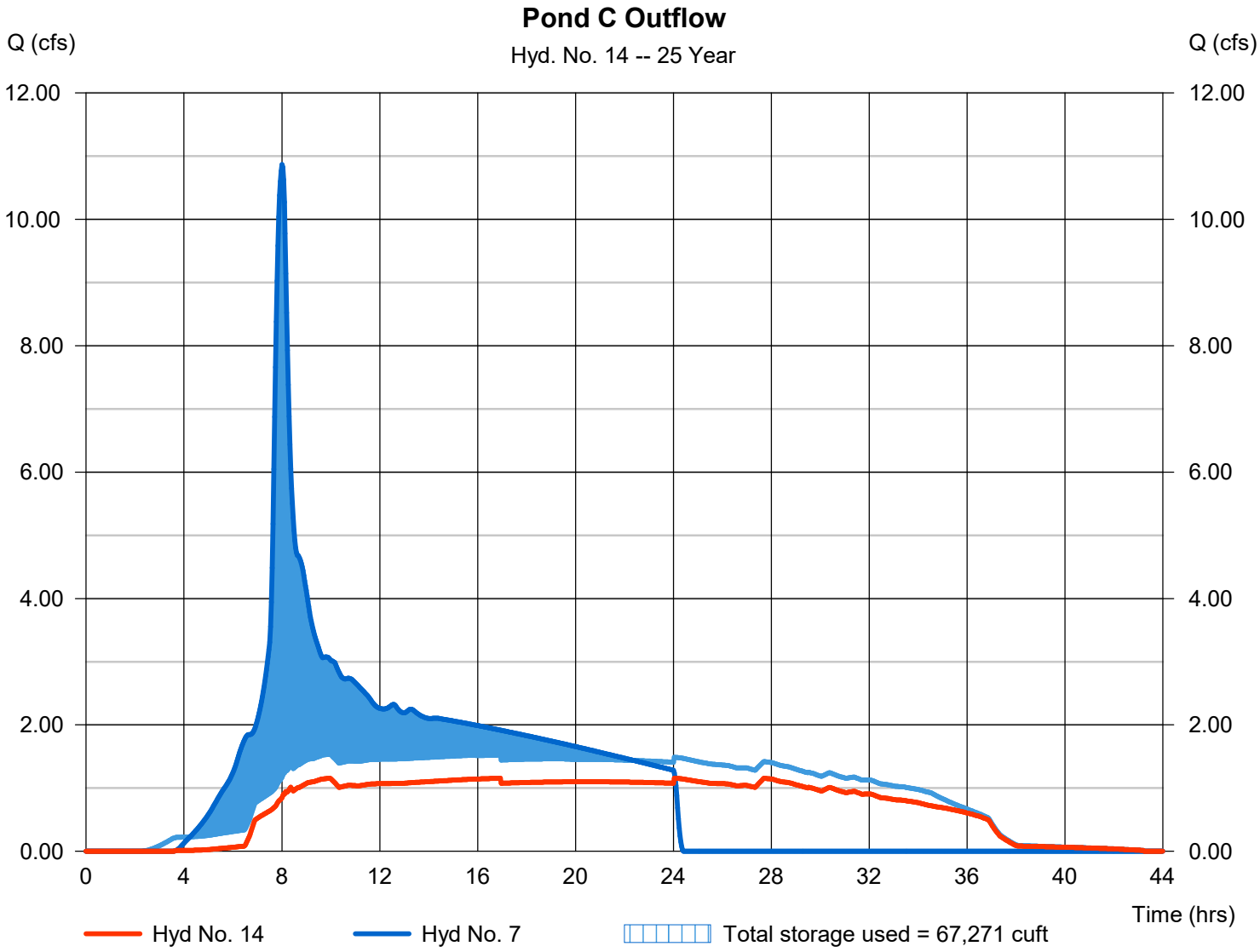
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 14

Pond C Outflow

Hydrograph type	=	Reservoir	Peak discharge	=	1.155 cfs
Storm frequency	=	25 yrs	Time to peak	=	27.70 hrs
Time interval	=	2 min	Hyd. volume	=	110,758 cuft
Inflow hyd. No.	=	7 - Basin C - Dev	Max. Elevation	=	139.42 ft
Reservoir name	=	Existing Pond C	Max. Storage	=	67,271 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



Hydrograph Report

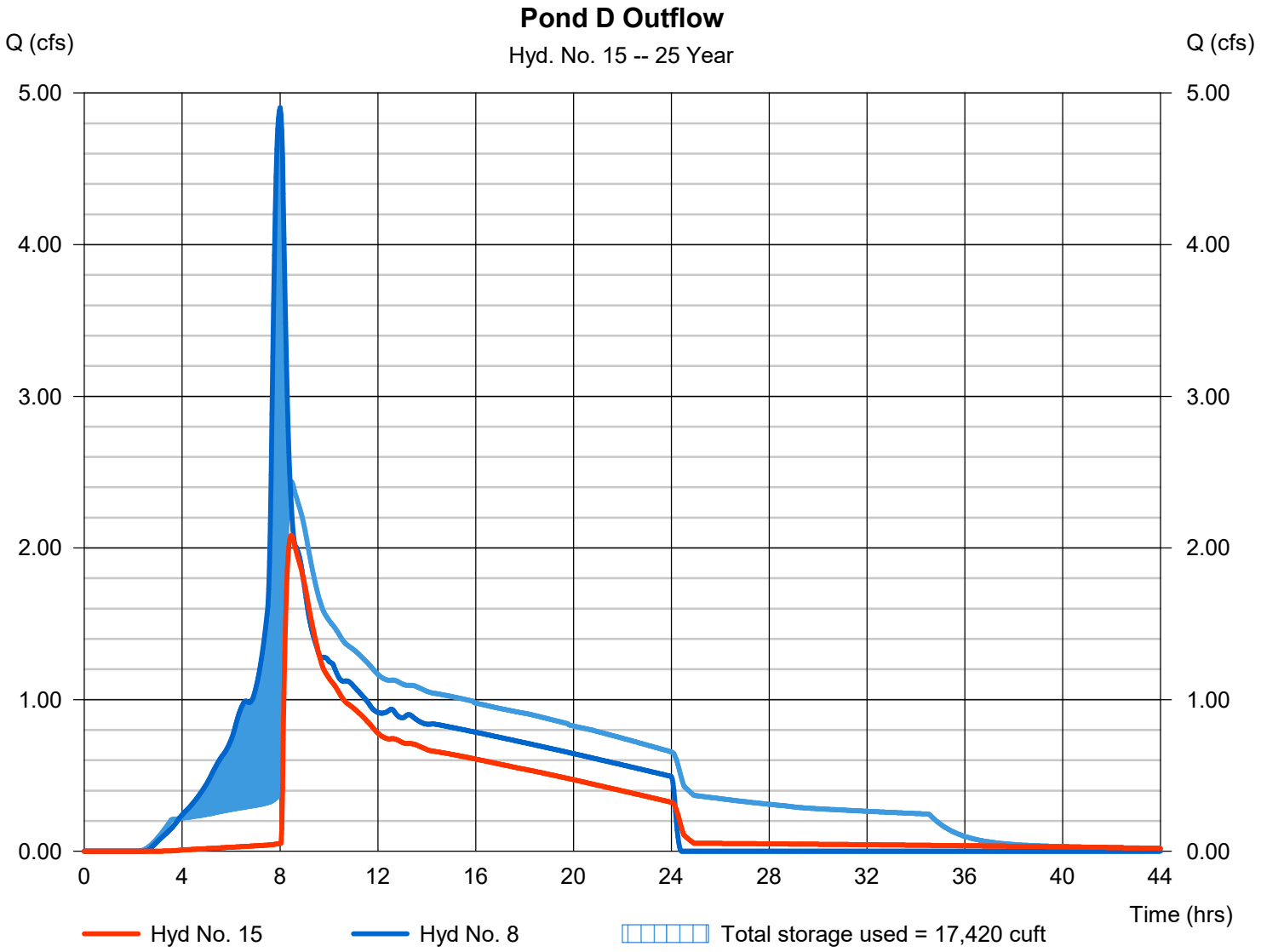
Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 15

Pond D Outflow

Hydrograph type	=	Reservoir	Peak discharge	=	2.083 cfs
Storm frequency	=	25 yrs	Time to peak	=	8.47 hrs
Time interval	=	2 min	Hyd. volume	=	44,957 cuft
Inflow hyd. No.	=	8 - Basin D - Dev	Max. Elevation	=	137.28 ft
Reservoir name	=	Modified Pond D	Max. Storage	=	17,420 cuft

Storage Indication method used. Exfiltration extracted from Outflow.



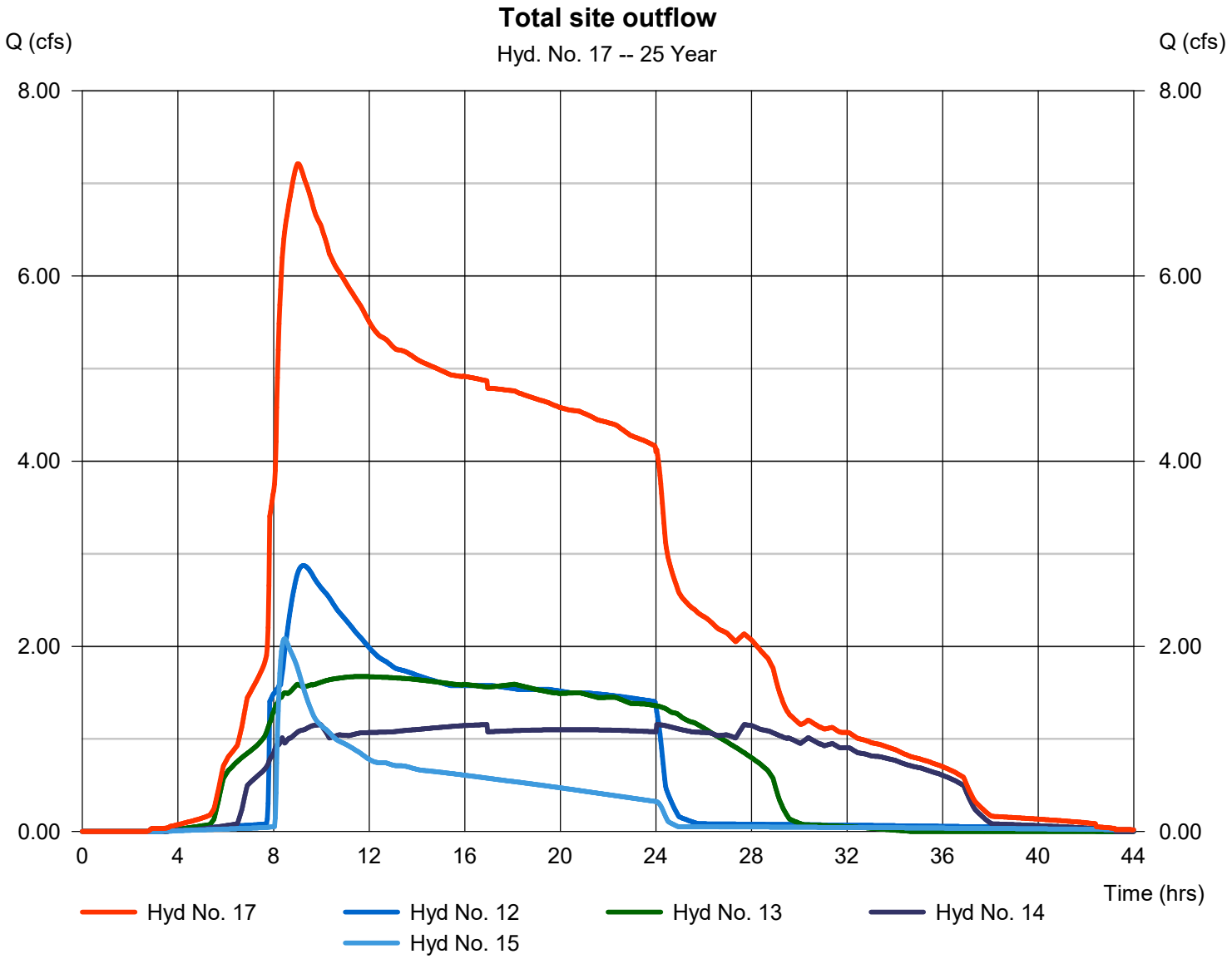
Hydrograph Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Hyd. No. 17

Total site outflow

Hydrograph type	=	Combine	Peak discharge	=	7.212 cfs
Storm frequency	=	25 yrs	Time to peak	=	9.03 hrs
Time interval	=	2 min	Hyd. volume	=	382,439 cuft
Inflow hyds.	=	12, 13, 14, 15	Contrib. drain. area	=	0.000 ac



Hydraflow Rainfall Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021 Tuesday, 07 / 23 / 2024

Return Period (Yrs)	Intensity-Duration-Frequency Equation Coefficients (FHA)			
	B	D	E	(N/A)
1	0.0000	0.0000	0.0000	--------
2	6.3201	2.1000	0.6144	--------
3	0.0000	0.0000	0.0000	--------
5	7.9532	1.6000	0.6153	--------
10	12.9652	3.7000	0.6766	--------
25	16.1446	4.6000	0.6900	--------
50	23.8777	6.0000	0.7457	--------
100	24.1258	5.6000	0.7114	--------

File name: CWS IDF curve.IDF

Intensity = B / (Tc + D)^E

Return Period (Yrs)	Intensity Values (in/hr)											
	5 min	10	15	20	25	30	35	40	45	50	55	60
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	1.90	1.37	1.10	0.94	0.83	0.75	0.69	0.63	0.59	0.56	0.53	0.50
3	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
5	2.49	1.76	1.41	1.20	1.06	0.95	0.87	0.80	0.75	0.70	0.66	0.63
10	3.00	2.21	1.79	1.52	1.34	1.20	1.09	1.01	0.94	0.88	0.82	0.78
25	3.39	2.54	2.07	1.77	1.56	1.40	1.28	1.18	1.09	1.02	0.96	0.91
50	3.99	3.02	2.47	2.10	1.84	1.65	1.50	1.37	1.27	1.19	1.11	1.05
100	4.50	3.42	2.80	2.40	2.12	1.90	1.73	1.59	1.48	1.38	1.30	1.23

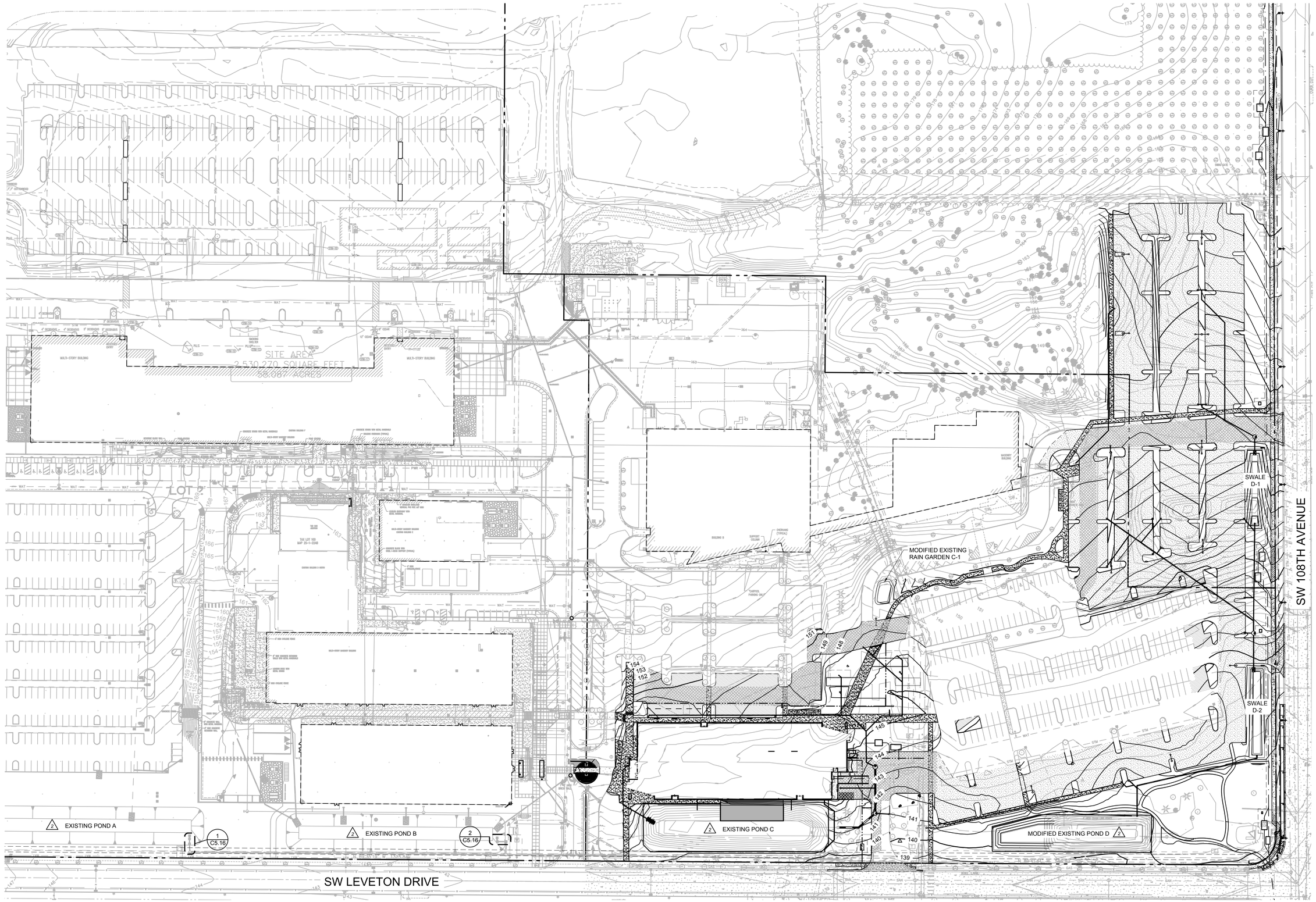
Tc = time in minutes. Values may exceed 60.

Reports & Calc Templates\Calc Templates\Stormwater\Hydraflow Stormwater Precipitation Data\CWS precipitation.pcp

Storm Distribution	Rainfall Precipitation Table (in)							
	1-yr	2-yr	3-yr	5-yr	10-yr	25-yr	50-yr	100-yr
SCS 24-hour	0.00	2.50	0.00	3.10	3.45	3.90	4.20	4.50
SCS 6-Hr	0.00	1.05	0.00	1.25	1.55	1.70	1.80	1.90
Huff-1st	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-2nd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-3rd	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-4th	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Huff-Indy	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Custom	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00

APPENDIX D

PROPOSED SITE PLANS



1 C1.30 OVERALL UTILITY PLAN
1" = 60'-0"

60 0 30 60 120 240 1:1

(IN FEET)
1 inch = **60** ft.

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REVISION SCHEDULE

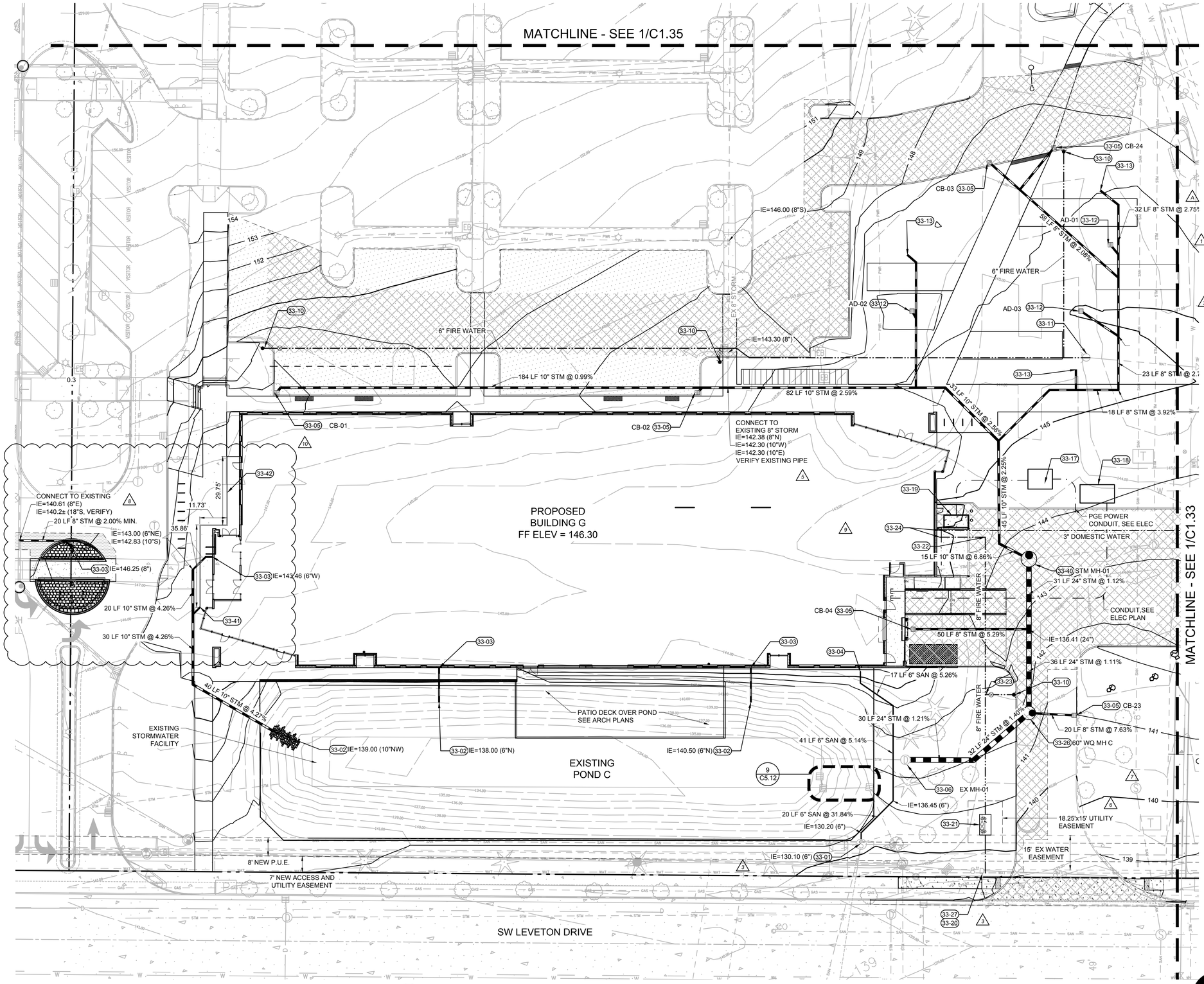
Delta	Issued As	Issue Date
2	PLAN CHECK	08/30/2023

SHEET TITLE:
OVERALL UTILITY PLAN

SHEET:
C1.30

JOB NO. **2220087.00**

CONSTRUCTION SET 2/20/24



KEYNOTES

33-01	CONNECT SEWER TO EXISTING MANHOLE
33-02	6" ROOF DRAIN OUTFALL WITH RIPRAP, SEE DETAIL 14/C5.11
33-03	ROOF DRAIN CONNECTION TO PLUMBING
33-04	CONNECT SEWER LATERAL TO PLUMBING
33-05	CATCH BASIN, SEE DETAIL 13/C5.11
33-06	CONNECT STORM TO EXISTING MANHOLE
33-10	FIRE HYDRANT (PRIVATE), SEE DETAIL 6/C5.12
33-11	CONNECT TO EXISTING FIRE LINE
33-12	AREA DRAIN, SEE DETAIL 15/C5.11
33-13	CONNECT TO RELOCATED SHELTER DOWNSPOUT
33-14	MODIFIED STORMWATER BASIN, SEE CWS DETAILS 2 AND 3/C5.14, REFER TO LANDSCAPE PLAN FOR REPLANTING
33-17	ELECTRICAL TRANSFORMER, SEE ELEC PLANS
33-18	GENERATOR, SEE ELEC PLANS
33-19	ELECTRICAL GEAR ENCLOSURE, SEE ELEC PLANS
33-20	8" HOT TAP CONNECT TO 18" PUBLIC WATER MAIN (TO BE PERFORMED BY COT APPROVED CONTRACTOR)
33-21	8" DOUBLE CHECK VALVE ASSEMBLY (DCVA) IN VAULT, PER DETAIL 5/C5.13
33-22	8" 90-DEGREE BEND, MECHANICAL JOINT RESTRAINT PER DETAIL 5/C5.12
33-23	8"X6" HYDRANT TEE, MECHANICAL JOINT RESTRAINT PER DETAIL 5/C5.12
33-24	CONNECT WATER TO PLUMBING
33-26	60" WATER QUALITY MANHOLE WITH SNOUT, SEE CWS DETAILS 6 AND 7/C5.14
~~33-40~~	~~STORM MANHOLE PER DETAIL 10/C5.13~~
33-41	TRENCH DRAIN CATCH BASIN WITH 6" PIPE CONNECTION TO STORM DRAIN. IE OUT=144.7+/-
33-42	4" TRENCH DRAIN, ACO KS100 WITH SLOPING CHANNEL AND 447D STAINLESS GRATE, CLASS B, HEEL SAFE AND ADA COMPLIANT

STORM DRAINAGE STRUCTURES	
STRUCTURE	DETAILS
60" WQ MH C	RIM = 141.66 IE IN (24"N) = 136.00 IE IN (8"E) = 136.67 IE OUT (24"SW) = 136.00
AD-01	RIM = 145.06 IE OUT (8"SE) = 142.80
AD-02	RIM = 145.15 IE OUT (8"SE) = 142.26
AD-03	RIM = 144.90 IE OUT (8"SE) = 142.51
CB-01	RIM = 147.80 IE OUT (10"NE) = 144.45
CB-02	RIM = 147.21 IE OUT (8"NE) = 143.69
CB-03	RIM = 146.38 IE OUT (8"SE) = 143.72
CB-04	RIM = 142.36 IE OUT (8"E) = 139.74
CB-23	RIM = 140.70 IE OUT (8"W) = 138.17
CB-24	RIM = 146.54 IE OUT (8"SW) = 143.84
EX MH-01	RIM = 142.53 IE IN (24"E) = 135.20 IE OUT (18"W) = 135.20
STM MH-01	RIM = 143.62 IE IN (10"NW) = 137.00 IE IN (21"E) = 137.00 IE OUT (24"S) = 136.75

1 C1.31 BUILDING G UTILITY PLAN
1" = 20'-0"

20 0 10 20 40 80 1:1
(IN FEET)
1 inch = 20 ft.

KEY MAP
SCALE: NTS

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REVISION SCHEDULE		
Delta	Issued As	Issue Date
A	PR #01	1/17/2023
1	PLANCHECK	06/21/2023
2	PLAN CHECK	08/30/2023
3	PLAN CHECK	10/18/2023
4	PLAN CHECK	12/15/2023
5	RFI 002	01/08/2024
6	PLAN CHECK	02/15/2024
7	RFI 087	04/08/2024
8	RFI 076	04/15/2024
9	RFI 087	04/26/2024
10	PR 02	05/24/2024

C1.36
C1.37

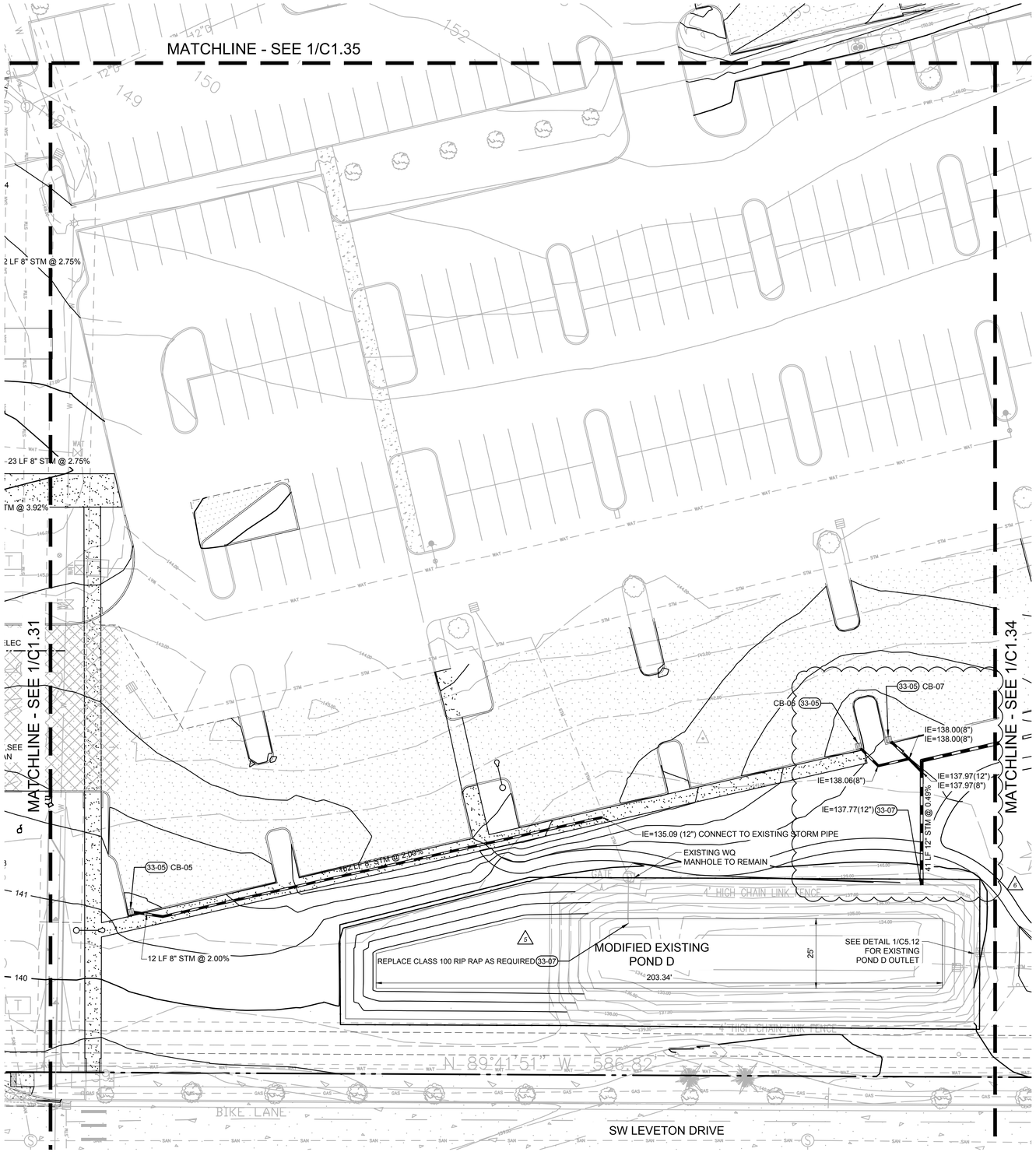
C1.31
C1.33
C1.34
C1.35

SHEET TITLE:
BUILDING G UTILITY PLAN

SHEET:
C1.31

JOB NO. **2220087.00**

CONSTRUCTION SET 2/20/24



KEYNOTES

33-05	CATCH BASIN, SEE DETAIL 13/C5.11
33-07	PIPE OUTFALL WITH RIPRAP, SEE DETAIL 8/C5.14
33-26	60" WATER QUALITY MANHOLE WITH SNOUT, SEE CWS DETAILS 6 AND 7/C5.14

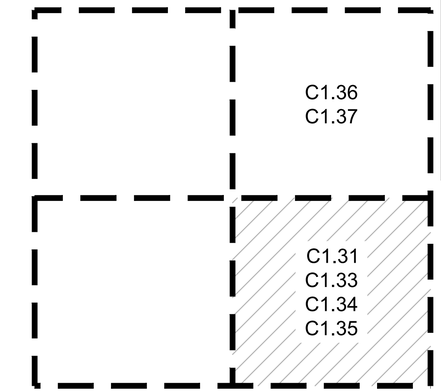
△3 △4 △5 △6

STORM DRAINAGE STRUCTURES	
STRUCTURE	DETAILS
CB-05	RIM = 140.79 IE IN (8"E) = 138.33
CB-06	RIM = 140.60 IE OUT (8"SE) = 138.11
CB-07	RIM = 140.50 IE OUT (8"SE) = 138.05
EX MH 02	RIM = 141.38 IE IN (12"W) = 133.13 IE OUT (12"E) = 133.13
RISER-04	RIM = 142.41 IE OUT (12"S) = 139.61
WQ MH D-2	RIM = 146.63 IE IN (8"W) = 142.77 IE IN (12"N) = 142.77 IE OUT (12"S) = 142.77

1 C1.33 EAST PARKING EXPANSION UTILITY PLAN
1" = 20'-0"
1:1
20 0 10 20 40 80
(IN FEET)
1 inch = 20 ft.

NOTE: ELEVATIONS SHOWN ARE BASED ON NVGD29 VERTICAL DATUM UPDATE TO NAVD88 FOR AS-BUILT DRAWINGS PER CITY REQUIREMENT.

KEY MAP
SCALE: NTS



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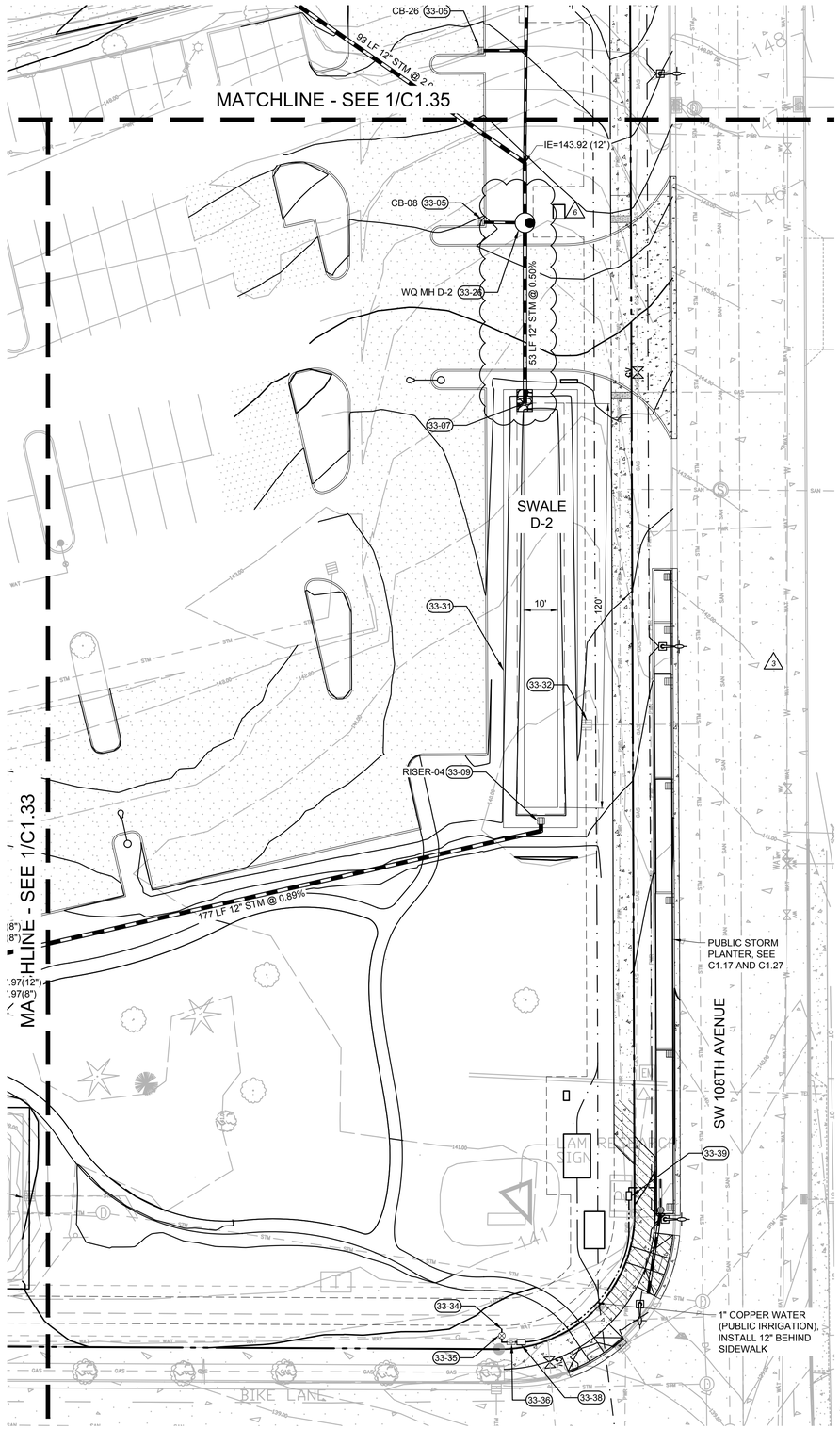
REVISION SCHEDULE		
Delta	Issued As	Issue Date
3	PLAN CHECK	10/18/2023
4	PLAN CHECK	12/15/2023
5	PLAN CHECK	01/17/2024
6	RFI 052	02/26/2024

SHEET TITLE:
EAST PARKING EXPANSION UTILITY PLAN

SHEET:
C1.33

JOB NO. **2220087.00**

CONSTRUCTION SET 2/20/24



1 C1.34 EAST PARKING EXPANSION UTILITY PLAN

1" = 20'-0" 20 0 10 20 40 80 1:1

(IN FEET)
1 inch = **20** ft.

NOTE: ELEVATIONS SHOWN ARE BASED ON NVGD29 VERTICAL DATUM UPDATE TO NAVD88 FOR AS-BUILT DRAWINGS PER CITY REQUIREMENT.

KEYNOTES

	33-05	CATCH BASIN, SEE DETAIL 13/C5.11
	33-07	PIPE OUTFALL WITH RIPRAP, SEE DETAIL 8/C5.14
	33-08	STORMWATER BASIN, SEE CWS DETAIL 2/C5.14
	33-09	OVERFLOW OUTLET, SEE CWS DETAIL 8/C5.15
	33-14	MODIFIED STORMWATER BASIN, SEE CWS DETAILS 2 AND 3/C5.14, REFER TO LANDSCAPE PLAN FOR REPLANTING
	33-26	60" WATER QUALITY MANHOLE WITH SNOUT, SEE CWS DETAILS 6 AND 7/C5.14
3	33-31	WATER QUALITY SWALE PER DETAIL 4/C5.14
	33-34	2" HOT TAP TO 18" CITY MAIN WITH HIGH PRESSURE SADDLE (BY CONTRACTOR)
	33-35	2" GATE VALVE WITH RISER AND CAST IRON VALVE BOX TOP
	33-36	2" PRV AND 1" METER IN 17"X30" VAULT, SEE 9/C5.13
	33-38	1" RPBA BACKFLOW INSTALLED IN INSULATED (NOT HEATED) ABOVE-GROUND ENCLOSURE, SEE CITY DETAIL 607/C5.13
	33-39	IRRIGATION CONTROLLER IN LOCKING VALVE BOX WITH DRAIN ROCK FLOOR. RAINBIRD TBOS-BT1, BATTERY-OPERATED, 4-STATION CONTROLLER

4

STORM DRAINAGE STRUCTURES	
STRUCTURE	DETAILS
CB-05	RIM = 140.79 IE IN (8"E) = 138.33
CB-06	RIM = 140.60 IE OUT (8"SE) = 138.11
CB-07	RIM = 140.50 IE OUT (8"SE) = 138.05
EX MH 02	RIM = 141.38 IE IN (12"W) = 133.13 IE OUT (12"E) = 133.13
RISER-04	RIM = 142.41 IE OUT (12"S) = 139.61
WQ MH D-2	RIM = 146.63 IE IN (8"W) = 142.77 IE IN (12"N) = 142.77 IE OUT (12"S) = 142.77

5
6

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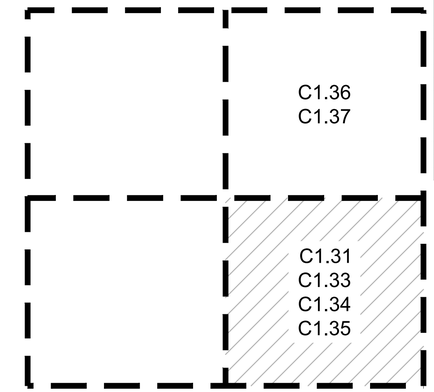
REVISION SCHEDULE		
Delta	Issued As	Issue Date
2	PLAN CHECK	08/30/2023
3	PLAN CHECK	10/18/2023
4	PLAN CHECK	01/12/2024
5	RFI 028	02/05/2024
6	RFI 038	02/22/2024



SHEET TITLE:
EAST PARKING EXPANSION UTILITY PLAN

SHEET:
C1.34

KEY MAP
SCALE: NTS

2

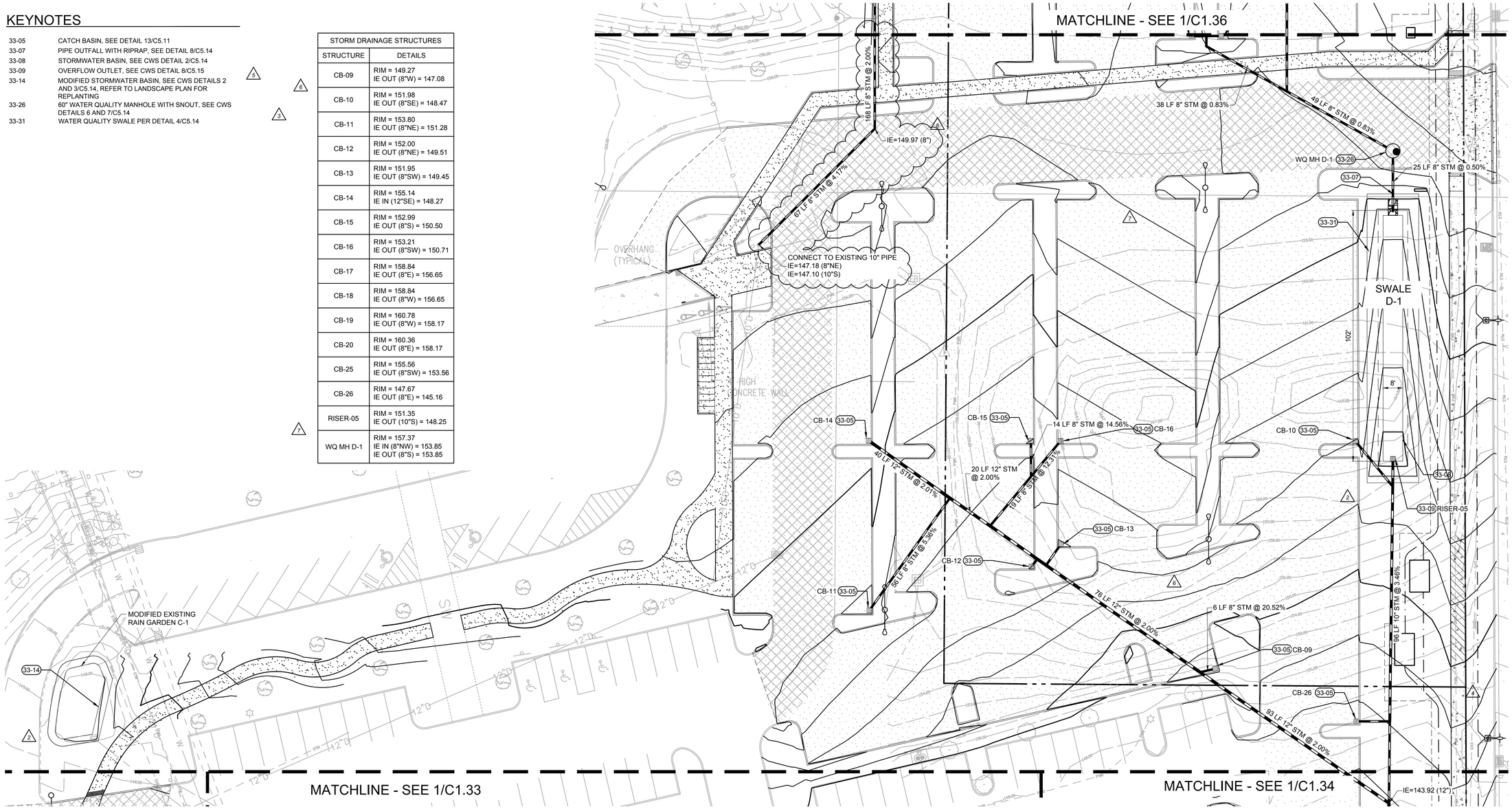
JOB NO. **2220087.00**

CONSTRUCTION SET 2/20/24

KEYNOTES

33-05	CATCH BASIN, SEE DETAIL 13/C5.11
33-07	PIPE OUTFALL WITH RIPRAP, SEE DETAIL 8/C5.14
33-08	STORMWATER BASIN, SEE CWS DETAIL 2/C5.14
33-09	OVERFLOW OUTLET, SEE CWS DETAIL 8/C5.15
33-14	MODIFIED STORMWATER BASIN, SEE CWS DETAILS 2 AND 3/C5.14, REFER TO LANDSCAPE PLAN FOR REPLANTING
33-26	60" WATER QUALITY MANHOLE WITH SNOUT, SEE CWS DETAILS 6 AND 7/C5.14
33-31	WATER QUALITY SWALE PER DETAIL 4/C5.14

STORM DRAINAGE STRUCTURES	
STRUCTURE	DETAILS
CB-09	RIM = 149.27 IE OUT (8"W) = 147.08
CB-10	RIM = 151.98 IE OUT (8"SE) = 148.47
CB-11	RIM = 153.80 IE OUT (8"NE) = 151.28
CB-12	RIM = 152.00 IE OUT (8"NE) = 149.51
CB-13	RIM = 151.95 IE OUT (8"SW) = 149.45
CB-14	RIM = 155.14 IE IN (12"SE) = 148.27
CB-15	RIM = 152.99 IE OUT (8"S) = 150.50
CB-16	RIM = 153.21 IE OUT (8"SW) = 150.71
CB-17	RIM = 158.84 IE OUT (8"E) = 156.65
CB-18	RIM = 158.84 IE OUT (8"W) = 156.65
CB-19	RIM = 160.78 IE OUT (8"W) = 158.17
CB-20	RIM = 160.36 IE OUT (8"E) = 158.17
CB-25	RIM = 155.56 IE OUT (8"SW) = 153.56
CB-26	RIM = 147.67 IE OUT (8"E) = 145.16
RISER-05	RIM = 151.35 IE OUT (10"S) = 148.25
WQ MH D-1	RIM = 157.37 IE IN (8"NW) = 153.85 IE OUT (8"S) = 153.85



1 C1.35 EAST PARKING EXPANSION UTILITY PLAN

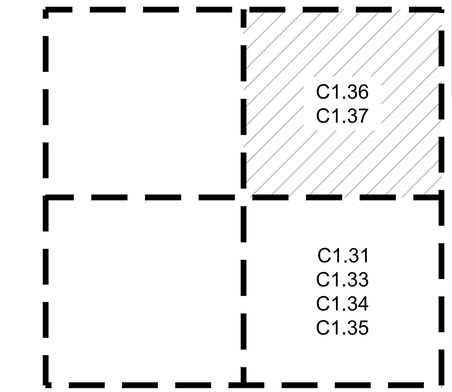
1" = 20'-0"

1:1

20 0 10 20 40 80

(IN FEET)
1 inch = **20** ft.

NOTE: ELEVATIONS SHOWN ARE BASED ON NVGD29 VERTICAL DATUM UPDATE TO NAVD88 FOR AS-BUILT DRAWINGS PER CITY REQUIREMENT.



KEY MAP
SCALE: NTS

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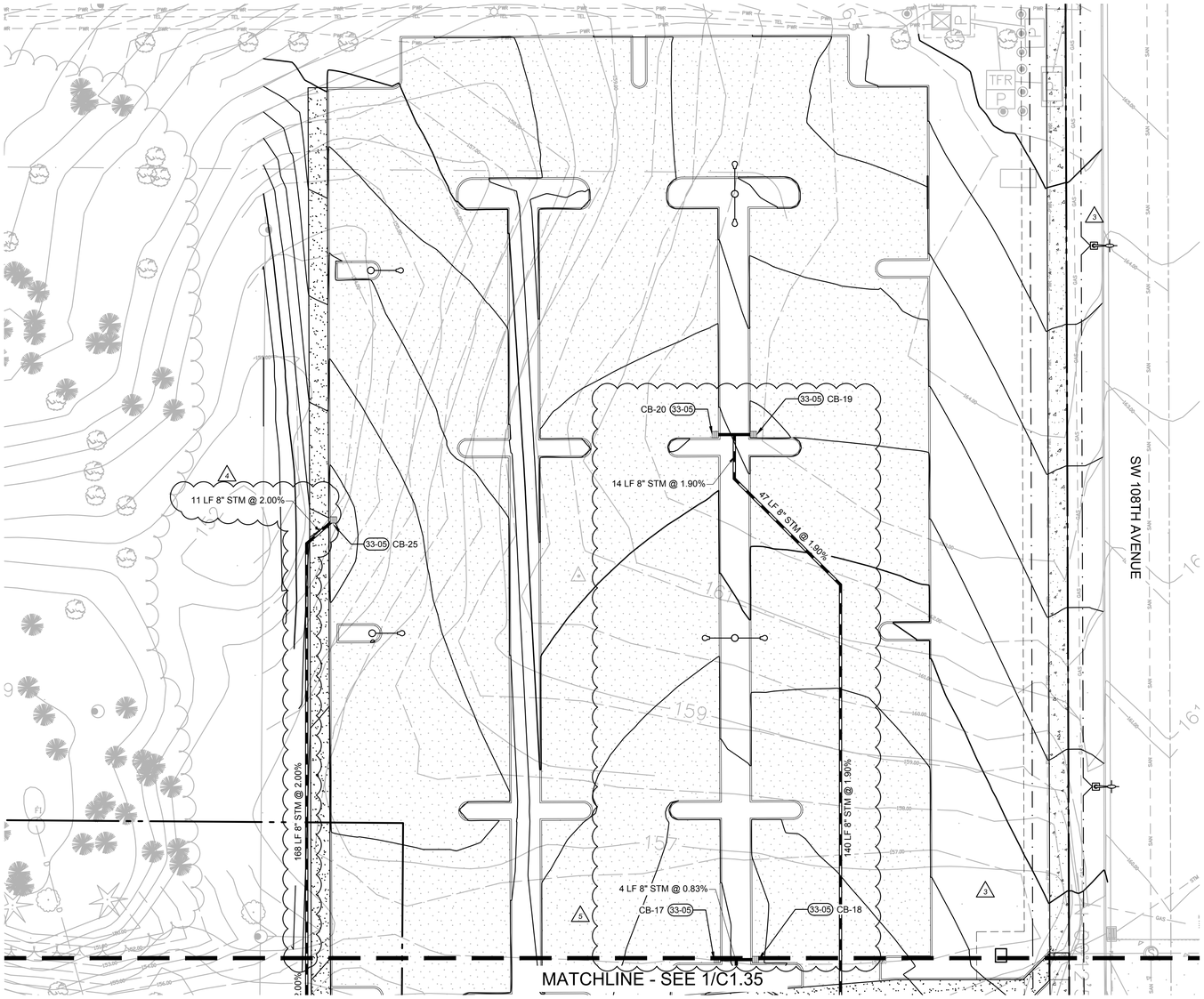
REVISION SCHEDULE		
Delta	Issued As	Issue Date
2	PLAN CHECK	08/30/2023
3	PLAN CHECK	10/18/2023
4	PLAN CHECK	02/15/2024
5	RFI 123	06/21/2024
6	RFI 124	06/21/2024
7	RFI 127	06/21/2024
8	RFI 120	06/28/2024

SHEET TITLE:
EAST PARKING EXPANSION UTILITY PLAN

SHEET:
C1.35

JOB NO. **2220087.00**

CONSTRUCTION SET 2/20/24



1 C1.36 EAST PARKING EXPANSION UTILITY PLAN
1" = 20'-0"
1:1

20 0 10 20 40 80
(IN FEET)
1 inch = **20** ft.

NOTE: ELEVATIONS SHOWN ARE BASED ON NVGD29 VERTICAL DATUM UPDATE TO NAVD88 FOR AS-BUILT DRAWINGS PER CITY REQUIREMENT.

KEYNOTES

33-05 CATCH BASIN, SEE DETAIL 13/C5.11

STORM DRAINAGE STRUCTURES	
STRUCTURE	DETAILS
CB-17	RIM = 158.84 IE OUT (8"E) = 156.65
CB-18	RIM = 158.84 IE OUT (8"W) = 156.65
CB-19	RIM = 160.78 IE OUT (8"W) = 158.17
CB-20	RIM = 160.36 IE OUT (8"E) = 158.17
CB-25	RIM = 155.56 IE OUT (8"SW) = 153.56

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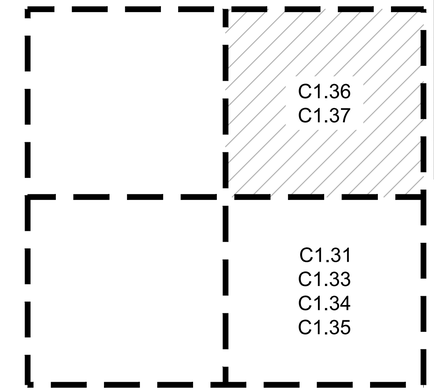
REVISION SCHEDULE		
Delta	Issued As	Issue Date
2	PLAN CHECK	08/30/2023
3	PLAN CHECK	02/15/2024
4	RFI 120	06/28/2024
5	RFI 127	06/21/2024



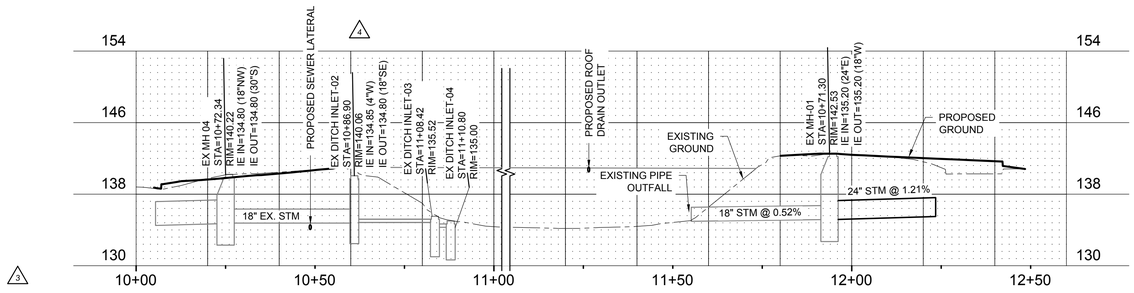
SHEET TITLE:
EAST PARKING EXPANSION UTILITY PLAN

SHEET:
C1.36

KEY MAP
SCALE: NTS

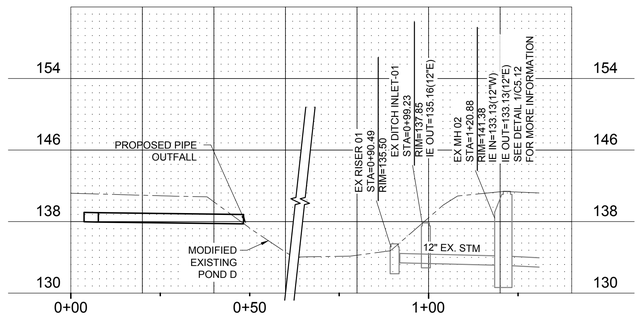
JOB NO. **2220087.00**

CONSTRUCTION SET 2/20/24



1 C1.37 EXISTING POND PROFILES - POND C
1" = 20'-0"

1:1



2 C1.37 EXISTING POND PROFILES - MODIFIED POND D
1" = 20'-0"

1:1

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REVISION SCHEDULE

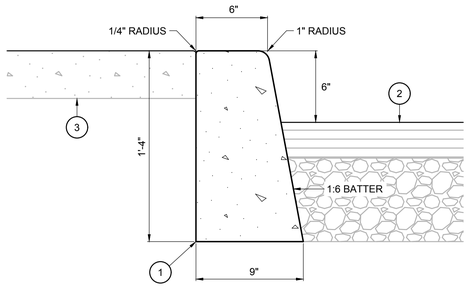
Delta	Issued As	Issue Date
2	PLAN CHECK	08/30/2023
3	PLAN CHECK	10/18/2023
4	PLAN CHECK	01/17/2024

SHEET TITLE:
EXISTING POND PROFILES

SHEET:
C1.37
2

JOB NO. **2220087.00**

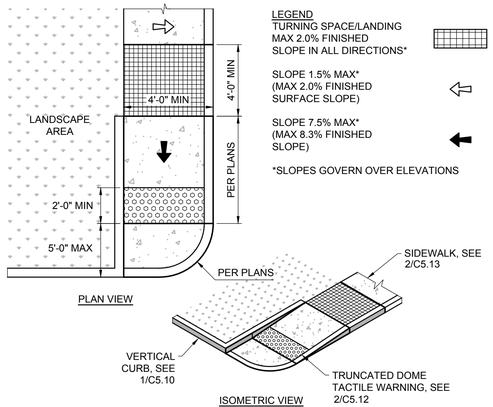
CONSTRUCTION SET 2/20/24



KEYNOTES:
1. CONCRETE FOR CURBING PER PROJECT SPECIFICATIONS
2. PAVEMENT SECTION PER CIVIL PLANS
3. SEE PLANS FOR IMPROVEMENTS AT BACK OF CURB. WHERE SIDEWALK OCCURS, THE SIDEWALK AND TOP OF CURB SHALL BE FLUSH. WHERE ABUTTING A PLANTER AREA, THE FINAL GRADE SHALL BE 1" MINIMUM BELOW TOP OF CURB, OR AS DIRECTED BY THE LANDSCAPE ARCHITECT

1 C5.10 VERTICAL CURB

NTS



LEGEND
TURNING SPACE/LANDING MAX 2.0% FINISHED SLOPE IN ALL DIRECTIONS*

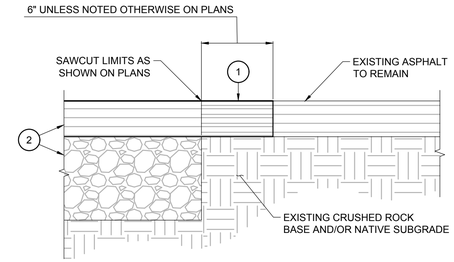
SLOPE 1.5%* (MAX 2.0% FINISHED SURFACE SLOPE)

SLOPE 7.5%* (MAX 8.3% FINISHED SLOPE)

*SLOPES GOVERN OVER ELEVATIONS

2 C5.10 CORNER CURB RAMP

NTS

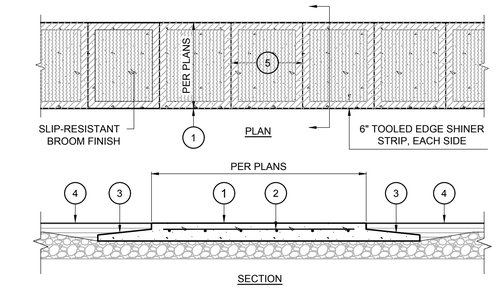


KEYNOTES:
1. ADDITIONALWIDTH OF EXISTING ASPHALT PAVEMENT TO BE SAWCUT AND REMOVED BEYOND THE SAWCUT LIMITS SHOWN ON PLANS
2. PROPOSED ASPHALT PAVEMENT SECTION PER 5/C5.10

NOTES:
A. DO NOT DISTURB THE EXISTING CRUSHED ROCK BASE OR NATIVE SUBGRADE UNDER THE ADDITIONAL WIDTH OF SAWCUT OR EXISTING ASPHALT PAVEMENT
B. PAVEMENT REPLACEMENT WITHIN THE ADDITIONAL SAWCUT LIMITS SHALL MATCH EXISTING OR PROPOSED SECTION, WHICHEVER IS GREATER

3 C5.10 ASPHALT PAVEMENT SAWCUT

NTS



KEYNOTES:
1. CONCRETE CROSSWALK: CONCRETE THICKNESS AND AGGREGATE BASE SECTION TO MATCH HEAVY DUTY VEHICULAR PAVEMENT SECTION PER PLANS
2. #4 REBAR AT 1'-0" ON CENTER, EACH WAY
3. ASPHALT TO CONCRETE TRANSITION PER
4. ADJACENT PAVEMENT SECTION PER PLANS. APPLY SEALANT AT JOINT
5. CONTROL AND EXPANSION JOINTS PER SIDEWALK DETAIL

NOTES:
A. CONCRETE AND REBAR PER PROJECT SPECIFICATIONS

4 C5.10 CONCRETE CROSSWALK

NTS



KEYNOTES:
1. ASPHALT PAVEMENT SECTION PER PROJECT SPECIFICATIONS
2. CRUSHED ROCK BASE SECTION PER PROJECT SPECIFICATIONS
3. COMPACTED SUBGRADE PER GEOTECHNICAL RECOMMENDATIONS

NOTES:
A. SEE PLANS FOR LOCATIONS OF LIGHT AND HEAVY DUTY PAVEMENTS. IF NONE SPECIFIED, USE LIGHT DUTY IN PASSENGER VEHICLE PARKING STALLS ONLY AND HEAVY DUTY IN ALL OTHER LOCATIONS
B. SEE PROJECT GEOTECHNICAL REPORT FOR PAVEMENT AND SUBGRADE PREPARATION RECOMMENDATIONS

5 C5.10 ASPHALT PAVEMENT SECTION

NTS

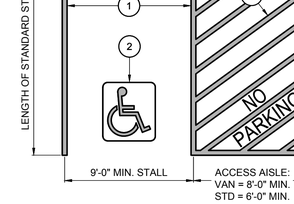


KEYNOTES:
1. CONCRETE PAVEMENT SECTION PER PROJECT SPECIFICATIONS
2. CRUSHED ROCK BASE SECTION PER PROJECT SPECIFICATIONS
3. COMPACTED SUBGRADE PER GEOTECHNICAL RECOMMENDATIONS

NOTES:
A. SEE PLANS FOR LOCATIONS OF LIGHT AND HEAVY DUTY PAVEMENTS. IF NONE SPECIFIED, USE LIGHT DUTY IN PASSENGER VEHICLE PARKING STALLS ONLY AND HEAVY DUTY IN ALL OTHER LOCATIONS
B. SEE PROJECT GEOTECHNICAL REPORT FOR PAVEMENT AND SUBGRADE PREPARATION RECOMMENDATIONS

6 C5.10 CONCRETE PAVEMENT SECTION

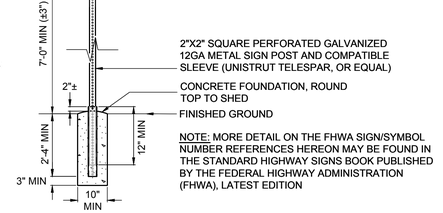
NTS



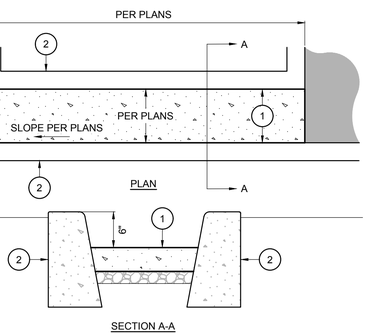
KEYNOTES:
1. 4" WIDE WHITE STRIPE
2. WHITE RETROREFLECTIVE PAVEMENT MARKING SYMBOL (FHWA 3B-22) WITH BLUE RETROREFLECTIVE BACKGROUND (41" TALL x 36" WIDE WITH 4" STROKE WIDTH). OFFSET BACKGROUND LIMIT 4" FROM SYMBOL
3. YELLOW RETROREFLECTIVE "NO PARKING" PAVEMENT MARKING LEGEND ("NO" SHALL BE 12" TALL x 18" WIDE AND "PARKING" SHALL BE 12" TALL x 60" WIDE)
4. ACCESSIBLE PARKING SPACE SIGNAGE PER DETAIL HEREON. MAINTAIN 48" CLEAR ACCESS AROUND SIGN. ENSURE NO INTERFERENCE WITH PARKING STALL OVERHANG
5. WHEEL STOP PER DETAIL 3/C5.12
6. SEE PLANS FOR PROPOSED CURB/SIDEWALK/RAMPS/ETC IMPROVEMENTS TO ACCOMMODATE ACCESSIBLE PARKING STALL ACCESS

7 C5.10 ACCESSIBLE PARKING STALL

NTS



NOTE: MORE DETAIL ON THE FHWA SIGN/SYMBOL NUMBER REFERENCES HEREON MAY BE FOUND IN THE STANDARD HIGHWAY SIGNS BOOK PUBLISHED BY THE FEDERAL HIGHWAY ADMINISTRATION (FHWA), LATEST EDITION

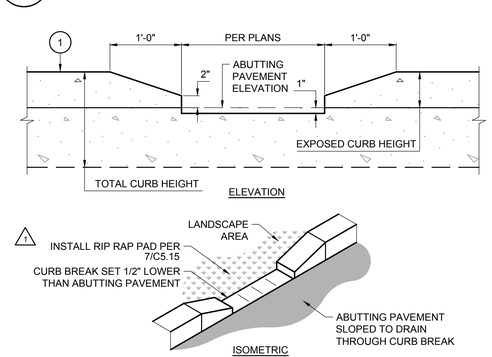


KEYNOTES:
1. 4" CONCRETE OVER 2" ROCK BASE. CONCRETE AND BASE PER SPECIFICATIONS
2. CONCRETE VERTICAL CURB PER 1/C5.10

NOTES:
A. CHANNEL SLOPE TO MATCH SLOPE OF ADJACENT PAVEMENT
B. WHERE CHANNEL IS IN-LINE WITH CURB AND GUTTER, CONTINUE CROSS SECTION OF CURB AND GUTTER THROUGH LENGTH OF CHANNEL
C. SECTION MAY BE CONSTRUCTED MONOLITHICALLY

8 C5.10 CONCRETE CURB CHANNEL

NTS

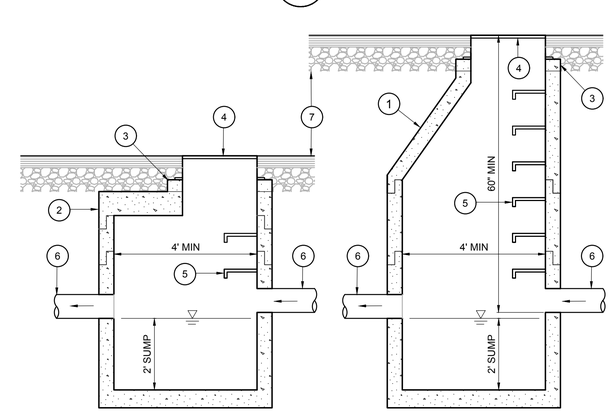


KEYNOTES:
1. CONCRETE CURB PER 1/C5.10 . CONCRETE FOR CURBING PER PROJECT SPECIFICATIONS

NOTES:
A. IF CURBING IS REINFORCED, BEND REINFORCEMENT TO PASS UNDER CURB BREAK WHILE MAINTAINING 3" COVER ON REBAR

9 C5.10 CURB BREAK-ONSITE CURBS

NTS



KEYNOTES:
1. 48" MIN DIAMETER PRECAST CONCRETE MANHOLE WITH ECCENTRIC CONE
2. 48" MIN DIAMETER PRECAST CONCRETE FLAT TOP MANHOLE (USED WHEN LESS THAN 60" AVAILABLE FROM PIPE INVERT TO RIM). CONCENTRIC LID SHALL BE USED AND STEPS SHALL BE OMITTED WHEN DEPTH FROM RIM TO INVERT IS LESS THAN 3 FEET
3. PRECAST CONCRETE GRADE RING AS REQUIRED TO ACCOMMODATE PAVING SECTION (12" TOTAL, MAX)
4. MANHOLE FRAME AND COVER PER PROJECT SPECIFICATIONS, RIM ELEVATION PER PLANS
5. 6 1/2" MIN LONG MANHOLE STEPS AT 12" ON CENTER PER PROJECT SPECIFICATIONS. LOCATE WITHIN 24" OF COVER AND FLOOR OF MANHOLE, AND A MINIMUM OF 5" FROM PRECAST SECTION JOINT
6. PIPE SIZE, INVERT, AND SLOPE PER PLANS
7. PAVING SECTION PER PLANS

NOTES:
A. MANHOLE DIAMETER SHALL BE INCREASED, IF REQUIRED, TO PROVIDE A MINIMUM OF 12" SEPARATION BETWEEN PIPE CONNECTIONS, OR WHEN ANY PIPE DIAMETER IS GREATER THAN 1/2 THE DIAMETER OF THE MANHOLE
B. MANHOLE ACCESS COVER SHALL NOT BE LOCATED DIRECTLY OVER A PIPE CONNECTION UNLESS DIRECTED OTHERWISE BY THE ENGINEER
C. CONTRACTOR SHALL SUBMIT SHOP DRAWINGS OF ALL MANHOLES FOR REVIEW AND APPROVAL BY THE ENGINEER PRIOR TO PROCURING MATERIALS
D. SELECTED MANHOLE SHALL MEET THE CRITERIA OF THE PROJECT SPECIFICATIONS AND BE INSTALLED ACCORDINGLY
E. INLET AND OUTLET PIPES CONNECTIONS SHALL BE COMPLIANT WITH PROJECT SPECIFICATIONS OR THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION, WHICHEVER IS MOST STRINGENT

10 C5.10 STORM SEWER MANHOLES

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REVISION SCHEDULE

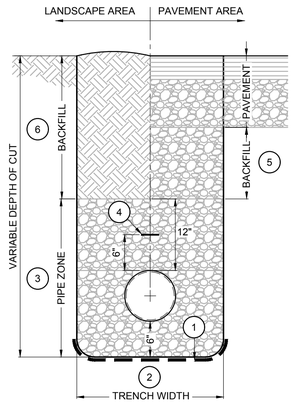
Delta	Issued As	Issue Date
1	PLAN CHECK	10/18/2023

SHEET TITLE:
CIVIL DETAILS

SHEET:
C5.10

JOB NO. **2220087.00**

CONSTRUCTION SET 2/20/24



KEYNOTES:
1. INSTALL TRENCH STABILIZATION AS NECESSARY TO OBTAIN COMPACTION
2. TRENCH WIDTH SHALL ACCOMMODATE THE PIPE DIAMETER PLUS ONE ADDITIONAL PIPE DIAMETER ON EITHER SIDE OF THE PIPE, BUT IN NO CASE LESS THAN 6 INCHES OR MORE THAN 18 INCHES
3. PIPE ZONE TO CONSIST OF IMPORTED GRANULAR MATERIAL
4. TRACER WIRE PER PROJECT SPECIFICATIONS
5. BACKFILL IN PAVEMENT AREAS WITH IMPORTED GRANULAR MATERIAL TO PAVEMENT SUBGRADE ELEVATION
6. BACKFILL IN LANDSCAPE AREAS WITH NATIVE MATERIAL TO PLANTER SUBGRADE ELEVATION. MOUND TOP TO SHED AT 2% EACH DIRECTION

NOTES:
A. THIS DETAIL IS FOR USE ON PRIVATE PROPERTY ONLY. TRENCHING AND BACKFILL REQUIREMENTS FOR WORK IN THE PUBLIC RIGHT-OF-WAY SHALL BE COMPLIANT WITH THE STANDARDS OF THE AUTHORITY HAVING JURISDICTION
B. SEE GEOTECHNICAL REPORT AND PROJECT SPECIFICATIONS FOR RECOMMENDED MATERIALS AND FURTHER REQUIREMENTS (i.e. SIZE AND GRADATION OF GRANULAR MATERIALS, MINIMUM COMPACTION, MAXIMUM LIFT PLACEMENT, TRACER WIRE, ETC.)
C. IF GROUNDWATER IS ENCOUNTERED, CONSULT THE GEOTECHNICAL ENGINEER OF RECORD FOR ADDITIONAL RECOMMENDATIONS WITH REGARD TO TRENCHING, PIPE PLACEMENT, AND BACKFILL
D. REFER TO PROJECT SPECIFICATIONS FOR MINIMUM PIPE COVER AND ALTERNATE MATERIAL REQUIREMENTS. CONTRACTOR SHALL PREVENT CONSTRUCTION VEHICLES FROM DRIVING OVER PIPING WITH LESS THAN 12" COVER AT ANY POINT IN TIME DURING CONSTRUCTION

11 C5.11 UTILITY TRENCH BEDDING & BACKFILL
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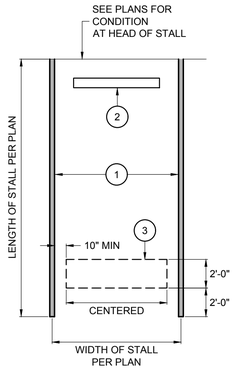


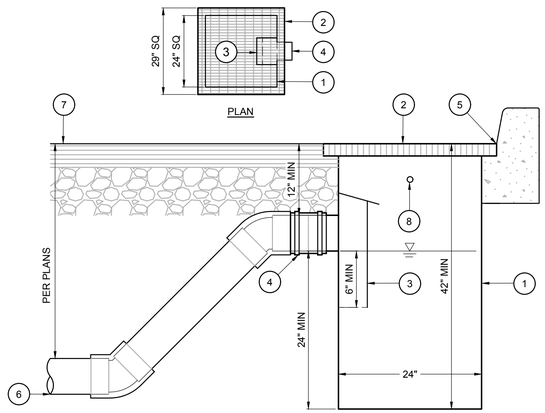
KEYNOTES:
1. 4" WIDE WHITE STRIPE
2. WHEEL STOP PER DETAIL 3/C5.12 , WHERE CALLED OUT ON PLANS
3. 8" (MIN) TALL WHITE PAVEMENT MARKING(S), 2" MIN STROKE, ORIENTED TO BOTTOM EDGE OF ZONE INDICATED, WHERE CALLED OUT ON PLANS. COMMON MARKINGS SHOWN BELOW

NOTES:
A. PAINT MATERIALS AND APPLICATION PER PROJECT SPECIFICATIONS

COMPACT
CARPOOL

COMMON PARKING STALL DESIGNATIONS

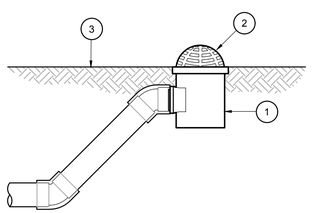
12 C5.11 PARKING STALL STRIPING
NTS



KEYNOTES:
1. PREFABRICATED, ASPHALT DIPPED, 10 GAUGE STEEL SUMPED CATCH BASIN WITH INTEGRAL GRATE FRAME
2. GRATE: HEAVY DUTY CAST IRON (ASTM A 48, CLASS 30B) BICYCLE SAFE
3. SEDIMENT TRAP WITH HINGED LID
4. INSTALL FLEXIBLE CLAMPED COUPLING ON INTEGRAL CATCH BASIN OUTLET. IMMEDIATELY TURN DOWN PIPING AT 45 DEGREES TO INTERSECT WITH THE SITE PIPING
5. LOCATE CATCH BASIN SUCH THAT THE EDGE OF GRATE FRAME IS INLINE WITH THE ABUTTING CURBLINE (WHERE APPLIES).
6. PIPE SIZE, INVERT, AND SLOPE PER PLANS
7. PAVING SECTION PER PLANS
8. 1/2 INCH TO 1 INCH DIAMETER WEEPHOLES, MINIMUM 1 PER SIDE. CONTRACTOR SHALL VERIFY COMPLIANCE WITH LOCAL JURISDICTION PRIOR TO PROCURING MATERIALS

NOTES:
A. ALL PRODUCTS USED SHALL BE COMPLIANT WITH BOTH THE UNIFORM AND LOCAL JURISDICTION PLUMBING CODES
B. WHERE ABUTTING CURBING, GRATE SHALL BE ORIENTED SO THAT THE ELONGATED PATTERN IS PERPENDICULAR TO THE CURB FACE

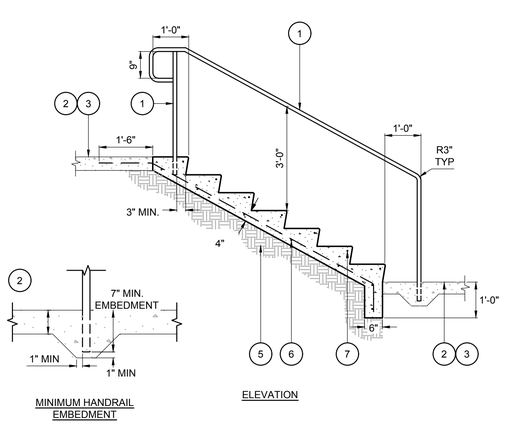
13 C5.11 STEEL CATCH BASIN
NTS

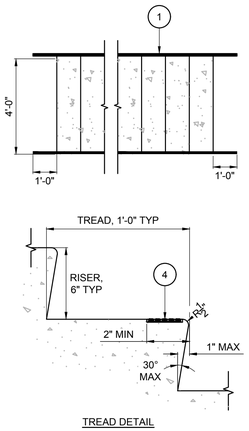


KEYNOTES:
1. PREFABRICATED PLASTIC SUMPED CATCH WITH OUTLET ADAPTER SIZED TO MATCH STORM LEADER PIPE. STORM LEADER TO BE 4 INCH DIAMETER UNLESS NOTED AS OTHERWISE ON PLANS
2. BLACK ATRIUM GRATE TO MATCH DRAIN BODY SIZE. GRATE SHALL BE 9 INCH SQUARE UNLESS NOTED AS OTHERWISE ON PLANS. MINIMUM OPEN SURFACE AREA FOR 9 INCH SQUARE GRATE SHALL BE 31.5 SQUARE INCHES, UNLESS OTHERWISE APPROVED BY THE ENGINEER
3. LANDSCAPE AREA PER PLANS. GRATE RIM ELEVATION SHALL BE SET FLUSH WITH FINAL LANDSCAPE GRADE, ALLOWING ATRIUM PORTION OF GRATE TO BE UNOBSTRUCTED

NOTES:
A. DRAIN BODY, GRATE, AND ADAPTERS SHALL BE PROCURED FROM THE SAME MANUFACTURER AND ASSEMBLED PER MANUFACTURER'S RECOMMENDATIONS

15 C5.11 LANDSCAPE AREA DRAIN
NTS



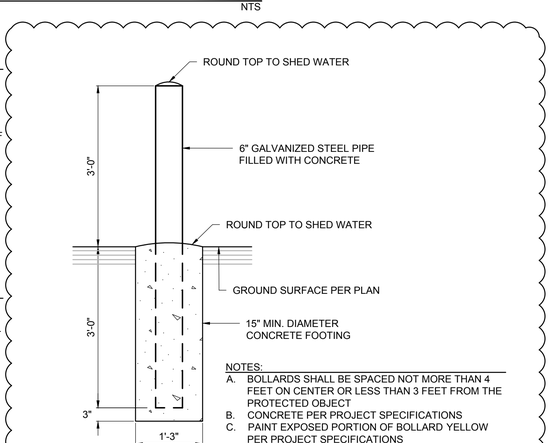


16 C5.11 CONCRETE STAIR
NTS

14 C5.11 NOT USED
NTS

KEYNOTES:
1. 1-1/4" DIAMETER PIPE RAIL. BRUSH FINISH OR POWDERCOAT BLACK - COORDINATE WITH OWNER
2. CONCRETE SIDEWALK PER DETAIL
3. LANDINGS SHALL BE A SOLID SURFACE WITH WIDTH NOT LESS THAN THE WIDTH OF THE STAIRWAY THEY SERVE. LANDING SLOPE SHALL NOT EXCEED 2.0% IN ANY DIRECTION
4. VISUALLY CONTRASTING, SLIP RESISTANT NOSING
5. PROVIDE COMPACTED FILL PER GEOTECHNICAL REQUIREMENTS
6. #3 REBAR AT 18" OC EACH WAY, TYP.
7. #3 NOSE BAR, TYP.
8. CONCRETE CHEEK WALL WHERE STAIR IS ADJACENT TO LANDSCAPING

NOTES:
A. NUMBER OF RISERS PER PLANS
B. WHERE LENGTH OF STAIRWAY IS GREATER THAN 8', PROVIDE INTERMEDIATE VERTICAL POSTS AT EVEN SPACING, 4' MAXIMUM
C. MAINTAIN 4'-0" MINIMUM CLEAR BETWEEN HANDRAILS
D. TREADS TO BE SLOPED TO PROVIDE POSITIVE DRAINAGE, BUT AT NO POINT TO EXCEED 2.0%
E. SEE PROJECT SPECIFICATIONS FOR CONCRETE REQUIREMENTS



NOTES:
A. BOLLARDS SHALL BE SPACED NOT MORE THAN 4 FEET ON CENTER OR LESS THAN 3 FEET FROM THE PROTECTED OBJECT
B. CONCRETE PER PROJECT SPECIFICATIONS
C. PAINT EXPOSED PORTION OF BOLLARD YELLOW PER PROJECT SPECIFICATIONS

17 C5.11 6" PIPE BOLLARD
NTS

Architecture ▪ Interiors
Planning ▪ Engineering

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REVISION SCHEDULE

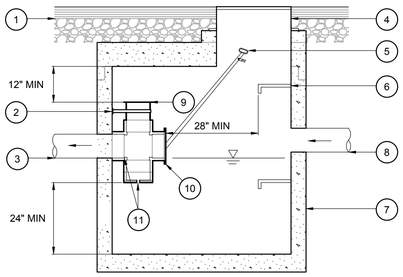
Delta	Issued As	Issue Date
1	PLAN CHECK	10/18/2023
2	RFI 39-R1	04/04/2024

SHEET TITLE:
CIVIL DETAILS

SHEET:
C5.11

JOB NO. **2220087.00**

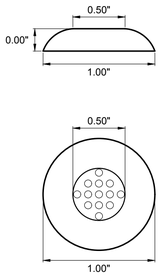
CONSTRUCTION SET 2/20/24



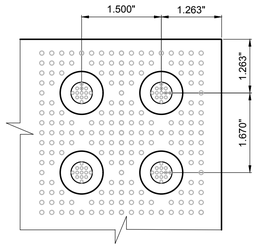
KEYNOTES:
1. PAVING SECTION PER PLANS
2. SECURE PIPE STACK TO MANHOLE WITH RUST PROOF TIE STRAPS AND BOLTS
3. OUTLET PIPE SIZE, INVERT, AND SLOPE PER PLANS
4. STANDARD MANHOLE FRAME AND COVER. RIM ELEVATION PER PLANS
5. LIFT HANDLE FOR SHEAR GATE, SEE DETAIL 10/C5.12
6. MANHOLE STEP PER DETAIL 10/C5.10
7. MANHOLE PER DETAIL 10/C5.10
8. INLET PIPE SIZE, INVERT, AND SLOPE PER PLANS
9. OVERFLOW SIZE AND ELEVATION = 12", 136.95
10. EXISTING SHEAR GATE
11. ORIFICE 1 SIZE AND ELEVATION = 1.16", 134.63

NOTE:
A. DETAIL REFLECTS EXISTING CONDITIONS. NO CHANGES ARE PROPOSED WITH THIS PERMIT.

1 C5.12 EXISTING POND D FLOW CONTROL MANHOLE
NTS



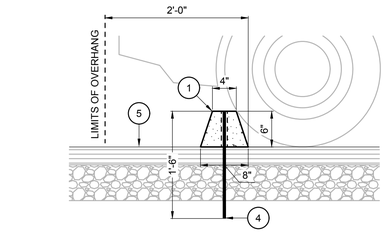
TRUNCATED DOME DETAIL



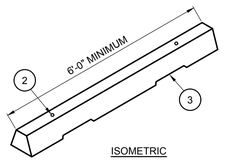
TRUNCATED DOME PANEL

NOTES:
A. PLACE CAST-IN-PLACE TRUNCATED DOME DETECTABLE WARNING TEXTURE IN THE LOWER 24" FOR THE FULL WIDTH OF THE RAMP
B. ARRANGE DOMES USING AN INLINE PATTERN AS SHOWN IN THE DETAIL ABOVE
C. COLOR OF DOME TEXTURE (OR PANELS) TO BE SAFETY YELLOW, UNLESS NOTED OTHERWISE ON PLANS
D. SURFACE APPLIED PANELS SHALL ONLY BE ALLOWED IN RETROFIT CONDITIONS AND WITH THE PRIOR APPROVAL OF THE ENGINEER

2 C5.12 TRUNCATED DOMES
NTS



SECTION



ISOMETRIC

KEYNOTES:
1. PRECAST WHEEL STOP. DIMENSIONS SHOWN ARE MINIMUMS
2. DOWEL HOLES (2 MINIMUM)
3. DRAINAGE SLOTS (2 MINIMUM)
4. DOWEL INTO PAVEMENT (2 MINIMUM). #4 REBAR OR PER MANUFACTURER'S RECOMMENDATIONS
5. FINISHED GROUND PER PLANS

NOTES:
A. INSTALL WHEEL STOP PER MANUFACTURER'S RECOMMENDATIONS

3 C5.12 PRECAST WHEEL STOP
NTS



BEARING AREA OF THRUST BLOCKS IN SQUARE FEET

FITTING SIZE	TEE, WYE, PLUG OR CAP	90° BEND, PLUGGED CROSS	TEE PLUGGED ON RUN A1	TEE PLUGGED ON RUN A2	45° BEND	22 1/2° BEND	11 1/4° BEND
4	1.0	1.4	1.9	1.4	1.0	---	---
6	2.1	3.0	4.3	3.0	1.6	1.0	---
8	3.8	5.3	7.6	5.4	2.9	1.5	1.0
10	5.9	8.4	11.8	8.4	4.6	2.4	1.2
12	8.5	12.0	17.0	12.0	6.6	3.4	1.7
14	11.5	16.3	23.0	16.3	8.9	4.6	2.3
16	15.0	21.3	30.0	21.3	11.6	6.0	3.0
18	19.0	27.0	38.0	27.0	14.6	7.6	3.8
20	23.5	33.3	47.0	33.3	18.1	9.4	4.7
24	34.0	48.0	68.0	48.0	26.2	13.6	6.8

NOTES:
1. CONCRETE THRUST BLOCKING TO BE POURED AGAINST UNDISTURBED EARTH
2. KEEP CONCRETE CLEAR OF JOINT AND ACCESSORIES.
3. THE REQUIRED THRUST BEARING AREAS FOR SPECIAL CONNECTIONS ARE SHOWN ENCIRCLED ON THE PLANS: E.G. 15 INDICATES 15 SQUARE FEET BEARING AREA REQUIRED.
4. IF NOT SHOWN ON PLANS REQUIRED BEARING AREAS AT FITTING SHALL BE AS INDICATED BELOW.
5. BEARING AREAS AND SPECIAL BLOCKING DETAILS SHOWN ON PLANS TAKE PRECEDENCE OVER BEARING AREAS AND BLOCKING DETAILS SHOWN ON THIS STANDARD DETAIL.
6. ABOVE BEARING AREAS BASED ON TEST PRESSURE OF 150 P.S.I. AND AN ALLOWABLE SOIL BEARING PRESSURE STRESS OF 2,000 POUNDS PER SQUARE FOOT. TO COMPUTE BEARING AREAS FOR DIFFERENT TEST PRESSURES AND SOIL BEARING STRESSES, USE THE FOLLOWING EQUATION:

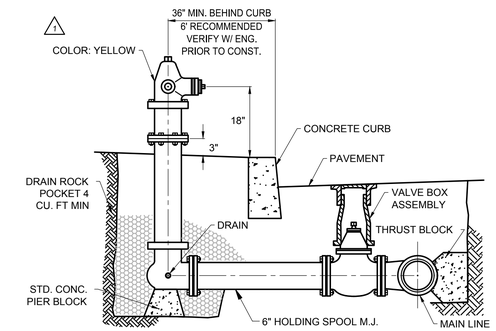
BEARING AREA = (TEST PRESSURE/150) x (2000/SOIL BEARING STRESS) x (TABLE VALUE)

4 C5.12 WATERLINE THRUST BLOCKING
N.T.S.

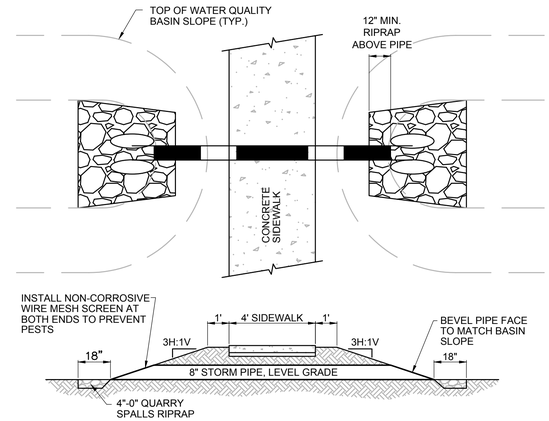
PIPE SIZE	FITTING TYPE	MINIMUM MECHANICAL JOINT RESTRAINT LENGTH		
		36"+ COVER	30" COVER	24" COVER
3"	90°	16'	19'	24'
3"	45°	7'	8'	10'
8"	90°	27'	37'	45'
8"	45°	11'	16'	19'
8"	8" X 8" TEE	20'	15'X15'X20'	20'X20'X13'
8"	8" X 6" TEE	20'	10'X10'X5'	12'X12'X7'
6"	90°	21'	29'	35'
6"	45°	9'	12'	15'

NOTE:
1. IF PIPE LENGTH IS LESS THAN MINIMUM RESTRAINT LENGTH, RESTRAIN THE FULL PIPE LENGTH. PIPE RESTRAINT DESIGN IS BASED ON MEGA-LUG. DESIGN TEST PRESSURE=200 PSI, DESIGN SAFETY FACTOR=1.5, SOIL TYPE GM, DEPTH OF BURY 3'
2. DEPTH OF BURY SHALL BE 3' MINIMUM, TYPICAL. WHERE UTILITY EXCAVATION ENCOUNTERS BEDROCK, DEPTH OF BURY MAY BE REDUCED TO 24" MINIMUM

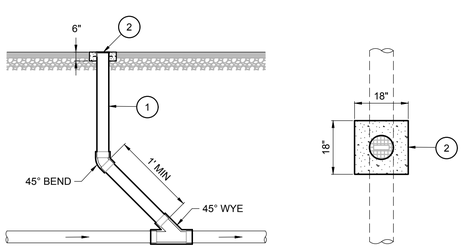
5 C5.12 MECHANICAL JOINT RESTRAINT
N.T.S.



6 C5.12 PRIVATE FIRE HYDRANT
NTS



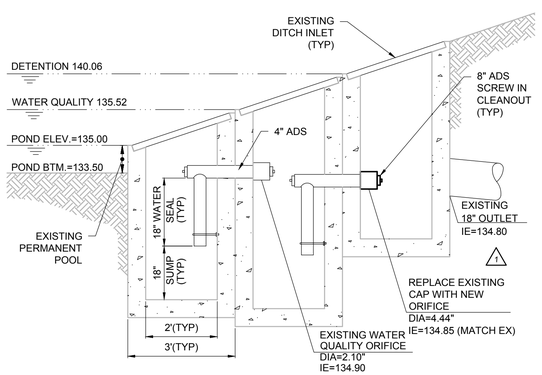
7 C5.12 CULVERT CROSSING
N.T.S.



KEYNOTES:
1. CLEANOUT PIPING AND FITTINGS TO BE OF THE SAME SIZE (8" MAX) AND MATERIAL AS THE PIPING IT IS SERVING
2. CLEANOUT LID & FRAME: HEAVY DUTY CAST IRON ACCESS BOX, SCORIATED CAST IRON COVER, THREADED BRONZE PLUGS, MOUNTED IN 4,000 PSI CONCRETE COLLAR.

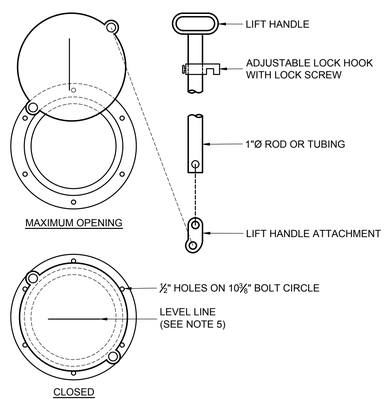
NOTES:
A. CONCRETE COLLAR MAY BE OMITTED IN LANDSCAPE AREAS. USE PLASTIC PIPE CAP AND SET 3 INCHES ABOVE GRADE

8 C5.12 CLEANOUT
NTS



NOTE: POND OUTLET DETAILS SHOWN REFLECT EXISTING CONDITIONS.
NO MODIFICATIONS ARE PROPOSED WITH THIS PERMIT.

9 C5.12 EXISTING POND C OUTLET DETAIL
N.T.S.



NOTES
A. THE FRAME AND LADDER OR STEPS ARE TO BE OFFSET SO THAT: THE SHEAR GATE IS VISIBLE FROM THE TOP; THE CLIMB-DOWN SPACE IS CLEAR OF RISER AND GATE; THE FRAME IS CLEAR OF THE CURB (IF APPLICABLE)
B. THE SHEAR GATE SHALL BE MADE OF ALUMINUM ALLOY IN ACCORDANCE WITH ASTM B 26M AND ASTM B 275, DESIGNATION ZG32A; OR CAST IRON IN ACCORDANCE WITH ASTM A 48, CLASS 30B
C. THE LIFT HANDLE SHALL BE MADE OF SIMILAR METAL TO THE GATE (TO PREVENT GALVANIC CORROSION)
D. A NEOPRENE RUBBER GASKET IS REQUIRED BETWEEN THE PIPE MOUNTING FLANGE AND THE GATE FLANGE
E. INSTALL THE GATE SO THAT THE LEVEL-LINE IS LEVEL WHEN THE GATE IS CLOSED
F. THE MATING SURFACES OF THE LID AND THE BODY SHALL BE MACHINED TO PROPER FIT
G. ALL SHEAR GATE BOLTS SHALL BE STAINLESS STEEL
H. THE SHEAR GATE MAXIMUM OPENING SHALL BE CONTROLLED BY LIMITED HINGE MOVEMENT, A STOP TAB, OR SOME OTHER DEVICE
I. ALTERNATIVE SHEAR GATE DESIGNS ARE ACCEPTABLE, IF MATERIAL SPECIFICATIONS ARE MET AND FLANGE BOLT PATTERN MATCHES. CONTRACTOR TO SUBMIT SHOP DRAWINGS TO ENGINEER PRIOR TO PROCURING PRODUCT OR CONSTRUCTION

10 C5.12 SHEAR GATE
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REVISION SCHEDULE

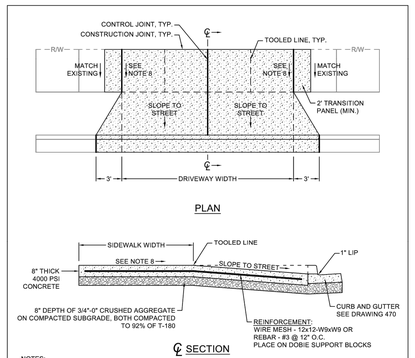
Delta	Issued As	Issue Date
1	PLANCHECK	10/18/2023
2	PLANCHECK	12/15/2023

SHEET TITLE:
CIVIL DETAILS

SHEET:
C5.12

JOB NO. **2220087.00**

CONSTRUCTION SET 2/20/24



PLAN

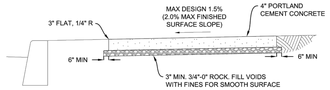
℄ SECTION

NOTES:

1. CONTROL JOINTS SHALL BE WEAKENED PLANE TYPE FORMED TO A DEPTH 2-3/4" WITH TOOLED EDGES (1/4"R EDGE, 3" FLAT) EXCEPT IN CURB AND GUTTER (1/4"R EDGE ONLY). NO MESH ACROSS CONTROL JOINTS.
2. TOOLED LINES ARE FOR COMESTIC PURPOSES ONLY, 1/4"R EDGE, 3" FLAT.
3. FOR LOCATION AND WIDTH OF DRIVEWAYS, MEET THE REQUIREMENTS OF THE TUALATIN DEVELOPMENT CODE.
4. FINISH CONCRETE APPROACH RAMP WITH BRUSH FINISH TRANSVERSE TO CENTERLINE.
5. POUR APPROACH SLAB AND WINGS (BOTH 8" THICK) MONOLITHIC WITH CURB AND GUTTER IF SO DIRECTED BY ENGINEER.
6. BEFORE OPENING TO TRAFFIC, ATTAIN 4,000 PSI COMPRESSIVE STRENGTH, ENTRAINED AIR 4% - 7%.
7. REMOVE THE CURB AND GUTTER IN ITS ENTIRETY AND POUR BACK AS A MONOLITHIC POUR IF AN EXISTING CURB AND GUTTER IS MODIFIED AS PART OF A DRIVEWAY APPROACH.
8. SIDEWALK CROSS SLOPE TO BE MAX 1.5% DESIGN SLOPE (2.0% MAX FINISHED SURFACE SLOPE).

CITY OF TUALATIN, OR	COMMERCIAL DRIVEWAY APPROACH CURBSIDE PLANTER STRIP	
REVISED: 11/2020 EFFECTIVE: 12/2020	SCALE: NOT TO SCALE	DRAFTED BY: C. FERGESON APPROVED BY: K. MCMILLAN
		DRAWING NO. 440

1 C5.13



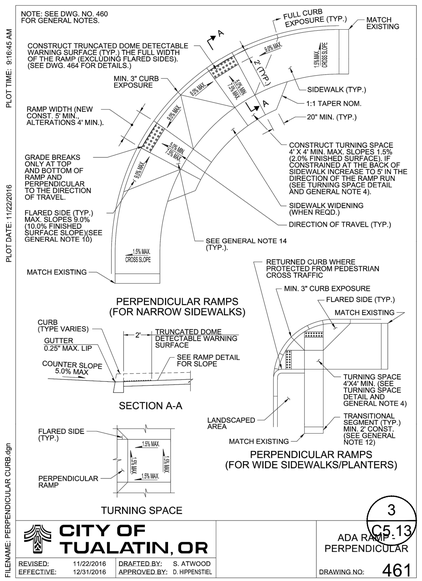
CROSS SECTION

NOTES:

1. PLATE COMPACT THE SIDEWALK SUBGRADE AND BASE ROCK TO SATISFACTION OF THE CITY ENGINEER. DO NOT COMPACT EARLIER THAN 7 DAYS AFTER CONSTRUCTING CURB OR BEFORE COMPLETING THE PLACEMENT OF PAVEMENT BASE ROCK. FILL VOIDS WITH FINES WHERE NECESSARY TO PROVIDE SMOOTH SURFACE.
2. USE PORTLAND CEMENT CONCRETE WITH 4-7% AIR ENTRAINMENT AND A 28 DAY COMPRESSIVE STRENGTH OF AT LEAST 3,300 PSI.
3. CONSTRUCT TRANSVERSE CONTROL JOINTS OF THE WEAKENED PLANE TYPE, 1-1/2" CONCRETE DEPTH AND SPACE AT 5' INTERVALS AND AT POINTS OF TANGENCY.
4. FORM CONTROL JOINTS WITH A SMOOTH FACE SQUARE TO THE SIDEWALK.
5. WHERE A STRUCTURE IS SURROUNDED BY OR IS ADJACENT TO THE SIDEWALK (EXCLUDING CURB), PROVIDE SEPARATION WITH ½" PREMOLDED ASPHALT-IMPREGNATED, NON-EXTRUDING EXPANSION JOINT MATERIAL.
6. BROOM FINISH THE SURFACE TRANSVERSE TO THE DIRECTION OF TRAFFIC.
7. FINISH ALL EDGES WITH ¼" RADIUS EDGER WITH 3" FLAT.
8. WHERE PRACTICAL, ALIGN SIDEWALK CONTROL JOINTS WITH CURB JOINTS.
9. IN ACCORDANCE WITH THE UNITED STATES ACCESS BOARD PROPOSED PUBLIC RIGHTS-OF-WAY ACCESSIBILITY GUIDELINES, IF THE EXISTING ADJACENT SIDEWALK PANEL CROSS SLOPE IS GREATER THAN 2.0%, CONSTRUCT A TRANSITIONAL PANEL THAT IS AT LEAST 2' LONG BETWEEN THE NEW SIDEWALK PANEL AND THE EXISTING SIDEWALK. EXTEND TRANSITION PANEL TO THE NEAREST CONTROL JOINT IF LESS THAN 2' OF THE EXISTING PANEL REMAINS.

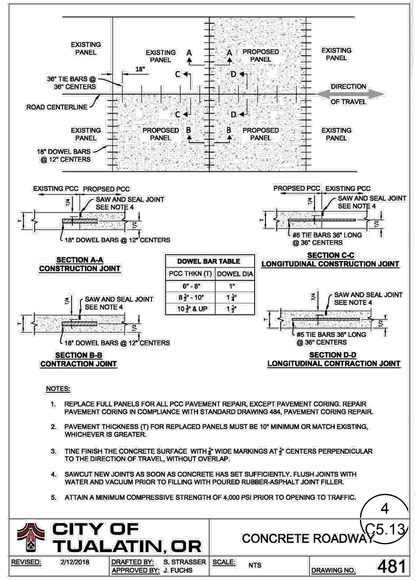
CITY OF TUALATIN, OR	CONCRETE SIDEWALK	
REVISED: 7/23/2018	DRAFTED BY: S. STRASSER APPROVED BY: J. FUCHS	SCALE: NTS
		DRAWING NO. 475

2 C5.13



CITY OF TUALATIN, OR		ADA RAMP - PERPENDICULAR
REVISED: 11/22/2016 EFFECTIVE: 12/31/2016	DRAFTED BY: S. ATWOOD APPROVED BY: D. HIPPENSTIEL	DRAWING NO: 461

3 C5.13



SECTION A-A CONSTRUCTION JOINT

DOWEL BAR TABLE	
PCC THKN (T)	DOWEL DIA
6" - 8"	1"
8 ½" - 10"	1 ¼"
10 ½" & UP	1 ½"

SECTION C-C LONGITUDINAL CONSTRUCTION JOINT

SECTION B-B CONTRACTION JOINT

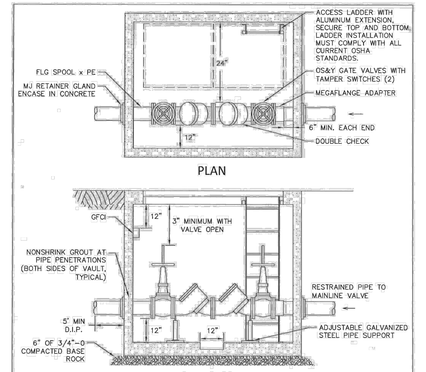
SECTION D-D LONGITUDINAL CONTRACTION JOINT

NOTES:

1. REPLACE FULL PANELS FOR ALL PCC PAVEMENT REPAIR, EXCEPT PAVEMENT CORING. REPAIR PAVEMENT CORING IN COMPLIANCE WITH STANDARD DRAWING 484, PAVEMENT CORING REPAIR.
2. PAVEMENT THICKNESS (T) FOR REPLACED PANELS MUST BE 10" MINIMUM OR MATCH EXISTING, WHICHEVER IS GREATER.
3. TINE FINISH THE CONCRETE SURFACE WITH ¼" WIDE MARKINGS AT 2" CENTERS PERPENDICULAR TO THE DIRECTION OF TRAVEL, WITHOUT OVERLAP.
4. SAWCUT NEW JOINTS AS SOON AS CONCRETE HAS SET SUFFICIENTLY, FLUSH JOINTS WITH WATER AND VACUUM PRIOR TO FILLING WITH POURED RUBBER-ASPHALT JOINT FILLER.
5. ATTAIN A MINIMUM COMPRESSIVE STRENGTH OF 4,000 PSI PRIOR TO OPENING TO TRAFFIC.

CITY OF TUALATIN, OR	CONCRETE ROADWAY	
REVISED: 2/12/2018	DRAFTED BY: S. STRASSER APPROVED BY: J. FUCHS	SCALE: NTS
		DRAWING NO. 481

4 C5.13



PLAN

ELEVATION

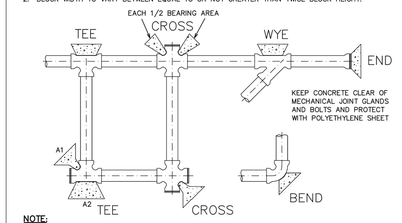
NOTES:

1. USE DUCTILE IRON PIPE THROUGH AND 5' BEYOND VAULT ON PRIVATE SIDE DUE TO VAULT SETTLEMENT, NO PIPE BELL ENDS INSIDE VAULT.
2. INSTALL PLUGS IN TEST COCKS.
3. ASSEMBLY MAY ALSO BE MOUNTED ABOVE GROUND IN AN INSULATED PROTECTIVE ENCLOSURE AT THE RIGHT-OF-WAY.
4. CHECK VAULT FLOTATION AND CORRECT IF NECESSARY.
5. BACKFLOW ASSEMBLY AND INSTALLATION TO COMPLY WITH AWWA C510 AND OAR 333-61-070.
6. PROVIDE SUMP PUMP WITH DIAPHRAGM OR VERTICAL FLOAT SWITCH AND 2" PVC CHECK VALVE AND PIPE DISCHARGE TO DAYLIGHT. SUPPLY POWER THRU GFCI INTERNAL WALL MOUNT 12" BELOW CEILING.
7. PROVIDE INSPECTOR WITH CERTIFIED TEST REPORT UPON COMPLETION.

PIPE SIZE	OLDCASTLE	COVER OFFSET
3"	577-LA	2-332P
4"	687-WA	2-332P
6"	687-WA	2-332P
8"	5106-WA	3-332P
10"	5106-WA	3-332P

CITY OF TUALATIN, OR	DOUBLE CHECK BACKFLOW ASSEMBLY 3" THRU 10"	
REVISED: 12/2018 VALID: 12/2018	SCALE: NOT TO SCALE	DRAWN: C. FERGESON APPROVED: K.MCMILLAN
		DWG NO. 613

5 C5.13



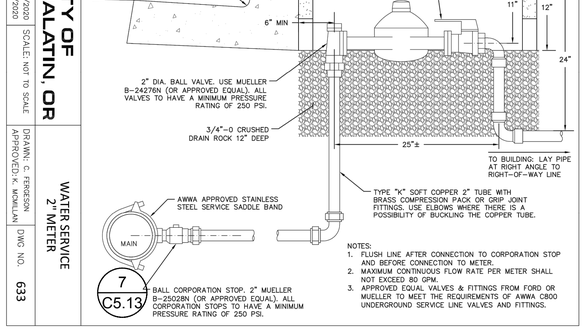
NOTE:
THRUST BLOCKS TO BE USED ONLY WHEN CONNECTING TO AN UNKNOWN LENGTH OF PIPE AND AT ALL LIVE TAPS. OTHERWISE, USE APPROVED MJ RETAINER GLANDS AND RESTRAINED PIPE.

FITTING SIZE INCHES	BEARING AREA SQ. FT. BEND 90° CROSS TEE A1	TEE A2	TEE WYE END	BEND 45°	BEND 22.5°	BEND 11.25°
3	1.31	1.85	0.92	0.71	0.36	0.18
4	1.92	2.71	1.36	1.04	0.53	0.27
6	3.97	5.61	2.80	2.15	1.09	0.55
8	6.82	9.65	4.82	3.69	1.88	0.95
10	10.26	14.52	7.26	5.55	2.83	1.42
12	14.51	20.53	10.26	7.86	4.00	2.01
14	19.50	27.58	13.79	10.55	5.38	2.70
16	25.22	35.67	17.83	13.65	6.96	3.50
18	31.68	44.80	22.40	17.14	8.74	4.39
20	38.87	54.97	27.48	21.03	10.72	5.39
24	55.45	78.42	39.21	30.01	15.30	7.69

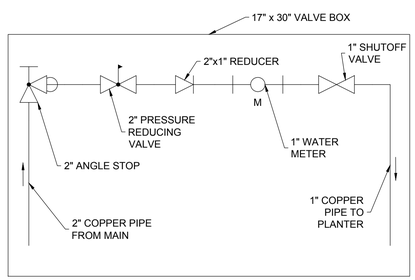
DESIGN CRITERIA:
1. TEST PRESSURE 150 LB/SQ.IN., CONCRETE 3300-1 1/2", AFTER POURING BLOCK DO NOT APPLY TEST PRESSURE FOR AT LEAST FIVE DAYS.
2. SAFETY FACTOR 1.5, SOIL SANDY SILT WITH BEARING STRENGTH 3,000 LB/SQ.FT.
3. CONCRETE POURED AGAINST UNDISTURBED SOIL OR SOIL COMPACTED TO AT LEAST 92% MODIFIED PROCTOR DENSITY, T-180.
4. SUBMIT BEARING AREA CALCULATIONS WITH CHANGE IN SOIL OR TEST PRESSURE.

CITY OF TUALATIN, OR	PIPE JOINT RESTRAINT BEARING THRUST BLOCKS	
REVISED: 11/2020 VALID: 12/2020	SCALE: NOT TO SCALE	DRAWN: C. FERGESON APPROVED: K.MCMILLAN
		DWG NO. 620

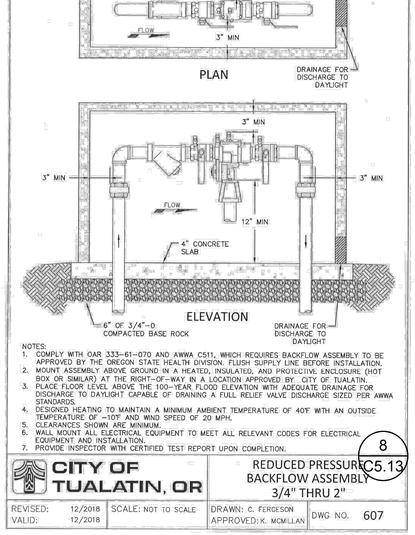
6 C5.13



7 C5.13 BALL CORPORATION STOP. 2" MUELLER B-25028N (OR APPROVED EQUAL). ALL CORPORATION STOPS TO HAVE A MINIMUM PRESSURE RATING OF 250 PSI.



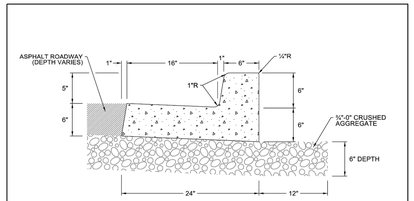
9 C5.13 PUBLIC IRRIGATION SCHEMATIC DETAIL
NTS



NOTES:
1. COMPLY WITH OAR 333-61-070 AND AWWA C511, WHICH REQUIRES BACKFLOW ASSEMBLY TO BE APPROVED BY THE OREGON STATE HEALTH DIVISION. FLUSH SUPPLY LINE BEFORE INSTALLATION.
2. MOUNT ASSEMBLY ABOVE GROUND IN A HEATED, INSULATED, AND PROTECTIVE ENCLOSURE (HOT BOX OR SIMILAR) AT THE RIGHT-OF-WAY IN A LOCATION APPROVED BY CITY OF TUALATIN.
3. PLACE FLOOR LEVEL ABOVE THE 100-YEAR FLOOD ELEVATION WITH ADEQUATE DRAINAGE FOR DISCHARGE TO DAYLIGHT CAPABLE OF DRAINING A FULL RELIEF VALVE DISCHARGE SIZED PER AWWA STANDARDS.
4. DESIGNED HEATING TO MAINTAIN A MINIMUM AMBIENT TEMPERATURE OF 40°F WITH AN OUTSIDE TEMPERATURE OF -10°F AND WIND SPEED OF 20 MPH.
5. CLEARANCES SHOWN ARE MINIMUM.
6. WALL MOUNT ALL ELECTRICAL EQUIPMENT TO MEET ALL RELEVANT CODES FOR ELECTRICAL EQUIPMENT AND INSTALLATION.
7. PROVIDE INSPECTOR WITH CERTIFIED TEST REPORT UPON COMPLETION.

CITY OF TUALATIN, OR	REDUCED PRESSURE BACKFLOW ASSEMBLY 3/4" THRU 2"	
REVISED: 12/2018 VALID: 12/2018	SCALE: NOT TO SCALE	DRAWN: C. FERGESON APPROVED: K. MCMILLAN
		DWG NO. 607

8 C5.13



NOTES:
1. CONCRETE, 4%-7% AIR, SHALL ATTAIN 3300 PSI COMPRESSIVE STRENGTH AT 28 DAYS.
2. CONTROL JOINTS OF THE WEAKENED PLANE TYPE, DOWN THROUGH THE CURB TO HALF THE DEPTH OF THE GUTTER, SHALL BE SPACED AT 15' INTERVALS AND AT POINTS OF TANGENCY. FINISH THE EXPOSED EDGE WITH 1/4" RADIUS EDGER. DO NOT USE EXPANSION JOINTS.
3. CONSTRUCTION JOINTS SHALL BE FORMED WITH A SMOOTH FACE SQUARE TO THE CURB AND DOWN THROUGH HALF THE DEPTH OF THE GUTTER. FINISH FUTURE EXPOSED EDGE WITH 1/4" RADIUS EDGER. THE LOWER HALF OF THE GUTTER CROSS SECTION SHALL BE LEFT WITH A ROUGH EXPOSED AGGREGATE SURFACE TO INTERLOCK WITH A FUTURE EXTENSION OF THE CURB AND GUTTER.
4. BASE ROCK UNDER THE CURB AND ALSO PLACED 12" BEYOND THE BACK OF THE CURB SHALL BE COMPACTED TO 91% OF T-180 MAXIMUM DENSITY.
5. DRAINAGE WEEP HOLES OF 3" DIAMETER PVC SCHEDULE 40 PIPE SHALL BE PLACED THROUGH THE CURB 1/2" ABOVE THE GUTTER INVERT AND EXTEND 3" BEYOND THE BACK OF THE CURB AT POSITIONS SHOWN ON THE PLANS, LOW POINTS IN THE CURB, OR WHERE DETERMINED BY THE ENGINEER.
6. THE BACK OF THE CURB SHALL BE BACKFILLED NOT EARLIER THAN 7 DAYS AFTER CONCRETE PLACEMENT AND PRIOR TO THE COMPACTION OF BASE AND TOP COURSE ROCK AND PAVEMENT.
7. THE EXPOSED SURFACES SHALL BE BROOM FINISHED IN THE DIRECTION OF GUTTER FLOW.

CITY OF TUALATIN, OR	CURB AND GUTTER	
REVISED: 04/07/2017 EFFECTIVE: 04/24/2017	SCALE:	DRAFTED BY: M. PALMER APPROVED BY: J. FUCHS
		DRAWING NO. 470

9 C5.13

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360.695.7879
Seattle, WA
206.749.9993
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Client
LAM RESEARCH

Lam RESEARCH

Project
LAM RESEARCH TUALATIN

NEW OFFICE BUILDING

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REVISION SCHEDULE

Delta	Issued As	Issue Date
1	PLAN CHECK	12/15/2023
2	PLAN CHECK	01/12/2024
3	RFI 021	02/12/2024

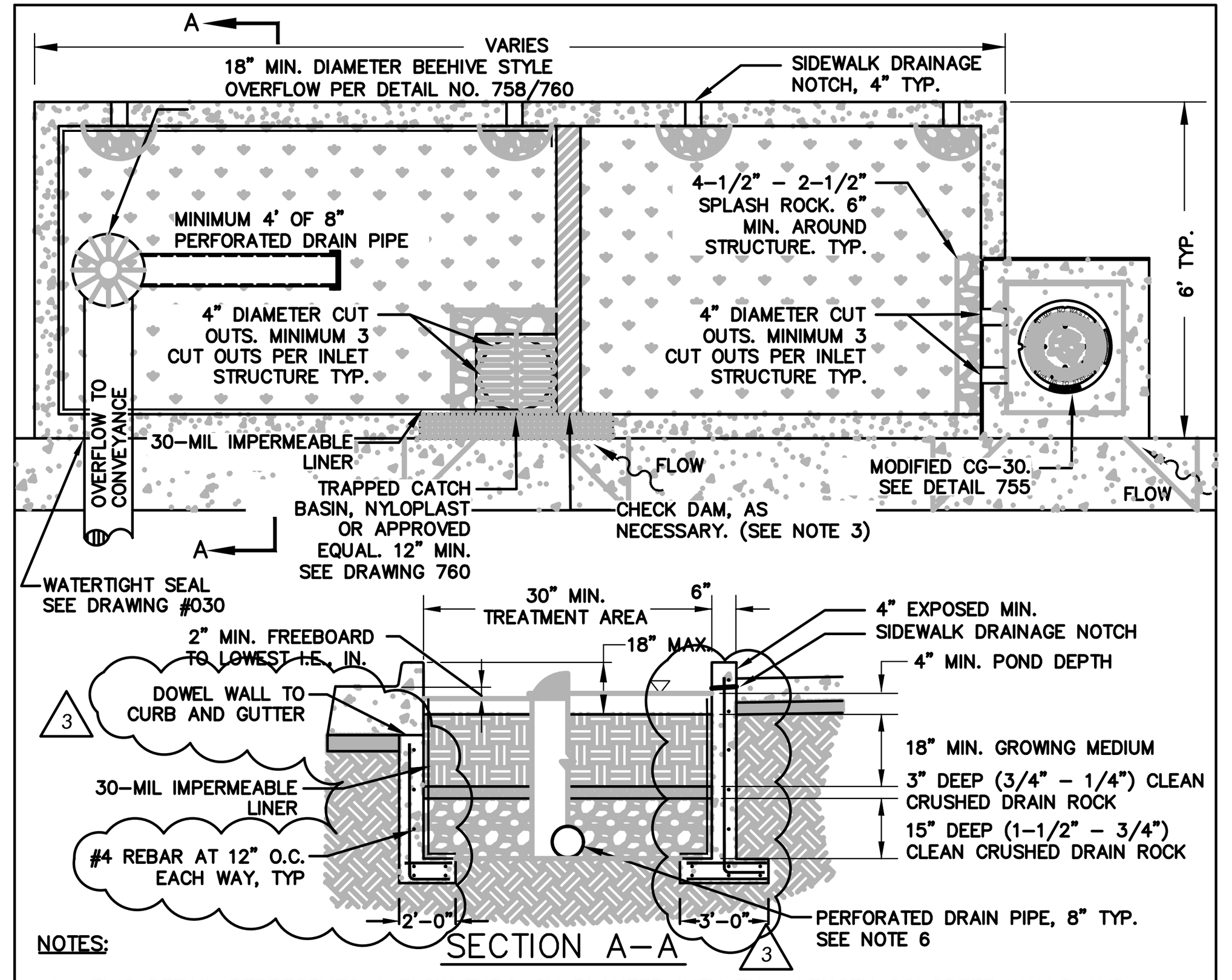
SHEET TITLE:
CITY OF TUALATIN DETAILS

SHEET:
C5.13

JOB NO. **2220087.00**

CONSTRUCTION SET 2/20/24

1 — STREET SIDE PLANTER WITHOUT STREET PARKING

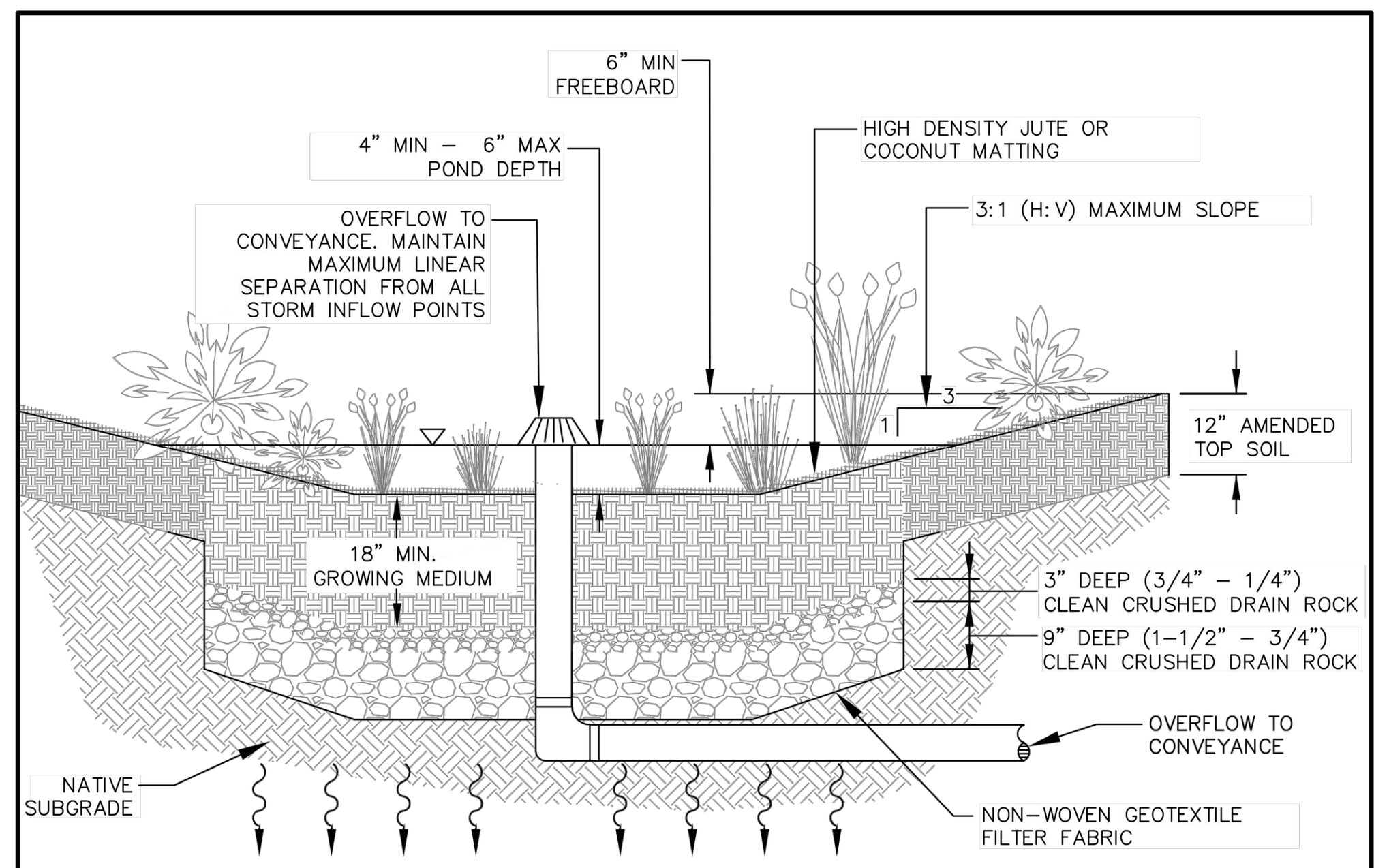


NOTES:

1. THIS DETAIL REPRESENTS A FLOW THROUGH PLANTER WITH FULL LENGTH CONCRETE WALLS AND FLOOR. FOR INFILTRATION PLANTER CONCRETE WALLS W/FOOTING WILL BE REQUIRED AS SHOWN ON DRAWING #750.
2. WALL'S STRUCTURAL DESIGN AND DIMENSIONS DETERMINED BY ENGINEER.
3. PROVIDE PROTECTION FROM ALL VEHICLE TRAFFIC, EQUIPMENT STAGING, AND FOOT TRAFFIC IN PROPOSED FACILITY AREAS PRIOR TO, DURING, AND AFTER CONSTRUCTION.
4. SIDEWALK ELEVATION MUST BE SET ABOVE CHECK DAM AND INLET/OUTLET ELEVATIONS TO ALLOW OVERFLOW TO DRAIN TO STREET OR PIPED OVERFLOW SYSTEM AS APPLICABLE.
5. PLANTER SHALL BE FLAT BOTTOM IN ALL DIRECTIONS TO WITHIN 1 INCH. CHECK DAMS SHALL BE PLACED ACCORDING TO INDIVIDUAL PROJECT PLANS PER DETAIL 762. PROVIDE 2" MIN FREEBOARD.
6. STREET SIDE CURB NOTCHES TO BE LOCATED AS IDENTIFIED ON PROJECT PLANS.
7. SIDEWALK CURB NOTCH: 1" LOWER THAN SIDEWALK, SLOPED TO FACILITY. SIDEWALK DRAINAGE NOTCHES SHALL ALIGN WITH SIDEWALK CONTRACTION JOINTS AND LOW POINTS.
8. PERFORATED PIPE IN INFILTRATION FACILITIES: BOTTOM OF PIPE SHALL BE SET AT 2 1/2" ABOVE SUBGRADE. PERFORATED PIPE IN FLOW THROUGH FACILITIES: BOTTOM OF PIPE SHALL BE SET AT BASE OF DRAIN ROCK LAYER.
9. HYDRANTS, UTILITY POLES, OR ANY UTILITY BOXES PLACED WITHIN PLANTER MUST BE APPROVED BY JURISDICTION IN WRITING.
10. ACTUAL ELEVATIONS AND DIMENSIONS TO BE CONSTRUCTED AS IDENTIFIED ON PROJECT PLANS.
11. ENSURE THAT A DOWNSTREAM CATCH BASIN IS IN PLACE FOR EMERGENCY OVERFLOW.

STREET SIDE PLANTER WITHOUT STREET PARKING (WITH PROJECT SPECIFIC MODIFICATIONS) — 1 / C5.14 — Clean Water Services
DRAWING NO. 745 — REVISED 10-31-19

2 — NON-STRUCTURAL INFILTRATION PLANTER/RAIN GARDEN

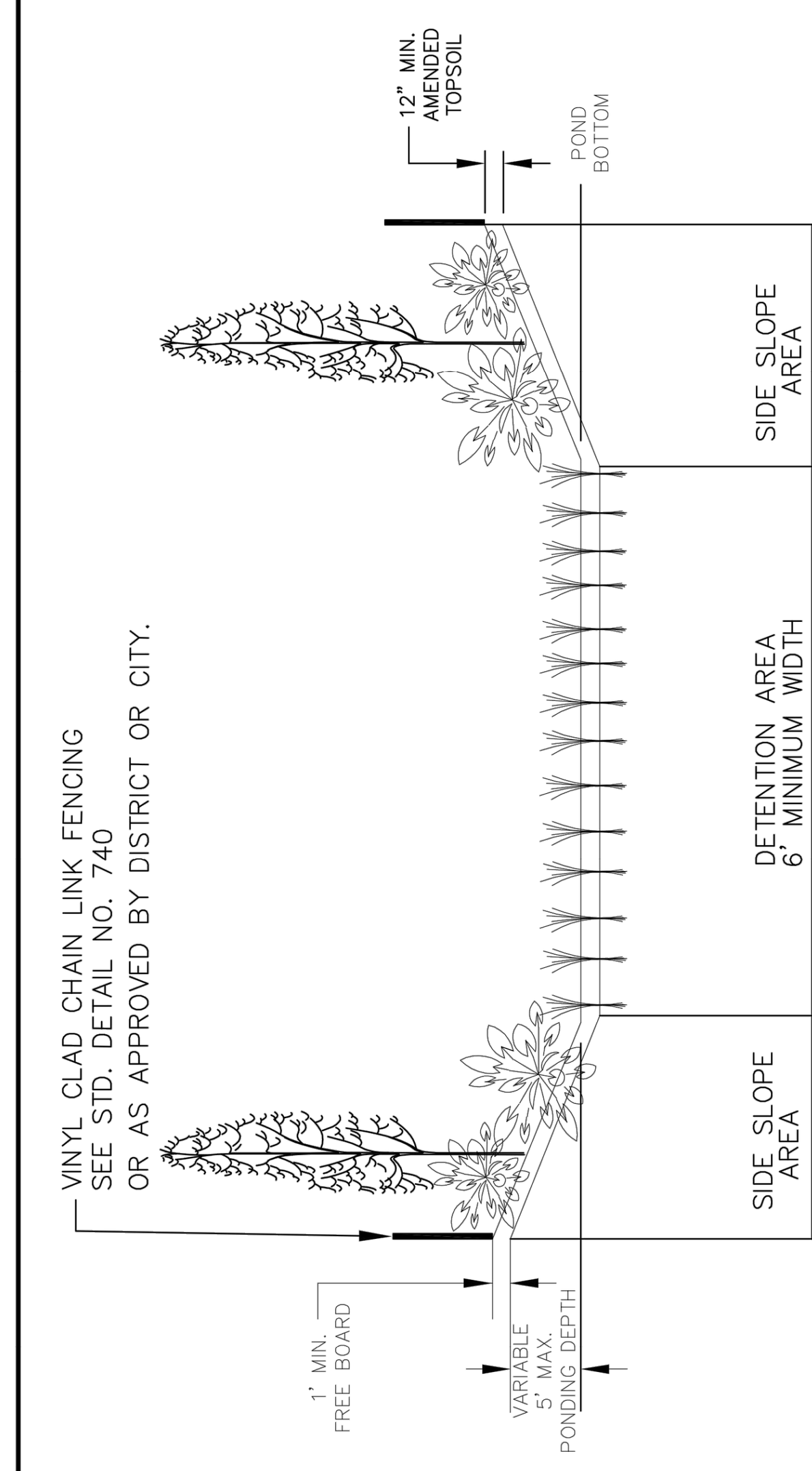


NOTES:

1. PROVIDE OVERFLOW CONVEYANCE SYSTEM, OVERFLOW CONVEYANCE HEIGHT TO ALLOW 4" MINIMUM - 6" MAXIMUM PONDING, PIPING TO A MINIMUM OF THE PLUMBING CODE OR CONVEY THE 25 YEAR STORM.
2. IF USING THE NATIVE SOIL INFILTRATION FOR SIZING, THE RATE SHALL BE DETERMINED BY ASTM STANDARD TESTING METHODS.
3. FLOW DISSIPATERS SHOULD BE USED IF ENTRY SLOPE TO THE BASIN IS GREATER THAN 3:1. FLOW DISSIPATERS SHALL BE CONSTRUCTED OUT OF ROCK OR GRAVEL PER DESIGN FLOW VELOCITY AT ENTRY OF THE FACILITY.
4. TREATMENT AREA SHALL HAVE HIGH DENSITY JUTE OR COCONUT MATTING OVER 18" MINIMUM OF GROWING MEDIUM OR BASE STABILIZATION METHOD AS APPROVED BY THE DISTRICT.
5. VEGETATION TO BE USED IN WET AREAS OF THE BASIN IS PER APPENDIX "A" FOR THE WET MOISTURE CONDITIONS.
6. VEGETATION TO BE USED IN OTHER AREAS OF BASIN CONFORMS TO PLANT LIST OF THIS HANDBOOK AS APPROVED BY DISTRICT.

NON-STRUCTURAL INFILTRATION PLANTER/RAIN GARDEN — 2 / C5.14 — Clean Water Services
DRAWING NO. 725 — REVISED 10-31-19

3 — DETENTION POND



	SIDE SLOPE AREA	DETENTION AREA 6' MINIMUM WIDTH	SIDE SLOPE AREA
EC MATTING	ECONOJUTE*	COCONUT FIBER OR GEOJUTE PLUS*	ECONOJUTE*
SEED MIX	LOW GROW MIX SEE NOTE #5	NONE	LOW GROW MIX SEE NOTE #5
MAX. SLOPE	3H:1V TYP	FLAT BOTTOM	3H:1V TYP

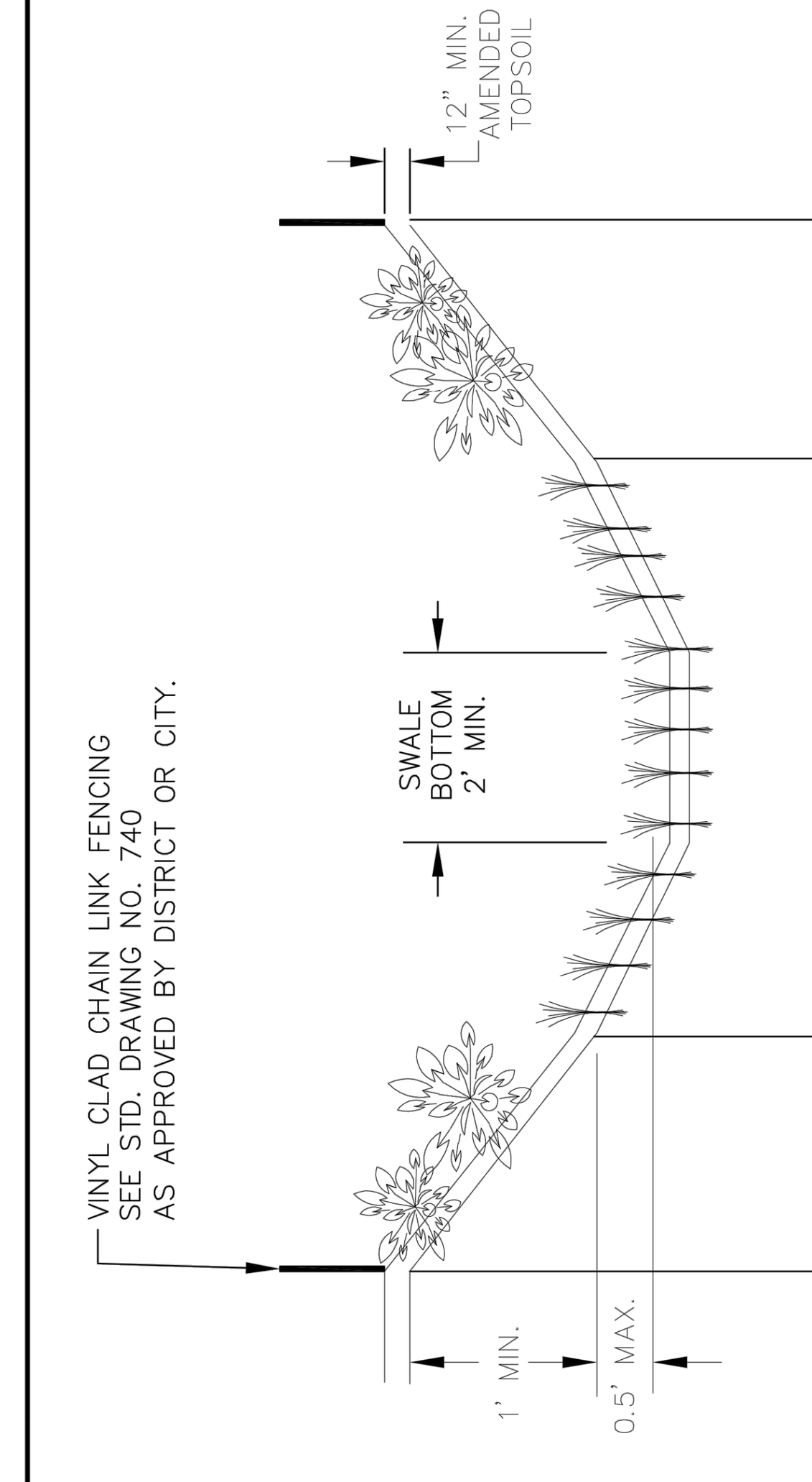
* OR AS APPROVED

NOTES:

1. REFER TO CHAPTER 4, CWS DESIGN & CONSTRUCTION STANDARDS, FOR LANDSCAPING REQUIREMENTS INCLUDING TREE PLACEMENT, TOPSOIL AND PLANTING SPECIFICATIONS.
2. PROVIDE IRRIGATION AS APPROVED BY CWS.
3. JUTE MATTING– GEOJUTE PLUS IN DETENTION AREA, ECONOJUTE FOR ALL OTHER AREAS, OR SIMILIAR FABRICS. COCONUT FIBER IS ALSO ACCEPTABLE.
4. 12 INCHES OF AMENDED TOPSOIL SHALL BE PLACED THROUGHOUT THE WATER QUANTITY FACILITY.
5. SIDE SLOPE AREA SEED MIX, DWARF TALL FESCUE 40%, DWARF PERENNIAL RYE 30%, CREEPING RED FESCUE 25%, COLONIAL BENT GRASS 5%. APPLY AT A RATE OF 120# / ACRE.

DETENTION POND — 3 / C5.14 — Clean Water Services
DRAWING NO. 700 — REVISED 10-31-19

4 — WATER QUALITY SWALE



SWALE AREA	SIDE SLOPE AREA	TREATMENT AREA 6' MINIMUM WIDTH			SIDE SLOPE AREA
EC MATTING	ECONOJUTE*	COCONUT FIBER OR GEOJUTE PLUS*			ECONOJUTE*
SEED MIX	LOW GROW MIX SEE NOTE #5	NONE			LOW GROW MIX SEE NOTE #5
MAX. SLOPE	2.5H:1V	4H:1V TYP	FLAT BOTTOM	4H: V1	2.5H: V1

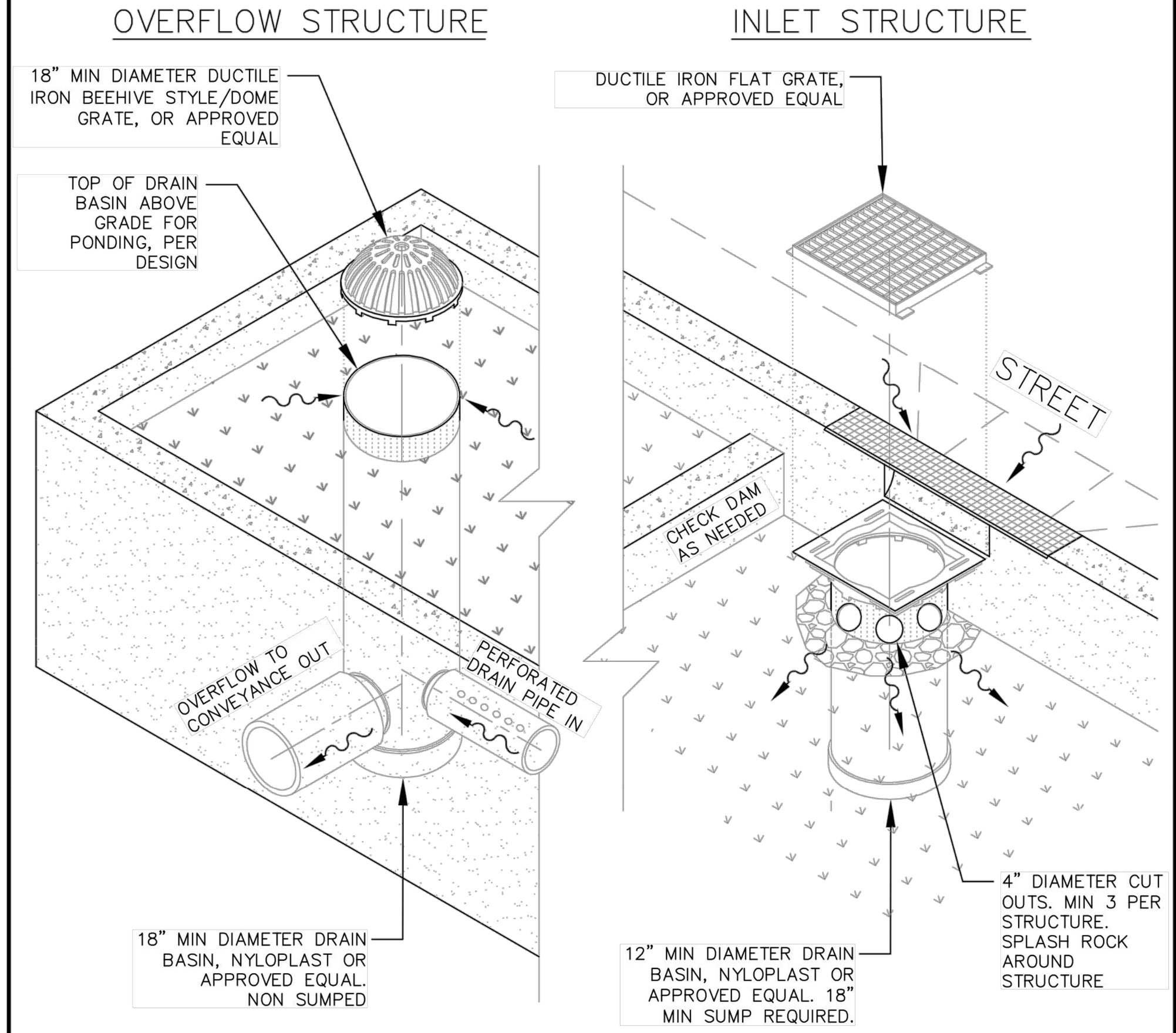
* OR AS APPROVED

NOTES:

1. REFER TO CHAPTER 4, CWS DESIGN & CONSTRUCTION STANDARDS, FOR LANDSCAPING REQUIREMENTS INCLUDING TREE PLACEMENT, TOPSOIL AND PLANTING SPECIFICATIONS.
2. PROVIDE IRRIGATION AS APPROVED BY CWS.
3. JUTE MATTING– GEOJUTE PLUS IN TREATMENT AREA, ECONOJUTE FOR ALL OTHER AREAS, OR SIMILIAR FABRICS. COCONUT FIBER IS ALSO ACCEPTABLE.
4. 12 INCHES OF AMENDED TOPSOIL SHALL BE PLACED THROUGHOUT THE WATER QUALITY FACILITY.
5. FREEBOARD AREA SEED MIX, DWARF TALL FESCUE 40%, DWARF PERENNIAL RYE 30%, CREEPING RED FESCUE 25%, COLONIAL BENT GRASS 5%. APPLY AT A RATE OF 120# / ACRE.

WATER QUALITY SWALE — 4 / C5.14 — Clean Water Services
DRAWING NO. 705 — REVISED 10-31-19

5 — OVERFLOW/INLET STRUCTURE



NOTE:

1. PLACE STRUCTURE ON 3/4" TO 0" BASE ROCK PLACED OVER NATIVE SUBGRADE.

OVERFLOW/INLET STRUCTURE — 5 / C5.14 — Clean Water Services
DRAWING NO. 760 — REVISED 10-31-19

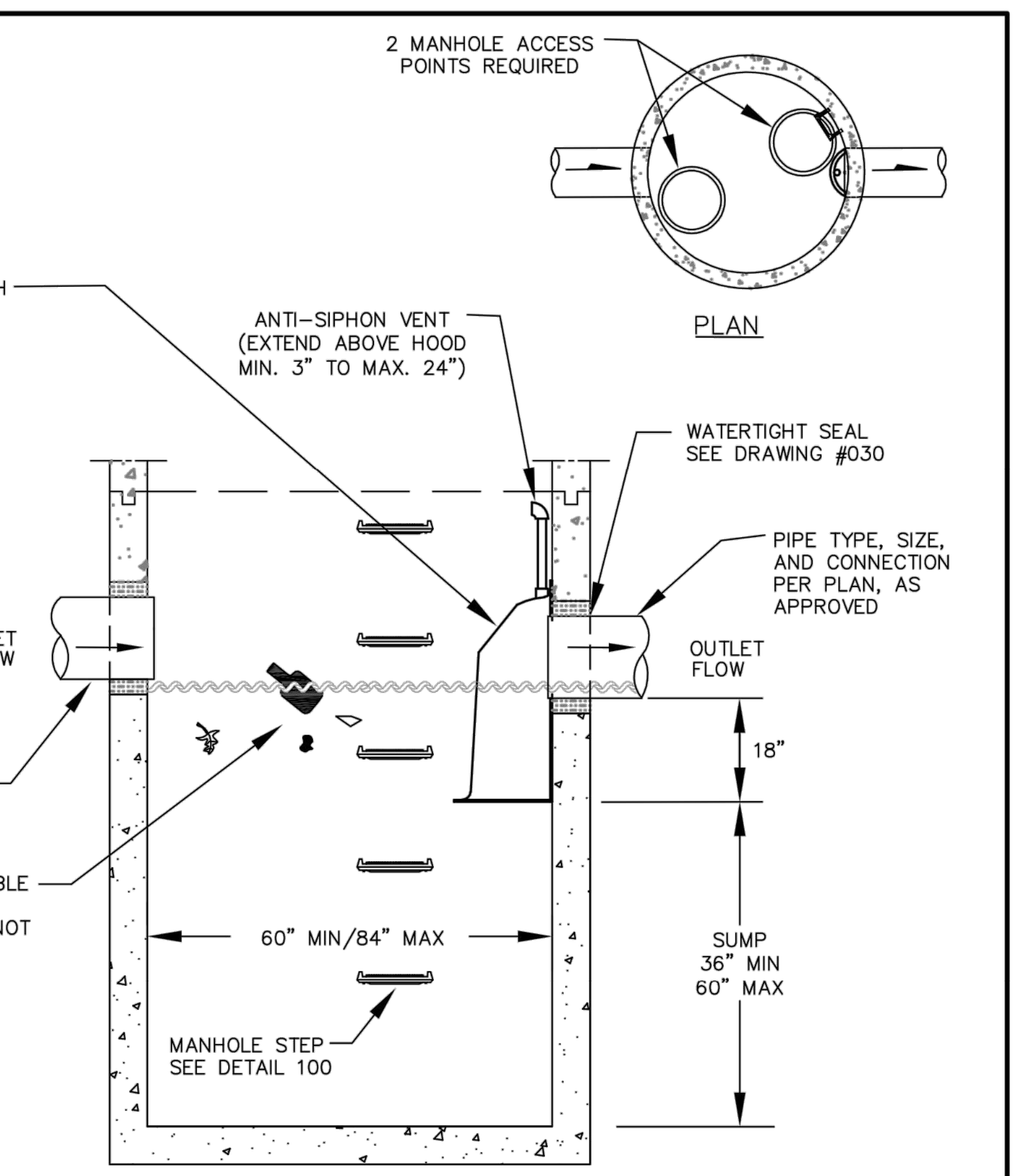
6 — WATER QUALITY MANHOLE (SNOUT) A

ALL SNOUTS AND TRAPS FOR CATCH BASINS AND WATER QUALITY STRUCTURES SHALL BE AS MANUFACTURED BY:

BEST MANAGEMENT PRODUCTS, INC.
53 MT. ARCHER RD.
LYME, CT 06371

(860) 434-0277, (860) 434-3195
FAX TOLL FREE: (800) 504-8008,
(888) 354-7585
WEB SITE: WWW.BMPINC.COM

OR PRE-APPROVED EQUAL.
SEE DETAIL #260



NOTES:

1. ALL MANHOLE SECTIONS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C-478 AND APPLICABLE PROVISIONS OF STD. MANHOLE DRAWING NO. 010.
2. INLET AND OUTLET PIPE NOT TO EXCEED 18" DIA.
3. PROVIDE SPECIAL DETAIL FOR SNOUT, EXCEEDING 18" DIA.
4. THE SIZE AND POSITION OF THE HOOD SHALL BE DETERMINED BY THE OUTLET PIPE SIZE AS PER MANUFACTURER'S RECOMMENDATIONS.
5. ANCHORING HARDWARE FOR THE HOOD SHALL BE EMBEDDED INTO CONCRETE; ANCHORING INTO GROUT IS NOT AUTHORIZED.
6. THE SURFACE OF THE STRUCTURE WHERE THE HOOD IS MOUNTED SHALL BE FINISHED SMOOTH AND FREE OF LOOSE MATERIAL.
7. INSTALL PER MANUFACTURER'S INSTRUCTIONS.
8. ALL MANHOLE FLAT TOPS SHALL CONFORM TO ASTM C-478 AND ARE DESIGNED TO MEET H-20 TRAFFIC LOADING.

SUMP VOLUME AVAILABLE PER DEPTH OF SUMP

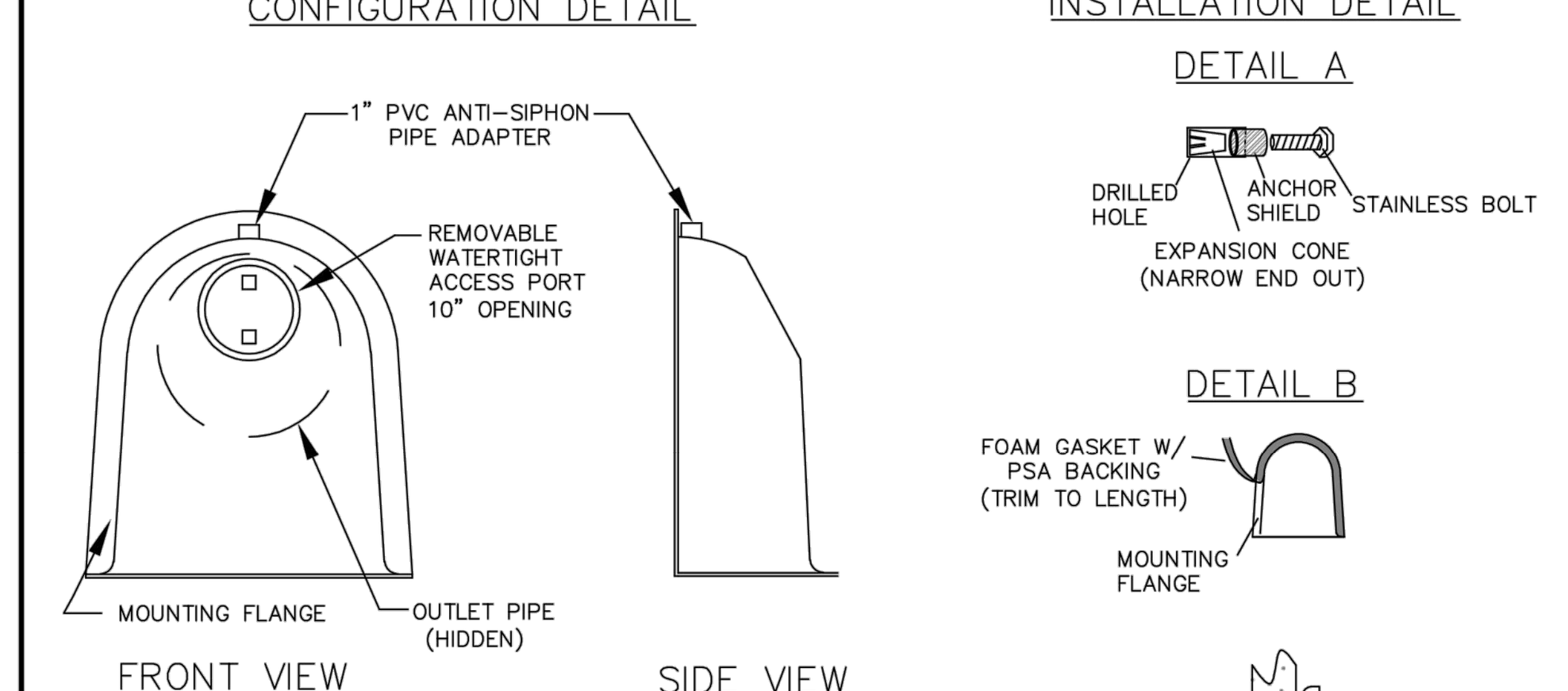
	36" MINIMUM	60" MAXIMUM
60" M.H.=	58.9 CF	98.1 CF
72" M.H.=	84.8 CF	141.3 CF
84" M.H.=	115.4 CF	192.4 CF

PROVIDE SPECIAL DETAIL FOR VOLUME REQUIREMENTS EXCEEDING 192.4 CF

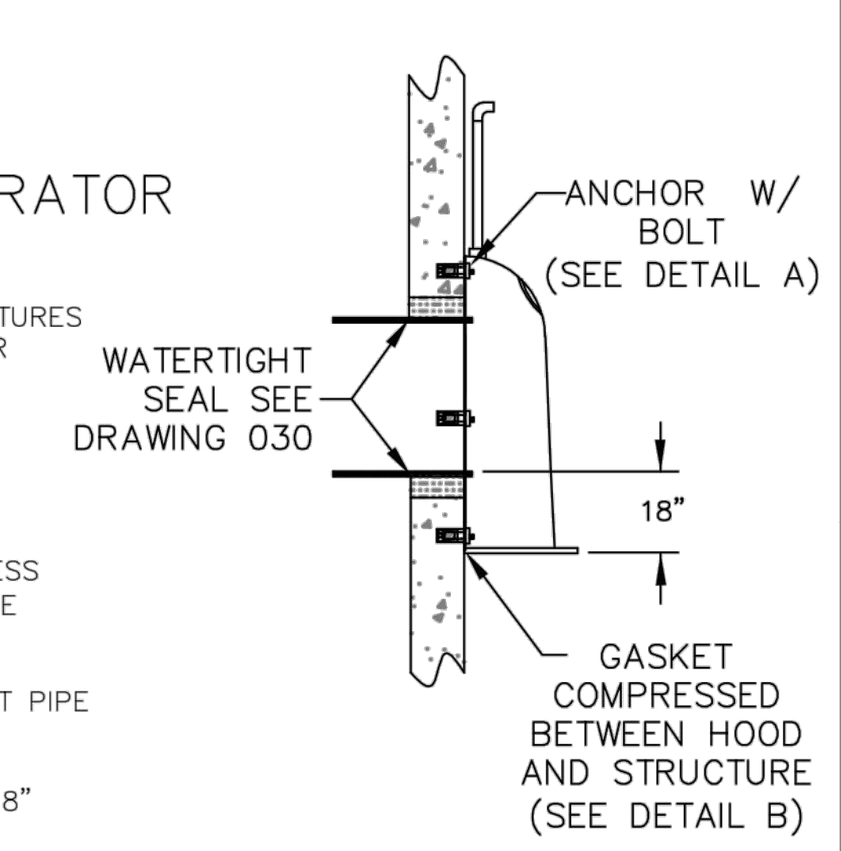
SUMP VOLUME REQUIREMENTS
20 CF/1.0 CFS OF INFLOW
58.9 CF MINIMUM REQUIRED

WATER QUALITY MANHOLE (SNOUT) A — 6 / C5.14 — Clean Water Services
DRAWING NO. 250 — REVISED 10-31-19

7 — WATER QUALITY MANHOLE (SNOUT) B



SNOUT OIL-WATER-DEBRIS SEPARATOR



NOTES:

1. ALL HOODS AND TRAPS FOR CATCH BASINS AND WATER QUALITY STRUCTURES SHALL BE AS MANUFACTURED BY BEST MANAGEMENT PRODUCTS, INC. OR PRE-APPROVED EQUAL.
2. ALL HOODS SHALL BE CONSTRUCTED OF A GLASS REINFORCED RESIN COMPOSITE WITH ISO GEL COAT EXTERIOR FINISH WITH A MINIMUM 0.125" LAMINATE THICKNESS.
3. ALL HOODS SHALL BE EQUIPPED WITH A MINIMUM 10", WATERTIGHT ACCESS PORT, A MOUNTING FLANGE, AND AN ANTI-SIPHON VENT AS DRAWN. (SEE CONFIGURATION DETAIL)
4. THE SIZE AND POSITION OF THE HOOD SHALL BE DETERMINED BY OUTLET PIPE SIZE AS PER MANUFACTURER'S RECOMMENDATION.
5. THE BOTTOM OF THE HOOD SHALL EXTEND DOWNWARD A DISTANCE OF 18" FROM I.E. OUT.
6. THE ANTI-SIPHON VENT SHALL EXTEND ABOVE HOOD BY MINIMUM OF 3" AND A MAXIMUM OF 24" ACCORDING TO STRUCTURE CONFIGURATION.
7. THE SURFACE OF THE STRUCTURE WHERE THE HOOD IS MOUNTED SHALL BE FINISHED SMOOTH AND FREE OF LOOSE MATERIAL.
8. THE HOOD SHALL BE SECURELY ATTACHED TO STRUCTURE WALL WITH STAINLESS STEEL BOLTS AND OIL-RESISTANT GASKET.
9. ANCHOR BOLTS SHALL BE INSTALLED INTO THE CONCRETE OF THE STRUCTURE'S WALL. (NOT WITHIN GROUT)
10. INSTALLATION INSTRUCTIONS SHALL BE FURNISHED WITH MANUFACTURER SUPPLIED INSTALLATION KIT.
    KIT SHALL INCLUDE:
    A. INSTALLATION INSTRUCTIONS
    B. PVC ANTI-SIPHON VENT PIPE AND ADAPTER
    C. OIL-RESISTANT CRUSHED CELL FOAM GASKET WITH PSA BACKING
    D. 3/8" STAINLESS STEEL BOLTS
    E. ANCHOR SHIELDS

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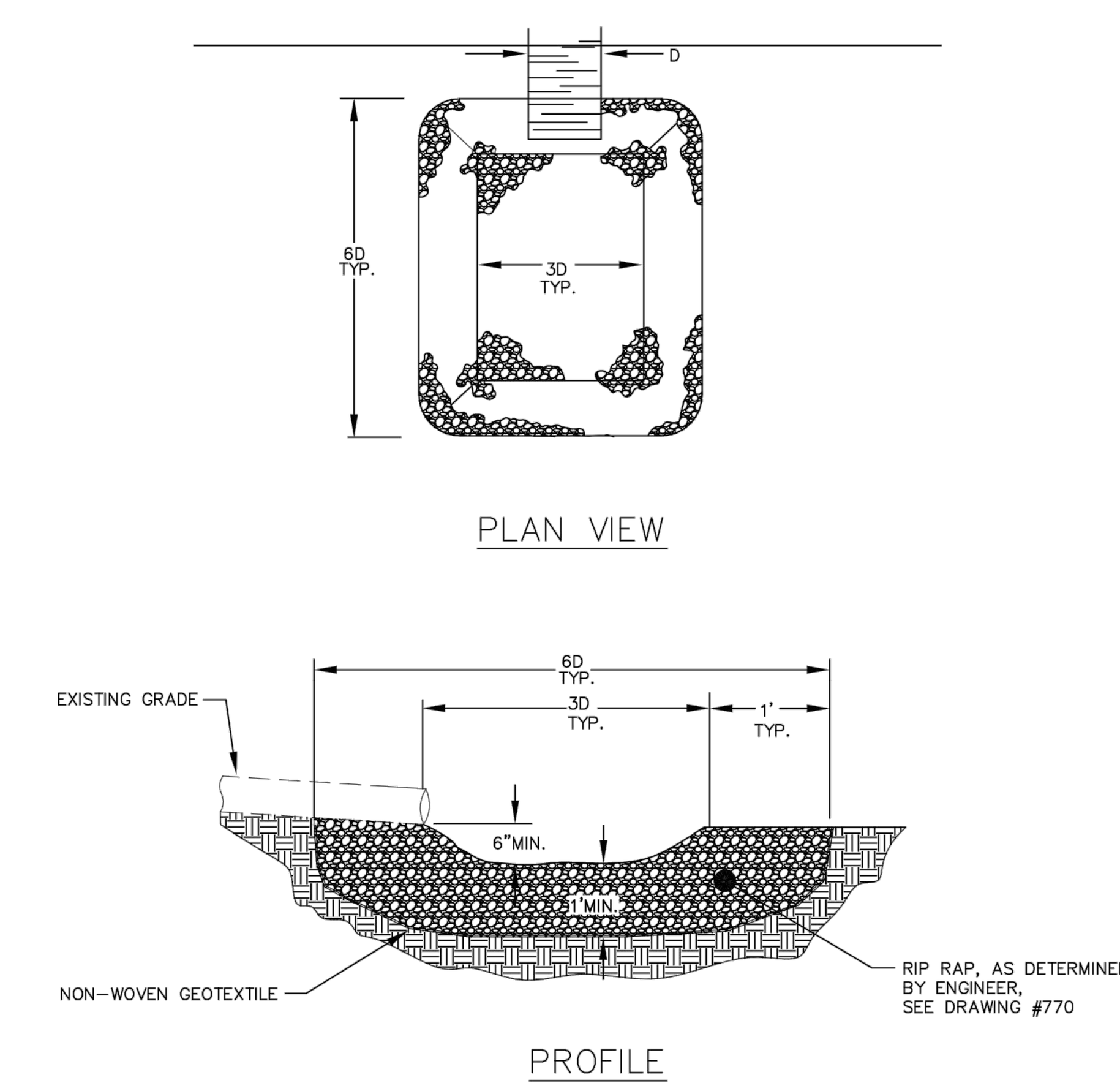
WEB SITE: WWW.BMPINC.COM

WHEN ORDERING, SPECIFY IF THE STRUCTURE IN WHICH THE HOOD WILL BE ATTACHED IS FLAT OR ROUND.

WATER QUALITY MANHOLE (SNOUT) B — 7 / C5.14 — Clean Water Services
DRAWING NO. 260 — REVISED 10-31-19

8 — OUTLET PROTECTION RIP RAP

FOR FURTHER INFORMATION ON DESIGN CRITERIA SEE CHAPTER 4 OF CLEAN WATER SERVICES EROSION PREVENTION AND SEDIMENT CONTROL PLANNING AND DESIGN MANUAL.



NOTE:

1. ADDITIONAL BMP'S ARE REQUIRED WHEN DISCHARGING SEDIMENT LADEN WATER.

OUTLET PROTECTION RIP RAP — 8 / C5.14 — Clean Water Services
DRAWING NO. 820 — REVISED 10-31-19

PROJECT SPECIFIC MANHOLES:

MANHOLE ID	WQ MH DIAM	WQ MH SUMP
WQ MH A-1	60"	3'
WQ MH D-1	60"	3'
WQ MH D-2	60"	3'
WQ MH C	60"	5'
EX WQ MH POND D	60"	5'

NOTE: THESE SUMP DEPTHS ARE IN ADDITION TO THE 18" BELOW THE IE OF THE OUTLET PIPE.

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NEW OFFICE BUILDING

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REVISION SCHEDULE

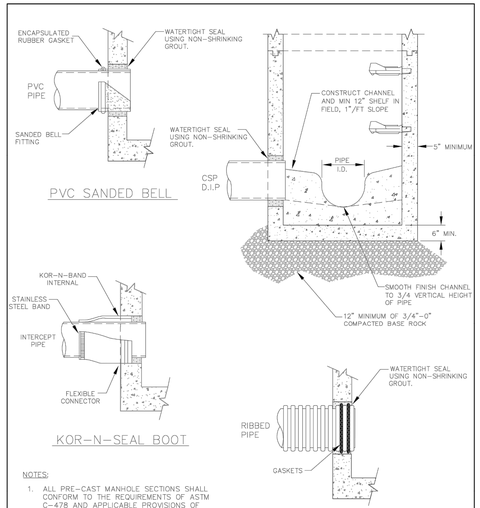
Delta	Issued As	Issue Date
1	PLANCHECK	10/18/2023
2	RFI 087	04/26/2024
3	RFI 138	07/03/2024

SHEET TITLE:
CWS DETAILS

SHEET:
C5.14

JOB NO. **2220087.00**

CONSTRUCTION SET 2/20/24

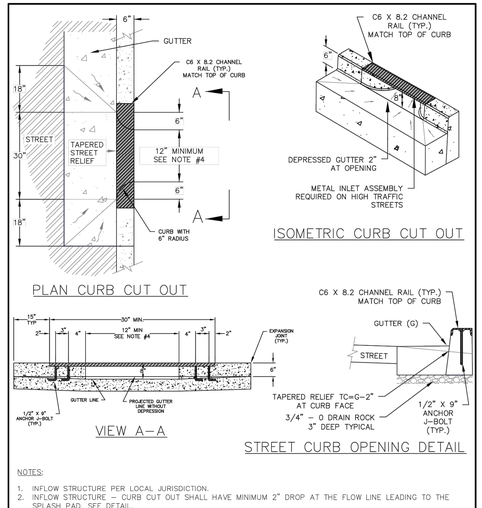


NOTES:

1. ALL PRE-CAST MANHOLE SECTIONS SHALL CONFORM TO THE REQUIREMENTS OF ASTM C-478 AND APPLICABLE PROVISIONS OF STANDARD DRAWING NO. 010.
2. ALTERNATE METHODS TO BE APPROVED BY CITY/DISTRICT.
3. BOOTS TO BE SIZED PER MANUFACTURER'S RECOMMENDATIONS/SPECIFICATIONS.

MANHOLE CONNECTIONS — 1 / C5.15 — REVISED 10-31-19

DRAWING NO. 030

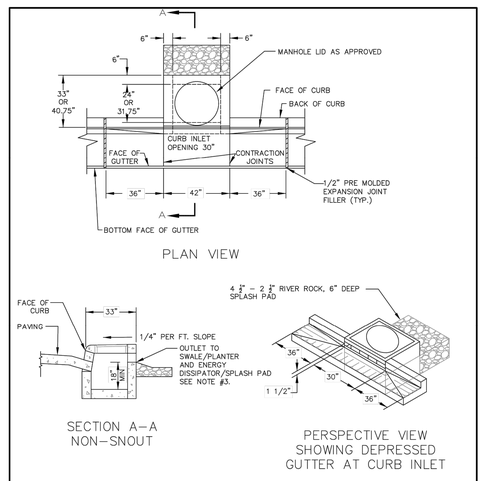


NOTES:

1. INFLOW STRUCTURE PER LOCAL JURISDICTION.
2. INFLOW STRUCTURE – CURB CUT OUT SHALL HAVE MINIMUM 2" DROP AT THE FLOW LINE LEADING TO THE SPLASH PAD, SEE DETAIL.
3. CURB PROFILE PER LOCAL JURISDICTION.
4. CURB CUT OUT TO MATCH INLET GRATE DIMENSION.

CURB CUT OUT TOP RAIL — 2 / C5.15 — REVISED 10-31-19

DRAWING NO. 753

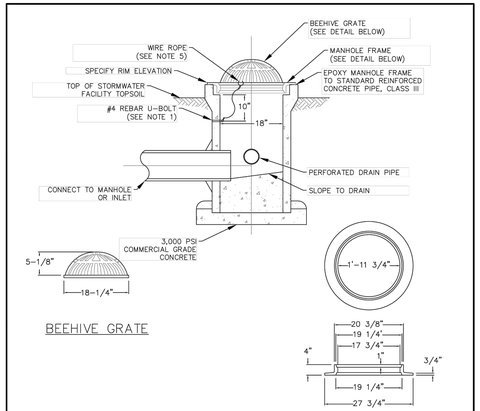


NOTES:

1. INSTALL STRUCTURE ON MINIMUM OF 8" OF 3/4" TO 0" COMPACTED BASE MATERIAL.
2. INSTALL ENERGY DISSIPATER/SPLASH PAD AT OUTFALL OF STRUCTURE.
3. FOUR INCH DIAMETER CUT OUTS, MINIMUM 3 CUT OUTS EVENLY SPACED PER INLET STRUCTURE, TYPICAL.

MODIFIED CG-30 INLET WITH SUMP — 3 / C5.15 — REVISED 10-31-19

DRAWING NO. 755

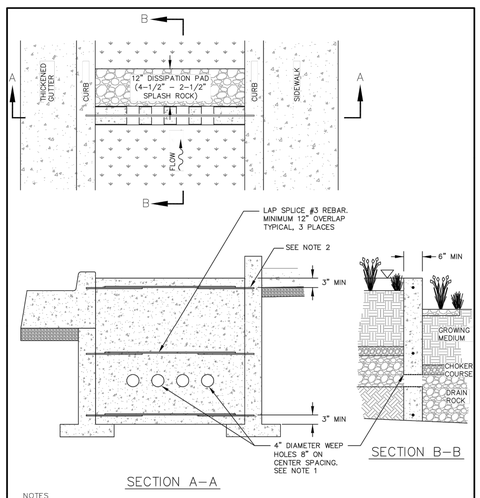


NOTES

1. SECURE GRATE IN PLACE WITH 54" OF WIRE ROPE, LOOP ENDS OF WIRE ROPE AROUND U-BOLT AND GRATE. CRIMP EACH END OF WIRE ROPE WITH 3" OVERLAP.
2. DRILL 2" DEEP HOLES INTO PIPE AND EPOXY #4 REBAR U-BOLT (2"X 4") IN HOLES.
3. GRATE TO BE CAST IRON, ASTM A48 CL30.
4. SIZE INLET BASED ON CALCULATED FLOWS AND MANUFACTURERS RECOMMENDATIONS.
5. WIRE ROPE BETWEEN 1/8"-3/16" DIAMETER, STAINLESS STEEL, 7 STRANDS OF 19 WIRES.

BEEHIVE INLET — 4 / C5.15 — REVISED 10-31-19

DRAWING NO. 758

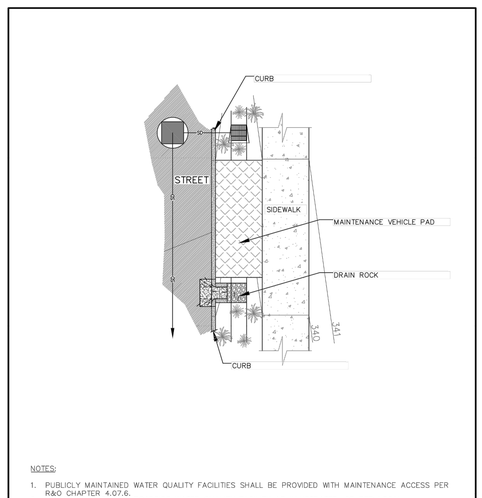


NOTES

1. WEEP HOLES TO BE PLACED WITHIN DRAIN ROCK LAYER. TOP OF WEEP HOLE TO BE SAME ELEVATION AS THE TOP OF DRAIN ROCK LAYER, ON LOWEST SIDE OF CHECK DAM.
2. MINIMUM 3" REBAR EMBEDMENT FOR CURB AND PLANTER WALL.
3. CHECK DAM SPACING SHALL PROVIDE A MINIMUM OF 2" FREEBOARD, AND AN 18" MAXIMUM DROP FROM ANY ADJACENT CURB TO TOP OF FACILITY GROWING MEDIUM.

CONCRETE CHECK DAM — 5 / C5.15 — REVISED 10-31-19

DRAWING NO. 762



NOTES:

1. PUBLICLY MAINTAINED WATER QUALITY FACILITIES SHALL BE PROVIDED WITH MAINTENANCE ACCESS PER R&O CHAPTER 4.07.6.
2. PROVIDE ACCESS FOR ROADSIDE WATER QUALITY FACILITY AS ILLUSTRATED, OR PER LOCAL JURISDICTION. DESIGN FOR TRAFFIC VOLUME AND/OR SIGHT DISTANCE MAY BE REQUIRED. MINIMUM 20' LONG, 7' WIDE PERVIOUS OR IMPERVIOUS PAVEMENT CAPABLE OF SUPPORTING A TYPICAL MAINTENANCE VEHICLE SHALL BE LOCATED WITHIN 10' OF ANY SUMPED STRUCTURES.
3. IF PERVIOUS PAVERS ARE USED, A STRUCTURAL BORDER SHALL BE DESIGNED TO PREVENT SHIFTING OF THE PAVERS.

PUBLIC WATER QUALITY FACILITY ACCESS — 6 / C5.15 — REVISED 10-31-19

DRAWING NO. 765

RIPRAP:

- ROCK FOR RIPRAP SHALL BE ANGULAR IN SHAPE.
- THICKNESS OF A SINGLE ROCK SHALL NOT BE LESS THAN ONE-THIRD ITS LENGTH.
- ROUNDED ROCK WILL NOT BE ACCEPTED UNLESS APPROVED BY THE DISTRICT.

RIPRAP INSTALLATION:

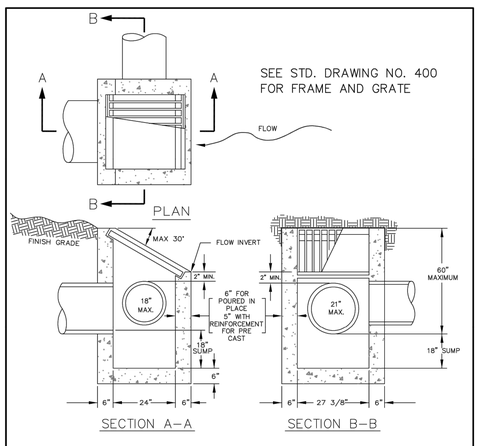
- EXCAVATE BELOW FINISH GRADE TO DEPTH & DIMENSIONS SHOWN ON APPROVED PLANS.
- INSTALL WOVEN GEOTEXTILE FABRIC.
- PLACE RIP RAP TO FINISH GRADE.

- GRADE RIPRAP SHALL BE THE CLASS AND SIZE OF ROCK ACCORDING TO THE FOLLOWING:

CLASS 50	CLASS 100	CLASS 200	CLASS 700	CLASS 2000	
		WEIGHT OF ROCK (LBS)			PERCENT (BY WEIGHT)
50-30	100-60	200-140	700-500	2000-1400	20
30-15	60-25	140-80	500-200	1400-700	30
15-2	25-2	80-8	200-20	700-40	40
2-0	2-0	8-0	20-0	40-0	10

RIP RAP DETAILS — 7 / C5.15 — REVISED 10-31-19

DRAWING NO. 790



NOTES:

1. ALL PRE CAST SECTIONS SHALL CONFORM TO REQUIREMENTS OF ASTM C-478.
2. INSTALL STRUCTURE ON MINIMUM OF 8" OF 3/4" – 0" COMPACTED BASE MATERIAL.
3. PRE CAST REINFORCEMENT SHALL BE REBAR MEETING ASTM A615 GRADE 60 OR WELDED WIRE MEETING ASTM A497
4. ALL POURED IN PLACE CONCRETE SHALL HAVE A 28 DAY STRENGTH OF 3000 PSI AND SLUMP OF 2" TO 4".
5. PRE-CAST STRUCTURE'S CONFORMING TO O.D.O.T. TYPE G-2 CATCH BASIN DESIGN/WITH DITCH INLET TOP ARE AN ACCEPTABLE ALTERNATE. ALL GRATE MATERIALS SHALL MEET C.W.S. STANDARDS AS SHOWN ON DETAIL #400

DITCH INLET — 8 / C5.15 — REVISED 10-31-19

DRAWING NO. 390

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REVISION SCHEDULE

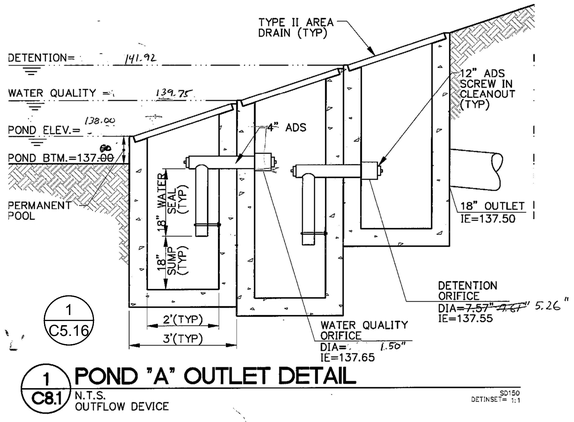
Delta	Issued As	Issue Date
1	PLAN CHECK	10/18/2023

SHEET TITLE:
CWS DETAILS

SHEET:
C5.15

JOB NO. **2220087.00**

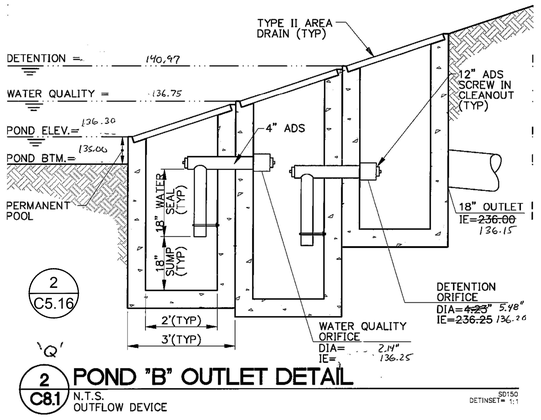
CONSTRUCTION SET 2/20/24



1 C8.1 **POND "A" OUTLET DETAIL**

N.T.S.
OUTFLOW DEVICE

DETAIL SHOWN IS FROM 2001 NOVELLUS CAMPUS DEVELOPMENT, NO CHANGES TO OUTLET STRUCTURE ARE PROPOSED WITH NEW CONSTRUCTION.



2 C8.1 **POND "B" OUTLET DETAIL**

N.T.S.
OUTFLOW DEVICE

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REVISION SCHEDULE

Delta	Issued As	Issue Date
1	PLAN CHECK	10/18/2023

SHEET TITLE:
NOVELLUS STORM POND DETAILS

SHEET:
C5.16

JOB NO. **2220087.00**

CONSTRUCTION SET 2/20/24

APPENDIX E

2001 NOVELLUS STORM REPORT

Storm Calculations

Novellus

Tualatin, Oregon



Project Number:000321

Dated: 2/14/01

REVISED: 3/6/01

Description:

Novellus is located on the northwest corner of SW Leveton Drive and SW 108th Avenue. The site is comprised of approximately 58 acres. The site currently has two buildings remaining from the previous Oki site. The two buildings were purchased by Novellus along with the property.

Water quality will be provided for all of the site including the existing impervious areas. Water quality will be provided to meet USA requirements which are to treat the "summer" storm or the first 0.36" of rainfall falling in a four hour period. Dry detention ponds with a permanent pool will be the method employed to accomplish treatment. The ponds are sized for full build out of the Novellus Master Plan as submitted in the Industrial Master Plan with the City of Tualatin.

Detention will be provided to limit runoff from the site to match existing runoff for storms upto the 25yr event. Each pond will serve approximately 25% of the full built out site. The SCS based software program "WaterWorks" has been used to design the detention ponds.

All pipes have been designed to convey the 25yr storm using SCS methodology.

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A. Vicinity Map
B. Site Map
C. Areas with full 'build-out'
D. Water Quality Volumes required
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G. SCS Soils Classification
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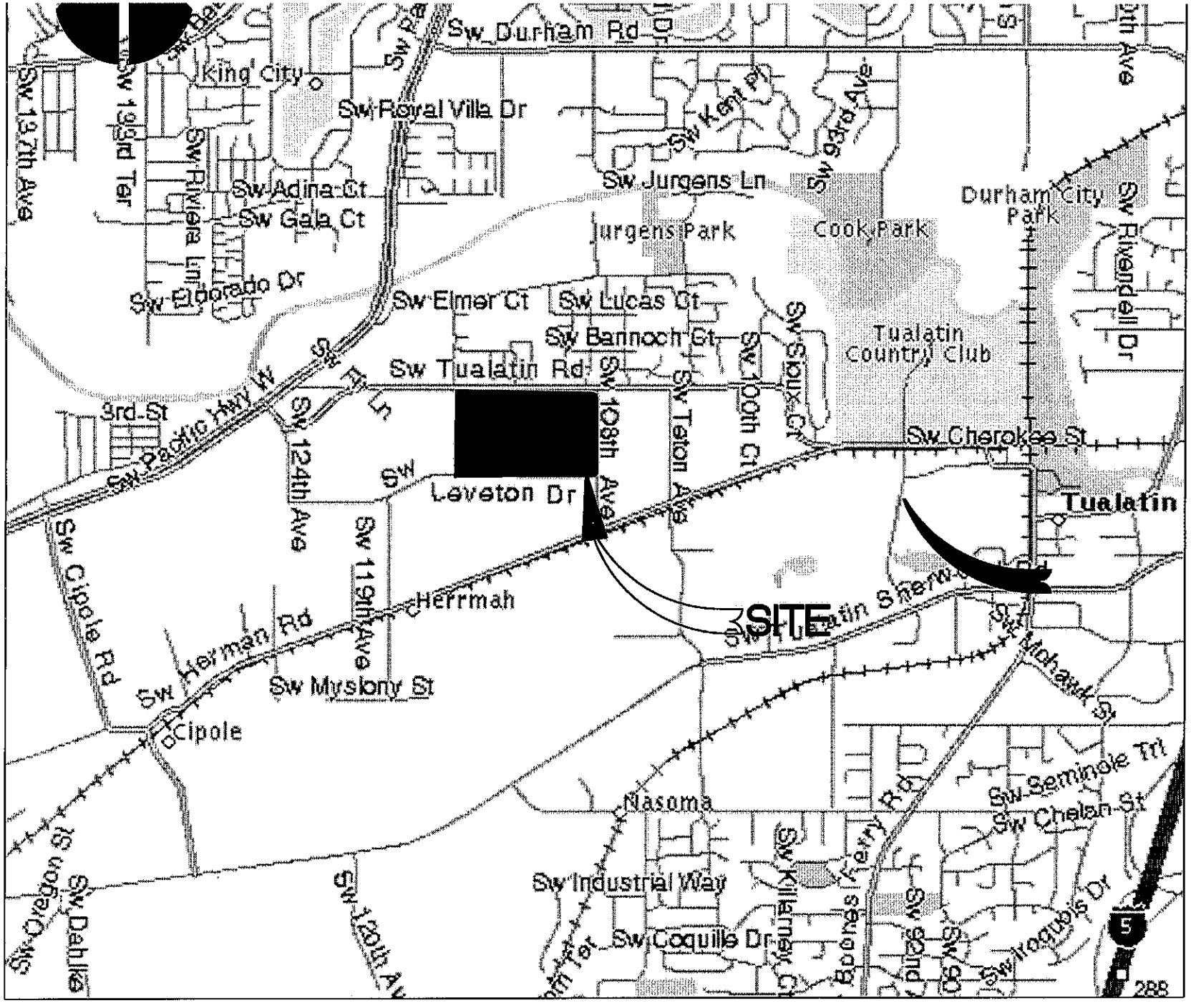
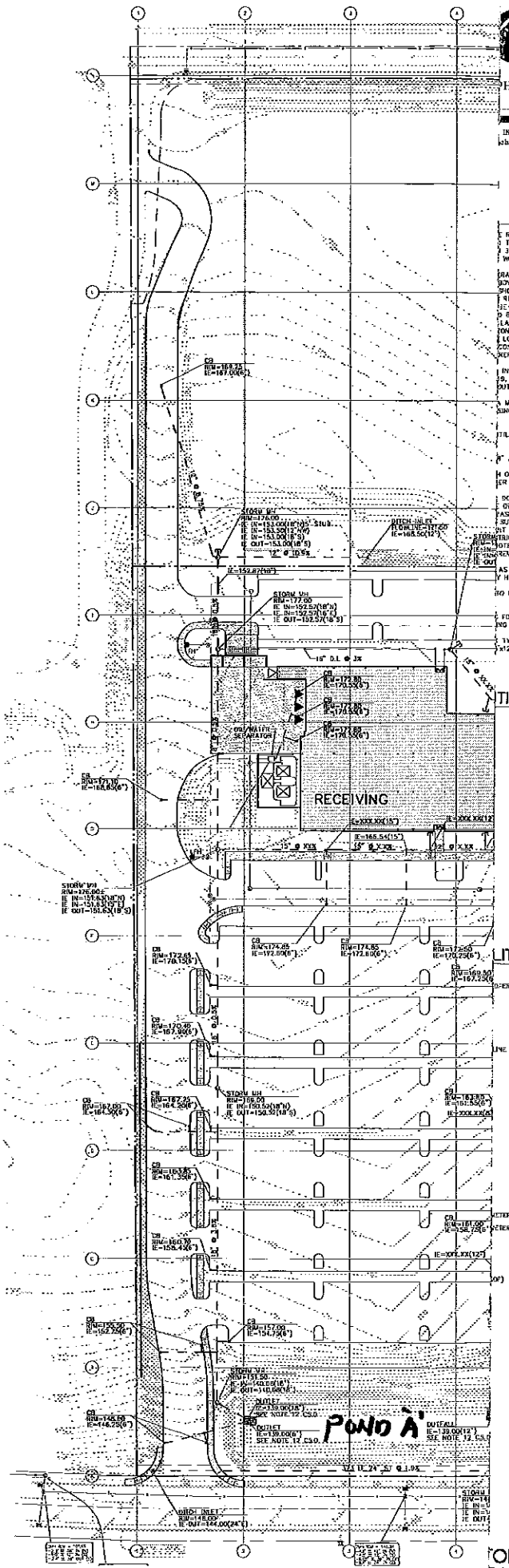
J. Pond 'A' Detention Volume
K. Water Quality Orifice Sizing
L. Pond 'A' Pond Outlet
M. Pond 'A' computer detention calc's
N. Pond 'B' Total Volume
O. Pond 'B' Detention Volume
P. Water Quality Orifice Sizing
Q. Pond 'B' Pond Outlet
R. Pond 'B' computer detention calc's
S. Pond 'C' Total Volume
T. Pond 'C' Detention Volume
U. Water Quality Orifice Sizing
V. Pond 'C' Pond Outlet
W. Pond 'C' computer detention calc's
X. Pipe sizing areas
Y. Computer volumes for pipe sizing
Z. Pipe sizing calc's

Attachment 'A' Drainage Map



`A' VICINITY MAP



HIC SCALE

IN FEET)
ch = 50 ft.

E REQUIREMENTS OF THE CITY OF TUALATIN,
THE CURRENT EDITION OF THE UNIFORM
BUILDING CODE. ALL WORK WITHIN THE
WORKS PERMIT.

RALLY DIAGRAMMATIC. THEY DO NOT
BOW REQUIRED FOR INSTALLATION IN THE
SHOW EVERY DIMENSION, COMPONENT
REQUIRED TO COMPLETE THE PROJECT.
E-CHECKED AND COORDINATED WITH
D BEFORE BEGINNING CONSTRUCTION.
LAYING WITHIN THE LIMITS OF EXCAVATION
ON, SIZE AND LOCATION BY UNCOVERING,
LOCAL PUBLIC AUTHORITIES WITH
CONSTRUCTION. CONTRACTOR TO NOTIFY
REPANCIES.

IN THE CURRENT UNIFORM PLUMBING CODE
S, AND CHAPTER 11, SECTION 1103.04.
OUTS ARE SHOWN ON THE PLANS.

MANNING'S "N" VALUE = 0.013.
ING CONCENTRIC PIPE TO PIPE AND

TILITIES LOCATED WITHIN THE BUILDING AND

AT 2.0% MIN. UNLESS NOTED OTHERWISE.

H OF EXISTING UTILITIES BY POTHOLING PRIOR
ER OF DISCREPANCIES.

DOMESTIC WATER METER VAULT AND BACKFLOW
DETECTOR CHECK VALVE (FIRE) VAULT.
ASE OF FIRE VAULT AND INSTALL 2" PVC DRAIN
SUMP PUMP TO DAYLIGHT AT NEAREST CURB.
NT FROM BUILDING ELECTRICAL ROOM TO
TRICAL SERVICE.
OTECTION CONTRACTOR FOR FLOW SENSOR
REVENTS.

AS A BACKGROUND SCREEN ON THIS SHEET IS
Y HICKMAN AND ASSOCIATES.

TO IRRIGATION CONTROLLER, SEE SPECIFICATIONS

FOR PIPING WITHIN THE BUILDING AND UP TO
NG ANY FOUNDATION DRAINAGE PIPING.

TYPE II RIP-RAP AT 12" AND LARGER STORM
x12" THICK TYPE II RIP-RAP AT 10" AND

TILITY LEGEND

FW

U.N.

LITY LEGEND

PERTY LINE

LINE (GTE)

METER

METER

(OF)

NOVELLUS

SWINERTON BUILDERS

Project
NOVELLUS TUALATIN FACILITY

Tualatin, Oregon

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REGISTERED PROFESSIONAL ENGINEER
OREGON
JULY 15, 1987
ROBERT L. FRENTRESS JR.
EXPIRES: 12/31/01

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REVISIONS:

REVISION	LAST REVISION THIS SHEET	REVISION EDITION CLOSING DATE

SHEET TITLE:
SITE STORM SEWER PLAN PHASE I

FIRST ISSUED:
LAST ISSUED:
DRAWN BY:
CHECKED BY:

SHEET C5.0 OF

GROUP MACKENZIE JOB NO. 000321
CONSULTANT JOB NO.

ORM SEWER PLAN
RAL REVIEW: 02/01/01

'B'

'C' AREAS W/ FULL 'BUILD-OUT'

POND 'A'

TOTAL AREA	= 598,000 ft	= 13.72 Ac
PERVIOUS AREA (15%)	= 89,700 ft	= 2.06 Ac
IMPERVIOUS AREA (85%)	= 508,300 ft	= 11.66 Ac

POND 'B'

TOTAL AREA	= 598,600 ft	= 13.72 Ac
PERVIOUS AREA	= 89,700 ft	= 2.06 Ac
IMPERVIOUS	= 508,300 ft	= 11.66 Ac

POND 'C'

TOTAL AREA	= 643,500 ft	= 14.77 Ac
PERVIOUS AREA	= 96,525 ft	= 2.22 Ac
IMPERVIOUS AREA	= 546,975 ft	= 12.55 Ac

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'D' WQ VOLUMES REQUIRED

POND 'A'

$$VOL = 508,300\ ft^2 \times 0.36\ in \times \frac{1ft}{12\ in} = 15,250\ ft^3$$

POND 'B'

$$VOL = 508,300\ ft^2 \times 0.36\ in \times \frac{1ft}{12\ in} = 15,249\ ft^3$$

POND 'C'

$$VOL = 546,975\ ft^2 \times 0.36\ in \times \frac{1ft}{12\ in} = 16,409\ ft^3$$

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'E' DETENTION SUMMARY

POND 'A'

	EXIST. (cfs)	DEVELOP. (cfs)	RELEASE (cfs)	PEAK STAGE	
2 YR	1.36	5.52	1.36	140.80	
10 YR	2.90	7.93	1.58	141.99	
25 YR	5.52	9.08	1.59	142.00	

POND 'B'

	EXIST. (cfs)	DEVEL. (cfs)	RELEASE (cfs)	PEAK STAGE	
2 YR	1.36	5.73	1.36	138.97	
10 YR	2.90	8.23	1.67	140.91	
25 YR	3.71	9.42	1.78	140.97	

POND 'C'

	EXIST. (cfs)	DEVEL. (cfs)	RELEASE (cfs)	PEAK STAGE	
2 YR	1.46	6.14	1.46	137.70	
10 YR	3.12	8.82	1.76	138.98	
25 YR	3.99	10.10	1.98	140.66	

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OREGON — SHEET NUMBER 47



0 1 Mile

0 5000 Feet

ale 1:20000

'F' SOILS MAP

TABLE 13.—*Soil and*

[Absence of an entry indicates the feature is not a concern. See Glossary for descriptions of such

Soil name and map symbol	Hydrologic group	Flooding		
		Frequency	Duration	Months
Aloha: 1	C	None		
Amity: 2	C	None		
Astoria: 3E, 3F	B	None		
Briedwell: 4B, 5B, 5C, 5D	B	None		
Carlton: 6B, 6C	B	None		
Cascade: 7B, 7C, 7D, 7E, 7F	C	None		
Chehalem: 8C	C	None		
Chehalis: 9, 10	B	Common	Brief	Nov-Mar
Cornelius: [1] 11B, [1] 11C, [1] 11D, [1] 11E, [1] 11F:				
Cornelius part	C	None		
Kinton part	C	None		
Cornelius Variant: 12A, 12B, 12C	C	None		
Cove: 13, 14	D	Common	Brief	Dec-Apr
Dayton: 15	D	None		
Delena: 16C	D	None		
Goble: 17B, 17C, 17D, 17E, 18E, 18F	C	None		
Helvetia: 19B, 19C, 19D, 19E	C	None		
Hembre: 20E, 20F, 20G	B	None		
Hillsboro: 21A, 21B, 21C, 21D	B	None		
Huberly: 22	D	None		
Jory: 23B, 23C, 23D, 23E, 23F	C	None		
Kilchis: [1] 24G:				
Kilchis part	C	None		
Klickitat part	B	None		

"H" SCS CURVE #

Table III-1.3 SCS Western Washington Runoff Curve Numbers
(Published by SCS in 1982) Runoff curve numbers for selected agricultural, suburban and urban land use for Type 1A rainfall distribution, 24-hour storm duration.

LAND USE DESCRIPTION		CURVE NUMBERS BY HYDROLOGIC SOIL GROUP A	B	C	D
Cultivated land(1):	winter condition	86	91	94	95
Mountain open areas:	low growing brush & grasslands	74	82	89	92
Meadow or pasture:		65	78	85	89
Wood or forest land:	undisturbed	42	64	76	81
Wood or forest land:	young second growth or brush	55	72	81	86
Orchard:	with cover crop	81	88	92	94
Open spaces, lawns, parks, golf courses, cemeteries, landscaping.					
Good condition:	grass cover on ≥75% of the area	68	80	86	90
Fair condition:	grass cover on 50-75% of the area	77	85	90	92
Gravel roads & parking lots:		76	85	89	91
Dirt roads & parking lots:		72	82	87	89
Impervious surfaces, pavement, roofs etc.		98	98	98	98
Open water bodies:	lakes, wetlands, ponds etc.	100	100	100	100
Single family residential(2):					
Dwelling Unit/Gross Acre	%Impervious(3)				
1.0 DU/GA	15				
1.5 DU/GA	20				
2.0 DU/GA	25				
2.5 DU/GA	30				
3.0 DU/GA	34				
3.5 DU/GA	38				
4.0 DU/GA	42				
4.5 DU/GA	46				
5.0 DU/GA	48				
5.5 DU/GA	50				
6.0 DU/GA	52				
6.5 DU/GA	54				
7.0 DU/GA	56				
PUD's, condos, apartments, commercial businesses & industrial areas	%impervious must be computed				
		Separate curve number shall be selected for pervious & impervious portions of the site or basin			

(1) For a more detailed description of agricultural land use curve numbers refer to National Engineering Handbook, Sec. 4, Hydrology, Chapter 9, August 1972.
(2) Assumes roof and driveway runoff is directed into street/storm system.
(3) The remaining pervious areas (lawn) are considered to be in good condition for these curve numbers.

'I' - POND 'A' TOTAL VOLUME

ELEV. (FT)	AREA (SF)	VOL (EF)	Cumm. VOL (CF)	
138	7015			
139	8904	7960	7960	
140	10,849	9876	17,836	← WQ VOL @ 139.75
141	12,851	11,850	29,686	
142	14,909	13,880	43,566	
143	17,024	15,967	59,532	

WQ RELEASE RATE

$$\frac{15{,}250\ ft^3}{48\ HRS} \times \frac{1\ HR}{3600\ s} = 0.088\ CS$$

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'J' - POND 'A' DETENTION VOLUME

ELEV (FT)	AREA (SF)	VOL (CF)	CUMM VOL (CF)
139.75	10,363		
140	10,849	2652	2652
141	12,851	11,850	14,501
142	14,909	13,880	28,382
143	17,024	15,967	41,348

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'K' - WQ ORIFICE 'A'

$Q = CA(2gh)^{1/2}$

$A = \dfrac{Q}{C(2gh)^{1/2}}$

$A = \dfrac{0.088}{0.62(2 \times 32.2 \times 2.10)^{1/2}}$

$A = 0.01224$

$d = \sqrt{\dfrac{4A}{\pi}} = 0.125' = \underline{1.50'' \ \phi}$

$Q = 0.088$

$C = 0.62$

$g = 32.2$

$h = 139.75 - 137.65 = 2.10'$

$A = \dfrac{\pi d^2}{4}$

$d = \sqrt{\dfrac{4A}{\pi}}$

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Sht. _____ of _____

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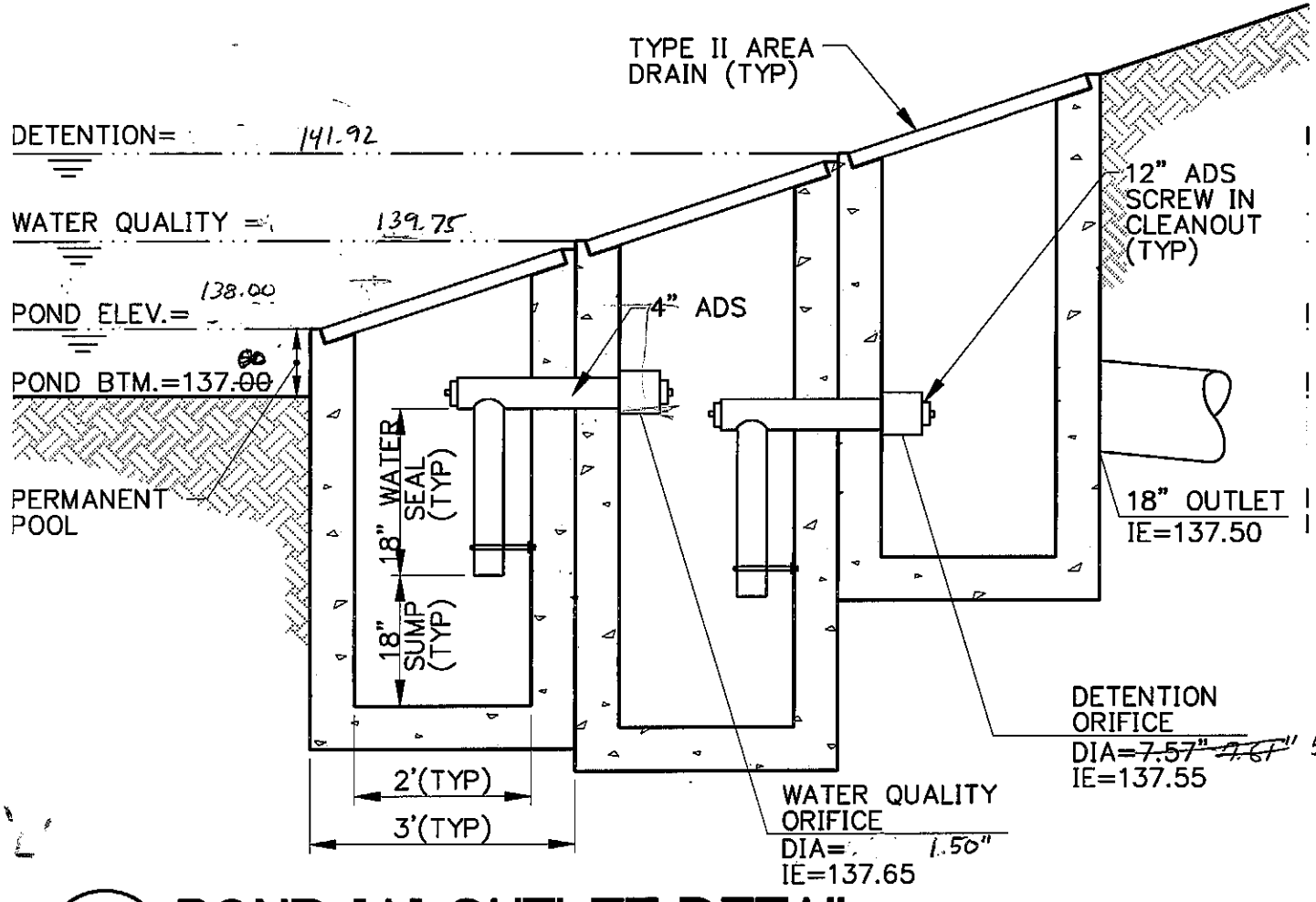

1 C8.1 POND "A" OUTLET DETAIL

N.T.S.
OUTFLOW DEVICE

SD150
DETINSET= 1:1

BASIN SUMMARY

BASIN ID: D10 NAME: DEVELOPED 10YR STORM
SBUH METHODOLOGY
TOTAL AREA.....: 13.72 Acres BASEFLOWS: 0.00 cfs
RAINFALL TYPE....: TYPE1A PERVIOUS AREA
PRECIPITATION....: 3.45 inches AREA..: 2.06 Acres
TIME INTERVAL....: 10.00 min CN....: 80.00
TIME OF CONC.....: 17.67 min IMPERVIOUS AREA
ABSTRACTION COEFF: 0.20 AREA..: 11.66 Acres
CN....: 98.00
TcReach - Sheet L: 30.00 ns:0.2400 p2yr: 2.50 s:0.0200
TcReach - Sheet L: 150.00 ns:0.0110 p2yr: 2.50 s:0.0020
TcReach - Channel L:1700.00 kc:42.00 s:0.0100
PEAK RATE: 7.93 cfs VOL: 3.40 Ac-ft TIME: 480 min

BASIN ID: D2 NAME: DEVELOPED 2YR STORM
SBUH METHODOLOGY
TOTAL AREA.....: 13.72 Acres BASEFLOWS: 0.00 cfs
RAINFALL TYPE....: TYPE1A PERVIOUS AREA
PRECIPITATION....: 2.50 inches AREA..: 2.06 Acres
TIME INTERVAL....: 10.00 min CN....: 80.00
TIME OF CONC.....: 17.67 min IMPERVIOUS AREA
ABSTRACTION COEFF: 0.20 AREA..: 11.66 Acres
CN....: 98.00
TcReach - Sheet L: 30.00 ns:0.2400 p2yr: 2.50 s:0.0200
TcReach - Sheet L: 150.00 ns:0.0110 p2yr: 2.50 s:0.0020
TcReach - Channel L:1700.00 kc:42.00 s:0.0100
PEAK RATE: 5.52 cfs VOL: 2.36 Ac-ft TIME: 480 min

BASIN ID: D25 NAME: DEVELOPED 25YR STORM
SBUH METHODOLOGY
TOTAL AREA.....: 13.72 Acres BASEFLOWS: 0.00 cfs
RAINFALL TYPE....: TYPE1A PERVIOUS AREA
PRECIPITATION....: 3.90 inches AREA..: 2.06 Acres
TIME INTERVAL....: 10.00 min CN....: 80.00
TIME OF CONC.....: 17.67 min IMPERVIOUS AREA
ABSTRACTION COEFF: 0.20 AREA..: 11.66 Acres
CN....: 98.00
TcReach - Sheet L: 30.00 ns:0.2400 p2yr: 2.50 s:0.0200
TcReach - Sheet L: 150.00 ns:0.0110 p2yr: 2.50 s:0.0020
TcReach - Channel L:1700.00 kc:42.00 s:0.0100
PEAK RATE: 9.08 cfs VOL: 3.90 Ac-ft TIME: 480 min

BASIN SUMMARY

BASIN ID: E10 NAME: EXISTING 10YR STORM
SBUH METHODOLOGY
TOTAL AREA.....: 13.72 Acres
RAINFALL TYPE....: TYPE1A
PRECIPITATION....: 3.45 inches
TIME INTERVAL....: 10.00 min
TIME OF CONC.....: 38.83 min
ABSTRACTION COEFF: 0.20
BASEFLOWS: 0.00 cfs
PERVIOUS AREA
AREA..: 13.72 Acres
CN....: 80.00
IMPERVIOUS AREA
AREA..: 0.00 Acres
CN....: 98.00
TcReach - Sheet L: 300.00 ns:0.2400 p2yr: 2.50 s:0.0400
TcReach - Shallow L: 300.00 ks:10.00 s:0.0400
TcReach - Channel L:1400.00 kc:17.00 s:0.0400
PEAK RATE: 2.90 cfs VOL: 1.83 Ac-ft TIME: 490 min

BASIN ID: E2 NAME: EXISTING 2YR STORM
SBUH METHODOLOGY
TOTAL AREA.....: 13.72 Acres
RAINFALL TYPE....: TYPE1A
PRECIPITATION....: 2.50 inches
TIME INTERVAL....: 10.00 min
TIME OF CONC.....: 38.83 min
ABSTRACTION COEFF: 0.20
BASEFLOWS: 0.00 cfs
PERVIOUS AREA
AREA..: 13.72 Acres
CN....: 80.00
IMPERVIOUS AREA
AREA..: 0.00 Acres
CN....: 98.00
TcReach - Sheet L: 300.00 ns:0.2400 p2yr: 2.50 s:0.0400
TcReach - Shallow L: 300.00 ks:10.00 s:0.0400
TcReach - Channel L:1400.00 kc:17.00 s:0.0400
PEAK RATE: 1.36 cfs VOL: 1.02 Ac-ft TIME: 490 min

BASIN ID: E25 NAME: EXISTING 25YR STORM
SBUH METHODOLOGY
TOTAL AREA.....: 13.72 Acres
RAINFALL TYPE....: TYPE1A
PRECIPITATION....: 3.90 inches
TIME INTERVAL....: 10.00 min
TIME OF CONC.....: 38.83 min
ABSTRACTION COEFF: 0.20
BASEFLOWS: 0.00 cfs
PERVIOUS AREA
AREA..: 13.72 Acres
CN....: 80.00
IMPERVIOUS AREA
AREA..: 0.00 Acres
CN....: 98.00
TcReach - Sheet L: 300.00 ns:0.2400 p2yr: 2.50 s:0.0400
TcReach - Shallow L: 300.00 ks:10.00 s:0.0400
TcReach - Channel L:1400.00 kc:17.00 s:0.0400
PEAK RATE: 3.71 cfs VOL: 2.24 Ac-ft TIME: 490 min

HYDROGRAPH SUMMARY

HYD NUM	PEAK RUNOFF RATE cfs	TIME OF PEAK min.	VOLUME OF HYDRO cf\AcFt	Contrib Area Acres
1	1.356	490	44270 cf	13.72
2	2.902	490	79526 cf	13.72
3	3.714	490	97581 cf	13.72
5	5.522	480	102758 cf	13.72
6	7.929	480	148087 cf	13.72
7	9.079	480	169790 cf	13.72
10	1.355	700	102983 cf	13.72
11	1.584	630	35096 cf	13.72
12	1.570	530	27536 cf	13.72

ROUTING REPORT

STORAGE LIST ID No. A
Description:

MULTIPLE ORIFICE ID No. A
Description:
Outlet Elev: 137.55
Elev: 137.55 ft Orifice Diameter: 5.2617 in.

ROUTING CURVE

STAGE (ft)	STORAGE (cf)	OUTFLOW (cfs)	O+2S cfs-min	STAGE (ft)	STORAGE (cf)	OUTFLOW (cfs)	O+2S cfs-min	STAGE (ft)	STORAGE (cf)	OUTFLOW (cfs)	O+2S cfs-min
137.55	0.0000	0.0000	0.0000	139.10	3837	0.9354	13.725	140.70	24218	1.3334	82.059
137.60	0.0000	0.1680	0.1680	139.20	5022	0.9651	17.704	140.80	25606	1.3544	86.707
137.70	0.0000	0.2910	0.2910	139.30	6207	0.9939	21.683	140.90	26994	1.3751	91.355
137.80	0.0000	0.3757	0.3757	139.40	7392	1.0219	25.661	141.00	28382	1.3955	96.002
137.90	0.0000	0.4445	0.4445	139.50	8577	1.0491	29.637	141.10	29979	1.4156	101.34
138.00	0.0000	0.5040	0.5040	139.60	9761	1.0757	33.614	141.20	31575	1.4354	106.69
138.10	0.0000	0.5572	0.5572	139.70	10946	1.1016	37.589	141.30	33172	1.4549	112.03
138.20	0.0000	0.6057	0.6057	139.80	12131	1.1270	41.564	141.40	34768	1.4742	117.37
138.30	0.0000	0.6507	0.6507	139.90	13316	1.1517	45.539	141.50	36365	1.4932	122.71
138.40	0.0000	0.6927	0.6927	140.00	14501	1.1760	49.513	141.60	37962	1.5120	128.05
138.50	0.0000	0.7323	0.7323	140.10	15889	1.1997	54.163	141.70	39558	1.5305	133.39
138.60	0.0000	0.7699	0.7699	140.20	17277	1.2230	58.814	141.80	41155	1.5489	138.73
138.70	0.0000	0.8057	0.8057	140.30	18665	1.2459	63.464	141.90	42751	1.5670	144.07
138.80	530.40	0.8400	2.6080	140.40	20053	1.2684	68.113				
138.90	1591	0.8729	6.1769	140.50	21442	1.2904	72.762				
139.00	2652	0.9047	9.7447	140.60	22830	1.3121	77.411				

LEVEL POOL ROUTING TABLE

MATCH Q (cfs) : 1.36 INFLOW Q (cfs): 5.52
PEAK STAGE (ft): 140.80 PEAK OUTFLOW : 1.36
PEAK TIME: 700.00 min.
INFLOW HYD No. : 5 OUTFLOW HYD No.: 10

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
0.0000	0.0001	0.0000	0.0001	0.0000	0.0001	137.55	50.00
0.0001	0.0062	0.0000	0.0063	0.0001	0.0062	137.55	60.00
0.0062	0.0358	0.0000	0.0420	0.0062	0.0358	137.55	70.00
0.0358	0.0902	0.0000	0.1259	0.0358	0.0902	137.55	80.00
0.0902	0.1532	0.0000	0.2434	0.0902	0.1532	137.55	90.00
0.1532	0.2163	0.0000	0.3695	0.1532	0.2163	137.55	100.00
0.2163	0.2756	0.0000	0.4919	0.2163	0.2756	137.55	110.00
0.2756	0.3295	0.0000	0.6051	0.2756	0.3295	137.55	120.00
0.3295	0.3947	0.0000	0.7242	0.3295	0.3947	137.55	130.00
0.3947	0.4686	0.0000	0.8633	0.3947	0.4686	137.55	140.00
0.4686	0.5284	0.0000	0.9970	0.4686	0.5284	137.55	150.00
0.5284	0.5757	0.0000	1.1042	0.5284	0.5757	137.55	160.00
0.5757	0.6188	0.0000	1.1946	0.5757	0.6188	137.55	170.00
0.6188	0.6554	0.0000	1.2742	0.6188	0.6554	137.55	180.00
0.6554	0.6842	0.0000	1.3396	0.6554	0.6842	137.55	190.00
0.6842	0.7129	0.0000	1.3971	0.6842	0.7129	137.55	200.00
0.7129	0.7378	0.0000	1.4507	0.7129	0.7378	137.55	210.00
0.7378	0.7566	0.0000	1.4944	0.7378	0.7566	137.55	220.00
0.7566	0.7773	0.0000	1.5339	0.7566	0.7773	137.55	230.00
0.7773	0.7952	0.0000	1.5725	0.7773	0.7952	137.55	240.00
0.7952	0.8366	0.0000	1.6319	0.7952	0.8366	137.55	250.00
0.8366	0.8912	0.0304	1.7583	0.8063	0.9520	138.70	260.00
0.8912	0.9280	0.1435	1.9627	0.8085	1.1543	138.71	270.00
0.9280	0.9574	0.3419	2.2273	0.8123	1.4150	138.72	280.00
0.9574	0.9756	0.5977	2.5306	0.8173	1.7133	138.73	290.00
0.9756	0.9904	0.8904	2.8563	0.8230	2.0334	138.75	300.00
0.9904	1.1189	1.2043	3.3136	0.8291	2.4846	138.77	310.00
1.1189	1.3095	1.6469	4.0754	0.8376	3.2377	138.79	320.00
1.3095	1.4235	2.3919	5.1249	0.8458	4.2791	138.82	330.00
1.4235	1.4938	3.4237	6.3410	0.8554	5.4856	138.85	340.00
1.4938	1.5398	4.6191	7.6527	0.8666	6.7861	138.88	350.00
1.5398	1.5727	5.9077	9.0202	0.8784	8.1418	138.92	360.00
1.5727	1.5694	7.2514	10.393	0.8904	9.5031	138.96	370.00
1.5694	1.5448	8.6005	11.715	0.9025	10.812	138.99	380.00
1.5448	1.5328	9.8993	12.977	0.9129	12.064	139.03	390.00
1.5328	1.5311	11.141	14.205	0.9226	13.283	139.06	400.00
1.5311	1.5386	12.351	15.421	0.9320	14.489	139.09	410.00
1.5386	1.5435	13.548	16.630	0.9411	15.689	139.12	420.00
1.5435	1.9599	14.739	18.242	0.9500	17.292	139.15	430.00
1.9599	2.6167	16.330	20.907	0.9620	19.945	139.19	440.00
2.6167	3.0001	18.963	24.580	0.9813	23.599	139.26	450.00

LEVEL POOL ROUTING TABLE

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
3.0001	3.8181	22.591	29.410	1.0074	28.402	139.35	460.00
3.8181	4.8896	27.362	36.069	1.0407	35.029	139.47	470.00
4.8896	5.5224	33.944	44.356	1.0849	43.271	139.64	480.00
5.5224	5.0947	42.133	52.750	1.1376	51.613	139.84	490.00
5.0947	4.0608	50.426	59.582	1.1867	58.395	140.05	500.00
4.0608	3.4876	57.174	64.722	1.2209	63.501	140.19	510.00
3.4876	3.1022	62.255	68.845	1.2461	67.599	140.30	520.00
3.1022	2.8252	66.333	72.261	1.2659	70.995	140.39	530.00
2.8252	2.6735	69.713	75.211	1.2820	73.929	140.46	540.00
2.6735	2.4188	72.633	77.726	1.2959	76.430	140.53	550.00
2.4188	2.1056	75.122	79.647	1.3075	78.339	140.58	560.00
2.1056	1.9318	77.023	81.060	1.3164	79.744	140.62	570.00
1.9318	1.8402	78.421	82.193	1.3228	80.870	140.65	580.00
1.8402	1.7861	79.542	83.169	1.3280	81.841	140.67	590.00
1.7861	1.7572	80.508	84.052	1.3324	82.719	140.70	600.00
1.7572	1.7089	81.383	84.849	1.3364	83.512	140.71	610.00
1.7089	1.6498	82.172	85.531	1.3400	84.191	140.73	620.00
1.6498	1.6177	82.848	86.115	1.3431	84.772	140.75	630.00
1.6177	1.5965	83.427	86.641	1.3457	85.295	140.76	640.00
1.5965	1.5897	83.947	87.133	1.3481	85.785	140.77	650.00
1.5897	1.5869	84.435	87.612	1.3503	86.261	140.78	660.00
1.5869	1.5149	84.909	88.011	1.3524	86.658	140.79	670.00
1.5149	1.4041	85.304	88.223	1.3542	86.869	140.80	680.00
1.4041	1.3427	85.514	88.260	1.3552	86.905	140.80	690.00
1.3427	1.3131	85.550	88.206	1.3553	86.850	140.80	700.00
1.3131	1.2929	85.495	88.101	1.3551	86.746	140.80	710.00
1.2929	1.2822	85.392	87.967	1.3546	86.612	140.80	720.00
1.2822	1.2808	85.258	87.821	1.3540	86.467	140.80	730.00
1.2808	1.2764	85.114	87.671	1.3534	86.318	140.79	740.00
1.2764	1.2744	84.965	87.516	1.3527	86.163	140.79	750.00
1.2744	1.2780	84.811	87.364	1.3520	86.012	140.79	760.00
1.2780	1.2762	84.660	87.214	1.3513	85.863	140.79	770.00
1.2762	1.2757	84.513	87.065	1.3506	85.714	140.78	780.00
1.2757	1.2081	84.364	86.848	1.3499	85.498	140.78	790.00
1.2081	1.0987	84.149	86.456	1.3490	85.107	140.77	800.00
1.0987	1.0378	83.759	85.896	1.3472	84.549	140.77	810.00
1.0378	1.0040	83.204	85.246	1.3447	83.901	140.75	820.00
1.0040	0.9854	82.559	84.549	1.3418	83.207	140.74	830.00
0.9854	0.9752	81.868	83.829	1.3386	82.490	140.72	840.00
0.9752	1.0037	81.155	83.134	1.3354	81.798	140.71	850.00
1.0037	1.0582	80.466	82.528	1.3322	81.196	140.69	860.00
1.0582	1.0890	79.866	82.014	1.3295	80.684	140.68	870.00
1.0890	1.1022	79.357	81.548	1.3271	80.221	140.67	880.00
1.1022	1.1142	78.896	81.112	1.3250	79.787	140.66	890.00
1.1142	1.1212	78.464	80.700	1.3230	79.377	140.65	900.00
1.1212	1.1211	78.056	80.298	1.3211	78.977	140.64	910.00
1.1211	1.1257	77.658	79.904	1.3193	78.585	140.63	920.00

LEVEL POOL ROUTING TABLE

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
1.1257	1.1285	77.268	79.522	1.3175	78.204	140.63	930.00
1.1285	1.1261	76.889	79.143	1.3157	77.828	140.62	940.00
1.1261	1.1293	76.513	78.769	1.3140	77.455	140.61	950.00
1.1293	1.1314	76.143	78.403	1.3123	77.091	140.60	960.00
1.1314	1.0216	75.780	77.933	1.3106	76.623	140.59	970.00
1.0216	0.8577	75.314	77.194	1.3084	75.885	140.58	980.00
0.8577	0.7661	74.580	76.204	1.3050	74.899	140.57	990.00
0.7661	0.7108	73.599	75.076	1.3004	73.775	140.55	1000.00
0.7108	0.6842	72.480	73.875	1.2951	72.580	140.52	1010.00
0.6842	0.6695	71.290	72.644	1.2895	71.355	140.50	1020.00
0.6695	0.7299	70.071	71.470	1.2837	70.187	140.47	1030.00
0.7299	0.8367	68.908	70.475	1.2782	69.197	140.44	1040.00
0.8367	0.8966	67.923	69.657	1.2735	68.383	140.42	1050.00
0.8966	0.9303	67.113	68.940	1.2696	67.671	140.41	1060.00
0.9303	0.9493	66.404	68.284	1.2662	67.018	140.39	1070.00
0.9493	0.9601	65.755	67.664	1.2631	66.401	140.38	1080.00
0.9601	0.9319	65.141	67.033	1.2601	65.773	140.36	1090.00
0.9319	0.8776	64.516	66.325	1.2571	65.068	140.35	1100.00
0.8776	0.8474	63.815	65.540	1.2536	64.286	140.33	1110.00
0.8474	0.9641	63.036	64.848	1.2499	63.598	140.32	1120.00
0.9641	0.8960	62.351	64.211	1.2465	62.965	140.30	1130.00
0.8960	0.7289	61.721	63.346	1.2434	62.103	140.29	1140.00
0.7289	0.7691	60.863	62.361	1.2392	61.122	140.27	1150.00
0.7691	0.7874	59.888	61.444	1.2344	60.210	140.25	1160.00
0.7874	0.7977	58.980	60.565	1.2299	59.335	140.23	1170.00
0.7977	0.8079	58.110	59.715	1.2256	58.490	140.21	1180.00
0.8079	0.8094	57.268	58.885	1.2214	57.664	140.19	1190.00
0.8094	0.8104	56.447	58.067	1.2173	56.849	140.18	1200.00
0.8104	0.8153	55.636	57.262	1.2132	56.049	140.16	1210.00
0.8153	0.8139	54.839	56.469	1.2092	55.259	140.14	1220.00
0.8139	0.8132	54.054	55.681	1.2052	54.476	140.12	1230.00
0.8132	0.8173	53.275	54.905	1.2013	53.704	140.11	1240.00
0.8173	0.8153	52.507	54.139	1.1974	52.942	140.09	1250.00
0.8153	0.8143	51.748	53.378	1.1935	52.184	140.07	1260.00
0.8143	0.8182	50.995	52.627	1.1896	51.438	140.06	1270.00
0.8182	0.8162	50.252	51.886	1.1858	50.701	140.04	1280.00
0.8162	0.8152	49.519	51.150	1.1820	49.968	140.03	1290.00
0.8152	0.8190	48.790	50.424	1.1783	49.245	140.01	1300.00
0.8190	0.8169	48.071	49.707	1.1744	48.533	139.99	1310.00
0.8169	0.8159	47.363	48.995	1.1700	47.825	139.98	1320.00
0.8159	0.7808	46.660	48.256	1.1657	47.091	139.96	1330.00
0.7808	0.7266	45.930	47.437	1.1612	46.276	139.94	1340.00
0.7266	0.6963	45.119	46.542	1.1562	45.386	139.92	1350.00
0.6963	0.6752	44.235	45.607	1.1508	44.456	139.90	1360.00
0.6752	0.6677	43.311	44.654	1.1450	43.509	139.87	1370.00
0.6677	0.6637	42.370	43.701	1.1391	42.562	139.85	1380.00
0.6637	0.6571	41.429	42.750	1.1332	41.617	139.83	1390.00

LEVEL POOL ROUTING TABLE

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
0.6571	0.6578	40.489	41.804	1.1273	40.677	139.80	1400.00
0.6578	0.6583	39.556	40.872	1.1213	39.751	139.78	1410.00
0.6583	0.6543	38.635	39.948	1.1154	38.832	139.75	1420.00
0.6543	0.6565	37.723	39.034	1.1096	37.924	139.73	1430.00
0.6565	0.6577	36.820	38.135	1.1038	37.031	139.71	1440.00
0.6577	0.5109	35.933	37.101	1.0980	36.003	139.69	1450.00
0.5109	0.2855	34.912	35.709	1.0913	34.617	139.66	1460.00
0.2855	0.1596	33.535	33.980	1.0823	32.898	139.63	1470.00
0.1596	0.0892	31.827	32.076	1.0709	31.005	139.58	1480.00
0.0892	0.0499	29.947	30.086	1.0583	29.027	139.53	1490.00
0.0499	0.0279	27.982	28.060	1.0450	27.015	139.48	1500.00
0.0279	0.0156	25.984	26.027	1.0312	24.996	139.43	1510.00
0.0156	0.0087	23.979	24.003	1.0172	22.986	139.38	1520.00
0.0087	0.0049	21.983	21.997	1.0031	20.993	139.33	1530.00
0.0049	0.0027	20.005	20.012	0.9889	19.023	139.28	1540.00
0.0027	0.0015	18.049	18.053	0.9746	17.078	139.23	1550.00
0.0015	0.0008	16.118	16.120	0.9604	15.160	139.18	1560.00
0.0008	0.0005	14.214	14.215	0.9461	13.269	139.14	1570.00
0.0005	0.0003	12.337	12.338	0.9319	11.406	139.09	1580.00
0.0003	0.0001	10.489	10.489	0.9175	9.5714	139.04	1590.00
0.0001	0.0001	8.6683	8.6685	0.9032	7.7654	139.00	1600.00
0.0001	0.0000	6.8783	6.8784	0.8871	5.9913	138.94	1610.00
0.0000	0.0000	5.1201	5.1202	0.8712	4.2490	138.89	1620.00
0.0000	0.0000	3.3938	3.3939	0.8551	2.5387	138.85	1630.00
0.0000	0.0000	1.7001	1.7001	0.8387	0.8614	138.80	1640.00
0.0000	0.0000	0.0547	0.0547	0.8067	-0.7521	138.70	1650.00

ROUTING REPORT

STORAGE LIST ID No. A
Description:

MULTIPLE ORIFICE ID No. A
Description:
Outlet Elev: 137.55
Elev: 137.55 ft Orifice Diameter: 5.2617 in.

ROUTING CURVE

STAGE (ft)	STORAGE (cf)	OUTFLOW (cfs)	O+2S cfs-min	STAGE (ft)	STORAGE (cf)	OUTFLOW (cfs)	O+2S cfs-min	STAGE (ft)	STORAGE (cf)	OUTFLOW (cfs)	O+2S cfs-min
137.55	0.0000	0.0000	0.0000	139.10	3837	0.9354	13.725	140.70	24218	1.3334	82.059
137.60	0.0000	0.1680	0.1680	139.20	5022	0.9651	17.704	140.80	25606	1.3544	86.707
137.70	0.0000	0.2910	0.2910	139.30	6207	0.9939	21.683	140.90	26994	1.3751	91.355
137.80	0.0000	0.3757	0.3757	139.40	7392	1.0219	25.661	141.00	28382	1.3955	96.002
137.90	0.0000	0.4445	0.4445	139.50	8577	1.0491	29.637	141.10	29979	1.4156	101.34
138.00	0.0000	0.5040	0.5040	139.60	9761	1.0757	33.614	141.20	31575	1.4354	106.69
138.10	0.0000	0.5572	0.5572	139.70	10946	1.1016	37.589	141.30	33172	1.4549	112.03
138.20	0.0000	0.6057	0.6057	139.80	12131	1.1270	41.564	141.40	34768	1.4742	117.37
138.30	0.0000	0.6507	0.6507	139.90	13316	1.1517	45.539	141.50	36365	1.4932	122.71
138.40	0.0000	0.6927	0.6927	140.00	14501	1.1760	49.513	141.60	37962	1.5120	128.05
138.50	0.0000	0.7323	0.7323	140.10	15889	1.1997	54.163	141.70	39558	1.5305	133.39
138.60	0.0000	0.7699	0.7699	140.20	17277	1.2230	58.814	141.80	41155	1.5489	138.73
138.70	0.0000	0.8057	0.8057	140.30	18665	1.2459	63.464	141.90	42751	1.5670	144.07
138.80	530.40	0.8400	2.6080	140.40	20053	1.2684	68.113				
138.90	1591	0.8729	6.1769	140.50	21442	1.2904	72.762				
139.00	2652	0.9047	9.7447	140.60	22830	1.3121	77.411				

LEVEL POOL ROUTING TABLE

MATCH Q (cfs) : 2.90 INFLOW Q (cfs): 7.93
PEAK STAGE (ft): 141.99 PEAK OUTFLOW : 1.58
PEAK TIME: 630.00 min.
INFLOW HYD No. : 6 OUTFLOW HYD No.: 11

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
0.0000	0.0019	0.0000	0.0019	0.0000	0.0019	137.55	40.00
0.0019	0.0209	0.0000	0.0229	0.0019	0.0209	137.55	50.00
0.0209	0.0630	0.0000	0.0839	0.0209	0.0630	137.55	60.00
0.0630	0.1440	0.0000	0.2070	0.0630	0.1440	137.55	70.00
0.1440	0.2565	0.0000	0.4005	0.1440	0.2565	137.55	80.00
0.2565	0.3646	0.0000	0.6211	0.2565	0.3646	137.55	90.00
0.3646	0.4624	0.0000	0.8270	0.3646	0.4624	137.55	100.00
0.4624	0.5481	0.0000	1.0104	0.4624	0.5481	137.55	110.00
0.5481	0.6221	0.0000	1.1701	0.5481	0.6221	137.55	120.00
0.6221	0.7143	0.0000	1.3364	0.6221	0.7143	137.55	130.00
0.7143	0.8201	0.0000	1.5344	0.7143	0.8201	137.55	140.00
0.8201	0.9008	0.0142	1.7351	0.8060	0.9291	138.70	150.00
0.9008	0.9604	0.1211	1.9823	0.8080	1.1743	138.71	160.00
0.9604	1.0135	0.3615	2.3355	0.8127	1.5228	138.72	170.00
1.0135	1.0568	0.7035	2.7738	0.8193	1.9544	138.74	180.00
1.0568	1.0886	1.1269	3.2723	0.8275	2.4447	138.76	190.00
1.0886	1.1211	1.6078	3.8176	0.8369	2.9807	138.79	200.00
1.1211	1.1484	2.1373	4.4068	0.8434	3.5634	138.81	210.00
1.1484	1.1673	2.7146	5.0303	0.8488	4.1814	138.83	220.00
1.1673	1.1896	3.3269	5.6838	0.8545	4.8293	138.84	230.00
1.1896	1.2085	3.9688	6.3669	0.8605	5.5064	138.86	240.00
1.2085	1.2628	4.6396	7.1110	0.8667	6.2442	138.88	250.00
1.2628	1.3370	5.3707	7.9705	0.8735	7.0970	138.90	260.00
1.3370	1.3845	6.2159	8.9374	0.8811	8.0563	138.93	270.00
1.3845	1.4213	7.1667	9.9725	0.8897	9.0828	138.95	280.00
1.4213	1.4427	8.1840	11.048	0.8988	10.149	138.98	290.00
1.4427	1.4610	9.2414	12.145	0.9078	11.237	139.01	300.00
1.4610	1.6480	10.321	13.430	0.9162	12.514	139.04	310.00
1.6480	1.9273	11.588	15.163	0.9260	14.237	139.07	320.00
1.9273	2.0950	13.298	17.320	0.9392	16.381	139.11	330.00
2.0950	2.1991	15.426	19.720	0.9552	18.765	139.17	340.00
2.1991	2.2669	17.792	22.258	0.9728	21.285	139.23	350.00
2.2669	2.3136	20.294	24.875	0.9910	23.884	139.29	360.00
2.3136	2.3054	22.874	27.493	1.0094	26.484	139.36	370.00
2.3054	2.2653	25.456	30.027	1.0275	29.000	139.42	380.00
2.2653	2.2436	27.955	32.464	1.0448	31.419	139.48	390.00
2.2436	2.2370	30.358	34.838	1.0610	33.777	139.54	400.00
2.2370	2.2440	32.701	37.182	1.0768	36.105	139.60	410.00
2.2440	2.2474	35.013	39.504	1.0920	38.412	139.66	420.00
2.2474	2.8471	37.305	42.400	1.1069	41.293	139.72	430.00
2.8471	3.7928	40.168	46.808	1.1252	45.683	139.79	440.00

LEVEL POOL ROUTING TABLE

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
3.7928	4.3398	44.530	52.663	1.1526	51.510	139.90	450.00
4.3398	5.5086	50.324	60.172	1.1862	58.986	140.04	460.00
5.5086	7.0369	57.762	70.308	1.2239	69.084	140.20	470.00
7.0369	7.9294	67.811	82.777	1.2730	81.504	140.42	480.00
7.9294	7.3040	80.173	95.407	1.3309	94.076	140.69	490.00
7.3040	5.8151	92.689	105.81	1.3870	104.42	140.96	500.00
5.8151	4.9882	102.99	113.80	1.4270	112.37	141.16	510.00
4.9882	4.4319	110.91	120.33	1.4561	118.88	141.31	520.00
4.4319	4.0321	117.40	125.86	1.4795	124.38	141.43	530.00
4.0321	3.8122	122.88	130.73	1.4991	129.23	141.53	540.00
3.8122	3.4466	127.71	134.97	1.5161	133.46	141.62	550.00
3.4466	2.9985	131.92	138.37	1.5307	136.84	141.70	560.00
2.9985	2.7496	135.30	141.04	1.5424	139.50	141.76	570.00
2.7496	2.6178	137.95	143.32	1.5515	141.77	141.81	580.00
2.6178	2.5397	140.21	145.37	1.5592	143.81	141.86	590.00
2.5397	2.4974	142.24	147.28	1.5661	145.71	141.90	600.00
2.4974	2.4279	144.14	149.06	1.5725	147.49	141.93	610.00
2.4279	2.3430	145.91	150.68	1.5784	149.11	141.96	620.00
2.3430	2.2966	147.52	152.16	1.5839	150.58	141.99	630.00
2.2966	2.2658	150.58	155.14	0.0000	155.14	0.00	640.00
2.2658	2.2555	155.14	159.66	0.0000	159.66	0.00	650.00
2.2555	2.2507	159.66	164.17	0.0000	164.17	0.00	660.00
2.2507	2.1480	164.17	168.57	0.0000	168.57	0.00	670.00
2.1480	1.9905	168.57	172.70	0.0000	172.70	0.00	680.00
1.9905	1.9030	172.70	176.60	0.0000	176.60	0.00	690.00
1.9030	1.8606	176.60	180.36	0.0000	180.36	0.00	700.00
1.8606	1.8315	180.36	184.05	0.0000	184.05	0.00	710.00
1.8315	1.8159	184.05	187.70	0.0000	187.70	0.00	720.00
1.8159	1.8136	187.70	191.33	0.0000	191.33	0.00	730.00
1.8136	1.8069	191.33	194.95	0.0000	194.95	0.00	740.00
1.8069	1.8037	194.95	198.56	0.0000	198.56	0.00	750.00
1.8037	1.8084	198.56	202.17	0.0000	202.17	0.00	760.00
1.8084	1.8056	202.17	205.79	0.0000	205.79	0.00	770.00
1.8056	1.8045	205.79	209.40	0.0000	209.40	0.00	780.00
1.8045	1.7086	209.40	212.91	0.0000	212.91	0.00	790.00
1.7086	1.5536	212.91	216.17	0.0000	216.17	0.00	800.00
1.5536	1.4672	216.17	219.19	0.0000	219.19	0.00	810.00
1.4672	1.4192	219.19	222.08	0.0000	222.08	0.00	820.00
1.4192	1.3927	222.08	224.89	0.0000	224.89	0.00	830.00
1.3927	1.3781	224.89	227.66	0.0000	227.66	0.00	840.00
1.3781	1.4182	227.66	230.46	0.0000	230.46	0.00	850.00
1.4182	1.4949	230.46	233.37	0.0000	233.37	0.00	860.00
1.4949	1.5382	233.37	236.40	0.0000	236.40	0.00	870.00
1.5382	1.5567	236.40	239.50	0.0000	239.50	0.00	880.00
1.5567	1.5733	239.50	242.63	0.0000	242.63	0.00	890.00
1.5733	1.5830	242.63	245.79	0.0000	245.79	0.00	900.00
1.5830	1.5827	245.79	248.95	0.0000	248.95	0.00	910.00

LEVEL POOL ROUTING TABLE

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
1.5827	1.5888	248.95	252.12	0.0000	252.12	0.00	920.00
1.5888	1.5926	252.12	255.30	0.0000	255.30	0.00	930.00
1.5926	1.5890	255.30	258.49	0.0000	258.49	0.00	940.00
1.5890	1.5933	258.49	261.67	0.0000	261.67	0.00	950.00
1.5933	1.5960	261.67	264.86	0.0000	264.86	0.00	960.00
1.5960	1.4409	264.86	267.89	0.0000	267.89	0.00	970.00
1.4409	1.2096	267.89	270.55	0.0000	270.55	0.00	980.00
1.2096	1.0804	270.55	272.84	0.0000	272.84	0.00	990.00
1.0804	1.0023	272.84	274.92	0.0000	274.92	0.00	1000.00
1.0023	0.9647	274.92	276.88	0.0000	276.88	0.00	1010.00
0.9647	0.9438	276.88	278.79	0.0000	278.79	0.00	1020.00
0.9438	1.0289	278.79	280.77	0.0000	280.77	0.00	1030.00
1.0289	1.1794	280.77	282.97	0.0000	282.97	0.00	1040.00
1.1794	1.2636	282.97	285.42	0.0000	285.42	0.00	1050.00
1.2636	1.3110	285.42	287.99	0.0000	287.99	0.00	1060.00
1.3110	1.3376	287.99	290.64	0.0000	290.64	0.00	1070.00
1.3376	1.3527	290.64	293.33	0.0000	293.33	0.00	1080.00
1.3527	1.3129	293.33	296.00	0.0000	296.00	0.00	1090.00
1.3129	1.2363	296.00	298.55	0.0000	298.55	0.00	1100.00
1.2363	1.1936	298.55	300.98	0.0000	300.98	0.00	1110.00
1.1936	1.3577	300.98	303.53	0.0000	303.53	0.00	1120.00
1.3577	1.2617	303.53	306.15	0.0000	306.15	0.00	1130.00
1.2617	1.0264	306.15	308.43	0.0000	308.43	0.00	1140.00
1.0264	1.0829	308.43	310.54	0.0000	310.54	0.00	1150.00
1.0829	1.1085	310.54	312.74	0.0000	312.74	0.00	1160.00
1.1085	1.1230	312.74	314.97	0.0000	314.97	0.00	1170.00
1.1230	1.1372	314.97	317.23	0.0000	317.23	0.00	1180.00
1.1372	1.1392	317.23	319.50	0.0000	319.50	0.00	1190.00
1.1392	1.1405	319.50	321.78	0.0000	321.78	0.00	1200.00
1.1405	1.1474	321.78	324.07	0.0000	324.07	0.00	1210.00
1.1474	1.1453	324.07	326.36	0.0000	326.36	0.00	1220.00
1.1453	1.1442	326.36	328.65	0.0000	328.65	0.00	1230.00
1.1442	1.1498	328.65	330.95	0.0000	330.95	0.00	1240.00
1.1498	1.1470	330.95	333.24	0.0000	333.24	0.00	1250.00
1.1470	1.1455	333.24	335.54	0.0000	335.54	0.00	1260.00
1.1455	1.1509	335.54	337.83	0.0000	337.83	0.00	1270.00
1.1509	1.1479	337.83	340.13	0.0000	340.13	0.00	1280.00
1.1479	1.1464	340.13	342.43	0.0000	342.43	0.00	1290.00
1.1464	1.1517	342.43	344.72	0.0000	344.72	0.00	1300.00
1.1517	1.1487	344.72	347.02	0.0000	347.02	0.00	1310.00
1.1487	1.1472	347.02	349.32	0.0000	349.32	0.00	1320.00
1.1472	1.0977	349.32	351.57	0.0000	351.57	0.00	1330.00
1.0977	1.0214	351.57	353.68	0.0000	353.68	0.00	1340.00
1.0214	0.9789	353.68	355.69	0.0000	355.69	0.00	1350.00
0.9789	0.9491	355.69	357.61	0.0000	357.61	0.00	1360.00
0.9491	0.9386	357.61	359.50	0.0000	359.50	0.00	1370.00
0.9386	0.9327	359.50	361.37	0.0000	361.37	0.00	1380.00

LEVEL POOL ROUTING TABLE

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
0.9327	0.9235	361.37	363.23	0.0000	363.23	0.00	1390.00
0.9235	0.9245	363.23	365.08	0.0000	365.08	0.00	1400.00
0.9245	0.9251	365.08	366.93	0.0000	366.93	0.00	1410.00
0.9251	0.9194	366.93	368.77	0.0000	368.77	0.00	1420.00
0.9194	0.9224	368.77	370.61	0.0000	370.61	0.00	1430.00
0.9224	0.9241	370.61	372.46	0.0000	372.46	0.00	1440.00
0.9241	0.7177	372.46	374.10	0.0000	374.10	0.00	1450.00
0.7177	0.4011	374.10	375.22	0.0000	375.22	0.00	1460.00
0.4011	0.2242	375.22	375.84	0.0000	375.84	0.00	1470.00
0.2242	0.1253	375.84	376.19	0.0000	376.19	0.00	1480.00
0.1253	0.0700	376.19	376.39	0.0000	376.39	0.00	1490.00
0.0700	0.0391	376.39	376.50	0.0000	376.50	0.00	1500.00

ROUTING REPORT

STORAGE LIST ID No. A
Description:

MULTIPLE ORIFICE ID No. A
Description:
Outlet Elev: 137.55
Elev: 137.55 ft Orifice Diameter: 5.2617 in.

