Hearings Examiner Meeting Agenda
Wednesday, December 14, 2022, 5:00 PM
Council Chambers, 616 NE 4th AVE

NOTE: The City welcomes public meeting citizen participation. TTY Relay Service: 711. In compliance with the ADA, if you need special assistance to participate in a meeting, contact the City Clerk's office at (360) 834-6864, 72 hours prior to the meeting so reasonable accommodations can be made (28 CFR 35.102-35.104 ADA Title 1)

To Participate Remotely:OPTION 1 - 1. Go to www.zoom.us and download the app or click "Join A Meeting" and use Meeting ID –867 8969 5363

2. Or, from any device click https://us06web.zoom.us/j/86789695363

OPTION 2 - Join by phone (audio only): 1. Dial 877-853-5257 and enter meeting ID# 867 8969 5363

For Public Comment:
1. Click the raise hand icon in the app or by phone, hit *9 to "raise your hand"
2. Or, email to communitydevelopment@cityofcamas.us

These will be entered into the meeting record. Emails received up until one hour before the start of the meeting will be emailed to the Meeting Body prior to the meeting start time.

CALL TO ORDER

INTRODUCTIONS AND INSTRUCTIONS

HEARING ITEM

1. Oak Tree Station (CUP22-01)

   Presenter: Madeline Sutherland, Planner

2. American Marble & Granite Sign (MAJVAR22-03)

   Presenter: Madeline Sutherland, Planner

CLOSE OF MEETING

LAND USE DECISION

STAFF REPORT

Oak Tree Station

File No. CUP22-01

(Consolidated files: SPRV22-03, DR22-03, and SEPA22-09)

Report Date: December 7, 2022

TO	Hearings Examiner	**HEARING DATE**	December 14, 2022
PROPOSAL	To construct an indoor/outdoor eating area with food carts, a drive-thru coffee shop, and a 12,574 square foot commercial building.		
LOCATION	The site is located at the corner of NW Lake Road and NW Friberg-Strunk Street in the SE ¼ of Section 29 Township 2 North, Range 3 East, Camas, WA, Parcel Number: 176162000.		
APPLICANT/ CONTACT	Paul Williams 6168 NE HWY 99 Vancouver, WA 98665	**OWNER**	Rob Kyne 3239 NW Hood Ct Camas, WA 98607
APPLICATION SUBMITTED	March 11, 2022	**APPLICATION COMPLETE**	June 8, 2022
SEPA	The City issued a SEPA Mitigated Determination of Non-significance (MDNS) on August 25, 2022, with a comment period ending on September 8, 2022. The SEPA MDNS was mailed to property owners and published in the Post Record on August 25, 2022. Legal publication #718310.		
PUBLIC NOTICES	A Notice of Application was mailed to property owners within 300 feet of the site and published in the Post Record on July 7, 2022. Legal publication #703980. A Notice of Public Hearing was mailed to property owners within 300 feet of the site and published in the Post Record on August 18, 2022. Legal publication #716580. A Notice of Canceled Public Hearing was mailed to property owners within 300 feet of the site on September 1, 2022. A Notice of Public Hearing was mailed to property owners within 300 feet of the site and published in the Post Record on November 24, 2022. Legal publication #758160.		

APPLICABLE LAW: The application was submitted on March 11, 2022, and the applicable codes are those codes that were in effect at the date of the application's first submittal. Camas Municipal Code (CMC) Title 16 Environment, Title 17 Land Development, and Title 18 Zoning.

CONTENTS

SUMMARY 2

FINDINGS 2

Chapter 16.07 State Environmental Policy Act 2
Chapter 16.31 Archaeological Preservation 2
Chapter 18.19 Design Review 18
Chapter 18.43 Conditional Use Permit 19
PUBLIC COMMENTS 22
CONCLUSION 22
RECOMMENDATION 22
CONDITIONS OF APPROVAL 22

SUMMARY

An application has been made to the City of Camas for conditional use permit approval for an indoor/outdoor eating area with food carts, a drive-thru coffee shop, and a 12,574 square foot commercial building on 3.59 acres zoned Community Commercial (CC). The site is relatively flat, with a small Category IV Wetland. There is one large Oregon White Oak in the center of the parcel that is proposed to be retained with the development. There are several smaller trees, shrubs, and vegetation in the southeast portion of the site. The proposal includes associated parking, landscaping, stormwater, and required utilities.

The subject site is bordered to the north by Community Commercial zoned parcels with a PUD building and a storage facility. Directly east, is city-owned property. To the south across NW Lake Road is Light Industrial/Business Park zoned land with a manufacturing industry on-site. To the southwest, is the City of Vancouver's jurisdiction, with single-family residential. To the west, also within the City of Vancouver, across NW Friberg-Strunk, is Union High School.

The proposed commercial development does or can comply with the applicable standards of the Camas Municipal Code (CMC) and Revised Code of Washington (RCW).

FINDINGS

Chapter 16.07 State Environmental Policy Act

A SEPA checklist was submitted, and a Mitigated Determination of Non-Significance (MDNS) was issued on August 24, 2022, as the proposed development includes more than 500 cubic yards of fill and excavation per CMC 16.07.020.A.1. The comment period ended September 8, 2022. There was one comment submitted by the Department of Ecology regarding a potential wetland onsite. As such, the application submitted a wetland report which is addressed further below. The applicant also submitted an updated SEPA Checklist addressing the Category IV Wetland on site. The checklist has been included in the determination as an addendum (Exhibit 32) per WAC 197-11-625. The threshold determination has not been affected.

FINDING: Staff finds the comments provided by the Department of Ecology should be complied with.

Chapter 16.31 Archaeological Preservation

The Department of Archaeology and Historic Preservation concluded that an archaeological predetermination report is not required for the site because one was conducted in 2008 by Archaeological Services of Clark County for the site. Based on the report, no further archaeological work is recommended at this time. The report and findings are not subject to the open public records act and as such, the City cannot disclose the results.

FINDING: Staff finds a condition of approval is warranted that if potential artifacts are discovered during construction, work must immediately cease, and both the State Department of Archaeological and Historic Preservation and the City shall be notified.

Chapter 16.51 Critical Areas

The applicant submitted a Wetland Report dated October 13, 2022, prepared by Ecological Land Services (Exhibit 30), which identified a .02 acre (872 square foot) Category IV wetland as Wetland A located at the northeast portion of the site. Per CMC 16.53.010.C.2.a., "isolated Category IV wetlands less than four thousand three hundred fifty square feet in area" are exempt from Chapter 16.53 - Wetlands. Therefore, Wetland A is exempt from Chapter 16.53. The Wetland Report indicated that the proposed development will unavoidably impact Wetland A, resulting in the filling of the wetland.

FINDING: The applicant will be required to obtain a Nationwide permit from the US Army Corps of Engineers prior to engineering plan approval and conditioned as such. A mitigation plan is required per CMC 16.51.180 and shall be submitted prior to engineering plan approval. A condition of approval is warranted.

Chapter 18.18 Site Plan Review

A. Compatibility with the city's comprehensive plan;

The subject property is designated as Commercial in the Camas 2035 Comprehensive Plan, which includes the Community Commercial (CC) zone designation. The food cart station, commercial building, and drive thru coffee kiosk proposal is consistent with the following comprehensive plan policies:

- Land Use Policy 1.3: Maintain compatible use and design with the surrounding built and natural environments when considering new development or redevelopment.
- Employment Land Use Policy LU-2.5: Ensure industrial development and other employment lands are compatible with adjacent neighborhoods through development and landscaping regulations and design review.
- Employment Land Use Policy LU2.7: Protect employment land from conversion to residential uses to ensure an adequate supply of commercial and industrial land to meet 20- year employment projections.
- Economic Development Policy ED-1.8: Ensure that development standards are balanced to promote high-quality building and site design and encourage businesses to operate in an environmentally responsible manner.
- Economic Development Policy ED-1.10: Encourage complementary businesses throughout the City to support industry clusters and leverage resources

The subject property is located near the entrance to the city limits at NW Lake Road, where land uses include large technology and manufacturing campuses, surrounded by commercial services and residential development. The site will develop vacant employment lands that will be compatible with the surrounding land uses.

FINDING: The proposed use is consistent with the intent and purpose of the comprehensive plan by providing diverse economic development to serve Camas residents and businesses as well as compatible site and building design with the surrounding area.

B. Compliance with all applicable design and development standards contained in this title and other applicable regulations;

The applicant provided a narrative, site plan, grading plan, utility plan, landscape plan, and building elevations/floor plans that are adequate for Site Plan Review. The density and dimensions are discussed in further detail at Criterion C under this staff report's Conditional Use Permit section.

Parking

New and expanded commercial uses must provide adequate off-street parking pursuant to CMC Chapter 18.11.130. Standards and per CMC Table 18.11-1 as follows:

Retail stores in general Less than 5,000 square feet: Greater than 5,000 square feet:	 1 per 300 square feet 17 plus 1 per 1,500 square feet
Multi-use retail center	1 per 250 square feet of gross floor area
Beauty parlor, barber shop	1 per 300 square feet of gross floor area
General offices	1 per employee, plus 1 per 400 square feet of gross floor area
General office (no customer service)	1 per 250 square feet of gross floor area
Furniture/appliance store	1 per 500 square feet of gross floor area
Beauty parlor, barber shop	1 per 300 square feet of gross floor area
Sports club, health, spa, karate club	1 space per 260 square feet of gross floor area, plus 1 space per employee
Restaurant	1 per 100 square feet of gross floor area
Restaurant, carry-out	1 space per 225 square feet of gross floor area
Fast food restaurant/coffee kiosk	1 space per 110 square feet of gross floor area, plus 6 stacking spaces for drive-through lane

The proposed development includes a 612 square-foot coffee kiosk, a 5,000 square-foot food cart station, and a 12,574 square-foot commercial building. Based on the required parking above, the coffee kiosk requires 6 parking spaces (612sf/110sf) plus six stacking spaces. The food cart station would be considered restaurant/carryout, therefore requiring 22 spaces (5,000sf/225sf).

According to the applicant's narrative, the 12,574 square foot commercial uses could range from retail, restaurant, office, or similar commercial uses. A restaurant has the strictest parking requirement of 1 space per 100 square feet. There is a very low probability the entire 12,574 square foot commercial space will be dedicated to restaurants, especially with the proximity to the food cart station. However, if this were to occur, the required parking would be 125 spaces (12,574sf/100sf) for the commercial building, 6 spaces for the coffee kiosk, and 22 spaces for the food cart station, for a total of 153 spaces. There are 143 spaces provided on-site.

In a more likely scenario, no more than half the commercial building would be restaurants (1 space per 100sf) and half would be retail or offices (1 space per 250sf). If so, then 63 spaces (restaurants) and 25 spaces (retail/offices), totaling 88 spaces for the commercial building would be required. A total of 116 spaces would be required if you added the coffee kiosk and food cart station. This is a more likely scenario for the development. With 143 spaces provided on-site, and only 116 spaces required, the

parking requirements are exceeded and have room for additional parking if there happen to be additional parking needs. Staff finds the parking requirements are met.

Per Camas Design Standards Manual (CDSM), Design Standards Table 1, Guidelines for Geometry of Private Roadway, Note 2 - Off-Street Parking (c) states "Aisle dimensions: one-way aisle minimum 15-feet wide; 2-way aisle minimum 24-feet wide." Per the preliminary site plan, submitted May 2022, all of the drive aisles are a minimum 24-feet wide. However, the drive aisles adjacent to trash enclosures should be a minimum of 26-feet wide to allow for access by the garbage and recycling providers. Additionally, the trash enclosure at the northeast corner of the parking lot on the east side of the commercial building should be relocated or a dead-end turnaround should be provided to allow access for the garbage and recycling providers.

> Staff recommends a condition of approval that prior to final engineering plan approval, the locations of trash enclosures and the minimum drive aisle widths, shown as 24-feet, adjacent to the trash enclosures should be approved by the garbage and recycling providers.

Per Camas Design Standards Manual (CDSM), Design Standards Table 1, Guidelines for Geometry of Private Roadway, Note 2 - Off-Street Parking (d) states "Ingress aisles setback from back of sidewalk: collectors minimum 40-feet; arterials minimum 50-feet." Per the preliminary site plan, submitted May 2022, the off-street parking stalls adjacent to the ingress/egress access from NW Friberg-Strunk Street, and the right-in / right-out only access to NW Lake Road meet the minimum setback requirement.

Landscaping

The proposal must comply with the applicable landscaping standards in CMC Chapter 18.13. The applicant has focused the planting areas on the perimeter of the site, adjacent to the drive- thru uses, and within the parking areas.

Street Trees

Existing street trees are located along NW Friberg-Strunk Street and NW Lake Road adjacent to the site's frontage. Trees are required to be planted every 30 linear feet within a planter strip. The applicant should be conditioned to plant missing street trees every 30 linear feet within the planter strip. The street tree species shall comply with the City's approved street tree list.

Landscape Buffers

Per CMC 18.13.055(A) Table 1 – Landscape Buffers, a 5-foot wide (L1) general landscape buffer is required for commercial uses abutting commercially zoned property which applies to the northern property line. The northern property line is proposing trees and ground cover; however, high, and low shrubs are required throughout the buffer as well. A condition of approval is recommended.

A 5-foot wide (L2) low screen landscape buffer is required at the eastern, southern, and western property lines where commercial uses that abut Business Park zones and Commercial zoned property are separated by a street. The applicant has provided a landscape buffer that includes trees every 30 linear feet, 3-foot high shrubs, and ground cover. There is landscaping provided along the drive-thru lanes to visually screen traffic on NW Lake Road and NW Friberg- Strunk Street. Staff finds that landscape buffering is met along these property lines.

Parking Lot Landscaping

The purpose of landscaping within parking areas is not only to minimize the visual impact of paved areas but also to provide shade and relief per CMC 18.13.060.B. With 143 proposed parking stalls, parking lot planter strips are required for every 15 parking spaces. Based on the site plan, some areas have more than 15 spaces in a row that do not have a planter strip.

Staff recommends a condition of approval that a parking lot planter strip is provided every 15 spaces and be landscaped in accordance with CMC 18.13.060. Wheel stops are required adjacent to planter areas to protect landscaping from car overhangs per CMC 18.13.060.F and will be conditioned as such.

Tree Density

Per CMC 18.13.051(A) Table 1- Required Tree Density, a minimum of 20 tree units (TU) per net acre is required to be incorporated into the overall landscape plan. An arborist report was prepared by Certified Arborist Consultations dated March 19, 2022 (Exhibit 5) and surveyed 20 significant trees on site. Per the arborist report, all trees on site are recommended for removal due to tree health and construction improvements except for the Oregon White Oak. The arborist report reviews the Tree Protection Zone (TPZ). The TPZ protects the roots and overall tree from construction and development activities to ensure tree survival.

Staff finds the applicant shall not encroach the TPZ and follow the recommendations listed in the Arborist Report by Certified Arborist Consultations dated March 19, 2022, to ensure the survival of the Oregon White Oak.

Staff also finds a conservation covenant shall be recorded with the County to ensure the long-term preservation of the Oregon White Oak.

Based on the 3.59-net acreage, 72 TUs are required. The applicant is proposing to plant 60 TUs and retain the Oregon White Oak which consists of 19 TU for a total of 79 TUs. Staff finds the proposed landscape plan exceeds the minimum TU per net acre requirement and therefore in compliance with the tree unit density requirement. Any existing off-site trees should not be removed if proposed without permission from the property owner.

Staff recommends a condition of approval that prior to final engineering plan approval, the applicant submits to the city for review and approval a final landscape plan consistent with the landscaping standards in CMC Chapter 18.13. Plants utilized will need to be per the approved City's Landscape list and per the Camas Design Manual planting specifications and landscape notes. For plants not on the approved City list, a characteristic card should be submitted to the City for review and approval. Irrigation and landscaping improvements should be installed or bonded for prior to final acceptance.

Retaining walls

No retaining walls are proposed at this time. However, if retaining walls are proposed, they must meet CMC 18.17.060. A condition is warranted.

Signage

Signage was provided to the Design Review Committee for the entrance to the food cart area. The Committee concluded the signage complied with the design requirements. If additional signage is proposed, additional approval per CMC 18.15 is required prior to receiving building permit approval for the sign. The Design Review Committee also recommends a condition of approval that signs located on buildings or incorporated into the landscaping are unobtrusive and vandal resistant. If illuminated, they shall be front-lit.

FINDING: As identified in this staff report, the applicant's narrative, on the submitted preliminary plans and as conditioned, staff concurs that this project can or will comply with all applicable design and development standards of the code.

C. Availability and accessibility of adequate public services such as roads, sanitary and storm sewer, and water to serve the site at the time development is to occur unless otherwise provided for by the applicable regulations;

Roads:
The proposed project is to meet the requirements of CMC 17.19.040.B Streets and the Camas Design Standards Manual (CDSM).

[Public Roads]: The proposed development is bordered on the south by NW Lake Road and on the west by NW Friberg-Strunk Street. Per the city's 2016 Transportation Comp Plan, NW Lake Road is classified as an existing 5-lane arterial with curb & gutter, bike lanes, landscape strips, and detached sidewalks on both sides of the roadway, and a raised center landscape median along the frontage of the proposed development. NW Friberg-Strunk Street is classified as an existing 3-lane arterial with curb & gutter, bike lanes, and curb tight sidewalks on both sides of the roadway in the vicinity of the proposed development.

Per CMC 17.19.040.B.1, half-width street improvements and per CMC 17.19.040.B.5 dedication of additional right-of-way may be required for a development when it is necessary to meet the minimum street width standards or when lack of such dedication would cause or contribute to an unsafe road or intersection. As both NW Lake Road and NW Friberg-Strunk Street are fully improved roadways, neither half-width street improvements nor dedication of additional right-of-way is required.

However, there may be segments of existing 5-foot wide sidewalks along the frontage of the proposed development on NW Friberg-Strunk Street and/or NW Lake Road. Per the CDSM, sidewalk widths for 3 and 5-lane arterial require 6-foot wide sidewalks.

Staff recommends a condition of approval that prior to final engineering plan approval, the site plans are to be revised to show removal and replacement of those segments of sidewalks along NW Lake Road and NW Friberg-Strunk Street that are worn, damaged, and less than 5-feet in width with ADA compliant 6-foot wide sidewalks.

Access Spacing:
Per the *Camas Design Standards Manual, Table 3 Access Spacing Standards*, the access spacing on an arterial roadway is a minimum of 660-feet and a maximum of 1,000-feet.

[NW Lake Road]: Per the preliminary site plans there is an access location onto NW Lake Road at the eastern end of the proposed development. The proposed access drive is approximately 420-feet east of the intersection with NW Friberg-Strunk. The proposed access location onto NW Lake Road does not meet the minimum access spacing requirements on an arterial.

However, as the proposed driveway access onto NW Lake Road is located as far from the intersection as possible, the city engineer would be in support of a deviation from the minimum access spacing standards with the following conditions:

- The drive access is to be restricted to a right-in / right-out access only and signed accordingly.
- The drive access is to be a minimum 24-foot wide paved access width.
- The curb radii is to be a minimum of 35-feet on each side of the drive access.

Staff recommends a condition of approval that prior to final engineering plan approval, the site plans should be revised with the following revisions to the NW Lake Road access drive:

- The drive access is to be restricted to a right-in / right-out access only and signed accordingly.
- The drive access is to be a minimum 24-foot wide paved access width.
- The curb radii is to be a minimum of 35-feet on each side of the drive access.

[NW Friberg-Strunk Street]: There is an existing 40-foot wide access drive from NW Friberg-Strunk Street to the proposed development. The existing drive access is located approximately 250-feet north of the intersection of NW Friberg-Strunk Street and NW Lake Road. The existing driveway location does not meet the minimum access spacing requirements on an arterial.

However, the city engineer has determined that the existing driveway location is the best location for a full access driveway based on the two existing drive accesses that serve the Clark Public Utility Substation to the north, the southernmost drive access that serves Union High School to the west, the intersection with NW Lake Road, and the existing left-turn pockets for the southernmost access to Union High School and the intersection at NW Lake Road.

> **FINDING:** Staff finds that the development, as conditioned, can and will meet the requirements of CMC 17.19.040.B and the Camas Design Standards Manual (CDSM) for Roads.

Traffic and Transportation:

Per CMC 18.18.040.E a transportation impact analysis (TIA) may be required when a development generates 200 or greater average daily trips (ADTs). Based on the originally proposed land use with food carts and a drive-thru coffee kiosk, the proposed development was anticipated to generate more than 200 ADTs, therefore requiring a TIA.

The first TIA dated January 28, 2022 (Exhibit #6), was submitted addressing the traffic impacts of a 5,500-sf indoor/outdoor food cart area with a 600-sf drive-thru coffee kiosk. The initial TIA was revised and resubmitted on May 18, 2022 (Exhibit #16), to include a new 12,574 sf commercial building in addition to the food cart area and the coffee kiosk.

The second submittal dated May 18, 2022, TIA (Exhibit #16) provided data, shown in *Table 2 Trip Generation Summary*, that was calculated using "empirical observations at other similar developments" and used the *10th Edition Institute of Traffic Engineering (ITE) Manual*. Additionally, *Table 2 Trip Generation Summary* did not include the AM or PM Peak Hour trips for the food carts. Per the discussion in the TIA the lack of AM Peak Hour trips was based on the applicant's intent for the food carts to not operate prior to 11:00 a.m.

However, as the operating hours for the food carts could potentially be revised in the future and the applicant's TIA did not consider either the AM or PM peak hour impacts on the traffic system, staff was proposing that *"based on the lack of AM and PM peak hour information, and in order to not impact the traffic system in the AM and PM peak hours, the food carts should be conditioned to have operating hours no earlier than 11:00 AM and no later than 3:30 PM weekdays."*

During the review of the second TIA (Exhibit #16) the applicant requested that a hold be placed on the Hearing, at which time a notice was sent out canceling the September 7, 2022, hearing (Exhibit #27). Therefore, staff sent an email to the applicant on September 7, 2022 (Exhibit #37), requesting that the second TIA be revised with the following issues addressed:

- Revise and resubmit the TIA using the current 11th Edition ITE Manual.
- The revised TIA is to include both the AM and PM Peak Hour trips for the food carts. The previous TIA did not include either AM or PM trips and will be conditioned accordingly.
- The revised TIA is also to provide AM/PM trips for the allowed / proposed uses for the commercial building.
- Provide a trip generation that extends west to NE 192nd Avenue and south to SR 14 and to intersections/roads under Clark County jurisdiction within 2 miles of the proposed development.
- The TIA is to be prepared under supervision of a registered Civil Engineer with a traffic engineering background, per the CDSM.

A third TIA (Exhibit #31) dated November 1, 2022, was submitted on November 16, 2022, for review. Staff's review comments of the third TIA were sent to the applicant via email on November 21, 2022 (Exhibit #38), with the following items that needed to be addressed:

- *Camas's engineering staff is not in support of the use of ITE LUC 932 High Turnover Sit Down Restaurant for the 22 food carts that are being proposed.*
- *The appropriate section for the food carts/pods is LUC 926. PM peak hour trips in LUC 926 Food carts are substantially higher than High Turnover Sit Down Restaurant.*
- *Please use LUC 926, PM Peak Hour of Adjacent Street Traffic. The food cart/pod LUC includes limited covered seating or dining and may include the sale of alcoholic beverages.*
- *Please provide justification for any internalization (internal capture) or pass-by reductions. The 3rd Edition Trip Generation Handbook does not provide pass-by information Table for LUC 926.*
- *The City of Vancouver requires a trip distribution of the number of PM peak hour trips generated by this use through the following intersections on 192nd Avenue:*
    - *NE 192nd Ave. & NE 13th Street*
    - *NE 192nd Ave. & SE 34th Street*
    - *NE 192nd Ave. & SR-14 ramps*
    - *The project will be required to pay proportionate share fees for the number of PM peak hour trips to the above intersections.*
- *Empirical data is mentioned in the TIA. Please provide documentation of this data.*

Staff received an email from the applicant on November 21, 2022 (Exhibit #39), stating that the applicant's traffic consultant disagreed with Staff's direction regarding the appropriate land-use code for food carts (LUC 926), as defined in the 11th Edition ITE Manual and the intent to continue to apply the land-use code for High Turnover Sit Down Restaurant (LUC 932).

Additional conversations were held, and Staff further clarified the reason for LUC 926 versus LUC 932 in the November 22, 2022, email to the applicant (Exhibit #40) with the following information:

As stated below, staff is not in support of the use of LUC 932 for High Turnover Sit Down Restaurant for calculating trips for the food carts. Per the ITE Manual LUC 932 applies as follows:

Land Use: 932 High-Turnover (Sit-Down) Restaurant
Description
This land use consists of sit-down, <u>full-service eating establishments</u> with a typical duration of stay of 60 minutes or less. This type of restaurant is usually moderately priced, frequently belongs to a restaurant chain, and is commonly referred to as casual dining. General, these restaurants serve lunch and dinner; they may also be open for breakfast and are sometimes open 24 hours a day. These restaurants typically do not accept reservations. <u>A patron commonly waits to be seated, is served by wait staff, orders from a menu, and pays after the meal.</u>

Staff finds that the proposed 'food carts' do not fit this land use designation (LUC 932).

While staff finds that the LUC 926 Food Carts designation is adequate for the food carts, staff would be willing to consider working with the applicant's consultant to come up with a congruent scenario from the ITE Trip Generation Manual, 11th Edition.

Specifically, using LUC 933 Fast-food Restaurant without Drive-through Window may be an amenable solution provided that the comparison used is the number of employees. Additionally, Staff finds that the use of seats and/or square footage is not an adequate fit.

As stated in the previous email, the following items are to be addressed:

4. *Please provide justification for any internalization (internal capture) or pass-by reductions. The 3rd Edition Trip Generation Handbook does not provide pass-by information Table for LUC 926.*

5. *The City of Vancouver requires a trip distribution of the number of PM peak hour trips generated by this use through the following intersections on 192nd Avenue:*
    a. *NE 192nd Ave. & NE 13th Street*
    b. *NE 192nd Ave. & SE 34th Street*
    c. *NE 192nd Ave. & SR-14 ramps*
    d. *The project will be required to pay proportionate share fees for the number of PM peak hour trips to the above intersections.*
6. *Empirical data is mentioned in the TIA. Please provide documentation of this data.*

Subsequently, via an email dated November 28, 2022 (Exhibit #41), the applicant requested that staff work with his attorney to discuss a path forward for addressing the transportation impact issues noted above. A meeting was held with the applicant on November 30, 2022. The applicant agreed to pursuing the compilation and submittal of an updated Transportation Impact Analysis (TIA) addressing the items noted above.

To-date, an updated TIA has not been submitted, addressing an acceptable land-use code; justification for internalization (internal capture) or pass-by reductions; documentation of the referenced empirical data; nor the number of PM Peak Hour trips thru the applicable City of Vancouver intersections.

Therefore, staff recommends a condition of approval that prior to final engineering plan submittal, the applicant should be required to submit the updated TIA for review and approval by Camas staff, the City of Vancouver, and Clark County.

[Trip Distribution and Assignment]:
The following discussion and conditions are based on the second TIA (Exhibit #16):
Per Appendix A Figure 3 - #3, Year 2022 Existing Conditions:

- Intersection of NW Friberg-Strunk Street and SE 1st Street/NW Lake Road:
    - 74 AM & 99 PM Peak Hour trips for the south and north bound movements.
    - 482 AM and 836 PM Peak Hour trips for the west and east movements.

Per Appendix A Figure 6 #3, Year 2023 "With Project" Conditions:

- Intersection of NW Friberg-Strunk Street and SE 1st Street/NW Lake Road:
    - 136 AM & 299 PM Peak Hour trips for the south and north bound movements.
    - 565 AM and 953 PM Peak Hour trips for the west and east movements.
    - The noted trip generation and distribution do not include the future food carts.

[City of Vancouver and Clark County]:
The applicant's TIA was sent to City of Vancouver's Transportation Engineer and to Clark County's Traffic Concurrency Engineer.

The City of Vancouver's May 11, 2022, concurrency review comments (Exhibit #35) are as follows:

> *"The City of Vancouver does <u>not</u> need additional intersection analysis, but it is crucial that we capture the fees necessary to mitigate the impacts to our proportionate share projects.* ***Therefore, the City of Vancouver requests trip distribution analysis identifying the number of PM peak hour trips being distributed to the following proportionate share intersections so that we can calculate the necessary proportionate share fees:***

Proportionate Share Project Name	Fee Rate	Number of Trips	Proportionate Share Cost
NE 192nd Ave & NE 13th St	$400 per PM peak hour trip		

SE 192nd Ave & SE 34th St	$150 per PM peak hour trip		
192nd Ave & SR-14 ramp terminals	$2,000 per PM peak hour trip		
Total Proportionate Share Cost			**$XXXX**

Staff recommends a condition of approval that prior to final engineering plan submittal, the applicant is to provide an updated trip distribution analysis that identifies the number of PM Peak Hour trips that are distributed to City of Vancouver's proportionate share intersections: NE 192nd Avenue & NE 13th Street; SE 192nd Avenue & SE 34th Street; and SE 192 Avenue & SR-14 Ramps.

Staff recommends a condition of approval that prior to issuance of building permit approvals the applicant is required to pay the proportionate share amount of $_____ to the City of Vancouver and to provide Camas staff with documentation of payment of said proportionate share amount.

Clark County's August 16, 2022, TIA concurrency review (Exhibit #36) comments are as follows:

"County concurrency has reviewed the submitted traffic study for the Oak Tree Food Carts. The applicant's submitted information proposes to construct a 600 square-foot coffee kiosk with 2 drive-through windows, 2 food cart pods totaling 22 food carts, a 4,704 square-foot food court structure, and a 12,574 square-foot multi-tenant shopping center. The applicant's traffic information prepared by Engineering Northwest dated January 20, 2022, suggests that there will be a net new total of 119 AM peak hour trips, 120 PM peak hour trips and an average daily trip (ADT) volume of 1,491. However, county staff's review of the submitted traffic study and proposed development plan suggests that the trip generation for this development is under-represented.

County staff used the plan submitted within the applicant's traffic study, the ITE Trip Generation Manual 11th Edition and the ITE Trip Generation Handbook 3rd Edition to perform an independent trip generation evaluation. County staff used ITE Land Use Codes 820 – Shopping Center, 926 – Food Cart Pod, 933 – Fast-Food without Drive Through and 938 – Coffee/Donut Shop with Drive Through to determine the initial trips generated by the proposed development. The ITE Trip Generation Handbook 3rd Edition was used to determine if pass by reductions were applicable to the land use, and to determine internal capture reductions as well. County concurrency's evaluation yielded a total net new trip generation estimate of 141 AM peak hour trips, 205 PM Peak hour trips, and 2,421 ADT's.

County concurrency staff used the applicant's distribution information presented in the traffic study to determine if peak hour trips would be impacting regionally significant intersections and corridors under county jurisdiction within 2 miles of the subject site."

Clark County's Staff review found that" based on the 10th Edition ITE Manual*, "the proposed development is not expected to impact the regionally significant intersections and corridors by adding 5 or more new peak hour trips to those locations; therefore, Concurrency has no further comments and requires no further concurrency related analysis. The proposed development site is located on parcel number 176162000 in Camas."*

Staff recommends a condition of approval that prior to final engineering plan submittal, the applicant should be required to provide an updated trip distribution analysis, based on the current ITE manual, for review by the City of Camas, City of Vancouver, and Clark County. The updated trip distribution is to include City of Camas intersections; will provide the City of Vancouver with the number of PM peak hour trips to the proportionate share intersections; and allow for Clark County to determine if there are 5 or more PM peak hour trips impacting regionally significant intersections or corridors under Clark County jurisdiction within 2 miles of the project.

[Sight Distance Evaluation]:
NW Friberg-Strunk Street
There is a full access drive to the proposed development located on NW Friberg-Strunk Street, which has a posted speed limit of 40 MPH, with a 'School Speed Limit 20 MPH" in both north and south bound directions, which applies when school is in session. The minimum site distance for a 20 MPH speed zone is 200-feet in either direction. Per the TIA, the available site distance at the full access drive from the proposed development is more than 200-feet. However, outside of school hours the posted speed limit is 40 MPH, therefore the minimum sight-distance is to be 400-feet in both directions.

Staff recommends a condition of approval that prior to final engineering plan approval, the site plans and the landscape plans are to include the minimum 400-foot site distance triangle at the drive access location on NW Friberg-Strunk Street.

NW Lake Road & NW Friberg-Strunk Street
There is a limited access, right-in/right-out only, access drive from the proposed development located on NW Lake Road, which has a posted speed limit of 40 MPH in both west and east bound directions. The minimum site distance effects the westbound traffic only, as left turns onto NW Lake Road are not permitted due to the raised center landscape island. The minimum site distance for a 40 MPH speed zone is 400-feet. Per the TIA, the available site distance to the east is more than 400-feet.

Staff recommends a condition of approval that prior to final engineering plan approval, the site plans and the landscape plans are to include the minimum 400-foot site distance triangle at the drive access location on NW Lake Road.

[Intersection Level of Service (LOS)]:
The level of service evaluation was conducted for the following signalized intersections: NW Friberg-Strunk Street and NW Lake Road/SE 1st Street; NW Lake Road and NW Larkspur Road; and SE 1st Street and NE 192nd Avenue, under "Existing Conditions", 2027 "Without Project", and 2027 "With Project". A 'LOS E' represents long delays, which would indicate signalization warrants need to be reviewed.

The "Existing PM peak hour" level of service for all three signalized intersections is shown to be at a LOS A for NW Friberg-Strunk Street and NW Lake Road/SE 1st Street; LOS B for NW Lake Road and NW Larkspur Road; and LOS C for SE 1st Street and SE 192nd Avenue.

The 2027 "Without Project" level of service, which was "calculated using a nominal 0.5 percent annual compounded growth factor" is shown to be at a LOS A for NW Friberg-Strunk Street and NW Lake Road/SE 1st Street; LOS A for NW Lake Road and NW Larkspur Road; and LOS D for SE 1st Street and SE 192nd Avenue.

The 2027 "With Project" level of service, which was "calculated using a nominal 0.5 percent annual compounded growth factor" is shown to be at a LOS B for NW Friberg-Strunk Street and NW Lake Road/SE 1st Street; LOS A for NW Lake Road and NW Larkspur Road; and the LOS D for SE 1st Street and SE 192nd Avenue, as shown in Appendix D.

Generally, a LOS A, B, C, or D are acceptable service levels indicating that delays are average during the PM peak hours and additional signal warrants are not necessary.

[Turn-Lane Warrants]:
Not required to be addressed due to the existing left-turn lane south bound on NW Friberg-Strunk Street and NW Lake Road consists of two-west bound lanes.

Findings and Recommendations Noted in the TIAs (Exhibits #6, #16, & #31):
[Existing Conditions]:

- All the study intersections operated within operating standards, level of service (LOS) D or better and deemed acceptable by the City of Camas during the weekday am and pm peak hours. *Staff concurs.*

[YEAR 2022 and 2027 Total Traffic Conditions]:

- Year "2018 and 2023" total traffic conditions were estimated assuming continued local and regional growth plus the proposed site traffic. Operational analysis indicates that the study intersections are forecast to continue to operate at acceptable levels. *Staff is unable to verify as an update to the TIA is needed to reassess LOS at study intersections.*

Staff finds that it would be preferable if the applicant would request that the record be held open until such time as an updated TIA is submitted for review. If the applicant does not request to keep the record open, the following condition of approval would be recommended by staff.

Staff recommends a condition of approval that prior to final engineering plan submittal, the applicant should be required to submit an updated TIA for staff to reassess the LOS at all study intersections.

- Engineering Northwest LLC performed filed sight distance measurements. The project access intersection will be able to meet the sight distance requirements assuming any vegetation within the sight distance triangles are properly maintained after construction.

Staff recommends a condition of approval that prior to final engineer plan approval, a note is to be added to the final landscaping plans stating that the applicant is required to maintain all vegetation at a height not to exceed 42-inches within the site distance triangle as shown on the site plans and the landscape plans.

FINDING: Staff finds that the development, as conditioned, can and will meet the requirements of the Camas Design Standards Manual (CDSM) for Traffic and Transportation.

Sanitary Sewer:

The proposed project is to meet the requirements of CMC 17.19.040.C.2 sanitary sewers.

There is an existing 8-inch STEP sanitary sewer main on the west side of the road in NW Friberg-Strunk Road. A 4-inch sanitary sewer line was stubbed to Parcel No. 176162000 for the benefit of future development as part of the NW Friberg-Strunk roadway improvement project in 2015. The sanitary sewer line for this parcel is located approximately 200-feet south of the 8-inch water line service on NW Friberg-Strunk.

[Onsite Private Sanitary Sewer System]:

The preliminary utility plans provide for the extension of the 4-inch pressure sewer line, from the existing lateral on NW Friberg-Strunk Street, throughout the site to serve the commercial building, the coffee kiosk, the food court building, and the food carts. Additionally, the preliminary sanitary sewer utility plans provide for three (3) separate STEP tanks, with one located within a paved surface and the remaining two located outside of the paved surface.

Per CMC 13.62.080 The riser lid to the access chamber shall be accessible at all times to insure proper and timely emergency and/or maintenance response to the system.

The locations of each of the STEP tanks are to be accessible for maintenance and inspections. Those STEP tanks located within a paved surface, are to have access lids are to be traffic rated. The applicant is responsible for sizing each of the STEP tanks for the proposed uses.

Per CMC 17.19.040.C. 2.D sanitary easements will be granted to the city of Camas as required for inspections purposes, however, outside of the right-of-way the onsite sanitary sewer system and all its

components, including the STEP tanks, are to be privately owned and maintained by the applicant and/or property owners.

Staff recommends a condition of approval that prior to final engineering plan approval the applicant should be required to submit sanitary sewer utility plans with the following revisions to the private onsite sanitary sewer system:

- The locations of each of the STEP tanks are to be accessible for maintenance and inspections.
- STEP tanks located within paved surfaces are to be designed with traffic rated access lids.
- The applicant is responsible for sizing of the STEP tanks for the future uses. Specifications, design, and calculations for sizing the STEP tanks for each of the proposed uses, are to be submitted for to the city review and approval prior to installation.

Per CMC 13.62.B "All STEP systems commercial, industrial, and other nonresidential properties shall be owned by the owner of the subject property, except for the service box at the point where the STEP system connects to the city sanitary sewer system, which shall be owned by the city. The owner shall be responsible for maintaining all components of the STEP system and its ownership and shall be responsible for pumping the STEP tank as needed and for disposing of the waste in an approved manner. The owner shall further be responsible for paying all electrical costs associated with the operation of the STEP system."

Staff recommends a condition of approval that prior to final engineering plan approval a note is to be added to the sanitary sewer utility plans stating, "All components of the onsite private sanitary sewer system, including the STEP tanks shall be privately owned and maintained by the property owners, with a right-of-entry granted to the city for inspection purposes."

FINDING: Staff finds that the development, as conditioned, can and will meet the requirements of CMC 17.19.040.C.2 and the Camas Design Standards Manual (CDSM) for Sanitary Sewer.

Storm Sewer:

The proposed project is to meet the requirements of CMC 14.02 Stormwater Control and the Camas Design Standards Manual (CDSM).

The proposed development is approximately 3.95 acres (172,062 sf) in size of undeveloped property that consists of grass, blackberries, a mixture of trees and shrubs around the perimeter, and a 42-inch diameter Oregon White Oak in the center of the parcel.

A preliminary drainage analysis (TIR) was submitted in March 2022 with the initial application and the proposed site plan layout that included construction of a 5,500 sf indoor/outdoor eating area with food carts, drive-through coffee kiosk, a total of 97 parking spaces, and drive aisles connecting the parking stall areas. The preliminary March TIR addressed the amount of impervious surface and the stormwater requirements for the initial layout.

An updated site plan layout was submitted in May 2022 that was revised to include the addition of a 12,574 sf commercial building, 49 additional parking stalls, and additional drive aisles to connect the additional parking stall areas. However, it appears that the March preliminary TIR was not revised to include the additional impervious surface with the updated site plan. The initial site plan showed the area with the new 12,574 sf commercial building and new parking lot to remain an undeveloped portion of the site.

Staff recommends a condition of approval that prior to final engineering plan approval, that the preliminary March TIR be revised and resubmitted for approval, clearly addressing the increase in impervious surface, both pollution generating and non-pollution generating; and the decrease in pervious surface.

Per CMC 14.02 Stormwater Control, stormwater treatment and detention shall be designed in accordance with the latest edition of Ecology's *SWMMWW*.
Refer to Ecology's *Figure I-3.1 Flow Chart for Determining Requirements for New Development (Vol. I, Chapter 3)*.

- All development projects shall comply with Minimum Requirement (MR) #2 – Submittal of a Stormwater Pollution Prevent Plan (SWPPP).
- As the project results in 5,000 sf, or greater, of new plus replaced hard surface area; than Minimum Requirements (MR) #1- #9 will apply.

The proposed development improvements will exceed 5,000 sf or more, of new plus replaced hard surface area, therefore, the proposed development will be required to meet MRs #1 - #9. The preliminary drainage analysis (TIR) that was submitted in March 2022, which is conditioned to be resubmitted addressing the increase of impervious surface and decrease in pervious surface, is to confirm that MR's #1 - 8 are still being met. MRs #9 was not addressed in the preliminary TIR.

Staff recommends a condition of approval that prior to final engineering plan approval, that the preliminary March TIR be revised and resubmitted verifying that MR's #1 - #8 are still being met with the increase in impervious surface, both pollution generating and non-pollution generating; and the decrease in pervious surface. Additionally, MRs #9 is to be addressed in the revised TIR.

There is a conflict between the preliminary TIR and the preliminary stormwater plans. Per the preliminary stormwater plans, stormwater will be collected, detained, and treated onsite. After detention and treatment, the stormwater is shown to be discharged at the eastern property line via a dispersion trench, which will allow for sheet flow across an open space/wetland parcel that is owned by the city and has a protective covenant recorded over said property.

The preliminary stormwater report (TIR) states that the onsite stormwater will be discharge to a storm manhole located in NW Lake Road and conveyed to the city owned stormwater facility, 20700 NW Lake Road, located approximately 1,100-feet east of the proposed development. The stormwater facility noted in the preliminary TIR is not a regional stormwater facility for use by others, it was constructed by the city as a requirement for treatment and detention for the NW Lake Road roadway improvement project that was constructed in 2005. Additionally, there is a recorded protective covenant over the storm facility, adjacent wetlands, and stream corridor in its entirety.

Staff is in support of the proposal to discharge stormwater, after treatment and detention, to the city's parcel located along the eastern property line of the proposed development, with the understanding that the parcel to the east is not be disturbed.

Staff recommends a condition of approval that prior to final engineering plan approval that the stormwater plans are to be submitted for approval with the collection and conveyance system, treatment and detention system, and proposed dispersion system located, in its entirety, on the site of the proposed development. Dispersal to the stormwater conveyance system in NW Lake Road is not approved.

Per CMC 17.19.040.C.3 Ownership and maintenance of onsite stormwater facilities will be the responsibility of the property Owner and the City shall have right-of-entry for inspection purposes.

Staff recommends a condition of approval that prior to final engineering plan approval a note is to be added to the stormwater plans that states, "All components of the onsite stormwater plan shall be owned and maintained by the applicant/property owner, with right-of-entry granted to the city for inspections purposes."

FINDING: Staff finds that the development, as conditioned, can and will meet the requirements of CMC 14.02 and the Camas Design Standards Manual (CDSM) for Storm Sewer.

Water:

The proposed project is to meet the requirements of CMC 17.19.040.C.4 Water System and the Camas Design Standards Manual (CDSM).

There is an existing 12-inch ductile iron water main located in NW Friberg-Strunk. An 8-inch water line was stubbed to Parcel No. 176162000 for the benefit of future development as part of the NW Friberg-Strunk roadway improvement project in 2015.

[Onsite Private Water System]:
The preliminary utility plans propose to extend the 8-inch water line throughout the proposed development to serve the commercial building, the food court building, the individual food carts. The 8-inch water line is located on the north side of the future commercial building and includes the future domestic water meter that will be located at the right-of-way on NW Friberg-Strunk Street. In addition to the domestic water meter, an above-ground reduced pressure backflow assembly (RPBA), located behind the water meter will be required, which is to be accessible for inspections and testing.

Staff recommends a condition of approval that prior to final engineering plan approval, the applicant should be required to submit revised onsite water utility plans for review and approval with the following changes:

- An above-ground reduced pressure backflow assembly (RPBA) is to be located behind the water meter and is to be accessible for inspections and testing.

Per CMC 13.32.080 Backflow prevention devices shall be inspected and tested at least annually, by an authorized representative. Inspection reports are to be submitted to the city. If a device is found to not be in satisfactory operating condition, the connection between the city water supply and the system shall be severed immediately or city water service may be discontinued without notice.

Per CMC 17.19.040.C.4.d. Landscaping and open spaces require a separate irrigation meter and backflow prevention device. The owner of the property is responsible for payment of all fees associated with the installation of the meter and water usage.

Neither the preliminary water utility plans nor the landscaping plans show the location or size of said landscape meter.

Staff recommends a condition of approval that prior to final engineering plan approval, the water utility plans, and the landscape plans are to be submitted with the location and size of the irrigation meter and backflow prevention device.

Per the CDSM, a separate fire line is required, unless otherwise approved by the Fire Marshal. The preliminary water plans do not provide information of the required fire line nor a proposed location for a new onsite fire hydrant. The nearest existing fire hydrant is located approximately 240 to 265-feet from the future drive access locations on NW Friberg-Strunk Street and NW Lake Road on the corner at the intersection of NW Friberg-Strunk Street and NW Lake Road; therefore, a new onsite private fire hydrant will be required.

The fire line location may be shown on the water utility plans for informational purposes, with Fire Department Connection (FDC) located within 75-ft. of a fire hydrant, per fire code. Plans for the fire line are to be submitted to the Fire Marshall's office for the NFPA24 Fire Main Underground Permit prior to any fire line installation beyond the right-of-way. All private fire hydrants are to be ordered from the factory and painted powder coated red.

Staff recommends a condition of approval that prior to final engineering plan approval and prior to final plat approval, the applicant is to submit water utility plans with the following revisions to the fire line water system:

- A note is to be added to the water utility plans stating, "All components of the onsite private water system and fire line, including fire hydrants shall be privately owned and maintained by the property owners with right-of-entry granted to the city for inspection purposes."
- A note is to be added to the water utility plans stating that "all private fire hydrants are to be ordered direct from the factory and factory painted powder coated red."

FINDING: Staff finds that the development, as conditioned, can and will meet the requirements of CMC 17.19.040.C.4 and the Camas Design Standards Manual (CDSM) for Water.

Erosion Control:

Per CMC 14.06 Erosion and Sediment Control and CMC 17.21.030 Land-disturbing activities greater than one acre, will be required to meet the provisions for erosion prevention and sediment control as outlined in CMC 17.21.030 Land-disturbing Activities and CMC 14.06 Erosion and Sediment Control.

The proposed development is approximately 3.95 acres (172,062 sf) in size.

Per CMC 14.06.100, at time of development application an Erosion Sediment Control (ESC) plan is to be submitted to the City for review and approval prior to any ground disturbing activities. Additionally, the Erosion and sediment control (ESC) plans are to be prepared in accordance with adopted city design standards (CDSM). A set of ESC plans for the onsite land-disturbing activities was not submitted with the preliminary site design plans.

Staff recommends a condition of approval that prior to final engineering plan approval, the applicant is required to submit a set of erosion and sediment control (ESC) plans addressing the onsite land-disturbing activities for review and approval.

Per CMC 14.06.030.C Land-disturbing activities greater than one-acre are required to submit a Construction Stormwater Pollution Prevention Plan (SWPPP), which is a component of Ecology's NPDES General Construction Stormwater Permit (GCSWP). Prior to any land-disturbing activities, the applicant is required to submit a copy of the NPDES GCSWP and the SWPPP.

Per CMC 14.06.200 and CMC 17.21.030.B, an approved form of financial security will be required for erosion and sediment control for any improvements, which are greater than one acre. The financial security is required to be submitted prior to any land-disturbing activities for the proposed development.

FINDING: Staff finds that the development, as conditioned, can and will meet the requirements of CMC 14.06 and the Camas Design Standards Manual (CDSM) for Erosion Control.

Finding: Staff finds that adequate provisions, as conditioned, can or will be made for public roads, sanitary sewer, stormwater, water, and erosion control improvements that will be consistent with City requirements.

D. Adequate provisions are made for other public and private services and utilities, parks, and trails;

[Public Utilities]: There aren't any public utilities required for this development.

[Private Utilities]: The applicant/owner of the Oak Tree Station Food Carts development is responsible for maintenance of all on-site private improvements; including but not limited to the private stormwater system; the private water and fire line system; the private sanitary sewer system, including STEP tanks; the parking areas; pedestrian pathways; any retaining walls; and onsite fencing, onsite lighting, and landscaping, which includes any new street trees along the frontages on NW Lake Road and NW Friberg-Strunk Street.

[Street lighting]: There is existing street lighting along the frontages for the proposed development on NW Lake Road and NW Friberg-Strunk Street. The applicant is not required to install any additional street lighting.

[Parks and Trails]: There are no city requirements for parks, trails or other public improvements associated with the development of this property.

FINDING: Staff finds that the applicant can or will make provisions for adequate maintenance of the private improvements as conditioned.

E. Adequate provisions are made for the maintenance of public utilities;

The applicant is not required to construct any new public utilities for the proposed development.

FINDING: Staff concurs that adequate provisions will or can be made for maintenance of public utilities.

F. All relevant statutory codes, regulations, ordinances, and compliance with the same. The review and decision of the city shall be in accordance with the provisions of CMC Chapter 18.55;

FINDING: As discussed throughout this staff report, and as conditioned, this proposal can or will meet all relevant codes, regulations, ordinances, and other requirements as identified herein.

Chapter 18.19 Design Review

Design Review Committee member attendees: Dawn Redmond, Greg Anderson, and Geoerl Niles.
Attendees Excused: Whitney Henion, Casey Wycoff, and Kevin Breuner.

Design Review is required for new commercial developments per CMC 18.19.020 and therefore the commercial building, food cart station, and coffee kiosk proposal is subject to the applicable design review standards in CMC 18.19.050.A Standard Principles and B.2 Specific Principles for Commercial and Mixed Uses and the guidelines in the Camas Design Review Manual "DRM". As such, a Design Review Committee (DRC) public meeting was held on August 23, 2022, to review the proposal and recommend conditions or other actions necessary for compliance with the Design Review Manual.

Standard Principles:

Landscaping and screening, integration, or natural features of the property, building design, and integration of historic elements

Landscaping is provided along the site's perimeter to provide a visual screen and buffer with the adjacent uses and the street right-of-way. Perimeter landscaping is discussed in further detail under criterion B of the Site Plan Review section of this report. Any landscape, parking lot, or building lighting should be directed, hooded, or shielded away from surrounding properties. The Oregon White Oak on site is proposed to be retained.

The commercial building will incorporate light and dark, brown-toned plank siding with windows. The building will include a variety of roof designs to break up the facade. The food cart station will include grey, white, and black tones with metal siding to create a more rustic, barn-like style. The Design Review Committee recommended an additional condition of approval for the applicant to submit fence examples for the proposed fencing at the perimeter of the food cart area and that outdoor furniture samples be submitted to the city if applicable.

Specific Principles:

Commercial and Mixed Uses

The committee agreed that the development provided 60%/40% glazing, buildings that are compatible with the surrounding uses, and landscaping to minimize visual impacts.

FINDING: The Design Review Committee and staff found the proposed commercial development is generally in compliance with the Design Review Manual, and applicable design principles and guidelines of CMC Chapter 18.19 as conditioned.

Chapter 18.43 Conditional Use Permit

CMC Chapter 18.43.050 Criteria for Conditional Use Permit Approval:

The hearings examiner shall be guided by all of the following criteria in granting or denying a conditional use permit:

1. The proposed use will not be materially detrimental to the public welfare, or injurious to the property or improvements in the vicinity of the proposed use, or in the district in which the subject property is situated;

The proposed commercial building and drive-thru coffee shop are allowed uses in the Community Commercial (CC) zone except for the food cart station. The food cart station is subject to a conditional use permit per CMC 18.07.030 Table 1 Commercial and Industrial land uses.

CMC 18.03.030 defines food carts/food trucks as "a business in which food is primarily prepared and sold from a vehicle or trailer. Restaurants or fast food restaurants in a permanent building are not included in this definition."

A commercial building and coffee drive-thru kiosk are allowed subject to Site Plan Review approval. Staff finds future uses within the commercial space should include only the permitted uses in CMC 18.07.030 Table 1 and conditioned as such.

Per CMC 18.05.050, the purpose of commercial zones is to provide services and employment primarily to residents. Since the proposed uses are not prohibited in the zone, the City has considered that the proposed uses will not be determinantal to the public.

The commercial impacts of the project will be minimized through building and site design as discussed throughout this staff report. For example, the buildings are designed with a small-scale commercial feel to include buildings with varying roof designs. Buildings are setback and buffered with landscaping from the streetscape. The drive-thru lane will also be landscaped to minimize light impacts on oncoming traffic from NW Lake Road.

FINDING: The proposed development is allowed with approval of a conditional use permit per CMC Chapter 18.07 Use Authorization and will not be detrimental to the public or injurious to adjacent uses as discussed and conditioned throughout this staff report.

2. The proposed use shall meet or exceed the development standards that are required in the zoning district in which the subject property is situated;

The proposed uses meet and exceed the Community Commercial (CC) zoning district development standards of CMC 18.09.030 Table 1, which requires no limitation on bulk regulations, setbacks, lot coverage, or building height. However, building setbacks are provided due to required landscape buffers and the Clark Public Utilities Department (PUD) easement along NW Friberg-Strunk Street.

Chapter 18.13 includes the landscaping requirements and describes the types of landscaping materials and plantings that may be utilized to meet the landscape requirements. Refer to the Site Plan Review section of this report at Criterion B for findings regarding landscaping and parking standards.

The proposed development is subject to the Design Review requirements of CMC 18.19 and therefore elevation drawings, exterior colors, and landscape design elements of the proposed buildings/structures were submitted for review by the Design Review Committee. Design Review is discussed in further detail in the previous section of this staff report.

FINDING: Staff finds the proposed development as conditioned can or will meet the development standards that are required in the zoning district.

3. The proposed use shall be compatible with the surrounding land uses in terms of traffic and pedestrian circulation, density, building, and site design;

[Traffic Circulation]

The proposed commercial development is surrounded by a variety of land uses in the immediate vicinity, which include a Clark Public Utility (CPU) Substation to the north; single-family residential parcels and subdivisions to the north and south; a future multi-family development to the west; three existing schools; and both developed and undeveloped commercial parcels to the north, west, and east.

The existing road system consists of an arterial along the south side, NW Lake Road; and a collector along the west side, NW Friberg-Struck Street.

- NW Lake Road is a fully improved 5-lane arterial with curb & gutter, detached sidewalks, planter strips, bike lanes, street lighting, and a dedicated east bound left-turn lane at the signal. *Additional road improvements are not required.*
- NW Friberg-Strunk Street is a fully improved 3-lane collector with curb & gutter, detached sidewalks, planter strips, bike lanes, street lighting, and dedicated right-turn and left-turn lanes at the signal. *Additional road improvements are not required.*

The three existing schools are: Union High School on the west side of NW Friberg-Strunk Road; Illahee Elementary School on the south side of SE 1st Avenue, and Shahala Middle School south of Illahee Elementary, on the east side of NE 192nd Avenue.

- Union High School generates a significant amount of morning and afternoon vehicular traffic, and the school's two drive access locations are from NW Friberg-Strunk.
- Illahee Elementary School generates a significant amount of morning and afternoon vehicular traffic, however, the school has only one shared egress and ingress drive that is approximately 2,332-feet west of the proposed development.
- Shahala Middle School generates a significant amount of morning and afternoon vehicular traffic, however, access to the school is from SE 192nd Avenue at SE Mill Plain Blvd.

West and southwest of the proposed development are single-family parcels, a large single-family subdivision, Westridge Place, a future multi-family development, a church, and a strip mall that is comprised of several restaurants, commercial services, and a Costco Wholesale Warehouse.

North of the proposed development are commercial and industrial parcels, single-family parcels, and a single-family subdivision, Morning Meadows Estates.

The existing traffic movements in all directions are controlled with a traffic signal at NW Friberg-Strunk Street and NW Lake Road / SE 1st Street; a traffic signal at SE 1st Street and SE 197th Avenue; and a traffic signal at NW Friberg-Strunk Street and NE Goodwin Road / NE 13th Street. All existing drive accesses and single-family driveways onto the adjacent roads are stop controlled.

Posted speed limits in the vicinity of the proposed development are as follows:

- 40 MPH eastbound and westbound on NW Lake Road/SE 1st Street;
- 40 MPH northbound and southbound on NW Friberg-Strunk Street; and

- 20 MPH school speed limits along the frontages of both the schools accessing NW Friberg-Strunk Street and SE 1st Street.

Based on the existing road classifications of collector and arterial; the proposed use is compatible with the surrounding land uses as it relates to traffic.

'Roads' and 'Traffic and Transportation' are discussed in further detail under Site Plan Review Criterion C of this staff report.

[Pedestrian Circulation]

Proposed internal / onsite pedestrian walkways connect the project site with the existing sidewalks along NW Lake Road and NW Friberg-Strunk Street for adequate pedestrian circulation as shown on the proposed site plan (Exhibit 19). Striped pedestrian crossings are proposed throughout the project site; however, staff recommends a concrete or distinct material that clearly defines the pedestrian connections to be provided and conditioned as such.

Density

There is no limitation on density and dimensions in the CC zone per CMC 18.09.030 Table 1 including the abutting properties immediately to the north which have compatible commercial uses of a storage facility and a Clark Public Utility Substation. To the east is Business Park zoned City property that consists of critical areas. Across the street to the south is Light Industrial/Business Park zoning which includes Wafer Tech, a manufacturing business. Zoning to the east includes commercial and residential areas consisting of Union High School and single-family residences. There are no density requirements for BP and LI/BP within Camas City limits.

Building Design

The proposed commercial building design includes a variety of brown tones that blend in with the surrounding area. There will be varying roof lines and facades to break up the 12,574 square-foot building. The elevations for the food cart station include a rustic barn-like building to blend in with the natural landscape and Oregon White Oak tree. The coffee kiosk will be similar in color and style to the commercial building. Overall, the development mitigates the size and scale differences of the proposed buildings by including multiple articulations, materials, and roof forms to break up the buildings into smaller components including the use of landscaping to help soften not only the appearance of the buildings but also the parking area on site.

Site Design

The proposed site design includes building setbacks along the street frontages that incorporate landscaping to help buffer and distance the proposed use from the public on NW Friberg-Strunk Street and NW Lake Road. There is also a 60-foot wide Clark Public Utilities Department (PUD) easement along the west property line that encroaches the property by 30 feet. Parking is placed primarily along the perimeter of the east, south, and west property lines to accommodate the PUD easement and the retention of the Oregon White Oak tree. Site design is discussed further under Criterion B of the Site Plan Review section of this staff report.

FINDING: Staff finds the proposed development, as conditioned, is compatible with surrounding land uses in terms of traffic and pedestrian circulation, density, building, and site design.

4. Appropriate measures have been taken to minimize the possible adverse impacts that the proposed use may have on the area in which it is located;

To minimize potential adverse impacts, the proposed site design includes perimeter landscape buffers at street frontages to buffer the proposed use from existing adjacent uses and the public right-of-way. Parking is required to be landscaped at all perimeters, as well as the drive-thru lanes for the coffee

kiosk. The commercial building along the northern property line will include one to two-story commercial spaces which is consistent with the storage facility building height to the north. Buildings are setback from property lines and constructed of a variety of materials and colors with varying architectural elements for a cohesive design complimentary with surrounding uses. The food cart station is at the center of the site surrounding the oak tree. The area will be landscaped along the perimeter and parking areas to minimize impacts to adjacent uses. The commercial building and coffee kiosk are outright permitted uses and are located to the exterior portions of the site, further screening the food cart station.

FINDING: Staff has proposed conditions of approval to minimize potential adverse project impacts to the area.

E. The proposed use is consistent with the goals and policies expressed in the comprehensive plan;

FINDING: As mentioned above in Section A of the Site Plan Review Criteria, the development is consistent with the goals and policies of the comprehensive plan.

F. Any special conditions and criteria established for the proposed use have been satisfied. In granting a conditional use permit the hearings examiner may stipulate additional requirements to carry out the intent of the Camas Municipal Code and comprehensive plan.

FINDING: After conducting a public hearing and deliberating over the evidence, the Hearings Examiner may include any additional conditions or criteria necessary to carry out the intent of the CMC and the Comprehensive Plan.

PUBLIC COMMENTS

As of the writing this staff report, staff has received one comment from the Department of Ecology which is discussed in the SEPA section of this staff report regarding the wetland.

CONCLUSION

Based on the above findings and discussion provided in this staff report, staff concludes that the Oak Tree Station (CUP22-01) could be approved with the applicable standards and all conditions of approval are met.

RECOMMENDATION

Staff recommends APPROVAL of the conditional use permit for the Oak Tree Station (CUP22-01) subject to the following conditions of approval:

CONDITIONS OF APPROVAL

STANDARD CONDITIONS OF APPROVAL:

1. Final engineering site improvement plans shall be prepared in accordance with the Camas Design Standards Manual (CDSM) and CMC 17.19.040.
    a. Per CMC 17.19.040.C.a: All utilities designed to serve the development shall be placed underground. Those utilities to be located beneath paved surfaces, including all service connections, shall be installed prior to application of any surface materials.
2. Installation of public improvements shall be in accordance with CMC 17.21 Procedures for Public Improvements.

3. The engineering site plans shall be prepared by a licensed civil engineer in Washington State and submitted to the City's Community Development (CDEV) Engineering Department for review and approval. Submittal requirements for first review are as follows:
    a. Final engineering civil site improvement plans are not to be submitted until after Planning issues the land-use decision.
    b. Submit four (4) full size sets and one (1) half size set of plans;
    c. One (1) PDF copy of final (TIR) stormwater report;
    d. Stamped preliminary engineer's estimate.
4. Community Development (CDEV) Engineering is responsible for plan review (PR) and construction inspection (CI) of all the civil site improvements outside of building footprints.
5. CDEV shall collect a total 3% plan review and construction inspection (PR&CI) fee for the proposed development outside of the building footprints.
    a. The 3% fee is based on a stamped engineer's estimate.
    b. A preliminary engineer's estimate is to be submitted prior to or with first review.
    c. Payment of the 1% plan review (PR) fee is to be paid prior to first review.
    d. Payment of the 2% construction inspection (CI) fee is to be paid prior to release of approved construction drawings by CDev Engineering Dept.
    e. Plans, profiles, and structural calculations for retaining walls over 4-feet in height are to be submitted to engineering for review and approval.
    f. Under no circumstances will the applicant be permitted to begin construction or any land-disturbing activities prior to final engineering plan approval.
6. Per CMC 17.21.030, prior to any land-disturbing activities of an acre or more, the applicant shall submit:
    a. A copy of the NPDES General Construction Stormwater Permit (GCSWP), which is issued by the Washington State Dept. of Ecology;
    b. A copy of the Stormwater Pollution Prevention Plan (SWPPP), which is required as a component of the NPDES GCSWP permit.
7. Per CMC 14.06.200, prior to commencing any land-disturbing activities of more than an acre, the applicant shall submit an Erosion Control Bond in the amount of 200% of the cost for erosion control measures.
8. Prior to construction, temporary fencing shall be installed that clearly marks in the field the critical area buffers and shall remain throughout permitted construction activities.
9. If applicable, existing wells and septic tanks and septic drain fields shall be decommissioned in accordance with State and County guidelines per CMC 17.19.020(A3).
10. In the event that any item of archaeological interest is uncovered during the course of a permitted ground disturbing action or activity, all ground disturbing activities shall immediately cease, and the applicant shall notify the City and Department of Archaeology and Historic Preservation (DAHP).
11. A separate new construction permit shall be required from the Fire Marshal's office. Two sets of plan specifications, and other information as may be necessary to determine compliance with fire and life safety code and standards shall be submitted to the Fire Marshal's office.
12. Permit(s) and inspections are required by the Fire Marshal's Office for this project. Please contact the Fire Marshal's office at 360-834-6191, or rmiller@ci.camas.wa.us for submittal information. Permit forms and submittal instructions are available online or can be picked up at the Fire Marshal's office at 605 NE 3rd.
13. A building permit shall be required prior to commencement of construction of any structures.

14. At the time of building permit issuance, the applicant shall pay the appropriate impact fees in accordance with the provisions of CMC 3.88.
15. Per CMC 18.18.070.B, prior to issuance of final occupancy permits, all public and private improvements shall be completed in accordance with CMC 17.21.070 Final Acceptance.
16. Final Acceptance is issued by the Community Development Engineering Dept.
17. Prior to Final Acceptance, the applicant shall remove all temporary erosion prevention and sediment control measures from the site at completion of all site improvements, which includes stabilization of all disturbed soil.
18. Prior to Final Acceptance, final as-built construction drawing submittals shall meet the requirements of the Camas Design Standards Manual (CDSM).
19. As-builts are to be submitted as PDFs and in either AutoCAD or Carlson formats. The cover sheet for the as-builts is to include the originally approved and signed cover sheet.
20. Per CMC 17.21.070.E A letter of Final Acceptance will be issued once all items listed in 17.21.070.B-C are completed.
21. Per CMC 18.18.070.B, prior to issuance of final occupancy permits, all public and private improvements shall be completed in accordance with CMC 17.21.070 Final Acceptance.
22. The applicant will be responsible for maintenance of all on-site private improvements, including but not limited to the private stormwater system; the private water and fire line system; the private sanitary sewer system, including STEP tanks; the parking areas; pedestrian pathways; any retaining walls; and onsite fencing, lighting, and landscaping.
23. The applicant shall take appropriate measures to ensure landscaping success for a minimum of three (3) years after issuance of Certificate of Occupancy. If plantings fail to survive, the property owner shall promptly replace them.
24. The applicant will be required to purchase all permanent traffic control signs, street name signs, street lighting, and traffic control markers for the proposed development.
25. Work within the city right-of-way (ROW) will require submittal and approval of a traffic control plan (TCP) prior to start of any work.
26. Regulations for installation of public improvements, improvement agreements, bonding, final platting, and final acceptance can be found at CMC 17.21.
27. The applicant will be responsible for ensuring that private utilities; underground power, telephone, gas, CATV, interior street/parking lighting, and associated appurtenances are installed.

SPECIAL CONDITIONS OF APPROVAL:

Planning:

28. The development shall not encroach the “Tree Protection Zone” and shall follow the recommendations listed in the Arborist Report by Certified Arborist Consultations dated March 19, 2022, to ensure the survival of the Oregon White Oak.
29. A conservation covenant shall be recorded with the County to ensure the long-term preservation of the Oregon White Oak
30. Any existing off-site trees should not be removed if proposed without permission from the property owner.

31. Street trees shall be planted every 30 linear feet within the existing planter strips where there are missing trees and shall comply with the City's Street Tree Manual.
32. The 5-foot L1 landscape buffer along the northern property line must include high and low shrubs.
33. Watering system shall maintain the proposed landscaping for a period to ensure that plants are well established.
34. A parking lot planter strip shall be provided every 15 spaces and be landscaped in accordance with CMC 18.13.060. Wheel stops are required adjacent to planter areas to protect landscaping from car overhangs per CMC 18.13.060.F.
35. Landscape, parking and building lighting shall be low voltage, non-glare, and indirect lighting is directed, hooded, or shielded away from neighboring properties.
36. If additional signage is proposed, additional approval per CMC 18.15 is required prior to receiving building permit approval for the sign. Signs located on buildings or incorporated into the landscaping are unobtrusive and vandal resistant.
37. Examples of the perimeter fencing and outdoor furniture samples at the food cart station shall be submitted to the city for approval.
38. Street lighting (poles, lamps) is substantially similar or architecturally more significant than other street lighting existing on the same street and do not conflict with any City approved street lighting plans for the street.
39. Lighting is incorporated into the landscape and illuminates the quality of the natural environment. Street light poles and lamps shall be compatible with other nearby lighting on the same street.
40. If retaining walls are proposed, they must meet CMC 18.17.060.
41. Future uses within the commercial space shall include only the permitted uses in CMC 18.07.030 Table 1.
42. In order to not impact the traffic system in the AM and PM peak hours, the food carts should be conditioned to have operating hours no earlier than 11:00 AM and no later than 3:30 PM weekdays.

<u>Prior to Final Engineering Plan Submittal:</u>

43. The applicant shall be required to submit the updated TIA for review and approval by Camas staff, the City of Vancouver, and Clark County.
44. The applicant shall be required to provide an updated trip distribution analysis, based on the current ITE manual, for review by the City of Camas, City of Vancouver, and Clark County. The updated trip distribution is to include City of Camas intersections; will provide the City of Vancouver with the number of PM peak hour trips to the proportionate share intersections; and allow for Clark County to determine if there are 5 or more PM peak hour trips impacting regionally significant intersections or corridors under Clark County jurisdiction within 2 miles of the project.
45. The applicant shall provide an updated trip distribution analysis that identifies the number of PM Peak Hour trips that are distributed to City of Vancouver's proportionate share intersections: NE 192nd Avenue & NE 13th Street; SE 192nd Avenue & SE 34th Street; and SE 192 Avenue & SR-14 Ramps.
46. Staff recommends a condition of approval that prior to final engineering plan submittal, the applicant should be required to submit an updated TIA for staff to reassess the LOS at all study intersections.

Prior to Final Engineering Plan Approval:

Planning:

47. The applicant will be required to obtain a Nationwide permit from the US Army Corps of Engineers.
48. A mitigation plan is required per CMC 16.51.180 and shall be submitted prior to engineering plan approval.
49. The applicant shall submit to the city for review and approval a final landscape plan consistent with the landscaping standards in CMC Chapter 18.13. Plants utilized will need to be per the approved City's Landscape list and per the Camas Design Manual planting specifications and landscape notes. For plants not on the approved City list, a characteristic card should be submitted to the City for review and approval. Irrigation and landscaping improvements should be installed or bonded for prior to final acceptance.
50. Temporary construction fencing is required prior to construction around the Oregon White Oak Tree Protection Zone and shall remain throughout permitted construction activities.

Engineering:

51. The locations of trash enclosures and the minimum drive aisle widths, shown as 24-feet, where adjacent to the trash enclosures shall be approved by the garbage and recycling providers.

[Roads]

52. The site plans shall be revised with the following revisions to the NW Lake Road drive access:
    a. The drive access is to be restricted to a right-in / right-out access only and signed accordingly.
    b. The drive access is to be a minimum 24-foot wide paved access width.
    c. The curb radii is to be a minimum of 35-feet on each side of the drive access.
53. The site plans are to be revised to show removal and replacement of those segments of sidewalks along NW Lake Road and NW Friberg-Strunk Street that are worn, damaged, and less than 5-feet in width with ADA compliant 6-foot wide sidewalks.

[Transportation]

54. The site plans and the landscape plans are to include the minimum 400-foot site distance triangle at the drive access location on NW Friberg-Strunk Street.
55. The site plans and the landscape plans are to include the site distance triangles at both drive access locations on NW Lake Road.
56. A note shall be added to the final landscaping plans stating that the applicant is required to maintain all vegetation at a height not to exceed 42-inches within the site distance triangle as shown on the site plans and the landscape plans.

[Sanitary Sewage]

57. The applicant shall be required to submit sanitary sewer utility plans with the following revisions to the private onsite sanitary sewer system:
    d. The locations of each of the STEP tanks are to be accessible for maintenance and inspections.
    e. STEP tanks located within paved surfaces are to be designed with traffic rated access lids.
    f. The applicant is responsible for sizing of the STEP tanks for the future uses. Specifications, design, and calculations for sizing the STEP tanks for each of the

proposed uses, are to be submitted for to the city review and approval prior to installation.

58. A note is to be added to the sanitary sewer utility plans stating, "All components of the onsite private sanitary sewer system, including the STEP tanks shall be privately owned and maintained by the property owners, with a right-of-entry granted to the city for inspection purposes.

[Stormwater]

59. The preliminary March TIR shall be revised and resubmitted for approval, clearly addressing the increase in impervious surface, both pollution generating and non-pollution generating, and the decrease in pervious surface.

60. The preliminary March TIR be revised and resubmitted verifying that MR's #1 - #9 are still being met with the increase in impervious surface, both pollution generating and non-pollution generating, and the decrease in pervious surface. Additionally, MRs #9 is to be addressed in the revised TIR.

61. The stormwater plans are to be submitted for approval with the collection and conveyance system, treatment and detention system, and proposed dispersion system located, in its entirety, on the site of the proposed development. Dispersal to the stormwater conveyance system in NW Lake Road is not approved.
62. A note is to be added to the stormwater plans that states, "All components of the onsite stormwater system shall be owned and maintained by the applicant/property owner, with right-of-entry granted to the city for inspections purposes."

[Water]

63. The applicant shall be required to submit revised onsite water utility plans for review and approval with the following changes:
    g. An above-ground RPBA, is to be located behind the water meter and is to be accessible for inspections and testing.

64. The water utility plans and the landscape plans are to be submitted with the location and size of the irrigation meter and backflow prevention device.

65. The applicant shall be required to submit water utility plans with the following revisions to the fire line water system:

    h. A note is to be added to the water utility plans stating that "all components of the onsite private water system and fire line, including fire hydrants shall be privately owned and maintained by the property owners with right-of-entry granted to the city for inspection purposes."
    i. A note is to be added to the water utility plans stating that "all private fire hydrants are to be ordered direct from the factory and factory painted powder coated red."

[Erosion Control]

66. The applicant is required to submit a set of erosion and sediment control (ESC) plans addressing the onsite land-disturbing activities for review and approval.

Fire Marshal:

67. The applicant shall be required to provide a design for a 'No Parking and Towing' sign for review and approval.
    a. Said sign is to include contact information for a towing company.
    b. The applicant shall be required to install the 'No Parking and Towing' signs prior to final acceptance.

Prior to Land-Disturbing Activities:

68. The NPDES GCSWP permit, an electronic copy of the SWPPP, and the Erosion and Sediment Control bond are to be submitted to the city.

Prior to Final Acceptance:

Planning:

69. Irrigation and landscaping should be installed or bonded for prior to final acceptance.

Engineering:

70. The applicant is required to provide a design for a 'No Parking and Towing' sign for review and approval.
    a. Said sign is to include contact information for a towing company, as the city does not provide towing on private roads, nor does the city enforce no parking on private roads.
    b. The applicant shall be required to install the 'No Parking and Towing' signs prior to final acceptance.
71. The applicant shall remove all temporary erosion prevention and sediment control measures from the site at completion of all site improvements, which includes stabilization of all disturbed soil, prior to issuance of Final Acceptance from CDEV Engineering.
72. Final as-built construction drawing submittals shall meet the requirements of the Camas Design Standards Manual (CDSM).
    a. As-builts are to be submitted as PDFs and in either AutoCAD or Carlson formats. The cover sheet for the as-builts is to include the originally approved and signed cover sheet.
73. The 2-year warranty maintenance bond is to be submitted in accordance with CMC 17.21.070.A Upon final acceptance of the development improvements a two-year (2) warranty bond commences.

Prior to Building Permit Approval:

74. Prior to building permit issuance, the applicant shall be required to pay the proportionate share amount of $_____ to the City of Vancouver and to provide Camas staff with documentation of payment of said proportionate share amount.

Prior to Final Occupancy:

Planning:

75. Detailed construction plans for any new building signage shall be submitted for city review and approval.
76. Unless construction of site improvements commences within two (2) years of issuance of this decision, this permit will expire.

Community Development Department | Planning
616 NE Fourth Avenue | Camas, WA 98607
(360) 817-1568
Permits@CityofCamas.us

General Application Form

Case Number: CUP22-01 Oak Tree Station

Applicant Information

Applicant/Contact: Paul Williams — Phone: (360) 931-3122

Address: 6168 NE HWY 99 (Street Address) — paulwilliamspe@gmail.com (E-mail Address)

Vancouver (City) — WA (State) — 98665 (ZIP Code)

Property Information

Property Address: None (Street Address) — 176162000 (County Assessor # / Parcel #)

Camas (City) — WA (State) — 98607 (ZIP Code)

Zoning District: Community Commercial — Site Size: 3.95 acres

Description of Project

Brief description: Oak Tree Station will construction a 5,500 sq.ft. indoor eating area and outdoor eating area. The project will also include a drive thru coffee shop

Are you requesting a consolidated review per CMC 18.55.020(B)? YES ☐ NO ☒

Permits Requested: ☐ Type I ☐ Type II ☒ Type III ☐ Type IV, BOA, Other

Property Owner or Contract Purchaser

Owner's Name: Kyne (Last) Rob (First) — Phone: (360) 909 5450

3239 NW Hood Ct. (Street Address) — Apartment/Unit #

E mail Address: Camas (City) — WA (State) — 98607 (Zip)

Signature

I authorize the applicant to make this application. Further, I grant permission for city staff to conduct site inspections of the property.

Signature: [signature] Date: 1/28/22

Note: If multiple property owners are party to the application, an additional application form must be signed by each owner. If it is impractical to obtain a property owner signature, then a letter of authorization from the owner is required.

Date Submitted:	Pre-Application Date:	Receipt #00665806
Staff:	Related Cases #: PA21-56	☐ Electronic Copy Submitted
		$11,234.60 Validation of Fees

Revised: 01/22/2019

Application Checklist and Fees [updated on January 1, 2022]

◊ Annexation	$863 - 10% petition; $3,669 - 60% petition	001-00-345-890-00		$
◊ Appeal Fee		001-00-345-810-00	$399.00	$
◊ Archaeological Review		001-00-345-810-00	$137.00	$
◊ Binding Site Plan	$1,879 + $24 per unit	001-00-345-810-00		$
◊ Boundary Line Adjustment		001-00-345-810-00	$103.00	$
◊ Comprehensive Plan Amendment		001-00-345-810-00	$5,826.00	$
◊ Conditional Use Permit				
Residential	$3,417 + $105 per unit	001-00-345-810-00		$
Non-Residential		001-00-345-810-00	$4,328.00	$ 4,328
◊ Continuance of Public Hearing		001-00-345-810-00	$524.00	$
◊ Critical or Sensitive Areas (fee per type)		001-00-345-810-00	$775.00	$
(wetlands, steep slopes or potentially unstable soils, streams and watercourses, vegetation removal, wildlife habitat)				
◊ Design Review				
Minor		001-00-345-810-00	$433.00	$
Committee		001-00-345-810-00	$2,375.00	$ 2,375
◊ Development Agreement	$877 first hearing; $530 ea. add'l hearing/continuance	001-00-345-810-00		$
◊ Engineering Department Review - *Fees Collected at Time of Engineering Plan Approval*				
Construction Plan Review & Inspection	*(3% of approved estimated construction costs)*			
Modification to Approved Construction Plan Review	*(Fee shown for information only)*		$420.00	
Single Family Residence (SFR) - Stormwater Plan Review	*(Fee shown for information only)*		$208.00	
Gates/Barrier on Private Street Plan Review	*(Fee shown for information only)*		$1,041.00	
◊ Fire Department Review				
Short Plat or other Development Construction Plan Review & Insp.		115-09-345-830-10	$284.00	$
Subdivision or PRD Construction Plan Review & Inspection		115-09-345-830-10	$354.00	$
Commercial Construction Plan Review & Inspection		115-09-345-830-10	$424.00	$ 424
◊ Home Occupation				
Minor - Notification (No fee)			$0.00	
Major		001-00-321-900-00	$69.00	$
◊ LI/BP Development	$4,328 + $41.00 per 1000 sf of GFA	001-00-345-810-00		$
◊ Minor Modifications to approved development		001-00-345-810-00	$346.00	$
◊ Planned Residential Development	$35 per unit + subdivision fees	001-00-345-810-00		$
◊ Plat, Preliminary				
Short Plat	4 lots or less: $1,936 per lot	001-00-345-810-00		$
Short Plat	5 lots or more: $7,1755 + $250 per lot	001-00-345-810-00		$
Subdivision	$7,175 + $250 per lot	001-00-345-810-00		$
◊ Plat, Final:				
Short Plat		001-00-345-810-00	$200.00	$
Subdivision		001-00-345-810-00	$2,375.00	$
◊ Plat Modification/Alteration		001-00-345-810-00	$1,196.00	$
◊ Pre-Application (Type III or IV Permits)				
No fee for Type I or II				
General		001-00-345-810-00	$354.00	$
Subdivision (Type III or IV)		001-00-345-810-00	$911.00	$
◊ SEPA		001-00-345-890-00	$810.00	$ 810
◊ Shoreline Permit		001-00-345-890-00	$1,196.00	$
◊ Sign Permit				
General Sign Permit	(Exempt if building permit is required)	001.00.322.400.00	$41.00	$
Master Sign Permit		001.00.322.400.00	$126.00	$
◊ Site Plan Review				
Residential	$1,151 + $34 per unit	001-00-345-810-00		$
Non-Residential	$2,876 + $68 per 1000 sf of GFA	001-00-345-810-00		$ 3,297.60
Mixed Residential/Non Residential	(see below)	001-00-345-810-00		$
	$4,055 + $34 per res unit + $68 per 1000 sf of GFA			
◊ Temporary Use Permit		001-00-321-990-00	$80.00	$
◊ Variance (Minor)		001-00-345-810-00	$695.00	$
◊ Variance (Major)		001-00-345-810-00	$1,295.00	$
◊ Zone Change (single tract)		001-00-345-810-00	$3,345.00	$

Adopted by RES 1023 AUG 2005; Revised by RES 1113 SEPT 2007; Revised by RES 1163 OCT 2009; Revised by RES 1204 NOV 2010; Revised by RES 15-001 JAN 2015; Revised by RES 15-007 MAY 2015; Revised by RES 15-018 DEC 2015; Revised by RES 16-019 NOV 2016; Revised by RES 17-015 NOV 2017; Revised by RES 18-003 APRIL 2018; Revised by RES 18-013 NOV 2018; Revised by RES 19-018 DEC 2019 Revised by RES20-014 DEC 2020

Fees reviewed & approved by Planner: _____ *Initial* *Date*

For office use only

Total Fees Due: $ 11,234.60

City of Camas
616 NE 4th Avenue
Camas, WA 98607
360-834-2462

Finance Office Hours:
Monday-Friday 9:00 - 5:00 p.m.

Date/Time 01/31/2022 09:07 AM
Receipt No. 00665806
Receipt Date 01/31/2022

CR plan	11,234.60
fire/site	
Fire Site Plan I	
nsp & Rev	424.00
sepa	
sepa fees	810.00
designrev	
design review	2,375.00
site-plrv	
site plan review	3,297.60
cond.use	
conditional use permit	4,328.00

Cash: 0.00
Other: 11,234.60
0.00
Check: 0.00

Total: 11,234.60
Change: 0.00

Check No: PA21-56 OAK TREE STATION

ROB KYNE
Customer #: 000000

Cashier: ckafouros
Station: IS02580

CITY OF CAMAS-LIC/PERM
616 NE 4TH AVE
CAMAS, WA 98607

01/31/2022 09:00:49

CREDIT CARD

VISA SALE

Card #	XXXXXXXXXXXX9722
SEQ #:	2
Batch #:	151
INVOICE	2
Approval Code:	01483D
Entry Method:	Manual
Mode:	Online

SALE AMOUNT $11234.60

CUSTOMER COPY

PRE-APPLICATION MEETING NOTES
Oak Tree Station Food Carts
PA21-56

Meeting held via Zoom Thursday, December 2, 2021 at 1:30 p.m.
Notes issued December 8, 2021

Applicant:	Paul Williams
City of Camas:	Madeline Sutherland, Planner Norm Wurzer Engineering Brian Smith, Building Official Randy Miller, Fire Marshal
Location:	Parcel Number: 176162000
Zoning:	Community Commercial (CC)
Description:	The applicant is proposing a food cart station with a drive thru coffee kiosk.

NOTICE: Notwithstanding any representation by City staff at a pre-application conference, staff is not authorized to waive any requirement of the City Code. Any omission or failure by staff to recite to an applicant all relevant applicable code requirements shall not constitute a waiver by the City of any standard or requirement. [CMC 18.55.060 (C)] This pre-application conference shall be valid for a period of 180 days from the date it is held. If no application is filed within 180 days of the conference or meeting, the applicant must schedule and attend another conference before the City will accept a permit application. [CMC 18.55.060 (D)] Any changes to the code or other applicable laws, which take effect between the pre-application conference and submittal of an application, shall be applicable. [CMC 18.55.060 (D)]. A link to the Camas Municipal Code (CMC) can be found on the City of Camas website, http://www.cityofcamas.us/ on the main page under "Business and Development".

PLANNING DIVISION **Madeline Sutherland | (360) 817-1568 |msutherland@cityofcamas.us**

An application for a conditional use permit is considered a Type III permit. Applicable codes for development include Title 16 Environment, Title 17 Land Development and Title 18 Zoning of the Camas Municipal Code (CMC), which can be found on the city website. Please note it remains the **applicant's responsibility** to review the CMC and address all applicable provisions. The following pre-application notes are based on application materials and site plan submitted to the City on October 28, 2021:

Application Requirements
Your proposal will need to comply with the general application requirements per **CMC Section 18.55.110** in addition to the specific application requirements outlined in **CMC 18.43** – Conditional Use permit, **CMC Section 18.18** - Site Plan Review and **CMC 18.19** - Design Review. The following is an excerpt from the requirements (see code section for full text):

1. A completed city application form and required fee(s);

Fees will be based on the adopted fees at the time of land use application submittal. The current fees include the following:	
1. Conditional Use Permit	$4,328
2. Site Plan Review	$2,876 + $68/1000sf of GFA
3. Design Review	$2,375
4. SEPA Review	$810
5. Fire Department Review	$424
6. Building Permit and Plan Review	based on the valuation of the project
7. Engineering Review	3% of estimated construction costs

2. Complete applications for other required land use proposals applicable to the proposal,
3. A vicinity map showing location of the site,
4. A narrative describing the project, addressing ownership of open spaces, stormwater facilities, trails, critical areas, and applicable criteria listed below.
5. All existing conditions shall be delineated on the site plan per CMC Section 17.11.030.B.6(a-p),
6. A topographic map based upon a site survey delineating contours, existing and proposed, at no less than five-foot intervals, and which locates existing streams, marshes, and other natural features,
7. A circulation plan drawn to a scale acceptable to the community development director illustrating all access points for the site, the size and location of all driveways, streets, and roads, with proposed width and outside turning radius, the location, size, and design of parking and loading areas, and existing and proposed pedestrian circulation system.
8. A preliminary stormwater technical information report (TIR) supporting the preliminary stormwater drainage and runoff plan.
9. A utility plan,
10. A plan of all proposed landscaping including the treatment and materials used for open spaces, and the types of plants and screening to be used.,
11. Tree survey,
12. One set of mailing labels for all property owners as provided in CMC Section 18.55.110.,
13. Necessary drawings- three sets and an electronic copy (send as a PDF by email or on a disc). All documents and reports submitted as separate pdf copies.

Conditional Use Permit

Food trucks/carts in the Community Commercial zone requires a conditional use permit per CMC 18.07.030 Table 1. A conditional use permit is a Type III process, and the final decision is rendered by the hearing's examiner. The narrative must address the approval criteria per CMC 18.43.050.A-F.

Site Plan Review

The site plan review approval process will be consolidated with the conditional use permit. The application shall contain information outlined in CMC 18.18.040(A-J). The application shall address in a narrative the criteria for approval CMC 18.18.060 (A-F). Building height, setbacks and lot coverage can be found in CMC 18.09.0030 Table 1.

Major Design Review

Design Review is required for all new development within commercial zones and gateway areas per CMC *18.19.20.* The standards applicable to this property for Design Review are found in the Design Review Manual to include the *Standard Principles & Guidelines* in addition to the *Specific Principles & Guidelines for Commercial and Mixed Uses as well as Gateways.*

A submittal for Design Review must include a narrative addressing the principles per CMC 18.19.050.A.1-4 and 18.19.050.B.1&2., site plan drawing, a detailed landscape plan, exterior building materials and colors, elevation views and lighting specifications and plan. A design review decision may be consolidated and issued with the site plan review/conditional use permit decision.

Critical Area Review
Clark County GIS mapping identifies wetland presence over 200 feet of the subject site. Therefore, a critical area report is not required per CMC Section 16.51.130.

SEPA
A SEPA checklist is required per CMC Section 16.07.020.C. because there over 40 parking spaces.

Landscaping Regulations
Per CMC 18.13.020, landscaping standards shall apply to all new commercial uses, including a parking lot for four or more parking spaces. As such, a landscape plan must be submitted pursuant the landscaping standards in Chapter 18.13.

Per CMC 18.13.055 Table 1, a 5-ft. L1 landscape buffer is required at the north property line abutting a commercial zone. A 5-ft. L2 landscape buffer is required at the east, south and west property line adjacent to Business Park and Residential zones.

Parking areas shall be landscaped at all perimeters and include a ratio of one tree per six parking spaces per CMC 18.13.060. No more than 15 parking spaces shall be located in a row without a landscaped divider strip. Additional landscape screening will be required between NW Lake Rd and the coffee drive thru lane.

Tree Survey
A tree survey is required per CMC 18.13.040.B and must be prepared by a certified arborist or professional forester pursuant to the requirements outlined in CMC 18.13.045. A minimum 20-unit tree density per net acre is required and needs to be incorporated in the overall landscape plan per CMC 18.13.051.A. The tree density applies to the net acreage, which does not include critical areas or the associated buffer.

If Oregon White Oaks or other habitat of local importance are identified on site and proposed for removal, a habitat report and premilitary mitigation plan are required to be conducted by a biologist or a qualified professional per CMC 16.61.

Parking Regulations
The proposed use must meet the automobile parking requirement pursuant to CMC Chapter 18.11. The number of off-street parking spaces is calculated based on the table at CMC 18.11.130. for the following uses:

- Restaurant, carry-out: 1 space per 225 square feet of GFA
- Fast food restaurant/coffee kiosk: 1 space per 110 square feet of gross floor area, plus 6 stacking spaces for drive-through lane.

Archaeological Review
A survey was conducted on the site and the Department of Archeology and Historic Preservation recommends no further work needs to be done. The project should follow a standard Inadvertent Discovery Plan.

ENGINEERING DIVISION **NORM WURZER (360) 842-7235 nwurer@cityofcamas.us**

General Requirements:

- Civil site construction plans shall be prepared by a licensed Washington State Engineer in accordance with the *Camas Design Standards Manual (CDSM)* and CMC 17.19.040.
- Per CMC 17.19.040.C.1 all utilities designed to serve the development shall be placed underground. This includes the dry utilities, such as power, fiber optics, cable, etc.
- *Engineering civil site improvements plans are not to be submitted until after land-use decision is issued.*
- Engineering civil site improvement plans are to be submitted to Community Development (CDev) Engineering Dept. for review and approval.
- The CDev Engineering Dept. is responsible for plan review (PR) and construction inspection (CI). A 3% PR&CI fee is collected by engineering for all infrastructure improvements.
    - The 3% fee is based on a stamped engineer's estimate.
    - The engineer's estimate is to include all improvements outside of the proposed building footprints.
    - *Payment of the 1% plan review (PR) fee is required when the civil plans are submitted for first review*.
    - *The 1st review will not begin until the 1% PR fee is paid.*
    - *Payment of the 2% construction inspection (CI) fee is to be paid prior to release of approved construction drawings by the CDev Engineering Dept.*
- *Building permit applications are not to be submitted until after final engineering plan approval, unless otherwise approved by the Building Official.*

Traffic/Transportation:

- A transportation impact analysis (TIA) is required and shall be prepared in accordance with the City's adopted *Traffic Impact Study Guidelines* as outlined in the *CDSM*.
- The Applicant will be required to have a traffic engineer analyze the following:
    - Site distance at the applicant's access points onto NW Lake Road and NW Friberg-Strunk.
    - Vision clearance area is to be addressed, per CMC 18.17.030.
    - An onsite traffic circulation plan showing ingress and egress, per CMC 17.19.040 (B.10.a). See 'On-site Parking Lot Requirements' under Streets.
    - Address movement conflicts with nearby intersections and existing driveways.
    - Provide trip AM and PM Peak distribution to and from the site down to less than 20 trips thru any given impacted intersection.
    - Intersections to be analyzed will be based on trip distribution.
- Per CDSM, Table 1 – Guideline for Geometry of Private Roadways:
    - Note 2.c: Aisle dimensions: one-way aisles are a minimum of 15-feet wide; two-way aisles are a minimum of 24-feet wide.
    - Note 2.d: Parking spaces are to be setback a minimum of 50-feet from back of sidewalk on an arterial.

Streets:

The proposed food cart building is located at northeast corner of NW Lake Road and NW Friberg-Strunk Road.

NW Lake Road:

- NW Lake Road is a fully improved 5-lane arterial with curb, gutter, landscape medians, and sidewalks on both sides of the roadway.
    - Additional right-of-way dedication will not be required since the road is fully improved.
    - Any existing sidewalk that is not a minimum of 6-feet wide is to be replaced with a minimum 6-foot wide sidewalk that meets ADA standards.
- Per *CDSM Table 3, Access Spacing Standards* on an arterial are 660-feet minimum and 1000-feet max. The proposed access location off NW Lake Road is approximately 410-feet east of the intersection with NW Friberg-Strunk. Additionally, there is an existing raised center median and a right-turn pocket along the frontage of the proposed development.
- The proposed access location does not meet the minimum access spacing requirements on an arterial.
    - As the proposed driveway access is located as far from the intersection as possible, the city engineer would be in support of a deviation from the minimum access spacing standards for a right-in right-out access only.
- The access is proposed as a 32-foot wide access, which exceeds the minimum 24-foot wide access width.
    - The applicant should consider that only a right-in right-out movement will be allowed in determining the necessary width of this driveway.
    - The curb radii is to be a minimum of 25-feet on each side.

NW Friberg-Strunk:

- NW Friberg-Strunk is a fully improved 3-lane arterial with curb, gutter, and sidewalks on both sides of the roadway.
    - Additional right-of-way dedication will not be required since the road is fully improved.
    - Any existing sidewalk along the frontage that is not 6-feet wide is to be replaced with 6-foot wide sidewalk that meets ADA standards.
- Per *CDSM Table 3, Access Spacing Standards* on an arterial are 660-feet minimum and 1000-feet max.
    - The proposed access location off NW Friberg-Strunk that is shown on the site plan is approximately 412-feet north of the intersection with NW Lake Road.
    - There are 3 existing driveways located north of the proposed development.
        - Two on the east side that provides access to the CPU Station and one on the west side that provides access to the Union HS parking lot.
    - There are two existing left-turn pockets; one for access to the Union HS parking lot and one at the intersection with NW Lake Road.
    - <u>This proposed location does not meet the minimum access spacing requirements on an arterial and is not supported by the city engineer.</u>
- There is an existing driveway approach that was constructed with the NW Friberg-Strunk roadway improvements. The existing driveway approach is located approximately 250-feet north of the intersection with NW Lake Road and is approximately 40-feet wide.
    - The existing driveway location does not meet the minimum access spacing requirements on an arterial.
    - <u>However, the city engineer has determined that the existing driveway location is the best location for a full access driveway based on the existing driveways serving CPU to the north, Union High School to the west, the intersection with Lake Road, and their respective left-turn lanes.</u>

On-site Parking Lot Requirements:

- Per CDSM, Table 1 – Guideline for Geometry of Private Roadway:
  - Note 2.c: Aisle dimensions: one-way aisles are a minimum of 15-feet wide; two-way aisles are a minimum of 24-feet wide.
  - Note 2.d: Parking spaces are to be setback a minimum of 50-feet from back of sidewalk on an arterial and a minimum 40-feet from back of sidewalk on a collector.

Stormwater:

- The site of the proposed development is approximately 3.95 acres.
- There is an existing 18-inch storm main located on the north side of NW Lake Road.
- There is an existing 12-inch storm main and 48-inch manhole located on the east side of NW Friberg-Strunk, approximately 50-feet south of the north property line.
- A preliminary stormwater report (TIR), in accordance with the latest edition of Ecology's *Stormwater Management Manual for Western Washington (current edition 2019 SWMMWW*), is required at time of application.
- Per CMC 14.02 Stormwater Control, stormwater treatment and detention shall be designed in accordance with the latest edition of Ecology's *SWMMWW*.
- Refer to Ecology's *Figure I-3.1 Flow Chart for Determining Requirements for New Development (Vol. I, Chapter 3)*.
  - All development projects shall comply with Minimum Requirement (MR) #2 – Submittal of a Stormwater Pollution Prevent Plan (SWPPP).
  - As the project results in 5,000 sf, or greater, of new plus replaced hard surface area; than Minimum Requirements (MR) #1- #9 will apply.
- Ownership and maintenance of onsite stormwater facilities will be the responsibility of the property Owner, per CMC 17.19.040 (C3).
- The City shall have right-of-entry for inspection purposes.
- Onsite private storm easements, if required, are to be shown on the construction drawings.
- A designated concrete washout area (BMP C154, Vol. II, Chap. 3, pgs. 320-326) is to be shown on the site plans. The washout area is to be removed prior to issuance of final occupancy.
- Applicant to address the following Best Management Preventions (BMPs), as discussed in *Volume IV of Ecology's Stormwater Management Manual for Western Washington (SWMMWW):*
  - *S454 BMPs for Preventive Maintenance / Good Housekeeping, pages 499-501*
  - *S455 BMPs for Spill Prevention and Cleanup, pages 501-502*
- The applicant is to provide a plan to prevent the discharge of unpermitted liquids and solid wastes being washed into catch basins and thereby the stormwater system.

Erosion Control

- The size of the proposed development is approximately 3.95 acres.
- As the land-disturbing activities are greater than one acre, the applicant will be required to obtain an *NPDES Construction Stormwater General Permit* from Ecology, which includes the *Stormwater Pollution Prevention Plan (SWPPP)*. Copies of both are to be submitted to engineering prior to any land-disturbing activities.
- The applicant will be responsible for all erosion and sediment control measures to ensure that sediment laden water does not leave the site or impact adjacent parcels.
- Per CMC 17.21.030.B an erosion and sediment control (ESC) bond, in the amount 200% of the engineer's estimate for ESC measures, is to be submitted prior to any land-disturbing activities.

- Mud tracking onto the road surface is discouraged and any mud tracking is to be cleaned up immediately.

Water:

NW Friberg-Strunk:

- There is an existing 12-inch water main located in NW Friberg-Strunk.
- There is an existing 8-inch water service stubbed to this parcel, which is located approximately 75-feet south of the northern property line on NW Friberg-Strunk.
- There is an existing fire hydrant on the northeast corner of NW Friberg-Strunk at the intersection with NW Lake Road.

NW Lake Road:

- There is an existing 12-inch water main located in the center of NW Lake Road.
- There does not appear to be a water service stubbed to this parcel from NW Lake Road.

- The applicant will be required to design and construct a waterline for the proposed development.
- The onsite water system shall be privately owned and maintained beyond the water meter by the property owner.
- A 10-foot separation is required, within the right-of-way, between the waterline and sanitary sewer main.
- Trenching and surface restoration within the public right-of-way is to be per CDSM Details G2 and G2A.
- Taps on the existing waterline are to be performed by a tapping Contractor approved by the City's Water/Sewer Dept. Approved list provided below.

Sanitary Sewer:

NW Friberg-Strunk:

- There is an existing 8-inch STEP sanitary sewer main on the west side of the road in NW Friberg-Strunk Road.
- There is an existing 4-inch sanitary sewer lateral stubbed to this parcel, which is located approximately 200-feet south of the water service on NW Friberg-Strunk.

NW Lake Road:

- There is an existing 12-inch STEP sanitary sewer main on the south side in NW Lake Road.
- There doesn't appear to be a sanitary sewer later stubbed to this parcel from NW Lake Road.

- The applicant will be responsible for the design, installation, and maintenance of the private STEP sewer system, with STEP tank, that will serve the proposed development, per CMC 17.19.040 (C, 2, d.).
- Trenching and surface restoration within the public right-of-way is to be per CDSM Details G2 and G2A.
- A 10-foot separation is required, within the right-of-way, between water service and sewer lateral.
- Taps on the existing STEP sewer main are to be performed by a tapping Contractor approved by the City's Water/Sewer Dept. Approved list provided below.

City Approved Tapping Contractors:

- A&A Drilling Services, Inc (water & pressure sewer):
  16734 SE Kens Ct. #B, Milwaukie, OR 97267, 800-548-3827,
  http://www.aadrilling.com
- Ferguson Waterworks (water only):
  14103 NW 3rd Court, Vancouver, WA 98685, 360-896-8708,
  https://www.ferguson.com/branch/nw-3rd-ct-vancouver-wa-waterworks

Garbage and Recycling:

- Location of onsite garbage and recycling receptacles is to be approved by the garbage and recycling providers.

Parks/Trails:

- While a trail is not required per the 2016 Comp Plan the applicant is proposing to construct a 6-foot wide bark path on the NE portion of the property.

Impact Fees & System Development Charges (SDCs):

- The proposed development is in the South District.
- Impact Fees and SDCs are collected at time of building permit issuance
- The impact fees and SDCs noted below are for informational purposes only.
- **Impact fees and SDCs are adjusted on January 1st of each year.**

Impact Fees for 2022:

Commercial use:

- Traffic Impact Fees (TIF) - $3,657.00 per PM Peak Hour trip.
  Contact Engineering for estimated fees which will be based on usage and number of PM Peak Hour trips.
- School Impact Fees (SIF) – Not applicable
- Park/Open Space (PIF) – Not applicable
- Fire (FIF) - $0.40 psf

System Development Charges (SDCs) for 2022:

- Water
  - ¾” meter - $8,071.00 + $401.00 connection fee
  - 1” meter - $13,451.00 + $445.00 connection fee
  - 1.5” meter - $26,901.00 + $851.00 connection fee
- Sewer - Commercial
  - 3/4” meter - $3,740.00 + $
  - 1” meter - $6,234.00 + $177.00 STEP/STEF Inspection
  - 1.5” meter - $12,467.00 + $177.00 STEP/STEF Inspection
- Sewer SDCs are based on the size of the water meters.

BUILDING DIVISION **BRIAN SMITH (360) 817-7243 bsmith@cityofcamas.us**

- The structures will be reviewed under the most current building codes as adopted by The State of Washington.

- A code analysis and plans shall be prepared by an architect licensed by the State of Washington. The code analysis shall address types of occupancy, type of construction, building height, allowable area, fire separation distance, Fire Life Safety elements and the ADA requirements.
- The structural drawings and calculations shall be prepared and stamped by a Professional Engineer licensed by the State of Washington.
- The new structures shall comply with the Washington Energy Code for building insulation, mechanical equipment, lighting, etc… All commercial energy forms shall be prepared by a licensed professional in accordance with section C103 of The Washington Energy Code.
- Plumbing and mechanical construction documents shall be prepared by a design professional licensed by the State of Washington
- A design professional, licensed by the State of Washington, shall address on the plumbing construction drawings how waste pretreatment (Gravity Grease Interceptors or Hydromechanical Grease Interceptors) will be provided if any drainage fixtures or equipment will be receiving grease-laden waste located in areas of establishments where food is prepared or other establishments where grease is introduced into the sewage system.
- Review and approval from the Clark County Public Health Department will be required.
- Any fire suppression and or fire alarm systems shall be in accordance with IBC and other applicable code standards, all fire suppression and or fire alarm systems shall be reviewed & permitted through the Camas Fire Marshal's office.
- Impact fees may, with the consent of the city, be prepaid. Prepaid impact fees, including the amounts of any developer credits under subsection 3.88.140(A) shall be deducted from impact fees at the time such fees are collected pursuant to subsection 3.88.040(C).
- Estimated review for building plan review is 8 -12 weeks

FIRE DEPARTMENT **RANDY MILLER (360) 834-6191 FMO@cityofcamas.us**

No building or structure regulated by the building and/or fire code shall be erected, constructed, enlarged, altered, repaired, moved, converted or demolished unless a separate permit for each building or structure has first been obtained from the CWFMO Camas Municipal Code 15.04.030.D.12.a

Any inadvertent omission or failure to site or include any applicable codes or code language by the Fire Marshals office or the City shall not be considered a waiver by the applicant.

Building

1) Fireflow- a fireflow test shall be conducted from the nearest hydrant
2) An additional hydrant may be required if fire sprinklers are mandated and/or a fence is installed around the property

If the building is determined to have an Occupancy of an A-2 then fire sprinklers will be required

3) NFPA 24 Fire Main Underground permit. Hydrant to be 75' from a FDC
4) NFPA 13 Fire Sprinkler permit. WA State licensed fire sprinkler contractor.
5) NFPA 72 Fire Alarm minimum NICET III for design and NICET II for acceptance testing.

Other possible permits

6) UST Permit. If any underground storage tanks are discovered.

7) CO2 dispensing permit
8) Multiple permits with the Fire Marshals Office will be required as this property develops.
    a. Site Plan
    b. New Construction

Mobile Food Carts

9) Each cart will require a permit through our office
10) Propane tanks in excess of 124 gallons require a permit
11) Permit required for kitchen appliances emitting grease laden vapors

---

HEALTH DEPARTMENT MAGGIE YADDOF PALOMAKI (360) 609.0948 maggie.yaddof@clark.wa.gov

- Public Health permitted mobile trucks, trailers, and push carts would be allowable - tent set ups are permitted differently and would not be allowed in this type of food pod.
    - Each food unit will need a restroom agreement with the food court
- Mobiles must be fully permitted through Public Health prior to operation - we don't like temporary permits due to L&I violations
- Restroom w/plumbed hot water sink required for employees and customer - consider who is responsible for maintenance and supplies of communal restroom.
- Access to public water supply - food trucks usually have 40-100 gallon freshwater tanks on board and would likely utilize access to freshwater supply
- Wastewater disposal on site (w/grease control) would be ideal since wastewater disposal is a frequent concern for mobile units.
    - Direct plumbing to fresh/wastewater OK as long as you have both. You cannot have a direct freshwater line without a direct wastewater line.
- Trash/recycling - ensure adequate storage for trash/recycling and pick up frequent enough to prevent overflow & pest issues.
- Roll up doors present pest issues; a variance can be written to allow open doors with proper pest management.
- Bar/taproom in main building will require its own food permit
    - Open ceilings present cleanliness issues - must be smooth, durable, and easily cleanable. This means no electrical lines, plumbing lines, exposed wood, etc. over bar area. With minimal food prep (such as beer and wine) a variance can be written to allow open ceilings.
    - Consider including a walk in refrigerator in the main building for food trucks to use. Food trucks are limited in storage and food prep options without a walk in cooler.
    - If you want to go one step further and provide a “cold commissary”, food trucks typically need produce washing, dish washing, and refrigeration storage beyond what they have on board. Adding a walk in cooler, good size 3-compartment dish sink, food prep sink, and hand sink would allow most mobiles to use this facility as their commissary since you are providing water and wastewater management. This is in no way required as it may require extra permitting.
    - Minimum equipment requirements for bar/taproom: 3-compartment dishwashing sink, designated hand sink, commercial refrigeration, mop sink, dump sink, prep sink (if washing produce for garnishes. Dump sink can also double as prep sink). Floors walls and ceilings must be smooth durable and easily cleanable.
- Plan review process summary (https://clark.wa.gov/sites/default/files/dept/files/public-health/food-safety/Plan_Review_Process-what_to_expect.pdf)

- Fee schedule (https://clark.wa.gov/sites/default/files/media/document/2021-06/Food%20Fees%20Description%202021_0.pdf)
- General permitting info (https://clark.wa.gov/public-health/food-service-permitting-information)
- Food establishment permitting info (https://clark.wa.gov/public-health/food-service-establishment)
- Mobile unit permitting info (https://clark.wa.gov/public-health/mobile-food-unit-information)
- Online permitting portal (https://clarkonline.envisionconnect.com/#/menu1)

NARRITIVE

Oak Tree Station Food Carts

City of Camas, Washington

PERLIMENARY SITE PLAN

Parcel 176162-000

Introduction:

Oak Tree Station will supply the Camas area with a wide variety of food from around the world & drinks that are local experience. Oak Tree station will also offering amazing Tap Beer / Wine / Cider Cart that operates year round. Why limit yourself to one restaurant when you can have over 20 restaurants at your fingertips.
Oak Tree Station will be will provide indoor and outdoor eating area. The indoor eating area will be design to capture nature lighting into a large open dinner area. The focus point for the outdoor dinner area is the large existing white Oak which the patio area stretches too. The outdoor eating area will included a covered area and uncover area from the sunny warm days. Our family friendly astrosphere ensures that you and your entire family will have an enjoyable experience. The project is also proposing a 12,574 square-foot commercial building which will be located alson the project north boundary line.

Application Requirements:

CMC 18.07.030:
This project proposes coffee kiosk and food trailers. 18.07.030 - Table 1—Commercial and industrial land use permits coffee kiosh however food carts are conditions use. The conditional use for food carts require complaints with CMC Chapter 18.19 "Design Review"

CMC 18.19.050 – Design Principles

A. Standard Principles
   1. Landscaping shall be done with a purpose. It shall be used as a tool to integrate the proposed development in the surrounding environment.
   2. All Attempts shall be made at minimizing the removal of significant natural features. Significant natural features shall be integrated into the overall site plan.
   3. Buildings shall have a finished look. Any use of panelized materials shall be integrated into the development in a manner that achieves a seamless appearance.
   4. A proposed development shall attempt to incorporate or enhance historic/ heritage elements related to the specific site or surrounding area.

The project proposes to meet these standards principles by persevering the large Oregon White Oaktree. The project proposes to create an outdoor atmosphere around the Oaktree which will include an outdoor fireplace and bench seating around a portion tree. The outdoor patio area will have a covered area.

B. Commercial and Mixed Uses

a. On-site parking areas shall be placed to the interior of the development unless site development proves prohibitive. All on-site parking areas along adjacent roadways shall be screened with landscaping. Downtown commercial and mixed-use areas shall not be required to provide on-site parking. *To preserve the existing large oak tree onsite along with creating large open space around the heritage tree, the project proposes to construct parking around the permitter. Between the public street and the parking stall will be a large landscape strip. When the landscape matures this will provide screening between the public street and the adjacent parking stalls.*

b. Buildings shall be used to define the streetscape unless site conditions prove prohibitive. *The project proposes a barn style for the indoor eating area, also the attached to each side of the building is covered walkways to the food carts.*

c. Structures abutting, located in, or located near less intensive uses or zoned areas (such as commercial developments next to residential areas) shall be designed to mitigate size and scale differences. *To the east of the project is City-owned property which is currently vacant. To the north is a Clark Public utility power station. Across NW Friderg-Strunk Street to the west of the project is the school property. To the south is a single-family home on a large lot.*

d. Developments containing a multiple of uses/activities shall integrate each use/activity in a manner that achieves a seamless appearance, or creates a cohesive development. *This project is proposing to use the parcel for eating experiences.*

e. Mixed-use developments that place uses throughout the site (horizontal development) shall organize elements in a manner that minimizes their impact on adjacent lower intensity uses. *This project is not a mixed uses project.*

f. Walls shall be broken up to avoid a blank look and to provide a sense of scale. *The submitted building shows wall articulation and roof modulation.*

g. Outdoor lighting shall not be directed off-site. *The lighting design for the project will not cast light offsite.*

CMC 18.55.110: Application – Requried Information

The project preliminary site plan application includes all the items listed is CMC 18.55.110.

A. A copy of a completed city application form(s) and required fee(s); *Included in the project submmital application*

B. A complete list of the permit approvals sought by the applicant; *Included in the project submittal application*

C. A current (within thirty days prior to application) mailing list and mailing labels of owners of real property within three hundred feet of the subject parcel, certified as based on the records of Clark County assessor; *Included in the project submittal application*

D. A complete and detailed narrative description that describes the proposed development, existing site conditions, existing buildings, public facilities and services, and other natural features. The narrative shall also explain how the criteria are or can be met, and address any other information indicated by staff at the preapplication conference as being required; *Included in the project submittal application*

E. Necessary drawings in the quantity specified by the director; *Included in the project submittal application*

F. Copy of the preapplication meeting notes (Type II and Type III); *Included in the project submittal application*

G. SEPA checklist, if required; NOT REQURIED FOR THIS PROJECT

H. Signage for Type III applications and short subdivisions: Prior to an application being deemed complete and Type III applications are scheduled for public hearing, the applicant shall post one four-foot by eight-foot sign per road frontage. The sign shall be attached to the ground with a minimum of two four-inch by four-inch posts or better. The development sign shall remain posted and in reasonable condition until a final decision of the city is issued, and then shall be removed by the applicant within fourteen days of the notice of decision by the city. The sign shall be clearly visible from adjoining rights-of-way and generally include the following:

1. Description of proposal, *Included in the project submittal application*

2. Types of permit applications on file and being considered by the City of Camas, *Included in the project submittal application*

3. Site plan, *Included in the project submittal application*

4. Name and phone number of applicant, and City of Camas contact for additional information, *Included in the project submittal application*

5. If a Type III application, then a statement that a public hearing is required and scheduled. Adequate space shall be provided for the date and location of the hearing to be added upon scheduling by the city. *Included in the project submittal application*

I. A copy of a full title report. *Included in the project submittal application*

CMC 18.43.050 -Criteria

A. The proposed use will not be materially detrimental to the public welfare, or injurious to the property or improvements in the vicinity of the proposed use, or in the district in which the subject property is situated; *The project proposes to create a family atmosphere by providing a variety of food option and indoor and outdoor eating area.*

B. The proposed use shall meet or exceed the development standards that are required in the zoning district in which the subject property is situated; *The project proposes to meet these standards.*

C. The proposed use shall be compatible with the surrounding land uses in terms of traffic and pedestrian circulation, density, building, and site design; *The project proposes to be compatible with the surrounding land uses.*

D. Appropriate measures have been taken to minimize the possible adverse impacts that the proposed use may have on the area in which it is located; *The project has submitted a traffic study which shows that all the impacted intersection meets City of Camas standards. The stormwater run-off will meet the City of Camas stormwater code. The project will work with the local fire marshall to ensure a safe site.*

E. The proposed use is consistent with the goals and policies expressed in the comprehensive plan; *This project meets the City of Camas vision statement in the comprehensive plan*

F. Any special conditions and criteria established for the proposed use have been satisfied. In granting a conditional use permit the hearings examiner may stipulate additional requirements to carry out the intent of the Camas Municipal Code and comprehensive plan. *The project meets the standards outlined in CMC 18.19 about the conditional use permit.*

CMC Section 18.18

18.18.060 - Criteria for approval

A. Compatibility with the city's comprehensive plan; *This project meets the City of Camas vision statement in the comprehensive plan*

B. Compliance with all applicable design and development standards contained in this title and other applicable regulations; *This project meets all the standards within the project pre-application report.*

C. Availability and accessibility of adequate public services such as roads, sanitary and storm sewer, and water to serve the site at the time development is to occur, unless otherwise provided for by the applicable regulations. *This project has direct access to roads, sanitary and storm sewer and water services on site.*

D. Adequate provisions are made for other public and private services and utilities, parks and trails (e.g., provide copies of private covenant documents); *This project proposes to meet City of Camas standards.*

E. Adequate provisions are made for the maintenance of public utilities; and *This project proposes to meet City of Camas standards. If reqruied the project will provide utilities easments.*

F. All relevant statutory codes, regulations, ordinances and compliance with the same. The review and decision of the city shall be in accordance with the provisions of CMC Chapter 18.55 Administration and Procedures. *This project proposes to meet City of Camas standards.*

CMC 18.19

CMC 18.07.030 Table 1 – Density and Dimensions for commercial and industrial zones

Zone	CC
Buld Regulations	
Maximum Density (dwelling units/net acre)	N/A
Minimum lot area (square feet)	None
Minimum lot width (feet)	None
Minimum lot depth (feet)	None
Setbacks:	
Minimum front yard (feet)	None
Minimum side yard (feet)	None
Minimum rear yard (feet)	None
Lot Coverage	None
Lot coverage	None
Building Height	
Maximum building height (feet)	None

SEPA CMC 16.07.020.C.

A SEPA checklist is required per CMC Section 16.07.020.C. SEPA checklist has been provided with the application.

18.18.040 – Submittal and contents of a complete application

A. A written description addressing the scope of the project, the nature and size in gross floor area of each use, and the total amount of square feet to be covered by impervious surfaces;

B. A vicinity map showing site boundaries, and existing roads and accesses within and bounding the site;

C. A topographic map based upon a site survey delineating contours, existing and proposed, at no less than five-foot intervals, and which locates existing streams, marshes, and other natural features;

D. Site plans drawn to a scale no smaller than one inch equals fifty feet showing location and size of uses, buffer areas, proposed areas of disturbance or construction outside of the building footprint, yards, open spaces and landscaped areas, and any existing structures, easements and utilities;

E. A circulation plan drawn to a scale acceptable to the community development director illustrating all access points for the site, the size and location of all driveways, streets, and roads, with proposed width and outside turning radius, the location, size, and design of parking and loading areas, and existing and proposed pedestrian circulation system. If a project would generate more than one hundred average daily trips either based on the latest edition of the International Transportation Engineer's (ITE) Trip Generation Manual or evidence substantiated by a professional engineer licensed in the state of Washington with expertise in traffic engineering, a traffic impact study shall be submitted;

F. A preliminary stormwater technical information report (TIR) supporting the preliminary stormwater drainage and runoff plan. The preliminary stormwater TIR is to be prepared in accordance with Ecology's latest edition Stormwater Management Manual for Western Washington (SWMMWW);

G. A utility plan;

H. A plot plan of all proposed landscaping including the treatment and materials used for open spaces, and the types of plants and screening to be used;

I. Typical building elevation and architectural style; and

J. Reserved.

The listed items above are included in the preliminary application submittal.

Camas Design Review Manual:

Design guidelines Commercial use

A landscaping/vegetation plan needs to identify the type of plants or trees to be planted within the foreground of the visual area (or street intersection). The use of vegetation native to the Pacific Northwest (or Camas) should be encouraged, except for noxious weeds. Low maintenances/hardy landscaping should also be encouraged.

The preliminary landscape plan includes the landscaping along both public roads. The final landscape plan will include a list of plants and trees that will be native to the Pacific Northwest.

Intersection should be illuminated, but not dominated by lighting.

This project does not propose any intersection.

Parking spaces should be clustered in a small grouping. Groupings should be separated by landscaping to create a pedestrian-friendly, park like environment. Parking lot landscaping should be credited toward the total landscape requirements

The preliminary site plan show parking in groups separated by landscaping.

Commercial developments should be encouraged to include a community information kiosk. The kiosk could be used to provide community information.

Within the site, the project could install a kiosk.

Massing and Setbacks

Since buildings define circulation routes, they should be placed as close to streets and roads as the zoning code allows before being set back to the interior or rear of the lot, unless site constraints make it impossible or characteristics of surrounding properties already developed make it incompatible.

To protect the large oak tree and to provide a focal point for the open area the project must place the parking around the permitter of the project.

Commercial structures abutting residentially zoned areas should be designed to mitigate size and scale differences.

This project proposes two buildings one of the buildings is a small coffee shop and the other building is for indoor and outdoor eating.

On-site parking areas should be placed to the interior of the site whenever possible.

To protect the large oak tree and to provide a focal point for the open area the project must place the parking around the permitter of the project.

Architecture:

Developments surrounded by residential areas or adjacent to residentially zoned properties should be built with a residential feel (i.e. size, scale, and materials compatible with neighboring buildings). The final building design will include the materials.

Buildings over two stories should have the third story and above offset from the first two stories, if surrounding developments are less than three stories or land uses designations on adjacent sites do not allow more than three story development.

The project proposes single-story buildings.

Outdoor lighting shall be hooded or shielded so as not to directly light adjoining or neighboring properties.

The final lighting plan will include hooded or shielded lights.

Circulation and Connections:

Pathways define traffic/pedestrian movement. Buildings brought up to the road help define these movements. Trees and/or planting strips shall be used for separating vehicles and pedestrian movements, as well as provide a secure and pedestrian friendly environment.

The project proposes a walking path around the east and north portion of the side (see submitted site plan).

New streets intersecting commercial properties should be designed to create a safe environment. "Coving" techniques and "round-a-bouts" should be considered for traffic calming when appropriate.

This project proposes no new streets.

CMC 18.13 Landscape Regulations

CMC 18.13.045 Tree Survey

Included in the submittal plan set is a tree survey. The project proposes to keep 4 existing trees and removed 19 existing trees.

18.13.051 – Minimum tree density requirement

The minimum requirement is 20 tree units per net acre

The project proposes

Net Site Area 3.95 acres

Req'd Tree Units (3.95 AC x 20 Units/AC = 79 units)

Retained Tree Unit 45" Oak = 19 units

Proposed Trees 60 x 1 = 60 tree units

The project proposes 5-foot L1 landscape buffer along the north property and a 5-foot L2 landscape buffer along the east, south, and west property line.

CMC 18.11 – Parking

Restaurant, carry-out: 1 space per 225 square feet of GFA

Fast food restaurant/coffee Kiosk: 1 space per 110 square feet of gross floor area, plus 6 staking spaces for drive-through land.

Reatil Stores in general 1 per 1,500 square-feet

The project is proposing a 612 square feet coffee Kiosk thus (612 SF/110 SF = 6 parking stalls)

The project proposes 5,000 square-feet restaurant thus (5,000 SF / 225 SF = 22 parking stalls

The project proposes 12,574 sqyare-foot commercial building (12,574 SF / 1,500 SF = 8 parking stalls)

The project is proposing 147 standard parking stalls and 4 ADA van accessible stalls

CMC 17.19 Water and Sewer

Currently, water and sewer is stub to the property.

Stormwater

The project will comply with Stormwater Management Manual for Western Washington edition 2019.

P01

Project: 2021004SP
Date: 1/27/2022
Drafted: NVS
Designed:
Page: 1 of 1

Northwest Utilities
1-800-425-5555
"It's the law"
Call 48 hours before you dig.

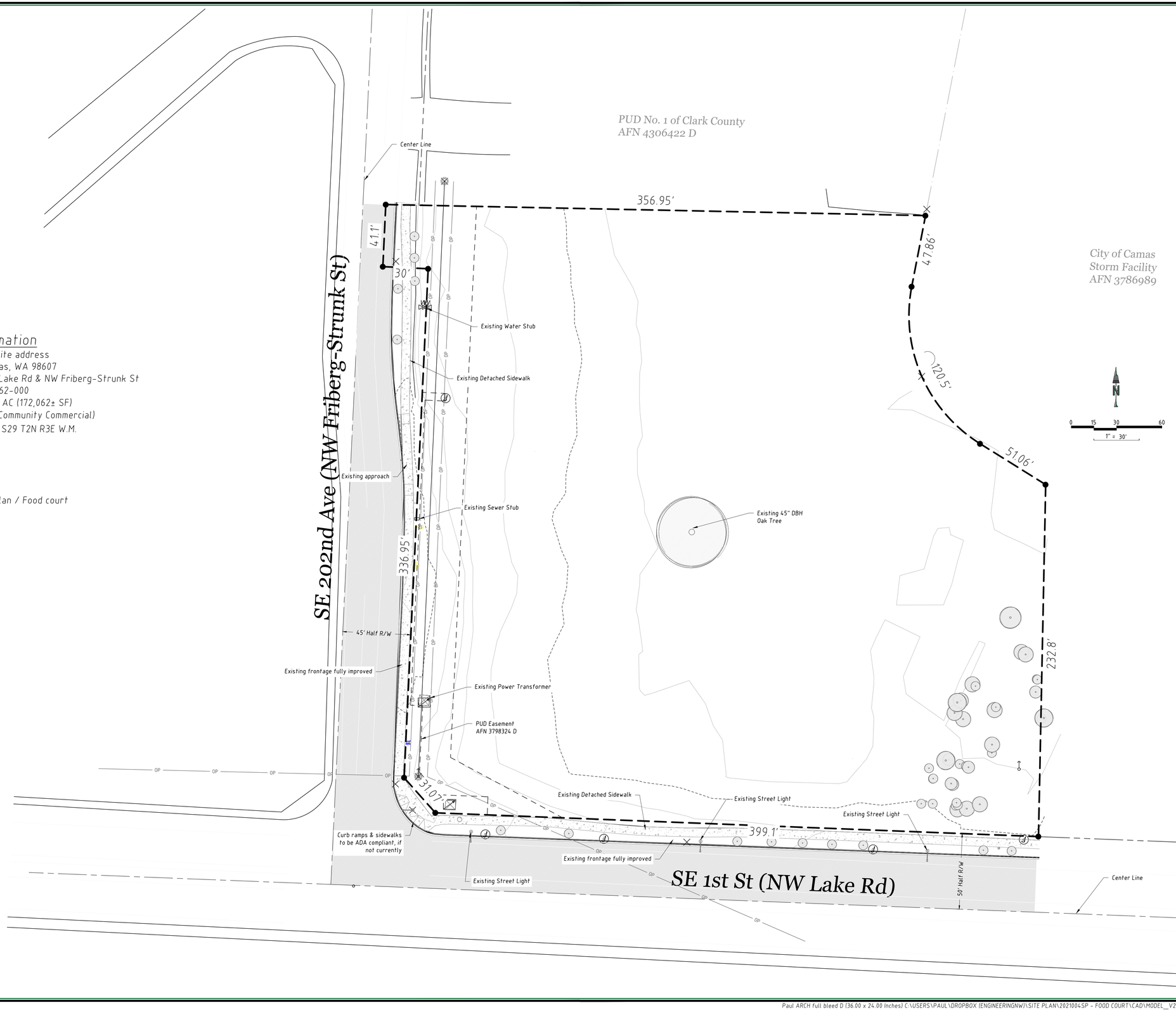
Revisions:

General Information

Address: No site address
Camas, WA 98607
Intersection: NW Lake Rd & NW Friberg-Strunk St
Parcel SN: 176162-000
Gross Area: 3.95 AC (172,062± SF)
Zoning: CC (Community Commercial)
S.T.R.: SE ¼ S29 T2N R3E W.M.

Existing use:
Vacant

Proposed use:
Commercial site plan / Food court



Existing Condition Plan:

Oak Tree Station

PRELIMINARY
NOT FOR CONSTRUCTION
1/27/2022
43138
REGISTERED PROFESSIONAL ENGINEER

ENGINEERING NORTHWEST
CONSULTING ENGINEERS & PLANNERS
6168 NE HWY 99 STE 100, VANCOUVER 98665
(3 6 0) 9 3 1 - 3 1 2 2

Paul ARCH full bleed D (36.00 x 24.00 Inches) C:\USERS\PAUL\DROPBOX (ENGINEERINGNW)\SITE PLAN\2021004SP - FOOD COURT\CAD\MODEL_V2 (WORKSTATION'S CONFLICTED COPY 2022-01-26).DWG

General Information

Address:	No site address Camas, WA 98607
Intersection:	NW Lake Rd & NW Friberg-Strunk St
Parcel SN:	176162-000
Gross Area:	3.95 AC (172,062± SF)
Zoning:	CC (Community Commercial)
S.T.R.:	SE ¼ S29 T2N R3E W.M.

Existing use:
Vacant

Proposed use:
Commercial site plan / Food court

P02

Project:	2021004SP
Date:	1/27/2022
Drafted:	NVS
Designed:	
Page:	1 of 1

Northwest Utilities
1-800-425-5555
"It's the law"
Call 48 hours before you dig.

Revisions:

Imagery Plan

Oak Tree Station

PRELIMINARY
NOT FOR CONSTRUCTION
PAUL C. WILLIAMS
EXPIRES: 9/1/2022
43138
REGISTERED
PROFESSIONAL ENGINEER

ENGINEERING NORTHWEST
CONSULTING ENGINEERS & PLANNERS
6168 NE HWY 99 STE 100, VANCOUVER 98665
(3 6 0) 9 3 1 - 3 1 2 2

Paul ARCH full bleed D (36.00 x 24.00 Inches) C:\USERS\PAUL\DROPBOX (ENGINEERINGNW)\SITE PLAN\2021004SP - FOOD COURT\CAD\MODEL_V2 (WORKSTATION'S CONFLICTED COPY 2022-01-26).DWG

General Information

Address: No site address
Camas, WA 98607
Intersection: NW Lake Rd & NW Friberg-Strunk St
Parcel SN: 176162-000
Gross Area: 3.95 AC (172,062± SF)
Zoning: CC (Community Commercial)
S.T.R.: SE ¼ S29 T2N R3E W.M.

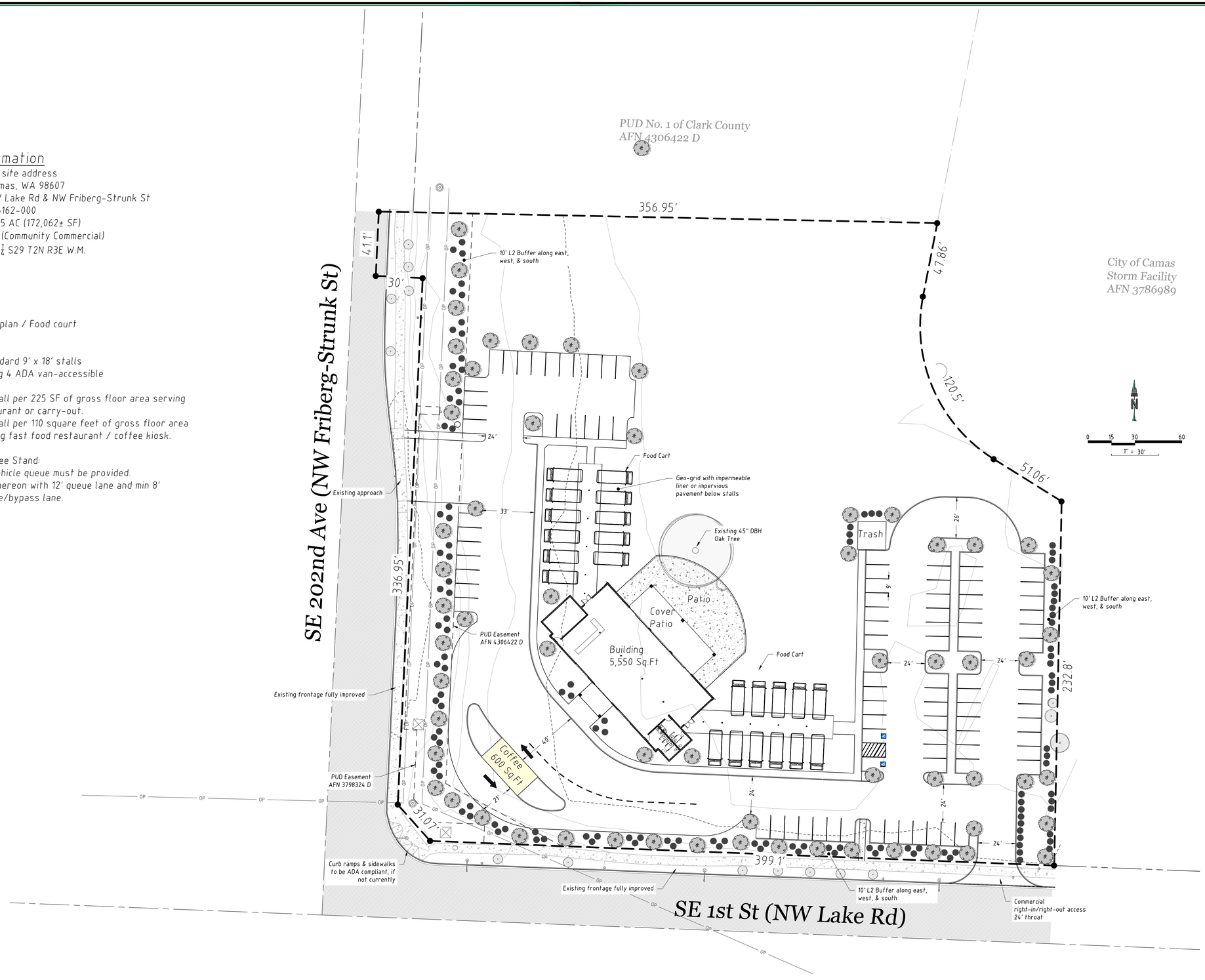
Existing use:
Vacant

Proposed use:
Commercial site plan / Food court

Parking: 97 Standard 9' x 18' stalls
including 4 ADA van-accessible

min 1 stall per 225 SF of gross floor area serving restaurant or carry-out.
min 1 stall per 110 square feet of gross floor area serving fast food restaurant / coffee kiosk.

Drive-through Coffee Stand:
Min 6 vehicle queue must be provided.
Shown hereon with 12' queue lane and min 8' escape/bypass lane.



P03

Project: 2021004SP
Date: 1/27/2022
Drafted: NVS
Designed:
Page: 1 of 1

Northwest Utilities
1-800-425-5555
"It's the law"
Call 48 hours before you dig.

Revisions:

Site Plan

Oak Tree Station

PAUL C. DITTLI
43138
REGISTERED PROFESSIONAL ENGINEER
STATE OF WASHINGTON
1/27/2022
PRELIMINARY
NOT FOR CONSTRUCTION

ENGINEERING NORTHWEST
CONSULTING ENGINEERS & PLANNERS
6168 NE HWY 99 STE 100, VANCOUVER 98665
(3 6 0) 9 3 1 - 3 1 2 2

LANDSCAPE PLAN NOTES

A. INDIVIDUAL LOT OWNERS SHALL BE RESPONSIBLE FOR DAMAGE TO A STREET, CUB, OR SIDEWALK CAUSED BY LANDSCAPING.
B. LANDSCAPING AND TREES SHALL BE SELECTED AND LOCATED TO DETER SOUND, FILTER AIR CONTAMINANTS, CURTAIL EROSION, MINIMIZE STORMWATER RUN-OFF, CONTRIBUTE TO LIVING PRIVACY, REDUCE THE VISUAL IMPACTS OF LARGE BUILDINGS AND PAVED AREAS, SCREEN, AND EMPHASIZE OR SEPARATE OUTDOOR SPACES OF DIFFERENT USES OR CHARACTER.
C. STREET TREES SHALL BE COMPLIANT WITH THE CAMAS DESIGN STANDARDS MANUAL. UNLESS OTHERWISE SPECIFIED, TREES MUST GENERALLY BE SPACED 30FT APART. SUBSTITUTE VARIETIES ARE SUBJECT TO APPROVAL BY THE CITY OF CAMAS.
D. PROPOSED VEGETATION CANNOT BE AN INVASIVE SPECIES AS LISTED WITHIN THE MOST CURRENT EDITION OF THE CLARK COUNTY NOXIOUS WEED LIST (E.G. ENGLISH IVY CULTIVARS.)
E. APPROPRIATE MEASURES SHALL BE TAKEN, E.G. INSTALLATION OF IRRIGATION SYSTEMS, TO ASSURE LANDSCAPING SUCCESS. IF PLANTINGS FAIL TO SURVIVE, IT IS THE RESPONSIBILITY OF THE PROPERTY OWNER TO REPLACE THEM.
F. REQUIRED TREES, AS THEY GROW, SHALL BE PRUNED IN ACCORDANCE WITH THE INTERNATIONAL SOCIETY OF ARBORICULTURE. THE PRUNED TREE WILL PROVIDE AT LEAST EIGHT FEET OF CLEARANCE ABOVE SIDEWALKS AND TWELVE FEET ABOVE STREET ROADWAY SURFACES.
G. STREET TREES AND OTHER REQUIRED LANDSCAPING WHICH DIES OR IS REMOVED, MUST BE REPLACED WITHIN ONE YEAR OF DEATH OR REMOVAL. REPLACEMENT STREET TREES MAY BE AN ALTERNATIVE SPECIES FROM THE CITY'S RECOMMENDED TREE LIST, AND MAY BE IN A DIFFERENT LOCATION AS APPROVED BY THE CITY.