ROUTING CURVE

STAGE (ft)	STORAGE (cf)	OUTFLOW (cfs)	O+2S cfs-min	STAGE (ft)	STORAGE (cf)	OUTFLOW (cfs)	O+2S cfs-min	STAGE (ft)	STORAGE (cf)	OUTFLOW (cfs)	O+2S cfs-min
137.55	0.0000	0.0000	0.0000	139.10	3837	0.9354	13.725	140.70	24218	1.3334	82.059
137.60	0.0000	0.1680	0.1680	139.20	5022	0.9651	17.704	140.80	25606	1.3544	86.707
137.70	0.0000	0.2910	0.2910	139.30	6207	0.9939	21.683	140.90	26994	1.3751	91.355
137.80	0.0000	0.3757	0.3757	139.40	7392	1.0219	25.661	141.00	28382	1.3955	96.002
137.90	0.0000	0.4445	0.4445	139.50	8577	1.0491	29.637	141.10	29979	1.4156	101.34
138.00	0.0000	0.5040	0.5040	139.60	9761	1.0757	33.614	141.20	31575	1.4354	106.69
138.10	0.0000	0.5572	0.5572	139.70	10946	1.1016	37.589	141.30	33172	1.4549	112.03
138.20	0.0000	0.6057	0.6057	139.80	12131	1.1270	41.564	141.40	34768	1.4742	117.37
138.30	0.0000	0.6507	0.6507	139.90	13316	1.1517	45.539	141.50	36365	1.4932	122.71
138.40	0.0000	0.6927	0.6927	140.00	14501	1.1760	49.513	141.60	37962	1.5120	128.05
138.50	0.0000	0.7323	0.7323	140.10	15889	1.1997	54.163	141.70	39558	1.5305	133.39
138.60	0.0000	0.7699	0.7699	140.20	17277	1.2230	58.814	141.80	41155	1.5489	138.73
138.70	0.0000	0.8057	0.8057	140.30	18665	1.2459	63.464	141.90	42751	1.5670	144.07
138.80	530.40	0.8400	2.6080	140.40	20053	1.2684	68.113				
138.90	1591	0.8729	6.1769	140.50	21442	1.2904	72.762				
139.00	2652	0.9047	9.7447	140.60	22830	1.3121	77.411				

LEVEL POOL ROUTING TABLE

MATCH Q (cfs) : 3.71 INFLOW Q (cfs): 9.08
PEAK STAGE (ft): 141.92 PEAK OUTFLOW : 1.57
PEAK TIME: 530.00 min.
INFLOW HYD No. : 7 OUTFLOW HYD No.: 12

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
0.0000	0.0088	0.0000	0.0088	0.0000	0.0088	137.55	40.00
0.0088	0.0452	0.0000	0.0540	0.0088	0.0452	137.55	50.00
0.0452	0.1056	0.0000	0.1508	0.0452	0.1056	137.55	60.00
0.1056	0.2104	-0.0000	0.3160	0.1056	0.2104	137.55	70.00
0.2104	0.3506	0.0000	0.5611	0.2104	0.3506	137.55	80.00
0.3506	0.4795	0.0000	0.8301	0.3506	0.4795	137.55	90.00
0.4795	0.5923	0.0000	1.0718	0.4795	0.5923	137.55	100.00
0.5923	0.6890	0.0000	1.2813	0.5923	0.6890	137.55	110.00
0.6890	0.7709	0.0000	1.4598	0.6890	0.7709	137.55	120.00
0.7709	0.8746	0.0000	1.6455	0.7709	0.8746	137.55	130.00
0.8746	0.9944	0.0676	1.9367	0.8070	1.1297	138.70	140.00
0.9944	1.0837	0.3178	2.3959	0.8119	1.5841	138.72	150.00
1.0837	1.1479	0.7636	2.9952	0.8205	2.1747	138.74	160.00
1.1479	1.2047	1.3430	3.6956	0.8317	2.8638	138.78	170.00
1.2047	1.2502	2.0215	4.4763	0.8423	3.6340	138.81	180.00
1.2502	1.2826	2.7845	5.3172	0.8495	4.4678	138.83	190.00
1.2826	1.3162	3.6106	6.2093	0.8572	5.3522	138.85	200.00
1.3162	1.3440	4.4868	7.1470	0.8653	6.2817	138.88	210.00
1.3440	1.3624	5.4078	8.1142	0.8739	7.2404	138.90	220.00
1.3624	1.3851	6.3580	9.1054	0.8824	8.2230	138.93	230.00
1.3851	1.4041	7.3319	10.121	0.8912	9.2299	138.96	240.00
1.4041	1.4642	8.3298	11.198	0.9001	10.298	138.99	250.00
1.4642	1.5479	9.3890	12.401	0.9090	11.492	139.01	260.00
1.5479	1.6023	10.574	13.724	0.9182	12.806	139.04	270.00
1.6023	1.6463	11.878	15.126	0.9283	14.198	139.08	280.00
1.6463	1.6727	13.259	16.578	0.9389	15.639	139.11	290.00
1.6727	1.6944	14.690	18.057	0.9497	17.107	139.15	300.00
1.6944	1.9105	16.147	19.751	0.9606	18.791	139.18	310.00
1.9105	2.2325	17.818	21.961	0.9729	20.988	139.23	320.00
2.2325	2.4245	19.999	24.656	0.9889	23.667	139.28	330.00
2.4245	2.5427	22.659	27.626	1.0079	26.619	139.35	340.00
2.5427	2.6187	25.590	30.751	1.0285	29.723	139.42	350.00
2.6187	2.6704	28.673	33.962	1.0497	32.913	139.50	360.00
2.6704	2.6589	31.842	37.171	1.0710	36.100	139.58	370.00
2.6589	2.6109	35.008	40.278	1.0919	39.186	139.66	380.00
2.6109	2.5841	38.074	43.269	1.1118	42.157	139.74	390.00
2.5841	2.5751	41.027	46.186	1.1307	45.055	139.81	400.00
2.5751	2.5817	43.907	49.063	1.1487	47.915	139.89	410.00
2.5817	2.5844	46.748	51.914	1.1662	50.748	139.96	420.00
2.5844	3.2716	49.566	55.422	1.1823	54.240	140.03	430.00
3.2716	4.3554	53.039	60.667	1.2001	59.466	140.10	440.00

LEVEL POOL ROUTING TABLE

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE (ft)	TIME (min)
<---------- cfs min ---------->							
4.3554	4.9805	58.240	67.576	1.2262	66.350	140.21	450.00
4.9805	6.3168	65.090	76.387	1.2598	75.128	140.36	460.00
6.3168	8.0629	73.826	88.206	1.3014	86.904	140.55	470.00
8.0629	9.0790	85.549	102.69	1.3553	101.34	140.80	480.00
9.0790	8.3587	99.920	117.36	1.4155	115.94	141.10	490.00
8.3587	6.6523	114.47	129.48	1.4690	128.02	141.37	500.00
6.6523	5.7040	126.50	138.86	1.5119	137.35	141.60	510.00
5.7040	5.0661	135.80	146.57	1.5441	145.03	141.77	520.00
5.0661	4.6075	143.46	153.13	1.5702	151.56	141.92	530.00
4.6075	4.3549	151.56	160.53	0.0000	160.53	0.00	540.00
4.3549	3.9363	160.53	168.82	0.0000	168.82	0.00	550.00
3.9363	3.4238	168.82	176.18	0.0000	176.18	0.00	560.00
3.4238	3.1390	176.18	182.74	0.0000	182.74	0.00	570.00
3.1390	2.9880	182.74	188.87	0.0000	188.87	0.00	580.00
2.9880	2.8984	188.87	194.75	0.0000	194.75	0.00	590.00
2.8984	2.8497	194.75	200.50	0.0000	200.50	0.00	600.00
2.8497	2.7700	200.50	206.12	0.0000	206.12	0.00	610.00
2.7700	2.6728	206.12	211.56	0.0000	211.56	0.00	620.00
2.6728	2.6196	211.56	216.86	0.0000	216.86	0.00	630.00
2.6196	2.5842	216.86	222.06	0.0000	222.06	0.00	640.00
2.5842	2.5722	222.06	227.22	0.0000	227.22	0.00	650.00
2.5722	2.5664	227.22	232.35	0.0000	232.35	0.00	660.00
2.5664	2.4491	232.35	237.37	0.0000	237.37	0.00	670.00
2.4491	2.2693	237.37	242.09	0.0000	242.09	0.00	680.00
2.2693	2.1693	242.09	246.53	0.0000	246.53	0.00	690.00
2.1693	2.1209	246.53	250.82	0.0000	250.82	0.00	700.00
2.1209	2.0876	250.82	255.03	0.0000	255.03	0.00	710.00
2.0876	2.0695	255.03	259.18	0.0000	259.18	0.00	720.00
2.0695	2.0668	259.18	263.32	0.0000	263.32	0.00	730.00
2.0668	2.0590	263.32	267.45	0.0000	267.45	0.00	740.00
2.0590	2.0552	267.45	271.56	0.0000	271.56	0.00	750.00
2.0552	2.0604	271.56	275.68	0.0000	275.68	0.00	760.00
2.0604	2.0571	275.68	279.79	0.0000	279.79	0.00	770.00
2.0571	2.0557	279.79	283.91	0.0000	283.91	0.00	780.00
2.0557	1.9463	283.91	287.91	0.0000	287.91	0.00	790.00
1.9463	1.7696	287.91	291.62	0.0000	291.62	0.00	800.00
1.7696	1.6712	291.62	295.06	0.0000	295.06	0.00	810.00
1.6712	1.6164	295.06	298.35	0.0000	298.35	0.00	820.00
1.6164	1.5861	298.35	301.55	0.0000	301.55	0.00	830.00
1.5861	1.5694	301.55	304.71	0.0000	304.71	0.00	840.00
1.5694	1.6150	304.71	307.89	0.0000	307.89	0.00	850.00
1.6150	1.7023	307.89	311.21	0.0000	311.21	0.00	860.00
1.7023	1.7514	311.21	314.66	0.0000	314.66	0.00	870.00
1.7514	1.7724	314.66	318.19	0.0000	318.19	0.00	880.00
1.7724	1.7913	318.19	321.75	0.0000	321.75	0.00	890.00
1.7913	1.8022	321.75	325.35	0.0000	325.35	0.00	900.00
1.8022	1.8018	325.35	328.95	0.0000	328.95	0.00	910.00

LEVEL POOL ROUTING TABLE

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
1.8018	1.8087	328.95	332.56	0.0000	332.56	0.00	920.00
1.8087	1.8129	332.56	336.18	0.0000	336.18	0.00	930.00
1.8129	1.8087	336.18	339.80	0.0000	339.80	0.00	940.00
1.8087	1.8135	339.80	343.43	0.0000	343.43	0.00	950.00
1.8135	1.8165	343.43	347.06	0.0000	347.06	0.00	960.00
1.8165	1.6399	347.06	350.51	0.0000	350.51	0.00	970.00
1.6399	1.3766	350.51	353.53	0.0000	353.53	0.00	980.00
1.3766	1.2295	353.53	356.13	0.0000	356.13	0.00	990.00
1.2295	1.1406	356.13	358.50	0.0000	358.50	0.00	1000.00
1.1406	1.0978	358.50	360.74	0.0000	360.74	0.00	1010.00
1.0978	1.0740	360.74	362.91	0.0000	362.91	0.00	1020.00
1.0740	1.1708	362.91	365.16	0.0000	365.16	0.00	1030.00
1.1708	1.3419	365.16	367.67	0.0000	367.67	0.00	1040.00
1.3419	1.4378	367.67	370.45	0.0000	370.45	0.00	1050.00
1.4378	1.4915	370.45	373.38	0.0000	373.38	0.00	1060.00
1.4915	1.5218	373.38	376.39	0.0000	376.39	0.00	1070.00
1.5218	1.5389	376.39	379.46	0.0000	379.46	0.00	1080.00
1.5389	1.4935	379.46	382.49	0.0000	382.49	0.00	1090.00
1.4935	1.4064	382.49	385.39	0.0000	385.39	0.00	1100.00
1.4064	1.3578	385.39	388.15	0.0000	388.15	0.00	1110.00
1.3578	1.5444	388.15	391.05	0.0000	391.05	0.00	1120.00
1.5444	1.4352	391.05	394.03	0.0000	394.03	0.00	1130.00
1.4352	1.1675	394.03	396.64	0.0000	396.64	0.00	1140.00
1.1675	1.2317	396.64	399.04	0.0000	399.04	0.00	1150.00
1.2317	1.2608	399.04	401.53	0.0000	401.53	0.00	1160.00
1.2608	1.2772	401.53	404.07	0.0000	404.07	0.00	1170.00
1.2772	1.2934	404.07	406.64	0.0000	406.64	0.00	1180.00
1.2934	1.2956	406.64	409.23	0.0000	409.23	0.00	1190.00
1.2956	1.2970	409.23	411.82	0.0000	411.82	0.00	1200.00
1.2970	1.3048	411.82	414.42	0.0000	414.42	0.00	1210.00
1.3048	1.3024	414.42	417.03	0.0000	417.03	0.00	1220.00
1.3024	1.3012	417.03	419.63	0.0000	419.63	0.00	1230.00
1.3012	1.3075	419.63	422.24	0.0000	422.24	0.00	1240.00
1.3075	1.3042	422.24	424.85	0.0000	424.85	0.00	1250.00
1.3042	1.3025	424.85	427.46	0.0000	427.46	0.00	1260.00
1.3025	1.3086	427.46	430.07	0.0000	430.07	0.00	1270.00
1.3086	1.3052	430.07	432.68	0.0000	432.68	0.00	1280.00
1.3052	1.3034	432.68	435.29	0.0000	435.29	0.00	1290.00
1.3034	1.3094	435.29	437.90	0.0000	437.90	0.00	1300.00
1.3094	1.3060	437.90	440.52	0.0000	440.52	0.00	1310.00
1.3060	1.3042	440.52	443.13	0.0000	443.13	0.00	1320.00
1.3042	1.2479	443.13	445.68	0.0000	445.68	0.00	1330.00
1.2479	1.1612	445.68	448.09	0.0000	448.09	0.00	1340.00
1.1612	1.1128	448.09	450.37	0.0000	450.37	0.00	1350.00
1.1128	1.0789	450.37	452.56	0.0000	452.56	0.00	1360.00
1.0789	1.0669	452.56	454.70	0.0000	454.70	0.00	1370.00
1.0669	1.0603	454.70	456.83	0.0000	456.83	0.00	1380.00

LEVEL POOL ROUTING TABLE

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
1.0603	1.0497	456.83	458.94	0.0000	458.94	0.00	1390.00
1.0497	1.0508	458.94	461.04	0.0000	461.04	0.00	1400.00
1.0508	1.0515	461.04	463.14	0.0000	463.14	0.00	1410.00
1.0515	1.0450	463.14	465.24	0.0000	465.24	0.00	1420.00
1.0450	1.0484	465.24	467.33	0.0000	467.33	0.00	1430.00
1.0484	1.0503	467.33	469.43	0.0000	469.43	0.00	1440.00
1.0503	0.8158	469.43	471.30	0.0000	471.30	0.00	1450.00
0.8158	0.4559	471.30	472.57	0.0000	472.57	0.00	1460.00
0.4559	0.2548	472.57	473.28	0.0000	473.28	0.00	1470.00
0.2548	0.1424	473.28	473.68	0.0000	473.68	0.00	1480.00
0.1424	0.0796	473.68	473.90	0.0000	473.90	0.00	1490.00
0.0796	0.0445	473.90	474.02	0.0000	474.02	0.00	1500.00

'N' - POND 'B' TOTAL VOLUME

ELEV (FT)	AREA (SF)	VOL (CF)	CUMM VOL (CF)	
135	7015			
136	8904	7960	7960	
137	10,849	9877	17,836	← WQ VOL @ 136.75'
138	12,851	11,850	29,686	
139	14,909	15,966	45,652	
140	17,023	15,966	61,618	

WQ RELEASE RATE

$$\frac{15,249\ ft^3}{48\ HRS} \times \frac{1\ HR}{3600\ s} = 0.088\ cfs$$

GROUP MACKENZIE
0690 SW Bancroft St / PO Box 69039 Portland, OR 97201-0039
Tel: 503.224.9560 Net: info@grpmack.com Fax: 503.228.1285

By _____
Date _____
Job # _____
Sht. _____ of _____

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'D' - POND 'B' DETENTION VOLUME

ELEV (FT)	AREA (SF)	VOL (CF)	CUMM. VOL. (CF)
136.75	10,363		
137	10,849	2652	2652
138	12,851	11,850	14,502
139	14,909	13,880	28,382
140	17,023	15,452	43,834

GROUP MACKENZIE
0690 SW Bancroft St/PO Box 69039 Portland, OR 97201-0039
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Date _____
Job # _____
Sht. _____ of _____

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'P' WQ ORIFICE 'B'

$Q = CA(2gh)^{1/2}$

$A = \dfrac{Q}{C(2gh)^{1/2}}$

$A = \dfrac{0.088\ cfs}{0.62\left(2 \times 32.2 \times 0.5\right)^{1/2}}$

$A = 0.025\ \square$

$d = \sqrt{\dfrac{4A}{\pi}} = 0.178' = \underline{\underline{2.14''\ \phi}}$

$Q = 0.088\ cfs$

$C = 0.6$

$h = 136.75 - 136.25 = 0.5'$

$g = 32.2$

$A = \dfrac{\pi d^2}{4}$

$d = \sqrt{\dfrac{4A}{\pi}}$

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Sht. _____ of _____

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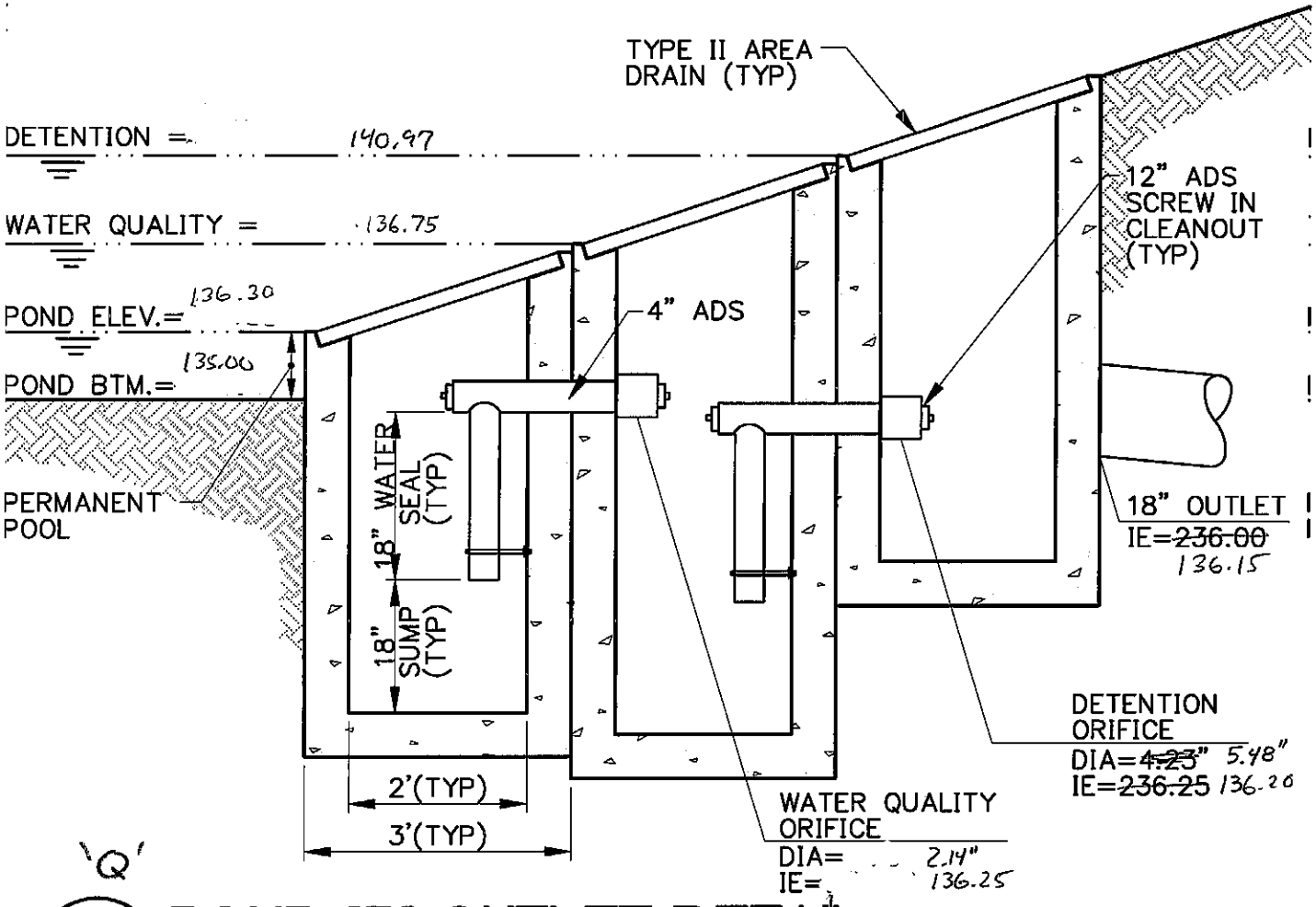

'Q'

2 C8.1 POND "B" OUTLET DETAIL

N.T.S.
OUTFLOW DEVICE

SD150
DETINSET= 1:1

BASIN SUMMARY

BASIN ID: D10 NAME: DEVELOPED 10YR STORM
SBUH METHODOLOGY
TOTAL AREA.....: 13.72 Acres BASEFLOWS: 0.00 cfs
RAINFALL TYPE....: TYPE1A PERVIOUS AREA
PRECIPITATION....: 3.45 inches AREA..: 2.06 Acres
TIME INTERVAL....: 10.00 min CN....: 80.00
TIME OF CONC.....: 14.80 min IMPERVIOUS AREA
ABSTRACTION COEFF: 0.20 AREA..: 11.66 Acres
CN....: 98.00
TcReach - Sheet L: 30.00 ns:0.2400 p2yr: 2.50 s:0.0200
TcReach - Sheet L: 150.00 ns:0.0110 p2yr: 2.50 s:0.0200
TcReach - Channel L:1700.00 kc:42.00 s:0.0100
PEAK RATE: 8.23 cfs VOL: 3.40 Ac-ft TIME: 480 min

BASIN ID: D2 NAME: DEVELOPED 2YR STORM
SBUH METHODOLOGY
TOTAL AREA.....: 13.72 Acres BASEFLOWS: 0.00 cfs
RAINFALL TYPE....: TYPE1A PERVIOUS AREA
PRECIPITATION....: 2.50 inches AREA..: 2.06 Acres
TIME INTERVAL....: 10.00 min CN....: 80.00
TIME OF CONC.....: 14.80 min IMPERVIOUS AREA
ABSTRACTION COEFF: 0.20 AREA..: 11.66 Acres
CN....: 98.00
TcReach - Sheet L: 30.00 ns:0.2400 p2yr: 2.50 s:0.0200
TcReach - Sheet L: 150.00 ns:0.0110 p2yr: 2.50 s:0.0200
TcReach - Channel L:1700.00 kc:42.00 s:0.0100
PEAK RATE: 5.73 cfs VOL: 2.36 Ac-ft TIME: 480 min

BASIN ID: D25 NAME: DEVELOPED 25YR STORM
SBUH METHODOLOGY
TOTAL AREA.....: 13.72 Acres BASEFLOWS: 0.00 cfs
RAINFALL TYPE....: TYPE1A PERVIOUS AREA
PRECIPITATION....: 3.90 inches AREA..: 2.06 Acres
TIME INTERVAL....: 10.00 min CN....: 80.00
TIME OF CONC.....: 14.80 min IMPERVIOUS AREA
ABSTRACTION COEFF: 0.20 AREA..: 11.66 Acres
CN....: 98.00
TcReach - Sheet L: 30.00 ns:0.2400 p2yr: 2.50 s:0.0200
TcReach - Sheet L: 150.00 ns:0.0110 p2yr: 2.50 s:0.0200
TcReach - Channel L:1700.00 kc:42.00 s:0.0100
PEAK RATE: 9.42 cfs VOL: 3.90 Ac-ft TIME: 480 min

BASIN SUMMARY

BASIN ID: E10 NAME: EXISTING 10YR STORM
SBUH METHODOLOGY
TOTAL AREA.....: 13.72 Acres BASEFLOWS: 0.00 cfs
RAINFALL TYPE....: TYPE1A PERVIOUS AREA
PRECIPITATION....: 3.45 inches AREA..: 13.72 Acres
TIME INTERVAL....: 10.00 min CN....: 80.00
TIME OF CONC.....: 38.83 min IMPERVIOUS AREA
ABSTRACTION COEFF: 0.20 AREA..: 0.00 Acres
CN....: 98.00
TcReach - Sheet L: 300.00 ns:0.2400 p2yr: 2.50 s:0.0400
TcReach - Shallow L: 300.00 ks:10.00 s:0.0400
TcReach - Channel L:1400.00 kc:17.00 s:0.0400
PEAK RATE: 2.90 cfs VOL: 1.83 Ac-ft TIME: 490 min

BASIN ID: E2 NAME: EXISTING 2YR STORM
SBUH METHODOLOGY
TOTAL AREA.....: 13.72 Acres BASEFLOWS: 0.00 cfs
RAINFALL TYPE....: TYPE1A PERVIOUS AREA
PRECIPITATION....: 2.50 inches AREA..: 13.72 Acres
TIME INTERVAL....: 10.00 min CN....: 80.00
TIME OF CONC.....: 38.83 min IMPERVIOUS AREA
ABSTRACTION COEFF: 0.20 AREA..: 0.00 Acres
CN....: 98.00
TcReach - Sheet L: 300.00 ns:0.2400 p2yr: 2.50 s:0.0400
TcReach - Shallow L: 300.00 ks:10.00 s:0.0400
TcReach - Channel L:1400.00 kc:17.00 s:0.0400
PEAK RATE: 1.36 cfs VOL: 1.02 Ac-ft TIME: 490 min

BASIN ID: E25 NAME: EXISTING 25YR STORM
SBUH METHODOLOGY
TOTAL AREA.....: 13.72 Acres BASEFLOWS: 0.00 cfs
RAINFALL TYPE....: TYPE1A PERVIOUS AREA
PRECIPITATION....: 3.90 inches AREA..: 13.72 Acres
TIME INTERVAL....: 10.00 min CN....: 80.00
TIME OF CONC.....: 38.83 min IMPERVIOUS AREA
ABSTRACTION COEFF: 0.20 AREA..: 0.00 Acres
CN....: 98.00
TcReach - Sheet L: 300.00 ns:0.2400 p2yr: 2.50 s:0.0400
TcReach - Shallow L: 300.00 ks:10.00 s:0.0400
TcReach - Channel L:1400.00 kc:17.00 s:0.0400
PEAK RATE: 3.71 cfs VOL: 2.24 Ac-ft TIME: 490 min

HYDROGRAPH SUMMARY

HYD NUM	PEAK RUNOFF RATE cfs	TIME OF PEAK min.	VOLUME OF HYDRO cf\AcFt	Contrib Area Acres
1	1.356	490	44270 cf	13.72
2	2.902	490	79526 cf	13.72
3	3.714	490	97581 cf	13.72
5	5.734	480	102758 cf	13.72
6	8.230	480	148087 cf	13.72
7	9.422	480	169790 cf	13.72
10	1.356	690	102847 cf	13.72
11	1.670	800	148142 cf	13.72
12	1.779	660	39111 cf	13.72

ROUTING REPORT

STORAGE LIST ID No. A
Description:

MULTIPLE ORIFICE ID No. A
Description:
Outlet Elev: 136.20
Elev: 136.20 ft Orifice Diameter: 5.4785 in.

ROUTING CURVE

STAGE (ft)	STORAGE (cf)	OUTFLOW (cfs)	O+2S cfs-min	STAGE (ft)	STORAGE (cf)	OUTFLOW (cfs)	O+2S cfs-min	STAGE (ft)	STORAGE (cf)	OUTFLOW (cfs)	O+2S cfs-min
136.20	0.0000	0.0000	0.0000	137.90	13317	1.0620	45.452	139.60	37653	1.5019	127.01
136.30	0.0000	0.2576	0.2576	138.00	14502	1.0928	49.433	139.70	39198	1.5238	132.19
136.40	0.0000	0.3643	0.3643	138.10	15890	1.1227	54.089	139.80	40744	1.5454	137.36
136.50	0.0000	0.4461	0.4461	138.20	17278	1.1519	58.745	139.90	42289	1.5667	142.53
136.60	0.0000	0.5151	0.5151	138.30	18666	1.1803	63.400	140.00	43834	1.5877	147.70
136.70	0.0000	0.5759	0.5759	138.40	20054	1.2081	68.055	140.10	45251	1.6085	152.44
136.80	530.40	0.6309	2.3989	138.50	21442	1.2352	72.709	140.20	46667	1.6290	157.19
136.90	1591	0.6815	5.9855	138.60	22830	1.2618	77.362	140.30	48084	1.6492	161.93
137.00	2652	0.7285	9.5685	138.70	24218	1.2878	82.014	140.40	49500	1.6692	166.67
137.10	3837	0.7727	13.563	138.80	25606	1.3133	86.667	140.50	50917	1.6890	171.41
137.20	5022	0.8145	17.554	138.90	26994	1.3384	91.318	140.60	52334	1.7085	176.15
137.30	6207	0.8542	21.544	139.00	28382	1.3629	95.970	140.70	53750	1.7278	180.90
137.40	7392	0.8922	25.532	139.10	29927	1.3870	101.14	140.80	55167	1.7469	185.64
137.50	8577	0.9287	29.519	139.20	31472	1.4107	106.32	140.90	56583	1.7658	190.38
137.60	9762	0.9637	33.504	139.30	33018	1.4341	111.49				
137.70	10947	0.9975	37.488	139.40	34563	1.4570	116.67				
137.80	12132	1.0303	41.470	139.50	36108	1.4796	121.84				

LEVEL POOL ROUTING TABLE

MATCH Q (cfs) : 1.36 INFLOW Q (cfs): 5.73
PEAK STAGE (ft): 138.97 PEAK OUTFLOW : 1.36
PEAK TIME: 690.00 min.
INFLOW HYD No. : 5 OUTFLOW HYD No.: 10

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
0.0000	0.0001	0.0000	0.0001	0.0000	0.0001	136.20	50.00
0.0001	0.0071	0.0000	0.0072	0.0001	0.0071	136.20	60.00
0.0071	0.0405	0.0000	0.0476	0.0071	0.0405	136.20	70.00
0.0405	0.1004	0.0000	0.1409	0.0405	0.1004	136.20	80.00
0.1004	0.1674	0.0000	0.2677	0.1004	0.1674	136.20	90.00
0.1674	0.2325	0.0000	0.3999	0.1674	0.2325	136.20	100.00
0.2325	0.2922	0.0000	0.5246	0.2325	0.2922	136.20	110.00
0.2922	0.3455	0.0000	0.6377	0.2922	0.3455	136.20	120.00
0.3455	0.4121	0.0000	0.7576	0.3455	0.4121	136.20	130.00
0.4121	0.4879	0.0000	0.8999	0.4121	0.4879	136.20	140.00
0.4879	0.5466	0.0000	1.0345	0.4879	0.5466	136.20	150.00
0.5466	0.5916	0.0000	1.1382	0.5466	0.5916	136.20	160.00
0.5916	0.6329	0.0152	1.2397	0.5764	0.6633	136.70	170.00
0.6329	0.6676	0.0847	1.3853	0.5786	0.8067	136.70	180.00
0.6676	0.6944	0.2238	1.5859	0.5829	1.0030	136.71	190.00
0.6944	0.7222	0.4142	1.8308	0.5888	1.2420	136.72	200.00
0.7222	0.7459	0.6460	2.1141	0.5960	1.5181	136.74	210.00
0.7459	0.7634	0.9137	2.4231	0.6043	1.8187	136.75	220.00
0.7634	0.7836	1.2053	2.7523	0.6134	2.1389	136.77	230.00
0.7836	0.8010	1.5159	3.1005	0.6231	2.4774	136.79	240.00
0.8010	0.8455	1.8454	3.4918	0.6320	2.8598	136.80	250.00
0.8455	0.9035	2.2224	3.9714	0.6374	3.3340	136.81	260.00
0.9035	0.9394	2.6899	4.5328	0.6441	3.8888	136.83	270.00
0.9394	0.9673	3.2369	5.1435	0.6519	4.4916	136.84	280.00
0.9673	0.9831	3.8312	5.7815	0.6604	5.1211	136.86	290.00
0.9831	0.9963	4.4519	6.4312	0.6693	5.7620	136.88	300.00
0.9963	1.1404	5.0837	7.2204	0.6783	6.5421	136.89	310.00
1.1404	1.3477	5.8533	8.3415	0.6888	7.6527	136.92	320.00
1.3477	1.4589	6.9494	9.7560	0.7033	9.0527	136.95	330.00
1.4589	1.5216	8.3309	11.311	0.7217	10.590	136.99	340.00
1.5216	1.5601	9.8499	12.932	0.7398	12.192	137.03	350.00
1.5601	1.5875	11.434	14.582	0.7575	13.824	137.07	360.00
1.5875	1.5763	13.049	16.213	0.7754	15.437	137.11	370.00
1.5763	1.5447	14.645	17.766	0.7923	16.974	137.15	380.00
1.5447	1.5310	16.165	19.241	0.8084	18.433	137.19	390.00
1.5310	1.5300	17.609	20.670	0.8232	19.847	137.22	400.00
1.5300	1.5391	19.010	22.079	0.8373	21.241	137.26	410.00
1.5391	1.5444	20.390	23.474	0.8512	22.623	137.29	420.00
1.5444	2.0207	21.758	25.323	0.8645	24.459	137.33	430.00
2.0207	2.7418	23.577	28.339	0.8820	27.457	137.37	440.00
2.7418	3.1175	26.547	32.407	0.9098	31.497	137.45	450.00

LEVEL POOL ROUTING TABLE

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
3.1175	3.9947	30.551	37.663	0.9461	36.717	137.55	460.00
3.9947	5.1321	35.726	44.853	0.9910	43.862	137.68	470.00
5.1321	5.7341	42.812	53.679	1.0493	52.629	137.86	480.00
5.7341	5.1376	51.516	62.388	1.1133	61.274	138.07	490.00
5.1376	3.9324	60.107	69.177	1.1673	68.010	138.25	500.00
3.9324	3.3411	66.802	74.075	1.2078	72.867	138.40	510.00
3.3411	2.9739	71.631	77.946	1.2361	76.710	138.50	520.00
2.9739	2.7215	75.452	81.147	1.2581	79.889	138.59	530.00
2.7215	2.6003	78.613	83.935	1.2759	82.659	138.65	540.00
2.6003	2.3457	81.368	86.314	1.2914	85.022	138.71	550.00
2.3457	2.0240	83.718	88.088	1.3043	86.783	138.76	560.00
2.0240	1.8663	85.469	89.360	1.3140	88.046	138.80	570.00
1.8663	1.7945	86.725	90.386	1.3207	89.065	138.83	580.00
1.7945	1.7557	87.739	91.289	1.3262	89.963	138.85	590.00
1.7557	1.7379	88.632	92.125	1.3311	90.794	138.87	600.00
1.7379	1.6924	89.459	92.889	1.3355	91.554	138.89	610.00
1.6924	1.6330	90.214	93.539	1.3396	92.200	138.91	620.00
1.6330	1.6047	90.857	94.095	1.3430	92.752	138.92	630.00
1.6047	1.5870	91.406	94.597	1.3459	93.251	138.93	640.00
1.5870	1.5841	91.903	95.074	1.3486	93.725	138.94	650.00
1.5841	1.5836	92.374	95.542	1.3511	94.191	138.95	660.00
1.5836	1.5029	92.838	95.924	1.3535	94.571	138.96	670.00
1.5029	1.3821	93.215	96.100	1.3555	94.744	138.97	680.00
1.3821	1.3230	93.388	96.093	1.3564	94.737	138.97	690.00
1.3230	1.2991	93.380	96.002	1.3564	94.646	138.97	700.00
1.2991	1.2830	93.290	95.872	1.3559	94.516	138.97	710.00
1.2830	1.2757	93.161	95.720	1.3552	94.364	138.97	720.00
1.2757	1.2775	93.010	95.563	1.3544	94.209	138.97	730.00
1.2775	1.2741	92.855	95.407	1.3536	94.053	138.96	740.00
1.2741	1.2730	92.700	95.247	1.3528	93.894	138.96	750.00
1.2730	1.2778	92.543	95.093	1.3520	93.741	138.96	760.00
1.2778	1.2759	92.390	94.944	1.3511	93.593	138.95	770.00
1.2759	1.2755	92.242	94.794	1.3504	93.443	138.95	780.00
1.2755	1.1982	92.094	94.567	1.3496	93.218	138.95	790.00
1.1982	1.0780	91.869	94.146	1.3484	92.797	138.94	800.00
1.0780	1.0187	91.451	93.548	1.3462	92.202	138.93	810.00
1.0187	0.9897	90.859	92.867	1.3430	91.524	138.92	820.00
0.9897	0.9756	90.185	92.150	1.3394	90.810	138.90	830.00
0.9756	0.9689	89.475	91.419	1.3356	90.083	138.89	840.00
0.9689	1.0047	88.752	90.725	1.3317	89.394	138.87	850.00
1.0047	1.0666	88.066	90.137	1.3280	88.809	138.86	860.00
1.0666	1.0976	87.484	89.648	1.3249	88.323	138.85	870.00
1.0976	1.1084	87.001	89.207	1.3222	87.885	138.84	880.00
1.1084	1.1190	86.565	88.792	1.3199	87.473	138.83	890.00
1.1190	1.1246	86.155	88.398	1.3177	87.081	138.82	900.00
1.1246	1.1228	85.765	88.013	1.3156	86.697	138.81	910.00
1.1228	1.1272	85.384	87.634	1.3135	86.320	138.80	920.00

LEVEL POOL ROUTING TABLE

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
1.1272	1.1296	85.009	87.265	1.3114	85.954	138.79	930.00
1.1296	1.1263	84.645	86.901	1.3094	85.591	138.78	940.00
1.1263	1.1299	84.284	86.540	1.3074	85.232	138.78	950.00
1.1299	1.1320	83.927	86.189	1.3055	84.883	138.77	960.00
1.1320	1.0060	83.580	85.718	1.3036	84.414	138.76	970.00
1.0060	0.8262	83.113	84.945	1.3010	83.644	138.75	980.00
0.8262	0.7373	82.348	83.911	1.2968	82.614	138.74	990.00
0.7373	0.6885	81.323	82.749	1.2911	81.458	138.71	1000.00
0.6885	0.6694	80.173	81.531	1.2847	80.247	138.69	1010.00
0.6694	0.6600	78.969	80.298	1.2779	79.020	138.66	1020.00
0.6600	0.7340	77.749	79.143	1.2711	77.872	138.64	1030.00
0.7340	0.8542	76.607	78.195	1.2647	76.931	138.61	1040.00
0.8542	0.9139	75.671	77.439	1.2593	76.180	138.59	1050.00
0.9139	0.9437	74.925	76.783	1.2551	75.527	138.57	1060.00
0.9437	0.9587	74.276	76.179	1.2513	74.927	138.56	1070.00
0.9587	0.9663	73.679	75.604	1.2479	74.356	138.55	1080.00
0.9663	0.9309	73.112	75.009	1.2446	73.764	138.54	1090.00
0.9309	0.8693	72.523	74.323	1.2413	73.082	138.52	1100.00
0.8693	0.8389	71.844	73.553	1.2374	72.315	138.51	1110.00
0.8389	0.9767	71.082	72.898	1.2329	71.665	138.49	1120.00
0.9767	0.8924	70.436	72.305	1.2292	71.076	138.48	1130.00
0.8924	0.7030	69.850	71.446	1.2257	70.220	138.46	1140.00
0.7030	0.7621	68.999	70.464	1.2207	69.243	138.45	1150.00
0.7621	0.7865	68.028	69.577	1.2150	68.362	138.43	1160.00
0.7865	0.7988	67.152	68.737	1.2099	67.528	138.41	1170.00
0.7988	0.8099	66.323	67.931	1.2049	66.726	138.39	1180.00
0.8099	0.8106	65.526	67.147	1.2002	65.947	138.37	1190.00
0.8106	0.8111	64.751	66.373	1.1955	65.177	138.35	1200.00
0.8111	0.8164	63.986	65.614	1.1909	64.423	138.34	1210.00
0.8164	0.8142	63.236	64.867	1.1864	63.681	138.32	1220.00
0.8142	0.8133	62.499	64.126	1.1820	62.944	138.31	1230.00
0.8133	0.8179	61.767	63.398	1.1775	62.220	138.29	1240.00
0.8179	0.8153	61.047	62.681	1.1731	61.507	138.27	1250.00
0.8153	0.8142	60.339	61.968	1.1687	60.799	138.26	1260.00
0.8142	0.8187	59.635	61.268	1.1644	60.104	138.24	1270.00
0.8187	0.8161	58.943	60.578	1.1602	59.418	138.23	1280.00
0.8161	0.8150	58.262	59.893	1.1560	58.737	138.21	1290.00
0.8150	0.8195	57.585	59.220	1.1518	58.068	138.20	1300.00
0.8195	0.8169	56.921	58.557	1.1476	57.409	138.19	1310.00
0.8169	0.8157	56.266	57.898	1.1435	56.755	138.17	1320.00
0.8157	0.7756	55.615	57.207	1.1394	56.067	138.16	1330.00
0.7756	0.7162	54.932	56.424	1.1351	55.289	138.14	1340.00
0.7162	0.6868	54.159	55.562	1.1302	54.431	138.13	1350.00
0.6868	0.6674	53.307	54.661	1.1248	53.536	138.11	1360.00
0.6674	0.6628	52.417	53.747	1.1191	52.628	138.09	1370.00
0.6628	0.6606	51.515	52.838	1.1133	51.725	138.07	1380.00
0.6606	0.6547	50.617	51.932	1.1075	50.825	138.05	1390.00

LEVEL POOL ROUTING TABLE

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
0.6547	0.6567	49.723	51.035	1.1017	49.933	138.03	1400.00
0.6567	0.6578	48.837	50.152	1.0960	49.056	138.01	1410.00
0.6578	0.6535	47.966	49.277	1.0898	48.187	137.99	1420.00
0.6535	0.6564	47.104	48.414	1.0831	47.331	137.97	1430.00
0.6564	0.6579	46.254	47.569	1.0765	46.492	137.95	1440.00
0.6579	0.4897	45.422	46.570	1.0700	45.500	137.93	1450.00
0.4897	0.2424	44.437	45.169	1.0623	44.107	137.90	1460.00
0.2424	0.1200	43.056	43.418	1.0513	42.367	137.87	1470.00
0.1200	0.0594	41.330	41.509	1.0374	40.472	137.82	1480.00
0.0594	0.0294	39.450	39.538	1.0221	38.516	137.77	1490.00
0.0294	0.0146	37.510	37.554	1.0060	36.548	137.73	1500.00
0.0146	0.0072	35.559	35.581	0.9896	34.591	137.68	1510.00
0.0072	0.0036	33.618	33.629	0.9730	32.656	137.63	1520.00
0.0036	0.0018	31.700	31.705	0.9563	30.749	137.58	1530.00
0.0018	0.0009	29.809	29.812	0.9395	28.872	137.53	1540.00
0.0009	0.0004	27.950	27.951	0.9228	27.028	137.48	1550.00
0.0004	0.0002	26.122	26.123	0.9059	25.217	137.44	1560.00
0.0002	0.0001	24.328	24.328	0.8892	23.439	137.39	1570.00
0.0001	0.0001	22.566	22.567	0.8723	21.694	137.35	1580.00
0.0001	0.0000	20.839	20.839	0.8557	19.983	137.30	1590.00
0.0000	0.0000	19.144	19.144	0.8387	18.306	137.26	1600.00
0.0000	0.0000	17.484	17.484	0.8220	16.662	137.22	1610.00
0.0000	0.0000	15.857	15.857	0.8051	15.051	137.18	1620.00
0.0000	0.0000	14.263	14.263	0.7883	13.475	137.14	1630.00
0.0000	0.0000	12.703	12.703	0.7717	11.931	137.10	1640.00
0.0000	0.0000	11.177	11.177	0.7546	10.422	137.06	1650.00
0.0000	0.0000	9.6842	9.6842	0.7380	8.9463	137.02	1660.00
0.0000	0.0000	8.2259	8.2259	0.7203	7.5056	136.98	1670.00
0.0000	0.0000	6.8042	6.8042	0.7014	6.1028	136.94	1680.00
0.0000	0.0000	5.4198	5.4198	0.6830	4.7368	136.90	1690.00
0.0000	0.0000	4.0729	4.0729	0.6639	3.4091	136.87	1700.00
0.0000	0.0000	2.7639	2.7639	0.6451	2.1188	136.83	1710.00
0.0000	0.0000	1.4963	1.4963	0.6225	0.8739	136.78	1720.00
0.0000	0.0000	0.2890	0.2890	0.5849	-0.2960	136.72	1730.00

ROUTING REPORT

STORAGE LIST ID No. A
Description:

MULTIPLE ORIFICE ID No. A
Description:
Outlet Elev: 136.20
Elev: 136.20 ft Orifice Diameter: 5.4785 in.

ROUTING CURVE

STAGE (ft)	STORAGE (cf)	OUTFLOW (cfs)	O+2S cfs-min	STAGE (ft)	STORAGE (cf)	OUTFLOW (cfs)	O+2S cfs-min	STAGE (ft)	STORAGE (cf)	OUTFLOW (cfs)	O+2S cfs-min
136.20	0.0000	0.0000	0.0000	137.90	13317	1.0620	45.452	139.60	37653	1.5019	127.01
136.30	0.0000	0.2576	0.2576	138.00	14502	1.0928	49.433	139.70	39198	1.5238	132.19
136.40	0.0000	0.3643	0.3643	138.10	15890	1.1227	54.089	139.80	40744	1.5454	137.36
136.50	0.0000	0.4461	0.4461	138.20	17278	1.1519	58.745	139.90	42289	1.5667	142.53
136.60	0.0000	0.5151	0.5151	138.30	18666	1.1803	63.400	140.00	43834	1.5877	147.70
136.70	0.0000	0.5759	0.5759	138.40	20054	1.2081	68.055	140.10	45251	1.6085	152.44
136.80	530.40	0.6309	2.3989	138.50	21442	1.2352	72.709	140.20	46667	1.6290	157.19
136.90	1591	0.6815	5.9855	138.60	22830	1.2618	77.362	140.30	48084	1.6492	161.93
137.00	2652	0.7285	9.5685	138.70	24218	1.2878	82.014	140.40	49500	1.6692	166.67
137.10	3837	0.7727	13.563	138.80	25606	1.3133	86.667	140.50	50917	1.6890	171.41
137.20	5022	0.8145	17.554	138.90	26994	1.3384	91.318	140.60	52334	1.7085	176.15
137.30	6207	0.8542	21.544	139.00	28382	1.3629	95.970	140.70	53750	1.7278	180.90
137.40	7392	0.8922	25.532	139.10	29927	1.3870	101.14	140.80	55167	1.7469	185.64
137.50	8577	0.9287	29.519	139.20	31472	1.4107	106.32	140.90	56583	1.7658	190.38
137.60	9762	0.9637	33.504	139.30	33018	1.4341	111.49				
137.70	10947	0.9975	37.488	139.40	34563	1.4570	116.67				
137.80	12132	1.0303	41.470	139.50	36108	1.4796	121.84				

LEVEL POOL ROUTING TABLE

MATCH Q (cfs) : 2.90 INFLOW Q (cfs): 8.23
PEAK STAGE (ft): 140.41 PEAK OUTFLOW : 1.67
PEAK TIME: 800.00 min.
INFLOW HYD No. : 6 OUTFLOW HYD No.: 11

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
0.0000	0.0022	0.0000	0.0022	0.0000	0.0022	136.20	40.00
0.0022	0.0238	0.0000	0.0260	0.0022	0.0238	136.20	50.00
0.0238	0.0705	0.0000	0.0944	0.0238	0.0705	136.20	60.00
0.0705	0.1595	0.0000	0.2300	0.0705	0.1595	136.20	70.00
0.1595	0.2804	0.0000	0.4399	0.1595	0.2804	136.20	80.00
0.2804	0.3921	0.0000	0.6725	0.2804	0.3921	136.20	90.00
0.3921	0.4901	0.0000	0.8823	0.3921	0.4901	136.20	100.00
0.4901	0.5742	0.0000	1.0643	0.4901	0.5742	136.20	110.00
0.5742	0.6457	0.0000	1.2199	0.5742	0.6457	136.20	120.00
0.6457	0.7394	0.0677	1.4528	0.5780	0.8747	136.70	130.00
0.7394	0.8479	0.2898	1.8770	0.5849	1.2921	136.72	140.00
0.8479	0.9262	0.6945	2.4686	0.5975	1.8711	136.74	150.00
0.9262	0.9816	1.2561	3.1639	0.6150	2.5489	136.77	160.00
0.9816	1.0317	1.9159	3.9292	0.6330	3.2962	136.80	170.00
1.0317	1.0721	2.6526	4.7564	0.6436	4.1128	136.83	180.00
1.0721	1.1008	3.4578	5.6306	0.6551	4.9755	136.85	190.00
1.1008	1.1318	4.3083	6.5409	0.6672	5.8737	136.87	200.00
1.1318	1.1577	5.1938	7.4834	0.6799	6.8035	136.90	210.00
1.1577	1.1746	6.1113	8.4436	0.6922	7.7514	136.92	220.00
1.1746	1.1964	7.0467	9.4178	0.7046	8.7131	136.95	230.00
1.1964	1.2146	7.9958	10.407	0.7173	9.6896	136.98	240.00
1.2146	1.2737	8.9598	11.448	0.7298	10.718	137.00	250.00
1.2737	1.3532	9.9771	12.604	0.7412	11.863	137.03	260.00
1.3532	1.3994	11.109	13.861	0.7539	13.108	137.06	270.00
1.3994	1.4340	12.340	15.173	0.7677	14.406	137.09	280.00
1.4340	1.4521	13.624	16.510	0.7815	15.729	137.12	290.00
1.4521	1.4683	14.933	17.854	0.7954	17.058	137.15	300.00
1.4683	1.6787	16.249	19.396	0.8093	18.587	137.19	310.00
1.6787	1.9830	17.762	21.423	0.8248	20.599	137.23	320.00
1.9830	2.1467	19.754	23.884	0.8448	23.039	137.28	330.00
2.1467	2.2398	22.170	26.557	0.8685	25.688	137.34	340.00
2.2398	2.2969	24.795	29.331	0.8937	28.438	137.40	350.00
2.2969	2.3352	27.519	32.151	0.9188	31.232	137.47	360.00
2.3352	2.3149	30.288	34.939	0.9437	33.995	137.54	370.00
2.3149	2.2642	33.027	37.606	0.9679	36.638	137.61	380.00
2.2642	2.2399	35.648	40.152	0.9903	39.162	137.68	390.00
2.2399	2.2342	38.150	42.624	1.0113	41.613	137.74	400.00
2.2342	2.2436	40.582	45.059	1.0314	44.028	137.80	410.00
2.2436	2.2477	42.977	47.469	1.0506	46.418	137.86	420.00
2.2477	2.9341	45.349	50.531	1.0694	49.461	137.92	430.00
2.9341	3.9727	48.368	55.275	1.0929	54.182	138.00	440.00

LEVEL POOL ROUTING TABLE

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
3.9727	4.5081	53.059	61.540	1.1233	60.416	138.10	450.00
4.5081	5.7611	59.254	69.523	1.1621	68.361	138.24	460.00
5.7611	7.3831	67.151	80.296	1.2099	79.086	138.41	470.00
7.3831	8.2300	77.814	93.427	1.2714	92.156	138.64	480.00
8.2300	7.3623	90.813	106.41	1.3428	105.06	138.92	490.00
7.3623	5.6284	103.66	116.65	1.4050	115.24	139.18	500.00
5.6284	4.7761	113.79	124.20	1.4507	122.75	139.37	510.00
4.7761	4.2464	121.26	130.29	1.4835	128.80	139.52	520.00
4.2464	3.8824	127.29	135.42	1.5094	133.91	139.63	530.00
3.8824	3.7062	132.38	139.97	1.5310	138.44	139.73	540.00
3.7062	3.3412	136.89	143.94	1.5498	142.39	139.82	550.00
3.3412	2.8814	140.82	147.04	1.5661	145.48	139.90	560.00
2.8814	2.6556	143.90	149.44	1.5787	147.86	139.96	570.00
2.6556	2.5522	146.27	151.48	1.5884	149.89	140.00	580.00
2.5522	2.4959	148.29	153.34	1.5973	151.74	140.05	590.00
2.4959	2.4696	150.14	155.10	1.6054	153.50	140.09	600.00
2.4696	2.4040	151.88	156.76	1.6130	155.14	140.12	610.00
2.4040	2.3189	153.52	158.25	1.6202	156.63	140.16	620.00
2.3189	2.2779	155.00	159.60	1.6266	157.97	140.19	630.00
2.2779	2.2521	156.34	160.87	1.6323	159.23	140.22	640.00
2.2521	2.2472	157.60	162.10	1.6377	160.46	140.24	650.00
2.2472	2.2459	158.82	163.31	1.6430	161.67	140.27	660.00
2.2459	2.1308	160.02	164.39	1.6481	162.75	140.29	670.00
2.1308	1.9591	161.09	165.18	1.6527	163.53	140.32	680.00
1.9591	1.8748	161.87	165.71	1.6560	164.05	140.33	690.00
1.8748	1.8405	162.39	166.11	1.6582	164.45	140.34	700.00
1.8405	1.8174	162.79	166.45	1.6599	164.79	140.35	710.00
1.8174	1.8066	163.13	166.75	1.6613	165.09	140.36	720.00
1.8066	1.8087	163.43	167.04	1.6626	165.38	140.37	730.00
1.8087	1.8035	163.72	167.33	1.6638	165.67	140.37	740.00
1.8035	1.8016	164.00	167.61	1.6650	165.94	140.38	750.00
1.8016	1.8080	164.28	167.88	1.6661	166.22	140.38	760.00
1.8080	1.8050	164.55	168.16	1.6673	166.50	140.39	770.00
1.8050	1.8040	164.83	168.44	1.6685	166.77	140.40	780.00
1.8040	1.6945	165.10	168.60	1.6696	166.93	140.40	790.00
1.6945	1.5242	165.26	168.48	1.6703	166.81	140.41	800.00
1.5242	1.4402	165.14	168.10	1.6698	166.43	140.40	810.00
1.4402	1.3989	164.76	167.60	1.6682	165.93	140.39	820.00
1.3989	1.3787	164.27	167.04	1.6661	165.38	140.38	830.00
1.3787	1.3691	163.72	166.46	1.6638	164.80	140.37	840.00
1.3691	1.4195	163.14	165.93	1.6613	164.27	140.36	850.00
1.4195	1.5067	162.61	165.53	1.6591	163.87	140.35	860.00
1.5067	1.5503	162.22	165.27	1.6574	163.62	140.34	870.00
1.5503	1.5653	161.96	165.07	1.6563	163.42	140.34	880.00
1.5653	1.5800	161.76	164.91	1.6555	163.25	140.33	890.00
1.5800	1.5877	161.60	164.77	1.6548	163.11	140.33	900.00
1.5877	1.5850	161.46	164.63	1.6542	162.97	140.32	910.00

LEVEL POOL ROUTING TABLE

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
1.5850	1.5909	161.32	164.50	1.6536	162.84	140.32	920.00
1.5909	1.5941	161.19	164.38	1.6531	162.72	140.32	930.00
1.5941	1.5892	161.07	164.25	1.6526	162.60	140.32	940.00
1.5892	1.5940	160.95	164.13	1.6521	162.48	140.31	950.00
1.5940	1.5968	160.83	164.02	1.6515	162.37	140.31	960.00
1.5968	1.4188	160.72	163.73	1.6511	162.08	140.31	970.00
1.4188	1.1652	160.43	163.01	1.6499	161.37	140.30	980.00
1.1652	1.0397	159.72	161.92	1.6468	160.28	140.29	990.00
1.0397	0.9708	158.63	160.64	1.6422	159.00	140.27	1000.00
0.9708	0.9437	157.37	159.28	1.6367	157.64	140.24	1010.00
0.9437	0.9304	156.01	157.89	1.6309	156.26	140.21	1020.00
0.9304	1.0346	154.63	156.60	1.6250	154.97	140.18	1030.00
1.0346	1.2040	153.35	155.59	1.6194	153.97	140.15	1040.00
1.2040	1.2880	152.36	154.85	1.6151	153.23	140.13	1050.00
1.2880	1.3299	151.62	154.24	1.6119	152.63	140.12	1060.00
1.3299	1.3508	151.02	153.70	1.6093	152.09	140.10	1070.00
1.3508	1.3614	150.48	153.19	1.6069	151.59	140.09	1080.00
1.3614	1.3114	149.98	152.66	1.6047	151.05	140.08	1090.00
1.3114	1.2245	149.45	151.98	1.6024	150.38	140.07	1100.00
1.2245	1.1816	148.78	151.19	1.5995	149.59	140.06	1110.00
1.1816	1.3755	147.99	150.55	1.5960	148.95	140.04	1120.00
1.3755	1.2567	147.36	149.99	1.5932	148.40	140.03	1130.00
1.2567	0.9899	146.81	149.06	1.5908	147.46	140.01	1140.00
0.9899	1.0730	145.88	147.94	1.5868	146.35	140.00	1150.00
1.0730	1.1073	144.77	146.95	1.5823	145.37	139.97	1160.00
1.1073	1.1245	143.79	146.02	1.5783	144.44	139.95	1170.00
1.1245	1.1400	142.87	145.13	1.5745	143.56	139.94	1180.00
1.1400	1.1409	141.99	144.27	1.5709	142.70	139.92	1190.00
1.1409	1.1415	141.13	143.41	1.5674	141.85	139.90	1200.00
1.1415	1.1489	140.28	142.57	1.5639	141.01	139.89	1210.00
1.1489	1.1457	139.45	141.74	1.5604	140.18	139.87	1220.00
1.1457	1.1443	138.63	140.92	1.5570	139.36	139.85	1230.00
1.1443	1.1507	137.81	140.10	1.5536	138.55	139.84	1240.00
1.1507	1.1470	137.00	139.29	1.5503	137.74	139.82	1250.00
1.1470	1.1453	136.20	138.49	1.5470	136.94	139.81	1260.00
1.1453	1.1516	135.40	137.70	1.5437	136.15	139.79	1270.00
1.1516	1.1479	134.61	136.91	1.5404	135.37	139.78	1280.00
1.1479	1.1461	133.83	136.13	1.5371	134.59	139.76	1290.00
1.1461	1.1524	133.06	135.36	1.5338	133.82	139.75	1300.00
1.1524	1.1486	132.29	134.59	1.5306	133.06	139.73	1310.00
1.1486	1.1469	131.53	133.83	1.5274	132.30	139.72	1320.00
1.1469	1.0904	130.78	133.01	1.5243	131.49	139.70	1330.00
1.0904	1.0068	129.97	132.07	1.5208	130.55	139.69	1340.00
1.0068	0.9654	129.03	131.00	1.5168	129.48	139.67	1350.00
0.9654	0.9381	127.97	129.88	1.5123	128.36	139.65	1360.00
0.9381	0.9316	126.86	128.73	1.5076	127.22	139.63	1370.00
0.9316	0.9285	125.72	127.58	1.5027	126.07	139.60	1380.00

LEVEL POOL ROUTING TABLE

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
0.9285	0.9200	124.57	126.42	1.4978	124.93	139.58	1390.00
0.9200	0.9229	123.43	125.28	1.4929	123.78	139.56	1400.00
0.9229	0.9244	122.29	124.14	1.4880	122.65	139.54	1410.00
0.9244	0.9182	121.17	123.01	1.4831	121.53	139.52	1420.00
0.9182	0.9222	120.05	121.89	1.4783	120.41	139.49	1430.00
0.9222	0.9243	118.94	120.79	1.4734	119.31	139.47	1440.00
0.9243	0.6880	117.85	119.46	1.4686	117.99	139.45	1450.00
0.6880	0.3406	116.53	117.55	1.4628	116.09	139.43	1460.00
0.3406	0.1686	114.64	115.15	1.4545	113.69	139.39	1470.00
0.1686	0.0835	112.25	112.50	1.4438	111.06	139.34	1480.00
0.0835	0.0413	109.62	109.75	1.4321	108.32	139.29	1490.00
0.0413	0.0205	106.90	106.96	1.4198	105.54	139.24	1500.00
0.0205	0.0101	104.13	104.16	1.4072	102.76	139.18	1510.00
0.0101	0.0050	101.36	101.38	1.3944	99.982	139.13	1520.00
0.0050	0.0025	98.601	98.608	1.3816	97.226	139.08	1530.00
0.0025	0.0012	95.858	95.861	1.3688	94.493	139.02	1540.00
0.0012	0.0006	93.137	93.139	1.3551	91.784	138.97	1550.00
0.0006	0.0003	90.443	90.444	1.3408	89.104	138.91	1560.00
0.0003	0.0001	87.777	87.778	1.3264	86.451	138.85	1570.00
0.0001	0.0001	85.139	85.139	1.3122	83.827	138.80	1580.00
0.0001	0.0000	82.529	82.529	1.2978	81.232	138.74	1590.00
0.0000	0.0000	79.948	79.948	1.2834	78.665	138.68	1600.00
0.0000	0.0000	77.396	77.396	1.2691	76.127	138.63	1610.00
0.0000	0.0000	74.872	74.872	1.2548	73.617	138.57	1620.00
0.0000	0.0000	72.377	72.377	1.2404	71.136	138.52	1630.00
0.0000	0.0000	69.910	69.910	1.2261	68.684	138.47	1640.00
0.0000	0.0000	67.472	67.472	1.2118	66.261	138.41	1650.00
0.0000	0.0000	65.063	65.063	1.1974	63.866	138.36	1660.00
0.0000	0.0000	62.683	62.683	1.1831	61.500	138.31	1670.00
0.0000	0.0000	60.331	60.331	1.1687	59.162	138.26	1680.00
0.0000	0.0000	58.008	58.008	1.1544	56.853	138.21	1690.00
0.0000	0.0000	55.713	55.713	1.1400	54.573	138.16	1700.00
0.0000	0.0000	53.448	53.448	1.1257	52.322	138.11	1710.00
0.0000	0.0000	51.211	51.211	1.1113	50.099	138.06	1720.00
0.0000	0.0000	49.002	49.002	1.0970	47.905	138.01	1730.00
0.0000	0.0000	46.824	46.824	1.0809	45.743	137.96	1740.00
0.0000	0.0000	44.679	44.679	1.0642	43.615	137.91	1750.00
0.0000	0.0000	42.567	42.567	1.0473	41.520	137.85	1760.00
0.0000	0.0000	40.489	40.489	1.0307	39.459	137.80	1770.00
0.0000	0.0000	38.445	38.445	1.0137	37.431	137.75	1780.00
0.0000	0.0000	36.434	36.434	0.9971	35.437	137.70	1790.00
0.0000	0.0000	34.457	34.457	0.9801	33.477	137.65	1800.00
0.0000	0.0000	32.513	32.513	0.9635	31.550	137.60	1810.00
0.0000	0.0000	30.603	30.603	0.9465	29.657	137.55	1820.00
0.0000	0.0000	28.727	28.727	0.9299	27.797	137.50	1830.00
0.0000	0.0000	26.884	26.884	0.9129	25.971	137.46	1840.00
0.0000	0.0000	25.075	25.075	0.8962	24.179	137.41	1850.00

LEVEL POOL ROUTING TABLE

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
0.0000	0.0000	23.299	23.299	0.8793	22.420	137.37	1860.00
0.0000	0.0000	21.557	21.557	0.8626	20.695	137.32	1870.00
0.0000	0.0000	19.849	19.849	0.8458	19.003	137.28	1880.00
0.0000	0.0000	18.174	18.174	0.8289	17.345	137.24	1890.00
0.0000	0.0000	16.533	16.533	0.8123	15.721	137.19	1900.00
0.0000	0.0000	14.926	14.926	0.7953	14.130	137.15	1910.00
0.0000	0.0000	13.352	13.352	0.7786	12.573	137.11	1920.00
0.0000	0.0000	11.811	11.811	0.7617	11.049	137.08	1930.00
0.0000	0.0000	10.305	10.305	0.7449	9.5597	137.04	1940.00
0.0000	0.0000	8.8313	8.8313	0.7284	8.1029	137.00	1950.00
0.0000	0.0000	7.3937	7.3937	0.7093	6.6844	136.96	1960.00
0.0000	0.0000	5.9938	5.9938	0.6906	5.3031	136.92	1970.00
0.0000	0.0000	4.6313	4.6313	0.6718	3.9595	136.88	1980.00
0.0000	0.0000	3.3066	3.3066	0.6529	2.6537	136.84	1990.00
0.0000	0.0000	2.0192	2.0192	0.6345	1.3847	136.81	2000.00
0.0000	0.0000	0.7843	0.7843	0.6003	0.1840	136.74	2010.00
0.0000	0.0000	0.0000	0.0000	0.1840	-0.1840	136.70	2020.00

ROUTING REPORT

STORAGE LIST ID No. A
Description:

MULTIPLE ORIFICE ID No. A
Description:
Outlet Elev: 136.20
Elev: 136.20 ft Orifice Diameter: 5.4785 in.

ROUTING CURVE

STAGE (ft)	STORAGE (cf)	OUTFLOW (cfs)	O+2S cfs-min	STAGE (ft)	STORAGE (cf)	OUTFLOW (cfs)	O+2S cfs-min	STAGE (ft)	STORAGE (cf)	OUTFLOW (cfs)	O+2S cfs-min
136.20	0.0000	0.0000	0.0000	137.90	13317	1.0620	45.452	139.60	37653	1.5019	127.01
136.30	0.0000	0.2576	0.2576	138.00	14502	1.0928	49.433	139.70	39198	1.5238	132.19
136.40	0.0000	0.3643	0.3643	138.10	15890	1.1227	54.089	139.80	40744	1.5454	137.36
136.50	0.0000	0.4461	0.4461	138.20	17278	1.1519	58.745	139.90	42289	1.5667	142.53
136.60	0.0000	0.5151	0.5151	138.30	18666	1.1803	63.400	140.00	43834	1.5877	147.70
136.70	0.0000	0.5759	0.5759	138.40	20054	1.2081	68.055	140.10	45251	1.6085	152.44
136.80	530.40	0.6309	2.3989	138.50	21442	1.2352	72.709	140.20	46667	1.6290	157.19
136.90	1591	0.6815	5.9855	138.60	22830	1.2618	77.362	140.30	48084	1.6492	161.93
137.00	2652	0.7285	9.5685	138.70	24218	1.2878	82.014	140.40	49500	1.6692	166.67
137.10	3837	0.7727	13.563	138.80	25606	1.3133	86.667	140.50	50917	1.6890	171.41
137.20	5022	0.8145	17.554	138.90	26994	1.3384	91.318	140.60	52334	1.7085	176.15
137.30	6207	0.8542	21.544	139.00	28382	1.3629	95.970	140.70	53750	1.7278	180.90
137.40	7392	0.8922	25.532	139.10	29927	1.3870	101.14	140.80	55167	1.7469	185.64
137.50	8577	0.9287	29.519	139.20	31472	1.4107	106.32	140.90	56583	1.7658	190.38
137.60	9762	0.9637	33.504	139.30	33018	1.4341	111.49				
137.70	10947	0.9975	37.488	139.40	34563	1.4570	116.67				
137.80	12132	1.0303	41.470	139.50	36108	1.4796	121.84				

LEVEL POOL ROUTING TABLE

MATCH Q (cfs) : 3.71 INFLOW Q (cfs): 9.42
PEAK STAGE (ft): 140.97 PEAK OUTFLOW : 1.78
PEAK TIME: 660.00 min.
INFLOW HYD No. : 7 OUTFLOW HYD No.: 12

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
0.0000	0.0101	0.0000	0.0101	0.0000	0.0101	136.20	40.00
0.0101	0.0511	0.0000	0.0612	0.0101	0.0511	136.20	50.00
0.0511	0.1172	0.0000	0.1684	0.0511	0.1172	136.20	60.00
0.1172	0.2314	0.0000	0.3486	0.1172	0.2314	136.20	70.00
0.2314	0.3813	0.0000	0.6127	0.2314	0.3813	136.20	80.00
0.3813	0.5133	0.0000	0.8946	0.3813	0.5133	136.20	90.00
0.5133	0.6254	0.0000	1.1387	0.5133	0.6254	136.20	100.00
0.6254	0.7193	0.0480	1.3927	0.5774	0.8152	136.70	110.00
0.7193	0.7978	0.2321	1.7492	0.5832	1.1660	136.71	120.00
0.7978	0.9030	0.5723	2.2730	0.5937	1.6793	136.73	130.00
0.9030	1.0258	1.0701	2.9989	0.6092	2.3897	136.76	140.00
1.0258	1.1121	1.7590	3.8970	0.6306	3.2663	136.80	150.00
1.1121	1.1713	2.6232	4.9067	0.6431	4.2635	136.82	160.00
1.1713	1.2245	3.6063	6.0021	0.6572	5.3449	136.85	170.00
1.2245	1.2665	4.6725	7.1635	0.6724	6.4911	136.88	180.00
1.2665	1.2954	5.8030	8.3649	0.6881	7.6768	136.91	190.00
1.2954	1.3274	6.9731	9.5958	0.7037	8.8922	136.95	200.00
1.3274	1.3536	8.1725	10.854	0.7196	10.134	136.98	210.00
1.3536	1.3698	9.3991	12.123	0.7348	11.388	137.01	220.00
1.3698	1.3920	10.639	13.401	0.7486	12.652	137.05	230.00
1.3920	1.4103	11.890	14.692	0.7626	13.929	137.08	240.00
1.4103	1.4760	13.153	16.039	0.7765	15.263	137.11	250.00
1.4760	1.5658	14.472	17.514	0.7905	16.723	137.14	260.00
1.5658	1.6191	15.918	19.102	0.8058	18.297	137.18	270.00
1.6191	1.6610	17.475	20.755	0.8219	19.933	137.22	280.00
1.6610	1.6838	19.095	22.440	0.8382	21.601	137.26	290.00
1.6838	1.7030	20.747	24.133	0.8548	23.279	137.30	300.00
1.7030	1.9460	22.408	26.057	0.8708	25.186	137.34	310.00
1.9460	2.2967	24.297	28.540	0.8889	27.651	137.39	320.00
2.2967	2.4840	26.739	31.520	0.9116	30.609	137.45	330.00
2.4840	2.5893	29.670	34.744	0.9383	33.805	137.53	340.00
2.5893	2.6528	32.839	38.081	0.9663	37.115	137.61	350.00
2.6528	2.6948	36.120	41.468	0.9944	40.474	137.69	360.00
2.6948	2.6693	39.452	44.816	1.0221	43.794	137.77	370.00
2.6693	2.6091	42.745	48.023	1.0488	46.974	137.86	380.00
2.6091	2.5794	45.901	51.089	1.0737	50.015	137.94	390.00
2.5794	2.5714	48.919	54.070	1.0965	52.973	138.01	400.00
2.5714	2.5808	51.858	57.010	1.1155	55.894	138.08	410.00
2.5808	2.5843	54.760	59.925	1.1340	58.791	138.14	420.00
2.5843	3.3711	57.639	63.595	1.1522	62.443	138.20	430.00
3.3711	4.5616	61.268	69.201	1.1745	68.026	138.28	440.00

LEVEL POOL ROUTING TABLE

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
4.5616	5.1730	66.818	76.553	1.2079	75.345	138.40	450.00
5.1730	6.6055	74.095	85.873	1.2503	84.623	138.56	460.00
6.6055	8.4586	83.321	98.385	1.3021	97.083	138.76	470.00
8.4586	9.4219	95.715	113.60	1.3681	112.23	139.02	480.00
9.4219	8.4243	110.79	128.64	1.4373	127.20	139.31	490.00
8.4243	6.4378	125.70	140.56	1.5026	139.06	139.60	500.00
6.4378	5.4605	137.50	149.40	1.5524	147.85	139.83	510.00
5.4605	4.8532	146.26	156.57	1.5884	154.99	140.00	520.00
4.8532	4.4357	153.37	162.66	1.6195	161.04	140.15	530.00
4.4357	4.2333	159.39	168.06	1.6454	166.41	140.28	540.00
4.2333	3.8155	164.75	172.79	1.6681	171.13	140.39	550.00
3.8155	3.2899	169.44	176.54	1.6878	174.86	140.49	560.00
3.2899	3.0315	173.15	179.47	1.7032	177.77	140.57	570.00
3.0315	2.9129	176.06	182.00	1.7151	180.29	140.63	580.00
2.9129	2.8482	178.56	184.32	1.7253	182.60	140.69	590.00
2.8482	2.8179	180.86	186.53	1.7347	184.79	140.74	600.00
2.8179	2.7427	183.05	188.61	1.7435	186.87	140.78	610.00
2.7427	2.6453	185.11	190.50	1.7518	188.75	140.83	620.00
2.6453	2.5983	186.99	192.23	1.7593	190.48	140.87	630.00
2.5983	2.5685	188.71	193.88	1.7662	192.11	140.90	640.00
2.5685	2.5626	190.34	195.47	1.7726	193.70	140.94	650.00
2.5626	2.5609	191.92	197.04	1.7789	195.26	140.97	660.00
2.5609	2.4294	195.26	200.25	0.0000	200.25	0.00	670.00
2.4294	2.2335	200.25	204.91	0.0000	204.91	0.00	680.00
2.2335	2.1372	204.91	209.29	0.0000	209.29	0.00	690.00
2.1372	2.0979	209.29	213.52	0.0000	213.52	0.00	700.00
2.0979	2.0714	213.52	217.69	0.0000	217.69	0.00	710.00
2.0714	2.0589	217.69	221.82	0.0000	221.82	0.00	720.00
2.0589	2.0611	221.82	225.94	0.0000	225.94	0.00	730.00
2.0611	2.0551	225.94	230.06	0.0000	230.06	0.00	740.00
2.0551	2.0527	230.06	234.16	0.0000	234.16	0.00	750.00
2.0527	2.0599	234.16	238.28	0.0000	238.28	0.00	760.00
2.0599	2.0563	238.28	242.39	0.0000	242.39	0.00	770.00
2.0563	2.0551	242.39	246.50	0.0000	246.50	0.00	780.00
2.0551	1.9302	246.50	250.49	0.0000	250.49	0.00	790.00
1.9302	1.7361	250.49	254.16	0.0000	254.16	0.00	800.00
1.7361	1.6403	254.16	257.53	0.0000	257.53	0.00	810.00
1.6403	1.5932	257.53	260.77	0.0000	260.77	0.00	820.00
1.5932	1.5702	260.77	263.93	0.0000	263.93	0.00	830.00
1.5702	1.5591	263.93	267.06	0.0000	267.06	0.00	840.00
1.5591	1.6165	267.06	270.23	0.0000	270.23	0.00	850.00
1.6165	1.7157	270.23	273.57	0.0000	273.57	0.00	860.00
1.7157	1.7652	273.57	277.05	0.0000	277.05	0.00	870.00
1.7652	1.7822	277.05	280.60	0.0000	280.60	0.00	880.00
1.7822	1.7989	280.60	284.18	0.0000	284.18	0.00	890.00
1.7989	1.8075	284.18	287.78	0.0000	287.78	0.00	900.00
1.8075	1.8043	287.78	291.39	0.0000	291.39	0.00	910.00

LEVEL POOL ROUTING TABLE

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
1.8043	1.8110	291.39	295.01	0.0000	295.01	0.00	920.00
1.8110	1.8146	295.01	298.64	0.0000	298.64	0.00	930.00
1.8146	1.8089	298.64	302.26	0.0000	302.26	0.00	940.00
1.8089	1.8143	302.26	305.88	0.0000	305.88	0.00	950.00
1.8143	1.8173	305.88	309.51	0.0000	309.51	0.00	960.00
1.8173	1.6148	309.51	312.95	0.0000	312.95	0.00	970.00
1.6148	1.3260	312.95	315.89	0.0000	315.89	0.00	980.00
1.3260	1.1832	315.89	318.40	0.0000	318.40	0.00	990.00
1.1832	1.1048	318.40	320.68	0.0000	320.68	0.00	1000.00
1.1048	1.0739	320.68	322.86	0.0000	322.86	0.00	1010.00
1.0739	1.0587	322.86	325.00	0.0000	325.00	0.00	1020.00
1.0587	1.1772	325.00	327.23	0.0000	327.23	0.00	1030.00
1.1772	1.3699	327.23	329.78	0.0000	329.78	0.00	1040.00
1.3699	1.4655	329.78	332.61	0.0000	332.61	0.00	1050.00
1.4655	1.5130	332.61	335.59	0.0000	335.59	0.00	1060.00
1.5130	1.5368	335.59	338.64	0.0000	338.64	0.00	1070.00
1.5368	1.5488	338.64	341.73	0.0000	341.73	0.00	1080.00
1.5488	1.4919	341.73	344.77	0.0000	344.77	0.00	1090.00
1.4919	1.3929	344.77	347.65	0.0000	347.65	0.00	1100.00
1.3929	1.3441	347.65	350.39	0.0000	350.39	0.00	1110.00
1.3441	1.5647	350.39	353.30	0.0000	353.30	0.00	1120.00
1.5647	1.4294	353.30	356.29	0.0000	356.29	0.00	1130.00
1.4294	1.1259	356.29	358.85	0.0000	358.85	0.00	1140.00
1.1259	1.2204	358.85	361.19	0.0000	361.19	0.00	1150.00
1.2204	1.2594	361.19	363.67	0.0000	363.67	0.00	1160.00
1.2594	1.2789	363.67	366.21	0.0000	366.21	0.00	1170.00
1.2789	1.2965	366.21	368.79	0.0000	368.79	0.00	1180.00
1.2965	1.2975	368.79	371.38	0.0000	371.38	0.00	1190.00
1.2975	1.2982	371.38	373.98	0.0000	373.98	0.00	1200.00
1.2982	1.3065	373.98	376.58	0.0000	376.58	0.00	1210.00
1.3065	1.3029	376.58	379.19	0.0000	379.19	0.00	1220.00
1.3029	1.3012	379.19	381.80	0.0000	381.80	0.00	1230.00
1.3012	1.3084	381.80	384.41	0.0000	384.41	0.00	1240.00
1.3084	1.3042	384.41	387.02	0.0000	387.02	0.00	1250.00
1.3042	1.3023	387.02	389.62	0.0000	389.62	0.00	1260.00
1.3023	1.3094	389.62	392.24	0.0000	392.24	0.00	1270.00
1.3094	1.3051	392.24	394.85	0.0000	394.85	0.00	1280.00
1.3051	1.3031	394.85	397.46	0.0000	397.46	0.00	1290.00
1.3031	1.3102	397.46	400.07	0.0000	400.07	0.00	1300.00
1.3102	1.3059	400.07	402.69	0.0000	402.69	0.00	1310.00
1.3059	1.3038	402.69	405.30	0.0000	405.30	0.00	1320.00
1.3038	1.2396	405.30	407.84	0.0000	407.84	0.00	1330.00
1.2396	1.1445	407.84	410.23	0.0000	410.23	0.00	1340.00
1.1445	1.0975	410.23	412.47	0.0000	412.47	0.00	1350.00
1.0975	1.0664	412.47	414.63	0.0000	414.63	0.00	1360.00
1.0664	1.0590	414.63	416.76	0.0000	416.76	0.00	1370.00
1.0590	1.0554	416.76	418.87	0.0000	418.87	0.00	1380.00

LEVEL POOL ROUTING TABLE

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
1.0554	1.0458	418.87	420.97	0.0000	420.97	0.00	1390.00
1.0458	1.0490	420.97	423.07	0.0000	423.07	0.00	1400.00
1.0490	1.0507	423.07	425.17	0.0000	425.17	0.00	1410.00
1.0507	1.0437	425.17	427.26	0.0000	427.26	0.00	1420.00
1.0437	1.0482	427.26	429.35	0.0000	429.35	0.00	1430.00
1.0482	1.0505	429.35	431.45	0.0000	431.45	0.00	1440.00
1.0505	0.7819	431.45	433.28	0.0000	433.28	0.00	1450.00
0.7819	0.3871	433.28	434.45	0.0000	434.45	0.00	1460.00
0.3871	0.1916	434.45	435.03	0.0000	435.03	0.00	1470.00
0.1916	0.0949	435.03	435.32	0.0000	435.32	0.00	1480.00
0.0949	0.0470	435.32	435.46	0.0000	435.46	0.00	1490.00
0.0470	0.0233	435.46	435.53	0.0000	435.53	0.00	1500.00

'S' - POND 'C' TOTAL VOLUME

ELEV (FT)	AREA (SF)	VOL (CF)	Cumm VOL (CF)	
133.5	6500			
134	7015	3379	3379	
135	8904	7960	11,339	← WQ VOL @ 135.52
136	10,849	9697	21,036	
137	14,909	12879	33,915	
138	17,023	15966	49881	
139	21,230	19,127	69,007	

WQ RELEASE RATE

$$\frac{16{,}409\ ft^3}{48\ HRS} \times \frac{1\ HR}{3600\ s} = 0.095\ cfs$$

GROUP MACKENZIE
0690 SW Bancroft St/PO Box 69039 Portland, OR 97201-0039
Tel: 503.224.9560 Net: info@grpmack.com Fax: 503.228.1285

By _____
Date _____
Job # _____
Sht. _____ of _____

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'T' - POND 'C' DETENTION VOLUME

ELEV (FT)	AREA (SF)	VOL (CF)	CUMM. VOL (CF)
135.52	9,915		
136	10,849	4983	4983
137	14,909	12,879	17,862
138	17,023	15,966	33,828
139	21,230	19,127	52,955

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Date _____
Job # _____
Sht. _____ of _____

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'U' - WQ ORIFICE 'C'

$Q = CA(2gh)^{1/2}$

$A = \dfrac{Q}{C(2gh)^{1/2}}$

$A = \dfrac{0.095}{0.62(2 \times 32.2 \times 0.62)^{1/2}}$

$A = 0.024\ \text{ft}^2$

$Q = 0.095$ cfs

$C = 0.62$

$g = 32.2$

$h = 135.52' - 134.90' = 0.62'$

$A = \dfrac{\pi d^2}{4}$

$d = \sqrt{\dfrac{4A}{\pi}}$

$d = \sqrt{\dfrac{4A}{\pi}} \quad 0.178' = 2.10''\ \phi$

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Date _____
Job # _____
Sht. _____ of _____

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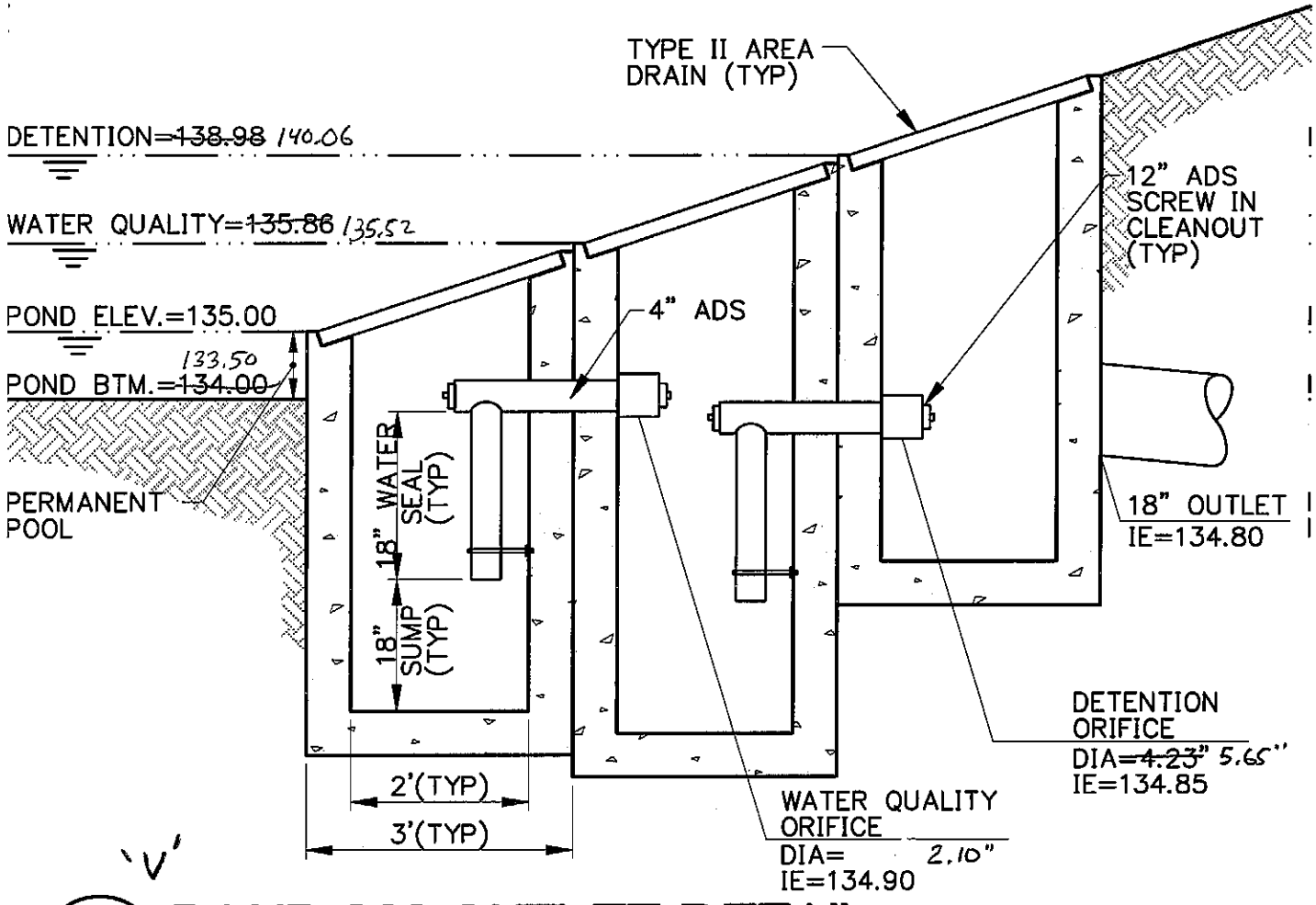

3 C8.1 POND "C" OUTLET DETAIL

N.T.S.
OUTFLOW DEVICE

SD150
DETINSET= 1:1

BASIN SUMMARY

BASIN ID: D10 NAME: DEVELOPED 10YR STORM
SBUH METHODOLOGY
TOTAL AREA.....: 14.77 Acres BASEFLOWS: 0.00 cfs
RAINFALL TYPE....: TYPE1A PERVIOUS AREA
PRECIPITATION....: 3.45 inches AREA..: 2.32 Acres
TIME INTERVAL....: 10.00 min CN....: 80.00
TIME OF CONC.....: 14.80 min IMPERVIOUS AREA
ABSTRACTION COEFF: 0.20 AREA..: 12.45 Acres
CN....: 98.00
TcReach - Sheet L: 30.00 ns:0.2400 p2yr: 2.50 s:0.0200
TcReach - Sheet L: 150.00 ns:0.0110 p2yr: 2.50 s:0.0200
TcReach - Channel L:1700.00 kc:42.00 s:0.0100
PEAK RATE: 8.82 cfs VOL: 3.65 Ac-ft TIME: 480 min

BASIN ID: D2 NAME: DEVELOPED 2YR STORM
SBUH METHODOLOGY
TOTAL AREA.....: 14.77 Acres BASEFLOWS: 0.00 cfs
RAINFALL TYPE....: TYPE1A PERVIOUS AREA
PRECIPITATION....: 2.50 inches AREA..: 2.32 Acres
TIME INTERVAL....: 10.00 min CN....: 80.00
TIME OF CONC.....: 14.80 min IMPERVIOUS AREA
ABSTRACTION COEFF: 0.20 AREA..: 12.45 Acres
CN....: 98.00
TcReach - Sheet L: 30.00 ns:0.2400 p2yr: 2.50 s:0.0200
TcReach - Sheet L: 150.00 ns:0.0110 p2yr: 2.50 s:0.0200
TcReach - Channel L:1700.00 kc:42.00 s:0.0100
PEAK RATE: 6.14 cfs VOL: 2.53 Ac-ft TIME: 480 min

BASIN ID: D25 NAME: DEVELOPED 25YR STORM
SBUH METHODOLOGY
TOTAL AREA.....: 14.77 Acres BASEFLOWS: 0.00 cfs
RAINFALL TYPE....: TYPE1A PERVIOUS AREA
PRECIPITATION....: 3.90 inches AREA..: 2.32 Acres
TIME INTERVAL....: 10.00 min CN....: 80.00
TIME OF CONC.....: 14.80 min IMPERVIOUS AREA
ABSTRACTION COEFF: 0.20 AREA..: 12.45 Acres
CN....: 98.00
TcReach - Sheet L: 30.00 ns:0.2400 p2yr: 2.50 s:0.0200
TcReach - Sheet L: 150.00 ns:0.0110 p2yr: 2.50 s:0.0200
TcReach - Channel L:1700.00 kc:42.00 s:0.0100
PEAK RATE: 10.10 cfs VOL: 4.18 Ac-ft TIME: 480 min

BASIN SUMMARY

BASIN ID: E10 NAME: EXISTING 10YR STORM
SBUH METHODOLOGY
TOTAL AREA.....: 14.77 Acres BASEFLOWS: 0.00 cfs
RAINFALL TYPE....: TYPE1A PERVIOUS AREA
PRECIPITATION....: 3.45 inches AREA..: 14.77 Acres
TIME INTERVAL....: 10.00 min CN....: 80.00
TIME OF CONC.....: 38.83 min IMPERVIOUS AREA
ABSTRACTION COEFF: 0.20 AREA..: 0.00 Acres
CN....: 98.00
TcReach - Sheet L: 300.00 ns:0.2400 p2yr: 2.50 s:0.0400
TcReach - Shallow L: 300.00 ks:10.00 s:0.0400
TcReach - Channel L:1400.00 kc:17.00 s:0.0400
PEAK RATE: 3.12 cfs VOL: 1.97 Ac-ft TIME: 490 min

BASIN ID: E2 NAME: EXISTING 2YR STORM
SBUH METHODOLOGY
TOTAL AREA.....: 14.77 Acres BASEFLOWS: 0.00 cfs
RAINFALL TYPE....: TYPE1A PERVIOUS AREA
PRECIPITATION....: 2.50 inches AREA..: 14.77 Acres
TIME INTERVAL....: 10.00 min CN....: 80.00
TIME OF CONC.....: 38.83 min IMPERVIOUS AREA
ABSTRACTION COEFF: 0.20 AREA..: 0.00 Acres
CN....: 98.00
TcReach - Sheet L: 300.00 ns:0.2400 p2yr: 2.50 s:0.0400
TcReach - Shallow L: 300.00 ks:10.00 s:0.0400
TcReach - Channel L:1400.00 kc:17.00 s:0.0400
PEAK RATE: 1.46 cfs VOL: 1.09 Ac-ft TIME: 490 min

BASIN ID: E25 NAME: EXISTING 25YR STORM
SBUH METHODOLOGY
TOTAL AREA.....: 14.77 Acres BASEFLOWS: 0.00 cfs
RAINFALL TYPE....: TYPE1A PERVIOUS AREA
PRECIPITATION....: 3.90 inches AREA..: 14.77 Acres
TIME INTERVAL....: 10.00 min CN....: 80.00
TIME OF CONC.....: 38.83 min IMPERVIOUS AREA
ABSTRACTION COEFF: 0.20 AREA..: 0.00 Acres
CN....: 98.00
TcReach - Sheet L: 300.00 ns:0.2400 p2yr: 2.50 s:0.0400
TcReach - Shallow L: 300.00 ks:10.00 s:0.0400
TcReach - Channel L:1400.00 kc:17.00 s:0.0400
PEAK RATE: 4.00 cfs VOL: 2.41 Ac-ft TIME: 490 min

HYDROGRAPH SUMMARY

HYD NUM	PEAK RUNOFF RATE cfs	TIME OF PEAK min.	VOLUME OF HYDRO cf\AcFt	Contrib Area Acres
1	1.460	490	47658 cf	14.77
2	3.124	490	85612 cf	14.77
3	3.999	490	105049 cf	14.77
5	6.139	480	110109 cf	14.77
6	8.822	480	158818 cf	14.77
7	10.104	480	182151 cf	14.77
10	1.460	690	110176 cf	14.77
11	1.760	800	158945 cf	14.77
12	1.976	800	182266 cf	14.77

ROUTING REPORT

STORAGE LIST ID No. A
Description:

MULTIPLE ORIFICE ID No. A
Description:
Outlet Elev: 134.85
Elev: 134.85 ft Orifice Diameter: 5.6484 in.

ROUTING CURVE

STAGE (ft)	STORAGE (cf)	OUTFLOW (cfs)	O+2S cfs-min	STAGE (ft)	STORAGE (cf)	OUTFLOW (cfs)	O+2S cfs-min	STAGE (ft)	STORAGE (cf)	OUTFLOW (cfs)	O+2S cfs-min
134.85	0.0000	0.0000	0.0000	136.90	16574	1.2396	56.487	139.00	52955	1.7638	178.28
134.90	0.0000	0.1936	0.1936	137.00	17862	1.2695	60.810	139.10	53960	1.7849	181.65
135.00	0.0000	0.3353	0.3353	137.10	19459	1.2987	66.161	139.20	54964	1.8058	185.02
135.10	0.0000	0.4329	0.4329	137.20	21055	1.3272	71.511	139.30	55969	1.8264	188.39
135.20	0.0000	0.5122	0.5122	137.30	22652	1.3552	76.861	139.40	56973	1.8468	191.76
135.30	0.0000	0.5808	0.5808	137.40	24248	1.3826	82.211	139.50	57978	1.8670	195.13
135.40	0.0000	0.6421	0.6421	137.50	25845	1.4094	87.559	139.60	58982	1.8870	198.49
135.50	0.0000	0.6980	0.6980	137.60	27442	1.4358	92.908	139.70	59987	1.9067	201.86
135.60	830.50	0.7498	3.5181	137.70	29038	1.4616	98.256	139.80	60991	1.9263	205.23
135.70	1869	0.7982	7.0270	137.80	30635	1.4871	103.60	139.90	61996	1.9456	208.60
135.80	2907	0.8439	10.533	137.90	32231	1.5121	108.95	140.00	63000	1.9648	211.96
135.90	3945	0.8872	14.037	138.00	33828	1.5366	114.30	140.10	64500	1.9838	216.98
136.00	4983	0.9285	17.538	138.10	35741	1.5608	120.70	140.20	66000	2.0026	222.00
136.10	6271	0.9680	21.871	138.20	37653	1.5847	127.10	140.30	67500	2.0212	227.02
136.20	7559	1.0060	26.202	138.30	39566	1.6082	133.50	140.40	69000	2.0397	232.04
136.30	8847	1.0426	30.532	138.40	41479	1.6313	139.89	140.50	70500	2.0580	237.06
136.40	10135	1.0779	34.860	138.50	43392	1.6541	146.29	140.60	72000	2.0761	242.08
136.50	11423	1.1121	39.187	138.60	45304	1.6766	152.69	140.70	73500	2.0941	247.09
136.60	12710	1.1453	43.513	138.70	47217	1.6988	159.09	140.80	75000	2.1119	252.11
136.70	13998	1.1776	47.839	138.80	49130	1.7207	165.49	140.90	76500	2.1296	257.13
136.80	15286	1.2090	52.163	138.90	51042	1.7424	171.88				

LEVEL POOL ROUTING TABLE

MATCH Q (cfs) : 1.46 INFLOW Q (cfs): 6.14
PEAK STAGE (ft): 137.70 PEAK OUTFLOW : 1.46
PEAK TIME: 690.00 min.
INFLOW HYD No. : 5 OUTFLOW HYD No.: 10

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
0.0000	0.0001	0.0000	0.0001	0.0000	0.0001	134.85	50.00
0.0001	0.0076	0.0000	0.0076	0.0001	0.0076	134.85	60.00
0.0076	0.0433	0.0000	0.0508	0.0076	0.0433	134.85	70.00
0.0433	0.1072	0.0000	0.1504	0.0433	0.1072	134.85	80.00
0.1072	0.1787	0.0000	0.2859	0.1072	0.1787	134.85	90.00
0.1787	0.2482	0.0000	0.4269	0.1787	0.2482	134.85	100.00
0.2482	0.3120	0.0000	0.5602	0.2482	0.3120	134.85	110.00
0.3120	0.3689	0.0000	0.6809	0.3120	0.3689	134.85	120.00
0.3689	0.4400	0.0000	0.8089	0.3689	0.4400	134.85	130.00
0.4400	0.5209	0.0000	0.9609	0.4400	0.5209	134.85	140.00
0.5209	0.5837	0.0000	1.1046	0.5209	0.5837	134.85	150.00
0.5837	0.6317	0.0000	1.2153	0.5837	0.6317	134.85	160.00
0.6317	0.6758	0.0000	1.3075	0.6317	0.6758	134.85	170.00
0.6758	0.7129	0.0000	1.3887	0.6758	0.7129	134.85	180.00
0.7129	0.7415	0.0146	1.4689	0.6983	0.7706	135.50	190.00
0.7415	0.7711	0.0713	1.5839	0.6994	0.8845	135.50	200.00
0.7711	0.7965	0.1830	1.7506	0.7015	1.0492	135.51	210.00
0.7965	0.8151	0.3447	1.9563	0.7045	1.2518	135.51	220.00
0.8151	0.8367	0.5436	2.1954	0.7082	1.4872	135.52	230.00
0.8367	0.8552	0.7747	2.4667	0.7125	1.7542	135.53	240.00
0.8552	0.9028	1.0367	2.7947	0.7174	2.0773	135.54	250.00
0.9028	0.9647	1.3540	3.2215	0.7234	2.4981	135.55	260.00
0.9647	1.0030	1.7670	3.7348	0.7311	3.0037	135.56	270.00
1.0030	1.0328	2.2633	4.2992	0.7404	3.5588	135.58	280.00
1.0328	1.0497	2.8084	4.8909	0.7504	4.1406	135.60	290.00
1.0497	1.0638	3.3822	5.4956	0.7584	4.7372	135.62	300.00
1.0638	1.2177	3.9706	6.2521	0.7666	5.4855	135.63	310.00
1.2177	1.4390	4.7085	7.3653	0.7770	6.5883	135.66	320.00
1.4390	1.5578	5.7961	8.7929	0.7922	8.0007	135.69	330.00
1.5578	1.6247	7.1898	10.372	0.8109	9.5614	135.73	340.00
1.6247	1.6659	8.7301	12.021	0.8312	11.189	135.77	350.00
1.6659	1.6953	10.337	13.699	0.8520	12.847	135.82	360.00
1.6953	1.6835	11.974	15.353	0.8725	14.481	135.87	370.00
1.6835	1.6500	13.588	16.922	0.8924	16.029	135.91	380.00
1.6500	1.6357	15.119	18.404	0.9107	17.494	135.96	390.00
1.6357	1.6349	16.566	19.836	0.9279	18.908	136.00	400.00
1.6349	1.6449	17.967	21.247	0.9410	20.306	136.03	410.00
1.6449	1.6508	19.352	22.648	0.9537	21.694	136.06	420.00
1.6508	2.1604	20.728	24.539	0.9664	23.573	136.10	430.00
2.1604	2.9320	22.590	27.682	0.9829	26.699	136.14	440.00
2.9320	3.3346	25.689	31.956	1.0102	30.946	136.21	450.00

LEVEL POOL ROUTING TABLE

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
3.3346	4.2741	29.900	37.508	1.0459	36.462	136.31	460.00
4.2741	5.4928	35.372	45.139	1.0906	44.048	136.44	470.00
5.4928	6.1390	42.899	54.530	1.1493	53.381	136.61	480.00
6.1390	5.5016	52.163	63.804	1.2177	62.586	136.83	490.00
5.5016	4.2117	61.307	71.021	1.2792	69.741	137.03	500.00
4.2117	3.5791	68.424	76.214	1.3178	74.897	137.17	510.00
3.5791	3.1862	73.552	80.317	1.3449	78.972	137.26	520.00
3.1862	2.9163	77.606	83.709	1.3660	82.343	137.34	530.00
2.9163	2.7867	80.959	86.662	1.3832	85.279	137.40	540.00
2.7867	2.5141	83.881	89.182	1.3980	87.784	137.46	550.00
2.5141	2.1695	86.373	91.057	1.4105	89.647	137.50	560.00
2.1695	2.0007	88.227	92.397	1.4197	90.977	137.54	570.00
2.0007	1.9238	89.551	93.476	1.4263	92.049	137.56	580.00
1.9238	1.8824	90.618	94.424	1.4315	92.993	137.58	590.00
1.8824	1.8634	91.556	95.302	1.4362	93.866	137.60	600.00
1.8634	1.8147	92.426	96.104	1.4404	94.663	137.62	610.00
1.8147	1.7511	93.219	96.785	1.4443	95.341	137.63	620.00
1.7511	1.7209	93.893	97.365	1.4475	95.918	137.65	630.00
1.7209	1.7020	94.467	97.890	1.4503	96.440	137.66	640.00
1.7020	1.6989	94.987	98.388	1.4529	96.935	137.67	650.00
1.6989	1.6985	95.480	98.877	1.4553	97.422	137.68	660.00
1.6985	1.6120	95.964	99.275	1.4576	97.817	137.68	670.00
1.6120	1.4825	96.358	99.452	1.4595	97.993	137.69	680.00
1.4825	1.4191	96.532	99.434	1.4604	97.974	137.70	690.00
1.4191	1.3936	96.513	99.326	1.4603	97.866	137.69	700.00
1.3936	1.3764	96.406	99.176	1.4598	97.716	137.69	710.00
1.3764	1.3686	96.257	99.002	1.4590	97.543	137.69	720.00
1.3686	1.3705	96.085	98.824	1.4582	97.366	137.69	730.00
1.3705	1.3669	95.908	98.646	1.4573	97.189	137.68	740.00
1.3669	1.3658	95.732	98.465	1.4565	97.008	137.68	750.00
1.3658	1.3710	95.553	98.289	1.4556	96.834	137.68	760.00
1.3710	1.3690	95.379	98.119	1.4548	96.664	137.67	770.00
1.3690	1.3686	95.210	97.948	1.4539	96.494	137.67	780.00
1.3686	1.2857	95.041	97.695	1.4531	96.242	137.67	790.00
1.2857	1.1567	94.790	97.233	1.4519	95.781	137.66	800.00
1.1567	1.0932	94.331	96.581	1.4497	95.131	137.65	810.00
1.0932	1.0620	93.685	95.840	1.4465	94.393	137.64	820.00
1.0620	1.0469	92.950	95.059	1.4430	93.616	137.63	830.00
1.0469	1.0398	92.177	94.264	1.4392	92.825	137.61	840.00
1.0398	1.0783	91.389	93.507	1.4354	92.072	137.60	850.00
1.0783	1.1447	90.640	92.863	1.4317	91.432	137.58	860.00
1.1447	1.1780	90.003	92.326	1.4285	90.897	137.57	870.00
1.1780	1.1896	89.472	91.839	1.4259	90.413	137.56	880.00
1.1896	1.2010	88.990	91.380	1.4235	89.957	137.55	890.00
1.2010	1.2070	88.536	90.944	1.4212	89.523	137.54	900.00
1.2070	1.2052	88.103	90.516	1.4191	89.097	137.54	910.00
1.2052	1.2099	87.680	90.095	1.4170	88.678	137.53	920.00

LEVEL POOL ROUTING TABLE

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE (ft)	TIME (min)
<---------- cfs min ---------->							
1.2099	1.2126	87.263	89.685	1.4149	88.270	137.52	930.00
1.2126	1.2090	86.857	89.279	1.4129	87.866	137.51	940.00
1.2090	1.2129	86.455	88.877	1.4109	87.466	137.51	950.00
1.2129	1.2152	86.057	88.485	1.4090	87.076	137.50	960.00
1.2152	1.0799	85.669	87.964	1.4070	86.557	137.49	970.00
1.0799	0.8869	85.153	87.120	1.4044	85.715	137.48	980.00
0.8869	0.7915	84.315	85.994	1.4002	84.593	137.47	990.00
0.7915	0.7392	83.199	84.730	1.3945	83.335	137.44	1000.00
0.7392	0.7186	81.947	83.405	1.3882	82.016	137.42	1010.00
0.7186	0.7085	80.635	82.062	1.3816	80.680	137.40	1020.00
0.7085	0.7880	79.306	80.802	1.3747	79.427	137.37	1030.00
0.7880	0.9171	78.059	79.764	1.3683	78.396	137.35	1040.00
0.9171	0.9812	77.033	78.931	1.3630	77.568	137.33	1050.00
0.9812	1.0132	76.209	78.203	1.3588	76.845	137.31	1060.00
1.0132	1.0293	75.489	77.532	1.3551	76.177	137.30	1070.00
1.0293	1.0375	74.825	76.892	1.3516	75.540	137.29	1080.00
1.0375	0.9995	74.192	76.229	1.3483	74.881	137.28	1090.00
0.9995	0.9333	73.536	75.469	1.3449	74.124	137.26	1100.00
0.9333	0.9008	72.783	74.617	1.3409	73.276	137.25	1110.00
0.9008	1.0488	71.940	73.889	1.3365	72.553	137.23	1120.00
1.0488	0.9582	71.220	73.227	1.3327	71.894	137.22	1130.00
0.9582	0.7548	70.565	72.278	1.3293	70.949	137.21	1140.00
0.7548	0.8183	69.625	71.198	1.3242	69.874	137.19	1150.00
0.8183	0.8446	68.555	70.218	1.3185	68.899	137.17	1160.00
0.8446	0.8577	67.586	69.288	1.3133	67.975	137.15	1170.00
0.8577	0.8697	66.667	68.394	1.3084	67.086	137.13	1180.00
0.8697	0.8705	65.782	67.522	1.3036	66.219	137.12	1190.00
0.8705	0.8710	64.920	66.661	1.2990	65.362	137.10	1200.00
0.8710	0.8767	64.068	65.816	1.2943	64.521	137.09	1210.00
0.8767	0.8744	63.231	64.983	1.2898	63.693	137.07	1220.00
0.8744	0.8734	62.408	64.155	1.2852	62.870	137.05	1230.00
0.8734	0.8783	61.589	63.341	1.2808	62.060	137.04	1240.00
0.8783	0.8756	60.784	62.538	1.2763	61.262	137.02	1250.00
0.8756	0.8744	59.990	61.740	1.2720	60.468	137.01	1260.00
0.8744	0.8793	59.200	60.954	1.2672	59.687	136.99	1270.00
0.8793	0.8765	58.425	60.181	1.2618	58.919	136.97	1280.00
0.8765	0.8753	57.663	59.415	1.2565	58.158	136.96	1290.00
0.8753	0.8801	56.907	58.662	1.2512	57.411	136.94	1300.00
0.8801	0.8773	56.165	57.923	1.2460	56.677	136.92	1310.00
0.8773	0.8761	55.436	57.189	1.2410	55.948	136.90	1320.00
0.8761	0.8330	54.712	56.421	1.2358	55.185	136.89	1330.00
0.8330	0.7692	53.955	55.557	1.2304	54.327	136.87	1340.00
0.7692	0.7377	53.102	54.609	1.2243	53.385	136.85	1350.00
0.7377	0.7168	52.167	53.622	1.2177	52.404	136.83	1360.00
0.7168	0.7119	51.193	52.622	1.2107	51.411	136.81	1370.00
0.7119	0.7096	50.208	51.629	1.2036	50.426	136.78	1380.00
0.7096	0.7032	49.229	50.642	1.1964	49.446	136.76	1390.00

LEVEL POOL ROUTING TABLE

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE (ft)	TIME (min)
<---------- cfs min ---------->							
0.7032	0.7054	48.256	49.665	1.1893	48.476	136.74	1400.00
0.7054	0.7066	47.293	48.705	1.1822	47.523	136.71	1410.00
0.7066	0.7019	46.348	47.756	1.1753	46.581	136.69	1420.00
0.7019	0.7050	45.413	46.820	1.1682	45.651	136.67	1430.00
0.7050	0.7066	44.490	45.902	1.1613	44.741	136.65	1440.00
0.7066	0.5260	43.586	44.819	1.1545	43.664	136.63	1450.00
0.5260	0.2604	42.518	43.304	1.1465	42.158	136.60	1460.00
0.2604	0.1289	41.023	41.412	1.1349	40.277	136.57	1470.00
0.1289	0.0638	39.157	39.349	1.1205	38.229	136.53	1480.00
0.0638	0.0316	37.124	37.220	1.1046	36.115	136.48	1490.00
0.0316	0.0156	35.027	35.074	1.0878	33.987	136.43	1500.00
0.0156	0.0077	32.916	32.939	1.0708	31.868	136.38	1510.00
0.0077	0.0038	30.815	30.826	1.0535	29.773	136.33	1520.00
0.0038	0.0019	28.737	28.743	1.0362	27.706	136.28	1530.00
0.0019	0.0009	26.688	26.691	1.0187	25.672	136.23	1540.00
0.0009	0.0005	24.671	24.672	1.0013	23.671	136.19	1550.00
0.0005	0.0002	22.687	22.688	0.9838	21.704	136.14	1560.00
0.0002	0.0001	20.737	20.738	0.9665	19.771	136.10	1570.00
0.0001	0.0001	18.822	18.823	0.9488	17.874	136.05	1580.00
0.0001	0.0000	16.942	16.942	0.9315	16.011	136.01	1590.00
0.0000	0.0000	15.100	15.100	0.9105	14.190	135.96	1600.00
0.0000	0.0000	13.301	13.301	0.8890	12.412	135.90	1610.00
0.0000	0.0000	11.545	11.545	0.8671	10.678	135.85	1620.00
0.0000	0.0000	9.8320	9.8320	0.8457	8.9864	135.80	1630.00
0.0000	0.0000	8.1626	8.1626	0.8237	7.3389	135.76	1640.00
0.0000	0.0000	6.5366	6.5366	0.8023	5.7343	135.71	1650.00
0.0000	0.0000	4.9539	4.9539	0.7804	4.1735	135.66	1660.00
0.0000	0.0000	3.4147	3.4147	0.7589	2.6558	135.62	1670.00
0.0000	0.0000	1.9219	1.9219	0.7340	1.1879	135.57	1680.00
0.0000	0.0000	0.4809	0.4809	0.7070	-0.2262	135.52	1690.00

ROUTING REPORT

STORAGE LIST ID No. A
Description:

MULTIPLE ORIFICE ID No. A
Description:
Outlet Elev: 134.85
Elev: 134.85 ft Orifice Diameter: 5.6484 in.

ROUTING CURVE

STAGE (ft)	STORAGE (cf)	OUTFLOW (cfs)	O+2S cfs-min	STAGE (ft)	STORAGE (cf)	OUTFLOW (cfs)	O+2S cfs-min	STAGE (ft)	STORAGE (cf)	OUTFLOW (cfs)	O+2S cfs-min
134.85	0.0000	0.0000	0.0000	136.90	16574	1.2396	56.487	139.00	52955	1.7638	178.28
134.90	0.0000	0.1936	0.1936	137.00	17862	1.2695	60.810	139.10	53960	1.7849	181.65
135.00	0.0000	0.3353	0.3353	137.10	19459	1.2987	66.161	139.20	54964	1.8058	185.02
135.10	0.0000	0.4329	0.4329	137.20	21055	1.3272	71.511	139.30	55969	1.8264	188.39
135.20	0.0000	0.5122	0.5122	137.30	22652	1.3552	76.861	139.40	56973	1.8468	191.76
135.30	0.0000	0.5808	0.5808	137.40	24248	1.3826	82.211	139.50	57978	1.8670	195.13
135.40	0.0000	0.6421	0.6421	137.50	25845	1.4094	87.559	139.60	58982	1.8870	198.49
135.50	0.0000	0.6980	0.6980	137.60	27442	1.4358	92.908	139.70	59987	1.9067	201.86
135.60	830.50	0.7498	3.5181	137.70	29038	1.4616	98.256	139.80	60991	1.9263	205.23
135.70	1869	0.7982	7.0270	137.80	30635	1.4871	103.60	139.90	61996	1.9456	208.60
135.80	2907	0.8439	10.533	137.90	32231	1.5121	108.95	140.00	63000	1.9648	211.96
135.90	3945	0.8872	14.037	138.00	33828	1.5366	114.30	140.10	64500	1.9838	216.98
136.00	4983	0.9285	17.538	138.10	35741	1.5608	120.70	140.20	66000	2.0026	222.00
136.10	6271	0.9680	21.871	138.20	37653	1.5847	127.10	140.30	67500	2.0212	227.02
136.20	7559	1.0060	26.202	138.30	39566	1.6082	133.50	140.40	69000	2.0397	232.04
136.30	8847	1.0426	30.532	138.40	41479	1.6313	139.89	140.50	70500	2.0580	237.06
136.40	10135	1.0779	34.860	138.50	43392	1.6541	146.29	140.60	72000	2.0761	242.08
136.50	11423	1.1121	39.187	138.60	45304	1.6766	152.69	140.70	73500	2.0941	247.09
136.60	12710	1.1453	43.513	138.70	47217	1.6988	159.09	140.80	75000	2.1119	252.11
136.70	13998	1.1776	47.839	138.80	49130	1.7207	165.49	140.90	76500	2.1296	257.13
136.80	15286	1.2090	52.163	138.90	51042	1.7424	171.88				

LEVEL POOL ROUTING TABLE

MATCH Q (cfs) : 3.12 INFLOW Q (cfs): 8.82
PEAK STAGE (ft): 138.98 PEAK OUTFLOW : 1.76
PEAK TIME: 800.00 min.
INFLOW HYD No. : 6 OUTFLOW HYD No.: 11

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE (ft)	TIME (min)
<---------- cfs min ---------->							
0.0000	0.0023	0.0000	0.0023	0.0000	0.0023	134.85	40.00
0.0023	0.0255	0.0000	0.0278	0.0023	0.0255	134.85	50.00
0.0255	0.0753	0.0000	0.1008	0.0255	0.0753	134.85	60.00
0.0753	0.1703	0.0000	0.2456	0.0753	0.1703	134.85	70.00
0.1703	0.2994	0.0000	0.4697	0.1703	0.2994	135.50	80.00
0.2994	0.4187	0.0000	0.7181	0.2994	0.4187	135.50	90.00
0.4187	0.5234	0.0000	0.9421	0.4187	0.5234	135.50	100.00
0.5234	0.6131	0.0000	1.1365	0.5234	0.6131	135.50	110.00
0.6131	0.6895	0.0000	1.3026	0.6131	0.6895	135.50	120.00
0.6895	0.7895	0.0000	1.4789	0.6895	0.7895	135.50	130.00
0.7895	0.9053	0.0898	1.7845	0.6997	1.0848	135.50	140.00
0.9053	0.9889	0.3797	2.2739	0.7051	1.5688	135.51	150.00
0.9889	1.0481	0.8548	2.8918	0.7140	2.1778	135.53	160.00
1.0481	1.1016	1.4526	3.6024	0.7252	2.8772	135.55	170.00
1.1016	1.1447	2.1391	4.3854	0.7380	3.6474	135.58	180.00
1.1447	1.1754	2.8958	5.2158	0.7516	4.4642	135.60	190.00
1.1754	1.2085	3.7014	6.0852	0.7629	5.3224	135.63	200.00
1.2085	1.2361	4.5477	6.9923	0.7747	6.2176	135.65	210.00
1.2361	1.2542	5.4306	7.9208	0.7871	7.1338	135.68	220.00
1.2542	1.2775	6.3342	8.8659	0.7996	8.0662	135.70	230.00
1.2775	1.2969	7.2545	9.8289	0.8118	9.0171	135.73	240.00
1.2969	1.3600	8.1930	10.850	0.8241	10.026	135.76	250.00
1.3600	1.4449	9.1885	11.993	0.8373	11.156	135.79	260.00
1.4449	1.4942	10.305	13.244	0.8516	12.392	135.82	270.00
1.4942	1.5311	11.525	14.551	0.8669	13.684	135.85	280.00
1.5311	1.5505	12.801	15.882	0.8828	15.000	135.89	290.00
1.5505	1.5680	14.101	17.220	0.8985	16.321	135.93	300.00
1.5680	1.7930	15.407	18.768	0.9141	17.854	135.97	310.00
1.7930	2.1184	16.922	20.834	0.9313	19.903	136.01	320.00
2.1184	2.2939	18.953	23.365	0.9500	22.415	136.05	330.00
2.2939	2.3939	21.442	26.130	0.9728	25.157	136.11	340.00
2.3939	2.4554	24.160	29.009	0.9968	28.013	136.18	350.00
2.4554	2.4969	26.991	31.944	1.0213	30.922	136.24	360.00
2.4969	2.4756	29.877	34.849	1.0458	33.803	136.31	370.00
2.4756	2.4218	32.734	37.631	1.0693	36.562	136.38	380.00
2.4218	2.3962	35.471	40.289	1.0914	39.197	136.44	390.00
2.3962	2.3906	38.085	42.872	1.1122	41.760	136.50	400.00
2.3906	2.4010	40.628	45.419	1.1319	44.288	136.56	410.00
2.4010	2.4058	43.136	47.943	1.1511	46.792	136.62	420.00
2.4058	3.1411	45.622	51.169	1.1698	49.999	136.68	430.00
3.1411	4.2539	48.806	56.201	1.1933	55.008	136.75	440.00

LEVEL POOL ROUTING TABLE

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
4.2539	4.8282	53.779	62.861	1.2292	61.631	136.87	450.00
4.8282	6.1720	60.357	71.358	1.2740	70.084	137.02	460.00
6.1720	7.9120	68.764	82.848	1.3196	81.528	137.17	470.00
7.9120	8.8222	80.149	96.884	1.3791	95.504	137.39	480.00
8.8222	7.8936	94.056	110.77	1.4483	109.32	137.65	490.00
7.8936	6.0356	107.81	121.74	1.5138	120.23	137.91	500.00
6.0356	5.1224	118.67	129.82	1.5591	128.27	138.09	510.00
5.1224	4.5550	126.68	136.35	1.5890	134.76	138.22	520.00
4.5550	4.1650	133.15	141.87	1.6127	140.26	138.32	530.00
4.1650	3.9765	138.63	146.77	1.6326	145.14	138.41	540.00
3.9765	3.5852	143.49	151.05	1.6500	149.40	138.48	550.00
3.5852	3.0921	147.73	154.41	1.6650	152.74	138.55	560.00
3.0921	2.8499	151.07	157.01	1.6768	155.33	138.60	570.00
2.8499	2.7391	153.65	159.24	1.6858	157.55	138.64	580.00
2.7391	2.6789	155.86	161.27	1.6935	159.58	138.68	590.00
2.6789	2.6508	157.88	163.21	1.7005	161.51	138.71	600.00
2.6508	2.5806	159.80	165.03	1.7071	163.33	138.74	610.00
2.5806	2.4893	161.61	166.68	1.7133	164.97	138.77	620.00
2.4893	2.4454	163.25	168.19	1.7190	166.47	138.79	630.00
2.4454	2.4178	164.74	169.61	1.7241	167.88	138.82	640.00
2.4178	2.4127	166.15	170.98	1.7289	169.25	138.84	650.00
2.4127	2.4114	167.52	172.35	1.7335	170.61	138.86	660.00
2.4114	2.2879	168.87	173.57	1.7381	171.83	138.88	670.00
2.2879	2.1036	170.09	174.48	1.7422	172.74	138.90	680.00
2.1036	2.0131	171.00	175.11	1.7453	173.37	138.91	690.00
2.0131	1.9763	171.62	175.61	1.7474	173.86	138.92	700.00
1.9763	1.9516	172.11	176.04	1.7490	174.29	138.93	710.00
1.9516	1.9400	172.54	176.43	1.7504	174.68	138.94	720.00
1.9400	1.9423	172.93	176.81	1.7518	175.06	138.94	730.00
1.9423	1.9368	173.31	177.19	1.7530	175.44	138.95	740.00
1.9368	1.9348	173.68	177.55	1.7543	175.80	138.96	750.00
1.9348	1.9418	174.04	177.92	1.7555	176.16	138.96	760.00
1.9418	1.9386	174.41	178.29	1.7567	176.53	138.97	770.00
1.9386	1.9376	174.77	178.65	1.7579	176.89	138.97	780.00
1.9376	1.8200	175.13	178.89	1.7591	177.13	138.98	790.00
1.8200	1.6371	175.37	178.83	1.7599	177.07	138.98	800.00
1.6371	1.5469	175.31	178.49	1.7597	176.73	138.98	810.00
1.5469	1.5026	174.97	178.02	1.7586	176.26	138.98	820.00
1.5026	1.4810	174.51	177.49	1.7570	175.73	138.97	830.00
1.4810	1.4706	173.98	176.93	1.7553	175.17	138.96	840.00
1.4706	1.5249	173.42	176.42	1.7534	174.66	138.95	850.00
1.5249	1.6185	172.91	176.06	1.7517	174.30	138.94	860.00
1.6185	1.6653	172.55	175.84	1.7505	174.09	138.94	870.00
1.6653	1.6815	172.34	175.68	1.7498	173.93	138.93	880.00
1.6815	1.6974	172.18	175.56	1.7492	173.81	138.93	890.00
1.6974	1.7056	172.07	175.47	1.7488	173.72	138.93	900.00
1.7056	1.7027	171.97	175.38	1.7485	173.63	138.93	910.00

LEVEL POOL ROUTING TABLE

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
1.7027	1.7091	171.88	175.29	1.7482	173.55	138.93	920.00
1.7091	1.7127	171.80	175.22	1.7480	173.47	138.93	930.00
1.7127	1.7074	171.72	175.14	1.7477	173.40	138.92	940.00
1.7074	1.7126	171.65	175.07	1.7475	173.32	138.92	950.00
1.7126	1.7156	171.57	175.00	1.7472	173.26	138.92	960.00
1.7156	1.5244	171.51	174.75	1.7470	173.00	138.92	970.00
1.5244	1.2519	171.26	174.03	1.7461	172.29	138.92	980.00
1.2519	1.1171	170.54	172.91	1.7437	171.17	138.91	990.00
1.1171	1.0431	169.43	171.59	1.7400	169.85	138.89	1000.00
1.0431	1.0140	168.11	170.17	1.7355	168.43	138.87	1010.00
1.0140	0.9997	166.70	168.72	1.7307	166.99	138.85	1020.00
0.9997	1.1117	165.26	167.37	1.7258	165.65	138.82	1030.00
1.1117	1.2937	163.92	166.33	1.7213	164.61	138.80	1040.00
1.2937	1.3840	162.89	165.57	1.7177	163.85	138.79	1050.00
1.3840	1.4290	162.14	164.95	1.7151	163.23	138.77	1060.00
1.4290	1.4515	161.52	164.40	1.7130	162.69	138.76	1070.00
1.4515	1.4629	160.98	163.89	1.7112	162.18	138.76	1080.00
1.4629	1.4092	160.47	163.34	1.7094	161.63	138.75	1090.00
1.4092	1.3158	159.93	162.65	1.7075	160.94	138.74	1100.00
1.3158	1.2697	159.24	161.82	1.7052	160.12	138.73	1110.00
1.2697	1.4782	158.42	161.16	1.7024	159.46	138.72	1120.00
1.4782	1.3504	157.76	160.59	1.7001	158.89	138.71	1130.00
1.3504	1.0637	157.19	159.61	1.6981	157.91	138.70	1140.00
1.0637	1.1531	156.21	158.43	1.6947	156.74	138.68	1150.00
1.1531	1.1900	155.04	157.39	1.6907	155.70	138.66	1160.00
1.1900	1.2084	154.01	156.41	1.6871	154.72	138.65	1170.00
1.2084	1.2252	153.04	155.47	1.6837	153.79	138.63	1180.00
1.2252	1.2261	152.11	154.56	1.6804	152.88	138.62	1190.00
1.2261	1.2268	151.20	153.65	1.6773	151.98	138.60	1200.00
1.2268	1.2347	150.30	152.76	1.6741	151.09	138.59	1210.00
1.2347	1.2313	149.42	151.88	1.6710	150.21	138.57	1220.00
1.2313	1.2298	148.55	151.01	1.6679	149.34	138.56	1230.00
1.2298	1.2367	147.67	150.14	1.6648	148.48	138.55	1240.00
1.2367	1.2328	146.81	149.28	1.6618	147.62	138.53	1250.00
1.2328	1.2310	145.96	148.43	1.6588	146.77	138.52	1260.00
1.2310	1.2377	145.11	147.58	1.6558	145.93	138.51	1270.00
1.2377	1.2337	144.27	146.74	1.6528	145.09	138.49	1280.00
1.2337	1.2319	143.44	145.91	1.6498	144.26	138.48	1290.00
1.2319	1.2386	142.61	145.08	1.6469	143.43	138.47	1300.00
1.2386	1.2346	141.79	144.26	1.6439	142.62	138.46	1310.00
1.2346	1.2327	140.98	143.45	1.6410	141.80	138.44	1320.00
1.2327	1.1720	140.17	142.57	1.6381	140.93	138.43	1330.00
1.1720	1.0821	139.30	141.55	1.6350	139.92	138.42	1340.00
1.0821	1.0377	138.29	140.41	1.6314	138.77	138.40	1350.00
1.0377	1.0083	137.15	139.19	1.6272	137.57	138.38	1360.00
1.0083	1.0014	135.94	137.95	1.6229	136.33	138.36	1370.00
1.0014	0.9980	134.71	136.71	1.6184	135.09	138.34	1380.00

LEVEL POOL ROUTING TABLE

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
0.9980	0.9889	133.48	135.46	1.6139	133.85	138.32	1390.00
0.9889	0.9920	132.24	134.22	1.6094	132.61	138.31	1400.00
0.9920	0.9936	131.01	132.99	1.6049	131.39	138.29	1410.00
0.9936	0.9870	129.79	131.77	1.6004	130.17	138.27	1420.00
0.9870	0.9913	128.57	130.55	1.5960	128.95	138.25	1430.00
0.9913	0.9935	127.36	129.35	1.5915	127.76	138.23	1440.00
0.9935	0.7395	126.17	127.90	1.5871	126.32	138.21	1450.00
0.7395	0.3661	124.73	125.84	1.5818	124.26	138.19	1460.00
0.3661	0.1812	122.68	123.23	1.5741	121.66	138.16	1470.00
0.1812	0.0897	120.09	120.36	1.5644	118.80	138.12	1480.00
0.0897	0.0444	117.24	117.38	1.5537	115.83	138.07	1490.00
0.0444	0.0220	114.28	114.35	1.5424	112.81	138.02	1500.00
0.0220	0.0109	111.28	111.31	1.5298	109.78	137.97	1510.00
0.0109	0.0054	108.26	108.28	1.5159	106.76	137.92	1520.00
0.0054	0.0027	105.26	105.27	1.5018	103.77	137.86	1530.00
0.0027	0.0013	102.28	102.29	1.4878	100.80	137.80	1540.00
0.0013	0.0007	99.324	99.326	1.4737	97.852	137.75	1550.00
0.0007	0.0003	96.392	96.393	1.4597	94.934	137.69	1560.00
0.0003	0.0002	93.488	93.488	1.4456	92.043	137.64	1570.00
0.0002	0.0001	90.611	90.612	1.4315	89.180	137.58	1580.00
0.0001	0.0000	87.763	87.763	1.4174	86.345	137.53	1590.00
0.0000	0.0000	84.942	84.942	1.4033	83.539	137.48	1600.00
0.0000	0.0000	82.150	82.150	1.3892	80.760	137.42	1610.00
0.0000	0.0000	79.385	79.385	1.3752	78.010	137.37	1620.00
0.0000	0.0000	76.649	76.649	1.3611	75.288	137.32	1630.00
0.0000	0.0000	73.941	73.941	1.3470	72.594	137.27	1640.00
0.0000	0.0000	71.261	71.261	1.3329	69.928	137.22	1650.00
0.0000	0.0000	68.609	68.609	1.3188	67.291	137.17	1660.00
0.0000	0.0000	65.986	65.986	1.3047	64.681	137.12	1670.00
0.0000	0.0000	63.390	63.390	1.2906	62.100	137.07	1680.00
0.0000	0.0000	60.823	60.823	1.2766	59.547	137.02	1690.00
0.0000	0.0000	58.286	58.286	1.2608	57.025	136.97	1700.00
0.0000	0.0000	55.782	55.782	1.2434	54.538	136.91	1710.00
0.0000	0.0000	53.313	53.313	1.2258	52.087	136.85	1720.00
0.0000	0.0000	50.878	50.878	1.2085	49.670	136.80	1730.00
0.0000	0.0000	48.479	48.479	1.1909	47.288	136.74	1740.00
0.0000	0.0000	46.114	46.114	1.1735	44.941	136.69	1750.00
0.0000	0.0000	43.785	43.785	1.1560	42.629	136.63	1760.00
0.0000	0.0000	41.490	41.490	1.1386	40.352	136.58	1770.00
0.0000	0.0000	39.231	39.231	1.1211	38.110	136.53	1780.00
0.0000	0.0000	37.006	37.006	1.1036	35.902	136.48	1790.00
0.0000	0.0000	34.816	34.816	1.0862	33.730	136.42	1800.00
0.0000	0.0000	32.661	32.661	1.0687	31.593	136.37	1810.00
0.0000	0.0000	30.541	30.541	1.0512	29.490	136.32	1820.00
0.0000	0.0000	28.456	28.456	1.0338	27.423	136.28	1830.00
0.0000	0.0000	26.406	26.406	1.0163	25.390	136.23	1840.00
0.0000	0.0000	24.391	24.391	0.9989	23.392	136.18	1850.00

LEVEL POOL ROUTING TABLE

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
0.0000	0.0000	22.411	22.411	0.9813	21.430	136.14	1860.00
0.0000	0.0000	20.466	20.466	0.9640	19.502	136.09	1870.00
0.0000	0.0000	18.555	18.555	0.9464	17.609	136.05	1880.00
0.0000	0.0000	16.680	16.680	0.9291	15.751	136.00	1890.00
0.0000	0.0000	14.843	14.843	0.9074	13.936	135.95	1900.00
0.0000	0.0000	13.050	13.050	0.8859	12.164	135.90	1910.00
0.0000	0.0000	11.300	11.300	0.8640	10.436	135.85	1920.00
0.0000	0.0000	9.5935	9.5935	0.8426	8.7509	135.80	1930.00
0.0000	0.0000	7.9302	7.9302	0.8207	7.1095	135.75	1940.00
0.0000	0.0000	6.3102	6.3102	0.7993	5.5109	135.70	1950.00
0.0000	0.0000	4.7336	4.7336	0.7773	3.9563	135.66	1960.00
0.0000	0.0000	3.2004	3.2004	0.7559	2.4446	135.61	1970.00
0.0000	0.0000	1.7145	1.7145	0.7301	0.9844	135.56	1980.00
0.0000	0.0000	0.2811	0.2811	0.7033	-0.4222	135.51	1990.00

ROUTING REPORT

STORAGE LIST ID No. A
Description:

MULTIPLE ORIFICE ID No. A
Description:
Outlet Elev: 134.85
Elev: 134.85 ft Orifice Diameter: 5.6484 in.

ROUTING CURVE

STAGE (ft)	STORAGE (cf)	OUTFLOW (cfs)	O+2S cfs-min	STAGE (ft)	STORAGE (cf)	OUTFLOW (cfs)	O+2S cfs-min	STAGE (ft)	STORAGE (cf)	OUTFLOW (cfs)	O+2S cfs-min
134.85	0.0000	0.0000	0.0000	136.90	16574	1.2396	56.487	139.00	52955	1.7638	178.28
134.90	0.0000	0.1936	0.1936	137.00	17862	1.2695	60.810	139.10	53960	1.7849	181.65
135.00	0.0000	0.3353	0.3353	137.10	19459	1.2987	66.161	139.20	54964	1.8058	185.02
135.10	0.0000	0.4329	0.4329	137.20	21055	1.3272	71.511	139.30	55969	1.8264	188.39
135.20	0.0000	0.5122	0.5122	137.30	22652	1.3552	76.861	139.40	56973	1.8468	191.76
135.30	0.0000	0.5808	0.5808	137.40	24248	1.3826	82.211	139.50	57978	1.8670	195.13
135.40	0.0000	0.6421	0.6421	137.50	25845	1.4094	87.559	139.60	58982	1.8870	198.49
135.50	0.0000	0.6980	0.6980	137.60	27442	1.4358	92.908	139.70	59987	1.9067	201.86
135.60	830.50	0.7498	3.5181	137.70	29038	1.4616	98.256	139.80	60991	1.9263	205.23
135.70	1869	0.7982	7.0270	137.80	30635	1.4871	103.60	139.90	61996	1.9456	208.60
135.80	2907	0.8439	10.533	137.90	32231	1.5121	108.95	140.00	63000	1.9648	211.96
135.90	3945	0.8872	14.037	138.00	33828	1.5366	114.30	140.10	64500	1.9838	216.98
136.00	4983	0.9285	17.538	138.10	35741	1.5608	120.70	140.20	66000	2.0026	222.00
136.10	6271	0.9680	21.871	138.20	37653	1.5847	127.10	140.30	67500	2.0212	227.02
136.20	7559	1.0060	26.202	138.30	39566	1.6082	133.50	140.40	69000	2.0397	232.04
136.30	8847	1.0426	30.532	138.40	41479	1.6313	139.89	140.50	70500	2.0580	237.06
136.40	10135	1.0779	34.860	138.50	43392	1.6541	146.29	140.60	72000	2.0761	242.08
136.50	11423	1.1121	39.187	138.60	45304	1.6766	152.69	140.70	73500	2.0941	247.09
136.60	12710	1.1453	43.513	138.70	47217	1.6988	159.09	140.80	75000	2.1119	252.11
136.70	13998	1.1776	47.839	138.80	49130	1.7207	165.49	140.90	76500	2.1296	257.13
136.80	15286	1.2090	52.163	138.90	51042	1.7424	171.88				

LEVEL POOL ROUTING TABLE

MATCH Q (cfs) : 4.00 INFLOW Q (cfs): 10.10
PEAK STAGE (ft): 140.06 PEAK OUTFLOW : 1.98
PEAK TIME: 800.00 min.
INFLOW HYD No. : 7 OUTFLOW HYD No.: 12

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
0.0000	0.0108	0.0000	0.0108	0.0000	0.0108	134.85	40.00
0.0108	0.0546	0.0000	0.0654	0.0108	0.0546	135.50	50.00
0.0546	0.1252	0.0000	0.1798	0.0546	0.1252	135.50	60.00
0.1252	0.2471	0.0000	0.3723	0.1252	0.2471	135.50	70.00
0.2471	0.4071	0.0000	0.6542	0.2471	0.4071	135.50	80.00
0.4071	0.5481	0.0000	0.9552	0.4071	0.5481	135.50	90.00
0.5481	0.6678	0.0000	1.2158	0.5481	0.6678	135.50	100.00
0.6678	0.7681	0.0000	1.4358	0.6678	0.7681	135.50	110.00
0.7681	0.8518	0.0687	1.6886	0.6993	0.9893	135.50	120.00
0.8518	0.9641	0.2859	2.1019	0.7034	1.3985	135.51	130.00
0.9641	1.0953	0.6876	2.7470	0.7109	2.0362	135.52	140.00
1.0953	1.1875	1.3136	3.5963	0.7226	2.8737	135.55	150.00
1.1875	1.2507	2.1358	4.5739	0.7380	3.8359	135.58	160.00
1.2507	1.3074	3.0818	5.6399	0.7542	4.8857	135.61	170.00
1.3074	1.3523	4.1170	6.7767	0.7687	6.0081	135.64	180.00
1.3523	1.3831	5.2239	7.9594	0.7842	7.1752	135.67	190.00
1.3831	1.4173	6.3750	9.1755	0.8002	8.3753	135.70	200.00
1.4173	1.4453	7.5595	10.422	0.8158	9.6063	135.74	210.00
1.4453	1.4626	8.7745	11.682	0.8318	10.851	135.77	220.00
1.4626	1.4863	10.003	12.952	0.8478	12.104	135.81	230.00
1.4863	1.5058	11.241	14.233	0.8633	13.370	135.84	240.00
1.5058	1.5760	12.491	15.572	0.8789	14.693	135.88	250.00
1.5760	1.6719	13.799	17.046	0.8949	16.152	135.92	260.00
1.6719	1.7289	15.239	18.640	0.9121	17.728	135.96	270.00
1.7289	1.7740	16.798	20.301	0.9302	19.371	136.00	280.00
1.7740	1.7986	18.425	21.998	0.9452	21.053	136.04	290.00
1.7986	1.8195	20.092	23.710	0.9605	22.750	136.08	300.00
1.8195	2.0796	21.774	25.673	0.9757	24.698	136.12	310.00
2.0796	2.4549	23.705	28.239	0.9928	27.246	136.17	320.00
2.4549	2.6557	26.232	31.342	1.0148	30.327	136.22	330.00
2.6557	2.7687	29.286	34.711	1.0408	33.670	136.30	340.00
2.7687	2.8373	32.602	38.208	1.0682	37.140	136.37	350.00
2.8373	2.8828	36.044	41.764	1.0959	40.668	136.45	360.00
2.8828	2.8561	39.544	45.283	1.1235	44.160	136.53	370.00
2.8561	2.7921	43.009	48.658	1.1502	47.507	136.61	380.00
2.7921	2.7608	46.332	51.885	1.1751	50.710	136.69	390.00
2.7608	2.7527	49.512	55.025	1.1985	53.827	136.77	400.00
2.7527	2.7632	52.606	58.122	1.2208	56.901	136.84	410.00
2.7632	2.7674	55.658	61.189	1.2425	59.947	136.91	420.00
2.7674	3.6107	58.683	65.061	1.2636	63.798	136.98	430.00
3.6107	4.8868	62.512	71.009	1.2858	69.723	137.06	440.00

LEVEL POOL ROUTING TABLE

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
4.8868	5.5430	68.406	78.835	1.3177	77.518	137.17	450.00
5.5430	7.0799	76.159	88.782	1.3586	87.424	137.31	460.00
7.0799	9.0687	86.015	102.16	1.4087	100.75	137.50	470.00
9.0687	10.104	99.281	118.45	1.4735	116.98	137.75	480.00
10.104	9.0361	115.43	134.57	1.5468	133.03	138.04	490.00
9.0361	6.9063	131.42	147.36	1.6064	145.76	138.29	500.00
6.9063	5.8589	144.10	156.87	1.6522	155.22	138.49	510.00
5.8589	5.2080	153.53	164.60	1.6854	162.91	138.64	520.00
5.2080	4.7606	161.20	171.17	1.7119	169.46	138.76	530.00
4.7606	4.5438	167.72	177.03	1.7342	175.29	138.86	540.00
4.5438	4.0957	173.54	182.18	1.7538	180.43	138.95	550.00
4.0957	3.5317	178.65	186.28	1.7772	184.50	139.06	560.00
3.5317	3.2545	182.70	189.48	1.8026	187.68	139.18	570.00
3.2545	3.1274	185.86	192.24	1.8221	190.42	139.28	580.00
3.1274	3.0582	188.58	194.77	1.8387	192.93	139.36	590.00
3.0582	3.0257	191.07	197.16	1.8538	195.30	139.43	600.00
3.0257	2.9452	193.43	199.41	1.8681	197.54	139.51	610.00
2.9452	2.8406	195.66	201.44	1.8813	199.56	139.57	620.00
2.8406	2.7903	197.67	203.30	1.8932	201.41	139.63	630.00
2.7903	2.7584	199.50	205.05	1.9041	203.15	139.69	640.00
2.7584	2.7522	201.23	206.74	1.9142	204.83	139.74	650.00
2.7522	2.7505	202.90	208.41	1.9240	206.48	139.79	660.00
2.7505	2.6094	204.55	209.91	1.9335	207.98	139.84	670.00
2.6094	2.3990	206.03	211.04	1.9421	209.10	139.88	680.00
2.3990	2.2956	207.15	211.85	1.9485	209.90	139.91	690.00
2.2956	2.2535	207.94	212.49	1.9530	210.54	139.94	700.00
2.2535	2.2251	208.58	213.06	1.9567	211.11	139.96	710.00
2.2251	2.2117	209.15	213.58	1.9599	211.62	139.97	720.00
2.2117	2.2142	209.66	214.09	1.9629	212.12	139.99	730.00
2.2142	2.2077	210.16	214.58	1.9654	212.61	140.00	740.00
2.2077	2.2052	210.65	215.06	1.9673	213.09	140.01	750.00
2.2052	2.2130	211.12	215.54	1.9691	213.57	140.02	760.00
2.2130	2.2092	211.60	216.02	1.9709	214.05	140.03	770.00
2.2092	2.2080	212.08	216.50	1.9727	214.52	140.04	780.00
2.2080	2.0738	212.55	216.83	1.9745	214.86	140.05	790.00
2.0738	1.8653	212.88	216.82	1.9758	214.84	140.06	800.00
1.8653	1.7624	212.87	216.50	1.9757	214.52	140.06	810.00
1.7624	1.7118	212.55	216.02	1.9745	214.05	140.05	820.00
1.7118	1.6871	212.07	215.47	1.9727	213.50	140.04	830.00
1.6871	1.6753	211.53	214.89	1.9706	212.92	140.03	840.00
1.6753	1.7370	210.95	214.36	1.9684	212.40	140.02	850.00
1.7370	1.8436	210.43	214.01	1.9664	212.04	140.01	860.00
1.8436	1.8968	210.08	213.82	1.9651	211.85	140.00	870.00
1.8968	1.9151	209.89	213.70	1.9642	211.74	140.00	880.00
1.9151	1.9331	209.77	213.62	1.9635	211.66	139.99	890.00
1.9331	1.9424	209.70	213.57	1.9631	211.61	139.99	900.00
1.9424	1.9390	209.65	213.53	1.9628	211.56	139.99	910.00

LEVEL POOL ROUTING TABLE

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
1.9390	1.9461	209.60	213.49	1.9625	211.52	139.99	920.00
1.9461	1.9501	209.56	213.46	1.9623	211.50	139.99	930.00
1.9501	1.9440	209.53	213.43	1.9621	211.46	139.99	940.00
1.9440	1.9498	209.50	213.40	1.9620	211.43	139.99	950.00
1.9498	1.9531	209.47	213.38	1.9618	211.41	139.98	960.00
1.9531	1.7354	209.45	213.14	1.9617	211.18	139.98	970.00
1.7354	1.4251	209.22	212.38	1.9603	210.42	139.98	980.00
1.4251	1.2717	208.46	211.16	1.9560	209.20	139.95	990.00
1.2717	1.1873	207.25	209.71	1.9491	207.76	139.92	1000.00
1.1873	1.1542	205.82	208.17	1.9409	206.22	139.88	1010.00
1.1542	1.1379	204.29	206.58	1.9320	204.65	139.83	1020.00
1.1379	1.2653	202.73	205.13	1.9229	203.21	139.78	1030.00
1.2653	1.4723	201.30	204.03	1.9146	202.12	139.74	1040.00
1.4723	1.5751	200.21	203.26	1.9082	201.35	139.71	1050.00
1.5751	1.6262	199.45	202.65	1.9037	200.74	139.68	1060.00
1.6262	1.6518	198.84	202.12	1.9002	200.22	139.67	1070.00
1.6518	1.6647	198.32	201.64	1.8971	199.74	139.65	1080.00
1.6647	1.6036	197.85	201.12	1.8943	199.22	139.64	1090.00
1.6036	1.4972	197.33	200.43	1.8912	198.54	139.62	1100.00
1.4972	1.4448	196.65	199.60	1.8873	197.71	139.60	1110.00
1.4448	1.6818	195.83	198.95	1.8823	197.07	139.58	1120.00
1.6818	1.5365	195.19	198.41	1.8785	196.53	139.56	1130.00
1.5365	1.2102	194.66	197.40	1.8753	195.53	139.54	1140.00
1.2102	1.3118	193.66	196.18	1.8694	194.31	139.51	1150.00
1.3118	1.3538	192.45	195.11	1.8621	193.25	139.48	1160.00
1.3538	1.3747	191.40	194.13	1.8558	192.27	139.44	1170.00
1.3747	1.3937	190.42	193.19	1.8499	191.34	139.42	1180.00
1.3937	1.3948	189.49	192.28	1.8443	190.44	139.39	1190.00
1.3948	1.3955	188.60	191.39	1.8388	189.55	139.36	1200.00
1.3955	1.4045	187.72	190.52	1.8335	188.68	139.33	1210.00
1.4045	1.4006	186.86	189.66	1.8282	187.83	139.31	1220.00
1.4006	1.3988	186.01	188.81	1.8230	186.99	139.28	1230.00
1.3988	1.4066	185.17	187.97	1.8178	186.16	139.26	1240.00
1.4066	1.4021	184.34	187.15	1.8127	185.34	139.23	1250.00
1.4021	1.4000	183.53	186.33	1.8077	184.53	139.21	1260.00
1.4000	1.4076	182.72	185.53	1.8027	183.73	139.19	1270.00
1.4076	1.4030	181.93	184.74	1.7978	182.94	139.16	1280.00
1.4030	1.4009	181.15	183.95	1.7929	182.16	139.14	1290.00
1.4009	1.4085	180.37	183.18	1.7881	181.39	139.12	1300.00
1.4085	1.4039	179.61	182.42	1.7833	180.64	139.09	1310.00
1.4039	1.4017	178.86	181.67	1.7786	179.89	139.07	1320.00
1.4017	1.3327	178.11	180.85	1.7739	179.07	139.05	1330.00
1.3327	1.2304	177.31	179.87	1.7688	178.10	139.02	1340.00
1.2304	1.1799	176.34	178.75	1.7632	176.98	139.00	1350.00
1.1799	1.1465	175.23	177.55	1.7594	175.79	138.98	1360.00
1.1465	1.1385	174.04	176.32	1.7555	174.57	138.96	1370.00
1.1385	1.1347	172.81	175.09	1.7514	173.34	138.94	1380.00

LEVEL POOL ROUTING TABLE

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
1.1347	1.1243	171.59	173.85	1.7473	172.10	138.92	1390.00
1.1243	1.1278	170.36	172.61	1.7431	170.87	138.90	1400.00
1.1278	1.1296	169.13	171.39	1.7390	169.65	138.88	1410.00
1.1296	1.1221	167.91	170.16	1.7348	168.43	138.87	1420.00
1.1221	1.1270	166.70	168.95	1.7307	167.22	138.85	1430.00
1.1270	1.1295	165.49	167.75	1.7266	166.02	138.83	1440.00
1.1295	0.8407	164.30	166.27	1.7226	164.54	138.81	1450.00
0.8407	0.4162	162.83	164.08	1.7175	162.37	138.79	1460.00
0.4162	0.2060	160.66	161.28	1.7101	159.57	138.75	1470.00
0.2060	0.1020	157.87	158.18	1.7005	156.48	138.71	1480.00
0.1020	0.0505	154.79	154.94	1.6898	153.25	138.66	1490.00
0.0505	0.0250	151.57	151.65	1.6786	149.97	138.61	1500.00
0.0250	0.0124	148.30	148.34	1.6670	146.67	138.56	1510.00
0.0124	0.0061	145.01	145.03	1.6554	143.38	138.51	1520.00
0.0061	0.0030	141.73	141.74	1.6437	140.10	138.45	1530.00
0.0030	0.0015	138.47	138.47	1.6320	136.84	138.40	1540.00
0.0015	0.0007	135.22	135.22	1.6203	133.60	138.35	1550.00
0.0007	0.0004	131.99	131.99	1.6085	130.39	138.30	1560.00
0.0004	0.0002	128.79	128.79	1.5967	127.19	138.25	1570.00
0.0002	0.0001	125.61	125.61	1.5850	124.02	138.20	1580.00
0.0001	0.0000	122.45	122.45	1.5732	120.88	138.15	1590.00
0.0000	0.0000	119.32	119.32	1.5615	117.75	138.10	1600.00
0.0000	0.0000	116.20	116.20	1.5497	114.65	138.05	1610.00
0.0000	0.0000	113.12	113.12	1.5380	111.58	138.01	1620.00
0.0000	0.0000	110.05	110.05	1.5241	108.53	137.95	1630.00
0.0000	0.0000	107.02	107.02	1.5101	105.51	137.89	1640.00
0.0000	0.0000	104.01	104.01	1.4960	102.52	137.84	1650.00
0.0000	0.0000	101.04	101.04	1.4819	99.554	137.78	1660.00
0.0000	0.0000	98.086	98.086	1.4678	96.619	137.72	1670.00
0.0000	0.0000	95.165	95.165	1.4537	93.711	137.67	1680.00
0.0000	0.0000	92.271	92.271	1.4397	90.832	137.62	1690.00
0.0000	0.0000	89.406	89.406	1.4255	87.981	137.56	1700.00
0.0000	0.0000	86.569	86.569	1.4115	85.158	137.51	1710.00
0.0000	0.0000	83.760	83.760	1.3974	82.363	137.46	1720.00
0.0000	0.0000	80.980	80.980	1.3833	79.596	137.40	1730.00
0.0000	0.0000	78.227	78.227	1.3692	76.858	137.35	1740.00
0.0000	0.0000	75.503	75.503	1.3552	74.148	137.30	1750.00
0.0000	0.0000	72.807	72.807	1.3410	71.466	137.25	1760.00
0.0000	0.0000	70.138	70.138	1.3270	68.811	137.20	1770.00
0.0000	0.0000	67.499	67.499	1.3128	66.186	137.15	1780.00
0.0000	0.0000	64.887	64.887	1.2988	63.588	137.10	1790.00
0.0000	0.0000	62.303	62.303	1.2847	61.019	137.05	1800.00
0.0000	0.0000	59.748	59.748	1.2707	58.477	137.00	1810.00
0.0000	0.0000	57.224	57.224	1.2534	55.971	136.95	1820.00
0.0000	0.0000	54.735	54.735	1.2360	53.499	136.89	1830.00
0.0000	0.0000	52.280	52.280	1.2185	51.062	136.83	1840.00
0.0000	0.0000	49.861	49.861	1.2010	48.660	136.77	1850.00

LEVEL POOL ROUTING TABLE

LEVEL POOL ROUTING TABLE

I1	I2	2S1	SUM	O1	O2+2S2	STAGE	TIME
<---------- cfs min ---------->						(ft)	(min)
0.0000	0.0000	47.476	47.476	1.1836	46.293	136.72	1860.00
0.0000	0.0000	45.126	45.126	1.1661	43.960	136.66	1870.00
0.0000	0.0000	42.812	42.812	1.1487	41.663	136.61	1880.00
0.0000	0.0000	40.532	40.532	1.1311	39.401	136.56	1890.00
0.0000	0.0000	38.287	38.287	1.1138	37.173	136.50	1900.00
0.0000	0.0000	36.077	36.077	1.0962	34.981	136.45	1910.00
0.0000	0.0000	33.902	33.902	1.0789	32.823	136.40	1920.00
0.0000	0.0000	31.762	31.762	1.0613	30.700	136.35	1930.00
0.0000	0.0000	29.656	29.656	1.0439	28.613	136.30	1940.00
0.0000	0.0000	27.586	27.586	1.0263	26.560	136.26	1950.00
0.0000	0.0000	25.551	25.551	1.0090	24.542	136.21	1960.00
0.0000	0.0000	23.550	23.550	0.9914	22.559	136.16	1970.00
0.0000	0.0000	21.585	21.585	0.9740	20.611	136.12	1980.00
0.0000	0.0000	19.654	19.654	0.9565	18.698	136.07	1990.00
0.0000	0.0000	17.759	17.759	0.9390	16.820	136.03	2000.00
0.0000	0.0000	15.900	15.900	0.9200	14.980	135.98	2010.00
0.0000	0.0000	14.082	14.082	0.8983	13.183	135.93	2020.00
0.0000	0.0000	12.307	12.307	0.8766	11.430	135.88	2030.00
0.0000	0.0000	10.575	10.575	0.8550	9.7201	135.83	2040.00
0.0000	0.0000	8.8868	8.8868	0.8333	8.0535	135.78	2050.00
0.0000	0.0000	7.2419	7.2419	0.8116	6.4303	135.73	2060.00
0.0000	0.0000	5.6403	5.6403	0.7900	4.8503	135.68	2070.00
0.0000	0.0000	4.0821	4.0821	0.7682	3.3139	135.64	2080.00
0.0000	0.0000	2.5678	2.5678	0.7461	1.8218	135.59	2090.00
0.0000	0.0000	1.1031	1.1031	0.7187	0.3845	135.54	2100.00
0.0000	0.0000	0.0000	0.0000	0.3845	-0.3845	135.50	2110.00

PIPES HAVE BEEN DESIGNED TO CONVEY THE 25 YR STORM FOR EXISTING AND FUTURE EXPANSION. FLOWS WERE GENERATED USING THE SCS BASED SOFTWARE PROGRAM "WATERWORKS"

By _____

Date _____

Job # _____

Sht. _____ of _____

GROUP MACKENZIE
0690 SW Bancroft St/PO Box 69039 Portland, OR 97201-0039
Tel: 503.224.9560 Net: info@grpmack.com Fax: 503.228.1285

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AREAS FOR PIPE SIZING - 'X'

ID	AREA (AC)
CB	
#1	0.26
#2	0.07
#3	0.05
#4	0.05
#5	0.24
#6	0.09
#7	0.08
#8	0.08
#9	0.10
#10	0.12
#11	0.11
#12	0.11
#13	0.11
#14	0.20
#15	0.21
#16	0.21
#17	0.11
#18	0.11
#19	0.06
#20	0.06
#21	

ID	AREA (AC)
#21	0.26
#22	0.10
#23	0.25
#24	0.25
#25	0.15
#26	0.19
#27	0.14
#28	0.10
#29	0.16
#30	0.17
#31	0.13
#32	0.03
#33	0.03
#34	0.06
#35	0.21
#36	0.12
#37	0.17
#38	0.19
#38A	0.12
#39	0.15
#40	0.36
#41	0.15

ID	AREA (AC)
#42	0.21
#43	0.36
#44	0.07
#45	0.20
#46	0.25
#47	0.29
#48	0.26
#49	0.13
#50	0.18
#51	0.11
#52	0.18
#53	0.21
#54	0.12
#55	0.15
#56	0.03
#57	0.04
DITCH INLET	
#1	0.46
#2	1.0
#3	0.28

By _____

Date _____

Job # _____

Sht. _____ of _____

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AREAS FOR PIPE SIZING

ID	AREA (Ac)
RD	
#1	0.06
#2	0.06
#3	0.06
#4	0.06
#5	0.06
#6	0.06
#7	0.06
#8	0.06
#9	0.06
#10	0.23
#11	0.22
#12	0.08
#13	0.08
#14	0.08
#15	0.20
#16	0.20
#17	0.15
#18	0.15
#19	0.28
#20	0.28
#21	0.28

ID	AREA (Ac)
#22	0.15
#23	0.15
#24	0.15
#25	0.15
#26	0.15
#27	0.15
FUTURE	
#1	3.40
#2	3.50
#3	0.35

By _____

Date _____

Job # _____

Sht. _____ of _____

GROUP MACKENZIE
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PIPE SIZING

BASIN RESULT SUMMARY

BASIN	-----VOLUME----		-RATE-	----TIME-----		Hydrograph	Area
ID	---cf--	Ac-ft	--cfs-	-min-	hours	Methodology	Acres
CB1	3459	0.08	0.21	480	8.00	SBUH Method	0.26
CB10	1597	0.04	0.10	480	8.00	SBUH Method	0.12
CB11	1464	0.03	0.09	480	8.00	SBUH Method	0.11
CB12	1464	0.03	0.09	480	8.00	SBUH Method	0.11
CB13	1464	0.03	0.09	480	8.00	SBUH Method	0.11
CB14	2661	0.06	0.16	480	8.00	SBUH Method	0.20
CB15	2794	0.06	0.17	480	8.00	SBUH Method	0.21
CB16	2794	0.06	0.17	480	8.00	SBUH Method	0.21
CB17	1464	0.03	0.09	480	8.00	SBUH Method	0.11
CB18	1464	0.03	0.09	480	8.00	SBUH Method	0.11
CB19	798	0.02	0.05	480	8.00	SBUH Method	0.06
CB2	931	0.02	0.06	480	8.00	SBUH Method	0.07
CB20	798	0.02	0.05	480	8.00	SBUH Method	0.06
CB21	3459	0.08	0.21	480	8.00	SBUH Method	0.26
CB22	1331	0.03	0.08	480	8.00	SBUH Method	0.10
CB23	3326	0.08	0.20	480	8.00	SBUH Method	0.25
CB24	3326	0.08	0.20	480	8.00	SBUH Method	0.25
CB25	1996	0.05	0.12	480	8.00	SBUH Method	0.15
CB26	2528	0.06	0.15	480	8.00	SBUH Method	0.19
CB27	1863	0.04	0.11	480	8.00	SBUH Method	0.14
CB28	1331	0.03	0.08	480	8.00	SBUH Method	0.10
CB29	2129	0.05	0.13	480	8.00	SBUH Method	0.16
CB3	665	0.02	0.04	480	8.00	SBUH Method	0.05
CB30	2262	0.05	0.14	480	8.00	SBUH Method	0.17
CB31	1730	0.04	0.11	480	8.00	SBUH Method	0.13
CB32	399	0.01	0.02	480	8.00	SBUH Method	0.03
CB33	399	0.01	0.02	480	8.00	SBUH Method	0.03
CB34	798	0.02	0.05	480	8.00	SBUH Method	0.06
CB35	2794	0.06	0.17	480	8.00	SBUH Method	0.21
CB36	1597	0.04	0.10	480	8.00	SBUH Method	0.12
CB37	2262	0.05	0.14	480	8.00	SBUH Method	0.17
CB38	2528	0.06	0.15	480	8.00	SBUH Method	0.19
CB38A	1597	0.04	0.10	480	8.00	SBUH Method	0.12
CB39	1996	0.05	0.12	480	8.00	SBUH Method	0.15
CB4	665	0.02	0.04	480	8.00	SBUH Method	0.05
CB40	4790	0.11	0.29	480	8.00	SBUH Method	0.36
CB41	1996	0.05	0.12	480	8.00	SBUH Method	0.15
CB42	2794	0.06	0.17	480	8.00	SBUH Method	0.21
CB43	4790	0.11	0.29	480	8.00	SBUH Method	0.36
CB44	931	0.02	0.06	480	8.00	SBUH Method	0.07
CB45	2661	0.06	0.16	480	8.00	SBUH Method	0.20
CB46	3326	0.08	0.20	480	8.00	SBUH Method	0.25
CB47	3859	0.09	0.24	480	8.00	SBUH Method	0.29
CB48	3459	0.08	0.21	480	8.00	SBUH Method	0.26
CB49	1730	0.04	0.11	480	8.00	SBUH Method	0.13
CB5	3193	0.07	0.20	480	8.00	SBUH Method	0.24
CB50	2395	0.05	0.15	480	8.00	SBUH Method	0.18

PIPE SIZING

BASIN RESULT SUMMARY

BASIN ID	VOLUME cf	VOLUME Ac-ft	RATE cfs	TIME min	TIME hours	Hydrograph Methodology	Area Acres
CB51	1464	0.03	0.09	480	8.00	SBUH Method	0.11
CB52	2395	0.05	0.15	480	8.00	SBUH Method	0.18
CB53	2794	0.06	0.17	480	8.00	SBUH Method	0.21
CB54	1597	0.04	0.10	480	8.00	SBUH Method	0.12
CB55	1996	0.05	0.12	480	8.00	SBUH Method	0.15
CB56	399	0.01	0.02	480	8.00	SBUH Method	0.03
CB57	532	0.01	0.03	480	8.00	SBUH Method	0.04
CB6	1197	0.03	0.07	480	8.00	SBUH Method	0.09
CB7	1064	0.02	0.07	480	8.00	SBUH Method	0.08
CB8	1064	0.02	0.07	480	8.00	SBUH Method	0.08
CB9	1331	0.03	0.08	480	8.00	SBUH Method	0.10
DI1	6120	0.14	0.37	480	8.00	SBUH Method	0.46
DI3	3725	0.09	0.23	480	8.00	SBUH Method	0.28
FUT1	45238	1.04	2.77	480	8.00	SBUH Method	3.40
FUT2	46568	1.07	2.85	480	8.00	SBUH Method	3.50
FUT3	4657	0.11	0.29	480	8.00	SBUH Method	0.35
RD1	798	0.02	0.05	480	8.00	SBUH Method	0.06
RD10	3060	0.07	0.19	480	8.00	SBUH Method	0.23
RD11	2927	0.07	0.18	480	8.00	SBUH Method	0.22
RD12	1064	0.02	0.07	480	8.00	SBUH Method	0.08
RD13	1064	0.02	0.07	480	8.00	SBUH Method	0.08
RD14	1064	0.02	0.07	480	8.00	SBUH Method	0.08
RD15	2661	0.06	0.16	480	8.00	SBUH Method	0.20
RD16	2661	0.06	0.16	480	8.00	SBUH Method	0.20
RD17	1996	0.05	0.12	480	8.00	SBUH Method	0.15
RD18	1996	0.05	0.12	480	8.00	SBUH Method	0.15
RD19	3725	0.09	0.23	480	8.00	SBUH Method	0.28
RD2	798	0.02	0.05	480	8.00	SBUH Method	0.06
RD20	3725	0.09	0.23	480	8.00	SBUH Method	0.28
RD21	3725	0.09	0.23	480	8.00	SBUH Method	0.28
RD22	1996	0.05	0.12	480	8.00	SBUH Method	0.15
RD23	1996	0.05	0.12	480	8.00	SBUH Method	0.15
RD24	1996	0.05	0.12	480	8.00	SBUH Method	0.15
RD25	1996	0.05	0.12	480	8.00	SBUH Method	0.15
RD26	1996	0.05	0.12	480	8.00	SBUH Method	0.15
RD27	1996	0.05	0.12	480	8.00	SBUH Method	0.15
RD3	798	0.02	0.05	480	8.00	SBUH Method	0.06
RD4	798	0.02	0.05	480	8.00	SBUH Method	0.06
RD5	798	0.02	0.05	480	8.00	SBUH Method	0.06
RD6	798	0.02	0.05	480	8.00	SBUH Method	0.06
RD7	798	0.02	0.05	480	8.00	SBUH Method	0.06
RD8	798	0.02	0.05	480	8.00	SBUH Method	0.06
RD9	798	0.02	0.05	480	8.00	SBUH Method	0.06

STORM SEWERS

By: _____
Date: _____
Ck'd _____
Date: _____

SEWER LOCATION				TIME (Min.)		In./Hr.	AREA (Acres)					SEWER DESIGN				PROFILE		
STREET		M.H. #	TO M.H. #	INCR. TIME	TOTAL TIME (To Upper End)	INTENSITY (I)	INCR. AREA	COEF. OF RUNOFF (c)	INCR. EQUIV. (c·A)	~~TOTAL EQUIV. AREA INCREM. (c·A) cfs~~	RUNOFF (C.F.S.) (I) ~~(c·A)~~	SLOPE (%)	DIAMETER (IN.)	CAPACITY (C.F.S.)	VELOCITY (F.P.S.), n=0.012	LENGTH (Ft.)	GROUND ELEV. / INVERT ELEV. UPPER	GROUND ELEV. / INVERT ELEV. LOWER
1		2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
CB #1	(1)									0.21	0.21	4.16	6"	1.24				
DI #1	(2)									0.37	0.37	3.83	12"	7.35				
FUT #1	(3)									2.77	2.77	0.5	18"	8.04				
(1) + (2) + (3) =	(4)										3.35	0.5	18"	8.04				
RO #1	(5)									0.05	0.05	10	6"	0.61				
RO #2	(6)									0.05	0.10	0.5	10"	1.68				
RO #3	(7)									0.05	0.15	0.5	12"	2.73				
RO #4	(8)									0.05	0.20	0.5	15"	4.95				
RO #5	(9)									0.05	0.25	0.5	15"	4.95				
RO #6	(10)									0.05	0.30	0.5	15"	4.95				
	(11)								n=0.013		0.30	3.94	16"	15.23				
(4) + (11) =	(12)										3.65	0.5	18"	8.04				
CB # 2, 3, 4	(13)									0.14	0.14	1.0	6"	0.61				

Z' - PIPE SIZING CALCS

STORM SEWERS

By: _____
Date: _____
Ck'd _____
Date: _____

SEWER LOCATION			TIME (Min.)		In./Hr.	AREA (Acres)					SEWER DESIGN				PROFILE		
STREET	M.H. #	TO M.H. #	INCR. TIME	TOTAL TIME (To Upper End)	INTENSITY (I)	INCR. AREA	COEF. OF RUNOFF (c)	INCR. EQUIV. (c·A)	~~TOTAL EQUIV. AREA~~ INCREM. Sum (c·A) cfs	RUNOFF (C.F.S.) (I) W (c·A)	SLOPE (%)	DIAMETER (IN.)	CAPACITY (C.F.S.)	VELOCITY (F.P.S.), n=0.012	LENGTH (ft.)	GROUND ELEV. / INVERT ELEV. UPPER	GROUND ELEV. / INVERT ELEV. LOWER
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
										3.79	0.5	18"	8.04				
(13) + (13) = (14)									0.20	3.99	0.5	18"	8.04				
CB #5 (15)																	
									0.05	0.05	1.0	6"	0.61				
1 RD #7 (16)									0.05	0.10	0.5	10"	1.68				
RD #8 (17)									0.07	0.17	0.5	10"	1.68				
CB #6 (18)									0.05	0.22	0.5	12"	2.73				
RD #9 (19)									0.07	0.29	0.5	15"	4.95				
CB #7 (20)									0.07	0.36	0.5	15"	4.95				
CB #8 (21)									0.37	0.73	0.84	15"	4.95				
RD #10, 11 (22)																	
										4.72	0.5	18"	8.04				
(15) + (22) = (23)									0.08	4.80	0.5	18"	8.04				
CB #9 (24)									0.10	4.90	0.5	18"	8.04				
CB #10 (25)									0.27	5.17	7.05	18"	8.04				
CB # 11, 12, 13 (26)									0.16	5.33	7.05	18"	8.04				
CB #14 (27)									0.17	5.50	7.05	18"	8.04				
CB #15 (28)																	

STORM SEWERS

By: _____
Date: _____
Ck'd _____
Date: _____

SEWER LOCATION			TIME (Min.)		In./Hr.	AREA (Acres)				RUNOFF (C.F.S.) (I) W (C·A)	SEWER DESIGN				PROFILE		
STREET	M.H. #	TO M.H. #	INCR. TIME	TOTAL TIME (To Upper End)	INTENSITY (I)	INCR. AREA	COEF. OF RUNOFF (C)	INCR. EQUIV. (C·A)	~~TOTAL EQUIV. AREA Increase, Sum~~ cf		SLOPE (%)	DIAMETER (IN.)	CAPACITY (C.F.S.)	VELOCITY (F.P.S.), n = 0.012	LENGTH (FT.)	GROUND ELEV. / INVERT ELEV. UPPER	INVERT ELEV. LOWER
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
CB #16, 17, 18 (29)									0.35	5.85	7.05	18"	30				
CB, #19, 20 (30)									0.10	0.10	1.0	6"	0.42				
CB #21 (31)									0.21	0.21	2.0	6"	0.86				
CB #22 (32)									0.08	0.29	3.46	8"	2.44				
CB #23 (33)									0.20	0.49	3.46	8"	2.44				
CB #24 (34)									0.20	0.69	4.63	10"	5.10				
CB #25 (35)									0.12	0.81	4.63	10"	5.10				
CB #26 (36)									0.10	0.91	2.5	12"	6.10				
CB #27 (37)									0.11	1.02	2.5	12"	6.10				
CB #28, 29 (38)									0.22	1.24	2.5	12"	6.10				
CB #30 (39)									0.14	0.14	6.13%	6"	1.51				
CB #31 (40)									0.11	0.25	11.6%	8"	4.46				
CB #32, 33 (41)									0.04	0.29	11.6%	8"	4.46				
CB #34 (42)									0.05	0.34	11.6%	8"	4.46				

STORM SEWERS

By: _____
Date: _____
Ck'd _____
Date: _____

SEWER LOCATION			TIME (Min.)		In./Hr.	AREA (Acres)					SEWER DESIGN				PROFILE		
STREET	M.H. #	TO M.H. #	INCR. TIME	TOTAL TIME (To Upper End)	INTENSITY (i)	INCR. AREA	COEF. OF RUNOFF (c)	INCR. EQUIV. (c·A)	~~TOTAL EQUIV. AREA~~ INCREM. ~~Σ(c·A)~~ cf_1	RUNOFF (C.F.S.) ~~(i) Σ(c·A)~~	SLOPE (%)	DIAMETER (IN.)	CAPACITY (C.F.S.)	VELOCITY (F.P.S.), n = 0.012	LENGTH (ft.)	GROUND ELEV. / INVERT ELEV. UPPER	LOWER
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
CB#35 RD#22 (42)									0.29	0.63	0.5	10"	1.68				
RD#23 (43)									0.12	0.75	0.5	12"	2.73				
RD#24 (44)									0.12	0.87	0.5	12"	2.73				
(44) + (42) = (45)										1.50	1.68	12"	5.0				
CB#36, 37 (46)									0.24	0.24	0.5	8"	0.93				
OT #3 (47)									0.23	0.23	0.5	12"	2.73				
FUTURE #2 (48)									2.85	3.08	5.14	18"	25.8				
CB#38 (49)									0.15	3.23	5.14	18"	25.8				
CB#38A (50)									0.10	3.33	5.14	18"	25.8				
CB#39 (51)									0.09	3.42	2.76	18"	18.9				
CB#40, 41 (52)									0.41	3.83	1.50	18"	13.9				

STORM SEWERS

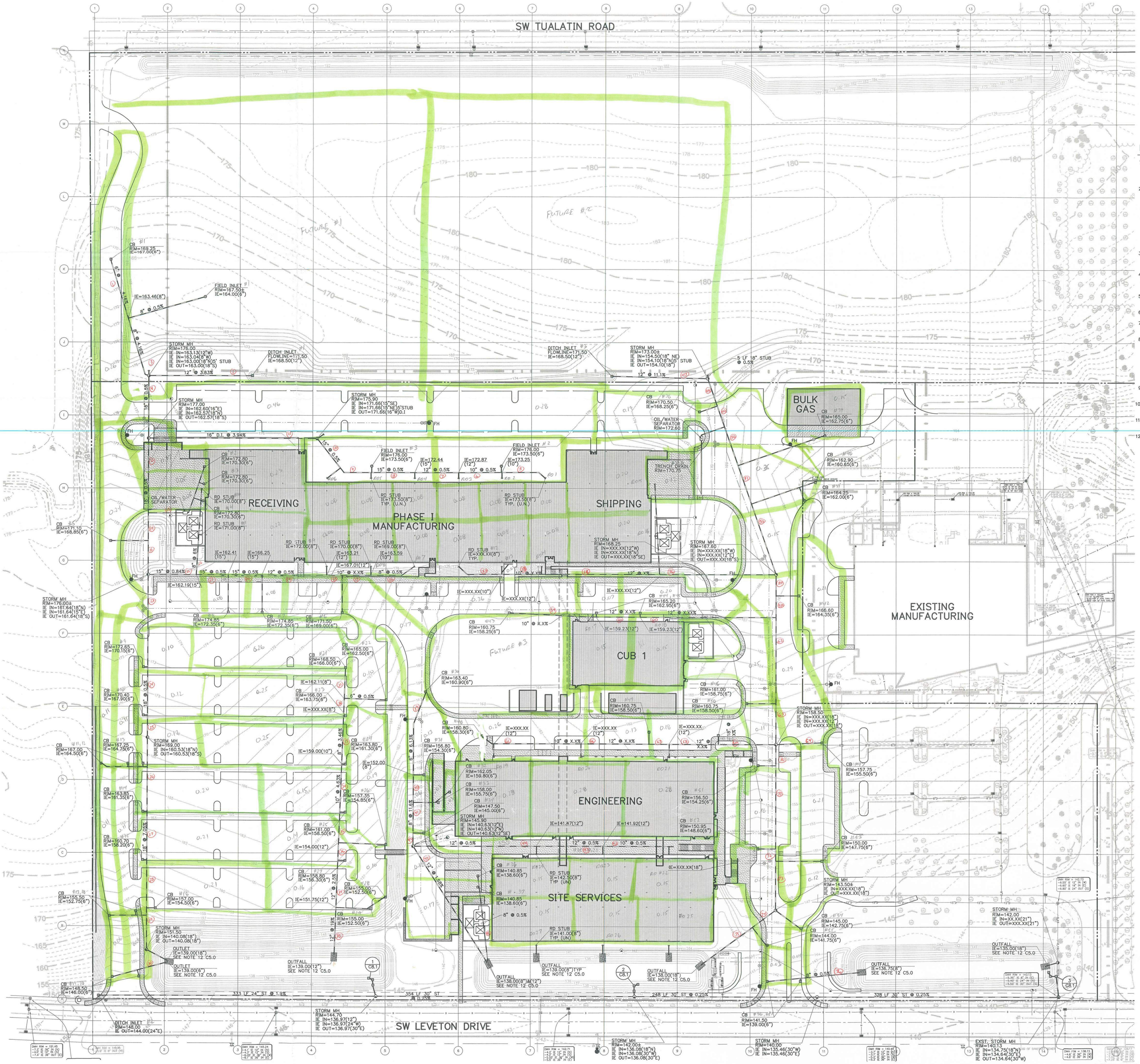
By: _____
Date: _____
Ck'd _____
Date: _____

SEWER LOCATION			TIME (Min)		In./Hr.	AREA (Acres)				RUNOFF (C.F.S.) (i) W (c·A)	SEWER DESIGN				PROFILE		
STREET	M.H. #	TO M.H. #	INCR. TIME	TOTAL TIME (To Upper End)	INTENSITY (i)	INCR. AREA	COEF. OF RUNOFF (c)	INCR. EQUIV. (c·A)	TOTAL EQUIV. AREA (Increm. Sheet) cf		SLOPE (%)	DIAMETER (IN.)	CAPACITY (C.F.S.)	VELOCITY (F.P.S.), n = 0.012	LENGTH (Ft.)	GROUND ELEV. / INVERT ELEV. UPPER	INVERT ELEV. LOWER
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
RD #12 (53)									0.07	0.07	2.0	6"	0.86				
RD #13 (54)									0.07	0.21	0.5	12"	2.73				
RD #14 (55)									0.07	0.21	0.5	12"	2.73				
RD # 15,16 (56)									0.32	0.53	0.5	12"	2.73				
(52) + (56) = (57)										4.36	2.65	18"	18.53				
CB #42 (58)									0.17	4.53	2.65	18"	18.53				
CB #43 FAT #3 (59)									0.58	0.58	0.75	10"	2.06				
CB # 41, RD # 17 (60)									0.18	0.76	0.75	10"	2.06				
CB # 45, RD #18 (61)									0.28	1.04	0.49	12"	2.70				
(58) + (61) = (62)										5.57	2.65	12"	6.28				
CB #46 (63)									0.20	5.77	2.65	12"	6.28				
CB # 47 (64)									0.24	0.24	2%	6"	0.86				

STORM SEWERS

By: _____
Date: _____
Ck'd _____
Date: _____

SEWER LOCATION			TIME (Min.)		In. / Hr.	AREA (Acres)					SEWER DESIGN				PROFILE		
STREET	M.H. #	TO M.H. #	INCR. TIME	TOTAL TIME (To Upper End)	INTENSITY (I)	INCR. AREA	COEF. OF RUNOFF (C)	INCR. EQUIV. (C·A)	TOTAL EQUIV. AREA INCREM. ~~C·A~~ CA	RUNOFF (C.F.S.) ~~(I) × (CA)~~	SLOPE (%)	DIAMETER (IN.)	CAPACITY (C.F.S.)	VELOCITY (F.P.S.), n=0.012	LENGTH (FT.)	GROUND ELEV. / INVERT ELEV. UPPER	LOWER
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
CB #48 RD # 19 (65)									0.44	0.44	0.5	10"	1.68				
RD #20 (66)									0.23	0.67	0.5	10"	1.68				
CB #49 (67)									0.11	0.77	0.5	12"	2.72				
RD #21 (68)									6.23	1.00	3.93	12"	7.65				
CB #50 (69)									0.15	1.15	3.93	12"	7.65				
										7.16	5.45	18"	26.5				
(63) + (64) + (69) = (70)									6.09	7.25	5.45	18"	26.5				
CB #51 (71)									0.15	7.40	5.45	18"	26.5				
CB # 52 (72)									0.17	7.57	5.45	18"	26.5				
CB # 53 (73)									0.10	7.67	0.5	18"	8.04				
CB # 54 (74)									0.12	7.79	0.5	18"	8.04				
CB #55 (75)																	
CB #56, 57 (76)																	



GRAPHIC SCALE

50 0 25 50 100 200

(IN FEET)
1 inch = 50 ft.

UTILITY NOTES

1. ALL WORK SHALL CONFORM TO THE REQUIREMENTS OF THE CITY OF TUALATIN, THE UNIFIED SEWAGE AGENCY, AND THE CURRENT EDITION OF THE UNIFORM PLUMBING CODE AND THE UNIFORM BUILDING CODE. ALL WORK WITHIN THE PUBLIC R.O.W. REQUIRES A PUBLIC WORKS PERMIT.
2. THE WORKING DRAWINGS ARE GENERALLY DIAGRAMMATIC. THEY DO NOT SHOW EVERY OFFSET, BEND OR ELBOW REQUIRED FOR INSTALLATION IN THE SPACE PROVIDED. THEY DO NOT SHOW EVERY DIMENSION, COMPONENT PIECE, SECTION, JOINT OR FITTING REQUIRED TO COMPLETE THE PROJECT. ALL LOCATIONS FOR WORK SHALL BE CHECKED AND COORDINATED WITH EXISTING CONDITIONS IN THE FIELD BEFORE BEGINNING CONSTRUCTION. EXISTING UNDERGROUND UTILITIES LAYING WITHIN THE LIMITS OF EXCAVATION SHALL BE VERIFIED AS TO CONDITION, SIZE AND LOCATION BY UNCOVERING, PROVIDING SUCH IS PERMITTED BY LOCAL PUBLIC AUTHORITIES WITH JURISDICTION, BEFORE BEGINNING CONSTRUCTION. CONTRACTOR TO NOTIFY ENGINEER IF THERE ARE ANY DISCREPANCIES.
3. PROVIDE CLEANOUTS AS REQUIRED IN THE CURRENT UNIFORM PLUMBING CODE CHAPTER 7, SECTIONS 707 AND 719, AND CHAPTER 11, SECTION 1103.04. NOTE: NOT ALL REQUIRED CLEANOUTS ARE SHOWN ON THE PLANS.
4. ALL STORM PIPING IS SIZED FOR A MANNING'S "N" VALUE = 0.013. ALL STORM PIPING IS DESIGNED USING CONCENTRIC PIPE TO PIPE AND WYE FITTINGS.
5. SEE MECHANICAL DRAWINGS FOR UTILITIES LOCATED WITHIN THE BUILDING AND TO 5' OUTSIDE THE BUILDING.
6. ALL ROOF DRAIN LEADERS TO BE 8" AT 2.0% MIN. UNLESS NOTED OTHERWISE.
7. VERIFY LOCATION, SIZE AND DEPTH OF EXISTING UTILITIES BY POTHOLING PRIOR TO CONSTRUCTION. NOTIFY ENGINEER OF DISCREPANCIES.
8. PROVIDE 2" PVC DRAIN LINE FROM DOMESTIC WATER METER VAULT AND BACKFLOW PREVENTER VAULT TO THE DOUBLE DETECTOR CHECK VALVE (FIRE) VAULT. PROVIDE 1/3 HP SUMP PUMP AT BASE OF FIRE VAULT AND INSTALL 2" PVC DRAIN LINE WITH BACKFLOW VALVE FROM SUMP PUMP TO DAYLIGHT AT NEAREST CURB. FURNISH ¾ INCH DIAMETER CONDUIT FROM BUILDING ELECTRICAL ROOM TO FIRE VAULT FOR SUMP PUMP ELECTRICAL SERVICE. NOTE: COORDINATE WITH FIRE PROTECTION CONTRACTOR FOR FLOW SENSOR INSTALLATION AND CONDUIT REQUIREMENTS.
9. THE SURVEY INFORMATION SHOWN AS A BACKGROUND SCREEN ON THIS SHEET IS BASED ON A SURVEY PREPARED BY HICKMAN AND ASSOCIATES.
10. CONTRACTOR TO PROVIDE POWER TO IRRIGATION CONTROLLER. SEE SPECIFICATIONS AND LANDSCAPE PLANS.
11. SEE BUILDING PLUMBING DRAWINGS FOR PIPING WITHIN THE BUILDING AND UP TO 5' OUTSIDE THE BUILDING, INCLUDING ANY FOUNDATION DRAINAGE PIPING.
12. PROVIDE MINIMUM 12'x8'x12" THICK TYPE II RIP-RAP AT 12" AND LARGER STORM OUTFALLS. PROVIDE MINIMUM 8'x6'x12" THICK TYPE II RIP-RAP AT 10" AND SMALLER OUTFALLS.

PROPOSED UTILITY LEGEND

STORM SEWER LINE	
SANITARY SEWER LINE	
FIRE WATER LINE	FW
WATER METER	
MANHOLE	
CATCH BASIN/DITCH INLET	
FIELD INLET	
FIRE HYDRANT ASSEMBLY	
UNLESS NOTED	U.N.

EXISTING UTILITY LEGEND

SITE BOUNDARY	
ADJOINING OR INTERIOR PROPERTY LINE	
RIGHT-OF-WAY CENTERLINE	
WATER LINE	W
GAS LINE	G
SANITARY SEWER LINE	S
UNDERGROUND TELEPHONE LINE (GTE)	UT
STORM DRAINAGE LINE	D
UNDERGROUND POWER LINE	UP
OVERHEAD POWER LINE	OP
FIRE HYDRANT	
WATER VALVE	
WATER METER	
GAS VALVE	
CATCH BASIN	
CURB LINE	
EDGE OF PAVEMENT	
STREET SIGN	
SANITARY SEWER MANHOLE	
EVERGREEN TREE WITH DIAMETER	
DECIDUOUS TREE WITH DIAMETER	
CHAIN LINK FENCE LINE	
LIGHT POLE	
6" BOLLARD	
ROOF DRAIN (SHOOT ON ROOF)	
GAS METER	
POWER TRANSFORMER	
CAMERA TOWER	
POWER POLE	
GUY ANCHOR	
SIDE INLET CATCH BASIN	
MAIL BOX	
STORM SEWER MANHOLE	

NOVELLUS

SWINERTON BUILDERS

Project
NOVELLUS TUALATIN FACILITY

Tualatin, Oregon

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Civil Engineer
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FAX: (503)274-7674

REGISTERED PROFESSIONAL ENGINEER #19178 OREGON JULY 15, 1987 FORREST L FRENTRESS JR

EXPIRES: 12/31/01

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REVISIONS:

REVISION EDITION	LAST REVISION THIS SHEET	REVISION EDITION CLOSING DATE

SHEET TITLE:
SITE STORM SEWER PLAN PHASE I

FIRST ISSUED:
LAST ISSUED:
DRAWN BY:
CHECKED BY:

SHEET **C5.0** OF

GROUP MACKENZIE JOB NO. **000366**
CONSULTANT JOB NO.

02/13/01 17:20 1:1 C5.0-01.DWG GLK

UTILITY PERMIT REVIEW SUBMITTAL 2/14/01

APPENDIX F

GEOTECHNICAL REPORT

REPORT OF GEOTECHNICAL ENGINEERING SERVICES

Lam Office Building
Lam Research Corporation Campus
11357 SW Leveton Drive
Tualatin, Oregon

For
Lam Research Corporation
c/o Mackenzie
June 22, 2022

Project: LamResCorp-7-01

NV5

June 22, 2022

Lam Research Corporation
c/o Mackenzie
River East Center
1515 SE Water Avenue, Suite 100
Portland, OR 97214

Attention: Brent Nielsen

Report of Geotechnical Engineering Services
Lam Office Building
Lam Research Corporation Campus
11357 SW Leveton Drive
Tualatin, Oregon
Project: LamResCorp-7-01

NV5 is pleased to present this report of geotechnical engineering services for the proposed office building at the Lam Research Corporation campus located at 11357 SW Leveton Drive in Tualatin, Oregon. Our services were provided in general conformance with our proposals dated March 24, 2022, and May 16, 2022.

We appreciate the opportunity to be of continued service to you. Please call if you have questions regarding this report.

Sincerely,

NV5

Najib A. Kalas, P.E.
Principal Engineer

Brett A. Shipton, P.E., G.E.
Principal Engineer

cc: Mike Rueter, Mackenzie (via email only)
David Linton, Mackenzie (via email only)

NAK:BAS:kt
Attachments
One copy submitted (via email only)
Document ID: LamResCorp-7-01-062222-geor.docx
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EXECUTIVE SUMMARY

- The proposed building can be supported on spread footings, provided the building can safely withstand the predicted foundation settlement.
- The foundations should be underlain by granular pads underlain by undisturbed native soil or new structural fill overlain by native soil. Topsoil and prior fill (if present) should be removed from under foundations.
- The site soil is slightly susceptible to liquefaction-induced ground settlement. A detailed discussion is provided in the report.
- The planned development will require demolition of structures and pavement. Demolition should include complete removal of the floor slabs and buried foundation elements to allow for evaluating subgrades. After evaluation, the excavations should be backfilled with compacted structural fill.
- The moisture content of the on-site soil generally varied from 10 to 37 percent at the time of our explorations, with an average of approximately 27 percent in the upper 5 feet. Moisture conditioning (drying) will be required to use the material as structural fill.
- The site soil is sensitive to moisture and is easily disturbed when at a moisture content that is above optimum. The subgrade should be protected from construction traffic. A granular working blanket consisting of imported granular material may be required to support construction activities. The contractor should select the thickness of the working blanket as they are in control of the type and frequency of construction traffic.
- Our explorations in vegetated portions of the site encountered a topsoil/tilled zone in the upper 14 to 22 inches, which includes an approximately 1- to 3-inch-thick root zone from past agricultural activities. The topsoil/tilled zone will provide poor support for foundations, floor slabs, and pavement. We recommend the topsoil/tilled zone be improved or stabilized.
- Infiltration rates were measured at between 1 inch and 6 inches per hour. Infiltration testing results and recommendations are discussed in the “Infiltration Systems” section.
- Groundwater was encountered in boring B-5 at a depth of 24.3 feet BGS during drilling and pore water pressure dissipation tests completed in the CPTs indicated groundwater was present at depths between approximately 19.4 and 21.6 feet BGS at the time of our explorations (May 2022). Perched groundwater is possible in the upper soil at the site during the wet winter to spring months.
- Foundation drains will not be required assuming cuts and fills will be less than a few feet each. NV5 should be contacted to review the final grading plans to verify our recommendations.

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ACRONYMS AND ABBREVIATIONS

AASHTO	American Association of State Highway and Transportation Officials
AC	asphalt concrete
ACP	asphalt concrete pavement
ASCE	American Society of Civil Engineers
ASTM	American Society for Testing and Materials
BGS	below ground surface
CPT	cone penetration test
ESAL	equivalent single-axle load
g	gravitational acceleration (32.2 feet/second^2)
GPR	ground penetrating radar
H:V	horizontal to vertical
MCE	maximum considered earthquake
MSL	mean sea level
OSHA	Occupational Safety and Health Administration
OSSC	2021 Oregon Standard Specifications for Construction
pcf	pounds per cubic foot
PG	performance grade
psf	pounds per square foot
psi	pounds per square inch
SPT	standard penetration test
µm	micrometer

1.0 INTRODUCTION

NV5 is pleased to submit this report of geotechnical engineering services for the proposed office building at the Lam Research Corporation campus located at 11357 SW Leveton Drive in Tualatin, Oregon. The site location is shown relative to surrounding features on Figure 1. Existing conditions and the proposed site layout (overlay) are shown on Figure 2. Acronyms and abbreviations used herein are defined above, immediately following the Table of Contents.

2.0 PROJECT UNDERSTANDING

The proposed development is a four-story office building (Building G) with a footprint of 130,000 square feet located south of existing Building B; a basement is not planned. Other improvements include a paved parking lot in the eastern portion of the site and utilities. We understand on-site disposal of stormwater is under consideration. The site is occupied by structures, pavement, and landscaped areas that will be demolished.

Based on correspondence with Mackenzie, maximum interior column and perimeter column/tilt walls loads for the building will be 500 kips (250 kips dead load and 250 kips live load) and 300 kips (225 kips dead load and 75 kips live load), respectively. Maximum floor slab loading will be up to 100 psf. Mackenzie indicates maximum total allowable static settlement for the building is 1 inch. Differential building static settlement can be up to 0.5 inch.

A site survey was not available at the time of this report. Based on Google Earth information, the site grades down from an elevation of approximately 153 feet at the northwestern portion to approximately 147 feet at the southeastern portion of proposed Building G. A grading plan has not been developed at the time of this report. However, based on existing site grades, we anticipate mass cuts and fills will likely be less than a few feet each. NV5 should be contacted to review the final grading plan to verify our recommendations.

3.0 BACKGROUND INFORMATION

We conducted prior phases of work at the site, including four geotechnical studies for the existing facility (GeoDesign, Inc., 2001, 2014, 2015, and 2017) and provided two letters (GeoDesign, Inc., 2013 and 2018) with our recommendations for design of a proposed retaining wall and a generator pad addition, respectively. Mackenzie also provided us with a 1989 geotechnical report by L.R. Squier Associates, Inc. for the property when it was occupied by the OKI Oregon Plant (.R. Squier Associates, Inc., 1989). Our prior work included borings to depths between 6.5 and 71.5 feet BGS, test pits to depths between 12 and 15 feet BGS, and CPTs to depths between 41.7 and 99.4 feet BGS.

4.0 PURPOSE AND SCOPE

The purpose of our services was to provide geotechnical engineering recommendations for use in design and construction of the proposed development. We completed the following specific scope of services:

- Reviewed readily available, published geologic data and our in-house files for existing information on subsurface conditions in the site vicinity.
- Prepared site-specific Safety Incident Prevention Program.
- Coordinated and managed the field explorations, including private and public utility locates and scheduling subcontractors and NV5 staff.
- Conducted a geophysical site survey of the exploration locations as well as low voltage conduits using a GPR.
- Drilled five borings to depths between 6.5 and 30 feet BGS using solid-stem auger drilling methods.
- Conducted two CPTs to depths between approximately 51.7 and 51.8 feet BGS
- Collected geotechnical soil samples from the borings for laboratory testing and maintained a log of encountered soil and groundwater conditions in the borings. Results of the CPTs were provided by the CPT subcontractor.
- Performed two infiltration tests at the locations and depths requested by the design team.
- Conducted a laboratory testing program, including the following tests:
  - Sixteen moisture content determinations in general accordance with ASTM D2216
  - Five particle-size analyses in general accordance with ASTM D1140
  - One Atterberg limits test in general accordance with ASTM D4318
- Prepared this geotechnical engineering report that presents our findings, conclusions, and recommendations, including the following:
  - Soil and groundwater conditions at the site
  - Recommendations for site preparation and grading, including temporary and permanent slopes, fill placement criteria, suitability of on-site soil for fill, and subgrade preparation
  - Recommendations for wet weather construction
  - Discussion of geologic hazards and evaluation of liquefaction and lateral spreading at the site
  - Seismic design parameters in accordance with ASCE 7-16 and the 2019 SOSSC
  - Recommendations for foundation support for the proposed building
  - Recommendations for use in design of conventional retaining walls, including backfill and drainage requirements and lateral earth pressures
  - Recommendations for AC pavement design sections and pavement subgrade preparation
  - General recommendations for dewatering during construction and subsurface drainage
  - Results of field infiltration testing

5.0 SITE CONDITIONS

5.1 SURFACE CONDITIONS

The site is currently occupied by canopies, a paved parking lot, gravel-surfaced areas, and landscaped areas that will be demolished. Small piles of mulch/wood chips are present on the eastern portion of the site.

Based on Google Earth, the site grades down from an elevation of approximately 153 feet at the northwestern portion to approximately 147 feet at the southeastern portion of proposed Building G. Elevations at the proposed parking lots range between approximately 168 and 143 feet from north to south.

5.2 SUBSURFACE CONDITIONS

Subsurface conditions were explored by drilling five borings (B-1 through B-5) to depths between 6.5 and 30 feet BGS and conducting two CPTs (CPT-1 and CPT-2) to depths between approximately 51.7 and 51.8 feet BGS. The locations of the explorations are shown on Figure 2. Descriptions of our field explorations and laboratory testing program, logs of the borings, and results of our laboratory testing are presented in Appendix A. The results of the CPTs are presented in Appendix B.

The subsurface conditions encountered in our explorations were generally consistent with those encountered in our previous explorations. The relevant site plans, exploration logs, and laboratory test results from our previous explorations are presented in Appendix C.

Subsurface conditions encountered in our explorations generally consist of a topsoil/tilled zone or pavement, underlain by up to 7.5 feet of silt and clay, underlain by silty sand to sand with silt with interbeds of silt and clay to the depths explored. The following sections provide a detailed description of the geologic units encountered.

5.2.1 Pavement Section

A pavement section was encountered in boring B-5. The pavement section consists of 2 inches of AC underlain by 9 inches of aggregate base. Boring B-2 encountered 2 inches of crushed rock underlain by geotextile fabric.

5.2.2 Topsoil and Tilled Zone

The upper 14 to 22 inches of soil at the boring locations (in vegetated areas) generally consists of topsoil that has been tilled for agricultural purposes and includes an approximately 1- to 3-inch-thick root zone.

5.2.3 Native Soil

Underlying the pavement or topsoil is medium stiff to stiff silt and clay with minor to with sand. The silt and clay extend to depths between approximately 4.5 and 7.5 feet BGS in explorations B-2, B-3, B-4, and CPT-2. Interbeds of silt and clay were encountered within the sand unit in the CPTs. CPT-1 was completed in silt and clay at a depth of approximately 51.7 feet BGS. The silt and clay have low plasticity based on field classifications and laboratory test results. Laboratory testing indicates the moisture content of the silt and clay at the time of our explorations ranged between 27 and 37 percent.

Underlying the pavement, topsoil, or silt and clay is loose to medium dense, silty sand to sand with silt. In general, the sand becomes denser and contains less fines with depth. The sand extends to the maximum depth explored of approximately 51.8 feet BGS in CPT-2. Boring B-5 was terminated in sand at a depth of 30 feet BGS due to heaving of sand below groundwater. All explorations, except B-4, encountered sand. Laboratory testing of the sand indicates the moisture content ranged between 10 and 31 percent at the time of our explorations. Fines content analysis of select sand samples indicates a fines content of between 8 and 45 percent.

5.2.4 Groundwater

Groundwater was encountered in boring B-5 at a depth of 24.3 feet BGS during drilling and pore water pressure dissipation tests completed in the CPTs indicated groundwater was present at depths between approximately 19.4 and 21.6 feet BGS at the time of our explorations (May 2022).

Based on our experience with projects completed in the vicinity, groundwater levels were generally encountered at depths between approximately 20 to 40 feet BGS (approximate elevations of 125 to 145 feet above MSL based on ground surface elevation of 165 feet above MSL), as measured in a piezometer installed on site in the year 2000. Groundwater levels were generally encountered at approximately 15 to 18 feet BGS (approximate elevations of 127 to 130 feet above MSL based on ground surface elevation of 145 feet above MSL) at the sites on the south side of SW Leveton Drive. The depth to groundwater may fluctuate in response to seasonal changes, prolonged rainfall, changes in surface topography, and other factors not observed in this study. Perched groundwater zones are also likely in the upper soil at the site, particularly during extended periods of wet weather.

5.3 INFILTRATION TESTING

We understand stormwater infiltration systems are proposed for the development. The locations and configurations were preliminary at the time of this report. We conducted an infiltration test in borings B-1 and B-3 at a depth of 8 feet BGS, as requested by Mackenzie. The infiltration testing procedures are described in Appendix A, and the results of the infiltration testing are described in the "Infiltration Systems" section.

5.4 GEOLOGIC HAZARDS

5.4.1 Liquefaction

Liquefaction is a phenomenon caused by a rapid increase in pore water pressure that reduces the effective stress between soil particles to near zero. The excessive buildup of pore water pressure results in the sudden loss of shear strength in a soil. Granular soil, which relies on interparticle friction for strength, is susceptible to liquefaction until the excess pore pressures can dissipate. Sand boils and flows observed at the ground surface after an earthquake are the result of excess pore pressures dissipating upwards, carrying soil particles with the draining water. In general, loose, saturated sand soil with low silt and clay content is the most susceptible to liquefaction. Low plasticity silty sand and silt may be moderately susceptible to liquefaction under relatively higher levels of ground shaking. Liquefaction can cause seismically induced densification of subsurface soil, which can result in settlement at the ground surface. If the ground surface is sloped or if there is an open face such as a ravine, the liquefied soil can also move horizontally in a process that is called lateral spreading.

We performed liquefaction analysis using the CPT results in accordance with Boulanger and Idriss (2014) employing the depth weighting methods from Cetin (2009). The CPTs provide continuous soil strength data for the full depth of penetration. The two strength parameters obtained are tip resistance and frictional resistance along the probe.

Our analysis indicates some of the silty sand to sandy silt and sand layers present below groundwater are susceptible to liquefaction under design levels of ground shaking. We estimate

total post-liquefaction settlement at the existing ground surface will be less than approximately 1.5 inches under a design-level seismic event. Differential settlement of up to 0. -inch over a 50-foot distance within the building should be assumed for design purposes.

Based on our correspondence with Mackenzie, we understand these settlements are within the acceptable structural tolerance.

5.4.2 Lateral Spreading

Lateral spreading is a liquefaction-related seismic hazard. Areas subject to lateral spreading are typically gently sloping or flat sites underlain by liquefiable sediment adjacent to an open face, such as a riverbank. Due to the low potential for liquefaction, the fact that there are no open faces in the site vicinity, and the Tualatin River is approximately 0.7 mile away from the site, the potential for lateral spreading at site is low.

5.4.3 Fault Surface Rupture

The closest mapped fault to the site is the Canby-Molalla fault, which is located approximately 1.8 miles northeast of the site. Consequently, it is our opinion that the probability of surface fault rupture beneath the site is low.

5.4.4 Other Geologic Hazards

Based on explorations and the topography at the site, the risk of damage from seiches, landslides, and subsidence is also low.

6.0 CONCLUSIONS AND RECOMMENDATIONS

Based on our understanding of the proposed development and the results of our explorations, laboratory testing, and analyses, it is our opinion the proposed development can be constructed at the site. The primary geotechnical considerations for the project are summarized in the "Executive Summary" section. Our specific recommendations are provided in the following sections.

7.0 DESIGN

7.1 GENERAL

The following sections provide our design recommendations for the project. All site preparation and structural fill should be prepared as recommended in the "Construction" section.

7.2 SHALLOW FOUNDATIONS

7.2.1 General

Based on the provided foundation loads as previously stated (column loads between 300 and 500 kips), assuming cut and fill will be less than a few feet each, and assuming the site is prepared as recommended in the "Construction" section, it is our opinion the proposed building can be supported on conventional spread footings founded on 24-inch-thick granular pads underlain by firm native soil or on structural fill overlying firm native soil. Foundation elements should not be supported on topsoil or undocumented fill material. If present, these materials should be removed and replaced with structural fill. The granular pads should extend 6 inches

beyond the margins of the footings for every foot excavated below the base grade of the footings. The granular pads should consist of imported granular material, as defined in the "Structural Fill" section. The imported granular material should be compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D1557, or until well keyed, as determined by one of our geotechnical staff. We recommend that a member of our geotechnical staff observe the prepared footing subgrade.

7.2.2 Bearing Capacity

Continuous wall and isolated spread footings should be at least 18 and 24 inches wide, respectively. The bottom of exterior footings should be at least 18 inches below the lowest adjacent exterior grade. The bottom of interior footings should be established at least 12 inches below the base of the slab.

Footings bearing on 24-inch-thick granular pads over subgrade prepared as recommended above should be sized based on an allowable bearing pressure of 3,000 psf. This is a net bearing pressure; the weight of the footing and overlying backfill can be ignored in calculating footing sizes. The recommended allowable bearing pressure applies to the total of dead plus long-term live loads and may be increased by 50 percent for short-term loads such as those resulting from wind or seismic forces.

7.2.3 Resistance to Sliding

Lateral loads on footings can be resisted by passive earth pressure on the sides of structures and by friction on the base of footings. Our analysis indicates the available passive earth pressure for footings confined by native soil and structural fill is 350 pcf modeled as an equivalent fluid pressure. Adjacent floor slabs, pavement, or the upper 12-inch depth of adjacent, unpaved areas should not be considered when calculating passive resistance. In addition, in order to rely on passive resistance, a minimum of 10 feet of horizontal clearance must exist between the face of the footings and any adjacent down slopes. For footings that bear on granular pads as described above, a coefficient of friction equal to 0.45 may be used when calculating resistance to sliding; this should be reduced to 0.35 for footings bearing on native silt and sand.

7.2.4 Settlement

Total foundation settlement should be less than 1 inch with differential settlement between similarly loaded foundations of less than 0.5 inch under dead and long-term live loads.

As discussed in the "Geologic Hazards" section, the site soil is slightly susceptible to liquefaction-induced settlement. We estimate total post-liquefaction settlement at the existing ground surface will be less than approximately 1.5 inches during a design-level earthquake. We anticipate differential settlement of up to 0.5 inch over a 50-foot distance within the building. Based on our correspondence with Mackenzie, we understand these settlements are within acceptable structural tolerances.

7.2.5 Subgrade Observation

All footing and floor slab subgrades should be evaluated by a representative of NV5 to evaluate the bearing conditions. Observations should also confirm that all loose or soft material, organic

material, unsuitable fill, prior topsoil zones, and softened subgrades (if present) have been removed. Localized deepening of footing excavations may be required to penetrate deleterious material.

7.3 SEISMIC DESIGN CONSIDERATIONS

7.3.1 Seismic Design Parameters

Seismic design criteria for this project will be based on the 2019 SOSSC and ASCE 7-16. Based on the results of our subsurface explorations and shear wave velocity testing in CPT-1, the site is classified as Site Class D. Due to liquefaction potential, the site is classified as Site Class F according to ASCE 7-16. ASCE 7-16 indicates a site-specific response analysis is not required for structures with a fundamental period of vibration equal to or less than 0.5 second and the site class without liquefaction can be used for design. Based on our correspondence with Mackenzie, we understand the fundamental period of vibration for the structure has not been determined. ASCE 7-16 Section 11.4.8 requires a ground motion hazard study in accordance with Section 21.2 for structures on Site Class D sites with S_1 greater than or equal to 0.2 g (S_1 at the site is 0.390 g). Exception 2 of ASCE 7-16 Section 11.4.8 indicates a ground motion hazard study is not required for structures on Site Class D sites with S_1 greater to or equal 0.2 g, provided the value of the seismic response coefficient C_S is determined by Eq. (12.8-2) for values of $T \leq 1.5T_s$ and taken as equal to 1.5 times the value computed in accordance with either Eq. (12.8-3) for $T_L \geq T > 1.5T_s$ or Eq. (12.8-4) for $T > T_L$. If Exception 2 is not applicable, a ground motion hazard analysis will be required. We recommend the structural engineer evaluate these requirements and exceptions to determine if the parameters for Site Class D provided in Table 1 can be used for design or if a site-specific seismic hazard evaluation is required.

Table 1. Seismic Design Parameters[1]

Seismic Design Parameter	Short Period (T_s)	1-Second Period (T_1)
MCE Spectral Acceleration	S_s = 0.839 g	S_1 = 0.390 g
Site Class	F[2]	
Site Coefficient	F_a = 1.164	F_v = 1.910
Adjusted Spectral Acceleration	S_{MS} = 0.977 g	S_{M1} = 0.745 g
Design Spectral Response Acceleration Parameters	S_{DS} = 0.651 g	S_{D1} = 0.497 g

1. The structural engineer should evaluate code requirements and exceptions to determine if these parameters can be used for design.
2. Site Class D can be assumed for the purpose of computing base shear forces, provided the building period is less than 0.5 second.

7.4 FLOOR SLABS

Slabs should be reinforced according to their proposed use and per the structural engineer's recommendations. Load-bearing concrete slabs may be designed assuming a modulus of subgrade reaction, k, of 125 psi per inch. To aid as a capillary break, we recommend a 6-inch-

thick layer of floor slab base rock be placed and compacted over the prepared subgrade. The floor slab base rock should meet the requirements in the "Structural Fill" section and be compacted to at least 95 percent of ASTM D1557.

The near-surface native soil is primarily fine grained and will tend to maintain a high moisture content. In areas where moisture-sensitive floor slab and flooring will be installed, installation of a vapor barrier is warranted in order to reduce the potential for moisture transmission through and efflorescence growth on the slab and flooring. In addition, flooring manufacturers often require vapor barriers to protect flooring and flooring adhesives and will warrant their product only if a vapor barrier is installed according to their recommendations. Selection and design of an appropriate vapor barrier should be a collaborative effort with members of the design team.

7.5 RETAINING STRUCTURES

7.5.1 Assumptions

Our retaining wall design recommendations are based on the following assumptions: (1) the walls consist of conventional, cantilevered retaining walls; (2) the walls are less than 8 feet in height; (3) the backfill is drained and consists of imported granular material; and (4) the backfill has a slope flatter than 4H:1V. Re-evaluation of our recommendations will be required if the retaining wall design criteria for the project varies from these assumptions.

7.5.2 Lateral Earth Pressures

Permanent retaining structures free to rotate slightly around the base should be designed for active earth pressures using an equivalent fluid unit pressure of 35 pcf. If retaining walls are restrained against rotation during backfilling, they should be designed for an at-rest earth pressure of 55 pcf.

Seismic lateral forces can be calculated using a dynamic force equal to $7H^2$ pounds per linear foot of wall, where H is the wall height. The seismic force should be applied as a distributed load with the centroid located at 0.6H from the wall base. Footings for retaining walls should be designed as recommended for shallow foundations.

The design equivalent fluid pressure should be increased for walls that retain sloping soil. We recommend the above lateral earth pressures be increased using the factors presented in Table 2 when designing walls that retain sloping soil.

Table 2. Lateral Earth Pressure Increase Factors for Sloping Soil

Slope of Retained Soil (degrees)	Lateral Earth Pressure Increase Factor
0	1.00
5	1.06
10	1.12
20	1.33
25	1.52
30	2.27

If other surcharges (i.e., slopes steeper than 2H:1V, foundations, vehicles, etc.) are located within a horizontal distance of twice the height of the wall from the back of the wall, additional pressures will need to be accounted for in the wall design. Our office should be contacted for appropriate wall surcharges based on the actual magnitude and configuration of the applied loads.

7.5.3 Wall Drainage and Backfill

The above design parameters have been provided assuming drains will be installed behind walls to prevent buildup of hydrostatic pressures behind all walls. If a drainage system is not installed, our office should be contacted for revised design forces.

Backfill material placed behind the walls and extending a horizontal distance of ½H, where H is the height of the retaining wall, should consist of retaining wall select backfill placed and compacted in conformance with the "Structural Fill" section.

A minimum 6-inch-diameter, perforated collector pipe should be placed at the base of the walls. The pipe should be embedded in a minimum 2-foot-wide zone of angular drain rock that is wrapped in a drainage geotextile fabric and extends up the back of the wall to within 1 foot of the finished grade. The drain rock and drainage geotextile fabric should meet specifications provided in the "Materials" section. The perforated collector pipes should discharge at an appropriate location away from the base of the wall. The discharge pipe(s) should not be tied directly into stormwater drain systems, unless measures are taken to prevent backflow into the drainage system of the wall.

Settlement of up to 1 percent of the wall height commonly occurs immediately adjacent to the wall as the wall rotates and develops active lateral earth pressures. Consequently, we recommend that construction of flatwork adjacent to retaining walls be postponed at least four weeks after backfilling of the wall, unless survey data indicates that settlement is complete prior to that time.

7.6 DRAINAGE

7.6.1 Temporary

During mass grading at the site, the contractor should be made responsible for temporary drainage of surface water as necessary to prevent standing water and/or erosion at the working surface. During rough and finished grading of the site, the contractor should keep all pads and subgrade free of ponding water.

7.6.2 Surface

Where possible, the finished ground surface around the building should be sloped away from the structure at a minimum 2 percent gradient for a distance of at least 5 feet. Downspouts or roof scuppers should discharge into a storm drain system that carries the collected water to an appropriate stormwater system. Trapped planter areas should not be created adjacent to the building without providing means for positive drainage (e.g., swales or catch basins).

7.6.3 Subsurface

Assuming the site grades around the building will be sloped as discussed previously, it is our opinion that perimeter footing drains will not be required around the proposed building. However, the use of these drains should be considered in areas where landscaping planters are placed proximate to the foundations or where surface grades cannot be completed as outlined above.

If installed, foundation drains should be constructed at a minimum slope of approximately ½ percent and pumped or drained by gravity to a suitable discharge. The perforated drainpipe should not be tied to a stormwater drainage system without backflow provisions. Foundation drains should consist of 4-inch-diameter, perforated drainpipe embedded in a minimum 2-foot-wide zone of crushed drain rock that extends to the ground surface. The invert elevation of the drainpipe should be installed at least 18 inches below the elevation of the floor slab.

The drain rock and geotextile should meet the requirements specified in the "Materials" section. The drain rock and geotextile should extend up the side of embedded walls to within a foot of the ground surface, geotextile wrapped over the top of the drain rock, as recommended in the "Retaining Structures" section.

7.7 INFILTRATION SYSTEMS

We understand stormwater infiltration systems are being considered for the proposed development. The locations and configurations were conceptual at the time of this report. The infiltration tests were performed to evaluate the infiltration potential for the proposed infiltration systems. The results of our field infiltration testing are presented in Table 3.

Table 3. Infiltration Testing Summary

Location	Depth (feet BGS)	Observed Infiltration Rate[1] (inches per hour)	Fines Content[2] (percent)	Soil Type at Test Depth
B-1	8	6	14	Silty sand
B-3	8	1	32	Silty sand

1. In-situ infiltration rate observed in the field
2. Fines content – material passing the U.S. Standard No. 200 sieve

The infiltration rates shown in Table 3 are short-term field rates and factors of safety have not been applied.

We recommend all infiltration systems be installed in the sand (below the upper silt and clay) and be at least 8 feet deep. Also, we recommend a minimum separation of 5 feet between the bottom of the infiltration systems and the groundwater encountered as shallow as 19.4 feet BGS. We recommend the following unfactored field infiltration rates:

- For infiltration systems in the silty sand at the southern portion of the site (near boring B-1), we recommend an unfactored field infiltration rate of 6 inches per hour.
- For infiltration systems in the silty sand at the northern portion of the site (near boring B-3), we recommend an unfactored field infiltration rate of 1 inch per hour.

We note that the high variability in the observed infiltration rates is due to high variability in fines content as presented in Table 3.

The recommended infiltration rates are measured rates and are unfactored. Correction factors should be applied to the recommended infiltration rates by the civil engineer during design to account for the degree of long-term maintenance and influent/pre-treatment control, as well as the potential for long-term clogging due to siltation and buildup of organic material, depending on the proposed length, location, and type of infiltration facility. We recommend a minimum factor of safety of at least 2 be applied to the recommended unfactored rates.

The actual depths and estimated infiltration rates can vary significantly from the values presented above. We recommend that the design infiltration values for the stormwater systems be confirmed by field testing completed during installation of the systems. The results of this field testing might necessitate that the stormwater system be enlarged to achieve the design infiltration rate.

7.8 PAVEMENT

Pavement should be installed on native subgrade or new engineered fills prepared in conformance with the "Site Preparation" and "Structural Fill" sections.

Our pavement recommendations are based on the assumption that the standard-duty traffic section will be subject to passenger cars and occasional maintenance and delivery trucks. We do not have specific information on the frequency and type of vehicles that will use the area; however, we have assumed that standard traffic conditions will consist of a maximum of 2 trucks per day and a maximum of 50 cars per day. We recommend that the heavy-duty pavement section be constructed in areas that will be subject to higher traffic volumes (such as entrances and areas subject to repeated delivery vehicles) or driveways that provide emergency fire truck access. The heavy-duty section assumes that traffic will consist of up to ten trucks per day.

Our pavement recommendations are based on the following assumptions:

- A resilient modulus of 20,000 psi was estimated for the aggregate base.
- Initial and terminal serviceability indices of 4.2 and 2.5, respectively.
- Reliability of 85 percent and standard deviation of 0.45.
- Structural coefficients of 0.42 and 0.10 for the AC and aggregate base, respectively.
- No growth.
- A resilient modulus of 3,500 psi for site subgrades assuming the surface 18 inches of subgrade is scarified and compacted to at least 92 percent of the maximum dry density, as defined by ASTM D1557 (modified).

- The pavement section of access roadways associated with the fire access road will support an imposed fire apparatus load of 75,000 pounds on an infrequent basis.
- Design life of 20 years.
- No growth.

If any of these assumptions are incorrect, our office should be contacted with the appropriate information so that the pavement designs can be revised.

Our pavement design recommendations are provided in Table 4.

Table 4. 20-Year Standard Pavement Sections

Traffic Levels	Trucks per Day	ESALs	AC (inches)	Aggregate Base (inches)
Standard Duty	2	10,000	3	10
Heavy Duty	10	51,000	4	11

If the subgrade is cement amended to the thicknesses indicated below and the amended soil achieves a seven-day unconfined compressive strength of at least 100 psi, the pavement can be constructed as recommended in Table 5.

Table 5. 20-Year Pavement Sections with Cement Amendment

Traffic Levels	Trucks per Day	ESALs	AC (inches)	Aggregate Base (inches)	Cement Amendment[1] (inches)
Standard Duty	2	10,000	3	4	12
Heavy Duty	10	51,000	4	4	12

1. Assumes a minimum seven-day unconfined compressive strength of 100 psi.

All thicknesses are intended to be the minimum acceptable. Design of the recommended pavement section is based on the assumption that construction will be completed during an extended period of dry weather. Wet weather construction could require an increased thickness of aggregate base. In addition, to prevent strength loss during curing, cement-amended soil should be allowed to cure for at least four days prior to construction traffic. Lastly, amended subgrade should be protected with a minimum of 4 inches of aggregate base prior to construction traffic access.

The AC, aggregate base, and cement amendment should meet the requirements outlined in the "Materials" section.

Construction traffic should be limited to non-building, unpaved portions of the site or haul roads. Construction traffic should not be allowed on new pavement. If construction traffic is to be allowed on newly constructed road sections, an allowance for this additional traffic will need to

be made in the design pavement section. The aggregate base and cement amendment thicknesses (if installed) do not account for construction traffic, and haul roads and staging areas should be used as described in the "Construction" section.

8.0 CONSTRUCTION

8.1 SITE PREPARATION

8.1.1 Demolition

Demolition includes complete removal of the existing buildings, retaining walls, pavement, concrete curbs, abandoned utilities, and any subsurface elements within 5 feet of areas to receive new pavement, buildings, retaining walls, or engineered fills. Demolished material should be transported off site for disposal. In general, this material will not be suitable for re-use as engineered fill. However, concrete, pavement, and base rock material may be recycled in accordance with the requirements set forth by the project jurisdiction and the recommendations provided in the "Structural Fill" section.

Excavations remaining from removing basements, foundations, utilities, and other subsurface elements should be backfilled with structural fill where these are below planned site grades. The base of the excavations should be excavated to expose firm subgrade before filling. The sides of the excavations should be cut into firm material and sloped a minimum of 1.5H:1V. Utility lines abandoned under new structural components should be completely removed and backfilled with structural fill or grouted full if left in place. Soft or disturbed soil encountered during demolition should be removed and replaced with structural fill.

Considerable subgrade damage can occur during demolition activities and we recommend that the subgrade protection measures discussed in the "Construction Considerations" section be implemented.

8.1.2 Grubbing and Stripping

Trees and shrubs should be removed from fill areas. In addition, root balls should be grubbed out to the depth of the roots, which could exceed 3 feet BGS. Depending on the methods used to remove root balls, considerable disturbance and loosening of the subgrade could occur during site grubbing. We recommend that soil disturbed during grubbing operations be removed to expose firm, undisturbed subgrade. The resulting excavations should be backfilled with structural fill.

The existing topsoil zone should be stripped and removed from all fill areas. Based on our explorations in vegetated areas, the average depth of stripping will be approximately 2.5 inches, although greater stripping depths may be required to remove localized zones of loose or organic soil. Greater stripping depths (approaching 12 inches) may be anticipated in areas with thicker vegetation and shrubs, which should be expected in the tree and shrub areas of the site. The actual stripping depth should be based on field observations at the time of construction.

Stripped material should be transported off site for disposal or used in landscaped areas in accordance with the project Contaminated Media Management Plan.

8.1.3 Topsoil/Tilled Zone

An approximately 14- to 22-inch-deep agricultural topsoil/tilled zone was observed at the ground surface in our explorations in vegetated portions of the site. Reliable strength properties are extremely difficult to predict for the topsoil/tilled zone material. There is a high risk for poor performance of floor slabs and pavement established directly over topsoil/tilled zone soil. In order to reduce the risk of settlement, we recommend the topsoil/tilled zone be improved during site preparation in areas where planned cuts do not extend to the bottom of the topsoil/tilled zone (up to 22 inches). Prior to fill placement and construction, the topsoil/tilled zone should be improved by removing and replacing with structural fill or scarifying and re-compacting to structural fill requirements.

As discussed in the "Structural Fill" section, the native soil can be sensitive to small changes in moisture content and will be difficult, if not impossible, to compact adequately during wet weather. While scarification and compaction of the subgrade is the best option for subgrade improvement, it will likely only be possible during extended dry periods and following moisture conditioning of the soil. As discussed further on in this report, cement amendment is an option for conditioning the soil for use as structural fill during periods of wet weather or when drying the soil is not an option.

8.1.4 Subgrade Evaluation

Upon completion of stripping and subgrade stabilization, and prior to the placement of fill or pavement, the exposed subgrade should be evaluated by proof rolling. The subgrade should be proof rolled with a fully loaded dump truck or similarly heavy, rubber tire construction equipment to identify soft, loose, or unsuitable areas. A member of our geotechnical staff should observe proof rolling to evaluate yielding of the ground surface. During wet weather, subgrade evaluation should be performed by probing with a foundation probe rather than proof rolling. Areas that appear soft or loose should be improved in accordance with subsequent sections.

8.1.5 Compacting Prior Test Pit Excavations

The prior test pit excavations (see Appendix C) were backfilled using the relatively minimal compactive effort of the excavator's bucket; therefore, soft spots can be expected at these locations. We recommend this relatively uncompacted soil be removed from the test pits to a depth of 3 feet below finished subgrade. If a test pit is located within 10 feet of a footing, we recommend full-depth removal of the uncompacted soil. The resulting excavation should be brought back to grade with compacted structural fill.

8.2 CONSTRUCTION CONSIDERATIONS

The fine-grained soil present on this site is easily disturbed. If not carefully executed, site preparation, utility trench work, and roadway excavation can create extensive soft areas and significant repair costs can result. Earthwork planning, regardless of the time of year, should include considerations for minimizing subgrade disturbance.

If construction occurs during or extends into the wet season, or if the moisture content of the surficial soil is more than a couple percentage points above optimum, site stripping and cutting may need to be accomplished using track-mounted equipment. Likewise, the use of granular haul roads and staging areas will be necessary for support of construction traffic during the rainy

season or when the moisture content of the surficial soil is more than a few percentage points above optimum. The base rock thickness for pavement areas is intended to support post-construction design traffic loads. This design base rock thickness will likely not support construction traffic or pavement construction. Moreover, if construction is planned for periods when the subgrade soil is wet, staging areas and haul roads with increased thicknesses of base rock will be required. The amount of staging areas and haul roads, as well as the required thickness of granular material, will vary with the contractor's sequencing of a project and type/frequency of construction equipment and should, therefore, be the responsibility of the contractor. Based on our experience, between 12 and 18 inches of imported granular material are generally required in staging areas and between 18 and 24 inches in haul roads areas. The contractor should also be responsible for selecting the type of material for construction of haul roads and staging areas. A geotextile fabric can be placed as a barrier between the subgrade and imported granular material in areas of repeated construction traffic to help prevent silt migration into the base rock. The imported granular material, stabilization material, and geotextile fabric should meet the specifications in the "Materials" section.

As an alternative to thickened crushed rock sections, haul roads and utility work zones may be constructed using cement-amended subgrades overlain by a crushed rock wearing surface. If this approach is used, the thickness of granular material in staging areas and along haul roads can typically be reduced to between 6 and 9 inches. This recommendation is based on an assumed minimum unconfined compressive strength of 100 psi for subgrade amended to a depth of 12 to 16 inches. The actual thickness of the amended material and imported granular material will depend on the contractor's means and methods and should be the contractor's responsibility. Cement amendment is discussed in the "Materials" section.

8.3 PERMANENT SLOPES

Permanent cut and fill slopes should not exceed 2H:1V. Access roads and pavement should be located at least 5 feet from the top of cut and fill slopes. The setback should be increased to 10 feet for buildings. The slopes should be planted with appropriate vegetation to provide protection against erosion as soon as possible after grading. Surface water runoff should be collected and directed away from slopes to prevent water from running down the face of the slope.

8.4 EXCAVATION

8.4.1 Excavation and Shoring

The site soil should be readily excavatable with conventional grading equipment. If buried construction debris from prior on-site structures is encountered beneath the ground surface, this material will result in difficult trench excavations and may require additional effort or special equipment. If difficult excavations are encountered, trenches may also be wider than anticipated, increasing the amount of backfill material required.

Temporary excavation sidewalls should stand vertical to a depth of approximately 4 feet, provided groundwater seepage is not observed in the sidewalls and surcharge loads will not be present within H feet, where H is the depth of the trench. Open excavation techniques may be used to excavate trenches with depths between 4 and 8 feet, provided the walls of the excavation are cut at a slope of 1.5H:1V and groundwater seepage and surcharge loads are not

present. At this inclination, slopes with loose sand may ravel and require some ongoing repair. Excavations should be flattened to 2H:1V if excessive sloughing or raveling occurs. In lieu of large and open cuts, approved temporary shoring may be used for excavation support. Use of approved temporary shoring is recommended where the slopes cannot be cut back, within the influence area of structural elements, and for cuts below the water table. The influence area can be defined as a 1H:1V slope extending down from a 5-foot setback from the edge of a foundation element. A wide variety of shoring and dewatering systems are available. Consequently, we recommend the contractor be responsible for selecting the appropriate shoring and dewatering systems.

If box shoring is used, it should be understood that box shoring is a safety feature used to protect workers and does not prevent caving. If excavations are left open for extended periods of time, caving of the sidewalls may occur. The presence of caved material will limit the ability to properly backfill and compact the trenches. The contractor should be prepared to fill voids between the box shoring and the sidewalls of the trenches with sand or gravel before caving occurs.

If shoring is used, we recommend the type and design of the shoring system be the responsibility of the contractor, who is in the best position to choose a system that fits the overall plan of operation.

8.4.2 Trench Dewatering

Groundwater was encountered in our explorations at depths between approximately 19.4 and 24.3 feet BGS at the time of exploration. Major dewatering is not anticipated for the project. If perched groundwater is present, dewatering may be required to maintain dry working conditions. Pumping from sumps located within the trench will likely be effective in removing water resulting from seepage.

If perched groundwater is encountered at the base of utility excavations, we recommend placing 1.5 to 2 feet of stabilization material at the base of the excavation. The use of a subgrade geotextile fabric may reduce the amount of stabilization material required. The actual thickness should be based on field observations during construction.

Trench stabilization material and the subgrade geotextile fabric should meet the requirements described in the “Materials” section. Trench stabilization material should be placed in one lift and compacted until well keyed. While we have described certain approaches to excavation dewatering, it is the contractor's responsibility to select the dewatering methods.

8.4.3 Safety

All excavations should be made in accordance with applicable OSHA requirements and regulations of the state, county, and local jurisdiction. While this report describes certain approaches to excavation and dewatering, the contract documents should specify that the contractor is responsible for selecting excavation and dewatering methods, monitoring the excavations for safety, and providing shoring (as required) to protect personnel and adjacent structural elements.

8.5 MATERIALS

8.5.1 Structural Fill

8.5.1.1 General

Fill should be placed on subgrade that has been prepared in conformance with the "Site Preparation" section. A variety of material may be used as structural fill at the site. However, all material used as structural fill should be free of organic material or other unsuitable material. A brief characterization of some of the acceptable materials and our recommendations for their use as structural fill are provided below.

8.5.1.2 On-Site Soil

The material at the site should be suitable for use as general structural fill, provided it is properly moisture conditioned and free of debris, organic material, and particles over 6 inches in diameter. Moisture conditioning (drying) will likely be required to use on-site fine-grained soil for structural fill. Accordingly, extended dry weather will be required to adequately condition and place the soil as structural fill. It will be difficult, if not impossible, to adequately compact on-site soil during the rainy season or during prolonged periods of rainfall.

When used as structural fill, native soil should be placed in lifts with a maximum uncompacted thickness of 8 inches and compacted to not less than 92 percent of the maximum dry density, as determined by ASTM D1557.

8.5.1.3 Imported Granular Material

Imported granular material used as structural fill should be pit- or quarry-run rock, crushed rock, or crushed gravel and sand. The imported granular material should also be angular and fairly well graded between coarse and fine material, should have less than 5 percent fines by dry weight passing the U.S. Standard No. 200 sieve, and should have at least two mechanically fractured faces.

Imported granular material should be placed in lifts with a maximum uncompacted thickness of 12 inches and compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D1557. During the wet season or when wet subgrade conditions exists, the initial lift should be approximately 18 inches in uncompacted thickness and should be compacted by rolling with a smooth-drum roller without using vibratory action.

8.5.1.4 Stabilization Material

Stabilization material used in staging or haul road areas or in trenches should consist of 4- or 6-inch-minus pit- or quarry-run rock, crushed rock, or crushed gravel and sand. The material should have a maximum particle size of 6 inches, should have less than 5 percent by dry weight passing the U.S. Standard No. 4 sieve, and should have at least two mechanically fractured faces. The material should be free of organic material and other deleterious material. Stabilization material should be placed in lifts between 12 and 24 inches thick and compacted to a firm condition.

8.5.1.5 Trench Backfill

Trench backfill placed beneath, adjacent to, and for at least 12 inches above utility lines (i.e., the pipe zone) should consist of durable, well-graded granular material with a maximum particle size

of 1½ inches, should have less than 7 percent fines by dry weight, and should have at least two mechanically fractured faces. The pipe zone backfill should be compacted to at least 90 percent of the maximum dry density, as determined by ASTM D1557, or as required by the pipe manufacturer or local building department.

Within roadway alignments, the remainder of the trench backfill up to the subgrade elevation should consist of durable, well-graded granular material with a maximum particle size of 2½ inches, should have less than 7 percent fines by dry weight, and should have at least two mechanically fractured faces. This material should be compacted to at least 92 percent of the maximum dry density, as determined by ASTM D1557, or as required by the pipe manufacturer or local building department. The upper 3 feet of the trench backfill should be compacted to at least 95 percent of the maximum dry density, as determined by ASTM D1557.

Outside of structural improvement areas (e.g., roadway alignments or building pads), trench backfill placed above the pipe zone may consist of general fill material that is free of organic material and material over 6 inches in diameter. This general trench backfill should be compacted to at least 90 percent of the maximum dry density, as determined by ASTM D1557, or as required by the pipe manufacturer or local building department.

8.5.1.6 Drain Rock

Drain rock should consist of angular, granular material with a maximum particle size of 2 inches. The material should be free of roots, organic material, and other unsuitable material; should have less than 2 percent by dry weight passing the U.S. Standard No. 200 sieve (washed analysis); and should have at least two mechanically fractured faces. Drain rock should be compacted to a well-keyed, firm condition.

8.5.1.7 Aggregate Base Rock

Imported granular material used as base rock for building floor slabs and pavement should consist of ¾- or 1½-inch-minus material (depending on the application). In addition, the aggregate should have less than 5 percent by dry weight passing the U.S. Standard No. 200 sieve and have at least two mechanically fractured faces. The aggregate base should be compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D1557.

8.5.1.8 Retaining Wall Select Backfill

Backfill material placed behind retaining walls and extending a horizontal distance of ½H, where H is the height of the retaining wall, should consist of imported granular material as described above and should have less than 7 percent fines by dry weight and have at least two mechanically fractured faces. We recommend the wall backfill be separated from general fill, native soil, and/or topsoil using a geotextile fabric that meets the specifications provided below for drainage geotextiles.

The wall backfill should be compacted to a minimum of 95 percent of the maximum dry density, as determined by ASTM D1557. However, backfill located within a horizontal distance of 3 feet from a retaining wall should only be compacted to approximately 90 percent of the maximum dry density, as determined by ASTM D1557. Backfill placed within 3 feet of the wall should be

compacted in lifts less than 6 inches thick using hand-operated tamping equipment (such as a jumping jack or vibratory plate compactor). If flatwork (sidewalks or pavement) will be placed atop the wall backfill, we recommend the upper 2 feet of material be compacted to 95 percent of the maximum dry density, as determined by ASTM D1557.

8.5.1.9 Retaining Wall Leveling Pad

Imported granular material placed at the base of retaining wall footings should consist of select granular material. The granular material should be 1"-0 to ¾"-0 aggregate size and have at least two mechanically fractured faces. The leveling pad material should be placed in a 6- to 12-inch-thick lift and compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D1557.

8.5.1.10 Existing Concrete and Crushed Rock

Concrete and crushed rock from the existing pavement areas and improvements can be used in general structural fill, provided particles greater than 3 inches are not present, it is thoroughly mixed and well graded so that there are no voids between the fragments, and the resulting mix is moisture conditioned for compaction. This material can be used as trench backfill if it meets the requirements for imported granular material, which would require a smaller maximum particle size. The material should be placed in lifts with a maximum uncompacted thickness of 12 inches and compacted to not less than 95 percent of the maximum dry density, as determined by ASTM D1557.

8.5.2 Geotextile Fabric

8.5.2.1 Subgrade Geotextile

Subgrade geotextile should conform to OSSC Table 02320-4 and OSSC 00350 (Geosynthetic Installation). A minimum initial aggregate base lift of 6 inches is required over geotextiles. All drainage aggregate and stabilization material should be underlain by a subgrade geotextile.

8.5.2.2 Drainage Geotextile

Drainage geotextile should conform to Type 2 material of OSSC Table 02320-1 and OSSC 00350 (Geosynthetic Installation). A minimum initial aggregate base lift of 6 inches is required over geotextiles.

8.5.3 Soil Amendment with Cement

8.5.3.1 General

As an alternative to the use of imported granular material for wet weather structural fill, an experienced contractor may be able to amend the on-site soil with portland cement to obtain suitable support properties. Successful use of soil amendment depends on the use of correct mixing techniques, soil moisture content, and amendment quantities. The amount of cement used during amendment should be based on an assumed soil dry unit weight of 100 pcf.

In addition, the new Oregon Department of Environmental Quality requirements under 1200C permits include additional requirements for routing, testing, and (if necessary) treating runoff from sites where cement amendment is used.

8.5.3.2 Subbase Stabilization

Specific recommendations based on exposed site conditions for soil amendment can be provided if necessary. However, for preliminary design purposes, we recommend a target strength for cement-amended subgrade for building and pavement subbase (below aggregate base) soil of 100 psi. The amount of cement used to achieve this target generally varies with moisture content and soil type. It is difficult to predict field performance of soil to cement amendment due to variability in soil response, and we recommend laboratory testing to confirm expectations. In general, 6 percent cement by weight of dry soil can be used when the soil moisture content does not exceed approximately 20 percent. If the soil moisture content is in the range of 25 to 35 percent, 7 to 8 percent by weight of dry soil is recommended. The amount of cement added to the soil may need to be adjusted based on field observations and performance. Moreover, depending on the time of year and moisture content levels during amendment, water may need to be applied during tilling to appropriately condition the soil moisture content.

We recommend assuming a minimum cement ratio of 6 percent by dry weight, with higher rates as discussed above. Because of the higher organic content and moisture of the topsoil, we recommend using a higher cement ratio when stabilizing topsoil zone, likely a minimum of 7 to 8 percent.

We recommend cement amendment equipment be equipped with balloon tires to reduce rutting and disturbance of the fine-grained soil. A sheepsfoot or segmented pad roller with a minimum static weight of 40,000 pounds should be used for initial compaction of the fine-grained soil without the use of vibratory action. A smooth-drum roller with a minimum applied linear force of 700 pounds per inch should be used for final compaction. The amended soil should be compacted to at least 92 percent of the achievable dry density at the moisture content of the material, as defined in ASTM D1557.

A minimum curing time of four days is required between amendment and construction traffic access. Construction traffic should not be allowed on unprotected, cement-amended subgrade. To protect the cement-amended surfaces from abrasion or damage, the finished surface should be covered with 4 to 6 inches of imported granular material.

Amendment depths for subgrade beneath buildings and pavement, haul roads, and staging areas are typically on the order of 12, 16, and 12 inches, respectively. The crushed rock typically becomes contaminated with soil during construction. Contaminated base rock should be removed and replaced with clean rock in pavement areas. The actual thickness of the amended material and imported granular material for haul roads and staging areas will depend on the anticipated traffic as well as the contractor's means and methods and should be the contractor's responsibility.

Cement amendment should not be attempted when the air temperature is below 40 degrees Fahrenheit or during moderate to heavy precipitation. Cement should not be placed when the ground surface is saturated or standing water exists.

8.5.3.3 Cement-Amended Structural Fill

On-site soil that would not otherwise be suitable for structural fill may be amended and placed as fill over a subgrade prepared in conformance with the "Site Preparation" section. The cement ratio for general cement-amended fill can generally be reduced by 1 percent (by dry weight). Typically, a minimum curing time of four days is required between amendment and construction traffic access. Consecutive lifts of fill may be amended immediately after the previous lift has been amended and compacted (e.g., the four-day wait period does not apply). However, where the final lift of fill is a building or roadway subgrade, the four-day wait period is in effect.

8.5.3.4 Other Considerations

Portland cement-amended soil is hard and has low permeability. This soil does not drain well and it is not suitable for planting. Future planted areas should not be cement amended, if practical, or accommodations should be made for drainage and planting. Moreover, cement amendment of soil within building areas must be done carefully to avoid trapping water under floor slabs. We should be contacted if this approach is considered. Cement amendment should not be used if runoff during construction cannot be directed away from adjacent wetlands. In general, cement amendment is not recommended during cold weather (temperatures less than 40 degrees Fahrenheit) or during steady rainfall.

8.5.4 AC

8.5.4.1 ACP

The AC should be Level 2, ½-inch, dense ACP according to OSSC 00744 (Asphalt Concrete Pavement) and compacted to 91 percent of the theoretical maximum density of the mix, as determined by AASHTO T 209. The minimum and maximum lift thicknesses are 2 and 3 inches, respectively, for ½-inch ACP. Asphalt binder should be performance graded and conform to PG 64-22 or better. The binder grade should be adjusted depending on the aggregate gradation and amount of recycled asphalt pavement and/or recycled asphalt shingles in the contractor's mix design submittal.

8.5.4.2 Cold Weather Paving Considerations

In general, AC paving is not recommended during cold weather (temperatures less than 40 degrees Fahrenheit). Compacting under these conditions can result in low compaction and premature pavement distress.

Each AC mix design has a recommended compaction temperature range that is specific for the particular AC binder used. In colder temperatures, it is more difficult to maintain the temperature of the AC mix as it can lose heat while stored in the delivery truck, as it is placed, and in the time between placement and compaction. In Oregon, the AC surface temperature during paving should be at least 40 degrees Fahrenheit for lift thickness greater than 2.5 inches and at least 50 degrees Fahrenheit for lift thickness between 2 and 2.5 inches.

If paving activities must take place during cold-weather construction as defined above, the project team should be consulted and a site meeting should be held to discuss ways to lessen low compaction risks.

8.6 EROSION CONTROL

The site soil is susceptible to erosion; therefore, erosion control measures should be carefully planned and in place before construction begins. Surface water runoff should be collected and directed away from slopes to prevent water from running down the slope face. Erosion control measures (such as straw bales, sediment fences, and temporary detention and settling basins) should be used in accordance with local and state ordinances.

9.0 OBSERVATION OF CONSTRUCTION

Satisfactory foundation and earthwork performance depends to a large degree on quality of construction. Sufficient observation of the contractor's activities is a key part of determining that the work is completed in accordance with the construction drawings and specifications. Subsurface conditions observed during construction should be compared with those encountered during the subsurface exploration. Recognition of changed conditions often requires experience; therefore, qualified personnel should visit the site with sufficient frequency to detect if subsurface conditions change significantly from those anticipated.

We recommend NV5 be retained to observe earthwork activities, including stripping, proof rolling of the subgrade and repair of soft areas, footing subgrade and granular pad preparation, final proof rolling of the pavement subgrade and base rock, and AC placement and compaction, and performing laboratory compaction and field moisture-density tests.

10.0 LIMITATIONS

We have prepared this report for use by Lam Research Corporation, Mackenzie, and members of the design and construction team for the proposed development. The data and report can be used for estimating purposes, but our report, conclusions, and interpretations should not be construed as a warranty of the subsurface conditions and are not applicable to other sites.

Soil explorations indicate soil conditions only at specific locations and only to the depths penetrated. They do not necessarily reflect soil strata or water level variations that may exist between exploration locations. If subsurface conditions differing from those described are noted during the course of excavation and construction, re-evaluation will be necessary.

The site development plans and design details were preliminary at the time this report was prepared. When the design has been finalized and if there are changes in the site grades or location, configuration, design loads, or type of construction, the conclusions and recommendations presented may not be applicable. If design changes are made, we should be retained to review our conclusions and recommendations and to provide a written evaluation or modification.

The scope of our services does not include services related to construction safety precautions, and our recommendations are not intended to direct the contractor's methods, techniques, sequences, or procedures, except as specifically described in this report for consideration in design.

Within the limitations of scope, schedule, and budget, our services have been executed in accordance with the generally accepted practices in this area at the time this report was prepared. No warranty or other conditions, express or implied, should be understood.

♦ ♦ ♦

We appreciate the opportunity to be of continued service to you. Please call if you have questions concerning this report or if we can provide additional services.

Sincerely,

NV5

Najib A. Kalas, P.E.
Principal Engineer

Brett A. Shipton, P.E., G.E.
Principal Engineer



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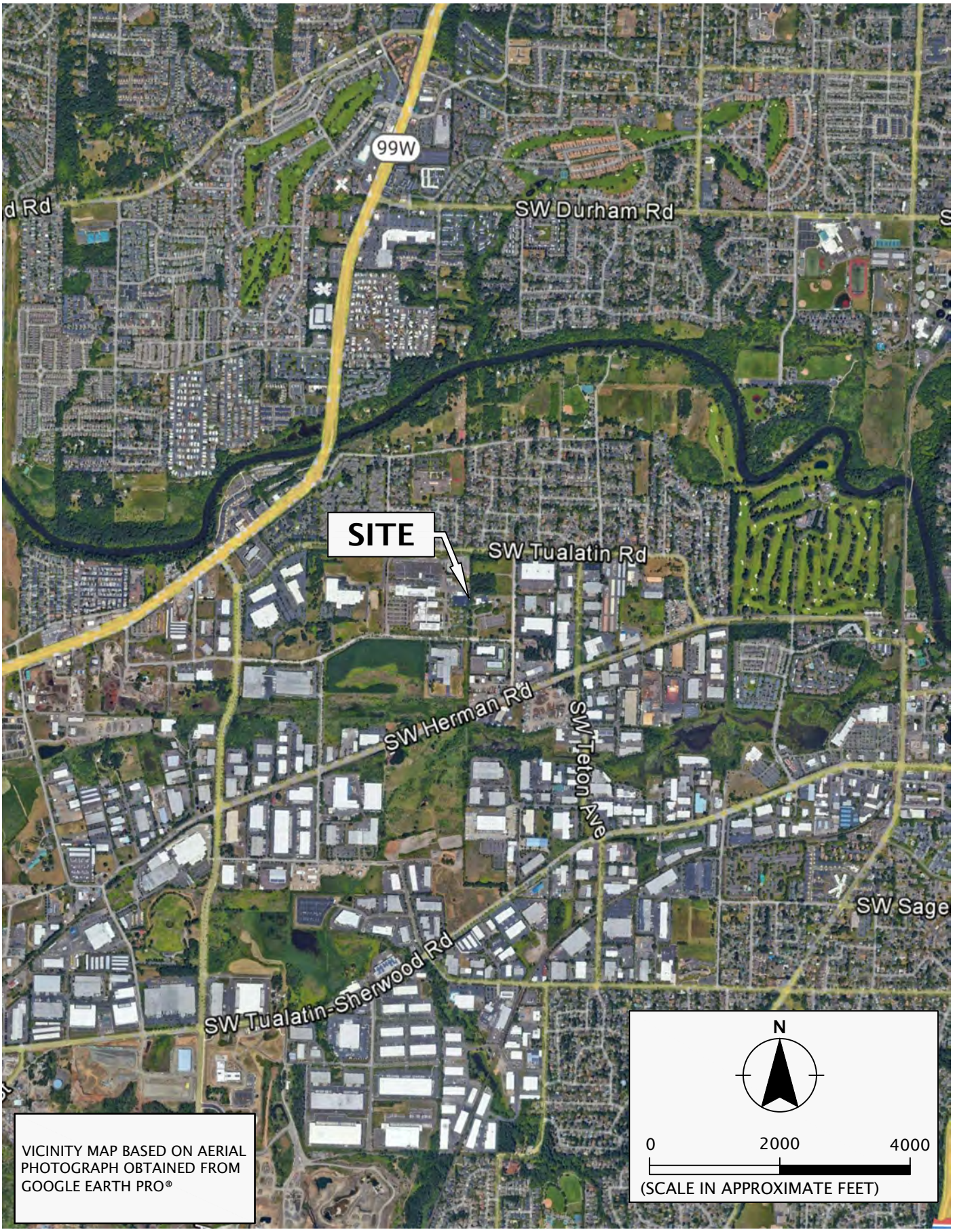
FIGURES



VICINITY MAP BASED ON AERIAL PHOTOGRAPH OBTAINED FROM GOOGLE EARTH PRO®

NV5	LAMRESCORP-7-01	**VICINITY MAP**
	JUNE 2022	LAM OFFICE BUILDING TUALATIN, OR
		FIGURE 1

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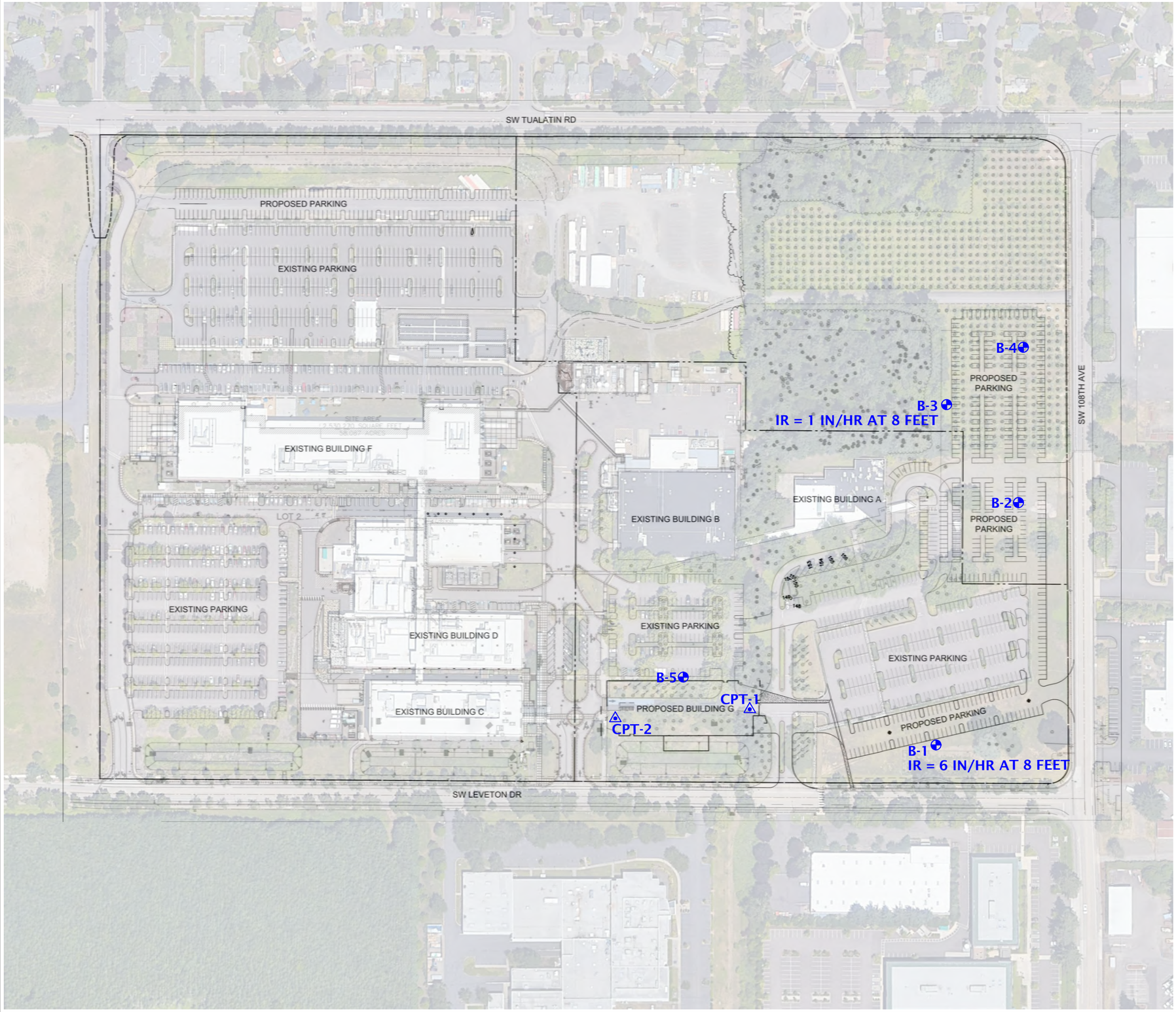

LEGEND:

B-1	BORING
CPT-1	CPT
IR = 6 IN/HR AT 8 FEET	UNFACTORED INFILTRATION RATE

N

0 200 400

(SCALE IN FEET)

NOTES:

1. SITE PLAN BASED ON IMAGE OF SHEET EX 1 OVERALL SITE PLAN PREPARED BY MACKENZIE.
2. AERIAL PHOTOGRAPH OBTAINED FROM GOOGLE EARTH PRO JUNE 10, 2022.

SITE PLAN

LAM OFFICE BUILDING
TUALATIN, OR

FIGURE 2

LAMRESCORP-7-01

JUNE 2022

NV5

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APPENDIX A

APPENDIX A

FIELD EXPLORATIONS

GENERAL

We explored subsurface conditions at the site by drilling five borings (B-1 through B-5) to depths between 6.5 and 30 feet BGS and conducting two CPTs (CPT-1 and CPT-2) to depths between approximately 51.7 and 51.8 feet BGS.

Drilling services were provided by Dan J. Fischer Excavating, Inc. of Forest Grove, Oregon, on May 25, 2022, using a trailer-mounted drill rig with solid-stem auger methods. The CPTs were conducted by Oregon Geotechnical Explorations, Inc. of Salem, Oregon, on May 25, 2022. Logs of the borings are presented in this appendix, and results of the CPTs are presented in Appendix B.

The locations of the explorations are shown on Figure 2. The exploration locations were determined by pacing from existing site features and should be considered accurate to the degree implied by the methods used. A member of our geology staff observed the explorations.

SOIL SAMPLING

We collected representative samples of the various soils encountered during drilling for geotechnical laboratory testing. Samples were collected from the borings using 1½-inch-inside-diameter, split-spoon SPT samplers in general accordance with ASTM D1586. The samplers were driven into the soil with a 140-pound hammer free-falling 30 inches. The sampler was driven a total distance of 18 inches. The number of blows required to drive the sampler the final 12 inches is recorded on the exploration logs, unless otherwise noted. Sampling methods and intervals are shown on the exploration logs.

The hammer used to conduct the SPTs was lifted using a rope and cathead system. The hammer was raised using two wraps of the rope around the cathead to conduct the SPTs.

SOIL CLASSIFICATION

The soil samples were classified in the field in accordance with the "Exploration Key" (Table A-1) and "Soil Classification System" (Table A-2), which are presented in this appendix. The exploration logs indicate the depths at which the soil characteristics change, although the change could be gradual. If the change occurred between sample locations, the depth was interpreted. Classifications are shown on the exploration logs.

INFILTRATION TESTING

Infiltration testing was conducted borings B-1 and B-3 at a depth of 8 feet BGS. The infiltration rates were estimated by filling the pipe with water, allowing the area to saturate, and then measuring the drop in water with time. The tests were conducted under a hydrostatic head of generally between approximately 18 and 54 inches. Representative soil samples were collected from at or below the infiltration test locations for grain-size distribution analyses, as described in this appendix.

LABORATORY TESTING

We visually examined soil samples collected from the explorations to confirm field classifications. We also performed the following laboratory tests to evaluate the engineering properties of the soil.

MOISTURE CONTENT

We tested the natural moisture content of select soil samples in general accordance with ASTM D2216. The natural moisture content is a ratio of the weight of the water to dry soil in a test sample and is expressed as a percentage. The test results are presented in this appendix.

PARTICLE-SIZE ANALYSIS

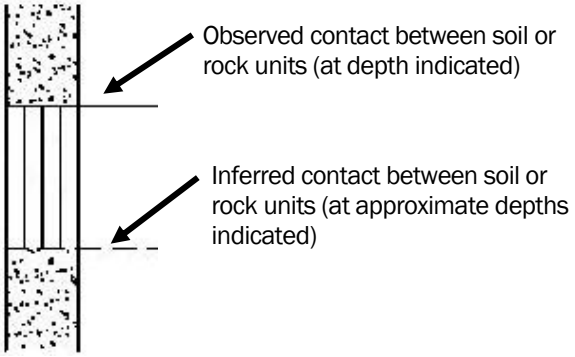
We completed grain-size testing on select soil samples in order to determine the distribution of soil particle sizes. The testing consisted of fines content determination completed in conformance with ASTM D1140. This test determines of the amount of material finer than a 75-µm expressed as a percentage of the dry weight of soil. The test results are presented in this appendix.

ATTERBERG LIMITS TESTING

Atterberg limits (plastic and liquid limits) testing was performed on a select soil sample in general accordance with ASTM D4318. The plastic limit is defined as the moisture content where the soil becomes brittle. The liquid limit is defined as the moisture content where the soil begins to act similar to a liquid. The plasticity index is the difference between the liquid and plastic limits. The test results are presented in this appendix.

SYMBOL	SAMPLING DESCRIPTION
	Location of sample collected in general accordance with ASTM D1586 using Standard Penetration Test (SPT) with recovery
	Location of sample collected using thin-wall Shelby tube or Geoprobe® sampler in general accordance with ASTM D1587 with recovery
	Location of sample collected using Dames & Moore sampler and 300-pound hammer or pushed with recovery
	Location of sample collected using Dames & Moore sampler and 140-pound hammer or pushed with recovery
	Location of sample collected using 3-inch-outside diameter California split-spoon sampler and 140-pound hammer with recovery
	Location of grab sample
	Rock coring interval
	Water level during drilling
	Water level taken on date shown

Graphic Log of Soil and Rock Types



GEOTECHNICAL TESTING EXPLANATIONS

ATT	Atterberg Limits	P	Pushed Sample
CBR	California Bearing Ratio	PP	Pocket Penetrometer
CON	Consolidation	P200	Percent Passing U.S. Standard No. 200 Sieve
DD	Dry Density		
DS	Direct Shear	RES	Resilient Modulus
HYD	Hydrometer Gradation	SIEV	Sieve Gradation
MC	Moisture Content	TOR	Torvane
MD	Moisture-Density Relationship	UC	Unconfined Compressive Strength
NP	Non-Plastic	VS	Vane Shear
OC	Organic Content	kPa	Kilopascal

ENVIRONMENTAL TESTING EXPLANATIONS

CA	Sample Submitted for Chemical Analysis	ND	Not Detected
P	Pushed Sample	NS	No Visible Sheen
PID	Photoionization Detector Headspace Analysis	SS	Slight Sheen
		MS	Moderate Sheen
ppm	Parts per Million	HS	Heavy Sheen

RELATIVE DENSITY - COARSE-GRAINED SOIL

Relative Density	Standard Penetration Test (SPT) Resistance	Dames & Moore Sampler (140-pound hammer)	Dames & Moore Sampler (300-pound hammer)
Very loose	0 – 4	0 – 11	0 – 4
Loose	4 – 10	11 – 26	4 – 10
Medium dense	10 – 30	26 – 74	10 – 30
Dense	30 – 50	74 – 120	30 – 47
Very dense	More than 50	More than 120	More than 47

CONSISTENCY - FINE-GRAINED SOIL

Consistency	Standard Penetration Test (SPT) Resistance	Dames & Moore Sampler (140-pound hammer)	Dames & Moore Sampler (300-pound hammer)	Unconfined Compressive Strength (tsf)
Very soft	Less than 2	Less than 3	Less than 2	Less than 0.25
Soft	2 – 4	3 – 6	2 – 5	0.25 – 0.50
Medium stiff	4 – 8	6 – 12	5 – 9	0.50 – 1.0
Stiff	8 – 15	12 – 25	9 – 19	1.0 – 2.0
Very stiff	15 – 30	25 – 65	19 – 31	2.0 – 4.0
Hard	More than 30	More than 65	More than 31	More than 4.0

PRIMARY SOIL DIVISIONS			GROUP SYMBOL	GROUP NAME
COARSE-GRAINED SOIL (more than 50% retained on No. 200 sieve)	GRAVEL (more than 50% of coarse fraction retained on No. 4 sieve)	CLEAN GRAVEL (< 5% fines)	GW or GP	GRAVEL
		GRAVEL WITH FINES (≥ 5% and ≤ 12% fines)	GW-GM or GP-GM	GRAVEL with silt
			GW-GC or GP-GC	GRAVEL with clay
		GRAVEL WITH FINES (> 12% fines)	GM	silty GRAVEL
			GC	clayey GRAVEL
			GC-GM	silty, clayey GRAVEL
	SAND (50% or more of coarse fraction passing No. 4 sieve)	CLEAN SAND (<5% fines)	SW or SP	SAND
		SAND WITH FINES (≥ 5% and ≤ 12% fines)	SW-SM or SP-SM	SAND with silt
			SW-SC or SP-SC	SAND with clay
		SAND WITH FINES (> 12% fines)	SM	silty SAND
			SC	clayey SAND
			SC-SM	silty, clayey SAND
FINE-GRAINED SOIL (50% or more passing No. 200 sieve)	SILT AND CLAY	Liquid limit less than 50	ML	SILT
			CL	CLAY
			CL-ML	silty CLAY
			OL	ORGANIC SILT or ORGANIC CLAY
		Liquid limit 50 or greater	MH	SILT
			CH	CLAY
			OH	ORGANIC SILT or ORGANIC CLAY
HIGHLY ORGANIC SOIL			PT	PEAT

MOISTURE CLASSIFICATION		ADDITIONAL CONSTITUENTS					
		Secondary granular components or other materials such as organics, man-made debris, etc.					
			Silt and Clay In:			Sand and Gravel In:	
Term	Field Test	Percent	Fine-Grained Soil	Coarse-Grained Soil	Percent	Fine-Grained Soil	Coarse-Grained Soil
dry	very low moisture, dry to touch						
moist	damp, without visible moisture	< 5	trace	trace	< 5	trace	trace
		5 – 12	minor	with	5 – 15	minor	minor
wet	visible free water, usually saturated	> 12	some	silty/clayey	15 – 30	with	with
					> 30	sandy/gravelly	Indicate %

NV5

SOIL CLASSIFICATION SYSTEM

TABLE A-2

DEPTH FEET	MATERIAL DESCRIPTION	ELEVATION / DEPTH	TESTING	SAMPLE	INSTALLATION AND COMMENTS
0.0	Loose, dark brown, silty SAND (SM), trace organics (rootlets); moist, sand is fine to medium (14-inch-thick tilled zone, 2-inch-thick root zone).				
2.5				6	
5.0	medium dense at 5.0 feet			11	
7.5			P200	11	Infiltration test at 8.0 feet. P200 = 14%
10.0				11	
11.5	Exploration completed at a depth of 11.5 feet. SPT completed using two wraps with a cathead.	11.5			Surface elevation was not measured at the time of exploration.
12.5					
15.0					
17.5					
20.0					

GRAPHIC LOG

▲ BLOW COUNT
● MOISTURE CONTENT %
RQD% CORE REC%
0 50 100

DRILLED BY: Dan J. Fischer Excavating, Inc.

LOGGED BY: L. Gose

COMPLETED: 05/25/22

BORING METHOD: solid-stem auger (see document text)

BORING BIT DIAMETER: 6 1/4 inches

N|V|5

LAMRESCORP-7-01

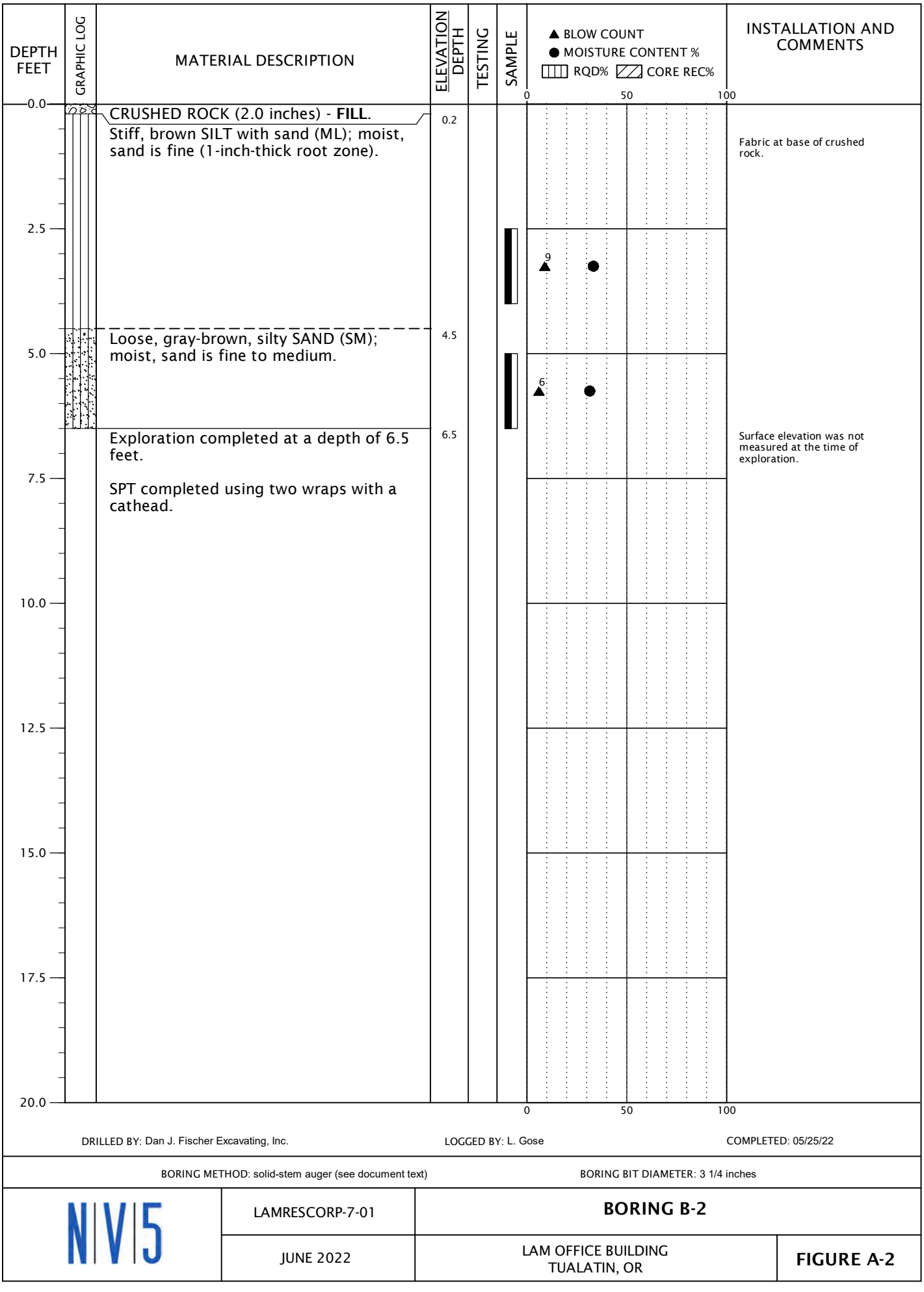
BORING B-1

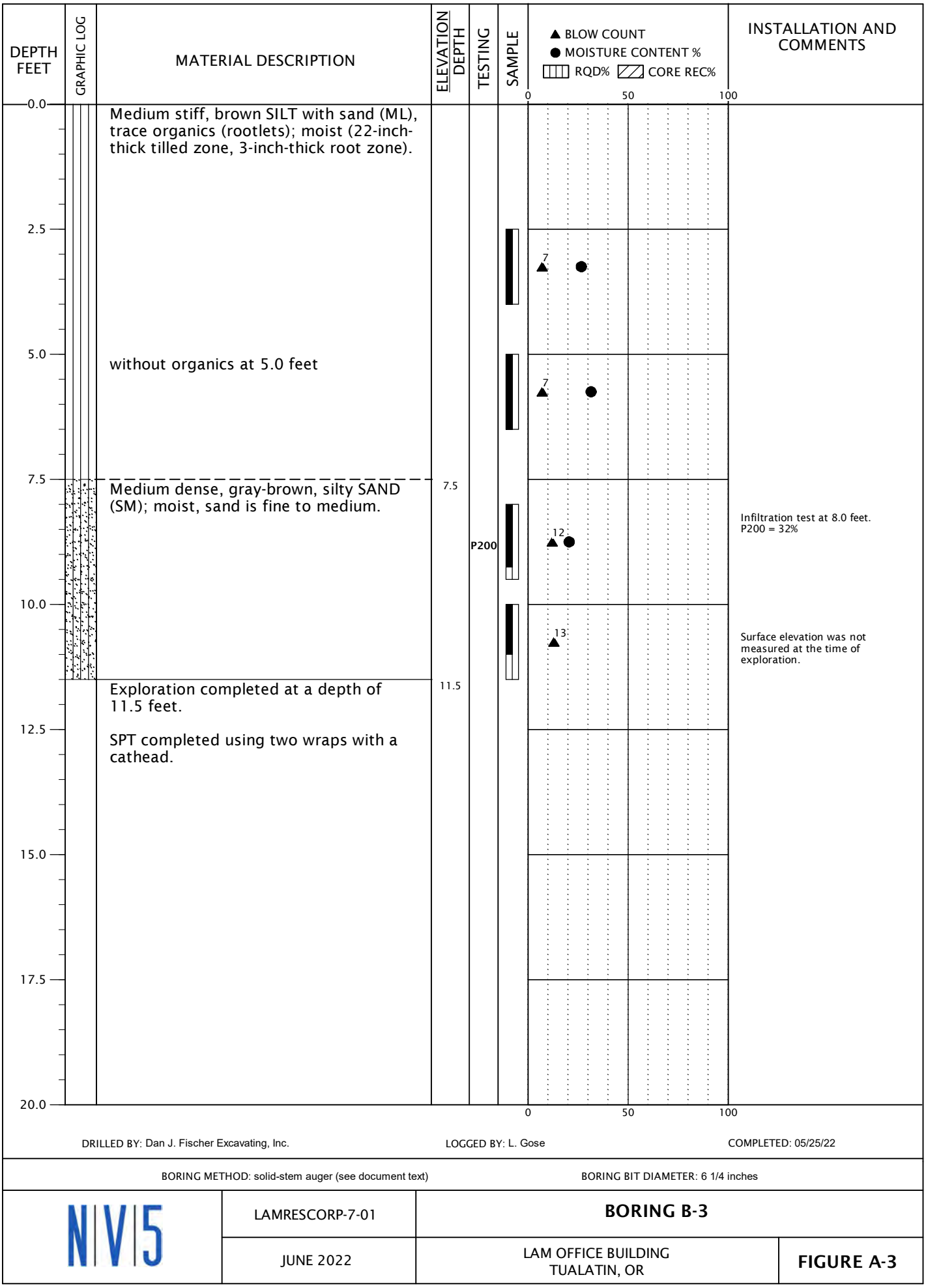
JUNE 2022

LAM OFFICE BUILDING
TUALATIN, OR

FIGURE A-1

BORING LOG - NV5 - 1 PER PAGE LAMRESCORP-7-01-B1_5.GPJ GDI_NV5.GDT PRINT DATE: 6/7/22:SN


DEPTH FEET
GRAPHIC LOG
MATERIAL DESCRIPTION
ELEVATION DEPTH
TESTING
SAMPLE
▲ BLOW COUNT
● MOISTURE CONTENT %
RQD% CORE REC%
INSTALLATION AND COMMENTS
0
50
100
0.0
CRUSHED ROCK (2.0 inches) - FILL.
0.2
Stiff, brown SILT with sand (ML); moist, sand is fine (1-inch-thick root zone).
Fabric at base of crushed rock.
2.5
9
4.5
Loose, gray-brown, silty SAND (SM); moist, sand is fine to medium.
5.0
6
6.5
Exploration completed at a depth of 6.5 feet.
Surface elevation was not measured at the time of exploration.
SPT completed using two wraps with a cathead.
7.5
10.0
12.5
15.0
17.5
20.0
DRILLED BY: Dan J. Fischer Excavating, Inc.
LOGGED BY: L. Gose
COMPLETED: 05/25/22
BORING METHOD: solid-stem auger (see document text)
BORING BIT DIAMETER: 3 1/4 inches
N|V|5
LAMRESCORP-7-01
BORING B-2
JUNE 2022
LAM OFFICE BUILDING
TUALATIN, OR
FIGURE A-2
BORING LOG - NV5 - 1 PER PAGE LAMRESCORP-7-01-B1_5.GPJ GDI_NV5.GDT PRINT DATE: 6/7/22:SN



DRILLED BY: Dan J. Fischer Excavating, Inc.

LOGGED BY: L. Gose

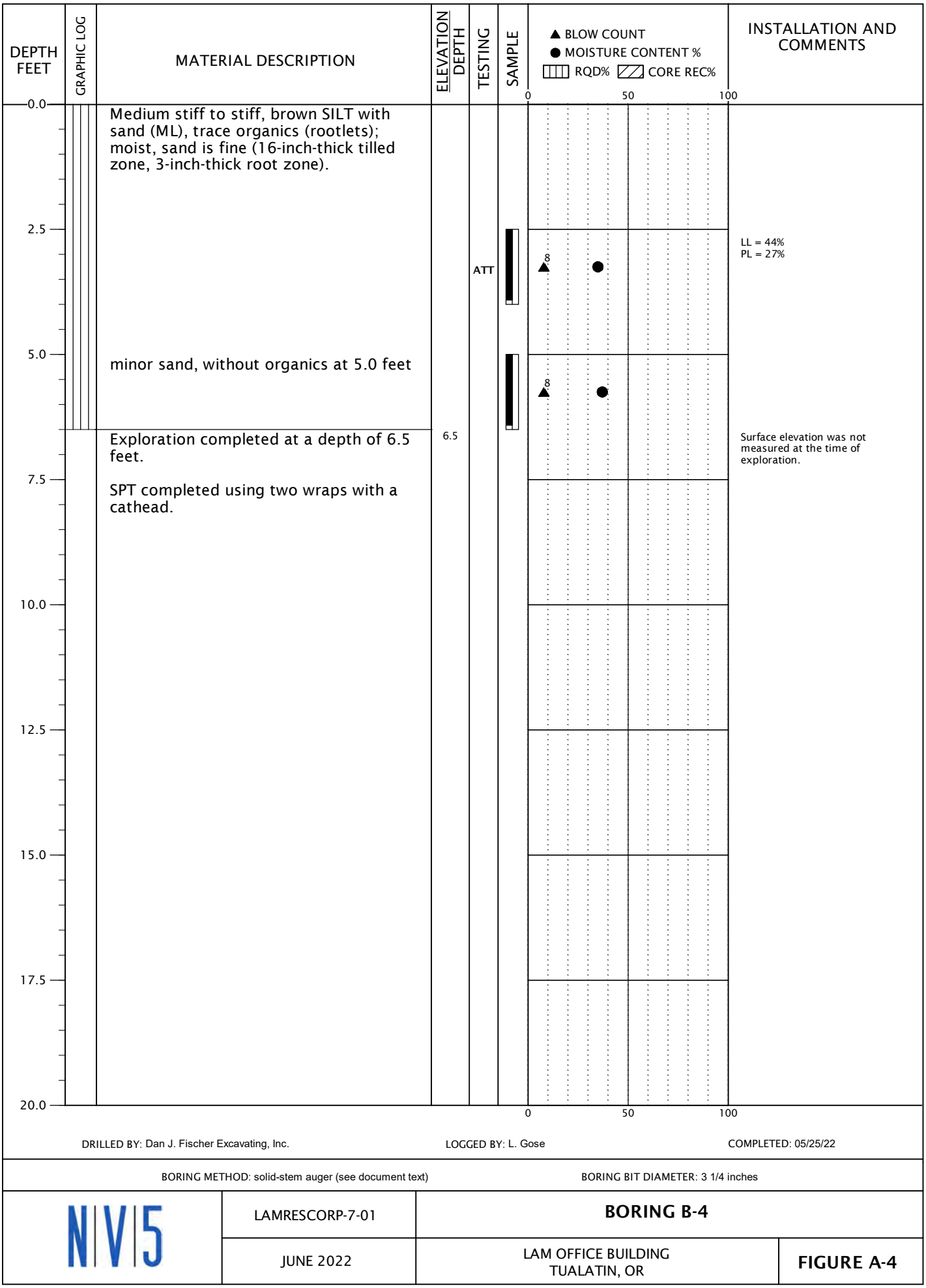
COMPLETED: 05/25/22

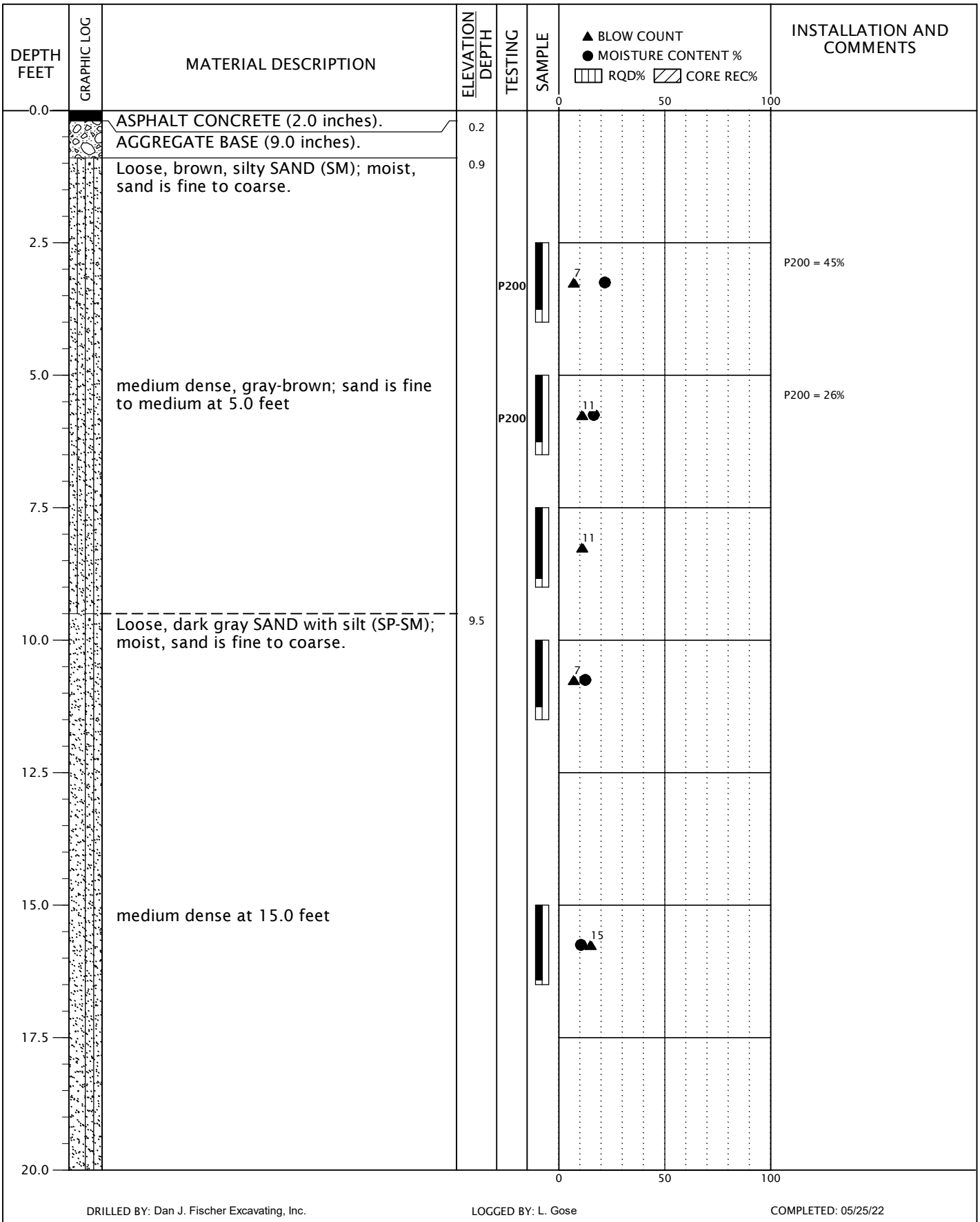
BORING METHOD: solid-stem auger (see document text)

BORING BIT DIAMETER: 6 1/4 inches

N|V|5	LAMRESCORP-7-01	**BORING B-3**
	JUNE 2022	LAM OFFICE BUILDING TUALATIN, OR
		FIGURE A-3

BORING LOG - NV5 - 1 PER PAGE LAMRESCORP-7-01-B1_5.GPJ GDI_NV5.GDT PRINT DATE: 6/7/22:SN


DEPTH FEET
GRAPHIC LOG
MATERIAL DESCRIPTION
ELEVATION DEPTH
TESTING
SAMPLE
▲ BLOW COUNT
● MOISTURE CONTENT %
RQD% CORE REC%
0
50
100
INSTALLATION AND COMMENTS
0.0
Medium stiff to stiff, brown SILT with sand (ML), trace organics (rootlets); moist, sand is fine (16-inch-thick tilled zone, 3-inch-thick root zone).
2.5
ATT
8
LL = 44%
PL = 27%
5.0
minor sand, without organics at 5.0 feet
8
6.5
Exploration completed at a depth of 6.5 feet.
Surface elevation was not measured at the time of exploration.
SPT completed using two wraps with a cathead.
7.5
10.0
12.5
15.0
17.5
20.0
0
50
100
DRILLED BY: Dan J. Fischer Excavating, Inc.
LOGGED BY: L. Gose
COMPLETED: 05/25/22
BORING METHOD: solid-stem auger (see document text)
BORING BIT DIAMETER: 3 1/4 inches
N|V|5
LAMRESCORP-7-01
BORING B-4
JUNE 2022
LAM OFFICE BUILDING
TUALATIN, OR
FIGURE A-4
BORING LOG - NV5 - 1 PER PAGE LAMRESCORP-7-01-B1_5.GPJ GDI_NV5.GDT PRINT DATE: 6/7/22:SN



DRILLED BY: Dan J. Fischer Excavating, Inc.

LOGGED BY: L. Gose

COMPLETED: 05/25/22

BORING METHOD: solid-stem auger (see document text)

BORING BIT DIAMETER: 3 1/4 inches

N|V|5

LAMRESCORP-7-01

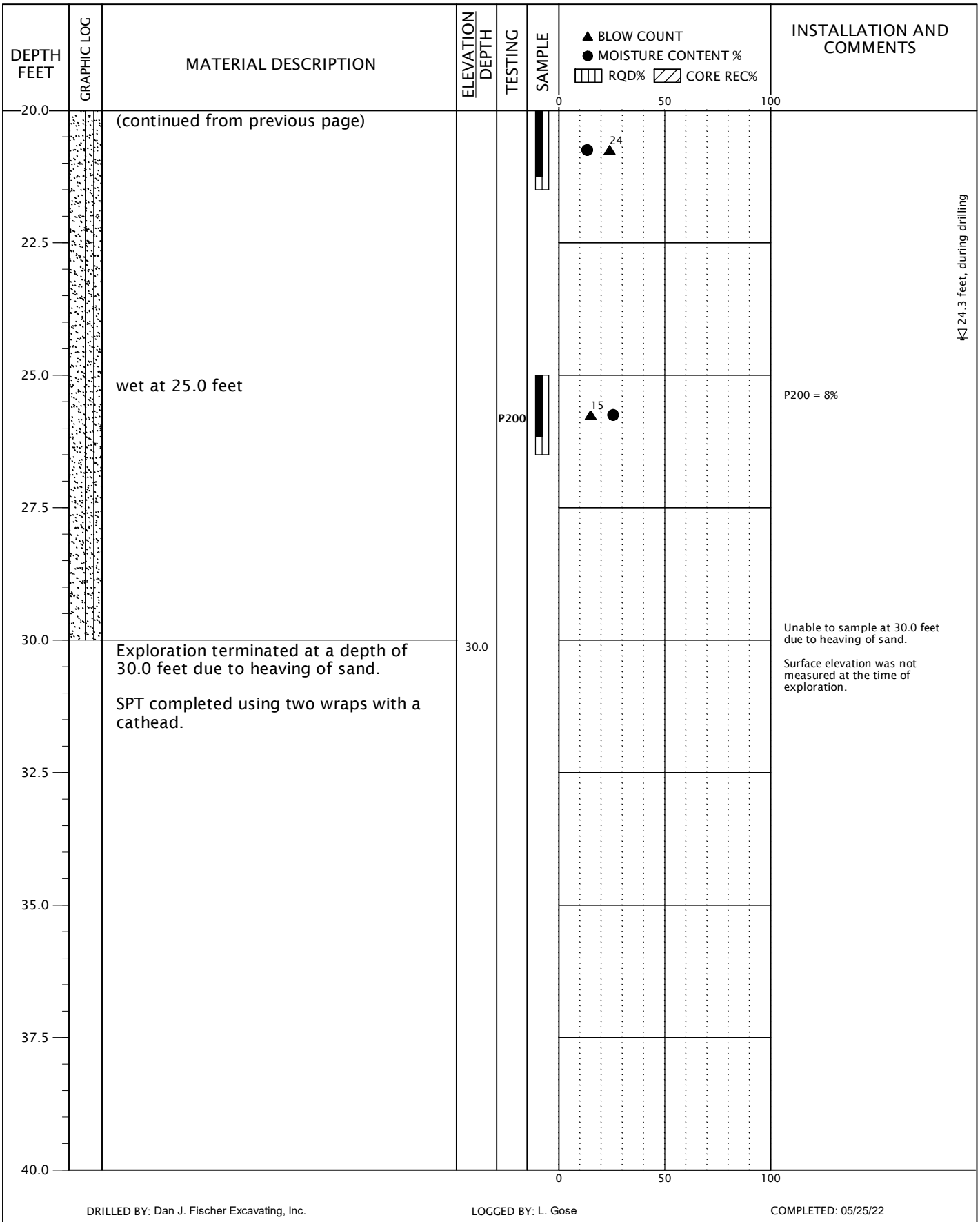
BORING B-5

JUNE 2022

LAM OFFICE BUILDING
TUALATIN, OR

FIGURE A-5

BORING LOG - NV5 - 1 PER PAGE LAMRESCORP-7-01-B1_5.GPJ GDI_NV5.GDT PRINT DATE: 6/7/22:SN



DRILLED BY: Dan J. Fischer Excavating, Inc.

LOGGED BY: L. Gose

COMPLETED: 05/25/22

BORING METHOD: solid-stem auger (see document text)

BORING BIT DIAMETER: 3 1/4 inches

N|V|5

LAMRESCORP-7-01

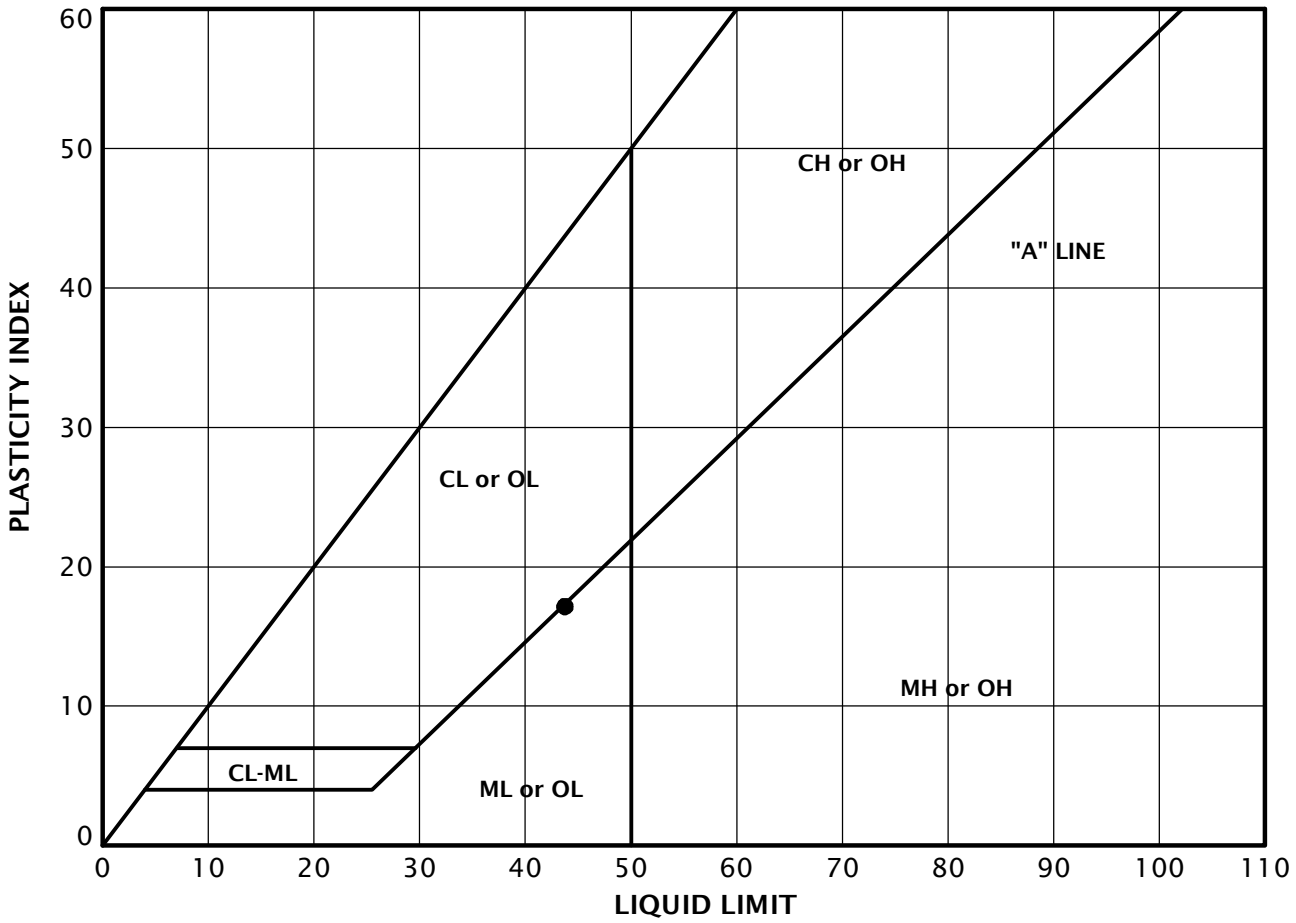
BORING B-5
(continued)

JUNE 2022

LAM OFFICE BUILDING
TUALATIN, OR

FIGURE A-5

BORING LOG - NV5 - 1 PER PAGE LAMRESCORP-7-01-B1_5.GPJ GDI_NV5.GDT PRINT DATE: 6/7/22:SN



KEY	EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	MOISTURE CONTENT (PERCENT)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
●	B-4	2.5	35	44	27	17

N|V|5	LAMRESCORP-7-01	ATTERBERG LIMITS TEST RESULTS	
	JUNE 2022	LAM OFFICE BUILDING TUALATIN, OR	FIGURE A-6

_ATTERBERG_LIMITS 7 LAMRESCORP-7-01-B1_5.GPJ GEODESIGN.GDT PRINT DATE: 6/6/22:SN

SAMPLE INFORMATION			MOISTURE CONTENT (PERCENT)	DRY DENSITY (PCF)	SIEVE			ATTERBERG LIMITS		
EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	ELEVATION (FEET)			GRAVEL (PERCENT)	SAND (PERCENT)	P200 (PERCENT)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
B-1	2.5		17							
B-1	5.0		15							
B-1	8.0		15				14			
B-2	2.5		33							
B-2	5.0		31							
B-3	2.5		27							
B-3	5.0		31							
B-3	8.0		20				32			
B-4	2.5		35					44	27	17
B-4	5.0		37							
B-5	2.5		22				45			
B-5	5.0		16				26			
B-5	10.0		12							
B-5	15.0		10							
B-5	20.0		13							
B-5	25.0		26				8			

LAB SUMMARY - GDI-NV5 LAMRESCORP-7-01-B1_5.GPJ GDI_NV5.GDT PRINT DATE: 6/6/22:SN

NV5	LAMRESCORP-7-01	**SUMMARY OF LABORATORY DATA**	
	JUNE 2022	LAM OFFICE BUILDING TUALATIN, OR	**FIGURE A-7**

APPENDIX B

APPENDIX B

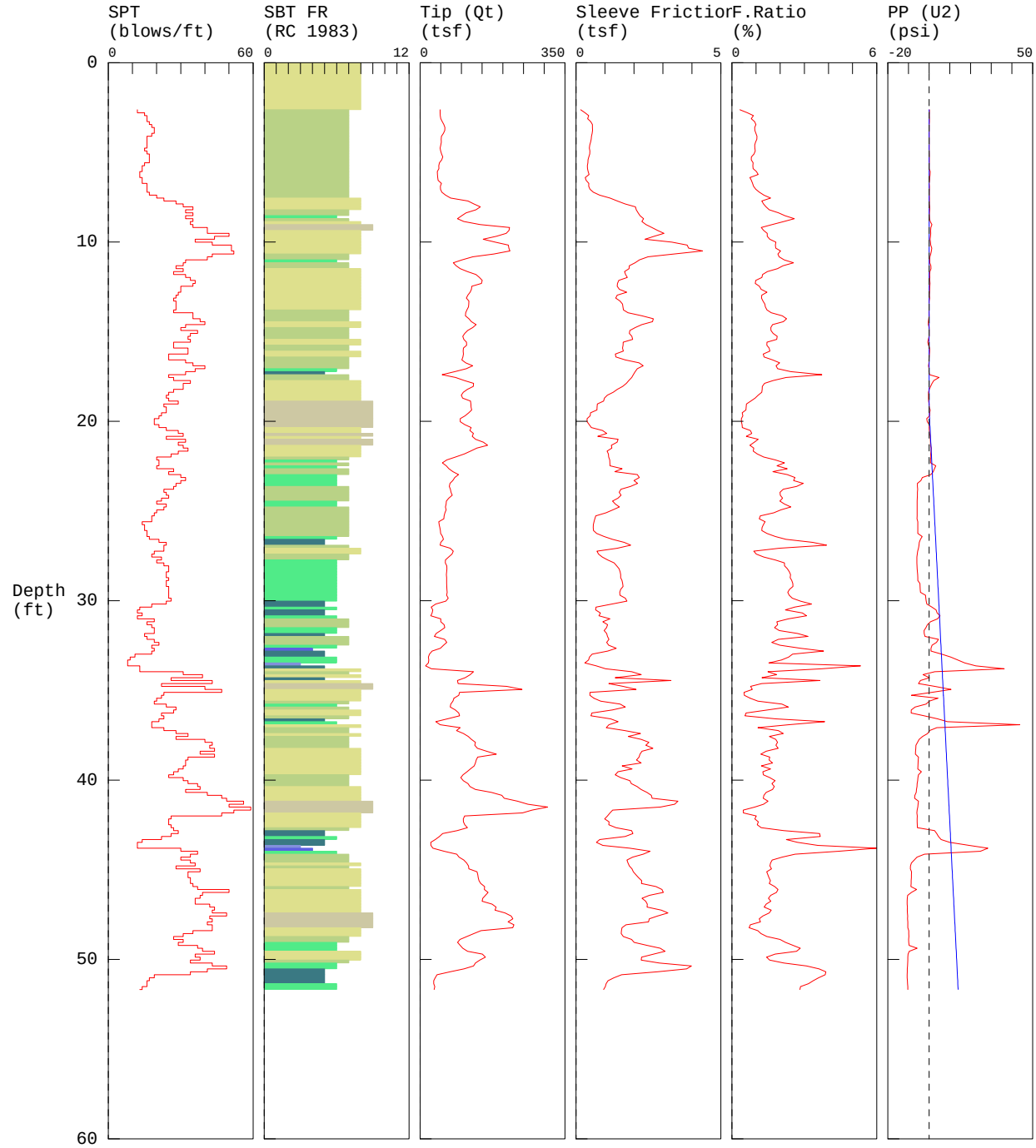
CONE PENETRATION TESTING

Our subsurface exploration program included two CPTs (CPT-1 and CPT-2) to depths between approximately 51.7 and 51.8 feet BGS. Figure 2 shows the locations of the CPTs. The CPTs were conducted in general accordance with ASTM D5778 by Oregon Geotechnical Explorations, Inc. of Salem, Oregon, on May 25, 2022. The results of the CPTs are presented in this appendix.

The CPT is an in-situ test that provides characterizes subsurface stratigraphy. The testing includes advancing a 35.6-millimeter-diameter cone equipped with a load cell and a friction sleeve through the soil profile. The cone is advanced at a rate of approximately 2 centimeters per second. Tip resistance, sleeve friction, and pore pressure at are typically recorded at 0.1-meter intervals. At selected depths, the CPT advancement can be suspended and pore water dissipation rates can be measured. Shear wave velocity of the subsurface soil can be measured, typically on increments of 1 meter to 2 meters.

NV5 / CPT-1 / 11357 SW Leveton Drive Tualatin

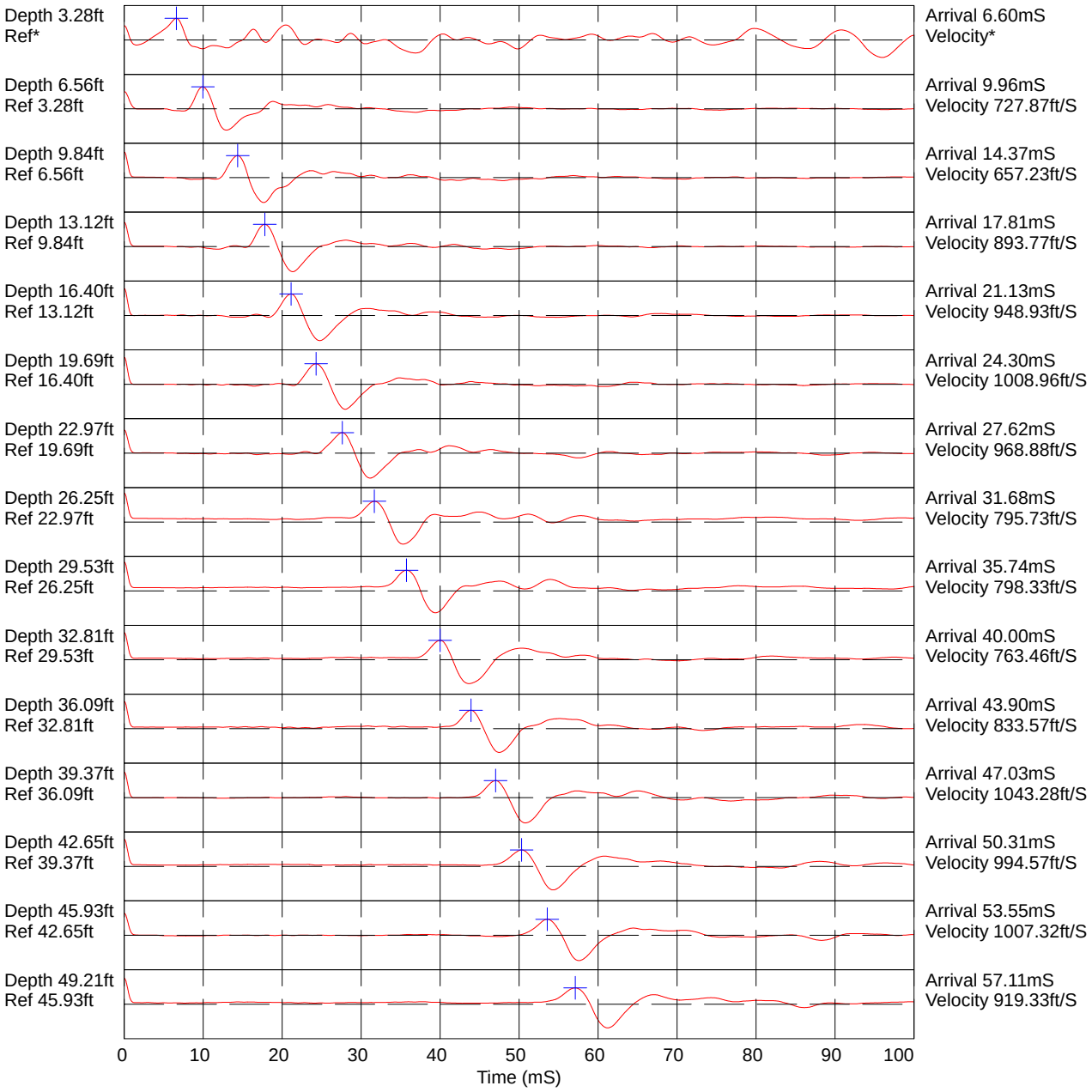
OPERATOR: OGE BAK
CONE ID: DDG1296
HOLE NUMBER: CPT-1
TEST DATE: 5/25/2022 10:56:32 AM
TOTAL DEPTH: 51.673 ft



1 sensitive fine gra
2 organic materia
3 clay
4 silty clay to cl
5 clayey silt to silt
6 sandy silt to claye
7 silty sand to sandy
8 sand to silty sa
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*SBT/SPT CORRELATION: UBC-1983

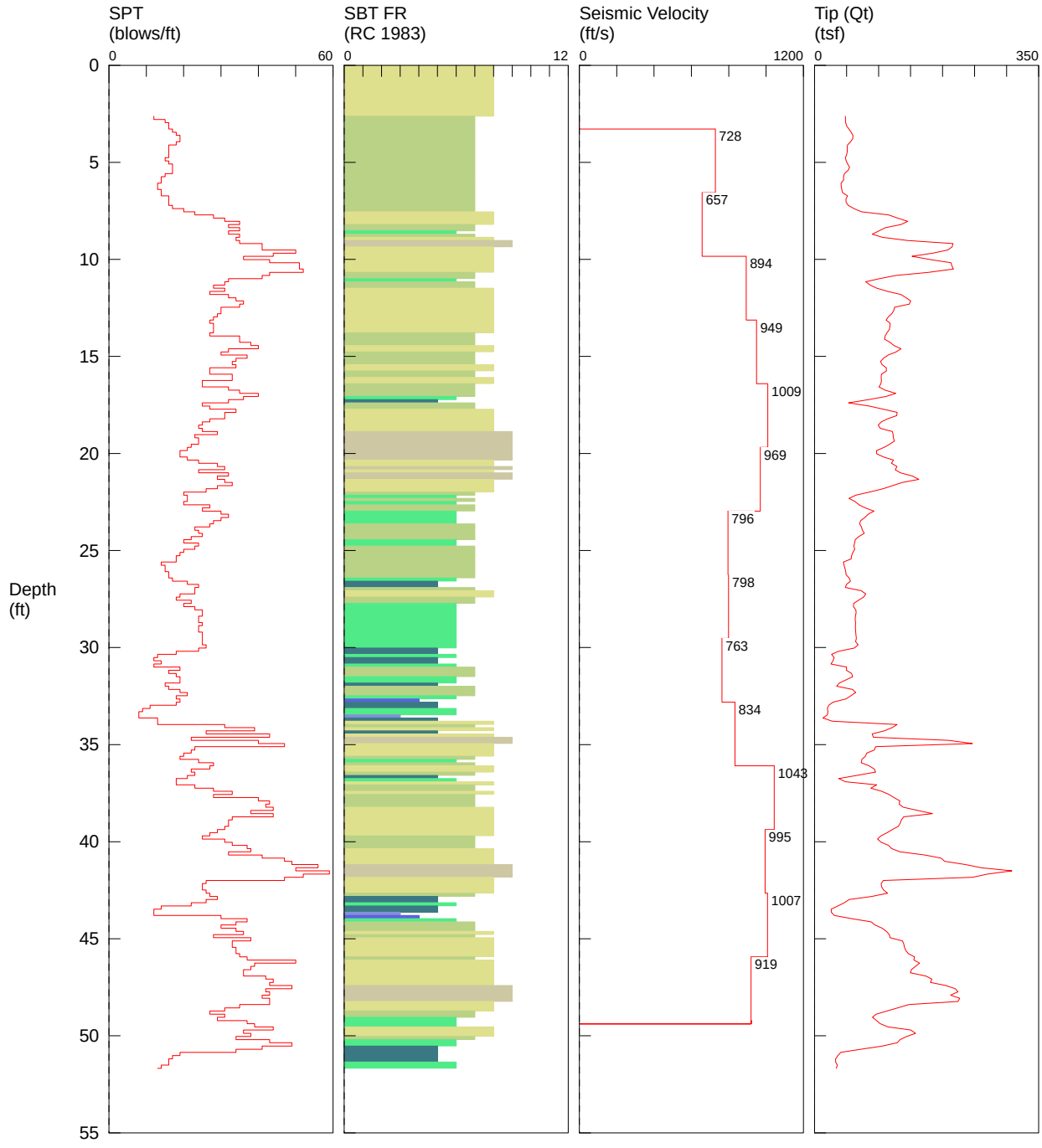
COMMENT: NV5 / CPT-1 / 11357 SW Leveton Drive Tualatin



Hammer to Rod String Distance (ft): 4.27
* = Not Determined

NV5 / CPT-1 / 11357 SW Leveton Drive Tualatin

OPERATOR: OGE BAK
CONE ID: DDG1296
HOLE NUMBER: CPT-1
TEST DATE: 5/25/2022 10:56:32 AM
TOTAL DEPTH: 51.673 ft

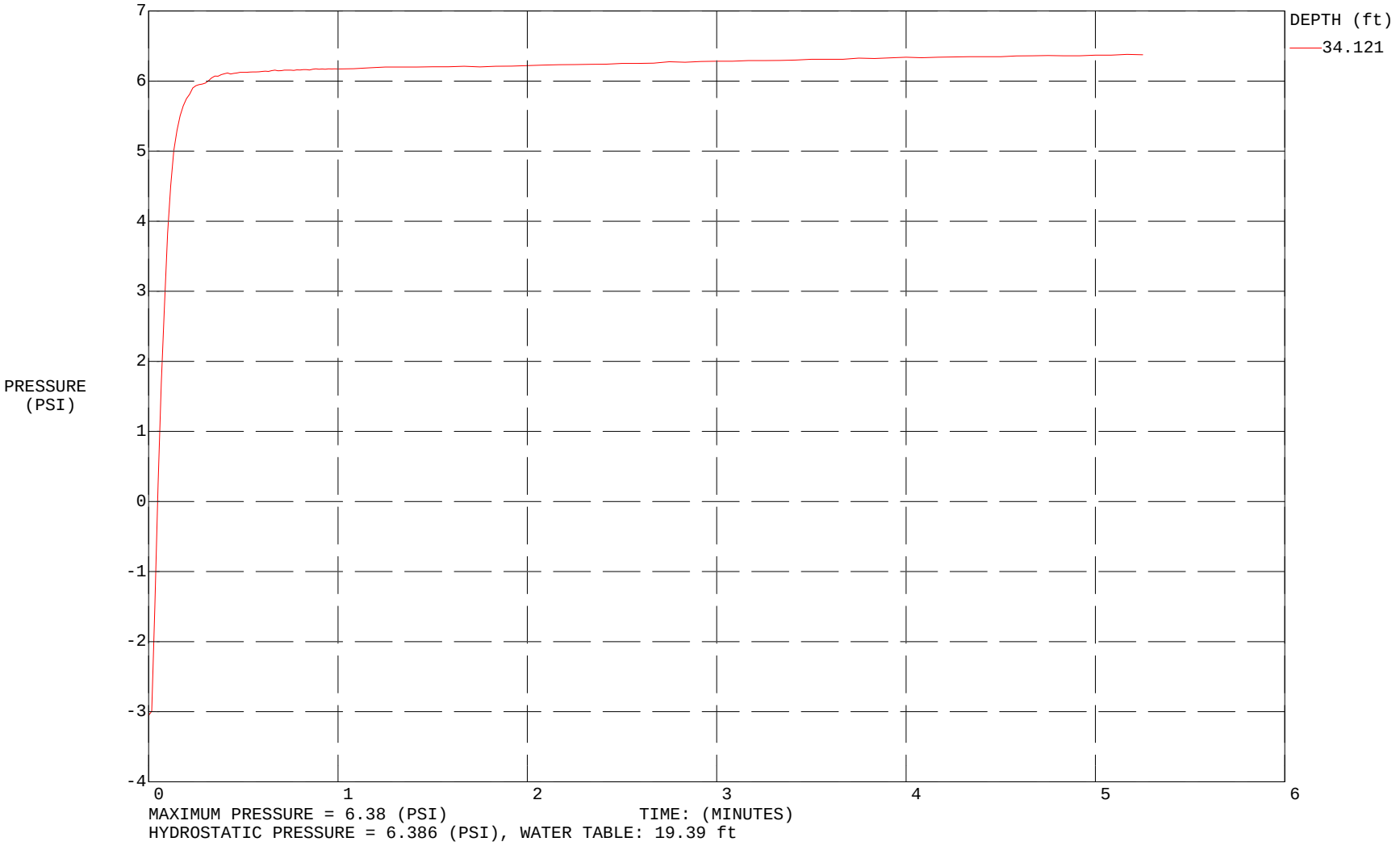


1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*SBT/SPT CORRELATION: UBC-1983

COMMENT: NV5 / CPT-1 / 11357 SW Leveton Drive Tualatin

TEST DATE: 5/25/2022 10:56:32 AM



NV5 / CPT-1 / 11357 SW Leveton Drive Tualatin

OPERATOR: OGE BAK
CONE ID: DDG1296
HOLE NUMBER: CPT-1
TEST DATE: 5/25/2022 10:56:32 AM
TOTAL DEPTH: 51.673 ft

Depth ft	Tip (Qt) (tsf)	Sleeve Friction (Fs) (tsf)	F.Ratio (%)	PP (U2) (psi)	SPT (blows/ft)	Zone	Soil Behavior Type UBC-1983
2.625	48.18	0.1581	0.328	0.050	12	8	sand to silty sand
2.789	48.29	0.3114	0.645	0.053	15	7	silty sand to sandy silt
2.953	48.59	0.4316	0.888	0.031	16	7	silty sand to sandy silt
3.117	49.92	0.3972	0.796	0.070	16	7	silty sand to sandy silt
3.281	53.50	0.5007	0.936	0.095	17	7	silty sand to sandy silt
3.445	57.07	0.5649	0.990	-0.045	18	7	silty sand to sandy silt
3.609	59.83	0.5634	0.942	-0.014	19	7	silty sand to sandy silt
3.773	59.69	0.5669	0.950	-0.061	19	7	silty sand to sandy silt
3.937	56.11	0.5552	0.989	-0.047	18	7	silty sand to sandy silt
4.101	51.53	0.5325	1.033	-0.045	16	7	silty sand to sandy silt
4.265	50.73	0.5225	1.030	-0.006	16	7	silty sand to sandy silt
4.429	50.98	0.4974	0.976	-0.053	16	7	silty sand to sandy silt
4.593	50.02	0.4716	0.943	-0.070	16	7	silty sand to sandy silt
4.757	48.14	0.4573	0.950	-0.056	15	7	silty sand to sandy silt
4.921	49.44	0.4744	0.959	-0.039	16	7	silty sand to sandy silt
5.085	51.73	0.4733	0.915	0.006	17	7	silty sand to sandy silt
5.249	54.60	0.4407	0.807	0.020	17	7	silty sand to sandy silt
5.413	52.20	0.4145	0.794	0.006	17	7	silty sand to sandy silt
5.577	46.56	0.4069	0.874	-0.003	15	7	silty sand to sandy silt
5.741	45.21	0.3905	0.864	-0.017	14	7	silty sand to sandy silt
5.906	45.38	0.3968	0.875	-0.020	14	7	silty sand to sandy silt
6.070	41.31	0.4184	1.013	0.468	13	7	silty sand to sandy silt
6.234	41.55	0.4505	1.084	0.404	13	7	silty sand to sandy silt
6.398	42.48	0.3144	0.740	0.267	14	7	silty sand to sandy silt
6.562	43.59	0.3504	0.804	0.209	14	7	silty sand to sandy silt
6.726	51.53	0.4395	0.853	-0.011	16	7	silty sand to sandy silt
6.890	48.88	0.4367	0.893	0.064	16	7	silty sand to sandy silt
7.054	49.02	0.4835	0.986	0.075	16	7	silty sand to sandy silt
7.218	52.46	0.5965	1.137	0.017	17	7	silty sand to sandy silt
7.382	61.39	0.8112	1.321	0.006	20	7	silty sand to sandy silt
7.546	73.54	1.1727	1.595	0.056	23	7	silty sand to sandy silt
7.710	115.53	1.4263	1.235	0.092	28	8	sand to silty sand
7.874	129.70	1.6922	1.305	0.064	31	8	sand to silty sand
8.038	145.36	2.0506	1.411	0.212	35	8	sand to silty sand
8.202	134.81	2.0771	1.541	0.170	32	8	sand to silty sand
8.366	110.96	2.1435	1.932	0.070	35	7	silty sand to sandy silt
8.530	100.69	2.2064	2.191	0.070	32	7	silty sand to sandy silt
8.694	90.26	2.3300	2.581	0.167	35	6	sandy silt to clayey silt
8.858	105.55	2.2705	2.151	0.454	34	7	silty sand to sandy silt
9.022	144.80	2.4107	1.665	1.335	35	8	sand to silty sand
9.186	216.11	2.6139	1.210	0.772	41	9	sand
9.350	214.69	2.8134	1.310	0.688	41	9	sand
9.514	207.95	3.0319	1.458	0.710	50	8	sand to silty sand
9.678	184.18	2.6968	1.464	0.624	44	8	sand to silty sand

Depth ft	Tip (Qt) (tsf)	Sleeve Friction (Fs) (tsf)	F.Ratio (%)	PP (U2) (psi)	SPT (blows/ft)	Zone	Soil Behavior Type UBC-1983
9.843	152.06	2.3817	1.566	0.396	36	8	sand to silty sand
10.007	181.47	3.3079	1.823	0.535	43	8	sand to silty sand
10.171	213.08	3.8328	1.799	0.722	51	8	sand to silty sand
10.335	214.39	3.8873	1.813	1.254	51	8	sand to silty sand
10.499	216.86	4.3675	2.014	1.050	52	8	sand to silty sand
10.663	177.86	3.3836	1.902	0.708	43	8	sand to silty sand
10.827	127.27	2.4812	1.950	0.320	41	7	silty sand to sandy silt
10.991	101.13	2.1887	2.164	0.273	32	7	silty sand to sandy silt
11.155	79.92	2.0372	2.549	0.312	31	6	sandy silt to clayey silt
11.319	86.64	1.8356	2.119	0.800	28	7	silty sand to sandy silt
11.483	96.95	1.8295	1.887	0.825	31	7	silty sand to sandy silt
11.647	114.01	1.6714	1.466	0.332	27	8	sand to silty sand
11.811	134.72	1.7105	1.270	0.184	32	8	sand to silty sand
11.975	143.15	1.7717	1.238	0.267	34	8	sand to silty sand
12.139	150.01	1.4768	0.984	0.312	36	8	sand to silty sand
12.303	148.01	1.4287	0.965	0.412	35	8	sand to silty sand
12.467	124.87	1.4188	1.136	0.237	30	8	sand to silty sand
12.631	123.78	1.4925	1.206	0.187	30	8	sand to silty sand
12.795	120.53	1.7455	1.448	0.167	29	8	sand to silty sand
12.959	115.09	1.4191	1.233	0.061	28	8	sand to silty sand
13.123	111.75	1.3685	1.225	0.159	27	8	sand to silty sand
13.287	117.89	1.5139	1.284	-0.089	28	8	sand to silty sand
13.451	117.60	1.6036	1.364	-0.128	28	8	sand to silty sand
13.615	116.78	1.6167	1.384	-0.131	28	8	sand to silty sand
13.780	113.00	1.6381	1.450	-0.164	27	8	sand to silty sand
13.944	110.09	1.7928	1.628	-0.162	35	7	silty sand to sandy silt
14.108	109.18	2.2737	2.083	-0.072	35	7	silty sand to sandy silt
14.272	117.75	2.6660	2.264	-0.251	38	7	silty sand to sandy silt
14.436	123.88	2.6377	2.129	-0.482	40	7	silty sand to sandy silt
14.600	134.94	2.2691	1.682	-0.474	32	8	sand to silty sand
14.764	127.13	2.0489	1.612	-0.031	30	8	sand to silty sand
14.928	114.89	1.8542	1.614	-0.098	37	7	silty sand to sandy silt
15.092	107.86	1.8370	1.703	-0.106	34	7	silty sand to sandy silt
15.256	102.89	1.9264	1.872	-0.031	33	7	silty sand to sandy silt
15.420	105.38	1.9562	1.856	-0.457	34	7	silty sand to sandy silt
15.584	111.98	1.6249	1.451	-0.733	27	8	sand to silty sand
15.748	112.23	1.6209	1.444	-0.371	27	8	sand to silty sand
15.912	104.33	1.6028	1.536	0.173	33	7	silty sand to sandy silt
16.076	103.92	1.6349	1.573	0.184	33	7	silty sand to sandy silt
16.240	104.29	1.3551	1.299	0.050	25	8	sand to silty sand
16.404	103.47	1.3737	1.328	-0.067	25	8	sand to silty sand
16.568	100.66	1.6961	1.685	-0.178	32	7	silty sand to sandy silt
16.732	110.05	2.1745	1.976	-0.159	35	7	silty sand to sandy silt
16.896	126.81	2.3145	1.825	-0.351	40	7	silty sand to sandy silt
17.060	111.60	2.1118	1.892	-0.123	36	7	silty sand to sandy silt
17.224	83.93	2.0413	2.432	-0.206	32	6	sandy silt to clayey silt
17.388	53.11	1.9786	3.725	0.117	25	5	clayey silt to silty clay
17.552	85.56	1.9200	2.244	4.675	27	7	silty sand to sandy silt
17.717	106.91	1.8221	1.704	2.209	34	7	silty sand to sandy silt
17.881	128.98	1.7381	1.348	1.365	31	8	sand to silty sand
18.045	128.26	1.6088	1.254	0.652	31	8	sand to silty sand
18.209	114.11	1.4273	1.251	-0.003	27	8	sand to silty sand
18.373	104.08	1.2816	1.231	-0.340	25	8	sand to silty sand

Depth ft	Tip (Qt) (tsf)	Sleeve Friction (Fs) (tsf)	F.Ratio (%)	PP (U2) (psi)	SPT (blows/ft)	Zone	Soil Behavior Type UBC-1983
18.537	99.21	1.0759	1.084	-0.421	24	8	sand to silty sand
18.701	102.46	0.9791	0.956	-0.379	25	8	sand to silty sand
18.865	121.56	0.9493	0.781	-0.309	29	8	sand to silty sand
19.029	122.59	0.7314	0.597	-0.089	23	9	sand
19.193	122.95	0.7260	0.591	-0.045	24	9	sand
19.357	124.67	0.7201	0.578	0.443	24	9	sand
19.521	117.28	0.4987	0.425	0.237	22	9	sand
19.685	108.53	0.4879	0.450	0.148	21	9	sand
19.849	96.90	0.3779	0.390	-1.223	19	9	sand
20.013	96.83	0.3788	0.391	-0.922	19	9	sand
20.177	107.70	0.4524	0.420	0.008	21	9	sand
20.341	123.17	0.5296	0.430	-0.036	24	9	sand
20.505	119.96	0.9123	0.761	0.011	29	8	sand to silty sand
20.669	128.82	1.0544	0.819	0.109	31	8	sand to silty sand
20.833	125.97	0.7485	0.594	0.496	24	9	sand
20.997	134.06	1.4543	1.085	0.507	32	8	sand to silty sand
21.161	152.67	1.4137	0.926	0.574	29	9	sand
21.325	162.87	1.2170	0.747	0.577	31	9	sand
21.490	137.09	1.2340	0.900	1.011	33	8	sand to silty sand
21.654	121.68	1.0708	0.880	0.866	29	8	sand to silty sand
21.818	106.94	1.1160	1.044	0.736	26	8	sand to silty sand
21.982	85.55	1.1225	1.312	0.797	20	8	sand to silty sand
22.146	64.46	1.1603	1.800	0.607	21	7	silty sand to sandy silt
22.310	53.70	1.1665	2.172	0.644	21	6	sandy silt to clayey silt
22.474	62.94	1.1724	1.863	3.126	20	7	silty sand to sandy silt
22.638	69.48	1.5909	2.290	2.538	27	6	sandy silt to clayey silt
22.802	79.05	1.3378	1.692	1.975	25	7	silty sand to sandy silt
22.966	92.66	2.1184	2.286	0.761	30	7	silty sand to sandy silt
23.130	83.82	2.1871	2.609	-3.363	32	6	sandy silt to clayey silt
23.294	78.52	2.0033	2.551	-4.034	30	6	sandy silt to clayey silt
23.458	71.90	2.1243	2.955	-5.748	28	6	sandy silt to clayey silt
23.622	70.34	1.8801	2.673	-5.723	27	6	sandy silt to clayey silt
23.786	73.07	1.5488	2.119	-5.636	23	7	silty sand to sandy silt
23.950	74.73	1.4883	1.992	-5.725	24	7	silty sand to sandy silt
24.114	77.57	1.5518	2.000	-5.734	25	7	silty sand to sandy silt
24.278	69.16	1.4492	2.095	-5.781	22	7	silty sand to sandy silt
24.442	63.44	1.2575	1.982	-5.901	20	7	silty sand to sandy silt
24.606	62.51	1.3588	2.174	-5.834	24	6	sandy silt to clayey silt
24.770	61.30	1.4946	2.438	-5.831	23	6	sandy silt to clayey silt
24.934	62.68	1.2693	2.025	-5.831	20	7	silty sand to sandy silt
25.098	59.80	1.0339	1.729	-5.890	19	7	silty sand to sandy silt
25.262	57.81	0.6788	1.174	-5.873	18	7	silty sand to sandy silt
25.427	57.11	0.6469	1.133	-5.923	18	7	silty sand to sandy silt
25.591	45.09	0.6187	1.372	-5.483	14	7	silty sand to sandy silt
25.755	45.99	0.5980	1.300	-5.500	15	7	silty sand to sandy silt
25.919	47.41	0.5908	1.246	-5.516	15	7	silty sand to sandy silt
26.083	48.74	0.6002	1.232	-5.525	16	7	silty sand to sandy silt
26.247	49.26	0.7138	1.449	-5.533	16	7	silty sand to sandy silt
26.411	53.93	0.9693	1.797	-3.388	17	7	silty sand to sandy silt
26.575	56.09	1.2550	2.237	-4.277	21	6	sandy silt to clayey silt
26.739	49.72	1.6645	3.348	-4.786	24	5	clayey silt to silty clay
26.903	48.15	1.8866	3.918	-4.959	23	5	clayey silt to silty clay
27.067	72.74	1.4272	1.962	-5.174	23	7	silty sand to sandy silt

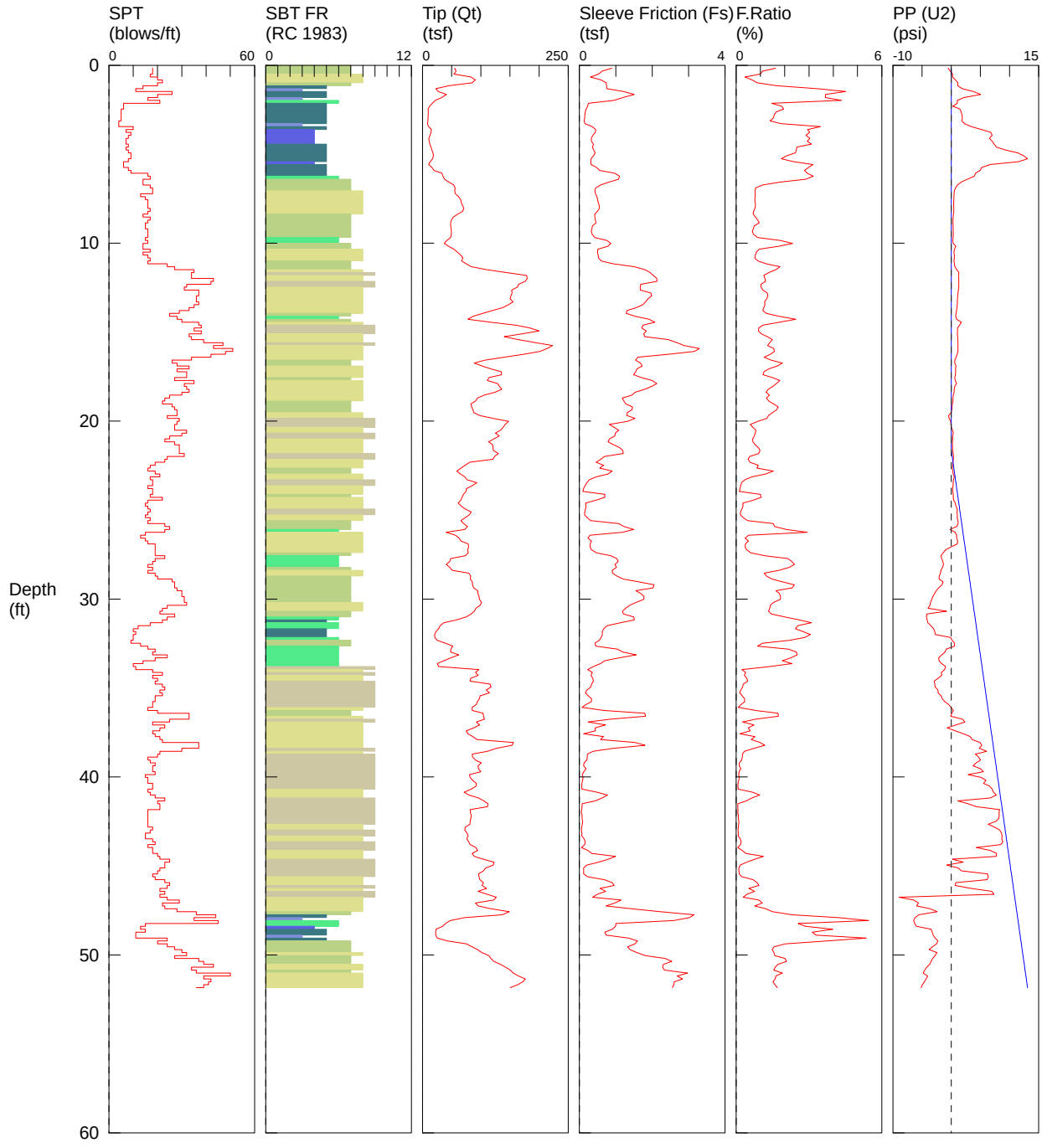
Depth ft	Tip (Qt) (tsf)	Sleeve Friction (Fs) (tsf)	F.Ratio (%)	PP (U2) (psi)	SPT (blows/ft)	Zone	Soil Behavior Type UBC-1983
27.231	79.90	0.7221	0.904	-5.600	19	8	sand to silty sand
27.395	76.66	0.7737	1.009	-5.781	18	8	sand to silty sand
27.559	68.62	0.9033	1.316	-5.971	22	7	silty sand to sandy silt
27.723	61.11	1.0945	1.791	-6.004	20	7	silty sand to sandy silt
27.887	60.66	1.3170	2.171	-5.979	23	6	sandy silt to clayey silt
28.051	64.35	1.4048	2.183	-5.912	25	6	sandy silt to clayey silt
28.215	64.73	1.4852	2.294	-5.809	25	6	sandy silt to clayey silt
28.379	63.91	1.5217	2.381	-5.714	24	6	sandy silt to clayey silt
28.543	63.42	1.5411	2.430	-5.611	24	6	sandy silt to clayey silt
28.707	63.99	1.5429	2.411	-5.536	25	6	sandy silt to clayey silt
28.871	63.87	1.5817	2.476	-5.511	24	6	sandy silt to clayey silt
29.035	63.89	1.6123	2.524	-4.491	24	6	sandy silt to clayey silt
29.199	64.24	1.6214	2.524	-4.455	25	6	sandy silt to clayey silt
29.364	64.62	1.5410	2.385	-4.405	25	6	sandy silt to clayey silt
29.528	65.25	1.5087	2.312	-4.268	25	6	sandy silt to clayey silt
29.692	64.00	1.5197	2.375	-1.819	25	6	sandy silt to clayey silt
29.856	67.93	1.6977	2.499	-1.691	26	6	sandy silt to clayey silt
30.020	62.04	1.7570	2.832	-1.491	24	6	sandy silt to clayey silt
30.184	37.47	1.2339	3.293	-1.156	18	5	clayey silt to silty clay
30.348	26.59	0.6905	2.597	1.326	13	5	clayey silt to silty clay
30.512	30.48	0.6748	2.214	3.318	12	6	sandy silt to clayey silt
30.676	28.82	0.8403	2.916	3.764	14	5	clayey silt to silty clay
30.840	25.54	0.7895	3.092	5.224	12	5	clayey silt to silty clay
31.004	49.84	1.1648	2.337	3.998	19	6	sandy silt to clayey silt
31.168	49.70	0.9234	1.858	0.596	16	7	silty sand to sandy silt
31.332	57.73	1.0909	1.890	-0.900	18	7	silty sand to sandy silt
31.496	59.40	1.0501	1.768	-1.588	19	7	silty sand to sandy silt
31.660	49.44	0.9692	1.960	-2.482	19	6	sandy silt to clayey silt
31.824	38.74	1.0535	2.720	-2.455	15	6	sandy silt to clayey silt
31.988	34.38	1.0834	3.151	-2.090	16	5	clayey silt to silty clay
32.152	59.07	1.1337	1.919	4.466	19	7	silty sand to sandy silt
32.316	64.25	1.0573	1.646	3.460	21	7	silty sand to sandy silt
32.480	56.74	1.1266	1.986	1.351	18	7	silty sand to sandy silt
32.644	48.83	1.3894	2.845	0.805	19	6	sandy silt to clayey silt
32.808	28.76	1.0914	3.794	0.841	18	4	silty clay to clay
32.972	22.21	0.5574	2.509	5.968	11	5	clayey silt to silty clay
33.136	19.77	0.4646	2.351	10.384	9	5	clayey silt to silty clay
33.301	20.92	0.4295	2.053	13.772	8	6	sandy silt to clayey silt
33.465	19.75	0.3018	1.528	17.157	8	6	sandy silt to clayey silt
33.629	13.12	0.6988	5.328	22.537	13	3	clay
33.793	27.37	1.0181	3.719	36.275	13	5	clayey silt to silty clay
33.957	128.88	1.9206	1.490	2.655	31	8	sand to silty sand
34.121	121.17	2.2492	1.856	-3.020	39	7	silty sand to sandy silt
34.285	108.82	1.3482	1.239	0.134	26	8	sand to silty sand
34.449	89.94	3.2797	3.647	-4.285	43	5	clayey silt to silty clay
34.613	91.72	1.1320	1.234	-5.260	22	8	sand to silty sand
34.777	209.47	1.6223	0.774	2.641	40	9	sand
34.941	246.31	2.0735	0.842	10.618	47	9	sand
35.105	95.38	0.4779	0.501	1.276	23	8	sand to silty sand
35.269	93.26	0.4745	0.509	-8.626	22	8	sand to silty sand
35.433	81.55	0.6151	0.754	4.207	20	8	sand to silty sand
35.597	79.18	0.8522	1.076	0.008	19	8	sand to silty sand
35.761	73.73	1.5235	2.066	-1.552	24	7	silty sand to sandy silt

Depth ft	Tip (Qt) (tsf)	Sleeve Friction (Fs) (tsf)	F.Ratio (%)	PP (U2) (psi)	SPT (blows/ft)	Zone	Soil Behavior Type UBC-1983
35.925	72.80	1.6970	2.331	-6.837	28	6	sandy silt to clayey silt
36.089	84.89	1.2538	1.477	-8.681	27	7	silty sand to sandy silt
36.253	93.32	0.5455	0.585	-8.723	22	8	sand to silty sand
36.417	95.25	0.5149	0.541	-2.471	23	8	sand to silty sand
36.581	65.56	1.1939	1.821	4.026	21	7	silty sand to sandy silt
36.745	37.78	1.4522	3.844	8.787	18	5	clayey silt to silty clay
36.909	48.16	1.1335	2.353	43.728	18	6	sandy silt to clayey silt
37.073	96.75	1.0413	1.076	3.686	23	8	sand to silty sand
37.238	87.68	1.6833	1.920	0.114	28	7	silty sand to sandy silt
37.402	104.61	2.2241	2.126	-0.783	33	7	silty sand to sandy silt
37.566	116.31	1.8040	1.551	-3.215	28	8	sand to silty sand
37.730	123.96	2.2457	1.812	-4.842	40	7	silty sand to sandy silt
37.894	133.31	2.5149	1.886	-5.664	43	7	silty sand to sandy silt
38.058	132.13	2.4094	1.823	-6.427	42	7	silty sand to sandy silt
38.222	138.44	2.6526	1.916	-6.547	44	7	silty sand to sandy silt
38.386	160.63	2.2735	1.415	-6.625	38	8	sand to silty sand
38.550	184.02	2.2029	1.197	-6.678	44	8	sand to silty sand
38.714	139.16	2.1756	1.563	-5.241	33	8	sand to silty sand
38.878	135.60	2.0857	1.538	-5.324	32	8	sand to silty sand
39.042	133.61	2.2460	1.681	-5.402	32	8	sand to silty sand
39.206	130.67	1.5928	1.219	-5.461	31	8	sand to silty sand
39.370	121.37	1.9375	1.596	-5.550	29	8	sand to silty sand
39.534	113.40	1.4506	1.279	-3.781	27	8	sand to silty sand
39.698	103.63	1.3497	1.302	-5.163	25	8	sand to silty sand
39.862	98.27	1.5395	1.567	-5.458	31	7	silty sand to sandy silt
40.026	104.05	1.8561	1.784	-5.633	33	7	silty sand to sandy silt
40.190	115.45	1.9111	1.655	-5.815	37	7	silty sand to sandy silt
40.354	120.18	2.1060	1.752	-5.962	38	7	silty sand to sandy silt
40.518	133.56	2.2418	1.678	-6.146	32	8	sand to silty sand
40.682	172.34	2.4462	1.419	-6.294	41	8	sand to silty sand
40.846	197.26	2.6014	1.319	-6.951	47	8	sand to silty sand
41.011	203.22	2.6273	1.293	-7.057	49	8	sand to silty sand
41.175	235.35	3.5213	1.496	-5.210	56	8	sand to silty sand
41.339	260.34	3.4033	1.307	-5.394	50	9	sand
41.503	308.10	2.9156	0.946	-5.539	59	9	sand
41.667	270.49	1.2611	0.466	-5.876	52	9	sand
41.831	247.07	1.1697	0.473	-5.990	47	9	sand
41.995	107.36	1.0840	1.010	-5.773	26	8	sand to silty sand
42.159	104.05	0.9883	0.950	-5.834	25	8	sand to silty sand
42.323	104.59	1.1396	1.090	-5.840	25	8	sand to silty sand
42.487	107.63	1.1312	1.051	-5.795	26	8	sand to silty sand
42.651	114.14	1.3811	1.210	-5.742	27	8	sand to silty sand
42.815	89.38	1.9169	2.145	2.580	29	7	silty sand to sandy silt
42.979	54.12	1.9640	3.629	3.614	26	5	clayey silt to silty clay
43.143	46.38	1.6955	3.656	4.413	22	5	clayey silt to silty clay
43.307	36.37	0.8177	2.248	5.723	14	6	sandy silt to clayey silt
43.471	25.85	0.7020	2.716	9.857	12	5	clayey silt to silty clay
43.635	25.98	0.9238	3.556	19.369	12	5	clayey silt to silty clay
43.799	30.94	1.8546	5.993	28.360	30	3	clay
43.963	57.95	2.5586	4.415	24.743	37	4	silty clay to clay
44.127	88.54	2.3150	2.615	-2.273	34	6	sandy silt to clayey silt
44.291	93.97	1.9563	2.082	-5.932	30	7	silty sand to sandy silt
44.455	105.43	1.7571	1.667	-7.302	34	7	silty sand to sandy silt

Depth ft	Tip (Qt) (tsf)	Sleeve Friction (Fs) (tsf)	F.Ratio (%)	PP (U2) (psi)	SPT (blows/ft)	Zone	Soil Behavior Type UBC-1983
44.619	112.20	1.7912	1.596	-8.623	36	7	silty sand to sandy silt
44.783	116.75	1.8353	1.572	-9.032	28	8	sand to silty sand
44.948	117.71	1.9279	1.638	-9.166	38	7	silty sand to sandy silt
45.112	137.34	1.9749	1.438	-8.570	33	8	sand to silty sand
45.276	139.34	2.0709	1.486	-8.615	33	8	sand to silty sand
45.440	140.47	2.1549	1.534	-8.642	34	8	sand to silty sand
45.604	142.17	2.2649	1.593	-8.715	34	8	sand to silty sand
45.768	146.53	2.2586	1.541	-8.787	35	8	sand to silty sand
45.932	155.73	2.7586	1.771	-8.879	37	8	sand to silty sand
46.096	155.08	2.9630	1.911	-6.102	50	7	silty sand to sandy silt
46.260	163.94	3.0154	1.839	-8.642	39	8	sand to silty sand
46.424	157.58	2.5291	1.605	-10.453	38	8	sand to silty sand
46.588	151.15	2.2791	1.508	-10.604	36	8	sand to silty sand
46.752	149.54	2.4050	1.608	-10.665	36	8	sand to silty sand
46.916	173.68	2.4614	1.417	-10.671	42	8	sand to silty sand
47.080	183.21	2.4483	1.336	-10.545	44	8	sand to silty sand
47.244	181.02	2.9451	1.627	-10.593	43	8	sand to silty sand
47.408	205.06	3.1749	1.548	-10.568	49	8	sand to silty sand
47.572	219.73	2.8153	1.281	-10.470	42	9	sand
47.736	224.06	2.5262	1.127	-10.492	43	9	sand
47.900	212.33	2.5014	1.178	-10.348	41	9	sand
48.064	226.60	1.7230	0.760	-10.328	43	9	sand
48.228	223.77	1.5844	0.708	-10.414	43	9	sand
48.392	147.19	1.5689	1.066	-9.913	35	8	sand to silty sand
48.556	129.69	1.5567	1.200	-9.891	31	8	sand to silty sand
48.720	113.12	1.6353	1.446	-9.866	27	8	sand to silty sand
48.885	96.13	1.9158	1.993	-9.946	31	7	silty sand to sandy silt
49.049	90.38	2.0046	2.218	-9.882	29	7	silty sand to sandy silt
49.213	96.88	2.4593	2.538	-9.704	37	6	sandy silt to clayey silt
49.377	102.67	2.9050	2.829	-5.826	39	6	sandy silt to clayey silt
49.541	114.58	3.0703	2.680	-9.657	44	6	sandy silt to clayey silt
49.705	150.24	2.6807	1.784	-10.253	36	8	sand to silty sand
49.869	157.56	2.2637	1.437	-10.367	38	8	sand to silty sand
50.033	144.01	2.2455	1.559	-10.375	34	8	sand to silty sand
50.197	133.54	2.8754	2.153	-10.434	43	7	silty sand to sandy silt
50.361	129.17	3.9855	3.086	-10.517	49	6	sandy silt to clayey silt
50.525	105.81	3.8151	3.606	-10.598	41	6	sandy silt to clayey silt
50.689	71.88	2.7983	3.893	-10.629	34	5	clayey silt to silty clay
50.853	40.69	1.5715	3.862	-10.712	19	5	clayey silt to silty clay
51.017	36.33	1.3024	3.584	-10.699	17	5	clayey silt to silty clay
51.181	32.76	1.1034	3.368	-10.573	16	5	clayey silt to silty clay
51.345	32.80	1.0392	3.168	-10.473	16	5	clayey silt to silty clay
51.509	35.56	1.0103	2.841	-10.392	14	6	sandy silt to clayey silt
51.673	33.78	0.9503	2.813	-10.325	13	6	sandy silt to clayey silt

NV5 / CPT-2 / 11357 SW Leveton Drive Tualatin

OPERATOR: OGE BAK
CONE ID: DDG1296
HOLE NUMBER: CPT-2
TEST DATE: 5/25/2022 8:28:59 AM
TOTAL DEPTH: 51.837 ft

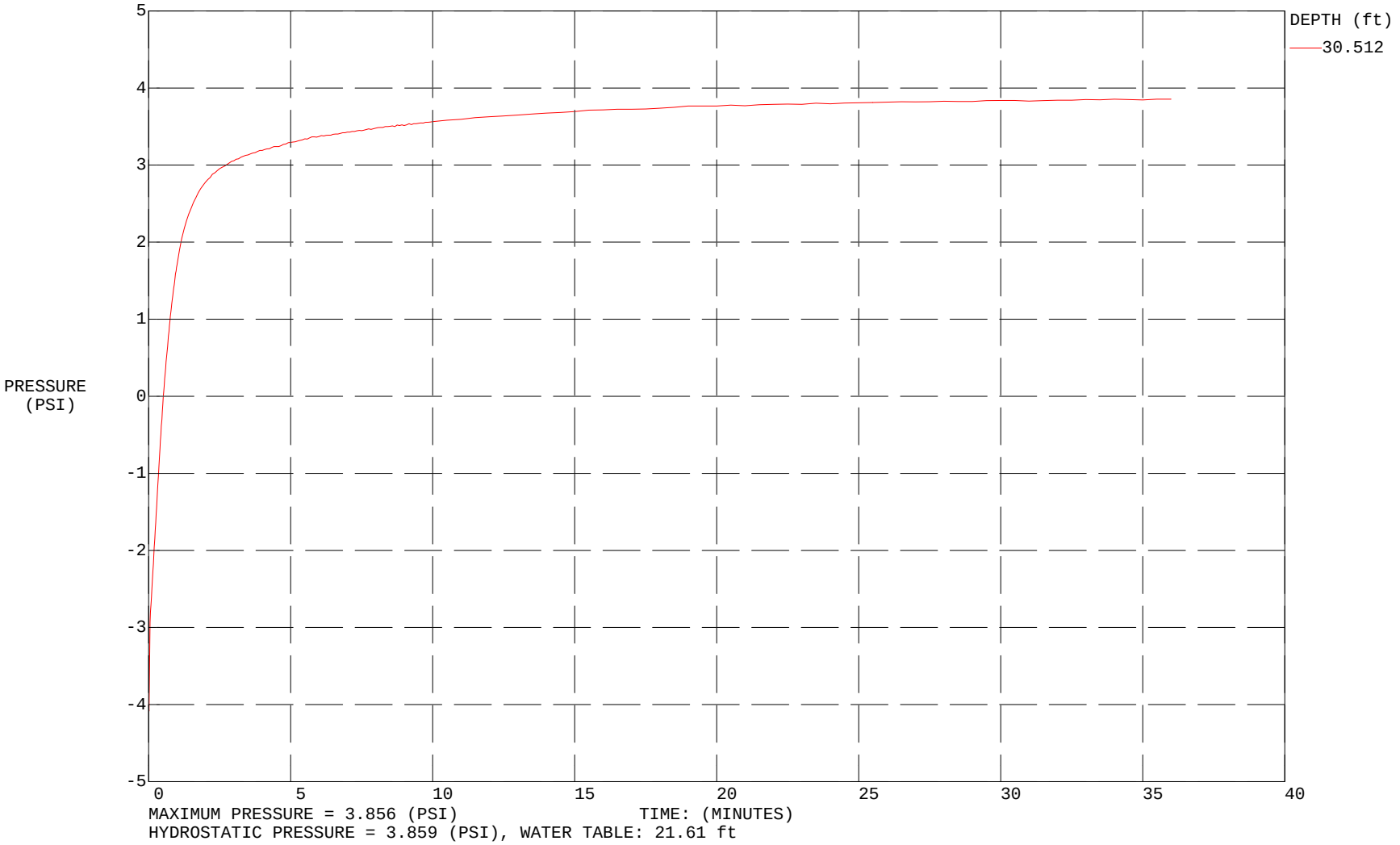


1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

*SBT/SPT CORRELATION: UBC-1983

COMMENT: NV5 / CPT-2 / 11357 SW Leveton Drive Tualatin

TEST DATE: 5/25/2022 8:28:59 AM



MAXIMUM PRESSURE = 3.856 (PSI)
HYDROSTATIC PRESSURE = 3.859 (PSI), WATER TABLE: 21.61 ft

NV5 / CPT-2 / 11357 SW Leveton Drive Tualatin

OPERATOR: OGE BAK
CONE ID: DDG1296
HOLE NUMBER: CPT-2
TEST DATE: 5/25/2022 8:28:59 AM
TOTAL DEPTH: 51.837 ft

Depth ft	Tip (Qt) (tsf)	Sleeve Friction (Fs) (tsf)	F.Ratio (%)	PP (U2) (psi)	SPT (blows/ft)	Zone	Soil Behavior Type UBC-1983
0.164	55.00	0.8905	1.619	-0.538	18	7	silty sand to sandy silt
0.328	57.29	0.6209	1.084	-0.164	18	7	silty sand to sandy silt
0.492	53.74	0.5283	0.983	0.215	17	7	silty sand to sandy silt
0.656	83.27	0.3044	0.366	0.231	20	8	sand to silty sand
0.820	90.45	0.5991	0.662	0.730	22	8	sand to silty sand
0.984	85.21	0.7346	0.862	1.145	20	8	sand to silty sand
1.148	44.63	0.7469	1.673	1.109	14	7	silty sand to sandy silt
1.312	22.60	0.7540	3.337	1.883	11	5	clayey silt to silty clay
1.476	26.85	1.2101	4.507	3.811	26	3	clay
1.640	40.81	1.5016	3.679	5.040	20	5	clayey silt to silty clay
1.804	32.71	1.1993	3.666	2.182	16	5	clayey silt to silty clay
1.969	22.10	0.9561	4.327	1.059	21	3	clay
2.133	16.77	0.2451	1.462	1.039	6	6	sandy silt to clayey silt
2.297	12.16	0.2276	1.871	0.259	6	5	clayey silt to silty clay
2.461	9.40	0.1835	1.952	1.502	5	5	clayey silt to silty clay
2.625	9.79	0.1606	1.640	1.691	5	5	clayey silt to silty clay
2.789	9.61	0.1502	1.563	1.836	5	5	clayey silt to silty clay
2.953	9.41	0.1440	1.530	1.897	5	5	clayey silt to silty clay
3.117	9.29	0.1295	1.394	1.814	4	5	clayey silt to silty clay
3.281	8.31	0.1531	1.841	2.251	4	5	clayey silt to silty clay
3.445	10.12	0.3507	3.466	3.424	10	3	clay
3.609	15.22	0.4474	2.940	5.199	7	5	clayey silt to silty clay
3.773	14.46	0.4375	3.026	6.770	9	4	silty clay to clay
3.937	12.81	0.3683	2.875	7.026	8	4	silty clay to clay
4.101	10.71	0.3250	3.035	6.550	7	4	silty clay to clay
4.265	11.17	0.3275	2.931	7.032	7	4	silty clay to clay
4.429	12.33	0.3819	3.096	7.352	8	4	silty clay to clay
4.593	14.30	0.3577	2.501	7.759	7	5	clayey silt to silty clay
4.757	15.78	0.3905	2.474	9.244	8	5	clayey silt to silty clay
4.921	17.77	0.4337	2.441	11.420	9	5	clayey silt to silty clay
5.085	18.64	0.3868	2.075	12.457	9	5	clayey silt to silty clay
5.249	17.22	0.3197	1.857	13.086	8	5	clayey silt to silty clay
5.413	13.07	0.3101	2.373	11.526	6	5	clayey silt to silty clay
5.577	10.07	0.3185	3.162	6.701	6	4	silty clay to clay
5.741	15.83	0.4713	2.978	5.227	8	5	clayey silt to silty clay
5.906	19.62	0.5517	2.812	4.956	9	5	clayey silt to silty clay
6.070	33.29	0.9739	2.926	4.165	16	5	clayey silt to silty clay
6.234	34.80	1.1041	3.172	3.965	17	5	clayey silt to silty clay
6.398	37.59	1.0734	2.855	2.753	14	6	sandy silt to clayey silt
6.562	45.09	0.8169	1.812	1.730	14	7	silty sand to sandy silt
6.726	53.46	0.5781	1.081	1.067	17	7	silty sand to sandy silt
6.890	55.87	0.4454	0.797	0.733	18	7	silty sand to sandy silt
7.054	55.09	0.4272	0.775	0.518	18	7	silty sand to sandy silt
7.218	56.35	0.4417	0.784	0.493	13	8	sand to silty sand

Depth ft	Tip (Qt) (tsf)	Sleeve Friction (Fs) (tsf)	F.Ratio (%)	PP (U2) (psi)	SPT (blows/ft)	Zone	Soil Behavior Type UBC-1983
7.382	61.74	0.4801	0.778	0.449	15	8	sand to silty sand
7.546	65.61	0.5014	0.764	0.432	16	8	sand to silty sand
7.710	66.34	0.5195	0.783	0.418	16	8	sand to silty sand
7.874	68.50	0.5428	0.792	0.418	16	8	sand to silty sand
8.038	70.81	0.5481	0.774	0.432	17	8	sand to silty sand
8.202	68.72	0.4930	0.717	0.429	16	8	sand to silty sand
8.366	60.42	0.4233	0.700	0.371	14	8	sand to silty sand
8.530	52.87	0.4189	0.792	0.312	17	7	silty sand to sandy silt
8.694	49.42	0.4393	0.889	0.298	16	7	silty sand to sandy silt
8.858	47.98	0.4547	0.948	0.301	15	7	silty sand to sandy silt
9.022	48.34	0.3570	0.739	0.315	15	7	silty sand to sandy silt
9.186	48.86	0.3447	0.705	0.318	16	7	silty sand to sandy silt
9.350	49.47	0.3266	0.660	0.345	16	7	silty sand to sandy silt
9.514	49.53	0.3569	0.721	0.332	16	7	silty sand to sandy silt
9.678	47.90	0.4231	0.883	0.323	15	7	silty sand to sandy silt
9.843	41.61	0.7567	1.818	0.265	16	6	sandy silt to clayey silt
10.007	37.12	0.8621	2.323	0.354	14	6	sandy silt to clayey silt
10.171	44.57	0.7830	1.757	0.766	14	7	silty sand to sandy silt
10.335	53.77	0.5079	0.945	0.543	17	7	silty sand to sandy silt
10.499	59.75	0.4976	0.833	0.462	14	8	sand to silty sand
10.663	65.07	0.5146	0.791	0.521	16	8	sand to silty sand
10.827	69.29	0.5249	0.758	0.524	17	8	sand to silty sand
10.991	67.02	0.5983	0.893	0.476	16	8	sand to silty sand
11.155	75.01	0.9288	1.238	0.535	24	7	silty sand to sandy silt
11.319	83.83	1.5121	1.804	0.613	27	7	silty sand to sandy silt
11.483	110.00	1.7986	1.635	0.942	35	7	silty sand to sandy silt
11.647	143.06	1.9385	1.355	1.318	34	8	sand to silty sand
11.811	178.75	2.0298	1.136	1.243	34	9	sand
11.975	179.61	2.1255	1.183	1.284	43	8	sand to silty sand
12.139	176.29	2.1274	1.207	1.296	42	8	sand to silty sand
12.303	164.79	1.6850	1.023	1.301	32	9	sand
12.467	162.75	1.6678	1.025	1.287	31	9	sand
12.631	152.87	1.6736	1.095	1.218	37	8	sand to silty sand
12.795	153.50	1.9646	1.280	1.148	37	8	sand to silty sand
12.959	151.93	1.9840	1.306	1.128	36	8	sand to silty sand
13.123	150.08	1.8871	1.257	1.064	36	8	sand to silty sand
13.287	155.31	1.8154	1.169	1.045	37	8	sand to silty sand
13.451	147.49	1.7435	1.182	1.039	35	8	sand to silty sand
13.615	137.87	1.5669	1.137	0.989	33	8	sand to silty sand
13.780	119.41	1.3061	1.094	0.892	29	8	sand to silty sand
13.944	103.57	1.2886	1.244	0.830	25	8	sand to silty sand
14.108	86.47	1.5329	1.773	0.752	28	7	silty sand to sandy silt
14.272	77.89	1.9151	2.459	0.928	30	6	sandy silt to clayey silt
14.436	116.41	2.0692	1.778	1.708	37	7	silty sand to sandy silt
14.600	159.77	1.7470	1.093	1.432	38	8	sand to silty sand
14.764	184.26	1.7124	0.929	1.084	35	9	sand
14.928	199.80	1.8339	0.918	1.081	38	9	sand
15.092	170.39	1.7624	1.034	1.022	33	9	sand
15.256	140.17	1.7977	1.283	1.095	34	8	sand to silty sand
15.420	164.40	2.4427	1.486	1.112	39	8	sand to silty sand
15.584	194.48	2.6797	1.378	1.151	47	8	sand to silty sand
15.748	223.10	2.8737	1.288	1.167	43	9	sand
15.912	213.78	3.2920	1.540	1.165	51	8	sand to silty sand

Depth ft	Tip (Qt) (tsf)	Sleeve Friction (Fs) (tsf)	F.Ratio (%)	PP (U2) (psi)	SPT (blows/ft)	Zone	Soil Behavior Type UBC-1983
16.076	201.59	3.1651	1.570	1.145	48	8	sand to silty sand
16.240	174.31	2.4603	1.411	1.009	42	8	sand to silty sand
16.404	140.41	1.6069	1.144	0.830	34	8	sand to silty sand
16.568	107.62	1.5406	1.432	0.619	26	8	sand to silty sand
16.732	88.36	1.6791	1.900	0.605	28	7	silty sand to sandy silt
16.896	102.11	1.7247	1.689	0.797	33	7	silty sand to sandy silt
17.060	116.75	1.5797	1.353	0.727	28	8	sand to silty sand
17.224	135.23	1.5432	1.141	0.749	32	8	sand to silty sand
17.388	135.65	1.4908	1.099	0.708	32	8	sand to silty sand
17.552	114.11	1.6980	1.488	0.599	27	8	sand to silty sand
17.717	111.06	1.9970	1.798	0.688	35	7	silty sand to sandy silt
17.881	128.70	2.1246	1.651	0.883	31	8	sand to silty sand
18.045	131.81	1.9882	1.508	0.599	32	8	sand to silty sand
18.209	136.01	1.7907	1.317	0.504	33	8	sand to silty sand
18.373	124.18	1.5263	1.229	0.485	30	8	sand to silty sand
18.537	105.56	1.4446	1.369	0.343	25	8	sand to silty sand
18.701	94.39	1.1754	1.245	0.301	23	8	sand to silty sand
18.865	91.13	1.2197	1.338	0.298	22	8	sand to silty sand
19.029	83.01	1.2755	1.537	0.187	26	7	silty sand to sandy silt
19.193	84.17	1.4559	1.730	0.139	27	7	silty sand to sandy silt
19.357	86.42	1.4443	1.671	0.078	28	7	silty sand to sandy silt
19.521	87.74	1.3118	1.495	-0.050	28	7	silty sand to sandy silt
19.685	98.31	1.3054	1.328	-0.451	24	8	sand to silty sand
19.849	121.43	1.5281	1.258	-0.368	29	8	sand to silty sand
20.013	147.59	1.3186	0.893	-0.098	28	9	sand
20.177	141.66	0.8207	0.579	-0.078	27	9	sand
20.341	138.43	0.9488	0.685	-0.017	27	9	sand
20.505	133.79	1.0805	0.808	0.226	32	8	sand to silty sand
20.669	124.99	0.9836	0.787	0.357	30	8	sand to silty sand
20.833	131.66	0.9755	0.741	0.228	25	9	sand
20.997	122.40	0.8275	0.676	0.276	23	9	sand
21.161	113.27	0.7842	0.692	0.178	27	8	sand to silty sand
21.325	120.30	0.9426	0.784	0.198	29	8	sand to silty sand
21.490	120.78	1.1092	0.918	0.240	29	8	sand to silty sand
21.654	121.58	1.1891	0.978	0.226	29	8	sand to silty sand
21.818	130.11	1.2053	0.926	0.362	31	8	sand to silty sand
21.982	123.42	0.6864	0.556	0.379	24	9	sand
22.146	120.52	0.5878	0.488	0.376	23	9	sand
22.310	80.88	0.4569	0.565	0.281	19	8	sand to silty sand
22.474	72.77	0.6642	0.913	0.270	17	8	sand to silty sand
22.638	65.88	0.5597	0.850	0.167	16	8	sand to silty sand
22.802	58.86	0.8999	1.529	0.251	19	7	silty sand to sandy silt
22.966	64.87	0.7853	1.211	0.320	21	7	silty sand to sandy silt
23.130	72.02	0.4673	0.649	0.529	17	8	sand to silty sand
23.294	76.27	0.2690	0.353	0.376	18	8	sand to silty sand
23.458	92.93	0.2063	0.222	0.309	18	9	sand
23.622	85.28	0.1553	0.182	0.318	16	9	sand
23.786	75.14	0.1137	0.151	0.231	18	8	sand to silty sand
23.950	74.65	0.0954	0.128	0.254	18	8	sand to silty sand
24.114	69.99	0.6979	0.997	0.334	17	8	sand to silty sand
24.278	67.67	0.6955	1.028	0.326	22	7	silty sand to sandy silt
24.442	65.39	0.4632	0.708	0.401	16	8	sand to silty sand
24.606	61.15	0.1674	0.274	0.683	15	8	sand to silty sand

Depth ft	Tip (Qt) (tsf)	Sleeve Friction (Fs) (tsf)	F.Ratio (%)	PP (U2) (psi)	SPT (blows/ft)	Zone	Soil Behavior Type UBC-1983
24.770	66.35	0.1848	0.279	0.819	16	8	sand to silty sand
24.934	72.95	0.1701	0.233	1.042	17	8	sand to silty sand
25.098	83.37	0.1461	0.175	0.989	16	9	sand
25.262	80.09	0.1402	0.175	1.045	15	9	sand
25.427	73.09	0.2133	0.292	1.009	17	8	sand to silty sand
25.591	65.79	0.3097	0.471	1.131	16	8	sand to silty sand
25.755	70.58	1.0777	1.527	1.179	23	7	silty sand to sandy silt
25.919	77.14	1.2226	1.585	0.947	25	7	silty sand to sandy silt
26.083	72.18	1.4871	2.060	-0.220	23	7	silty sand to sandy silt
26.247	40.40	1.1802	2.921	0.666	15	6	sandy silt to clayey silt
26.411	56.22	0.2881	0.512	0.928	13	8	sand to silty sand
26.575	62.73	0.2316	0.369	0.905	15	8	sand to silty sand
26.739	65.73	0.3300	0.502	1.095	16	8	sand to silty sand
26.903	78.38	0.2971	0.379	1.042	19	8	sand to silty sand
27.067	78.95	0.2903	0.368	-0.075	19	8	sand to silty sand
27.231	77.29	0.3356	0.434	-0.970	19	8	sand to silty sand
27.395	78.44	0.4652	0.593	-1.379	19	8	sand to silty sand
27.559	73.30	0.8597	1.173	-1.755	23	7	silty sand to sandy silt
27.723	48.40	1.0257	2.119	-1.666	19	6	sandy silt to clayey silt
27.887	46.49	1.0661	2.293	-1.457	18	6	sandy silt to clayey silt
28.051	40.65	0.9757	2.400	-1.332	16	6	sandy silt to clayey silt
28.215	46.62	1.0181	2.184	-1.479	18	6	sandy silt to clayey silt
28.379	50.97	0.8991	1.764	-1.800	16	7	silty sand to sandy silt
28.543	79.12	0.9097	1.150	-1.833	19	8	sand to silty sand
28.707	82.37	1.0295	1.250	-2.064	20	8	sand to silty sand
28.871	81.78	1.2039	1.472	-2.106	26	7	silty sand to sandy silt
29.035	85.36	1.6274	1.906	-1.410	27	7	silty sand to sandy silt
29.199	85.71	2.0494	2.391	-1.574	27	7	silty sand to sandy silt
29.364	87.65	2.0221	2.307	-2.151	28	7	silty sand to sandy silt
29.528	94.77	1.5525	1.638	-2.583	30	7	silty sand to sandy silt
29.692	94.81	1.6895	1.782	-2.886	30	7	silty sand to sandy silt
29.856	96.95	1.7776	1.833	-3.159	31	7	silty sand to sandy silt
30.020	97.35	1.7643	1.812	-3.329	31	7	silty sand to sandy silt
30.184	101.29	1.5598	1.540	-3.561	32	7	silty sand to sandy silt
30.348	98.71	1.3843	1.402	-3.661	24	8	sand to silty sand
30.512	91.38	1.2673	1.387	-4.004	22	8	sand to silty sand
30.676	88.89	1.1834	1.331	-0.788	21	8	sand to silty sand
30.840	83.41	1.2092	1.450	-4.204	27	7	silty sand to sandy silt
31.004	74.50	1.4925	2.003	-4.268	24	7	silty sand to sandy silt
31.168	58.10	1.5055	2.591	-4.135	22	6	sandy silt to clayey silt
31.332	36.45	1.1312	3.103	-4.031	17	5	clayey silt to silty clay
31.496	30.08	0.7632	2.537	-3.499	12	6	sandy silt to clayey silt
31.660	27.39	0.6689	2.442	-3.034	10	6	sandy silt to clayey silt
31.824	22.93	0.6296	2.745	-2.833	11	5	clayey silt to silty clay
31.988	20.71	0.6332	3.057	-2.758	10	5	clayey silt to silty clay
32.152	21.08	0.5941	2.819	-0.109	10	5	clayey silt to silty clay
32.316	24.68	0.5466	2.215	0.137	9	6	sandy silt to clayey silt
32.480	39.30	0.4267	1.086	0.563	13	7	silty sand to sandy silt
32.644	51.60	0.4512	0.874	0.543	16	7	silty sand to sandy silt
32.808	48.43	1.0390	2.145	-0.858	19	6	sandy silt to clayey silt
32.972	48.28	1.1951	2.475	-1.089	18	6	sandy silt to clayey silt
33.136	61.83	1.5574	2.519	-1.635	24	6	sandy silt to clayey silt
33.301	48.48	1.0910	2.250	-2.165	19	6	sandy silt to clayey silt

Depth ft	Tip (Qt) (tsf)	Sleeve Friction (Fs) (tsf)	F.Ratio (%)	PP (U2) (psi)	SPT (blows/ft)	Zone	Soil Behavior Type UBC-1983
33.465	36.22	0.6907	1.907	-2.092	14	6	sandy silt to clayey silt
33.629	25.29	0.5809	2.297	-1.658	10	6	sandy silt to clayey silt
33.793	27.64	0.3841	1.390	-0.978	11	6	sandy silt to clayey silt
33.957	96.59	0.2282	0.236	-1.151	18	9	sand
34.121	90.60	0.3552	0.392	-1.702	22	8	sand to silty sand
34.285	95.21	0.3180	0.334	-1.633	18	9	sand
34.449	82.52	0.3638	0.441	-2.268	20	8	sand to silty sand
34.613	81.34	0.3844	0.473	-2.917	19	8	sand to silty sand
34.777	115.82	0.3337	0.288	-2.839	22	9	sand
34.941	117.52	0.3103	0.264	-2.778	23	9	sand
35.105	109.20	0.2095	0.192	-2.271	21	9	sand
35.269	114.68	0.1635	0.143	-2.262	22	9	sand
35.433	98.90	0.2425	0.245	-1.764	19	9	sand
35.597	97.45	0.3317	0.340	-1.560	19	9	sand
35.761	94.32	0.3306	0.351	-1.112	18	9	sand
35.925	92.22	0.1870	0.203	-0.454	18	9	sand
36.089	84.98	0.0733	0.086	-0.053	16	9	sand
36.253	85.37	0.6801	0.797	0.368	20	8	sand to silty sand
36.417	104.00	1.7947	1.726	0.081	33	7	silty sand to sandy silt
36.581	104.67	1.8168	1.736	-0.089	33	7	silty sand to sandy silt
36.745	106.14	0.8497	0.801	1.920	25	8	sand to silty sand
36.909	92.33	0.2403	0.260	2.351	18	9	sand
37.073	97.87	0.7145	0.730	0.786	23	8	sand to silty sand
37.238	87.88	0.4338	0.494	-0.722	21	8	sand to silty sand
37.402	74.96	0.4354	0.581	0.683	18	8	sand to silty sand
37.566	77.64	0.1169	0.151	2.098	19	8	sand to silty sand
37.730	86.06	0.6609	0.768	3.260	21	8	sand to silty sand
37.894	93.13	0.5788	0.621	3.580	22	8	sand to silty sand
38.058	155.80	1.5300	0.982	4.931	37	8	sand to silty sand
38.222	153.49	1.8011	1.173	5.249	37	8	sand to silty sand
38.386	127.17	0.9434	0.742	4.800	30	8	sand to silty sand
38.550	110.94	0.3709	0.334	6.071	21	9	sand
38.714	84.85	0.2176	0.256	4.143	20	8	sand to silty sand
38.878	85.95	0.2156	0.251	4.678	16	9	sand
39.042	90.69	0.2057	0.227	5.037	17	9	sand
39.206	100.63	0.1293	0.128	4.265	19	9	sand
39.370	95.18	0.1167	0.123	3.753	18	9	sand
39.534	95.90	0.1810	0.189	5.007	18	9	sand
39.698	99.91	0.1201	0.120	5.514	19	9	sand
39.862	80.30	0.0806	0.100	2.911	15	9	sand
40.026	81.42	0.1022	0.125	5.151	16	9	sand
40.190	85.90	0.0873	0.102	5.957	16	9	sand
40.354	92.19	0.0684	0.074	5.542	18	9	sand
40.518	91.66	0.0649	0.071	6.584	18	9	sand
40.682	83.33	0.0672	0.081	7.018	16	9	sand
40.846	71.50	0.4788	0.670	7.227	17	8	sand to silty sand
41.011	79.22	0.7697	0.972	7.729	19	8	sand to silty sand
41.175	96.11	0.6221	0.647	6.689	23	8	sand to silty sand
41.339	104.97	0.4338	0.413	1.123	20	9	sand
41.503	112.08	0.0778	0.069	2.875	21	9	sand
41.667	111.31	0.0711	0.064	4.302	21	9	sand
41.831	81.53	0.0618	0.076	8.300	16	9	sand
41.995	82.10	0.0546	0.067	8.191	16	9	sand

Depth ft	Tip (Qt) (tsf)	Sleeve Friction (Fs) (tsf)	F.Ratio (%)	PP (U2) (psi)	SPT (blows/ft)	Zone	Soil Behavior Type UBC-1983
42.159	83.61	0.0758	0.091	8.225	16	9	sand
42.323	82.81	0.0722	0.087	8.155	16	9	sand
42.487	81.42	0.0916	0.112	7.670	16	9	sand
42.651	81.22	0.0806	0.099	6.338	16	9	sand
42.815	73.20	0.0640	0.087	7.389	18	8	sand to silty sand
42.979	72.23	0.0531	0.074	8.308	17	8	sand to silty sand
43.143	76.05	0.0676	0.089	8.642	15	9	sand
43.307	78.15	0.0652	0.083	8.706	15	9	sand
43.471	75.89	0.1277	0.168	8.673	18	8	sand to silty sand
43.635	79.07	0.1609	0.203	8.863	19	8	sand to silty sand
43.799	81.54	0.1466	0.180	8.481	16	9	sand
43.963	91.46	0.0572	0.062	4.293	18	9	sand
44.127	94.61	0.2335	0.247	6.717	18	9	sand
44.291	85.13	0.3365	0.395	7.770	20	8	sand to silty sand
44.455	88.84	0.9939	1.119	7.690	21	8	sand to silty sand
44.619	103.69	0.7948	0.766	0.203	25	8	sand to silty sand
44.783	122.42	0.5293	0.432	2.051	23	9	sand
44.948	121.30	0.1997	0.165	-0.783	23	9	sand
45.112	108.42	0.1153	0.106	1.167	21	9	sand
45.276	104.24	0.1166	0.112	1.758	20	9	sand
45.440	96.00	0.1179	0.123	6.213	18	9	sand
45.604	96.90	0.2236	0.231	6.366	19	9	sand
45.768	98.10	0.6828	0.696	6.143	23	8	sand to silty sand
45.932	104.31	0.8999	0.863	0.777	25	8	sand to silty sand
46.096	102.05	0.9577	0.938	0.649	24	8	sand to silty sand
46.260	109.71	0.5688	0.518	3.382	21	9	sand
46.424	95.11	0.7209	0.758	6.946	23	8	sand to silty sand
46.588	110.91	0.4905	0.442	7.339	21	9	sand
46.752	126.47	0.3616	0.286	-8.971	24	9	sand
46.916	121.81	1.1424	0.938	-6.447	29	8	sand to silty sand
47.080	90.66	0.9739	1.074	-5.647	22	8	sand to silty sand
47.244	95.44	0.7299	0.765	-5.934	23	8	sand to silty sand
47.408	117.25	1.4283	1.218	-3.636	28	8	sand to silty sand
47.572	148.74	2.2271	1.497	-2.404	36	8	sand to silty sand
47.736	136.42	3.1428	2.304	-5.575	44	7	silty sand to sandy silt
47.900	72.16	3.0241	4.191	-6.224	35	5	clayey silt to silty clay
48.064	47.49	2.5903	5.455	-6.464	45	3	clay
48.228	39.31	1.0044	2.555	-6.274	15	6	sandy silt to clayey silt
48.392	34.71	0.9902	2.853	-5.998	13	6	sandy silt to clayey silt
48.556	22.75	0.9056	3.980	-3.452	15	4	silty clay to clay
48.720	22.37	0.7005	3.132	-3.262	11	5	clayey silt to silty clay
48.885	22.37	0.7338	3.281	-3.093	11	5	clayey silt to silty clay
49.049	25.23	1.3511	5.355	-2.747	24	3	clay
49.213	42.35	1.5927	3.761	-2.265	20	5	clayey silt to silty clay
49.377	75.22	1.5256	2.028	-2.538	24	7	silty sand to sandy silt
49.541	84.96	1.3257	1.560	-3.240	27	7	silty sand to sandy silt
49.705	94.07	1.3901	1.478	-3.783	30	7	silty sand to sandy silt
49.869	101.58	1.5775	1.553	-2.471	32	7	silty sand to sandy silt
50.033	113.97	1.8116	1.590	-2.783	27	8	sand to silty sand
50.197	117.06	2.3552	2.012	-3.201	37	7	silty sand to sandy silt
50.361	122.40	2.5409	2.076	-3.485	39	7	silty sand to sandy silt
50.525	133.81	2.3056	1.723	-3.719	43	7	silty sand to sandy silt
50.689	142.30	2.2855	1.606	-4.218	34	8	sand to silty sand

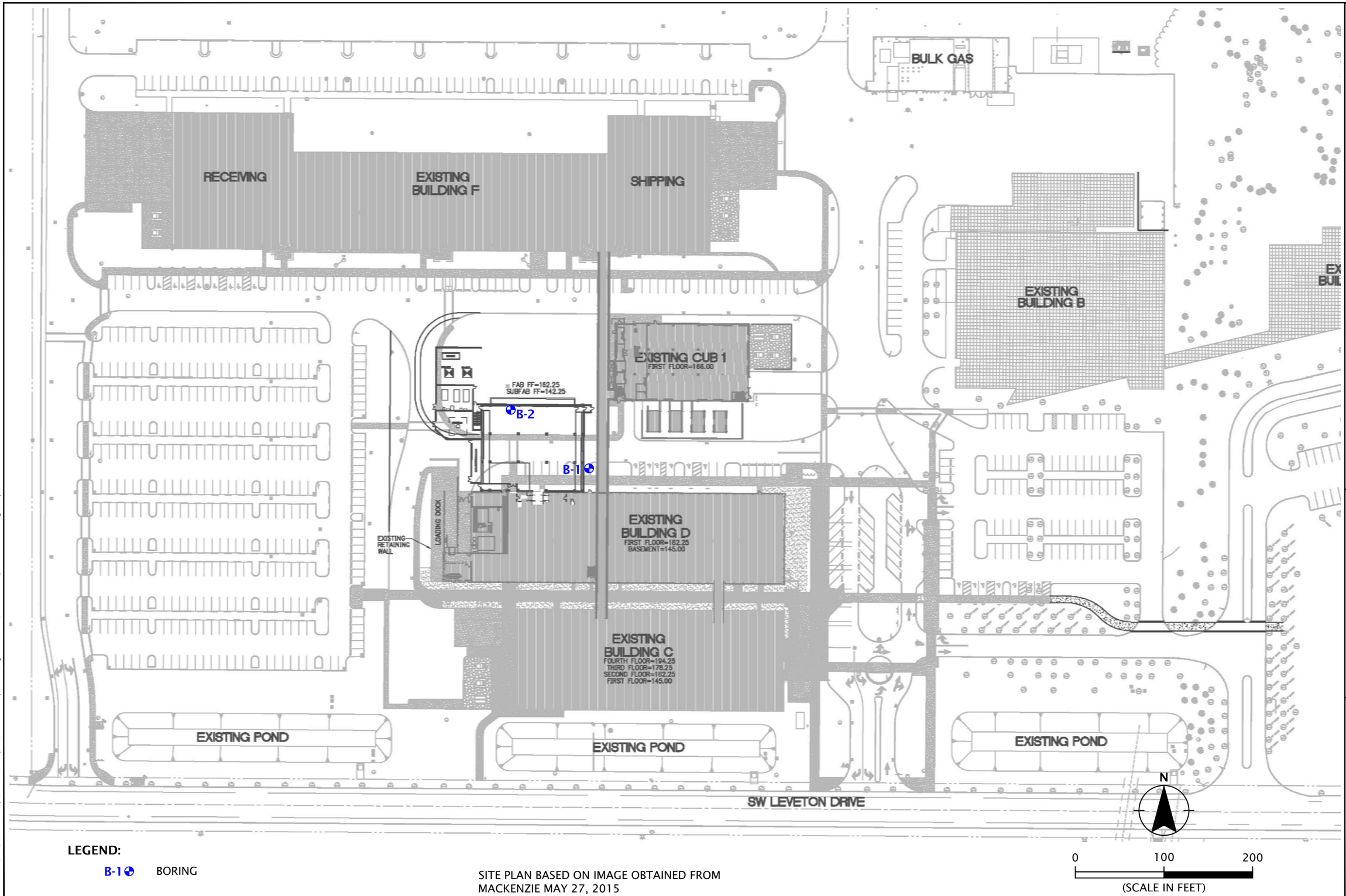
Depth ft	Tip (Qt) (tsf)	Sleeve Friction (Fs) (tsf)	F.Ratio (%)	PP (U2) (psi)	SPT (blows/ft)	Zone	Soil Behavior Type UBC-1983
50.853	150.51	2.3371	1.553	-4.547	36	8	sand to silty sand
51.017	155.69	2.9681	1.906	-4.817	50	7	silty sand to sandy silt
51.181	164.56	2.6844	1.631	-4.054	39	8	sand to silty sand
51.345	176.32	2.8310	1.606	-4.332	42	8	sand to silty sand
51.509	172.12	2.6038	1.513	-4.625	41	8	sand to silty sand
51.673	162.92	2.5907	1.590	-4.959	39	8	sand to silty sand
51.837	150.33	2.5507	1.697	-5.165	36	8	sand to silty sand

APPENDIX C

APPENDIX C

PREVIOUS EXPLORATIONS

This appendix contains copies of the prior relevant site plans. explorations logs, and laboratory test results that were completed by NV5 (formerly GeoDesign).



LEGEND:

B-1 BORING

SITE PLAN BASED ON IMAGE OBTAINED FROM MACKENZIE MAY 27, 2015

SITE PLAN

BUILDING D ADDITION
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FIGURE 2

LAMRESCORP-2-01

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Printed By: mmiller | Print Date: 7/17/2015 2:21:17 PM
File Name: J:\E-L\LamResCorp\LamResCorp-2\LamResCorp-2-01\Figures\CAD\LamResCorp-2-01-SP02.dwg | Layout: FIGURE 2

APPENDIX A

FIELD EXPLORATIONS

GENERAL

Subsurface conditions at the site were explored by drilling two borings (B-1 and B-2) to a maximum depth of 51.5 feet BGS. Figure 2 shows the approximate locations of our boring explorations. The borings were drilled on June 22, 2015 by Western States Soil Conservation, Inc., of Hubbard, Oregon, using mud rotary drilling techniques. The exploration was observed by a member of our geotechnical staff. We obtained representative samples of the various soil encountered in the exploration for geotechnical laboratory testing. Classifications and sampling depths are presented on the exploration log included in this appendix.

The locations of our explorations were chosen based on a site plan provided to our office by Mackenzie. This information should be considered accurate to the degree implied by the methods used.

SOIL SAMPLING

Samples were obtained from the boring explorations using 1½-inch-inner diameter, split-spoon samplers in general accordance with ASTM D 1586. The SPT sampler was driven into the soil with a 140-pound hammer free-falling 30 inches. The SPT sampler was driven a total distance of 18 inches. The number of blows required to drive the sampler the final 12 inches is recorded on the exploration logs, unless otherwise noted. Soil classifications, sampler type, and sampling intervals are presented on the exploration logs included in this appendix.

SOIL CLASSIFICATION

The soil samples were classified in accordance with the "Exploration Key" (Table A-1) and "Soil Classification System" (Table A-2), which are included in this appendix. The exploration logs indicate the depths at which the soils or their characteristics change, although the change could be gradual. If the change occurred between sample locations, the depth was interpreted. Classifications and sampling intervals are presented on the exploration logs included in this appendix.

The average efficiency of the automatic SPT hammer used by Western States Soil Conservation, Inc. was 92.6 percent. A copy of the calibration testing is presented at the end of this appendix.

LABORATORY TESTING

CLASSIFICATION

The soil samples were classified in the laboratory to confirm field classifications. The laboratory classifications are presented on the exploration logs if those classifications differed from the field classifications.

MOISTURE CONTENT

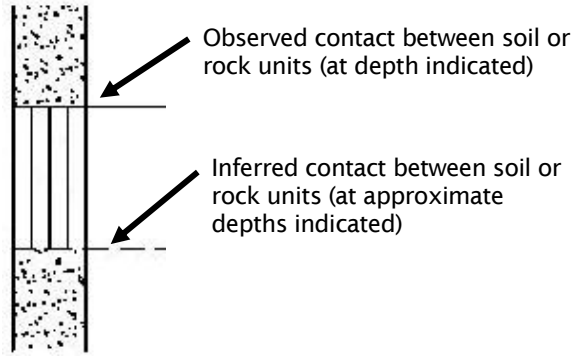
The natural moisture content of selected soil samples was determined in general accordance with ASTM D 2216. The natural moisture content is a ratio of the weight of the water to soil in a test sample and is expressed as a percentage. The test results are presented in this appendix.

GRAIN-SIZE TESTING

Grain-size testing was performed on selected soil samples to determine the distribution of soil particle sizes. The testing consisted of percent fines determinations (percent passing the U.S. Standard No. 200 Sieve) completed in general accordance with ASTM C 117 and ASTM D 1140 (P200). Test results are presented in this appendix.

SYMBOL	SAMPLING DESCRIPTION
	Location of sample obtained in general accordance with ASTM D 1586 Standard Penetration Test with recovery
	Location of sample obtained using thin-wall Shelby tube or Geoprobe® sampler in general accordance with ASTM D 1587 with recovery
	Location of sample obtained using Dames & Moore sampler and 300-pound hammer or pushed with recovery
	Location of sample obtained using Dames & Moore and 140-pound hammer or pushed with recovery
	Location of sample obtained using 3-inch-O.D. California split-spoon sampler and 140-pound hammer
	Location of grab sample
	Rock coring interval
	Water level during drilling
	Water level taken on date shown

Graphic Log of Soil and Rock Types



GEOTECHNICAL TESTING EXPLANATIONS

ATT	Atterberg Limits	PP	Pocket Penetrometer
CBR	California Bearing Ratio	P200	Percent Passing U.S. Standard No. 200 Sieve
CON	Consolidation		
DD	Dry Density	RES	Resilient Modulus
DS	Direct Shear	SIEV	Sieve Gradation
HYD	Hydrometer Gradation	TOR	Torvane
MC	Moisture Content	UC	Unconfined Compressive Strength
MD	Moisture-Density Relationship	VS	Vane Shear
OC	Organic Content	kPa	Kilopascal
P	Pushed Sample		

ENVIRONMENTAL TESTING EXPLANATIONS

CA	Sample Submitted for Chemical Analysis	ND	Not Detected
P	Pushed Sample	NS	No Visible Sheen
PID	Photoionization Detector Headspace Analysis	SS	Slight Sheen
		MS	Moderate Sheen
ppm	Parts per Million	HS	Heavy Sheen

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EXPLORATION KEY

TABLE A-1

RELATIVE DENSITY - COARSE-GRAINED SOILS

Relative Density	Standard Penetration Resistance	Dames & Moore Sampler (140-pound hammer)	Dames & Moore Sampler (300-pound hammer)
Very Loose	0 – 4	0 - 11	0 - 4
Loose	4 – 10	11 - 26	4 - 10
Medium Dense	10 – 30	26 - 74	10 - 30
Dense	30 – 50	74 - 120	30 - 47
Very Dense	More than 50	More than 120	More than 47

CONSISTENCY - FINE-GRAINED SOILS

Consistency	Standard Penetration Resistance	Dames & Moore Sampler (140-pound hammer)	Dames & Moore Sampler (300-pound hammer)	Unconfined Compressive Strength (tsf)
Very Soft	Less than 2	Less than 3	Less than 2	Less than 0.25
Soft	2 - 4	3 – 6	2 - 5	0.25 - 0.50
Medium Stiff	4 - 8	6 – 12	5 - 9	0.50 - 1.0
Stiff	8 - 15	12 – 25	9 - 19	1.0 - 2.0
Very Stiff	15 - 30	25 – 65	19 – 31	2.0 - 4.0
Hard	More than 30	More than 65	More than 31	More than 4.0

PRIMARY SOIL DIVISIONS			GROUP SYMBOL	GROUP NAME
COARSE-GRAINED SOILS (more than 50% retained on No. 200 sieve)	GRAVEL (more than 50% of coarse fraction retained on No. 4 sieve)	CLEAN GRAVELS (< 5% fines)	GW or GP	GRAVEL
		GRAVEL WITH FINES (≥ 5% and ≤ 12% fines)	GW-GM or GP-GM	GRAVEL with silt
			GW-GC or GP-GC	GRAVEL with clay
		GRAVELS WITH FINES (> 12% fines)	GM	silty GRAVEL
			GC	clayey GRAVEL
			GC-GM	silty, clayey GRAVEL
	SAND (50% or more of coarse fraction passing No. 4 sieve)	CLEAN SANDS (<5% fines)	SW or SP	SAND
		SANDS WITH FINES (≥ 5% and ≤ 12% fines)	SW-SM or SP-SM	SAND with silt
			SW-SC or SP-SC	SAND with clay
		SANDS WITH FINES (> 12% fines)	SM	silty SAND
			SC	clayey SAND
			SC-SM	silty, clayey SAND
FINE-GRAINED SOILS (50% or more passing No. 200 sieve)	SILT AND CLAY	Liquid limit less than 50	ML	SILT
			CL	CLAY
			CL-ML	silty CLAY
			OL	ORGANIC SILT or ORGANIC CLAY
		Liquid limit 50 or greater	MH	SILT
			CH	CLAY
			OH	ORGANIC SILT or ORGANIC CLAY
HIGHLY ORGANIC SOILS			PT	PEAT

MOISTURE CLASSIFICATION

Term	Field Test
dry	very low moisture, dry to touch
moist	damp, without visible moisture
wet	visible free water, usually saturated

ADDITIONAL CONSTITUENTS

Secondary granular components or other materials such as organics, man-made debris, etc.

Percent	Silt and Clay In: Fine-Grained Soils	Silt and Clay In: Coarse-Grained Soils	Percent	Sand and Gravel In: Fine-Grained Soils	Sand and Gravel In: Coarse-Grained Soils
< 5	trace	trace	< 5	trace	trace
5 – 12	minor	with	5 – 15	minor	minor
> 12	some	silty/clayey	15 – 30	with	with
			> 30	sandy/gravelly	Indicate %

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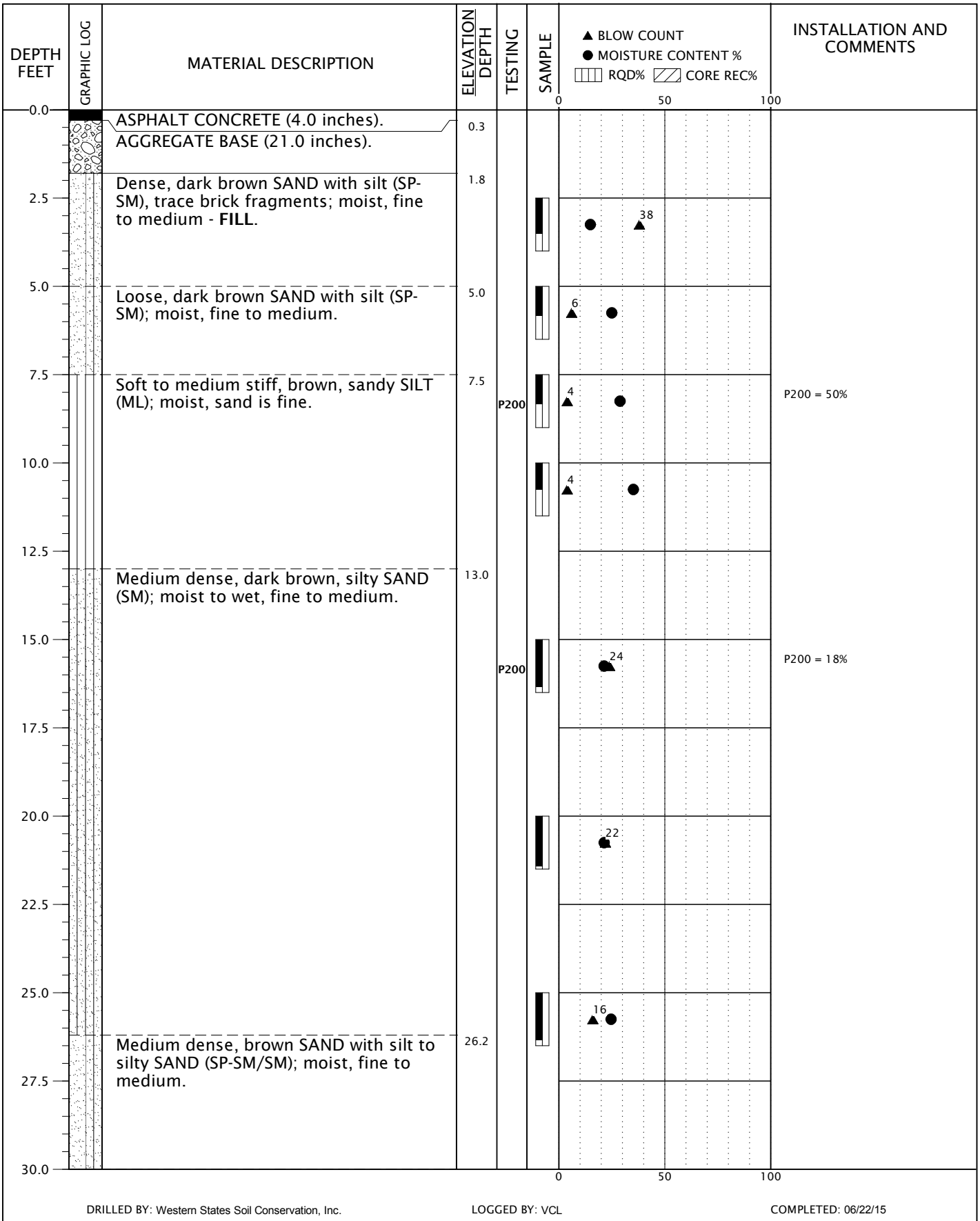
SOIL CLASSIFICATION SYSTEM

TABLE A-2



DRILLED BY: Western States Soil Conservation, Inc. LOGGED BY: VCL COMPLETED: 06/22/15

BORING METHOD: mud rotary (see document text) BORING BIT DIAMETER: 3 7/8 inches

BORING LOG LAMRESCORP-2-01-B1_2.GPJ GEODESIGN.GDT PRINT DATE: 7/17/15:KT

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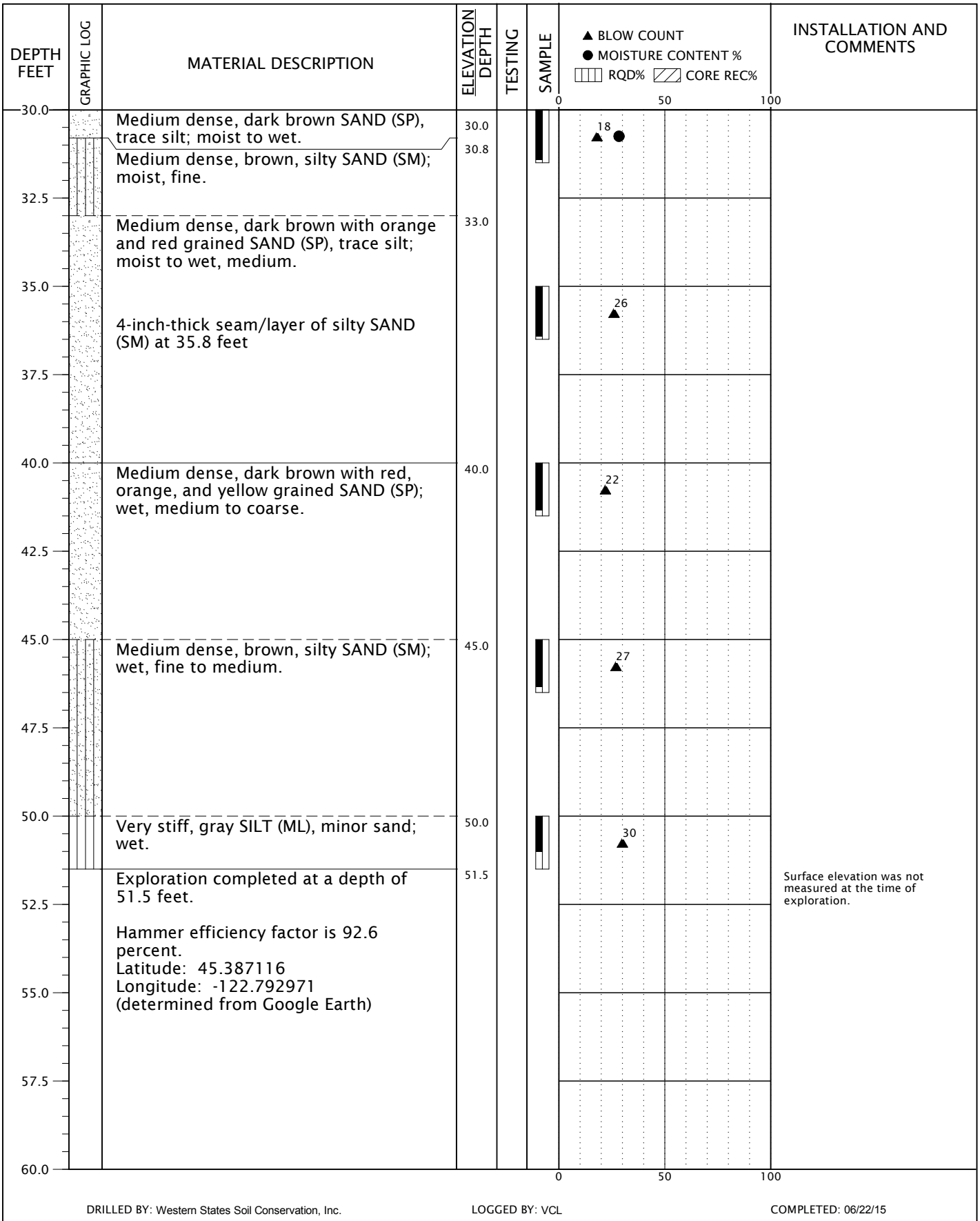
BORING B-1

JULY 2015

BUILDING D ADDITION
TUALATIN, OR

FIGURE A-1



DRILLED BY: Western States Soil Conservation, Inc.

LOGGED BY: VCL

COMPLETED: 06/22/15

BORING METHOD: mud rotary (see document text)

BORING BIT DIAMETER: 3 7/8 inches

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LAMRESCORP-2-01

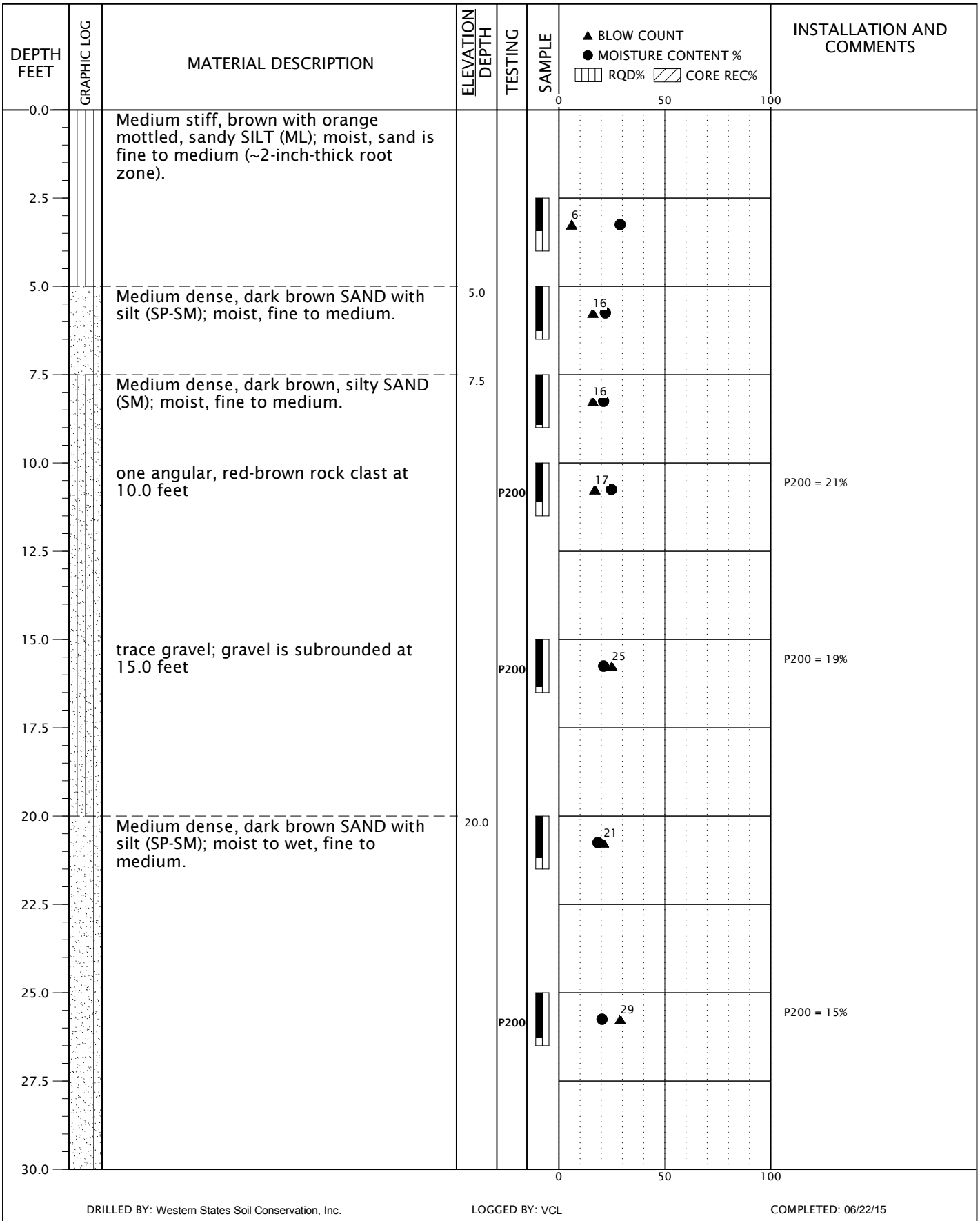
BORING B-1
(continued)

JULY 2015

BUILDING D ADDITION
TUALATIN, OR

FIGURE A-1

BORING LOG LAMRESCORP-2-01-B1_2.GPJ GEODESIGN.GDT PRINT DATE: 7/17/15:KT



DRILLED BY: Western States Soil Conservation, Inc.

LOGGED BY: VCL

COMPLETED: 06/22/15

BORING METHOD: mud rotary (see document text)

BORING BIT DIAMETER: 3 7/8 inches

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LAMRESCORP-2-01

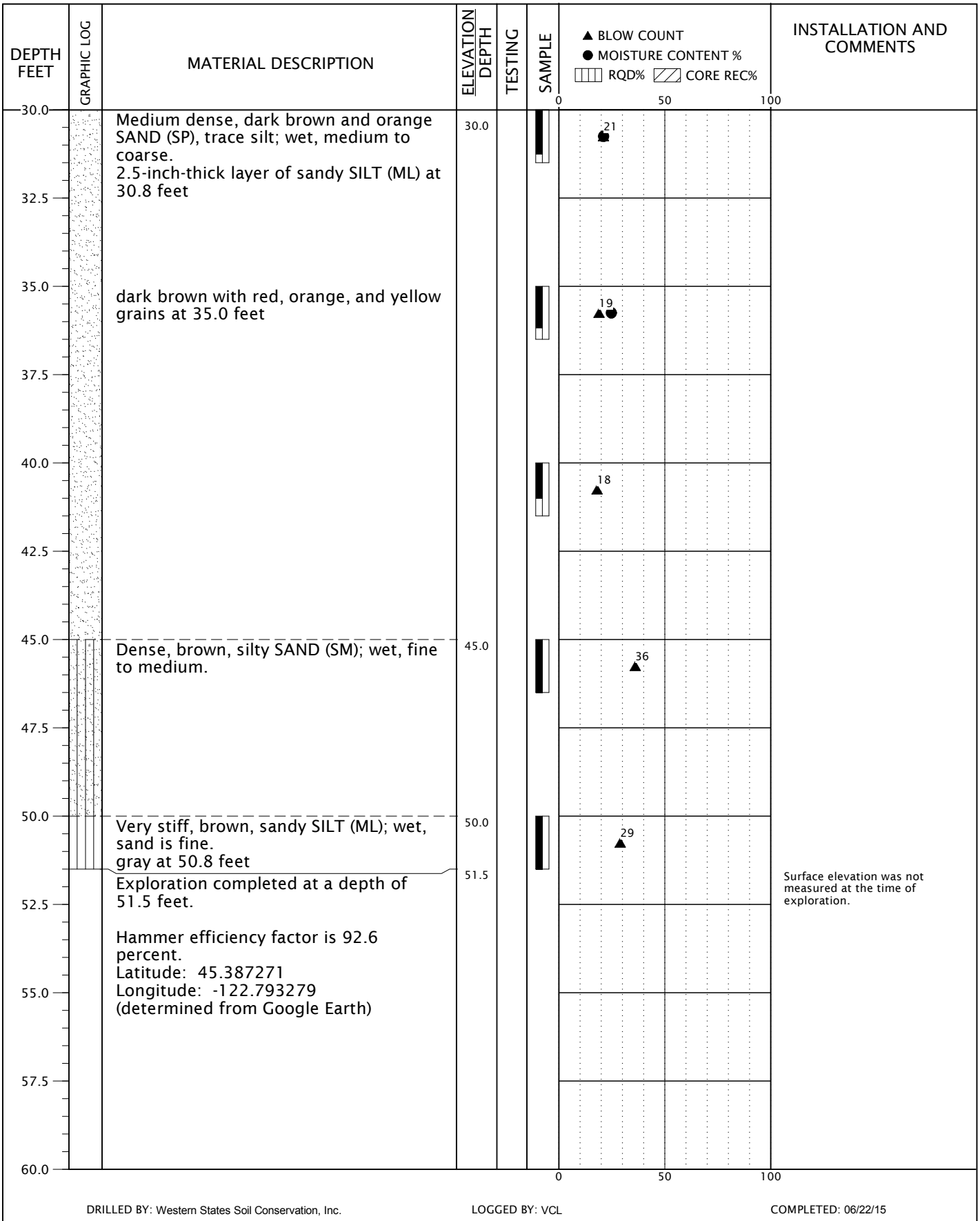
BORING B-2

JULY 2015

BUILDING D ADDITION
TUALATIN, OR

FIGURE A-2

BORING LOG LAMRESCORP-2-01-B1_2.GPJ GEODESIGN.GDT PRINT DATE: 7/17/15:KT



DRILLED BY: Western States Soil Conservation, Inc. LOGGED BY: VCL COMPLETED: 06/22/15

BORING METHOD: mud rotary (see document text) BORING BIT DIAMETER: 3 7/8 inches

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LAMRESCORP-2-01

BORING B-2
(continued)

JULY 2015

BUILDING D ADDITION
TUALATIN, OR

FIGURE A-2

BORING LOG LAMRESCORP-2-01-B1_2.GPJ GEODESIGN.GDT PRINT DATE: 7/17/15:KT

SAMPLE INFORMATION			MOISTURE CONTENT (PERCENT)	DRY DENSITY (PCF)	SIEVE			ATTERBERG LIMITS		
EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	ELEVATION (FEET)			GRAVEL (PERCENT)	SAND (PERCENT)	P200 (PERCENT)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
B-1	2.5		15							
B-1	5.0		25							
B-1	7.5		29				50			
B-1	10.0		35							
B-1	15.0		21				18			
B-1	20.0		21							
B-1	25.0		25							
B-1	30.0		28							
B-2	2.5		29							
B-2	5.0		22							
B-2	7.5		21							
B-2	10.0		25				21			
B-2	15.0		21				19			
B-2	20.0		18							
B-2	25.0		20				15			
B-2	30.0		21							
B-2	35.0		25							

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LAMRESCORP-2-01

SUMMARY OF LABORATORY DATA

JULY 2015

BUILDING D ADDITION
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FIGURE A-3

LAB SUMMARY LAMRESCORP-2-01-B1_2.GPJ GEODESIGN.GDT PRINT DATE: 7/17/15:KT

WSSC-7-01 - TEST BORING B-3 25FT
OP: WMN

TRUCK NO. 1
Date: 30-May-2015

AR: 1.41 in²
LE: 28.00 ft
WS: 16,807.9 f/s

SP: 0.492 k/ft³
EM: 30,000 ksi
JC: 0.00 []

ETR: Energy Transfer Ratio
EMX: Max Transferred Energy
CSB: Compression Stress at Bottom
BPM: Blows per Minute
FFS: Force Full Scale

DMX: Maximum Displacement
SFR: Skin friction w/ damping correction
MEX: Maximum Strain
VMX: Maximum Velocity

BL#	depth	BLC	ETR	EMX	CSB	BPM	FFS	DMX	SFR	MEX	VMX
	ft	bl/ft	(%)	k-ft	ksi	bpm	kips	in	kips	µE	f/s
9	25.17	6	85.3	0.3	0.0	50.1	60	1.46	0	953	17.2
11	25.52	6	92.8	0.3	0.0	49.9	60	1.08	0	1,035	18.8
13	25.86	6	94.7	0.3	0.0	50.0	60	1.15	0	1,037	19.3
15	26.21	6	93.5	0.3	0.0	50.1	60	0.82	0	1,044	18.7
17	26.55	6	92.7	0.3	0.0	50.2	60	0.75	0	1,034	18.3
19	26.90	6	90.2	0.3	0.0	19.6	60	0.77	0	1,026	17.1
21	27.24	6	89.3	0.3	0.0	50.1	60	1.62	0	1,035	16.4
23	27.59	6	91.6	0.3	0.0	50.0	60	0.95	0	1,089	17.3
25	27.93	6	95.1	0.3	0.0	50.0	60	0.82	0	1,082	17.6
27	28.28	6	92.3	0.3	0.0	50.2	60	1.30	0	1,046	17.2
37	30.00	6	90.8	0.3	0.0	51.9	60	1.30	0	998	17.5
39	30.26	8	93.8	0.3	0.0	51.9	60	1.25	0	1,021	18.0
41	30.53	8	92.9	0.3	0.0	52.0	60	1.05	0	1,018	17.8
43	30.79	8	92.9	0.3	0.0	52.0	60	0.94	0	1,037	17.6
45	31.05	8	90.4	0.3	0.0	51.9	60	0.65	0	1,004	16.9
47	31.32	8	92.0	0.3	0.0	52.0	60	1.22	0	995	17.5
49	31.58	8	93.4	0.3	0.0	52.0	60	1.02	0	1,004	18.2
51	31.84	8	93.0	0.3	0.0	51.9	60	0.93	0	1,015	17.4
53	32.11	8	92.6	0.3	0.0	51.9	60	0.86	0	992	17.0
55	32.37	8	92.0	0.3	0.0	52.0	60	0.70	0	1,024	16.9
57	32.63	8	92.3	0.3	0.0	51.9	60	0.74	0	1,004	17.2
59	32.89	8	95.9	0.3	0.0	52.0	60	1.20	0	1,024	17.7
61	33.16	8	92.3	0.3	0.0	52.0	60	0.73	0	1,006	17.0
63	33.42	8	94.6	0.3	0.0	51.9	60	1.37	0	993	17.4
75	35.00	8	94.0	0.3	0.0	54.3	60	0.65	0	986	15.7
77	35.29	7	94.8	0.3	0.0	54.3	60	0.73	0	996	15.6
79	35.57	7	94.5	0.3	0.0	54.4	60	0.68	0	994	16.2
81	35.86	7	94.2	0.3	0.0	54.2	60	0.65	0	996	15.5
83	36.14	7	95.7	0.3	0.0	54.4	60	0.79	0	997	16.7
85	36.43	7	95.0	0.3	0.0	54.3	60	0.80	0	1,004	15.7
87	36.71	7	95.4	0.3	0.0	54.2	60	0.65	0	997	16.7
89	37.00	7	99.5	0.3	0.0	54.4	60	1.51	0	1,009	16.4
91	37.29	7	95.8	0.3	0.0	54.2	60	0.61	0	1,021	16.9
93	37.57	7	95.7	0.3	0.0	54.3	60	0.42	0	1,039	16.3
95	37.86	7	94.5	0.3	0.0	54.2	60	0.73	0	981	16.4
97	38.14	7	93.8	0.3	0.0	54.2	60	0.48	0	973	16.1
99	38.43	7	98.3	0.3	0.0	54.2	60	0.60	0	1,049	16.5
101	38.71	7	94.8	0.3	0.0	54.3	60	0.40	0	975	16.0
103	39.00	7	95.4	0.3	0.0	54.4	60	0.53	0	1,013	15.8
105	39.29	7	10.5	0.0	0.0	49.3	60	0.08	0	339	5.2
111	40.14	7	93.9	0.3	0.0	54.0	60	0.98	0	909	16.7
113	40.43	7	97.3	0.3	0.0	53.9	60	1.10	0	981	16.6
115	40.71	7	98.9	0.3	0.0	54.1	60	1.31	0	962	17.1
117	41.00	7	94.8	0.3	0.0	54.0	60	0.73	0	940	16.1
119	41.29	7	96.5	0.3	0.0	54.1	60	1.23	0	962	16.7

WSSC-7-01 - TEST BORING B-3 25FT
OP: WMN

TRUCK NO. 1
Date: 30-May-2015

BL#	depth ft	BLC bl/ft	ETR (%)	EMX k-ft	CSB ksi	BPM bpm	FFS kips	DMX in	SFR kips	MEX µE	VMX f/s
121	41.57	7	95.7	0.3	0.0	54.2	60	1.25	0	965	16.7
123	41.86	7	96.9	0.3	0.0	54.0	60	1.11	0	948	16.7
125	42.14	7	95.9	0.3	0.0	54.1	60	1.07	0	966	16.6
127	42.43	7	95.0	0.3	0.0	54.1	60	1.15	0	967	16.3
129	42.71	7	102.1	0.4	0.0	54.0	60	1.58	0	974	16.9
		Average	92.6	0.3	0.0	52.4	60	0.99	0	986	16.7
		Std. Dev.	12.2	0.0	0.0	3.7	0	0.36	0	99	1.9

Total number of blows analyzed: 101

BL# Sensors

8-130 F3: [SPT B1] 217.8 (1.00); F4: [SPT B2] 218.9 (1.00); A3: [K0232] 290.0 (1.00); A4: [K0231] 325.0 (1.00)

BL# Comments

28 N 6, 9, 12
37 LE = 33.60 ft; WC = 16,775.9 f/s
64 N: 7,11,17
75 LE = 38.60 ft; WC = 16,777.3 f/s
105 N:9,13,17
110 LE = 43.60 ft; WC = 16,769.2 f/s
130 N: 3,9,12

Time Summary

Drive	25 seconds	10:45 AM - 10:45 AM (5/30/2015) BN 8 - 28
Stop	20 minutes 45 seconds	10:45 AM - 11:06 AM
Drive	31 seconds	11:06 AM - 11:06 AM BN 37 - 64
Stop	14 minutes 57 seconds	11:06 AM - 11:21 AM
Drive	33 seconds	11:21 AM - 11:22 AM BN 75 - 105
Stop	20 minutes 41 seconds	11:22 AM - 11:43 AM
Drive	22 seconds	11:43 AM - 11:43 AM BN 110 - 130

Total time [00:58:16] = (Driving [00:01:52] + Stop [00:56:23])

APPENDIX B

PREVIOUS EXPLORATIONS BY GEODESIGN

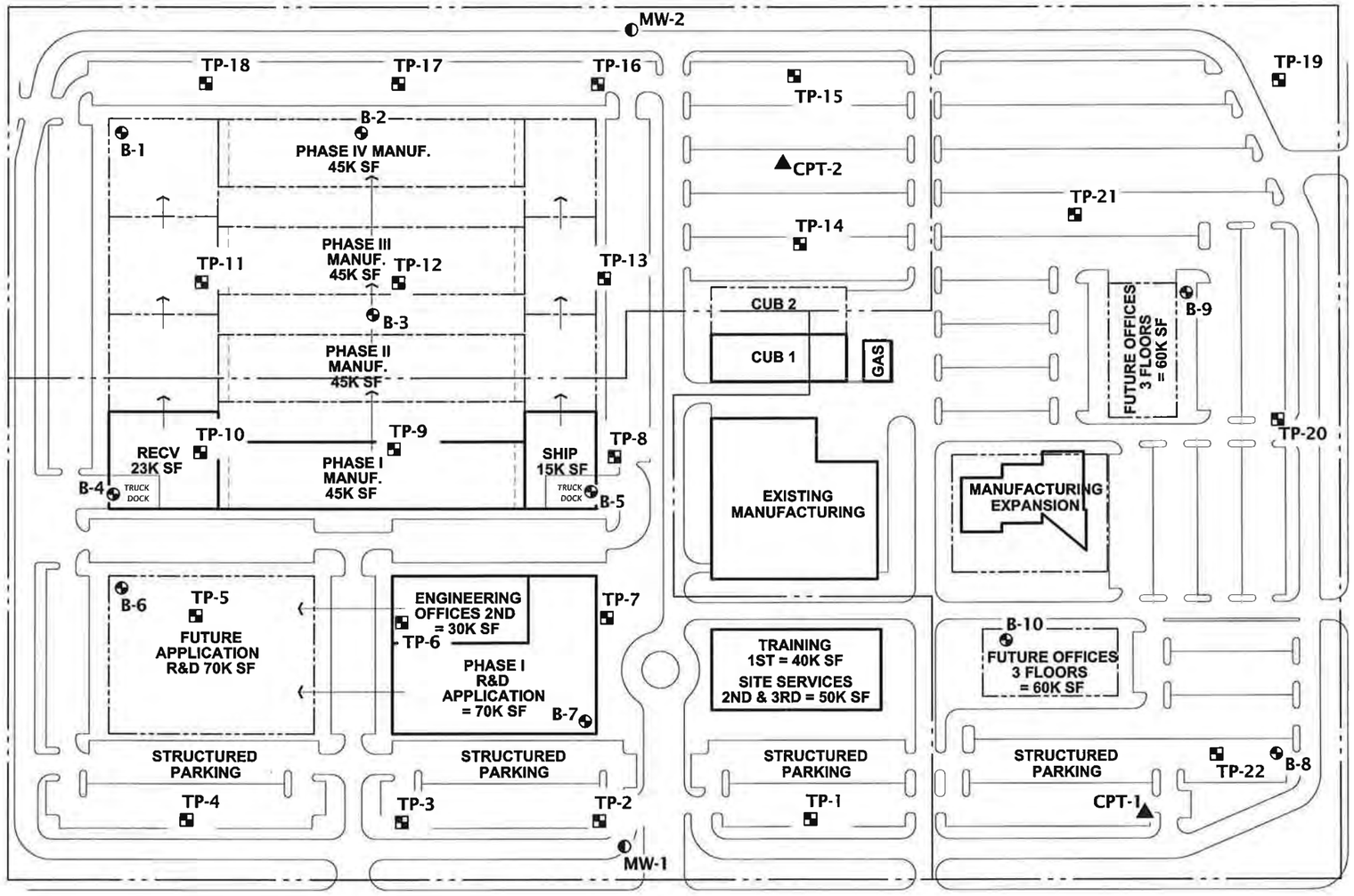
This appendix contains copies of the explorations logs that were completed by GeoDesign in December 2000. The locations of these explorations are shown on Figure 2 of the previous report, which is included in this appendix.

SITE PLAN

FIGURE 2

DECEMBER 2000

NOVELLUS-4



EXPLANATION:

- B-1 — BORING
- MW-1 — MONITORING WELL
- TP-1 — TEST PIT
- CPT-1 — CONE PENETROMETER

N

0 200 400 FT

SITE PLAN FROM DRAWING PROVIDED BY GROUP MACKENZIE.

GEODESIGN INC

KEY TO TEST PIT AND BORING LOG SYMBOLS

SYMBOL	SOIL DESCRIPTION
	Location of sample obtained in general accordance with ASTM D 1586 Standard Penetration Test
	Location of SPT sampling attempt with no sample recovery
	Location of sample obtained using thin wall, shelby tube, or Geoprobe® sampler in general accordance with ASTM D 1587
	Location of thin wall, shelby tube, or Geoprobe® sampling attempt with no sample recovery
	Location of sample obtained using Dames and Moore sampler and 300 pound hammer or pushed
	Location of Dames and Moore sampling attempt (300 pound hammer or pushed) with no sample recovery
	Location of grab sample
	Rock Coring Interval
	Water level

GEOTECHNICAL TESTING EXPLANATIONS

PP	Pocket Penetrometer	LL	Liquid Limit
TOR	Torvane	PI	Plasticity Index
CONSOL	Consolidation	PCF	Pounds Per Cubic Foot
DS	Direct Shear	PSF	Pounds Per Square Foot
P200	Percent Passing U.S. No. 200 Sieve	TSF	Tons Per Square Foot
W	Moisture Content	P	Pushed Sample
DD	Dry Density	OC	Organic Content

ENVIRONMENTAL TESTING EXPLANATIONS

CA	Sample Submitted for Chemical Analysis	ND	Not Detected
PID	Photoionization Detector Headspace Analysis	NS	No Visible Sheen
		SS	Slight Sheen
PPM	Parts Per Million	MS	Moderate Sheen
MG/KG	Milligrams Per Kilogram	HS	Heavy Sheen
P	Pushed Sample		

GEODESIGN INC

KEY TO TEST PIT AND BORING LOG SYMBOLS

TABLE A-1

SOIL CLASSIFICATION SYSTEM

MAJOR DIVISIONS			SYMBOL	NAME
Coarse Grained Soils More than 50% retained on No. 200 Sieve	Gravel More than 50% of coarse fraction retained on No. 4 Sieve	Clean Gravel	GW	Well graded, fine to coarse gravel
			GP	Poorly graded gravel
		Gravel with Fines	GM	Silty gravel
			GC	Clayey gravel
	Sand More than 50% of coarse fraction passes No. 4 Sieve	Clean Sand	SW	Well graded, fine to coarse sand
			SP	Poorly graded sand
		Sand with Fines	SM	Silty sand
			SC	Clayey sand
Fine Grained Soils More than 50% passes No. 200 Sieve	Silt and Clay Liquid Limit less than 50%	Inorganic	ML	Low plasticity silt
			CL	Low plasticity clay
		Organic	OL	Organic silt, organic clay
	Silt and Clay Liquid Limit greater than 50%	Inorganic	MH	High plasticity silt
			CH	High plasticity clay, fat clay
		Organic	OH	Organic clay, organic silt
Highly Organic Soils			PT	Peat

SOIL CLASSIFICATION GUIDELINES

GRANULAR SOILS		COHESIVE SOILS		
Relative Density	**Standard Penetration Resistance**	**Consistency**	**Standard Penetration Resistance**	**Unconfined Compressive Strength (tsf)**
Very Loose	0 – 4	Very Soft	Less than 2	Less than 0.25
Loose	4 – 10	Soft	2 - 4	0.25 - 0.50
Medium Dense	10 – 30	Medium Stiff	4 - 8	0.50 - 1.0
Dense	30 – 50	Stiff	8 - 15	1.0 - 2.0
Very Dense	More than 50	Very Stiff	15 - 30	2.0 - 4.0
		Hard	More than 30	More than 4.0

GRAIN SIZE CLASSIFICATION

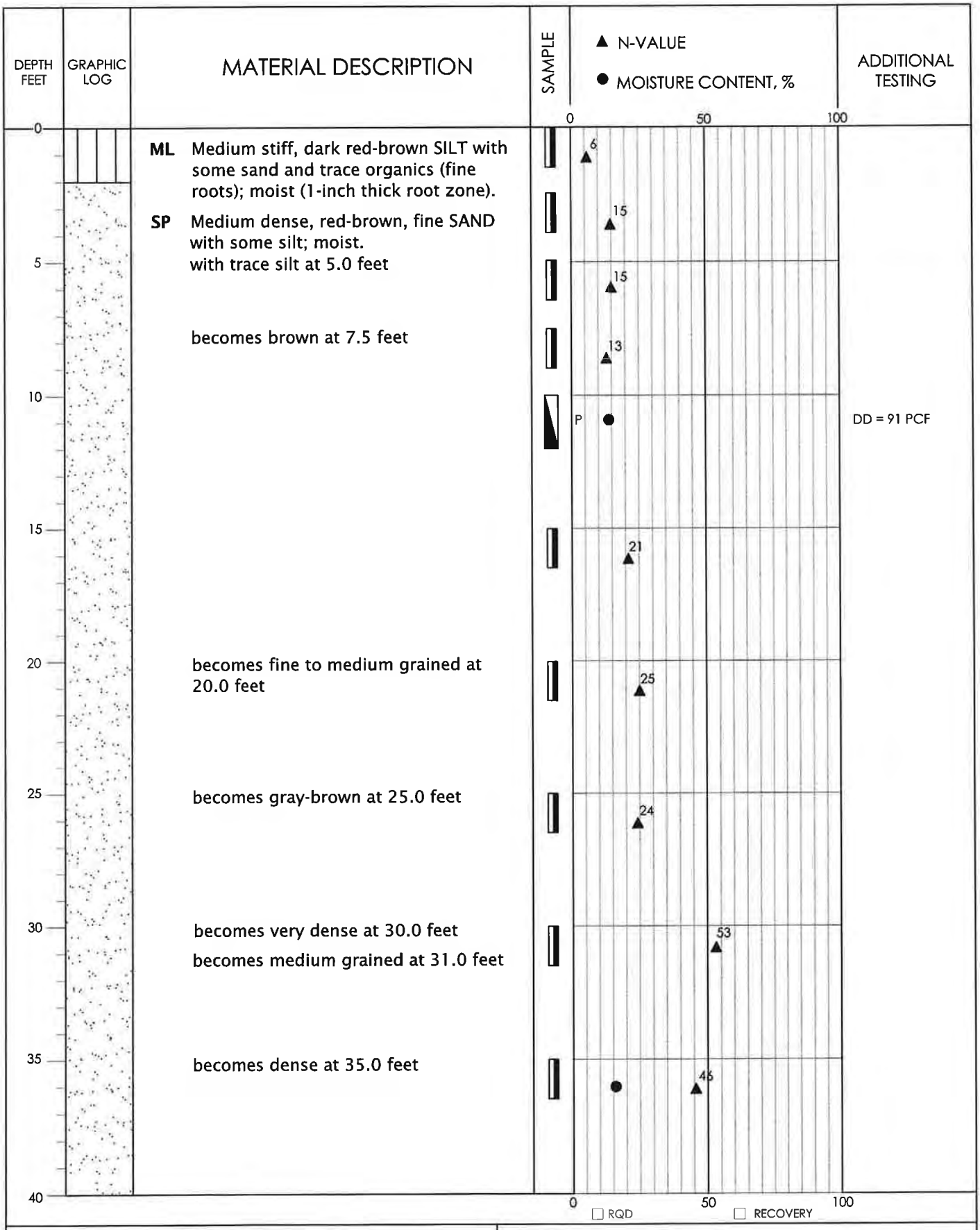
		Subclassifications	
Boulders	12 - 36 inches		
Cobbles	3 - 12 inches	Percentage of other material in sample	
Gravel	¾ - 3 inches (coarse) ¼ - ¾ inches (fine)	Clean	0 – 2
		Trace	2 – 10
Sand	No. 10 - No. 4 Sieve (coarse) No. 10 - No. 40 Sieve (medium) No. 40 - No. 200 Sieve (fine)	Some	10 - 30
		Sandy, Silty, Clayey, etc.	30 - 50

Dry = very low moisture, dry to the touch; Moist = damp, without visible moisture; Wet = saturated, with visible free water.

GEODESIGN INC

SOIL CLASSIFICATION SYSTEM AND GUIDELINES

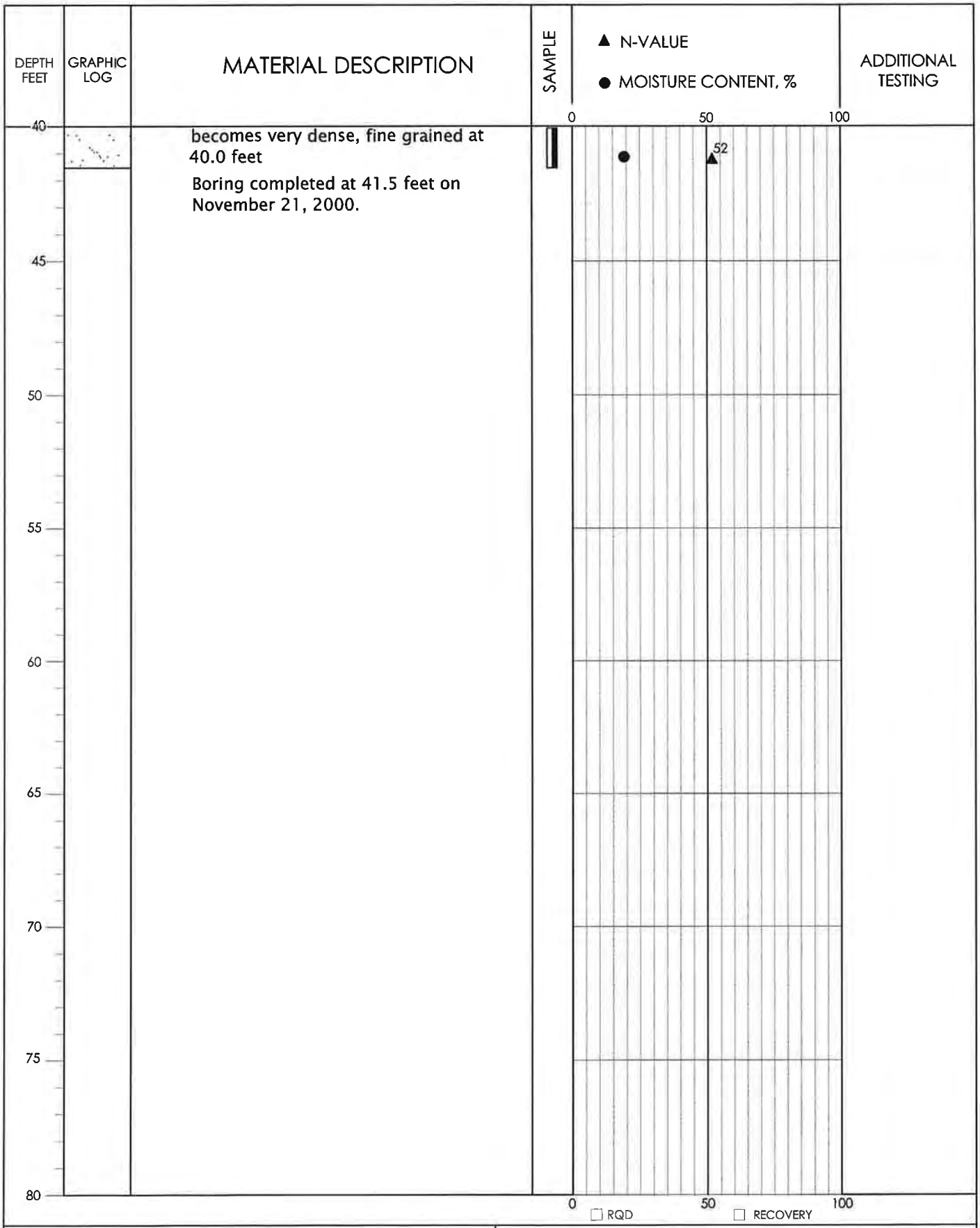
TABLE A-2



GEODESIGN INC

BORING B-1

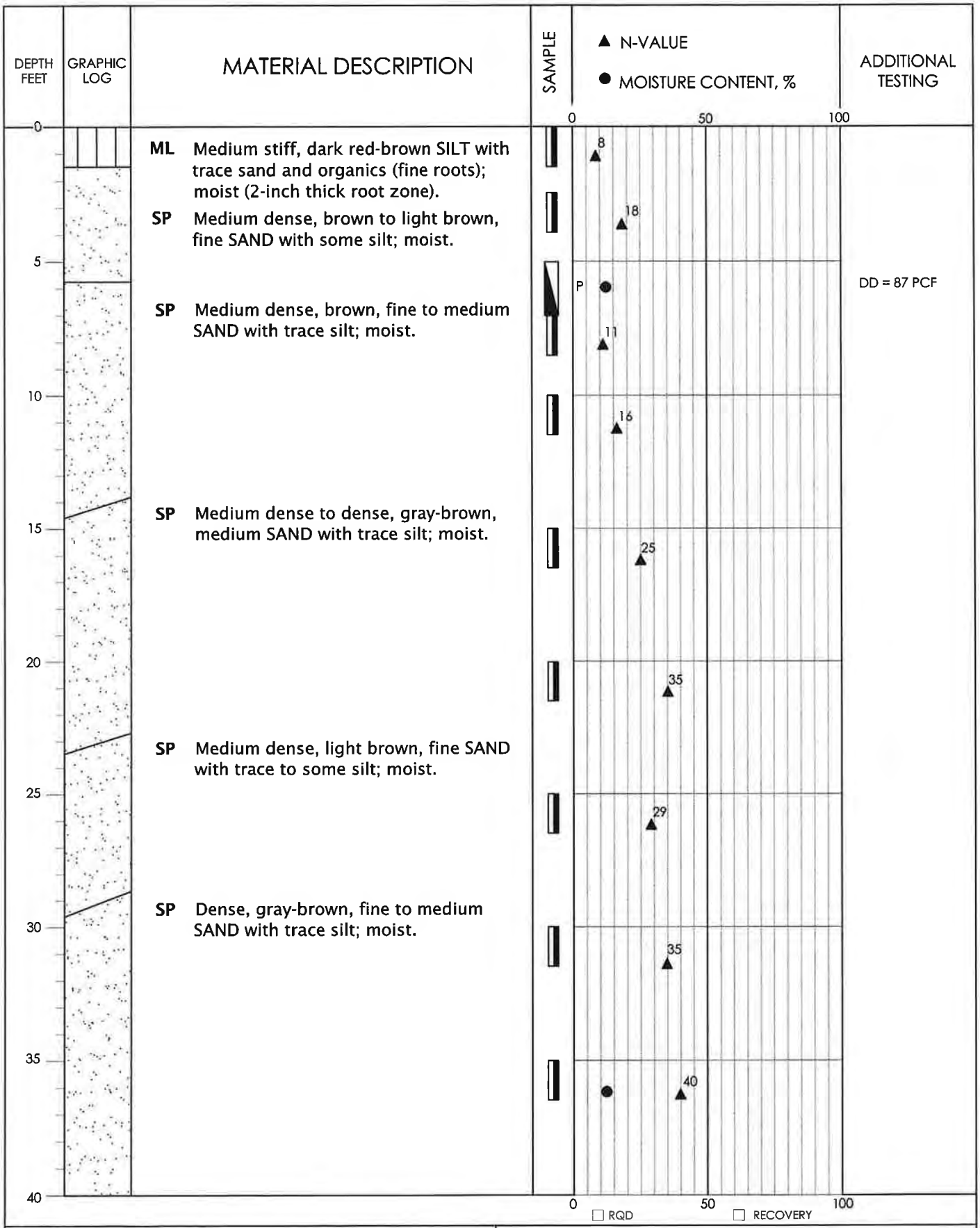
NOVELLUS-4	DECEMBER 2000	FIGURE A-1



GEODESIGN INC

BORING B-1 (CONT.)

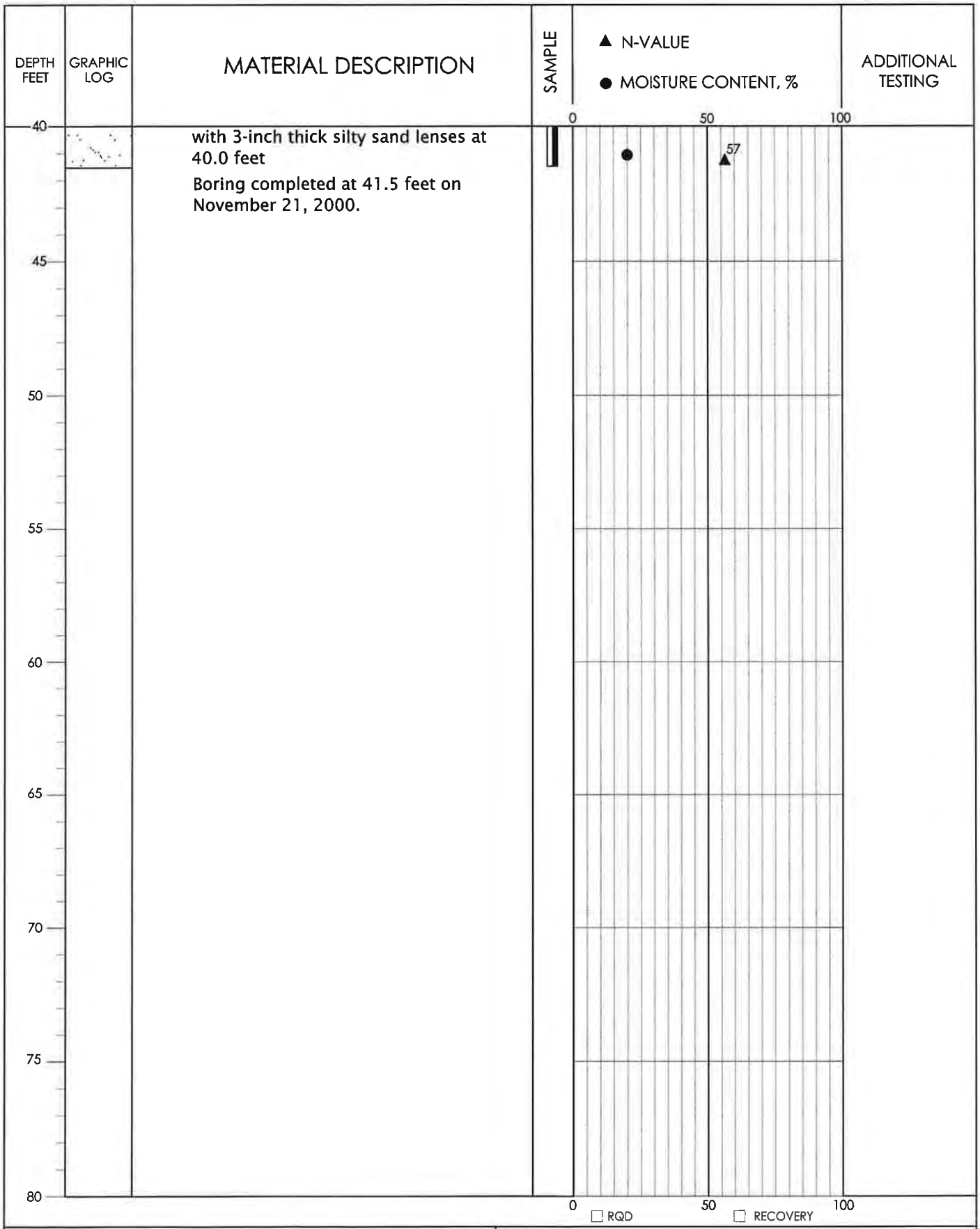
NOVELLUS-4	DECEMBER 2000	FIGURE A-1



GEODESIGN INC

BORING B-2

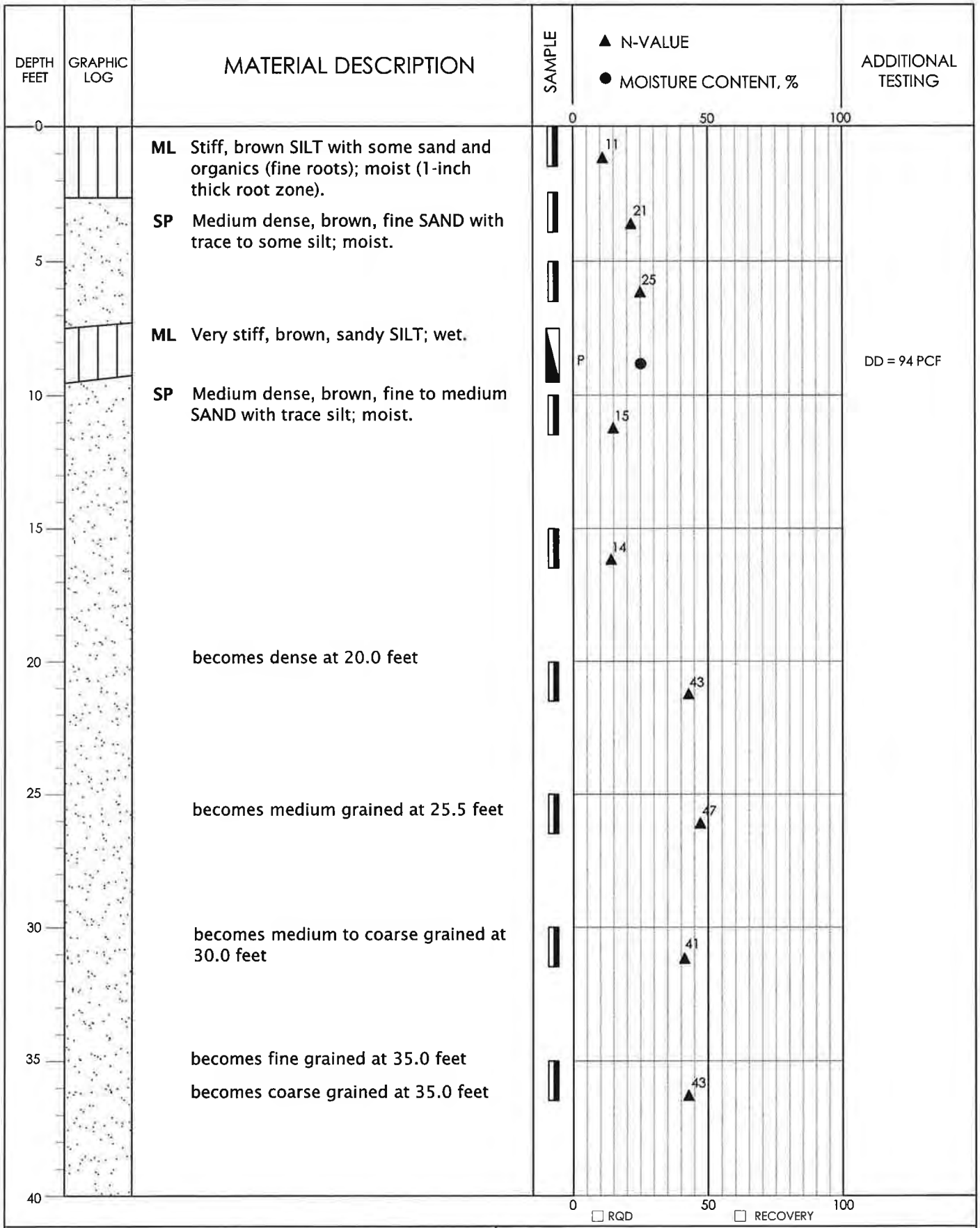
NOVELLUS-4	DECEMBER 2000	FIGURE A-2



GEODESIGN INC

BORING B-2 (CONT.)

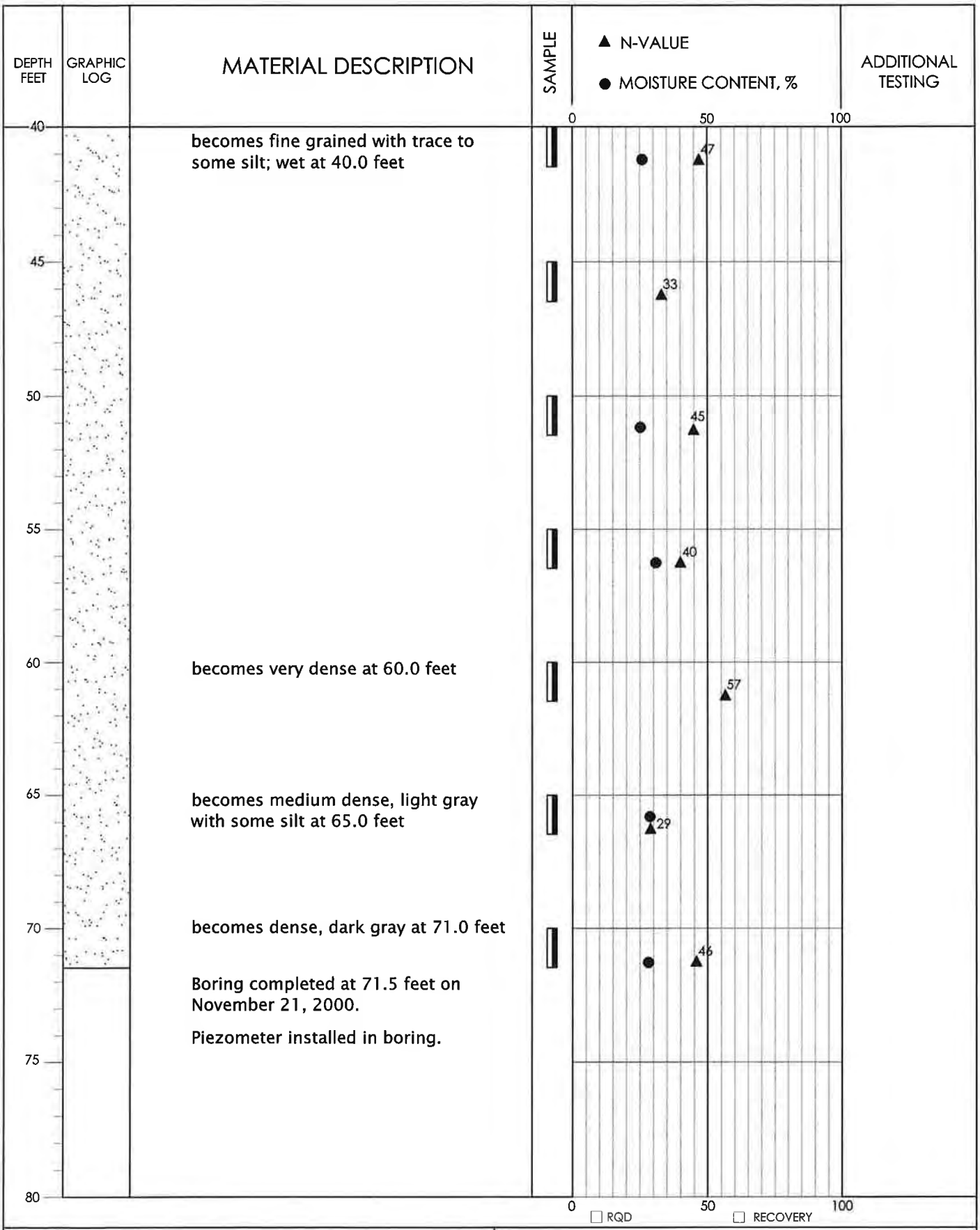
NOVELLUS-4	DECEMBER 2000	FIGURE A-2



GEODESIGN INC

BORING B-3

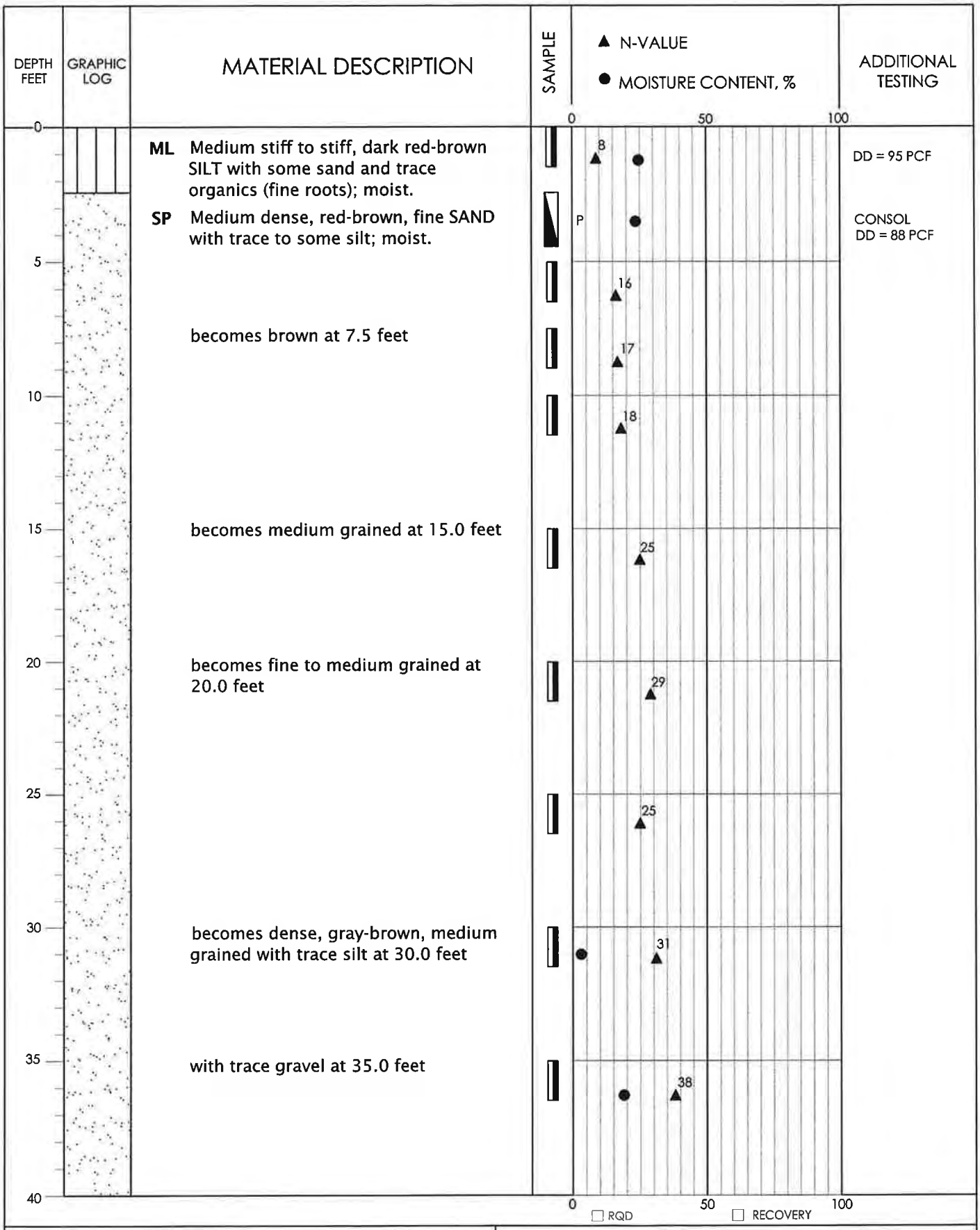
NOVELLUS-4	DECEMBER 2000	FIGURE A-3



GEODESIGN INC

BORING B-3 (CONT.)

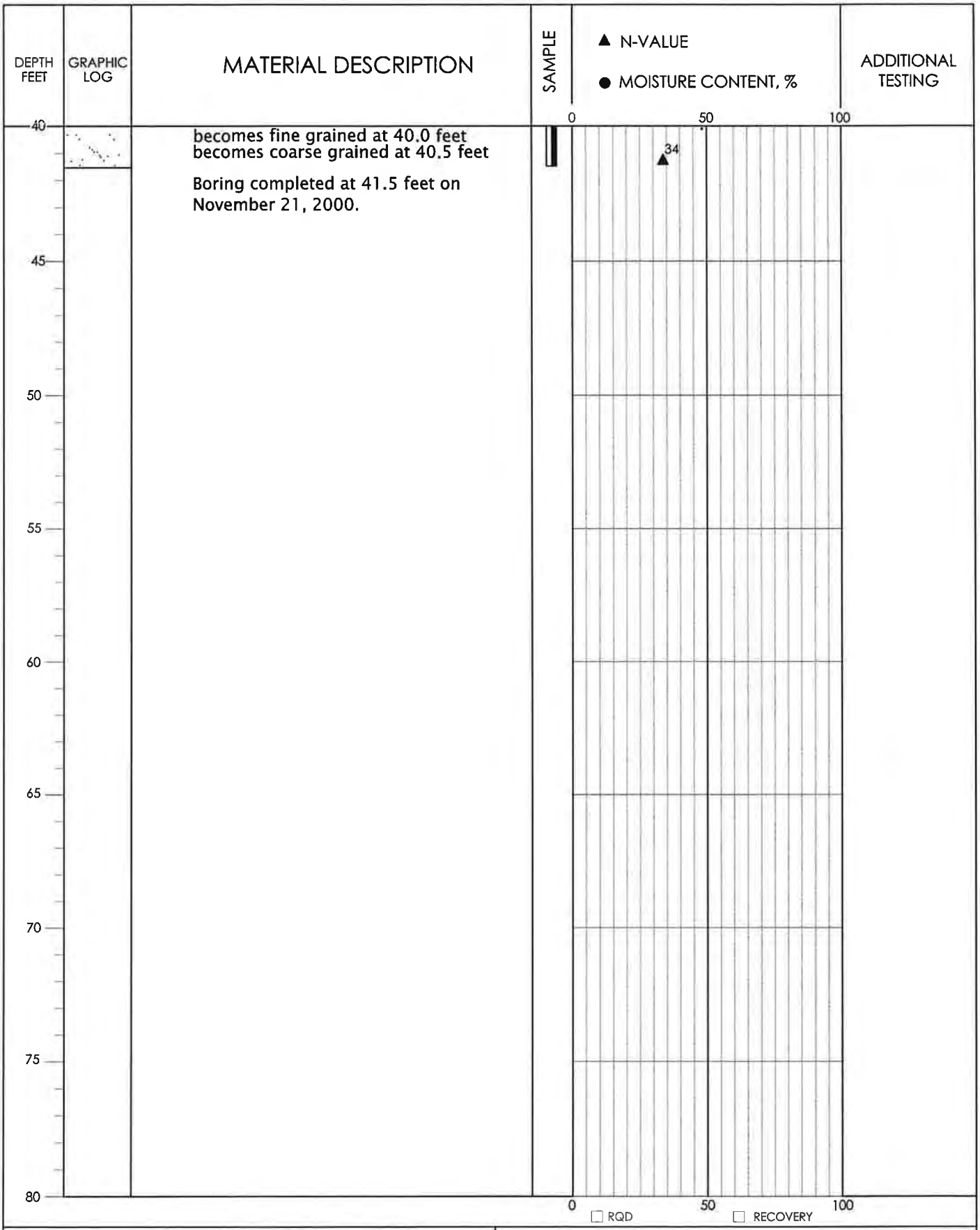
NOVELLUS-4	DECEMBER 2000	FIGURE A-3



GEODESIGN INC

BORING B-4

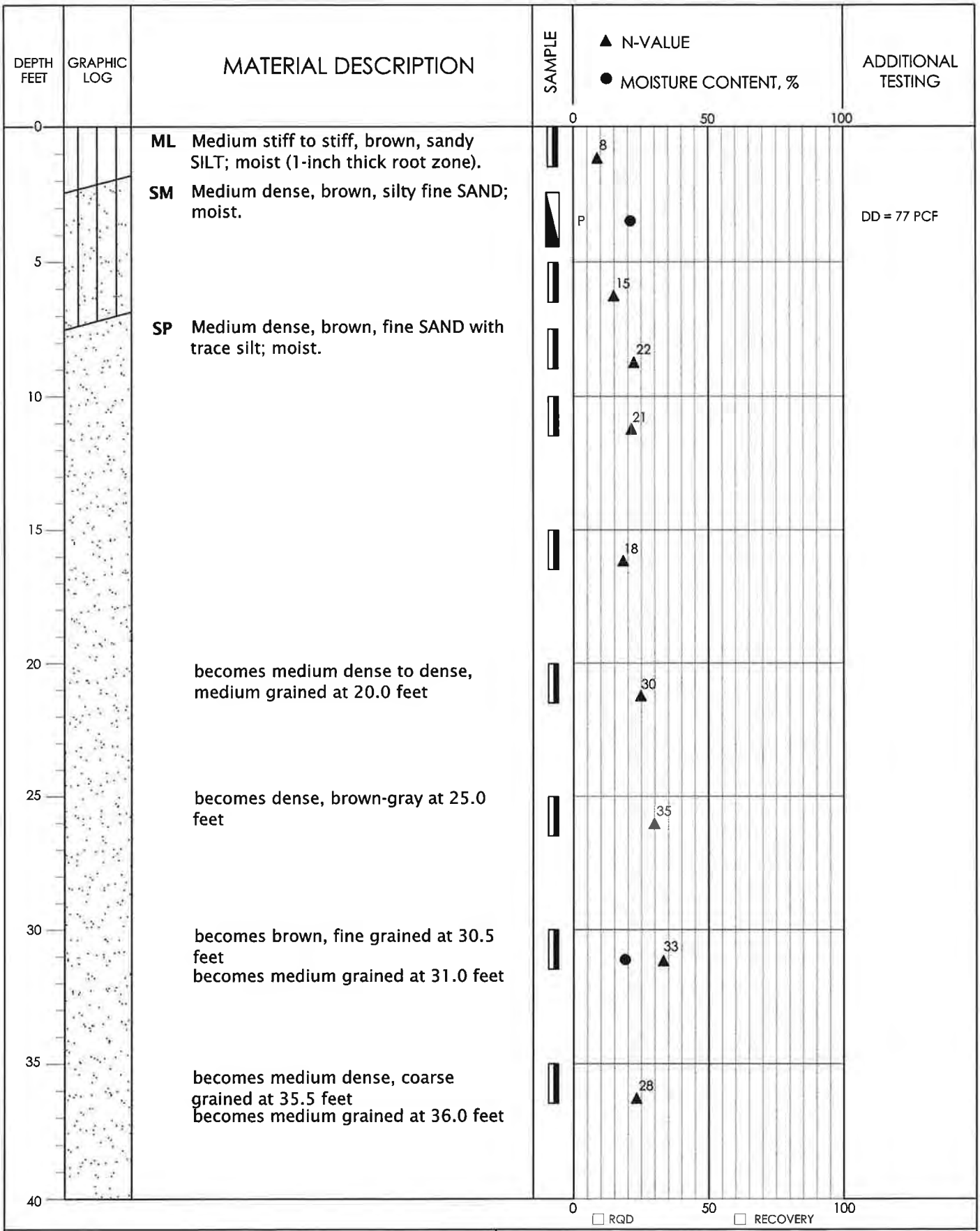
NOVELLUS-4	DECEMBER 2000	FIGURE A-4



GEODESIGN INC

BORING B-4 (CONT.)

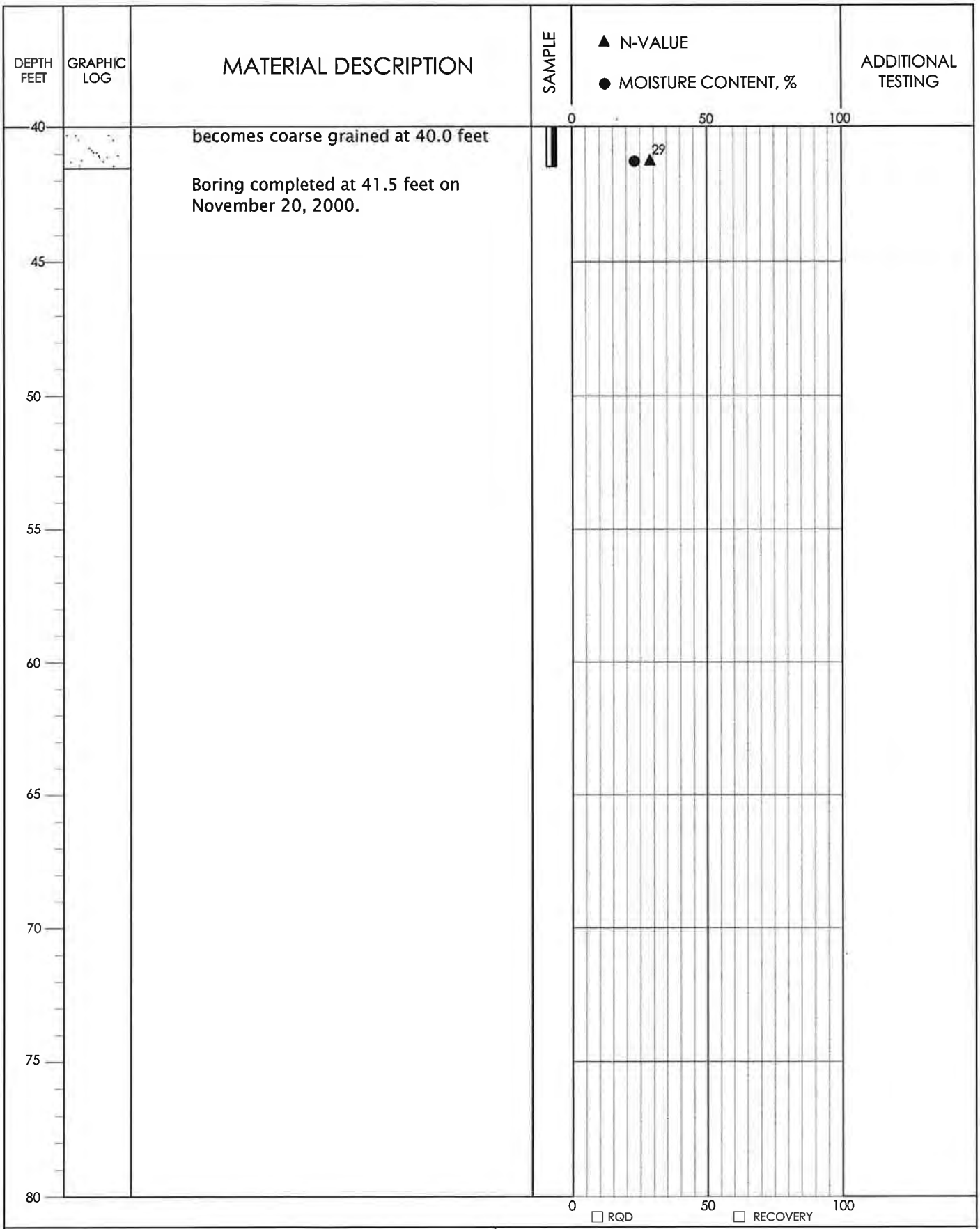
NOVELLUS-4	DECEMBER 2000	FIGURE A-4



GEODESIGN INC

BORING B-5

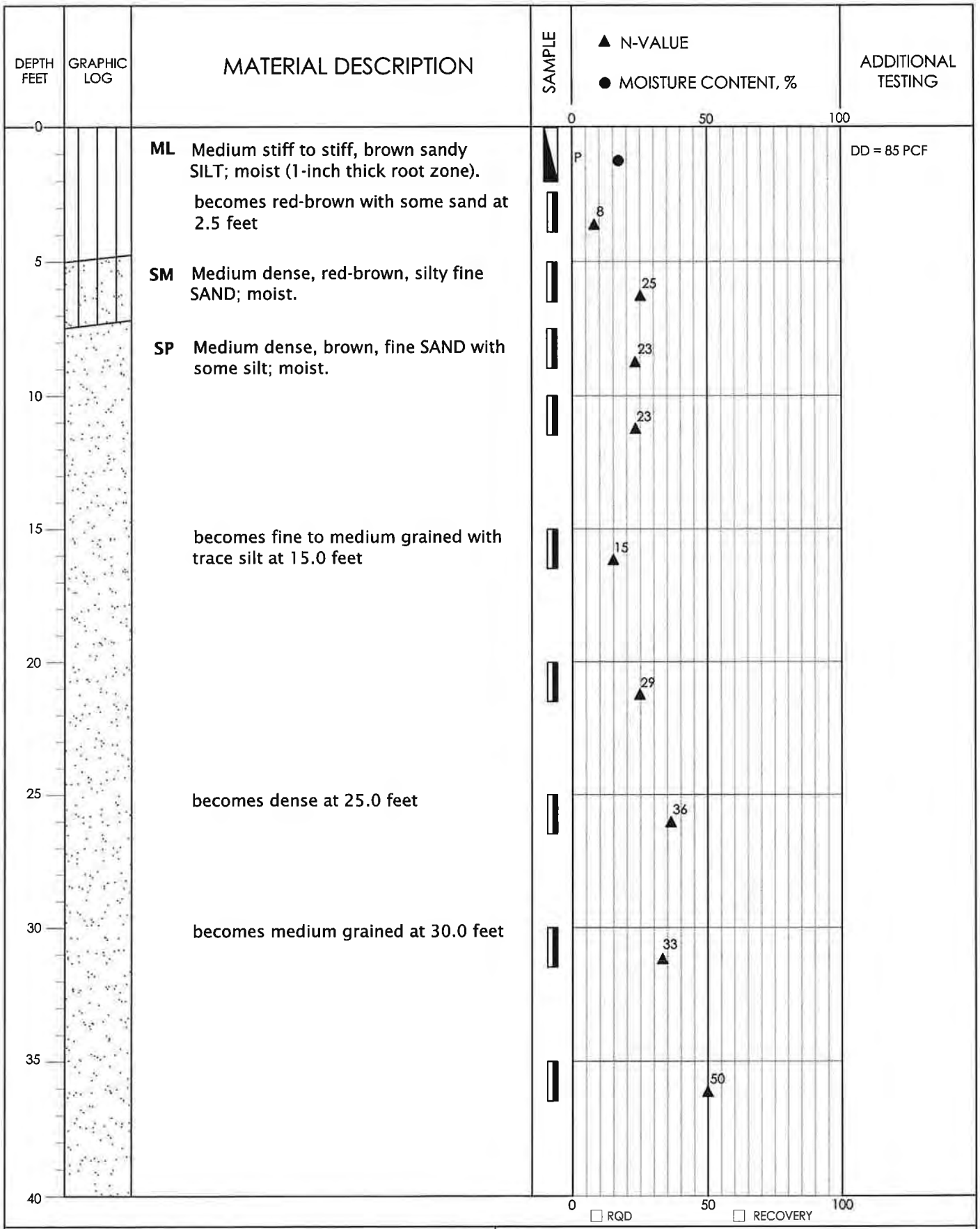
NOVELLUS-4	DECEMBER 2000	FIGURE A-5



GEODESIGN INC

BORING B-5 (CONT.)

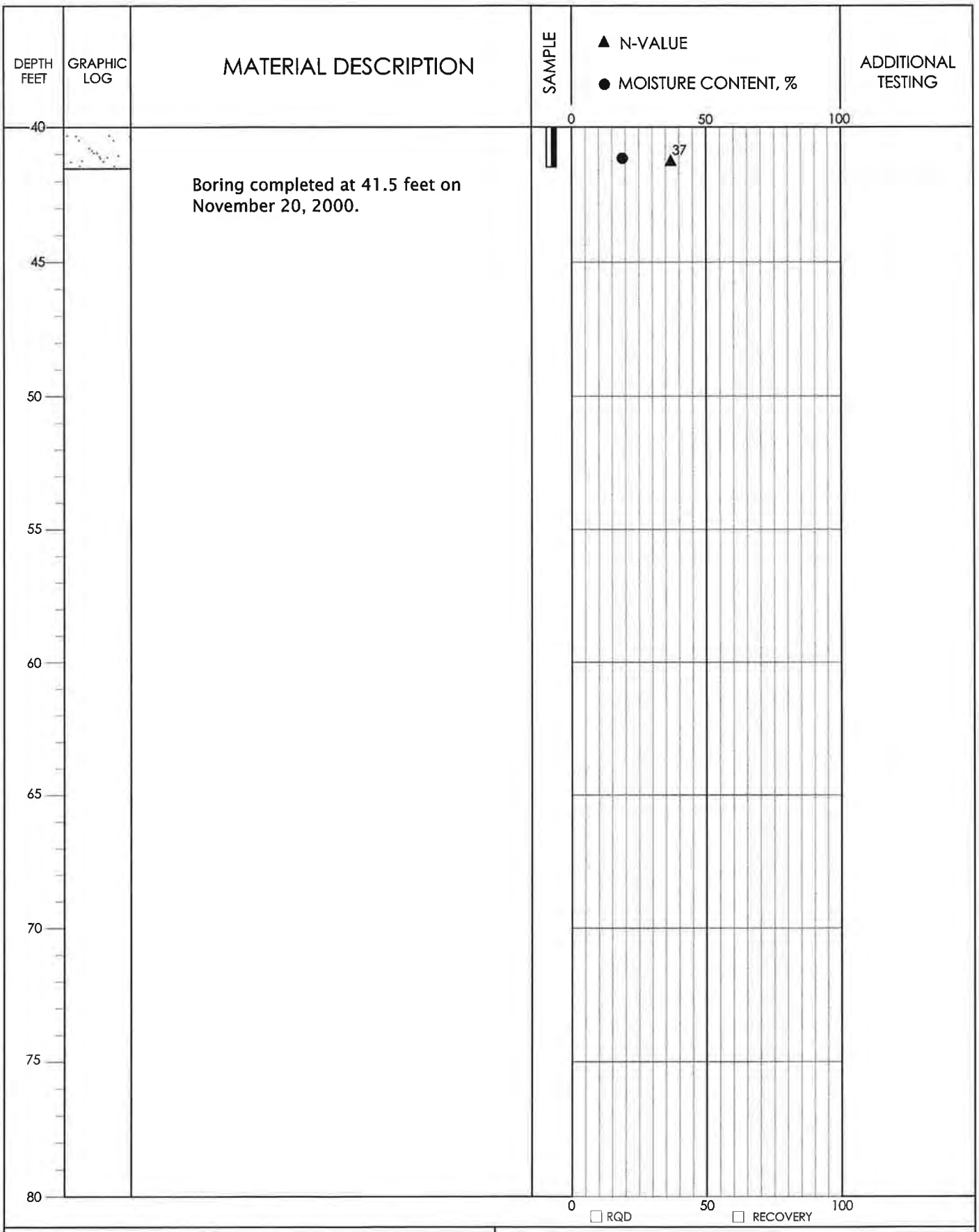
NOVELLUS-4	DECEMBER 2000	FIGURE A-5



GEODESIGN INC

BORING B-6

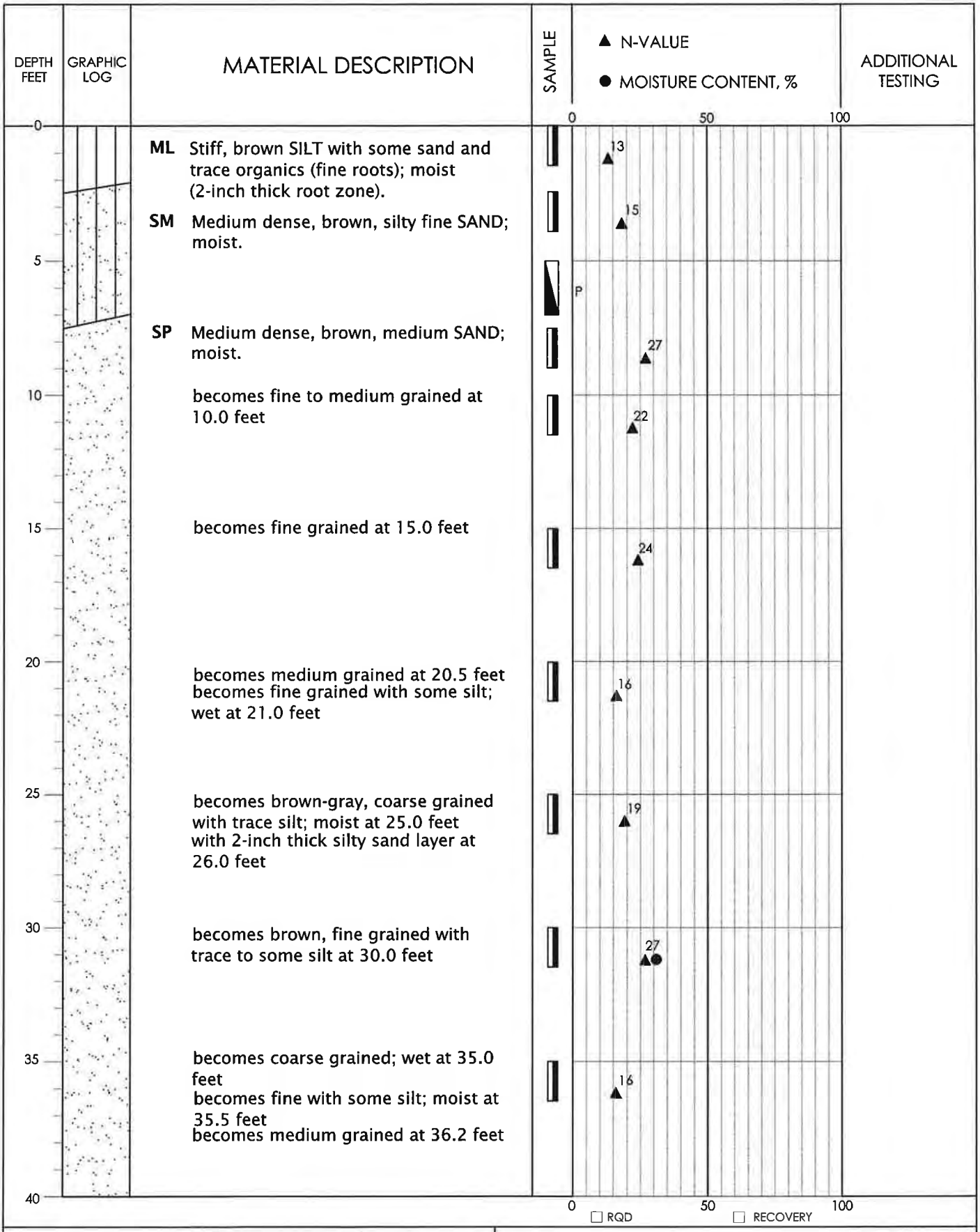
NOVELLUS-4	DECEMBER 2000	FIGURE A-6



GEODESIGN INC

BORING B-6 (CONT.)

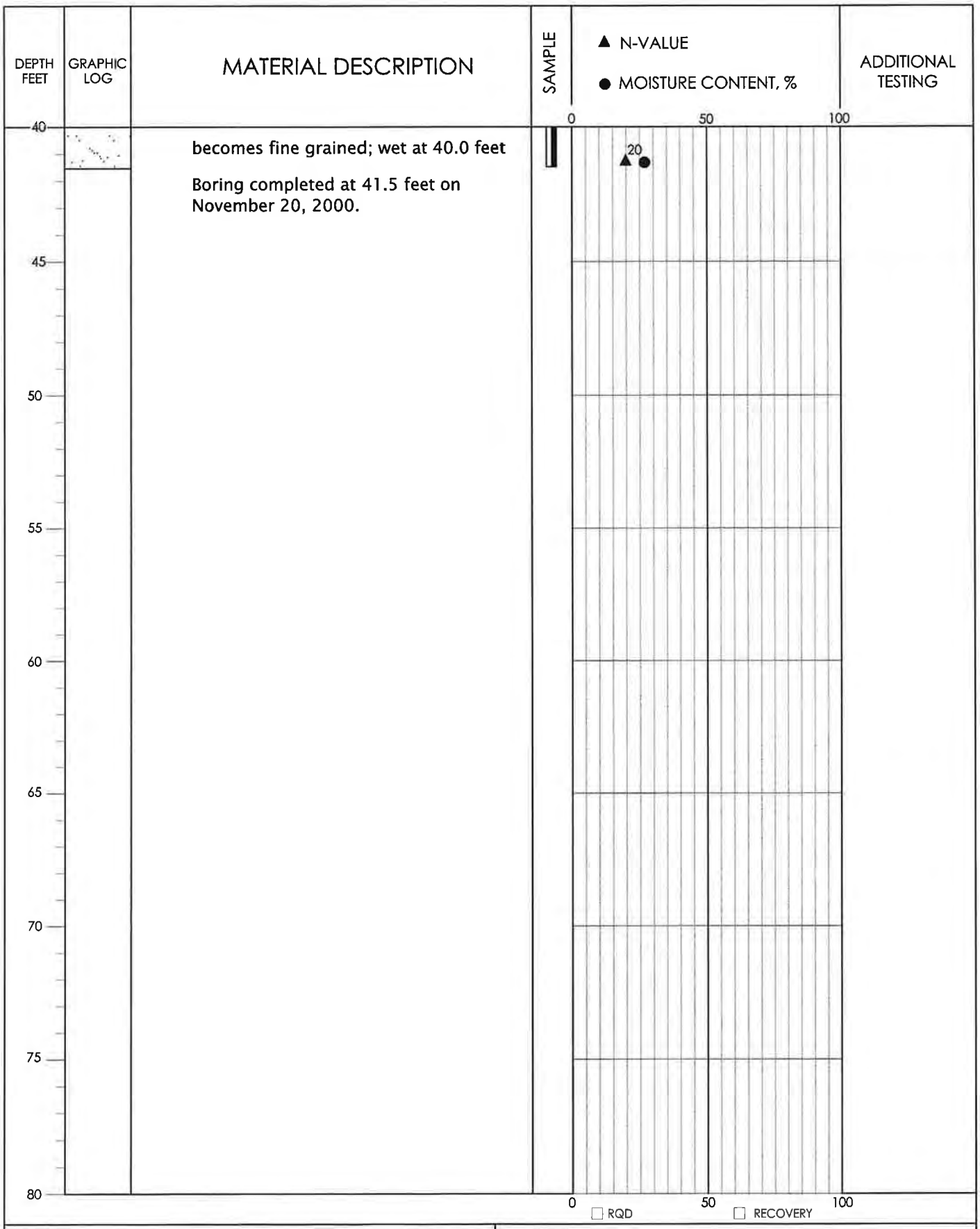
NOVELLUS-4	DECEMBER 2000	FIGURE A-6



GEODESIGN INC

BORING B-7

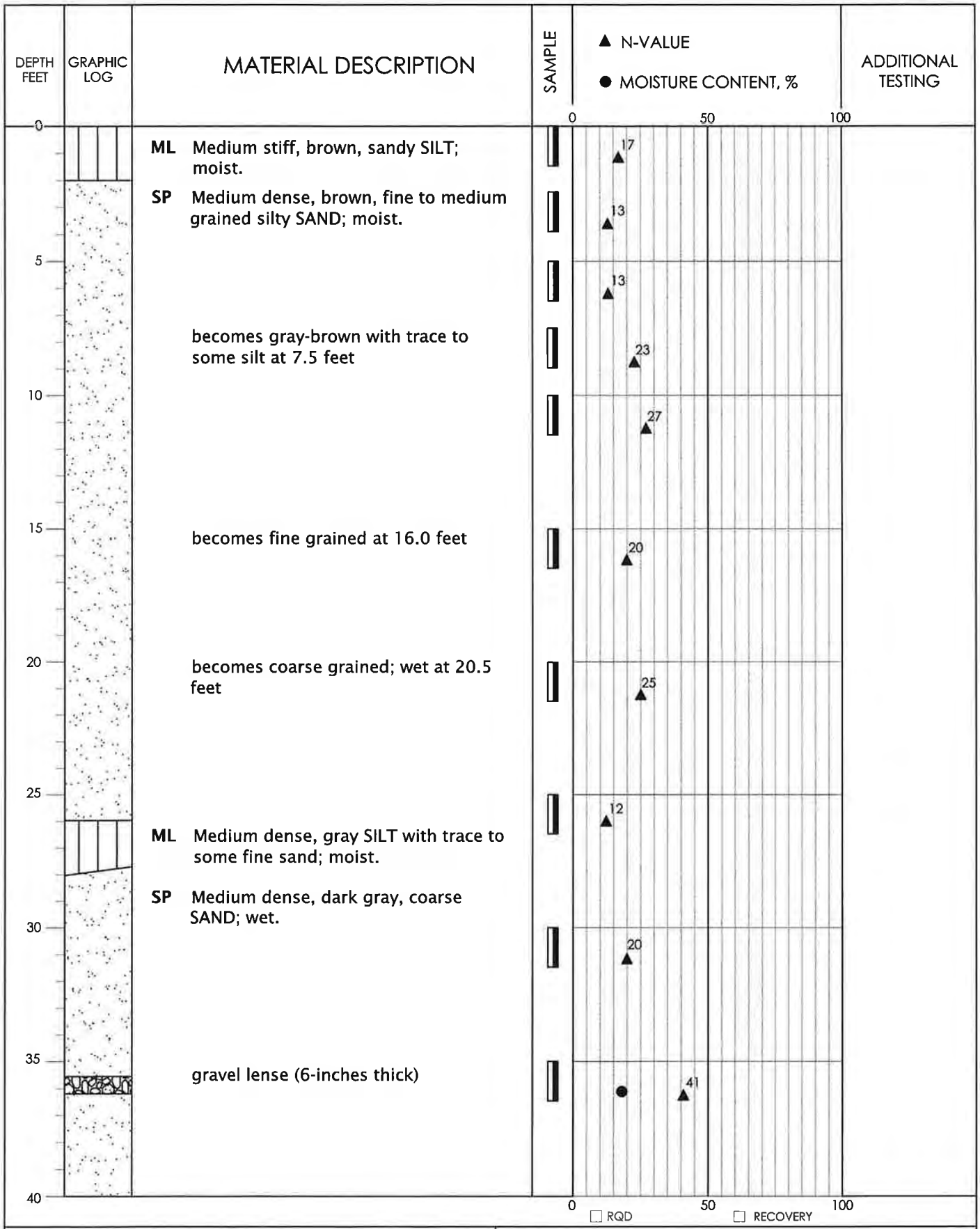
NOVELLUS-4	DECEMBER 2000	FIGURE A-7



GEODESIGN INC

BORING B-7 (CONT.)

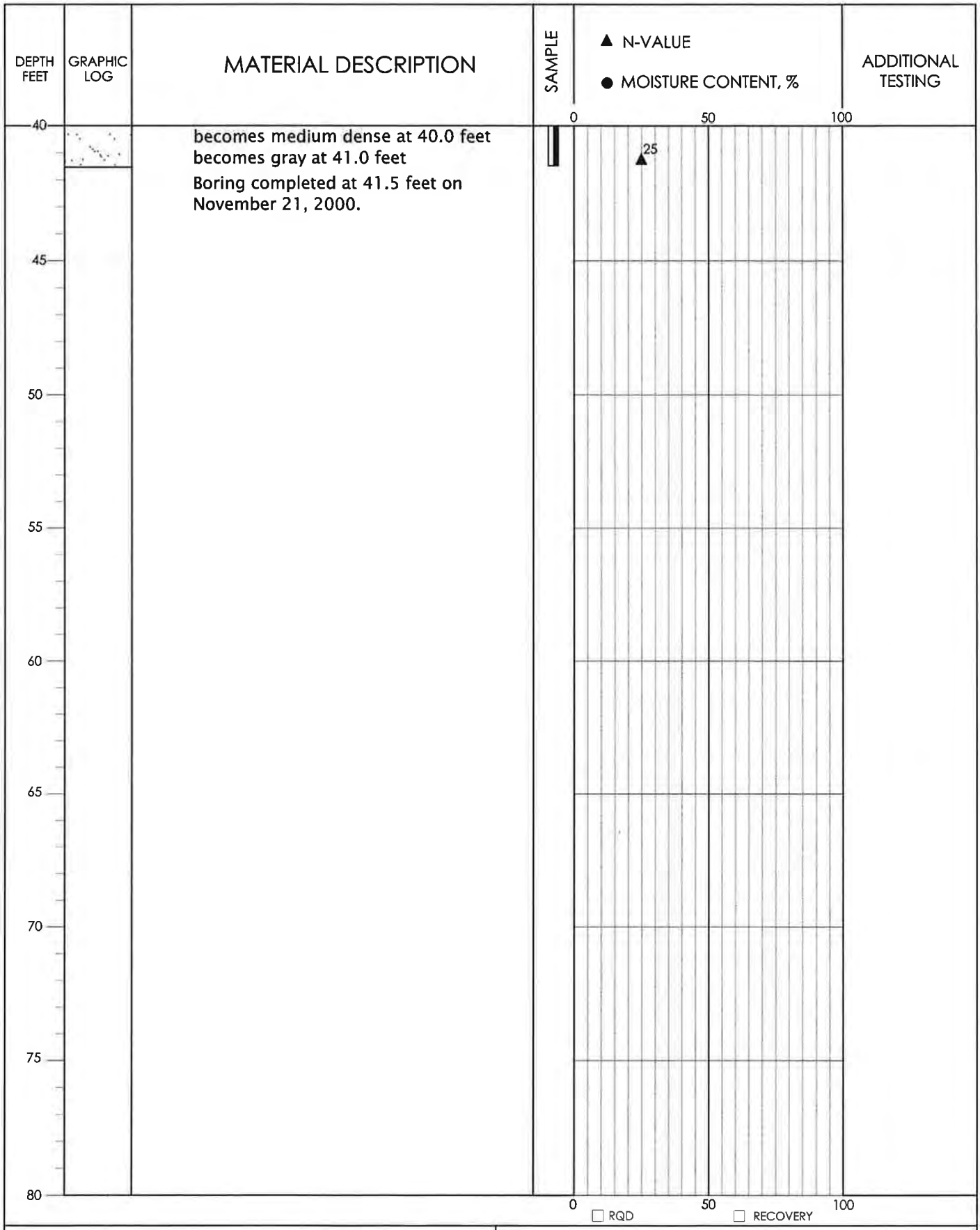
NOVELLUS-4	DECEMBER 2000	FIGURE A-7



GEODESIGN INC

BORING B-8

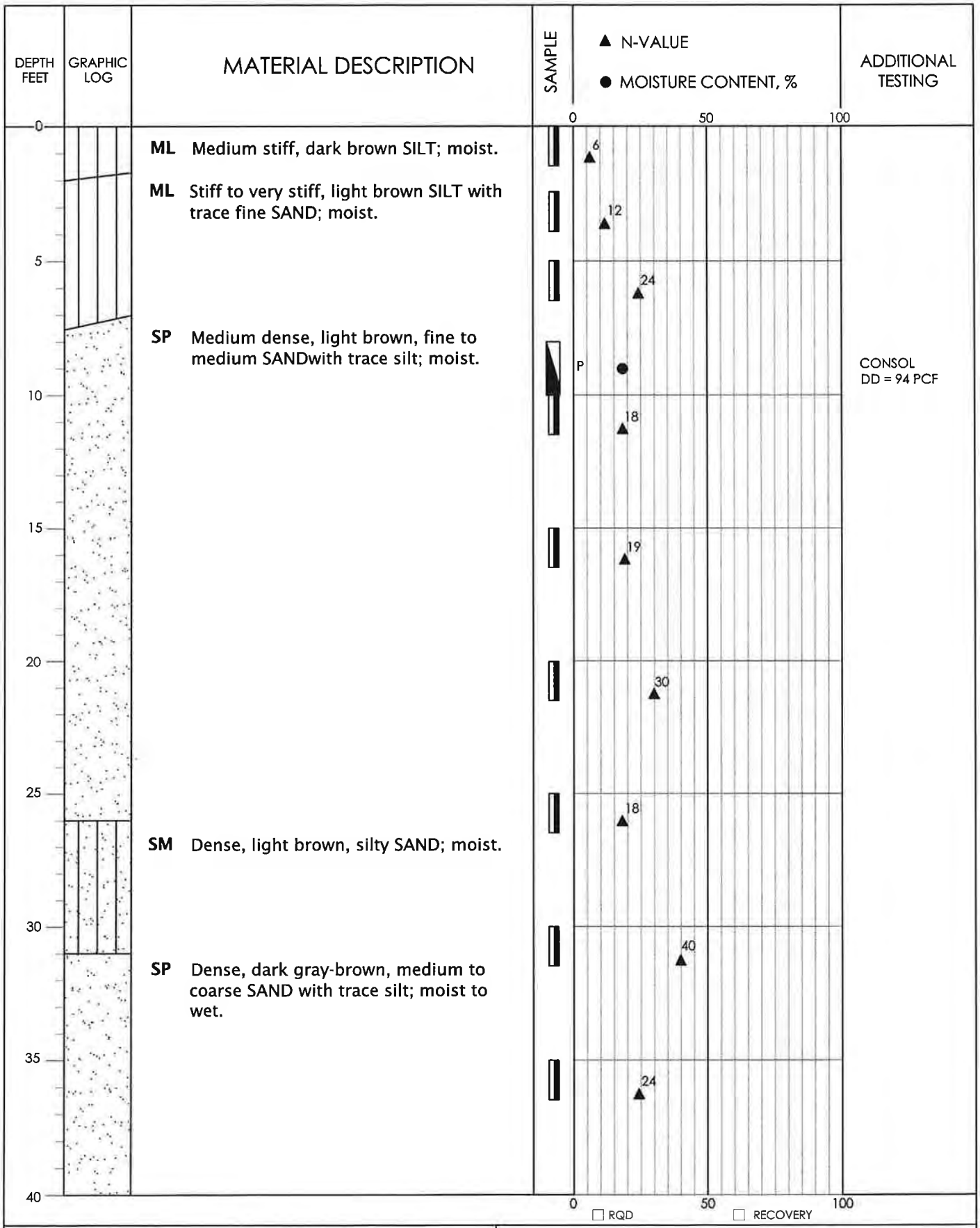
NOVELLUS-4	DECEMBER 2000	FIGURE A-8



GEODESIGN INC

BORING B-8 (CONT.)

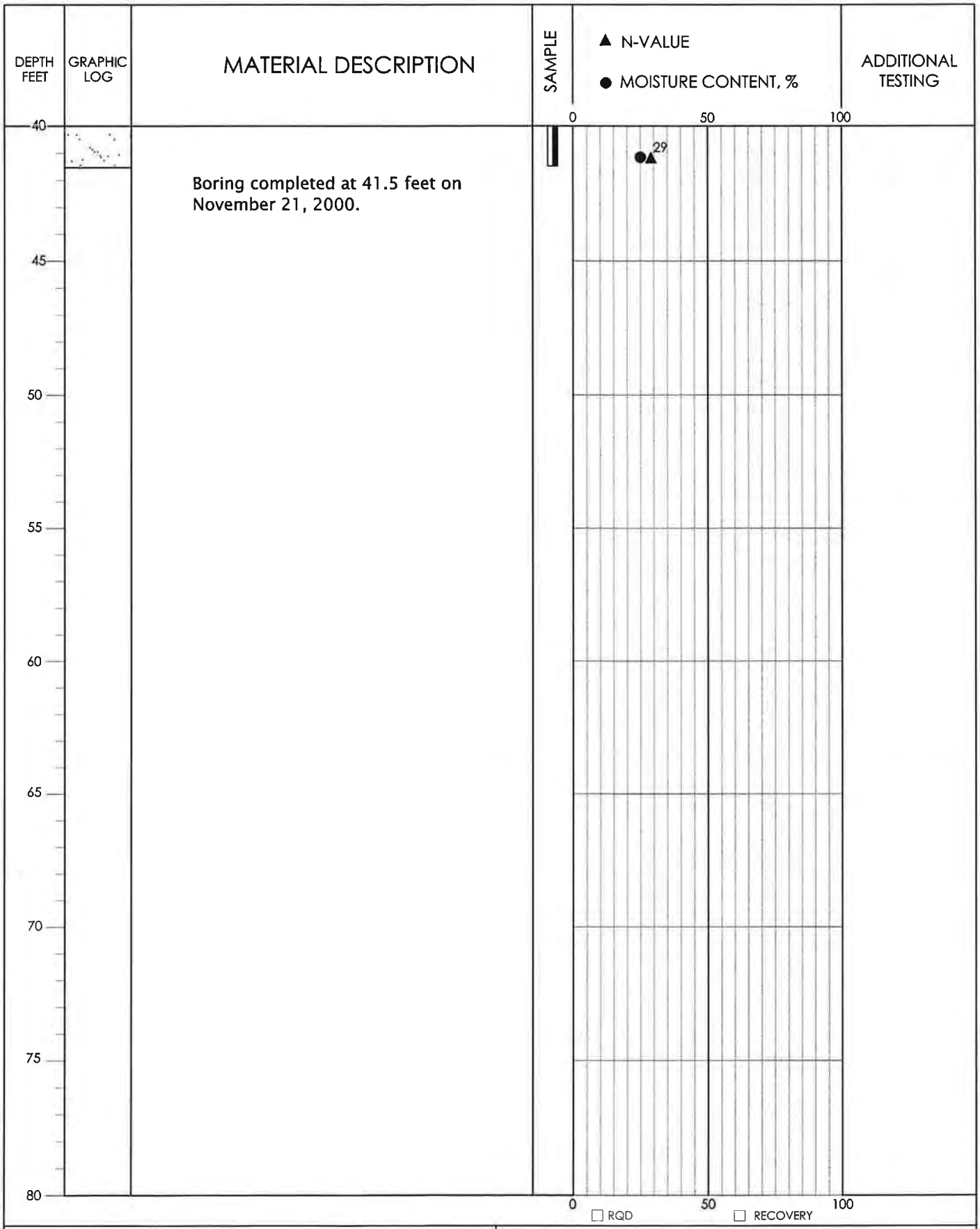
NOVELLUS-4	DECEMBER 2000	FIGURE A-8



GEODESIGN INC

BORING B-9

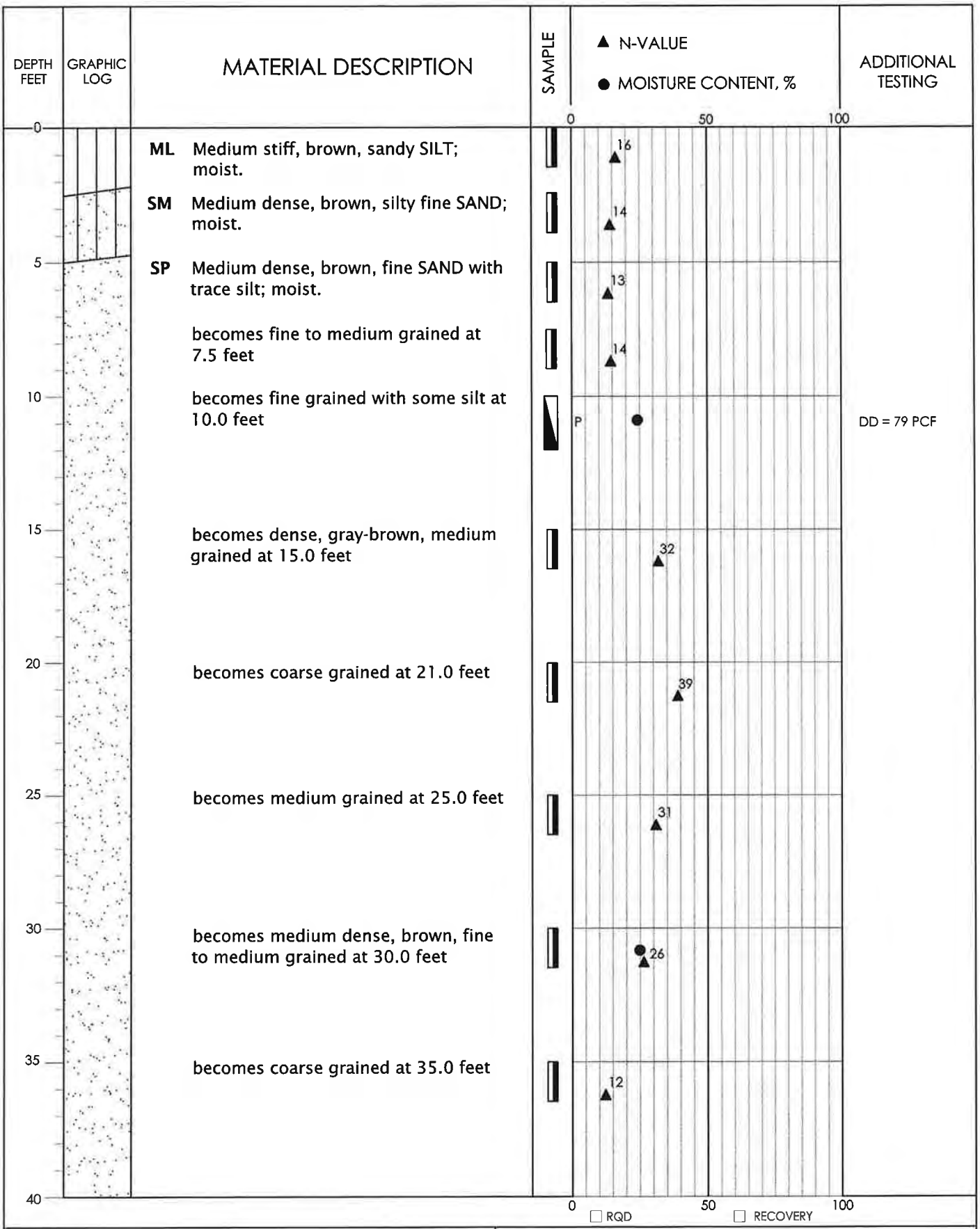
NOVELLUS-4	DECEMBER 2000	FIGURE A-9



GEODESIGN INC

BORING B-9 (CONT.)

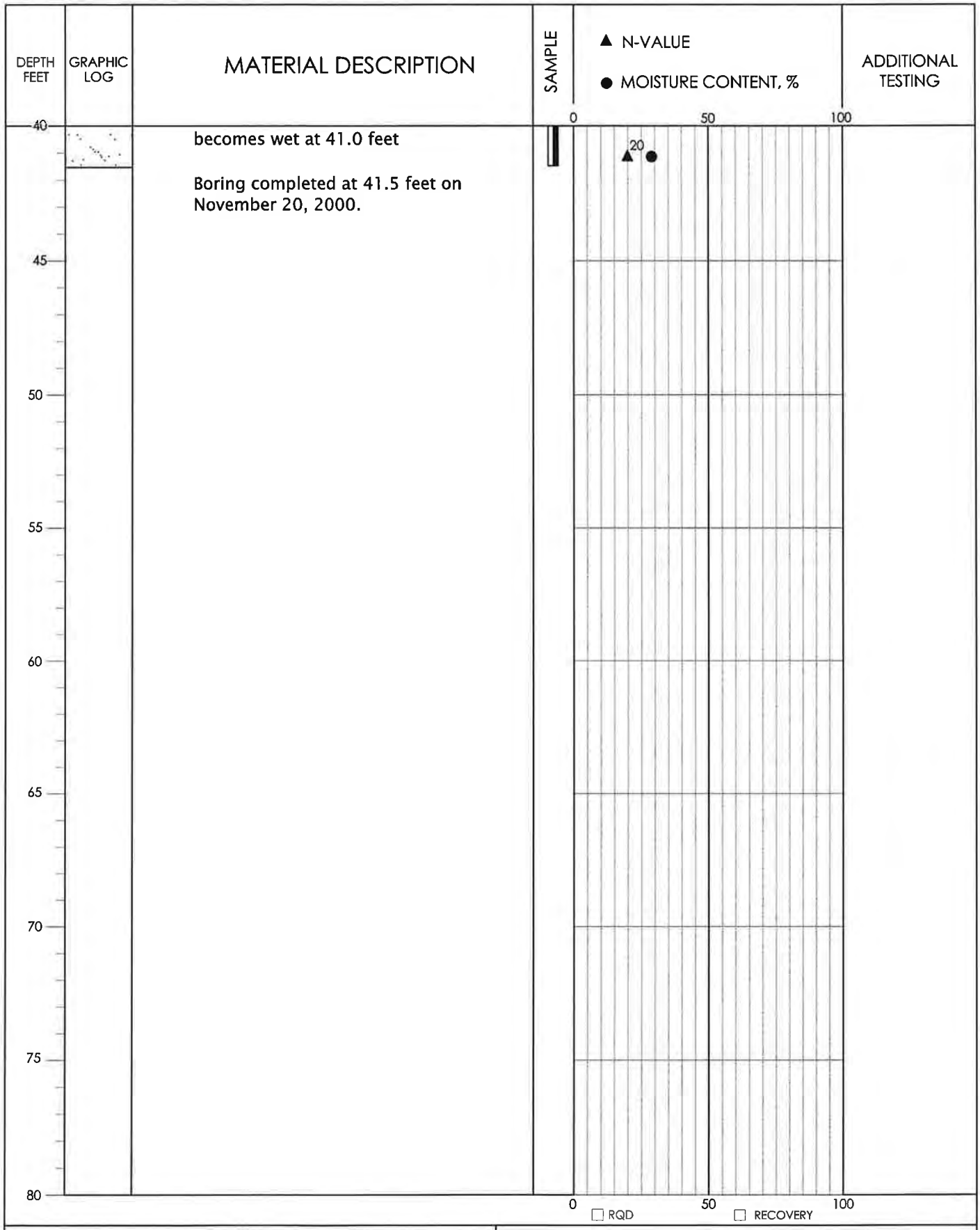
NOVELLUS-4	DECEMBER 2000	FIGURE A-9



GEODESIGN INC

BORING B-10

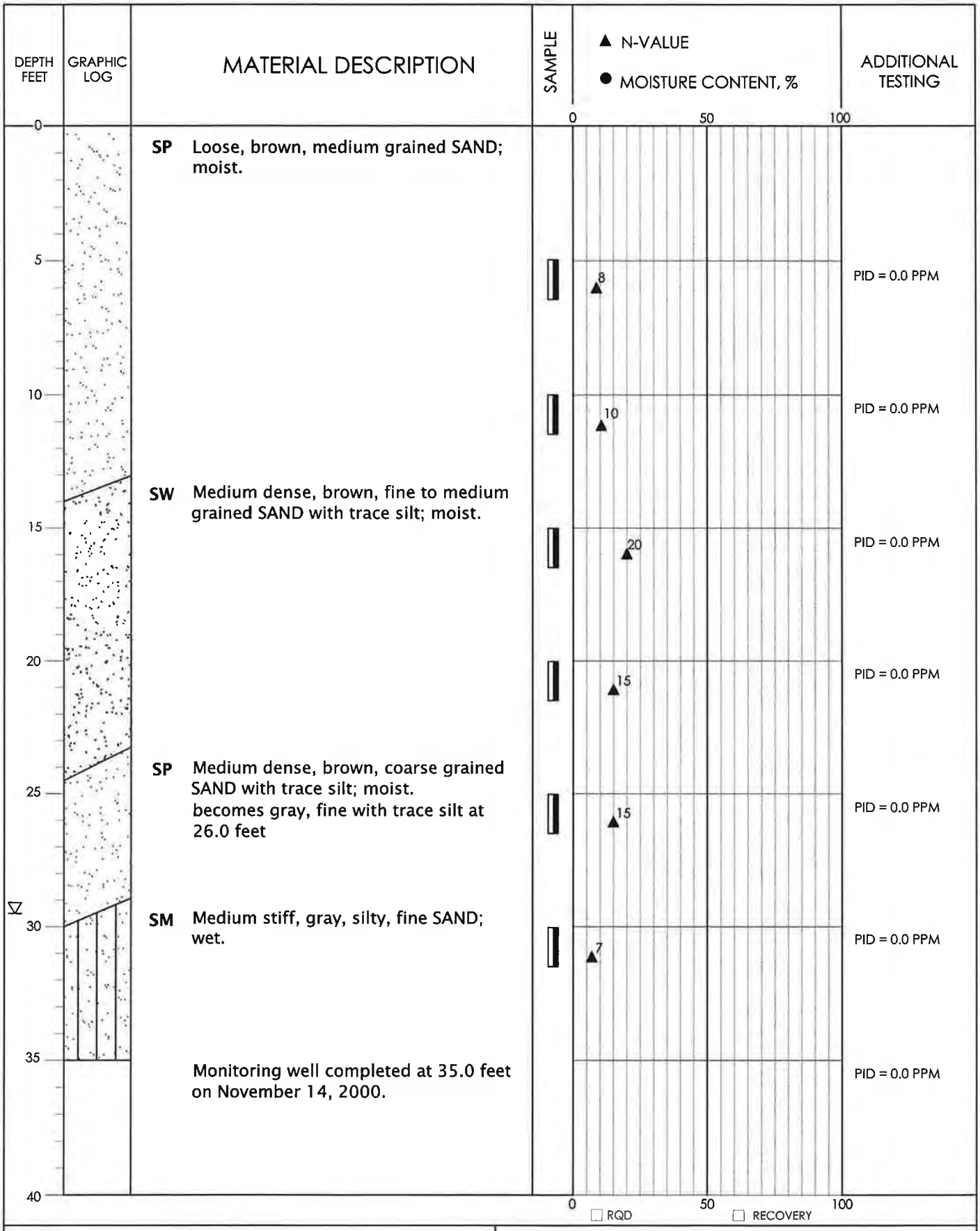
NOVELLUS-4	DECEMBER 2000	FIGURE A-10



GEODESIGN INC

BORING B-10 (CONT.)

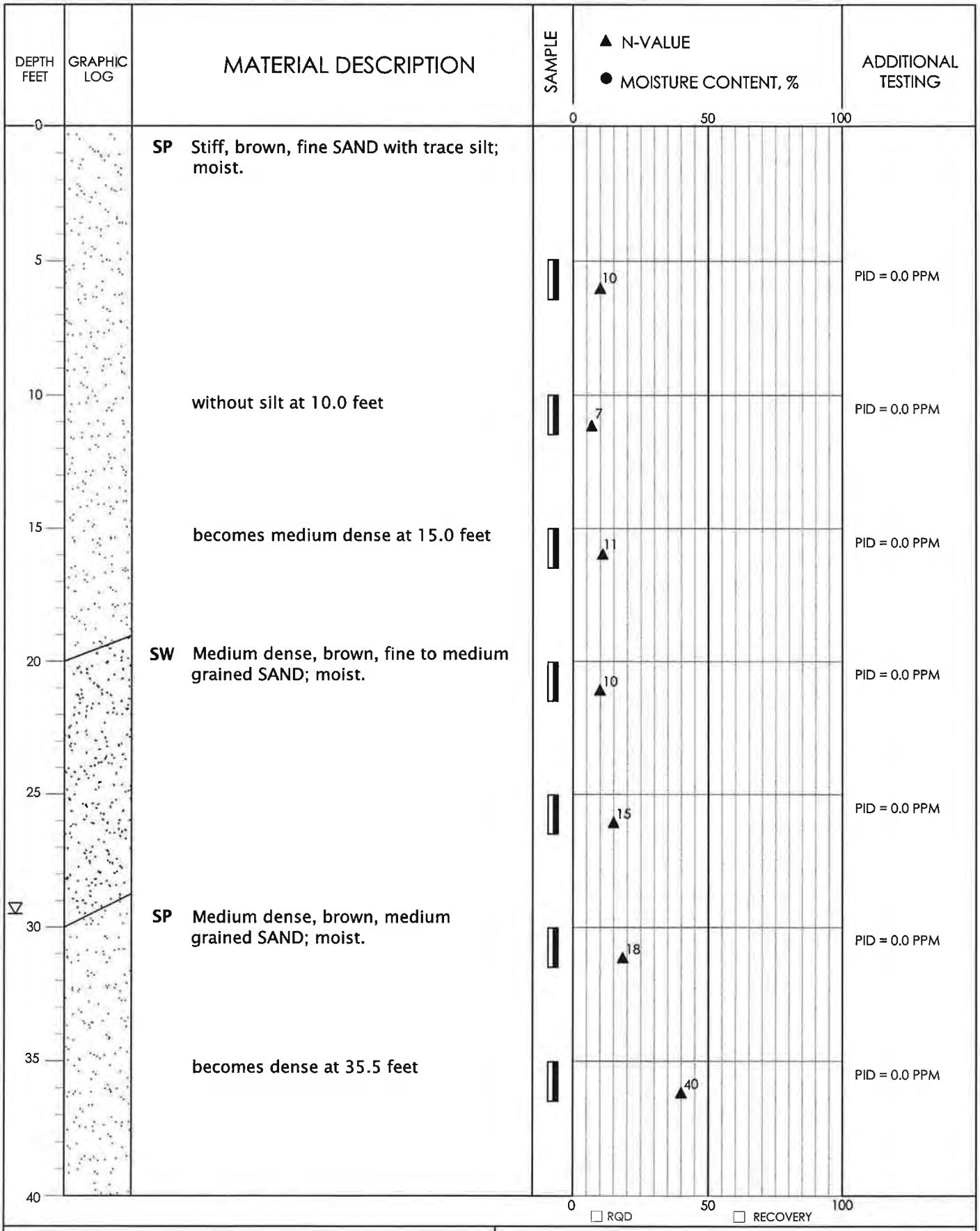
NOVELLUS-4	DECEMBER 2000	FIGURE A-10



GEODESIGN INC

MONITORING WELL MW-1

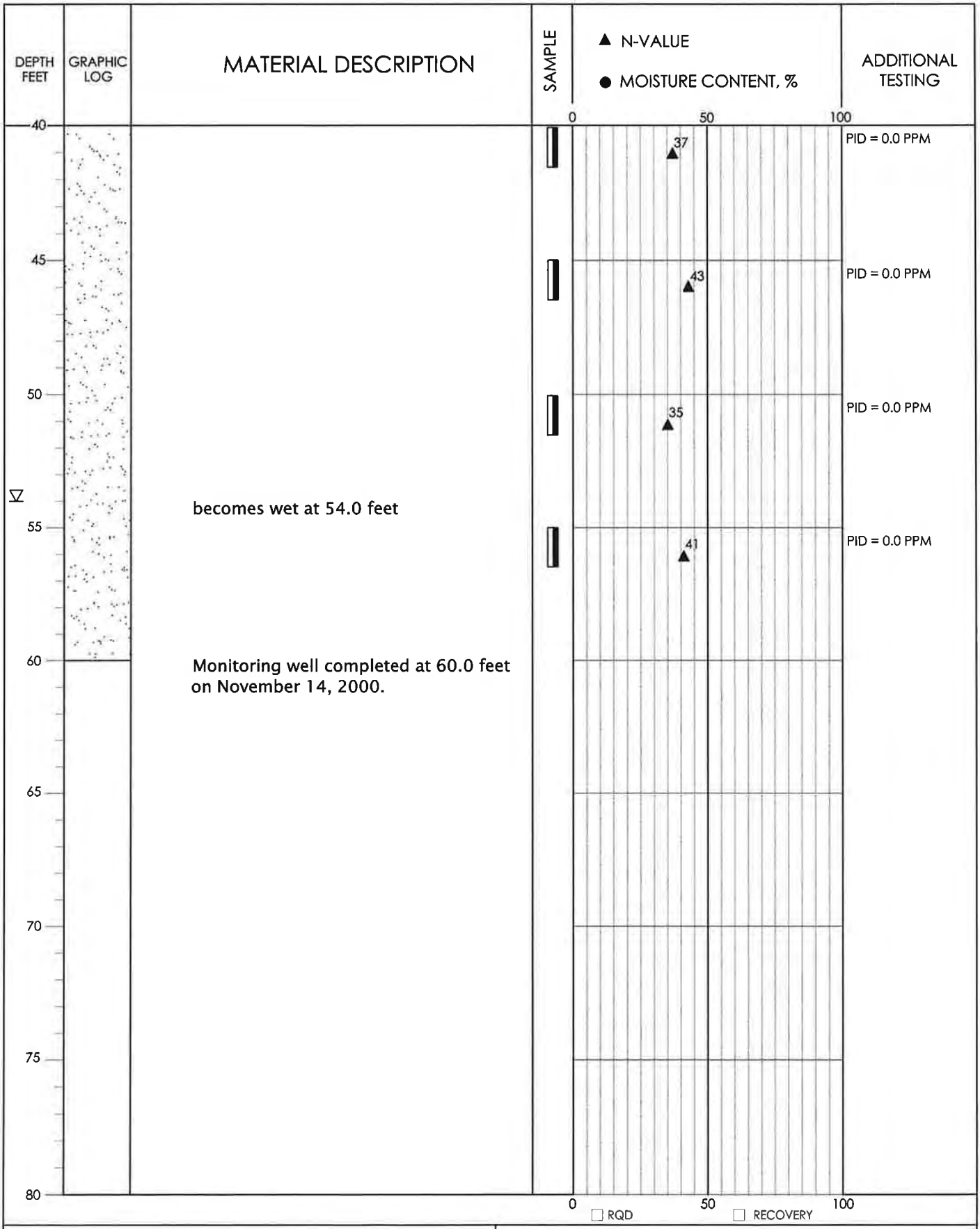
NOVELLUS-4	DECEMBER 2000	FIGURE A-11



GEODESIGN INC

MONITORING WELL MW-2

NOVELLUS-4	DECEMBER 2000	FIGURE A-12



GEODESIGN INC

MONITORING WELL MW-2 (CONT.)

NOVELLUS-4	DECEMBER 2000	FIGURE A-12

DEPTH/FT	MATERIAL DESCRIPTION	TESTING

TP-1

0	SP	Medium dense, dark brown SAND with some silt moist (2-inch thick root zone, 2-inch thick topsoil layer).	
1			
2		becomes dense, brown without silt at 2.0 feet	W = 10%
3			
4			W = 9%
5			
6		becomes medium dense at 6.0 feet	
7			
8			
9			
10			
11			
12		Test pit completed at 12.0 feet on November 9, 2000.	
13		Disturbed samples obtained at 2.0, 4.0, 6.0, 8.0, 10.0 and 12.0 feet.	
14		No groundwater seepage observed to the depth explored.	
15		No caving observed to the depth explored.	

TP-2

0	SM	Medium dense, dark brown silty SAND; moist (2-inch thick rooted zone, 12-inch thick topsoil layer).	
1			W = 21%
2	SP	Dense, brown SAND with some silt; moist.	
3		becomes dense to very dense at 3.0 feet	
4		grades to without silt at 4.0 feet	
5			
6			
7			
8			
9			
10			
11			
12		Test pit completed at 12.0 feet on November 9, 2000.	
13		Disturbed samples obtained at 1.0, 3.0, 5.0, 7.0, 9.0 and 11.0 feet.	
14		No groundwater seepage observed to the depth explored.	
15		Minor caving observed from 6.0 to 12.0 feet.	

GEODESIGN INC

TEST PIT LOGS

NOVELLUS-4	DECEMBER 2000	FIGURE A-13

DEPTH/FT	MATERIAL DESCRIPTION	TESTING

TP-3

DEPTH/FT		MATERIAL DESCRIPTION	TESTING
0	SM	Medium dense, dark brown, silty SAND with trace organics; moist (2.5-inch thick root zone, 12-inch thick topsoil layer).	
1		becomes very dense, light brown, cemented at 1.8 feet	
2			
3			
4	SP	Medium dense, dark brown SAND with trace to some silt; moist.	
5		becomes dense to very dense, brown with occasional gravel at 5.0 feet	
6			
7			
8			
9			
10			
11			
12			
13		Test pit completed at 12.5 feet on November 9, 2000. Disturbed samples obtained at 2.0, 4.0, 8.0 and 12.0 feet. No groundwater seepage observed to the depth explored. No caving observed to the depth explored.	
14			
15			

TP-4

DEPTH/FT		MATERIAL DESCRIPTION	TESTING
0	ML	Medium stiff, dark brown, sandy SILT; moist (2.5-inch thick root zone, 12-inch thick topsoil layer).	W = 24%
1			
2		grades to hard, light brown with some sand at 2.0 feet	
3			W = 20%
4			
5			
6	SP	Very dense, orange and brown, cemented, medium grained SAND; moist.	
7			
8			
9		becomes brown and not cemented at 9.0 feet	
10			
11			
12		Test pit completed at 12.0 feet on November 9, 2000. Disturbed samples obtained at 0.5, 3.0, 7.0 and 12.0 feet. No groundwater seepage observed to the depth explored. Minor caving observed from 10.0 to 12.0 feet.	
13			
14			
15			

GEODESIGN INC

TEST PIT LOGS

NOVELLUS-4	DECEMBER 2000	FIGURE A-14

DEPTH/FT	MATERIAL DESCRIPTION	TESTING

TP-5

DEPTH/FT		MATERIAL DESCRIPTION	TESTING
0 - 2	ML	Very stiff, dark brown SILT with trace fine sand and organics (2-inch thick root zone, 12-inch thick topsoil layer). becomes very dense, light brown, cemented at 1.8 feet	PP = 2.0 TSF PP = 3.5 TSF PP = 2.75 TSF
2 - 6	SM	Dense to very dense, light brown, fine silty SAND; moist.	W = 14%
6 - 12	SP	Dense, brown, medium grained SAND; moist. becomes dark brown at 9.0 feet	
12 - 15		Test pit completed at 12.5 feet on November 9, 2000. Disturbed samples obtained at 2.5, 4.0, 7.0 and 9.0 feet. No groundwater seepage observed to the depth explored. No caving observed to the depth explored.	

TP-6

DEPTH/FT		MATERIAL DESCRIPTION	TESTING
0 - 1	ML	Stiff, dark brown SILT with trace sand and organics (roots) and occasional gravel; moist (2-inch thick heavily root zone, 16-inch thick topsoil layer).	PP = 1.75 TSF W = 23%
1 - 5	SM	Dense, light brown, silty fine SAND; moist. becomes very dense at 2.5 feet	W = 16%
5 - 12	SP	Dense to very dense, light brown, fine SAND; moist. grades to trace silt at 11.0 feet	
12 - 15		Test pit completed at 12.5 feet on November 9, 2000. Disturbed samples obtained at 0.5, 3.0, 6.0 and 11.0 feet. No groundwater seepage observed to the depth explored. No caving observed to the depth explored.	

GEODESIGN INC

TEST PIT LOGS

NOVELLUS-4	DECEMBER 2000	FIGURE A-15

DEPTH/FT	MATERIAL DESCRIPTION	TESTING

TP-7

DEPTH/FT		MATERIAL DESCRIPTION	TESTING
0	ML	Medium stiff to stiff, dark brown SILT with trace organics; moist (2-inch thick heavily root zone, 12-inch thick topsoil layer).	
1		becomes light brown with trace sand at 1.5 feet	
2			
3	SM	Dense to very dense, light brown, silty fine SAND; moist.	
4			
5	SP	Dense to very dense, light brown, fine SAND with trace silt; moist.	W = 11%
6			
7		becomes brown, fine to medium grained and cemented at 70 feet	
8			
9			
10		not cemented at 10.0 feet	
11			
12			
13		Test pit completed at 12.5 feet on November 9, 2000.	
14		Disturbed samples obtained at 2.0, 5.0, 7.0 and 12.0 feet.	
15		No groundwater seepage observed to the depth explored.	
		No caving observed to the depth explored.	

TP-8

DEPTH/FT		MATERIAL DESCRIPTION	TESTING
0	ML	Stiff to very stiff, dark brown SILT with trace sand and organics; moist (2.5-inch thick root zone, 16-inch thick topsoil layer).	
1			
2			W = 18%
3	SM	Dense to very dense, light brown silty SAND; moist.	
4	SP	Dense to very dense, light brown, fine SAND with trace silt; moist.	
5		becomes gray-brown, medium grained without silt at 5.5 feet	
6			
7			
8			
9			
10			
11			
12			
13		becomes light brown, fine with trace silt at 13.0 feet	
14		Test pit completed at 15.0 feet on November 9, 2000.	
15		Relatively undisturbed sample obtained from 2.25 to 4.25 feet.	
		Disturbed samples obtained at 2.0, 4.0, 11.5, 13.0 and 15.0 feet.	
		No groundwater seepage or caving observed to the depth explored.	

DEPTH/FT	MATERIAL DESCRIPTION	TESTING

TP-9

DEPTH/FT		MATERIAL DESCRIPTION	TESTING
0 - 3	ML	Stiff to very stiff, dark brown SILT with trace sand and organics; moist (2-inch thick root zone, 12-inch thick topsoil layer). becomes light brown at 1.5 feet becomes hard at 2.0 feet	PP = 3.0 TSF W = 22% PP >4.0 TSF
4 - 14	SP	Dense to very dense, light brown, fine SAND with trace silt; moist. becomes medium grained without silt at 7.0 feet becomes brown at 10.0 feet	
15		Test pit completed at 15.0 feet on November 10, 2000. Disturbed samples obtained at 1.0, 4.0 and 12.0 feet. No groundwater seepage observed to the depth explored. No caving observed to the depth explored.	

TP-10

DEPTH/FT		MATERIAL DESCRIPTION	TESTING
0 - 4	ML	Stiff to very stiff, dark brown SILT with trace sand and organics; moist (2-inch thick root zone, 12-inch thick topsoil layer). becomes light brown at 1.5 feet	
5 - 14	SP	Dense to very dense, light brown, fine SAND with trace silt; moist. becomes medium grained without silt at 12.0 feet becomes brown at 12.0 feet	
15		Test pit completed at 15.0 feet on November 10, 2000. Relatively undisturbed sample obtained from 0.5 to 2.5 feet. Disturbed sample obtained at 7.0 feet. No groundwater seepage or caving observed to the depth explored.	

GEODESIGN INC

TEST PIT LOGS

NOVELLUS-4	DECEMBER 2000	FIGURE A-17

TP-11

DEPTH/FT		MATERIAL DESCRIPTION	TESTING
0	ML	Stiff to very stiff, dark brown SILT with trace sand and organics; moist (2-inch thick root zone).	PP = 2.0 TSF
1			
2		grades to light brown with trace to some fine sand and without organics at 2.0 feet	W = 16%
3			
4	SP	Very dense, light brown, fine SAND with trace to some silt; moist.	PP >4.0 TSF
5		grades to trace silt at 5.0 feet	W = 17%
6			
7		becomes light orange-brown, cemented with interbedded silt layers at 7.0 feet	
8			
9			
10		becomes light brown, fine to medium grained without silt and not cemented at 10.0 feet	
11			
12		becomes medium grained at 12.5 feet	
13		becomes gray-brown at 13.5 feet	
14			
15		Test pit completed at 15.0 feet on November 10, 2000. Disturbed samples obtained at 2.0, 5.0, 7.0 and 10.0 feet. No groundwater seepage or caving observed to the depth explored.	

TP-12

0	ML	Very stiff, dark brown SILT with trace sand and organics; moist (2-inch thick root zone, 10-inch thick topsoil layer).	PP = 2.5 TSF
1		becomes hard, light brown at 1.5 feet	PP >4.0 TSF
2	SM	Very dense, light brown, silty SAND; moist.	W = 17%
3			
4			
5	SP	Dense to very dense, light brown, fine SAND with trace to some silt; moist.	
6		becomes cemented at 6.0 feet	
7			
8		becomes brown, medium grained at 8.0 feet	
9			
10		not cemented and without silt at 10.0 feet	
11			
12			
13			
14			
15		Test pit completed at 15.0 feet on November 10, 2000. Disturbed samples obtained at 3.0, 8.0 and 12.0 feet. No groundwater seepage observed to the depth explored. No caving observed to the depth explored.	

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TEST PIT LOGS

NOVELLUS-4	DECEMBER 2000	FIGURE A-18

DEPTH/FT	MATERIAL DESCRIPTION	TESTING

TP-13

DEPTH/FT		MATERIAL DESCRIPTION	TESTING
0	ML	Very stiff, dark brown SILT with trace sand and organics; moist (2-inch thick root zone, 10-inch thick topsoil layer).	PP = 2.0 TSF
1			PP = 3.5 TSF
2		becomes light brown with out organics at 2.0 feet	
3	SM	Very dense, light brown, silty fine SAND; moist.	W = 13%
4			
5	SP	Very dense, light brown, fine SAND with trace to some silt; moist.	W = 24%
6			
7		becomes orange-brown, cemented, medium grained at 7.0 feet	
8			
9			
10		becomes brown at 10.0 feet	
11			
12			
13			
14			
15		Test pit completed at 15.0 feet on November 10, 2000. Relatively undisturbed sample obtained from 6.0 to 8.0 feet. Disturbed samples obtained at 3.0, 5.0, 7.5 and 15.0 feet. No groundwater seepage or caving observed to the depth explored.	

TP-14

DEPTH/FT		MATERIAL DESCRIPTION	TESTING
0	ML	Stiff, dark brown SILT with trace sand and organics; moist (2-inch thick root zone, 18-inch thick topsoil layer).	PP = 1.25 TSF
1			
2		becomes light brown with trace to some sand and without organics at 2.0 feet	
3			
4	SP	Dense to very dense, light brown, fine SAND with some silt; moist.	W = 18%
5			
6			
7		becomes cemented with trace to some silt at 7.0 feet	
8		becomes dense, brown-gray and not cemented at 8.0 feet	
9			
10			
11			
12		becomes medium grained at 12.5 feet	
13			
14		becomes gray fine to medium grained at 14.5 feet	
15		Test pit completed at 15.0 feet on November 10, 2000. Disturbed samples obtained at 2.0, 4.0, 8.0 and 15.0 feet. No groundwater seepage or caving observed to the depth explored.	

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TEST PIT LOGS

NOVELLUS-4	DECEMBER 2000	FIGURE A-19

DEPTH/FT	MATERIAL DESCRIPTION	TESTING

TP-15

DEPTH/FT		MATERIAL DESCRIPTION	TESTING
0 - 2	ML	Stiff, dark brown SILT with trace sand and organics; moist (2-inch thick root zone, 18-inch thick topsoil layer). becomes very stiff at 1.0 foot	PP = 1.25 TSF PP = 2.5 TSF W = 14%
2 - 4	SM	Very dense , light brown, silty SAND; moist. trace roots (15-inch diameter) at 2.5 feet	W = 14%
4 - 15	SP	Dense to very dense, light brown, fine SAND with trace silt; moist. becomes light brown-gray and cemented at 7.0 feet becomes without silt and not cemented at 10.0 feet becomes fine to medium grained at 13.5 feet Test pit completed at 15.0 feet on November 10, 2000. Disturbed samples obtained at 2.0, 4.5, 7.0 and 10.5 feet. No groundwater seepage or caving observed to the depth explored.	

TP-16

DEPTH/FT		MATERIAL DESCRIPTION	TESTING
0 - 2	ML	Stiff, dark brown SILT with trace sand and organics; moist (3-inch thick root zone, 12-inch thick topsoil layer).	PP = 1.5 TSF W = 24%
2 - 5	SM	Dense to very dense, light brown, fine silty SAND with trace silt; moist.	W = 15%
5 - 15	SP	Dense to very dense, light brown, cemented SAND with trace silt; moist. becomes gray- brown, fine to medium grained without silt and not cemented at 10.0 feet becomes medium grained at 15.0 feet Test pit completed at 15.0 feet on November 10, 2000. Relatively undisturbed sample obtained from 4.0 to 6.0 feet. Disturbed samples obtained at 1.0, 3.0, 5.0 and 11.0 feet. No groundwater seepage or caving observed to the depth explored.	

DEPTH/FT	MATERIAL DESCRIPTION	TESTING

TP-17

DEPTH/FT		MATERIAL DESCRIPTION	TESTING
0	ML	Stiff, dark brown SILT with trace sand and organics; moist (2-inch thick root zone, 12-inch thick topsoil layer).	PP = 1.5 TSF
1		becomes red-brown from 1.0 to 2.0 feet	W = 18%
2		becomes stiff, dark brown, sandy at 2.0 feet	
3			
4	SP	Dense to very dense, light brown, fine SAND with some silt; moist.	W = 16%
5			
6			
7		becomes cemented at 7.5 feet	
8			
9			
10		becomes brown-gray without silt and not cemented at 10.0 feet	
11			
12		becomes medium grained at 12.5 feet	
13			
14			
15		Test pit completed at 15.0 feet on November 10, 2000. Disturbed samples obtained at 1.5, 4.0, 8.0 and 12.5 feet. No groundwater seepage or caving observed to the depth explored.	