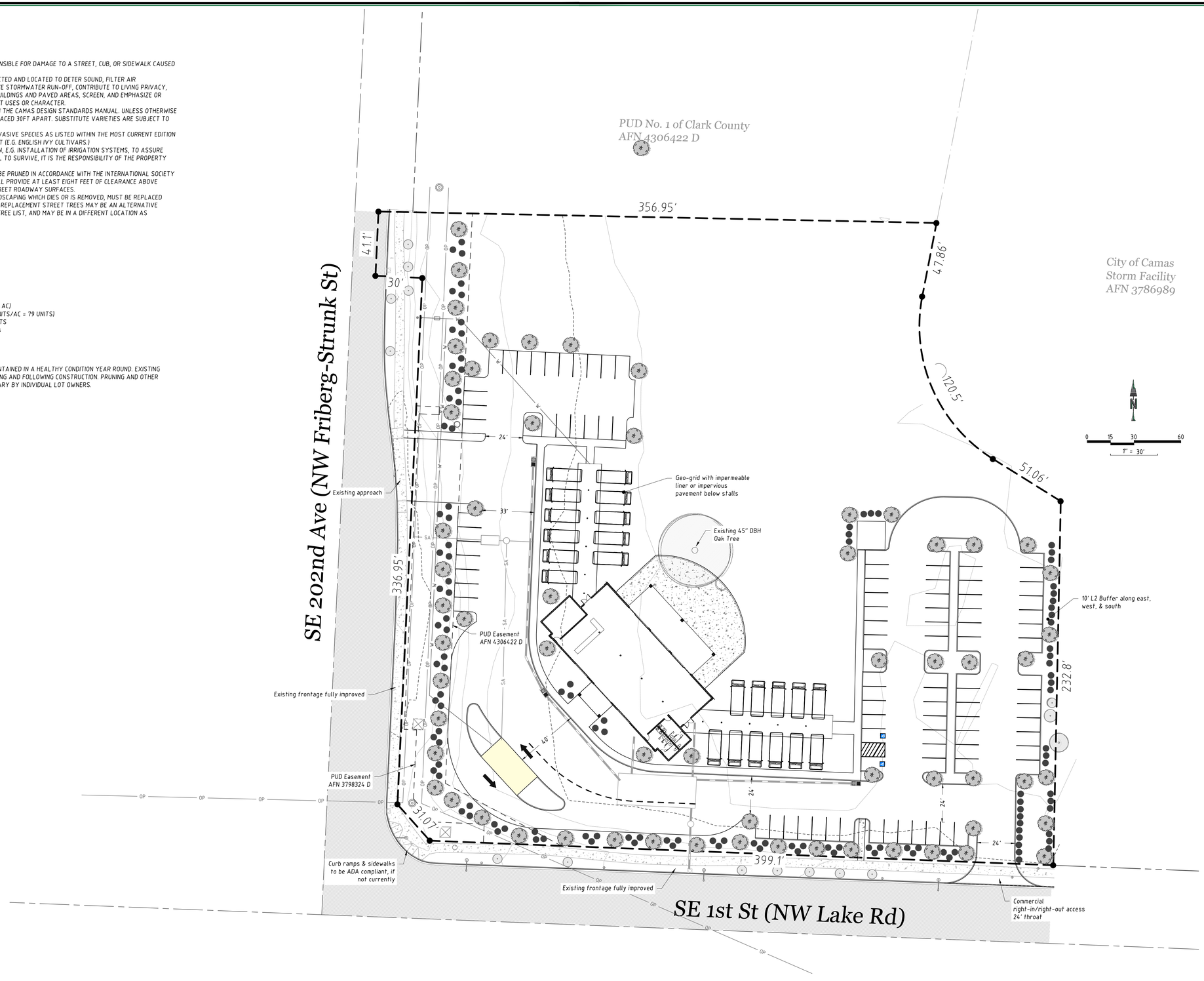
TREE DENSITY

MINIMUM 20 TREE UNITS PER NET ACRE.

NET SITE AREA	172,062 SF (3.95 AC)
REQ'D TREE UNITS	(3.95 AC x 20 UNITS/AC = 79 UNITS)
RETAINED TREE UNITS	45" Oak =19 UNITS
PROPOSED TREE	60 x 1 = 60 units

ON-SITE TREE PLANTINGS: 100% CONIFER (10/10)

NOTE: NEW TREES SHALL BE IRRIGATED AND MAINTAINED IN A HEALTHY CONDITION YEAR ROUND. EXISTING TREES SHALL BE PROTECTED FROM DAMAGE DURING AND FOLLOWING CONSTRUCTION. PRUNING AND OTHER MAINTENANCE SHALL BE PERFORMED AS NECESSARY BY INDIVIDUAL LOT OWNERS.



P04

Project:	2021004.SP
Date:	1/27/2022
Drafted:	NVS
Designed:	
Page:	1 of 1

Northwest Utilities
1-800-425-5555
"It's the law"
Call 48 hours before you dig.

Revisions:

Landscape Plan

Oak Tree Station

PAUL C. WILLIAMS
43138
REGISTERED PROFESSIONAL ENGINEER
ISSUED: 01/27/2022
PRELIMINARY NOT FOR CONSTRUCTION

ENGINEERING NORTHWEST
CONSULTING ENGINEERS & PLANNERS
6168 NE HWY 99 STE 100, VANCOUVER 98665
(3 6 0) 9 3 1 - 3 1 2 2

General Information

Address: No site address
Camas, WA 98607
Intersection: NW Lake Rd & NW Friberg-Strunk St
Parcel SN: 176162-000
Gross Area: 3.95 AC (172,062± SF)
Zoning: CC (Community Commercial)
S.T.R.: SE ¼ S29 T2N R3E W.M.

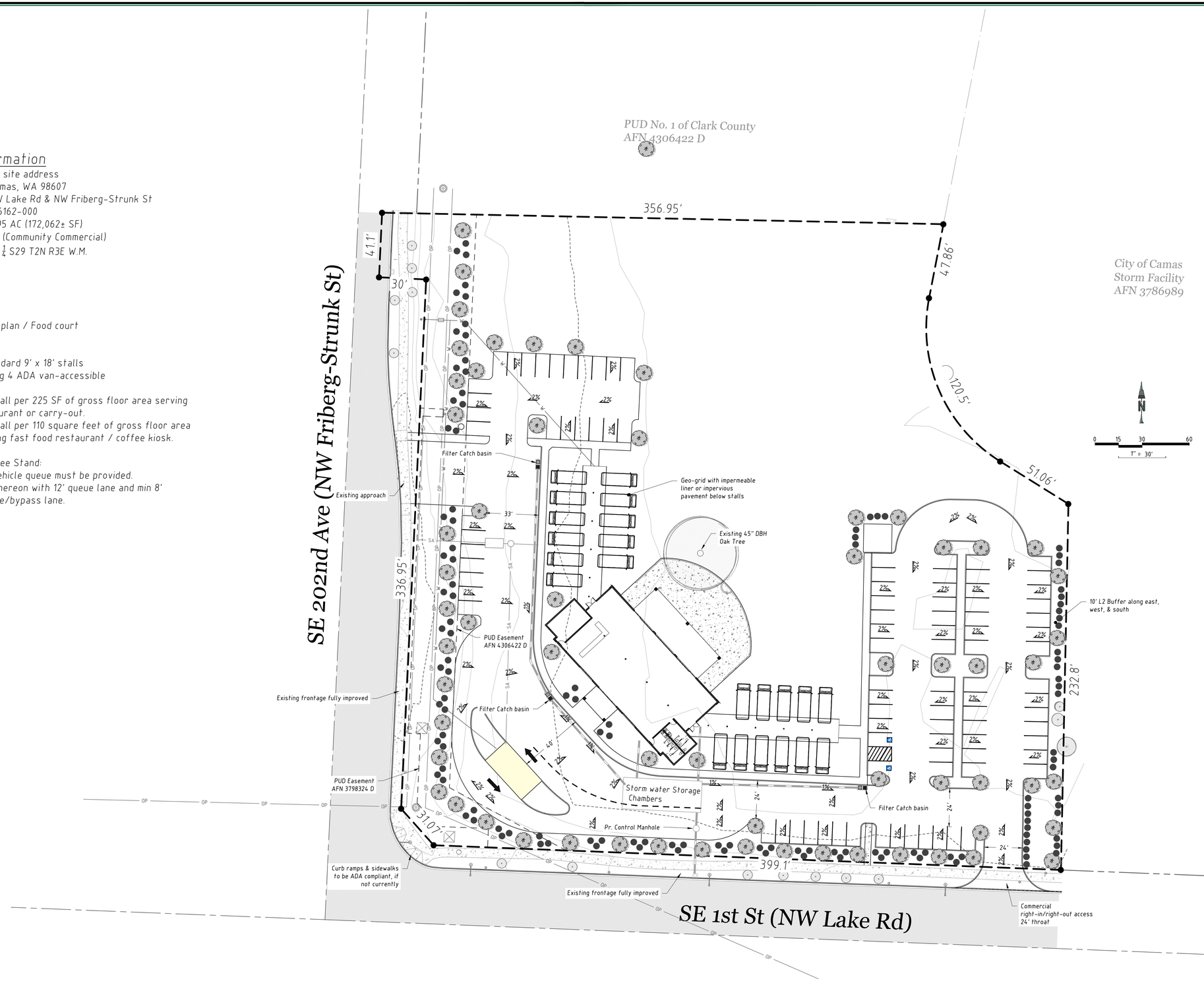
Existing use:
Vacant

Proposed use:
Commercial site plan / Food court

Parking: 97 Standard 9' x 18' stalls
including 4 ADA van-accessible

min 1 stall per 225 SF of gross floor area serving restaurant or carry-out.
min 1 stall per 110 square feet of gross floor area serving fast food restaurant / coffee kiosk.

Drive-through Coffee Stand:
Min 6 vehicle queue must be provided.
Shown hereon with 12' queue lane and min 8' escape/bypass lane.



P05

Project: 2021004SP
Date: 1/27/2022
Drafted: NVS
Designed:
Page: 1 of 1

Northwest Utilities
1-800-425-5555
"It's the law"
Call 48 hours before you dig.

Revisions:

Stormwater Plan

Oak Tree Station

PAUL C. BUTLER
EXPIRES: 9/27/2022
PRELIMINARY
NOT FOR CONSTRUCTION
43138
REGISTERED
PROFESSIONAL ENGINEER

ENGINEERING NORTHWEST
CONSULTING ENGINEERS & PLANNERS
6168 NE HWY 99 STE 100, VANCOUVER 98665
(3 6 0) 9 3 1 - 3 1 2 2

General Information

Address: No site address
Camas, WA 98607
Intersection: NW Lake Rd & NW Friberg-Strunk St
Parcel SN: 176162-000
Gross Area: 3.95 AC (172,062± SF)
Zoning: CC (Community Commercial)
S.T.R.: SE ¼ S29 T2N R3E W.M.

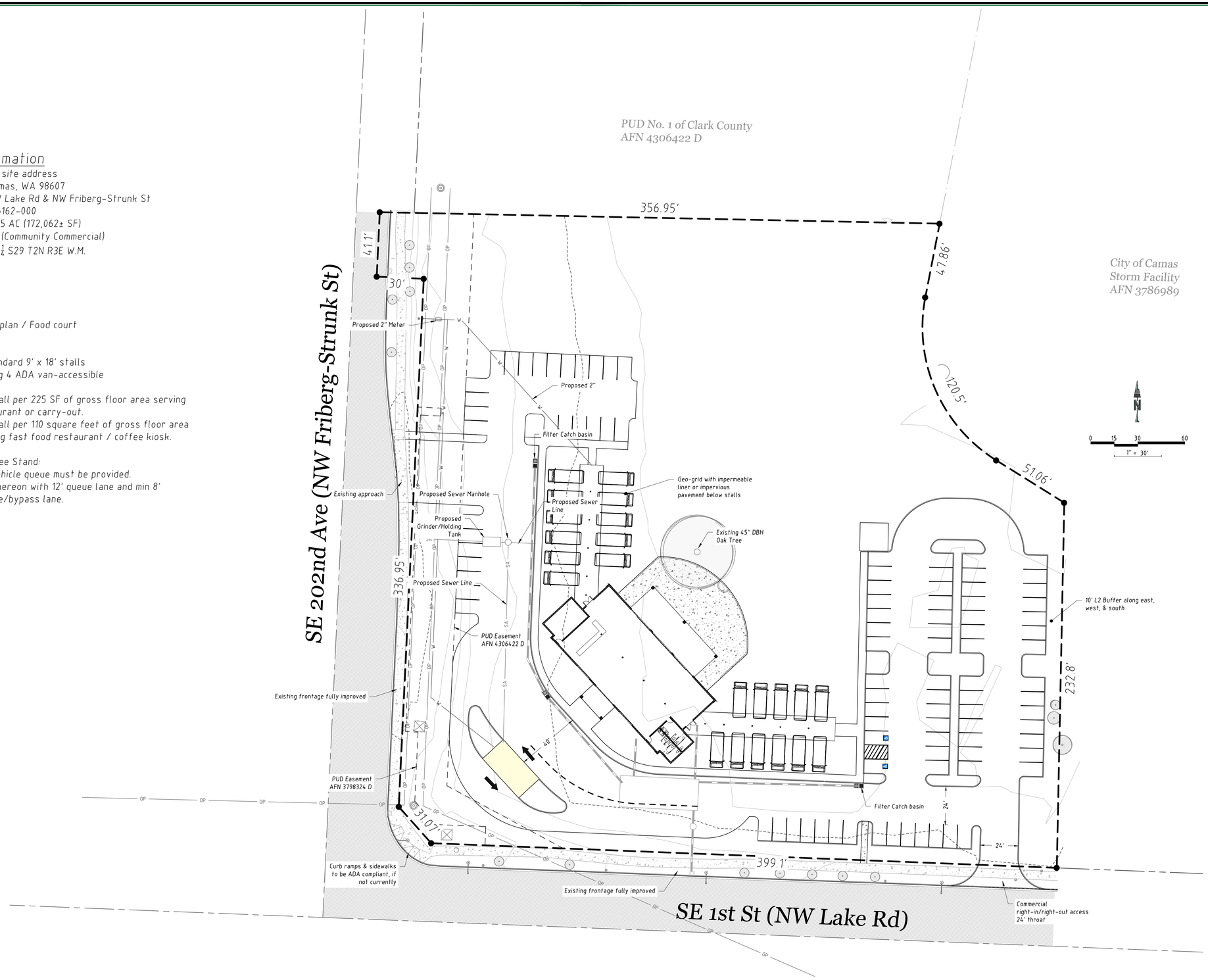
Existing use:
Vacant

Proposed use:
Commercial site plan / Food court

Parking: 105 Standard 9' x 18' stalls
including 4 ADA van-accessible

min 1 stall per 225 SF of gross floor area serving restaurant or carry-out.
min 1 stall per 110 square feet of gross floor area serving fast food restaurant / coffee kiosk.

Drive-through Coffee Stand:
Min 6 vehicle queue must be provided.
Shown hereon with 12' queue lane and min 8' escape/bypass lane.



P06

Project: 2021004.SP
Date: 1/27/2022
Drafted: NVS
Designed:
Page: 1 of 1

Northwest Utilities
1-800-425-5555
"It's the law"
Call 48 hours before you dig.

Revisions:

Sewer & Water Plan

Oak Tree Station

PAUL C. DITTLI
EXPIRES: 9/27/2022
PRELIMINARY
NOT FOR CONSTRUCTION
43138
REGISTERED
PROFESSIONAL ENGINEER

ENGINEERING NORTHWEST
CONSULTING ENGINEERS & PLANNERS
6168 NE HWY 99 STE 100, VANCOUVER 98665
(3 6 0) 9 3 1 - 3 1 2 2

P07

Project: 2021004SP
Date: 1/27/2022
Drafted: NVS
Designed:
Page: 1 of 1

Northwest Utilities
1-800-425-5555
"It's the law"
Call 48 hours before you dig.

Revisions:

PUD No. 1 of Clark County
AFN 4306422 D

City of Camas
Storm Facility
AFN 3786989

Center Line

356.95'

47.86'

120.5'

51.06'

232.8'

411'

30'

336.95'

31.07'

399.1'

Existing Water Stub

Existing Detached Sidewalk

Existing approach

Existing Sewer Stub

45' Half R/W

Existing frontage fully improved

Existing Power Transformer

PUD Easement
AFN 3798324 D

Existing 45" DBH
Oak Tree

Tree to remain

Tree to remain

Tree to remain

Tree to remain

Existing Detached Sidewalk

Existing Street Light

Existing Street Light

Curb ramps & sidewalks to be ADA compliant, if not currently

Existing frontage fully improved

Existing Street Light

50' Half R/W

Center Line

SE 202nd Ave (NW Friberg-Strunk St)

SE 1st St (NW Lake Rd)

OP

N

0 15 30 60
1" = 30'

EXISTING TREES

SYMBOL	BOTANICAL/COMMON NAME
○	Alnu Rubra / Alder
✳	Pseudotsuga/Douglas Fir

NOTES

SYMBOL	
○	EXISTING TREES RETAINED
×	EXISTING TREE REMOVED
▨	TREE PROTECTION ZONE (MINIMUM SHOWN)

Tree Plan:

Oak Tree Station

PRELIMINARY
NOT FOR CONSTRUCTION
1/27/2022
43138
REGISTERED
PROFESSIONAL ENGINEER
STATE OF WASHINGTON
PAUL W. ARCH

ENGINEERING NORTHWEST
CONSULTING ENGINEERS & PLANNERS
6168 NE HWY 99 STE 100, VANCOUVER 98665
(3 6 0) 9 3 1 - 3 1 2 2

Jerry Hofer

ISA Certified Arborist®

PN 7901A

Phone: 360-521-7944
E-mail: JerryHofer2@gmail.com

Date: March 19, 2022

Paul Williams
NW Engineering

On January 17th I met you to get a map and discuss a consultation for the Oak Tree Station Project at the junction of NW Lake Road and NW Friberg-Strunk St. The main tree concern is the large Oregon White Oak, 45" DBH and 68' tall, near the center of the property. The distances the crown extends from the trunk of this tree are: North 35'; East 22'; South 34'; West 35'. The development work will be on the south and west side of this tree. Oak trees have massive root systems that often go 4'-6'+ deep. They also have shallow roots like most trees. The proposed project includes installation of a paver patio under a portion of the crown of the tree. Protection Guidelines for this tree includes:

1. The Standard Tree Protection Zone (TPZ) for trees to be retained will be no disturbance within 1-foot radius (measured horizontally from the face of the tree) for each inch of tree diameter breast high.
2. No new encroachment should be made within ½ of the distance of the Standard TPZ.
3. TPZ should be staked or install orange construction fence on the side of the tree facing the construction work.
4. Any excavation between the Standard and Minimum TPZ for installation of gravel, sand, and pavers will be limited to 12" in depth.
5. No equipment or material should be stored in the TPZ.
6. If on the ground work changes from original plans, I or another certified Arborist should be contacted to see if changes need to be made to proposed actions and protections.

Following these Protection Guidelines will not cause long term adverse impacts to this large oak tree.

The other trees on the property are all on the back, southeast corner, and will be removed in the construction process. The trees look like they are all natural, and sprouted by themselves without being planted. There are a lot of trees less than 8” in diameter and many in clumps growing very close together. Most are in poor condition and would not develop into a vibrant healthy tree.

3/16			OAK	TREE	STATION	
	TREES	ON SITE				
Tree	SPECIES	DBH	Height	Crown	Other Information	CUT/SAVE
1	Alder	12"	50'	Good		Cut
2	Alder	11"	50'	Good		Cut
3	Cherry	12"	40'	Poor	Forked at 5'	Cut
4	Maple	8"	35'	Poor	Forked at 6' & 8'	Cut
5	Maple	8"	30'	Fair	Forked at 5'	Cut
6	Cherry	8";	40'	Poor	Forked at 2' & 3'	Cut
7	Alder	8"	35'	Poor		Cut
8	Cherry	8"	40'	Fair		Cut
9	Cherry	8"	35'	Fair		Cut
10	Cherry	12"	45'	Good		Cut
11	Alder	9"	35'	Fair		Cut
12	Alder	8"	35'	Poor		Cut
13	Alder	11"	35'	Poor		Cut
14	Alder	12"	45'	Good		Cut
15	Alder	12"	40'	Poor		Cut
16	Alder	9"	35'	Poor		Cut
17	Alder	10"	45'	Fair		Cut
18	Alder	12"	55'	Good		Cut
19	Alder	11"	50'	Good		Cut

There are also some trees that were planted on the sidewalk curb strip on the south side along Lake Road. The information on those trees is:

3/15			OAK	TREE	STATION
	STREET	TREES	FROM	EAST	
Tree	**Species**	**DBH**	**Height**	**Crown**	**Other Information**
1	Columnar oak	6"	40'	Good	Taller columnar
2	Columnar oak	6"	35'	Good	Taller columnar
3	Columnar oak	8"	40'	Good	Taller columnar
4	Columnar oak	6"	35'	Good	Taller columnar
5	Ash	7"	25'	Good	Shorter, round crown
6	Ash	7"	25'	Good	Shorter, round crown
7	Ash	8"	25'	Good	Shorter, round crown
8	Ash	7"	20'	Good	Shorter, round crown
9	Columnar oak	3"	20'	Top dead	Columnar, Girdled and dying
10	Columnar oak	4"	25'	Good	Taller columnar

Tree # should be replaced. There are also some trees missing along the curb strip.

Please give me a call if you have any questions.

Thank you for your business.

/s/ Jerry L. Hofer
Certified Arborist Consultations
4414 NE 115th St
Vancouver, WA 98686

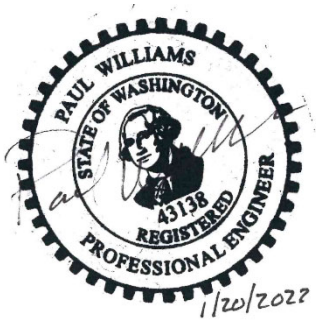
TRAFFIC IMPACT ANALYSIS

OAK TREE STATION

Camas, Washington

Prepared For:

Rob Kyne & Larry Bonife
3239 NW Hood Ct
Camas WA, 98607



Prepared by:
Engineering Northwest
7504 NW 10th Ave
Vancouver, WA 98685
PH: 360-931-3122
paulwilliamspe@gmail.com

January 28, 2022

ENGINEERING NORTHWEST

Contents

INTRODUCTION 4
TRAFFIC ANALYSIS CONSIDERATION 5
SCOPE OF TRAFFIC IMPACT STUDY AREA 5
SITE CONDITIONS AND ADJACENT LAND USES 6
PEDESTRIAN AND BICYCLE FACILITIES 6
TRANSIT FACILITES 6
PROPOSED DEVELOPMENT TRIP GENERATION ESTIMATE 6
TRIP DISTRIBUTION AND ASSIGNMENT 7
TRAFFIC OPERATIONAL ANALYSIS 7
CAPACITY ANALYSIS 8
QUEUING ANALYSIS 9
SIGHT DISTANCE 9
LEFT TURN LANE WARRANTS 10
2027 WITHOUT PROJECT TRAFFIC L.O.S. 10
2027 WITH PROJECT TRAFFIC L.O.S 11
PROJECT CROSS CIRCULATION 11
FINDINGS AND RECOMMENDATIONS 11
REFERENCES 12

APPENDIX A

Figure 1. Project Vicinity Map
Figure 2. Site Plan
Figure 3. Existing Lane Configurations and Traffic Control
Figure 4 Existing A.M. and P.M Peak Hour Traffic Volumes
Figure 5 2023 "Without" A.M. and P.M. Peak Hour Traffic Volumes
Figure 6 Trip Distribution and Assignment for Residential Use
Figure 7 Trip Distribution and Assignment for Commercial Use
Figure 8 2023 "With Project" A.M. and P.M. Peak Hour Traffic Volumes

APPENDIX B Existing Traffic Counts
APPENDIX C Existing Level of Services
APPENDIX D 2023 "Without Project" LOS
APPENDIX E 2023 "With Project" LOS

INTRODUCTION

This project will consist of a 5,500 sq.ft indoor and outdoor eating area which is surrounded by food carts. Also the project will consist of a drive thru 600 sq.ft coffee shop. The restaurant use is proposed on the most south westerly portion of the site approximately 1.5 acres in size and approximately. Currently all proposed parcel for the development are zoned Commercial Community (CC). Access will be provided by utilizing the existing driveway onto NW Friberg-Strunk St and constructing a new driveway approach onto NW Lake Road which will be right-in / right-out. Please refer to the plans included in this application for more information on the proposed lot layout.

As indicated on vicinity map the 3.95-acre subject site is located north side of NW Lake Road in City of Camas Washington. The approximate latitude and longitude are 45.81151278°N 122.6.9973816°W and the legal description is a portion of the SE 1/4, S29, T2N, R3E of the Willamette Meridian. The regulatory jurisdictional agency is the City of Camas, Washington.

Vicinity Map

The proposed development is estimated to generate more than 200 vpd. As per City of Camas a traffic impact study is required. Traffic profile for this project is shown below in table 2.

TRAFFIC ANALYSIS CONSIDERATION

In the project scope established City of Camas, a number of important elements were identified and considered in this study.

- Inventory and record pertinent information such as traffic control devices, lane conditions, pedestrian & bicycle facilities, transit zones, parking conditions, and street characteristics
- Record data on typical weekdays during the am and pm peak traffic hours
- Forecast year 2027 traffic conditions during the weekday am and pm peak hours
- Level of service (LOS) analysis of the study intersections to measure the approach delays for comparison to City of Camas standards
- Verification of intersection sight distance at the existing/proposed accesses.
- On-Site access
- Implementation of the trip generation rates for AM & PM the proposed development

SCOPE OF TRAFFIC IMPACT STUDY AREA

The scope of the traffic impact study area included the following intersections:

- NW Friberg-Strunk Street/ NW Lake Road
- NW 192 Avenue / SE 1st Street (Within the City Limits)
- NW Payne Street / NW Lake Road

The remainder of this report presents the following analysis:

- Existing traffic conditions in the project study area
- 2027 "Without Project" condition to establish the baseline condition by which the project impacts could be determined.
- Trip generation estimates for the proposed development
- 2027 "With Project" condition to determine project traffic impacts

SITE CONDITIONS AND ADJACENT LAND USES

The study site is located northeast of intersection of NW Friberg-Strunk Street and NW Lake Road. Table 1 summarizes key characteristics of the adjacent roadways.

Table 1

Roadway	Classification	Cross Section	Speed Limit	Side-walks	Bicycle Lanes	Median	On-Street Parking
NW Lake Rd	Arterial Roadway	4-lanes 5-lane	40 35	yes	yes	yes	no
NW Friberg-Strunk rd	Collector Arterial	2-lanes	20	yes	yes	no	no
NW Larkspur St	Arterial Roadway	2-lanes	25	Intermit	No	No	no
NE 192nd Ave	Principal Arterial	2/4-lanes	40	yes	yes	yes	No

PEDESTRIAN AND BICYCLE FACILITIES

Sidewalks are currently provided along the site frontage on NW Friberg-Strunk Rd and NW Lake Rd. Currently no bike lanes exist on both sides of NW Friberg-Strunk Rd.

TRANSIT FACILITES

C-Tran provides public transit service in Clark County. Currently there is no transit service in the project vicinity.

PROPOSED DEVELOPMENT TRIP GENERATION ESTIMATE

Estimates of daily and weekday am and pm peak hour vehicle trip ends for the proposed development were calculated from empirical observations at other similar developments. These observations were obtained from the standard reference manual, Trip Generation, 10th Edition, and the Trip Generation Handbook, published by the

Institute of Transportation Engineers (ITE) (References 2 and 3). Table 2 summarizes the estimated site trip generation. The trip generation table below includes AM and PM. The Food Cart facility will not operate before 11am.

Table 2. Trip Generation Summary

	Amount	Average Daily	A.M. Peak			P.M. Peak		
			In	Out	Total	In	Out	Total
High Turnover Sit-Down Restaurant - ITE Code 932								
Rate per 1,000 square feet (ksf)		112.18				6.06	3.71	9.77
Trips	5.5 ksf	617				34	20	54
Coffee Shop with Drive Through - ITE Code 937								
Rate per 1,000 square feet (ksf)		818.58	51.30	49.28	100.58	21.40	21.40	42.80
Trips	0.6 ksf	491	31	29	60	13	13	26
Net Total Site Trips		**1,108**	**31**	**29**	**60**	**47**	**33**	**80**

TRIP DISTRIBUTION AND ASSIGNMENT

A generalized trip distribution pattern for the A.M. and P.M. peak hour project-generated trips was developed for the existing traffic counts, previous traffic studies, locations of major employment centers and residential areas, and logical travel paths to and from major travel corridors. Appendix A shows the resulting trip distribution pattern and assignment of A.M. and P.M. peak hour project generated trips without pass-

TRAFFIC OPERATIONAL ANALYSIS

In order to evaluate traffic flow and delay in the area the signalized intersection a Level of Services (LOS) analyses were completed in the pm peak hour period and am peak hour period for the following scenarios: The analyzed intersections identified below using the methodologies outlined in the 2010 Highway Capacity manual (HCM). According to the HCM there are six levels of service (LOS) by which the operational performance of an intersection may be described. These levels of service range between

LOS "A" which indicates a relatively free-flowing condition and LOS "F" which indicates operational breakdown. LOS "D" is the Cit of Camas adopted level of service standard for arterial/collector intersection. The overall level of serves was report in the table below.

- 2022 Existing Traffic

Table 1: Existing Levels of Service

	A.M. Peak Hour		P.M. Peak Hour	
	LOS	Average Delay (sec)	LOS	Average Delay (sec)
Signalized Intersections				
NW Friberg-Strunk St/NW Lake Rd	A	8.8	A	10.0
NW Lake Road / NW Larkspur Rd	A	8.2	B	14.7
SE 1st St / NE & SE 192 Avenue	C	32	C	32.7

In order to perform the Level of Service (LOS) analysis at the intersections, manual traffic counts were conducted during the pm peak (4:00-6:00 pm) traffic hours and am peak (7:00-9:00 am). The existing volume data for the weekday peak hours (see Appendix A).

CAPACITY ANALYSIS

Capacity analysis was performed to determine the level of service for the weekday pm peak hour and weekday am peak hour. Synchro 10 software was used to determine the level of service for each scenario considered. The program is based on the latest Highway Capacity Manual (HCS) methodology.

Generally, LOS 'A','B','C', and 'D' are desirable service levels ranging from no vehicle delays to average or longer than average delays in the peak hours. Level 'E' represents long delays indicating signalization warrants need to be reviewed and signals considered only if warrants are met. Level 'F' indicates that intersection improvements, such as widening and signalization, may be required. According to the Highway

Capacity Manual (HCM), the following delay times are associated with the LOS at stop controlled unsignalized and signalized intersections.

Level of Service criteria defined in the 2000 Highway Capacity Manual

Level of Service (LOS)	Unsignalized Control Stopped Delay (sec/veh)	Signalized Control Stopped Delay (sec/veh)
A	<10	<10
B	> 10 and <15	>10 and <20
C	>15 and <25	>20 and <35
D	>25 and <35	>35 and < 55
E	>35 and <50	>55 and <80
F	>50	>80

QUEUING ANALYSIS

Queuing analysis at the project access intersection were not conducted due to low traffic volumes, acceptable levels of service, and acceptable accident rate in the 2027 "With Project" conditions.

SIGHT DISTANCE

Sight distance at the driveway approach onto NW Friberg-Strunk was reviewed in the field in accordance with City of Camas standards. Based on at a posted speed of 20 miles per hour, City of Camas requires a minimum of 200 of sight distance be available in both directions. The sight distance is to be measured from an eye height of 3.5 feet, at least fifteen feet from the edge of the uncontrolled public travel way. Based on the measurements obtained from existing driveway approach along NW Friberg-Strunk Rd the project has 200 feet of sight distance is available to the north and south. This distance exceeds City of Camas minimum sight distance requirements of 200 feet.

Sight distance at the driveway approach onto NW Lake Rd was reviewed in the field in accordance with City of Camas standards. Based on at a posted speed of 40 miles per hour, City of Camas requires a minimum of 400 of sight distance be available in both directions. The sight distance is to be measured from an eye height of 3.5 feet, at least fifteen feet from the edge of the uncontrolled public travel way. Based on the measurements obtained from proposed driveway approach along NW lake Rd the

project has 400 feet of sight distance is available to the east. This distance exceeds City of Camas minimum sight distance requirements of 400 feet.

LEFT TURN LANE WARRANTS

None

2027 WITHOUT PROJECT TRAFFIC L.O.S.

The 2027 "Without Project" traffic volumes were calculated using a nominal 0.5 percent annual compounded growth factor as established by pervious traffic studies

	A.M. Peak Hour		P.M. Peak Hour	
	LOS	Average Delay (sec)	LOS	Average Delay (sec)
Signalized Intersections				
NW Friberg-Strunk St/NW Lake Rd			A	9.3
NW Lake Road / NW Larkspur Rd			A	8.4
SE 1st St / NE & SE 192 Avenue			D	38.4

2027 WITH PROJECT TRAFFIC L.O.S.

The 2027 "Without Project" traffic volumes were calculated using a nominal 0.5 percent annual compounded growth factor as established by pervious traffic studies.

The traffic study area intersection are projected to operate within adopted level of service standards in the 2027 "With Project"

	A.M. Peak Hour		P.M. Peak Hour	
	LOS	Average Delay (sec)	LOS	Average Delay (sec)
Signalized Intersections				
NW Friberg-Strunk St/NW Lake Rd	B	11.7	B	15.0
NW Lake Road / NW Larkspur Rd	A	6.8	A	7.7
SE 1st St / NE & SE 192 Avenue				

PROJECT CROSS CIRCULATION

This project will not provide a private connection to the parcel to the east because a significant portion of the parcel is wetland and currently owned by the City of Camas.

FINDINGS AND RECOMMENDATIONS

Based on the results of the transportation impact analysis, the proposed Oak Tree Station development can be constructed while maintaining acceptable levels of service and safety at the study intersections. The primary findings and recommendations of this study are summarized below.

Existing Conditions

- All of the study intersections operated within operating standards deemed acceptable by the City of Camas during the weekday am and pm peak hours.

YEAR 2022 and 2027 Total Traffic Conditions

- Year 2018 and 2023 total traffic conditions were estimated assuming continued local and regional growth plus the proposed site traffic. Operational analysis indicates that the study intersections are forecast to continue to operate at acceptable levels.
- Engineering Northwest LLC performed filed sight distance measurements. The project access intersection will be able to meet the sight distance requirements assuming any vegetation within the sight distance triangles are properly maintained after construction.

REFERENCES

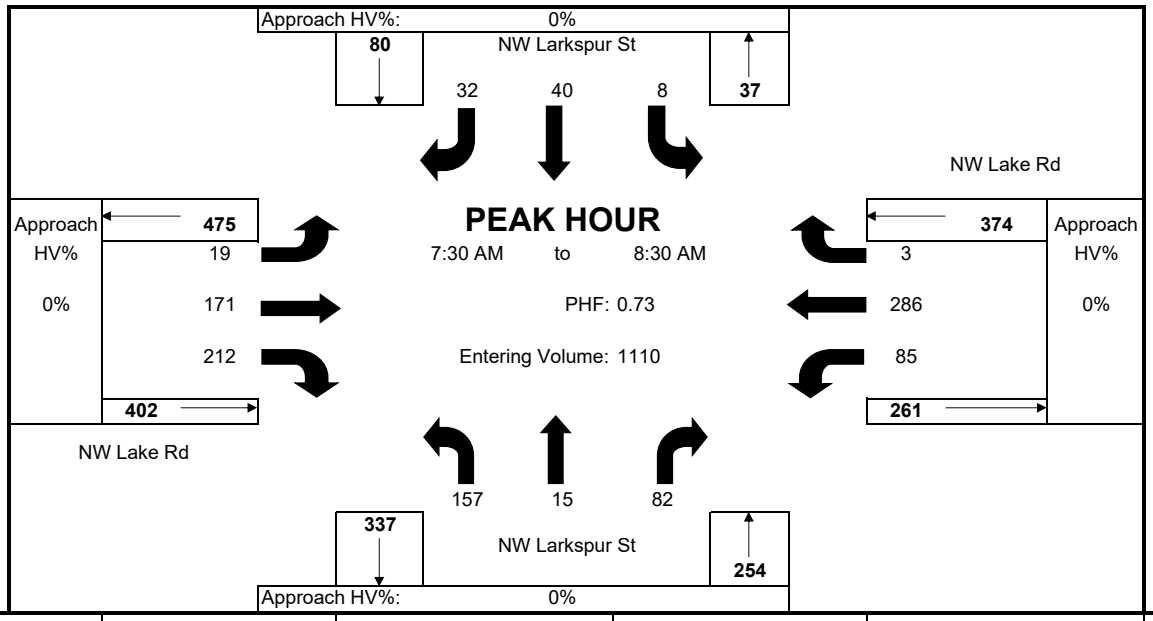
1) C-Tran, http://www.c-tran.com. March 201
2) Institute of Transportation Engineers, Trip Generation, 10th Editions
3) Transportation Research Board, Highway Capacity Manual, 2010

Appendix B

Existing Traffic Counts

LOCATION:
NW Larkspur St & NW Lake Rd
Ridgefield, WA

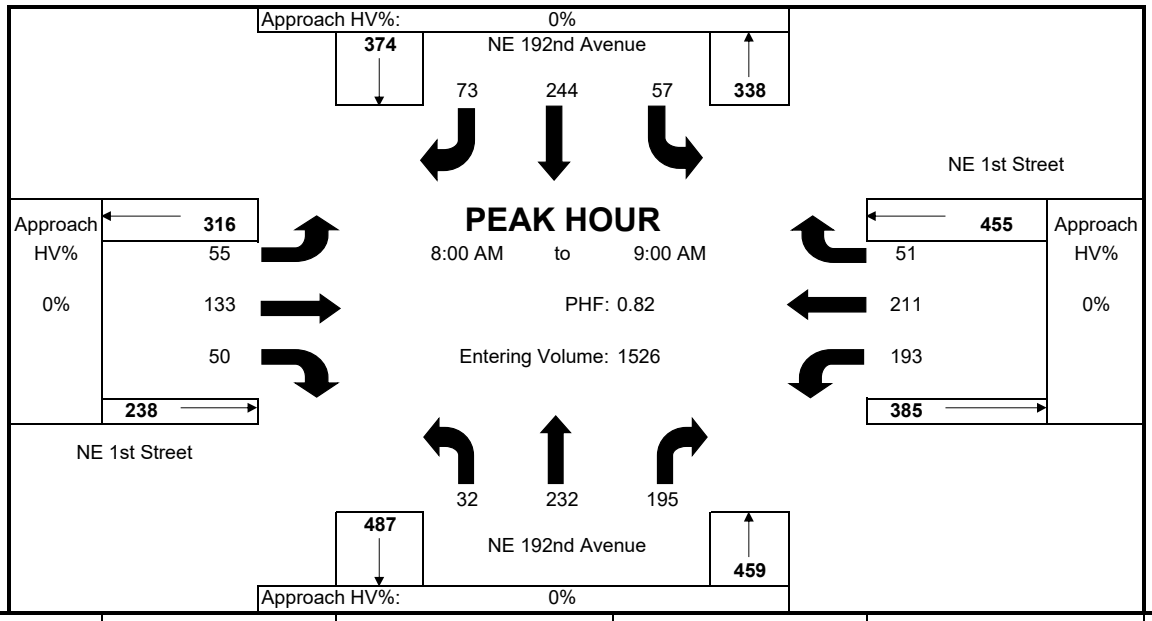
DATE: 1/5/2022
DAY: Wenesday
TIME: 7:30 to 8:30



Time Period		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
7:30	7:45	50	4	18	5	13	2	3	39	45	30	70	1	280
7:45	8:00	56	7	48	11	13	2	4	46	79	35	80	0	381
8:00	8:15	22	4	13	6	8	1	7	44	54	13	78	1	251
8:15	8:30	29	0	3	10	6	3	5	42	34	7	58	1	198
8:30	8:45	26	3	11	7	9	1	5	46	14	9	56	1	188
8:45	9:00	38	4	10	9	4	3	5	45	20	8	97	1	244
9:00	9:15	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15	9:30	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30	9:45	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45	10:00	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00	10:15	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15	10:30	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL:	221	22	103	48	53	12	29	262	246	102	439	5	1542
	Peak HR %HV:	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Peak HR Factor:	0.70	0.54	0.43	0.73	0.77	0.67	0.68	0.93	0.67	0.61	0.89	0.75	

LOCATION:
NE 192nd Avenue & NE 1st Street
Ridgefield, WA

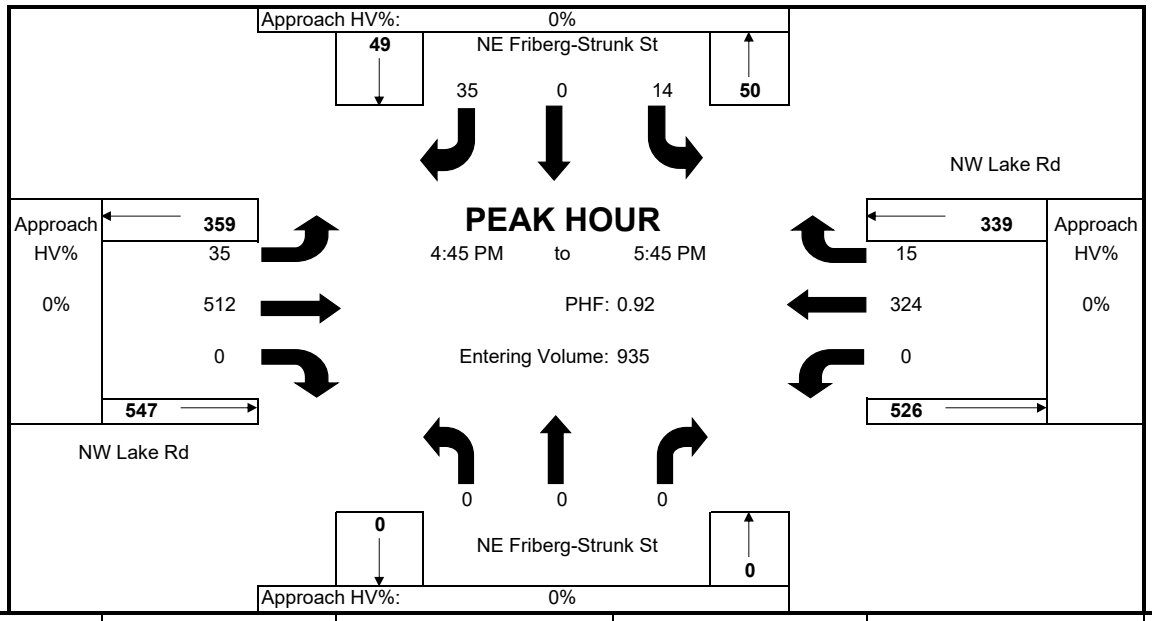
DATE: 1/5/2022
DAY: Wenesday
TIME: 7:30 to 8:30



Time Period		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
7:30	7:45	13	54	78	17	80	15	17	56	13	73	70	22	508
7:45	8:00	7	50	37	12	68	20	12	32	18	36	38	18	348
8:00	8:15	9	62	29	19	54	9	17	21	12	32	32	13	309
8:15	8:30	10	52	42	21	56	15	8	28	10	35	35	9	321
8:30	8:45	8	58	46	14	75	16	12	39	15	61	68	17	429
8:45	9:00	5	60	78	19	59	17	18	45	13	65	76	12	467
9:00	9:15	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15	9:30	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30	9:45	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45	10:00	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00	10:15	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15	10:30	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL:	52	336	310	102	392	92	84	221	81	302	319	91	2382
	Peak HR %HV:	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Peak HR Factor:	0.80	0.94	0.63	0.87	0.81	0.84	0.76	0.74	0.83	0.74	0.69	0.75	

LOCATION:
NE Friberg-Strunk St & NW Lake Rd
Camas, WA

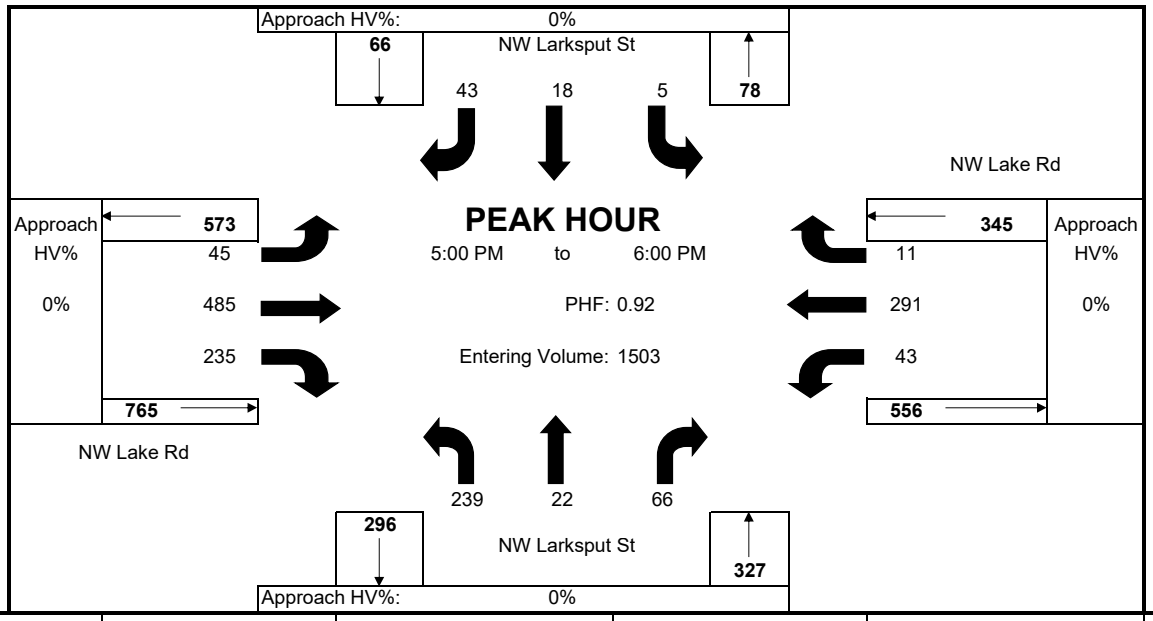
DATE: 1/5/2022
DAY: Wednessday
TIME: 16:00 to 9:00



Time Period		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
16:00	16:15	0	0	0	5	0	6	10	95	0	0	77	6	199
16:15	16:30	1	0	0	8	0	4	5	120	0	0	98	3	239
16:30	16:45	0	0	0	6	0	3	10	119	0	0	92	2	232
16:45	17:00	0	0	0	9	0	5	5	106	0	0	91	4	220
17:00	17:15	0	0	0	10	0	3	12	118	0	0	75	5	223
17:15	17:30	0	0	0	9	0	2	7	165	0	0	66	4	253
17:30	17:45	0	0	0	7	0	4	11	123	0	0	92	2	239
17:45	18:00	0	0	0	5	0	3	5	119	0	0	68	4	204
18:00	18:15	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	18:30	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30	18:45	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45	19:00	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL:	1	0	0	59	0	30	65	965	0	0	659	30	1809
	Peak HR %HV:	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Peak HR Factor:	0.00	0.00	0.00	0.88	0.00	0.70	0.73	0.78	0.00	0.00	0.88	0.75	

LOCATION:
NW Larksput St & NW Lake Rd
Camas, WA

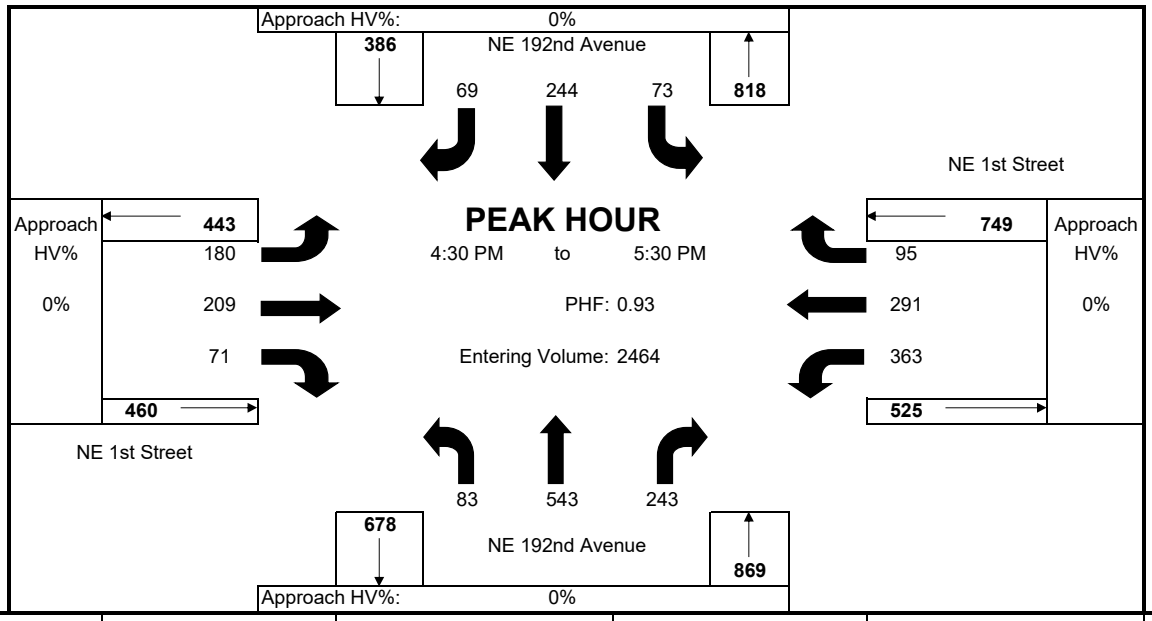
DATE: 1/5/2022
DAY: Wednessday
TIME: 16:00 to 9:00



Time Period		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
16:00	16:15	45	6	5	13	8	5	17	98	41	9	75	2	324
16:15	16:30	51	4	11	10	3	2	8	118	37	4	97	4	349
16:30	16:45	43	1	6	13	0	0	12	117	32	8	87	0	319
16:45	17:00	39	6	8	8	2	2	7	99	53	10	88	2	324
17:00	17:15	81	4	26	14	7	2	14	113	66	10	69	3	409
17:15	17:30	37	5	12	11	3	0	9	149	82	15	64	4	391
17:30	17:45	49	6	9	12	7	2	14	113	69	5	91	0	377
17:45	18:00	72	7	19	6	1	1	8	110	18	13	67	4	326
18:00	18:15	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	18:30	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30	18:45	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45	19:00	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL:		417	39	96	87	31	14	89	917	398	74	638	19	2819
Peak HR %HV:		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Peak HR Factor:		0.74	0.79	0.63	0.77	0.64	0.63	0.80	0.81	0.72	0.72	0.80	0.69	

LOCATION:
NE 192nd Avenue & NE 1st Street
Camas, WA

DATE: 1/5/2022
DAY: Wednessday
TIME: 16:00 to 9:00



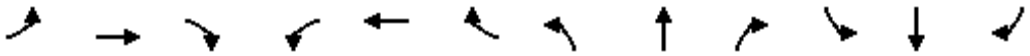
Time Period		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
16:00	16:15	25	119	50	13	64	12	50	67	19	85	68	15	587
16:15	16:30	16	162	59	14	72	11	48	53	13	92	65	16	621
16:30	16:45	17	132	58	24	50	17	53	41	16	86	75	15	584
16:45	17:00	19	116	49	20	57	14	48	54	22	84	69	27	579
17:00	17:15	20	149	78	15	71	24	28	40	15	111	82	30	663
17:15	17:30	27	146	58	10	66	18	51	74	18	82	65	23	638
17:30	17:45	21	131	59	17	71	34	40	16	11	89	62	20	571
17:45	18:00	10	122	63	15	73	32	29	45	20	76	63	25	573
18:00	18:15	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	18:30	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30	18:45	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45	19:00	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL:		155	1077	474	128	524	162	347	390	134	705	549	171	4816
Peak HR %HV:		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Peak HR Factor:		0.77	0.91	0.78	0.72	0.86	0.76	0.85	0.71	0.81	0.82	0.89	0.79	

Appendix C

Existing Level of Services

Lanes, Volumes, Timings
NE 192nd Ave & SE 1st St

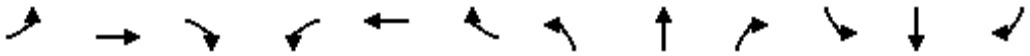
AM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	133	50	193	211	51	32	232	195	57	244	73
Future Volume (vph)	55	133	50	193	211	51	32	232	195	57	244	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.97	0.95	0.95	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.959				0.850			0.850		0.966	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3394	0	3433	1863	1583	1770	3539	1583	1770	3419	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	3394	0	3433	1863	1583	1770	3539	1583	1770	3419	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		46				112			238		33	
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		687			2643			1144			1304	
Travel Time (s)		11.7			45.1			19.5			22.2	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	67	162	61	235	257	62	39	283	238	70	298	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	67	223	0	235	257	62	39	283	238	70	387	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	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	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	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	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6	3	7	4	1	3	8	
Permitted Phases						6			4			
Detector Phase	5	2		1	6	3	7	4	1	3	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	15.0	5.0	5.0	15.0	

Lanes, Volumes, Timings
NE 192nd Ave & SE 1st St

AM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	9.5	22.5		9.5	22.5	22.5	9.5	22.5	9.5	22.5	22.5	
Total Split (s)	9.5	22.5		12.0	25.0	22.5	45.5	23.0	12.0	22.5	22.5	
Total Split (%)	9.3%	22.0%		11.7%	24.4%	22.0%	44.4%	22.4%	11.7%	22.0%	22.0%	
Maximum Green (s)	5.0	18.0		7.5	20.5	18.0	41.0	18.5	7.5	18.0	18.0	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max		None	Max	Max	None	C-Max	None	Max	Max	
Walk Time (s)		7.0			7.0	7.0		7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0	11.0		11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0		0		0	0	
Act Effct Green (s)	5.0	18.0		7.5	22.4	44.9	7.8	41.0	53.0	18.0	55.4	
Actuated g/C Ratio	0.05	0.18		0.07	0.22	0.44	0.08	0.40	0.52	0.18	0.54	
v/c Ratio	0.40	0.35		0.94	0.63	0.08	0.29	0.20	0.26	0.23	0.21	
Control Delay	54.7	31.0		90.9	45.3	0.8	49.6	20.5	2.4	38.5	12.5	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	54.7	31.0		90.9	45.3	0.8	49.6	20.5	2.4	38.5	12.5	
LOS	D	C		F	D	A	D	C	A	D	B	
Approach Delay		36.5			59.7			14.9			16.5	
Approach LOS		D			E			B			B	
Queue Length 50th (ft)	22	53		80	158	0	25	62	0	40	65	
Queue Length 95th (ft)	41	80		#133	219	1	51	83	26	73	88	
Internal Link Dist (ft)		607			2563			1064			1224	
Turn Bay Length (ft)												
Base Capacity (vph)	167	633		251	407	756	708	1415	933	310	1864	
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	0.40	0.35		0.94	0.63	0.08	0.06	0.20	0.26	0.23	0.21	

Intersection Summary			
Area Type:	Other		
Cycle Length: 102.5			
Actuated Cycle Length: 102.5			
Offset: 0 (0%), Referenced to phase 4:NBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 32.0		Intersection LOS: C	
Intersection Capacity Utilization 46.9%		ICU Level of Service A	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 3:

Lanes, Volumes, Timings
NE Friberg & NW Lake Rd

AM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	179	1	0	303	9	0	0	0	14	0	32
Future Volume (vph)	19	179	1	0	303	9	0	0	0	14	0	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999				0.850						0.850
Flt Protected	0.950										0.950	
Satd. Flow (prot)	1770	3536	0	0	3539	1583	0	1863	0	0	1770	1583
Flt Permitted	0.553										0.757	
Satd. Flow (perm)	1030	3536	0	0	3539	1583	0	1863	0	0	1410	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				36						36
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2643			4666			279			633	
Travel Time (s)		60.1			106.0			6.3			14.4	
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
Adj. Flow (vph)	21	195	1	0	329	10	0	0	0	15	0	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	196	0	0	329	10	0	0	0	0	15	35
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA			NA	Perm				Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5
Total Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%	50.0%
Maximum Green (s)	18.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	4.5	4.5			4.5	4.5		4.5			4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0	11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	0
Act Effct Green (s)	18.0	18.0			18.0	18.0					18.0	18.0
Actuated g/C Ratio	0.40	0.40			0.40	0.40					0.40	0.40
v/c Ratio	0.05	0.14			0.23	0.02					0.03	0.05
Control Delay	8.8	8.9			9.5	1.0					8.4	3.9
Queue Delay	0.0	0.0			0.0	0.0					0.0	0.0
Total Delay	8.8	8.9			9.5	1.0					8.4	3.9

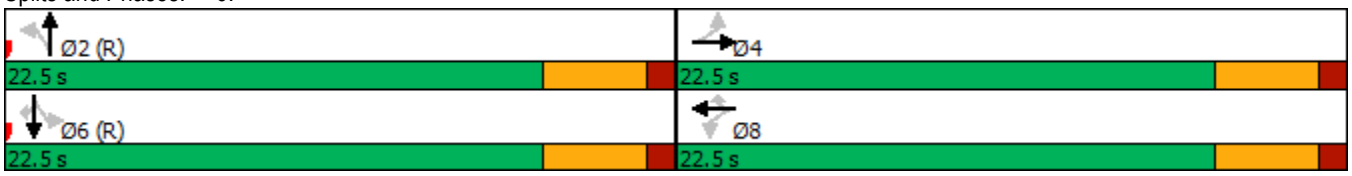
Lanes, Volumes, Timings
NE Friberg & NW Lake Rd

AM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	A	A			A	A					A	A
Approach Delay		8.9			9.2						5.3	
Approach LOS		A			A						A	
Queue Length 50th (ft)	3	15			27	0					2	0
Queue Length 95th (ft)	13	31			48	2					10	11
Internal Link Dist (ft)		2563			4586			199			553	
Turn Bay Length (ft)												
Base Capacity (vph)	412	1415			1415	654					564	654
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	0.05	0.14			0.23	0.02					0.03	0.05

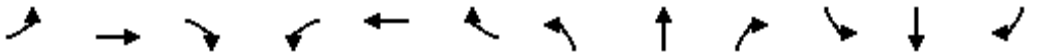
Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.23			
Intersection Signal Delay: 8.8		Intersection LOS: A	
Intersection Capacity Utilization 27.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6:



Lanes, Volumes, Timings
NW Parker St & NW Lake Rd

AM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	171	212	85	286	3	157	15	82	8	40	32
Future Volume (vph)	19	171	212	85	286	3	157	15	82	8	40	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.999			0.873			0.933	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	3536	0	1770	1626	0	1770	1738	0
Flt Permitted	0.561			0.640			0.706			0.689		
Satd. Flow (perm)	1045	1863	1583	1192	3536	0	1315	1626	0	1283	1738	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			230		2			89			35	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		4666			452			981			831	
Travel Time (s)		106.0			10.3			22.3			18.9	
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
Adj. Flow (vph)	21	186	230	92	311	3	171	16	89	9	43	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	186	230	92	314	0	171	105	0	9	78	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0		18.0	18.0	
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40		0.40	0.40		0.40	0.40	
v/c Ratio	0.05	0.25	0.30	0.19	0.22		0.33	0.15		0.02	0.11	
Control Delay	9.5	10.2	4.3	10.2	9.4		11.5	3.9		8.4	6.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	9.5	10.2	4.3	10.2	9.4		11.5	3.9		8.4	6.0	

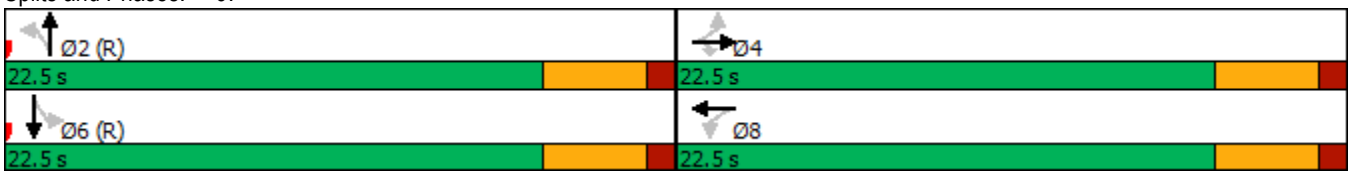
Lanes, Volumes, Timings
NW Parker St & NW Lake Rd

AM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	A	B	A	B	A		B	A		A	A	
Approach Delay		7.1			9.5			8.6			6.3	
Approach LOS		A			A			A			A	
Queue Length 50th (ft)	3	26	0	15	26		29	2		1	6	
Queue Length 95th (ft)	13	62	32	37	46		64	23		7	24	
Internal Link Dist (ft)		4586			372			901			751	
Turn Bay Length (ft)												
Base Capacity (vph)	418	745	771	476	1415		526	703		513	716	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.05	0.25	0.30	0.19	0.22		0.33	0.15		0.02	0.11	

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.33			
Intersection Signal Delay: 8.2		Intersection LOS: A	
Intersection Capacity Utilization 40.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 9:



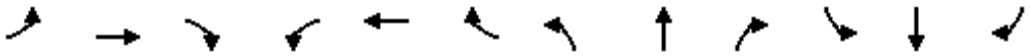
Lanes, Volumes, Timings
NE 192nd Ave & SE 1st St

PM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	209	71	363	291	95	83	543	243	73	244	69
Future Volume (vph)	180	209	71	363	291	95	83	543	243	73	244	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	280		0	330		1000	200		220	270		0
Storage Lanes	2		0	2		1	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	0.95	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.962				0.850			0.850		0.967	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3405	0	3433	1863	1583	1770	3539	1583	1770	3422	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	3405	0	3433	1863	1583	1770	3539	1583	1770	3422	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		41				65			261		39	
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		687			2643			1144			1304	
Travel Time (s)		11.7			45.1			19.5			22.2	
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
Adj. Flow (vph)	194	225	76	390	313	102	89	584	261	78	262	74
Shared Lane Traffic (%)												
Lane Group Flow (vph)	194	301	0	390	313	102	89	584	261	78	336	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	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	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	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	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6	3	7	4	1	3	8	
Permitted Phases						6			4			

Lanes, Volumes, Timings
NE 192nd Ave & SE 1st St

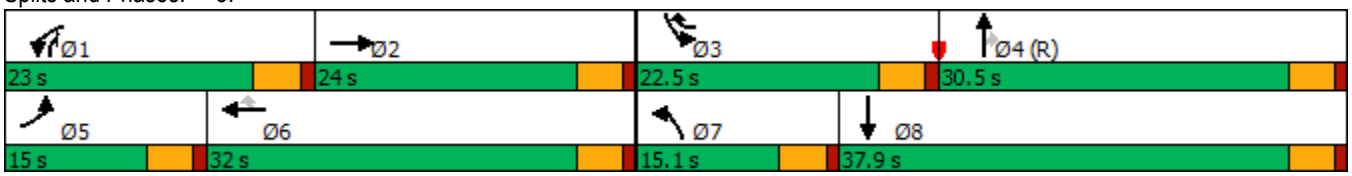
PM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2		1	6	3	7	4	1	3	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	15.0	5.0	5.0	15.0	
Minimum Split (s)	9.5	22.5		9.5	22.5	22.5	9.5	22.5	9.5	22.5	22.5	
Total Split (s)	15.0	24.0		23.0	32.0	22.5	15.1	30.5	23.0	22.5	37.9	
Total Split (%)	15.0%	24.0%		23.0%	32.0%	22.5%	15.1%	30.5%	23.0%	22.5%	37.9%	
Maximum Green (s)	10.5	19.5		18.5	27.5	18.0	10.6	26.0	18.5	18.0	33.4	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max		None	Max	Max	None	C-Max	None	Max	Max	
Walk Time (s)		7.0			7.0	7.0		7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0	11.0		11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0		0		0	0	
Act Effct Green (s)	9.8	21.9		16.1	28.2	50.7	9.3	26.0	46.6	18.0	36.9	
Actuated g/C Ratio	0.10	0.22		0.16	0.28	0.51	0.09	0.26	0.47	0.18	0.37	
v/c Ratio	0.58	0.39		0.71	0.60	0.12	0.54	0.63	0.30	0.25	0.26	
Control Delay	50.1	31.0		46.9	36.9	6.2	55.5	36.5	2.8	37.6	21.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	50.1	31.0		46.9	36.9	6.2	55.5	36.5	2.8	37.6	21.1	
LOS	D	C		D	D	A	E	D	A	D	C	
Approach Delay		38.5			37.8			28.9			24.2	
Approach LOS		D			D			C			C	
Queue Length 50th (ft)	61	74		122	174	12	55	173	0	43	71	
Queue Length 95th (ft)	97	118		168	265	39	105	232	40	86	108	
Internal Link Dist (ft)		607			2563			1064			1224	
Turn Bay Length (ft)	280			330		1000	200		220	270		
Base Capacity (vph)	360	777		635	525	834	187	920	908	318	1285	
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	0.54	0.39		0.61	0.60	0.12	0.48	0.63	0.29	0.25	0.26	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 4:NBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 32.7		Intersection LOS: C	
Intersection Capacity Utilization 54.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3:



Lanes, Volumes, Timings
NE Friberg St & NW Lake Rd

PM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	512	0	0	324	15	0	0	0	14	0	35
Future Volume (vph)	35	512	0	0	324	15	0	0	0	14	0	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850						0.850
Flt Protected	0.950										0.950	
Satd. Flow (prot)	1770	3539	0	0	3539	1583	0	1863	0	0	1770	1583
Flt Permitted	0.541										0.757	
Satd. Flow (perm)	1008	3539	0	0	3539	1583	0	1863	0	0	1410	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						36						38
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2643			4666			279			633	
Travel Time (s)		60.1			106.0			6.3			14.4	
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
Adj. Flow (vph)	38	557	0	0	352	16	0	0	0	15	0	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	557	0	0	352	16	0	0	0	0	15	38
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		36			36			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA			NA	Perm				Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5
Total Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%	50.0%
Maximum Green (s)	18.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	4.5	4.5			4.5	4.5		4.5			4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0	11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	0
Act Effct Green (s)	18.0	18.0			18.0	18.0					18.0	18.0
Actuated g/C Ratio	0.40	0.40			0.40	0.40					0.40	0.40
v/c Ratio	0.09	0.39			0.25	0.02					0.03	0.06
Control Delay	9.3	10.7			10.0	3.7					8.4	3.9
Queue Delay	0.0	0.0			0.0	0.0					0.0	0.0
Total Delay	9.3	10.7			10.0	3.7					8.4	3.9

Lanes, Volumes, Timings
NE Friberg St & NW Lake Rd

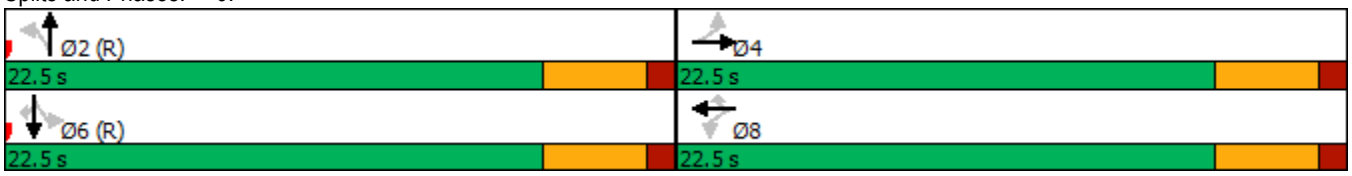
PM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	A	B			B	A					A	A
Approach Delay		10.6			9.8						5.2	
Approach LOS		B			A						A	
Queue Length 50th (ft)	6	51			28	0					2	0
Queue Length 95th (ft)	19	81			56	m4					10	12
Internal Link Dist (ft)		2563			4586			199			553	
Turn Bay Length (ft)												
Base Capacity (vph)	403	1415			1415	654					564	656
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	0.39			0.25	0.02					0.03	0.06

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.39			
Intersection Signal Delay: 10.0		Intersection LOS: A	
Intersection Capacity Utilization 38.5%		ICU Level of Service A	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6:



Lanes, Volumes, Timings NW
Parker St & NW Lake Rd

PM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	485	235	43	291	11	239	22	66	5	18	43
Future Volume (vph)	45	485	235	43	291	11	239	22	66	5	18	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.995			0.887			0.895	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	3522	0	1770	1652	0	1770	1667	0
Flt Permitted	0.554			0.295			0.713			0.695		
Satd. Flow (perm)	1032	1863	1583	550	3522	0	1328	1652	0	1295	1667	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			255		10			72			47	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		4666			452			981			831	
Travel Time (s)		106.0			10.3			22.3			18.9	
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
Adj. Flow (vph)	49	527	255	47	316	12	260	24	72	5	20	47
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	527	255	47	328	0	260	96	0	5	67	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0		18.0	18.0	
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40		0.40	0.40		0.40	0.40	
v/c Ratio	0.12	0.71	0.32	0.21	0.23		0.49	0.14		0.01	0.10	
Control Delay	15.8	24.9	8.1	12.0	9.2		14.0	4.4		8.2	4.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	15.8	24.9	8.1	12.0	9.2		14.0	4.4		8.2	4.8	

Lanes, Volumes, Timings
Parker St & NW Lake Rd

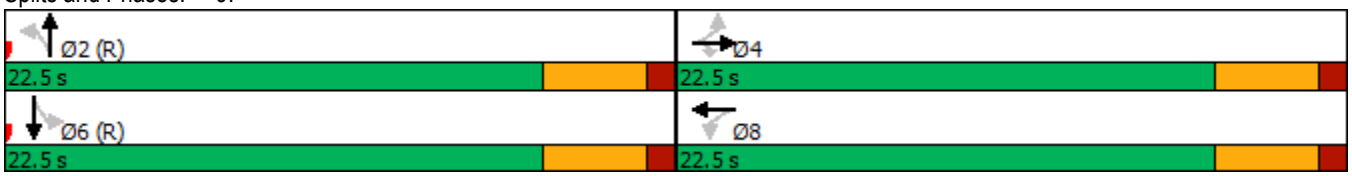
PM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	B	C	A	B	A		B	A		A	A	
Approach Delay		19.2			9.5			11.4			5.1	
Approach LOS		B			A			B			A	
Queue Length 50th (ft)	10	124	0	8	26		47	4		1	3	
Queue Length 95th (ft)	m29	#210	61	26	47		98	23		5	19	
Internal Link Dist (ft)		4586			372			901			751	
Turn Bay Length (ft)												
Base Capacity (vph)	412	745	786	220	1414		531	704		518	695	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.12	0.71	0.32	0.21	0.23		0.49	0.14		0.01	0.10	

Intersection Summary

Area Type: Other
Cycle Length: 45
Actuated Cycle Length: 45
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 50
Control Type: Pretimed
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 14.7 Intersection LOS: B
Intersection Capacity Utilization 60.9% ICU Level of Service B
Analysis Period (min) 15
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.

Splits and Phases: 9:



Appendix D

2023 Without Project Level of Services

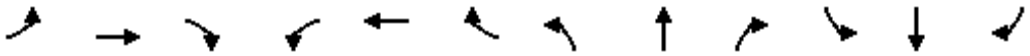
Lanes, Volumes, Timings
NE 192nd Ave & SE 1st St

AM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	133	50	193	211	51	32	232	195	57	244	73
Future Volume (vph)	55	133	50	193	211	51	32	232	195	57	244	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.97	0.95	0.95	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.959				0.850			0.850		0.965	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3394	0	3433	1863	1583	1770	3539	1583	1770	3415	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	3394	0	3433	1863	1583	1770	3539	1583	1770	3415	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		46				112			262		33	
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		687			2643			1144			1304	
Travel Time (s)		11.7			45.1			19.5			22.2	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	74	178	67	259	283	68	43	311	262	76	327	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	74	245	0	259	283	68	43	311	262	76	425	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	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	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	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	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6	3	7	4	1	3	8	
Permitted Phases						6			4			
Detector Phase	5	2		1	6	3	7	4	1	3	8	
Switch Phase												

Lanes, Volumes, Timings
NE 192nd Ave & SE 1st St

AM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	15.0	5.0	5.0	15.0	
Minimum Split (s)	9.5	22.5		9.5	22.5	22.5	9.5	22.5	9.5	22.5	22.5	
Total Split (s)	9.5	22.5		12.0	25.0	22.5	45.5	23.0	12.0	22.5	22.5	
Total Split (%)	9.3%	22.0%		11.7%	24.4%	22.0%	44.4%	22.4%	11.7%	22.0%	22.0%	
Maximum Green (s)	5.0	18.0		7.5	20.5	18.0	41.0	18.5	7.5	18.0	18.0	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max		None	Max	Max	None	C-Max	None	Max	Max	
Walk Time (s)		7.0			7.0	7.0		7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0	11.0		11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0		0		0	0	
Act Effct Green (s)	5.0	18.0		7.5	22.4	44.9	8.0	41.0	53.0	18.0	55.3	
Actuated g/C Ratio	0.05	0.18		0.07	0.22	0.44	0.08	0.40	0.52	0.18	0.54	
v/c Ratio	0.44	0.39		1.03	0.70	0.09	0.31	0.22	0.28	0.25	0.23	
Control Delay	56.1	32.2		112.9	48.3	1.2	49.9	20.8	2.4	38.8	12.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	56.1	32.2		112.9	48.3	1.2	49.9	20.8	2.4	38.8	12.9	
LOS	E	C		F	D	A	D	C	A	D	B	
Approach Delay		37.7			70.5			15.0			16.8	
Approach LOS		D			E			B			B	
Queue Length 50th (ft)	24	60		~94	176	0	27	68	0	43	73	
Queue Length 95th (ft)	44	87		#152	242	3	55	90	26	78	98	
Internal Link Dist (ft)		607			2563			1064			1224	
Turn Bay Length (ft)												
Base Capacity (vph)	167	633		251	407	756	708	1415	945	310	1856	
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	0.44	0.39		1.03	0.70	0.09	0.06	0.22	0.28	0.25	0.23	

Intersection Summary			
Area Type:	Other		
Cycle Length: 102.5			
Actuated Cycle Length: 102.5			
Offset: 0 (0%), Referenced to phase 4:NBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.03			
Intersection Signal Delay: 35.5		Intersection LOS: D	
Intersection Capacity Utilization 48.0%		ICU Level of Service A	
Analysis Period (min) 15			

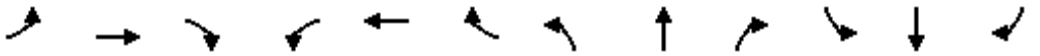
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 3:

Lanes, Volumes, Timings
NE Friberg St & NW Lake Rd

AM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	179	1	0	303	9	0	0	0	14	0	32
Future Volume (vph)	19	179	1	0	303	9	0	0	0	14	0	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999				0.850						0.850
Flt Protected	0.950										0.950	
Satd. Flow (prot)	1770	3536	0	0	3539	1583	0	1863	0	0	1770	1583
Flt Permitted	0.536										0.757	
Satd. Flow (perm)	998	3536	0	0	3539	1583	0	1863	0	0	1410	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				36						38
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2643			4666			279			633	
Travel Time (s)		60.1			106.0			6.3			14.4	
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
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	23	214	1	0	362	11	0	0	0	17	0	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	215	0	0	362	11	0	0	0	0	17	38
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA			NA	Perm				Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5
Total Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%	50.0%
Maximum Green (s)	18.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	4.5	4.5			4.5	4.5		4.5			4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0	11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	0
Act Effct Green (s)	18.0	18.0			18.0	18.0					18.0	18.0
Actuated g/C Ratio	0.40	0.40			0.40	0.40					0.40	0.40
v/c Ratio	0.06	0.15			0.26	0.02					0.03	0.06
Control Delay	8.9	9.0			10.5	3.0					8.4	3.9
Queue Delay	0.0	0.0			0.0	0.0					0.0	0.0

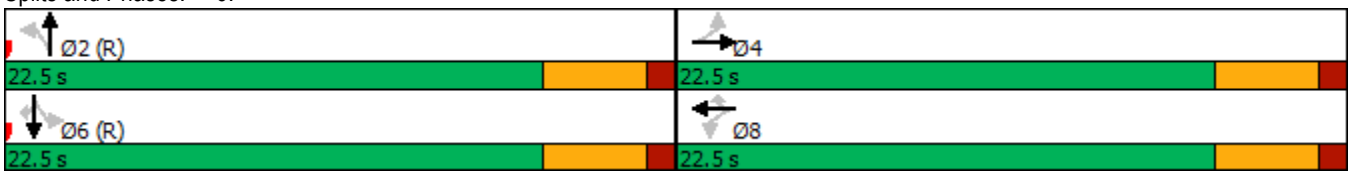
Lanes, Volumes, Timings
NE 192nd Ave & SE 1st St

AM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	8.9	9.0			10.5	3.0					8.4	3.9
LOS	A	A			B	A					A	A
Approach Delay		9.0			10.3						5.3	
Approach LOS		A			B						A	
Queue Length 50th (ft)	4	17			30	0					3	0
Queue Length 95th (ft)	14	33			58	m0					11	12
Internal Link Dist (ft)		2563			4586			199			553	
Turn Bay Length (ft)												
Base Capacity (vph)	399	1415			1415	654					564	656
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	0.06	0.15			0.26	0.02					0.03	0.06

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.26			
Intersection Signal Delay: 9.4		Intersection LOS: A	
Intersection Capacity Utilization 29.0%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 6:



Lanes, Volumes, Timings
NW Parker St & NW Lake Rd

AM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	171	212	85	286	3	157	15	82	8	40	32
Future Volume (vph)	19	171	212	85	286	3	157	15	82	8	40	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.998			0.873			0.934	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	3532	0	1770	1626	0	1770	1740	0
Flt Permitted	0.544			0.630			0.701			0.682		
Satd. Flow (perm)	1013	1863	1583	1174	3532	0	1306	1626	0	1270	1740	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			253		3			98			38	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		4666			452			981			831	
Travel Time (s)		106.0			10.3			22.3			18.9	
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
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	23	204	253	102	342	4	188	18	98	10	48	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	204	253	102	346	0	188	116	0	10	86	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0		18.0	18.0	
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40		0.40	0.40		0.40	0.40	
v/c Ratio	0.06	0.27	0.32	0.22	0.24		0.36	0.16		0.02	0.12	
Control Delay	9.9	10.7	4.7	10.4	9.5		12.0	3.9		8.4	6.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	

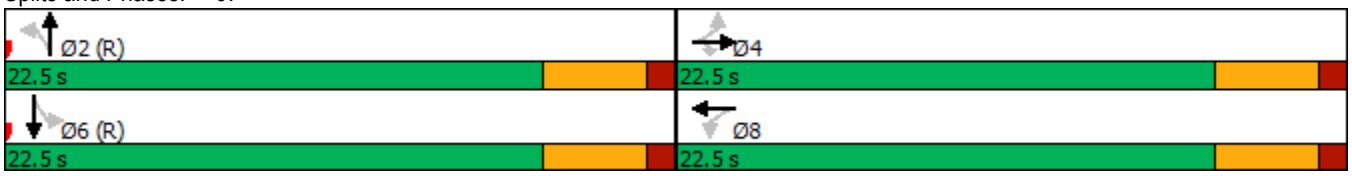
Lanes, Volumes, Timings
NW Parker St & NW Lake Rd

AM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	9.9	10.7	4.7	10.4	9.5		12.0	3.9		8.4	6.1	
LOS	A	B	A	B	A		B	A		A	A	
Approach Delay		7.5			9.7			8.9			6.3	
Approach LOS		A			A			A			A	
Queue Length 50th (ft)	3	29	0	16	29		32	3		2	7	
Queue Length 95th (ft)	15	69	36	41	50		70	24		8	26	
Internal Link Dist (ft)		4586			372			901			751	
Turn Bay Length (ft)												
Base Capacity (vph)	405	745	785	469	1414		522	709		508	718	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.06	0.27	0.32	0.22	0.24		0.36	0.16		0.02	0.12	

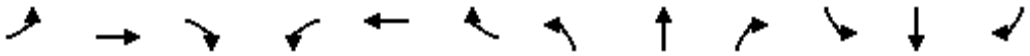
Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.36			
Intersection Signal Delay: 8.5		Intersection LOS: A	
Intersection Capacity Utilization 42.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 9:



Lanes, Volumes, Timings
NE 192nd Ave & SE 1st St

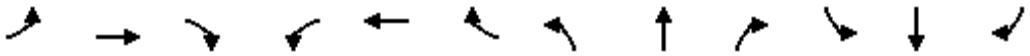
PM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	209	71	363	291	95	83	543	243	73	244	69
Future Volume (vph)	180	209	71	363	291	95	83	543	243	73	244	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	280		0	330		1000	200		220	270		0
Storage Lanes	2		0	2		1	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	0.95	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.962				0.850			0.850		0.967	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3405	0	3433	1863	1583	1770	3539	1583	1770	3422	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	3405	0	3433	1863	1583	1770	3539	1583	1770	3422	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		42				65			287		39	
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		687			2643			1144			1304	
Travel Time (s)		11.7			45.1			19.5			22.2	
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
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	213	247	84	429	344	112	98	642	287	86	289	82
Shared Lane Traffic (%)												
Lane Group Flow (vph)	213	331	0	429	344	112	98	642	287	86	371	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	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	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	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	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6	3	7	4	1	3	8	

Lanes, Volumes, Timings
NE 192nd Ave & SE 1st St

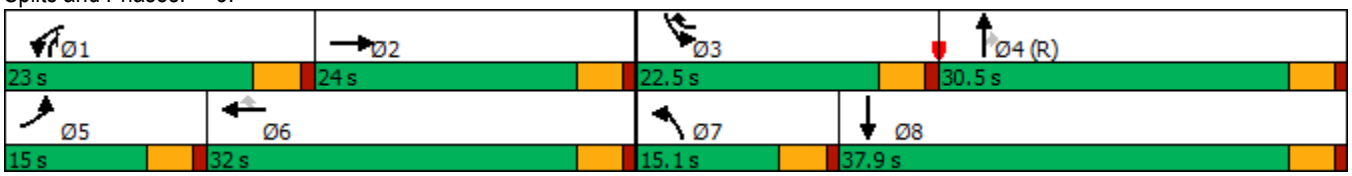
PM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases						6			4			
Detector Phase	5	2		1	6	3	7	4	1	3	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	15.0	5.0	5.0	15.0	
Minimum Split (s)	9.5	22.5		9.5	22.5	22.5	9.5	22.5	9.5	22.5	22.5	
Total Split (s)	15.0	24.0		23.0	32.0	22.5	15.1	30.5	23.0	22.5	37.9	
Total Split (%)	15.0%	24.0%		23.0%	32.0%	22.5%	15.1%	30.5%	23.0%	22.5%	37.9%	
Maximum Green (s)	10.5	19.5		18.5	27.5	18.0	10.6	26.0	18.5	18.0	33.4	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max		None	Max	Max	None	C-Max	None	Max	Max	
Walk Time (s)		7.0			7.0	7.0		7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0	11.0		11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0		0		0	0	
Act Effct Green (s)	10.0	21.3		16.7	28.0	50.5	9.5	26.0	47.2	18.0	36.7	
Actuated g/C Ratio	0.10	0.21		0.17	0.28	0.50	0.10	0.26	0.47	0.18	0.37	
v/c Ratio	0.62	0.44		0.75	0.66	0.13	0.58	0.70	0.32	0.27	0.29	
Control Delay	51.5	32.2		48.2	39.1	6.7	57.3	38.2	2.7	38.0	21.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	51.5	32.2		48.2	39.1	6.7	57.3	38.2	2.7	38.0	21.7	
LOS	D	C		D	D	A	E	D	A	D	C	
Approach Delay		39.8			39.4			30.1			24.8	
Approach LOS		D			D			C			C	
Queue Length 50th (ft)	68	85		134	195	15	60	194	0	48	81	
Queue Length 95th (ft)	105	130		184	294	43	113	257	41	93	120	
Internal Link Dist (ft)		607			2563			1064			1224	
Turn Bay Length (ft)	280			330		1000	200		220	270		
Base Capacity (vph)	360	758		635	521	831	187	920	922	318	1280	
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	0.59	0.44		0.68	0.66	0.13	0.52	0.70	0.31	0.27	0.29	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 4:NBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 33.9		Intersection LOS: C	
Intersection Capacity Utilization 58.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3:



Lanes, Volumes, Timings
NE Friberg St & NW Lake Rd

PM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	512	0	0	324	15	0	0	0	14	0	35
Future Volume (vph)	35	512	0	0	324	15	0	0	0	14	0	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850						0.850
Flt Protected	0.950										0.950	
Satd. Flow (prot)	1770	3539	0	0	3539	1583	0	1863	0	0	1770	1583
Flt Permitted	0.523										0.757	
Satd. Flow (perm)	974	3539	0	0	3539	1583	0	1863	0	0	1410	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						36						42
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2643			4666			279			633	
Travel Time (s)		60.1			106.0			6.3			14.4	
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
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	42	612	0	0	387	18	0	0	0	17	0	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	42	612	0	0	387	18	0	0	0	0	17	42
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		36			36			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA			NA	Perm				Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5
Total Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%	50.0%
Maximum Green (s)	18.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	4.5	4.5			4.5	4.5		4.5			4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0	11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	0
Act Effct Green (s)	18.0	18.0			18.0	18.0					18.0	18.0
Actuated g/C Ratio	0.40	0.40			0.40	0.40					0.40	0.40
v/c Ratio	0.11	0.43			0.27	0.03					0.03	0.06
Control Delay	9.4	11.0			9.4	3.2					8.4	3.8
Queue Delay	0.0	0.0			0.0	0.0					0.0	0.0

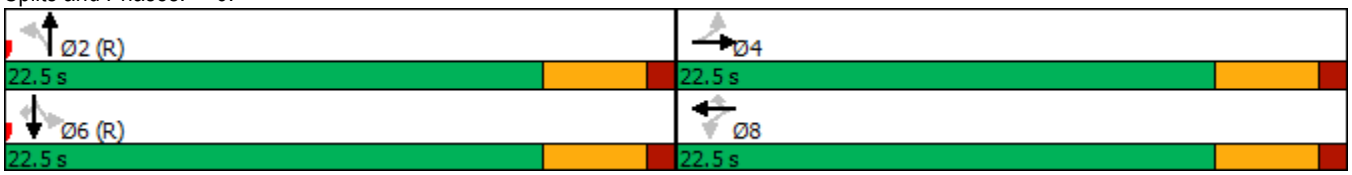
Lanes, Volumes, Timings
NE Friberg St & NW Lake Rd

PM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	9.4	11.0			9.4	3.2					8.4	3.8
LOS	A	B			A	A					A	A
Approach Delay		10.9			9.1						5.1	
Approach LOS		B			A						A	
Queue Length 50th (ft)	6	56			27	0					3	0
Queue Length 95th (ft)	21	90			53	m1					11	12
Internal Link Dist (ft)		2563			4586			199			553	
Turn Bay Length (ft)												
Base Capacity (vph)	389	1415			1415	654					564	658
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	0.11	0.43			0.27	0.03					0.03	0.06

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 9.9		Intersection LOS: A	
Intersection Capacity Utilization 40.8%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 6:



Lanes, Volumes, Timings
NW Parker St & NW Lake Rd

PM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	485	235	43	291	11	239	22	66	5	18	43
Future Volume (vph)	45	485	235	43	291	11	239	22	66	5	18	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.995			0.887			0.895	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	3522	0	1770	1652	0	1770	1667	0
Flt Permitted	0.536			0.239			0.709			0.689		
Satd. Flow (perm)	998	1863	1583	445	3522	0	1321	1652	0	1283	1667	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			281		10			79			51	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		4666			452			981			831	
Travel Time (s)		106.0			10.3			22.3			18.9	
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
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	54	580	281	51	348	13	286	26	79	6	22	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	580	281	51	361	0	286	105	0	6	73	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0		18.0	18.0	
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40		0.40	0.40		0.40	0.40	
v/c Ratio	0.14	0.78	0.35	0.29	0.26		0.54	0.15		0.01	0.10	
Control Delay	16.1	28.4	8.4	14.5	9.4		15.1	4.4		8.3	4.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	

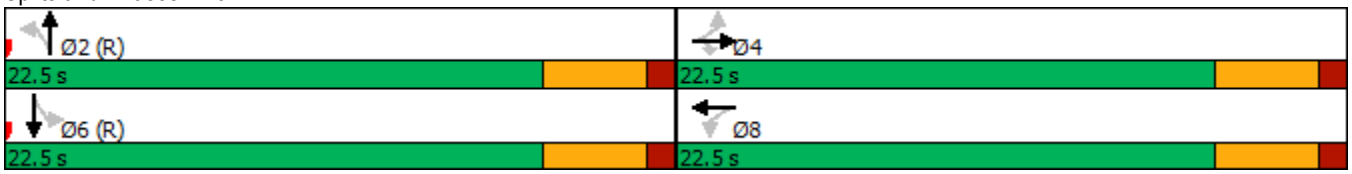
Lanes, Volumes, Timings
NW Parker St & NW Lake Rd

PM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	16.1	28.4	8.4	14.5	9.4		15.1	4.4		8.3	4.8	
LOS	B	C	A	B	A		B	A		A	A	
Approach Delay		21.5			10.0			12.2			5.1	
Approach LOS		C			A			B			A	
Queue Length 50th (ft)	11	141	0	8	30		53	4		1	3	
Queue Length 95th (ft)	m31	#255	67	30	52		111	24		6	20	
Internal Link Dist (ft)		4586			372			901			751	
Turn Bay Length (ft)												
Base Capacity (vph)	399	745	801	178	1414		528	708		513	697	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.14	0.78	0.35	0.29	0.26		0.54	0.15		0.01	0.10	

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 55			
Control Type: Pretimed			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 16.1		Intersection LOS: B	
Intersection Capacity Utilization 64.7%		ICU Level of Service C	
Analysis Period (min) 15			
# 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.			

Splits and Phases: 9:



Appendix E

2023 With Project Level of Services

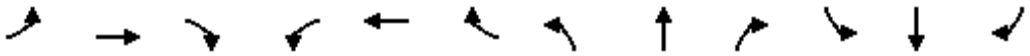
Lanes, Volumes, Timings
NE 192nd Ave & SE 1 St

PM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	134	50	206	212	51	32	232	208	57	244	73
Future Volume (vph)	55	134	50	206	212	51	32	232	208	57	244	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.97	0.95	0.95	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.959				0.850			0.850		0.965	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3394	0	3433	1863	1583	1770	3539	1583	1770	3415	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	3394	0	3433	1863	1583	1770	3539	1583	1770	3415	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		45				112			279		33	
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		687			2643			1144			1304	
Travel Time (s)		11.7			45.1			19.5			22.2	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	74	180	67	276	284	68	43	311	279	76	327	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	74	247	0	276	284	68	43	311	279	76	425	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	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	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	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	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6	3	7	4	1	3	8	
Permitted Phases						6			4			
Detector Phase	5	2		1	6	3	7	4	1	3	8	
Switch Phase												

Lanes, Volumes, Timings
NE 192nd Ave & SE 1 St

PM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	15.0	5.0	5.0	15.0	
Minimum Split (s)	9.5	22.5		9.5	22.5	22.5	9.5	22.5	9.5	22.5	22.5	
Total Split (s)	9.5	22.5		12.0	25.0	22.5	45.5	23.0	12.0	22.5	22.5	
Total Split (%)	9.3%	22.0%		11.7%	24.4%	22.0%	44.4%	22.4%	11.7%	22.0%	22.0%	
Maximum Green (s)	5.0	18.0		7.5	20.5	18.0	41.0	18.5	7.5	18.0	18.0	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max		None	Max	Max	None	C-Max	None	Max	Max	
Walk Time (s)		7.0			7.0	7.0		7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0	11.0		11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0		0		0	0	
Act Effct Green (s)	5.0	18.0		7.5	22.4	44.9	8.0	41.0	53.0	18.0	55.3	
Actuated g/C Ratio	0.05	0.18		0.07	0.22	0.44	0.08	0.40	0.52	0.18	0.54	
v/c Ratio	0.44	0.39		1.10	0.70	0.09	0.31	0.22	0.29	0.25	0.23	
Control Delay	56.1	32.4		131.1	48.4	1.2	49.9	20.8	2.4	38.8	12.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	56.1	32.4		131.1	48.4	1.2	49.9	20.8	2.4	38.8	12.9	
LOS	E	C		F	D	A	D	C	A	D	B	
Approach Delay		37.9			79.6			14.7			16.8	
Approach LOS		D			E			B			B	
Queue Length 50th (ft)	24	61		~106	177	0	27	68	0	43	73	
Queue Length 95th (ft)	44	88		#164	242	3	55	90	27	78	98	
Internal Link Dist (ft)		607			2563			1064			1224	
Turn Bay Length (ft)												
Base Capacity (vph)	167	633		251	407	756	708	1415	953	310	1856	
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	0.44	0.39		1.10	0.70	0.09	0.06	0.22	0.29	0.25	0.23	

Intersection Summary

Area Type: Other

Cycle Length: 102.5

Actuated Cycle Length: 102.5

Offset: 0 (0%), Referenced to phase 4:NBT, Start of Green

Natural Cycle: 80

Control Type: Actuated-Coordinated

Maximum v/c Ratio: 1.10

Intersection Signal Delay: 38.4 Intersection LOS: D

Intersection Capacity Utilization 48.1% ICU Level of Service A

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

Lanes, Volumes, Timings
NE 192nd Ave & SE 1 St

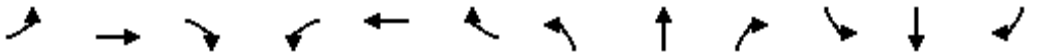
PM PEAK

Queue shown is maximum after two cycles.

Splits and Phases: 3:

Lanes, Volumes, Timings
NE Friberg St & NW Lake Rd

PM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	179	1	0	319	9	0	0	0	21	0	48
Future Volume (vph)	35	179	1	0	319	9	0	0	0	21	0	48
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999				0.850						0.850
Flt Protected	0.950										0.950	
Satd. Flow (prot)	1770	3536	0	0	3539	1583	0	1863	0	0	1770	1583
Flt Permitted	0.526										0.757	
Satd. Flow (perm)	980	3536	0	0	3539	1583	0	1863	0	0	1410	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				36						57
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2643			4666			279			633	
Travel Time (s)		60.1			106.0			6.3			14.4	
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
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	42	214	1	0	381	11	0	0	0	25	0	57
Shared Lane Traffic (%)												
Lane Group Flow (vph)	42	215	0	0	381	11	0	0	0	0	25	57
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA			NA	Perm				Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5
Total Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%	50.0%
Maximum Green (s)	18.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	4.5	4.5			4.5	4.5		4.5			4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0	11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	0
Act Effct Green (s)	18.0	18.0			18.0	18.0					18.0	18.0
Actuated g/C Ratio	0.40	0.40			0.40	0.40					0.40	0.40
v/c Ratio	0.11	0.15			0.27	0.02					0.04	0.09
Control Delay	9.4	9.0			10.6	3.0					8.6	3.5
Queue Delay	0.0	0.0			0.0	0.0					0.0	0.0

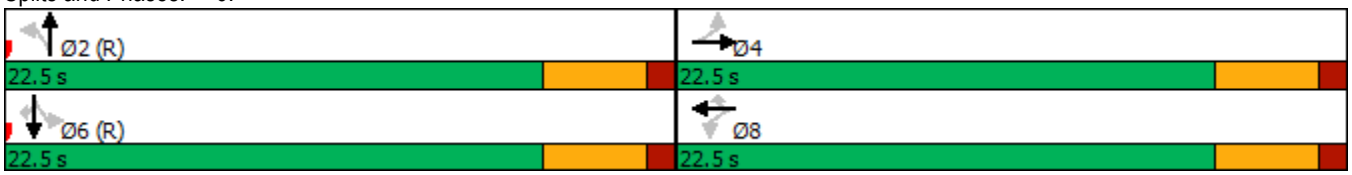
Lanes, Volumes, Timings
NE 192nd Ave & SE 1 St

PM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	9.4	9.0			10.6	3.0					8.6	3.5
LOS	A	A			B	A					A	A
Approach Delay		9.0			10.4						5.1	
Approach LOS		A			B						A	
Queue Length 50th (ft)	6	17			32	0					4	0
Queue Length 95th (ft)	21	33			61	m0					14	15
Internal Link Dist (ft)		2563			4586			199			553	
Turn Bay Length (ft)												
Base Capacity (vph)	392	1415			1415	654					564	667
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	0.11	0.15			0.27	0.02					0.04	0.09

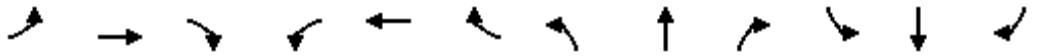
Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.27			
Intersection Signal Delay: 9.3		Intersection LOS: A	
Intersection Capacity Utilization 30.6%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 6:



Lanes, Volumes, Timings
NW Parker St & NW Lake Rd

PM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	171	212	85	286	3	157	15	82	8	40	32
Future Volume (vph)	19	171	212	85	286	3	157	15	82	8	40	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.998			0.873			0.934	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	3532	0	1770	1626	0	1770	1740	0
Flt Permitted	0.544			0.630			0.701			0.682		
Satd. Flow (perm)	1013	1863	1583	1174	3532	0	1306	1626	0	1270	1740	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			253		3			98			38	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		4666			452			981			831	
Travel Time (s)		106.0			10.3			22.3			18.9	
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
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	23	204	253	102	342	4	188	18	98	10	48	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	204	253	102	346	0	188	116	0	10	86	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0		18.0	18.0	
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40		0.40	0.40		0.40	0.40	
v/c Ratio	0.06	0.27	0.32	0.22	0.24		0.36	0.16		0.02	0.12	
Control Delay	9.8	10.6	4.6	10.4	9.5		12.0	3.9		8.4	6.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	

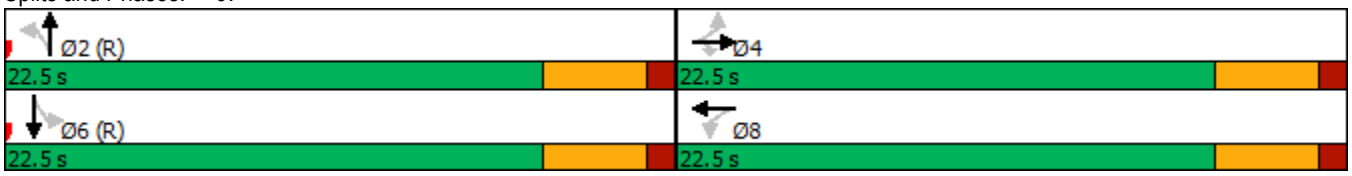
Lanes, Volumes, Timings
NW Parker St & NW Lake Rd

PM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	9.8	10.6	4.6	10.4	9.5		12.0	3.9		8.4	6.1	
LOS	A	B	A	B	A		B	A		A	A	
Approach Delay		7.4			9.7			8.9			6.3	
Approach LOS		A			A			A			A	
Queue Length 50th (ft)	3	29	0	16	29		32	3		2	7	
Queue Length 95th (ft)	15	69	35	41	50		70	24		8	26	
Internal Link Dist (ft)		4586			372			901			751	
Turn Bay Length (ft)												
Base Capacity (vph)	405	745	785	469	1414		522	709		508	718	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.06	0.27	0.32	0.22	0.24		0.36	0.16		0.02	0.12	

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.36			
Intersection Signal Delay: 8.4		Intersection LOS: A	
Intersection Capacity Utilization 42.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 9:



PRELIMINARY TECHNICAL INFORMATION REPORT

Oak Tree Station

City of Camas, Washington

Prepared for:

KYNE ROB & BONIFE LARRY
3239 NW HOOD CT
CAMAS WA , 98607

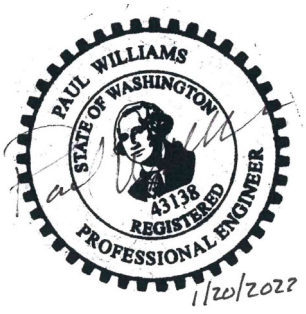
Prepared by:

ENGINEERING NORTHWEST PLLC
Paul Williams P.E.
7504 NW 10th Avenue
Vancouver, WA 98665
(360) 931-3122
paulwilliamspe@gmail.com

ENGINEERING NORTHWEST

CERTIFICATION OF ENGINEERING

The technical information and data contained in this report was prepared under the direction and supervision of the undersigned, whose seal, as a professional engineer licensed to practice as such, is affixed below. This TIR meets the minimum requirements of the City of Camas stormwater ordinances and 2019 Stormwater Management Manual for Western Washington.



Contents

Section A – Project Overview 4

Section A.1 Site Information 4

Section B – Minimum Requirements 5

Section B.1 – Determination of Minimum Requirements 5

Table A.1: Threshold Discharge Area ID 5

Appendix A: Maps 10

Appendix B: Flow charts 18

Appendix C: Natural Drainage Flow Pattern 21

Appendix D: WWHM SCREEN SHOT 23

Appendix e: DESIGN FOR PERKFILTER 25

Appendix F: WWHM 29

Appendix H: ISO MAPS 30

Appendix I: Basin map 35

SECTION A – PROJECT OVERVIEW

Section A.1 Site Information

The proposed Oak Tree Station food court will be located on the northeast quadrant of the NW Lake Road and NW Friberg-Strunk Street cross section in the City of Camas, Washington (See Vicinity Map). It is on parcel number 176162000. The proposed project will construct a building that will act as a food court, a parking lot, sidewalks, a drive thru coffee kiosk, a patio, concrete pads for the food carts, landscaping, and a storm water facility.

The proposed storm design will meet the requirements of the City of Camas and 2019 Stormwater Management Manual for Western Washington.

Topography

The project site is approximately 3.95 acres in size. The site has modest slopes (0-5%). The highest elevation of 250 feet is located along the west side of the parcel. The lowest elevation of 244 feet is located along the northeast corner of the property.

Hydrology

Stormwater runoff sheet flows from approximately at the high point which is on the east property line. From the high point the stormwater runoff sheet flows west to the adjacent property.

Basin Areas

Impervious and pervious surface areas for the pre-developed, existing and post-developed conditions site are shown in Table A.1. The impervious area includes roofs, the parking lot,

sidewalks, the concrete pads, and the concrete patio while pervious area includes landscaping. Pre-Developed conditions are defined as forested.

Due to soil properties in this area, it is unlikely stormwater management by infiltration BMPs will be applicable.

Section B – Minimum Requirements

Section B.1 – Determination of Minimum Requirements

Proposed land disturbance will consist of two buildings, concrete pads, a concrete patio and parking lot. Since the amount of proposed hard surfaces is more than 5,000 square feet, this project is required to meet Minimum Requirements 1-9

TABLE A.1: THRESHOLD DISCHARGE AREA ID Basin 1	Square Feet
Existing hard Surface	*0*
New hard surfaces	*58,048*
Replaced hard surfaces	*0*
Native vegetation converted to lawn/landscape	*25,530*
Native vegetation converted to pasture	*0*
Total land disturbing activity	*84,000*
New and replaced pollution generating hard surfaces (PGHS)	*47,868*
Non-pollution generating surface	*10,180*

The developed basin's effective hard surfaces and their applicability to meeting the Minimum Requirements 6-8 are summarized in Table A.2 below.

TABLE A.2 EFFECTIVE HARD SURFACES			
Hard Surface Area	MR #6 Required (Y/N)	MR#7 Required (Y/N)	MR#8 Required (Y/N)
47,868	Y	Y	N

City of City of Camas stormwater ordinances requires that the project discharge less than the pre-development rate. The pre-development site was modeled in WWHM2012 as forested condition for the proposed project disturbed area.

Section C -Soils Evaluation

The "Soil Survey of Clark County. Washington" indicates the soil at this site consist of the following:

(DoB) Dollar loam, 0 to 5 percent slopes.

Clark County GIS indicates that the site soils are designed as Soil Group 4 – Poorly Drained Soils for use with the Western Washington Hydrology Model (WWHM2012).

Onsite native soil is not suitable for infiltration, thus infiltration testing was not performed onsite.

Section D – Source Control

There are not any prohibited discharges planned for this site. A stormwater pollution plan (SWPPP) will be prepared for the final technical report for the project. The SWPPP will identify and list BMPs for Source Control and will include BMPs to prohibit sediment-laden runoff from leaving the site and impacting any local or State water. In addition, BMPs will be implemented as necessary to prevent pollutants from coming in contact with the stormwater system.

The proposed site is being developed with activities that are pollution generating. The following BMP categories have some degree of applicability, in particular, BMPs for Landscaping and Lawn/Vegetation Management and Maintenance of Stormwater Drainage and Treatment System.

All source control BMPs in the private street will be the responsibility of the parcel owners per their established maintenance procedures. The stormwater facilities will be privately owned and maintained in a manner consistent with the Stormwater Facility Maintenance Manual and BMPs for landscaping and Lawn/Vegetation Management.

The parcel owners will also be responsible for source control BMPs related to installing and maintaining landscaping and roof downspout systems on this parcel. This responsibility includes the prevention of introduction of pollutants into their system(s). The application of appropriate maintenance measures will also provide source control.

Additional Reference: SMMWW, Volume IV, Chapter 2 - Selection of Operational and Structural Source Control BMPs; 2.2 Pollutant Source-Specific BMPs

BMPs for Dust Control at Disturbed Land Areas and Unpaved Roadways and Parking Lots

BMPs for Landscaping and Lawn/ Vegetation Management

BMPs for Maintenance of Stormwater Drainage and Treatment Systems BMPs for Urban Streets

Section E - Onsite Stormwater Management BMPs

An Erosion Control Plan will be developed for the implementation of BMPs to manage stormwater during grading activities. These BMPs will be shown on the erosion control plan.

The parcel owners will be responsible for installing and maintaining roof downspout systems consistent with Volume III, Chapter 3.1.1 of the SMMWW.

Section F – Runoff Treatment and Design

1) Basic stormwater treatment is required for the parking lot in this project.

2) Phosphorous removal is also required.

The runoff from areas requiring treatment will be routed to specific Old Castle PerkFilter Systems (or Contech Stormfilter Systems). The systems will be off-line in nature and be sized to treat the off-line flow rate determined from a WWHM2012 analysis.

The management of flows above the WQ flow rates will be directed to the particular storm line system. The existing site will release to a stormwater pipe in NW Lake Road that will take the runoff to a public basin on the adjacent, east parcel.

Initial installation cost and the expenses associated with long-term maintenance are expected to be typical of projects with similar street sections and with runoff from parking lots.

The amount of pollution-generating surfaces is:

From Parking Lot = 1.1 acres

Section G - Flow Control Analysis and Design

The project proposes a large vault to store clean stormwater runoff. A control manhole will meter the stormwater from the storage vault and slowly release runoff to the stormwater pipe in NW Lake Road that will discharge into the public basin on the parcel to the east. The WWHM model for the project show flow duration has passed.

Section I - Wetlands Protection

No wetland in the area.

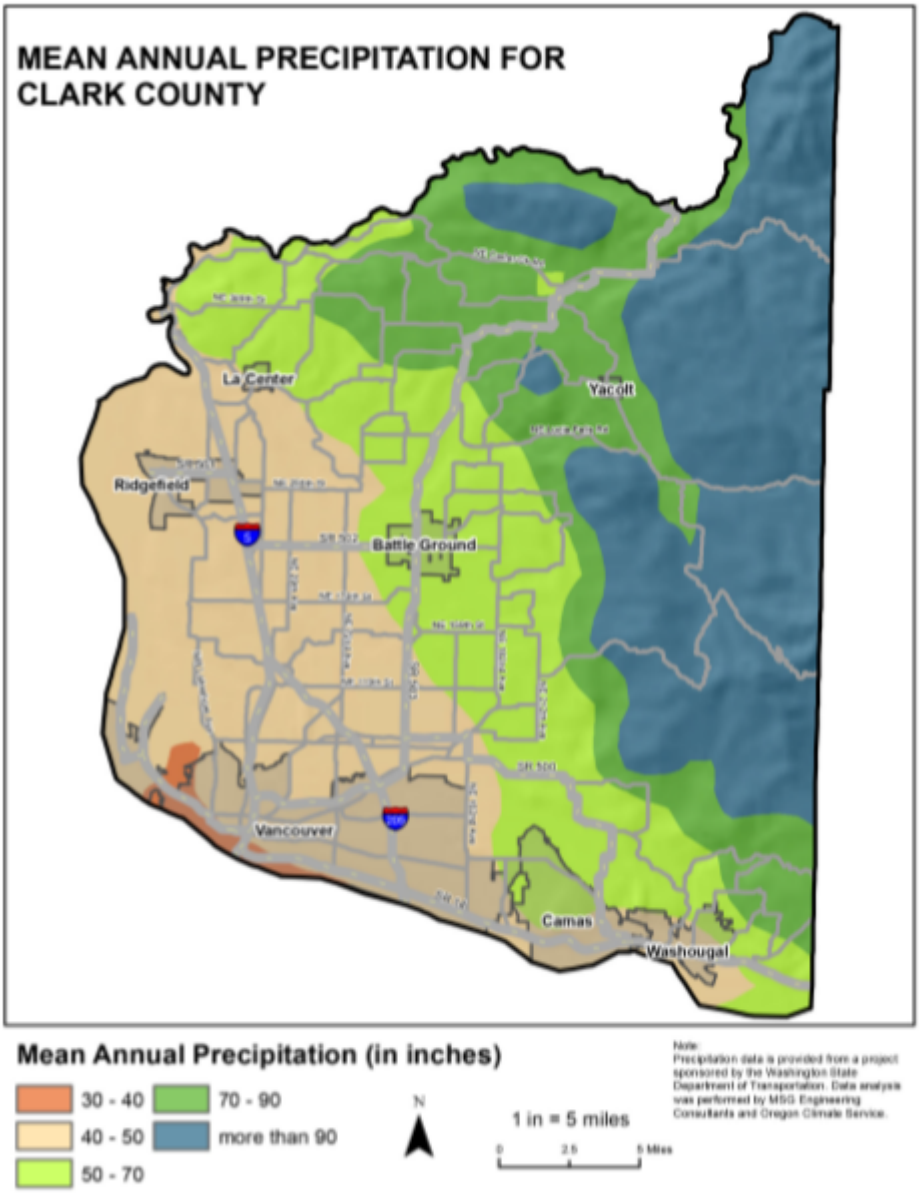
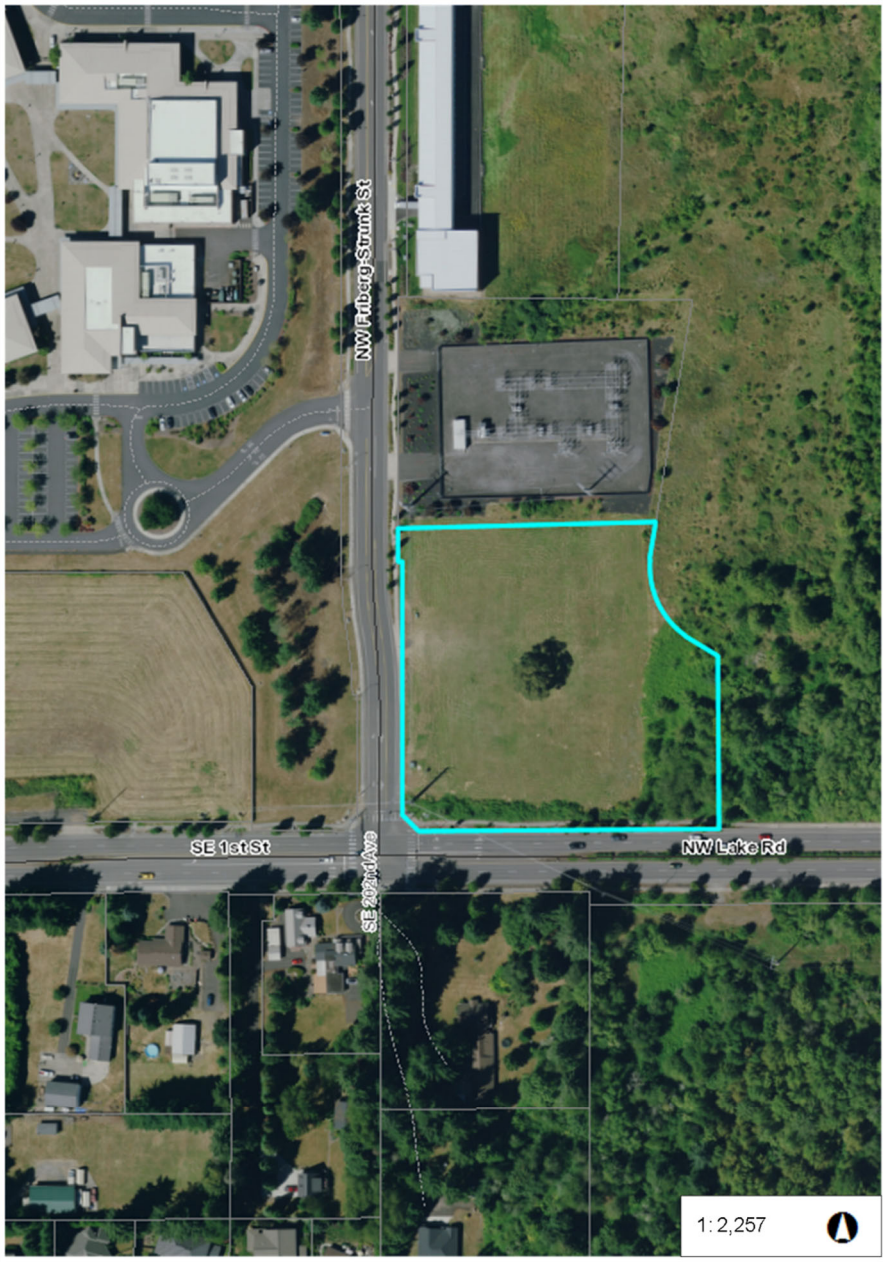


Figure 15: Mean Annual Precipitation in Clark County

APPENDIX A: MAPS

AERIAL



Legend

- Taxlots
- All Roads
  - Interstate
  - State Route
  - Arterial
  - Forest Arterial
  - Minor Collector
  - Forest Collector
  - Private or Other
- Cities Boundaries
- Urban Growth Boundaries

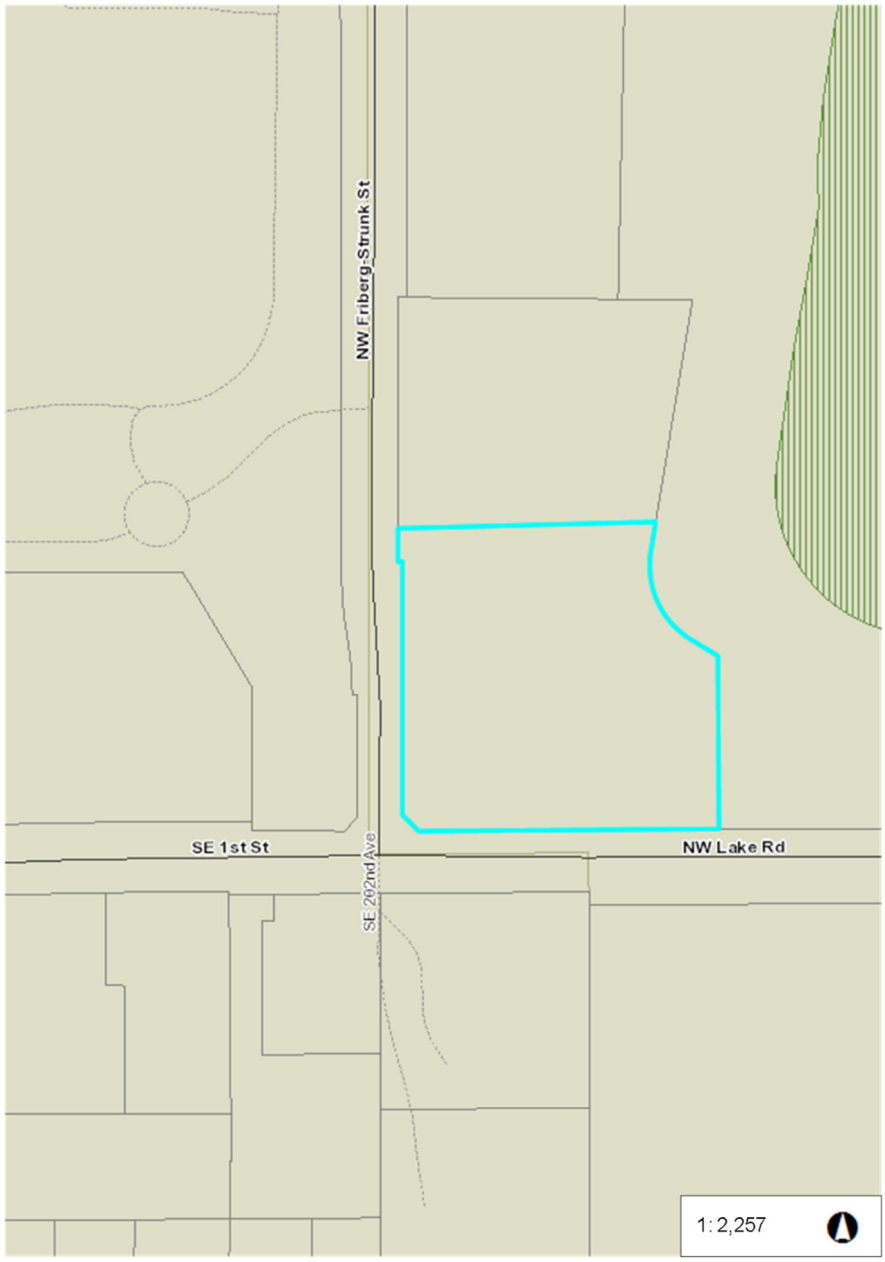
Notes:

376.2 0 188.08 376.2Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
Clark County, WA. GIS - http://gis.clark.wa.gov

This map was generated by Clark County's "MapsOnline" website. Clark County does not warrant the accuracy, reliability or timeliness of any information on this map, and shall not be held liable for losses caused by using this information.

HABITAT



Legend

- Taxlots
- Riparian Habitat
- All Roads
  - Interstate
  - State Route
  - Arterial
  - Forest Arterial
  - Minor Collector
  - Forest Collector
  - Private or Other
- Cities Boundaries
- Urban Growth Boundaries

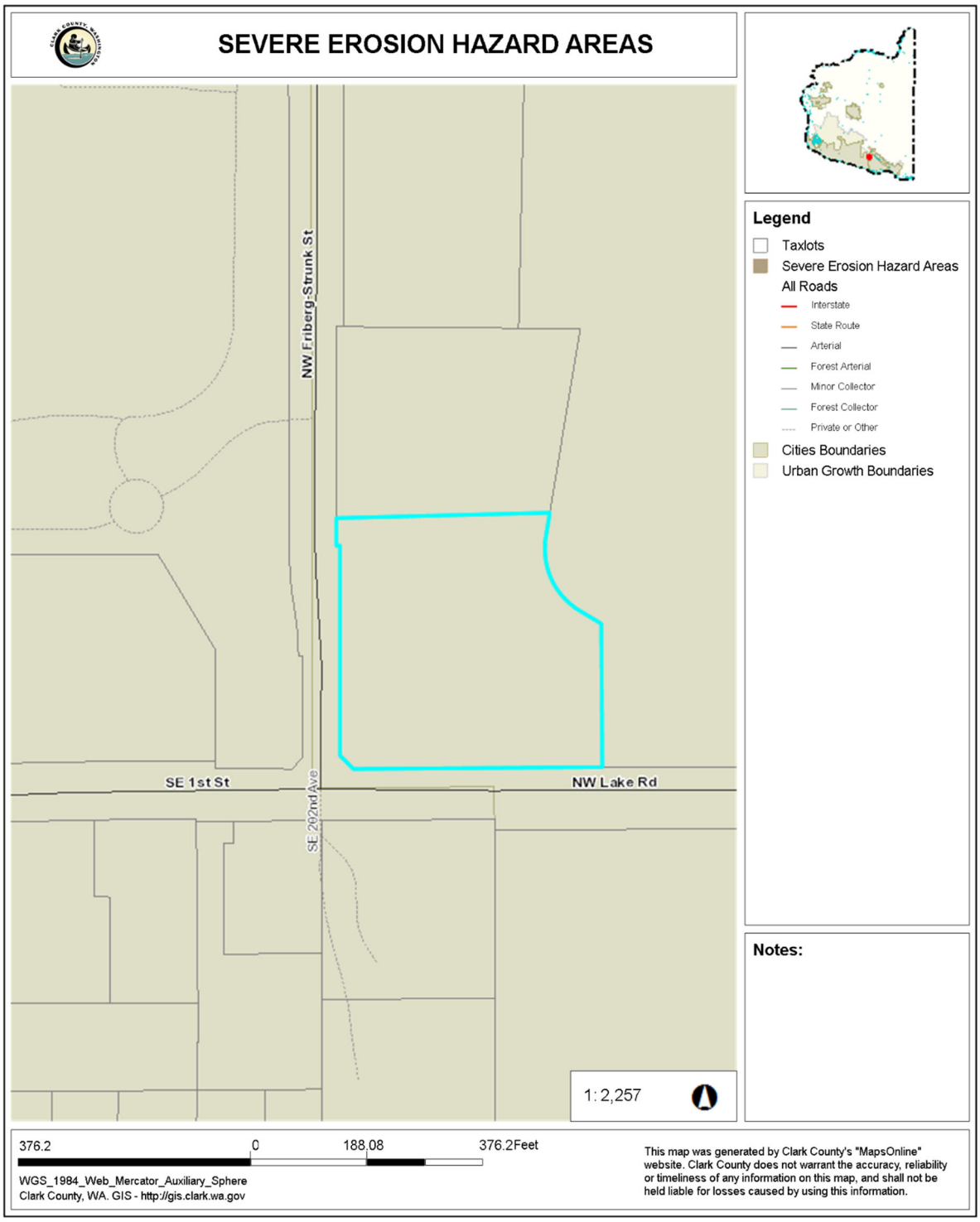
Notes:

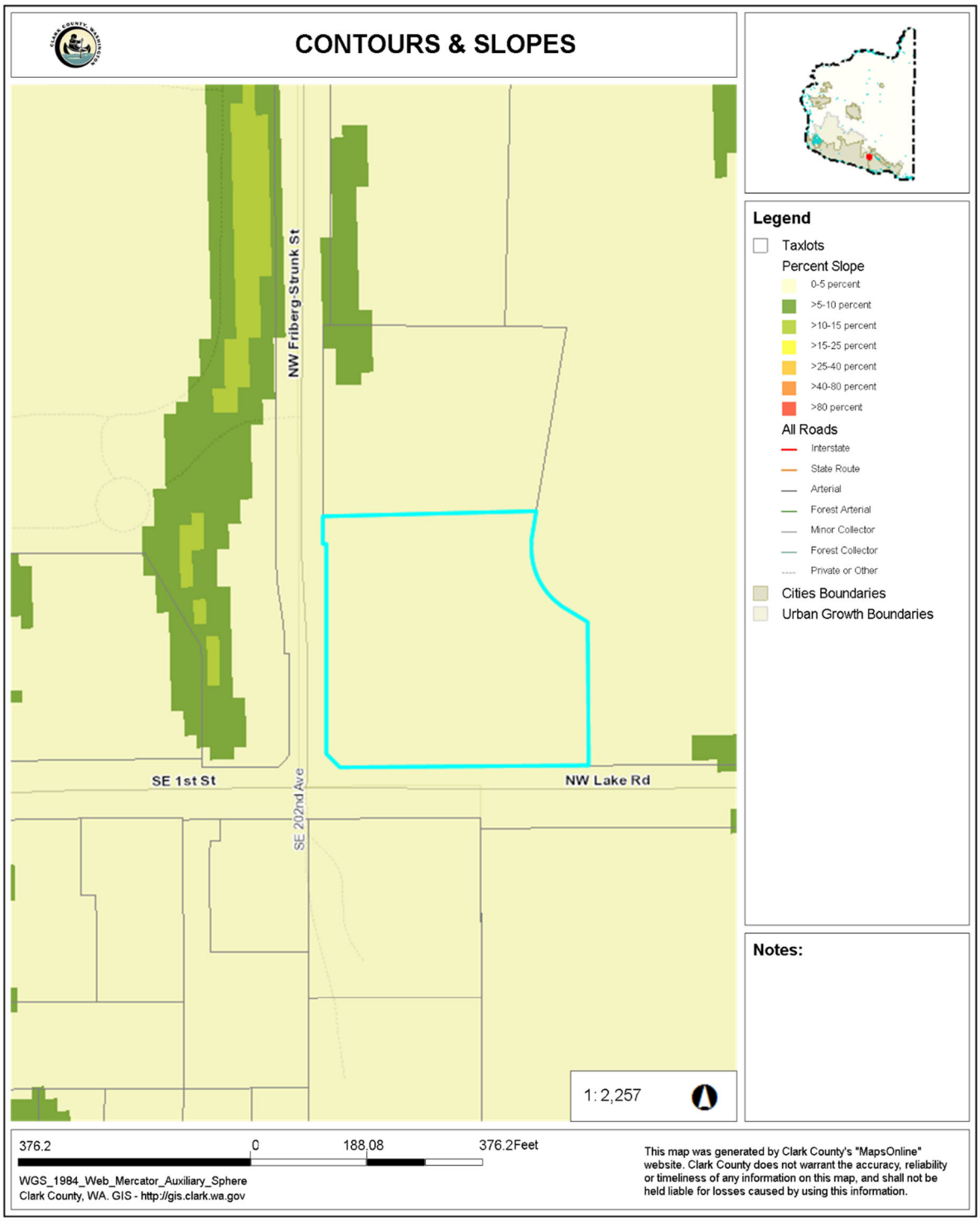
376.2 0 188.08 376.2Feet

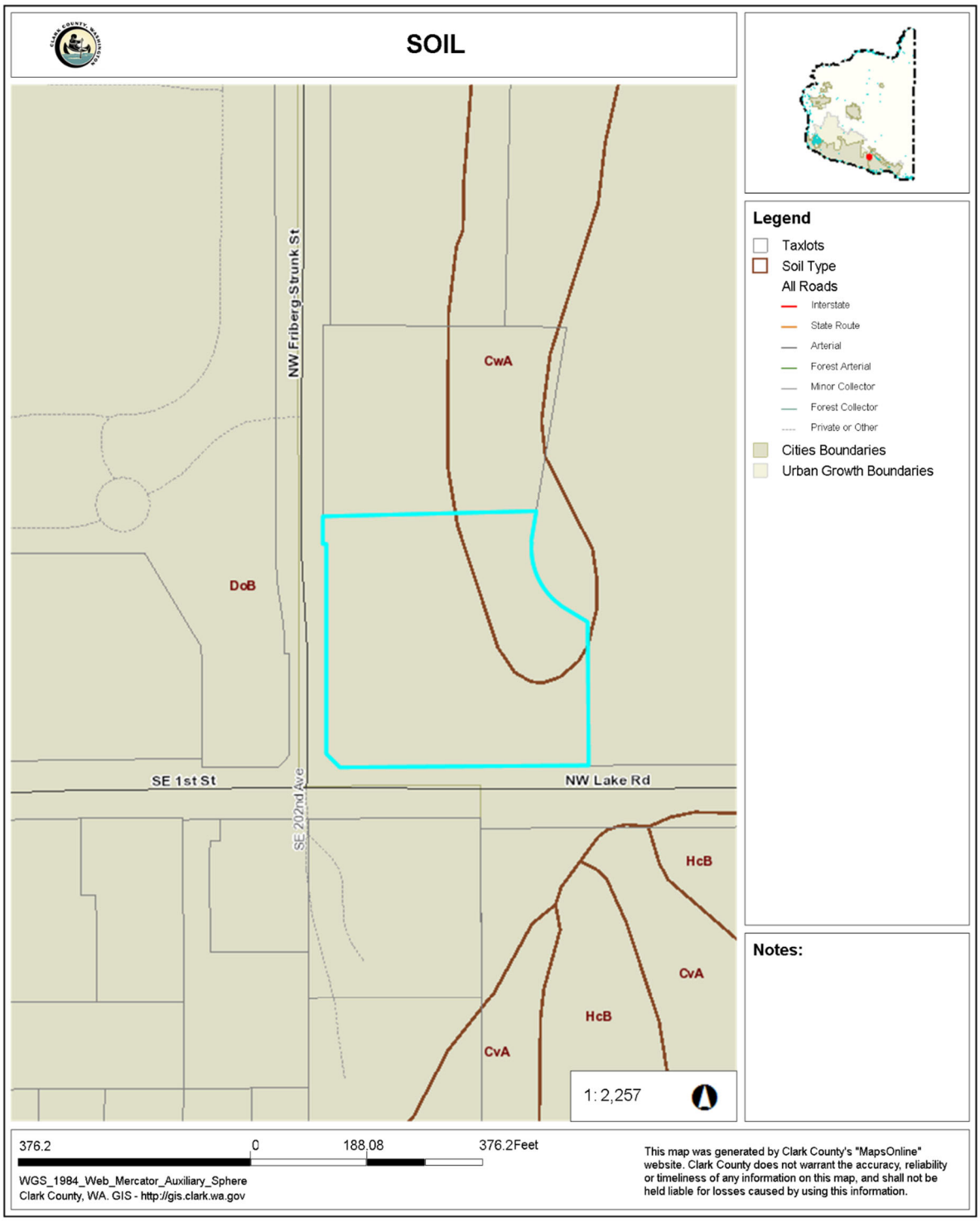
WGS_1984_Web_Mercator_Auxiliary_Sphere
Clark County, WA. GIS - http://gis.clark.wa.gov

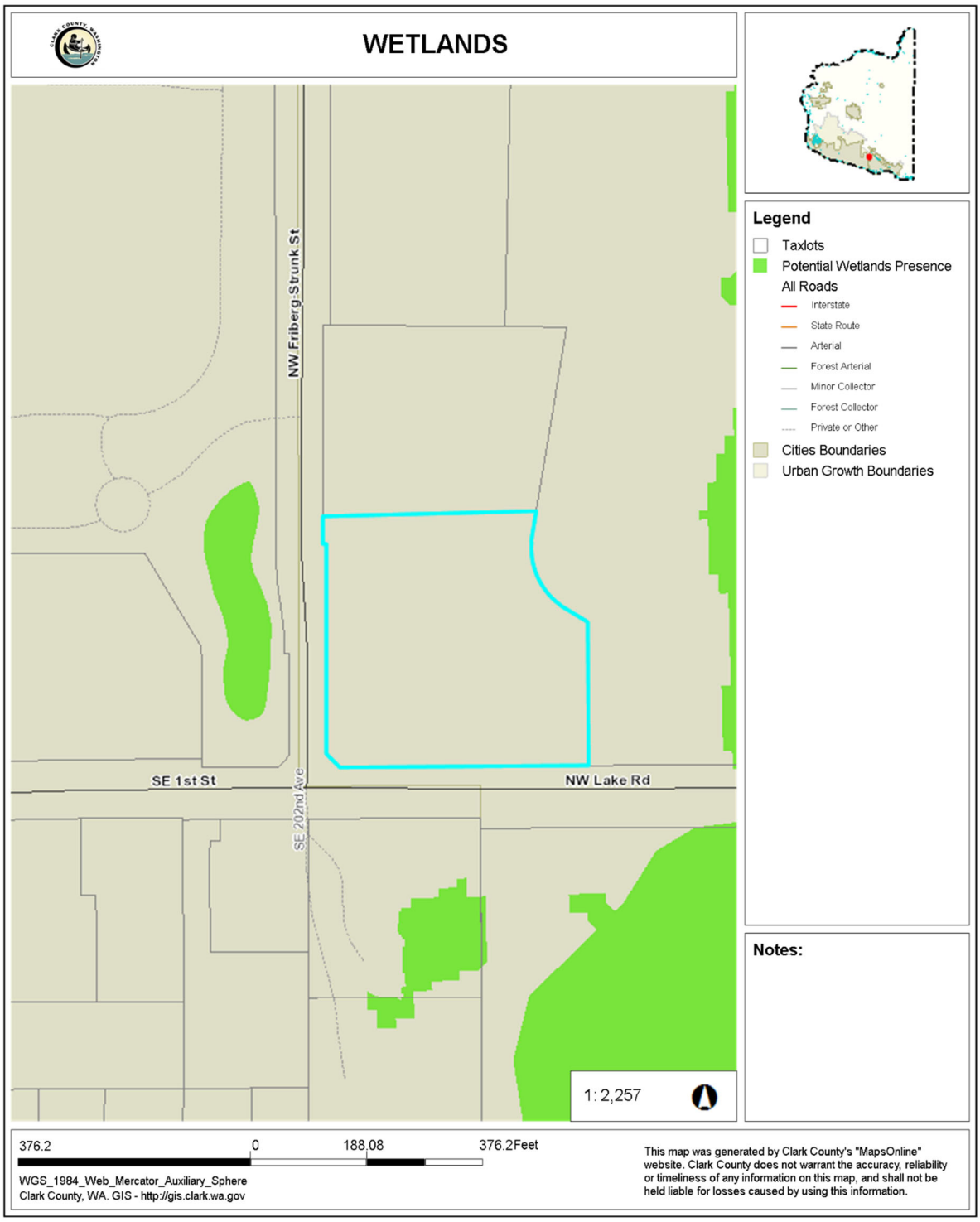
This map was generated by Clark County's "MapsOnline" website. Clark County does not warrant the accuracy, reliability or timeliness of any information on this map, and shall not be held liable for losses caused by using this information.

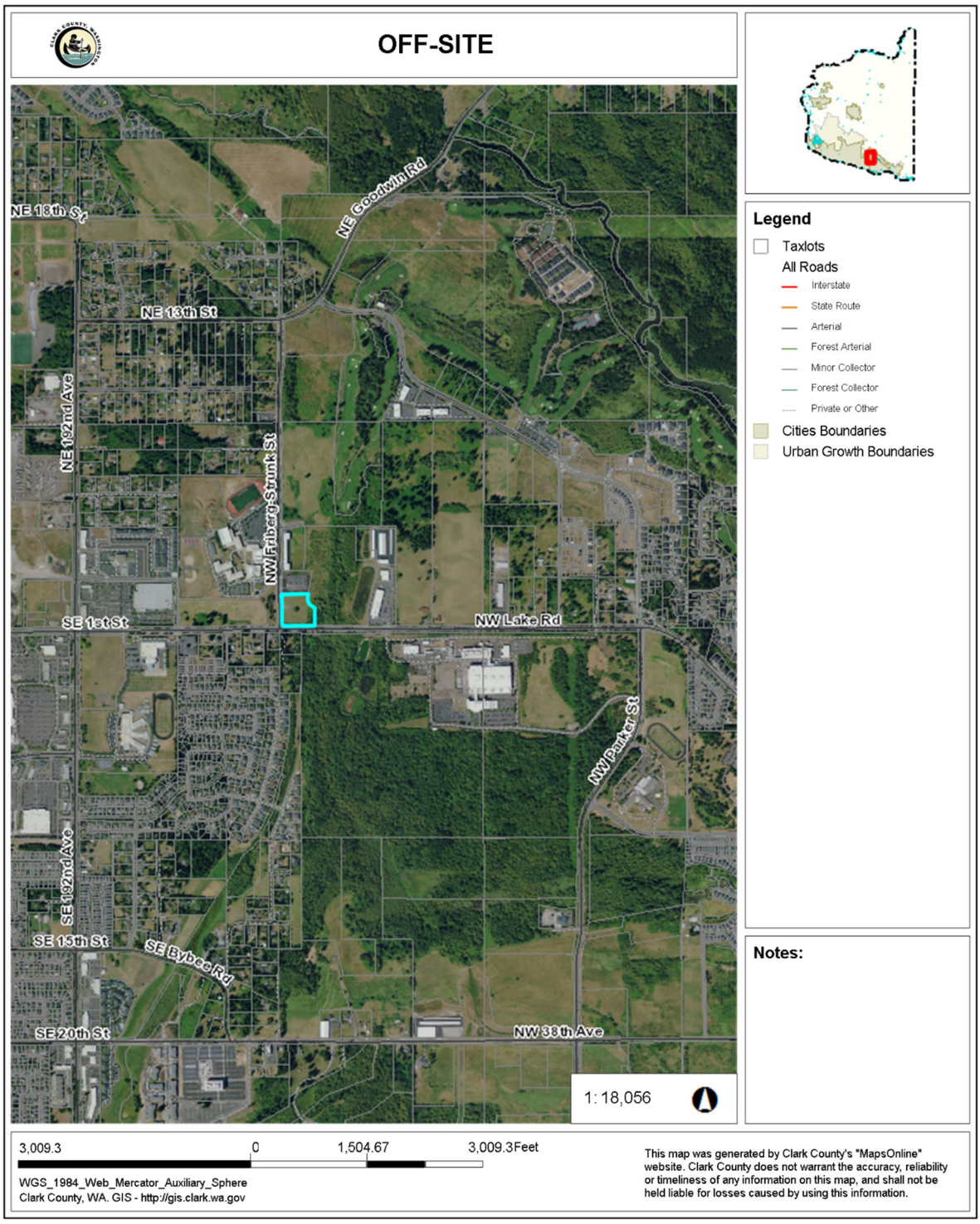
SEVERE EROSION HAZARD AREAS




CONTOURS & SLOPES
NW Friberg-Strunk St
SE 1st St
NW Lake Rd
SE 202nd Ave
1: 2,257
Legend
Taxlots
Percent Slope
0-5 percent
>5-10 percent
>10-15 percent
>15-25 percent
>25-40 percent
>40-80 percent
>80 percent
All Roads
Interstate
State Route
Arterial
Forest Arterial
Minor Collector
Forest Collector
Private or Other
Cities Boundaries
Urban Growth Boundaries
Notes:
376.2
0
188.08
376.2Feet
WGS_1984_Web_Mercator_Auxiliary_Sphere
Clark County, WA. GIS - http://gis.clark.wa.gov
This map was generated by Clark County's "MapsOnline" website. Clark County does not warrant the accuracy, reliability or timeliness of any information on this map, and shall not be held liable for losses caused by using this information.