TP-18

DEPTH/FT		MATERIAL DESCRIPTION	TESTING
0	ML	Very stiff, dark brown SILT with trace sand and organics; moist (2-inch thick root zone, 14-inch thick topsoil layer).	PP = 3.0 TSF
1			
2	SM	Very dense, light brown, silty fine SAND; moist.	
3			
4	SP	Very dense, light brown, fine SAND with trace to some silt; moist.	
5			
6		becomes cemented at 6.0 feet	
7			
8			
9		without silt and not cemented at 9.0 feet	
10		becomes brown-gray at 10.0 feet	
11		becomes medium grained at 10.5 feet	
12			
13			
14			
15		Test pit completed at 15.0 feet on November 10, 2000. Disturbed samples obtained at 2.0, 4.0, 9.0 and 15.0 feet. No groundwater seepage or caving observed to the depth explored.	

DEPTH/FT	MATERIAL DESCRIPTION	TESTING

TP-19

DEPTH/FT		MATERIAL DESCRIPTION	TESTING
0	ML	Stiff, dark brown SILT with trace sand and organics; moist (12-inch thick topsoil layer).	PP = 1.5 TSF
1			
2		becomes hard, brown with trace to some fine sand at 2.0 feet	W = 19%
3	SM	Dense to very dense, brown, silty fine SAND; moist.	
4			W = 21%
5			
6	SP	Dense to very dense, light brown, fine SAND with some silt and interbedded silt lenses; moist.	
7			
8		becomes gray-brown and without silt at 8.0 feet	
9			
10			
11			
12			
13			
14		Test pit completed at 14.0 feet on November 10, 2000.	
15		Disturbed samples obtained at 2.0, 4.0 and 8.0 feet.	
		No groundwater seepage observed to the depth explored.	
		No caving observed to the depth explored.	

TP-20

DEPTH/FT		MATERIAL DESCRIPTION	TESTING
0	ML	Very stiff, dark brown SILT with trace sand and organics; moist (2-inch thick root zone, 12-inch thick topsoil layer).	PP = 2.5 TSF
1			
2		becomes hard, brown with trace to some sand at 2.0 feet	
3	SM	Dense to very dense, brown, silty SAND; moist.	
4			
5	SP	Dense to very dense, brown, fine SAND with trace silt; moist.	
6		becomes cemented at 6.0 feet	
7			
8		without silt at 8.0 feet	
9		not cemented at 10.0 feet	
10			
11			
12		becomes fine to medium grained at 12.0 feet	
13			
14			
15		Test pit completed at 15.0 feet on November 10, 2000.	
		Disturbed samples obtained at 2.0, 5.0 and 12.0 feet.	
		No groundwater seepage or caving observed to the depth explored.	

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TEST PIT LOGS

NOVELLUS-4	DECEMBER 2000	FIGURE A-22

DEPTH/FT	MATERIAL DESCRIPTION	TESTING

TP-21

DEPTH/FT		MATERIAL DESCRIPTION	TESTING
0 - 2	ML	Very stiff, dark brown SILT with trace sand and organics; moist (12-inch topsoil layer).	PP = 2.5 TSF W = 17%
3 - 5	SM	Dense to very dense, brown, silty SAND; moist.	W = 17%
6 - 13	SP	Dense to very dense, light brown, cemented fine SAND with trace to some silt; moist. becomes brown-gray without silt and not cemented at 9.0 feet grades to trace silt at 11.0 feet grades to fine to medium grained without silt at 13.0 feet	
14 - 15		Test pit completed at 14.0 feet on November 10, 2000. Disturbed samples obtained at 2.0, 5.0, 6.0 and 14.0 feet. No groundwater seepage observed to the depth explored. No caving observed to the depth explored.	

TP-22

DEPTH/FT		MATERIAL DESCRIPTION	TESTING
0 - 3	ML	Very stiff, dark brown SILT with trace sand and organics and occasional gravel; moist (2-inch thick root zone, 14-inch thick topsoil layer). becomes brown at 1.5 feet grades to trace to some sand at 2.0 feet	PP = 2.5 TSF W = 12%
4 - 14	SP	Dense to very dense, brown, fine SAND with trace silt; moist. becomes medium grained at 6.0 feet	W = 15%
15		Test pit completed at 15.0 feet on November 10, 2000. Disturbed samples obtained at 2.0, 4.5 and 6.0 feet. No groundwater seepage observed to the depth explored. Minor caving observed from 8.0 to 15.0 feet.	

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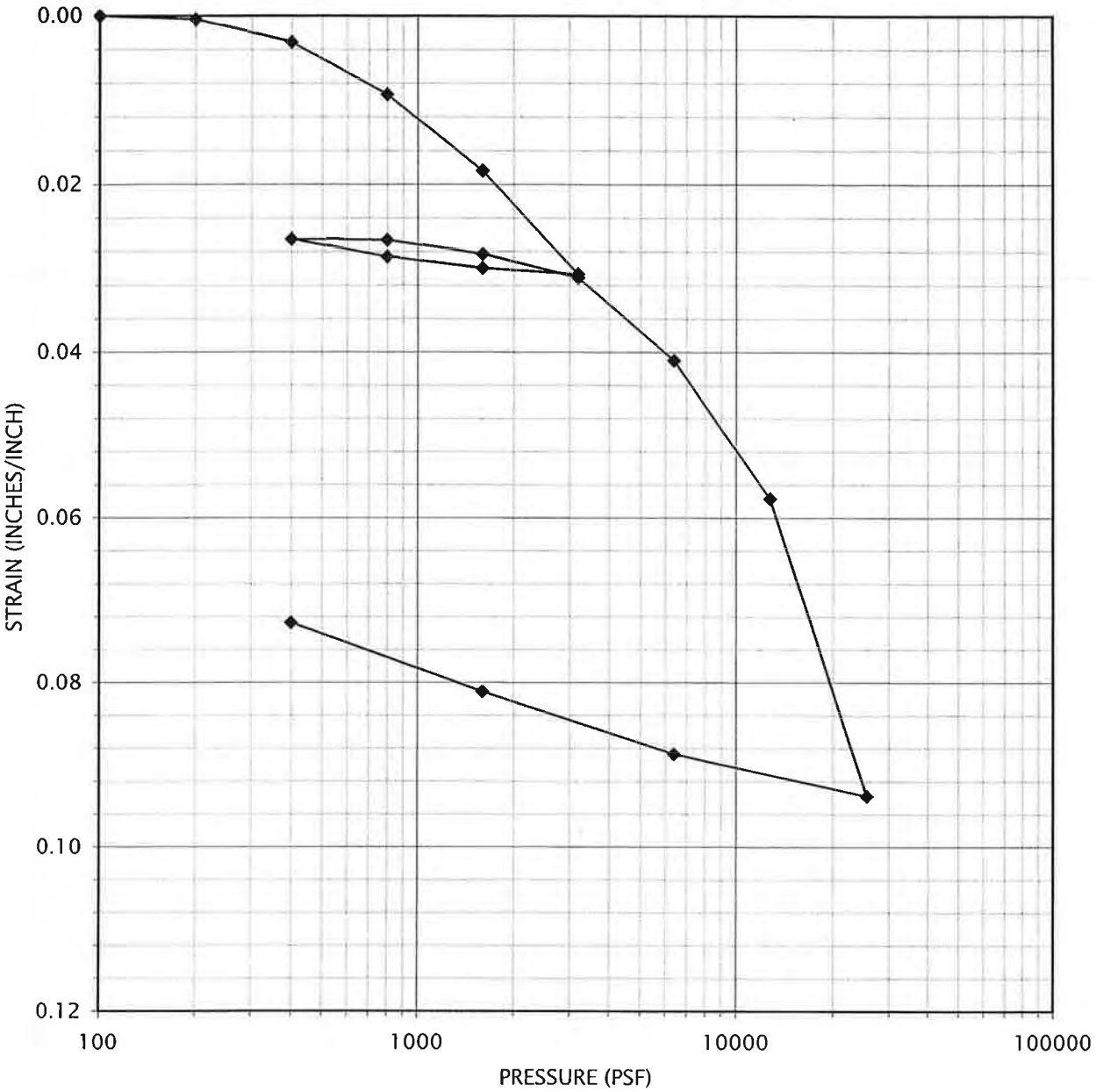
TEST PIT LOGS

NOVELLUS-4	DECEMBER 2000	FIGURE A-23



KEY	EXPLORATION NUMBER	SAMPLE DEPTH (FT)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	SOIL DESCRIPTION
—◆—	B-4	4.5	24	88	Medium dense, red-brown, fine SAND with trace to some silt; moist. (SP)

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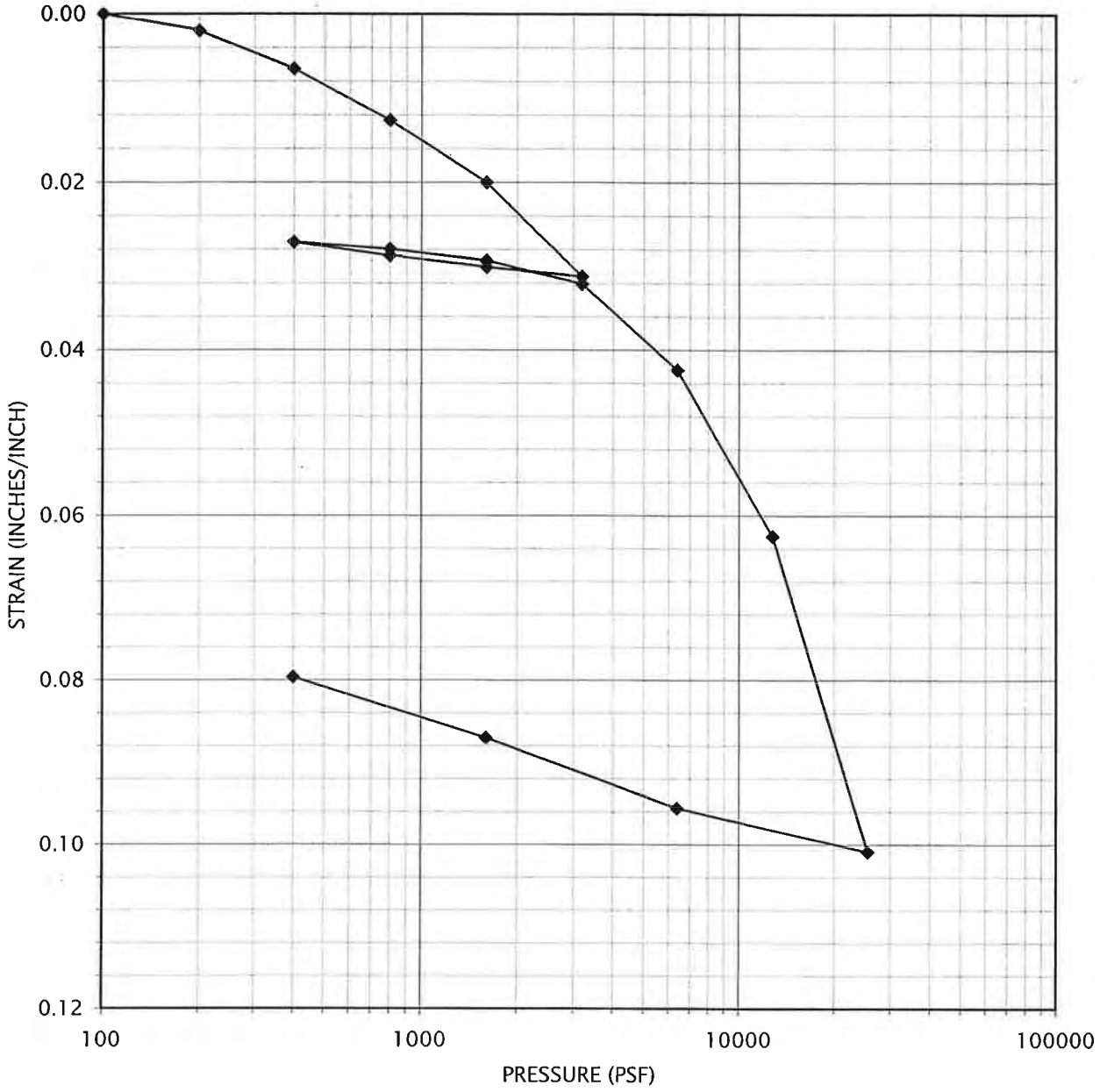
CONSOLIDATION TEST RESULTS

NOVELLUS-4	DECEMBER 2000	FIGURE A-24



KEY	EXPLORATION NUMBER	SAMPLE DEPTH (FT)	MOISTURE CONTENT (%)	DRY DENSITY (PCF)	SOIL DESCRIPTION
—◆—	B-9	8.5	19	94	Medium dense, light brown, fine to medium SAND with trace silt; moist. (SP)

GEODESIGN INC

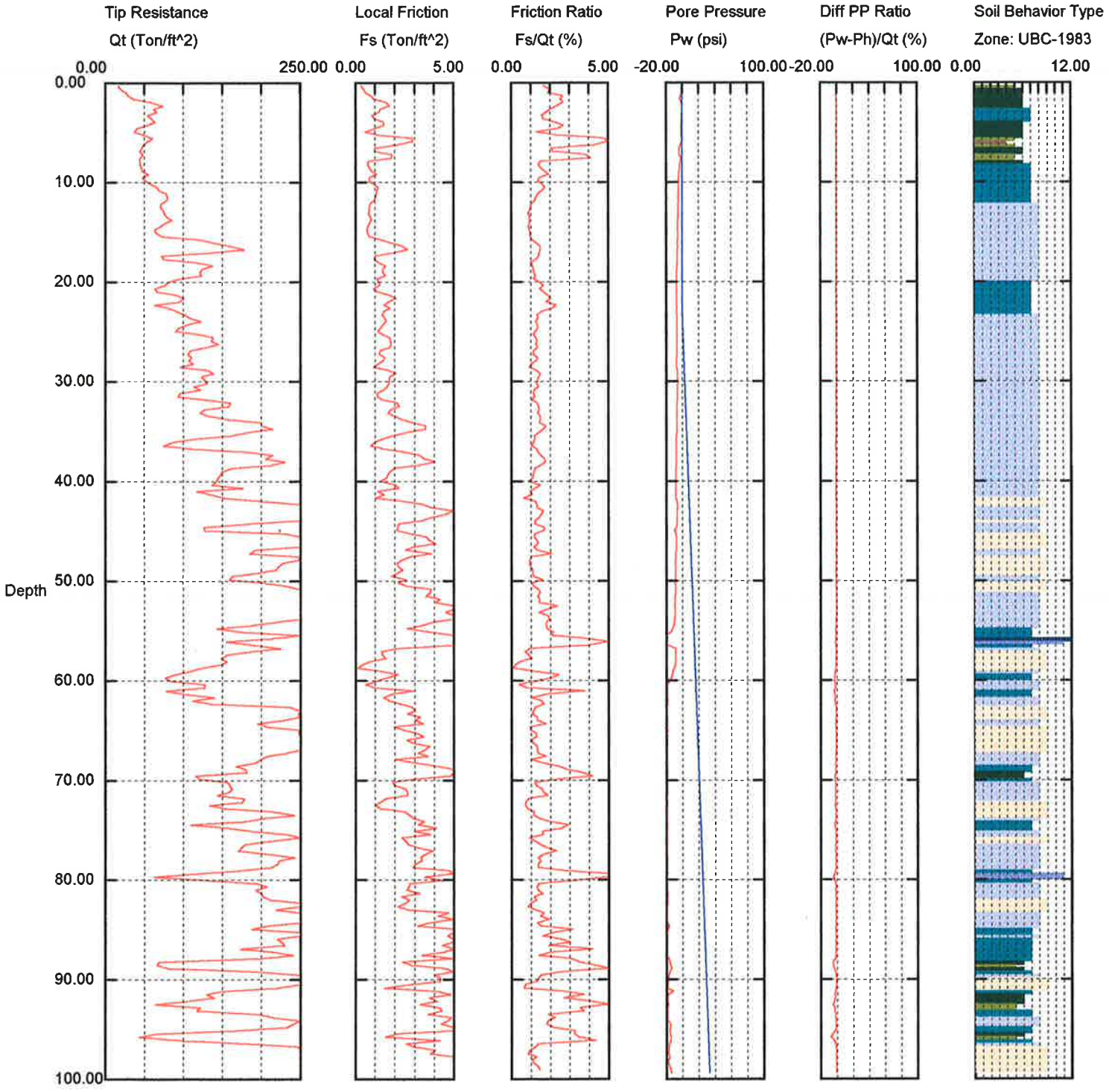
CONSOLIDATION TEST RESULTS

NOVELLUS-4	DECEMBER 2000	FIGURE A-25

Subsurface Technologies

Operator: W.MCC / A.MEE
Sounding: SND202
Cone Used: 442 TC

CPT Date/Time: 11-15-00 10:03
Location: CPT-2 TUALITAIN
Job Number: NOVELLUS-3



Maximum Depth = 99.41 feet

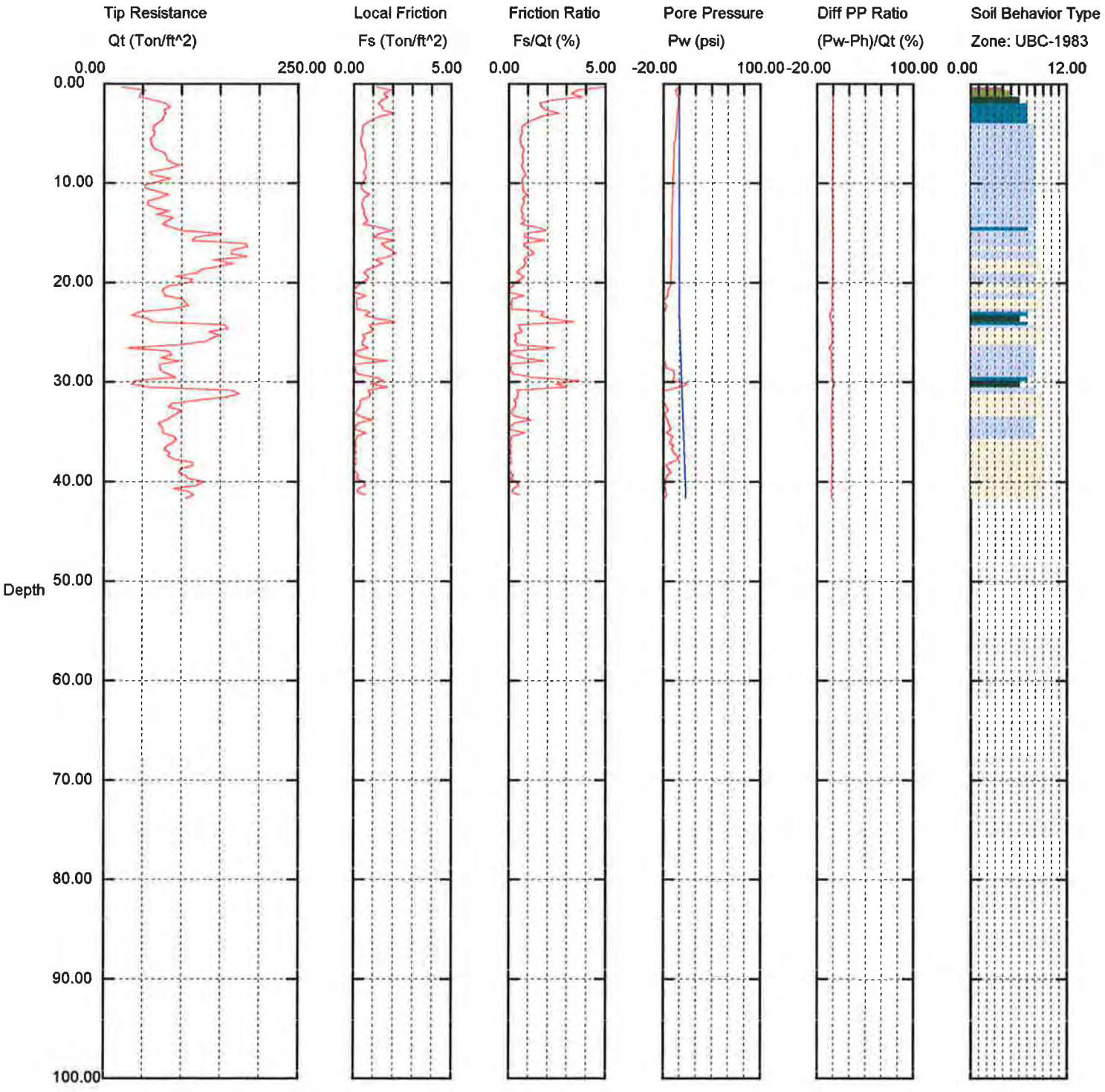
Depth Increment = 0.16 feet

1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

Subsurface Technologies

Operator: W.MCC / A.MEE
Sounding: SND201
Cone Used: 442 TC

CPT Date/Time: 11-15-00 08:32
Location: CPT-1 TUALITAIN
Job Number: NOVELLUS-3



Maximum Depth = 41.67 feet

Depth Increment = 0.16 feet

1 sensitive fine grained
2 organic material
3 clay
4 silty clay to clay
5 clayey silt to silty clay
6 sandy silt to clayey silt
7 silty sand to sandy silt
8 sand to silty sand
9 sand
10 gravelly sand to sand
11 very stiff fine grained (*)
12 sand to clayey sand (*)

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P.O. BOX 1911, PORTLAND, OREGON 97207
TELEPHONE (503) 635-6516

To: GeoDesign, Inc., Brad Hupy
From: Stuart Greenberger, P.E.
Date: November 16, 2000
Subject: Soil Resistivity Test for Novellus

Attached are the soil resistivity measurements and interval calculations. Based on log probability distribution, the expected soil resistivities at 50% and 95% probabilities are as follows; however, note that the interval resistivities indicate distorted soil layers.

Soil Layer	**Resistivity (ohm-cm)**	
Interval (ft)	50% probability	95% probability
0-2½	525,000	1,100,000 or less
2½-5	20,000	35,000 or less[1]
5-7½	6,500	17,000 or less
7½-10	30,000	250,000 or less
10-15	15,000	40,000 or less
15-50	30,000	250,000 or less
0-5	35,000	80,000 or less
0-7½	14,000	30,000 or less

[1] Outliers at ranked percentiles of 90% and 95% are 90,000 ohm-cm and 225,000 ohm-cm, respectively.



EXPIRES 6/02

Novellus, Tualatin

4-Pin Resistivity Measurements (ohm-cm)[1]

Surface-to-Depth Resistivity

NORTH LINE

Depth (ft)	WEST				EAST
0-2½	550,000	425,000	950,000	520,000	260,000
0-5	25,000	32,000	29,000	27,000	26,000
0-7½	9,900	15,000	11,000	12,500	9,500
0-10	13,000	20,000	14,600	14,400	13,000
0-15	12,600	21,000	14,700	21,000	11,100
0-50	13,000	41,000	NR[2]	9,600	33,000

NORTH CENTER LINE

Depth (ft)	WEST			EAST
0-2½	650,000	370,000	445,000	335,000
0-5	48,000	35,000	30,000	34,000
0-7½	11,100	9,300	8,700	12,450
0-10	11,000	10,600	10,000	18,200
0-15	12,900	9,900	9,300	15,000
0-50	14,000	20,000	25,000	27,000

SOUTH CENTER LINE

Depth (ft)	WEST		EAST
0-2½	600,000	375,000	470,000
0-5	34,000	22,000	39,000
0-7½	12,800	13,400	10,100
0-10	13,800	16,000	12,600
0-15	12,000	19,800	15,600
0-50	62,000	NR[2]	39,000

SOUTH LINE

Depth (ft)	WEST				EAST
0-2½	435,000	750,000	650,000	900,000	1,000,000
0-5	25,000	50,000	54,000	90,000	43,000
0-7½	9,200	24,000	28,500	37,500	24,000
0-10	13,000	26,000	32,000	44,000	28,000
0-15	13,500	25,200	24,000	33,000	21,900
0-50	13,000	16,000	13,000	44,000	NR[2]

[1] Nilsson 400 AC soil resistivity meter

[2] NR - not reported, erratic interference

4-Pin Resistivity Measurements (ohm-cm)[1]

Interval Resistivity, Barnes Procedure

NORTH LINE

Depth (ft)	WEST				EAST
0-2½	550,000	425,000	950,000	520,000	260,000
2½-5	12,800	16,529	14,700	13,900	13,700
5-7½	4,500	7,143	4,900	6,000	4,200
7½-10	166,600	NR[3]	NR[3]	28,500	NR[3]
10-15	11,900	NR[3]	NR[3]	7,700	NR[3]
15-50	13,200	NR[3]	NR[3]	7,800	NR[3]

NORTH CENTER LINE

Depth (ft)	WEST			
0-2½	650,000	370,000	445,000	335,000
2½-5	25,000	18,400	227,300	17,900
5-7½	4,400	3,800	3,000	5,500
7½-10	63,500	18,100	2,700	NR[3]
10-15	11,500	8,800	8,200	NR[3]
15-50	14,500	41,200	87,500	NR[3]

SOUTH CENTER LINE

Depth (ft)	WEST		
0-2½	600,000	375,000	470,000
2½-5	17,200	11,300	20,500
5-7½	5,600	7,400	4,100
7½-10	18,600	41,700	3,500
10-15	9,500	37,700	5,700
15-50	NR[3]	NR[2]	108,700

SOUTH LINE

Depth (ft)	WEST				EAST
0-2½	435,000	750,000	650,000	900,000	1,000,000
2½-5	12,900	25,900	28,200	89,100	22,000
5-7½	4,000	11,800	14,700	17,300	12,700
7½-10	NR[3]	34,700	47,600	91,700	56,000
10-15	NR[3]	23,700	16,000	21,800	15,200
15-50	NR[3]	13,800	10,900	51,000	NR[2]

[1] Nilsson 400 AC soil resistivity meter

[2] NR - not reported, erratic interference

[3] NR - not reported, increased resistance within an incremental series



LEGEND:

B-1 BORING

N

0 50 100

(SCALE IN FEET)

SITE PLAN BASED ON AERIAL PHOTOGRAPH OBTAINED FROM GOOGLE EARTH PRO®, MARCH 14, 2017

SITE PLAN

GAS PAD EXPANSION
TUALATIN, OR

FIGURE 2

LAMRESCORP-4-01

APRIL 2017

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Printed By: aday | Print Date: 4/18/2017 3:47:48 PM
File Name: J:\E-L\LamResCorp\LamResCorp-4\LamResCorp-4-01\Figures\CAD\LamResCorp-4-01-SP01.dwg | Layout: FIGURE 2

APPENDIX

FIELD EXPLORATIONS

GENERAL

Subsurface conditions at the site were explored by drilling three borings (B-1 through B-3) to depths ranging between 6.5 and 51.5 feet BGS. Figure 2 shows the approximate locations of our explorations. The borings were drilled on March 10, 2017 by Western States Soil Conservation, Inc. of Hubbard, Oregon, using hollow-stem auger drilling techniques. The explorations were observed by a member of our geology staff. Representative samples of the various soils encountered in the explorations were collected for geotechnical laboratory testing.

The locations of our explorations were chosen based on a site plan provided to our office by Mackenzie. This information should be considered accurate to the degree implied by the methods used.

SOIL SAMPLING

Samples were collected from the borings using 1½-inch-inner diameter, split-spoon samplers in general accordance with ASTM D 1586. The SPT sampler was driven into the soil with a 140-pound hammer free-falling 30 inches. The SPT sampler was driven a total distance of 18 inches. The number of blows required to drive the sampler the final 12 inches is recorded on the exploration logs, unless otherwise noted. Sampling methods and intervals are shown on the exploration logs.

The calibration factor for the SPT hammer used by Western States Soil Conservation was 88.3 percent. The calibration testing results are presented at the end of this appendix.

SOIL CLASSIFICATION

The soil samples were classified in accordance with the "Exploration Key" (Table A-1) and "Soil Classification System" (Table A-2), which are presented in this appendix. The exploration logs indicate the depths at which the soils or their characteristics change, although the change could be gradual. If the change occurred between sample locations, the depth was interpreted. Classifications are shown on the exploration logs.

LABORATORY TESTING

CLASSIFICATION

The soil samples were classified in the laboratory to confirm field classifications. The laboratory classifications are shown on the exploration logs if those classifications differed from the field classifications.

MOISTURE CONTENT

The natural moisture content of selected soil samples was determined in general accordance with ASTM D 2216. The natural moisture content is a ratio of the weight of the water to soil in a test sample and is expressed as a percentage. The test results are presented in this appendix.

PARTICLE-SIZE TESTING

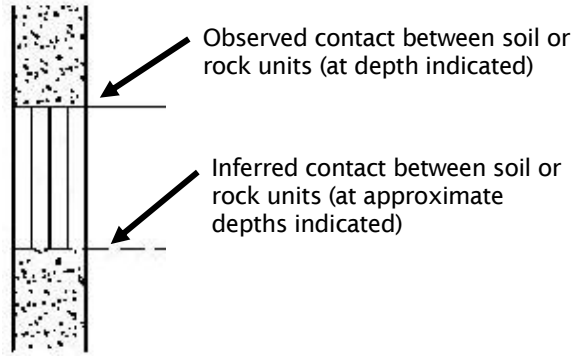
Particle-size testing was performed on selected soil samples to determine the distribution of soil particle sizes. The testing consisted of percent fines determinations (percent passing the U.S. Standard No. 200 sieve) completed in general accordance with ASTM D 1140. Test results are presented in this appendix.

ATTERBERG LIMITS

The plastic limit and liquid limit (Atterberg limits) of a selected soil sample were determined in accordance with ASTM D 4318. The Atterberg limits and the plasticity index were completed to aid in the classification of the soil. The test results are presented in this appendix.

SYMBOL	SAMPLING DESCRIPTION
	Location of sample obtained in general accordance with ASTM D 1586 Standard Penetration Test with recovery
	Location of sample obtained using thin-wall Shelby tube or Geoprobe® sampler in general accordance with ASTM D 1587 with recovery
	Location of sample obtained using Dames & Moore sampler and 300-pound hammer or pushed with recovery
	Location of sample obtained using Dames & Moore and 140-pound hammer or pushed with recovery
	Location of sample obtained using 3-inch-O.D. California split-spoon sampler and 140-pound hammer
	Location of grab sample
	Rock coring interval
	Water level during drilling
	Water level taken on date shown

Graphic Log of Soil and Rock Types



GEOTECHNICAL TESTING EXPLANATIONS

ATT	Atterberg Limits	PP	Pocket Penetrometer
CBR	California Bearing Ratio	P200	Percent Passing U.S. Standard No. 200 Sieve
CON	Consolidation		
DD	Dry Density	RES	Resilient Modulus
DS	Direct Shear	SIEV	Sieve Gradation
HYD	Hydrometer Gradation	TOR	Torvane
MC	Moisture Content	UC	Unconfined Compressive Strength
MD	Moisture-Density Relationship	VS	Vane Shear
OC	Organic Content	kPa	Kilopascal
P	Pushed Sample		

ENVIRONMENTAL TESTING EXPLANATIONS

CA	Sample Submitted for Chemical Analysis	ND	Not Detected
P	Pushed Sample	NS	No Visible Sheen
PID	Photoionization Detector Headspace Analysis	SS	Slight Sheen
		MS	Moderate Sheen
ppm	Parts per Million	HS	Heavy Sheen

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EXPLORATION KEY

TABLE A-1

RELATIVE DENSITY - COARSE-GRAINED SOILS

Relative Density	Standard Penetration Resistance	Dames & Moore Sampler (140-pound hammer)	Dames & Moore Sampler (300-pound hammer)
Very Loose	0 – 4	0 - 11	0 - 4
Loose	4 – 10	11 - 26	4 - 10
Medium Dense	10 – 30	26 - 74	10 - 30
Dense	30 – 50	74 - 120	30 - 47
Very Dense	More than 50	More than 120	More than 47

CONSISTENCY - FINE-GRAINED SOILS

Consistency	Standard Penetration Resistance	Dames & Moore Sampler (140-pound hammer)	Dames & Moore Sampler (300-pound hammer)	Unconfined Compressive Strength (tsf)
Very Soft	Less than 2	Less than 3	Less than 2	Less than 0.25
Soft	2 - 4	3 – 6	2 - 5	0.25 - 0.50
Medium Stiff	4 - 8	6 – 12	5 - 9	0.50 - 1.0
Stiff	8 - 15	12 – 25	9 - 19	1.0 - 2.0
Very Stiff	15 - 30	25 – 65	19 – 31	2.0 - 4.0
Hard	More than 30	More than 65	More than 31	More than 4.0

PRIMARY SOIL DIVISIONS			GROUP SYMBOL	GROUP NAME
COARSE-GRAINED SOILS (more than 50% retained on No. 200 sieve)	GRAVEL (more than 50% of coarse fraction retained on No. 4 sieve)	CLEAN GRAVELS (< 5% fines)	GW or GP	GRAVEL
		GRAVEL WITH FINES (≥ 5% and ≤ 12% fines)	GW-GM or GP-GM	GRAVEL with silt
			GW-GC or GP-GC	GRAVEL with clay
		GRAVELS WITH FINES (> 12% fines)	GM	silty GRAVEL
			GC	clayey GRAVEL
			GC-GM	silty, clayey GRAVEL
	SAND (50% or more of coarse fraction passing No. 4 sieve)	CLEAN SANDS (<5% fines)	SW or SP	SAND
		SANDS WITH FINES (≥ 5% and ≤ 12% fines)	SW-SM or SP-SM	SAND with silt
			SW-SC or SP-SC	SAND with clay
		SANDS WITH FINES (> 12% fines)	SM	silty SAND
			SC	clayey SAND
			SC-SM	silty, clayey SAND
FINE-GRAINED SOILS (50% or more passing No. 200 sieve)	SILT AND CLAY	Liquid limit less than 50	ML	SILT
			CL	CLAY
			CL-ML	silty CLAY
			OL	ORGANIC SILT or ORGANIC CLAY
		Liquid limit 50 or greater	MH	SILT
			CH	CLAY
			OH	ORGANIC SILT or ORGANIC CLAY
HIGHLY ORGANIC SOILS			PT	PEAT

MOISTURE CLASSIFICATION

Term	Field Test
dry	very low moisture, dry to touch
moist	damp, without visible moisture
wet	visible free water, usually saturated

ADDITIONAL CONSTITUENTS

Secondary granular components or other materials such as organics, man-made debris, etc.

Percent	Silt and Clay In: Fine-Grained Soils	Silt and Clay In: Coarse-Grained Soils	Percent	Sand and Gravel In: Fine-Grained Soils	Sand and Gravel In: Coarse-Grained Soils
< 5	trace	trace	< 5	trace	trace
5 – 12	minor	with	5 – 15	minor	minor
> 12	some	silty/clayey	15 – 30	with	with
			> 30	sandy/gravelly	Indicate %

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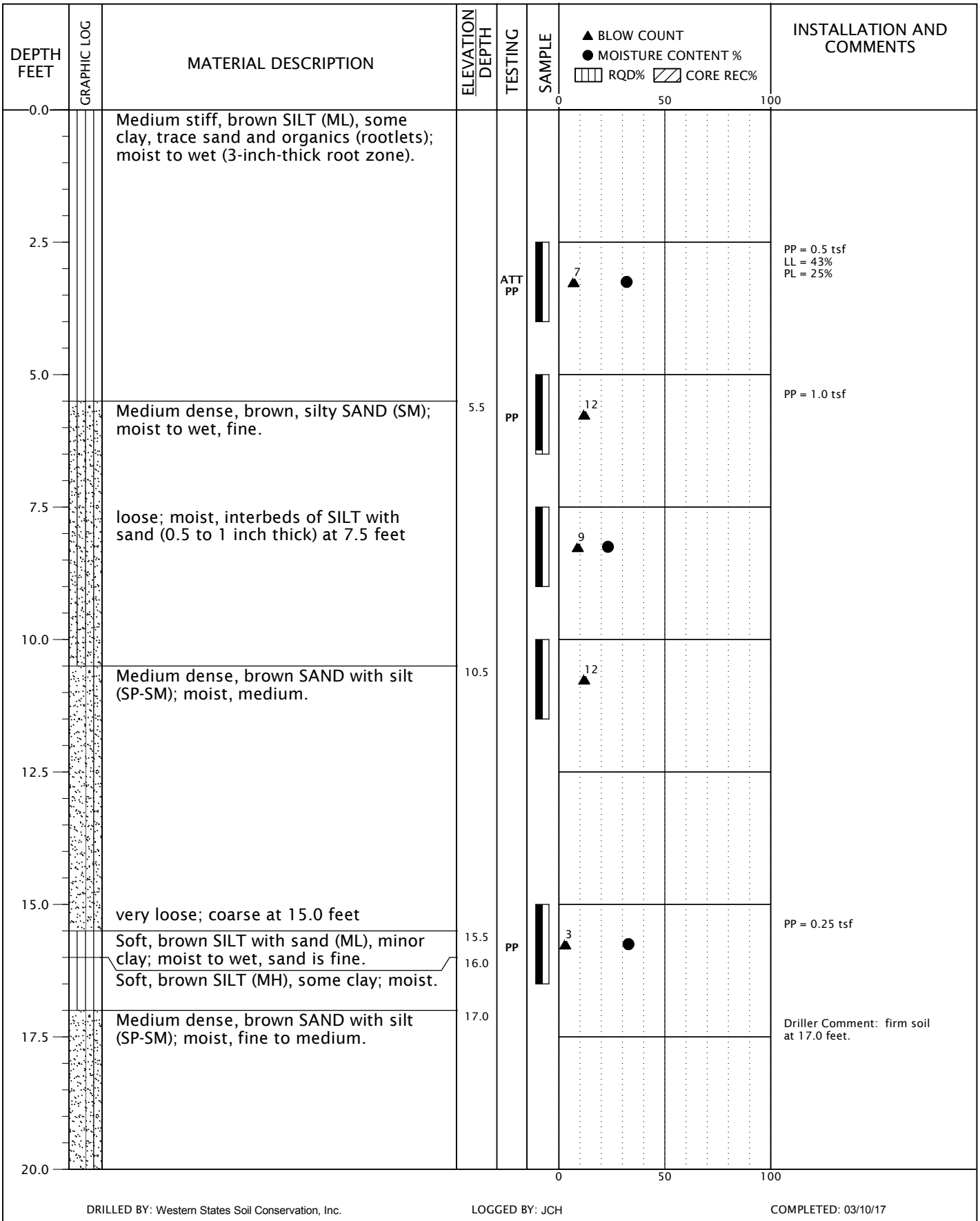
SOIL CLASSIFICATION SYSTEM

TABLE A-2



DRILLED BY: Western States Soil Conservation, Inc.

LOGGED BY: JCH

COMPLETED: 03/10/17

BORING METHOD: hollow-stem auger (see document text)

BORING BIT DIAMETER: 8 1/4 inches

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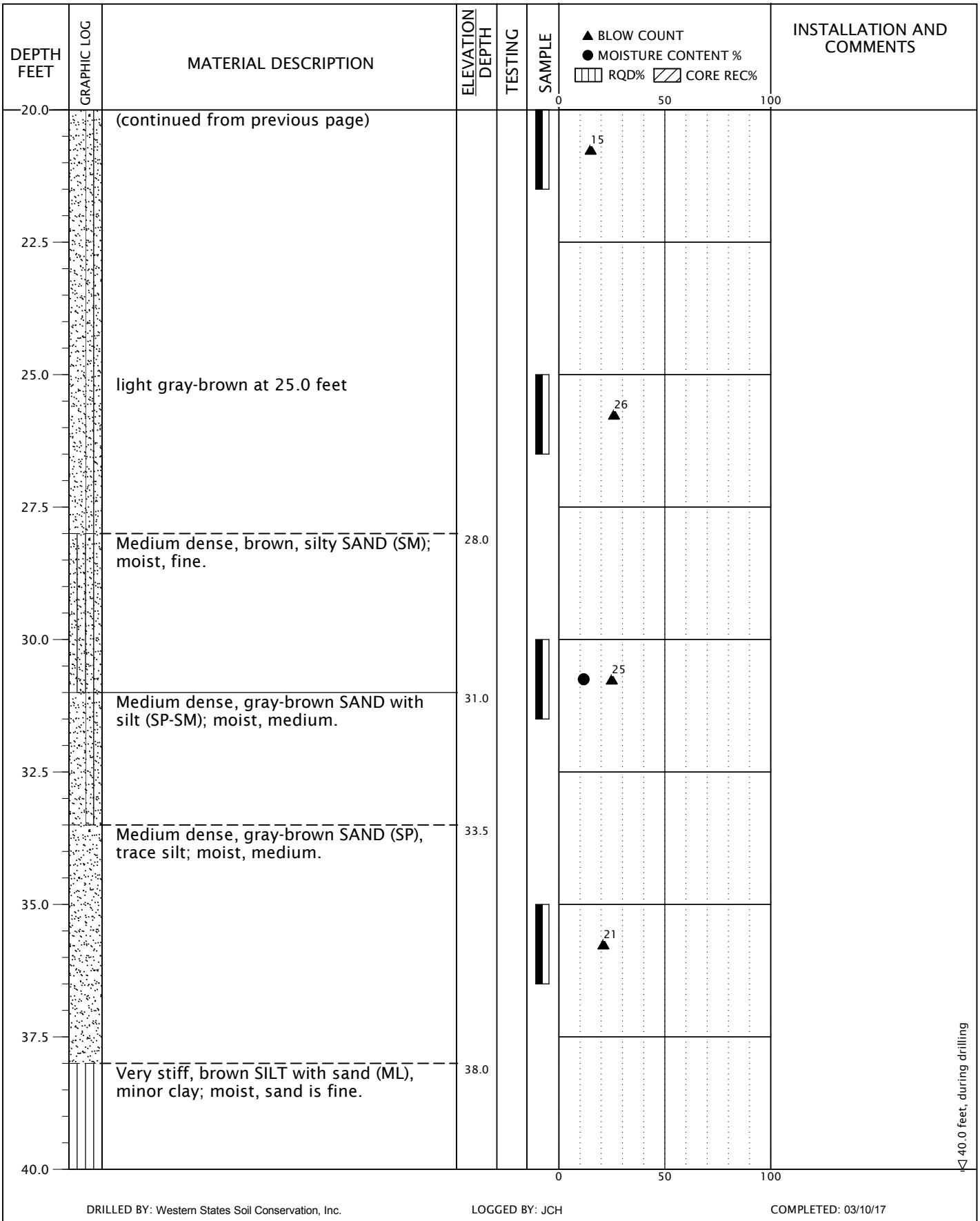
BORING B-1

APRIL 2017

GAS PAD EXPANSION
TUALATIN, OR

FIGURE A-1

BORING LOG LAMRESCORP-4-01-B1_3.GPJ GEODESIGN.GDT PRINT DATE: 4/18/17:RC



DRILLED BY: Western States Soil Conservation, Inc.

LOGGED BY: JCH

COMPLETED: 03/10/17

BORING METHOD: hollow-stem auger (see document text)

BORING BIT DIAMETER: 8 1/4 inches

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LAMRESCORP-4-01

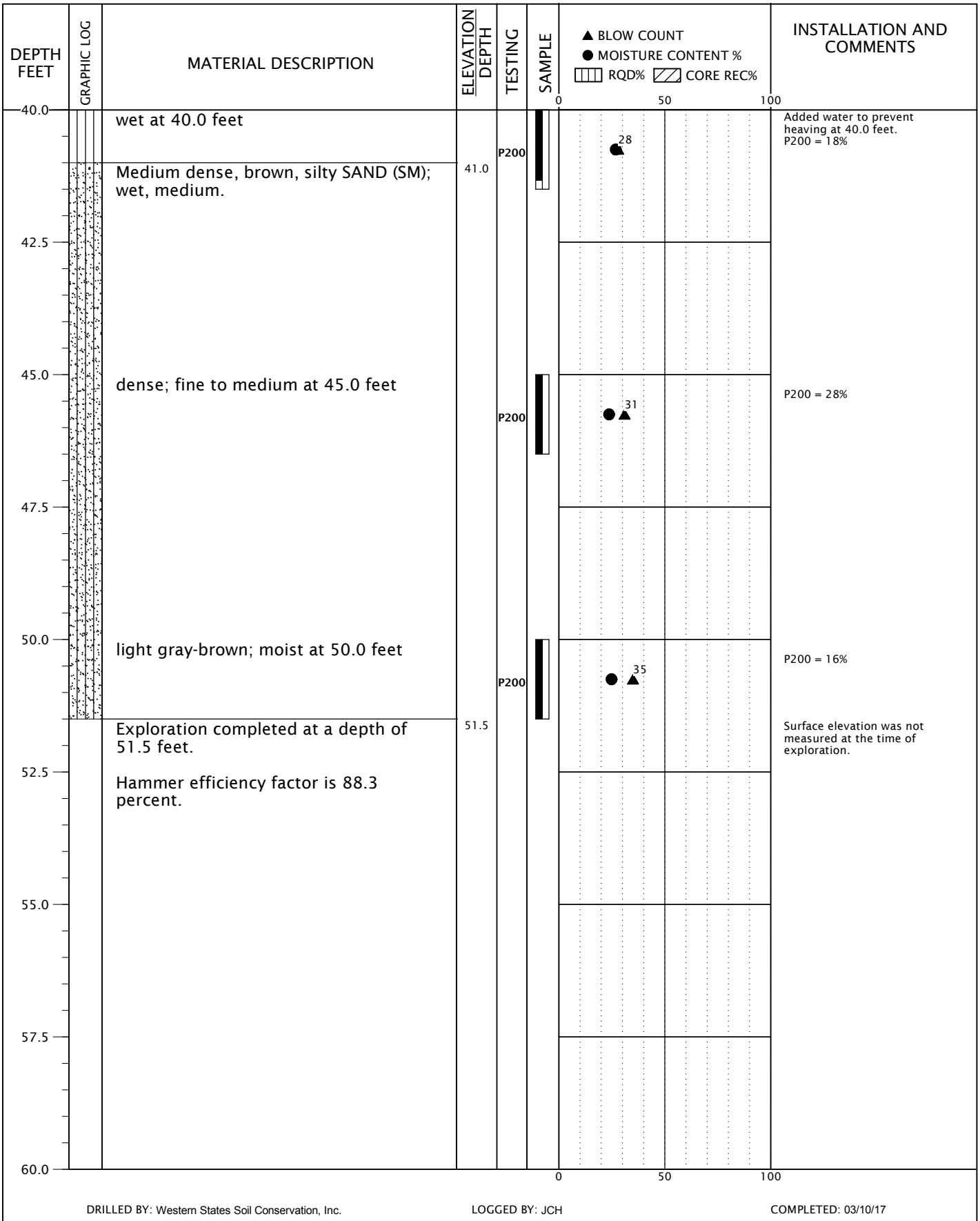
BORING B-1
(continued)

APRIL 2017

GAS PAD EXPANSION
TUALATIN, OR

FIGURE A-1

BORING LOG LAMRESCORP-4-01-B1_3.GPJ GEODESIGN.GDT PRINT DATE: 4/18/17:RC



DRILLED BY: Western States Soil Conservation, Inc. LOGGED BY: JCH COMPLETED: 03/10/17

BORING METHOD: hollow-stem auger (see document text) BORING BIT DIAMETER: 8 1/4 inches

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LAMRESCORP-4-01

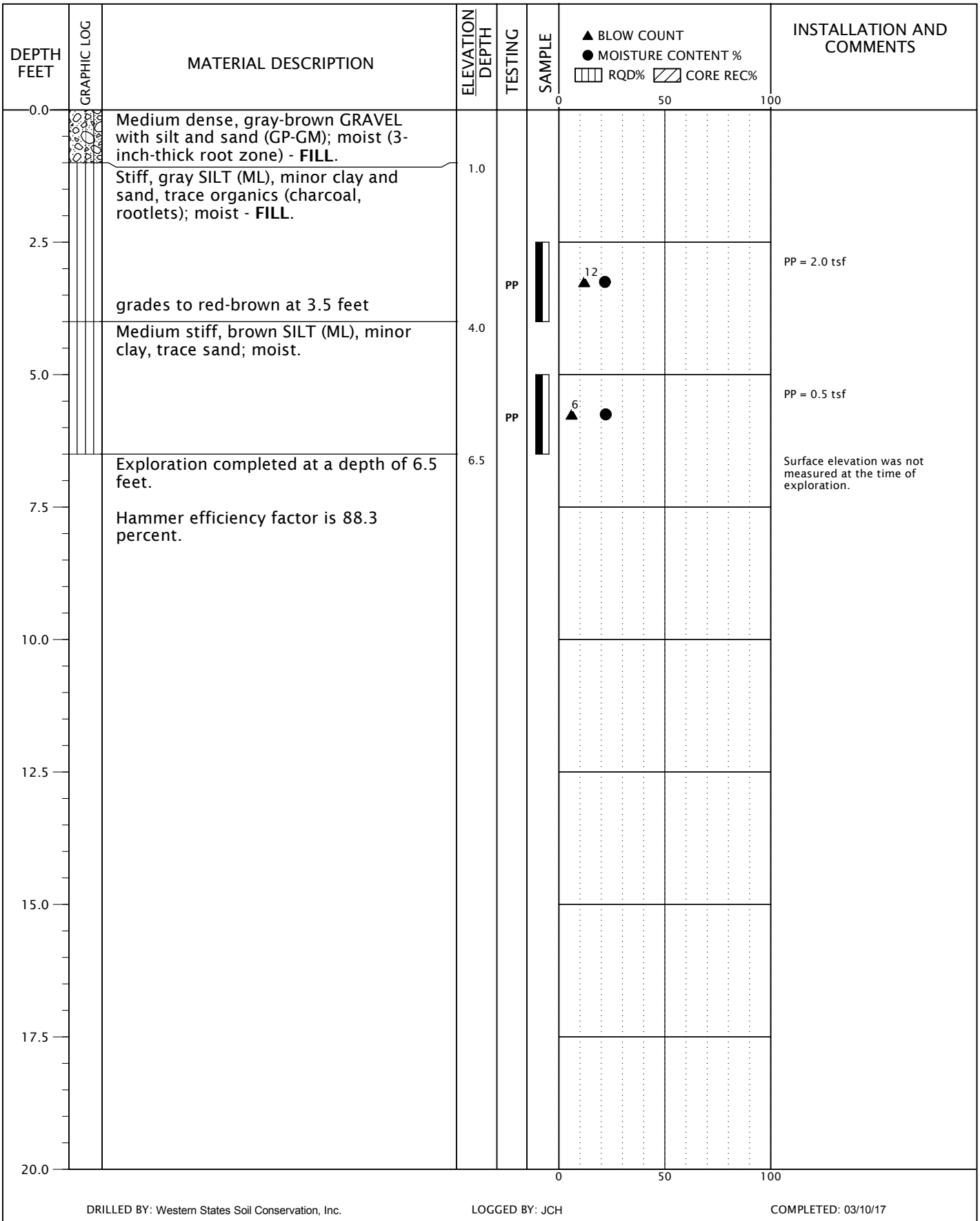
BORING B-1
(continued)

APRIL 2017

GAS PAD EXPANSION
TUALATIN, OR

FIGURE A-1

BORING LOG LAMRESCORP-4-01-B1_3.GPJ GEODESIGN.GDT PRINT DATE: 4/18/17:RC



DRILLED BY: Western States Soil Conservation, Inc.

LOGGED BY: JCH

COMPLETED: 03/10/17

BORING METHOD: hollow-stem auger (see document text)

BORING BIT DIAMETER: 8 1/4 inches

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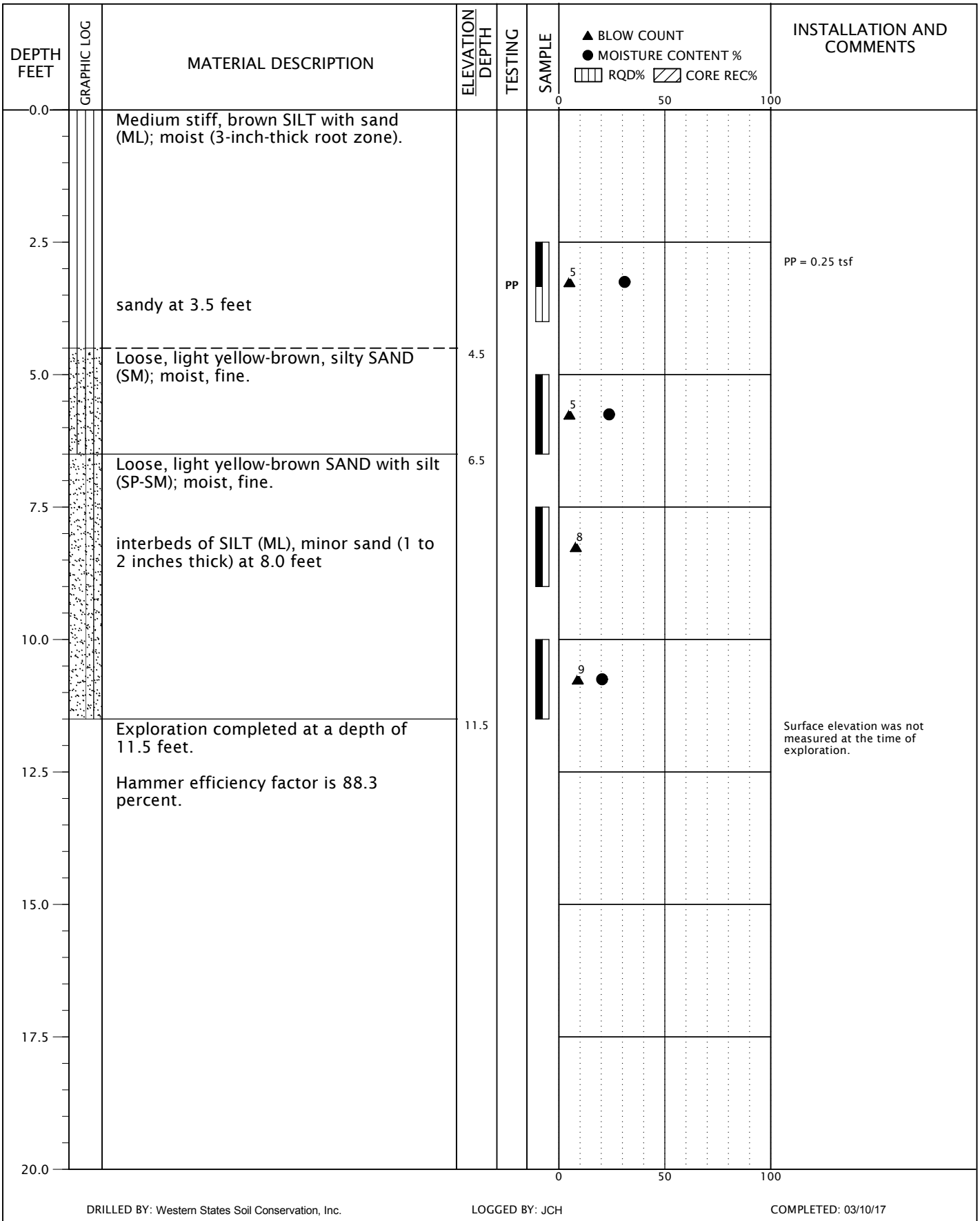
BORING B-2

APRIL 2017

GAS PAD EXPANSION
TUALATIN, OR

FIGURE A-2

BORING LOG LAMRESCORP-4-01-B1_3.GPJ GEODESIGN.GDT PRINT DATE: 4/18/17:RC



DRILLED BY: Western States Soil Conservation, Inc. LOGGED BY: JCH COMPLETED: 03/10/17

BORING METHOD: hollow-stem auger (see document text) BORING BIT DIAMETER: 8 1/4 inches

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LAMRESCORP-4-01

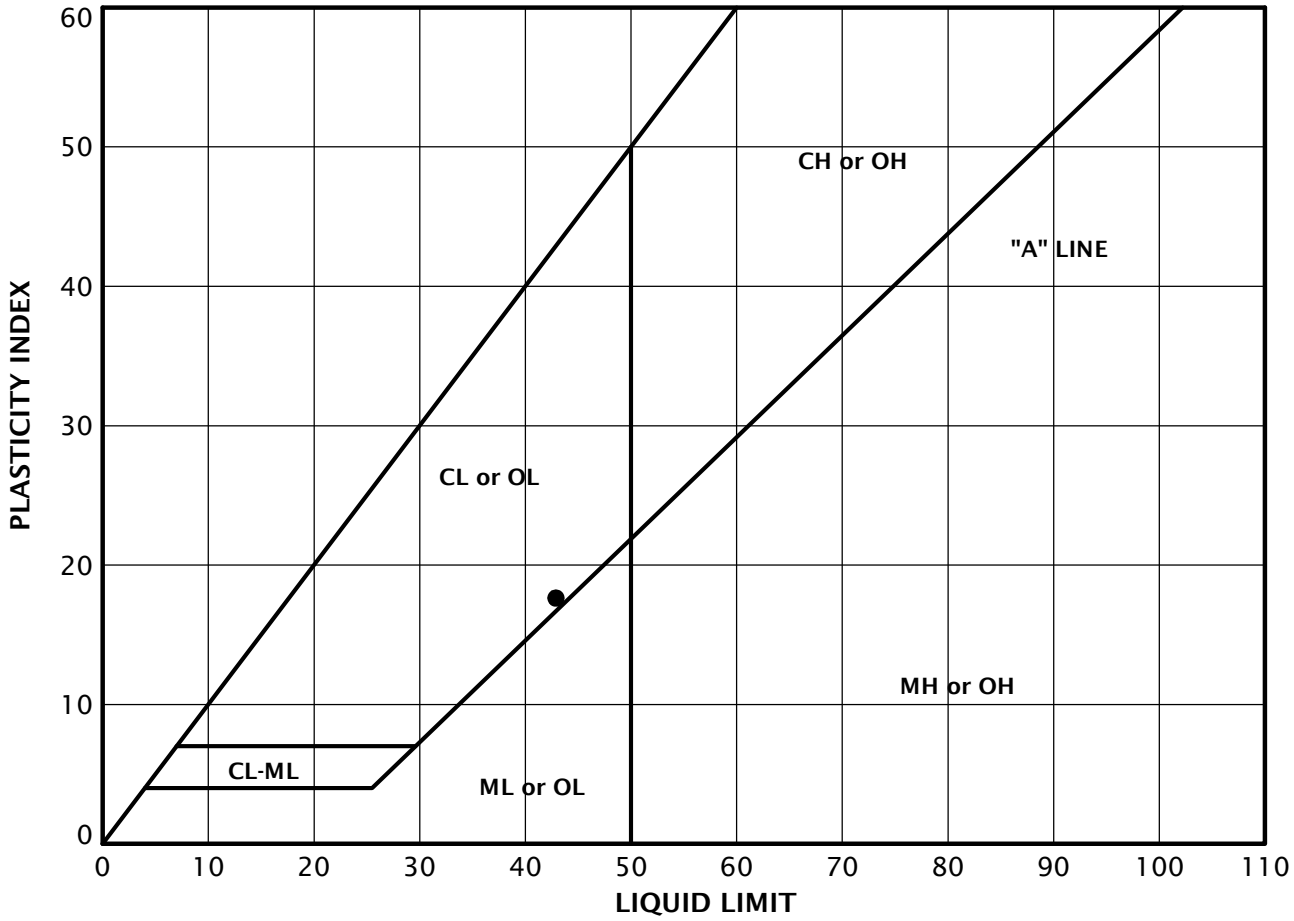
BORING B-3

APRIL 2017

GAS PAD EXPANSION
TUALATIN, OR

FIGURE A-3

BORING LOG LAMRESCORP-4-01-B1_3.GPJ GEODESIGN.GDT PRINT DATE: 4/18/17:RC



KEY	EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	MOISTURE CONTENT (PERCENT)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
●	B-1	2.5	32	43	25	18

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LAMRESCORP-4-01	**ATTERBERG LIMITS TEST RESULTS**	
APRIL 2017	GAS PAD EXPANSION TUALATIN, OR	**FIGURE A-4**

ATTERBERG_LIMITS 7 LAMRESCORP-4-01-B1_3.GPJ GEODESIGN.GDT PRINT DATE: 4/3/17:RC

SAMPLE INFORMATION			MOISTURE CONTENT (PERCENT)	DRY DENSITY (PCF)	SIEVE			ATTERBERG LIMITS		
EXPLORATION NUMBER	SAMPLE DEPTH (FEET)	ELEVATION (FEET)			GRAVEL (PERCENT)	SAND (PERCENT)	P200 (PERCENT)	LIQUID LIMIT	PLASTIC LIMIT	PLASTICITY INDEX
B-1	2.5		32					43	25	18
B-1	7.5		23							
B-1	15.0		33							
B-1	30.0		12							
B-1	40.0		27				18			
B-1	45.0		24				28			
B-1	50.0		25				16			
B-2	2.5		22							
B-2	5.0		22							
B-3	2.5		31							
B-3	5.0		24							
B-3	10.0		20							

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LAMRESCORP-4-01

APRIL 2017

SUMMARY OF LABORATORY DATA

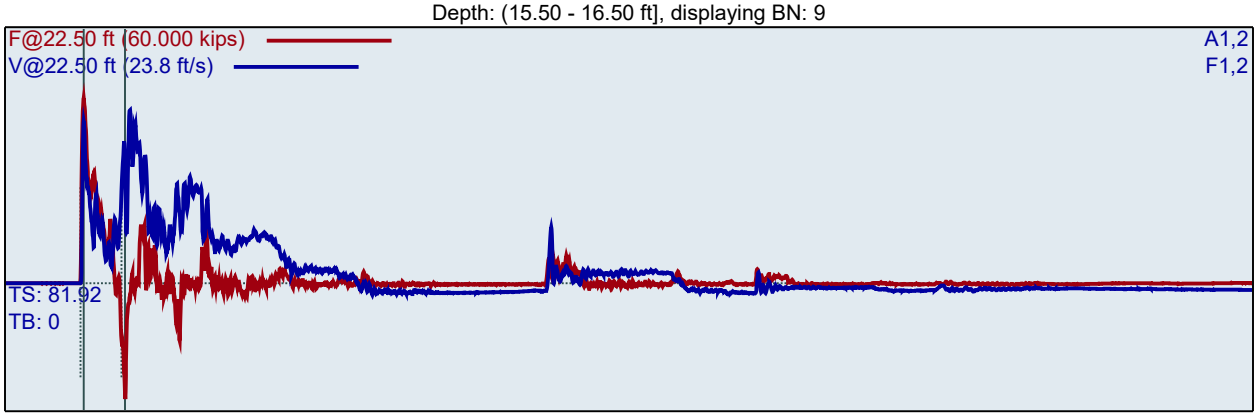
GAS PAD EXPANSION
TUALATIN, OR

FIGURE A-5

WSSC-8-01
JDT
AR: 1.41 in^2
LE: 22.50 ft
WS: 16807.9 ft/s

RIG 7 - SERIAL NO. 383942
Test date: 12/28/2016
SP: 0.492 k/ft3
EM: 30000 ksi

Depth: (15.50 - 16.50 ft], displaying BN: 9



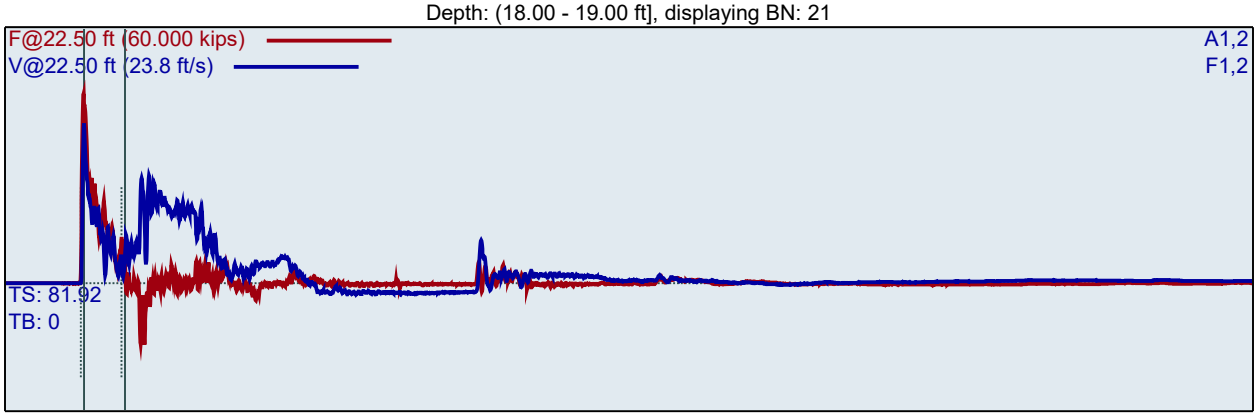
LP: Length of Penetration
FMX: Maximum Force
VMX: Maximum Velocity
BPM: Blows/Minute
EMX: Maximum Energy
ETR: Energy Transfer Ratio - Rated

BL#	BC /6"	LP ft	FMX kips	VMX ft/s	BPM bpm	EMX ft-lb	ETR (%)
1	3	15.67	44.305	15.6	1.9	313.0	89.4
2	3	15.83	44.589	17.0	55.3	316.3	90.4
3	3	16.00	44.472	16.5	55.2	307.7	87.9
4	8	16.06	44.492	16.8	54.7	311.3	88.9
5	8	16.13	42.703	16.4	54.9	309.6	88.5
6	8	16.19	44.398	16.9	54.6	310.9	88.8
7	8	16.25	43.695	16.3	54.8	312.9	89.4
8	8	16.31	43.700	16.1	54.9	311.4	89.0
9	8	16.38	43.409	16.1	55.0	310.4	88.7
10	8	16.44	43.247	15.3	54.8	307.0	87.7
11	8	16.50	19.792	6.7	80.3	59.1	16.9
	Average	16.16	41.709	15.4	52.4	288.2	82.3
	Std Dev	0.24	6.955	2.8	17.5	72.5	20.7
	Maximum	16.50	44.589	17.0	80.3	316.3	90.4
	Minimum	15.67	19.792	6.7	1.9	59.1	16.9

N-value: 11

Sample Interval Time: 10.56 seconds.

Depth: (18.00 - 19.00 ft], displaying BN: 21

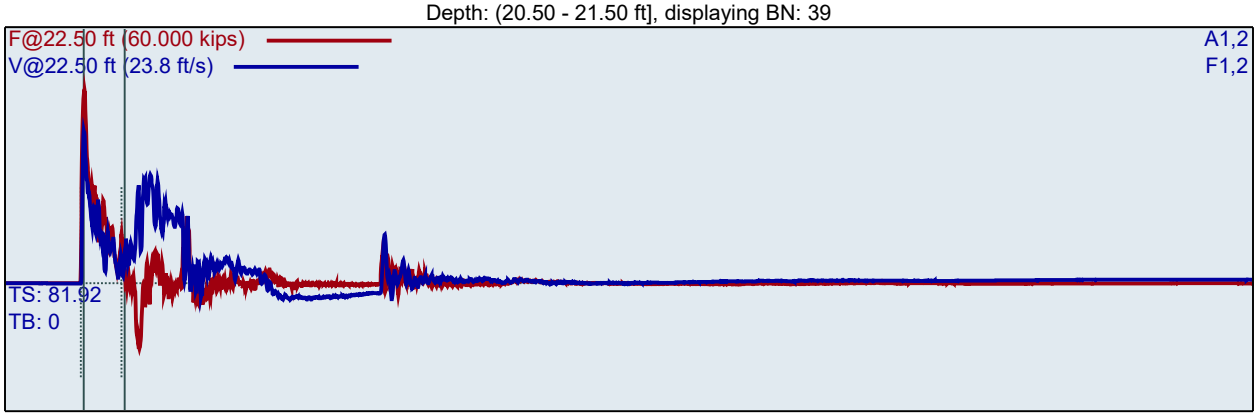


BL#	BC /6"	LP ft	FMX kips	VMX ft/s	BPM bpm	EMX ft-lb	ETR (%)
12	4	18.13	43.583	14.3	54.5	310.6	88.8
13	4	18.25	43.570	14.1	54.5	312.4	89.3
14	4	18.38	43.975	14.3	54.2	310.8	88.8
15	4	18.50	42.792	15.5	54.6	312.5	89.3
16	8	18.56	43.422	15.0	54.5	317.1	90.6
17	8	18.63	43.768	14.6	54.1	316.0	90.3
18	8	18.69	43.318	14.5	54.4	315.8	90.2
19	8	18.75	42.657	14.0	54.4	312.9	89.4
20	8	18.81	44.231	14.8	54.3	314.4	89.8
21	8	18.88	44.488	14.9	54.3	316.3	90.4
22	8	18.94	44.711	15.0	54.4	313.9	89.7
23	8	19.00	43.832	14.4	54.4	311.8	89.1
Average		18.63	43.696	14.6	54.4	313.7	89.6
Std Dev		0.26	0.591	0.4	0.1	2.1	0.6
Maximum		19.00	44.711	15.5	54.6	317.1	90.6
Minimum		18.13	42.657	14.0	54.1	310.6	88.8

N-value: 12

Sample Interval Time: 12.12 seconds.

Depth: (20.50 - 21.50 ft], displaying BN: 39

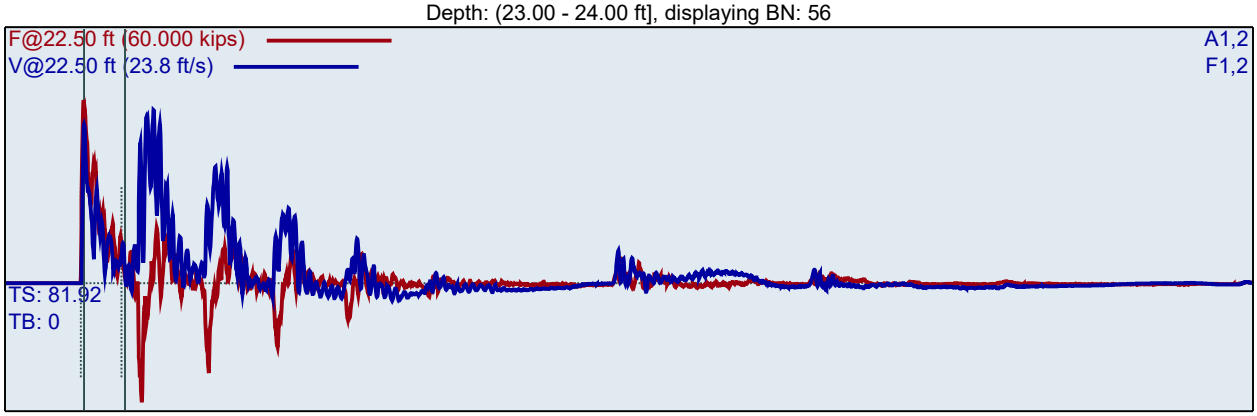


BL#	BC /6"	LP ft	FMX kips	VMX ft/s	BPM bpm	EMX ft-lb	ETR (%)
24	8	20.56	44.057	14.8	54.5	317.7	90.8
25	8	20.63	43.219	16.8	54.2	306.1	87.5
26	8	20.69	44.090	14.1	54.2	313.8	89.7
27	8	20.75	44.898	14.9	54.4	316.2	90.3
28	8	20.81	44.836	16.6	54.2	311.3	88.9
29	8	20.88	44.302	16.5	54.4	314.1	89.8
30	8	20.94	44.345	15.1	54.3	314.5	89.8
31	8	21.00	45.057	15.8	54.5	311.2	88.9
32	10	21.05	44.132	15.3	54.2	311.7	89.1
33	10	21.10	43.899	17.1	54.3	309.6	88.5
34	10	21.15	45.254	14.7	54.1	313.8	89.7
35	10	21.20	45.251	14.4	54.5	317.2	90.6
36	10	21.25	43.714	15.5	54.0	311.9	89.1
37	10	21.30	42.554	17.2	54.3	312.7	89.4
38	10	21.35	42.369	16.6	54.2	310.0	88.6
39	10	21.40	45.048	14.2	54.1	314.9	90.0
40	10	21.45	42.990	16.5	54.3	309.4	88.4
41	10	21.50	44.257	15.9	54.2	317.1	90.6
	Average	21.06	44.126	15.7	54.3	313.0	89.4
	Std Dev	0.28	0.861	1.0	0.1	3.0	0.9
	Maximum	21.50	45.254	17.2	54.5	317.7	90.8
	Minimum	20.56	42.369	14.1	54.0	306.1	87.5

N-value: 18

Sample Interval Time: 18.77 seconds.

Depth: (23.00 - 24.00 ft], displaying BN: 56



BL#	BC /6"	LP ft	FMX kips	VMX ft/s	BPM bpm	EMX ft-lb	ETR (%)
42	8	23.06	42.016	15.5	54.7	315.2	90.0
43	8	23.13	42.207	15.6	54.8	313.2	89.5
44	8	23.19	42.444	15.6	54.7	319.6	91.3
45	8	23.25	42.717	15.5	55.1	316.9	90.5
46	8	23.31	42.337	15.5	54.3	317.4	90.7
47	8	23.38	42.016	15.4	54.9	315.0	90.0
48	8	23.44	42.802	15.9	54.8	317.9	90.8
49	8	23.50	41.630	15.5	54.7	314.4	89.8
50	9	23.56	42.341	15.8	54.6	316.4	90.4
51	9	23.61	41.710	15.9	54.7	316.5	90.4
52	9	23.67	42.185	16.0	54.7	319.2	91.2
53	9	23.72	41.073	15.5	54.6	309.2	88.3
54	9	23.78	41.662	15.5	54.6	313.4	89.6
55	9	23.83	40.943	15.4	54.7	311.3	88.9
56	9	23.89	42.559	16.1	54.4	317.5	90.7
57	9	23.94	41.035	15.5	54.4	311.8	89.1
58	9	24.00	41.007	14.8	54.7	309.5	88.4
	Average	23.54	41.923	15.6	54.7	315.0	90.0
	Std Dev	0.29	0.599	0.3	0.2	3.1	0.9
	Maximum	24.00	42.802	16.1	55.1	319.6	91.3
	Minimum	23.06	40.943	14.8	54.3	309.2	88.3
			N-value: 17				

Sample Interval Time: 17.54 seconds.

Summary of SPT Test Results

Project: WSSC-8-01, Test Date: 12/28/2016

LP: Length of Penetration
FMX: Maximum Force
VMX: Maximum Velocity
BPM: Blows/Minute
EMX: Maximum Energy
ETR: Energy Transfer Ratio - Rated

Instr. Length ft	Blows Applied /6"	N Value	N60 Value	Average LP ft	Average FMX kips	Average VMX ft/s	Average BPM bpm	Average EMX ft-lb	Average ETR (%)
22.50	**3-8**	**8**	**11**	16.16	41.709	15.4	52.4	288.2	82.3
22.50	**4-8**	**8**	**11**	18.63	43.696	14.6	54.4	313.7	89.6
22.50	**8-10**	**10**	**14**	21.06	44.126	15.7	54.3	313.0	89.4
22.50	**8-9**	**9**	**13**	23.54	41.923	15.6	54.7	315.0	90.0
		Overall Average Values:		20.35	42.933	15.4	54.1	309.0	88.3 ←
		Standard Deviation:		2.68	3.275	1.4	7.7	33.2	9.5
		Overall Maximum Value:		24.00	45.254	17.2	80.3	319.6	91.3
		Overall Minimum Value:		15.67	19.792	6.7	1.9	59.1	16.9

Average Energy Transfer Ratio = 88.3%
Energy Correction Factor = 1.47

NV5

Delivering Solutions
Improving Lives

DocuSign Envelope ID: C00D6AC1-EE56-45ED-AAB9-DA556DAEF71B

CITY OF TUALATIN
Planning Division

Land Use Application

Project Information		
Project Title: Lam TUX		
Brief Description: Proposed new buildings: office ("I" - 164,000 SF), utilities ("U" - 56,000 SF), lab ("X" - 205,000 SF); approximately 500 new parking spaces and associated access and circulation; associated landscaping.		
Estimated Construction Value: > $500,000		
Property Information		
Address: 11155-11361 SW Leveton Drive		
Assessor's Map Number and Tax Lot(s): 2S122AA00500, 2S122BB00800, 2S122AB00100, 2S122BA00100		
Applicant / Primary Contact		
Name: Suzannah Stanley	Company Name: Mackenzie	
Address: 1515 SE Water Ave, Suite 100		
City: Portland	State: OR	ZIP: 97214
Phone: 971-346-3808	Email: sstanley@mcknze.com	
Property Owner		
Name: Lam Research Corporation (Ajay Changaran, Sr. Director of Real Estate & Construction)		
Address: 11155 SW Leveton Drive		
City: Tualatin	State: OR	ZIP: 97062
Phone:	Email:	
Property Owner's Signature: (Note: Letter of authorization is required if not signed by owner)	DocuSigned by: B3853C4AF91E4C2...	Date: 7/4/2024

AS THE PERSON RESPONSIBLE FOR THIS APPLICATION, I HEREBY ACKNOWLEDGE THAT I HAVE READ THIS APPLICATION AND STATE THAT THE INFORMATION IN AND INCLUDED WITH THIS APPLICATION IN ITS ENTIRETY IS CORRECT. I AGREE TO COMPLY WITH ALL APPLICABLE CITY AND COUNTY ORDINANCES AND STATE LAWS REGARDING BUILDING CONSTRUCTION AND LAND USE.	
Primary Contact's Applicant's Signature: Suzannah H Stanley	Date: 7/8/24

Land Use Application Type:

- ☐ Annexation (ANN)
- ☑ Architectural Review (AR)
- ☐ Architectural Review—Single Family (ARSF)
- ☐ Architectural Review—ADU (ARADU)
- ☐ Conditional Use (CUP)
- ☐ Historic Landmark (HIST)
- ☐ Industrial Master Plan (IMP)
- ☐ Plan Map Amendment (PMA)
- ☐ Plan Text Amendment (PTA)
- ☐ Tree Removal/Review (TCP)
- ☐ Minor Architectural Review (MAR)
- ☐ Minor Variance (MVAR)
- ☐ Sign Variance (SVAR)
- ☐ Variance (VAR)
- ☐ Other _____

Office Use		
Case No:	Date Received:	Received by:
Fee:	Receipt No:	

Clean Water Services

SENSITIVE AREA PRE-SCREENING SITE ASSESSMENT

Clean Water Services File Number 24-001259

1. **Jurisdiction:** Washington County

2. **Property Information** (example: 1S234AB01400)
   Tax lot ID(s): ~~2S122BA00100, 2S122AB00100, 2S122AA00800 and 00500~~

   ***OR* Site Address:** 11355 SW Leveton Drive
   City, State, Zip: Tualatin,OR,97062
   Nearest cross street:

3. **Owner Information**
   Name: Paul Roessler
   Company: Lam Research
   Address: 11355 SW Leveton Drive
   City, State, Zip: Tualatin,OR,97062
   Phone/fax: 971-712-6388
   Email: Paul.Roessler@lamresearch.com

4. **Development Activity** (check **all** that apply)
   - ☐ Addition to single family residence (rooms, deck, garage)
   - ☒ Lot line adjustment
   - ☐ Minor land partition
   - ☐ Residential condominium
   - ☐ Commercial condominium
   - ☐ Residential subdivision
   - ☐ Commercial subdivision
   - ☐ Single lot commercial
   - ☒ Multi lot commercial

   Other: New office, lab, and utilities buildings; parking.

4. **Applicant Information**
   Name: Suzannah Stanley
   Company: Mackenzie
   Address: 1515 SE Water Ave
   City, State, Zip: Portland,OR,97214
   Phone/fax: 971-346-3808
   Email: sstanley@mcknze.com

6. **Will the project involve any off-site work?** ☐ Yes ☐ No ☒ Unknown
   Location and description of off-site work: Potential street improvements on SW Tualatin Rd and/or SW 108th Ave

7. **Additional comments or information that may be needed to understand your project:**

This application does NOT replace Grading and Erosion Control Permits, Connection Permits, Building Permits, Site Development Permits, DEQ 1200-C Permit or other permits as issued by the Department of Environmental Quality, Department of State Lands and/or Department of the Army COE. All required permits and approvals must be obtained and completed under applicable local, state, and federal law.

By signing this form, the Owner or Owner's authorized agent or representative, acknowledges and agrees that employees of Clean Water Services have authority to enter the project site at all reasonable times for the purpose of inspecting project site conditions and gathering information related to the project site. I certify that I am familiar with the information contained in this document, and to the best of my knowledge and belief, this information is true, complete, and accurate.

Print/type name: Suzannah Stanley Print/type title: Land Use Planner

Signature: ONLINE SUBMITTAL Date: 6/12/2024

FOR DISTRICT USE ONLY

- ☐ Sensitive areas potentially exist on site or within 200' of the site. **THE APPLICANT MUST PERFORM A SITE ASSESSMENT PRIOR TO ISSUANCE OF A SERVICE PROVIDER LETTER.** If Sensitive Areas exist on the site or within 200 feet on adjacent properties, a Natural Resources Assessment Report may also be required.
- ☐ Based on review of the submitted materials and best available information sensitive areas do not appear to exist on site or within 200' of the site. This Sensitive Area Pre-Screening Site Assessment does NOT eliminate the need to evaluate and protect water quality sensitive areas if they are subsequently discovered. This document will serve as your Service Provider Letter as required by Resolution and Order 19-5, Section 3.02.1, as amended by Resolution and Order 19-22. All required permits and approvals must be obtained and completed under applicable local, State and federal law.
- ■ Based on review of the submitted materials and best available information the above referenced project will not significantly impact the existing or potentially sensitive area(s) found near the site. This Sensitive Area Pre-Screening Site Assessment does NOT eliminate the need to evaluate and protect additional water quality sensitive areas if they are subsequently discovered. This document will serve as your Service Provider Letter as required by Resolution and Order 19-5, Section 3.02.1, as amended by Resolution and Order 19-22. All required permits and approvals must be obtained and completed under applicable local, state and federal law.
- ☐ **THIS SERVICE PROVIDER LETTER IS NOT VALID UNLESS _____ CWS APPROVED SITE PLAN(S) ARE ATTACHED.**
- ☐ The proposed activity does not meet the definition of development or the lot was platted after 9/9/95 ORS 92.040(2). **NO SITE ASSESSMENT OR SERVICE PROVIDER LETTER IS REQUIRED.**

Reviewed by: Jessica Chaplen Date: 6/13/2024

Once complete, email to: **SPLReview@cleanwaterservices.org** • Fax: **(503) 681-4439**

OR mail to: SPL Review, Clean Water Services, 2550 SW Hillsboro Highway, Hillsboro, Oregon 97123

Revised 2/2020

FIRE CODE / LAND USE / BUILDING REVIEW APPLICATION

Tualatin Valley Fire & Rescue

North Operating Center
11945 SW 70th Avenue
Tigard, OR 97223
Phone: 503-649-8577

South Operating Center
8445 SW Elligsen Rd
Wilsonville, OR 97070
Phone: 503-649-8577

REV 6-30-20

Project Information

Applicant Name: Jacobs Engineering

Address: 2020 SW 4th Ave, 3rd Floor, Portland, OR 97201

Phone: 509-842-7429

Email: Benjamin.Sommer@jacobs.com

Site Address: 11361 SW Leveton Drive

City: Tualatin

Map & Tax Lot #: 2S122BA00100 | 2S122AB00100 | 2S122AA00800 | 2S122AA00500

Business Name: Lam Research Corporation

Land Use/Building Jurisdiction: Tualatin

Land Use/ Building Permit # AR 24-0002, IMP 24-0001, PLA 24-0002

Choose from: Beaverton, Tigard, Newberg, **Tualatin**, North Plains, West Linn, Wilsonville, Sherwood, Rivergrove, Durham, King City, Washington County, Clackamas County, Multnomah County, Yamhill County

Project Description

The Lam Research Corporation is expanding its Lam Campus on the north side of SW Leveton Drive in Tualatin, Oregon. The project involves constructing three new buildings: a Lab, a CUB and yard, an Office, and a bulk gas plant.

Permit/Review Type (check one):

- ☒ Land Use / Building Review - Service Provider Permit
- ☐ Emergency Radio Responder Coverage Install/Test
- ☐ LPG Tank (Greater than 2,000 gallons)
- ☐ Flammable or Combustible Liquid Tank Installation (Greater than 1,000 gallons)
  - * Exception: Underground Storage Tanks (UST) are deferred to DEQ for regulation.
- ☐ Explosives Blasting (Blasting plan is required)
- ☐ Exterior Toxic, Pyrophoric or Corrosive Gas Installation (in excess of 810 cu.ft.)
- ☐ Tents or Temporary Membrane Structures (in excess of 10,000 square feet)
- ☐ Temporary Haunted House or similar
- ☐ OLCC Cannabis Extraction License Review
- ☐ Ceremonial Fire or Bonfire (For gathering, ceremony or other assembly)

For Fire Marshal's Office Use Only

TVFR Permit # 2025-0125

Permit Type: SPP - Tualatin

Submittal Date: 7/10/2025

Assigned To: McGladrey

Due Date: 7/16/2025

Fees Due: $79,000 MERRC Fees

Fees Paid: $0

Approval/Inspection Conditions

(For Fire Marshal's Office Use Only)

This section is for application approval only

MC — 7/16/2025

Fire Marshal or Designee — Date

Conditions:

A TVF&R final inspection is required for this project.

MERRC fees are due prior to building permit issuance.
Updated from permit #2024-0138

See Attached Conditions: ☐ Yes ☐ No

Site Inspection Required: ☒ Yes ☐ No

This section used when site inspection is required

Inspection Comments:

Final TVFR Approval Signature & Emp ID — Date

TUALATIN VALLEY FIRE & RESCUE
MOBILE EMERGENCY RESPONDER RADIO COVERAGE (MERRC) APPLICATION

This application is to be used when requesting approval for participation in the TVF&R MERRC program in lieu of providing an in-building OFC 510 emergency responder radio coverage system

North Operating Center
11945 SW 70th Avenue
Tigard, OR 97223
Phone: 503-649-8577

South Operating Center
8445 SW Elligsen Road
Wilsonville, OR 97070
Phone: 503-259-1500

Building Information
(Separate Application Required for Each Building)

Business/ Building Name: LAM RESEARCH BUILDING H

Proposed Use of Building: RESEARCH & DEVELOPMENT

Address: 11361 SW LEVETON DR

City/County: TUALATIN, CLACKAMAS

Building Permit # AR-24-0002, IMP 24-0001

Applicant Contact Information

Contact Person: BRIAN HANE

Phone: 503-826-7531

Email: brian.hane@lamresearch.com

MERRC FEE:

Approved Fee Schedule (as of 11/2015)
First 0 - 50,000 sq.ft. = $0.50 per sq.ft.
Additional sq.ft. from 50,001 - 100,001 = $0.30 per sq.ft.
For each sq.ft. over 100,000 = $0.10 per sq.ft.

Example fee for 300,000 sf building:
First 50,000 sq.ft. x $0.50 = $25,000 +
50,001 to 100,001 sq.ft. x $0.30 = $15,000 +
100,002 to 300,000 sq.ft. x $ 0.10 = $19,999
TOTAL = $59,999

Total Square Footage: 120,000 SF

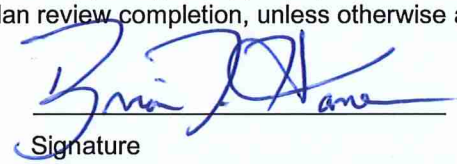
50,000 SF x $0.50 = 25,000$

50,000 SF x $0.30 = 15,000$

20,000 SF x $0.10 = 2,000$

TOTAL MERRC FEE: $ 42,000$

As an authorized representative for the above referenced building, I hereby request the building be permanently approved under the TVF&R Mobile Emergency Responder Radio Coverage program as having an approved method of compliance with Oregon Fire Code Section 510 and TVF&R Resolution 2015-09. If the application is accepted, I understand that full payment of the calculated MERRC fee is required prior to completing the approval process. For construction projects under a building permit, payment must be received prior to plan review completion, unless otherwise approved by the Fire Marshal.

Brian Hane, Sr. Mgr, EHS		15-JUL-2025
Name & Title of Authorized Representative	Signature	Date

For Fire Marshal's Office Use Only

This section is for APPLICATION APPROVAL ONLY.

Application Approved by Fire Marshal: YES or NO

Reviewer Name: _____

Reviewer Signature _____

Date: _____

Comments:

_____

_____

_____

This section is for FINAL APPROVAL ONLY.

Payment Total: _____

Received By: _____

Date: _____

Comments:

_____

_____

Provide a signed, approved final copy to applicant.

TUALATIN VALLEY FIRE & RESCUE
MOBILE EMERGENCY RESPONDER RADIO COVERAGE (MERRC) APPLICATION

This application is to be used when requesting approval for participation in the TVF&R MERRC program in lieu of providing an in-building OFC 510 emergency responder radio coverage system

North Operating Center
11945 SW 70th Avenue
Tigard, OR 97223
Phone: 503-649-8577

South Operating Center
8445 SW Elligsen Road
Wilsonville, OR 97070
Phone: 503-259-1500

Building Information
(Separate Application Required for Each Building)

Business/ Building Name: LAM RESEARCH BUILDING X

Proposed Use of Building: DEVELOPMENT & PRODUCTION

Address: 11361 SW LEVETON DR

City/County: TUALATIN, CLACKAMAS

Building Permit # AR-24-0002, IMP 24-0001

Applicant Contact Information

Contact Person: Brian Hane

Phone: 503-826-7531

Email: brian.hane@lamresearch.com

MERRC FEE:

Approved Fee Schedule (as of 11/2015)
First 0 - 50,000 sq.ft. = $0.50 per sq.ft.
Additional sq.ft. from 50,001 - 100,001 = $0.30 per sq.ft.
For each sq.ft. over 100,000 = $0.10 per sq.ft.

Example fee for 300,000 sf building:
First 50,000 sq.ft. x $0.50 = $25,000 +
50,001 to 100,001 sq.ft. x $0.30 = $15,000 +
100,002 to 300,000 sq.ft. x $ 0.10 = $19,999
TOTAL = $59,999

Total Square Footage: 90,000 SF

50,000 SF x $0.50 = 25,000$

40,000 SF x $0.30 = 12,000$

_____ SF x $0.10 =

TOTAL MERRC FEE: $ 37,000$

As an authorized representative for the above referenced building, I hereby request the building be permanently approved under the TVF&R Mobile Emergency Responder Radio Coverage program as having an approved method of compliance with Oregon Fire Code Section 510 and TVF&R Resolution 2015-09. If the application is accepted, I understand that full payment of the calculated MERRC fee is required prior to completing the approval process. For construction projects under a building permit, payment must be received prior to plan review completion, unless otherwise approved by the Fire Marshal.

Brian Hane, Sr. Mgr, EHS	Brian Hane	15-JUL-2025
Name & Title of Authorized Representative	Signature	Date

For Fire Marshal's Office Use Only

This section is for APPLICATION APPROVAL ONLY.

Application Approved by Fire Marshal: YES or NO

Reviewer Name: _____

Reviewer Signature _____

Date: _____

Comments:

_____

_____

_____

This section is for FINAL APPROVAL ONLY.

Payment Total: _____

Received By: _____

Date: _____

Comments:

_____

_____

Provide a signed, approved final copy to applicant.

TUALATIN VALLEY FIRE & RESCUE
MOBILE EMERGENCY RESPONDER RADIO COVERAGE (MERRC) APPLICATION

This application is to be used when requesting approval for participation in the TVF&R MERRC program in lieu of providing an in-building OFC 510 emergency responder radio coverage system

North Operating Center
11945 SW 70th Avenue
Tigard, OR 97223
Phone: 503-649-8577

South Operating Center
8445 SW Elligsen Road
Wilsonville, OR 97070
Phone: 503-259-1500

Building Information
(Separate Application Required for Each Building)

Business/ Building Name: LAM RESEARCH BUILDING U

Proposed Use of Building: UTILITIES

Address: 11361 SW LEVETON DR

City/County: TUALATIN, CLACKAMAS

Building Permit # AR-24-0002, IMP 24-0001

Applicant Contact Information

Contact Person: BRIAN HANE

Phone: 503-826-7531

Email: brian.hane@lamresearch.com

MERRC FEE:

Approved Fee Schedule (as of 11/2015)
First 0 - 50,000 sq.ft. = $0.50 per sq.ft.
Additional sq.ft. from 50,001 - 100,001 = $0.30 per sq.ft.
For each sq.ft. over 100,000 = $0.10 per sq.ft.

Example fee for 300,000 sf building:
First 50,000 sq.ft. x $0.50 = $25,000 +
50,001 to 100,001 sq.ft. x $0.30 = $15,000 +
100,002 to 300,000 sq.ft. x $ 0.10 = $19,999
TOTAL = $59,999

Total Square Footage: 29,000 SF

29,000 SF x $0.50 =

_____ SF x $0.30 =

_____ SF x $0.10 =

TOTAL MERRC FEE: $ 14,500$

As an authorized representative for the above referenced building, I hereby request the building be permanently approved under the TVF&R Mobile Emergency Responder Radio Coverage program as having an approved method of compliance with Oregon Fire Code Section 510 and TVF&R Resolution 2015-09. If the application is accepted, I understand that full payment of the calculated MERRC fee is required prior to completing the approval process. For construction projects under a building permit, payment must be received prior to plan review completion, unless otherwise approved by the Fire Marshal.

Brian Hane, Sr. Mgr, EHS | Brian J. Hane | 15-JUL-2025

Name & Title of Authorized Representative | Signature | Date

For Fire Marshal's Office Use Only

This section is for APPLICATION APPROVAL ONLY.

Application Approved by Fire Marshal: YES or NO

Reviewer Name: _____

Reviewer Signature _____

Date: _____

Comments:

_____

_____

_____

This section is for FINAL APPROVAL ONLY.

Payment Total: _____

Received By: _____

Date: _____

Comments:

_____

_____

Provide a signed, approved final copy to applicant.

TUALATIN VALLEY FIRE & RESCUE
MOBILE EMERGENCY RESPONDER RADIO COVERAGE (MERRC) APPLICATION

This application is to be used when requesting approval for participation in the TVF&R MERRC program in lieu of providing an in-building OFC 510 emergency responder radio coverage system

North Operating Center
11945 SW 70th Avenue
Tigard, OR 97223
Phone: 503-649-8577

South Operating Center
8445 SW Elligsen Road
Wilsonville, OR 97070
Phone: 503-259-1500

Building Information
(Separate Application Required for Each Building)

Business/ Building Name: LAM RESEARCH STORAGE

Proposed Use of Building: STORAGE

Address: 11361 SW LEVETON DR

City/County: TUALATIN, CLACKAMAS

Building Permit # AR-24-0002, IMP 24-0001

Applicant Contact Information

Contact Person: Brian Hare

Phone: 503-826-7531

Email: Brian.hare@lamresearch.com

MERRC FEE:

Approved Fee Schedule (as of 11/2015)
First 0 - 50,000 sq.ft. = $0.50 per sq.ft.
Additional sq.ft. from 50,001 - 100,001 = $0.30 per sq.ft.
For each sq.ft. over 100,000 = $0.10 per sq.ft.

Example fee for 300,000 sf building:
First 50,000 sq.ft. x $0.50 = $25,000 +
50,001 to 100,001 sq.ft. x $0.30 = $15,000 +
100,002 to 300,000 sq.ft. x $ 0.10 = $19,999
TOTAL = $59,999

Total Square Footage: 2,230 SF

2,230 SF x $0.50 =

_____ SF x $0.30 =

_____ SF x $0.10 =

TOTAL MERRC FEE: $ 1,115$

As an authorized representative for the above referenced building, I hereby request the building be permanently approved under the TVF&R Mobile Emergency Responder Radio Coverage program as having an approved method of compliance with Oregon Fire Code Section 510 and TVF&R Resolution 2015-09. If the application is accepted, I understand that full payment of the calculated MERRC fee is required prior to completing the approval process. For construction projects under a building permit, payment must be received prior to plan review completion, unless otherwise approved by the Fire Marshal.

Brian Hare, Sr. Mgr, EHS — Name & Title of Authorized Representative

Signature

15-JUL-2025 — Date

For Fire Marshal's Office Use Only

This section is for APPLICATION APPROVAL ONLY.

Application Approved by Fire Marshal: YES or NO

Reviewer Name: _____

Reviewer Signature _____

Date: _____

Comments:

_____

_____

_____

This section is for FINAL APPROVAL ONLY.

Payment Total: _____

Received By: _____

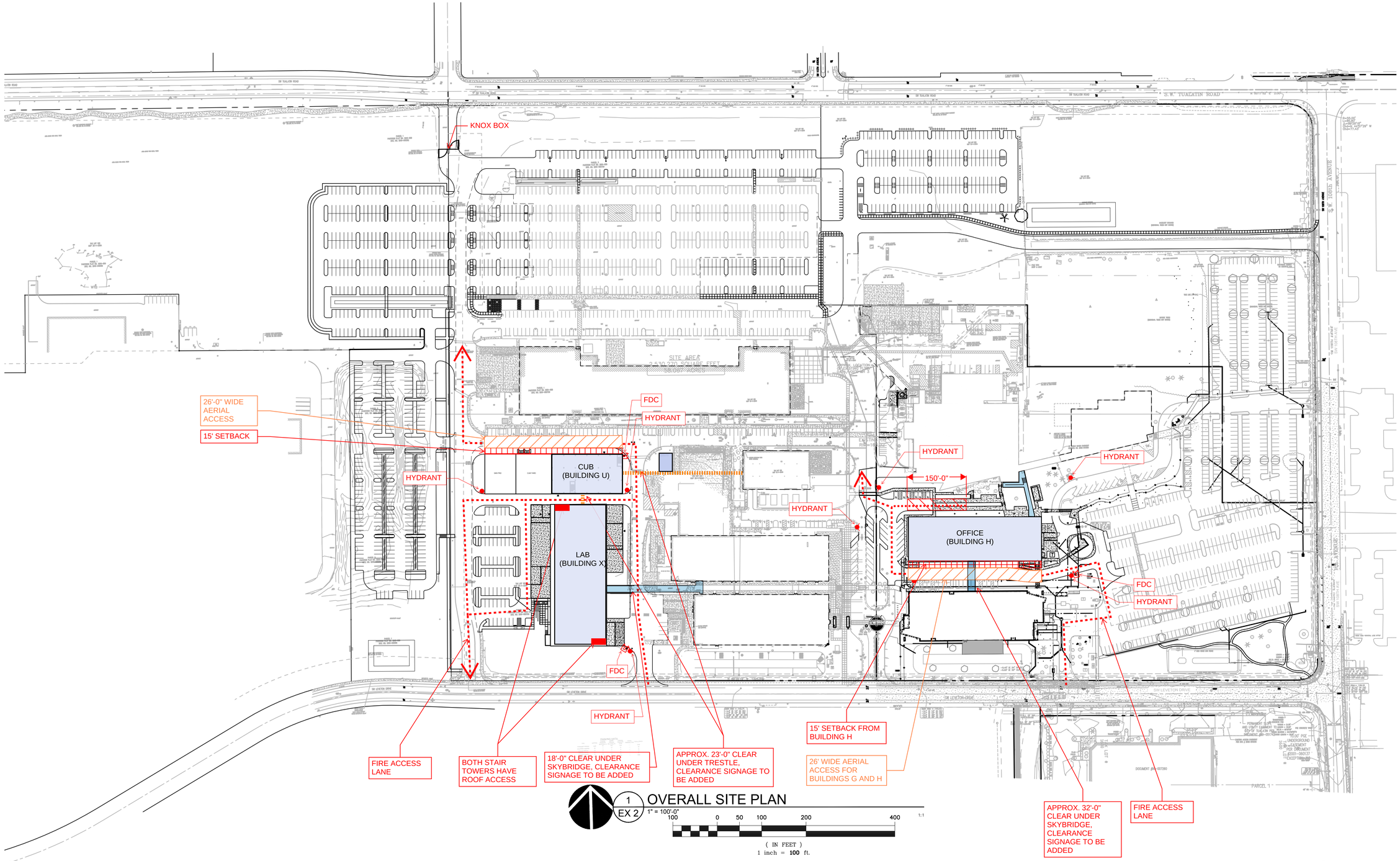
Date: _____

Comments:

_____

_____

Provide a signed, approved final copy to applicant.



1 EX 2 OVERALL SITE PLAN

1" = 100'-0" 1:1

100 0 50 100 200 400

(IN FEET)
1 inch = **100** ft.

Note: Updated to reflect new building size and location changes.

MERRC fees are due prior to building permit issuance.

A TVF&R final inspection is required for this project.

TVF&R Tualatin Valley Fire & Rescue

APPROVED PLANS

APPROVAL OF PLANS IS NOT AN APPROVAL OF OMISSIONS OR OVERSIGHTS.

Deputy Fire Marshal II

TVF&R Permit #2024-0138

PRELIMINARY ONLY

www.mackenzie.inc

ARCHITECTURE • INTERIORS • STRUCTURAL ENGINEERING • CIVIL ENGINEERING • LAND USE PLANNING • LANDSCAPE ARCHITECTURE

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Vancouver, WA 360.695.7879
Seattle, WA 206.749.9993
Sacramento, CA 916.839.4507

MACKENZIE.

Client

Lam RESEARCH

Project

LAM RESEARCH TUALATIN

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SHEET TITLE:

OVERALL SITE PLAN

SHEET:

EX 2

JOB NO. **2250180.00**

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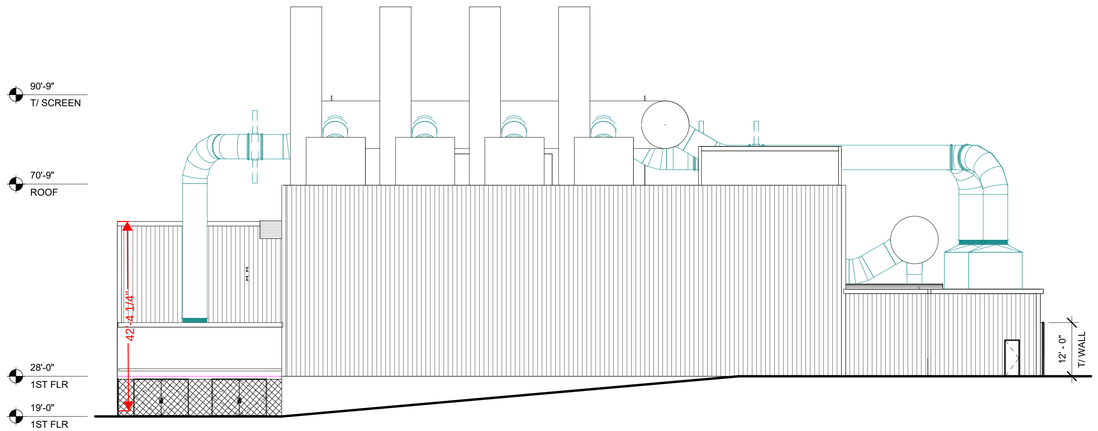
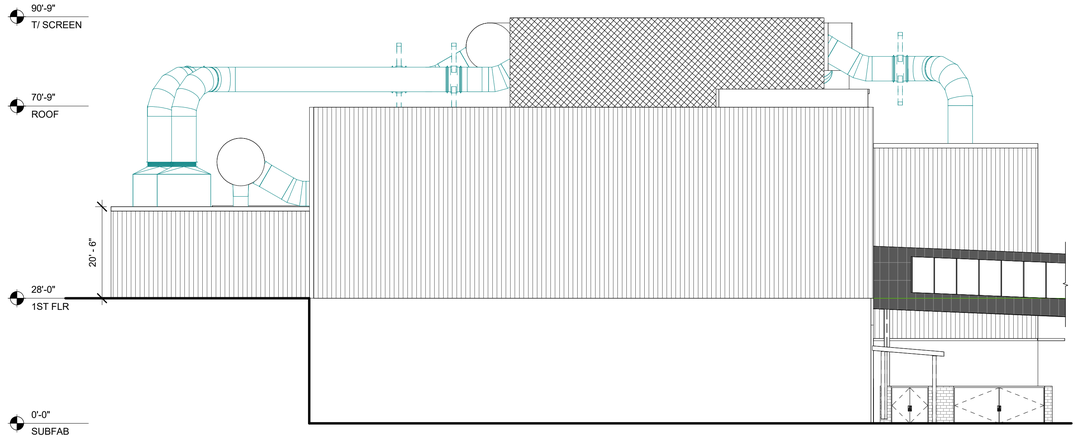
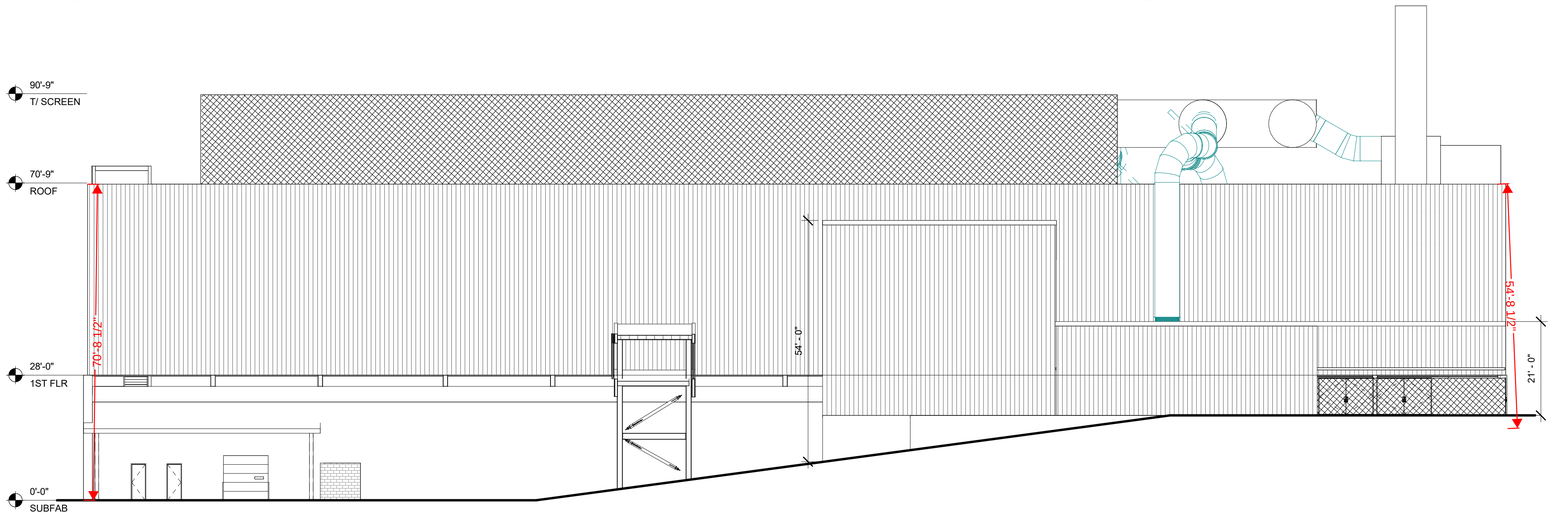


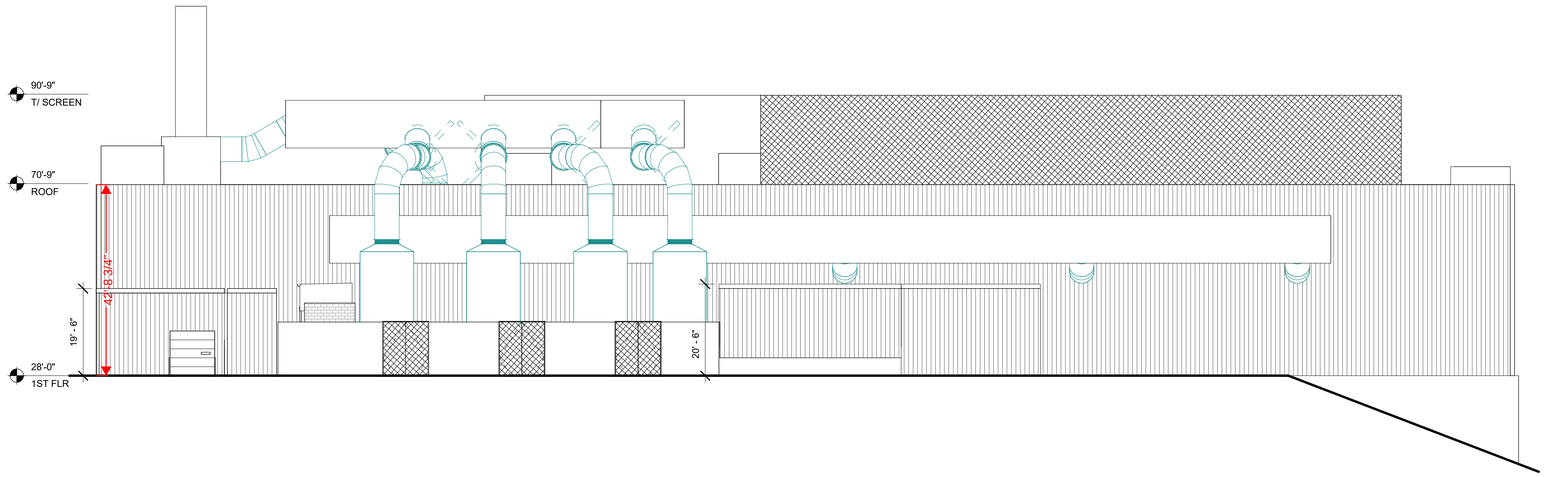
1 A2.10 BUILDING X - NORTH ELEVATION
1/16" = 1'-0"



2 A2.10 BUILDING X - SOUTH ELEVATION
1/16" = 1'-0"



3 A2.10 BUILDING X - EAST ELEVATION
1/16" = 1'-0"



4 A2.10 BUILDING X - WEST ELEVATION
1/16" = 1'-0"

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Vancouver, WA 360.695.7879
Seattle, WA 206.749.9993
Sacramento, CA 916.839.4507

MACKENZIE.

Client

LAM RESEACH
11355 SW LEVETON DR
TUALATIN, OR 97062

Project

LAM TUALATIN CAMPUS - REVISED SMP
11355 SW LEVETON DR
TUALATIN, OR 97062

Mechanical/Electrical

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REVISION SCHEDULE

Delta	Issued As	Issue Date

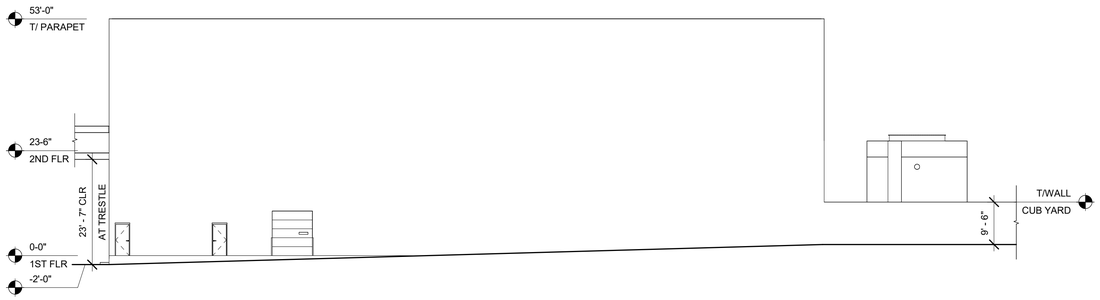
SHEET TITLE:
BUILDING X - ELEVATIONS

TVF&R Tualatin Valley Fire & Rescue
APPROVED PLANS
APPROVAL OF PLANS IS NOT AN APPROVAL OF OMISSIONS OR OVERSIGHTS.
Deputy Fire Marshal II
TVF&R Permit #2024-0138

SHEET
A2.10

JOB NO. **2240022.02**

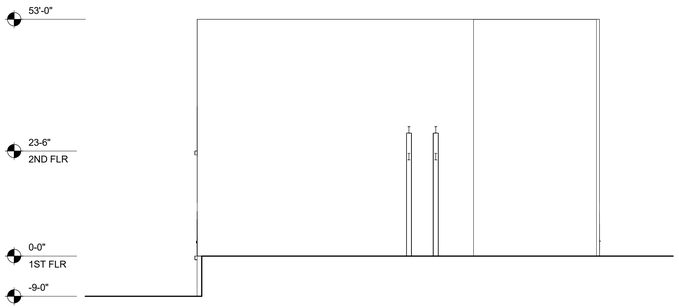
REVISED SMP - PROGRESS PRINT 06/26/25



2 A2.20 BUILDING U - NORTH ELEVATION
1/16" = 1'-0"



4 A2.20 BUILDING U - SOUTH ELEVATION
1/16" = 1'-0"



3 A2.20 BUILDING U - EAST ELEVATION
1/16" = 1'-0"



1 A2.20 BUILDING U - WEST ELEVATION
1/16" = 1'-0"

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Vancouver, WA 360.695.7879
Seattle, WA 206.749.9993
Sacramento, CA 916.839.4507

MACKENZIE.

Client

LAM RESEACH
11355 SW LEVETON DR
TUALATIN, OR 97062

Project
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REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:
BUILDING U - ELEVATIONS

TVF&R Tualatin Valley Fire & Rescue
APPROVED PLANS
APPROVAL OF PLANS IS NOT AN APPROVAL OF OMISSIONS OR OVERSIGHTS.
Deputy Fire Marshal II
TVF&R Permit #2024-0138

SHEET
A2.20

JOB NO. **2240022.02**

REVISED SMP - PROGRESS PRINT 06/26/25



1 A2.30 NORTH ELEVATION
1/16" = 1'-0"



2 A2.30 SOUTH ELEVATION
1/16" = 1'-0"



3 A2.30 EAST ELEVATION
1/16" = 1'-0"



4 A2.30 WEST ELEVATION
1/16" = 1'-0"

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Sacramento, CA 916.839.4507

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TUALATIN, OR 97062

Mechanical/Electrical

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REVISION SCHEDULE

Delta	Issued As	Issue Date

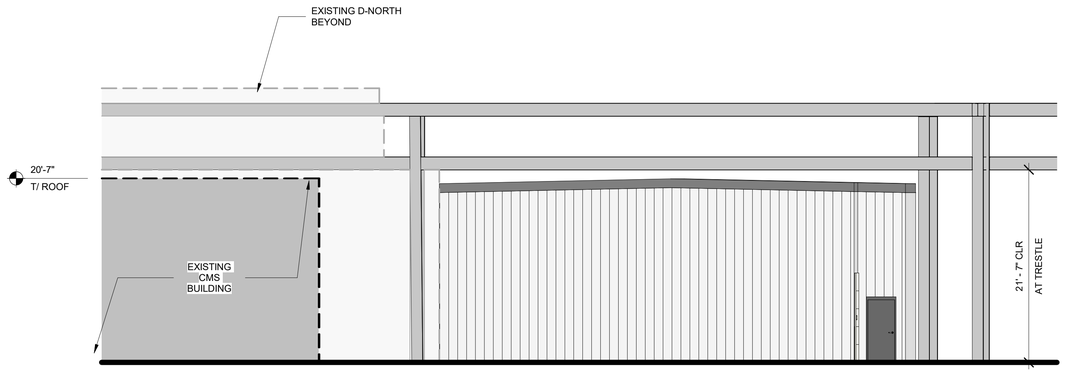
SHEET TITLE:
BUILDING H - ELEVATIONS

Tualatin Valley Fire & Rescue
APPROVED PLANS
APPROVAL OF PLANS IS NOT AN APPROVAL OF OMISSIONS OR OVERSIGHTS.
Deputy Fire Marshal II
TVF&R Permit #2024-0138

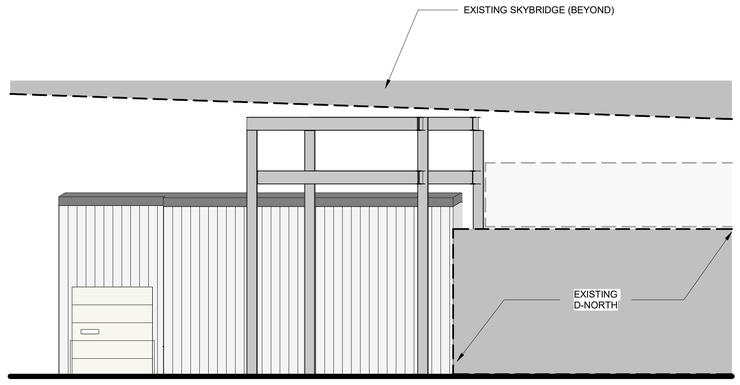
SHEET
A2.30

JOB NO. **2240022.02**

REVISED SMP - PROGRESS PRINT 06/26/25
Autodesk Docs://Lam - Revised SMP/LAM-Site_ Master Plan MODEL-V24-A.rvt 7/10/2025 1:55:56 PM 1/16" = 1'-0"



1 A2.40 FACILITIES STORAGE - NORTH ELEVATION
1/8" = 1'-0"



2 A2.40 FACILITIES STORAGE - WEST ELEVATION
1/8" = 1'-0"

1 MP-1 - PRE ENGINEERED METAL BUILDING CORRUGATED METAL CLADDING



2 MP-2 - PRE ENGINEERED METAL BUILDING CORRUGATED METAL ROOFING



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MACKENZIE.

Client

LAM RESEACH
11355 SW LEVETON DR
TUALATIN, OR 97062

Project
LAM TUALATIN CAMPUS - REVISED SMP
11355 SW LEVETON DR
TUALATIN, OR 97062

Mechanical/Electrical

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REVISION SCHEDULE

Delta	Issued As	Issue Date

SHEET TITLE:
FACILITIES STORAGE - ELEVATIONS / MATERIALITY

Tualatin Valley Fire & Rescue
APPROVED PLANS
APPROVAL OF PLANS IS NOT AN APPROVAL OF OMISSIONS OR OVERSIGHTS.
Deputy Fire Marshal II
TVF&R Permit #2024-0138

SHEET
A2.40

JOB NO. **2240022.02**

REVISED SMP - PROGRESS PRINT 06/26/25

Western States Fire Protection Co.

Protecting Lives and Property

a subsidiary of API Group, Inc.

HYDRANT CALCULATION AT 20 PSI				Hydrant Number	1
STATIC	50	Location of Hydrant		Tualatin RD	
RESIDUAL	48	Manufacturer Of Hydrant			
PITOT	662GPM	Model of Hydrant			
Actual GPM		Year of hydrant			
FLOW AT 20 PSI =		GPM	Coeff.	0.9	

HYDRANT CALCULATION AT 20 PSI				Hydrant Number	2
STATIC	110	Location of Hydrant		West Center bldg f	
RESIDUAL	85	Manufacturer Of Hydrant			
PITOT	936GPM	Model of Hydrant			
Actual GPM	0	Year of hydrant			
FLOW AT 20 PSI =	#NUM!	GPM	Coeff.	0.9	

HYDRANT CALCULATION AT 20 PSI				Hydrant Number	3
STATIC	65	Location of Hydrant		Leveton rd	
RESIDUAL	55	Manufacturer Of Hydrant			
PITOT	GPM748	Model of Hydrant			
Actual GPM	0	Year of hydrant			
FLOW AT 20 PSI =	#NUM!	GPM	Coeff.	0.9	

Do all hydrants appear to be free of leaks at the time of inspection:	Yes
Do all hydrant nozzles threads lubed and operating nuts appear to be in good condition at the time of inspection:	Yes
Do all hydrant barrels appear to be free of cracks and without ice or water present at the time of the inspection:	Yes
Do all of the hydrants appear to be free from leaking and physical damage:	Yes
Are all hydrants painted properly:	Yes
Where all hydrants opened fully and flowed for no less than one minute:	Yes
Do all hydrants drain properly (full drainage within 60min):	Yes

Problems found during the testing of the fire hydrants or comments from the inspector

1) 662 GPM city low pressure side 2857 @20psi
2) 936 GPM Campus loop (fire pump on) 1869 @20psi
3) 748 GPM city low pressure side 1685 @20psi

TVF&R Tualatin Valley Fire & Rescue

APPROVED PLANS

APPROVAL OF PLANS IS NOT AN APPROVAL OF OMISSIONS OR OVERSIGHTS.

Alex McGlen

Deputy Fire Marshal II

Hydrant test

TVF&R Permit #2024-0138

Western States Fire Protection Co.

Protecting Lives and Property

a subsidiary of API Group, Inc.

HYDRANT CALCULATION AT 20 PSI				Hydrant Number	1
STATIC	120	Location of Hydrant		Front of buildg C	
RESIDUAL	93	Manufacturer Of Hydrant			
PITOT	1044	Model of Hydrant			
Actual GPM		Year of hydrant			
FLOW AT 20 PSI =		GPM	Coeff.	0.9	

HYDRANT CALCULATION AT 20 PSI				Hydrant Number	
STATIC	125	Location of Hydrant		New tie in for G	
RESIDUAL	110	Manufacturer Of Hydrant			
PITOT	811	Model of Hydrant			
Actual GPM	0	Year of hydrant			
FLOW AT 20 PSI =	#NUM!	GPM	Coeff.	0.9	

HYDRANT CALCULATION AT 20 PSI				Hydrant Number	
STATIC		Location of Hydrant			
RESIDUAL		Manufacturer Of Hydrant			
PITOT		Model of Hydrant			
Actual GPM	0	Year of hydrant			
FLOW AT 20 PSI =	#NUM!	GPM	Coeff.	0.9	

Do all hydrants appear to be free of leaks at the time of inspection:	Yes
Do all hydrant nozzles threads lubed and operating nuts appear to be in good condition at the time of inspection:	Yes
Do all hydrant barrels appear to be free of cracks and without ice or water present at the time of the inspection:	Yes
Do all of the hydrants appear to be free from leaking and physical damage:	Yes
Are all hydrants painted properly:	Yes
Where all hydrants opened fully and flowed for no less than one minute:	Yes
Do all hydrants drain properly (full drainage within 60min):	Yes

Problems found during the testing of the fire hydrants or comments from the inspector

1) 1044 GPM Campus loop (fire pump on) 2117 @20psi
2) 811 GPM City High pressure side 2319 @20psi

TVF&R Tualatin Valley Fire & Rescue

APPROVED PLANS

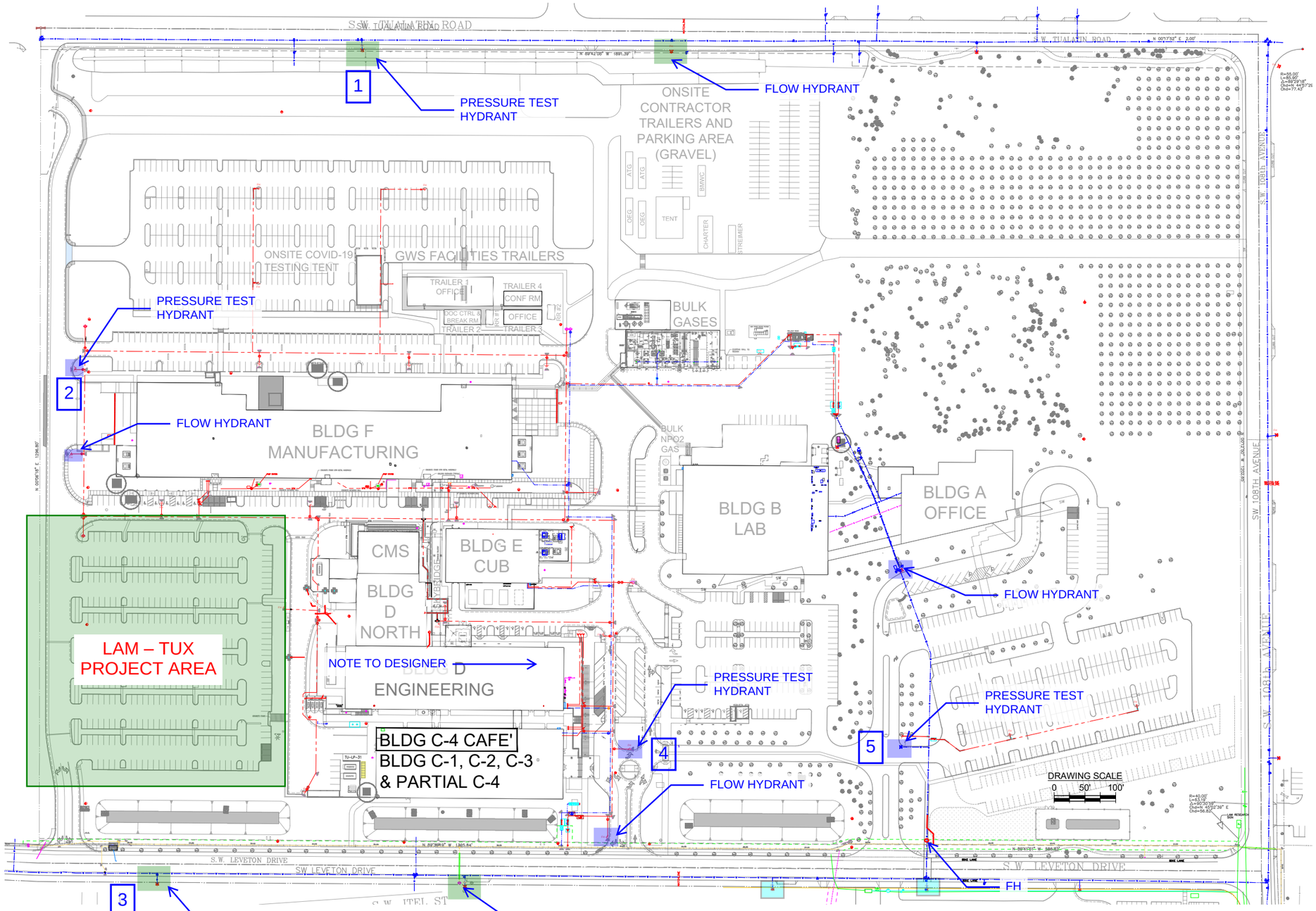
APPROVAL OF PLANS IS NOT AN APPROVAL OF OMISSIONS OR OVERSIGHTS.

Alex McGlen

Deputy Fire Marshal II

Hydrant test

TVF&R Permit #2024-0138



1 LAM SITE UNDERGROUND UTILITY PLAN - FIRE & CITY WATER (10/19/2020)

SCALE : NTS

TESTS REQUESTED FOR THE CITY MODEL

TESTS REQUESTED FOR THE JACOBS ONSITE MODEL

X TEST NUMBER

"DRAWING IS FOR REFERENCE ONLY AND MAY BE OUT OF DATE DUE TO ONGOING PROJECTS AND UPDATES. CONTACT DOCUMENT CONTROL FOR LATEST REVISION. IF DRAWING DOES NOT MATCH WHAT IS OUT IN THE FIELD PLEASE CONTACT DOCUMENT CONTROL TO COORDINATE ANY UPDATES."

TVF&R Tualatin Valley Fire & Rescue

APPROVED PLANS

APPROVAL OF PLANS IS NOT AN APPROVAL OF OMISSIONS OR OVERSIGHTS.

Alex McGlashan

Deputy Fire Marshal II

TVF&R Permit #2024-0138

LAM TUALATIN CAMPUS SITE UNDERGROUND UTILITIES FIRE & CITY WATER PLAN

SCALE: NTS	DATE: 05/13/2020	SHEET #:
DRAWN: BDM	REV.:	CHECKED:
CAD FILE: Lam Site Plan Utilities		

Lam RESEARCH

11155 SW Leveton Drive
Tualatin, OR 97062

Lam Confidential

S:\Tualatin Source Documents\Site Development\Lam Site Plan Utilities.dwg, Fire & City Water, 7/9/2021 3:19:59 PM, megilbr, 1:2.093

REPUBLIC SERVICES
10295 Southwest Ridder Road, Wilsonville, OR 97070
o 503.570.0626 f 503.582.9417 republicservices.com

July 18, 2025

Adria Williams
Mackenzie Architecture
Re: Lam Research
11155 SW Leveton Dr.
Tualatin, OR 97xxx

Dear Adria,

Thank you for sending us the preliminary site plans for this proposed development in Tualatin OR.

My Company: Republic Services of Clackamas and Washington Counties has the franchise agreement to service this area with the City of Tualatin. We will provide complete commercial waste removal and recycling services as needed on a weekly basis for this location

The ingress/egress and site traffic pattern plans are adequate for our trucks to safely navigate the site, and access of the planned trash and recycle receptacles at Bldg. X and Bldg. H

Bldg. X: The frontload and sideload receptacle enclosure of 42' X 10' with double gates that open a minimum of 120 degrees with wind pins to secure them in the open and closed positions is adequate for container placement space and access for our trucks to service.

Bldg. H: The frontload receptacle enclosure of 20' X 13'-6 ¼ "with double gates that open a minimum of 120 degrees with wind pins to secure them in the open and closed positions is adequate for container placement space and access for our trucks to service. The self-contained compactor enclosure of 11' X 25' will require wheel guiderails that extend the length of the compactor with wheels stops to prevent collision with the loading dock. A minimum of 4'Ft. free space clearance around the compactor and clear access to the control panel will be required. Our operations team will require confirmation of the compatibility with our trucks and ground set up at the time of installation.

Thanks Adria, for your help and concerns for our services prior to this project being developed.

Sincerely,

Kelly Herrod
Operations Supervisor
Republic Services Inc.

REPUBLIC SERVICES
10295 Southwest Ridder Road, Wilsonville, OR 97070
o 503.570.0626 f 503.582.9417 republicservices.com

Service levels are available as follows:

Trash –	6 days per week
Recycle –	5 days per week
Food Waste –	5 days per week
Glass –	1 day per week

WFG National Title Insurance Company
a Williston Financial Group company

PROPERTY INFORMATION REPORT

Date: October 11, 2024

File No.: 24-195255
Property: 11361 SW Leveton Drive, Tualatin, OR 97062

LAM RESEARCH
Attn: Trish McNulty
11155 SW Leveton Drive
Tualatin, OR 97062

REPORT FEE: $350.00

The information contained in this report is furnished by WFG National Title Insurance Company (the "Company") as an information service based on the records and the indices maintained by the Company for the county identified below. This report does not constitute title insurance and is not to be construed or used as a commitment for title insurance. The Company assumes and shall have no liability whatsoever for any errors or inaccuracies in this report. In the event any such liability is ever asserted or enforced, such liability shall in no event exceed the paid herein. No examination has been made of the Company's records, other than as specifically set forth in this report.

The effective date of this report is October 2, 2024 at 8:00am

REPORT FINDINGS

A. The land referred to in this report is located in the county of Washington State of Oregon, and is described as follows:

See Attached Exhibit "A"

B. As of the Effective Date and according to the last deed of record, we find the title to the land to be vested as follows:

Lam Research Corporation, a Delaware corporation as to the Fee Simple Estate as to Parcels I, II, III and IV and a Leasehold Estate as to Parcel V

C. As of the Effective Date and according to the Public Records, the Land is subject to the following liens and encumbrances, which are not necessarily shown in the order of priority:

AS TO PARCEL I OF THE PREMISES:

1. Unpaid Taxes for 2024-2025:
   Levied Amount : $782,454.79
   Property ID No. : R2107971
   Levy Code : 023.76
   Map Tax Lot No. : 2S122AB-00100

2. Unpaid Taxes for 2024-2025:
   Levied Amount : $2,465,640.13
   Property ID No. : R2180033
   Levy Code : 023.76
   Map Tax Lot No. : 2S122BA-00100 M&E
   Industrial Machinery and Equipment located on Parcel I

3. City liens, if any, of the City of Tualatin.

4. Cross Easement Agreement, including the terms and provisions thereof:
   Regarding : Private roadway
   Between : First Interstate Bank of Oregon, N.A. as personal representative of the estate of William Leveton
   And : JAE Oregon, Inc.
   Recorded : May 5, 1989
   Recording No. : 89020417

   As amended or modified by Amended and Restated Access Easement Agreement, including the terms and provisions thereof:
   Between : LAM Research Corporation, a Delaware corporation
   And : JAE Oregon, Inc., an Oregon corporation
   Dated : December 15, 2023
   Recorded : December 15, 2023
   Recording No. : 2023-051646

5. Easement, including the terms and provisions thereof:
   For : Slope purposes
   Granted to : City of Tualatin
   Recorded : June 9, 1989
   Recording No. : 89026084
   Re-Recorded : July 6, 1989
   Recording No. : 89030633

6. Easement, including the terms and provisions thereof:
   For : Slope purposes
   Granted to : City of Tualatin
   Recorded : November 1, 1989
   Recording No. : 89-53170

7. Conditions of Approval of the City of Tualatin Planning Department Case File PAR-00-04, as shown on Partition Plat No. 2001-058:
   Recorded : August 16, 2001
   Recording No. : 2001-082729

8. Declaration of Roadway, Utility, Cross-Access and Parking Easements and Restrictive Covenants, including the terms and provisions thereof:
   By : Novellus Systems, Inc., a California corporation
   Recorded : March 22, 2002
   Recording No. : 2002-033655

9. Private Stormwater Facilities Agreement, including the terms and provisions thereof:
   Between : Lam Research Corporation
   And : City of Tualatin
   Recorded : August 16, 2021
   Recording No. : 2021-088690

10. Private Stormwater Facilities Agreement, including the terms and provisions thereof:
    Between : Lam Research
    And : City of Tualatin
    Recorded : April 22, 2024
    Recording No. : 2024-016636

11. Easement, including the terms and provisions thereof:
    For : Public utility
    Granted to : City of Tualatin
    Recorded : May 8, 2024
    Recording No. : 2024-019607

AS TO PARCEL II OF THE PREMISES:

12. Unpaid Taxes for 2024-2025:
    Levied Amount : $77,581.38
    Property ID No. : R2107974
    Levy Code : 023.76
    Map Tax Lot No. : 2S122AA-00800

13. City liens, if any, of the City of Tualatin.

14. Easement, including the terms and provisions thereof:
    For : Slope purposes
    Granted to : City of Tualatin
    Recorded : November 23, 1999
    Recording No. : 99130427

15. Easement, including the terms and provisions thereof:
    For : Underground distribution line
    Granted to : Portland General Electric Company
    Recorded : June 22, 2001
    Recording No. : 2001060136

16. Conditions of Approval of the City of Tualatin Planning Department Case File PAR-00-04, as shown on Partition Plat No. 2001-058:
    Recorded : August 16, 2001
    Recording No. : 2001-082729

17. Declaration of Roadway, Utility, Cross-Access and Parking Easements and Restrictive Covenants, including the terms and provisions thereof:
    By : Novellus Systems, Inc., a California corporation
    Recorded : March 22, 2002
    Recording No. : 2002-033655

18. Easement, including the terms and provisions thereof:
    For : Water line
    Granted to : City of Tualatin
    Recorded : April 15, 2002
    Recording No. : 2002-044680

19. Grant and Reservation of Reciprocal Easements, including the terms and provisions thereof:

Regarding	:	Access
By	:	JAE Oregon, Inc.
Recorded	:	May 18, 2010
Recording No.	:	2010-037842

As amended or modified by Amended and Restated Access Easement Agreement, including the terms and provisions thereof:

Between	:	LAM Research Corporation, a Delaware corporation
And	:	JAE Oregon, Inc., an Oregon corporation
Dated	:	December 15, 2023
Recorded	:	December 15, 2023
Recording No.	:	2023-051646

First Amendment to Amended and Restated Access Easement Agreement, including the terms and provisions thereof:

Between	:	LAM Research Corporation, a Delaware corporation
And	:	JAE Oregon, Inc., an Oregon corporation
Dated	:	April 3, 2024
Recorded	:	April 3, 2024
Recording No.	:	2024-013606

20. Private Stormwater Facilities Agreement, including the terms and provisions thereof:

Between	:	Lam Research
And	:	City of Tualatin
Recorded	:	April 22, 2024
Recording No.	:	2024-016636

AS TO PARCEL III OF THE PREMISES:

21. Unpaid Taxes for 2024-2025:

Levied Amount	:	$146,697.21
Property ID No.	:	R2107973
Levy Code	:	023.76
Map Tax Lot No.	:	2S122AA-00500

22. Unpaid Taxes for 2024-2025:

Levied Amount	:	$708,385.86
Property ID No.	:	R2180077
Levy Code	:	023.76
Map Tax Lot No.	:	2S122AA-00500 M&E

Industrial Machinery and Equipment located on Parcel III

23. City liens, if any, of the City of Tualatin.

24. Easement, including the terms and provisions thereof:

For	:	Slope purposes
Granted to	:	City of Tualatin
Recorded	:	November 1, 1989
Recording No.	:	89-53170

25. Easement, including the terms and provisions thereof:

For	:	Pedestrian walkway and bikepath
Granted to	:	City of Tualatin
Recorded	:	June 1, 1990
Recording No.	:	90-28257

26. Easement, including the terms and provisions thereof:
    For : Underground distribution line
    Granted to : Portland General Electric Company
    Recorded : June 22, 2001
    Recording No. : 2001060136

27. Conditions of Approval of the City of Tualatin Planning Department Case File PAR-00-04, as shown on Partition Plat No. 2001-058:
    Recorded : August 16, 2001
    Recording No. : 2001-082729

28. Declaration of Roadway, Utility, Cross-Access and Parking Easements and Restrictive Covenants, including the terms and provisions thereof:
    By : Novellus Systems, Inc., a California corporation
    Recorded : March 22, 2002
    Recording No. : 2002-033655

29. Easement, including the terms and provisions thereof:
    For : Water line
    Granted to : City of Tualatin
    Recorded : April 15, 2002
    Recording No. : 2002-044680

30. Private Stormwater Facilities Agreement, including the terms and provisions thereof:
    Between : Lam Research Corporation
    And : City of Tualatin
    Recorded : November 2, 2020
    Recording No. : 2020-110089

31. Private Stormwater Facilities Agreement, including the terms and provisions thereof:
    Between : Lam Research
    And : City of Tualatin
    Recorded : April 22, 2024
    Recording No. : 2024-016636

32. Easement, including the terms and provisions thereof:
    For : Public utility
    Granted to : City of Tualatin
    Recorded : May 8, 2024
    Recording No. : 2024-019607

AS TO PARCEL IV OF THE PREMISES:

33. Unpaid Taxes for 2024-2025:
    Levied Amount : $121,958.78
    Property ID No. : R2171143
    Levy Code : 088.15
    Map Tax Lot No. : 2S122BA-00100
    Affects : Parcel IV of the premises herein

34. City liens, if any, of the City of Tualatin.

35. Easement, including the terms and provisions thereof:
    For : Slope purposes
    Granted to : City of Tualatin
    Recorded : January 23, 1989
    Recording No. : 89-03228

36. Cross Easement Agreement, including the terms and provisions thereof:

Regarding	:	Private roadway
Between	:	First Interstate Bank of Oregon, N.A. as personal representative of the estate of William Leveton
And	:	JAE Oregon, Inc.
Recorded	:	May 5, 1989
Recording No.	:	89020417

As amended or modified by Amended and Restated Access Easement Agreement, including the terms and provisions thereof:

Between	:	LAM Research Corporation, a Delaware corporation
And	:	JAE Oregon, Inc., an Oregon corporation
Dated	:	December 15, 2023
Recorded	:	December 15, 2023
Recording No.	:	2023-051646

37. Easement, including the terms and provisions thereof:

For	:	Pedestrian use, trees, landscaping and sidewalk
Granted to	:	City of Tualatin
Recorded	:	August 12, 1999
Recording No.	:	99094538

38. Agreement to maintain stormwater detention and water quality treatment facilities, including the terms and provisions thereof:

Between	:	JAE Oregon, Inc.
And	:	City of Tualatin
Recorded	:	December 24, 2009
Recording No.	:	2009-110981

39. Conditions and Restrictions as shown on Partition Plat No. 2010-009:

Recorded	:	March 9, 2010
Recording No.	:	2010-018382

40. Grant and Reservation of Reciprocal Easements, including the terms and provisions thereof:

Regarding	:	Access
By	:	JAE Oregon, Inc.
Recorded	:	May 18, 2010
Recording No.	:	2010-037842

As amended or modified by Amended and Restated Access Easement Agreement, including the terms and provisions thereof:

Between	:	LAM Research Corporation, a Delaware corporation
And	:	JAE Oregon, Inc., an Oregon corporation
Dated	:	December 15, 2023
Recorded	:	December 15, 2023
Recording No.	:	2023-051646

First Amendment to Amended and Restated Access Easement Agreement, including the terms and provisions thereof:

Between	:	LAM Research Corporation, a Delaware corporation
And	:	JAE Oregon, Inc., an Oregon corporation
Dated	:	April 3, 2024
Recorded	:	April 3, 2024
Recording No.	:	2024-013606

41. Private stormwater facilities Agreement, including the terms and provisions thereof:

Between	:	JAE Oregon, Inc.
And	:	City of Tualatin
Recorded	:	May 8, 2020
Recording No.	:	2020-039137

42. Easement, including the terms and provisions thereof:
    For : Existing utilities as defined in the document
    Granted to : JAE Oregon, Inc., an Oregon corporation
    Dated : December 15, 2023
    Recorded : December 15, 2023
    Recording No. : 2023-051647

43. Access Easement Agreement, including the terms and provisions thereof:
    Between : LAM Research Corporation, a Delaware corporation
    And : JAE Oregon, Inc., an Oregon corporation
    Dated : April 3, 2024
    Recorded : April 3, 2024
    Recording No. : 2024-013607

AS TO PARCEL V OF THE PREMISES:

44. Unpaid Taxes for 2024-2025:
    Levied Amount : $51,660.95
    Property ID No. : R2171155
    Levy Code : 023.76
    Map Tax Lot No. : 2S122AD-01300
    Industrial Machinery and Equipment located on Parcel V
    and
    Unpaid Taxes for 2024-2025:
    Levied Amount : $9,178.37
    Property ID No. : P2102057
    Levy Code : 001.17
    Map Tax Lot No. : 2S122AD-01300
    Personal Property located on Parcel V

    NOTE: Unpaid Taxes for 2024-2025:
    Levied Amount : $290,622.46
    Property ID No. : R2176128
    Levy Code : 023.76
    Map Tax Lot No. : 2S122AD-01300
    Parcel V fee simple title of Abbott Tualatin LLC

45. City liens, if any, of the City of Tualatin.

46. Easement, including the terms and provisions thereof:
    For : Slope and utility
    Granted to : City of Tualatin
    Recorded : October 25, 1989
    Recording No. : 89-51742

47. Easement, including the terms and provisions thereof:
    For : Underground distribution line
    Granted to : Portland General Electric Company
    Recorded : June 22, 2001
    Recording No. : 2001060135

48. Easement, including the terms and provisions thereof:
    For : Underground distribution line
    Granted to : Portland General Electric Company
    Recorded : June 22, 2001
    Recording No. : 2001060137

49. Easement Agreement and Declaration of Covenant, including the terms and provisions thereof:

For	:	Ingress, egress and utilities
Between	:	Builder's Wholesale Stone, LLC
And	:	SFP Leveton, LLC
Recorded	:	June 16, 2008
Recording No.	:	2008-054248

50. Easement Agreement, including the terms and provisions thereof:

For	:	Adjoiner encroachments of trash enclosure, compressor cover, mechanical and transformer
Between	:	SFP Leveton, LLC
And	:	Builder's Wholesale Stone, LLC
Recorded	:	June 16, 2008
Recording No.	:	2008-054249

51. Private Stormwater Facilities Agreement, including the terms and provisions thereof:

Between	:	Leveton LLC
And	:	City of Tualatin
Recorded	:	December 13, 2017
Recording No.	:	2017-097239

52. Lease, including the terms and provisions thereof, as evidenced by Memorandum:

Lessor	:	Leveton LLC, an Oregon limited liabiity company
Lessee	:	Lam Research Corporation, a Delaware corporation
Dated	:	December 7, 2017
Recorded	:	December 11, 2017
Recording No.	:	2017-096793

The lessor's interest thereunder is now held by Abbott Tualatin, LLC, an Oregon limited liability company, per Statutory Special Warranty Deed recorded November 12, 2020 as Recording No. 2020-114748.

- - -

AS TO RIGHTS APPURTENANT TO THE PREMISES:

A. Well Ownership Information Form:

Recorded	:	February 22, 2002
Recording No.	:	2002-021309
Referencing Deed Recording Number		2000-036382

B. Revocable Permit (Right-of-Way):

Regarding	:	Right to encroach upon and occupy a public right-of-way with a private fiber optic network connection
Recorded	:	October 26, 2017
Recording No.	:	2017-084661

END OF EXCEPTIONS

NOTE: LINKS FOR ADDITIONAL SUPPORTING DOCUMENTS:
Vesting Deed 2017-018737 PLA Deed for 2S122AA00800 & 2S122AB00100 & 2S122AA00500
Vesting Deed 2024-013605 PLA Deed for 2S122BA00100
Vesting Memo of Lease 2017-096793
Business Registry - OREGON - LAM Research Corporation FBC
Business Registry - DELAWARE - LAM Research Corporation
Report Maps
Aerial Photo
Partition Plat 2001-058 2001-082729
Partition Plat 2010-009 2010-018382
Partition Plat 2011-024 2011-053337

Plat Map Glenmorag Park - underlying
Public Survey 33034
Public Survey 33698
Public Survey 34761
Legal Description Reference 2017-018737
Legal Description Reference 2017-096793
Legal Description Reference 2024-013605
map - BLM Master Plat 020s010wm01
map - City of Tualatin Zoning
map - CWS sewer lines
map - NWN gas lines - NE Q
map - NWN gas lines - NW Q
map - USF&WS wetlands map
map - ORMAP topographic
Assessor's map 2s122aa
Assessor's map 2s122ab
Assessor's map 2s122ad
Assessor's map 2s122ba
WCO Intermap Property Info Tax Account R2107971 2S122AB00100
WCO Intermap Property Info Tax Account R2107973 2S122AA00500
WCO Intermap Property Info Tax Account R2107974 2S122AA00800
WCO Intermap Property Info Tax Account R2171143 2S122BA00100
WCO Intermap Property Info Tax Account R2176128 2S122AD01300
WCO Intermap Property Info Tax Account R2180033 2S122AB00100
WCO Intermap Property Info Tax Account R2180077 2S122AA00500

END OF REPORT

Rosa Stombaugh
Senior Commercial Title Officer
WFG National Title Insurance Company
12909 SW 68th Pkwy., Suite 350
Portland, OR 97223
Phone: **(503) 431-8526**
Fax: **(503) 684-2978**
Email: **rstombaugh@wfgtitle.com**

EXHIBIT A
LEGAL DESCRIPTION

PARCEL I:

A tract of land created under approval by City of Tualatin Case File No. PLA-006, by Special Warranty Deed for Property Line Adjustment recorded March 6, 2017 as Recorder's No. 2017-018737, Records of Washington County, shown as Tract 1 in Record of Survey filed on March 2, 2017 as No. 33034 in the Washington County Surveyor's Office, being a portion of Parcels 1 and 3, PARTITION PLAT No. 2001-058, located in the northeast one-quarter of Section 22, Township 2 South, Range 1 West, Willamette Meridian, City of Tualatin, Washington County, Oregon, being more particularly described as follows:

Beginning at a brass screw and washer located at the northwest corner of said Parcel 3, said point being also on the southerly right-of-way line of SW Tualatin Road, 32.00 feet southerly of the centerline thereof, when measured at right angles; thence along said southerly right-of-way line North 89°42'41" East a distance of 0.06 feet to an angle point thereon; thence continuing along said southerly right-of-way line, South 89°42'08" East a distance of 839.18 feet to a 5/8 inch iron rod; thence departing said southerly right-of-way line, South 00°17'49" West a distance of 450.67 feet to a 5/8 inch iron rod; thence South 89°35'19" East a distance of 87.37 feet to a 5/8 inch iron rod; thence South 00°24'38" West a distance of 66.15 feet to a 5/8 inch iron rod; thence South 89°35'22" East a distance of 36.44 feet to a 5/8 inch iron rod; thence South 00°24'41" West a distance of 779.79 feet to a copper disk located on the northerly right-of-way line of SW Leveton Drive, 30.00 feet northerly of the centerline thereof, when measured at right angles; thence along said northerly right-of-way line, North 89°34'51" West a distance of 957.07 feet to a brass disk located at the southwest corner of said Parcel 1; thence along the west line of said Parcel 1 and the west line of said Parcel 3, North 00°06'26" East a distance of 1294.82 feet to the Point of Beginning.

PARCEL II:

A tract of land created under approval by City of Tualatin Case File No. PLA-006, by Special Warranty Deed for Property Line Adjustment recorded March 6, 2017 as Recorder's No. 2017-018737, Records of Washington County, shown as Tract 2 in Record of Survey filed on March 2, 2017 as No. 33034 in the Washington County Surveyor's Office, being a portion of Parcels 2 and 3, PARTITION PLAT No. 2001-058, located in the northeast one-quarter of Section 22, Township 2 South, Range 1 West, Willamette Meridian, City of Tualatin, Washington County, Oregon, being more particularly described as follows:

Commencing at a brass screw and washer located at the northwest corner of said Parcel 3, said point being also on the southerly right-of-way line of SW Tualatin Road, 32.00 feet southerly of the centerline thereof, when measured at right angles; thence along said southerly right-of-way line, North 89°42'41" East a distance of 0.06 feet to an angle point thereon; thence continuing along said southerly right-of-way line, South 89°42'08" East a distance of 839.18 feet to a 5/8 inch iron rod and the Point of Beginning; thence continuing along said southerly right-of-way line, South 89°42'08" East a distance of 1052.10 feet to a point of curvature thereon; thence continuing along said southerly right-of-way line, 85.91 feet through the arc of a 55.00 foot radius circular curve to the right, said curve having a central angle of 89°29'34", a chord bearing of South 44°57'21" East and a chord length of 77.44 feet to a 5/8 inch iron rod located at a point of tangency on the westerly right-of-way line of SW 108th Avenue, 32.00 feet westerly of the centerline thereof, when measured at right angles; thence along said westerly right-of-way line, South 00°12'34" East a distance of 843.64 feet to a 5/8 inch iron rod; thence departing said westerly right-of-way line, North 89°35'22" West a distance of 212.34 feet to a 5/8 inch iron rod; thence North 00°24'38" East a distance of 306.24 feet to a 5/8 inch iron rod; thence North 89°35'22" West a distance of 438.80 feet to a 5/8 inch iron rod; thence North 00°24'38" East a distance of 139.01 feet to a 5/8 inch iron rod; thence North 89°35'19" West a distance of 464.30 feet to a 5/8 inch iron rod; thence North 00°17'49" East a distance of 450.67 feet to the Point of Beginning.

PARCEL III:

A tract of land created under approval by City of Tualatin Case File No. PLA-006, by Special Warranty Deed for Property Line Adjustment recorded March 6, 2017 as Recorder's No. 2017-018737, Records of Washington County, shown as Tract 3 in Record of Survey filed on March 2, 2017 as No. 33034 in the Washington County Surveyor's Office, being a portion of Parcels 1 and 2, PARTITION PLAT No. 2001-058, located in the northeast

one-quarter of Section 22, Township 2 South, Range 1 West, Willamette Meridian, City of Tualatin, Washington County, Oregon, being more particularly described as follows:

Commencing at a brass screw and washer located at the northwest corner of Parcel 3 of Partition Plat No. 2001-058, said point being also on the southerly right-of-way line of SW Tualatin Road, 32.00 feet southerly of the centerline thereof, when measured at right angles; thence along said southerly right-of-way line, North 89°42'41" East a distance of 0.06 feet to an angle point thereon; thence continuing along said southerly right-of-way line, South 89°42'08" East a distance of 839.18 feet to a 5/8 inch iron rod; thence departing said southerly right-of-way line, South 00°17'49" West a distance of 450.67 feet to a 5/8 inch iron rod; thence South 89°35'19" East a distance of 87.37 feet to a 5/8 inch iron rod and the Point of Beginning; thence South 00°24'38" West a distance of 66.15 feet to a 5/8 inch iron rod; thence South 89°35'22" East a distance of 36.44 feet to a 5/8 inch iron rod; thence South 00°24'41" West a distance of 779.79 feet to a copper disk located on the northerly right-of-way line of SW Leveton Drive, 30.00 feet northerly of the centerline thereof, when measured at right angles; thence along said northerly right-of-way line, South 89°34'51" East a distance of 368.77 feet to an angle point thereon; thence continuing along said northerly right-of-way line, South 89°42'00" East a distance of 586.84 feet to a brass screw and washer located at a point of curvature thereon; thence continuing along said northerly right-of-way line, 63.19 feet through the arc of a 40.00 foot radius circular curve to the left, said curve having a central angle of 90°30'34", a chord bearing of North 45°02'43'" East and a chord length of 56.82 feet to a point of tangency on the westerly right-of-way line of SW 108th Avenue, 32.00 feet westerly of the centerline thereof, when measured at right angles; thence along said westerly right-of-way line, North 00°12'34" West a distance of 359.19 feet to a 5/8 inch iron rod; thence departing said westerly right-of-way line, North 89°35'22" West a distance of 212.34 feet to a 5/8 inch iron rod; thence North 00°24'38" East a distance of 306.24 feet to a 5/8 inch iron rod; thence North 89°35'22" West a distance of 438.80 feet to a 5/8 inch iron rod; thence North 00°24'38" East a distance of 139.01 feet to a 5/8 inch iron rod; thence North 89°35'19" West a distance of 376.93 to the Point of Beginning.

PARCEL IV:

A tract of land created under approval by City of Tualatin No. PLA23-0004, by Warranty Deed for Property Line Adjustment recorded April 3, 2024 as Recorder's No. 2024-013605, Records of Washington County, shown as Tract 3 in Record of Survey filed April 12, 2024 as No. 34761 in the Washington County Surveyor's Office, being portions of Parcels 1 and 2, PARTITION PLAT No. 2010-009, located in the northwest one-quarter of Section 22, Township 2 South, Range 1 West, Willamette Meridian, City of Tualatin, Washington County, Oregon, being more particularly described as follows:

Beginning at a brass disk located at the most southerly southeast corner of sad Parcel 1, said point being on the northerly right-of-way line of SW Leveton Drive, 30.00 feet northerly of the centerline thereof when measured at right angles; thence along said northerly right-of-way line, North 85°47'18" West a distance of 112.70 feet to a point of curvature thereon; thence continuing along said northerly right-of-way line, 112.59 feet through the arc of a tangent 630.00 foot radius circular curve to the left, said curve having a central angle of 10°14'24" a chord bearing of South 89°05'30" West and a chord length of 112.44 feet to the most southerly southeast corner of said Parcel 2, and from which point a 5/8 inch Iron rod bears North 01°43'45" East a distance of 0.07 feet; thence departing said northerly right-of-way line and along the most southerly east line of said Parcel 2, North 01°43'45" East a distance of 138.88 feet to a 5/8 inch iron rod located at an angle point on the easterly boundary of said Parcel 2; thence North 01°43'40" East a distance of 607.73 feet to a 5/8 inch iron rod; thence North 88°16'38" West a distance of 383.76 feet to a 5/8 inch iron rod; thence North 01°41'05" East a distance of 127.48 feet to a point; thence North 88°18'11" West a distance of 346.67 feet to a 5/8 inch iron rod; thence South 01°41'04" West a distance of 174.78 feet to a 5/8 inch iron rod; thence North 88°15'40" West a distance of 230.24 feet to a 5/8 inch iron rod located on the west line of said Parcel 2; thence along the west line of said Parcel 2 together with the west line of said Parcel 1, North 01°43'57" East a distance of 589.95 feet to a brass disk located at the northwest corner of said Parcel 1, said point being on the southerly right-of-way line of SW Tualatin Road, 30.00 feet southerly of the centerline thereof, when measured at right angles; thence along said southerly right-of-way line, South 88°40'05" East a distance of 1185.53 feet to a brass screw and washer located at the northeast corner of said Parcel 1; thence departing said southerly right-of-way line and along the east line of said Parcel 1, South 01°43'40" West a distance of 1296.98 feet to the Point of Beginning. Bearings are based on the Oregon State Plane Coordinate System - North Zone (NAD 83/2011).

PARCEL V:

A leasehold estate as defined in unrecorded Lease dated January 31, 2017 and evidenced of record in Memorandum of Lease recorded December 11, 2017 as Recorder's No. 2017-096793, Records of Washington County, as to that certain property described as follows:

Parcels 1, 2 and 3, PARTITION PLAT NO. 2011-024, recorded August 2, 2011 as Document No. 2011053337, in the City of Tualatin, County of Washington and State of Oregon.

TOGETHER WITH an easement for ingress, egress and utilities as described in Easement Agreement and Declaration of Covenant recorded June 16, 2008 as No. 2008-054248, Records of Washington County, Oregon.

WFG National Title Insurance Company
a Williston Financial Group company

WFG National Title
Title Department
12909 SW 68th Pkwy #350
Portland, OR 97223
Phone: 503.431.8500
Fax 503.684.2978

Assessor Property ID / Assessor Map & Tax Lot No.

PARCEL R2107971 & R2180033 / 2S122AB00100

11361 SW Leveton Drive, Tualatin, OR 97062

PARCEL R2107974 / 2S122AA00800

PARCELS R2107973 & R2180077 / 2S122AA00500

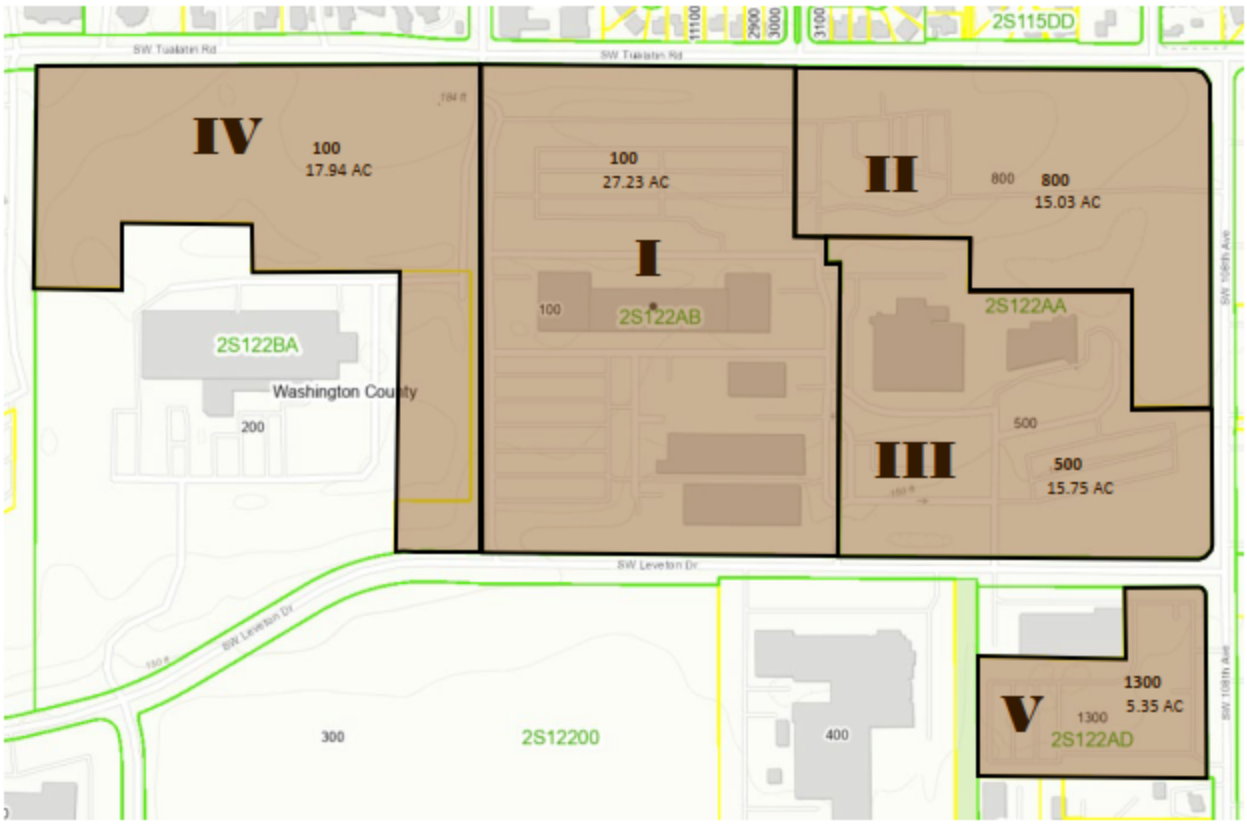
11555 SW Leveton Drive, Tualatin, OR 97062

PARCEL R2171143 / 2S122BA00100

no situs, Tualatin, OR 97062

PARCELS R2176128 & R2211155 / 2S122AD-01300

18625 SW 108TH Avenue, Tualatin, OR 97062



This map is a copy of public record and is provided solely for informational purposes. WFG National Title assumes no liability for variations, if any, in dimensions, area or location of the premises or the location of improvements.

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a Williston Financial Group company

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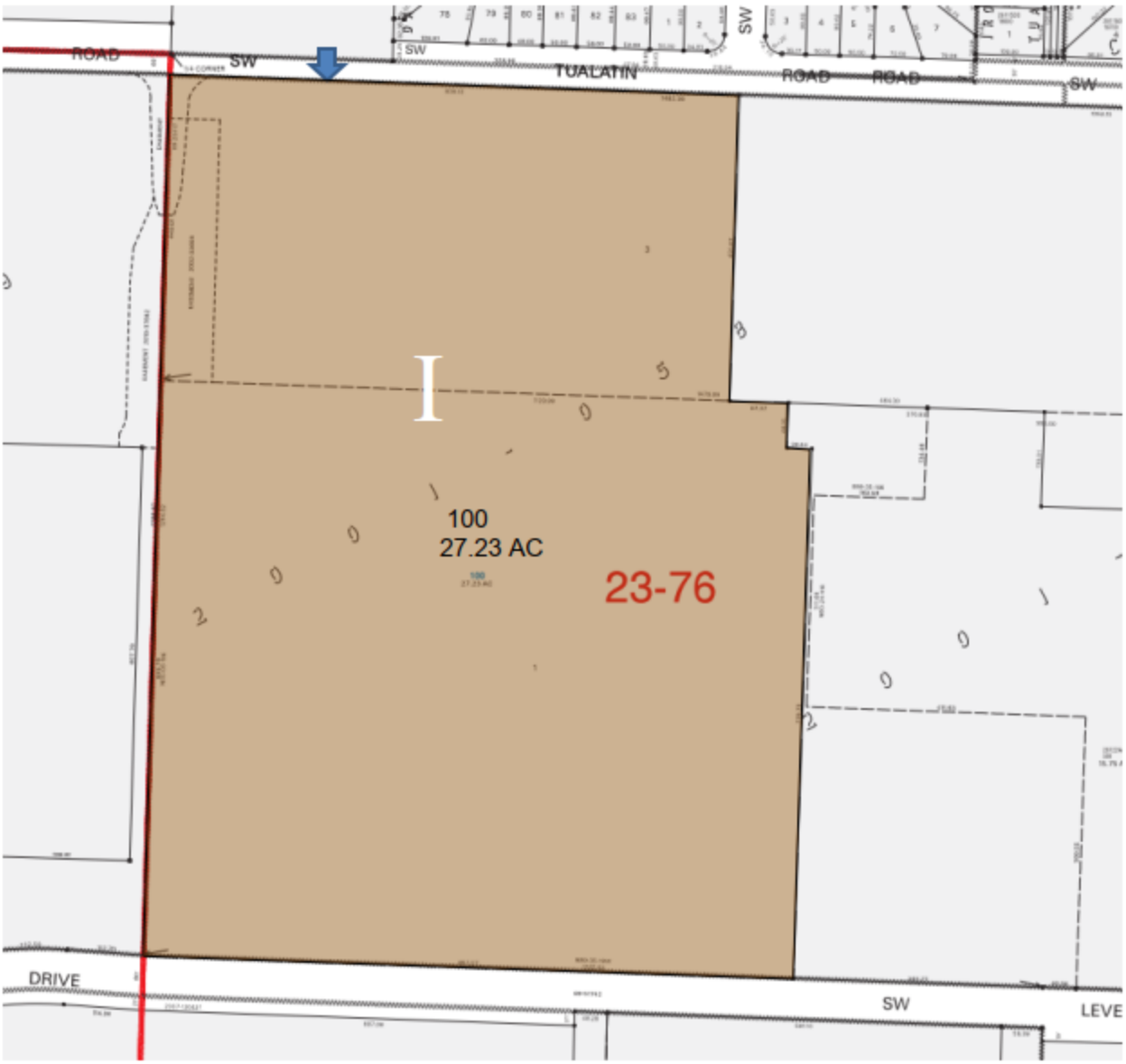

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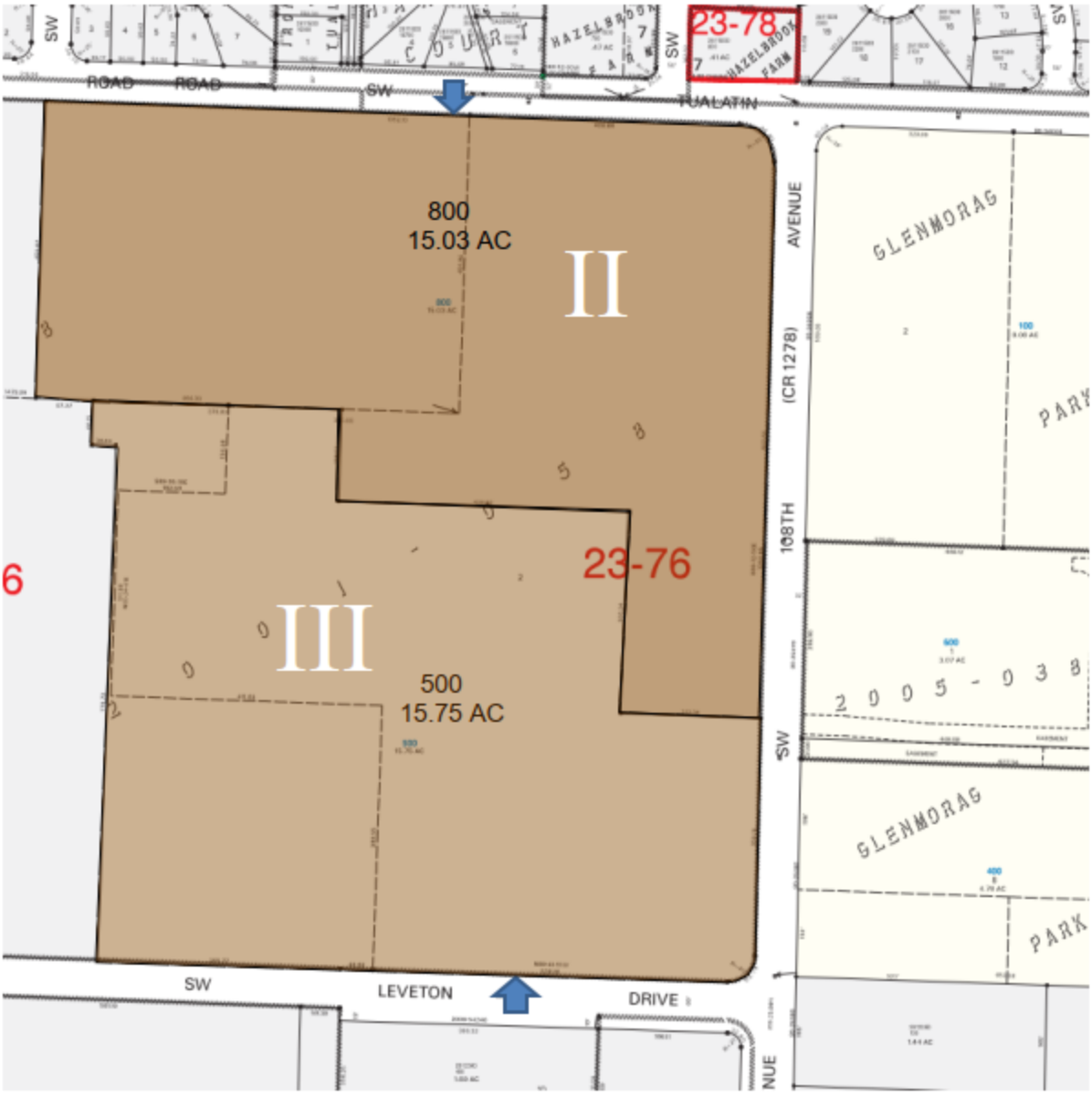
PARCEL R2107974 / 2S122AA00800

PARCELS R2107973 & R2180077 / 2S122AA00500

11555 SW Leveton Drive, Tualatin, OR 97062



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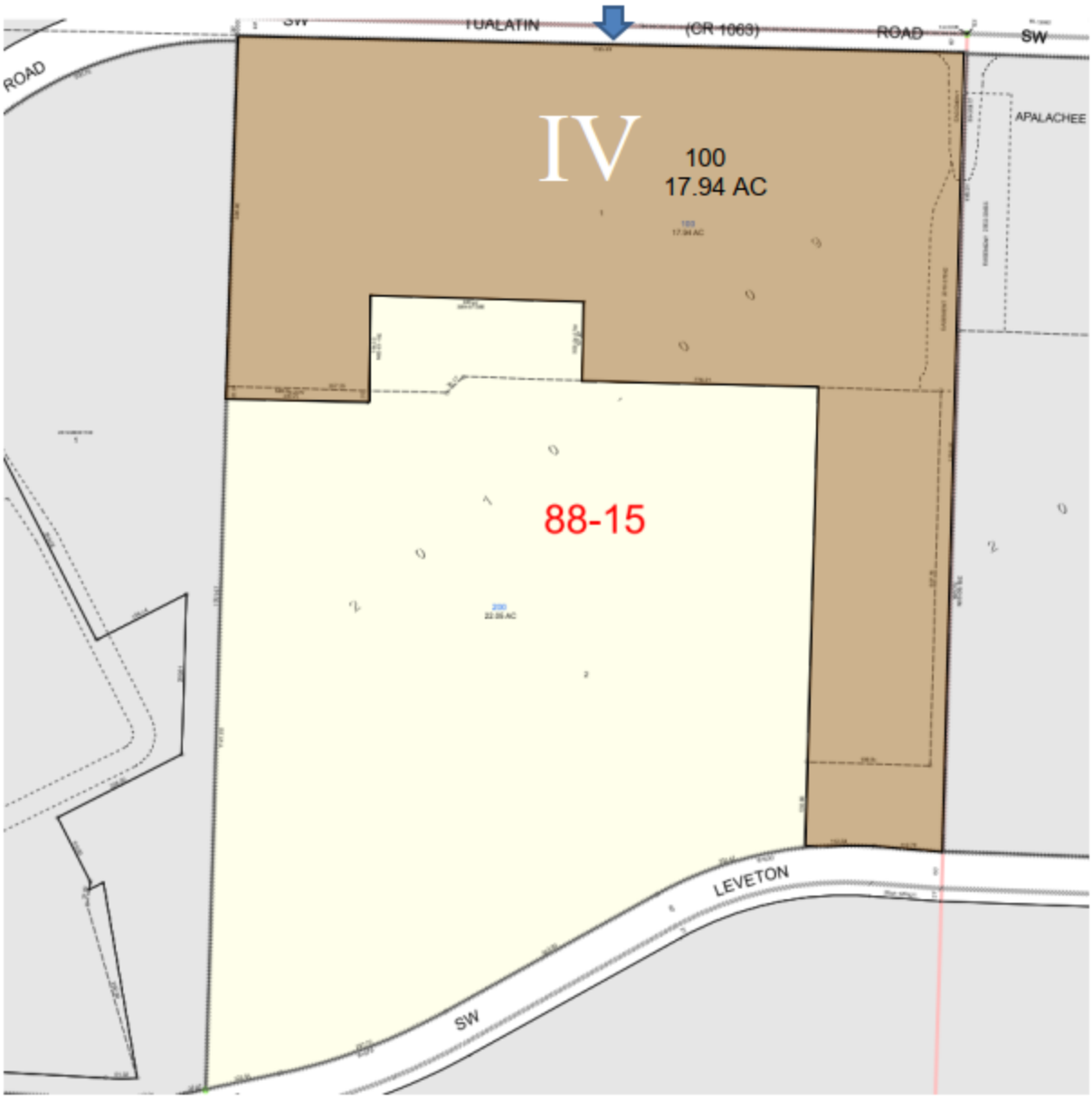
PARCEL R2171143 / 2S122BA00100

no situs, Tualatin, OR 97062



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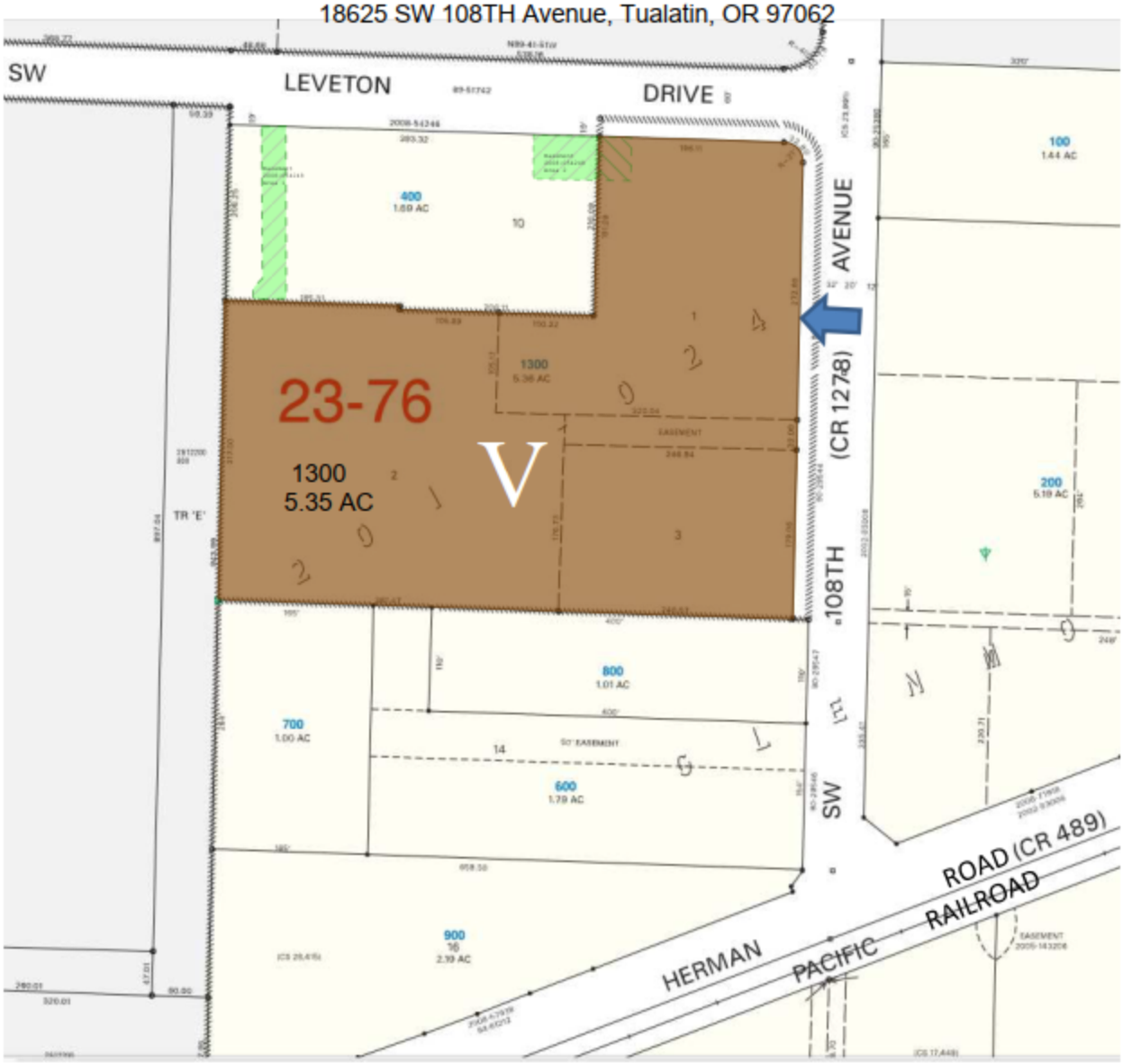
12909 SW 68th Pkwy #350
Portland, OR 97223
Phone: 503.431.8500
Fax 503.684.2978

TAX PARCEL R2176128 MAP & TAX LOT 2S122AD-01300
& TAX PARCEL R2211155
Assessor Property ID Assessor Map & Tax Lot No.
18625 SW 108TH Avenue, Tualatin, OR 97062



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MACKENZIE.

P 503.224.9560 ▪ F 503.228.1285 ▪ W MACKENZIE.INC
RiverEast Center, 1515 SE Water Avenue, #100, Portland, OR 97214

Portland, Oregon ▪ Vancouver, Washington ▪ Seattle, Washington

MEETING MINUTES

PROJECT NUMBER:	2240022.00	ISSUE DATE:	June 10, 2024
PROJECT NAME:	Lam TUX - Site		

RECORDED BY:	Ian Sisson – Land Use Planner
TO:	FILE
PRESENT:	Neighbors – See sign-in sheets. Todd Fosler, Stefanie McEvers, Jennifer Otterness, Frank Quackenbush, Doug Riggs – Lam Research Liatt Braun, David Mustonen, Ben Sommer – Jacobs Brent Ahrend, Bill Bezio, Aisha Bouziane, Ian Sisson, Suzannah Stanley – Mackenzie

SUBJECT: Neighborhood Meeting Minutes (June 5, 2024)

INFORMATION ITEMS

1. The meeting began at 6:00 PM. Attendees signed in via the provided sign-in sheets as they arrived.
2. Mackenzie (Suzannah Stanley) started presenting at 6:05 PM with introductions of the project team and an outline for the meeting.
3. Lam (Jennifer Otterness) provided an overview of the proposed project. She discussed the history of the campus and its growth and Lam's efforts to mitigate impacts to residential neighbors, and described the proposed new buildings, uses, and approach to site plan configuration.
4. Mackenzie (Suzannah Stanley) described the design and permitting process including the neighborhood meeting, land use application review and public hearings, and building permit review. She noted Lam anticipates starting construction in the second half of 2025.
5. Jacobs (Liatt Braun) described the intent and process for developing the site plan and architectural design. She noted the design team includes an array of technical experts and will evaluate potential off-site impacts such as noise and vibration.
6. Mackenzie (Aisha Bouziane) described the proposed landscape plan, including the existing berm to remain and be expanded along SW Tualatin Road, pedestrian experience, stormwater plantings, and parking lot landscaping.
7. Jacobs (Ben Sommer) noted outdoor lighting would be designed to meet code requirements and minimize impacts to adjacent properties.
8. Mackenzie (Brent Ahrend) discussed transportation topics including the proposed new signal at the SW Tualatin Road/SW 115th Avenue intersection, access and circulation for trucks and passenger vehicles, and the proposed scope of the traffic impact analysis, which will include studying the impact of shifting trips from SW Leveton Drive to SW Tualatin Road. He noted the City will need to approve the scope prior to Mackenzie beginning the analysis.

9. Lam (Todd Fosler) said Lam intends to be responsive to neighborhood concerns. He said construction of the project is expected to take two years, occurring within the days/hours allowed under City code, and that construction traffic will access the site from the south.

ATTENDEE QUESTIONS AND FEEDBACK

10. An attendee asked for information about the types of gases to be stored in the bulk gas yard, the volumes and pressures of the stored gases, and Lam's methods for detecting leaks and ensuring safety. Lam (Todd Fosler) listed the gases that are used and confirmed there are no toxics. He described that Lam has multiple layers of safety redundancy and complies with all applicable laws and regulations.

11. An attendee asked how the scope of the traffic impact study is determined. He had reviewed a previous study and noticed it did not include intersections with SW Hazelbrook Road. He would like these intersections included in the study for this project. He anticipates traffic issues on SW 115th Avenue north of Tualatin Road, as well as more congestion on Tualatin Road due to the proposed traffic signal and wanted to know how impacts will be mitigated. Mackenzie (Brent Ahrend) confirmed the study will include the intersections identified on the presentation slide and the needs/methods for mitigation will not be known until the analysis is complete.

12. An attendee asked how many new employees would be associated with the proposed expansion. Lam (Jennifer Otterness) confirmed there would be 600 new seats, but not all seats will be filled immediately; Lam is sizing the campus to accommodate growth over time. She also noted there are currently about 1100-1200 seats on campus.

13. An attendee asked if there will be future meetings with the City regarding traffic issues. Mackenzie (Suzannah Stanley) said there will be public hearings for the land use applications, no specific traffic meetings, and that the project team is open to continue discussing topics of concern with neighbors until then.

14. An attendee asked how many parking spaces are currently on campus and how many spaces the proposal would add/remove. Mackenzie (Suzannah Stanley) said the proposal would result in a net increase of about 500 parking spaces.

15. Attendees expressed concern with possible cut-through traffic in the apartments and neighborhoods by vehicles stuck at the new traffic signal, vision clearance at the southwest corner of the SW Tualatin Road/SW 108th Avenue intersection, and tree removal/root damage associated with proposed parking in the northeast corner of the campus.

16. Multiple attendees expressed concerns with shifting Lam employee traffic onto SW Tualatin Road due to traffic issues and suggested it would be more appropriate to restrict employee traffic to SW Leveton Road and SW 108th Avenue.

17. An attendee asked whether the design team considered placing the new buildings on the north side of campus with parking and vehicle access to the south. Mackenzie (Suzannah Stanley) said multiple layouts had been considered, but the thought was that placing the buildings on the north side of campus may be less desirable to neighbors because of the scale and height of the buildings relative to the neighborhood, potentially causing issues with things like solar access and noise.

18. An attendee said they appreciate Lam's contributions to economic development in Tualatin but are frustrated the surrounding transportation infrastructure hasn't kept up with growth. They expect the proposal to have significant traffic impacts and want to have another opportunity to

meet with the project team and City staff on this topic once the scope of the traffic study is approved and/or when the study is complete.

19. An attendee expressed safety concerns for children with additional traffic in and adjacent to residential areas and wants the design team to reevaluate the proposed vehicle access to campus.

20. An attendee said the City conducted a study to evaluate signalizing the intersections of SW Tualatin Road with SW 115th Avenue and SW 108th Avenue which concluded the signals would not mitigate traffic issues. They asked the design team to push back if the City requires the signal at 115th.

21. Attendees expressed concerns with current neighborhood impacts from traffic on SW Tualatin Road, including excessive vibration and odors from exhaust.

22. Attendees expressed concerns with the proposed new access to the campus at SW 112th Avenue and noted it was not described in the text of the neighborhood meeting notice, which stated the impact to the berm would be at SW 115th Avenue. They questioned why this access point was necessary and said Lam traffic should not be routed to SW Tualatin Road. They also asked whether this would affect the existing crosswalk at this location. Mackenzie (Suzannah Stanley) said the street number mentioned in the text of the notice in regard to the new driveway was an error. Mackenzie (Brent Ahrend) noted the access would be right-in right-out only.

23. Attendees expressed concern that the residents of the nearby apartment buildings did not receive the neighborhood meeting notice. Mackenzie (Suzannah Stanley) explained that we mailed notices to addressed identified on the list the City generated, and posted signs on the site. The mailing list included the Owner of the apartment complex. In the future we can attempt to identify apartment unit numbers for additional mailings.

24. An attendee said Lam's traffic should be directed to the south side of campus, which is adjacent to other industrial uses, rather than north, which is adjacent to residential uses. They would like the design team to come up with a solution that doesn't involve access points on SW Tualatin Road.

25. An attendee asked why there were no City staff present at the neighborhood meeting. Mackenzie (Suzannah Stanley) confirmed staff knew of the meeting.

26. An attendee asked if the school district was invited to the neighborhood meeting as the proposal may affect bus routes and stops. Mackenzie (Suzannah Stanley) confirmed the middle school is in the mailing buffer, so the district would have been on the mailing list.

27. An attendee said the proposed site plan has major flaws and there is consensus among the attendees against the access points on SW Tualatin Road. Jacobs (Liatt Braun) said the intent was to spread trips across the campus rather than having them concentrated onto one street.

28. An attendee asked if there would be another meeting to discuss traffic impacts. Mackenzie (Suzannah Stanley) said the project team will set up a second neighborhood meeting to continue the discussion and to provide further traffic analysis and possible design alternatives, and that we will ask again that the City attend. Mailed notice will be provided to neighbors in advance of the next meeting and we will try to get contact information for the residents of the apartment complex and include them in the mailing if possible.

29. Attendees expressed concerns with the existing safety of the SW Hazelbrook Road/SW 115th Avenue intersection and that the City has not addressed their requests to study it. They expect the current issues to get worse with the proposed Lam expansion.

30. Mackenzie (Brent Ahrend) discussed the process and timing to finalize the scope of the traffic study, collect and analyze information, and develop conclusions and recommendations to mitigate impacts. He described the methods used for traffic counts, confirmed counts have already been taken at the proposed study area intersections, and will request counts for the Hazelbrook Road intersections to occur prior to the end of the school year.

31. An attendee asked if three access points on Leveton Drive and three on SW 108th Avenue could adequately serve the site without needing to use Tualatin Road. Mackenzie (Brent Ahrend) said further analysis would be needed and noted past analysis showed new access points were needed on 108th to serve Building G, which is currently under construction.

32. An attendee asked if the traffic study would consider the maximum potential utilization of the proposed buildings (i.e., employees occupying all available seats). Mackenzie (Brent Ahrend) confirmed it would.

33. An attendee said they believed Lam leases a building northwest of the main campus and asked if employees could use the existing parking on that site and be shuttled to campus as an alternative to the proposed parking and access plan. Lam (Jennifer Otterness) said that building would no longer be used once Building G is complete, so this would not be an option.

34. Attendees agreed the proposed accesses on SW Tualatin Road were problematic and urged the design team to evaluate alternative options. Mackenzie (Suzannah Stanley) confirmed the team has heard and understands the concerns that were raised and will continue to analyze site design and traffic impacts.

35. An attendee said they hear a hissing sound from their home north of SW Tualatin Road and expressed concern the proposed new driveway opening at 112th would increase off-site noise impacts. Lam (Todd Fosler) said the design team includes a noise consultant that will analyze impacts and engineer mitigation solutions including noise-attenuating enclosures around the bulk gas yard and roof-mounted equipment.

ADJOURNMENT

36. Mackenzie (Suzannah Stanley) thanked everyone for their participation and feedback and provided contact information for key members of the project team. She said the team would take the feedback collected during this meeting into consideration and evaluate possible design alternatives for access and circulation. A second neighborhood meeting will be planned to provide an opportunity for further discussion of traffic impacts and other concerns.

37. The meeting was adjourned at approximately 7:40 PM.

MACKENZIE.
P 503.224.9560 ▪ F 503.228.1285 ▪ W MCKNZE.COM
RiverEast Center, 1515 SE Water Avenue, #100, Portland, OR 97214
Portland, Oregon ▪ Vancouver, Washington ▪ Seattle, Washington

SIGN-IN SHEET

PROJECT NUMBER:	2240022.00	**MEETING DATE:**	June 5, 2024
PROJECT NAME:	Lam TUX - Site	**MEETING TIME:**	6:00 PM
FACILITATOR:	Suzannah Stanley		

Joan & Paul Hamilton	Hazelbrook Rd. / Tualatin, OR.
Doug Riggs	doug@nwpolicy.com
JANINE WILSON	TualatinCIO.org jasuwi7@gmail.com
SHERI ESSER	sheri_esser@hotmail.com
BRETT HAMILTON	brett@simple.be
Heather Davis	Kiwikai@outlook.com
Steve Brooks	"
THOMAS MACAULAY	tmacaulay03@gmail.com
MARK WILLON	mark.willon@gmail.com
Greg Fronczak	greg@yahoo.com
~~Bobbi Fenn~~	~~Bobbi.fenn@gmail.com~~
Bobbi Fenn	fenn_home@frontier.com
Mike Hannegan	mike.hannegan@STIGOV.com

MACKENZIE.

P 503.224.9560 ▪ F 503.228.1285 ▪ W MCKNZE.COM
RiverEast Center, 1515 SE Water Avenue, #100, Portland, OR 97214

Portland, Oregon ▪ Vancouver, Washington ▪ Seattle, Washington

SIGN-IN SHEET

PROJECT NUMBER:	2240022.00	**MEETING DATE:**	June 5, 2024
PROJECT NAME:	Lam TUX - Site	**MEETING TIME:**	6:00 PM
FACILITATOR:	Suzannah Stanley		

Kristy Hewitt	kristykhewitt@gmail.com
MARIUS BRISAN	MARLID16@FRONTIER.COM
Janet Weber	weberjanet@hotmail.com
Derich Hartfeil	djhartfeil@outlook.com
GREGORY HORNER	procuring@icloud.com
LOIS CHAUNEE	lchaun99@gmail.com

MACKENZIE.

P 503.224.9560 ▪ F 503.228.1285 ▪ W MCKNZE.COM
RiverEast Center, 1515 SE Water Avenue, #100, Portland, OR 97214

Portland, Oregon ▪ Vancouver, Washington ▪ Seattle, Washington

SIGN-IN SHEET

PROJECT NUMBER:	2240022.00	**MEETING DATE:**	June 5, 2024
PROJECT NAME:	Lam TUX - Site	**MEETING TIME:**	6:00 PM
FACILITATOR:	Suzannah Stanley		

Cathy Baedor 503-419-7484

Mary & Jim Arbuckle 503-691-2079

Kami Hamilton

Lynn Miller 503-486-5188 ~ 503-929-2167

CERTIFICATION OF SIGN POSTING



In addition to the requirements of TDC 32.150, the 18" x 24" sign must display the meeting date, time, and address as well as a contact phone number. A template of this sign is available at: https://www.tualatinoregon.gov/planning/neighborhooddeveloper-meeting-information-packet

---

As the applicant for the **Lam Research - AR and IMP for TUX Site (PRE24-0008)** project, I hereby certify that on this day, **May 22, 2024** sign(s) was/were posted on the subject property in accordance with the requirements of the Tualatin Development Code and the Community Development Division.

Applicant's representative:

~~Applicant's Name~~: Ian Sisson, Mackenzie
(Please Print)

Representative's signature:

~~Applicant's Signature~~:

Date: 5-22-2024

AFFIDAVIT OF MAILING NOTICE

STATE OF OREGON)
) SS
COUNTY OF WASHINGTON)

I, IAN SISSON being first duly sworn, depose and say:

That on the 22 day of MAY, 2024, I will serve upon the persons shown on Exhibit "A" (Mailing Area List), attached hereto and by this reference incorporated herein, a copy of the Notice of Neighborhood/Developer Meeting marked Exhibit "B," attached hereto and by this reference incorporated herein, by mailing to them a true and correct copy of the original hereof. I further certify that the addresses shown on said Exhibit "A" are their regular addresses as determined from the books and records of the Washington County and/or Clackamas County Departments of Assessment and Taxation Tax Rolls, and that said envelopes were placed in the United States Mail with postage fully prepared thereon.

Signature

SUBSCRIBED AND SWORN to before me this 22nd day of May, 2024.

OFFICIAL STAMP
LEONID Y SMETANA
NOTARY PUBLIC - OREGON
COMMISSION NO. 1037839
MY COMMISSION EXPIRES JUNE 08, 2027

Notary Public for Oregon
My commission expires: June 08, 2027

RE: _____

MACKENZIE.

May 22, 2024

Dear Property Owner, Tenant, or Resident:

You are cordially invited to attend a meeting to review a proposed expansion of the Lam Research campus. The meeting will be held in person at:

Juanita Pohl Center
8513 SW Tualatin Road
Tualatin, OR 97062
Wednesday, June 5 at 6:00 PM

The Lam Research campus is located at 11155 SW Leveton Drive in Tualatin. The proposal would add three new buildings on the south (SE Leveton Road) side of the campus and expand parking on the north (SW Tualatin Road) side of the campus. The project will require Architectural Review and an updated Industrial Master Plan, both of which are "Type III" land use reviews by the City of Tualatin, including public hearing procedures. The project will be designed to meet Tualatin Development Code standards, such that no variance requests are anticipated.

The June 5 meeting will allow the project team to share the development proposal with interested neighbors. You will have the opportunity to review preliminary plans and identify topics of interest or issues the design team should consider.

PROJECT OVERVIEW

Lam is Oregon's largest semiconductor equipment company, with a strong presence in the state for more than 20 years. Lam is excited to be able to expand its Tualatin campus, providing more jobs and revenue to the community and capitalizing on the rich semiconductor talent in the area, which is one of the leading hubs for chipmaking and technology innovation in the United States. This project (aka "TUX") will add a new laboratory building, offices, and utilities hub to the Lam campus:

- Offices and Engineering Building ("T"): 160,000 SF
- Central Utility Building ("U"): 48,000 SF
- Laboratory/Research and Development Building ("X"): 250,000 SF (over two phases)

The TUX design is aligned with Lam's Environmental, Social, and Governance (ESG) goals[1]. Sustainability targets for TUX include Net Zero and LEED certification.

[1] https://www.lamresearch.com/company/environmental-social-and-governance/

ADDITIONAL DETAILS YOU MAY WANT TO KNOW

Buildings

- **Architectural Design:** The proposed buildings will be consistent with the materials and colors of the existing buildings across the campus.
- **Height and Scale:** The proposed buildings will be similar in height and scale with existing buildings on the campus. Building heights will be within the parameters allowed by the City of Tualatin.
- **Mechanical Equipment:** Rooftop equipment will be screened as required by the City of Tualatin's design standards.
- **Noise:** No significant noise impacts are anticipated. The design team is working with a specialized consultant with the goal of not increasing the noise levels produced by existing operations.
- **Air Quality:** No new types of chemicals or bulk gases will be used in the expanded operations and air quality will meet all applicable federal, state, and local regulations.
- **Sustainability:** The design team is pursuing LEED certification for the proposed new buildings.

Site Elements

- **Outdoor Lighting:** The lighting plan will be designed to minimize off-site impacts and will comply with the City of Tualatin's code requirements to direct illumination away from streets and residential areas.
- **Berm:** The existing mature landscape berm is an important piece of the Lam campus and its relationship to surrounding neighbors. The berm will be extended to the west, and the existing section will remain in place, except for a new driveway, which will form a south leg of the 115th Avenue intersection.
- **Trees:** New landscaping will result in a net gain in the number of trees across the campus.

Transportation

- **Access and Signal:** The City's Transportation System Plan (TSP) calls for a future signal at the SW Tualatin Road/SW 115th Avenue intersection to meet traffic/circulation needs as the community grows. The south approach of this intersection is currently a driveway for JAE and emergency access for Lam. With the project, the driveway will be opened for access to the expanded parking area and continue to provide access to JAE. It is expected the traffic signal will be installed with the change in access to the Lam parking areas.
  - The site circulation patterns will discourage any cut-through traffic between Tualatin Road and Leveton Road and landscaping or screening will be provided to minimize visibility into the campus from Tualatin Road and 115th Avenue.
  - Lam plans to design the project to minimize the number of cut-through trips using 115th Avenue to travel to Highway 99W.
- **Parking:** Parking demands will be accommodated entirely on-site, and parking will be concentrated on the northern edge of the site to reduce the impact of the buildings and equipment areas on the residential area to the north.
- **Trucks:** Truck access to the Lam campus will continue to be from Leveton Road – no trucks will be added to Tualatin Road.
- **Traffic Impact Analysis:** The City of Tualatin will require a TIA to address impacts of the project on the surrounding transportation network. Work on the TIA is just beginning.

Construction

- **Duration:** Approximately two years to complete all phases of construction.

- **Hours/Impacts:** Construction will occur during normal business hours and will comply with all City of Tualatin noise ordinances. Most of the construction noise and other impacts will occur in the morning hours. No night operations are planned. Lam will be fully engaged during construction and will monitor noise and other impacts.
- **Traffic:** Construction vehicles will be routed on Leveton Drive and will park in designated contractor parking areas on Lam property.

PROCESS

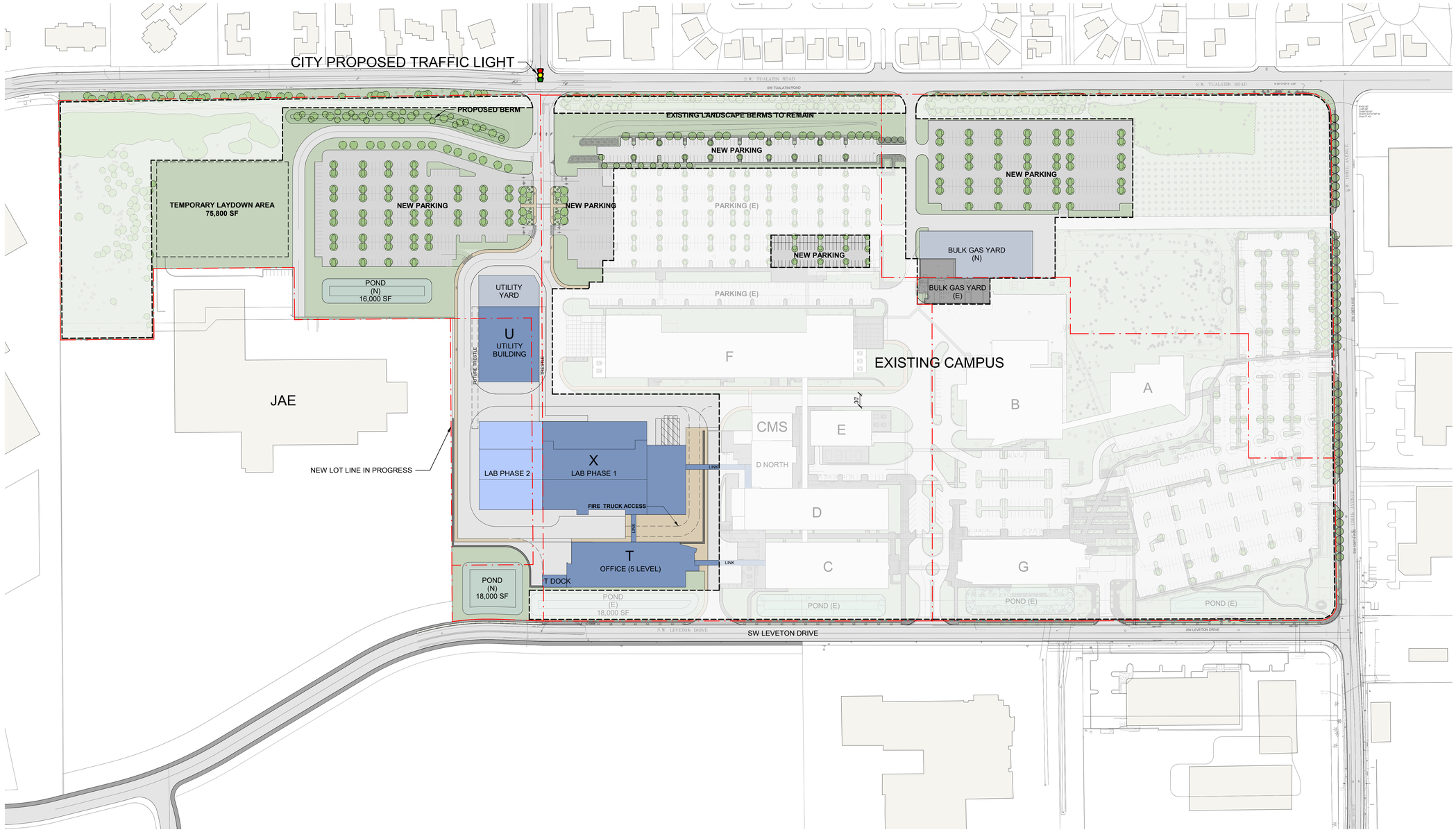
Lam intends to submit the Architectural Review and Industrial Master Plan applications to the City of Tualatin by the end of June 2024. After the City determines the applications to be complete, the City will schedule two public hearings to review the proposal, which will require additional public notice to surrounding neighbors. Following land use approval, the project team will proceed to submit for building permits in phases, beginning with site grading and utilities, followed by construction of building foundations and walls, and then final build-out. Construction is anticipated to begin in the third quarter of 2025 and be completed by the second quarter of 2027.

Please contact me (Suzannah Stanley, 971-346-3808 or sstanley@mcknze.com) if you have questions regarding the land use review process for this project. For questions about Lam's ESG goals or campus operations, please contact Todd.Fosler@lamresearch.com, Project Manager, or Chad.Oyler@lamresearch.com, ESG and Environmental Health & Safety.

Sincerely,

Suzannah Stanley
Land Use Planner

Enclosure(s): Attachment A – Preliminary Site Plan



LEGEND

- EXISTING BUILDINGS
- NEW BUILDINGS (142,000 SF FLOOR PLATE)
- NEW BUILDINGS PHASE 2 (36,000 SF FP)
- NEW YARDS
- SITE BOUNDARY
- NEW PEDESTRIAN / AREA
- DRIVE AREA
- DETENTION POND
- LANDSCAPE & BERM

TOTAL LAM CAMPUS SITE AREA: 76 ACRES

N

0 50' 100' 200'

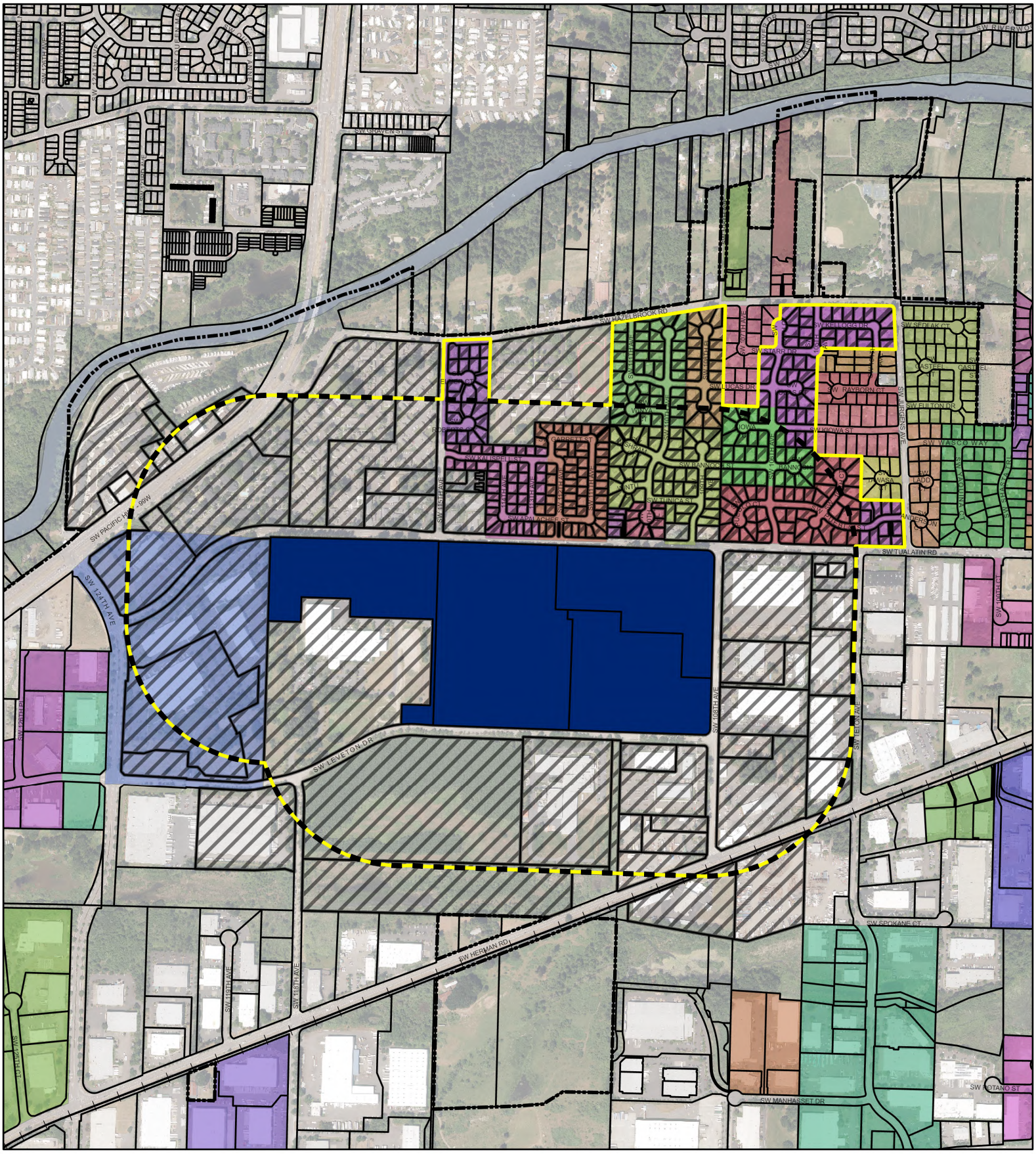
Lam RESEARCH Jacobs MACKENZIE.

NEIGHBORHOOD MEETING

PRINT DATE & TIME: 5/21/2024 12:43:20 PM

Mailing List - (2S122BA00100) (2S122AA00500) (2S122AB00100) (2S122AA00800)

TUALGIS



1000' Buffer

1000' Buffer with Subdivisions

Selected Taxlots

N
W E
S

12345 SW LEVETON LLC
1730 SW SKYLINE BLVD, STE #121
PORTLAND, OR 97221

18355 SW TETON AVENUE TUALATIN OR LLC
17455 SW RIDGEVIEW LN
LAKE OSWEGO, OR 97034

3 J'S PROPERTIES LLC
10400 SW TUALATIN RD
TUALATIN, OR 97062

AAA OREGON/IDAHO
600 MARKET ST
PORTLAND, OR 97201

ABBOTT TUALATIN LLC
3030 BRIDGEWAY STE 100
SAUSALITO, CA 94965

ABERNATHY TRAVIS E & ABERNATHY AMANDA M
17860 SW 114TH AVE
TUALATIN, OR 97062

ABRAMS HOWARD R REV LIV TRUST
7799 SW MONTCLAIR DR
PORTLAND, OR 97225

ACKERMAN CLINTON
17987 SW 106TH AVE
TUALATIN, OR 97062

ACKLEY KRISTEN & ROTTMAN ERIK A
17961 SW 105TH CT
TUALATIN, OR 97062

ADAMS KAREN E TRUST & BARTHOLOMEW BRIAN J
17445 SW 104TH AVE
TUALATIN, OR 97062

ADAMS SHEILA D
10915 SW TUALATIN RD
TUALATIN, OR 97062

AIELLO FAMILY TRUST
10650 SW PUEBLO CT
TUALATIN, OR 97062

ALBERTSON BRUCE & ALBERTSON JUDY
11415 SW ELMER CT
TUALATIN, OR 97062

ALBERT GARY J & ALBERT LISA J
17630 SW 108TH PL
TUALATIN, OR 97062

AMAN FAMILY TRUST
17435 SW 108TH PL
TUALATIN, OR 97062

ANDERSON DEBORAH M
11045 SW TUALATIN RD
TUALATIN, OR 97062

ANDERSON EDWARD JOEL & GADKARI SHRUTI UDAY
11029 SW TUALATIN RD
TUALATIN, OR 97062

APOSTOLIC LUTHERAN CHURCH OF PORTLAND
PO BOX 23312
TIGARD, OR 97223

ARBUCKLE JAMES F & ARBUCKLE MARY D
11400 SW ELMER CT
TUALATIN, OR 97062

ARNDT RONALD C 2015 TRUST
80395 WEISKOPF
LA QUINTA, CA 92253

ARROYO CHRIS & ARROYO JAQUELINE C
10515 SW STARR DR
TUALATIN, OR 97062

ASAI C&C JOINT TRUST
10555 SW KIOWA ST
TUALATIN, OR 97062

ASCENTEC ENGINEERING LLC
18500 SW 108TH AVE
TUALATIN, OR 97062

AUGUSTYNIAK EDWARD J & SUJCZYNSKA MONIKA J
10555 SW BANNOCH CT
TUALATIN, OR 97062

BAEDOR FAMILY TRUST
17775 SW 111TH AVE
TUALATIN, OR 97062

BAILEY TRUST
17971 SW 106TH AVE
TUALATIN, OR 97062

BAIRD LEAH J
17610 SW 108TH PL
TUALATIN, OR 97062

BANEY JOACHIM E
PO BOX 3474
PORTLAND, OR 97208

BANTA BRYCE & BANTA RENE
17880 SW 110TH AVE
TUALATIN, OR 97062

BARRACLOUGH RODNEY P JR & BARRACLOUGH SANDRA
11475 SW ELMER CT
TUALATIN, OR 97062

BARROW BRAD JAMES & BARROW SYDNEY ANTONETTE
10850 SW BANNOCH ST
TUALATIN, OR 97062

BARTHOLOMEW MARY C TRUST
10570 SW KIOWA ST
TUALATIN, OR 97062

BATEMAN TRUST
17875 SW 114TH AVE
TUALATIN, OR 97062

BAUMANN THOMAS K & BAUMANN ROSEMARIE D
10500 SW KIOWA ST
TUALATIN, OR 97062

BAXTER CHRISTOPHER & BAXTER STEPHANIE
10606 SW BANNOCH CT
TUALATIN, OR 97062

BELL TAMERA J & JURCHEN STEVEN L
10644 SW PUEBLO ST
TUALATIN, OR 97062

BENEDICT ELIZABETH A
10460 SW KELLOGG DR
TUALATIN, OR 97062

BENKE FAMILY TRUST
17400 SW 106TH CT
TUALATIN, OR 97062

BENNETT JENNIFER ANN & FRICK BENJAMIN JOHN
11030 SW WINTU CT
TUALATIN, OR 97062

BERG TOR L & BERG CHERYL L
17880 SW 113TH AVE
TUALATIN, OR 97062

BERGGREN TERESA DORAN REV LIV TRUST
11115 SW GARRETT ST
TUALATIN, OR 97062

BERGGREN BRAD J & BERGGREN ROBERTA K
11425 SW KALISPELL ST
TUALATIN, OR 97062

BIEHLER ROBYN L
17750 SW 112TH AVE
TUALATIN, OR 97062

BILITZ MARTIN & BILITZ MICHAELA DANIELA
10479 SW PUEBLO ST
TUALATIN, OR 97062

BIXEL JENNIFER
10455 SW KELLOGG DR
TUALATIN, OR 97062

BLAKEY BLAKE & BLAKEY DOMENIQUE
11400 SW APALACHEE ST
TUALATIN, OR 97062

BLATT CHARLES M JR & BLATT NAOMI T
17897 SW 105TH CT
TUALATIN, OR 97062

BLUM MARY LOU
11020 SW WISHRAM CT
TUALATIN, OR 97062

BORTHWICK MELODY
10461 SW PUEBLO ST
TUALATIN, OR 97062

BRISAN MARIUS M & BRISAN LIDIA M
17850 SW 113TH AVE
TUALATIN, OR 97062

BROCKWAY FAMILY TRUST
17455 SW 108TH PL
TUALATIN, OR 97062

BROOKS STEVEN K & DAVIS HEATHER M
15532 SW PACIFIC HWY #CIB111
TIGARD, OR 97224

BROPHY JEFFREY E & BROPHY DANETTE M
11465 SW KALISPELL ST
TUALATIN, OR 97062

BROWNE AARON J & BROWNE KELLIE G
11035 SW WISHRAM CT
TUALATIN, OR 97062

BRYANT SYDNAY & BRYANT JAKE
11420 SW ROBERTS CT
TUALATIN, OR 97062

BUCKNER ORVILLE KERN III TRUST
17890 SW 110TH AVE
TUALATIN, OR 97062

BURDICK EILEEN T & BURDICK CHRISTOPHER J
17430 SW 104TH AVE
TUALATIN, OR 97062

BURNS JACK S
17785 SW 113TH AVE
TUALATIN, OR 97062

BUSHNELL TODD MICHAEL
17960 SW 111TH AVE
TUALATIN, OR 97062

CABLE SAMUEL & CABLE MARLENE
11225 SW APALACHEE ST
TUALATIN, OR 97062

CAGLE STEVEN & CAROLYN LIV TRUST
10777 SW KIOWA CT
TUALATIN, OR 97062

CALDER KENNETH D & CALDER MARY C
10945 SW TUNICA ST
TUALATIN, OR 97062

CALMAX TECHNOLOGY INC
3491 LAFAYETTE ST
SANTA CLARA, CA 95054

CAVEN JEREMY LIONEL
17870 SW 111TH AVE
TUALATIN, OR 97062

CERO JEFFREY C & CERO CARISSA
11410 SW KALISPELL ST
TUALATIN, OR 97062

CHALFAN TRUST
4095 WESTBAY RD
LAKE OSWEGO, OR 97035

CHALISE PRAVEEN & CHALISE DEEPA
17625 SW 108TH PL
TUALATIN, OR 97062

CHAMBERS LIV TRUST
10595 SW BANNOCH CT
TUALATIN, OR 97062

CHAMBERLAIN HUSSA PROPERTIES
18755 SW TETON AVE
TUALATIN, OR 97062

CHANG SARAH
11360 SW APALACHEE ST
TUALATIN, OR 97062

CHAUNCEY LOIS
17890 SW 112TH AVE
TUALATIN, OR 97062

CHEN DAVID & CALIXTRO ELIZABETH
10720 SW KIOWA CT
TUALATIN, OR 97062

CHONG CHRISTOPHER A & CHONG KIRSTEN J
5870 SW WICHITA ST
TUALATIN, OR 97062

CHRISTIAN LOU A & CHRISTIAN TINA L
10677 SW BANNOCH ST
TUALATIN, OR 97062

CLARK DAVID A & CLARK CATHERINE M
10639 SW PUEBLO CT
TUALATIN, OR 97062

CLARK MONICA J & CLARK LONNY T
10525 SW LUCAS CT
TUALATIN, OR 97062

CLARK CHARLES L TRUST
17875 SW 110TH AVE
TUALATIN, OR 97062

COCKRELL WILLIAM D & COCKRELL PAMELA K
11460 SW ROBERTS CT
TUALATIN, OR 97062

CODINO VAL H & CODINO LOIS D
17962 SW 105TH CT
TUALATIN, OR 97062

COMPTON JAY W
17595 SW 110TH AVE
TUALATIN, OR 97062

CONNER DANIEL J & CONNER SHARON W
10650 SW KIOWA CT
TUALATIN, OR 97062

CORR FAMILY REV TRUST
17585 SW 111TH AVE
TUALATIN, OR 97062

COSNER BERNADATTE M LIV TRUST
17890 SW 115TH AVE
TUALATIN, OR 97062

COX LEE H & COX CHRISTINA R
17825 SW 114TH AVE
TUALATIN, OR 97062

CR RIVERCREST MEADOWS COMMUNITIES LLC
444 W BEECH ST #300
SAN DIEGO, CA 92101

CRALL RICHARD F & CRALL BARBARA M
10055 SW WASCO WAY
TUALATIN, OR 97062

CROSS THOMAS A & CROSS DIANE RUTH
17845 SW 114TH AVE
TUALATIN, OR 97062

CYPRESS PARISH LLC
16750 SE KENS CT
MILWAUKIE, OR 97267

DEAVILLE CASEY D
17970 SW 105TH CT
TUALATIN, OR 97062

DEBRAUWERE LIV TRUST
11100 SW LUCAS DR
TUALATIN, OR 97062

DEHEN PAUL V & DEHEN ROBERTA A
10995 SW TUNICA ST
TUALATIN, OR 97062

DEJONG STEVEN & DEJONG KAITLIN
17350 SW 108TH PL
TUALATIN, OR 97062

DIXON ROBERT W
17967 SW 110TH PL
TUALATIN, OR 97062

DOLAK TYLER JOHN & MCMUNN KRISTIANA NICHOLE
17795 SW 111TH AVE
TUALATIN, OR 97062

DONAUGH ANTHONY M & DONAUGH CHRISTI S
10651 SW PUEBLO CT
TUALATIN, OR 97062

DONOHUE NICHOLAS MICHAEL
17800 SW 113TH AVE
TUALATIN, OR 97062

DOWNING DARYL & DOWNING CHRISTINE
17865 SW 111TH AVE
TUALATIN, OR 97062

DRAPER JAMES A & JANICE F TRUST
17755 SW 106TH AVE
TUALATIN, OR 97062

DUE NORTH PROPERTIES LLC
401 E FIRST ST #1062
NEWBERG, OR 97132

DUPUIS KENNETH & DUPUIS ERIN
17550 SW 110TH AVE
TUALATIN, OR 97062

DUPUIS FAMILY TRUST
17460 SW 110TH AVE
TUALATIN, OR 97062

EASTMAN ROBYN T & EASTMAN SANDY M
17770 SW 113TH AVE
TUALATIN, OR 97062

EDWARDS MARK
17986 SW 110TH PL
TUALATIN, OR 97062

ESTRADA ALFRED & ESTRADA SHARON
17460 SW 111TH AVE
TUALATIN, OR 97062

FB TRUST
10910 SW BANNOCH ST
TUALATIN, OR 97062

FENN DENNIS LESLIE & FENN ROBERTA JEAN
11440 SW ROBERTS CT
TUALATIN, OR 97062

FISH TAMMY G & FISH WAYNE L
17475 SW 108TH PL
TUALATIN, OR 97062

FITCH JACQUELINE DARLENE & FITCH JOHN WALLACE
17915 SW 113TH AVE
TUALATIN, OR 97062

FLORES SAMANTHA & PENA JOSE ROBERTO
11380 SW APALACHEE ST
TUALATIN, OR 97062

FOILES LESLIE E & FOILES VICTORIA A
10960 SW TUNICA ST
TUALATIN, OR 97062

FORD KEVIN & LOCKE EMMA
11495 SW ELMER CT
TUALATIN, OR 97062

FORD JOHN E & AMES STEPHANIE
17953 SW 110TH PL
TUALATIN, OR 97062

FRAINEY BRIAN A & FRAINEY ABIGAIL J
11155 SW GARRETT ST
TUALATIN, OR 97062

FRANKLIN MELLISA & FRANKLIN IGNACIO
17425 SW 105TH AVE
TUALATIN, OR 97062

FRANKLINIA LLC
6107 SW MURRAY BLVD #175
BEAVERTON, OR 97008

FRIEDMAN MARK E REV TRUST & FRIEDMAN JOHNNALEE L REV TRUST
17355 SW 105TH AVE
TUALATIN, OR 97062

FRONCZAK GREG JOHN
11450 SW KALISPELL ST
TUALATIN, OR 97062

FUJIMI CORPORATION
11200 SW LEVETON DR
TUALATIN, OR 97062

GALLARDO MICHAEL & MIELE SARA
10680 SW KIOWA CT
TUALATIN, OR 97062

GALLAGHER RON MICHAEL & GALLAGHER KELLY MORIARTY
17975 SW 109TH AVE
TUALATIN, OR 97062

GALVIN JEREMY & GALVIN ANDREA
17950 SW 112TH AVE
TUALATIN, OR 97062

GARSKE TRAVIS W
PO BOX 729
COLBERT, WA 99005

GILBERTSON CHRISTOPHER C & GILBERTSON HEIDI S
17435 SW 110TH AVE
TUALATIN, OR 97062

GIMARELLI-BAST TERRA
11120 SW GARRETT ST
TUALATIN, OR 97062

GIRDNER DOUGLAS R & GIRDNER SANDRA L
10623 SW PUEBLO CT
TUALATIN, OR 97062

GITT SHARON M
10435 SW KELLOGG DR
TUALATIN, OR 97062

GITT SEAN C & GITT MELISSA A
17770 SW 110TH AVE
TUALATIN, OR 97062

GLASSER FAMILY REV TRUST
11035 SW LUCAS DR
TUALATIN, OR 97062

GODFREY DAVID E & GODFREY LISA J
17410 SW 110TH AVE
TUALATIN, OR 97062

GONZALEZ JULIE A REV TRUST
17565 SW 110TH AVE
TUALATIN, OR 97062

GONZALEZ RODOLFO GUERRERO & GUZMAN JOSE LUIS AMEZCUA
17780 SW 114TH AVE
TUALATIN, OR 97062

GOVINDAN ANUMARLA & GOVINDAN SODHARI
11460 SW HAZELBROOK RD
TUALATIN, OR 97062

GRAHAM CONNIE L REV TRUST
17500 SW 111TH AVE
TUALATIN, OR 97062

GREENE JOHN W & GREENE SUSAN
17915 SW 114TH AVE
TUALATIN, OR 97062

GREEN GARY L & GREEN JANIS A
10695 SW KIOWA CT
TUALATIN, OR 97062

GREEN CRAIG D
17885 SW 110TH AVE
TUALATIN, OR 97062

GUILFOYLE CAROL L TRUST
10795 SW BANNOCH ST
TUALATIN, OR 97062

GUTOWSKI MARK A
11070 SW WINTU CT
TUALATIN, OR 97062

GUY CARRIE & GUY TIMOTHY M
10482 SW PUEBLO CT
TUALATIN, OR 97062

HACKBARTH JANICE V
10585 SW KIOWA ST
TUALATIN, OR 97062

HALL STEPHEN C & HALL WENDY S
10799 SW LUCAS DR
TUALATIN, OR 97062

HAMILTON PAUL CHARLES & HAMILTON JOAN E
PO BOX 3207
TUALATIN, OR 97062

HAMILTON BRETT T & HAMILTON KAMI R
11430 SW KALISPELL ST
TUALATIN, OR 97062

HANNEGAN MICHAEL L
17992 SW 110TH PL
TUALATIN, OR 97062

HANNON RACHELLE S & HANNON JEFFREY T
17440 SW 105TH AVE
TUALATIN, OR 97062

HANSON TIMOTHY J & HANSON SUSAN E
17690 SW 110TH AVE
TUALATIN, OR 97062

HARRIS DEGAY C & OBIDIGBO OBINNA KINGSLEY
11037 SW TUALATIN RD
TUALATIN, OR 97062

HARTFEIL DERICH & HARTFEIL ELEANOR
11170 SW APALACHEE ST
TUALATIN, OR 97062

HAUPERT REV TRUST
10415 SW KELLOGG DR
TUALATIN, OR 97062

HAYES RYAN D & ANCHARSKI NANCY
11025 SW WINYA CT
TUALATIN, OR 97062

HEIN CHRISTOPHER HAROLD & HEIN SUSANNE BIRGIT
10975 SW TUNICA ST
TUALATIN, OR 97062

HELSER LLC
PO BOX 1569
TUALATIN, OR 97062

HELTNESS ERIC TODD & HELTNESS CHERYL LYNN
10632 SW PUEBLO CT
TUALATIN, OR 97062

HEMANN MAURA A REV LIV TRUST
10645 SW PUEBLO CT
TUALATIN, OR 97062

HENRY DAVID & SHARI LIV TRUST
10355 SW KELLOGG DR
TUALATIN, OR 97062

HENSLEY TRACY L & BARTELS AARON DAVID
17980 SW 109TH AVE
TUALATIN, OR 97062

HERINCKX JEFFREY & HERINCKX CHANDA S
10560 SW LUCAS CT
TUALATIN, OR 97062

HERR DANIEL J & HERR CAMILLE
17655 SW 111TH AVE
TUALATIN, OR 97062

HEWITT KRISTY K & HEWITT MARSHALL
17815 SW 111TH AVE
TUALATIN, OR 97062

HILDEBRAN REED & HILDEBRAN SALLY J
10500 SW BANNOCH CT
TUALATIN, OR 97062

HILLIARD DAVID M & DRAPER ELIZABETH L
10316 SW PUEBLO ST
TUALATIN, OR 97062

HINDS FAMILY TRUST
17900 SW 115TH AVE
TUALATIN, OR 97062

HIRTE EDWIN K & HIRTE TERESA J
11450 SW ELMER CT
TUALATIN, OR 97062

HISLOP BRENT & HISLOP CLAUDIA
11425 SW ROBERTS CT
TUALATIN, OR 97062

HOLMES TRUST
11025 SW WINTU CT
TUALATIN, OR 97062

HOOVER DEVIN & HOOVER KRISTEN
11315 SW KALISPELL ST
TUALATIN, OR 97062

HOURANI JIHAD & SHIKHA HAYAT
11490 SW KALISPELL ST
TUALATIN, OR 97062

HOWELL ZACHARY P & HOWELL REBECCA J
17535 SW 111TH AVE
TUALATIN, OR 97062

HR LLC
18280 SW 108TH AVE
TUALATIN, OR 97062

HUGEBACK BENJAMIN L & HUGEBACK JULIET F
11135 SW GARRETT ST
TUALATIN, OR 97062

HURDLE FAMILY REV TRUST
15927 SE LARK AVE
MILWAUKIE, OR 97267

HUTCHISON BERNADETTE SEP PROP REV LIV TRUST
17430 SW 111TH AVE
TUALATIN, OR 97062

HYATT SEAN & HYATT LISA
10755 SW KIOWA CT
TUALATIN, OR 97062

IDM-OREGON LLC
1101 SE TECH CENTER DR STE 160
VANCOUVER, WA 98683

IMBLER-YOUNG DIANE REV LIV TRUST
17485 SW 110TH AVE
TUALATIN, OR 97062

IMUS ROBERT G & DEBORAH R IMUS LIV TRUST
17895 SW 109TH AVE
TUALATIN, OR 97062

JAE OREGON INC
11555 SW LEVETON DR
TUALATIN, OR 97062

JAFFEE CAROLINE JOHANNA & JAFFEE JAY
17350 SW 106TH CT
TUALATIN, OR 97062

JAGODNIK BRIAN & JAGODNIK LAUREN
10536 SW PUEBLO ST
TUALATIN, OR 97062

JAMES FAMILY INVESTMENT LLC
20675 SW LEBEAU RD
SHERWOOD, OR 97140

JANSSEN JILLIAN & JANSSEN JARED
10595 SW LUCAS CT
TUALATIN, OR 97062

JASTER ALEXIS
10760 SW KIOWA CT
TUALATIN, OR 97062

JEWELL THOMAS G & JEWELL DANA P
17400 SW 104TH AVE
TUALATIN, OR 97062

JIRICEK AARON G & KARINA B REV LIV TRUST
10525 SW KIOWA ST
TUALATIN, OR 97062

JODOIN MICHAEL A & JODOIN NANCY
17810 SW 112TH AVE
TUALATIN, OR 97062

JOHNSON PHILLIP TILO
17445 SW 111TH AVE
TUALATIN, OR 97062

JOHNSON KIT & JOHNSON AMY
17560 SW 111TH AVE
TUALATIN, OR 97062

JONES ROBERT ALAN & JONES SHELLEY DIANE
17964 SW 110TH PL
TUALATIN, OR 97062

KAWAL JUSTIN & BURNS ERIN
10550 SW STARR DR
TUALATIN, OR 97062

KERR JACK & KERR SARWESHNI
17645 SW 106TH AVE
TUALATIN, OR 97062

KINDRED LYLE V & KINDRED ELAINE A
17968 SW 106TH AVE
TUALATIN, OR 97062

KING JERSILYN & PANGELINAN GERHART JURADO
11200 SW APALACHEE ST
TUALATIN, OR 97062

KIRKPATRICK GREG D & KIRKPATRICK DEBRA S
17765 SW 112TH AVE
TUALATIN, OR 97062

KLEIN GEORGE P & KLEIN LEANNE S
17800 SW 111TH AVE
TUALATIN, OR 97062

KLENZ MICHAEL & KLENZ LINDA
17480 SW 108TH AVE
TUALATIN, OR 97062

KNAPKE STEVEN J & KNAPKE LIEN K
17997 SW 105TH CT
TUALATIN, OR 97062

KNAPPENBERGER CLARK W & KNAPPENBERGER CAROLYN
10575 SW LUCAS CT
TUALATIN, OR 97062

KOFORD AARON S & KOFORD ELIZABETH S
11220 SW APALACHEE ST
TUALATIN, OR 97062

KRAJCAR TIMOTHY D & KRAJCAR KIERSTEN A
11070 SW WINYA CT
TUALATIN, OR 97062

KUMAR ZOYA & UFFORD JOHN C
17915 SW 112TH AVE
TUALATIN, OR 97062

KUMLER PHILIP A & JULIE I FAM TRUST
17515 SW 108TH PL
TUALATIN, OR 97062

LAM RESEARCH CORPORATION
2025 GATEWAY PL #228
SAN JOSE, CA 95110

LAM RESEARCH CORP
4650 CUSHING PKWY
FREMONT, CA 94538

LAMB ETHAN S & LAMB SARAH W
17825 SW 113TH AVE
TUALATIN, OR 97062

LANG JULIANNE LERAE
17197 SW SMITH AVE BLDG #37
SHERWOOD, OR 97140

LAUREN NICHOLAS D & LAUREN CHRISTINA M
17935 SW 114TH AVE
TUALATIN, OR 97062

LEE MIKE
17475 SW 111TH AVE
TUALATIN, OR 97062

LEE JONATHAN K & LEE STEPHANIE IRVING
17605 SW 108TH PL
TUALATIN, OR 97062

LEGEND HOMES CORPORATION
4200 NE 20TH ST
OTIS, OR 97368

LIGHT HARVEY EUGENE & LIGHT CLAUDIA JO
11405 SW KALISPELL ST
TUALATIN, OR 97062

LIN DONGMEI & MAO DIAN
17950 SW 109TH AVE
TUALATIN, OR 97062

LOANZON EMMELINE V TRUST
17994 SW 105TH CT
TUALATIN, OR 97062

LONGTIN DAVID E JR
17929 SW 105TH CT
TUALATIN, OR 97062

LORENTE JOAQUIN & LORENTE LOUISE
17460 SW 108TH PL
TUALATIN, OR 97062

LOSER CALLIE
17700 SW 111TH AVE
TUALATIN, OR 97062

LUIKART GLEN
11060 SW WISHRAM CT
TUALATIN, OR 97062

LUMBER FAMILY CO LLC
PO BOX 1427
TUALATIN, OR 97062

LYONS RICHARD & LYONS JUDITH
11065 SW LUCAS DR
TUALATIN, OR 97062

MACAULAY THOMAS & MACAULAY DEBRA
10520 SW BANNOCH CT
TUALATIN, OR 97062

MACIELINSKI DAMIEN & LAURIE LIV TRUST
17565 SW 108TH PL
TUALATIN, OR 97062

MACK ADAM S & MACK KATHRYN M
10770 SW BANNOCH ST
TUALATIN, OR 97062

MACK RYAN P & MACK PATRICIA L
17825 SW 110TH AVE
TUALATIN, OR 97062

MACMILLEN JAMES WILSON &
MACMILLEN DONNA JEAN
10547 SW PUEBLO ST
TUALATIN, OR 97062

MAGILKE GILBERT & MAGILKE GAIL L
17990 SW 106TH AVE
TUALATIN, OR 97062

MAGUIRE BRIAN J & MAGUIRE LISA N
17860 SW 112TH AVE
TUALATIN, OR 97062

MALETA SANDRA L & MALETA GREGORY B
17932 SW 105TH CT
TUALATIN, OR 97062

MANABE STELLA K & NAKAMA DEAN S
11420 SW HAZELBROOK RD
TUALATIN, OR 97062

MANN ERIC A & LUPULESCU NICOLETA
11490 SW ROBERTS CT
TUALATIN, OR 97062

MANN SONIA & MANN JONATHAN
11100 SW APALACHEE ST
TUALATIN, OR 97062

MARKS CHRISTINA A REV LIV TRUST
17760 SW 111TH AVE
TUALATIN, OR 97062

MARONDE JOHN ALBERT & MARONDE JILL
I
17730 SW 111TH AVE
TUALATIN, OR 97062

MARSHALL ASSOCIATED LLC
PO BOX 278
TUALATIN, OR 97062

MAYER ANDREW PETER & MAYER MARIT
JANAE
17395 SW 105TH AVE
TUALATIN, OR 97062

MCCLATCHEY CAITLIN & MCCLATCHEY
GARRETT
11130 SW APALACHEE ST
TUALATIN, OR 97062

MCCURTAIN LIV TRUST
10560 SW PUEBLO ST
TUALATIN, OR 97062

MCCURDY WAYNE & MCCURDY BETTE
10580 SW BANNOCH CT
TUALATIN, OR 97062

MCKINNON SPENCER E LIV TRUST
17971 SW 110TH PL
TUALATIN, OR 97062

MCPHERSON SCOTT K & MCPHERSON
SUSAN R
17895 SW 113TH AVE
TUALATIN, OR 97062

MEGARGEE IRWIN F & MEGARGEE AMY L
10580 SW LUCAS CT
TUALATIN, OR 97062

MELTON LAWRENCE E & MELTON TONYA
M
17900 SW 111TH AVE
TUALATIN, OR 97062

MEYER PAUL R & MEYER MARY B
17365 SW 108TH PL
TUALATIN, OR 97062

MICHAELIDES JAMIE C & RADISH KEVIN A
17920 SW 112TH AVE
TUALATIN, OR 97062

MIDKIFF HOUSTON A & MIDKIFF NANCY
17845 SW 106TH AVE
TUALATIN, OR 97062

MILLER LYNN B
11190 SW APALACHEE ST
TUALATIN, OR 97062

MILLER JOINT TRUST
10970 SW BANNOCH ST
TUALATIN, OR 97062

MILNE JAMES S & MILNE MARY F
17875 SW 109TH AVE
TUALATIN, OR 97062

MINATO KAZUKI & MINATO YUKO
11445 SW ROBERTS CT
TUALATIN, OR 97062

MITCHELL TIMOTHY
900 SW 5TH AVE FL 17
PORTLAND, OR 97204

MITCHELL GARRETT C & MITCHELL SHARON M
17910 SW 115TH AVE
TUALATIN, OR 97062

MITTLEMAN PROPERTIES
1 SW COLUMBIA ST STE 950
PORTLAND, OR 97258

MOORE KERRI ANN & MOORE CHRISTOHER
10619 SW BANNOCH CT
TUALATIN, OR 97062

MORAN STEVEN TIMOTHY & MORAN ASHLEY SCHNAPP
17870 SW 110TH AVE
TUALATIN, OR 97062

MORRELL LIVING TRUST
10915 SW TUNICA ST
TUALATIN, OR 97062

MORRISSEY FAMILY TRUST
17924 SW 105TH CT
TUALATIN, OR 97062

MOWERY DANA KAY
17948 SW 105TH CT
TUALATIN, OR 97062

MUIR JOHN S & ACHILOVA LOLA
17795 SW 112TH AVE
TUALATIN, OR 97062

MUNSON JAMES L & PAMELA B REV LIV TRUST
10600 SW KIOWA ST
TUALATIN, OR 97062

MURMAN CORY D & MURMAN TAMIKO A
11485 SW KALISPELL ST
TUALATIN, OR 97062

MURO MONICA D
11011 SW TUALATIN RD
TUALATIN, OR 97062

MUSTEDANAGIC ADIS & MUSTEDANAGIC ALISA
11045 SW WINTU CT
TUALATIN, OR 97062

NAJERA KENE S & BUSTOS ESMERALDA RODRIGUEZ
12288 SW FUJI CT
TIGARD, OR 97224

NEUMANN DANIEL & NEUMANN SYDNEY
10412 SW PUEBLO ST
TUALATIN, OR 97062

NEWTON DAVID & E SUZANNE JOINT TRUST
10950 SW BANNOCH ST
TUALATIN, OR 97062

NGUYEN HONG T & TRI VINH V
10444 SW PUEBLO ST
TUALATIN, OR 97062

NGUYEN CATHY H
11485 SW ROBERTS CT
TUALATIN, OR 97062

NORDEN PAUL & JEANINE LIV TRUST
17440 SW 108TH PL
TUALATIN, OR 97062

NUNLEY RICHARD V III
11105 SW GARRETT ST
TUALATIN, OR 97062

OLSON LIVING TRUST
11435 SW ELMER CT
TUALATIN, OR 97062

OLSON DOUGLAS E & OLSON KIMBERLY R
11130 SW WINYA CT
TUALATIN, OR 97062

ORLANES JONATHAN
10620 SW LUCAS DR
TUALATIN, OR 97062

OWEN GREGORY L & OWEN DEBORAH L
17885 SW 109TH AVE
TUALATIN, OR 97062

PACIFIC FINANCIAL CENTER LLC
4200 S HULEN ST STE 410
FORT WORTH, TX 76109

PAIGE LIV TRUST
17940 SW 109TH AVE
TUALATIN, OR 97062

PAPAS EDITH ELIZABETH
11055 SW WINYA CT
TUALATIN, OR 97062

PARK KRISTEN
17902 SW 105TH CT
TUALATIN, OR 97062

PARK DANIEL K & PARK ANNA K
9333 SW NEZ PERCE CT
TUALATIN, OR 97062

PARKER DAVID SCOTT & CAVALLO KIMBERLY G
10301 SW PUEBLO ST
TUALATIN, OR 97062

PARKER SARAH D & PARKER WILEY
11480 SW ELMER CT
TUALATIN, OR 97062

PARKER MARION M
17830 SW 114TH AVE
TUALATIN, OR 97062

PARSONS KIMBERLY MARIE & PARSONS BENJAMIN JAMES
17580 SW 110TH AVE
TUALATIN, OR 97062

PAYNE DANIEL J & PAYNE JANET M
10440 SW KELLOGG DR
TUALATIN, OR 97062

PENNIMAN STEVEN K & PHYLLIS D REV LIV TRUST
8374 VEREDA DEL PADRE
GOLETA, CA 93117

PENSADO ERNESTO & ALVARENGA NALLY M
10380 SW PUEBLO ST
TUALATIN, OR 97062

PETERSON JACOB CURTIS & PETERSON JULIE DAWN
17925 SW 111TH AVE
TUALATIN, OR 97062

PEUSER NILS ARNE & PEUSER NICOLE
17380 SW 106TH CT
TUALATIN, OR 97062

PHIGHT LLC
ONE BOWERMAN DR
BEAVERTON, OR 97005

PLAMBECK CAROL R
10600 SW STARR DR
TUALATIN, OR 97062

POINTS YU SUN
11465 SW ROBERTS CT
TUALATIN, OR 97062

POUR ALI FROTAN & ESFANDIARPOUR SAMANEH
17995 SW 110TH PL
TUALATIN, OR 97062

PR 17995 SW 106TH LLC
8925 SW IOWA DR
TUALATIN, OR 97062

PRICE DAVID A & PRICE JENNIFER K
11080 SW WISHRAM CT
TUALATIN, OR 97062

PUPPO MIKK
17894 SW 105TH CT
TUALATIN, OR 97062

PURCELLA ALEXANDRA M & PURCELLA SCOTT E
11215 SW APALACHEE ST
TUALATIN, OR 97062

PUTNAM DAVID L JR & PUTNAM HEIDI F
17770 SW 112TH AVE
TUALATIN, OR 97062

PYRCH LAUREN & THOMASSEN AARON JENS
10640 SW BANNOCH ST
TUALATIN, OR 97062

RADECKI SHAUN MICHAEL & RADECKI JESSICA ELLEN
17370 SW 108TH PL
TUALATIN, OR 97062

RADER SAM A & RADER ANDREA S
11445 SW KALISPELL ST
TUALATIN, OR 97062

RAMSBY MILLS TRUST
10500 SW STARR DR
TUALATIN, OR 97062

RANDALL LAWRENCE L & SANDOVAL-RANDALL C SUSIE
11440 SW HAZELBROOK RD
TUALATIN, OR 97062

RAXTER NORA SUSAN
10476 SW PUEBLO ST
TUALATIN, OR 97062

RICE DOUGLAS S
17820 SW 111TH AVE
TUALATIN, OR 97062

RICHARDS EMMETT L & RICHARDS MARY C & RICHARDS SHELLEY D
15247 WILBUR RD
LA CONNER, WA 98257

RICHARDSON DEVIN & RICHARDSON TAMI ANN
11100 SW WINYA CT
TUALATIN, OR 97062

RICHEY LELAND R & RICHEY VALERIE J FAMILY TRUST
17911 SW 105TH CT
TUALATIN, OR 97062

RIRIE LIVING TRUST
11015 SW LUCAS DR
TUALATIN, OR 97062

RIVER RIDGE APARTMENTS OWNER LLC
701 FIFTH AVE STE 5700
SEATTLE, WA 98104

RIVER RIDGE APARTMENTS OWNER LLC
701 FIFTH AVE STE 5700
SEATTLE, WA 98104

RIVERA AURELIO GOMEZ
17865 SW 113TH AVE
TUALATIN, OR 97062

ROBBINS FAMILY REVOCABLE TRUST
17420 SW 110TH AVE
TUALATIN, OR 97062

ROBERTS BLAINE N
17980 SW 111TH AVE
TUALATIN, OR 97062

ROBERTS JULIE A
17890 SW 114TH AVE
TUALATIN, OR 97062

ROBINSON RONALD L & ROBINSON MICHELLE
17976 SW 106TH AVE
TUALATIN, OR 97062

ROE FAMILY TRUST
620 SAND HILL RD #213F
PALO ALTO, CA 94304

RUDY CHARLES & RUDY STACY
17385 SW 108TH PL
TUALATIN, OR 97062

RUVALCABA CHRIS & RUVALCABA ESTHER
10529 SW PUEBLO ST
TUALATIN, OR 97062

RYAN DAIN & RYAN LEE
11470 SW KALISPELL ST
TUALATIN, OR 97062

RYAN MICHAEL
11075 SW WILSHRAM CT
TUALATIN, OR 97062

RYMAL CHARLES & RYMAL JESSICA
17920 SW 114TH AVE
TUALATIN, OR 97062

SABETI RAMIN
17835 SW PACIFIC HWY
TUALATIN, OR 97062

SABRA HEALTH CARE HOLDINGS III LLC
10220 SW GREENBURG RD #201
PORTLAND, OR 97223

SATTLER BRIAN L & WALCZYK KERRY M
10615 SW PUEBLO CT
TUALATIN, OR 97062

SAVASTA THOMAS
11355 SW KALISPELL ST
TUALATIN, OR 97062

SCHAEFER SETH & SCHAEFER RENEE
10710 SW BANNOCH ST
TUALATIN, OR 97062

SCHENK JOANNE & ROGER REV LIV TRUST
10555 SW LUCAS CT
TUALATIN, OR 97062

SCHLACHTER KEVIN M & SCHLACHTER RENEE
17570 SW 108TH PL
TUALATIN, OR 97062

SCHLOETTER ERIN RENAE BATES
17845 SW 111TH AVE
TUALATIN, OR 97062

SCHOENHEIT JOHN & SCHOENHEIT KAITLIN J
17890 SW 109TH AVE
TUALATIN, OR 97062

SHEN PING LU
17460 SW 104TH AVE
TUALATIN, OR 97062

SHERFINSKI MICHAEL R
11195 SW GARRETT ST
TUALATIN, OR 97062

SHERMAN JENNIFER A TRUST
17740 SW 110TH AVE
TUALATIN, OR 97062

SHERWOOD NICOLE D
17850 SW 111TH AVE
TUALATIN, OR 97062

SHETLER STACY A & SHETLER JOANNA L
11080 SW LUCAS DR
TUALATIN, OR 97062

SMITH LESTER MICHAEL & SMITH JOAN MARIE
10990 SW BANNOCH ST
TUALATIN, OR 97062

SMITH WILLIAM E & SHEARER-SMITH SARAH K
17989 SW 110TH PL
TUALATIN, OR 97062

SPENCER FAMILY REV TRUST
17920 SW 109TH AVE
TUALATIN, OR 97062

SPRENG FREDERICK IV & BACHUS DESTINY & PUROL KATHLEEN & RAYMOND
17570 SW 106TH AVE
TUALATIN, OR 97062

STANTON ANDREW & STANTON ASHLEY
17780 SW 111TH AVE
TUALATIN, OR 97062

STEINER LARRY D SURVIVORS TRUST
17420 SW 108TH PL
TUALATIN, OR 97062

STEINMETZ JON & JEANETTE TRUST
17735 SW 112TH AVE
TUALATIN, OR 97062

STORI SADRUDDIN
11340 SW APALACHEE ST
TUALATIN, OR 97062

STRENGTH GREG M & STRENGTH MARGO D
17870 SW 109TH AVE
TUALATIN, OR 97062

STRIBLING DAVID L & STRIBLING AMANDA L
10920 SW TUNICA ST
TUALATIN, OR 97062

STRICKLER LAUREL R & STRICKLER ADAM J
11025 SW WISHRAM CT
TUALATIN, OR 97062

STRINGFELLOW GAYLE
11140 SW GARRETT ST
TUALATIN, OR 97062

SULLIVAN SHANON LEE
11150 SW APALACHEE ST
TUALATIN, OR 97062

SULLIVAN WAIKEN L & SULLIVAN JENNIFER
17705 SW 112TH AVE
TUALATIN, OR 97062

SWAFFORD DOUGLAS G & SINCERE MIRIAM A
17715 SW 110TH AVE
TUALATIN, OR 97062

SYNDER BROOKE & CHANDLER KYLE
10573 SW PUEBLO ST
TUALATIN, OR 97062

TALLENT DOMINIC JAMES & TALLENT HEINI
11115 SW WINYA CT
TUALATIN, OR 97062

TERJESON JOHN
17840 SW 112TH AVE
TUALATIN, OR 97062

TEUTSCH LISA ELIZABETH & AIELLO DAX
17800 SW 110TH AVE
TUALATIN, OR 97062

TIEDEMANN CHRISTINA ANNE
17885 SW 112TH AVE
TUALATIN, OR 97062

TIGARD-TUALATIN SCHOOL DISTRICT #23J
6960 SW SANDBURG ST
TIGARD, OR 97223

TOWLE CORDES K & KRAEMER JILL J
15045 SW 141ST AVE
TIGARD, OR 97224

TREBELHORN DEAN B & TREBELHORN LINDA V
11040 SW WISHRAM CT
TUALATIN, OR 97062

TREMAIN JUNE E TRUST
10735 SW BANNOCH ST
TUALATIN, OR 97062

TROTMAN TRUST
10799 SW KIOWA CT
TUALATIN, OR 97062

TUALATIN CITY OF DEVELOPMENT COMMISSION
18880 SW MARTINAZZI AVE
TUALATIN, OR 97062

TUALATIN CITY OF
PO BOX 723597
ATLANTA, GA 31139

TUALATIN TETON LLC
621 SW ALDER ST STE 800
PORTLAND, OR 97205

VALDENEGRO GILLIAN F TRUST
17981 SW C ER ERGHINO LN
SHERWOOD, OR 97140

VANHORN MARK G & DIANA L LIV TRUST
17960 SW 109TH AVE
TUALATIN, OR 97062

VANN KEN & VANN CHRISTINA M
17480 SW 105TH AVE
TUALATIN, OR 97062

VT TRUST
17989 SW 105TH CT
TUALATIN, OR 97062

WAGGONER LOREN M & WAGGONER CYNTHIA J
11430 SW ELMER CT
TUALATIN, OR 97062

WAGNER LINDA G PHD
17945 SW 110TH AVE
TUALATIN, OR 97062

WALK DAVID ALLAN & WALK WANDA VAI
17855 SW 112TH AVE
TUALATIN, OR 97062

WASHINGTON COUNTY FACILITIES MGMT
169 N 1ST AVE #42
HILLSBORO, OR 97124

WATT REBECCA SUE
17880 SW 109TH AVE
TUALATIN, OR 97062

WATTS MARK A & WATTS APRYLE
11400 SW ROBERTS CT
TUALATIN, OR 97062

WAVE PROPERTY HOLDINGS LLC
35 PANORAMA CREST AVE
LAS VEGAS, NV 89135

WEBSTER CHARLES N & WEBSTER KAREN A
11385 SW KALISPELL ST
TUALATIN, OR 97062

WEICHOLD STEPHEN & WEICHOLD SHARRON & WEICHOLD WILLIAM
17900 SW 112TH AVE
TUALATIN, OR 97062

WEITMAN LIVING TRUST
10666 SW BANNOCH ST
TUALATIN, OR 97062

WEN-SHU LIU
17885 SW 114TH AVE
TUALATIN, OR 97062

WEST PHYLLIS ELAINE
17930 SW 111TH AVE
TUALATIN, OR 97062

WESTPHAL FAMILY TRUST
10100 SW HIGHLAND DR
TIGARD, OR 97224

WETHERN LINDA J IRREVOCABLE TRUST
17595 SW SEIFFERT RD
SHERWOOD, OR 97140

WHITE CURTIS & WHITE DEBRA L
17880 SW 115TH AVE
TUALATIN, OR 97062

WIGGINS JEAN E TRUST
11065 SW WINTU CT
TUALATIN, OR 97062

WILLIAMS MATTHEW STEVEN
10655 SW PUEBLO CT
TUALATIN, OR 97062

WILLIAMS VERONICA L
10540 SW KIOWA ST
TUALATIN, OR 97062

WILLIAMS DAVE A & WILLIAMS KIMBERLY R
11050 SW WINTU CT
TUALATIN, OR 97062

WILLON MARK & PAM TRUST
17850 SW 110TH AVE
TUALATIN, OR 97062

WILLY LUMP LUMP LLC
4500 SW ADVANCE RD
WILSONVILLE, OR 97070

WILSON CONSTANCE J TRUST
10530 SW LUCAS CT
TUALATIN, OR 97062

WINKLER MISTY D & REGISTER JEAN
10515 SW BANNOCH CT
TUALATIN, OR 97062

WISNER RANDOLPH R & DEBBIE R LIV TRUST
17600 SW 110TH AVE
TUALATIN, OR 97062

WOLFE GEORGE A & WOLFE ANDREA H
10420 SW KELLOGG DR
TUALATIN, OR 97062

WOLLEY KEVIN & WOLLEY JANE
11055 SW WISHRAM CT
TUALATIN, OR 97062

WOODRIDGE LP
THREE CENTERPOINTE DR #130
LAKE OSWEGO, OR 97035

WORLEY LAURA & SPIEGEL JOEL
10475 SW KELLOGG DR
TUALATIN, OR 97062

WRIGHT RALPH RICHARD & LYNDA RAE LIV TRUST
11040 SW WINYA CT
TUALATIN, OR 97062

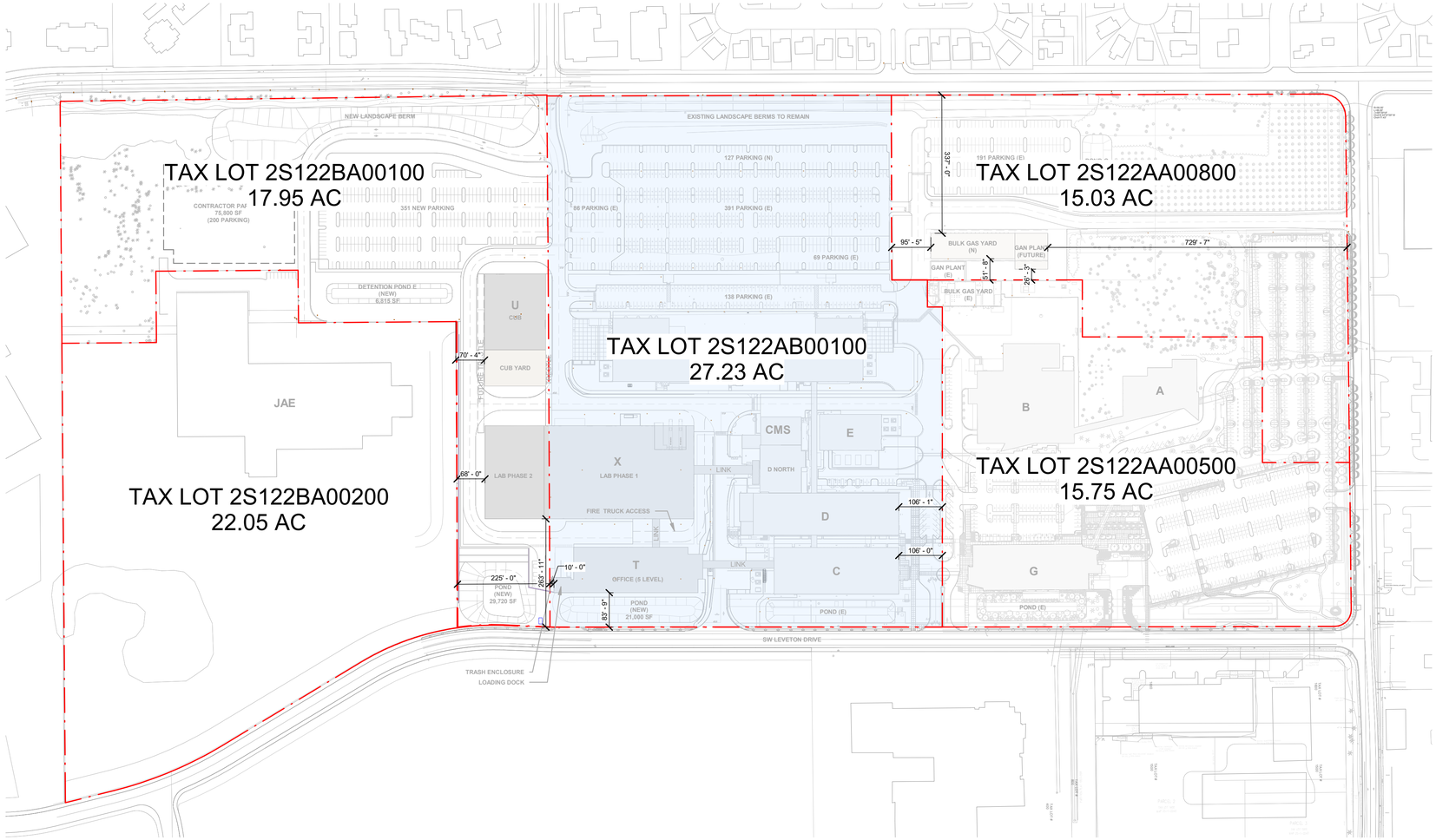
WYLLER LIV TRUST
613 NW MT MAZAMA ST
MCMINNVILLE, OR 97128

YAM ASA
11050 SW LUCAS DR
TUALATIN, OR 97062

YANG HAOWEI
17925 SW 114TH AVE
TUALATIN, OR 97062

YODER MATTHEW & YODER CARRIE
10332 SW PUEBLO ST
TUALATIN, OR 97062

ZIENKIEWICZ MIKE & ZIENKIEWICZ STEPHANIE
10510 SW LUCAS CT
TUALATIN, OR 97062



LEGEND

EXISTING PROPERTY LINE

TOTAL SITE AREA: 75.96 AC

Jacobs
Portland Office
2020 S.W. 4th Avenue, 3rd Floor
Portland, Oregon 97201

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Planning • Engineering

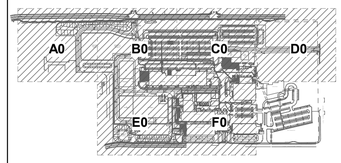
CORBIN
CONSULTING ENGINEERS

Portland, OR
503.224.9560
Vancouver, WA
360.695.7879
Seattle, WA
206.749.9993
www.mackenzie.inc
MACKENZIE.