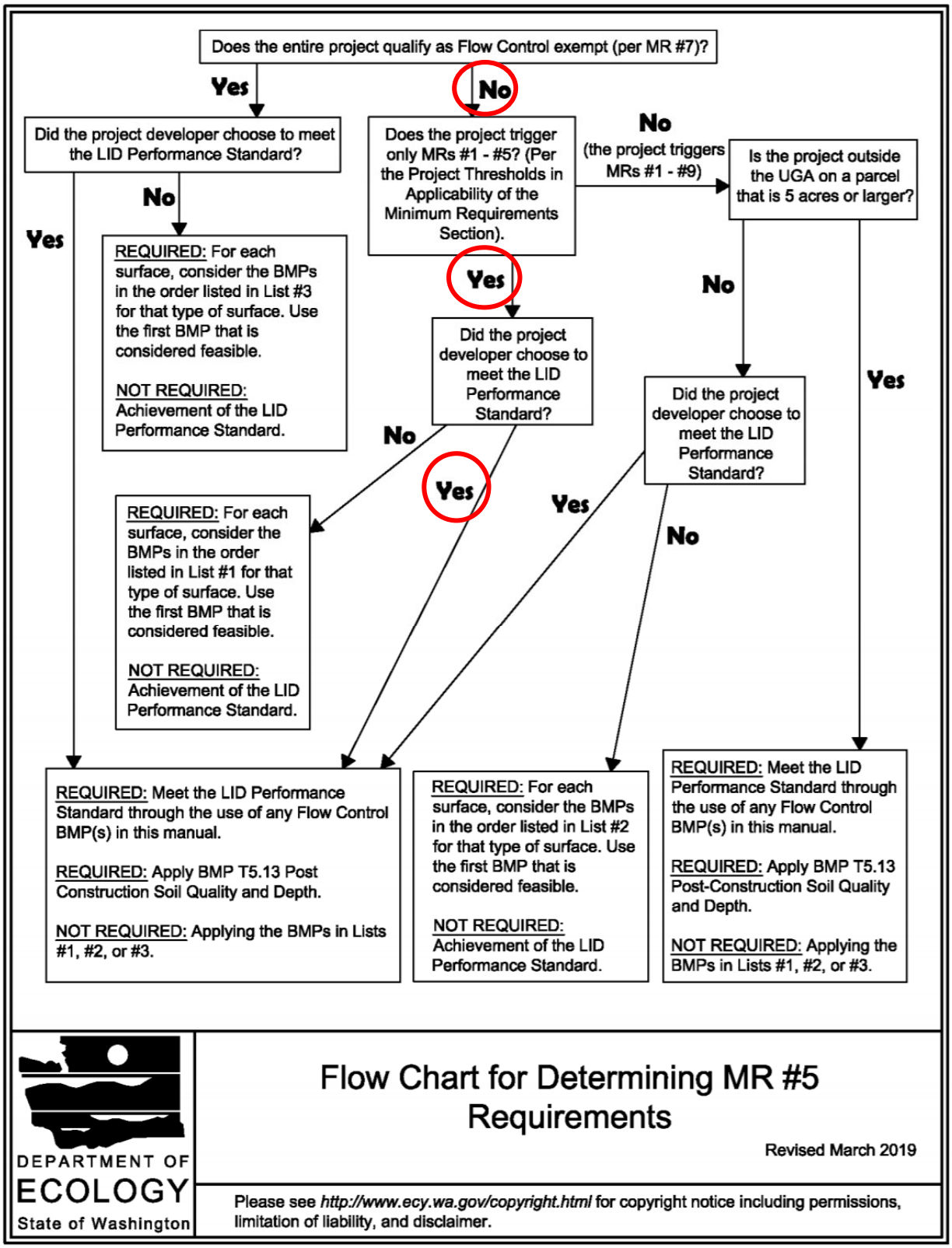

SOIL
NW Friberg-Strunk St
CwA
DoB
SE 1st St
NW Lake Rd
SE 202nd Ave
HcB
CvA
HcB
CvA
1:2,257
Legend
Taxlots
Soil Type
All Roads
Interstate
State Route
Arterial
Forest Arterial
Minor Collector
Forest Collector
Private or Other
Cities Boundaries
Urban Growth Boundaries
Notes:
376.2
0
188.08
376.2Feet
WGS_1984_Web_Mercator_Auxiliary_Sphere
Clark County, WA. GIS - http://gis.clark.wa.gov
This map was generated by Clark County's "MapsOnline" website. Clark County does not warrant the accuracy, reliability or timeliness of any information on this map, and shall not be held liable for losses caused by using this information.

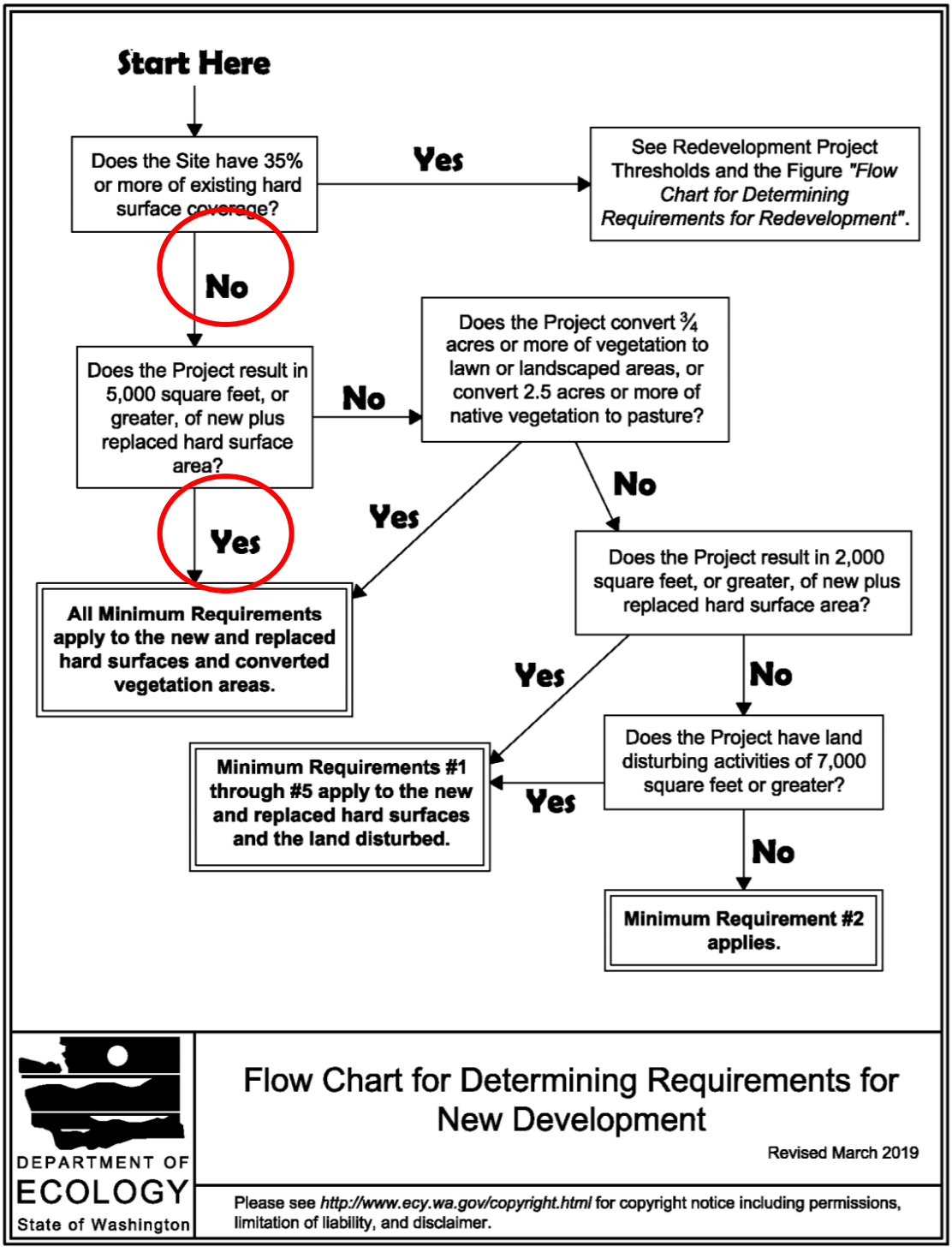

WETLANDS
NW Friberg-Strunk St
SE 1st St
NW Lake Rd
SE 202nd Ave
1:2,257
Legend
Taxlots
Potential Wetlands Presence
All Roads
Interstate
State Route
Arterial
Forest Arterial
Minor Collector
Forest Collector
Private or Other
Cities Boundaries
Urban Growth Boundaries
Notes:
376.2
0
188.08
376.2Feet
WGS_1984_Web_Mercator_Auxiliary_Sphere
Clark County, WA. GIS - http://gis.clark.wa.gov
This map was generated by Clark County's "MapsOnline" website. Clark County does not warrant the accuracy, reliability or timeliness of any information on this map, and shall not be held liable for losses caused by using this information.


OFF-SITE
NE 18th St
NE Goodwin Rd
NE 13th St
NE 192nd Ave
NW Friberg-Strunk St
SE 1st St
NW Lake Rd
NW Parker St
SE 192nd Ave
SE 15th St
SE Bybee Rd
SE 20th St
NW 38th Ave
1:18,056
Legend
Taxlots
All Roads
Interstate
State Route
Arterial
Forest Arterial
Minor Collector
Forest Collector
Private or Other
Cities Boundaries
Urban Growth Boundaries
Notes:
3,009.3
0
1,504.67
3,009.3Feet
WGS_1984_Web_Mercator_Auxiliary_Sphere
Clark County, WA. GIS - http://gis.clark.wa.gov
This map was generated by Clark County's "MapsOnline" website. Clark County does not warrant the accuracy, reliability or timeliness of any information on this map, and shall not be held liable for losses caused by using this information.

Off-site Map

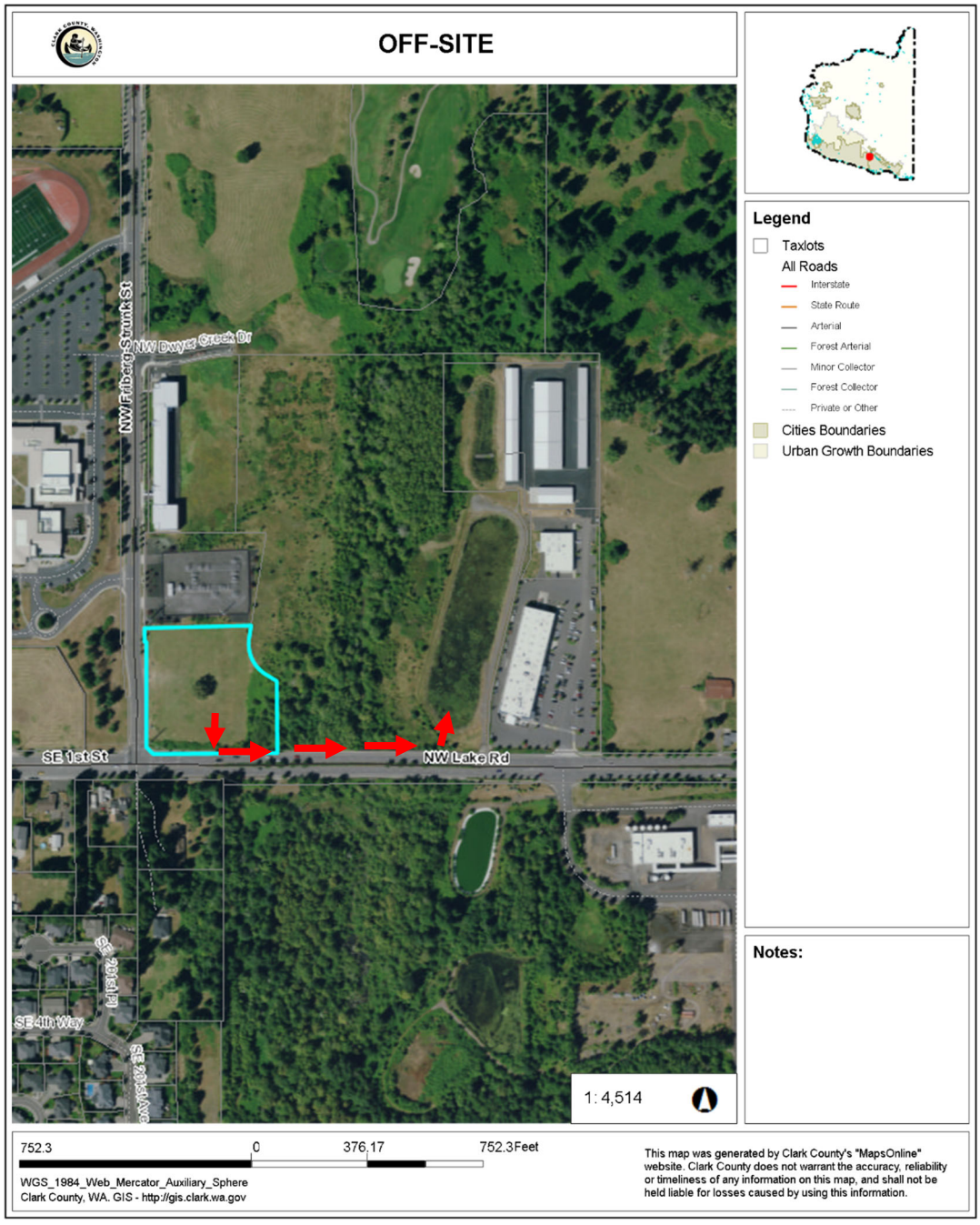
APPENDIX B: FLOW CHARTS


Does the entire project qualify as Flow Control exempt (per MR #7)?
Yes
No
Did the project developer choose to meet the LID Performance Standard?
Does the project trigger only MRs #1 - #5? (Per the Project Thresholds in Applicability of the Minimum Requirements Section).
No
(the project triggers MRs #1 - #9)
Is the project outside the UGA on a parcel that is 5 acres or larger?
No
Yes
REQUIRED: For each surface, consider the BMPs in the order listed in List #3 for that type of surface. Use the first BMP that is considered feasible.
NOT REQUIRED: Achievement of the LID Performance Standard.
Yes
Did the project developer choose to meet the LID Performance Standard?
No
Yes
Did the project developer choose to meet the LID Performance Standard?
Yes
No
REQUIRED: For each surface, consider the BMPs in the order listed in List #1 for that type of surface. Use the first BMP that is considered feasible.
NOT REQUIRED: Achievement of the LID Performance Standard.
Yes
No
REQUIRED: Meet the LID Performance Standard through the use of any Flow Control BMP(s) in this manual.
REQUIRED: Apply BMP T5.13 Post Construction Soil Quality and Depth.
NOT REQUIRED: Applying the BMPs in Lists #1, #2, or #3.
REQUIRED: For each surface, consider the BMPs in the order listed in List #2 for that type of surface. Use the first BMP that is considered feasible.
NOT REQUIRED: Achievement of the LID Performance Standard.
REQUIRED: Meet the LID Performance Standard through the use of any Flow Control BMP(s) in this manual.
REQUIRED: Apply BMP T5.13 Post-Construction Soil Quality and Depth.
NOT REQUIRED: Applying the BMPs in Lists #1, #2, or #3.
DEPARTMENT OF ECOLOGY
State of Washington
Flow Chart for Determining MR #5 Requirements
Revised March 2019
Please see http://www.ecy.wa.gov/copyright.html for copyright notice including permissions, limitation of liability, and disclaimer.



Minimum Requirement #8 Flow Chart

APPENDIX C: NATURAL DRAINAGE FLOW PATTERN

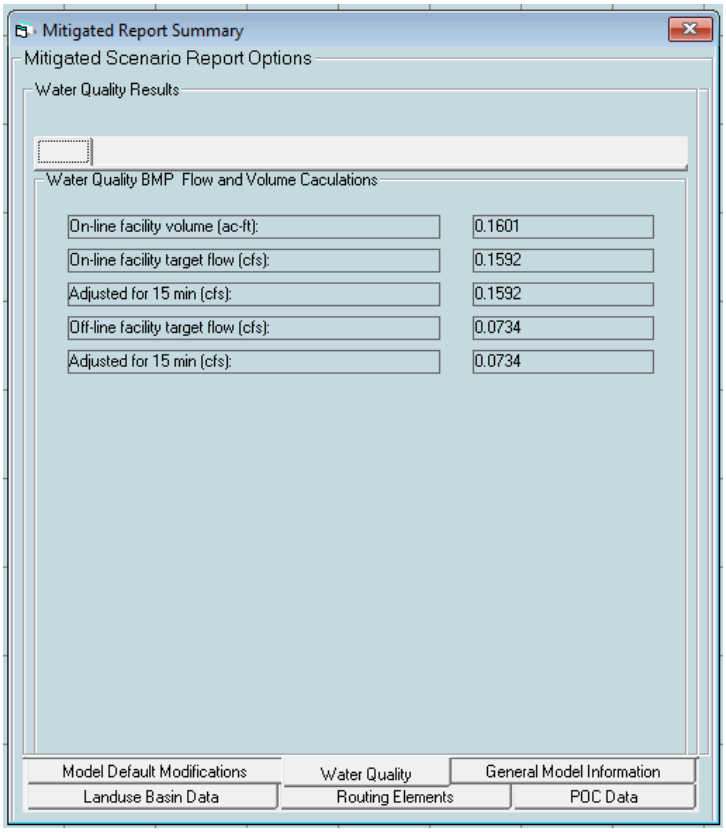


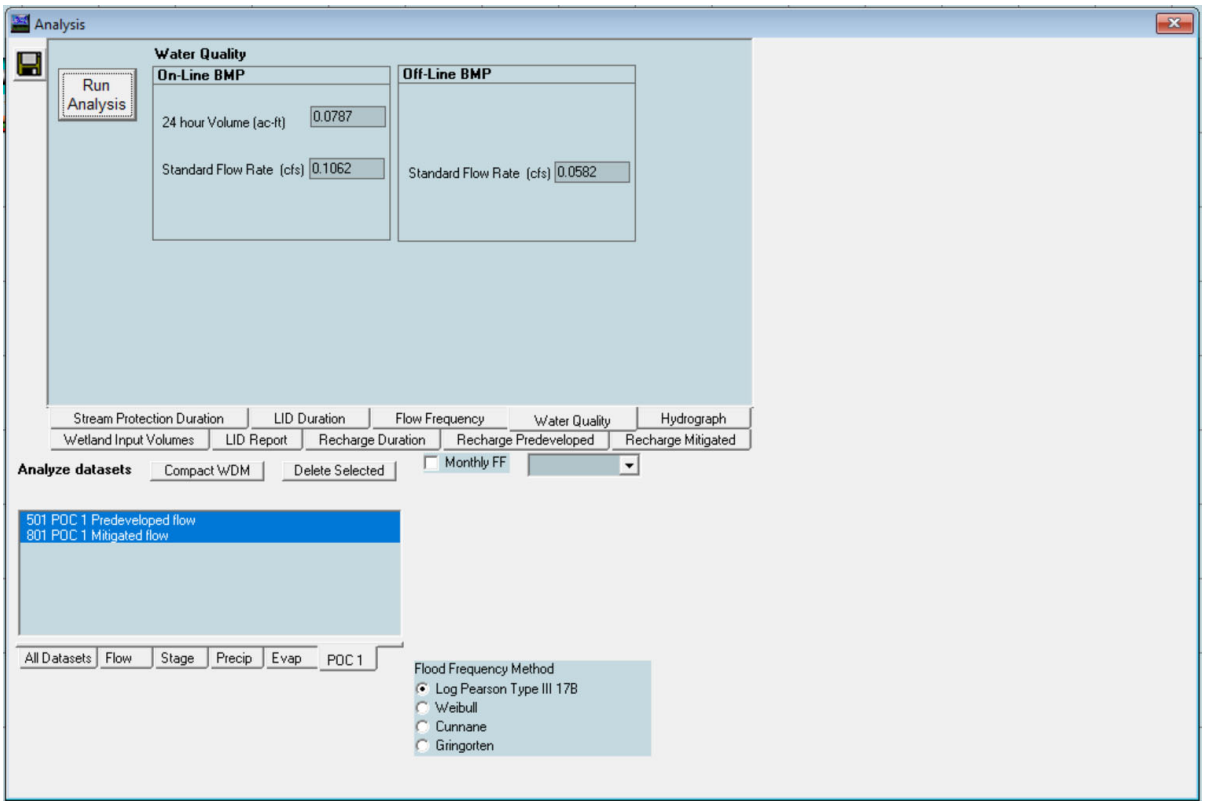
DRAINAGE FLOW PATH

Natural Drainage Flow

APPENDIX D: WWHM SCREEN SHOT

(WATER QUALITY SYSTEM DESIGN)


Mitigated Report Summary
Mitigated Scenario Report Options
Water Quality Results
Water Quality BMP Flow and Volume Caculations
On-line facility volume (ac-ft): 0.1601
On-line facility target flow (cfs): 0.1592
Adjusted for 15 min (cfs): 0.1592
Off-line facility target flow (cfs): 0.0734
Adjusted for 15 min (cfs): 0.0734
Model Default Modifications
Water Quality
General Model Information
Landuse Basin Data
Routing Elements
POC Data


Analysis
Run Analysis
Water Quality
On-Line BMP
24 hour Volume (ac-ft) 0.0787
Standard Flow Rate (cfs) 0.1062
Off-Line BMP
Standard Flow Rate (cfs) 0.0582
Stream Protection Duration
LID Duration
Flow Frequency
Water Quality
Hydrograph
Wetland Input Volumes
LID Report
Recharge Duration
Recharge Predeveloped
Recharge Mitigated
Analyze datasets
Compact WDM
Delete Selected
Monthly FF
501 POC 1 Predeveloped flow
801 POC 1 Mitigated flow
All Datasets
Flow
Stage
Precip
Evap
POC 1
Flood Frequency Method
Log Pearson Type III 17B
Weibull
Cunnane
Gringorten

APPENDIX E: DESIGN FOR PERKFILTER

Design for PerkFilters

Kristar/Oldcastle Precast, Inc. FloGard Perk Filter™ (using ZPC Filter Media)

Ecology's Decision:

Based on Kristar/Oldcastle's application submissions, including the Draft Technical Evaluation Report, dated April 2010, Ecology hereby issues the following use level designations:

1. **General use level designation (GULD) for the Perk Filter™ for basic treatment:**
   - **Using a zeolite-perlite-carbon (ZPC) filter media as specified by Kristar/Oldcastle.**
   - **Sized at hydraulic loading rate of no more than 1.5 gpm/ft² of media surface area, per Table 1.**

Table 1. Design Flowrate per Cartridge

Effective Cartridge Height (inches)	12	18
Cartridge Flowrate (gpm/cartridge)	6.8	10.2

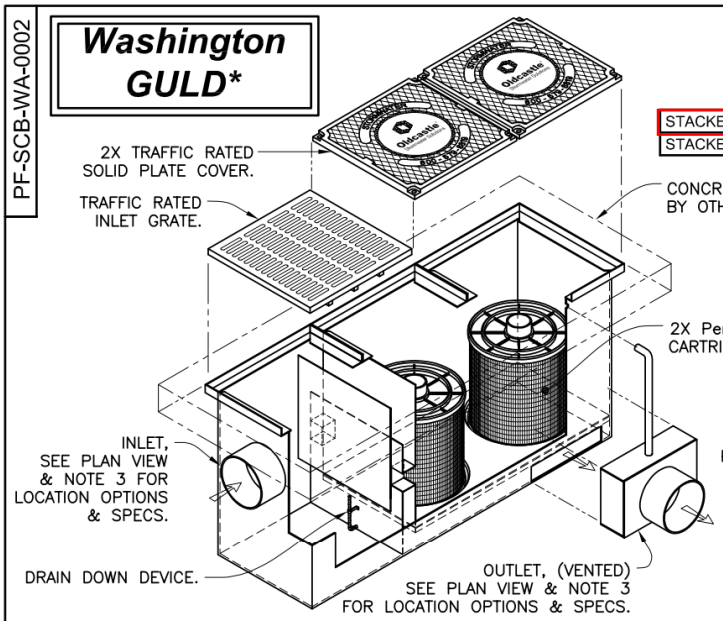
2. **General use level designation (GULD) for the Perk Filter™ for phosphorus treatment:**
   - **Using a zeolite-perlite-carbon (ZPC) filter media as specified by Kristar/Oldcastle.**
   - **Sized at hydraulic loading rate of no more than 1.5 gpm/ft² of media surface area, per Table 1.**

3. **Ecology approves Perk Filter™ units for treatment at the hydraulic loading rates shown in Table 1, and sized based on the water quality design flow rate for an off-line system. The internal weir in the inlet chamber functions as a bypass to route flow in excess of the water quality design flow rate around the treatment chamber. Calculate the water quality design flow rate using the following procedures:**

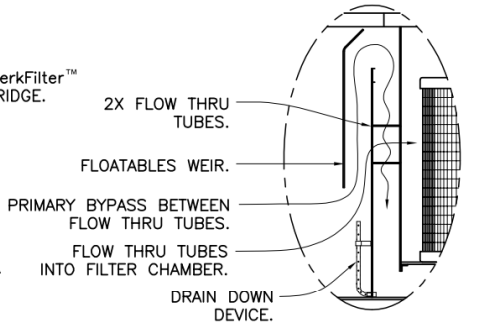
PF-SCB-WA-0002

Washington GULD*

	CARTRIDGE SIZE	TREATMENT FLOW RATE GPM / CFS	TOTAL FLOW CAPACITY CFS	MINIMUM DEPTH (FEET)
	12.00"	13.6 / 0.030	1.3	1.80
	18.00"	20.4 / 0.045	1.3	2.34
STACKED	12.00" + 12.00"	27.2 / 0.061	1.3	3.08
STACKED	18.00" + 12.00"	34 / 0.076	1.3	3.67



ISOMETRIC VIEW

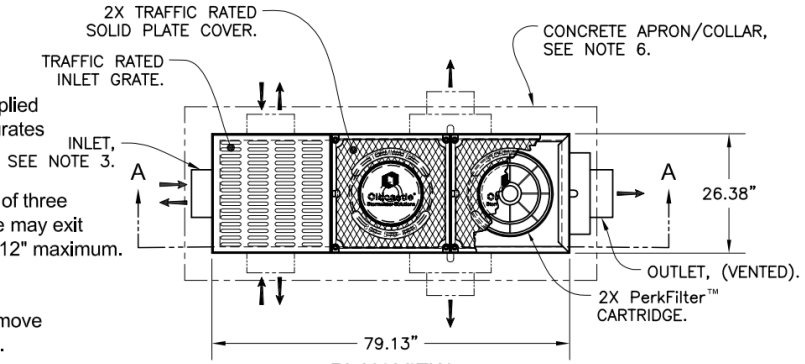


DETAIL A
INLET / BYPASS ASSEMBLY & DRAIN DOWN SCALE: 1.5X

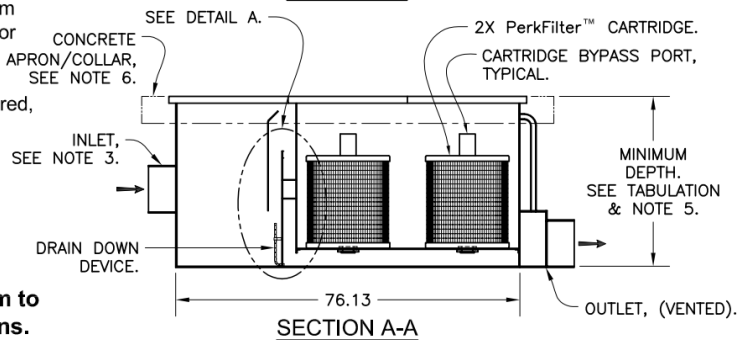
Notes:

1. All steel utilized in fabrication and shall be 1/4" plate per ASTM A36.
2. PerkFilter™ Catch basin shall be supplied with traffic rated (H20) bicycle-proof grates and solid plate cover.
3. Inlet pipe(s) may enter device on any of three sides of the inlet chamber. Outlet pipe may exit on any of all four sides. All pipe is Ø 12" maximum.
4. Inlet chamber shall be supplied with a DRAIN DOWN device designed to remove standing water between storm events.
5. For depths less than the specified minimum contact Oldcastle® Stormwater Solutions for engineering assistance.
6. Field poured Concrete Apron / Collar required, by others. Refer to PF-SCB-1000 for recommended configuration.
7. PerkFilter™ cartridge shall be maintained in accordance with manufacturer recommendations.

*** Treatment Flow Rates shown conform to Washington State GULD Specifications.**



PLAN VIEW



SECTION A-A

Media Filtration

PerkFilter™
Steel Catch Basin
Double Cartridge
(End Grate Configuration)

Oldcastle®
Stormwater Solutions
7921 Southpark Plaza, Suite 200 | Littleton, CO | 80120 | Ph: 800.579.8819 | oldcastlestormwater.com

THIS DOCUMENT IS THE PROPERTY OF OLDCASTLE PRECAST, INC. IT IS SUBMITTED FOR REFERENCE PURPOSES ONLY AND SHALL NOT BE USED IN ANY WAY INJURIOUS TO THE INTERESTS OF SAID COMPANY. COPYRIGHT © 2016 OLDCASTLE PRECAST, INC. ALL RIGHTS RESERVED.

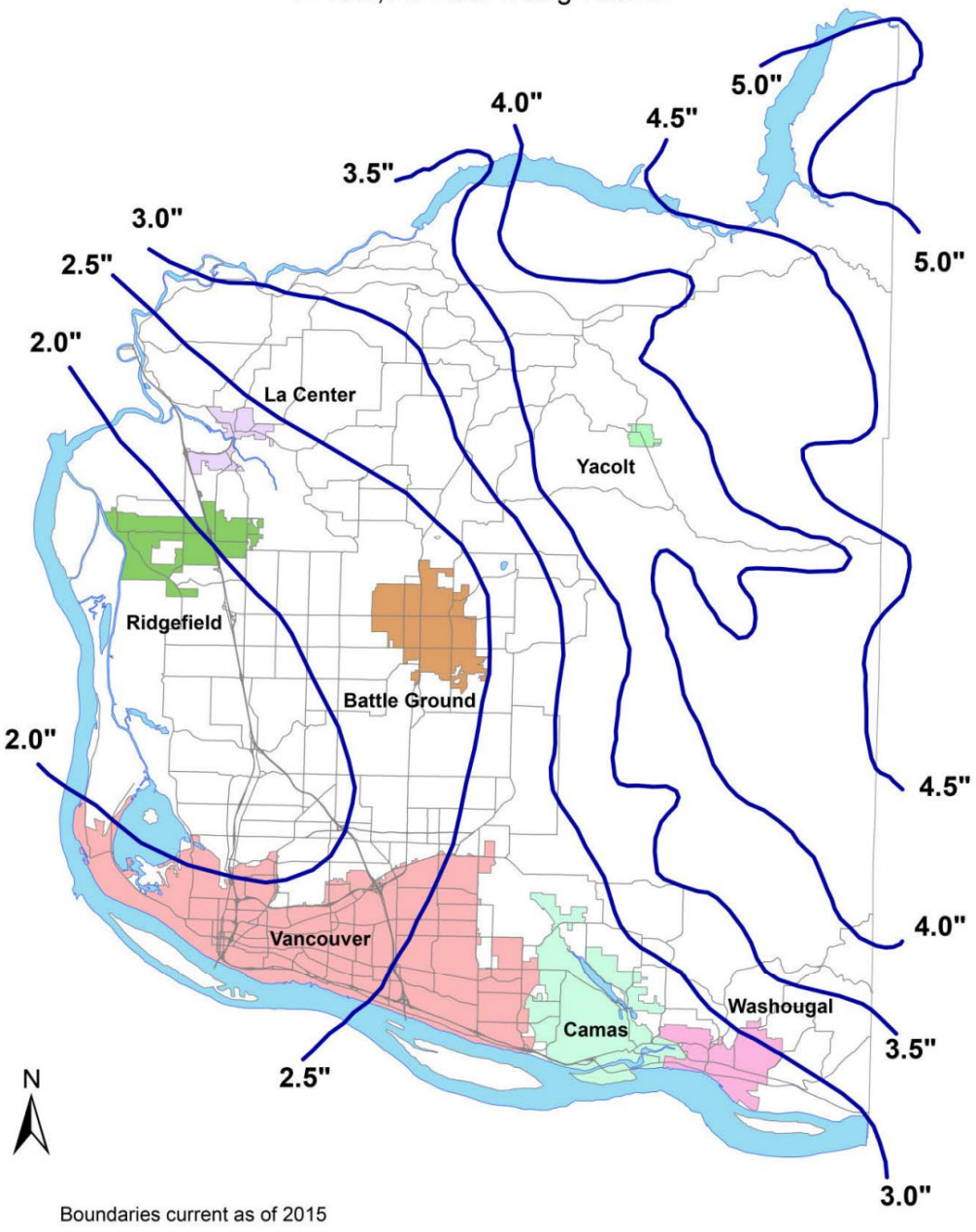
DRAWING NO.	REV	ECO	DATE	SHEET
PF-SCB-WA-0002	NR	ECO-0143 NEW	JPR 12/2/16	1 OF 1

Since the stacked 12.00” cartridges have a treatment flow rate of 0.061 cfs, which is the first flowrate on the table greater than 0.0582 cfs, the stacked 12.00” + 12.00” cartridges will be used for each filter catch basin.

APPENDIX F: WWHM

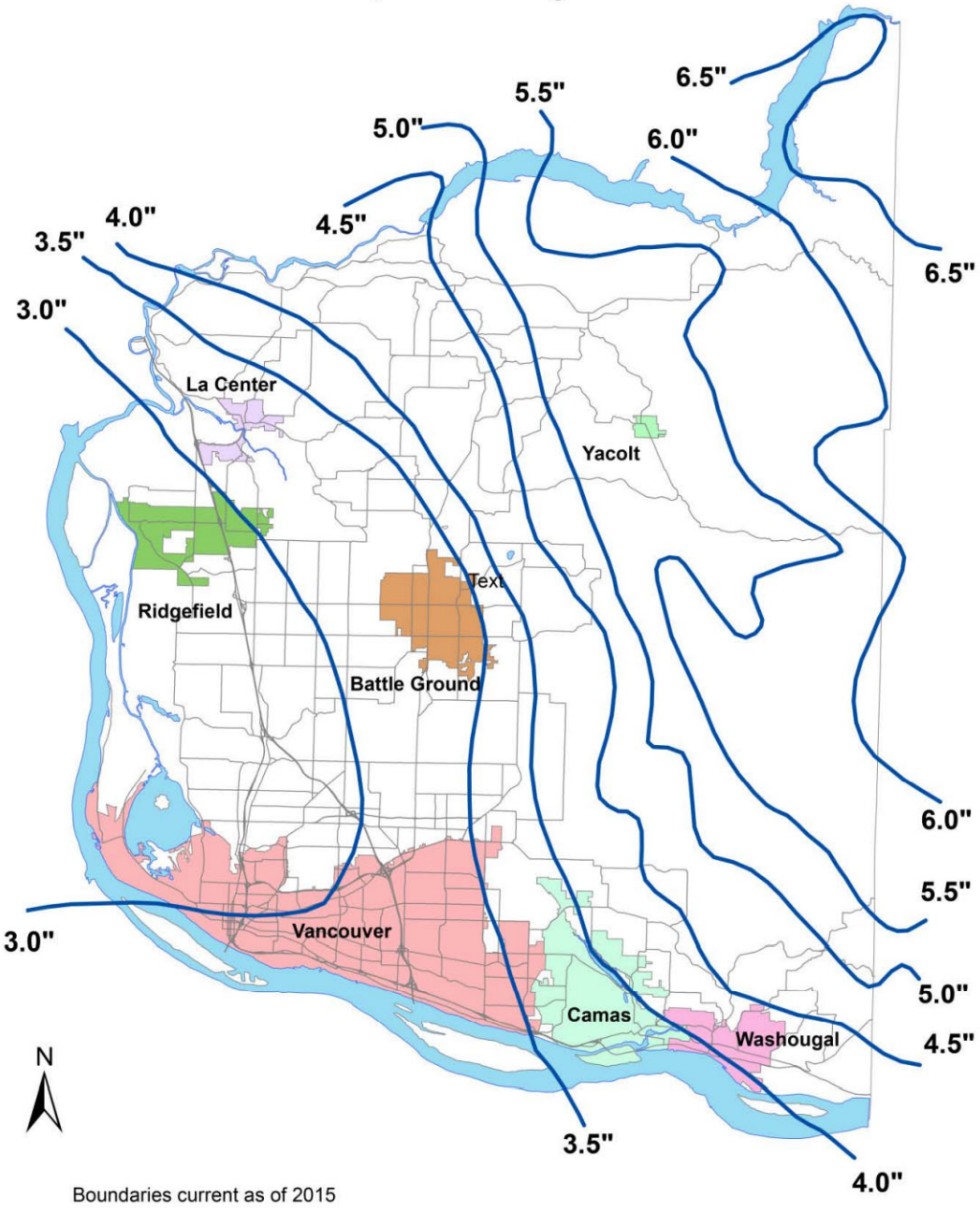
APPENDIX H: ISO MAPS

Isopluvial Map for Clark County
2-Year, 24-Hour Design Storm



Boundaries current as of 2015

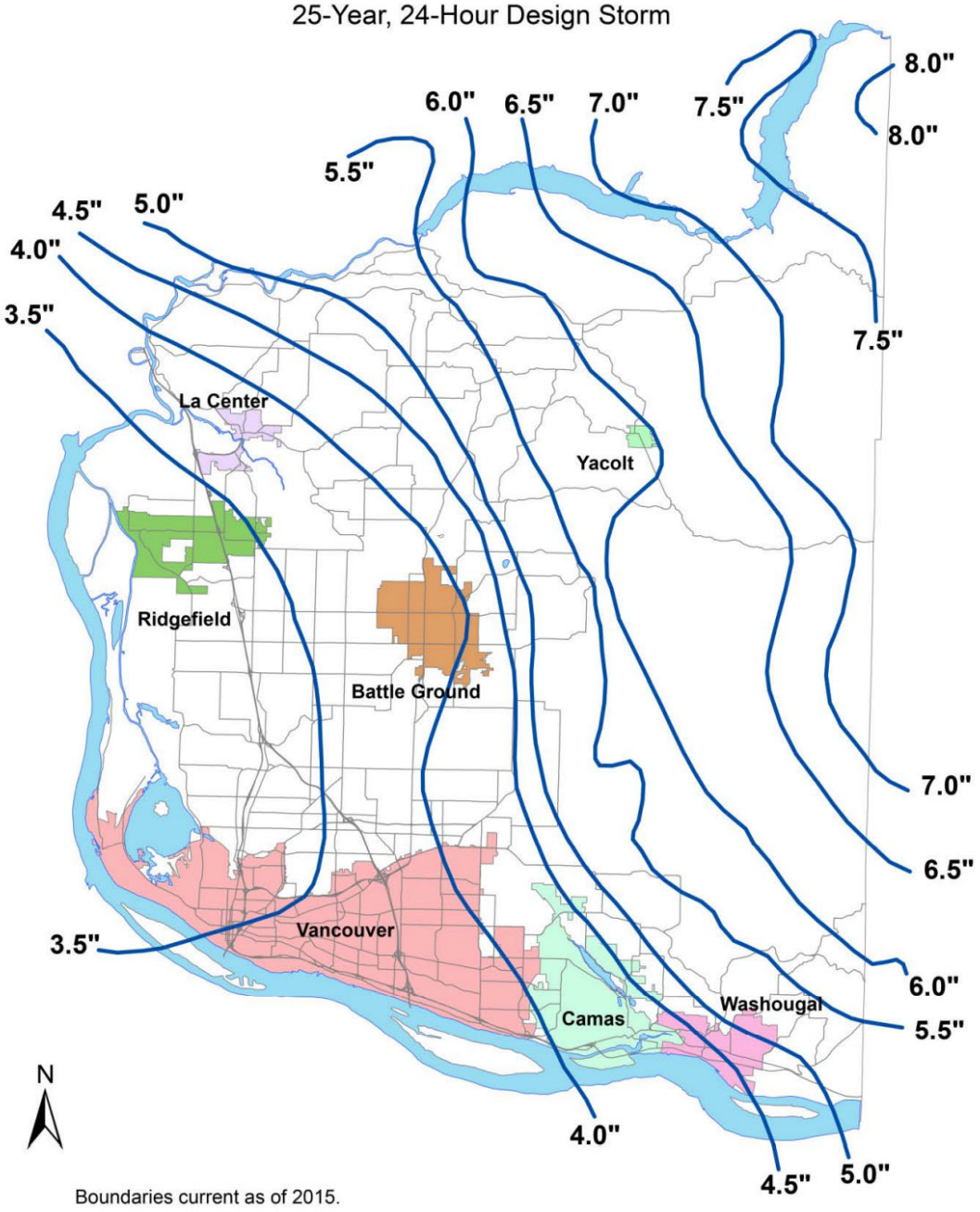
Isopluvial Map for Clark County
10-Year, 24-Hour Design Storm



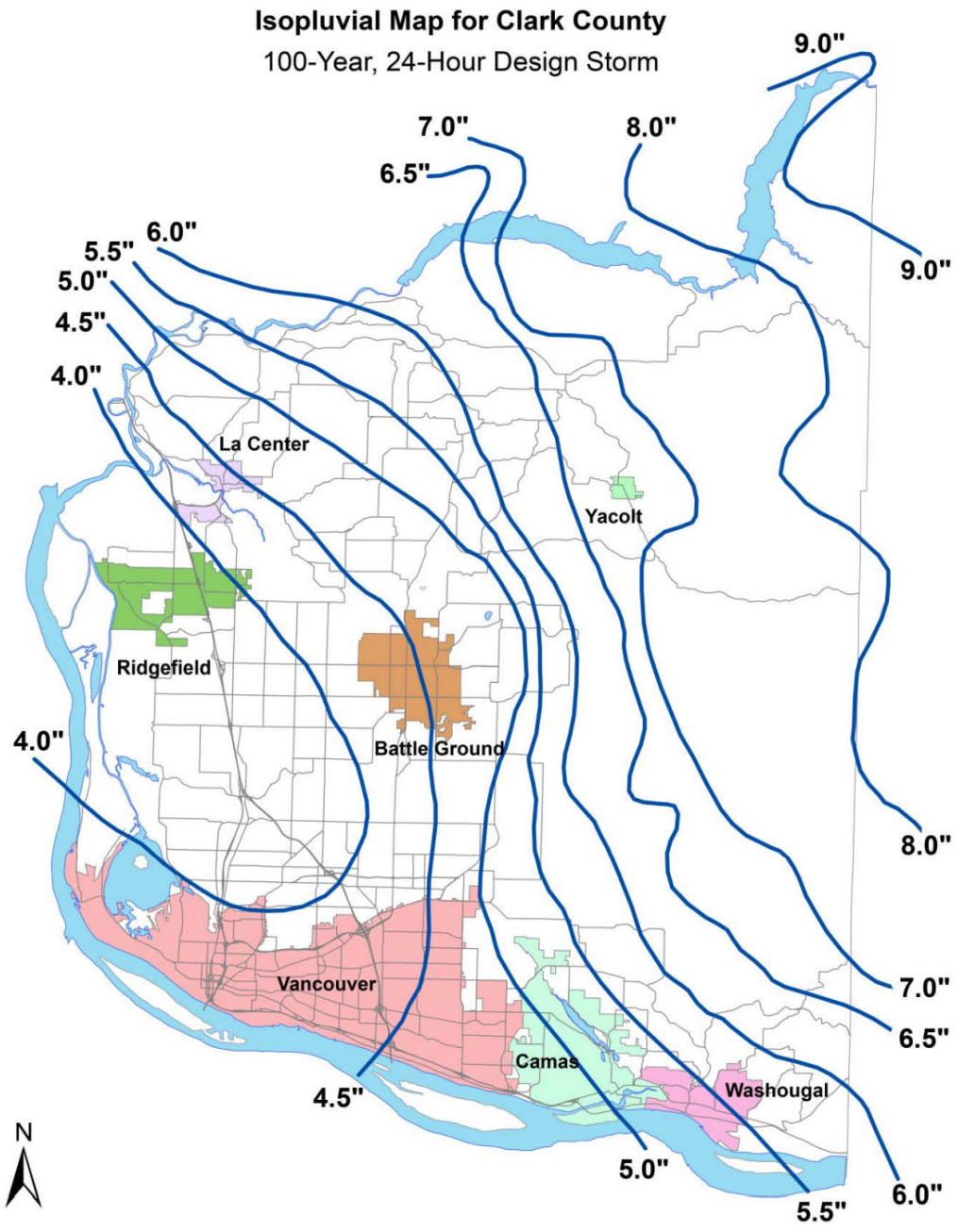
Boundaries current as of 2015

Isopluvial Map for Clark County

25-Year, 24-Hour Design Storm



Boundaries current as of 2015.

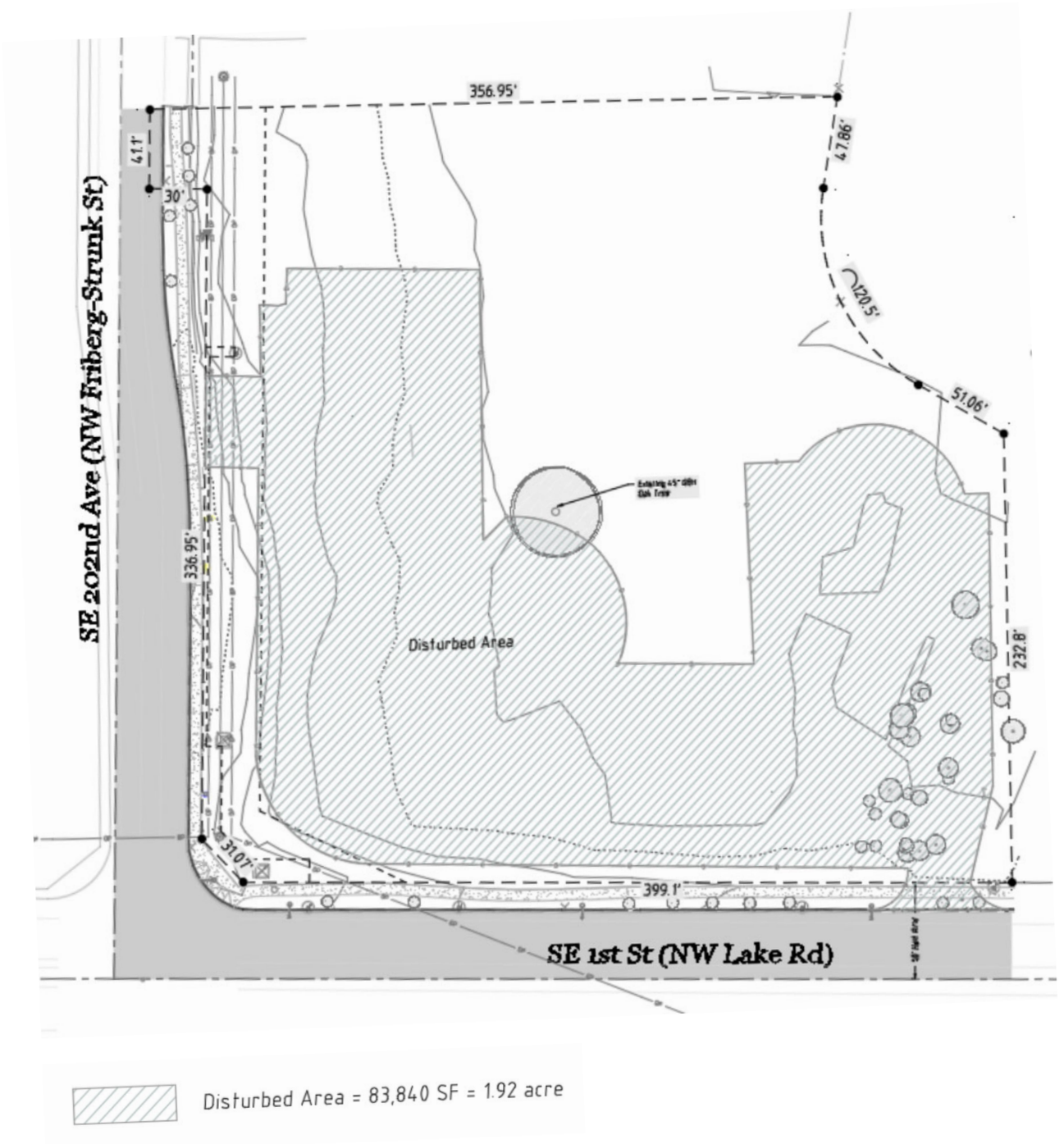


Boundaries current as of 2015.

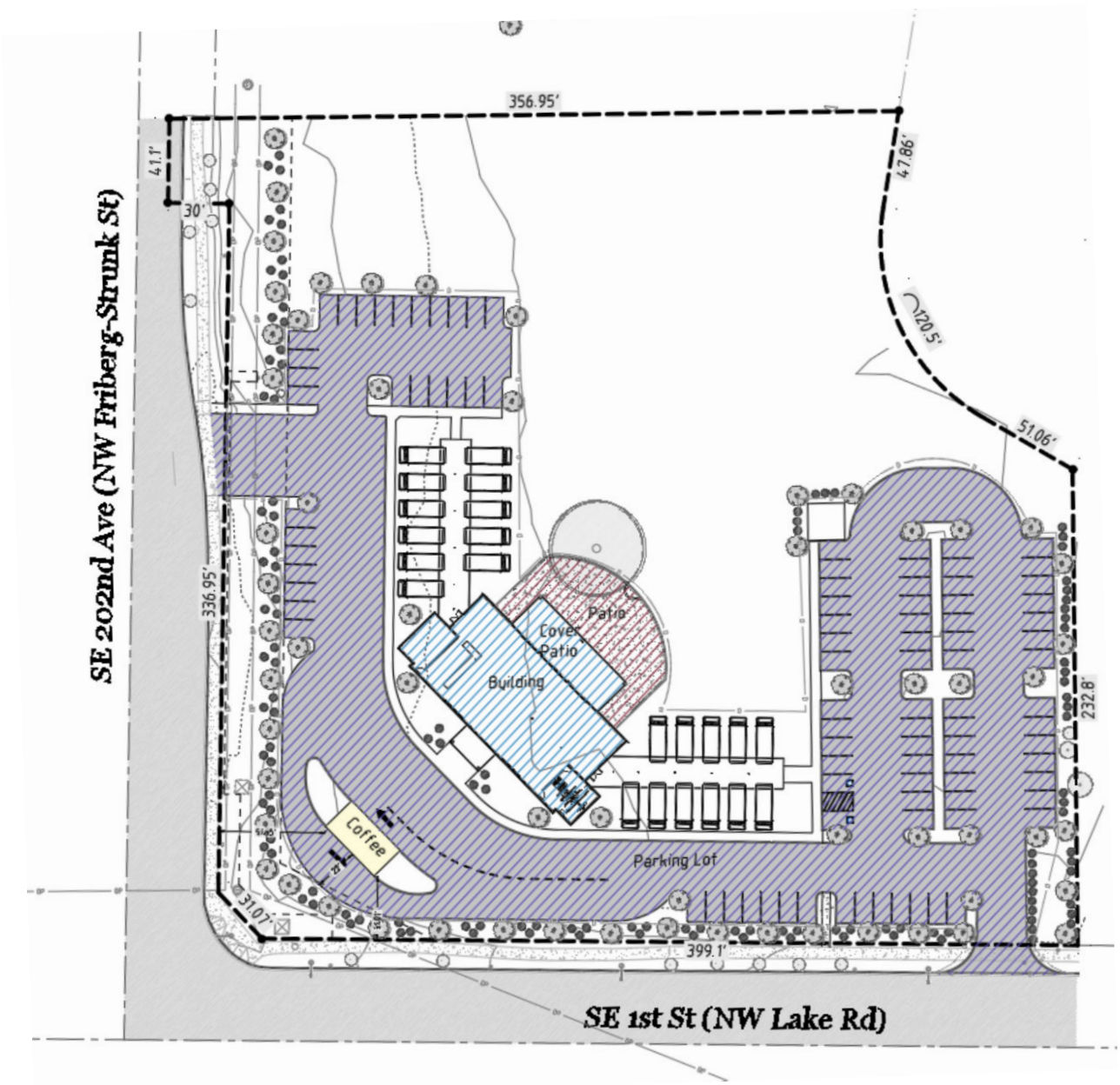
APPENDIX I: BASIN MAPS

Flow Control

Pre-developed



Mitigated



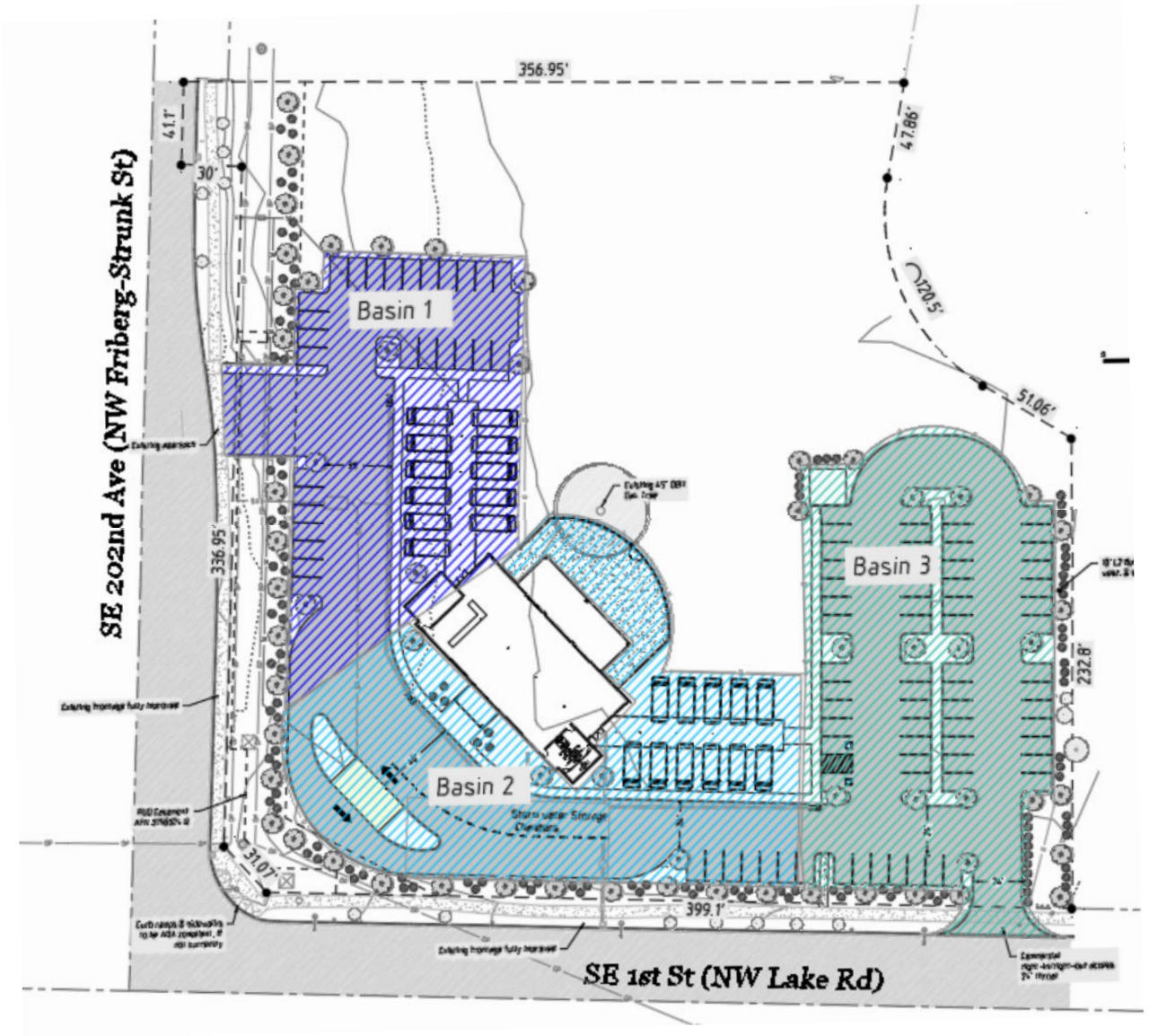
Building + Cover Patio (Roof 1) = 6,690 SF = 0.154 acre

Coffee Kiosk (Roof 2) = 600 SF = 0.014 acre

Patio = 2,875 SF = 0.066 acre

Parking Lot = 47,870 SF = 1.1 acre

Water Quality



WWHM2012

PROJECT REPORT

General Model Information

Project Name:	Oak Tree Station Project Flow Control
Site Name:	176162000
Site Address:	
City:	Camas
Report Date:	1/31/2022
Gage:	Lacamas
Data Start:	1948/10/01
Data End:	2008/09/30
Timestep:	15 Minute
Precip Scale:	1.300
Version Date:	2021/08/18
Version:	4.2.18

POC Thresholds

Low Flow Threshold for POC1:	50 Percent of the 2 Year
High Flow Threshold for POC1:	50 Year

Landuse Basin Data

Predeveloped Land Use

Basin 1

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG4, Forest, Flat	1.92
Pervious Total	1.92

Impervious Land Use	acre
Impervious Total	0
Basin Total	1.92

Element Flows To:

Surface	Interflow	Groundwater

Mitigated Land Use

Basin 1

Bypass:	Yes
GroundWater:	No

Pervious Land Use	acre
SG4, Field, Flat	0.586
Pervious Total	0.586

Impervious Land Use	acre
Impervious Total	0
Basin Total	0.586

Element Flows To:

Surface	Interflow	Groundwater

Roof 1

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
Pervious Total	0
Impervious Land Use	acre
ROOF TOPS FLAT	0.154
Impervious Total	0.154
Basin Total	0.154

Element Flows To:

Surface	Interflow	Groundwater
Vault 1	Vault 1	

Roof 2

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
Pervious Total	0
Impervious Land Use	acre
ROOF TOPS FLAT	0.014
Impervious Total	0.014
Basin Total	0.014

Element Flows To:

Surface	Interflow	Groundwater
Vault 1	Vault 1	

Patio

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
Pervious Total	0
Impervious Land Use	acre
DRIVEWAYS FLAT	0.014
Impervious Total	0.014
Basin Total	0.014

Element Flows To:

Surface	Interflow	Groundwater
Vault 1	Vault 1	

Parking Lot

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
Pervious Total	0
Impervious Land Use	acre
PARKING FLAT	1.1
Impervious Total	1.1
Basin Total	1.1

Element Flows To:

Surface	Interflow	Groundwater
Vault 1	Vault 1	

Routing Elements
Predeveloped Routing

Mitigated Routing

Vault 1

Width: 40 ft.
Length: 100 ft.
Depth: 3.75 ft.
Discharge Structure
Riser Height: 3.6 ft.
Riser Diameter: 10 in.
Orifice 1 Diameter: 0.75 in. Elevation:0 ft.
Orifice 2 Diameter: 3.5 in. Elevation:3.2 ft.
Element Flows To:
Outlet 1 Outlet 2

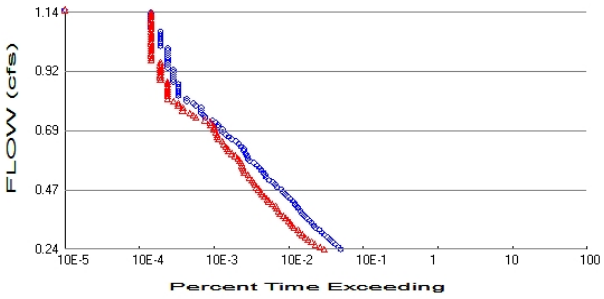
Vault Hydraulic Table

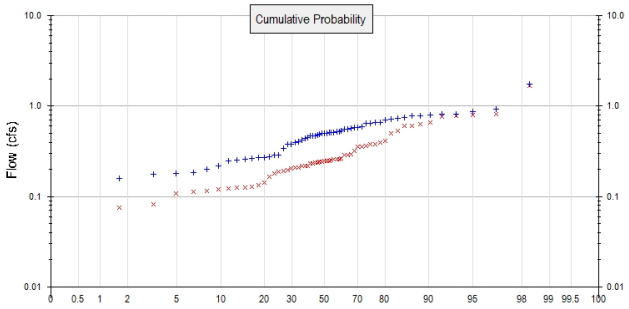
Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.091	0.000	0.000	0.000
0.0417	0.091	0.003	0.003	0.000
0.0833	0.091	0.007	0.004	0.000
0.1250	0.091	0.011	0.005	0.000
0.1667	0.091	0.015	0.006	0.000
0.2083	0.091	0.019	0.007	0.000
0.2500	0.091	0.023	0.007	0.000
0.2917	0.091	0.026	0.008	0.000
0.3333	0.091	0.030	0.008	0.000
0.3750	0.091	0.034	0.009	0.000
0.4167	0.091	0.038	0.009	0.000
0.4583	0.091	0.042	0.010	0.000
0.5000	0.091	0.045	0.010	0.000
0.5417	0.091	0.049	0.011	0.000
0.5833	0.091	0.053	0.011	0.000
0.6250	0.091	0.057	0.012	0.000
0.6667	0.091	0.061	0.012	0.000
0.7083	0.091	0.065	0.012	0.000
0.7500	0.091	0.068	0.013	0.000
0.7917	0.091	0.072	0.013	0.000
0.8333	0.091	0.076	0.013	0.000
0.8750	0.091	0.080	0.014	0.000
0.9167	0.091	0.084	0.014	0.000
0.9583	0.091	0.088	0.014	0.000
1.0000	0.091	0.091	0.015	0.000
1.0417	0.091	0.095	0.015	0.000
1.0833	0.091	0.099	0.015	0.000
1.1250	0.091	0.103	0.016	0.000
1.1667	0.091	0.107	0.016	0.000
1.2083	0.091	0.111	0.016	0.000
1.2500	0.091	0.114	0.017	0.000
1.2917	0.091	0.118	0.017	0.000
1.3333	0.091	0.122	0.017	0.000
1.3750	0.091	0.126	0.017	0.000
1.4167	0.091	0.130	0.018	0.000
1.4583	0.091	0.133	0.018	0.000
1.5000	0.091	0.137	0.018	0.000
1.5417	0.091	0.141	0.019	0.000
1.5833	0.091	0.145	0.019	0.000

1.6250	0.091	0.149	0.019	0.000
1.6667	0.091	0.153	0.019	0.000
1.7083	0.091	0.156	0.020	0.000
1.7500	0.091	0.160	0.020	0.000
1.7917	0.091	0.164	0.020	0.000
1.8333	0.091	0.168	0.020	0.000
1.8750	0.091	0.172	0.020	0.000
1.9167	0.091	0.176	0.021	0.000
1.9583	0.091	0.179	0.021	0.000
2.0000	0.091	0.183	0.021	0.000
2.0417	0.091	0.187	0.021	0.000
2.0833	0.091	0.191	0.022	0.000
2.1250	0.091	0.195	0.022	0.000
2.1667	0.091	0.199	0.022	0.000
2.2083	0.091	0.202	0.022	0.000
2.2500	0.091	0.206	0.022	0.000
2.2917	0.091	0.210	0.023	0.000
2.3333	0.091	0.214	0.023	0.000
2.3750	0.091	0.218	0.023	0.000
2.4167	0.091	0.221	0.023	0.000
2.4583	0.091	0.225	0.023	0.000
2.5000	0.091	0.229	0.024	0.000
2.5417	0.091	0.233	0.024	0.000
2.5833	0.091	0.237	0.024	0.000
2.6250	0.091	0.241	0.024	0.000
2.6667	0.091	0.244	0.024	0.000
2.7083	0.091	0.248	0.025	0.000
2.7500	0.091	0.252	0.025	0.000
2.7917	0.091	0.256	0.025	0.000
2.8333	0.091	0.260	0.025	0.000
2.8750	0.091	0.264	0.025	0.000
2.9167	0.091	0.267	0.026	0.000
2.9583	0.091	0.271	0.026	0.000
3.0000	0.091	0.275	0.026	0.000
3.0417	0.091	0.279	0.026	0.000
3.0833	0.091	0.283	0.026	0.000
3.1250	0.091	0.287	0.027	0.000
3.1667	0.091	0.290	0.027	0.000
3.2083	0.091	0.294	0.057	0.000
3.2500	0.091	0.298	0.101	0.000
3.2917	0.091	0.302	0.128	0.000
3.3333	0.091	0.306	0.149	0.000
3.3750	0.091	0.309	0.167	0.000
3.4167	0.091	0.313	0.183	0.000
3.4583	0.091	0.317	0.197	0.000
3.5000	0.091	0.321	0.210	0.000
3.5417	0.091	0.325	0.223	0.000
3.5833	0.091	0.329	0.234	0.000
3.6250	0.091	0.332	0.280	0.000
3.6667	0.091	0.336	0.408	0.000
3.7083	0.091	0.340	0.577	0.000
3.7500	0.091	0.344	0.773	0.000
3.7917	0.091	0.348	0.979	0.000
3.8333	0.000	0.000	1.179	0.000

Analysis Results

POC 1





\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #1
Total Pervious Area: 1.92
Total Impervious Area: 0

Mitigated Landuse Totals for POC #1
Total Pervious Area: 0.586
Total Impervious Area: 1.282

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.481706
5 year	0.754113
10 year	0.902752
25 year	1.054393
50 year	1.144674
100 year	1.218985

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0.252788
5 year	0.446568
10 year	0.605093
25 year	0.840633
50 year	1.042309
100 year	1.267008

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	0.376	0.203
1950	0.493	0.243
1951	0.651	0.238
1952	0.382	0.248
1953	0.515	0.378
1954	0.718	0.396
1955	0.400	0.164
1956	0.784	0.799
1957	0.596	0.250
1958	0.442	0.232

1959	0.257	0.113
1960	0.254	0.126
1961	0.706	0.626
1962	0.474	0.209
1963	0.526	0.220
1964	0.502	0.358
1965	0.450	0.416
1966	0.576	0.376
1967	0.502	0.193
1968	0.656	0.248
1969	0.534	0.261
1970	1.747	1.670
1971	0.276	0.124
1972	0.470	0.180
1973	0.468	0.353
1974	0.737	0.812
1975	0.401	0.186
1976	0.577	0.217
1977	0.016	0.041
1978	0.823	0.504
1979	0.557	0.236
1980	0.340	0.289
1981	0.782	0.609
1982	0.526	0.360
1983	0.875	0.320
1984	0.286	0.116
1985	0.220	0.135
1986	0.272	0.125
1987	0.475	0.260
1988	0.183	0.219
1989	0.199	0.119
1990	0.181	0.143
1991	0.512	0.198
1992	0.564	0.207
1993	0.662	0.257
1994	0.506	0.230
1995	0.420	0.655
1996	0.804	0.764
1997	0.931	0.780
1998	0.752	0.288
1999	0.562	0.529
2000	0.272	0.107
2001	0.157	0.075
2002	0.821	0.297
2003	0.646	0.243
2004	0.177	0.083
2005	0.265	0.128
2006	0.495	0.267
2007	0.245	0.611
2008	0.288	0.254

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	1.7467	1.6697
2	0.9308	0.8122
3	0.8754	0.7991
4	0.8225	0.7798

5	0.8213	0.7642
6	0.8037	0.6549
7	0.7839	0.6260
8	0.7819	0.6112
9	0.7525	0.6093
10	0.7367	0.5286
11	0.7180	0.5045
12	0.7060	0.4159
13	0.6625	0.3955
14	0.6558	0.3778
15	0.6515	0.3762
16	0.6456	0.3604
17	0.5962	0.3577
18	0.5770	0.3531
19	0.5756	0.3198
20	0.5636	0.2971
21	0.5623	0.2888
22	0.5567	0.2878
23	0.5344	0.2666
24	0.5264	0.2606
25	0.5262	0.2604
26	0.5152	0.2573
27	0.5123	0.2540
28	0.5065	0.2500
29	0.5024	0.2483
30	0.5016	0.2477
31	0.4955	0.2433
32	0.4932	0.2428
33	0.4746	0.2382
34	0.4737	0.2363
35	0.4697	0.2321
36	0.4678	0.2305
37	0.4504	0.2195
38	0.4423	0.2189
39	0.4202	0.2174
40	0.4014	0.2086
41	0.3998	0.2068
42	0.3819	0.2031
43	0.3761	0.1977
44	0.3404	0.1933
45	0.2879	0.1859
46	0.2856	0.1804
47	0.2762	0.1640
48	0.2723	0.1425
49	0.2720	0.1347
50	0.2649	0.1279
51	0.2571	0.1259
52	0.2540	0.1253
53	0.2453	0.1237
54	0.2202	0.1190
55	0.1991	0.1162
56	0.1833	0.1131
57	0.1806	0.1073
58	0.1772	0.0827
59	0.1569	0.0753
60	0.0157	0.0413

Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.2409	1046	626	59	Pass
0.2500	968	556	57	Pass
0.2591	894	476	53	Pass
0.2682	812	425	52	Pass
0.2774	747	377	50	Pass
0.2865	696	350	50	Pass
0.2956	636	320	50	Pass
0.3048	586	293	50	Pass
0.3139	543	281	51	Pass
0.3230	484	247	51	Pass
0.3321	456	233	51	Pass
0.3413	425	223	52	Pass
0.3504	405	208	51	Pass
0.3595	367	189	51	Pass
0.3687	338	178	52	Pass
0.3778	317	160	50	Pass
0.3869	301	153	50	Pass
0.3961	280	146	52	Pass
0.4052	265	141	53	Pass
0.4143	253	125	49	Pass
0.4234	240	114	47	Pass
0.4326	223	108	48	Pass
0.4417	201	98	48	Pass
0.4508	187	92	49	Pass
0.4600	176	89	50	Pass
0.4691	167	84	50	Pass
0.4782	145	78	53	Pass
0.4873	139	74	53	Pass
0.4965	128	71	55	Pass
0.5056	114	67	58	Pass
0.5147	104	62	59	Pass
0.5239	101	60	59	Pass
0.5330	96	53	55	Pass
0.5421	90	52	57	Pass
0.5513	85	51	60	Pass
0.5604	80	50	62	Pass
0.5695	72	49	68	Pass
0.5786	62	46	74	Pass
0.5878	59	44	74	Pass
0.5969	58	40	68	Pass
0.6060	56	36	64	Pass
0.6152	53	33	62	Pass
0.6243	52	32	61	Pass
0.6334	48	30	62	Pass
0.6426	45	28	62	Pass
0.6517	41	27	65	Pass
0.6608	36	24	66	Pass
0.6699	33	23	69	Pass
0.6791	30	23	76	Pass
0.6882	27	22	81	Pass
0.6973	27	21	77	Pass
0.7065	24	21	87	Pass
0.7156	24	19	79	Pass

0.7247	22	19	86	Pass
0.7338	20	16	80	Pass
0.7430	16	12	75	Pass
0.7521	15	11	73	Pass
0.7612	14	10	71	Pass
0.7704	14	8	57	Pass
0.7795	14	8	57	Pass
0.7886	12	7	58	Pass
0.7978	11	7	63	Pass
0.8069	9	6	66	Pass
0.8160	9	5	55	Pass
0.8251	7	5	71	Pass
0.8343	7	5	71	Pass
0.8434	7	5	71	Pass
0.8525	7	5	71	Pass
0.8617	7	5	71	Pass
0.8708	7	5	71	Pass
0.8799	6	5	83	Pass
0.8890	6	4	66	Pass
0.8982	6	4	66	Pass
0.9073	6	4	66	Pass
0.9164	6	4	66	Pass
0.9256	6	4	66	Pass
0.9347	5	4	80	Pass
0.9438	5	4	80	Pass
0.9530	5	4	80	Pass
0.9621	5	3	60	Pass
0.9712	5	3	60	Pass
0.9803	5	3	60	Pass
0.9895	5	3	60	Pass
0.9986	5	3	60	Pass
1.0077	5	3	60	Pass
1.0169	4	3	75	Pass
1.0260	4	3	75	Pass
1.0351	4	3	75	Pass
1.0442	4	3	75	Pass
1.0534	4	3	75	Pass
1.0625	4	3	75	Pass
1.0716	4	3	75	Pass
1.0808	3	3	100	Pass
1.0899	3	3	100	Pass
1.0990	3	3	100	Pass
1.1082	3	3	100	Pass
1.1173	3	3	100	Pass
1.1264	3	3	100	Pass
1.1355	3	3	100	Pass
1.1447	3	3	100	Pass

Water Quality

Water Quality BMP Flow and Volume for POC #1

On-line facility volume:	0 acre-feet
On-line facility target flow:	0 cfs.
Adjusted for 15 min:	0 cfs.
Off-line facility target flow:	0 cfs.
Adjusted for 15 min:	0 cfs.

LID Report

LID Technique	Used for Treatment ?	Total Volume Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft)	Cumulative Volume Infiltration Credit	Percent Volume Infiltrated	Water Quality	Percent Water Quality Treated	Comment
Vault 1 POC	☐	230.76			☐	0.00			
Total Volume Infiltrated		230.76	0.00	0.00		0.00	0.00	0%	No Treat. Credit
Compliance with LID Standard 8% of 2-yr to 50% of 2-yr									Duration Analysis Result = Passed

Model Default Modifications

Total of 0 changes have been made.

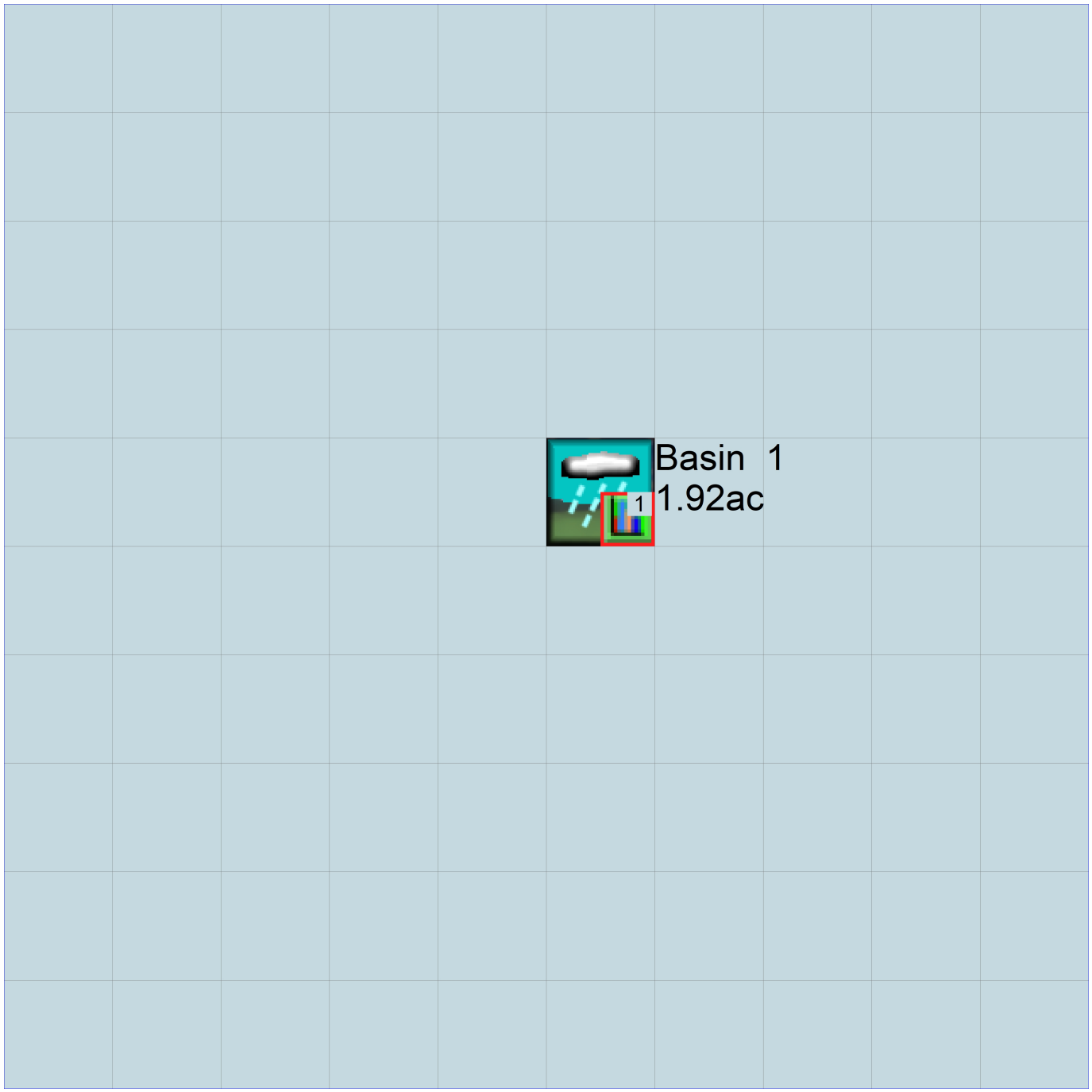
PERLND Changes

No PERLND changes have been made.

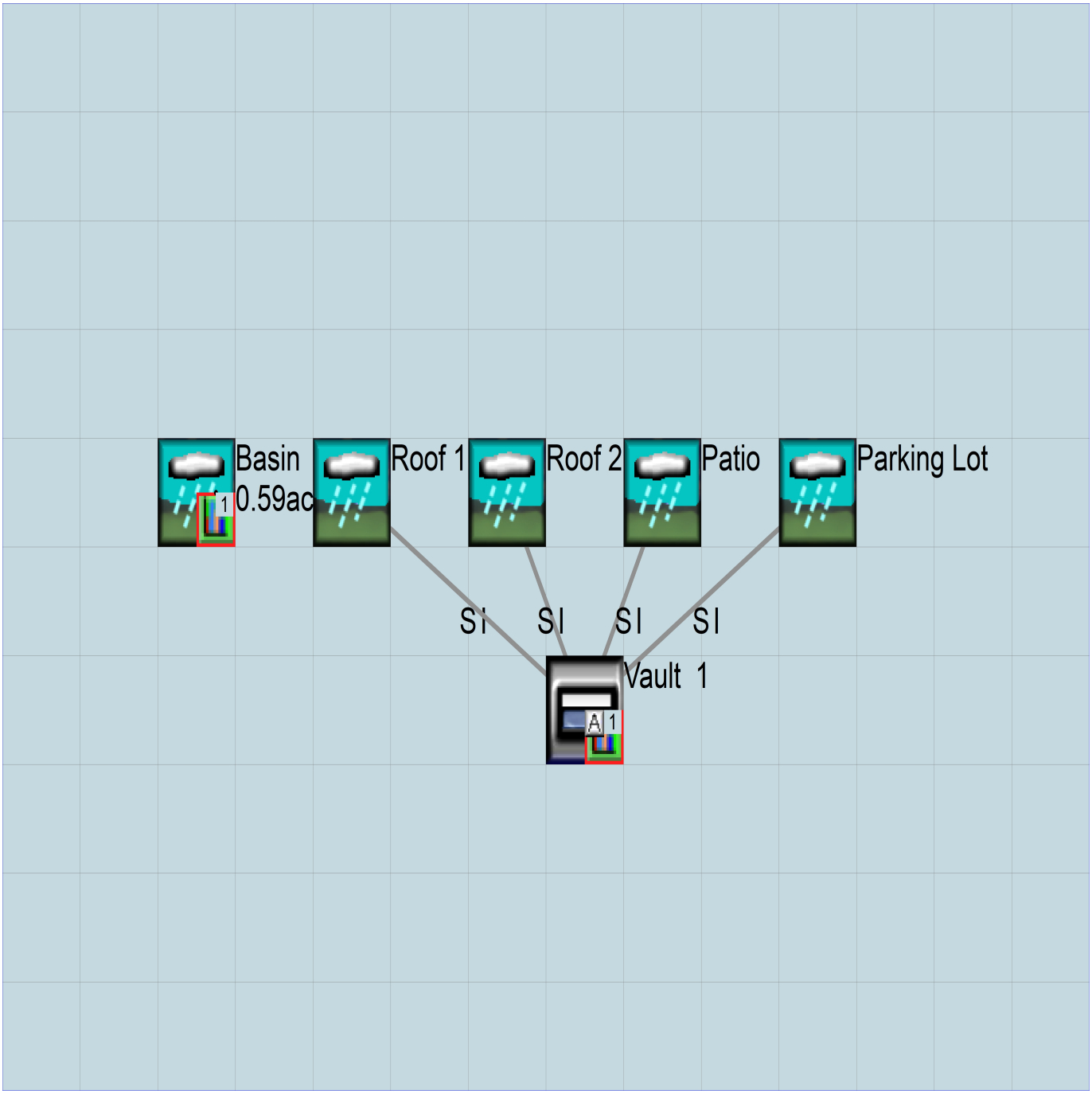
IMPLND Changes

No IMPLND changes have been made.

Appendix
Predeveloped Schematic



Mitigated Schematic



Predeveloped UCI File

Mitigated UCI File

Predeveloped HSPF Message File

Mitigated HSPF Message File

Disclaimer

Legal Notice

This program and accompanying documentation are provided 'as-is' without warranty of any kind. The entire risk regarding the performance and results of this program is assumed by End User. Clear Creek Solutions Inc. and the governmental licensee or sublicensees disclaim all warranties, either expressed or implied, including but not limited to implied warranties of program and accompanying documentation. In no event shall Clear Creek Solutions Inc. be liable for any damages whatsoever (including without limitation to damages for loss of business profits, loss of business information, business interruption, and the like) arising out of the use of, or inability to use this program even if Clear Creek Solutions Inc. or their authorized representatives have been advised of the possibility of such damages. Software Copyright © by : Clear Creek Solutions, Inc. 2005-2022; All Rights Reserved.

Clear Creek Solutions, Inc.
6200 Capitol Blvd. Ste F
Olympia, WA. 98501
Toll Free 1(866)943-0304
Local (360)943-0304

www.clearcreeksolutions.com

GEOTECHNICAL ENGINEERING STUDY

For

Oak Tree Station

City of Camas, Washington

Prepared for:

Oak Tree Station

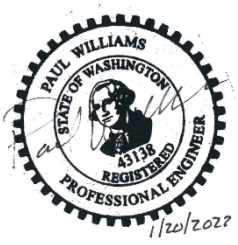
3239 NW Hood Ct

Camas WA 98607

Prepared by:

Engineering Northwest PLLC
6168 NE HWY 99
Vancouver, WA 98665
PH: 360-931-3122
paulwilliamspe@gmail.com

January 13, 2022



Contents

1.0 Introduction 3
1.1 General Site Information 4
1.2 Proposed Development 4
2.0 Regional Geology and Soil Conditions 4
3.0 Regional Seismology 5
4.0 Geotechnical Field Investigation 6
4.1 Surface Investigation and Site Description 6
4.2 Subsurface Exploration and Investigation 7
4.2.1 Soil Type Description 8
5.0 Design Recommendations 8
5.1 Site Preparation and Grading 8
5.2 Engineered Structural Fill 8
5.2.1 Reuse of Undocumented Fill Material 11
5.3 Cut and Fill Slopes 12
5.4 Foundations 12
5.5 Temporary Excavations 14
5.6 Lateral Earth Pressure 14
5.7 Seismic Design Considerations 15
5.9 Drainage 16
5.10 Bituminous Asphalt And Portland Cement Concrete 16
5.11 Wet Weather Construction Methods and Techniques 17
5.12 Soil Erosion Potential 17
5.13 Soil Shrink/Swell Potential 18
5.14 Utility Installation 18
5.15 Groundwater 19
5.17 Lab Soil Test Results 19

5.18 Infiltration Testing 20
5.19 Conclusion 22
5.20 Limitations 22

1.0 Introduction

This report presents the results of the geotechnical engineering study completed by Engineering Northwest PLLC for the proposed Oak Tree Station project in the City of Camas, Washington. The general location of the site is shown on the Vicinity Map, figure 1. The site includes one parcel, which total approximately 3.95 acres. At the time our study was performed, the site and our exploratory locations were approximate as shown on the site plan map, figure 1.

The purpose of this study was to explore subsurface conditions at the site, and based on the conditions encountered, provide geotechnical recommendations for the proposed construction. This report is subject to the limitations expressed in Section 6.0, Conclusion and Limitations.

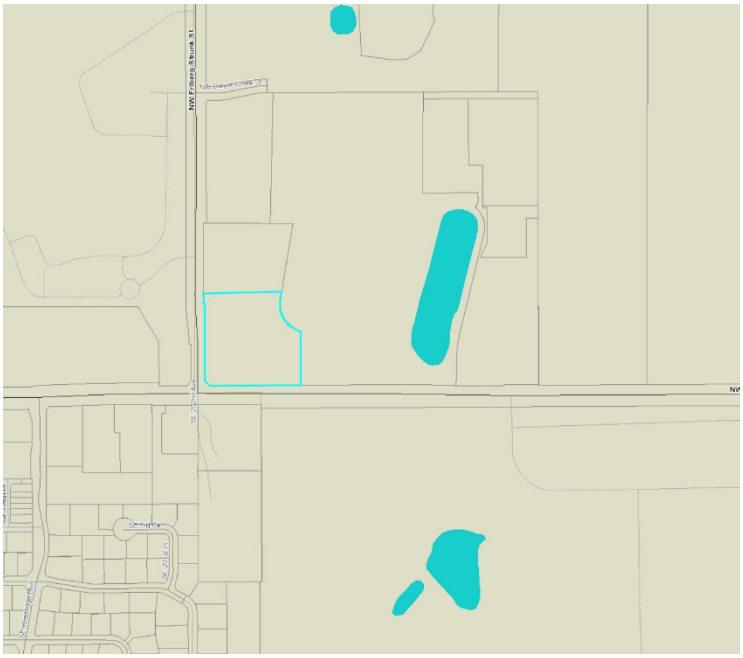


FIGURE 1

1.1 General Site Information

As indicated on Figures 1 the 3.95-acre subject site is located north side of NW Lake Road in the City of Camas, Washington. The approximate latitude and longitude are 45°39'19.72"N and 122°27'56.85"W and the legal description is a portion of the SE ¼ Section 29 Township 2N, Range 3E, Willamette Meridian. The regulatory jurisdictional agency is the City of Camas, Washington.

1.2 Proposed Development

The proposed Oaktree Station project is located on north side of NW lake Road. The project proposes 5,000 square-feet indoor and outdoor eating area and a small coffee shop. The project includes the future construction of utility, private parking, a storm water facility and other related infrastructural improvements.

2.0 Regional Geology and Soil Conditions

According to the Geologic Map of the Vancouver Quadrangle, Washington and Oregon (Washington Division of Geology and Earth Resources, Open-File Report 87-10, Revised November 1987), near-surface geology is:

Map Unit: Qf
Name: Pleistocene outburst-flood deposits
Full Name: Pleistocene outburst-flood deposits
Age: Quaternary (Pleistocene)
Description: Pleistocene gravel and sandy gravel deposits with interbedded silt lenses; deposited as benches along the main stem of the Snake River as a result of rapid draining of glacial Lake Bonneville; also widespread silt, sand, gravel, and boulder deposits deposited during multiple catastrophic drainings of glacial Lake Missoula; includes glaciolacustrine deposits.

The Soil Survey of Clark County, Washington (United States Department of Agriculture, Soil Conservation Service [USDA SCS], November 1972) identifies three separate surface soils with the subject property. Although actual on-site soils may vary from the broad USDA descriptions, soil types and associated descriptions are presented below.

- Dollar (DoB): The Olympic series consists of deep, moderately well drained, nearly level to gently sloping soils. Hydrologic soil group "C"

3.0 Regional Seismology

Recent research and subsurface mapping investigations within the Pacific Northwest appear to suggest the historic potential risk for a large earthquake event with strong localized ground movement may be underestimated. Past earthquakes in the Pacific Northwest appear to have caused landslides and ground subsidence, in addition to severe flooding near coastal areas. Earthquakes may also induce soil liquefaction, which occurs when elevated horizontal ground acceleration and velocity cause soil particles to interact as a fluid as opposed to a solid. Liquefaction of soil can result in lateral spreading and temporary loss of bearing capacity and shear strength.
There are at least four major known fault zones in the vicinity of the site that may be capable of generating potentially destructive horizontal accelerations. These fault zones are described briefly in the following text.

Portland Hills Fault Zone

The Portland Hills Fault Zone consists of server northwest-trending faults located along the eastern boundary of the Portland Hills. The fault zone is approximately 12 miles in length and is located approximately 8.5 southwest of the site. According to Seismic Design Mapping, State of Oregon (Geomatrix Consultants, 1995), there is no definitive consensus among geologists as to the zone fault type. Several alternate interpretations have been suggested, including various strike-slip and dipping thrust fault theories. Evidence exists to suggest that fault movement has impacted shallow Holocene deposits and deeper Pleistocene sediments. Seismologists recorded a M3.9 earthquake thought to be associated with the fault zone near Kelly Point Park in April 2003, and a M3.5 earthquake possibly associated with the fault zone occurred approximately 1.3 miles east of the fault in 1991. Therefore, the Portland Hills Fault Zone is generally thought to be potentially active and capable of producing possible damaging earthquakes.

Gales Creek-Newberg-Mt. Angel Fault Zone

Located approximately 30 miles south of the site, the 50-mile long Gales Creek-Newberg-Mt. Angel Structural Zone consists of a series of discontinuous northwest-trending faults. Possible late-Quaternary geomorphic surface deformation may exist along the structural zone (Geomatrix Consultants, 1995). Although no definitive

evidence of impacts to Holocene sediments has reportedly been observed, a M5.6

earthquake occurred in March 1993 near Scotts Mills, approximately four mile south of the mapped extent of the Mt. Angel fault. It is unclear if the earthquake occurred along the fault zone or a parallel structure. Therefore, the Gales Creek-Newberg-Mt Angel Structural Zone is considered potentially active.

Lacamas Creek-Sandy River Fault Zone

The northwest-trending Lacamas Creek Fault and northeast-trending Sandy River Fault intersect north of Camas, Washington approximately 3.5 southeast of the site. According to Geologty and Groundwater Conditions of Clark County Washington (USGS Water Supply Paper 1600, Mundorff, 1964) and the Geologic Map of the Lake Owego Quandrangle (Oregon DOGAMI Series GMS-59, 1989), the Lacamas Creek fault zone consists of shear contact between the Troutdale Formation and underlying Oligocene andesite-basalt bedrock. Secondary shear contact associated with the fault zone may have produced a series of prominent northwest-southeast geomorphic lineaments in proximity to the site. Recorded mild seismic activity during the recent past indicates this area may be potentially seismogenic.

Cascadia Subduction Zone

The Cascadia Subduction Zone has recently been recognized as a potential source of strong earthquake activity in the Portland/Vancouver Basin. This phenomenon is the result of the earth's large tectonic plate movement. Geologic evidence indicates that volcanic ocean floor activity along the Juan de Fuca ridge in the Pacific Ocean causes the Juan de Fuca Plate to perpetually move east and subduct under the North American Continental Plate. The subduction zone results in historic volcanic and potential earthquake activity in proximity to the plate interface, believed to lie approximately 20 to 60 miles west of the general location of the Oregon and Washington coast (Geomatrix Consultants, 1995).

4.0 Geotechnical Field Investigation

A geotechnical field investigation consisting of visual reconnaissance and one test pit explorations (TP-1) was conducted at the site. Test pit exploration was performed with a excavator. Subsurface soil profiles were logged in accordance with Unified Soil Classification System (USCS) specifications. Disturbed soil samples were collected from relevant soil horizons and analyzed. Test pit locations are indicated on Figure 2.

4.1 Subsurface Exploration and Investigation

We explored subsurface conditions for one test pits (TP-1) were excavated at the site to a maximum depth of 6 feet on January 13, 2022. The approximate locations of the test pit are shown in Figure 2.

Select soil samples from the test pit were tested to determine the natural moisture content, dry density, organic content.

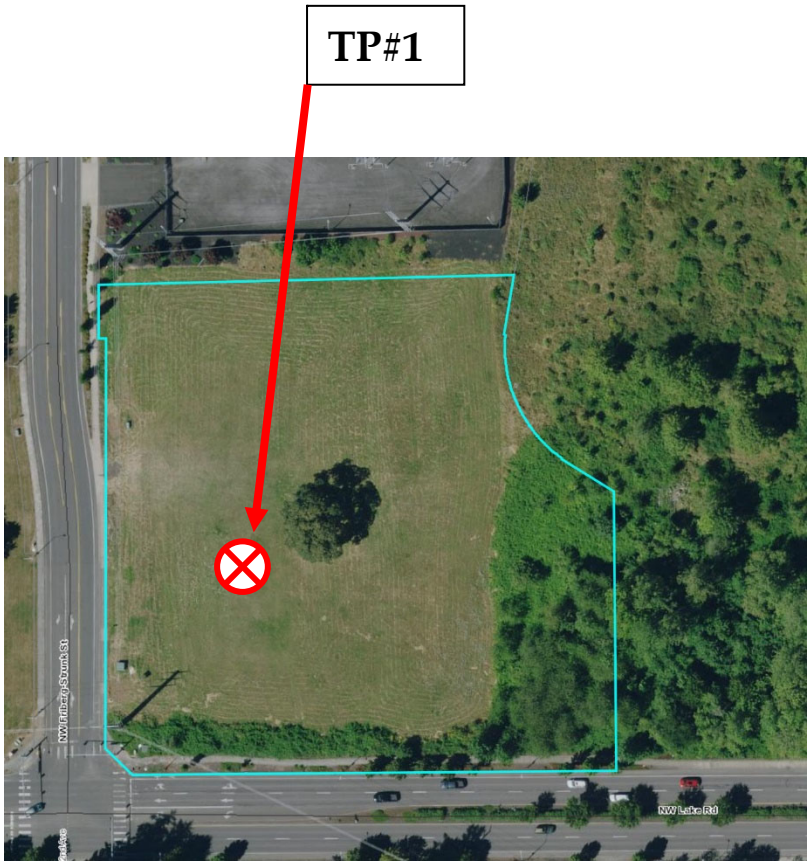


Figure 2

4.2 Surface Investigation and Site Description

The surface topography of the subject property typical slopes from east to west. The majority of the site is covered with field grass one large tree and serval small trees to the east property line.

In general, the surface soil over the majority of the project site varies from dark brown to reddish-brown which is typical Dollar soil type. The near- surface soil conditions has relatively high organic content extended to an approximate depth of 14 inches.

Laboratory testing of selected samples resulted in soil moisture content varying between 8 and 12 percent.

4.2.1 Soil Type Description

The field sample soil results are listed below.

Soil	USDA Texture	Unified	AASHO	Hydrologic Group
DoB	Loam	ML	A-4	C

5.0 Design Recommendations

The geotechnical site investigation suggests that proposes development is generally compatible with surface and subsurface soils, provided the recommendations presented in this report are used and incorporated into the design and construction process.

5.1 Site Preparation and Grading

Trees, grasses, and other grubbing items should be removed from all building, slab, structural fill, and pavement and sidewalk areas. Root balls should be grubbed out to the depth of the roots, which could exceed 2.0 to 3.0 feet depth. Depending on the methods used to remove the root balls, considerable disturbance and lessening 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/root zone should be stripped and removed from all proposed building, slab, structural fill, pavement and sidewalk areas, and for a 5-foot margins around such areas. Based on our explorations, the average depth of stripping in will be

approximately 10 inches. Greater stripping depths will be required to remove localized zones of loose or organic soil.

After grubbing, stripping, and required site cutting have been completed, we recommend proof rolling the subgrade with a fully-loaded dump truck or similar size, rubber tire construction equipment to identify areas of excessive yielding. The proof rolling should be observed by geotechnical engineering who will evaluate the subgrade. If areas of excessive yielding are identified, the material should be excavated and replaced with compacted materials recommended for structural fill. Areas that appear to be too wet and soft to support proof rolling equipment should be prepared in accordance with the recommendations for wet weather construction presented in the following section of this report

The test pit excavations were backfilled using the relatively minimal compaction effort of the hoe bucket; therefore, soft spots can be expected at these locations. We recommend that these relatively uncompacted soils be removed from the test pits to a depth of 3.0 feet below finished subgrade. The resulting excavation should be brought back to grade with structural fill.

5.2 Engineered Structural Fill

The native silt can be used as structural fill provided it is adequately moisture conditioned. Silty soils are generally sensitive to small changes in moisture content and are difficult, if not impossible, to compact adequately during wet weather or when their moisture content is more than a few percentage points above the optimum moisture content. Some moisture conditioning will likely be necessary even during the dry weather construction season. We recommend using clean. Angular imported granular material for structural fill if site soils cannot be properly moisture conditioned. As an alternative, use of the native silt soil as structural fill may be acceptable if it is properly amended with Portland cement or lime.

When used as structural fill, the silt soils should be placed in lifts with a maximum uncompact thickness of 6 to 8 inches and compacted to not less than 92 percent of the maximum dry density, as determined by American Society for Testing and Materials (ASTM) D 1557.

Engineered structural fill should be placed in loose lifts not exceeding 12 inches in depth and compacted using standard conventional compaction equipment. A field density at least equal to 92 percent of the maximum dry density, obtained from the modified Proctor moisture-density relationship test (ASTM D1557), is recommended for structural fill placement. For engineered structural fill placed on sloped grades, the area should be benched to provide a horizontal surface for compaction. Compaction of engineered structural fill should be verified by nuclear gauge field compaction testing performed in accordance with ASTM D6938-08. Field compaction testing should be performed for each vertical foot of engineered fill placed. Engineered fill placement should be observed by an experienced geotechnical engineer or designated representative. Engineered structural fill placement occurs during dry weather conditions, clean non-organic achieve recommended compaction specifications. If adequate compaction is not achievable with clean native soils, import structural fill consisting of well-graded granular material with a maximum particle size of 3 inches and no more than 5 percent passing the No. 200 sieve is recommended. Representative samples of proposed engineered structural fill should be submitted for laboratory analysis and approval by the geotechnical engineer prior to placement. Laboratory analyses should include particle-size gradation and modified Proctor moisture-density analysis.

Trench backfill for the utility pipe base and pipe zone should consist of well-graded granular material with a maximum particle size of ¾ inch and less than 8 percent by weight passing the U.S. Standard No. 200 Sieve. The material should be free of roots, organic matter, and other unsuitable materials. Backfill for the pipe base and pipe zone should be compacted to at least 90 percent of the maximum dry density, as determined by ASTM D 1557, or as recommended by the pipe manufacturer. Within building and pavement areas, trench backfill placed above the pipe zone should be compacted to at least 92 percent of ASTM D 1557 at depths greater than 2.0 feet below the finished subgrade and as recommended for structural fill within 2 feet of finished subgrade. In all other areas, trench backfill above the pipe zone should be compacted to at least 92 percent of the maximum dry density, as determined by ASTM D 1557.

As an alternative to the use of imported granular material, an experienced contractor may be able to amend the on-site with Portland cement to obtain suitable support

properties. Depending on the size of the area, it is generally less costly to amend on-site soils than to remove and replace soft soils with granular material. Based on the moisture contents, soil types, and processing speed, cement amendment would be more suitable at this site than lime amendment.

The amount of cement used to amend the soils generally varies with moisture content. It is difficult to predict field performance of soils to cement amendment due to variability in soil response and we recommend laboratory testing to confirm expectations. However, for preliminary design purposes, we expect acceptable soil strength will be obtained using an amendment rate of 6 pounds Portland cement tilled to a depth of 12 inches. This translates to approximately 6 percent cement by weight. The amount of cement added to the soil may need to be adjusted based on field observations and performance.

5.2.1 Reuse of Undocumented Fill Material

As discussed in Section 5.1 Site Preparation and Grading, undocumented fill was encountered at the entrance of the site. In general, the fill encountered consisted of sand and gravel. If minor debris is encountered the contractor shall notify the geotechnical engineer or designated representative. Cobbles and boulders larger than 6 inches that cannot be broken into smaller fragments should be removed. Crushing and mixing processes should be observed and approved by an experienced geotechnical engineer.

5.3 Cut and Fill Slopes

Fill placed on grades steeper than 5H:1V should be horizontally benched at least 10 feet into the slope. Fill slopes greater than six feet in height should be vertically keyed into existing subsurface soil. Drainage implementations, including subdrains or perforated drain pipe trenches, may also be required in proximity to cut and fill slopes if seeps, springs, or soft mottled soils are encountered. Drainage design may be performed on a case-by-case basis. Extent, depth, and location of drainage may be determined in the field by the geotechnical engineer during construction when soil conditions are exposed. Failure to provide adequate drainage may result in soil sloughing, settlement, or erosion. Concentrated drainage or water flow over the face of slopes should be prohibited, and adequate protection against erosion is required.

Final cut or fill slopes should not exceed 2H:1V or 20 feet in vertical height without individual slope stability analysis. The values above assume a minimum horizontal setback for loads of 10 feet from top of cut or fill slope face or overall slope height divided by three (H/3), whichever is greater. Fill slopes should be constructed by placing fill material in maximum 12-inch level lifts, compacting as described in Section 5.2, Engineered Structural Fill and horizontally benching where appropriate. Fill slopes should be overbuilt, compacted, and trimmed at least two feet horizontally to provide adequate compaction of the outer slope face. Proper cut and fill slope construction is critical to overall project stability and should be observed by and experienced geotechnical engineer.

5.4 Home Foundations

Engineering Northwest recommendation to follow the recommendation and guidelines in the most current IBC.

5.5 Temporary Excavations

The following information is provided solely as a service to our client. Under no circumstances should this information be interpreted to mean that Engineering Northwest PLLC is assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred.

In no case should excavation slopes be greater than the limits specified in local, state and federal safety regulations. Based on the information obtained from our field

exploration and laboratory testing, the site soils expected to be encountered in excavations, firm to stiff silt (ML) and silty sand (SM) would be classified as a Type "B" soil by OSHA guidelines.

Therefore, temporary excavations and cuts greater than four feet in height, should be sloped at an inclination no steeper than 1H:1V (horizontal:vertical) for type "B" soils. If slopes of this inclination, or flatter, cannot be constructed or if excavations greater than ten feet in depth are required, temporary shoring may be necessary.

The shoring would help protect against slope or excavation collapse, and would provide protection to workmen in the excavation. If temporary shoring is required, we will be available to provide shoring design criteria, if requested.

5.6 Lateral Earth Pressure

Lateral earth pressure should be carefully considered for design of retaining walls or below-grade structures. Hydrostatic pressure and additional surcharge loading should also be considered. Retained material may include engineered structural backfill or relatively undisturbed native soil. Structural wall backfill may consist of recompacted fine-textured soils or imported granular material. Backfill should be prepared and

compacted to at least 92 percent of maximum dry density as determined by the modified Proctor test (ASTM D1557). If seismic design is required, seismic forces for unrestrained wall may be calculated by superimposing a uniform lateral force of $10H^2$ pounds per lineal foot of wall, where H is the total wall height in feet. The resultant force should be applied at 0.6H from the base of the wall.

A continuous one-foot-thick zone of free-draining, washed, open-graded 1-inch by 2-inch drain rock and a 3-inch perforated gravity drain pipe is assumed behind retaining walls. Geotextile filter fabric should be placed between the drain rock and fine-textured backfill soil. Specifications for drainpipe design are presented in Section 5.10, Drainage. If walls cannot be gravity drained, saturated base conditions and /or applicable hydrostatic pressures should be assumed.

5.7 Seismic Design Considerations

Based upon Site Class Map of Clark County, Washington (Washington State Department of Natural Resources, 2004), shallow site soils may be represented by Site Class C as defined in 2009 IBC Table 161.5.2. This assessment is preliminary, pertains to near-surface soils, and is based upon limited field exploration and research of existing published literature. Additional exploration would be necessary to provide soil site class information at greater depths. Amplification of seismic energy due to depth to competent bedrock, compression and shear wave velocity of bedrock, presence and thickness of loose, unconsolidated alluvial deposits, soil plasticity, grain size, and other factors is possible at the site

According to Clark County Maps Online, the site is mapped as very low to low potential for liquefaction.

Identification of specific seismic response spectra, probabilistic ground motions, and liquefaction analysis for the site are beyond the scope of this investigation. If site structures are designed in accordance with recommendations specified in the 2009 IBC, the potential for peak ground accelerations in excess of adjusted and amplified values should be understood.

5.9 Drainage

At a minimum, site drainage should include surface water collection and conveyance to properly designed Stormwater management structures and facilities. Drainage design in general should conform to the Clark County regulations. Finished site grading should be conducted with positive drainage away from structures. Depressions or shallow areas that may retain ponding water should be avoided. Roof drains and perimeter foundation drains are recommended for proposed structures. Drains should consist of separate systems and gravity flow with a minimum two-percent slope away from foundations into the storm water system or approved discharge location.

5.10 Bituminous Asphalt And Portland Cement Concrete

According to the preliminary short plat plan the subject site is not anticipated to include asphalt concrete for the new parking lot. Based upon analytical laboratory test results and field exploration. Engineering Northwest PLLC recommends the general pavement design consist of 12 inches of compacted crushed aggregate base overlain with a minimum of 3.0 inches of asphalt concrete pavement for truck loading and traffic areas.

For dry weather construction, pavement surface sections should bear upon competent subgrade consisting of compacted native soil or engineered structural fill. Wet weather pavement construction is discussed later in Section 5.44, Wet Weather Construction Methods and Techniques. Subgrade conditions should be evaluated and tested by a licensed geotechnical engineer or designated representative prior to placement of crushed aggregate base. Subgrade evaluation should include nuclear gauge density testing and wheel proof-roll observations conducted with a 12-cubic yard, double-axle dump truck or equivalent. Nuclear gauge density testing should be conducted at 250-foot intervals or as determined by the onsite geotechnical engineer. Subgrade soil should be compacted to at least 95 percent of the modified Proctor dry density as determined by ASTM D1557. Areas of observed deflection or rutting during proof-roll evaluation should be excavated to a firm surface and replaced with compacted crushed aggregate.

Crushed aggregate base should be compacted and tested in accordance with the specifications outlined above. Asphalt concrete pavement should be compacted to at least 91 percent of maximum Rice Density. Nuclear gauge density testing should be

conducted to verify adherence to recommended specifications. Testing frequency should be in accordance with Washington Department of Transportation and the Clark County specifications.

Curb and sidewalk aggregate base should be observed and proof-rolled in the presence of an experienced geotechnical engineer or designated representative. Soft areas that deflect or rut should be stabilized prior to pouring concrete. Concrete should be tested during installation in accordance with ASTM C171, C138, C231, C143, C1064, and C31. This includes casting of cylinder specimen at a frequency of four cylinders per 100 cubic yards of poured concrete. Recommended filed and analytical laboratory concrete testing includes slump. Air entrainment.
Temperature, and unit weight.

5.11 Wet Weather Construction Methods and Techniques

Wet weather construction often results in significant shear strength reduction and soft areas that my rut or deflect. Installation of granular working layers may be necessary to provide a firm support base and sustain construction equipment. Granular layers should consist of all-weather gravel, 4-inch by 6-inch gabion, or other similar material (6- inch maximum size with less than 5 percent passing the No. 200 sieve).

Construction equipment traffic across exposed native soil should be minimized. Equipment traffic induces dynamic loading, which may result in weak areas and significant reduction in shear strength for soils above plastic limit. Wet weather construction may generate significant excess quantities of soft wet soil, which should be removed from the site or stockpiled in a designated area.

5.12 Soil Erosion Potential

Based upon review of the Soil Survey of Clark County, Washington and field observations, the erosion hazard for the site soil is considered low to moderate. For flat to shallow- gradient portions of the property the erosion hazard is likely to be low. Erosion potential generally increases in sloped areas. Therefore, disturbance to vegetation in sloped areas should be minimized during construction activities. Soil is also prone to erosion if unprotected and unvegetated during periods of increased precipitation.

Erosion can be minimized by performing construction activities during dry summer months.

Site-specific erosion control measures should be implemented to address the maintenance of exposed areas. This may include silt fence, biofilter bags, straw wattles, or other suitable methods. During construction activities, exposed areas should be well-compacted and protected from erosion with visqueen, surface tactifier, or other means, as appropriate. Temporary slopes or exposed areas may be covered with straw, crushed aggregate, or riprap in localized areas to minimize erosion. Erosion and water runoff during wet weather conditions may be controlled by application of strategically placed channels and small detention depressions with overflow pipes. After grading the surface should be vegetated as soon as possible with erosion-resistant native grasses and forbs. Jute mesh or straw may be applied to enhance vegetation. Once established, vegetation should be properly maintained. It is also recommended that disturbance to existing native vegetation and surrounding organic soil be minimized during construction activities.

5.13 Soil Shrink/Swell Potential

The Soil Survey of Clark County, Washington indicates a very low potential for shrinking and swelling of the native site soils or imported subbase material.

5.14 Utility Installation

Utility installation at the site may require subsurface excavation and trenching. Excavation, trenching and shoring should conform to federal Occupational Safety and Health Administration (OSHA)(29 CFR, PART 1926) and WISHA (WAC, Chapter 296-155) regulations. Site soils may slough when cut vertically and sudden precipitation events or perched ground water may result in accumulation of water within excavation zones and trenches. These areas should be dewatered in accordance with appropriate discharge regulations.

Utilities should be installed in general accordance with manufacturer's recommendations. Utility trench backfill should consist of crushed aggregate or other coarse-textured, free-draining material acceptable to the Clark County and the site geotechnical engineer. Trench backfill material within 18 inches of the top of utility pipes should be hand compacted (i.e., no heavy compaction equipment). The

remaining backfill should be compacted to at least 90 percent of maximum dry density as determined by the modified Proctor moisture-density test (ASTM D1557). With exception of the pipe zone, backfill should be placed in loose lifts not exceeding 12 inches in thickness.

Compaction of utility trench backfill material should be verified by nuclear gauge field compaction testing performed in accordance with ASTM D6938-08. Field compaction testing should be performed at 250-foot intervals along the utility trench centerline at the surface and midpoint depth of the trench. Compaction frequency and specifications may be modified for non-structural areas in accordance with recommendations of the site geotechnical engineer.

5.15 Groundwater

No groundwater was an encounter in any of the test pits to the maximum exploration depth of 6 feet below the existing ground surface.

It is important to note that groundwater conditions are not static; fluctuation may be expected in the level and seepage flow depending on the season, amount of rainfall, surface water runoff, and other factors. Generally, the groundwater level is higher and seepage rate is greater in the wetter winter months (typically November through May).

5.17 Lab Soil Test Results

Laboratory test were conducted on representative soil samples to verify or modify the field soil classification of the units encountered, and to evaluate the general physical properties as well as the engineering characteristics of the soils encountered. The following provides information about the testing procedures performed on representative soil samples and the general condition of subsurface soil conditions encountered:

- Moisture Content (ASTM-D2216-92) test were performed on representative samples. In the upper layer of poorly graded gravel-sand mixes, the moisture content ranges from seven to ten percent.

- Grain Size Analyses (ASTM-D1140-97 and D422-90) were performed on samples collected from the proposed subbase. These tests indicate that soil consists predominantly of silt loam. Passing the #200 sieve result below, sample taken at 3.5- feet below the existing ground.

Test Pit	Percent Passing #200 sieve
1	68

- The result of laboratory tests performed on specific samples are provided at the appropriate sample depth on the individual test pit logs. However, it is important to note that some variation of subsurface conditions may exist. Our geotechnical recommendations are based on our interpretation of these test results.

5.18 Infiltration Testing

No infiltration test was performed.

5.19 Conclusion

This geotechnical site investigation report was prepared in accordance with accepted standard conventional principles and practices of geotechnical engineering. This investigation pertains only to material tested and observed as of the date of this report, and is based upon proposed site development as described in the text herein.

5.20 Limitations

Our recommendations and conclusions are based on the site materials observed, selective laboratory testing, engineering analyses, the design information provided to Engineering Northwest PLLC and our experience as well as engineering judgment. The conclusions and recommendations are professional opinions derived in a manner

consistent with that level of care and skill ordinarily exercised by other members of the profession currently practicing under similar conditions in this area. No warranty is expressed or implied.

The recommendations submitted in this report are based upon the data obtained from the test pits. If soil variations do appear Engineering Northwest PLLC should be requested to reevaluate the recommendations contained in this report and to modify or verify them in writing prior to proceeding with the proposed construction.

LOG OF TEST PIT -1

Surface Elevation: 270
Boring Date: 01/12/2022
Boring Location: 3761706
Dilling Method: Machine

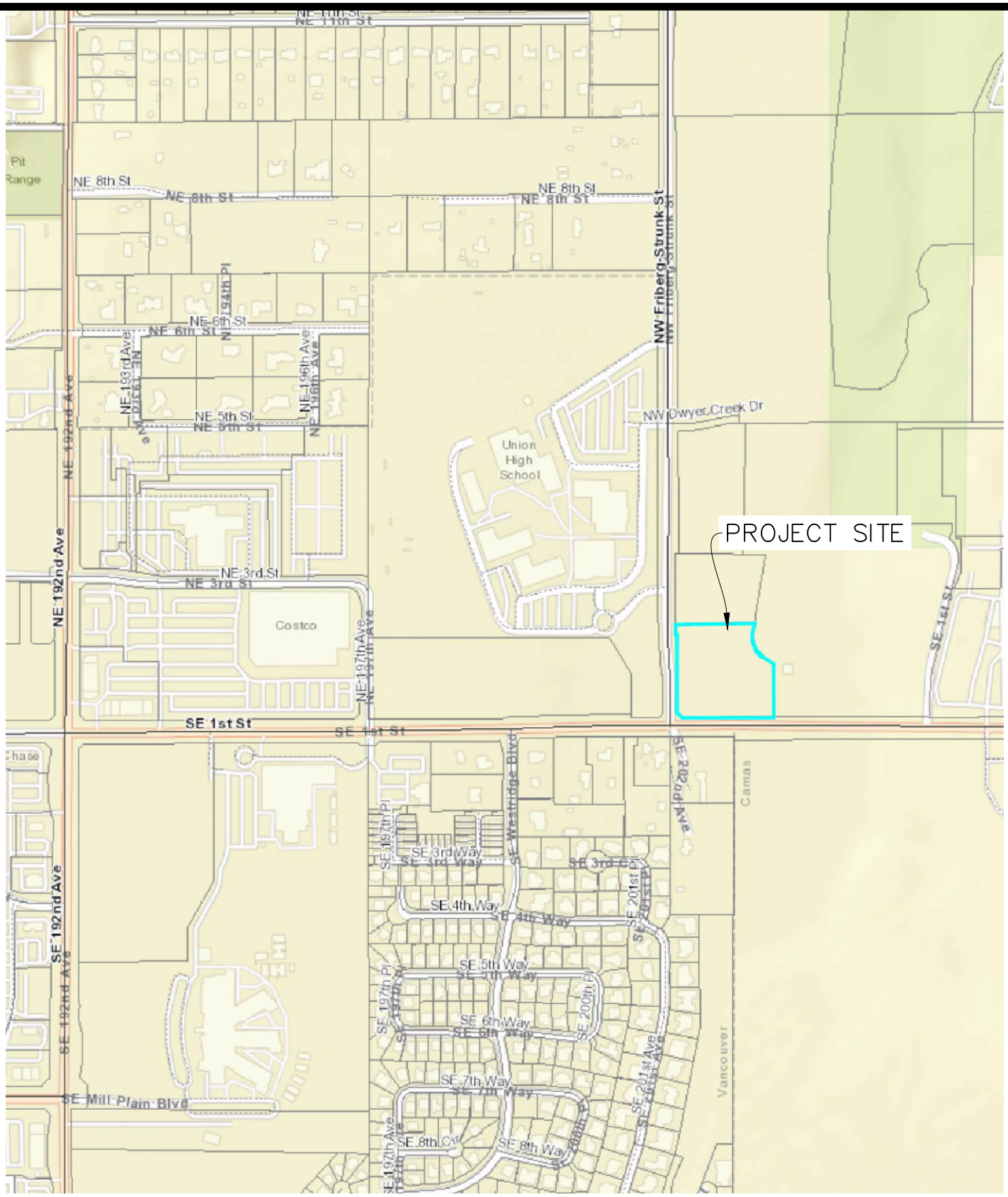
Depth	Remarks	COLOR	MOISTURE	MOISTURE CONTENT (%)	CONSISTENCY	Percent Pass #200	(ASHTO)	SOIL CLASSIFICATION
0		Dark Brown	Moist	8.5	Hard Medium	X ■		High organic content 4 to 12 inches of grass, roots and topsoil Dark brown, low plasticity
5		Brown		11	Medium	68 ■	A-4	Brown SILT with trace to some sand; moist. No ground water @ 6' below existing ground
10								
15								
20								
25								
30								
35							END	Boring completed at and depth of about 6 feet below the ground surface.

LOG OF BORING

ENGINEERING NORTHWEST	Oak Tree Station City of Camas WA	Plate 1

Engineering Northwest
6168 NE HWY 99 St 100
VANCOUVER WA 98685
360-931-3122

SITE VICINITY MAP

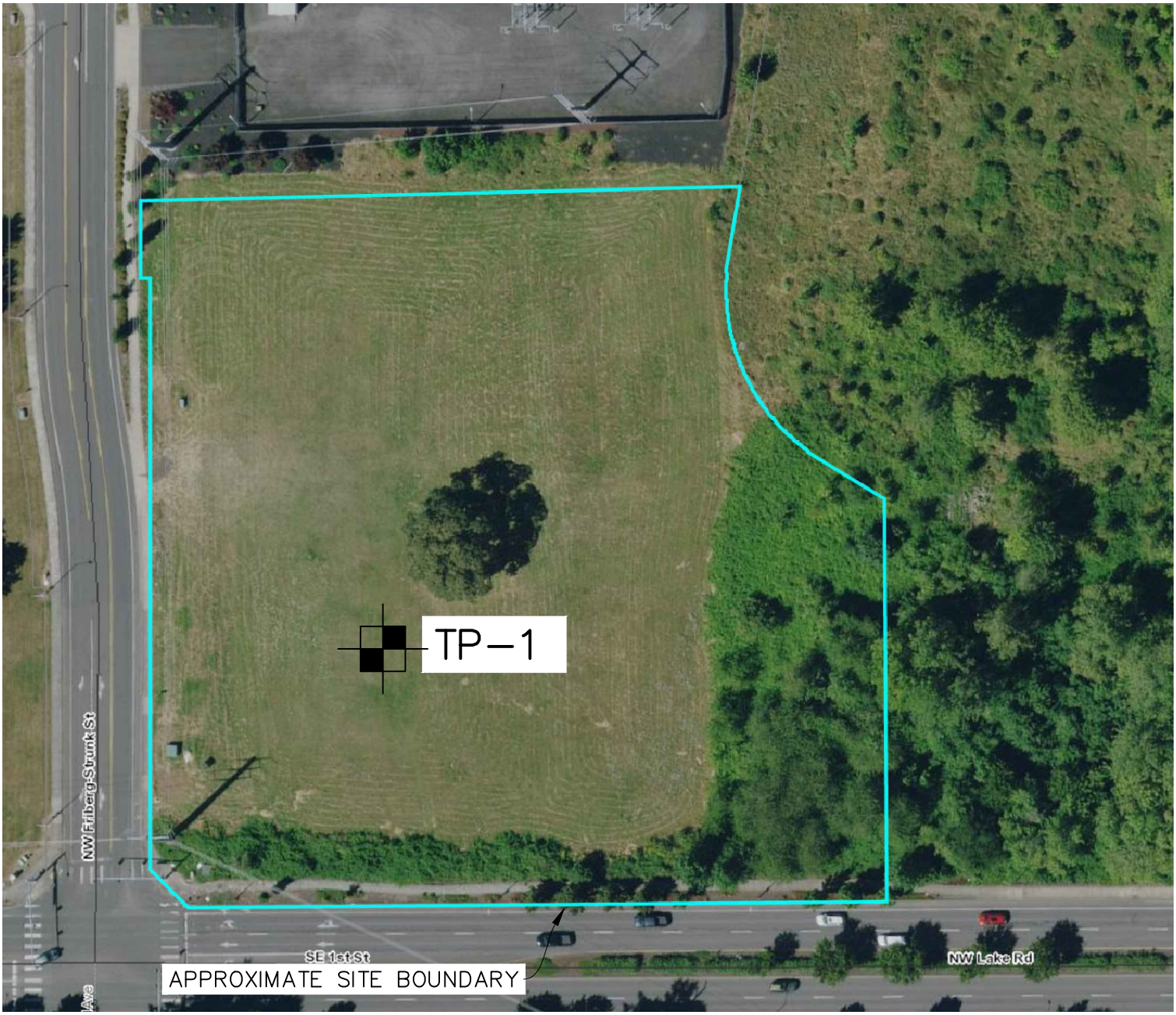


Project: Oak tree Station
Parcel #176162-000

FIGURE 1

Engineering Northwest
6168 NE HWY 99 St 100
VANCOUVER WA 98685
360-931-3122

SITE AERIAL AND EXPLORATION LOCATION

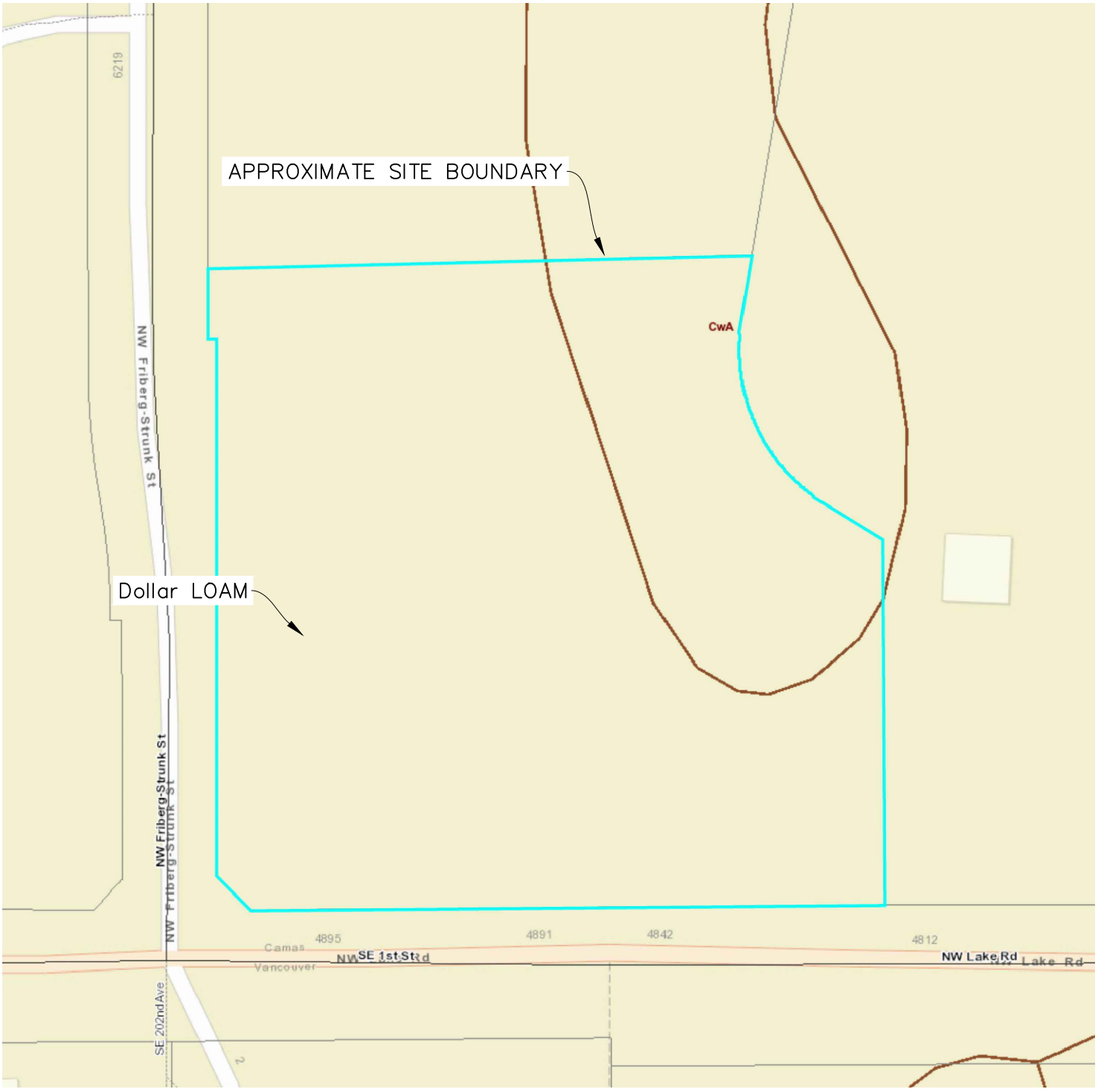


Project: Oak tree Station
Parcel #176162-000

FIGURE 2

Engineering Northwest
6168 NE HWY 99 St 100
VANCOUVER WA 98685
360-931-3122

SOIL MAP



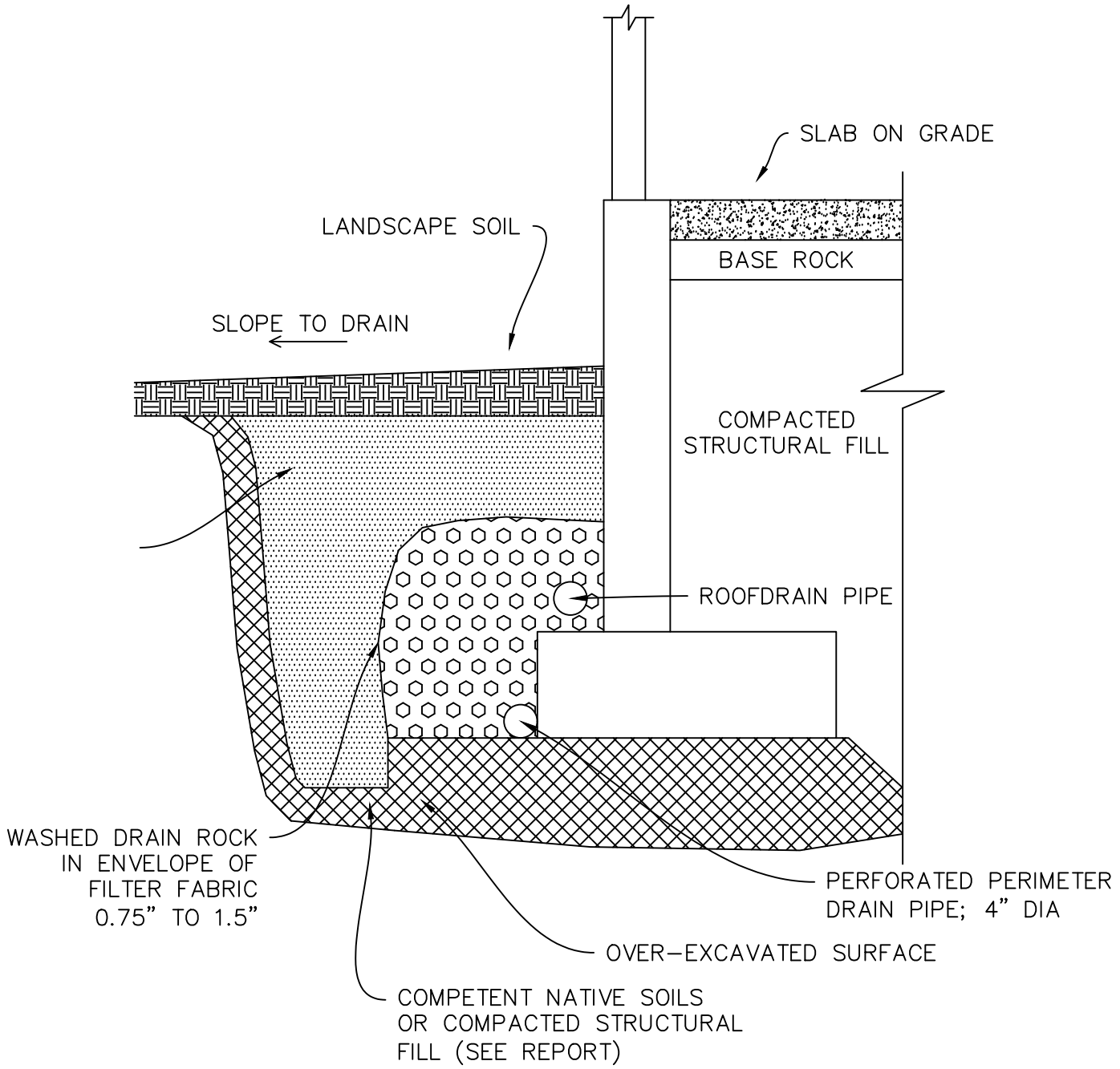
Project: Oak tree Station
Parcel #176162-000

FIGURE 3

Engineering Northwest
6168 NE HWY 99 St 100
VANCOUVER WA 98685
360-931-3122

FOOTING DETAIL

Not to Scale



NOTES:

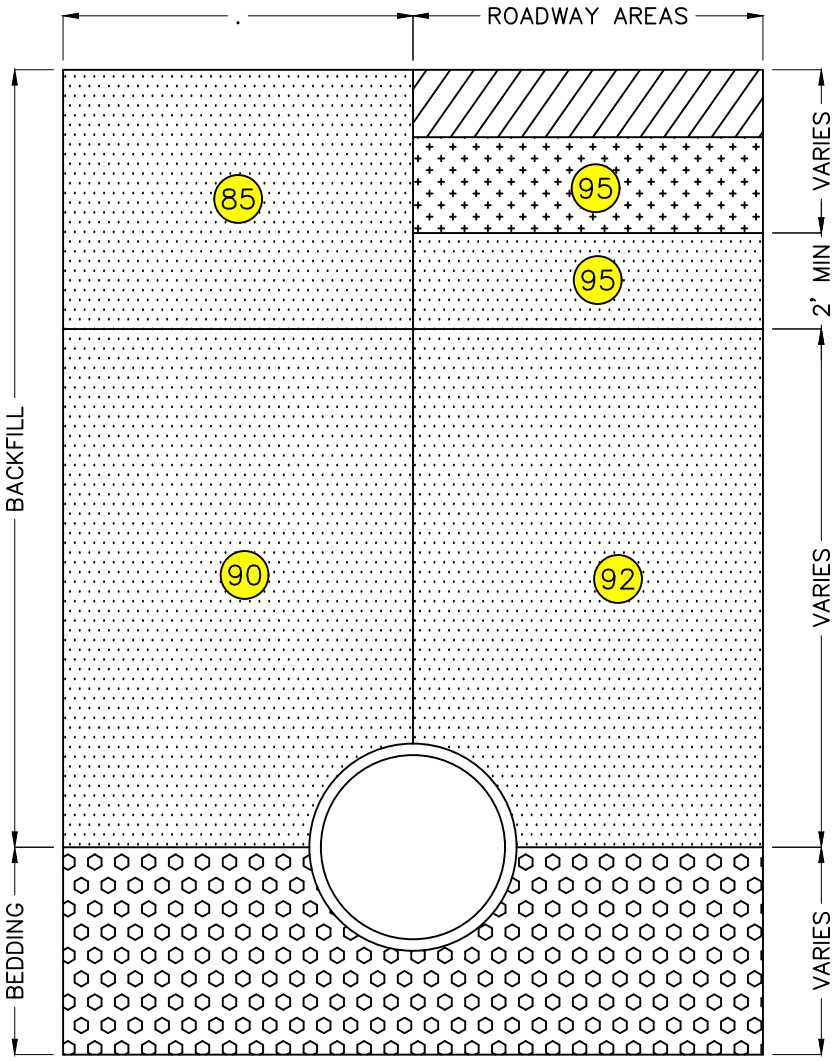
1. PERFORATED OR SLOTTED RIGID PVC PIPE WITH A POSITIVE DRAINAGE GRADIENT
2. FILTER SAND – FINE AGGREGATE FOR PORTLAND CEMENT; SECTION 9=03. 1(2)
3. FILTER FABRIC OPTIONAL IF FILTER SAND USED

Project: Oak tree Station
Parcel #176162-000

FIGURE 4

Engineering Northwest
6168 NE HWY 99 St 100
VANCOUVER WA 98685
360-931-3122

UTILITY TRENCH DETAIL



LEGEND

ASPHALT OR CONCRETE PAVEMENT

ROADWAY BASE MATERIAL OR BASE ROCK

BACKFILL: COMPACTED ON-SITE SOIL OR IMPORTED SELECT FILL MATERIALS AS DESCRIBED IN THE SITE PREPARATION OF THE GENERAL EARTHWORK SECTION OF THE ATTACHED REPORT TEXT

MINIMUM PERCENTAGE OF MAXIMUM LABORATORY DRY DENSITY AS DETERMINED BY ASTM TEST METHOD D1557 (MODIFIER PROCTOR), UNLESS OTHERWISE SPECIFIED IN THE ATTACHED REPORT TEXT

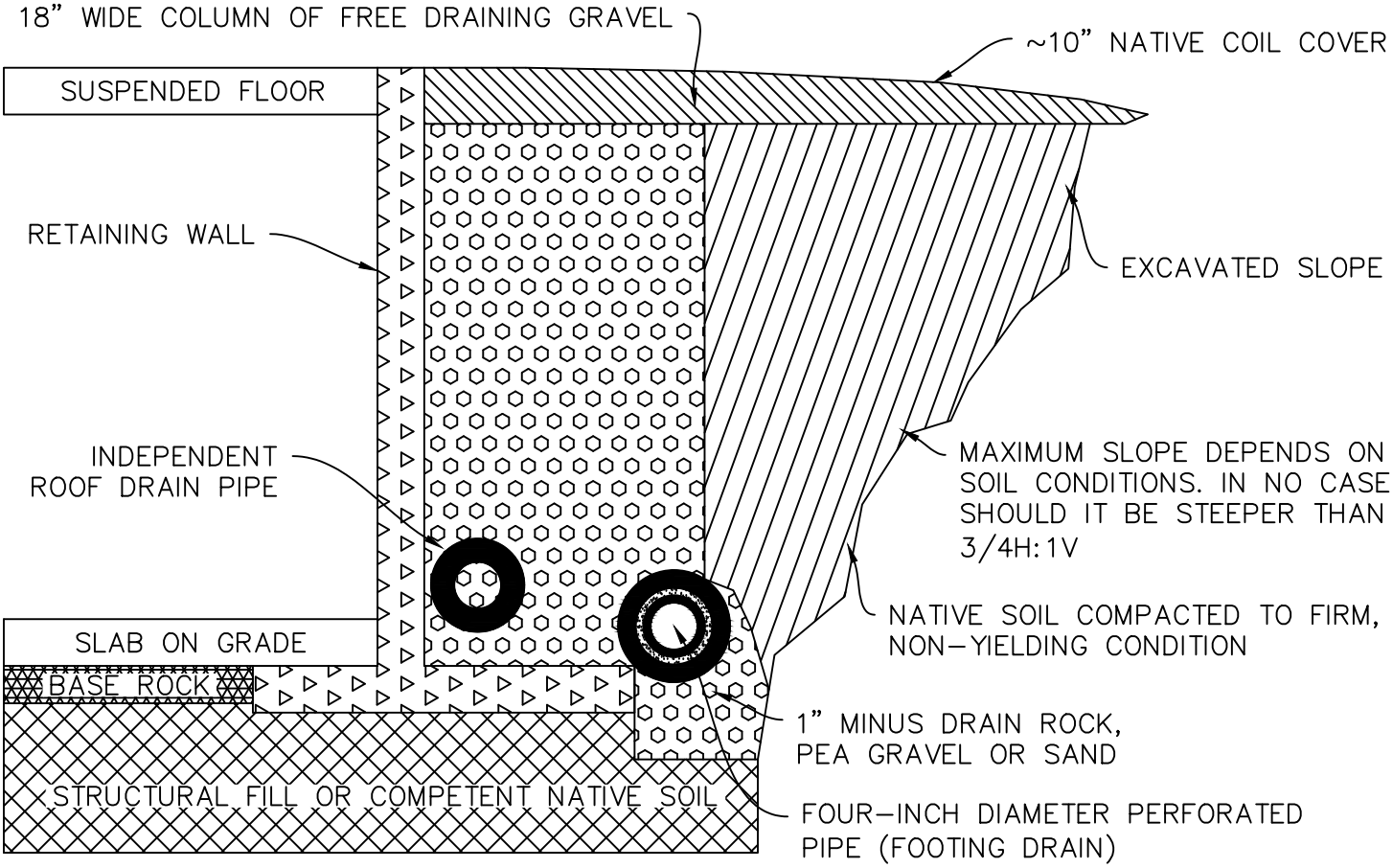
BEDDING MATERIAL: MATERIAL TYPE DEPENDS ON TYPE OF PIPE AND LAYING CONDITIONS. BEDDING SHOULD CONFORM TO THE MANUFACTURER'S RECOMMENDATIONS FOR THE TYPE OF PIPE SELECTED.

Project: Oak tree Station
Parcel #176162-000

FIGURE 5

Engineering Northwest
6168 NE HWY 99 St 100
VANCOUVER WA 98685
360-931-3122

TYPICAL RETAINING WALL BACKFILL & FOOTING DRAINAGE



LEGEND

SURFACE SEAL: NATIVE SOIL OR OTHER LOW PERMEABILITY MATERIALS. SLOPE TO DRAIN AWAY FROM STRUCTURE

GRANULAR BACKFILL SHOULD CONSIST OF FREE DRAINING, ORGANIC FREE GRANULAR MATERIAL WITH A MAXIMUM SIZE OF 3"

DRAIN ROCK SHALL CONSIST OF CLEAN ONE INCH MINUS ROUND ROCK OR PEA GRAVEL WITH LITTLE TO NO FINES COLUMN OF DRAIN ROCK SHALL HAVE A MINIMUM WIDTH OF EIGHTEEN INCHES WITH ~TEN INCHES OF NATIVE SOIL COVER.

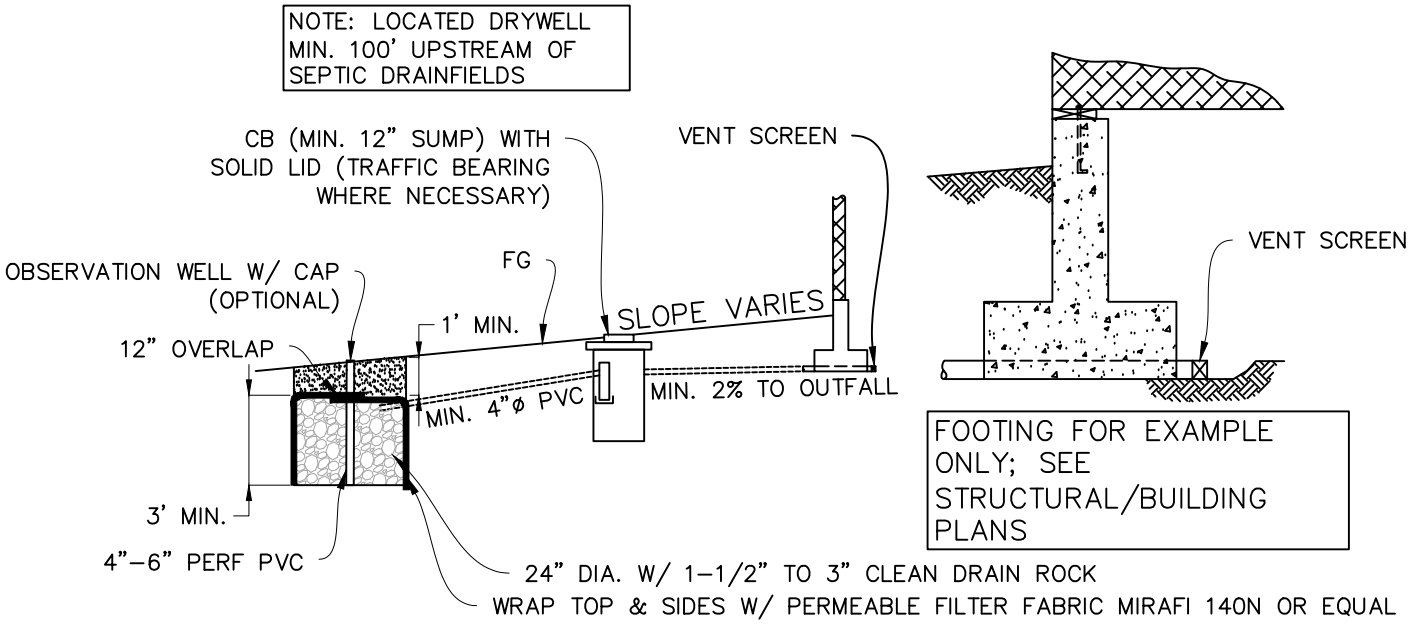
DRAIN PIPE: SMOOTH WALL PERFORATED OR SLOTTED RIGID PVC PIPE LAID WITH PERFORATIONS OR SLOTS FACING DOWN: TIGHT JOINTED; WITH A POSITIVE GRADIENT. DO NOT USE FLEXIBLE CORRUGATED PLASTIC PIPE. DRAIN LINE SHOULD BE BEDDED ON AND SURROUNDED WITH FREE DRAINING 1" MINUS ROCK, PEA GRAVEL, SAND AS DESIRED. THE DRAIN ROCK MAY BE ENCAPSULATED WITH A GEOTECHNICAL DRAINAGE FABRIC AT THE ENGINEER'S DISCRETION

Project: Oak tree Station
Parcel #176162-000

FIGURE 6

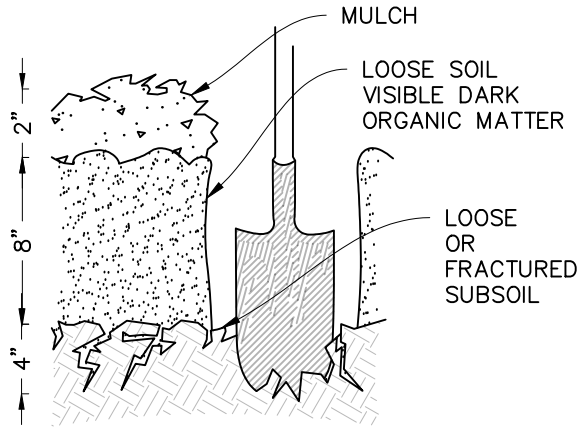
Engineering Northwest
6168 NE HWY 99 St 100
VANCOUVER WA 98685
360-931-3122

LOW POINT DRAIN SOIL QUALITY AND DEPTH



LOW POINT DRAIN

NTS



BMP T5.13 SOIL QUALITY AND DEPTH

NOT TO SCALE

Project: Oak tree Station
Parcel #176162-000

FIGURE 7

Engineering Northwest
6168 NE HWY 99 St 100
VANCOUVER WA 98685
360-931-3122

SOIL LEGEND

MAJOR DIVISIONS			GRAPH SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
Coarse Grained Soils	Gravel and Gravelly Soils	Clean Gravels (little or no fines)		GW gw	Well-Graded Gravels, Gravel-Sand Mixtures Little or no Fines
				GP gp	Poorly-Graded Gravels, Gravel-Sand Mixtures, Little or no Fines
	More than 50% Coarse Fraction Retained on No 4 Sieve	Gravels with Fines (appreciable amount of fines)		GM gm	Silty Gravels, Gravel-Sand-Silt Mixtures
				GC gc	Clayey Gravels, Gravel-Sand-Clay Mixtures
More Than 50% Material Larger Than No 200 Sieve Size	Sand and Sandy Soils	Clean Sand (little or no fines)		SW sw	Well-Graded Sands, Gravelly Sands Little or no Fines
				SP sp	Poorly-Graded Sands, Gravelly Sands Little or no Fines
	More Than 50% Coarse Fraction Passing No 4 Sieve	Sands with Fines (appreciable amount of fines)		SM sm	Silty Sands, Sand-Silt Mixtures
				SC sc	Clayey Sands, Sand-Clay Mixtures
Fine Grained Soils	Silts and Clays	Liquid Limit Less than 50		ML ml	Inorganic Silts and Very Fine Sands, Rock Flour, Silty-Clayey Fine Sands; Clayey Silts w/ slight Plasticity
				CL cl	Inorganic Clays of Low to Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean
				OL ol	Organic Silts and Organic Silty Clays of Low Plasticity
More Than 50% Material Smaller Than No 200 Sieve Size	Silts and Clays	Liquid Limit Greater than 50		MH mh	Inorganic Silts, Micaceous or Diatomaceous Fine Sand or Silty Soils
				CH ch	Inorganic Clays of High Plasticity, Fat Clays
				OH oh	Organic Clays of Medium to High Plasticity, Organic Silts
Highly Organic Soils				PT pt	Peat, Humus, Swamp Soils with High Organic Contents

Topsoil		Humus and Duff Layer
Fill		Highly Variable Constituents

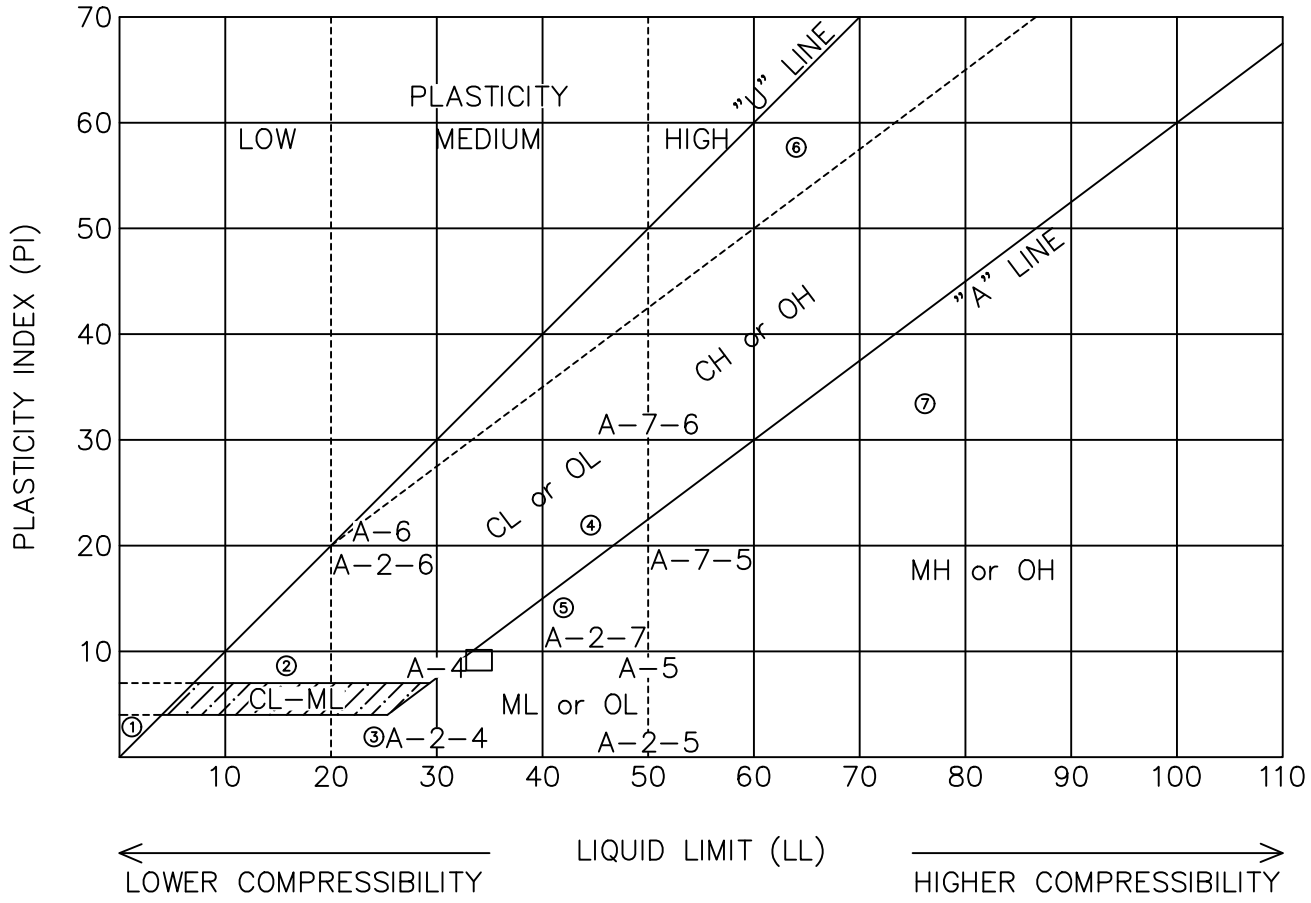
TYPICAL DESCRIPTIONS			
Grab Sample	SPT Drive Sampler (ASTM D1586)	Shelby Tube Push Sampler (ASTM D1587)	Dames and Moore Drive Sampler (ASTM D3550

Project: Oak tree Station
Parcel #176162-000

FIGURE 8

Engineering Northwest
7504 NW 10TH AVENUE
VANCOUVER WA 98685
360-931-3122

ATTERBERG LIMITS



LEGEND

☐ TP – 4 One feet below existing grade

1. COHESIONLESS SOILS
2. INORGANIC CLAYS, LOW PLASTICITY
3. INORGANIC SILTS, LOW COMPRESSIBILITY
4. INORGANIC CLAYS, MEDIUM PLASTICITY
5. INORGANIC SILTS AND ORGANIC CLAYS, MEDIUM COMPRESSIBILITY
6. INORGANIC CLAYS, HIGH PLASTICITY
7. INORGANIC SILTS AND ORGANIC CLAYS, HIGH COMPRESSIBILITY

Project: Oak tree Station
Parcel #176162-000

FIGURE 9

ENGINEERING
NORTHWEST PLLC

SEPA ENVIRONMENTAL CHECKLIST

Purpose of checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

Instructions for applicants:

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals:

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

A. Background [HELP]

1. Name of proposed project, if applicable:

Oak Tree Station

2. Name of applicant:

Oak Tree Station LLC

3. Address and phone number of applicant and contact person:

Paul Williams 6168 NE HWY 99, Vancouver WA, 98665 (360)931-3122

4. Date checklist prepared:

January 24th, 2022

5. Agency requesting checklist:

City of Camas

6. Proposed timing or schedule (including phasing, if applicable):

Construction would likely begin upon approval and procurements of all applicable reviews and permits

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

No plans at this time

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal. This project will impact and mitigate the existing wetland in the southwest corner of the project. One large Oregon White Oak onsite which will remain.

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain. None

10. List any government approvals or permits that will be needed for your proposal, if known. None

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

Oak Tree Station will supply the Camas area with a wide variety of food from around the world & drinks that are local experience. Oak Tree station will also offering amazing Tap Beer / Wine / Cider Cart that operates year round. Why limit yourself to one restaurant when you can have over 20 restaurants at your fingertips.
Oak Tree Station will be will provide indoor and outdoor eating area. The indoor eating area will be design to capture nature lighting into a large open dinner area. The focus point for the outdoor dinner area is the large existing white Oak which the patio area stretches too. The outdoor eating area will included a covered area and uncover area from the sunny warm days. Our family friendly astrosphere ensures that you and your entire family will have an enjoyable experience.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you

are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

B. Environmental Elements [HELP]

1. *Earth* [help]

a. General description of the site: The iste is 14.0 in size and slopes from the middle of the side to the east and west

(circle one): Flat, rolling, hilly, steep slopes, mountainous, other _____

b. What is the steepest slope on the site (approximate percent slope)? The approximate steepest slope is 5%

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils. The navitve soil on site is silty loam

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe. No surface indication or history of undatable soils in the immediate vicinity

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.

Site grading to construct building pads, parking, and other associated improvments. Preliminary estimates show that the site may require more than 3,000 cubic yards of fill. Fill will be imported from an approved site.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Yes, erosion could occur if adequate measure were not implement. Stormwater and Erosion Control Plans will be prepared and implemented by the applicant, which will meet or exceed he requiremens imposed by the City of Camas Code.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Approximately 55% of the site will be covered with impervious surfaces after construction.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

The project will implement temporary erosion conrol measures during the construction to precent silt-laden stormwater from leaving he project site. These will meet the City of Camas and DOE standards. All disturbed area will be planted with permanent vegetation to minimize long term erosion. The project will also construct a stormwater infiliration facility that will meet he City of Camas stormwater code. Refer to preliminary development plan for information regarding stormwater and erosion conrol.

2. *Air* [help]

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

Short term exhaust emissions and dust generated from construction equipment are expected. Long term impacts include standard vehicle emissions. Other emission sourse include building emissions from heating, ventilation and air conditioning.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

No offsite sources of emissions or odors exist that would adversely affect the proposed development

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

Water will be utilized for dust control as needed during construction as well as the implementation of all local, state and federal regulations. The construction of the building will comply with standards of the Environmental Protection Agency and all other applicable local, state and federal standards.

3. Water [help]

a. Surface Water: [help]

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.
To the far east is a small seasonal stream on the adjacent parcel.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

No

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

None

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

No

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

No

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

No

b. Ground Water: [help]

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.

No groundwater will withdraw from a well for drinking water. This project will connect to public water and sewer. The storm water plan for this project proposes the uses of storm filters to treat storm water.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.
None

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

This project proposes to use storm filter catch basin to collection, treat and depose of the storm water runoff. Calculations and information regarding the drainage facilities are included in the Preliminary Stromwater Report.

2) Could waste materials enter ground or surface waters? If so, generally describe.
No

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe. This project will maintain existing drainage patterns a flow discharge. See project stormwater technical report

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

This proposal will meet or exceed City of Camas water quality and quantity standards provided for by the City of Camas Storm water Ordinance. This project may implement Department of Ecology approved Chitosan chemical treatment of runoff during construction. At treatment levels used, any residual trace of Chitosan in the treated stromwater is negligible and results in no negative impacts for downstream fish or riparian habitats.

4. Plants [help]

a. Check the types of vegetation found on the site:

__x__deciduous tree: alder, maple, aspen, other
__x__evergreen tree: fir, cedar, pine, other
__x__shrubs
__x__grass
__x__pasture
____crop or grain
____ Orchards, vineyards or other permanent crops.
___ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
____water plants: water lily, eelgrass, milfoil, other
__x__other types of vegetation

b. What kind and amount of vegetation will be removed or altered?
All vegetation will be removed form areas depicted for the future buildings, parking, utilities and other on site improvements during construction activates as shown on the Preliminary Site Plan unless otherwise shown to remain on the Preliminary Landscape Plan.

c. List threatened and endangered species known to be on or near the site.
None to the Applicant's knowledge.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:
A landscaping plan, with the proposed use of native plants, will be prepared for the site as required by City of Camas Code.

e. List all noxious weeds and invasive species known to be on or near the site.
None to the Applicant's knowledge

5. Animals [help]

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site.

Examples include:

birds: hawk, heron, eagle, songbirds, other:
mammals: deer, bear, elk, beaver, other:
fish: bass, salmon, trout, herring, shellfish, other _____
Songbirds and rodents

b. List any threatened and endangered species known to be on or near the site.
None to the Applicant's knowledge

c. Is the site part of a migration route? If so, explain. No

d. Proposed measures to preserve or enhance wildlife, if any:
Landscaping, which includes trees, shrubs and groundcovers, will be installed that will provide some habitat for wildlife.

e. List any invasive animal species known to be on or near the site.
None to the Applicant's knowledge

6. Energy and Natural Resources [help]

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc. This project will meet Washington state energy compliance standards

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:
All construction on the site will be designed to comply with the state adopted codes and policies related to energy conservation.

7. Environmental Health [help]

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

1) Describe any known or possible contamination at the site from present or past uses.
None to the Applicant's knowledge

2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.
None to the Applicant's knowledge

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.
None to the Applicant's knowledge

4) Describe special emergency services that might be required.

Additional police and fire/emergency may be required. No special emergency services will be required.

5) Proposed measures to reduce or control environmental health hazards, if any:

The Applicant will comply with applicable local, state and federal regulations during construction and operation of the project. All construction will be inspected according to industry requirements and standards.

b. Noise

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?
Existing traffic noise from adjacent roadways exist, but it should not affect the proposed project.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.
Development of the site would create short-term construction noise. Costomers will create vehicle noise in the long-term.

3) Proposed measures to reduce or control noise impacts, if any:
Construction activities will not occur after 8:00 p.m. or before 7 a.m

8. Land and Shoreline Use [help]

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe. No existing single family homes on-site.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use? No

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how:
None to the applicant's knowledge

c. Describe any structures on the site. Three existing single family homes and outbuildings

d. Will any structures be demolished? If so, what?
None to the applicant's knowledge

e. What is the current zoning classification of the site? development are zoned Community Commercial

f. What is the current comprehensive plan designation of the site? zoned Community Commercial

g. If applicable, what is the current shoreline master program designation of the site?
None to the applicant's knowledge

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.
No

i. Approximately how many people would reside or work in the completed project? 50 employees

j. Approximately how many people would the completed project displace?
None

j. Proposed measures to avoid or reduce displacement impacts, if any:
None

L. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:
The proposed use is consistent with the comprehensive plan and exisisting zoning

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any:
None

9. Housing [help]

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing. None

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing. No existing homes onsite

c. Proposed measures to reduce or control housing impacts, if any:
None

10. Aesthetics [help]

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

It is estimated that the buildings will be 26 feet tall. The principle exterior building materials will be hardi plank and other materials.

b. What views in the immediate vicinity would be altered or obstructed?
Views across the site may be obstructed with the construction of the buidings

b. Proposed measures to reduce or control aesthetic impacts, if any:
Landscaping and artichtectural elements

11. Light and Glare [help]

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?
Typical commercial parkng lot and building lighting will occur in the nighttime hours.

b. Could light or glare from the finished project be a safety hazard or interfere with views?
The installation of illuminated materials will minimize dispersion on the site and will not conistute a safety hazard

c. What existing off-site sources of light or glare may affect your proposal?
There are some amounts of light level gnereated off site but they are unlikely to affect the proposal

d. Proposed measures to reduce or control light and glare impacts, if any:
The lighting plan for the proposal will be designed to minimize off site glare

12. Recreation [help]

a. What designated and informal recreational opportunities are in the immediate vicinity?
Walking trail located around the outdoor eating area

b. Would the proposed project displace any existing recreational uses? If so, describe.
None

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:
None

13. Historic and cultural preservation [help]

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers ? If so, specifically describe.
None

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

There are no known historic, archaeological, scientific or cultural evidence or landmarks on or next to the site.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

If any cultural artifacts are discovered during construction on the site, all development will cease and all appropriate federal, state, county and tribal agencies will be contacted.

14. Transportation [help]

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any. This project will access NW Friberg-Strunk Street which is a public street

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop? No public transit system in the area

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate? 97 parking stalls

d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private). The project will access onto NW Friberg-Strunk Street which fronts the project. Currently frontage improvements exist along NW Friberg-Strunk Street and SE 1st Street.

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe. None

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates? This project will generate 1,400 daily vehicular trips. Small percent will be deliver trucks. Data used to estimate traffic generation is Institute of Transportation Engeering manual

g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe. No

h. Proposed measures to reduce or control transportation impacts, if any: This project will pay City of Camas traffic impact fees

15. Public Services [help]

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.

The need for additional fire/emergency and police protection may be needed

b. Proposed measures to reduce or control direct impacts on public services, if any.

Provide urban utilities, pay taxes and imact fees

16. Utilities [help]

a. Circle utilities currently available at the site:
electricity, natural gas, ***water***, ***refuse service***, telephone, ***sanitary sewer***, septic system, other _____

c. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

Electricity –Clark Public Utilities
Sewer –City of Camas
Telephone–Qwest
Water –City of Camas
Refuse Service –Waste Connections
Natural Gas –Northwest Natural

C. Signature [HELP]

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: _____

Name of signee Paul Williams P.E.

Position and Agency/Organization Civil Engineer, Engineering Northwest PLLC

Date Submitted: _____

D. Supplemental sheet for nonproject actions [HELP]

(**IT IS NOT NECESSARY** to use this sheet for project actions)

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, be aware of the extent the proposal, or the types of activities likely to result from the proposal, would affect the item at a greater intensity or at a faster rate than if the proposal were not implemented. Respond briefly and in general terms.

1. How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?

Proposed measures to avoid or reduce such increases are:

2. How would the proposal be likely to affect plants, animals, fish, or marine life?

Proposed measures to protect or conserve plants, animals, fish, or marine life are:

3. How would the proposal be likely to deplete energy or natural resources?

Proposed measures to protect or conserve energy and natural resources are:

4. How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection; such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?

Proposed measures to protect such resources or to avoid or reduce impacts are:

5. How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?

Proposed measures to avoid or reduce shoreline and land use impacts are:

6. How would the proposal be likely to increase demands on transportation or public services and utilities?

Proposed measures to reduce or respond to such demand(s) are:

7. Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.

Notice of Proposed Devleopment

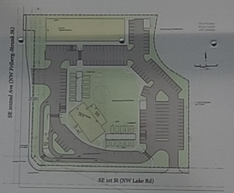
"Oak Tree Station"

Project Description:

Oak Tree Station will supply the Camas area with a wide variety of food from around the world & drinks that are local experience. Oak Tree station will also offering amazing Tap Beer / Wine / Cider Cart that operates year-round. Why limit yourself to one restaurant when you can have over 20 restaurants at your fingertips. Oak Tree Station will be will provide indoor and outdoor eating areas. The indoor eating area will be design to capture nature lighting into a large open dinner area. The focus point for the outdoor dinner area is the large existing white Oak which the patio area stretches too. The outdoor eating area will include a covered area and uncover area for the sunny warm days. Our family friendly astrosphere ensures that you and your entire family will have an enjoyable experience. The project is also proposing a 12,574 square-foot commercial building which will be located on the project north boundary line.

Applications applied for with City:

Conditional use permit;
Site Plan Approval



Public Hearing Schedule:

(will be filed in 14 or more days prior to a hearing)

Hearing Date/Time: 9-7-22 4:00 PM

Hearing Location: 616 NE 4th Ave.,
Camas, WA 98607

For information regarding this project contact::

Applicant contact: Paul Williams,
Engineering Northwest PLLC
6168 NE HWY 99 Suite 103
Phone: 360-931-3122

City Contact: Madeline Sutherland,
City of Camas Community Development Dept.
616 NE 4th Avenue Camas, WA 98607
Phone: 360-817-7237
Email: msutherland@cityofcamas.us

OAK TR
STATION

SPRING 2023

A PLACE WHERE COMMUNITY GATHERS

CREATIVE EXCEPTIONAL + DIVERSE FOOD WANTED

OAKTREESTATION.COM

Occupant PID 176160000
19814 SE 1ST ST
CAMAS, WA 98607

Occupant PID 177449000
20703 SE 1ST AVE
CAMAS, WA 98607

Occupant PID 177441015
20019 SE 1ST ST
CAMAS, WA 98607

Occupant PID 176189000
6100 NW FRIBERG-STRUNK ST
CAMAS, WA 98607

Occupant PID 176188000
20700 SE 1ST ST
CAMAS, WA 98607

Occupant PID 177468000
20117 SE 1ST ST
CAMAS, WA 98607

Occupant PID 177485000
20101 SE 1ST ST
CAMAS, WA 98607

Occupant PID 177480000
107 SE 202ND AVE
CAMAS, WA 98607

Occupant PID 176190000
6250 NW FRIBERG-STRUNK ST
CAMAS, WA 98607

Occupant PID 176165000
6201 NW FRIBERG-STRUNK ST
CAMAS, WA 98607

PID	Situs Address			
176160000	19814 SE 1ST ST	CAMAS	WA	98607
177449000	20703 SE 1ST AVE	CAMAS	WA	98607
177441015	20019 SE 1ST ST	CAMAS	WA	98607
176162000			WA	0
176189000	6100 NW FRIBERG-STRUNK ST	CAMAS	WA	98607
176188000	20700 SE 1ST ST	CAMAS	WA	98607
177468000	20117 SE 1ST ST	CAMAS	WA	98607
177485000	20101 SE 1ST ST	CAMAS	WA	98607
177480000	107 SE 202ND AVE	CAMAS	WA	98607
176190000	6250 NW FRIBERG-STRUNK ST	CAMAS	WA	98607
176165000	6201 NW FRIBERG-STRUNK ST	CAMAS	WA	98607

This document was created by the Clark County, Washington Geographic Information System

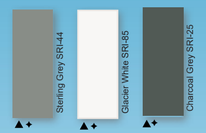
Number of Records 11
Number of Pages 1
Date Created 3/14/2022
Employee Bob Pool
Employee Name Bob Pool

Exhibit 12 CUP22-01

OAK TREE STATION

COLOR CONCEPTS

Sterling Grey / Glacier White / Charcoal Grey



Walls Roof

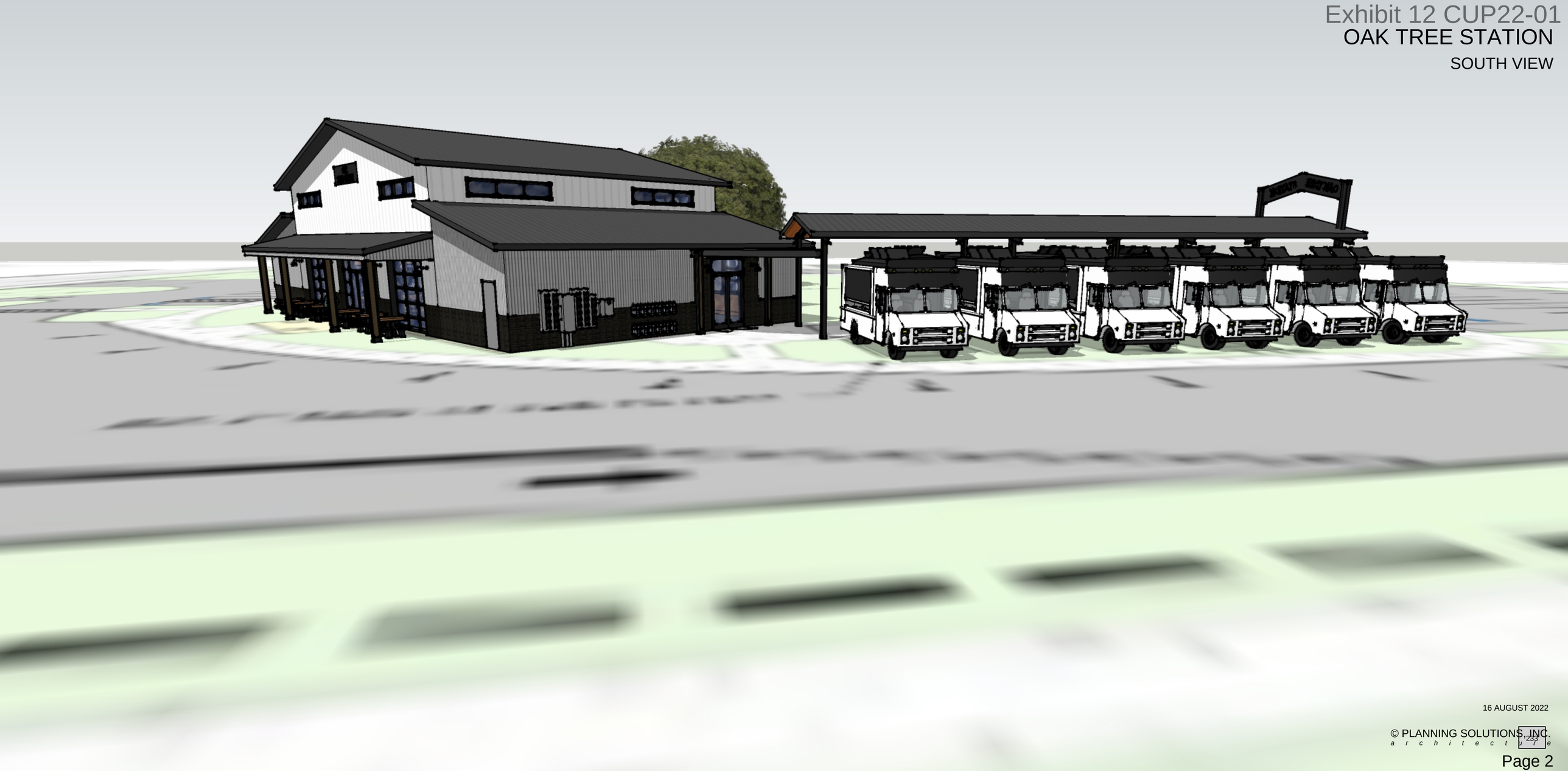
16 AUGUST 2022

© PLANNING SOLUTIONS, INC.

architecture

OAK TREE STATION

SOUTH VIEW



16 AUGUST 2022

© PLANNING SOLUTIONS, INC.

OAK TREE STATION

WEST VIEW

16 AUGUST 2022

© PLANNING SOLUTIONS, INC.
a r c h i t e c t u r e

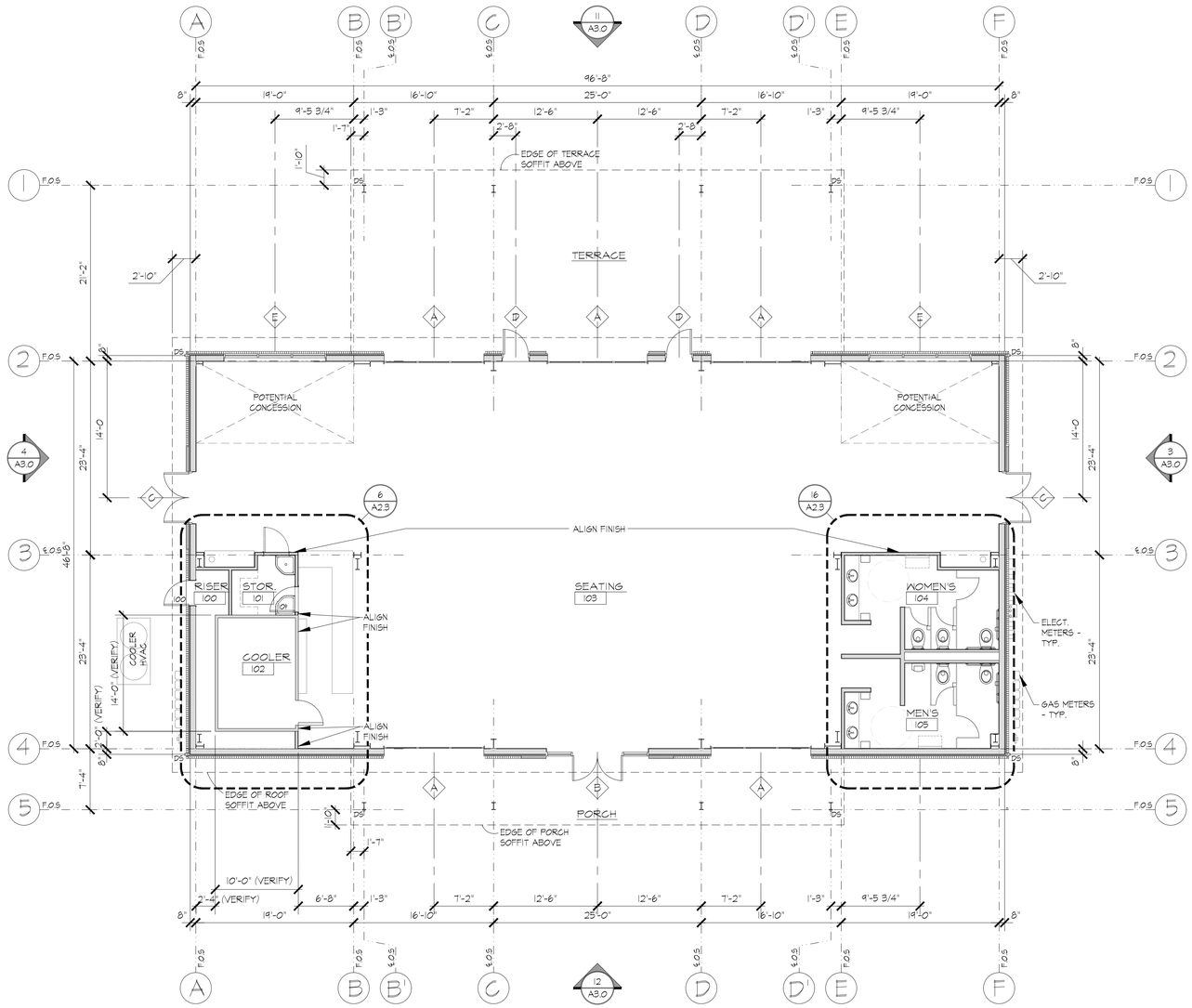
OAK TREE STATION

EAST VIEW

20 JUNE 2022

© PLANNING SOLUTIONS, INC.

architecture



12 FLOOR PLAN
SCALE: 1/8" = 1'-0"

© COPYRIGHT 2019, PLANNING SOLUTIONS, INC. NO PART OF THIS DRAWING MAY BE COPIED OR REPRODUCED WITHOUT WRITTEN PERMISSION OF PLANNING SOLUTIONS, INC.

Planning Solutions, Inc.
Creating Solutions to Complex Issues
4400 NE 77th Avenue
Suite 275
VANCOUVER, WA 98662
VOICE: 360-750-9000 FAX: 360-713-6102
www.planningsolutionsinc.com

PRELIMINARY
NOT FOR CONSTRUCTION
SUBJECT TO APPROVAL

OAK TREE STATION

NW LAKE RD & NW FRIBERG-STRUNK ST
CAMAS, WASHINGTON

DRAWN: md	CHECKED: MD
SCALE: AS NOTED	DATE: 07/20/22
JOB #:	16-1388 DD REV. 1

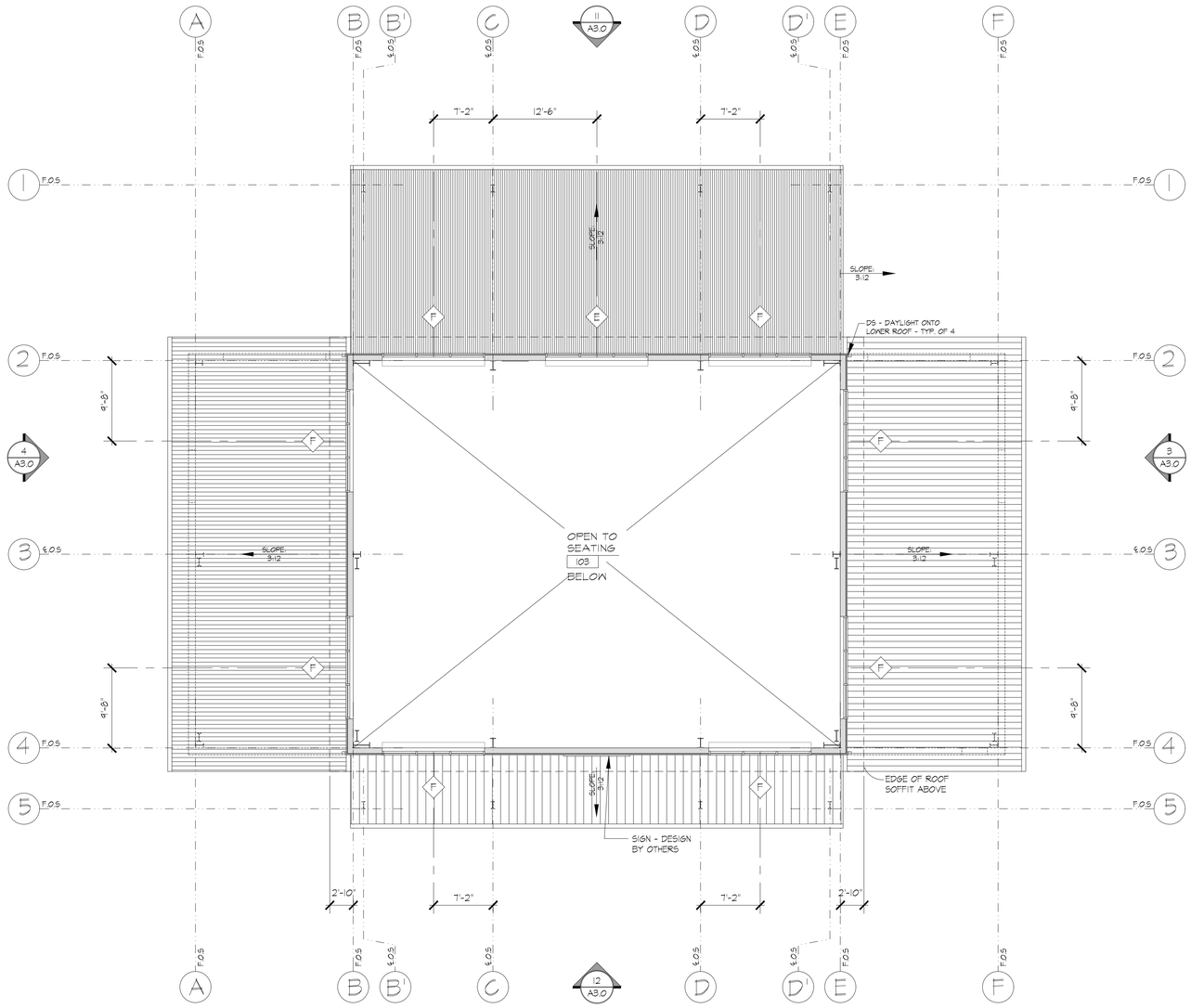
ISSUED FOR: DESIGN DEVELOPMENT

REVISIONS:
1
2
3
4
5
6

SHEET NAME:
FLOOR PLAN

SHEET #:
A2.0

C:\Users\Mark\Desktop\22-1709 Oak Tree Station\3.0 Architectural Process\3.03 Design Development\1709 Oak Tree 6-22-22.dwg, 7/20/2022 10:04:25 AM, AutoCAD PDF (General Documentation).pc3



12 CLERESTORY PLAN
SCALE: 1/8" = 1'-0"

© COPYRIGHT 2019, PLANNING SOLUTIONS, INC. NO PART OF THIS DRAWING MAY BE COPIED OR REPRODUCED WITHOUT WRITTEN PERMISSION OF PLANNING SOLUTIONS, INC.

Planning Solutions, Inc.
Creating Solutions to Complex Issues
4400 NE 77th Avenue
Suite 275
VANCOUVER, WA 98662
VOICE: 360-750-9000 FAX: 360-713-6102
www.planningsolutionsinc.com

PRELIMINARY
NOT FOR CONSTRUCTION
SUBJECT TO APPROVAL

OAK TREE STATION

NW LAKE RD & NW FRIBERG-STRUNK ST
CAMAS, WASHINGTON

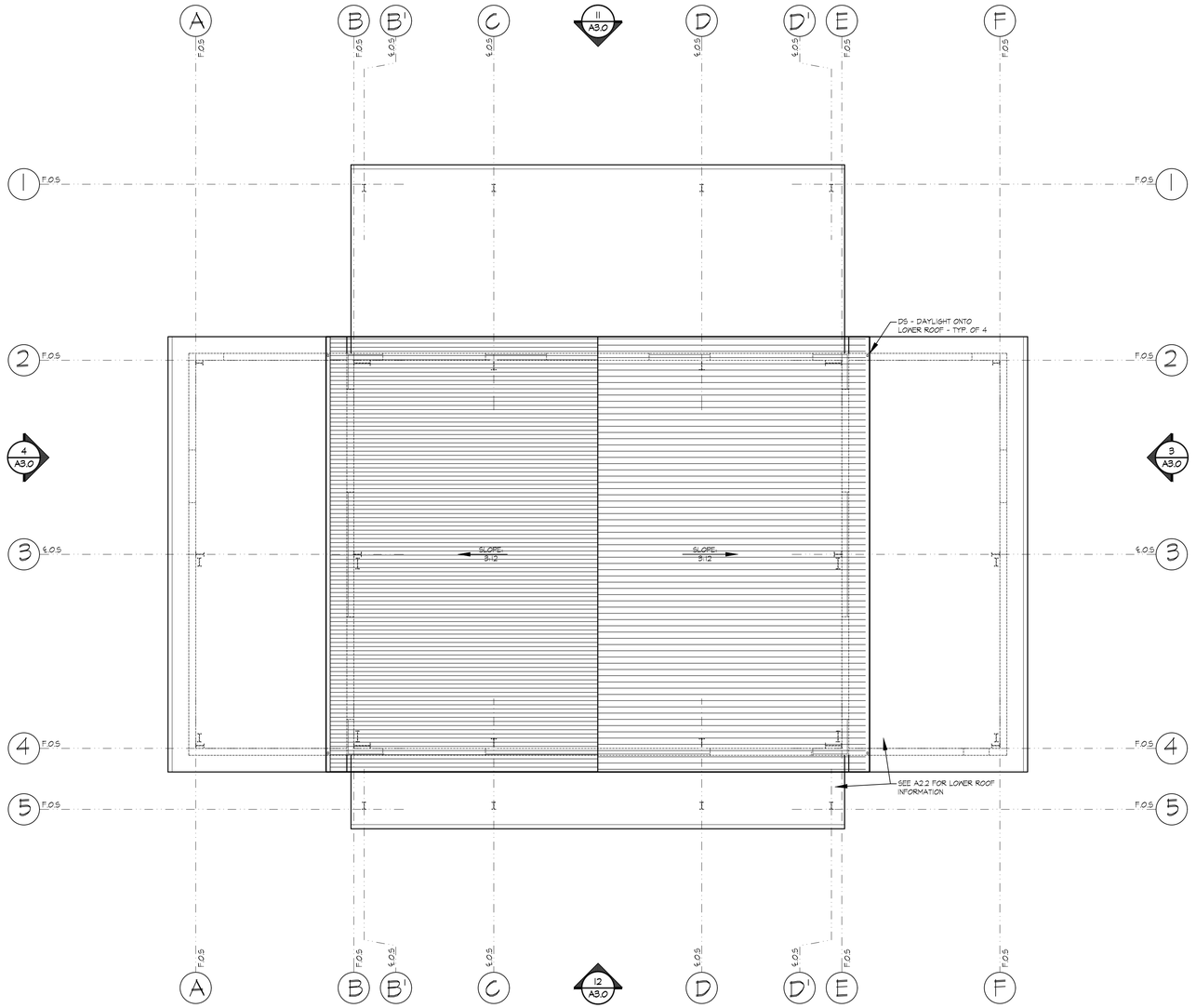
DRAWN: md	CHECKED: MD
SCALE: AS NOTED	DATE: 07/20/22
JOB #:	16-1388 DD REV. 1
ISSUED FOR:	DESIGN DEVELOPMENT
REVISIONS:	

SHEET NAME:
CLERESTORY PLAN

SHEET #:
A2.1

SHEET 1 OF 237

THESE INSTRUMENTS OF SERVICE SHALL NOT BE USED AS THE BASIS FOR A FINANCIAL EVALUATION OR CONSTRUCTION COST ESTIMATING. NO ASSURANCES ARE OFFERED OR IMPLIED AS TO THE OVERALL FEASIBILITY OF THE PROJECT. ALL WORK SHALL BE SUBJECT TO ELEVATION AND FINAL APPROVAL BY ALL APPROPRIATE LOCAL, STATE AND LOCAL AGENCIES AND SHALL CONFORM TO THE PROFESSIONAL SEAL AND SIGNATURE OF ALL LICENSED DESIGN PROFESSIONALS PRIOR TO WHICH THESE DOCUMENTS. PLANNING SOLUTIONS, INC. AND ITS CONSULTANTS SHALL BE DEEMED THE AUTHORS AND OWNERS OF THEIR RESPECTIVE INSTRUMENTS OF SERVICE AND SHALL RETAIN ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS, INCLUDING COPYRIGHTS.



12 CLERESTORY PLAN
SCALE: 1/8" = 1'-0"

© COPYRIGHT 2019, PLANNING SOLUTIONS, INC. NO PART OF THIS DRAWING MAY BE COPIED OR REPRODUCED WITHOUT WRITTEN PERMISSION OF PLANNING SOLUTIONS, INC.

Planning Solutions, Inc.
Creating Solutions to Complex Issues
4400 NE 77th Avenue
Suite 275
VANCOUVER, WA 98662
VOICE: 360-750-9000 FAX: 360-713-6102
www.planningsolutionsinc.com

PRELIMINARY
NOT FOR CONSTRUCTION
SUBJECT TO APPROVAL

OAK TREE STATION

NW LAKE RD & NW FRIBERG-STRUNK ST
CAMAS, WASHINGTON

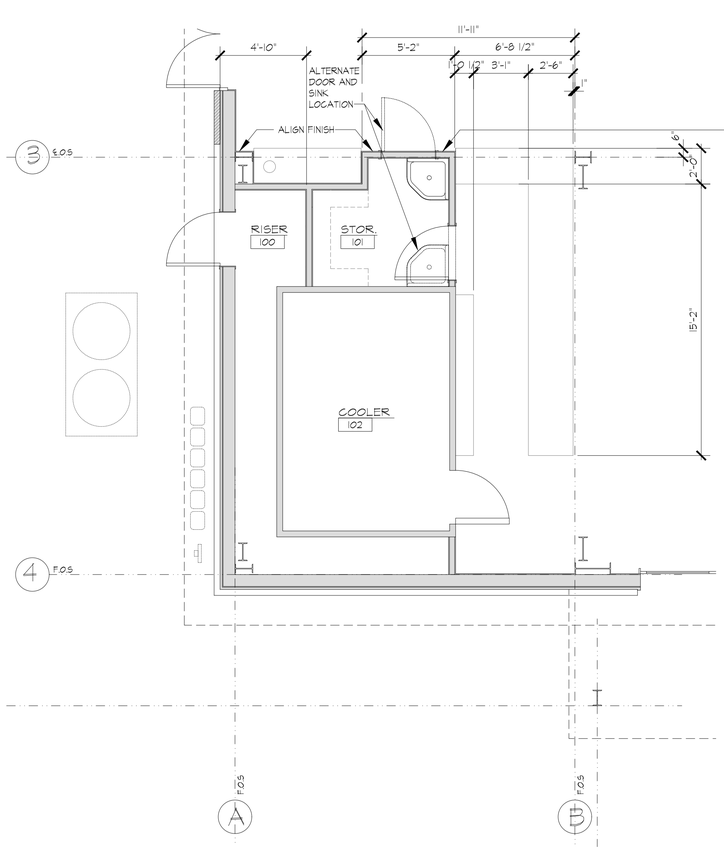
DRAWN: md	CHECKED: MD
SCALE: AS NOTED	DATE: 07/20/22
JOB #:	16-1388 DD REV. 1
ISSUED FOR:	DESIGN DEVELOPMENT

REVISIONS:
1
2
3
4
5
6

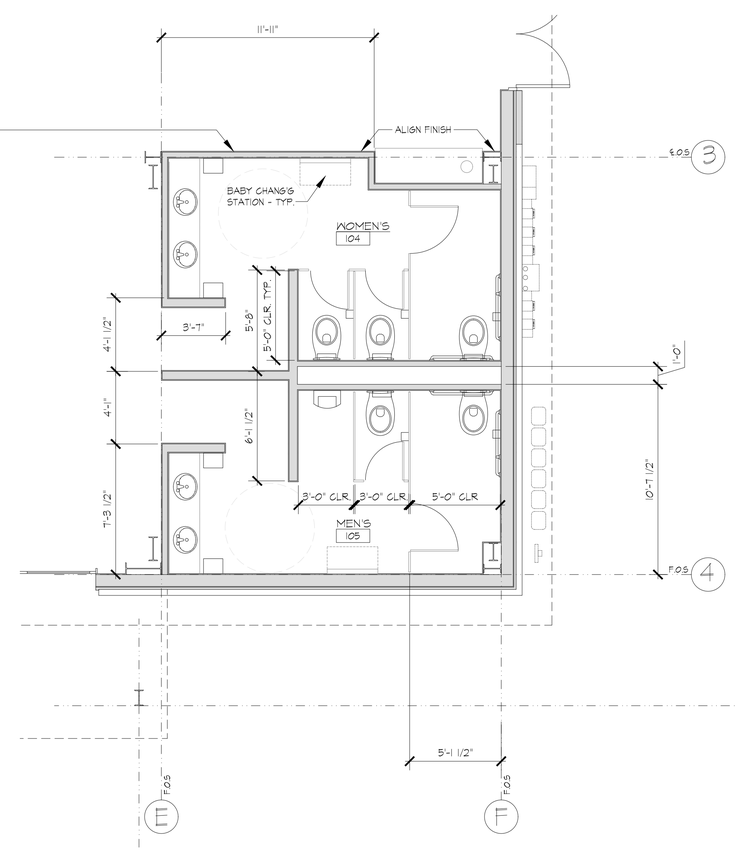
SHEET NAME:
ROOF PLAN

SHEET #:
A2.2
SHEET 1 OF

IDEAS, DESIGNS AND PLANS INDICATED OR REPRESENTED BY THIS DRAWING AND THE WRITTEN MATERIAL APPEARING HEREIN CONSTITUTE ORIGINAL AND UNPUBLISHED WORK OF PLANNING SOLUTIONS, INC. AND THE USE OF THESE IDEAS, DESIGNS AND PLANS FOR ANY PROJECT OTHER THAN THE PROJECT FOR WHICH THEY HAVE BEEN PREPARED IS PROHIBITED. THEY ARE NOT TO BE CHANGED OR COPIED IN ANY FORM OR MANNER WHATSOEVER NOR ARE THEY TO BE ASSIGNED TO ANY THIRD PARTY WITHOUT FIRST OBTAINING THE EXPRESS WRITTEN PERMISSION AND CONSENT OF PLANNING SOLUTIONS, INC. IN THE EVENT OF UNAUTHORIZED REUSE OF THESE PLANS BY THE OWNER OR BY OTHERS, THE OWNER AGREES TO INDEMNIFY AND HOLD HARMLESS PLANNING SOLUTIONS, INC. FROM ANY CLAIMS, LIABILITY OR COSTS. IN THE EVENT THAT CHANGES ARE MADE IN THESE PLANS WITHOUT THE PROFESSIONAL ADVICE AND CONSENT OF PLANNING SOLUTIONS, INC., THE OWNER AGREES TO INDEMNIFY AND HOLD HARMLESS PLANNING SOLUTIONS, INC. FROM ANY CLAIMS, LIABILITY OR COSTS. IF THIS DRAWING IS PROVIDED IN CONJUNCTION WITH A CONCEPTUAL DESIGN, THESE INSTRUMENTS OF SERVICE SHALL NOT BE USED AS THE BASIS FOR A FINANCIAL EVALUATION OR CONSTRUCTION COST ESTIMATE. ALL DRAWINGS, MODELS AND COMPUTER FILES ARE INSTRUMENTS OF SERVICE AND SHALL REMAIN THE PROPERTY OF THEIR RESPECTIVE INSTRUMENTS OF SERVICE AND SHALL RETAIN ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS, INCLUDING COPYRIGHTS.



6 ENLARGED STORAGE PLAN
SCALE: 1/4" = 1'-0"



16 ENLARGED RESTROOMS PLANS
SCALE: 1/4" = 1'-0"

© COPYRIGHT 2019, PLANNING SOLUTIONS, INC., NO PART OF THIS DRAWING MAY BE COPIED OR REPRODUCED WITHOUT WRITTEN PERMISSION OF PLANNING SOLUTIONS, INC.

Planning Solutions, Inc.
Creating Solutions to Complex Issues
4400 NE 77th Avenue
Suite 275
VANCOUVER, WA 98662
VOICE: 360-750-9000 FAX: 360-713-6102
www.planningsolutionsinc.com

PRELIMINARY
NOT FOR CONSTRUCTION
SUBJECT TO APPROVAL

OAK TREE STATION

NW LAKE RD & NW FRIBERG-STRUNK ST
CAMAS, WASHINGTON

DRAWN: md	CHECKED: MD
SCALE: AS NOTED	DATE: 07/20/22
JOB #:	16-1388 DD REV. 1

ISSUED FOR: DESIGN DEVELOPMENT

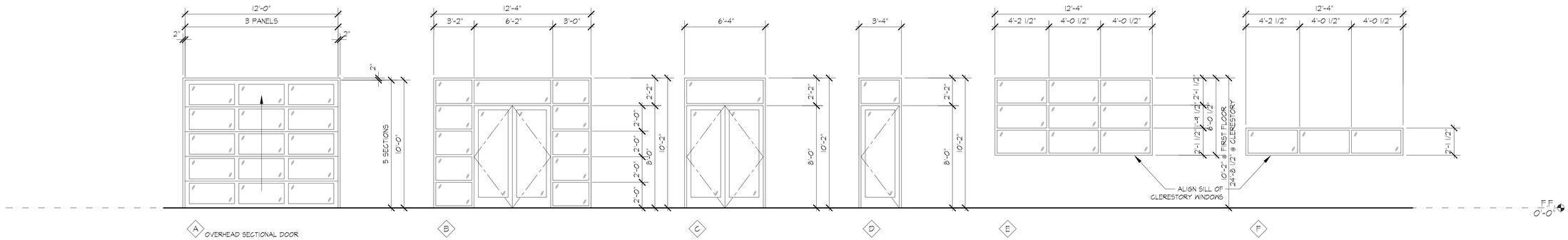
REVISIONS:
1
2
3
4
5
6

SHEET NAME:
ENLARGED PLANS

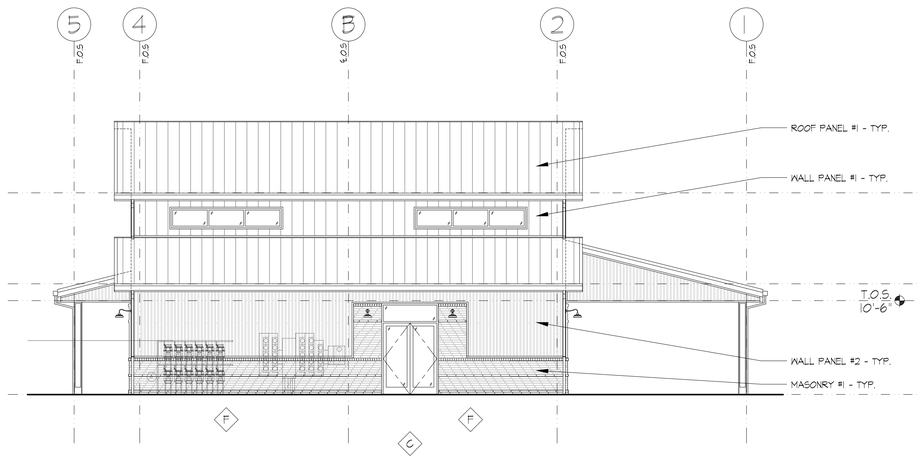
SHEET #:
A2.3

SHEET 1 OF 239

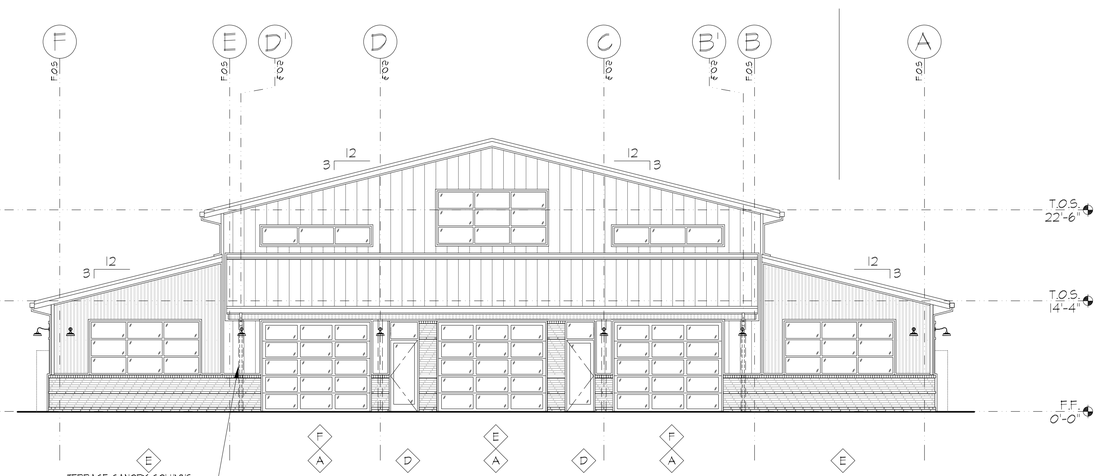
C:\Users\Mark\Desktop\22-1709 Oak Tree Station\3.0 Architectural Process\3.03 Design Development\1709 Oak Tree 6-22-22.dwg, 7/20/2022 10:04:40 AM, AutoCAD PDF (General Documentation).pc3



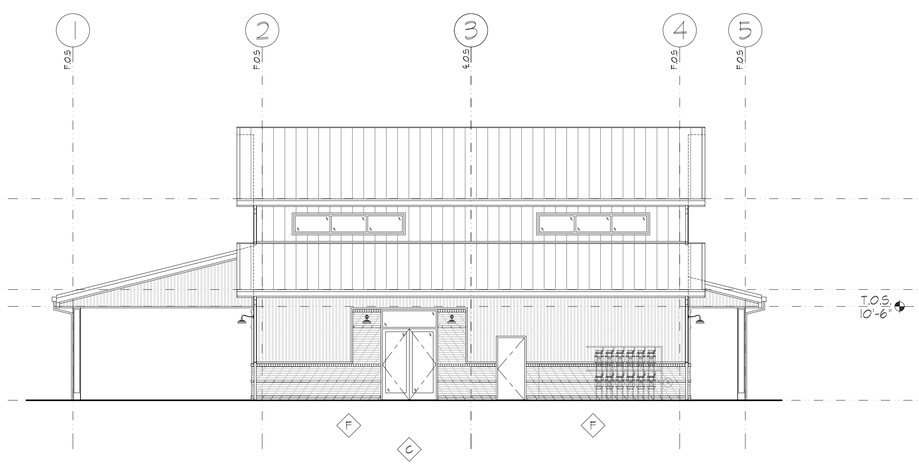
1 WINDOW TYPES
SCALE: 1/4" = 1'-0"



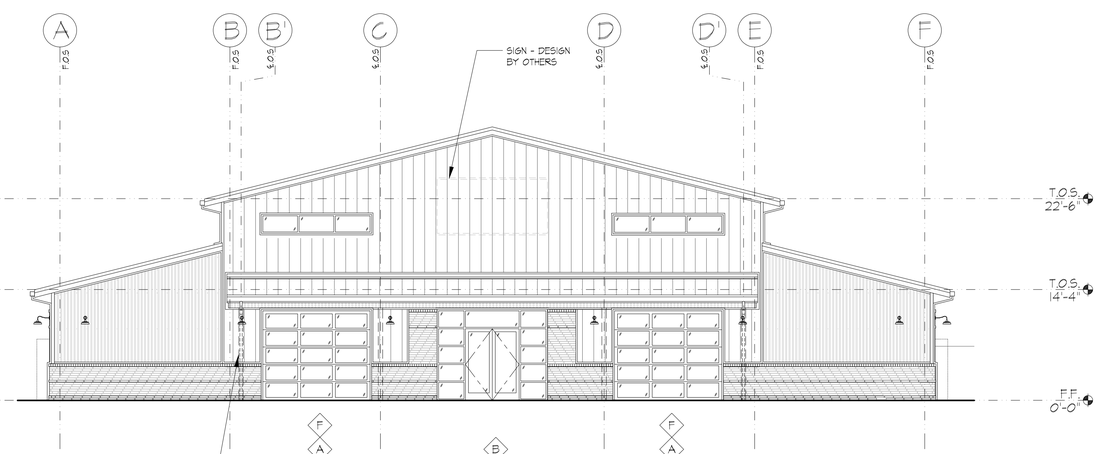
3 SOUTHEAST
SCALE: 1/8" = 1'-0"



11 NORTHEAST
SCALE: 1/8" = 1'-0"



4 NORTHWEST
SCALE: 1/8" = 1'-0"



12 SOUTHWEST
SCALE: 1/8" = 1'-0"

© COPYRIGHT 2019, PLANNING SOLUTIONS, INC. NO PART OF THIS DRAWING MAY BE COPIED OR REPRODUCED WITHOUT WRITTEN PERMISSION OF PLANNING SOLUTIONS, INC.

DISCLAIMER AND LIMITATIONS: ANY WORK CONTAINED HEREIN INCLUDING BUT NOT LIMITED TO PLANS AND DOCUMENTS ARE INSTRUMENTS OF SERVICE INTENDED FOR USE SOLELY WITH RESPECT TO THIS PROJECT. ALL WORK SHALL BE CONSIDERED CONCEPTUAL AND SUBJECT TO CHANGE. THESE INSTRUMENTS OF SERVICE SHALL BE CONSIDERED A WORK IN PROGRESS WHERE UNKNOWN FACTORS EXIST AND JURISDICTIONAL REQUIREMENTS HAVE NOT BEEN VERIFIED. DUE TO THE HIGH DEGREE OF UNCERTAINTY ASSOCIATED WITH A CONCEPTUAL DESIGN, THESE INSTRUMENTS OF SERVICE SHALL NOT BE USED AS THE BASIS FOR A FINANCIAL EVALUATION OR CONSTRUCTION COST ESTIMATING. NO ASSURANCES ARE OFFERED OR IMPLIED AS TO THE OVERALL FEASIBILITY OF THE PROJECT. ALL WORK SHALL BE SUBJECT TO REVIEW AND FINAL APPROVAL BY ALL APPROPRIATE FEDERAL, STATE AND LOCAL AGENCIES AND SHALL CONTAIN THE PROFESSIONAL SEAL AND SIGNATURE OF ALL REQUIRED DESIGN PROFESSIONALS PRIOR TO ANY USE OF THESE DOCUMENTS. PLANNING SOLUTIONS, INC. AND ITS CONSULTANTS SHALL BE DEEMED THE AUTHORS AND OWNERS OF THEIR RESPECTIVE INSTRUMENTS OF SERVICE AND SHALL RETAIN ALL COMMON LAW, STATUTORY AND OTHER RESERVED RIGHTS, INCLUDING COPYRIGHTS.

Planning Solutions, Inc.
Creating Solutions to Complex Issues
4400 NE 77th Avenue
Suite 275
VANCOUVER, WA 98662
VOICE: 360-750-9000 FAX: 360-713-6102
www.planningsolutionsinc.com

PRELIMINARY
NOT FOR CONSTRUCTION
SUBJECT TO APPROVAL

OAK TREE STATION

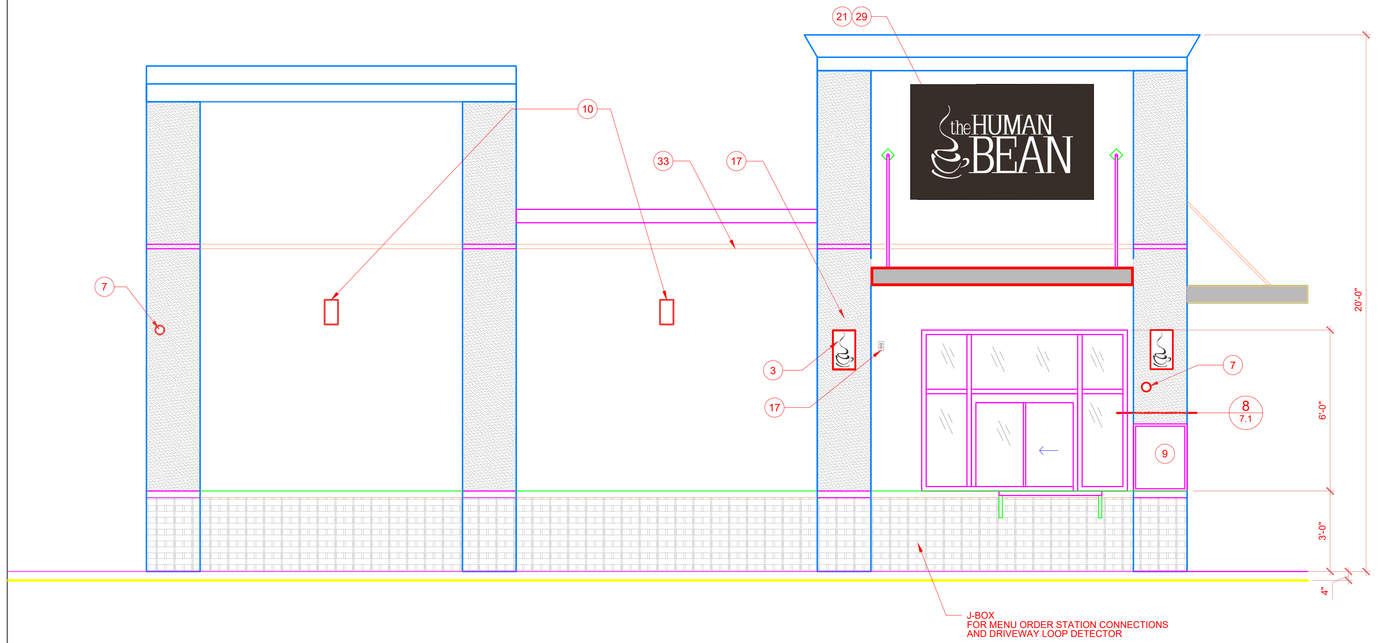
NW LAKE RD & NW FRIBERG-STRUNK ST
CAMAS, WASHINGTON

DRAWN: md	CHECKED: MD
SCALE: AS NOTED	DATE: 07/20/22
JOB #:	16-188 DD REV. 1
ISSUED FOR:	DESIGN DEVELOPMENT
REVISIONS:	
1	
2	
3	
4	
5	
6	

SHEET NAME:
EXTERIOR ELEVATIONS

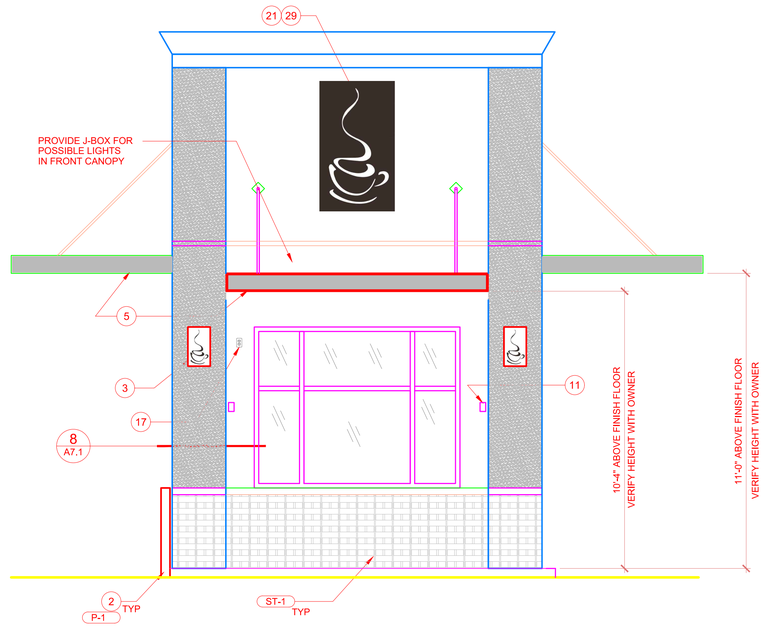
SHEET #:
A3.0

SHEET | OF



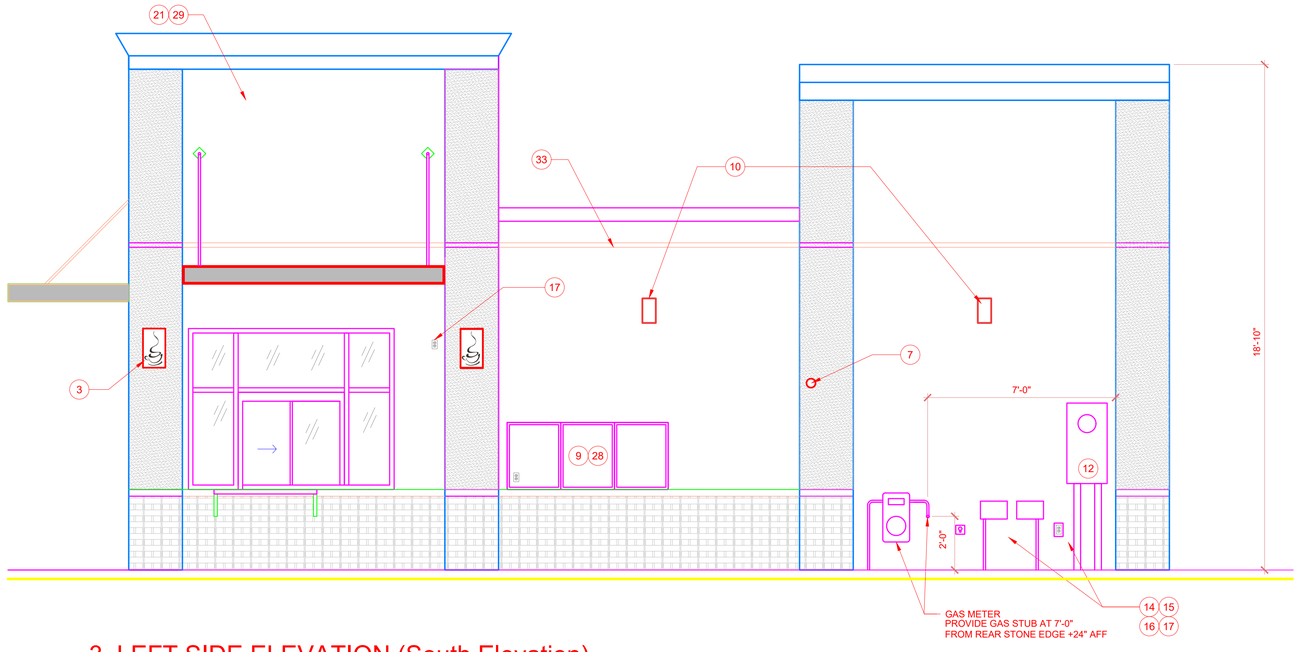
1. RIGHT SIDE - ELEVATION (North Elevation)

SCALE: 3/8" = 1'-0"



2. FRONT ELEVATION (West Elevation)

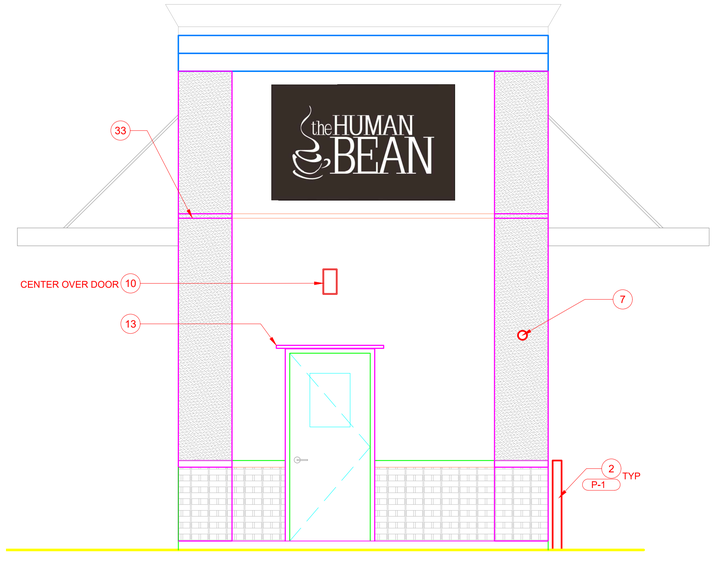
SCALE: 3/8" = 1'-0"



3. LEFT SIDE ELEVATION (South Elevation)

SCALE: 3/8" = 1'-0"

Single side store - cars on Right.
Utility connections would not be in this location with a double side store.



4. REAR ELEVATION (East Elevation)

SCALE: 3/8" = 1'-0"

FOR REFERENCE & PRICING ONLY - NOT FOR CONSTRUCTION

THIS MATERIAL IS THE EXCLUSIVE PROPERTY OF BRIAN MAGNUSSEN N.C.A.R.B. AND SHALL NOT BE REPRODUCED, OR DISCLOSED TO OTHERS, EXCEPT APPROVED HB FANCHISEES, WITHOUT WRITTEN PERMISSION OF BRIAN MAGNUSSEN.

Human Bean Salmon Creek

VANCOUVER, WA XXXXX

Revisions:

Date: MARCH 2021

Scale: AS NOTED

Project No.:

File Name: HB A3.0R.dwg

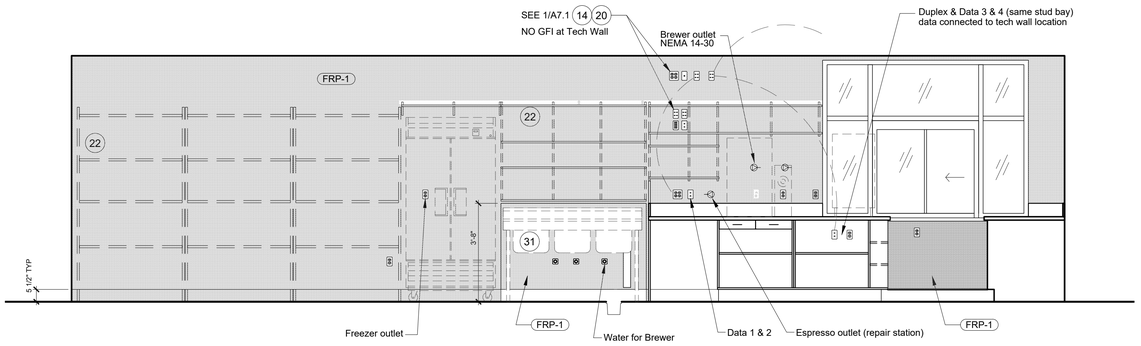
Drawn By: BKM

Checked By:

Jurisdiction Approval:

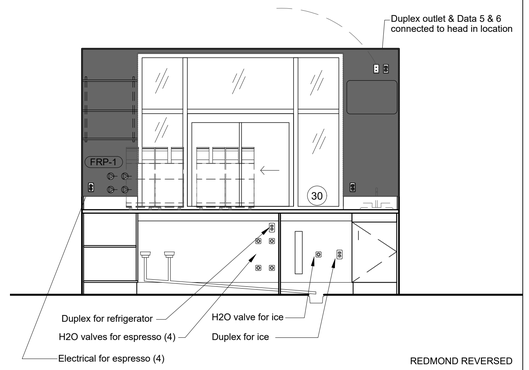
Sheet Title: EXTERIOR ELEVATIONS

Sheet No.: A3.0R



1. LEFT SIDE ELEVATION

SCALE: 3/8" = 1'-0"



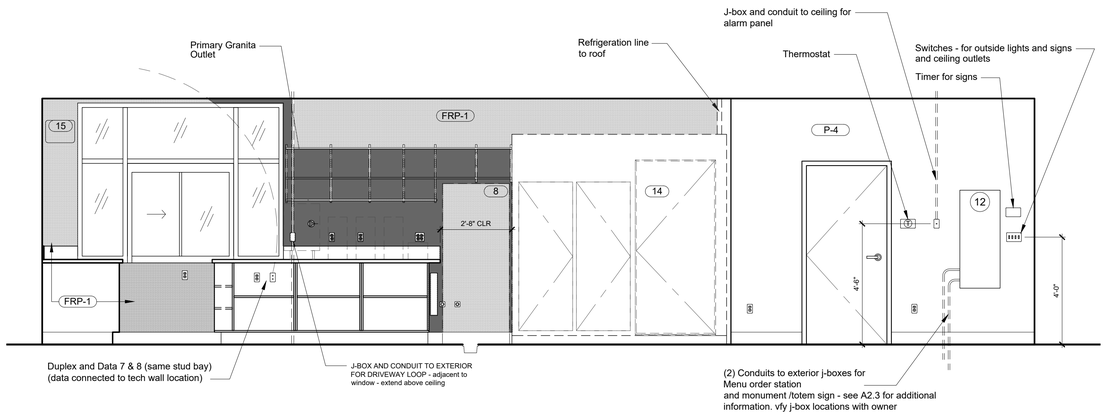
REDMOND REVERSED

2. FRONT ELEVATION

SCALE: 3/8" = 1'-0"

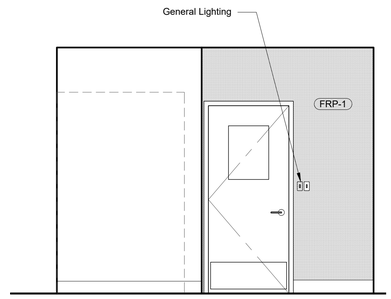
KEYNOTES - NOT ALL NOTES USED ON ALL SHEETS

1. BUILDING CURB - ALIGN WITH FACE OF PILASTER COLUMNS
2. 4" x 4" STEEL BOLLARD, FULLY GROUTED. ALIGN W/ LEADING EDGE OF PILASTERS AND MATCH LEDGE HEIGHT. TYPICAL (4) EACH SIDE. PAINT P-1.
3. "HUMAN BEAN" LIGHT FIXTURE (OFCI), ALIGN WITH TOP OF WINDOW FRAME HB SCONCE AND FIXTURE BEHIND, BY OWNER. TYPICAL (6) LOCATIONS.
4. EQUIPMENT SHOWN FOR REFERENCE ONLY - VERIFY LOCATION OF ALL EQUIPMENT WITH OWNER & COORDINATE CONNECTIONS
5. METAL AWNING/ CANOPY - SEE A7.2 / A7.3
6. SWITCHED OUTLET, SEE ELECTRICAL FOR MORE INFORMATION
7. JUNCTION BOX FOR CAMERA. PROVIDE BACKING FOR MOUNTING. RUN CAT 5E TO EACH LOCATION INTERIOR AND EXTERIOR. (SECURITY SYSTEM OFOI)
8. SPEAKERS - TYPICAL (4) (OFCI) - SPEAKERS WIRED TO 'HEAD IN LOCATION' SEE INTERIOR ELEVATIONS FOR LOCATION
9. HUMAN BEAN MENU (OFCI)
10. FLOOD LIGHT, CENTER IN BAY, SEE ELECTRICAL FOR MORE INFORMATION
11. MOUNTING PLATE FOR FLAG (FLAG BRACKETS - OFOI)
12. ELECTRICAL METER /PANEL (panel to be recessed)
13. DOOR HEAD FLASHING
14. PHONE /CABLE CONNECTION POINT
15. IRRIGATION CONTROLS
16. HOSE BIB WITH FREEZE PROTECTION
17. EXTERIOR OUTLET WITH WEATHER COVER (Holiday outlets switched)
18. WALK IN COOLER - SEE EQUIPMENT SCHEDULE FOR MORE INFORMATION
19. GREASE INTERCEPTOR - LOCATION TO BE VERIFIED
20. HEAD-IN LOCATION FOR AUDIO, VIDEO, AND CABLE CONNECTIONS
21. BUILDING SIGNAGE, OFOI. CONTRACTOR TO COORDINATE BLOCKING LOCATION AND ELECTRICAL LOCATION WITH VENDOR.
22. ADJUSTABLE SHELVING - (OFOI)
23. STAINLESS STEEL OR ALUMINUM SERVING SHELF - 12" x 48" CENTER OF SHELF AT CENTER OF SLIDER WINDOW
24. DOWNSPOUT - PAINT TO MATCH BACKGROUND COLOR
25. TRASH ENCLOSURE - ROOM FOR 3 BINS. 1 TRASH /1 RECYCLE / 1 CARDBOARD
26. TRANSFORMER - LOCATION TO BE VERIFIED
27. WORK AREA & ESPRESSO MACHINE REPAIR STATION - W/ POWER, WATER AND DRAIN
28. PROVIDE J-BOX FOR WALK UP MENU (SINGLE SIDE STORES ONLY)
29. PROVIDE SLEEVE OR CONDUIT THROUGH PARAPET FOR SIGN POWER
30. FRONT COUNTER LAYOUT CAN FLIP INDEPENDENT OF STORE LAYOUT (A RIGHT HAND OR LEFT HAND STORE CAN HAVE THE FRONT COUNTER IN EITHER CONFIGURATION)
31. KEEP PLUMBING TIGHT TO SINK (NEED FLOOR SPACE UNDER)
32. NOT USED
33. PAINT TRIM STRIP COLOR TO MATCH BACKGROUND



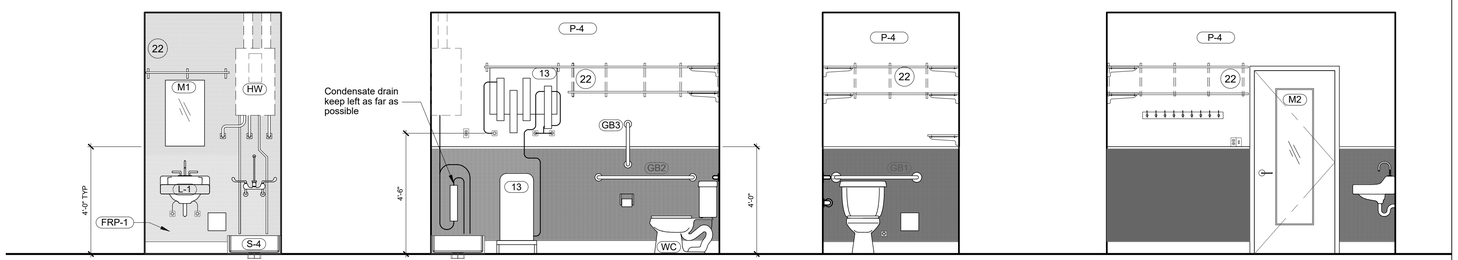
3. RIGHT SIDE ELEVATION

SCALE: 3/8" = 1'-0"



4. REAR ELEVATION

SCALE: 3/8" = 1'-0"



A. B. C. D.

5. TOILET ROOM ELEVATIONS

SCALE: 3/8" = 1'-0"

REFER TO SHEET A2.0 FOR RECEPTACLE AND VALVE LOCATIONS WITH FRAMING

the HUMAN BEAN

FOR REFERENCE & PRICING ONLY - NOT FOR CONSTRUCTION

THIS MATERIAL IS THE EXCLUSIVE PROPERTY OF BRIAN MAGNUSSEN N.C.A.R.B. AND SHALL NOT BE REPRODUCED, OR DISCLOSED TO OTHERS, EXCEPT APPROVED HB FANCHISEES, WITHOUT WRITTEN PERMISSION OF BRIAN MAGNUSSEN.

Human Bean Salmon Creek

VANCOUVER, WA XXXXX

Revisions:

Date: MARCH 2021

Scale: AS NOTED

Project No.:

File Name: HB A4.0Right.dwg

Drawn By: BKM

Checked By:

Jurisdiction Approval:

Sheet Title: INTERIOR ELEVATIONS

Sheet No.: A4.0 Right

1. HB ST JOSEPH, MO
SCALE:

2. HB CALDWELL, IDAHO
SCALE:

3. HB WILSONVILLE, OREGON
SCALE:

4. HB VANCOUVER, WA - 162ND
SCALE:

5. J-BOX FOR HEADSET SYSTEM
SCALE:

6. LIGHT AT SCONCE
SCALE: NTS

7. HB MADRAS, OREGON
SCALE:

8. HB VANCOUVER, WA - 162ND
SCALE:

9. DETAIL
SCALE:

10. LIGHT SONCE COVER
SCALE:

11. BOLLARD AT CURB
SCALE:

12. CANOPY
SCALE:

FOR REFERENCE & PRICING ONLY - NOT FOR CONSTRUCTION

THIS MATERIAL IS THE EXCLUSIVE PROPERTY OF BRIAN MAGNUSSEN N.C.A.R.B. AND SHALL NOT BE REPRODUCED, OR DISCLOSED TO OTHERS, EXCEPT APPROVED HB FANCHISEES, WITHOUT WRITTEN PERMISSION OF BRIAN MAGNUSSEN.

Human Bean Salmon Creek

VANCOUVER, WA XXXXX

Revisions:

Date: MARCH 2021

Scale: AS NOTED

Project No.:

File Name: HB A8.0.dwg

Drawn By: BKM

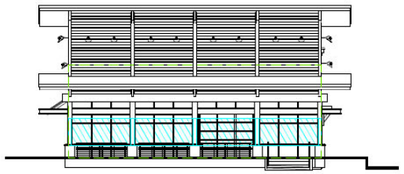
Checked By:

Jurisdiction Approval:

Sheet Title: BUILDING IMAGES

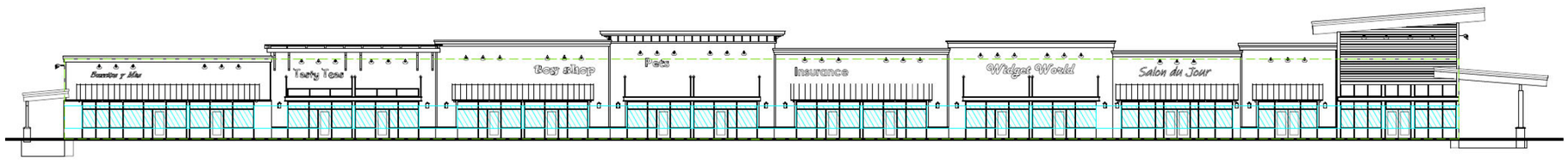
Sheet No.: A8.0

1 **WEST ELEVATION**
1/16" = 1'-0"



2 **NORTH ELEVATION**
1/16" = 1'-0"

OAK TREE STATION



3 **EAST ELEVATION**
1/16" = 1'-0"

4 **SOUTH ELEVATION**
1/16" = 1'-0"

COMMUNITY DEVELOPMENT DEPARTMENT
616 NE 4th Avenue
Camas, WA 98607
www.ci.camas.wa.us

July 29, 2022

Paul Williams
6168 NE HWY 99
Vancouver, WA 98665
(sent via email paulwilliamspe@gmail.com)

RE: Camas Food Cart Station (CUP22-01) application review comments

Dear Paul Williams,

The comments below are based on the City's review of the application materials submitted for the Camas Food Cart Station.

- A signed and dated copy of the SEPA Checklist is required.
- The revised Traffic Impact Analysis (TIA) that was submitted in May 2022, is to be revised and resubmitted using the correct ITE manual. The latest report used the 10th Edition ITE Manual, when it was to be current 11th Edition ITE Manual. Therefore, a revised TIA is to be submitted using the 11th Edition ITE Manual.

Respectfully,

Madeline Sutherland, AICP
Planner

PRELIMINARY TECHNICAL INFORMATION REPORT

Oak Tree Station

City of Camas, Washington

Prepared for:

KYNE ROB & BONIFE LARRY
3239 NW HOOD CT
CAMAS WA , 98607

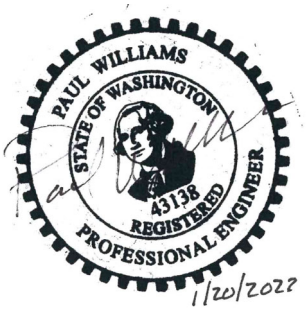
Prepared by:

ENGINEERING NORTHWEST PLLC
Paul Williams P.E.
7504 NW 10th Avenue
Vancouver, WA 98665
(360) 931-3122
paulwilliamspe@gmail.com

ENGINEERING NORTHWEST

CERTIFICATION OF ENGINEERING

The technical information and data contained in this report was prepared under the direction and supervision of the undersigned, whose seal, as a professional engineer licensed to practice as such, is affixed below. This TIR meets the minimum requirements of the City of Camas stormwater ordinances and 2019 Stormwater Management Manual for Western Washington.



Contents

Section A – Project Overview 4

Section A.1 Site Information 4

Section B – Minimum Requirements 5

Section B.1 – Determination of Minimum Requirements 5

Table A.1: Threshold Discharge Area ID 5

Appendix A: Maps 10

Appendix B: Flow charts 18

Appendix C: Natural Drainage Flow Pattern 21

Appendix D: WWHM SCREEN SHOT 23

Appendix e: DESIGN FOR PERKFILTER 25

Appendix F: WWHM 29

Appendix H: ISO MAPS 30

Appendix I: Basin map 35

SECTION A – PROJECT OVERVIEW

Section A.1 Site Information

The proposed Oak Tree Station food court will be located on the northeast quadrant of the NW Lake Road and NW Friberg-Strunk Street cross section in the City of Camas, Washington (See Vicinity Map). It is on parcel number 176162000. The proposed project will construct a building that will act as a food court, a parking lot, sidewalks, a drive thru coffee kiosk, a patio, concrete pads for the food carts, landscaping, and a storm water facility.

The proposed storm design will meet the requirements of the City of Camas and 2019 Stormwater Management Manual for Western Washington.

Topography

The project site is approximately 3.95 acres in size. The site has modest slopes (0-5%). The highest elevation of 250 feet is located along the west side of the parcel. The lowest elevation of 244 feet is located along the northeast corner of the property.

Hydrology

Stormwater runoff sheet flows from approximately at the high point which is on the east property line. From the high point the stormwater runoff sheet flows west to the adjacent property.

Basin Areas

Impervious and pervious surface areas for the pre-developed, existing and post-developed conditions site are shown in Table A.1. The impervious area includes roofs, the parking lot,

sidewalks, the concrete pads, and the concrete patio while pervious area includes landscaping. Pre-Developed conditions are defined as forested.

Due to soil properties in this area, it is unlikely stormwater management by infiltration BMPs will be applicable.

Section B – Minimum Requirements

Section B.1 – Determination of Minimum Requirements

Proposed land disturbance will consist of two buildings, concrete pads, a concrete patio and parking lot. Since the amount of proposed hard surfaces is more than 5,000 square feet, this project is required to meet Minimum Requirements 1-9

TABLE A.1: THRESHOLD DISCHARGE AREA ID Basin 1	Square Feet
Existing hard Surface	*0*
New hard surfaces	*58,048*
Replaced hard surfaces	*0*
Native vegetation converted to lawn/landscape	*25,530*
Native vegetation converted to pasture	*0*
Total land disturbing activity	*84,000*
New and replaced pollution generating hard surfaces (PGHS)	*47,868*
Non-pollution generating surface	*10,180*

The developed basin's effective hard surfaces and their applicability to meeting the Minimum Requirements 6-8 are summarized in Table A.2 below.

TABLE A.2 EFFECTIVE HARD SURFACES			
Hard Surface Area	MR #6 Required (Y/N)	MR#7 Required (Y/N)	MR#8 Required (Y/N)
47,868	Y	Y	N

City of City of Camas stormwater ordinances requires that the project discharge less than the pre-development rate. The pre-development site was modeled in WWHM2012 as forested condition for the proposed project disturbed area.

Section C -Soils Evaluation

The "Soil Survey of Clark County. Washington" indicates the soil at this site consist of the following:

(DoB) Dollar loam, 0 to 5 percent slopes.

Clark County GIS indicates that the site soils are designed as Soil Group 4 – Poorly Drained Soils for use with the Western Washington Hydrology Model (WWHM2012).

Onsite native soil is not suitable for infiltration, thus infiltration testing was not performed onsite.

Section D – Source Control

There are not any prohibited discharges planned for this site. A stormwater pollution plan (SWPPP) will be prepared for the final technical report for the project. The SWPPP will identify and list BMPs for Source Control and will include BMPs to prohibit sediment-laden runoff from leaving the site and impacting any local or State water. In addition, BMPs will be implemented as necessary to prevent pollutants from coming in contact with the stormwater system.

The proposed site is being developed with activities that are pollution generating. The following BMP categories have some degree of applicability, in particular, BMPs for Landscaping and Lawn/Vegetation Management and Maintenance of Stormwater Drainage and Treatment System.

All source control BMPs in the private street will be the responsibility of the parcel owners per their established maintenance procedures. The stormwater facilities will be privately owned and maintained in a manner consistent with the Stormwater Facility Maintenance Manual and BMPs for landscaping and Lawn/Vegetation Management.

The parcel owners will also be responsible for source control BMPs related to installing and maintaining landscaping and roof downspout systems on this parcel. This responsibility includes the prevention of introduction of pollutants into their system(s). The application of appropriate maintenance measures will also provide source control.

Additional Reference: SMMWW, Volume IV, Chapter 2 - Selection of Operational and Structural Source Control BMPs; 2.2 Pollutant Source-Specific BMPs

BMPs for Dust Control at Disturbed Land Areas and Unpaved Roadways and Parking Lots

BMPs for Landscaping and Lawn/ Vegetation Management

BMPs for Maintenance of Stormwater Drainage and Treatment Systems BMPs for Urban Streets

Section E - Onsite Stormwater Management BMPs

An Erosion Control Plan will be developed for the implementation of BMPs to manage stormwater during grading activities. These BMPs will be shown on the erosion control plan.

The parcel owners will be responsible for installing and maintaining roof downspout systems consistent with Volume III, Chapter 3.1.1 of the SMMWW.

Section F – Runoff Treatment and Design

1) Basic stormwater treatment is required for the parking lot in this project.

2) Phosphorous removal is also required.

The runoff from areas requiring treatment will be routed to specific Old Castle PerkFilter Systems (or Contech Stormfilter Systems). The systems will be off-line in nature and be sized to treat the off-line flow rate determined from a WWHM2012 analysis.

The management of flows above the WQ flow rates will be directed to the particular storm line system. The existing site will release to a stormwater pipe in NW Lake Road that will take the runoff to a public basin on the adjacent, east parcel.

Initial installation cost and the expenses associated with long-term maintenance are expected to be typical of projects with similar street sections and with runoff from parking lots.

The amount of pollution-generating surfaces is:

From Parking Lot = 1.1 acres

Section G - Flow Control Analysis and Design

The project proposes a large vault to store clean stormwater runoff. A control manhole will meter the stormwater from the storage vault and slowly release runoff to the stormwater pipe in NW Lake Road that will discharge into the public basin on the parcel to the east. The WWHM model for the project show flow duration has passed.

Section I - Wetlands Protection

No wetland in the area.

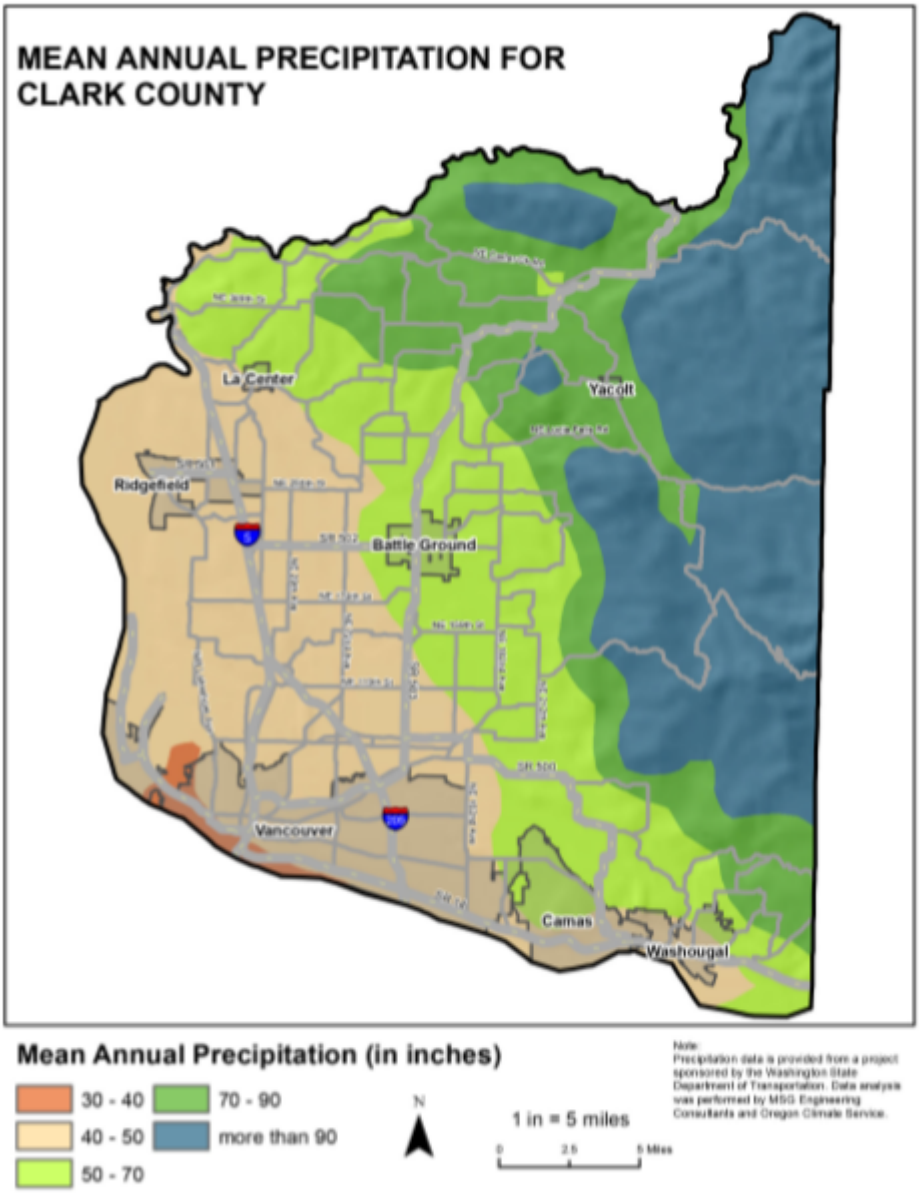
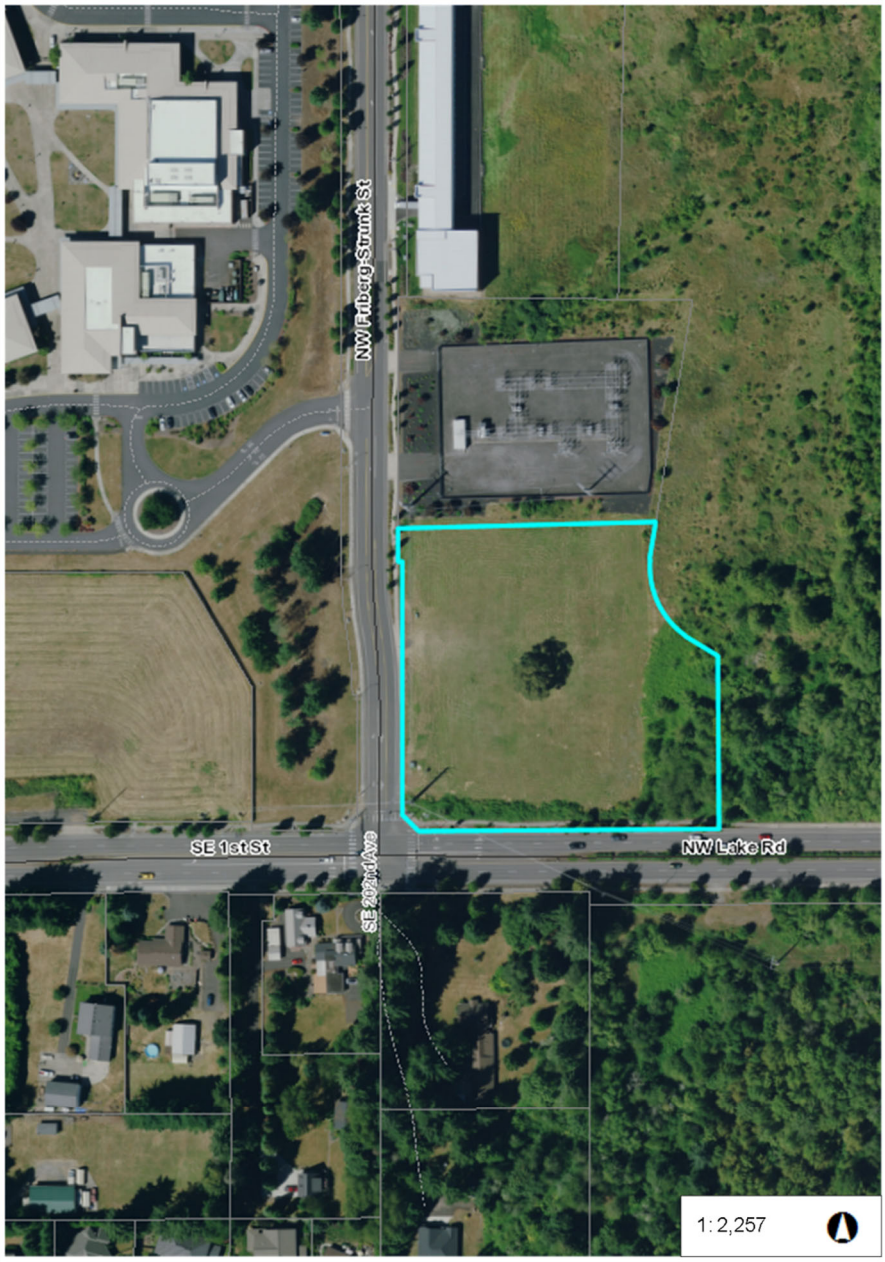


Figure 15: Mean Annual Precipitation in Clark County

APPENDIX A: MAPS

AERIAL



Legend

- Taxlots
- All Roads
  - Interstate
  - State Route
  - Arterial
  - Forest Arterial
  - Minor Collector
  - Forest Collector
  - Private or Other
- Cities Boundaries
- Urban Growth Boundaries

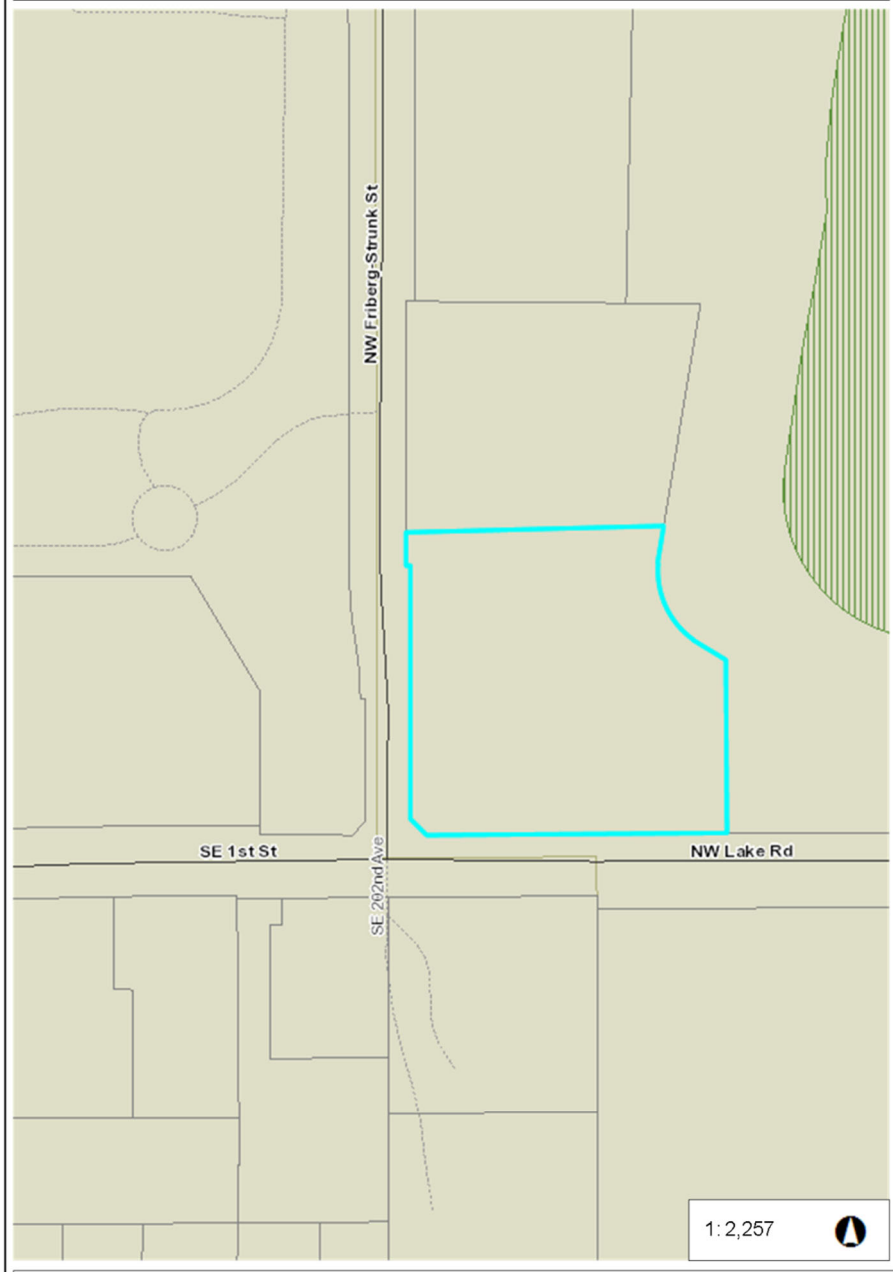
Notes:

376.2 0 188.08 376.2Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
Clark County, WA. GIS - http://gis.clark.wa.gov

This map was generated by Clark County's "MapsOnline" website. Clark County does not warrant the accuracy, reliability or timeliness of any information on this map, and shall not be held liable for losses caused by using this information.

HABITAT



Legend

- Taxlots
- Riparian Habitat
- All Roads
  - Interstate
  - State Route
  - Arterial
  - Forest Arterial
  - Minor Collector
  - Forest Collector
  - Private or Other
- Cities Boundaries
- Urban Growth Boundaries

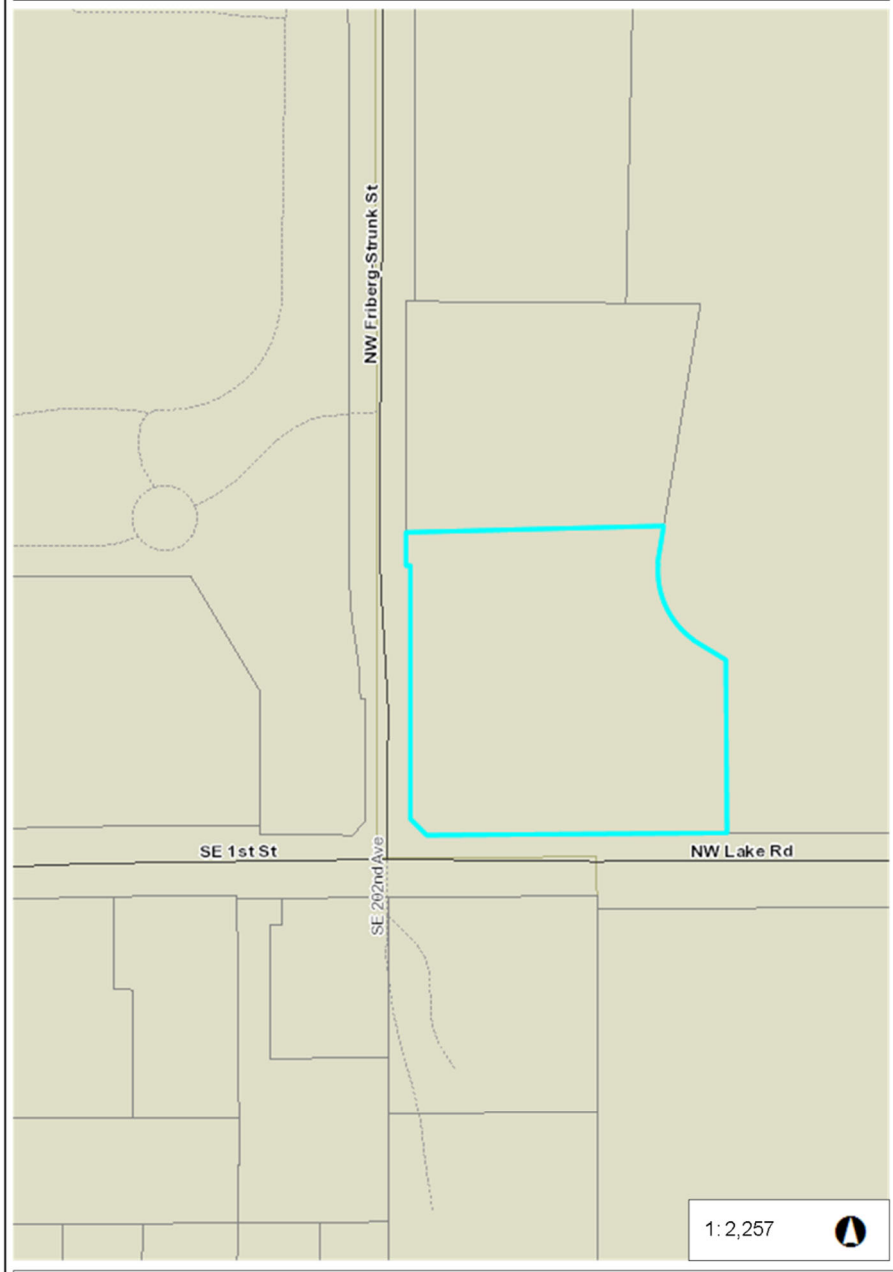
Notes:

376.2 0 188.08 376.2 Feet

WGS_1984_Web_Mercator_Auxiliary_Sphere
Clark County, WA. GIS - http://gis.clark.wa.gov

This map was generated by Clark County's "MapsOnline" website. Clark County does not warrant the accuracy, reliability or timeliness of any information on this map, and shall not be held liable for losses caused by using this information.

SEVERE EROSION HAZARD AREAS



Legend

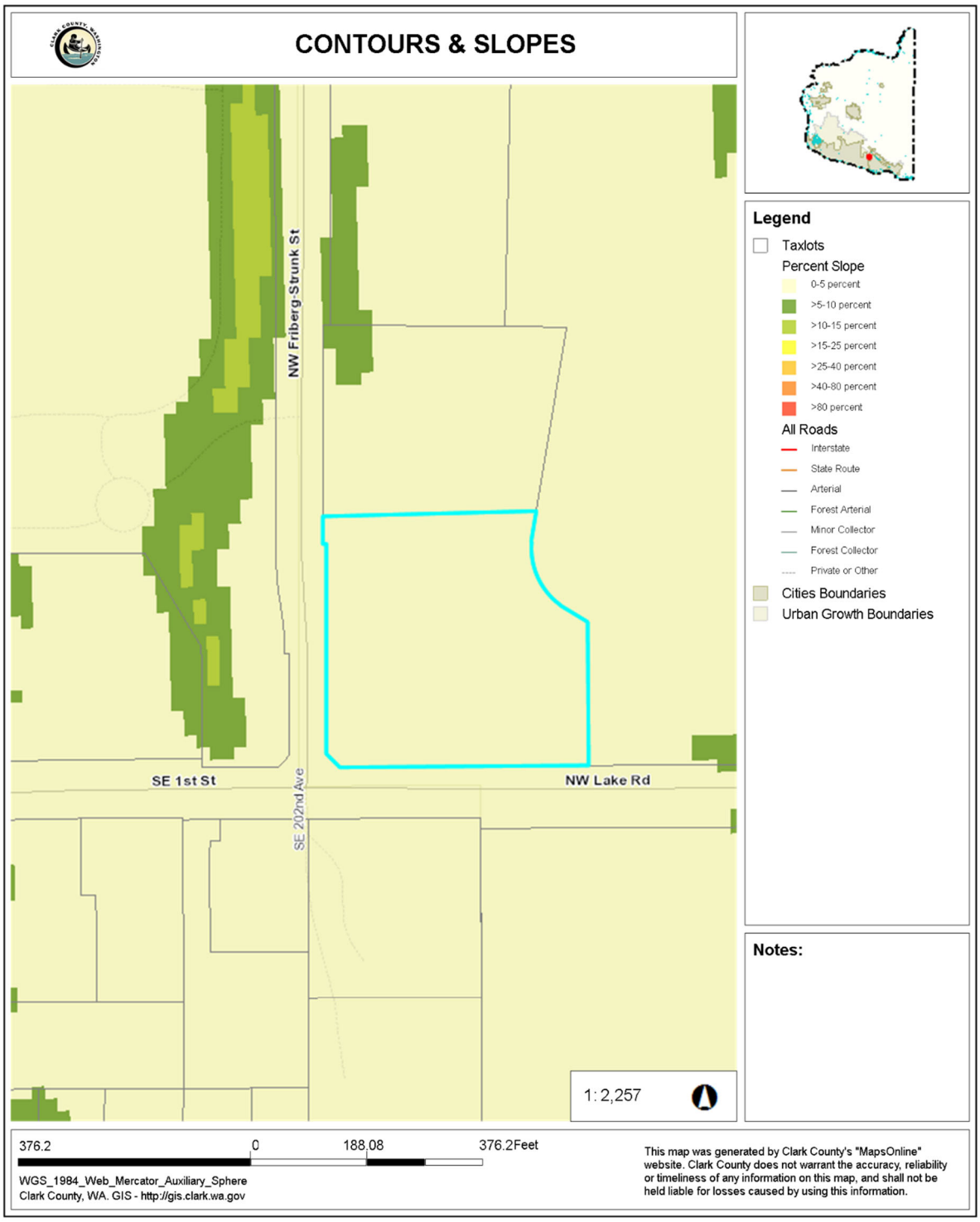
- Taxlots
- Severe Erosion Hazard Areas
- All Roads
  - Interstate
  - State Route
  - Arterial
  - Forest Arterial
  - Minor Collector
  - Forest Collector
  - Private or Other
- Cities Boundaries
- Urban Growth Boundaries

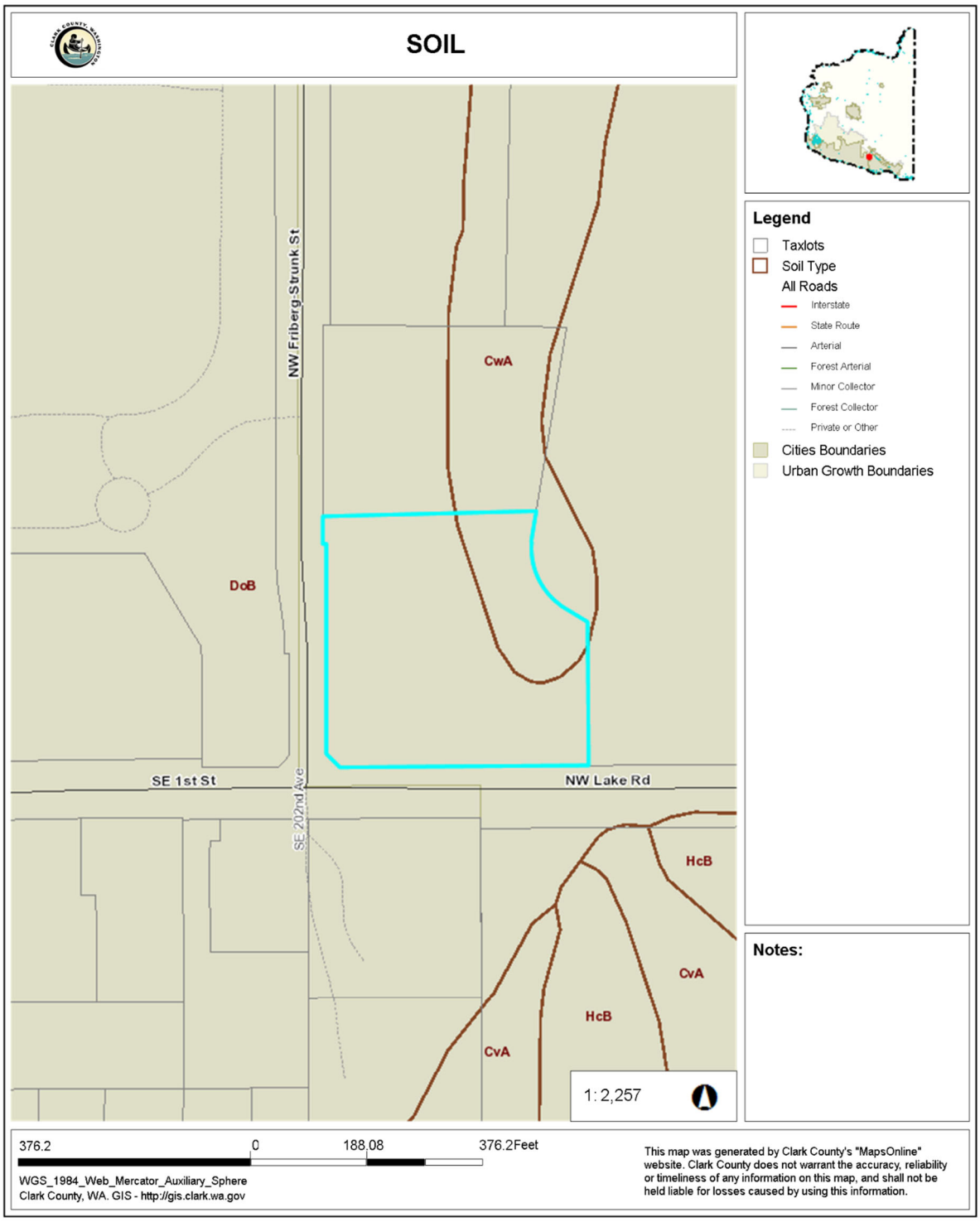
Notes:

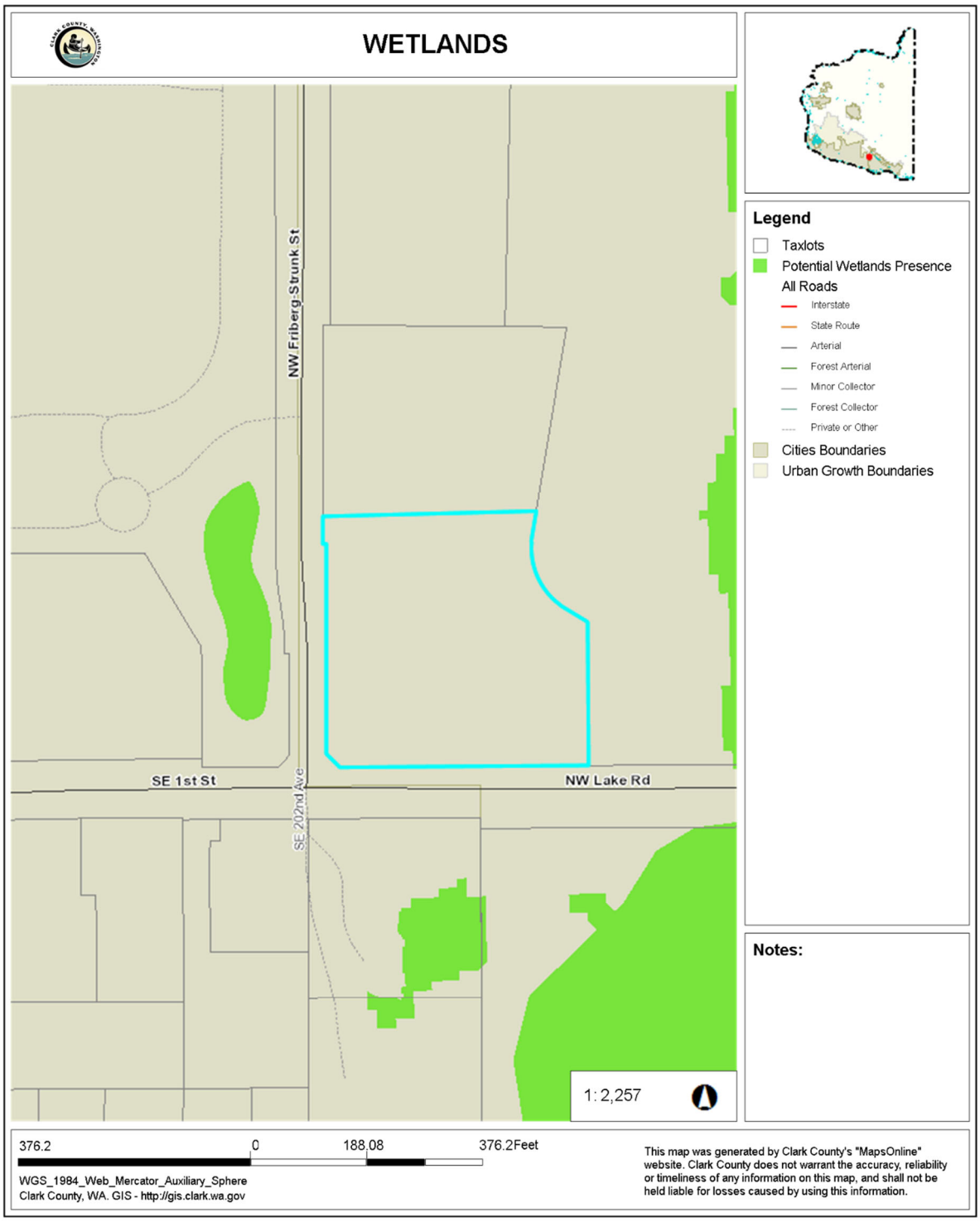
376.2 0 188.08 376.2Feet

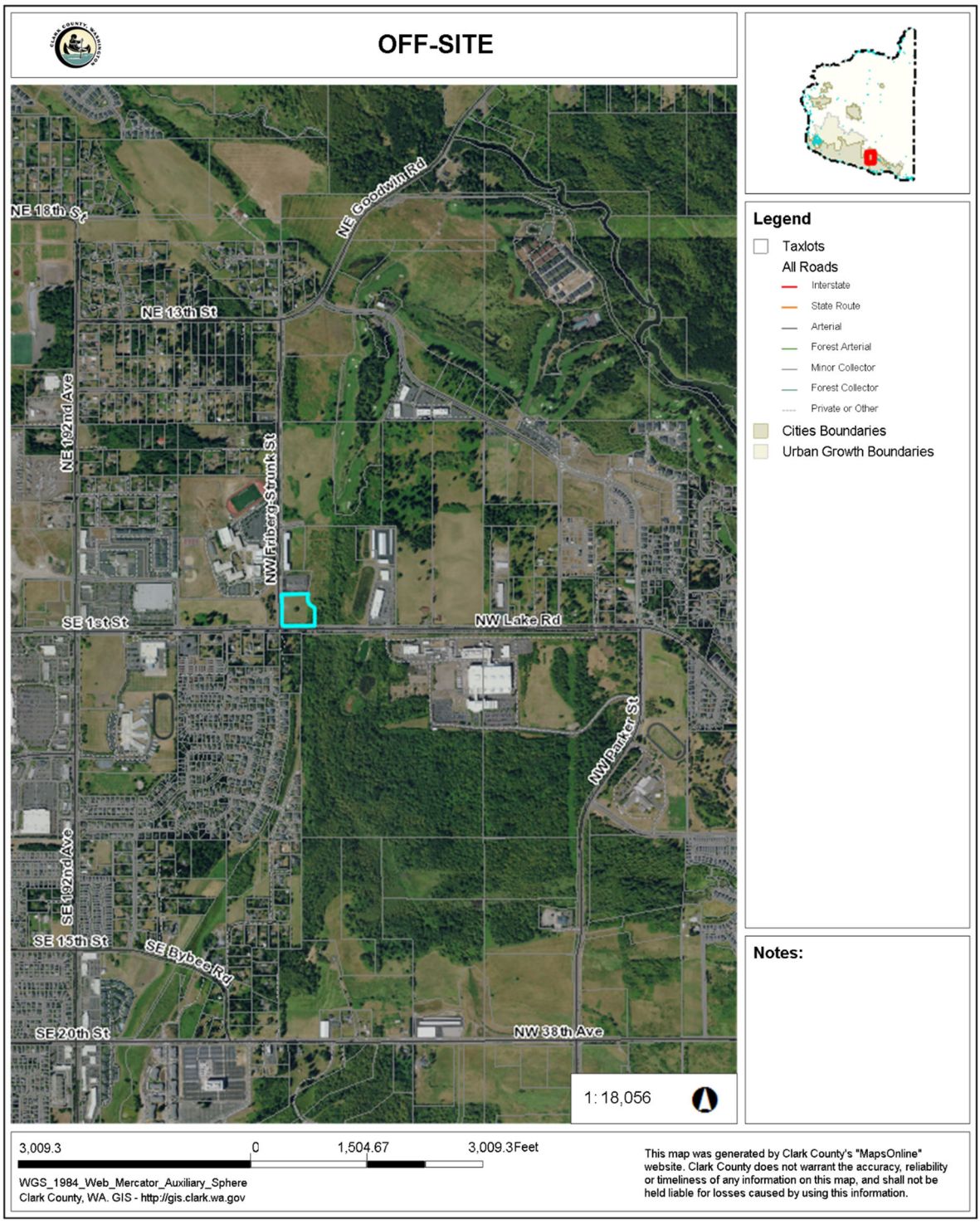
WGS_1984_Web_Mercator_Auxiliary_Sphere
Clark County, WA. GIS - http://gis.clark.wa.gov

This map was generated by Clark County's "MapsOnline" website. Clark County does not warrant the accuracy, reliability or timeliness of any information on this map, and shall not be held liable for losses caused by using this information.


CONTOURS & SLOPES
NW Friberg-Strunk St
SE 1st St
NW Lake Rd
SE 202nd Ave
1: 2,257
Legend
Taxlots
Percent Slope
0-5 percent
>5-10 percent
>10-15 percent
>15-25 percent
>25-40 percent
>40-80 percent
>80 percent
All Roads
Interstate
State Route
Arterial
Forest Arterial
Minor Collector
Forest Collector
Private or Other
Cities Boundaries
Urban Growth Boundaries
Notes:
376.2
0
188.08
376.2Feet
WGS_1984_Web_Mercator_Auxiliary_Sphere
Clark County, WA. GIS - http://gis.clark.wa.gov
This map was generated by Clark County's "MapsOnline" website. Clark County does not warrant the accuracy, reliability or timeliness of any information on this map, and shall not be held liable for losses caused by using this information.

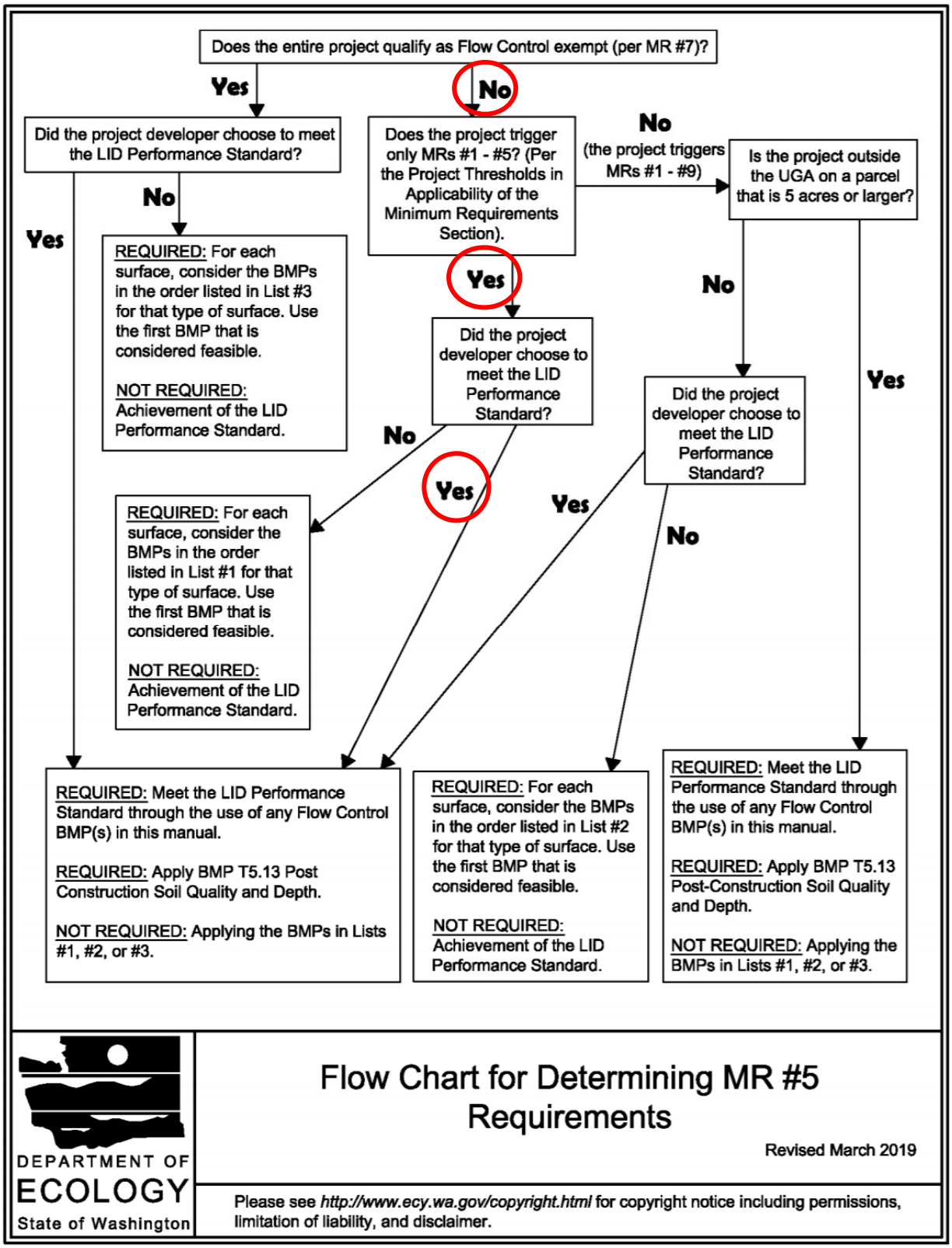

SOIL
NW Friberg-Strunk St
CwA
DoB
SE 1st St
NW Lake Rd
SE 202nd Ave
HcB
CvA
HcB
CvA
1:2,257
Legend
Taxlots
Soil Type
All Roads
Interstate
State Route
Arterial
Forest Arterial
Minor Collector
Forest Collector
Private or Other
Cities Boundaries
Urban Growth Boundaries
Notes:
376.2
0
188.08
376.2Feet
WGS_1984_Web_Mercator_Auxiliary_Sphere
Clark County, WA. GIS - http://gis.clark.wa.gov
This map was generated by Clark County's "MapsOnline" website. Clark County does not warrant the accuracy, reliability or timeliness of any information on this map, and shall not be held liable for losses caused by using this information.

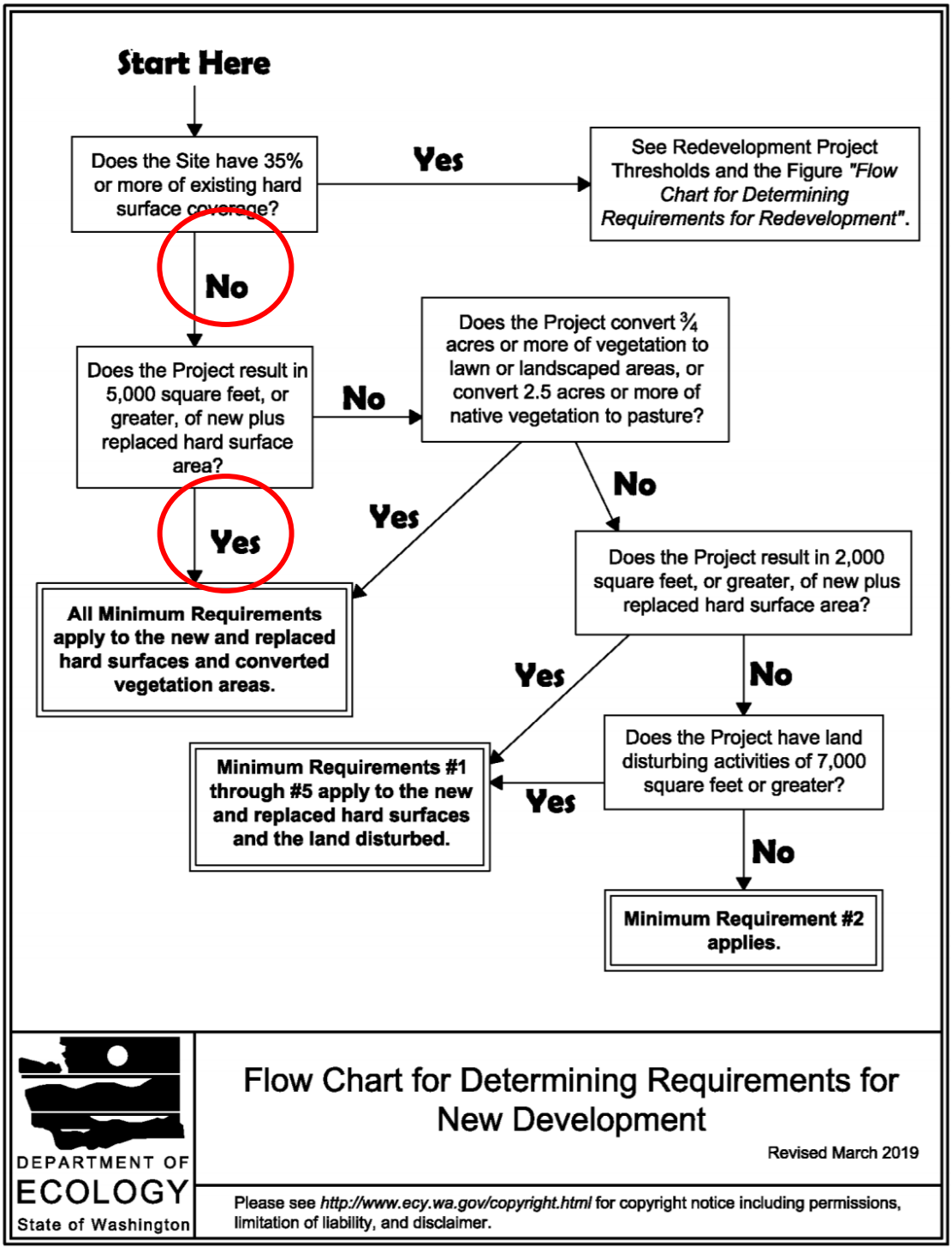

WETLANDS
NW Friberg-Strunk St
SE 1st St
NW Lake Rd
SE 202nd Ave
1:2,257
Legend
Taxlots
Potential Wetlands Presence
All Roads
Interstate
State Route
Arterial
Forest Arterial
Minor Collector
Forest Collector
Private or Other
Cities Boundaries
Urban Growth Boundaries
Notes:
376.2
0
188.08
376.2Feet
WGS_1984_Web_Mercator_Auxiliary_Sphere
Clark County, WA. GIS - http://gis.clark.wa.gov
This map was generated by Clark County's "MapsOnline" website. Clark County does not warrant the accuracy, reliability or timeliness of any information on this map, and shall not be held liable for losses caused by using this information.