JACOBS PROJECT No.:	CLIENT PROJECT No.:
D3822800	
DRAWN:	REVIEWED:
DESIGNED:	APPROVED:
NOTICE:	STAMP:

ARCHITECTURAL REVIEW
9/16/2024
(NOT FOR CONSTRUCTION)

NO	REVISION OR ISSUE	DATE	BY



NORTH

SITE

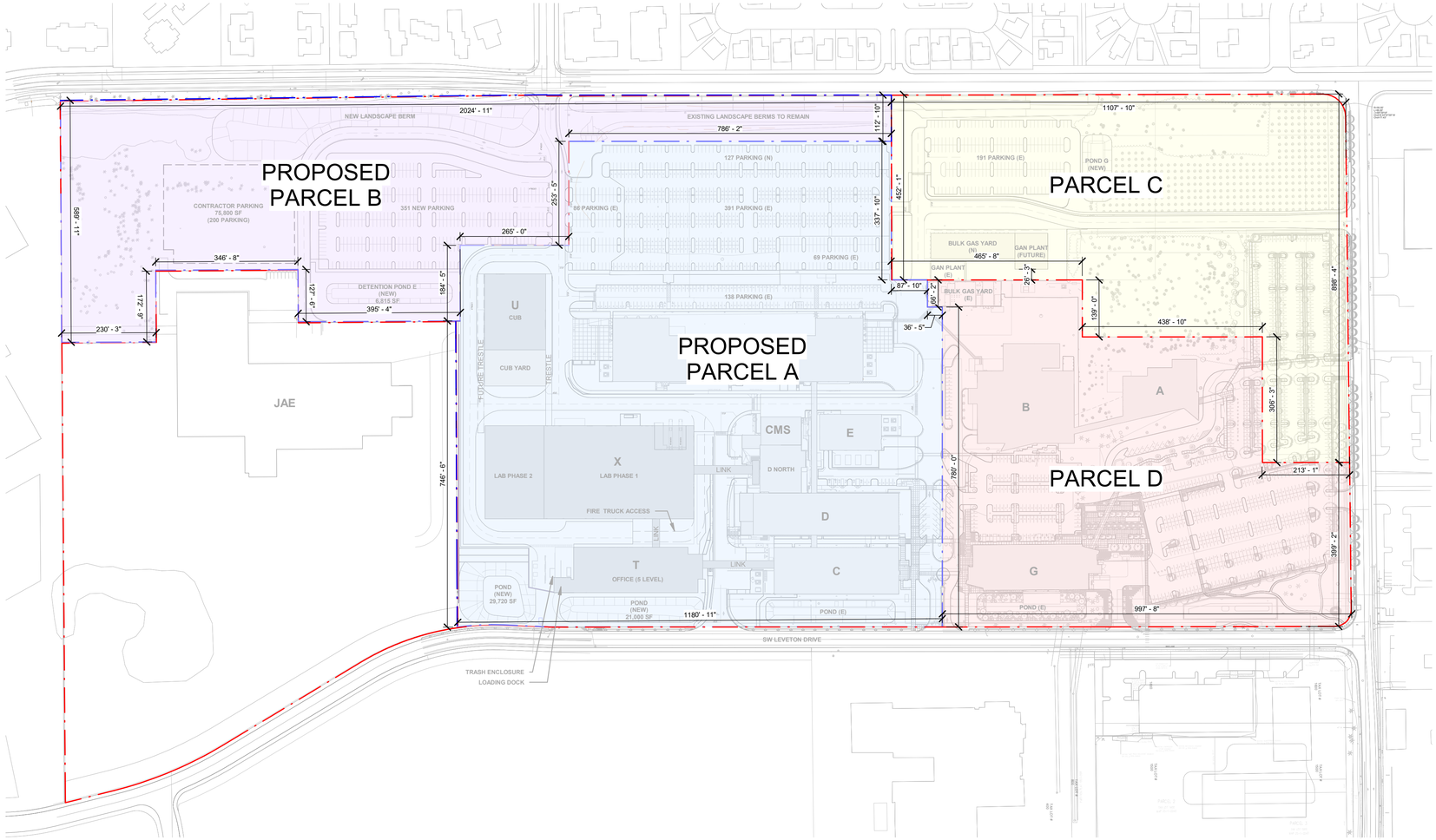
Lam RESEARCH
Lam Research Corporation
4400 CUSHING PARKWAY
FREMONT, CA 94538

TITLE:
PROPERTY LINE EXHIBIT

DATE ISSUED:
DRAWING SCALE: 1" = 160'-0"
REVIT FILE:
BUILDING DESIGNATOR:

DRAWING NUMBER:
SA0-0010

PATH: Autodesk Docs://US
DATE: 9/25/2024 12:59:00 PM



LEGEND

- EXISTING PROPERTY LINE
- PROPERTY LINE ADJUSTMENT
- PROPOSED PARCEL A - 29.52 AC
- PROPOSED PARCEL B - 15.66 AC
- PARCEL C - 15.03 AC
- PARCEL D - 15.75 AC

TOTAL SITE AREA: 75.96 AC

Jacobs
Portland Office
2020 S.W. 4th Avenue, 3rd Floor
Portland, Oregon 97201

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Planning • Engineering

CORBIN
CONSULTING ENGINEERS

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Vancouver, WA
360.695.7879
Seattle, WA
206.749.9993
www.mackenzie.inc
MACKENZIE.

JACOBS PROJECT No.:	CLIENT PROJECT No.:
D3822800	
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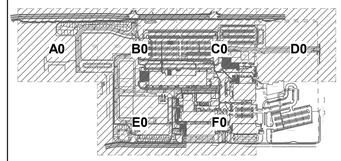
ARCHITECTURAL REVIEW
9/16/2024
(NOT FOR CONSTRUCTION)

NO	REVISION OR ISSUE	DATE	BY



NORTH

SITE

Lam RESEARCH
Lam Research Corporation
4400 CUSHING PARKWAY
FREMONT, CA 94538

TITLE:
PROPERTY LINE ADJUSTMENT EXHIBIT

DATE ISSUED:	DRAWING SCALE: 1" = 160'-0"
REVIT FILE:	BUILDING DESIGNATOR:

DRAWING NUMBER:
SA0-0011

PATH: Autodesk Docs://US
OR_D3822800_LAM Research
Corp_Tualatin Expansion
TUX/LAM-SMP-AD-DM-JAC.rvt

DATE: 9/26/2024 5:20:17 PM

AFFIDAVIT OF MAILING

STATE OF OREGON)

) ss

COUNTY OF WASHINGTON)

I, Lindsey Hagerman being first duly sworn, depose and say:

That on the 16 day of December, I served upon the persons shown on Exhibit A, attached hereto and by this reference incorporated herein, a copy of a Notice of Hearing/Application/Decision marked Exhibit B, attached hereto and by this reference incorporated herein, by mailing to them a true and correct copy of the original hereof. I further certify that the addresses reflect information received from the relevant party or agency, and that said envelopes were placed in the United States Mail at Tualatin, Oregon, prepared to receive postage administered by city staff.

Dated this 16 of, December 2024 Lindsey Hagerman

Signature

SUBSCRIBED AND SWORN to before me this 12/16/2024

Notary Public for Oregon

My commission expires: 10/02/2027

RE: IMP24-0001 AR24-0002 NOTICE OF HEARING

OFFICIAL STAMP
AGATHA LEIGH BURKE
NOTARY PUBLIC - OREGON
COMMISSION NO. 1041046
MY COMMISSION EXPIRES OCTOBER 02, 2027

TLID	OWNER1	OWNERADDR	OWNERCITY	OWNERST	OWNERZIP
2S115DD08300	ZIENKIEWICZ MIKE & ZIENKIEWICZ STEPHANIE	10510 SW LUCAS CT	TUALATIN	OR	97062
2S115DD18500	ZEIN ZEINA	7575 SW ELMWOOD ST	TIGARD	OR	97223
2S115DC10600	YANG HAOWEI	17925 SW 114TH AVE	TUALATIN	OR	97062
2S115DD17400	WYLLER LIV TRUST	613 NW MT MAZAMA ST	MCMINNVILLE	OR	97128
2S115DD18000	WRIGHT RALPH RICHARD & LYNDA RAE LIV TRUST	11040 SW WINYA CT	TUALATIN	OR	97062
2S114CB02700	WORLEY LAURA & SPIEGEL JOEL	10475 SW KELLOGG DR	TUALATIN	OR	97062
2S115CC00100	WOODRIDGE LP	THREE CENTERPOINTE DR #130	LAKE OSWEGO	OR	97035
2S115CC00200	WOODRIDGE LP	THREE CENTERPOINTE DR #130	LAKE OSWEGO	OR	97035
2S115DD11500	WOLLEY KEVIN & WOLLEY JANE	11055 SW WISHRAM CT	TUALATIN	OR	97062
2S114CB01800	WOLFE GEORGE A & WOLFE ANDREA H	10420 SW KELLOGG DR	TUALATIN	OR	97062
2S115DD16500	WISNER RANDOLPH R & DEBBIE R LIV TRUST	17600 SW 110TH AVE	TUALATIN	OR	97062
2S115DD06600	WINKLER MISTY D & REGISTER JEAN	10515 SW BANNOCH CT	TUALATIN	OR	97062
2S115DD08200	WILSON CONSTANCE J TRUST	10530 SW LUCAS CT	TUALATIN	OR	97062
2S122AD00600	WILLY LUMP LUMP LLC	4500 SW ADVANCE RD	WILSONVILLE	OR	97070
2S122AD00700	WILLY LUMP LUMP LLC	4500 SW ADVANCE RD	WILSONVILLE	OR	97070
2S122AD00800	WILLY LUMP LUMP LLC	4500 SW ADVANCE RD	WILSONVILLE	OR	97070
2S115DD16000	WILLON MARK & PAM TRUST	17850 SW 110TH AVE	TUALATIN	OR	97062
2S115DD02200	WILLIAMS MATTHEW STEVEN	10655 SW PUEBLO CT	TUALATIN	OR	97062
2S115DD07300	WILLIAMS VERONICA L	10540 SW KIOWA ST	TUALATIN	OR	97062
2S115DD10500	WILLIAMS DAVE A & WILLIAMS KIMBERLY R	11050 SW WINTU CT	TUALATIN	OR	97062
2S115DD10700	WIGGINS JEAN E TRUST	11065 SW WINTU CT	TUALATIN	OR	97062
2S115DC90004	WHITE CURTIS & WHITE DEBRA L	17880 SW 115TH AVE	TUALATIN	OR	97062
2S115DA01800	WETHERN LINDA J IRREVOCABLE TRUST	17595 SW SEIFFERT RD	SHERWOOD	OR	97140
2S115DC07500	WESTPHAL FAMILY TRUST	10100 SW HIGHLAND DR	TIGARD	OR	97224
2S115DC03800	WEST PHYLLIS ELAINE	17930 SW 111TH AVE	TUALATIN	OR	97062
2S115DC10400	WEN-SHU LIU	17885 SW 114TH AVE	TUALATIN	OR	97062
2S115DD04600	WEITMAN LIVING TRUST	10666 SW BANNOCH ST	TUALATIN	OR	97062
2S115DC07000	WEICHOLD STEPHEN & WEICHOLD SHARRON & WEICHOLD WIL	17900 SW 112TH AVE	TUALATIN	OR	97062
2S115DC09000	WEBSTER CHARLES N & WEBSTER KAREN A	11385 SW KALISPELL ST	TUALATIN	OR	97062
2S123BB90001	WAVE PROPERTY HOLDINGS LLC	35 PANORAMA CREST AVE	LAS VEGAS	NV	89135
2S115DC01800	WATTS MARK A & WATTS APRYLE	11400 SW ROBERTS CT	TUALATIN	OR	97062
2S115DD12700	WATT REBECCA SUE	17880 SW 109TH AVE	TUALATIN	OR	97062
2S1220000500	WASHINGTON COUNTY FACILITIES MGMT	169 N 1ST AVE #42	HILLSBORO	OR	97124
2S115DC07700	WALK DAVID ALLAN & WALK WANDA VAI	17855 SW 112TH AVE	TUALATIN	OR	97062
2S115DD10300	WAGNER LINDA G PHD	17945 SW 110TH AVE	TUALATIN	OR	97062
2S115DC01000	WAGGONER LOREN M & WAGGONER CYNTHIA J	11430 SW ELMER CT	TUALATIN	OR	97062
2S115DD01000	VT TRUST	17989 SW 105TH CT	TUALATIN	OR	97062
2S114CB01400	VANN KEN & VANN CHRISTINA M	17480 SW 105TH AVE	TUALATIN	OR	97062
2S115DD13300	VANHORN MARK G & DIANA L LIV TRUST	17960 SW 109TH AVE	TUALATIN	OR	97062

2S115DD02600	VALDENEGRO GILLIAN F TRUST	17981 SW C ER ERGHINO LN	SHERWOOD	OR	97140
2S115DA03900	TUALATIN CITY OF DEVELOPMENT COMMISSION	18880 SW MARTINAZZI AVE	TUALATIN	OR	97062
2S115DA05300	TUALATIN CITY OF DEVELOPMENT COMMISSION	18880 SW MARTINAZZI AVE	TUALATIN	OR	97062
2S115DA05400	TUALATIN CITY OF DEVELOPMENT COMMISSION	18880 SW MARTINAZZI AVE	TUALATIN	OR	97062
2S115DC08200	TUALATIN CITY OF DEVELOPMENT COMMISSION	18880 SW MARTINAZZI AVE	TUALATIN	OR	97062
2S115DC12400	TUALATIN CITY OF DEVELOPMENT COMMISSION	18880 SW MARTINAZZI AVE	TUALATIN	OR	97062
2S115DD14600	TUALATIN CITY OF DEVELOPMENT COMMISSION	18880 SW MARTINAZZI AVE	TUALATIN	OR	97062
2S115DD18700	TUALATIN CITY OF DEVELOPMENT COMMISSION	18880 SW MARTINAZZI AVE	TUALATIN	OR	97062
2S115DD18800	TUALATIN CITY OF DEVELOPMENT COMMISSION	18880 SW MARTINAZZI AVE	TUALATIN	OR	97062
2S115DD20200	TUALATIN CITY OF DEVELOPMENT COMMISSION	18880 SW MARTINAZZI AVE	TUALATIN	OR	97062
2S115DD20300	TUALATIN CITY OF DEVELOPMENT COMMISSION	18880 SW MARTINAZZI AVE	TUALATIN	OR	97062
2S1220000800	TUALATIN CITY OF DEVELOPMENT COMMISSION	18880 SW MARTINAZZI AVE	TUALATIN	OR	97062
2S122AD00200	TUALATIN CITY OF	PO BOX 723597	ATLANTA	GA	31139
2S123B000602	TUALATIN TETON LLC	621 SW ALDER ST STE 800	PORTLAND	OR	97205
2S115DD05700	TROTMAN TRUST	10799 SW KIOWA CT	TUALATIN	OR	97062
2S115DD05000	TREMAIN JUNE E TRUST	10735 SW BANNOCH ST	TUALATIN	OR	97062
2S115DD11100	TREBELHORN DEAN B & TREBELHORN LINDA V	11040 SW WISHRAM CT	TUALATIN	OR	97062
2S115D001400	TIGARD-TUALATIN SCHOOL DISTRICT #23J	6960 SW SANDBURG ST	TIGARD	OR	97223
2S115DC07800	TIEDEMANN CHRISTINA ANNE	17885 SW 112TH AVE	TUALATIN	OR	97062
2S115DD16100	TEUTSCH LISA ELIZABETH & AIELLO DAX	17800 SW 110TH AVE	TUALATIN	OR	97062
2S123BB90000	TETON INDUSTRIAL CONDO OWNERS OF ALL UNITS			OR	00000
2S115DC07300	TERJESON JOHN	17840 SW 112TH AVE	TUALATIN	OR	97062
2S115DD17600	TALLENT DOMINIC JAMES & TALLENT HEINI	11115 SW WINYA CT	TUALATIN	OR	97062
2S115DD03100	SYNDER BROOKE & CHANDLER KYLE	10573 SW PUEBLO ST	TUALATIN	OR	97062
2S115DD18400	SWAFFORD DOUGLAS G & SINCERE MIRIAM A	17715 SW 110TH AVE	TUALATIN	OR	97062
2S115DC03300	SULLIVAN SHANON LEE	11150 SW APALACHEE ST	TUALATIN	OR	97062
2S115DC05400	SULLIVAN WAIKEN L & SULLIVAN JENNIFER	17705 SW 112TH AVE	TUALATIN	OR	97062
2S115DC05900	STRINGFELLOW GAYLE	11140 SW GARRETT ST	TUALATIN	OR	97062
2S115DD11700	STRICKLER LAUREL R & STRICKLER ADAM J	11025 SW WISHRAM CT	TUALATIN	OR	97062
2S115DD13700	STRIBLING DAVID L & STRIBLING AMANDA L	10920 SW TUNICA ST	TUALATIN	OR	97062
2S115DD12600	STRENGTH M D TRUST	17870 SW 109TH AVE	TUALATIN	OR	97062
2S115DC11100	STORI SADRUDDIN	11340 SW APALACHEE ST	TUALATIN	OR	97062
2S115DA03300	STEINER LARRY D SURVIVORS TRUST	17420 SW 108TH PL	TUALATIN	OR	97062
2S115DC05500	STEINMETZ JON & JEANETTE TRUST	17735 SW 112TH AVE	TUALATIN	OR	97062
2S115DC04400	STANTON ANDREW & STANTON ASHLEY	17780 SW 111TH AVE	TUALATIN	OR	97062
2S115DD09000	SPRENG FREDERICK IV & BACHUS DESTINY & PUROL KATHLEE	17570 SW 106TH AVE	TUALATIN	OR	97062
2S115DD13000	SPENCER FAMILY REV TRUST	17920 SW 109TH AVE	TUALATIN	OR	97062
2S115DD14200	SMITH LESTER MICHAEL & SMITH JOAN MARIE	10990 SW BANNOCH ST	TUALATIN	OR	97062
2S115DD19700	SMITH WILLIAM E & SHEARER-SMITH SARAH K	17989 SW 110TH PL	TUALATIN	OR	97062
2S115DD18600	SHETLER STACY A & SHETLER JOANNA L	11080 SW LUCAS DR	TUALATIN	OR	97062

2S115DC04100	SHERWOOD NICOLE D	17850 SW 111TH AVE	TUALATIN	OR	97062
2S115DD16300	SHERMAN JENNIFER A TRUST	17740 SW 110TH AVE	TUALATIN	OR	97062
2S115DC05300	SHERFINSKI MICHAEL R	11195 SW GARRETT ST	TUALATIN	OR	97062
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2S115DC06400	SCHLOETTER ERIN RENAE BATES	17845 SW 111TH AVE	TUALATIN	OR	97062
2S115DD15300	SCHLACHTER KEVIN M & SCHLACHTER RENEE	17570 SW 108TH PL	TUALATIN	OR	97062
2S115DD08500	SCHENK JOANNE & ROGER REV LIV TRUST	10555 SW LUCAS CT	TUALATIN	OR	97062
2S115DD04700	SCHAEFER SETH & SCHAEFER RENEE	10710 SW BANNOCH ST	TUALATIN	OR	97062
2S115DC08900	SAVASTA THOMAS	11355 SW KALISPELL ST	TUALATIN	OR	97062
2S115DD02800	SATTLER BRIAN L & WALCZYK KERRY M	10615 SW PUEBLO CT	TUALATIN	OR	97062
2S115DC02500	SABRA HEALTH CARE HOLDINGS III LLC	10220 SW GREENBURG RD #201	PORTLAND	OR	97223
2S115C002190	SABETI RAMIN	17835 SW PACIFIC HWY	TUALATIN	OR	97062
2S115C002192	SABETI RAMIN	17835 SW PACIFIC HWY	TUALATIN	OR	97062
2S115DC12300	RYMAL CHARLES & RYMAL JESSICA	17920 SW 114TH AVE	TUALATIN	OR	97062
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2S115DD11400	RYAN MICHAEL	11075 SW WILSHRAM CT	TUALATIN	OR	97062
2S115DD03300	RUVALCABA CHRIS & RUVALCABA ESTHER	10529 SW PUEBLO ST	TUALATIN	OR	97062
2S115DA03700	RUDY CHARLES & RUDY STACY	17385 SW 108TH PL	TUALATIN	OR	97062
2S115DC05200	ROE FAMILY TRUST	620 SAND HILL RD #213F	PALO ALTO	CA	94304
2S115DD01300	ROBINSON RONALD L & ROBINSON MICHELLE	17976 SW 106TH AVE	TUALATIN	OR	97062
2S115DC03600	ROBERTS BLAINE N	17980 SW 111TH AVE	TUALATIN	OR	97062
2S115DC12200	ROBERTS JULIE A	17890 SW 114TH AVE	TUALATIN	OR	97062
2S115DA04200	ROBBINS FAMILY REVOCABLE TRUST	17420 SW 110TH AVE	TUALATIN	OR	97062
2S115C002200	RIVER RIDGE APARTMENTS OWNER LLC	701 FIFTH AVE STE 5700	SEATTLE	WA	98104
2S115C002300	RIVER RIDGE APARTMENTS OWNER LLC	701 FIFTH AVE STE 5700	SEATTLE	WA	98104
2S115DC11600	RIVERA AURELIO GOMEZ	17865 SW 113TH AVE	TUALATIN	OR	97062
2S114CC06000	RICHEY LELAND R & RICHEY VALERIE J FAMILY TRUST	17911 SW 105TH CT	TUALATIN	OR	97062
2S115DD07800	RICHARDS EMMETT L & RICHARDS MARY C & RICHARDS SHELL	15247 WILBUR RD	LA CONNER	WA	98257
2S115DD17800	RICHARDSON DEVIN & RICHARDSON TAMI ANN	11100 SW WINYA CT	TUALATIN	OR	97062
2S115DC04200	RICE DOUGLAS S	17820 SW 111TH AVE	TUALATIN	OR	97062
2S114CC05300	RAXTER NORA SUSAN	10476 SW PUEBLO ST	TUALATIN	OR	97062
2S115DC00200	RANDALL LAWRENCE L & SANDOVAL-RANDALL C SUSIE	11440 SW HAZELBROOK RD	TUALATIN	OR	97062
2S115DD09200	RAMSBY MILLS TRUST	10500 SW STARR DR	TUALATIN	OR	97062
2S115DC09300	RADER SAM A & RADER ANDREA S	11445 SW KALISPELL ST	TUALATIN	OR	97062
2S115DA03400	RADECKI SHAUN MICHAEL & RADECKI JESSICA ELLEN	17370 SW 108TH PL	TUALATIN	OR	97062
2S115DD04500	PYRCH LAUREN & THOMASSEN AARON JENS	10640 SW BANNOCH ST	TUALATIN	OR	97062
2S114CC06200	PYLE DAVID NORMAN	16869 SW 65TH AVE #2	LAKE OSWEGO	OR	97035
2S115DC05700	PUTNAM DAVID L JR & PUTNAM HEIDI F	17770 SW 112TH AVE	TUALATIN	OR	97062
2S115DC08000	PURCELLA ALEXANDRA M & PURCELLA SCOTT E	11215 SW APALACHEE ST	TUALATIN	OR	97062

2S115DD11300	PRICE DAVID A & PRICE JENNIFER K	11080 SW WISHRAM CT	TUALATIN	OR	97062
2S115DD01600	PR 17995 SW 106TH LLC	8925 SW IOWA DR	TUALATIN	OR	97062
2S115DD19800	POUR ALI FROTAN & ESFANDIARPOUR SAMANEH	17995 SW 110TH PL	TUALATIN	OR	97062
2S115DC01400	POINTS YU SUN	11465 SW ROBERTS CT	TUALATIN	OR	97062
2S115DD08900	PLAMBECK CAROL R	10600 SW STARR DR	TUALATIN	OR	97062
2S1220000300	PHIGHT LLC	ONE BOWERMAN DR	BEAVERTON	OR	97005
2S115DA02000	PEUSER NILS ARNE & PEUSER NICOLE	17380 SW 106TH CT	TUALATIN	OR	97062
2S115DC06600	PETERSON JACOB CURTIS & PETERSON JULIE DAWN	17925 SW 111TH AVE	TUALATIN	OR	97062
2S114CC06800	PENNIMAN STEVEN K & PHYLLIS D REV LIV TRUST	8374 VEREDA DEL PADRE	GOLETA	CA	93117
2S114CB01700	PAYNE DANIEL J & PAYNE JANET M	10440 SW KELLOGG DR	TUALATIN	OR	97062
2S115DD16600	PARSONS KIMBERLY MARIE & PARSONS BENJAMIN JAMES	17580 SW 110TH AVE	TUALATIN	OR	97062
2S115DC01200	PARKER SARAH D & PARKER WILEY	11480 SW ELMER CT	TUALATIN	OR	97062
2S115DC12000	PARKER MARION M	17830 SW 114TH AVE	TUALATIN	OR	97062
2S114CC06300	PARK KRISTEN	17902 SW 105TH CT	TUALATIN	OR	97062
2S115DD00800	PARK DANIEL K & PARK ANNA K	9333 SW NEZ PERCE CT	TUALATIN	OR	97062
2S115DD18200	PAPAS EDITH ELIZABETH	11055 SW WINYA CT	TUALATIN	OR	97062
2S115DD13100	PAIGE LIV TRUST	17940 SW 109TH AVE	TUALATIN	OR	97062
2S122BB00100	PACIFIC FINANCIAL CENTER LLC	4200 S HULEN ST STE 410	FORT WORTH	TX	76109
2S115DD12400	OWEN GREGORY L & OWEN DEBORAH L	17885 SW 109TH AVE	TUALATIN	OR	97062
2S115DD07900	ORLANES JONATHAN	10620 SW LUCAS DR	TUALATIN	OR	97062
2S115DC00700	OLSON LIVING TRUST	11435 SW ELMER CT	TUALATIN	OR	97062
2S115DD17700	OLSON DOUGLAS E & OLSON KIMBERLY R	11130 SW WINYA CT	TUALATIN	OR	97062
2S115DC04800	NUNLEY RICHARD V III	11105 SW GARRETT ST	TUALATIN	OR	97062
2S115DD08000	NUCHOLS MEAGAN & CHASE MARCUS	10580 SW LUCAS CT	TUALATIN	OR	97062
2S115DA03200	NORDEN PAUL & JEANINE LIV TRUST	17440 SW 108TH PL	TUALATIN	OR	97062
2S115DC01500	NGUYEN CATHY H	11485 SW ROBERTS CT	TUALATIN	OR	97062
2S115DD14400	NEWTON DAVID & E SUZANNE JOINT TRUST	10950 SW BANNOCH ST	TUALATIN	OR	97062
2S115DC11200	NAJERA KENE S & BUSTOS ESMERALDA RODRIGUEZ	12288 SW FUJI CT	TIGARD	OR	97224
2S115DD10800	MUSTEDANAGIC ADIS & MUSTEDANAGIC ALISA	11045 SW WINTU CT	TUALATIN	OR	97062
2S115DD19300	MURO MONICA D	11011 SW TUALATIN RD	TUALATIN	OR	97062
2S115DC09500	MURMAN CORY D & MURMAN TAMIKO A	11485 SW KALISPELL ST	TUALATIN	OR	97062
2S115DD06200	MUNSON JAMES L & PAMELA B REV LIV TRUST	10600 SW KIOWA ST	TUALATIN	OR	97062
2S115DC07600	MUIR JOHN S & ACHILOVA LOLA	17795 SW 112TH AVE	TUALATIN	OR	97062
2S114CC06600	MOWERY DANA KAY	17948 SW 105TH CT	TUALATIN	OR	97062
2S114CC06400	MORRISSEY FAMILY TRUST	17924 SW 105TH CT	TUALATIN	OR	97062
2S115DD13800	MORRELL LIVING TRUST	10915 SW TUNICA ST	TUALATIN	OR	97062
2S115DD12000	MORAN STEVEN TIMOTHY & MORAN ASHLEY SCHNAPP	17870 SW 110TH AVE	TUALATIN	OR	97062
2S115DD06300	MOORE KERRI ANN & MOORE CHRISTOHER	10619 SW BANNOCH CT	TUALATIN	OR	97062
2S122B001100	MITTLEMAN PROPERTIES	1 SW COLUMBIA ST STE 950	PORTLAND	OR	97258
2S115DC01300	MITCHELL TIMOTHY	900 SW 5TH AVE FL 17	PORTLAND	OR	97204

2S115DC90001	MITCHELL GARRETT C & MITCHELL SHARON M	17910 SW 115TH AVE	TUALATIN	OR	97062
2S115DC01600	MINATO KAZUKI & MINATO YUKO	11445 SW ROBERTS CT	TUALATIN	OR	97062
2S115DD12500	MILNE JAMES S & MILNE MARY F	17875 SW 109TH AVE	TUALATIN	OR	97062
2S115DC03100	MILLER LYNN B	11190 SW APALACHEE ST	TUALATIN	OR	97062
2S115DD14300	MILLER JOINT TRUST	10970 SW BANNOCH ST	TUALATIN	OR	97062
2S115DD05200	MIDKIFF HOUSTON & NANCY TRUST	17845 SW 106TH AVE	TUALATIN	OR	97062
2S115DC06900	MICHAELIDES JAMIE C & RADISH KEVIN A	17920 SW 112TH AVE	TUALATIN	OR	97062
2S115DA03600	MEYER PAUL R & MEYER MARY B	17365 SW 108TH PL	TUALATIN	OR	97062
2S115DC03900	MELTON LAWRENCE E & MELTON TONYA M	17900 SW 111TH AVE	TUALATIN	OR	97062
2S115DC11500	MCPHERSON SCOTT K & MCPHERSON SUSAN R	17895 SW 113TH AVE	TUALATIN	OR	97062
2S115DD19600	MCKINNON SPENCER E LIV TRUST	17971 SW 110TH PL	TUALATIN	OR	97062
2S115DD01200	MCCURTAIN LIV TRUST	10560 SW PUEBLO ST	TUALATIN	OR	97062
2S115DD06900	MCCURDY WAYNE & MCCURDY BETTE	10580 SW BANNOCH CT	TUALATIN	OR	97062
2S115DC03400	MCCLATCHEY CAITLIN & MCCLATCHEY GARRETT	11130 SW APALACHEE ST	TUALATIN	OR	97062
2S115DA01500	MAYER ANDREW PETER & MAYER MARIT JANAE	17395 SW 105TH AVE	TUALATIN	OR	97062
2S115DD01500	MATHYS JACKIE & STEVE ZIMMERMAN FAMILY TRUST	24305 SW BOONES FERRY RD	TUALATIN	OR	97062
2S122AD01000	MARSHALL ASSOCIATED LLC	PO BOX 278	TUALATIN	OR	97062
2S115DC04600	MARONDE JOHN ALBERT & MARONDE JILL I	17730 SW 111TH AVE	TUALATIN	OR	97062
2S115DC04500	MARKS CHRISTINA A REV LIV TRUST	17760 SW 111TH AVE	TUALATIN	OR	97062
2S115DC02200	MANN ERIC A & LUPULESCU NICOLETA	11490 SW ROBERTS CT	TUALATIN	OR	97062
2S115DC03500	MANN SONIA & MANN JONATHAN	11100 SW APALACHEE ST	TUALATIN	OR	97062
2S115DC00100	MANABE STELLA K & NAKAMA DEAN S	11420 SW HAZELBROOK RD	TUALATIN	OR	97062
2S114CC06500	MALETA SANDRA L & MALETA GREGORY B	17932 SW 105TH CT	TUALATIN	OR	97062
2S115DC07200	MAGUIRE BRIAN J & MAGUIRE LISA N	17860 SW 112TH AVE	TUALATIN	OR	97062
2S115DD03200	MACMILLEN JAMES WILSON & MACMILLEN DONNA JEAN	10547 SW PUEBLO ST	TUALATIN	OR	97062
2S115DD04800	MACK ADAM S & MACK KATHRYN M	10770 SW BANNOCH ST	TUALATIN	OR	97062
2S115DD18100	MACK RYAN P & MACK PATRICIA L	17825 SW 110TH AVE	TUALATIN	OR	97062
2S115DD14800	MACIELINSKI DAMIEN & LAURIE LIV TRUST	17565 SW 108TH PL	TUALATIN	OR	97062
2S115DD06800	MACAULAY THOMAS & MACAULAY DEBRA	10520 SW BANNOCH CT	TUALATIN	OR	97062
2S115DD17000	LYONS RICHARD & LYONS JUDITH	11065 SW LUCAS DR	TUALATIN	OR	97062
2S122AA00700	LUMBER FAMILY CO LLC	PO BOX 1427	TUALATIN	OR	97062
2S115DD11200	LUIKART GLEN A & WENDY C LUIKART LIV TRUST	11060 SW WISHRAM CT	TUALATIN	OR	97062
2S115DC04700	LOSER CALLIE	17700 SW 111TH AVE	TUALATIN	OR	97062
2S115DD15600	LORENTE JOAQUIN & LORENTE LOUISE	17460 SW 108TH PL	TUALATIN	OR	97062
2S114CC05600	LOANZON EMMELINE V TRUST	17994 SW 105TH CT	TUALATIN	OR	97062
2S115DD13200	LIN DONGMEI & MAO DIAN	17950 SW 109TH AVE	TUALATIN	OR	97062
2S115DC09100	LIGHT HARVEY EUGENE & LIGHT CLAUDIA JO	11405 SW KALISPELL ST	TUALATIN	OR	97062
2S115DC08300	LEGEND HOMES CORPORATION	4200 NE 20TH ST	OTIS	OR	97368
2S115DA05100	LEE MIKE	17475 SW 111TH AVE	TUALATIN	OR	97062
2S115DD14900	LEE JONATHAN K & LEE STEPHANIE IRVING	17605 SW 108TH PL	TUALATIN	OR	97062

2S115DC10700	LAUREN NICHOLAS D & LAUREN CHRISTINA M	17935 SW 114TH AVE	TUALATIN	OR	97062
2S115DC12500	LANG JULIANNE LERAE	17197 SW SMITH AVE BLDG #37	SHERWOOD	OR	97140
2S115DC11700	LAMB ETHAN S & LAMB SARAH W	17825 SW 113TH AVE	TUALATIN	OR	97062
2S122AA00500	LAM RESEARCH CORPORATION	2025 GATEWAY PL #228	SAN JOSE	CA	95110
2S122AA00800	LAM RESEARCH CORPORATION	2025 GATEWAY PL #228	SAN JOSE	CA	95110
2S122AB00100	LAM RESEARCH CORPORATION	2025 GATEWAY PL #228	SAN JOSE	CA	95110
2S122BA00100	LAM RESEARCH CORP	4650 CUSHING PKWY	FREMONT	CA	94538
2S115DD15900	KUMLER PHILIP A & JULIE I FAM TRUST	17515 SW 108TH PL	TUALATIN	OR	97062
2S115DC07900	KUMAR ZOYA & UFFORD JOHN C	17915 SW 112TH AVE	TUALATIN	OR	97062
2S115DD17900	KRAJCAR TIMOTHY D & KRAJCAR KIERSTEN A	11070 SW WINYA CT	TUALATIN	OR	97062
2S115DC02900	KOFORD AARON S & KOFORD ELIZABETH S	11220 SW APALACHEE ST	TUALATIN	OR	97062
2S115DD08600	KNAPPENBERGER CLARK W & KNAPPENBERGER CAROLYN	10575 SW LUCAS CT	TUALATIN	OR	97062
2S115DD00900	KNAPKE STEVEN J & KNAPKE LIEN K	17997 SW 105TH CT	TUALATIN	OR	97062
2S115DD15500	KLENZ MICHAEL & KLENZ LINDA	17480 SW 108TH AVE	TUALATIN	OR	97062
2S115DC04300	KLEIN GEORGE P & KLEIN LEANNE S	17800 SW 111TH AVE	TUALATIN	OR	97062
2S115DC05600	KIRKPATRICK GREG D & KIRKPATRICK DEBRA S	17765 SW 112TH AVE	TUALATIN	OR	97062
2S115DC03000	KING JERSILYN & PANGELINAN GERHART JURADO	11200 SW APALACHEE ST	TUALATIN	OR	97062
2S115DD03000	KINDRED LYLE V & KINDRED ELAINE A	17968 SW 106TH AVE	TUALATIN	OR	97062
2S115DD08800	KERR JACK & KERR SARWESHNI	17645 SW 106TH AVE	TUALATIN	OR	97062
2S115DD09100	KAWAL JUSTIN & BURNS ERIN	10550 SW STARR DR	TUALATIN	OR	97062
2S115DD20100	JONES ROBERT ALAN & JONES SHELLEY DIANE	17964 SW 110TH PL	TUALATIN	OR	97062
2S115DA05000	JOHNSON PHILLIP TILO	17445 SW 111TH AVE	TUALATIN	OR	97062
2S115DD17100	JOHNSON KIT & JOHNSON AMY	17560 SW 111TH AVE	TUALATIN	OR	97062
2S115DC07400	JODOIN MICHAEL A & JODOIN NANCY	17810 SW 112TH AVE	TUALATIN	OR	97062
2S115DD07500	JIRICEK AARON G & KARINA B REV LIV TRUST	10525 SW KIOWA ST	TUALATIN	OR	97062
2S114CB02200	JEWELL THOMAS G & JEWELL DANA P	17400 SW 104TH AVE	TUALATIN	OR	97062
2S115DD05600	JASTER ALEXIS	10760 SW KIOWA CT	TUALATIN	OR	97062
2S115DD08700	JANSSEN JILLIAN & JANSSEN JARED	10595 SW LUCAS CT	TUALATIN	OR	97062
2S115C002001	JAMES FAMILY INVESTMENT LLC	20675 SW LEBEAU RD	SHERWOOD	OR	97140
2S115DD01100	JAGODNIK BRIAN & JAGODNIK LAUREN	10536 SW PUEBLO ST	TUALATIN	OR	97062
2S115DA02100	JAFFEE CAROLINE JOHANNA & JAFFEE JAY	17350 SW 106TH CT	TUALATIN	OR	97062
2S122BA00200	JAE OREGON INC	11555 SW LEVETON DR	TUALATIN	OR	97062
2S115DD12300	IMUS ROBERT G & DEBORAH R IMUS LIV TRUST	17895 SW 109TH AVE	TUALATIN	OR	97062
2S115DA04500	IMBLER-YOUNG DIANE REV LIV TRUST	17485 SW 110TH AVE	TUALATIN	OR	97062
2S122B001000	IDM-OREGON LLC	1101 SE TECH CENTER DR STE 160	VANCOUVER	WA	98683
2S115DD05900	HYATT SEAN & HYATT LISA	10755 SW KIOWA CT	TUALATIN	OR	97062
2S115DA04900	HUTCHISON BERNADETTE SEP PROP REV LIV TRUST	17430 SW 111TH AVE	TUALATIN	OR	97062
2S115DC05000	HUGEBACK BENJAMIN L & HUGEBACK JULIET F	11135 SW GARRETT ST	TUALATIN	OR	97062
2S122AA00600	HR LLC	18280 SW 108TH AVE	TUALATIN	OR	97062
2S115DA05200	HOWELL ZACHARY P & HOWELL REBECCA J	17535 SW 111TH AVE	TUALATIN	OR	97062

2S115DC09600	HOURANI JIHAD & SHIKHA HAYAT	11490 SW KALISPELL ST	TUALATIN	OR	97062
2S115DC08800	HOOVER DEVIN & HOOVER KRISTEN	11315 SW KALISPELL ST	TUALATIN	OR	97062
2S115DD10900	HOLMES TRUST	11025 SW WINTU CT	TUALATIN	OR	97062
2S115DC01700	HISLOP BRENT & HISLOP CLAUDIA	11425 SW ROBERTS CT	TUALATIN	OR	97062
2S115DC01100	HIRTE EDWIN K & HIRTE TERESA J	11450 SW ELMER CT	TUALATIN	OR	97062
2S115DC90002	HINDS FAMILY TRUST	17900 SW 115TH AVE	TUALATIN	OR	97062
2S115DC08700	HILLNER GISEL	17770 SW 113TH AVE	TUALATIN	OR	97062
2S115DD06700	HILDEBRAN REED & HILDEBRAN SALLY J	10500 SW BANNOCH CT	TUALATIN	OR	97062
2S115DC06300	HEWITT KRISTY K & HEWITT MARSHALL	17815 SW 111TH AVE	TUALATIN	OR	97062
2S115DD17300	HERR DANIEL J & HERR CAMILLE	17655 SW 111TH AVE	TUALATIN	OR	97062
2S115DD08100	HERINCKX JEFFREY & HERINCKX CHANDA S	10560 SW LUCAS CT	TUALATIN	OR	97062
2S115DD13400	HENSLEY TRACY L & BARTELS AARON DAVID	17980 SW 109TH AVE	TUALATIN	OR	97062
2S114CB02300	HENRY DAVID & SHARI LIV TRUST	10355 SW KELLOGG DR	TUALATIN	OR	97062
2S115DD02400	HEMANN MAURA A REV LIV TRUST	10645 SW PUEBLO CT	TUALATIN	OR	97062
2S115DD01900	HELTNESS ERIC TODD & HELTNESS CHERYL LYNN	10632 SW PUEBLO CT	TUALATIN	OR	97062
2S122AA00100	HELSER LLC	PO BOX 1569	TUALATIN	OR	97062
2S115DD14000	HEIN CHRISTOPHER HAROLD & HEIN SUSANNE BIRGIT	10975 SW TUNICA ST	TUALATIN	OR	97062
2S115DC90000	HAZELBROOK CONDO UNIT OWNERS			OR	00000
2S115DD18300	HAYES RYAN D & ANCHARSKI NANCY	11025 SW WINYA CT	TUALATIN	OR	97062
2S114CB02400	HAUPERT REV TRUST	10415 SW KELLOGG DR	TUALATIN	OR	97062
2S115DC03200	HARTFEIL DERICH & HARTFEIL ELEANOR	11170 SW APALACHEE ST	TUALATIN	OR	97062
2S115DD19100	HARRIS DEGAY C & OBIDIGBO OBINNA KINGSLEY	11037 SW TUALATIN RD	TUALATIN	OR	97062
2S115DD16400	HANSON TIMOTHY J & HANSON SUSAN E	17690 SW 110TH AVE	TUALATIN	OR	97062
2S114CB01500	HANNON RACHELLE S & HANNON JEFFREY T	17440 SW 105TH AVE	TUALATIN	OR	97062
2S115DD19900	HANNEGAN MICHAEL L	17992 SW 110TH PL	TUALATIN	OR	97062
2S115DD16800	HAMLIN JANI LYNN & HAMLIN LARRY	11015 SW LUCAS DR	TUALATIN	OR	97062
2S115DC00400	HAMILTON PAUL CHARLES & HAMILTON JOAN E	PO BOX 3207	TUALATIN	OR	97062
2S115DC09900	HAMILTON BRETT T & HAMILTON KAMI R	11430 SW KALISPELL ST	TUALATIN	OR	97062
2S115DD15400	HALL STEPHEN C & HALL WENDY S	10799 SW LUCAS DR	TUALATIN	OR	97062
2S115DD07700	HACKBARTH JANICE V	10585 SW KIOWA ST	TUALATIN	OR	97062
2S114CC05400	GUY CARRIE & GUY TIMOTHY M	10482 SW PUEBLO CT	TUALATIN	OR	97062
2S115DD10600	GUTOWSKI MARK A	11070 SW WINTU CT	TUALATIN	OR	97062
2S115DD04900	GUILFOYLE CAROL L TRUST	10795 SW BANNOCH ST	TUALATIN	OR	97062
2S115DC10500	GREENE JOHN W & GREENE SUSAN	17915 SW 114TH AVE	TUALATIN	OR	97062
2S115DD06000	GREEN GARY L & GREEN JANIS A	10695 SW KIOWA CT	TUALATIN	OR	97062
2S115DD11800	GREEN CRAIG D	17885 SW 110TH AVE	TUALATIN	OR	97062
2S115DA04700	GRAHAM CONNIE L REV TRUST	17500 SW 111TH AVE	TUALATIN	OR	97062
2S115DC00300	GOVINDAN ANUMARLA & GOVINDAN SODHARI	11460 SW HAZELBROOK RD	TUALATIN	OR	97062
2S114CC05800	GONZALEZ JULIE A REV TRUST	17565 SW 110TH AVE	TUALATIN	OR	97062
2S115DA04600	GONZALEZ JULIE A REV TRUST	17565 SW 110TH AVE	TUALATIN	OR	97062

2S115DC11900	GONZALEZ RODOLFO GUERRERO & GUZMAN JOSE LUIS AMEZC	17780 SW 114TH AVE	TUALATIN	OR	97062
2S115DA04300	GODFREY DAVID E & GODFREY LISA J	17410 SW 110TH AVE	TUALATIN	OR	97062
2S115DD16900	GLASSER FAMILY REV TRUST	11035 SW LUCAS DR	TUALATIN	OR	97062
2S114CB02500	GITT SHARON M	10435 SW KELLOGG DR	TUALATIN	OR	97062
2S115DD16200	GITT SEAN C & GITT MELISSA A	17770 SW 110TH AVE	TUALATIN	OR	97062
2S115DD02700	GIRDNER DOUGLAS R & GIRDNER SANDRA L	10623 SW PUEBLO CT	TUALATIN	OR	97062
2S115DC06000	GIMARELLI-BAST TERRA	11120 SW GARRETT ST	TUALATIN	OR	97062
2S115DA04400	GILBERTSON CHRISTOPHER C & GILBERTSON HEIDI S	17435 SW 110TH AVE	TUALATIN	OR	97062
2S122AD01100	GARSKE TRAVIS W	PO BOX 729	COLBERT	WA	99005
2S115DC06800	GALVIN JEREMY & GALVIN ANDREA	17950 SW 112TH AVE	TUALATIN	OR	97062
2S115DD05400	GALLARDO MICHAEL & MIELE SARA	10680 SW KIOWA CT	TUALATIN	OR	97062
2S115DD13500	GALLAGHER RON MICHAEL & GALLAGHER KELLY MORIARTY	17975 SW 109TH AVE	TUALATIN	OR	97062
2S1220000400	FUJIMI CORPORATION	11200 SW LEVETON DR	TUALATIN	OR	97062
2S115DC09800	FRONCZAK GREG JOHN	11450 SW KALISPELL ST	TUALATIN	OR	97062
2S115DA01400	FRIEDMAN MARK E REV TRUST & FRIEDMAN JOHNNALEE L REV	17355 SW 105TH AVE	TUALATIN	OR	97062
2S115DA01600	FRANKLIN MELLISA & FRANKLIN IGNACIO	17425 SW 105TH AVE	TUALATIN	OR	97062
2S122AD00900	FRANKLINIA LLC	6107 SW MURRAY BLVD #175	BEAVERTON	OR	97008
2S115DC05100	FRAINEY BRIAN A & FRAINEY ABIGAIL J	11155 SW GARRETT ST	TUALATIN	OR	97062
2S115DC00500	FORD KEVIN & LOCKE EMMA	11495 SW ELMER CT	TUALATIN	OR	97062
2S115DD19400	FORD JOHN E & AMES STEPHANIE	17953 SW 110TH PL	TUALATIN	OR	97062
2S115DD13600	FOILES LESLIE E & FOILES VICTORIA A	10960 SW TUNICA ST	TUALATIN	OR	97062
2S115DC10900	FLORES SAMANTHA & PENA JOSE ROBERTO	11380 SW APALACHEE ST	TUALATIN	OR	97062
2S115DC11400	FITCH JACQUELINE DARLENE & FITCH JOHN WALLACE	17915 SW 113TH AVE	TUALATIN	OR	97062
2S115DD15800	FISH TAMMY G & FISH WAYNE L	17475 SW 108TH PL	TUALATIN	OR	97062
2S115DC02000	FENN DENNIS LESLIE & FENN ROBERTA JEAN	11440 SW ROBERTS CT	TUALATIN	OR	97062
2S115DD14500	FB TRUST	10910 SW BANNOCH ST	TUALATIN	OR	97062
2S115DA04800	ESTRADA ALFRED & ESTRADA SHARON	17460 SW 111TH AVE	TUALATIN	OR	97062
2S115DD20000	EDWARDS MARK	17986 SW 110TH PL	TUALATIN	OR	97062
2S115DA04000	DUPUIS KENNETH & DUPUIS ERIN	17550 SW 110TH AVE	TUALATIN	OR	97062
2S115DA04100	DUPUIS FAMILY TRUST	17460 SW 110TH AVE	TUALATIN	OR	97062
2S115C002000	DUE NORTH PROPERTIES LLC	401 E FIRST ST #1062	NEWBERG	OR	97132
2S115DD06100	DRAPER JAMES A & JANICE F TRUST	17755 SW 106TH AVE	TUALATIN	OR	97062
2S115DC06500	DOWNING DARYL & DOWNING CHRISTINE	17865 SW 111TH AVE	TUALATIN	OR	97062
2S115DC08600	DONOHUE NICHOLAS MICHAEL	17800 SW 113TH AVE	TUALATIN	OR	97062
2S115DD02300	DONAUGH ANTHONY M & DONAUGH CHRISTI S	10651 SW PUEBLO CT	TUALATIN	OR	97062
2S115DC06200	DOLAK TYLER JOHN & MCMUNN KRISTIANA NICHOLE	17795 SW 111TH AVE	TUALATIN	OR	97062
2S115DD19500	DIXON ROBERT W	17967 SW 110TH PL	TUALATIN	OR	97062
2S115DA03500	DEJONG STEVEN & DEJONG KAITLIN	17350 SW 108TH PL	TUALATIN	OR	97062
2S115DD14100	DEHEN PAUL V & DEHEN ROBERTA A	10995 SW TUNICA ST	TUALATIN	OR	97062
2S115DD17500	DEBRAUWERE LIV TRUST	11100 SW LUCAS DR	TUALATIN	OR	97062

2S114CC05500	DEAVILLE CASEY D	17970 SW 105TH CT	TUALATIN	OR	97062
2S115C002803	CYPRESS PARISH LLC	16750 SE KENS CT	MILWAUKIE	OR	97267
2S115DC10200	CROSS THOMAS A & CROSS DIANE RUTH	17845 SW 114TH AVE	TUALATIN	OR	97062
2S115DD01400	CRALL RICHARD F & CRALL BARBARA M	10055 SW WASCO WAY	TUALATIN	OR	97062
2S115C001600	CR RIVERCREST MEADOWS COMMUNITIES LLC	444 W BEECH ST #300	SAN DIEGO	CA	92101
2S115C001700	CR RIVERCREST MEADOWS COMMUNITIES LLC	444 W BEECH ST #300	SAN DIEGO	CA	92101
2S115DC10100	COX LEE H & COX CHRISTINA R	17825 SW 114TH AVE	TUALATIN	OR	97062
2S115DC90003	COSNER BERNADATTE M LIV TRUST	17890 SW 115TH AVE	TUALATIN	OR	97062
2S115DD17200	CORR FAMILY REV TRUST	17585 SW 111TH AVE	TUALATIN	OR	97062
2S115DD05300	CONNER LIV TRUST	10650 SW KIOWA CT	TUALATIN	OR	97062
2S115DD16700	COMPTON JAY W	17595 SW 110TH AVE	TUALATIN	OR	97062
2S114CC06700	CODINO VAL H & CODINO LOIS D	17962 SW 105TH CT	TUALATIN	OR	97062
2S115DC02100	COCKRELL WILLIAM D & COCKRELL PAMELA K	11460 SW ROBERTS CT	TUALATIN	OR	97062
2S115DD02500	CLARK DAVID A & CLARK CATHERINE M	10639 SW PUEBLO CT	TUALATIN	OR	97062
2S115DD08400	CLARK MONICA J & CLARK LONNY T	10525 SW LUCAS CT	TUALATIN	OR	97062
2S115DD11900	CLARK CHARLES L TRUST	17875 SW 110TH AVE	TUALATIN	OR	97062
2S115DD05100	CHRISTIAN LOU A & CHRISTIAN TINA L	10677 SW BANNOCH ST	TUALATIN	OR	97062
2S115DC06700	CHONG CHRISTOPHER A & CHONG KIRSTEN J	5870 SW WICHITA ST	TUALATIN	OR	97062
2S115DD05500	CHEN DAVID & CALIXTRO ELIZABETH	10720 SW KIOWA CT	TUALATIN	OR	97062
2S115DC07100	CHAUNCEY LOIS	17890 SW 112TH AVE	TUALATIN	OR	97062
2S115DC11000	CHANG SARAH	11360 SW APALACHEE ST	TUALATIN	OR	97062
2S115DD06400	CHAMBERS LIV TRUST	10595 SW BANNOCH CT	TUALATIN	OR	97062
2S123B000600	CHAMBERLAIN HUSSA PROPERTIES	18755 SW TETON AVE	TUALATIN	OR	97062
2S115DD15000	CHALISE PRAVEEN & CHALISE DEEPA	17625 SW 108TH PL	TUALATIN	OR	97062
2S115DD01800	CHALFAN TRUST	4095 WESTBAY RD	LAKE OSWEGO	OR	97035
2S115DC10000	CERO JEFFREY C & CERO CARISSA	11410 SW KALISPELL ST	TUALATIN	OR	97062
2S115DC04000	CAVEN JEREMY LIONEL	17870 SW 111TH AVE	TUALATIN	OR	97062
2S122AD00400	CALMAX TECHNOLOGY INC	3491 LAFAYETTE ST	SANTA CLARA	CA	95054
2S115DD13900	CALDER KENNETH D & CALDER MARY C	10945 SW TUNICA ST	TUALATIN	OR	97062
2S115DD05800	CAGLE STEVEN & CAROLYN LIV TRUST	10777 SW KIOWA CT	TUALATIN	OR	97062
2S115DC08100	CABLE SAMUEL & CABLE MARLENE	11225 SW APALACHEE ST	TUALATIN	OR	97062
2S115DC03700	BUSHNELL TODD MICHAEL	17960 SW 111TH AVE	TUALATIN	OR	97062
2S115DC11800	BURNS JACK S	17785 SW 113TH AVE	TUALATIN	OR	97062
2S114CB02100	BURDICK EILEEN T & BURDICK CHRISTOPHER J	17430 SW 104TH AVE	TUALATIN	OR	97062
2S115DD12200	BUCKNER ORVILLE KERN III TRUST	17890 SW 110TH AVE	TUALATIN	OR	97062
2S115DC01900	BRYANT SYDNAY & BRYANT JAKE	11420 SW ROBERTS CT	TUALATIN	OR	97062
2S115DD11600	BROWNE AARON J & BROWNE KELLIE G	11035 SW WISHRAM CT	TUALATIN	OR	97062
2S115DC09400	BROPHY JEFFREY E & BROPHY DANETTE M	11465 SW KALISPELL ST	TUALATIN	OR	97062
2S114CB02800	BROOKS STEVEN K & DAVIS HEATHER M	15532 SW PACIFIC HWY #CIB111	TIGARD	OR	97224
2S115DD15700	BROCKWAY FAMILY TRUST	17455 SW 108TH PL	TUALATIN	OR	97062

2S115DC08500	BRISAN MARIUS M & BRISAN LIDIA M	17850 SW 113TH AVE	TUALATIN	OR	97062
2S115DD11000	BLUM MARY LOU	11020 SW WISHRAM CT	TUALATIN	OR	97062
2S114CC06100	BLATT CHARLES M JR & BLATT NAOMI T	17897 SW 105TH CT	TUALATIN	OR	97062
2S115DC10800	BLAKEY BLAKE & BLAKEY DOMENIQUE	11400 SW APALACHEE ST	TUALATIN	OR	97062
2S114CB02600	BIXEL JENNIFER	10455 SW KELLOGG DR	TUALATIN	OR	97062
2S114CC06900	BILITZ MARTIN & BILITZ MICHAELA DANIELA	10479 SW PUEBLO ST	TUALATIN	OR	97062
2S114CC05900	BIHARI NUPUR	17929 SW 105TH CT	TUALATIN	OR	97062
2S115DC05800	BIEHLER ROBYN L	17750 SW 112TH AVE	TUALATIN	OR	97062
2S115DC04900	BERGGREN TERESA DORAN REV LIV TRUST	11115 SW GARRETT ST	TUALATIN	OR	97062
2S115DC09200	BERGGREN BRAD J & BERGGREN ROBERTA K	11425 SW KALISPELL ST	TUALATIN	OR	97062
2S115DC08400	BERG TOR L & BERG CHERYL L	17880 SW 113TH AVE	TUALATIN	OR	97062
2S115DD10400	BENNETT JENNIFER ANN & FRICK BENJAMIN JOHN	11030 SW WINTU CT	TUALATIN	OR	97062
2S115DA01900	BENKE FAMILY TRUST	17400 SW 106TH CT	TUALATIN	OR	97062
2S114CB01600	BENEDICT ELIZABETH A	10460 SW KELLOGG DR	TUALATIN	OR	97062
2S115DD02000	BELL TAMERA J & JURCHEN STEVEN L	10644 SW PUEBLO ST	TUALATIN	OR	97062
2S115DD07000	BAXTER CHRISTOPHER & BAXTER STEPHANIE	10606 SW BANNOCH CT	TUALATIN	OR	97062
2S115DD07400	BAUMANN THOMAS K & BAUMANN ROSEMARIE D	10500 SW KIOWA ST	TUALATIN	OR	97062
2S115DC10300	BATEMAN TRUST	17875 SW 114TH AVE	TUALATIN	OR	97062
2S115DD07200	BARTHOLOMEW MARY C TRUST	10570 SW KIOWA ST	TUALATIN	OR	97062
2S115DD12900	BARROW BRAD JAMES & BARROW SYDNEY ANTONETTE	10850 SW BANNOCH ST	TUALATIN	OR	97062
2S115DC00600	BARRACLOUGH RODNEY P JR & BARRACLOUGH SANDRA	11475 SW ELMER CT	TUALATIN	OR	97062
2S115DD12100	BANTA BRYCE & BANTA RENE	17880 SW 110TH AVE	TUALATIN	OR	97062
2S115DD15200	BAIRD LEAH J	17610 SW 108TH PL	TUALATIN	OR	97062
2S115DD02900	BAILEY TRUST	17971 SW 106TH AVE	TUALATIN	OR	97062
2S115DC06100	BAEDOR FAMILY TRUST	17775 SW 111TH AVE	TUALATIN	OR	97062
2S115DD06500	AUGUSTYNIAK EDWARD J & SUJCZYNSKA MONIKA J	10555 SW BANNOCH CT	TUALATIN	OR	97062
2S122AA00400	ASCENTEC ENGINEERING LLC	18500 SW 108TH AVE	TUALATIN	OR	97062
2S122AD00100	ASCENTEC ENGINEERING LLC	18500 SW 108TH AVE	TUALATIN	OR	97062
2S115DD07600	ASAI C&C JOINT TRUST	10555 SW KIOWA ST	TUALATIN	OR	97062
2S115DA01700	ARROYO CHRIS & ARROYO JAQUELINE C	10515 SW STARR DR	TUALATIN	OR	97062
2S115DC11300	ARNDT RONALD C 2015 TRUST	80395 WEISKOPF	LA QUINTA	CA	92253
2S115DC00900	ARBUCKLE JAMES F & ARBUCKLE MARY D	11400 SW ELMER CT	TUALATIN	OR	97062
2S115C002802	APOSTOLIC LUTHERAN CHURCH OF PORTLAND	PO BOX 23312	TIGARD	OR	97223
2S115DD19000	ANDERSON DEBORAH M	11045 SW TUALATIN RD	TUALATIN	OR	97062
2S115DD19200	ANDERSON EDWARD JOEL & GADKARI SHRUTI UDAY	11029 SW TUALATIN RD	TUALATIN	OR	97062
2S115DA03800	AMAN FAMILY TRUST	17435 SW 108TH PL	TUALATIN	OR	97062
2S115DC00800	ALBERTSON BRUCE & ALBERTSON JUDY	11415 SW ELMER CT	TUALATIN	OR	97062
2S115DD15100	ALBERT GARY J & ALBERT LISA J	17630 SW 108TH PL	TUALATIN	OR	97062
2S115DD02100	AIELLO FAMILY TRUST	10650 SW PUEBLO CT	TUALATIN	OR	97062
2S114CB01900	ADAMS KAREN E TRUST & BARTHOLOMEW BRIAN J	17445 SW 104TH AVE	TUALATIN	OR	97062

2S115DD00700	ADAMS SHEILA D	10915 SW TUALATIN RD	TUALATIN	OR	97062
2S114CC05700	ACKLEY KRISTEN & ROTTMAN ERIK A	17961 SW 105TH CT	TUALATIN	OR	97062
2S115DD01700	ACKERMAN CLINTON	17987 SW 106TH AVE	TUALATIN	OR	97062
2S115DC12100	ABERNATHY TRAVIS E & ABERNATHY AMANDA M	17860 SW 114TH AVE	TUALATIN	OR	97062
2S122AD01300	ABBOTT TUALATIN LLC	3030 BRIDGEWAY STE #100	SAUSALITO	CA	94965
2S123BB00701	AAA OREGON/IDAHO	600 MARKET ST	PORTLAND	OR	97201
2S123BB90002	3 J'S PROPERTIES LLC	10400 SW TUALATIN RD	TUALATIN	OR	97062
2S123BB00501	18355 SW TETON AVENUE TUALATIN OR LLC	17455 SW RIDGEVIEW LN	LAKE OSWEGO	OR	97034
2S122B001200	12345 SW LEVETON LLC	1730 SW SKYLINE BLVD STE #121	PORTLAND	OR	97221
	LAM RESEARCH CORPORATION	11155 SW LEVETON DR	TUALATIN	OR	97062
	MACKENZIE ARCHITECTS	1515 SW WATER AVE	PORTLAND	OR	97214

Exhibit B.

NOTICE OF HEARINGS AND OPPORTUNITY TO COMMENT
CASE FILES: IMP 24-0001 and AR 24-0002— LAM Research — TUX Development

NOTICE IS HEREBY GIVEN that public hearings will be in-person at:

Location: Tualatin Service Center
10699 SW Herman Road, Tualatin, OR 97062

The hearings can also be attended virtually via:
Zoom Teleconference: log-in available at www.tualatinoregon.gov/meetings 7 days before each hearing

INDUSTRIAL MASTER PLAN (IMP) 24-0001
Planning Commission Hearing: March 19, 2025 at 6:30 pm

Mackenzie, on behalf of LAM Research Corporation, is requesting an Industrial Master Plan (IMP) amendment to setback and building height standards for a 75.96 acre site zoned Manufacturing Park (MP).

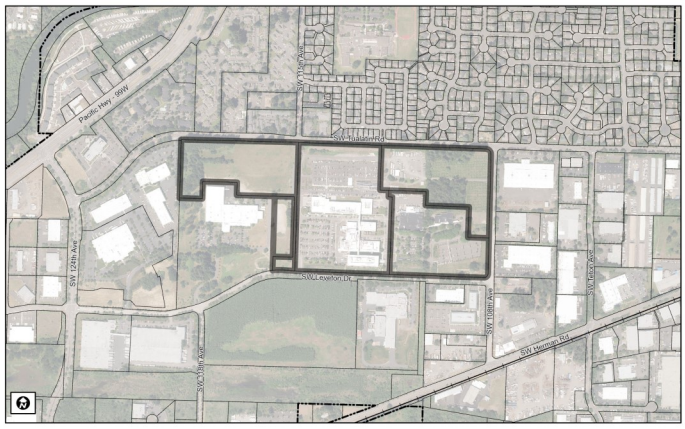
ARCHITECTURAL REVIEW (AR) 24-0002
Architectural Review Board Hearing: April 2, 2025 at 6:30 pm

Mackenzie, on behalf of LAM Research Corporation, is requesting approval to construct a two phase project consisting of three buildings for office, research laboratory, and utilities, totaling 423,470 square feet, expansion of an existing bulk gas storage yard, and associated landscaping, parking, and public/site improvements on a 75.96 acre site zoned Manufacturing Park (MP).

To view the applications, visit: www.tualatinoregon.gov/projects

TO PROVIDE COMMENTS:

Email: kleonard@tualatin.gov
First Class Mail:
Planning Division
Attn: Keith Leonard
10699 SW Herman Road
Tualatin, OR 97062
Phone: 503-691-3029



Property location for both applications: 11155-11361 SW Leveton Drive (Tax Lots: 2S122AA500 & 800, 2S122AB 100, 2S122BA00100)

- **Industrial Master Plan Criteria**: TDC Chapters: 32, 33, 62
- **Architectural Review Criteria**: TDC Chapters: 32, 33, 62, 63, 73A-D, 74, 75

NOTICE OF HEARINGS AND OPPORTUNITY TO COMMENT
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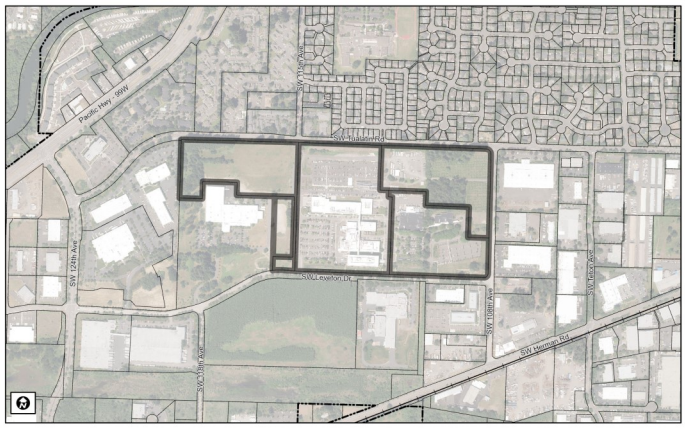

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- **Industrial Master Plan Criteria**: TDC Chapters: 32, 33, 62
- **Architectural Review Criteria**: TDC Chapters: 32, 33, 62, 63, 73A-D, 74, 75

- **Individuals wishing to comment on the application(s)** must do so in writing to the Planning Division prior to each hearing, or in writing and/or orally at the hearing. The minimum statutory comment period is 21 days for these applications, and as such materials must be received by March 11, 2025 for the IMP24-0001 and March 24, 2024 for AR24-0002 to be included in the hearing packets for the respective applications.
- **The public hearings process** begins with a staff presentation, followed by testimony by proponents, testimony by opponents, and rebuttal. Individual testimony may be limited. At the conclusion of the hearing, the respective hearing body will deliberate and make a decision based on the facts and arguments in the public record. Before each hearing is closed, a participant may request that the record remain open for at least seven days after that hearing.
- **Staff reports and the application packet** will be available at least seven days before each hearing date for inspection at no cost, and copies will be provided at a reasonable cost. An online accessible version will be published seven days before each hearing at **www.tualatinoregon.gov/meetings**
- **Everyone is invited to attend the hearing(s) and comment** on that application's approval criteria. Failure of an issue to be raised in a hearing, in person, or by letter, or failure to provide sufficient specificity to afford each decision maker an opportunity to respond to the issue raised precludes appeal of that application to the State Land Use Board of Appeals (LUBA) based on that issue. The failure of the applicant to raise constitutional or other issues relating to proposed conditions of approval for either application with sufficient specificity to each decision maker to respond to the issue precludes an action for damages in circuit court.

For additional information contact:
Keith Leonard, Associate Planner: kleonard@tualatin.gov, 503-691-3029

- **Individuals wishing to comment on the application(s)** must do so in writing to the Planning Division prior to each hearing, or in writing and/or orally at the hearing. The minimum statutory comment period is 21 days for these applications, and as such materials must be received by March 11, 2025 for the IMP24-0001 and March 24, 2024 for AR24-0002 to be included in the hearing packets for the respective applications.
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For additional information contact:
Keith Leonard, Associate Planner: kleonard@tualatin.gov, 503-691-3029

10699 SW Herman Rd, Tualatin, Oregon 97062 TualatinOregon.gov

AFFIDAVIT OF MAILING

STATE OF OREGON)

) ss

COUNTY OF WASHINGTON)

I, Lindsey Hagerman being first duly sworn, depose and say:

That on the 11 day of March, I served upon the persons shown on Exhibit A, attached hereto and by this reference incorporated herein, a copy of a Notice of Hearing/Application/Decision marked Exhibit B, attached hereto and by this reference incorporated herein, by mailing to them a true and correct copy of the original hereof. I further certify that the addresses reflect information received from the relevant party or agency, and that said envelopes were placed in the United States Mail at Tualatin, Oregon, prepared to receive postage administered by city staff.

Dated this 11 of, March 2025

Lindsey Hagerman
Signature

SUBSCRIBED AND SWORN to before me this 3/11/2025

Agatha Leigh Burke
Notary Public for Oregon

OFFICIAL STAMP
AGATHA LEIGH BURKE
NOTARY PUBLIC - OREGON
COMMISSION NO. 1041046
MY COMMISSION EXPIRES OCTOBER 02, 2027

My commission expires: 10/02/2027

RE: IMP24-0001 AND AR24-0002 NOTICE OF RESCHEDULED HEARING LAM

Exibit A.

TLID	OWNER1	OWNERADDR	OWNERCITY	/NERST	OWNERZIP
2S115DD08300	ZIENKIEWICZ MIKE & ZIENKIEWICZ STEPHANIE	10510 SW LUCAS CT	TUALATIN	OR	97062
2S115DD18500	ZEIN ZEINA	7575 SW ELMWOOD ST	TIGARD	OR	97223
2S115DC10600	YANG HAOWEI	17925 SW 114TH AVE	TUALATIN	OR	97062
2S115DD17400	WYLLER LIV TRUST	613 NW MT MAZAMA ST	MCMINNVILLE	OR	97128
2S115DD18000	WRIGHT RALPH RICHARD & LYNDA RAE LIV TRUST	11040 SW WINYA CT	TUALATIN	OR	97062
2S114CB02700	WORLEY LAURA & SPIEGEL JOEL	10475 SW KELLOGG DR	TUALATIN	OR	97062
2S115CC00100	WOODRIDGE LP	THREE CENTERPOINTE DR #130	LAKE OSWEGO	OR	97035
2S115DD11500	WOLLEY KEVIN & WOLLEY JANE	11055 SW WISHRAM CT	TUALATIN	OR	97062
2S114CB01800	WOLFE GEORGE A & WOLFE ANDREA H	10420 SW KELLOGG DR	TUALATIN	OR	97062
2S115DD16500	WISNER RANDOLPH R & DEBBIE R LIV TRUST	17600 SW 110TH AVE	TUALATIN	OR	97062
2S115DD06600	WINKLER MISTY D & REGISTER JEAN	10515 SW BANNOCH CT	TUALATIN	OR	97062
2S115DD08200	WILSON CONSTANCE J TRUST	10530 SW LUCAS CT	TUALATIN	OR	97062
2S122AD00600	WILLY LUMP LUMP LLC	4500 SW ADVANCE RD	WILSONVILLE	OR	97070
2S115DD16000	WILLON MARK & PAM TRUST	17850 SW 110TH AVE	TUALATIN	OR	97062
2S115DD02200	WILLIAMS MATTHEW STEVEN	10655 SW PUEBLO CT	TUALATIN	OR	97062
2S115DD07300	WILLIAMS VERONICA L	10540 SW KIOWA ST	TUALATIN	OR	97062
2S115DD10500	WILLIAMS DAVE A & WILLIAMS KIMBERLY R	11050 SW WINTU CT	TUALATIN	OR	97062
2S115DD10700	WIGGINS JEAN E TRUST	11065 SW WINTU CT	TUALATIN	OR	97062
2S115DC90004	WHITE CURTIS & WHITE DEBRA L	17880 SW 115TH AVE	TUALATIN	OR	97062
2S115DA01800	WETHERN LINDA J IRREVOCABLE TRUST	17595 SW SEIFFERT RD	SHERWOOD	OR	97140
2S115DC07500	WESTPHAL FAMILY TRUST	10100 SW HIGHLAND DR	TIGARD	OR	97224
2S115DC03800	WEST PHYLLIS ELAINE	17930 SW 111TH AVE	TUALATIN	OR	97062
2S115DC10400	WEN-SHU LIU	17885 SW 114TH AVE	TUALATIN	OR	97062
2S115DD04600	WEITMAN LIVING TRUST	10666 SW BANNOCH ST	TUALATIN	OR	97062
2S115DC07000	WEICHOLD STEPHEN & WEICHOLD SHARRON & WEICHOLD WILLIAM	17900 SW 112TH AVE	TUALATIN	OR	97062
2S115DC09000	WEBSTER CHARLES N & WEBSTER KAREN A	11385 SW KALISPELL ST	TUALATIN	OR	97062
2S123BB90001	WAVE PROPERTY HOLDINGS LLC	35 PANORAMA CREST AVE	LAS VEGAS	NV	89135
2S115DC01800	WATTS MARK A & WATTS APRYLE	11400 SW ROBERTS CT	TUALATIN	OR	97062
2S115DD12700	WATT REBECCA SUE	17880 SW 109TH AVE	TUALATIN	OR	97062
2S1220000500	WASHINGTON COUNTY FACILITIES MGMT	169 N 1ST AVE #42	HILLSBORO	OR	97124
2S115DC07700	WALK DAVID ALLAN & WALK WANDA VAI	17855 SW 112TH AVE	TUALATIN	OR	97062
2S115DD10300	WAGNER LINDA G PHD	17945 SW 110TH AVE	TUALATIN	OR	97062
2S115DC01000	WAGGONER LOREN M & WAGGONER CYNTHIA J	11430 SW ELMER CT	TUALATIN	OR	97062
2S115DD01000	VT TRUST	17989 SW 105TH CT	TUALATIN	OR	97062
2S114CB01400	VANN KEN & VANN CHRISTINA M	17480 SW 105TH AVE	TUALATIN	OR	97062

2S115DD13300	VANHORN MARK G & DIANA L LIV TRUST	17960 SW 109TH AVE	TUALATIN	OR	97062
2S115DD02600	VALDENEGRO GILLIAN F TRUST	17981 SW C ER ERGHINO LN	SHERWOOD	OR	97140
2S122AD00200	TUALATIN CITY OF	PO BOX 723597	ATLANTA	GA	31139
2S123B000602	TUALATIN TETON LLC	621 SW ALDER ST STE 800	PORTLAND	OR	97205
2S115DD05700	TROTMAN TRUST	10799 SW KIOWA CT	TUALATIN	OR	97062
2S115DD05000	TREMAIN JUNE E TRUST	10735 SW BANNOCH ST	TUALATIN	OR	97062
2S115DD11100	TREBELHORN DEAN B & TREBELHORN LINDA V	11040 SW WISHRAM CT	TUALATIN	OR	97062
2S115D001400	TIGARD-TUALATIN SCHOOL DISTRICT #23J	6960 SW SANDBURG ST	TIGARD	OR	97223
2S115DC07800	TIEDEMANN CHRISTINA ANNE	17885 SW 112TH AVE	TUALATIN	OR	97062
2S115DD16100	TEUTSCH LISA ELIZABETH & AIELLO DAX	17800 SW 110TH AVE	TUALATIN	OR	97062
2S123BB90000	TETON INDUSTRIAL CONDO OWNERS OF ALL UNITS			OR	00000
2S115DC07300	TERJESON JOHN	17840 SW 112TH AVE	TUALATIN	OR	97062
2S115DD17600	TALLENT DOMINIC JAMES & TALLENT HEINI	11115 SW WINYA CT	TUALATIN	OR	97062
2S115DD03100	SYNDER BROOKE & CHANDLER KYLE	10573 SW PUEBLO ST	TUALATIN	OR	97062
2S115DD18400	SWAFFORD DOUGLAS G & SINCERE MIRIAM A	17715 SW 110TH AVE	TUALATIN	OR	97062
2S115DC03300	SULLIVAN SHANON LEE	11150 SW APALACHEE ST	TUALATIN	OR	97062
2S115DC05400	SULLIVAN WAIKEN L & SULLIVAN JENNIFER	17705 SW 112TH AVE	TUALATIN	OR	97062
2S115DC05900	STRINGFELLOW GAYLE	11140 SW GARRETT ST	TUALATIN	OR	97062
2S115DD11700	STRICKLER LAUREL R & STRICKLER ADAM J	11025 SW WISHRAM CT	TUALATIN	OR	97062
2S115DD13700	STRIBLING DAVID L & STRIBLING AMANDA L	10920 SW TUNICA ST	TUALATIN	OR	97062
2S115DD12600	STRENGTH M D TRUST	17870 SW 109TH AVE	TUALATIN	OR	97062
2S115DC11100	STORI SADRUDDIN	11340 SW APALACHEE ST	TUALATIN	OR	97062
2S115DA03300	STEINER LARRY D SURVIVORS TRUST	17420 SW 108TH PL	TUALATIN	OR	97062
2S115DC05500	STEINMETZ JON & JEANETTE TRUST	17735 SW 112TH AVE	TUALATIN	OR	97062
2S115DC04400	STANTON ANDREW & STANTON ASHLEY	17780 SW 111TH AVE	TUALATIN	OR	97062
2S115DD09000	SPRENG FREDERICK IV & BACHUS DESTINY & PUROL KATHLEEN ET AI	17570 SW 106TH AVE	TUALATIN	OR	97062
2S115DD13000	SPENCER FAMILY REV TRUST	17920 SW 109TH AVE	TUALATIN	OR	97062
2S115DD14200	SMITH LESTER MICHAEL & SMITH JOAN MARIE	10990 SW BANNOCH ST	TUALATIN	OR	97062
2S115DD19700	SMITH WILLIAM E & SHEARER-SMITH SARAH K	17989 SW 110TH PL	TUALATIN	OR	97062
2S115DD18600	SHETLER STACY A & SHETLER JOANNA L	11080 SW LUCAS DR	TUALATIN	OR	97062
2S115DC04100	SHERWOOD NICOLE D	17850 SW 111TH AVE	TUALATIN	OR	97062
2S115DD16300	SHERMAN JENNIFER A TRUST	17740 SW 110TH AVE	TUALATIN	OR	97062
2S115DC05300	SHERFINSKI MICHAEL R	11195 SW GARRETT ST	TUALATIN	OR	97062
2S114CB02000	SHEN PING LU	17460 SW 104TH AVE	TUALATIN	OR	97062
2S115DD12800	SCHOENHEIT JOHN & SCHOENHEIT KAITLIN J	17890 SW 109TH AVE	TUALATIN	OR	97062
2S115DC06400	SCHLOETTER ERIN RENAE BATES	17845 SW 111TH AVE	TUALATIN	OR	97062

2S115DD15300	SCHLACHTER KEVIN M & SCHLACHTER RENEE	17570 SW 108TH PL	TUALATIN	OR	97062
2S115DD08500	SCHENK JOANNE & ROGER REV LIV TRUST	10555 SW LUCAS CT	TUALATIN	OR	97062
2S115DD04700	SCHAEFER SETH & SCHAEFER RENEE	10710 SW BANNOCH ST	TUALATIN	OR	97062
2S115DC08900	SAVASTA THOMAS	11355 SW KALISPELL ST	TUALATIN	OR	97062
2S115DD02800	SATTLER BRIAN L & WALCZYK KERRY M	10615 SW PUEBLO CT	TUALATIN	OR	97062
2S115DC02500	SABRA HEALTH CARE HOLDINGS III LLC	10220 SW GREENBURG RD #201	PORTLAND	OR	97223
2S115C002190	SABETI RAMIN	17835 SW PACIFIC HWY	TUALATIN	OR	97062
2S115C002192	SABETI RAMIN	17835 SW PACIFIC HWY	TUALATIN	OR	97062
2S115DC12300	RYMAL CHARLES & RYMAL JESSICA	17920 SW 114TH AVE	TUALATIN	OR	97062
2S115DC09700	RYAN DAIN & RYAN LEE	11470 SW KALISPELL ST	TUALATIN	OR	97062
2S115DD11400	RYAN MICHAEL	11075 SW WILSHRAM CT	TUALATIN	OR	97062
2S115DD03300	RUVALCABA CHRIS & RUVALCABA ESTHER	10529 SW PUEBLO ST	TUALATIN	OR	97062
2S115DA03700	RUDY CHARLES & RUDY STACY	17385 SW 108TH PL	TUALATIN	OR	97062
2S115DC05200	ROE FAMILY TRUST	620 SAND HILL RD #213F	PALO ALTO	CA	94304
2S115DD01300	ROBINSON RONALD L & ROBINSON MICHELLE	17976 SW 106TH AVE	TUALATIN	OR	97062
2S115DC03600	ROBERTS BLAINE N	17980 SW 111TH AVE	TUALATIN	OR	97062
2S115DC12200	ROBERTS JULIE A	17890 SW 114TH AVE	TUALATIN	OR	97062
2S115DA04200	ROBBINS FAMILY REVOCABLE TRUST	17420 SW 110TH AVE	TUALATIN	OR	97062
2S115C002200	RIVER RIDGE APARTMENTS OWNER LLC	701 FIFTH AVE STE 5700	SEATTLE	WA	98104
2S115DC11600	RIVERA AURELIO GOMEZ	17865 SW 113TH AVE	TUALATIN	OR	97062
2S114CC06000	RICHEY LELAND R & RICHEY VALERIE J FAMILY TRUST	17911 SW 105TH CT	TUALATIN	OR	97062
2S115DD07800	RICHARDS EMMETT L & RICHARDS MARY C & RICHARDS SHELLEY D	15247 WILBUR RD	LA CONNER	WA	98257
2S115DD17800	RICHARDSON DEVIN & RICHARDSON TAMI ANN	11100 SW WINYA CT	TUALATIN	OR	97062
2S115DC04200	RICE DOUGLAS S	17820 SW 111TH AVE	TUALATIN	OR	97062
2S114CC05300	RAXTER NORA SUSAN	10476 SW PUEBLO ST	TUALATIN	OR	97062
2S115DC00200	RANDALL LAWRENCE L & SANDOVAL-RANDALL C SUSIE	11440 SW HAZELBROOK RD	TUALATIN	OR	97062
2S115DD09200	RAMSBY MILLS TRUST	10500 SW STARR DR	TUALATIN	OR	97062
2S115DC09300	RADER SAM A & RADER ANDREA S	11445 SW KALISPELL ST	TUALATIN	OR	97062
2S115DA03400	RADECKI SHAUN MICHAEL & RADECKI JESSICA ELLEN	17370 SW 108TH PL	TUALATIN	OR	97062
2S115DD04500	PYRCH LAUREN & THOMASSEN AARON JENS	10640 SW BANNOCH ST	TUALATIN	OR	97062
2S114CC06200	PYLE DAVID NORMAN	16869 SW 65TH AVE #2	LAKE OSWEGO	OR	97035
2S115DC05700	PUTNAM DAVID L JR & PUTNAM HEIDI F	17770 SW 112TH AVE	TUALATIN	OR	97062
2S115DC08000	PURCELLA ALEXANDRA M & PURCELLA SCOTT E	11215 SW APALACHEE ST	TUALATIN	OR	97062
2S115DD11300	PRICE DAVID A & PRICE JENNIFER K	11080 SW WISHRAM CT	TUALATIN	OR	97062
2S115DD01600	PR 17995 SW 106TH LLC	8925 SW IOWA DR	TUALATIN	OR	97062
2S115DD19800	POUR ALI FROTAN & ESFANDIARPOUR SAMANEH	17995 SW 110TH PL	TUALATIN	OR	97062

2S115DC01400	POINTS YU SUN	11465 SW ROBERTS CT	TUALATIN	OR	97062
2S115DD08900	PLAMBECK CAROL R	10600 SW STARR DR	TUALATIN	OR	97062
2S1220000300	PHIGHT LLC	ONE BOWERMAN DR	BEAVERTON	OR	97005
2S115DA02000	PEUSER NILS ARNE & PEUSER NICOLE	17380 SW 106TH CT	TUALATIN	OR	97062
2S115DC06600	PETERSON JACOB CURTIS & PETERSON JULIE DAWN	17925 SW 111TH AVE	TUALATIN	OR	97062
2S114CC06800	PENNIMAN STEVEN K & PHYLLIS D REV LIV TRUST	8374 VEREDA DEL PADRE	GOLETA	CA	93117
2S114CB01700	PAYNE DANIEL J & PAYNE JANET M	10440 SW KELLOGG DR	TUALATIN	OR	97062
2S115DD16600	PARSONS KIMBERLY MARIE & PARSONS BENJAMIN JAMES	17580 SW 110TH AVE	TUALATIN	OR	97062
2S115DC01200	PARKER SARAH D & PARKER WILEY	11480 SW ELMER CT	TUALATIN	OR	97062
2S115DC12000	PARKER MARION M	17830 SW 114TH AVE	TUALATIN	OR	97062
2S114CC06300	PARK KRISTEN	17902 SW 105TH CT	TUALATIN	OR	97062
2S115DD00800	PARK DANIEL K & PARK ANNA K	9333 SW NEZ PERCE CT	TUALATIN	OR	97062
2S115DD18200	PAPAS EDITH ELIZABETH	11055 SW WINYA CT	TUALATIN	OR	97062
2S115DD13100	PAIGE LIV TRUST	17940 SW 109TH AVE	TUALATIN	OR	97062
2S122BB00100	PACIFIC FINANCIAL CENTER LLC	801 CHERRY ST STE 1800	FORT WORTH	TX	76102
2S115DD12400	OWEN GREGORY L & OWEN DEBORAH L	17885 SW 109TH AVE	TUALATIN	OR	97062
2S115DD07900	ORLANES JONATHAN	10620 SW LUCAS DR	TUALATIN	OR	97062
2S115DC00700	OLSON LIVING TRUST	11435 SW ELMER CT	TUALATIN	OR	97062
2S115DD17700	OLSON DOUGLAS E & OLSON KIMBERLY R	11130 SW WINYA CT	TUALATIN	OR	97062
2S115DC04800	NUNLEY RICHARD V III	11105 SW GARRETT ST	TUALATIN	OR	97062
2S115DD08000	NUCHOLS MEAGAN & CHASE MARCUS	10580 SW LUCAS CT	TUALATIN	OR	97062
2S115DA03200	NORDEN PAUL & JEANINE LIV TRUST	17440 SW 108TH PL	TUALATIN	OR	97062
2S115DC01500	NGUYEN CATHY H	11485 SW ROBERTS CT	TUALATIN	OR	97062
2S115DD14400	NEWTON DAVID & E SUZANNE JOINT TRUST	10950 SW BANNOCH ST	TUALATIN	OR	97062
2S115DC11200	NAJERA KENE S & BUSTOS ESMERALDA RODRIGUEZ	12288 SW FUJI CT	TIGARD	OR	97224
2S115DD10800	MUSTEDANAGIC ADIS & MUSTEDANAGIC ALISA	11045 SW WINTU CT	TUALATIN	OR	97062
2S115DD19300	MURO MONICA D	11011 SW TUALATIN RD	TUALATIN	OR	97062
2S115DC09500	MURMAN CORY D & MURMAN TAMIKO A	11485 SW KALISPELL ST	TUALATIN	OR	97062
2S115DD06200	MUNSON JAMES L & PAMELA B REV LIV TRUST	10600 SW KIOWA ST	TUALATIN	OR	97062
2S115DC07600	MUIR JOHN S & ACHILOVA LOLA	17795 SW 112TH AVE	TUALATIN	OR	97062
2S114CC06600	MOWERY DANA KAY	17948 SW 105TH CT	TUALATIN	OR	97062
2S114CC06400	MORRISSEY FAMILY TRUST	17924 SW 105TH CT	TUALATIN	OR	97062
2S115DD13800	MORRELL LIVING TRUST	10915 SW TUNICA ST	TUALATIN	OR	97062
2S115DD12000	MORAN STEVEN TIMOTHY & MORAN ASHLEY SCHNAPP	17870 SW 110TH AVE	TUALATIN	OR	97062
2S115DD06300	MOORE KERRI ANN & MOORE CHRISTOHER	10619 SW BANNOCH CT	TUALATIN	OR	97062
2S122B001100	MITTLEMAN PROPERTIES	1 SW COLUMBIA ST STE 950	PORTLAND	OR	97258

2S115DC01300	MITCHELL TIMOTHY	900 SW 5TH AVE FL 17	PORTLAND	OR	97204
2S115DC90001	MITCHELL GARRETT C & MITCHELL SHARON M	17910 SW 115TH AVE	TUALATIN	OR	97062
2S115DC01600	MINATO KAZUKI & MINATO YUKO	11445 SW ROBERTS CT	TUALATIN	OR	97062
2S115DD12500	MILNE JAMES S & MILNE MARY F	17875 SW 109TH AVE	TUALATIN	OR	97062
2S115DC03100	MILLER LYNN B	11190 SW APALACHEE ST	TUALATIN	OR	97062
2S115DD14300	MILLER JOINT TRUST	10970 SW BANNOCH ST	TUALATIN	OR	97062
2S115DD05200	MIDKIFF HOUSTON & NANCY TRUST	17845 SW 106TH AVE	TUALATIN	OR	97062
2S115DC06900	MICHAELIDES JAMIE C & RADISH KEVIN A	17920 SW 112TH AVE	TUALATIN	OR	97062
2S115DA03600	MEYER PAUL R & MEYER MARY B	17365 SW 108TH PL	TUALATIN	OR	97062
2S115DC03900	MELTON LAWRENCE E & MELTON TONYA M	17900 SW 111TH AVE	TUALATIN	OR	97062
2S115DC11500	MCPHERSON SCOTT K & MCPHERSON SUSAN R	17895 SW 113TH AVE	TUALATIN	OR	97062
2S115DD19600	MCKINNON SPENCER E LIV TRUST	17971 SW 110TH PL	TUALATIN	OR	97062
2S115DD01200	MCCURTAIN LIV TRUST	10560 SW PUEBLO ST	TUALATIN	OR	97062
2S115DD06900	MCCURDY WAYNE & MCCURDY BETTE	10580 SW BANNOCH CT	TUALATIN	OR	97062
2S115DC03400	MCCLATCHEY CAITLIN & MCCLATCHEY GARRETT	11130 SW APALACHEE ST	TUALATIN	OR	97062
2S115DA01500	MAYER ANDREW PETER & MAYER MARIT JANAE	17395 SW 105TH AVE	TUALATIN	OR	97062
2S115DD01500	MATHYS JACKIE & STEVE ZIMMERMAN FAMILY TRUST	24305 SW BOONES FERRY RD	TUALATIN	OR	97062
2S122AD01000	MARSHALL ASSOCIATED LLC	PO BOX 278	TUALATIN	OR	97062
2S115DC04600	MARONDE JOHN ALBERT & MARONDE JILL I	17730 SW 111TH AVE	TUALATIN	OR	97062
2S115DC04500	MARKS CHRISTINA A REV LIV TRUST	17760 SW 111TH AVE	TUALATIN	OR	97062
2S115DC02200	MANN ERIC A & LUPULESCU NICOLETA	11490 SW ROBERTS CT	TUALATIN	OR	97062
2S115DC03500	MANN SONIA & MANN JONATHAN	11100 SW APALACHEE ST	TUALATIN	OR	97062
2S115DC00100	MANABE STELLA K & NAKAMA DEAN S	11420 SW HAZELBROOK RD	TUALATIN	OR	97062
2S114CC06500	MALETA SANDRA L & MALETA GREGORY B	17932 SW 105TH CT	TUALATIN	OR	97062
2S115DC07200	MAGUIRE BRIAN J & MAGUIRE LISA N	17860 SW 112TH AVE	TUALATIN	OR	97062
2S115DD03200	MACMILLEN JAMES WILSON & MACMILLEN DONNA JEAN	10547 SW PUEBLO ST	TUALATIN	OR	97062
2S115DD04800	MACK ADAM S & MACK KATHRYN M	10770 SW BANNOCH ST	TUALATIN	OR	97062
2S115DD18100	MACK RYAN P & MACK PATRICIA L	17825 SW 110TH AVE	TUALATIN	OR	97062
2S115DD14800	MACIELINSKI DAMIEN & LAURIE LIV TRUST	17565 SW 108TH PL	TUALATIN	OR	97062
2S115DD06800	MACAULAY THOMAS & MACAULAY DEBRA	10520 SW BANNOCH CT	TUALATIN	OR	97062
2S115DD17000	LYONS RICHARD & LYONS JUDITH	11065 SW LUCAS DR	TUALATIN	OR	97062
2S122AA00700	LUMBER FAMILY CO LLC	PO BOX 1427	TUALATIN	OR	97062
2S115DD11200	LUIKART GLEN A & WENDY C LUIKART LIV TRUST	11060 SW WISHRAM CT	TUALATIN	OR	97062
2S115DC04700	LOSER CALLIE	17700 SW 111TH AVE	TUALATIN	OR	97062
2S115DD15600	LORENTE JOAQUIN & LORENTE LOUISE	17460 SW 108TH PL	TUALATIN	OR	97062
2S114CC05600	LOANZON EMMELINE V TRUST	17994 SW 105TH CT	TUALATIN	OR	97062

2S115DD13200	LIN DONGMEI & MAO DIAN	17950 SW 109TH AVE	TUALATIN	OR	97062
2S115DC09100	LIGHT HARVEY EUGENE & LIGHT CLAUDIA JO	11405 SW KALISPELL ST	TUALATIN	OR	97062
2S115DC08300	LEGEND HOMES CORPORATION	4200 NE 20TH ST	OTIS	OR	97368
2S115DA05100	LEE MIKE	17475 SW 111TH AVE	TUALATIN	OR	97062
2S115DD14900	LEE JONATHAN K & LEE STEPHANIE IRVING	17605 SW 108TH PL	TUALATIN	OR	97062
2S115DC10700	LAUREN NICHOLAS D & LAUREN CHRISTINA M	17935 SW 114TH AVE	TUALATIN	OR	97062
2S115DC12500	LANG JULIANNE LERAE	17197 SW SMITH AVE BLDG #37	SHERWOOD	OR	97140
2S115DC11700	LAMB ETHAN S & LAMB SARAH W	17825 SW 113TH AVE	TUALATIN	OR	97062
2S122AA00500	LAM RESEARCH CORPORATION	2025 GATEWAY PL #228	SAN JOSE	CA	95110
2S122BA00100	LAM RESEARCH CORP	4650 CUSHING PKWY	FREMONT	CA	94538
2S115DD15900	KUMLER PHILIP A & JULIE I FAM TRUST	17515 SW 108TH PL	TUALATIN	OR	97062
2S115DC07900	KUMAR ZOYA & UFFORD JOHN C	17915 SW 112TH AVE	TUALATIN	OR	97062
2S115DD17900	KRAJCAR TIMOTHY D & KRAJCAR KIERSTEN A	11070 SW WINYA CT	TUALATIN	OR	97062
2S115DC02900	KOFORD AARON S & KOFORD ELIZABETH S	11220 SW APALACHEE ST	TUALATIN	OR	97062
2S115DD08600	KNAPPENBERGER CLARK W & KNAPPENBERGER CAROLYN	10575 SW LUCAS CT	TUALATIN	OR	97062
2S115DD00900	KNAPKE STEVEN J & KNAPKE LIEN K	17997 SW 105TH CT	TUALATIN	OR	97062
2S115DD15500	KLENZ MICHAEL & KLENZ LINDA	17480 SW 108TH AVE	TUALATIN	OR	97062
2S115DC04300	KLEIN GEORGE P & KLEIN LEANNE S	17800 SW 111TH AVE	TUALATIN	OR	97062
2S115DC05600	KIRKPATRICK GREG D & KIRKPATRICK DEBRA S	17765 SW 112TH AVE	TUALATIN	OR	97062
2S115DC03000	KING JERSILYN & PANGELINAN GERHART JURADO	11200 SW APALACHEE ST	TUALATIN	OR	97062
2S115DD03000	KINDRED LYLE V & KINDRED ELAINE A	17968 SW 106TH AVE	TUALATIN	OR	97062
2S115DD08800	KERR JACK & KERR SARWESHNI	17645 SW 106TH AVE	TUALATIN	OR	97062
2S115DD09100	KAWAL JUSTIN & BURNS ERIN	10550 SW STARR DR	TUALATIN	OR	97062
2S115DD20100	JONES ROBERT ALAN & JONES SHELLEY DIANE	17964 SW 110TH PL	TUALATIN	OR	97062
2S115DA05000	JOHNSON PHILLIP TILO	17445 SW 111TH AVE	TUALATIN	OR	97062
2S115DD17100	JOHNSON KIT & JOHNSON AMY	17560 SW 111TH AVE	TUALATIN	OR	97062
2S115DC07400	JODOIN MICHAEL A & JODOIN NANCY	17810 SW 112TH AVE	TUALATIN	OR	97062
2S115DD07500	JIRICEK AARON G & KARINA B REV LIV TRUST	10525 SW KIOWA ST	TUALATIN	OR	97062
2S114CB02200	JEWELL THOMAS G & JEWELL DANA P	17400 SW 104TH AVE	TUALATIN	OR	97062
2S115DD05600	JASTER ALEXIS	10760 SW KIOWA CT	TUALATIN	OR	97062
2S115DD08700	JANSSEN JILLIAN & JANSSEN JARED	10595 SW LUCAS CT	TUALATIN	OR	97062
2S115C002001	JAMES FAMILY INVESTMENT LLC	20675 SW LEBEAU RD	SHERWOOD	OR	97140
2S115DD01100	JAGODNIK BRIAN & JAGODNIK LAUREN	10536 SW PUEBLO ST	TUALATIN	OR	97062
2S115DA02100	JAFFEE CAROLINE JOHANNA & JAFFEE JAY	17350 SW 106TH CT	TUALATIN	OR	97062
2S122BA00200	JAE OREGON INC	11555 SW LEVETON DR	TUALATIN	OR	97062
2S115DD12300	IMUS ROBERT G & DEBORAH R IMUS LIV TRUST	17895 SW 109TH AVE	TUALATIN	OR	97062

2S115DA04500	IMBLER-YOUNG DIANE REV LIV TRUST	17485 SW 110TH AVE	TUALATIN	OR	97062
2S122B001000	IDM-OREGON LLC	1101 SE TECH CENTER DR STE 160	VANCOUVER	WA	98683
2S115DD05900	HYATT SEAN & HYATT LISA	10755 SW KIOWA CT	TUALATIN	OR	97062
2S115DA04900	HUTCHISON BERNADETTE SEP PROP REV LIV TRUST	17430 SW 111TH AVE	TUALATIN	OR	97062
2S115DC05000	HUGEBACK BENJAMIN L & HUGEBACK JULIET F	11135 SW GARRETT ST	TUALATIN	OR	97062
2S122AA00600	HR LLC	18280 SW 108TH AVE	TUALATIN	OR	97062
2S115DA05200	HOWELL ZACHARY P & HOWELL REBECCA J	17535 SW 111TH AVE	TUALATIN	OR	97062
2S115DC09600	HOURANI JIHAD & SHIKHA HAYAT	11490 SW KALISPELL ST	TUALATIN	OR	97062
2S115DC08800	HOOVER DEVIN & HOOVER KRISTEN	11315 SW KALISPELL ST	TUALATIN	OR	97062
2S115DD10900	HOLMES TRUST	11025 SW WINTU CT	TUALATIN	OR	97062
2S115DC01700	HISLOP BRENT & HISLOP CLAUDIA	11425 SW ROBERTS CT	TUALATIN	OR	97062
2S115DC01100	HIRTE EDWIN K & HIRTE TERESA J	11450 SW ELMER CT	TUALATIN	OR	97062
2S115DC90002	HINDS FAMILY TRUST	17900 SW 115TH AVE	TUALATIN	OR	97062
2S115DC08700	HILLNER GISEL	17770 SW 113TH AVE	TUALATIN	OR	97062
2S115DD06700	HILDEBRAN REED & HILDEBRAN SALLY J	10500 SW BANNOCH CT	TUALATIN	OR	97062
2S115DC06300	HEWITT KRISTY K & HEWITT MARSHALL	17815 SW 111TH AVE	TUALATIN	OR	97062
2S115DD17300	HERR DANIEL J & HERR CAMILLE	17655 SW 111TH AVE	TUALATIN	OR	97062
2S115DD08100	HERINCKX JEFFREY & HERINCKX CHANDA S	10560 SW LUCAS CT	TUALATIN	OR	97062
2S115DD13400	HENSLEY TRACY L & BARTELS AARON DAVID	17980 SW 109TH AVE	TUALATIN	OR	97062
2S114CB02300	HENRY DAVID & SHARI LIV TRUST	10355 SW KELLOGG DR	TUALATIN	OR	97062
2S115DD02400	HEMANN MAURA A REV LIV TRUST	10645 SW PUEBLO CT	TUALATIN	OR	97062
2S115DD01900	HELTNESS ERIC TODD & HELTNESS CHERYL LYNN	10632 SW PUEBLO CT	TUALATIN	OR	97062
2S122AA00100	HELSER LLC	PO BOX 1569	TUALATIN	OR	97062
2S115DD14000	HEIN CHRISTOPHER HAROLD & HEIN SUSANNE BIRGIT	10975 SW TUNICA ST	TUALATIN	OR	97062
2S115DC90000	HAZELBROOK CONDO UNIT OWNERS			OR	00000
2S115DD18300	HAYES RYAN D & ANCHARSKI NANCY	11025 SW WINYA CT	TUALATIN	OR	97062
2S114CB02400	HAUPERT REV TRUST	10415 SW KELLOGG DR	TUALATIN	OR	97062
2S115DC03200	HARTFEIL DERICH & HARTFEIL ELEANOR	11170 SW APALACHEE ST	TUALATIN	OR	97062
2S115DD19100	HARRIS DEGAY C & OBIDIGBO OBINNA KINGSLEY	11037 SW TUALATIN RD	TUALATIN	OR	97062
2S115DD16400	HANSON TIMOTHY J & HANSON SUSAN E	17690 SW 110TH AVE	TUALATIN	OR	97062
2S114CB01500	HANNON RACHELLE S & HANNON JEFFREY T	17440 SW 105TH AVE	TUALATIN	OR	97062
2S115DD19900	HANNEGAN MICHAEL L	17992 SW 110TH PL	TUALATIN	OR	97062
2S115DD16800	HAMLIN JANI LYNN & HAMLIN LARRY	11015 SW LUCAS DR	TUALATIN	OR	97062
2S115DC00400	HAMILTON PAUL CHARLES & HAMILTON JOAN E	PO BOX 3207	TUALATIN	OR	97062
2S115DC09900	HAMILTON BRETT T & HAMILTON KAMI R	11430 SW KALISPELL ST	TUALATIN	OR	97062
2S115DD15400	HALL STEPHEN C & HALL WENDY S	10799 SW LUCAS DR	TUALATIN	OR	97062

2S115DD07700	HACKBARTH JANICE V	10585 SW KIOWA ST	TUALATIN	OR	97062
2S114CC05400	GUY CARRIE & GUY TIMOTHY M	10482 SW PUEBLO CT	TUALATIN	OR	97062
2S115DD10600	GUTOWSKI MARK A	11070 SW WINTU CT	TUALATIN	OR	97062
2S115DD04900	GUILFOYLE CAROL L TRUST	10795 SW BANNOCH ST	TUALATIN	OR	97062
2S115DC10500	GREENE JOHN W & GREENE SUSAN	17915 SW 114TH AVE	TUALATIN	OR	97062
2S115DD06000	GREEN GARY L & GREEN JANIS A	10695 SW KIOWA CT	TUALATIN	OR	97062
2S115DD11800	GREEN CRAIG D	17885 SW 110TH AVE	TUALATIN	OR	97062
2S115DA04700	GRAHAM CONNIE L REV TRUST	17500 SW 111TH AVE	TUALATIN	OR	97062
2S115DC00300	GOVINDAN ANUMARLA & GOVINDAN SODHARI	11460 SW HAZELBROOK RD	TUALATIN	OR	97062
2S114CC05800	GONZALEZ JULIE A REV TRUST	17565 SW 110TH AVE	TUALATIN	OR	97062
2S115DC11900	GONZALEZ RODOLFO GUERRERO & GUZMAN JOSE LUIS AMEZCUA	17780 SW 114TH AVE	TUALATIN	OR	97062
2S115DA04300	GODFREY DAVID E & GODFREY LISA J	17410 SW 110TH AVE	TUALATIN	OR	97062
2S115DD16900	GLASSER FAMILY REV TRUST	11035 SW LUCAS DR	TUALATIN	OR	97062
2S114CB02500	GITT SHARON M	10435 SW KELLOGG DR	TUALATIN	OR	97062
2S115DD16200	GITT SEAN C & GITT MELISSA A	17770 SW 110TH AVE	TUALATIN	OR	97062
2S115DD02700	GIRDNER DOUGLAS R & GIRDNER SANDRA L	10623 SW PUEBLO CT	TUALATIN	OR	97062
2S115DC06000	GIMARELLI-BAST TERRA	11120 SW GARRETT ST	TUALATIN	OR	97062
2S115DA04400	GILBERTSON CHRISTOPHER C & GILBERTSON HEIDI S	17435 SW 110TH AVE	TUALATIN	OR	97062
2S122AD01100	GARSKE TRAVIS W	PO BOX 729	COLBERT	WA	99005
2S115DC06800	GALVIN JEREMY & GALVIN ANDREA	17950 SW 112TH AVE	TUALATIN	OR	97062
2S115DD05400	GALLARDO MICHAEL & MIELE SARA	10680 SW KIOWA CT	TUALATIN	OR	97062
2S115DD13500	GALLAGHER RON MICHAEL & GALLAGHER KELLY MORIARTY	17975 SW 109TH AVE	TUALATIN	OR	97062
2S1220000400	FUJIMI CORPORATION	11200 SW LEVETON DR	TUALATIN	OR	97062
2S115DC09800	FRONCZAK GREG JOHN	11450 SW KALISPELL ST	TUALATIN	OR	97062
2S115DA01400	FRIEDMAN MARK E REV TRUST & FRIEDMAN JOHNNALEE L REV TRU	17355 SW 105TH AVE	TUALATIN	OR	97062
2S115DA01600	FRANKLIN MELLISA & FRANKLIN IGNACIO	17425 SW 105TH AVE	TUALATIN	OR	97062
2S122AD00900	FRANKLINIA LLC	6107 SW MURRAY BLVD #175	BEAVERTON	OR	97008
2S115DC05100	FRAINEY BRIAN A & FRAINEY ABIGAIL J	11155 SW GARRETT ST	TUALATIN	OR	97062
2S115DC00500	FORD KEVIN & LOCKE EMMA	11495 SW ELMER CT	TUALATIN	OR	97062
2S115DD19400	FORD JOHN E & AMES STEPHANIE	17953 SW 110TH PL	TUALATIN	OR	97062
2S115DD13600	FOILES LESLIE E & FOILES VICTORIA A	10960 SW TUNICA ST	TUALATIN	OR	97062
2S115DC10900	FLORES SAMANTHA & PENA JOSE ROBERTO	11380 SW APALACHEE ST	TUALATIN	OR	97062
2S115DC11400	FITCH JACQUELINE DARLENE & FITCH JOHN WALLACE	17915 SW 113TH AVE	TUALATIN	OR	97062
2S115DD15800	FISH TAMMY G & FISH WAYNE L	17475 SW 108TH PL	TUALATIN	OR	97062
2S115DC02000	FENN DENNIS LESLIE & FENN ROBERTA JEAN	11440 SW ROBERTS CT	TUALATIN	OR	97062
2S115DD14500	FB TRUST	10910 SW BANNOCH ST	TUALATIN	OR	97062

2S115DA04800	ESTRADA ALFRED & ESTRADA SHARON	17460 SW 111TH AVE	TUALATIN	OR	97062
2S115DD20000	EDWARDS MARK	17986 SW 110TH PL	TUALATIN	OR	97062
2S115DA04000	DUPUIS KENNETH & DUPUIS ERIN	17550 SW 110TH AVE	TUALATIN	OR	97062
2S115DA04100	DUPUIS FAMILY TRUST	17460 SW 110TH AVE	TUALATIN	OR	97062
2S115C002000	DUE NORTH PROPERTIES LLC	401 E FIRST ST #1062	NEWBERG	OR	97132
2S115DD06100	DRAPER JAMES A & JANICE F TRUST	17755 SW 106TH AVE	TUALATIN	OR	97062
2S115DC06500	DOWNING DARYL & DOWNING CHRISTINE	17865 SW 111TH AVE	TUALATIN	OR	97062
2S115DC08600	DONOHUE NICHOLAS MICHAEL	17800 SW 113TH AVE	TUALATIN	OR	97062
2S115DD02300	DONAUGH ANTHONY M & DONAUGH CHRISTI S	10651 SW PUEBLO CT	TUALATIN	OR	97062
2S115DC06200	DOLAK TYLER JOHN & MCMUNN KRISTIANA NICHOLE	17795 SW 111TH AVE	TUALATIN	OR	97062
2S115DD19500	DIXON ROBERT W	17967 SW 110TH PL	TUALATIN	OR	97062
2S115DA03500	DEJONG STEVEN & DEJONG KAITLIN	17350 SW 108TH PL	TUALATIN	OR	97062
2S115DD14100	DEHEN PAUL V & DEHEN ROBERTA A	10995 SW TUNICA ST	TUALATIN	OR	97062
2S115DD17500	DEBRAUWERE LIV TRUST	11100 SW LUCAS DR	TUALATIN	OR	97062
2S114CC05500	DEAVILLE CASEY D	17970 SW 105TH CT	TUALATIN	OR	97062
2S115C002803	CYPRESS PARISH LLC	16750 SE KENS CT	MILWAUKIE	OR	97267
2S115DC10200	CROSS THOMAS A & CROSS DIANE RUTH	17845 SW 114TH AVE	TUALATIN	OR	97062
2S115DD01400	CRALL RICHARD F & CRALL BARBARA M	10055 SW WASCO WAY	TUALATIN	OR	97062
2S115C001700	CR RIVERCREST MEADOWS COMMUNITIES LLC	444 W BEECH ST #300	SAN DIEGO	CA	92101
2S115DC10100	COX LEE H & COX CHRISTINA R	17825 SW 114TH AVE	TUALATIN	OR	97062
2S115DC90003	COSNER BERNADATTE M LIV TRUST	17890 SW 115TH AVE	TUALATIN	OR	97062
2S115DD17200	CORR FAMILY REV TRUST	17585 SW 111TH AVE	TUALATIN	OR	97062
2S115DD05300	CONNER LIV TRUST	10650 SW KIOWA CT	TUALATIN	OR	97062
2S115DD16700	COMPTON JAY W	17595 SW 110TH AVE	TUALATIN	OR	97062
2S114CC06700	CODINO VAL H & CODINO LOIS D	17962 SW 105TH CT	TUALATIN	OR	97062
2S115DC02100	COCKRELL WILLIAM D & COCKRELL PAMELA K	11460 SW ROBERTS CT	TUALATIN	OR	97062
2S115DD02500	CLARK DAVID A & CLARK CATHERINE M	10639 SW PUEBLO CT	TUALATIN	OR	97062
2S115DD08400	CLARK MONICA J & CLARK LONNY T	10525 SW LUCAS CT	TUALATIN	OR	97062
2S115DD11900	CLARK CHARLES L TRUST	17875 SW 110TH AVE	TUALATIN	OR	97062
2S115DD05100	CHRISTIAN LOU A & CHRISTIAN TINA L	10677 SW BANNOCH ST	TUALATIN	OR	97062
2S115DC06700	CHONG CHRISTOPHER A & CHONG KIRSTEN J	5870 SW WICHITA ST	TUALATIN	OR	97062
2S115DD05500	CHEN DAVID & CALIXTRO ELIZABETH	10720 SW KIOWA CT	TUALATIN	OR	97062
2S115DC07100	CHAUNCEY LOIS	17890 SW 112TH AVE	TUALATIN	OR	97062
2S115DC11000	CHANG SARAH	11360 SW APALACHEE ST	TUALATIN	OR	97062
2S115DD06400	CHAMBERS LIV TRUST	10595 SW BANNOCH CT	TUALATIN	OR	97062
2S123B000600	CHAMBERLAIN HUSSA PROPERTIES	18755 SW TETON AVE	TUALATIN	OR	97062

2S115DD15000	CHALISE PRAVEEN & CHALISE DEEPA	17625 SW 108TH PL	TUALATIN	OR	97062
2S115DD01800	CHALFAN TRUST	4095 WESTBAY RD	LAKE OSWEGO	OR	97035
2S115DC10000	CERO JEFFREY C & CERO CARISSA	11410 SW KALISPELL ST	TUALATIN	OR	97062
2S115DC04000	CAVEN JEREMY LIONEL	17870 SW 111TH AVE	TUALATIN	OR	97062
2S122AD00400	CALMAX TECHNOLOGY INC	3491 LAFAYETTE ST	SANTA CLARA	CA	95054
2S115DD13900	CALDER KENNETH D & CALDER MARY C	10945 SW TUNICA ST	TUALATIN	OR	97062
2S115DD05800	CAGLE STEVEN & CAROLYN LIV TRUST	10777 SW KIOWA CT	TUALATIN	OR	97062
2S115DC08100	CABLE SAMUEL & CABLE MARLENE	11225 SW APALACHEE ST	TUALATIN	OR	97062
2S115DC03700	BUSHNELL TODD MICHAEL	17960 SW 111TH AVE	TUALATIN	OR	97062
2S115DC11800	BURNS JACK S	17785 SW 113TH AVE	TUALATIN	OR	97062
2S114CB02100	BURDICK EILEEN T & BURDICK CHRISTOPHER J	17430 SW 104TH AVE	TUALATIN	OR	97062
2S115DD12200	BUCKNER ORVILLE KERN III TRUST	17890 SW 110TH AVE	TUALATIN	OR	97062
2S115DC01900	BRYANT SYDNAY & BRYANT JAKE	11420 SW ROBERTS CT	TUALATIN	OR	97062
2S115DD11600	BROWNE AARON J & BROWNE KELLIE G	11035 SW WISHRAM CT	TUALATIN	OR	97062
2S115DC09400	BROPHY JEFFREY E & BROPHY DANETTE M	11465 SW KALISPELL ST	TUALATIN	OR	97062
2S114CB02800	BROOKS STEVEN K & DAVIS HEATHER M	15532 SW PACIFIC HWY #CIB111	TIGARD	OR	97224
2S115DD15700	BROCKWAY FAMILY TRUST	17455 SW 108TH PL	TUALATIN	OR	97062
2S115DC08500	BRISAN MARIUS M & BRISAN LIDIA M	17850 SW 113TH AVE	TUALATIN	OR	97062
2S115DD11000	BLUM MARY LOU	11020 SW WISHRAM CT	TUALATIN	OR	97062
2S114CC06100	BLATT CHARLES M JR & BLATT NAOMI T	17897 SW 105TH CT	TUALATIN	OR	97062
2S115DC10800	BLAKEY BLAKE & BLAKEY DOMENIQUE	11400 SW APALACHEE ST	TUALATIN	OR	97062
2S114CB02600	BIXEL JENNIFER	10455 SW KELLOGG DR	TUALATIN	OR	97062
2S114CC06900	BILITZ MARTIN & BILITZ MICHAELA DANIELA	10479 SW PUEBLO ST	TUALATIN	OR	97062
2S114CC05900	BIHARI NUPUR	17929 SW 105TH CT	TUALATIN	OR	97062
2S115DC05800	BIEHLER ROBYN L	17750 SW 112TH AVE	TUALATIN	OR	97062
2S115DC04900	BERGGREN TERESA DORAN REV LIV TRUST	11115 SW GARRETT ST	TUALATIN	OR	97062
2S115DC09200	BERGGREN BRAD J & BERGGREN ROBERTA K	11425 SW KALISPELL ST	TUALATIN	OR	97062
2S115DC08400	BERG TOR L & BERG CHERYL L	17880 SW 113TH AVE	TUALATIN	OR	97062
2S115DD10400	BENNETT JENNIFER ANN & FRICK BENJAMIN JOHN	11030 SW WINTU CT	TUALATIN	OR	97062
2S115DA01900	BENKE FAMILY TRUST	17400 SW 106TH CT	TUALATIN	OR	97062
2S114CB01600	BENEDICT ELIZABETH A	10460 SW KELLOGG DR	TUALATIN	OR	97062
2S115DD02000	BELL TAMERA J & JURCHEN STEVEN L	10644 SW PUEBLO ST	TUALATIN	OR	97062
2S115DD07000	BAXTER CHRISTOPHER & BAXTER STEPHANIE	10606 SW BANNOCH CT	TUALATIN	OR	97062
2S115DD07400	BAUMANN THOMAS K & BAUMANN ROSEMARIE D	10500 SW KIOWA ST	TUALATIN	OR	97062
2S115DC10300	BATEMAN TRUST	17875 SW 114TH AVE	TUALATIN	OR	97062
2S115DD07200	BARTHOLOMEW MARY C TRUST	10570 SW KIOWA ST	TUALATIN	OR	97062

2S115DD12900	BARROW BRAD JAMES & BARROW SYDNEY ANTONETTE	10850 SW BANNOCH ST	TUALATIN	OR	97062
2S115DC00600	BARRACLOUGH RODNEY P JR & BARRACLOUGH SANDRA	11475 SW ELMER CT	TUALATIN	OR	97062
2S115DD12100	BANTA BRYCE & BANTA RENE	17880 SW 110TH AVE	TUALATIN	OR	97062
2S115DD15200	BAIRD LEAH J	17610 SW 108TH PL	TUALATIN	OR	97062
2S115DD02900	BAILEY TRUST	17971 SW 106TH AVE	TUALATIN	OR	97062
2S115DC06100	BAEDOR FAMILY TRUST	17775 SW 111TH AVE	TUALATIN	OR	97062
2S115DD06500	AUGUSTYNIAK EDWARD J & SUJCZYNSKA MONIKA J	10555 SW BANNOCH CT	TUALATIN	OR	97062
2S122AA00400	ASCENTEC ENGINEERING LLC	18500 SW 108TH AVE	TUALATIN	OR	97062
2S115DD07600	ASAI C&C JOINT TRUST	10555 SW KIOWA ST	TUALATIN	OR	97062
2S115DA01700	ARROYO CHRIS & ARROYO JAQUELINE C	10515 SW STARR DR	TUALATIN	OR	97062
2S115DC11300	ARNDT RONALD C 2015 TRUST	80395 WEISKOPF	LA QUINTA	CA	92253
2S115DC00900	ARBUCKLE JAMES F & ARBUCKLE MARY D	11400 SW ELMER CT	TUALATIN	OR	97062
2S115C002802	APOSTOLIC LUTHERAN CHURCH OF PORTLAND	PO BOX 23312	TIGARD	OR	97223
2S115DD19000	ANDERSON DEBORAH M	11045 SW TUALATIN RD	TUALATIN	OR	97062
2S115DD19200	ANDERSON EDWARD JOEL & GADKARI SHRUTI UDAY	11029 SW TUALATIN RD	TUALATIN	OR	97062
2S115DA03800	AMAN FAMILY TRUST	17435 SW 108TH PL	TUALATIN	OR	97062
2S115DC00800	ALBERTSON BRUCE & ALBERTSON JUDY	11415 SW ELMER CT	TUALATIN	OR	97062
2S115DD15100	ALBERT GARY J & ALBERT LISA J	17630 SW 108TH PL	TUALATIN	OR	97062
2S115DD02100	AIELLO FAMILY TRUST	10650 SW PUEBLO CT	TUALATIN	OR	97062
2S114CB01900	ADAMS KAREN E TRUST & BARTHOLOMEW BRIAN J	17445 SW 104TH AVE	TUALATIN	OR	97062
2S115DD00700	ADAMS SHEILA D	10915 SW TUALATIN RD	TUALATIN	OR	97062
2S114CC05700	ACKLEY KRISTEN & ROTTMAN ERIK A	17961 SW 105TH CT	TUALATIN	OR	97062
2S115DD01700	ACKERMAN CLINTON	17987 SW 106TH AVE	TUALATIN	OR	97062
2S115DC12100	ABERNATHY TRAVIS E & ABERNATHY AMANDA M	17860 SW 114TH AVE	TUALATIN	OR	97062
2S122AD01300	ABBOTT TUALATIN LLC	3030 BRIDGEWAY	SAUSALITO	CA	94965
2S123BB00701	AAA OREGON/IDAHO	600 MARKET ST	PORTLAND	OR	97201
2S123BB90002	3 J'S PROPERTIES LLC	10400 SW TUALATIN RD	TUALATIN	OR	97062
2S123BB00501	18355 SW TETON AVENUE TUALATIN OR LLC	17455 SW RIDGEVIEW LN	LAKE OSWEGO	OR	97034
2S122B001200	12345 SW LEVETON LLC	101 SW MAIN ST STE 1200	PORTLAND	OR	97204

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Riverpark CIO Secretary
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Riverpark CIO Treasurer
Cynthia Martinez
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East Tualatin CIO Land Use Officer
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East Tualatin CIO Treasurer
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East Tualatin CIO Secretary
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TualatinOR 97062

Midwest Tualatin CIO Vice President
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Byrom CIO Land Use Officer
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22625 SW 94th Ter
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Cathy Holland
10740 SW Lucas Dr
TualatinOR 97062

Commercial CIO Vice President
Scott Miller
12976 SW Hillside Tce
TualatinOR 97223

Exhibit B.

*** NOTICE OF RESCHEDULED HEARINGS AND EXTENDED OPPORTUNITY TO COMMENT ***

NOTICE IS HEREBY GIVEN that below listed public hearings have been ***rescheduled*** and will held be in-person at:
Location: Tualatin Service Center
10699 SW Herman Road, Tualatin, OR 97062

The hearings can also be attended virtually via:
Zoom Teleconference: log-in available at
www.tualatinoregon.gov/meetings 7 days before each hearing

INDUSTRIAL MASTER PLAN (IMP) 24-0001
Planning Commission Hearing: *Rescheduled* from March 19, 2025 to *May 21, 2025 at 6:30 pm*
Mackenzie, on behalf of LAM Research Corporation, is requesting an Industrial Master Plan (IMP) amendment to setback and building height standards for a 75.96 acre site zoned Manufacturing Park (MP).

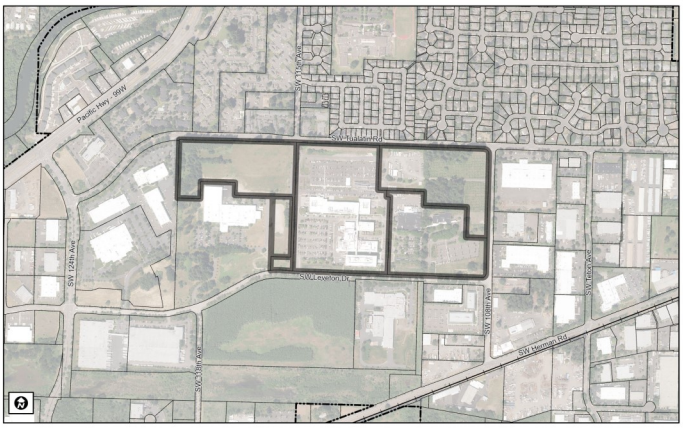
ARCHITECTURAL REVIEW (AR) 24-0002
Architectural Review Board Hearing: *Rescheduled* from April 2, 2025 to *June 11, 2025 at 6:30 pm*
Mackenzie, on behalf of LAM Research Corporation, is requesting approval to construct a two phase project consisting of three buildings for office, research laboratory, and utilities, totaling 423,470 square feet, expansion of an existing bulk gas storage yard, and associated landscaping, parking, and public/site improvements on a 75.96 acre site zoned Manufacturing Park (MP).

To view the applications, visit: www.tualatinoregon.gov/projects

TO PROVIDE COMMENTS:

First Class Mail:
Planning Division
Attn: Keith Leonard
10699 SW Herman Road
Tualatin, OR 97062

Email: kleonard@tualatin.gov
Phone: 503-691-3029



Property location for both applications: 11155-11361 SW Leveton Drive (Tax Lots: 2S122AA500 & 800, 2S122AB 100, 2S122BA00100)

Industrial Master Plan Criteria: TDC Chapters: 32, 33, 62

Architectural Review Criteria: TDC Chapters: 32, 33, 62, 63, 73A-D, 74, 75

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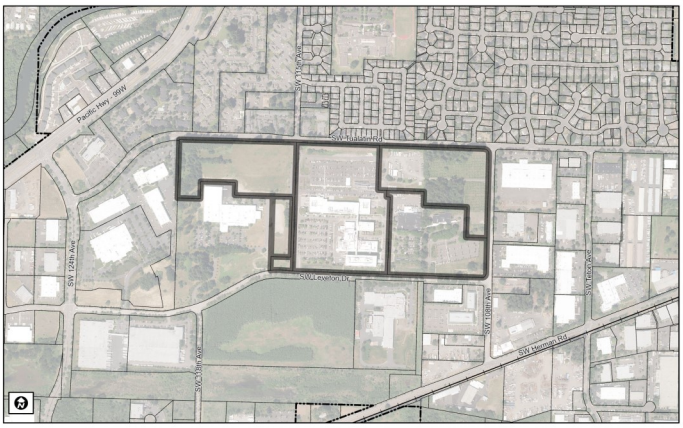

Property location for both applications: 11155-11361 SW Leveton Drive (Tax Lots: 2S122AA500 & 800, 2S122AB 100, 2S122BA00100)

Industrial Master Plan Criteria: TDC Chapters: 32, 33, 62

Architectural Review Criteria: TDC Chapters: 32, 33, 62, 63, 73A-D, 74, 75

- **Individuals wishing to comment on the application(s)** must do so in writing to the Planning Division prior to each hearing, or in writing and/or orally at the hearing. The minimum statutory comment period is 21 days for these applications, and the deadline for materials to be received to be included in the hearing packets for the respective applications has been ***extended*** to ***May 14, 2025*** for IMP24-0001 and ***June 7, 2024*** for AR24-0002.
- **The public hearings process** begins with a staff presentation, followed by testimony by proponents, testimony by opponents, and rebuttal. Individual testimony may be limited. At the conclusion of the hearing, the respective hearing body will deliberate and make a decision based on the facts and arguments in the public record. Before each hearing is closed, a participant may request that the record remain open for at least seven days after that hearing.
- **Staff reports and the application packet** will be available at least seven days before each hearing date for inspection at no cost, and copies will be provided at a reasonable cost. An online version will be published seven days before each hearing at **www.tualatinoregon.gov/meetings**
- **Everyone is invited to attend the hearing(s) and comment** on that application's approval criteria. Failure of an issue to be raised in a hearing, in person, or by letter, or failure to provide sufficient specificity to afford each decision maker an opportunity to respond to the issue raised precludes appeal of that application to the State Land Use Board of Appeals (LUBA) based on that issue. The failure of the applicant to raise constitutional or other issues relating to proposed conditions of approval for either application with sufficient specificity to each decision maker to respond to the issue precludes an action for damages in circuit court.

For additional information contact:
Keith Leonard, Associate Planner: kleonard@tualatin.gov, 503-691-3029

- **Individuals wishing to comment on the application(s)** must do so in writing to the Planning Division prior to each hearing, or in writing and/or orally at the hearing. The minimum statutory comment period is 21 days for these applications, and the deadline for materials to be received to be included in the hearing packets for the respective applications has been ***extended*** to ***May 14, 2025*** for IMP24-0001 and ***June 7, 2024*** for AR24-0002.
- **The public hearings process** begins with a staff presentation, followed by testimony by proponents, testimony by opponents, and rebuttal. Individual testimony may be limited. At the conclusion of the hearing, the respective hearing body will deliberate and make a decision based on the facts and arguments in the public record. Before each hearing is closed, a participant may request that the record remain open for at least seven days after that hearing.
- **Staff reports and the application packet** will be available at least seven days before each hearing date for inspection at no cost, and copies will be provided at a reasonable cost. An online version will be published seven days before each hearing at **www.tualatinoregon.gov/meetings**
- **Everyone is invited to attend the hearing(s) and comment** on that application's approval criteria. Failure of an issue to be raised in a hearing, in person, or by letter, or failure to provide sufficient specificity to afford each decision maker an opportunity to respond to the issue raised precludes appeal of that application to the State Land Use Board of Appeals (LUBA) based on that issue. The failure of the applicant to raise constitutional or other issues relating to proposed conditions of approval for either application with sufficient specificity to each decision maker to respond to the issue precludes an action for damages in circuit court.

For additional information contact:
Keith Leonard, Associate Planner: kleonard@tualatin.gov, 503-691-3029

10699 SW Herman Rd, Tualatin, Oregon 97062 TualatinOregon.gov

CITY of TUALATIN

AFFIDAVIT OF MAILING

STATE OF OREGON)

) ss

COUNTY OF WASHINGTON)

I, Lindsey Hagerman being first duly sworn, depose and say:

That on the 9 day of May, I served upon the persons shown on Exhibit A, attached hereto and by this reference incorporated herein, a copy of a Notice of Hearing/Application/Decision marked Exhibit B, attached hereto and by this reference incorporated herein, by mailing to them a true and correct copy of the original hereof. I further certify that the addresses reflect information received from the relevant party or agency, and that said envelopes were placed in the United States Mail at Tualatin, Oregon, prepared to receive postage administered by city staff.

Dated this 9 of, May 2025

Lindsey Hagerman
Signature

SUBSCRIBED AND SWORN to before me this 5/9/2025

OFFICIAL STAMP
AGATHA LEIGH BURKE
NOTARY PUBLIC - OREGON
COMMISSION NO. 1041046
MY COMMISSION EXPIRES OCTOBER 02, 2027

Agatha Leigh Burke
Notary Public for Oregon

My commission expires: 10/02/2027

RE: IMP24-0001 AND AR24-0002 NOTICE OF HEARING LAM LUX

Exhibit A.

TLID	OWNER1	OWNERADDR
2S115DD08300	ZIENKIEWICZ MIKE & ZIENKIEWICZ STEPHANIE	10510 SW LUCAS CT
2S115DD18500	ZEIN ZEINA	7575 SW ELMWOOD ST
2S115DC10600	YANG HAOWEI	17925 SW 114TH AVE
2S115DD17400	WYLLER LIV TRUST	613 NW MT MAZAMA ST
2S115DD18000	WRIGHT RALPH RICHARD & LYNDA RAE LIV TRUST	11040 SW WINYA CT
2S114CB02700	WORLEY LAURA & SPIEGEL JOEL	10475 SW KELLOGG DR
2S115CC00100	WOODRIDGE LP	THREE CENTERPOINTE DR #130
2S115CC00200	WOODRIDGE LP	THREE CENTERPOINTE DR #130
2S115DD11500	WOLLEY KEVIN & WOLLEY JANE	11055 SW WISHRAM CT
2S114CB01800	WOLFE GEORGE A & WOLFE ANDREA H	10420 SW KELLOGG DR
2S115DD16500	WISNER RANDOLPH R & DEBBIE R LIV TRUST	17600 SW 110TH AVE
2S115DD06600	WINKLER MISTY D & REGISTER JEAN	10515 SW BANNOCH CT
2S115DD08200	WILSON CONSTANCE J TRUST	10530 SW LUCAS CT
2S122AD00600	WILLY LUMP LUMP LLC	4500 SW ADVANCE RD
2S122AD00700	WILLY LUMP LUMP LLC	4500 SW ADVANCE RD
2S122AD00800	WILLY LUMP LUMP LLC	4500 SW ADVANCE RD
2S115DD16000	WILLON MARK & PAM TRUST	17850 SW 110TH AVE
2S115DD02200	WILLIAMS MATTHEW STEVEN	10655 SW PUEBLO CT
2S115DD07300	WILLIAMS VERONICA L	10540 SW KIOWA ST
2S115DD10500	WILLIAMS DAVE A & WILLIAMS KIMBERLY R	11050 SW WINTU CT
2S115DD10700	WIGGINS JEAN E TRUST	11065 SW WINTU CT
2S115DC90004	WHITE CURTIS & WHITE DEBRA L	17880 SW 115TH AVE
2S115DA01800	WETHERN LINDA J IRREVOCABLE TRUST	17595 SW SEIFFERT RD
2S115DC07500	WESTPHAL FAMILY TRUST	10100 SW HIGHLAND DR
2S115DC03800	WEST PHYLLIS ELAINE	17930 SW 111TH AVE
2S115DC10400	WEN-SHU LIU	17885 SW 114TH AVE
2S115DD04600	WEITMAN LIVING TRUST	10666 SW BANNOCH ST
2S115DC07000	WEICHOLD STEPHEN & WEICHOLD SHARRON & WEICHO	17900 SW 112TH AVE
2S115DC09000	WEBSTER CHARLES N & WEBSTER KAREN A	11385 SW KALISPELL ST
2S123BB90001	WAVE PROPERTY HOLDINGS LLC	35 PANORAMA CREST AVE
2S115DC01800	WATTS MARK A & WATTS APRYLE	11400 SW ROBERTS CT
2S115DD12700	WATT REBECCA SUE	17880 SW 109TH AVE
2S1220000500	WASHINGTON COUNTY FACILITIES MGMT	169 N 1ST AVE #42
2S115DC07700	WALK DAVID ALLAN & WALK WANDA VAI	17855 SW 112TH AVE
2S115DD10300	WAGNER LINDA G PHD	17945 SW 110TH AVE
2S115DC01000	WAGGONER LOREN M & WAGGONER CYNTHIA J	11430 SW ELMER CT
2S115DD01000	VT TRUST	17989 SW 105TH CT
2S114CB01400	VANN KEN & VANN CHRISTINA M	17480 SW 105TH AVE
2S115DD13300	VANHORN MARK G & DIANA L LIV TRUST	17960 SW 109TH AVE
2S115DD02600	VALDENEGRO GILLIAN F TRUST	17981 SW C ER ERGHINO LN
2S123B000602	TUALATIN TETON LLC	621 SW ALDER ST STE 800
2S115DD05700	TROTMAN TRUST	10799 SW KIOWA CT
2S115DD05000	TREMAIN JUNE E TRUST	10735 SW BANNOCH ST
2S115DD11100	TREBELHORN DEAN B & TREBELHORN LINDA V	11040 SW WISHRAM CT
2S115D001400	TIGARD-TUALATIN SCHOOL DISTRICT #23J	6960 SW SANDBURG ST
2S115DC07800	TIEDEMANN CHRISTINA ANNE	17885 SW 112TH AVE
2S115DD16100	TEUTSCH LISA ELIZABETH & AIELLO DAX	17800 SW 110TH AVE
2S123BB90000	TETON INDUSTRIAL CONDO OWNERS OF ALL UNITS	
2S115DC07300	TERJESON JOHN	17840 SW 112TH AVE
2S115DD17600	TALLENT DOMINIC JAMES & TALLENT HEINI	11115 SW WINYA CT
2S115DD03100	SYNDER BROOKE & CHANDLER KYLE	10573 SW PUEBLO ST
2S115DD18400	SWAFFORD DOUGLAS G & SINCERE MIRIAM A	17715 SW 110TH AVE
2S115DC03300	SULLIVAN SHANON LEE	11150 SW APALACHEE ST
2S115DC05400	SULLIVAN WAIKEN L & SULLIVAN JENNIFER	17705 SW 112TH AVE
2S115DC05900	STRINGFELLOW GAYLE	11140 SW GARRETT ST
2S115DD11700	STRICKLER LAUREL R & STRICKLER ADAM J	11025 SW WISHRAM CT
2S115DD13700	STRIBLING DAVID L & STRIBLING AMANDA L	10920 SW TUNICA ST
2S115DD12600	STRENGTH M D TRUST	17870 SW 109TH AVE
2S115DC11100	STORI SADRUDDIN	11340 SW APALACHEE ST
2S115DA03300	STEINER LARRY D SURVIVORS TRUST	17420 SW 108TH PL
2S115DC05500	STEINMETZ JON & JEANETTE TRUST	17735 SW 112TH AVE

OWNERCITY	NERST	WNERZIP
TUALATIN	OR	97062
TIGARD	OR	97223
TUALATIN	OR	97062
MCMINNVILLE	OR	97128
TUALATIN	OR	97062
TUALATIN	OR	97062
LAKE OSWEGO	OR	97035
LAKE OSWEGO	OR	97035
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SHERWOOD	OR	97140
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LAS VEGAS	NV	89135
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HILLSBORO	OR	97124
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SHERWOOD	OR	97140
PORTLAND	OR	97205
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TIGARD	OR	97223
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2S115DC04400	STANTON ANDREW & STANTON ASHLEY	17780 SW 111TH AVE
2S115DD09000	SPRENG FREDERICK IV & BACHUS DESTINY & PUROL KA	17570 SW 106TH AVE
2S115DD13000	SPENCER FAMILY REV TRUST	17920 SW 109TH AVE
2S115DD14200	SMITH LESTER MICHAEL & SMITH JOAN MARIE	10990 SW BANNOCH ST
2S115DD19700	SMITH WILLIAM E & SHEARER-SMITH SARAH K	17989 SW 110TH PL
2S115DD18600	SHETLER STACY A & SHETLER JOANNA L	11080 SW LUCAS DR
2S115DC04100	SHERWOOD NICOLE D	17850 SW 111TH AVE
2S115DD16300	SHERMAN JENNIFER A TRUST	17740 SW 110TH AVE
2S115DC05300	SHERFINSKI MICHAEL R	11195 SW GARRETT ST
2S114CB02000	SHEN PING LU	17460 SW 104TH AVE
2S115DD12800	SCHOENHEIT JOHN & SCHOENHEIT KAITLIN J	17890 SW 109TH AVE
2S115DC06400	SCHLOETTER ERIN RENAE BATES	17845 SW 111TH AVE
2S115DD15300	SCHLACHTER KEVIN M & SCHLACHTER RENEE	17570 SW 108TH PL
2S115DD08500	SCHENK JOANNE & ROGER REV LIV TRUST	10555 SW LUCAS CT
2S115DD04700	SCHAEFER SETH & SCHAEFER RENEE	10710 SW BANNOCH ST
2S115DC08900	SAVASTA THOMAS	11355 SW KALISPELL ST
2S115DD02800	SATTLER BRIAN L & WALCZYK KERRY M	10615 SW PUEBLO CT
2S115DC02500	SABRA HEALTH CARE HOLDINGS III LLC	10220 SW GREENBURG RD #201
2S115C002190	SABETI RAMIN	17835 SW PACIFIC HWY
2S115C002192	SABETI RAMIN	17835 SW PACIFIC HWY
2S115DC12300	RYMAL CHARLES & RYMAL JESSICA	17920 SW 114TH AVE
2S115DC09700	RYAN DAIN & RYAN LEE	11470 SW KALISPELL ST
2S115DD11400	RYAN MICHAEL	11075 SW WILSHRAM CT
2S115DD03300	RUVALCABA CHRIS & RUVALCABA ESTHER	10529 SW PUEBLO ST
2S115DA03700	RUDY CHARLES & RUDY STACY	17385 SW 108TH PL
2S115DC05200	ROE FAMILY TRUST	620 SAND HILL RD #213F
2S115DD01300	ROBINSON RONALD L & ROBINSON MICHELLE	17976 SW 106TH AVE
2S115DC03600	ROBERTS BLAINE N	17980 SW 111TH AVE
2S115DC12200	ROBERTS JULIE A	17890 SW 114TH AVE
2S115DA04200	ROBBINS FAMILY REVOCABLE TRUST	17420 SW 110TH AVE
2S115C002200	RIVER RIDGE APARTMENTS OWNER LLC	701 FIFTH AVE STE 5700
2S115C002300	RIVER RIDGE APARTMENTS OWNER LLC	701 FIFTH AVE STE 5700
2S115DC11600	RIVERA AURELIO GOMEZ	17865 SW 113TH AVE
2S114CC06000	RICHEY LELAND R & RICHEY VALERIE J FAMILY TRUST	17911 SW 105TH CT
2S115DD07800	RICHARDS EMMETT L & RICHARDS MARY C & RICHARDS	15247 WILBUR RD
2S115DD17800	RICHARDSON DEVIN & RICHARDSON TAMI ANN	11100 SW WINYA CT
2S115DC04200	RICE DOUGLAS S	17820 SW 111TH AVE
2S114CC05300	RAXTER NORA SUSAN	10476 SW PUEBLO ST
2S115DC00200	RANDALL LAWRENCE L & SANDOVAL-RANDALL C SUSIE	11440 SW HAZELBROOK RD
2S115DD09200	RAMSBY MILLS TRUST	10500 SW STARR DR
2S115DC09300	RADER SAM A & RADER ANDREA S	11445 SW KALISPELL ST
2S115DA03400	RADECKI SHAUN MICHAEL & RADECKI JESSICA ELLEN	17370 SW 108TH PL
2S115DD04500	PYRCH LAUREN & THOMASSEN AARON JENS	10640 SW BANNOCH ST
2S114CC06200	PYLE DAVID NORMAN	16869 SW 65TH AVE #2
2S115DC05700	PUTNAM DAVID L JR & PUTNAM HEIDI F	17770 SW 112TH AVE
2S115DC08000	PURCELLA ALEXANDRA M & PURCELLA SCOTT E	11215 SW APALACHEE ST
2S115DD11300	PRICE DAVID A & PRICE JENNIFER K	11080 SW WISHRAM CT
2S115DD01600	PR 17995 SW 106TH LLC	8925 SW IOWA DR
2S115DD19800	POUR ALI FROTAN & ESFANDIARPOUR SAMANEH	17995 SW 110TH PL
2S115DC01400	POINTS YU SUN	11465 SW ROBERTS CT
2S115DD08900	PLAMBECK CAROL R	10600 SW STARR DR
2S1220000300	PHIGHT LLC	ONE BOWERMAN DR
2S115DA02000	PEUSER NILS ARNE & PEUSER NICOLE	17380 SW 106TH CT
2S115DC06600	PETERSON JACOB CURTIS & PETERSON JULIE DAWN	17925 SW 111TH AVE
2S114CC06800	PENNIMAN STEVEN K & PHYLLIS D REV LIV TRUST	8374 VEREDA DEL PADRE
2S114CB01700	PAYNE DANIEL J & PAYNE JANET M	10440 SW KELLOGG DR
2S115DD16600	PARSONS KIMBERLY MARIE & PARSONS BENJAMIN JAME	17580 SW 110TH AVE
2S115DC01200	PARKER SARAH D & PARKER WILEY	11480 SW ELMER CT
2S115DC12000	PARKER MARION M	17830 SW 114TH AVE
2S114CC06300	PARK KRISTEN	17902 SW 105TH CT
2S115DD00800	PARK DANIEL K & PARK ANNA K	9333 SW NEZ PERCE CT
2S115DD18200	PAPAS EDITH ELIZABETH	11055 SW WINYA CT

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SEATTLE	WA	98104
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LA CONNER	WA	98257
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2S115DD13100	PAIGE LIV TRUST	17940 SW 109TH AVE
2S122BB00100	PACIFIC FINANCIAL CENTER LLC	4200 S HULEN ST STE 410
2S115DD12400	OWEN GREGORY L & OWEN DEBORAH L	17885 SW 109TH AVE
2S115DD07900	ORLANES JONATHAN	10620 SW LUCAS DR
2S115DC00700	OLSON LIVING TRUST	11435 SW ELMER CT
2S115DD17700	OLSON DOUGLAS E & OLSON KIMBERLY R	11130 SW WINYA CT
2S115DC04800	NUNLEY RICHARD V III	11105 SW GARRETT ST
2S115DD08000	NUCHOLS MEAGAN & CHASE MARCUS	10580 SW LUCAS CT
2S115DA03200	NORDEN PAUL & JEANINE LIV TRUST	17440 SW 108TH PL
2S115DC01500	NGUYEN CATHY H	11485 SW ROBERTS CT
2S115DD14400	NEWTON DAVID & E SUZANNE JOINT TRUST	10950 SW BANNOCH ST
2S115DC11200	NAJERA KENE S & BUSTOS ESMERALDA RODRIGUEZ	12288 SW FUJI CT
2S115DD10800	MUSTEDANAGIC ADIS & MUSTEDANAGIC ALISA	11045 SW WINTU CT
2S115DD19300	MURO MONICA D	11011 SW TUALATIN RD
2S115DC09500	MURMAN CORY D & MURMAN TAMIKO A	11485 SW KALISPELL ST
2S115DD06200	MUNSON JAMES L & PAMELA B REV LIV TRUST	10600 SW KIOWA ST
2S115DC07600	MUIR JOHN S & ACHILOVA LOLA	17795 SW 112TH AVE
2S114CC06600	MOWERY DANA KAY	17948 SW 105TH CT
2S114CC06400	MORRISSEY FAMILY TRUST	17924 SW 105TH CT
2S115DD13800	MORRELL LIVING TRUST	10915 SW TUNICA ST
2S115DD12000	MORAN STEVEN TIMOTHY & MORAN ASHLEY SCHNAPP	17870 SW 110TH AVE
2S115DD06300	MOORE KERRI ANN & MOORE CHRISTOHER	10619 SW BANNOCH CT
2S122B001100	MITTLEMAN PROPERTIES	1 SW COLUMBIA ST STE 950
2S115DC01300	MITCHELL TIMOTHY	900 SW 5TH AVE FL 17
2S115DC90001	MITCHELL GARRETT C & MITCHELL SHARON M	17910 SW 115TH AVE
2S115DC01600	MINATO KAZUKI & MINATO YUKO	11445 SW ROBERTS CT
2S115DD12500	MILNE JAMES S & MILNE MARY F	17875 SW 109TH AVE
2S115DC03100	MILLER LYNN B	11190 SW APALACHEE ST
2S115DD14300	MILLER JOINT TRUST	10970 SW BANNOCH ST
2S115DD05200	MIDKIFF HOUSTON & NANCY TRUST	17845 SW 106TH AVE
2S115DC06900	MICHAELIDES JAMIE C & RADISH KEVIN A	17920 SW 112TH AVE
2S115DA03600	MEYER PAUL R & MEYER MARY B	17365 SW 108TH PL
2S115DC03900	MELTON LAWRENCE E & MELTON TONYA M	17900 SW 111TH AVE
2S115DC11500	MCPHERSON SCOTT K & MCPHERSON SUSAN R	17895 SW 113TH AVE
2S115DD19600	MCKINNON SPENCER E LIV TRUST	17971 SW 110TH PL
2S115DD01200	MCCURTAIN LIV TRUST	10560 SW PUEBLO ST
2S115DD06900	MCCURDY WAYNE & MCCURDY BETTE	10580 SW BANNOCH CT
2S115DC03400	MCCLATCHEY CAITLIN & MCCLATCHEY GARRETT	11130 SW APALACHEE ST
2S115DA01500	MAYER ANDREW PETER & MAYER MARIT JANAE	17395 SW 105TH AVE
2S115DD01500	MATHYS JACKIE & STEVE ZIMMERMAN FAMILY TRUST	24305 SW BOONES FERRY RD
2S122AD01000	MARSHALL ASSOCIATED LLC	PO BOX 278
2S115DC04600	MARONDE JOHN ALBERT & MARONDE JILL I	17730 SW 111TH AVE
2S115DC04500	MARKS CHRISTINA A REV LIV TRUST	17760 SW 111TH AVE
2S115DC02200	MANN ERIC A & LUPULESCU NICOLETA	11490 SW ROBERTS CT
2S115DC03500	MANN SONIA & MANN JONATHAN	11100 SW APALACHEE ST
2S115DC00100	MANABE STELLA K & NAKAMA DEAN S	11420 SW HAZELBROOK RD
2S114CC06500	MALETA SANDRA L & MALETA GREGORY B	17932 SW 105TH CT
2S115DC07200	MAGUIRE BRIAN J & MAGUIRE LISA N	17860 SW 112TH AVE
2S115DD03200	MACMILLEN JAMES WILSON & MACMILLEN DONNA JEAN	10547 SW PUEBLO ST
2S115DD04800	MACK ADAM S & MACK KATHRYN M	10770 SW BANNOCH ST
2S115DD18100	MACK RYAN P & MACK PATRICIA L	17825 SW 110TH AVE
2S115DD14800	MACIELINSKI DAMIEN & LAURIE LIV TRUST	17565 SW 108TH PL
2S115DD06800	MACAULAY THOMAS & MACAULAY DEBRA	10520 SW BANNOCH CT
2S115DD17000	LYONS RICHARD & LYONS JUDITH	11065 SW LUCAS DR
2S122AA00700	LUMBER FAMILY CO LLC	PO BOX 1427
2S115DD11200	LUIKART GLEN A & WENDY C LUIKART LIV TRUST	11060 SW WISHRAM CT
2S115DC04700	LOSER CALLIE	17700 SW 111TH AVE
2S115DD15600	LORENTE JOAQUIN & LORENTE LOUISE	17460 SW 108TH PL
2S114CC05600	LOANZON EMMELINE V TRUST	17994 SW 105TH CT
2S115DD13200	LIN DONGMEI & MAO DIAN	17950 SW 109TH AVE
2S115DC09100	LIGHT HARVEY EUGENE & LIGHT CLAUDIA JO	11405 SW KALISPELL ST
2S115DC08300	LEGEND HOMES CORPORATION	4200 NE 20TH ST

TUALATIN	OR	97062
FORT WORTH	TX	76109
TUALATIN	OR	97062
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TIGARD	OR	97224
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2S115DA05100	LEE MIKE	17475 SW 111TH AVE
2S115DD14900	LEE JONATHAN K & LEE STEPHANIE IRVING	17605 SW 108TH PL
2S115DC10700	LAUREN NICHOLAS D & LAUREN CHRISTINA M	17935 SW 114TH AVE
2S115DC12500	LANG JULIANNE LERAE	17197 SW SMITH AVE BLDG #37
2S115DC11700	LAMB ETHAN S & LAMB SARAH W	17825 SW 113TH AVE
2S122AA00500	LAM RESEARCH CORPORATION	2025 GATEWAY PL #228
2S122AA00800	LAM RESEARCH CORPORATION	2025 GATEWAY PL #228
2S122AB00100	LAM RESEARCH CORPORATION	2025 GATEWAY PL #228
2S122BA00100	LAM RESEARCH CORP	4650 CUSHING PKWY
2S115DD15900	KUMLER PHILIP A & JULIE I FAM TRUST	17515 SW 108TH PL
2S115DC07900	KUMAR ZOYA & UFFORD JOHN C	17915 SW 112TH AVE
2S115DD17900	KRAJCAR TIMOTHY D & KRAJCAR KIERSTEN A	11070 SW WINYA CT
2S115DC02900	KOFORD AARON S & KOFORD ELIZABETH S	11220 SW APALACHEE ST
2S115DD08600	KNAPPENBERGER CLARK W & KNAPPENBERGER CAROL	10575 SW LUCAS CT
2S115DD00900	KNAPKE STEVEN J & KNAPKE LIEN K	17997 SW 105TH CT
2S115DD15500	KLENZ MICHAEL & KLENZ LINDA	17480 SW 108TH AVE
2S115DC04300	KLEIN GEORGE P & KLEIN LEANNE S	17800 SW 111TH AVE
2S115DC05600	KIRKPATRICK GREG D & KIRKPATRICK DEBRA S	17765 SW 112TH AVE
2S115DC03000	KING JERSILYN & PANGELINAN GERHART JURADO	11200 SW APALACHEE ST
2S115DD03000	KINDRED LYLE V & KINDRED ELAINE A	17968 SW 106TH AVE
2S115DD08800	KERR JACK & KERR SARWESHNI	17645 SW 106TH AVE
2S115DD09100	KAWAL JUSTIN & BURNS ERIN	10550 SW STARR DR
2S115DD20100	JONES ROBERT ALAN & JONES SHELLEY DIANE	17964 SW 110TH PL
2S115DA05000	JOHNSON PHILLIP TILO	17445 SW 111TH AVE
2S115DD17100	JOHNSON KIT & JOHNSON AMY	17560 SW 111TH AVE
2S115DC07400	JODOIN MICHAEL A & JODOIN NANCY	17810 SW 112TH AVE
2S115DD07500	JIRICEK AARON G & KARINA B REV LIV TRUST	10525 SW KIOWA ST
2S114CB02200	JEWELL THOMAS G & JEWELL DANA P	17400 SW 104TH AVE
2S115DD05600	JASTER ALEXIS	10760 SW KIOWA CT
2S115DD08700	JANSSEN JILLIAN & JANSSEN JARED	10595 SW LUCAS CT
2S115C002001	JAMES FAMILY INVESTMENT LLC	20675 SW LEBEAU RD
2S115DD01100	JAGODNIK BRIAN & JAGODNIK LAUREN	10536 SW PUEBLO ST
2S115DA02100	JAFFEE CAROLINE JOHANNA & JAFFEE JAY	17350 SW 106TH CT
2S122BA00200	JAE OREGON INC	11555 SW LEVETON DR
2S115DD12300	IMUS ROBERT G & DEBORAH R IMUS LIV TRUST	17895 SW 109TH AVE
2S115DA04500	IMBLER-YOUNG DIANE REV LIV TRUST	17485 SW 110TH AVE
2S122B001000	IDM-OREGON LLC	1101 SE TECH CENTER DR STE 160
2S115DD05900	HYATT SEAN & HYATT LISA	10755 SW KIOWA CT
2S115DA04900	HUTCHISON BERNADETTE SEP PROP REV LIV TRUST	17430 SW 111TH AVE
2S115DC05000	HUGEBACK BENJAMIN L & HUGEBACK JULIET F	11135 SW GARRETT ST
2S122AA00600	HR LLC	18280 SW 108TH AVE
2S115DA05200	HOWELL ZACHARY P & HOWELL REBECCA J	17535 SW 111TH AVE
2S115DC09600	HOURANI JIHAD & SHIKHA HAYAT	11490 SW KALISPELL ST
2S115DC08800	HOOVER DEVIN & HOOVER KRISTEN	11315 SW KALISPELL ST
2S115DD10900	HOLMES TRUST	11025 SW WINTU CT
2S115DC01700	HISLOP BRENT & HISLOP CLAUDIA	11425 SW ROBERTS CT
2S115DC01100	HIRTE EDWIN K & HIRTE TERESA J	11450 SW ELMER CT
2S115DC90002	HINDS FAMILY TRUST	17900 SW 115TH AVE
2S115DC08700	HILLNER GISEL	17770 SW 113TH AVE
2S115DD06700	HILDEBRAN REED & HILDEBRAN SALLY J	10500 SW BANNOCH CT
2S115DC06300	HEWITT KRISTY K & HEWITT MARSHALL	17815 SW 111TH AVE
2S115DD17300	HERR DANIEL J & HERR CAMILLE	17655 SW 111TH AVE
2S115DD08100	HERINCKX JEFFREY & HERINCKX CHANDA S	10560 SW LUCAS CT
2S115DD13400	HENSLEY TRACY L & BARTELS AARON DAVID	17980 SW 109TH AVE
2S114CB02300	HENRY DAVID & SHARI LIV TRUST	10355 SW KELLOGG DR
2S115DD02400	HEMANN MAURA A REV LIV TRUST	10645 SW PUEBLO CT
2S115DD01900	HELTNESS ERIC TODD & HELTNESS CHERYL LYNN	10632 SW PUEBLO CT
2S122AA00100	HELSER LLC	PO BOX 1569
2S115DD14000	HEIN CHRISTOPHER HAROLD & HEIN SUSANNE BIRGIT	10975 SW TUNICA ST
2S115DC90000	HAZELBROOK CONDO UNIT OWNERS	
2S115DD18300	HAYES RYAN D & ANCHARSKI NANCY	11025 SW WINYA CT
2S114CB02400	HAUPERT REV TRUST	10415 SW KELLOGG DR

TUALATIN	OR	97062
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TUALATIN	OR	97062
SHERWOOD	OR	97140
TUALATIN	OR	97062
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SAN JOSE	CA	95110
FREMONT	CA	94538
TUALATIN	OR	97062
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TUALATIN	OR	97062

2S115DC03200	HARTFEIL DERICH & HARTFEIL ELEANOR	11170 SW APALACHEE ST
2S115DD19100	HARRIS DEGAY C & OBIDIGBO OBINNA KINGSLEY	11037 SW TUALATIN RD
2S115DD16400	HANSON TIMOTHY J & HANSON SUSAN E	17690 SW 110TH AVE
2S114CB01500	HANNON RACHELLE S & HANNON JEFFREY T	17440 SW 105TH AVE
2S115DD19900	HANNEGAN MICHAEL L	17992 SW 110TH PL
2S115DD16800	HAMLIN JANI LYNN & HAMLIN LARRY	11015 SW LUCAS DR
2S115DC00400	HAMILTON PAUL CHARLES & HAMILTON JOAN E	PO BOX 3207
2S115DC09900	HAMILTON BRETT T & HAMILTON KAMI R	11430 SW KALISPELL ST
2S115DD15400	HALL STEPHEN C & HALL WENDY S	10799 SW LUCAS DR
2S115DD07700	HACKBARTH JANICE V	10585 SW KIOWA ST
2S114CC05400	GUY CARRIE & GUY TIMOTHY M	10482 SW PUEBLO CT
2S115DD10600	GUTOWSKI MARK A	11070 SW WINTU CT
2S115DD04900	GUILFOYLE CAROL L TRUST	10795 SW BANNOCH ST
2S115DC10500	GREENE JOHN W & GREENE SUSAN	17915 SW 114TH AVE
2S115DD06000	GREEN GARY L & GREEN JANIS A	10695 SW KIOWA CT
2S115DD11800	GREEN CRAIG D	17885 SW 110TH AVE
2S115DA04700	GRAHAM CONNIE L REV TRUST	17500 SW 111TH AVE
2S115DC00300	GOVINDAN ANUMARLA & GOVINDAN SODHARI	11460 SW HAZELBROOK RD
2S114CC05800	GONZALEZ JULIE A REV TRUST	17565 SW 110TH AVE
2S115DA04600	GONZALEZ JULIE A REV TRUST	17565 SW 110TH AVE
2S115DC11900	GONZALEZ RODOLFO GUERRERO & GUZMAN JOSE LUIS	17780 SW 114TH AVE
2S115DA04300	GODFREY DAVID E & GODFREY LISA J	17410 SW 110TH AVE
2S115DD16900	GLASSER FAMILY REV TRUST	11035 SW LUCAS DR
2S114CB02500	GITT SHARON M	10435 SW KELLOGG DR
2S115DD16200	GITT SEAN C & GITT MELISSA A	17770 SW 110TH AVE
2S115DD02700	GIRDNER DOUGLAS R & GIRDNER SANDRA L	10623 SW PUEBLO CT
2S115DC06000	GIMARELLI-BAST TERRA	11120 SW GARRETT ST
2S115DA04400	GILBERTSON CHRISTOPHER C & GILBERTSON HEIDI S	17435 SW 110TH AVE
2S122AD01100	GARSKE TRAVIS W	PO BOX 729
2S115DC06800	GALVIN JEREMY & GALVIN ANDREA	17950 SW 112TH AVE
2S115DD05400	GALLARDO MICHAEL & MIELE SARA	10680 SW KIOWA CT
2S115DD13500	GALLAGHER RON MICHAEL & GALLAGHER KELLY MORIAI	17975 SW 109TH AVE
2S1220000400	FUJIMI CORPORATION	11200 SW LEVETON DR
2S115DC09800	FRONCZAK GREG JOHN	11450 SW KALISPELL ST
2S115DA01400	FRIEDMAN MARK E REV TRUST & FRIEDMAN JOHNNALEE	17355 SW 105TH AVE
2S115DA01600	FRANKLIN MELLISA & FRANKLIN IGNACIO	17425 SW 105TH AVE
2S122AD00900	FRANKLINIA LLC	6107 SW MURRAY BLVD #175
2S115DC05100	FRAINEY BRIAN A & FRAINEY ABIGAIL J	11155 SW GARRETT ST
2S115DC00500	FORD KEVIN & LOCKE EMMA	11495 SW ELMER CT
2S115DD19400	FORD JOHN E & AMES STEPHANIE	17953 SW 110TH PL
2S115DD13600	FOILES LESLIE E & FOILES VICTORIA A	10960 SW TUNICA ST
2S115DC10900	FLORES SAMANTHA & PENA JOSE ROBERTO	11380 SW APALACHEE ST
2S115DC11400	FITCH JACQUELINE DARLENE & FITCH JOHN WALLACE	17915 SW 113TH AVE
2S115DD15800	FISH TAMMY G & FISH WAYNE L	17475 SW 108TH PL
2S115DC02000	FENN DENNIS LESLIE & FENN ROBERTA JEAN	11440 SW ROBERTS CT
2S115DD14500	FB TRUST	10910 SW BANNOCH ST
2S115DA04800	ESTRADA ALFRED & ESTRADA SHARON	17460 SW 111TH AVE
2S115DD20000	EDWARDS MARK	17986 SW 110TH PL
2S115DA04000	DUPUIS KENNETH & DUPUIS ERIN	17550 SW 110TH AVE
2S115DA04100	DUPUIS FAMILY TRUST	17460 SW 110TH AVE
2S115C002000	DUE NORTH PROPERTIES LLC	401 E FIRST ST #1062
2S115DD06100	DRAPER JAMES A & JANICE F TRUST	17755 SW 106TH AVE
2S115DC06500	DOWNING DARYL & DOWNING CHRISTINE	17865 SW 111TH AVE
2S115DC08600	DONOHUE NICHOLAS MICHAEL	17800 SW 113TH AVE
2S115DD02300	DONAUGH ANTHONY M & DONAUGH CHRISTI S	10651 SW PUEBLO CT
2S115DC06200	DOLAK TYLER JOHN & MCMUNN KRISTIANA NICHOLE	17795 SW 111TH AVE
2S115DD19500	DIXON ROBERT W	17967 SW 110TH PL
2S115DA03500	DEJONG STEVEN & DEJONG KAITLIN	17350 SW 108TH PL
2S115DD14100	DEHEN PAUL V & DEHEN ROBERTA A	10995 SW TUNICA ST
2S115DD17500	DEBRAUWERE LIV TRUST	11100 SW LUCAS DR
2S114CC05500	DEAVILLE CASEY D	17970 SW 105TH CT
2S115C002803	CYPRESS PARISH LLC	16750 SE KENS CT

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MILWAUKIE	OR	97267

2S115DC10200	CROSS THOMAS A & CROSS DIANE RUTH	17845 SW 114TH AVE
2S115DD01400	CRALL RICHARD F & CRALL BARBARA M	10055 SW WASCO WAY
2S115C001600	CR RIVERCREST MEADOWS COMMUNITIES LLC	444 W BEECH ST #300
2S115C001700	CR RIVERCREST MEADOWS COMMUNITIES LLC	444 W BEECH ST #300
2S115DC10100	COX LEE H & COX CHRISTINA R	17825 SW 114TH AVE
2S115DC90003	COSNER BERNADATTE M LIV TRUST	17890 SW 115TH AVE
2S115DD17200	CORR FAMILY REV TRUST	17585 SW 111TH AVE
2S115DD05300	CONNER LIV TRUST	10650 SW KIOWA CT
2S115DD16700	COMPTON JAY W	17595 SW 110TH AVE
2S114CC06700	CODINO VAL H & CODINO LOIS D	17962 SW 105TH CT
2S115DC02100	COCKRELL WILLIAM D & COCKRELL PAMELA K	11460 SW ROBERTS CT
2S115DD02500	CLARK DAVID A & CLARK CATHERINE M	10639 SW PUEBLO CT
2S115DD08400	CLARK MONICA J & CLARK LONNY T	10525 SW LUCAS CT
2S115DD11900	CLARK CHARLES L TRUST	17875 SW 110TH AVE
2S115DD05100	CHRISTIAN LOU A & CHRISTIAN TINA L	10677 SW BANNOCH ST
2S115DC06700	CHONG CHRISTOPHER A & CHONG KIRSTEN J	5870 SW WICHITA ST
2S115DD05500	CHEN DAVID & CALIXTRO ELIZABETH	10720 SW KIOWA CT
2S115DC07100	CHAUNCEY LOIS	17890 SW 112TH AVE
2S115DC11000	CHANG SARAH	11360 SW APALACHEE ST
2S115DD06400	CHAMBERS LIV TRUST	10595 SW BANNOCH CT
2S123B000600	CHAMBERLAIN HUSSA PROPERTIES	18755 SW TETON AVE
2S115DD15000	CHALISE PRAVEEN & CHALISE DEEPA	17625 SW 108TH PL
2S115DD01800	CHALFAN TRUST	4095 WESTBAY RD
2S115DC10000	CERO JEFFREY C & CERO CARISSA	11410 SW KALISPELL ST
2S115DC04000	CAVEN JEREMY LIONEL	17870 SW 111TH AVE
2S122AD00400	CALMAX TECHNOLOGY INC	3491 LAFAYETTE ST
2S115DD13900	CALDER KENNETH D & CALDER MARY C	10945 SW TUNICA ST
2S115DD05800	CAGLE STEVEN & CAROLYN LIV TRUST	10777 SW KIOWA CT
2S115DC08100	CABLE SAMUEL & CABLE MARLENE	11225 SW APALACHEE ST
2S115DC03700	BUSHNELL TODD MICHAEL	17960 SW 111TH AVE
2S115DC11800	BURNS JACK S	17785 SW 113TH AVE
2S114CB02100	BURDICK EILEEN T & BURDICK CHRISTOPHER J	17430 SW 104TH AVE
2S115DD12200	BUCKNER ORVILLE KERN III TRUST	17890 SW 110TH AVE
2S115DC01900	BRYANT SYDNAY & BRYANT JAKE	11420 SW ROBERTS CT
2S115DD11600	BROWNE AARON J & BROWNE KELLIE G	11035 SW WISHRAM CT
2S115DC09400	BROPHY JEFFREY E & BROPHY DANETTE M	11465 SW KALISPELL ST
2S114CB02800	BROOKS STEVEN K & DAVIS HEATHER M	15532 SW PACIFIC HWY #CIB111
2S115DD15700	BROCKWAY FAMILY TRUST	17455 SW 108TH PL
2S115DC08500	BRISAN MARIUS M & BRISAN LIDIA M	17850 SW 113TH AVE
2S115DD11000	BLUM MARY LOU	11020 SW WISHRAM CT
2S114CC06100	BLATT CHARLES M JR & BLATT NAOMI T	17897 SW 105TH CT
2S115DC10800	BLAKEY BLAKE & BLAKEY DOMENIQUE	11400 SW APALACHEE ST
2S114CB02600	BIXEL JENNIFER	10455 SW KELLOGG DR
2S114CC06900	BILITZ MARTIN & BILITZ MICHAELA DANIELA	10479 SW PUEBLO ST
2S114CC05900	BIHARI NUPUR	17929 SW 105TH CT
2S115DC05800	BIEHLER ROBYN L	17750 SW 112TH AVE
2S115DC04900	BERGGREN TERESA DORAN REV LIV TRUST	11115 SW GARRETT ST
2S115DC09200	BERGGREN BRAD J & BERGGREN ROBERTA K	11425 SW KALISPELL ST
2S115DC08400	BERG TOR L & BERG CHERYL L	17880 SW 113TH AVE
2S115DD10400	BENNETT JENNIFER ANN & FRICK BENJAMIN JOHN	11030 SW WINTU CT
2S115DA01900	BENKE FAMILY TRUST	17400 SW 106TH CT
2S114CB01600	BENEDICT ELIZABETH A	10460 SW KELLOGG DR
2S115DD02000	BELL TAMERA J & JURCHEN STEVEN L	10644 SW PUEBLO ST
2S115DD07000	BAXTER CHRISTOPHER & BAXTER STEPHANIE	10606 SW BANNOCH CT
2S115DD07400	BAUMANN THOMAS K & BAUMANN ROSEMARIE D	10500 SW KIOWA ST
2S115DC10300	BATEMAN TRUST	17875 SW 114TH AVE
2S115DD07200	BARTHOLOMEW MARY C TRUST	10570 SW KIOWA ST
2S115DD12900	BARROW BRAD JAMES & BARROW SYDNEY ANTONETTE	10850 SW BANNOCH ST
2S115DC00600	BARRACLOUGH RODNEY P JR & BARRACLOUGH SANDRA	11475 SW ELMER CT
2S115DD12100	BANTA BRYCE & BANTA RENE	17880 SW 110TH AVE
2S115DD15200	BAIRD LEAH J	17610 SW 108TH PL
2S115DD02900	BAILEY TRUST	17971 SW 106TH AVE

TUALATIN	OR	97062
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SAN DIEGO	CA	92101
SAN DIEGO	CA	92101
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SANTA CLARA	CA	95054
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2S115DC06100	BAEDOR FAMILY TRUST	17775 SW 111TH AVE
2S115DD06500	AUGUSTYNIAK EDWARD J & SUJCZYNSKA MONIKA J	10555 SW BANNOCH CT
2S122AA00400	ASCENTEC ENGINEERING LLC	18500 SW 108TH AVE
2S122AD00100	ASCENTEC ENGINEERING LLC	18500 SW 108TH AVE
2S115DD07600	ASAI C&C JOINT TRUST	10555 SW KIOWA ST
2S115DA01700	ARROYO CHRIS & ARROYO JAQUELINE C	10515 SW STARR DR
2S115DC11300	ARNDT RONALD C 2015 TRUST	80395 WEISKOPF
2S115DC00900	ARBUCKLE JAMES F & ARBUCKLE MARY D	11400 SW ELMER CT
2S115C002802	APOSTOLIC LUTHERAN CHURCH OF PORTLAND	PO BOX 23312
2S115DD19000	ANDERSON DEBORAH M	11045 SW TUALATIN RD
2S115DD19200	ANDERSON EDWARD JOEL & GADKARI SHRUTI UDAY	11029 SW TUALATIN RD
2S115DA03800	AMAN FAMILY TRUST	17435 SW 108TH PL
2S115DC00800	ALBERTSON BRUCE & ALBERTSON JUDY	11415 SW ELMER CT
2S115DD15100	ALBERT GARY J & ALBERT LISA J	17630 SW 108TH PL
2S115DD02100	AIELLO FAMILY TRUST	10650 SW PUEBLO CT
2S114CB01900	ADAMS KAREN E TRUST & BARTHOLOMEW BRIAN J	17445 SW 104TH AVE
2S115DD00700	ADAMS SHEILA D	10915 SW TUALATIN RD
2S114CC05700	ACKLEY KRISTEN & ROTTMAN ERIK A	17961 SW 105TH CT
2S115DD01700	ACKERMAN CLINTON	17987 SW 106TH AVE
2S115DC12100	ABERNATHY TRAVIS E & ABERNATHY AMANDA M	17860 SW 114TH AVE
2S122AD01300	ABBOTT TUALATIN LLC	3030 BRIDGEWAY STE #100
2S123BB00701	AAA OREGON/IDAHO	600 MARKET ST
2S123BB90002	3 J'S PROPERTIES LLC	10400 SW TUALATIN RD
2S123BB00501	18355 SW TETON AVENUE TUALATIN OR LLC	17455 SW RIDGEVIEW LN
2S122B001200	12345 SW LEVETON LLC	1730 SW SKYLINE BLVD STE #121
	LAM RESEARCH CORPORATION	11155 SW LEVETON DR
	MACKENZIE ARCHITECTS	1515 SW WATER AVE

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LA QUINTA	CA	92253
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TUALATIN	OR	97062
SAUSALITO	CA	94965
PORTLAND	OR	97201
TUALATIN	OR	97062
LAKE OSWEGO	OR	97034
PORTLAND	OR	97221
TUALATIN	OR	97062
PORTLAND	OR	97214

*** NOTICE OF RESCHEDULED HEARINGS AND EXTENDED OPPORTUNITY TO COMMENT ***

Exhibit B.

NOTICE IS HEREBY GIVEN that below listed public hearings have been ***rescheduled*** and will held be in-person at:
Location: Tualatin Service Center
10699 SW Herman Road, Tualatin, OR 97062

The hearings can also be attended virtually via:
Zoom Teleconference: log-in available at
www.tualatinoregon.gov/meetings 7 days before each hearing

INDUSTRIAL MASTER PLAN (IMP) 24-0001
Planning Commission Hearing: *Rescheduled* from May 21, 2025 to *August 20, 2025 at 6:30 pm*
Mackenzie, on behalf of LAM Research Corporation, is requesting an Industrial Master Plan (IMP) amendment to setback and building height standards for a 75.96 acre site zoned Manufacturing Park (MP).

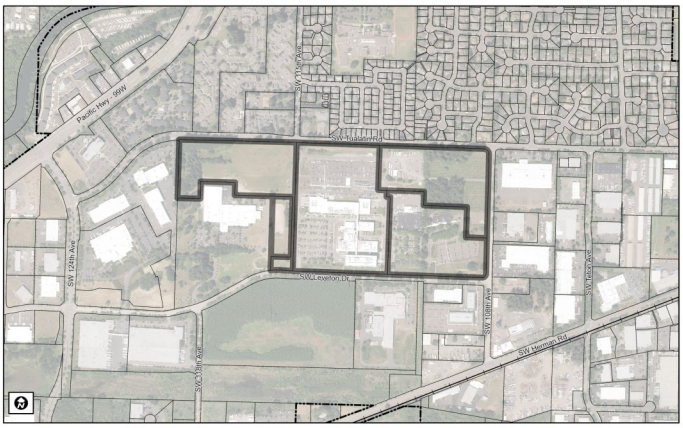
ARCHITECTURAL REVIEW (AR) 24-0002
Architectural Review Board Hearing: *Rescheduled* from June 11, 2025 to *September 10, 2025 at 6:30 pm*
Mackenzie, on behalf of LAM Research Corporation, is requesting approval to construct a two phase project consisting of three buildings for office, research laboratory, and utilities, totaling 423,470 square feet, expansion of an existing bulk gas storage yard, and associated landscaping, parking, and public/site improvements on a 75.96 acre site zoned Manufacturing Park (MP).

To view the applications, visit: www.tualatinoregon.gov/projects

TO PROVIDE COMMENTS:

First Class Mail:
Planning Division
Attn: Keith Leonard
10699 SW Herman Road
Tualatin, OR 97062

Email: kleonard@tualatin.gov
Phone: 503-691-3029



Property location for both applications: 11155-11361 SW Leveton Drive
(Tax Lots: 2S122AA500 & 800, 2S122AB 100, 2S122BA00100)

Industrial Master Plan Criteria: TDC Chapters: 32, 33, 62

Architectural Review Criteria: TDC Chapters: 32, 33, 62, 63, 73A-D, 74, 75

*** NOTICE OF RESCHEDULED HEARINGS AND EXTENDED OPPORTUNITY TO COMMENT ***

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INDUSTRIAL MASTER PLAN (IMP) 24-0001
Planning Commission Hearing: *Rescheduled* from May 21, 2025 to *August 20, 2025 at 6:30 pm*
Mackenzie, on behalf of LAM Research Corporation, is requesting an Industrial Master Plan (IMP) amendment to setback and building height standards for a 75.96 acre site zoned Manufacturing Park (MP).

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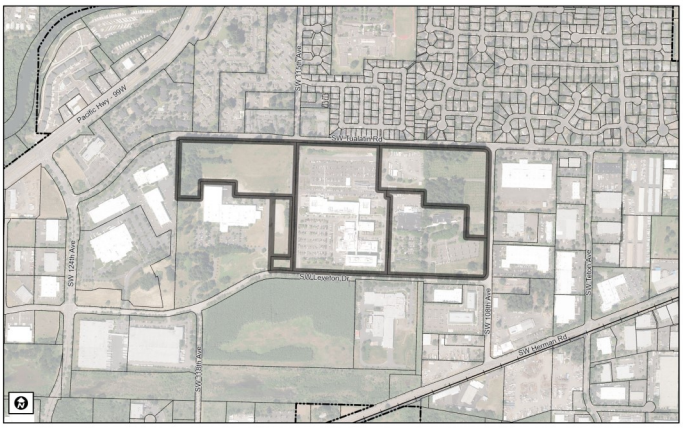

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10699 SW Herman Rd, Tualatin, Oregon 97062 TualatinOregon.gov

CITY of TUALATIN

AFFIDAVIT OF MAILING

STATE OF OREGON)

) ss

COUNTY OF WASHINGTON)

I, Lindsey Hagerman being first duly sworn, depose and say:

That on the 16 day of May, I served upon the persons shown on Exhibit A, attached hereto and by this reference incorporated herein, a copy of a Notice of Hearing/Application/Decision marked Exhibit B, attached hereto and by this reference incorporated herein, by mailing to them a true and correct copy of the original hereof. I further certify that the addresses reflect information received from the relevant party or agency, and that said envelopes were placed in the United States Mail at Tualatin, Oregon, prepared to receive postage administered by city staff.

Dated this 16 of, May 2025 Lindsey Hagerman
Signature

SUBSCRIBED AND SWORN to before me this 5/16/2025

OFFICIAL STAMP
AGATHA LEIGH BURKE
NOTARY PUBLIC - OREGON
COMMISSION NO. 1041046
MY COMMISSION EXPIRES OCTOBER 02, 2027

Agatha Leigh Burke
Notary Public for Oregon

My commission expires: 10/02/2027

RE: IMP24-0001 AND AR24-0002 NOTICE OF HEARING
AND AR25-0001 FINAL DECISION LETTER

Exhibit A.

Name	Address	City	State	Zip
Janine Wilson	18325 SW 135th Tce	Tualatin	OR	97062
Chris Tunstall	17400 SW Cheyenne Way	Tualatin	OR	97062
Rocky Bixby	18126 133rd Terrace	Tualatin	OR	97062
Kate Pinamonti	10240 SW Fulton Dr	Tualatin	OR	97062
Cynthia Martinez	8900 SW Sweek Dr Apt 1538	Tualatin	OR	97062
Doug Ulmer	7149 SW Sagert St., Unit 105	Tualatin	OR	97062
Jackie Woods	5373 SW Joshua St	Tualatin	OR	97062
Keenan Woods	5373 SW Joshua St	Tualatin	OR	97062
Dana Holland	7237 SW Delaware Ct	Tualatin	OR	97062
Julie Van Etten	5235 SW Wichita St	Tualatin	OR	97062
Tammy Palumbo	9510 SW Siuslaw Ln	Tualatin	OR	97062
Ed Palumbo	9510 SW Siuslaw Ln	Tualatin	OR	97062
Justin Lindley	9251 SW Cree Circle	Tualatin	OR	97062
Sharon Noell	20805 SW 104th Ave	Tualatin	OR	97062
Thea Wood	9497 SW Ochoco Dr	Tualatin	OR	97062
Sallie Olson	8960 SW Arapaho Rd	Tualatin	OR	97062
Ann Buenzli	20735 SW 90th Ave	Tualatin	OR	97062
Claudia Sterling	20600 SW Shoshone Dr	Tualatin	OR	97062
Kimberly Poole	8442 SW Mohawk St	Tualatin	OR	97062
Patricia Parsons	10325 SW Gardner Court	Tualatin	OR	97062
Aaron Bohn	10836 Westfall Ct	Tualatin	OR	97062
Ed Casey	22255 SW 102nd Pl	Tualatin	OR	97062
Dennis Clinefelter	21818 SW Columbia Cir	Tualatin	OR	97062
Tim Neary	22780 SW 92nd St	Tualatin	OR	97062
Julie Heironimus	22710 SW 90th Pl	Tualatin	OR	97062
Danny O'Neal	22625 SW 94th Ter	Tualatin	OR	97062
Cathy Holland	10740 SW Lucas Dr	Tualatin	OR	97062
Scott Miller	12976 SW Hillside Tce	Tualatin	OR	97223
Scott Miller	12976 SW Hillside Tce	Tualatin	OR	97223
Chris Tunstall	17400 SW Cheyenne Way	Tualatin	OR	97062
Robert Kellogg	9412 SW Arikara Dr	Tualatin	OR	97062
Sonya Nyberg Rygh	PO Box 230338	Tigard	OR	97281
Scott Miller	12976 SW Hillside Tce	Tualatin	OR	97223
Chris Tunstall	17400 SW Cheyenne Way	Tualatin	OR	97062
Robert Kellogg	9412 SW Arikara Dr	Tualatin	OR	97062
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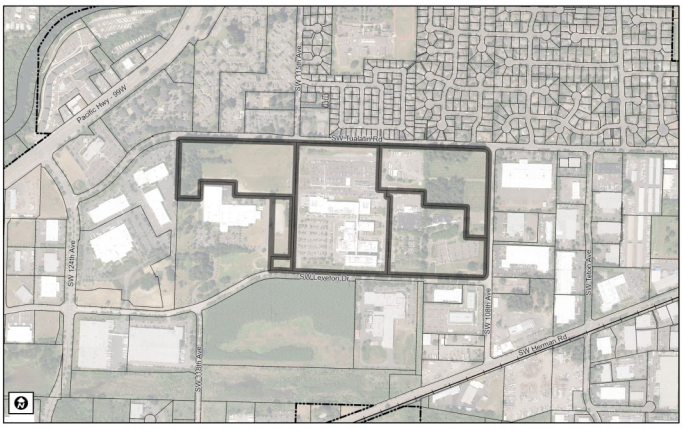

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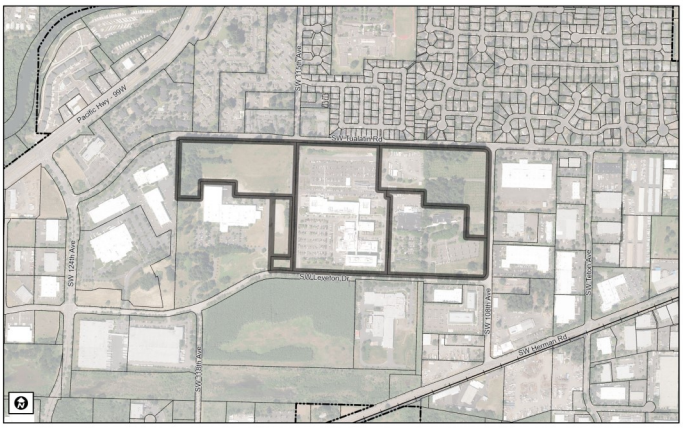

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10699 SW Herman Rd, Tualatin, Oregon 97062 TualatinOregon.gov

M E M O R A N D U M

Date: January 6, 2025

To: Keith Leonard, Associate Planner, City of Tualatin

From: Jackie Sue Humphreys, Clean Water Services (CWS)

Subject: Lam Research TUX Development, IMP24-0001 and AR24-0002, 2S122AA00500, 00800, 2S122AB00100, 2S122BA00100

Please include the following comments when writing your conditions of approval:

PRIOR TO ANY WORK ON THE SITE

A Clean Water Services (CWS) Storm Water Connection Permit Authorization must be obtained. Application for CWS Permit Authorization must be in accordance with the requirements of the Design and Construction Standards, Resolution and Order No. 19-5 as amended by R&O 19-22, or prior standards as meeting the implementation policy of R&O 18-28, and is to include:

a. Detailed plans prepared in accordance with Chapter 2, Section 2.04.

b. Detailed grading and erosion control plan. An Erosion Control Permit will be required. Area of Disturbance must be clearly identified on submitted construction plans. If site area and any offsite improvements required for this development exceed one-acre of disturbance, project will require a 1200-CN Erosion Control Permit. If site area and any offsite improvements required for this development exceed five-acres of disturbance, project will require a 1200-C Erosion Control Permit.

c. Detailed plans showing each lot within the development having direct access by gravity to public storm and sanitary sewer.

d. Provisions for water quality in accordance with the requirements of the above named design standards. Water Quality is required for all new development and redevelopment areas per R&O 19-5, Section 4.04. Access shall be provided for maintenance of facility per R&O 19-5, Section 4.07.6.

e. If use of an existing offsite or regional Water Quality Facility is proposed, it must be clearly identified on plans, showing its location, condition, capacity to treat this site and, any additional improvements and/or upgrades that may be needed to utilize that facility.

f. If private lot LIDA systems proposed, must comply with the current CWS Design and Construction Standards. A private maintenance agreement, for the proposed private lot LIDA systems, needs to be provided to the City for review and acceptance.

g. Show all existing and proposed easements on plans. Any required storm sewer, sanitary sewer, and water quality related easements must be granted to the City.

h. Application may require additional permitting and plan review from CWS Source Control Program. For any questions or additional information, please contact Source Control at (503) 681-5175.

i. Any proposed offsite construction activities will require an update or amendment to the current Service Provider Letter for this project.

CONCLUSION

This Land Use Review does not constitute CWS approval of storm or sanitary sewer compliance to the NPDES permit held by CWS. CWS, prior to issuance of any connection permits, must approve final construction plans and drainage calculations.

From: Jackie Humphreys <HumphreysJ@CleanWaterServices.org>
Sent: Thursday, July 31, 2025 2:48 PM
To: Keith Leonard
Subject: RE: Lam Research TUX Development

Hello Keith,

These changes will not affect the Land Use Memo provided. It is okay to proceed with your staff report recommendation.

Thanks,
Jackie

Jackie Sue Humphreys | Engineering Plan Review
Clean Water Services | Planning and Development Services
2550 SW Hillsboro Hwy | Hillsboro OR 97123
o 503.681.5101 | **f** 503.681.4439
engage permits | news | facebook | twitter

From: Keith Leonard <kleonard@tualatin.gov>
Sent: Tuesday, July 29, 2025 12:22 PM
To: Jackie Humphreys <HumphreysJ@CleanWaterServices.org>
Subject: RE: Lam Research TUX Development

> **Caution:** External email

Hi Jackie,

I wanted to make you aware that Lam has revised their development proposal. In short, they've cut the size of development and eliminated an employee entrance to Tualatin Road. Here's the links…

IMP https://www.tualatinoregon.gov/planning/lam-research-industrial-master-plan-imp24-0001

AR https://www.tualatinoregon.gov/planning/lam-research-tux-development-ar24-0002

Please confirm if the previous memo is still applicable. If you need to update the memo then I urge you to do so as soon as possible. We're drafting the recommendations with the first hearing August 20th and second hearing September 10th.

Thanks a bunch and I hope you're doing well!

Keith Leonard, AICP
Associate Planner
Phone: 503.691.3029

From: Jackie Humphreys <HumphreysJ@CleanWaterServices.org>
Sent: Monday, January 6, 2025 3:49 PM
To: Keith Leonard <kleonard@tualatin.gov>
Subject: Lam Research TUX Development

Keith,

Here is a copy of the Land Use Comments for the above project.
Thanks,

Jackie Sue Humphreys | Engineering Plan Review
Clean Water Services | Planning and Development Services
2550 SW Hillsboro Hwy | Hillsboro OR 97123
o 503.681.5101 | **f** 503.681.4439
engage permits | news | facebook | twitter

CITY of TUALATIN

NOTICE OF PLANNING COMMISSION DECISION
APPROVAL WITH CONDITIONS

August 20, 2025

Case #:	IMP 24-0001
Project:	Lam Research Corporation Campus
Location:	11155-11361 SW Leveton Drive; Tax Lots: 2S122AA 500 and 800; 2S122AB 100 2S122BA 100
Representative:	Suzannah Stanley, Mackenzie
Owner:	Lam Research Corporation

I. FINDINGS

IMP24-0001

A. An application for Industrial Master Plan ~~(IMP 25-0001)~~ was filed by Mackenzie, on behalf of Lam Research, requesting the addition of Lot 2S122BA00100 to the Plan Area and amend Conditions of Approval from IMP 22-0001, in order to modify building setback, parking and circulation setback, building height and parking lot landscaping.

B. The Tualatin Planning Commission (TPC) conducted a noticed quasi-judicial public hearing on August 20, 2025, in conformance with the laws of the State of Oregon and the City of Tualatin.

C. The Tualatin Planning Commission found that the findings and analysis, the staff presentation, testimony at the public hearing, materials in the record, and discussion on the record, support the approval of and materials in the record address the approval criteria of TDC 33.050 for Industrial Masters Plans and support the approval of IMP 24-0001 with the Conditions of Approval.

II. ACTION

The Tualatin Planning Commission approves IMP 24-0001 and adopts the staff analysis and findings, dated August 20, 2025, with the following Conditions of Approval:

GENERAL:

1. If future modifications to this Industrial Master Plan are necessary, a new Industrial Master Plan application must be submitted to the City for review.

PUBLIC FACILITIES:

2. Through the Architectural Review process:
   a. Private Easement declarations must be recorded and/or maintained for cross-access, parking, and utilities (including but not limited to: water, sanitary sewer, storm drainage)

that extend across parcels shared under common ownership within the campus, when deemed necessary in accordance with TDC 74.330, and TDC 75.040 (2 & 3).

b. Utilities must serve individual parcels within the campus, in accordance with the Public Works Construction Code and TDC 74.610, 74.620, and 74.630.

LOCATION, DESIGN, COLOR AND MATERIALS

3. Development proposed through the Architectural Review process must:
   a. Include building material elements consisting of, or complimentary to: masonry, sandstone, architectural metal siding, and window glazing. Color palettes must remain complimentary to earth toned shades.
   b. Meet the modified development standards listed in the table below:

STANDARD	MODIFIED DEVELOPMENT STANDARDS UNDER IMP 24-0001
LOT SIZE	
Minimum Lot Size	15 acres
MINIMUM SETBACKS	
Minimum Building Setback for Yards Adjacent to SW Leveton Drive	68 feet
Minimum Building Setback for Yards Adjacent to SW 108th Drive	98 feet
Minimum Building Setback for Yards Adjacent to SW Tualatin Road	Subject to Table 62-2 Development Standards in the MP Zone
Minimum Setback for Side and Rear Yards not Adjacent to Streets or Alleys	0 feet from side and rear yards under common ownership From other lots: Subject to Table 62-2 Development Standards in the MP Zone
Parking and Circulation Areas Adjacent to SW Leveton Drive	50 feet
Parking and Circulation Areas Adjacent to SW 108th Avenue	43 feet
Parking and Circulation Areas Adjacent to SW Tualatin Road	35 feet

STANDARD	MODIFIED DEVELOPMENT STANDARDS UNDER IMP 24-0001
Parking and Circulation Areas Adjacent to Private Property Line	0 feet from property lines under common ownership 10 feet from other lots
Fences	Subject to Table 62-2 Development Standards in the MP Zone
STRUCTURE HEIGHT	
Maximum Height	85 feet
Maximum Height Adjacent to Residential District	Subject to Table 62-2 Development Standards in the MP Zone

c. Maintain the earthen berm and landscaping consisting of deciduous street trees, evergreen trees, and shrubs along the northeast frontage of SW Tualatin Road to the driveway adjacent to 115th Avenue.

d. Retain the existing stand of trees behind Building A, or integrate into the parking lot design as deemed appropriate.

e. The version of TDC 73C Parking Standards effective on July 8, 2024 will apply.

III. APPEAL

The applicant or any person who submitted written comments or testified orally or in writing at the Tualatin Planning Commission hearing and who may be adversely affected by the Commission's decision may file a request for review of the final decision of the Tualatin Planning Commission to the City Council.

The Tualatin Planning Commission's decision will be final after 14 calendar days from the mailing of this order, unless a written appeal is received by the **Community Development Department Planning Division at 10699 SW SW Herman Road, Tualatin, Oregon, before 5:00 p.m., September 8, 2025. The appeal must be submitted on the City appeal form with all the information requested provided thereon, signed by the appellant, and include the applicable appeal fee.** The record and appeal forms are available at the Planning Division offices. The appeal forms must include reasons, current appeal fee, and meet the requirements of Section 32.310 of the Tualatin Development Code. The City Council will review and make a decision. The parties will be notified of the Council meeting date.

ADOPTED THIS 20h DAY OF AUGUST 2025.

PLANNING COMMISSION

CITY OF TUALATIN

BY: William J Beers

Bill Beers, Chair
Tualatin Planning Commission

Note: There was a scrivener's error that listed the project file as IMP 25-0001 when it should have listed IMP 24-0001. A line has been drawn through the incorrect file name and the correct file name has been added. There is no IMP 25-0001 nor do we anticipate another IMP application being applied for by the end of 2025.

Technical Memorandum

Date:	October 29, 2024
Project:	HWM24-0002 11359 SW Leveton Dr
To:	Tony Doran – Engineering Associate City of Tualatin – Engineering Division
From:	Consor, Emily Flock, PE
Reviewed By:	Brian Ginter, PE
Re:	Water System Capacity Analysis - Lam Tux Expansion, SW Leveton Dr

Introduction

The City of Tualatin requested evaluation of proposed expansion of Lam Tux facilities off SW Leveton Dr, east of SW 108th Ave. This memorandum presents the findings of this analysis for the City's use in assessing water system improvements necessary to meet fire flow and pressure requirements and proposed connection points to best suit City water system operations.

Background

The proposed development consists of approximately 424,000 square feet (sq. ft.) of industrial and office space in three separate buildings. The proposed development is located within the City's existing A-Level pressure zone and is served by the Tualatin Supply Main (TSM) and the A-2 Reservoir. There are multiple existing mains adjacent to the proposed development including an 18-inch diameter, high-pressure main on SW Leveton Dr; a 12-inch diameter, A-Level main on SW Leveton Dr; a 12-inch diameter, A-Level line on Quakenbush Ln; and a 16-inch diameter, A-Level line on SW Tualatin Rd. The high-pressure main on SW Leveton Dr is part of the TSM with a nominal hydraulic grade line of approximately 530 feet above mean sea level (msl). The existing A-Level operates at a nominal HGL of approximately 295 feet above msl.

The 12-inch diameter line on Quakenbush Ln is on private property. The City would like to eliminate public mains that are on private property where possible for access and maintenance purposes. Currently, the 12-inch diameter line provides domestic and fire flow to the JAE Oregon industrial property west of the proposed expansion. The existing Lam facilities do not have any connections to the 12-inch diameter line, but the proposed Lam Tux expansion plans add a service with significant water demand to this line. For City system access and operations, it is recommended the 12-inch diameter line on Quakenbush Ln be converted to a private line with metered connections to the 16-inch diameter main in SW Tualatin Rd. Subsequently, it is recommended the proposed Lam Tux expansion connect to the 16-inch diameter, A-Level line in SW Tualatin Rd rather than the 12-inch diameter line in Quakenbush Ln. **Figure 1** illustrates the proposed development site, existing water system infrastructure, and recommended expansion connections to the existing system.



Figure 1. Proposed Development Site and Existing Water System Infrastructure

Analysis and Findings

The City's water system hydraulic model was used to perform a hydraulic analysis of pressure and fire flow performance in the City's water system under maximum day demand (MDD) conditions with fire flow events evaluated at the site.

A summary of specific model conditions for this analysis is presented below.

- Demand Conditions: 2040 Maximum Day Demand
  - Proposed Lam Tux expansion demands:
    - 550 gpm domestic demand on 16-inch diameter main on SW Tualatin Rd
    - 26 gpm domestic demand on 18-inch diameter main on SW Leveton Dr (high-pressure)
- Fire Flow:
  - Fire flow for the development site is not proposed to change. Planning-level fire flow for industrial property is assumed to be 3,000 gpm from 18-inch diameter main on SW Leveton Dr.
  - Adjacent JAE Oregon industrial building is assumed to be fully sprinkled and have a fire flow requirement of 1,500 gpm per proposed site plan review memo from Tualatin Valley Fire and Rescue (TVFR) (Nov 2019, see Attachment A).

The residual pressures within the area influenced by the fire flow and domestic demands at the proposed development site meet or exceed the minimum pressure criteria of 25 pounds per square inch (PSI) as stated in the WMP during MDD conditions.

Based on the findings of this analysis, additional system improvements are not required to serve domestic and fire flows to the proposed development. However as described earlier, it is recommended the City convert the existing 12-inch diameter line in Quakenbush Ln to a privately-owned line to serve domestic and fire flow (configured to meet the City's Public Works Construction Code) for the JAE Oregon property and have the Lam Tux expansion facilities connect directly to the 16-inch diameter main (A-Level) in SW Tualatin Rd or the 18-inch diameter main (high-pressure) in SW Leveton Dr. Proposed plans for the Lam Tux expansion include replacing the 12-inch line in Quakenbush Ln and relocating a portion of the alignment to accommodate one of the proposed new buildings.

It is the developer's responsibility to size internal (private) fire and domestic mains for adequate service pressure, private hydrants and fire suppression sprinkler systems as these facilities are outside the scope of this analysis.

Please do not hesitate to contact us if you have any questions or comments in this regard. We would be happy to meet with you personally to discuss the findings presented in this memorandum.

Tualatin Valley Fire & Rescue

November 12, 2019

Erin Engman
Associate Planner
City of Tualatin
18880 SW Martinazzi Avenue
Tualatin, Oregon 97062

Re: JAE Oregon
Tax Lot I.D: 2S122BA00200

Dear Erin,

Thank you for the opportunity to review the proposed site plan surrounding the above-named development project. These notes are provided regarding the plans received November 7, 2019 and are based on the current New Construction Guide version 4.2C. There may be more or less requirements needed based upon the final project design, however, Tualatin Valley Fire & Rescue will endorse this proposal predicated on the following criteria and conditions of approval.

FIRE APPARATUS ACCESS:

1. **FIRE APPARATUS ACCESS ROADS:** Access roads shall be provided for every facility, building, or portion of a building hereafter constructed or moved into or within the jurisdiction. **Exception:** Approved agricultural and equine structures complying with ORS 455.315 are not required to have fire apparatus access roads (see New Construction Guide Appendix C). Access roads are not required to be modified for commercial buildings that undergo a change in occupancy, change in use, or conversion from agricultural or equine exempt to non-exempt unless there is a change to the structure's square footage or building footprint. (OFC 503.1.1)

2. **FIRE ACCESS ROAD DISTANCE FROM BUILDINGS:** The access shall extend to within 150 feet of all portions of the exterior wall of the first story of the building as measured by an approved route around the exterior of the building or facility. (OFC 503.1.1)

3. **DEAD ENDS AND ROADS IN EXCESS OF 150 FEET (TURNAROUNDS):** Dead end fire apparatus access roads or roads in excess of 150 feet in length shall be provided with an approved turnaround. Diagrams of approved turnarounds can be found in the corresponding guide that is located at http://www.tvfr.com/DocumentCenter/View/1296. (OFC 503.2.5 & Figure D103.1)

   Plans indicate a hammerhead turnaround. Please provide dimensions on the turnaround.

4. **FIRE APPARATUS ACCESS ROAD WIDTH AND VERTICAL CLEARANCE:** Fire apparatus access roads shall have an unobstructed driving surface width of not less than 20 feet (26 feet adjacent to fire hydrants (OFC D103.1)) and an unobstructed vertical clearance of not less than 13 feet 6 inches. (OFC 503.2.1 & D103.1)

5. **NO PARKING SIGNS:** Where fire apparatus roadways are not of sufficient width to accommodate parked vehicles and 20 feet of unobstructed driving surface, "No Parking" signs shall be installed on one or both sides of the roadway and

in turnarounds as needed. Signs shall read “NO PARKING - FIRE LANE” and shall be installed with a clear space above grade level of 7 feet. Signs shall be 12 inches wide by 18 inches high and shall have red letters on a white reflective background. (OFC D103.6)

See Sheet A0.1 for locations of fire lanes.

6. **NO PARKING:** Parking on emergency access roads shall be as follows (OFC D103.6.1-2):
   1. 20-26 feet road width – no parking on either side of roadway
   2. 26-32 feet road width – parking is allowed on one side
   3. Greater than 32 feet road width – parking is not restricted

   Note: For specific widths and parking allowances, contact the local municipality.

   See Sheet A0.1 for locations of fire lanes.

7. **PAINTED CURBS:** Where required, fire apparatus access roadway curbs shall be painted red (or as approved) and marked “NO PARKING FIRE LANE” at 25 foot intervals. Lettering shall have a stroke of not less than one inch wide by six inches high. Lettering shall be white on red background (or as approved). (OFC 503.3)

   See Sheet A0.1 for locations of fire lanes.

8. **FIRE APPARATUS ACCESS ROADS WITH FIRE HYDRANTS:** Where a fire hydrant is located on a fire apparatus access road, the minimum road width shall be 26 feet and shall extend 20 feet before and after the point of the hydrant. (OFC D103.1)

9. **SURFACE AND LOAD CAPACITIES:** Fire apparatus access roads shall be of an all-weather surface that is easily distinguishable from the surrounding area and is capable of supporting not less than 12,500 pounds point load (wheel load) and 75,000 pounds live load (gross vehicle weight). Documentation from a registered engineer that the final construction is in accordance with approved plans or the requirements of the Fire Code may be requested. (OFC 503.2.3)

10. **TURNING RADIUS:** The inside turning radius and outside turning radius shall not be less than 28 feet and 48 feet respectively, measured from the same center point. (OFC 503.2.4 & D103.3)

    Please note turning radius on plans.

11. **ACCESS ROAD GRADE:** Fire apparatus access roadway grades shall not exceed 15%. Alternate methods and materials may be available at the discretion of the Fire Marshal (for grade exceeding 15%).

12. **ANGLE OF APPROACH/GRADE FOR TURNAROUNDS:** Turnarounds shall be as flat as possible and have a maximum of 5% grade with the exception of crowning for water run-off. (OFC 503.2.7 & D103.2)

13. **GATES:** Gates securing fire apparatus roads shall comply with all of the following (OFC D103.5, and 503.6):
    1. Minimum unobstructed width shall be not less than 20 feet (or the required roadway surface width).
    2. Gates shall be set back at minimum of 30 feet from the intersecting roadway or as approved.
    3. Electric gates shall be equipped with a means for operation by fire department personnel
    4. Electric automatic gates shall comply with ASTM F 2200 and UL 325.

14. **ACCESS DURING CONSTRUCTION:** Approved fire apparatus access roadways shall be installed and operational prior to any combustible construction or storage of combustible materials on the site. Temporary address signage shall also be provided during construction. (OFC 3309 and 3310.1)

15. **TRAFFIC CALMING DEVICES:** Shall be prohibited on fire access routes unless approved by the Fire Marshal. (OFC 503.4.1). Traffic calming measures linked here: http://www.tvfr.com/DocumentCenter/View/1578

FIREFIGHTING WATER SUPPLIES:

16. **COMMERCIAL BUILDINGS – REQUIRED FIRE FLOW:** The minimum fire flow and flow duration shall be determined in accordance with OFC Table B105.2. The required fire flow for a building shall not exceed the available GPM in the water delivery system at 20 psi residual. (OFC B105.3)
    Note: OFC B106, Limiting Fire-Flow is also enforced, except for the following:
    - The maximum needed fire flow shall be 3,000 GPM, measured at 20 psi residual pressure.
    - Tualatin Valley Fire & Rescue does not adopt Occupancy Hazards Modifiers in section B105.4-B105.4.1

    An assumption of a Type IIB construction type was made. Per Oregon Fire Code this building will require a fire flow of 4,000GPM. If the building will be fully sprinklered then a 75% reduction in required fire flow is allowed. With fire sprinklers a fire flow of 1,500GPM would be required.

17. **FIRE FLOW WATER AVAILABILITY:** Applicants shall provide documentation of a fire hydrant flow test or flow test modeling of water availability from the local water purveyor if the project includes a new structure or increase in the floor area of an existing structure. Tests shall be conducted from a fire hydrant within 400 feet for commercial projects, or 600 feet for residential development. Flow tests will be accepted if they were performed within 5 years as long as no adverse modifications have been made to the supply system. Water availability information may not be required to be submitted for every project. (OFC Appendix B)

    Provide documentation of fire hydrant flow test or modeling.

18. **WATER SUPPLY DURING CONSTRUCTION:** Approved firefighting water supplies shall be installed and operational prior to any combustible construction or storage of combustible materials on the site. (OFC 3312.1)

FIRE HYDRANTS:

19. **FIRE HYDRANTS – COMMERCIAL BUILDINGS:** Where a portion of the building is more than 400 feet from a hydrant on a fire apparatus access road, as measured in an approved route around the exterior of the building, on-site fire hydrants and mains shall be provided. (OFC 507.5.1)
    - This distance may be increased to 600 feet for buildings equipped throughout with an approved automatic sprinkler system.
    - The number and distribution of fire hydrants required for commercial structure(s) is based on Table C105.1, following any fire-flow reductions allowed by section B105.3.1. Additional fire hydrants may be required due to spacing and/or section 507.5 of the Oregon Fire Code.

20. **FIRE HYDRANT(S) PLACEMENT:** (OFC C104)
    - Existing hydrants in the area may be used to meet the required number of hydrants as approved. Hydrants that are up to 600 feet away from the nearest point of a subject building that is protected with fire sprinklers may contribute to the required number of hydrants. (OFC 507.5.1)
    - Hydrants that are separated from the subject building by railroad tracks shall not contribute to the required number of hydrants unless approved by the Fire Marshal.
    - Hydrants that are separated from the subject building by divided highways or freeways shall not contribute to the required number of hydrants. Heavily traveled collector streets may be considered when approved by the Fire Marshal.

- Hydrants that are accessible only by a bridge shall be acceptable to contribute to the required number of hydrants only if approved by the Fire Marshal.

21. **PRIVATE FIRE HYDRANT IDENTIFICATION:** Private fire hydrants shall be painted red in color. Exception: Private fire hydrants within the City of Tualatin shall be yellow in color. (OFC 507)

22. **FIRE HYDRANT DISTANCE FROM AN ACCESS ROAD:** Fire hydrants shall be located not more than 15 feet from an approved fire apparatus access roadway unless approved by the Fire Marshal. (OFC C102.1)

23. **REFLECTIVE HYDRANT MARKERS:** Fire hydrant locations shall be identified by the installation of blue reflective markers. They shall be located adjacent and to the side of the center line of the access roadway that the fire hydrant is located on. In the case that there is no center line, then assume a center line and place the reflectors accordingly. (OFC 507)

24. **PHYSICAL PROTECTION:** Where fire hydrants are subject to impact by a motor vehicle, guard posts, bollards or other approved means of protection shall be provided. (OFC 507.5.6 & OFC 312)

25. **CLEAR SPACE AROUND FIRE HYDRANTS:** A 3 foot clear space shall be provided around the circumference of fire hydrants. (OFC 507.5.5)

26. **FIRE DEPARTMENT CONNECTION (FDC) LOCATIONS:** FDCs shall be located within 100 feet of a fire hydrant (or as approved). Hydrants and FDC's shall be located on the same side of the fire apparatus access roadway or drive aisle, fully visible, and recognizable from the street or nearest point of the fire department vehicle access or as otherwise approved. (OFC 912.2.1 & NFPA 13)
    - Fire department connections (FDCs) shall normally be located remotely and outside of the fall-line of the building when required. FDCs may be mounted on the building they serve, when approved.
    - FDCs shall be plumbed on the system side of the check valve when sprinklers are served by underground lines also serving private fire hydrants.

Indicate location of FDC on plans if the building will be sprinklered.

BUILDING ACCESS AND FIRE SERVICE FEATURES

27. **FIRE PROTECTION EQUIPMENT IDENTIFICATION:** Rooms containing controls to fire suppression and detection equipment shall be identified as "Fire Control Room." Signage shall have letters with a minimum of 4 inches high with a minimum stroke width of 1/2 inch, and be plainly legible, and contrast with its background. (OFC 509.1)

28. **PREMISES IDENTIFICATION:** New and existing buildings shall have approved address numbers; building numbers or approved building identification placed in a position that is plainly legible and visible from the street or road fronting the property, including monument signs. These numbers shall contrast with their background. Numbers shall be a minimum of 4 inches high with a minimum stroke width of 1/2 inch. (OFC 505.1)

If you have questions or need further clarification, please feel free to contact me at 503-259-1419.

Sincerely,

Tom Mooney

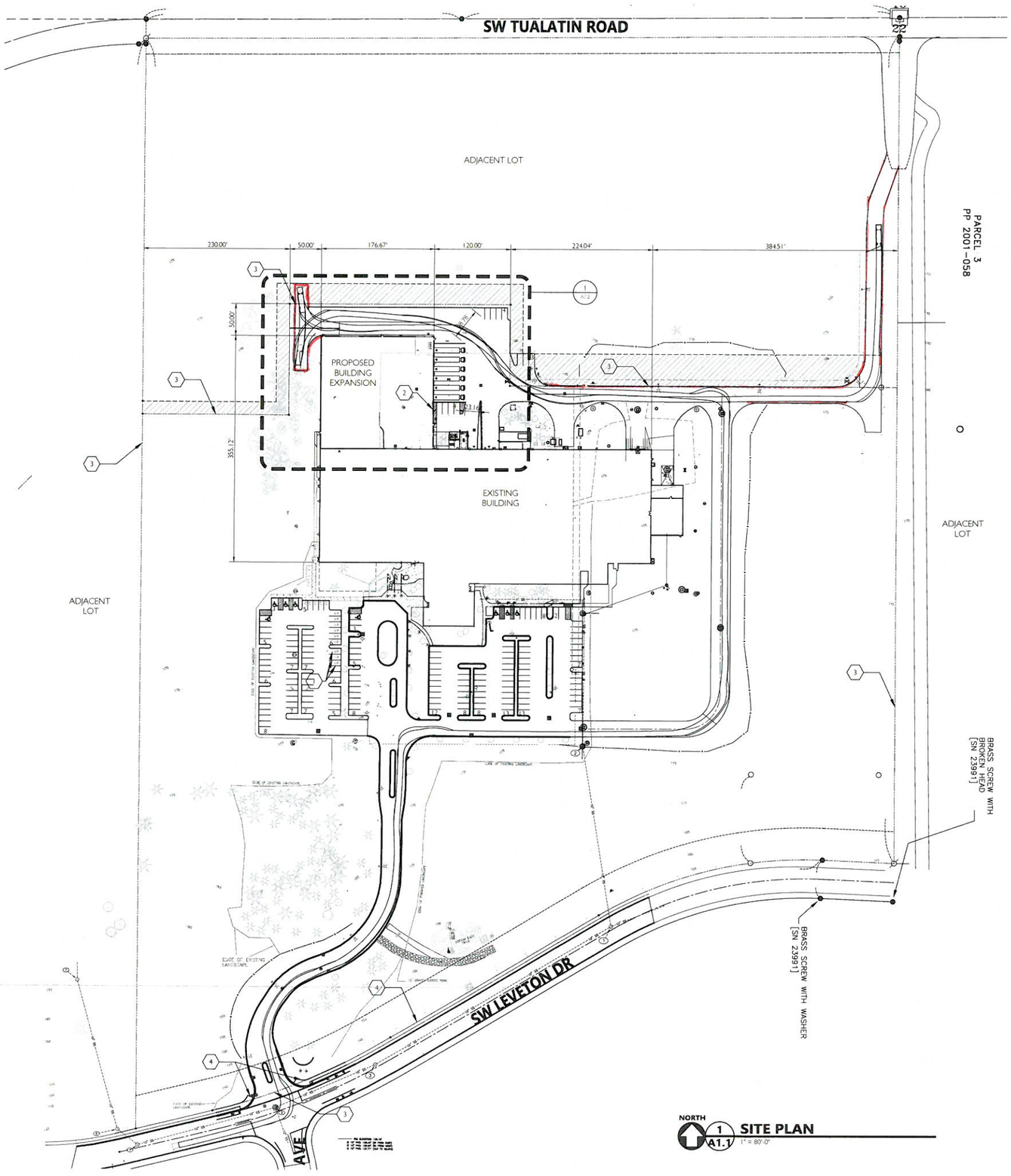
Tom Mooney

Deputy Fire Marshal II

Thomas.mooney@tvfr.com

Cc: File
City of Tualatin

A full copy of the New Construction Fire Code Applications Guide for Commercial and Multi-Family Development is available at http://www.tvfr.com/DocumentCenter/View/1296



GENERAL NOTES

- CONTRACTOR SHALL VERIFY AND CONFIRM EXISTING CONDITIONS SHOWN OR IMPLIED ON DRAWINGS PRIOR TO START OF CONSTRUCTION. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES.
- TYPICAL CURB RADIUS = 3' UNLESS NOTED OTHERWISE.
- PRIOR TO SITE CLEARING, GRADING OR CONSTRUCTION IN THE VEGETATED CORRIDOR, WATER QUALITY AND SENSITIVE AREAS SHALL BE SURVEYED, STAKED AND TEMPORARILY FENCED. VEGETATED CORRIDOR SHALL REMAIN FENCED AND UNDISTURBED DURING CONSTRUCTION.

LEGAL DESCRIPTION

TAX LOT: 2S122BA00200 - 2010-009 PARTITION PLAT LOT 2

QUARTER SECTION,
TOWNSHIP, RANGE: NE 1/4 NW 1/4 SECTION 22 T2S R1W W.M.

ADDRESS: 11555 SW LEVETON DRIVE
TUALATIN, OR 97062
WASHINGTON COUNTY OREGON

SITE AREA: 2.485 ACRES

BUILDING AREA:
EXISTING
1ST FLOOR 119,814 SF
MEZZANINE 6,882 SF
NEW 1ST FLOOR 31,211 SF
TOTAL: 151,021 SF

LANDSCAPE AREA:
REQUIRED: 162,343.5 SF (15%)
PROPOSED: 611,957 SF (81.2%)

PARKING PROVIDED:

TYPE	SIZE	# PROVIDED
STANDARD	9' X 18.5'	164 STALLS
COMPACT	8.5' X 15'	5 STALLS
H/C ACCESSIBLE	9' X 18.5'	8 STALLS
TOTAL PROVIDED PARKING:		177 STALLS

KEYNOTES

1. NEW VANPOOL PARKING
2. NEW BIKE PARKING INSIDE BUILDING
3. PROPERTY LINE
4. REBUILD (E) SIDEWALK FOR ADA ACCESSIBILITY COMPLIANCE
5. FIRE TRUCK TURN AROUND AREA

LEGEND

- FIRE HYDRANT
- LIGHT POLE
- CATCH BASIN
- (S) SANITARY SEWER LINE
- (W) SANITARY LINE
- DOCK HIGH
- DRIVE IN
- ACCESSIBLE PARKING
- C COMPACT VEHICLE PARKING
- V.P. VANPOOL PARKING
- (E) EXISTING
- DS DOWNSPOUT
- (E) CONIFEROUS TREE
- (E) DECIDUOUS TREE
- SIGN POLE
- PROPERTY BOUNDARY
- PROPERTY EASEMENT
- MANEUVERING, LANDSCAPE AND SLOPE EASEMENT

PRELIMINARY PLAN ONLY-NOT FOR CONSTRUCTION

NO.	DATE	DESCRIPTION
1	09.13.2019	ARCHITECTURAL REVIEW SET
2		

CIDA
ARCHITECTURE
ENGINEERING
PLANNING
INTERIORS
15895 SW 72ND AVE SUITE 220
PORTLAND OREGON 97224
TEL 503.226.1285
FAX 503.226.1672
WWW.CIDAINC.COM

BUILDING EXPANSION
JAE OREGON
11555 SW LEVETON DR
TUALATIN, OR

SITE PLAN

A0.1

JOB NO. 19017.001

© CIDA PLANNING ALL RIGHTS RESERVED

Exhibit F

Public Comments

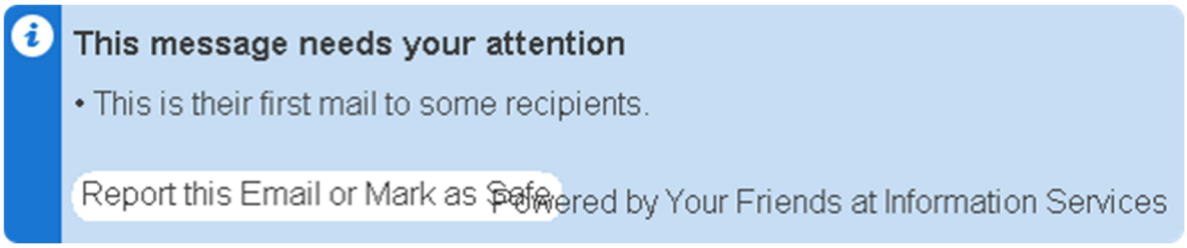
8/21/2

through

9/4/25

In Favor

From: Chris I. West <chris@pacwestresources.com>
Sent: Thursday, September 4, 2025 3:12 PM
To: Ext - Planning
Cc: Council
Subject: Testimony in support of LAM Research Investment & Development



Dear Tualatin Architectural Review Board,

I would like to express strong support for Lam Research and its proposed expansion in the City of Tualatin. Lam Research is not only a global leader in semiconductor manufacturing, but also one of the most significant employers and community partners in Tualatin and Washington County.

This proposed Expansion Project represents nearly a $1 billion potential investment in our region. I live in Sherwood, and my office is in Tigard, and the southern end of Washington County needs private investments and development like this, which will lead to future economic development and stability. The benefits of this project will be felt across this region and the state of Oregon: creating hundreds of millions of dollars in new economic activity, be a boost to the construction trades' employment, generating an estimated 600 local high-paying jobs, and strengthening Oregon's economy in an uncertain time.

This investment will directly support local schools, parks, public safety, and libraries through significant property tax contributions. Also providing resources for road maintenance and traffic improvements.

Lam Research has been a strong community partner to Tualatin and Washington County throughout the planning and public hearing process. It is time to let them move ahead with this expansion.

I respectfully urge you to approve Lam Research's Industrial Master Plan application. This project is more than an expansion of a facility, it is an investment in the future of Tualatin, Washington County, and Oregon.

Thank you for your consideration.

Sincerely yours,

Chris

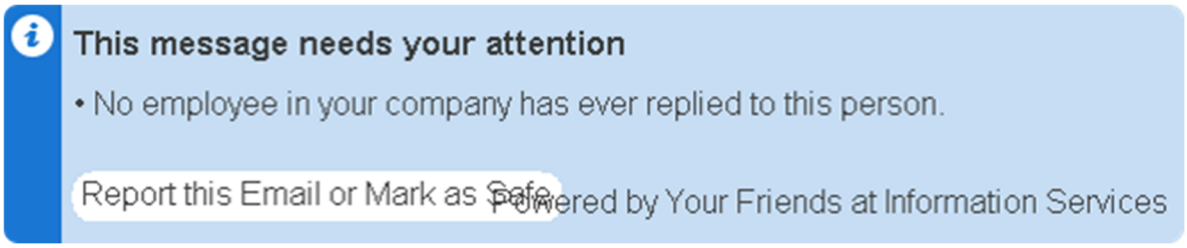


Chris West
President, Pac/West Resources

PAC/WEST

Phone: 503-685-9400 (o) | 503-781-3766 (c)
Website: www.pacwestresources.com
Email: chris@pacwestresources.com

From: Edward H. Trompke <Ed.Trompke@jordanramis.com>
Sent: Thursday, September 4, 2025 2:58 PM
To: Ext - Planning
Cc: Council
Subject: Testimony in SUPPORT of LAM Research Expansion



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Thank you for your consideration.

Edward H. Trompke | Attorney
Direct: (503) 598-5532

JORDAN RAMIS

1211 SW Fifth Ave, Suite 2700
Portland OR 97204

jordanramis.com | (888) 598-7070

Portland | Bend | Vancouver WA



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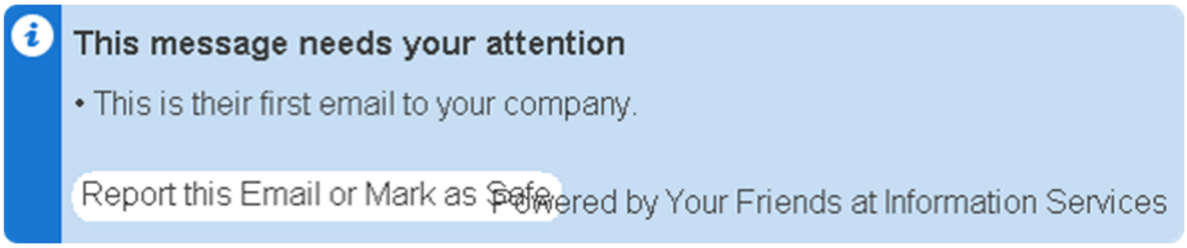
From: Greg Manning <gmanning@pioneerprojectpartners.com>
Sent: Thursday, September 4, 2025 3:21 PM
To: Ext - Planning
Cc: Council
Subject: Testimony in SUPPORT of LAM Research Expansion



Dear Tualatin Architectural Review Board,

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The proposed Expansion Project represents nearly a $1 billion potential investment in our region. The benefits of this project will be felt across this region and the state of Oregon: creating hundreds of millions of dollars in new economic activity, generating an estimated 600 local high-paying jobs, and strengthening Oregon's economy.

This opportunity comes at a time when the Portland MSA's job losses year-over-year make our region one of the bottom three metro areas in the country for job growth.

This investment will directly support local schools, parks, public safety, and libraries through significant property tax contributions. Also providing resources for road maintenance and traffic improvements.

Lam Research has been a strong community partner to Tualatin and Washington County throughout the planning and public hearing process. It is time to let them move ahead with this expansion.

I respectfully urge you to approve Lam Research's Industrial Master Plan application. This project is more than an expansion of a facility, it is an investment in the future of Tualatin, Washington County, and Oregon.

Thank you for your consideration.

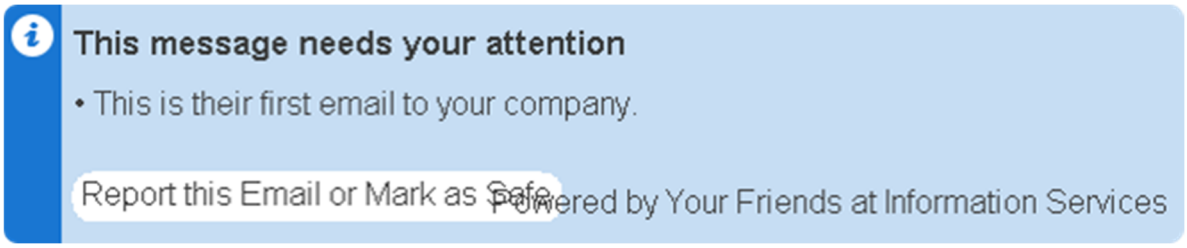
PIONEER
PROJECT PARTNERS, LLC

Greg Manning, Principal

Cell: (503) 929-9879

www.pioneerprojectpartners.com

From: Joshua Shearer <jshearer@kgip.com>
Sent: Thursday, September 4, 2025 3:21 PM
To: Ext - Planning
Cc: Council
Subject: Testimony in SUPPORT of LAM Research Expansion



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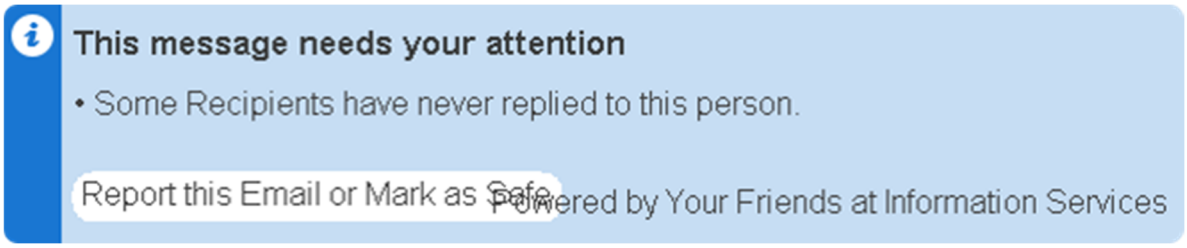
I respectfully urge you to approve Lam Research's Industrial Master Plan application. This project is more than an expansion of a facility, it is an investment in the future of Tualatin, Washington County, and Oregon.

Thank you for your consideration.

Josh Shearer
SVP, Regional Director
KG Investment Properties
10300 SW Nimbus Ave, Suite P-C
Portland, OR 97223

From: Kali Bader <kali@rembold.com>
Sent: Thursday, September 4, 2025 3:44 PM
To: Ext - Planning
Cc: Council
Subject: Testimony in SUPPORT of LAM Research Expansion



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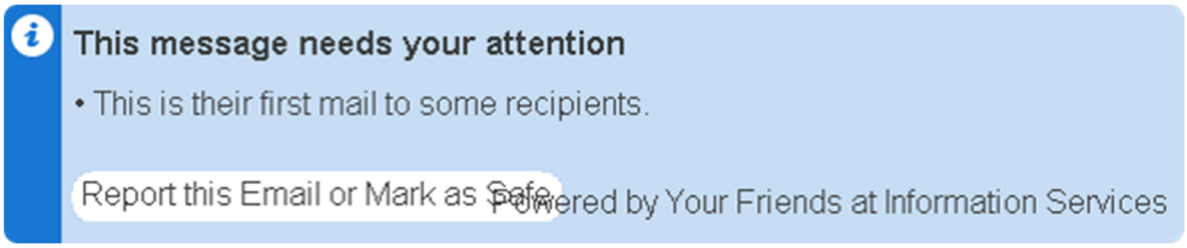
I respectfully urge you to approve Lam Research's Industrial Master Plan application. This project is more than an expansion of a facility, it is an investment in the future of Tualatin, Washington County, and Oregon.

Thank you for your consideration.

Kali Bader, Rembold Properties, Portland, OR

From: KC Schwartzkoph <KC@pacific-community.com>
Sent: Thursday, September 4, 2025 3:45 PM
To: Ext - Planning
Cc: Council
Subject: Testimony in SUPPORT of LAM Research Expansion



Dear Tualatin Architectural Review Board,

I would like to express strong support for Lam Research and its proposed expansion in Tualatin. Lam Research is not only a global leader in semiconductor manufacturing, but also one of the most significant employers and community partners in Tualatin and Washington County.

The proposed Expansion Project represents nearly a $1 billion potential investment in our region. The benefits of this project will be felt across this region and the state of Oregon: creating hundreds of millions of dollars in new economic activity, generating an estimated 600 local high-paying jobs, and strengthening Oregon's economy in an uncertain time.

This investment will directly support local schools, parks, public safety, and libraries through significant property tax contributions. Also providing resources for road maintenance and traffic improvements.

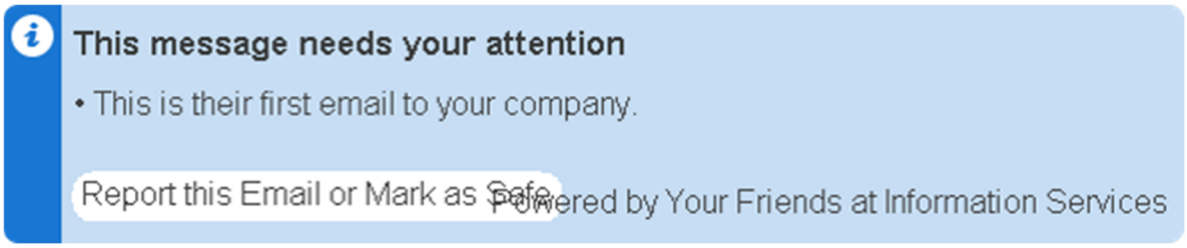
Lam Research has been a strong community partner to Tualatin and Washington County throughout the planning and public hearing process. It is time to let them move ahead with this expansion.

I respectfully urge you to approve Lam Research's Industrial Master Plan application. This project is more than an expansion of a facility, it is an investment in the future of Tualatin, Washington County, and Oregon.

Thank you for your consideration.

KC Schwartzkoph
Pacific Community Design

From: Kira Cador <kira@rembold.com>
Sent: Thursday, September 4, 2025 3:11 PM
To: Ext - Planning
Cc: Council
Subject: Testimony in SUPPORT of LAM Research Expansion



Dear Tualatin Architectural Review Board,

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The proposed Expansion Project represents nearly a $1 billion potential investment in our region. The benefits of this project will be felt across this region and the state of Oregon: creating hundreds of millions of dollars in new economic activity, generating an estimated 600 local high-paying jobs, and strengthening Oregon's economy in an uncertain time.

This investment will directly support local schools, parks, public safety, and libraries through significant property tax contributions. Also providing resources for road maintenance and traffic improvements.

Lam Research has been a strong community partner to Tualatin and Washington County throughout the planning and public hearing process. It is time to let them move ahead with this expansion.

I respectfully urge you to approve Lam Research's Industrial Master Plan application. This project is more than an expansion of a facility, it is an investment in the future of Tualatin, Washington County, and Oregon especially at a time when many large employers are devesting in this region and shedding employees.

Thank you for your consideration.

Kira Cador, President and Principal , Rembold, 10305 SW Park Way, Suite 206, Portland, OR 97229 (located in unincorporated Washington County) www.rembold.com

Kira Cador | Rembold
President + Principal

10305 SW Park Way, Suite 204
Portland, OR 97225
Office: 503.222.7258 | Fax: 971.231.3362
kira@rembold.com | www.rembold.com
Diverse and Innovative Real Estate

From: Shawn Sell <shawnsell@icloud.com>
Sent: Thursday, September 4, 2025 3:13 PM
To: Ext - Planning
Cc: Council
Subject: Testimony in SUPPORT of LAM Research Expansion

Dear Tualatin Architectural Review Board,

I would like to express strong support for Lam Research and its proposed expansion in Tualatin. Lam Research is not only a global leader in semiconductor manufacturing, but also one of the most significant employers and community partners in Tualatin and Washington County.

The proposed Expansion Project represents nearly a $1 billion potential investment in our region. The benefits of this project will be felt across this region and the state of Oregon: creating hundreds of millions of dollars in new economic activity, generating an estimated 600 local high-paying jobs, and strengthening Oregon's economy in an uncertain time.

This investment will directly support local schools, parks, public safety, and libraries through significant property tax contributions. Also providing resources for road maintenance and traffic improvements.

Lam Research has been a strong community partner to Tualatin and Washington County throughout the planning and public hearing process. It is time to let them move ahead with this expansion.

I respectfully urge you to approve Lam Research's Industrial Master Plan application. This project is more than an expansion of a facility, it is an investment in the future of Tualatin, Washington County, and Oregon.

Thank you for your consideration,

Shawn Sell
Shawn Sell Insurance Agent
Tigard, Oregon 97223
(503)740-2416
shawnsell@icloud.com

Sent from my iPhone

WEA
WESTSIDE ECONOMIC ALLIANCE

September 4, 2025

Dear Tualatin Architectural Review Board,

Westside Economic Alliance (WEA) once again expresses strong support for Lam Research and its proposed expansion in Tualatin.

WEA represents a coalition of local governments, private employers, and community organizations working to advance balanced economic development throughout the Tualatin Valley and the broader Westside of the Portland Metro Region.

Lam's story is well known; they have spent over four decades at the forefront of semiconductor innovation. Today, nearly every computer chip in the world is made with the use of Lam equipment.

Here in Oregon, Lam Research has been an anchor employer in Tualatin since 2002, growing into the city's largest employer with more than 3,800 full-time employees and contractors. Beyond jobs, Lam has invested deeply in the community, supporting STEM education, advancing opportunities for underserved youth, and helping families access affordable housing.

Lam Research has been an engaged and willing partner to the City of Tualatin and Washington County throughout the planning and public hearing process. Should this project fail to move forward, our region will be sending a clear message. We will be telling job creators that want to invest into our state that we put the concerns of unfounded local opposition ahead of the very investments that create career pathways and roads to home ownership.

In a time of economic uncertainty, a vote to advance this project prioritizes the needs of the local community and unlocks the transformative potential of a $1 billion investment in our region. This initiative will deliver widespread benefits — driving hundreds of millions in new economic activity, creating approximately 600 high-paying jobs, and reinforcing Oregon's economic resilience.

The multiplier effects cannot be overstated. These new employees will purchase homes, pay income and property taxes, shop in local stores, participate in community events, send their kids to local schools, and volunteer in their neighborhoods. Lam's presence will have cascading benefits in creating positive economic impact throughout the region.

The Westside Economic Alliance respectfully urges your support and approval of Lam Research's Industrial Master Plan application.

10220 SW Nimbus Ave, Suite K-12 | Tigard, Oregon 97223
Office 503-968-3100 | www.WestsideAlliance.org

EXECUTIVE COMMITTEE
President Nina Carlson
NW Natural

Vice President Gina Cole
Legacy Health

Secretary Carly Riter
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Treasurer Brantley Dettmer
Kaiser Permanente

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John Howorth
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City of Hillsboro

Mayor Frank Bubenik
City of Tualatin

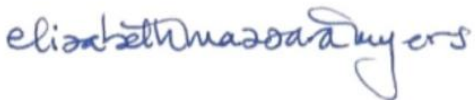
Councilor John Dugger
City of Beaverton

Council President Maureen Wolf
City of Tigard

This project is more than an expansion of a facility, it is an investment in the future of Tualatin, Washington County, and Oregon.

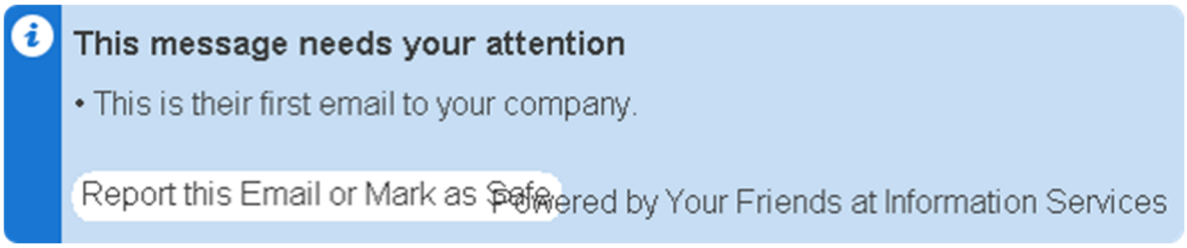
Thank you for your consideration.

Sincerely



Elizabeth Mazzara Myers
Executive Director

From: Chad Darby <cmdarby@frontier.com>
Sent: Tuesday, September 2, 2025 12:27 PM
To: Keith Leonard; Ext - Planning; outreach@tualatinroad.org; Council
Subject: Re: LAM 108th use of Tualatin Rd. OPPOSITION



I was copied on Toni's email. I just wanted to add that I've lived on Shawnee Trail for 22 years. Is it a pain to get out sometimes onto Tualatin road via Cheyenne Way? Yes, but it's never taken me more than 2-3 minutes even during high traffic, which is like waiting at a traffic light. The lights to the east are timed such that you can turn into the center turn lane facing east and then merge into the eastbound traffic in less than 30 seconds later. A right turn onto Tualatin road is never a problem. The concern about traffic and saving Tualatin road is so overblown. If you look at the intersection you'll see it has always been awkward because Cheyenne comes out super close to the traffic light. As long as the city is ensuring that proper traffic studies are done, I don't see the issue. Some people just need things to get riled about. Please confirm someone received my comments.
Kind regards,
Chad Darby
Cell: 503-523-7142

On Aug 30, 2025, at 2:45 PM, T. Carrasco <tntand@gmail.com> wrote:

Tualatin Architectural Review Board,

Currently, during LOW traffic time, it takes us 5 to 10 minutes to get out of our street, Cheyenne Way.

It is totally unreasonable to expect 600 new employees to use Tualatin road via 108th or 115th, when Leviton was specifically built to circumvent all neighborhood traffic, as was 124th.
If you look back in the proposals for these road constructions, you'll see this was the promise made to Tualatin residents, businesses and taxpayers at the time.

There must be no additional industrial access of 108th or 115th, to access Tualatin Rd. as this jeopardizes the safety and livability of all residents in the area.

Should the city and LAM allow this use, they would be liable for the crash rate that will surely increase.

Tualatin road designation was changed in error by the city from a neighborhood surface road, to a thoroughfare.
It was never designed to be such.
Also, as it is an asphalt road and will not hold up to this traffic.
This city redesignation must be corrected to protect Tualatin SAFETY and LIVABILITY.

Many residents have suggested that LAM solve its proposed additional traffic by creating more of their own shifts and less traffic for Tualatin, but still keeping all of its traffic off of Tualatin road and directing all Leviton exits onto main thoroughfares, such as 124th and Tualatin-Sherwood Hwy.

As we are unable to attend september 10 meeting, please read this into the public testimony.

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

The Tualatin Comprehensive Plan 2040 asks us to "Consider transportation options that make the best use of the existing network." (Goal 8.7) Leveton Drive has a massive amount of unused capacity available and is currently under-utilized especially during peak traffic times. **The highest and best use for Leveton Drive is to carry ALL of Lam's added site trips. It is unreasonable to put more strain on Tualatin Road (and its residents) when Leveton is sitting there mostly empty**.

Lam's expanded entrance on 108th fails three of the driveway approach criteria in TDC 75.020.5:
"(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity;
(h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and
(i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

Lam's traffic study shows that the **Hazelbrook Road onramp to Hwy 99W will fail to meet performance standards after adding the additional**

traffic volumes from this proposed 108th entrance.

Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you

Toni and Len Carrasco
17790 Cheyenne Way Tualatin

In Opposition

From: Alex Simpson <asimps33@gmail.com>
Sent: Friday, August 29, 2025 11:21 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

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Lam's expanded entrance on 108th fails three of the driveway approach criteria in TDC 75.020.5: "(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

Lam's traffic study shows that the Hazelbrook Road onramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volumes from this proposed 108th entrance.

Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

From: Alisa Pegis <alisa.pegis@yahoo.com>
Sent: Friday, August 29, 2025 10:31 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

The Tualatin Comprehensive Plan 2040 asks us to "Consider transportation options that make the best use of the existing network." (Goal 8.7) Leveton Drive has a massive amount of unused capacity available and is currently under-utilized especially during peak traffic times. The highest and best use for Leveton Drive is to carry ALL of Lam's added site trips. It is unreasonable to put more strain on Tualatin Road (and its residents) when Leveton is sitting there mostly empty.

Lam's expanded entrance on 108th fails three of the driveway approach criteria in TDC 75.020.5: "(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

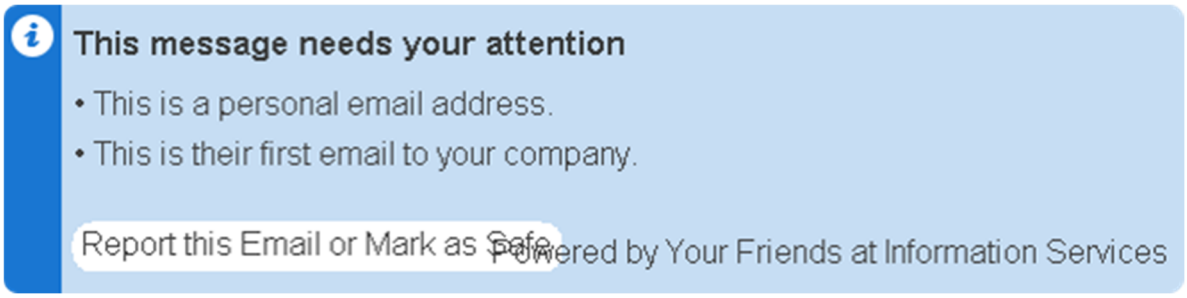
Lam's traffic study shows that the Hazelbrook Road onramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volumes from this proposed 108th entrance.

Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

From: Allyson Overton <allyover@yahoo.com>
Sent: Friday, August 29, 2025 4:33 PM
To: Keith Leonard; Ext - Planning; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance



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Lams expanded entrance on 108th fails three of the driveway approach criteria in TDC 75.020.5. The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets.

Lam's traffic study shows that the Hazelbrook Road onramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volumes from this proposed 108th entrance.

Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Outlook

Lam Traffic Impacts

From Amy Williams <130.amy@gmail.com>
Date Wed 8/27/2025 5:51 AM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX site plan, specifically the proposed expansion of the 108th Avenue north access point which is currently gated. Opening this gate to allow employee access would add traffic to Tualatin Road, making it more difficult for residents to enter and exit our neighborhoods. Peak traffic volume on Tualatin Road is already a major problem, and I would ask the city to take steps to reduce, not increase, traffic volumes on Tualatin Road.

Approved in 2023, Lam's Building G project is still under construction, and the full traffic impact of its two new parking lots on 108th has not yet been felt, but is already baked in. I am opposed to opening another access on 108th, and I respectfully request that Lam's existing 108th north access remain in its current configuration: closed to employee traffic but available for emergency and utility use.

For the majority of Riverpark residents, Tualatin Road is our ONLY option for local access. We do not have an alternate route, but Lam does: Leveton Drive. It has a higher speed limit and lower traffic volume than Tualatin Road. Leveton is a better route for Lam's trips.

SITE CIRCULATION

Lam's updated site plan shows a primary employee driveway connecting the north parking lots directly to Leveton Drive, providing more than adequate roadway access for these employees. Connecting these same parking lots to 108th is redundant and unnecessary, and would create unintended negative impacts in the surrounding neighborhoods.

Lam's site plan shows 6 other access points: 4 on Leveton Drive and 2 on 108th. Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to open yet another access point.

DRIVEWAY CRITERIA

Lam's traffic study shows that the Hazelbrook Road on-ramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volume from the proposed 108th entrance.

This proposed entrance fails three of the driveway approach criteria in TDC 75.020.5: "

(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

PLANNING GOALS

The Tualatin Comprehensive Plan 2040 asks us to "Consider transportation options that make the best use of the existing network." (Goal 8.7) Leveton Drive has a massive amount of unused capacity available and is currently under-utilized especially during peak traffic times. The highest and best use for Leveton Drive is to carry ALL of Lam's added site trips. It is unreasonable to put more strain on Tualatin Road (and its residents) when Leveton is sitting there mostly empty.

SCOPE OF IMPACT

The full impact of an expanded 108th access would extend well beyond the TUX project. Lam's latest site plan shows an abundance of open space available for future development, and based on current trends, Lam will continue to expand and build out their campus.

It is also common for semiconductor facilities to run multiple shifts, in order to double or triple their production capacity without expanding the physical plant. Adding shifts (and the accompanying traffic volume) would not require an Architectural Review, Industrial Master Plan update, or Conditional Use Permit. The potential for a significantly increased intensity of use should be anticipated now and addressed during the current land use review cycle.

The Tualatin Planning Commission was advised to not consider ANY traffic or noise impacts during their IMP hearing, and was told that these concerns would be handled by the Architectural Review Board.

When measuring the traffic impact of Lam's proposed entrance, it is appropriate and justified to look at not only the impact from Lam's TUX project, but also look at the total anticipated impact from future developments that could use this entrance. At the IMP hearing, one of Lam's advocates mentioned that "this project has been part of Lam's master plan for quite some time." In order to evaluate the full impact of Lam's current proposal, it would be helpful to see how this entrance would interact with future projects, and how it fits into Lam's overall campus master plan.

ROAD SAFETY

An expansion at 108th would provide Lam's north parking lots with access to Tualatin Road. The intersection of 108th and Tualatin Road already has an elevated crash rate, and adding more traffic here would increase the risk of injury, not only for those who choose to turn here, but also for each person who travels along this section of Tualatin Road.

STUDENT SAFETY

The proposed expansion on 108th would also add traffic to 115th Avenue, which many students cross on foot each day going to and from school. Compared to existing conditions, the current TUX proposal represents a decrease in student safety, and that is a step in the wrong direction.

Lam’s traffic study also does not identify the locations of school bus routes or the potential impacts to school bus traffic. Student safety is one of the most important issues in our community, but so far it has been ignored in this process.

JUSTICE AND EQUITY

Although the negative traffic impacts from 108th would be felt along the entire length of Tualatin Road, these impacts would be most concentrated between 108th and 124th Avenues, an area which includes more than 600 high-density housing units, traditionally disadvantaged demographics, and income-limited apartments. Putting more traffic stress on these populations is not equitable, especially when a better alternative is available on the other side of Lam's campus.

PUBLIC FUNDS

Lam Research received $22 million in taxpayer-funded CHIPS Act grant funds to help pay for the TUX expansion. Any project built with taxpayer funds should be designed so that it does not harm the community.

ECONOMIC IMPACT

The total value of residential real estate located between the Tualatin River and Tualatin Road is well over $500 million. This tax base must be protected. The best economic solution would be for Lam to grow in a way that does not interfere with surrounding residential land uses. The current decision before you does not need to be a conflict between Lam and the surrounding community. With good site design and smart planning, this project can be a win-win.

Keeping the 108th north access in its current configuration and utilizing Leveton for all of Lam's new site trips is a solution that will allow Lam's campus to grow long into the future while protecting the quality of life and property values of the taxpayers who live along Tualatin Road.

Thank you for your consideration.

P.S. I personally enter and exit my neightborhood near 108th and my home backs this intersection/ Tualatin Road. Currently at peak traffic hours I can wait easily 10 minutes trying to just exit the neighborhood due to people entering Helser Industries.This would make it significantly more difficult for me and those who live around me to exit/enter our neighborhoods at 106th.

From: Arva Bartos <arva41@gmail.com>
Sent: Friday, August 29, 2025 3:39 PM
To: Keith Leonard; Ext - Planning; Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance

Dear Tualatin Architectural Review Board,

While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration,
Arva Bartos
17750 SW Chippewa Trail, Tualatin, OR 97062

Outlook

Lam 108th Ave Proposed Entrance

From Ashley Isenberg <ashleymisenberg@gmail.com>
Date Tue 8/26/2025 4:20 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

Lam's expanded entrance on 108th fails three of the driveway approach criteria in TDC 75.020.5: "(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

The Tualatin Comprehensive Plan 2040 asks us to "Consider transportation options that make the best use of the existing network." (Goal 8.7) Leveton Drive has a massive amount of unused capacity available and is currently under-utilized especially during peak traffic times. The highest and best use for Leveton Drive is to carry ALL of Lam's added site trips. It is unreasonable to put more strain on Tualatin Road (and its residents) when Leveton is sitting there mostly empty.

Lam's traffic study shows that the Hazelbrook Road onramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volumes from this proposed 108th entrance.

Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Outlook

Lam Traffic Impacts

From Patti Atkins <patti@prpatti.com>
Date Tue 8/26/2025 3:28 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>; Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

To: Keith Leonard kleonard@tualatin.gov
To: Planning Department planning@tualatin.gov
Cc: City Council council@tualatin.gov
Cc: STR Outreach outreach@tualatinroad.org

Subject: Lam Traffic Impacts

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX site plan, specifically the proposed expansion of the 108th Avenue north access point which is currently gated. Opening this gate to allow employee access would add traffic to Tualatin Road, making it more difficult for residents to enter and exit our neighborhoods. Peak traffic volume on Tualatin Road is already a major problem, and I would ask the city to take steps to reduce, not increase, traffic volumes on Tualatin Road.

Approved in 2023, Lam's Building G project is still under construction, and the full traffic impact of its two new parking lots on 108th has not yet been felt, but is already baked in. I am opposed to opening another access on 108th, and I respectfully request that Lam's existing 108th north access remain in its current configuration: closed to employee traffic but available for emergency and utility use.

For the majority of Riverpark residents, Tualatin Road is our ONLY option for local access. We do not have an alternate route, but Lam does: Leveton Drive. It has a higher speed limit and lower traffic volume than Tualatin Road. Leveton is a better route for Lam's trips.

Tualatin Road is already quite busy and the traffic often exceeds the posted speed limit. A guest of mine was hit while turning left onto Tualatin Road and the GrubHub driver who hit her was exceeding the speed limit and totaled her car.

SITE CIRCULATION

Lam's updated site plan shows a primary employee driveway connecting the north parking lots directly to Leveton Drive, providing more than adequate roadway

access for these employees. Connecting these same parking lots to 108th is redundant and unnecessary, and would create unintended negative impacts in the surrounding neighborhoods.

Lam's site plan shows 6 other access points: 4 on Leveton Drive and 2 on 108th. Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to open yet another access point.

DRIVEWAY CRITERIA

Lam's traffic study shows that the Hazelbrook Road on-ramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volume from the proposed 108th entrance.

This proposed entrance fails three of the driveway approach criteria in TDC 75.020.5: "(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

PLANNING GOALS

The Tualatin Comprehensive Plan 2040 asks us to "Consider transportation options that make the best use of the existing network." (Goal 8.7) Leveton Drive has a massive amount of unused capacity available and is currently under-utilized especially during peak traffic times. The highest and best use for Leveton Drive is to carry ALL of Lam's added site trips. It is unreasonable to put more strain on Tualatin Road (and its residents) when Leveton is sitting there mostly empty.

SCOPE OF IMPACT

The full impact of an expanded 108th access would extend well beyond the TUX project. Lam's latest site plan shows an abundance of open space available for future development, and based on current trends, Lam will continue to expand and build out their campus.

It is also common for semiconductor facilities to run multiple shifts, in order to double or triple their production capacity without expanding the physical plant. Adding shifts (and the accompanying traffic volume) would not require an Architectural Review, Industrial Master Plan update, or Conditional Use Permit. The potential for a significantly increased intensity of use should be anticipated now and addressed during the current land use review cycle.

The Tualatin Planning Commission was advised to not consider ANY traffic or noise impacts during their IMP hearing, and was told that these concerns would be handled by the Architectural Review Board.

When measuring the traffic impact of Lam's proposed entrance, it is appropriate and justified to look at not only the impact from Lam's TUX project, but also look at the the total anticipated effect from future developments that could use this

entrance. The traffic effect of this entrance would continue to grow over time as future development occurs on this campus. At the IMP hearing, one of Lam's advocates mentioned that "this project has been part of Lam's master plan for quite some time." In order to evaluate the full impact of Lam's current proposal, it would be helpful to see how this entrance would interact with future projects, and how it fits into Lam's overall campus master plan.

ROAD SAFETY

An expansion at 108th would provide Lam's north parking lots with access to Tualatin Road. The intersection of 108th and Tualatin Road has an elevated crash rate, and adding more traffic here would increase the risk of injury, not only for those who choose to turn here, but also for each person who travels along this section of Tualatin Road.

STUDENT SAFETY

The proposed expansion on 108th would also add traffic to 115th Avenue, which many students cross on foot each day going to and from school. Compared to existing conditions, the current TUX proposal represents a decrease in student safety, and that is a step in the wrong direction.

Lam’s traffic study also does not identify the locations of school bus routes or the potential impacts to school bus traffic. Student safety is one of the most important issues in our community, but so far it has been ignored in this process.

JUSTICE AND EQUITY

Although the negative traffic impacts from 108th would be felt along the entire length of Tualatin Road, these impacts would be most concentrated between 108th and 124th Avenues, an area which includes more than 600 high-density housing units, traditionally disadvantaged demographics, and income-limited apartments. Putting more traffic stress on these populations is not equitable, especially when a better alternative is available on the other side of Lam's campus.

PUBLIC FUNDS

Lam Research received $22 million in taxpayer-funded CHIPS Act grant funds to help pay for the TUX expansion. Taxpayer funds should not be used to build a project that harms the community.

ECONOMIC IMPACT

The total value of residential real estate located between the Tualatin River and Tualatin Road is well over $500 million. This tax base must be protected. The best economic solution would be for Lam to grow in a way that does not interfere with surrounding residential land uses. The current decision before you does not need to be a conflict between Lam and the surrounding community. With good site design and smart planning, this project can be a win-win.

Keeping the 108th north access in its current configuration and utilizing Leveton for

all of Lam's new site trips is a solution that will allow Lam's campus to grow long into the future while protecting the quality of life and property values of the taxpayers who live along Tualatin Road.

Thank you for your consideration.
Patricia Atkins
17745 SW Chippewa Trail, Tualatin, OR 97062

From: bob jones <bobjones2398@yahoo.com>
Sent: Friday, August 29, 2025 10:36 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

The Tualatin Comprehensive Plan 2040 asks us to "Consider transportation options that make the best use of the existing network." (Goal 8.7) Leveton Drive has a massive amount of unused capacity available and is currently under-utilized especially during peak traffic times. The highest and best use for Leveton Drive is to carry ALL of Lam's added site trips. It is unreasonable to put more strain on Tualatin Road (and its residents) when Leveton is sitting there mostly empty.

Lam's expanded entrance on 108th fails three of the driveway approach criteria in TDC 75.020.5: "(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

Lam's traffic study shows that the Hazelbrook Road onramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volumes from this proposed 108th entrance.

Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Bob

Outlook

Re: Lam Traffic Impacts

From Lindsey Hagerman <lhagerman@tualatin.gov>
Date Thu 8/28/2025 12:03 PM
To Brett Hamilton <brett@simple.be>
Cc Keith Leonard <kleonard@tualatin.gov>

Good afternoon,

Thank you for your recent submission regarding the Lam development proposal. Your comments have been received and added to the public record.

We appreciate you taking the time to participate in the public review and comment process.

Kind regards,

Lindsey Hagerman
Office Coordinator
Community Development
Phone: 503.691.3053
tualatinoregon.gov

From: Brett Hamilton <brett@simple.be>
Sent: Wednesday, August 27, 2025 1:59 PM
To: Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc: Council <council@tualatin.gov>; Outreach <outreach@tualatinroad.org>
Subject: Lam Traffic Impacts

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX site plan, specifically the proposed expansion of the 108th Avenue north access point which is currently gated. Opening this gate to allow employee access would add traffic to Tualatin Road, making it more difficult for residents to enter and exit our neighborhoods. Peak traffic volume on Tualatin Road is already a major problem, and I would ask the city to take steps to reduce, not increase, traffic volumes on Tualatin Road.

Approved in 2023, Lam's Building G project is still under construction, and the full traffic impact of its two new parking lots on 108th has not yet been felt, but is already baked in. I am opposed to opening another access on 108th, and I respectfully request that Lam's existing 108th north access remain in its current configuration: closed to employee traffic but available for emergency and utility use.

For the majority of Riverpark residents, Tualatin Road is our ONLY option for local access. We do not

have an alternate route, but Lam does: Leveton Drive. It has a higher speed limit and lower traffic volume than Tualatin Road. Leveton is a better route for Lam's trips.

SITE CIRCULATION

Lam's updated site plan shows a primary employee driveway connecting the north parking lots directly to Leveton Drive, providing more than adequate roadway access for these employees. Connecting these same parking lots to 108th is redundant and unnecessary, and would create unintended negative impacts in the surrounding neighborhoods.

Lam's site plan shows 6 other access points: 4 on Leveton Drive and 2 on 108th. Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to open yet another access point.

DRIVEWAY CRITERIA

Lam's traffic study shows that the Hazelbrook Road on-ramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volume from the proposed 108th entrance.

This proposed entrance fails three of the driveway approach criteria in TDC 75.020.5: "(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

PLANNING GOALS

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SCOPE OF IMPACT

The full impact of an expanded 108th access would extend well beyond the TUX project. Lam's latest site plan shows an abundance of open space available for future development, and based on current trends, Lam will continue to expand and build out their campus.

It is also common for semiconductor facilities to run multiple shifts, in order to double or triple their production capacity without expanding the physical plant. Adding shifts (and the accompanying traffic volume) would not require an Architectural Review, Industrial Master Plan update, or Conditional Use Permit. The potential for significantly increased intensity of use should be anticipated now and addressed during the current land use review cycle.

The Tualatin Planning Commission was advised to not consider ANY traffic or noise impacts during their IMP hearing, and was told that these concerns would be handled by the Architectural Review Board.

When measuring the traffic impact of Lam's proposed entrance, it is appropriate and justified to look at

not only the impact from Lam's TUX project, but also look at the total anticipated impact from future developments that could use this entrance. At the IMP hearing, one of Lam's advocates mentioned that "this project has been part of Lam's master plan for quite some time." In order to evaluate the full impact of Lam's current proposal, it would be helpful to see how this entrance would interact with future projects, and how it fits into Lam's overall campus master plan.

ROAD SAFETY

An expansion at 108th would provide Lam's north parking lots with access to Tualatin Road. The intersection of 108th and Tualatin Road already has an elevated crash rate, and adding more traffic here would increase the risk of injury, not only for those who choose to turn here, but also for each person who travels along this section of Tualatin Road.

STUDENT SAFETY

The proposed expansion on 108th would also add traffic to 115th Avenue, which many students cross on foot each day going to and from school. Compared to existing conditions, the current TUX proposal represents a decrease in student safety, and that is a step in the wrong direction.

Lam's traffic study also does not identify the locations of school bus routes or the potential impacts to school bus traffic. Student safety is one of the most important issues in our community, but so far it has been ignored in this process.

JUSTICE AND EQUITY

Although the negative traffic impacts from 108th would be felt along the entire length of Tualatin Road, these impacts would be most concentrated between 108th and 124th Avenues, an area which includes more than 600 high-density housing units, traditionally disadvantaged demographics, and income-limited apartments. Putting more traffic stress on these populations is not equitable, especially when a better alternative is available on the other side of Lam's campus.

PUBLIC FUNDS

Lam Research received $22 million in taxpayer-funded CHIPS Act grant funds to help pay for the TUX expansion. Any project built with taxpayer funds should be designed so that it does not harm the community.

ECONOMIC IMPACT

The total value of residential real estate located between the Tualatin River and Tualatin Road is well over $500 million. This tax base must be protected. The best economic solution would be for Lam to grow in a way that does not interfere with surrounding residential land uses. The current decision before you does not need to be a conflict between Lam and the surrounding community. With good site design and smart planning, this project can be a win-win.

Keeping the 108th north access in its current configuration and utilizing Leveton for all of Lam's new site trips is a solution that will allow Lam's campus to grow long into the future while protecting the quality of life and property values of the taxpayers who live along Tualatin Road.

Thank you for your consideration,
Brett Hamilton

Outlook

Lam Off-Site Noise Video

From Brett Hamilton <brett@simple.be>
Date Wed 8/27/2025 1:58 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; Outreach <outreach@tualatinroad.org>

Dear Tualatin Architectural Review Board,

In order to save time at the upcoming Lam TUX hearing, and to prevent technical difficulties, I've converted my off-site noise presentation into a video and posted it on YouTube to be part of the public record. I would ask that this email be included in the hearing packet.

https://youtu.be/lyzioqzFeXw

Sincerely,
Brett Hamilton

Outlook

Lam 108th Ave Proposed Entrance

From Brian Craker <crakerb@yahoo.com>
Date Tue 8/26/2025 3:33 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

As a resident who lives on 106th Court, I am especially concerned for the impact this will have for my family being able to safely exit onto Tualatin Road. We already have multiple issues with the current traffic load, this plan would make it significantly worse for our particular neighborhood.

Lam's expanded entrance on 108th fails three of the driveway approach criteria in TDC 75.020.5: "(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

The Tualatin Comprehensive Plan 2040 asks us to "Consider transportation options that make the best use of the existing network." (Goal 8.7) Leveton Drive has a massive amount of unused capacity available and is currently under-utilized especially during peak traffic times. The highest and best use for Leveton Drive is to carry ALL of Lam's added site trips. It is unreasonable to put more strain on Tualatin Road (and its residents) when Leveton is sitting there mostly empty.

Lam's traffic study shows that the Hazelbrook Road onramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volumes from this proposed 108th entrance.

Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Brian and Alison Craker

<><----------><>
Brian Craker
Sent from my iPhone

Outlook

Re: Lam 108th Ave Proposed Entrance

From Lindsey Hagerman <lhagerman@tualatin.gov>
Date Thu 8/28/2025 11:19 AM
To Carmen O. <carmenofearth@gmail.com>
Cc Keith Leonard <kleonard@tualatin.gov>

Good morning,

Thank you for your additional submission regarding the Lam development proposal. Your comments have been received and added to the public record.

We appreciate you taking the time to participate in the public review and comment process.

Kind regards,

Lindsey Hagerman
Office Coordinator
Community Development
Phone: 503.691.3053
tualatinoregon.gov

From: Carmen O. <carmenofearth@gmail.com>
Sent: Wednesday, August 27, 2025 8:47 AM
To: Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc: Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>
Subject: Lam 108th Ave Proposed Entrance

This message needs your attention
• Some Recipients have never replied to this person.
• This is a personal email address.
Report this Email or Mark as Safe
Powered by Your Friends at Information Services

Dear Tualatin Architectural Review Board,

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Lam’s expanded entrance on 108th fails three of the driveway approach criteria in TDC 75.020.5: “(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets.”

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Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Outlook

Lam 108th Ave Proposed Entrance

From Carrie Knappenberger <carrie.knappenberger1@gmail.com>
Date Wed 8/27/2025 12:50 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

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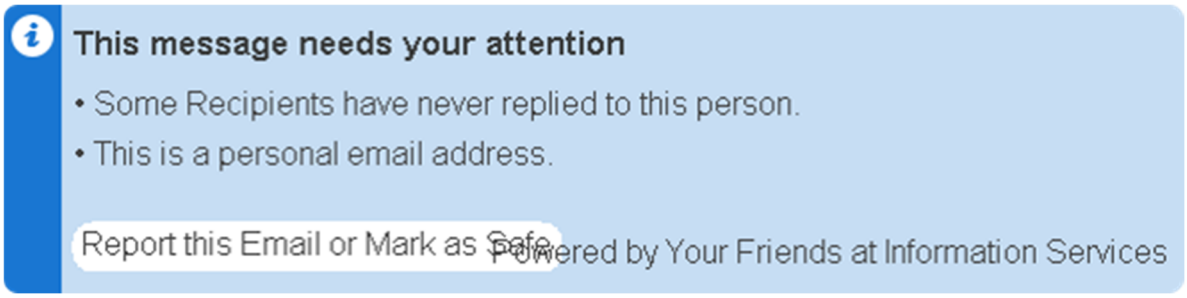
NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Carrie Knappenberger

From: Chantelle Widerburg <chantellewiderburg1234@gmail.com>
Sent: Saturday, August 23, 2025 6:52 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance



Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

Lam's proposed entrance on 108th fails three of the new driveway approach criteria in TDC 75.020.5: "(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

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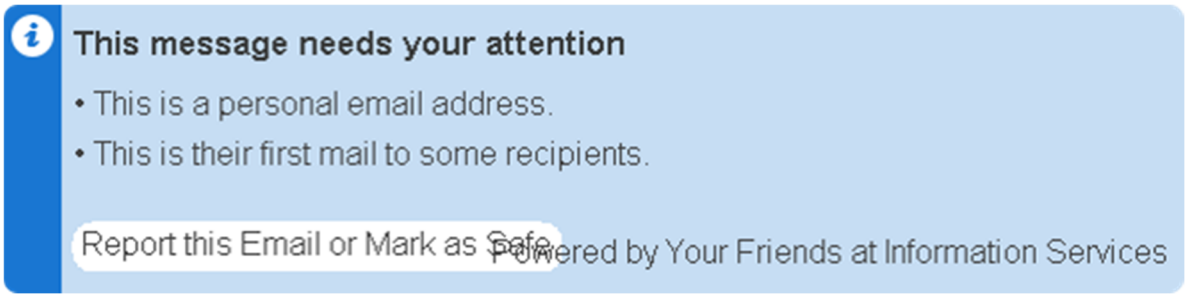
NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

From: Chantelle Widerburg <chantellewiderburg1234@gmail.com>
Sent: Saturday, August 23, 2025 6:52 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts



Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for your dedication and service to the community, and for your work to protect our quality of life. While development and corporate activities are essential to the vitality of our city, residential land uses must also be protected, both from an economic standpoint (property values) and from a quality of life standpoint (mental and physical health). In keeping with this mission, we are asking for your help in resolving Lam's noise pollution problem.

Multiple noise signatures have been identified emanating from Lam's campus, including clear tones that pulse, two-toned harmonics, and a low rumble that sounds like an old bomber airplane. The most distinctive sound is the high-frequency hiss from Lam's gas plant, clearly audible across Tualatin Road most nights.

We have brought this issue to the attention of the City Council, Police Department, Code Enforcement, Riverpark CIO, and Lam. Despite repeated requests for a solution, no meaningful changes have been made. When Tualatin's police officers have driven onto the Lam campus to investigate noise complaints, they have been chased down by Lam's security guards and asked to leave.

The Tualatin Noise Ordinance (1361-13) sets a city-wide limit of 50dB at night for residential areas, and the Tualatin Development Code (62.100) places even stricter limits on Manufacturing Park (MP) zoning, stating that "Such permitted uses must not cause objectionable noise". A noise study performed earlier this year at night by a licensed acoustical engineer measured noise levels of 52dB at a private residence across the street from Lam's gas plant. Therefore, Lam's offsite noise impacts are in violation of both the Tualatin Development Code and the Tualatin Municipal Code.

Lam's noise pollution problem is not caused by daytime construction, backup beepers, or truck horns, but rather, by permanently-installed equipment that is part of Lam's physical plant. This equipment runs 24/7 and generates sound continuously. The sounds are most

noticeable at night when background noise is low, and the location of sound impacts can vary depending on atmospheric conditions, especially temperature and wind direction. During southerly winds, Lam's noise signature can be heard more than a mile away.

Manufacturing Park (MP) zoning serves as a buffer between heavy industry and residential areas. MP zoning calls for “limiting uses to those that are of a nature so as to not conflict with other industrial uses or surrounding residential areas.” (TDC 62.100) Please consider this letter as evidence that Lam's operations are, in fact, currently conflicting with surrounding residential areas.

In order to bring Lam's facility into compliance with the Tualatin Code, I request that Lam's off-site noise impacts be eliminated as part of the TUX project. It is absolutely critical to our quality of life that peace and quiet be restored to our neighborhoods. We ask the City of Tualatin to require Lam to prove their ability to eliminate offsite noise before approving the addition of any new noise sources on campus.

Thank you for your consideration.

From: Cleve Rolfe <cleverdella2@icloud.com>
Sent: Friday, August 29, 2025 11:26 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

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Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Sent from my iPhone

Outlook

Lam 108th Ave Proposed Entrance

From clint ackerman <hockey535353@outlook.com>
Date Tue 8/26/2025 10:04 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

Dear Tualatin Architectural Review Board,

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NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.
I sleep with my window open until 3:30 AM when the first cars with mufflers Trucks with turbo engines and HD motorcycles start heading to Lams then I close it. IN the afternoon there is the 12 noon rush hour to get a few things done the the 2:30, 3:30 ,:4:30 and finally the overtime 5:30 6:00 Rush hour to get home. Thanks for not caring Vote for TRUMP again next election.

Sent from my iPhone

Outlook

Lam 108th Ave Proposed Entrance

From Carmen O. <carmenofearth@gmail.com>
Date Wed 8/27/2025 8:46 AM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

Please consider using Leveton to 124th as you employee entrance and exit method.You will be considered a champion member of the community. Everyone will agree it is the best solution. Thank you for your time in considering this matter.

Keith Leonard

From: Dan Wilson-Fey <dwilsonfey@gmail.com>
Sent: Monday, September 1, 2025 8:57 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal. I appreciate the work that has been done by LAM Research and Mackenzie, Inc. to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveways. LAM Research's response to citizen input on that initial plan is commendable. I do, however, have questions about the proposed opening of the north driveway in the northeast corner of the LAM Research property, as an employee entrance/exit, that exits onto SW 108th Avenue, approximately 300 feet south of Tualatin Road. I am concerned about any increased traffic on Tualatin Road and adjacent residential roads.

First, I note the "LAM TUX Transportation Impact Analysis" submitted by Mackenzie, Inc. on LAM Research's behalf, dated July 8, 2024, and revised on October 10, 2024 and July 21, 2025, found here: https://www.tualatinoregon.gov/sites/default/files/fileattachments/planning/project/57063/attachment_9_-_transportation_impact_assessment_rev_250721.pdf After the design change which eliminated the proposed signalized employee entrance at SW 115th Ave and Tualatin Road, a supplemental letter to the initial transportation impact analysis, dated August 19, 2025, was submitted by Mackenzie, Inc., on behalf of LAM Research, and is offered on the City of Tualatin's website here: https://www.tualatinoregon.gov/sites/default/files/fileattachments/planning/project/57063/00ltr-city_of_tualatin-lam_tux_tia_supplemental_letter-250819.pdf. At the end of that supplemental letter document, is a memo from Mike McCarthy to Keith Leonard, dated August 5, 2025. I have three questions about this:

1. If the supplemental letter from Mackenzie (LAM Research) is dated August 19, 2025, and Mike McCarthy's memo is dated August 5, 2025, does this mean that Mike McCarthy had not reviewed the submitted supplemental letter when he sent his affirmative memo to Keith Leonard? Does this mean that the latest information Mike McCarthy reviewed was the July 21, 2025 revisions to the original TIA? (And by the way...how can one tell in that TIA what are the original proposals, and what are the revisions?)
2. Mike McCarthy's memo states that "The existing utilities and transportation system are adequate, or can be made adequate through conditions, to support the proposed Lam development." My question is: which is it? The existing...transportation system IS adequate, or CAN BE MADE adequate? If it is not adequate, what are the requirements so that it CAN BE MADE adequate?
3. Mike McCarthy's memo's subject line is "IMP 24-0001 Analysis and Findings." Am I to assume he was commenting on the TIA for purposes of the 8/20/25 Industrial Master Plan (IMP) hearing before the Tualatin Planning Commission? I attended that hearing, and it was clarified at that hearing that traffic impact analysis was not a consideration in the decisions to be made at that hearing. If that is so, why was Mike McCarthy specifically commenting on the adequacy of the traffic impact analysis and existing transportation s system for that hearing? It gave mixed messages to the public at large if he was commenting on something that was not to be considered at that hearing.

Now, we approach the Architectural Review Board hearing scheduled for September 10, 2025. It is my understanding that the Tualatin Architectural Review Board WILL consider traffic impact analyses at this hearing, and so I offer the following observations, questions and comments.

1. I live at 17640 SW Fulton Dr., just one block east of Jurgens Lane, about halfway between Tualatin Road and Hazelbrook Drive. Any trip I make driving anywhere toward the south from my home necessitates me heading south on Jurgens Lane and stopping at Tualatin Road. My experience driving that road, often several times a day, is that I have to wait, sometimes for an extensive amount of time, to turn either west or east onto Tualatin Road. I do not have any quantitative data for this observation; I'm just sharing my personal experience as a resident in the neighborhood. I can't imagine it appropriate to add any more traffic to Tualatin Road at this time.

2. Mackenzie/LAM Research's 8/19/25 supplemental letter states on page 3, referring to page 13 of the original TIA, "The existing north driveway on SW 108th Avenue has been in use for access to the north end of the campus and will be used by vehicles parking in the new northeast lot, resulting in it serving approximately 6% of total campus trips after development of the project. The driveway is located approximately 300' south of Tualatin Road and is on a lower classification minor arterial road, so meets City of Tualatin standards. As shown in the TIA, the driveway will not result in adverse impacts to the functionality of adjacent roadways and intersections." My question is: how do they know that this driveway will result in only 6% of total campus trips after development of the project? I realize that they have done studies based on employees' home addresses, but this does not take into account persons going shopping or other destinations either before or after work, and I wonder if it takes into account the "best routing" offered to drivers from Waze, GoogleMaps, and other map apps on employee's phones or automobiles.

3. Employees exiting the exit in question (the north exit onto SW 108th Ave.), if they turn left onto 108th, they then face the decision of whether to turn left or to turn right onto Tualatin Road. If their goal is to head north on Hwy 99, they can certainly turn left, but at peak traffic hours (rush hours), turning left onto Tualatin Road may entail waiting a good deal of time, especially if there is a queue on SW 108th Ave. for the left turn onto Tualatin Road. Drivers may choose to turn right, travel the short distance to Jurgens Lane, and then seek to turn left, which means they cross only one lane of traffic instead of two. This would place more traffic onto Jurgens Lane, and it would also make longer wait times for cars headed south on Jurgens Lane, waiting to turn left onto Tualatin Road. Has this possible impact been analyzed adequately?

4. Will Mike McKenzie be issuing an opinion on the traffic impact analysis on the matters I note above (and other traffic impact analyses) AFTER he has received the August 19, 2025 TIA Supplemental Letter on the LAM TUX proposal, and SPECIFICALLY for purposes of the Architectural Review Board's September 10, 2025 consideration of the proposal, which, as the public was given to understand at the 8/25/25 IMP hearing of the Tualatin Planning Commission, will fully include consideration of any external traffic impacts of the entire proposal as it is presently conceived?

5. The original Transportation Impact Analysis document is very extensive. It includes the proposed signal at 115th Ave. and Tualatin Road. The document does indicated two revisions were made on 10/14/24 and 7/21/25. It is extremely difficult to discern which data apply to the plan WITH the signalized employee entrance at SW 115th Ave. and Tualatin Rd., and which data/analyses apply to the plan with that proposed signalized intersection removed, thus resulting in the traffic from the westerly parking lots routed south to the westerly entrance on Leveton Drive. The TIA Supplemental letter purports to update the original plan, but does the supplemental letter analysis take into account the increased traffic on the north 108th Ave. entrance due to the removal of the SW 115th Ave./Tualatin road access? If so, I was unable to tease out that data from the two documents, and question whether this change has been sufficiently analyzed.

The Tualatin Comprehensive Plan 2040 asks us to "Consider transportation options that make the best use of the existing network." (Goal 8.7) Leveton Drive has a massive amount of unused capacity available and is currently under-utilized especially during peak traffic times. The highest and best use for Leveton Drive is to carry ALL of Lam's added site trips. It is unreasonable to put more strain on Tualatin Road (and its residents) when Leveton Drive has MORE than enough capacity to handle ALL of Lam's added site trips.

Lam's expanded entrance on 108th fails three of the driveway approach criteria in TDC 75.020.5: "(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

Additionally, LAM Research's traffic study shows that the Hazelbrook Road onramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volumes from this proposed 108th entrance.

Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will likely increase this crash rate even further.

I may be wrong, but my understanding is that the date by which comments need to be submitted to the Architectural Review Board is September 3, 2025. I was hoping that there would be a Tualatin City staff report available prior to making my comments, but I do not find one on the City website for this expansion proposal. I assume that a staff report will be forthcoming for the Architectural Review Board, and I may have a chance to review it and amend any comments I have made here based on that review.

Finally, I want to leave you with two concluding thoughts:

1. I do support LAM Research's expansion proposal overall. They are good community partners in many ways, and I am grateful for what they do and the way they contribute to our community and beyond.

2. That said, I want to note that for me, and for all residents of the residential neighborhoods north of Tualatin Road in this area, to head anywhere south from our homes, Tualatin Road is the ONLY option for us to travel. We MUST use Tualatin Road. Lam Research employees have several options already available and planned, to use the two already existing entrances on SW 108th Ave. and three entrances on Leveton Drive. As such:

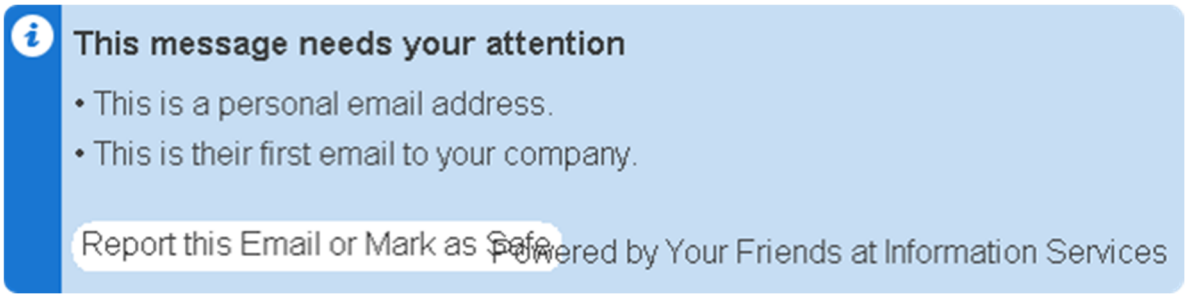
I ask that there be:

* No new employee access on SW 108th Ave.
* No added traffic on Tualatin Road
* Use of Leveton Drive and Herman Road for any increased employee vehicular access to the LAM complex

Thank you for your consideration.

Dan Wilson-Fey, neighborhood resident
dwilsonfey@gmail.com
17640 SW Fulton Dr.
Tualatin, OR 97062

From: Danette Brophy <webebrophy@gmail.com>
Sent: Sunday, August 31, 2025 5:27 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance



Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

The Tualatin Comprehensive Plan 2040 asks us to "Consider transportation options that make the best use of the existing network." (Goal 8.7) Leveton Drive has a massive amount of unused capacity available and is currently under-utilized especially during peak traffic times. The highest and best use for Leveton Drive is to carry ALL of Lam's added site trips. It is unreasonable to put more strain on Tualatin Road (and its residents) when Leveton is sitting there mostly empty.

Lam's expanded entrance on 108th fails three of the driveway approach criteria in TDC 75.020.5: "(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

Lam's traffic study shows that the Hazelbrook Road onramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volumes from this proposed 108th entrance.

Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th

NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Danette Brophy
Tualatin Resident

Outlook

Lam 108th Ave Proposed Entrance

From deborah anderson <deborah52557@hotmail.com>
Date Tue 8/26/2025 10:56 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

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Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.
Please continue to be good neighbors and remember that your employees have options, I only have one option out of my driveway.

Sincerely,
Deborah Anderson
SW Tualatin Rd Resident

Sent from my iPhone

From: Derek White <uvltruck345@gmail.com>
Sent: Sunday, August 31, 2025 8:45 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

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Lam's traffic study shows that the Hazelbrook Road onramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volumes from this proposed 108th entrance.

Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Sent from my iPhone

From: Eric Smith <jetsmith777@gmail.com>
Sent: Sunday, August 31, 2025 9:46 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

The Tualatin Comprehensive Plan 2040 asks us to "Consider transportation options that make the best use of the existing network." (Goal 8.7) Leveton Drive has a massive amount of unused capacity available and is currently under-utilized especially during peak traffic times. The highest and best use for Leveton Drive is to carry ALL of Lam's added site trips. It is unreasonable to put more strain on Tualatin Road (and its residents) when Leveton is sitting there mostly empty.

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Lam's traffic study shows that the Hazelbrook Road onramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volumes from this proposed 108th entrance.

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NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Outlook

Lam 108th Ave Proposed Entrance

From Hazen Hyland <hazenh@westernwoodstructures.com>
Date Tue 8/26/2025 7:40 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

Dear Tualatin Architectural Review Board,

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Lam's traffic study shows that the Hazelbrook Road onramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volumes from this proposed 108th entrance.

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NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Hazen Hyland
WWS
(800) 547-5411

sent via wireless phone machine
Wire fraud is real. Please contact Western Wood Structures directly via phone to confirm any payment method changes requested by any employee.

From: Hazen Hyland <hazenh@westernwoodstructures.com>
Sent: Friday, August 29, 2025 1:07 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

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NO new employee access on 108th
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Use Leveton Drive and Herman Road

Thank you for your consideration.

Hazen Hyland
WWS
(800) 547-5411

sent via wireless phone machine
Wire fraud is real. Please contact Western Wood Structures directly via phone to confirm any payment method changes requested by any employee.

Outlook

Lam 108th Ave Proposed Entrance

From Houston Midkiff <houston.midkiff@gmail.com>
Date Wed 8/27/2025 2:49 AM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

Dear Tualatin Architectural Review Board,

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NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Houston

Outlook

Lam 108th Ave Proposed Entrance

From Jacquie Fitch <sassyteacherqueen@gmail.com>
Date Wed 8/27/2025 5:16 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

Dear Tualatin Architectural Review Board,

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NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Outlook

Lam Noise Impacts

From Jacquie Fitch <sassyteacherqueen@gmail.com>
Date Wed 8/27/2025 5:17 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

Dear Tualatin Architectural Review Board,

Thank you for your dedication and service to the community, and for your work to protect our quality of life. While development and corporate activities are essential to the vitality of our city, residential land uses must also be protected, both from an economic standpoint (property values) and from a quality of life standpoint (mental and physical health). In keeping with this mission, we are asking for your help in resolving Lam's noise pollution problem.

Multiple noise signatures have been identified emanating from Lam's campus, including clear tones that pulse, two-toned harmonics, and a low rumble that sounds like an old bomber airplane. The most distinctive sound is the high-frequency hiss from Lam's gas plant, clearly audible across Tualatin Road most nights.

We have brought this issue to the attention of the City Council, Police Department, Code Enforcement, Riverpark CIO, and Lam. Despite repeated requests for a solution, no meaningful changes have been made. When Tualatin's police officers have driven onto the Lam campus to investigate noise complaints, they have been chased down by Lam's security guards and asked to leave.

The Tualatin Noise Ordinance (1361-13) sets a city-wide limit of 50dB at night for residential areas, and the Tualatin Development Code (62.100) places even stricter limits on Manufacturing Park (MP) zoning, stating that "Such permitted uses must not cause objectionable noise". A noise study performed earlier this year at night by a licensed acoustical engineer measured noise levels of 52dB at a private residence across the street from Lam's gas plant. Therefore, Lam's offsite noise impacts are in violation of both the Tualatin Development Code and the Tualatin Municipal Code.

Lam's noise pollution problem is not caused by daytime construction, backup beepers, or truck horns, but rather, by permanently-installed equipment that is part of Lam's physical plant. This equipment runs 24/7 and generates sound continuously. The sounds are most noticeable at night when background noise is low, and the location of sound impacts can vary depending on atmospheric conditions, especially temperature and wind direction. During southerly winds, Lam's noise signature can be heard more than a mile away.

Manufacturing Park (MP) zoning serves as a buffer between heavy industry and residential areas. MP zoning calls for "limiting uses to those that are of a nature so as to not conflict with other industrial uses or surrounding residential areas." (TDC 62.100) Please consider this letter as evidence that Lam's

operations are, in fact, currently conflicting with surrounding residential areas.

In order to bring Lam's facility into compliance with the Tualatin Code, I request that Lam's off-site noise impacts be eliminated as part of the TUX project. It is absolutely critical to our quality of life that peace and quiet be restored to our neighborhoods. We ask the City of Tualatin to require Lam to prove their ability to eliminate offsite noise before approving the addition of any new noise sources on campus.

Thank you for your consideration.

Outlook

Lam Traffic Impacts

From Janet Weber <weberjanet@hotmail.com>
Date Tue 8/26/2025 6:05 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>; Council <council@tualatin.gov>; Cc: STR Outreach <outreach@tualatinroad.org>

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX site plan, specifically the proposed expansion of the 108th Avenue north access point which is currently gated. Opening this gate to allow employee access would add traffic to Tualatin Road, making it more difficult for residents to enter and exit our neighborhoods. Peak traffic volume on Tualatin Road is already a major problem, and I would ask the city to take steps to reduce, not increase, traffic volumes on Tualatin Road.

Approved in 2023, Lam's Building G project is still under construction, and the full traffic impact of its two new parking lots on 108th has not yet been felt, but is already baked in. I am opposed to opening another access on 108th, and I respectfully request that Lam's existing 108th north access remain in its current configuration: closed to employee traffic but available for emergency and utility use.

For the majority of Riverpark residents, Tualatin Road is our ONLY option for local access. We do not have an alternate route, but Lam does: Leveton Drive. It has a higher speed limit and lower traffic volume than Tualatin Road. Leveton is a better route for Lam's trips.

SITE CIRCULATION

Lam's updated site plan shows a primary employee driveway connecting the north parking lots directly to Leveton Drive, providing more than adequate roadway access for these employees. Connecting these same parking lots to 108th is redundant and unnecessary, and would create unintended negative impacts in the surrounding neighborhoods.

Lam's site plan shows 6 other access points: 4 on Leveton Drive and 2 on 108th. Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to open yet another access point.

DRIVEWAY CRITERIA

Lam's traffic study shows that the Hazelbrook Road on-ramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volume from the proposed 108th entrance.

This proposed entrance fails three of the driveway approach criteria in TDC 75.020.5: "(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

PLANNING GOALS

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SCOPE OF IMPACT

The full impact of an expanded 108th access would extend well beyond the TUX project. Lam's latest site plan shows an abundance of open space available for future development, and based on current trends, Lam will continue to expand and build out their campus.

It is also common for semiconductor facilities to run multiple shifts, in order to double or triple their production capacity without expanding the physical plant. Adding shifts (and the accompanying traffic volume) would not require an Architectural Review, Industrial Master Plan update, or Conditional Use Permit. The potential for a significantly increased intensity of use should be anticipated now and addressed during the current land use review cycle.

The Tualatin Planning Commission was advised to not consider ANY traffic or noise impacts during their IMP hearing, and was told that these concerns would be handled by the Architectural Review Board.

When measuring the traffic impact of Lam's proposed entrance, it is appropriate and justified to look at not only the impact from Lam's TUX project, but also look at the total anticipated impact from future developments that could use this entrance. At the IMP hearing, one of Lam's advocates mentioned that "this project has been part of Lam's master plan for quite some time." In order to evaluate the full impact of Lam's current proposal, it would be helpful to see how this entrance would interact with future projects, and how it fits into Lam's overall campus master plan.

ROAD SAFETY

An expansion at 108th would provide Lam's north parking lots with access to Tualatin Road. The intersection of 108th and Tualatin Road already has an elevated crash rate, and adding more traffic here would increase the risk of injury, not only for those who choose to turn here, but also for each person who travels along this section of Tualatin Road.

STUDENT SAFETY

The proposed expansion on 108th would also add traffic to 115th Avenue, which many students cross on foot each day going to and from school. Compared to existing conditions, the current TUX proposal represents a decrease in student safety, and that is a step in the wrong direction.

Lam’s traffic study also does not identify the locations of school bus routes or the potential impacts to school bus traffic. Student safety is one of the most important issues in our community, but so far it has been ignored in this process.

JUSTICE AND EQUITY

Although the negative traffic impacts from 108th would be felt along the entire length of Tualatin Road,

these impacts would be most concentrated between 108th and 124th Avenues, an area which includes more than 600 high-density housing units, traditionally disadvantaged demographics, and income-limited apartments. Putting more traffic stress on these populations is not equitable, especially when a better alternative is available on the other side of Lam's campus.

PUBLIC FUNDS

Lam Research received $22 million in taxpayer-funded CHIPS Act grant funds to help pay for the TUX expansion. Any project built with taxpayer funds should be designed so that it does not harm the community.

ECONOMIC IMPACT

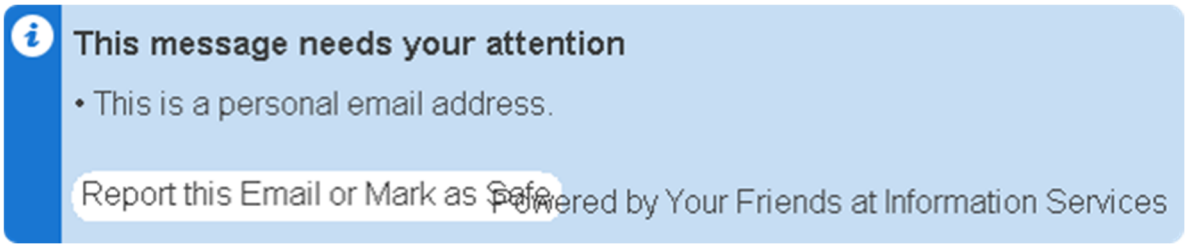
The total value of residential real estate located between the Tualatin River and Tualatin Road is well over $500 million. This tax base must be protected. The best economic solution would be for Lam to grow in a way that does not interfere with surrounding residential land uses. The current decision before you does not need to be a conflict between Lam and the surrounding community. With good site design and smart planning, this project can be a win-win.

Keeping the 108th north access in its current configuration and utilizing Leveton for all of Lam's new site trips is a solution that will allow Lam's campus to grow long into the future while protecting the quality of life and property values of the taxpayers who live along Tualatin Road.

Thank you for your consideration.

Janet Weber,
Tualatin Riverpark CIO resident for 13 years

From: jdyee@comcast.net
Sent: Friday, August 29, 2025 10:35 AM
To: Keith Leonard; Ext - Planning; Council; outreach@tualatin.org
Subject: Lam 108th Ave Proposed Entrance



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Lam's expanded entrance on 108th fails three of the driveway approach criteria in TDC 75.020.5: "(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

Lam's traffic study shows that the Hazelbrook Road onramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volumes from this proposed 108th entrance.

Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Janet Yee
10400 SW Kiowa St
Tualatin, OR 97062

From: Janice Corr <janice_corr@yahoo.com>
Sent: Friday, August 29, 2025 10:54 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

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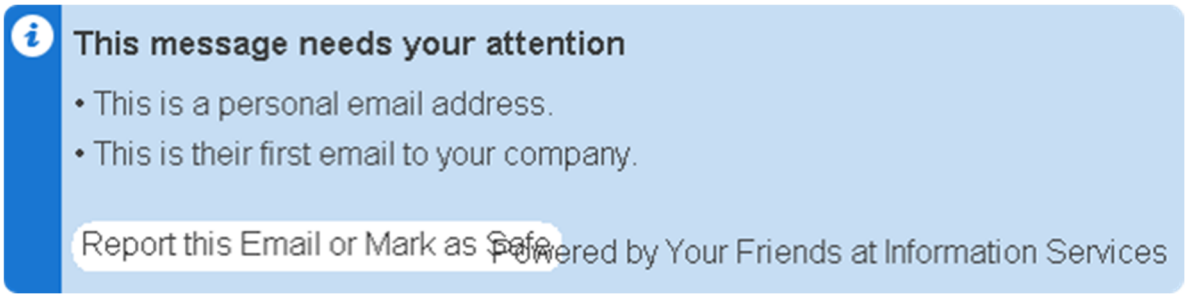
NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.
Janice Corr

Sent from my iPad

From: janice oakman <jmoak1984@gmail.com>
Sent: Friday, August 29, 2025 10:54 AM
To: Keith Leonard; Ext - Planning; Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance



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Lam's traffic study shows that the Hazelbrook Road onramp to Hwy

99W will fail to meet performance standards after adding the additional traffic volumes from this proposed 108th entrance.

Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

Lam's own traffic study cites all the reasons why this plan is unsafe and does not meet performance standards.

This plan goes against common sense, goes against the best interests of the residents who daily use Tualatin Road and is detrimental to the safety of both walkers/bicyclists and drivers on Tualatin road.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

From: Jay Compton <zardoz503@icloud.com>
Sent: Friday, August 29, 2025 1:52 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

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NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Jay Compton

Outlook

Lam 108th Ave Proposed Entrance

From Jazmin Rodea <myangelschool@gmail.com>
Date Tue 8/26/2025 7:41 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

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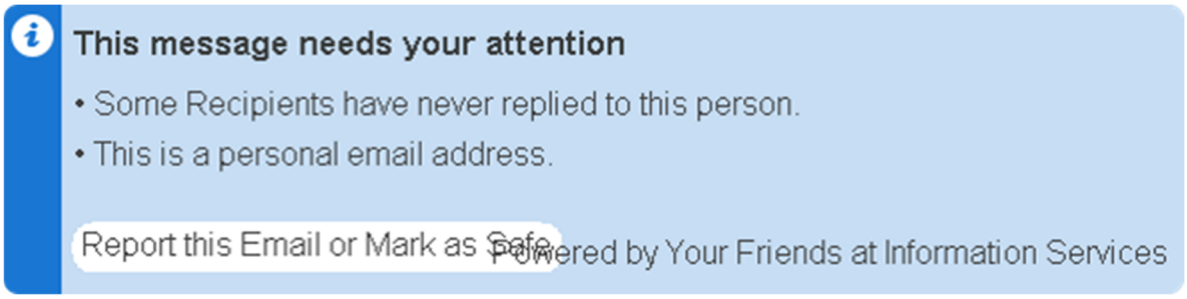
NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

From: Jean and Eric Stein <steinjeaneric@gmail.com>
Sent: Friday, August 29, 2025 5:21 PM
To: Keith Leonard; Ext - Planning; Council; outreach@tualatinroad.org
Subject: LAM - Tualatin Rd Issue



To: Keith Leonard kleonard@tualatin.gov
To: Planning Department planning@tualatin.gov
Cc: City Council council@tualatin.gov
Cc: STR Outreach outreach@tualatinroad.org

Subject: Lam Traffic Impacts

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX site plan, specifically the proposed expansion of the 108th Avenue north access point which is currently gated. Opening this gate to allow employee access would add traffic to Tualatin Road, making it more difficult for residents to enter and exit our neighborhoods. Peak traffic volume on Tualatin Road is already a major problem, and I would ask the city to take steps to reduce, not increase, traffic volumes on Tualatin Road.

Approved in 2023, Lam's Building G project is still under construction, and the full traffic impact of its two new parking lots on 108th has not yet been felt, but is already baked in. I am opposed to opening another access on 108th, and I respectfully request that Lam's existing 108th north access remain in its current configuration: closed to employee traffic but available for emergency and utility use.

For the majority of Riverpark residents, Tualatin Road is our ONLY option for local access. We do not have an alternate route, but Lam does: Leveton Drive. It has a higher speed limit and lower traffic volume than Tualatin Road. Leveton is a better route for Lam's trips.

SITE CIRCULATION

Lam's updated site plan shows a primary employee driveway connecting the north parking lots directly to Leveton Drive, providing more than adequate roadway access for these employees. Connecting these same parking lots to 108th is redundant and unnecessary, and would create unintended negative impacts in the surrounding neighborhoods.

Lam's site plan shows 6 other access points: 4 on Leveton Drive and 2 on 108th. Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to open yet another access point.

DRIVEWAY CRITERIA

Lam's traffic study shows that the Hazelbrook Road on-ramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volume from the proposed 108th entrance.

This proposed entrance fails three of the driveway approach criteria in TDC 75.020.5: "(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

PLANNING GOALS

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SCOPE OF IMPACT

The full impact of an expanded 108th access would extend well beyond the TUX project. Lam's latest site plan shows an abundance of open space available for future development, and based on current trends, Lam will continue to expand and build out their campus.

It is also common for semiconductor facilities to run multiple shifts, in order to double or triple their production capacity without expanding the physical plant. Adding shifts (and the accompanying traffic volume) would not require an Architectural Review, Industrial Master Plan update, or Conditional Use

Permit. The potential for significantly increased intensity of use should be anticipated now and addressed during the current land use review cycle.

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ROAD SAFETY

An expansion at 108th would provide Lam's north parking lots with access to Tualatin Road. The intersection of 108th and Tualatin Road already has an elevated crash rate, and adding more traffic here would increase the risk of injury, not only for those who choose to turn here, but also for each person who travels along this section of Tualatin Road.

STUDENT SAFETY

The proposed expansion on 108th would also add traffic to 115th Avenue, which many students cross on foot each day going to and from school. Compared to existing conditions, the current TUX proposal represents a decrease in student safety, and that is a step in the wrong direction.

Lam’s traffic study also does not identify the locations of school bus routes or the potential impacts to school bus traffic. Student safety is one of the most important issues in our community, but so far it has been ignored in this process.

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PUBLIC FUNDS

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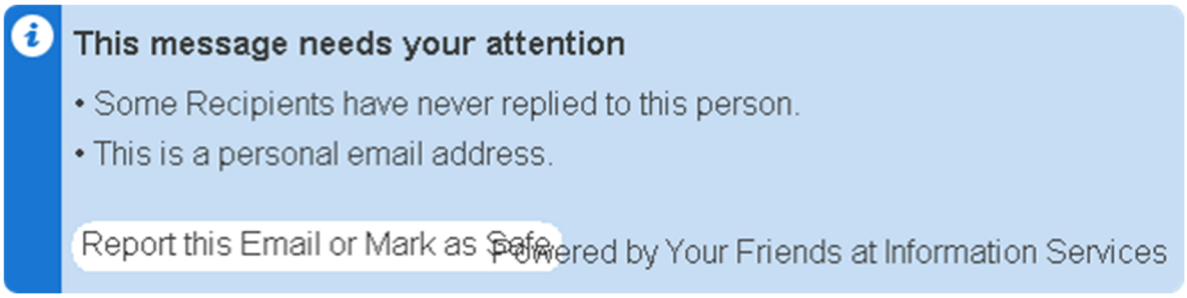
The total value of residential real estate located between the Tualatin River and Tualatin Road is well over $500 million. This tax base must be protected. The best economic solution would be for Lam to grow in a way that does not interfere with surrounding residential land uses. The current decision before you does not need to be a conflict between Lam and the surrounding community. With good site design and smart planning, this project can be a win-win.

Keeping the 108th north access in its current configuration and utilizing Leveton for all of Lam's new site trips is a solution that will allow Lam's campus to grow long into the future while protecting the quality of life and property values of the taxpayers who live along Tualatin Road.

Thank you for your consideration.

Jean & Eric Stein

From: Jenny Blodgett <jenny.blodgett32@gmail.com>
Sent: Friday, August 29, 2025 10:40 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance



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Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th

NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Outlook

Lam 108th Ave Proposed Entrance

From Jenny Blodgett <jenny.blodgett32@gmail.com>
Date Tue 8/26/2025 4:22 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

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NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Outlook

Lam 108th Ave Proposed Entrance

From Jihad Hourani <jhourani@gmail.com>
Date Wed 8/27/2025 11:14 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

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Use Leveton Drive and Herman Road

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From: Jim Milne <Jim.Milne@jedunn.com>
Sent: Friday, August 29, 2025 12:08 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance

Dear Tualatin Architectural Review Board,

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NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Outlook

Lam 108th Ave Proposed Entrance

From Jim Milne <Jim.Milne@jedunn.com>
Date Tue 8/26/2025 4:33 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

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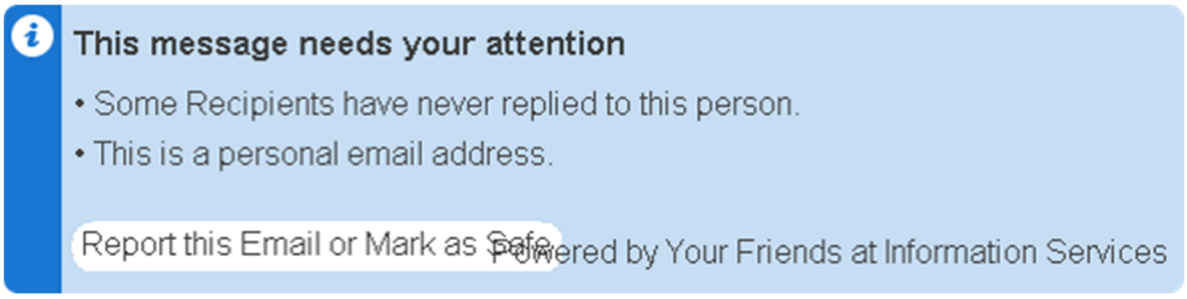
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

From: Joanne Schenk <jojo10k@aol.com>
Sent: Friday, August 29, 2025 1:15 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam's 108th Proposed Entrance



Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

The Tualatin Comprehensive Plan 2040 asks us to "Consider transportation options that make the best use of the existing network." (Goal 8.7) Leveton Drive has a massive amount of unused capacity available and is currently under-utilized especially during peak traffic times. The highest and best use for Leveton Drive is to carry ALL of Lam's added site trips. It is unreasonable to put more strain on Tualatin Road (and its residents) when Leveton is sitting there mostly empty.

Lam's expanded entrance on 108th fails three of the driveway approach criteria in TDC 75.020.5: "(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

Lam's traffic study shows that the Hazelbrook Road onramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volumes from this proposed 108th entrance.

Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.
Joanne & Roger Schenk
10555 SW Lucas Rd.
Tualatin, OR 97062

From: jjporcello2@frontier.com
Sent: Thursday, August 28, 2025 5:41 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: LAM Traffic Impacts

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX site plan, specifically the proposed expansion of the 108th Avenue north access point which is currently gated. Opening this gate to allow employee access would add traffic to Tualatin Road, making it more difficult for residents to enter and exit our neighborhoods. Peak traffic volume on Tualatin Road is already a major problem, and I would ask the city to take steps to reduce, not increase, traffic volumes on Tualatin Road.

Approved in 2023, Lam's Building G project is still under construction, and the full traffic impact of its two new parking lots on 108th has not yet been felt, but is already baked in. I am opposed to opening another access on 108th, and I respectfully request that Lam's existing 108th north access remain in its current configuration: closed to employee traffic but available for emergency and utility use.

For the majority of Riverpark residents, Tualatin Road is our ONLY option for local access. We do not have an alternate route, but Lam does: Leveton Drive. It has a higher speed limit and lower traffic volume than Tualatin Road. Leveton is a better route for Lam's trips.

SITE CIRCULATION

Lam's updated site plan shows a primary employee driveway connecting the north parking lots directly to Leveton Drive, providing more than adequate roadway access for these employees. Connecting these same parking lots to 108th is redundant and unnecessary, and would create unintended negative impacts in the surrounding neighborhoods.

Lam's site plan shows 6 other access points: 4 on Leveton Drive and 2 on 108th. Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to open yet another access point.

DRIVEWAY CRITERIA

Lam's traffic study shows that the Hazelbrook Road on-ramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volume from the proposed 108th entrance.

This proposed entrance fails three of the driveway approach criteria in TDC 75.020.5: "(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

PLANNING GOALS

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SCOPE OF IMPACT

The full impact of an expanded 108th access would extend well beyond the TUX project. Lam's latest site plan shows an abundance of open space available for future development, and based on current trends, Lam will continue to expand and build out their campus.

It is also common for semiconductor facilities to run multiple shifts, in order to double or triple their production capacity without expanding the physical plant. Adding shifts (and the accompanying traffic volume) would not require an Architectural Review, Industrial Master Plan update, or Conditional Use Permit. The potential for significantly increased intensity of use should be anticipated now and addressed during the current land use review cycle.

The Tualatin Planning Commission was advised to not consider ANY traffic or noise impacts during their IMP hearing, and was told that these concerns would be handled by the Architectural Review Board.

When measuring the traffic impact of Lam's proposed entrance, it is appropriate and justified to look at not only the impact from Lam's TUX project, but also look at the total anticipated impact from future developments that could use this entrance. At the IMP hearing, one of Lam's advocates mentioned that "this project has been part of Lam's master plan for quite some time." In order to evaluate the full impact of Lam's current proposal, it would be helpful to see how this entrance would interact with future projects, and how it fits into Lam's overall campus master plan.

ROAD SAFETY

An expansion at 108th would provide Lam's north parking lots with access to Tualatin

Road. The intersection of 108th and Tualatin Road already has an elevated crash rate, and adding more traffic here would increase the risk of injury, not only for those who choose to turn here, but also for each person who travels along this section of Tualatin Road.

STUDENT SAFETY

The proposed expansion on 108th would also add traffic to 115th Avenue, which many students cross on foot each day going to and from school. Compared to existing conditions, the current TUX proposal represents a decrease in student safety, and that is a step in the wrong direction.

Lam's traffic study also does not identify the locations of school bus routes or the potential impacts to school bus traffic. Student safety is one of the most important issues in our community, but so far it has been ignored in this process.

JUSTICE AND EQUITY

Although the negative traffic impacts from 108th would be felt along the entire length of Tualatin Road, these impacts would be most concentrated between 108th and 124th Avenues, an area which includes more than 600 high-density housing units, traditionally disadvantaged demographics, and income-limited apartments. Putting more traffic stress on these populations is not equitable, especially when a better alternative is available on the other side of Lam's campus.

PUBLIC FUNDS

Lam Research received $22 million in taxpayer-funded CHIPS Act grant funds to help pay for the TUX expansion. Any project built with taxpayer funds should be designed so that it does not harm the community.

ECONOMIC IMPACT

The total value of residential real estate located between the Tualatin River and Tualatin Road is well over $500 million. This tax base must be protected. The best economic solution would be for Lam to grow in a way that does not interfere with surrounding residential land uses. The current decision before you does not need to be a conflict between Lam and the surrounding community. With good site design and smart planning, this project can be a win-win.

Keeping the 108th north access in its current configuration and utilizing Leveton for all of Lam's new site trips is a solution that will allow Lam's campus to grow long into the future while protecting the quality of life and property values of the taxpayers who live along Tualatin Road.

Thank you for your consideration.

John and Pam Porcello
10780 SW Lucas Drive
Tualatin, OR 97062
Email: jjporcello2@frontier.com

From: Jorge Del Rio <jorgedelrio52@gmail.com>
Sent: Friday, August 29, 2025 10:51 AM
To: Keith Leonard; Ext - Planning; Council; Cc: STR Outreach
Subject: Lam Traffic Impacts

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX site plan, specifically the proposed expansion of the 108th Avenue north access point which is currently gated. Opening this gate to allow employee access would add traffic to Tualatin Road, making it more difficult for residents to enter and exit our neighborhoods. Peak traffic volume on Tualatin Road is already a major problem, and I would ask the city to take steps to reduce, not increase, traffic volumes on Tualatin Road.

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Thank you for your consideration.

Outlook

Lam 108th Ave Proposed Entrance

From jterjeson <jterjeson@comcast.net>
Date Tue 8/26/2025 7:13 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

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NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.
John Terjeson

Sent from my Verizon, Samsung Galaxy smartphone

From: Karen Aiello <aiellok54@gmail.com>
Sent: Friday, August 29, 2025 10:31 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance

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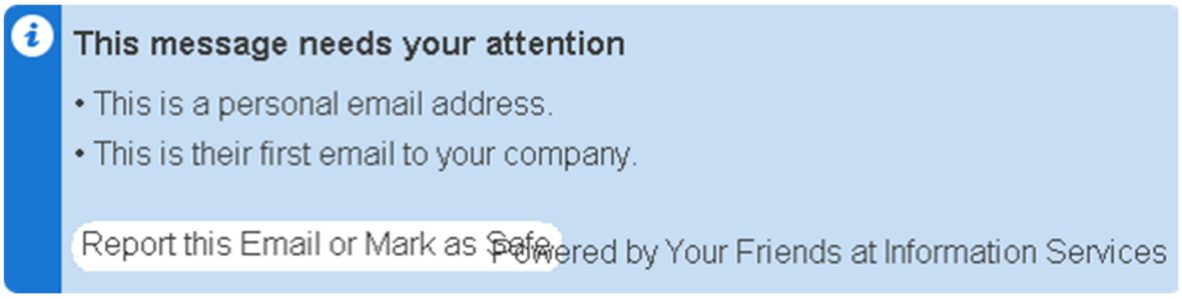
NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Respectful,
Sent ka

From: Karla Bateman <karlasbateman@gmail.com>
Sent: Wednesday, September 3, 2025 2:39 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance



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IT IS ALREADY A NIGHTMARE TO GET IN AND OUT OF OUR NEIGHBORHOOD I DURING THE morning OR EVENING RUSH!

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NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Karla

From: Kate Pinamonti <katepinamonti@hotmail.com>
Sent: Sunday, August 31, 2025 1:44 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance

Dear Tualatin Architectural Review Board,

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NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Sent from my iPhone

From: Kathy Sander <kosanderrn@gmail.com>
Sent: Friday, August 29, 2025 11:14 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

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I feel that allowing Lam to perform the traffic study is a contradiction to the actual number of vehicles that use Tualatin Road and then turn onto 115th down to Hazelbrook to get to highway 99. We walk 115th and Hazelbrook nearly daily and the amount of "through" traffic is astounding! I live right off Jurgens and we also get a high number of vehicles that are using these streets as basically a speedway to get to Hwy 99. Please, I implore you to take this neighborhood into consideration- how would you feel about having this occur in the neighborhood that YOU live in!

NO new employee access on 108th
NO added traffic on Tualatin Road

Use Leveton Drive and Herman Road

Thank you for your consideration.

Thanks,
Kathy Sander
10240 SW Sedlak Ct

Outlook

Lam 108th Ave Proposed Entrance

From Kathy <k.vigil@frontier.com>
Date Tue 8/26/2025 6:00 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

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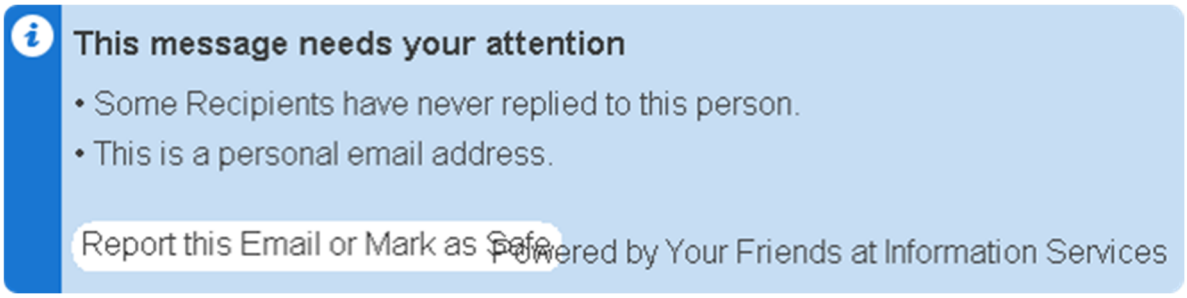
Sent from my iPad

From: Ken Johnson <kenj4609@gmail.com>
Sent: Friday, August 29, 2025 3:32 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance



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--
Ken Johnson
17285 SW 108th Ave

Outlook

Lam 108th Ave Proposed Entrance

From Kiki Goodwin <kikigoodwin@yahoo.com>
Date Tue 8/26/2025 5:30 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

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Sent from my iPhone

Outlook

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From Kim Devers <kimldevers@gmail.com>
Date Thu 8/28/2025 8:17 AM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX site plan, specifically the proposed expansion of the 108th Avenue north access point which is currently gated. Opening this gate to allow employee access would add traffic to Tualatin Road, making it more difficult for residents to enter and exit our neighborhoods. Peak traffic volume on Tualatin Road is already a major problem, and I would ask the city to take steps to reduce, not increase, traffic volumes on Tualatin Road.

Approved in 2023, Lam's Building G project is still under construction, and the full traffic impact of its two new parking lots on 108th has not yet been felt, but is already baked in. I am opposed to opening another access on 108th, and I respectfully request that Lam's existing 108th north access remain in its current configuration: closed to employee traffic but available for emergency and utility use.

For the majority of Riverpark residents, Tualatin Road is our ONLY option for local access. We do not have an alternate route, but Lam does: Leveton Drive. It has a higher speed limit and lower traffic volume than Tualatin Road. Leveton is a better route for Lam's trips.

SITE CIRCULATION

Lam's updated site plan shows a primary employee driveway connecting the north parking lots directly to Leveton Drive, providing more than adequate roadway access for these employees. Connecting these same parking lots to 108th is redundant and unnecessary, and would create unintended negative impacts in the surrounding neighborhoods.

Lam's site plan shows 6 other access points: 4 on Leveton Drive and 2 on 108th. Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to open yet another access point.

DRIVEWAY CRITERIA

Lam's traffic study shows that the Hazelbrook Road on-ramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volume from the proposed 108th entrance.

This proposed entrance fails three of the driveway approach criteria in TDC 75.020.5: "(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The

proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

PLANNING GOALS

The Tualatin Comprehensive Plan 2040 asks us to "Consider transportation options that make the best use of the existing network." (Goal 8.7) Leveton Drive has a massive amount of unused capacity available and is currently under-utilized especially during peak traffic times. The highest and best use for Leveton Drive is to carry ALL of Lam's added site trips. It is unreasonable to put more strain on Tualatin Road (and its residents) when Leveton is sitting there mostly empty.

SCOPE OF IMPACT

The full impact of an expanded 108th access would extend well beyond the TUX project. Lam's latest site plan shows an abundance of open space available for future development, and based on current trends, Lam will continue to expand and build out their campus.

It is also common for semiconductor facilities to run multiple shifts, in order to double or triple their production capacity without expanding the physical plant. Adding shifts (and the accompanying traffic volume) would not require an Architectural Review, Industrial Master Plan update, or Conditional Use Permit. The potential for significantly increased intensity of use should be anticipated now and addressed during the current land use review cycle.

The Tualatin Planning Commission was advised to not consider ANY traffic or noise impacts during their IMP hearing, and was told that these concerns would be handled by the Architectural Review Board.

When measuring the traffic impact of Lam's proposed entrance, it is appropriate and justified to look at not only the impact from Lam's TUX project, but also look at the total anticipated impact from future developments that could use this entrance. At the IMP hearing, one of Lam's advocates mentioned that "this project has been part of Lam's master plan for quite some time." In order to evaluate the full impact of Lam's current proposal, it would be helpful to see how this entrance would interact with future projects, and how it fits into Lam's overall campus master plan.

ROAD SAFETY

An expansion at 108th would provide Lam's north parking lots with access to Tualatin Road. The intersection of 108th and Tualatin Road already has an elevated crash rate, and adding more traffic here would increase the risk of injury, not only for those who choose to turn here, but also for each person who travels along this section of Tualatin Road.

STUDENT SAFETY

The proposed expansion on 108th would also add traffic to 115th Avenue, which many students cross on foot each day going to and from school. Compared to existing conditions, the current TUX proposal represents a decrease in student safety, and that is a step in the wrong direction.

Lam’s traffic study also does not identify the locations of school bus routes or the potential impacts to

school bus traffic. Student safety is one of the most important issues in our community, but so far it has been ignored in this process.

JUSTICE AND EQUITY

Although the negative traffic impacts from 108th would be felt along the entire length of Tualatin Road, these impacts would be most concentrated between 108th and 124th Avenues, an area which includes more than 600 high-density housing units, traditionally disadvantaged demographics, and income-limited apartments. Putting more traffic stress on these populations is not equitable, especially when a better alternative is available on the other side of Lam's campus.

PUBLIC FUNDS

Lam Research received $22 million in taxpayer-funded CHIPS Act grant funds to help pay for the TUX expansion. Any project built with taxpayer funds should be designed so that it does not harm the community.

ECONOMIC IMPACT

The total value of residential real estate located between the Tualatin River and Tualatin Road is well over $500 million. This tax base must be protected. The best economic solution would be for Lam to grow in a way that does not interfere with surrounding residential land uses. The current decision before you does not need to be a conflict between Lam and the surrounding community. With good site design and smart planning, this project can be a win-win.

Keeping the 108th north access in its current configuration and utilizing Leveton for all of Lam's new site trips is a solution that will allow Lam's campus to grow long into the future while protecting the quality of life and property values of the taxpayers who live along Tualatin Road.

Thank you for your consideration.
Kim Devers

Outlook

Lam Traffic Impacts

From kminato4sin@gmail.com <kminato4sin@gmail.com>
Date Wed 8/27/2025 4:31 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; 'STR Outreach' <outreach@tualatinroad.org>

Dear Tualatin Architectural Review Board,

I am sending this message as I learned about recent Lam TUX site plan hearing from SAVE Tualatin Road organization.

Thank you for the opportunity to comment on Lam's updated TUX site plan, specifically the proposed expansion of the 108th Avenue north access point which is currently gated. Opening this gate to allow employee access would add traffic to Tualatin Road, making it more difficult for residents to enter and exit our neighborhoods. Peak traffic volume on Tualatin Road is already a major problem, and I would ask the city to take steps to reduce, not increase, traffic volumes on Tualatin Road.

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Thank you for your consideration.

Kazuki Minato

Outlook

Lam 108th Ave Proposed Entrance

From Laurel Strickler <topmanager2012@yahoo.com>
Date Tue 8/26/2025 4:22 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

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Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Sincerely,
Laurel Strickler

From: Lexi Howell <alexaehowell@gmail.com>
Sent: Friday, August 29, 2025 11:01 AM
To: Ext - Planning
Subject: Lam 108th Ave Proposed Entrance

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

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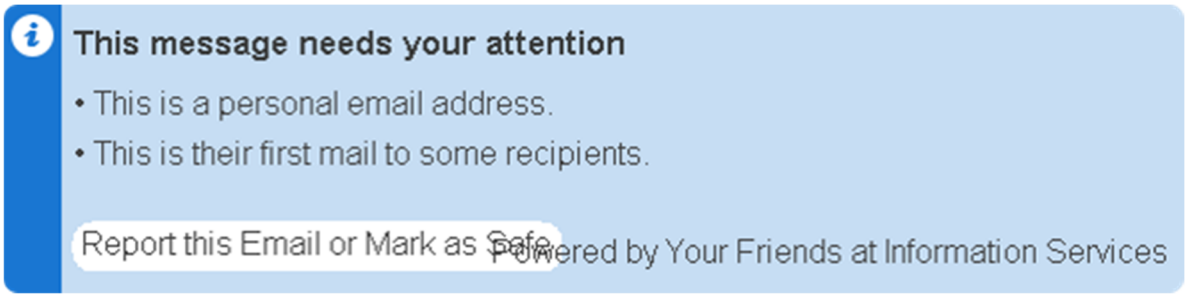
this crash rate even further.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

--
Lexi Howell
(541) 921-7992 | alexaehowell@gmail.com | linkedin.com/in/alexa-howell/

From: Linda Myers <lmmyers48@gmail.com>
Sent: Tuesday, September 2, 2025 3:41 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance



To: Keith Leonard kleonard@tualatin.gov
To: Planning Department planning@tualatin.gov
Cc: City Council council@tualatin.gov
Cc: STR Outreach outreach@tualatinroad.org

Subject: Lam 108th Ave Proposed Entrance

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal.

I am writing in opposition to the addition of a new LAM employee vehicle entrance on SW 108th Avenue onto Tualatin Road. I realize that you are working to reconcile the residential area needs to the north, with the office / industrial requirements to the south of Tualatin Road. Understanding that this is a challenging interface, please recognize that the proposed increased traffic volume would severely impact residential access and safety.

I live on Chippewa Trail, to the east of 108th. Especially during morning and afternoon peak traffic, I often need to use the lane of refuge to make a left turn onto Tualatin Road, and wait for some time to make a right turn. Tualatin Road is already a heavy corridor between I-5, Boones Ferry and Hwy 99, due to the limited number of access roads to cross the Tualatin River to the north.

The solution that I and my neighbors request is to instead route the increased traffic from Lam's expansion to the south, onto Leveton, Herman, and Tualatin-Sherwood Roads. These streets are built for larger volumes of traffic and heavier vehicles, and have been recently upgraded.

Lam's own traffic study shows that the Hazelbrook Road route to Hwy 99W, which drivers use to avoid current Tualatin Road backups, will fail to meet performance standards after adding the additional traffic from the proposed 108th entrance. It also shows that the

108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will further increase this crash rate.

Besides vehicle traffic, there is significant pedestrian activity on the sidewalks on both sides of Tualatin Road, numerous pedestrian crossings, and children who attend a neighborhood school. Heavier traffic will put these people as well as bicyclists at greater risk. The residences to the north of Tualatin Road range from single family homes to high density, and these citizens also need good access, safe traffic volume and speeds, and tolerable exposure to traffic noise and vehicle exhaust.

The current Tualatin Road environment, although very active, has many mature trees and substantial berms that screen and buffer the heavy commercial uses to the south from the residential neighborhood. Please maintain this separation of activity, and keep the high quality of life and safety for this community.

Thank you for considering these requests as you determine how to proceed. I look forward to attending the meetings where the project will be discussed.

Sincerely,
Linda Myers
17570 SW Chippewa Trail
Tualatin, OR

Outlook

Lam 108th Ave Proposed Entrance

From lynda boatwright <lynda.boatwright@frontier.com>
Date Tue 8/26/2025 4:43 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

Dear Tualatin Architectural Review Board,

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Lam's traffic study shows that the Hazelbrook Road onramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volumes from this proposed 108th entrance.

Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Sent from my iPhone

From: Marcia Frost <marciajfrost@gmail.com>
Sent: Friday, August 29, 2025 10:58 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance

Dear Tualatin Architectural Review Board,

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NO new employee access on 108th
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Use Leveton Drive and Herman Road

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From: Margo Strength <dgrahms@comcast.net>
Sent: Friday, August 29, 2025 11:41 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance

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Sent from my iPhone

Outlook

Lam 108th Ave Proposed Entrance

From MARION PARKER <amparker2@me.com>
Date Wed 8/27/2025 4:23 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

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Lam Noise Impacts

From MARION PARKER <amparker2@me.com>
Date Wed 8/27/2025 4:23 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

Dear Tualatin Architectural Review Board,

Thank you for your dedication and service to the community, and for your work to protect our quality of life. While development and corporate activities are essential to the vitality of our city, residential land uses must also be protected, both from an economic standpoint (property values) and from a quality of life standpoint (mental and physical health). In keeping with this mission, we are asking for your help in resolving Lam's noise pollution problem.

Multiple noise signatures have been identified emanating from Lam's campus, including clear tones that pulse, two-toned harmonics, and a low rumble that sounds like an old bomber airplane. The most distinctive sound is the high-frequency hiss from Lam's gas plant, clearly audible across Tualatin Road most nights.

We have brought this issue to the attention of the City Council, Police Department, Code Enforcement, Riverpark CIO, and Lam. Despite repeated requests for a solution, no meaningful changes have been made. When Tualatin's police officers have driven onto the Lam campus to investigate noise complaints, they have been chased down by Lam's security guards and asked to leave.

The Tualatin Noise Ordinance (1361-13) sets a city-wide limit of 50dB at night for residential areas, and the Tualatin Development Code (62.100) places even stricter limits on Manufacturing Park (MP) zoning, stating that "Such permitted uses must not cause objectionable noise". A noise study performed earlier this year at night by a licensed acoustical engineer measured noise levels of 52dB at a private residence across the street from Lam's gas plant. Therefore, Lam's offsite noise impacts are in violation of both the Tualatin Development Code and the Tualatin Municipal Code.

Lam's noise pollution problem is not caused by daytime construction, backup beepers, or truck horns, but rather, by permanently-installed equipment that is part of Lam's physical plant. This equipment runs 24/7 and generates sound continuously. The sounds are most noticeable at night when background noise is low, and the location of sound impacts can vary depending on atmospheric conditions, especially temperature and wind direction. During southerly winds, Lam's noise signature can be heard more than a mile away.

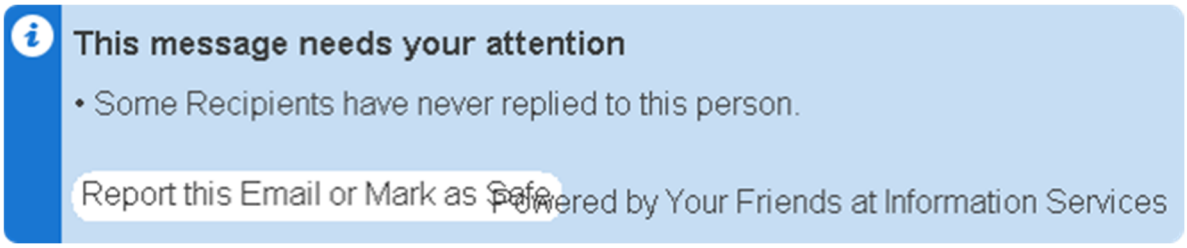
Manufacturing Park (MP) zoning serves as a buffer between heavy industry and residential areas. MP zoning calls for "limiting uses to those that are of a nature so as to not conflict with other industrial uses or surrounding residential areas." (TDC 62.100) Please consider this letter as evidence that Lam's operations are, in fact, currently conflicting with surrounding residential areas.

In order to bring Lam's facility into compliance with the Tualatin Code, I request that Lam's off-site noise impacts be eliminated as part of the TUX project. It is absolutely critical to our quality of life that peace and quiet be restored to our neighborhoods. We ask the City of Tualatin to require Lam to prove their ability to eliminate offsite noise before approving the addition of any new noise sources on campus.

Thank you for your consideration.

Sent from my iPhone

From: Marius Brisan <marlid16@frontier.com>
Sent: Thursday, August 28, 2025 6:45 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Traffic Impacts



Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX site plan, specifically the proposed expansion of the 108th Avenue north access point which is currently gated. Opening this gate to allow employee access would add traffic to Tualatin Road, making it more difficult for residents to enter and exit our neighborhoods. Peak traffic volume on Tualatin Road is already a major problem, and I am asking the city to take steps to reduce, not increase, traffic volumes on Tualatin Road.

Approved in 2023, Lam's Building G project is still under construction, and the full traffic impact of its two new parking lots on 108th has not yet been felt, but is already baked in. I am opposed to opening another access on 108th, and I respectfully request that Lam's existing 108th north access remain in its current configuration: closed to employee traffic but available for emergency and utility use.

For the majority of Riverpark residents, Tualatin Road is our ONLY option for local access. We do not have an alternate route, but Lam does: Leveton Drive. It has a higher speed limit and lower traffic volume than Tualatin Road. Leveton Dr is a better route for Lam's trips.

SITE CIRCULATION

Lam's updated site plan shows a primary employee driveway

connecting the north parking lots directly to Leveton Drive, providing more than adequate roadway access for these employees. Connecting these same parking lots to 108th is redundant and unnecessary, and would create unintended negative impacts in the surrounding neighborhoods.

Lam's site plan shows 6 other access points: 4 on Leveton Drive and 2 on 108th. Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to open yet another access point.

DRIVEWAY CRITERIA

Lam's traffic study shows that the Hazelbrook Road on-ramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volume from the proposed 108th entrance.

This proposed entrance fails three of the driveway approach criteria in TDC 75.020.5: "(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

PLANNING GOALS

The Tualatin Comprehensive Plan 2040 asks us to "Consider transportation options that make the best use of the existing network." (Goal 8.7) Leveton Drive has a massive amount of unused capacity available and is currently under-utilized especially during peak traffic times. The highest and best use for Leveton Drive is to carry ALL of Lam's added site trips. It is unreasonable to put more strain on Tualatin Road (and its residents) when Leveton Dr is sitting there mostly empty.

SCOPE OF IMPACT

The full impact of an expanded 108th access would extend well

beyond the TUX project. Lam's latest site plan shows an abundance of open space available for future development, and based on current trends, Lam will continue to expand and build out their campus.

It is also common for semiconductor facilities to run multiple shifts, in order to double or triple their production capacity without expanding the physical plant. Adding shifts (and the accompanying traffic volume) would not require an Architectural Review, Industrial Master Plan update, or Conditional Use Permit. The potential for significantly increased intensity of use should be anticipated now and addressed during the current land use review cycle.

The Tualatin Planning Commission was advised to not consider ANY traffic or noise impacts during their IMP hearing, and was told that these concerns would be handled by the Architectural Review Board.

When measuring the traffic impact of Lam's proposed entrance, it is appropriate and justified to look at not only the impact from Lam's TUX project, but also look at the total anticipated impact from future developments that could use this entrance. At the IMP hearing, one of Lam's advocates mentioned that "this project has been part of Lam's master plan for quite some time." In order to evaluate the full impact of Lam's current proposal, it would be helpful to see how this entrance would interact with future projects, and how it fits into Lam's overall campus master plan.

ROAD SAFETY

An expansion at 108th would provide Lam's north parking lots with access to Tualatin Road. The intersection of 108th and Tualatin Road already has an elevated crash rate, and adding more traffic here would increase the risk of injury, not only for those who choose to turn here, but also for each person who travels along this section of Tualatin Road.

STUDENT SAFETY

The proposed expansion on 108th would also add traffic to 115th

Avenue, which many students cross on foot each day going to and from school. Compared to existing conditions, the current TUX proposal represents a decrease in student safety, and that is a step in the wrong direction.

Lam's traffic study also does not identify the locations of school bus routes or the potential impacts to school bus traffic. Student safety is one of the most important issues in our community, but so far it has been ignored in this process.

JUSTICE AND EQUITY

Although the negative traffic impacts from 108th would be felt along the entire length of Tualatin Road, these impacts would be most concentrated between 108th and 124th Avenues, an area which includes more than 600 high-density housing units, traditionally disadvantaged demographics, and income-limited apartments. Putting more traffic stress on these populations is not equitable, especially when a better alternative is available on the other side of Lam's campus.

PUBLIC FUNDS

Lam Research received $22 million in taxpayer-funded CHIPS Act grant funds to help pay for the TUX expansion. Any project built with taxpayer funds should be designed so that it does not harm the community.

ECONOMIC IMPACT

The total value of residential real estate located between the Tualatin River and Tualatin Road is well over $500 million. This tax base must be protected. The best economic solution would be for Lam to grow in a way that does not interfere with surrounding residential land uses. The current decision before you does not need to be a conflict between Lam and the surrounding community. With good site design and smart planning, this project can be a win-win.

Keeping the 108th north access in its current configuration and

utilizing Leveton Dr for all of Lam's new site trips is a solution that will allow Lam's campus to grow long into the future while protecting the quality of life and property values of the taxpayers who live along Tualatin Road.

Thank you for your consideration.

Marius Brisan

From: Marius Brisan <marlid16@frontier.com>
Sent: Saturday, August 30, 2025 11:54 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

Dear Tualatin Architectural Review Board,

Thank you for your dedication and service to the community, and for your work to protect our quality of life. While development and corporate activities are essential to the vitality of our city, residential land uses must also be protected, both from an economic standpoint (property values) and from a quality of life standpoint (mental and physical health). In keeping with this mission I am asking for your help in resolving Lam's noise pollution problem.

Multiple noise signatures have been identified emanating from Lam's campus, including clear tones that pulse, two-toned harmonics, and a low rumble that sounds like an old bomber airplane. The most distinctive sound is the high-frequency hiss from Lam’s gas plant, clearly audible across Tualatin Road most nights.

We have brought this issue to the attention of the City Council, Police Department, Code Enforcement, Riverpark CIO, and Lam. Despite repeated requests for a solution, no meaningful changes have been made. When Tualatin's police officers have driven onto the Lam campus to investigate noise complaints, they have been chased down by Lam’s security guards and asked to leave.

The Tualatin Noise Ordinance (1361-13) sets a city-wide limit of 50dB at night for residential areas, and the Tualatin Development Code (62.100) places even stricter limits on Manufacturing Park (MP) zoning, stating that “Such permitted uses must not cause objectionable noise”. A noise study performed earlier this year at night by a licensed acoustical engineer measured noise levels of 52dB at a private residence across the street from Lam's gas plant. Therefore, Lam's offsite noise levels are in violation of both the Tualatin Development Code and the Tualatin Municipal Code.

Lam's noise pollution problem is not caused by daytime construction, backup beepers, or truck horns, but rather by permanently installed equipment that is part of Lam's physical plant. This equipment runs 24/7 and generates sound continuously. The sounds are most noticeable at night when background noise is low, and the location of sound impacts can vary depending on atmospheric conditions, especially temperature and wind direction. During southerly winds, Lam's noise signature can be heard more than a mile away.

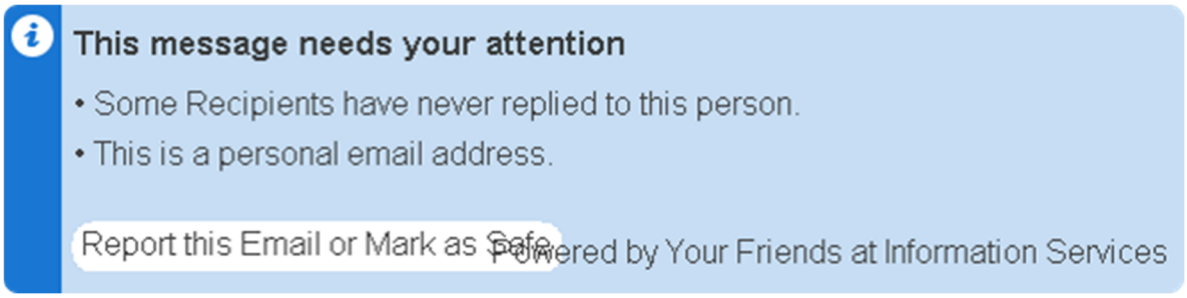
Manufacturing Park (MP) zoning serves as a buffer between heavy industry and residential areas. MP zoning calls for “limiting uses to those that are of a nature so as to not conflict with other industrial uses or surrounding residential areas.” (TDC 62.100) Please consider this letter as evidence that Lam's operations are, in fact, currently conflicting with surrounding residential areas.

In order to bring Lam's facility into compliance with the Tualatin Code, I request that Lam's off-site noise impacts be eliminated as part of the TUX project. It is absolutely critical to our quality of life that peace and quiet be restored to our neighborhoods. We ask the City of Tualatin to require Lam to prove their ability to eliminate offsite noise before approving the addition of any new noise sources on campus.

Thank you for your consideration.

Marius Brisan

From: Kristy Hewitt <kristykhewitt@gmail.com>
Sent: Friday, August 29, 2025 4:01 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance



Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

The Tualatin Comprehensive Plan 2040 asks us to "Consider transportation options that make the best use of the existing network." (Goal 8.7) Leveton Drive has a massive amount of unused capacity available and is currently under-utilized especially during peak traffic times. The highest and best use for Leveton Drive is to carry ALL of Lam's added site trips. It is unreasonable to put more strain on Tualatin Road (and its residents) when Leveton is sitting there mostly empty.

Lam's expanded entrance on 108th fails three of the driveway approach criteria in TDC 75.020.5: "(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

Lam's traffic study shows that the Hazelbrook Road onramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volumes from this proposed 108th entrance.

Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

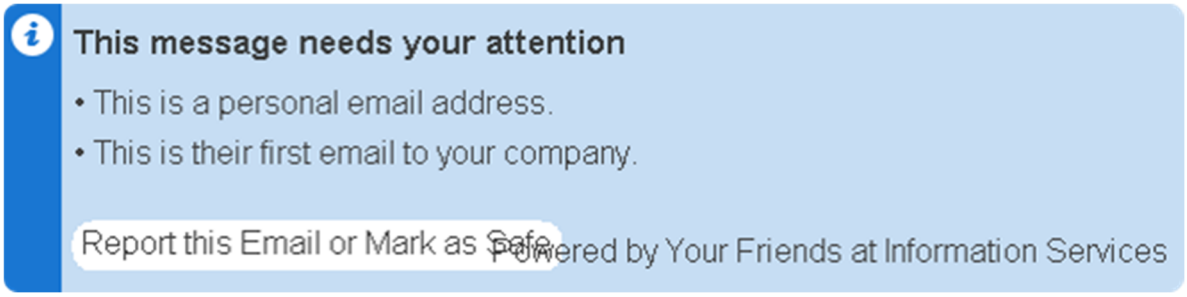
NO new employee access on 108th

NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Marshall and Kristy Hewitt

From: Iancu Family <tranian@juno.com>
Sent: Friday, August 29, 2025 2:02 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance



To: Keith Leonard kleonard@tualatin.gov
To: Planning Department planning@tualatin.gov
Cc: City Council council@tualatin.gov
Cc: STR Outreach outreach@tualatinroad.org

Subject: Lam 108th Ave Proposed Entrance

To the Tualatin Architectural Review Board:

I am a resident of King City who occasionally drives on Tualatin Road to reach the Kaiser clinic. I have lived in Tualatin or King City for a total of about 20 years. I agree with those in the Tualatin community who want to prevent peak traffic volumes on Tualatin Road from increasing due to safety and quality of life concerns. Thank you for the opportunity to comment on Lam's updated TUX proposal.

I truly appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and to maintain the Leveton driveway. However, I oppose the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

The Tualatin Comprehensive Plan 2040 asks us to "Consider transportation options that make the best use of the existing network." (Goal 8.7) Leveton Drive has a massive amount of unused capacity available and is currently under-utilized, especially during peak traffic times. The highest and best use for Leveton Drive is to carry ALL of Lam's added site trips. It is unreasonable to put more strain on Tualatin Road (and its residents) when Leveton is sitting there mostly empty.

Lam’s expanded entrance on 108th fails three of the driveway approach criteria in TDC 75.020.5: “(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets.”

Lam's traffic study shows that the Hazelbrook Road onramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volumes from this proposed 108th entrance. This is a huge concern for the surrounding communities as well as for Tualatin residents.

Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5 times the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Sincerely,
Martha Iancu
15715 SW Queen Victoria Place
King City, OR 97224
tranian@juno.com

Outlook

Lam 108th Ave Proposed Entrance

From Martin Bilitz <mebilitz@hotmail.com>
Date Tue 8/26/2025 6:48 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

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Lam's traffic study shows that the Hazelbrook Road onramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volumes from this proposed 108th entrance.

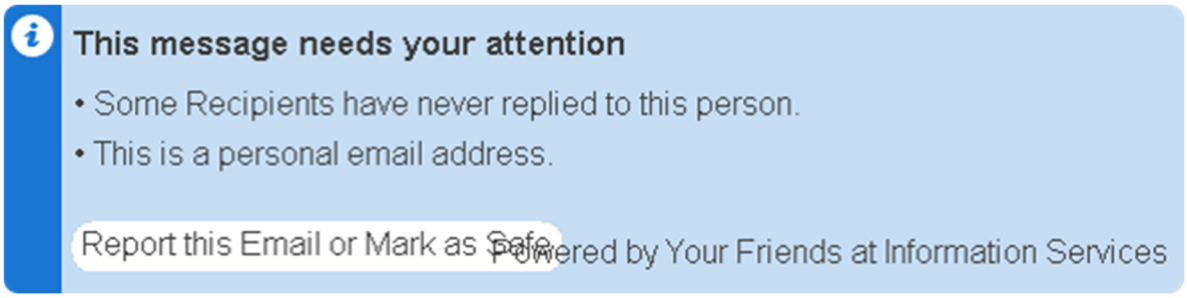
Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Get Outlook for iOS

From: Matt Williams <matt.williams.rpi@gmail.com>
Sent: Friday, August 29, 2025 10:29 AM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance



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NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

--
Matt Williams
matt.williams.rpi@gmail.com

Outlook

Lam 108th Ave Proposed Entrance

From Maura Hemann <maurahemann@icloud.com>
Date Wed 8/27/2025 2:31 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

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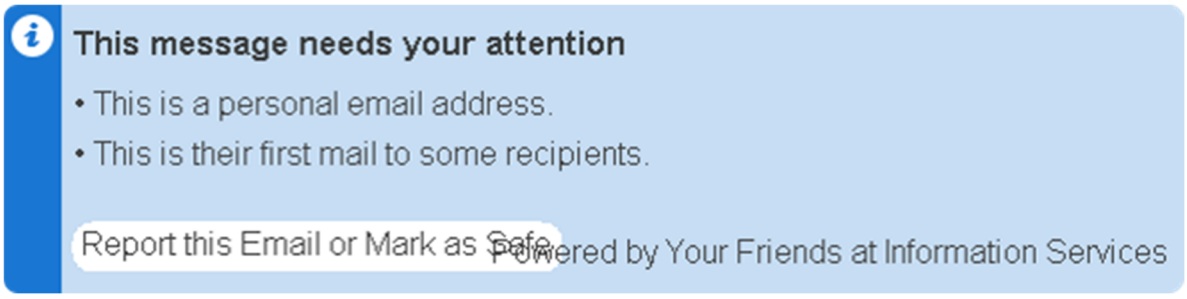
NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Sent from my iPad

From: MB <mbr14@protonmail.com>
Sent: Saturday, August 30, 2025 5:22 PM
To: Keith Leonard; Ext - Planning
Cc: outreach@tualatinroad.org; Council
Subject: Lam 108th Ave Proposed Entrance



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NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Best,
Maya

From: RCB <g4rl1c5@proton.me>
Sent: Saturday, August 30, 2025 5:22 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance

Dear Tualatin Architectural Review Board,

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Use Leveton Drive and Herman Road

Thank you for your consideration.

Best,
Maya

From: Michelle Lazoff <michellelazoff@icloud.com>
Sent: Friday, August 29, 2025 11:00 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance

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As someone who has first hand knowledge and being first on the scene to three accidents on Tualatin Road near the cemetery - please no more traffic!!!!!

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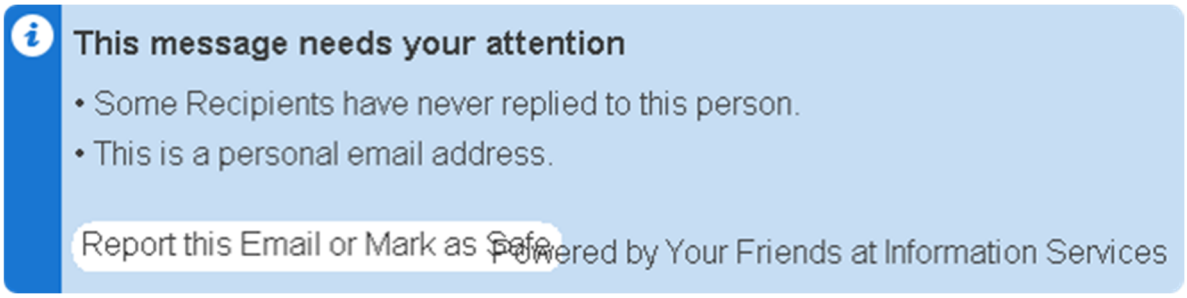
NO new employee access on 108th

NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Sent from my iPhone

From: Misty D Winkler <misty.d.winkler@gmail.com>
Sent: Saturday, August 30, 2025 5:33 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance



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NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Have a wonderful day,

Misty D Winkler
503.701.6168
OR Notary Public & Signing Agent
Attentive Mobile Notary Service, LLC
www.SigningAgent.com/profile/158004754
Commission # 1018914

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Outlook

Re: Subject: Lam 108th Ave Proposed Entrance

From Nancy Midkiff <nancymidkiff@gmail.com>
Date Thu 8/28/2025 1:15 PM
To Lindsey Hagerman <lhagerman@tualatin.gov>
Cc Keith Leonard <kleonard@tualatin.gov>

Thank you for the update.

Nancy

On Thu, Aug 28, 2025 at 12:06 PM Lindsey Hagerman <lhagerman@tualatin.gov> wrote:

> Good afternoon,
>
> Thank you for your recent submission regarding the Lam development proposal. Your comments have been received and added to the public record.
>
> We appreciate you taking the time to participate in the public review and comment process.
>
> Kind regards,
>
> **Lindsey Hagerman**
> Office Coordinator
> Community Development
> **Phone**: 503.691.3053
> **tualatinoregon.gov**
>
> ---
>
> **From:** Nancy Midkiff <nancymidkiff@gmail.com>
> **Sent:** Wednesday, August 27, 2025 2:45 PM
> **To:** Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>; Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>
> **Subject:** Subject: Lam 108th Ave Proposed Entrance
>
> To: Keith Leonard kleonard@tualatin.gov
> To: Planning Department planning@tualatin.gov
> Cc: City Council council@tualatin.gov
> Cc: STR Outreach outreach@tualatinroad.org

Subject: Lam 108th Ave Proposed Entrance

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

Lam's expanded entrance on 108th fails three of the driveway approach criteria in TDC 75.020.5: "(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

The Tualatin Comprehensive Plan 2040 asks us to "Consider transportation options that make the best use of the existing network." (Goal 8.7) Leveton Drive has a massive amount of unused capacity available and is currently under-utilized especially during peak traffic times. The highest and best use for Leveton Drive is to carry ALL of Lam's added site trips. It is unreasonable to put more strain on Tualatin Road (and its residents) when Leveton is sitting there mostly empty.

Lam's traffic study shows that the Hazelbrook Road onramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volumes from this proposed 108th entrance.

Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Regards,

Nancy Midkiff

Outlook

Comments about LAM project

From Nicole Ingram <niikingram@gmail.com>
Date Wed 8/27/2025 9:11 AM
To Keith Leonard <kleonard@tualatin.gov>; Council <council@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

This message needs your attention

• Some Recipients have never replied to this person.
• This is a personal email address.

Report this Email or Mark as Safe
Powered by Your Friends at Information Services

Dear Tualatin Architectural Review Board and entities involved in the LAM access project,

Thank you for the opportunity to comment on Lam's updated TUX site plan, specifically the proposed expansion of the 108th Avenue north access point which is currently gated. Opening this gate to allow employee access would add traffic to Tualatin Road, making it more difficult for residents to enter and exit our neighborhoods. Peak traffic volume on Tualatin Road is already a major problem, and I would ask the city to take steps to reduce, not increase, traffic volumes on Tualatin Road.

Approved in 2023, Lam's Building G project is still under construction, and the full traffic impact of its two new parking lots on 108th has not yet been felt, but is already baked in. I am opposed to opening another access on 108th, and I respectfully request that Lam's existing 108th north access remain in its current configuration: closed to employee traffic but available for emergency and utility use.

For the majority of Riverpark residents, Tualatin Road is our ONLY option for local access. We do not have an alternate route, but Lam does: Leveton Drive. It has a higher speed limit and lower traffic volume than Tualatin Road. Leveton is a better route for Lam's trips.

SITE CIRCULATION

Lam's updated site plan shows a primary employee driveway connecting the north parking lots directly to Leveton Drive, providing more than adequate roadway access for these employees. Connecting these same parking lots to 108th is redundant and unnecessary, and would create unintended negative impacts in the surrounding neighborhoods.

Lam's site plan shows 6 other access points: 4 on Leveton Drive and 2 on 108th. Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to open yet another access point.

DRIVEWAY CRITERIA

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SCOPE OF IMPACT

The full impact of an expanded 108th access would extend well beyond the TUX project. Lam's latest site plan shows an abundance of open space available for future development, and based on current trends, Lam will continue to expand and build out their campus.

It is also common for semiconductor facilities to run multiple shifts, in order to double or triple their production capacity without

expanding the physical plant. Adding shifts (and the accompanying traffic volume) would not require an Architectural Review, Industrial Master Plan update, or Conditional Use Permit. The potential for significantly increased intensity of use should be anticipated now and addressed during the current land use review cycle.

The Tualatin Planning Commission was advised to not consider ANY traffic or noise impacts during their IMP hearing, and was told that these concerns would be handled by the Architectural Review Board.

When measuring the traffic impact of Lam's proposed entrance, it is appropriate and justified to look at not only the impact from Lam's TUX project, but also look at the total anticipated impact from future developments that could use this entrance. At the IMP hearing, one of Lam's advocates mentioned that "this project has been part of Lam's master plan for quite some time." In order to evaluate the full impact of Lam's current proposal, it would be helpful to see how this entrance would interact with future projects, and how it fits into Lam's overall campus master plan.

ROAD SAFETY

An expansion at 108th would provide Lam's north parking lots with access to Tualatin Road. The intersection of 108th and Tualatin Road already has an elevated crash rate, and adding more traffic here would increase the risk of injury, not only for those who choose to turn here, but also for each person who travels along this section of Tualatin Road.

STUDENT SAFETY

The proposed expansion on 108th would also add traffic to 115th Avenue, which many students cross on foot each day going to and from school. Compared to existing conditions, the current TUX proposal represents a decrease in student safety, and that is a step in the wrong direction.

Lam’s traffic study also does not identify the locations of school bus routes or the potential impacts to school bus traffic. Student safety is one of the most important issues in our community, but so far it has been ignored in this process.

JUSTICE AND EQUITY

Although the negative traffic impacts from 108th would be felt along the entire length of Tualatin Road, these impacts would be most concentrated between 108th and 124th Avenues, an area which includes more than 600 high-density housing units, traditionally disadvantaged demographics, and income-limited

apartments. Putting more traffic stress on these populations is not equitable, especially when a better alternative is available on the other side of Lam's campus.

PUBLIC FUNDS

Lam Research received $22 million in taxpayer-funded CHIPS Act grant funds to help pay for the TUX expansion. Any project built with taxpayer funds should be designed so that it does not harm the community.

ECONOMIC IMPACT

The total value of residential real estate located between the Tualatin River and Tualatin Road is well over $500 million. This tax base must be protected. The best economic solution would be for Lam to grow in a way that does not interfere with surrounding residential land uses. The current decision before you does not need to be a conflict between Lam and the surrounding community. With good site design and smart planning, this project can be a win-win.

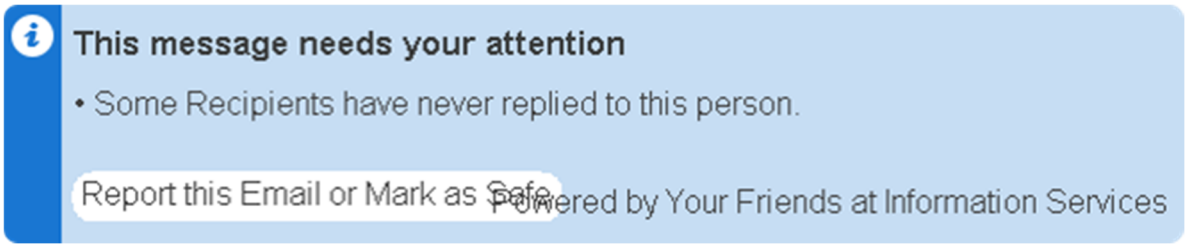
Keeping the 108th north access in its current configuration and utilizing Leveton for all of Lam's new site trips is a solution that will allow Lam's campus to grow long into the future while protecting the quality of life and property values of the taxpayers who live along Tualatin Road.

Thank you for your consideration.

Nicole (Niik) Ingram

17725 SW Shawnee Trail, Tualatin, OR 97062

From: Nils Peuser <nils@peusers.org>
Sent: Friday, August 29, 2025 10:41 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance



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The Tualatin Comprehensive Plan 2040 asks us to "Consider transportation options that make the best use of the existing network." (Goal 8.7) Leveton Drive has a massive amount of unused capacity available and is currently under-utilized especially during peak traffic times. The highest and best use for Leveton Drive is to carry ALL of Lam's added site trips. It is unreasonable to put more strain on Tualatin Road (and its residents) when Leveton is sitting there mostly empty.

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Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th
NO added traffic on Tualatin Road

Use Leveton Drive and Herman Road

My wife and I are walking along Tualatin road (and across) it multiple times every day and traffic is already very ignorant of pedestrians, even with the improved road crossings (thank you all for those!). More traffic will exacerbate this and our ability to enjoy neighborhood walks in Riverpark and on Tualatin Road.

Thank you for your consideration.

~ Nils Peuser

Outlook

Tualatin Road

From nwssln@comcast.net <nwssln@comcast.net>
Date Thu 8/28/2025 12:36 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>; Council <council@tualatin.gov>; Cc: STR Outreach <outreach@tualatinroad.org>

Save Tualatin Road

To: Keith Leonard kleonard@tualatin.gov
To: Planning Department planning@tualatin.gov
Cc: City Council council@tualatin.gov
Cc: STR Outreach outreach@tualatinroad.org

Subject: Lam Traffic Impacts

Dear Tualatin Architectural Review Board,

I understand your need to help Lam Research out as they are a huge employer and very important to our Tualatin tax base. If they must have access to Tualatin Road for their employees, although I don't know why Leviton Road isn't ok, would they or the city consider adding stoplights at Jurgens? Or a round about that would help Teton and Jurgens Roads. It would help with all the local school traffic and allow for some breaks in traffic so people can pull out on Tualatin Road?

I feel we really need help with the traffic that already exists on Tualatin Road.

Thank you for your consideration.

Sybil A. Latham-Nagata
10165 SW Sedlak Ct.
Tualatin, OR
503-705-7386

Lindsey Hagerman

From: Patti Atkins <patti@prpatti.com>
Sent: Tuesday, August 26, 2025 3:28 PM
To: Keith Leonard; Ext - Planning; Council; outreach@tualatinroad.org
Subject: Lam Traffic Impacts

Follow Up Flag: Follow up
Flag Status: Completed



To: Keith Leonard kleonard@tualatin.gov
To: Planning Department planning@tualatin.gov
Cc: City Council council@tualatin.gov
Cc: STR Outreach outreach@tualatinroad.org

Subject: Lam Traffic Impacts

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX site plan, specifically the proposed expansion of the 108th Avenue north access point which is currently gated. Opening this gate to allow employee access would add traffic to Tualatin Road, making it more difficult for residents to enter and exit our neighborhoods. Peak traffic volume on Tualatin Road is already a major problem, and I would ask the city to take steps to reduce, not increase, traffic volumes on Tualatin Road.

Approved in 2023, Lam's Building G project is still under construction, and the full traffic impact of its two new parking lots on 108th has not yet been felt, but is already baked in. I am opposed to opening another access on 108th, and I respectfully request that Lam's existing 108th north access remain in its current configuration: closed to employee traffic but available for emergency and utility use.

For the majority of Riverpark residents, Tualatin Road is our ONLY option for local access. We do not have an alternate route, but Lam does: Leveton Drive.

It has a higher speed limit and lower traffic volume than Tualatin Road. Leveton is a better route for Lam's trips.

Tualatin Road is already quite busy and the traffic often exceeds the posted speed limit. A guest of mine was hit while turning left onto Tualatin Road and the GrubHub driver who hit her was exceeding the speed limit and totaled her car.

SITE CIRCULATION

Lam's updated site plan shows a primary employee driveway connecting the north parking lots directly to Leveton Drive, providing more than adequate roadway access for these employees. Connecting these same parking lots to 108th is redundant and unnecessary, and would create unintended negative impacts in the surrounding neighborhoods.

Lam's site plan shows 6 other access points: 4 on Leveton Drive and 2 on 108th. Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to open yet another access point.

DRIVEWAY CRITERIA

Lam's traffic study shows that the Hazelbrook Road on-ramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volume from the proposed 108th entrance.

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PLANNING GOALS

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SCOPE OF IMPACT

The full impact of an expanded 108th access would extend well beyond the TUX project. Lam's latest site plan shows an abundance of open space available for future development, and based on current trends, Lam will continue to expand and build out their campus.

It is also common for semiconductor facilities to run multiple shifts, in order to double or triple their production capacity without expanding the physical plant. Adding shifts (and the accompanying traffic volume) would not require an Architectural Review, Industrial Master Plan update, or Conditional Use Permit. The potential for a significantly increased intensity of use should be anticipated now and addressed during the current land use review cycle.

The Tualatin Planning Commission was advised to not consider ANY traffic or noise impacts during their IMP hearing, and was told that these concerns would be handled by the Architectural Review Board.

When measuring the traffic impact of Lam's proposed entrance, it is appropriate and justified to look at not only the impact from Lam's TUX project, but also look at the the total anticipated effect from future developments that could use this entrance. The traffic effect of this entrance would continue to grow over time as future development occurs on this campus. At the IMP hearing, one of Lam's advocates mentioned that "this project has been part of Lam's master plan for quite some time." In order to evaluate the full impact of Lam's current proposal, it would be helpful to see how this entrance would interact with future projects, and how it fits into Lam's overall campus master plan.

ROAD SAFETY

An expansion at 108th would provide Lam's north parking lots with access to Tualatin Road. The intersection of 108th and Tualatin Road has an elevated crash rate, and adding more traffic here would increase the risk of injury, not only for those who choose to turn here, but also for each person who travels along this section of Tualatin Road.

STUDENT SAFETY

The proposed expansion on 108th would also add traffic to 115th Avenue, which many students cross on foot each day going to and from school. Compared to existing conditions, the current TUX proposal represents a decrease in student safety, and that is a step in the wrong direction.

Lam's traffic study also does not identify the locations of school bus routes or the potential impacts to school bus traffic. Student safety is one of the most important issues in our community, but so far it has been ignored in this process.

JUSTICE AND EQUITY

Although the negative traffic impacts from 108th would be felt along the entire length of Tualatin Road, these impacts would be most concentrated between 108th and 124th Avenues, an area which includes more than 600 high-density housing units, traditionally disadvantaged demographics, and income-limited apartments. Putting more traffic stress on these populations is not equitable, especially when a better alternative is available on the other side of Lam's campus.

PUBLIC FUNDS

Lam Research received $22 million in taxpayer-funded CHIPS Act grant funds to help pay for the TUX expansion. Taxpayer funds should not be used to build a project that harms the community.

ECONOMIC IMPACT

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Keeping the 108th north access in its current configuration and utilizing Leveton for all of Lam's new site trips is a solution that will allow Lam's campus to grow long into the future while protecting the quality of life and property values of the taxpayers who live along Tualatin Road.

Thank you for your consideration.
Patricia Atkins
17745 SW Chippewa Trail, Tualatin, OR 97062

From: pdvpdx@gmail.com
Sent: Friday, August 29, 2025 8:30 AM
To: Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam Traffic Impacts

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX site plan, specifically the proposed expansion of the 108th Avenue north access point which is currently gated. Opening this gate to allow employee access would add traffic to Tualatin Road, making it more difficult for residents to enter and exit our neighborhoods. Peak traffic volume on Tualatin Road is already a major problem, and I would ask the city to take steps to reduce, not increase, traffic volumes on Tualatin Road.

Approved in 2023, Lam's Building G project is still under construction, and the full traffic impact of its two new parking lots on 108th has not yet been felt, but is already baked in. I am opposed to opening another access on 108th, and I respectfully request that Lam's existing 108th north access remain in its current configuration: closed to employee traffic but available for emergency and utility use.

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PLANNING GOALS

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SCOPE OF IMPACT

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STUDENT SAFETY

The proposed expansion on 108th would also add traffic to 115th Avenue, which many students cross on foot each day going to and from school. Compared to existing conditions, the current TUX proposal represents a decrease in student safety, and that is a step in the wrong direction.

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JUSTICE AND EQUITY

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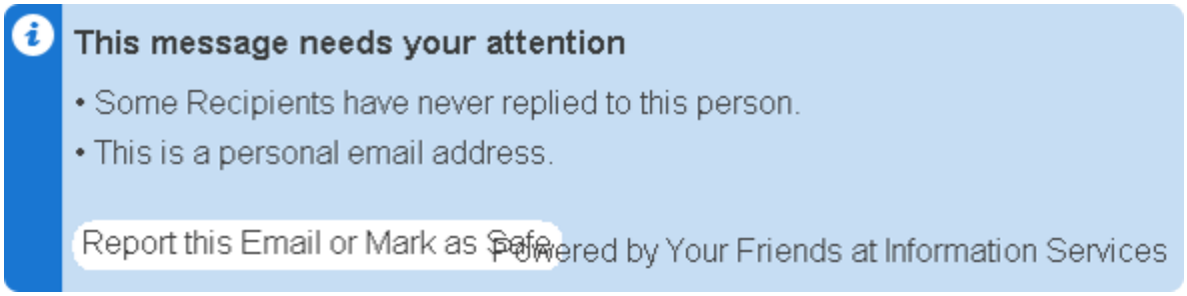
Thank you for your consideration.

(503) 754-4805
pdvpdx@gmail.com
pvincent@blueimpactcaptial.com
www.philvincentbooks.com
www.blueimpactcapital.com
www.linkedin.com/in/phillip-vincent

Outlook

Lam Traffic Impacts

From Regina Chante <reginachante@gmail.com>
Date Wed 8/27/2025 9:58 AM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>; Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>



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Thank you for your consideration.

Regina Chante

•••••••••

Outlook

Lam 108th Ave Proposed Entrance

From richard.lyons15@gmail.com <richard.lyons15@gmail.com>
Date Tue 8/26/2025 11:40 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

Lam's expanded entrance on 108th fails three of the driveway approach criteria in TDC 75.020.5: "(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

The Tualatin Comprehensive Plan 2040 asks us to "Consider transportation options that make the best use of the existing network." (Goal 8.7) Leveton Drive has a massive amount of unused capacity available and is currently under-utilized especially during peak traffic times. The highest and best use for Leveton Drive is to carry ALL of Lam's added site trips. It is unreasonable to put more strain on Tualatin Road (and its residents) when Leveton is sitting there mostly empty.

Lam's traffic study shows that the Hazelbrook Road onramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volumes from this proposed 108th entrance.

Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.
Richard Lyons
11065 SW Lucas Drive

Sent from my iPad

Outlook

Lam Traffic Impacts

From Rick Cady <rcadycvelo@gmail.com>
Date Tue 8/26/2025 7:05 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX site plan, specifically the proposed expansion of the 108th Avenue north access point which is currently gated. Opening this gate to allow employee access would add traffic to Tualatin Road, making it more difficult for residents to enter and exit our neighborhoods. Peak traffic volume on Tualatin Road is already a major problem, and I would ask the city to take steps to reduce, not increase, traffic volumes on Tualatin Road.

Approved in 2023, Lam's Building G project is still under construction, and the full traffic impact of its two new parking lots on 108th has not yet been felt, but is already baked in. I am opposed to opening another access on 108th, and I respectfully request that Lam's existing 108th north access remain in its current configuration: closed to employee traffic but available for emergency and utility use.

For the majority of Riverpark residents, Tualatin Road is our ONLY option for local access. We do not have an alternate route, but Lam does: Leveton Drive. It has a higher speed limit and lower traffic volume than Tualatin Road. Leveton is a better route for Lam's trips.

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Lam's updated site plan shows a primary employee driveway connecting the north parking lots directly to Leveton Drive, providing more than adequate roadway access for these employees. Connecting these same parking lots to 108th is redundant and unnecessary, and would create unintended negative impacts in the surrounding neighborhoods.

Lam's site plan shows 6 other access points: 4 on Leveton Drive and 2 on 108th. Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to open yet another access point.

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SCOPE OF IMPACT

The full impact of an expanded 108th access would extend well beyond the TUX project. Lam's latest site plan shows an abundance of open space available for future development, and based on current trends, Lam will continue to expand and build out their campus.

It is also common for semiconductor facilities to run multiple shifts, in order to double or triple their production capacity without expanding the physical plant. Adding shifts (and the accompanying traffic volume) would not require an Architectural Review, Industrial Master Plan update, or Conditional Use Permit. The potential for a significantly increased intensity of use should be anticipated now and addressed during the current land use review cycle.

The Tualatin Planning Commission was advised to not consider ANY traffic or noise impacts during their IMP hearing, and was told that these concerns would be handled by the Architectural Review Board.

When measuring the traffic impact of Lam's proposed entrance, it is appropriate and justified to look at not only the impact from Lam's TUX project, but also look at the total anticipated impact from future developments that could use this entrance. At the IMP hearing, one of Lam's advocates mentioned that "this project has been part of Lam's master plan for quite some time." In order to evaluate the full impact of Lam's current proposal, it would be helpful to see how this entrance would interact with future projects, and how it fits into Lam's overall campus master plan.

ROAD SAFETY

An expansion at 108th would provide Lam's north parking lots with access to Tualatin Road. The intersection of 108th and Tualatin Road already has an elevated

crash rate, and adding more traffic here would increase the risk of injury, not only for those who choose to turn here, but also for each person who travels along this section of Tualatin Road.

STUDENT SAFETY

The proposed expansion on 108th would also add traffic to 115th Avenue, which many students cross on foot each day going to and from school. Compared to existing conditions, the current TUX proposal represents a decrease in student safety, and that is a step in the wrong direction.

Lam's traffic study also does not identify the locations of school bus routes or the potential impacts to school bus traffic. Student safety is one of the most important issues in our community, but so far it has been ignored in this process.

JUSTICE AND EQUITY

Although the negative traffic impacts from 108th would be felt along the entire length of Tualatin Road, these impacts would be most concentrated between 108th and 124th Avenues, an area which includes more than 600 high-density housing units, traditionally disadvantaged demographics, and income-limited apartments. Putting more traffic stress on these populations is not equitable, especially when a better alternative is available on the other side of Lam's campus.

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ECONOMIC IMPACT

The total value of residential real estate located between the Tualatin River and Tualatin Road is well over $500 million. This tax base must be protected. The best economic solution would be for Lam to grow in a way that does not interfere with surrounding residential land uses. The current decision before you does not need to be a conflict between Lam and the surrounding community. With good site design and smart planning, this project can be a win-win.

Keeping the 108th north access in its current configuration and utilizing Leveton for all of Lam's new site trips is a solution that will allow Lam's campus to grow long into the future while protecting the quality of life and property values of the taxpayers who live along Tualatin Road.

Thank you for your consideration.

From: Robert Dixon <rwdixon@pacbell.net>
Sent: Saturday, August 30, 2025 10:16 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Subject: Lam 108th Ave Proposed Entrance

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

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carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Robert Dixon
17967 SW 110th Pl
Tualatin, OR 97062

Outlook

Lam Noise Impacts

From Robyn Biehler <bthkfl46@gmail.com>
Date Wed 8/27/2025 2:58 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

Dear Tualatin Architectural Review Board,

Thank you for your dedication and service to the community, and for your work to protect our quality of life. While development and corporate activities are essential to the vitality of our city, residential land uses must also be protected, both from an economic standpoint (property values) and from a quality of life standpoint (mental and physical health). In keeping with this mission, we are asking for your help in resolving Lam's noise pollution problem.

Multiple noise signatures have been identified emanating from Lam's campus, including clear tones that pulse, two-toned harmonics, and a low rumble that sounds like an old bomber airplane. The most distinctive sound is the high-frequency hiss from Lam's gas plant, clearly audible across Tualatin Road most nights.

We have brought this issue to the attention of the City Council, Police Department, Code Enforcement, Riverpark CIO, and Lam. Despite repeated requests for a solution, no meaningful changes have been made. When Tualatin's police officers have driven onto the Lam campus to investigate noise complaints, they have been chased down by Lam's security guards and asked to leave.

The Tualatin Noise Ordinance (1361-13) sets a city-wide limit of 50dB at night for residential areas, and the Tualatin Development Code (62.100) places even stricter limits on Manufacturing Park (MP) zoning, stating that "Such permitted uses must not cause objectionable noise". A noise study performed earlier this year at night by a licensed acoustical engineer measured noise levels of 52dB at a private residence across the street from Lam's gas plant. Therefore, Lam's offsite noise impacts are in violation of both the Tualatin Development Code and the Tualatin Municipal Code.

Lam's noise pollution problem is not caused by daytime construction, backup beepers, or truck horns, but rather, by permanently-installed equipment that is part of Lam's physical plant. This equipment runs 24/7 and generates sound continuously. The sounds are most noticeable at night when background noise is low, and the location of sound impacts can vary depending on atmospheric conditions, especially temperature and wind direction. During southerly winds, Lam's noise signature can be heard more than a mile away.

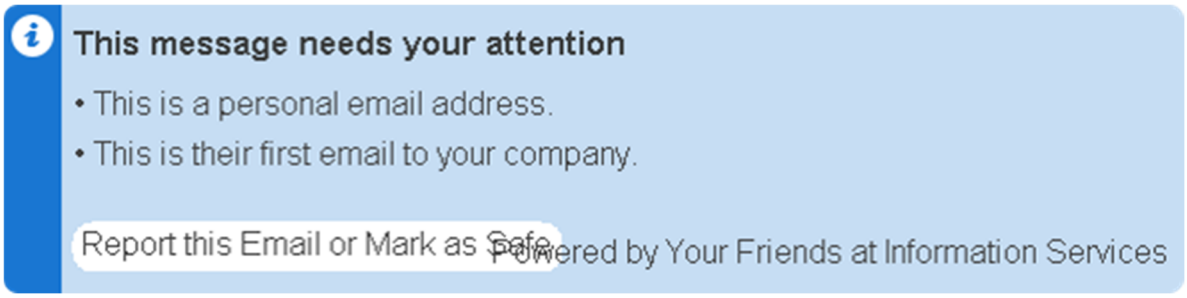
Manufacturing Park (MP) zoning serves as a buffer between heavy industry and residential areas. MP zoning calls for "limiting uses to those that are of a nature so as to not conflict with other industrial uses or surrounding residential areas." (TDC 62.100) Please consider this letter as evidence that Lam's operations are, in fact, currently conflicting with surrounding residential areas.

In order to bring Lam's facility into compliance with the Tualatin Code, I request that Lam's off-site noise impacts be eliminated as part of the TUX project. It is absolutely critical to our quality of life that peace and quiet be restored to our neighborhoods. We ask the City of Tualatin to require Lam to prove their ability to eliminate offsite noise before approving the addition of any new noise sources on campus.

Thank you for your consideration.

Respectfully,
Robyn Biehler
17750 SW 112th Ave
Tualatin

From: Russell Streit <back8acres@gmail.com>
Sent: Friday, August 29, 2025 5:29 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance



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Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th

NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Outlook

Lam 108th Ave Proposed Entrance

From Sally Hildebran <sallyhildebran@gmail.com>
Date Wed 8/27/2025 2:33 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

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Thank you for your consideration.
Reed and Sally Hildebran

Sent from my iPhone

Outlook

Lam Traffic

From Scot Hale <m.scothale@gmail.com>
Date Tue 8/26/2025 9:55 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>; Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

Save Tualatin Road

To: Keith Leonard kleonard@tualatin.gov
To: Planning Department planning@tualatin.gov
Cc: City Council council@tualatin.gov
Cc: STR Outreach outreach@tualatinroad.org

Subject: Lam Traffic Impacts

Dear Tualatin Architectural Review Board,

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Thank you for your consideration.

From: Sharon Roberts <sharon.roberts53@icloud.com>
Sent: Friday, August 29, 2025 11:11 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance

Dear Tualatin Architectural Review Board,

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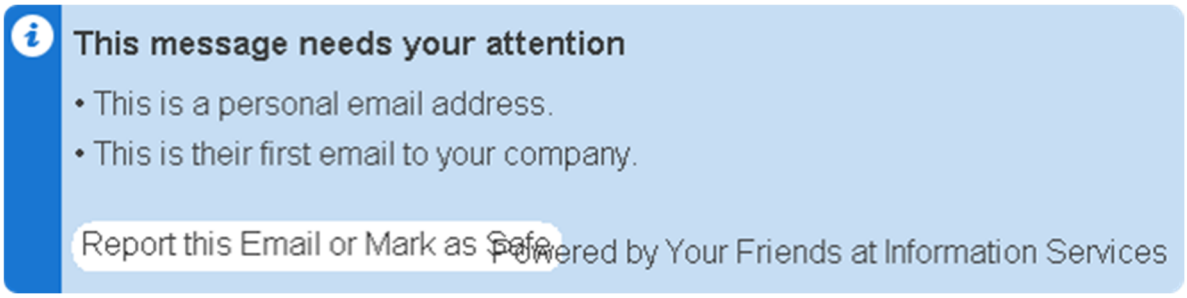
NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Sent from my iPhone

From: Sianna Orr <sianna.orr@gmail.com>
Sent: Friday, August 29, 2025 12:35 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance



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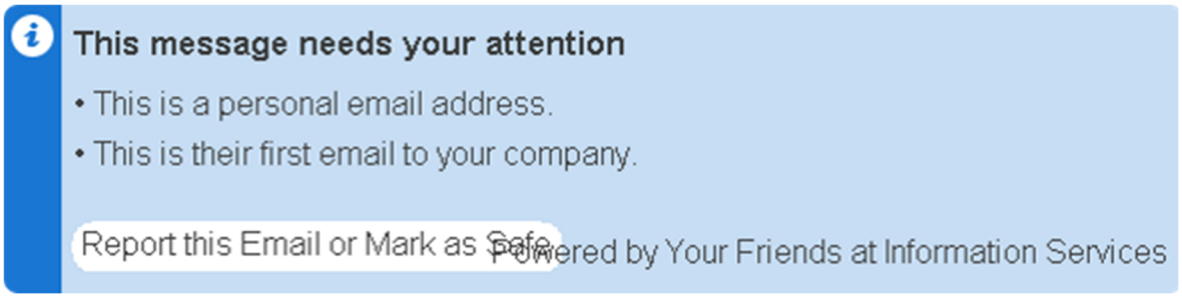
NO new employee access on 108th

NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

From: Stacey E <stacey.richards137@gmail.com>
Sent: Sunday, August 31, 2025 4:09 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance



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NO new employee access on 108th

NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Stacey Edwards

From: Stacey <whmranch@gmail.com>
Sent: Friday, August 29, 2025 11:12 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance

I fully support this request. Tualatin road is nearly impossible at some times during the day now. It's imperative that there is

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Lam's traffic study shows that the Hazelbrook Road onramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volumes from this proposed 108th entrance.

Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th

NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Stacey Harnew Swanson
Wildhorsemountain.org

From: Stephanie <stephimelton@gmail.com>
Sent: Saturday, August 30, 2025 5:54 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

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NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Stephanie Melton

From: Laurie Newberry <ms.laurel1@mac.com>
Sent: Friday, August 29, 2025 10:41 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance

Dear Tualatin Architectural Review Board,

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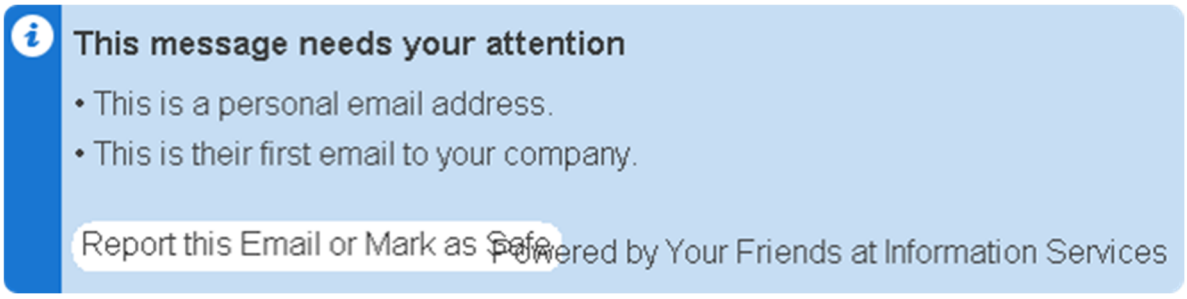
NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Steve and Laurie Newberry
SW Kiowa Street

From: Steve Benke <sbenke0524@gmail.com>
Sent: Friday, August 29, 2025 11:40 AM
To: Keith Leonard; Ext - Planning; Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance



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NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.
Steve Benke
17400 SW 106th Ct.
Tualatin, OR 97062

From: Sue Hein <suehein59@gmail.com>
Sent: Friday, August 29, 2025 4:00 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance

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NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

As a 31 year residents of Tualatin, we live off a 109th & Tualatin Road, the amount of traffic increased by this proposal would add to the already heavy traffic volume on this section on of road. Please consider the residents who have to navigate this area daily.

Thank you for your consideration.
Chris & Sue Hein

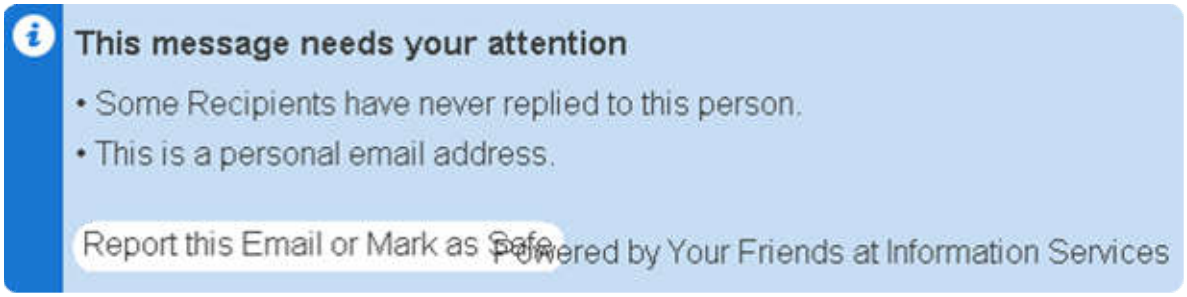
10975 SW Tunica Street

Sent from my iPhone

Lindsey Hagerman

From: nwssln@comcast.net
Sent: Thursday, August 28, 2025 12:36 PM
To: Keith Leonard; Ext - Planning; Council; Cc: STR Outreach
Subject: Tualatin Road

Follow Up Flag: Flag for follow up
Flag Status: Completed



To: Keith Leonard kleonard@tualatin.gov
To: Planning Department planning@tualatin.gov
Cc: City Council council@tualatin.gov
Cc: STR Outreach outreach@tualatinroad.org

Subject: Lam Traffic Impacts

Dear Tualatin Architectural Review Board,

I understand your need to help Lam Research out as they are a huge employer and very important to our Tualatin tax base. If they must have access to Tualatin Road for their employees, although I don't know why Leviton Road isn't ok, would they or the city consider adding stoplights at Jurgens? Or a round about that would help Teton and Jurgens Roads. It would help with all the local school traffic and allow for some breaks in traffic so people can pull out on Tualatin Road?

I feel we really need help with the traffic that already exists on Tualatin Road.

Thank you for your consideration.

Sybil A. Latham-Nagata
10165 SW Sedlak Ct.
Tualatin, OR
503-705-7386

Outlook

Lam 108th Ave Proposed Entrance

From Tami Weitman <tntweitman@comcast.net>
Date Wed 8/27/2025 8:49 AM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

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NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

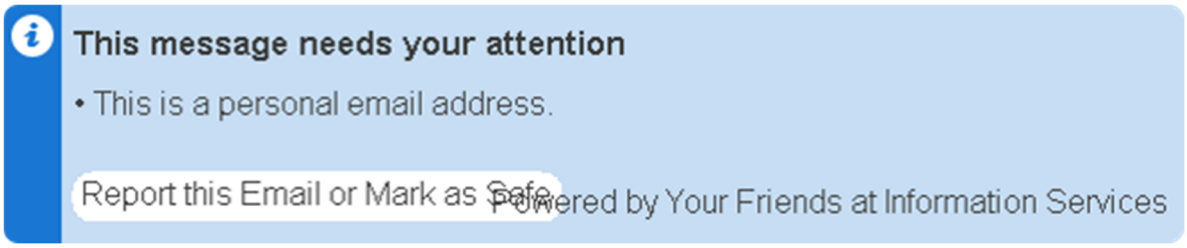
We are fully in favor of the progress in our Tualatin community that Lam represents. We just ask to coexist in a manner that is conducive to all.

We enter Tualatin Road from 106th. As we look across the road and to our right seeing 108th, increased traffic flow in that location represents a nightmare.

Ted and Tami Weitman
10666 SW Bannoch Street

Sent from my iPhone

From: Tara and Tim Linn <taraandtim.house@gmail.com>
Sent: Friday, August 29, 2025 11:02 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Traffic Impacts



Save Tualatin Road

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX site plan, specifically the proposed expansion of the 108th Avenue north access point which is currently gated. Opening this gate to allow employee access would add traffic to Tualatin Road, making it more difficult for residents to enter and exit our neighborhoods. Peak traffic volume on Tualatin Road is already a major problem, and I would ask the city to take steps to reduce, not increase, traffic volumes on Tualatin Road.

Approved in 2023, Lam's Building G project is still under construction, and the full traffic impact of its two new parking lots on 108th has not yet been felt, but is already baked in. I am opposed to opening another access on 108th, and I respectfully request that Lam's existing 108th north access remain in its current configuration: closed to employee traffic but available for emergency and utility use.

For the majority of Riverpark residents, Tualatin Road is our ONLY option for local access. We do not have an alternate route, but Lam does: Leveton Drive. It has a higher speed limit and lower traffic volume than Tualatin Road. Leveton is a better route for Lam's

trips.

SITE CIRCULATION

Lam's updated site plan shows a primary employee driveway connecting the north parking lots directly to Leveton Drive, providing more than adequate roadway access for these employees. Connecting these same parking lots to 108th is redundant and unnecessary, and would create unintended negative impacts in the surrounding neighborhoods.

Lam's site plan shows 6 other access points: 4 on Leveton Drive and 2 on 108th. Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to open yet another access point.

DRIVEWAY CRITERIA

Lam's traffic study shows that the Hazelbrook Road on-ramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volume from the proposed 108th entrance.

This proposed entrance fails three of the driveway approach criteria in TDC 75.020.5: "(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

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is sitting there mostly empty.

SCOPE OF IMPACT

The full impact of an expanded 108th access would extend well beyond the TUX project. Lam's latest site plan shows an abundance of open space available for future development, and based on current trends, Lam will continue to expand and build out their campus.

It is also common for semiconductor facilities to run multiple shifts, in order to double or triple their production capacity without expanding the physical plant. Adding shifts (and the accompanying traffic volume) would not require an Architectural Review, Industrial Master Plan update, or Conditional Use Permit. The potential for significantly increased intensity of use should be anticipated now and addressed during the current land use review cycle.

The Tualatin Planning Commission was advised to not consider ANY traffic or noise impacts during their IMP hearing, and was told that these concerns would be handled by the Architectural Review Board.

When measuring the traffic impact of Lam's proposed entrance, it is appropriate and justified to look at not only the impact from Lam's TUX project, but also look at the total anticipated impact from future developments that could use this entrance. At the IMP hearing, one of Lam's advocates mentioned that "this project has been part of Lam's master plan for quite some time." In order to evaluate the full impact of Lam's current proposal, it would be helpful to see how this entrance would interact with future projects, and how it fits into Lam's overall campus master plan.

ROAD SAFETY

An expansion at 108th would provide Lam's north parking lots with access to Tualatin Road. The intersection of 108th and Tualatin Road already has an elevated crash rate, and adding more traffic here would increase the risk of injury, not only for those who choose to turn here, but also for each person who travels along this

section of Tualatin Road.

STUDENT SAFETY

The proposed expansion on 108th would also add traffic to 115th Avenue, which many students cross on foot each day going to and from school. Compared to existing conditions, the current TUX proposal represents a decrease in student safety, and that is a step in the wrong direction.

Lam's traffic study also does not identify the locations of school bus routes or the potential impacts to school bus traffic. Student safety is one of the most important issues in our community, but so far it has been ignored in this process.

JUSTICE AND EQUITY

Although the negative traffic impacts from 108th would be felt along the entire length of Tualatin Road, these impacts would be most concentrated between 108th and 124th Avenues, an area which includes more than 600 high-density housing units, traditionally disadvantaged demographics, and income-limited apartments. Putting more traffic stress on these populations is not equitable, especially when a better alternative is available on the other side of Lam's campus.

PUBLIC FUNDS

Lam Research received $22 million in taxpayer-funded CHIPS Act grant funds to help pay for the TUX expansion. Any project built with taxpayer funds should be designed so that it does not harm the community.

ECONOMIC IMPACT

The total value of residential real estate located between the Tualatin River and Tualatin Road is well over $500 million. This tax base must be protected. The best economic solution would be for Lam to grow in a way that does not interfere with surrounding

residential land uses. The current decision before you does not need to be a conflict between Lam and the surrounding community. With good site design and smart planning, this project can be a win-win.

Keeping the 108th north access in its current configuration and utilizing Leveton for all of Lam's new site trips is a solution that will allow Lam's campus to grow long into the future while protecting the quality of life and property values of the taxpayers who live along Tualatin Road.

Thank you for your consideration.

Tim and Tara Linn
17565 SW Chippewa Trl.
Tualatin, OR 97062

From: tbsj <tbsj@comcast.net>
Sent: Friday, August 29, 2025 2:02 PM
To: Keith Leonard; Ext - Planning; Council; outreach@tualatinroad.org
Subject: LAM

Subject: Lam 108th Ave Proposed Entrance

Dear Tualatin Architectural Review Board,

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Lam's traffic study also shows that the 108th / Tualatin Road

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NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

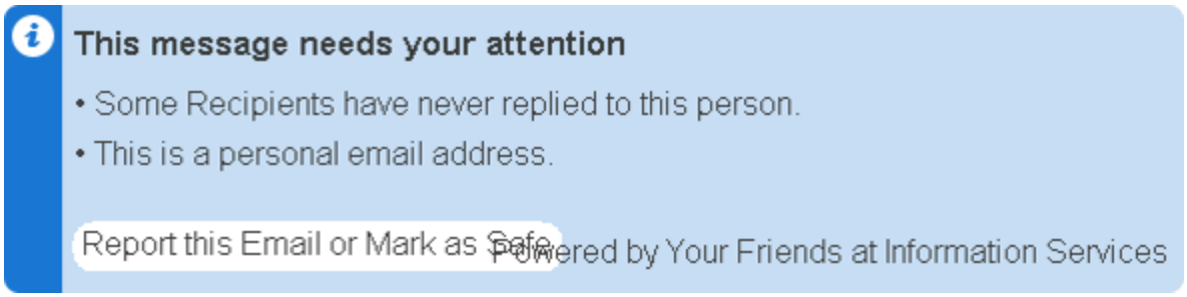
Thank you for your consideration.


Virus-free.www.avast.com

Outlook

Lam 108th Ave Proposed Entrance

From Ted Olson <noslotheo@gmail.com>
Date Tue 8/26/2025 10:27 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>



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Thank you for your consideration.

_____

I wish to add some additional comments regarding the well-stated concerns and suggested solutions outlined above.

As a 20 year resident in the River Park community, my family, like nearly all of the families in our community, has need to access Tualatin Road almost daily. The growing problem we have, even now, is that the traffic has increased to the point where it's very difficult, depending on the time of day, to find an opening to safely enter onto Tualatin Road, especially if we're going toward town.

With the growth of Lam, which we support, we can't help but feel more landlocked than ever before. Our safe travel choices will be diminished substantially more without your help. Let's do this right the first time around, rather than wait until a serious accident happens that could have been prevented. Thanks.

Ted Olson

Outlook

Subject: Lam Traffic Impacts

From Tom Rymanowicz <tom@advantagetaxservices.com>
Date Tue 8/26/2025 4:23 PM
To Ext - Planning <Planning@tualatin.gov>

Dear Tualatin Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX site plan, specifically the proposed expansion of the 108th Avenue north access point which is currently gated. Opening this gate to allow employee access would add traffic to Tualatin Road, making it more difficult for residents to enter and exit our neighborhoods. Peak traffic volume on Tualatin Road is already a major problem, and I would ask the city to take steps to reduce, not increase, traffic volumes on Tualatin Road.

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ECONOMIC IMPACT

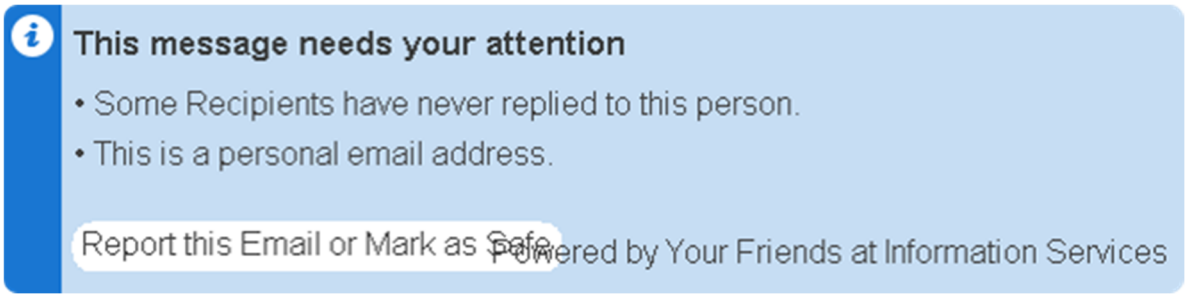
The total value of residential real estate located between the Tualatin River and Tualatin Road is well over $500 million. This tax base must be protected. The best economic solution would be for Lam to grow in a way that does not interfere with surrounding residential land uses. The current decision before you does not need to be a conflict between Lam and the surrounding community. With good site design and smart planning, this project can be a win-win.

Keeping the 108th north access in its current configuration and utilizing Leveton for all of Lam's new site trips is a solution that will allow Lam's campus to grow long into the future while protecting the quality of life and property values of the taxpayers who live along Tualatin Road.

Thank you for your consideration.

Thomas Rymanowicz
17500 SW Cheyenne Way
Tualatin, OR 97062

From: T. Carrasco <tntand@gmail.com>
Sent: Saturday, August 30, 2025 2:45 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: LAM 108th use of Tualatin Rd. OPPOSITION



Tualatin Architectural Review Board,

Currently, during LOW traffic time, it takes us 5 to 10 minutes to get out of our street, Cheyenne Way.

It is totally unreasonable to expect 600 new employees to use Tualatin road via 108th or 115th, when Leviton was specifically built to circumvent all neighborhood traffic, as was 124th.
If you look back in the proposals for these road constructions, you'll see this was the promise made to Tualatin residents, businesses and taxpayers at the time.

There must be no additional industrial access of 108th or 115th, to access Tualatin Rd. as this jeopardizes the safety and livability of all residents in the area.
Should the city and LAM allow this use, they would be liable for the crash rate that will surely increase.

Tualatin road designation was changed in error by the city from a neighborhood surface road, to a thoroughfare.
It was never designed to be such.
Also, as it is an asphalt road and will not hold up to this traffic.
This city redesignation must be corrected to protect Tualatin SAFETY and LIVABILITY.

Many residents have suggested that LAM solve its proposed additional traffic by creating more of their own shifts and less traffic for Tualatin, but still keeping all of its traffic off of Tualatin road and directing all Leviton exits onto main thoroughfares, such as 124th and Tualatin-Sherwood Hwy.

As we are unable to attend september 10 meeting, please read this into the public testimony.

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

The Tualatin Comprehensive Plan 2040 asks us to "Consider transportation options that make the best use of the existing network." (Goal 8.7) Leveton Drive has a massive amount of unused capacity available and is currently under-utilized especially during peak traffic times. **The highest and best use for Leveton Drive is to carry ALL of Lam's added site trips. It is unreasonable to put more strain on Tualatin Road (and its residents) when Leveton is sitting there mostly empty**.

Lam's expanded entrance on 108th fails three of the driveway approach criteria in TDC 75.020.5:
"(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity;
(h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and
(i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

Lam's traffic study shows that the **Hazelbrook Road onramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volumes from this proposed 108th entrance**.

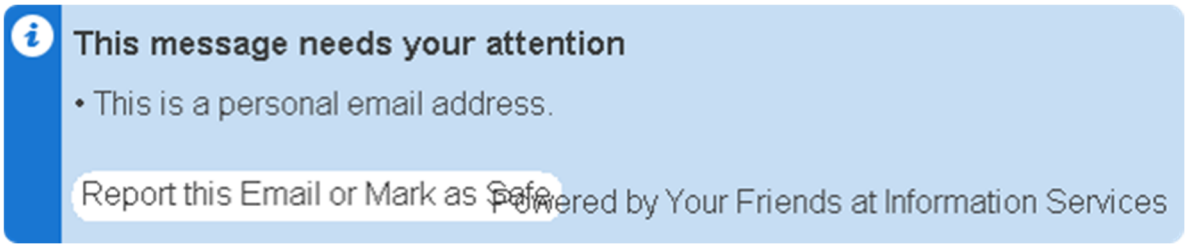
Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you

Toni and Len Carrasco
17790 Cheyenne Way Tualatin

From: Trace Helms <tracehelms@gmail.com>
Sent: Saturday, August 30, 2025 8:26 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance



Dear Tualatin Architectural Review Board,

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NO new employee access on 108th

NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration,

Trace Helms

Lindsey Hagerman

From: Vanessa Fuentes <nessafuentes31@gmail.com>
Sent: Tuesday, August 26, 2025 6:59 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

Follow Up Flag: Flag for follow up
Flag Status: Completed

Dear Tualatin Architectural Review Board,

Thank you for your dedication and service to the community, and for your work to protect our quality of life. While development and corporate activities are essential to the vitality of our city, residential land uses must also be protected, both from an economic standpoint (property values) and from a quality of life standpoint (mental and physical health). In keeping with this mission, we are asking for your help in resolving Lam's noise pollution problem.

Multiple noise signatures have been identified emanating from Lam's campus, including clear tones that pulse, two-toned harmonics, and a low rumble that sounds like an old bomber airplane. The most distinctive sound is the high-frequency hiss from Lam's gas plant, clearly audible across Tualatin Road most nights.

We have brought this issue to the attention of the City Council, Police Department, Code Enforcement, Riverpark CIO, and Lam. Despite repeated requests for a solution, no meaningful changes have been made. When Tualatin's police officers have driven onto the Lam campus to investigate noise complaints, they have been chased down by Lam's security guards and asked to leave.

The Tualatin Noise Ordinance (1361-13) sets a city-wide limit of 50dB at night for residential areas, and the Tualatin Development Code (62.100) places even stricter limits on Manufacturing Park (MP) zoning, stating that "Such permitted uses must not cause objectionable noise". A noise study performed earlier this year at night by a licensed acoustical engineer measured noise levels of 52dB at a private residence across the street from Lam's gas plant. Therefore, Lam's offsite noise impacts are in violation of both the Tualatin Development Code and the Tualatin Municipal Code.

Lam's noise pollution problem is not caused by daytime construction, backup beepers, or truck horns, but rather, by permanently-installed equipment that is part of Lam's physical plant. This equipment runs 24/7 and generates sound continuously. The sounds are most noticeable at night when background noise is low, and the location of sound impacts can vary depending on atmospheric conditions, especially temperature and wind direction. During southerly winds, Lam's noise signature can be heard more than a mile away.

Manufacturing Park (MP) zoning serves as a buffer between heavy industry and residential areas. MP zoning calls for "limiting uses to those that are of a nature so as to not conflict with other industrial uses or surrounding residential areas." (TDC 62.100) Please consider this letter as evidence that Lam's operations are, in fact, currently conflicting with surrounding residential areas.

In order to bring Lam's facility into compliance with the Tualatin Code, I request that Lam's off-site noise impacts be eliminated as part of the TUX project. It is absolutely critical to our quality of life that peace and quiet be restored to our neighborhoods. We ask the City of Tualatin to require Lam to prove their ability to eliminate offsite noise before approving the addition of any new noise sources on campus.

Thank you for your consideration.

Sent from my iPhone

Outlook

Lam 108th Ave Proposed Entrance

From Vanessa Fuentes <nessafuentes31@gmail.com>
Date Tue 8/26/2025 6:58 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

Dear Tualatin Architectural Review Board,

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The Tualatin Comprehensive Plan 2040 asks us to "Consider transportation options that make the best use of the existing network." (Goal 8.7) Leveton Drive has a massive amount of unused capacity available and is currently under-utilized especially during peak traffic times. The highest and best use for Leveton Drive is to carry ALL of Lam's added site trips. It is unreasonable to put more strain on Tualatin Road (and its residents) when Leveton is sitting there mostly empty.

Lam's traffic study shows that the Hazelbrook Road onramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volumes from this proposed 108th entrance.

Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Sent from my iPhone

Outlook

Lam 108th Ave Proposed Entrance

From Wendy Morrell <imluvnlife2@gmail.com>
Date Tue 8/26/2025 5:09 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

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NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

John and Wendy Morrell
Tunica St
Tualatin Or 97062

Sent from Wendy"s iPhone

Outlook

Lam 108th Ave Proposed Entrance

From William Lancaster <william.lancaster@gmail.com>
Date Tue 8/26/2025 8:51 PM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

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NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Sent from my iPhone

Outlook

Lam 108th Ave Proposed Entrance

From Wren Villicano <wren.villicano@gmail.com>
Date Wed 8/27/2025 1:29 AM
To Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc Council <council@tualatin.gov>; outreach@tualatinroad.org <outreach@tualatinroad.org>

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NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

7/22/25

through

8-20-25

In Favor

Written Testimony - Girls Inc. of the Pacific Northwest

On behalf of Girls Inc. of the Pacific Northwest, I'd like to share how Lam Research has made a meaningful difference in the lives of the youth we serve.
For several years, Lam has welcomed high school students from our programs into their Tualatin facility through summer externships. These experiences give our youth—many of whom are girls of color and first-generation college students—direct exposure to science and engineering careers. Lam staff consistently go above and beyond to design hands-on learning opportunities, introduce students to professionals across the company, and help them understand what a future in STEM could look like.

The impact is real. Our youth leave Lam with new skills, a sense of belonging in the tech world, and the confidence to pursue pathways they may never have considered before.
From our perspective, Lam is a community partner that invests in the next generation of talent right here in Oregon. We believe that continued growth in Tualatin will only deepen that impact.

Additional quotes from Program Participants:

Grace Wilde (she/her): "Interning at LAM has hands down been one of the most valuable experiences I've had during high school so far. Everyone was super nice and I had a great time learning what LAM does. My favorite memory was when we learned how to operate one of the many complex tools that LAM creates."

Pootnavi Sok: "My favorite part has definitely been going to lunch and connecting with so many amazing people at Lam.Being able to hear people's life journey and advice is truly a blessing. I'm so happy I was able to network and connect with people who have inspired me to keep going. My gratitude is immeasurable towards the opportunities Girls Inc. has given me to continue my path in life and I am so grateful."

Rosie
"I enjoyed my externship experience at LAM research and everything that I was able to learn and do with the employees. I especially enjoyed the clean room visit, as we were able to get completely suited up and see how semiconductors were made. I also got to do tools hands-on training exercise, and work with the products and communications team to see how LAM sells and markets their products. I'm interested in learning about automation, how software and hardware are used together, and how potential problems are solved in industries when or before they occur, and LAM research tied in a lot of my interest into the summer externship."

Clackamas Workforce Partnership
WORKFORCE DEVELOPMENT BOARD

Thursday, August 13th , 2025

To Chair Beers and Fellow Commissioners:

My name is Brent Balog and I am the Interim Executive Director of Clackamas Workforce Partnership (CWP), which has served as Clackamas County's certified workforce development board for over 20 years. Per federal mandate under the Workforce Innovation and Opportunity Act, CWP, along with our counterparts throughout Oregon, is responsible for securing and investing funds into education, training, and employment-related support services. These services are available at no-cost to eligible Oregonians, and equip them with the skills and credentials needed to obtain competitive, living-wage employment within the region's most in-demand industries, including the technology sector.

On behalf of CWP and the service providers who comprise Clackamas County's local workforce ecosystem, I would like to express my support for Lam Research's proposed expansion and urge you to approve their application. Considering many employers in the area are laying-off workers or closing shop, Lam's intention to expand and create new job opportunities is a welcomed sign. If approved, this proposed expansion will contribute to long-term family stability, economic vitality, and improved quality of life for Oregonians.

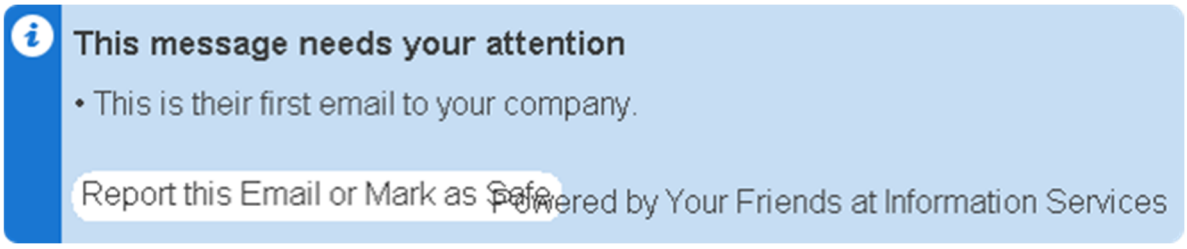
Lam frequently works with several of CWP's core partners in Clackamas County, including Clackamas Community College, the Oregon Institute of Technology, local high schools, and many other social/human service providers. Through these partnerships, Lam helps equip individuals with the skills they need to enter a stable, promising career in technology – one that does not require relocation, and allows people to remain in their community and contribute to the local economy. They work across county boundaries and within two of Oregon's workforce regions to support training programs that not only benefit them, but other tech companies, as well.

I would like to reiterate my support for Lam's Industrial Master Plan application. It is good for the City of Tualatin and other communities within Clackamas and Washington Counties, as well as a benefit to individuals interested in employment in the tech sector.

I appreciate your consideration,

Brent Balog
Interim Executive Director
Clackamas Workforce Partnership
Email: brent.balog@clackamasworkforce.org
Phone: 503-953-4288
Online: www.clackamasworkforce.org

From: Isaac Ambruso <isaaca@hbapdx.org>
Sent: Wednesday, August 20, 2025 9:23 AM
To: Ext - Planning
Subject: HBA Letter of Support - LAM Expansion



Hello,

Please accept the attached letter of support in favor of the expansion of the LAM facility on behalf of the Homebuilding Association of Greater Portland.

Isaac Ambruso
Deputy Director of Public Policy
Home Building Association of Greater Portland
(503) 684-1880
IsaacA@hbapdx.org

HOME BUILDING ASSOCIATION
OF GREATER PORTLAND

August 20, 2025

Tualatin Planning Commission
Tualatin City Services
10699 SW Herman Road

Re: Letter of support LAM Facility Expansion

Thank you, Chair Beers and members of the Planning Commission, for the opportunity to provide testimony on the proposed LAM Research facility expansion.

The Home Building Association of Greater Portland strongly supports this project. The expansion has been part of LAM's long-established master plan for over 25 years. It is therefore surprising that organized opposition has only emerged now that the project is actively moving forward. In our view, this kind of late-stage resistance risks undermining long-term planning efforts that have been clearly communicated and publicly vetted over time.

To its credit, LAM has engaged in good faith with the City and surrounding neighborhoods, addressing key concerns including the Tualatin Road access—an element of the plan introduced not by LAM, but by the City itself. Their willingness to collaborate demonstrates the company's continued commitment to being a constructive community partner.

Beyond process, the economic benefits of the expansion are substantial. LAM anticipates creating between 400 and 600 new high-paying jobs in the region. These positions will not only contribute to Tualatin's economic vitality, but also support the region's housing sector by increasing demand for market-rate homes that match these income levels. That demand creates a powerful incentive to expand housing supply—critical in a time when undersupply is a primary driver of housing inflation.

Moreover, the economic ripple effects of these new jobs will be felt across the community. New families bring purchasing power to local businesses—coffee shops, restaurants, retailers, and service providers—as well as fresh energy and investment into civic life. These are the kinds of multiplier effects that foster healthy, resilient communities.

It's also important to recognize the strategic role this facility plays in Oregon's economy. Even without the proposed expansion, LAM is now the state's second-largest technology employer—and unlike many tech firms facing layoffs, LAM has continued to grow its workforce. In an

increasingly competitive and globally significant sector, that stability matters. With semiconductor manufacturing serving as Oregon's top traded-sector industry, continued support for companies like LAM is critical to preserving the state's economic leadership and long-term competitiveness.

Importantly, LAM is not asking for public funding. They are simply seeking the ability to complete a long-planned expansion that will allow them to keep doing what they've always done: employ highly skilled professionals, invest in their communities, and manufacture cutting-edge technology right here in Oregon. Their record speaks for itself—whether through support for local STEM education, initiatives to engage underrepresented groups in technology fields, or contributions to rental assistance programs in Tualatin.

In an era when it is increasingly difficult to identify corporations that lead with both conscience and competence, LAM continues to set a high bar. We urge the Planning Commission to recognize and support that leadership.

For these reasons, we respectfully encourage you to approve the proposed expansion.

Sincerely,



Isaac Ambruso
Deputy Director of Public Policy
Home Building Association of Greater Portland

ELECTRONIC WOOD SYSTEMS
SCANNING FOR QUALITY
NORTH AMERICA

Tualatin Planning Commission
10699 SW Herman Road
Tualatin, OR 97062

Keith Mays
23237 SW Pine Steet
Sherwood, Oregon 97140

August 12, 2025

Re: Letter of Support for Lam Research Industrial Master Plan
Application (IMP24-0001 & AR24-0002)

Dear Members of the Tualatin Planning Commission,

This letter expresses strong support for Lam Research's Industrial Master Plan (IMP24-0001) and Architectural Review (AR24-0002) applications.

The application process reflects collaboration and compliance. The plan shows close coordination with city staff, meeting all approval criteria. Lam Research is a long-standing part of Tualatin, with 23 years in the city. The company is Tualatin's largest employer and a major contributor to the local economy. In the context of workforce reductions in Washington County, Lam Research's growth plans are encouraging. Any city would be proud of their commitment to Tualatin.

The Planning Commission should support this application without any changes. It represents growth, job creation, and investment in Tualatin's future.

Sincerely,

Keith Mays, Washington County trade sector business owner

Mayor of Sherwood for 13 years

August 19, 2025

Tualatin Planning Commission
City of Tualatin
18880 SW Martinazzi Ave.
Tualatin OR 97062

Re: Support for Lam Research Industrial Master Plan Application

Dear Chair Beers and Commissioners,

On behalf of Intel Corporation, I am pleased to voice our strong support for Lam Research's proposed expansion in Tualatin.

Lam is a global leader in semiconductor manufacturing equipment and Oregon's largest semiconductor equipment company. For more than 20 years, they have been a vital part of our state's technology ecosystem—employing over 3,800 people, investing millions in the community, and partnering to advance STEM education and workforce development. The TUX Expansion Project will bring hundreds of millions in investment, create high-paying jobs, and strengthen the U.S. semiconductor supply chain. Lam's expanded R&D operations will accelerate innovation in chipmaking technologies at a time of unprecedented manufacturing complexity.

We urge the Planning Commission to approve Lam's application and help ensure Oregon remains a global hub for semiconductor innovation.

Sincerely,

Intel Corporation

Intel Corporation
5200 Elam Young
Pkwy
Hillsboro, OR 97124

From: Penny Jahraus
Director of Career Connected Learning
South Metro-Salem STEM Partnership
Oregon Institute of Technology
27500 SW Parkway Ave.
Wilsonville, OR 97070
penny.jahraus@oit.edu | 503-821-1166

8/20/2025

To: Keith Leonard
Industrial Master Plan/Architectural Review Hearing
Tualatin Planning Commission
18880 SW Martinazzi Ave.
Tualatin, OR 97062

Re: Public Comment in favor of Lam Research Expansion

Dear Tualatin Planning Commission Members,

I am submitting written comments in strong support of Lam Research's proposed expansion project.

I am Penny Jahraus, and I work as the Director of Career Connected Learning at the South Metro-Salem STEM Partnership at Oregon Tech in Wilsonville. I have had the privilege of collaborating with **Lam Research** since 2018, and I want to share how much they have meant to our regional workforce and education programs.

Lam Research has been a hands-on partner in our Career Connected Learning work since prior to me joining the STEM hub. They always show up! Every year they are at our STEM Industry-Educator Speed Networking event connecting with 50-60 educators, they have a table at Manufacturing Day at CCC helping thousands of students see career possibilities, and they have even opened their doors for educator tours. Those experiences ripple outward. Teachers bring back fresh ideas to their classrooms, and students start to picture themselves in real-world careers.

When I look at this expansion, it is not just about their business growing; it is about continuing a partnership that directly benefits students, teachers, and the community. Supporting this project is supporting the kind of community partnership and workforce development we want more of.

Thank you for your consideration.

Sincerely,

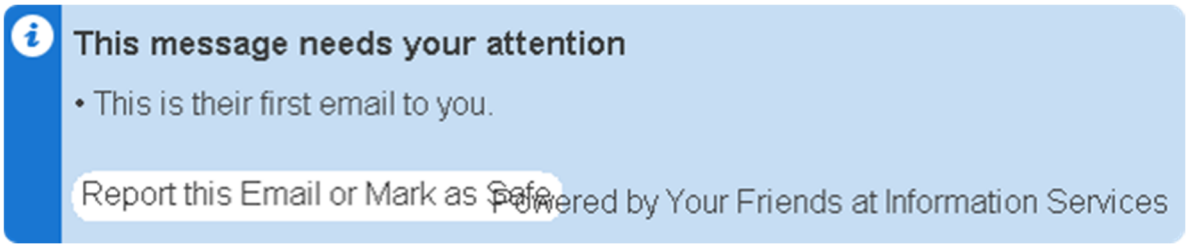
Penny M. Jahraus

From: Samantha Vandagriff
Sent: Wednesday, August 20, 2025 12:01 PM
To: Keith Leonard
Subject: FW: LAM RESEARCH HEARING TONIGHT

Here you go.

Samantha Vandagriff
Building Official
Phone: 503.691.3042
tualatinoregon.gov

From: Stu Peterson <stu@macadamforbes.com>
Sent: Wednesday, August 20, 2025 10:22 AM
To: Samantha Vandagriff <svandagriff@tualatin.gov>
Subject: LAM RESEARCH HEARING TONIGHT



To whom it may concern. I am writing to express my support for the expansion of Lam Research onto a properly zoned parcel. I understand there is significant neighborhood objection to this use. I am not going to waste yours or my time by spending a lot of words on how important an employer and source of income Lam is to the entire economic ecosystem in Oregon, and Tualatin in particular. At a time when our local economy is suffering from the decline of Intel, Nike and departures from the state of many employers, employers, and clean neighbors like Lam are priceless.

As regards to the neighborhoods concerns there are far more unsavory industrial neighbors than Lam. In fact the great preponderance of uses for this property would generate more noise and more traffic, especially truck traffic, than Lam. This property has been zoned for years and likely most of the objections are coming from people who moved into the area well after the zoning was designated.

I have been an industrial real estate broker for 43 years in the Portland/Vancouver markets and have focused most of my efforts on the I-5/217 corridor. I have represented all manner of industrial users in that time and I can

think of few industrial users of this size that offer a more benign, architecturally attractive neighbor than Lam.
I urge this project to move forward. The benefits to the community and the region far outweigh any perceived inconvenience.

Stu Peterson SIOR
Macadam Forbes
2 Centrepointe Drive Suite 500

Lake Oswego OR 97035
503 972 7288 direct
503 227 2500 office
503 730 2875 cell
Initial Agency Disclosure Packet

MACADAM FORBES
COMMERCIAL REAL ESTATE SERVICES



Testimony Submitted to the Tualatin Planning Commission
Re: Lam Research Industrial Master Plan

August 20, 2025

Chair and Members of the Planning Commission,

On behalf of the Washington County Chamber of Commerce, which represents more than 800 businesses and over 75,000 jobs across the region, we appreciate the opportunity to submit written testimony in support of LAM Research's Industrial Master Plan.

Lam's proposed expansion is about more than adding space; it reflects a commitment to global competitiveness, local prosperity, and long-term resilience for our regional economy. Washington County is a key part of Oregon's semiconductor corridor, and LAM serves as one of its anchors. Their work powers not only advanced technologies, but also careers, partnerships, and innovation that ripple across our community.

As Tualatin's largest employer, LAM has demonstrated what it means to be a deeply invested corporate citizen. This expansion aligns with the values we consistently hear from businesses: stability, opportunity, and shared growth. The project will create workforce opportunities across a wide range of skill levels—from engineers and technicians to logistics providers and local small business suppliers. These ripple effects are precisely the kind of economic impact that strengthens a region.

We are particularly impressed with LAM's collaborative approach. Their partnerships with local agencies, community organizations, and educational institutions demonstrate a commitment to investing in people as much as facilities. This approach ensures that the benefits of the expansion are broad-based and enduring.

For these reasons, the Washington County Chamber of Commerce strongly supports LAM Research's Industrial Master Plan and respectfully urges its approval. This project represents the kind of forward-looking investment that will strengthen both Tualatin and our regional economy for years to come.

Thank you for your consideration.

Sincerely,
Titonian Wallace, Sr.
Chair of the Board of Directors
Washington County Chamber of Commerce

EXECUTIVE COMMITTEE
President Nina Carlson
NW Natural

Vice President Gina Cole
Legacy Health

Secretary Carly Riter
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Treasurer Brantley Dettmer
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City of Hillsboro

Mayor Frank Bubenik
City of Tualatin

Councilor John Dugger
City of Beaverton

Council President Maureen Wolf
City of Tigard

WEA
WESTSIDE ECONOMIC ALLIANCE

August 18, 2025

To the Tualatin Planning Commission:

The Westside Economic Alliance (WEA) would like to express strong support for Lam Research and its proposed expansion in Tualatin. Lam Research is not only a global leader in wafer fabrication equipment and semiconductor manufacturing, but also one of the most significant employers and community partners in Washington County.

WEA represents a coalition of public sector jurisdictions, private sector employers and community benefit organizations, working collaboratively to advance balanced economic development and a thriving business community throughout the Tualatin Valley and the broader Westside of the Portland Metro Region.

Lam's story is well known with over four decades at the forefront of semiconductor innovation. Today, nearly every computer chip in the world is made with the use of Lam equipment. Here in Oregon, Lam has been an anchor employer in Tualatin since 2002, growing into the city's largest employer with more than 3,800 full-time employees and contractors. Beyond jobs, Lam has invested deeply in the community, supporting STEM education, advancing opportunities for underserved youth, and helping families access affordable housing.

The proposed Tualatin Expansion Project represents nearly **a $1 billion investment in our region**. The benefits of this project will be felt across Tualatin, Washington County, and the state of Oregon. It will create hundreds of millions of dollars in new economic activity, generate high-paying jobs for an estimated 600 additional workers, and strengthen Oregon's economy in an uncertain time. This investment will directly support local schools, parks, public safety services, and libraries through significant property tax contributions. It will also provide resources for road maintenance and traffic improvements, helping the community keep pace with growth.

The multiplier effects cannot be overstated. These new employees will purchase homes, pay income and property taxes, shop in local stores, and volunteer in their neighborhoods. Local suppliers and vendors will benefit from Lam's presence, amplifying the positive economic impact throughout the region.

Lam has worked closely with staff and agencies to submit a thorough and compliant application that meets all relevant approval criteria. With the support of Governor Kotek and the state legislature, this project reflects Oregon's commitment to strengthening its leadership in the semiconductor industry.

10220 SW Nimbus Ave, Suite K-12 | Tigard, Oregon 97223
Office 503-968-3100 | www.WestsideAlliance.org

The Westside Economic Alliance respectfully urges your support and approval of Lam Research's Industrial Master Plan application. **This project is more than an expansion of a facility, it is an investment in the future of Tualatin, Washington County, and Oregon**.

Thank you for your consideration.

Sincerely



Elizabeth Mazzara Myers
Executive Director

August 20, 2025

Windy Wahlke
Portland Community College
1626 SE Water Ave
Portland, OR 97214

As the director for PCC's Professional Development and Training, I am happy to provide this letter of support for Lam Research and the ongoing partnership we have developed over the years. Together, we have collaborated to deliver incumbent worker training in a variety of specialty areas, including Assembly to Test, Microscopy, and resume development. Seeing employees grow their skills and knowing we had a hand in that is exactly why we do this work.

While PCC does not take a position on land use policy, we do want to emphasize our support for industry partnerships such as this one. Collaborations with employers like Lam Research are essential to advancing workforce skills, building career opportunities, and ensuring that our region remains competitive in a rapidly evolving economy.

Our partnership has helped us connect education with real-world industry needs, and it's opened up meaningful opportunities for both your employees and our college community. We look forward to continuing our work with Lam and building on the strong foundation of partnership that has already proven to be so impactful.

Sincerely,

Windy Wahlke
Director
Professional Development and Training

Professional Development and Training

PCC is an Affirmative Action, Equal Opportunity Institution.

Our Mission is to coordinate a regional workforce system that supports individual prosperity and business competitiveness.

Executive Board

Elected Officials

Commissioner Vince Jones-Dixon
Multnomah County

Councilor Loretta Smith
City of Portland

Commissioner Pam Treece
Washington County

Chair James Paulson
Owner, JMPDX LLC

Vice-Chair Travis Stovall
Executive Director, eRep

Paul Brown
President, Cinder

David Fortney
Workforce Development Planner/Manager, PGE

Josh Hall
State Labor Liaison, Oregon AFL-CIO

Caryn Lilley
Controller/HR Director, KGW Media Group

www.worksystems.org

1800 SW First Ave.
Ste. 110
Portland, OR 97201

503.478.7300

August 15, 2025

Dear Members of the Planning Commission,

On behalf of the Workforce Development Board for Washington and Multnomah Counties, I am writing to express our strong support for Lam Research's application to expand in the City of Tualatin. Lam Research has been a cornerstone of our regional economy for more than 30 years, consistently providing family-wage jobs and creating opportunities for residents to build rewarding, long-term careers.

This expansion represents far more than new construction—it represents hundreds of high-quality jobs in advanced manufacturing and technology, sectors that are vital to the future competitiveness of our workforce and community. These are career-pathway jobs that provide stability, benefits, and advancement opportunities, ensuring that workers from diverse backgrounds have access to meaningful employment.

Lam Research has demonstrated a deep commitment to workforce development. The company partners with schools, training providers, and community organizations to prepare residents for careers in high-tech industries. Their investment in internships, apprenticeships, and skill-building programs has helped grow the local talent pipeline and inspired young people to pursue STEM-related careers. This new expansion will further strengthen these partnerships and expand opportunities for the next generation of workers.

In addition to the tax revenues and community benefits that will support schools, parks, and public safety, the workforce benefits of this project are profound. The expansion will help retain and attract talent, support upward mobility, and ensure that our region continues to compete on a global stage in advanced manufacturing.

For these reasons, I strongly urge you to approve Lam Research's application. It is an investment not only in our community's economy, but also in our workers, our students, and our shared future.

Thank you for your consideration.

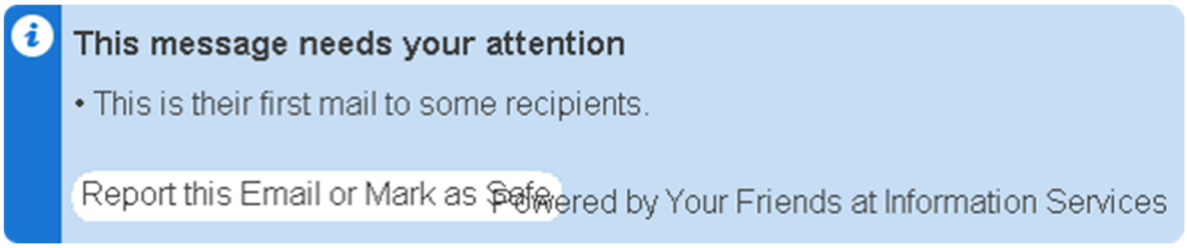
Sincerely,



Andrew McGough, Executive Director
amcgough@worksystems.org
503.478.7371

In Opposition

From: Al Smith <al@earnestimages.com>
Sent: Wednesday, August 13, 2025 10:59 AM
To: Ext - Planning; Frank Bubenik; Maria Reyes; Christen Sacco; Bridget Brooks; Cyndy Hillier; Octavio Gonzalez; Valerie Pratt
Subject: Tualatin Road



To Tualatin planning commission and all members of the Tualatin City Council,

My wife and live on SW Pawnee Path in the Riverpark CIO. We have been here for 40 years and have watched the traffic on Tualatin Road increase substantially over the years. We are concerned about the access to LAM from Tualatin Road. If you have measured the volume of traffic accessing Leveton from 125th in the last few years you have probably seen a big increase during the high traffic hours. We would prefer that this traffic not be directed onto Tualatin road.
While I understand that this request by LAM benefits LAM and their employees it does not benefit, in any way, the residents of our neighborhood. LAM has access from Herman and Leveton roads, the residents of Riverpark have only one access, Tualatin Road.

Thank you for your consideration.

Al Smith

From: Alex Simpson <asimps33@gmail.com>
Sent: Tuesday, August 12, 2025 12:16 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for your dedication and service to the community, and for your work to protect our quality of life. While development and corporate activities are essential to the vitality of our city, residential land uses must also be protected, both from an economic standpoint (property values) and from a quality of life standpoint (mental and physical health). In keeping with this mission, we are asking for your help in resolving Lam's noise pollution problem.

Multiple noise signatures have been identified emanating from Lam's campus, including clear tones that pulse, two-toned harmonics, and a low rumble that sounds like an old bomber airplane. The most distinctive sound is the high-frequency hiss from Lam's gas plant, clearly audible across Tualatin Road most nights.

We have brought this issue to the attention of the City Council, Police Department, Code Enforcement, Riverpark CIO, and Lam. Despite repeated requests for a solution, no meaningful changes have been made. When Tualatin's police officers have driven onto the Lam campus to investigate noise complaints, they have been chased down by Lam's security guards and asked to leave.

The Tualatin Noise Ordinance (1361-13) sets a city-wide limit of 50dB at night for residential areas, and the Tualatin Development Code (62.100) places even stricter limits on Manufacturing Park (MP) zoning, stating that "Such permitted uses must not cause objectionable noise". A noise study performed earlier this year at night by a licensed acoustical enginneer measured noise levels of 52dB at a private residence across the street from Lam's gas plant. Therefore, Lam's offsite noise impacts are in violation of both the Tualatin Development Code and the Tualatin Municipal Code.

Lam's noise pollution problem is not caused by daytime construction, backup beepers, or truck horns, but rather, by permanently-installed equipment that is part of Lam's physical plant. This equipment runs 24/7 and generates sound continuously. The sounds are most noticeable at night when background noise is low, and the location of sound impacts can vary depending on atmospheric conditions, especially temperature and wind direction. During southerly winds, Lam's noise signature can be heard more than a mile away.

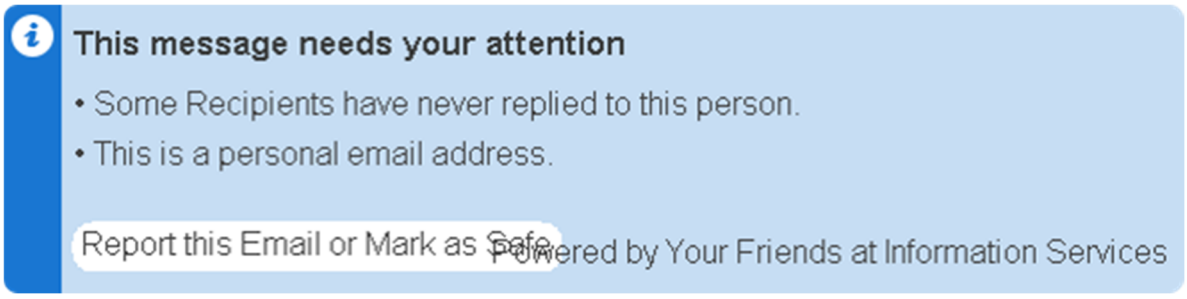
Manufacturing Park (MP) zoning serves as a buffer between heavy industry and residential areas. MP zoning calls for "limiting uses to those that are of a nature so as to not conflict with other industrial uses or surrounding residential areas." (TDC 62.100) Please consider this letter

as evidence that Lam's operations are, in fact, currently conflicting with surrounding residential areas.

In order to bring Lam's facility into compliance with the Tualatin Code, I request that Lam's off-site noise impacts be eliminated as part of the TUX project. It is absolutely critical to our quality of life that peace and quiet be restored to our neighborhoods. We ask the City of Tualatin to require Lam to prove their ability to eliminate offsite noise before approving the addition of any new noise sources on campus.

Thank you for your consideration.

From: Amy Williams <130.amy@gmail.com>
Sent: Tuesday, July 29, 2025 7:09 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan



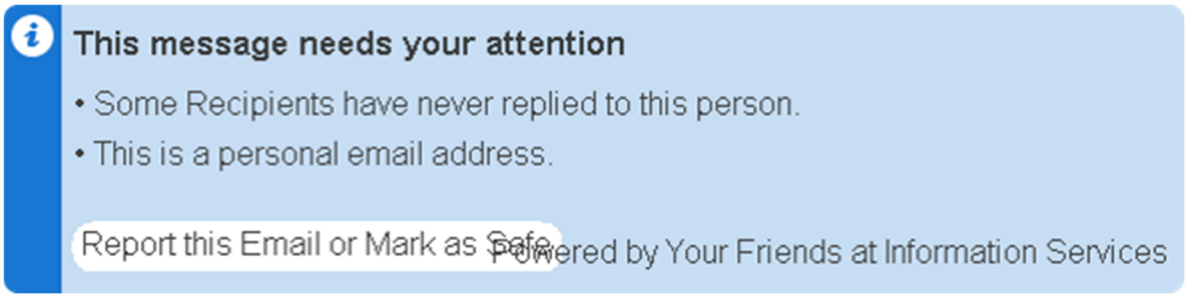
Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

From: Amy Williams <130.amy@gmail.com>
Sent: Tuesday, August 12, 2025 1:46 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts



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We have brought this issue to the attention of the City Council, Police Department, Code Enforcement, Riverpark CIO, and Lam. Despite repeated requests for a solution, no meaningful changes have been made. When Tualatin's police officers have driven onto the Lam campus to investigate noise complaints, they have been chased down by Lam's security guards and asked to leave.

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In order to bring Lam's facility into compliance with the Tualatin Code, I request that Lam's off-site noise impacts be eliminated as part of the TUX project. It is absolutely critical to our quality of life that peace and quiet be restored to our neighborhoods. We ask the City of Tualatin to require Lam to prove their ability to eliminate offsite noise before approving the addition of any new noise sources on campus.

Thank you for your consideration.

From: Arva Bartos <arva41@gmail.com>
Sent: Tuesday, August 12, 2025 2:32 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Noise Abatement re LAM

Subject: Lam Noise Impacts

Dear Tualatin Planning Commission and Architectural Review Board,

Multiple times per month, I am awakened by a deep, rumbling sound that is rather like a jet plane revving up to take off. Being a senior citizen, it is tough for me to get back to sleep. I have gone outside to try and identify the noise source, but it is impossible to pinpoint because it's completely surround-sound. Please note; my home is about a mile away from LAM, next to the Tualatin Country Club.

Thank you for your dedication and service to the community, and for your work to protect our quality of life. While development and corporate activities are essential to the vitality of our city, residential land uses must also be protected, both from an economic standpoint (property values) and from a quality of life standpoint (mental and physical health). In keeping with this mission, I am asking for your help in resolving Lam's noise pollution problem.

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permanently-installed equipment that is part of Lam's physical plant. This equipment runs 24/7 and generates sound continuously. The sounds are most noticeable at night when background noise is low, and the location of sound impacts can vary depending on atmospheric conditions, especially temperature and wind direction. During southerly winds, Lam's noise signature can be heard more than a mile away.

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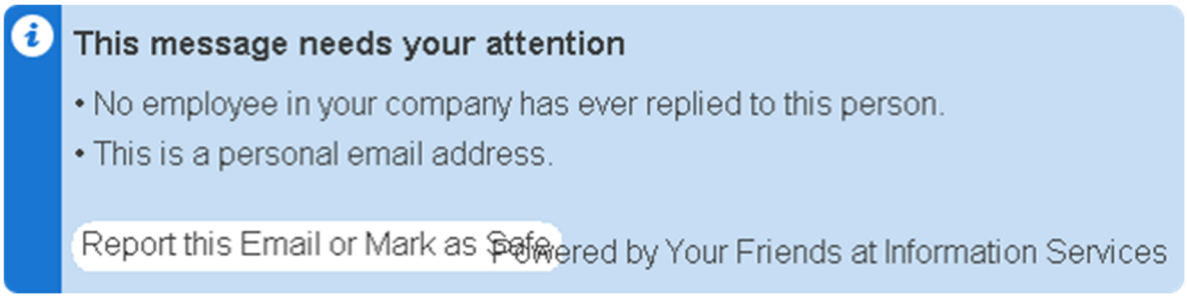
In order to bring Lam's facility into compliance with the Tualatin Code, I request that Lam's off-site noise impacts be eliminated as part of the TUX project. It is absolutely critical to our quality of life that peace and quiet be restored to our neighborhoods. We ask the City of Tualatin to require Lam to prove their ability to eliminate offsite noise before approving the addition of any new noise sources on campus.

Thank you for your consideration.
Arva Bartos
17750 SW Chippewa Trail
Tualatin, OR 97062

From: Ashley Isenberg <ashleymisenberg@gmail.com>
Sent: Monday, July 28, 2025 5:12 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan



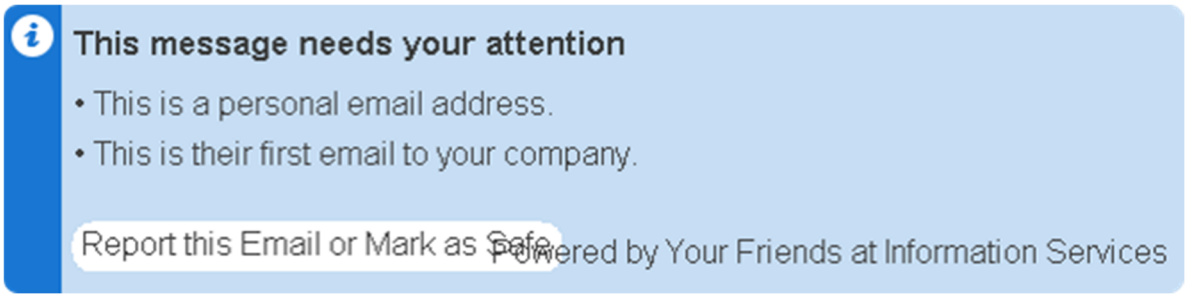
Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

From: Bob Anderson <banderson12@gmail.com>
Sent: Tuesday, July 29, 2025 8:30 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised LAM TUX site plan



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NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration

Bob Anderson
101910 SW Bannoch St.
Tualatin, OR

From: Brett Hamilton <brett@simple.be>
Sent: Tuesday, August 12, 2025 9:51 AM
To: Keith Leonard; Ext - Planning
Cc: Council; Outreach
Subject: Lam Noise Impacts

Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for your dedication and service to the community, and for your work to protect our quality of life. While development and corporate activities are essential to the vitality of our city, residential land uses must also be protected, both from an economic standpoint (property values) and from a quality of life standpoint (mental and physical health). In keeping with this mission, we are asking for your help in resolving Lam's noise pollution problem.

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We have brought this issue to the attention of the City Council, Police Department, Code Enforcement, Riverpark CIO, and Lam. Despite repeated requests for a solution, no meaningful changes have been made. When Tualatin's police officers have driven onto the Lam campus to investigate noise complaints, they have been chased down by Lam's security guards and asked to leave.

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as evidence that Lam's operations are, in fact, currently conflicting with surrounding residential areas.

In order to bring Lam's facility into compliance with the Tualatin Code, I request that Lam's off-site noise impacts be eliminated as part of the TUX project. It is absolutely critical to our quality of life that peace and quiet be restored to our neighborhoods. We ask the City of Tualatin to require Lam to prove their ability to eliminate offsite noise before approving the addition of any new noise sources on campus.

Thank you for your consideration,
Brett Hamilton

From: Brett Hamilton <brett@simple.be>
Sent: Wednesday, August 13, 2025 11:02 AM
To: Keith Leonard; Ext - Planning
Cc: Council
Subject: Lam Noise Study
Attachments: STR2025081301.pdf

Dear Tualatin Planning Commission and Architectural Review Board,

In preparation for the upcoming TUX project land use hearings, please find attached the acoustical engineer's report on the sound impact from Lam Research on a nearby residential property.

Sincerely, Brett Hamilton

A ACOUSTICS
9324 SW CAMILLE TER.
PORTLAND, OR. 97223 - 7043
(503) 977 - 2690
elki@aacoustics.com
www.acousticalengineering.net

August 13, 2025

Brett Hamilton
11430 SW Kalispell St
Tualatin OR 97062
Brett Hamilton <brett@simple.be>
503-803-7609

Re: Evaluation of sound impact from the Lam Research plant at Deborah Anderson Home located on 11045 SW Tualatin Road Tualatin Oregon 97062.

At the request of Brett Hamilton*, A Acoustics* visited the Deborah Anderson home on 10:00 PM March 30, 2025 to evaluate the plant noise. Please see Google site map below with the red dot showing the sound recording location.



Sound Pressure Level (SPL) Recording
The following instruments were used for the recordings:

- Precision sound level meter and analyzer, General Radio Precision Sound Level Meter (SLM) and analyzer (Type, I) Model 1982 Serial #0657982
- Sound level calibrator, ACO Pacific, Inc., Model 511E
- Marantz Professional Solid-State Recorder MPD660

The recording was made with General Radio and recorded in Marantz Recorder. The Sound Pressure level meter was calibrated on the site with a hand-held calibrator before the readings were made.

The sound data was analyzed using SpectraPlus-SC software.

During the recording it was drizzling with no wind. We analyze the data when there was no traffic on SW Tualatin Road.

Finding
The sound recorded was 52 dBA and there was sound peak at 175 Hz and 350 Hz.

Please call me if you have any question.

Sincerely,

A ACOUSTICS



EIki M. Lahav P.E.

From: Brett Hamilton <brett@simple.be>
Sent: Monday, August 18, 2025 3:34 PM
To: Keith Leonard; Ext - Planning
Cc: Council; Outreach
Subject: Lam 108th Ave Proposed Entrance

Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

Lam's proposed entrance on 108th fails three of the new driveway approach criteria in TDC 75.020.5: "(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

Lam's traffic study shows that the Hazelbrook Road onramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volumes from this proposed 108th entrance.

Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

From: Brett Hamilton <brett@simple.be>
Sent: Tuesday, August 12, 2025 11:39 AM
To: Keith Leonard; Ext - Planning
Cc: Council
Subject: Lam Noise Documentation
Attachments: WCC2025081201.pdf; STR2025081202.pdf

Dear Tualatin Planning Commission and Architectural Review Board,

Please find attached the following documentation for Lam's upcoming land use hearings:

1) Record of noise complaints that I reported to Washington County Non-Emergency dispatch during late 2024.

2) Text messages to and from Chad Oyler, Director of Environmental, Health, and Safety at Lam Research, Tualatin Oregon from January 2023 through February 2025.

Sincerely, Brett Hamilton

Text Message • SMS
Jan 27, 2023 at 4:17 PM

Hi Chad, Brett here (neighbor on Kalispell Street. The noise profile is pretty strong right now.

we've noticed it most nights this week. it's been pretty consistent.

Is it the ~500hz sound or the hissing?

the hissing and the low ~250hz are consistent. the ~500hz has been intermittent and mostly not present

500hz is audible now. comes and goes

512Hz very clearly audible now

Do you have an idea of about how long it lasts for? I have someone checking it out now.

This really helps so I appreciate the info!

i think it's all the time.

just depends on the wind if we hear it at the house or not

wind is out of the south at 5mph right now which seems ideal for the sound to carry

Got it. That helps too

thanks!

one more signature, the 512 Hz tone fades in and out at about 145 beats per minute. pulsing. maybe some kind or harmonic with an enclosure?

Jan 27, 2023 at 5:57 PM

That's quite a ripple. Our team has some things they are going to zero in on. Thank you. I'll check in with you next week. If anything changes, new sounds or

are going to zero in on. Thank you. I'll check in with you next week. If anything changes, new sounds or something let me know

Sounds good. Thanks to you and your team for working on this. Much appreciated. Will do. Have a great weekend.

Feb 9, 2023 at 9:00 AM

Ok I have an update. We are going to make a change to our nitrogen plant in the next 2 weeks. We believe this will quiet it down quite a bit. We are also going to be planting trees along our berm to grow into a sound barrier. I know that is a long term solution but everything helps.

I'll let you know when the plant modification is done and we'll monitor afterwards.

Feb 9, 2023 at 1:31 PM

Thanks Chad for the update that sounds great. Do you think the nitrogen plant is involved with all of the sounds we've ID'd or just the hissing?

Feb 9, 2023 at 3:20 PM

I'm hoping both. It is the only distinguishable sound we can detect.

Mar 2, 2023 at 9:54 AM

Good morning. The 512Hz sound has been pretty loud Tuesday night. and last night through to this morning.

i'm guessing due to cold temps and south wind

Mar 3, 2023 at 7:55 AM

Good morning. I wasn't able to meet with the facilities person in status of the work they have been doing. I should he able to connect with him today.

Mar 23, 2023 at 10:15 AM

Good Morning Chad. We've got a really solid noise

Good Morning Chad. We've got a really solid noise signature today. Probably due to wind from the south at 16 mph.

Mar 23, 2023 at 11:46 AM

Possibly. We are still working on the plant but I think the big noise improvements are done at this point. We still plan to do the additional trees but that'll is long term. I'll have facilities look into a sound wall where we generate nitrogen.

It does seem to be really tied to wind carrying sound though huh.

For today how long would you say?

I think it is just where we make nitrogen but if there are truck offloads happening we need to take different steps they only make elevated noise at the end of the offload for a few min.

Today I first noticed it around 9am. I think that was when the wind picked up this morning. It's been continuous since then. I don't think trees will reduce the impact if the source of the sound is up high like a roof top air handler. There are lots of trees between us and the facility. I think it's going over/through them.

But yes it seems very much a wind direction issue.

All of the sounds we're hearing from the facility seem to be continuously generated.

It's is possible at some point I'd love to pinpoint the source of the noise because it might not be what we think it is

The only way I can think to do that is, on a day when we can her the sound clearly, to turn off a suspected source and see if the sound stops or not.

if the sound continues then we know that wasn't the source. and can turn it back on right away

source. and can turn it back on right away

but i imagine some of the suspected sources are things that •need• to run all the time

Mar 23, 2023 at 3:50 PM

They do. air systems and the nitrogen plant are in part to support safety requirements. Shutting them down is a major thing.

Do you work typical business hours? Maybe we can meet to review together with our facilities manager.

Typical hours yes but I work from home and my schedule is very flexible.

I'd be glad to meet.

Ok. I'll see what works best on our end

Apr 12, 2023 at 9:06 AM

Hi Chad, We heard a new sound last night, a low frequency rumble. We first noticed it around 8pm. I took a midnight drive to locate it, and it's coming from Lam. Any equipment changes in the past few days that might explain it?

Nothing that I'm aware of. Was it more than a few minutes. I need to set up our meeting. I'll confirm time this week.

Thanks. For sure it was continuous from at 11:20pm till 12:30am when I fell asleep. We heard it earlier, just not sure if it was continuous then.

Apr 12, 2023 at 10:55 AM

Are you available at 1pm on monday?

at 1:10

Apr 12, 2023 at 2:34 PM

Ok. Let's plan to meet here at our lobby then. I'll

Ok. Let's plan to meet here at our lobby then. I'll confirm the time with our facilities manager.

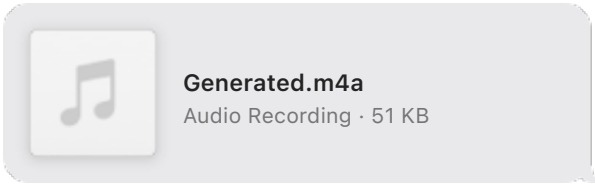
Apr 12, 2023 at 4:03 PM

Sounds good. Thanks.

Apr 18, 2023 at 9:05 AM

Hi Chad, Thanks for meeting with my yesterday. I'm glad to get a better sense of what is going on. I was wrong about the beat frequency of the 512 Hz tone. I measured it last night, it's not 5 beats a second, but more like 1.95 Hz or 117 beats per minute.

Here's a tone I generated online that's pretty close to what we hear.



Not Delivered

Oh shoot. The audio file didn't go through. I'll upload it to the web and send you the URL

No worries. It will be interesting to hear what you hear at your house

turns out the audio file is really small, so i just attached it to an email.

Ok

Apr 26, 2023 at 3:02 PM

Hi Brett, we were able to idle our nitrogen plant today for a few days to do some work. Let me know if you hear the same sound. I'll let you know when it comes back on.

oh super. will do. thanks!

.

Apr 27, 2023 at 7:39 AM

Well that was a shorter time frame than I had expected. It is back up and running now.

ok. was it up amd running last night?

Yes it was back up around 10pm. I originally thought it would be offline for a few days.

that's consistent with what i heard. the wind was from the north yesterday eve so it was quiet at our house. i went out just after 10pm to drive downwind and take a listen. heard the same sounds as typical, but the scrubber fans were slightly higher freq than normally are.

thanka for letting me know about the idle

May 4, 2023 at 9:21 AM

Good Morning. We've had our windows open the past few days and have noticed a clean 520Hz tone with a beat frequency around once every two seconds. One time it was so loud my wife asked "Is that an alarm?"

Ok. I don't know of anything unusual over the past few days but I'll check.

Thanks. I'm guessing it's the scrubber fans running slightly faster than they have in the past?

May 14, 2023 at 11:19 PM

Hi Chad, Sorry to bug you at night. There is a new loud constant tone. About 350Hz. Sounds like by the nitrogen plant. Just started a few minutes ago

Loudest thing we've ever heard from Lam.

I think it stopped

May 15, 2023 at 5:45 AM

May 15, 2023 at 5:45 AM

I woke up at 5:30 to a different but similar noise 343Hz confirmed just now it's coming from the nitrogen plant area.

Interesting. I'll check what was going on last night.

Thanks

May 16, 2023 at 10:02 AM

We are putting in some noise mitigation next week. We'll see what it does. But I think every improvement helps.

That sounds great. Thank you!

Curious was there something different going on Sunday night, or was it just a bad night for sound?

May 18, 2023 at 6:35 AM

Good Morning. There's a super clear 522 Hz tone with a slow, irregular beat this morning. South wind 4mph. I think it woke me up. Windows are open. Surprised how loud it is in warm weather too. Sounds a bit like an alarm clock. Probably is the scrubber fans.

I'm going to head over through the neighborhood and see what I hear. Thanks for the heads up.

Thanks to you too!

interestingly it's easier to hear inside than outside. maybe because less background noise inside? for some reason the tone is less audible inside now than it was earlier.

I'm going to datalog the fans and N2 plant again now that we are through a bunch of work on the N2 system. I hear it. But I think given the intensity, it may still be the N2. When I get close to the scrubber fans then back out to the property line I can't hear them with my ears. Or maybe the N2 system is just drowning it out. I can

Or maybe the N2 system is just drowning it out. I can hear that anywhere on the north side.

Oh interesting. Thanks!

it's audible in my back yard intermittently. both the N2 sounds and the other tone

Jun 8, 2023 at 8:26 PM

We've got an audible 510 Hz tone with a beat in our backyard right now. Comes and goes. Plus some N2 sounds. The 510 tone was pretty loud last night and this morning.

Jun 8, 2023 at 9:34 PM

Ok I was going to check with you yesterday
Our newest N2 compressor has been down for a while. It just came back up yesterday.

We have new trees in around it. I'm looking at other effective sound dampening methods.

Interesting. Thanks.

Jun 23, 2023 at 10:00 AM

We have a clear 517Hz tone today with a beat. Audible upstairs, downstairs, and in the back yard.

Sep 11, 2023 at 8:30 AM

Hi Chad, as the weather cools down, the 520Hz tone with a beat is becoming louder again. We realized what it reminds us of: a digital beeping alarm clock. Not the kind of thing you want to hear at night when you are trying to go to sleep.

No it's not. I know it's not a fast solution but we are looking implementing more sound prevention to reduce as much sound from being heard off site as possible. We will improve this.

Sep 11, 2023 at 4:04 PM

Sep 11, 2023 at 4:04 PM

Thanks for your understanding and for your efforts towards improvements.

Dec 4, 2023 at 9:35 AM

Hi Chad, I hope you are well. We had a loud weekend here. Friday night especially so, wind was from the south over 10mph, so that doesn't help. There is a new primary frequency at 175Hz and a harmonic at 354Hz. The 175Hz seems louder than anything we've heard previously. I compared to the sounds onsite Sunday morning and they matched. Have there been any changes that could explain this?

Dec 4, 2023 at 11:47 AM

Hi Brett, Im not aware of any changes but will investigate. We are still planning improved sound reduction. Did you notice where it was strongest.

off the NE corner of building D

kinda lined up with that alley between buildings E and D

That is odd. We've modified our system a few months ago to minimize how much we run chillers. That should result in reduced noise, not more. How did the nitrogen gas plant sound?

Oh interesting. The 175Hz sound has been pretty constant since Friday, but not sure how much of that is due to a steady wind pattern. The nitrogen gas plant sounds like white noise when onsite, which is good, and I don't think it carries too far. I wasn't listening for it across the street tho, cuz it's not what we're hearing at our house. I'll give it a listen from our neighborhood entry next time I'm out.

Jan 19, 2024 at 1:49 PM

Hi Chad, The neighbors who live near Grimm's Fuel Compost are trying to get the word out about a Metro license renewal and a public comments period that is

license renewal and a public comments period that is open. Wondering if it would be possible for us to put up some yard signs on Lam property on 124th between Tualatin Road and Highway 99 until the end of the month?

Jan 19, 2024 at 3:54 PM

Hi Brett. That isn't our property it is owned by another company. We just lease a few floors.

Ok, Good to know! Thanks.

Mar 4, 2024 at 9:03 AM

Hi Chad, The sound has been loud the past few days. This weekend was probably the worst sofar. Could hear it throughout our house. The pulsing 350Hz tone woke me up both mornings. It was going day and night. Kept me awake last night. Wind was steady out of the south the whole time I think.

Hi Brett. It is amazing what wind does for sound. Aside from the trees planted, we are pulling sound protection into our construction designs. It is in progress but moves slowly.

Apr 25, 2024 at 5:04 PM

Hi Chad, Just a head's up that the 520 Hz tone is loud enough that I'm hearing it in my garage. Ground level, no windows.

Is it still happening or was it for a set period of time?

It was audible for most of the afternoon. I've got some water running right now so can't tell if it's still going or not.

It's still going now.

the sound that is.

Ok I'm investigating

Ok I'm investigating

Thanks.

Apr 30, 2024 at 9:48 AM

It's been loud over the weekend plus yesterday and today. Probably because the wind is steady from the south at 10+ mph and chilly?

Yeah the wind definitely affects it. I haven't found anything different. I will be happy when we get new sound screens uo

Up

Tue, Dec 3 at 9:32 AM

Hi Chad, We were hearing some new harmonics last night, including a really low frequency around 47Hz. I think it's the first time we've heard that low frequency. Wondering if anything has changed onsite that might explain this? There were four harmonics. Each was about one octave lower than the next. 347/170/84/47Hz

Tue, Dec 3 at 11:59 AM

That's interesting. How long did the low frequencies last for? No changes that would do that. I don't think we have anything big enough to push that low a frequency that far.

Not sure how long it lasted. We noticed it around 10:30pm until falling asleep around 11:15pm.

Any recent changes that could account for the other, higher, harmonic frequencies?

Tue, Dec 3 at 2:00 PM

I am checking to see if anything has happened that I'm not aware of. But nothing obvious or significant.

Ok. Thanks!

Thu, Jan 30 at 8:38 AM

Thu, Jan 30 at 8:38 AM

Hi Chad. We've noticed a major decrease in sound the past couple weeks but it's back last night and today. any changes onsite that could explain it, or just the weather?

Hi Brett. I've been traveling all week but am checking with the team on site.

Thu, Jan 30 at 11:55 AM

I think it might have been a wind shift. Wind has been N and NW recently (including last night) but today it's from the South. I wonder if the local actual wind last night was different than what the weather app said. Any clues from on site?

No, we haven't had any change in operations.

Ok thanks.

Fri, Jan 31 at 9:54 AM

Just an update. Today the wind is South 180° at 8 mph gusting to 26. The fan noise is so loud I can hear it in my garage with the doors closed.

Fri, Jan 31 at 3:37 PM

That's unusual. I'll ask facilities to see if something is changing. We have every parameter monitored so of something was off we would know right away.

Tue, Feb 4 at 8:52 AM

The low frequency 88Hz was back last night along with its 344Hz harmonic, both of which we have heard together before.

Tue, Feb 4 at 11:56 AM

Hmm. I did double check with facilities. They confirmed no changes and everything is running normally.

Washington County Consolidated Communications Agency
5900 NE Pinefarm Court, Hillsboro, Oregon 97124
503-690-4911 ext 3280

CERTIFICATE OF AUTHENTICITY

Pursuant to the State of Oregon public records laws and administrative rules, the following public records were compiled and/or reproduced on 12/27/2024 as requested by and released to:

Name: Brett Hamilton
Agency:
Street Address: 11430 SW Kalispell St
City, State Zip: Tualatin, OR 97062
Phone: 503 803 7609
Email: brett@simple.be

~ PUBLIC RECORDS ~

Request Type: Other Search Report
Delivery Method: Email - electronic pdf file & mp3
Reference #:

Record Type	CAD Incident# Search Criteria	Inc. Date	Audio Description	Begin Time/Date	End Time/Date	Search Results
Other Search Report	503 803 7609			10/27/2024	12/6/2024	6

1 - Total Records

The public records listed above are certified to be a true and accurate copy of the original. WCCCA is a public safety answering point (PSAP) for emergency calls originating within a 9-1-1 service area and recognized by the State of Oregon.

Regarding telephone calls: At the date and time reference above, a telephone call was processed by WCCCA or made by WCCCA. During the full duration of the call, the call was recorded by a digital logging recorder.

Regarding radio traffic: At the date and time referenced above, radio traffic was processed by WCCCA. The radio traffic was relayed via WCCCA's emergency communications radio system. During the full duration of the radio traffic, the radio traffic was recorded by a digital logging recorder.

The operator of the Equature DSS digital logging recorder was competent to transfer the recording to the format provided. If any redactions were made to the recordings to protect confidential data obtained from the Oregon Law Enforcement Data Systems (LEDS) or Protected Health Information, the redactions would be indicated by a steady digital tone placed on the recording. Otherwise, the public record provided accurately reflects the original call and no changes, additions, or deletions were made.

The public record provided is an accurate rendition of the telephone call and/or radio traffic placed at the time and date set forth above.

Date Received: 12/6/2024
Date Completed: 12/27/2024
Request Number: 24-2888
Request Status: COMPLETED

Processed By: Krista Tate

Phone History

Search Parameter: 5038037609

IncidentNumber	Problem	ResponseDate	CallerPhone	CallBackPhone	Address	City	Name	Disposition
WP243010290	NOI - NOISE COMPLAINT	10/27/2024 09:49:05		503-803-7609	11361 Sw Leveton Dr	TUALATIN	BRETT HAMILTON	W1 - ASSIGNMENT COMPLETED
WP243060035	NOI - NOISE COMPLAINT	11/01/2024 01:00:04		503-803-7609	11361 Sw Leveton Dr	TUALATIN	BRETT HAMILTON	W1 - ASSIGNMENT COMPLETED
WP243160888	NOI - NOISE COMPLAINT	11/11/2024 20:24:56		503-803-7609	11361 Sw Leveton Dr	TUALATIN	BRETT HAMILTON	W1 - ASSIGNMENT COMPLETED
WP243210830	NOI - NOISE COMPLAINT	11/16/2024 20:41:50		503-803-7609	11361 Sw Leveton Dr	TUALATIN	HAMILTON, BRETT	W1 - ASSIGNMENT COMPLETED
WP243220790	NOI - NOISE COMPLAINT	11/17/2024 20:57:11		503-803-7609	11361 Sw Leveton Dr	TUALATIN	BRETT HAMILTON	W1 - ASSIGNMENT COMPLETED
WP243220867	FOL - FOLLOW UP	11/17/2024 22:55:06		503 803 7609	11361 Sw Leveton Dr	TUALATIN	BRETT HAMILTON	W3 - PERSON ADVISED/REFERRED

From: Bridgette Garza <bridgettegarzafit@gmail.com>
Sent: Monday, August 4, 2025 7:18 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Bridgette Garza

From: Camille Herr <camilleherr3@gmail.com>
Sent: Friday, August 15, 2025 7:33 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for your dedication and service to the community, and for your work to protect our quality of life. While development and corporate activities are essential to the vitality of our city, residential land uses must also be protected, both from an economic standpoint (property values) and from a quality of life standpoint (mental and physical health). In keeping with this mission, we are asking for your help in resolving Lam's noise pollution problem.

Multiple noise signatures have been identified emanating from Lam's campus, including clear tones that pulse, two-toned harmonics, and a low rumble that sounds like an old bomber airplane. The most distinctive sound is the high-frequency hiss from Lam's gas plant, clearly audible across Tualatin Road most nights.

We have brought this issue to the attention of the City Council, Police Department, Code Enforcement, Riverpark CIO, and Lam. Despite repeated requests for a solution, no meaningful changes have been made. When Tualatin's police officers have driven onto the Lam campus to investigate noise complaints, they have been chased down by Lam's security guards and asked to leave.

The Tualatin Noise Ordinance (1361-13) sets a city-wide limit of 50dB at night for residential areas, and the Tualatin Development Code (62.100) places even stricter limits on Manufacturing Park (MP) zoning, stating that "Such permitted uses must not cause objectionable noise". A noise study performed earlier this year at night by a licensed acoustical enginneer measured noise levels of 52dB at a private residence across the street from Lam's gas plant. Therefore, Lam's offsite noise impacts are in violation of both the Tualatin Development Code and the Tualatin Municipal Code.

Lam's noise pollution problem is not caused by daytime construction, backup beepers, or truck horns, but rather, by permanently-installed equipment that is part of Lam's physical plant. This equipment runs 24/7 and generates sound continuously. The sounds are most noticeable at night when background noise is low, and the location of sound impacts can vary depending on atmospheric conditions, especially temperature and wind direction. During southerly winds, Lam's noise signature can be heard more than a mile away.

Manufacturing Park (MP) zoning serves as a buffer between heavy industry and residential areas. MP zoning calls for "limiting uses to those that are of a nature so as to not conflict with other industrial uses or surrounding residential areas." (TDC 62.100) Please consider this letter

as evidence that Lam's operations are, in fact, currently conflicting with surrounding residential areas.

In order to bring Lam's facility into compliance with the Tualatin Code, I request that Lam's off-site noise impacts be eliminated as part of the TUX project. It is absolutely critical to our quality of life that peace and quiet be restored to our neighborhoods. We ask the City of Tualatin to require Lam to prove their ability to eliminate offsite noise before approving the addition of any new noise sources on campus.

Thank you for your consideration.

Camille

From: Candis Bayne <Candis@afpsys.com>
Sent: Tuesday, August 12, 2025 9:46 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for your dedication and service to the community, and for your work to protect our quality of life. While development and corporate activities are essential to the vitality of our city, residential land uses must also be protected, both from an economic standpoint (property values) and from a quality of life standpoint (mental and physical health). In keeping with this mission, we are asking for your help in resolving Lam's noise pollution problem.

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We have brought this issue to the attention of the City Council, Police Department, Code Enforcement, Riverpark CIO, and Lam. Despite repeated requests for a solution, no meaningful changes have been made. When Tualatin's police officers have driven onto the Lam campus to investigate noise complaints, they have been chased down by Lam's security guards and asked to leave.

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Thank you for your consideration.

Sent from my iPad

Candis Bayne

From: Carrie Knappenberger <carrie.knappenberger1@gmail.com>
Sent: Tuesday, August 12, 2025 2:26 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance

Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

Lam's proposed entrance on 108th fails three of the new driveway approach criteria in TDC 75.020.5: "(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

Lam's traffic study shows that the Hazelbrook Road onramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volumes from this proposed 108th entrance.

Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Carrie Knappenberger
10575 SW Lucas CT.
Tualatin, OR. 97062

From: Carrie Knappenberger <carrie.knappenberger1@gmail.com>
Sent: Tuesday, August 12, 2025 2:25 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for your dedication and service to the community, and for your work to protect our quality of life. While development and corporate activities are essential to the vitality of our city, residential land uses must also be protected, both from an economic standpoint (property values) and from a quality of life standpoint (mental and physical health). In keeping with this mission, we are asking for your help in resolving Lam's noise pollution problem.

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Thank you for your consideration.

Carrie Knappenberger
10575 SW Lucas Ct
Tualatin, OR. 97062

From: Carrie Mathis <camathis86@gmail.com>
Sent: Tuesday, August 12, 2025 11:01 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for your dedication and service to the community, and for your work to protect our quality of life. While development and corporate activities are essential to the vitality of our city, residential land uses must also be protected, both from an economic standpoint (property values) and from a quality of life standpoint (mental and physical health). In keeping with this mission, we are asking for your help in resolving Lam's noise pollution problem.

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We have brought this issue to the attention of the City Council, Police Department, Code Enforcement, Riverpark CIO, and Lam. Despite repeated requests for a solution, no meaningful changes have been made. When Tualatin's police officers have driven onto the Lam campus to investigate noise complaints, they have been chased down by Lam's security guards and asked to leave.

The Tualatin Noise Ordinance (1361-13) sets a city-wide limit of 50dB at night for residential areas, and the Tualatin Development Code (62.100) places even stricter limits on Manufacturing Park (MP) zoning, stating that "Such permitted uses must not cause objectionable noise". A noise study performed earlier this year at night by a licensed acoustical enginneer measured noise levels of 52dB at a private residence across the street from Lam's gas plant. Therefore, Lam's offsite noise impacts are in violation of both the Tualatin Development Code and the Tualatin Municipal Code.

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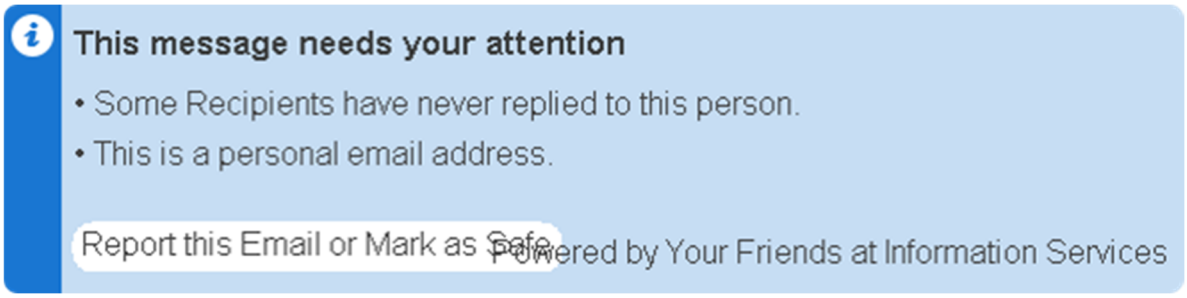
as evidence that Lam's operations are, in fact, currently conflicting with surrounding residential areas.

In order to bring Lam's facility into compliance with the Tualatin Code, I request that Lam's off-site noise impacts be eliminated as part of the TUX project. It is absolutely critical to our quality of life that peace and quiet be restored to our neighborhoods. We ask the City of Tualatin to require Lam to prove their ability to eliminate offsite noise before approving the addition of any new noise sources on campus.

Thank you for your consideration.

Sent from my iPhone

From: Cathy Baedor <cjbaedor@hotmail.com>
Sent: Sunday, August 17, 2025 6:25 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts



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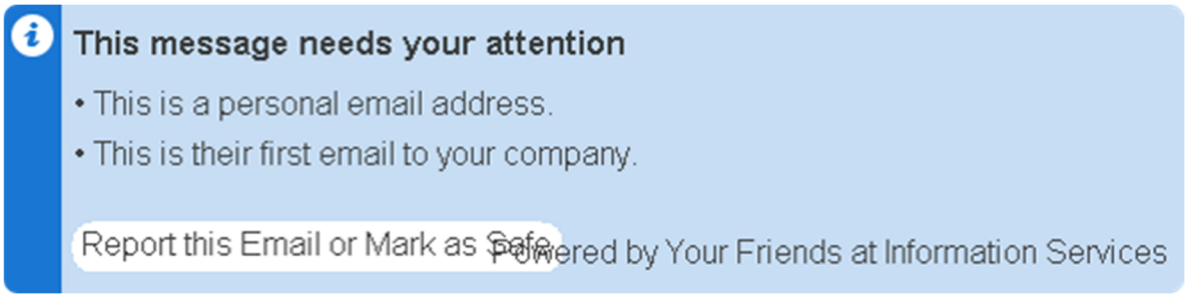
Thank you for your consideration.

From: cleverdella1826@gmail.com
Sent: Wednesday, August 6, 2025 6:23 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan



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NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Cleve Rolfe

From: clint ackerman <hockey535353@outlook.com>
Sent: Monday, July 28, 2025 8:01 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

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NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideratin

Think don't be like Trump and kiss the ass of big business. You elected to represent the will of the people.

Sent from my iPhone

From: clint ackerman <hockey535353@outlook.com>
Sent: Tuesday, August 12, 2025 11:49 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for your dedication and service to the community, and for your work to protect our quality of life. While development and corporate activities are essential to the vitality of our city, residential land uses must also be protected, both from an economic standpoint (property values) and from a quality of life standpoint (mental and physical health). In keeping with this mission, we are asking for your help in resolving Lam's noise pollution problem.

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Thank you for your consideration

DO THE JOB YOU WERE HIRED TO DO
DONT BE LIKE TRUMP

Sent from my iPhone

Keith Leonard

From: Dan Wilson-Fey <dwilsonfey@gmail.com>
Sent: Wednesday, August 13, 2025 11:32 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

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Thank you for your consideration.

Dan Wilson-Fey
dwilsonfey@gmail.com
17640 SW Fulton Dr.
Tualatin, OR 97062

Keith Leonard

From: Dan Wilson-Fey <dwilsonfey@gmail.com>
Sent: Wednesday, August 13, 2025 11:31 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance

Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

Lam's proposed entrance on 108th fails three of the new driveway approach criteria in TDC 75.020.5: "(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

Lam's traffic study shows that the Hazelbrook Road onramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volumes from this proposed 108th entrance.

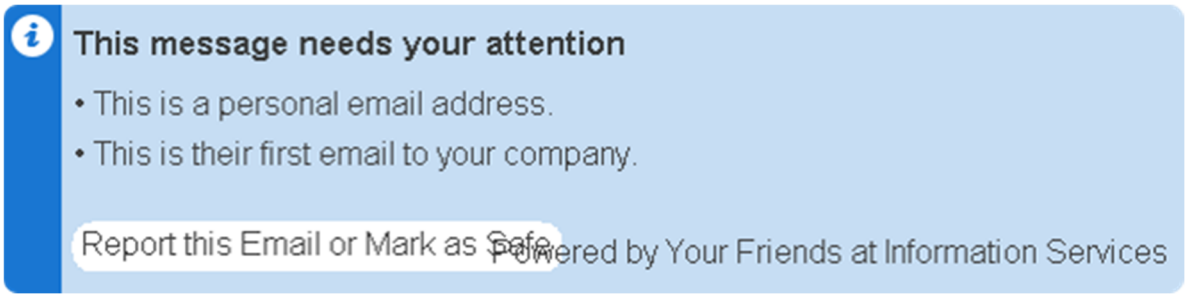
Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Dan Wilson-Fey
dwilsonfey@gmail.com
17640 SW Fulton Dr.
Tualatin, OR 97062

From: daniel_affonso <daniel_affonso@comcast.net>
Sent: Saturday, August 16, 2025 4:22 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance



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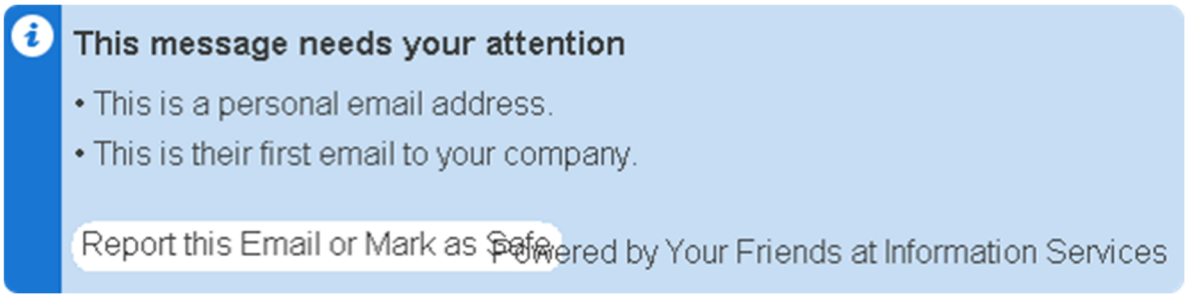
NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Sent from Samsung Galaxy smartphone.

From: Dara Grey <grey.dara@gmail.com>
Sent: Monday, August 11, 2025 12:53 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Comment on Revised Lam TUX Site Plan



Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's updated TUX proposal. Although I don't live in Tualatin, I've driven Tualatin road at different times over the years and definitely think that it does NOT need more traffic, especially during commute hours and especially since there's another path available for Lam's employee traffic instead (Leveton drive and Herman road). Please don't approve Lam's proposal to dump more congestion and pollution onto Tualatin road. It's unnecessary and will negatively impact Lam's local neighbors as well as anyone else trying to drive Tualatin road.

While I appreciate the work that has been done to eliminate the employee entrance on Tualatin road at SW 115th Ave and maintain the Leveton driveway, I add my voice to the community opposition to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin road.

Thank you for your consideration,
Dara Grey
Newberg

From: Dave McKevitt <dmckevitt@silkinmanagementgroup.com>
Sent: Monday, July 28, 2025 8:45 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

Dear City of Tualatin,

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NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

- Dave McKevitt

From: Dax Aiello <dax.aiello@yahoo.com>
Sent: Wednesday, August 6, 2025 4:16 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

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Thank you for your consideration.

Sent from my iPhone

From: Deano Sandoval <deano.pdx@gmail.com>
Sent: Wednesday, August 13, 2025 8:58 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

Dear Tualatin Planning Commission and Architectural Review Board,

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We have brought this issue to the attention of the City Council, Police Department, Code Enforcement, Riverpark CIO, and Lam. Despite repeated requests for a solution, no meaningful changes have been made. When Tualatin's police officers have driven onto the Lam campus to investigate noise complaints, they have been chased down by Lam's security guards and asked to leave.

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Thank you for your consideration.

Sent from Deano

From: deborah anderson <deborah52557@hotmail.com>
Sent: Wednesday, July 30, 2025 9:46 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

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Use Leveton Drive and Herman Road

As a long time resident living on SW Tualatin Rd, this is my ONLY access in and out. Your employees have other choices, please be a good neighbor and do the right thing. It would be such an easy fix to have your employees take Leveton Drive/Herman Road/124th.

Thank you for your consideration.

Deborah Anderson

Sent from my iPhone

From: deborah anderson <deborah52557@hotmail.com>
Sent: Tuesday, August 12, 2025 11:26 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

Dear Tualatin Planning Commission and Architectural Review Board,

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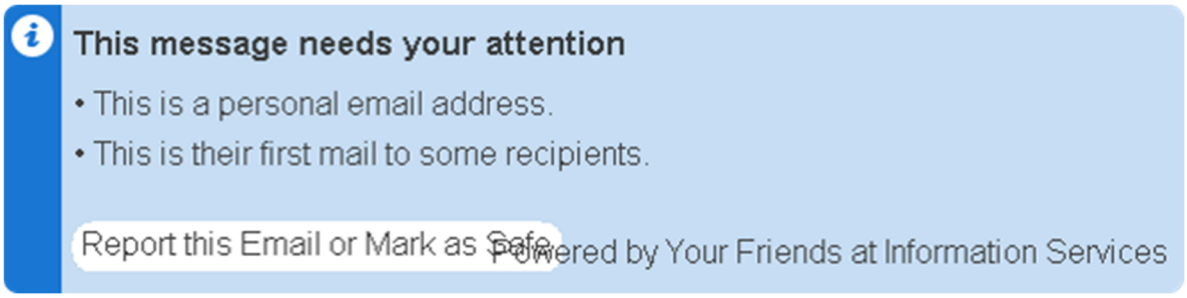
Thank you for your consideration.

Deborah Anderson
Resident SW Tualatin Rd
Sent from my iPhone

From: Brian Park Condos <brianparkcondos@gmail.com>
Sent: Tuesday, August 12, 2025 11:23 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts



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Thank you for your consideration.
Debra Rae

From: Beth Sethi <beth@pdximmigration.com>
Sent: Tuesday, August 12, 2025 2:01 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts



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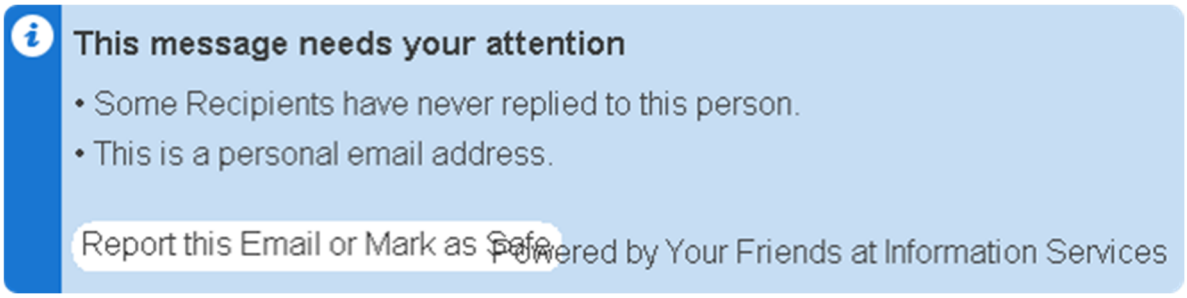
Elisabeth Sethi, Attorney at Law
Portland Immigration Law LLC
520 SW 6th Ave., Suite 610
Portland, OR 97204
503-749-7700
beth@pdximmigration.com
pdximmigration.com

Know Your Rights
Conozca Sus Derechos

From: Elizabeth Ford <luckiecharm2001@gmail.com>
Sent: Tuesday, August 12, 2025 10:56 AM
To: Keith Leonard; Ext - Planning
Cc: Council; Save Tualatin Road
Subject: Lam Noise Impacts



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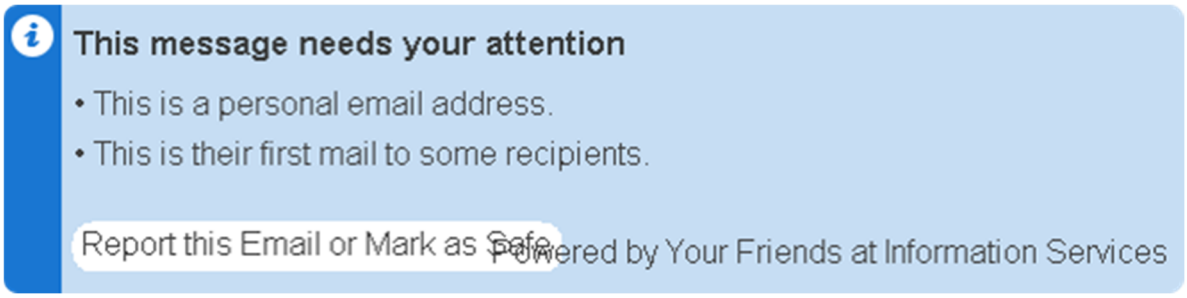
Thank you for your consideration.

Elizabeth Ford

From: EnlightenedKing <simmonsmontrell88@gmail.com>
Sent: Tuesday, August 12, 2025 6:24 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts



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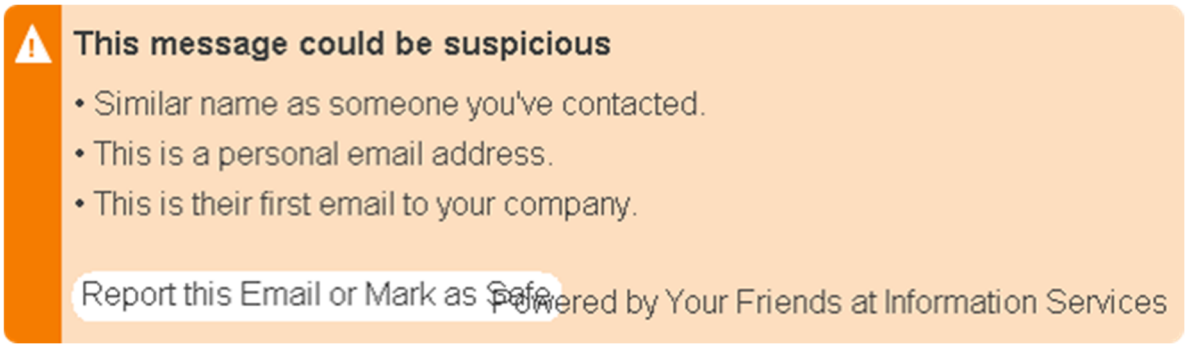
Thank you for your consideration.

From: Eric Smith <jetsmith777@gmail.com>
Sent: Monday, July 28, 2025 5:50 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan



Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

From: Eric Smith <jetsmith777@gmail.com>
Sent: Tuesday, August 5, 2025 8:56 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

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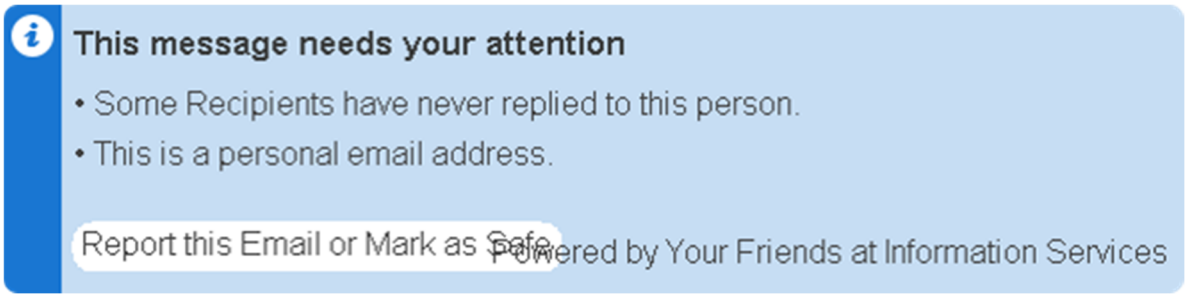
From: Eric Smith <jetsmith777@gmail.com>
Sent: Tuesday, August 12, 2025 9:55 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts



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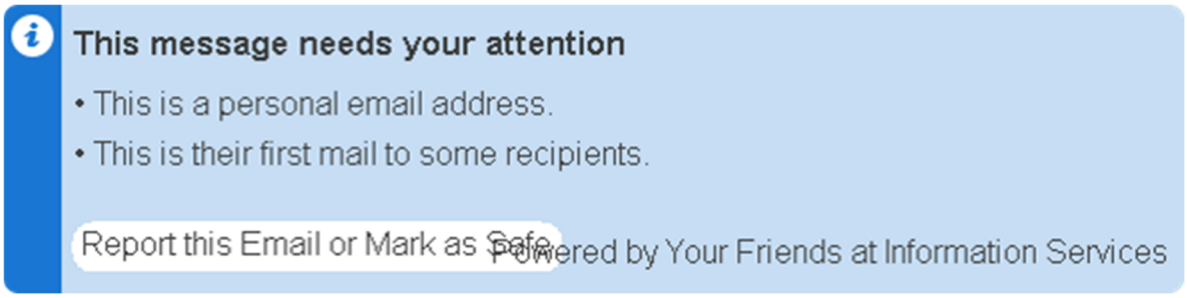
Thank you for your consideration.

From: Fran Avery <franavery7@gmail.com>
Sent: Wednesday, August 13, 2025 4:54 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts



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God Bless,
Fran Avery

From: Fritz Weber <fritz@luminos.net>
Sent: Tuesday, August 12, 2025 12:08 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

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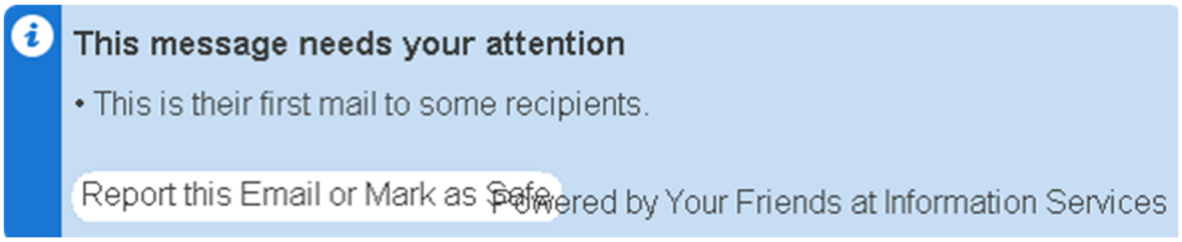
From: Gayle Lutes <gayle@assuredseniorplacement.com>
Sent: Tuesday, August 12, 2025 6:53 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts



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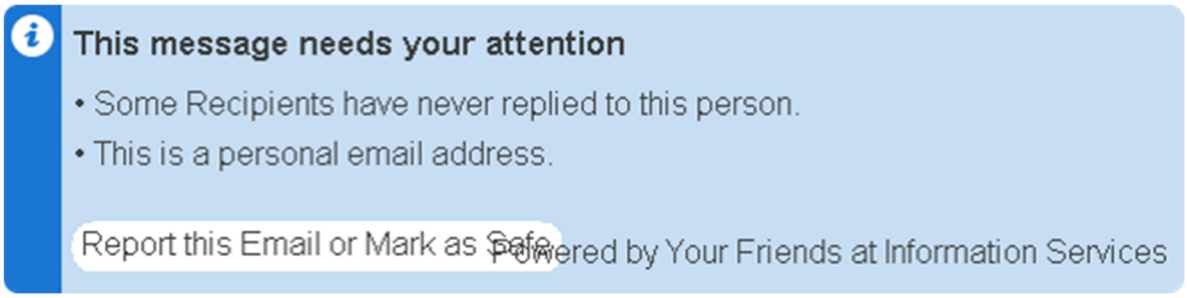
Gayle Lutes
Senior Housing Advisor - Owner
Oregon Senior Referral Agency Association - Associate Member
State Approved National COVID - Ready LTC Certification
Assured Senior Placement & Resources
(503)318-6466 - Mobile
gayle@assuredseniorplacement.com
https://www.assuredseniorplacement.com

From: Hayden Thornton <hrt0206@gmail.com>
Sent: Tuesday, August 12, 2025 12:16 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts



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Hayden Thornton

From: Hazen Hyland <hazenhyland@yahoo.com>
Sent: Tuesday, August 12, 2025 10:23 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

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From: Isabella Kreske <ickreske@gmail.com>
Sent: Tuesday, August 12, 2025 11:05 AM
To: Keith Leonard; Ext - Planning
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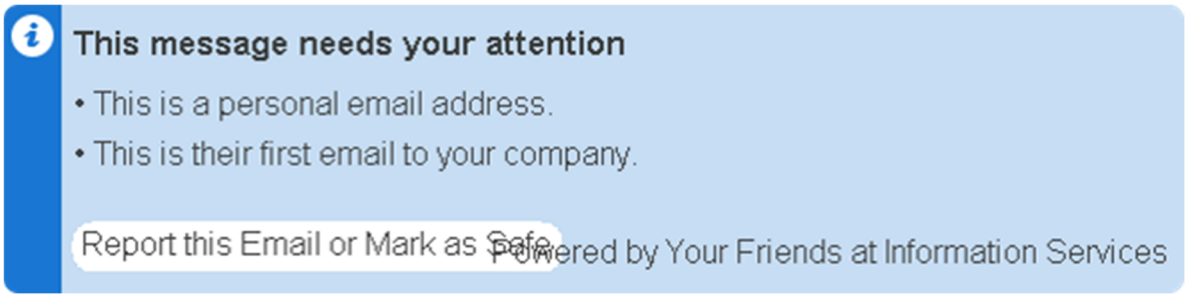
Thank you for your consideration.

Isabella

From: Janelle Fuji <jfuji331@gmail.com>
Sent: Sunday, August 10, 2025 1:12 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan



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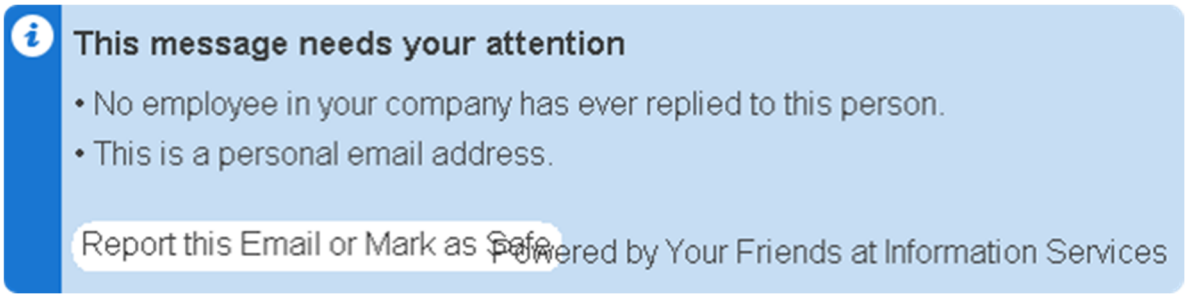
NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

From: Janelle Fuji <jfuji331@gmail.com>
Sent: Tuesday, August 12, 2025 11:15 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts



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Thank you for your consideration.

From: Janet Weber <weberjanet@hotmail.com>
Sent: Saturday, August 9, 2025 2:31 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

Dear City of Tualatin,

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NO new employee access on 108th!!!!
NO added traffic on Tualatin Road!!!!
Use Leveton Drive and Herman Road!!!

Thank you for your consideration.

Janet Weber
13 year Riverpark CIO resident

Sent from my iPhone

From: Janice Corr <janice_corr@yahoo.com>
Sent: Tuesday, August 12, 2025 10:33 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

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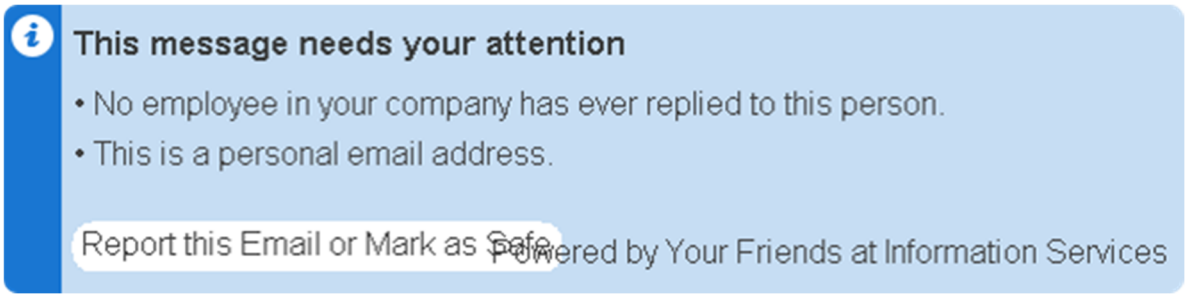
Thank you for your consideration.
Janice Corr

Sent from my iPad

From: Jasmine Walling <jasminewalling26@gmail.com>
Sent: Sunday, August 17, 2025 2:20 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance



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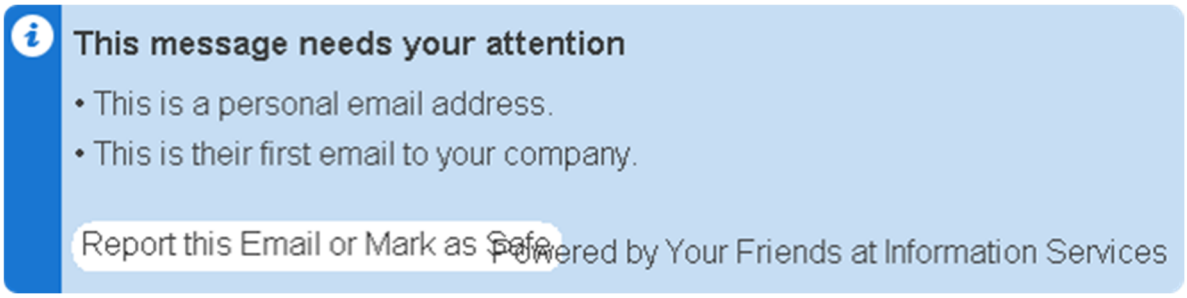
From: Jasmine Walling <jasminewalling26@gmail.com>
Sent: Sunday, August 17, 2025 2:20 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts



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Thank you for your consideration.

From: Jay Compton <zardoz503@gmail.com>
Sent: Monday, July 28, 2025 6:01 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

Dear City of Tualatin,

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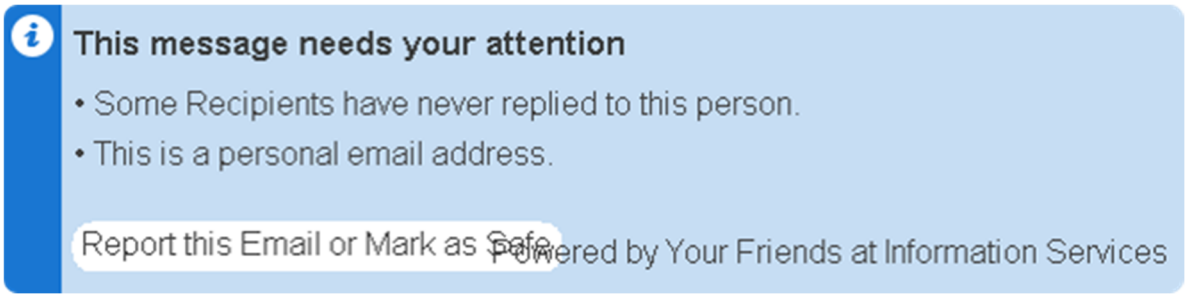
From: Jazmin Rodea Olvera <friendlyjaz79@gmail.com>
Sent: Tuesday, August 12, 2025 9:46 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts



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Thank you for your consideration.

From: Jenny Blodgett <jenny.blodgett32@gmail.com>
Sent: Saturday, August 9, 2025 10:03 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

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From: Jenny Blodgett <jenny.blodgett32@gmail.com>
Sent: Tuesday, August 12, 2025 12:29 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

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From: Jeremy Wilson <wils9705@yahoo.com>
Sent: Monday, August 11, 2025 12:01 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

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JW

From: Jim Milne <Jim.Milne@jedunn.com>
Sent: Sunday, August 17, 2025 8:33 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance

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From: JL Friedman <hikergirl500@gmail.com>
Sent: Wednesday, August 13, 2025 9:08 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

Dear Tualatin Planning Commission and Architectural Review Board,

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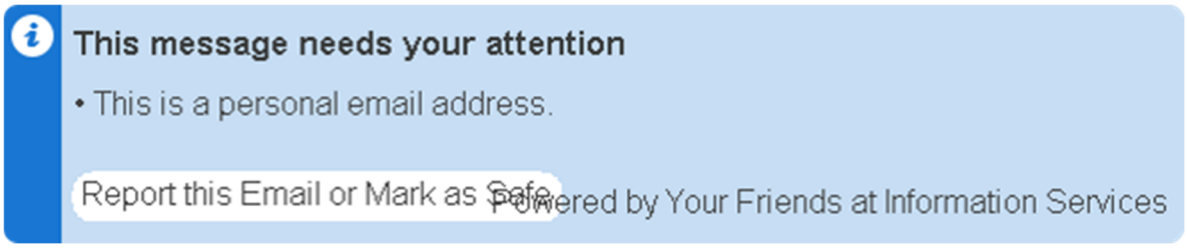
Respectfully,

Jl Friedman

From: Joanne Schenk <jojo10k@aol.com>
Sent: Tuesday, August 12, 2025 10:38 AM
To: Keith Leonard
Cc: Council; outreach@tualatinroad.org; Ext - Planning
Subject: Lam Noise Impacts



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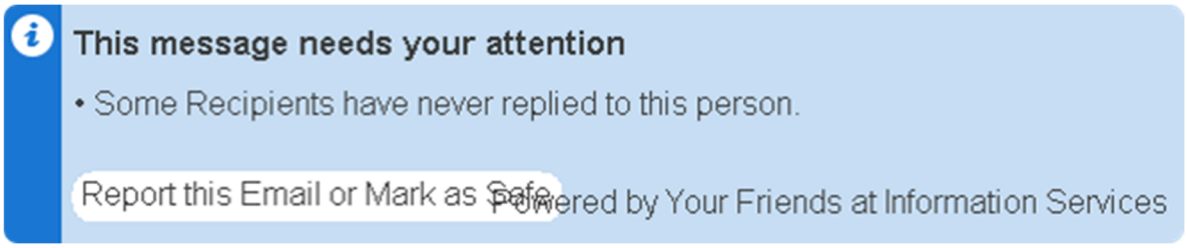
Manufacturing Park (MP) zoning serves as a buffer between heavy industry and residential areas. MP zoning calls for "limiting uses to those that are of a nature so as to not conflict with other industrial uses or surrounding residential areas." (TDC 62.100) Please consider this letter as evidence that Lam's operations are, in fact, currently conflicting with surrounding residential areas.

In order to bring Lam's facility into compliance with the Tualatin Code, I request that Lam's off-site noise impacts be eliminated as part of the TUX project. It is absolutely critical to our quality of life that peace and quiet be restored to our neighborhoods. We ask the City of Tualatin to require Lam to prove their ability to eliminate offsite noise before approving the addition of any new noise sources on campus.

Thank you for your consideration.
Joanne & Roger Schenk

From: jjporcello2@frontier.com
Sent: Monday, July 28, 2025 9:09 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan



Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While we **greatly** appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, we are nonetheless opposed to the addition of a new employee entrance on SW 108th Avenue, which would increase peak traffic volumes on Tualatin Road. Getting onto Tualatin Road from our neighborhood on the north side of Tualatin Road is already difficult and fraught with worry about getting into an accident due to difficult sight lines and speeding traffic. This will only make it worse. Specifically, here's what we request:

- NO new employee access on 108th
- NO added traffic on Tualatin Road
- All LAM traffic should use Leveton Drive and Herman Road to access the LAM campus

Thank you for your consideration.

John and Pam Porcello

10780 SW Lucas Drive

Tualatin, OR 97062

From: Keith Leonard
Sent: Tuesday, July 29, 2025 9:30 AM
To: 'John Phillips'
Subject: RE: Revised Lam TUX Site Plan

Good Morning John,

We've received your additional comments pertaining to the Lam development proposal. Your comments have been added to the public record. Thank you for taking the time out of your day to take part in the public review and comment process.

Have a good day.

Keith Leonard, AICP
Associate Planner
Phone: 503.691.3029

-----Original Message-----
From: John Phillips <jphillips4994@icloud.com>
Sent: Tuesday, July 29, 2025 7:28 AM
To: Keith Leonard <kleonard@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Cc: Council <council@tualatin.gov>; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

John C Phillips
Shawnee Trail

Sent from my iPhone

From: John Phillips <jphillips4994@icloud.com>
Sent: Tuesday, August 12, 2025 4:48 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for your dedication and service to the community, and for your work to protect our quality of life. While development and corporate activities are essential to the vitality of our city, residential land uses must also be protected, both from an economic standpoint (property values) and from a quality of life standpoint (mental and physical health). In keeping with this mission, we are asking for your help in resolving Lam's noise pollution problem.

Multiple noise signatures have been identified emanating from Lam's campus, including clear tones that pulse, two-toned harmonics, and a low rumble that sounds like an old bomber airplane. The most distinctive sound is the high-frequency hiss from Lam's gas plant, clearly audible across Tualatin Road most nights.

We have brought this issue to the attention of the City Council, Police Department, Code Enforcement, Riverpark CIO, and Lam. Despite repeated requests for a solution, no meaningful changes have been made. When Tualatin's police officers have driven onto the Lam campus to investigate noise complaints, they have been chased down by Lam's security guards and asked to leave.

The Tualatin Noise Ordinance (1361-13) sets a city-wide limit of 50dB at night for residential areas, and the Tualatin Development Code (62.100) places even stricter limits on Manufacturing Park (MP) zoning, stating that "Such permitted uses must not cause objectionable noise". A noise study performed earlier this year at night by a licensed acoustical enginneer measured noise levels of 52dB at a private residence across the street from Lam's gas plant. Therefore, Lam's offsite noise impacts are in violation of both the Tualatin Development Code and the Tualatin Municipal Code.

Lam's noise pollution problem is not caused by daytime construction, backup beepers, or truck horns, but rather, by permanently-installed equipment that is part of Lam's physical plant. This equipment runs 24/7 and generates sound continuously. The sounds are most noticeable at night when background noise is low, and the location of sound impacts can vary depending on atmospheric conditions, especially temperature and wind direction. During southerly winds, Lam's noise signature can be heard more than a mile away.

Manufacturing Park (MP) zoning serves as a buffer between heavy industry and residential areas. MP zoning calls for "limiting uses to those that are of a nature so as to not conflict with other industrial uses or surrounding residential areas." (TDC 62.100) Please consider this letter

as evidence that Lam's operations are, in fact, currently conflicting with surrounding residential areas.

In order to bring Lam's facility into compliance with the Tualatin Code, I request that Lam's off-site noise impacts be eliminated as part of the TUX project. It is absolutely critical to our quality of life that peace and quiet be restored to our neighborhoods. We ask the City of Tualatin to require Lam to prove their ability to eliminate offsite noise before approving the addition of any new noise sources on campus.

Thank you for your consideration.

Sent from my iPhone

From: JL Friedman <hikergirl500@gmail.com>
Sent: Saturday, August 9, 2025 1:11 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road; the very thing we're trying to manage. Leveton Drive and Herman Road are the very best solutions to this issue for our neighborhood and traffic flows.

Thank you for your consideration.

Jl Friedman

From: Jorge Del Rio <jorgedelrio52@gmail.com>
Sent: Tuesday, August 12, 2025 11:42 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for your dedication and service to the community, and for your work to protect our quality of life. While development and corporate activities are essential to the vitality of our city, residential land uses must also be protected, both from an economic standpoint (property values) and from a quality of life standpoint (mental and physical health). In keeping with this mission, we are asking for your help in resolving Lam's noise pollution problem.

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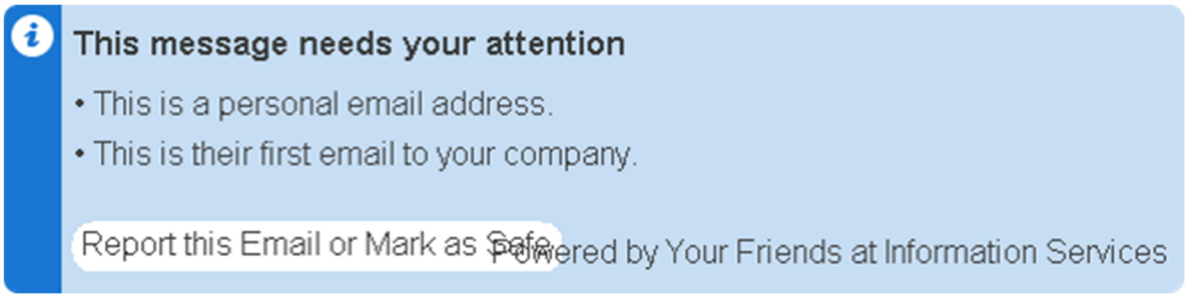
Thank you for your consideration.

Sent from my iPhone

From: Joshua Wilson <wwwilsons.joshua@gmail.com>
Sent: Tuesday, August 5, 2025 5:14 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan



Dear City of Tualatin,

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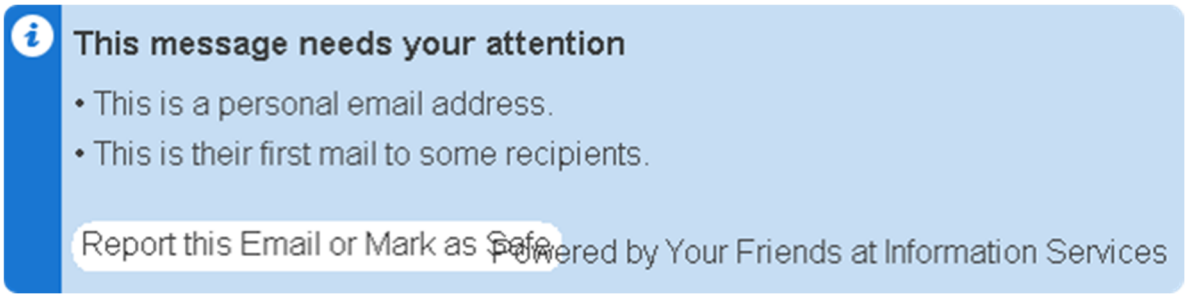
NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

From: Joyce Atkins <uwdawggirl@gmail.com>
Sent: Sunday, August 10, 2025 7:00 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan



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NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Joyce Atkins
503-320-2440 (C)
uwdawggirl@gmail.com

From: Judy Hilgefort <judyhilgefort@gmail.com>
Sent: Sunday, August 10, 2025 12:05 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

Dear City of Tualatin,

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NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Sent from my iPhone

From: Judy Hilgefort <judyhilgefort@gmail.com>
Sent: Wednesday, August 13, 2025 10:45 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for your dedication and service to the community, and for your work to protect our quality of life. While development and corporate activities are essential to the vitality of our city, residential land uses must also be protected, both from an economic standpoint (property values) and from a quality of life standpoint (mental and physical health). In keeping with this mission, we are asking for your help in resolving Lam's noise pollution problem.

Multiple noise signatures have been identified emanating from Lam's campus, including clear tones that pulse, two-toned harmonics, and a low rumble that sounds like an old bomber airplane. The most distinctive sound is the high-frequency hiss from Lam's gas plant, clearly audible across Tualatin Road most nights.

We have brought this issue to the attention of the City Council, Police Department, Code Enforcement, Riverpark CIO, and Lam. Despite repeated requests for a solution, no meaningful changes have been made. When Tualatin's police officers have driven onto the Lam campus to investigate noise complaints, they have been chased down by Lam's security guards and asked to leave.

The Tualatin Noise Ordinance (1361-13) sets a city-wide limit of 50dB at night for residential areas, and the Tualatin Development Code (62.100) places even stricter limits on Manufacturing Park (MP) zoning, stating that "Such permitted uses must not cause objectionable noise". A noise study performed earlier this year at night by a licensed acoustical enginneer measured noise levels of 52dB at a private residence across the street from Lam's gas plant. Therefore, Lam's offsite noise impacts are in violation of both the Tualatin Development Code and the Tualatin Municipal Code.

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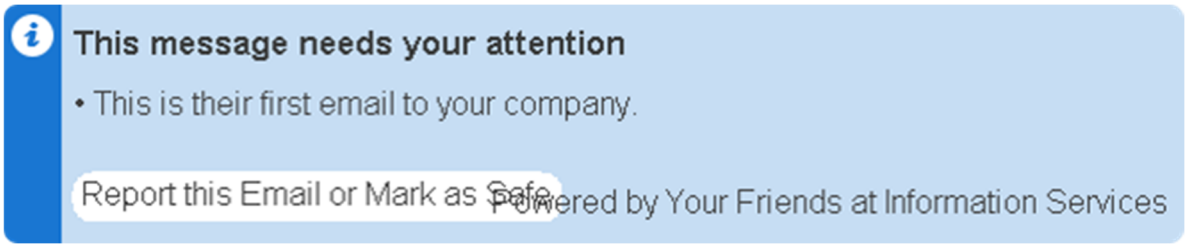
as evidence that Lam's operations are, in fact, currently conflicting with surrounding residential areas.

In order to bring Lam's facility into compliance with the Tualatin Code, I request that Lam's off-site noise impacts be eliminated as part of the TUX project. It is absolutely critical to our quality of life that peace and quiet be restored to our neighborhoods. We ask the City of Tualatin to require Lam to prove their ability to eliminate offsite noise before approving the addition of any new noise sources on campus.

Thank you for your consideration.

Sent from my iPhone

From: Kumler Julie <julie@jkumler.com>
Sent: Tuesday, August 12, 2025 9:51 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts



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Thank you for your consideration.

With warm regards,

Julie Kumler
RE/MAX equity group Broker
Email: julie@jkumler.com
Cell: 503-680-1316
Fax: 503-495-3363
Website: WWW.equitygroup.com/Jkumler

From: Kami Hamilton <kami@simple.be>
Sent: Tuesday, August 12, 2025 10:14 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

Dear Tualatin Planning Commission and Architectural Review Board,

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Thank you for your consideration.

Sent from my iPhone

From: Karen Aiello <aiellok54@gmail.com>
Sent: Tuesday, July 29, 2025 8:31 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.
Respectfully,
Karen Aiello- long time resident of 106th and Tualatin road.

Sent ka

From: Karen Aiello <aiellok54@gmail.com>
Sent: Tuesday, August 12, 2025 11:03 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for your dedication and service to the community, and for your work to protect our quality of life. While development and corporate activities are essential to the vitality of our city, residential land uses must also be protected, both from an economic standpoint (property values) and from a quality of life standpoint (mental and physical health). In keeping with this mission, we are asking for your help in resolving Lam's noise pollution problem.

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Thank you for your consideration.

Sent ka

From: Kathleen Mahmoudi <katyvonne@yahoo.com>
Sent: Monday, July 28, 2025 6:00 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

Dear City of Tualatin,

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NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Sent from my iPhone

From: Kathleen McLean <blazer91@icloud.com>
Sent: Wednesday, August 20, 2025 6:21 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for your dedication and service to the community, and for your work to protect our quality of life. While development and corporate activities are essential to the vitality of our city, residential land uses must also be protected, both from an economic standpoint (property values) and from a quality of life standpoint (mental and physical health). In keeping with this mission, we are asking for your help in resolving Lam's noise pollution problem.

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Thank you for your consideration.

Sent from my iPad

From: Kathleen McLean <blazer91@icloud.com>
Sent: Wednesday, August 20, 2025 6:21 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance

Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

Lam's proposed entrance on 108th fails three of the new driveway approach criteria in TDC 75.020.5: "(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

Lam's traffic study shows that the Hazelbrook Road onramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volumes from this proposed 108th entrance.

Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Sent from my iPad

From: Kathy <k.vigil@frontier.com>
Sent: Saturday, August 9, 2025 3:45 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Sent from my iPad

From: Kathy <k.vigil@frontier.com>
Sent: Wednesday, August 13, 2025 5:09 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for your dedication and service to the community, and for your work to protect our quality of life. While development and corporate activities are essential to the vitality of our city, residential land uses must also be protected, both from an economic standpoint (property values) and from a quality of life standpoint (mental and physical health). In keeping with this mission, we are asking for your help in resolving Lam's noise pollution problem.

Multiple noise signatures have been identified emanating from Lam's campus, including clear tones that pulse, two-toned harmonics, and a low rumble that sounds like an old bomber airplane. The most distinctive sound is the high-frequency hiss from Lam's gas plant, clearly audible across Tualatin Road most nights.