OFF-SITE
NE 18th St
NE Goodwin Rd
NE 13th St
NE 192nd Ave
NW Friberg-Strunk St
SE 1st St
NW Lake Rd
NW Parker St
SE 192nd Ave
SE 15th St
SE Bybee Rd
SE 20th St
NW 38th Ave
1:18,056
Legend
Taxlots
All Roads
Interstate
State Route
Arterial
Forest Arterial
Minor Collector
Forest Collector
Private or Other
Cities Boundaries
Urban Growth Boundaries
Notes:
3,009.3
0
1,504.67
3,009.3Feet
WGS_1984_Web_Mercator_Auxiliary_Sphere
Clark County, WA. GIS - http://gis.clark.wa.gov
This map was generated by Clark County's "MapsOnline" website. Clark County does not warrant the accuracy, reliability or timeliness of any information on this map, and shall not be held liable for losses caused by using this information.

Off-site Map

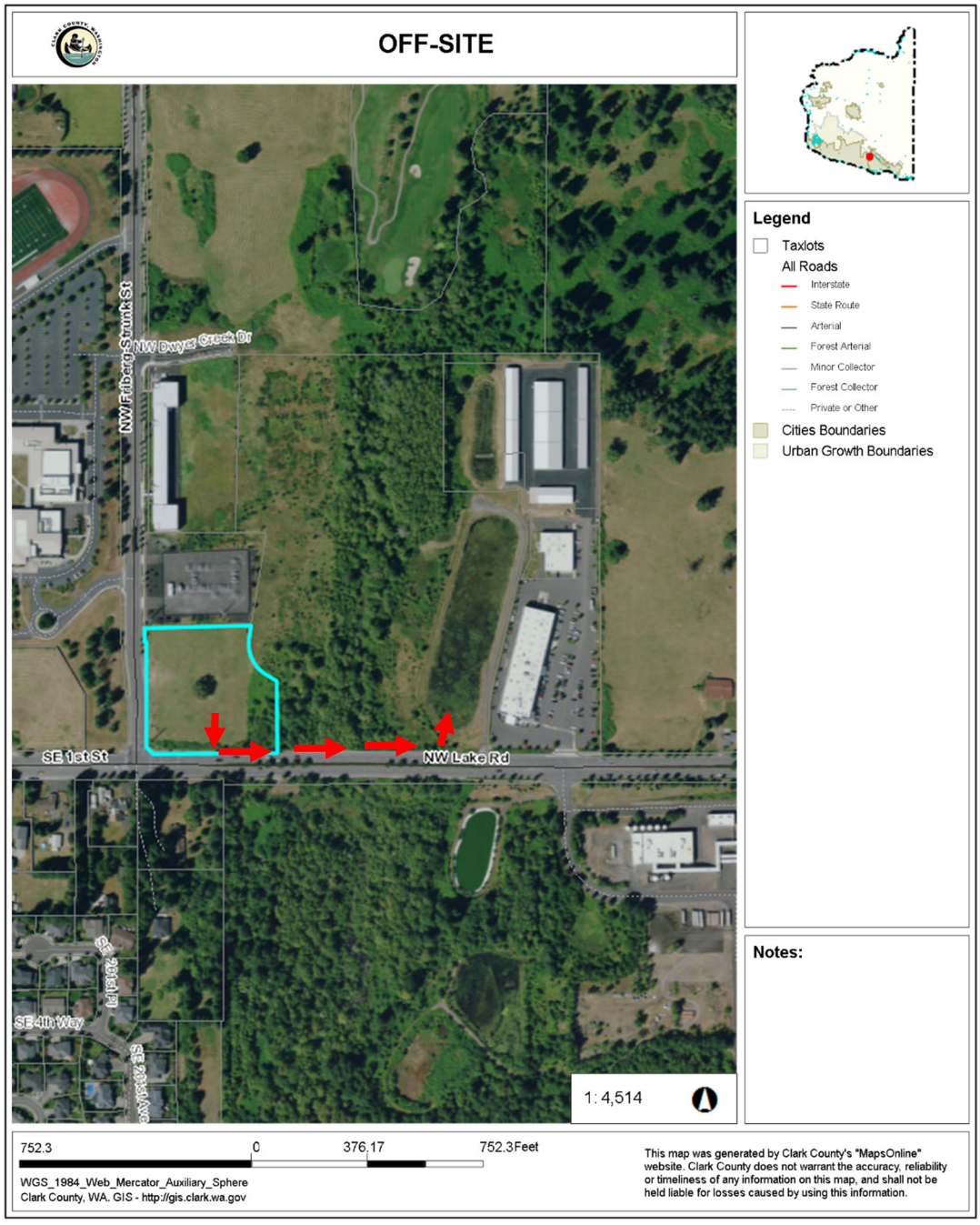
APPENDIX B: FLOW CHARTS


Does the entire project qualify as Flow Control exempt (per MR #7)?
Yes
No
Did the project developer choose to meet the LID Performance Standard?
Does the project trigger only MRs #1 - #5? (Per the Project Thresholds in Applicability of the Minimum Requirements Section).
No
(the project triggers MRs #1 - #9)
Is the project outside the UGA on a parcel that is 5 acres or larger?
No
Yes
REQUIRED: For each surface, consider the BMPs in the order listed in List #3 for that type of surface. Use the first BMP that is considered feasible.
NOT REQUIRED: Achievement of the LID Performance Standard.
Yes
Did the project developer choose to meet the LID Performance Standard?
No
Yes
Did the project developer choose to meet the LID Performance Standard?
Yes
No
REQUIRED: For each surface, consider the BMPs in the order listed in List #1 for that type of surface. Use the first BMP that is considered feasible.
NOT REQUIRED: Achievement of the LID Performance Standard.
Yes
No
REQUIRED: Meet the LID Performance Standard through the use of any Flow Control BMP(s) in this manual.
REQUIRED: Apply BMP T5.13 Post Construction Soil Quality and Depth.
NOT REQUIRED: Applying the BMPs in Lists #1, #2, or #3.
REQUIRED: For each surface, consider the BMPs in the order listed in List #2 for that type of surface. Use the first BMP that is considered feasible.
NOT REQUIRED: Achievement of the LID Performance Standard.
REQUIRED: Meet the LID Performance Standard through the use of any Flow Control BMP(s) in this manual.
REQUIRED: Apply BMP T5.13 Post-Construction Soil Quality and Depth.
NOT REQUIRED: Applying the BMPs in Lists #1, #2, or #3.
DEPARTMENT OF ECOLOGY
State of Washington
Flow Chart for Determining MR #5 Requirements
Revised March 2019
Please see http://www.ecy.wa.gov/copyright.html for copyright notice including permissions, limitation of liability, and disclaimer.



Minimum Requirement #8 Flow Chart

APPENDIX C: NATURAL DRAINAGE FLOW PATTERN

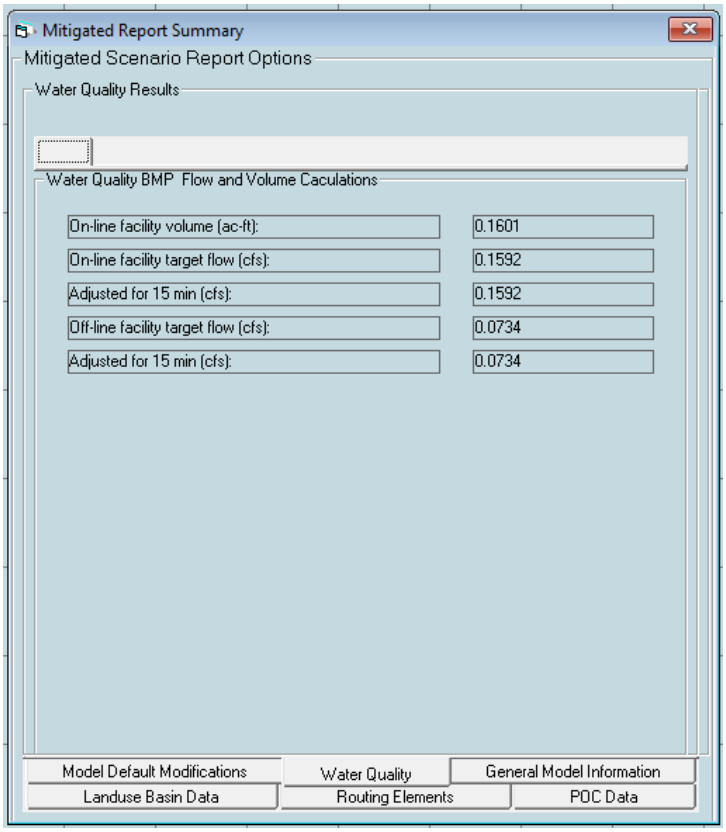


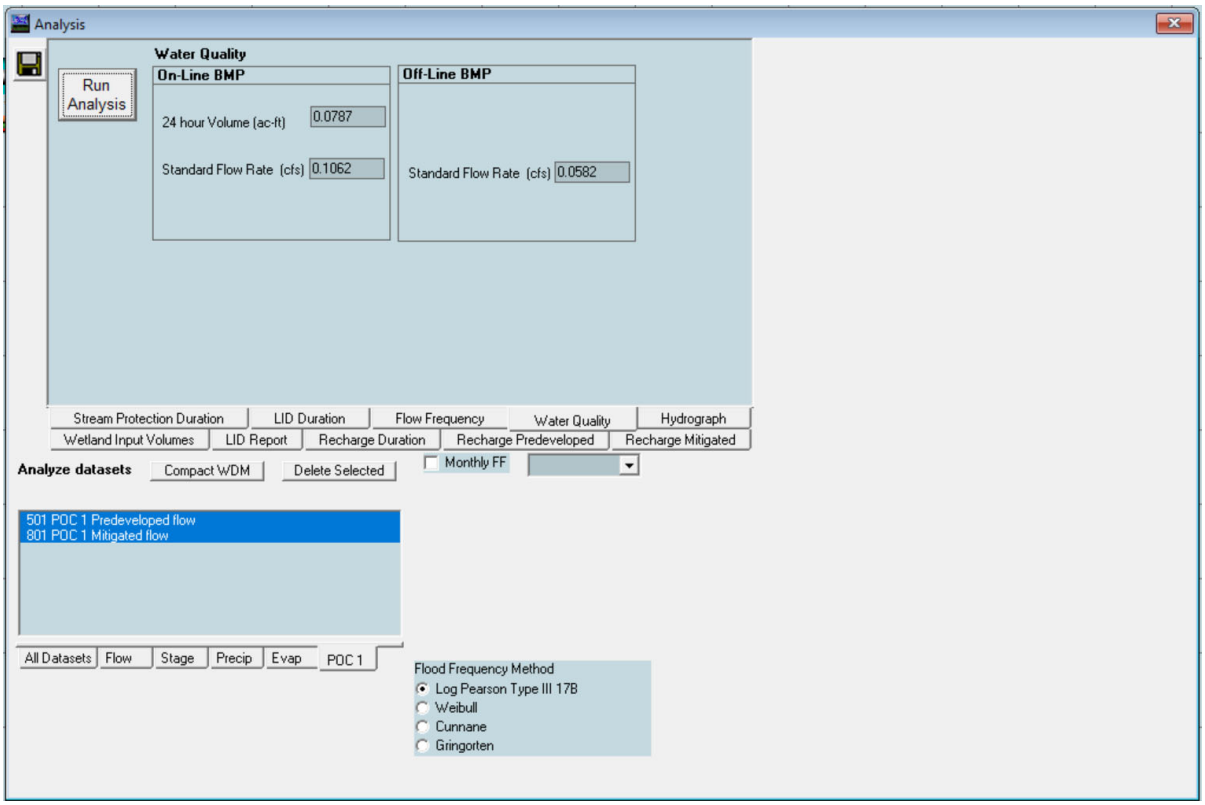
DRAINAGE FLOW PATH

Natural Drainage Flow

APPENDIX D: WWHM SCREEN SHOT

(WATER QUALITY SYSTEM DESIGN)


Mitigated Report Summary
Mitigated Scenario Report Options
Water Quality Results
Water Quality BMP Flow and Volume Caculations
On-line facility volume (ac-ft): 0.1601
On-line facility target flow (cfs): 0.1592
Adjusted for 15 min (cfs): 0.1592
Off-line facility target flow (cfs): 0.0734
Adjusted for 15 min (cfs): 0.0734
Model Default Modifications
Water Quality
General Model Information
Landuse Basin Data
Routing Elements
POC Data


Analysis
Water Quality
Run Analysis
On-Line BMP
24 hour Volume (ac-ft) 0.0787
Standard Flow Rate (cfs) 0.1062
Off-Line BMP
Standard Flow Rate (cfs) 0.0582
Stream Protection Duration
LID Duration
Flow Frequency
Water Quality
Hydrograph
Wetland Input Volumes
LID Report
Recharge Duration
Recharge Predeveloped
Recharge Mitigated
Analyze datasets
Compact WDM
Delete Selected
Monthly FF
501 POC 1 Predeveloped flow
801 POC 1 Mitigated flow
All Datasets
Flow
Stage
Precip
Evap
POC 1
Flood Frequency Method
Log Pearson Type III 17B
Weibull
Cunnane
Gringorten

APPENDIX E: DESIGN FOR PERKFILTER

Design for PerkFilters

Kristar/Oldcastle Precast, Inc. FloGard Perk Filter™ (using ZPC Filter Media)

Ecology's Decision:

Based on Kristar/Oldcastle's application submissions, including the Draft Technical Evaluation Report, dated April 2010, Ecology hereby issues the following use level designations:

1. **General use level designation (GULD) for the Perk Filter™ for basic treatment:**
   - **Using a zeolite-perlite-carbon (ZPC) filter media as specified by Kristar/Oldcastle.**
   - **Sized at hydraulic loading rate of no more than 1.5 gpm/ft² of media surface area, per Table 1.**

Table 1. Design Flowrate per Cartridge

Effective Cartridge Height (inches)	12	18
Cartridge Flowrate (gpm/cartridge)	6.8	10.2

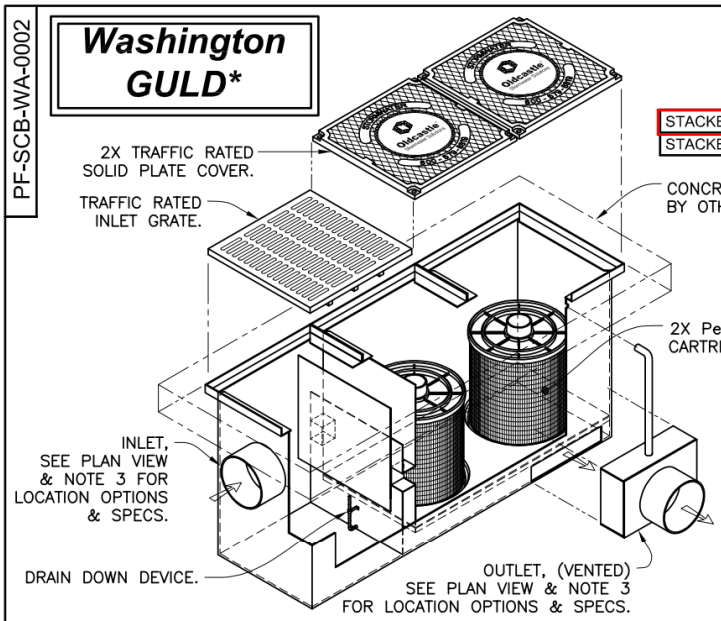
2. **General use level designation (GULD) for the Perk Filter™ for phosphorus treatment:**
   - **Using a zeolite-perlite-carbon (ZPC) filter media as specified by Kristar/Oldcastle.**
   - **Sized at hydraulic loading rate of no more than 1.5 gpm/ft² of media surface area, per Table 1.**

3. **Ecology approves Perk Filter™ units for treatment at the hydraulic loading rates shown in Table 1, and sized based on the water quality design flow rate for an off-line system. The internal weir in the inlet chamber functions as a bypass to route flow in excess of the water quality design flow rate around the treatment chamber. Calculate the water quality design flow rate using the following procedures:**

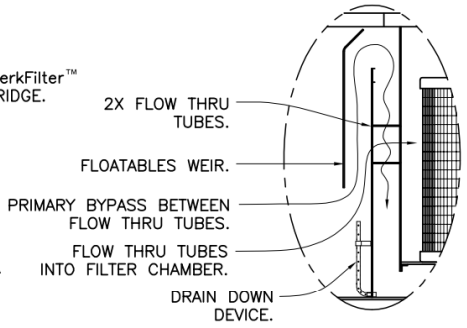
PF-SCB-WA-0002

Washington GULD*

	CARTRIDGE SIZE	TREATMENT FLOW RATE GPM / CFS	TOTAL FLOW CAPACITY CFS	MINIMUM DEPTH (FEET)
	12.00"	13.6 / 0.030	1.3	1.80
	18.00"	20.4 / 0.045	1.3	2.34
STACKED	12.00" + 12.00"	27.2 / 0.061	1.3	3.08
STACKED	18.00" + 12.00"	34 / 0.076	1.3	3.67



ISOMETRIC VIEW

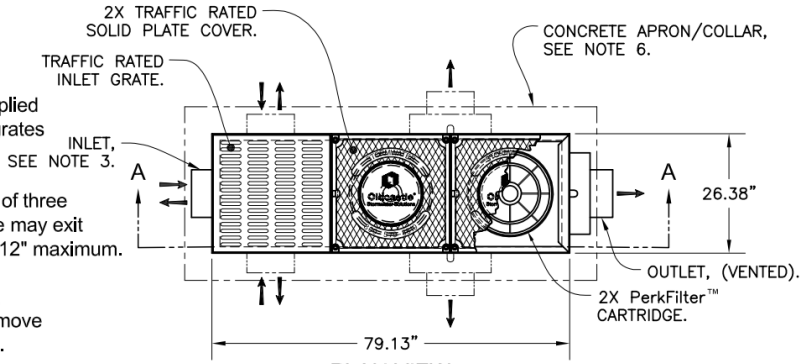


DETAIL A
INLET / BYPASS ASSEMBLY & DRAIN DOWN SCALE: 1.5X

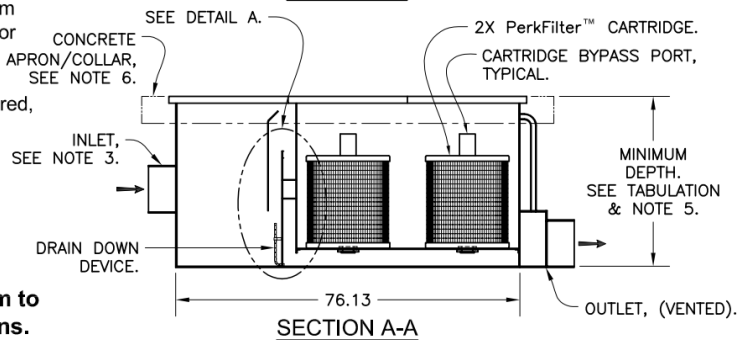
Notes:

1. All steel utilized in fabrication and shall be 1/4" plate per ASTM A36.
2. PerkFilter™ Catch basin shall be supplied with traffic rated (H20) bicycle-proof grates and solid plate cover.
3. Inlet pipe(s) may enter device on any of three sides of the inlet chamber. Outlet pipe may exit on any of all four sides. All pipe is Ø 12" maximum.
4. Inlet chamber shall be supplied with a DRAIN DOWN device designed to remove standing water between storm events.
5. For depths less than the specified minimum contact Oldcastle® Stormwater Solutions for engineering assistance.
6. Field poured Concrete Apron / Collar required, by others. Refer to PF-SCB-1000 for recommended configuration.
7. PerkFilter™ cartridge shall be maintained in accordance with manufacturer recommendations.

*** Treatment Flow Rates shown conform to Washington State GULD Specifications.**



PLAN VIEW



SECTION A-A

Media Filtration

PerkFilter™
Steel Catch Basin
Double Cartridge
(End Grate Configuration)

Oldcastle®
Stormwater Solutions
7921 Southpark Plaza, Suite 200 | Littleton, CO | 80120 | Ph: 800.579.8819 | oldcastlestormwater.com

THIS DOCUMENT IS THE PROPERTY OF OLDCASTLE PRECAST, INC. IT IS SUBMITTED FOR REFERENCE PURPOSES ONLY AND SHALL NOT BE USED IN ANY WAY INJURIOUS TO THE INTERESTS OF SAID COMPANY. COPYRIGHT © 2016 OLDCASTLE PRECAST, INC. ALL RIGHTS RESERVED.

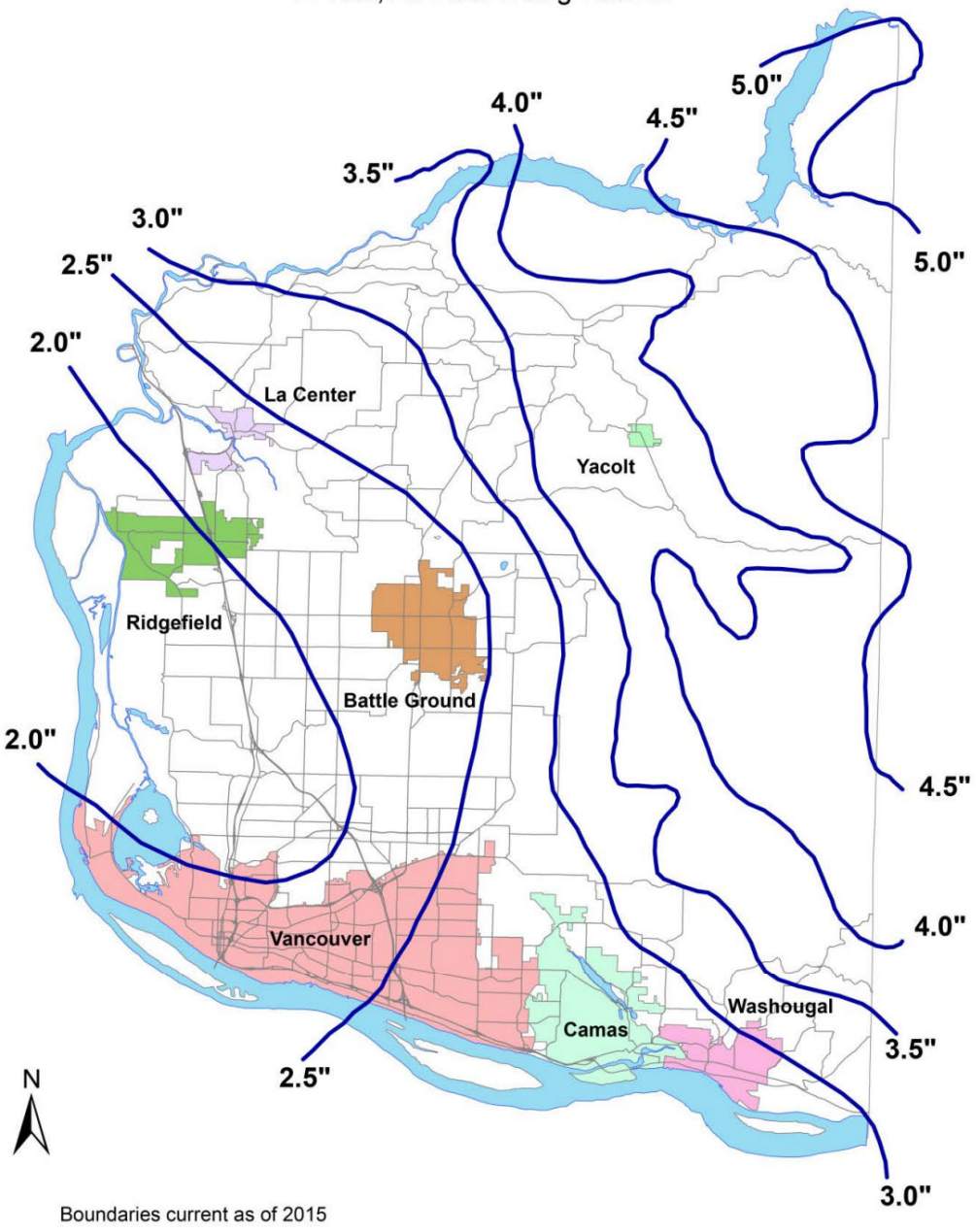
DRAWING NO.	REV	ECO	DATE	SHEET
PF-SCB-WA-0002	NR	ECO-0143 NEW	JPR 12/2/16	1 OF 1

Since the stacked 12.00” cartridges have a treatment flow rate of 0.061 cfs, which is the first flowrate on the table greater than 0.0582 cfs, the stacked 12.00” + 12.00” cartridges will be used for each filter catch basin.

APPENDIX F: WWHM

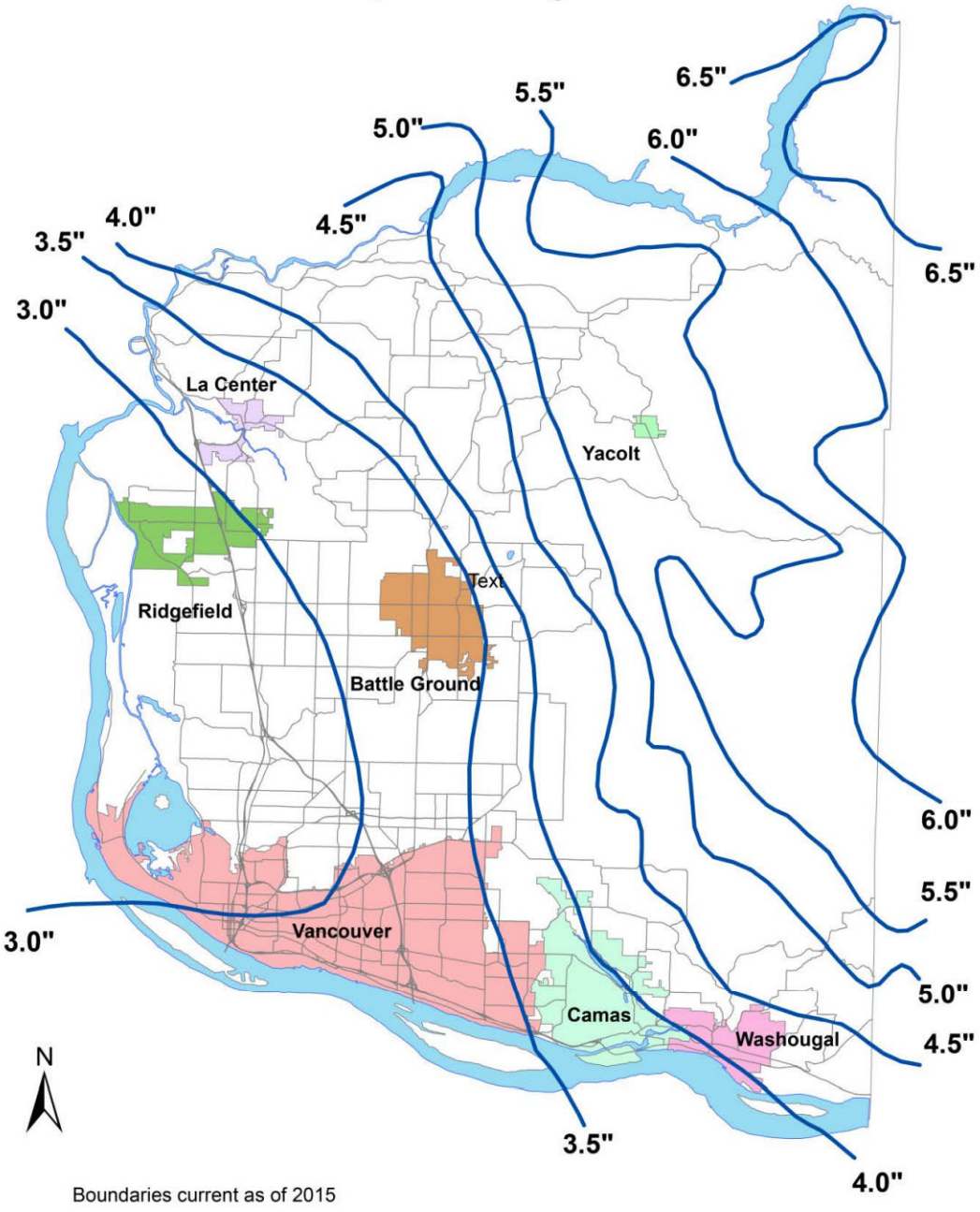
APPENDIX H: ISO MAPS

Isopluvial Map for Clark County
2-Year, 24-Hour Design Storm



Boundaries current as of 2015

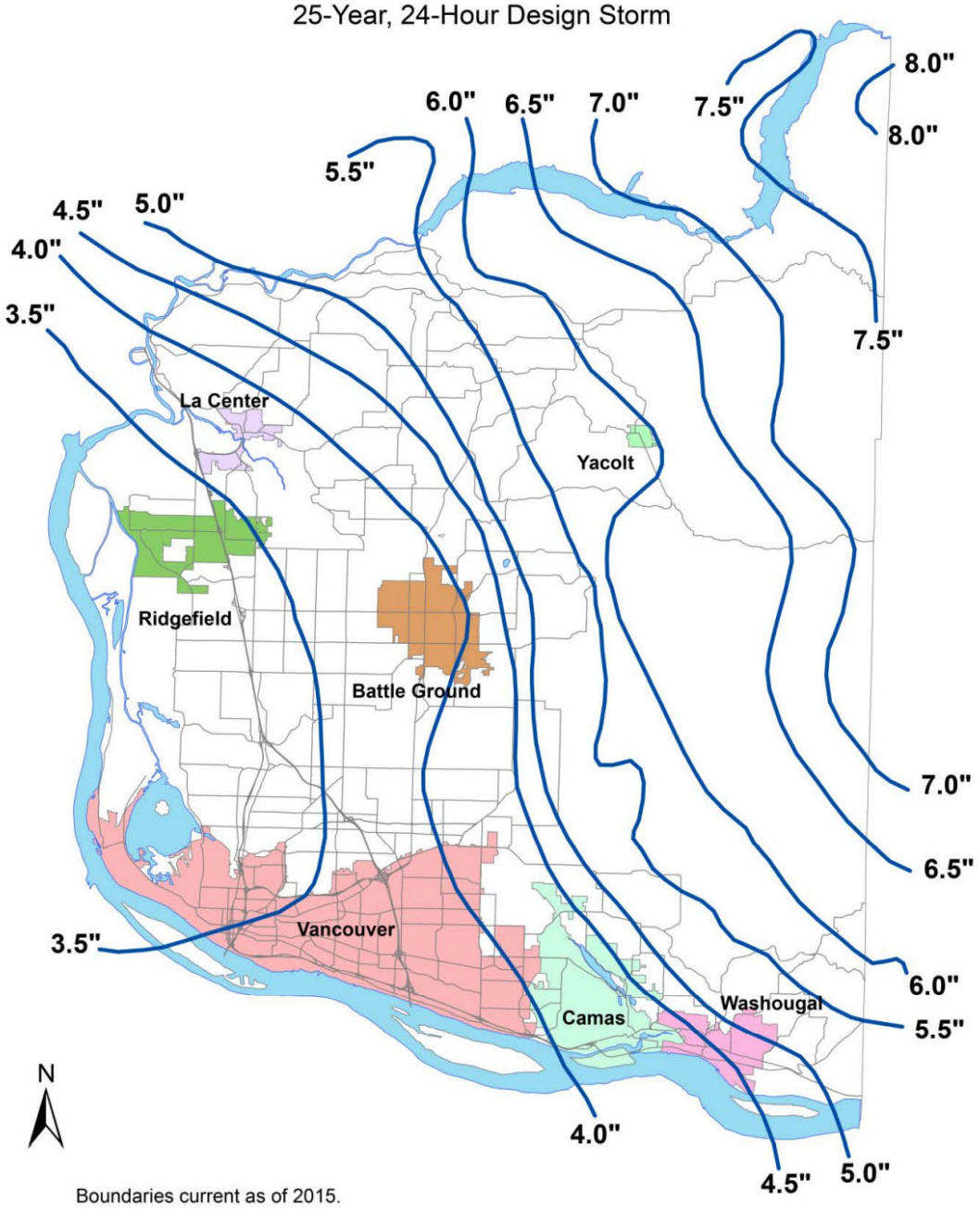
Isopluvial Map for Clark County
10-Year, 24-Hour Design Storm



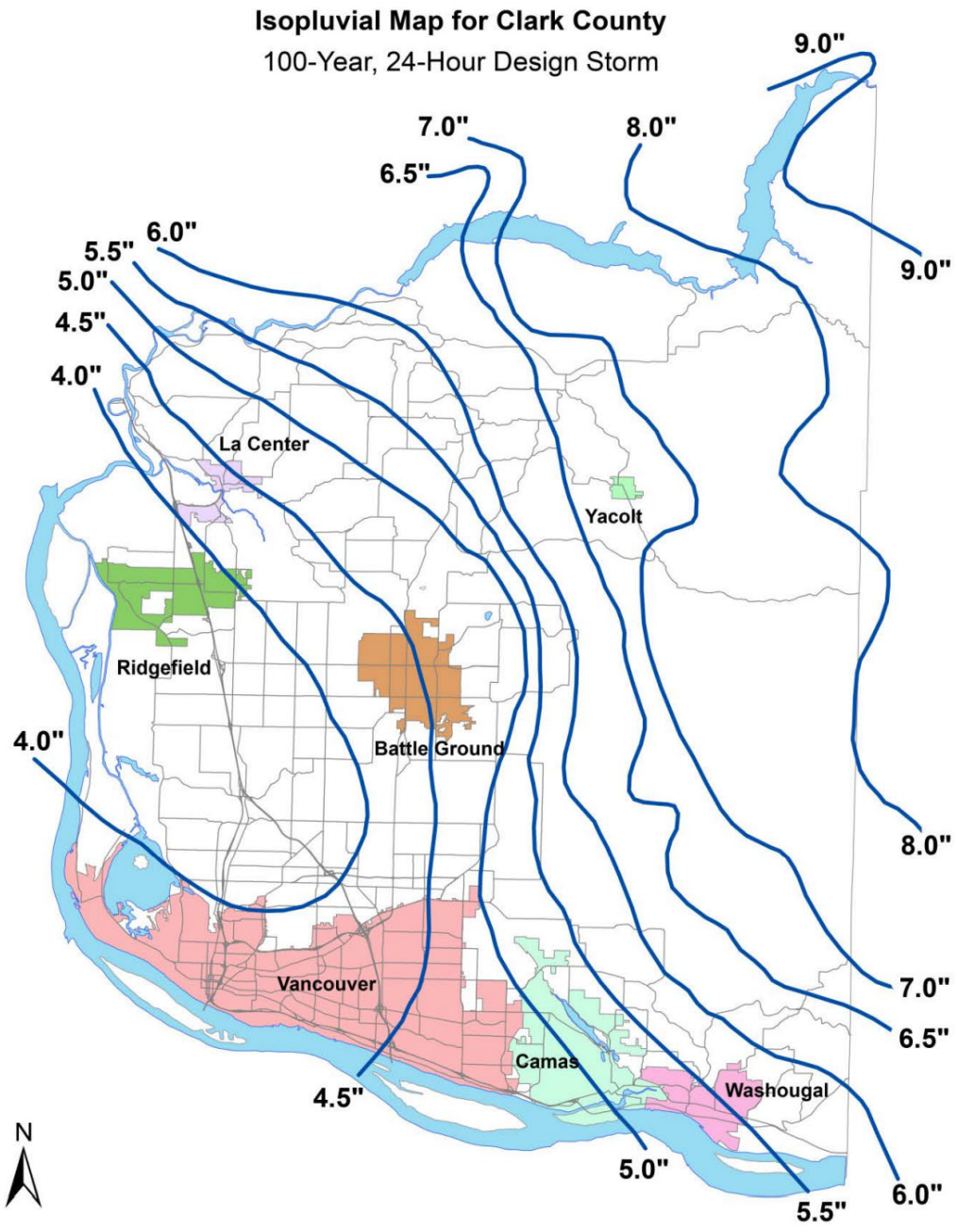
Boundaries current as of 2015

Isopluvial Map for Clark County

25-Year, 24-Hour Design Storm



Boundaries current as of 2015.

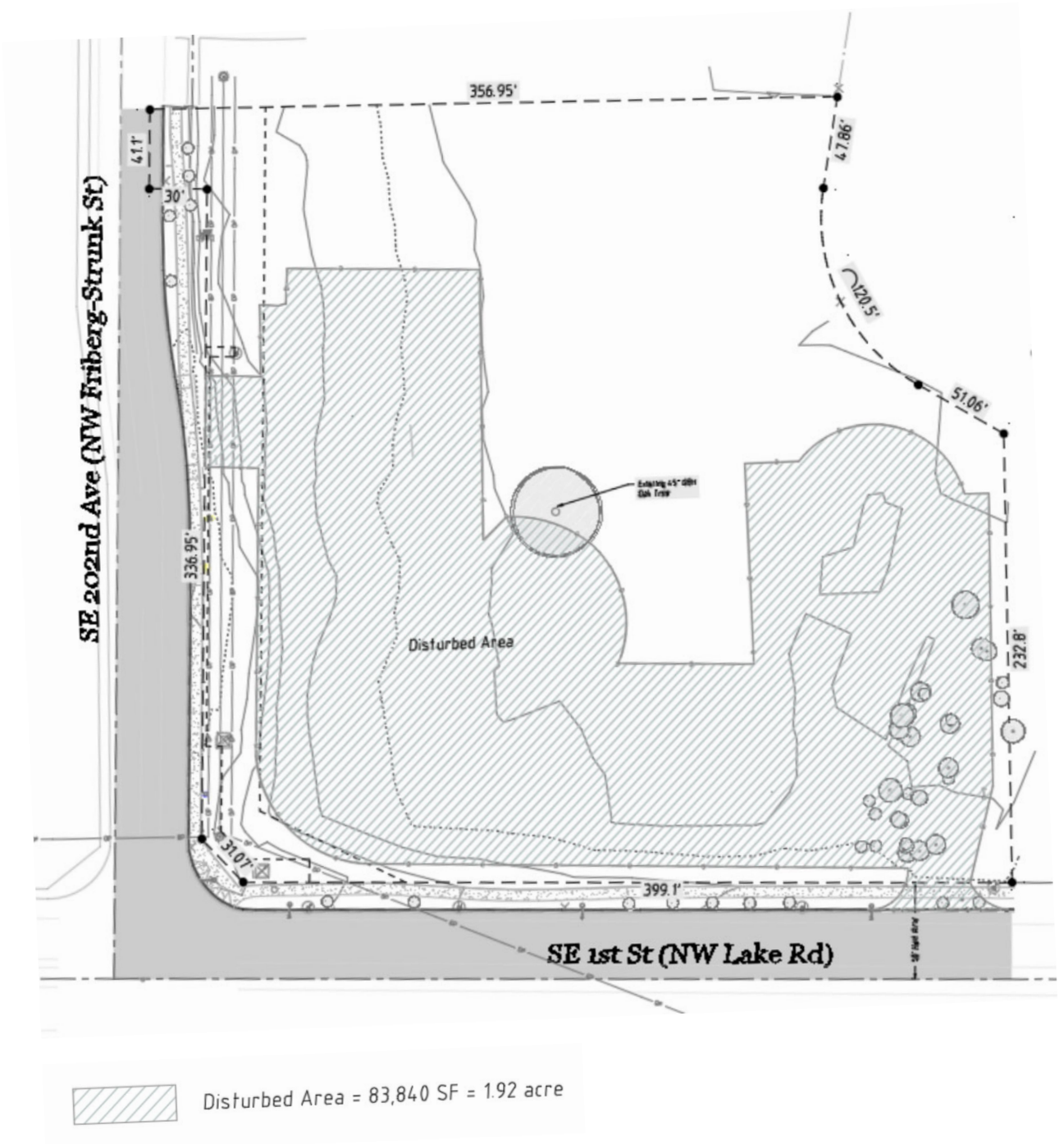


Boundaries current as of 2015.

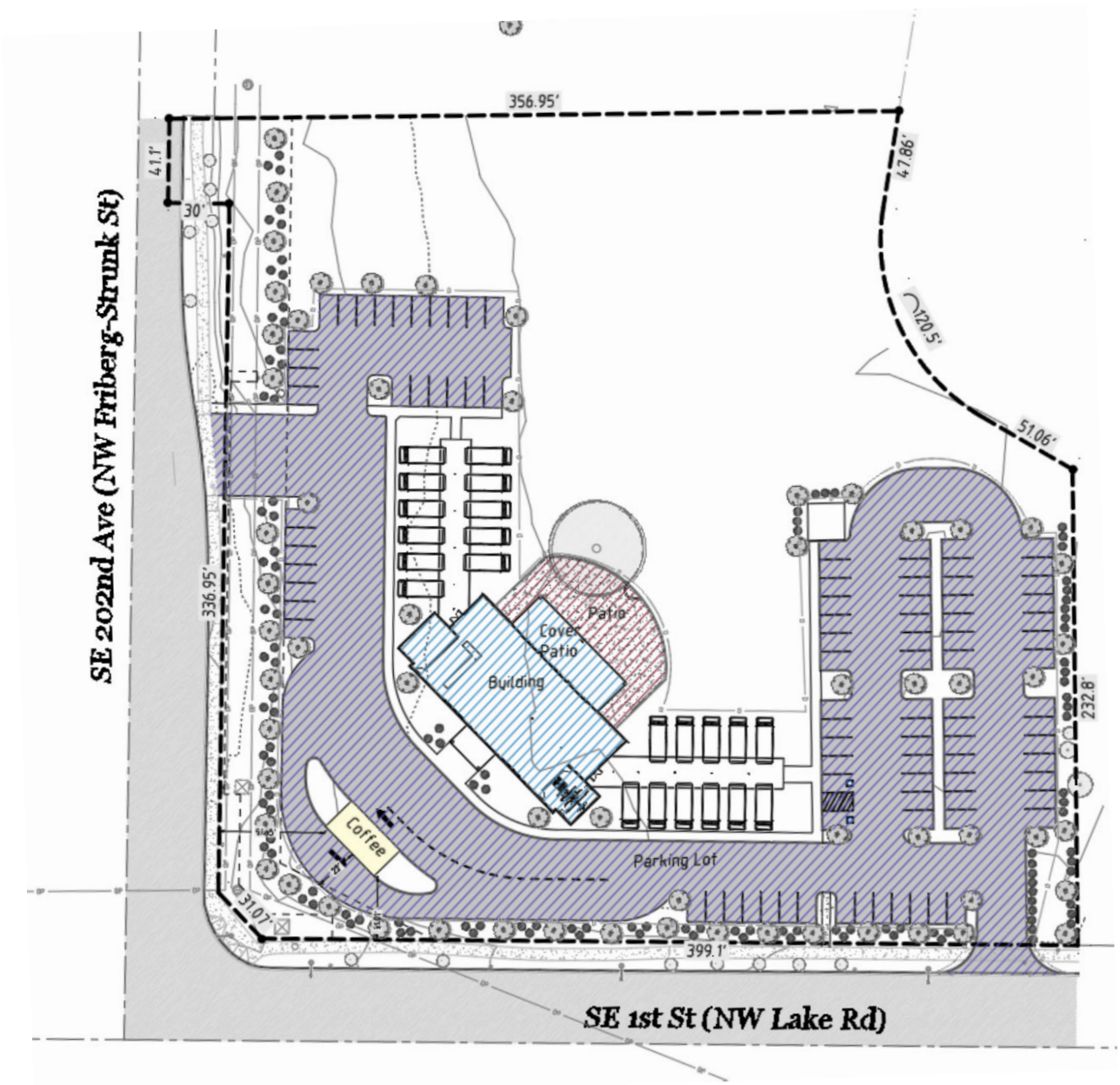
APPENDIX I: BASIN MAPS

Flow Control

Pre-developed



Mitigated



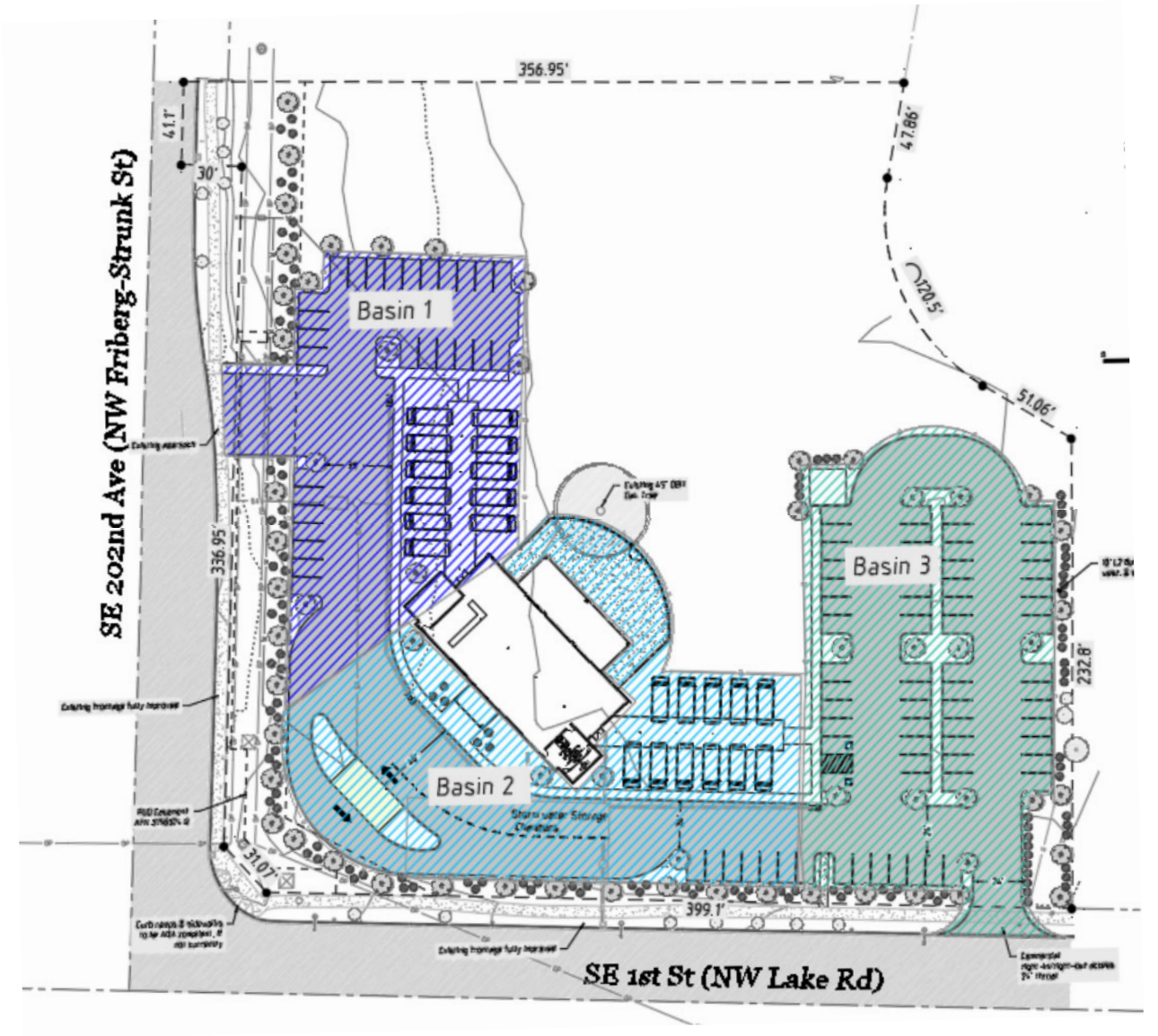
Building + Cover Patio (Roof 1) = 6,690 SF = 0.154 acre

Coffee Kiosk (Roof 2) = 600 SF = 0.014 acre

Patio = 2,875 SF = 0.066 acre

Parking Lot = 47,870 SF = 1.1 acre

Water Quality



WWHM2012

PROJECT REPORT

General Model Information

Project Name:	Oak Tree Station Project Flow Control
Site Name:	176162000
Site Address:	
City:	Camas
Report Date:	1/31/2022
Gage:	Lacamas
Data Start:	1948/10/01
Data End:	2008/09/30
Timestep:	15 Minute
Precip Scale:	1.300
Version Date:	2021/08/18
Version:	4.2.18

POC Thresholds

Low Flow Threshold for POC1:	50 Percent of the 2 Year
High Flow Threshold for POC1:	50 Year

Landuse Basin Data

Predeveloped Land Use

Basin 1

Bypass:	No
GroundWater:	No

Pervious Land Use	acre
SG4, Forest, Flat	1.92
Pervious Total	1.92

Impervious Land Use	acre
Impervious Total	0
Basin Total	1.92

Element Flows To:

Surface	Interflow	Groundwater

Mitigated Land Use

Basin 1

Bypass:	Yes
GroundWater:	No
Pervious Land Use	acre
SG4, Field, Flat	0.586
Pervious Total	0.586
Impervious Land Use	acre
Impervious Total	0
Basin Total	0.586

Element Flows To:

Surface	Interflow	Groundwater

Roof 1

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
Pervious Total	0
Impervious Land Use	acre
ROOF TOPS FLAT	0.154
Impervious Total	0.154
Basin Total	0.154

Element Flows To:

Surface	Interflow	Groundwater
Vault 1	Vault 1	

Roof 2

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
Pervious Total	0
Impervious Land Use	acre
ROOF TOPS FLAT	0.014
Impervious Total	0.014
Basin Total	0.014

Element Flows To:

Surface	Interflow	Groundwater
Vault 1	Vault 1	

Patio

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
Pervious Total	0
Impervious Land Use	acre
DRIVEWAYS FLAT	0.014
Impervious Total	0.014
Basin Total	0.014

Element Flows To:

Surface	Interflow	Groundwater
Vault 1	Vault 1	

Parking Lot

Bypass:	No
GroundWater:	No
Pervious Land Use	acre
Pervious Total	0
Impervious Land Use	acre
PARKING FLAT	1.1
Impervious Total	1.1
Basin Total	1.1

Element Flows To:

Surface	Interflow	Groundwater
Vault 1	Vault 1	

Routing Elements
Predeveloped Routing

Mitigated Routing

Vault 1

Width: 40 ft.
Length: 100 ft.
Depth: 3.75 ft.
Discharge Structure
Riser Height: 3.6 ft.
Riser Diameter: 10 in.
Orifice 1 Diameter: 0.75 in. Elevation:0 ft.
Orifice 2 Diameter: 3.5 in. Elevation:3.2 ft.
Element Flows To:
Outlet 1 Outlet 2

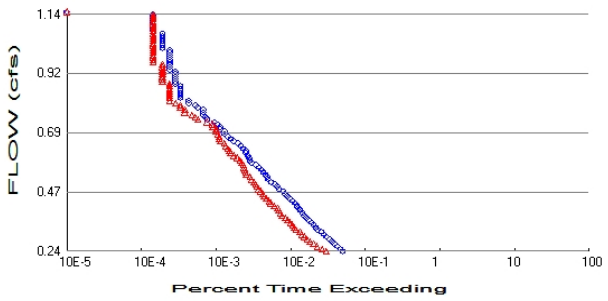
Vault Hydraulic Table

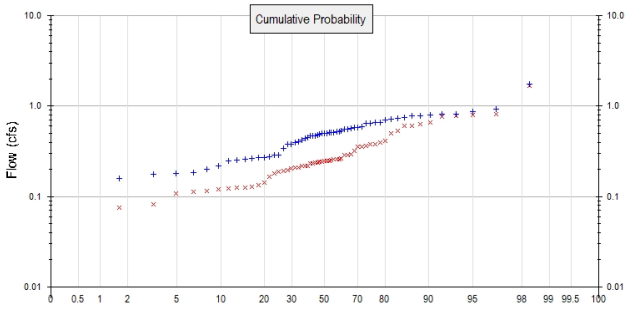
Stage(feet)	Area(ac.)	Volume(ac-ft.)	Discharge(cfs)	Infilt(cfs)
0.0000	0.091	0.000	0.000	0.000
0.0417	0.091	0.003	0.003	0.000
0.0833	0.091	0.007	0.004	0.000
0.1250	0.091	0.011	0.005	0.000
0.1667	0.091	0.015	0.006	0.000
0.2083	0.091	0.019	0.007	0.000
0.2500	0.091	0.023	0.007	0.000
0.2917	0.091	0.026	0.008	0.000
0.3333	0.091	0.030	0.008	0.000
0.3750	0.091	0.034	0.009	0.000
0.4167	0.091	0.038	0.009	0.000
0.4583	0.091	0.042	0.010	0.000
0.5000	0.091	0.045	0.010	0.000
0.5417	0.091	0.049	0.011	0.000
0.5833	0.091	0.053	0.011	0.000
0.6250	0.091	0.057	0.012	0.000
0.6667	0.091	0.061	0.012	0.000
0.7083	0.091	0.065	0.012	0.000
0.7500	0.091	0.068	0.013	0.000
0.7917	0.091	0.072	0.013	0.000
0.8333	0.091	0.076	0.013	0.000
0.8750	0.091	0.080	0.014	0.000
0.9167	0.091	0.084	0.014	0.000
0.9583	0.091	0.088	0.014	0.000
1.0000	0.091	0.091	0.015	0.000
1.0417	0.091	0.095	0.015	0.000
1.0833	0.091	0.099	0.015	0.000
1.1250	0.091	0.103	0.016	0.000
1.1667	0.091	0.107	0.016	0.000
1.2083	0.091	0.111	0.016	0.000
1.2500	0.091	0.114	0.017	0.000
1.2917	0.091	0.118	0.017	0.000
1.3333	0.091	0.122	0.017	0.000
1.3750	0.091	0.126	0.017	0.000
1.4167	0.091	0.130	0.018	0.000
1.4583	0.091	0.133	0.018	0.000
1.5000	0.091	0.137	0.018	0.000
1.5417	0.091	0.141	0.019	0.000
1.5833	0.091	0.145	0.019	0.000

1.6250	0.091	0.149	0.019	0.000
1.6667	0.091	0.153	0.019	0.000
1.7083	0.091	0.156	0.020	0.000
1.7500	0.091	0.160	0.020	0.000
1.7917	0.091	0.164	0.020	0.000
1.8333	0.091	0.168	0.020	0.000
1.8750	0.091	0.172	0.020	0.000
1.9167	0.091	0.176	0.021	0.000
1.9583	0.091	0.179	0.021	0.000
2.0000	0.091	0.183	0.021	0.000
2.0417	0.091	0.187	0.021	0.000
2.0833	0.091	0.191	0.022	0.000
2.1250	0.091	0.195	0.022	0.000
2.1667	0.091	0.199	0.022	0.000
2.2083	0.091	0.202	0.022	0.000
2.2500	0.091	0.206	0.022	0.000
2.2917	0.091	0.210	0.023	0.000
2.3333	0.091	0.214	0.023	0.000
2.3750	0.091	0.218	0.023	0.000
2.4167	0.091	0.221	0.023	0.000
2.4583	0.091	0.225	0.023	0.000
2.5000	0.091	0.229	0.024	0.000
2.5417	0.091	0.233	0.024	0.000
2.5833	0.091	0.237	0.024	0.000
2.6250	0.091	0.241	0.024	0.000
2.6667	0.091	0.244	0.024	0.000
2.7083	0.091	0.248	0.025	0.000
2.7500	0.091	0.252	0.025	0.000
2.7917	0.091	0.256	0.025	0.000
2.8333	0.091	0.260	0.025	0.000
2.8750	0.091	0.264	0.025	0.000
2.9167	0.091	0.267	0.026	0.000
2.9583	0.091	0.271	0.026	0.000
3.0000	0.091	0.275	0.026	0.000
3.0417	0.091	0.279	0.026	0.000
3.0833	0.091	0.283	0.026	0.000
3.1250	0.091	0.287	0.027	0.000
3.1667	0.091	0.290	0.027	0.000
3.2083	0.091	0.294	0.057	0.000
3.2500	0.091	0.298	0.101	0.000
3.2917	0.091	0.302	0.128	0.000
3.3333	0.091	0.306	0.149	0.000
3.3750	0.091	0.309	0.167	0.000
3.4167	0.091	0.313	0.183	0.000
3.4583	0.091	0.317	0.197	0.000
3.5000	0.091	0.321	0.210	0.000
3.5417	0.091	0.325	0.223	0.000
3.5833	0.091	0.329	0.234	0.000
3.6250	0.091	0.332	0.280	0.000
3.6667	0.091	0.336	0.408	0.000
3.7083	0.091	0.340	0.577	0.000
3.7500	0.091	0.344	0.773	0.000
3.7917	0.091	0.348	0.979	0.000
3.8333	0.000	0.000	1.179	0.000

Analysis Results

POC 1





\+ Predeveloped x Mitigated

Predeveloped Landuse Totals for POC #1
Total Pervious Area: 1.92
Total Impervious Area: 0

Mitigated Landuse Totals for POC #1
Total Pervious Area: 0.586
Total Impervious Area: 1.282

Flow Frequency Method: Log Pearson Type III 17B

Flow Frequency Return Periods for Predeveloped. POC #1

Return Period	Flow(cfs)
2 year	0.481706
5 year	0.754113
10 year	0.902752
25 year	1.054393
50 year	1.144674
100 year	1.218985

Flow Frequency Return Periods for Mitigated. POC #1

Return Period	Flow(cfs)
2 year	0.252788
5 year	0.446568
10 year	0.605093
25 year	0.840633
50 year	1.042309
100 year	1.267008

Annual Peaks

Annual Peaks for Predeveloped and Mitigated. POC #1

Year	Predeveloped	Mitigated
1949	0.376	0.203
1950	0.493	0.243
1951	0.651	0.238
1952	0.382	0.248
1953	0.515	0.378
1954	0.718	0.396
1955	0.400	0.164
1956	0.784	0.799
1957	0.596	0.250
1958	0.442	0.232

1959	0.257	0.113
1960	0.254	0.126
1961	0.706	0.626
1962	0.474	0.209
1963	0.526	0.220
1964	0.502	0.358
1965	0.450	0.416
1966	0.576	0.376
1967	0.502	0.193
1968	0.656	0.248
1969	0.534	0.261
1970	1.747	1.670
1971	0.276	0.124
1972	0.470	0.180
1973	0.468	0.353
1974	0.737	0.812
1975	0.401	0.186
1976	0.577	0.217
1977	0.016	0.041
1978	0.823	0.504
1979	0.557	0.236
1980	0.340	0.289
1981	0.782	0.609
1982	0.526	0.360
1983	0.875	0.320
1984	0.286	0.116
1985	0.220	0.135
1986	0.272	0.125
1987	0.475	0.260
1988	0.183	0.219
1989	0.199	0.119
1990	0.181	0.143
1991	0.512	0.198
1992	0.564	0.207
1993	0.662	0.257
1994	0.506	0.230
1995	0.420	0.655
1996	0.804	0.764
1997	0.931	0.780
1998	0.752	0.288
1999	0.562	0.529
2000	0.272	0.107
2001	0.157	0.075
2002	0.821	0.297
2003	0.646	0.243
2004	0.177	0.083
2005	0.265	0.128
2006	0.495	0.267
2007	0.245	0.611
2008	0.288	0.254

Ranked Annual Peaks

Ranked Annual Peaks for Predeveloped and Mitigated. POC #1

Rank	Predeveloped	Mitigated
1	1.7467	1.6697
2	0.9308	0.8122
3	0.8754	0.7991
4	0.8225	0.7798

5	0.8213	0.7642
6	0.8037	0.6549
7	0.7839	0.6260
8	0.7819	0.6112
9	0.7525	0.6093
10	0.7367	0.5286
11	0.7180	0.5045
12	0.7060	0.4159
13	0.6625	0.3955
14	0.6558	0.3778
15	0.6515	0.3762
16	0.6456	0.3604
17	0.5962	0.3577
18	0.5770	0.3531
19	0.5756	0.3198
20	0.5636	0.2971
21	0.5623	0.2888
22	0.5567	0.2878
23	0.5344	0.2666
24	0.5264	0.2606
25	0.5262	0.2604
26	0.5152	0.2573
27	0.5123	0.2540
28	0.5065	0.2500
29	0.5024	0.2483
30	0.5016	0.2477
31	0.4955	0.2433
32	0.4932	0.2428
33	0.4746	0.2382
34	0.4737	0.2363
35	0.4697	0.2321
36	0.4678	0.2305
37	0.4504	0.2195
38	0.4423	0.2189
39	0.4202	0.2174
40	0.4014	0.2086
41	0.3998	0.2068
42	0.3819	0.2031
43	0.3761	0.1977
44	0.3404	0.1933
45	0.2879	0.1859
46	0.2856	0.1804
47	0.2762	0.1640
48	0.2723	0.1425
49	0.2720	0.1347
50	0.2649	0.1279
51	0.2571	0.1259
52	0.2540	0.1253
53	0.2453	0.1237
54	0.2202	0.1190
55	0.1991	0.1162
56	0.1833	0.1131
57	0.1806	0.1073
58	0.1772	0.0827
59	0.1569	0.0753
60	0.0157	0.0413

Duration Flows

The Facility PASSED

Flow(cfs)	Predev	Mit	Percentage	Pass/Fail
0.2409	1046	626	59	Pass
0.2500	968	556	57	Pass
0.2591	894	476	53	Pass
0.2682	812	425	52	Pass
0.2774	747	377	50	Pass
0.2865	696	350	50	Pass
0.2956	636	320	50	Pass
0.3048	586	293	50	Pass
0.3139	543	281	51	Pass
0.3230	484	247	51	Pass
0.3321	456	233	51	Pass
0.3413	425	223	52	Pass
0.3504	405	208	51	Pass
0.3595	367	189	51	Pass
0.3687	338	178	52	Pass
0.3778	317	160	50	Pass
0.3869	301	153	50	Pass
0.3961	280	146	52	Pass
0.4052	265	141	53	Pass
0.4143	253	125	49	Pass
0.4234	240	114	47	Pass
0.4326	223	108	48	Pass
0.4417	201	98	48	Pass
0.4508	187	92	49	Pass
0.4600	176	89	50	Pass
0.4691	167	84	50	Pass
0.4782	145	78	53	Pass
0.4873	139	74	53	Pass
0.4965	128	71	55	Pass
0.5056	114	67	58	Pass
0.5147	104	62	59	Pass
0.5239	101	60	59	Pass
0.5330	96	53	55	Pass
0.5421	90	52	57	Pass
0.5513	85	51	60	Pass
0.5604	80	50	62	Pass
0.5695	72	49	68	Pass
0.5786	62	46	74	Pass
0.5878	59	44	74	Pass
0.5969	58	40	68	Pass
0.6060	56	36	64	Pass
0.6152	53	33	62	Pass
0.6243	52	32	61	Pass
0.6334	48	30	62	Pass
0.6426	45	28	62	Pass
0.6517	41	27	65	Pass
0.6608	36	24	66	Pass
0.6699	33	23	69	Pass
0.6791	30	23	76	Pass
0.6882	27	22	81	Pass
0.6973	27	21	77	Pass
0.7065	24	21	87	Pass
0.7156	24	19	79	Pass

0.7247	22	19	86	Pass
0.7338	20	16	80	Pass
0.7430	16	12	75	Pass
0.7521	15	11	73	Pass
0.7612	14	10	71	Pass
0.7704	14	8	57	Pass
0.7795	14	8	57	Pass
0.7886	12	7	58	Pass
0.7978	11	7	63	Pass
0.8069	9	6	66	Pass
0.8160	9	5	55	Pass
0.8251	7	5	71	Pass
0.8343	7	5	71	Pass
0.8434	7	5	71	Pass
0.8525	7	5	71	Pass
0.8617	7	5	71	Pass
0.8708	7	5	71	Pass
0.8799	6	5	83	Pass
0.8890	6	4	66	Pass
0.8982	6	4	66	Pass
0.9073	6	4	66	Pass
0.9164	6	4	66	Pass
0.9256	6	4	66	Pass
0.9347	5	4	80	Pass
0.9438	5	4	80	Pass
0.9530	5	4	80	Pass
0.9621	5	3	60	Pass
0.9712	5	3	60	Pass
0.9803	5	3	60	Pass
0.9895	5	3	60	Pass
0.9986	5	3	60	Pass
1.0077	5	3	60	Pass
1.0169	4	3	75	Pass
1.0260	4	3	75	Pass
1.0351	4	3	75	Pass
1.0442	4	3	75	Pass
1.0534	4	3	75	Pass
1.0625	4	3	75	Pass
1.0716	4	3	75	Pass
1.0808	3	3	100	Pass
1.0899	3	3	100	Pass
1.0990	3	3	100	Pass
1.1082	3	3	100	Pass
1.1173	3	3	100	Pass
1.1264	3	3	100	Pass
1.1355	3	3	100	Pass
1.1447	3	3	100	Pass

Water Quality

Water Quality BMP Flow and Volume for POC #1

On-line facility volume:	0 acre-feet
On-line facility target flow:	0 cfs.
Adjusted for 15 min:	0 cfs.
Off-line facility target flow:	0 cfs.
Adjusted for 15 min:	0 cfs.

LID Report

LID Technique	Used for Treatment ?	Total Volume Needs Treatment (ac-ft)	Volume Through Facility (ac-ft)	Infiltration Volume (ac-ft)	Cumulative Volume Infiltration Credit	Percent Volume Infiltrated	Water Quality	Percent Water Quality Treated	Comment
Vault 1 POC	☐	230.76			☐	0.00			
Total Volume Infiltrated		230.76	0.00	0.00		0.00	0.00	0%	No Treat. Credit
Compliance with LID Standard 8% of 2-yr to 50% of 2-yr									Duration Analysis Result = Passed

Model Default Modifications

Total of 0 changes have been made.

PERLND Changes

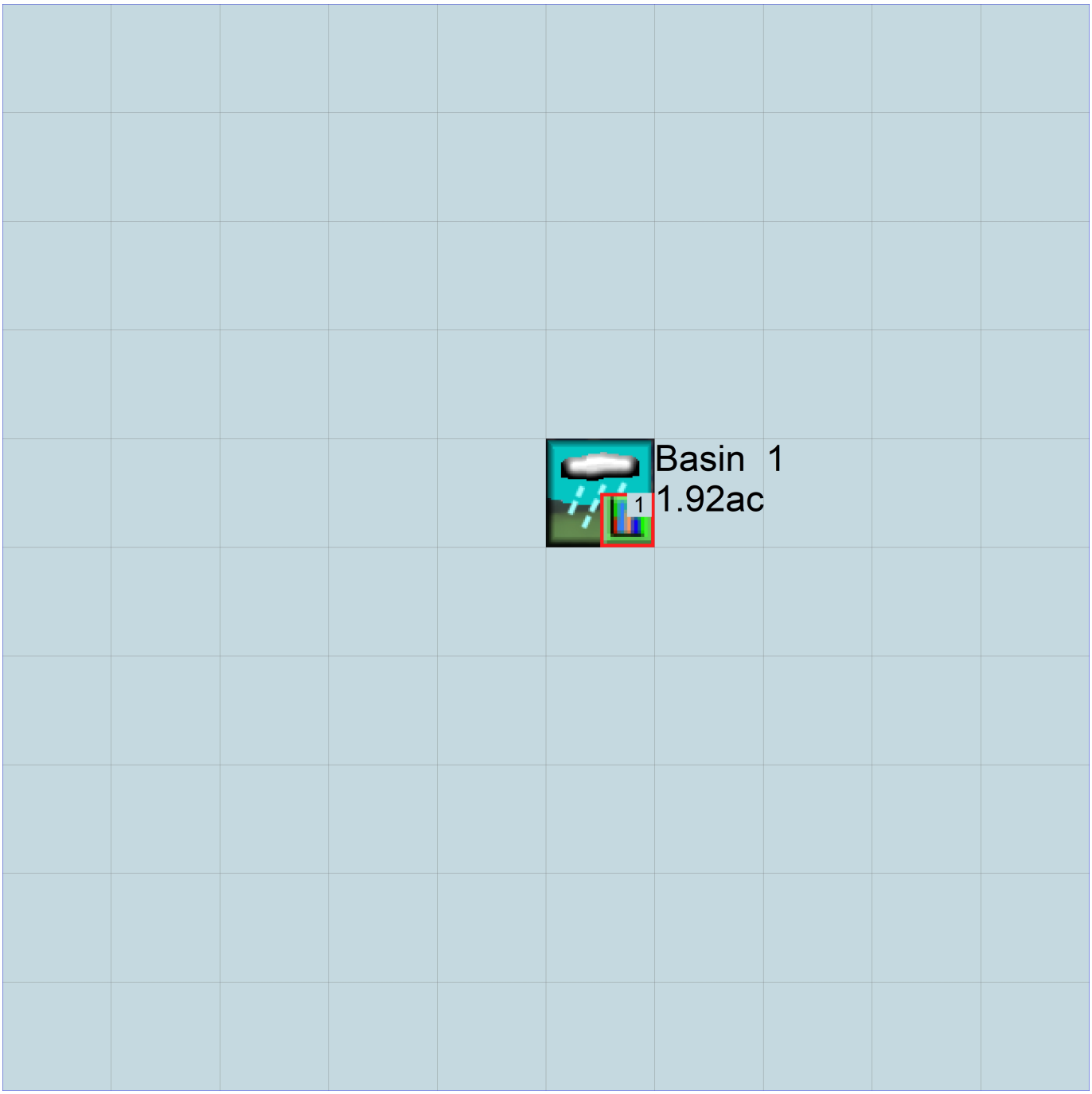
No PERLND changes have been made.

IMPLND Changes

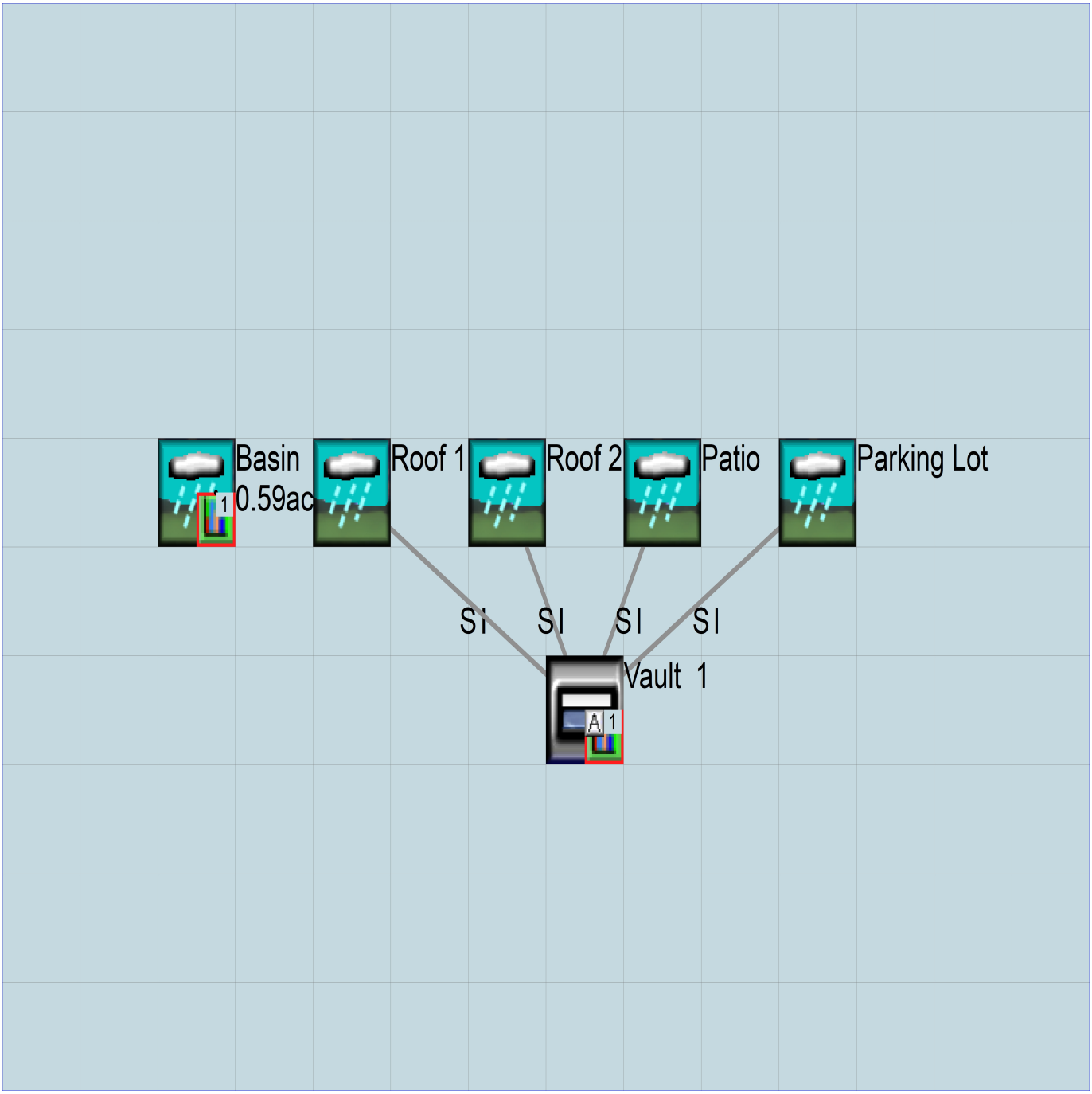
No IMPLND changes have been made.

Appendix

Predeveloped Schematic



Mitigated Schematic



Predeveloped UCI File

Mitigated UCI File

Predeveloped HSPF Message File

Mitigated HSPF Message File

Disclaimer

Legal Notice

This program and accompanying documentation are provided 'as-is' without warranty of any kind. The entire risk regarding the performance and results of this program is assumed by End User. Clear Creek Solutions Inc. and the governmental licensee or sublicensees disclaim all warranties, either expressed or implied, including but not limited to implied warranties of program and accompanying documentation. In no event shall Clear Creek Solutions Inc. be liable for any damages whatsoever (including without limitation to damages for loss of business profits, loss of business information, business interruption, and the like) arising out of the use of, or inability to use this program even if Clear Creek Solutions Inc. or their authorized representatives have been advised of the possibility of such damages. Software Copyright © by : Clear Creek Solutions, Inc. 2005-2022; All Rights Reserved.

Clear Creek Solutions, Inc.
6200 Capitol Blvd. Ste F
Olympia, WA. 98501
Toll Free 1(866)943-0304
Local (360)943-0304

www.clearcreeksolutions.com

GEOTECHNICAL ENGINEERING STUDY

For

Oak Tree Station

City of Camas, Washington

Prepared for:

Oak Tree Station

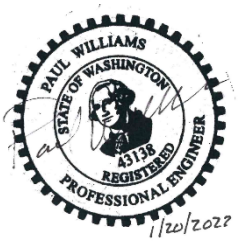
3239 NW Hood Ct

Camas WA 98607

Prepared by:

Engineering Northwest PLLC
6168 NE HWY 99
Vancouver, WA 98665
PH: 360-931-3122
paulwilliamspe@gmail.com

January 13, 2022



Contents

1.0 Introduction 3
1.1 General Site Information 4
1.2 Proposed Development 4
2.0 Regional Geology and Soil Conditions 4
3.0 Regional Seismology 5
4.0 Geotechnical Field Investigation 6
4.1 Surface Investigation and Site Description 6
4.2 Subsurface Exploration and Investigation 7
4.2.1 Soil Type Description 8
5.0 Design Recommendations 8
5.1 Site Preparation and Grading 8
5.2 Engineered Structural Fill 8
5.2.1 Reuse of Undocumented Fill Material 11
5.3 Cut and Fill Slopes 12
5.4 Foundations 12
5.5 Temporary Excavations 14
5.6 Lateral Earth Pressure 14
5.7 Seismic Design Considerations 15
5.9 Drainage 16
5.10 Bituminous Asphalt And Portland Cement Concrete 16
5.11 Wet Weather Construction Methods and Techniques 17
5.12 Soil Erosion Potential 17
5.13 Soil Shrink/Swell Potential 18
5.14 Utility Installation 18
5.15 Groundwater 19
5.17 Lab Soil Test Results 19

5.18 Infiltration Testing 20
5.19 Conclusion 22
5.20 Limitations 22

1.0 Introduction

This report presents the results of the geotechnical engineering study completed by Engineering Northwest PLLC for the proposed Oak Tree Station project in the City of Camas, Washington. The general location of the site is shown on the Vicinity Map, figure 1. The site includes one parcel, which total approximately 3.95 acres. At the time our study was performed, the site and our exploratory locations were approximate as shown on the site plan map, figure 1.

The purpose of this study was to explore subsurface conditions at the site, and based on the conditions encountered, provide geotechnical recommendations for the proposed construction. This report is subject to the limitations expressed in Section 6.0, Conclusion and Limitations.

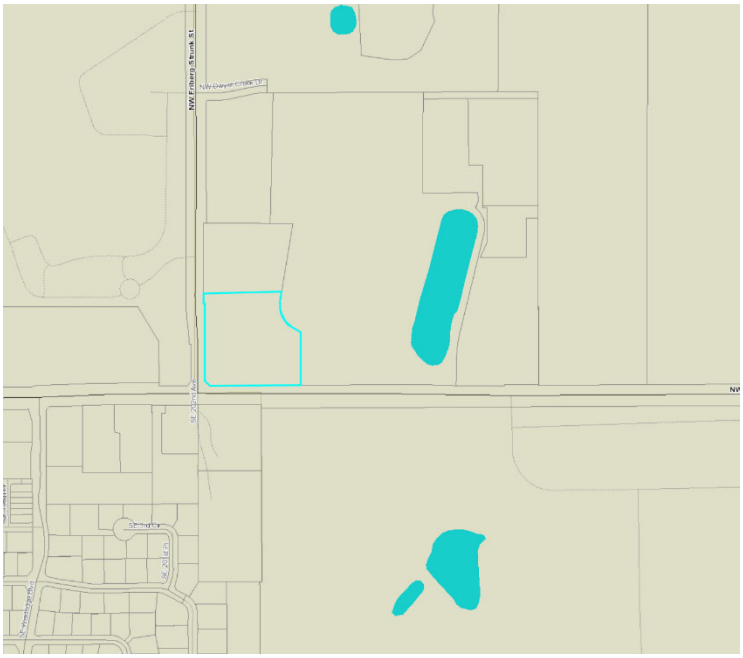


FIGURE 1

1.1 General Site Information

As indicated on Figures 1 the 3.95-acre subject site is located north side of NW Lake Road in the City of Camas, Washington. The approximate latitude and longitude are 45°39'19.72"N and 122°27'56.85"W and the legal description is a portion of the SE ¼ Section 29 Township 2N, Range 3E, Willamette Meridian. The regulatory jurisdictional agency is the City of Camas, Washington.

1.2 Proposed Development

The proposed Oaktree Station project is located on north side of NW lake Road. The project proposes 5,000 square-feet indoor and outdoor eating area and a small coffee shop. The project includes the future construction of utility, private parking, a storm water facility and other related infrastructural improvements.

2.0 Regional Geology and Soil Conditions

According to the Geologic Map of the Vancouver Quadrangle, Washington and Oregon (Washington Division of Geology and Earth Resources, Open-File Report 87-10, Revised November 1987), near-surface geology is:

Map Unit: Qf
Name: Pleistocene outburst-flood deposits
Full Name: Pleistocene outburst-flood deposits
Age: Quaternary (Pleistocene)
Description: Pleistocene gravel and sandy gravel deposits with interbedded silt lenses; deposited as benches along the main stem of the Snake River as a result of rapid draining of glacial Lake Bonneville; also widespread silt, sand, gravel, and boulder deposits deposited during multiple catastrophic drainings of glacial Lake Missoula; includes glaciolacustrine deposits.

The Soil Survey of Clark County, Washington (United States Department of Agriculture, Soil Conservation Service [USDA SCS], November 1972) identifies three separate surface soils with the subject property. Although actual on-site soils may vary from the broad USDA descriptions, soil types and associated descriptions are presented below.

- Dollar (DoB): The Olympic series consists of deep, moderately well drained, nearly level to gently sloping soils. Hydrologic soil group "C"

3.0 Regional Seismology

Recent research and subsurface mapping investigations within the Pacific Northwest appear to suggest the historic potential risk for a large earthquake event with strong localized ground movement may be underestimated. Past earthquakes in the Pacific Northwest appear to have caused landslides and ground subsidence, in addition to severe flooding near coastal areas. Earthquakes may also induce soil liquefaction, which occurs when elevated horizontal ground acceleration and velocity cause soil particles to interact as a fluid as opposed to a solid. Liquefaction of soil can result in lateral spreading and temporary loss of bearing capacity and shear strength.
There are at least four major known fault zones in the vicinity of the site that may be capable of generating potentially destructive horizontal accelerations. These fault zones are described briefly in the following text.

Portland Hills Fault Zone

The Portland Hills Fault Zone consists of server northwest-trending faults located along the eastern boundary of the Portland Hills. The fault zone is approximately 12 miles in length and is located approximately 8.5 southwest of the site. According to Seismic Design Mapping, State of Oregon (Geomatrix Consultants, 1995), there is no definitive consensus among geologists as to the zone fault type. Several alternate interpretations have been suggested, including various strike-slip and dipping thrust fault theories. Evidence exists to suggest that fault movement has impacted shallow Holocene deposits and deeper Pleistocene sediments. Seismologists recorded a M3.9 earthquake thought to be associated with the fault zone near Kelly Point Park in April 2003, and a M3.5 earthquake possibly associated with the fault zone occurred approximately 1.3 miles east of the fault in 1991. Therefore, the Portland Hills Fault Zone is generally thought to be potentially active and capable of producing possible damaging earthquakes.

Gales Creek-Newberg-Mt. Angel Fault Zone

Located approximately 30 miles south of the site, the 50-mile long Gales Creek-Newberg-Mt. Angel Structural Zone consists of a series of discontinuous northwest-trending faults. Possible late-Quaternary geomorphic surface deformation may exist along the structural zone (Geomatrix Consultants, 1995). Although no definitive

evidence of impacts to Holocene sediments has reportedly been observed, a M5.6

earthquake occurred in March 1993 near Scotts Mills, approximately four mile south of the mapped extent of the Mt. Angel fault. It is unclear if the earthquake occurred along the fault zone or a parallel structure. Therefore, the Gales Creek-Newberg-Mt Angel Structural Zone is considered potentially active.

Lacamas Creek-Sandy River Fault Zone

The northwest-trending Lacamas Creek Fault and northeast-trending Sandy River Fault intersect north of Camas, Washington approximately 3.5 southeast of the site. According to Geologty and Groundwater Conditions of Clark County Washington (USGS Water Supply Paper 1600, Mundorff, 1964) and the Geologic Map of the Lake Owego Quandrangle (Oregon DOGAMI Series GMS-59, 1989), the Lacamas Creek fault zone consists of shear contact between the Troutdale Formation and underlying Oligocene andesite-basalt bedrock. Secondary shear contact associated with the fault zone may have produced a series of prominent northwest-southeast geomorphic lineaments in proximity to the site. Recorded mild seismic activity during the recent past indicates this area may be potentially seismogenic.

Cascadia Subduction Zone

The Cascadia Subduction Zone has recently been recognized as a potential source of strong earthquake activity in the Portland/Vancouver Basin. This phenomenon is the result of the earth's large tectonic plate movement. Geologic evidence indicates that volcanic ocean floor activity along the Juan de Fuca ridge in the Pacific Ocean causes the Juan de Fuca Plate to perpetually move east and subduct under the North American Continental Plate. The subduction zone results in historic volcanic and potential earthquake activity in proximity to the plate interface, believed to lie approximately 20 to 60 miles west of the general location of the Oregon and Washington coast (Geomatrix Consultants, 1995).

4.0 Geotechnical Field Investigation

A geotechnical field investigation consisting of visual reconnaissance and one test pit explorations (TP-1) was conducted at the site. Test pit exploration was performed with a excavator. Subsurface soil profiles were logged in accordance with Unified Soil Classification System (USCS) specifications. Disturbed soil samples were collected from relevant soil horizons and analyzed. Test pit locations are indicated on Figure 2.

4.1 Subsurface Exploration and Investigation

We explored subsurface conditions for one test pits (TP-1) were excavated at the site to a maximum depth of 6 feet on January 13, 2022. The approximate locations of the test pit are shown in Figure 2.

Select soil samples from the test pit were tested to determine the natural moisture content, dry density, organic content.

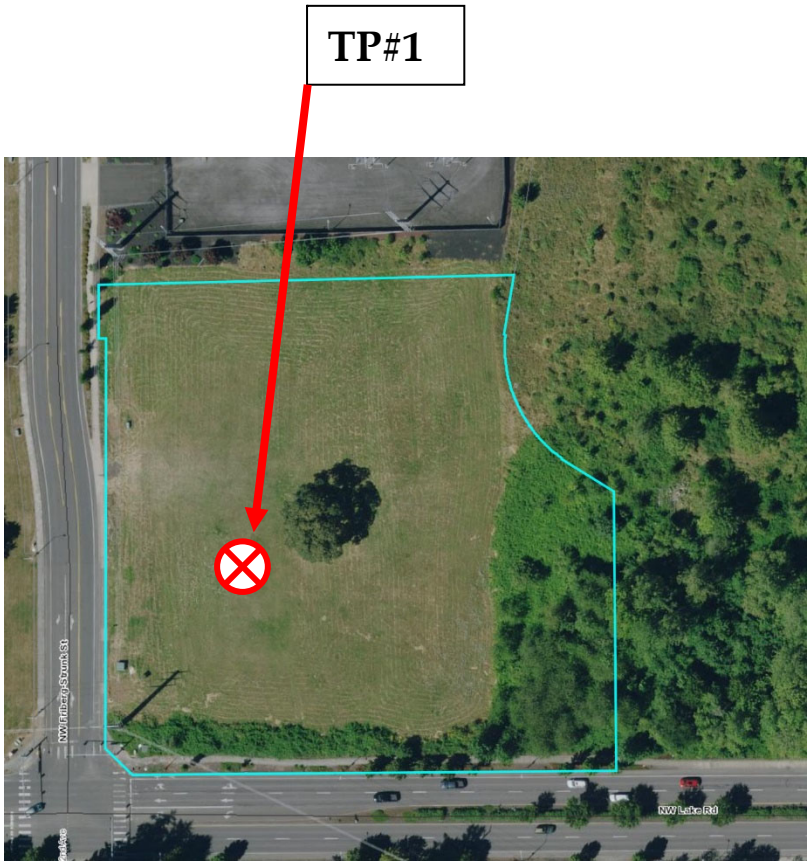


Figure 2

4.2 Surface Investigation and Site Description

The surface topography of the subject property typical slopes from east to west. The majority of the site is covered with field grass one large tree and serval small trees to the east property line.

In general, the surface soil over the majority of the project site varies from dark brown to reddish-brown which is typical Dollar soil type. The near- surface soil conditions has relatively high organic content extended to an approximate depth of 14 inches.

Laboratory testing of selected samples resulted in soil moisture content varying between 8 and 12 percent.

4.2.1 Soil Type Description

The field sample soil results are listed below.

Soil	USDA Texture	Unified	AASHO	Hydrologic Group
DoB	Loam	ML	A-4	C

5.0 Design Recommendations

The geotechnical site investigation suggests that proposes development is generally compatible with surface and subsurface soils, provided the recommendations presented in this report are used and incorporated into the design and construction process.

5.1 Site Preparation and Grading

Trees, grasses, and other grubbing items should be removed from all building, slab, structural fill, and pavement and sidewalk areas. Root balls should be grubbed out to the depth of the roots, which could exceed 2.0 to 3.0 feet depth. Depending on the methods used to remove the root balls, considerable disturbance and lessening 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/root zone should be stripped and removed from all proposed building, slab, structural fill, pavement and sidewalk areas, and for a 5-foot margins around such areas. Based on our explorations, the average depth of stripping in will be

approximately 10 inches. Greater stripping depths will be required to remove localized zones of loose or organic soil.

After grubbing, stripping, and required site cutting have been completed, we recommend proof rolling the subgrade with a fully-loaded dump truck or similar size, rubber tire construction equipment to identify areas of excessive yielding. The proof rolling should be observed by geotechnical engineering who will evaluate the subgrade. If areas of excessive yielding are identified, the material should be excavated and replaced with compacted materials recommended for structural fill. Areas that appear to be too wet and soft to support proof rolling equipment should be prepared in accordance with the recommendations for wet weather construction presented in the following section of this report

The test pit excavations were backfilled using the relatively minimal compaction effort of the hoe bucket; therefore, soft spots can be expected at these locations. We recommend that these relatively uncompacted soils be removed from the test pits to a depth of 3.0 feet below finished subgrade. The resulting excavation should be brought back to grade with structural fill.

5.2 Engineered Structural Fill

The native silt can be used as structural fill provided it is adequately moisture conditioned. Silty soils are generally sensitive to small changes in moisture content and are difficult, if not impossible, to compact adequately during wet weather or when their moisture content is more than a few percentage points above the optimum moisture content. Some moisture conditioning will likely be necessary even during the dry weather construction season. We recommend using clean. Angular imported granular material for structural fill if site soils cannot be properly moisture conditioned. As an alternative, use of the native silt soil as structural fill may be acceptable if it is properly amended with Portland cement or lime.

When used as structural fill, the silt soils should be placed in lifts with a maximum uncompact thickness of 6 to 8 inches and compacted to not less than 92 percent of the maximum dry density, as determined by American Society for Testing and Materials (ASTM) D 1557.

Engineered structural fill should be placed in loose lifts not exceeding 12 inches in depth and compacted using standard conventional compaction equipment. A field density at least equal to 92 percent of the maximum dry density, obtained from the modified Proctor moisture-density relationship test (ASTM D1557), is recommended for structural fill placement. For engineered structural fill placed on sloped grades, the area should be benched to provide a horizontal surface for compaction. Compaction of engineered structural fill should be verified by nuclear gauge field compaction testing performed in accordance with ASTM D6938-08. Field compaction testing should be performed for each vertical foot of engineered fill placed. Engineered fill placement should be observed by an experienced geotechnical engineer or designated representative. Engineered structural fill placement occurs during dry weather conditions, clean non-organic achieve recommended compaction specifications. If adequate compaction is not achievable with clean native soils, import structural fill consisting of well-graded granular material with a maximum particle size of 3 inches and no more than 5 percent passing the No. 200 sieve is recommended. Representative samples of proposed engineered structural fill should be submitted for laboratory analysis and approval by the geotechnical engineer prior to placement. Laboratory analyses should include particle-size gradation and modified Proctor moisture-density analysis.

Trench backfill for the utility pipe base and pipe zone should consist of well-graded granular material with a maximum particle size of ¾ inch and less than 8 percent by weight passing the U.S. Standard No. 200 Sieve. The material should be free of roots, organic matter, and other unsuitable materials. Backfill for the pipe base and pipe zone should be compacted to at least 90 percent of the maximum dry density, as determined by ASTM D 1557, or as recommended by the pipe manufacturer. Within building and pavement areas, trench backfill placed above the pipe zone should be compacted to at least 92 percent of ASTM D 1557 at depths greater than 2.0 feet below the finished subgrade and as recommended for structural fill within 2 feet of finished subgrade. In all other areas, trench backfill above the pipe zone should be compacted to at least 92 percent of the maximum dry density, as determined by ASTM D 1557.

As an alternative to the use of imported granular material, an experienced contractor may be able to amend the on-site with Portland cement to obtain suitable support

properties. Depending on the size of the area, it is generally less costly to amend on-site soils than to remove and replace soft soils with granular material. Based on the moisture contents, soil types, and processing speed, cement amendment would be more suitable at this site than lime amendment.

The amount of cement used to amend the soils generally varies with moisture content. It is difficult to predict field performance of soils to cement amendment due to variability in soil response and we recommend laboratory testing to confirm expectations. However, for preliminary design purposes, we expect acceptable soil strength will be obtained using an amendment rate of 6 pounds Portland cement tilled to a depth of 12 inches. This translates to approximately 6 percent cement by weight. The amount of cement added to the soil may need to be adjusted based on field observations and performance.

5.2.1 Reuse of Undocumented Fill Material

As discussed in Section 5.1 Site Preparation and Grading, undocumented fill was encountered at the entrance of the site. In general, the fill encountered consisted of sand and gravel. If minor debris is encountered the contractor shall notify the geotechnical engineer or designated representative. Cobbles and boulders larger than 6 inches that cannot be broken into smaller fragments should be removed. Crushing and mixing processes should be observed and approved by an experienced geotechnical engineer.

5.3 Cut and Fill Slopes

Fill placed on grades steeper than 5H:1V should be horizontally benched at least 10 feet into the slope. Fill slopes greater than six feet in height should be vertically keyed into existing subsurface soil. Drainage implementations, including subdrains or perforated drain pipe trenches, may also be required in proximity to cut and fill slopes if seeps, springs, or soft mottled soils are encountered. Drainage design may be performed on a case-by-case basis. Extent, depth, and location of drainage may be determined in the field by the geotechnical engineer during construction when soil conditions are exposed. Failure to provide adequate drainage may result in soil sloughing, settlement, or erosion. Concentrated drainage or water flow over the face of slopes should be prohibited, and adequate protection against erosion is required.

Final cut or fill slopes should not exceed 2H:1V or 20 feet in vertical height without individual slope stability analysis. The values above assume a minimum horizontal setback for loads of 10 feet from top of cut or fill slope face or overall slope height divided by three (H/3), whichever is greater. Fill slopes should be constructed by placing fill material in maximum 12-inch level lifts, compacting as described in Section 5.2, Engineered Structural Fill and horizontally benching where appropriate. Fill slopes should be overbuilt, compacted, and trimmed at least two feet horizontally to provide adequate compaction of the outer slope face. Proper cut and fill slope construction is critical to overall project stability and should be observed by and experienced geotechnical engineer.

5.4 Home Foundations

Engineering Northwest recommendation to follow the recommendation and guidelines in the most current IBC.

5.5 Temporary Excavations

The following information is provided solely as a service to our client. Under no circumstances should this information be interpreted to mean that Engineering Northwest PLLC is assuming responsibility for construction site safety or the contractor's activities; such responsibility is not being implied and should not be inferred.

In no case should excavation slopes be greater than the limits specified in local, state and federal safety regulations. Based on the information obtained from our field

exploration and laboratory testing, the site soils expected to be encountered in excavations, firm to stiff silt (ML) and silty sand (SM) would be classified as a Type "B" soil by OSHA guidelines.

Therefore, temporary excavations and cuts greater than four feet in height, should be sloped at an inclination no steeper than 1H:1V (horizontal:vertical) for type "B" soils. If slopes of this inclination, or flatter, cannot be constructed or if excavations greater than ten feet in depth are required, temporary shoring may be necessary.

The shoring would help protect against slope or excavation collapse, and would provide protection to workmen in the excavation. If temporary shoring is required, we will be available to provide shoring design criteria, if requested.

5.6 Lateral Earth Pressure

Lateral earth pressure should be carefully considered for design of retaining walls or below-grade structures. Hydrostatic pressure and additional surcharge loading should also be considered. Retained material may include engineered structural backfill or relatively undisturbed native soil. Structural wall backfill may consist of recompacted fine-textured soils or imported granular material. Backfill should be prepared and

compacted to at least 92 percent of maximum dry density as determined by the modified Proctor test (ASTM D1557). If seismic design is required, seismic forces for unrestrained wall may be calculated by superimposing a uniform lateral force of $10H^2$ pounds per lineal foot of wall, where H is the total wall height in feet. The resultant force should be applied at 0.6H from the base of the wall.

A continuous one-foot-thick zone of free-draining, washed, open-graded 1-inch by 2-inch drain rock and a 3-inch perforated gravity drain pipe is assumed behind retaining walls. Geotextile filter fabric should be placed between the drain rock and fine-textured backfill soil. Specifications for drainpipe design are presented in Section 5.10, Drainage. If walls cannot be gravity drained, saturated base conditions and /or applicable hydrostatic pressures should be assumed.

5.7 Seismic Design Considerations

Based upon Site Class Map of Clark County, Washington (Washington State Department of Natural Resources, 2004), shallow site soils may be represented by Site Class C as defined in 2009 IBC Table 161.5.2. This assessment is preliminary, pertains to near-surface soils, and is based upon limited field exploration and research of existing published literature. Additional exploration would be necessary to provide soil site class information at greater depths. Amplification of seismic energy due to depth to competent bedrock, compression and shear wave velocity of bedrock, presence and thickness of loose, unconsolidated alluvial deposits, soil plasticity, grain size, and other factors is possible at the site

According to Clark County Maps Online, the site is mapped as very low to low potential for liquefaction.

Identification of specific seismic response spectra, probabilistic ground motions, and liquefaction analysis for the site are beyond the scope of this investigation. If site structures are designed in accordance with recommendations specified in the 2009 IBC, the potential for peak ground accelerations in excess of adjusted and amplified values should be understood.

5.9 Drainage

At a minimum, site drainage should include surface water collection and conveyance to properly designed Stormwater management structures and facilities. Drainage design in general should conform to the Clark County regulations. Finished site grading should be conducted with positive drainage away from structures. Depressions or shallow areas that may retain ponding water should be avoided. Roof drains and perimeter foundation drains are recommended for proposed structures. Drains should consist of separate systems and gravity flow with a minimum two-percent slope away from foundations into the storm water system or approved discharge location.

5.10 Bituminous Asphalt And Portland Cement Concrete

According to the preliminary short plat plan the subject site is not anticipated to include asphalt concrete for the new parking lot. Based upon analytical laboratory test results and field exploration. Engineering Northwest PLLC recommends the general pavement design consist of 12 inches of compacted crushed aggregate base overlain with a minimum of 3.0 inches of asphalt concrete pavement for truck loading and traffic areas.

For dry weather construction, pavement surface sections should bear upon competent subgrade consisting of compacted native soil or engineered structural fill. Wet weather pavement construction is discussed later in Section 5.44, Wet Weather Construction Methods and Techniques. Subgrade conditions should be evaluated and tested by a licensed geotechnical engineer or designated representative prior to placement of crushed aggregate base. Subgrade evaluation should include nuclear gauge density testing and wheel proof-roll observations conducted with a 12-cubic yard, double-axle dump truck or equivalent. Nuclear gauge density testing should be conducted at 250-foot intervals or as determined by the onsite geotechnical engineer. Subgrade soil should be compacted to at least 95 percent of the modified Proctor dry density as determined by ASTM D1557. Areas of observed deflection or rutting during proof-roll evaluation should be excavated to a firm surface and replaced with compacted crushed aggregate.

Crushed aggregate base should be compacted and tested in accordance with the specifications outlined above. Asphalt concrete pavement should be compacted to at least 91 percent of maximum Rice Density. Nuclear gauge density testing should be

conducted to verify adherence to recommended specifications. Testing frequency should be in accordance with Washington Department of Transportation and the Clark County specifications.

Curb and sidewalk aggregate base should be observed and proof-rolled in the presence of an experienced geotechnical engineer or designated representative. Soft areas that deflect or rut should be stabilized prior to pouring concrete. Concrete should be tested during installation in accordance with ASTM C171, C138, C231, C143, C1064, and C31. This includes casting of cylinder specimen at a frequency of four cylinders per 100 cubic yards of poured concrete. Recommended filed and analytical laboratory concrete testing includes slump. Air entrainment.
Temperature, and unit weight.

5.11 Wet Weather Construction Methods and Techniques

Wet weather construction often results in significant shear strength reduction and soft areas that my rut or deflect. Installation of granular working layers may be necessary to provide a firm support base and sustain construction equipment. Granular layers should consist of all-weather gravel, 4-inch by 6-inch gabion, or other similar material (6- inch maximum size with less than 5 percent passing the No. 200 sieve).

Construction equipment traffic across exposed native soil should be minimized. Equipment traffic induces dynamic loading, which may result in weak areas and significant reduction in shear strength for soils above plastic limit. Wet weather construction may generate significant excess quantities of soft wet soil, which should be removed from the site or stockpiled in a designated area.

5.12 Soil Erosion Potential

Based upon review of the Soil Survey of Clark County, Washington and field observations, the erosion hazard for the site soil is considered low to moderate. For flat to shallow- gradient portions of the property the erosion hazard is likely to be low. Erosion potential generally increases in sloped areas. Therefore, disturbance to vegetation in sloped areas should be minimized during construction activities. Soil is also prone to erosion if unprotected and unvegetated during periods of increased precipitation.

Erosion can be minimized by performing construction activities during dry summer months.

Site-specific erosion control measures should be implemented to address the maintenance of exposed areas. This may include silt fence, biofilter bags, straw wattles, or other suitable methods. During construction activities, exposed areas should be well-compacted and protected from erosion with visqueen, surface tactifier, or other means, as appropriate. Temporary slopes or exposed areas may be covered with straw, crushed aggregate, or riprap in localized areas to minimize erosion. Erosion and water runoff during wet weather conditions may be controlled by application of strategically placed channels and small detention depressions with overflow pipes. After grading the surface should be vegetated as soon as possible with erosion-resistant native grasses and forbs. Jute mesh or straw may be applied to enhance vegetation. Once established, vegetation should be properly maintained. It is also recommended that disturbance to existing native vegetation and surrounding organic soil be minimized during construction activities.

5.13 Soil Shrink/Swell Potential

The Soil Survey of Clark County, Washington indicates a very low potential for shrinking and swelling of the native site soils or imported subbase material.

5.14 Utility Installation

Utility installation at the site may require subsurface excavation and trenching. Excavation, trenching and shoring should conform to federal Occupational Safety and Health Administration (OSHA)(29 CFR, PART 1926) and WISHA (WAC, Chapter 296-155) regulations. Site soils may slough when cut vertically and sudden precipitation events or perched ground water may result in accumulation of water within excavation zones and trenches. These areas should be dewatered in accordance with appropriate discharge regulations.

Utilities should be installed in general accordance with manufacturer's recommendations. Utility trench backfill should consist of crushed aggregate or other coarse-textured, free-draining material acceptable to the Clark County and the site geotechnical engineer. Trench backfill material within 18 inches of the top of utility pipes should be hand compacted (i.e., no heavy compaction equipment). The

remaining backfill should be compacted to at least 90 percent of maximum dry density as determined by the modified Proctor moisture-density test (ASTM D1557). With exception of the pipe zone, backfill should be placed in loose lifts not exceeding 12 inches in thickness.

Compaction of utility trench backfill material should be verified by nuclear gauge field compaction testing performed in accordance with ASTM D6938-08. Field compaction testing should be performed at 250-foot intervals along the utility trench centerline at the surface and midpoint depth of the trench. Compaction frequency and specifications may be modified for non-structural areas in accordance with recommendations of the site geotechnical engineer.

5.15 Groundwater

No groundwater was an encounter in any of the test pits to the maximum exploration depth of 6 feet below the existing ground surface.

It is important to note that groundwater conditions are not static; fluctuation may be expected in the level and seepage flow depending on the season, amount of rainfall, surface water runoff, and other factors. Generally, the groundwater level is higher and seepage rate is greater in the wetter winter months (typically November through May).

5.17 Lab Soil Test Results

Laboratory test were conducted on representative soil samples to verify or modify the field soil classification of the units encountered, and to evaluate the general physical properties as well as the engineering characteristics of the soils encountered. The following provides information about the testing procedures performed on representative soil samples and the general condition of subsurface soil conditions encountered:

- Moisture Content (ASTM-D2216-92) test were performed on representative samples. In the upper layer of poorly graded gravel-sand mixes, the moisture content ranges from seven to ten percent.

- Grain Size Analyses (ASTM-D1140-97 and D422-90) were performed on samples collected from the proposed subbase. These tests indicate that soil consists predominantly of silt loam. Passing the #200 sieve result below, sample taken at 3.5- feet below the existing ground.

Test Pit	Percent Passing #200 sieve
1	68

- The result of laboratory tests performed on specific samples are provided at the appropriate sample depth on the individual test pit logs. However, it is important to note that some variation of subsurface conditions may exist. Our geotechnical recommendations are based on our interpretation of these test results.

5.18 Infiltration Testing

No infiltration test was performed.

5.19 Conclusion

This geotechnical site investigation report was prepared in accordance with accepted standard conventional principles and practices of geotechnical engineering. This investigation pertains only to material tested and observed as of the date of this report, and is based upon proposed site development as described in the text herein.

5.20 Limitations

Our recommendations and conclusions are based on the site materials observed, selective laboratory testing, engineering analyses, the design information provided to Engineering Northwest PLLC and our experience as well as engineering judgment. The conclusions and recommendations are professional opinions derived in a manner

consistent with that level of care and skill ordinarily exercised by other members of the profession currently practicing under similar conditions in this area. No warranty is expressed or implied.

The recommendations submitted in this report are based upon the data obtained from the test pits. If soil variations do appear Engineering Northwest PLLC should be requested to reevaluate the recommendations contained in this report and to modify or verify them in writing prior to proceeding with the proposed construction.

LOG OF TEST PIT -1

Surface Elevation: 270
Boring Date: 01/12/2022
Boring Location: 3761706
Dilling Method: Machine

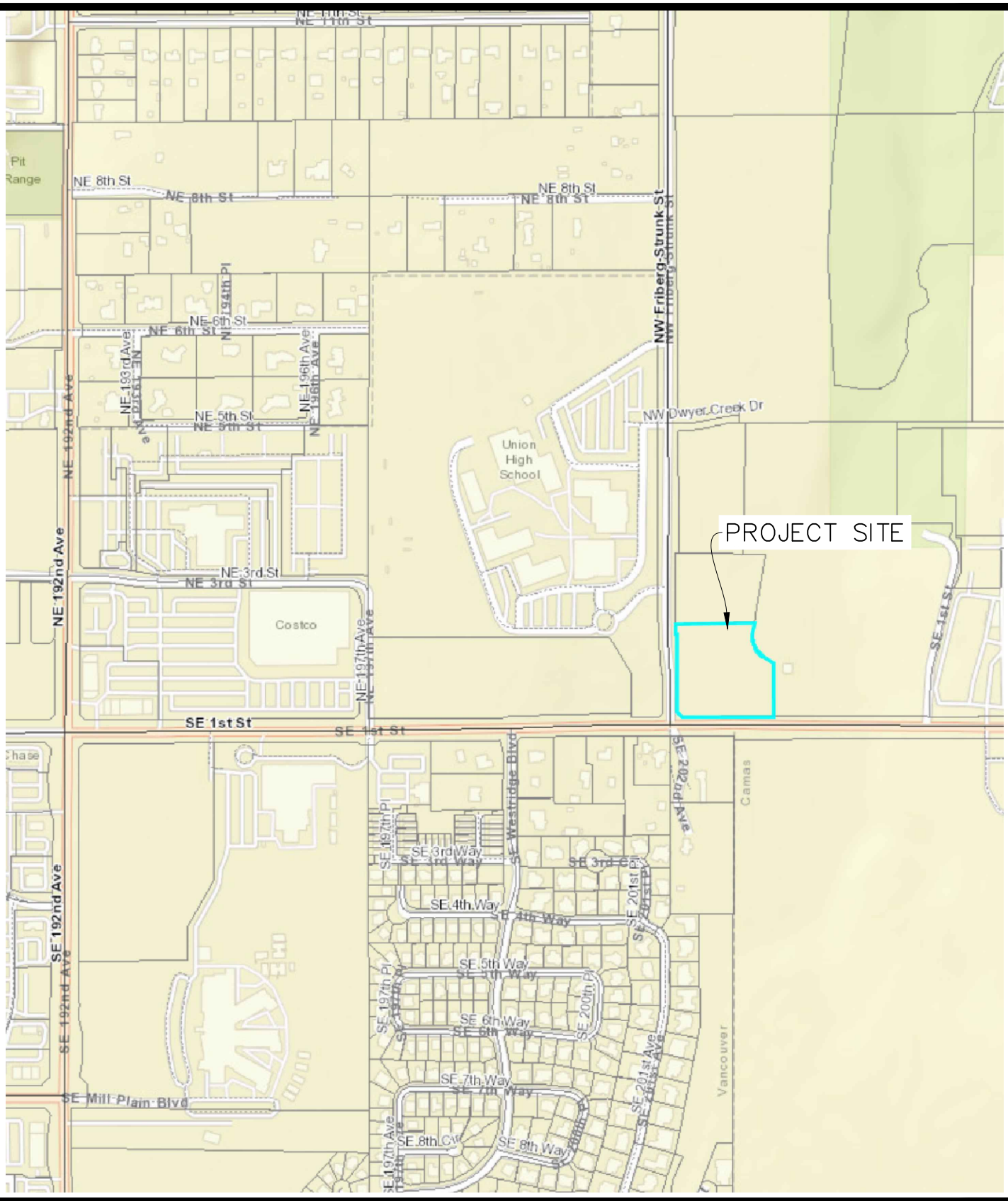
Depth	Remarks	COLOR	MOISTURE	MOISTURE CONTENT (%)	CONSISTENCY	Percent Pass #200	(ASHTO)	SOIL CLASSIFICATION
0		Dark Brown	Moist	8.5	Hard Medium	X ■		High organic content 4 to 12 inches of grass, roots and topsoil Dark brown, low plasticity
5		Brown		11	Medium	68 ■	A-4	Brown SILT with trace to some sand; moist. No ground water @ 6' below existing ground
10								
15								
20								
25								
30								
35							END	Boring completed at and depth of about 6 feet below the ground surface.

LOG OF BORING

ENGINEERING NORTHWEST	Oak Tree Station City of Camas WA	Plate 1

Engineering Northwest
6168 NE HWY 99 St 100
VANCOUVER WA 98685
360-931-3122

SITE VICINITY MAP

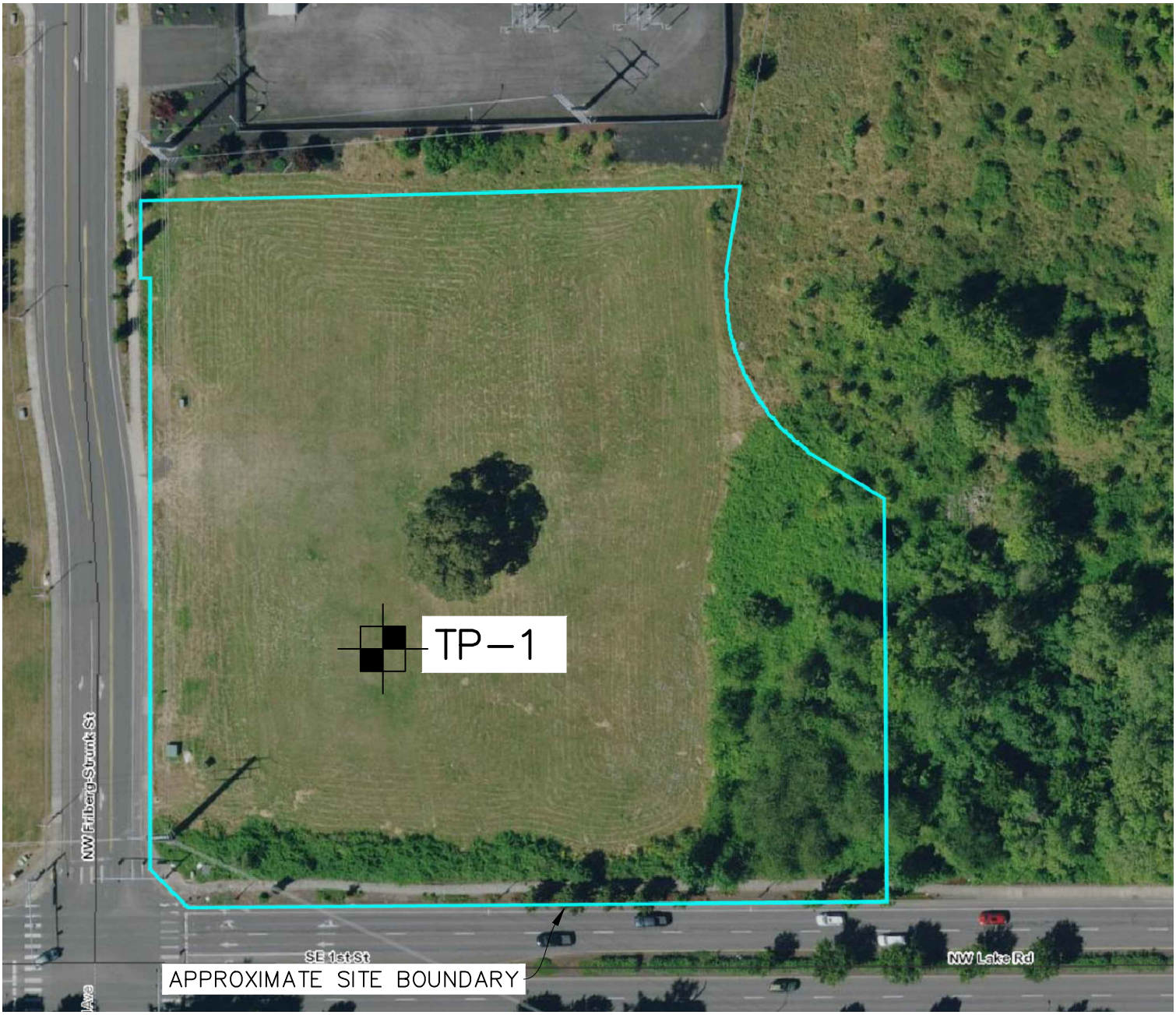


Project: Oak tree Station
Parcel #176162-000

FIGURE 1

Engineering Northwest
6168 NE HWY 99 St 100
VANCOUVER WA 98685
360-931-3122

SITE AERIAL AND EXPLORATION LOCATION

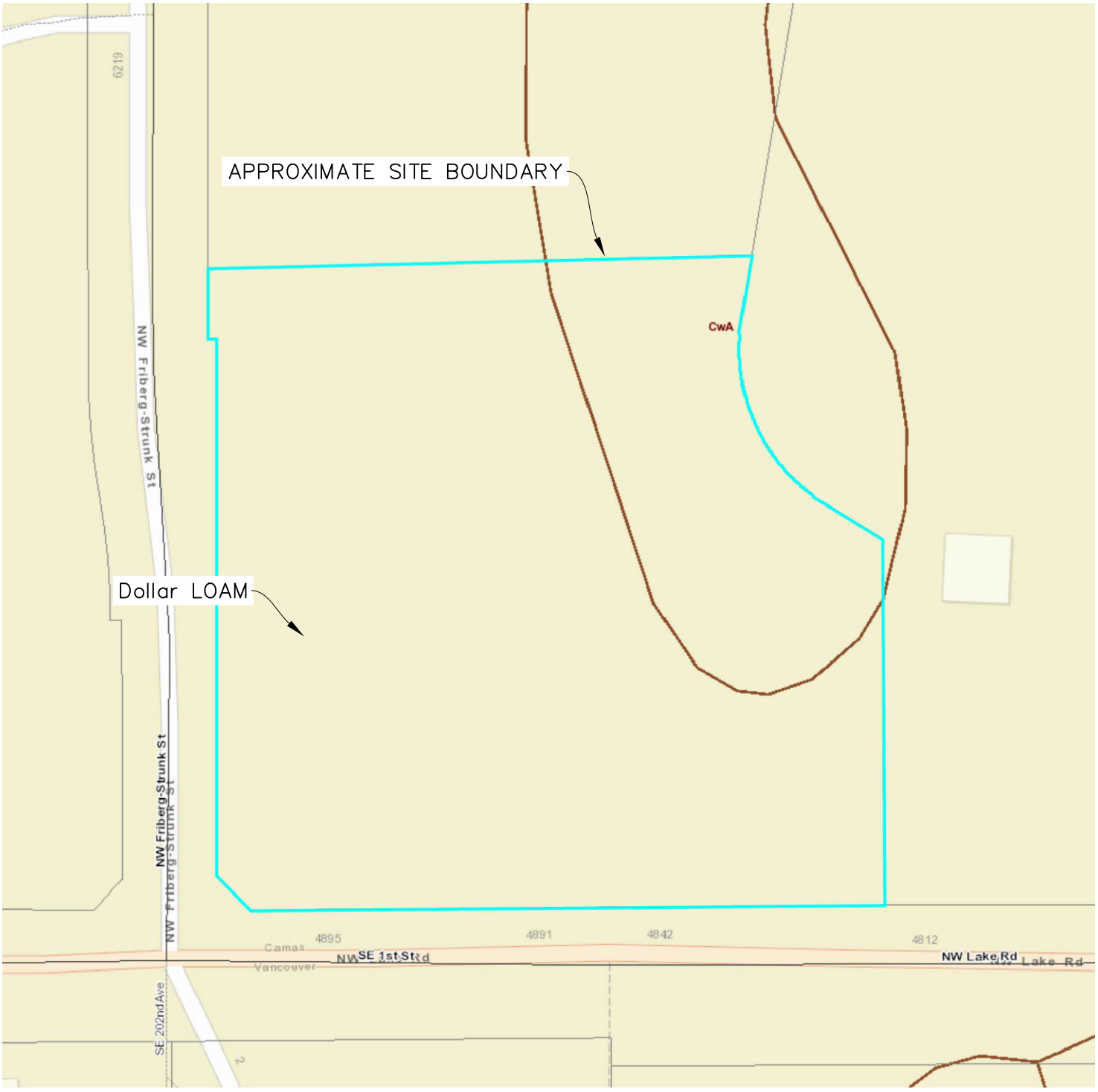


Project: Oak tree Station
Parcel #176162-000

FIGURE 2

Engineering Northwest
6168 NE HWY 99 St 100
VANCOUVER WA 98685
360-931-3122

SOIL MAP



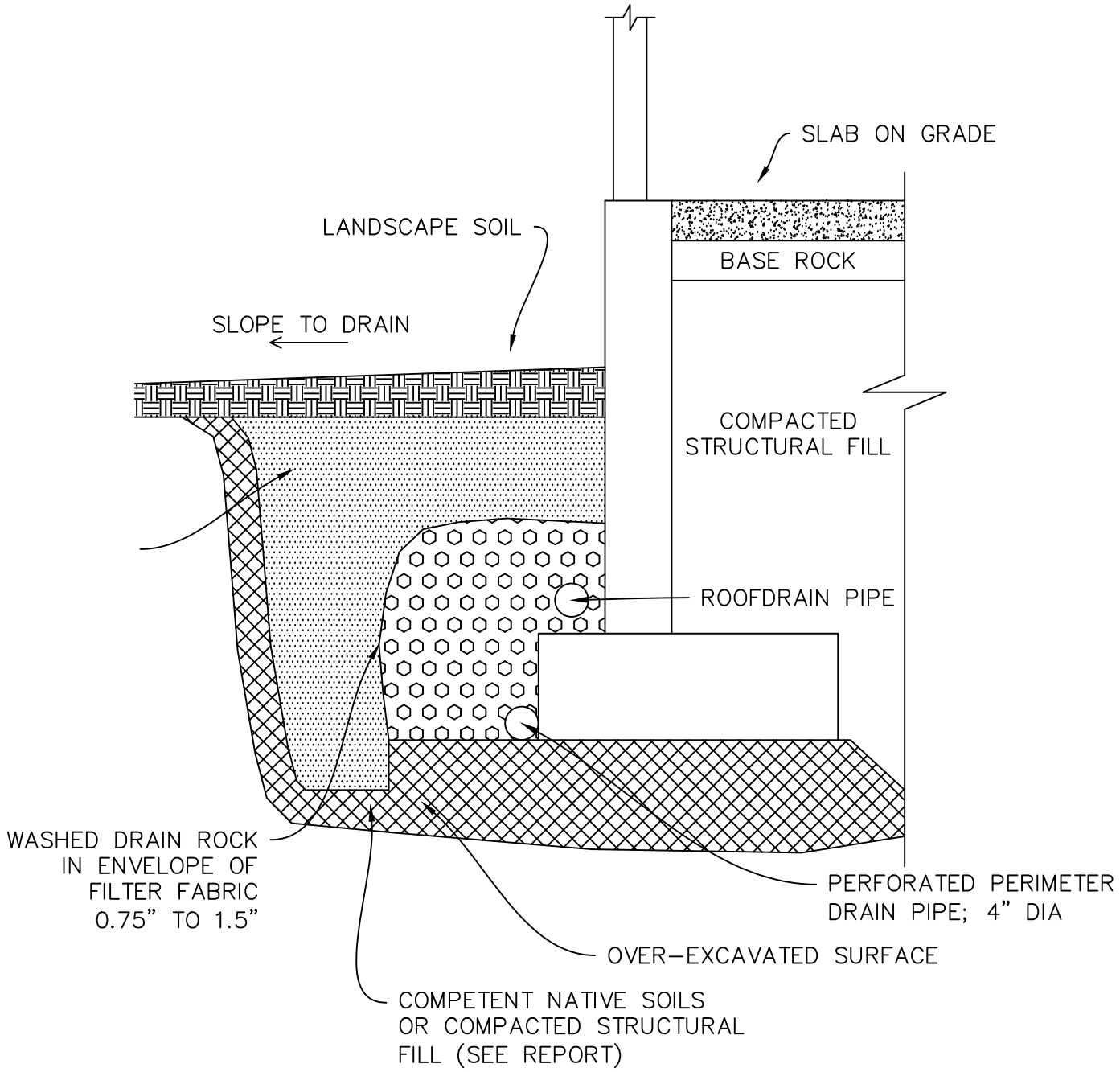
Project: Oak tree Station
Parcel #176162-000

FIGURE 3

Engineering Northwest
6168 NE HWY 99 St 100
VANCOUVER WA 98685
360-931-3122

FOOTING DETAIL

Not to Scale



NOTES:

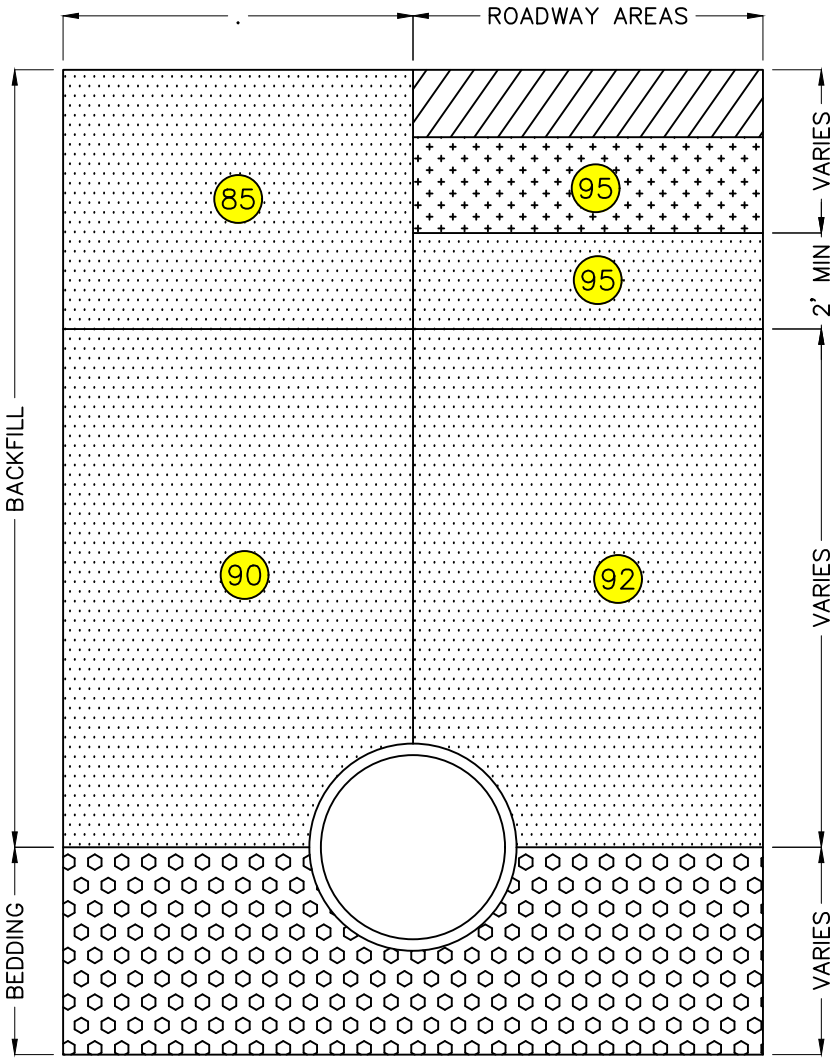
1. PERFORATED OR SLOTTED RIGID PVC PIPE WITH A POSITIVE DRAINAGE GRADIENT
2. FILTER SAND – FINE AGGREGATE FOR PORTLAND CEMENT; SECTION 9=03. 1(2)
3. FILTER FABRIC OPTIONAL IF FILTER SAND USED

Project: Oak tree Station
Parcel #176162-000

FIGURE 4

Engineering Northwest
6168 NE HWY 99 St 100
VANCOUVER WA 98685
360-931-3122

UTILITY TRENCH DETAIL



LEGEND

ASPHALT OR CONCRETE PAVEMENT

ROADWAY BASE MATERIAL OR BASE ROCK

BACKFILL: COMPACTED ON-SITE SOIL OR IMPORTED SELECT FILL MATERIALS AS DESCRIBED IN THE SITE PREPARATION OF THE GENERAL EARTHWORK SECTION OF THE ATTACHED REPORT TEXT

MINIMUM PERCENTAGE OF MAXIMUM LABORATORY DRY DENSITY AS DETERMINED BY ASTM TEST METHOD D1557 (MODIFIER PROCTOR), UNLESS OTHERWISE SPECIFIED IN THE ATTACHED REPORT TEXT

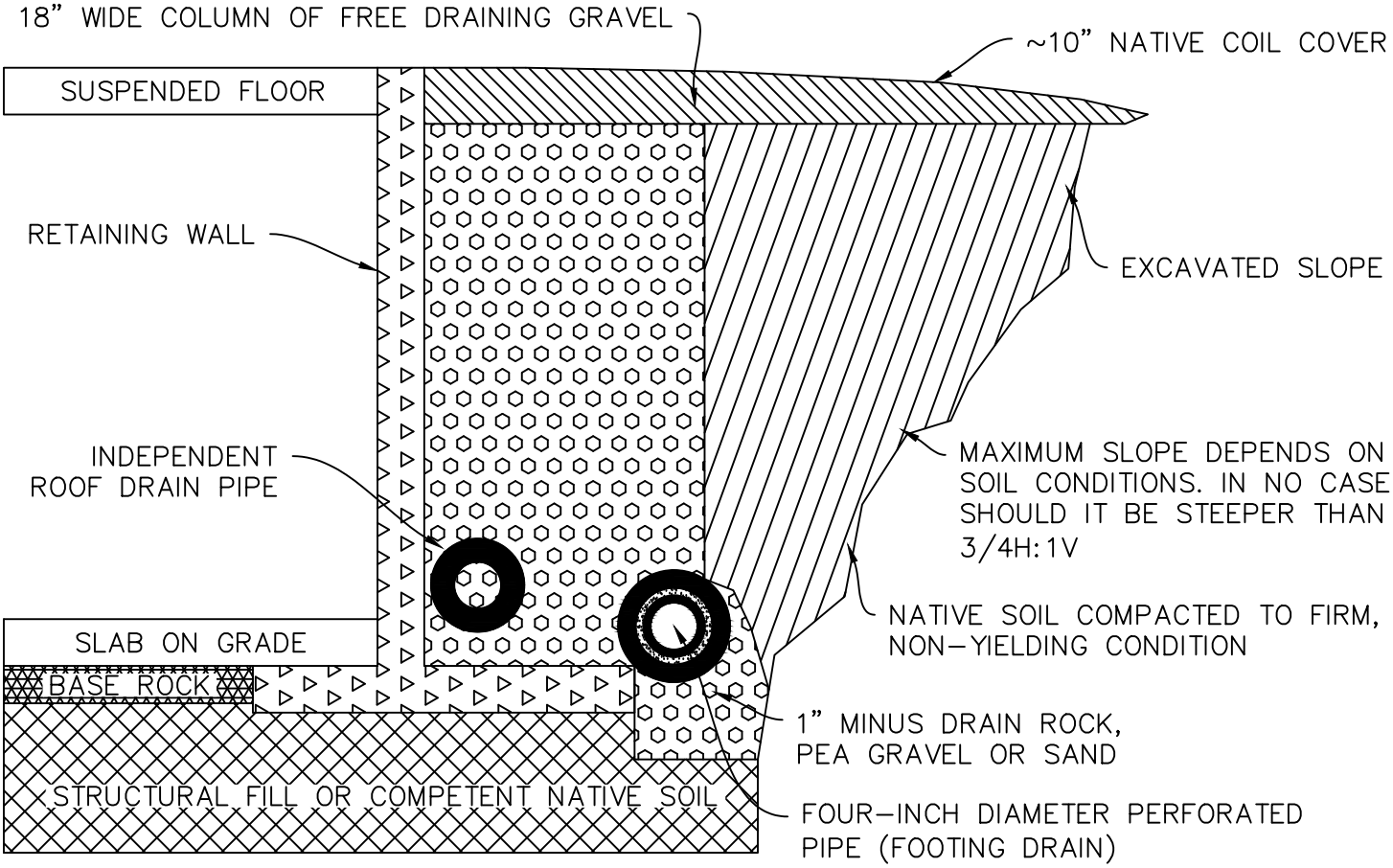
BEDDING MATERIAL: MATERIAL TYPE DEPENDS ON TYPE OF PIPE AND LAYING CONDITIONS. BEDDING SHOULD CONFORM TO THE MANUFACTURER'S RECOMMENDATIONS FOR THE TYPE OF PIPE SELECTED.

Project: Oak tree Station
Parcel #176162-000

FIGURE 5

Engineering Northwest
6168 NE HWY 99 St 100
VANCOUVER WA 98685
360-931-3122

TYPICAL RETAINING WALL BACKFILL & FOOTING DRAINAGE



LEGEND

SURFACE SEAL: NATIVE SOIL OR OTHER LOW PERMEABILITY MATERIALS. SLOPE TO DRAIN AWAY FROM STRUCTURE

GRANULAR BACKFILL SHOULD CONSIST OF FREE DRAINING, ORGANIC FREE GRANULAR MATERIAL WITH A MAXIMUM SIZE OF 3"

DRAIN ROCK SHALL CONSIST OF CLEAN ONE INCH MINUS ROUND ROCK OR PEA GRAVEL WITH LITTLE TO NO FINES COLUMN OF DRAIN ROCK SHALL HAVE A MINIMUM WIDTH OF EIGHTEEN INCHES WITH ~TEN INCHES OF NATIVE SOIL COVER.