We have brought this issue to the attention of the City Council, Police Department, Code Enforcement, Riverpark CIO, and Lam. Despite repeated requests for a solution, no meaningful changes have been made. When Tualatin's police officers have driven onto the Lam campus to investigate noise complaints, they have been chased down by Lam's security guards and asked to leave.

The Tualatin Noise Ordinance (1361-13) sets a city-wide limit of 50dB at night for residential areas, and the Tualatin Development Code (62.100) places even stricter limits on Manufacturing Park (MP) zoning, stating that "Such permitted uses must not cause objectionable noise". A noise study performed earlier this year at night by a licensed acoustical enginneer measured noise levels of 52dB at a private residence across the street from Lam's gas plant. Therefore, Lam's offsite noise impacts are in violation of both the Tualatin Development Code and the Tualatin Municipal Code.

Lam's noise pollution problem is not caused by daytime construction, backup beepers, or truck horns, but rather, by permanently-installed equipment that is part of Lam's physical plant. This equipment runs 24/7 and generates sound continuously. The sounds are most noticeable at night when background noise is low, and the location of sound impacts can vary depending on atmospheric conditions, especially temperature and wind direction. During southerly winds, Lam's noise signature can be heard more than a mile away.

Manufacturing Park (MP) zoning serves as a buffer between heavy industry and residential areas. MP zoning calls for "limiting uses to those that are of a nature so as to not conflict with other industrial uses or surrounding residential areas." (TDC 62.100) Please consider this letter

as evidence that Lam's operations are, in fact, currently conflicting with surrounding residential areas.

In order to bring Lam's facility into compliance with the Tualatin Code, I request that Lam's off-site noise impacts be eliminated as part of the TUX project. It is absolutely critical to our quality of life that peace and quiet be restored to our neighborhoods. We ask the City of Tualatin to require Lam to prove their ability to eliminate offsite noise before approving the addition of any new noise sources on campus.

Thank you for your consideration.

Sent from my iPad

From: Kathy Sander <kosanderrn@gmail.com>
Sent: Thursday, August 7, 2025 4:11 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

And if you're not interested in protecting the neighborhood and the environment nearby, then just block off Hazelbrook Road at hwy 99 completely. This will stop all the ancillary traffic that diverts off Tualatin Road into the neighborhood to get to highway 99 in an effort to avoid the traffic lights at 124th and Hwy 99, speeding down Jurgens Road and 115th. As a resident, I have almost been hit by cars not adhering to the stop signs and speeding down Hazelbrook Road, past a park and a middle school!
And if that's not enough, we have almost been T-boned at the bottom of 115th by cut through vehicles, more than once. Or put speed bumps in on all of these streets like they have done in NW Portland in the Raleigh Hills area.
It's frustrating that the city makes all sorts of considerations in favor of the businesses and not the homeowners. We are the backbone of this community but seem to always be at the bottom of the list in keeping residents safe within their own neighborhoods!

Thank you for your consideration.

Thanks,
Kathy Sander
10240 SW Sedlak Ct

From: Kathy Sander <kosanderrn@gmail.com>
Sent: Monday, August 18, 2025 3:00 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

Follow Up Flag: Follow up
Flag Status: Completed

Dear Tualatin Planning Commission and Architectural Review Board,

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I don't currently have a decibel reader on my iPhone, however, we do walk our dog over on Leviton during the weekends (because the noise of ALL the traffic on Tualatin Road) and there is always a loud continuous hum that is emitted from Lam. To add to the noise was a consistent beeping during the weekend of August 16-17.

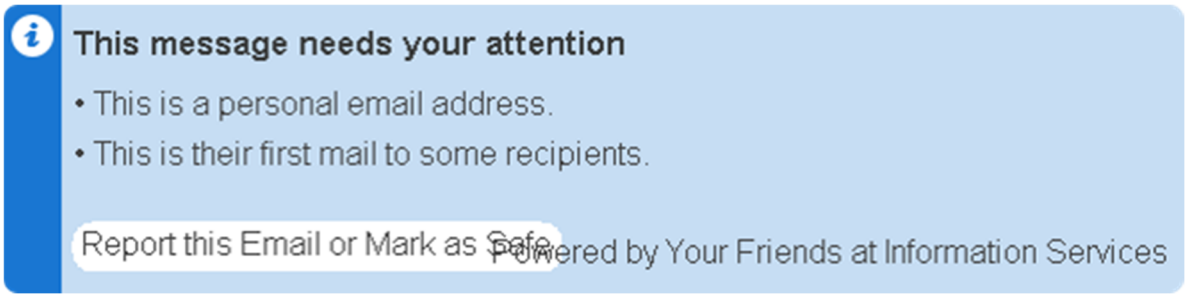
I would also like to add that when there is a lower cloud cover and wind from the west and/or south, we get to hear Lam AND the gun club! Weekends and evenings should be a time for us to enjoy our peace and quiet, family gatherings, or to just hang out in the yard and all of these noises and traffic noise interrupt this time.

Thank you for your consideration.

Thanks,

Kathy Sander
10240 SW Sedlak Ct
503-998-1751

From: Katie H <pearson.katie.41@gmail.com>
Sent: Tuesday, July 29, 2025 1:45 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan



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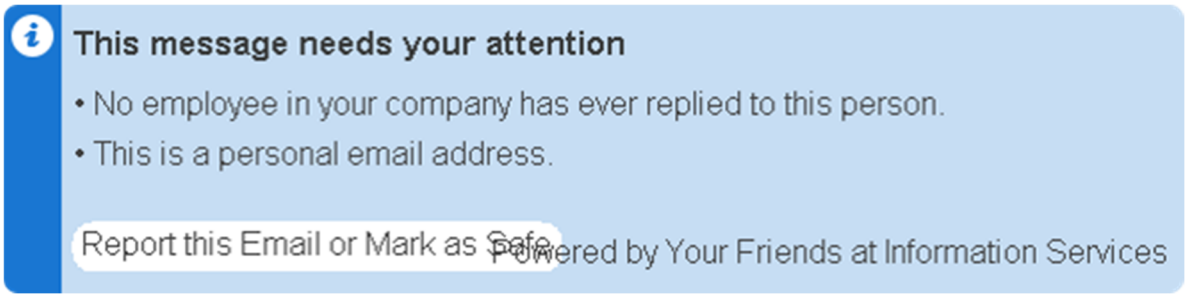
There are already FREQUENT accidents along this stretch of road, and it would bring the increased safety concerns, congestion, and noise of the added traffic even closer to many residencial areas whose only access is Tualatin Rd. I have already witnessed people speeding around cars to pass illegally on Tualatin road, and have been subject to cars speeding, tailgating, and demonstrating a variety of other unsafe behaviors, often close to the intersection by SW 108th Ave. all while my toddler was in the car or when trying to walk to Juergen park from our neighborhood. Families live here, many with small children - myself included - and we strongly oppose the new employee entrance on SW 108th Ave.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Katie Helms
(Resident and home owner in Tualatin)

From: Kay Cusick <kcastrid50@gmail.com>
Sent: Sunday, August 17, 2025 12:34 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts



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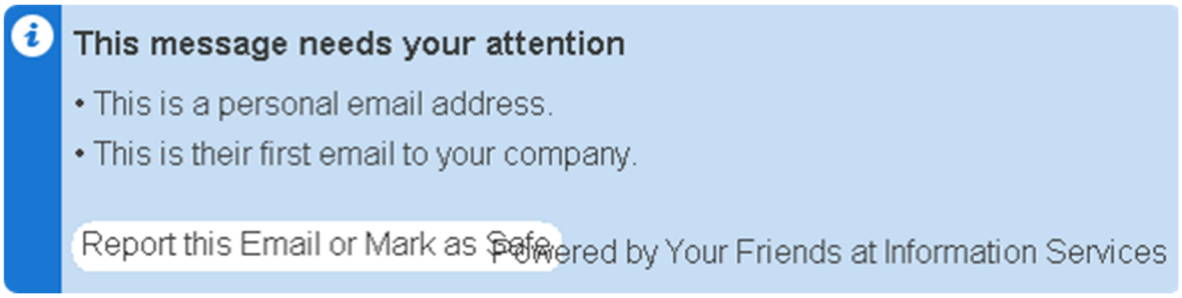
Kay C.

From: Kay Cusick <kcastrid50@gmail.com>
Sent: Sunday, August 17, 2025 12:34 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance



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NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Kay C.

From: kminato4sin@gmail.com
Sent: Wednesday, August 13, 2025 10:30 PM
To: Keith Leonard; Ext - Planning
Cc: Council; 'STR Outreach'
Subject: Lam Noise Impacts

Hello Tualatin Planning Department and Mr. Leonard,
Dear Tualatin Planning Commission and Architectural Review Board,

My name is Kazuki Minato and I resided at 11445 SW Roberts Ct. in Tualatin of 155th Ave.

Thank you for your dedication and service to the community, and for your work to protect our quality of life. While development and corporate activities are essential to the vitality of our city, residential land uses must also be protected, both from an economic standpoint (property values) and from a quality of life standpoint (mental and physical health). In keeping with this mission, we are asking for your help in resolving Lam's noise pollution problem.

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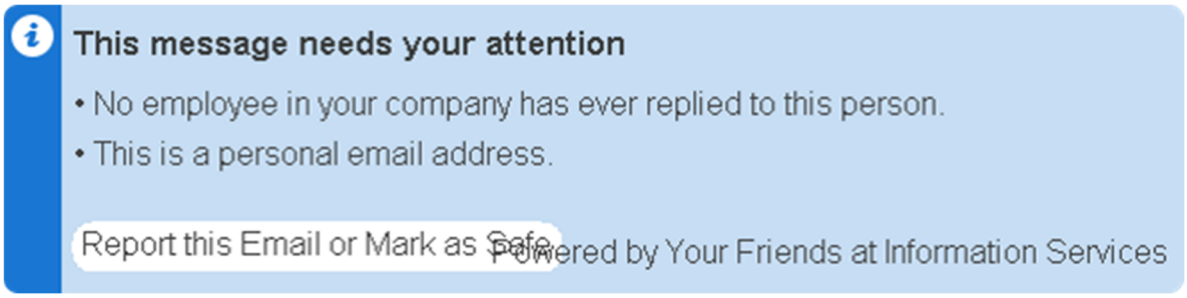
Thank you for your consideration.

Kazuki Minato
11445 SW Roberts Ct.
Tualatin, OR 97062
Kminato4sin@gmail.com

From: kcarterdesign@yahoo.com
Sent: Wednesday, August 20, 2025 2:56 AM
To: Ext - Planning
Subject: LAM noise



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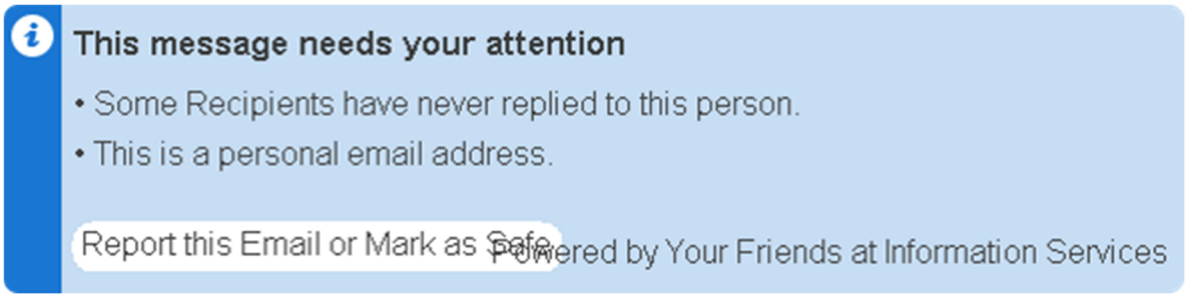
Thank you for your consideration.

Yahoo Mail: Search, Organize, Conquer
Yahoo Mail: Search, Organize, Conquer

From: Kim Devers <kimldevers@gmail.com>
Sent: Tuesday, July 29, 2025 8:30 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan



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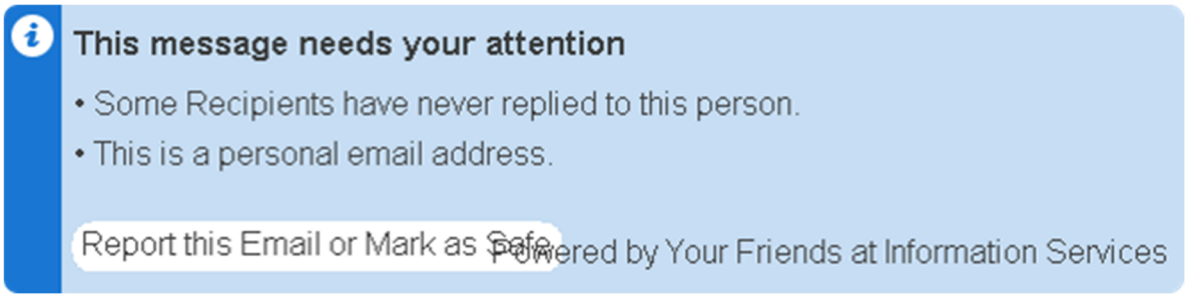
Thank you for your consideration.

Kim Devers

PS -- My house is just one house away from Tualatin Road, on Chippewa Trail. The traffic noise and pollution is already significant. My neighbors who are on the corner have a toddler and an infant. I would hate for their children to be unable to play in their own yard due to additional fumes and/or noise.

From: Kim Devers <kimldevers@gmail.com>
Sent: Tuesday, August 12, 2025 12:47 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts



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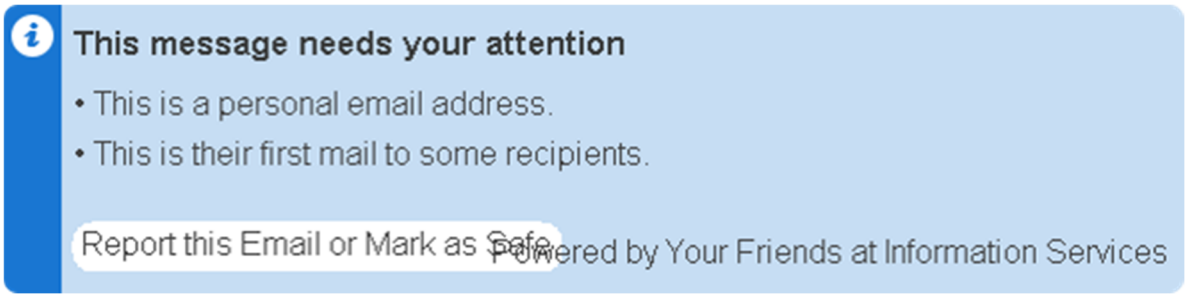
Kim Devers

From: Kimberly Harrow <kimberly.harrow@gmail.com>
Sent: Sunday, August 10, 2025 9:17 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan



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From: Devin & Kristen Hoover <pdxhoovers@gmail.com>
Sent: Tuesday, August 12, 2025 6:00 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

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The Tualatin Noise Ordinance (1361-13) sets a city-wide limit of 50dB at night for residential areas, and the Tualatin Development Code (62.100) places even stricter limits on Manufacturing Park (MP) zoning, stating that "Such permitted uses must not cause objectionable noise". A noise study performed earlier this year at night by a licensed acoustical enginneer measured noise levels of 52dB at a private residence across the street from Lam's gas plant. Therefore, Lam's offsite noise impacts are in violation of both the Tualatin Development Code and the Tualatin Municipal Code.

Lam's noise pollution problem is not caused by daytime construction, backup beepers, or truck horns, but rather, by permanently-installed equipment that is part of Lam's physical plant. This equipment runs 24/7 and generates sound continuously. The sounds are most noticeable at night when background noise is low, and the location of sound impacts can vary depending on atmospheric conditions, especially temperature and wind direction. During southerly winds, Lam's noise signature can be heard more than a mile away.

Manufacturing Park (MP) zoning serves as a buffer between heavy industry and residential areas. MP zoning calls for "limiting uses to those that are of a nature so as to not conflict with other industrial uses or surrounding residential areas." (TDC 62.100) Please consider this letter

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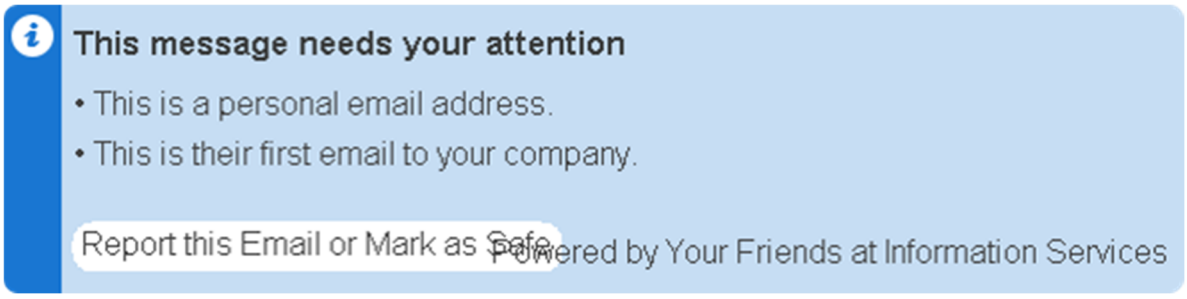
In order to bring Lam's facility into compliance with the Tualatin Code, I request that Lam's off-site noise impacts be eliminated as part of the TUX project. It is absolutely critical to our quality of life that peace and quiet be restored to our neighborhoods. We ask the City of Tualatin to require Lam to prove their ability to eliminate offsite noise before approving the addition of any new noise sources on campus.

Thank you for your consideration.

Kristen

From: Lacy Jo Avera <lacyjoavera@gmail.com>
Sent: Sunday, August 3, 2025 8:38 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan



Dear City of Tualatin,

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NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

From: Larry Pegis <lpegis@yahoo.com>
Sent: Thursday, August 7, 2025 8:46 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Sent from my iPhone

From: Leah Rath <leahrath29@gmail.com>
Sent: Tuesday, August 12, 2025 11:19 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for your dedication and service to the community, and for your work to protect our quality of life. While development and corporate activities are essential to the vitality of our city, residential land uses must also be protected, both from an economic standpoint (property values) and from a quality of life standpoint (mental and physical health). In keeping with this mission, we are asking for your help in resolving Lam's noise pollution problem.

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Thank you for your consideration.

From: Leah Rath <leahrath29@gmail.com>
Sent: Tuesday, August 5, 2025 4:35 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

Dear City of Tualatin,

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NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

From: linda poulson <no1toothfxr@gmail.com>
Sent: Tuesday, August 5, 2025 8:48 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

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NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Sent from my iPhone

From: Lindsay Krinke <lindsay.krinke@gmail.com>
Sent: Saturday, July 26, 2025 11:09 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

Dear City of Tualatin,

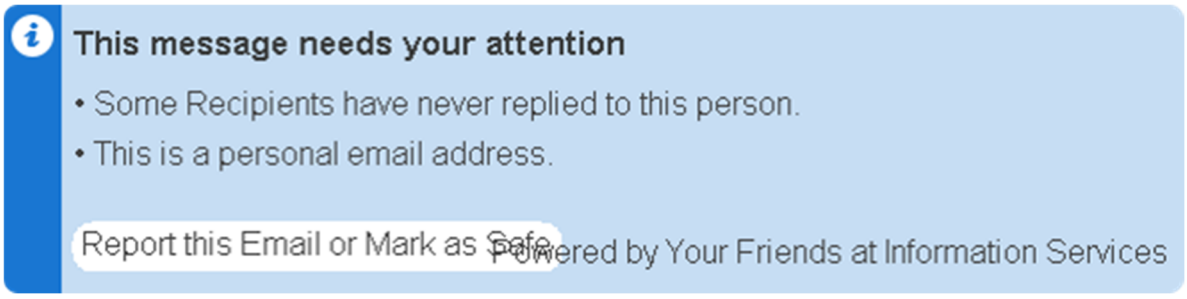
Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Pecked on a mobile device. Please excuse errors.

From: Lisa Godfrey <ljgodfrey@gmail.com>
Sent: Tuesday, July 29, 2025 5:43 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan



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NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Virus-free.www.avg.com

From: Lisa Godfrey <lisagodfreyhomes@gmail.com>
Sent: Tuesday, August 12, 2025 6:19 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for your dedication and service to the community, and for your work to protect our quality of life. While development and corporate activities are essential to the vitality of our city, residential land uses must also be protected, both from an economic standpoint (property values) and from a quality of life standpoint (mental and physical health). In keeping with this mission, we are asking for your help in resolving Lam's noise pollution problem.

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Thank you for your consideration.

Thanks,
Lisa Godfrey
Realtor OR/WA
RENE,GRI,MRP
MORE Realty, Inc

Realtor Oklahoma
Kelly Right
503-919-8188
www.lisagodfreyrealty.com

From: Lisa Teutsch <lisateutsch@hotmail.com>
Sent: Wednesday, August 6, 2025 3:31 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration,
Lisa teutsch

From: Louie Olivares <louieolivares@gmail.com>
Sent: Tuesday, July 29, 2025 4:39 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Site Plan

To whom it may concern,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Louie Olivares

From: lynda boatwright <lynda.boatwright@frontier.com>
Sent: Monday, July 28, 2025 10:35 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

Dear City of Tualatin,

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NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Sent from my iPhone

From: Marcia Frost <marciajfrost@gmail.com>
Sent: Tuesday, August 12, 2025 2:04 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

Dear Tualatin Planning Commission and Architectural Review Board,

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as evidence that Lam's operations are, in fact, currently conflicting with surrounding residential areas.

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Thank you for your consideration.

From: Marcia Frost <marciajfrost@gmail.com>
Sent: Thursday, August 7, 2025 2:30 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

Dear City of Tualatin,

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NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

From: Margo Strength <dgrahms@comcast.net>
Sent: Saturday, August 9, 2025 5:20 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

Dear City of Tualatin,

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NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Sent from my iPhone

From: MARGOT LEE <margotrlee@aol.com>
Sent: Saturday, August 2, 2025 3:34 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

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Use Leveton Drive and Herman Road

Thank you for your consideration.

Sent from my iPhone

From: Marius Brisan <marlid16@frontier.com>
Sent: Tuesday, July 29, 2025 6:19 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

Dear City of Tualatin,

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Use Leveton Drive and Herman Road

Thank you for your consideration.

Marius Brisan
17850 SW 113th Ave
Tualatin, OR 97062

From: Mary Thompson <mt_dwr@msn.com>
Sent: Saturday, August 9, 2025 2:35 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

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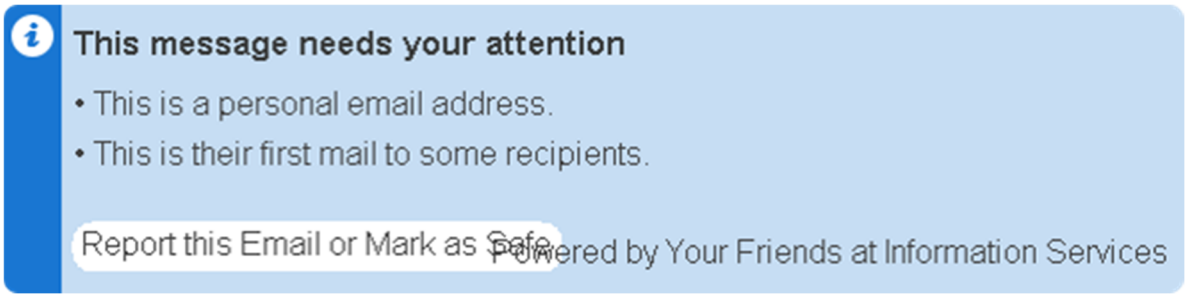
Use Leveton Drive and Herman Road

Thank you for your consideration.

Sent from my iPhone

From: Matt Williams <matt.williams.rpi@gmail.com>
Sent: Tuesday, July 29, 2025 12:53 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan



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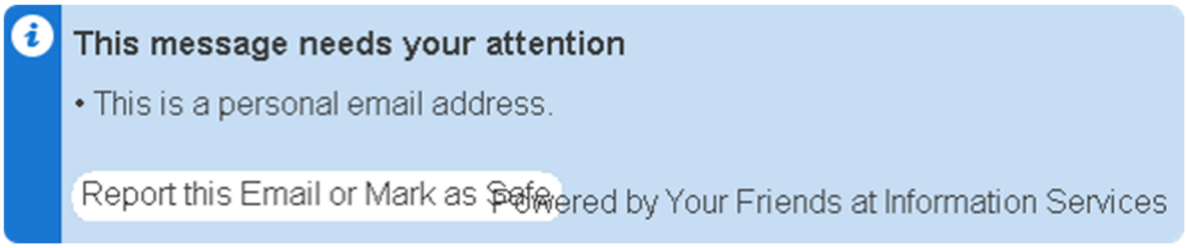
Use Leveton Drive and Herman Road

Thank you for your consideration.

--
Matt Williams
matt.williams.rpi@gmail.com

From: Matt Williams <matt.williams.rpi@gmail.com>
Sent: Tuesday, August 12, 2025 11:35 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts



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Thank you for your consideration.

--
Matt Williams
10320 SW Kiowa St
matt.williams.rpi@gmail.com

From: MD Aman <mdaman5455@gmail.com>
Sent: Tuesday, August 12, 2025 11:01 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

Dear Tualatin Planning Commission and Architectural Review Board,

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Thank you for your consideration.

Sent from my iPad

From: Megan Davidson <meganldavidson@gmail.com>
Sent: Thursday, August 14, 2025 4:16 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance

Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

Lam's proposed entrance on 108th fails three of the new driveway approach criteria in TDC 75.020.5: "(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

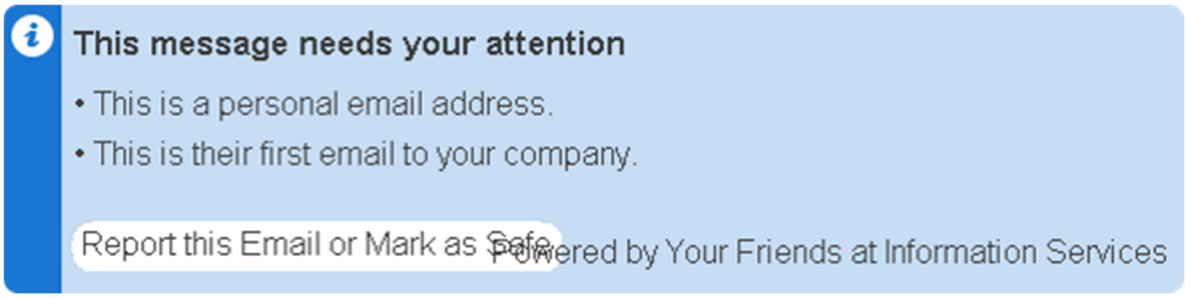
Lam's traffic study shows that the Hazelbrook Road onramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volumes from this proposed 108th entrance.

Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration,
Megan and Tyler Scroggins

From: Michael Crumley <mickcrumdog21@gmail.com>
Sent: Thursday, July 24, 2025 6:26 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan



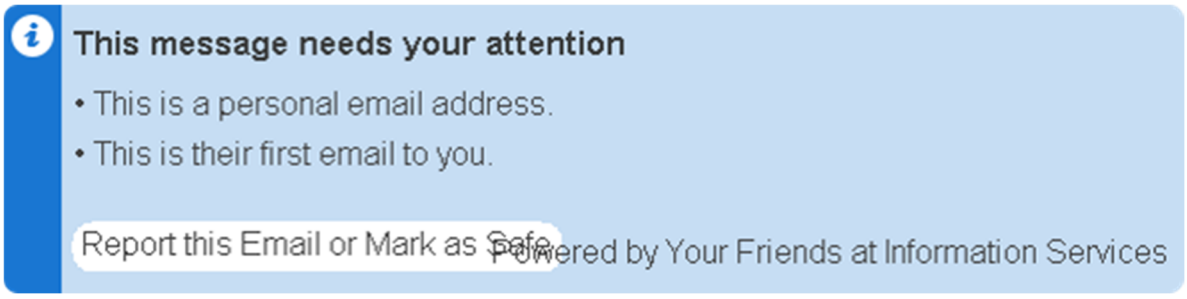
Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

From: mm3soups <mm3soups@gmail.com>
Sent: Saturday, August 9, 2025 12:15 PM
To: Keith Leonard
Subject: Tualatin Road



Dear Mr. Leonard,

I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

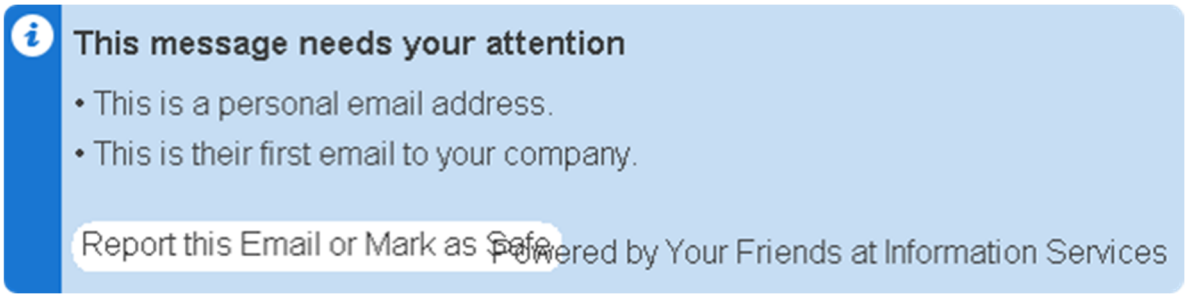
My backyard is along Tualatin Road and the heavy traffic during peak times already makes it extremely difficult to turn left out of my neighborhood. An increase in traffic would also present the possibility of traffic cutting through my neighborhood, causing a dangerous situation for children playing in the area.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Regards,

Michele Campbell
11270 SW Apalachee St.

From: Michelle Affonso <affonsom@msn.com>
Sent: Saturday, August 16, 2025 4:29 PM
To: Ext - Planning; Keith Leonard
Cc: outreach@tualatinroad.org; Council
Subject: Lam 108th Ave Proposed Entrance



Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

Lam's proposed entrance on 108th fails three of the new driveway approach criteria in TDC 75.020.5: "(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

Lam's traffic study shows that the Hazelbrook Road onramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volumes from this proposed 108th entrance.

Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Sent from Samsung Galaxy smartphone.

From: Michelle Lazoff <michellelazoff@icloud.com>
Sent: Tuesday, August 12, 2025 5:18 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for your dedication and service to the community, and for your work to protect our quality of life. While development and corporate activities are essential to the vitality of our city, residential land uses must also be protected, both from an economic standpoint (property values) and from a quality of life standpoint (mental and physical health). In keeping with this mission, we are asking for your help in resolving Lam's noise pollution problem.

Multiple noise signatures have been identified emanating from Lam's campus, including clear tones that pulse, two-toned harmonics, and a low rumble that sounds like an old bomber airplane. The most distinctive sound is the high-frequency hiss from Lam's gas plant, clearly audible across Tualatin Road most nights.

We have brought this issue to the attention of the City Council, Police Department, Code Enforcement, Riverpark CIO, and Lam. Despite repeated requests for a solution, no meaningful changes have been made. When Tualatin's police officers have driven onto the Lam campus to investigate noise complaints, they have been chased down by Lam's security guards and asked to leave.

The Tualatin Noise Ordinance (1361-13) sets a city-wide limit of 50dB at night for residential areas, and the Tualatin Development Code (62.100) places even stricter limits on Manufacturing Park (MP) zoning, stating that "Such permitted uses must not cause objectionable noise". A noise study performed earlier this year at night by a licensed acoustical enginneer measured noise levels of 52dB at a private residence across the street from Lam's gas plant. Therefore, Lam's offsite noise impacts are in violation of both the Tualatin Development Code and the Tualatin Municipal Code.

Lam's noise pollution problem is not caused by daytime construction, backup beepers, or truck horns, but rather, by permanently-installed equipment that is part of Lam's physical plant. This equipment runs 24/7 and generates sound continuously. The sounds are most noticeable at night when background noise is low, and the location of sound impacts can vary depending on atmospheric conditions, especially temperature and wind direction. During southerly winds, Lam's noise signature can be heard more than a mile away.

Manufacturing Park (MP) zoning serves as a buffer between heavy industry and residential areas. MP zoning calls for "limiting uses to those that are of a nature so as to not conflict with other industrial uses or surrounding residential areas." (TDC 62.100) Please consider this letter

as evidence that Lam's operations are, in fact, currently conflicting with surrounding residential areas.

In order to bring Lam's facility into compliance with the Tualatin Code, I request that Lam's off-site noise impacts be eliminated as part of the TUX project. It is absolutely critical to our quality of life that peace and quiet be restored to our neighborhoods. We ask the City of Tualatin to require Lam to prove their ability to eliminate offsite noise before approving the addition of any new noise sources on campus.

Thank you for your consideration.

Michelle Lazoff

Sent from my iPhone

From: MD Aman <mdaman5455@gmail.com>
Sent: Tuesday, July 29, 2025 3:48 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

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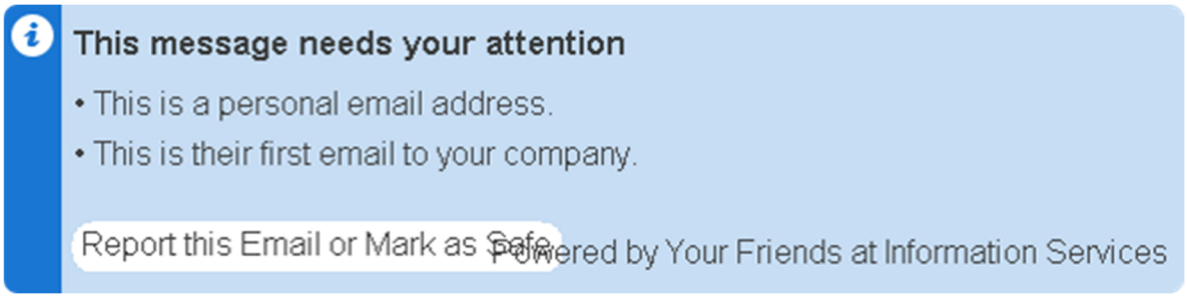
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration,
Mike and Debbie Aman

From: Misty D Winkler <misty.d.winkler@gmail.com>
Sent: Tuesday, August 12, 2025 9:42 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts



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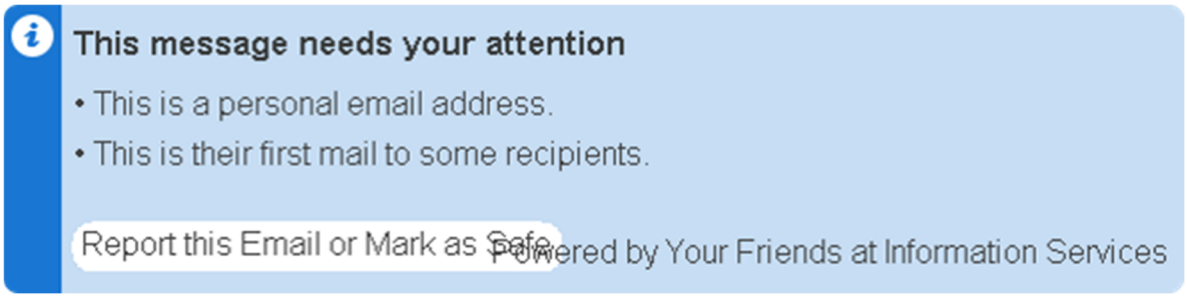
Thank you for your consideration.

Have a wonderful day,

Misty D Winkler
503.701.6168
OR Notary Public & Signing Agent
Attentive Mobile Notary Service, LLC
www.SigningAgent.com/profile/158004754
Commission # 1018914

IMPORTANT NOTICE: Never trust wiring instructions sent via email. Always independently confirm wiring instructions in person or via a telephone call to a trusted and verified phone number. Never wire money without double checking the wiring instructions are correct.
CONFIDENTIALITY NOTICE: This e-mail, including any attachments, is for the sole use of the intended recipient(s) and may contain confidential and privileged information protected by law. Any unauthorized review, use, disclosure or distribution is prohibited. If you are not the intended recipient, please contact the sender by reply e-mail and destroy all copies of the original message

From: Nicole Ingram <niikingram@gmail.com>
Sent: Tuesday, August 12, 2025 7:29 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts



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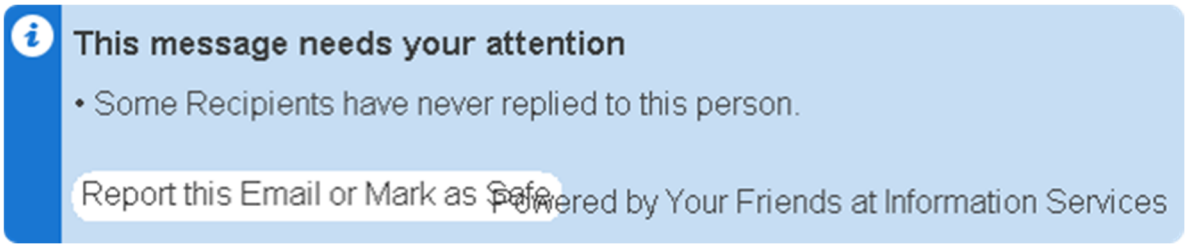
Thank you for your consideration.

Nicole (Niik) Ingram

17725 SW Shawnee Trail, Tualatin, OR 97062

From: Nils Peuser <nils@peusers.org>
Sent: Tuesday, August 12, 2025 2:00 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts



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Thank you for your consideration.

~ Nils Peuser

From: NWS <nws.jn@comcast.net>
Sent: Thursday, August 7, 2025 1:20 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

The money spent to improve Herman Road and add SE 124th was to be used to help improve traffic flow for existing businesses and future growth.
Tualatin Road remained as with no traffic light additions, and no road improvements to address current traffic flows. Current traffic on Tualatin Road has increased substantially and that’s without the future anticipated LAM traffic.

Thank you for your consideration.

Sent from my iPhone

From: Patrice Dugan <duganfamily4@gmail.com>
Sent: Saturday, August 9, 2025 11:55 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

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Use Leveton Drive and Herman Road

Thank you for your consideration.
Patrice Dugan

Sent from my iPad

From: Patrice Dugan <duganfamily4@gmail.com>
Sent: Tuesday, August 12, 2025 5:02 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

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Thank you for your consideration.
Patrice Dugan
10365 SW Tawasa CT
Tualatin 97062

Sent from my iPad

From: Patti Atkins <patti@prpatti.com>
Sent: Tuesday, August 12, 2025 9:47 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts



Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for your dedication and service to the community, and for your work to protect our quality of life. While development and corporate activities are essential to the vitality of our city, residential land uses must also be protected, both from an economic standpoint (property values) and from a quality of life standpoint (mental and physical health). In keeping with this mission, we are asking for your help in resolving Lam's noise pollution problem.

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Thank you for your consideration.
Patricia Atkins
17745 sw Chippewa Trail, Tualatin, OR 97062

From: Phil Vincent <pdvpdx@gmail.com>
Sent: Friday, July 25, 2025 12:15 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue.

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Sent from my iPhone

From: Phil Vincent <pdvpdx@gmail.com>
Sent: Tuesday, August 12, 2025 5:58 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

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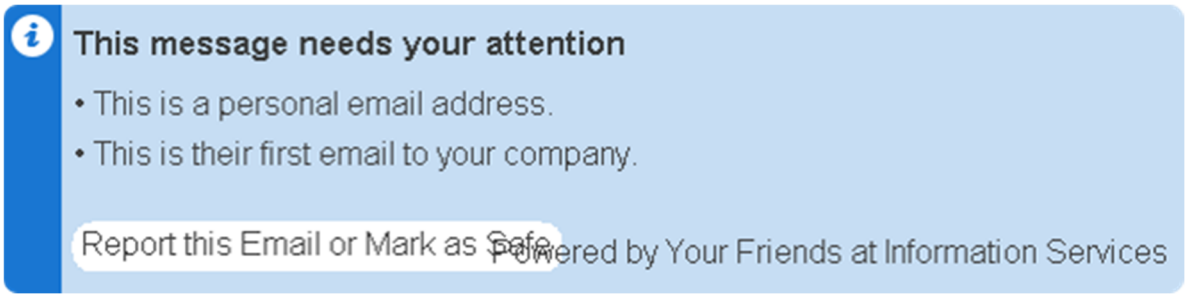
Thank you for your consideration.

Sent from my iPhone

From: Regina Chante <reginachante@gmail.com>
Sent: Thursday, July 31, 2025 6:44 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Subject: Revised Lam TUX Site Plan



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Use Leveton Drive and Herman Road

Thank you for your consideration.

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•••••••••
Regina Chante
www.ReginaChante.org

From: richard.lyons15@gmail.com
Sent: Monday, July 28, 2025 6:10 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Richard Lyons
Sent from my iPad

From: richard.lyons15@gmail.com
Sent: Tuesday, August 12, 2025 1:22 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for your dedication and service to the community, and for your work to protect our quality of life. While development and corporate activities are essential to the vitality of our city, residential land uses must also be protected, both from an economic standpoint (property values) and from a quality of life standpoint (mental and physical health). In keeping with this mission, we are asking for your help in resolving Lam's noise pollution problem.

Multiple noise signatures have been identified emanating from Lam's campus, including clear tones that pulse, two-toned harmonics, and a low rumble that sounds like an old bomber airplane. The most distinctive sound is the high-frequency hiss from Lam's gas plant, clearly audible across Tualatin Road most nights.

My understanding is that this issue has been brought to the attention of the City Council, Police Department, Code Enforcement, Riverpark CIO, and Lam. Despite repeated requests for a solution, no meaningful changes have been made.

The Tualatin Noise Ordinance (1361-13) sets a city-wide limit of 50dB at night for residential areas, and the Tualatin Development Code (62.100) places even stricter limits on Manufacturing Park (MP) zoning, stating that "Such permitted uses must not cause objectionable noise". A noise study performed earlier this year at night by a licensed acoustical enginneer measured noise levels of 52dB at a private residence across the street from Lam's gas plant. Therefore, Lam's offsite noise impacts are in violation of both the Tualatin Development Code and the Tualatin Municipal Code.

Lam's noise pollution problem is not caused by daytime construction, backup beepers, or truck horns, but rather, by permanently-installed equipment that is part of Lam's physical plant. This equipment runs 24/7 and generates sound continuously. The sounds are most noticeable at night when background noise is low, and the location of sound impacts can vary depending on atmospheric conditions, especially temperature and wind direction. During southerly winds, Lam's noise signature can be heard more than a mile away.

Manufacturing Park (MP) zoning serves as a buffer between heavy industry and residential areas. MP zoning calls for "limiting uses to those that are of a nature so as to not conflict with other industrial uses or surrounding residential areas." (TDC 62.100) Please consider this letter as evidence that Lam's operations are, in fact, currently conflicting with surrounding residential areas.

In order to bring Lam's facility into compliance with the Tualatin Code, I request that Lam's off-site noise impacts be eliminated as part of the TUX project. It is absolutely critical to our quality of life that peace and quiet be restored to our neighborhoods. We ask the City of Tualatin to require Lam to prove their ability to eliminate offsite noise before approving the addition of any new noise sources on campus.

Thank you for your consideration.

Richard Lyons
Sent from my iPad

From: Rick Cady <rcadycvelo@gmail.com>
Sent: Tuesday, August 12, 2025 12:12 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise impacts

Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for your dedication and service to the community, and for your work to protect our quality of life. While development and corporate activities are essential to the vitality of our city, residential land uses must also be protected, both from an economic standpoint (property values) and from a quality of life standpoint (mental and physical health). In keeping with this mission, we are asking for your help in resolving Lam's noise pollution problem.

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We have brought this issue to the attention of the City Council, Police Department, Code Enforcement, Riverpark CIO, and Lam. Despite repeated requests for a solution, no meaningful changes have been made. When Tualatin's police officers have driven onto the Lam campus to investigate noise complaints, they have been chased down by Lam’s security guards and asked to leave.

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Thank you for your consideration.

Rick Cady
10230 SW Anderson Ct.
Tualatin, OR. 97062

From: Rick Cady <rcadycvelo@gmail.com>
Sent: Monday, July 28, 2025 8:09 PM
To: k.leonard@tualatin.gov; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Rick Cady
10230 SW Anderson Ct.
Tualatin, OR. 97062

From: Robert Dixon <rwdixon@pacbell.net>
Sent: Tuesday, July 29, 2025 9:37 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan



Dear City of Tualatin,

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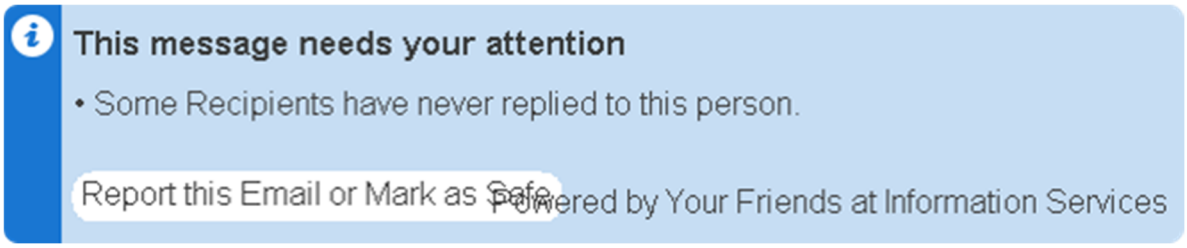
Thank you for your consideration.

Robert Dixon
17967 SW 110th Pl
Tualatin, OR 97062

From: Robert Dixon <rwdixon@pacbell.net>
Sent: Tuesday, August 12, 2025 11:22 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts



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Thank you for your consideration.

Robert Dixon
Tualatin, OR 97062

From: RONALD MADLAND <rmadland@msn.com>
Sent: Tuesday, August 12, 2025 2:30 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for your dedication and service to the community, and for your work to protect our quality of life. While development and corporate activities are essential to the vitality of our city, residential land uses must also be protected, both from an economic standpoint (property values) and from a quality of life standpoint (mental and physical health). In keeping with this mission, we are asking for your help in resolving Lam's noise pollution problem.

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Thank you for your consideration.

Sent from my iPhone

From: RONALD MADLAND <rmadland@msn.com>
Sent: Monday, August 4, 2025 4:51 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Sent from my iPhone

From: Rosemarie Drake-Baumann <baumann12@icloud.com>
Sent: Monday, July 28, 2025 6:23 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

Dear City of Tualatin,

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For those of us that use 106 Avenue to exit the neighborhood adding additional traffic at 108 avenue will make it more difficult.

Thank you for your consideration.

Rosemarie Drake-Baumann

Sent from my iPhone

From: Sally Hildebran <sallyhildebran@gmail.com>
Sent: Sunday, August 10, 2025 8:16 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

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Use Leveton Drive and Herman Road

Thank you for your consideration.

Sally and Reed Hildebran

Sent from my iPhone

From: Sally Hildebran <sallyhildebran@gmail.com>
Sent: Wednesday, August 13, 2025 4:29 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for your dedication and service to the community, and for your work to protect our quality of life. While development and corporate activities are essential to the vitality of our city, residential land uses must also be protected, both from an economic standpoint (property values) and from a quality of life standpoint (mental and physical health). In keeping with this mission, we are asking for your help in resolving Lam's noise pollution problem.

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Thank you for your consideration.

Sally and Reed Hildebran

Sent from my iPhone

From: Sandra Shadron <sshadron@mac.com>
Sent: Friday, August 15, 2025 7:49 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for your dedication and service to the community, and for your work to protect our quality of life. While development and corporate activities are essential to the vitality of our city, residential land uses must also be protected, both from an economic standpoint (property values) and from a quality of life standpoint (mental and physical health). In keeping with this mission, we are asking for your help in resolving Lam's noise pollution problem.

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Sandra

From: Sandra Shadron <sshadron@mac.com>
Sent: Friday, August 15, 2025 7:49 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance

Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

Lam's proposed entrance on 108th fails three of the new driveway approach criteria in TDC 75.020.5: "(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

Lam's traffic study shows that the Hazelbrook Road onramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volumes from this proposed 108th entrance.

Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Sandra

From: Sara Z <sarazimmers@yahoo.com>
Sent: Tuesday, August 12, 2025 10:46 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

Dear Tualatin Planning Commission and Architectural Review Board,

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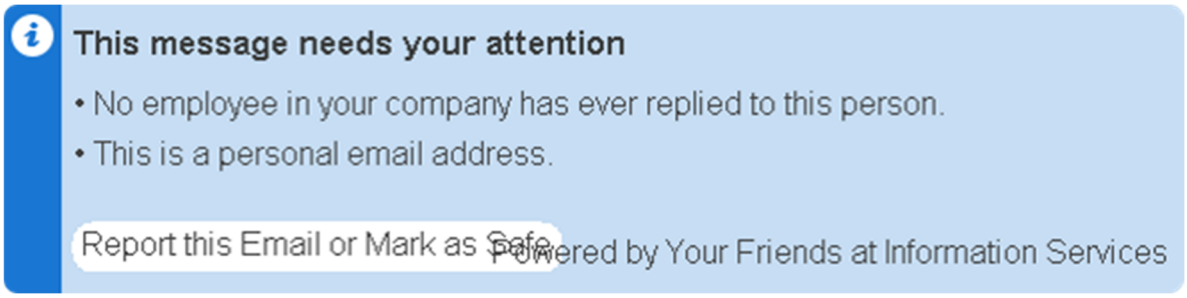
Thank you for your consideration.

Sara Zimmers, DVM, CVA
10340 Rayborn Court
Tualatin, OR 97062

Sent from my iPad

From: Sean Acosta <seaneacosta1@gmail.com>
Sent: Wednesday, August 20, 2025 12:26 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts



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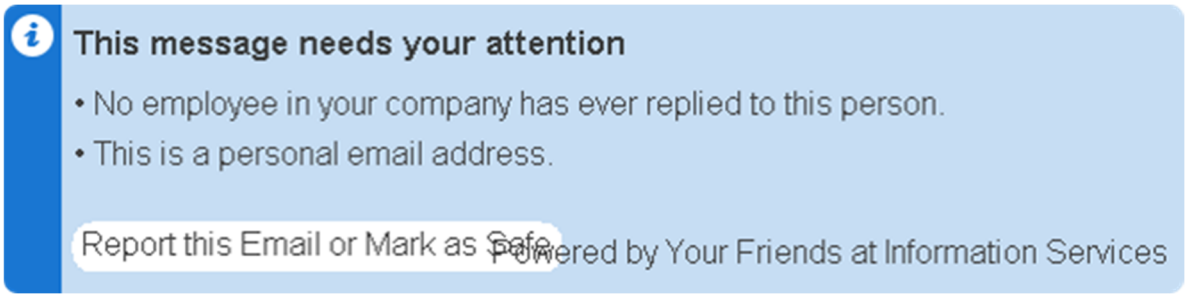
Get Outlook for iOS

From: Sean Acosta <seaneacosta1@gmail.com>
Sent: Wednesday, August 20, 2025 12:26 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance



Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

Lam's proposed entrance on 108th fails three of the new driveway approach criteria in TDC 75.020.5: "(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

Lam's traffic study shows that the Hazelbrook Road onramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volumes from this proposed 108th entrance.

Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Get Outlook for iOS

From: Skye Allen <skyeallen97@icloud.com>
Sent: Tuesday, August 12, 2025 11:45 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for your dedication and service to the community, and for your work to protect our quality of life. While development and corporate activities are essential to the vitality of our city, residential land uses must also be protected, both from an economic standpoint (property values) and from a quality of life standpoint (mental and physical health). In keeping with this mission, we are asking for your help in resolving Lam's noise pollution problem.

Multiple noise signatures have been identified emanating from Lam's campus, including clear tones that pulse, two-toned harmonics, and a low rumble that sounds like an old bomber airplane. The most distinctive sound is the high-frequency hiss from Lam's gas plant, clearly audible across Tualatin Road most nights.

We have brought this issue to the attention of the City Council, Police Department, Code Enforcement, Riverpark CIO, and Lam. Despite repeated requests for a solution, no meaningful changes have been made. When Tualatin's police officers have driven onto the Lam campus to investigate noise complaints, they have been chased down by Lam's security guards and asked to leave.

The Tualatin Noise Ordinance (1361-13) sets a city-wide limit of 50dB at night for residential areas, and the Tualatin Development Code (62.100) places even stricter limits on Manufacturing Park (MP) zoning, stating that "Such permitted uses must not cause objectionable noise". A noise study performed earlier this year at night by a licensed acoustical enginneer measured noise levels of 52dB at a private residence across the street from Lam's gas plant. Therefore, Lam's offsite noise impacts are in violation of both the Tualatin Development Code and the Tualatin Municipal Code.

Lam's noise pollution problem is not caused by daytime construction, backup beepers, or truck horns, but rather, by permanently-installed equipment that is part of Lam's physical plant. This equipment runs 24/7 and generates sound continuously. The sounds are most noticeable at night when background noise is low, and the location of sound impacts can vary depending on atmospheric conditions, especially temperature and wind direction. During southerly winds, Lam's noise signature can be heard more than a mile away.

Manufacturing Park (MP) zoning serves as a buffer between heavy industry and residential areas. MP zoning calls for "limiting uses to those that are of a nature so as to not conflict with other industrial uses or surrounding residential areas." (TDC 62.100) Please consider this letter

as evidence that Lam's operations are, in fact, currently conflicting with surrounding residential areas.

In order to bring Lam's facility into compliance with the Tualatin Code, I request that Lam's off-site noise impacts be eliminated as part of the TUX project. It is absolutely critical to our quality of life that peace and quiet be restored to our neighborhoods. We ask the City of Tualatin to require Lam to prove their ability to eliminate offsite noise before approving the addition of any new noise sources on campus.

Thank you for your consideration.

Sent from my iPhone

From: Sue Hein <suehein59@gmail.com>
Sent: Tuesday, August 12, 2025 2:15 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam 108th Ave Proposed Entrance

Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

Lam's proposed entrance on 108th fails three of the new driveway approach criteria in TDC 75.020.5: "(g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

Lam's traffic study shows that the Hazelbrook Road onramp to Hwy 99W will fail to meet performance standards after adding the additional traffic volumes from this proposed 108th entrance.

Lam's traffic study also shows that the 108th / Tualatin Road intersection has 5X the crash rate of 115th / Tualatin Road despite carrying much less traffic. Adding more traffic at 108th will increase this crash rate even further.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Sent from my iPhone

From: Sue Hein <suehein59@gmail.com>
Sent: Tuesday, August 12, 2025 2:18 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for your dedication and service to the community, and for your work to protect our quality of life. While development and corporate activities are essential to the vitality of our city, residential land uses must also be protected, both from an economic standpoint (property values) and from a quality of life standpoint (mental and physical health). In keeping with this mission, we are asking for your help in resolving Lam's noise pollution problem.

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We have brought this issue to the attention of the City Council, Police Department, Code Enforcement, Riverpark CIO, and Lam. Despite repeated requests for a solution, no meaningful changes have been made. When Tualatin's police officers have driven onto the Lam campus to investigate noise complaints, they have been chased down by Lam's security guards and asked to leave.

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as evidence that Lam's operations are, in fact, currently conflicting with surrounding residential areas.

In order to bring Lam's facility into compliance with the Tualatin Code, I request that Lam's off-site noise impacts be eliminated as part of the TUX project. It is absolutely critical to our quality of life that peace and quiet be restored to our neighborhoods. We ask the City of Tualatin to require Lam to prove their ability to eliminate offsite noise before approving the addition of any new noise sources on campus.

On a nice cool evening, sleeping with the window open isn’t possible with this noise.

Thank you for your consideration.

Sent from my iPhone

From: Susy Greene <susydgreene@gmail.com>
Sent: Tuesday, August 12, 2025 10:56 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for your dedication and service to the community, and for your work to protect our quality of life. While development and corporate activities are essential to the vitality of our city, residential land uses must also be protected, both from an economic standpoint (property values) and from a quality of life standpoint (mental and physical health). In keeping with this mission, we are asking for your help in resolving Lam's noise pollution problem.

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Thank you for your consideration.

From: Sybil Latham-Nagata <nwssln@comcast.net>
Sent: Thursday, August 7, 2025 1:03 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

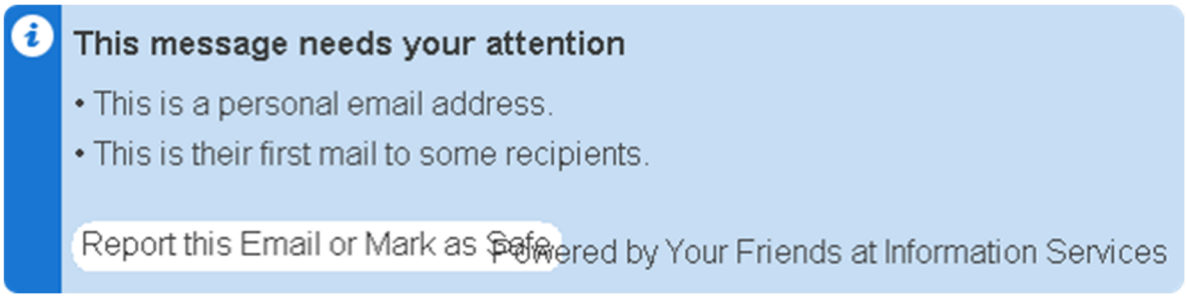
As a resident of Century Estates the addition of this traffic to the Hazelbrook School traffic is going to cause so much delay on Jurgens Rd. Please please don't add to the congestion!!! The city should be considering the addition of a stop light that would help Jurgens and Teton Roads.

Thank you for your consideration.

Sybil A. Latham-Nagata
10165 SW Sedlak CT
Tualatin, OR

Sent from my iPad

From: Tara and Tim Linn <taraandtim.house@gmail.com>
Sent: Tuesday, August 12, 2025 4:08 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts



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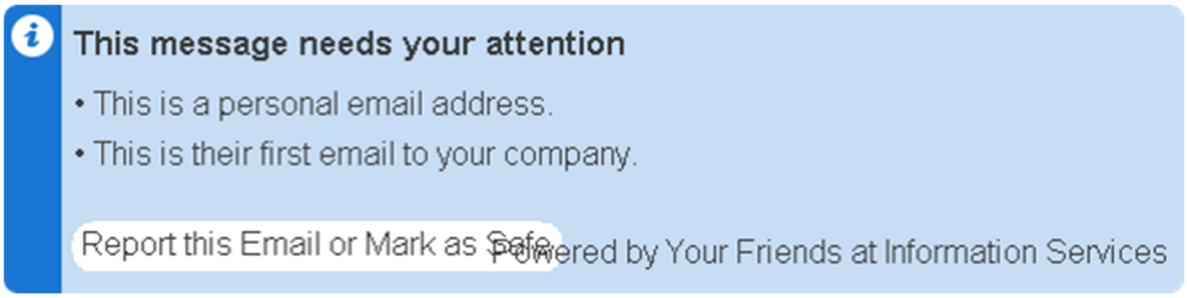
In order to bring Lam's facility into compliance with the Tualatin Code, I request that Lam's off-site noise impacts be eliminated as part of the TUX project. It is absolutely critical to our quality of life that peace and quiet be restored to our neighborhoods. We ask the City of Tualatin to require Lam to prove their ability to eliminate offsite noise before approving the addition of any new noise sources on campus.

Thank you for your consideration.

From: Ted Olson <noslotheo@gmail.com>
Sent: Tuesday, August 12, 2025 11:42 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts



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In order to bring Lam's facility into compliance with the Tualatin Code, I request that Lam's off-site noise impacts be eliminated as part of the TUX project. It is absolutely critical to our quality of life that peace and quiet be restored to our neighborhoods. We ask the City of Tualatin to require Lam to prove their ability to eliminate offsite noise before approving the addition of any new noise sources on campus.

Thank you for your consideration.

Ted Olson
11435 SW Elmer Ct
Tualatin, OR 97062

From: Terri Renfro <teriyaki2go@yahoo.com>
Sent: Monday, July 28, 2025 5:18 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Sent from my iPad

From: Terri Renfro <teriyaki2go@yahoo.com>
Sent: Wednesday, August 6, 2025 5:58 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's updated TUX proposal. While I appreciate the work that has been done to eliminate the employee entrance on Tualatin Road at SW 115th Ave and maintain the Leveton driveway, I am opposed to the addition of a new employee entrance on SW 108th Avenue, as it would increase peak traffic volumes on Tualatin Road.

NO new employee access on 108th
NO added traffic on Tualatin Road
Use Leveton Drive and Herman Road

Thank you for your consideration.

Sent from my iPhone

From: tom@almy.us
Sent: Wednesday, August 6, 2025 11:46 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan



Dear City of Tualatin,

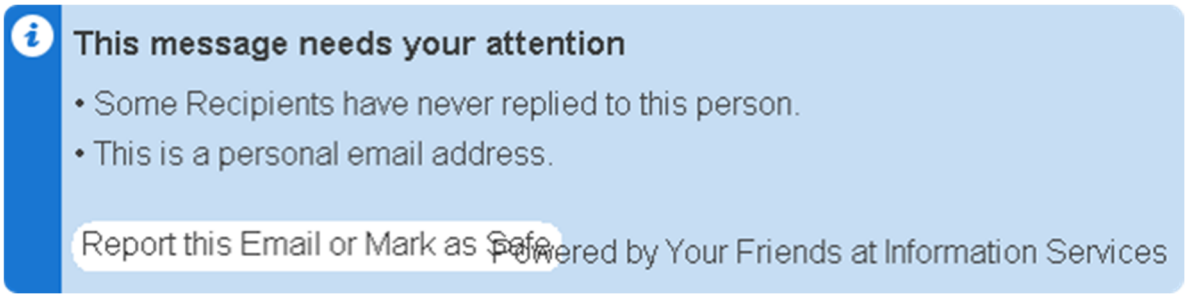
Thank you for the opportunity to provide feedback on Lam's revised TUX proposal. While I acknowledge the efforts made to eliminate the employee entrance on Tualatin Road at SW 115th Ave and preserve the Leveton driveway, I express my opposition to the inclusion of a new employee entrance on SW 108th Ave. This addition would likely result in an increase in peak traffic volumes on Tualatin Road.

- NO new employee access on 108th
- NO added traffic on Tualatin Road
- Use Leveton Drive and Herman Road

Thank you for your consideration.

Tom Almy
Tualatin, Oregon USA
Internet: tom@almy.us
Website: almy.us

From: Trace Helms <tracehelms@gmail.com>
Sent: Friday, August 15, 2025 10:13 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts



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We have brought this issue to the attention of the City Council, Police Department, Code Enforcement, Riverpark CIO, and Lam. Despite repeated requests for a solution, no meaningful changes have been made. When Tualatin's police officers have driven onto the Lam campus to investigate noise complaints, they have been chased down by Lam's security guards and asked to leave.

The Tualatin Noise Ordinance (1361-13) sets a city-wide limit of 50dB at night for residential areas, and the Tualatin Development Code (62.100) places even stricter limits on Manufacturing Park (MP) zoning, stating that "Such permitted uses must not cause objectionable noise". A noise study performed earlier this year at night by a licensed acoustical enginneer measured noise levels of 52dB at a private residence across the street from Lam's gas plant. Therefore, Lam's offsite noise impacts are in violation of both the Tualatin Development Code and the Tualatin Municipal Code.

Lam's noise pollution problem is not caused by daytime construction, backup beepers, or truck horns, but rather, by permanently-installed equipment that is part of Lam's physical plant. This equipment runs 24/7 and generates sound continuously. The sounds are most

noticeable at night when background noise is low, and the location of sound impacts can vary depending on atmospheric conditions, especially temperature and wind direction. During southerly winds, Lam's noise signature can be heard more than a mile away.

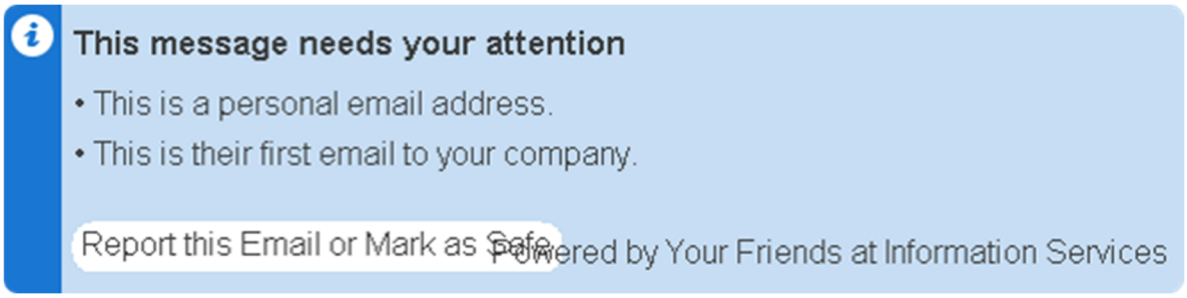
Manufacturing Park (MP) zoning serves as a buffer between heavy industry and residential areas. MP zoning calls for “limiting uses to those that are of a nature so as to not conflict with other industrial uses or surrounding residential areas.” (TDC 62.100) Please consider this letter as evidence that Lam's operations are, in fact, currently conflicting with surrounding residential areas.

In order to bring Lam's facility into compliance with the Tualatin Code, I request that Lam's off-site noise impacts be eliminated as part of the TUX project. It is absolutely critical to our quality of life that peace and quiet be restored to our neighborhoods. We ask the City of Tualatin to require Lam to prove their ability to eliminate offsite noise before approving the addition of any new noise sources on campus.

Thanks,

Trace Helms

From: Wendy Luikart <kickitin2016@gmail.com>
Sent: Friday, August 1, 2025 2:14 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Revised Lam TUX Site Plan



Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's updated TUX proposal.
We are STRONGLY opposed to the addition of a new employee entrance on SW 108th Avenue.
There is already too much traffic and this will make the exit from our street ridiculously long.
Please take this into consideration!!!!

NO new employee access on 108th
NO added traffic on Tualatin Road
Their employees should use Leveton Drive and Herman Road!!!!

Thank you,

Wendy and Glen Luikart

From: Wendy Luikart <kickitin2016@gmail.com>
Sent: Tuesday, August 12, 2025 8:24 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam Noise Impacts

Dear Tualatin Planning Commission and Architectural Review Board,

Thank you for your dedication and service to the community, and for your work to protect our quality of life. While development and corporate activities are essential to the vitality of our city, residential land uses must also be protected, both from an economic standpoint (property values) and from a quality of life standpoint (mental and physical health). In keeping with this mission, we are asking for your help in resolving Lam's noise pollution problem.

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Thank you for your consideration.

12/17/24

Through

7/21/25

In Favor

In Opposition

From: Adam Dickinson <adambdickinson@gmail.com>
Sent: Monday, March 24, 2025 12:16 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Adam Dickinson

From: Adam Skach <adam.skach@gmail.com>
Sent: Saturday, March 8, 2025 3:29 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

From: Adrienne McCullough <adrienneamac@icloud.com>
Sent: Monday, March 3, 2025 6:42 AM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Afreen Aen <afreenaen@gmail.com>
Sent: Tuesday, March 4, 2025 5:51 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

,Dear City of Tualatin

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Alaina Hailey <achailey16@gmail.com>
Sent: Wednesday, June 18, 2025 3:22 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Alex Santucci <asantonio356@gmail.com>
Sent: Wednesday, June 18, 2025 7:16 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Alex Simpson <asimps33@gmail.com>
Sent: Thursday, March 13, 2025 2:32 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

From: Alexa Johnson <johnson.alexa@icloud.com>
Sent: Sunday, March 2, 2025 1:36 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Alexis Ramirez <alexrramirez2@gmail.com>
Sent: Sunday, March 2, 2025 8:12 AM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Alisha Carlson <alishamcarlson91@gmail.com>
Sent: Saturday, March 22, 2025 2:40 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

From: Alisha Treider <a_415@hotmail.com>
Sent: Monday, March 17, 2025 8:56 AM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Get Outlook for iOS

From: Amy Johnson <johnsona@ohsu.edu>
Sent: Thursday, March 6, 2025 5:49 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

- Amy Johnson
17560 SW 111th Avenue
Tualatin, OR 97062
503.329.1952

From: Amy Williams <130.amy@gmail.com>
Sent: Thursday, March 27, 2025 6:11 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

From: Andrea Conner <andreawconner@hotmail.com>
Sent: Wednesday, January 29, 2025 10:01 AM
To: Council; Ext - Planning; Ext - Engineering Exterrnal Email
Subject: Long Time Resident Concerns

City of Tualatin,

I have lived in Tualatin most of my life. I went to Byrom, Hazelbrook, and graduated from TuHS. I moved back to Tualatin from Beaverton in 2016 to be closer to my parents when my kids were young. My parents have lived in Tualatin since 1990. I have two daughters who attend MITCH Charter and who are involved in local sports, activities, and call this city home.

I'm very disappointed in the LAM Research proposal to expand which affects Tualatin Road.

Having lived in Tualatin prior to LAM's presence, I'm at a loss as to what benefit their presence has added. To learn that tax dollars are potentially going to assist this company is very disappointing. Meanwhile, the schools in Tualatin have crumbled and parents are scrambling to move to private school or move out of the city (we are considering a move to move to West Linn or Sherwood). A potential move would be very disruptive to my children.

I believe the City of Tualatin needs to put residents first. If the Tualatin road project moves forward, there will be significant impacts to the residents.

Please consider this email to reflect that as a Tualatin taxpayer and voter, I will be watching the actions very closely and will vote accordingly.

Thank you,
Andrea Conner
10375 SW Rayborn Ct.
Tualatin, OR

From: Andrea Conner <andreawconner@hotmail.com>
Sent: Wednesday, January 29, 2025 10:01 AM
To: Council; Ext - Planning; Ext - Engineering Exterrnal Email
Subject: Long Time Resident Concerns

City of Tualatin,

I have lived in Tualatin most of my life. I went to Byrom, Hazelbrook, and graduated from TuHS. I moved back to Tualatin from Beaverton in 2016 to be closer to my parents when my kids were young. My parents have lived in Tualatin since 1990. I have two daughters who attend MITCH Charter and who are involved in local sports, activities, and call this city home.

I'm very disappointed in the LAM Research proposal to expand which affects Tualatin Road.

Having lived in Tualatin prior to LAM's presence, I'm at a loss as to what benefit their presence has added. To learn that tax dollars are potentially going to assist this company is very disappointing. Meanwhile, the schools in Tualatin have crumbled and parents are scrambling to move to private school or move out of the city (we are considering a move to move to West Linn or Sherwood). A potential move would be very disruptive to my children.

I believe the City of Tualatin needs to put residents first. If the Tualatin road project moves forward, there will be significant impacts to the residents.

Please consider this email to reflect that as a Tualatin taxpayer and voter, I will be watching the actions very closely and will vote accordingly.

Thank you,
Andrea Conner
10375 SW Rayborn Ct.
Tualatin, OR

From: Arva Bartos <arva41@gmail.com>
Sent: Wednesday, January 29, 2025 1:20 PM
To: Ext - Planning
Subject: LAM code violations re Tualatin Road use...

"We did not contact any City-recognized CIOs.
Please use this statement in your completeness checklist."
(Page 29) http://www.tualatinroad.org/files/LAM2022081201.pdf

If the City of Tualatin allows Mackenzie and Lam to repeatedly and flagrantly violate notice requirements, the legitimacy of the CIO program will be compromised.

Please correct this situation.
Thank you,
Arva & Paul Bartos
17750 SW Chippewa Trail, Tualatin, OR 97062

From: Ashley Sexton <sextona94@gmail.com>
Sent: Tuesday, July 1, 2025 1:59 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

From: athomassen <athomassen@comcast.net>
Sent: Friday, February 28, 2025 1:29 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my Verizon, Samsung Galaxy smartphone

From: Comcast <ba53@comcast.net>
Sent: Wednesday, March 5, 2025 10:13 AM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPad

From: Beth Sethi <bethsethi@gmail.com>
Sent: Saturday, March 1, 2025 10:00 AM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Please don't let LAM ruin our neighborhood!

Dear Council Members, Mayor Bubenik, and City Staff,

Please do not allow LAM to add an entrance on Tualatin Road for their new TUX project. The neighborhood has been clear - as taxpayers, voters, and residents who love this city, there is a resounding voice OPPOSED to adding this unnecessary, problematic entrance.

LAM can continue to exit quite happily and successfully on to the lightly used Leveton Road, which was designed for industrial use and in my 20 years living in Tualatin has NEVER had a back up. Leveton is quiet even on the busiest days and nobody lives on Leveton.

In contrast, north of Tualatin Road is 100% residential. It is already difficult to turn onto, both right and left, from the Jurgens neighborhood exits during morning and evening commute time. Adding 1600 cars, including potentially trucks, will for certain make it impossible to turn left during busy times of day, and even turning right would be problematic. Tualatin Road hosts pedestrians and joggers, cyclists, and many school buses (including students waiting on corners abutting Tualatin Road for the bus). If anything, the city should be looking for ways to lighten traffic on Tualatin Road. Under no circumstances should the city be complicit in adding traffic to Tualatin Road, particularly when the neighborhood residents (who have been clear are not opposed to further development at LAM apart from this exit) have expressed such strong opposition.

We have an alternative. Use Leveton. Do not use Tualatin Road.

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Beth Sethi
17552 SW Shasta Trail
20 year Tualatin resident, mother of 3 TTSD students, regular walker and cyclist

From: bob jones <bobjones2398@yahoo.com>
Sent: Sunday, March 2, 2025 3:17 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Bob

From: Brenda Adams <space20k@gmail.com>
Sent: Tuesday, March 4, 2025 2:40 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Brenda Adams

Sent from my iPhone

From: Brett Hamilton <brett@simple.be>
Sent: Wednesday, January 29, 2025 9:02 AM
To: Keith Leonard
Subject: Re: CIO Notice Requirement
Attachments: LAM2024110701.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Thanks Keith,

I would also like to add to the record, my October 2024 email to Lam CEO Tim Archer, and the November 2024 response from Lam's Chief Communication Officer Steve Fine (attached together)

-Brett Hamilton

> On Jan 29, 2025, at 8:25 AM, Keith Leonard <kleonard@tualatin.gov> wrote:
>
> Good morning Brett,
>
> Thank you for providing additional comments pertaining to the Lam TUX application. I have added these comments to the public record. Thank you for participating in the public process. Have a good day.
>
> **Keith Leonard, AICP**
> Associate Planner
> **Phone**: 503.691.3029
>
> ---
>
> **From:** Brett Hamilton <brett@simple.be>
> **Sent:** Wednesday, January 29, 2025 8:25 AM
> **To:** Council <council@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>; Ext - Engineering Exterrnal Email <engineering@tualatin.gov>
> **Cc:** Sherilyn Lombos <slombos@tualatin.gov>; Megan George <mgeorge@tualatin.gov>; Steve Koper <skoper@tualatin.gov>; Keith Leonard <kleonard@tualatin.gov>; Mike McCarthy <mmccarthy@tualatin.gov>
> **Subject:** CIO Notice Requirement
>
> Dear City of Tualatin,
>
> A review of project documents reveals that Mackenzie/Lam did not notify any

CIO representatives prior to the June 2024 neighborhood developer meeting, as required by Tualatin Development Code 32.120.5 (b)(iii). The code requires an applicant to send notice to CIO representatives via First Class Mail at least 14 days *before* the neighborhood developer meeting. This requirement was not met at the time, nor can it be met retroactively.

Lam and Mackenzie have been through the Tualatin land use review process before and they know the requirements. In 2022, Suzannah Stanley, Mackenzie Planner, demonstrated that she is very familiar with the CIO notification section. On pages 29-32 of Lam's IMP 22-0001 application, Ms. Stanley is on the record arguing that this notice requirement does not apply to Lam:

"We did not contact any City-recognized CIOs.
Please use this statement in your completeness checklist."
(Page 29) http://www.tualatinroad.org/files/LAM2022081201.pdf

If the City of Tualatin allows Mackenzie and Lam to repeatedly and flagrantly violate notice requirements, the legitimacy of the CIO program will be compromised.

At the June neighborhood developer meeting, Mackenzie said that "the project team is open to continue discussing topics of concern with neighbors" (see meeting minutes #13) however, repeated attempts by the community to open a dialogue with Lam and Mackenzie have been met with refusal and stonewalling. Lam's Chief Communication Officer, Steve Fine, clarified their position in his November 2024 email:

"We are committed to following the City's process to finalize a plan for our project that works for the City, the community, and Lam. In keeping with this approach, please address future communications about traffic considerations to the City of Tualatin."

Because Mackenzie and Lam have not followed proper notice procedure, we hereby ask the City of Tualatin to deny Lam's current land use application so that the applicant can reset and start over.

Thank you for your consideration.

-Brett Hamilton

From: Steve Koper
Sent: Friday, February 7, 2025 4:09 PM
To: Brett Hamilton; Council; Ext - Planning; Ext - Engineering Exterrnal Email
Cc: Sherilyn Lombos; Megan George; Keith Leonard; Mike McCarthy; Kim McMillan
Subject: RE: CIO Notice Requirement

Good afternoon, Mr. Hamilton,

Thank you for your email. A copy will be included in the written record for the Lam Industrial Master Plan (IMP) and Architectural Review (AR) applications. I wanted to take the opportunity to respond to your request that the city "deny Lam's current land use application so that the applicant can reset and start over."

The applications were both deemed complete on December 16, 2024. A hearing for the IMP has been scheduled with the Planning Commission on March 19, 2025, and a hearing for the AR has been scheduled with the Architectural Review Board on April 2, 2025.

Since the applications have been deemed complete, city staff cannot "deny" or otherwise void or rescind them. The issue you've raised – Lam did not notify CIO reps of the Neighborhood/Developer meeting as required by TDC 32.120(5)(b)(iii) – may be considered by the Planning Commission and Architectural Review Board, respectively, as part of their decision-making processes.

Sincerely,

Steve Koper
Assistant Director
Community Development
Phone: 503.691.3028
tualatinoregon.gov

From: Brett Hamilton <brett@simple.be>
Sent: Wednesday, January 29, 2025 8:25 AM
To: Council <council@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>; Ext - Engineering Exterrnal Email <engineering@tualatin.gov>
Cc: Sherilyn Lombos <slombos@tualatin.gov>; Megan George <mgeorge@tualatin.gov>; Steve Koper <skoper@tualatin.gov>; Keith Leonard <kleonard@tualatin.gov>; Mike McCarthy <mmccarthy@tualatin.gov>
Subject: CIO Notice Requirement

Dear City of Tualatin,

A review of project documents reveals that Mackenzie/Lam did not notify any CIO representatives prior to the June 2024 neighborhood developer meeting, as required by Tualatin

Development Code 32.120.5 (b)(iii). The code requires an applicant to send notice to CIO representatives via First Class Mail at least 14 days *before* the neighborhood developer meeting. This requirement was not met at the time, nor can it be met retroactively.

Lam and Mackenzie have been through the Tualatin land use review process before and they know the requirements. In 2022, Suzannah Stanley, Mackenzie Planner, demonstrated that she is very familiar with the CIO notification section. On pages 29-32 of Lam's IMP 22-0001 application, Ms. Stanley is on the record arguing that this notice requirement does not apply to Lam:

"We did not contact any City-recognized CIOs.
Please use this statement in your completeness checklist."
(Page 29) http://www.tualatinroad.org/files/LAM2022081201.pdf

If the City of Tualatin allows Mackenzie and Lam to repeatedly and flagrantly violate notice requirements, the legitimacy of the CIO program will be compromised.

At the June neighborhood developer meeting, Mackenzie said that "the project team is open to continue discussing topics of concern with neighbors" (see meeting minutes #13) however, repeated attempts by the community to open a dialogue with Lam and Mackenzie have been met with refusal and stonewalling. Lam's Chief Communication Officer, Steve Fine, clarified their position in his November 2024 email:

"We are committed to following the City's process to finalize a plan for our project that works for the City, the community, and Lam. In keeping with this approach, please address future communications about traffic considerations to the City of Tualatin."

Because Mackenzie and Lam have not followed proper notice procedure, we hereby ask the City of Tualatin to deny Lam's current land use application so that the applicant can reset and start over.

Thank you for your consideration.

-Brett Hamilton

From: Brett Hamilton <brett@simple.be>
Sent: Wednesday, January 29, 2025 8:25 AM
To: Council; Ext - Planning; Ext - Engineering Exterrnal Email
Cc: Sherilyn Lombos; Megan George; Steve Koper; Keith Leonard; Mike McCarthy
Subject: CIO Notice Requirement

Dear City of Tualatin,

A review of project documents reveals that Mackenzie/Lam did not notify any CIO representatives prior to the June 2024 neighborhood developer meeting, as required by Tualatin Development Code 32.120.5 (b)(iii). The code requires an applicant to send notice to CIO representatives via First Class Mail at least 14 days *before* the neighborhood developer meeting. This requirement was not met at the time, nor can it be met retroactively.

Lam and Mackenzie have been through the Tualatin land use review process before and they know the requirements. In 2022, Suzannah Stanley, Mackenzie Planner, demonstrated that she is very familiar with the CIO notification section. On pages 29-32 of Lam's IMP 22-0001 application, Ms. Stanley is on the record arguing that this notice requirement does not apply to Lam:

"We did not contact any City-recognized CIOs.
Please use this statement in your completeness checklist."
(Page 29) http://www.tualatinroad.org/files/LAM2022081201.pdf

If the City of Tualatin allows Mackenzie and Lam to repeatedly and flagrantly violate notice requirements, the legitimacy of the CIO program will be compromised.

At the June neighborhood developer meeting, Mackenzie said that "the project team is open to continue discussing topics of concern with neighbors" (see meeting minutes #13) however, repeated attempts by the community to open a dialogue with Lam and Mackenzie have been met with refusal and stonewalling. Lam's Chief Communication Officer, Steve Fine, clarified their position in his November 2024 email:

"We are committed to following the City's process to finalize a plan for our project that works for the City, the community, and Lam. In keeping with this approach, please address future communications about traffic considerations to the City of Tualatin."

Because Mackenzie and Lam have not followed proper notice procedure, we hereby ask the City of Tualatin to deny Lam's current land use application so that the applicant can reset and start over.

Thank you for your consideration.

-Brett Hamilton

From: Brett Hamilton <brett@simple.be>
Sent: Wednesday, March 5, 2025 9:15 PM
To: Council
Cc: Ext - Planning; Megan George; Keith Leonard; Steve Koper; Sherilyn Lombos
Subject: Lam Hearing Schedule

Dear City Council,

Over the past week, members of the community have been canvassing neighborhoods to get word out regarding Lam's upcoming hearings. Each day during our canvas we checked the city website to make sure the schedule had not changed. Today, we learned that Lam requested a postponement a week ago. This was not announced to the public and the city website has still not been updated. As a result, all the flyers we distributed have obsolete dates.

The first hearing was scheduled for two weeks from tonight. Many residents are still planning to attend based on that original date, and unfortunately we do not have an efficient way to reach all of them in time, but the City does.

We are asking the City of Tualatin to provide updates to the community right now explaining that the hearings have been postponed at the request of the applicant. There is no need to wait for new hearing dates to be confirmed before letting the public know that the old dates are now obsolete. Due to the short time frame, we believe that three methods will be necessary now to reach all interested parties in time:

1) Update the city website.
2) Send an email update to each person who has provided public comment.
3) Mail a postcard to every household in the Riverpark CIO.

We ask for your assistance in keeping the community up to date on this very important issue.

Sincerely,
Brett Hamilton

From: Brianna Nelson <briannan90000@gmail.com>
Sent: Saturday, March 1, 2025 5:57 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Brianna Nelson

From: Carol Plambeck <carol.plambeck@gmail.com>
Sent: Tuesday, March 11, 2025 3:39 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Follow Up Flag: Follow up
Flag Status: Flagged

Dear City of Tualatin decision makers:

Thank you for the opportunity to comment on Lam's proposed TUX project. I have lived in Tualatin (and paid taxes here) for 46 years.

I am totally opposed to the proposed employee entrance on Tualatin Road. If that entrance is approved, we city residents who live north of Tualatin Road will have to wait even longer to leave our neighborhood (and the wait is plenty long already!) Please require Lam to keep their existing driveways on Leveton Drive. PLEASE do not permit ANY new roadway access on Tualatin Road.

At the very least, IF this entrance is approved—and I very much hope that it's NOT—please insist that Lam install a traffic light at that entrance.

Thank you.

carol.plambeck@gmail.com

From: Caroline Jaffee <carolinejw8@gmail.com>
Sent: Thursday, March 6, 2025 10:03 AM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sincerely,

Caroline Jaffee

From: Carrie Knappenberger <carrie.knappenberger1@gmail.com>
Sent: Sunday, May 4, 2025 8:47 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Carrie

From: Carrie Mathis <swissmissthefirst@hotmail.com>
Sent: Saturday, March 8, 2025 10:19 AM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

I really appreciate your consideration.

Thank you!
Carrie Yoder

Sent from my iPhone

From: Catie Jones <catiesybiljones@gmail.com>
Sent: Wednesday, March 19, 2025 1:13 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Best
Catharine Jones

From: cdacondo@gmail.com
Sent: Monday, March 17, 2025 5:18 PM
To: Council; Ext - Planning
Subject: Tualatin Road

September 7, 2024

To: Tualatin City Council: council@tualatin.gov
To: Tualatin Planning Department: planning@tualatin.gov

Dear Tualatin City Council and Tualatin Planning Department:

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!

From: Cheyenne Palmer <cheyenne0autumn@icloud.com>
Sent: Friday, June 27, 2025 2:01 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Chris Hein <ChrisH@osf.com>
Sent: Monday, May 5, 2025 1:16 PM
To: Transportation System Plan (TSP) distribution group; Ext - Planning; Council; outreach@tualatinroad.org
Cc: Chris Hein; Keith Leonard
Subject: RE: Tualatin Transportation System Plan

To: Tualatin TSP, Planning Department, City Council
cc: Outreach Tualatin Road.ORG

Dear City of Tualatin,

Thank you for the opportunity to comment on the Draft Tualatin Transportation System Plan and I would also like my comments to be included in the Public Comments for the Lam Tux Proposal.

I would like to request the following changes be made to the draft TSP before it is considered for adoption:

1. Remove the proposed traffic signal at Tualatin Road and SW 115th Ave.
2. Reclassify Tualatin Road as an Arterial.
3. Reclassify Leveton Drive as a Collector.

Although this traffic signal has been proposed with good intentions, community members have identified a number of unintended consequences that would result from signalizing this intersection:

• Increased cut-through traffic in the surrounding neighborhoods
• Increased bypass traffic on Jurgens Ave and Hazelbrook Road
• Increased traffic in the School Zone at Hazelbrook Middle School
• Increased pedestrian risk to Hazelbrook Middle School students
• More brake dust, engine noise, car exhaust, and traffic collisions
• Increased air pollution in the areas downwind from this intersection
• Increased traffic congestion upstream from this intersection

The proposed traffic signal would do more harm than good, and the negative impacts would be detrimental to our community. We are opposed to this traffic signal, and we ask the City to remove it from the TSP.

Tualatin Road is currently functioning as an arterial, it was previously classified as an arterial,

and it has the traffic volume of an arterial. Leveton Drive is currently functioning as a collector, it was previously classified as a collector, and it has the current traffic volume of a collector. We ask that the functional classifications of these two roadways be restored to their correct category during the current TSP update.

Having lived in Tualatin for over 30 Years and having attended many proposal hearings about the development of the Novellus and now Lam Industries property the conversation had always been promoted about Leveton Drive as a collector to alleviate the traffic on Tualatin Road. You now have a chance to reconfirm the classifications to keep even more traffic off Tualatin road.

Thank you for your consideration,

Chris Hein

10975 SW Tunica
St.

Tualatin, Oregon 97062

This email and any files transmitted with it are confidential and intended solely for the use of the individual or entity to whom they are addressed. If you have received this email in error, please notify the sender immediately by email and delete this email from your system

From: Kristen McCormick <sushik10@gmail.com>
Sent: Thursday, January 16, 2025 7:12 PM
To: Council; Ext - Planning; Ext - Engineering Exterrnal Email
Subject: Save Tualatin Road!

December 16, 2024

To: Tualatin City Council council@tualatin.gov
To: Tualatin Planning Department planning@tualatin.gov
To: Tualatin Engineering Department engineering@tualatin.gov

Dear City of Tualatin,

While researching the traffic impacts from Lam's TUX project, members of the community have discovered that Lam's proposal is not compatible with the Tualatin Comprehensive Plan 2040, and it would violate the Tualatin Development Code, both in spirit and letter.

For the reasons outlined below, we are asking the Tualatin Planning Department to consider Lam's proposed entrance on Tualatin Road to not be approvable, and we ask the City Manager to use her authority to have the proposed entrance removed from the TUX project site plan so that alternative access can be designed.

SITE CIRCULATION

Existing driveways provide sufficient access points to the Lam Campus as a whole. Lam currently has 6 other access points. 3 on 108th and 3 on Leveton Drive. Adding a new access point on Tualatin Road is unnecessary.

Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to add an additional driveway onto the street network.

The Tualatin Comprehensive Plan 2040 strongly supports the use of existing access points, rather than creating new ones, especially when a new access point would have negative impacts to the community. "Consider transportation options that make the best use of the existing network" (Goal 8.7)

SPIRIT OF THE LAW

Tualatin Road is currently functioning as an arterial, it was previously classified as an arterial, and it has the traffic volume of an arterial. Leveton Drive is currently functioning as a collector, it was previously classified as a collector, and it has the current traffic volume of a collector.

During the 2012-14 TSP update, the functional classifications of these streets were reversed in a failed attempt by the city to reduce the amount of traffic on Tualatin Road and encourage more trips to use Leveton Drive. While we appreciate the intent of this reversal, the impact is now

exactly opposite of what was intended, and we ask that this reversal be deemed a mistake. We ask the city to remedy this mistake by restoring the correct functional classifications to their appropriate streets. Lam should not be allowed to rely on a classification error to put a new entrance on a road that, based on current conditions, should not have a new entrance.

If the streets were classified correctly, Lam Research would not be able to add an employee entrance on Tualatin Road because it would be an arterial. “No new driveways or streets on arterial roadways within the City, except where noted in the TDC, usually when no alternative access is available.” (TCP 2040 POLICY 8.10.1)

LETTER OF THE LAW

The Tualatin Development Code says “Lots that front on more than one street may be required to locate motor vehicle accesses on the street with the lower functional classification as determined by the City Manager.” TDC 75.040 (5) Currently the TSP shows 108th classified as a minor collector and Tualatin Road a major collector. Based on this, access should be provided from 108th not Tualatin Road.

Lam’s proposed entrance on Tualatin Road fails four of the new driveway approach criteria in TDC 75.020.5: "(d)(ii) Takes access from the lowest classification of street abutting the property … (g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

Tualatin Development Code 75.140.15 (a) grants the specific locations for Lam's three driveways on the north side of Leveton Drive. The applicant's proposal to relocate one of the three driveways is not compliant with the development code.

No matter which way you slice it, Tualatin Road is the worst option for carrying Lam’s new entrance and additional traffic volume. We ask the City Manager to use her discretion and require access from the most appropriate road which, by any metric, is Leveton Drive.

PROPOSED TRAFFIC SIGNAL

The proposed entrance on Tualatin Road would create the need for a new traffic signal on Tualatin Road which would have many negative impacts on the community. These impacts justify rejection of the proposed access. If Lam were to take access from Leveton Drive, no new traffic signal would be needed.

The community provided overwhelming feedback during the TSP update this summer about this issue and we asked that the proposed traffic signal be removed from the TSP. The city should take this feedback into account and "Conduct the planning process with adequate input and feedback from citizens in each affected neighborhood” (TCP 2040 Goal 8.7)

CONSIDER SAFETY

The Tualatin TSP Existing Conditions Report shows Tualatin Road and 115th Ave having higher Pedestrian Level of Traffic Stress than Leveton Drive and 108th Ave. (Figure 23) Adding more traffic to Tualatin Road and 115th Ave will degrade pedestrian safety even further.

Tualatin Road between 124th and 115th has higher concentration of collisions than Leveton and 108th, with a history of serious injury collision while Leveton does not. (Figure 31) Adding more traffic onto Tualatin Road and 115th will increase the traffic exposure and likely result in worse safety outcomes.

Tualatin Road has a history of collisions involving pedestrians and bicycles while Leveton and 108th do not. (Figure 32) Adding more traffic to Tualatin Road will likely make this safety issue worse.

Converting a driveway to full access or signalizing a driveway would likely increase traffic crashes. Per CMF ClearingHouse, changing driveway type to full access has a crash modification factor (CMF) of 2.25, and signalizing a driveway has a CMF of 3.98, which means that the two measures will likely increase traffic crashes by a factor of 2.25 and 3.98 respectively.

Lam's traffic study also does not identify the locations of school bus routes at Hazelbrook Middle School or the potential impacts to school bus traffic. Student safety is one of the most important issues in our community, but so far it has been ignored in this process.

Also, the safety and congestion impacts from Lam's proposal would be most concentrated on Tualatin Road between 115th and 124th which abuts a residential area with traditionally disadvantaged demographics and income limited apartments. This is not equitable.

BYPASS ROUTE

The route from Hazelbrook Road going west and turning right onto Hwy 99W is a "hidden" route that can bypass the traffic congestion at the west end of Tualatin Road. Adding a signal at 115th and Tualatin Road will encourage more cars to take this bypass. The potential impact of this new traffic pattern imposes significant safety concerns to communities all along the route. These impacts were not addressed in the traffic study.

SUMMARY

We urge the city to consider all the above concerns and require the applicant (Lam) to revise their site development plan accordingly. We believe that the current proposal does not meet Tualatin's planning rules, and that the City Manager should use her authority to bring Lam's proposal into compliance. No new roadway access on Tualatin Road.

Thank You

Kristen McCormick

From: Cidney Marshall <marshall.cidney@gmail.com>
Sent: Saturday, March 1, 2025 9:52 PM
To: Council; Ext - Planning
Subject: Save Tualatin Road

Dear Tualatin City Council and Tualatin Planning Department:

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!

Cidney

From: clint ackerman <hockey535353@outlook.com>
Sent: Tuesday, February 25, 2025 4:45 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Coy Lay <solarcoy@gmail.com>
Sent: Tuesday, February 11, 2025 8:06 PM
To: Keith Leonard
Cc: barb@tigardlife.com; contact@tualatinroad.org; council@tualitin.gov; Ext - Planning; Ext - Engineering Exterrnal Email
Subject: LAM-Tualatin Rd

I drive Tualatin Rd several times a week. To create a new entrance for LAM and add a traffic light would seriously deteriorate my life. Tualatin Sherwood Road is already really loaded with commercial and industrial traffic. To channel large amounts of new traffic onto Tualatin Road will cost me a lot of time and significantly deterorate the local residential community. I want LAM to thrive but, I don't want the community to pay a big price for that to happen. A route using Leveton Drive and 124th Ave should be improved for their use instead.

If Tualatin Rd must be compromised, LAM could offer Tualatin something of significant value in addition to the addional tax revenue their expansion would generate. The tax revenues would, after all, be needed just to continue to provide municipal services for their operations.

For making my life a little worse, let them provide a place for community meetings, or perhaps some recreational park space, or a dog park on their grounds. Perhaps they could provide significat funds to support the Phol center, to upgrade the Jergens Dog Park, or raise the level of the Tualatin Dog Park so it isn't so soggy after rains, or some additional resourses for other city parks or facility.

Let them compensate the community for the deterioration in local life they propose, something more than just paying their tax levy to cover the expected expenses of their expansion.

From: Daniel Flores <dany2142@icloud.com>
Sent: Monday, March 3, 2025 5:13 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Darrell Jones <drljones2@gmail.com>
Sent: Wednesday, July 9, 2025 3:24 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

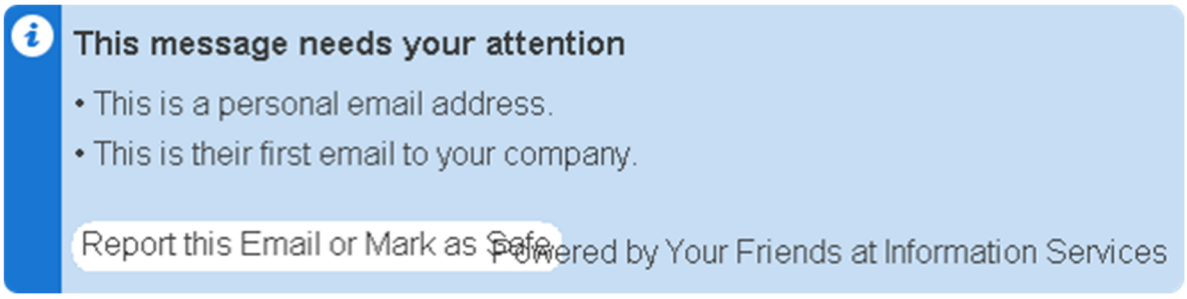
Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: dave franceis <ps4davey@gmail.com>
Sent: Friday, June 20, 2025 2:43 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project



Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Best regards

From: Dave McKevitt <dmckevitt@silkinmanagementgroup.com>
Sent: Friday, June 20, 2025 12:46 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: David Brockway <DaveBpdx@outlook.com>
Sent: Monday, March 3, 2025 10:27 AM
To: Council; Ext - Planning
Cc: bluewave500@yahoo.com
Subject: Save Tualatin Road

Dear Tualatin City Council and Tualatin Planning Department:

Our family is opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. We live north of Tualatin Road. The only way to get to Tualatin is to make a left turn from our neighborhood on to Tualatin Road. With the large number of additional vehicles anticipated on Tualatin Road due to the Lam Research proposal, I feel it would be not only inconvenient but dangerous for us to get to Tualatin.

Why not use Leveton Drive? It seems to make so much more sense. It was built for industrial traffic and has plenty of unused capacity already available.

Is the issue that Lam would have to spend a few extra bucks to route cars to Leveton? They are a for profit company and should be able to find a way to fund this solution. If they go ahead and add the Tualatin Road option, they will never be considered a good neighbor. Not only that, any council member that votes for this will not be in office when the election cycle happens. Something to think about.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!
Dave and Stephanie Brockway
108th pl,Tualatin

From: David Chen <dchen369@gmail.com>
Sent: Thursday, February 27, 2025 1:36 PM
To: Ext - Planning
Subject: Save Tualatin Road - Tualatin Resident

Hi,

I am writing to express that I am saying NO to the new access on Tualatin Road. Please keep the lever on driveway for access.

Sincerely,

Concerned Tualatin Resident - David Chen

From: David Ney <davidn503@gmail.com>
Sent: Friday, March 14, 2025 3:51 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Regards,

David Ney
10235 SW Fulton Dr, Tualatin, OR 97062

From: deborah anderson <deborah52557@hotmail.com>
Sent: Sunday, May 4, 2025 10:31 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.
PLEASE DO NOT DO THIS. THERE ARE OTHER CHOICES. MANY PEOPLE WHO LIVE ON THIS STREET WILL BE NEGATIVELY IMPACTED FOR NO GOOD REASON.
Use 124 th for access. That's what's it was built for, to divert traffic from the residential area to the industrial area.
I appreciate all my neighbors, including the businesses, please appreciate me back!

Thank you for your consideration.
Deborah Anderson
Resident SW Tualatin RD

Sent from my iPhone

From: DeGay Harris <degaycheri@gmail.com>
Sent: Friday, February 28, 2025 5:53 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Best regards,
DeGay
Sent from my iPhone

From: Denise Means <misterylwork@gmail.com>
Sent: Sunday, March 2, 2025 1:26 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

From: Tami Richardson <trichardson.ccc@gmail.com>
Sent: Monday, March 3, 2025 5:23 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project.

We are residents of Tualatin and live in a neighborhood off Tualatin Road on Winya Ct.

We are against the proposed employee entrance on Tualatin Road. We are asking that the city require Lam to keep their existing driveways on Leveton Drive.

Please do not allow a new roadway access on Tualatin Road.

Tualatin Road is already a busy road. We live active and involved lives here in Tualatin with our 4 children and have found it difficult and increasingly dangerous to turn out of our neighborhood when trying to take our kids to school, activities and sports practices during peak times. Having a LAM entrance on Tualatin Road would only add to this issue.

We love raising our family here in Tualatin and hope you take our quality of life into consideration. Thank you for your time.

Devin and Tami Richardson

From: Don Johnson <djohnsona1@icloud.com>
Sent: Saturday, March 1, 2025 11:37 AM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin - I am really disappointed in our City for even considering allowing Lam Research traffic to exit onto Tualatin Rd. I understand the Tualatin Rd exit is one of three options, but it is not the favored option of local residents. Leveton drive makes greater sense and is the option supported by the majority of Tualatin residents. Please don't make the wrong decision for your constituents, when other, more favorable, options are available.

Thank you for your consideration.

Sent from my iPhone

From: Donald Spencer <donaldwspencer@gmail.com>
Sent: Tuesday, February 25, 2025 4:12 PM
To: Ext - Planning
Subject: LAM Tualatin Road Entrance

Follow Up Flag: Follow up
Flag Status: Flagged

To Whom Makes Decisions:

Please, NO new entrance to LAM off of Tualatin Road.
I am not opposed to LAM increasing the number of buildings and employees on their property as they have been doing for years.

I walk the LAM property and appreciate their attentiveness to landscaping and noise pollution. LAM has been a good neighbor.

But LAM is not neighborly but asking its neighbors for another entrance and to increase traffic on Tualatin Road.
LAM presently has 5 entrances to its property.
Three on SW 108th and two on Leveton Drive

LAM cannot suggest they need direct access to Tualatin Road for trucks nor employees.

In the years I've lived across from LAM they and many other employers in the area have expanded and the traffic on Tualatin Road has greatly increased.

Please, NO new truck and employee access to the LAM property off of Tualatin Road.

Thank you. I do appreciate your work on the Planning Commission and the Review Board.

Don Spencer 503-539-3274

From: Dorothy Dorantes <dorothysamantha123@icloud.com>
Sent: Wednesday, May 28, 2025 11:42 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Dorothy Dorantes
(971)727-0346
dorothysamantha123@icloud.com

From: Doug Zimmers <dougzimmers@yahoo.com>
Sent: Sunday, July 20, 2025 10:09 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Doug Zimmers

From: douglas kidwiler <dkidwiler@msn.com>
Sent: Sunday, March 2, 2025 1:50 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

No

From: Drew Riverman <driv3n8@gmail.com>
Sent: Monday, March 3, 2025 12:39 PM
To: Ext - Planning
Subject: Save Tualatin Road

Dear Tualatin City Council and Tualatin Planning Department:

My name is Drew, and I live at the Rivercrest Meadows Townhomes on Tualatin Road.

This is truly going to be an issue for myself and all other residents looking to travel to and from work each day.

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank you for your consideration.

From: Eli Puga <edpuga40@icloud.com>
Sent: Tuesday, March 4, 2025 3:30 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Elizabeth Whalley <elizabethwhalley04@gmail.com>
Sent: Saturday, March 1, 2025 6:54 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am ABSOLUTELY against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Ellison Marks <ellison.marks27@gmail.com>
Sent: Saturday, March 1, 2025 9:50 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.
Ellison

Sent from my iPhone

From: Emy Loanzon <emmlcommerce@gmail.com>
Sent: Sunday, March 23, 2025 3:16 PM
To: Council; Ext - Planning
Subject: Save Tualatin Road

Dear Tualatin City Council and Tualatin Planning Department:

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!

Emy Loanzon

From: ERIC SMITH <esscraigslist@hotmail.com>
Sent: Friday, January 31, 2025 12:04 PM
To: Ext - Planning

Dear City of Tualatin,

A review of project documents reveals that Mackenzie/Lam did not notify any CIO representatives prior to the June 2024 neighborhood developer meeting, as required by Tualatin Development Code 32.120.5 (b)(iii). The code requires an applicant to send notice to CIO representatives via First Class Mail at least 14 days *before* the neighborhood developer meeting. This requirement was not met at the time, nor can it be met retroactively.

Lam and Mackenzie have been through the Tualatin land use review process before and they know the requirements. In 2022, Suzannah Stanley, Mackenzie Planner, demonstrated that she is very familiar with the CIO notification section. On pages 29-32 of Lam's IMP 22-0001 application, Ms. Stanley is on the record arguing that this notice requirement does not apply to Lam:

"We did not contact any City-recognized CIOs.
Please use this statement in your completeness checklist."
(Page 29) http://www.tualatinroad.org/files/LAM2022081201.pdf

If the City of Tualatin allows Mackenzie and Lam to repeatedly and flagrantly violate notice requirements, the legitimacy of the CIO program will be compromised.

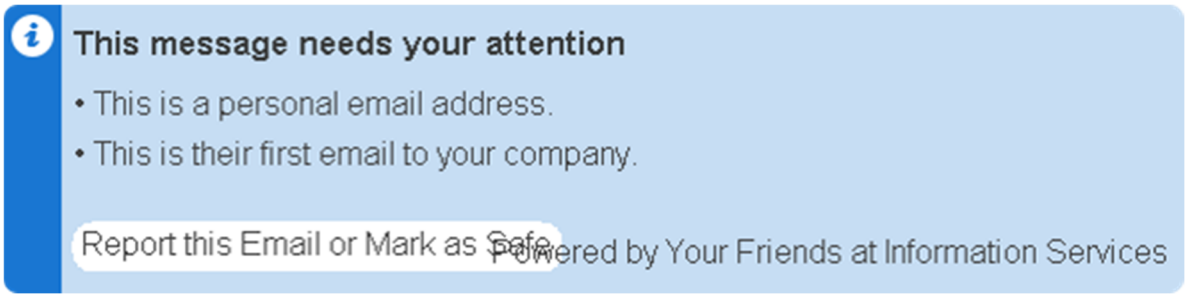
At the June neighborhood developer meeting, Mackenzie said that "the project team is open to continue discussing topics of concern with neighbors" (see meeting minutes #13) however, repeated attempts by the community to open a dialogue with Lam and Mackenzie have been met with refusal and stonewalling. Lam's Chief Communication Officer, Steve Fine, clarified their position in his November 2024 email:

"We are committed to following the City's process to finalize a plan for our project that works for the City, the community, and Lam. In keeping with this approach, please address future communications about traffic considerations to the City of Tualatin."

Because Mackenzie and Lam have not followed proper notice procedure, we hereby ask the City of Tualatin to deny Lam's current land use application so that the applicant can reset and start over.

Thank you for your consideration.
Sent from my Verizon, Samsung Galaxy smartphone

From: Erica Flores <ericadelasflores@gmail.com>
Sent: Saturday, June 28, 2025 4:21 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project



Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Erica

From: Ethan Hutchison <ethanc.hutchison@gmail.com>
Sent: Tuesday, March 4, 2025 7:37 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

As a long term resident, and part of the local community, I believe that we should put our financial or economic interests aside.

Thank you for your consideration.

From: Steve Fine
Subject: RE: Tualatin Road
Date: November 7, 2024 at 4:56:28 PM PST
To: Brett Hamilton

Dear Mr. Hamilton,

I received your e-mail below regarding the TUX project. We are excited to expand Lam Research's presence in Tualatin, bringing new jobs and economic impact to the community. We also recognize the importance of community feedback.

Thank you for sharing your input about Tualatin Road. We are currently working with the City of Tualatin and the Department of Transportation to address relevant traffic issues. There will be several public meetings in connection with Lam's land use application to capture feedback from the community.

I appreciate your acknowledgement of Lam's reputation as a good neighbor and responsible member of the community. We are committed to following the City's process to finalize a plan for our project that works for the City, the community, and Lam. In keeping with this approach, please address future communications about traffic considerations to the City of Tualatin.

Regards,
Steve Fine
Chief Communication Officer, Lam Research

From: Brett Hamilton
Sent: Thursday, October 24, 2024 2:54:59 PM
To: Archer, Tim CEO
Cc: Bettinger, Doug; Charles, Audrey; Fernandes, Neil; Fine, Steve; Gottscho, Richard; Harter, Ava; Hassett, Mary; Lord, Pat; Vahedi, Vahid; Varadarajan, Sesha
Subject: Tualatin Road

Dear Mr. Archer,

I live near the Lam Research campus in Tualatin Oregon, and on behalf of my neighbors, would like to ask for your assistance in resolving a problem posed by Lam's TUX expansion. We have not been able to resolve this issue locally.

Lam's proposal includes a new employee entrance on Tualatin Road, and this would add a significant amount of traffic to our local roadway network. The community is strongly opposed to this new entrance, and we have been asking Lam's planners for months to change the site layout to use Leveton Drive instead.

Leveton Drive, on the south side of Lam's campus, was built for industrial traffic, has plenty of unused capacity already available, and currently carries 3 entrances to Lam's campus. Lam's current proposal would eliminate the main driveway that connects Leveton Drive to the parking lots on the north side of campus. This is the crux of the issue.

Traffic is already the number one complaint for residents here in Tualatin, and Lam's proposal threatens to make this problem even worse. Historically, Lam has been a responsible member of our community and has a reputation for being a good neighbor, but the current proposal, and the way it is being pursued, puts that corporate reputation at risk. We believe that the current site plan is not in the best interests of either Lam's shareholders or the Tualatin community, and we ask that Lam change course in order to avoid a conflict.

Our community is highly motivated to find a solution that meets the needs of both Lam and the surrounding neighborhoods. We have outlined our concerns on the Save Tualatin Road website and would like an opportunity to work with Lam so that your expansion is a success.

http://www.tualatinroad.org/

Thank you for your consideration on this matter.

Brett Hamilton

From: Frances Avery <franavery7@icloud.com>
Sent: Wednesday, February 26, 2025 10:36 AM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Fritz Weber <fritz@luminos.net>
Sent: Thursday, May 15, 2025 12:30 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

I am against a new employee entrance on Tualatin Road. They should keep their existing access on Leveton Drive.

Thank you.

From: Gabriel Brown <gabebrown319377@gmail.com>
Sent: Tuesday, May 20, 2025 8:51 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.
Sincerely a guy who lives in rivercrest meadows. The literal intersection they are asking to gang rape with their employees.

Sent from my iPhone

From: Gary Green <garygreen97062@gmail.com>
Sent: Thursday, February 27, 2025 12:29 PM
To: Ext - Planning
Subject: Opposed to Lam driveway

Please add my opposition to those asking you to turn down Lam's petition for a new driveway accessing Tualatin Road.
I am already experiencing great difficulty pulling onto Tualatin Road from 106th and from Jurgens because of high traffic levels. The city has already constructed a road to carry truck traffic to the site and to separate business traffic from residential traffic. This proposal wastes that expenditure.
East/West traffic is a major problem throughout Tualatin because neighboring cities allowed the construction of barrier developments near freeway ramps in Tigard/Durham, Lake Grove, and especially Wilsonville. Tualatin needs to stop cooperating with these cities until they take their fair share of east/west traffic.

Sincerely yours,

Gary Green
10695 SW Kiowa Court

From: Mike McCarthy
Sent: Monday, July 22, 2024 8:24 AM
To: Kim McMillan; Steve Koper; Abby McFetridge; Keith Leonard
Subject: FW: 115th signal should be stopped

FYI

Mike McCarthy P.E.
City Engineer
City of Tualatin
Community Development Department
503-691-3674
971-666-0000

-----Original Message-----
From: georgeklein59@gmail.com <georgeklein59@gmail.com>
Sent: Friday, July 19, 2024 8:02 PM
To: Mike McCarthy <mmccarthy@tualatin.gov>; George Klein <gkleins@comcast.net>
Subject: 115th signal should be stopped

Sent from my iPhone
Hi Mike, please help our neighborhood and residential area and the Fox Run HOA by moving Lam traffic to Leviton industrial way where it belongs please.
Industry should exit to industrial streets to protect out children and livability for residential areas.
The city has always tried to do this and should continue to plan in a constructive and protective way for residence.
Children walk, run, ride scooters, bikes and try to cross an already too busy Tualatin road.
Thanks for acting responsively to the citizens and residence that this effects. Lives can be effected and possibly lost if more traffic is allowed on Tualatin rd. And the residence who use it.

With appreciation for your kind consideration for us.

Sincerely, George Klein
503-318-9637

From: Geriann Courtney <gmcourtney@msn.com>
Sent: Thursday, February 27, 2025 12:51 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Geriann Courtney

Sent from my iPhone

From: Gina Byers <oregongina@yahoo.com>
Sent: Sunday, May 4, 2025 10:08 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

From: Grant Zadow <gzadow46@icloud.com>
Sent: Wednesday, July 16, 2025 7:36 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPad

From: Sandra Maleta <gsmaleta@icloud.com>
Sent: Monday, March 3, 2025 1:53 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Greg Maleta
(Neighbor near by)

From: glo.consulting@comcast.net
Sent: Thursday, February 27, 2025 1:06 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Greg Owen

Sent via the Samsung Galaxy S22 5G, an AT&T 5G smartphone
Get Outlook for Android

From: Hannah Laudi <hannahlaudi@gmail.com>
Sent: Sunday, June 29, 2025 6:36 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: HAWKE PACHECO <hawkepacheco28@gmail.com>
Sent: Tuesday, March 4, 2025 8:46 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Hawke Pacheco

From: Hayden Oelke <hayds421@gmail.com>
Sent: Thursday, June 26, 2025 11:57 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Hayden Thornton <hrt0206@gmail.com>
Sent: Sunday, March 2, 2025 9:15 PM
To: Ext - Planning; Keith Leonard
Subject: Re: Lam TUX Project

Sorry I mean 118th as of 118th and leveton.

Thanks,

Hayden Thornton

On Sun, Mar 2, 2025 at 16:30 Hayden Thornton <hrt0206@gmail.com> wrote:

> Dear City of Tualatin,
>
> Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive
>
> NO new roadway access on Tualatin Road.
>
> 115th seems perfect for it…
>
> Thank you for your consideration.
>
> Hayden Thornton

From: Hazen Hyland <hazenhyland@yahoo.com>

Sent: Wednesday, January 29, 2025 8:06 AM

To: Ext - Planning

Subject: LAM

Dear City of Tualatin,

A review of project documents reveals that Mackenzie/Lam did not notify any CIO representatives prior to the June 2024 neighborhood developer meeting, as required by Tualatin Development Code 32.120.5 (b)(iii). The code requires an applicant to send notice to CIO representatives via First Class Mail at least 14 days *before* the neighborhood developer meeting. This requirement was not met at the time, nor can it be met retroactively.

Lam and Mackenzie have been through the Tualatin land use review process before and they know the requirements. In 2022, Suzannah Stanley, Mackenzie Planner, demonstrated that she is very familiar with the CIO notification section. On pages 29-32 of Lam's IMP 22-0001 application, Ms. Stanley is on the record arguing that this notice requirement does not apply to Lam:

"We did not contact any City-recognized CIOs.
Please use this statement in your completeness checklist."
(Page 29) http://www.tualatinroad.org/files/LAM2022081201.pdf

If the City of Tualatin allows Mackenzie and Lam to repeatedly and flagrantly violate notice requirements, the legitimacy of the CIO program will be compromised.

At the June neighborhood developer meeting, Mackenzie said that "the project team is open to continue discussing topics of concern with neighbors" (see meeting minutes #13) however, repeated attempts by the community to open a dialogue with Lam and Mackenzie have been met with refusal and stonewalling. Lam's Chief Communication Officer, Steve Fine, clarified their position in his November 2024 email:

"We are committed to following the City's process to finalize a plan for our project that works for the City, the community, and Lam. In keeping with this approach, please address future communications about traffic considerations to the City of Tualatin."

Because Mackenzie and Lam have not followed proper notice procedure, we hereby ask the City of Tualatin to deny Lam's current land use application so that the applicant can reset and start over.

Thank you for your consideration.

Hazen Hyland

From: Heather Perin <perin.heather@yahoo.com>
Sent: Tuesday, March 4, 2025 5:59 AM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Heather Perin-Lake
Sent from my iPhone

From: Isaac Simmons <simmonsartistry888@gmail.com>
Sent: Sunday, March 2, 2025 4:26 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

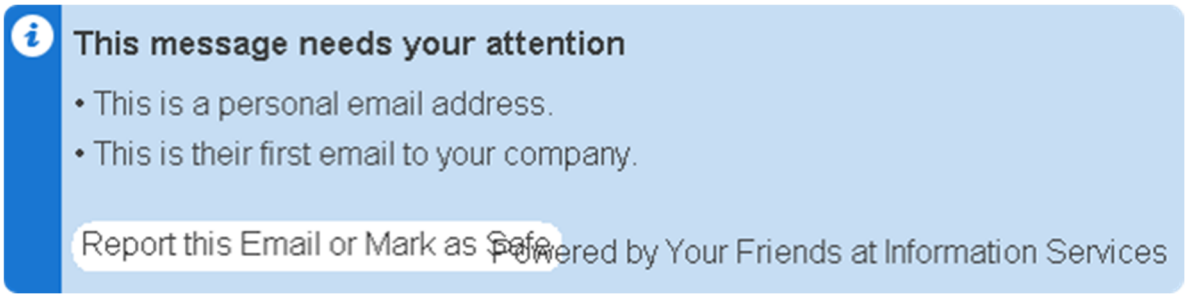
Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

From: Sabrina Juarez Fabela <sabrinamjuarezfabela@gmail.com>
Sent: Thursday, June 26, 2025 8:02 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project



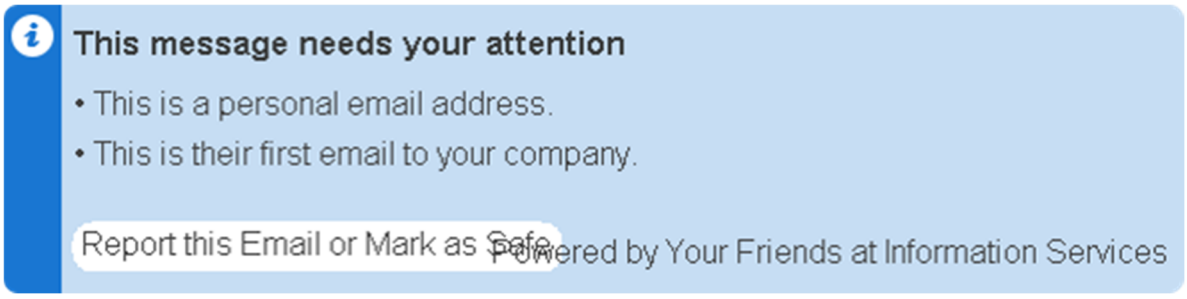
Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

From: Sabrina Juarez Fabela <sabrinamjuarezfabela@gmail.com>
Sent: Thursday, June 26, 2025 8:02 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project



Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

From: Isabella Kreske <ickreske@gmail.com>
Sent: Monday, March 3, 2025 3:06 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

11400 SW Elmer Court
Tualatin, OR 97062

March 3, 2025

Tualatin Planning Commission
10699 SW Herman Road
Tualatin, OR 97062

Re: Tualatin Road at 115th to provide an exit from Lam Research for hundreds of cars

We attended the first meeting regarding this issue last year. It was obvious to us that Lam Research and the City of Tualatin were surprised that the people attending were against the stoplight at 115th and Tualatin Road which would provide an exit from Lam. Lam currently has an adequate exit from their property on Leveton Drive. Leveton Drive currently has little or no traffic and has access to to SW 108th and 124th from either direction. This driveway has provided an exit from Lam sufficiently for years.

We are concerned that an exit from Lam directly to 115th and Tualatin Road would jam the roads with hundreds of cars. We live on Elmer Court off of 115th and with hundreds of additional cars moving across Tualatin Road down 115th to Hazelbrook Road to reach the shortcut to Highway 99, it would clog access to 115th from Kalispel, Roberts Court and Elmer Court from even being able to get on 115th. The span from Tualatin Road to Hazelbrook Road is about the length of a downtown city block. The backup at Lam would be horrendous.

Currently, there are issues at certain times of the day when cars are lined up on 115th going down to Hazelbrook Road. We don't want the traffic congestion to get worse.

Please consider that they have an exit on Leveton Drive and one at 115th and Tualatin Road would just cause added traffic congestion there,

Thank you.

Sincerely,

James and Mary Arbuckle

From: Jan Ohm <dsjohm@frontier.com>
Sent: Tuesday, March 4, 2025 3:27 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Janessa Quintanilla <janessaq89@gmail.com>
Sent: Sunday, April 27, 2025 7:18 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Follow Up Flag: Follow up
Flag Status: Flagged

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Janet Weber <weberjanet@hotmail.com>
Sent: Wednesday, February 26, 2025 11:37 AM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Janet Yee <jdyee@comcast.net>
Sent: Monday, March 3, 2025 8:34 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Janet Yee
10400 SW Kiowa St
Tualatin, OR 97062

Sent from my iPhone

From: Javier Angelfernandez <janicearroyo@icloud.com>
Sent: Sunday, March 2, 2025 7:00 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.
-Janice Arroyo

Sent from my iPhone

From: Janine <jasuwi7@gmail.com>
Sent: Tuesday, March 4, 2025 4:35 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Jay Compton <zardoz503@icloud.com>
Sent: Saturday, March 1, 2025 2:04 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

From: Jay Jaffee <jayjaffee@yahoo.com>
Sent: Thursday, March 6, 2025 7:59 AM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

From: Jazmin Rodea Olvera <friendlyjaz79@gmail.com>
Sent: Saturday, March 1, 2025 5:22 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

From: Jen <jen.cameron86@gmail.com>
Sent: Friday, February 28, 2025 3:00 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Thank you,

Jen

From: Jennifer Harper <jenjenharper2021@gmail.com>
Sent: Friday, February 28, 2025 10:10 AM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

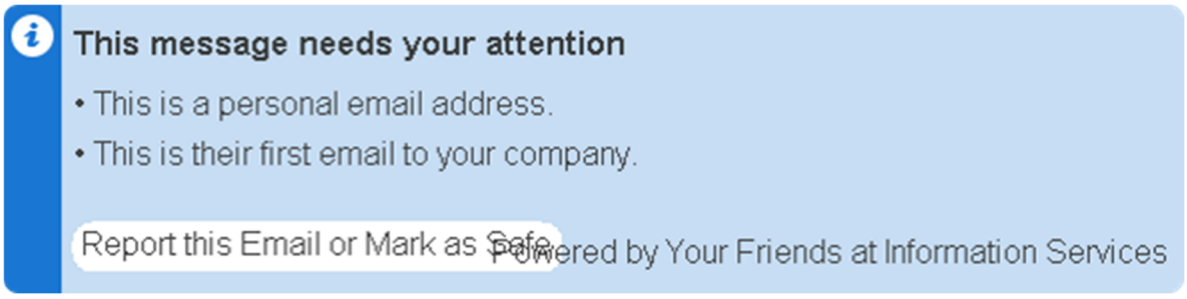
Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Jenny Blodgett <jenny.blodgett32@gmail.com>
Sent: Friday, July 11, 2025 3:16 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project



Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

From: Jessica Kraus <jessicaruthkraus@gmail.com>
Sent: Thursday, January 30, 2025 8:17 AM
To: Council; Ext - Planning; Ext - Engineering Exterrnal Email
Subject: Failure to send notice to CIO (Lam)

Dear City of Tualatin,

A review of project documents reveals that Mackenzie/Lam did not notify any CIO representatives prior to the June 2024 neighborhood developer meeting, as required by Tualatin Development Code 32.120.5 (b)(iii). The code requires an applicant to send notice to CIO representatives via First Class Mail at least 14 days *before* the neighborhood developer meeting. This requirement was not met at the time, nor can it be met retroactively.

Lam and Mackenzie have been through the Tualatin land use review process before and they know the requirements. In 2022, Suzannah Stanley, Mackenzie Planner, demonstrated that she is very familiar with the CIO notification section. On pages 29-32 of Lam's IMP 22-0001 application, Ms. Stanley is on the record arguing that this notice requirement does not apply to Lam:

"We did not contact any City-recognized CIOs.
Please use this statement in your completeness checklist."
(Page 29) http://www.tualatinroad.org/files/LAM2022081201.pdf

If the City of Tualatin allows Mackenzie and Lam to repeatedly and flagrantly violate notice requirements, the legitimacy of the CIO program will be compromised.

At the June neighborhood developer meeting, Mackenzie said that "the project team is open to continue discussing topics of concern with neighbors" (see meeting minutes #13) however, repeated attempts by the community to open a dialogue with Lam and Mackenzie have been met with refusal and stonewalling. Lam's Chief Communication Officer, Steve Fine, clarified their position in his November 2024 email:

"We are committed to following the City's process to finalize a plan for our project that works for the City, the community, and Lam. In keeping with this approach, please address future communications about traffic considerations to the City of Tualatin."

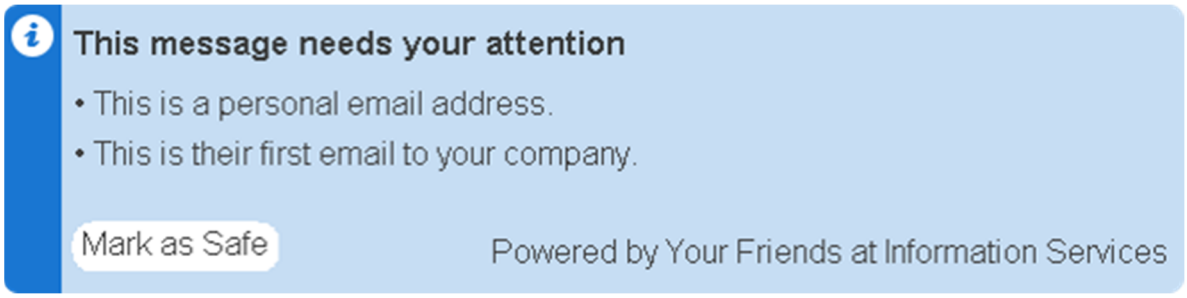
Because Mackenzie and Lam have not followed proper notice procedure, we hereby ask the City of Tualatin to deny Lam's current land use application so that the applicant can reset and start over.

Thank you for your consideration.

Jessica Kraus
10340 SW Rayborn Ct

Tualatin, OR 97062

From: jfurnash@protonmail.com
Sent: Tuesday, January 21, 2025 8:34 PM
To: Ext - Planning
Subject: Tualatin road



Dear City of Tualatin,

While researching the traffic impacts from Lam's TUX project, members of the community have discovered that Lam's proposal is not compatible with the Tualatin Comprehensive Plan 2040, and it would violate the Tualatin Development Code, both in spirit and letter.

For the reasons outlined below, we are asking the Tualatin Planning Department to consider Lam's proposed entrance on Tualatin Road to not be approvable, and we ask the City Manager to use her authority to have the proposed entrance removed from the TUX project site plan so that alternative access can be designed.

SITE CIRCULATION

Existing driveways provide sufficient access points to the Lam Campus as a whole. Lam currently has 6 other access points. 3 on 108th and 3 on Leveton Drive. Adding a new access point on Tualatin Road is unnecessary.

Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to add an additional driveway onto the street network.

The Tualatin Comprehensive Plan 2040 strongly supports the use of existing access points, rather than creating new ones, especially when a new access point would have negative impacts to the community. "Consider transportation options that make the best use of the existing network" (Goal 8.7)

SPIRIT OF THE LAW

Tualatin Road is currently functioning as an arterial, it was previously classified as an arterial, and it has the traffic volume of an arterial. Leveton Drive is currently functioning as a collector, it was previously classified as a collector, and it has the current traffic volume of a collector.

During the 2012-14 TSP update, the functional classifications of these streets were reversed in a failed attempt by the city to reduce the amount of traffic on Tualatin Road and encourage more trips to use Leveton Drive. While we appreciate the intent of this reversal, the impact is now exactly opposite of what was intended, and we ask that this reversal be deemed a mistake. We ask the city to remedy this mistake by restoring the correct functional classifications to their appropriate streets. Lam should not be allowed to rely on a classification error to put a new entrance on a road that, based on current conditions, should not have a new entrance.

If the streets were classified correctly, Lam Research would not be able to add an employee entrance on Tualatin Road because it would be an arterial. “No new driveways or streets on arterial roadways within the City, except where noted in the TDC, usually when no alternative access is available.” (TCP 2040 POLICY 8.10.1)

LETTER OF THE LAW

The Tualatin Development Code says “Lots that front on more than one street may be required to locate motor vehicle accesses on the street with the lower functional classification as determined by the City Manager.” TDC 75.040 (5) Currently the TSP shows 108th classified as a minor collector and Tualatin Road a major collector. Based on this, access should be provided from 108th not Tualatin Road.

Lam’s proposed entrance on Tualatin Road fails four of the new driveway approach criteria in TDC 75.020.5: "(d)(ii) Takes access from the lowest classification of street abutting the property … (g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

Tualatin Development Code 75.140.15 (a) grants the specific locations for Lam's three driveways on the north side of Leveton Drive. The applicant's proposal to relocate one of the three driveways is not compliant with the development code.

No matter which way you slice it, Tualatin Road is the worst option for carrying Lam’s new entrance and additional traffic volume. We ask the City Manager to use her discretion and require access from the most appropriate road which, by any metric, is Leveton Drive.

PROPOSED TRAFFIC SIGNAL

The proposed entrance on Tualatin Road would create the need for a new traffic signal on Tualatin Road which would have many negative impacts on the community. These impacts justify rejection of the proposed access. If Lam were to take access from Leveton Drive, no new traffic signal would be needed.

The community provided overwhelming feedback during the TSP update this summer about this issue and we asked that the proposed traffic signal be removed from the TSP. The city should

take this feedback into account and "Conduct the planning process with adequate input and feedback from citizens in each affected neighborhood" (TCP 2040 Goal 8.7)

CONSIDER SAFETY

The Tualatin TSP Existing Conditions Report shows Tualatin Road and 115th Ave having higher Pedestrian Level of Traffic Stress than Leveton Drive and 108th Ave. (Figure 23) Adding more traffic to Tualatin Road and 115th Ave will degrade pedestrian safety even further.

Tualatin Road between 124th and 115th has higher concentration of collisions than Leveton and 108th, with a history of serious injury collision while Leveton does not. (Figure 31) Adding more traffic onto Tualatin Road and 115th will increase the traffic exposure and likely result in worse safety outcomes.

Tualatin Road has a history of collisions involving pedestrians and bicycles while Leveton and 108th do not. (Figure 32) Adding more traffic to Tualatin Road will likely make this safety issue worse.

Converting a driveway to full access or signalizing a driveway would likely increase traffic crashes. Per CMF ClearingHouse, changing driveway type to full access has a crash modification factor (CMF) of 2.25, and signalizing a driveway has a CMF of 3.98, which means that the two measures will likely increase traffic crashes by a factor of 2.25 and 3.98 respectively.

Lam's traffic study also does not identify the locations of school bus routes at Hazelbrook Middle School or the potential impacts to school bus traffic. Student safety is one of the most important issues in our community, but so far it has been ignored in this process.

Also, the safety and congestion impacts from Lam's proposal would be most concentrated on Tualatin Road between 115th and 124th which abuts a residential area with traditionally disadvantaged demographics and income limited apartments. This is not equitable.

BYPASS ROUTE

The route from Hazelbrook Road going west and turning right onto Hwy 99W is a "hidden" route that can bypass the traffic congestion at the west end of Tualatin Road. Adding a signal at 115th and Tualatin Road will encourage more cars to take this bypass. The potential impact of this new traffic pattern imposes significant safety concerns to communities all along the route. These impacts were not addressed in the traffic study.

SUMMARY

We urge the city to consider all the above concerns and require the applicant (Lam) to revise their site development plan accordingly. We believe that the current proposal does not meet Tualatin's planning rules, and that the City Manager should use her authority to bring Lam's proposal into compliance. No new roadway access on Tualatin Road.

Thank You

From: Jim Milne <jimkayaks@comcast.net>
Sent: Friday, February 28, 2025 10:20 AM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

From: Joe Calzada <joecalzada87@gmail.com>
Sent: Monday, March 3, 2025 5:56 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on

From: John Phillips <jphillips4994@icloud.com>
Sent: Monday, March 3, 2025 6:24 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: John Phillips <jphillips4994@yahoo.com>
Sent: Friday, March 21, 2025 10:57 AM
To: Keith Leonard; Brett Hamilton
Subject: Fwd: Improving Tualatin's Public Notice Policy

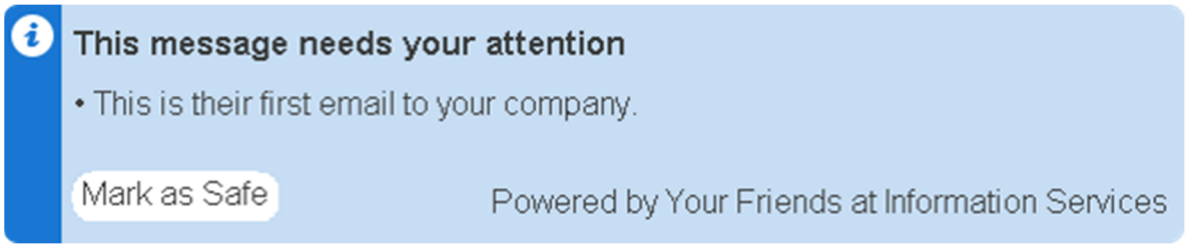
Dear Tualatin City Council,

Thank you for being responsive to community input regarding the city's public notice policies. We are glad to see that the Council is considering adding apartments units to the public notice mailing lists, as this will improve equity and fairness in the land use review process. We would ask that the City Council also consider expanding the mailing radius beyond 1000 feet for large projects. We believe that the current mailing radius does not reach all of the residents who would be impacted by Lam's TUX proposal. Although 1000 ft is adequate for small projects, larger projects call for a larger mailing radius.

Thank you for your consideration, and for your efforts to improve our community!

Sent from my phone
>
>

From: (null) jjporcello2 <jjporcello2@frontier.com>
Sent: Thursday, March 6, 2025 8:41 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project



Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

John Porcello
10780 SW Lucas Drive
Tualatin, Oregon 97062
(971)-344-1331

From: Jorge Del Rio <jorgedelrio52@gmail.com>
Sent: Wednesday, June 18, 2025 3:05 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Joshua Baggett <joshua.baggett4@gmail.com>
Sent: Sunday, March 2, 2025 5:24 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Joshua Baggett

Sent from my iPhone

From: Joy Carlin Honodel <designcarlin@gmail.com>
Sent: Wednesday, March 5, 2025 6:47 AM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Joy Honodel

From: Julianna Johnson <juliannaj230@gmail.com>
Sent: Saturday, March 1, 2025 6:19 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Kami Hamilton <kami@simple.be>
Sent: Tuesday, March 4, 2025 7:10 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Kami Hamilton
11430 SW Kalispell St

Sent from my iPhone

From: Karen Aiello <aiellok54@gmail.com>
Sent: Wednesday, June 18, 2025 10:31 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent ka

From: Katelyn Sasken <kafoiles@gmail.com>
Sent: Wednesday, March 5, 2025 1:31 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Katelyn and Kellan Sasken

From: Katherine Garcia <katherinegarcia707@icloud.com>
Sent: Tuesday, March 4, 2025 8:48 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Kat Gallagher <kmgallagher17@gmail.com>
Sent: Wednesday, March 5, 2025 8:02 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO to new roadway access on Tualatin Road!

Thank you for your consideration,
Kathleen Gallagher

From: Kayla Gonzaga <kaygon1997@gmail.com>
Sent: Friday, April 25, 2025 1:11 AM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Kelly Gallagher <kmoriartygallagher@gmail.com>
Sent: Thursday, February 27, 2025 2:26 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

From: Kendra Texta <kendra.texta@icloud.com>
Sent: Sunday, March 2, 2025 5:19 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Kevin Wolley <batmute@gmail.com>
Sent: Wednesday, February 26, 2025 12:53 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I live in the neighborhood immediately north of Tualatin Road at 11055 SW Wishram Court.

I am pleased to have Lam Research nearby, as they provide good jobs and are quiet neighbors. It's a good thing that their business is doing so well that they are expanding. So far their expansion has been done with consideration for the neighbors.

Now it seems Lam's expansion plans are losing their consideration for us neighbors. I am against the proposed employee entrance on Tualatin Road. Surely it is not too much of an inconvenience for Lam personnel to enter and leave the Lam property via Leveton Drive, away from flow path of people coming and going from their homes north of Tualatin Road.

As a citizen and your constituent, I ask that the city require Lam to be good neighbors by limiting access to their property via Leveton Drive, and away from Tualatin Road.

NO new roadway access on Tualatin Road, please. Let's be considerate of one another.

Thank you,

Kevin Wolley

From: Kiki Goodwin <kikigoodwin@yahoo.com>
Sent: Tuesday, February 25, 2025 6:52 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Kiki Goodwin
10631 SW Pueblo Ct

Sent from my iPhone

From: Kimmarie Baranco <kimmarie@gmail.com>
Sent: Sunday, May 4, 2025 6:13 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Kimmarie Baranco
503-927-9150

From: Lalaina Serres <lalaina.serres@gmail.com>
Sent: Wednesday, December 25, 2024 2:47 PM
To: Ext - Engineering Exterrnal Email
Cc: Ext - Planning; Council
Subject: Tualatin Roads

Dear City of Tualatin,

While researching the traffic impacts from Lam's TUX project, members of the community have discovered that Lam's proposal is not compatible with the Tualatin Comprehensive Plan 2040, and it would violate the Tualatin Development Code, both in spirit and letter.

For the reasons outlined below, we are asking the Tualatin Planning Department to consider Lam's proposed entrance on Tualatin Road to not be approvable, and we ask the City Manager to use her authority to have the proposed entrance removed from the TUX project site plan so that alternative access can be designed.

SITE CIRCULATION

Existing driveways provide sufficient access points to the Lam Campus as a whole. Lam currently has 6 other access points. 3 on 108th and 3 on Leveton Drive. Adding a new access point on Tualatin Road is unnecessary.

Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to add an additional driveway onto the street network.

The Tualatin Comprehensive Plan 2040 strongly supports the use of existing access points, rather than creating new ones, especially when a new access point would have negative impacts to the community. "Consider transportation options that make the best use of the existing network" (Goal 8.7)

SPIRIT OF THE LAW

Tualatin Road is currently functioning as an arterial, it was previously classified as an arterial, and it has the traffic volume of an arterial. Leveton Drive is currently functioning as a collector, it was previously classified as a collector, and it has the current traffic volume of a collector.

During the 2012-14 TSP update, the functional classifications of these streets were reversed in a failed attempt by the city to reduce the amount of traffic on Tualatin Road and encourage more trips to use Leveton Drive. While we appreciate the intent of this reversal, the impact is now exactly opposite of what was intended, and we ask that this reversal be deemed a mistake. We ask the city to remedy this mistake by restoring the correct functional classifications to their appropriate streets. Lam should not be allowed

to rely on a classification error to put a new entrance on a road that, based on current conditions, should not have a new entrance.

If the streets were classified correctly, Lam Research would not be able to add an employee entrance on Tualatin Road because it would be an arterial. "No new driveways or streets on arterial roadways within the City, except where noted in the TDC, usually when no alternative access is available." (TCP 2040 POLICY 8.10.1)

LETTER OF THE LAW

The Tualatin Development Code says "Lots that front on more than one street may be required to locate motor vehicle accesses on the street with the lower functional classification as determined by the City Manager." TDC 75.040 (5) Currently the TSP shows 108th classified as a minor collector and Tualatin Road a major collector. Based on this, access should be provided from 108th not Tualatin Road.

Lam's proposed entrance on Tualatin Road fails four of the new driveway approach criteria in TDC 75.020.5: "(d)(ii) Takes access from the lowest classification of street abutting the property … (g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

Tualatin Development Code 75.140.15 (a) grants the specific locations for Lam's three driveways on the north side of Leveton Drive. The applicant's proposal to relocate one of the three driveways is not compliant with the development code.

No matter which way you slice it, Tualatin Road is the worst option for carrying Lam's new entrance and additional traffic volume. We ask the City Manager to use her discretion and require access from the most appropriate road which, by any metric, is Leveton Drive.

PROPOSED TRAFFIC SIGNAL

The proposed entrance on Tualatin Road would create the need for a new traffic signal on Tualatin Road which would have many negative impacts on the community. These impacts justify rejection of the proposed access. If Lam were to take access from Leveton Drive, no new traffic signal would be needed.

The community provided overwhelming feedback during the TSP update this summer about this issue and we asked that the proposed traffic signal be removed from the TSP. The city should take this feedback into account and "Conduct the planning process with adequate input and feedback from citizens in each affected neighborhood" (TCP 2040 Goal 8.7)

CONSIDER SAFETY

The Tualatin TSP Existing Conditions Report shows Tualatin Road and 115th Ave having higher Pedestrian Level of Traffic Stress than Leveton Drive and 108th Ave. (Figure 23) Adding more traffic to Tualatin Road and 115th Ave will degrade pedestrian safety even further.

Tualatin Road between 124th and 115th has higher concentration of collisions than Leveton and 108th, with a history of serious injury collision while Leveton does not. (Figure 31) Adding more traffic onto Tualatin Road and 115th will increase the traffic exposure and likely result in worse safety outcomes.

Tualatin Road has a history of collisions involving pedestrians and bicycles while Leveton and 108th do not. (Figure 32) Adding more traffic to Tualatin Road will likely make this safety issue worse.

Converting a driveway to full access or signalizing a driveway would likely increase traffic crashes. Per CMF ClearingHouse, changing driveway type to full access has a crash modification factor (CMF) of 2.25, and signalizing a driveway has a CMF of 3.98, which means that the two measures will likely increase traffic crashes by a factor of 2.25 and 3.98 respectively.

Lam's traffic study also does not identify the locations of school bus routes at Hazelbrook Middle School or the potential impacts to school bus traffic. Student safety is one of the most important issues in our community, but so far it has been ignored in this process.

Also, the safety and congestion impacts from Lam's proposal would be most concentrated on Tualatin Road between 115th and 124th which abuts a residential area with traditionally disadvantaged demographics and income limited apartments. This is not equitable.

BYPASS ROUTE

The route from Hazelbrook Road going west and turning right onto Hwy 99W is a "hidden" route that can bypass the traffic congestion at the west end of Tualatin Road. Adding a signal at 115th and Tualatin Road will encourage more cars to take this bypass. The potential impact of this new traffic pattern imposes significant safety concerns to communities all along the route. These impacts were not addressed in the traffic study.

SUMMARY

We urge the city to consider all the above concerns and require the applicant (Lam) to revise their site development plan accordingly. We believe that the current proposal does not meet Tualatin's planning rules, and that the City Manager should use her authority to bring Lam's proposal into compliance. No new roadway access on Tualatin Road.

Thank You.

From: Larry Melton <lmelton63@gmail.com>
Sent: Wednesday, December 18, 2024 4:36 PM
To: Council; Ext - Planning; Ext - Engineering Exterrnal Email
Subject: LAM Proposal re: Tualatin Rd driveway

Dear City of Tualatin,

My name is Larry Melton. I've lived with my wife and daughters in the Fox Run Neighborhood off of Tualatin Rd for 31 years. We continue to see a troubling increase in traffic along Tualatin Rd at the access to our neighborhood. The thought of increasing that even more with an entrance to LAM at 115th is very troubling. The remainder of this email is a reiteration of more formal thoughts and concerns from the neighborhood, but information I hope you will give serious weight to during this decision process.

I'm writing to express my concerns about Lam Research's proposed TUX project expansion and the plan to add a new entrance on Tualatin Road. After reviewing the project details and researching the potential impacts, it's clear this proposal isn't in line with Tualatin's Comprehensive Plan 2040 or the Development Code.

I ask the Planning Department to consider the proposed entrance on Tualatin Road unworkable and urge the City Manager to require its removal from the site plan, allowing Lam to explore alternative access points.

Site Access and Circulation
Lam Research already has six access points—three on 108th and three on Leveton Drive—which should be more than adequate. Adding another driveway onto Tualatin Road seems unnecessary, especially since the Comprehensive Plan encourages making the best use of the current transportation network. Good site circulation within the campus is Lam's responsibility, and it shouldn't require adding a new entrance.

Traffic Classification and Safety
Although the streets were reclassified during a past TSP update, Tualatin Road functions like an arterial and carries heavy traffic, while Leveton Drive operates as a collector. The reversal of these classifications seems to have backfired, and it's causing unintended issues. If the classifications reflected the actual conditions, no new access would be allowed on Tualatin Road.

Adding an entrance here would also increase congestion and negatively affect safety. Data from the Tualatin TSP shows that Tualatin Road has a higher risk of crashes, especially involving pedestrians and cyclists, compared to Leveton. Encouraging more traffic on Tualatin Road would only make these issues worse.

Equity and Community Impact
The proposed entrance would have the biggest impact on the stretch of Tualatin Road adjacent to

residential areas, including income-limited apartments. It feels inequitable to concentrate traffic and safety risks in this area, especially when viable alternatives exist.

Proposed Traffic Signal
Installing a new traffic signal at 115th and Tualatin Road could create unintended traffic patterns, encouraging cars to bypass congestion by cutting through smaller neighborhoods. These potential impacts weren't addressed in Lam's traffic study but should be carefully considered.

Student and Pedestrian Safety
It's also concerning that the traffic study didn't evaluate impacts on school bus routes or pedestrian safety near Hazelbrook Middle School. Protecting students and pedestrians should be a top priority, and the current proposal seems to fall short here.

Final Thoughts
I urge the city to require Lam Research to revise their plans and remove the proposed entrance on Tualatin Road. This addition doesn't align with our city's planning rules, and it risks creating significant safety, equity, and traffic concerns for the community.

Thank you for considering these concerns as part of your review.

Sincerely,

From: Laurel Strickler <topmanager2012@yahoo.com>
Sent: Friday, February 28, 2025 11:44 AM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sincerely,
Laurel Strickler

From: Lauren Pyrch <lpyrch3@gmail.com>
Sent: Friday, February 28, 2025 1:15 PM
To: Ext - Planning; Council
Subject: Opposition to Lam Research

Dear Tualatin City Council and Tualatin Planning Department:

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!

Lauren

From: Lexi Howell <alexaehowell@gmail.com>
Sent: Wednesday, January 29, 2025 4:26 PM
To: Ext - Planning
Subject: Code Violation by Lam

Dear City of Tualatin,

A review of project documents reveals that Mackenzie/Lam did not notify any CIO representatives prior to the June 2024 neighborhood developer meeting, as required by Tualatin Development Code 32.120.5 (b)(iii). The code requires an applicant to send notice to CIO representatives via First Class Mail at least 14 days *before* the neighborhood developer meeting. This requirement was not met at the time, nor can it be met retroactively.

Lam and Mackenzie have been through the Tualatin land use review process before and they know the requirements. In 2022, Suzannah Stanley, Mackenzie Planner, demonstrated that she is very familiar with the CIO notification section. On pages 29-32 of Lam's IMP 22-0001 application, Ms. Stanley is on the record arguing that this notice requirement does not apply to Lam:

"We did not contact any City-recognized CIOs.
Please use this statement in your completeness checklist."
(Page 29) http://www.tualatinroad.org/files/LAM2022081201.pdf

If the City of Tualatin allows Mackenzie and Lam to repeatedly and flagrantly violate notice requirements, the legitimacy of the CIO program will be compromised.

At the June neighborhood developer meeting, Mackenzie said that "the project team is open to continue discussing topics of concern with neighbors" (see meeting minutes #13) however, repeated attempts by the community to open a dialogue with Lam and Mackenzie have been met with refusal and stonewalling. Lam's Chief Communication Officer, Steve Fine, clarified their position in his November 2024 email:

"We are committed to following the City's process to finalize a plan for our project that works for the City, the community, and Lam. In keeping with this approach, please address future communications about traffic considerations to the City of Tualatin."

Because Mackenzie and Lam have not followed proper notice procedure, we hereby ask the City of Tualatin to deny Lam's current land use application so that the applicant can reset and start over.

Thank you for your consideration.
--
Lexi Howell
(541) 921-7992 | alexaehowell@gmail.com | linkedin.com/in/alexa-howell/

From: Lisa Godfrey <ljgodfrey@gmail.com>
Sent: Wednesday, May 14, 2025 8:49 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Thanks,
Lisa

From: Lola Achilova <achi2949@gmail.com>
Sent: Tuesday, March 4, 2025 9:17 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Lori Kellogg <lorilussierkellogg@gmail.com>
Sent: Friday, February 28, 2025 7:28 AM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

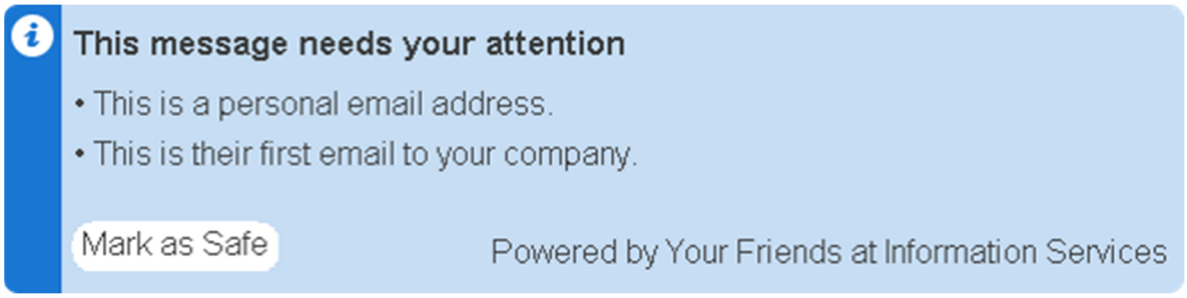
Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Lori

From: luckiecharm2001 <luckiecharm2001@yahoo.com>
Sent: Monday, March 3, 2025 5:35 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project



Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my Verizon, Samsung Galaxy smartphone

From: Lynn Courtney <lynn.courtney@icloud.com>
Sent: Thursday, February 27, 2025 12:31 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

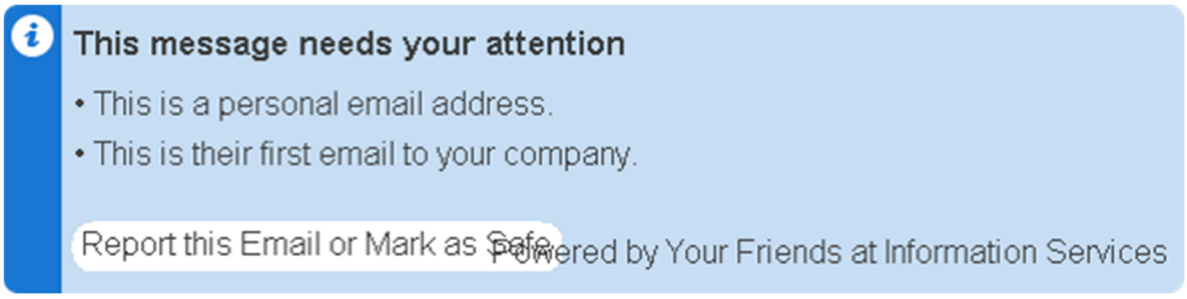
Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Lynn & Geriann Courtney

From: Marco Fabela <marcofabela1469@gmail.com>
Sent: Thursday, June 26, 2025 8:02 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project



Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

From: Margo Strength <dgrahms@comcast.net>
Sent: Saturday, March 22, 2025 9:57 AM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Margo Strength (concerned resident)

Sent from my iPhone

From: Mark Edwards <mmmarkpdx@icloud.com>
Sent: Monday, March 3, 2025 9:36 AM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

Many of us living and working in the neighborhood across from the Lam campus are voicing our concerns about the challenges of pulling our vehicles out onto Tualatin road. It's becoming a danger to not only turn left at any of the exit points but also to cross the road on foot. The high speed of the traffic and disregard for the crosswalks can make it a challenge at many times during the day. This is without the proposed addition to increased traffic from the Lam project. Many of us are finding it easier to shop and eat in Sherwood and beyond just because of the difficulty of safely navigating towards Tualatin.

As a unified neighborhood voice we ask for no new roadway access on Tualatin Road.

Thank you for your consideration.

Mark Edwards
503.805.2200

From: Mark Rieniets <Mark.Rieniets@ipaper.com>
Sent: Tuesday, March 4, 2025 6:08 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from phone. Apologies for typing mistakes and autocorrect

From: Martin Bilitz <mebilitz@hotmail.com>
Sent: Tuesday, February 25, 2025 9:55 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Get Outlook for iOS

From: Mary C. France <francemaryc@gmail.com>
Sent: Monday, March 3, 2025 11:36 AM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.
Mary C. France
10570 SW Kiowa St, Tualatin, OR 97062

503 701 9065

From: Mary Milne <jsmilne@comcast.net>
Sent: Thursday, March 6, 2025 7:47 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Mary Milne

From: jsmilne@comcast.net
Sent: Friday, March 7, 2025 9:40 AM
To: Keith Leonard
Subject: RE: Lam TUX Project

Thanks Keith,

I would also like to emphasize that it is already difficult to turn left off our street (109th Ave.) onto Tualatin road at various times during the day. In addition, often while we try to turn left from 109th Ave., there are people across Tualatin Rd. trying to turn left off 108th Ave. from the area of LAM. Because 109th and 108th are so close, it makes turning even more challenging for us. Sometimes, you need to take a chance to make your turn instead of having to wait so long.

Thank you,
Mary Milne

-----Original Message-----
From: Keith Leonard <kleonard@tualatin.gov>
Sent: Friday, March 7, 2025 9:17 AM
To: Mary Milne <jsmilne@comcast.net>
Subject: RE: Lam TUX Project

Good morning Mary,

Thank you for submitting comments pertaining to the Lam TUX proposal. We have added your comments to the public record. Thank you for taking time out of your day to be part of the public review process.

Have a great day.

Keith Leonard, AICP
Associate Planner
Phone: 503.691.3029

-----Original Message-----
From: Mary Milne <jsmilne@comcast.net>
Sent: Thursday, March 6, 2025 7:47 PM
To: Ext - Planning <Planning@tualatin.gov>; Keith Leonard <kleonard@tualatin.gov>
Cc: Council <council@tualatin.gov>; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Mary Milne

From: Mary Thompson <mt_dwr@msn.com>
Sent: Tuesday, March 4, 2025 7:18 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

From: Meghan Rogers-Czarnecki <megczar@gmail.com>
Sent: Friday, June 27, 2025 4:19 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Michael Ryan <bluesoxbb@aol.com>
Sent: Friday, February 28, 2025 10:05 AM
To: Ext - Planning
Subject: Tualatin rd

To Whom it may concern,
The idea of giving Lam Research new access to Tualatin Rd is horrible. It is already a road that has far to much traffic! With Lam adding another large building, which, of course, includes hundreds of more people with their cars, is fine for Lam. Just don't let them have access onto Tualatin Road. There is plenty of access for them on the south side of their campus.
Your idea of a traffic light to help regulate is just nonsense. If Lam gets access to Tualatin Road, the city might as well put a traffic light at Tualatin Rd and Teton, and one at 108th and Tualatin Rd.
For Christs sake, I moved into this neighborhood because of it being ideal for my family. Don't start eroding our neighborhood because of Lam's greed!
Mike Ryan
503-936-9744
11075 SW Wishram Ct

From: Michella Massaad <michamassaad@gmail.com>
Sent: Thursday, February 27, 2025 4:16 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Michelle Lazoff <michellelazoff@icloud.com>
Sent: Friday, February 28, 2025 10:29 AM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Since moving to SW Chippewa Trail in 2015 - we have had no less than 4 severe crashes into the house on corner entry of our street or into the cemetery gates. When the original senior female owner was still in residence, a car crashed through the fence into her backyard and almost through her sliding glass door. Luckily, she was watching a movie at her neighbor's house. A fellow neighbor and I were woken up because it sounded like a car hit the house like a train and we ran to assist her. It is a horrible corner where people increase their speed for the fun of it. You can hear them rev the engines if it's nighttime. And the fact that you want to add more cars to the area and compound the issue, is literally another accident waiting to happen.

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Michelle Lazoff
17900 SW Chippewa Trail

Sent from my iPhone

From: Michelle Stevie <michelleystevie@gmail.com>
Sent: Thursday, December 19, 2024 5:37 PM
To: Ext - Planning
Subject: LAM Proposed new entry off Tualatin Rd

Dear City of Tualatin,

While researching the traffic impacts from Lam's TUX project, members of the community have discovered that Lam's proposal is not compatible with the Tualatin Comprehensive Plan 2040, and it would violate the Tualatin Development Code, both in spirit and letter.

For the reasons outlined below, we are asking the Tualatin Planning Department to consider Lam's proposed entrance on Tualatin Road to not be approvable, and we ask the City Manager to use her authority to have the proposed entrance removed from the TUX project site plan so that alternative access can be designed.

SITE CIRCULATION

Existing driveways provide sufficient access points to the Lam Campus as a whole. Lam currently has 6 other access points. 3 on 108th and 3 on Leveton Drive. Adding a new access point on Tualatin Road is unnecessary.

Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to add an additional driveway onto the street network.

The Tualatin Comprehensive Plan 2040 strongly supports the use of existing access points, rather than creating new ones, especially when a new access point would have negative impacts to the community. "Consider transportation options that make the best use of the existing network" (Goal 8.7)

SPIRIT OF THE LAW

Tualatin Road is currently functioning as an arterial, it was previously classified as an arterial, and it has the traffic volume of an arterial. Leveton Drive is currently functioning as a collector, it was previously classified as a collector, and it has the current traffic volume of a collector.

During the 2012-14 TSP update, the functional classifications of these streets were reversed in a failed attempt by the city to reduce the amount of traffic on Tualatin Road and encourage more trips to use Leveton Drive. While we appreciate the intent of this reversal, the impact is now exactly opposite of what was intended, and we ask that this reversal be deemed a mistake. We ask the city to remedy this mistake by restoring the correct functional classifications to their appropriate streets. Lam should not be allowed to rely on a classification error to put a new entrance on a road that, based on current conditions, should not have a new entrance.

If the streets were classified correctly, Lam Research would not be able to add an employee

entrance on Tualatin Road because it would be an arterial. “No new driveways or streets on arterial roadways within the City, except where noted in the TDC, usually when no alternative access is available.” (TCP 2040 POLICY 8.10.1)

LETTER OF THE LAW

The Tualatin Development Code says “Lots that front on more than one street may be required to locate motor vehicle accesses on the street with the lower functional classification as determined by the City Manager.” TDC 75.040 (5) Currently the TSP shows 108th classified as a minor collector and Tualatin Road a major collector. Based on this, access should be provided from 108th not Tualatin Road.

Lam’s proposed entrance on Tualatin Road fails four of the new driveway approach criteria in TDC 75.020.5: "(d)(ii) Takes access from the lowest classification of street abutting the property … (g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

Tualatin Development Code 75.140.15 (a) grants the specific locations for Lam's three driveways on the north side of Leveton Drive. The applicant's proposal to relocate one of the three driveways is not compliant with the development code.

No matter which way you slice it, Tualatin Road is the worst option for carrying Lam’s new entrance and additional traffic volume. We ask the City Manager to use her discretion and require access from the most appropriate road which, by any metric, is Leveton Drive.

PROPOSED TRAFFIC SIGNAL

The proposed entrance on Tualatin Road would create the need for a new traffic signal on Tualatin Road which would have many negative impacts on the community. These impacts justify rejection of the proposed access. If Lam were to take access from Leveton Drive, no new traffic signal would be needed.

The community provided overwhelming feedback during the TSP update this summer about this issue and we asked that the proposed traffic signal be removed from the TSP. The city should take this feedback into account and "Conduct the planning process with adequate input and feedback from citizens in each affected neighborhood” (TCP 2040 Goal 8.7)

CONSIDER SAFETY

The Tualatin TSP Existing Conditions Report shows Tualatin Road and 115th Ave having higher Pedestrian Level of Traffic Stress than Leveton Drive and 108th Ave. (Figure 23) Adding more traffic to Tualatin Road and 115th Ave will degrade pedestrian safety even further.

Tualatin Road between 124th and 115th has higher concentration of collisions than Leveton and

108th, with a history of serious injury collision while Leveton does not. (Figure 31) Adding more traffic onto Tualatin Road and 115th will increase the traffic exposure and likely result in worse safety outcomes.

Tualatin Road has a history of collisions involving pedestrians and bicycles while Leveton and 108th do not. (Figure 32) Adding more traffic to Tualatin Road will likely make this safety issue worse.

Converting a driveway to full access or signalizing a driveway would likely increase traffic crashes. Per CMF ClearingHouse, changing driveway type to full access has a crash modification factor (CMF) of 2.25, and signalizing a driveway has a CMF of 3.98, which means that the two measures will likely increase traffic crashes by a factor of 2.25 and 3.98 respectively.

Lam's traffic study also does not identify the locations of school bus routes at Hazelbrook Middle School or the potential impacts to school bus traffic. Student safety is one of the most important issues in our community, but so far it has been ignored in this process.

Also, the safety and congestion impacts from Lam's proposal would be most concentrated on Tualatin Road between 115th and 124th which abuts a residential area with traditionally disadvantaged demographics and income limited apartments. This is not equitable.

BYPASS ROUTE

The route from Hazelbrook Road going west and turning right onto Hwy 99W is a "hidden" route that can bypass the traffic congestion at the west end of Tualatin Road. Adding a signal at 115th and Tualatin Road will encourage more cars to take this bypass. The potential impact of this new traffic pattern imposes significant safety concerns to communities all along the route. These impacts were not addressed in the traffic study.

SUMMARY

We urge the city to consider all the above concerns and require the applicant (Lam) to revise their site development plan accordingly. We believe that the current proposal does not meet Tualatin's planning rules, and that the City Manager should use her authority to bring Lam's proposal into compliance. No new roadway access on Tualatin Road.

Thank you for hearing your constituents' concerns and taking the time to ensure the best decision is made in this matter.

MIchelle Stevie, Concerned Tualatin Resident

From: Miguel Rodea Olvera <zoologicoandante@gmail.com>
Sent: Saturday, March 1, 2025 5:25 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

From: mikaela stoner <mikaelastoner@icloud.com>
Sent: Saturday, June 28, 2025 6:42 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: obidigbo obinna <obidigbobizil@yahoo.com>
Sent: Friday, February 28, 2025 6:41 AM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

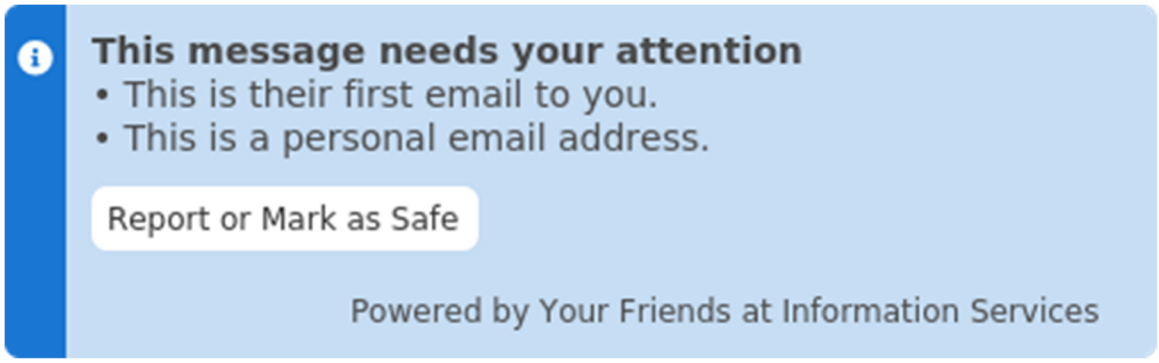
Sent from my iPhone

From: Mike McCarthy
Sent: Monday, July 22, 2024 8:25 AM
To: Kim McMillan; Steve Koper; Abby McFetridge; Keith Leonard
Subject: FW: Tualatin Road and 115th

FYI

Mike McCarthy P.E.
City Engineer
City of Tualatin
Community Development Department
503-691-3674
971-666-0000

From: Paul Hamilton <ke7uae@gmail.com>
Sent: Friday, July 19, 2024 7:43 PM
To: Mike McCarthy <mmccarthy@tualatin.gov>
Subject: Tualatin Road and 115th



Dear Sir,

I live on the corner of 115th Ave and Hazelbrook Road, having moved here in 1993.

Since the new lights and intersections on Tualatin Road and 124th Avenue plus 124th Avenue and 99 our street has become a bypass for folks in a hurry going west on Tualatin road to reach 99 and go north.

I strongly feel that an exit from Lam research at 115th and Tualatin Road and a light at that corner would only exacerbate this situation. Drivers on 115th often only slow at the Hazelbrook stop sign, treating it as a yield sign.

School children going to and coming from Hazelbrook middle school have to contend with drivers in a hurry that do not respect the one whole lane margin of safety the law requires. I have even seen school busses going right at that intersection roll that stop sign and turn right after slowing but not stopping to look.

Please consider removing this traffic signal from the traffic plan as well as adding speed bumps and lowering the speed limit on 115th. It should not be a bypass to the aforementioned lights on Tualatin road and 99.

Thank you for your time and consideration.

Paul Hamilton,

503-806-6050

From: Quentin Isenberg <qdi1996@gmail.com>
Sent: Sunday, March 2, 2025 4:56 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

From: Rachel Namdrik <bitolkiotak3@icloud.com>
Sent: Monday, March 3, 2025 3:38 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

No Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Raisa Hawk <raisahoquejbd@gmail.com>
Sent: Sunday, March 2, 2025 4:27 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

From: randy starks <notree87@gmail.com>
Sent: Tuesday, March 4, 2025 9:01 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

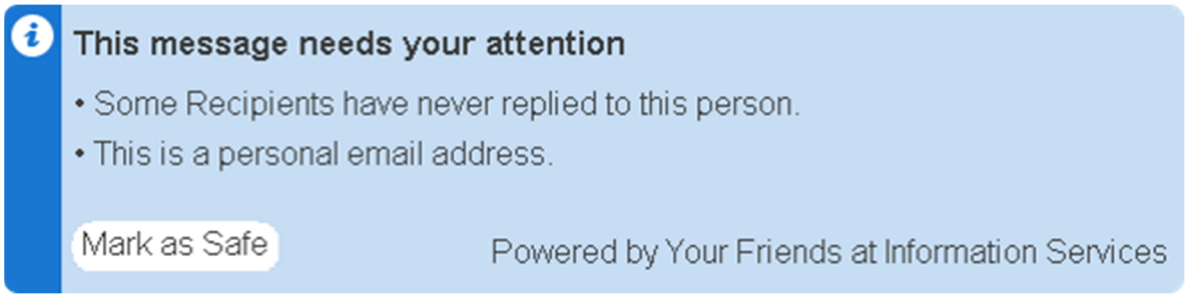
Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Randi
Sent from my iPhone

From: Reba Tobey <rtdoglover@yahoo.com>
Sent: Wednesday, January 15, 2025 4:37 PM
To: Council; Ext - Planning; Ext - Engineering Exterrnal Email
Subject: LAM and SW Tualatin Road



Dear City of Tualatin

LAM's TUX project proposal would violate the Tualatin Development Code, both in spirit and letter.

Wer'e asking the Tualatin Planning Department to consider **Lam's proposed entrance on Tualatin Road to NOT BE APPROVED**, and City Manager use authority to removed the proposed Tualatin Rd. entrance from the TUX project site plan so that alternative access can be designed.

SITE CIRCULATION

Existing driveways provide sufficient access points to the LAM Campus as a whole. LAM currently has 6 other access points. 3 on 108th and 3 on Leveton Drive. **Adding a new access point on Tualatin Road is unnecessary and will be deleterious to Tualatin residents**. This would not be in line with LAM's mission to **Act with purpose for a better world.**

Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to add an additional driveway onto the street network.

Tualatin Road is currently functioning as an arterial, it was previously classified as an arterial, and it has the traffic volume of an arterial. Leveton Drive is currently functioning as a collector, it was previously classified as a collector, and it has the current traffic volume of a collector.

We ask the **city to remedy mistaken reclassifications of Tualatin Rd**. and Leveton by restoring the correct functional classifications to their appropriate streets. LAM should not be allowed to rely on a classification

error to put a new entrance on a road that, based on current conditions, should not have a new entrance.

If the streets were classified correctly, LAM research would not be able to add an employee entrance on Tualatin Road because it would be an arterial. "**No new driveways or streets on arterial roadways**within the City, except where noted in the TDC, usually when no alternative access is available." (TCP 2040 POLICY 8.10.1)

We urge the city to consider all the above concerns and require the applicant (LAM) to revise their site development plan accordingly. We believe that the current proposal does not meet Tualatin's planning rules, and that the City Manager should bring LAM's proposal into compliance. No new roadway access on Tualatin Road.

Please update all residents about these decisions and continue to represent us completely. Thank You for consideration of these many requests by the citizens of Tualatin.

Thanks,

Reba Tobey
17815 SW Cheyenne Way
Tualatin, OR 97062

cc: various neigbors

From: T. Carrasco <tntand@gmail.com>
Sent: Wednesday, January 15, 2025 11:37 AM
To: Council; Ext - Planning; Ext - Engineering Exterrnal Email
Cc: len carrasco
Subject: Tualatin Rd traffic, etc

Dear City of Tualatin

LAM's TUX project proposal would violate the Tualatin Development Code, both in spirit and letter.

Wer'e asking the Tualatin Planning Department to consider **Lam's proposed entrance on Tualatin Road to NOT BE APPROVED**, and City Manager use authority to removed the proposed Tualatin Rd. entrance from the TUX project site plan so that alternative access can be designed.

SITE CIRCULATION

Existing driveways provide sufficient access points to the LAM Campus as a whole. LAM currently has 6 other access points. 3 on 108th and 3 on Leveton Drive. **Adding a new access point on Tualatin Road is unnecessary and will be deleterious to Tualatin residents**. This would not be in line with LAM's mission to **Act with purpose for a better world.**

Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to add an additional driveway onto the street network.

Tualatin Road is currently functioning as an arterial, it was previously classified as an arterial, and it has the traffic volume of an arterial. Leveton Drive is currently functioning as a collector, it

was previously classified as a collector, and it has the current traffic volume of a collector.

We ask the **city to remedy mistaken reclassifications of Tualatin Rd**. and Leveton by restoring the correct functional classifications to their appropriate streets. LAM should not be allowed to rely on a classification error to put a new entrance on a road that, based on current conditions, should not have a new entrance.

If the streets were classified correctly, LAM research would not be able to add an employee entrance on Tualatin Road because it would be an arterial. "**No new driveways or streets on arterial roadways** within the City, except where noted in the TDC, usually when no alternative access is available." (TCP 2040 POLICY 8.10.1)

We urge the city to consider all the above concerns and require the applicant (LAM) to revise their site development plan accordingly. We believe that the current proposal does not meet Tualatin's planning rules, and that the City Manager should bring LAM's proposal into compliance. No new roadway access on Tualatin Road.

Please update all residents about these decisions and continue to represent us completely. Thank You for consideration of these many requests by the citizens of Tualatin.

Toni and Leonard Carrasco

17790 SW Cheyenne Way

Tualatin 97062

cc: Several Neighbors (PLEASE SHARE with other neighbors on your street and reply all with comments)

From: Kristen McCormick <sushik10@gmail.com>
Sent: Thursday, January 16, 2025 7:12 PM
To: Council; Ext - Planning; Ext - Engineering Exterrnal Email
Subject: Save Tualatin Road!

December 16, 2024

To: Tualatin City Council council@tualatin.gov
To: Tualatin Planning Department planning@tualatin.gov
To: Tualatin Engineering Department engineering@tualatin.gov

Dear City of Tualatin,

While researching the traffic impacts from Lam's TUX project, members of the community have discovered that Lam's proposal is not compatible with the Tualatin Comprehensive Plan 2040, and it would violate the Tualatin Development Code, both in spirit and letter.

For the reasons outlined below, we are asking the Tualatin Planning Department to consider Lam's proposed entrance on Tualatin Road to not be approvable, and we ask the City Manager to use her authority to have the proposed entrance removed from the TUX project site plan so that alternative access can be designed.

SITE CIRCULATION

Existing driveways provide sufficient access points to the Lam Campus as a whole. Lam currently has 6 other access points. 3 on 108th and 3 on Leveton Drive. Adding a new access point on Tualatin Road is unnecessary.

Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to add an additional driveway onto the street network.

The Tualatin Comprehensive Plan 2040 strongly supports the use of existing access points, rather than creating new ones, especially when a new access point would have negative impacts to the community. "Consider transportation options that make the best use of the existing network" (Goal 8.7)

SPIRIT OF THE LAW

Tualatin Road is currently functioning as an arterial, it was previously classified as an arterial, and it has the traffic volume of an arterial. Leveton Drive is currently functioning as a collector, it was previously classified as a collector, and it has the current traffic volume of a collector.

During the 2012-14 TSP update, the functional classifications of these streets were reversed in a failed attempt by the city to reduce the amount of traffic on Tualatin Road and encourage more trips to use Leveton Drive. While we appreciate the intent of this reversal, the impact is now

exactly opposite of what was intended, and we ask that this reversal be deemed a mistake. We ask the city to remedy this mistake by restoring the correct functional classifications to their appropriate streets. Lam should not be allowed to rely on a classification error to put a new entrance on a road that, based on current conditions, should not have a new entrance.

If the streets were classified correctly, Lam Research would not be able to add an employee entrance on Tualatin Road because it would be an arterial. “No new driveways or streets on arterial roadways within the City, except where noted in the TDC, usually when no alternative access is available.” (TCP 2040 POLICY 8.10.1)

LETTER OF THE LAW

The Tualatin Development Code says “Lots that front on more than one street may be required to locate motor vehicle accesses on the street with the lower functional classification as determined by the City Manager.” TDC 75.040 (5) Currently the TSP shows 108th classified as a minor collector and Tualatin Road a major collector. Based on this, access should be provided from 108th not Tualatin Road.

Lam’s proposed entrance on Tualatin Road fails four of the new driveway approach criteria in TDC 75.020.5: "(d)(ii) Takes access from the lowest classification of street abutting the property … (g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

Tualatin Development Code 75.140.15 (a) grants the specific locations for Lam's three driveways on the north side of Leveton Drive. The applicant's proposal to relocate one of the three driveways is not compliant with the development code.

No matter which way you slice it, Tualatin Road is the worst option for carrying Lam’s new entrance and additional traffic volume. We ask the City Manager to use her discretion and require access from the most appropriate road which, by any metric, is Leveton Drive.

PROPOSED TRAFFIC SIGNAL

The proposed entrance on Tualatin Road would create the need for a new traffic signal on Tualatin Road which would have many negative impacts on the community. These impacts justify rejection of the proposed access. If Lam were to take access from Leveton Drive, no new traffic signal would be needed.

The community provided overwhelming feedback during the TSP update this summer about this issue and we asked that the proposed traffic signal be removed from the TSP. The city should take this feedback into account and "Conduct the planning process with adequate input and feedback from citizens in each affected neighborhood” (TCP 2040 Goal 8.7)

CONSIDER SAFETY

The Tualatin TSP Existing Conditions Report shows Tualatin Road and 115th Ave having higher Pedestrian Level of Traffic Stress than Leveton Drive and 108th Ave. (Figure 23) Adding more traffic to Tualatin Road and 115th Ave will degrade pedestrian safety even further.

Tualatin Road between 124th and 115th has higher concentration of collisions than Leveton and 108th, with a history of serious injury collision while Leveton does not. (Figure 31) Adding more traffic onto Tualatin Road and 115th will increase the traffic exposure and likely result in worse safety outcomes.

Tualatin Road has a history of collisions involving pedestrians and bicycles while Leveton and 108th do not. (Figure 32) Adding more traffic to Tualatin Road will likely make this safety issue worse.

Converting a driveway to full access or signalizing a driveway would likely increase traffic crashes. Per CMF ClearingHouse, changing driveway type to full access has a crash modification factor (CMF) of 2.25, and signalizing a driveway has a CMF of 3.98, which means that the two measures will likely increase traffic crashes by a factor of 2.25 and 3.98 respectively.

Lam's traffic study also does not identify the locations of school bus routes at Hazelbrook Middle School or the potential impacts to school bus traffic. Student safety is one of the most important issues in our community, but so far it has been ignored in this process.

Also, the safety and congestion impacts from Lam's proposal would be most concentrated on Tualatin Road between 115th and 124th which abuts a residential area with traditionally disadvantaged demographics and income limited apartments. This is not equitable.

BYPASS ROUTE

The route from Hazelbrook Road going west and turning right onto Hwy 99W is a "hidden" route that can bypass the traffic congestion at the west end of Tualatin Road. Adding a signal at 115th and Tualatin Road will encourage more cars to take this bypass. The potential impact of this new traffic pattern imposes significant safety concerns to communities all along the route. These impacts were not addressed in the traffic study.

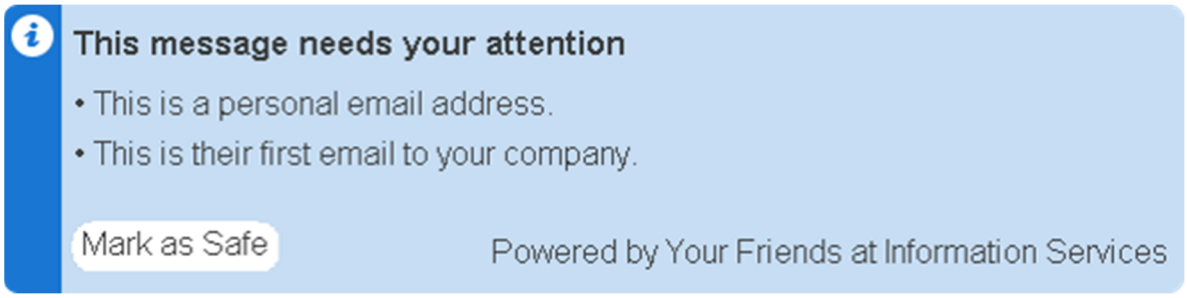
SUMMARY

We urge the city to consider all the above concerns and require the applicant (Lam) to revise their site development plan accordingly. We believe that the current proposal does not meet Tualatin's planning rules, and that the City Manager should use her authority to bring Lam's proposal into compliance. No new roadway access on Tualatin Road.

Thank You

Kristen McCormick

From: jfurnash@protonmail.com
Sent: Tuesday, January 21, 2025 8:34 PM
To: Ext - Planning
Subject: Tualatin road



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For the reasons outlined below, we are asking the Tualatin Planning Department to consider Lam's proposed entrance on Tualatin Road to not be approvable, and we ask the City Manager to use her authority to have the proposed entrance removed from the TUX project site plan so that alternative access can be designed.

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CONSIDER SAFETY

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SUMMARY

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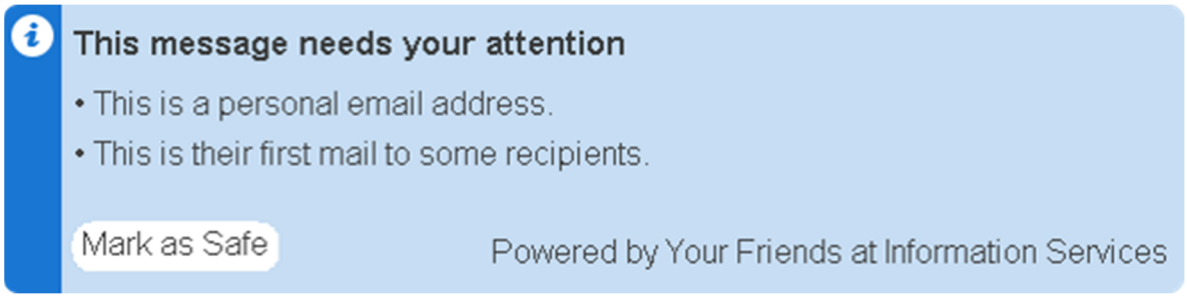
Thank You

From: Rebecca Phillips <beckyjean101@outlook.com>
Sent: Tuesday, March 4, 2025 5:28 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project



Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am not in favor of the proposed employee entrance on Tualatin Road. I ask that the city please require Lam to keep their existing driveways on Leveton Drive.

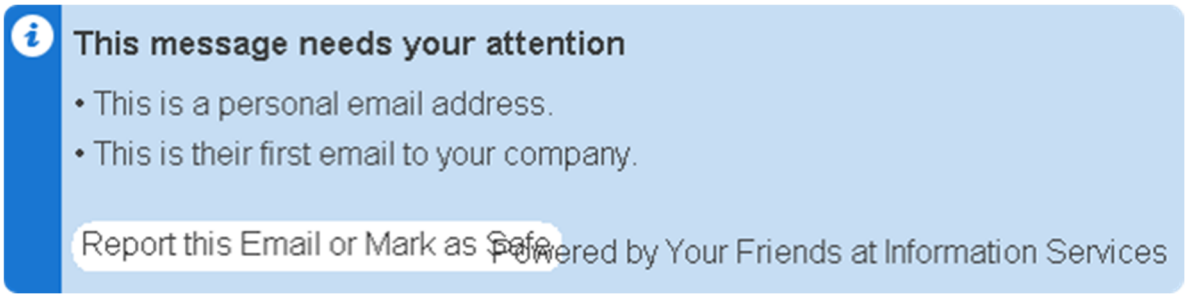
NO new roadway access on Tualatin Road.

Thank you for your consideration.

Residents of:

17535 SW 111th Ave
Tualatin, OR 97062

From: Renee Dempsey <naenae6392@gmail.com>
Sent: Thursday, July 17, 2025 12:30 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project



Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

From: richard.lyons15@gmail.com
Sent: Monday, March 3, 2025 5:55 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPad

From: Rick Cady <rcadycvelo@gmail.com>
Sent: Wednesday, January 29, 2025 2:23 PM
To: Council; Ext - Planning; Ext - Engineering Exterrnal Email
Cc: Regina Chante; Brett Hamilton
Subject: Code violation by Lam

Dear City of Tualatin,

A review of project documents reveals that Mackenzie/Lam did not notify any CIO representatives prior to the June 2024 neighborhood developer meeting, as required by Tualatin Development Code 32.120.5 (b)(iii). The code requires an applicant to send notice to CIO representatives via First Class Mail at least 14 days *before* the neighborhood developer meeting. This requirement was not met at the time, nor can it be met retroactively.

Lam and Mackenzie have been through the Tualatin land use review process before and they know the requirements. In 2022, Suzannah Stanley, Mackenzie Planner, demonstrated that she is very familiar with the CIO notification section. On pages 29-32 of Lam's IMP 22-0001 application, Ms. Stanley is on the record arguing that this notice requirement does not apply to Lam:

"We did not contact any City-recognized CIOs.
Please use this statement in your completeness checklist."
(Page 29) http://www.tualatinroad.org/files/LAM2022081201.pdf

If the City of Tualatin allows Mackenzie and Lam to repeatedly and flagrantly violate notice requirements, the legitimacy of the CIO program will be compromised.

At the June neighborhood developer meeting, Mackenzie said that "the project team is open to continue discussing topics of concern with neighbors" (see meeting minutes #13) however, repeated attempts by the community to open a dialogue with Lam and Mackenzie have been met with refusal and stonewalling. Lam's Chief Communication Officer, Steve Fine, clarified their position in his November 2024 email:

"We are committed to following the City's process to finalize a plan for our project that works for the City, the community, and Lam. In keeping with this approach, please address future communications about traffic considerations to the City of Tualatin."

Because Mackenzie and Lam have not followed proper notice procedure, we hereby ask the City of Tualatin to deny Lam's current land use application so that the applicant can reset and start over.

Thank you for your consideration.

Rick Cady/Regina Chante
10230 SW Anderson Ct.

Tualatin, OR. 97062

From: Rick S <rspreng77@gmail.com>
Sent: Saturday, March 1, 2025 12:08 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

From: RCB <g4rl1c5@proton.me>
Sent: Friday, December 27, 2024 3:04 PM
To: Council; Ext - Planning; Ext - Engineering Exterrnal Email
Subject: Lam - City Code Concerns - Save Tualatin Road

Dear City of Tualatin,

While researching the traffic impacts from Lam's TUX project, members of the community have discovered that Lam's proposal is not compatible with the Tualatin Comprehensive Plan 2040, and it would violate the Tualatin Development Code, both in spirit and letter.

For the reasons outlined below, we are asking the Tualatin Planning Department to consider Lam's proposed entrance on Tualatin Road to not be approvable, and we ask the City Manager to use her authority to have the proposed entrance removed from the TUX project site plan so that alternative access can be designed.

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SUMMARY

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Thank You.

Riley Bartel - Citizen of Tualatin

From: Rosemarie Drake-Baumann <baumann12@icloud.com>
Sent: Sunday, March 2, 2025 11:22 AM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

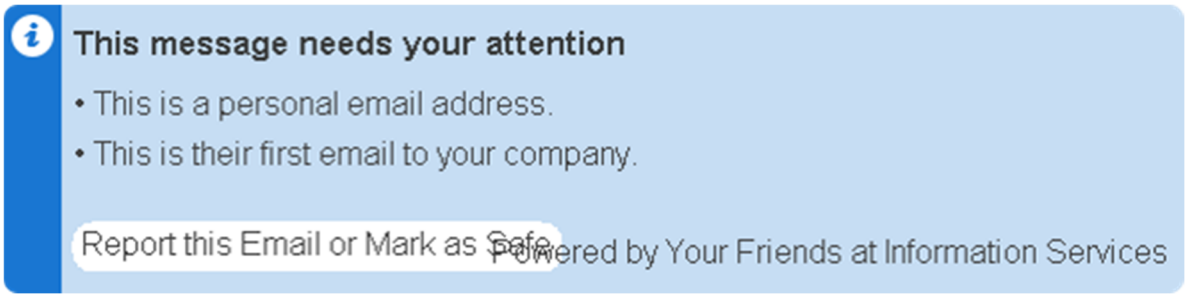
Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Rosemarie Baumann
10500 SW Kiowa St.
Tualatin, OR
Sent from my iPhone

From: Sabrina Juarez Fabela <sabrinamjuarezfabela@gmail.com>
Sent: Thursday, June 26, 2025 8:02 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project



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NO new roadway access on Tualatin Road.

Thank you for your consideration.

From: Sally Hildebran <sallyhildebran@gmail.com>
Sent: Thursday, February 27, 2025 5:53 AM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

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NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Sam Engen <sam.p.engen@gmail.com>
Sent: Sunday, March 2, 2025 1:26 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

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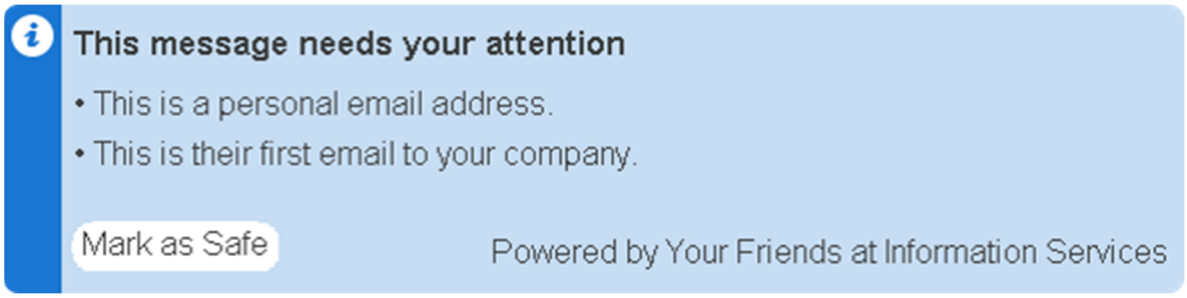
NO new roadway access on Tualatin Road.

Thank you for your consideration.

Signed,
Sam Engen

From: Samaneh Esfandiarpour <esfandiarpour@icloud.com>
Sent: Wednesday, February 26, 2025 10:20 AM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project



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NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Samantha Beem <samanthabeem@gmail.com>
Sent: Saturday, March 8, 2025 3:30 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

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Sent from my iPhone

From: Sandy Maleta <gsmaleta@gmail.com>
Sent: Monday, March 3, 2025 1:52 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

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NO new roadway access on Tualatin Road.

Thank you for your consideration.

From: Sara Z <sarazimmers@yahoo.com>
Sent: Thursday, July 17, 2025 9:37 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sara Zimmers, DVM, CVA

Sent from my iPad

From: Saray <saraybieber94@gmail.com>
Sent: Monday, March 3, 2025 5:59 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Saray Gonzales

From: Scot Hale <m.scothale@gmail.com>
Sent: Wednesday, March 5, 2025 8:11 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

From: Sharon Mitchell <sharon.fama@gmail.com>
Sent: Tuesday, March 4, 2025 9:49 AM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sharon Mitchell

Sent from my iPhone

From: Shayna Baranek <shaynabaranek@gmail.com>
Sent: Monday, March 3, 2025 5:21 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

It’s already hard to pull out onto the road as it is

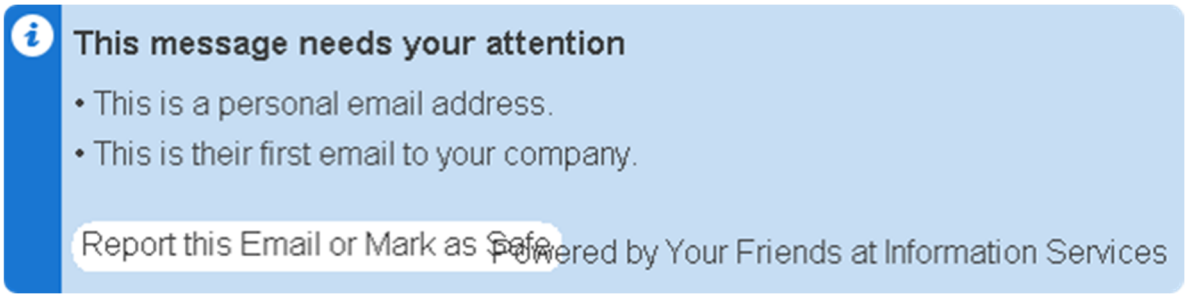
Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Sheylinn Gano <shey_shey16@hotmail.com>
Sent: Tuesday, July 15, 2025 11:05 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project



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NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my T-Mobile 5G Device
Get Outlook for Android

From: Skye Allen <skyeallen97@icloud.com>
Sent: Sunday, July 20, 2025 2:28 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

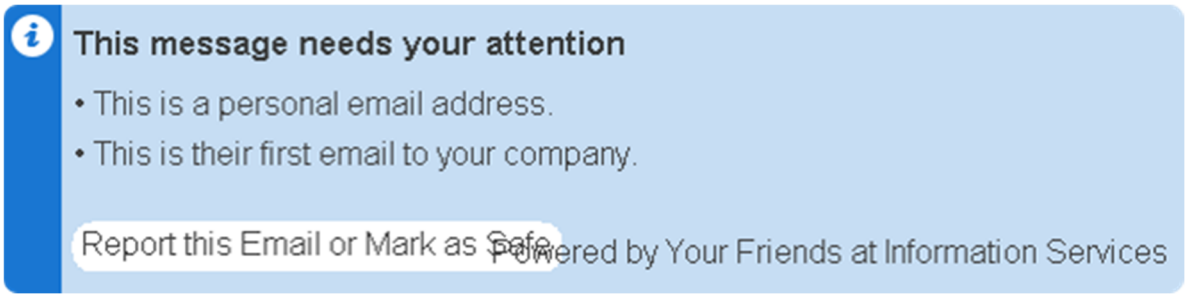
Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: hopecounselingservices <hopecounselingservices@comcast.net>
Sent: Thursday, June 12, 2025 3:39 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project



Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project.

I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.
Sonya Jones

Sent from my T-Mobile 5G Device

From: Stephanie Melton <stephimelton@gmail.com>
Sent: Tuesday, February 4, 2025 2:24 PM
To: Ext - Planning
Subject: Evidence to Deny Lam's Land Use Application

Dear City of Tualatin,

A review of project documents reveals that Mackenzie/Lam did not notify any CIO representatives prior to the June 2024 neighborhood developer meeting, as required by Tualatin Development Code 32.120.5 (b)(iii). The code requires an applicant to send notice to CIO representatives via First Class Mail at least 14 days *before* the neighborhood developer meeting. This requirement was not met at the time, nor can it be met retroactively.

Lam and Mackenzie have been through the Tualatin land use review process before and they know the requirements. In 2022, Suzannah Stanley, Mackenzie Planner, demonstrated that she is very familiar with the CIO notification section. On pages 29-32 of Lam's IMP 22-0001 application, Ms. Stanley is on the record arguing that this notice requirement does not apply to Lam:

"We did not contact any City-recognized CIOs.
Please use this statement in your completeness checklist."
(Page 29) http://www.tualatinroad.org/files/LAM2022081201.pdf

If the City of Tualatin allows Mackenzie and Lam to repeatedly and flagrantly violate notice requirements, the legitimacy of the CIO program will be compromised.

At the June neighborhood developer meeting, Mackenzie said that "the project team is open to continue discussing topics of concern with neighbors" (see meeting minutes #13) however, repeated attempts by the community to open a dialogue with Lam and Mackenzie have been met with refusal and stonewalling. Lam's Chief Communication Officer, Steve Fine, clarified their position in his November 2024 email:

"We are committed to following the City's process to finalize a plan for our project that works for the City, the community, and Lam. In keeping with this approach, please address future communications about traffic considerations to the City of Tualatin."

Because Mackenzie and Lam have not followed proper notice procedure, we hereby ask the City of Tualatin to deny Lam's current land use application so that the applicant can reset and start over.

Thank you for your consideration.

Stephanie Melton

(503) 516-2163

From: Steven Agee <stevenagee724@gmail.com>
Sent: Saturday, March 22, 2025 3:48 PM
To: Council; Ext - Engineering Exterrnal Email; Ext - Planning
Subject: SAVE TUALATIN ROAD

Dear Tualatin City Council, Tualatin Engineering Department and Tualatin Planning Department:

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!

From: Steven Agee <stevenagee724@gmail.com>

Sent: Saturday, March 22, 2025 3:50 PM

To: Council; Ext - Planning; Ext - Engineering Exterrnal Email

Subject: SAVE TUALATIN ROAD

Dear City of Tualatin,

While researching the traffic impacts from Lam's TUX project, members of the community have discovered that Lam's proposal is not compatible with the Tualatin Comprehensive Plan 2040, and it would violate the Tualatin Development Code, both in spirit and letter.

For the reasons outlined below, we are asking the Tualatin Planning Department to consider Lam's proposed entrance on Tualatin Road to not be approvable, and we ask the City Manager to use her authority to have the proposed entrance removed from the TUX project site plan so that alternative access can be designed.

SITE CIRCULATION

Existing driveways provide sufficient access points to the Lam Campus as a whole. Lam currently has 6 other access points. 3 on 108th and 3 on Leveton Drive. Adding a new access point on Tualatin Road is unnecessary.

Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to add an additional driveway onto the street network.

The Tualatin Comprehensive Plan 2040 strongly supports the use of existing access points, rather than creating new ones, especially when a new access point would have negative impacts to the community. "Consider transportation options that make the best use of the existing network" (Goal 8.7)

SPIRIT OF THE LAW

Tualatin Road is currently functioning as an arterial, it was previously classified as an arterial, and it has the traffic volume of an arterial. Leveton Drive is currently functioning as a collector, it was previously classified as a collector, and it has the current traffic volume of a collector.

During the 2012-14 TSP update, the functional classifications of these streets were reversed in a failed attempt by the city to reduce the amount of traffic on Tualatin Road and encourage more trips to use Leveton Drive. While we appreciate the intent of this reversal, the impact is now exactly opposite of what was intended, and we ask that this reversal be deemed a mistake. We ask the city to remedy this mistake by restoring the correct functional classifications to their appropriate streets. Lam should not be allowed to rely on a classification error to put a new entrance on a road that, based on current conditions, should not have a new entrance.

If the streets were classified correctly, Lam Research would not be able to add an employee entrance on Tualatin Road because it would be an arterial. “No new driveways or streets on arterial roadways within the City, except where noted in the TDC, usually when no alternative access is available.” (TCP 2040 POLICY 8.10.1)

LETTER OF THE LAW

The Tualatin Development Code says “Lots that front on more than one street may be required to locate motor vehicle accesses on the street with the lower functional classification as determined by the City Manager.” TDC 75.040 (5) Currently the TSP shows 108th classified as a minor collector and Tualatin Road a major collector. Based on this, access should be provided from 108th not Tualatin Road.

Lam’s proposed entrance on Tualatin Road fails four of the new driveway approach criteria in TDC 75.020.5: "(d)(ii) Takes access from the lowest classification of street abutting the property … (g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

Tualatin Development Code 75.140.15 (a) grants the specific locations for Lam's three driveways on the north side of Leveton Drive. The applicant's proposal to relocate one of the three driveways is not compliant with the development code.

No matter which way you slice it, Tualatin Road is the worst option for carrying Lam’s new entrance and additional traffic volume. We ask the City Manager to use her discretion and require access from the most appropriate road which, by any metric, is Leveton Drive.

PROPOSED TRAFFIC SIGNAL

The proposed entrance on Tualatin Road would create the need for a new traffic signal on Tualatin Road which would have many negative impacts on the community. These impacts justify rejection of the proposed access. If Lam were to take access from Leveton Drive, no new traffic signal would be needed.

The community provided overwhelming feedback during the TSP update this summer about this issue and we asked that the proposed traffic signal be removed from the TSP. The city should take this feedback into account and "Conduct the planning process with adequate input and feedback from citizens in each affected neighborhood” (TCP 2040 Goal 8.7)

CONSIDER SAFETY

The Tualatin TSP Existing Conditions Report shows Tualatin Road and 115th Ave having higher Pedestrian Level of Traffic Stress than Leveton Drive and 108th Ave. (Figure 23) Adding more traffic to Tualatin Road and 115th Ave will degrade pedestrian safety even further.

Tualatin Road between 124th and 115th has higher concentration of collisions than Leveton and 108th, with a history of serious injury collision while Leveton does not. (Figure 31) Adding more traffic onto Tualatin Road and 115th will increase the traffic exposure and likely result in worse safety outcomes.

Tualatin Road has a history of collisions involving pedestrians and bicycles while Leveton and 108th do not. (Figure 32) Adding more traffic to Tualatin Road will likely make this safety issue worse.

Converting a driveway to full access or signalizing a driveway would likely increase traffic crashes. Per CMF ClearingHouse, changing driveway type to full access has a crash modification factor (CMF) of 2.25, and signalizing a driveway has a CMF of 3.98, which means that the two measures will likely increase traffic crashes by a factor of 2.25 and 3.98 respectively.

Lam's traffic study also does not identify the locations of school bus routes at Hazelbrook Middle School or the potential impacts to school bus traffic. Student safety is one of the most important issues in our community, but so far it has been ignored in this process.

Also, the safety and congestion impacts from Lam's proposal would be most concentrated on Tualatin Road between 115th and 124th which abuts a residential area with traditionally disadvantaged demographics and income limited apartments. This is not equitable.

BYPASS ROUTE

The route from Hazelbrook Road going west and turning right onto Hwy 99W is a "hidden" route that can bypass the traffic congestion at the west end of Tualatin Road. Adding a signal at 115th and Tualatin Road will encourage more cars to take this bypass. The potential impact of this new traffic pattern imposes significant safety concerns to communities all along the route. These impacts were not addressed in the traffic study.

SUMMARY

We urge the city to consider all the above concerns and require the applicant (Lam) to revise their site development plan accordingly. We believe that the current proposal does not meet Tualatin's planning rules, and that the City Manager should use her authority to bring Lam's proposal into compliance. No new roadway access on Tualatin Road.

Thank You

From: Steven Agee <stevenagee724@gmail.com>
Sent: Saturday, March 22, 2025 3:51 PM
To: Ext - Engineering Exterrnal Email; Ext - Planning; Council
Subject: SAVE TUALATIN ROAD

Dear City of Tualatin,

A review of project documents reveals that Mackenzie/Lam did not notify any CIO representatives prior to the June 2024 neighborhood developer meeting, as required by Tualatin Development Code 32.120.5 (b)(iii). The code requires an applicant to send notice to CIO representatives via First Class Mail at least 14 days *before* the neighborhood developer meeting. This requirement was not met at the time, nor can it be met retroactively.

Lam and Mackenzie have been through the Tualatin land use review process before and they know the requirements. In 2022, Suzannah Stanley, Mackenzie Planner, demonstrated that she is very familiar with the CIO notification section. On pages 29-32 of Lam's IMP 22-0001 application, Ms. Stanley is on the record arguing that this notice requirement does not apply to Lam:

"We did not contact any City-recognized CIOs.
Please use this statement in your completeness checklist."
(Page 29) http://www.tualatinroad.org/files/LAM2022081201.pdf

If the City of Tualatin allows Mackenzie and Lam to repeatedly and flagrantly violate notice requirements, the legitimacy of the CIO program will be compromised.

At the June neighborhood developer meeting, Mackenzie said that "the project team is open to continue discussing topics of concern with neighbors" (see meeting minutes #13) however, repeated attempts by the community to open a dialogue with Lam and Mackenzie have been met with refusal and stonewalling. Lam's Chief Communication Officer, Steve Fine, clarified their position in his November 2024 email:

"We are committed to following the City's process to finalize a plan for our project that works for the City, the community, and Lam. In keeping with this approach, please address future communications about traffic considerations to the City of Tualatin."

Because Mackenzie and Lam have not followed proper notice procedure, we hereby ask the City of Tualatin to deny Lam's current land use application so that the applicant can reset and start over.

Thank you for your consideration.

From: Steven Agee <stevenagee724@gmail.com>
Sent: Sunday, March 23, 2025 2:09 PM
To: Ext - Planning; Ext - Engineering Exterrnal Email; Council
Subject: SAVE TUALATIN ROAD

I do not currently live on Tualatin Road. I actually live in Tigard right across the bridge and grew up on Tualatin Road. I do not feel that the impact this project would have on commuters or on neighboring cities have been thought of enough as well as the people who would be affected around the expansion. If approved their expansion would increase commute times for people already taking 99W home and passing the shortcut people take off hazelbrook road to get to 99W. I feel that it could potentially lead to more accidents from people forcing their way on to 99W from the Hazelbrook stop sign and it could also create delays even further back on 99W due to congestion which is already bad enough as is. I feel that with an expansion of this size it should be required by law for Lam to bring this to the attention of the whole county it affects rather than just to the City of Tualatin as it would affect many more people than just Tualatin! I truly and whole-heartedly believe that a good amount of people from neighboring cities within the county who also would be affected would have some input about this which should be taken in to consideration as well!

Thank you

Steven Agee

Former Tualatin Resident for 15 years, current King City resident RIGHT across the bridge barely out of Tualatin!

From: Tami Weitman <tntweitman@comcast.net>
Sent: Tuesday, February 25, 2025 6:10 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Tom Rymanowicz <tom@advantagetaxservices.com>
Sent: Monday, May 12, 2025 8:42 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

I live on SW Cheyenne Way. With the existing traffic we now have on Tualatin and Herman Roads where they intersect, it is very difficult to turn onto Tualatin Road from SW Cheyenne Way. Adding more traffic on Tualatin Road would only make my turn onto Tualatin Road more dangerous. It Lam is permitted to adding the entrance, I will to have the intersection of Herman and Tualatin re-configured to allow my safe turn onto Tualatin Road

Please - NO new roadway access on Tualatin Road.

Thank you for your consideration.

Thomas Rymanowicz
17500 SW Cheyenne Way
Tualatin, OR 97062

From: T B <baumanntk@gmail.com>
Sent: Friday, February 28, 2025 7:40 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Tom Baumann

From: T. Carrasco <tntand@gmail.com>
Sent: Wednesday, January 15, 2025 11:37 AM
To: Council; Ext - Planning; Ext - Engineering Exterrnal Email
Cc: len carrasco
Subject: Tualatin Rd traffic, etc

Dear City of Tualatin

LAM's TUX project proposal would violate the Tualatin Development Code, both in spirit and letter.

Wer'e asking the Tualatin Planning Department to consider **Lam's proposed entrance on Tualatin Road to NOT BE APPROVED**, and City Manager use authority to removed the proposed Tualatin Rd. entrance from the TUX project site plan so that alternative access can be designed.

SITE CIRCULATION

Existing driveways provide sufficient access points to the LAM Campus as a whole. LAM currently has 6 other access points. 3 on 108th and 3 on Leveton Drive. **Adding a new access point on Tualatin Road is unnecessary and will be deleterious to Tualatin residents**. This would not be in line with LAM's mission to **Act with purpose for a better world.**

Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to add an additional driveway onto the street network.

Tualatin Road is currently functioning as an arterial, it was previously classified as an arterial, and it has the traffic volume of an arterial. Leveton Drive is currently functioning as a collector, it

was previously classified as a collector, and it has the current traffic volume of a collector.

We ask the **city to remedy mistaken reclassifications of Tualatin Rd**. and Leveton by restoring the correct functional classifications to their appropriate streets. LAM should not be allowed to rely on a classification error to put a new entrance on a road that, based on current conditions, should not have a new entrance.

If the streets were classified correctly, LAM research would not be able to add an employee entrance on Tualatin Road because it would be an arterial. "**No new driveways or streets on arterial roadways** within the City, except where noted in the TDC, usually when no alternative access is available." (TCP 2040 POLICY 8.10.1)

We urge the city to consider all the above concerns and require the applicant (LAM) to revise their site development plan accordingly. We believe that the current proposal does not meet Tualatin's planning rules, and that the City Manager should bring LAM's proposal into compliance. No new roadway access on Tualatin Road.

Please update all residents about these decisions and continue to represent us completely. Thank You for consideration of these many requests by the citizens of Tualatin.

Toni and Leonard Carrasco

17790 SW Cheyenne Way

Tualatin 97062

cc: Several Neighbors (PLEASE SHARE with other neighbors on your street and reply all with comments)

From: Keith Leonard
Sent: Thursday, January 16, 2025 8:10 AM
To: T. Carrasco
Subject: RE: Tualatin Rd traffic, etc

Good morning Toni and Leonard,

Thank you for providing public comments pertaining to the proposed Lam TUX development. I have added your comments to the public record. We appreciate you taking the time to take part in the public process. Have a great day!

Keith Leonard, AICP
Associate Planner
Phone: 503.691.3029

From: T. Carrasco <tntand@gmail.com>
Sent: Wednesday, January 15, 2025 11:37 AM
To: Council <council@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>; Ext - Engineering Exterrnal Email <engineering@tualatin.gov>
Cc: len carrasco <lenbobG3@gmail.com>
Subject: Tualatin Rd traffic, etc

[redacted]

Dear City of Tualatin

LAM's TUX project proposal would violate the Tualatin Development Code, both in spirit and letter.

Wer'e asking the Tualatin Planning Department to consider **Lam's proposed entrance on Tualatin Road to NOT BE APPROVED**, and City Manager use authority to removed the proposed Tualatin Rd. entrance from the TUX project site plan so that alternative access can be designed.

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Toni and Leonard Carrasco

17790 SW Cheyenne Way

Tualatin 97062

cc: Several Neighbors (PLEASE SHARE with other neighbors on your street and reply all with comments)

From: T. Carrasco <tntand@gmail.com>
Sent: Monday, February 10, 2025 8:22 PM
To: janine wilson; Keith Leonard; barb@tigardlife.com; Council
Subject: Protect Tualatin Road

I've received no reply to my letter of January 15 (below). I would like the council and LAM to make it part of the testimony record and request that all share this email far and wide with any concerned about our only and already congested neighborhood exit..

From: T. Carrasco <tntand@gmail.com>
Sent: Wednesday, January 15, 2025 11:37 AM
To: council@tualatin.gov; planning@tualatin.gov; engineering@tualatin.gov
Cc: len carrasco <lenbobG3@gmail.com>
Subject: [EXT]Tualatin Rd traffic, etc

[redacted]

Dear City of Tualatin

LAM's TUX project proposal would violate the Tualatin Development Code, both in spirit and letter.

Wer'e asking the Tualatin Planning Department to consider **Lam's proposed entrance on Tualatin Road to NOT BE APPROVED**, and City Manager use authority to removed the proposed Tualatin Rd. entrance from the TUX project site plan so that alternative access can be designed.

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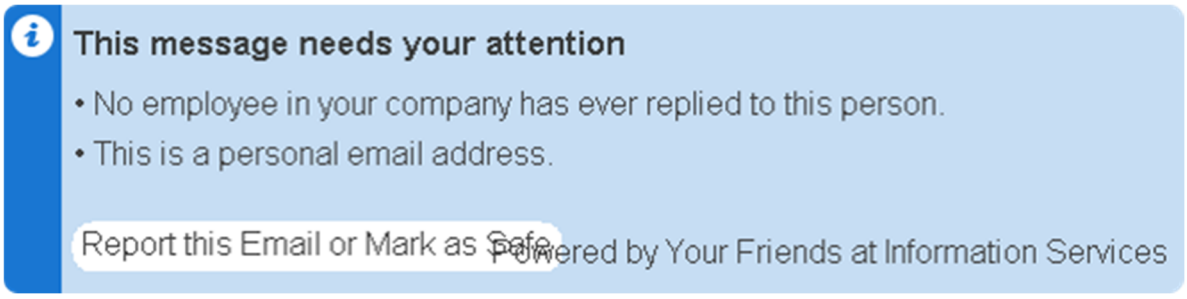
Toni and Leonard Carrasco

17790 SW Cheyenne Way

Tualatin 97062

cc: Several Neighbors (PLEASE SHARE with other neighbors on your street and reply all with comments

From: Tricia Bellavance <wildabundance17@gmail.com>
Sent: Wednesday, June 25, 2025 10:02 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project



Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Tricia

From: Tricia Johnson <mynameistricia@icloud.com>
Sent: Friday, June 20, 2025 3:44 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

From: Vicki Tomaras <vicster529@gmail.com>
Sent: Tuesday, February 25, 2025 6:15 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Vickie Gearhart <gearsmom@yahoo.com>
Sent: Wednesday, March 5, 2025 4:21 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

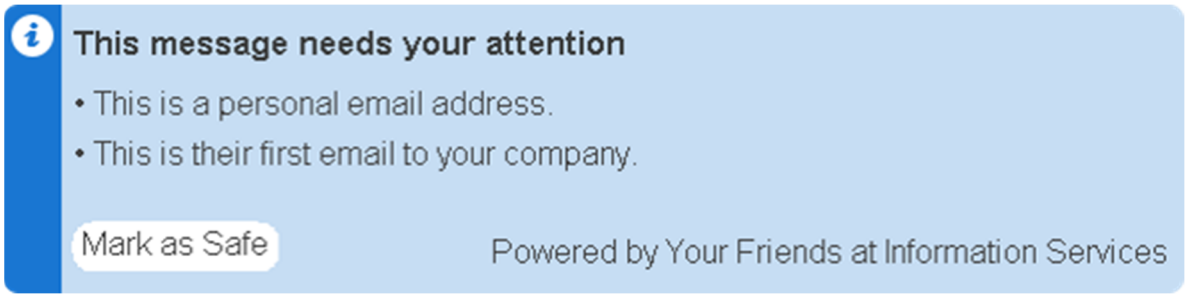
Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Wasayif Ahmed <wasayif00@icloud.com>
Sent: Monday, March 3, 2025 7:08 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project



,Dear City of Tualatin

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Wendy Morrell <imluvnlife2@gmail.com>
Sent: Tuesday, February 25, 2025 3:26 PM
To: Ext - Planning; Keith Leonard
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Follow Up Flag: Follow up
Flag Status: Flagged

Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the proposed employee entrance on Tualatin Road. I ask that the city require Lam to keep their existing driveways on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from Wendy"s iPhone

From: William Lancaster <william.lancaster@gmail.com>
Sent: Thursday, May 29, 2025 8:09 AM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project

Dear City of Tualatin,

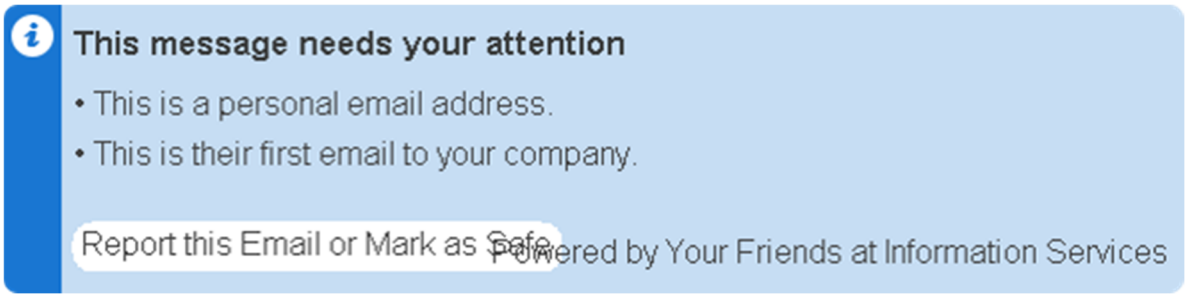
Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

Sent from my iPhone

From: Wren Villicano <wren.villicano@gmail.com>
Sent: Monday, June 30, 2025 2:45 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project



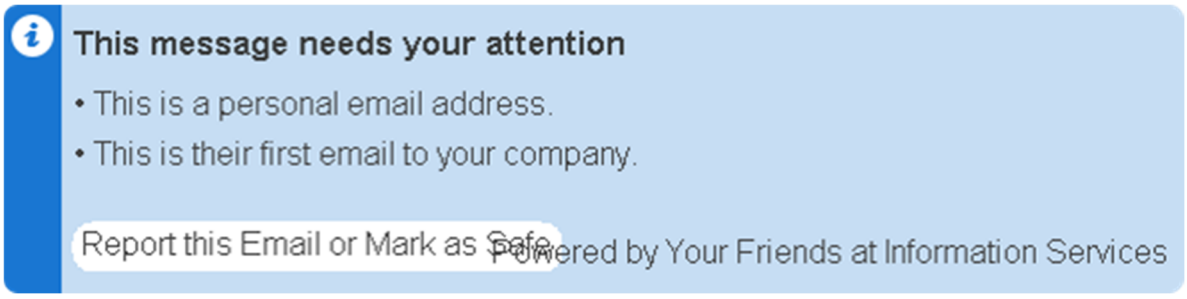
Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

From: zach kuzens <zkuzens@gmail.com>
Sent: Friday, June 6, 2025 1:01 PM
To: Keith Leonard; Ext - Planning
Cc: Council; outreach@tualatinroad.org
Subject: Lam TUX Project



Dear City of Tualatin,

Thank you for the opportunity to comment on Lam's proposed TUX project. I am against the addition of an employee entrance on Tualatin Road. I ask that the City require Lam to keep their existing access on Leveton Drive.

NO new roadway access on Tualatin Road.

Thank you for your consideration.

7/8/24

through

12/16/24

In Favor

From: Mike Hannegan <mikehanegan@yahoo.com>
Sent: Wednesday, August 28, 2024 5:13 PM
To: Ext - Planning
Subject: Fw: An Old-Timer's Opinion - LAM Expansion.

Hi there,

I just thought I'd add my two cents to the LAM expansion comments. I sent the following email out to the neighborhood group. I am in full support of LAM's expansion. I know they will do what is right for our neighborhood and our city.

Respectfully,

Michael L. Hannegan
17992 SW 110th PL.
Tualatin, OR 97062

----- Forwarded Message -----
From: Mike Hannegan <mikehanegan@yahoo.com>
To: neighborhood@oregonair.org <neighborhood@oregonair.org>
Sent: Wednesday, August 28, 2024 at 05:05:46 PM PDT
Subject: An Old-Timer's Opinion

Hi Everyone,

My family moved to Tualatin Rd. in the 1940's. I was born in 1956 and have lived on Tualatin Rd. most of my life. Since the 60s, the land on the south side of Tualatin Rd. has been zoned commercial/industrial. Progress and development was always planned for that area. If you didn't like that, you shouldn't have moved to the area. If it wasn't for growth and expansion, there would be no homes on the north side of Tualatin Rd. either. It would still all be small farms.

I support LAM and their right to expand and add jobs to the local area. The traffic calculations on the website seem to be the absolute worst case scenario. They assume every position is filled with everyone driving their own vehicle to and from work every day of the week. In these days of work-from-home and flex days, this just isn't the case.

The people at LAM have been very receptive to making changes to accommodate your requests as best as they can. In many ways they have gone above and beyond over the years. I think we all should cut them some slack.

The local roads can certainly handle the additional traffic. But if I were to make one suggestion for them to consider that may be a solution to all your concerns, it would be to shift their start times. Instead of having 7-4 or 8-5 work hours, shift the times to 6-3 or 9-6. Or maybe they could offer 10 hour days 4 days a week. They should consider scheduling commute times to not be during the peak commuting hours. And try to avoid the school start and end times. I think the Hazelbrook Middle School traffic is way worse than any congestion LAM has.

Respectfully,

Mike Hannegan

In Opposition

From: A Micheals <amichaels68@gmail.com>
Sent: Wednesday, October 23, 2024 7:08 PM
To: Ext - Planning
Subject: Save Tualatin road

Dear Tualatin City Council and Tualatin Planning Department:

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!

From: Abigail Frainey <abigailfrainey@gmail.com>
Sent: Monday, December 9, 2024 5:39 PM
To: Council; Ext - Planning; Ext - Engineering Exterrnal Email
Subject: LAM traffic project

Follow Up Flag: Follow up
Flag Status: Flagged

To: Tualatin City Council
To: Tualatin Planning Department
To: Tualatin Engineering Department

Dear City of Tualatin,

While researching the traffic impacts from Lam's TUX project, members of the community have discovered that Lam's proposal is not compatible with the Tualatin Comprehensive Plan 2040, and it would violate the Tualatin Development Code, both in spirit and letter.

For the reasons outlined below, we are asking the Tualatin Planning Department to consider Lam's proposed entrance on Tualatin Road to not be approvable, and we ask the City Manager to use her authority to have the proposed entrance removed from the TUX project site plan so that alternative access can be designed.

SITE CIRCULATION

Existing driveways provide sufficient access points to the Lam Campus as a whole. Lam currently has 6 other access points. 3 on 108th and 3 on Leveton Drive. Adding a new access point on Tualatin Road is unnecessary.

Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to add an additional driveway onto the street network.

The Tualatin Comprehensive Plan 2040 strongly supports the use of existing access points, rather than creating new ones, especially when a new access point would have negative impacts to the community. "Consider transportation options that make the best use of the existing network" (Goal 8.7)

SPIRIT OF THE LAW

Tualatin Road is currently functioning as an arterial, it was previously classified as an arterial, and it has the traffic volume of an arterial. Leveton Drive is currently functioning as a collector, it was previously classified as a collector, and it has the current traffic volume of a collector.

During the 2012-14 TSP update, the functional classifications of these streets were reversed in a failed attempt by the city to reduce the amount of traffic on Tualatin Road and encourage more trips to use Leveton Drive. While we appreciate the intent of this reversal, the impact is now exactly opposite of what was intended, and we ask that this reversal be deemed a mistake. We ask the city to remedy this mistake by restoring the correct functional classifications to their appropriate streets. Lam should not be allowed to rely on a classification error to put a new entrance on a road that, based on current conditions, should not have a new entrance.

If the streets were classified correctly, Lam Research would not be able to add an employee entrance on Tualatin Road because it would be an arterial. "No new driveways or streets on arterial roadways within the City, except where noted in the TDC, usually when no alternative access is available." (TCP 2040 POLICY 8.10.1)

LETTER OF THE LAW

The Tualatin Development Code says "Lots that front on more than one street may be required to locate motor vehicle accesses on the street with the lower functional classification as determined by the City Manager." TDC 75.040 (5) Currently the TSP shows 108th classified as a minor collector and Tualatin Road a major collector. Based on this, access should be provided from 108th not Tualatin Road.

Lam's proposed entrance on Tualatin Road fails four of the new driveway approach criteria in TDC 75.020.5: "(d)(ii) Takes access from the lowest classification of street abutting the property … (g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

Tualatin Development Code 75.140.15 (a) grants the specific locations for Lam's three driveways on the north side of Leveton Drive. The applicant's

proposal to relocate one of the three driveways is not compliant with the development code.

No matter which way you slice it, Tualatin Road is the worst option for carrying Lam's new entrance and additional traffic volume. We ask the City Manager to use her discretion and require access from the most appropriate road which, by any metric, is Leveton Drive.

PROPOSED TRAFFIC SIGNAL

The proposed entrance on Tualatin Road would create the need for a new traffic signal on Tualatin Road which would have many negative impacts on the community. These impacts justify rejection of the proposed access. If Lam were to take access from Leveton Drive, no new traffic signal would be needed.

The community provided overwhelming feedback during the TSP update this summer about this issue and we asked that the proposed traffic signal be removed from the TSP. The city should take this feedback into account and "Conduct the planning process with adequate input and feedback from citizens in each affected neighborhood" (TCP 2040 Goal 8.7)

CONSIDER SAFETY

The Tualatin TSP Existing Conditions Report shows Tualatin Road and 115th Ave having higher Pedestrian Level of Traffic Stress than Leveton Drive and 108th Ave. (Figure 23) Adding more traffic to Tualatin Road and 115th Ave will degrade pedestrian safety even further.

Tualatin Road between 124th and 115th has higher concentration of collisions than Leveton and 108th, with a history of serious injury collision while Leveton does not. (Figure 31) Adding more traffic onto Tualatin Road and 115th will increase the traffic exposure and likely result in worse safety outcomes.

Tualatin Road has a history of collisions involving pedestrians and bicycles while Leveton and 108th do not. (Figure 32) Adding more traffic to Tualatin Road will likely make this safety issue worse.

Converting a driveway to full access or signalizing a driveway would likely increase traffic crashes. Per CMF ClearingHouse, changing driveway type to full access has a crash modification factor (CMF) of 2.25, and signalizing a driveway has a CMF of 3.98, which means that the two measures will likely increase traffic crashes by a factor of 2.25 and 3.98 respectively.

Lam’s traffic study also does not identify the locations of school bus routes at Hazelbrook Middle School or the potential impacts to school bus traffic. Student safety is one of the most important issues in our community, but so far it has been ignored in this process.

Also, the safety and congestion impacts from Lam’s proposal would be most concentrated on Tualatin Road between 115th and 124th which abuts a residential area with traditionally disadvantaged demographics and income limited apartments. This is not equitable.

BYPASS ROUTE

The route from Hazelbrook Road going west and turning right onto Hwy 99W is a "hidden" route that can bypass the traffic congestion at the west end of Tualatin Road. Adding a signal at 115th and Tualatin Road will encourage more cars to take this bypass. The potential impact of this new traffic pattern imposes significant safety concerns to communities all along the route. These impacts were not addressed in the traffic study.

SUMMARY

We urge the city to consider all the above concerns and require the applicant (Lam) to revise their site development plan accordingly. We believe that the current proposal does not meet Tualatin’s planning rules, and that the City Manager should use her authority to bring Lam’s proposal into compliance. No new roadway access on Tualatin Road.

Thank You,

Abigail Frainey’s

Concerned resident of Tualatin

503-550-4703

From: J.A Ena <al_3401@hotmail.com>
Sent: Friday, October 18, 2024 8:40 AM
To: Ext - Planning; Council
Subject: Save tualatin road

To: Tualatin City Council:
To: Tualatin Planning Department:

Dear Tualatin City Council and Tualatin Planning Department:

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. I face traffic on tualatin road daily during the school year trying to rush my middle schoolers from school to extra curricular activities. It is already a challenge now. I'm worried this will only increase the stress of getting slow to rise middle schoolers to school and get them from school to the other side of town for practices.

Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!

Alaina Ena

From: Amy Swanson <130.amy@gmail.com>
Sent: Wednesday, November 27, 2024 9:23 PM
To: Council; Ext - Planning
Subject: Save Tualatin road

Dear Tualatin City Council and Tualatin Planning Department:

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!

From: Annelise Petersen <annelisempetersen@outlook.com>
Sent: Monday, December 2, 2024 8:05 AM
To: Ext - Planning
Subject: Fw: Lam Research

From: Annelise Petersen <annelisempetersen@outlook.com>
Sent: Monday, December 2, 2024 8:04 AM
To: council@tualatin.gov <council@tualatin.gov>
Subject: Lam Research

Dear Tualatin City Council and Tualatin Planning Department:

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

I also do not support tax payer money funding private companies for profit.

My child attends Hazelbrook MS and if you spent a morning at the school, you would quickly understand why this expansion would cause much more harm and potential safety and logistical concerns. The benefits do not outweigh the risks here.

Use Leveton Drive. Save Tualatin Road.

Thank You!

Annelise P.

Get Outlook for iOS

From: Arva Bartos <arva41@gmail.com>
Sent: Thursday, October 31, 2024 11:56 AM
To: Council; Ext - Planning

To: Tualatin City Council: council@tualatin.gov
To: Tualatin Planning Department: planning@tualatin.gov

Dear Tualatin City Council and Tualatin Planning Department:

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

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Use Leveton Drive. Save Tualatin Road.

Sincerely,

Arva Bartos, 17750 SW Chippewa Trail, Tualatin

From: Arva Bartos <arva41@gmail.com>
Sent: Monday, December 9, 2024 3:27 PM
To: Ext - Planning
Subject: Rethink LAM's Proposal for Tualatin Road

City Council council@tualatin.gov
Planning Department planning@tualatin.gov
Engineering engineering@tualatin.gov

Dear City of Tualatin,

While researching the traffic impacts from Lam's TUX project, members of the community have discovered that Lam's proposal is not compatible with the Tualatin Comprehensive Plan 2040, and it would violate the Tualatin Development Code, both in spirit and letter.

For the reasons outlined below, we are asking the Tualatin Planning Department to consider Lam's proposed entrance on Tualatin Road to not be approvable, and we ask the City Manager to use her authority to have the proposed entrance removed from the TUX project site plan so that alternative access can be designed.

SITE CIRCULATION

Existing driveways provide sufficient access points to the Lam Campus as a whole. Lam currently has 6 other access points. 3 on 108th and 3 on Leveton Drive. Adding a new access point on Tualatin Road is unnecessary.

Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to add an additional driveway onto the street network.

The Tualatin Comprehensive Plan 2040 strongly supports the use of existing access points, rather than creating new ones, especially when a new access point would have negative impacts to the community. "Consider transportation options that make the best use of the existing network" (Goal 8.7)

SPIRIT OF THE LAW

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and encourage more trips to use Leveton Drive. While we appreciate the intent of this reversal, the impact is now exactly opposite of what was intended, and we ask that this reversal be deemed a mistake. We ask the city to remedy this mistake by restoring the correct functional classifications to their appropriate streets. Lam should not be allowed to rely on a classification error to put a new entrance on a road that, based on current conditions, should not have a new entrance.

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Lam’s proposed entrance on Tualatin Road fails four of the new driveway approach criteria in TDC 75.020.5: "(d)(ii) Takes access from the lowest classification of street abutting the property … (g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

Tualatin Development Code 75.140.15 (a) grants the specific locations for Lam's three driveways on the north side of Leveton Drive. The applicant's proposal to relocate one of the three driveways is not compliant with the development code.

No matter which way you slice it, Tualatin Road is the worst option for carrying Lam’s new entrance and additional traffic volume. We ask the City Manager to use her discretion and require access from the most appropriate road which, by any metric, is Leveton Drive.

PROPOSED TRAFFIC SIGNAL

The proposed entrance on Tualatin Road would create the need for a new traffic signal on Tualatin Road which would have many negative impacts on the community. These impacts justify rejection of the proposed access. If Lam were to take access from Leveton Drive, no new traffic signal would be needed.

The community provided overwhelming feedback during the TSP update this summer about this issue and we asked that the proposed traffic signal be removed from the

TSP. The city should take this feedback into account and "Conduct the planning process with adequate input and feedback from citizens in each affected neighborhood" (TCP 2040 Goal 8.7)

CONSIDER SAFETY

The Tualatin TSP Existing Conditions Report shows Tualatin Road and 115th Ave having higher Pedestrian Level of Traffic Stress than Leveton Drive and 108th Ave. (Figure 23) Adding more traffic to Tualatin Road and 115th Ave will degrade pedestrian safety even further.

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Lam's traffic study also does not identify the locations of school bus routes at Hazelbrook Middle School or the potential impacts to school bus traffic. Student safety is one of the most important issues in our community, but so far it has been ignored in this process.

Also, the safety and congestion impacts from Lam's proposal would be most concentrated on Tualatin Road between 115th and 124th which abuts a residential area with traditionally disadvantaged demographics and income limited apartments. This is not equitable.

BYPASS ROUTE

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SUMMARY

We urge the city to consider all the above concerns and require the applicant (Lam) to revise their site development plan accordingly. We believe that the current proposal does not meet Tualatin's planning rules, and that the City Manager should use her authority to bring Lam's proposal into compliance. No new roadway access on Tualatin Road.

Thank You.
Arva & Paul Bartos
17750 SW Chippewa Trl.
Tualatin 97062

From: Brett Hamilton <brett@simple.be>
Sent: Monday, December 9, 2024 3:16 PM
To: Sherilyn Lombos; Ext - Planning
Cc: Council; Ext - Engineering Exterrnal Email
Subject: Lam's Proposal and Tualatin Code

Dear City of Tualatin,

While researching the traffic impacts from Lam's TUX project, members of the community have discovered that Lam's proposal is not compatible with the Tualatin Comprehensive Plan 2040, and it would violate the Tualatin Development Code, both in spirit and letter.

For the reasons outlined below, we are asking the Tualatin Planning Department to consider Lam's proposed entrance on Tualatin Road to not be approvable, and we ask the City Manager to use her authority to have the proposed entrance removed from the TUX project site plan so that alternative access can be designed.

SITE CIRCULATION

Existing driveways provide sufficient access points to the Lam Campus as a whole. Lam currently has 6 other access points. 3 on 108th and 3 on Leveton Drive. Adding a new access point on Tualatin Road is unnecessary.

Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to add an additional driveway onto the street network.

The Tualatin Comprehensive Plan 2040 strongly supports the use of existing access points, rather than creating new ones, especially when a new access point would have negative impacts to the community. "Consider transportation options that make the best use of the existing network" (Goal 8.7)

SPIRIT OF THE LAW

Tualatin Road is currently functioning as an arterial, it was previously classified as an arterial, and it has the traffic volume of an arterial. Leveton Drive is currently functioning as a collector, it was previously classified as a collector, and it has the current traffic volume of a collector.

During the 2012-14 TSP update, the functional classifications of these streets were reversed in a failed attempt by the city to reduce the amount of traffic on Tualatin Road and encourage more trips to use Leveton Drive. While we appreciate the intent of this reversal, the impact is now exactly opposite of what was intended, and we ask that this reversal be deemed a mistake. We ask the city to remedy this mistake by restoring the correct functional classifications to their appropriate streets. Lam should not be allowed to rely on a classification error to put a new entrance on a road that, based on current conditions, should not have a new entrance.

If the streets were classified correctly, Lam Research would not be able to add an employee entrance on Tualatin Road because it would be an arterial. "No new driveways or streets on arterial roadways within the City, except where noted in the TDC, usually when no alternative access is available." (TCP 2040 POLICY 8.10.1)

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The Tualatin Development Code says “Lots that front on more than one street may be required to locate motor vehicle accesses on the street with the lower functional classification as determined by the City Manager.” TDC 75.040 (5) Currently the TSP shows 108th classified as a minor collector and Tualatin Road a major collector. Based on this, access should be provided from 108th not Tualatin Road.

Lam’s proposed entrance on Tualatin Road fails four of the new driveway approach criteria in TDC 75.020.5: "(d)(ii) Takes access from the lowest classification of street abutting the property … (g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

Tualatin Development Code 75.140.15 (a) grants the specific locations for Lam's three driveways on the north side of Leveton Drive. The applicant's proposal to relocate one of the three driveways is not compliant with the development code.

No matter which way you slice it, Tualatin Road is the worst option for carrying Lam’s new entrance and additional traffic volume. We ask the City Manager to use her discretion and require access from the most appropriate road which, by any metric, is Leveton Drive.

PROPOSED TRAFFIC SIGNAL

The proposed entrance on Tualatin Road would create the need for a new traffic signal on Tualatin Road which would have many negative impacts on the community. These impacts justify rejection of the proposed access. If Lam were to take access from Leveton Drive, no new traffic signal would be needed.

The community provided overwhelming feedback during the TSP update this summer about this issue and we asked that the proposed traffic signal be removed from the TSP. The city should take this feedback into account and "Conduct the planning process with adequate input and feedback from citizens in each affected neighborhood” (TCP 2040 Goal 8.7)

CONSIDER SAFETY

The Tualatin TSP Existing Conditions Report shows Tualatin Road and 115th Ave having higher Pedestrian Level of Traffic Stress than Leveton Drive and 108th Ave. (Figure 23) Adding more traffic to Tualatin Road and 115th Ave will degrade pedestrian safety even further.

Tualatin Road between 124th and 115th has higher concentration of collisions than Leveton and 108th, with a history of serious injury collision while Leveton does not. (Figure 31) Adding more traffic onto Tualatin Road and 115th will increase the traffic exposure and likely result in worse safety outcomes.

Tualatin Road has a history of collisions involving pedestrians and bicycles while Leveton and 108th do not. (Figure 32) Adding more traffic to Tualatin Road will likely make this safety issue worse.

Converting a driveway to full access or signalizing a driveway would likely increase traffic crashes. Per CMF ClearingHouse, changing driveway type to full access has a crash modification factor (CMF) of 2.25, and signalizing a driveway has a CMF of 3.98, which means that the two measures will likely increase traffic crashes by a factor of 2.25 and 3.98 respectively.

Lam's traffic study also does not identify the locations of school bus routes at Hazelbrook Middle School or the potential impacts to school bus traffic. Student safety is one of the most important issues in our community, but so far it has been ignored in this process.

Also, the safety and congestion impacts from Lam's proposal would be most concentrated on Tualatin Road between 115th and 124th which abuts a residential area with traditionally disadvantaged demographics and income limited apartments. This is not equitable.

BYPASS ROUTE

The route from Hazelbrook Road going west and turning right onto Hwy 99W is a "hidden" route that can bypass the traffic congestion at the west end of Tualatin Road. Adding a signal at 115th and Tualatin Road will encourage more cars to take this bypass. The potential impact of this new traffic pattern imposes significant safety concerns to communities all along the route. These impacts were not addressed in the traffic study.

SUMMARY

We urge the city to consider all the above concerns and require the applicant (Lam) to revise their site development plan accordingly. We believe that the current proposal does not meet Tualatin's planning rules, and that the City Manager should use her authority to bring Lam's proposal into compliance. No new roadway access on Tualatin Road.

Thank You,
Brett Hamilton

From: Frank Bubenik
Sent: Tuesday, September 10, 2024 8:39 PM
To: Brett Hamilton; Council; Ext - Planning
Subject: Re: Lam and Tualatin Road

Brett,

Thanks for your email and for sharing your thoughts about Tualatin Road, Lam, and 115th Avenue. A historical FYI that Lam has had an approved industrial master plan for the eventual buildout of its campus since 2001, including access to SW Tualatin Road at SW 115th Avenue. Lam's master plan was amended in 2022 to include the addition of Building G along Leveton Road, which is currently under construction. The new proposed buildings, referred to as TUX, will be occupied by up to 600 new employees.

I live in the area and want to make sure Tualatin Road does not become congested/overwhelmed. There were new ideas brought forward to redirect many LAM employees off of Tualatin Road. These ideas are being vetting by Lam and city transportation experts. Our traffic folks are working with Lam on the 115th and Tualatin Road intersection to create ways to minimize traffic on 115th and Tualatin Road.

The City of Tualatin is committed to listening to the community, working on traffic solutions, and working to bring together the parties. In that vein, City staff are organizing a neighborhood forum designed to allow the neighborhood to talk about traffic issues and concerns that have arisen. We do not have a date identified at this time but are planning it within the next few weeks. Since the topics are broader than what Lam can be required to do, city council and staff feel it is appropriate for the city to host and facilitate this meeting, with Lam participating. Lam is attuned to the neighborhood concerns and their representatives are willing to be at the table.

There are many moving pieces on this, and they're moving pretty slowly. The application from Lam is not yet deemed complete and there are missing chunks of information and changes being made.

The Lam proposal will not come to council initially as this development conforms with the existing use and zoning. An Architecture Review Board (ARB) review is required as well as the Planning Commission review and they are months away; it could be as late as February or March 2025. The Industrial Master Plan application will be heard by the Planning Commission and the Architectural Review Application will be heard by the Architectural Review Board. Each hearing body would make its own decision based on the applicable criteria for that application; each decision is then potentially separately appealable to City Council.

Please attend the next neighborhood meeting and provide your thoughts and suggestions.

Mayor of Tualatin
fbubenik@tualatin.gov
Cell: 971.420.7443

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From: Brett Hamilton <brett@simple.be>
Sent: Tuesday, September 10, 2024 2:25 PM
To: Council <council@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Subject: Lam and Tualatin Road

Dear Tualatin City Council and Tualatin Planning Department:

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!
Brett Hamilton

From: Mike McCarthy
Sent: Thursday, November 21, 2024 7:29 AM
To: Keith Leonard
Cc: Steve Koper
Subject: Fwd: Traffic Study

Follow Up Flag: Follow up
Flag Status: Flagged

Hi Keith

Forgot to cc you on this

Sent from my iPhone

Begin forwarded message:

> **From:** Mike McCarthy <mmccarthy@tualatin.gov>
> **Date:** November 21, 2024 at 12:13:33 AM PST
> **To:** Steve Koper <skoper@tualatin.gov>, Joel Rabinovitz <joel.rabinovitz@dksassociates.com>
> **Cc:** Abby McFetridge <Amcfetridge@tualatin.gov>, Kim McMillan <kmcmillan@tualatin.gov>
> **Subject: Fwd: Traffic Study**
>
> Hi Steve and Joel
>
> What are your thoughts on the request below and how it would fit with typical best practices for this type of traffic study and land use case?
>
> Thanks
> Mike
>
> Sent from my iPhone
>
> Begin forwarded message:
>
> > **From:** Brett Hamilton <brett@simple.be>
> > **Date:** November 20, 2024 at 9:16:36 PM PST
> > **To:** Mike McCarthy <mmccarthy@tualatin.gov>
> > **Cc:** Steve Koper <skoper@tualatin.gov>
> > **Subject: Traffic Study**

Dear Mr. McCarthy,

Thanks for presenting at the Riverpark CIO meeting last night and taking questions from the community. Last week you mentioned Lam waiting to submit their traffic study based on the outcome of the CIO meeting, and I'd like to share with you some of the comments and suggestions I've received from the community about what residents and property owners would like to see included in the traffic study:

1) Because the proposed entrance on 115th would be shared jointly with Lam and JAE, and available for use by future development and expansion at those properties, we would like to see traffic projections based on both the Lam and JAE parcels being fully developed at the density that Lam is currently using for the TUX project, including with 70% of trips using Tualatin Road and 30% of trips using Leveton Drive.

2) Because the Lam and JAE parcels contain manufacturing activity, and manufacturing capacity can be increased by adding a second shift (and/or moving to 24 hour operations) the traffic impacts could be double what is currently being modeled, and shift change would present unique challenges where groups of vehicles are coming and going at the same time, rather than just one group filling up or emptying the site.

3) Combining points 1 and 2, the traffic delays on Tualatin Road could reasonably make the Jurgens / Hazelbrook bypass a quicker route to 99W, and the resulting traffic increase would be significantly higher than the projections shown last night. We would like the traffic modeling to take into account predictable time-saving driver behavior, and automated mapping / navigation software route selection algorithms. Once Google Maps finds out the bypass is quicker, it will send people the quicker way.

Basically the community wants to see the traffic model look at the maximum future impact of this entrance on Tualatin Road, not just the best case scenario of only Lam's TUX project. The future impacts of a new entrance on Tualatin Road are bigger than one project, and the city needs to look further out into the future before opening up this access point on Tualatin Road, because as we know, once it is built it will be used.

Beyond the traffic study, we would also like to see the full project budget for the concrete construction of Leveton Drive back in the day when it built / improved, and we would like to see the city staff report that analyzed the expenditure, specifically how the increased expense of concrete over asphalt was justified.

Thank you for your consideration and your work on this project.

Regards, Brett Hamilton

From: Brian Craker <crakerb@yahoo.com>
Sent: Tuesday, September 24, 2024 7:39 PM
To: Council; Ext - Planning
Subject: Concerns with Lam Research Expansion / Tualatin Road Impact

My name is Brian Craker, and I live at the end of 106th Ct. in Tualatin, one block from Mayor Bubenik. We have lived in Tualatin in 1997, and watched the traffic on Tualatin Rd. grow from a sleepy road of occasion traffic to the constant flow that it is now. Tualatin Rd. is the ONLY option out of neighborhood to go west, east or south, and it is getting more difficult (and more dangerous) to pull out onto in the last two years. Today I had to sit at the end of 106th Ct for over 5 minutes waiting for a break in the traffic so I could go pick up my son in downtown Tualatin, and when I did finally pull out, the person heading west was speeding over 45mph and nearly hit me, because they were in a hurry.

My wife and I are very concerned for our livability and our safety on Tualatin Rd. if the Lam proposal is allowed to drop thousands of additional vehicles onto our road. Allowing that much traffic onto our ONLY access point will essentially trap us in our neighborhood during peak hours, and threaten the safety of our families trying to safely get out. That, and we are certain it will create the same headaches for people who will begin using Jergens to Hazelbrook as a cut-through, adding unsafe speeders in front of a park and a middle school.

I recently drove through the Lam facility to see what was being built. Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus. So why do they want to close this access and divert everyone onto Tualatin Road instead? This is unacceptable. Lam's new site plan needs to keep all of their traffic directly to Leveton Drive where there is currently very little traffic and lots of room for expansion.

Our neighborhood can not handle a thousand more cars per day onto Tualatin Road, especially when a better alternative already exists. I am asking the City Council and City Staff please find a solution to this problem that does not involve adding more traffic to Tualatin Road and destroying our wonderful neighborhood in the city we have called home for over 20 years.

Sincerely,

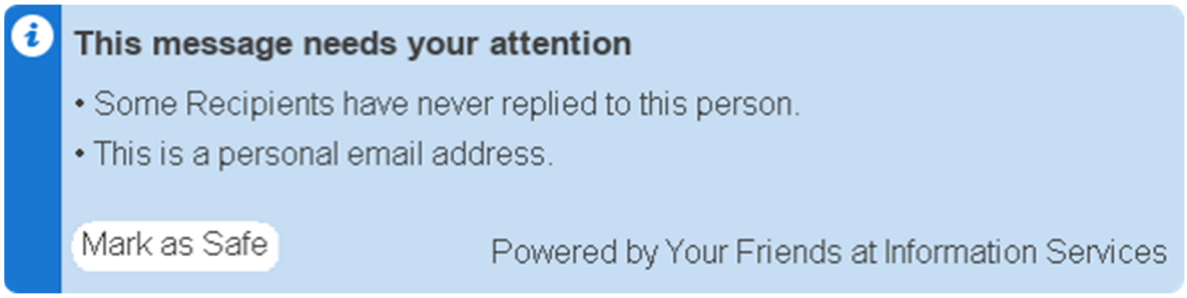
Brian Craker

<><----------><>
Brian Craker

"Write your plans in pencil, then give God the eraser."
(Unknown)

From: Brian Craker <crakerb@yahoo.com>
Sent: Monday, December 9, 2024 5:42 PM
To: Council; Ext - Planning; Ext - Engineering Exterrnal Email
Subject: Lam Proposal Code Non-Compliance

Follow Up Flag: Follow up
Flag Status: Flagged



Dear City of Tualatin,

While researching the traffic impacts from Lam's TUX project, *members of our community living close to the Lam campus have discovered that their proposal is not compatible with the Tualatin Comprehensive Plan 2040, and it would violate the Tualatin Development Code, both in spirit and letter.*

For the reasons outlined below, we are asking the Tualatin Planning Department to consider Lam's proposed entrance on Tualatin Road to not be approvable, and we ask the City Manager to use her authority to have the proposed entrance removed from the TUX project site plan so that alternative access can be designed.

SITE CIRCULATION

Existing driveways provide sufficient access points to the Lam Campus as a whole. Lam currently has 6 other access points. 3 on 108th and 3 on Leveton Drive. Adding a new access point on Tualatin Road is unnecessary.

Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to add an additional driveway onto the street network.

The Tualatin Comprehensive Plan 2040 strongly supports the use of existing access points, rather than creating new ones, especially when a new access point would have negative impacts to the community. "Consider transportation options that make the best use of the existing network" (Goal 8.7)

SPIRIT OF THE LAW

Tualatin Road is currently functioning as an arterial, it was previously classified as an arterial, and it has the traffic volume of an arterial. Leveton Drive is currently functioning as a collector, it was previously classified as a collector, and it has the current traffic volume of a collector.

During the 2012-14 TSP update, the functional classifications of these streets were reversed in a failed attempt by the city to reduce the amount of traffic on Tualatin Road and encourage more trips to use Leveton Drive. While we appreciate the intent of this reversal, the impact is now exactly opposite of what was intended, and we ask that this reversal be deemed a mistake. We ask the city to remedy this mistake by restoring the correct functional classifications to their appropriate streets. Lam should not be allowed to rely on a classification error to put a new entrance on a road that, based on current conditions, should not have a new entrance.

If the streets were classified correctly, Lam Research would not be able to add an employee entrance on Tualatin Road because it would be an arterial. “No new driveways or streets on arterial roadways within the City, except where noted in the TDC, usually when no alternative access is available.” (TCP 2040 POLICY 8.10.1)

LETTER OF THE LAW

The Tualatin Development Code says “Lots that front on more than one street may be required to locate motor vehicle accesses on the street with the lower functional classification as determined by the City Manager.” TDC 75.040 (5) Currently the TSP shows 108th classified as a minor collector and Tualatin Road a major collector. Based on this, access should be provided from 108th not Tualatin Road.

Lam’s proposed entrance on Tualatin Road fails four of the new driveway approach criteria in TDC 75.020.5: "(d)(ii) Takes access from the lowest classification of street abutting the property … (g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

Tualatin Development Code 75.140.15 (a) grants the specific locations for Lam's three driveways on the north side of Leveton Drive. The applicant's proposal to relocate one of the three driveways is not compliant with the development code.

No matter which way you slice it, Tualatin Road is the worst option for carrying Lam’s new entrance and additional traffic volume. We ask the City Manager to use her discretion and require access from the most appropriate road which, by any metric, is Leveton Drive.

PROPOSED TRAFFIC SIGNAL

The proposed entrance on Tualatin Road would create the need for a new traffic signal on Tualatin Road which would have many negative impacts on the community. These impacts justify rejection of the proposed access. If Lam were to take access from Leveton Drive, no new traffic signal would be needed.

The community provided overwhelming feedback during the TSP update this summer about this issue and we asked that the proposed traffic signal be removed from the TSP. The city should take this feedback into account and "Conduct the planning process with adequate input and feedback from citizens in each affected neighborhood” (TCP 2040 Goal 8.7)

CONSIDER SAFETY

The Tualatin TSP Existing Conditions Report shows Tualatin Road and 115th Ave having higher Pedestrian Level of Traffic Stress than Leveton Drive and 108th Ave. (Figure 23) Adding more traffic to Tualatin Road and 115th Ave will degrade pedestrian safety even further.

Tualatin Road between 124th and 115th has higher concentration of collisions than Leveton and 108th, with a history of serious injury collision while Leveton does not. (Figure 31) Adding more traffic onto Tualatin Road and 115th will increase the traffic exposure and likely result in worse safety outcomes.

Tualatin Road has a history of collisions involving pedestrians and bicycles while Leveton and 108th do not. (Figure 32) Adding more traffic to Tualatin Road will likely make this safety issue worse.

Converting a driveway to full access or signalizing a driveway would likely increase traffic crashes. Per CMF ClearingHouse, changing driveway type to full access has a crash modification factor (CMF) of 2.25, and signalizing a driveway has a CMF of 3.98, which means that the two measures will likely increase traffic crashes by a factor of 2.25 and 3.98 respectively.

Lam's traffic study also does not identify the locations of school bus routes at Hazelbrook Middle School or the potential impacts to school bus traffic. Student safety is one of the most important issues in our community, but so far it has been ignored in this process.

Also, the safety and congestion impacts from Lam's proposal would be most concentrated on Tualatin Road between 115th and 124th which abuts a residential area with traditionally disadvantaged demographics and income limited apartments. This is not equitable.

BYPASS ROUTE

The route from Hazelbrook Road going west and turning right onto Hwy 99W is a "hidden" route that can bypass the traffic congestion at the west end of Tualatin Road. Adding a signal at 115th and Tualatin Road will encourage more cars to take this bypass. The potential impact of this new traffic pattern imposes significant safety concerns to communities all along the route. These impacts were not addressed in the traffic study.

SUMMARY

We urge the city to consider all the above concerns and require the applicant (Lam) to revise their site development plan accordingly. We believe that the current proposal does not meet Tualatin's planning rules, and that the City Manager should use her authority to bring Lam's proposal into compliance. No new roadway access on Tualatin Road.

Thank you for taking the time to receive and review these comments, and thank you for your continued work for our great city!

Brian & Alison Craker
17395 SW 106th Ct.
Tualatin, OR 97062

From: Steve Koper
Sent: Monday, September 9, 2024 8:54 AM
To: Keith Leonard
Subject: FW: Save Tualatin Road

From: Carmen O. <carmenofearth@gmail.com>
Sent: Sunday, September 08, 2024 3:49 PM
To: Council <council@tualatin.gov>
Subject: Save Tualatin Road

To City Council council@tualatin.gov
and Planning Department planning@tualatin.gov

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!
Carmen Oliver
17955 SW Shasta Trail
Tualatin OR 97062
503-724-1419

From: chdwckk@aol.com
Sent: Saturday, October 26, 2024 2:53 PM
To: Council; Ext - Planning
Subject: Save Tualatin Road

Dear Tualatin City Council and Tualatin Planning Department:

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!

From: Chris Mitchell <chris.mitchell@autodesk.com>

Sent: Tuesday, September 10, 2024 11:29 AM

To: Council; Ext - Planning

Subject: Save Tualatin Road!

Hello,

I recently found out about the potential plans for LAM to create a new entrance way on Tualatin Road at 115th Avenue. Quite frankly I am very disappointed that this has even got as far as it has. I've lived in Tualatin near Jurgens Park for almost 20 years now & am very concerned about the impact on the local roads in terms of excessive traffic, (both volume & vehicle size), as well as the potential for more traffic incidents in what is very much a quiet residential neighborhood.

Tualatin has invested very successfully over the years to improve on traffic issues, but I feel that LAM's most recent plans will put that in jeopardy for this area. Much investment in infrastructure has already been done for 124th, Leveton & Herman so LAM should be striving to leverage those as much as possible instead of introducing more traffic on the local residential roads. Any plans already now in place should be revisited with a view to redirecting all traffic to Leveton as the primary - after all that was created to serve exactly such industrial needs.

As the Tualatin City/Planning councils you should not allow these plans to go ahead as-is. I'd be more than happy to discuss this further at your convenience.

Many Thanks,

Chris Mitchell.

BEng, Meng, CEng, FIMechE

From: Cindy Morrison <belydnc1@yahoo.com>
Sent: Friday, September 13, 2024 4:12 PM
To: Council; Ext - Planning
Subject: Save Tualatin Road

Dear Tualatin City Council and Tualatin Planning Department:

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!

Cindy Morrison

Ty Tolomei

Sherwood Oregon

Sent from Yahoo Mail for iPhone

From: Dan Gaur <dgaur@frontier.com>
Sent: Sunday, September 8, 2024 3:54 PM
To: Council; Ext - Planning
Subject: Opposition to Lam entrance on Tualatin road: Tualatin Moving Forward initiative, $cost and student safety

I'm writing in opposition to the new Lam entrance on Tualatin Road. The north side of Tualatin road is obviously an entirely residential area, including Hazelbrook Middle School + Jurgens Park. Deliberately increasing traffic on Tualatin Road will only increase the risk to these students and residents in this area.

As concrete data-points:

* As part of the "Tualatin Moving Forward" initiative, the city already invested $142,000 of taxpayer bond funds into pedestrian safety improvements on Tualatin Road between 105th Ave and 115th Ave. The city invested another $15,000 of bond money for traffic/pedestrian safety on 115th Ave between Tualatin Road to Hazelbrook Road, one block from Hazelbrook Middle School.

* At the west end of Tualatin Road, there is already a large school bus-stop (approx 10-15 students each morning) to support the nearby apartment complexes.

* Likewise, the intersection of Tualatin Road and Herman Road also hosts another large bus-stop as well.

The proposed Lam entrance on Tualatin Road will steer that new Lam traffic directly through these bus-stops and recent safety improvements, increasing the risk of accidents and undermining the city's own investment in the Tualatin Moving Forward efforts.

The existing Lam entrance on Leveton has none of these risks or issues. Traffic access from Herman and Leveton roads does not pass through any new residential areas or bus-stops. The city's investment in its own traffic improvements is likewise preserved.

The most-obvious, lowest-risk and lowest-cost option is to funnel this surge in Lam traffic back onto Leveton and Herman roads.

Thanks.

Dan

From: Dan Herr <dannyjherr@gmail.com>
Sent: Friday, September 6, 2024 3:20 PM
To: Ext - Planning; Council; Camille Herr
Subject: Request for Maintaining Safe Access to LAM Tualatin Facility

Follow Up Flag: Follow up
Flag Status: Completed

Dear Council Members,

I am writing to express my concern about changing the entrance to the LAM Tualatin facility. As a resident of Tualatin for the past five years, I believe keeping the entrance on Levaton Road is crucial for the following reasons:

1. Traffic Congestion: Tualatin Road is already heavily trafficked, serving as a key link between I-5 and Pacific Highway. Adding thousands of trips from LAM could worsen congestion and complicate traffic flow.
2. Local Safety: The area around Tualatin Road and 115th includes a nursing home, apartment complexes, and a church. Increased traffic and a potential new traffic light could create safety hazards and disrupt the flow in this busy area.
3. Neighborhood Impact: The Hazelbrook neighborhood, with its many families and school buses, would benefit from keeping traffic away from residential streets. The current entrance on the industrial side is better suited to handle the volume.

I urge you to keep the existing entrance from Levaton Road to ensure safety and manage traffic effectively.

Thank you for your consideration.

Sincerely,

Daniel

From: Doug Rice <DRice@pioneermetal.com>
Sent: Friday, August 23, 2024 11:39 AM
To: Ext - Planning
Subject: Tualatin Resident Concern, LAM Research, Tualatin Road Proposal

All Planning Commission Members,

As a longtime resident and employee in Tualatin I am writing to advocate against the LAM Research plans for Tualatin Road.

As currently situated, Tualatin Road between SW 124th to the west and SW Cheyenne Way is primarily residential access. This stretch of road is already a commuter cut through from Hwy 99 towards I-5. Implementing the proposed changes would only make the heavy traffic on this road worse (particularly during morning and evening commute times).

Reviewing a map and driving the local roads, LAM can have all access to its facility off SW Leveton Road. SW 124th is two lanes and provides easy access, and SW Herman Road off Tualatin Road is already completely commercially zoned.

Further, proposed plans to add a stop light at SW 115th and Tualatin Road is not necessary, particularly to placate one employer who has access already on SW Leveton.

As a resident of David's Fox Run with access at SW Tualatin Road and SW 112th, making this residential entrance a right turn in, right turn out only would significantly hinder the residents of my neighborhood to freely enter and leave our community.

Please take this into consideration as you review this project.

Sincerely,

Doug Rice
Program Manager
Pioneer Metal Finishing
503.563.1743 O
503.509.7500 M
drice@pioneermetal.com
19005 SW 125th Court
Tualatin, OR 97062
www.pioneermetal.com



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attachments. If you receive this message in error, please notify the sender by reply email and delete this message and any attachments.

From: Drew R <drew.riverman@gmail.com>
Sent: Wednesday, November 13, 2024 11:48 AM
To: Council; Ext - Planning
Subject: Save Tualatin Road

Dear Tualatin City Council and Tualatin Planning Department:

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!

From: greg.fronczak@yahoo.com
Sent: Tuesday, September 24, 2024 7:01 PM
To: Ext - Planning
Subject: Save Tualatin Road

Dear Tualatin Planning Department,

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

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Use Leveton Drive. Save Tualatin Road.

Thank You!

Sincerely,

Greg Fronczak
503-729-0170
greg.fronczak@yahoo.com

From: Gus keyser <gus.keyser@comcast.net>
Sent: Wednesday, August 21, 2024 4:35 PM
To: Ext - Planning
Subject: LAM expansion and Tualatin Road

To All Planning Commission members:

Thriving businesses are an important component of the quality of life in Tualatin. However, it is critical that current infrastructure is protected as the business traffic increases.

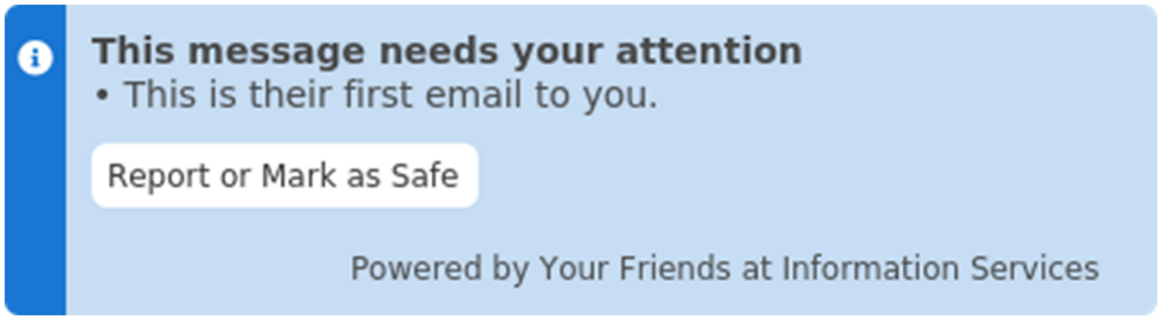
The LAM expansion has an alternative to putting undue pressure on Tualatin Road and it must use it. Tualatin Road is the only access in or out for so many residents because of their proximity to the river. Conversely, the LSM traffic can be directed to and from their south via Leveton Drive, the road that was built for this purpose.

The first priority of our city government is the safety and livability of our city for our residents.

Please keep Tualatin Road as an open ingress and egress for those of us who depend on it.

Gus Keyser
17810 SW Shawnee Trail
Tualatin
Sent from my iPad

From: Hazen Hyland <hazenh@westernwoodstructures.com>
Sent: Friday, September 6, 2024 2:53 PM
To: Ext - Planning
Subject: LAM Entrance



Hello,

I live and work in Tualatin. Have for the past 13 years. I would encourage all Tualatin planning members to assist in doing the right thing, which is maintaining a proper entrance to the LAM Tualatin facility from Levaton Road. An entrance from Levaton Road is much safer, for there is a nursing home on the corner of Tualatin Rd and 115th, apartment complexes on the corner of Tualatin Rd and 115th that stretch to the west nearly to 124th st., and there is a church quite close to the corner of Tualatin Rd and 115th.

There's no reason to make Tualatin Rd busier than it already is. It's a lifeline for folks trying to get between I-5 and Pac Hwy. It's busy nearly all day on weekdays, and throwing 2000+ trips into LAM's campus (and possibly adding a traffic light at the corner of 115th and Tualatin Rd) would push a currently bearable situation into a rather difficult situation.

The Hazelbrook neighborhood is filled with kids and school busses, and keeping unnecessary traffic away from this neighborhood by simply having LAM folks use the traditional entrance, which is on the industrial side of the campus, makes a whole lot of sense.

Hazen Hyland
Bridge & Int'l Sales / Project Manager
Western Wood Structures, Inc.

20675 SW 105th Ave / PO Box 130
Tualatin, OR 97062
Office Ph (503) 692-6900
wwsi.com

Wire fraud is real. Please contact Western Wood Structures directly via phone to confirm any payment method changes requested by any employee.

From: Hazen <hazenhyland@yahoo.com>
Sent: Tuesday, December 10, 2024 2:51 PM
To: Ext - Planning
Subject: LAM Study omissions

Dear City of Tualatin,

While researching the traffic impacts from Lam's TUX project, members of the community have discovered that Lam's proposal is not compatible with the Tualatin Comprehensive Plan 2040, and it would violate the Tualatin Development Code, both in spirit and letter.

This impacts the Hazelbrook neighborhood and Hazelbrook Middle School more than meets the eye.

For the reasons outlined below, we are asking the Tualatin Planning Department to consider Lam's proposed entrance on Tualatin Road to not be approvable, and we ask the City Manager to use her authority to have the proposed entrance removed from the TUX project site plan so that alternative access can be designed.

SITE CIRCULATION

Existing driveways provide sufficient access points to the Lam Campus as a whole. Lam currently has 6 other access points. 3 on 108th and 3 on Leveton Drive. Adding a new access point on Tualatin Road is unnecessary.

Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to add an additional driveway onto the street network.

The Tualatin Comprehensive Plan 2040 strongly supports the use of existing access points, rather than creating new ones, especially when a new access point would have negative impacts to the community. "Consider transportation options that make the best use of the existing network" (Goal 8.7)

SPIRIT OF THE LAW

Tualatin Road is currently functioning as an arterial, it was previously classified as an arterial, and it has the traffic volume of an arterial. Leveton Drive is currently functioning as a collector, it was previously classified as a collector, and it has the current traffic volume of a collector.

During the 2012-14 TSP update, the functional classifications of these streets were reversed in a failed attempt by the city to reduce the amount of traffic on Tualatin Road and encourage more trips to use Leveton Drive. While we appreciate the intent of this reversal, the impact is now exactly opposite of what was intended, and we ask that this reversal be deemed a mistake. We ask the city to remedy this mistake by restoring the correct functional classifications to their

appropriate streets. Lam should not be allowed to rely on a classification error to put a new entrance on a road that, based on current conditions, should not have a new entrance.

If the streets were classified correctly, Lam Research would not be able to add an employee entrance on Tualatin Road because it would be an arterial. “No new driveways or streets on arterial roadways within the City, except where noted in the TDC, usually when no alternative access is available.” (TCP 2040 POLICY 8.10.1)

LETTER OF THE LAW

The Tualatin Development Code says “Lots that front on more than one street may be required to locate motor vehicle accesses on the street with the lower functional classification as determined by the City Manager.” TDC 75.040 (5) Currently the TSP shows 108th classified as a minor collector and Tualatin Road a major collector. Based on this, access should be provided from 108th not Tualatin Road.

Lam’s proposed entrance on Tualatin Road fails four of the new driveway approach criteria in TDC 75.020.5: "(d)(ii) Takes access from the lowest classification of street abutting the property … (g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

Tualatin Development Code 75.140.15 (a) grants the specific locations for Lam's three driveways on the north side of Leveton Drive. The applicant's proposal to relocate one of the three driveways is not compliant with the development code.

No matter which way you slice it, Tualatin Road is the worst option for carrying Lam’s new entrance and additional traffic volume. We ask the City Manager to use her discretion and require access from the most appropriate road which, by any metric, is Leveton Drive.

PROPOSED TRAFFIC SIGNAL

The proposed entrance on Tualatin Road would create the need for a new traffic signal on Tualatin Road which would have many negative impacts on the community. These impacts justify rejection of the proposed access. If Lam were to take access from Leveton Drive, no new traffic signal would be needed.

The community provided overwhelming feedback during the TSP update this summer about this issue and we asked that the proposed traffic signal be removed from the TSP. The city should take this feedback into account and "Conduct the planning process with adequate input and feedback from citizens in each affected neighborhood” (TCP 2040 Goal 8.7)

CONSIDER SAFETY

The Tualatin TSP Existing Conditions Report shows Tualatin Road and 115th Ave having higher Pedestrian Level of Traffic Stress than Leveton Drive and 108th Ave. (Figure 23) Adding more traffic to Tualatin Road and 115th Ave will degrade pedestrian safety even further.

Tualatin Road between 124th and 115th has higher concentration of collisions than Leveton and 108th, with a history of serious injury collision while Leveton does not. (Figure 31) Adding more traffic onto Tualatin Road and 115th will increase the traffic exposure and likely result in worse safety outcomes.

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Lam's traffic study also does not identify the locations of school bus routes at Hazelbrook Middle School or the potential impacts to school bus traffic. Student safety is one of the most important issues in our community, but so far it has been ignored in this process.

Also, the safety and congestion impacts from Lam's proposal would be most concentrated on Tualatin Road between 115th and 124th which abuts a residential area with traditionally disadvantaged demographics and income limited apartments. This is not equitable.

BYPASS ROUTE

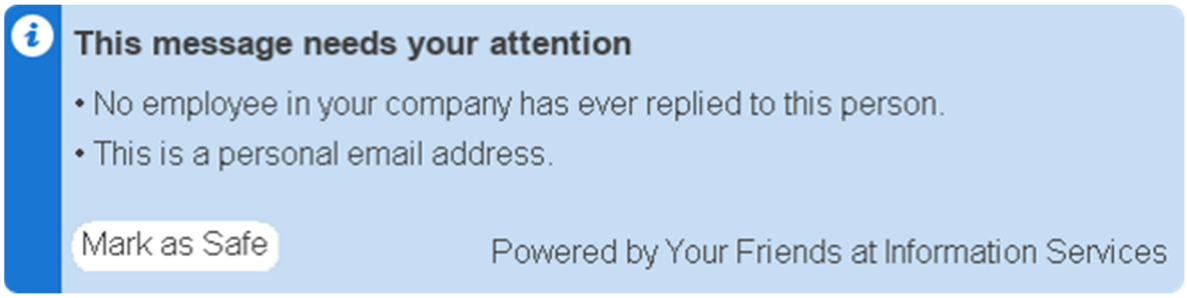
The route from Hazelbrook Road going west and turning right onto Hwy 99W is a "hidden" route that can bypass the traffic congestion at the west end of Tualatin Road. Adding a signal at 115th and Tualatin Road will encourage more cars to take this bypass. The potential impact of this new traffic pattern imposes significant safety concerns to communities all along the route. These impacts were not addressed in the traffic study.

SUMMARY

We urge the city to consider all the above concerns and require the applicant (Lam) to revise their site development plan accordingly. We believe that the current proposal does not meet Tualatin's planning rules, and that the City Manager should use her authority to bring Lam's proposal into compliance. No new roadway access on Tualatin Road.

Thank You.

From: J Hidalgo <hibarrios@yahoo.com>
Sent: Sunday, November 10, 2024 1:49 PM
To: Ext - Planning
Subject: Save Tualatin Rd



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Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!

From: Steve Koper
Sent: Monday, September 9, 2024 8:57 AM
To: Keith Leonard
Subject: FW: Lam entrance.

Follow Up Flag: Follow up
Flag Status: Flagged

From: Frank Bubenik <fbubenik@tualatin.gov>
Sent: Thursday, August 29, 2024 4:03 PM
To: James Carr <ptownblazers88@gmail.com>; Council <council@tualatin.gov>
Subject: Re: Lam entrance.

Mr. Carr,

Thanks for your email and for sharing your thoughts.

City staff is working with Lam to protect neighborhood livability. I live in the area and want to make sure Tualatin Road does not become congested/overwhelmed. There were new ideas brought forward to redirect many LAM employees off of Tualatin Road. These ideas are being vetting by Lam and city transportation experts. Our traffic folks are working with Lam on the 115th and Tualatin Road intersection to create ways to minimize traffic on 115th and Tualatin Road.

There are many moving pieces on this development and they're moving pretty slowly. The application from Lam is not yet deemed complete and there are missing chunks of information and changes being made.

The Lam proposal will not come to council as this development conforms with the existing use and zoning. An Architecture Review Board (ARB) review is required as well as the Planning Commission review and they are months away. The Industrial Master Plan application will be heard by the Planning Commission and the Architectural Review Application will be heard by the Architectural Review Board.

I am regularly looking into the progress of this project and pushing for staff and Lam to do right by the neighborhood.

MAYOR FRANK BUBENIK

Mayor of Tualatin

fbubenik@tualatin.gov
Cell: 971.420.7443

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From: James Carr <ptownblazers88@gmail.com>
Sent: Thursday, August 29, 2024 3:26 PM
To: Council <council@tualatin.gov>
Subject: Lam entrance.

I work in this area and there are a lot (a lot) of traffic issues in Tualatin. i5 connection is 30 years in the past when it was helpful. The local streets, through streets and commercial truck routes are all one.

And now this huge disaster is on the horizon with LAM research proposed entrance to their compound. I take that route home (beaverton) and it's a crap show now and a school is right there. it's going to be a non-breaking stream of cars just leaving Lam. Plus everyone else. It's not better if they go to the Freeway, which is now on some days a crap show too.

Cheers to a boom I guess, I just think we don't need all that traffic to be funneled into places where families are living, walking to the park, to school. I wish I could live here and walk to work, where are the new homes?

Let's meet in the middle.

From: Jared J <janssen.jared@gmail.com>
Sent: Tuesday, November 12, 2024 12:17 PM
To: Council; Ext - Planning
Subject: Lam Tux Projects & Tualatin Rd Traffic Concerns

Dear Tualatin City Council and Tualatin Planning Department

As a Tualatin resident that lives north of Tualatin Rd, I am reaching out today to express my concern and opposition with Lam Research's proposed new entrance on Tualatin Rd. at SW 115th. Avenue. Primarily my concern is that an adequate road fit for their needs, Leveton Drive, is being largely abandoned in favor of using a local collector road (Tualatin Rd.) for the majority of employee/contractor transportation, according to the latest IMP.

Based on reviewing meeting minutes and previous discussions, I know others have touched on this same concern. I don't think a new entrance is entirely a bad idea, but it seems like facility location dictated everything from Lam's perspective -- each IMP is maximizing setback, building height, etc. -- in an attempt to get the most building on the lot.

I have over nearly a decade of experience in Civil/Consultant Engineering including traffic signal controls as an electrical engineer. All that to say that I have some experience reviewing supporting documentation on these exact types of projects. If I may, something I don't think has been properly addressed by either the City of Tualatin or Lam:

From OORPT-City of Tualatin-Industrial Master Plan-240708

(5) Approval Criteria.

(a) Public facilities and services, including transportation, existing or planned, for the area affected by the use are capable of supporting the proposed development or will be made capable by the time development is completed.

Response: The subject property is an existing developed site that is served by adequate public facilities and services. The effect of this IMP is to allow alternative setbacks, building height, and parking lot landscaping standards, as described above. These changes will not affect the availability of public facilities and services. This standard is met.

When reviewing the TUX Project Transportation Analysis document, its final recommendation is merely a traffic signal and some vegetation clearing; however, the report acknowledges EXISTING problems while supplying figures that show they are only adding to them. See Page

19 of this Analysis for full:

At the intersection of OR 99W with SW 124th Avenue, the westbound left turn lanes on OR 99W are expected to have queues that exceed the existing storage lengths.

With the increase in stie trips added to the Tualatin Road approach to SW 124th Avenue, queues are expected to exceed the storage for both the left and right turn lanes. Queues will then back into the through lane and the existing center left turn lane.

During analysis, it was found that the queuing calculation for the SW Hazelbrook Road/OR 99W intersection was unreliable, showing the westbound right turn onto the highway as over capacity even in existing conditions. A review of the traffic count video recording shows driver behavior at the right turn currently operates similar to a Yield sign, with multiple vehicles entering without stopping at the stop sign when a long gap is available. Therefore, the intersection was modeled with a Yield control to more accurately mimic current operation for purposes of estimating queues. The reported queues still exceed the observed condition in the afternoon peak hour.

I would argue that these proposed changes would make the Approval Criteria response false by 2027 Phase 1 of this project.

Taking a step back: The project aims to reduce commuter traffic on Leveton Dr, and increase commuter traffic on Tualatin Rd. It acknowledges the problems are at Hazelbrook/99 and 99/124, specifically queueing to enter 99 off hazelbrook and making two lefts off of 99 to Tualatin Rd.

Approving as Lam Research wants = Immediate, more apparent issues with traffic at 124th/Tualatin Rd turn lane and the disparity in traffic volume between the left-hand left-turn lane and the right-hand left-turn lane on 99 **AND** more commuter traffic shortcutting a new light and queued traffic by cutting through a school zone which also borders homes with livestock. The consultant's data supports this. It is human nature - once people learn it's faster for them to cut straight across Tualatin Rd and go to Hazelbrook/99, that is what they will do.
Approving most but keeping Leveton the primary = 124th, Leveton, and Herman can all support more commuter, business, and industrial traffic AS PLANNED. The consultant's data supports this as well. Maybe this 'entrance' would be well-suited for unidirectional traffic as a compromise. What does that data look like?

What will happen if a light is put in at 115 and employees no longer use Leveton drive is traffic will get backed up on Tualatin Rd., people coming east to west will turn on Jurgens, and we will have people going 35-40mph next to a playground and school zone. The data collected for Hazelbrook was done on June 11, the last day of school - is that also the most realistic data? (I truly do not know)

I recognize this is a lot, so if you've taken the time to read all of that I do appreciate it. My hope is that some of these points are ready to be discussed because I can say that talking with people in the area is that this is the one and only concern. We are all for business growth and development in Tualatin, but we ask that Lam and the City recognize the idyllic beautiful area we call home and do their part in maintaining that for everyone.

Thank you very much,

Jared Janssen
971-381-9018

From: Jean and Eric Stein <steinjeaneric@gmail.com>
Sent: Sunday, September 8, 2024 6:30 PM
To: Ext - Planning; Council
Subject: Tualatin Road

Like many residents of the "River Park" neighborhood, I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available. Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive. The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road. Use Leveton Drive.

Close the entrances off of 108th, require all Lam Research vehicles to use Herman Road, Leveton and 124th. We already have issues turning from the neighborhoods on the north, onto Tualatin road (especially left). Additionally most School buses leaving Hazelbrook Middle school and servicing our neighborhood, are delayed by the left turn onto Tualatin Road at Jergens road.

Tualatin Road is a feeder street; Herman, Leveton and 124th are industrial roads, keep it that way.

Sincerely Jean and Eric Stein
10320 SW Tawasa Ct,
Tualatin

Save Tualatin Road.

From: Jeremy Howell <jmhowell11@gmail.com>
Sent: Monday, September 9, 2024 1:13 PM
To: Ext - Planning
Subject: Letter to City - Tualatin Rd

Good afternoon,

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!
Jeremy Howell

From: Jeremy Howell <jmhowell11@gmail.com>
Sent: Monday, December 9, 2024 3:51 PM
To: Ext - Planning
Subject: Tualatin Code

Dear City of Tualatin,

While researching the traffic impacts from Lam's TUX project, members of the community have discovered that Lam's proposal is not compatible with the Tualatin Comprehensive Plan 2040, and it would violate the Tualatin Development Code, both in spirit and letter.

For the reasons outlined below, we are asking the Tualatin Planning Department to consider Lam's proposed entrance on Tualatin Road to not be approvable, and we ask the City Manager to use her authority to have the proposed entrance removed from the TUX project site plan so that alternative access can be designed.

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Existing driveways provide sufficient access points to the Lam Campus as a whole. Lam currently has 6 other access points. 3 on 108th and 3 on Leveton Drive. Adding a new access point on Tualatin Road is unnecessary.

Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to add an additional driveway onto the street network.

The Tualatin Comprehensive Plan 2040 strongly supports the use of existing access points, rather than creating new ones, especially when a new access point would have negative impacts to the community. "Consider transportation options that make the best use of the existing network" (Goal 8.7)

SPIRIT OF THE LAW

Tualatin Road is currently functioning as an arterial, it was previously classified as an arterial, and it has the traffic volume of an arterial. Leveton Drive is currently functioning as a collector, it was previously classified as a collector, and it has the current traffic volume of a collector.

During the 2012-14 TSP update, the functional classifications of these streets were reversed in a failed attempt by the city to reduce the amount of traffic on Tualatin Road and encourage more trips to use Leveton Drive. While we appreciate the intent of this reversal, the impact is now exactly opposite of what was intended, and we ask that this reversal be deemed a mistake. We ask the city to remedy this mistake by restoring the correct functional classifications to their appropriate streets. Lam should not be allowed to rely on a classification error to put a new entrance on a road that, based on current

conditions, should not have a new entrance.

If the streets were classified correctly, Lam Research would not be able to add an employee entrance on Tualatin Road because it would be an arterial. “No new driveways or streets on arterial roadways within the City, except where noted in the TDC, usually when no alternative access is available.” (TCP 2040 POLICY 8.10.1)

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The Tualatin Development Code says “Lots that front on more than one street may be required to locate motor vehicle accesses on the street with the lower functional classification as determined by the City Manager.” TDC 75.040 (5) Currently the TSP shows 108th classified as a minor collector and Tualatin Road a major collector. Based on this, access should be provided from 108th not Tualatin Road.

Lam’s proposed entrance on Tualatin Road fails four of the new driveway approach criteria in TDC 75.020.5: "(d)(ii) Takes access from the lowest classification of street abutting the property … (g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

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No matter which way you slice it, Tualatin Road is the worst option for carrying Lam’s new entrance and additional traffic volume. We ask the City Manager to use her discretion and require access from the most appropriate road which, by any metric, is Leveton Drive.

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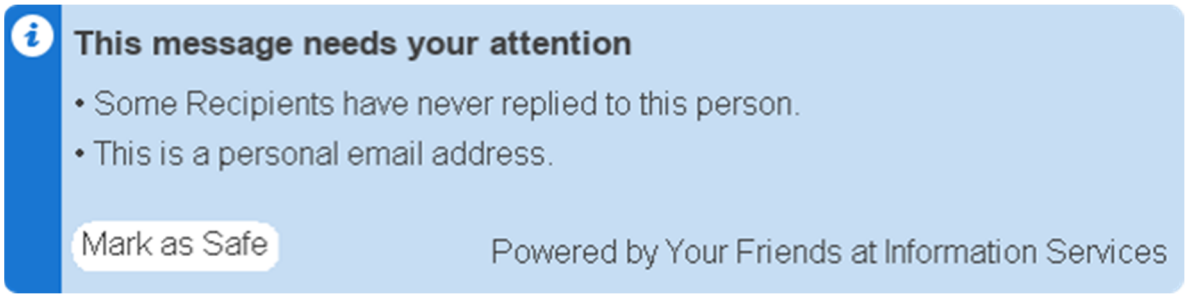
We urge the city to consider all the above concerns and require the applicant (Lam) to revise their site development plan accordingly. We believe that the current proposal does not meet Tualatin's planning rules, and that the City Manager should use her authority to bring Lam's proposal into compliance. No new roadway access on Tualatin

Road.

Thank You.

From: Joanne Santee <jojo10k@aol.com>
Sent: Tuesday, December 10, 2024 8:38 AM
To: Council; Ext - Planning; Ext - Engineering Exterrnal Email
Subject: Save Tualatin Road Please!!!



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No matter which way you slice it, Tualatin Road is the worst option for carrying Lam's new entrance and additional traffic volume. We ask the City Manager to use her discretion and require access from the most appropriate road which, by any metric, is Leveton Drive.

PROPOSED TRAFFIC SIGNAL

The proposed entrance on Tualatin Road would create the need for a new traffic signal on Tualatin Road which would have many negative impacts on the community. These impacts justify rejection of the proposed access. If Lam were to take access from Leveton Drive, no new traffic signal would be needed.

The community provided overwhelming feedback during the TSP update this summer about this issue and we asked that the proposed traffic signal be removed from the TSP. The city should take this feedback into account and "Conduct the planning process with adequate input and feedback from citizens in each affected neighborhood" (TCP 2040 Goal 8.7)

CONSIDER SAFETY

The Tualatin TSP Existing Conditions Report shows Tualatin Road and 115th Ave having higher Pedestrian Level of Traffic Stress than Leveton Drive and 108th Ave. (Figure 23) Adding more traffic to Tualatin Road and 115th Ave will degrade pedestrian safety even further.

Tualatin Road between 124th and 115th has higher concentration of collisions than Leveton and 108th, with a history of serious injury collision while Leveton does not. (Figure 31) Adding more traffic onto Tualatin Road and 115th will increase the traffic exposure and likely result in worse safety outcomes.

Tualatin Road has a history of collisions involving pedestrians and bicycles while Leveton and 108th do not. (Figure 32) Adding more traffic to Tualatin Road will likely make this safety issue worse.

Converting a driveway to full access or signalizing a driveway would likely increase traffic crashes. Per CMF ClearingHouse, changing driveway type to full access has a crash modification factor (CMF) of 2.25, and signalizing a driveway has a CMF of 3.98, which means that the two measures will likely increase traffic crashes by a factor of 2.25 and 3.98 respectively.

Lam's traffic study also does not identify the locations of school bus routes at Hazelbrook Middle School or the potential impacts to school bus traffic. Student safety is one of the most important issues in our community, but so far it has been ignored in this process.

Also, the safety and congestion impacts from Lam's proposal would be most concentrated on Tualatin Road between 115th and 124th which abuts a residential area with traditionally disadvantaged demographics and income limited apartments. This is not equitable.

BYPASS ROUTE

The route from Hazelbrook Road going west and turning right onto Hwy 99W is a "hidden" route that can bypass the traffic congestion at the west end of Tualatin Road. Adding a signal at 115th and Tualatin Road will encourage more cars to take this bypass. The potential impact of this new traffic pattern imposes significant safety concerns to communities all along the route. These impacts were not addressed in the traffic study.

SUMMARY

We urge the city to consider all the above concerns and require the applicant (Lam) to revise their site development plan accordingly. We believe that the current proposal does not meet Tualatin's planning rules, and that the City Manager should use her authority to bring Lam's proposal into compliance. No new roadway access on Tualatin Road.

Thank You.

Joanne & Roger Schenk
10555 SW Lucas Ct.
Tualatin, OR

From: Joanne Santee <jojo10k@aol.com>
Sent: Wednesday, August 28, 2024 5:28 PM
To: Ext - Planning
Subject: Save Tualatin Road

Please listen to those of us who live off Tualatin Road! I purchased my house on Lucas Ct in 1995 and definitely see the traffic increase on Tualatin Road. Adding an entrance to LAM will NOT be in the best interest of the residents who live here!! Please save our road and do not allow this to happen!
Joanne Schenk

From: The Corrs <corrs62@gmail.com>
Sent: Tuesday, October 15, 2024 8:36 PM
To: Council
Cc: Ext - Planning
Subject: Proposed road access for LAM

Dear Tualatin City Council and Tualatin Planning Department:

As 27 year residents of Tualatin and living opposite from the Lam facility, I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!

John and Janice Corr

From: Sherilyn Lombos
Sent: Wednesday, September 11, 2024 2:11 PM
To: Ext - Planning; Kim McMillan; Mike McCarthy
Subject: FW: Tualatin Road

Sherilyn Lombos
City Manager
Phone: 503.691.3010

From: Frank Bubenik <fbubenik@tualatin.gov>
Sent: Wednesday, September 11, 2024 2:09 PM
To: John Phillips <jphillips4994@icloud.com>; Council <council@tualatin.gov>
Subject: Re: Tualatin Road

Mr. Phillips,

Thanks for your email and for sharing your thoughts about Tualatin Road and Lam. I also want to thank you for driving a school bus that services TTSD students.

A historical FYI that Lam has had an approved industrial master plan for the eventual buildout of its campus since 2001, including access to SW Tualatin Road at SW 115th Avenue. Lam's master plan was amended in 2022 to include the addition of Building G along Leveton Road, which is currently under construction. The new proposed buildings, referred to as TUX, will be occupied by up to 600 new employees.

I live in the area and want to make sure Tualatin Road does not become congested/overwhelmed. There were new ideas brought forward to redirect many LAM employees off of Tualatin Road. These ideas are being vetting by Lam and city transportation experts. Our traffic folks are working with Lam on the 115th and Tualatin Road intersection to create ways to minimize traffic on 115th and Tualatin Road.

The City of Tualatin is committed to listening to the community and working on traffic solutions. City staff are organizing a neighborhood forum designed to allow the neighborhood to talk about traffic issues in our area. We do not have a date identified at this time but are planning it within the next few weeks. Since the topics are broader than what Lam can be required to do, city council and staff feel it is appropriate for the city to host and facilitate this meeting, with Lam participating. Lam is attuned to the neighborhood concerns and their representatives are willing to be at the table.

There are many moving pieces on this, and they're moving pretty slowly. The application from Lam is not yet deemed complete and there are missing chunks of information and changes being made.

The Lam proposal will not come to council initially as this development conforms with the existing use and zoning. An Architecture Review Board (ARB) review is required as well as the Planning Commission review and they are months away; it could be as late as February or March 2025. The Industrial Master Plan application will be heard by the Planning Commission and the Architectural Review Application will be heard by the Architectural Review Board. Each hearing body would make its own decision based on the applicable criteria for that application; each decision is then potentially separately appealable to City Council. Since the City Council is the appeal body for both of those forums, it is important that we stay neutral and unbiased. If we do hear an appeal on this matter, both LAM and the public have a right to expect that we have not prejudged the matter or are otherwise biased in favor of or against the proposal/s. Our job will be to make a decision based upon the record before us and the applicable criteria.

Please attend the next neighborhood meeting and provide your thoughts and suggestions.

Mayor of Tualatin
fbubenik@tualatin.gov
Cell: 971.420.7443

This e-mail, including attachments, is intended for the exclusive use of the addressee and may contain proprietary, confidential, or privileged information. If you are not the intended recipient, any dissemination, use, distribution, or copying is strictly prohibited. If you have received this e-mail in error, please notify me via return e-mail, permanently delete the original message, and destroy all copies.

From: John Phillips <jphillips4994@icloud.com>
Sent: Wednesday, September 11, 2024 1:28 PM
To: Council <council@tualatin.gov>; Brett Hamilton <brett@simple.be>
Subject: Tualatin Road

I drive a Special Needs School bus for the Tigard/Tualatin school district. Tualatin Road is lined with apartments and is used all day long to transport students to and from all the schools in the district. With the addition of more traffic, we along with all the people using this road to get to work, will have more delays than needed with the addition of more traffic. Leveton is not used as often by our buses and would be better served by Lam Research. Please consider this option when making your decision on the proposed routing change.

Thank you,

John C Phillips
Tigard/Tualatin school district

Resident of Tualatin right off of Tualatin Road
Sent from my iPhone

From: Steve Koper
Sent: Monday, December 9, 2024 5:15 PM
To: Keith Leonard
Subject: FW: Lams

Follow Up Flag: Follow up
Flag Status: Flagged

-----Original Message-----
From: Sherilyn Lombos <slombos@tualatin.gov>
Sent: Monday, December 9, 2024 5:10 PM
To: Steve Koper <skoper@tualatin.gov>; Mike McCarthy <mmccarthy@tualatin.gov>; Kim McMillan <kmcmillan@tualatin.gov>
Subject: FW: Lams

Forwarding these along; no response required, although you may want to put it in the file.

Sherilyn Lombos
City Manager
Phone: 503.691.3010

-----Original Message-----
From: John Phillips <jphillips4994@yahoo.com>
Sent: Monday, December 09, 2024 5:03 PM
To: Council <council@tualatin.gov>
Subject: Lams

Dear City of Tualatin,

While researching the traffic impacts from Lam's TUX project, members of the community have discovered that Lam's proposal is not compatible with the Tualatin Comprehensive Plan 2040, and it would violate the Tualatin Development Code, both in spirit and letter.

For the reasons outlined below, we are asking the Tualatin Planning Department to consider Lam's proposed entrance on Tualatin Road to not be approvable, and we ask the City Manager to use her authority to have the proposed entrance removed from the TUX project site plan so that alternative access can be designed.

SITE CIRCULATION

Existing driveways provide sufficient access points to the Lam Campus as a whole. Lam currently has 6 other access points. 3 on 108th and 3 on Leveton Drive. Adding a new access point on Tualatin Road is unnecessary.

Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to add an additional driveway onto the street network.

The Tualatin Comprehensive Plan 2040 strongly supports the use of existing access points, rather than creating new ones, especially when a new access point would have negative impacts to the community. "Consider transportation options that make the best use of the existing network" (Goal 8.7)

SPIRIT OF THE LAW

Tualatin Road is currently functioning as an arterial, it was previously classified as an arterial, and it has the traffic volume of an arterial. Leveton Drive is currently functioning as a collector, it was previously classified as a collector, and it has the current traffic volume of a collector.

During the 2012-14 TSP update, the functional classifications of these streets were reversed in a failed attempt by the city to reduce the amount of traffic on Tualatin Road and encourage more trips to use Leveton Drive. While we appreciate the intent of this reversal, the impact is now exactly opposite of what was intended, and we ask that this reversal be deemed a mistake. We ask the city to remedy this mistake by restoring the correct functional classifications to their appropriate streets. Lam should not be allowed to rely on a classification error to put a new entrance on a road that, based on current conditions, should not have a new entrance.

If the streets were classified correctly, Lam Research would not be able to add an employee entrance on Tualatin Road because it would be an arterial. “No new driveways or streets on arterial roadways within the City, except where noted in the TDC, usually when no alternative access is available.” (TCP 2040 POLICY 8.10.1)

LETTER OF THE LAW

The Tualatin Development Code says “Lots that front on more than one street may be required to locate motor vehicle accesses on the street with the lower functional classification as determined by the City Manager.” TDC 75.040 (5) Currently the TSP shows 108th classified as a minor collector and Tualatin Road a major collector. Based on this, access should be provided from 108th not Tualatin Road.

Lam’s proposed entrance on Tualatin Road fails four of the new driveway approach criteria in TDC 75.020.5: "(d)(ii) Takes access from the lowest classification of street abutting the property … (g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

Tualatin Development Code 75.140.15 (a) grants the specific locations for Lam's three driveways on the north side of Leveton Drive. The applicant's proposal to relocate one of the three driveways is not compliant with the development code.

No matter which way you slice it, Tualatin Road is the worst option for carrying Lam’s new entrance and additional traffic volume. We ask the City Manager to use her discretion and require access from the most appropriate road which, by any metric, is Leveton Drive.

PROPOSED TRAFFIC SIGNAL

The proposed entrance on Tualatin Road would create the need for a new traffic signal on Tualatin Road which would have many negative impacts on the community. These impacts justify rejection of the proposed access. If Lam were to take access from Leveton Drive, no new traffic signal would be needed.

The community provided overwhelming feedback during the TSP update this summer about this issue and we asked that the proposed traffic signal be removed from the TSP. The city should take this feedback into account and "Conduct the planning process with adequate input and feedback from citizens in each affected neighborhood" (TCP 2040 Goal 8.7)

CONSIDER SAFETY

The Tualatin TSP Existing Conditions Report shows Tualatin Road and 115th Ave having higher Pedestrian Level of Traffic Stress than Leveton Drive and 108th Ave. (Figure 23) Adding more traffic to Tualatin Road and 115th Ave will degrade pedestrian safety even further.

Tualatin Road between 124th and 115th has higher concentration of collisions than Leveton and 108th, with a history of serious injury collision while Leveton does not. (Figure 31) Adding more traffic onto Tualatin Road and 115th will increase the traffic exposure and likely result in worse safety outcomes.

Tualatin Road has a history of collisions involving pedestrians and bicycles while Leveton and 108th do not. (Figure 32) Adding more traffic to Tualatin Road will likely make this safety issue worse.

Converting a driveway to full access or signalizing a driveway would likely increase traffic crashes. Per CMF ClearingHouse, changing driveway type to full access has a crash modification factor (CMF) of 2.25, and signalizing a driveway has a CMF of 3.98, which means that the two measures will likely increase traffic crashes by a factor of 2.25 and 3.98 respectively.

Lam's traffic study also does not identify the locations of school bus routes at Hazelbrook Middle School or the potential impacts to school bus traffic. Student safety is one of the most important issues in our community, but so far it has been ignored in this process.

Also, the safety and congestion impacts from Lam's proposal would be most concentrated on Tualatin Road between 115th and 124th which abuts a residential area with traditionally disadvantaged demographics and income limited apartments. This is not equitable.

BYPASS ROUTE

The route from Hazelbrook Road going west and turning right onto Hwy 99W is a "hidden" route that can bypass the traffic congestion at the west end of Tualatin Road. Adding a signal at 115th and Tualatin Road will encourage more cars to take this bypass. The potential impact of this new traffic pattern imposes significant safety concerns to communities all along the route. These impacts were not addressed in the traffic study.

SUMMARY

We urge the city to consider all the above concerns and require the applicant (Lam) to revise their site development plan accordingly. We believe that the current proposal does not meet Tualatin's planning

rules, and that the City Manager should use her authority to bring Lam's proposal into compliance. No new roadway access on Tualatin Road.

Thank You.

Sent from my iPhone

From: JL Friedman <hikergirl500@gmail.com>
Sent: Sunday, September 8, 2024 8:47 AM
To: Ext - Planning
Subject: LAM project on Tualatin Rd

Friends,

I am concerned about Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This seems unreasonable and will add an additional burden to already busy Tualatin Road. Lam's new site plan should include a usable driveway that connects their main parking lots directly to Leveton Drive which would flow easily onto 124th Ave without causing delays at Tualatin Road.

This route is a better alternative and it already exists.

We are asking the City Council and City Staff to be reasonable, support neighborhood concerns and seriously consider and our proposed solution to this problem.

Use Leveton Drive. Save Tualatin Road.

Regards,
Johnnalee Friedman

From: Steve Koper
Sent: Monday, September 9, 2024 8:54 AM
To: Keith Leonard
Subject: FW: Lam entrance proposal

-----Original Message-----
From: Karla Ellis <karla2ke@gmail.com>
Sent: Sunday, September 08, 2024 10:02 AM
To: Council <council@tualatin.gov>
Subject: Lam entrance proposal

Dear City Council-

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available. There is absolutely no need for this addition. Lam does not use what they currently have and it is inappropriate to impact residents for their wants when they are currently met on the same property.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!

Karla Ellis
503-703-6789

From: Katie Nelson <katiemn898@gmail.com>
Sent: Saturday, October 12, 2024 5:21 PM
To: Council; Ext - Planning
Subject: Save tualatin road

Dear Tualatin City Council and Tualatin Planning Department:

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!

From: kminato4sin@gmail.com
Sent: Thursday, October 24, 2024 11:57 PM
To: Keith Leonard
Subject: RE: Opposing Lam Research adding traffic light and entrance on Tualatin Road and 115th Ave.

Hello Keith,

Thank you for your reply to confirm email.

Please allow me to add,
Further reviewing, access to LAM facility at 115th and Tualatin, when cars are leaving LAM facility heading towards 99W,
I think there are more possibility that car will proceed straight to 115th Ave. rather turn left towards Tualatin Road with traffic light when exiting from LAM facility.

This will add more concern of traffic increase not only in Tualatin Road but both in 115th Ave and Tualatin Road for through traffic that should be accessing through Leveton Fr..
For 115th Ave it should be residential traffic for local access mainly not a through traffic accessing to 99W.

Best Regards,
Kazuki Minato
11445 SW Roberts Ct.
Tualatin, OR 97062

From: Keith Leonard <kleonard@tualatin.gov>
Sent: Wednesday, October 23, 2024 8:49 AM
To: kminato4sin@gmail.com
Subject: RE: Opposing Lam Research adding traffic light and entrance on Tualatin Road and 115th Ave.

Good morning Kazuki,

We have received your comments. We will add your comments to the public record. Thank you for taking part in the public process! Have a good day.

Keith Leonard, AICP
Associate Planner
Phone: 503.691.3029

From: kminato4sin@gmail.com <kminato4sin@gmail.com>
Sent: Tuesday, October 22, 2024 11:25 PM
To: Council <council@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>
Subject: Opposing Lam Research adding traffic light and entrance on Tualatin Road and 115th Ave.

Dear Tualatin City Council and Tualatin Planning Department:

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue.
Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic.

I live on Roberts Ct. and seen traffic increased on Tualatin Road and 115th Ave. in last few years and many seem to be cars from industrial park.
Alread many cars from industrial park use Tualatin Road instead of Leveton Drive and worse many cars turn into 115th and connect to Hazelbrook Road making short cut to 99W.

Many car driving through 115th Ave. exceeding the speed limit is also my concern in residential area and Hazelbrook Middle School nearby.
Safety of children in residential are and school student in also major concern.

Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway.
This is unacceptable.
Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists.
We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.
Use Leveton Drive. Save Tualatin Road.

Thank You for listening to my concern and I understand that many other neighbors in Tualatin share same concern

Sincerely,
Kazuki Minato
11445 SW Roberts Ct.
Tualatin, OR 97062

From: Ken Johnson <kenj4609@gmail.com>
Sent: Thursday, August 29, 2024 7:03 PM
To: Ext - Planning
Subject: LAM Expansion

To whom it may concern
I am including the message I sent to the city council. I hope you will consider my request.

To all Council Members
I have lived in the Riverpark area since 1993. As a long time resident, I have long admired how our city has worked to keep high traffic flows from our neighborhoods. I served on the citizens committee for the Tualatin 2040 plan. I care about our community. I am a great supporter of our strong industrial tax base, and commend LAM for their expansion.
I cannot however support the consideration of allowing a new light at SW 115th, and allowing the tremendous flow of traffic that will come straight down SW 115th to access Highway 99 from Hazelbrook Road. Traffic seeking Hwy 99 access will also come down Jurgens in order to gain access to Hazelbrook Rd. That brings higher traffic flow past a park and a school.
I urge you to consider these tremendous impacts on our neighborhood, and require LAM to use Leveton Rd.
Thank you for your consideration

--
Ken Johnson
17285 SW 108th Ave

From: Ken Trotman <ksknstrot@msn.com>
Sent: Thursday, September 19, 2024 6:25 PM
To: Council; Ext - Planning
Subject: Lam Research Traffic Problems

Dear Tualatin City Council and Tualatin Planning Department:

The points made below are simply common-sense steps to prevent the degradation of the livability of this area of our city. Since I live in this area and will be directly impacted by your decisions, please carefully consider this request.

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!

Kenneth and Susan Trotman
10799 SW Kiowa CT
Tualatin, OR 97052

From: Kerri Moore <ohara.kerri@gmail.com>
Sent: Monday, September 9, 2024 8:01 AM
To: Council; Ext - Planning
Subject: Opposed to Lam Research Expansion

Hello,

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!
Kerri Moore
Tualatin Resident

From: Kim Devers <kimldevers@gmail.com>
Sent: Monday, December 9, 2024 3:50 PM
To: Council; Ext - Planning; Ext - Engineering Exterrnal Email
Subject: Tualatin Road and City Code

Dear City of Tualatin,

While researching the traffic impacts from Lam's TUX project, members of the community have discovered that Lam's proposal is not compatible with the Tualatin Comprehensive Plan 2040, and it would violate the Tualatin Development Code, both in spirit and letter.

For the reasons outlined below, we are asking the Tualatin Planning Department to consider Lam's proposed entrance on Tualatin Road to not be approvable, and we ask the City Manager to use her authority to have the proposed entrance removed from the TUX project site plan so that alternative access can be designed.

SITE CIRCULATION

Existing driveways provide sufficient access points to the Lam Campus as a whole. Lam currently has 6 other access points. 3 on 108th and 3 on Leveton Drive. Adding a new access point on Tualatin Road is unnecessary.

Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to add an additional driveway onto the street network.

The Tualatin Comprehensive Plan 2040 strongly supports the use of existing access points, rather than creating new ones, especially when a new access point would have negative impacts to the community. "Consider transportation options that make the best use of the existing network" (Goal 8.7)

SPIRIT OF THE LAW

Tualatin Road is currently functioning as an arterial, it was previously classified as an arterial, and it has the traffic volume of an arterial. Leveton Drive is currently functioning as a collector, it was previously classified as a collector, and it has the current traffic volume of a collector.

During the 2012-14 TSP update, the functional classifications of these streets were reversed in a failed attempt by the city to reduce the amount of traffic on Tualatin Road and encourage more trips to use Leveton Drive. While we appreciate the intent of this reversal, the impact is now exactly opposite of what was intended, and we ask that this reversal be deemed a mistake. We ask the city to remedy this mistake by restoring the correct functional classifications to their appropriate streets. Lam should not be allowed to rely on a classification error to put a new entrance on a road that, based on current conditions, should not have a new entrance.

If the streets were classified correctly, Lam Research would not be able to add an employee

entrance on Tualatin Road because it would be an arterial. “No new driveways or streets on arterial roadways within the City, except where noted in the TDC, usually when no alternative access is available.” (TCP 2040 POLICY 8.10.1)

LETTER OF THE LAW

The Tualatin Development Code says “Lots that front on more than one street may be required to locate motor vehicle accesses on the street with the lower functional classification as determined by the City Manager.” TDC 75.040 (5) Currently the TSP shows 108th classified as a minor collector and Tualatin Road a major collector. Based on this, access should be provided from 108th not Tualatin Road.

Lam’s proposed entrance on Tualatin Road fails four of the new driveway approach criteria in TDC 75.020.5: "(d)(ii) Takes access from the lowest classification of street abutting the property … (g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

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PROPOSED TRAFFIC SIGNAL

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CONSIDER SAFETY

The Tualatin TSP Existing Conditions Report shows Tualatin Road and 115th Ave having higher Pedestrian Level of Traffic Stress than Leveton Drive and 108th Ave. (Figure 23) Adding more traffic to Tualatin Road and 115th Ave will degrade pedestrian safety even further.

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108th, with a history of serious injury collision while Leveton does not. (Figure 31) Adding more traffic onto Tualatin Road and 115th will increase the traffic exposure and likely result in worse safety outcomes.

Tualatin Road has a history of collisions involving pedestrians and bicycles while Leveton and 108th do not. (Figure 32) Adding more traffic to Tualatin Road will likely make this safety issue worse.

Converting a driveway to full access or signalizing a driveway would likely increase traffic crashes. Per CMF ClearingHouse, changing driveway type to full access has a crash modification factor (CMF) of 2.25, and signalizing a driveway has a CMF of 3.98, which means that the two measures will likely increase traffic crashes by a factor of 2.25 and 3.98 respectively.

Lam's traffic study also does not identify the locations of school bus routes at Hazelbrook Middle School or the potential impacts to school bus traffic. Student safety is one of the most important issues in our community, but so far it has been ignored in this process.

Also, the safety and congestion impacts from Lam's proposal would be most concentrated on Tualatin Road between 115th and 124th which abuts a residential area with traditionally disadvantaged demographics and income limited apartments. This is not equitable.

BYPASS ROUTE

The route from Hazelbrook Road going west and turning right onto Hwy 99W is a "hidden" route that can bypass the traffic congestion at the west end of Tualatin Road. Adding a signal at 115th and Tualatin Road will encourage more cars to take this bypass. The potential impact of this new traffic pattern imposes significant safety concerns to communities all along the route. These impacts were not addressed in the traffic study.

SUMMARY

We urge the city to consider all the above concerns and require the applicant (Lam) to revise their site development plan accordingly. We believe that the current proposal does not meet Tualatin's planning rules, and that the City Manager should use her authority to bring Lam's proposal into compliance. No new roadway access on Tualatin Road.

Thank You.
Kim Devers

From: kminato4sin@gmail.com
Sent: Monday, December 9, 2024 11:20 PM
To: Council; Ext - Planning; Ext - Engineering Exterrnal Email
Subject: Traffic Impact concern to LAM TUX Project

Follow Up Flag: Follow up
Flag Status: Flagged

To Tualatin City Council, Engineering and Planning Department,

Dear City of Tualatin,

Hello my name is Kazuki and Yuko Minato and we live on 11445 SW Roberts Court in Tualatin. In recent years we have noticed significant amount of traffic increase in 115th Avenue and Tualatin Road.
Specially around afternoon commuting time I have seen significant increase on Tualatin Road and 115th Avenue have been my concern.
Also many cars seems to driving fast above speed limit.

Because of this traffic increase made us following closely to Lam's TUX Project and gained information that traffic impact study have several concern.

While researching the traffic impacts from Lam's TUX project, members of the community have discovered that Lam's proposal is not compatible with the Tualatin Comprehensive Plan 2040, and it would violate the Tualatin Development Code, both in spirit and letter.

For the reasons outlined below, we are asking the Tualatin Planning Department to consider Lam's proposed entrance on Tualatin Road to not be approvable, and we ask the City Manager to use her authority to have the proposed entrance removed from the TUX project site plan so that alternative access can be designed.

SITE CIRCULATION

Existing driveways provide sufficient access points to the Lam Campus as a whole. Lam currently has 6 other access points. 3 on 108th and 3 on Leveton Drive. Adding a new access point on Tualatin Road is unnecessary.

Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to add an additional driveway onto the street network.

The Tualatin Comprehensive Plan 2040 strongly supports the use of existing access points, rather than creating new ones, especially when a new access point would have negative impacts to the community. "Consider transportation options that make the best use of the existing network" (Goal 8.7)

SPIRIT OF THE LAW

Tualatin Road is currently functioning as an arterial, it was previously classified as an arterial, and it has the traffic volume of an arterial. Leveton Drive is currently functioning as a collector, it was previously classified as a collector, and it has the current traffic volume of a collector.

During the 2012-14 TSP update, the functional classifications of these streets were reversed in a failed attempt by the city to reduce the amount of traffic on Tualatin Road and encourage more trips to use Leveton Drive. While we appreciate the intent of this reversal, the impact is now exactly opposite of what was intended, and we ask that this reversal be deemed a mistake. We ask the city to remedy this mistake by restoring the correct functional classifications to their appropriate streets. Lam should not be allowed to rely on a classification error to put a new entrance on a road that, based on current conditions, should not have a new entrance.

If the streets were classified correctly, Lam Research would not be able to add an employee entrance on Tualatin Road because it would be an arterial. “No new driveways or streets on arterial roadways within the City, except where noted in the TDC, usually when no alternative access is available.” (TCP 2040 POLICY 8.10.1)

LETTER OF THE LAW

The Tualatin Development Code says “Lots that front on more than one street may be required to locate motor vehicle accesses on the street with the lower functional classification as determined by the City Manager.” TDC 75.040 (5) Currently the TSP shows 108th classified as a minor collector and Tualatin Road a major collector. Based on this, access should be provided from 108th not Tualatin Road.

Lam’s proposed entrance on Tualatin Road fails four of the new driveway approach criteria in TDC 75.020.5: "(d)(ii) Takes access from the lowest classification of street abutting the property … (g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

Tualatin Development Code 75.140.15 (a) grants the specific locations for Lam's three driveways on the north side of Leveton Drive. The applicant's proposal to relocate one of the three driveways is not compliant with the development code.

No matter which way you slice it, Tualatin Road is the worst option for carrying Lam’s new entrance and additional traffic volume. We ask the City Manager to use her discretion and require access from the most appropriate road which, by any metric, is Leveton Drive.

PROPOSED TRAFFIC SIGNAL

The proposed entrance on Tualatin Road would create the need for a new traffic signal on Tualatin Road which would have many negative impacts on the community. These impacts justify rejection of the proposed access. If Lam were to take access from Leveton Drive, no new traffic signal would be needed.

The community provided overwhelming feedback during the TSP update this summer about this issue and we asked that the proposed traffic signal be removed from the TSP. The city should take this feedback into account and "Conduct the planning process with adequate input and feedback from citizens in each affected neighborhood” (TCP 2040 Goal 8.7)

CONSIDER SAFETY

The Tualatin TSP Existing Conditions Report shows Tualatin Road and 115th Ave having higher Pedestrian Level of Traffic Stress than Leveton Drive and 108th Ave. (Figure 23) Adding more traffic to Tualatin Road and 115th Ave will degrade pedestrian safety even further.

Tualatin Road between 124th and 115th has higher concentration of collisions than Leveton and 108th, with a history of serious injury collision while Leveton does not. (Figure 31) Adding more traffic onto Tualatin Road and 115th will increase the traffic exposure and likely result in worse safety outcomes.

Tualatin Road has a history of collisions involving pedestrians and bicycles while Leveton and 108th do not. (Figure 32) Adding more traffic to Tualatin Road will likely make this safety issue worse.

Converting a driveway to full access or signalizing a driveway would likely increase traffic crashes. Per CMF ClearingHouse, changing driveway type to full access has a crash modification factor (CMF) of 2.25, and signalizing a driveway has a CMF of 3.98, which means that the two measures will likely increase traffic crashes by a factor of 2.25 and 3.98 respectively.

Lam's traffic study also does not identify the locations of school bus routes at Hazelbrook Middle School or the potential impacts to school bus traffic. Student safety is one of the most important issues in our community, but so far it has been ignored in this process.

Also, the safety and congestion impacts from Lam's proposal would be most concentrated on Tualatin Road between 115th and 124th which abuts a residential area with traditionally disadvantaged demographics and income limited apartments. This is not equitable.

BYPASS ROUTE

The route from Hazelbrook Road going west and turning right onto Hwy 99W is a "hidden" route that can bypass the traffic congestion at the west end of Tualatin Road. Adding a signal at 115th and Tualatin Road will encourage more cars to take this bypass. The potential impact of this new traffic pattern imposes significant safety concerns to communities all along the route. These impacts were not addressed in the traffic study.

SUMMARY

We urge the city to consider all the above concerns and require the applicant (Lam) to revise their site development plan accordingly. We believe that the current proposal does not meet Tualatin's planning rules, and that the City Manager should use her authority to bring Lam's proposal into compliance. No new roadway access on Tualatin Road.

Thank You.

From: Larry Melton <lmelton63@gmail.com>
Sent: Wednesday, August 21, 2024 3:49 PM
To: Ext - Planning
Subject: LAM Tualatin Road proposal

To All Planning Commission Members,

I am writing with concern about the proposed entry to LAM off of Tualatin Rd. at 115th Ave. My wife and I have lived off of Tualatin Road in the Fox Run Neighborhood for 32 years and have seen a great deal of change and growth in the area. Most of which has been very positive and I understand that growth and expansion are normal. However, it has become increasingly difficult to get into and out of our neighborhood with the current traffic that flows past the entry to our neighborhood at 112th and the adjacent road at 115th. This has been caused by the growth in the Sherwood and Newberg areas and has created a tremendous strain on Tualatin Rd. I have great concern that allowing LAM to create an entry point at 115th would only exacerbate the situation to a breaking point creating traffic issues as the neighborhood residents along Tualatin Rd try to get out of the neighborhood and into that ever increasing flow of traffic. This would also create safety issues entering the roadway.

I would like to see that new LAM traffic using Leveton Rd. directly to the South of the LAM property. It is not adjacent to any neighborhood traffic and is better designed and constructed to accept that increase in daily flow of cars and trucks in and out of the area.

Thank you for taking my input into consideration.

Larry Melton
Fox Run Resident

From: Lexi Howell <alexaehowell@gmail.com>
Sent: Monday, September 9, 2024 12:15 PM
To: Ext - Planning
Subject: Letter to City - Lam Research

Good afternoon,

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!

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Lexi Howell
(541) 921-7992 | alexaehowell@gmail.com | linkedin.com/in/alexa-howell/

From: Lexi Howell <alexaehowell@gmail.com>
Sent: Monday, December 9, 2024 3:50 PM
To: Ext - Planning
Subject: Tualatin Code

Dear City of Tualatin,

While researching the traffic impacts from Lam's TUX project, members of the community have discovered that Lam's proposal is not compatible with the Tualatin Comprehensive Plan 2040, and it would violate the Tualatin Development Code, both in spirit and letter.

For the reasons outlined below, we are asking the Tualatin Planning Department to consider Lam's proposed entrance on Tualatin Road to not be approvable, and we ask the City Manager to use her authority to have the proposed entrance removed from the TUX project site plan so that alternative access can be designed.

SITE CIRCULATION

Existing driveways provide sufficient access points to the Lam Campus as a whole. Lam currently has 6 other access points. 3 on 108th and 3 on Leveton Drive. Adding a new access point on Tualatin Road is unnecessary.

Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to add an additional driveway onto the street network.

The Tualatin Comprehensive Plan 2040 strongly supports the use of existing access points, rather than creating new ones, especially when a new access point would have negative impacts to the community. "Consider transportation options that make the best use of the existing network" (Goal 8.7)

SPIRIT OF THE LAW

Tualatin Road is currently functioning as an arterial, it was previously classified as an arterial, and it has the traffic volume of an arterial. Leveton Drive is currently functioning as a collector, it was previously classified as a collector, and it has the current traffic volume of a collector.

During the 2012-14 TSP update, the functional classifications of these streets were reversed in a failed attempt by the city to reduce the amount of traffic on Tualatin Road and encourage more trips to use Leveton Drive. While we appreciate the intent of this reversal, the impact is now exactly opposite of what was intended, and we ask that this reversal be deemed a mistake. We ask the city to remedy this mistake by restoring the correct functional classifications to their appropriate streets. Lam should not be allowed to rely on a classification error to put a new entrance on a road that, based on current conditions, should not have a new entrance.

If the streets were classified correctly, Lam Research would not be able to add an employee

entrance on Tualatin Road because it would be an arterial. “No new driveways or streets on arterial roadways within the City, except where noted in the TDC, usually when no alternative access is available.” (TCP 2040 POLICY 8.10.1)

LETTER OF THE LAW

The Tualatin Development Code says “Lots that front on more than one street may be required to locate motor vehicle accesses on the street with the lower functional classification as determined by the City Manager.” TDC 75.040 (5) Currently the TSP shows 108th classified as a minor collector and Tualatin Road a major collector. Based on this, access should be provided from 108th not Tualatin Road.

Lam’s proposed entrance on Tualatin Road fails four of the new driveway approach criteria in TDC 75.020.5: "(d)(ii) Takes access from the lowest classification of street abutting the property … (g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

Tualatin Development Code 75.140.15 (a) grants the specific locations for Lam's three driveways on the north side of Leveton Drive. The applicant's proposal to relocate one of the three driveways is not compliant with the development code.

No matter which way you slice it, Tualatin Road is the worst option for carrying Lam’s new entrance and additional traffic volume. We ask the City Manager to use her discretion and require access from the most appropriate road which, by any metric, is Leveton Drive.

PROPOSED TRAFFIC SIGNAL

The proposed entrance on Tualatin Road would create the need for a new traffic signal on Tualatin Road which would have many negative impacts on the community. These impacts justify rejection of the proposed access. If Lam were to take access from Leveton Drive, no new traffic signal would be needed.

The community provided overwhelming feedback during the TSP update this summer about this issue and we asked that the proposed traffic signal be removed from the TSP. The city should take this feedback into account and "Conduct the planning process with adequate input and feedback from citizens in each affected neighborhood” (TCP 2040 Goal 8.7)

CONSIDER SAFETY

The Tualatin TSP Existing Conditions Report shows Tualatin Road and 115th Ave having higher Pedestrian Level of Traffic Stress than Leveton Drive and 108th Ave. (Figure 23) Adding more traffic to Tualatin Road and 115th Ave will degrade pedestrian safety even further.

Tualatin Road between 124th and 115th has higher concentration of collisions than Leveton and

108th, with a history of serious injury collision while Leveton does not. (Figure 31) Adding more traffic onto Tualatin Road and 115th will increase the traffic exposure and likely result in worse safety outcomes.

Tualatin Road has a history of collisions involving pedestrians and bicycles while Leveton and 108th do not. (Figure 32) Adding more traffic to Tualatin Road will likely make this safety issue worse.

Converting a driveway to full access or signalizing a driveway would likely increase traffic crashes. Per CMF ClearingHouse, changing driveway type to full access has a crash modification factor (CMF) of 2.25, and signalizing a driveway has a CMF of 3.98, which means that the two measures will likely increase traffic crashes by a factor of 2.25 and 3.98 respectively.

Lam's traffic study also does not identify the locations of school bus routes at Hazelbrook Middle School or the potential impacts to school bus traffic. Student safety is one of the most important issues in our community, but so far it has been ignored in this process.

Also, the safety and congestion impacts from Lam's proposal would be most concentrated on Tualatin Road between 115th and 124th which abuts a residential area with traditionally disadvantaged demographics and income limited apartments. This is not equitable.

BYPASS ROUTE

The route from Hazelbrook Road going west and turning right onto Hwy 99W is a "hidden" route that can bypass the traffic congestion at the west end of Tualatin Road. Adding a signal at 115th and Tualatin Road will encourage more cars to take this bypass. The potential impact of this new traffic pattern imposes significant safety concerns to communities all along the route. These impacts were not addressed in the traffic study.

SUMMARY

We urge the city to consider all the above concerns and require the applicant (Lam) to revise their site development plan accordingly. We believe that the current proposal does not meet Tualatin's planning rules, and that the City Manager should use her authority to bring Lam's proposal into compliance. No new roadway access on Tualatin Road.

Thank You.

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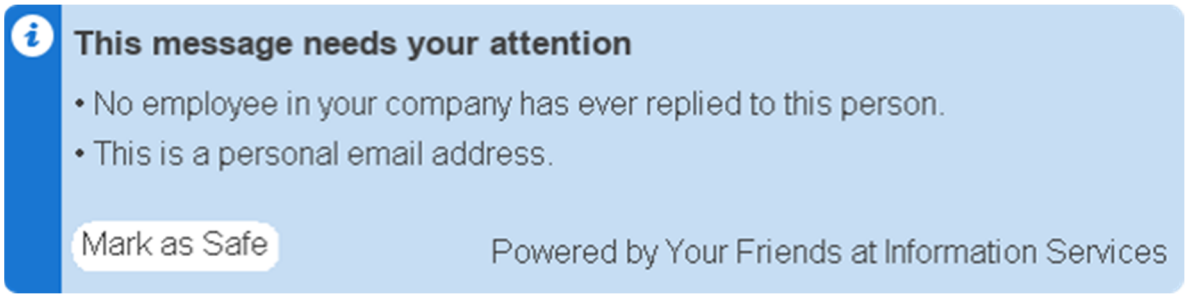
Lexi Howell
(541) 921-7992 | alexaehowell@gmail.com | linkedin.com/in/alexa-howell/

From: Lynda Wright <momiswright@yahoo.com>
Sent: Friday, November 15, 2024 4:13 PM
To: Ext - Planning
Subject: Tualatin Rod



Dear Tualatin City Council and Tualatin Planning Department:

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

I used the sample letter, but I would like to give a personal plea also. It can be so hard getting onto Tualatin Road from a side street, especially if you are turning left. It is much worse during high traffic time. I have seen multiple drivers turn right from Teton onto Tualatin Road, then turn left at 106th in order together into the neighborhood. There are multiple school buses on Tualatin Road also, which have schedules to keep and it could delay them. Please consider the driveway being on Leveto Road which has only local business traffic.

I appreciate your consideration on this important matter.

Thank you,

Lynda Wright

Sent from my iPad

From: Marius Brisan <marlid16@frontier.com>
Sent: Monday, September 9, 2024 12:21 PM
To: Ext - Planning
Subject: please stop planning access to Lam campus directly from Tualatin Rd

Tualatin Planning Team,

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue, and possibly another one at 112th.
Tualatin Road provides the main access to our residential neighborhoods, and it is already overloaded with cut-through commuter traffic that connects between 99w and I5. Leveton Dr , on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

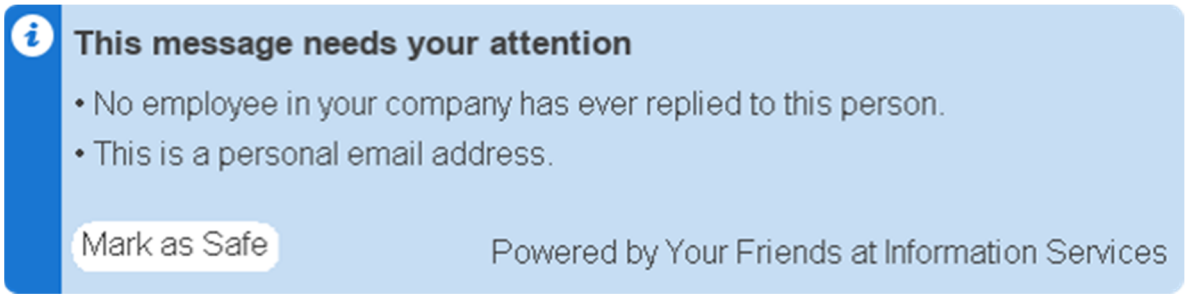
Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include at least one usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when better alternatives already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Dr. Save Tualatin Road!

Regards,
Marius Brisan

From: Marje Martinez <nursemarje@gmail.com>
Sent: Tuesday, September 24, 2024 12:00 PM
To: Council; Ext - Planning
Subject: Lam proposal for Tualatin Road



Realized when I sent the first, I put east but I meant west part. However, the rest is correct and wanted to make sure was accurate.

Save Tualatin Road

To: Tualatin City Council: council@tualatin.gov
To: Tualatin Planning Department: planning@tualatin.gov

Dear Tualatin City Council and Tualatin Planning Department:

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Additionally, I personally use Tualatin Road frequently to serve hospice patients in the community. This would put a huge burden on travel time to and from patient's in the west/ north part of our city.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway.

This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!

-Marjorie Martinez,
Legacy Hospice RN Case Manager in Tualatin

From: Marlene Cable <marleneavilescable@gmail.com>
Sent: Saturday, September 7, 2024 8:51 PM
To: Council; Ext - Planning
Subject: Tualatin Road

Dear Council Members and Planning Department,

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank you,
Marlene Aviles-Cable

From: Mary C. France <francemaryc@gmail.com>
Sent: Monday, September 9, 2024 10:52 AM
To: Council; Ext - Planning
Subject: Save Tualatin Road

Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!

Mary Colleen France
10570 SW Kiowa Street
Tualatin

503 701 9065
francemaryc@gmail.com

From: MB <mbr14@protonmail.com>
Sent: Wednesday, September 11, 2024 10:35 AM
To: Ext - Planning; Council
Subject: Save Tualatin Road - Lam Research proposal

Dear Tualatin City Council and Planning Department,

I am writing to add my voice to the growing coalition opposed to Lam Research building a new entrance to their facilities on Tualatin Road at SW 115th Avenue.

Tualatin Road already serves the local community and does not need more traffic. Currently, Tualatin Road serves as the primary access to several residential neighborhoods as well as handling additional commuter traffic between I-5 and Highway 99. As a result, Tualatin Road already gets backed up at typical commuting times, and the new Lam Research entrance would only add to this problem.

However, the existing Leveton Drive can handle the traffic from Lam Research employees. Further, the existing Leveton Drive is already connected to the Lam Research campus and can be used immediately (saving money and time, rather than creating the new Tualatin Road entrance). While I believe there should be no entrance for Lam Research along Tualatin Road, if that entrance is created then the proposed site expansion proposal to eliminate the existing driveway along Leveton Drive needs to be reconsidered. Maintaining this entrance point would help curb traffic along Tualatin Road, regardless of the final decision regarding a Lam Research entrance along Tualatin Road.
Furthermore, creating more traffic along Tualatin Road makes the road less safe for our children, bikers, pedestrians, and neighbors. For a healthier and happier community, we should not be intentionally and for the long-term adding more traffic to this road.
I believe that the Tualatin City Council and City Staff can find another way to address Lam Research's proposal that does not contribute more traffic along Tualatin Road. *Use Leveton Drive. Save Tualatin Road.* Thank you for your time!

Maya Bartel
City of Tualatin volunteer, CERT member, and concerned resident

From: Melissa McCabe <mdmccabe18@gmail.com>
Sent: Monday, October 21, 2024 3:05 PM
To: Council; Ext - Planning
Subject: Save Tualatin Road by Using Common Sense

Dear Tualatin City Council and Tualatin Planning Department:

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!

Melissa Cerda

From: Steve Koper
Sent: Monday, September 9, 2024 8:54 AM
To: Keith Leonard
Subject: FW: Tualatin Road

From: Michael Ryan <bluesoxbb@aol.com>
Sent: Sunday, September 08, 2024 8:03 AM
To: Council <council@tualatin.gov>
Subject: Tualatin Road

To the uncaring council,
Is LAM so big that you have no respect for the citizens of this town?
I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!

From: Steve Koper
Sent: Monday, September 9, 2024 8:54 AM
To: Keith Leonard
Subject: FW: Tualatin Road

From: mm3soups <mm3soups@gmail.com>
Sent: Sunday, September 08, 2024 12:40 PM
To: Council <council@tualatin.gov>
Subject: Tualatin Road

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!

Michele Campbell
112th and Apalachee resident

From: Michael Gallardo <gallardo.mike@gmail.com>
Sent: Wednesday, October 30, 2024 11:28 AM
To: Council; Ext - Planning
Subject: Save Tualatin Road

Dear Tualatin City Council and Tualatin Planning Department:

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!

Sincerely,

Mike (A resident & homeowner of the Riverpark neighborhood)

From: Molly Phillips <mollykphillips@gmail.com>
Sent: Friday, November 8, 2024 2:36 PM
To: Council; Ext - Planning
Subject: Save Tualatin Road- please!

Dear Tualatin City Council and Tualatin Planning Department:

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

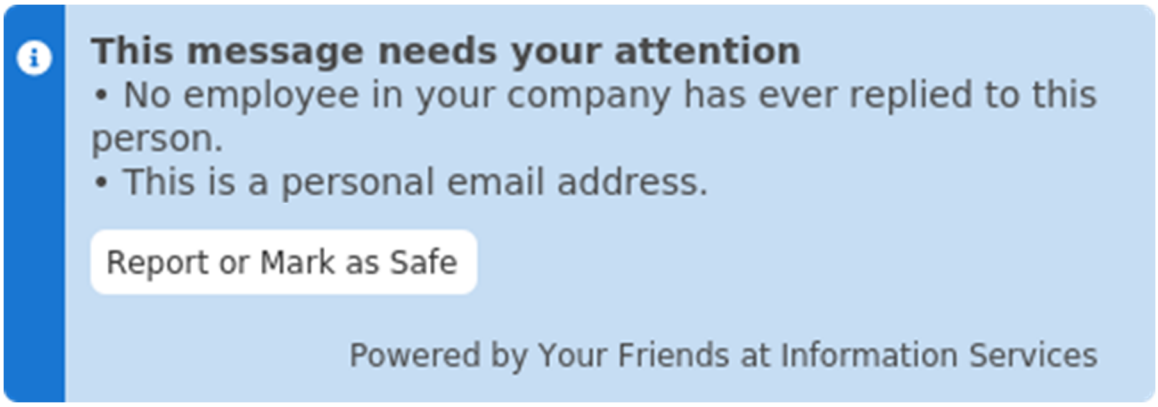
The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!

Sent from my iPhone

From: Nick Lauren <nich.lauren@gmail.com>
Sent: Wednesday, August 28, 2024 8:18 AM
To: Ext - Planning
Subject: More Support for "Save Tualatin Road"



Good morning!

I am writing to lend my support to the Save Tualatin Road proposals. I live at 17935 SW 114th Ave, Tualatin, OR 97062, just across from Lam between SW 115 Ave and SW 112th Ave. I regularly run and bike on Tualatin Road with my two young sons.

I hope the planning committee agrees that we should minimize vehicle traffic on streets where families and children play, especially when there is a feasible alternative. It makes good sense for our community to have Lam employees use SW Leviton Dr.

I understand you have competing priorities and that forging next steps may entail difficult decisions. Lam is a good neighbor (as far as light industrial neighbors go!), and I appreciate the economic prosperity they help bring to our community. That said, please know that the collective will of the Fox Run neighborhood is to keep traffic down on Tualatin Road.

Thanks for your time and consideration.

Best regards,

Nick Lauren
nich.lauren@gmail.com
509-240-6791
Owner of 17935 SW 114th Ave, Tualatin, OR 97062

From: Sherwood, Nicole <nicole.sherwood@vanguard-ems.com>
Sent: Monday, September 9, 2024 10:02 AM
To: Council
Cc: Ext - Planning
Subject: Save Tualatin Road

Dear Tualatin City Council and Tualatin Planning Department:

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. **Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive**.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!

Nicole Sherwood
Master Scheduler/Planner
Nicole.sherwood@vanguard-ems.com
503-672-4267


VANGUARD EMS™
Leading Edge Electronics Manufacturing

From: Nikola Tcherven <ntcherven@hotmail.com>
Sent: Monday, October 21, 2024 7:05 PM
To: Council
Cc: Ext - Planning
Subject: Save Tualatin Road!

Dear Tualatin City Council and Tualatin Planning Department:

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!

Nikola Tcherven

From: Patrice Dugan <duganfamily4@gmail.com>
Sent: Thursday, September 5, 2024 9:40 PM
To: Ext - Planning
Subject: Tualatin Road

All Planning Commision Members

I have lived in the Jurgens Park neighborhood for 25 years. Our family has been very happy here and have seen many changes during this time. One change has been the increased traffic on Tualatin Rd due to housing additions (single family and apartments). Depending on the time of day, getting on to Tualatin Rd from Jurgens is already quite a challenge.
I am strongly opposed to Lam's proposal which would very negatively impact traffic and neighborhood liveability as currently proposed. There are other roads in the area that are much better suited to this industrial traffic (Herman Rd, Leveton)- please do not allow Lam to feed their traffic from their addition on to Tualatin Road

Sincerely
Patrice and Casey Dugan
10365 SW Tawasa CT
Tualatin 97062

Sent from my iPad

From: Patrice Dugan <duganfamily4@gmail.com>
Sent: Friday, December 13, 2024 12:26 PM
To: Ext - Planning
Subject: Lam expansion/traffic impacts

I recently attended the meeting with city employees and concerned citizens. Please see the updated information below as it relates to Lams plans to add additional traffic to Tualatin Road

Thank you
Patrice Dugan

> Dear City of Tualatin,
>
> While researching the traffic impacts from Lam's TUX project, members of the community have discovered that Lam's proposal is not compatible with the Tualatin Comprehensive Plan 2040, and it would violate the Tualatin Development Code, both in spirit and letter.
>
> For the reasons outlined below, we are asking the Tualatin Planning Department to consider Lam's proposed entrance on Tualatin Road to not be approvable, and we ask the City Manager to use her authority to have the proposed entrance removed from the TUX project site plan so that alternative access can be designed.
>
> SITE CIRCULATION
>
> Existing driveways provide sufficient access points to the Lam Campus as a whole. Lam currently has 6 other access points. 3 on 108th and 3 on Leveton Drive. Adding a new access point on Tualatin Road is unnecessary.
>
> Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to add an additional driveway onto the street network.
>
> The Tualatin Comprehensive Plan 2040 strongly supports the use of existing access points, rather than creating new ones, especially when a new access point would have negative impacts to the community. "Consider transportation options that make the best use of the existing network" (Goal 8.7)
>
> SPIRIT OF THE LAW
>
> Tualatin Road is currently functioning as an arterial, it was previously classified as an arterial, and it has the traffic volume of an arterial. Leveton Drive is currently functioning as a collector, it was previously classified as a collector, and it has the current traffic volume of a collector.
>
> During the 2012-14 TSP update, the functional classifications of these streets were reversed in a failed attempt by the city to reduce the amount of traffic on Tualatin Road and encourage more trips to use Leveton Drive. While we appreciate the intent of this reversal, the impact is now exactly opposite of what was intended, and we ask that this reversal be deemed a mistake. We ask the city to remedy this mistake by restoring the correct functional classifications to their appropriate streets. Lam should not be allowed to rely on a classification error to put a new entrance on a road that, based on current conditions, should not have a new entrance.

>
> If the streets were classified correctly, Lam Research would not be able to add an employee entrance on Tualatin Road because it would be an arterial. “No new driveways or streets on arterial roadways within the City, except where noted in the TDC, usually when no alternative access is available.” (TCP 2040 POLICY 8.10.1)
>
> LETTER OF THE LAW
>
> The Tualatin Development Code says “Lots that front on more than one street may be required to locate motor vehicle accesses on the street with the lower functional classification as determined by the City Manager.” TDC 75.040 (5) Currently the TSP shows 108th classified as a minor collector and Tualatin Road a major collector. Based on this, access should be provided from 108th not Tualatin Road.
>
> Lam’s proposed entrance on Tualatin Road fails four of the new driveway approach criteria in TDC 75.020.5: "(d)(ii) Takes access from the lowest classification of street abutting the property … (g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."
>
> Tualatin Development Code 75.140.15 (a) grants the specific locations for Lam's three driveways on the north side of Leveton Drive. The applicant's proposal to relocate one of the three driveways is not compliant with the development code.
>
> No matter which way you slice it, Tualatin Road is the worst option for carrying Lam’s new entrance and additional traffic volume. We ask the City Manager to use her discretion and require access from the most appropriate road which, by any metric, is Leveton Drive.
>
> PROPOSED TRAFFIC SIGNAL
>
> The proposed entrance on Tualatin Road would create the need for a new traffic signal on Tualatin Road which would have many negative impacts on the community. These impacts justify rejection of the proposed access. If Lam were to take access from Leveton Drive, no new traffic signal would be needed.
>
> The community provided overwhelming feedback during the TSP update this summer about this issue and we asked that the proposed traffic signal be removed from the TSP. The city should take this feedback into account and "Conduct the planning process with adequate input and feedback from citizens in each affected neighborhood” (TCP 2040 Goal 8.7)
>
> CONSIDER SAFETY
>
> The Tualatin TSP Existing Conditions Report shows Tualatin Road and 115th Ave having higher Pedestrian Level of Traffic Stress than Leveton Drive and 108th Ave. (Figure 23) Adding more traffic to Tualatin Road and 115th Ave will degrade pedestrian safety even further.
>
> Tualatin Road between 124th and 115th has higher concentration of collisions than Leveton and 108th, with a history of serious injury collision while Leveton does not. (Figure 31) Adding more traffic

onto Tualatin Road and 115th will increase the traffic exposure and likely result in worse safety outcomes.
>
> Tualatin Road has a history of collisions involving pedestrians and bicycles while Leveton and 108th do not. (Figure 32) Adding more traffic to Tualatin Road will likely make this safety issue worse.
>
> Converting a driveway to full access or signalizing a driveway would likely increase traffic crashes. Per CMF ClearingHouse, changing driveway type to full access has a crash modification factor (CMF) of 2.25, and signalizing a driveway has a CMF of 3.98, which means that the two measures will likely increase traffic crashes by a factor of 2.25 and 3.98 respectively.
>
> Lam's traffic study also does not identify the locations of school bus routes at Hazelbrook Middle School or the potential impacts to school bus traffic. Student safety is one of the most important issues in our community, but so far it has been ignored in this process.
>
> Also, the safety and congestion impacts from Lam's proposal would be most concentrated on Tualatin Road between 115th and 124th which abuts a residential area with traditionally disadvantaged demographics and income limited apartments. This is not equitable.
>
> BYPASS ROUTE
>
> The route from Hazelbrook Road going west and turning right onto Hwy 99W is a "hidden" route that can bypass the traffic congestion at the west end of Tualatin Road. Adding a signal at 115th and Tualatin Road will encourage more cars to take this bypass. The potential impact of this new traffic pattern imposes significant safety concerns to communities all along the route. These impacts were not addressed in the traffic study.
>
> SUMMARY
>
> We urge the city to consider all the above concerns and require the applicant (Lam) to revise their site development plan accordingly. We believe that the current proposal does not meet Tualatin's planning rules, and that the City Manager should use her authority to bring Lam's proposal into compliance. No new roadway access on Tualatin Road.
>
> Thank You.
>
Sent from my iPhone

From: Patti Atkins <patti@prpatti.com>
Sent: Monday, December 9, 2024 5:39 PM
To: Council; Ext - Planning; Ext - Engineering Exterrnal Email
Subject: Tualatin Road

Follow Up Flag: Follow up
Flag Status: Flagged

City Council council@tualatin.gov
Planning Department planning@tualatin.gov
Engineering engineering@tualatin.gov

Dear City of Tualatin,

While researching the traffic impacts from Lam's TUX project, members of the community have discovered that Lam's proposal is not compatible with the Tualatin Comprehensive Plan 2040, and it would violate the Tualatin Development Code, both in spirit and letter.

For the reasons outlined below, we are asking the Tualatin Planning Department to consider Lam's proposed entrance on Tualatin Road to not be approvable, and we ask the City Manager to use her authority to have the proposed entrance removed from the TUX project site plan so that alternative access can be designed.

SITE CIRCULATION

Existing driveways provide sufficient access points to the Lam Campus as a whole. Lam currently has 6 other access points. 3 on 108th and 3 on Leveton Drive. Adding a new access point on Tualatin Road is unnecessary.

Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to add an additional driveway onto the street network.

The Tualatin Comprehensive Plan 2040 strongly supports the use of existing access points, rather than creating new ones, especially when a new access point would have negative impacts to the community. "Consider transportation

options that make the best use of the existing network" (Goal 8.7)

SPIRIT OF THE LAW

Tualatin Road is currently functioning as an arterial, it was previously classified as an arterial, and it has the traffic volume of an arterial. Leveton Drive is currently functioning as a collector, it was previously classified as a collector, and it has the current traffic volume of a collector.

During the 2012-14 TSP update, the functional classifications of these streets were reversed in a failed attempt by the city to reduce the amount of traffic on Tualatin Road and encourage more trips to use Leveton Drive. While we appreciate the intent of this reversal, the impact is now exactly opposite of what was intended, and we ask that this reversal be deemed a mistake. We ask the city to remedy this mistake by restoring the correct functional classifications to their appropriate streets. Lam should not be allowed to rely on a classification error to put a new entrance on a road that, based on current conditions, should not have a new entrance.

If the streets were classified correctly, Lam Research would not be able to add an employee entrance on Tualatin Road because it would be an arterial. “No new driveways or streets on arterial roadways within the City, except where noted in the TDC, usually when no alternative access is available.” (TCP 2040 POLICY 8.10.1)

LETTER OF THE LAW

The Tualatin Development Code says “Lots that front on more than one street may be required to locate motor vehicle accesses on the street with the lower functional classification as determined by the City Manager.” TDC 75.040 (5) Currently the TSP shows 108th classified as a minor collector and Tualatin Road a major collector. Based on this, access should be provided from 108th not Tualatin Road.

Lam’s proposed entrance on Tualatin Road fails four of the new driveway approach criteria in TDC 75.020.5: "(d)(ii) Takes access from the lowest classification of street abutting the property … (g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The

proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

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No matter which way you slice it, Tualatin Road is the worst option for carrying Lam's new entrance and additional traffic volume. We ask the City Manager to use her discretion and require access from the most appropriate road which, by any metric, is Leveton Drive.

PROPOSED TRAFFIC SIGNAL

The proposed entrance on Tualatin Road would create the need for a new traffic signal on Tualatin Road which would have many negative impacts on the community. These impacts justify rejection of the proposed access. If Lam were to take access from Leveton Drive, no new traffic signal would be needed.

The community provided overwhelming feedback during the TSP update this summer about this issue and we asked that the proposed traffic signal be removed from the TSP. The city should take this feedback into account and "Conduct the planning process with adequate input and feedback from citizens in each affected neighborhood" (TCP 2040 Goal 8.7)

CONSIDER SAFETY

The Tualatin TSP Existing Conditions Report shows Tualatin Road and 115th Ave having higher Pedestrian Level of Traffic Stress than Leveton Drive and 108th Ave. (Figure 23) Adding more traffic to Tualatin Road and 115th Ave will degrade pedestrian safety even further.

Tualatin Road between 124th and 115th has higher concentration of collisions than Leveton and 108th, with a history of serious injury collision while Leveton does not. (Figure 31) Adding more traffic onto Tualatin Road and 115th will

increase the traffic exposure and likely result in worse safety outcomes.

Tualatin Road has a history of collisions involving pedestrians and bicycles while Leveton and 108th do not. (Figure 32) Adding more traffic to Tualatin Road will likely make this safety issue worse.

Converting a driveway to full access or signalizing a driveway would likely increase traffic crashes. Per CMF ClearingHouse, changing driveway type to full access has a crash modification factor (CMF) of 2.25, and signalizing a driveway has a CMF of 3.98, which means that the two measures will likely increase traffic crashes by a factor of 2.25 and 3.98 respectively.

Lam's traffic study also does not identify the locations of school bus routes at Hazelbrook Middle School or the potential impacts to school bus traffic. Student safety is one of the most important issues in our community, but so far it has been ignored in this process.

Also, the safety and congestion impacts from Lam's proposal would be most concentrated on Tualatin Road between 115th and 124th which abuts a residential area with traditionally disadvantaged demographics and income limited apartments. This is not equitable.

BYPASS ROUTE

The route from Hazelbrook Road going west and turning right onto Hwy 99W is a "hidden" route that can bypass the traffic congestion at the west end of Tualatin Road. Adding a signal at 115th and Tualatin Road will encourage more cars to take this bypass. The potential impact of this new traffic pattern imposes significant safety concerns to communities all along the route. These impacts were not addressed in the traffic study.

SUMMARY

We urge the city to consider all the above concerns and require the applicant (Lam) to revise their site development plan accordingly. We believe that the current proposal does not meet Tualatin's planning rules, and that the City Manager should use her authority to bring Lam's proposal into compliance. No new roadway access on Tualatin Road.

Thank You.
Patricia Atkins
17745 SW Chippewa Trail, Tualatin, OR 97062

From: ï»¿Paul Morrissey <vp.morrissey@frontier.com>
Sent: Tuesday, December 3, 2024 7:33 AM
To: Keith Leonard
Subject: Re: Tualatin Road

Good morning
After reviewing the site plan and reading other comments, I too am very concerned about projected traffic on Tualatin Road.

1. It's already a challenge to get onto the road via Jurgens Rd which we use frequently. Often we have to make a right turn and then turn left to proceed to Herman Rd.
The sight lines at Jurgens are limited and made worse when school buses are arriving or departing. There will be a bad accident someday and all this will be made worse with increased LAM traffic.

2. I was shocked to see the parking layout for the LAM expansion. With no internal driveway between Tualatin Road and Leveton, employees will have to travel on TR.
I support a revision that would provide a reasonable option for employees and direct more traffic and definitely commercial trucks to Leveton Rd.

Thank you for your consideration

Paul Morrissey
17924 SW 105th Ct.

Sent from Yahoo Mail for iPad

On Monday, December 2, 2024, 8:38 AM, Keith Leonard <kleonard@tualatin.gov> wrote:

> Good morning Paul,
>
> We did not receive a comment, just what is displayed below. If you wish to provide a public comment then please send an emailed comment. I typically do not click on links that I don't recognize.
>
> **Keith Leonard, AICP**
> Associate Planner
> **Phone**: 503.691.3029
>
> ---
>
> **From:** ï»¿Paul Morrissey <vp.morrissey@frontier.com>
> **Sent:** Sunday, December 1, 2024 4:54 PM
> **To:** Ext - Planning <Planning@tualatin.gov>
> **Subject:** Tualatin Road

http://www.tualatinroad.org/sampleletter

Sent from Yahoo Mail for iPad

From: Phil Vincent <pdvpdx@gmail.com>
Sent: Tuesday, October 29, 2024 2:59 PM
To: Council
Cc: Ext - Planning
Subject: Save Tualatin Road

Dear Tualatin City Council and Tualatin Planning Department:

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!

Phil Vincent

17240 SW 108th Ave

Tualatin, OR 97062

Sent from my iPhone

From: pryz10@yahoo.com
Sent: Saturday, September 7, 2024 9:24 PM
To: Ext - Planning
Subject: Tualatin Road

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

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Use Leveton Drive. Save Tualatin Road.

Thank You!

Sent from my iPhone

From: Reba Tobey <rtdoglover@yahoo.com>
Sent: Monday, December 9, 2024 4:18 PM
To: Council; Ext - Planning; Ext - Engineering Exterrnal Email
Subject: Lamm's proposed new direct access onto SW Tualatin Rd

Dear City of Tualatin,

While researching the traffic impacts from Lam's TUX project, members of the community have discovered that Lam's proposal is not compatible with the Tualatin Comprehensive Plan 2040, and it would violate the Tualatin Development Code, both in spirit and letter.

For the reasons outlined below, we are asking the Tualatin Planning Department to consider Lam's proposed entrance on Tualatin Road to not be approvable, and we ask the City Manager to use her authority to have the proposed entrance removed from the TUX project site plan so that alternative access can be designed.

SITE CIRCULATION

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SPIRIT OF THE LAW

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LETTER OF THE LAW

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PROPOSED TRAFFIC SIGNAL

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CONSIDER SAFETY

The Tualatin TSP Existing Conditions Report shows Tualatin Road and 115th Ave having higher Pedestrian Level of Traffic Stress than Leveton Drive and 108th Ave. (Figure 23) Adding more traffic to Tualatin Road and 115th Ave will degrade pedestrian safety even further.

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Tualatin Road has a history of collisions involving pedestrians and bicycles while Leveton and 108th do not. (Figure 32) Adding more traffic to Tualatin Road will likely make this safety issue worse.

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and signalizing a driveway has a CMF of 3.98, which means that the two measures will likely increase traffic crashes by a factor of 2.25 and 3.98 respectively.

Lam's traffic study also does not identify the locations of school bus routes at Hazelbrook Middle School or the potential impacts to school bus traffic. Student safety is one of the most important issues in our community, but so far it has been ignored in this process.

Also, the safety and congestion impacts from Lam's proposal would be most concentrated on Tualatin Road between 115th and 124th which abuts a residential area with traditionally disadvantaged demographics and income limited apartments. This is not equitable.

BYPASS ROUTE

The route from Hazelbrook Road going west and turning right onto Hwy 99W is a "hidden" route that can bypass the traffic congestion at the west end of Tualatin Road. Adding a signal at 115th and Tualatin Road will encourage more cars to take this bypass. The potential impact of this new traffic pattern imposes significant safety concerns to communities all along the route. These impacts were not addressed in the traffic study.

SUMMARY

We urge the city to consider all the above concerns and require the applicant (Lam) to revise their site development plan accordingly. We believe that the current proposal does not meet Tualatin's planning rules, and that the City Manager should use her authority to bring Lam's proposal into compliance. No new roadway access on Tualatin Road.

Thank you,

Reba Tobey
Tualatin Resident

17815 SW Cheyenne Way
Tualatin , Oregon 97062
503-449-8123

From: Rick Cady <rcadycvelo@gmail.com>
Sent: Saturday, August 24, 2024 3:04 PM
To: Ext - Planning
Cc: Regina Chante
Subject: LAM research expansion proposal and safety of Tualatin Road/All planning commission members PLEASE READ

To all planning commission members:

My wife and I moved to Tualatin in 2019, and our house is located with its backside to Tualatin Road. We fell in love with the house, community, neighborhood and nearby Jurgens park. Our only hesitation in purchasing was the traffic noise generated by the road and adjacent industries. At that time, however, traffic was audible but not outrageous, so we felt the move was worth the risk, given the other benefits we saw.

Since our move here over four years ago, we've noticed a dramatic increase in cars, trucks, and motorcycles racing down the street, well beyond speed limits. Many of these vehicles have modified muffler systems that substantially increase volume and pollution on acceleration. We have reached out to the Tualatin police department, but due to limited capacities they are unable to provide consistent, necessary deterrents to address traffic volume and reckless driving behavior.

In reviewing the proposal from LAM, it appears that approval of their expansion would increase traffic congestion, especially as fall returns and school buses and students crossing streets are added to the equation. Additionally, there are several elderly folks living in the neighborhood, some that use walkers to get around, and this expansion would put these citizens at increased risk as they try to exercise and move around their neighborhood. The increase of commuter traffic inherently increases noise volume, and air pollution from idling vehicles (already an issue). The lack of law enforcement monitoring Tualatin Road ultimately increases the potential risk of vehicular and pedestrian accidents. The ability of homeowners, renters, and retirement home residents who live adjacent to Tualatin Road to relax, enjoy, and feel safe and sane in their own outdoors would be greatly impacted in a negative way.

"*Citizens to Save Tualatin Road*" created a proposal we would like LAM to adopt. The proposal suggests creating an entrance to LAM via Leveton Drive which is designed to handle the vehicular capacity of the company's expansion. This alternate entry would serve to divert more traffic south of the neighborhood into already developed, industrialized land, and away from our neighborhoods.

Additionally, we would like to see Tualatin Road fit with interventions that would be appropriate and consider ideas, such as speed bumps, video radar, and/or police presence along this business/neighborhood corridor. Signs reflecting the need for safety of pedestrians and children could also be considered. We are very concerned for the safety, health and well-being of all who live here, and of those who travel Tualatin Road.

We appreciate your consideration of our letter as a concerned citizen of Tualatin, and we ask the

appropriate committees to vote “NO” on the LAM expansion as it is currently proposed and to consider additional measures to improve the safety and livability for all of us that border this high traffic street.

Thank you,

Rick Cady and Regina Chante

From: RCB <g4rl1c5@proton.me>
Sent: Wednesday, September 11, 2024 3:25 PM
To: Council; Ext - Planning
Subject: Save Tualatin Road

Dear City of Tualatin,

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!
Riley Bartel
Concerned resident of Tualatin

From: Steve Koper
Sent: Monday, December 9, 2024 5:16 PM
To: Keith Leonard
Subject: FW: Save Tualatin Road

Follow Up Flag: Follow up
Flag Status: Flagged

From: Sherilyn Lombos <slombos@tualatin.gov>
Sent: Monday, December 9, 2024 5:14 PM
To: Steve Koper <skoper@tualatin.gov>; Mike McCarthy <mmccarthy@tualatin.gov>; Kim McMillan <kmcmillan@tualatin.gov>
Subject: FW: Save Tualatin Road

Sherilyn Lombos
City Manager
Phone: 503.691.3010

From: baumann12@frontier.com <baumann12@frontier.com>
Sent: Monday, December 09, 2024 4:00 PM
To: Council <council@tualatin.gov>
Subject: Save Tualatin Road

Dear City of Tualatin,

While researching the traffic impacts from Lam's TUX project, members of the community have discovered that Lam's proposal is not compatible with the Tualatin Comprehensive Plan 2040, and it would violate the Tualatin Development Code, both in spirit and letter.

For the reasons outlined below, we are asking the Tualatin Planning Department to consider Lam's proposed entrance on Tualatin Road to not be approvable, and we ask the City Manager to use her authority to have the proposed entrance removed from the TUX project site plan so that alternative access can be designed.

SITE CIRCULATION

Existing driveways provide sufficient access points to the Lam Campus as a whole. Lam currently has 6 other access points. 3 on 108th and 3 on Leveton Drive. Adding a new access point on Tualatin Road is unnecessary.

Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to add an additional driveway onto the street network.

The Tualatin Comprehensive Plan 2040 strongly supports the use of existing access points, rather than creating new ones, especially when a new access point would have negative impacts to the community. "Consider transportation options that make the best use of the existing network" (Goal 8.7)

SPIRIT OF THE LAW

Tualatin Road is currently functioning as an arterial, it was previously classified as an arterial, and it has the traffic volume of an arterial. Leveton Drive is currently functioning as a collector, it was previously classified as a collector, and it has the current traffic volume of a collector.

During the 2012-14 TSP update, the functional classifications of these streets were reversed in a failed attempt by the city to reduce the amount of traffic on Tualatin Road and encourage more trips to use Leveton Drive. While we appreciate the intent of this reversal, the impact is now exactly opposite of what was intended, and we ask that this reversal be deemed a mistake. We ask the city to remedy this mistake by restoring the correct functional classifications to their appropriate streets. Lam should not be allowed to rely on a classification error to put a new entrance on a road that, based on current conditions, should not have a new entrance.

If the streets were classified correctly, Lam Research would not be able to add an employee entrance on Tualatin Road because it would be an arterial. “No new driveways or streets on arterial roadways within the City, except where noted in the TDC, usually when no alternative access is available.” (TCP 2040 POLICY 8.10.1)

LETTER OF THE LAW

The Tualatin Development Code says “Lots that front on more than one street may be required to locate motor vehicle accesses on the street with the lower functional classification as determined by the City Manager.” TDC 75.040 (5) Currently the TSP shows 108th classified as a minor collector and Tualatin Road a major collector. Based on this, access should be provided from 108th not Tualatin Road.

Lam’s proposed entrance on Tualatin Road fails four of the new driveway approach criteria in TDC 75.020.5: "(d)(ii) Takes access from the lowest classification of street abutting the property … (g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

Tualatin Development Code 75.140.15 (a) grants the specific locations for Lam's three driveways on the north side of Leveton Drive. The applicant's proposal to relocate one of the three driveways is not compliant with the development code.

No matter which way you slice it, Tualatin Road is the worst option for carrying Lam's new entrance and additional traffic volume. We ask the City Manager to use her discretion and require access from the most appropriate road which, by any metric, is Leveton Drive.

PROPOSED TRAFFIC SIGNAL

The proposed entrance on Tualatin Road would create the need for a new traffic signal on Tualatin Road which would have many negative impacts on the community. These impacts justify rejection of the proposed access. If Lam were to take access from Leveton Drive, no new traffic signal would be needed.

The community provided overwhelming feedback during the TSP update this summer about this issue and we asked that the proposed traffic signal be removed from the TSP. The city should take this feedback into account and "Conduct the planning process with adequate input and feedback from citizens in each affected neighborhood" (TCP 2040 Goal 8.7)

CONSIDER SAFETY

The Tualatin TSP Existing Conditions Report shows Tualatin Road and 115th Ave having higher Pedestrian Level of Traffic Stress than Leveton Drive and 108th Ave. (Figure 23) Adding more traffic to Tualatin Road and 115th Ave will degrade pedestrian safety even further.

Tualatin Road between 124th and 115th has higher concentration of collisions than Leveton and 108th, with a history of serious injury collision while Leveton does not. (Figure 31) Adding more traffic onto Tualatin Road and 115th will increase the traffic exposure and likely result in worse safety outcomes.

Tualatin Road has a history of collisions involving pedestrians and bicycles while Leveton and 108th do not. (Figure 32) Adding more traffic to Tualatin Road will likely make this safety issue worse.

Converting a driveway to full access or signalizing a driveway would likely increase traffic crashes. Per CMF ClearingHouse, changing driveway type to full access has a crash modification factor (CMF) of 2.25, and signalizing a driveway has a CMF of 3.98, which means that the two measures will likely increase traffic crashes by a factor of 2.25 and 3.98 respectively.

Lam's traffic study also does not identify the locations of school bus routes at Hazelbrook Middle School or the potential impacts to school bus traffic. Student safety

is one of the most important issues in our community, but so far it has been ignored in this process.

Also, the safety and congestion impacts from Lam's proposal would be most concentrated on Tualatin Road between 115th and 124th which abuts a residential area with traditionally disadvantaged demographics and income limited apartments. This is not equitable.

BYPASS ROUTE

The route from Hazelbrook Road going west and turning right onto Hwy 99W is a "hidden" route that can bypass the traffic congestion at the west end of Tualatin Road. Adding a signal at 115th and Tualatin Road will encourage more cars to take this bypass. The potential impact of this new traffic pattern imposes significant safety concerns to communities all along the route. These impacts were not addressed in the traffic study.

SUMMARY

We urge the city to consider all the above concerns and require the applicant (Lam) to revise their site development plan accordingly. We believe that the current proposal does not meet Tualatin's planning rules, and that the City Manager should use her authority to bring Lam's proposal into compliance. No new roadway access on Tualatin Road.

Thank You.

Rosemarie Drake-Baumann

From: Ryan Parker <ryanparker2985@gmail.com>

Sent: Thursday, November 21, 2024 9:00 AM

To: Ext - Planning

Subject: Tualatin Road

Dear Tualatin City Council and Tualatin Planning Department:

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!

From: Sherilyn Lombos
Sent: Wednesday, September 11, 2024 6:50 AM
To: Ext - Planning; Mike McCarthy; Steve Koper; Kim McMillan
Subject: FW: Please Use Leveton Drive. Save Tualatin Road.

Sherilyn Lombos
City Manager
Phone: 503.691.3010

-----Original Message-----
From: Samantha Flores <samantha.r.flores@gmail.com>
Sent: Tuesday, September 10, 2024 8:49 PM
To: Council <council@tualatin.gov>
Subject: Please Use Leveton Drive. Save Tualatin Road.

Hello,

My family and I live on 11380 SW Apalachee St and use Tualatin Road everyday. We strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to many residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing our neighborhood needs is a more cars cutting around the traffic light daily and endangering our kids playing outside. Our neighbors kids and soon my 1 year old son will be playing outside our home and cars will be coming in front of our house (114th & Apalachee) cutting across the traffic light endangering them. Please don't allow that when a better alternative to more traffic on Tualatin Road and the surrounding side streets already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Please Use Leveton Drive

A concerned Tualatin Resident and Mother of a 1 year old -Samantha Flores-Peña

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Sent from my iPhone

From: Sara Miele <saramiele101@gmail.com>
Sent: Wednesday, October 30, 2024 11:27 AM
To: Council; Ext - Planning
Subject: Save Tualatin Road

Dear Tualatin City Council and Tualatin Planning Department:

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!

Sincerely,

Sara (A resident & homeowner of the Riverpark neighborhood)

From: Sean Begley <begleysm@gmail.com>
Sent: Tuesday, October 29, 2024 12:41 PM
To: Council; Ext - Planning
Subject: Save Tualatin Road

Dear Tualatin City Council and Tualatin Planning Department:

I oppose Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to many residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!

--
Sean Michael Begley

From: Shari Henry <sharihenry@outlook.com>
Sent: Monday, September 9, 2024 10:50 PM
To: Council; Ext - Planning
Subject: Save Tualatin Road

To: Tualatin City Council: council@tualatin.gov
To: Tualatin Planning Department: planning@tualatin.gov

Dear Tualatin City Council and Tualatin Planning Department:

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!

- Shari Henry

From: Sonia Mann <soniajmann@gmail.com>
Sent: Wednesday, August 21, 2024 5:27 PM
To: Ext - Planning
Subject: Lam Proposal - Tualatin Road

To All Planning Commission Members,

My name is Sonia Mann. I live at 11100 SW Apalachee Street, Tualatin 97062. My back yard directly faces Tualatin Rd. I vehemently oppose Lam Research's proposal to widen and create a bigger entrance for vehicles going to and from Lam on Tualatin Rd and the traffic lights they want to install there. There is Leveton Drive, an industrial road which is extremely underused, why doesn't Lam build a bigger entrance there? The traffic noise in my back yard can be deafening at times, and the proposed Lam entrance will funnel more traffic into Tualatin Rd which is already a main vein and has become busier since we moved into the area over four years ago. Further, Lam's proposed traffic lights will funnel traffic directly through my neighborhood as drivers try and circumvent the traffic light.

The only way I would agree to Lam's proposal is if they paid to put thick and tall noise barriers all along Tualatin Road and stop signs at each street intersecting with Tualatin Road. Until then, I vehemently oppose Lam's proposal and think that it is horrendous they did not consult with the neighborhood more about it.

Kind Regards,

Sonia Mann

From: Stephanie Griffith <stephgriffith12@gmail.com>
Sent: Wednesday, October 30, 2024 4:56 PM
To: Council; Ext - Planning
Subject: Tualatin Road should not be for Truck Traffic!!

Dear Tualatin City Council and Tualatin Planning Department:

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Wasn't the purpose of building Leveton and 124th to ease the traffic in downtown Tualatin? Wasn't the purpose to provide a bypass for truck traffic (and other cars) who just want to get to the freeway from 99? Those roads are large and able to handle large trucks and lots of traffic. Tualatin Road is not. It makes no sense to route truck traffic on a residential road that was not meant for that number of cars.

My elderly mom lives in the condo complex across from the Police Department, and walks daily through all parts of Tualatin, including Tualatin Road. This would make her route unsafe due to the increase in cars/trucks, and the noise would be terrible. Please reconsider this plan and do not allow LAM to use Tualatin Road as their new entrance!

Use Leveton Drive. Save Tualatin Road!

Thank You!

Stephanie Griffith

Tualatin resident/homeowner since 2003

From: Keith Leonard
Sent: Tuesday, December 17, 2024 4:23 PM
To: Keith Leonard
Subject: FW: Protect Tualatin Road

-----Original Message-----
From: Stephanie <stephimelton@gmail.com>
Sent: Monday, December 16, 2024 8:26 AM
To: Council <council@tualatin.gov>; Ext - Planning <Planning@tualatin.gov>; Ext - Engineering Exterrnal Email <engineering@tualatin.gov>
Subject: Protect Tualatin Road

Dear City of Tualatin,

While researching the traffic impacts from Lam's TUX project, members of the community have discovered that Lam's proposal is not compatible with the Tualatin Comprehensive Plan 2040, and it would violate the Tualatin Development Code, both in spirit and letter.

For the reasons outlined below, we are asking the Tualatin Planning Department to consider Lam's proposed entrance on Tualatin Road to not be approvable, and we ask the City Manager to use her authority to have the proposed entrance removed from the TUX project site plan so that alternative access can be designed.

SITE CIRCULATION

Existing driveways provide sufficient access points to the Lam Campus as a whole. Lam currently has 6 other access points. 3 on 108th and 3 on Leveton Drive. Adding a new access point on Tualatin Road is unnecessary.

Lam is responsible for designing reasonable site circulation. A lack of good site circulation is not a valid reason to add an additional driveway onto the street network.

The Tualatin Comprehensive Plan 2040 strongly supports the use of existing access points, rather than creating new ones, especially when a new access point would have negative impacts to the community. "Consider transportation options that make the best use of the existing network" (Goal 8.7)

SPIRIT OF THE LAW

Tualatin Road is currently functioning as an arterial, it was previously classified as an arterial, and it has the traffic volume of an arterial. Leveton Drive is currently functioning as a collector, it was previously classified as a collector, and it has the current traffic volume of a collector.

During the 2012-14 TSP update, the functional classifications of these streets were reversed in a failed attempt by the city to reduce the amount of traffic on Tualatin Road and encourage more trips to use Leveton Drive. While we appreciate the intent of this reversal, the impact is now exactly opposite of what was intended, and we ask that this reversal be deemed a mistake. We ask the city to remedy this mistake by restoring the correct functional classifications to their appropriate streets. Lam should not be

allowed to rely on a classification error to put a new entrance on a road that, based on current conditions, should not have a new entrance.

If the streets were classified correctly, Lam Research would not be able to add an employee entrance on Tualatin Road because it would be an arterial. “No new driveways or streets on arterial roadways within the City, except where noted in the TDC, usually when no alternative access is available.” (TCP 2040 POLICY 8.10.1)

LETTER OF THE LAW

The Tualatin Development Code says “Lots that front on more than one street may be required to locate motor vehicle accesses on the street with the lower functional classification as determined by the City Manager.” TDC 75.040 (5) Currently the TSP shows 108th classified as a minor collector and Tualatin Road a major collector. Based on this, access should be provided from 108th not Tualatin Road.

Lam’s proposed entrance on Tualatin Road fails four of the new driveway approach criteria in TDC 75.020.5: "(d)(ii) Takes access from the lowest classification of street abutting the property … (g) The proposed driveway approach does not result in significant adverse impacts to the vicinity; (h) The proposed driveway approach minimizes impact to the functionality of adjacent streets and intersections; and (i) The proposed driveway approach balances the adverse impacts to residentially zoned property and the functionality of adjacent streets."

Tualatin Development Code 75.140.15 (a) grants the specific locations for Lam's three driveways on the north side of Leveton Drive. The applicant's proposal to relocate one of the three driveways is not compliant with the development code.

No matter which way you slice it, Tualatin Road is the worst option for carrying Lam’s new entrance and additional traffic volume. We ask the City Manager to use her discretion and require access from the most appropriate road which, by any metric, is Leveton Drive.

PROPOSED TRAFFIC SIGNAL

The proposed entrance on Tualatin Road would create the need for a new traffic signal on Tualatin Road which would have many negative impacts on the community. These impacts justify rejection of the proposed access. If Lam were to take access from Leveton Drive, no new traffic signal would be needed.

The community provided overwhelming feedback during the TSP update this summer about this issue and we asked that the proposed traffic signal be removed from the TSP. The city should take this feedback into account and "Conduct the planning process with adequate input and feedback from citizens in each affected neighborhood” (TCP 2040 Goal 8.7)

CONSIDER SAFETY

The Tualatin TSP Existing Conditions Report shows Tualatin Road and 115th Ave having higher Pedestrian Level of Traffic Stress than Leveton Drive and 108th Ave. (Figure 23) Adding more traffic to Tualatin Road and 115th Ave will degrade pedestrian safety even further.

Tualatin Road between 124th and 115th has higher concentration of collisions than Leveton and 108th, with a history of serious injury collision while Leveton does not. (Figure 31) Adding more traffic onto Tualatin Road and 115th will increase the traffic exposure and likely result in worse safety outcomes.

Tualatin Road has a history of collisions involving pedestrians and bicycles while Leveton and 108th do not. (Figure 32) Adding more traffic to Tualatin Road will likely make this safety issue worse.

Converting a driveway to full access or signalizing a driveway would likely increase traffic crashes. Per CMF ClearingHouse, changing driveway type to full access has a crash modification factor (CMF) of 2.25, and signalizing a driveway has a CMF of 3.98, which means that the two measures will likely increase traffic crashes by a factor of 2.25 and 3.98 respectively.

Lam's traffic study also does not identify the locations of school bus routes at Hazelbrook Middle School or the potential impacts to school bus traffic. Student safety is one of the most important issues in our community, but so far it has been ignored in this process.

Also, the safety and congestion impacts from Lam's proposal would be most concentrated on Tualatin Road between 115th and 124th which abuts a residential area with traditionally disadvantaged demographics and income limited apartments. This is not equitable.

BYPASS ROUTE

The route from Hazelbrook Road going west and turning right onto Hwy 99W is a "hidden" route that can bypass the traffic congestion at the west end of Tualatin Road. Adding a signal at 115th and Tualatin Road will encourage more cars to take this bypass. The potential impact of this new traffic pattern imposes significant safety concerns to communities all along the route. These impacts were not addressed in the traffic study.

SUMMARY

We urge the city to consider all the above concerns and require the applicant (Lam) to revise their site development plan accordingly. We believe that the current proposal does not meet Tualatin's planning rules, and that the City Manager should use her authority to bring Lam's proposal into compliance. No new roadway access on Tualatin Road.

Thank You.

Stephanie Melton

Resident of Fox Run Neighborhood

From: Steve Koper
Sent: Monday, September 9, 2024 8:58 AM
To: Keith Leonard
Subject: FW: Lam Research LUX Proposal

From: Frank Bubenik <fbubenik@tualatin.gov>
Sent: Thursday, August 15, 2024 9:55 AM
To: Steve <sntitus@gmail.com>; Council <council@tualatin.gov>
Subject: Re: Lam Research LUX Proposal

Steve,

Thanks for your email and for sharing your thoughts at city council this week.

The Lam proposal will not come to council, just ARB. As this development conforms with the existing use and zoning, no council review is required.

The CIO land use officers attend regularly scheduled land use officer meetings with the city and they are kept informed of development. Rocky Bixby is Riverpark's land use officer. As you mention the Riverpark CIO's purpose is to get the word out to residents and gather opinions/recommendations that they then share with the city.

Our traffic folks are working with Lam on the 115th and Tualatin Road intersection to create ways to minimize traffic on 115th and Tualatin Road. City staff is working with Lam to protect neighborhood livability. I live in the area, as you know, and want to make sure Tualatin Road does not become congested/overwhelmed.

Just a FYI that you may already know - The city's 1,000 foot notice requirement (which expands to include boundaries of sub-divisions that are within the 1,000 foot), is 10x the requirement in the state and most cities (100 foot).

Lam has had their required neighborhood meeting and has talked about having a follow -up, but nothing is scheduled as of yet. If they have it, the CIO and concerned residents need to be ready to attend.

I am regularly looking into the progress of this project and pushing for staff and Lam to do right by the neighborhood.

MAYOR
FRANK BUBENIK

Mayor of Tualatin
fbubenik@tualatin.gov
Cell: 971.420.7443

This e-mail, including attachments, is intended for the exclusive use of the addressee and may contain proprietary, confidential, or privileged information. If you are not the intended recipient, any dissemination, use, distribution, or copying is strictly prohibited. If you have received this e-mail in error, please notify me via return e-mail, permanently delete the original message, and destroy all copies.

From: Steve <sntitus@gmail.com>
Sent: Tuesday, August 13, 2024 9:35 AM
To: Council <council@tualatin.gov>; Sherilyn Lombos <slombos@tualatin.gov>
Subject: Lam Research LUX Proposal

Council members:

Thank you for continuing to provide the Public Comment period during the City Council Meetings. The traffic along Tualatin Road is only going to increase when Lam Building G is finished and the LUX project is finished. Additionally there will be more pressure on the Leviton Area roads when the current 6 or 7 industrial sites, currently in process or recently finished, come online.

I expect that the current proposal to "improve" the intersection at Tualatin Rd and 115th will ultimately prevail. The Architectural Review Board will hold their required meetings and pass it to the Council. The Council will have two or three public hearings and the project will pass. After all we need the local jobs and you need the taxes from the additional Assessed Valuation.

I'm not a fan of the implementation of the residential CIO program as it provides no active two-way communication between the residents and Council or City Departments. That said, I would like to see the City go the extra mile in communication to Riverpark CIO on this project.

If for nothing else, to go above and beyond to communicate with the residents will give you additional "talking points" to fall back on against a ground swell of opposition as well as explicitly satisfying State of Oregon, Goal 1: Citizen Involvement requirements.

Thank you,

Stephen Titus
sntitus@gmail.com

From: Steve Sethi <stevesethi@gmail.com>
Sent: Wednesday, August 21, 2024 8:28 PM
To: Ext - Planning; Council
Subject: Lam proposal for Tualatin Rd

Hello,

I'm writing as a resident of Shasta Trail for the last 19 years, to express my opposition to the Lam Research proposal to add a truck entrance to Tualatin Road. This is a residential street with access for thousands of Tualatin residents, and the alteration of the Lam commercial access point would negatively impact traffic and quality of life.

I appreciate that Tualatin has had a business friendly approach to city government, and I have no opposition to Lam building new facilities that expand jobs in the area. However, this is a mixed use neighborhood and the city needs to better balance livability in a way that prioritizes families. Lam has the opportunity to use Leveton Drive for trucks and commercial vehicles and should avoid adding traffic to Tualatin Road.

I have not engaged in local politics and generally appreciate the professional and minimally invasive approach the city takes, but if this proposal goes through I will hold council members accountable at the next election.

Best regards,
Steve Sethi
503.484.4243

From: Yahoo Mail <kikigoodwin@yahoo.com>
Sent: Saturday, September 7, 2024 8:16 PM
To: Ext - Planning
Subject: NO! to Lam entrance on Tualatin Rd/115th

I am strongly opposed to Lam Research adding a new entrance on Tualatin Road at SW 115th Avenue. Tualatin Road provides the main access to our residential neighborhoods and is already overloaded with cut-through commuter traffic. Leveton Drive, on the other hand, was built for industrial traffic and has plenty of unused capacity already available.

Lam currently has a driveway that connects Leveton Drive straight to the parking lots on the north side of their campus, but the proposed site expansion would eliminate that driveway. This is unacceptable. Lam's new site plan needs to include a usable driveway that connects their main parking lots directly to Leveton Drive.

The last thing Tualatin Road needs is a thousand more cars per day, especially when a better alternative already exists. We are asking the City Council and City Staff to get creative and find a solution to this problem that does not involve adding more traffic to Tualatin Road.

Use Leveton Drive. Save Tualatin Road.

Thank You!

The Goodwin's
On Pueblo Ct
Tualatin

From: Comcast <ba53@comcast.net>
Sent: Monday, November 18, 2024 9:11 AM
To: Keith Leonard
Subject: Re: SAVE Tualatin Road

Good Morning Keith.

I would also like to have noted on our comments, that both Jurgen and Hazelbrook, also have added school bus traffic. Along with parents dropping off and picking up their children from Hazelbrook School. Thank You, for reviewing our comments.

William and Julie Arata.

Sent from my iPad

> On Nov 18, 2024, at 8:15 AM, Keith Leonard <kleonard@tualatin.gov> wrote:
>
> Dear William Julie Arata,
>
> We have received your comments. I have read over your comment and will forward them to our Engineering Division and supervisors. We take your comments seriously. We will add your comments to the public record for the proposed Lam Research expansion. Thank you for taking part in the public process! Have a good day.
>
> Keith Leonard, AICP
> Associate Planner
> Phone: 503.691.3029
>
> -----Original Message-----
> From: Comcast <ba53@comcast.net>
> Sent: Sunday, November 17, 2024 1:02 PM
> To: Ext - Planning <Planning@tualatin.gov>
> Subject: SAVE Tualatin Road
>
>
> To whom it may concerns:
> My wife and I have lived on the corner of Jurgen and Tawasa Ct for over the past 9 years. And over that time my wife and I have complained to Tualatin Police about people speeding on both Jurgen and Hazelbrook roads, especially between 2:30 and 6:00 pm, when people are getting off work in the surrounding areas. We have asked why isn't the speed limit reduce to 25mph, since it a residential area? And have been told it's a county road(not true). And since there not very many driveways adjacent to these roads it allowed to be 35mph. Also been told an officer that they don't like to give tickets to people that live in the neighborhood(I guess it okay if they speed) Also talk with a motorcycle officer who was on Tualatin Road about using radar on these 2 street, and more less blew me off. So, all that being said, we have received nothing but lip service from the City of Tualatin. Both Jurgen and Hazelbrook roads are long very long stretches of road. And both should be 25mph with speed bumps.

And now there's a chance with added traffic, think about what impact that's going to do on these 2 roads. Hopefully, whoever the person is that reads our comments above. Will take in consideration about the quality of life, along with the safety of our neighbor.
> Thank You.
> William and Julie Arata.
> Sent from my IPad
>

From: William Smith <william@thesmithlo.com>
Sent: Saturday, August 24, 2024 9:48 AM
To: Ext - Planning
Subject: Lam Expansion Plan

All Planning Commission Members,
My name is William Smith. I am an attorney who has had an office in Tualatin for over 10 years. I also live in Tualatin, and have lived at my current residence for over 15 years. My back fence runs along Tualatin Road. Tualatin Road has become increasingly busy over the years I have lived here.
With the Lam proposed expansion, Tualatin Road will become even more traveled and congested, and I fear some of these properties, such as mine, will become less and less livable.
There is no need for Lam to have direct access to Tualatin Road. Access for Lam is the entire purpose of Leveton Dr., a road already under-utilized. Please force Lam to utilize Leveton Dr, and maintain, if not increase, the berm between Lam and Tualatin Road.
Thank you,
William E. Smith

--
William E. Smith
Attorney

The Smith Law Office, P.C.
7945 SW Mohawk St.
Tualatin, OR 97062

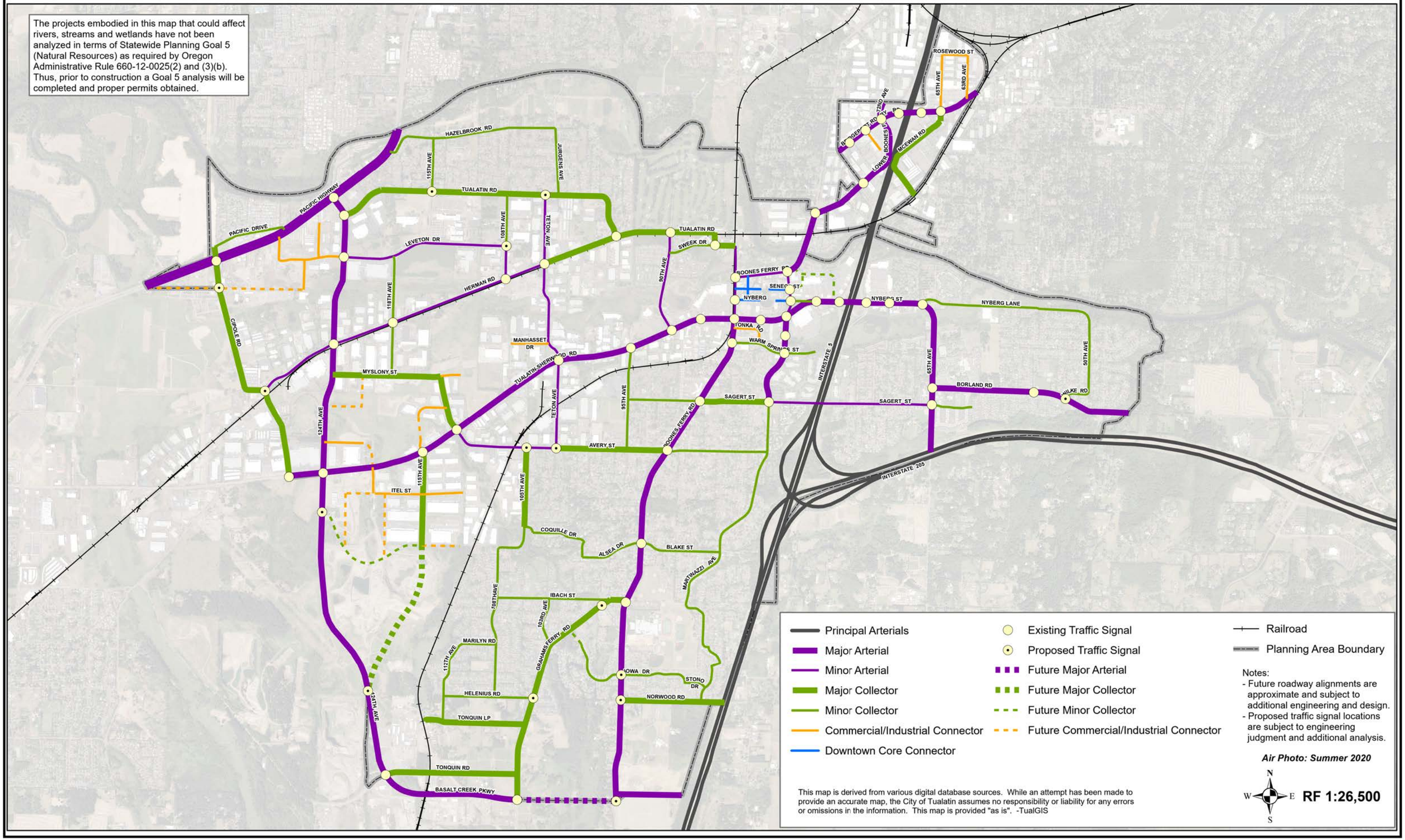
NEW!!! Phone: (503) 855-5806
FAX: (503) 389-1050

NOTE: This e-mail is intended only for the use of the addressee(s) and may contain confidential or privileged information. If you are not the intended recipient, please call me immediately and delete this message. Thank you.

Map 8-1: Functional Classification and Traffic Signal Plan

TUALGIS

The projects embodied in this map that could affect rivers, streams and wetlands have not been analyzed in terms of Statewide Planning Goal 5 (Natural Resources) as required by Oregon Administrative Rule 660-12-0025(2) and (3)(b). Thus, prior to construction a Goal 5 analysis will be completed and proper permits obtained.



- Principal Arterials
- Major Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Commercial/Industrial Connector
- Downtown Core Connector
- Existing Traffic Signal
- Proposed Traffic Signal
- Future Major Arterial
- Future Major Collector
- Future Minor Collector
- Future Commercial/Industrial Connector
- Railroad
- Planning Area Boundary

Notes:
- Future roadway alignments are approximate and subject to additional engineering and design.
- Proposed traffic signal locations are subject to engineering judgment and additional analysis.

Air Photo: Summer 2020

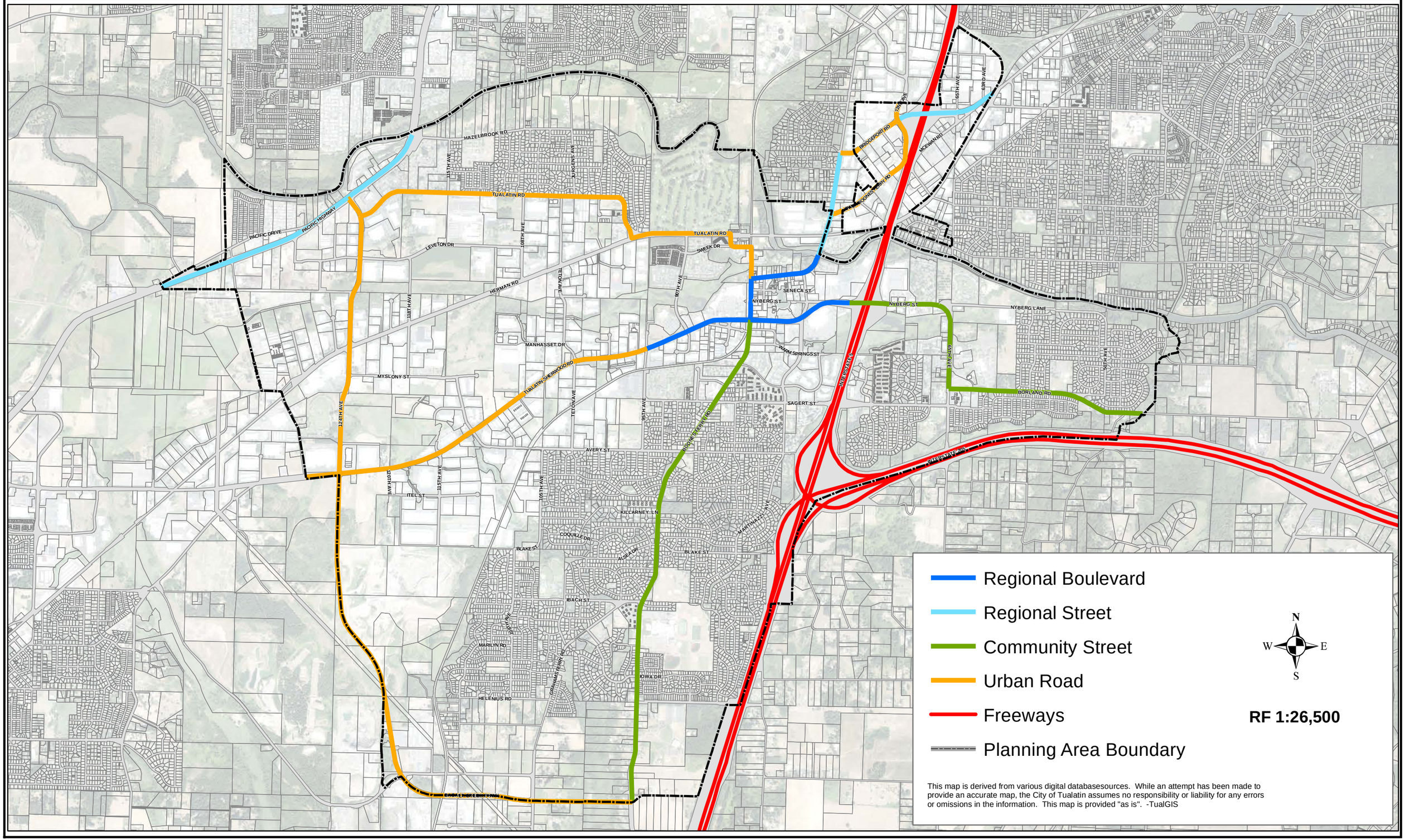
N W E S

RF 1:26,500

This map is derived from various digital database sources. While an attempt has been made to provide an accurate map, the City of Tualatin assumes no responsibility or liability for any errors or omissions in the information. This map is provided "as is". -TualGIS

Map 8-2: Metro Regional Street Design System

TUALGIS



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Map 8-3: Local Street Plan

Local Street Connection

Planning Area Boundary

Air Photo: Summer 2022

Note:
Future roadway alignments are approximate and subject to additional engineering and design.

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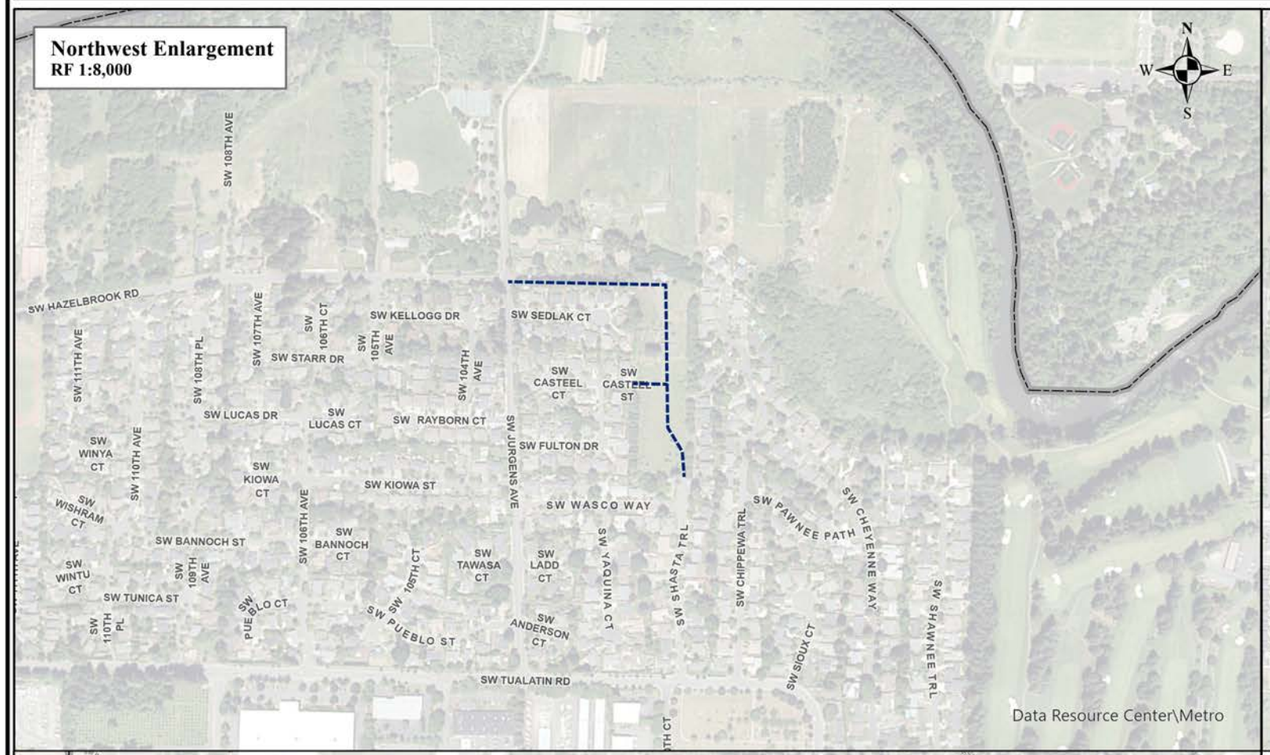
TUALGIS

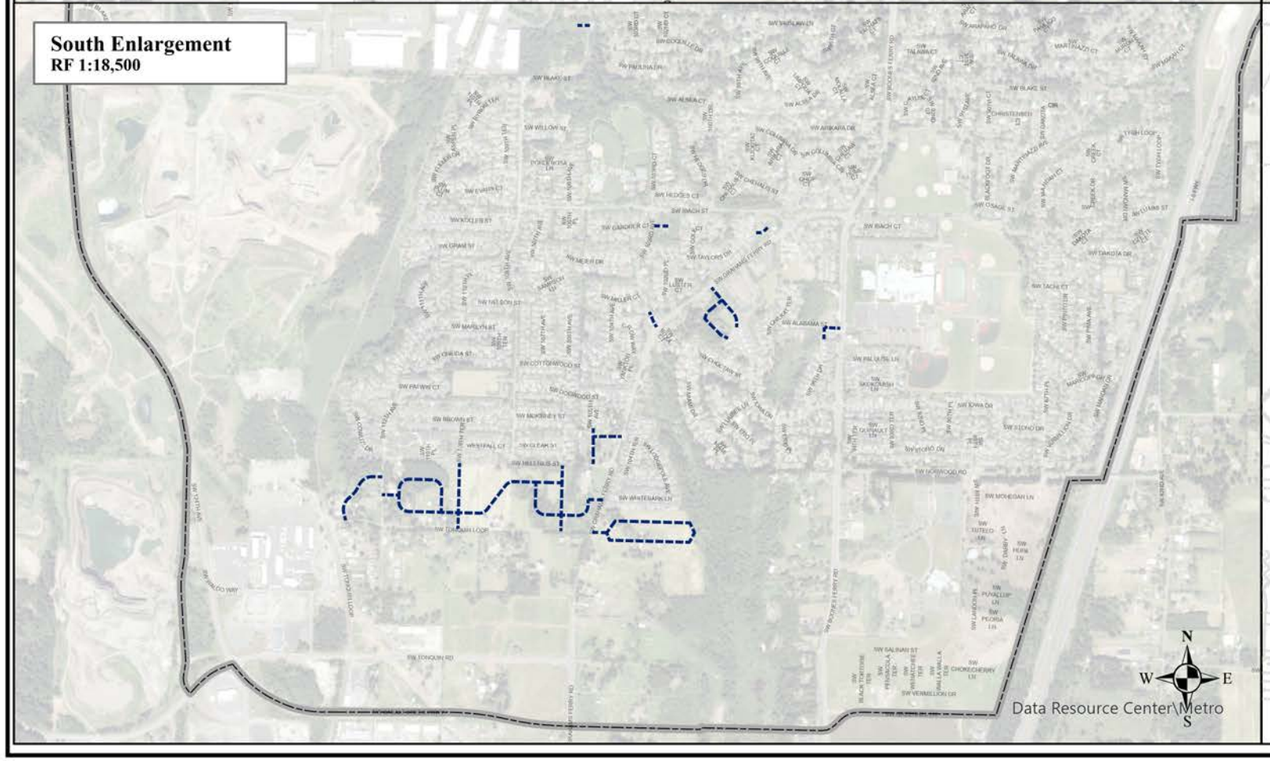
Northwest Enlargement
RF 1:8,000



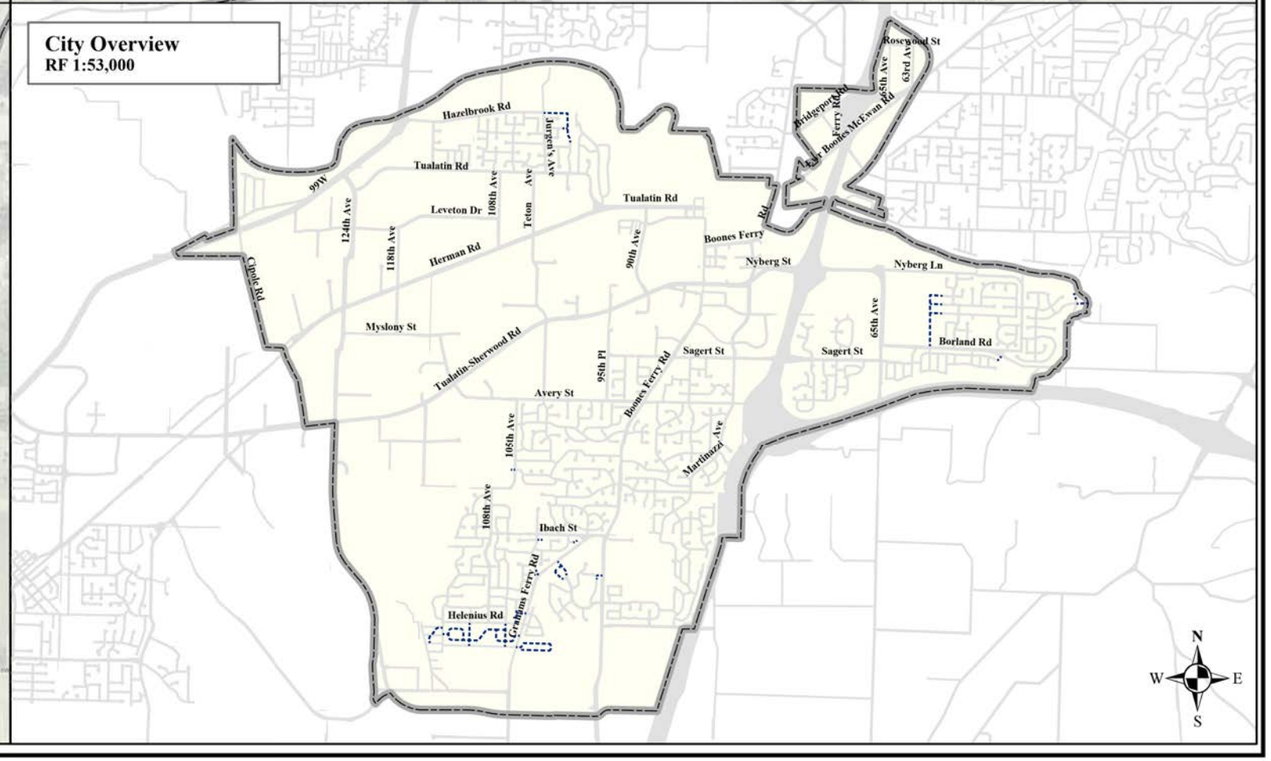
East Enlargement
RF 1:9,000



South Enlargement
RF 1:18,500

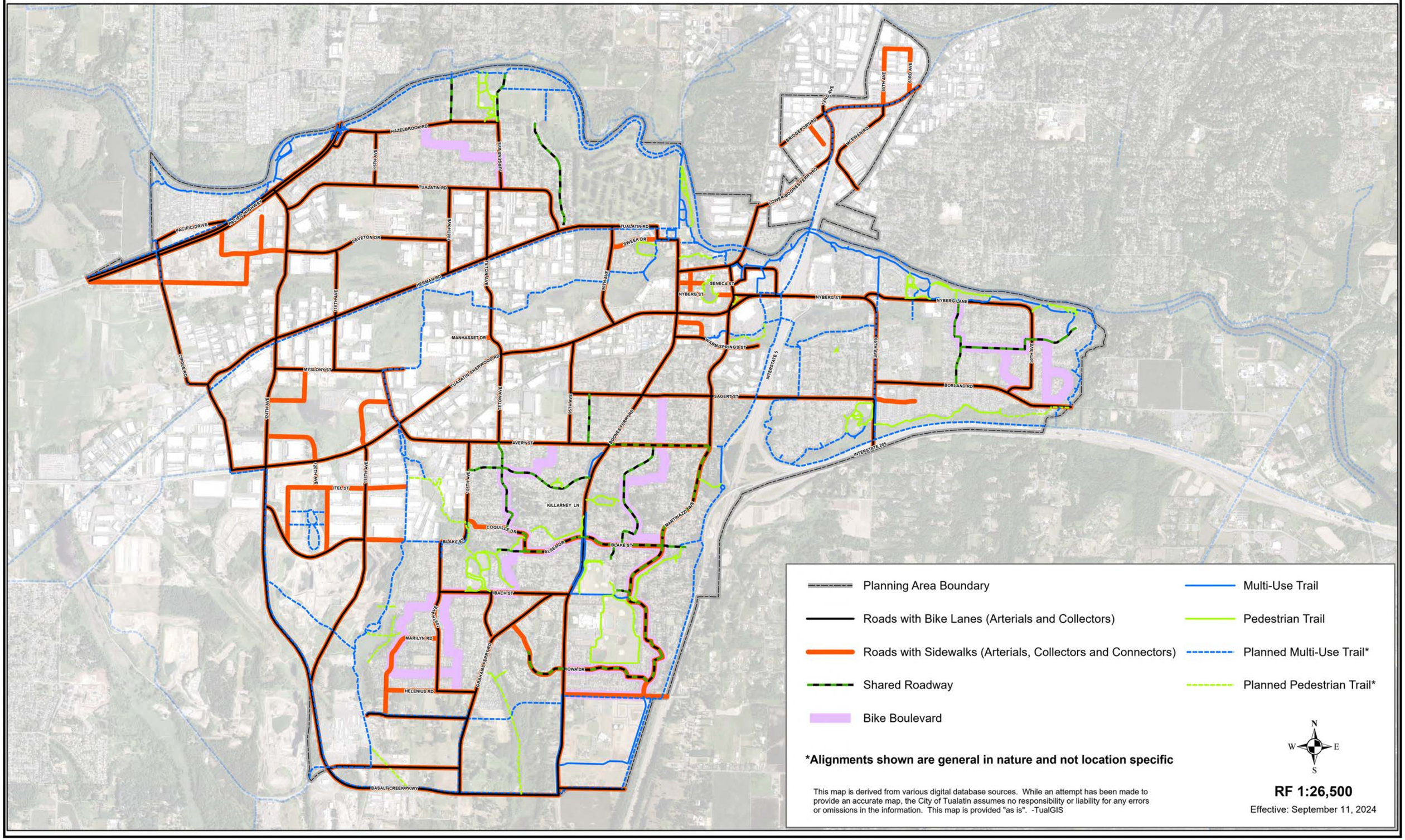


City Overview
RF 1:53,000



Map 8-4: Bicycle and Pedestrian Plan

TUALGIS



- Planning Area Boundary
- Roads with Bike Lanes (Arterials and Collectors)
- Roads with Sidewalks (Arterials, Collectors and Connectors)
- Shared Roadway
- Bike Boulevard
- Multi-Use Trail
- Pedestrian Trail
- Planned Multi-Use Trail*
- Planned Pedestrian Trail*

***Alignments shown are general in nature and not location specific**

This map is derived from various digital database sources. While an attempt has been made to provide an accurate map, the City of Tualatin assumes no responsibility or liability for any errors or omissions in the information. This map is provided "as is". -TualGIS

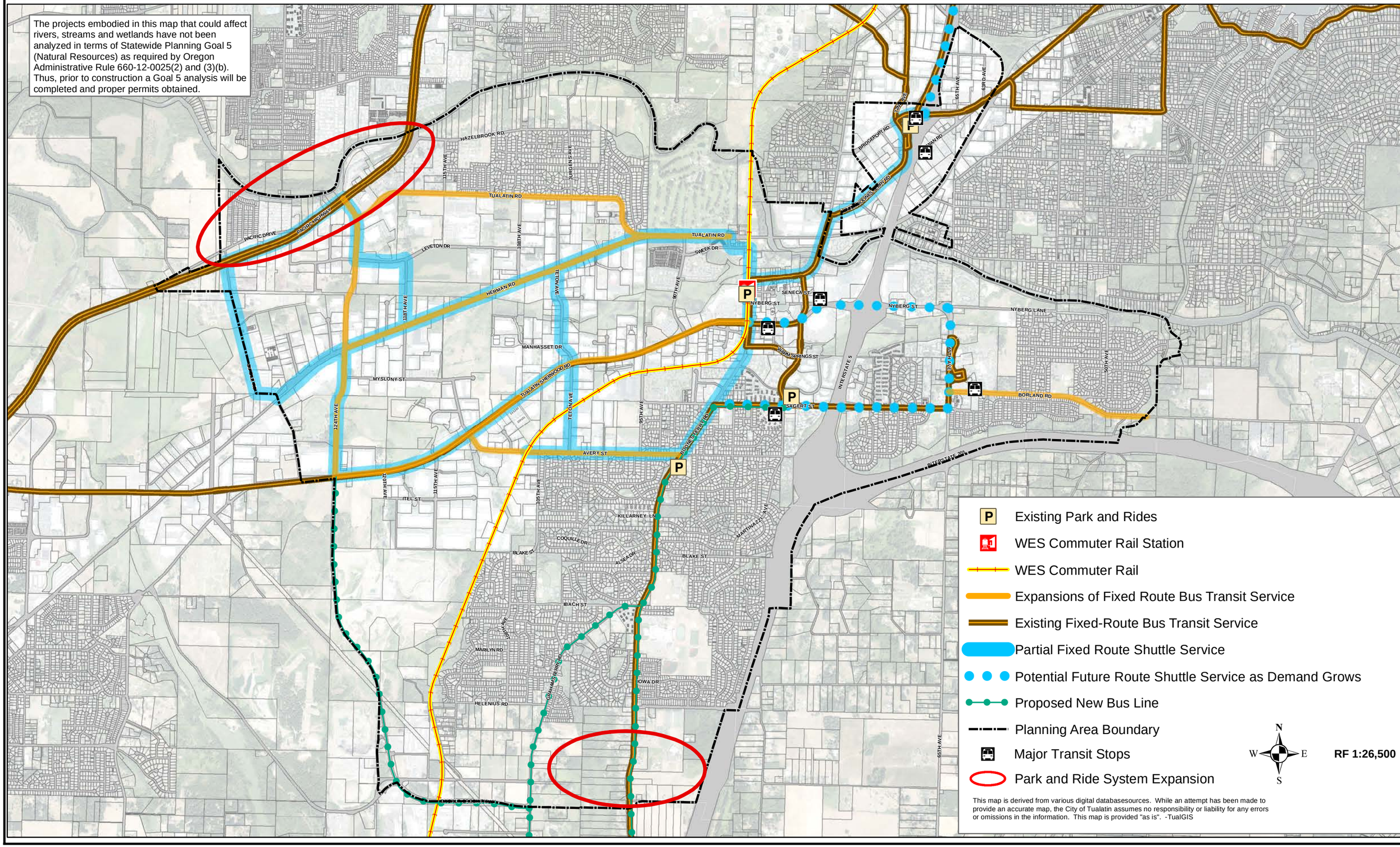
N W E S

RF 1:26,500

Effective: September 11, 2024

Map 8-5: Tualatin Transit Plan

TUALGIS


The projects embodied in this map that could affect rivers, streams and wetlands have not been analyzed in terms of Statewide Planning Goal 5 (Natural Resources) as required by Oregon Administrative Rule 660-12-0025(2) and (3)(b). Thus, prior to construction a Goal 5 analysis will be completed and proper permits obtained.

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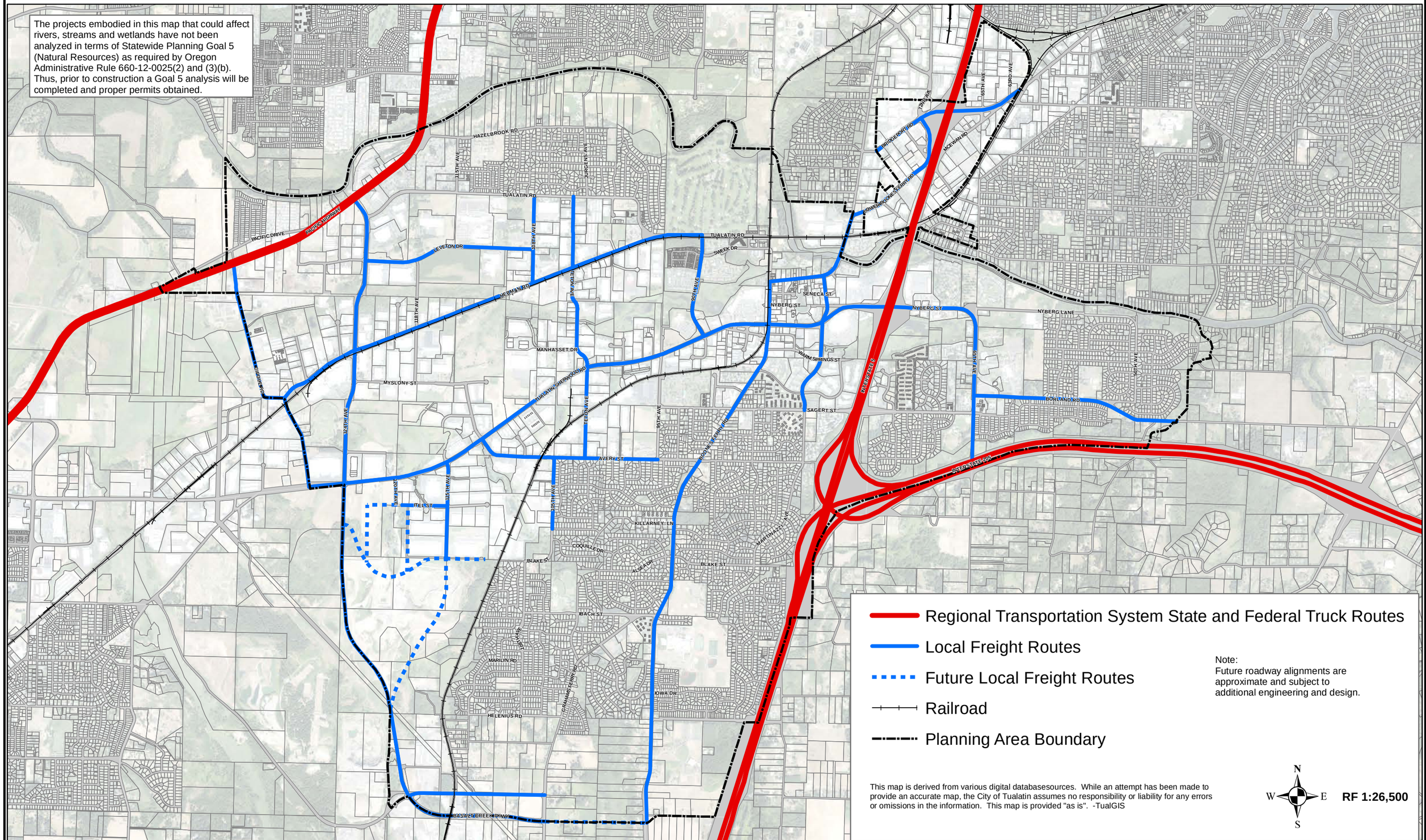
Map 8-6: Freight Routes

TUALGIS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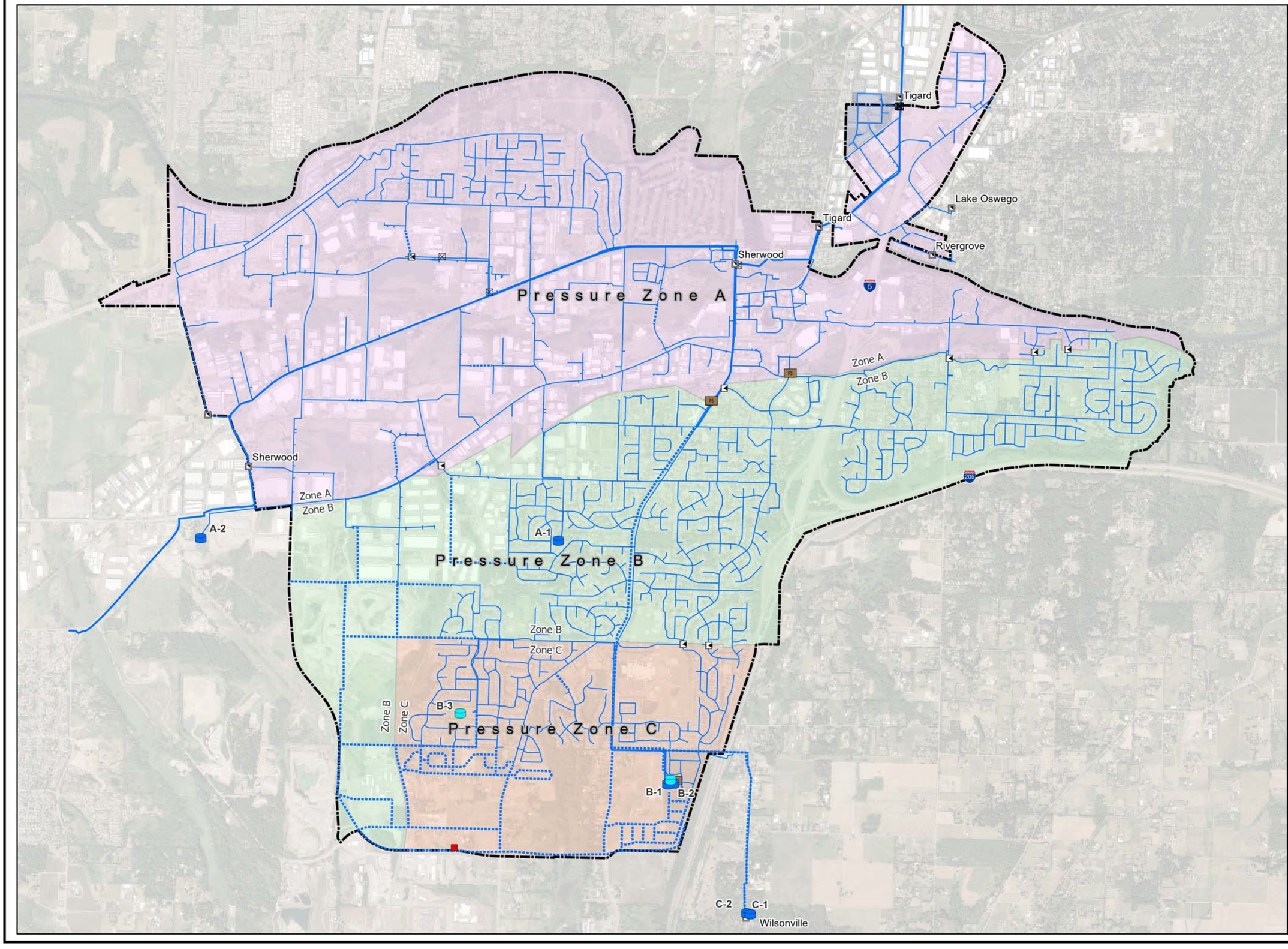
TUALGIS

City of Tualatin
Water System Master Plan

Map 9-1



- Pump Stations
- Pressure Reducing-Sustaining Valve
- Pressure Reducing Valve
- Future Pressure Reducing Valve
- Water System Interties
- Existing Reservoirs
- Future Reservoirs
- Transmission Lines
- Distribution System
- Future System Improvements
- A-Level
- B-Level
- C-Level
- Bridgeport

RF 1:26,500

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TUALGIS

City of Tualatin
Sewer System Master Plan

Map 9-2

- Conceptual Lift Station
- Lift Station
- Gravity Pipe
- Force Main
- Conceptual Gravity Pipe
- Conceptual Force Main
- Planning Area Boundary

RF 1:26,500

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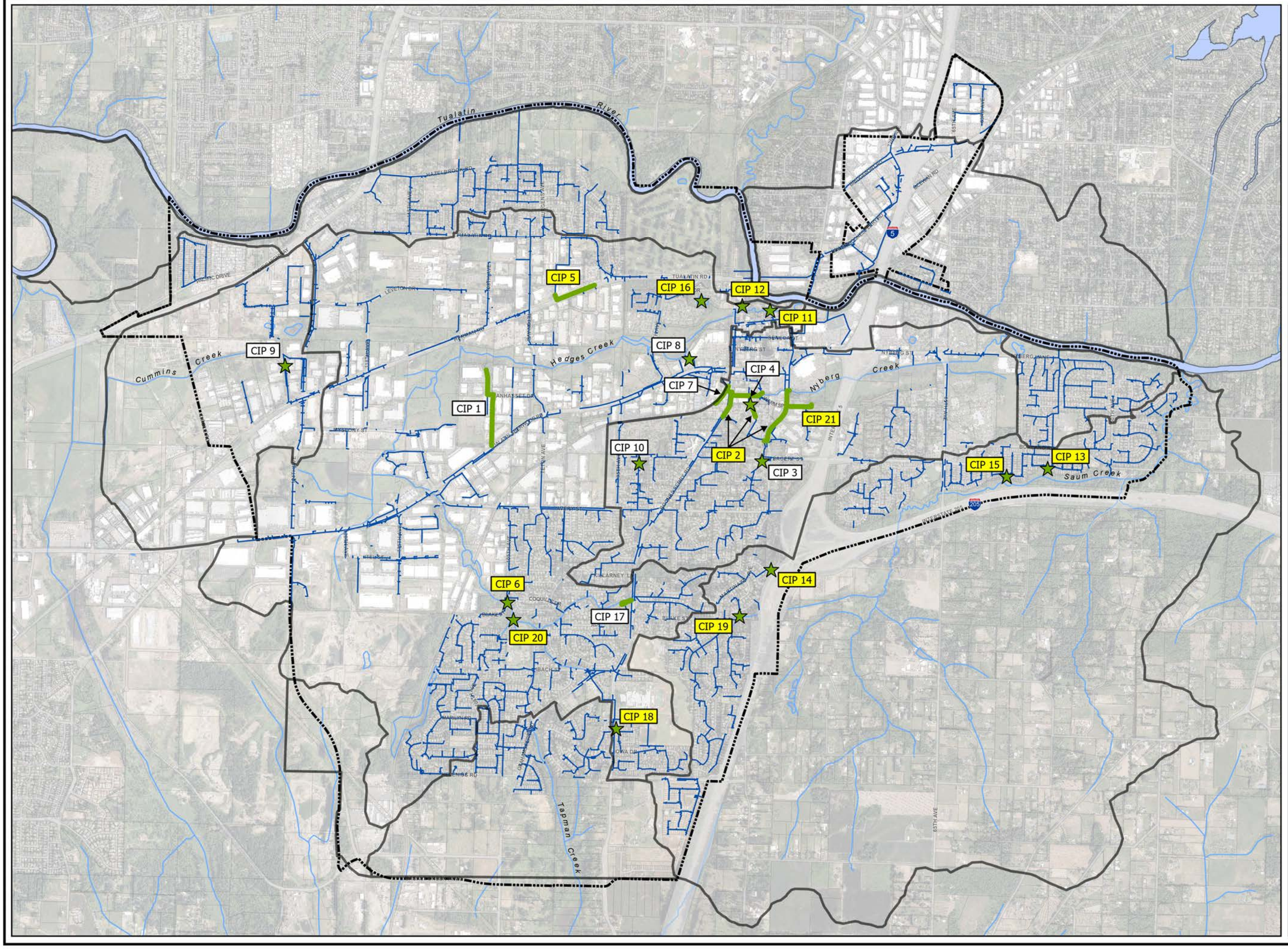
TUALGIS

City of Tualatin
Storm System Master Plan

Map 9-3



- CIP (Conveyance Pipe or Channel)
- CIP (Other)
- Storm Lines
- Major Drainage Basins
- Planning Area Boundary
- Streams

N

RF 1:26,500

Effective: September 11, 2024

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Map 10-1 Comprehensive Plan Map

TUALGIS

Notes:

1. All plan designation boundaries are intended to follow property lines, center lines of streets, or can be scaled pursuant to the scale of this map. If mapping errors occur, the City Council shall be the sole arbitration body to decide the location of boundaries.

2. Specific requirements for each Planning District are found within the Tualatin Development Code.

3. The Wetland Protection District and the Greenway and Riverbank Protection District locations are described in the Tualatin Development Code. Maps of the districts are available from the Planning Department.

4. Properties within the Tualatin Urban Renewal Area boundary are subject to the Tualatin Urban Renewal Plan which may contain specifications and requirements that are more restrictive than those found within the Planning District standards.

N W E S

RF 1:26,500

Residential
- RL Low Density
- RML Medium-Low Density
- RMH Medium-High Density
- RH High Density
- RH/HR High Density/High Rise

Commercial
- CO Office
- CC Central
- CG General
- CN Neighborhood
- CR Recreational
- CO/MR Mid-Rise Office
- MUC Mixed Use
- MC Medical

Manufacturing
- ML Light
- MG General
- MP Park
- MBP Manufacturing Business Park
- BCE Basalt Creek Employment

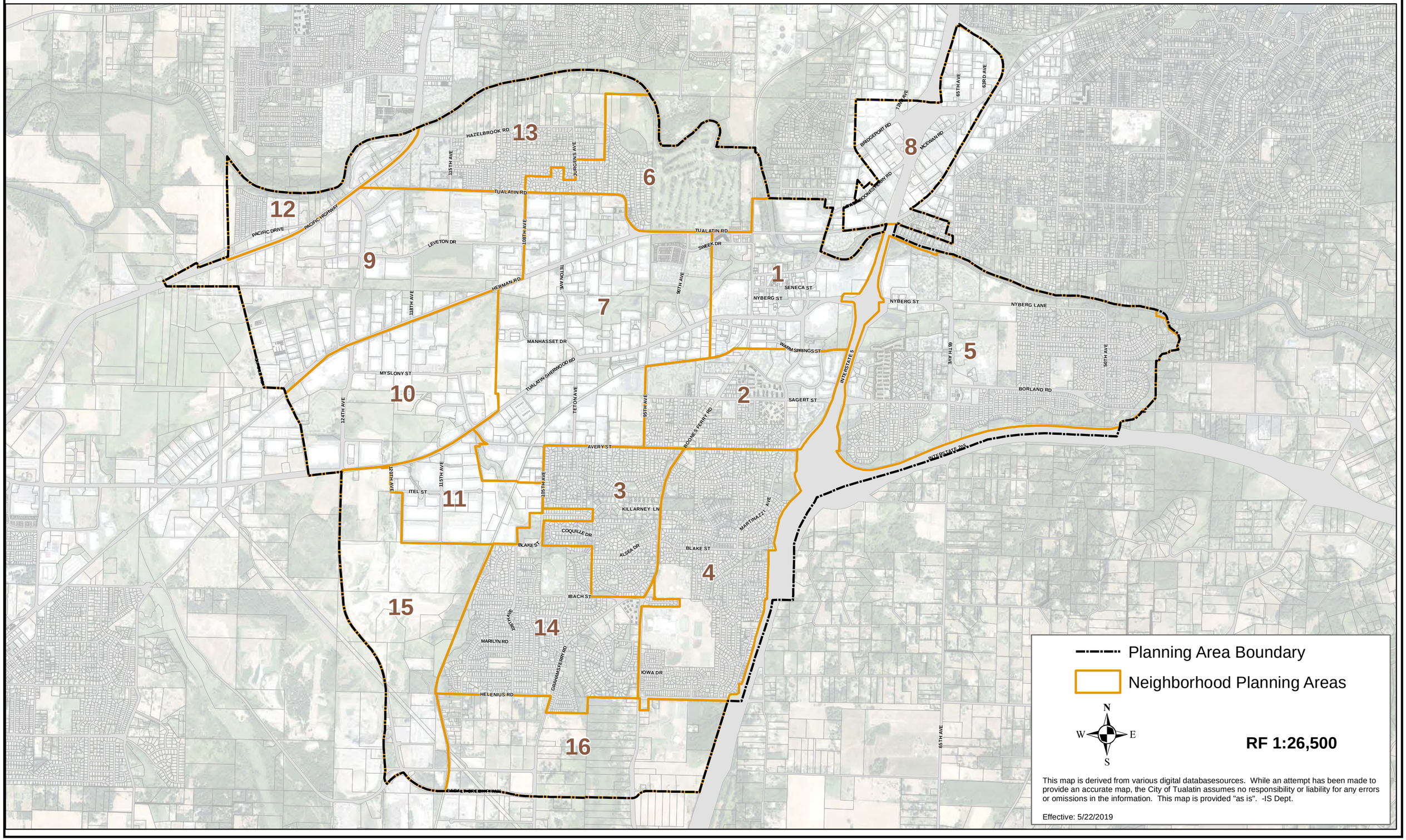
Institutional
- IN Institutional

- Planning Area Boundary
- City of Tualatin
- Mobile Home Parks
- Planning Districts
- In Planning Area/Outside of City

Effective: September 27, 2023

Map 10-2: Neighborhood Planning Areas

TUALGIS



This map is derived from various digital databasesources. While an attempt has been made to provide an accurate map, the City of Tualatin assumes no responsibility or liability for any errors or omissions in the information. This map is provided "as is". -IS Dept.

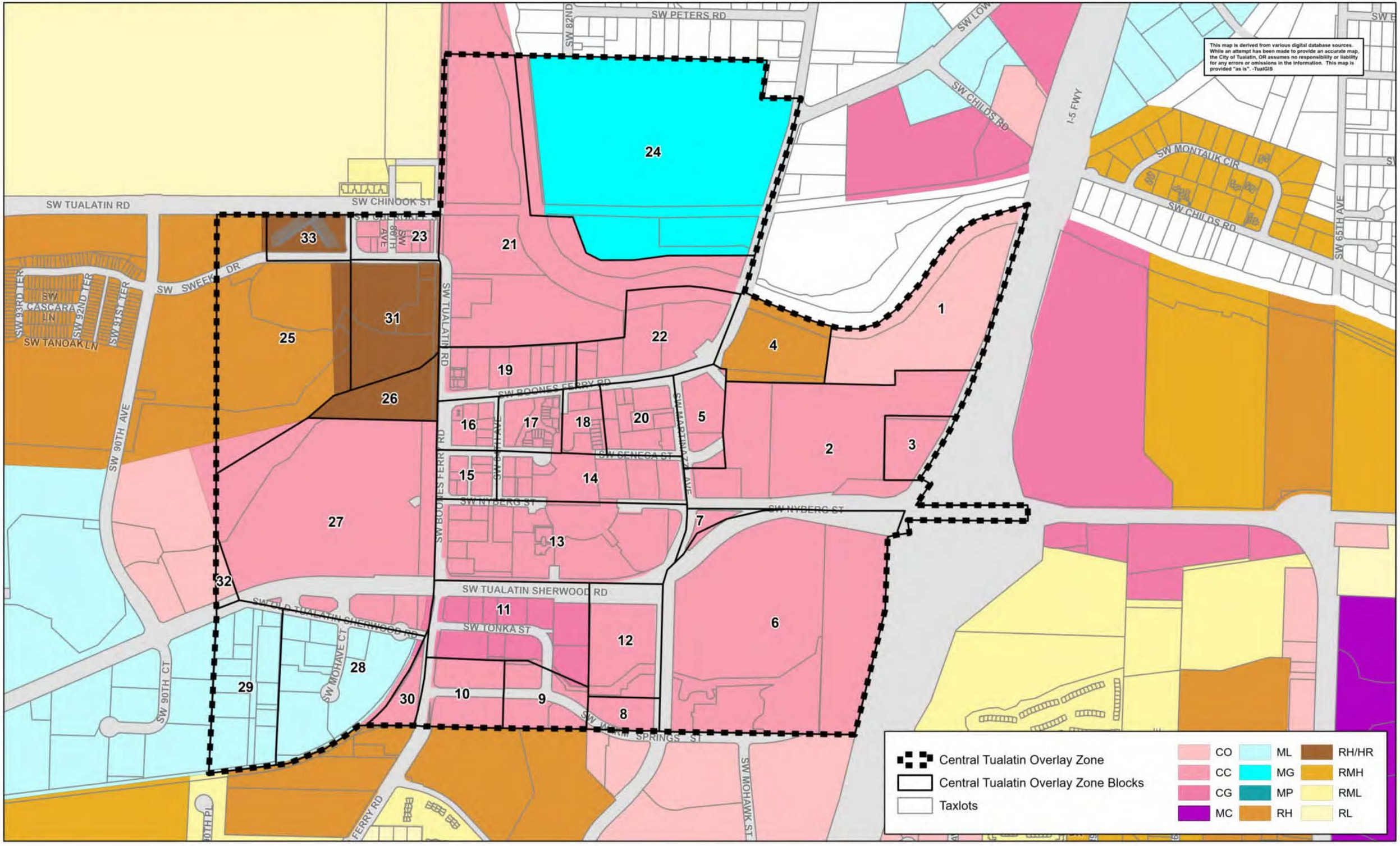
Effective: 5/22/2019

Map 10-3: Central Tualatin Overlay Zone

RF 1:6000

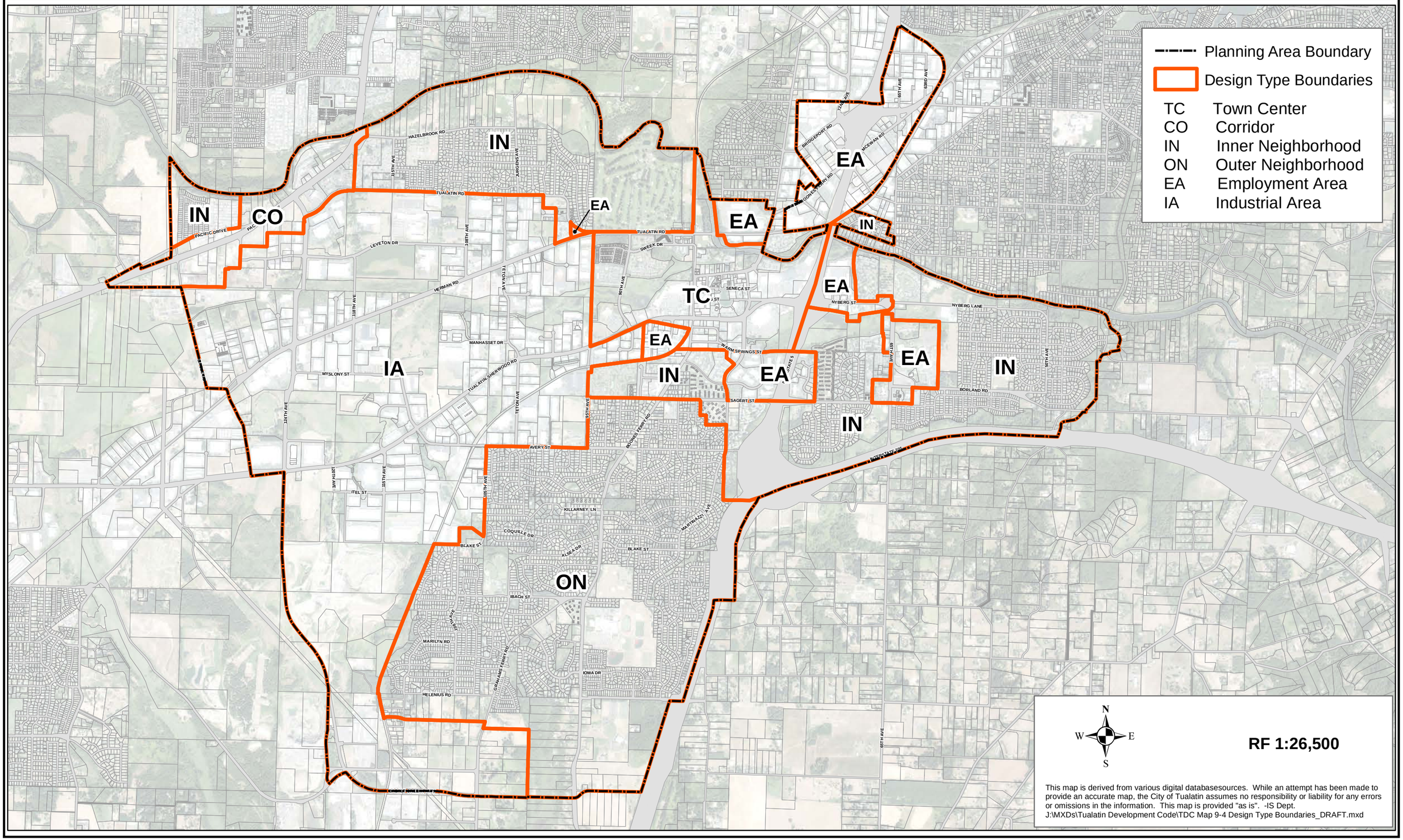
N W E S

TUALGIS



Map 10-4: Design Type Boundaries

TUALGIS



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W E

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RF 1:26,500

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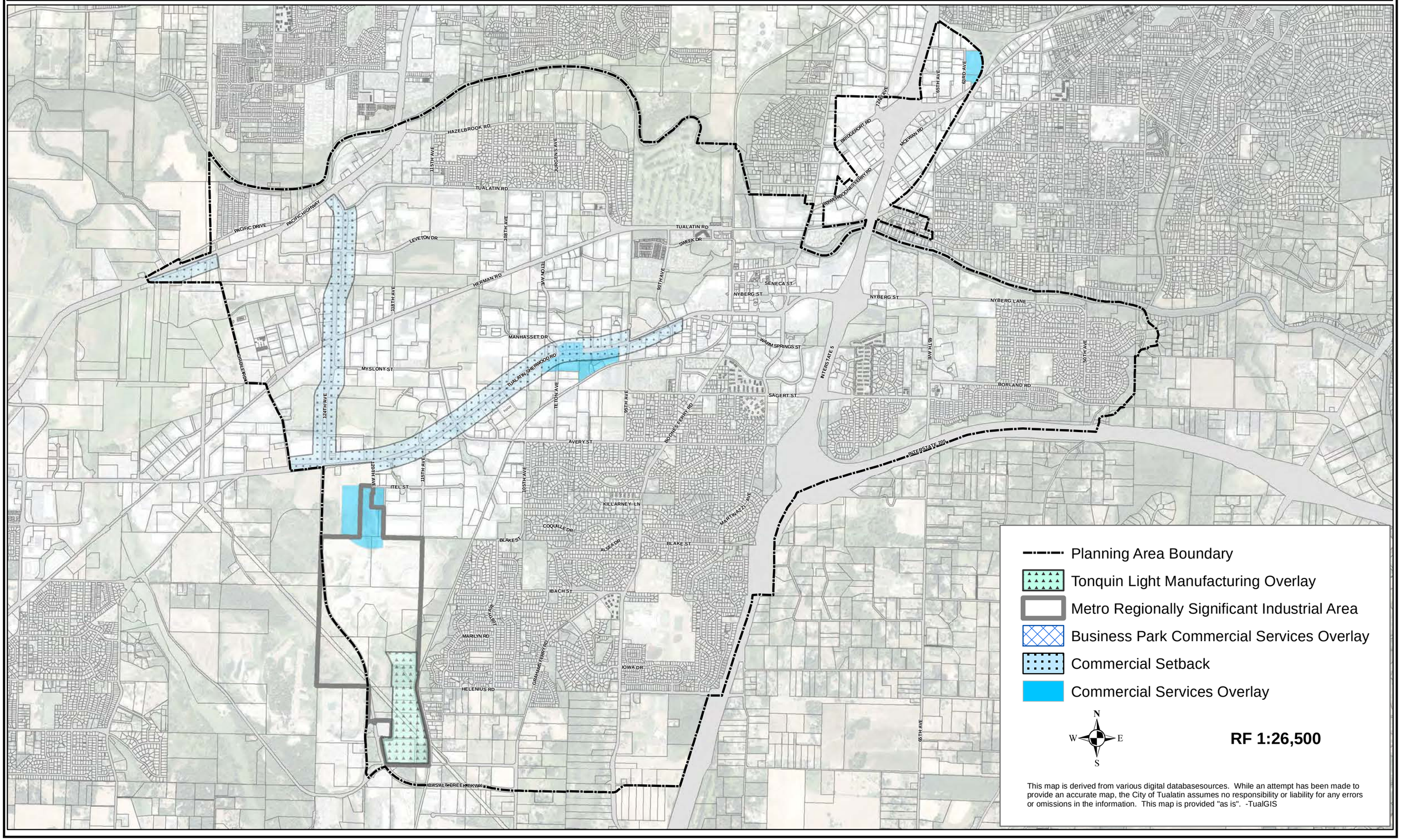
J:\MXDs\Tualatin Development Code\TDC Map 9-4 Design Type Boundaries_DRAFT.mxd

Map 10-5: Commercial Setback & Commercial Services Overlay

TUALGIS



- Planning Area Boundary
- Tonquin Light Manufacturing Overlay
- Metro Regionally Significant Industrial Area
- Business Park Commercial Services Overlay
- Commercial Setback
- Commercial Services Overlay

N
W E
S

RF 1:26,500

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Map 10-6: Conditional Use for Agricultural Animals

TUALGIS

Tualatin River

HAZELBROOK RD

115TH AVE

JURGENS AVE

TUALATIN RD

108TH AVE

LEVETON DR

TETON AVE

HERMAN RD

118TH AVE

90TH AVE

TUALATIN RD

Planning Area Boundary

Agricultural Animals by Conditional Use

N

W E

S

RF 1:9,000

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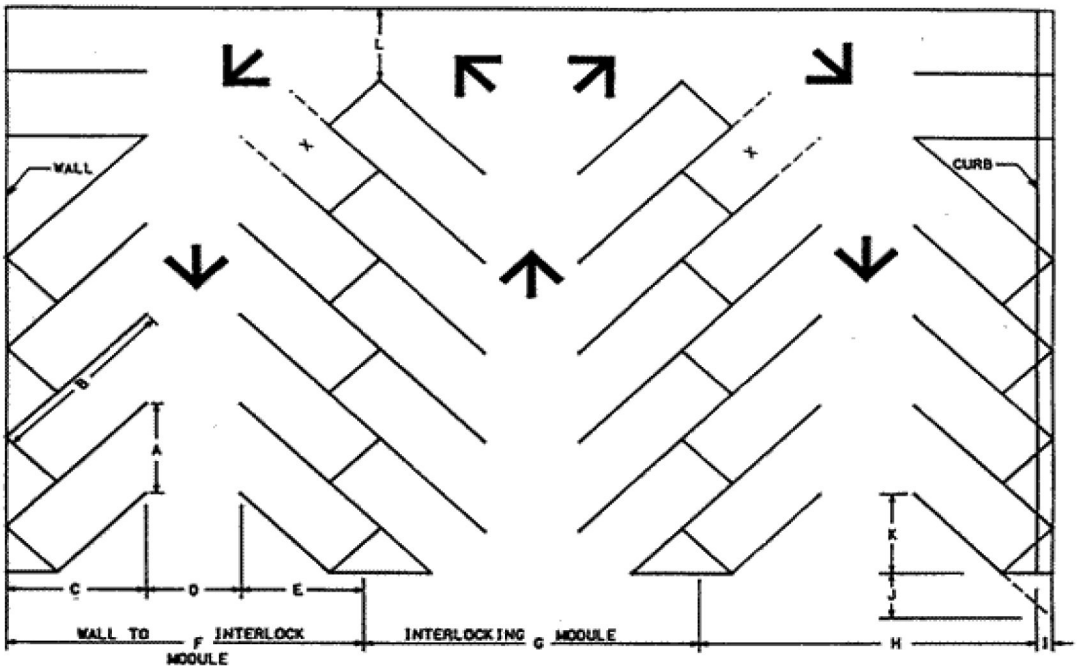
Tualatin Development Code - Figure 73-1
Parking Space Design Standards for 9-Foot Stalls



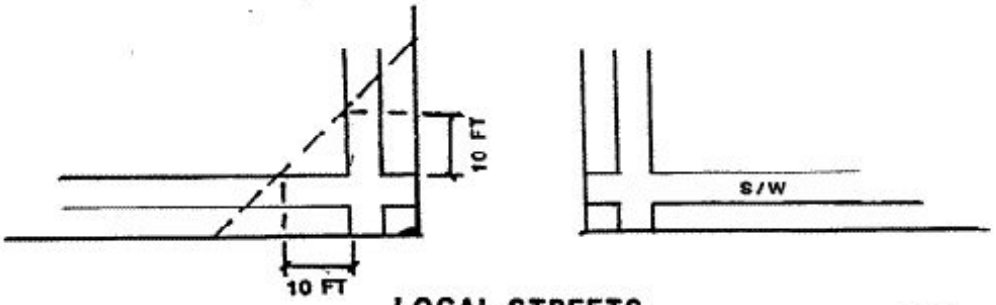
Dimension	On Diagram	45°	60°	75°	90°
Stall width parallel to aisle	A	12.7	10.4	9.3	9.0
Stall Length of line	B	25.0	22.0	20.0	18.5
Stall depth to wall	C	17.5	19.0	19.5	18.5
Aisle width between stall lines	D	12.0	16.0	21.0	24.0
Stall depth, interlock	E	15.3	17.5	18.8	18.5
Module, wall to interlock	F	44.8	52.5	61.3	63.0
Module, interlocking	G	42.6	51.0	61.0	63.0
Module, interlocking to curb face	H	42.8	50.2	58.8	60.5
Bumper overhang (typical)	I	2.0	2.3	2.5	2.5
Offset	J	6.3	2.7	0.5	0.0
Setback	K	11.0	8.3	5.0	0.0
Cross aisle, one-way	L	12.0	12.0	12.0	12.0
Cross aisle, two way	-	22.0	22.0	22.0	22.0

X = Stall not accessible in some cases.

Parking Dimensions for Subcompact Parking	45°	60°	75°	90°
Stall Width	7.5	7.5	7.5	7.7
Aisle Width per Stall	10.5	8.7	7.8	7.5
Depth of Stalls at right angle to aisle	16.0	16.7	16.3	15.0
Aisle Width	11.0	14.0	17.4	20.0
Wall-to-Wall module	43.0	47.4	50.0	50.0

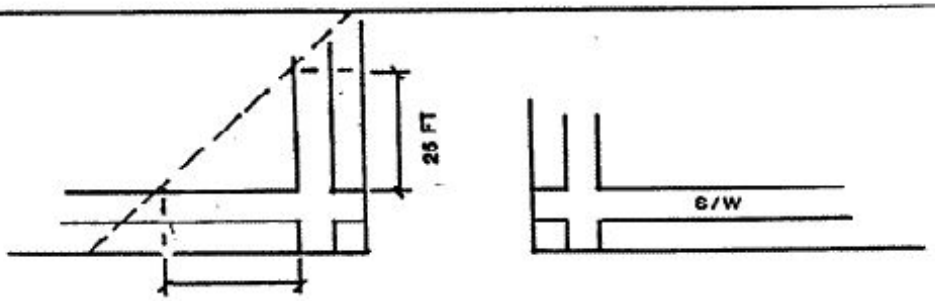
Note: These measurements are inadequate for average compacts. Each stall depth should be increased about 1 foot (2 feet total for the module) to accommodate for the usual range of compact sizes.

VISION CLEARANCE AREA

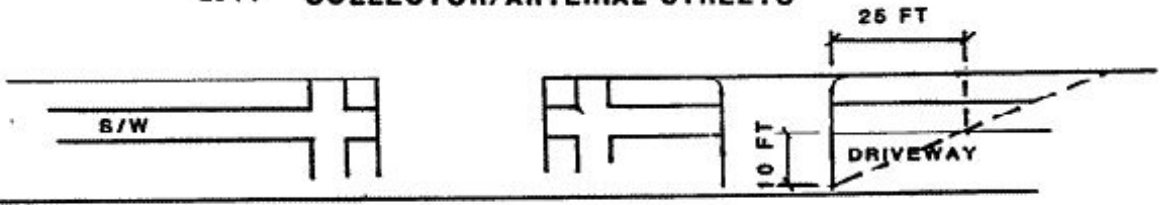


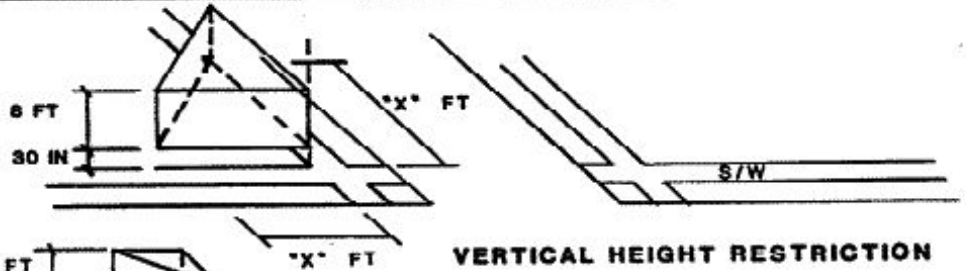
LOCAL STREETS



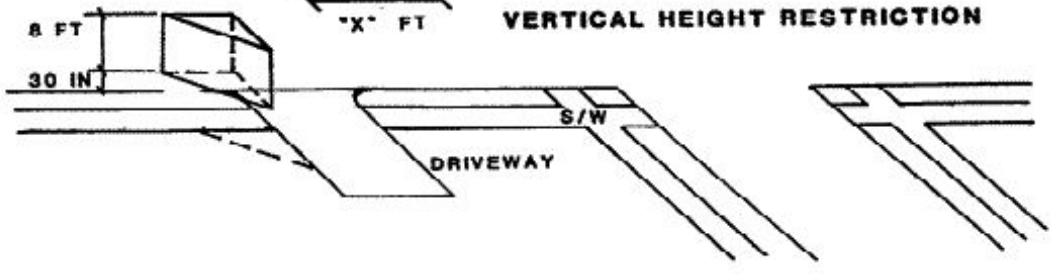


COLLECTOR/ARTERIAL STREETS





VERTICAL HEIGHT RESTRICTION



Map 8-1: Functional Classification and Traffic Signal Plan

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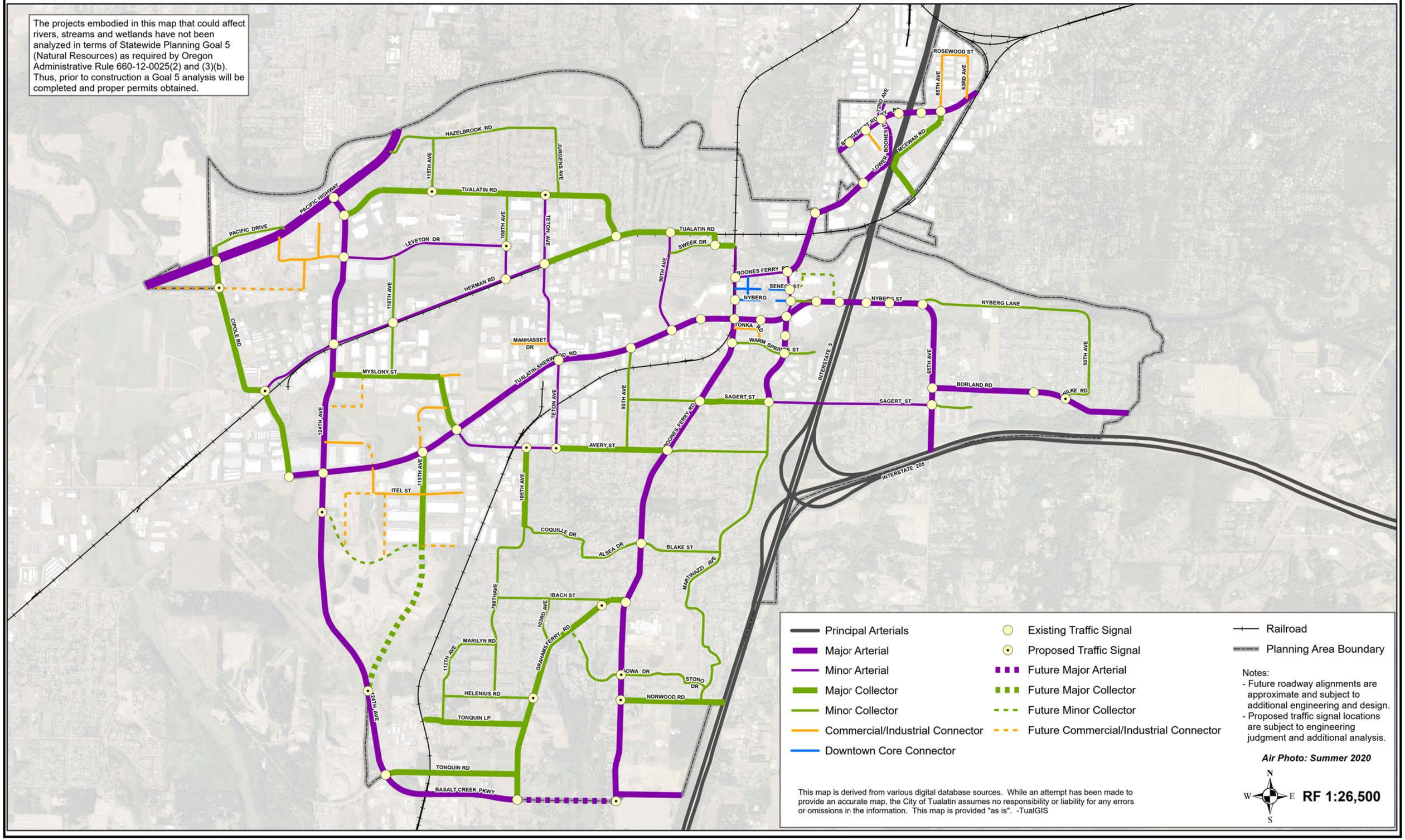

- Principal Arterials
- Major Arterial
- Minor Arterial
- Major Collector
- Minor Collector
- Commercial/Industrial Connector
- Downtown Core Connector
- Existing Traffic Signal
- Proposed Traffic Signal
- Future Major Arterial
- Future Major Collector
- Future Minor Collector
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- Railroad
- Planning Area Boundary

Notes:
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- Proposed traffic signal locations are subject to engineering judgment and additional analysis.

Air Photo: Summer 2020

N W E S

RF 1:26,500

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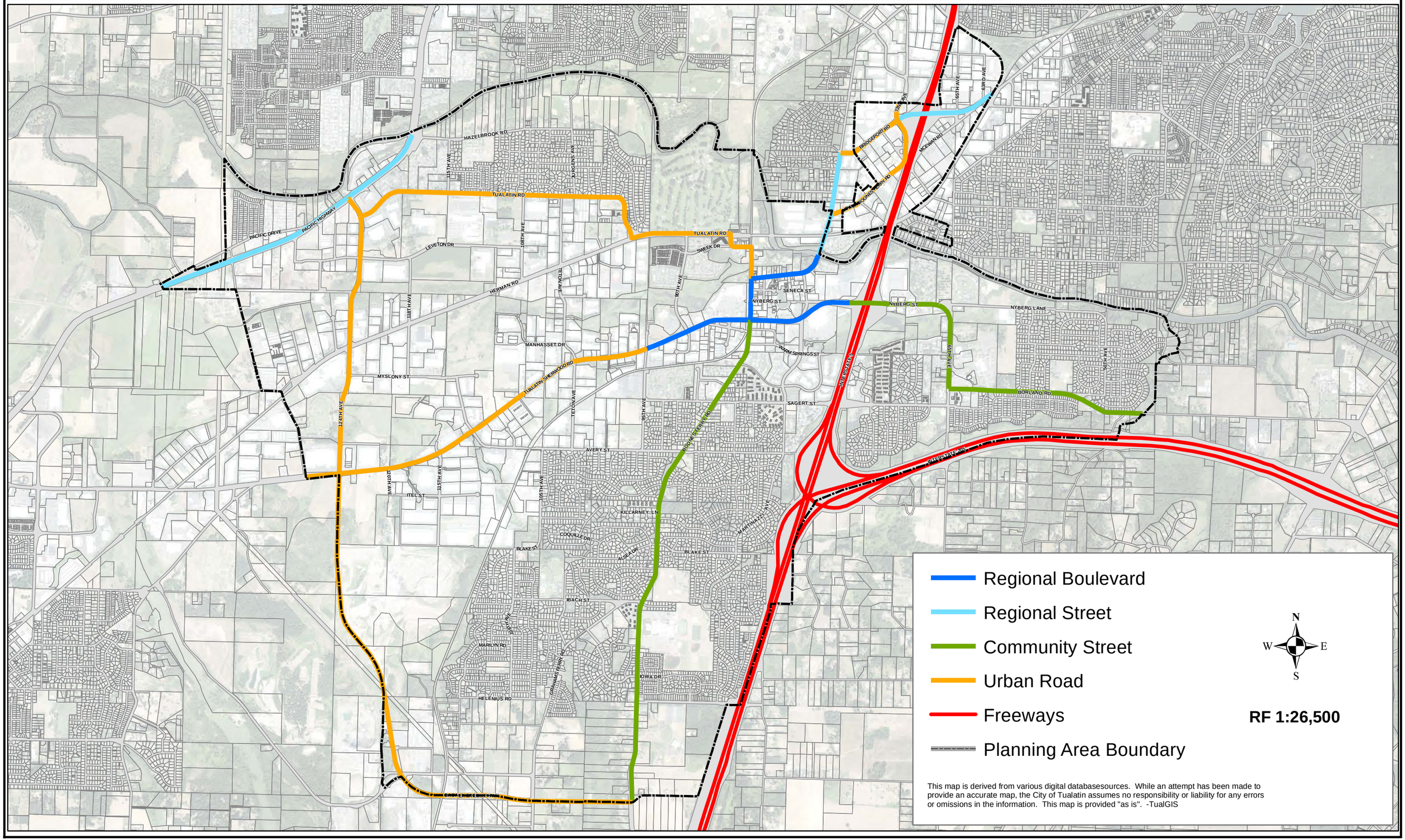
Map 8-2: Metro Regional Street Design System

TUALGIS



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Map 8-3: Local Street Plan

Local Street Connection

Planning Area Boundary

Air Photo: Summer 2022

Note:
Future roadway alignments are approximate and subject to additional engineering and design.

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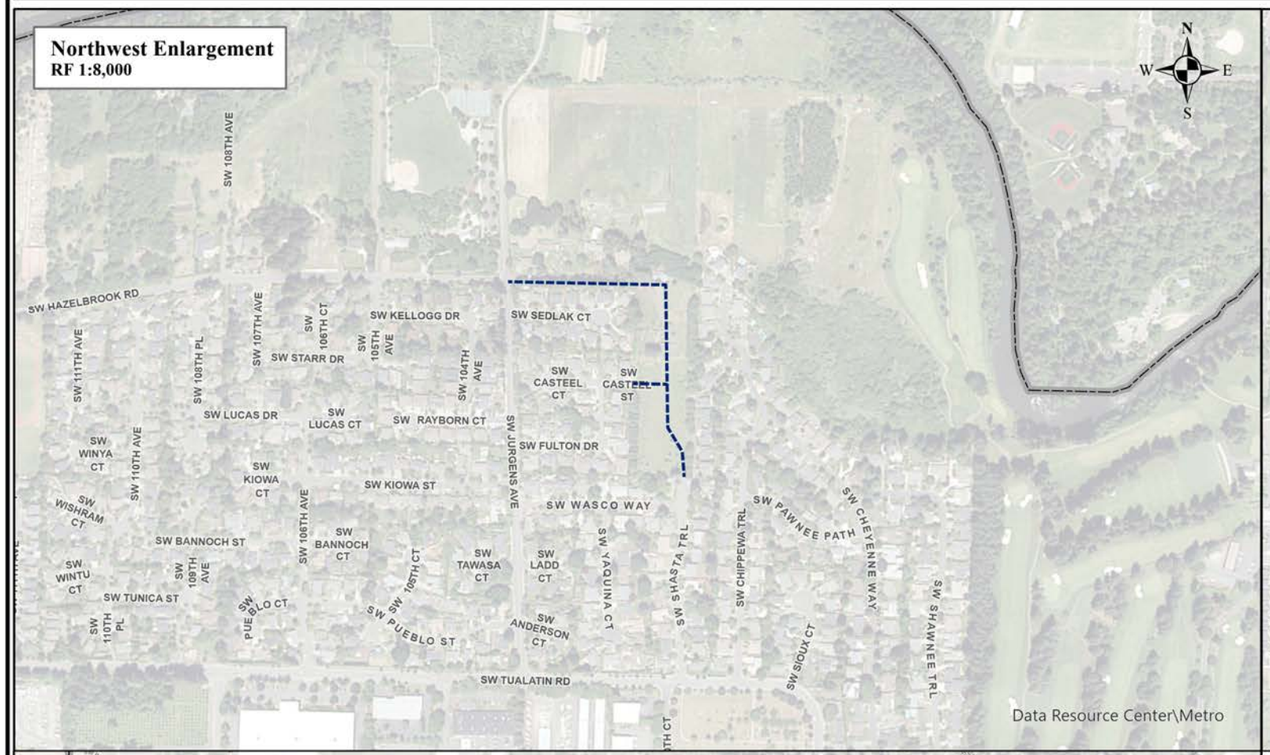
TUALGIS

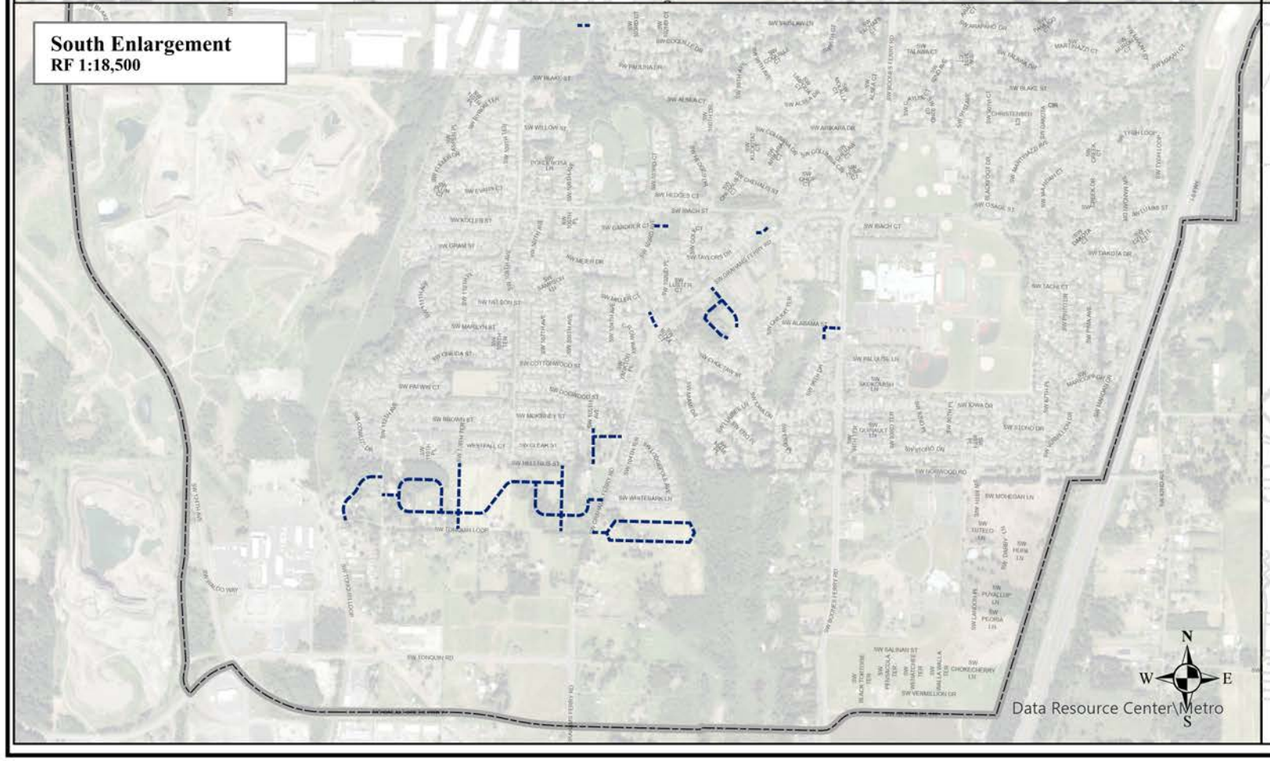
Northwest Enlargement
RF 1:8,000



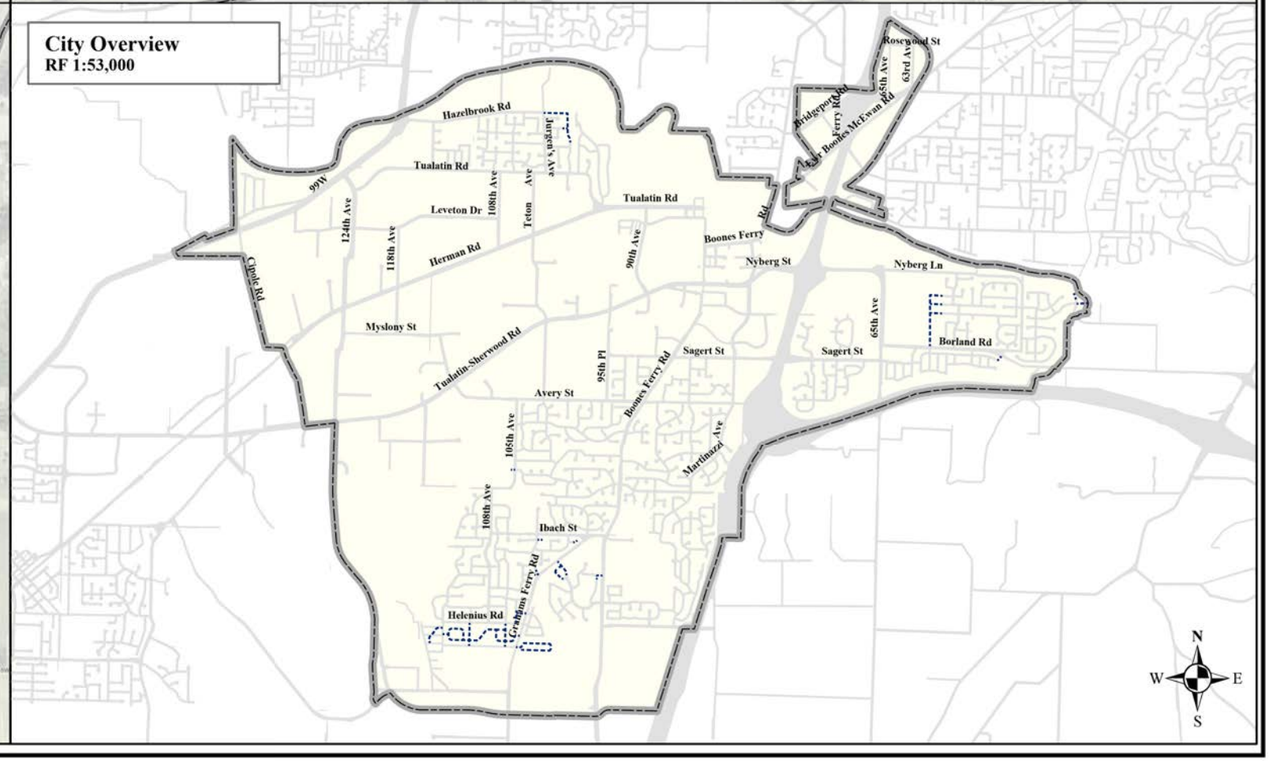
East Enlargement
RF 1:9,000



South Enlargement
RF 1:18,500

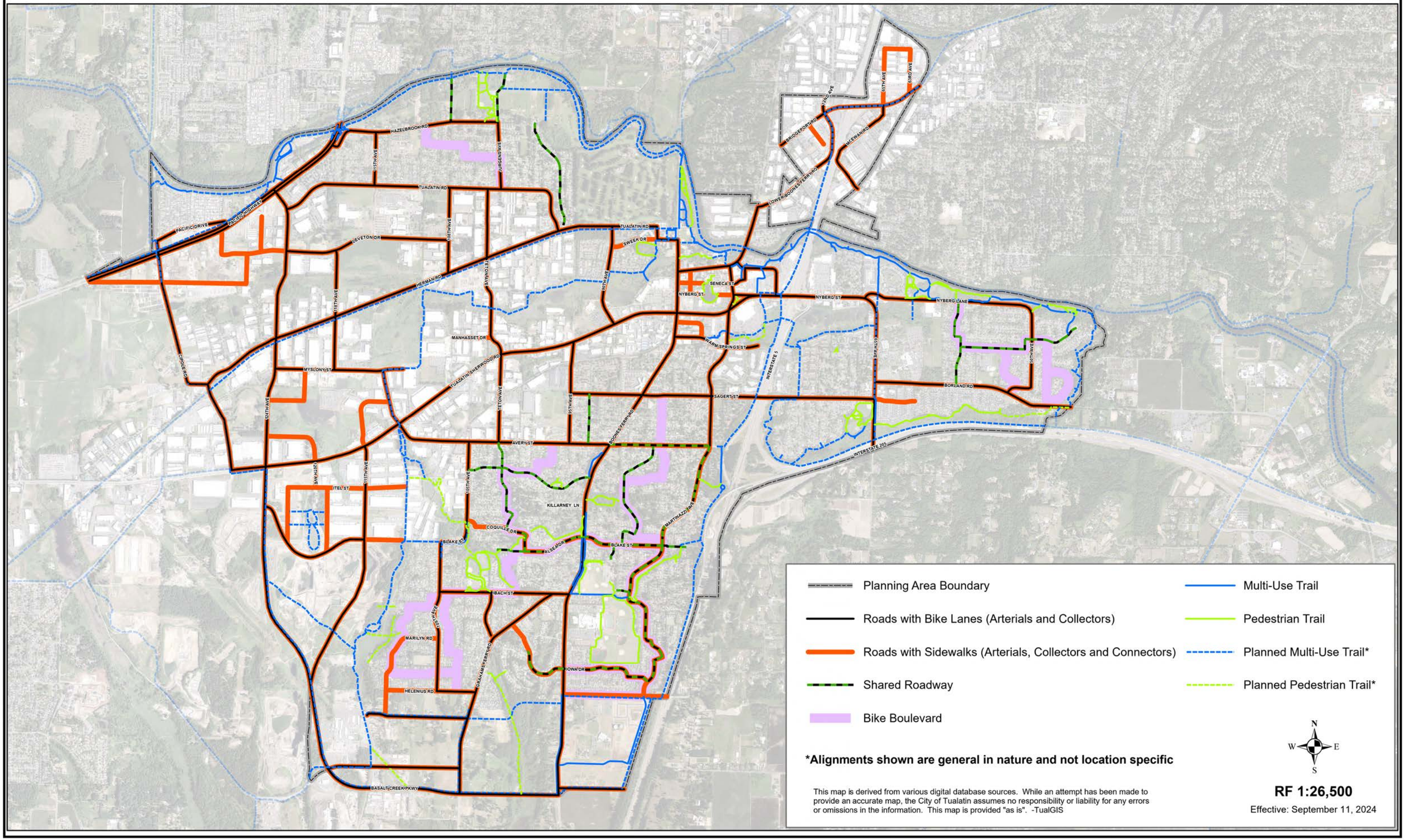


City Overview
RF 1:53,000



Map 8-4: Bicycle and Pedestrian Plan

TUALGIS



- Planning Area Boundary
- Roads with Bike Lanes (Arterials and Collectors)
- Roads with Sidewalks (Arterials, Collectors and Connectors)
- Shared Roadway
- Bike Boulevard
- Multi-Use Trail
- Pedestrian Trail
- Planned Multi-Use Trail*
- Planned Pedestrian Trail*

***Alignments shown are general in nature and not location specific**

This map is derived from various digital database sources. While an attempt has been made to provide an accurate map, the City of Tualatin assumes no responsibility or liability for any errors or omissions in the information. This map is provided "as is". -TualGIS

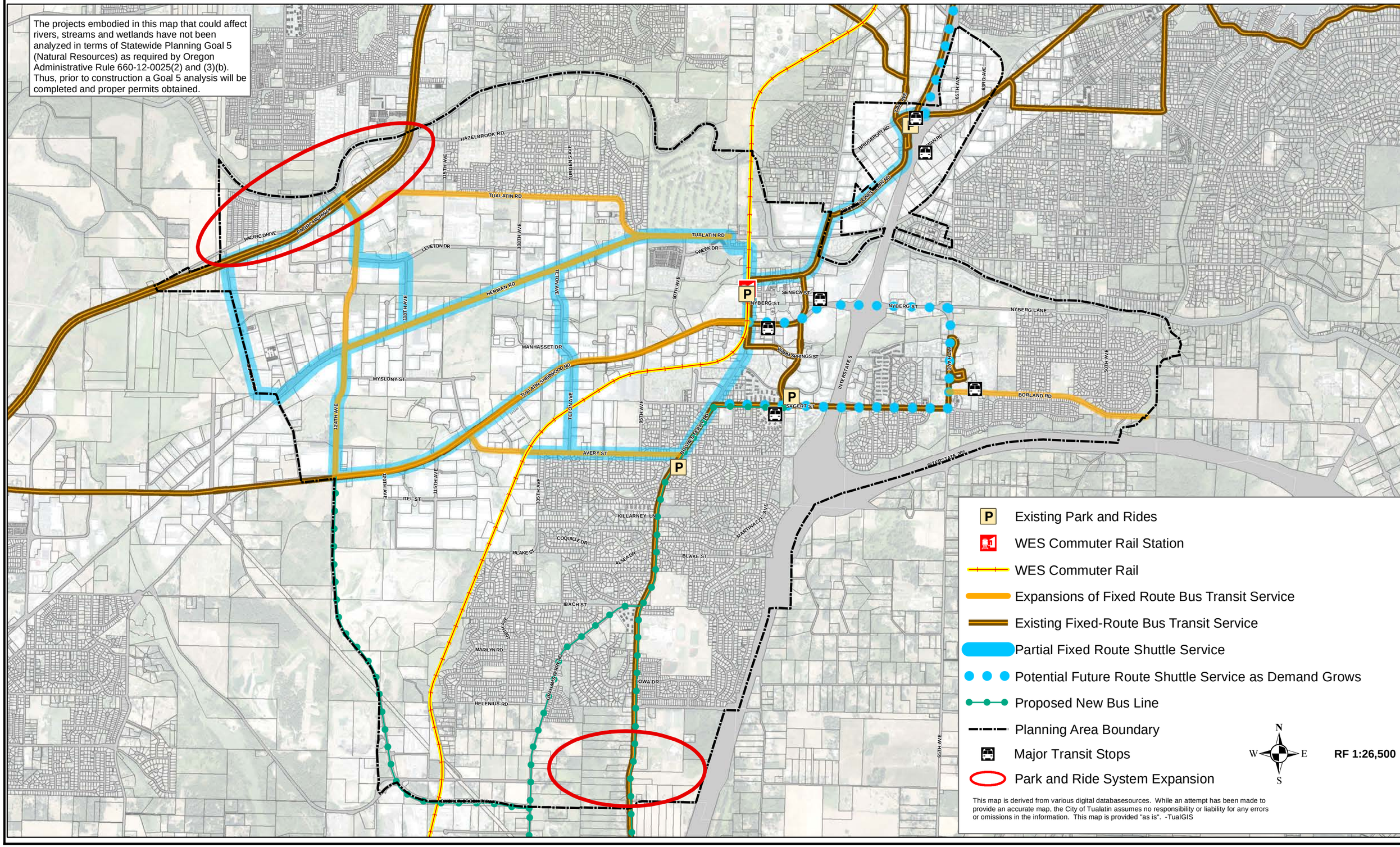
N W E S

RF 1:26,500

Effective: September 11, 2024

Map 8-5: Tualatin Transit Plan

TUALGIS


The projects embodied in this map that could affect rivers, streams and wetlands have not been analyzed in terms of Statewide Planning Goal 5 (Natural Resources) as required by Oregon Administrative Rule 660-12-0025(2) and (3)(b). Thus, prior to construction a Goal 5 analysis will be completed and proper permits obtained.

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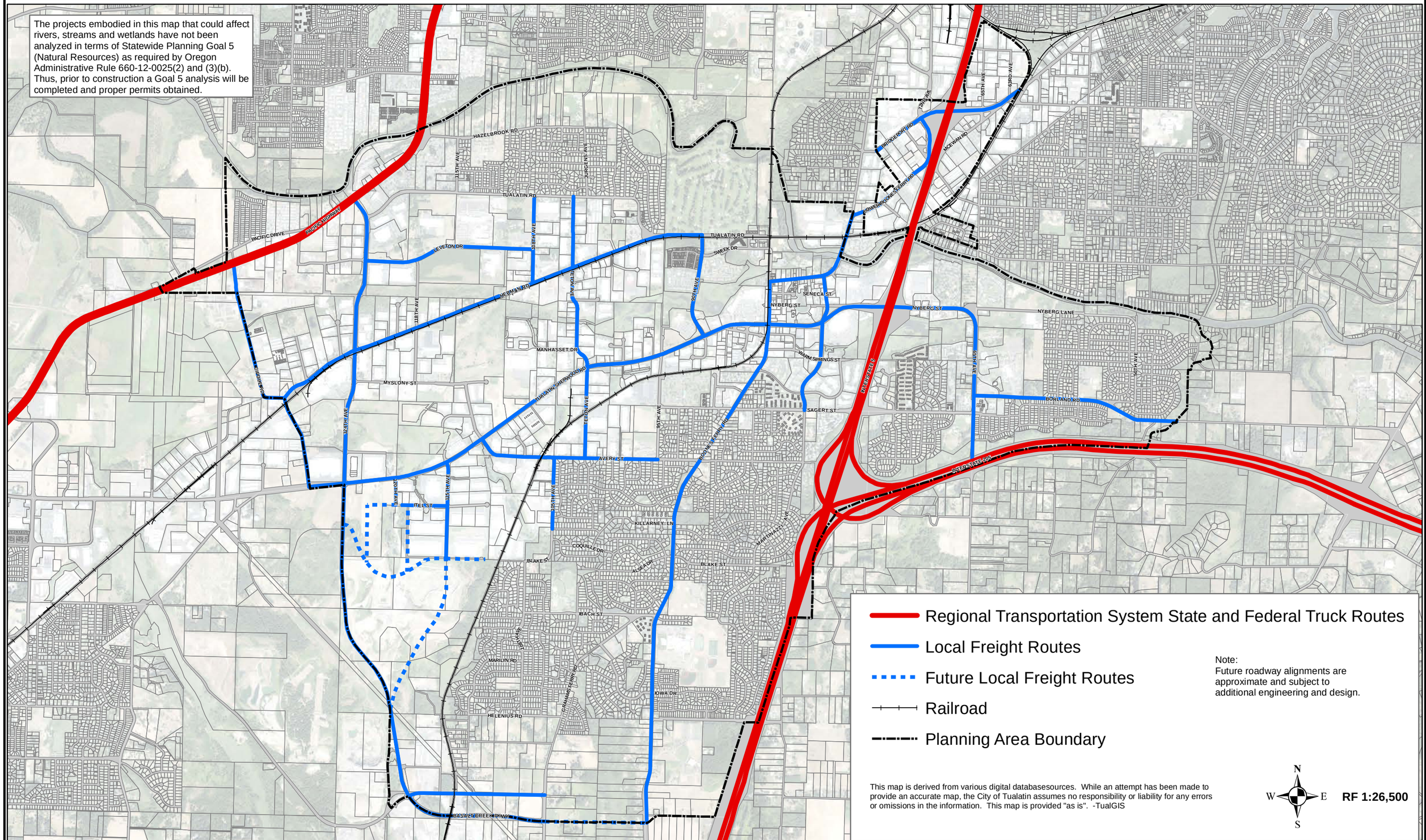
Map 8-6: Freight Routes

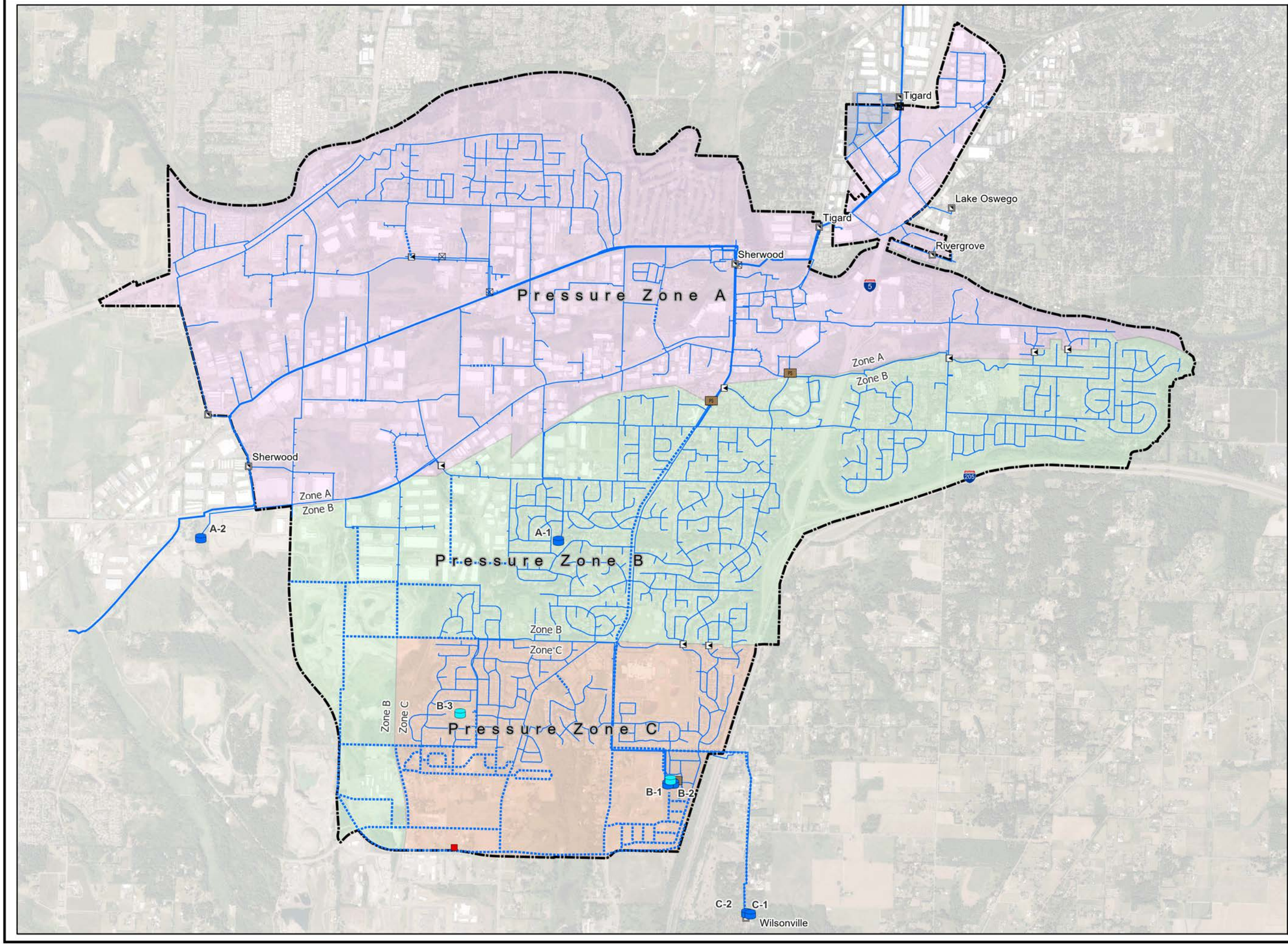
TUALGIS


The projects embodied in this map that could affect rivers, streams and wetlands have not been analyzed in terms of Statewide Planning Goal 5 (Natural Resources) as required by Oregon Administrative Rule 660-12-0025(2) and (3)(b). Thus, prior to construction a Goal 5 analysis will be completed and proper permits obtained.

TUALGIS

City of Tualatin
Water System Master Plan

Map 9-1



- Pump Stations
- Pressure Reducing-Sustaining Valve
- Pressure Reducing Valve
- Future Pressure Reducing Valve
- Water System Interties
- Existing Reservoirs
- Future Reservoirs
- Transmission Lines
- Distribution System
- Future System Improvements
- A-Level
- B-Level
- C-Level
- Bridgeport

RF 1:26,500

This map is derived from various digital database sources. While an attempt has been made to provide an accurate map, the City of Tualatin assumes no responsibility or liability for any errors or omissions in the information. This map is provided "as is". -TualGIS

TUALGIS

City of Tualatin
Sewer System Master Plan

Map 9-2

- Conceptual Lift Station
- Lift Station
- Gravity Pipe
- Force Main
- Conceptual Gravity Pipe
- Conceptual Force Main
- Planning Area Boundary

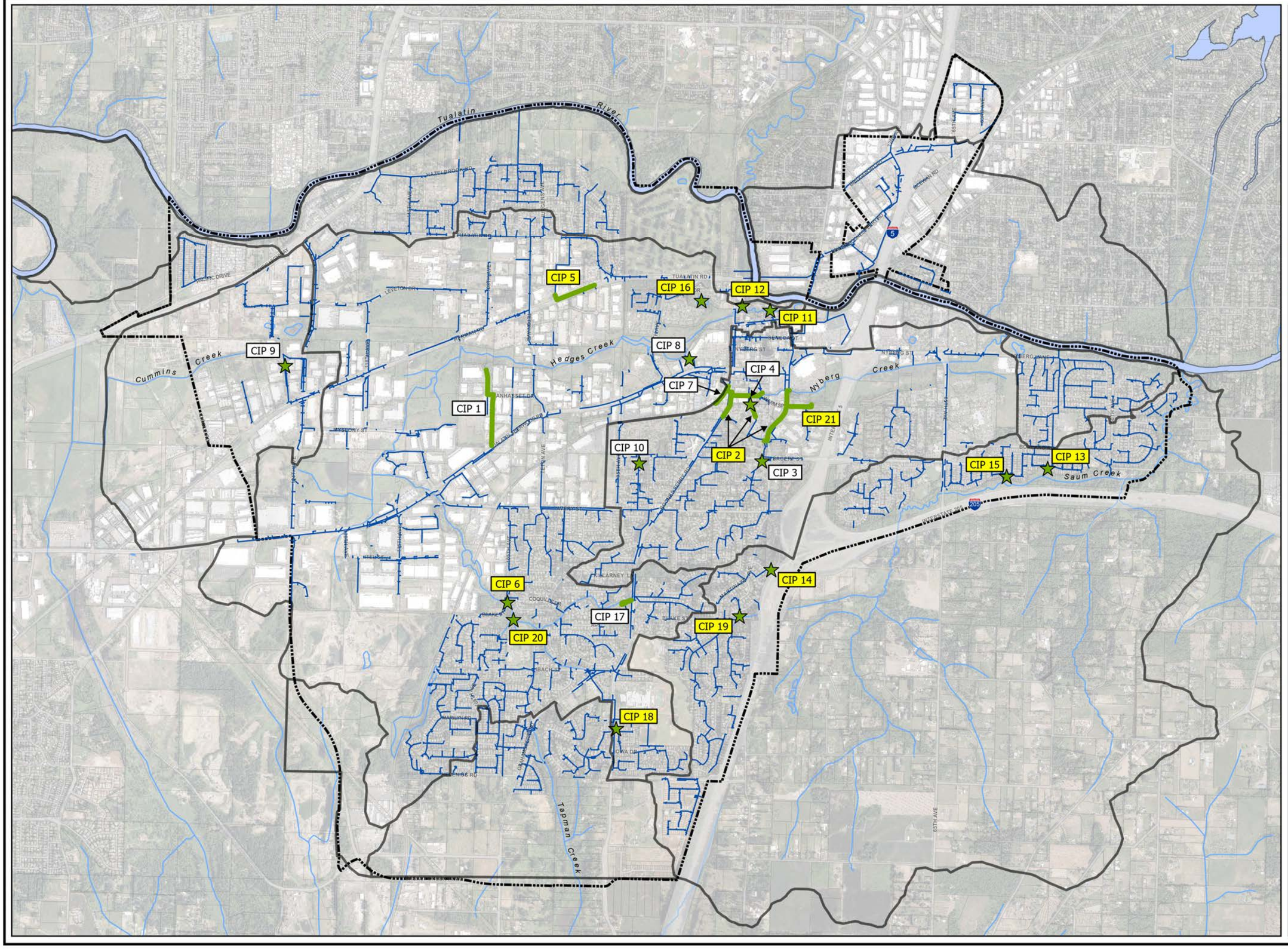
RF 1:26,500

This map is derived from various digital database sources. While an attempt has been made to provide an accurate map, the City of Tualatin assumes no responsibility or liability for any errors or omissions in the information. This map is provided "as is". -TualGIS

TUALGIS

City of Tualatin
Storm System Master Plan

Map 9-3



- CIP (Conveyance Pipe or Channel)
- CIP (Other)
- Storm Lines
- Major Drainage Basins
- Planning Area Boundary
- Streams

N

RF 1:26,500

Effective: September 11, 2024

This map is derived from various digital database sources. While an attempt has been made to provide an accurate map, the City of Tualatin assumes no responsibility or liability for any errors or omissions in the information. This map is provided "as is". -TualGIS

Map 10-1 Comprehensive Plan Map

TUALGIS

Notes:

1. All plan designation boundaries are intended to follow property lines, center lines of streets, or can be scaled pursuant to the scale of this map. If mapping errors occur, the City Council shall be the sole arbitration body to decide the location of boundaries.

2. Specific requirements for each Planning District are found within the Tualatin Development Code.

3. The Wetland Protection District and the Greenway and Riverbank Protection District locations are described in the Tualatin Development Code. Maps of the districts are available from the Planning Department.

4. Properties within the Tualatin Urban Renewal Area boundary are subject to the Tualatin Urban Renewal Plan which may contain specifications and requirements that are more restrictive than those found within the Planning District standards.

N W E S

RF 1:26,500

Residential
- RL Low Density
- RML Medium-Low Density
- RMH Medium-High Density
- RH High Density
- RH/HR High Density/High Rise

Commercial
- CO Office
- CC Central
- CG General
- CN Neighborhood
- CR Recreational
- CO/MR Mid-Rise Office
- MUC Mixed Use
- MC Medical

Manufacturing
- ML Light
- MG General
- MP Park
- MBP Manufacturing Business Park
- BCE Basalt Creek Employment

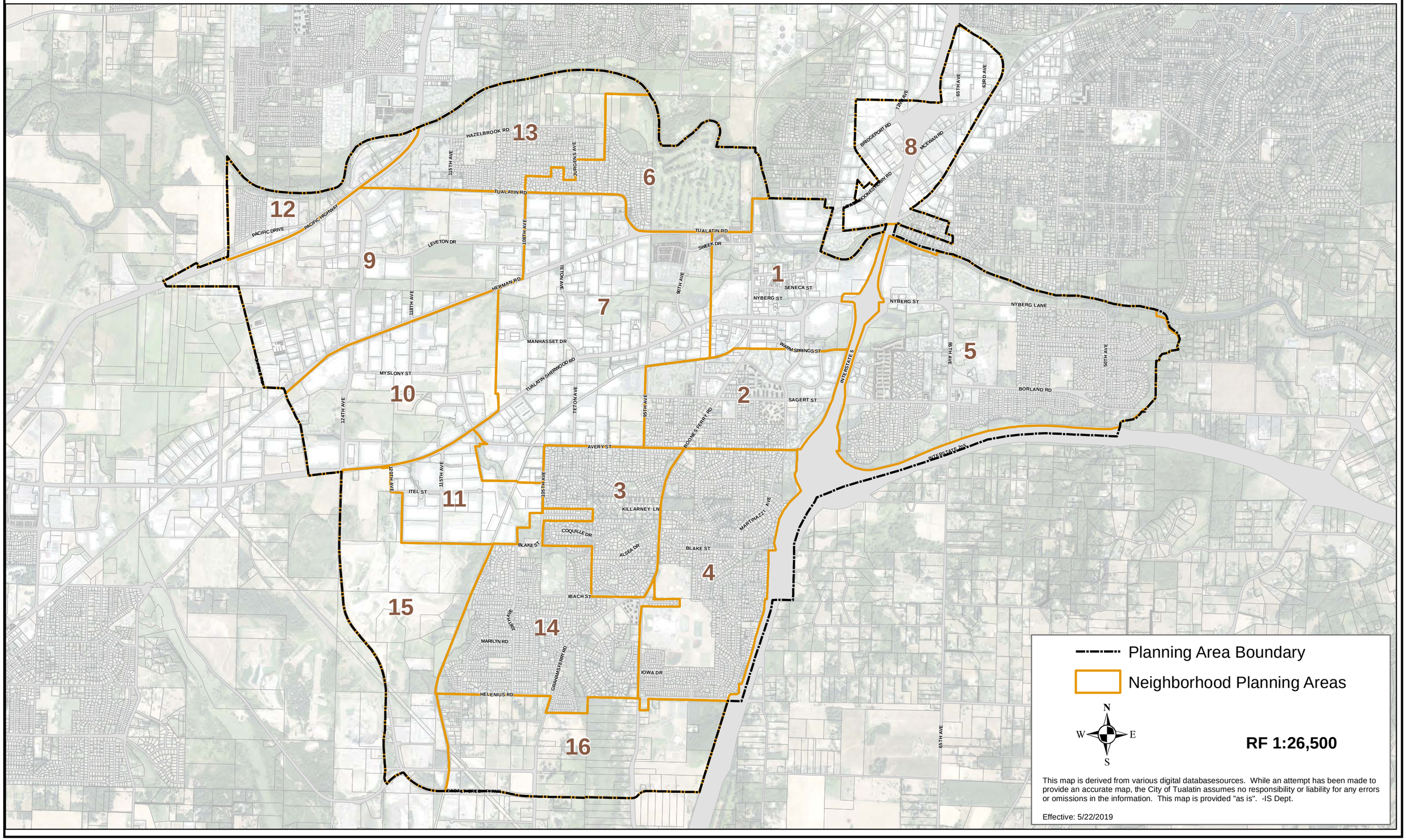
Institutional
- IN Institutional

- Planning Area Boundary
- City of Tualatin
- Mobile Home Parks
- Planning Districts
- In Planning Area/Outside of City

Effective: September 27, 2023

Map 10-2: Neighborhood Planning Areas

TUALGIS



This map is derived from various digital databasesources. While an attempt has been made to provide an accurate map, the City of Tualatin assumes no responsibility or liability for any errors or omissions in the information. This map is provided "as is". -IS Dept.

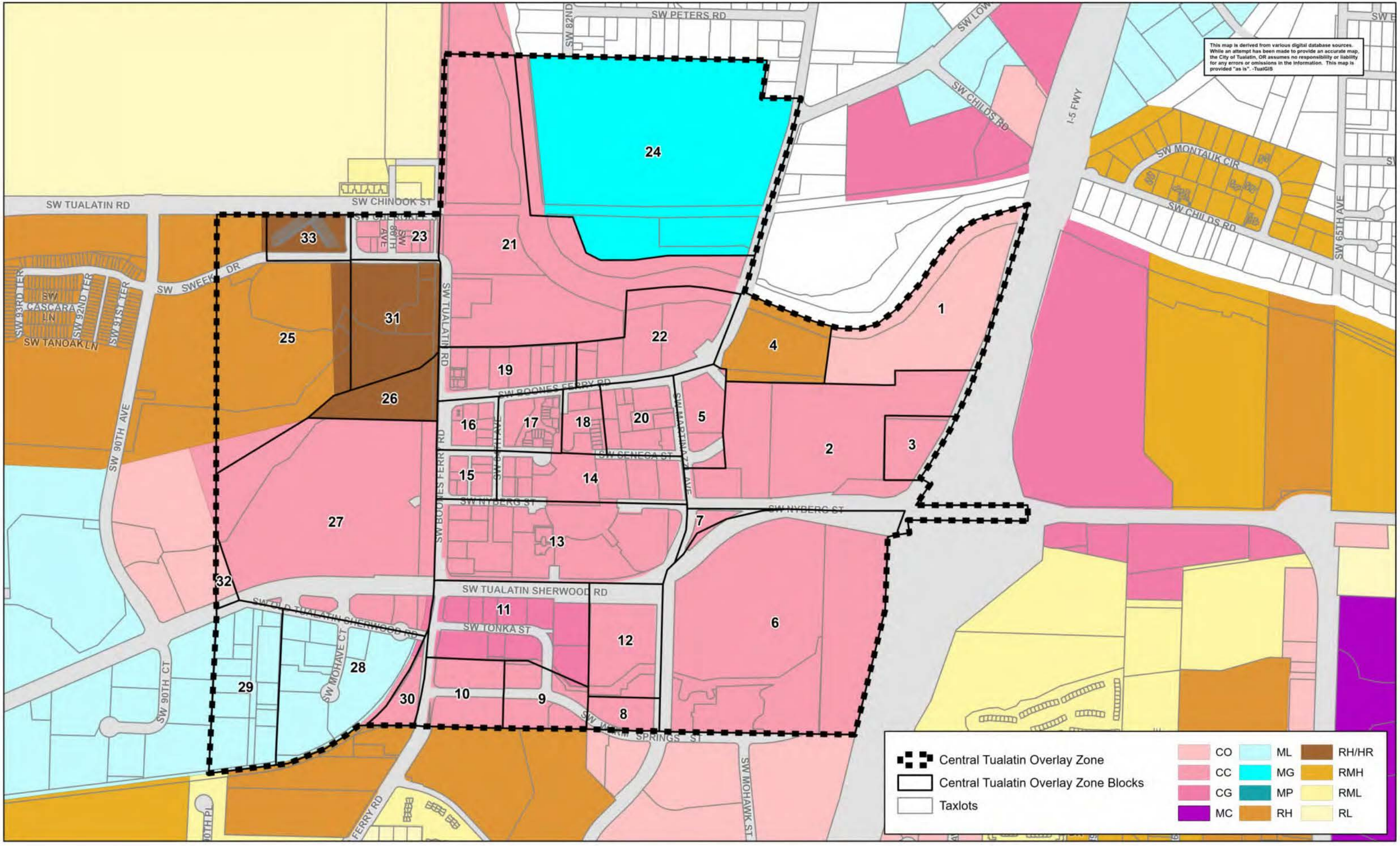
Effective: 5/22/2019

Map 10-3: Central Tualatin Overlay Zone

RF 1:6000

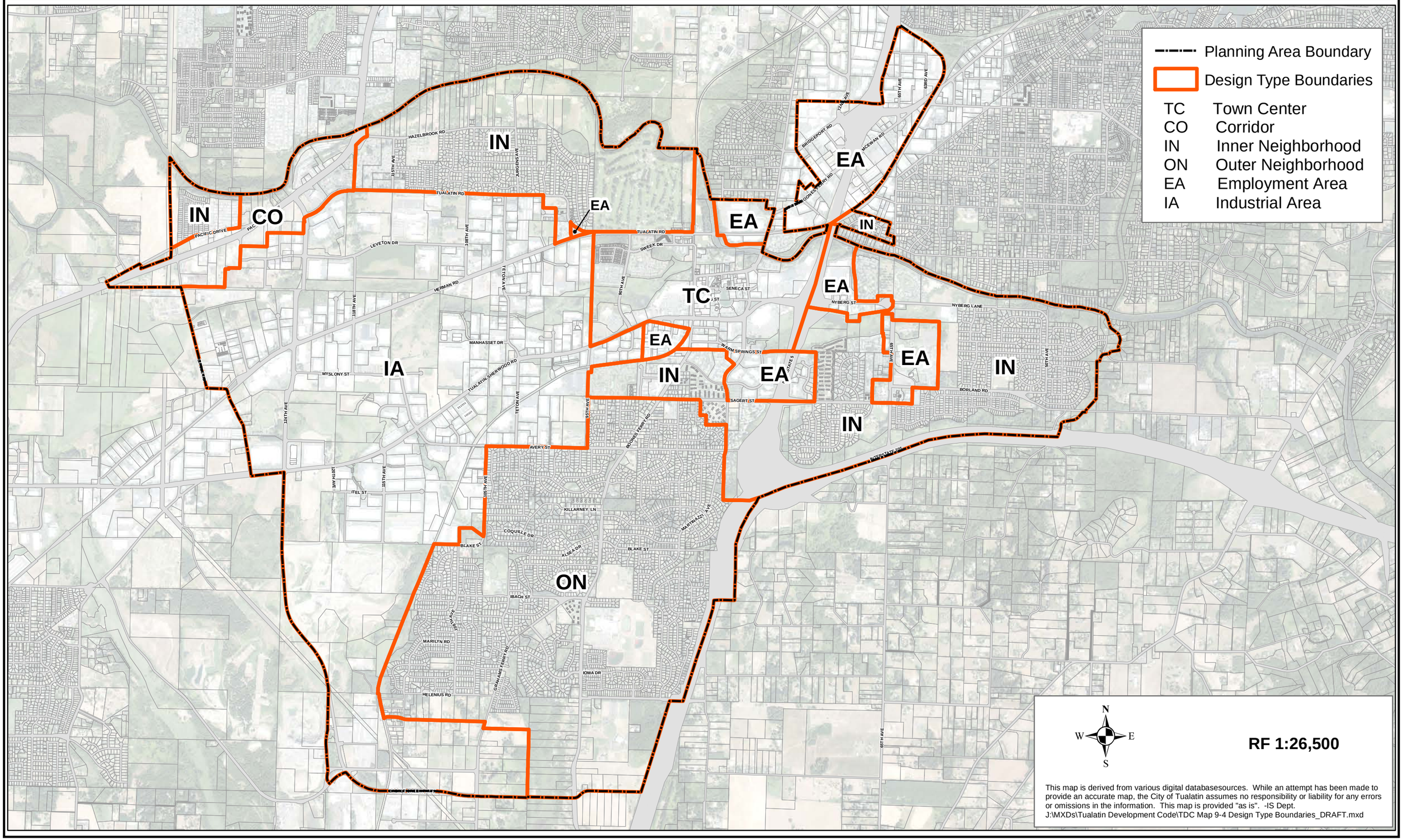
N W E S

TUALGIS



Map 10-4: Design Type Boundaries

TUALGIS



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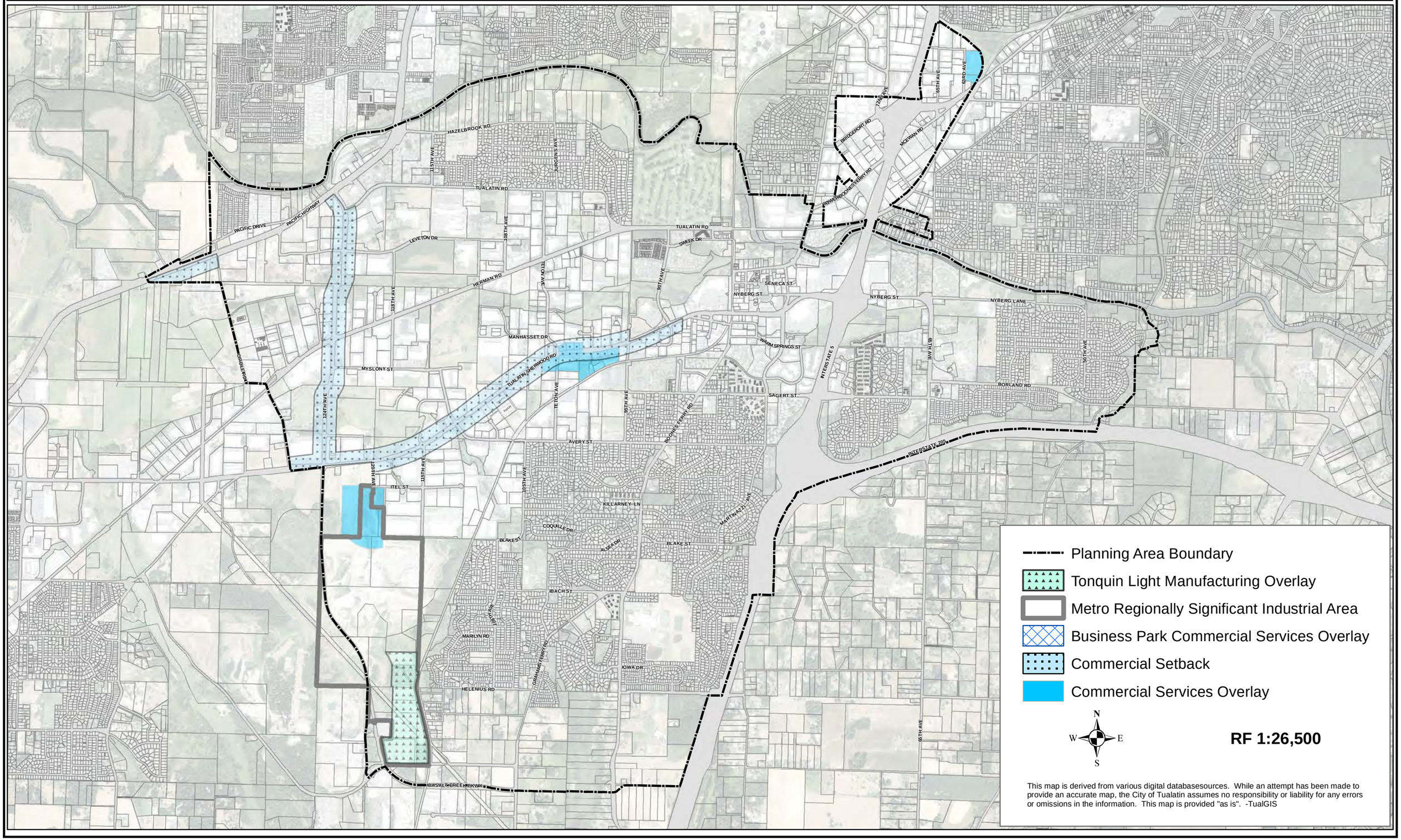
RF 1:26,500

This map is derived from various digital databasesources. While an attempt has been made to provide an accurate map, the City of Tualatin assumes no responsibility or liability for any errors or omissions in the information. This map is provided "as is". -IS Dept.
J:\MXDs\Tualatin Development Code\TDC Map 9-4 Design Type Boundaries_DRAFT.mxd

Map 10-5: Commercial Setback & Commercial Services Overlay

TUALGIS



- Planning Area Boundary
- Tonquin Light Manufacturing Overlay
- Metro Regionally Significant Industrial Area
- Business Park Commercial Services Overlay
- Commercial Setback
- Commercial Services Overlay

N
W E
S

RF 1:26,500

This map is derived from various digital databasesources. While an attempt has been made to provide an accurate map, the City of Tualatin assumes no responsibility or liability for any errors or omissions in the information. This map is provided "as is". -TualGIS

Map 10-6: Conditional Use for Agricultural Animals

TUALGIS

Tualatin River

HAZELBROOK RD

115TH AVE

JURGENS AVE

TUALATIN RD

108TH AVE

LEVETON DR

TETON AVE

HERMAN RD

118TH AVE

90TH AVE

TUALATIN RD

Planning Area Boundary

Agricultural Animals by Conditional Use

N

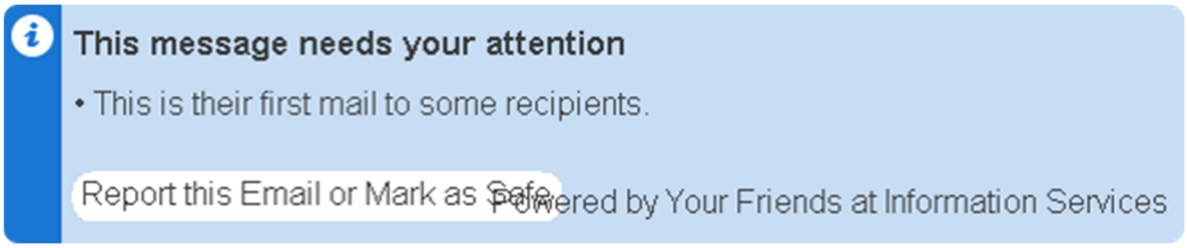
W E

S

RF 1:9,000

This map is derived from various digital databasesources. While an attempt has been made to provide an accurate map, the City of Tualatin assumes no responsibility or liability for any errors or omissions in the information. This map is provided "as is". -TualGIS

From: RUSSELL John <John.RUSSELL@odot.oregon.gov>
Sent: Tuesday, July 29, 2025 11:49 AM
To: Mike McCarthy; Joel Rabinovitz; Jinde Zhu
Cc: Abby McFetridge; Garth Appanaitis; ODOT_R1_DevRev; Steve Koper; Keith Leonard; Aquilla Hurd-Ravich
Subject: RE: Document Issue No. 4 - Updated submittal materials for Lam Campus AR and IMP (ODOT DRS #13340 Lam TUX)



Mike,

All ODOT intersections are projected to meet ODOT mobility standards in this and previous TIA revisions, with this revision appearing to better spread out traffic across ODOT intersections, rather than concentrating more traffic on Hazelbrook Rd. As such, there are no significant changes to the comments ODOT provided on 11/12/2024, which are as follows:

> ODOT concurs with the findings of the TIA that **all ODOT intersections are projected to meet ODOT mobility standards** following completion of both phases of the project in 2030.
>
> While there are a number intersections along OR 99W where 95th percentile queues may be expected to exceed existing storage capacity under some models, the applicant has gone to the effort of correlating HCM 2000 queue outputs to better reflect actual conditions. ODOT concurs with their conclusion that these intersections along OR 99W "**are built out to their full capacity, and little can be done to mitigate these queues**" at the applicant level. While the applicant recommends "coordination of the left turn movement from OR 99W with the left turn movement to SW Tualatin Road," **ODOT policy does not consider signal retiming as a mitigation for development**. This signal coordination is outside the scope of this development at this time, particularly given the different ownership of each signal, which would require further coordination between ODOT and the City of Tualatin.
>
> Lastly, long delays were identified for westbound traffic on Hazelbrook on the stop-controlled approach OR 99W. Given that this has not been shown to present safety or operation issues for northbound traffic on OR 99W, ODOT concurs that "**mitigation is not recommended [at Hazelbrook]** because it would encourage vehicles to travel this route from SW Tualatin Road instead of using SW 124th Avenue to access OR 99W northbound."
>
> **No further analysis of state highway facilities is required**.

Thank you again for the for the opportunity to review the revisions to the TIA for Lam TUX expansion.

Please let me know if you have additional questions.

John Russell, PE [he/him]
Traffic Analysis Engineer
Oregon Dept of Transportation
John.Russell@odot.oregon.gov
503.731.8282

From: Mike McCarthy <mmccarthy@tualatin.gov>
Sent: Monday, July 21, 2025 5:36 PM
To: Joel Rabinovitz <joel.rabinovitz@dksassociates.com>; RUSSELL John <John.RUSSELL@odot.oregon.gov>; Jinde Zhu <jinde_zhu@washingtoncountyor.gov>
Cc: Abby McFetridge <Amcfetridge@tualatin.gov>; Garth Appanaitis <gaa@dksassociates.com>; ODOT_R1_DevRev <ODOT_R1_DevRev@odot.oregon.gov>; Steve Koper <skoper@tualatin.gov>; Keith Leonard <kleonard@tualatin.gov>; Aquilla Hurd-Ravich <ahurd-ravich@tualatin.gov>
Subject: FW: Document Issue No. 4 - Updated submittal materials for Lam Campus AR and IMP

This message was sent from outside the organization. Treat attachments, links and requests with caution. Be conscious of the information you share if you respond.

Hi Joel, John, and Jinde,

Attachment 9 at the link below is the updated traffic study for the proposed Lam Research development on Leveton Drive east of 124th Ave in Tualatin. Please review it and let us know any comments you have (or if it doesn't meet your agency's threshold for review) by the end of next week.

Thanks,

Mike McCarthy
Tualatin City Engineer
Phone: 503.691.3674
Cell: 971.666.0000

From: Ian Sisson (Mackenzie (Portland)) <isisson@mcknze.com>
Sent: Monday, July 21, 2025 5:05 PM
To: Mike McCarthy <mmccarthy@tualatin.gov>
Subject: Document Issue No. 4 - Updated submittal materials for Lam Campus AR and IMP

2250180.00 - Tualatin Exp Lab/CUB/Bldg H Issue 4

Issued by: Ian Sisson (Mackenzie)
On: 21 Jul 2025

Hello Keith,

The updated submittal materials for IMP 24-0001 and AR 24-0002 are available for download via the link below. This includes revised application narratives for each, as well as updated exhibits. Only the exhibits that have been modified are included in this transmittal.

Please let me know if you have any questions or issues accessing the files.

Thank you,

Ian Sisson
isisson@mcknze.com
971-346-3725

Access the documents for this issue

Recipients:

Bill Bezio (Mackenzie (Portland))
Mike Rueter (Mackenzie (Portland))
Nicole Burrell (Mackenzie (Portland))
Suzannah Stanley (Mackenzie (Portland))
Brent Ahrend (Mackenzie (Portland))
Steve Koper (City of Tualatin (<Default>))
Mike McCarthy (City of Tualatin (<Default>))
Keith Leonard (City of Tualatin (<Default>))
Ian Sisson (Mackenzie (Portland))
Danielle Nonamaker (Lam Research Corporation (NEW 11155 SW Leveton))

By opening these documents, you agree to the following terms and conditions, click here.

Ian Sisson AICP
D 971-346-3725 **C** 503-501-8588

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