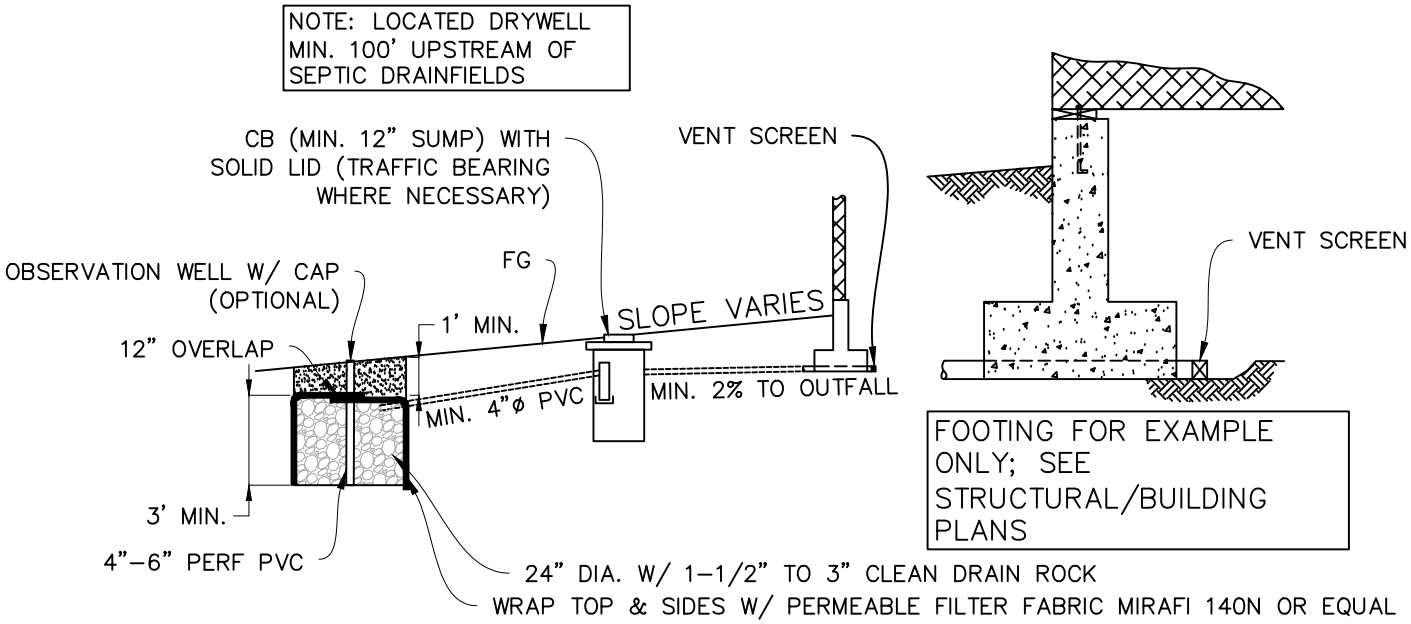
DRAIN PIPE: SMOOTH WALL PERFORATED OR SLOTTED RIGID PVC PIPE LAID WITH PERFORATIONS OR SLOTS FACING DOWN: TIGHT JOINTED; WITH A POSITIVE GRADIENT. DO NOT USE FLEXIBLE CORRUGATED PLASTIC PIPE. DRAIN LINE SHOULD BE BEDDED ON AND SURROUNDED WITH FREE DRAINING 1" MINUS ROCK, PEA GRAVEL, SAND AS DESIRED. THE DRAIN ROCK MAY BE ENCAPSULATED WITH A GEOTECHNICAL DRAINAGE FABRIC AT THE ENGINEER'S DISCRETION

Project: Oak tree Station
Parcel #176162-000

FIGURE 6

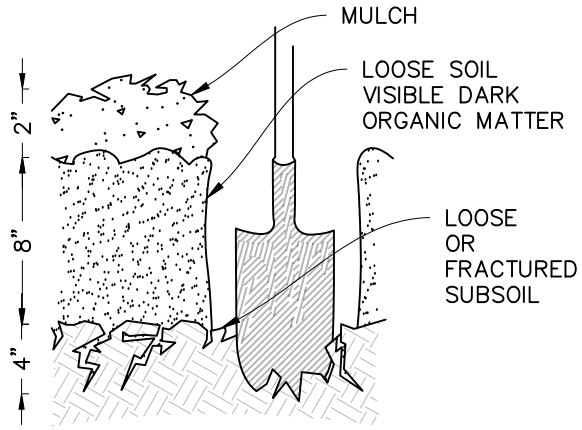
Engineering Northwest
6168 NE HWY 99 St 100
VANCOUVER WA 98685
360-931-3122

LOW POINT DRAIN SOIL QUALITY AND DEPTH



LOW POINT DRAIN

NTS



BMP T5.13 SOIL QUALITY AND DEPTH

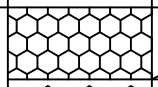
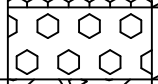
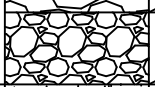
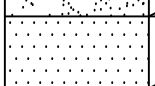
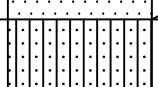
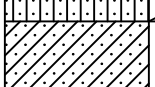
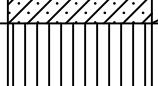
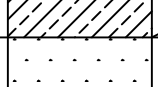
NOT TO SCALE

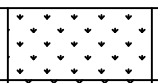
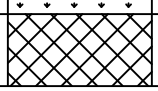
Project: Oak tree Station
Parcel #176162-000

FIGURE 7

Engineering Northwest
6168 NE HWY 99 St 100
VANCOUVER WA 98685
360-931-3122

SOIL LEGEND

MAJOR DIVISIONS			GRAPH SYMBOL	LETTER SYMBOL	TYPICAL DESCRIPTIONS
Coarse Grained Soils	Gravel and Gravelly Soils	Clean Gravels (little or no fines)		GW gw	Well-Graded Gravels, Gravel-Sand Mixtures Little or no Fines
				GP gp	Poorly-Graded Gravels, Gravel-Sand Mixtures, Little or no Fines
	More than 50% Coarse Fraction Retained on No 4 Sieve	Gravels with Fines (appreciable amount of fines)		GM gm	Silty Gravels, Gravel-Sand-Silt Mixtures
				GC gc	Clayey Gravels, Gravel-Sand-Clay Mixtures
	Sand and Sandy Soils	Clean Sand (little or no fines)		SW sw	Well-Graded Sands, Gravelly Sands Little or no Fines
				SP sp	Poorly-Graded Sands, Gravelly Sands Little or no Fines
More Than 50% Material Larger Than No 200 Sieve Size	More Than 50% Coarse Fraction Passing No 4 Sieve	Sands with Fines (appreciable amount of fines)		SM sm	Silty Sands, Sand-Silt Mixtures
				SC sc	Clayey Sands, Sand-Clay Mixtures
Fine Grained Soils	Silts and Clays	Liquid Limit Less than 50		ML ml	Inorganic Silts and Very Fine Sands, Rock Flour, Silty-Clayey Fine Sands; Clayey Silts w/ slight Plasticity
				CL cl	Inorganic Clays of Low to Medium Plasticity, Gravelly Clays, Sandy Clays, Silty Clays, Lean
				OL ol	Organic Silts and Organic Silty Clays of Low Plasticity
More Than 50% Material Smaller Than No 200 Sieve Size	Silts and Clays	Liquid Limit Greater than 50		MH mh	Inorganic Silts, Micaceous or Diatomaceous Fine Sand or Silty Soils
				CH ch	Inorganic Clays of High Plasticity, Fat Clays
				OH oh	Organic Clays of Medium to High Plasticity, Organic Silts
Highly Organic Soils				PT pt	Peat, Humus, Swamp Soils with High Organic Contents

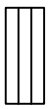
Topsoil		Humus and Duff Layer
Fill		Highly Variable Constituents

TYPICAL DESCRIPTIONS

Grab Sample

SPT Drive Sampler (ASTM D1586)

Shelby Tube Push Sampler (ASTM D1587)

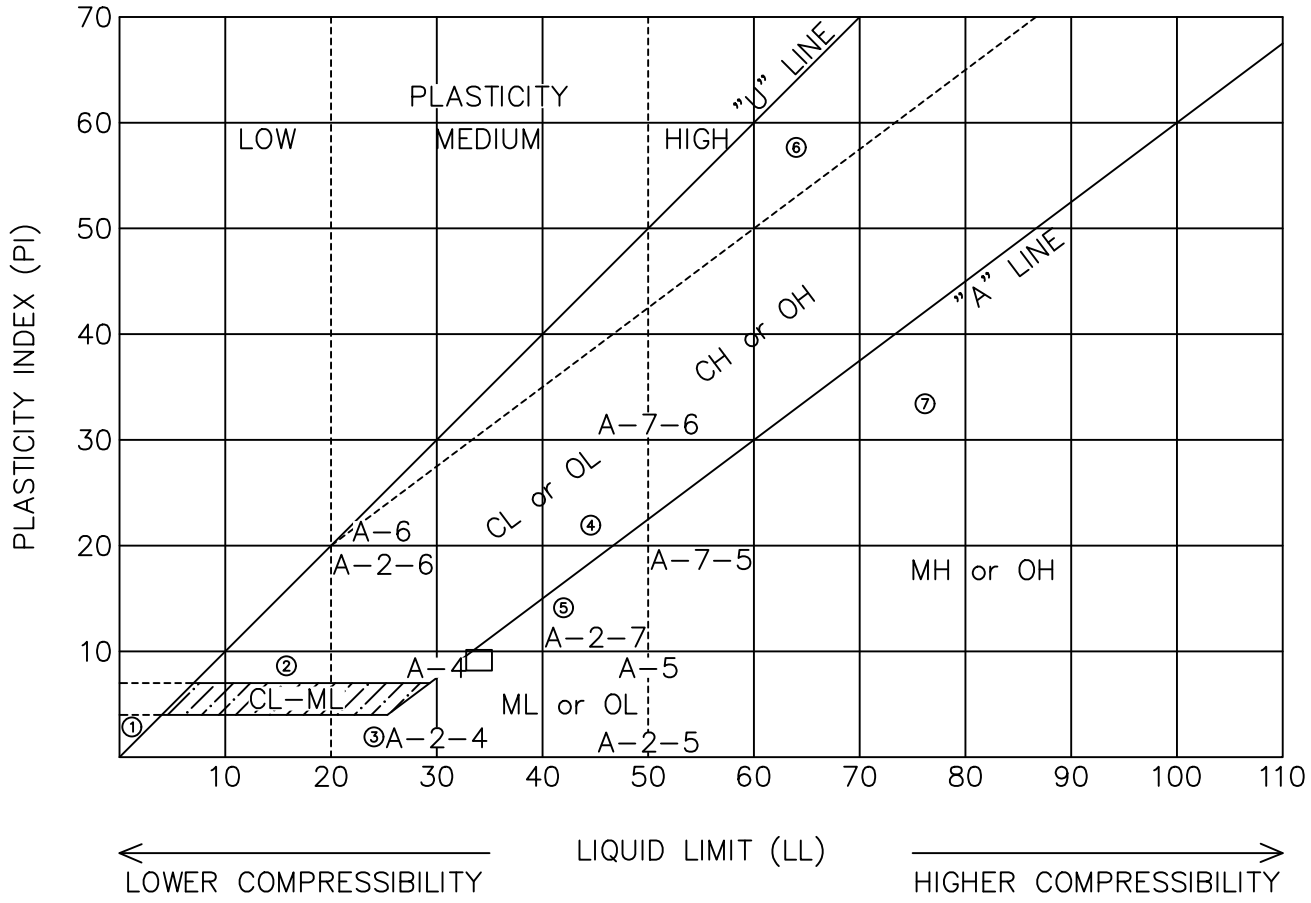
 Dames and Moore Drive Sampler (ASTM D3550

Project: Oak tree Station
Parcel #176162-000

FIGURE 8

Engineering Northwest
7504 NW 10TH AVENUE
VANCOUVER WA 98685
360-931-3122

ATTERBERG LIMITS



LEGEND

☐ TP – 4 One feet below existing grade

1. COHESIONLESS SOILS
2. INORGANIC CLAYS, LOW PLASTICITY
3. INORGANIC SILTS, LOW COMPRESSIBILITY
4. INORGANIC CLAYS, MEDIUM PLASTICITY
5. INORGANIC SILTS AND ORGANIC CLAYS, MEDIUM COMPRESSIBILITY
6. INORGANIC CLAYS, HIGH PLASTICITY
7. INORGANIC SILTS AND ORGANIC CLAYS, HIGH COMPRESSIBILITY

Project: Oak tree Station
Parcel #176162-000

FIGURE 9

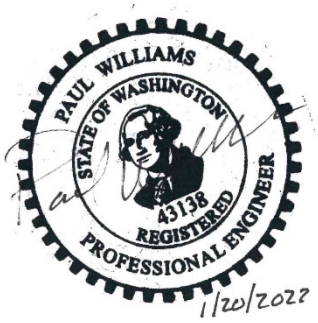
TRAFFIC IMPACT ANALYSIS

OAK TREE STATION

Camas, Washington

Prepared For:

Rob Kyne & Larry Bonife
3239 NW Hood Ct
Camas WA, 98607



Prepared by:
Engineering Northwest
7504 NW 10th Ave
Vancouver, WA 98685
PH: 360-931-3122
paulwilliamspe@gmail.com

January 28, 2022

ENGINEERING NORTHWEST

Contents

INTRODUCTION 3
TRAFFIC ANALYSIS CONSIDERATION 5
SCOPE OF TRAFFIC IMPACT STUDY AREA 5
SITE CONDITIONS AND ADJACENT LAND USES 5
PEDESTRIAN AND BICYCLE FACILITIES 6
TRANSIT FACILITES 6
PROPOSED DEVELOPMENT TRIP GENERATION ESTIMATE 6
TRIP DISTRIBUTION AND ASSIGNMENT 7
TRAFFIC OPERATIONAL ANALYSIS 7
CAPACITY ANALYSIS 8
QUEUING ANALYSIS 9
SIGHT DISTANCE 9
LEFT TURN LANE WARRANTS 10
2027 WITHOUT PROJECT TRAFFIC L.O.S. 10
2027 WITH PROJECT TRAFFIC L.O.S. 11
PROJECT CROSS CIRCULATION 11
FINDINGS AND RECOMMENDATIONS 11
REFERENCES 12

APPENDIX A

Figure 1 Project Vicinity Map
Figure 2 Existing Lane Configurations and Traffic Control
Figure 3 Existing A.M. and P.M Peak Hour Traffic Volumes
Figure 4 2023 "Without" A.M. and P.M. Peak Hour Traffic Volumes
Figure 5 Trip Distribution and Assignment for Residential Use
Figure 6 2023 "With Project" A.M. and P.M. Peak Hour Traffic Volumes
Figure 7 Site Plan

APPENDIX B Existing Traffic Counts

APPENDIX C Existing Level of Services
APPENDIX D 2023 "Without Project" LOS
APPENDIX E 2023 "With Project" LOS

INTRODUCTION

This project will consist of a 4,704 sq.ft indoor eating area which is surrounded by food carts. Also the project will consist of a drive thru 600 sq.ft coffee shop. The project also proposes to construct 12,574 square-foot commercial building. Currently all proposed

parcel for the development are zoned Commercial Community (CC). Access will be provided by utilizing the existing driveway onto NW Friberg-Strunk St and constructing a new driveway approach onto NW Lake Road which will be right-in / right-out. Please refer to the plans included in this application for more information on the proposed lot layout.

As indicated on vicinity map the 3.95-acre subject site is located north side of NW Lake Road in City of Camas Washington. The approximate latitude and longitude are 45.81151278°N 122.6.9973816°W and the legal description is a portion of the SE 1/4, S29, T2N, R3E of the Willamette Meridian. The regulatory jurisdictional agency is the City of Camas, Washington.

Vicinity Map

The proposed development is estimated to generate more than 200 vpd. As per City of Camas a traffic impact study is required. Traffic profile for this project is shown below in table 2.

TRAFFIC ANALYSIS CONSIDERATION

In the project scope established City of Camas, a number of important elements were identified and considered in this study.

- Inventory and record pertinent information such as traffic control devices, lane conditions, pedestrian & bicycle facilities, transit zones, parking conditions, and street characteristics
- Record data on typical weekdays during the am and pm peak traffic hours
- Forecast year 2027 traffic conditions during the weekday am and pm peak hours
- Level of service (LOS) analysis of the study intersections to measure the approach delays for comparison to City of Camas standards
- Verification of intersection sight distance at the existing/proposed accesses.
- On-Site access
- Implementation of the trip generation rates for AM & PM the proposed development

SCOPE OF TRAFFIC IMPACT STUDY AREA

The scope of the traffic impact study area included the following intersections:

- NW Friberg-Strunk Street/ NW Lake Road
- NW 192 Avenue / SE 1st Street (Within the City Limits)
- NW Payne Street / NW Lake Road

The remainder of this report presents the following analysis:

- Existing traffic conditions in the project study area
- 2027 "Without Project" condition to establish the baseline condition by which the project impacts could be determined.
- Trip generation estimates for the proposed development
- 2027 "With Project" condition to determine project traffic impacts

SITE CONDITIONS AND ADJACENT LAND USES

The study site is located northeast of intersection of NW Friberg-Strunk Street and NW Lake Road. Table 1 summarizes key characteristics of the adjacent roadways.

Table 1

Roadway	Classification	Cross Section	Speed Limit	Side-walks	Bicycle Lanes	Median	On-Street Parking
NW Lake Rd	Arterial Roadway	4-lanes 5-lane	40 35	yes	yes	yes	no
NW Friberg-Strunk rd	Collector Arterial	2-lanes	20	yes	yes	no	no
NW Larkspur St	Arterial Roadway	2-lanes	25	Intermit	No	No	no
NE 192nd Ave	Principal Arterial	2/4-lanes	40	yes	yes	yes	No

PEDESTRIAN AND BICYCLE FACILITIES

Sidewalks are currently provided along the site frontage on NW Friberg-Strunk Rd and NW Lake Rd. Currently no bike lanes exist on both sides of NW Friberg-Strunk Rd.

TRANSIT FACILITES

C-Tran provides public transit service in Clark County. Currently there is no transit service in the project vicinity.

PROPOSED DEVELOPMENT TRIP GENERATION ESTIMATE

Estimates of daily and weekday am and pm peak hour vehicle trip ends for the proposed development were calculated from empirical observations at other similar developments. These observations were obtained from the standard reference manual, Trip Generation, 10th Edition, and the Trip Generation Handbook, published by the Institute of Transportation Engineers (ITE) (References 2 and 3). Table 2 summarizes the estimated site trip generation. The trip generation table below includes AM and PM. The Food Cart facility will not operate before 11am.

Table 2. Trip Generation Summary

	Amount	Average Daily	A.M. Peak			P.M. Peak		
			In	Out	Total	In	Out	Total
High Turnover Sit-Down Restaurant - ITE Code 932								
Rate per 1,000 square feet (ksf)		112.18	5.47	44.47	9.94	6.06	3.71	9.77
Trips	4.7 ksf	528	26	22	47	29	18	46
Coffee Shop with Drive Through - ITE Code 937								
Rate per 1,000 square feet (ksf)		818.58	51.30	49.28	100.58	21.40	21.40	42.80
Trips	0.6 ksf	491	31	29	60	13	13	26
Shopping Center - ITE Code 820								
Rate per 1,000 square feet (ksf)		37.75	0.58	0.36	0.94	1.83	1.98	3.81
Trips	12.5 ksf	472	8	8	12	23	25	48
Total		**1491**	**65**	**59**	**119**	**65**	**56**	**120**

TRIP DISTRIBUTION AND ASSIGNMENT

A generalized trip distribution pattern for the A.M. and P.M. peak hour project-generated trips was developed for the existing traffic counts, previous traffic studies, locations of major employment centers and residential areas, and logical travel paths to and from major travel corridors. Appendix A shows the resulting trip distribution pattern and assignment of A.M. and P.M. peak hour project generated trips without pass-

TRAFFIC OPERATIONAL ANALYSIS

In order to evaluate traffic flow and delay in the area the signalized intersection a Level of Services (LOS) analyses were completed in the pm peak hour period and am peak hour period for the following scenarios: The analyzed intersections identified below using the methodologies outlined in the 2010 Highway Capacity manual (HCM).

According to the HCM there are six levels of service (LOS) by which the operational performance of an intersection may be described. These levels of service range between LOS "A" which indicates a relatively free-flowing condition and LOS "F" which indicates operational breakdown. LOS "D" is the Cit of Camas adopted level of service standard for arterial/collector intersection. The overall level of serves was report in the table below.

- 2022 Existing Traffic

Table 1: Existing Levels of Service

	A.M. Peak Hour		P.M. Peak Hour	
	LOS	Average Delay (sec)	LOS	Average Delay (sec)
Signalized Intersections				
NW Friberg-Strunk St/NW Lake Rd	A	8.8	A	10.0
NW Lake Road / NW Larkspur Rd	A	8.2	B	14.7
SE 1st St / NE & SE 192 Avenue	C	32	C	32.7

In order to perform the Level of Service (LOS) analysis at the intersections, manual traffic counts were conducted during the pm peak (4:00-6:00 pm) traffic hours and am peak (7:00-9:00 am). The existing volume data for the weekday peak hours (see Appendix A).

CAPACITY ANALYSIS

Capacity analysis was performed to determine the level of service for the weekday pm peak hour and weekday am peak hour. Synchro 10 software was used to determine the level of service for each scenario considered. The program is based on the latest Highway Capacity Manual (HCS) methodology.

Generally, LOS 'A','B','C', and 'D' are desirable service levels ranging from no vehicle delays to average or longer than average delays in the peak hours. Level 'E' represents long delays indicating signalization warrants need to be reviewed and signals

considered only if warrants are met. Level 'F' indicates that intersection improvements, such as widening and signalization, may be required. According to the Highway Capacity Manual (HCM), the following delay times are associated with the LOS at stop controlled unsignalized and signalized intersections.

Level of Service criteria defined in the 2000 Highway Capacity Manual

Level of Service (LOS)	Unsignalized Control Stopped Delay (sec/veh)	Signalized Control Stopped Delay (sec/veh)
A	<10	<10
B	> 10 and <15	>10 and <20
C	>15 and <25	>20 and <35
D	>25 and <35	>35 and < 55
E	>35 and <50	>55 and <80
F	>50	>80

QUEUING ANALYSIS

Queuing analysis at the project access intersection were not conducted due to low traffic volumes, acceptable levels of service, and acceptable accident rate in the 2027 "With Project" conditions.

SIGHT DISTANCE

Sight distance at the driveway approach onto NW Friberg-Strunk was reviewed in the field in accordance with City of Camas standards. Based on at a posted speed of 20 miles per hour, City of Camas requires a minimum of 200 of sight distance be available in both directions. The sight distance is to be measured from an eye height of 3.5 feet, at least fifteen feet from the edge of the uncontrolled public travel way. Based on the measurements obtained from existing driveway approach along NW Friberg-Strunk Rd the project has 200 feet of sight distance is available to the north and south. This distance exceeds City of Camas minimum sight distance requirements of 200 feet.

Sight distance at the driveway approach onto NW Lake Rd was reviewed in the field in accordance with City of Camas standards. Based on at a posted speed of 40 miles per hour, City of Camas requires a minimum of 400 of sight distance be available in both directions. The sight distance is to be measured from an eye height of 3.5 feet, at least

fifteen feet from the edge of the uncontrolled public travel way. Based on the measurements obtained from proposed driveway approach along NW lake Rd the project has 400 feet of sight distance is available to the east. This distance exceeds City of Camas minimum sight distance requirements of 400 feet.

LEFT TURN LANE WARRANTS

None

2027 WITHOUT PROJECT TRAFFIC L.O.S.

The 2027 "Without Project" traffic volumes were calculated using a nominal 0.5 percent annual compounded growth factor as established by pervious traffic studies

	A.M. Peak Hour		P.M. Peak Hour	
	LOS	Average Delay (sec)	LOS	Average Delay (sec)
Signalized Intersections				
NW Friberg-Strunk St/NW Lake Rd			A	9.3
NW Lake Road / NW Larkspur Rd			A	8.4
SE 1st St / NE & SE 192 Avenue			D	38.4

2027 WITH PROJECT TRAFFIC L.O.S.

The 2027 "Without Project" traffic volumes were calculated using a nominal 0.5 percent annual compounded growth factor as established by pervious traffic studies.

The traffic study area intersection are projected to operate within adopted level of service standards in the 2027 "With Project"

	A.M. Peak Hour		P.M. Peak Hour	
	LOS	Average Delay (sec)	LOS	Average Delay (sec)
Signalized Intersections				
NW Friberg-Strunk St/NW Lake Rd	B	11.7	B	15.0
NW Lake Road / NW Larkspur Rd	A	6.8	A	7.7
SE 1st St / NE & SE 192 Avenue				

PROJECT CROSS CIRCULATION

This project will not provide a private connection to the parcel to the east because a significant portion of the parcel is wetland and currently owned by the City of Camas.

FINDINGS AND RECOMMENDATIONS

Based on the results of the transportation impact analysis, the proposed Oak Tree Station development can be constructed while maintaining acceptable levels of service and safety at the study intersections. The primary findings and recommendations of this study are summarized below.

Existing Conditions

- All of the study intersections operated within operating standards deemed acceptable by the City of Camas during the weekday am and pm peak hours.

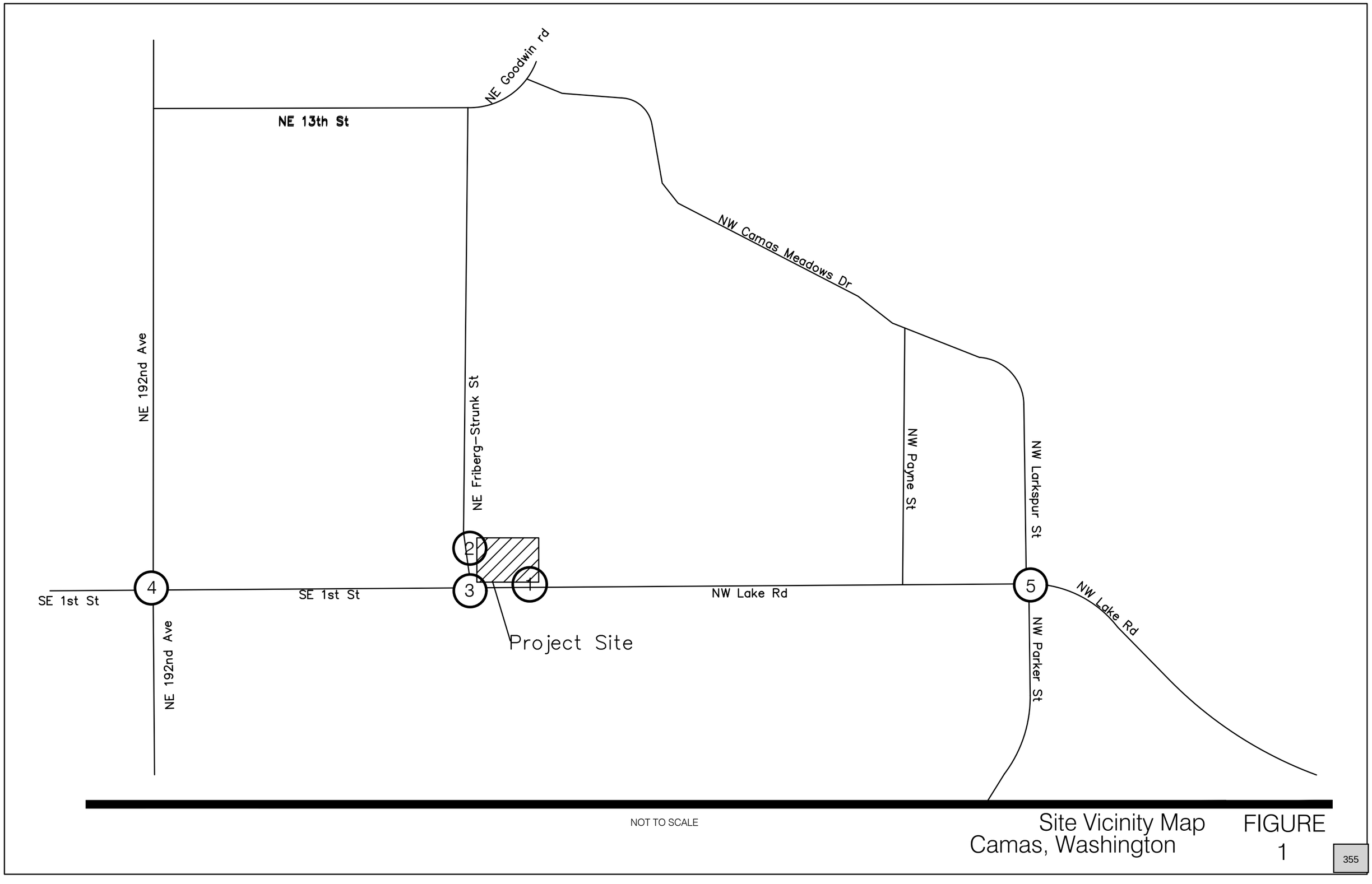
YEAR 2022 and 2027 Total Traffic Conditions

- Year 2018 and 2023 total traffic conditions were estimated assuming continued local and regional growth plus the proposed site traffic. Operational analysis indicates that the study intersections are forecast to continue to operate at acceptable levels.
- Engineering Northwest LLC performed filed sight distance measurements. The project access intersection will be able to meet the sight distance requirements assuming any vegetation within the sight distance triangles are properly maintained after construction.

REFERENCES

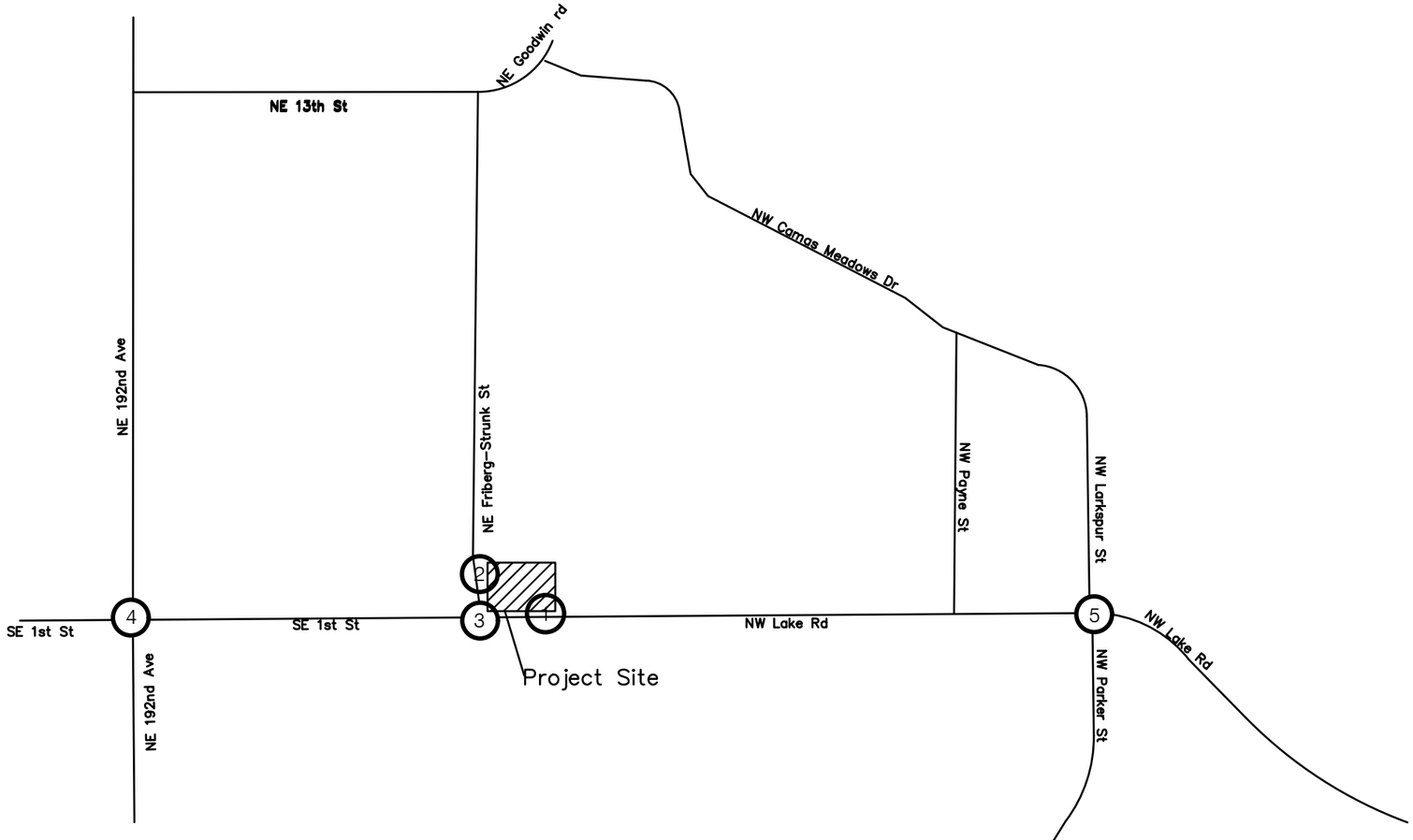
1) C-Tran, http://www.c-tran.com. March 201
2) Institute of Transportation Engineers, Trip Generation, 10th Editions
3) Transportation Research Board, Highway Capacity Manual, 2010

Appendix A

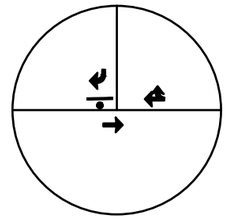


Site Vicinity Map
Camas, Washington

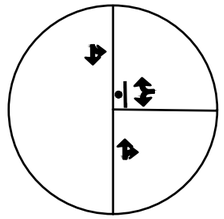
FIGURE 1



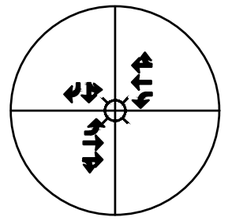
1. NW Lake Rd /Project Access (South)



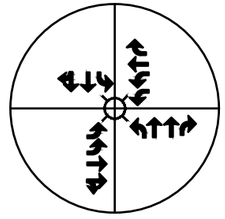
2. NE Fridberg Strunk /Project Access (West)



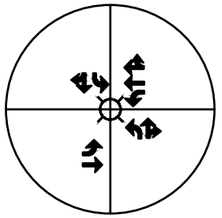
3. NE Fridberg Struck /NW Lake Rd



4. NE 1st Street NE & SE 192nd Ave



5. NW Larkspur NW Lake Rd



NOT TO SCALE

LEGEND

Roundabout

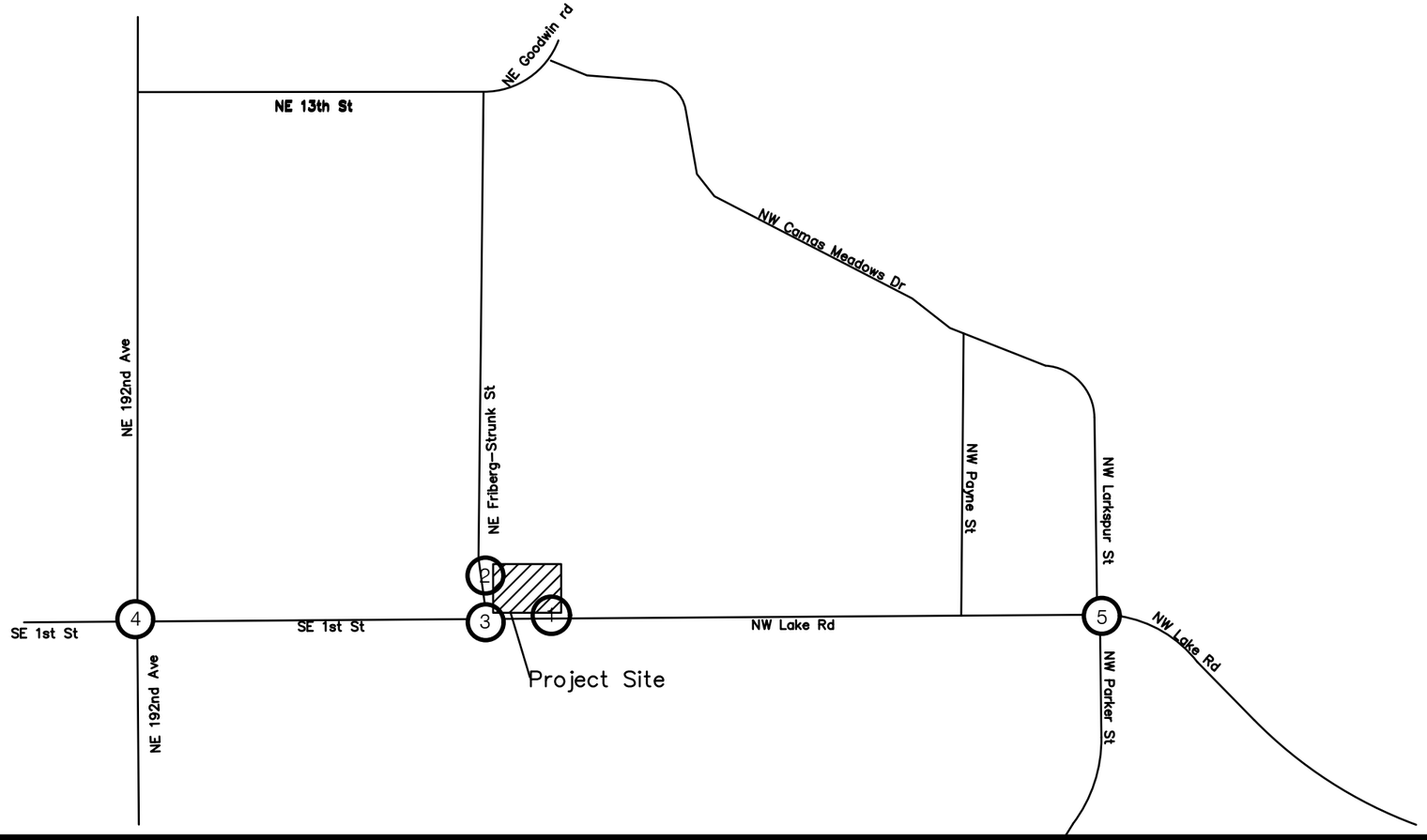
Channelized

Stop Sign

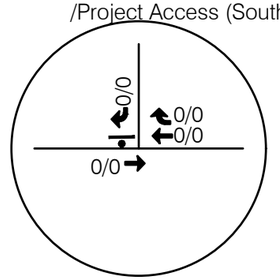
Traffic Signal

Year 2022 Existing Lane Configuration and Traffic Control

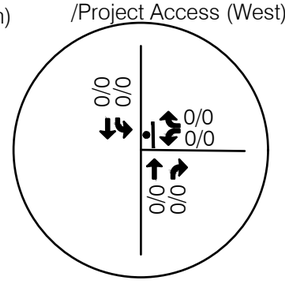
FIGURE 2



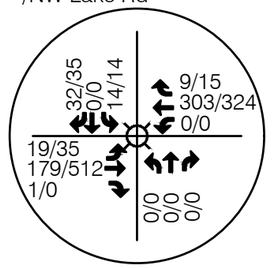
1. NW Lake Rd /Project Access (South)



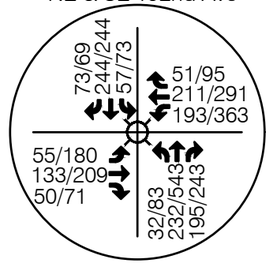
2. NE Fridberg Strunk /Project Access (West)



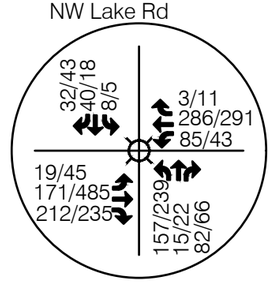
3. NE Fridberg Struck /NW Lake Rd



4. NE 1st Street NE & SE 192nd Ave



5. NW Larkspur NW Lake Rd



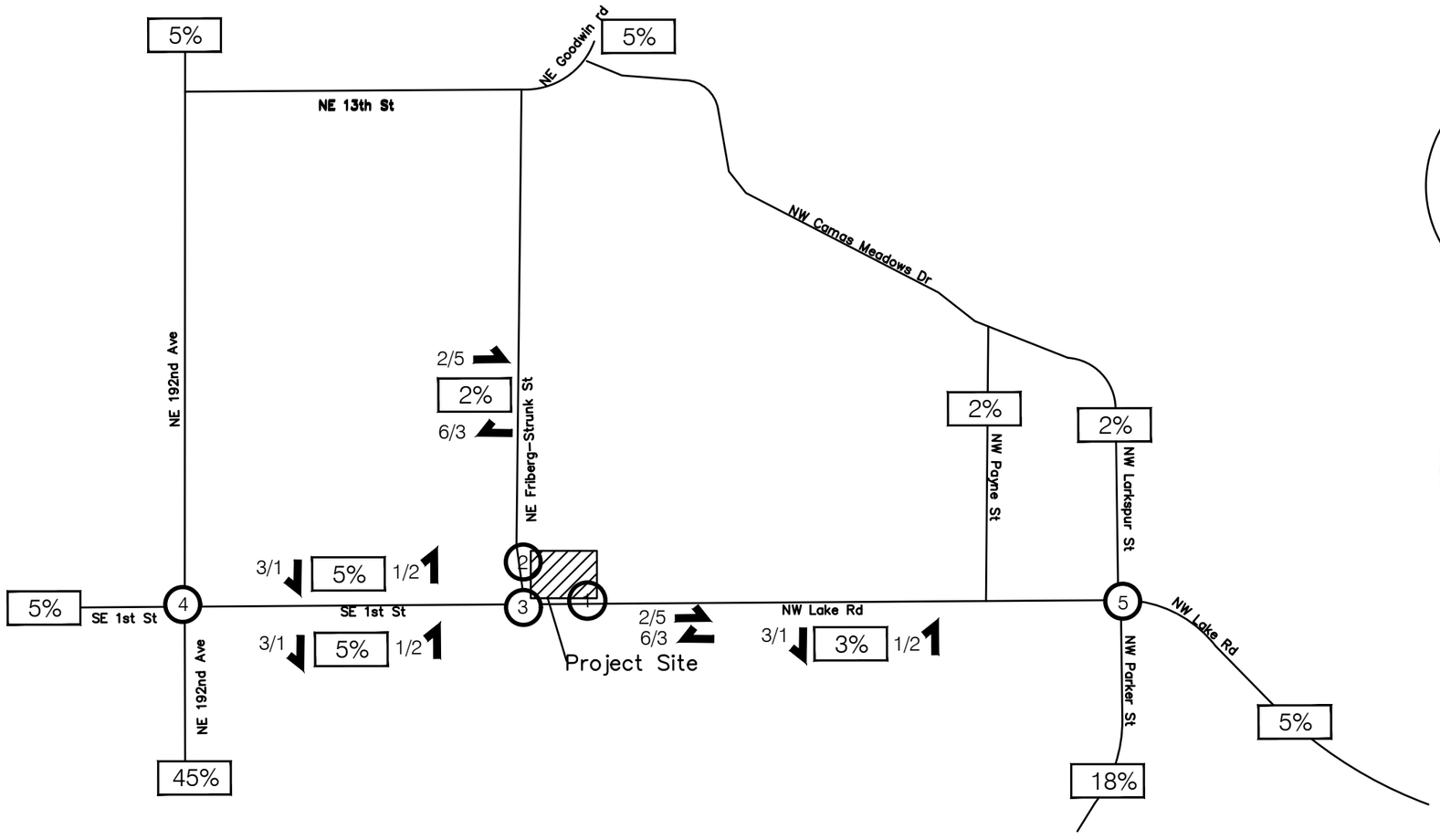
NOT TO SCALE

LEGEND

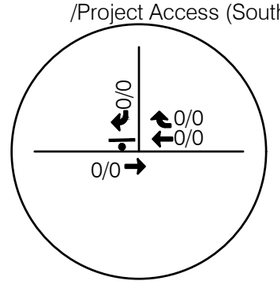
#/# A.M./P.M. Peak Hour Traffic Volume

Year 2022 Existing Traffic Conditions
Weekday A.M. and P.M.
Peak Hour Traffic Volumes

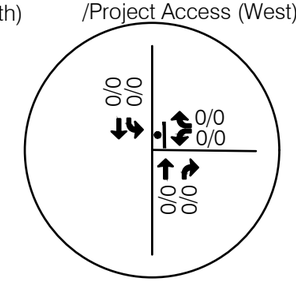
FIGURE 3



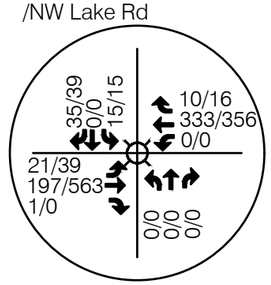
1. NW Lake Rd /Project Access (South)



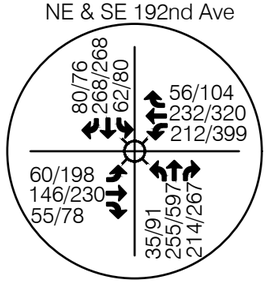
2. NE Fridberg Strunk /Project Access (West)



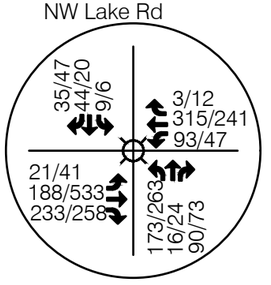
3. NE Fridberg Struck /NW Lake Rd



4. NE 1st Street NE & SE 192nd Ave



5. NW Larkspur NW Lake Rd



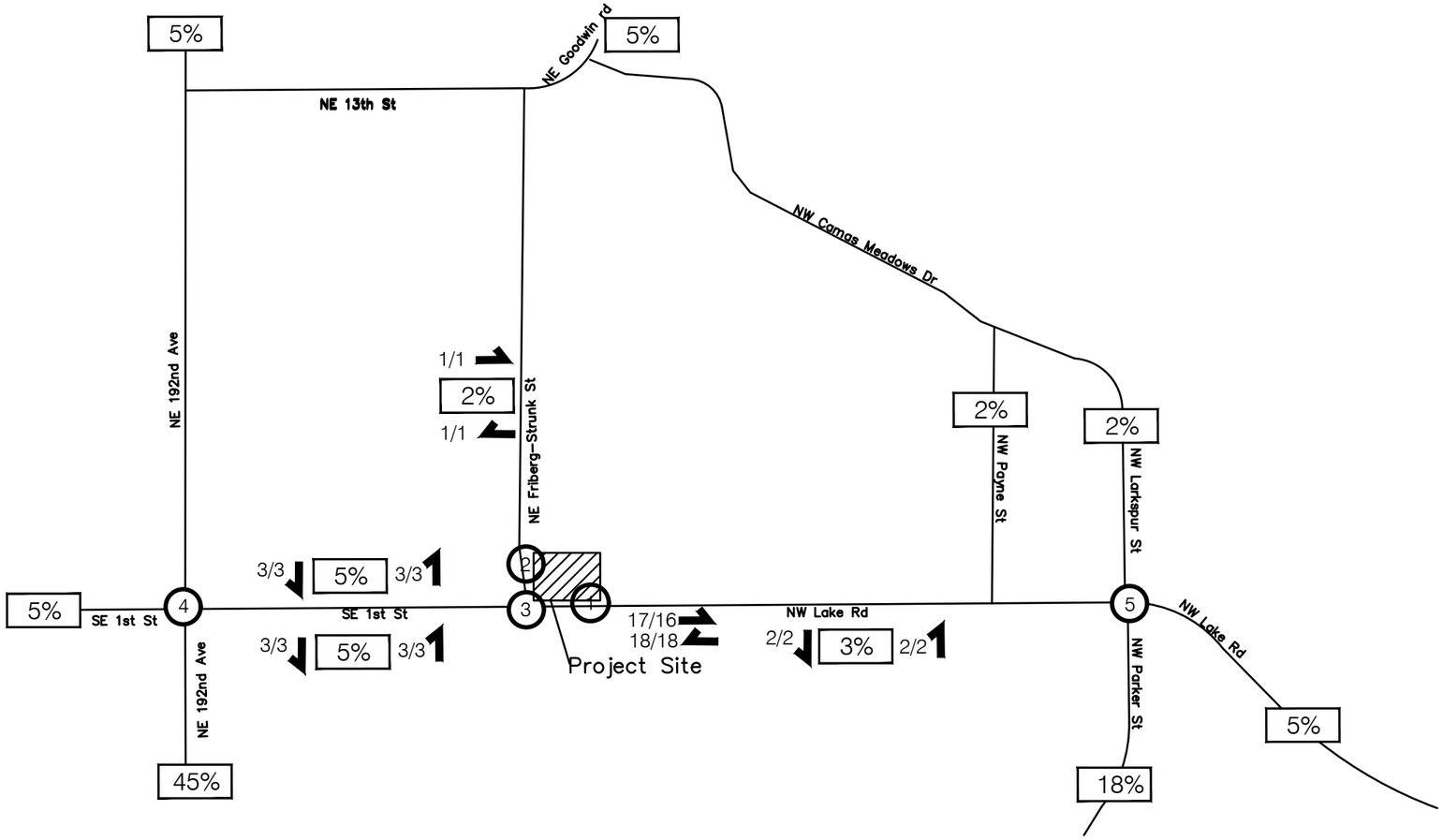
LEGEND

/# A.M./P.M. Peak Hour Traffic Volume

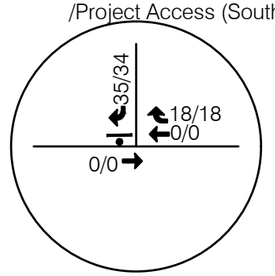
NOT TO SCALE

2027 "Without Project"
A.M. and P.M. Peak Hour Traffic Volumes

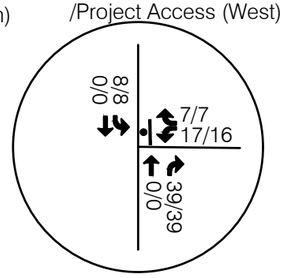
FIGURE 4



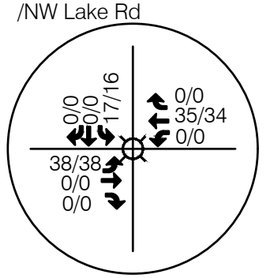
1. NW Lake Rd /Project Access (South)



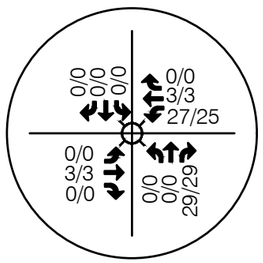
2. NE Fridberg Strunk /Project Access (West)



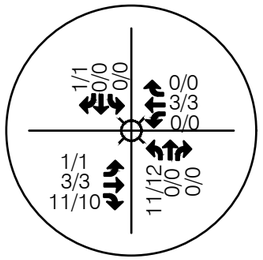
3. NE Fridberg Struck /NW Lake Rd



4. NE 1st Street NE & SE 192nd Ave



5. NW Larkspur NW Lake Rd



LEGEND

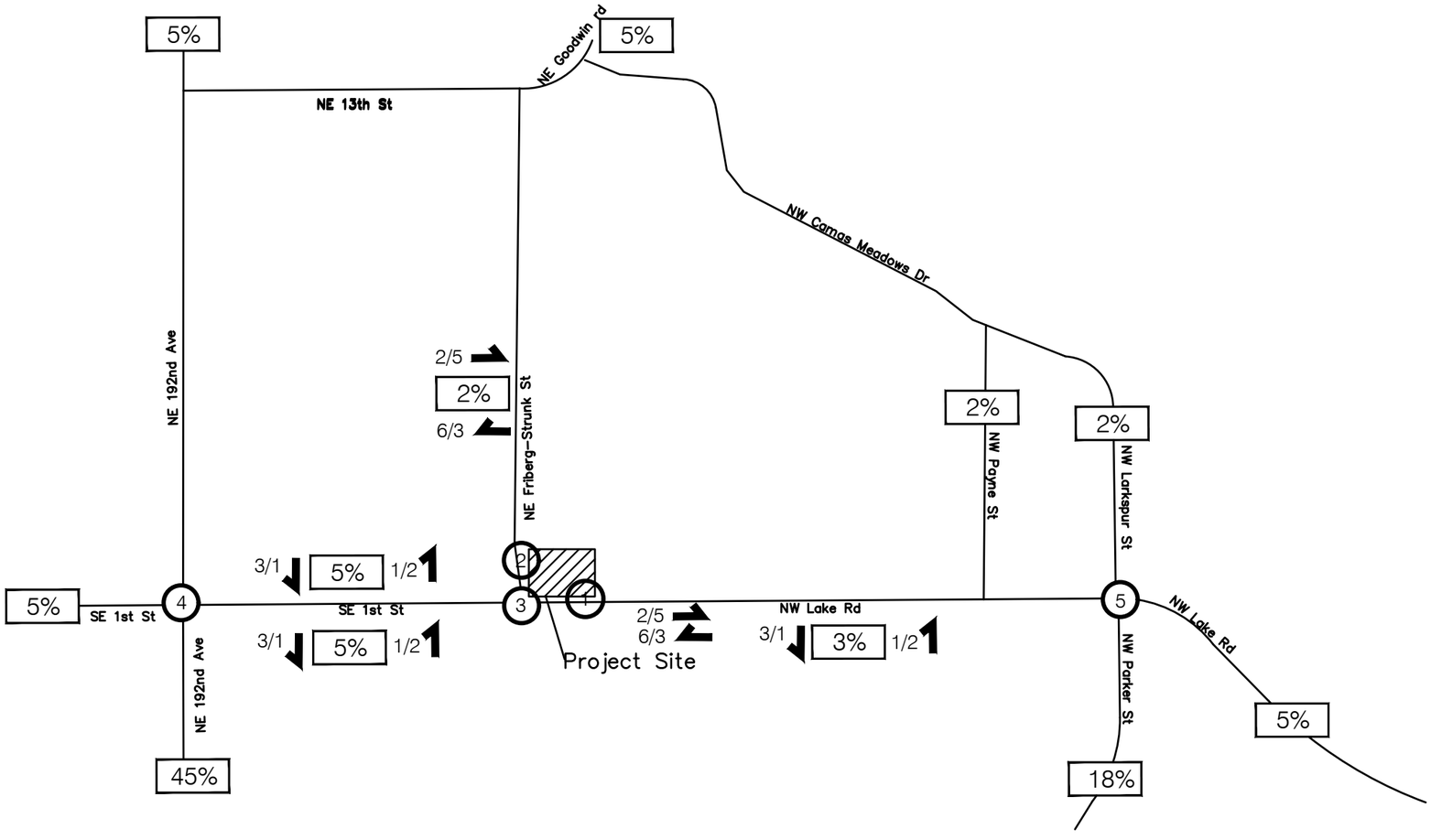
/# A.M./P.M. Peak Hour Traffic Volume

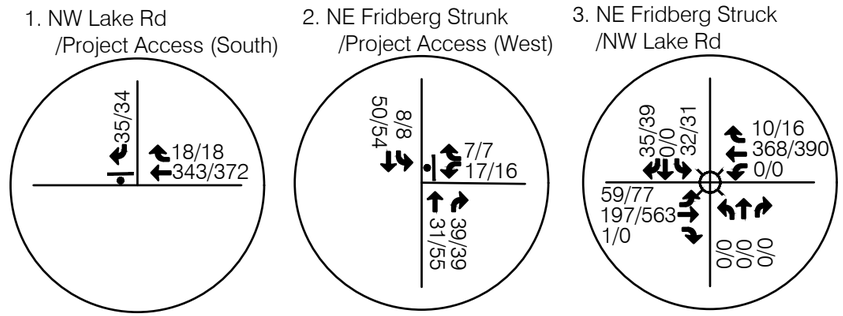
10% Peak Hour Trip Distribution

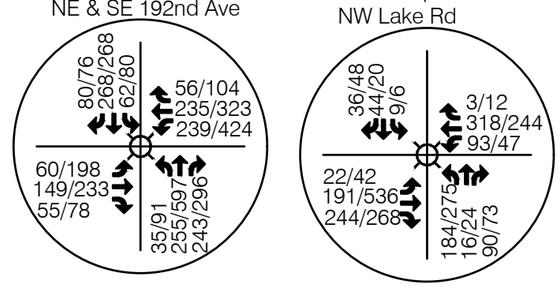
NOT TO SCALE

Trip Distribution and Assignment
Traffic Volumes

FIGURE
5







LEGEND

/# A.M./P.M. Peak Hour Traffic Volume

NOT TO SCALE

2023 "With Project"
A.M. and P.M. Peak Hour Traffic Volumes

FIGURE 6

General Information

Address: No site address
Camas, WA 98607
Intersection: NW Lake Rd & NW Friberg-Strunk St
Parcel SN: 176162-000
Gross Area: 3.95 AC (172,062± SF)
Zoning: CC (Community Commercial)
S.T.R.: SE ¼ S29 T2N R3E W.M.

Existing use:
Vacant

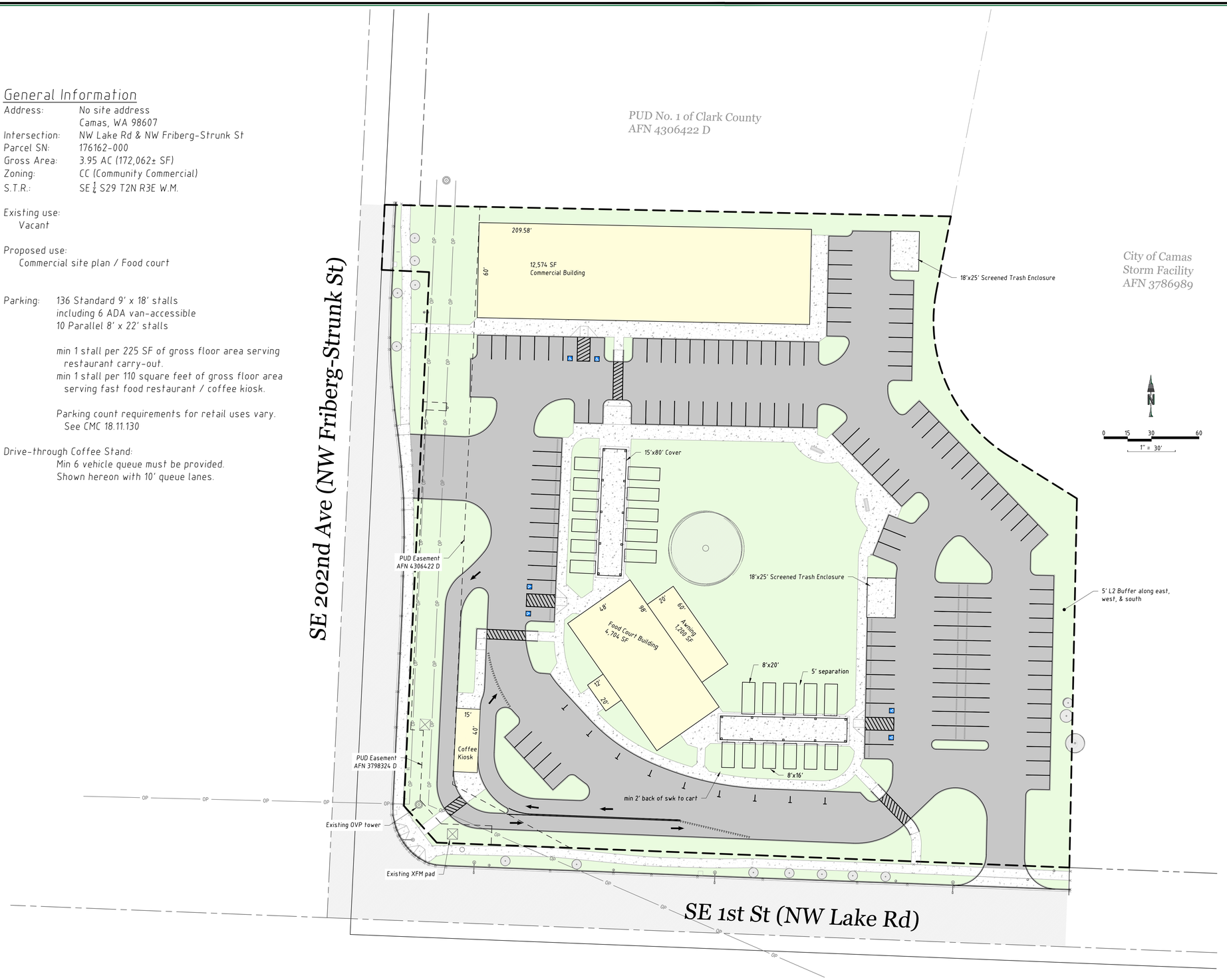
Proposed use:
Commercial site plan / Food court

Parking: 136 Standard 9' x 18' stalls
including 6 ADA van-accessible
10 Parallel 8' x 22' stalls

min 1 stall per 225 SF of gross floor area serving restaurant carry-out.
min 1 stall per 110 square feet of gross floor area serving fast food restaurant / coffee kiosk.

Parking count requirements for retail uses vary. See CMC 18.11.130

Drive-through Coffee Stand:
Min 6 vehicle queue must be provided.
Shown hereon with 10' queue lanes.



P04

Project: 2021004SP
Date: 4/12/2022
Drafted: NVS
Designed: PCW
Page: 1 of 1

Northwest Utilities
1-800-425-5555
"It's the law"
Call 48 hours before you dig.

Revisions:

Concept Site Plan

Oak Tree Station

PRELIMINARY
NOT FOR CONSTRUCTION
43138
REGISTERED PROFESSIONAL ENGINEER

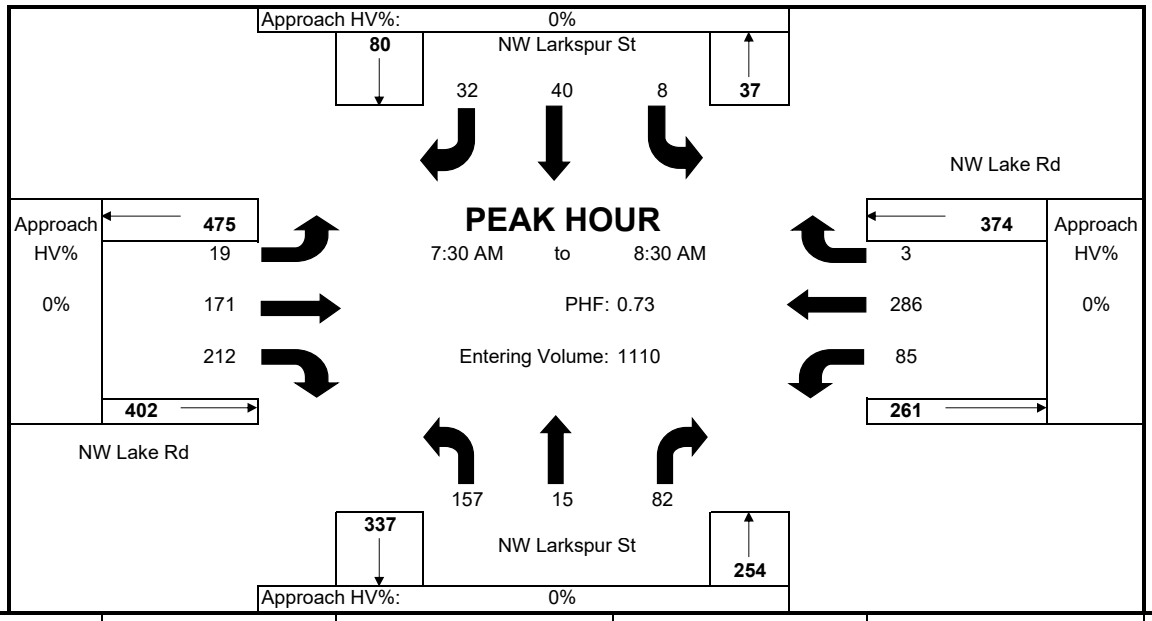
ENGINEERING NORTHWEST
CONSULTING ENGINEERS & PLANNERS
6168 NE HWY 99 STE 100, VANCOUVER 98665
(3 6 0) 9 3 1 - 3 1 2 2

Appendix B

Existing Traffic Counts

LOCATION:
NW Larkspur St & NW Lake Rd
Ridgefield, WA

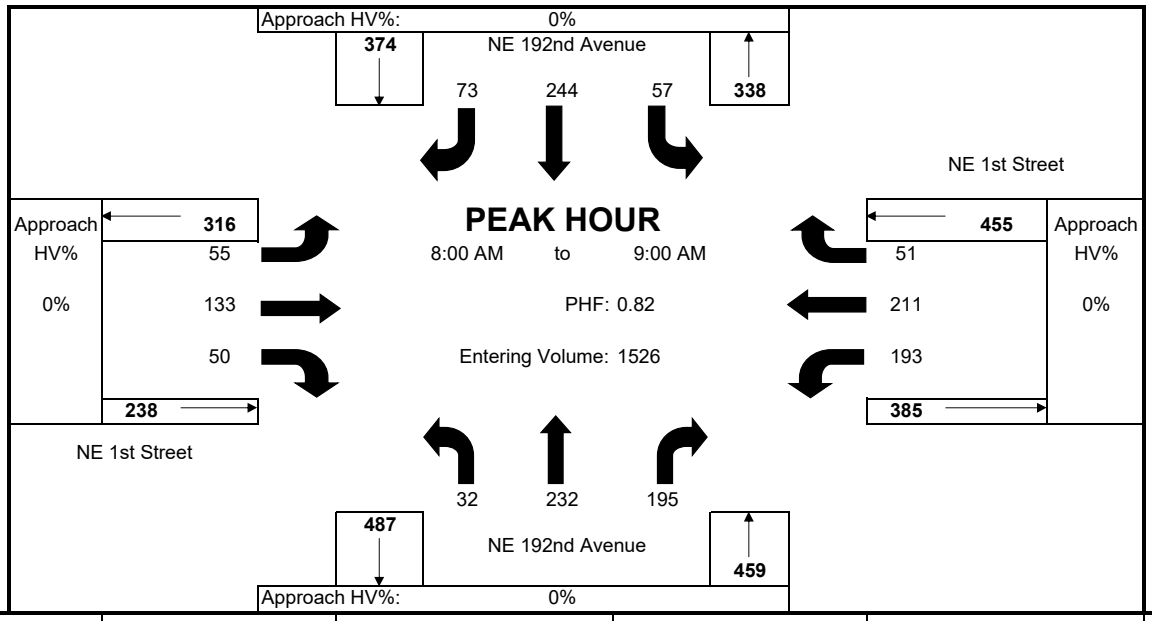
DATE: 1/5/2022
DAY: Wenesday
TIME: 7:30 to 8:30



Time Period		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
7:30	7:45	50	4	18	5	13	2	3	39	45	30	70	1	280
7:45	8:00	56	7	48	11	13	2	4	46	79	35	80	0	381
8:00	8:15	22	4	13	6	8	1	7	44	54	13	78	1	251
8:15	8:30	29	0	3	10	6	3	5	42	34	7	58	1	198
8:30	8:45	26	3	11	7	9	1	5	46	14	9	56	1	188
8:45	9:00	38	4	10	9	4	3	5	45	20	8	97	1	244
9:00	9:15	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15	9:30	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30	9:45	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45	10:00	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00	10:15	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15	10:30	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL:	221	22	103	48	53	12	29	262	246	102	439	5	1542
	Peak HR %HV:	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Peak HR Factor:	0.70	0.54	0.43	0.73	0.77	0.67	0.68	0.93	0.67	0.61	0.89	0.75	

LOCATION:
NE 192nd Avenue & NE 1st Street
Ridgefield, WA

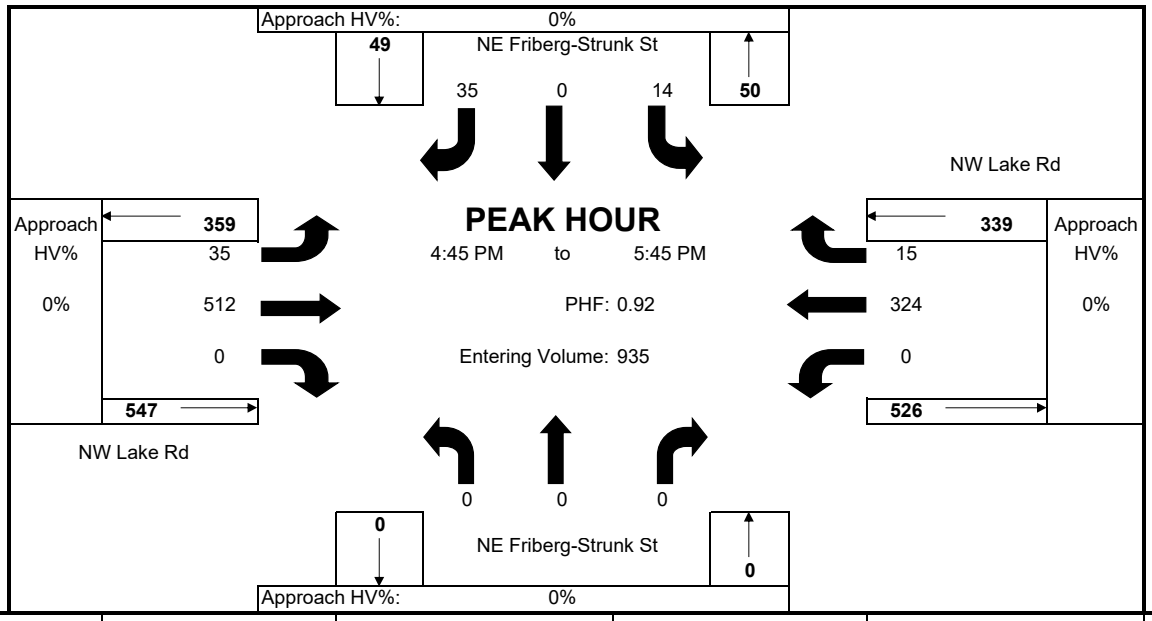
DATE: 1/5/2022
DAY: Wenesday
TIME: 7:30 to 8:30



Time Period		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
7:30	7:45	13	54	78	17	80	15	17	56	13	73	70	22	508
7:45	8:00	7	50	37	12	68	20	12	32	18	36	38	18	348
8:00	8:15	9	62	29	19	54	9	17	21	12	32	32	13	309
8:15	8:30	10	52	42	21	56	15	8	28	10	35	35	9	321
8:30	8:45	8	58	46	14	75	16	12	39	15	61	68	17	429
8:45	9:00	5	60	78	19	59	17	18	45	13	65	76	12	467
9:00	9:15	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15	9:30	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30	9:45	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45	10:00	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00	10:15	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15	10:30	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL:	52	336	310	102	392	92	84	221	81	302	319	91	2382
	Peak HR %HV:	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Peak HR Factor:	0.80	0.94	0.63	0.87	0.81	0.84	0.76	0.74	0.83	0.74	0.69	0.75	

LOCATION:
NE Friberg-Strunk St & NW Lake Rd
Camas, WA

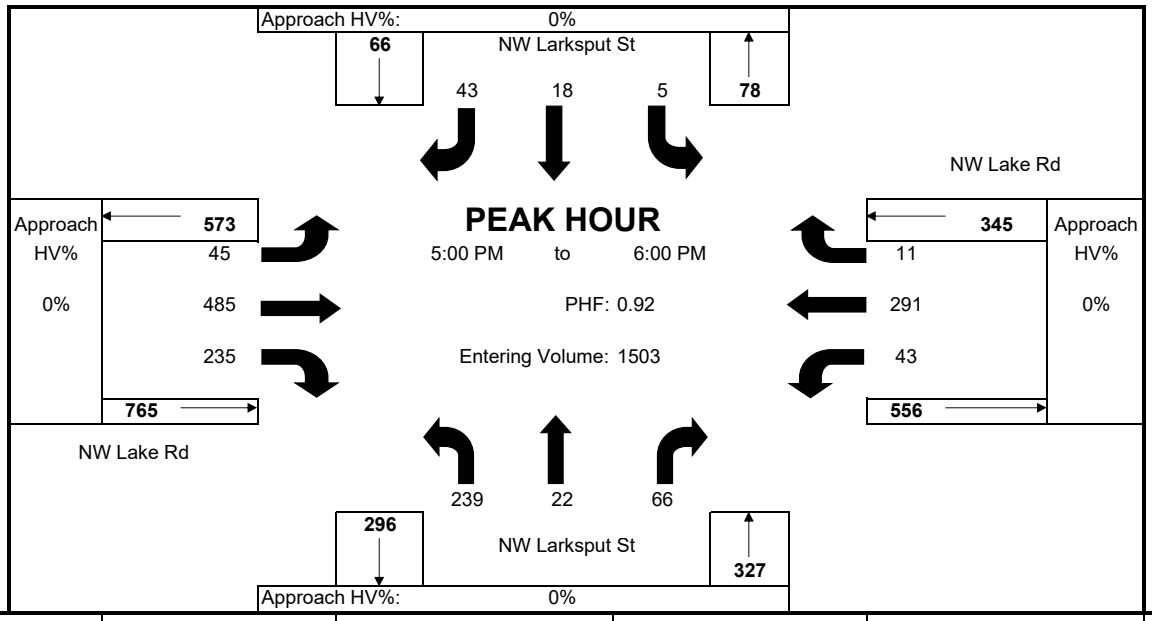
DATE: 1/5/2022
DAY: Wednessday
TIME: 16:00 to 9:00



Time Period		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
16:00	16:15	0	0	0	5	0	6	10	95	0	0	77	6	199
16:15	16:30	1	0	0	8	0	4	5	120	0	0	98	3	239
16:30	16:45	0	0	0	6	0	3	10	119	0	0	92	2	232
16:45	17:00	0	0	0	9	0	5	5	106	0	0	91	4	220
17:00	17:15	0	0	0	10	0	3	12	118	0	0	75	5	223
17:15	17:30	0	0	0	9	0	2	7	165	0	0	66	4	253
17:30	17:45	0	0	0	7	0	4	11	123	0	0	92	2	239
17:45	18:00	0	0	0	5	0	3	5	119	0	0	68	4	204
18:00	18:15	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	18:30	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30	18:45	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45	19:00	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL:	1	0	0	59	0	30	65	965	0	0	659	30	1809
	Peak HR %HV:	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Peak HR Factor:	0.00	0.00	0.00	0.88	0.00	0.70	0.73	0.78	0.00	0.00	0.88	0.75	

LOCATION:
NW Larksput St & NW Lake Rd
Camas, WA

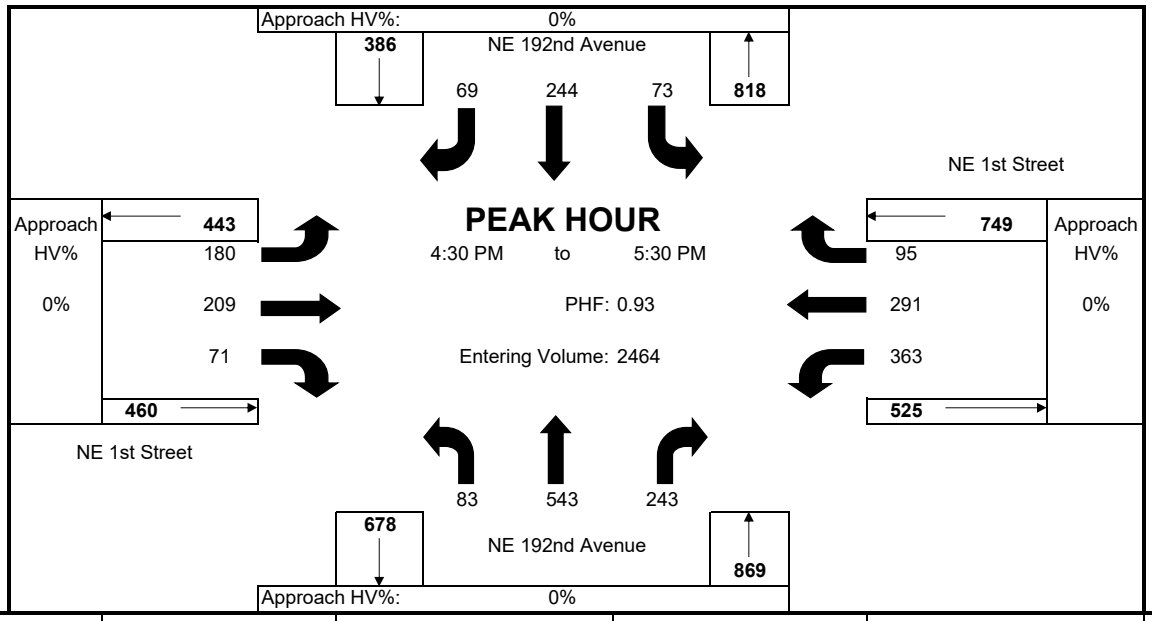
DATE: 1/5/2022
DAY: Wednessday
TIME: 16:00 to 9:00



Time Period		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
16:00	16:15	45	6	5	13	8	5	17	98	41	9	75	2	324
16:15	16:30	51	4	11	10	3	2	8	118	37	4	97	4	349
16:30	16:45	43	1	6	13	0	0	12	117	32	8	87	0	319
16:45	17:00	39	6	8	8	2	2	7	99	53	10	88	2	324
17:00	17:15	81	4	26	14	7	2	14	113	66	10	69	3	409
17:15	17:30	37	5	12	11	3	0	9	149	82	15	64	4	391
17:30	17:45	49	6	9	12	7	2	14	113	69	5	91	0	377
17:45	18:00	72	7	19	6	1	1	8	110	18	13	67	4	326
18:00	18:15	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	18:30	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30	18:45	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45	19:00	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL:		417	39	96	87	31	14	89	917	398	74	638	19	2819
Peak HR %HV:		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Peak HR Factor:		0.74	0.79	0.63	0.77	0.64	0.63	0.80	0.81	0.72	0.72	0.80	0.69	

LOCATION:
NE 192nd Avenue & NE 1st Street
Camas, WA

DATE: 1/5/2022
DAY: Wednessday
TIME: 16:00 to 9:00



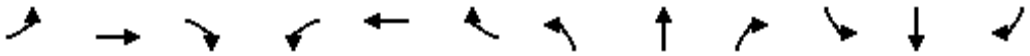
Time Period		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
16:00	16:15	25	119	50	13	64	12	50	67	19	85	68	15	587
16:15	16:30	16	162	59	14	72	11	48	53	13	92	65	16	621
16:30	16:45	17	132	58	24	50	17	53	41	16	86	75	15	584
16:45	17:00	19	116	49	20	57	14	48	54	22	84	69	27	579
17:00	17:15	20	149	78	15	71	24	28	40	15	111	82	30	663
17:15	17:30	27	146	58	10	66	18	51	74	18	82	65	23	638
17:30	17:45	21	131	59	17	71	34	40	16	11	89	62	20	571
17:45	18:00	10	122	63	15	73	32	29	45	20	76	63	25	573
18:00	18:15	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	18:30	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30	18:45	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45	19:00	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL:		155	1077	474	128	524	162	347	390	134	705	549	171	4816
Peak HR %HV:		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Peak HR Factor:		0.77	0.91	0.78	0.72	0.86	0.76	0.85	0.71	0.81	0.82	0.89	0.79	

Appendix C

Existing Level of Services

Lanes, Volumes, Timings
NE 192nd Ave & SE 1st St

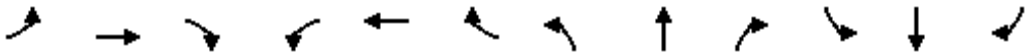
AM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	133	50	193	211	51	32	232	195	57	244	73
Future Volume (vph)	55	133	50	193	211	51	32	232	195	57	244	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.97	0.95	0.95	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.959				0.850			0.850		0.966	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3394	0	3433	1863	1583	1770	3539	1583	1770	3419	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	3394	0	3433	1863	1583	1770	3539	1583	1770	3419	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		46				112			238		33	
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		687			2643			1144			1304	
Travel Time (s)		11.7			45.1			19.5			22.2	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	67	162	61	235	257	62	39	283	238	70	298	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	67	223	0	235	257	62	39	283	238	70	387	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	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	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	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	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6	3	7	4	1	3	8	
Permitted Phases						6			4			
Detector Phase	5	2		1	6	3	7	4	1	3	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	15.0	5.0	5.0	15.0	

Lanes, Volumes, Timings
NE 192nd Ave & SE 1st St

AM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	9.5	22.5		9.5	22.5	22.5	9.5	22.5	9.5	22.5	22.5	
Total Split (s)	9.5	22.5		12.0	25.0	22.5	45.5	23.0	12.0	22.5	22.5	
Total Split (%)	9.3%	22.0%		11.7%	24.4%	22.0%	44.4%	22.4%	11.7%	22.0%	22.0%	
Maximum Green (s)	5.0	18.0		7.5	20.5	18.0	41.0	18.5	7.5	18.0	18.0	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max		None	Max	Max	None	C-Max	None	Max	Max	
Walk Time (s)		7.0			7.0	7.0		7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0	11.0		11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0		0		0	0	
Act Effct Green (s)	5.0	18.0		7.5	22.4	44.9	7.8	41.0	53.0	18.0	55.4	
Actuated g/C Ratio	0.05	0.18		0.07	0.22	0.44	0.08	0.40	0.52	0.18	0.54	
v/c Ratio	0.40	0.35		0.94	0.63	0.08	0.29	0.20	0.26	0.23	0.21	
Control Delay	54.7	31.0		90.9	45.3	0.8	49.6	20.5	2.4	38.5	12.5	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	54.7	31.0		90.9	45.3	0.8	49.6	20.5	2.4	38.5	12.5	
LOS	D	C		F	D	A	D	C	A	D	B	
Approach Delay		36.5			59.7			14.9			16.5	
Approach LOS		D			E			B			B	
Queue Length 50th (ft)	22	53		80	158	0	25	62	0	40	65	
Queue Length 95th (ft)	41	80		#133	219	1	51	83	26	73	88	
Internal Link Dist (ft)		607			2563			1064			1224	
Turn Bay Length (ft)												
Base Capacity (vph)	167	633		251	407	756	708	1415	933	310	1864	
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	0.40	0.35		0.94	0.63	0.08	0.06	0.20	0.26	0.23	0.21	

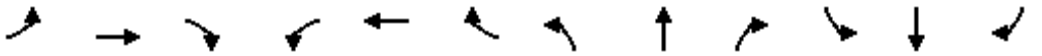
Intersection Summary			
Area Type:	Other		
Cycle Length: 102.5			
Actuated Cycle Length: 102.5			
Offset: 0 (0%), Referenced to phase 4:NBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 32.0		Intersection LOS: C	
Intersection Capacity Utilization 46.9%		ICU Level of Service A	
Analysis Period (min) 15			

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3:

Lanes, Volumes, Timings
NE Friberg & NW Lake Rd

AM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	179	1	0	303	9	0	0	0	14	0	32
Future Volume (vph)	19	179	1	0	303	9	0	0	0	14	0	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999				0.850						0.850
Flt Protected	0.950										0.950	
Satd. Flow (prot)	1770	3536	0	0	3539	1583	0	1863	0	0	1770	1583
Flt Permitted	0.553										0.757	
Satd. Flow (perm)	1030	3536	0	0	3539	1583	0	1863	0	0	1410	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				36						36
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2643			4666			279			633	
Travel Time (s)		60.1			106.0			6.3			14.4	
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
Adj. Flow (vph)	21	195	1	0	329	10	0	0	0	15	0	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	196	0	0	329	10	0	0	0	0	15	35
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA			NA	Perm				Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5
Total Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%	50.0%
Maximum Green (s)	18.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	4.5	4.5			4.5	4.5		4.5			4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0	11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	0
Act Effct Green (s)	18.0	18.0			18.0	18.0					18.0	18.0
Actuated g/C Ratio	0.40	0.40			0.40	0.40					0.40	0.40
v/c Ratio	0.05	0.14			0.23	0.02					0.03	0.05
Control Delay	8.8	8.9			9.5	1.0					8.4	3.9
Queue Delay	0.0	0.0			0.0	0.0					0.0	0.0
Total Delay	8.8	8.9			9.5	1.0					8.4	3.9

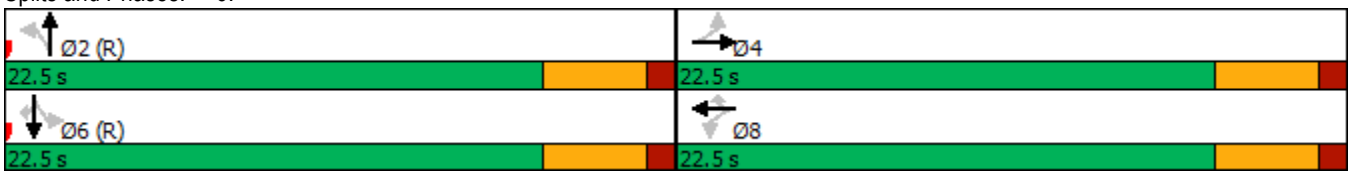
Lanes, Volumes, Timings
NE Friberg & NW Lake Rd

AM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	A	A			A	A					A	A
Approach Delay		8.9			9.2						5.3	
Approach LOS		A			A						A	
Queue Length 50th (ft)	3	15			27	0					2	0
Queue Length 95th (ft)	13	31			48	2					10	11
Internal Link Dist (ft)		2563			4586			199			553	
Turn Bay Length (ft)												
Base Capacity (vph)	412	1415			1415	654					564	654
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	0.05	0.14			0.23	0.02					0.03	0.05

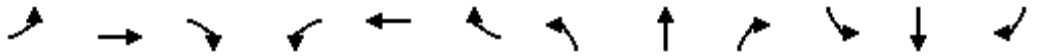
Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.23			
Intersection Signal Delay: 8.8		Intersection LOS: A	
Intersection Capacity Utilization 27.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6:



Lanes, Volumes, Timings
NW Parker St & NW Lake Rd

AM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	171	212	85	286	3	157	15	82	8	40	32
Future Volume (vph)	19	171	212	85	286	3	157	15	82	8	40	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.999			0.873			0.933	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	3536	0	1770	1626	0	1770	1738	0
Flt Permitted	0.561			0.640			0.706			0.689		
Satd. Flow (perm)	1045	1863	1583	1192	3536	0	1315	1626	0	1283	1738	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			230		2			89			35	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		4666			452			981			831	
Travel Time (s)		106.0			10.3			22.3			18.9	
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
Adj. Flow (vph)	21	186	230	92	311	3	171	16	89	9	43	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	186	230	92	314	0	171	105	0	9	78	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0		18.0	18.0	
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40		0.40	0.40		0.40	0.40	
v/c Ratio	0.05	0.25	0.30	0.19	0.22		0.33	0.15		0.02	0.11	
Control Delay	9.5	10.2	4.3	10.2	9.4		11.5	3.9		8.4	6.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	9.5	10.2	4.3	10.2	9.4		11.5	3.9		8.4	6.0	

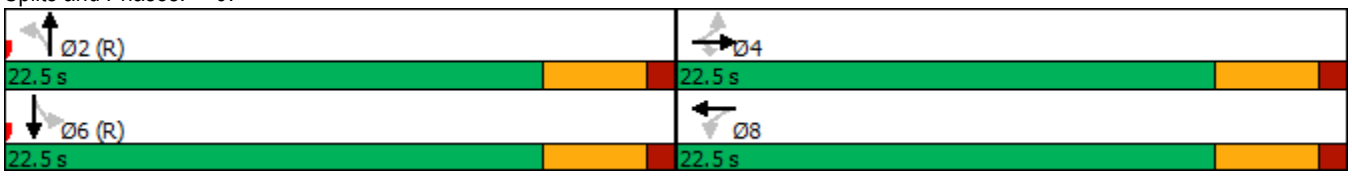
Lanes, Volumes, Timings
NW Parker St & NW Lake Rd

AM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	A	B	A	B	A		B	A		A	A	
Approach Delay		7.1			9.5			8.6			6.3	
Approach LOS		A			A			A			A	
Queue Length 50th (ft)	3	26	0	15	26		29	2		1	6	
Queue Length 95th (ft)	13	62	32	37	46		64	23		7	24	
Internal Link Dist (ft)		4586			372			901			751	
Turn Bay Length (ft)												
Base Capacity (vph)	418	745	771	476	1415		526	703		513	716	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.05	0.25	0.30	0.19	0.22		0.33	0.15		0.02	0.11	

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.33			
Intersection Signal Delay: 8.2		Intersection LOS: A	
Intersection Capacity Utilization 40.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 9:



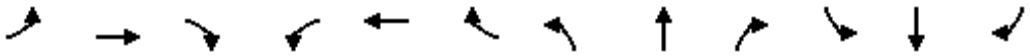
Lanes, Volumes, Timings
NE 192nd Ave & SE 1st St

PM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	209	71	363	291	95	83	543	243	73	244	69
Future Volume (vph)	180	209	71	363	291	95	83	543	243	73	244	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	280		0	330		1000	200		220	270		0
Storage Lanes	2		0	2		1	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	0.95	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.962				0.850			0.850		0.967	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3405	0	3433	1863	1583	1770	3539	1583	1770	3422	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	3405	0	3433	1863	1583	1770	3539	1583	1770	3422	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		41				65			261		39	
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		687			2643			1144			1304	
Travel Time (s)		11.7			45.1			19.5			22.2	
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
Adj. Flow (vph)	194	225	76	390	313	102	89	584	261	78	262	74
Shared Lane Traffic (%)												
Lane Group Flow (vph)	194	301	0	390	313	102	89	584	261	78	336	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	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	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	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	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6	3	7	4	1	3	8	
Permitted Phases						6			4			

Lanes, Volumes, Timings
NE 192nd Ave & SE 1st St

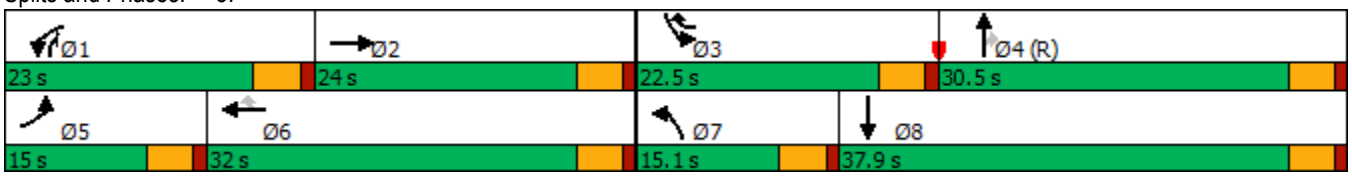
PM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2		1	6	3	7	4	1	3	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	15.0	5.0	5.0	15.0	
Minimum Split (s)	9.5	22.5		9.5	22.5	22.5	9.5	22.5	9.5	22.5	22.5	
Total Split (s)	15.0	24.0		23.0	32.0	22.5	15.1	30.5	23.0	22.5	37.9	
Total Split (%)	15.0%	24.0%		23.0%	32.0%	22.5%	15.1%	30.5%	23.0%	22.5%	37.9%	
Maximum Green (s)	10.5	19.5		18.5	27.5	18.0	10.6	26.0	18.5	18.0	33.4	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max		None	Max	Max	None	C-Max	None	Max	Max	
Walk Time (s)		7.0			7.0	7.0		7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0	11.0		11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0		0		0	0	
Act Effct Green (s)	9.8	21.9		16.1	28.2	50.7	9.3	26.0	46.6	18.0	36.9	
Actuated g/C Ratio	0.10	0.22		0.16	0.28	0.51	0.09	0.26	0.47	0.18	0.37	
v/c Ratio	0.58	0.39		0.71	0.60	0.12	0.54	0.63	0.30	0.25	0.26	
Control Delay	50.1	31.0		46.9	36.9	6.2	55.5	36.5	2.8	37.6	21.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	50.1	31.0		46.9	36.9	6.2	55.5	36.5	2.8	37.6	21.1	
LOS	D	C		D	D	A	E	D	A	D	C	
Approach Delay		38.5			37.8			28.9			24.2	
Approach LOS		D			D			C			C	
Queue Length 50th (ft)	61	74		122	174	12	55	173	0	43	71	
Queue Length 95th (ft)	97	118		168	265	39	105	232	40	86	108	
Internal Link Dist (ft)		607			2563			1064			1224	
Turn Bay Length (ft)	280			330		1000	200		220	270		
Base Capacity (vph)	360	777		635	525	834	187	920	908	318	1285	
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	0.54	0.39		0.61	0.60	0.12	0.48	0.63	0.29	0.25	0.26	

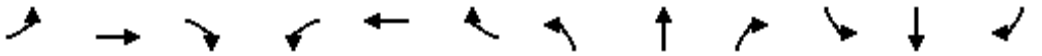
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 4:NBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 32.7		Intersection LOS: C	
Intersection Capacity Utilization 54.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3:



Lanes, Volumes, Timings
NE Friberg St & NW Lake Rd

PM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	512	0	0	324	15	0	0	0	14	0	35
Future Volume (vph)	35	512	0	0	324	15	0	0	0	14	0	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850						0.850
Flt Protected	0.950										0.950	
Satd. Flow (prot)	1770	3539	0	0	3539	1583	0	1863	0	0	1770	1583
Flt Permitted	0.541										0.757	
Satd. Flow (perm)	1008	3539	0	0	3539	1583	0	1863	0	0	1410	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						36						38
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2643			4666			279			633	
Travel Time (s)		60.1			106.0			6.3			14.4	
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
Adj. Flow (vph)	38	557	0	0	352	16	0	0	0	15	0	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	557	0	0	352	16	0	0	0	0	15	38
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		36			36			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA			NA	Perm				Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5
Total Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%	50.0%
Maximum Green (s)	18.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	4.5	4.5			4.5	4.5		4.5			4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0	11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	0
Act Effct Green (s)	18.0	18.0			18.0	18.0					18.0	18.0
Actuated g/C Ratio	0.40	0.40			0.40	0.40					0.40	0.40
v/c Ratio	0.09	0.39			0.25	0.02					0.03	0.06
Control Delay	9.3	10.7			10.0	3.7					8.4	3.9
Queue Delay	0.0	0.0			0.0	0.0					0.0	0.0
Total Delay	9.3	10.7			10.0	3.7					8.4	3.9

Lanes, Volumes, Timings
NE Friberg St & NW Lake Rd

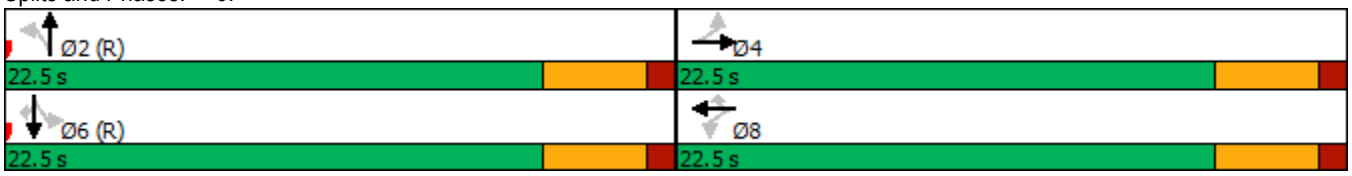
PM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	A	B			B	A					A	A
Approach Delay		10.6			9.8						5.2	
Approach LOS		B			A						A	
Queue Length 50th (ft)	6	51			28	0					2	0
Queue Length 95th (ft)	19	81			56	m4					10	12
Internal Link Dist (ft)		2563			4586			199			553	
Turn Bay Length (ft)												
Base Capacity (vph)	403	1415			1415	654					564	656
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	0.39			0.25	0.02					0.03	0.06

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.39			
Intersection Signal Delay: 10.0		Intersection LOS: A	
Intersection Capacity Utilization 38.5%		ICU Level of Service A	
Analysis Period (min) 15			

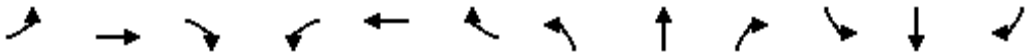
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6:



Lanes, Volumes, Timings NW
Parker St & NW Lake Rd

PM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	485	235	43	291	11	239	22	66	5	18	43
Future Volume (vph)	45	485	235	43	291	11	239	22	66	5	18	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.995			0.887			0.895	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	3522	0	1770	1652	0	1770	1667	0
Flt Permitted	0.554			0.295			0.713			0.695		
Satd. Flow (perm)	1032	1863	1583	550	3522	0	1328	1652	0	1295	1667	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			255		10			72			47	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		4666			452			981			831	
Travel Time (s)		106.0			10.3			22.3			18.9	
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
Adj. Flow (vph)	49	527	255	47	316	12	260	24	72	5	20	47
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	527	255	47	328	0	260	96	0	5	67	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0		18.0	18.0	
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40		0.40	0.40		0.40	0.40	
v/c Ratio	0.12	0.71	0.32	0.21	0.23		0.49	0.14		0.01	0.10	
Control Delay	15.8	24.9	8.1	12.0	9.2		14.0	4.4		8.2	4.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	15.8	24.9	8.1	12.0	9.2		14.0	4.4		8.2	4.8	

Lanes, Volumes, Timings
Parker St & NW Lake Rd

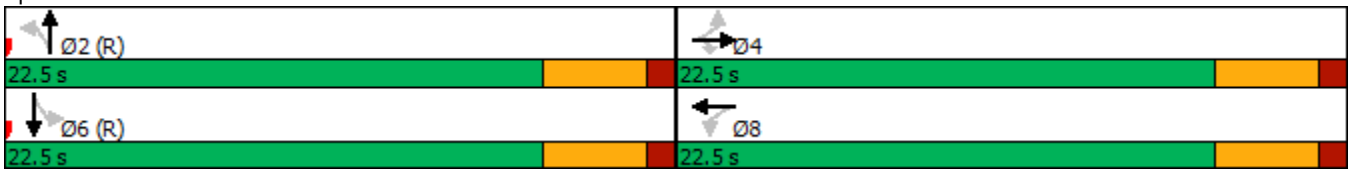
PM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	B	C	A	B	A		B	A		A	A	
Approach Delay		19.2			9.5			11.4			5.1	
Approach LOS		B			A			B			A	
Queue Length 50th (ft)	10	124	0	8	26		47	4		1	3	
Queue Length 95th (ft)	m29	#210	61	26	47		98	23		5	19	
Internal Link Dist (ft)		4586			372			901			751	
Turn Bay Length (ft)												
Base Capacity (vph)	412	745	786	220	1414		531	704		518	695	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.12	0.71	0.32	0.21	0.23		0.49	0.14		0.01	0.10	

Intersection Summary

Area Type: Other
Cycle Length: 45
Actuated Cycle Length: 45
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green
Natural Cycle: 50
Control Type: Pretimed
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 14.7 Intersection LOS: B
Intersection Capacity Utilization 60.9% ICU Level of Service B
Analysis Period (min) 15
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.

Splits and Phases: 9:

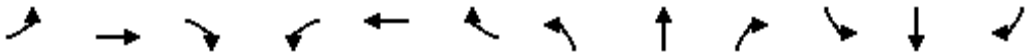


Appendix D

2023 Without Project Level of Services

Lanes, Volumes, Timings
NE 192nd Ave & SE 1st St

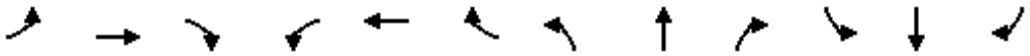
AM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	133	50	193	211	51	32	232	195	57	244	73
Future Volume (vph)	55	133	50	193	211	51	32	232	195	57	244	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.97	0.95	0.95	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.959				0.850			0.850		0.965	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3394	0	3433	1863	1583	1770	3539	1583	1770	3415	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	3394	0	3433	1863	1583	1770	3539	1583	1770	3415	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		46				112			262		33	
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		687			2643			1144			1304	
Travel Time (s)		11.7			45.1			19.5			22.2	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	74	178	67	259	283	68	43	311	262	76	327	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	74	245	0	259	283	68	43	311	262	76	425	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	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	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	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	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6	3	7	4	1	3	8	
Permitted Phases						6			4			
Detector Phase	5	2		1	6	3	7	4	1	3	8	
Switch Phase												

Lanes, Volumes, Timings
NE 192nd Ave & SE 1st St

AM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	15.0	5.0	5.0	15.0	
Minimum Split (s)	9.5	22.5		9.5	22.5	22.5	9.5	22.5	9.5	22.5	22.5	
Total Split (s)	9.5	22.5		12.0	25.0	22.5	45.5	23.0	12.0	22.5	22.5	
Total Split (%)	9.3%	22.0%		11.7%	24.4%	22.0%	44.4%	22.4%	11.7%	22.0%	22.0%	
Maximum Green (s)	5.0	18.0		7.5	20.5	18.0	41.0	18.5	7.5	18.0	18.0	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max		None	Max	Max	None	C-Max	None	Max	Max	
Walk Time (s)		7.0			7.0	7.0		7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0	11.0		11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0		0		0	0	
Act Effct Green (s)	5.0	18.0		7.5	22.4	44.9	8.0	41.0	53.0	18.0	55.3	
Actuated g/C Ratio	0.05	0.18		0.07	0.22	0.44	0.08	0.40	0.52	0.18	0.54	
v/c Ratio	0.44	0.39		1.03	0.70	0.09	0.31	0.22	0.28	0.25	0.23	
Control Delay	56.1	32.2		112.9	48.3	1.2	49.9	20.8	2.4	38.8	12.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	56.1	32.2		112.9	48.3	1.2	49.9	20.8	2.4	38.8	12.9	
LOS	E	C		F	D	A	D	C	A	D	B	
Approach Delay		37.7			70.5			15.0			16.8	
Approach LOS		D			E			B			B	
Queue Length 50th (ft)	24	60		~94	176	0	27	68	0	43	73	
Queue Length 95th (ft)	44	87		#152	242	3	55	90	26	78	98	
Internal Link Dist (ft)		607			2563			1064			1224	
Turn Bay Length (ft)												
Base Capacity (vph)	167	633		251	407	756	708	1415	945	310	1856	
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	0.44	0.39		1.03	0.70	0.09	0.06	0.22	0.28	0.25	0.23	

Intersection Summary			
Area Type:	Other		
Cycle Length: 102.5			
Actuated Cycle Length: 102.5			
Offset: 0 (0%), Referenced to phase 4:NBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.03			
Intersection Signal Delay: 35.5		Intersection LOS: D	
Intersection Capacity Utilization 48.0%		ICU Level of Service A	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.

Lanes, Volumes, Timings
NE 192nd Ave & SE 1st St

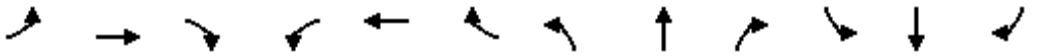
AM PEAK

Queue shown is maximum after two cycles.

Splits and Phases: 3:

Lanes, Volumes, Timings
NE Friberg St & NW Lake Rd

AM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	179	1	0	303	9	0	0	0	14	0	32
Future Volume (vph)	19	179	1	0	303	9	0	0	0	14	0	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999				0.850						0.850
Flt Protected	0.950										0.950	
Satd. Flow (prot)	1770	3536	0	0	3539	1583	0	1863	0	0	1770	1583
Flt Permitted	0.536										0.757	
Satd. Flow (perm)	998	3536	0	0	3539	1583	0	1863	0	0	1410	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				36						38
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2643			4666			279			633	
Travel Time (s)		60.1			106.0			6.3			14.4	
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
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	23	214	1	0	362	11	0	0	0	17	0	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	215	0	0	362	11	0	0	0	0	17	38
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA			NA	Perm				Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5
Total Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%	50.0%
Maximum Green (s)	18.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	4.5	4.5			4.5	4.5		4.5			4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0	11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	0
Act Effct Green (s)	18.0	18.0			18.0	18.0					18.0	18.0
Actuated g/C Ratio	0.40	0.40			0.40	0.40					0.40	0.40
v/c Ratio	0.06	0.15			0.26	0.02					0.03	0.06
Control Delay	8.9	9.0			10.5	3.0					8.4	3.9
Queue Delay	0.0	0.0			0.0	0.0					0.0	0.0

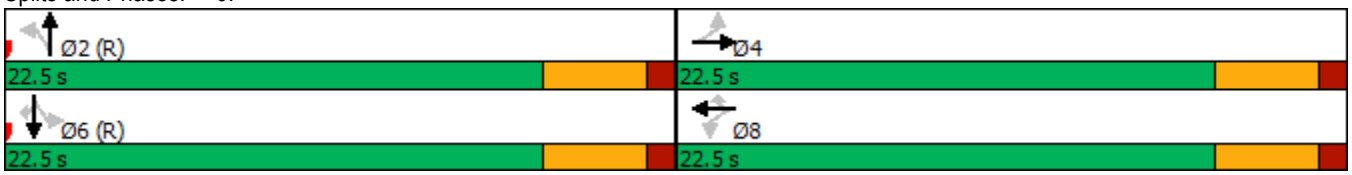
Lanes, Volumes, Timings
NE 192nd Ave & SE 1st St

AM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	8.9	9.0			10.5	3.0					8.4	3.9
LOS	A	A			B	A					A	A
Approach Delay		9.0			10.3						5.3	
Approach LOS		A			B						A	
Queue Length 50th (ft)	4	17			30	0					3	0
Queue Length 95th (ft)	14	33			58	m0					11	12
Internal Link Dist (ft)		2563			4586			199			553	
Turn Bay Length (ft)												
Base Capacity (vph)	399	1415			1415	654					564	656
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	0.06	0.15			0.26	0.02					0.03	0.06

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.26			
Intersection Signal Delay: 9.4		Intersection LOS: A	
Intersection Capacity Utilization 29.0%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 6:



Lanes, Volumes, Timings
NW Parker St & NW Lake Rd

AM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	171	212	85	286	3	157	15	82	8	40	32
Future Volume (vph)	19	171	212	85	286	3	157	15	82	8	40	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.998			0.873			0.934	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	3532	0	1770	1626	0	1770	1740	0
Flt Permitted	0.544			0.630			0.701			0.682		
Satd. Flow (perm)	1013	1863	1583	1174	3532	0	1306	1626	0	1270	1740	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			253		3			98			38	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		4666			452			981			831	
Travel Time (s)		106.0			10.3			22.3			18.9	
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
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	23	204	253	102	342	4	188	18	98	10	48	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	204	253	102	346	0	188	116	0	10	86	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0		18.0	18.0	
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40		0.40	0.40		0.40	0.40	
v/c Ratio	0.06	0.27	0.32	0.22	0.24		0.36	0.16		0.02	0.12	
Control Delay	9.9	10.7	4.7	10.4	9.5		12.0	3.9		8.4	6.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	

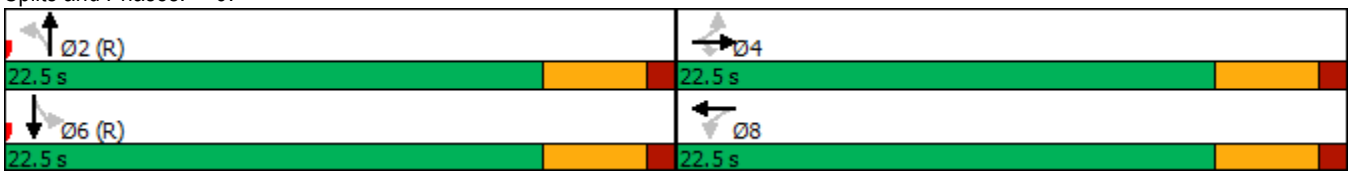
Lanes, Volumes, Timings
NW Parker St & NW Lake Rd

AM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	9.9	10.7	4.7	10.4	9.5		12.0	3.9		8.4	6.1	
LOS	A	B	A	B	A		B	A		A	A	
Approach Delay		7.5			9.7			8.9			6.3	
Approach LOS		A			A			A			A	
Queue Length 50th (ft)	3	29	0	16	29		32	3		2	7	
Queue Length 95th (ft)	15	69	36	41	50		70	24		8	26	
Internal Link Dist (ft)		4586			372			901			751	
Turn Bay Length (ft)												
Base Capacity (vph)	405	745	785	469	1414		522	709		508	718	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.06	0.27	0.32	0.22	0.24		0.36	0.16		0.02	0.12	

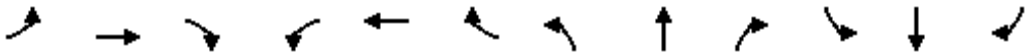
Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.36			
Intersection Signal Delay: 8.5		Intersection LOS: A	
Intersection Capacity Utilization 42.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 9:



Lanes, Volumes, Timings
NE 192nd Ave & SE 1st St

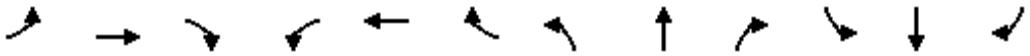
PM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	209	71	363	291	95	83	543	243	73	244	69
Future Volume (vph)	180	209	71	363	291	95	83	543	243	73	244	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	280		0	330		1000	200		220	270		0
Storage Lanes	2		0	2		1	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	0.95	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.962				0.850			0.850		0.967	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3405	0	3433	1863	1583	1770	3539	1583	1770	3422	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	3405	0	3433	1863	1583	1770	3539	1583	1770	3422	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		42				65			287		39	
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		687			2643			1144			1304	
Travel Time (s)		11.7			45.1			19.5			22.2	
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
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	213	247	84	429	344	112	98	642	287	86	289	82
Shared Lane Traffic (%)												
Lane Group Flow (vph)	213	331	0	429	344	112	98	642	287	86	371	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	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	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	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	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6	3	7	4	1	3	8	

Lanes, Volumes, Timings
NE 192nd Ave & SE 1st St

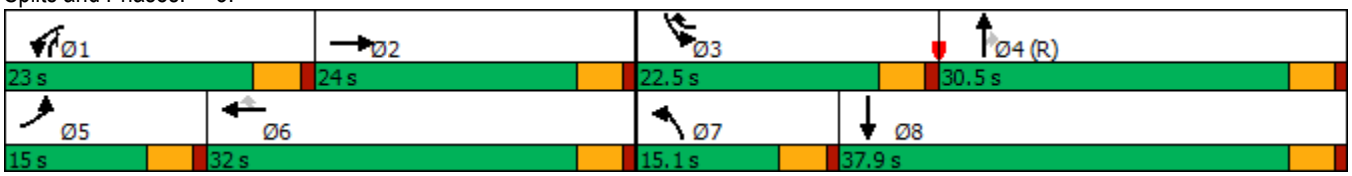
PM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases						6			4			
Detector Phase	5	2		1	6	3	7	4	1	3	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	15.0	5.0	5.0	15.0	
Minimum Split (s)	9.5	22.5		9.5	22.5	22.5	9.5	22.5	9.5	22.5	22.5	
Total Split (s)	15.0	24.0		23.0	32.0	22.5	15.1	30.5	23.0	22.5	37.9	
Total Split (%)	15.0%	24.0%		23.0%	32.0%	22.5%	15.1%	30.5%	23.0%	22.5%	37.9%	
Maximum Green (s)	10.5	19.5		18.5	27.5	18.0	10.6	26.0	18.5	18.0	33.4	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max		None	Max	Max	None	C-Max	None	Max	Max	
Walk Time (s)		7.0			7.0	7.0		7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0	11.0		11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0		0		0	0	
Act Effct Green (s)	10.0	21.3		16.7	28.0	50.5	9.5	26.0	47.2	18.0	36.7	
Actuated g/C Ratio	0.10	0.21		0.17	0.28	0.50	0.10	0.26	0.47	0.18	0.37	
v/c Ratio	0.62	0.44		0.75	0.66	0.13	0.58	0.70	0.32	0.27	0.29	
Control Delay	51.5	32.2		48.2	39.1	6.7	57.3	38.2	2.7	38.0	21.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	51.5	32.2		48.2	39.1	6.7	57.3	38.2	2.7	38.0	21.7	
LOS	D	C		D	D	A	E	D	A	D	C	
Approach Delay		39.8			39.4			30.1			24.8	
Approach LOS		D			D			C			C	
Queue Length 50th (ft)	68	85		134	195	15	60	194	0	48	81	
Queue Length 95th (ft)	105	130		184	294	43	113	257	41	93	120	
Internal Link Dist (ft)		607			2563			1064			1224	
Turn Bay Length (ft)	280			330		1000	200		220	270		
Base Capacity (vph)	360	758		635	521	831	187	920	922	318	1280	
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	0.59	0.44		0.68	0.66	0.13	0.52	0.70	0.31	0.27	0.29	

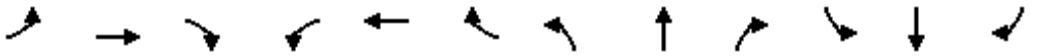
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 4:NBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 33.9		Intersection LOS: C	
Intersection Capacity Utilization 58.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3:



Lanes, Volumes, Timings
NE Friberg St & NW Lake Rd

PM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	512	0	0	324	15	0	0	0	14	0	35
Future Volume (vph)	35	512	0	0	324	15	0	0	0	14	0	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850						0.850
Flt Protected	0.950										0.950	
Satd. Flow (prot)	1770	3539	0	0	3539	1583	0	1863	0	0	1770	1583
Flt Permitted	0.523										0.757	
Satd. Flow (perm)	974	3539	0	0	3539	1583	0	1863	0	0	1410	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						36						42
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2643			4666			279			633	
Travel Time (s)		60.1			106.0			6.3			14.4	
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
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	42	612	0	0	387	18	0	0	0	17	0	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	42	612	0	0	387	18	0	0	0	0	17	42
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		36			36			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA			NA	Perm				Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5
Total Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%	50.0%
Maximum Green (s)	18.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	4.5	4.5			4.5	4.5		4.5			4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0	11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	0
Act Effct Green (s)	18.0	18.0			18.0	18.0					18.0	18.0
Actuated g/C Ratio	0.40	0.40			0.40	0.40					0.40	0.40
v/c Ratio	0.11	0.43			0.27	0.03					0.03	0.06
Control Delay	9.4	11.0			9.4	3.2					8.4	3.8
Queue Delay	0.0	0.0			0.0	0.0					0.0	0.0

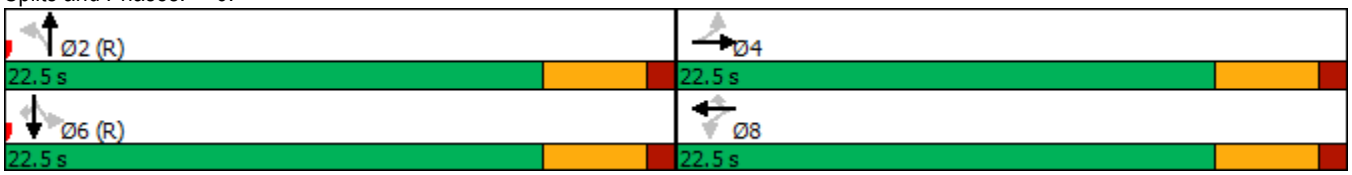
Lanes, Volumes, Timings
NE Friberg St & NW Lake Rd

PM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	9.4	11.0			9.4	3.2					8.4	3.8
LOS	A	B			A	A					A	A
Approach Delay		10.9			9.1						5.1	
Approach LOS		B			A						A	
Queue Length 50th (ft)	6	56			27	0					3	0
Queue Length 95th (ft)	21	90			53	m1					11	12
Internal Link Dist (ft)		2563			4586			199			553	
Turn Bay Length (ft)												
Base Capacity (vph)	389	1415			1415	654					564	658
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	0.11	0.43			0.27	0.03					0.03	0.06

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 9.9		Intersection LOS: A	
Intersection Capacity Utilization 40.8%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 6:



Lanes, Volumes, Timings
NW Parker St & NW Lake Rd

PM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	485	235	43	291	11	239	22	66	5	18	43
Future Volume (vph)	45	485	235	43	291	11	239	22	66	5	18	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.995			0.887			0.895	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	3522	0	1770	1652	0	1770	1667	0
Flt Permitted	0.536			0.239			0.709			0.689		
Satd. Flow (perm)	998	1863	1583	445	3522	0	1321	1652	0	1283	1667	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			281		10			79			51	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		4666			452			981			831	
Travel Time (s)		106.0			10.3			22.3			18.9	
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
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	54	580	281	51	348	13	286	26	79	6	22	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	580	281	51	361	0	286	105	0	6	73	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0		18.0	18.0	
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40		0.40	0.40		0.40	0.40	
v/c Ratio	0.14	0.78	0.35	0.29	0.26		0.54	0.15		0.01	0.10	
Control Delay	16.1	28.4	8.4	14.5	9.4		15.1	4.4		8.3	4.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	

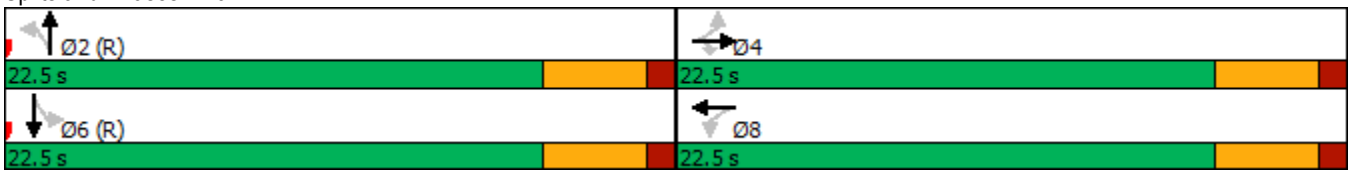
Lanes, Volumes, Timings
NW Parker St & NW Lake Rd

PM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	16.1	28.4	8.4	14.5	9.4		15.1	4.4		8.3	4.8	
LOS	B	C	A	B	A		B	A		A	A	
Approach Delay		21.5			10.0			12.2			5.1	
Approach LOS		C			A			B			A	
Queue Length 50th (ft)	11	141	0	8	30		53	4		1	3	
Queue Length 95th (ft)	m31	#255	67	30	52		111	24		6	20	
Internal Link Dist (ft)		4586			372			901			751	
Turn Bay Length (ft)												
Base Capacity (vph)	399	745	801	178	1414		528	708		513	697	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.14	0.78	0.35	0.29	0.26		0.54	0.15		0.01	0.10	

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 55			
Control Type: Pretimed			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 16.1		Intersection LOS: B	
Intersection Capacity Utilization 64.7%		ICU Level of Service C	
Analysis Period (min) 15			
# 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.			

Splits and Phases: 9:



Appendix E

2023 With Project Level of Services

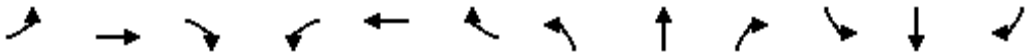
Lanes, Volumes, Timings
3: SE 192nd Ave & SE 1st St

AM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	136	50	220	214	51	32	232	224	57	244	73
Future Volume (vph)	55	136	50	220	214	51	32	232	224	57	244	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.97	0.95	0.95	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.960				0.850			0.850		0.965	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3398	0	3433	1863	1583	1770	3539	1583	1770	3415	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	3398	0	3433	1863	1583	1770	3539	1583	1770	3415	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		45				112			300		33	
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		687			2643			1144			1304	
Travel Time (s)		11.7			45.1			19.5			22.2	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	74	182	67	295	287	68	43	311	300	76	327	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	74	249	0	295	287	68	43	311	300	76	425	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	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	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	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	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6	3	7	4	1	3	8	
Permitted Phases						6			4			
Detector Phase	5	2		1	6	3	7	4	1	3	8	
Switch Phase												

Lanes, Volumes, Timings
3: SE 192nd Ave & SE 1st St

AM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	15.0	5.0	5.0	15.0	
Minimum Split (s)	9.5	22.5		9.5	22.5	22.5	9.5	22.5	9.5	22.5	22.5	
Total Split (s)	9.5	22.5		12.0	25.0	22.5	45.5	23.0	12.0	22.5	22.5	
Total Split (%)	9.3%	22.0%		11.7%	24.4%	22.0%	44.4%	22.4%	11.7%	22.0%	22.0%	
Maximum Green (s)	5.0	18.0		7.5	20.5	18.0	41.0	18.5	7.5	18.0	18.0	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max		None	Max	Max	None	C-Max	None	Max	Max	
Walk Time (s)		7.0			7.0	7.0		7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0	11.0		11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0		0		0	0	
Act Effct Green (s)	5.0	18.0		7.5	22.4	44.9	8.0	41.0	53.0	18.0	55.3	
Actuated g/C Ratio	0.05	0.18		0.07	0.22	0.44	0.08	0.40	0.52	0.18	0.54	
v/c Ratio	0.44	0.39		1.18	0.71	0.09	0.31	0.22	0.31	0.25	0.23	
Control Delay	56.1	32.5		155.1	48.8	1.2	49.9	20.8	2.5	38.8	12.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	56.1	32.5		155.1	48.8	1.2	49.9	20.8	2.5	38.8	12.9	
LOS	E	C		F	D	A	D	C	A	D	B	
Approach Delay		37.9			92.1			14.3			16.8	
Approach LOS		D			F			B			B	
Queue Length 50th (ft)	24	62		~119	179	0	27	68	0	43	73	
Queue Length 95th (ft)	44	89		#178	244	3	55	90	27	78	98	
Internal Link Dist (ft)		607			2563			1064			1224	
Turn Bay Length (ft)												
Base Capacity (vph)	167	633		251	407	756	708	1415	963	310	1856	
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	0.44	0.39		1.18	0.71	0.09	0.06	0.22	0.31	0.25	0.23	

Intersection Summary			
Area Type:	Other		
Cycle Length: 102.5			
Actuated Cycle Length: 102.5			
Offset: 0 (0%), Referenced to phase 4:NBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.18			
Intersection Signal Delay: 42.2		Intersection LOS: D	
Intersection Capacity Utilization 48.2%		ICU Level of Service A	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.

Lanes, Volumes, Timings
3: SE 192nd Ave & SE 1st St

AM PEAK

Queue shown is maximum after two cycles.

Splits and Phases: 3: SE 192nd Ave & SE 1st St

Lanes, Volumes, Timings
6: SE 1st St/NW Lake Rd & NE Fridberg Struck

AM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	179	1	0	338	9	0	0	0	31	0	32
Future Volume (vph)	57	179	1	0	338	9	0	0	0	31	0	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999				0.850						0.850
Flt Protected	0.950										0.950	
Satd. Flow (prot)	1770	3536	0	0	3539	1583	0	1863	0	0	1770	1583
Flt Permitted	0.514										0.757	
Satd. Flow (perm)	957	3536	0	0	3539	1583	0	1863	0	0	1410	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				36						38
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2643			4666			279			633	
Travel Time (s)		60.1			106.0			6.3			14.4	
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
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	68	214	1	0	404	11	0	0	0	37	0	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	68	215	0	0	404	11	0	0	0	0	37	38
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA			NA	Perm				Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5
Total Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%	50.0%
Maximum Green (s)	18.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	4.5	4.5			4.5	4.5		4.5			4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0	11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	0
Act Effct Green (s)	18.0	18.0			18.0	18.0					18.0	18.0
Actuated g/C Ratio	0.40	0.40			0.40	0.40					0.40	0.40
v/c Ratio	0.18	0.15			0.29	0.02					0.07	0.06
Control Delay	10.3	9.0			10.5	2.9					8.8	3.9
Queue Delay	0.0	0.0			0.0	0.0					0.0	0.0

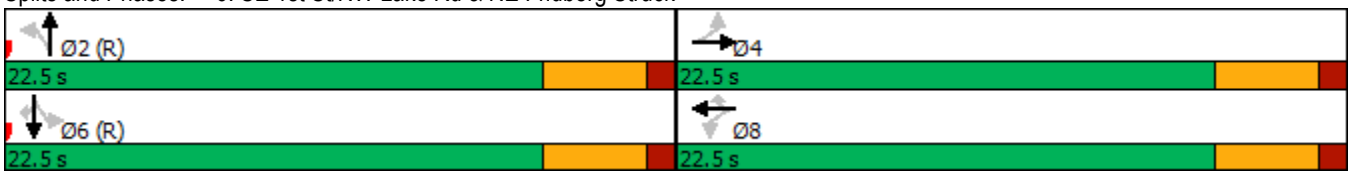
Lanes, Volumes, Timings
6: SE 1st St/NW Lake Rd & NE Fridberg Struck

AM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	10.3	9.0			10.5	2.9					8.8	3.9
LOS	B	A			B	A					A	A
Approach Delay		9.3			10.3						6.3	
Approach LOS		A			B						A	
Queue Length 50th (ft)	11	17			34	0					6	0
Queue Length 95th (ft)	30	33			64	m0					18	12
Internal Link Dist (ft)		2563			4586			199			553	
Turn Bay Length (ft)												
Base Capacity (vph)	382	1415			1415	654					564	656
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	0.18	0.15			0.29	0.02					0.07	0.06

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.29			
Intersection Signal Delay: 9.6		Intersection LOS: A	
Intersection Capacity Utilization 31.2%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 6: SE 1st St/NW Lake Rd & NE Fridberg Struck



Lanes, Volumes, Timings
9: NW Larkspur & NW Lake Rd

AM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	174	222	85	289	3	168	15	82	8	40	33
Future Volume (vph)	20	174	222	85	289	3	168	15	82	8	40	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.998			0.873			0.933	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	3532	0	1770	1626	0	1770	1738	0
Flt Permitted	0.542			0.628			0.701			0.682		
Satd. Flow (perm)	1010	1863	1583	1170	3532	0	1306	1626	0	1270	1738	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			265		3			98			39	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		4666			452			981			831	
Travel Time (s)		106.0			10.3			22.3			18.9	
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
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	24	208	265	102	346	4	201	18	98	10	48	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	24	208	265	102	350	0	201	116	0	10	87	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0		18.0	18.0	
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40		0.40	0.40		0.40	0.40	
v/c Ratio	0.06	0.28	0.33	0.22	0.25		0.39	0.16		0.02	0.12	
Control Delay	9.7	10.5	4.5	10.4	9.5		12.3	3.9		8.4	6.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	

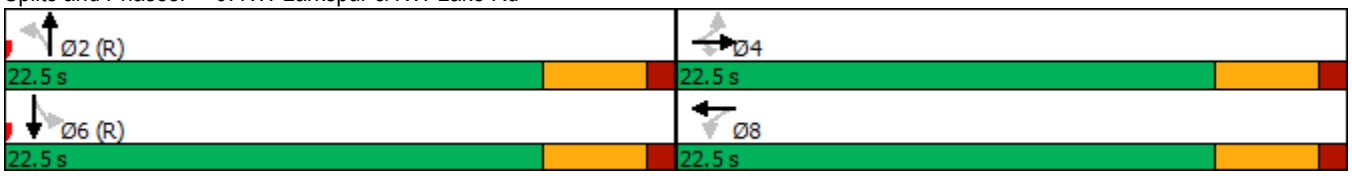
Lanes, Volumes, Timings
9: NW Larkspur & NW Lake Rd

AM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	9.7	10.5	4.5	10.4	9.5		12.3	3.9		8.4	6.1	
LOS	A	B	A	B	A		B	A		A	A	
Approach Delay		7.3			9.7			9.2			6.3	
Approach LOS		A			A			A			A	
Queue Length 50th (ft)	3	30	0	16	29		35	3		2	7	
Queue Length 95th (ft)	15	70	35	41	51		75	24		8	26	
Internal Link Dist (ft)		4586			372			901			751	
Turn Bay Length (ft)												
Base Capacity (vph)	404	745	792	468	1414		522	709		508	718	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.06	0.28	0.33	0.22	0.25		0.39	0.16		0.02	0.12	

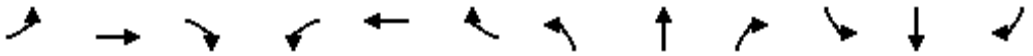
Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.39			
Intersection Signal Delay: 8.5		Intersection LOS: A	
Intersection Capacity Utilization 43.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 9: NW Larkspur & NW Lake Rd



Lanes, Volumes, Timings
3: NE 192nd Ave & SE 1st St

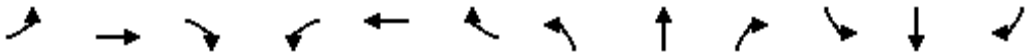
PM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	212	71	388	294	95	83	543	272	73	244	69
Future Volume (vph)	180	212	71	388	294	95	83	543	272	73	244	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	280		0	330		1000	200		220	270		0
Storage Lanes	2		0	2		1	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	0.95	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.962				0.850			0.850		0.967	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3405	0	3433	1863	1583	1770	3539	1583	1770	3422	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	3405	0	3433	1863	1583	1770	3539	1583	1770	3422	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		41				65			322		39	
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		687			2643			1144			1304	
Travel Time (s)		11.7			45.1			19.5			22.2	
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
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	213	251	84	459	348	112	98	642	322	86	289	82
Shared Lane Traffic (%)												
Lane Group Flow (vph)	213	335	0	459	348	112	98	642	322	86	371	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	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	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	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	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6	3	7	4	1	3	8	

Lanes, Volumes, Timings
3: NE 192nd Ave & SE 1st St

PM PEAK



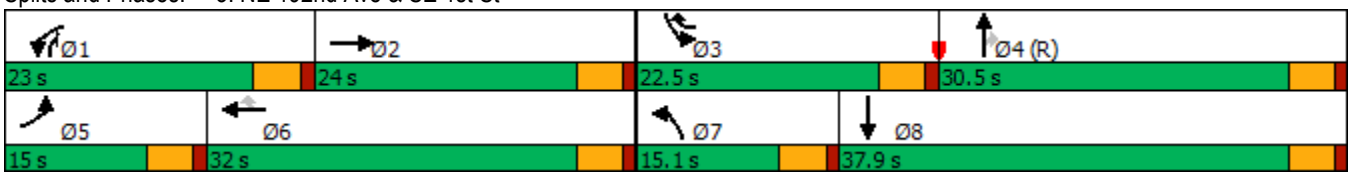
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases						6			4			
Detector Phase	5	2		1	6	3	7	4	1	3	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	15.0	5.0	5.0	15.0	
Minimum Split (s)	9.5	22.5		9.5	22.5	22.5	9.5	22.5	9.5	22.5	22.5	
Total Split (s)	15.0	24.0		23.0	32.0	22.5	15.1	30.5	23.0	22.5	37.9	
Total Split (%)	15.0%	24.0%		23.0%	32.0%	22.5%	15.1%	30.5%	23.0%	22.5%	37.9%	
Maximum Green (s)	10.5	19.5		18.5	27.5	18.0	10.6	26.0	18.5	18.0	33.4	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max		None	Max	Max	None	C-Max	None	Max	Max	
Walk Time (s)		7.0			7.0	7.0		7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0	11.0		11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0		0		0	0	
Act Effct Green (s)	10.0	20.8		17.2	28.0	50.5	9.5	26.0	47.7	18.0	36.7	
Actuated g/C Ratio	0.10	0.21		0.17	0.28	0.50	0.10	0.26	0.48	0.18	0.37	
v/c Ratio	0.62	0.45		0.78	0.67	0.13	0.58	0.70	0.35	0.27	0.29	
Control Delay	51.5	32.9		49.4	39.4	6.7	57.3	38.2	2.8	38.0	21.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	51.5	32.9		49.4	39.4	6.7	57.3	38.2	2.8	38.0	21.7	
LOS	D	C		D	D	A	E	D	A	D	C	
Approach Delay		40.1			40.4			29.2			24.8	
Approach LOS		D			D			C			C	
Queue Length 50th (ft)	68	87		143	198	15	60	194	0	48	81	
Queue Length 95th (ft)	105	132		197	298	43	113	257	43	93	120	
Internal Link Dist (ft)		607			2563			1064			1224	
Turn Bay Length (ft)	280			330		1000	200		220	270		
Base Capacity (vph)	360	741		635	521	831	187	920	939	318	1280	
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	0.59	0.45		0.72	0.67	0.13	0.52	0.70	0.34	0.27	0.29	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 4:NBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 34.0		Intersection LOS: C	
Intersection Capacity Utilization 58.6%		ICU Level of Service B	
Analysis Period (min) 15			

Lanes, Volumes, Timings
3: NE 192nd Ave & SE 1st St

PM PEAK

Splits and Phases: 3: NE 192nd Ave & SE 1st St



Lanes, Volumes, Timings
6: SE 1st St/NW Lake Rd & NE Frodnerg Strunk

PM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	512	0	0	358	15	0	0	0	30	0	35
Future Volume (vph)	73	512	0	0	358	15	0	0	0	30	0	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850						0.850
Flt Protected	0.950										0.950	
Satd. Flow (prot)	1770	3539	0	0	3539	1583	0	1863	0	0	1770	1583
Flt Permitted	0.503										0.757	
Satd. Flow (perm)	937	3539	0	0	3539	1583	0	1863	0	0	1410	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						36						42
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2643			4666			279			633	
Travel Time (s)		60.1			106.0			6.3			14.4	
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
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	87	612	0	0	428	18	0	0	0	36	0	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	612	0	0	428	18	0	0	0	0	36	42
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		36			36			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA			NA	Perm				Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5
Total Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%	50.0%
Maximum Green (s)	18.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	4.5	4.5			4.5	4.5		4.5			4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0	11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	0
Act Effct Green (s)	18.0	18.0			18.0	18.0					18.0	18.0
Actuated g/C Ratio	0.40	0.40			0.40	0.40					0.40	0.40
v/c Ratio	0.23	0.43			0.30	0.03					0.06	0.06
Control Delay	11.0	11.0			9.3	3.1					8.8	3.8
Queue Delay	0.0	0.0			0.0	0.0					0.0	0.0

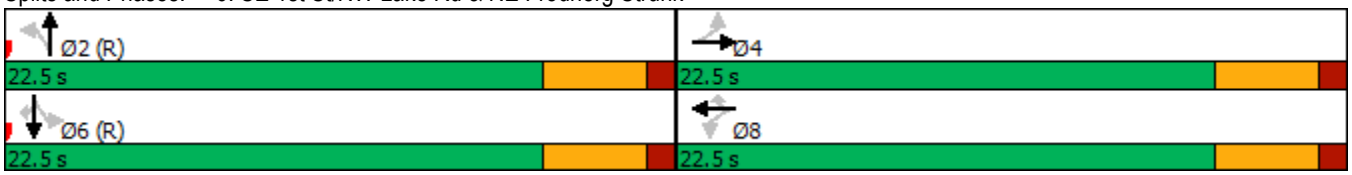
Lanes, Volumes, Timings
6: SE 1st St/NW Lake Rd & NE Frodnerg Strunk

PM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	11.0	11.0			9.3	3.1					8.8	3.8
LOS	B	B			A	A					A	A
Approach Delay		11.0			9.1						6.1	
Approach LOS		B			A						A	
Queue Length 50th (ft)	14	56			30	0					5	0
Queue Length 95th (ft)	38	90			57	m1					18	12
Internal Link Dist (ft)		2563			4586			199			553	
Turn Bay Length (ft)												
Base Capacity (vph)	374	1415			1415	654					564	658
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	0.23	0.43			0.30	0.03					0.06	0.06

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 10.0		Intersection LOS: A	
Intersection Capacity Utilization 41.9%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 6: SE 1st St/NW Lake Rd & NE Frodnerg Strunk



Lanes, Volumes, Timings
9: NW Lake Rd & NW Larkspur

PM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	488	245	43	289	11	251	22	66	5	18	44
Future Volume (vph)	46	488	245	43	289	11	251	22	66	5	18	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.995			0.887			0.894	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	3522	0	1770	1652	0	1770	1665	0
Flt Permitted	0.537			0.236			0.708			0.689		
Satd. Flow (perm)	1000	1863	1583	440	3522	0	1319	1652	0	1283	1665	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			293		10			79			53	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		4666			452			981			831	
Travel Time (s)		106.0			10.3			22.3			18.9	
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
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	55	583	293	51	346	13	300	26	79	6	22	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	55	583	293	51	359	0	300	105	0	6	75	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0		18.0	18.0	
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40		0.40	0.40		0.40	0.40	
v/c Ratio	0.14	0.78	0.36	0.29	0.25		0.57	0.15		0.01	0.11	
Control Delay	16.0	28.4	8.2	14.6	9.4		15.7	4.4		8.3	4.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	

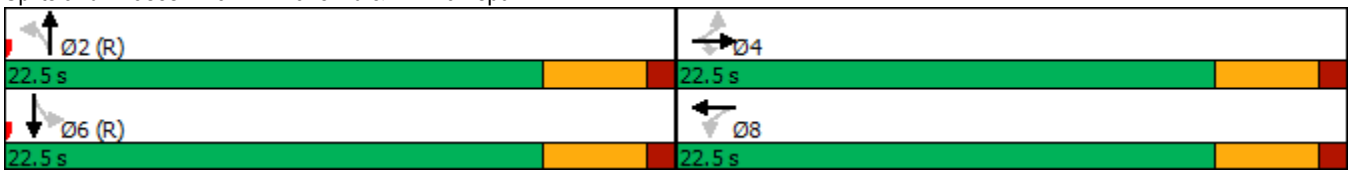
Lanes, Volumes, Timings
9: NW Lake Rd & NW Larkspur

PM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	16.0	28.4	8.2	14.6	9.4		15.7	4.4		8.3	4.7	
LOS	B	C	A	B	A		B	A		A	A	
Approach Delay		21.3			10.0			12.8			5.0	
Approach LOS		C			B			B			A	
Queue Length 50th (ft)	11	142	0	8	30		57	4		1	3	
Queue Length 95th (ft)	m31	#258	67	30	51		118	24		6	20	
Internal Link Dist (ft)		4586			372			901			751	
Turn Bay Length (ft)												
Base Capacity (vph)	400	745	809	176	1414		527	708		513	697	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.14	0.78	0.36	0.29	0.25		0.57	0.15		0.01	0.11	

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 55			
Control Type: Pretimed			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 16.2		Intersection LOS: B	
Intersection Capacity Utilization 65.6%		ICU Level of Service C	
Analysis Period (min) 15			
# 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.			

Splits and Phases: 9: NW Lake Rd & NW Larkspur



ENGINEERING
NORTHWEST PLLC

SEPA ENVIRONMENTAL CHECKLIST

Purpose of checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

Instructions for applicants:

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals:

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

A. Background [HELP]

1. Name of proposed project, if applicable:

Oak Tree Station

2. Name of applicant:

Oak Tree Station LLC

3. Address and phone number of applicant and contact person:

Paul Williams 6168 NE HWY 99, Vancouver WA, 98665 (360)931-3122

4. Date checklist prepared:

January 24th, 2022

5. Agency requesting checklist:

City of Camas

6. Proposed timing or schedule (including phasing, if applicable):

Construction would likely begin upon approval and procurements of all applicable reviews and permits

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

No plans at this time

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal. This project will impact and mitigate the existing wetland in the southwest corner of the project. One large Oregon White Oak onsite which will remain.

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain. None

10. List any government approvals or permits that will be needed for your proposal, if known. None

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

Oak Tree Station will supply the Camas area with a wide variety of food from around the world & drinks that are local experience. Oak Tree station will also offering amazing Tap Beer / Wine / Cider Cart that operates year round. Why limit yourself to one restaurant when you can have over 20 restaurants at your fingertips.
Oak Tree Station will be will provide indoor and outdoor eating area. The indoor eating area will be design to capture nature lighting into a large open dinner area. The focus point for the outdoor dinner area is the large existing white Oak which the patio area stretches too. The outdoor eating area will included a covered area and uncover area from the sunny warm days. Our family friendly astrosphere ensures that you and your entire family will have an enjoyable experience.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you

are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

B. Environmental Elements [HELP]

1. *Earth* [help]

a. General description of the site: The iste is 14.0 in size and slopes from the middle of the side to the east and west

(circle one): Flat, rolling, hilly, steep slopes, mountainous, other _____

b. What is the steepest slope on the site (approximate percent slope)? The approximate steepest slope is 5%

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils. The native soil on site is silty loam

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe. No surface indication or history of undatable soils in the immediate vicinity

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.

Site grading to construct building pads, parking, and other associated improvements. Preliminary estimates show that the site may require more than 30,000 cubic yards of fill. Fill will be imported from an approved site.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Yes, erosion could occur if adequate measure were not implement. Stormwater and Erosion Control Plans will be prepared and implemented by the applicant, which will meet or exceed he requirements imposed by the City of Camas Code.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Approximately 70% of the site will be covered with impervious surfaces after construction.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

The project will implement temporary erosion control measures during the construction to precent silt-laden stormwater from leaving he project site. These will meet the City of Camas and DOE standards. All disturbed area will be planted with permanent vegetation to minimize long term erosion. The project will also construct a stormwater infiltration facility that will meet he City of Camas stormwater code. Refer to preliminary development plan for information regarding stormwater and erosion control.

2. *Air* [help]

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

Short term exhaust emissions and dust generated from construction equipment are expected. Long term impacts include standard vehicle emissions. Other emission sources include building emissions from heating, ventilation and air conditioning.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

No offsite sources of emissions or odors exist that would adversely affect the proposed development

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

Water will be utilized for dust control as needed during construction as well as the implementation of all local, state and federal regulations. The construction of the building will comply with standards of the Environmental Protection Agency and all other applicable local, state and federal standards.

3. Water [help]

a. Surface Water: [help]

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.
To the far east is a small seasonal stream on the adjacent parcel.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

No

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

None

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

No

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

No

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

No

b. Ground Water: [help]

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.

No groundwater will withdraw from a well for drinking water. This project will connect to public water and sewer. The storm water plan for this project proposes the uses of storm filters to treat storm water.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.
None

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

This project proposes to use storm filter catch basin to collection, treat and depose of the storm water runoff. Calculations and information regarding the drainage facilities are included in the Preliminary Stromwater Report.

2) Could waste materials enter ground or surface waters? If so, generally describe.
No

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe. This project will maintain existing drainage patterns a flow discharge. See project stormwater technical report

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

This proposal will meet or exceed City of Camas water quality and quantity standards provided for by the City of Camas Storm water Ordinance. This project may implement Department of Ecology approved Chitosan chemical treatment of runoff during construction. At treatment levels used, any residual trace of Chitosan in the treated stormwater is negligible and results in no negative impacts for downstream fish or riparian habitats.

4. Plants [help]

a. Check the types of vegetation found on the site:

__x__deciduous tree: alder, maple, aspen, other
__x__evergreen tree: fir, cedar, pine, other
__x__shrubs
__x__grass
__x__pasture
____crop or grain
____ Orchards, vineyards or other permanent crops.
___ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
____water plants: water lily, eelgrass, milfoil, other
__x__other types of vegetation

b. What kind and amount of vegetation will be removed or altered?
All vegetation will be removed form areas depicted for the future buildings, parking, utilities and other on-site improvements during construction activates as shown on the Preliminary Site Plan unless otherwise shown to remain on the Preliminary Landscape Plan.

c. List threatened and endangered species known to be on or near the site.
None to the Applicant's knowledge.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:
A landscaping plan, with the proposed use of native plants, will be prepared for the site as required by City of Camas Code.

e. List all noxious weeds and invasive species known to be on or near the site.
None to the Applicant's knowledge

5. Animals [help]

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site.

Examples include:

birds: hawk, heron, eagle, songbirds, other:
mammals: deer, bear, elk, beaver, other:
fish: bass, salmon, trout, herring, shellfish, other _____
Songbirds and rodents

b. List any threatened and endangered species known to be on or near the site.
None to the Applicant's knowledge

c. Is the site part of a migration route? If so, explain. No

d. Proposed measures to preserve or enhance wildlife, if any:
Landscaping, which includes trees, shrubs and groundcovers, will be installed that will provide some habitat for wildlife.

e. List any invasive animal species known to be on or near the site.
None to the Applicant's knowledge

6. Energy and Natural Resources [help]

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc. This project will meet Washington state energy compliance standards

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.
No

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:
All construction on the site will be designed to comply with the state adopted codes and policies related to energy conservation.

7. Environmental Health [help]

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

1) Describe any known or possible contamination at the site from present or past uses.
None to the Applicant's knowledge

2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.
None to the Applicant's knowledge

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.
None to the Applicant's knowledge

4) Describe special emergency services that might be required.

Additional police and fire/emergency may be required. No special emergency services will be required.

5) Proposed measures to reduce or control environmental health hazards, if any:

The Applicant will comply with applicable local, state and federal regulations during construction and operation of the project. All construction will be inspected according to industry requirements and standards.

b. Noise

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?
Existing traffic noise from adjacent roadways exist, but it should not affect the proposed project.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.
Development of the site would create short-term construction noise. Costomers will create vehicle noise in the long-term.

3) Proposed measures to reduce or control noise impacts, if any:
Construction activities will not occur after 8:00 p.m. or before 7 a.m

8. Land and Shoreline Use [help]

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe. No existing single family homes on-site.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use? No

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how:
None to the applicant's knowledge

c. Describe any structures on the site. No existing building on-site

d. Will any structures be demolished? If so, what?
None to the applicant's knowledge

e. What is the current zoning classification of the site? `development are zoned Community Commercial`

f. What is the current comprehensive plan designation of the site? zoned Community Commercial

g. If applicable, what is the current shoreline master program designation of the site?
None to the applicant's knowledge

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.
No

i. Approximately how many people would reside or work in the completed project? 50 employees

j. Approximately how many people would the completed project displace?
None

j. Proposed measures to avoid or reduce displacement impacts, if any:
None

L. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:
The proposed use is consistent with the comprehensive plan and existing zoning

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any:
None

9. Housing [help]

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing. None

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing. No existing homes onsite

c. Proposed measures to reduce or control housing impacts, if any:
None

10. Aesthetics [help]

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

It is estimated that the buildings will be 26 feet tall. The principle exterior building materials will be hardi plank and other materials.

b. What views in the immediate vicinity would be altered or obstructed?
Views across the site may be obstructed with the construction of the buildings

b. Proposed measures to reduce or control aesthetic impacts, if any:
Landscaping and architectural elements

11. Light and Glare [help]

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?
Typical commercial parkng lot and building lighting will occur in the nighttime hours.

b. Could light or glare from the finished project be a safety hazard or interfere with views?
The installation of illuminated materials will minimize dispersion on the site and will not constitute a safety hazard

c. What existing off-site sources of light or glare may affect your proposal?
There are some amounts of light level generated off-site but they are unlikely to affect the proposal

d. Proposed measures to reduce or control light and glare impacts, if any:
The lighting plan for the proposal will be designed to minimize off site glare

12. Recreation [help]

a. What designated and informal recreational opportunities are in the immediate vicinity?
Walking trail located around the outdoor eating area

b. Would the proposed project displace any existing recreational uses? If so, describe.
None

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:
None

13. Historic and cultural preservation [help]

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers ? If so, specifically describe.
None

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

There are no known historic, archaeological, scientific or cultural evidence or landmarks on or next to the site.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

If any cultural artifacts are discovered during construction on the site, all development will cease and all appropriate federal, state, county and tribal agencies will be contacted.

14. Transportation [help]

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any. This project will access NW Friberg-Strunk Street which is a public street

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop? No public transit system in the area

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate? 97 parking stalls

d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private). The project will access onto NW Friberg-Strunk Street which fronts the project. Currently frontage improvements exist along NW Friberg-Strunk Street and SE 1st Street.

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe. None

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates? This project will generate 1,400 daily vehicular trips. Small percent will be deliver trucks. Data used to estimate traffic generation is Institute of Transportation Engineering manual

g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe. No

h. Proposed measures to reduce or control transportation impacts, if any: This project will pay City of Camas traffic impact fees

15. Public Services [help]

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.

The need for additional fire/emergency and police protection may be needed

b. Proposed measures to reduce or control direct impacts on public services, if any.

Provide urban utilities, pay taxes and imact fees

16. Utilities [help]

a. Circle utilities currently available at the site:
electricity, natural gas, ***water***, ***refuse service***, telephone, ***sanitary sewer***, septic system, other _____

c. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

Electricity –Clark Public Utilities
Sewer –City of Camas
Telephone–Qwest
Water –City of Camas
Refuse Service –Waste Connections
Natural Gas –Northwest Natural

C. Signature [HELP]

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: Paul Williams ____ _____

Name of signee Paul Williams P.E.

Position and Agency/Organization Civil Engineer, Engineering Northwest PLLC

Date Submitted: 8/22/2022

D. Supplemental sheet for nonproject actions [HELP]

(**IT IS NOT NECESSARY** to use this sheet for project actions)

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, be aware of the extent the proposal, or the types of activities likely to result from the proposal, would affect the item at a greater intensity or at a faster rate than if the proposal were not implemented. Respond briefly and in general terms.

1. How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?

Proposed measures to avoid or reduce such increases are:

2. How would the proposal be likely to affect plants, animals, fish, or marine life?

Proposed measures to protect or conserve plants, animals, fish, or marine life are:

3. How would the proposal be likely to deplete energy or natural resources?

Proposed measures to protect or conserve energy and natural resources are:

4. How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection; such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?

Proposed measures to protect such resources or to avoid or reduce impacts are:

5. How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?

Proposed measures to avoid or reduce shoreline and land use impacts are:

6. How would the proposal be likely to increase demands on transportation or public services and utilities?

Proposed measures to reduce or respond to such demand(s) are:

7. Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.

NARRITIVE

Oak Tree Station Food Carts

City of Camas, Washington

PERLIMENARY SITE PLAN

Parcel 176162-000

Introduction:

Oak Tree Station will supply the Camas area with a wide variety of food from around the world & drinks that are local experience. Oak Tree station will also offering amazing Tap Beer / Wine / Cider Cart that operates year-round. Why limit yourself to one restaurant when you can have over 20 restaurants at your fingertips.
Oak Tree Station will be will provide indoor and outdoor eating areas. The indoor eating area will be design to capture nature lighting into a large open dinner area. The focus point for the outdoor dinner area is the large existing white Oak which the patio area stretches too. The outdoor eating area will include a covered area and uncover area for the sunny warm days. Our family friendly astrosphere ensures that you and your entire family will have an enjoyable experience. The project is also proposing a 12,574 square-foot commercial building which will be located on the project north boundary line.

Application Requirements:

CMC 18.07.030:
This project proposes coffee kiosk and food trailers. 18.07.030 - Table 1—Commercial and industrial land use permits coffee kiosh however food carts are conditions use. The conditional use for food carts requires complaints with CMC Chapter 18.19 “Design Review”

The project proposes a 12,574 square-foot building located along the project's north boundary line. The future use of the space is unknown at this time however the possible uses are listed below.

Antique Shop
Appliance sales
Bakery (retail)
Barber and beauty shops
Book Store
Café
Daycare
Fitness center
Florist shop
Professional offices
Smoke Shop

CMC 18.19.050 – Design Principles

A. Standard Principles
   1. Landscaping shall be done with a purpose. It shall be used as a tool to integrate the proposed development in the surrounding environment.
   2. All Attempts shall be made at minimizing the removal of significant natural features. Significant natural features shall be integrated into the overall site plan.
   3. Buildings shall have a finished look. Any use of panelized materials shall be integrated into the development in a manner that achieves a seamless appearance.
   4. A proposed development shall attempt to incorporate or enhance historic/ heritage elements related to the specific site or surrounding area.

The project proposes to meet these standards principles by persevering the large Oregon White Oaktree. The project proposes to create an outdoor atmosphere around the Oaktree which will include an outdoor fireplace and bench seating around a portion tree. The outdoor patio area will have a covered area.

B. Commercial and Mixed Uses

a. On-site parking areas shall be placed to the interior of the development unless site development proves prohibitive. All on-site parking areas along adjacent roadways shall be screened with landscaping. Downtown commercial and mixed-use areas shall not be required to provide on-site parking. *To preserve the existing large oak tree onsite along with creating large open space around the heritage tree, the project proposes to construct parking around the permitter. Between the public street and the parking stall will be a large landscape strip. When the landscape matures this will provide screening between the public street and the adjacent parking stalls.*

b. Buildings shall be used to define the streetscape unless site conditions prove prohibitive. *The project proposes a barn style for the indoor eating area, also the attached to each side of the building is covered walkways to the food carts.*

c. Structures abutting, located in, or located near less intensive uses or zoned areas (such as commercial developments next to residential areas) shall be designed to mitigate size and scale differences. *To the east of the project is City-owned property which is currently vacant. To the north is a Clark Public utility power station. Across NW Friderg-Strunk Street to the west of the project is the school property. To the south is a single-family home on a large lot.*

d. Developments containing a multiple of uses/activities shall integrate each use/activity in a manner that achieves a seamless appearance, or creates a cohesive development. *This project is proposing to use the parcel for eating experiences.*

e. Mixed-use developments that place uses throughout the site (horizontal development) shall organize elements in a manner that minimizes their impact on adjacent lower intensity uses. *This project is not a mixed uses project.*

f. Walls shall be broken up to avoid a blank look and to provide a sense of scale. *The submitted building shows wall articulation and roof modulation.*

g. Outdoor lighting shall not be directed off-site. *The lighting design for the project will not cast light offsite.*

CMC 18.55.110: Application – Requried Information

The project preliminary site plan application includes all the items listed is CMC 18.55.110.

A. A copy of a completed city application form(s) and required fee(s); *Included in the project submmital application*

B. A complete list of the permit approvals sought by the applicant; *Included in the project submittal application*

C. A current (within thirty days prior to application) mailing list and mailing labels of owners of real property within three hundred feet of the subject parcel, certified as based on the records of Clark County assessor; *Included in the project submittal application*

D. A complete and detailed narrative description that describes the proposed development, existing site conditions, existing buildings, public facilities and services, and other natural features. The narrative shall also explain how the criteria are or can be met, and address any other information indicated by staff at the preapplication conference as being required; *Included in the project submittal application*

E. Necessary drawings in the quantity specified by the director; *Included in the project submittal application*

F. Copy of the preapplication meeting notes (Type II and Type III); *Included in the project submittal application*

G. SEPA checklist, if required; NOT REQURIED FOR THIS PROJECT

H. Signage for Type III applications and short subdivisions: Prior to an application being deemed complete and Type III applications are scheduled for public hearing, the applicant shall post one four-foot by eight-foot sign per road frontage. The sign shall be attached to the ground with a minimum of two four-inch by four-inch posts or better. The development sign shall remain

posted and in reasonable condition until a final decision of the city is issued, and then shall be removed by the applicant within fourteen days of the notice of decision by the city. The sign shall be clearly visible from adjoining rights-of-way and generally include the following:

1. Description of proposal, *Included in the project submittal application*
2. Types of permit applications on file and being considered by the City of Camas, *Included in the project submittal application*
3. Site plan, *Included in the project submittal application*
4. Name and phone number of applicant, and City of Camas contact for additional information, *Included in the project submittal application*
5. If a Type III application, then a statement that a public hearing is required and scheduled. Adequate space shall be provided for the date and location of the hearing to be added upon scheduling by the city. *Included in the project submittal application*

I. A copy of a full title report. *Included in the project submittal application*

CMC 18.43.050 -Criteria

A. The proposed use will not be materially detrimental to the public welfare, or injurious to the property or improvements in the vicinity of the proposed use, or in the district in which the subject property is situated; *The project proposes to create a family atmosphere by providing a variety of food option and indoor and outdoor eating area.*

B. The proposed use shall meet or exceed the development standards that are required in the zoning district in which the subject property is situated; *The project proposes to meet these standards.*

C. The proposed use shall be compatible with the surrounding land uses in terms of traffic and pedestrian circulation, density, building, and site design; *The project proposes to be compatible with the surrounding land uses.*

D. Appropriate measures have been taken to minimize the possible adverse impacts that the proposed use may have on the area in which it is located; *The project has submitted a traffic study which shows that all the impacted intersection meets City of Camas standards. The stormwater run-off will meet the City of Camas stormwater code. The project will work with the local fire marshall to ensure a safe site.*

E. The proposed use is consistent with the goals and policies expressed in the comprehensive plan; *This project meets the City of Camas vision statement in the comprehensive plan*

F. Any special conditions and criteria established for the proposed use have been satisfied. In granting a conditional use permit the hearings examiner may stipulate additional requirements to carry out the intent of the Camas Municipal Code and comprehensive plan. *The project meets the standards outlined in CMC 18.19 about the conditional use permit.*

CMC Section 18.18

18.18.060 - Criteria for approval

A. Compatibility with the city's comprehensive plan; *This project meets the City of Camas vision statement in the comprehensive plan*

B. Compliance with all applicable design and development standards contained in this title and other applicable regulations; *This project meets all the standards within the project pre-application report.*

C. Availability and accessibility of adequate public services such as roads, sanitary and storm sewer, and water to serve the site at the time development is to occur, unless otherwise provided for by the applicable regulations. *This project has direct access to roads, sanitary and storm sewer and water services on site.*

D. Adequate provisions are made for other public and private services and utilities, parks and trails (e.g., provide copies of private covenant documents); *This project proposes to meet City of Camas standards.*

E. Adequate provisions are made for the maintenance of public utilities; and *This project proposes to meet City of Camas standards. If reqruied the project will provide utilities easments.*

F. All relevant statutory codes, regulations, ordinances and compliance with the same. The review and decision of the city shall be in accordance with the provisions of CMC Chapter 18.55 Administration and Procedures. *This project proposes to meet City of Camas standards.*

CMC 18.19

CMC 18.07.030 Table 1 – Density and Dimensions for commercial and industrial zones

Zone	CC
Buld Regulations	
Maximum Density (dwelling units/net acre)	N/A
Minimum lot area (square feet)	None
Minimum lot width (feet)	None
Minimum lot depth (feet)	None
Setbacks:	
Minimum front yard (feet)	None
Minimum side yard (feet)	None
Minimum rear yard (feet)	None
Lot Coverage	None

Lot coverage	None
Building Height	
Maximum building height (feet)	None

SEPA CMC 16.07.020.C.

A SEPA checklist is required per CMC Section 16.07.020.C. SEPA checklist has been provided with the application.

18.18.040 – Submittal and contents of a complete application

A. A written description addressing the scope of the project, the nature and size in gross floor area of each use, and the total amount of square feet to be covered by impervious surfaces;

B. A vicinity map showing site boundaries, and existing roads and accesses within and bounding the site;

C. A topographic map based upon a site survey delineating contours, existing and proposed, at no less than five-foot intervals, and which locates existing streams, marshes, and other natural features;

D. Site plans drawn to a scale no smaller than one inch equals fifty feet showing location and size of uses, buffer areas, proposed areas of disturbance or construction outside of the building footprint, yards, open spaces and landscaped areas, and any existing structures, easements and utilities;

E. A circulation plan drawn to a scale acceptable to the community development director illustrating all access points for the site, the size and location of all driveways, streets, and roads, with proposed width and outside turning radius, the location, size, and design of parking and loading areas, and existing and proposed pedestrian circulation system. If a project would generate more than one hundred average daily trips either based on the latest edition of the International Transportation Engineer's (ITE) Trip Generation Manual or evidence substantiated by a professional engineer licensed in the state of Washington with expertise in traffic engineering, a traffic impact study shall be submitted;

F. A preliminary stormwater technical information report (TIR) supporting the preliminary stormwater drainage and runoff plan. The preliminary stormwater TIR is to be prepared in accordance with Ecology's latest edition Stormwater Management Manual for Western Washington (SWMMWW);

G. A utility plan;

H. A plot plan of all proposed landscaping including the treatment and materials used for open spaces, and the types of plants and screening to be used;

I. Typical building elevation and architectural style; and

J. Reserved.

The listed items above are included in the preliminary application submittal.

Camas Design Review Manual:

Design guidelines Commercial use

A landscaping/vegetation plan needs to identify the type of plants or trees to be planted within the foreground of the visual area (or street intersection). The use of vegetation native to the Pacific Northwest (or Camas) should be encouraged, except for noxious weeds. Low maintenances/hardy landscaping should also be encouraged.

The preliminary landscape plan includes the landscaping along both public roads. The final landscape plan will include a list of plants and trees that will be native to the Pacific Northwest.

Intersection should be illuminated, but not dominated by lighting.

This project does not propose any intersection.

Parking spaces should be clustered in a small grouping. Groupings should be separated by landscaping to create a pedestrian-friendly, park like environment. Parking lot landscaping should be credited toward the total landscape requirements

The preliminary site plan show parking in groups separated by landscaping.

Commercial developments should be encouraged to include a community information kiosk. The kiosk could be used to provide community information.

Within the site, the project could install a kiosk.

Massing and Setbacks

Since buildings define circulation routes, they should be placed as close to streets and roads as the zoning code allows before being set back to the interior or rear of the lot, unless site constraints make it impossible or characteristics of surrounding properties already developed make it incompatible.

To protect the large oak tree and to provide a focal point for the open area the project must place the parking around the permitter of the project.

Commercial structures abutting residentially zoned areas should be designed to mitigate size and scale differences.

This project proposes two buildings one of the buildings is a small coffee shop and the other building is for indoor and outdoor eating.

On-site parking areas should be placed to the interior of the site whenever possible.

To protect the large oak tree and to provide a focal point for the open area the project must place the parking around the permitter of the project.

Architecture:

Developments surrounded by residential areas or adjacent to residentially zoned properties should be built with a residential feel (i.e. size, scale, and materials compatible with neighboring buildings). The final building design will include the materials.

Buildings over two stories should have the third story and above offset from the first two stories, if surrounding developments are less than three stories or land uses designations on adjacent sites do not allow more than three story development.

The project proposes single-story buildings.

Outdoor lighting shall be hooded or shielded so as not to directly light adjoining or neighboring properties.

The final lighting plan will include hooded or shielded lights.

Circulation and Connections:

Pathways define traffic/pedestrian movement. Buildings brought up to the road help define these movements. Trees and/or planting strips shall be used for separating vehicles and pedestrian movements, as well as provide a secure and pedestrian friendly environment.

The project proposes a walking path around the east and north portion of the side (see submitted site plan).

New streets intersecting commercial properties should be designed to create a safe environment. "Coving" techniques and "round-a-bouts" should be considered for traffic calming when appropriate.

This project proposes no new streets.

CMC 18.13 Landscape Regulations

CMC 18.13.045 Tree Survey

Included in the submittal plan set is a tree survey. The project proposes to keep 4 existing trees and removed 19 existing trees.

18.13.051 – Minimum tree density requirement

The minimum requirement is 20 tree units per net acre

The project proposes

Net Site Area 3.95 acres

Req'd Tree Units (3.95 AC x 20 Units/AC = 79 units)

Retained Tree Unit 45" Oak = 19 units

Proposed Trees 60 x 1 = 60 tree units

The project proposes 5-foot L1 landscape buffer along the north property and a 5-foot L2 landscape buffer along the east, south, and west property line.

CMC 18.11 – Parking

Restaurant, carry-out: 1 space per 225 square feet of GFA

Fast food restaurant/coffee Kiosk: 1 space per 110 square feet of gross floor area, plus 6 staking spaces for drive-through land.

Reatil Stores in general 1 per 1,500 square-feet

The project is proposing a 612 square feet coffee Kiosk thus (612 SF/110 SF = 6 parking stalls)

The project proposes 5,000 square-feet restaurant thus (5,000 SF / 225 SF = 22 parking stalls

The project proposes 12,574 sqyare-foot commercial building (12,574 SF / 1,500 SF = 8 parking stalls)

The project is proposing 147 standard parking stalls and 4 ADA van accessible stalls

CMC 17.19 Water and Sewer

Currently, water and sewer is stub to the property.

Stormwater

The project will comply with Stormwater Management Manual for Western Washington edition 2019.

OAK TREE STATION

Parcel # 176162000

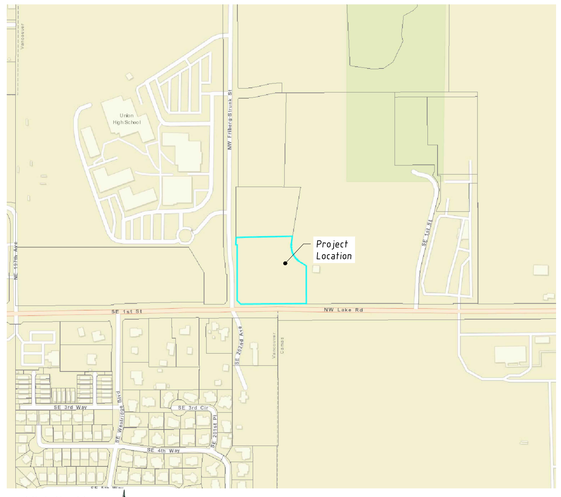
Situate in a portion of the SE $\frac{1}{4}$ of
Section 29, Township 2 North, Range
3 East, of the Willamette Meridian
City of Camas
County of Clark
State of Washington

P000

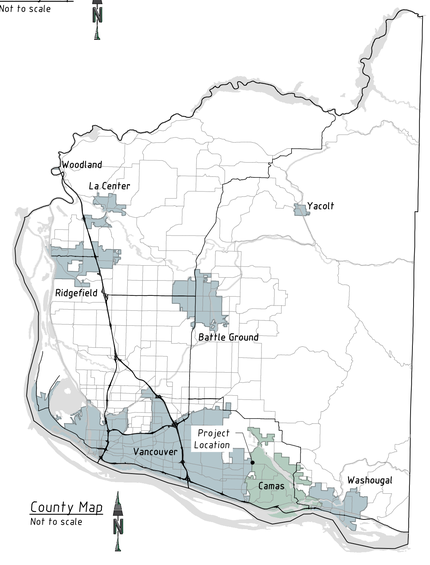
Project: 2021004.SP
Date: 5/17/2022
Drafted: NVS
Designed: PCW
Page: 1 of 9

Northwest Utilities
1-800-425-5555
"It's the law"
Call 48 hours before you dig.

Revisions:



Vicinity Map
Not to scale



County Map
Not to scale

Contact Information

Owner	Oak Tree Station LLC 3239 NW Hood Ct Camas, WA 98607 Phone: Email: RobKyne79@Gmail.com
Engineer/ Applicant/ Contact	Engineering Northwest, PLLC Paul Williams, P.E. 6168 NE Hwy 99 #103 Vancouver, WA 98665 Phone: 360-931-3122 Email: PaulWilliamsPE@Gmail.com

Site Information

Address	No site address assigned
Abbrev. Desc.	#16 SEC 29 T2N R3EWM 3.95A
S-T-R	SE¼ S29 T2N R3E W.M.
Parcel	176162000
Area	3.59 AC (156,287± SF)
Zone	CC

Sheet List

1	P000	Cover Sheet
2	P010	Existing Conditions
3	P020	Preliminary Site
4	P030	Preliminary Grading & Erosion Control
5	P040	Preliminary Water & Sewer
6	P050	Preliminary Tree Removal and Preservation
7	P060	Preliminary Landscape
8	P070	Preliminary Circulation
9	P080	Preliminary Stormwater

Boundary & Topography

Property boundaries shown herein are taken from 2009 record of survey by Olson Engineering, Inc. filed in Book 60, Page 66, of Surveys. Adjacent property boundaries, where shown, are approximate only. Topographic survey performed by Engineering Northwest in 2022.

Site Map
Not to scale

Cover Sheet

Oak Tree Station

PRELIMINARY
NOT FOR CONSTRUCTION
5/17/2022
43138
REGISTERED PROFESSIONAL ENGINEER

ENGINEERING NORTHWEST
CONSULTING ENGINEERS & PLANNERS
6168 NE HWY 99 STE 100, VANCOUVER 98665
(3 6 0) 9 3 1 - 3 1 2 2

Site Information

Address	No site address assigned
Abbrev. Desc.	#16 SEC 29 T2N R3EWM 3.95A
S-T-R	SE ¼ S29 T2N R3E W.M.
Parcel	176162000
Area	3.59 AC (156,287± SF)
Zone	CC

Boundary & Topography

Property boundaries shown herein are taken from 2009 record of survey by Olson Engineering, Inc. filed in Book 60, Page 66, of Surveys. Adjacent property boundaries, where shown, are approximate only. Topographic survey performed by Engineering Northwest in 2022.

Notes

On or within 100 feet of the site, there are:

1) No known water courses.
2) No known water bodies, areas prone to flooding, or wetlands.
3) No designated shoreline areas.
4) No wetlands are mapped or known to exist, therefore a wetlandland determination is not required.
5) No unstable slopes or landslide areas.
6) No significant wildlife habitat or vegetation, other than as shown hereon.
7) No significant historic sites.
8) No existing pedestrian facilities.
9) No existing bicycle facilities.
10) No transit routes (within 600 feet of the site)
11) No streets providing access to the site in excess of 15% grade.
12) A survey was conducted by the Department of Archeology and Historic Preservation reccommending no further study is required.

Site Information and Environmental Constraints

As available from Clark County GIS

Zoning Designation - Codes	Community Commercial (CC)
Zoning Overlay(s)	none
Comprehensive Plan	COM
Comp. Plan Overlay(s)	none
Census Tract	406.08
Jurisdiction	Camas
Fire District	Camas
Park District	n/a
School District	Camas
Elementary	Grass Valley
Middle School	Skyridge Middle
High School	Camas
Sewer District	Camas
Sewer Board District	Camas
Water District	Camas
Neighborhood	n/a
Section-Township-Range	SE 1/4,S29,T2N,R3E PDF
Urban Growth Area	Camas
C-Tran Benefit Area	Yes
School Impact Fee	Camas
Transportation Impact Fee	Camas
Transportation Analysis Zone	425
Waste Collection Service Provider Garbage Collection Day	Waste Connections Thursday
Last Street Sweeping	n/a
CPU Lighting Utility District	0
Burning Allowed	No
Increased Wildfire Danger Area	No
Public Health Food Inspector District	District 2
Public Health Food Plan Review Area	District B
Public Health WRAP Inspector District	District 1
Councilor District	4
Drainage District	none

Wetlands and Soil Types

Wetland Class:	PEMC
Wetland Inventory: Info...	No Mapping Indicators
Flood Hazard Area: Info...	Outside Flood Area
Shoreline Designation:	none
Soil Types / Class:	Hydric / CwA Non-Hydric / DoB
Critical Aquifer Recharge Area:	Category 2 Recharge Areas
FEMA Map / FIRM Panel: Info...	53011C0530D
Watershed:	Lacamas Creek
Sub Watershed:	Dwyer Creek
Water Resource Inventory Area:	Name: SALMON-WASHOUGAL Sub-Basin: Burnt Bridge

Geological Hazards Info...

Slope Stability:	
Geological Hazard:	
NEHRP Class:	C
Liquefaction:	Very Low

Water Well Details

none

Septic Document Details

none

Cultural Resources

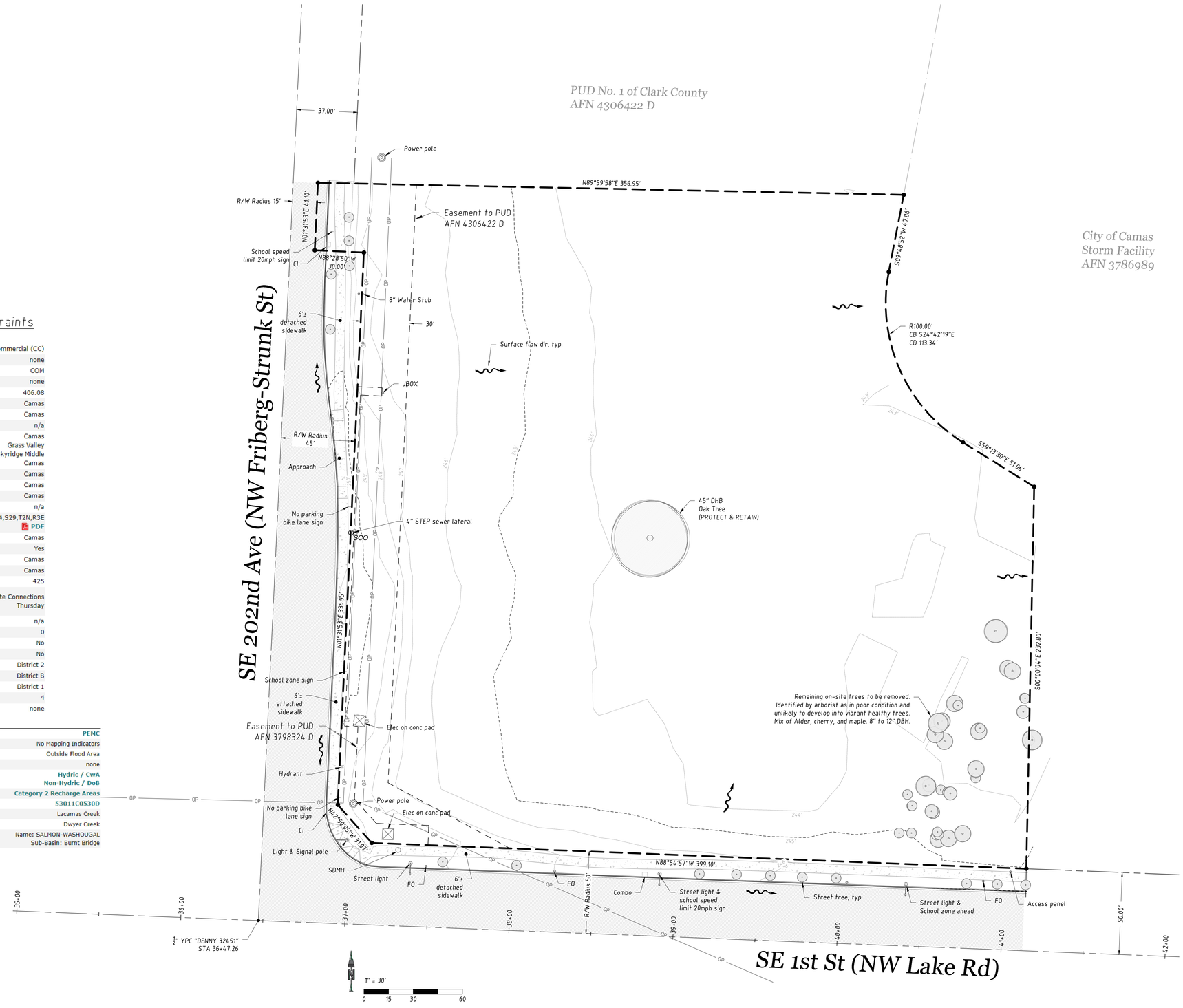
Archaeological Probability:	High
Archaeological Site Buffer:	Yes
Historic Site:	No Mapping Indicators

Habitat and Species Resources Info...

Habitat and Species Impacts:	No Mapping Indicators

Development Moratorium Info...

none



P010

Project:	2021004.SP
Date:	5/17/2022
Drafted:	NVS
Designed:	PCW
Page:	2 of 9

Northwest Utilities
1-800-425-5555
"It's the law"
Call 48 hours before you dig.

Revisions:

Existing Conditions

Oak Tree Station

PRELIMINARY
NOT FOR CONSTRUCTION
5/17/22
43138
REGISTERED
PROFESSIONAL ENGINEER

ENGINEERING NORTHWEST
CONSULTING ENGINEERS & PLANNERS
6168 NE HWY 99 STE 100, VANCOUVER 98665
(3 6 0) 9 3 1 - 3 1 2 2

Site Information

Address	No site address assigned
Abbrev. Desc.	#16 SEC 29 T2N R3EWM 3.95A
S-T-R	SE ¼ S29 T2N R3E W.M.
Parcel	176162000
Area	3.59 AC (156,287± SF)
Zone	CC

Boundary & Topography

Property boundaries shown herein are taken from 2009 record of survey by Olson Engineering, Inc. filed in Book 60, Page 66, of Surveys. Adjacent property boundaries, where shown, are approximate only. Topographic survey performed by Engineering Northwest in 2022.

Notes

- Existing use is vacant. Proposec use is a commercial site plan with uses including a food court featuring the existing oak tree as a point of focus.
- A conditional use permit is required for food trucks/carts in the CC zone.
- 136 standard 9'x18' parking stalls are proposed, including six (6) ADA van-accessible stalls. The front of parking stalls either include a 2' overhang onto the adjacent sidewalk, without infringing upon required widths, or a curb stop 2' from the end of the stall. Ten (10) parallel 8'x22' stalls are also proposed for a total supply of 146 stalls.
- The drive-through coffee stand is designed with a queue length of 6 cars in both directions at 22' length each in a ten (10) foot drive-through aisle.

Development Standards (CC)

CMC 18.09.030 Table 1	Requirement	Proposed
Max density	n/a	n/a
Min lot area	none	156,287± SF
Min lot width	none	404.5'
Min lot depth	none	318.0'
Setbacks:		
Front	(1)	10'
Side	None	10'
Rear	None	10'
Lot Coverage	None	13%
Building Height	None	40'±

(1) Residential dwelling units shall satisfy the front setbacks of CMC 18.09.040 Table 2, based on comparable lot size.

CMC 18.13.020 Landscaping Regulations
A 5ft L2 buffer is required on the east, west, and south.
A 5ft L1 buffer is required on the north.
Perimeter of the proposed parking areas will be landscaped including a min ratio of one tree per six parking spaces, or at least 25 trees.
A min tree density of 20 tree-units per acre are required and may be incorporated with the proposed landscaping. Tree density is calculated on net acreage, excluding open space, critical areas and their buffers.
The oak tree on site is not proposed for removal. It will be retained.

Landscaped areas:
For detailed information, see preliminary landscape plan

Parking
Restaurant, carry-out: min 1 space per gross 225 SF
12,574 SF / 225 SF = 56 stalls
5,904 SF / 225 SF = 27 stalls
Coffee Kiosk min 1 space per gross 110 SF
600 SF / 110 SF = 6 stalls
sum = min 89 stalls
proposed 146 stalls

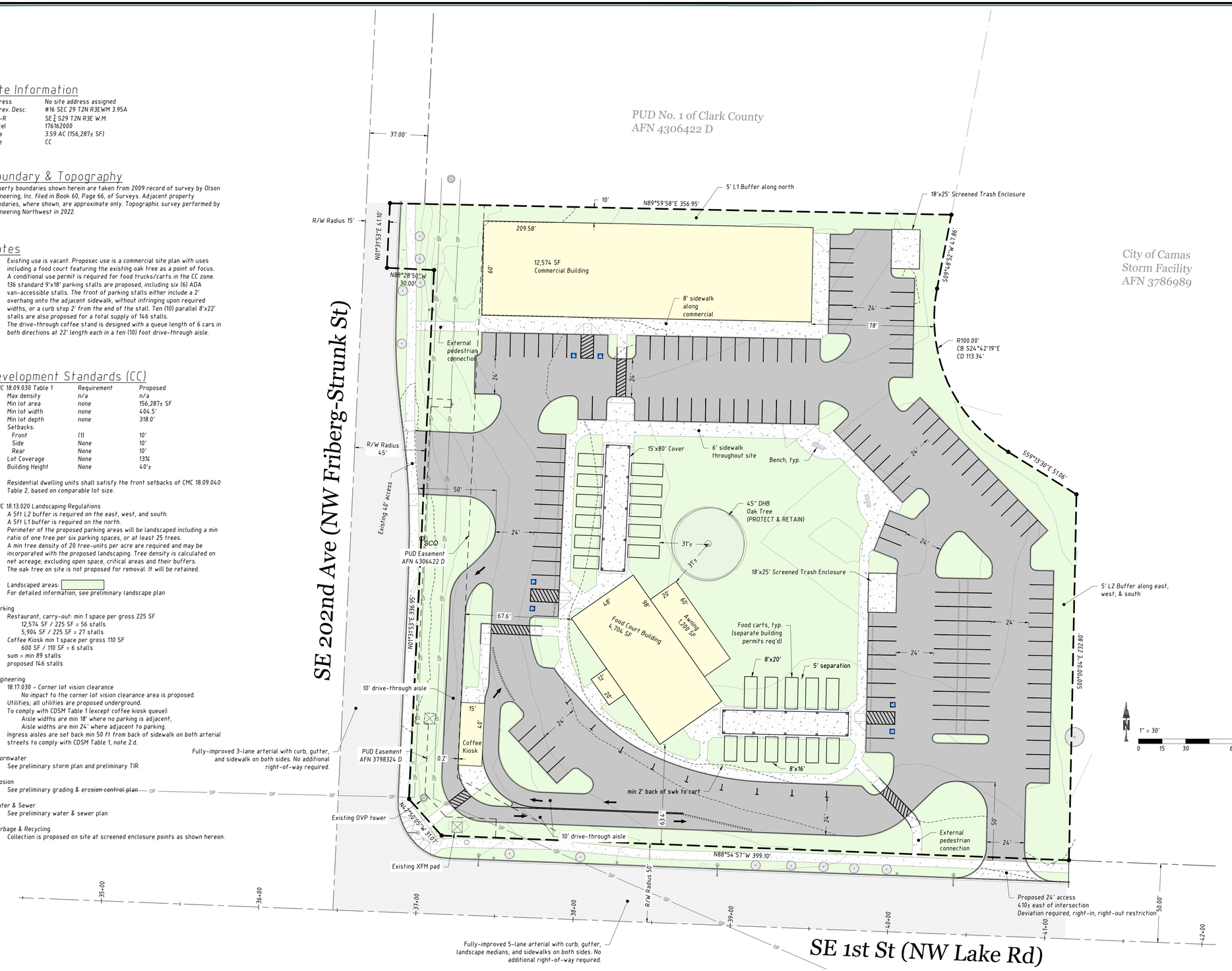
Engineering
18.17.030 - Corner lot vision clearance
No impact to the corner lot vision clearance area is proposed.
Utilities; all utilities are proposed underground.
To comply with CDSM Table 1 (except coffee kiosk queue):
Aisle widths are min 18' where no parking is adjacent,
Aisle widths are min 24' where adjacent to parking.
Ingress aisles are set back min 50 ft from back of sidewalk on both arterial streets to comply with CDSM Table 1, note 2.d.

Stormwater
See preliminary storm plan and preliminary TIR.

Erosion
See preliminary grading & erosion control plan

Water & Sewer
See preliminary water & sewer plan

Garbage & Recycling
Collection is proposed on site at screened enclosure points as shown hereon.



P020

Project:	2021004.SP
Date:	5/17/2022
Drafted:	NVS
Designed:	PCW
Page:	3 of 9

Northwest Utilities
1-800-425-5555
"It's the law"
Call 48 hours before you dig.

Revisions:

Preliminary Site

Oak Tree Station

PRELIMINARY
NOT FOR CONSTRUCTION
43138
REGISTERED PROFESSIONAL ENGINEER
PAUL C. WILLIAMS
STATE OF WASHINGTON

ENGINEERING NORTHWEST
CONSULTING ENGINEERS & PLANNERS
6168 NE HWY 99 STE 100, VANCOUVER 98665
(3 6 0) 9 3 1 - 3 1 2 2

Site Information

Address	No site address assigned
Abbrev. Desc.	#16 SEC 29 T2N R3EWM 3.95A
S-T-R	SE ¼ S29 T2N R3E W.M.
Parcel	176162000
Area	3.59 AC (156,287± SF)
Zone	CC

Boundary & Topography

Property boundaries shown herein are taken from 2009 record of survey by Olson Engineering, Inc. filed in Book 60, Page 66, of Surveys. Adjacent property boundaries, where shown, are approximate only. Topographic survey performed by Engineering Northwest in 2022.

Approximate Earthwork Volumes

Disclaimer: These figures represent approximate earthwork quantities calculated from the existing surface to a design surface at 1:1 volume. This estimate does not include adjustments for pavement or base sections, foundations, trench spoils, utilities, over excavation, shrinkage, swell, deleterious materials removal, etc. Contractors are solely responsible for quantity estimates for bidding purposes. The design surface is typically top of final pavement, finish floor elevations, final grading, etc.

Cut: 1,400 CY
Fill: 1,700 CY
Disturbed Area: 3.50 AC

Environmental Constraints

As provided by Clark County GIS, no environmental constraints exist on or within 100 feet of the subject site. No critical areas are known to exist on site.

Compaction Specification

All structural fill shall be compacted to 95% maximum density. Non-structural fill shall be compacted to 90% maximum density. Individual lifts shall not exceed 12" in depth. Measurements for compaction shall be taken using the proctor test as detailed in AASHTO T-99 or standard industry practice as approved by the geotechnical engineer of record. All compaction test results shall be made available to the Engineer and the County upon request.

Archeological Note

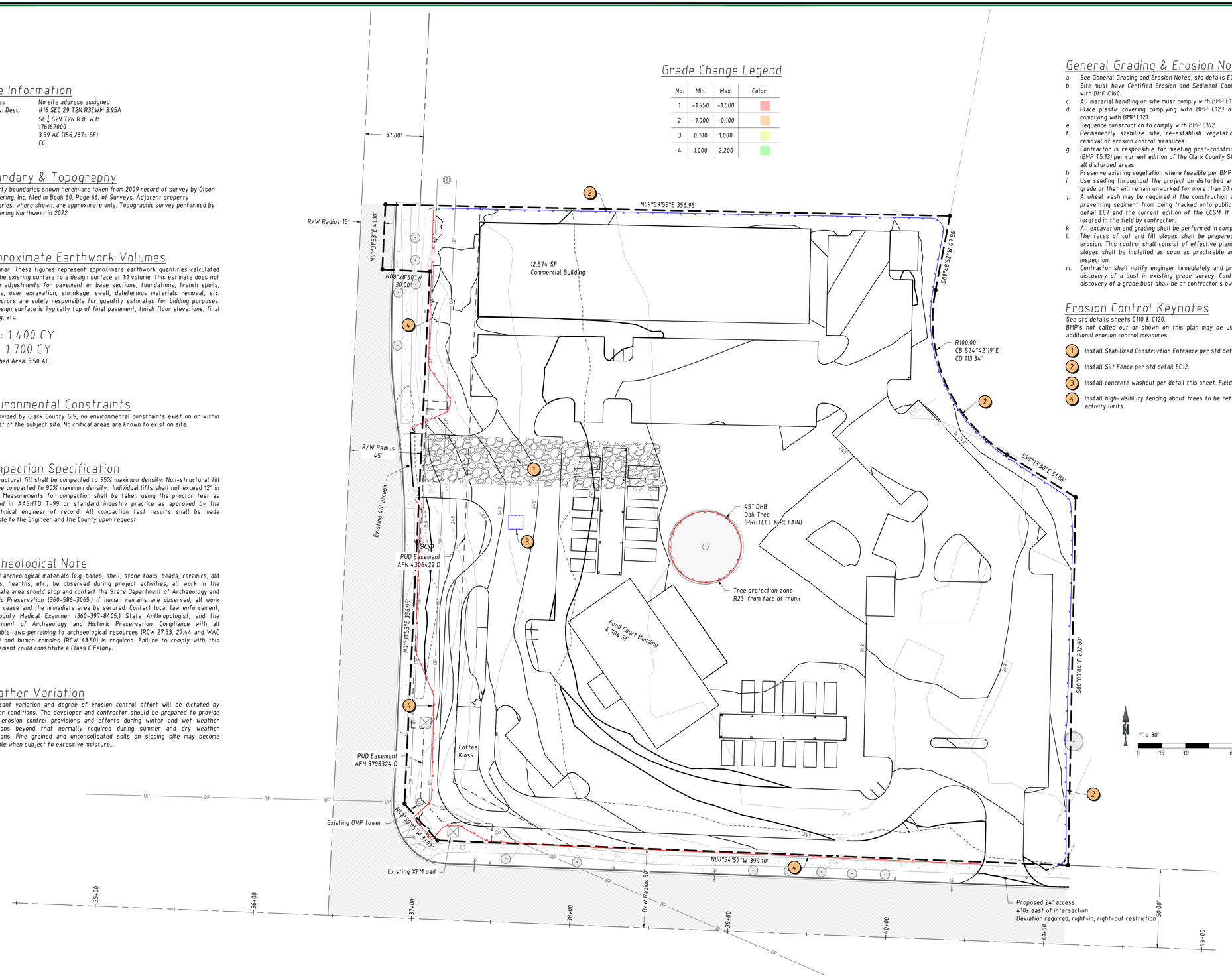
Should archeological materials (e.g. bones, shell, stone tools, beads, ceramics, old bottles, hearths, etc.) be observed during project activities, all work in the immediate area should stop and contact the State Department of Archaeology and Historic Preservation (360-586-3065.) If human remains are observed, all work should cease and the immediate area be secured. Contact local law enforcement, the County Medical Examiner (360-397-8405,) State Anthropologist, and the Department of Archaeology and Historic Preservation. Compliance with all applicable laws pertaining to archaeological resources (RCW 27.53, 27.44 and WAC 25-48) and human remains (RCW 68.50) is required. Failure to comply with this requirement could constitute a Class C Felony.

Weather Variation

Significant variation and degree of erosion control effort will be dictated by weather conditions. The developer and contractor should be prepared to provide extra erosion control provisions and efforts during winter and wet weather conditions beyond that normally required during summer and dry weather conditions. Fine grained and unconsolidated soils on sloping site may become unstable when subject to excessive moisture.,

Grade Change Legend

No.	Min.	Max.	Color
1	-1.950	-1.000	
2	-1.000	-0.100	
3	0.100	1.000	
4	1.000	2.200	



General Grading & Erosion Notes

a. See General Grading and Erosion Notes, std details EC1, EC2, EC3.
b. Site must have Certified Erosion and Sediment Control Lead (CESCL) to comply with BMP C160.
c. All material handling on site must comply with BMP C150, BMP C151, and BMP C154.
d. Place plastic covering complying with BMP C123 over all soil piles or straw complying with BMP C121.
e. Sequence construction to comply with BMP C162.
f. Permanently stabilize site, re-establish vegetation or landscaping prior to removal of erosion control measures.
g. Contractor is responsible for meeting post-construction soil quality and depth (BMP T5.13) per current edition of the Clark County Stormwater Manual (CCSM) for all disturbed areas.
h. Preserve existing vegetation where feasible per BMP C101.
i. Use seeding throughout the project on disturbed areas that have reached final grade or that will remain unworked for more than 30 days per BMP C120.
j. A wheel wash may be required if the construction entrance is not sufficient in preventing sediment from being tracked onto public roads. Wheel wash per std detail EC7 and the current edition of the CCSM. If required, wheel wash to be located in the field by contractor.
k. All excavation and grading shall be performed in compliance with CCC 14.07.
l. The faces of cut and fill slopes shall be prepared and maintained to control erosion. This control shall consist of effective planting. Erosion control for the slopes shall be installed as soon as practicable and prior to calling for final inspection.
m. Contractor shall notify engineer immediately and prior to grading activity upon discovery of a bust in existing grade survey. Continuing grading activity upon discovery of a grade bust shall be at contractor's own risk.

Erosion Control Keynotes

See std details sheets C110 & C120.
BMP's not called out or shown on this plan may be used at the developer's discretion as additional erosion control measures.

1. Install Stabilized Construction Entrance per std detail EC28.
2. Install Silt Fence per std detail EC12.
3. Install concrete washout per detail this sheet. Field located by contractor.
4. Install high-visibility fencing about trees to be retained to mark clearing & development activity limits.

P030

Project: 2021004SP
Date: 5/17/2022
Drafted: NVS
Designed: PCW
Page: 4 of 9

Northwest Utilities
1-800-425-5555
"It's the law"
Call 48 hours before you dig.

Revisions:

Preliminary Grading & Erosion Control

Oak Tree Station

PRELIMINARY NOT FOR CONSTRUCTION
5/17/2022
43138
REGISTERED PROFESSIONAL ENGINEER

ENGINEERING NORTHWEST
CONSULTING ENGINEERS & PLANNERS
6168 NE HWY 99 STE 100, VANCOUVER 98665
(3 6 0) 9 3 1 - 3 1 2 2

Site Information

Address	No site address assigned
Abbrev. Desc.	#16 SEC 29 T2N R3EWM 3.95A
S-T-R	SE ¼ S29 T2N R3E W.M.
Parcel	176162000
Area	3.59 AC (156,287± SF)
Zone	CC

Boundary & Topography

Property boundaries shown herein are taken from 2009 record of survey by Olson Engineering, Inc. filed in Book 60, Page 66, of Surveys. Adjacent property boundaries, where shown, are approximate only. Topographic survey performed by Engineering Northwest in 2022.

PUD No. 1 of Clark County
AFN 4306422 D

City of Camas
Storm Facility
AFN 3786989

37.00'

R/W Radius 15'

N01°31'53"E 411.10'

N89°59'58"E 356.95'

N88°28'50"W 30.00'

S09°48'52"W 47.86'

R100.00'
CB S24°42'19"E
CD 113.34'

S59°43'30"E 51.06'

S00°00'04"E 232.80'

12,574 SF
Commercial Building

Water meter

Potable water

Oil/Water separator

Grey water
Black water

Step tank & pump

pvt SFM

R/W Radius
45'

Existing 40' access

PUD Easement
AFN 4306422 D

SCO

Step tank & pump

Oil/water separator

Grey water hook-up at each stall

Potable water
hook-up at each stall
(freeze protection)

45" DHB
Oak Tree
(PROTECT & RETAIN)

Potable water

Grey water
Black water

Step tank & pump

Grey water hook-up
at each stall

Oil/water separator

Food Court Building
4,704± SF

Grey-water

Potable water

Coffee
Kiosk

PUD Easement
AFN 3798324 D

Existing hydrant

Existing OVP tower

N42°50'05"W 31.07'

Existing XFM pad

N88°54'57"W 399.10'

R/W Radius 50'

Proposed 24' access
410± east of intersection
Deviation required, right-in, right-out restriction

50.00'

SE 202nd Ave (NW Friberg-Strunk St)

SE 1st St (NW Lake Rd)

35+00 36+00 37+00 38+00 39+00 40+00 41+00 42+00 43+00

1" = 30'
0 15 30 60

P040

Project:	2021004.SP
Date:	5/17/2022
Drafted:	NVS
Designed:	PCW
Page:	5 of 9

Northwest Utilities
1-800-425-5555
"It's the law"
Call 48 hours before you dig.

Revisions:

Preliminary Water & Sewer

Oak Tree Station

PRELIMINARY
NOT FOR CONSTRUCTION
5/17/2022
PATRICK C. WILLIAMS
43138
REGISTERED PROFESSIONAL ENGINEER
STATE OF WASHINGTON

ENGINEERING NORTHWEST
CONSULTING ENGINEERS & PLANNERS
6168 NE HWY 99 STE 100, VANCOUVER 98665
(3 6 0) 9 3 1 - 3 1 2 2

Site Information

Address	No site address assigned
Abbrev. Desc.	#16 SEC 29 T2N R3EWM 3.95A
S-T-R	SE ¼ S29 T2N R3E W.M.
Parcel	176162000
Area	3.59 AC (156,287± SF)
Zone	CC

Boundary & Topography

Property boundaries shown herein are taken from 2009 record of survey by Olson Engineering, Inc. filed in Book 60, Page 66, of Surveys. Adjacent property boundaries, where shown, are approximate only. Topographic survey performed by Engineering Northwest in 2022.

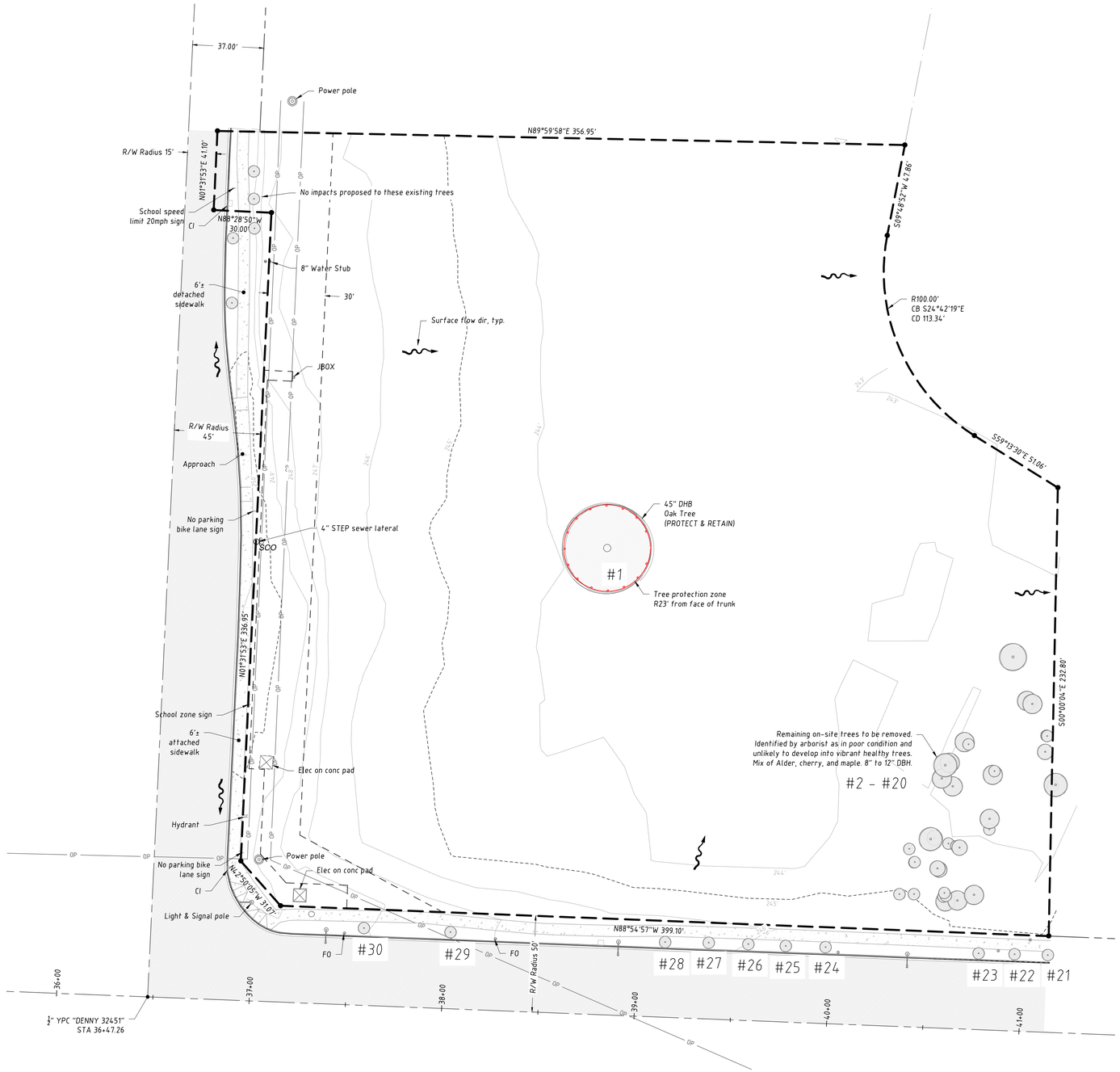
Notes

Consultation by an ISA Certified Arborist performed by Jerry Hofer on March 19, 2022. Reccommendations of the arborist shall be followed.

Existing Tree Table

ID #	DBH (inch)	Species	Condition	Retain / Remove	Tree Units	Retained Units
1	45	Oregon White Oak	Fair	Retain	19	19
2	12	Alder	Good	Remove	2	-
3	11	Alder	Good	Remove	2	-
4	12	Cherry	Poor	Remove	2	-
5	8	Maple	Poor	Remove	2	-
6	8	Maple	Fair	Remove	2	-
7	8	Cherry	Poor	Remove	2	-
8	8	Alder	Poor	Remove	2	-
9	8	Cherry	Fair	Remove	2	-
10	8	Cherry	Fair	Remove	2	-
11	12	Cherry	Good	Remove	2	-
12	9	Alder	Fair	Remove	2	-
13	8	Alder	Poor	Remove	2	-
14	11	Alder	Poor	Remove	2	-
15	12	Alder	Good	Remove	2	-
16	12	Alder	Poor	Remove	2	-
17	9	Alder	Poor	Remove	2	-
18	10	Alder	Fair	Remove	2	-
19	12	Alder	Good	Remove	2	-
20	11	Alder	Good	Remove	2	-
21	6	Columnar Oak	Good	Retain	2	(street)
22	6	Columnar Oak	Good	Retain	2	(street)
23	8	Columnar Oak	Good	Retain	2	(street)
24	6	Columnar Oak	Good	Retain	2	(street)
25	7	Ash	Good	Retain	2	(street)
26	7	Ash	Good	Retain	2	(street)
27	8	Ash	Good	Retain	2	(street)
28	7	Ash	Good	Retain	2	(street)
29	3	Columnar Oak	Top dead	Replace	1	(street)
30	4	Columnar Oak	Good	Retain	1	(street)
					19	

3.59ac x 20 u/ac = 72 tree units
53 additional tree units req'd



P050

Project:	2021004.SP
Date:	5/17/2022
Drafted:	NVS
Designed:	PCW
Page:	6 of 9

Northwest Utilities
1-800-425-5555
"It's the law"
Call 48 hours before you dig.

Revisions:

Preliminary Tree Removal & Protection

Oak Tree Station

PRELIMINARY NOT FOR CONSTRUCTION
43138
REGISTERED PROFESSIONAL ENGINEER
5/17/2022

ENGINEERING NORTHWEST
CONSULTING ENGINEERS & PLANNERS
6168 NE HWY 99 STE 100, VANCOUVER 98665
(3 6 0) 9 3 1 - 3 1 2 2

Site Information

Address	No site address assigned
Abbrev. Desc.	#16 SEC 29 T2N R3EWM 3.95A
S-T-R	SE ¼ S29 T2N R3E W.M.
Parcel	176162000
Area	3.59 AC (156,287± SF)
Zone	CC

Boundary & Topography

Property boundaries shown herein are taken from 2009 record of survey by Olson Engineering, Inc. filed in Book 60, Page 66, of Surveys. Adjacent property boundaries, where shown, are approximate only. Topographic survey performed by Engineering Northwest in 2022.

Landscape Notes

a) Lot owners shall be responsible for damage to a street, curb, or sidewalk caused by landscaping.
b) Landscaping and trees shall be selected and located to deter sound, filter air contaminants, curtail erosion, minimize stormwater run-off, contribute to living privacy, reduce the visual impacts of large buildings and paved areas, screen, and emphasize or separate outdoor spaces of different uses or character.
c) Street trees shall be compliant with the CDSM. Unless otherwise specified, trees must generally be spaced 30 feet apart. Substitute varieties are subject to approval by the City of Camas.
d) Proposed vegetation cannot be an invasive species as listed with the most current edition of the Clark County Noxious Weed List (for example, English ivy cultivars.)
e) Appropriate measures shall be taken, such as installation of irrigation systems, to assure landscaping success. If plantings fail to survive, it is the responsibility of the property owner to replace them.
f) Required trees, as they grow, shall be pruned in accordance with the international society of arboriculture. The pruned tree will provide at least eight feet of clearance above sidewalks and fourteen feet above street roadway surfaces.
g) Street trees and other required landscaping which dies or is removed must be replaced within one year of death or removal. Replacement street trees may be an alternative species from the City's approved list, and may be in a different location, as specifically approved by the City.

Landscape Schedule

Symbol	Common Name	Species	Height x Width	Container	Qty
	Tree			B&B	73
	Shrub			5gal	176

Remaining landscaping area shall be groundcover grass mix.

Final species selection shall consist of min 60% native vegetation and min 50% evergreen.
Deciduous trees shall have straight trunks, be fully branched, and have a min caliper of 2 inches with an equivalent 5-gallon container size and be adequately staked for planting.
Evergreen trees shall be a min 5 ft height, fully branched, and adequately staked for planting.

Tree Density

min 20 tree units per acre are required for new development.

Net acreage (excluding open space or critical areas and their buffers)
3.59 ac

Required tree units
3.59ac x 20u/ac = 72 units

Retained tree units = 19 units (see P050)
Proposed tree units = 73
Total = 92

Tree density is met.

P060

Project:	2021004.SP
Date:	5/17/2022
Drafted:	NVS
Designed:	PCW
Page:	7 of 9

Northwest Utilities
1-800-425-5555
"It's the law"
Call 48 hours before you dig.

Revisions:

Preliminary Landscape Plan

Oak Tree Station

PRELIMINARY NOT FOR CONSTRUCTION
43138 REGISTERED PROFESSIONAL ENGINEER

ENGINEERING NORTHWEST
CONSULTING ENGINEERS & PLANNERS
6168 NE HWY 99 STE 100, VANCOUVER 98665
(3 6 0) 9 3 1 - 3 1 2 2

Site Information

Address	No site address assigned
Abbrev. Desc.	#16 SEC 29 T2N R3EWM 3.95A
S-T-R	SE ¼ S29 T2N R3E W.M.
Parcel	176162000
Area	3.59 AC (156,287± SF)
Zone	CC

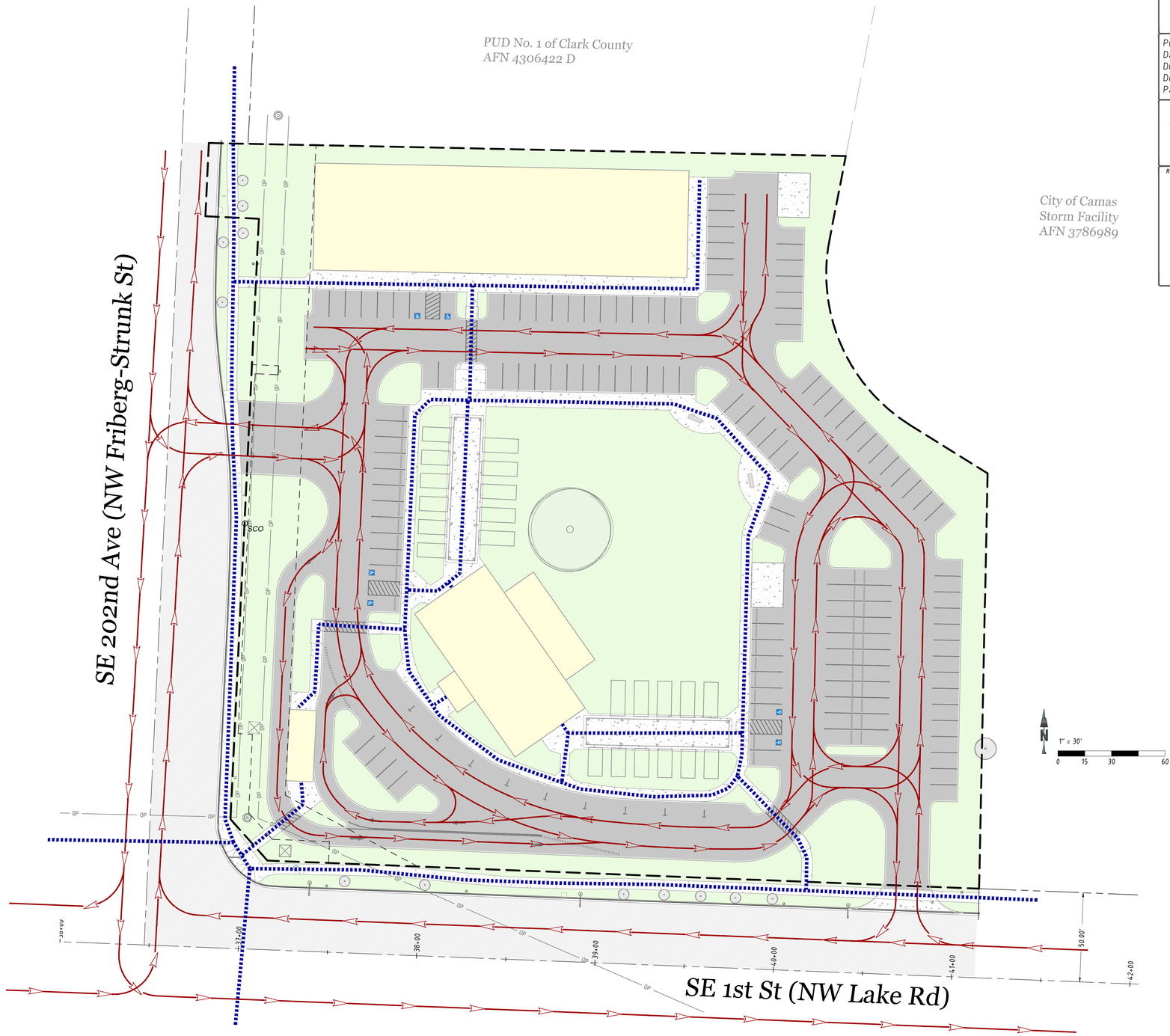
Boundary & Topography

Property boundaries shown herein are taken from 2009 record of survey by Olson Engineering, Inc. filed in Book 60, Page 66, of Surveys. Adjacent property boundaries, where shown, are approximate only. Topographic survey performed by Engineering Northwest in 2022.

Circulation Legend

Vehicle Travel

Pedestrian Travel



P070

Project:	2021004.SP
Date:	5/17/2022
Drafted:	NVS
Designed:	PCW
Page:	8 of 9

Northwest Utilities
1-800-425-5555
"It's the law"
Call 48 hours before you dig.

Revisions:

Preliminary Circulation

Oak Tree Station

PRELIMINARY NOT FOR CONSTRUCTION
5/17/2022
PATRICK C. WILLIAMS
43138
REGISTERED PROFESSIONAL ENGINEER
STATE OF WASHINGTON

ENGINEERING NORTHWEST
CONSULTING ENGINEERS & PLANNERS
6168 NE HWY 99 STE 100, VANCOUVER 98665
(3 6 0) 9 3 1 - 3 1 2 2

Schmit ARCH full bleed D (36.00 x 24.00 Inches) D:\DROPBOX (ENGINEERINGNW)\SITE PLAN\2021004.SP - FOOD COURT\CAD\MODEL.DWG

Site Information

Address	No site address assigned
Abbrev. Desc.	#16 SEC 29 T2N R3EWM 3.95A
S-T-R	SE ¼ S29 T2N R3E W.M.
Parcel	176162000
Area	3.59 AC (156,287± SF)
Zone	CC

Boundary & Topography

Property boundaries shown herein are taken from 2009 record of survey by Olson Engineering, Inc. filed in Book 60, Page 66, of Surveys. Adjacent property boundaries, where shown, are approximate only. Topographic survey performed by Engineering Northwest in 2022.

P080

Project:	2021004.SP
Date:	5/17/2022
Drafted:	NVS
Designed:	PCW
Page:	9 of 9

Northwest Utilities
1-800-425-5555
"It's the law"
Call 48 hours before you dig.

Revisions:

Preliminary Stormwater

Oak Tree Station

PRELIMINARY NOT FOR CONSTRUCTION
43138 REGISTERED PROFESSIONAL ENGINEER
PASCO, WASHINGTON

ENGINEERING NORTHWEST
CONSULTING ENGINEERS & PLANNERS
6168 NE HWY 99 STE 100, VANCOUVER 98665
(3 6 0) 9 3 1 - 3 1 2 2

State Environmental Policy Act
Mitigated Determination of Non-Significance

CASE NO: SEPA 22-09 Camas Food Cart Station

APPLICANT: Paul Williams
6168 NE HWY 99
Vancouver, WA 98665

REQUEST: Construction of an indoor/outdoor eating area with food carts, a drive-thru coffee shop, and a 12,574 square foot commercial building.

Location: Corner of NW Lake Road and NW Friberg-Strunk

Legal Description: SE ¼ of Section 29 Township 2 North, Range 3 East, Camas, WA, Parcel Number: 176162000.

SEPA Determination: Mitigated Determination of Non-Significance (MDNS)

Comment Deadline: **September 8, 2022, at 5:00 p.m.**

As lead agency under the State Environmental Policy Act (SEPA) Rules [Chapter 197-11, Washington Administrative Code (WAC)], the City of Camas must determine if there are possible significant adverse environmental impacts associated with this proposal. The options include the following:

- DS = Determination of Significance (The impacts cannot be mitigated through conditions of approval and, therefore, requiring the preparation of an Environmental Impact Statement (EIS).
- MDNS = Mitigated Determination of Non-Significance (The impacts can be addressed through conditions of approval), or;
- DNS = Determination of Non-Significance (The impacts can be addressed by applying the Camas Municipal Code).

Published in the Post Record on August 25, 2022 Legal Publication # 718310
Posted at Camas City Hall, Camas Library, City of Camas web site at: http://www.cityofcamas.us
Mailed to property owners within 300-feet on August 24, 2022

Determination:

Mitigated Determination of Non-Significance (MDNS). The City of Camas, as lead agency for review of this proposal, has determined that this proposal does not have a probable significant adverse impact on the environment. An Environmental Impact Statement (EIS) is not required under RCW 43.21C.030(2)(e). This decision was made after review of a completed environmental checklist, and other information on file with the City of Camas.

Date of Publication & Comment Period:

Publication date of this MDNS is **August 25, 2022 and** is issued under WAC 197-11-350. The lead agency will not act on this proposal until the close of the 14-day comment period, which ends on **September 8, 2022**. Comments may be sent by email to communitydevelopment@cityofcamas.us or regular mail to:

City of Camas SEPA Official
Community Development Department
616 NE Fourth Avenue
Camas, Washington 98607

Responsible Official: Robert Maul (360) 817-1568

Robert Maul, Interim Community Development Director and Responsible SEPA Official

August 25, 2022
Date of publication

SEPA Mitigation Measure for Camas Station (SEPA22-09)

The City of Camas has identified impacts by the proposed project that requires mitigation. In addition to the requirement that the development must comply with all City of Camas zoning and development regulations, the following SEPA condition of approval applies:

Traffic and Transportation
Per the Camas Design Standards Manual (CDSM), a Transportation Impact Study is required for the proposed development. A preliminary Traffic Impact Analysis (TIA) was prepared and submitted by the applicant's Engineer. The preliminary TIA was provided to the City of Vancouver's (COV) Sr. Civil Engineer for Streets & Transportation; and Clark County's Traffic Concurrency Engineer, for review comments.

City of Vancouver:
Based on the City of Vancouver's review of the preliminary TIA, the following comment was provided:

The assumption is that "a significant percentage of the 80 PM peak hour trips generated by this site will be traveling to/from the west along SE 1st Street to 192nd Ave and will therefore have an impact on the City of Vancouver's street system. The City of Vancouver does not need additional intersection analysis, but it is crucial that we capture the fees necessary to mitigate the impacts to our proportionate share projects." ***A condition is warranted.***

Condition: The applicant shall be required to provide trip distribution analysis identifying the number of PM peak hour trips being distributed to the following proportionate share intersections so that the City of Vancouver can calculate the necessary proportionate share fees for intersections noted in the Table below:

Proportionate Share Project Name	Fee Rate	Number of Trips	Proportionate Share Cost
NE 192nd Ave & NE 13th St	$400 per PM peak hour trip		
SE 192nd Ave & SE 34th St	$150 per PM peak hour trip		
192nd Ave & SR-14 ramp terminals	$2,000 per PM peak hour trip		
Total Proportionate Share Cost			**$XXXX**

Clark County:
Review comments have not been received from Clark County's Concurrency Engineer, however, when comments are received, they will be addressed in the final staff report for CUP22-01.

STAFF REPORT

Oak Tree Station

Major Design Review (DR22-03)

Related File: CUP22-01

TO	Design Review Committee
FROM	Madeline Sutherland, Planner
LOCATION	Corner of NW Lake Road and NW Friberg-Strunk Street Parcel No. 176162000
APPLICANT	Paul Williams 6168 NE HWY 99 Vancouver, WA 98665

APPLICABLE LAW: This land use application submitted on March 11, 2022, is vested to the land use regulations and development standards in effect on the effective date of the Camas Municipal Code (CMC) Title 16 Environment, Title 17 Land Development and Title 18 Zoning.

Summary

The applicant is currently seeking design review approval for the construction of an indoor/outdoor eating area with food carts, a drive-thru coffee shop, and a 12,574 square foot commercial building The site is located on the southeast corner of NW Lake Road and NW Friberg-Strunk Street, Parcel No. 176162000.

The subject property is zoned Community Commercial (CC) including the properties to the north. To the east is city-owned property zoned Business Park. To the south is property zoned Light Industrial/Business Park. The properties to the west and southwest are within the City of Vancouver's jurisdiction and are zoned commercial and residential.

The site's topography is relatively flat with a large Oregon White Oak located in the center of the site. The site is currently undeveloped and covered with brush/grass and several smaller trees in the southeast corner.

Purpose

Design Review is required under CMC Chapter 18.19. Design review and is not intended to determine the appropriate use of a parcel but rather to review a proposed development for compliance with City codes and plans related to landscaping, architectural elevations, and other elements relative to required improvements. The recommendations from the Design Review Committee (DRC) must consider the design review standards from the Design Review Manual and Camas Municipal Code

(CMC). An enclosed checklist is to help guide you in your review but refer to the manual for specific details regarding the standards.

Standard and Specific Commercial & Mixed Use Design Principles and Guidelines

The standard and specific commercial & mixed uses principles and guidelines are required and must be demonstrated to have been satisfied with the overall intent for design review approval. The standard design guidelines are developed to assist a project in meeting the established principles and each guideline should be adequately addressed. If the proposal cannot meet a specific guideline, then an explanation should be provided by the applicant as to why and how it will be mitigated to satisfy the intent of the design principles. The development guidelines include five major categories: 1) Landscaping and Screening, 2) Architecture, 3) Massing and Setbacks, 4) Historic & Heritage Preservation, and 5) Circulation and Connections. **The Design Review Checklist is enclosed to help guide the DRC in reviewing the standard applicable specific design review principles and guidelines.**

Recommendation

That the Design Review Committee reviews the submitted materials, deliberates, and forwards a recommendation to staff for a final decision.

COMMUNITY DEVELOPMENT DEPARTMENT
616 NE 4th Avenue
Camas, WA 98607
www.ci.camas.wa.us

April 8, 2022

Paul Williams
6168 NE HWY 99
Vancouver, WA 98665
(sent via email paulwilliamspe@gmail.com)

RE: Oak Tree Food Cart Station (CUP22-01) application completeness review

Dear Paul Williams,

Thank you for your application submittal for the Camas Heights Subdivision. There are items that need to be addressed with your application submittal. The purpose of this letter is to inform you that the above application submitted on March 11, 2022, has been deemed incomplete in accordance with Camas Municipal Code (CMC) Section 18.55.130. You have 180 days from the date of application to submit the missing information pursuant to CMC 18.55.130.C. If the below requested information is submitted, staff will again verify whether the application is complete.

Items necessary for completeness:

- The narrative, SEPA checklist, development plans, traffic report and other applicable reports must be updated to reflect the new commercial building,
- Description of the commercial building use,
- Tree survey and assessment must be submitted,
- If impacts are proposed to the Oregon White Oak on site, then a critical area report is required,
- Elevations, colors, and other applicable design review materials,
- A development sign is required per CMC 18.55.110.H.

Other items to be addressed, but not necessary for application completeness:

If you have any questions, please contact me at msutherland@cityofcamas.us

Respectfully,

Madeline Sutherland
Planner

COMMUNITY DEVELOPMENT DEPARTMENT
616 NE 4th Avenue
Camas, WA 98607
www.ci.camas.wa.us

May 31, 2022

Paul Williams
6168 NE HWY 99
Vancouver, WA 98665
(sent via email paulwilliamspe@gmail.com)

RE: Oak Tree Food Cart Station (CUP22-01) application completeness review

Dear Paul Williams,

Thank you for your application submittal for the Oak Tree Food Cart Station. There are items that need to be addressed with your application submittal. The purpose of this letter is to inform you that the above application submitted on March 11, 2022, and resubmitted on May 18th, has been deemed incomplete in accordance with Camas Municipal Code (CMC) Section 18.55.130. You have 180 days from the date of application to submit the missing information pursuant to CMC 18.55.130.C. If the below requested information is submitted, staff will again verify whether the application is complete.

Items necessary for completeness:

- A development sign is required per CMC 18.55.110.H.
- Updated Site Plan Review fees need to be paid based on the square footage of the commercial building.

Other items to be addressed, but not necessary for application completeness:

- The narrative needs to address the type of commercial space provided per the allowed uses in CMC 18.07.030 Table 1

If you have any questions, please contact me at msutherland@cityofcamas.us

Respectfully,

Madeline Sutherland, AICP
Planner

COMMUNITY DEVELOPMENT DEPARTMENT
616 NE 4th Avenue
Camas, WA 98607
www.ci.camas.wa.us

June 13, 2022

Paul Williams
6168 NE HWY 99
Vancouver, WA 98665
(sent via email paulwilliamspe@gmail.com)

RE: Oak Tree Food Cart Station (CUP22-01) application completeness review

Dear Paul Williams,

The purpose of this letter is to inform you that the above application submitted on March 11, 2022 and resubmitted on May 18th and June 8th has been deemed complete in accordance with Camas Municipal Code (CMC) Section 18.55.130. Staff will begin reviewing the application and contact you should we have questions/comments.

If you have any questions, please email me: msutherland@cityofcamas.us

Respectfully,

Madeline Sutherland, AICP
Planner

NOTICE OF APPLICATION
Oak Tree Station
(File no. CUP22-01)

Consolidated Files: Site Plan Review (SPRV22-03), Design Review (DR22-03), and State Environmental Policy Act (SEPA22-09)

NOTICE IS HEREBY GIVEN that an application for the "Oak Tree Station", an indoor/outdoor eating area with food carts, a drive-thru coffee shop, and a 12,574 square foot commercial building was received on March 11, 2022, resubmitted on May 18, 2022, and deemed technically complete on June 8, 2022. A public hearing is required for the development proposal and will be scheduled at a later date. A separate public hearing notice will be mailed to all property owners within 300-feet of the subject development and published in the Post Record.

Location: The 3.95-acre site is zoned Community Commercial (CC) in the City of Camas. The site is located at the corner of NW Lake Road and NW Friberg-Strunk Street in the SE ¼ of Section 29 Township 2 North, Range 3 East, Camas, WA, Parcel Number: 176162000.

Application Materials: The application included the following: project narrative, SEPA checklist, preliminary development plans, building elevations, tree report, preliminary stormwater report, and traffic study. Application materials are available for review from the Community Development Department during regular business hours Monday – Friday 8am-5pm.

Questions/Comments: For questions related to this application, please contact Madeline Sutherland, Planner, at (360) 817-1568 or by email at communitydevelopment@cityofcamas.us.

Published in the Post Record on July 7, 2022, and posted on the City website
Mailed to property owners within 300-feet of the property on July 6, 2022
Published no. 703980

Site Plan for Oak Tree Station (CUP22-01)

Published in the Post Record on July 7, 2022, and posted on the City website
Mailed to property owners within 300-feet of the property on July 6, 2022

Published no. 703980

NOTICE OF PUBLIC HEARING
Oak Tree Station
(File no. CUP22-01)

A public hearing will be held on **September 7, 2022, at 4:00 p.m.** or soon thereafter, before the City's Hearings Examiner to consider the Conditional Use Permit application for the Oak Tree Station. The public hearing will be held remotely and in person at city hall. The applicant proposes to construct an indoor/outdoor eating area with food carts, a drive-thru coffee shop, and a 12,574-square-foot commercial building. The 3.95-acre site is located at the corner of NW Lake Road and NW Friberg-Strunk Street in the SE ¼ of Section 29 Township 2 North, Range 3 East, Camas, WA. Parcel Number includes 176162000. The application was determined technically complete on June 8, 2022.

Questions/Comments: The public hearing will follow the quasi-judicial process described within Camas Municipal Code §18.55.180. Comments related to this development may be submitted as follows: (1) In person by testifying at the public hearing; (2) by regular mail to Community Development Department staff, Madeline Sutherland, Planner, at Camas City Hall, 616 Northeast Fourth Avenue, Camas, WA 98607; (3) by phone at (360) 817-1568; or (4) by email to: communitydevelopment@cityofcamas.us. It is preferable that written comments be received at least five working days prior to the public hearing, in order to be available with the online agenda and materials. After the agenda has been posted online, all other written comments must be received no later than noon (12:00 p.m.) the day of the hearing, in order for those comments to be handed to the Hearings Examiner by Staff. Written and oral comments may also be submitted in person during the hearing.

Application Materials: The application included the following: project narrative, SEPA checklist, preliminary development plans, building elevations, tree report, preliminary stormwater report, and traffic study, as required for a complete application pursuant to Camas Municipal Code (CMC) §18.55.110. The application materials are also available for viewing at the Community Development Department (616 NE 4th Avenue, Camas, WA) during regular business hours Monday – Friday 8 a.m-5 p.m.

Participate: All citizens are entitled to have equal access to the services, benefits and programs of the City of Camas. Please contact the City Clerk at (360) 817-1591 for special accommodations if needed. The City will provide translators for non-English speaking persons who request assistance at least three working days prior to a public meeting or hearing.

More Information: The public hearing agenda and supporting documents will be available for review on the City's website at the "Minutes, Agendas & Videos" link within the drop-down menu that is labeled "Your Government" or follow this link: http://www.cityofcamas.us/yourgovernment/minuteagendavideo.

Published in the Post Record on August 18, 2022 Legal Publication # 716580
Posted at Camas City Hall, Camas Library, City of Camas web site at: http://www.cityofcamas.us
Mailed to property owners within 300-feet on August 22, 2022

Site Plan for Oak Tree Station (CUP22-01)

Published in the Post Record on August 18, 2022
Legal Publication # 716580
Posted at Camas City Hall, Camas Library, City of Camas web site at: http://www.cityofcamas.us
Mailed to property owners within 300-feet on August 22, 2022

Community Development Department

NOTICE OF CANCELED HEARINGS EXAMINER MEETING

NOTICE IS HEREBY GIVEN that the scheduled public meeting of the Hearings Examiner will be **canceled on Wednesday, September 7, 2022.**

Questions or comments may be directed to Community Development Department staff at (360) 817-1568 or by email at communitydevelopment@cityofcamas.us.

All citizens are entitled to have equal access to the services, benefits, and programs of the City of Camas. Please contact the City Clerk at (360) 817-1591 for special accommodations if needed. The City will provide translators for non-English speaking persons who request assistance at least three working days prior to a public meeting or hearing.

NOTICE OF PUBLIC HEARING
Oak Tree Station
(File no. CUP22-01)

A public hearing will be held on **December 14, 2022, at 5:00 p.m.** or soon thereafter, before the City's Hearings Examiner to consider the Conditional Use Permit application for the Oak Tree Station. The public hearing will be held remotely and in person at city hall. The applicant proposes to construct an indoor/outdoor eating area with food carts, a drive-thru coffee shop, and a 12,574-square-foot commercial building. The 3.95-acre site is located at the corner of NW Lake Road and NW Friberg-Strunk Street in the SE ¼ of Section 29 Township 2 North, Range 3 East, Camas, WA. Parcel Number includes 176162000. The application was determined technically complete on June 8, 2022.

Questions/Comments: The public hearing will follow the quasi-judicial process described within Camas Municipal Code §18.55.180. Comments related to this development may be submitted as follows: (1) In person by testifying at the public hearing; (2) by regular mail to Community Development Department staff, Madeline Sutherland, Planner, at Camas City Hall, 616 Northeast Fourth Avenue, Camas, WA 98607; (3) by phone at (360) 817-1568; or (4) by email to: communitydevelopment@cityofcamas.us. It is preferable that written comments be received at least five working days prior to the public hearing, in order to be available with the online agenda and materials. After the agenda has been posted online, all other written comments must be received no later than noon (12:00 p.m.) the day of the hearing, in order for those comments to be handed to the Hearings Examiner by Staff. Written and oral comments may also be submitted in person during the hearing.

Application Materials: The application included the following: project narrative, SEPA checklist, preliminary development plans, building elevations, tree report, preliminary stormwater report, and traffic study, as required for a complete application pursuant to Camas Municipal Code (CMC) §18.55.110. The application materials are also available for viewing at the Community Development Department (616 NE 4th Avenue, Camas, WA) during regular business hours Monday – Friday 8 a.m-5 p.m.

Participate: All citizens are entitled to have equal access to the services, benefits and programs of the City of Camas. Please contact the City Clerk at (360) 817-1591 for special accommodations if needed. The City will provide translators for non-English speaking persons who request assistance at least three working days prior to a public meeting or hearing.

More Information: The public hearing agenda and supporting documents will be available for review on the City's website at the "Minutes, Agendas & Videos" link within the drop-down menu that is labeled "Your Government" or follow this link: http://www.cityofcamas.us/yourgovernment/minuteagendavideo.

Published in the Post Record on November 24, 2022 Legal Publication #758160
Posted at Camas City Hall, Camas Library, City of Camas web site at: http://www.cityofcamas.us
Mailed to property owners within 300-feet on November 23, 2022

Site Plan for Oak Tree Station (CUP22-01)

JORDAN RAMIS

Jamie D. Howsley
jamie.howsley@jordanramis.com
Direct Dial: (360) 567-3913

1499 SE Tech Center Place, Ste. 380
Vancouver, WA 98683
T (360) 567-3900
F (360) 567-3901

November 15, 2022

VIA EMAIL ONLY

Madeline Sutherland, Assistant Planner
Robert Maul, Planning Manager
City of Camas
616 NE 4th Ave
Camas WA 98607

E-mail: rmaul@cityofcamas.us
E-mail: msutherland@cityofcamas.us

Re: **Oak Tree Station**
Our File No. 56123-80430

Dear Madeline and Robert:

Thank you for your continuing assistance with the development of Oak Tree Station, a unique combination of dining options which will bring a delightful smorgasbord of cuisine to north Camas. Enclosed with this letter are professional consulting reports on traffic, wetlands and archeology.

The traffic report describes the trip generation and will serve as the basis for discussion on the Traffic Impact Fee. The critical areas report addresses those issues and is consistent with the site plan.

The archeology survey was completed in 2008 for a prior proposed development that did not come to fruition. That report included shovel probes at numerous points around the site, which revealed no evidence of archeological or cultural resources. In sum, it is a clean report that was accepted by DAHP; indeed, we obtained our copy from their office. Additional reports from the area were received from DAHP and are included as well.

We look forward to working with you to answer any questions on these reports. With the submittal of these items, we trust you will agree the site plan application is now complete, and the application can be scheduled for a hearing.

In addition, we would like to discuss with the City at your convenience the issues around stormwater and moving this matter forward to public hearing. I will be in touch with you shortly.

Best regards,

JORDAN RAMIS PC

Jamie D. Howsley
Admitted in Oregon and Washington

Enclosures

Ecological Land Services

October 13, 2022

Larry Bonafie
3239 NW Hood Court
Camas, WA 98607
larrybonife51@gmail.com
(360) 513-8900

Re: Critical Areas findings at Oak Tree Station

Dear Larry,

At your request, Ecological Land Services, Inc. (ELS) prepared the following critical areas determination for Clark County parcel 176162000 (study area) located at NW Friberg-Strunk Street and NW Lake Road in Camas, Washington. The study area is 3.95 acres of the SE ¼ of Section 29, Township 2 North, and Range 3 East of the Willamette Meridian. ELS's findings are formatted in accordance with Camas Municipal Code (CMC) Chapter 16.53 "Wetlands" and Chapter 16.61 "Fish and Wildlife Habitat Conservation Areas", current through August 15, 2022.

Study Area Overview and Findings Summary

The study area is 3.95-acre field managed for hay production. It has been in agricultural management for approximately 67 years—at least since 1955, the oldest aerial image available to ELS. One Oregon white oak, approximately 100 years old, is in the middle of the study area. Adjacent land uses include a Clark Public Utility station to the north, NW Lake Rd to the south, unmanaged land to the east, and NW Friberg-Strunk St to the west. Land to the east was previously occupied by a single family residence, beginning sometime prior to 1955 until the early to mid-1990's. Around 1998, the residence was abandoned. Presently, land to the east is occupied by trees and shrubs.

Data Collection Methods

Wetlands Determination

ELS follows the U.S. Army Corps of Engineers (Corps) Routine Determination Method as it is described in the Wetland Delineation Manual (Environmental Laboratory 1987) and the Corps' Regional Supplement, Western Mountains, Valleys, and Coast Region, Version 2.0 (Corps 2010). For regulatory purposes under the Clean Water Act (Section 404), the Environmental Protection Agency (EPA) defines wetlands as "…those areas that are inundated or saturated by surface or ground water at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions" (EPA 2014). According to the Corps, wetland hydrology is water table 12 inches below ground to 6.6 feet above ground, sustained for at least 14 consecutive days at least once every two years during the growing season. If an area meets the above-described "wetlands" conditions, those areas may be regulated as "Waters of the United States" by the

Corps, "Waters of the State" by the Washington Department of Ecology (Ecology), and/or as "Critical Areas" by the City of Camas.

ELS completed fieldwork on October 4, 2022, collecting vegetation, soils, and hydrology data from two test plots (TP) that together document existing conditions in the study area. ELS also gathered data from historic and current aerial imagery, federal GIS mapping databases, and Clark County GIS to develop historical context and further inform decisions about the presence or absence of wetlands. Using these methods, ELS located and delineated one wetland, identified in this report as Wetland A, in the northeastern part of the study area. ELS physically marked the wetland boundary and TP locations in the field using florescent pin flags and recorded the flag locations using an Arrow 100 GNSS Receiver paired with Amigo Cloud mobile GIS platform. The Arrow consistently provides 60cm accuracy or better; under ideal conditions, accuracy is approximately 3cm. GPS data collected during fieldwork is the base data overlaid onto the Google Earth image in Figure 2.

Local, State, and Federal Databases

The National Wetlands Inventory (NWI)
NWI identifies one 0.62-acre freshwater forested/shrub wetland, classified as PSS1Ch, west of the study area (Figure 4). PSS1Ch describes a broad-leaved deciduous scrub shrub wetland seasonally flooded by a man-made impoundment (NWI 2022). In this case, the NWI-mapped wetland is a stormwater pond constructed in 2005 that serves development west of NW Friberg-Strunk St. NWI's source data for the pond was photo interpretation of ≤1 meter digital, true color imagery from 2009. NWI mapping does not include wetlands in the study area or on lands immediately north, south, or east.

Clark County GIS
Clark County's "Soils and Wetlands Inventory" identifies "Potential Wetlands Presence" west of the study area—in the same location and configuration as the NWI PSS1Ch wetland—and east of the study area in a scrub-shrub/forested riparian area surrounding a "Type F" stream (Figure 5). Clark County's modeled wetlands are approximately 215 feet east of the study area boundary. Clark County does not map wetlands in the study area.

Natural Resources Conservation Service (NRCS) soils maps
NRCS maps Cove silty clay loam, thin solum, 0 to 3 percent slopes (CwA) in the northeast portion of the study area and Dollar loam 0 to 5 percent slopes (DoB) in for the remainder (Figure 4).

1. CwA is formed on flood plains. A typical profile includes silty clay loam from 0 to 14 inches, clay from 14 to 21 inches, and silt loam from 21 to 60 inches. It is poorly drained with 0 to 12 inches average depth to the water table during the winter and spring. CwA is a hydric soil (NRCS 2022).

2. DoB is formed on terraces from alluvium. A typical profile includes loam from 0 to 60 inches. It is a moderately well drained soil with 18 to 35 inches average depth to the water table during the winter and spring. DoB is not a hydric soil (NRCS 2022).

ELS's Findings and Interpretations

Soils
ELS collected soil samples from two TP locations representative of wetland and upland conditions in the study area.

1. TP-1 was collected near the western edge of Wetland A and consisted of silty loam (10YR 4/2) with 2 percent oxidized roots (7.5YR 6/8) from 0 to 7 inches, and silt (10 YR 4/1) with 5 percent redox concentrations in the matrix, meeting the NRCS hydric soil indicator F3, "depleted matrix".

2. TP-2 was collected in the upland adjacent to Wetland A, about 15 feet west of TP-1. Soils consisted of silty loam (10YR 3/2) from 0 to 16 inches. Redox developed at about 12 inches, persisted to 16 inches, and occupied about 1 percent of the matrix. TP-2 did not meet a hydric soil indicator.

Vegetation
Vegetation consisted of closely mowed pasture grasses. There were no seed heads or flowers to positively identify grass species. For the purposes of wetland determination, ELS is considering grasses in the wetland and upland to be an even distribution of bluegrass (*Poa spp*.) and bent grass (*Agrostis spp*.). Both genera have the facultative indicator "FAC", meaning they are equally likely to be found in wetlands and uplands, and meet the indicator status for "hydrophytic vegetation" on the Corps wetland determination data form. Poa and Agrostis are common in wetland and upland pasture settings throughout southwest Washington.

In addition to grasses, one Oregon white oak is in the study area, slightly south and west from Wetland A. The oak canopy is approximately 3,200 square feet and its diameter at breast heigh (DBH) is greater than 20 inches.

Hydrology
ELS did not observe ground or surface water during fieldwork; however, TP-1 contained oxidized rhizospheres on living roots (C3), a primary hydrology indicator, and the area delineated as Wetland A is a slight geomorphic depression and has saturation visible in some historic aerial images. The wetland appears to be isolated from other surfaces waters, including wetlands, streams, and man-made features such as drainage ditches and swales. A "Type F" stream is about 350 feet east of the study area boundary and about 400 feet from Wetland A (Figure 2).

Habitat
Most of the study area is open field isolated from other habitats to the north, south, and west by existing development. Wetland A, located in the northeast portion of the study area, is Cat IV, emergent, and depressional. Accessible habitat to the east includes the vegetated riparian corridor for the "Type F" stream; while accessible, connectivity is disturbed by haying/mowing, a moderate intensity agricultural land use (Ecology 2014). Mowing/haying includes the entire 50-foot wetland buffer. The stream's designated riparian habitat buffer of 100 feet (CMC 16.61.40.D) is about 250 feet east of the proposed

project/study area boundary. When present, hydrology in Wetland A is primarily saturation. Frequent mowing/haying prevents the wetland from providing reproductive habitat for egg-laying amphibians. The nearby oak is considered "Priority Habitat" by Washington Department of Fish and Wildlife (WDFW).

Preliminary Jurisdictional Conclusions

Wetland A is exempt from City of Camas regulation per CMC 16.53.010.C.2. It is likely regulated by the Corps and Ecology as follows:

The Corps doesn't exempt wetlands from Section 404 review, but they may not require mitigation for wetland fill that is less than 1/10 acre (4,356 sf). Wetland A meets this threshold, but the development application will need to go through the federal review process to determine their mitigation requirement or mitigation exemption. Ecology does not exempt wetlands or mitigation under Section 401. A Water Quality Certification will be required from Ecology to fill Wetland A.

Wetland A is not connected to other wetlands or streams and impacts to the wetland will not adversely affect the offsite "Type F" stream or its buffer. The nearby Oregon white oak is a protected priority habitat. Protection is recommended by WDFW and required by CMC 16.61.101.A.3.a. If the oak tree is impacted, mitigation in accordance with the general habitat conditions outlined in CMC 16.61.010 "Designation of fish and wildlife habitat conservation areas" will be necessary.

Summary of regulated critical areas:

Critical Area	*Buffer Designation*
Wetland A, Cat IV	exempt
Oregon white oak	Dripline
"Type F" Stream (offsite)	100 feet

Avoidance, minimization, and mitigation for unavoidable impacts

Avoiding and/or minimizing impacts to the oak tree and Wetland A has been considered by the applicant and implemented in the development proposal. At this time, the proposal will avoid the oak tree and impact Wetland A. Impacts to the wetland will be addressed in a mitigation plan that will submitted later in the review process.

ELS findings and conclusions are based on standard scientific methodology and best professional judgment; however, our findings and conclusions are preliminary until they have been approved in writing by the City of Camas and any other agencies with jurisdiction as determined by processes of permit review. ELS is not responsible for the impacts of any changes in environmental standards, practices, or regulations after the date of this report.

Thank you for the opportunity to provide the above information. If you have any questions, please contact Francis Naglich or Andrew Allison by phone (360) 578-1371 or email andrew@eco-land.com and francis@eco-land.com.

Sincerely,

Andrew R. Allison
Wetlands Scientist

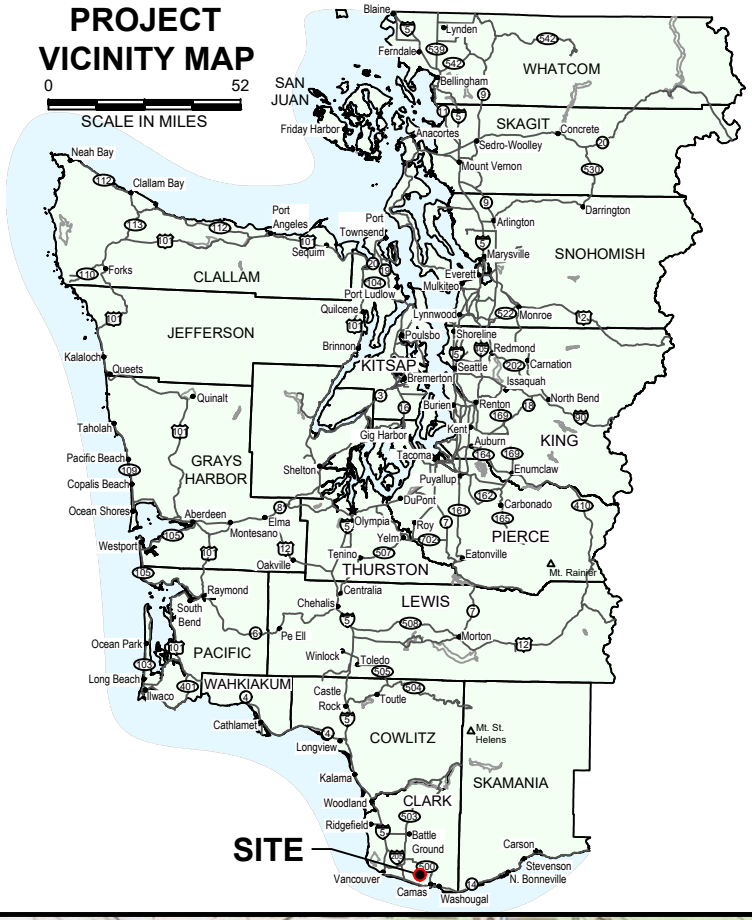
Attachments:
Figures
Photos
Wetland Rating Form
Corps Wetland Determination Data Forms

WASHINGTON

Latitude: 45.6221°
Longitude: -122.4649°

LOCATION MAP

PROJECT VICINITY MAP



R 3 E

T 2 N

6					1
	29				
31					36

NOTE:
Quadrangle topographic map from USGS.

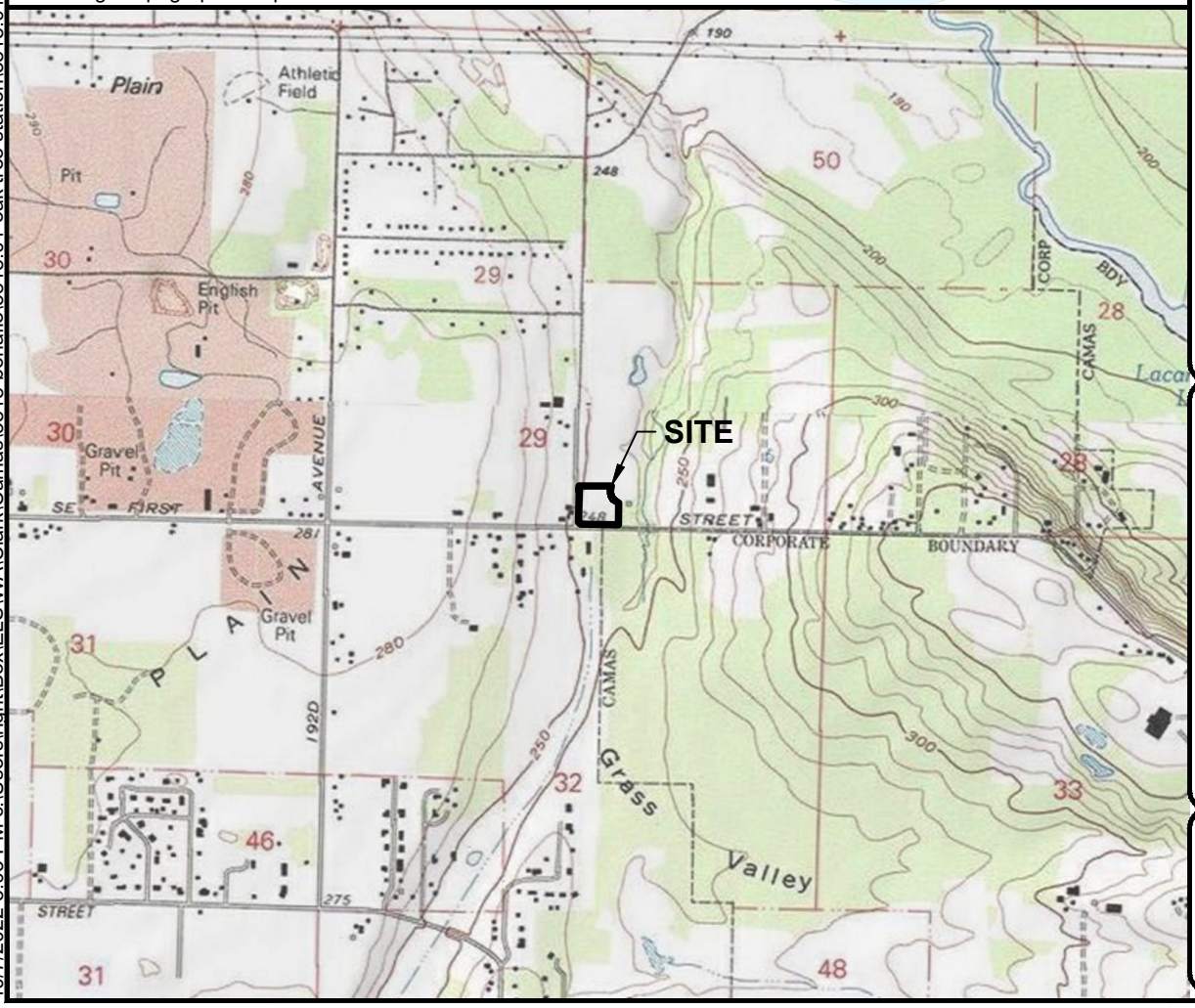


Figure 1
VICINITY MAP
Oak Tree Station
Larry Bonife
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 10/7/22
DWN: JLL
REQ. BY:
PRJ. MGR: ARBA
CHK:
PROJECT NO: 3818.01

1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com

Ecological Land Services

0 2000 4000
SCALE IN FEET

N
W E
S

10/7/2022 3:03 PM c:\Users\right\Box\ELS\WA\Clark\Camas\3818-bonafie\3818.01-oak tree station\3818.01-figures cad only\3818.01_DL.dwg right

10/7/2022 3:03 PM c:\Users\right\Box\ELS\WA\Clark\Camas\3818-bonafie\3818.01-oak tree station\3818.01-figures cad only\3818.01_DL.dwg right

NOTE(S):

1. Aerial from Google Earth™ (2021).
2. Wetland and test plots located using handheld GPS capable of submeter accuracy.
3. ELS mapped the Type F stream using a combination of aerial imagery interpretation and stream modeling provided by DNR and Clark County GIS. Type F streams have a 100-ft riparian buffer per CMC 16.61.40.D.

N W E S

0 120 240
SCALE IN FEET

Ecological Land Services
1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com

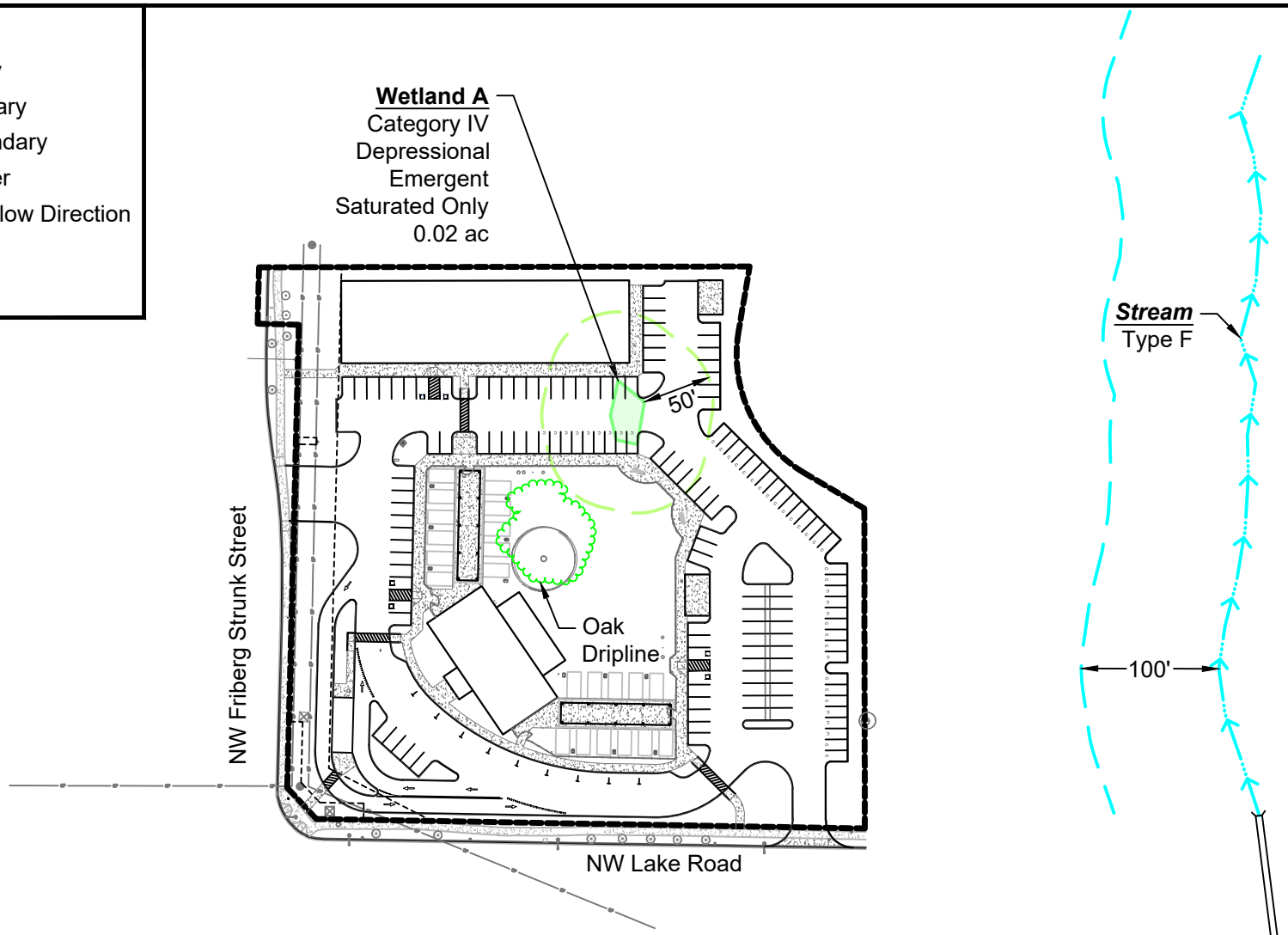
DATE: 10/7/22
DWN: JLL
REQ. BY:
PRJ. MGR: ARBA
CHK:
PROJECT NO: 3818.01

Figure 2
EXISTING CONDITIONS
Oak Tree Station
Larry Bonife
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

10/7/2022 3:03 PM c:\Users\right\Box\ELS\WA\Clark\Camas\3818-bonafie\3818.01-oak tree station\3818.01-figures cad only\3818.01_DL.dwg right

LEGEND:

- Site Boundary
- Parcel Boundary
- Wetland Boundary
- Wetland Buffer
- Stream with Flow Direction
- Stream Buffer
- Culvert



NOTE(S):

1. Wetland and test plots located using handheld GPS capable of submeter accuracy.
2. ELS mapped the Type F stream using a combination of aerial imagery interpretation and stream modeling provided by DNR and Clark County GIS. Type F streams have a 100-ft riparian buffer per CMC 16.61.40.D.

N W E S

0 120 240
SCALE IN FEET

Ecological Land Services
1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com

DATE: 10/7/22
DWN: JLL
REQ. BY:
PRJ. MGR: ARBA
CHK:
PROJECT NO: 3818.01

Figure 3
PROPOSED CONDITIONS
Oak Tree Station
Larry Bonife
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

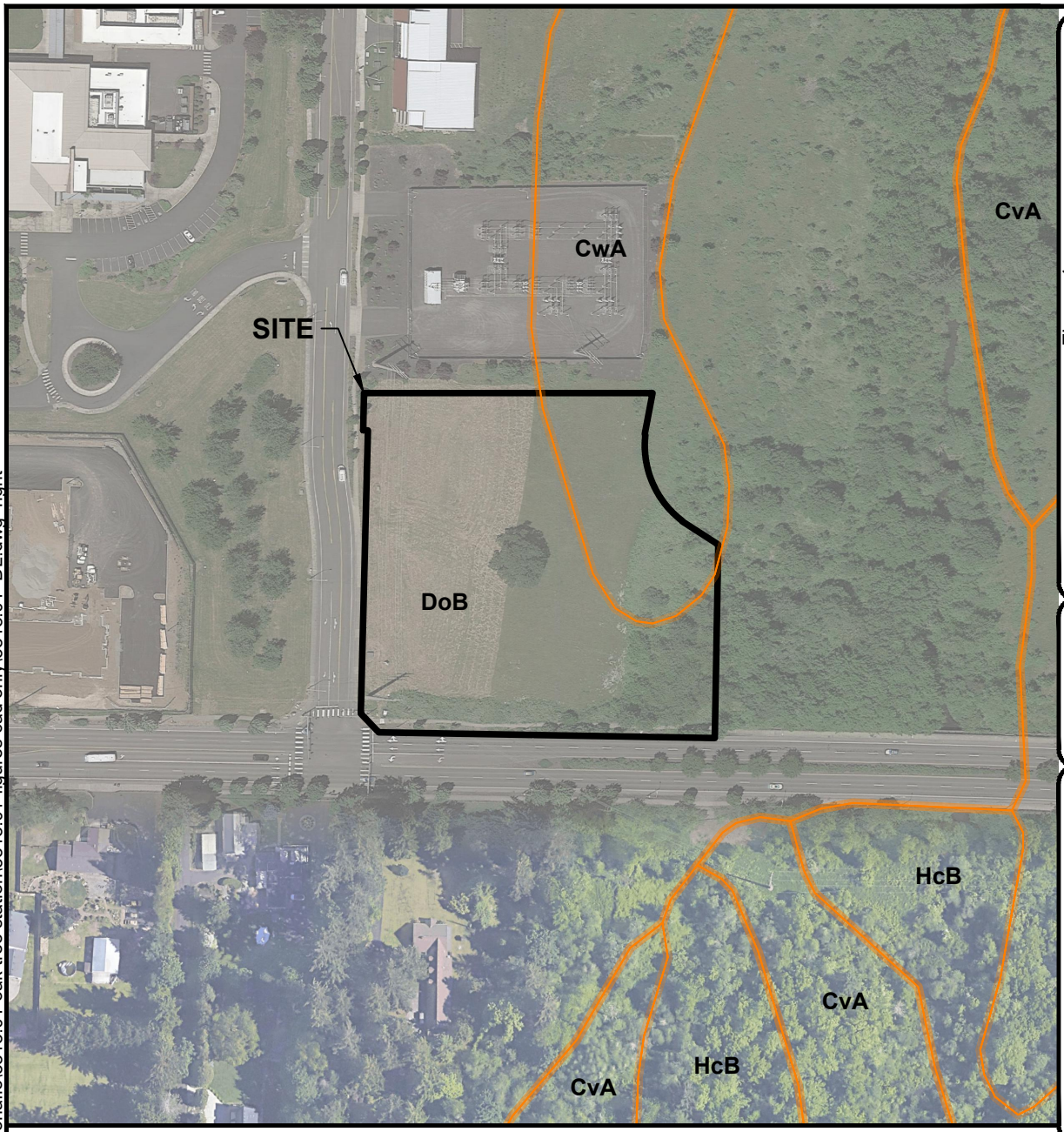


Figure 4
NRCS SOIL SURVEY
Oak Tree Station
Larry Bonife
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 10/7/22
DWN: JLL
REQ. BY:
PRJ. MGR: ARBA
CHK:
PROJECT NO: 3818.01

1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com
Ecological Land Services

LEGEND:

- Site Boundary
- NRCS Soil Boundary
- **CwA** Cove silty clay loam, thin solum, 0 to 3 percent slopes. **Hydric.**
- **DoB** Dollar loam, 0 to 5 percent slopes. Not hydric.

SCALE IN FEET
0
200
400

N
W
E
S

470

NOTE(S):
1. Map provided on-line by NRCS at web address: *http://websoilsurvey.nrcs.usda.gov/app/*

10/7/2022 3:03 PM c:\Users\right\Box\ELS\WA\Clark\Camas\3818-bonafie\3818.01-oak tree station\3818.01-figures cad only\3818.01 DL.dwg right

Figure 5
USFWS NATIONAL WETLANDS INVENTORY
Oak Tree Station
Larry Bonife
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 10/7/22
DWN: JLL
REQ. BY:
PRJ. MGR: ARBA
CHK:
PROJECT NO: 3818.01

1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com
Ecological Land Services

No mapped wetlands indicated onsite by US Fish & Wildlife Service.

LEGEND:

Site Boundary

Wetlands

Freshwater Forested/Shrub Wetland

0 200 400
SCALE IN FEET

N
W E
S

NOTE(S):

1. Map provided on-line by US Fish & Wildlife Service at web address: *https://www.fws.gov/program/national-wetlands-inventory/wetlands-mapper*

10/7/2022 3:03 PM c:\Users\right\Box\ELS\WA\Clark\Camas\3818-bonafie\3818.01-oak tree station\3818.01-figures cad only\3818.01_DL.dwg right

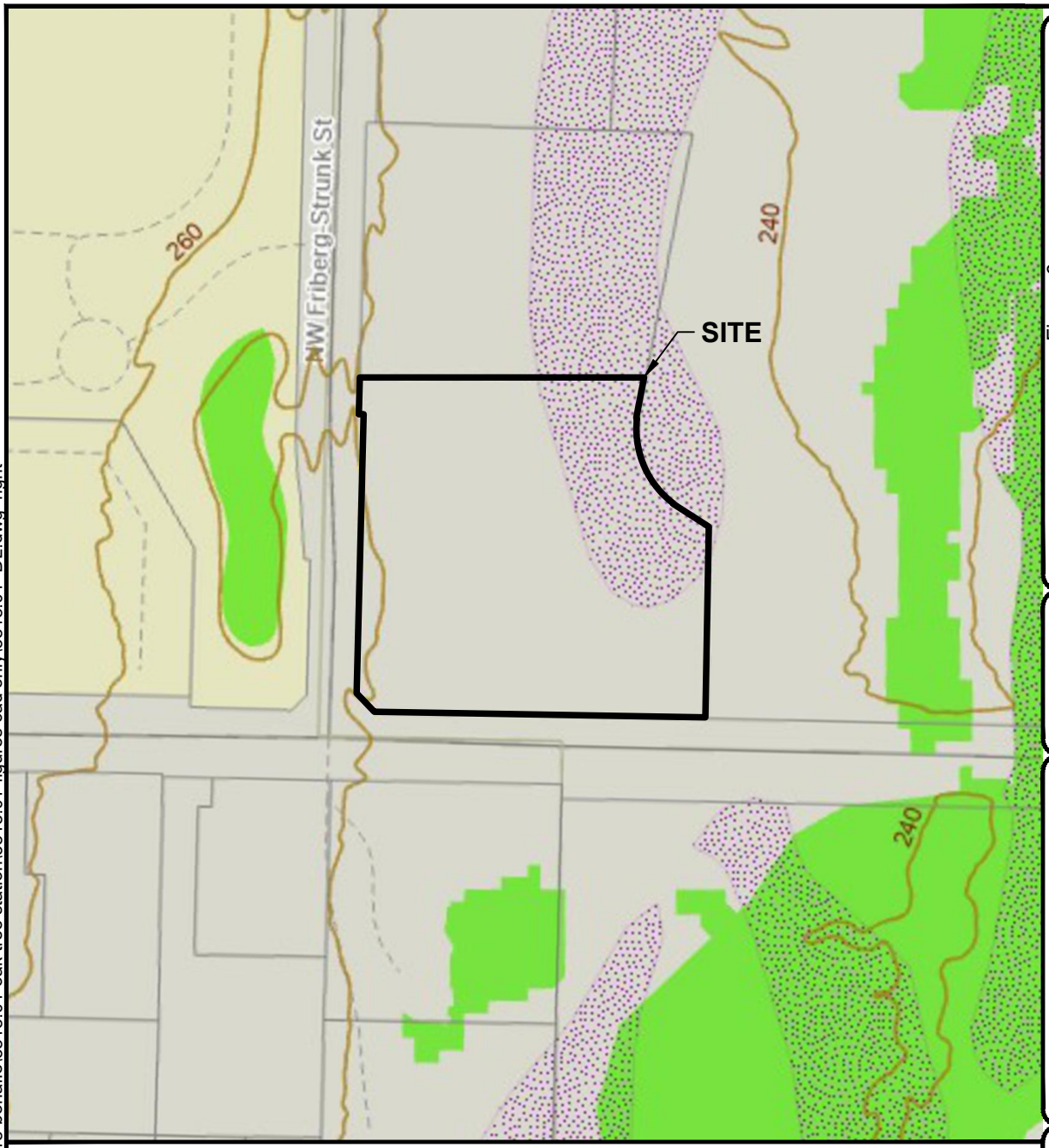


Figure 6
CLARK COUNTY CRITICAL AREAS - POTENTIAL WETLANDS PRESENCE
Oak Tree Station
Larry Bonife
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 10/7/22
DWN: JLL
REQ. BY:
PRJ. MGR: ARBA
CHK:
PROJECT NO: 3818.01

1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com
Ecological Land Services

LEGEND:

Site Boundary

Environmental
Slopes and Geologic Hazards Group
Contour Lines
Contour Lines - 10 ft

Soils and Wetlands Inventory
Hydric Soils
Potential Wetlands Presence

SCALE IN FEET
0
200
400

N
W
E
S

NOTE(S):
1. Map provided on-line by Clark County at web address: *https://gis.clark.wa.gov/mapsonline/index.cfm?site=Environmental*

10/7/2022 3:03 PM c:\Users\right\Box\ELS\WA\Clark\Camas\3818-bonafie\3818.01-oak tree station\3818.01-figures cad only\3818.01 DL.dwg right

LEGEND:

- Site Boundary
- Wetland Unit Boundary
- 150' Wetland Offset
- Impervious\Pollutant Generating Surfaces - 77.3%

Figure 7
WETLAND RATING FORM-150' OFFSET
Oak Tree Station
Larry Bonife
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 10/7/22
DWN: JLL
REQ. BY:
PRJ. MGR: ARBA
CHK:
PROJECT NO: 3818.01

1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com
Ecological Land Services

SCALE IN FEET
0
60
120

N
W
E
S

10/7/2022 3:03 PM c:\Users\right\Box\ELS\WA\Clark\Camas\3818-bonafie\3818.01-oak tree station\3818.01-figures cad only\3818.01 DL.dwg right

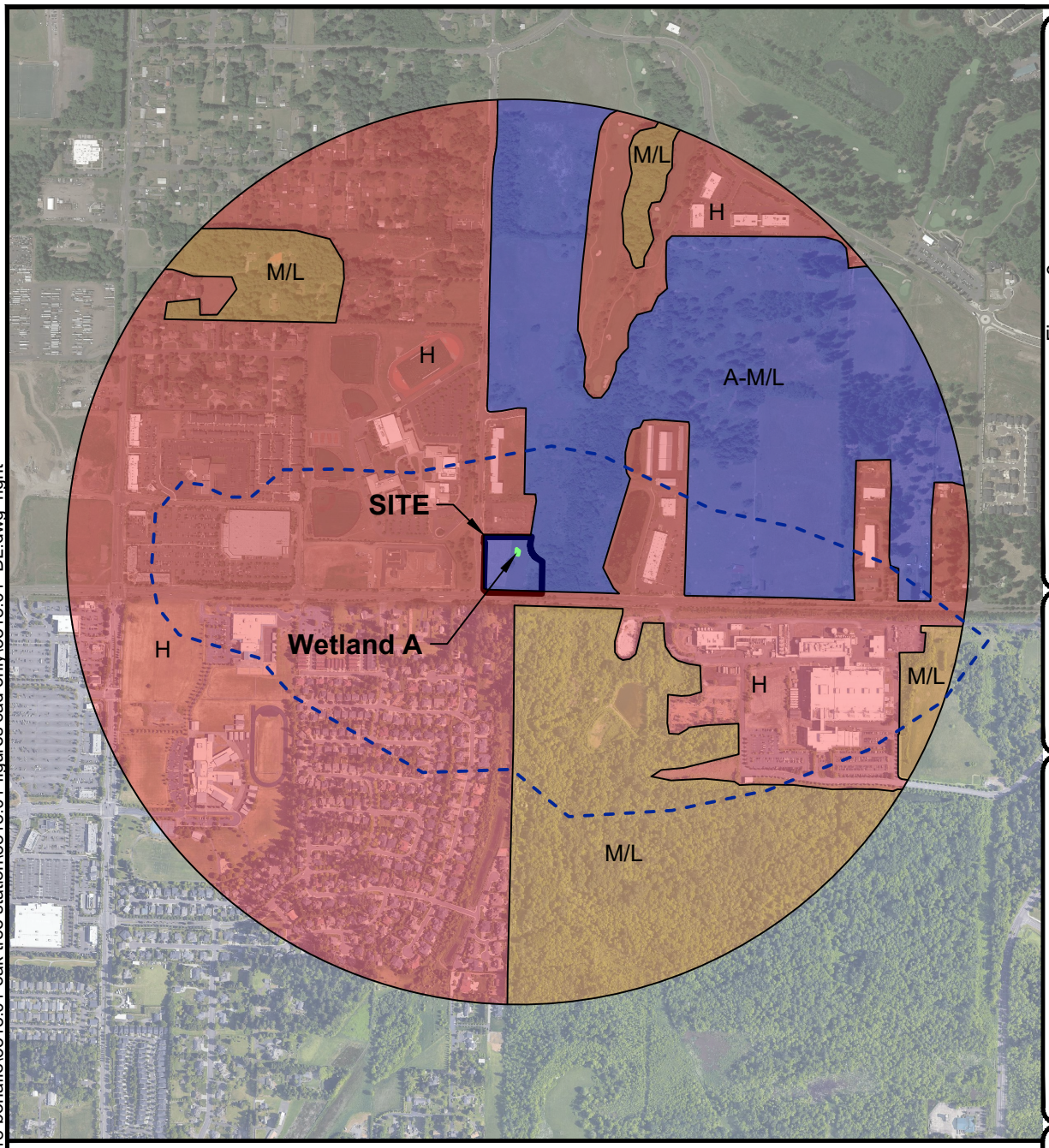


Figure 8
WETLAND RATING FORM-1 km OFFSET
Oak Tree Station
Larry Bonife
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 10/7/22
DWN: JLL
REQ. BY:
PRJ. MGR: ARBA
CHK:
PROJECT NO: 3818.01

1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com
Ecological Land Services

LEGEND:

- Site Boundary
- Wetland Unit Boundary
- Contributing Basin
  14,000x area of Wetland A

H2.1 Accessible Habitat

- A-U — A-U (00.0%)
- A-M/L — A-M/L (21.5%)

H2.2 Undisturbed Habitat

- U — U (00.0%)
- M/L — M/L (17.8%)

H2.3 Land Use Intensity

- H — H (60.70%)

SCALE IN FEET: 0, 1200, 2400

H 2.1. Accessible Habitat Equation

% A-U habitat **00.0%** + [(% A-M/L intensity land uses)/2] **10.8%** = **10.8%**

H 2.2. Total Undisturbed Habitat Equation

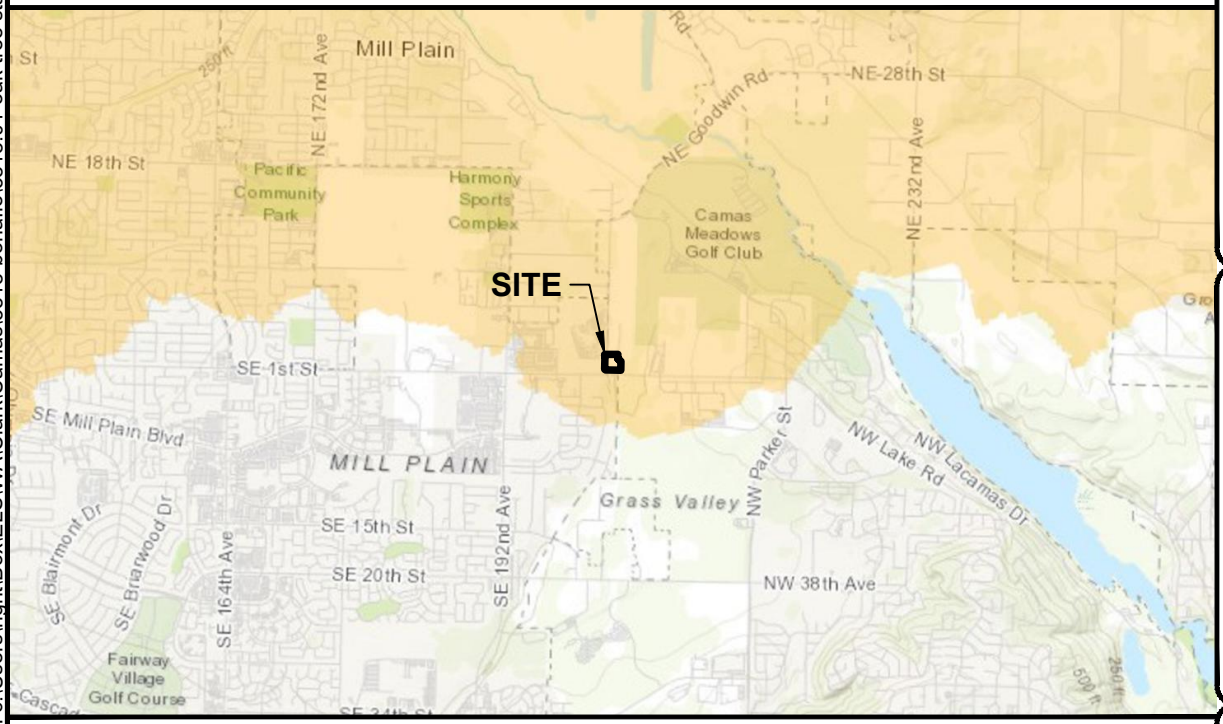
% A-U + % U habitat **00.0%** + [(% A-M/L + % M/L land uses)/2] **19.7%** = **19.7%**

N, W, E, S

10/7/2022 3:03 PM c:\Users\right\Box\ELS\WA\Clark\Camas\3818-bonafie\3818.01-oak tree station\3818.01-figures cad only\3818.01 DL.dwg right

Assessed Waters/Sediment

Water	Sediment	Subbasins
Category 5 - 303d	Category 5 - 303d	12 Digit HUC Boundary
Category 4C	Category 4C	
Category 4B	Category 4B	
Category 4A	Category 4A	
Category 2	Category 2	
Category 1	Category 1	



WQ Improvement Projects

- Approved
- In Development

NOTE(S):

1. Map provided on-line by Washington State Department of Ecology at web address: *https://fortress.wa.gov/ecy/waterqualityatlas/map.aspx?*

Figure 9
WETLAND RATING FORM-303(d) and TMDLs
Oak Tree Station
Larry Bonife
City of Camas, Clark County, Washington
Section 29, Township 2N, Range 3E, W.M.

DATE: 10/7/22
DWN: JLL
REQ. BY:
PRJ. MGR: ARBA
CHK:
PROJECT NO: 3818.01

1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305
www.eco-land.com
Ecological Land Services

SCALE IN FEET
0
5000
10000

N
W
E
S

10/7/2022 3:03 PM c:\Users\right\Box\ELS\WA\Clark\Camas\3818-bonafie\3818.01-oak tree station\3818.01-figures cad only\3818.01 DL.dwg right

Photo 1. Data collection in Wetland A.

Photo 2. Upland adjacent to Wetland A, east.

Photo 3. Adjacent development to the north.

Photo 4. Site overview facing south toward the Oregon white oak.

Ecological Land Services

1157 3rd Ave., Suite 220A
Longview, WA 98632
Phone: (360) 578-1371
Fax: (360) 414-9305

DATE: 10-11-22
DWN: ARBA
MGR: FN
#: 3818.01

Photoplate 1
Site Photos
Oak Tree Station
Critical Areas Findings
City of Camas, Washington

Wetland name or number __A__

RATING SUMMARY – Western Washington

Name of wetland (or ID #): Wetland A Date of site visit: 10-4-2022

Rated by Andrew Allison Trained by Ecology? X Yes ___No Date of training 4-2015

HGM Class used for rating Depressional Wetland has multiple HGM classes?___Y __X__N

NOTE: **Form is not complete without the figures requested** *(figures can be combined)*.
Source of base aerial photo/map Google Earth

OVERALL WETLAND CATEGORY __IV__ (based on functions X or special characteristics___)

1. Category of wetland based on FUNCTIONS

_____**Category I** – Total score = 23 - 27

_____**Category II** – Total score = 20 - 22

_____**Category III** – Total score = 16 - 19

__X____**Category IV** – Total score = 9 - 15

FUNCTION	Improving Water Quality	Hydrologic	Habitat	
	Circle the appropriate ratings			
Site Potential	H M (L)	H M (L)	H M (L)	
Landscape Potential	H (M) L	H (M) L	H M (L)	
Value	(H) M L	H (M) L	H (M) L	**TOTAL**
Score Based on Ratings	6	5	4	15

Score for each function based on three ratings *(order of ratings is not important)*

9 = H,H,H
8 = H,H,M
7 = H,H,L
7 = H,M,M
6 = H,M,L
6 = M,M,M
5 = H,L,L
5 = M,M,L
4 = M,L,L
3 = L,L,L

2. Category based on SPECIAL CHARACTERISTICS of wetland

CHARACTERISTIC	CATEGORY
Estuarine	**I II**
Wetland of High Conservation Value	**I**
Bog	**I**
Mature Forest	**I**
Old Growth Forest	**I**
Coastal Lagoon	**I II**
Interdunal	**I II III IV**
(None of the above)	n/a

Wetland name or number _A__

Maps and figures required to answer questions correctly for Western Washington

Depressional Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	D 1.3, H 1.1, H 1.4	7
Hydroperiods	D 1.4, H 1.2	7
Location of outlet (*can be added to map of hydroperiods)*	D 1.1, D 4.1	n/a
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	D 2.2, D 5.2	7
Map of the contributing basin	D 4.3, D 5.3	8
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	8
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	D 3.1, D 3.2	9
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	D 3.3	9

Riverine Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Ponded depressions	R 1.1	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	R 2.4	
Plant cover of trees, shrubs, and herbaceous plants	R 1.2, R 4.2	
Width of unit vs. width of stream *(can be added to another figure)*	R 4.1	
Map of the contributing basin	R 2.2, R 2.3, R 5.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	R 3.1	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	R 3.2, R 3.3	

Lake Fringe Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	L 1.1, L 4.1, H 1.1, H 1.4	
Plant cover of trees, shrubs, and herbaceous plants	L 1.2	
Boundary of area within 150 ft of the wetland *(can be added to another figure)*	L 2.2	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	L 3.1, L 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	L 3.3	

Slope Wetlands

Map of:	To answer questions:	Figure #
Cowardin plant classes	H 1.1, H 1.4	
Hydroperiods	H 1.2	
Plant cover of **dense** trees, shrubs, and herbaceous plants	S 1.3	
Plant cover of **dense, rigid** trees, shrubs, and herbaceous plants (*can be added to figure above)*	S 4.1	
Boundary of 150 ft buffer (can be added to another figure)	S 2.1, S 5.1	
1 km Polygon: Area that extends 1 km from entire wetland edge - including polygons for accessible habitat and undisturbed habitat	H 2.1, H 2.2, H 2.3	
Screen capture of map of 303(d) listed waters in basin (from Ecology website)	S 3.1, S 3.2	
Screen capture of list of TMDLs for WRIA in which unit is found (from web)	S 3.3	

Wetland name or number _A__

HGM Classification of Wetlands in Western Washington

For questions 1-7, the criteria described must apply to the entire unit being rated.

If the hydrologic criteria listed in each question do not apply to the entire unit being rated, you probably have a unit with multiple HGM classes. In this case, identify which hydrologic criteria in questions 1-7 apply, and go to Question 8.

1. Are the water levels in the entire unit usually controlled by tides except during floods?

NO – go to 2 **YES** – the wetland class is **Tidal Fringe** – go to 1.1

1.1 Is the salinity of the water during periods of annual low flow below 0.5 ppt (parts per thousand)?

NO – Saltwater Tidal Fringe (Estuarine) **YES – Freshwater Tidal Fringe**
*If your wetland can be classified as a Freshwater Tidal Fringe use the forms for **Riverine** wetlands. If it is Saltwater Tidal Fringe it is an **Estuarine** wetland and is not scored. This method **cannot** be used to score functions for estuarine wetlands.*

2. The entire wetland unit is flat and precipitation is the only source (>90%) of water to it. Groundwater and surface water runoff are NOT sources of water to the unit.

NO – go to 3 **YES** – The wetland class is **Flats**
*If your wetland can be classified as a Flats wetland, use the form for **Depressional** wetlands.*

3. Does the entire wetland unit **meet all** of the following criteria?
___The vegetated part of the wetland is on the shores of a body of permanent open water (without any plants on the surface at any time of the year) at least 20 ac (8 ha) in size;
___At least 30% of the open water area is deeper than 6.6 ft (2 m).

NO – go to 4 **YES –** The wetland class is **Lake Fringe** (Lacustrine Fringe)

4. Does the entire wetland unit **meet all** of the following criteria?
___The wetland is on a slope (*slope can be very gradual*),
___The water flows through the wetland in one direction (unidirectional) and usually comes from seeps. It may flow subsurface, as sheetflow, or in a swale without distinct banks,
___The water leaves the wetland **without being impounded**.

NO – go to 5 **YES –** The wetland class is **Slope**

NOTE: Surface water does not pond in these type of wetlands except occasionally in very small and shallow depressions or behind hummocks (depressions are usually <3 ft diameter and less than 1 ft deep).

5. Does the entire wetland unit **meet all** of the following criteria?
___The unit is in a valley, or stream channel, where it gets inundated by overbank flooding from that stream or river,
___The overbank flooding occurs at least once every 2 years.

Wetland name or number _A__

NO – go to 6 **YES** – The wetland class is **Riverine**

NOTE: The Riverine unit can contain depressions that are filled with water when the river is not flooding

6. Is the entire wetland unit in a topographic depression in which water ponds, or is saturated to the surface, at some time during the year? *This means that any outlet, if present, is higher than the interior of the wetland.*

NO – go to 7 **YES** – The wetland class is **Depressional**

7. Is the entire wetland unit located in a very flat area with no obvious depression and no overbank flooding? The unit does not pond surface water more than a few inches. The unit seems to be maintained by high groundwater in the area. The wetland may be ditched, but has no obvious natural outlet.

NO – go to 8 **YES** – The wetland class is **Depressional**

8. Your wetland unit seems to be difficult to classify and probably contains several different HGM classes. For example, seeps at the base of a slope may grade into a riverine floodplain, or a small stream within a Depressional wetland has a zone of flooding along its sides. GO BACK AND IDENTIFY WHICH OF THE HYDROLOGIC REGIMES DESCRIBED IN QUESTIONS 1-7 APPLY TO DIFFERENT AREAS IN THE UNIT (make a rough sketch to help you decide). Use the following table to identify the appropriate class to use for the rating system if you have several HGM classes present within the wetland unit being scored.

NOTE: Use this table only if the class that is recommended in the second column represents 10% or more of the total area of the wetland unit being rated. If the area of the HGM class listed in column 2 is less than 10% of the unit; classify the wetland using the class that represents more than 90% of the total area.

HGM classes within the wetland unit being rated	HGM class to use in rating
Slope + Riverine	Riverine
Slope + Depressional	Depressional
Slope + Lake Fringe	Lake Fringe
Depressional + Riverine along stream within boundary of depression	Depressional
Depressional + Lake Fringe	Depressional
Riverine + Lake Fringe	Riverine
Salt Water Tidal Fringe and any other class of freshwater wetland	Treat as ESTUARINE

*If you are still unable to determine which of the above criteria apply to your wetland, or if you have **more than 2 HGM classes** within a wetland boundary, classify the wetland as Depressional for the rating.*

Wetland name or number A

DEPRESSIONAL AND FLATS WETLANDS

Water Quality Functions - Indicators that the site functions to improve water quality

D 1.0. Does the site have the potential to improve water quality?	
D 1.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression (QUESTION 7 on key) with no surface water leaving it (no outlet). points = 3 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet. points = 2 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 1 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch. points = 1	3
D 1.2. The soil 2 in below the surface (or duff layer) is true clay or true organic *(use NRCS definitions).* Yes = 4 No = 0	0
D 1.3. Characteristics and distribution of persistent plants (Emergent, Scrub-shrub, and/or Forested Cowardin classes): Wetland has persistent, ungrazed, plants > 95% of area points = 5 Wetland has persistent, ungrazed, plants > ½ of area points = 3 Wetland has persistent, ungrazed plants > $^1/_{10}$ of area points = 1 Wetland has persistent, ungrazed plants < $^1/_{10}$ of area points = 0	0
D 1.4. Characteristics of seasonal ponding or inundation: *This is the area that is ponded for at least 2 months. See description in manual.* Area seasonally ponded is > ½ total area of wetland points = 4 Area seasonally ponded is > ¼ total area of wetland points = 2 Area seasonally ponded is < ¼ total area of wetland points = 0	0
Total for D 1 Add the points in the boxes above	3

Rating of Site Potential If score is: ___ **12-16 = H** ___ **6-11 = M** X **0-5 = L** *Record the rating on the first page*

D 2.0. Does the landscape have the potential to support the water quality function of the site?	
D 2.1. Does the wetland unit receive stormwater discharges? Yes = 1 No = 0	0
D 2.2. Is > 10% of the area within 150 ft of the wetland in land uses that generate pollutants? Yes = 1 No = 0	1
D 2.3. Are there septic systems within 250 ft of the wetland? Yes = 1 No = 0	0
D 2.4. Are there other sources of pollutants coming into the wetland that are not listed in questions D 2.1-D 2.3? Source_____ Yes = 1 No = 0	0
Total for D 2 Add the points in the boxes above	1

Rating of Landscape Potential If score is: ___ **3 or 4 = H** X **1 or 2 = M** ___ **0 = L** *Record the rating on the first page*

D 3.0. Is the water quality improvement provided by the site valuable to society?	
D 3.1. Does the wetland discharge directly (i.e., within 1 mi) to a stream, river, lake, or marine water that is on the 303(d) list? Yes = 1 No = 0	1
D 3.2. Is the wetland in a basin or sub-basin where an aquatic resource is on the 303(d) list? Yes = 1 No = 0	1
D 3.3. Has the site been identified in a watershed or local plan as important for maintaining water quality (*answer YES if there is a TMDL for the basin in which the unit is found*)? Yes = 2 No = 0	0
Total for D 3 Add the points in the boxes above	2

Rating of Value If score is: X **2-4 = H** ___ **1 = M** ___ **0 = L** *Record the rating on the first page*

Wetland name or number _A_

DEPRESSIONAL AND FLATS WETLANDS

Hydrologic Functions - Indicators that the site functions to reduce flooding and stream degradation

D 4.0. Does the site have the potential to reduce flooding and erosion?	
D 4.1. Characteristics of surface water outflows from the wetland: Wetland is a depression or flat depression with no surface water leaving it (no outlet) points = 4 Wetland has an intermittently flowing stream or ditch, OR highly constricted permanently flowing outlet points = 2 Wetland is a flat depression (QUESTION 7 on key), whose outlet is a permanently flowing ditch points = 1 Wetland has an unconstricted, or slightly constricted, surface outlet that is permanently flowing points = 0	4
D 4.2. Depth of storage during wet periods: *Estimate the height of ponding above the bottom of the outlet. For wetlands with no outlet, measure from the surface of permanent water or if dry, the deepest part.* Marks of ponding are 3 ft or more above the surface or bottom of outlet points = 7 Marks of ponding between 2 ft to < 3 ft from surface or bottom of outlet points = 5 Marks are at least 0.5 ft to < 2 ft from surface or bottom of outlet points = 3 The wetland is a "headwater" wetland points = 3 Wetland is flat but has small depressions on the surface that trap water points = 1 Marks of ponding less than 0.5 ft (6 in) points = 0	0
D 4.3. Contribution of the wetland to storage in the watershed: *Estimate the ratio of the area of upstream basin contributing surface water to the wetland to the area of the wetland unit itself.* The area of the basin is less than 10 times the area of the unit points = 5 The area of the basin is 10 to 100 times the area of the unit points = 3 The area of the basin is more than 100 times the area of the unit points = 0 Entire wetland is in the Flats class points = 5	0
Total for D 4 Add the points in the boxes above	4

Rating of Site Potential If score is: ___ **12-16 = H** ___ **6-11 = M** _X_ **0-5 = L** *Record the rating on the first page*

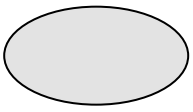
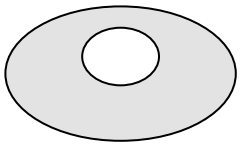
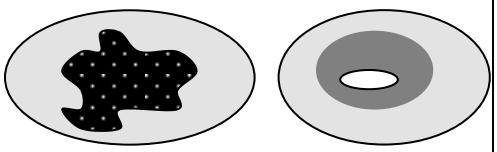
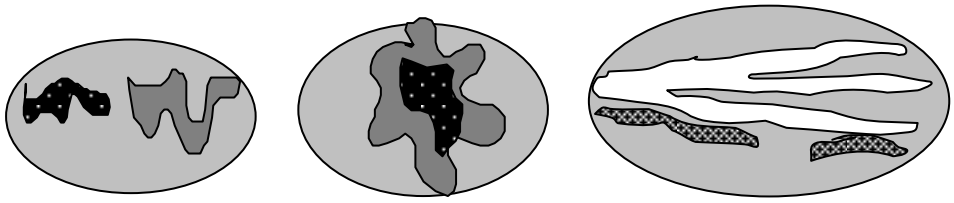
D 5.0. Does the landscape have the potential to support hydrologic functions of the site?	
D 5.1. Does the wetland receive stormwater discharges? Yes = 1 No = 0	0
D 5.2. Is >10% of the area within 150 ft of the wetland in land uses that generate excess runoff? Yes = 1 No = 0	1
D 5.3. Is more than 25% of the contributing basin of the wetland covered with intensive human land uses (residential at >1 residence/ac, urban, commercial, agriculture, etc.)? Yes = 1 No = 0	1
Total for D 5 Add the points in the boxes above	2

Rating of Landscape Potential If score is: ___ **3 = H** _X_ **1 or 2 = M** ___ **0 = L** *Record the rating on the first page*

D 6.0. Are the hydrologic functions provided by the site valuable to society?	
D 6.1. The unit is in a landscape that has flooding problems. *Choose the description that best matches conditions around the wetland unit being rated. Do not add points. Choose the highest score if more than one condition is met.* The wetland captures surface water that would otherwise flow down-gradient into areas where flooding has damaged human or natural resources (e.g., houses or salmon redds): • Flooding occurs in a sub-basin that is immediately down-gradient of unit. points = 2 • Surface flooding problems are in a sub-basin farther down-gradient. points = 1 Flooding from groundwater is an issue in the sub-basin. points = 1 The existing or potential outflow from the wetland is so constrained by human or natural conditions that the water stored by the wetland cannot reach areas that flood. *Explain why* _____ points = 0 There are no problems with flooding downstream of the wetland. points = 0	1
D 6.2. Has the site been identified as important for flood storage or flood conveyance in a regional flood control plan? Yes = 2 No = 0	0
Total for D 6 Add the points in the boxes above	1

Rating of Value If score is: ___ **2-4 = H** _X_ **1 = M** ___ **0 = L** *Record the rating on the first page*

Wetland name or number _A__

These questions apply to wetlands of all HGM classes. **HABITAT FUNCTIONS** - Indicators that site functions to provide important habitat	
H 1.0. Does the site have the potential to provide habitat?	
H 1.1. Structure of plant community: *Indicators are Cowardin classes and strata within the Forested class.* Check the Cowardin plant classes in the wetland. *Up to 10 patches may be combined for each class to meet the threshold of ¼ ac or more than 10% of the unit if it is smaller than 2.5 ac. Add the number of structures checked.* ____Aquatic bed — 4 structures or more: points = 4 _X__Emergent — 3 structures: points = 2 ____Scrub-shrub (areas where shrubs have > 30% cover) — 2 structures: points = 1 ____Forested (areas where trees have > 30% cover) — 1 structure: points = 0 *If the unit has a Forested class, check if:* ____The Forested class has 3 out of 5 strata (canopy, sub-canopy, shrubs, herbaceous, moss/ground-cover) that each cover 20% within the Forested polygon	0
H 1.2. Hydroperiods Check the types of water regimes (hydroperiods) present within the wetland. The water regime has to cover more than 10% of the wetland or ¼ ac to count (*see text for descriptions of hydroperiods*). ____Permanently flooded or inundated — 4 or more types present: points = 3 ____Seasonally flooded or inundated — 3 types present: points = 2 ____Occasionally flooded or inundated — 2 types present: points = 1 _X__Saturated only — 1 type present: points = 0 ____Permanently flowing stream or river in, or adjacent to, the wetland ____Seasonally flowing stream in, or adjacent to, the wetland ____**Lake Fringe wetland** — **2 points** ____**Freshwater tidal wetland** — **2 points**	0
H 1.3. Richness of plant species Count the number of plant species in the wetland that cover at least 10 ft^2. *Different patches of the same species can be combined to meet the size threshold and you do not have to name the species.* ***Do not include Eurasian milfoil, reed canarygrass, purple loosestrife, Canadian thistle*** If you counted: > 19 species — points = 2 5 - 19 species — points = 1 < 5 species — points = 0	0
H 1.4. Interspersion of habitats Decide from the diagrams below whether interspersion among Cowardin plants classes (described in H 1.1), or the classes and unvegetated areas (can include open water or mudflats) is high, moderate, low, or none. *If you have four or more plant classes or three classes and open water, the rating is always high.*  **None** = 0 points  **Low** = 1 point  **Moderate** = 2 points All three diagrams in this row are **HIGH** = 3points 	0

Wetland name or number _A_

H 1.5. Special habitat features: Check the habitat features that are present in the wetland. *The number of checks is the number of points.* ____Large, downed, woody debris within the wetland (> 4 in diameter and 6 ft long). ____Standing snags (dbh > 4 in) within the wetland ____Undercut banks are present for at least 6.6 ft (2 m) **and/or** overhanging plants extends at least 3.3 ft (1 m) over a stream (or ditch) in, or contiguous with the wetland, for at least 33 ft (10 m) ____Stable steep banks of fine material that might be used by beaver or muskrat for denning (> 30 degree slope) OR signs of recent beaver activity are present *(cut shrubs or trees that have not yet weathered where wood is exposed)* ____At least ¼ ac of thin-stemmed persistent plants or woody branches are present in areas that are permanently or seasonally inundated *(structures for egg-laying by amphibians)* _X_Invasive plants cover less than 25% of the wetland area in every stratum of plants (*see H 1.1 for list of strata*)	1
Total for H 1 Add the points in the boxes above	1

Rating of Site Potential If score is:___**15-18 = H** ___**7-14 = M** _X_**0-6 = L** *Record the rating on the first page*

H 2.0. Does the landscape have the potential to support the habitat functions of the site?	
H 2.1. Accessible habitat (include *only habitat that directly abuts wetland unit*). *Calculate:* % undisturbed habitat___ **+** [(% moderate and low intensity land uses)/2]___ **=** _10.8_ % If total accessible habitat is: > $^1/_3$ (33.3%) of 1 km Polygon points = 3 20-33% of 1 km Polygon points = 2 10-19% of 1 km Polygon points = 1 < 10% of 1 km Polygon points = 0	1
H 2.2. Undisturbed habitat in 1 km Polygon around the wetland. *Calculate:* % undisturbed habitat___ **+** [(% moderate and low intensity land uses)/2]___ **=** _19.7_ % Undisturbed habitat > 50% of Polygon points = 3 Undisturbed habitat 10-50% and in 1-3 patches points = 2 Undisturbed habitat 10-50% and > 3 patches points = 1 Undisturbed habitat < 10% of 1 km Polygon points = 0	1
H 2.3. Land use intensity in 1 km Polygon: If > 50% of 1 km Polygon is high intensity land use points = (- 2) ≤ 50% of 1 km Polygon is high intensity points = 0	-2
Total for H 2 Add the points in the boxes above	0

Rating of Landscape Potential If score is:___**4-6 = H** ___**1-3 = M** _X_**< 1 = L** *Record the rating on the first page*

H 3.0. Is the habitat provided by the site valuable to society?	
H 3.1. Does the site provide habitat for species valued in laws, regulations, or policies? *Choose only the highest score that applies to the wetland being rated.* Site meets ANY of the following criteria: points = 2 — It has 3 or more priority habitats within 100 m (see next page) — It provides habitat for Threatened or Endangered species (any plant or animal on the state or federal lists) — It is mapped as a location for an individual WDFW priority species — It is a Wetland of High Conservation Value as determined by the Department of Natural Resources — It has been categorized as an important habitat site in a local or regional comprehensive plan, in a Shoreline Master Plan, or in a watershed plan Site has 1 or 2 priority habitats (listed on next page) within 100 m points = 1 Site does not meet any of the criteria above points = 0	1

Rating of Value If score is:___**2 = H** _X_**1 = M** ___**0 = L** *Record the rating on the first page*

Wetland name or number _A__

WDFW Priority Habitats

Priority habitats listed by WDFW (see complete descriptions of WDFW priority habitats, and the counties in which they can be found, in: Washington Department of Fish and Wildlife. 2008. Priority Habitat and Species List. Olympia, Washington. 177 pp. http://wdfw.wa.gov/publications/00165/wdfw00165.pdf or access the list from here: http://wdfw.wa.gov/conservation/phs/list/)

Count how many of the following priority habitats are within 330 ft (100 m) of the wetland unit: ***NOTE:*** *This question is independent of the land use between the wetland unit and the priority habitat.*

— **Aspen Stands:** Pure or mixed stands of aspen greater than 1 ac (0.4 ha).

— **Biodiversity Areas and Corridors**: Areas of habitat that are relatively important to various species of native fish and wildlife (*full descriptions in WDFW PHS report*).

— **Herbaceous Balds:** Variable size patches of grass and forbs on shallow soils over bedrock.

— **Old-growth/Mature forests:** Old-growth west of Cascade crest – Stands of at least 2 tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) > 32 in (81 cm) dbh or > 200 years of age. Mature forests – Stands with average diameters exceeding 21 in (53 cm) dbh; crown cover may be less than 100%; decay, decadence, numbers of snags, and quantity of large downed material is generally less than that found in old-growth; 80-200 years old west of the Cascade crest.

X **Oregon White Oak:** Woodland stands of pure oak or oak/conifer associations where canopy coverage of the oak component is important (*full descriptions in WDFW PHS report p. 158 – see web link above*).

X **Riparian**: The area adjacent to aquatic systems with flowing water that contains elements of both aquatic and terrestrial ecosystems which mutually influence each other.

— **Westside Prairies:** Herbaceous, non-forested plant communities that can either take the form of a dry prairie or a wet prairie (*full descriptions in WDFW PHS report p. 161 – see web link above*).

— **Instream:** The combination of physical, biological, and chemical processes and conditions that interact to provide functional life history requirements for instream fish and wildlife resources.

— **Nearshore**: Relatively undisturbed nearshore habitats. These include Coastal Nearshore, Open Coast Nearshore, and Puget Sound Nearshore. (*full descriptions of habitats and the definition of relatively undisturbed are in WDFW report – see web link on previous page).*

— **Caves:** A naturally occurring cavity, recess, void, or system of interconnected passages under the earth in soils, rock, ice, or other geological formations and is large enough to contain a human.

— **Cliffs:** Greater than 25 ft (7.6 m) high and occurring below 5000 ft elevation.

— **Talus:** Homogenous areas of rock rubble ranging in average size 0.5 - 6.5 ft (0.15 - 2.0 m), composed of basalt, andesite, and/or sedimentary rock, including riprap slides and mine tailings. May be associated with cliffs.

— **Snags and Logs:** Trees are considered snags if they are dead or dying and exhibit sufficient decay characteristics to enable cavity excavation/use by wildlife. Priority snags have a diameter at breast height of > 20 in (51 cm) in western Washington and are > 6.5 ft (2 m) in height. Priority logs are > 12 in (30 cm) in diameter at the largest end, and > 20 ft (6 m) long.

Note: All vegetated wetlands are by definition a priority habitat but are not included in this list because they are addressed elsewhere.

Wetland name or number _A__

CATEGORIZATION BASED ON SPECIAL CHARACTERISTICS

Wetland Type *Check off any criteria that apply to the wetland. Circle the category when the appropriate criteria are met.*	**Category**
SC 1.0. Estuarine wetlands Does the wetland meet the following criteria for Estuarine wetlands? — The dominant water regime is tidal, — Vegetated, and — With a salinity greater than 0.5 ppt Yes –Go to **SC 1.1** No= **Not an estuarine wetland**	
SC 1.1. Is the wetland within a National Wildlife Refuge, National Park, National Estuary Reserve, Natural Area Preserve, State Park or Educational, Environmental, or Scientific Reserve designated under WAC 332-30-151? Yes = **Category I** No - Go to **SC 1.2**	**Cat. I**
SC 1.2. Is the wetland unit at least 1 ac in size and meets at least two of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing, and has less than 10% cover of non-native plant species. (If non-native species are *Spartina*, see page 25) — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland has at least two of the following features: tidal channels, depressions with open water, or contiguous freshwater wetlands. Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 2.0. Wetlands of High Conservation Value (WHCV) SC 2.1. Has the WA Department of Natural Resources updated their website to include the list of Wetlands of High Conservation Value? Yes **–** Go to **SC 2.2** No **–** Go to **SC 2.3** SC 2.2. Is the wetland listed on the WDNR database as a Wetland of High Conservation Value? Yes **= Category I** No **= Not a WHCV** SC 2.3. Is the wetland in a Section/Township/Range that contains a Natural Heritage wetland? http://www1.dnr.wa.gov/nhp/refdesk/datasearch/wnhpwetlands.pdf Yes **– Contact WNHP/WDNR and go to SC 2.4** No **= Not a WHCV** SC 2.4. Has WDNR identified the wetland within the S/T/R as a Wetland of High Conservation Value and listed it on their website? Yes **= Category I** No **= Not a WHCV**	**Cat. I**
SC 3.0. Bogs Does the wetland (or any part of the unit) meet both the criteria for soils and vegetation in bogs? *Use the key below.* ***If you answer YES you will still need to rate the wetland based on its functions.*** SC 3.1. Does an area within the wetland unit have organic soil horizons, either peats or mucks, that compose 16 in or more of the first 32 in of the soil profile? Yes – Go to **SC 3.3** No – Go to **SC 3.2** SC 3.2. Does an area within the wetland unit have organic soils, either peats or mucks, that are less than 16 in deep over bedrock, or an impermeable hardpan such as clay or volcanic ash, or that are floating on top of a lake or pond? Yes – Go to **SC 3.3** No = **Is not a bog** SC 3.3. Does an area with peats or mucks have more than 70% cover of mosses at ground level, AND at least a 30% cover of plant species listed in Table 4? Yes = **Is a Category I bog** No – Go to **SC 3.4** **NOTE:** If you are uncertain about the extent of mosses in the understory, you may substitute that criterion by measuring the pH of the water that seeps into a hole dug at least 16 in deep. If the pH is less than 5.0 and the plant species in Table 4 are present, the wetland is a bog. SC 3.4. Is an area with peats or mucks forested (> 30% cover) with Sitka spruce, subalpine fir, western red cedar, western hemlock, lodgepole pine, quaking aspen, Engelmann spruce, or western white pine, AND any of the species (or combination of species) listed in Table 4 provide more than 30% of the cover under the canopy? Yes = **Is a Category I bog** No **= Is not a bog**	**Cat. I**

Wetland name or number _A__

SC 4.0. Forested Wetlands Does the wetland have at least 1 contiguous acre of forest that meets one of these criteria for the WA Department of Fish and Wildlife's forests as priority habitats? ***If you answer YES you will still need to rate the wetland based on its functions.*** — **Old-growth forests** (west of Cascade crest): Stands of at least two tree species, forming a multi-layered canopy with occasional small openings; with at least 8 trees/ac (20 trees/ha) that are at least 200 years of age OR have a diameter at breast height (dbh) of 32 in (81 cm) or more. — **Mature forests** (west of the Cascade Crest): Stands where the largest trees are 80- 200 years old OR the species that make up the canopy have an average diameter (dbh) exceeding 21 in (53 cm). Yes = **Category I** (No) = **Not a forested wetland for this section**	**Cat. I**
SC 5.0. Wetlands in Coastal Lagoons Does the wetland meet all of the following criteria of a wetland in a coastal lagoon? — The wetland lies in a depression adjacent to marine waters that is wholly or partially separated from marine waters by sandbanks, gravel banks, shingle, or, less frequently, rocks — The lagoon in which the wetland is located contains ponded water that is saline or brackish (> 0.5 ppt) during most of the year in at least a portion of the lagoon *(needs to be measured near the bottom)* Yes – Go to **SC 5.1** (No) = **Not a wetland in a coastal lagoon** SC 5.1. Does the wetland meet all of the following three conditions? — The wetland is relatively undisturbed (has no diking, ditching, filling, cultivation, grazing), and has less than 20% cover of aggressive, opportunistic plant species (see list of species on p. 100). — At least ¾ of the landward edge of the wetland has a 100 ft buffer of shrub, forest, or un-grazed or un-mowed grassland. — The wetland is larger than $^{1}/_{10}$ ac (4350 ft^2) Yes = **Category I** No = **Category II**	**Cat. I** **Cat. II**
SC 6.0. Interdunal Wetlands Is the wetland west of the 1889 line (also called the Western Boundary of Upland Ownership or WBUO)? ***If you answer yes you will still need to rate the wetland based on its habitat functions.*** In practical terms that means the following geographic areas: — Long Beach Peninsula: Lands west of SR 103 — Grayland-Westport: Lands west of SR 105 — Ocean Shores-Copalis: Lands west of SR 115 and SR 109 Yes – Go to **SC 6.1** (No) = **not an interdunal wetland for rating** SC 6.1. Is the wetland 1 ac or larger and scores an 8 or 9 for the habitat functions on the form (rates H,H,H or H,H,M for the three aspects of function)? Yes = **Category I** No – Go to **SC 6.2** SC 6.2. Is the wetland 1 ac or larger, or is it in a mosaic of wetlands that is 1 ac or larger? Yes = **Category II** No – Go to **SC 6.3** SC 6.3. Is the unit between 0.1 and 1 ac, or is it in a mosaic of wetlands that is between 0.1 and 1 ac? Yes = **Category III** No = **Category IV**	**Cat I** **Cat. II** **Cat. III** **Cat. IV**
Category of wetland based on Special Characteristics If you answered No for all types, enter "Not Applicable" on Summary Form	n/a

Wetland name or number __A__

This page left blank intentionally

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Oak Tree Station City/County: Camas Sampling Date: 10-4-2022

Applicant/Owner: Larry Bonafie State: WA Sampling Point: TP-1

Investigator(s): Andrew Allison Section, Township, Range: SE ¼ of S29, T2N, R3E, W.M.

Landform (hillside, terrace, etc.): flood plain Local relief (concave, convex, none): concave Slope (%): 0-3

Subregion (LRR): LRR A, MLRA 4A Lat: 45.6223024 Long: -122.4645782 Datum: NAD83

Soil Map Unit Name: Cove silty clay loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** X **No** ____
Hydric Soil Present?	Yes X	No ____	
Wetland Hydrology Present?	Yes X	No ____	

Remarks:
Climatic conditions are drier than the 20-year average.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft. radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft. radius)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5 ft. radius)			
1. *Poa spp.*	50	Yes	FAC
2. *Agrostis spp.*	50	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 =Total Cover		
Woody Vine Stratum (Plot size: 15 ft. radius)			
1.			
2.			
	=Total Cover		
% Bare Ground in Herb Stratum ____			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vacular Plants[1]
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks:

SOIL

Sampling Point: TP-1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 4/2	98	7.5YR 6/8	2	C	PL	Loamy/Clayey	Prominent redox concentrations
7-16	10YR 4/1	95	7.5YR 6/8	5	C	M	Loamy/Clayey	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- X Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- X Saturation Visible on Aerial Imagery (C9)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present? Yes ___ No ___ Depth (inches): ___

Water Table Present? Yes ___ No ___ Depth (inches): ___

Saturation Present? (includes capillary fringe) Yes ___ No ___ Depth (inches): ___

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Western Mountains, Valleys, and Coast Region

Project/Site: Oak Tree Station City/County: Camas Sampling Date: 10-4-2022

Applicant/Owner: Larry Bonafie State: WA Sampling Point: TP-2

Investigator(s): Andrew Allison Section, Township, Range: SE ¼ of S29, T2N, R3E, W.M.

Landform (hillside, terrace, etc.): terrace Local relief (concave, convex, none): convex Slope (%): 0-3

Subregion (LRR): LRR A, MLRA 4A Lat: 45.6222758 Long: -122.46465 Datum: NAD83

Soil Map Unit Name: Dollar loam NWI classification: None

Are climatic / hydrologic conditions on the site typical for this time of year? Yes ____ No X (If no, explain in Remarks.)

Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____

Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No ____	**Is the Sampled Area within a Wetland?** **Yes** ____ **No** X
Hydric Soil Present?	Yes ____	No X	
Wetland Hydrology Present?	Yes ____	No X	

Remarks:
Climatic conditions are drier than the 20-year average.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30 ft. radius)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
	____ =Total Cover		
Sapling/Shrub Stratum (Plot size: 15 ft. radius)			
1.			
2.			
3.			
4.			
5.			
	____ =Total Cover		
Herb Stratum (Plot size: 5 ft. radius)			
1. *Poa spp.*	50	Yes	FAC
2. *Agrostis spp.*	50	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
	100 =Total Cover		
Woody Vine Stratum (Plot size: 15 ft. radius)			
1.			
2.			
	____ =Total Cover		
% Bare Ground in Herb Stratum ____			

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:
OBL species ____	x 1 = ____
FACW species ____	x 2 = ____
FAC species ____	x 3 = ____
FACU species ____	x 4 = ____
UPL species ____	x 5 = ____
Column Totals: ____ (A)	____ (B)

Prevalence Index = B/A = ____

Hydrophytic Vegetation Indicators:

- ____ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- ____ 3 - Prevalence Index is ≤3.0[1]
- ____ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- ____ 5 - Wetland Non-Vacular Plants[1]
- ____ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No** ____

Remarks:

SOIL

Sampling Point: TP-2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-12	10YR 3/2	100					Loamy/Clayey	
12-16	10YR 3/2	99	7.5YR 6/8	1	C	PL	Loamy/Clayey	Prominent redox concentrations

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators: (Applicable to all LRRs, unless otherwise noted.)

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 2.5 cm Mucky Peat or Peat (S2) **(LRR G)**
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Loamy Mucky Mineral (F1) **(except MLRA 1)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Surface Soil Cracks (B6)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9) (**except MLRA 1, 2, 4A, and 4B**)
- ___ Salt Crust (B11)
- ___ Aquatic Invertebrates (B13)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Stunted or Stressed Plants (D1) (**LRR A**)
- ___ Other (Explain in Remarks)

Secondary Indicators (2 or more required)

- ___ Water-Stained Leaves (B9) (**MLRA 1, 2 4A, and 4B**)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ FAC-Neutral Test (D5)
- ___ Raised Ant Mounds (D6) (**LRR A**)
- ___ Frost-Heave Hummocks (D7)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

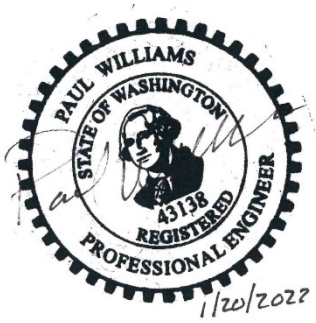
TRAFFIC IMPACT ANALYSIS

OAK TREE STATION

Camas, Washington

Prepared For:

Rob Kyne & Larry Bonife
3239 NW Hood Ct
Camas WA, 98607



Prepared by:
Engineering Northwest
7504 NW 10th Ave
Vancouver, WA 98685
PH: 360-931-3122
paulwilliamspe@gmail.com

November 1, 2022

ENGINEERING NORTHWEST

Contents

INTRODUCTION 4
TRAFFIC ANALYSIS CONSIDERATION 5
SCOPE OF TRAFFIC IMPACT STUDY AREA 5
SITE CONDITIONS AND ADJACENT LAND USES 6
PEDESTRIAN AND BICYCLE FACILITIES 6
TRANSIT FACILITES 6
PROPOSED DEVELOPMENT TRIP GENERATION ESTIMATE 6
TRIP DISTRIBUTION AND ASSIGNMENT 11
TRAFFIC OPERATIONAL ANALYSIS 12
CAPACITY ANALYSIS 12
QUEUING ANALYSIS 13
SIGHT DISTANCE 13
LEFT TURN LANE WARRANTS 14
2027 WITHOUT PROJECT TRAFFIC L.O.S. 14
2027 WITH PROJECT TRAFFIC L.O.S 15
PROJECT CROSS CIRCULATION 15
FINDINGS AND RECOMMENDATIONS 15
REFERENCES 16

APPENDIX A

Figure 1 Project Vicinity Map
Figure 2 Existing Lane Configurations and Traffic Control
Figure 3 Existing A.M. and P.M Peak Hour Traffic Volumes
Figure 4 2023 "Without" A.M. and P.M. Peak Hour Traffic Volumes
Figure 5 Trip Distribution and Assignment for Residential Use
Figure 6 2023 "With Project" A.M. and P.M. Peak Hour Traffic Volumes
Figure 7 Site Plan

APPENDIX B Existing Traffic Counts

APPENDIX C Existing Level of Services
APPENDIX D 2023 "Without Project" LOS
APPENDIX E 2023 "With Project" LOS
APPENDIX F Internal Capture Rate Worksheet
APPENDIX G PM Peak Trip Calculator

INTRODUCTION

This project will consist of a 4,704 sq.ft indoor eating area which is surrounded by 22 food carts. Also the project will consist of a drive thru 600 sq.ft coffee shop located in the southwest corner of the project. The project also proposes to construct 12,574 square-foot commercial building which will be located along the project's north boundary line. Currently, all proposed parcels for the development are zoned Commercial Community (CC). Access will be provided by utilizing the existing driveway onto NW Friberg-Strunk St and constructing a new driveway approach onto NW Lake Road which will be right-in / right-out. Please refer to the plans included in this application for more information on the proposed lot layout.

As indicated on the vicinity map the 3.95-acre subject site is located north side of NW Lake Road in the City of Camas Washington. The approximate latitude and longitude are 45.81151278°N 122.6.9973816°W and the legal description is a portion of the SE 1/4, S29, T2N, R3E of the Willamette Meridian. The regulatory jurisdictional agency is the City of Camas, Washington.

Vicinity Map

The proposed development is estimated to generate more than 200 vpd. As per City of Camas a traffic impact study is required.

TRAFFIC ANALYSIS CONSIDERATION

In the project scope established City of Camas, a number of important elements were identified and considered in this study.

- Inventory and record pertinent information such as traffic control devices, lane conditions, pedestrian & bicycle facilities, transit zones, parking conditions, and street characteristics
- Provide trip AM and PM Peak Distribution to and from the site down to less than 20 trips thru any given impacted intersection.
- Intersections to be analyzed will be based on trip to the intersection GREATER than 20 Peak trips.
- Record data on typical weekdays during the AM and PM peak traffic hours
- Forecast year 2027 traffic conditions during the weekday AM and PM peak hours
- Level of service (LOS) analysis of the study intersections to measure the approach delays for comparison to City of Camas standards
- Verification of intersection sight distance at the existing/proposed accesses.
- On-Site Access
- Implementation of the trip generation rates for AM & PM the proposed development

SCOPE OF TRAFFIC IMPACT STUDY AREA

The scope of the traffic impact study area included the following intersections:

- NW Friberg-Strunk Street/ NW Lake Road
- NW 192 Avenue / SE 1st Street (Within the City of Vancouver Limits)
- NW Payne Street / NW Lake Road

The remainder of this report presents the following analysis:

- Existing traffic conditions in the project study area
- 2027 "Without Project" condition to establish the baseline condition by which the project impacts could be determined.

- Trip generation estimates for the proposed development
- 2027 "With Project" condition to determine project traffic impacts

SITE CONDITIONS AND ADJACENT LAND USES

The study site is located northeast of the intersection of NW Friberg-Strunk Street and NW Lake Road. Table 1 summarizes the key characteristics of the adjacent roadways.

Table 1

Roadway	Classification	Cross Section	Speed Limit	Side-walks	Bicycle Lanes	Median	On-Street Parking
NW Lake Rd	Arterial Roadway	4-lanes 5-lane	40 35	yes	yes	yes	no
NW Friberg-Strunk rd	Collector Arterial	2-lanes	20	yes	yes	no	no
NW Larkspur St	Arterial Roadway	2-lanes	25	Intermit	No	No	no
NE 192nd Ave	Principal Arterial	2/4-lanes	40	yes	yes	yes	No

PEDESTRIAN AND BICYCLE FACILITIES

Sidewalks are currently provided along the site frontage on NW Friberg-Strunk Rd and NW Lake Rd. Currently, no bike lanes exist on both sides of NW Friberg-Strunk Rd.

TRANSIT FACILITIES

C-Tran provides public transit service in Clark County. Currently, there is no transit service in the project vicinity.

PROPOSED DEVELOPMENT TRIP GENERATION ESTIMATE

The proposed land use is community commercial (CC), the area of the approved use is listed in CMC table 1 18.07.030. ITE has developed data regarding various trip types that all developments experience. These are found in several places, however, for this

analysis, the Trip Generation Manual 11th Edition as well as the Trip Generation Handbook were used to develop the criteria for this analysis.

Generally, all proposed developments will be made up of one or more of the following trip types: new (destination) trips, pass-by trips, diverted trips, and shared (internal trips). To better understand the trip types available for land access a description of each specific trip type follows.

New (Destination) Trips- These types of trips occur only to access a specific land use such as a new retail development. These types of the trip will travel to and from the new side and a single other destination such as home or work. This is the only trip type that will result in a net increase in the total amount of traffic within the study area. The reason primarily is that these trips represent planned trips to a specific destination that never took trips to that part of the City before the development was constructed and occupied. This project will develop new trips.

Pas-by Trips These trips represent vehicles that currently use adjacent roadways providing primary access to new land uses or project and are trip of convenience. These trips, however, have an ultimate destination other than the project in question. They should be viewed as customers who stop in on their way home from work. Pass-by trips are almost always associated with commercial/retail types of development along major roadways. Therefore, for this project pass-by trips will be considered.

Estimates of daily and weekday am and pm peak hour vehicle trip ends for the proposed development were calculated from empirical observations at other similar developments. As noted earlier, trip generation rates are determined by use of the Trip Generation Manual, 11th Edition published by the Institute of Transportation Engineers (ITE) to determine the number of trips generated during the AM and PM Peak Hour. The purpose of the Trip Generation Manual is to compile and quantify empirical trip generation rates for specific land uses within the US.

Proposed Land Uses

For the 12,547 sf (12.5 ksf) of proposed retail land use, Land Use Code LUC #822, Strip Retail Plaza (40<k) was used to establish the number of potential trips generated by the

future retail land use. The fitted curve equation and the anticipated number of AM and PM peak hour trips for the future retail land use are shown on Table 1.

Table 1 -Trip Generation Rates for LUC #822 – Strip Retail Plaza (<40K)

KSF	AM Peak Hour Trips			PM Peak Hour Trips		
	Vol. @ 2.36/Trips	Directional Distribution		Vol. @ Fitted Curve Equation / Trips	Directional Distribution	
		60% IN	40% Out		50% In	50% Out
12.5	30	18	12	82	41	41
Internal Capture	-	-	-	28	14	14
Pass-by*	4	2	2	8	4	4
New	**26**	**16**	**10**	**46**	**23**	**23**

Average Daily Trip End (ADT)			**Fitted Curve Equation** **AM – T = 2.36(x)** **PM -Ln(T) = 0.711 Ln(x) + 2.72** **ADT – Ln(T) = 42.20(x) + 22.68** **T = Trips/units**
KSF	**Fitted Curve**	**ADT**	
12.5		757	

- AM and PM 14% Pass-by Percentage per the ITE Trip Generation Handbook 3rd Edition.

For the 600 sf (0.6 ksf) of the proposed coffee shop with two drive-through windows, Land Use Code LUC #938, Coffee/Donut shop with drive-through windows was used to establish the number of potential trips generated by the retail land use. The average rate and the anticipated number of AM and PM peak-hour trips for future retail land use are shown in Table 2.

Table 2 -Trip Generation Rates for LUC #938 – Coffee/Donut Shop w/Drive-thru Win

KSF or Windows	AM Peak Hour Trips			PM Peak Hour Trips		
	Vol. @ 85.88/Trips	Directional Distribution		Vol. @ Fitted Curve Equation / Trips	Directional Distribution	
		51% IN	49% Out		50% In	50% Out
0.6 sf (2 win)	51	26	25	30	15	15
Internal Capture	-	-	-	25	12	13
Pass-by*	46	24	22	1	0	1
New	**5**	**2**	3	**4**	**3**	**1**

Average Daily Trip End (ADT)			**Fitted Curve Equation** **AM – T = 2.36(x)** **PM -Ln(T) = 0.711 Ln(x) + 2.72** **ADT – Ln(T) = 42.20(x) + 22.68** **T = Trips/units**
KSF	**Fitted Curve**	**ADT**	
12.5		757	

- AM Pass-by 90% per the ITE Trip Generation Manual 11th Edition
- PM 14% Pass-by Percentage per the ITE Trip Generation Handbook 3rd Edition.

For the 4,704 sf (4.7. ksf) proposed enclosed building area to be used for 800 sq.ft. bar area, and 400 sq.ft ice cream and 280 sq.ft. dessert with the remaining area as open space and general setting. To the north and east of the building the project proposed 22 food carts at 160 sf each, thus total high-turnover (sit-down restaurant is 5,000 sf (5.0 ksf) was used to establish the number of potential trips generated by the restaurant land use. The average rate and the anticipated number of PM peak hour trips for future high-turnover restaurant land use are shown in Table 3. The food carts will only be open to the public for lunch and dinner. The food cart and the enclosed building will not be open from 7 AM to 9 am which is the peak AM hour period.

Table 3 -Trip Generation Rates for LUC #932 –High-Turnover (Sit-Down) Restaurant

KSF	**AM Peak Hour Trips**			**PM Peak Hour Trips**		
	Vol. @ 9.57/Trips	**Directional Distribution**		**Vol. @ Fitted Curve Equation / Trips**	**Directional Distribution**	
		55% IN	**45% Out**		**61% In**	**39% Out**
5.0	-	-	-	45	27	18
Internal Capture	-	-	-	19	12	7
Pass-by*	-	-	-	4	2	2
New	**-**	**-**	**-**	**22**	**13**	**9**

Average Daily Trip End (ADT)		
KSF	**Fitted Curve**	**ADT**
5.0		976

- 14% for PM Pass-by Percentage per the ITE Trip Generation Handbook 3rd Edition.

Total New Trip Generation Summary (Proposed)

Land Use Code (LUC)	AM Peak Hour			PM Peak Hour		
	Vol. per LUC	Directional Distribution		Vol. per LUC	Directional Distribution	
		IN	OUT		IN	OUT
Strip Retail Plaza 822	26	16	10	46	23	23
Coffee w/drive-thru 938	5	2	3	4	3	1
High Turnover Restaurant 932	-	-	-	22	13	9
Total	**31**	**18**	**13**	**72**	**39**	33

TRIP DISTRIBUTION AND ASSIGNMENT

A generalized trip distribution pattern for the A.M. and P.M. peak hour project-generated trips was developed for the existing traffic counts, previous traffic studies, locations of major employment centers and residential areas, and logical travel paths to and from major travel corridors. Appendix A "Figure 5" shows the resulting trip distribution pattern and assignment of A.M. and P.M. peak hour project generated trips.

TRAFFIC OPERATIONAL ANALYSIS

In order to evaluate traffic flow and delay in the area the signalized intersection a Level of Services (LOS) analyses were completed in the pm peak hour period and am peak hour period for the following scenarios: The analyzed intersections identified below using the methodologies outlined in the 2010 Highway Capacity Manual (HCM). According to the HCM there are six levels of service (LOS) by which the operational performance of an intersection may be described. These levels of service range between LOS "A" which indicates a relatively free-flowing condition and LOS "F" which indicates operational breakdown. LOS "D" is the Cit of Camas adopted level of service standard for arterial/collector intersections. The overall level of service was reported in the table below.

Table 4: 2022 Existing Levels of Service

	A.M. Peak Hour		P.M. Peak Hour	
	LOS	Average Delay (sec)	LOS	Average Delay (sec)
Signalized Intersections				
NW Friberg-Strunk St/NW Lake Rd	**	**	A	10.0
NW Lake Road / NW Larkspur Rd	**	**	B	14.7
SE 1st St / NE & SE 192 Avenue	**	**	C	32.7

**The project doesn't send no more than 20 AM peak to the intersection listed in table 4, thus not required by code to analyze the Level of Services.

In order to perform the Level of Service (LOS) analysis at the intersections, manual traffic counts were conducted during the pm peak (4:00-6:00 pm) traffic hours and am peak (7:00-9:00 am). The existing volume data for the weekday peak hours (see Appendix A).

CAPACITY ANALYSIS

Capacity analysis was performed to determine the level of service for the weekday pm peak hour and weekday am peak hour. Synchro 10 software was used to determine the

level of service for each scenario considered. The program is based on the latest Highway Capacity Manual (HCS) methodology.

Generally, LOS 'A','B','C', and 'D' are desirable service levels ranging from no vehicle delays to average or longer than average delays in the peak hours. Level 'E' represents long delays indicating signalization warrants need to be reviewed and signals considered only if warrants are met. Level 'F' indicates that intersection improvements, such as widening and signalization, may be required. According to the Highway Capacity Manual (HCM), the following delay times are associated with the LOS at stop controlled, unsignalized and signalized intersections.

Level of Service criteria defined in the 2000 Highway Capacity Manual

Level of Service (LOS)	Unsignalized Control Stopped Delay (sec/veh)	Signalized Control Stopped Delay (sec/veh)
A	<10	<10
B	> 10 and <15	>10 and <20
C	>15 and <25	>20 and <35
D	>25 and <35	>35 and < 55
E	>35 and <50	>55 and <80
F	>50	>80

QUEUING ANALYSIS

Queuing analysis at the project access intersection was not conducted due to low traffic volumes, acceptable levels of service, and acceptable accident rate in the 2027 "With Project" conditions.

SIGHT DISTANCE

Sight distance at the driveway approach onto NW Friberg-Strunk was reviewed in the field in accordance with City of Camas standards. Based on a posted speed of 20 miles per hour, City of Camas requires a minimum of 200 of sight distance to be available in both directions. The sight distance is to be measured from an eye height of 3.5 feet, at least fifteen feet from the edge of the uncontrolled public travel way. Based on the measurements obtained from the existing driveway approach along NW Friberg-Strunk

Rd the project has 200 feet of sight distance is available to the north and south. This distance exceeds City of Camas minimum sight distance requirements of 200 feet.

Sight distance at the driveway approach onto NW Lake Rd was reviewed in the field in accordance with City of Camas standards. Based on a posted speed of 40 miles per hour, the City of Camas requires a minimum of 400 of sight distance to be available in both directions. The sight distance is to be measured from an eye height of 3.5 feet, at least fifteen feet from the edge of the uncontrolled public travel way. Based on the measurements obtained from the proposed driveway approach along NW lake Rd the project has 400 feet of sight distance is available to the east. This distance exceeds City of Camas minimum sight distance requirements of 400 feet.

LEFT TURN LANE WARRANTS

None

2027 WITHOUT PROJECT TRAFFIC L.O.S.

The 2027 "Without Project" traffic volumes were calculated using a nominal 0.5 percent annual compounded growth factor as established by pervious traffic studies

Table 5: 2027 "Without Project" Levels of Service

	A.M. Peak Hour		P.M. Peak Hour	
	LOS	Average Delay (sec)	LOS	Average Delay (sec)
Signalized Intersections	**	**		
NW Friberg-Strunk St/NW Lake Rd	**	**	A	9.3
NW Lake Road / NW Larkspur Rd	**	**	A	8.4
SE 1st St / NE & SE 192 Avenue	**	**	D	38.4

**The project doesn't send no more than 20 AM peak to the intersection listed in table 5, thus not required by code to analyze Level of Services.

2027 WITH PROJECT TRAFFIC L.O.S.

The 2027 "Without Project" traffic volumes were calculated using a nominal 0.5 percent annual compounded growth factor as established by previous traffic studies.

The traffic study area intersection is projected to operate within the adopted level of service standards in the 2027 "With Project"

Table 6: 2027 "With Project" Levels of Service

	A.M. Peak Hour		P.M. Peak Hour	
	LOS	Average Delay (sec)	LOS	Average Delay (sec)
Signalized Intersections				
NW Friberg-Strunk St/NW Lake Rd	**	**	B	15.0
NW Lake Road / NW Larkspur Rd	**	**	A	7.7
SE 1st St / NE & SE 192 Avenue	**	**		

**The project doesn't send no more than 20 AM peak to the intersection listed in table 6, thus not required by code to analyze Level of Services.

PROJECT CROSS CIRCULATION

This project will not provide a private connection to the parcel to the east because a significant portion of the parcel is wetland and currently owned by the City of Camas.

FINDINGS AND RECOMMENDATIONS

Based on the results of the transportation impact analysis, the proposed Oak Tree Station development can be constructed while maintaining acceptable levels of service and safety at the study intersections. The primary findings and recommendations of this study are summarized below.

Existing Conditions

- All of the study intersections operated within operating standards deemed acceptable by the City of Camas during the weekday am and pm peak hours.

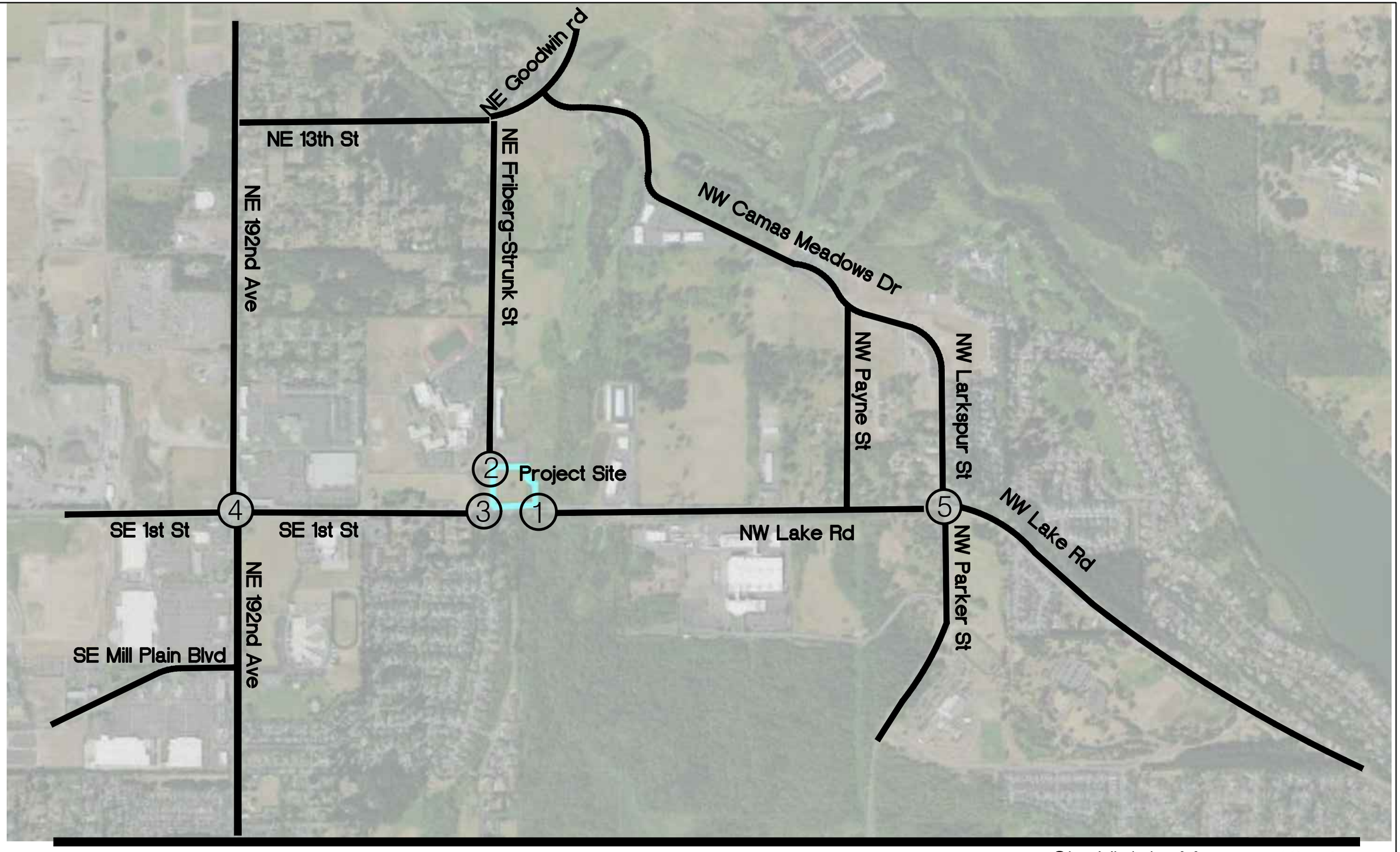
The YEAR 2022 and 2027 Total Traffic Conditions

- Year 2018 and 2023 total traffic conditions were estimated assuming continued local and regional growth plus the proposed site traffic. Operational analysis indicates that the study intersections are forecast to continue to operate at acceptable levels.
- Engineering Northwest LLC performed field sight distance measurements. The project access intersection will be able to meet the sight distance requirements assuming any vegetation within the sight distance triangles is properly maintained after construction.

REFERENCES

1) C-Tran, http://www.c-tran.com. March 201
2) Institute of Transportation Engineers, Trip Generation, 10th Editions
3) Transportation Research Board, Highway Capacity Manual, 2010

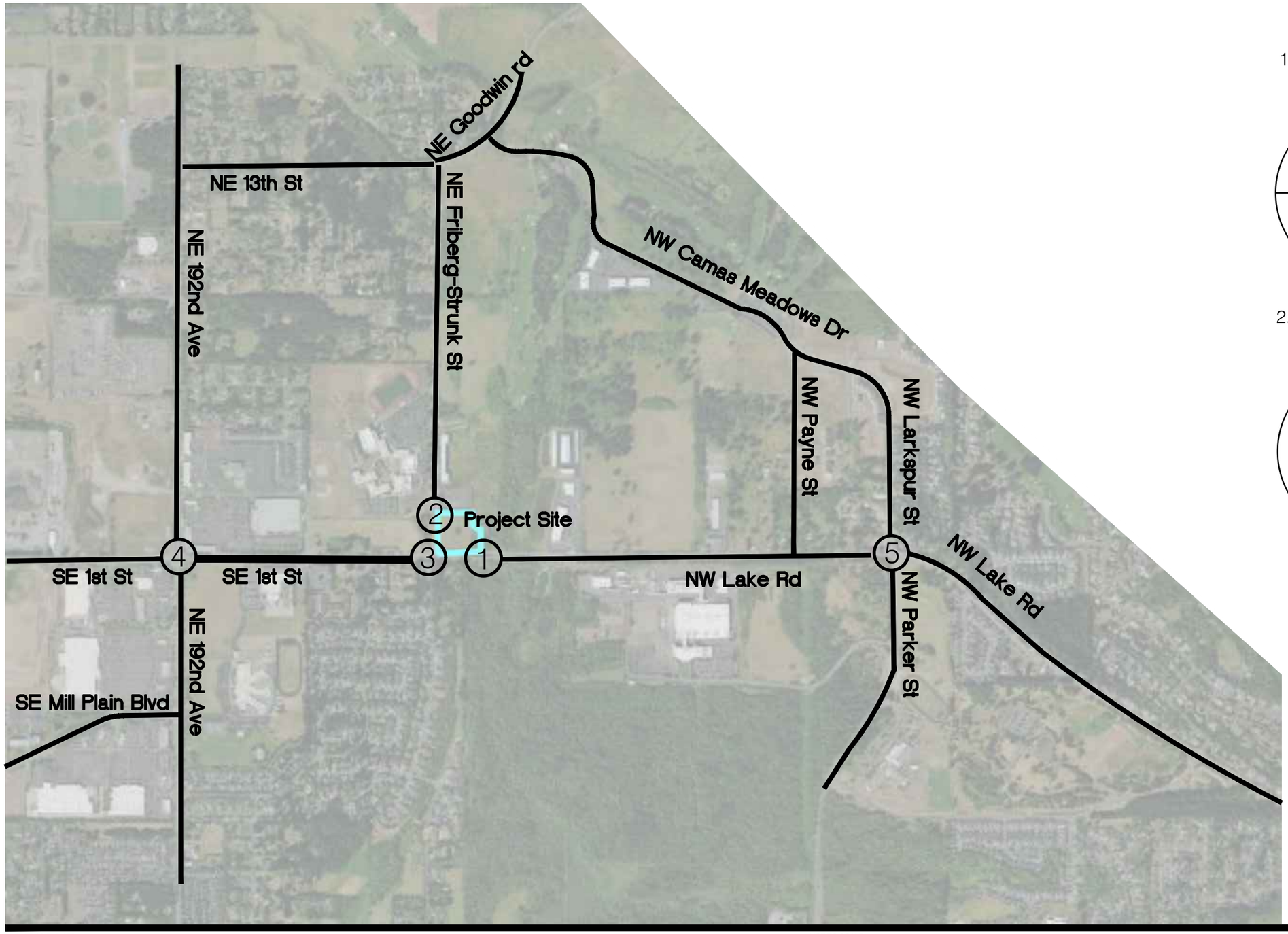
Appendix A



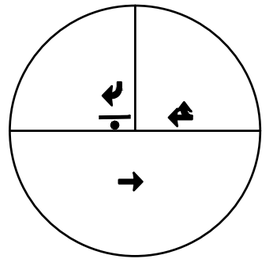
NOT TO SCALE

Site Vicinity Map
Camas, Washington

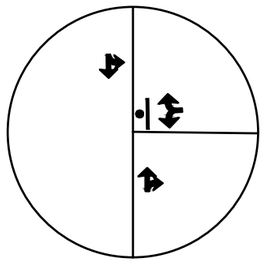
FIGURE
1



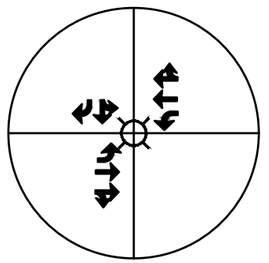
1. NW Lake Rd
/Project Access (South)



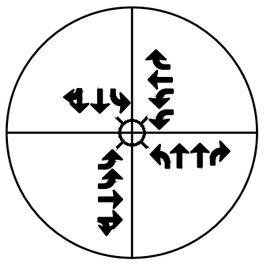
2. NE Fridberg Strunk
/Project Access (West)



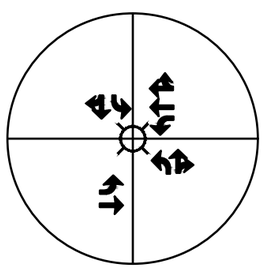
3. NE Fridberg Struck
/NW Lake Rd



4. NE 1st Street
NE & SE 192nd Ave



5. NW Larkspur
NW Lake Rd



LEGEND

Roundabout

Channelized

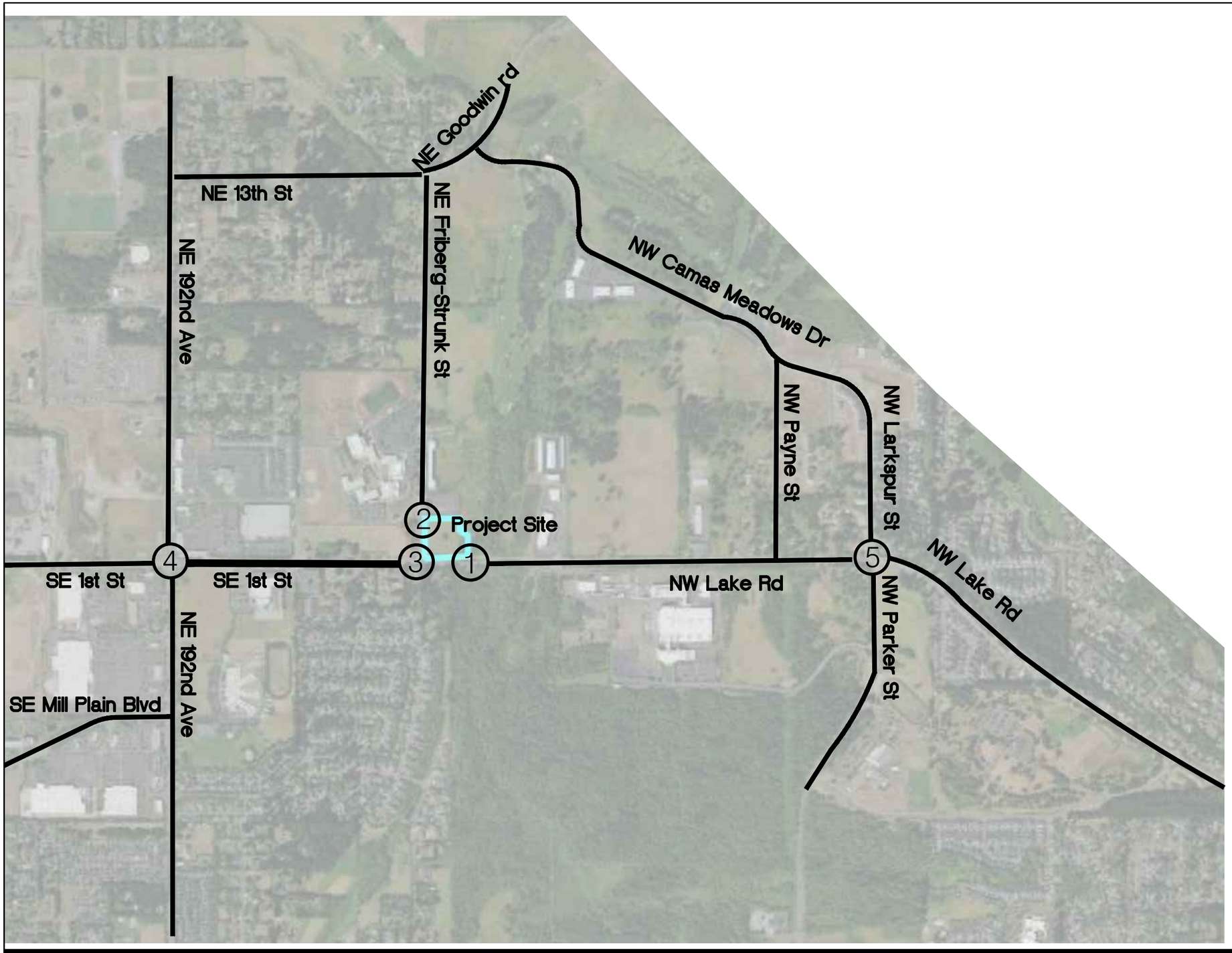
Stop Sign

Traffic Signal

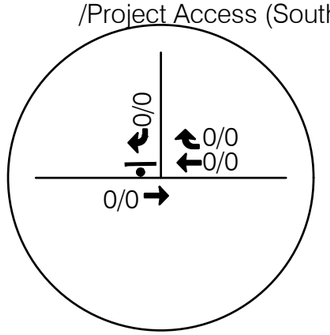
NOT TO SCALE

Year 2022 Existing Lane Configuration and Traffic Control

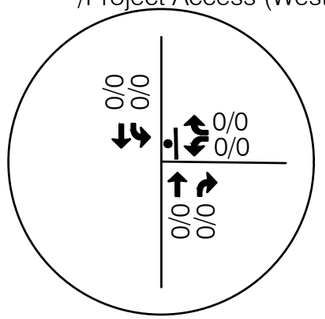
FIGURE 2



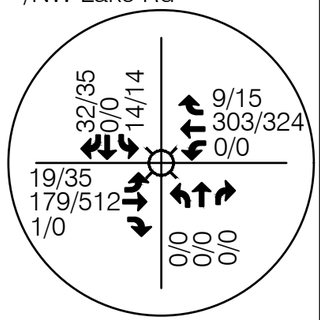
1. NW Lake Rd /Project Access (South)



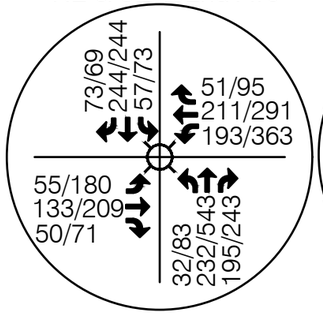
2. NE Fridberg Strunk /Project Access (West)



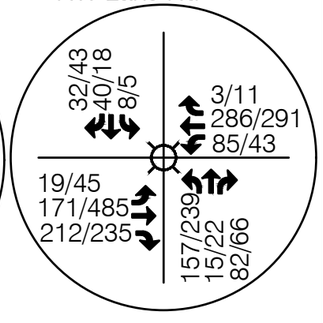
3. NE Fridberg Struck /NW Lake Rd



4. NE 1st Street NE & SE 192nd Ave



5. NW Larkspur NW Lake Rd

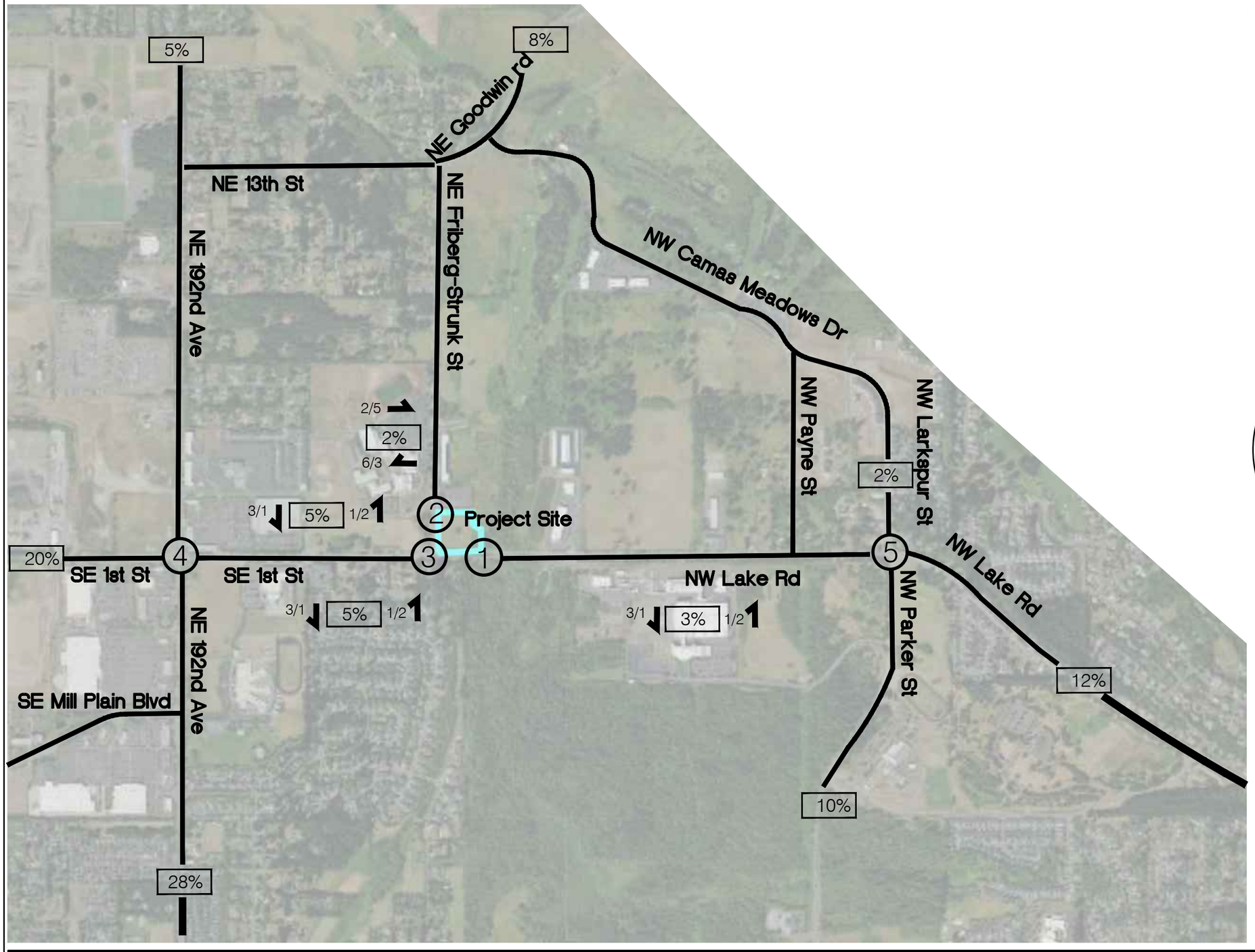


LEGEND
#/# A.M./P.M. Peak Hour Traffic Volume

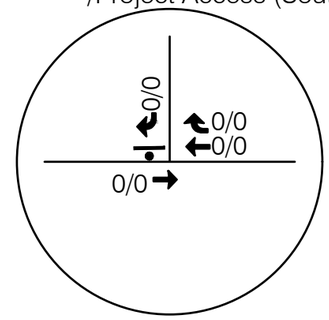
NOT TO SCALE

Year 2022 Existing Traffic Conditions
Weekday A.M. and P.M.
Peak Hour Traffic Volumes

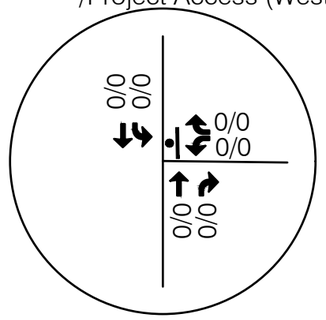
FIGURE 3



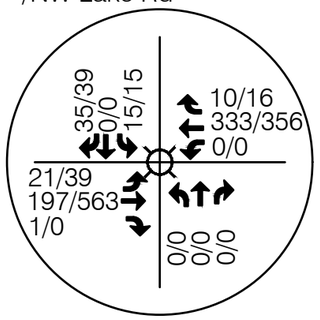
1. NW Lake Rd
/Project Access (South)



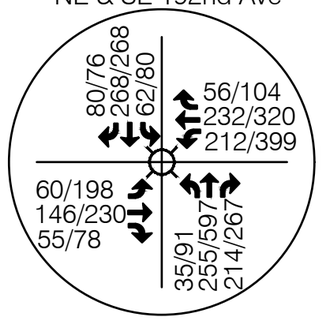
2. NE Fridberg Strunk
/Project Access (West)



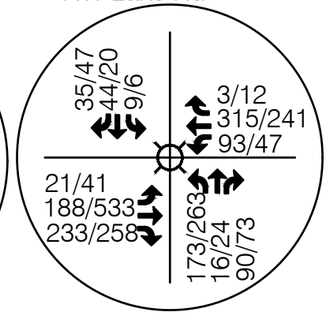
3. NE Fridberg Struck
/NW Lake Rd



4. NE 1st Street
NE & SE 192nd Ave



5. NW Larkspur
NW Lake Rd

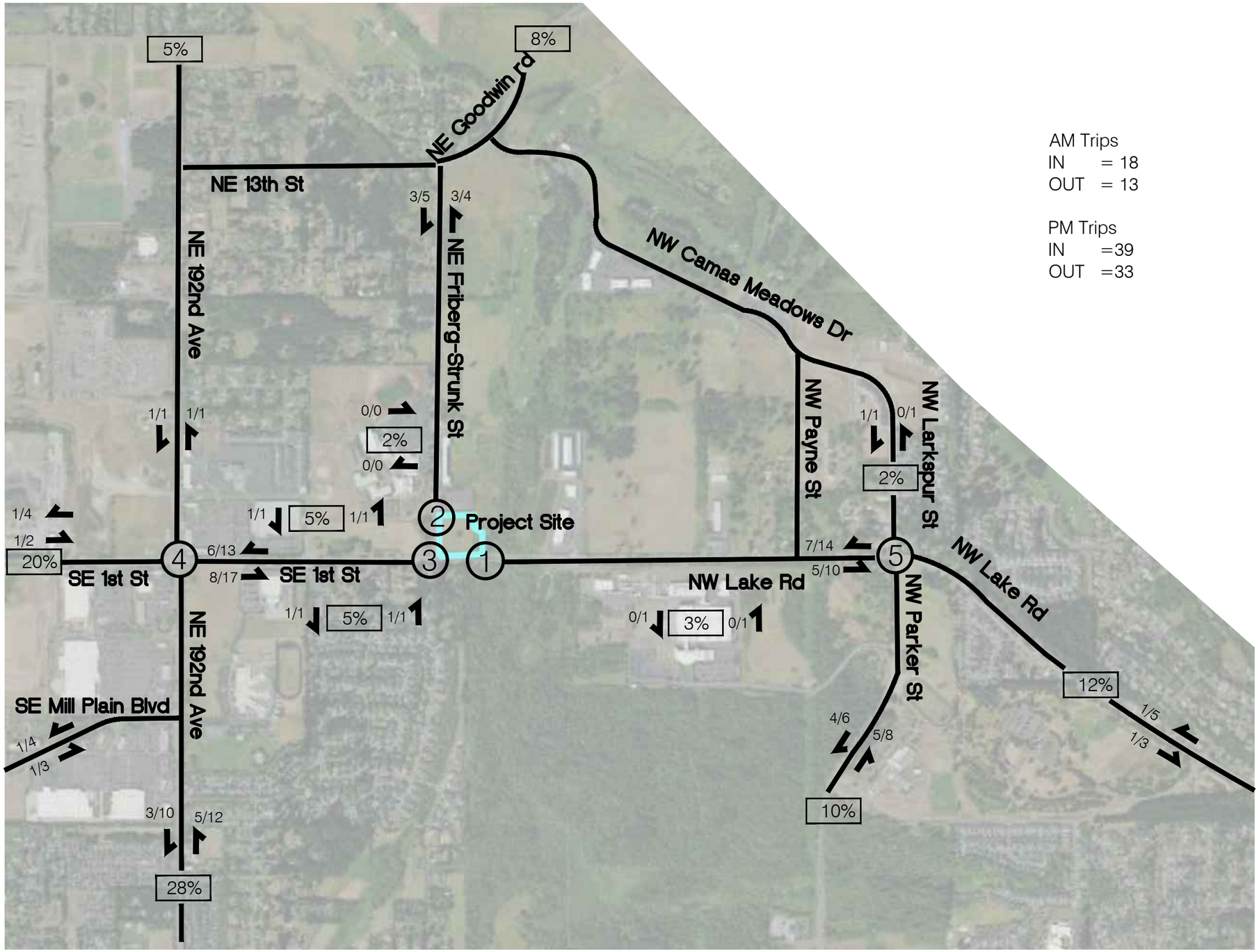


LEGEND
/#
A.M./P.M. Peak Hour
Traffic Volume

NOT TO SCALE

2027 "Without Project"
A.M. and P.M. Peak Hour Traffic Volumes

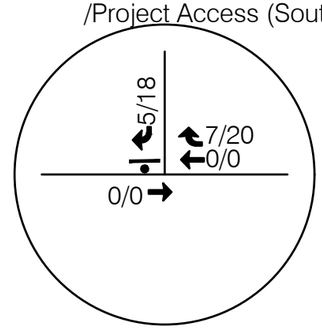
FIGURE
4



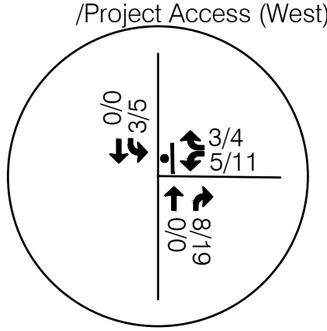
AM Trips
IN = 18
OUT = 13

PM Trips
IN =39
OUT =33

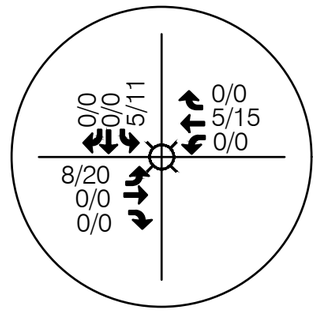
1. NW Lake Rd /Project Access (South)



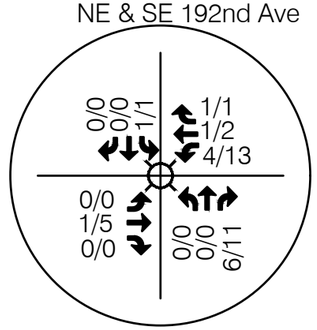
2. NE Fridberg Strunk /Project Access (West)



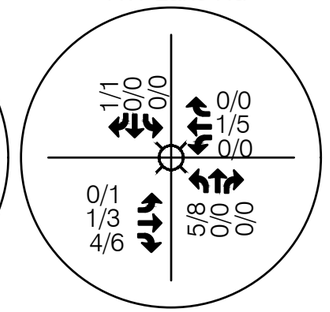
3. NE Fridberg Struck /NW Lake Rd



4. NE 1st Street NE & SE 192nd Ave



5. NW Larkspur NW Lake Rd



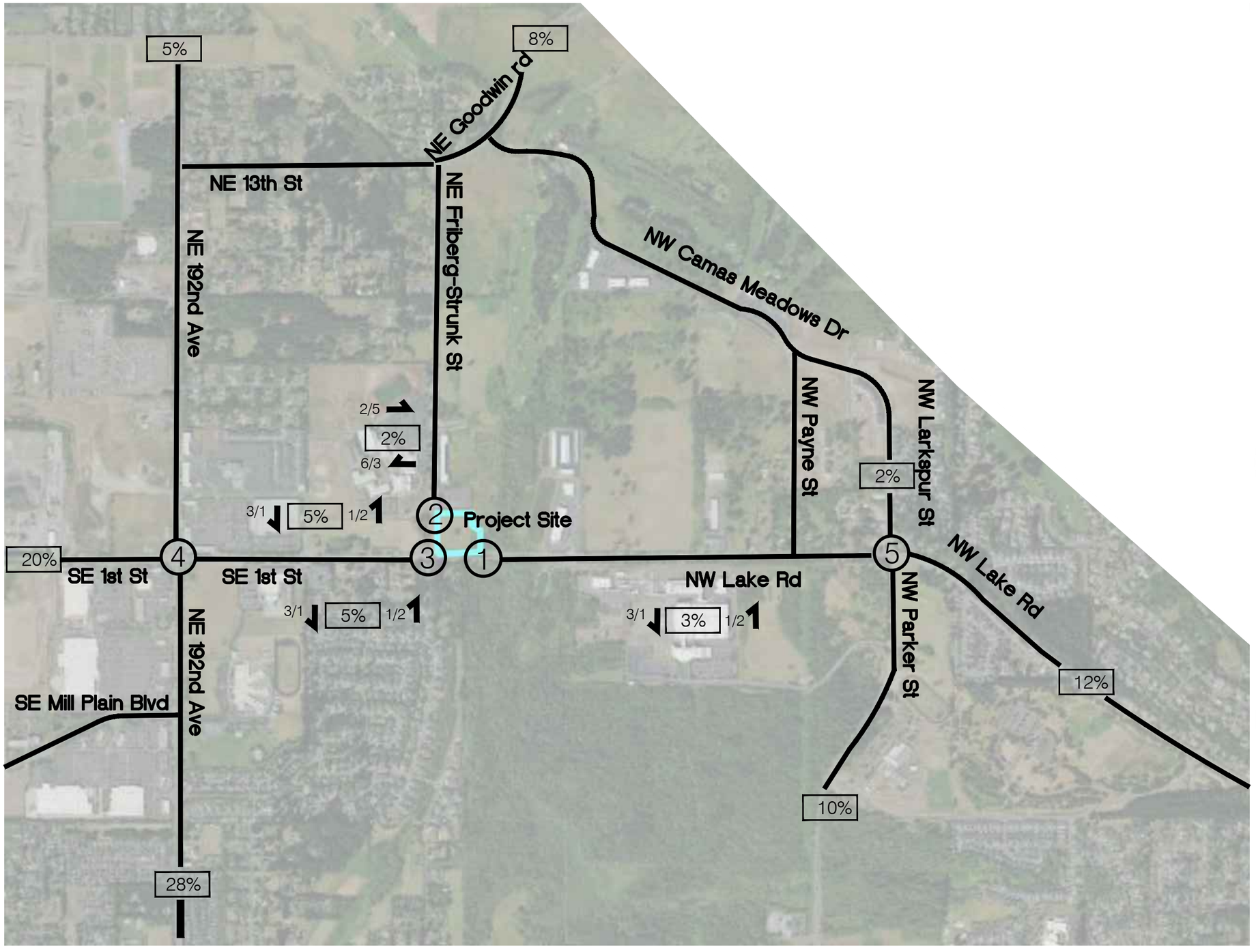
LEGEND
/# A.M./P.M. Peak Hour Traffic Volume

10% Peak Hour Trip Distribution

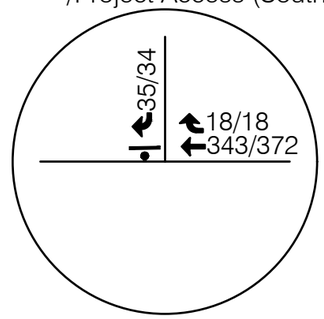
NOT TO SCALE

Trip Distribution and Assignment
Traffic Volumes

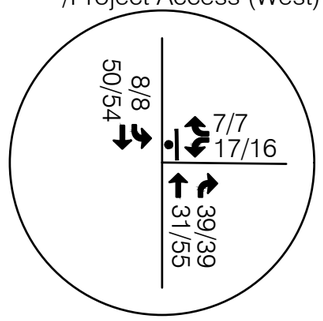
FIGURE
5



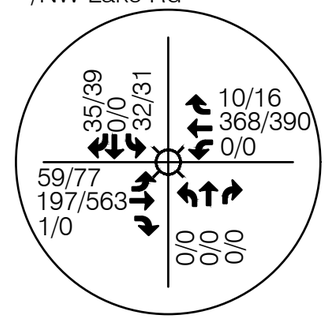
1. NW Lake Rd
/Project Access (South)



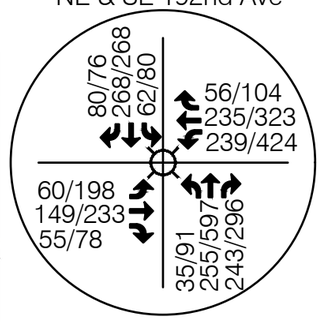
2. NE Fridberg Strunk
/Project Access (West)



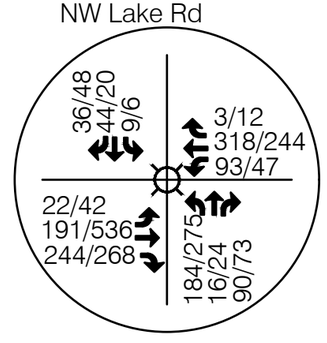
3. NE Fridberg Struck
/NW Lake Rd



4. NE 1st Street
NE & SE 192nd Ave



5. NW Larkspur
NW Lake Rd



LEGEND
/#
A.M./P.M. Peak Hour
Traffic Volume

NOT TO SCALE

2023 "With Project"
A.M. and P.M. Peak Hour Traffic Volumes

FIGURE
6

General Information

Address: No site address
Camas, WA 98607
Intersection: NW Lake Rd & NW Friberg-Strunk St
Parcel SN: 176162-000
Gross Area: 3.95 AC (172,062± SF)
Zoning: CC (Community Commercial)
S.T.R.: SE ¼ S29 T2N R3E W.M.

Existing use:
Vacant

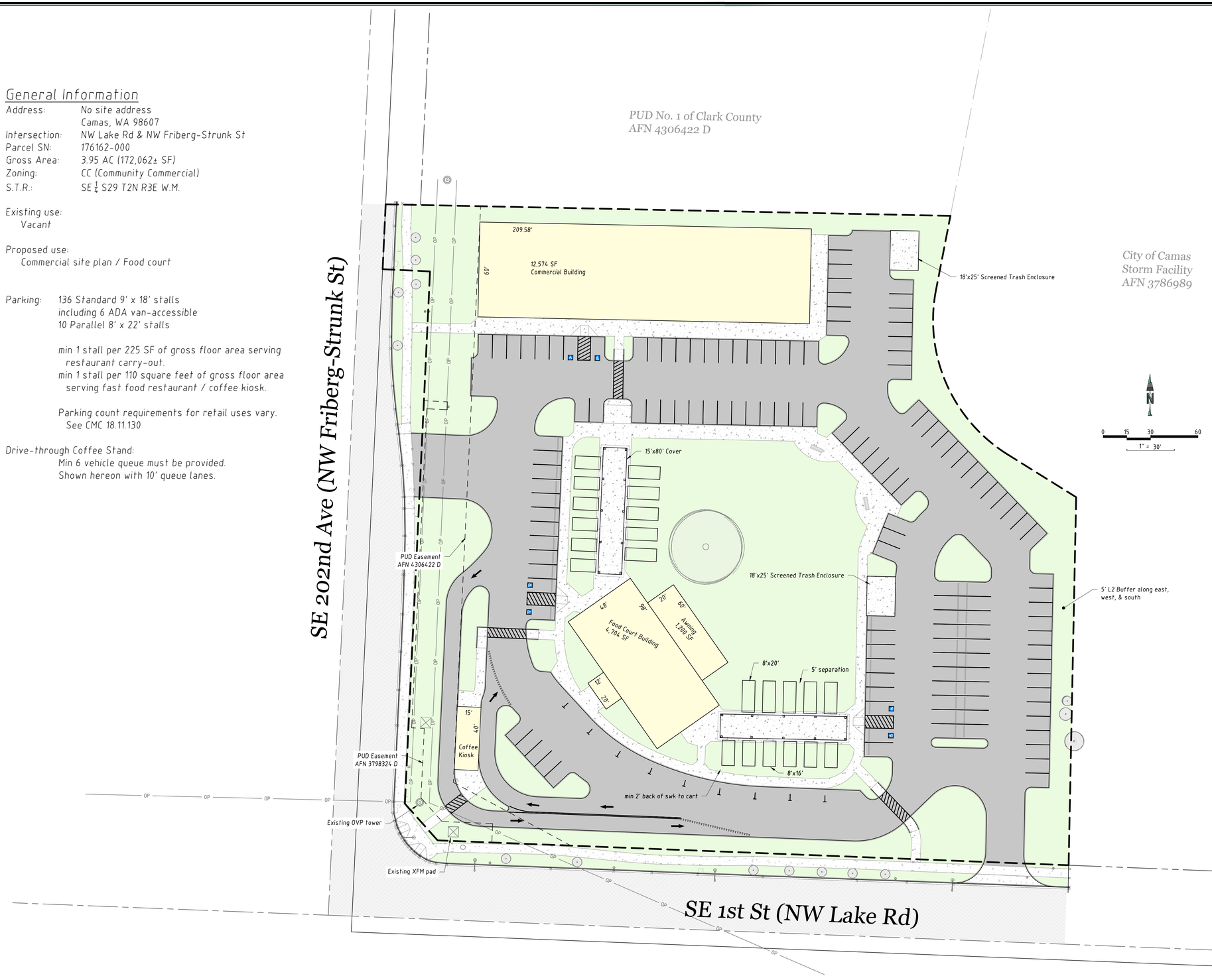
Proposed use:
Commercial site plan / Food court

Parking: 136 Standard 9' x 18' stalls
including 6 ADA van-accessible
10 Parallel 8' x 22' stalls

min 1 stall per 225 SF of gross floor area serving restaurant carry-out.
min 1 stall per 110 square feet of gross floor area serving fast food restaurant / coffee kiosk.

Parking count requirements for retail uses vary. See CMC 18.11.130

Drive-through Coffee Stand:
Min 6 vehicle queue must be provided.
Shown hereon with 10' queue lanes.



P04

Project: 2021004.SP
Date: 4/12/2022
Drafted: NVS
Designed: PCW
Page: 1 of 1

Northwest Utilities
1-800-425-5555
"It's the law"
Call 48 hours before you dig.

Revisions:

Concept Site Plan

Oak Tree Station

PRELIMINARY
NOT FOR CONSTRUCTION
4/12/22
43138
REGISTERED PROFESSIONAL ENGINEER
WILLIAM C. WALLACE
STATE OF WASHINGTON

ENGINEERING NORTHWEST
CONSULTING ENGINEERS & PLANNERS
6168 NE HWY 99 STE 100, VANCOUVER 98665
(3 6 0) 9 3 1 - 3 1 2 2

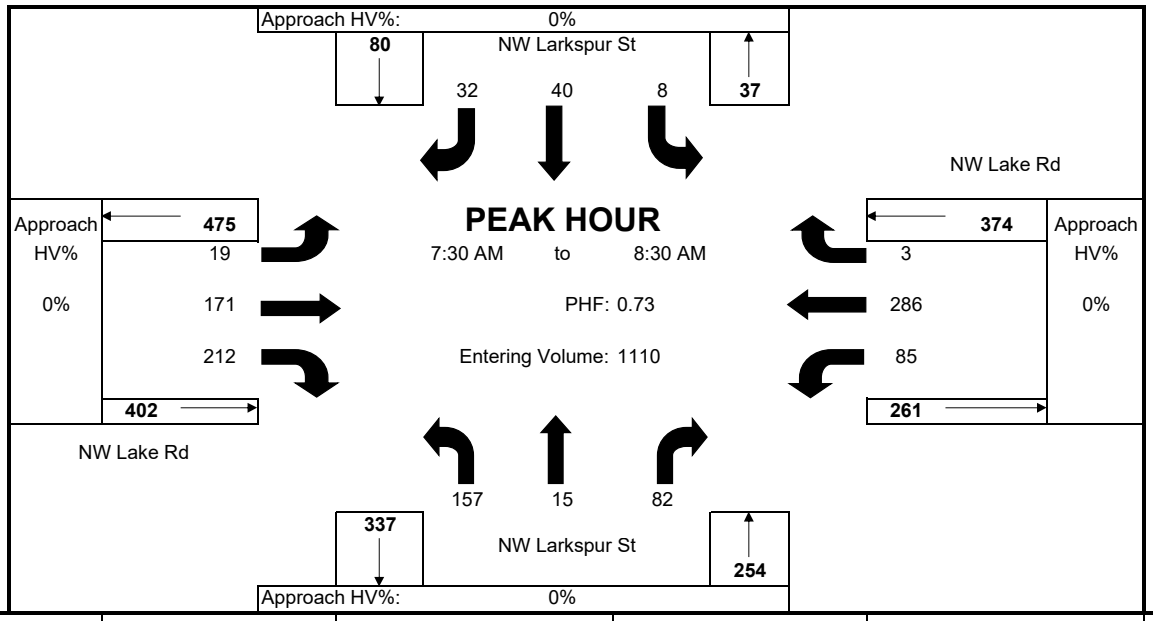
Schmit ARCH full bleed D (36.00 x 24.00 Inches) D:\DROPBOX (ENGINEERINGNW)\SITE PLAN\2021004.SP - FOOD COURT\CAD\MODEL.DWG

Appendix B

Existing Traffic Counts

LOCATION:
NW Larkspur St & NW Lake Rd
Ridgefield, WA

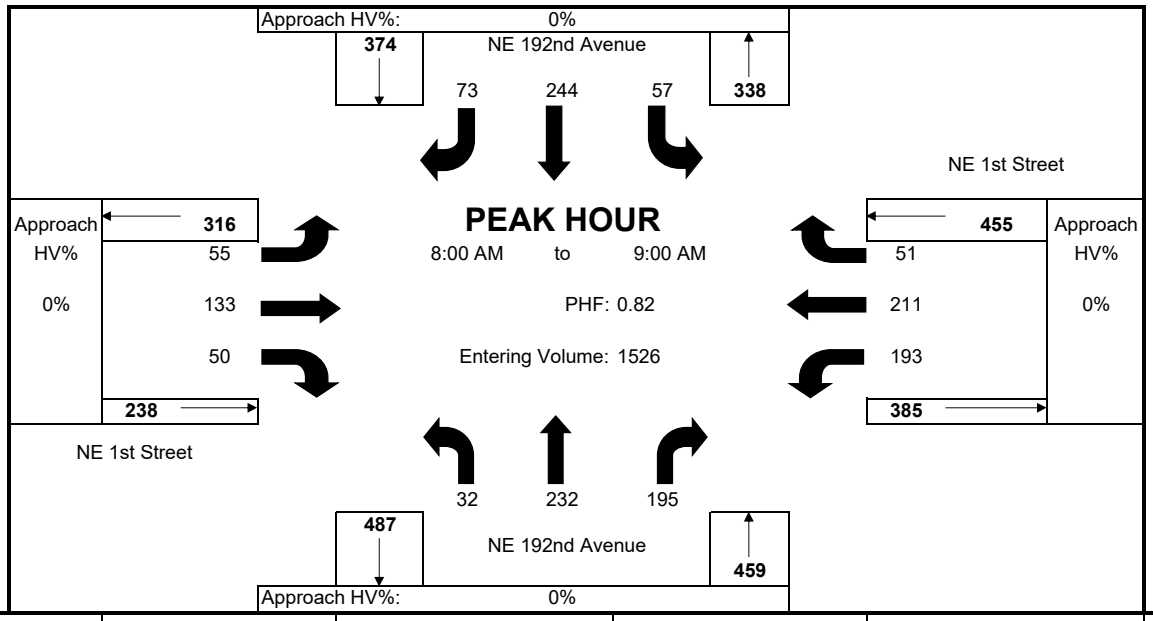
DATE: 1/5/2022
DAY: Wenesday
TIME: 7:30 to 8:30



Time Period		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
7:30	7:45	50	4	18	5	13	2	3	39	45	30	70	1	280
7:45	8:00	56	7	48	11	13	2	4	46	79	35	80	0	381
8:00	8:15	22	4	13	6	8	1	7	44	54	13	78	1	251
8:15	8:30	29	0	3	10	6	3	5	42	34	7	58	1	198
8:30	8:45	26	3	11	7	9	1	5	46	14	9	56	1	188
8:45	9:00	38	4	10	9	4	3	5	45	20	8	97	1	244
9:00	9:15	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15	9:30	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30	9:45	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45	10:00	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00	10:15	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15	10:30	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL:	221	22	103	48	53	12	29	262	246	102	439	5	1542
	Peak HR %HV:	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Peak HR Factor:	0.70	0.54	0.43	0.73	0.77	0.67	0.68	0.93	0.67	0.61	0.89	0.75	

LOCATION:
NE 192nd Avenue & NE 1st Street
Ridgefield, WA

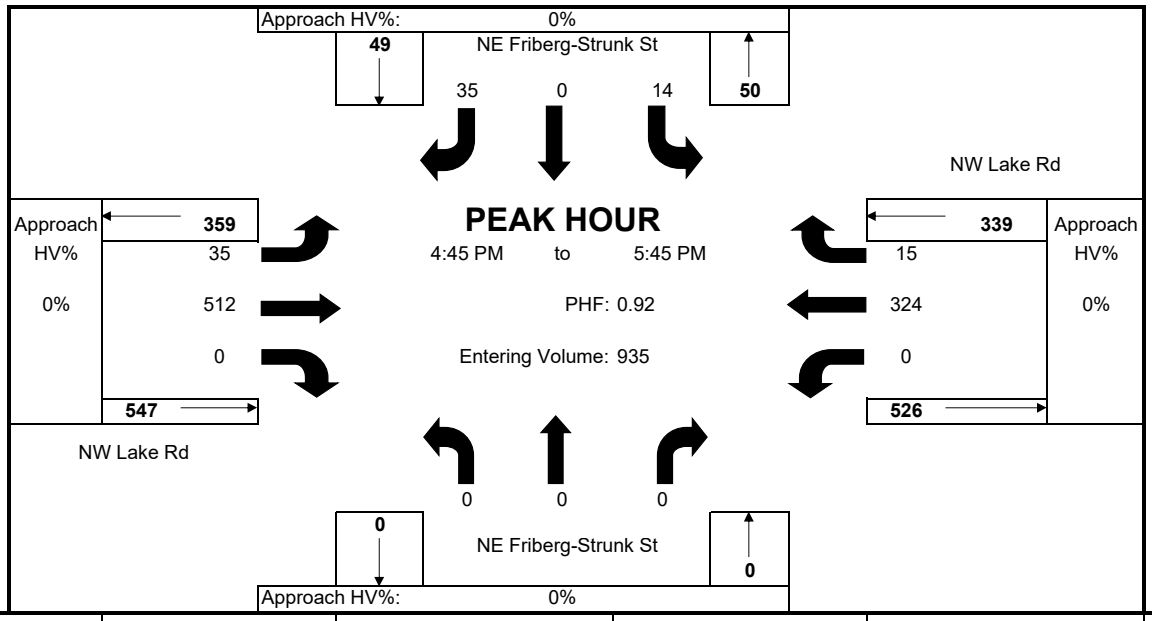
DATE: 1/5/2022
DAY: Wenesday
TIME: 7:30 to 8:30



Time Period		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
7:30	7:45	13	54	78	17	80	15	17	56	13	73	70	22	508
7:45	8:00	7	50	37	12	68	20	12	32	18	36	38	18	348
8:00	8:15	9	62	29	19	54	9	17	21	12	32	32	13	309
8:15	8:30	10	52	42	21	56	15	8	28	10	35	35	9	321
8:30	8:45	8	58	46	14	75	16	12	39	15	61	68	17	429
8:45	9:00	5	60	78	19	59	17	18	45	13	65	76	12	467
9:00	9:15	0	0	0	0	0	0	0	0	0	0	0	0	0
9:15	9:30	0	0	0	0	0	0	0	0	0	0	0	0	0
9:30	9:45	0	0	0	0	0	0	0	0	0	0	0	0	0
9:45	10:00	0	0	0	0	0	0	0	0	0	0	0	0	0
10:00	10:15	0	0	0	0	0	0	0	0	0	0	0	0	0
10:15	10:30	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL:	52	336	310	102	392	92	84	221	81	302	319	91	2382
	Peak HR %HV:	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Peak HR Factor:	0.80	0.94	0.63	0.87	0.81	0.84	0.76	0.74	0.83	0.74	0.69	0.75	

LOCATION:
NE Friberg-Strunk St & NW Lake Rd
Camas, WA

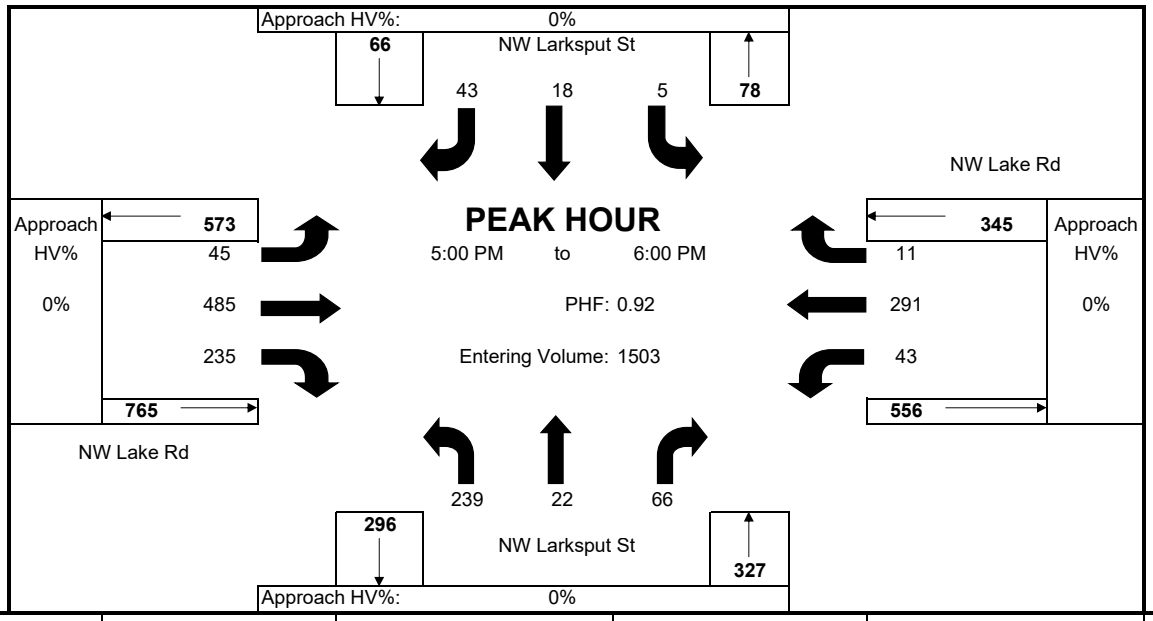
DATE: 1/5/2022
DAY: Wednessday
TIME: 16:00 to 9:00



Time Period		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
16:00	16:15	0	0	0	5	0	6	10	95	0	0	77	6	199
16:15	16:30	1	0	0	8	0	4	5	120	0	0	98	3	239
16:30	16:45	0	0	0	6	0	3	10	119	0	0	92	2	232
16:45	17:00	0	0	0	9	0	5	5	106	0	0	91	4	220
17:00	17:15	0	0	0	10	0	3	12	118	0	0	75	5	223
17:15	17:30	0	0	0	9	0	2	7	165	0	0	66	4	253
17:30	17:45	0	0	0	7	0	4	11	123	0	0	92	2	239
17:45	18:00	0	0	0	5	0	3	5	119	0	0	68	4	204
18:00	18:15	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	18:30	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30	18:45	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45	19:00	0	0	0	0	0	0	0	0	0	0	0	0	0
	TOTAL:	1	0	0	59	0	30	65	965	0	0	659	30	1809
	Peak HR %HV:	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
	Peak HR Factor:	0.00	0.00	0.00	0.88	0.00	0.70	0.73	0.78	0.00	0.00	0.88	0.75	

LOCATION:
NW Larksput St & NW Lake Rd
Camas, WA

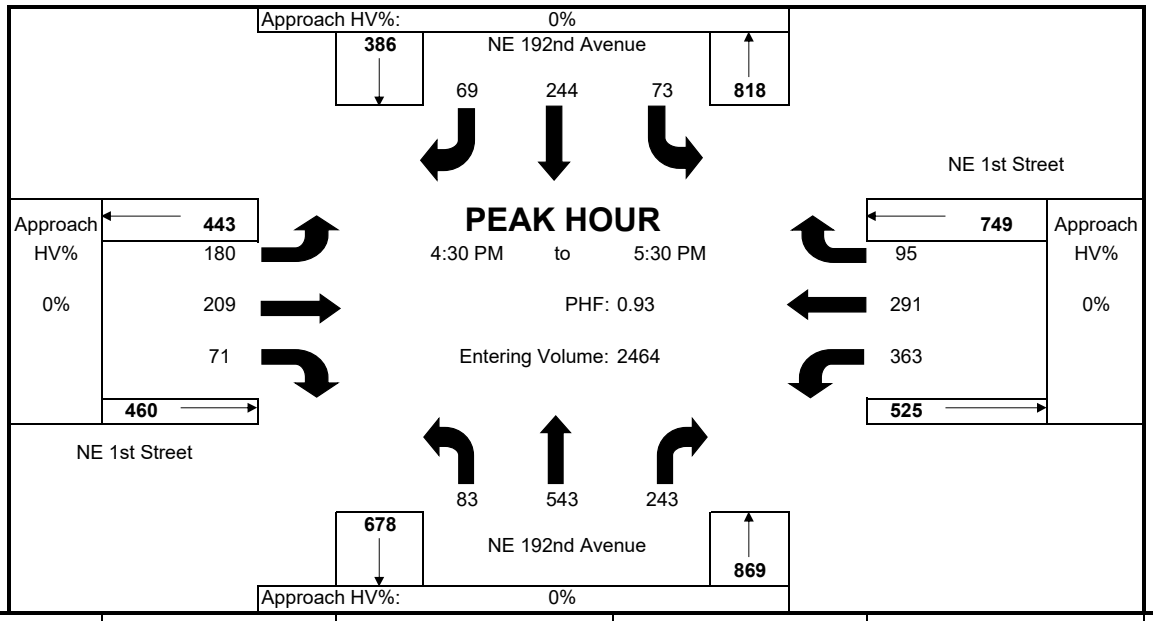
DATE: 1/5/2022
DAY: Wednessday
TIME: 16:00 to 9:00



Time Period		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
16:00	16:15	45	6	5	13	8	5	17	98	41	9	75	2	324
16:15	16:30	51	4	11	10	3	2	8	118	37	4	97	4	349
16:30	16:45	43	1	6	13	0	0	12	117	32	8	87	0	319
16:45	17:00	39	6	8	8	2	2	7	99	53	10	88	2	324
17:00	17:15	81	4	26	14	7	2	14	113	66	10	69	3	409
17:15	17:30	37	5	12	11	3	0	9	149	82	15	64	4	391
17:30	17:45	49	6	9	12	7	2	14	113	69	5	91	0	377
17:45	18:00	72	7	19	6	1	1	8	110	18	13	67	4	326
18:00	18:15	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	18:30	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30	18:45	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45	19:00	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL:		417	39	96	87	31	14	89	917	398	74	638	19	2819
Peak HR %HV:		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Peak HR Factor:		0.74	0.79	0.63	0.77	0.64	0.63	0.80	0.81	0.72	0.72	0.80	0.69	

LOCATION:
NE 192nd Avenue & NE 1st Street
Camas, WA

DATE: 1/5/2022
DAY: Wednessday
TIME: 16:00 to 9:00



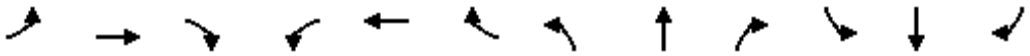
Time Period		NORTHBOUND			SOUTHBOUND			EASTBOUND			WESTBOUND			TOTAL
16:00	16:15	25	119	50	13	64	12	50	67	19	85	68	15	587
16:15	16:30	16	162	59	14	72	11	48	53	13	92	65	16	621
16:30	16:45	17	132	58	24	50	17	53	41	16	86	75	15	584
16:45	17:00	19	116	49	20	57	14	48	54	22	84	69	27	579
17:00	17:15	20	149	78	15	71	24	28	40	15	111	82	30	663
17:15	17:30	27	146	58	10	66	18	51	74	18	82	65	23	638
17:30	17:45	21	131	59	17	71	34	40	16	11	89	62	20	571
17:45	18:00	10	122	63	15	73	32	29	45	20	76	63	25	573
18:00	18:15	0	0	0	0	0	0	0	0	0	0	0	0	0
18:15	18:30	0	0	0	0	0	0	0	0	0	0	0	0	0
18:30	18:45	0	0	0	0	0	0	0	0	0	0	0	0	0
18:45	19:00	0	0	0	0	0	0	0	0	0	0	0	0	0
TOTAL:		155	1077	474	128	524	162	347	390	134	705	549	171	4816
Peak HR %HV:		0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	0%	
Peak HR Factor:		0.77	0.91	0.78	0.72	0.86	0.76	0.85	0.71	0.81	0.82	0.89	0.79	

Appendix C

Existing Level of Services

Lanes, Volumes, Timings
NE 192nd Ave & SE 1st St

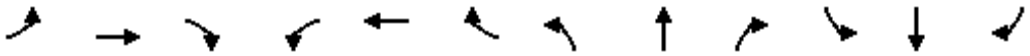
AM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	133	50	193	211	51	32	232	195	57	244	73
Future Volume (vph)	55	133	50	193	211	51	32	232	195	57	244	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.97	0.95	0.95	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.959				0.850			0.850		0.966	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3394	0	3433	1863	1583	1770	3539	1583	1770	3419	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	3394	0	3433	1863	1583	1770	3539	1583	1770	3419	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		46				112			238		33	
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		687			2643			1144			1304	
Travel Time (s)		11.7			45.1			19.5			22.2	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Adj. Flow (vph)	67	162	61	235	257	62	39	283	238	70	298	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	67	223	0	235	257	62	39	283	238	70	387	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	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	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	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	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6	3	7	4	1	3	8	
Permitted Phases						6			4			
Detector Phase	5	2		1	6	3	7	4	1	3	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	15.0	5.0	5.0	15.0	

Lanes, Volumes, Timings
NE 192nd Ave & SE 1st St

AM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Split (s)	9.5	22.5		9.5	22.5	22.5	9.5	22.5	9.5	22.5	22.5	
Total Split (s)	9.5	22.5		12.0	25.0	22.5	45.5	23.0	12.0	22.5	22.5	
Total Split (%)	9.3%	22.0%		11.7%	24.4%	22.0%	44.4%	22.4%	11.7%	22.0%	22.0%	
Maximum Green (s)	5.0	18.0		7.5	20.5	18.0	41.0	18.5	7.5	18.0	18.0	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max		None	Max	Max	None	C-Max	None	Max	Max	
Walk Time (s)		7.0			7.0	7.0		7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0	11.0		11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0		0		0	0	
Act Effct Green (s)	5.0	18.0		7.5	22.4	44.9	7.8	41.0	53.0	18.0	55.4	
Actuated g/C Ratio	0.05	0.18		0.07	0.22	0.44	0.08	0.40	0.52	0.18	0.54	
v/c Ratio	0.40	0.35		0.94	0.63	0.08	0.29	0.20	0.26	0.23	0.21	
Control Delay	54.7	31.0		90.9	45.3	0.8	49.6	20.5	2.4	38.5	12.5	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	54.7	31.0		90.9	45.3	0.8	49.6	20.5	2.4	38.5	12.5	
LOS	D	C		F	D	A	D	C	A	D	B	
Approach Delay		36.5			59.7			14.9			16.5	
Approach LOS		D			E			B			B	
Queue Length 50th (ft)	22	53		80	158	0	25	62	0	40	65	
Queue Length 95th (ft)	41	80		#133	219	1	51	83	26	73	88	
Internal Link Dist (ft)		607			2563			1064			1224	
Turn Bay Length (ft)												
Base Capacity (vph)	167	633		251	407	756	708	1415	933	310	1864	
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	0.40	0.35		0.94	0.63	0.08	0.06	0.20	0.26	0.23	0.21	

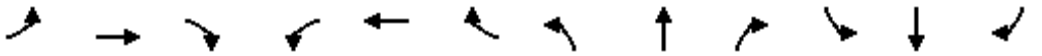
Intersection Summary			
Area Type:	Other		
Cycle Length: 102.5			
Actuated Cycle Length: 102.5			
Offset: 0 (0%), Referenced to phase 4:NBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.94			
Intersection Signal Delay: 32.0		Intersection LOS: C	
Intersection Capacity Utilization 46.9%		ICU Level of Service A	
Analysis Period (min) 15			

\# 95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3:

Lanes, Volumes, Timings
NE Friberg & NW Lake Rd

AM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	179	1	0	303	9	0	0	0	14	0	32
Future Volume (vph)	19	179	1	0	303	9	0	0	0	14	0	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999				0.850						0.850
Flt Protected	0.950										0.950	
Satd. Flow (prot)	1770	3536	0	0	3539	1583	0	1863	0	0	1770	1583
Flt Permitted	0.553										0.757	
Satd. Flow (perm)	1030	3536	0	0	3539	1583	0	1863	0	0	1410	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				36						36
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2643			4666			279			633	
Travel Time (s)		60.1			106.0			6.3			14.4	
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
Adj. Flow (vph)	21	195	1	0	329	10	0	0	0	15	0	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	196	0	0	329	10	0	0	0	0	15	35
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA			NA	Perm				Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5
Total Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%	50.0%
Maximum Green (s)	18.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	4.5	4.5			4.5	4.5		4.5			4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0	11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	0
Act Effct Green (s)	18.0	18.0			18.0	18.0					18.0	18.0
Actuated g/C Ratio	0.40	0.40			0.40	0.40					0.40	0.40
v/c Ratio	0.05	0.14			0.23	0.02					0.03	0.05
Control Delay	8.8	8.9			9.5	1.0					8.4	3.9
Queue Delay	0.0	0.0			0.0	0.0					0.0	0.0
Total Delay	8.8	8.9			9.5	1.0					8.4	3.9

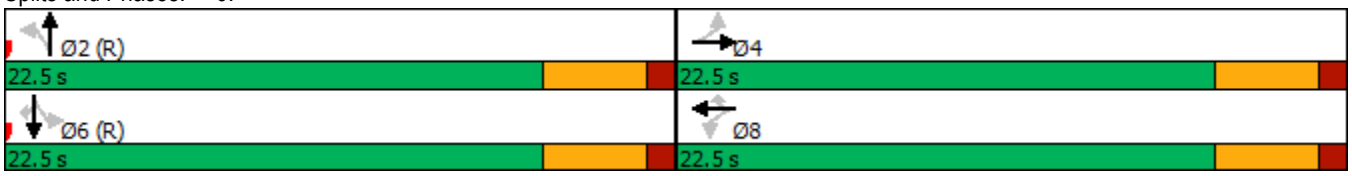
Lanes, Volumes, Timings
NE Friberg & NW Lake Rd

AM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	A	A			A	A					A	A
Approach Delay		8.9			9.2						5.3	
Approach LOS		A			A						A	
Queue Length 50th (ft)	3	15			27	0					2	0
Queue Length 95th (ft)	13	31			48	2					10	11
Internal Link Dist (ft)		2563			4586			199			553	
Turn Bay Length (ft)												
Base Capacity (vph)	412	1415			1415	654					564	654
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	0.05	0.14			0.23	0.02					0.03	0.05

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.23			
Intersection Signal Delay: 8.8		Intersection LOS: A	
Intersection Capacity Utilization 27.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 6:



Lanes, Volumes, Timings
NW Parker St & NW Lake Rd

AM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	171	212	85	286	3	157	15	82	8	40	32
Future Volume (vph)	19	171	212	85	286	3	157	15	82	8	40	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.999			0.873			0.933	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	3536	0	1770	1626	0	1770	1738	0
Flt Permitted	0.561			0.640			0.706			0.689		
Satd. Flow (perm)	1045	1863	1583	1192	3536	0	1315	1626	0	1283	1738	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			230		2			89			35	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		4666			452			981			831	
Travel Time (s)		106.0			10.3			22.3			18.9	
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
Adj. Flow (vph)	21	186	230	92	311	3	171	16	89	9	43	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	21	186	230	92	314	0	171	105	0	9	78	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0		18.0	18.0	
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40		0.40	0.40		0.40	0.40	
v/c Ratio	0.05	0.25	0.30	0.19	0.22		0.33	0.15		0.02	0.11	
Control Delay	9.5	10.2	4.3	10.2	9.4		11.5	3.9		8.4	6.0	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	9.5	10.2	4.3	10.2	9.4		11.5	3.9		8.4	6.0	

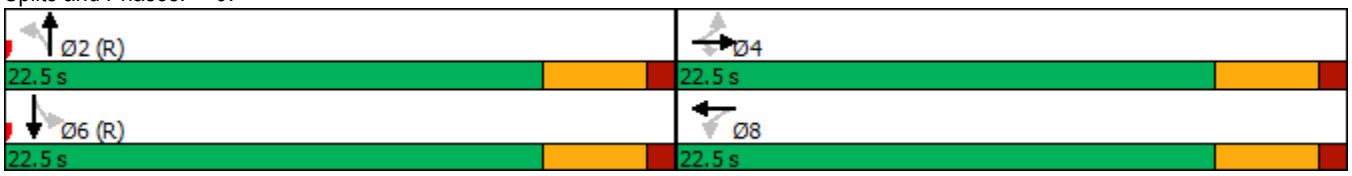
Lanes, Volumes, Timings
NW Parker St & NW Lake Rd

AM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	A	B	A	B	A		B	A		A	A	
Approach Delay		7.1			9.5			8.6			6.3	
Approach LOS		A			A			A			A	
Queue Length 50th (ft)	3	26	0	15	26		29	2		1	6	
Queue Length 95th (ft)	13	62	32	37	46		64	23		7	24	
Internal Link Dist (ft)		4586			372			901			751	
Turn Bay Length (ft)												
Base Capacity (vph)	418	745	771	476	1415		526	703		513	716	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.05	0.25	0.30	0.19	0.22		0.33	0.15		0.02	0.11	

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.33			
Intersection Signal Delay: 8.2		Intersection LOS: A	
Intersection Capacity Utilization 40.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 9:



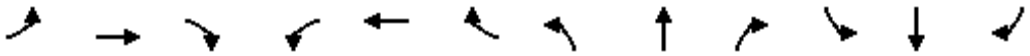
Lanes, Volumes, Timings
NE 192nd Ave & SE 1st St

PM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	209	71	363	291	95	83	543	243	73	244	69
Future Volume (vph)	180	209	71	363	291	95	83	543	243	73	244	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	280		0	330		1000	200		220	270		0
Storage Lanes	2		0	2		1	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	0.95	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.962				0.850			0.850		0.967	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3405	0	3433	1863	1583	1770	3539	1583	1770	3422	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	3405	0	3433	1863	1583	1770	3539	1583	1770	3422	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		41				65			261		39	
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		687			2643			1144			1304	
Travel Time (s)		11.7			45.1			19.5			22.2	
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
Adj. Flow (vph)	194	225	76	390	313	102	89	584	261	78	262	74
Shared Lane Traffic (%)												
Lane Group Flow (vph)	194	301	0	390	313	102	89	584	261	78	336	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	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	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	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	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6	3	7	4	1	3	8	
Permitted Phases						6			4			

Lanes, Volumes, Timings
NE 192nd Ave & SE 1st St

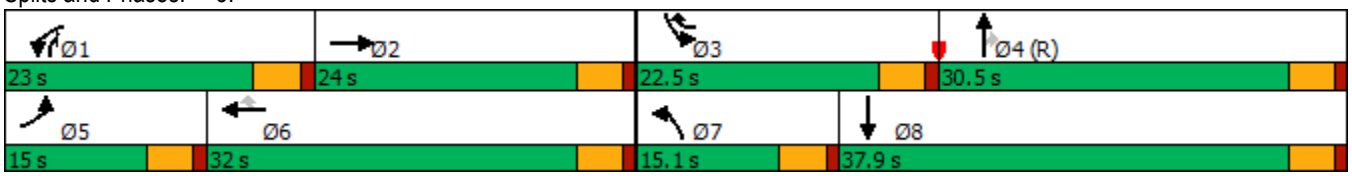
PM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2		1	6	3	7	4	1	3	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	15.0	5.0	5.0	15.0	
Minimum Split (s)	9.5	22.5		9.5	22.5	22.5	9.5	22.5	9.5	22.5	22.5	
Total Split (s)	15.0	24.0		23.0	32.0	22.5	15.1	30.5	23.0	22.5	37.9	
Total Split (%)	15.0%	24.0%		23.0%	32.0%	22.5%	15.1%	30.5%	23.0%	22.5%	37.9%	
Maximum Green (s)	10.5	19.5		18.5	27.5	18.0	10.6	26.0	18.5	18.0	33.4	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max		None	Max	Max	None	C-Max	None	Max	Max	
Walk Time (s)		7.0			7.0	7.0		7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0	11.0		11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0		0		0	0	
Act Effct Green (s)	9.8	21.9		16.1	28.2	50.7	9.3	26.0	46.6	18.0	36.9	
Actuated g/C Ratio	0.10	0.22		0.16	0.28	0.51	0.09	0.26	0.47	0.18	0.37	
v/c Ratio	0.58	0.39		0.71	0.60	0.12	0.54	0.63	0.30	0.25	0.26	
Control Delay	50.1	31.0		46.9	36.9	6.2	55.5	36.5	2.8	37.6	21.1	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	50.1	31.0		46.9	36.9	6.2	55.5	36.5	2.8	37.6	21.1	
LOS	D	C		D	D	A	E	D	A	D	C	
Approach Delay		38.5			37.8			28.9			24.2	
Approach LOS		D			D			C			C	
Queue Length 50th (ft)	61	74		122	174	12	55	173	0	43	71	
Queue Length 95th (ft)	97	118		168	265	39	105	232	40	86	108	
Internal Link Dist (ft)		607			2563			1064			1224	
Turn Bay Length (ft)	280			330		1000	200		220	270		
Base Capacity (vph)	360	777		635	525	834	187	920	908	318	1285	
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	0.54	0.39		0.61	0.60	0.12	0.48	0.63	0.29	0.25	0.26	

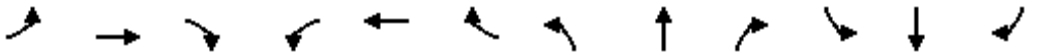
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 4:NBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 32.7		Intersection LOS: C	
Intersection Capacity Utilization 54.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3:



Lanes, Volumes, Timings
NE Friberg St & NW Lake Rd

PM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	512	0	0	324	15	0	0	0	14	0	35
Future Volume (vph)	35	512	0	0	324	15	0	0	0	14	0	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850						0.850
Flt Protected	0.950										0.950	
Satd. Flow (prot)	1770	3539	0	0	3539	1583	0	1863	0	0	1770	1583
Flt Permitted	0.541										0.757	
Satd. Flow (perm)	1008	3539	0	0	3539	1583	0	1863	0	0	1410	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						36						38
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2643			4666			279			633	
Travel Time (s)		60.1			106.0			6.3			14.4	
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
Adj. Flow (vph)	38	557	0	0	352	16	0	0	0	15	0	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	38	557	0	0	352	16	0	0	0	0	15	38
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		36			36			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA			NA	Perm				Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5
Total Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%	50.0%
Maximum Green (s)	18.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	4.5	4.5			4.5	4.5		4.5			4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0	11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	0
Act Effct Green (s)	18.0	18.0			18.0	18.0					18.0	18.0
Actuated g/C Ratio	0.40	0.40			0.40	0.40					0.40	0.40
v/c Ratio	0.09	0.39			0.25	0.02					0.03	0.06
Control Delay	9.3	10.7			10.0	3.7					8.4	3.9
Queue Delay	0.0	0.0			0.0	0.0					0.0	0.0
Total Delay	9.3	10.7			10.0	3.7					8.4	3.9

Lanes, Volumes, Timings
NE Friberg St & NW Lake Rd

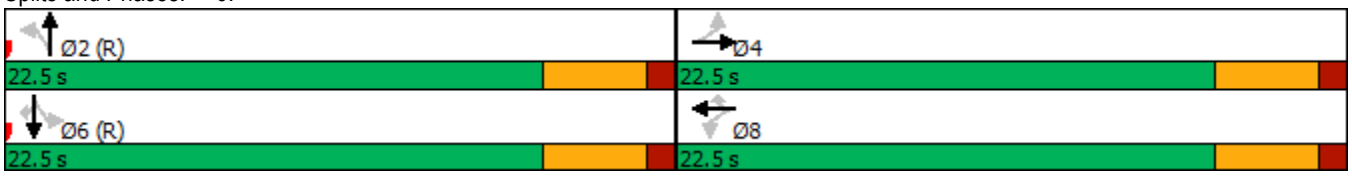
PM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	A	B			B	A					A	A
Approach Delay		10.6			9.8						5.2	
Approach LOS		B			A						A	
Queue Length 50th (ft)	6	51			28	0					2	0
Queue Length 95th (ft)	19	81			56	m4					10	12
Internal Link Dist (ft)		2563			4586			199			553	
Turn Bay Length (ft)												
Base Capacity (vph)	403	1415			1415	654					564	656
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	0.39			0.25	0.02					0.03	0.06

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.39			
Intersection Signal Delay: 10.0		Intersection LOS: A	
Intersection Capacity Utilization 38.5%		ICU Level of Service A	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6:



Lanes, Volumes, Timings NW
Parker St & NW Lake Rd

PM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	485	235	43	291	11	239	22	66	5	18	43
Future Volume (vph)	45	485	235	43	291	11	239	22	66	5	18	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.995			0.887			0.895	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	3522	0	1770	1652	0	1770	1667	0
Flt Permitted	0.554			0.295			0.713			0.695		
Satd. Flow (perm)	1032	1863	1583	550	3522	0	1328	1652	0	1295	1667	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			255		10			72			47	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		4666			452			981			831	
Travel Time (s)		106.0			10.3			22.3			18.9	
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
Adj. Flow (vph)	49	527	255	47	316	12	260	24	72	5	20	47
Shared Lane Traffic (%)												
Lane Group Flow (vph)	49	527	255	47	328	0	260	96	0	5	67	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0		18.0	18.0	
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40		0.40	0.40		0.40	0.40	
v/c Ratio	0.12	0.71	0.32	0.21	0.23		0.49	0.14		0.01	0.10	
Control Delay	15.8	24.9	8.1	12.0	9.2		14.0	4.4		8.2	4.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	15.8	24.9	8.1	12.0	9.2		14.0	4.4		8.2	4.8	

Lanes, Volumes, Timings
Parker St & NW Lake Rd

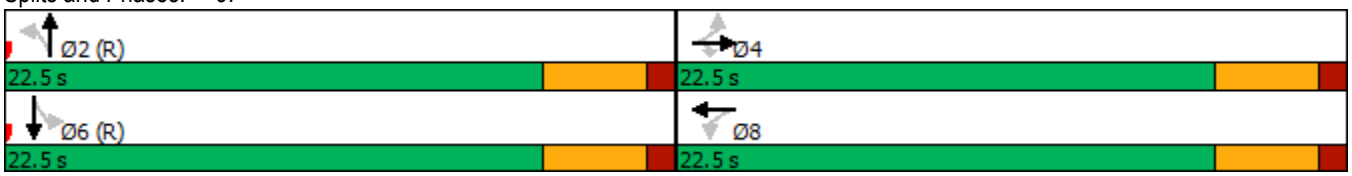
PM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
LOS	B	C	A	B	A		B	A		A	A	
Approach Delay		19.2			9.5			11.4			5.1	
Approach LOS		B			A			B			A	
Queue Length 50th (ft)	10	124	0	8	26		47	4		1	3	
Queue Length 95th (ft)	m29	#210	61	26	47		98	23		5	19	
Internal Link Dist (ft)		4586			372			901			751	
Turn Bay Length (ft)												
Base Capacity (vph)	412	745	786	220	1414		531	704		518	695	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.12	0.71	0.32	0.21	0.23		0.49	0.14		0.01	0.10	

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 50			
Control Type: Pretimed			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 14.7		Intersection LOS: B	
Intersection Capacity Utilization 60.9%		ICU Level of Service B	
Analysis Period (min) 15			

\# 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.

Splits and Phases: 9:



Appendix D

2023 Without Project Level of Services

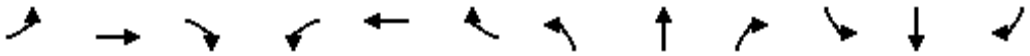
Lanes, Volumes, Timings
NE 192nd Ave & SE 1st St

AM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	133	50	193	211	51	32	232	195	57	244	73
Future Volume (vph)	55	133	50	193	211	51	32	232	195	57	244	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.97	0.95	0.95	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.959				0.850			0.850		0.965	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3394	0	3433	1863	1583	1770	3539	1583	1770	3415	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	3394	0	3433	1863	1583	1770	3539	1583	1770	3415	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		46				112			262		33	
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		687			2643			1144			1304	
Travel Time (s)		11.7			45.1			19.5			22.2	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	74	178	67	259	283	68	43	311	262	76	327	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	74	245	0	259	283	68	43	311	262	76	425	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	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	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	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	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6	3	7	4	1	3	8	
Permitted Phases						6			4			
Detector Phase	5	2		1	6	3	7	4	1	3	8	
Switch Phase												

Lanes, Volumes, Timings
NE 192nd Ave & SE 1st St

AM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	15.0	5.0	5.0	15.0	
Minimum Split (s)	9.5	22.5		9.5	22.5	22.5	9.5	22.5	9.5	22.5	22.5	
Total Split (s)	9.5	22.5		12.0	25.0	22.5	45.5	23.0	12.0	22.5	22.5	
Total Split (%)	9.3%	22.0%		11.7%	24.4%	22.0%	44.4%	22.4%	11.7%	22.0%	22.0%	
Maximum Green (s)	5.0	18.0		7.5	20.5	18.0	41.0	18.5	7.5	18.0	18.0	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max		None	Max	Max	None	C-Max	None	Max	Max	
Walk Time (s)		7.0			7.0	7.0		7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0	11.0		11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0		0		0	0	
Act Effct Green (s)	5.0	18.0		7.5	22.4	44.9	8.0	41.0	53.0	18.0	55.3	
Actuated g/C Ratio	0.05	0.18		0.07	0.22	0.44	0.08	0.40	0.52	0.18	0.54	
v/c Ratio	0.44	0.39		1.03	0.70	0.09	0.31	0.22	0.28	0.25	0.23	
Control Delay	56.1	32.2		112.9	48.3	1.2	49.9	20.8	2.4	38.8	12.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	56.1	32.2		112.9	48.3	1.2	49.9	20.8	2.4	38.8	12.9	
LOS	E	C		F	D	A	D	C	A	D	B	
Approach Delay		37.7			70.5			15.0			16.8	
Approach LOS		D			E			B			B	
Queue Length 50th (ft)	24	60		~94	176	0	27	68	0	43	73	
Queue Length 95th (ft)	44	87		#152	242	3	55	90	26	78	98	
Internal Link Dist (ft)		607			2563			1064			1224	
Turn Bay Length (ft)												
Base Capacity (vph)	167	633		251	407	756	708	1415	945	310	1856	
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	0.44	0.39		1.03	0.70	0.09	0.06	0.22	0.28	0.25	0.23	

Intersection Summary			
Area Type:	Other		
Cycle Length: 102.5			
Actuated Cycle Length: 102.5			
Offset: 0 (0%), Referenced to phase 4:NBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.03			
Intersection Signal Delay: 35.5		Intersection LOS: D	
Intersection Capacity Utilization 48.0%		ICU Level of Service A	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.

Lanes, Volumes, Timings
NE 192nd Ave & SE 1st St

AM PEAK

Queue shown is maximum after two cycles.

Splits and Phases: 3:

Lanes, Volumes, Timings
NE Friberg St & NW Lake Rd

AM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	179	1	0	303	9	0	0	0	14	0	32
Future Volume (vph)	19	179	1	0	303	9	0	0	0	14	0	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999				0.850						0.850
Flt Protected	0.950										0.950	
Satd. Flow (prot)	1770	3536	0	0	3539	1583	0	1863	0	0	1770	1583
Flt Permitted	0.536										0.757	
Satd. Flow (perm)	998	3536	0	0	3539	1583	0	1863	0	0	1410	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				36						38
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2643			4666			279			633	
Travel Time (s)		60.1			106.0			6.3			14.4	
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
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	23	214	1	0	362	11	0	0	0	17	0	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	215	0	0	362	11	0	0	0	0	17	38
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA			NA	Perm				Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5
Total Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%	50.0%
Maximum Green (s)	18.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	4.5	4.5			4.5	4.5		4.5			4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0	11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	0
Act Effct Green (s)	18.0	18.0			18.0	18.0					18.0	18.0
Actuated g/C Ratio	0.40	0.40			0.40	0.40					0.40	0.40
v/c Ratio	0.06	0.15			0.26	0.02					0.03	0.06
Control Delay	8.9	9.0			10.5	3.0					8.4	3.9
Queue Delay	0.0	0.0			0.0	0.0					0.0	0.0

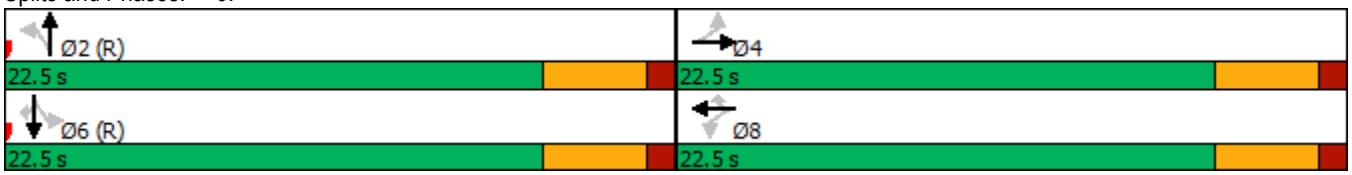
Lanes, Volumes, Timings
NE 192nd Ave & SE 1st St

AM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	8.9	9.0			10.5	3.0					8.4	3.9
LOS	A	A			B	A					A	A
Approach Delay		9.0			10.3						5.3	
Approach LOS		A			B						A	
Queue Length 50th (ft)	4	17			30	0					3	0
Queue Length 95th (ft)	14	33			58	m0					11	12
Internal Link Dist (ft)		2563			4586			199			553	
Turn Bay Length (ft)												
Base Capacity (vph)	399	1415			1415	654					564	656
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	0.06	0.15			0.26	0.02					0.03	0.06

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.26			
Intersection Signal Delay: 9.4		Intersection LOS: A	
Intersection Capacity Utilization 29.0%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 6:



Lanes, Volumes, Timings
NW Parker St & NW Lake Rd

AM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	19	171	212	85	286	3	157	15	82	8	40	32
Future Volume (vph)	19	171	212	85	286	3	157	15	82	8	40	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.998			0.873			0.934	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	3532	0	1770	1626	0	1770	1740	0
Flt Permitted	0.544			0.630			0.701			0.682		
Satd. Flow (perm)	1013	1863	1583	1174	3532	0	1306	1626	0	1270	1740	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			253		3			98			38	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		4666			452			981			831	
Travel Time (s)		106.0			10.3			22.3			18.9	
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
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	23	204	253	102	342	4	188	18	98	10	48	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	23	204	253	102	346	0	188	116	0	10	86	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0		18.0	18.0	
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40		0.40	0.40		0.40	0.40	
v/c Ratio	0.06	0.27	0.32	0.22	0.24		0.36	0.16		0.02	0.12	
Control Delay	9.9	10.7	4.7	10.4	9.5		12.0	3.9		8.4	6.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	

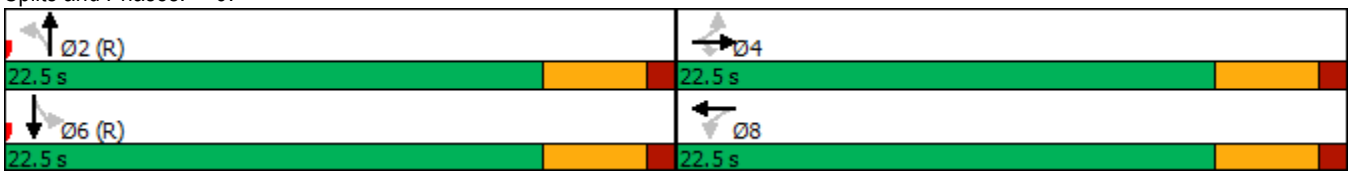
Lanes, Volumes, Timings
NW Parker St & NW Lake Rd

AM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	9.9	10.7	4.7	10.4	9.5		12.0	3.9		8.4	6.1	
LOS	A	B	A	B	A		B	A		A	A	
Approach Delay		7.5			9.7			8.9			6.3	
Approach LOS		A			A			A			A	
Queue Length 50th (ft)	3	29	0	16	29		32	3		2	7	
Queue Length 95th (ft)	15	69	36	41	50		70	24		8	26	
Internal Link Dist (ft)		4586			372			901			751	
Turn Bay Length (ft)												
Base Capacity (vph)	405	745	785	469	1414		522	709		508	718	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.06	0.27	0.32	0.22	0.24		0.36	0.16		0.02	0.12	

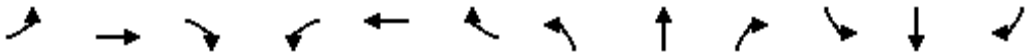
Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.36			
Intersection Signal Delay: 8.5		Intersection LOS: A	
Intersection Capacity Utilization 42.6%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 9:



Lanes, Volumes, Timings
NE 192nd Ave & SE 1st St

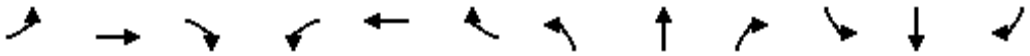
PM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	209	71	363	291	95	83	543	243	73	244	69
Future Volume (vph)	180	209	71	363	291	95	83	543	243	73	244	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	280		0	330		1000	200		220	270		0
Storage Lanes	2		0	2		1	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	0.95	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.962				0.850			0.850		0.967	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3405	0	3433	1863	1583	1770	3539	1583	1770	3422	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	3405	0	3433	1863	1583	1770	3539	1583	1770	3422	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		42				65			287		39	
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		687			2643			1144			1304	
Travel Time (s)		11.7			45.1			19.5			22.2	
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
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	213	247	84	429	344	112	98	642	287	86	289	82
Shared Lane Traffic (%)												
Lane Group Flow (vph)	213	331	0	429	344	112	98	642	287	86	371	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	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	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	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	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6	3	7	4	1	3	8	

Lanes, Volumes, Timings
NE 192nd Ave & SE 1st St

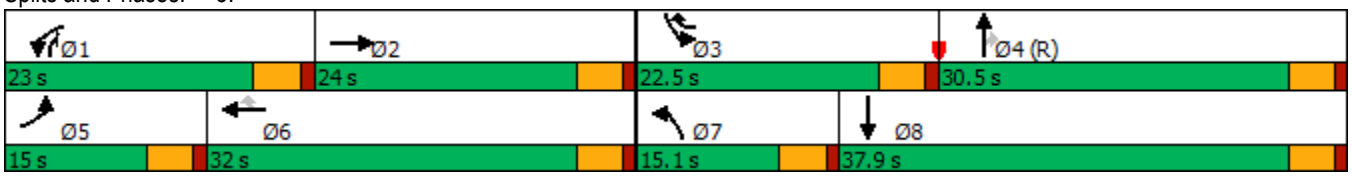
PM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases						6			4			
Detector Phase	5	2		1	6	3	7	4	1	3	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	15.0	5.0	5.0	15.0	
Minimum Split (s)	9.5	22.5		9.5	22.5	22.5	9.5	22.5	9.5	22.5	22.5	
Total Split (s)	15.0	24.0		23.0	32.0	22.5	15.1	30.5	23.0	22.5	37.9	
Total Split (%)	15.0%	24.0%		23.0%	32.0%	22.5%	15.1%	30.5%	23.0%	22.5%	37.9%	
Maximum Green (s)	10.5	19.5		18.5	27.5	18.0	10.6	26.0	18.5	18.0	33.4	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max		None	Max	Max	None	C-Max	None	Max	Max	
Walk Time (s)		7.0			7.0	7.0		7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0	11.0		11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0		0		0	0	
Act Effct Green (s)	10.0	21.3		16.7	28.0	50.5	9.5	26.0	47.2	18.0	36.7	
Actuated g/C Ratio	0.10	0.21		0.17	0.28	0.50	0.10	0.26	0.47	0.18	0.37	
v/c Ratio	0.62	0.44		0.75	0.66	0.13	0.58	0.70	0.32	0.27	0.29	
Control Delay	51.5	32.2		48.2	39.1	6.7	57.3	38.2	2.7	38.0	21.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	51.5	32.2		48.2	39.1	6.7	57.3	38.2	2.7	38.0	21.7	
LOS	D	C		D	D	A	E	D	A	D	C	
Approach Delay		39.8			39.4			30.1			24.8	
Approach LOS		D			D			C			C	
Queue Length 50th (ft)	68	85		134	195	15	60	194	0	48	81	
Queue Length 95th (ft)	105	130		184	294	43	113	257	41	93	120	
Internal Link Dist (ft)		607			2563			1064			1224	
Turn Bay Length (ft)	280			330		1000	200		220	270		
Base Capacity (vph)	360	758		635	521	831	187	920	922	318	1280	
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	0.59	0.44		0.68	0.66	0.13	0.52	0.70	0.31	0.27	0.29	

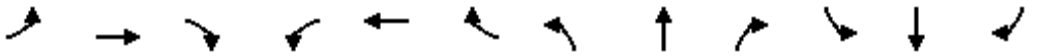
Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 4:NBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 33.9		Intersection LOS: C	
Intersection Capacity Utilization 58.5%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3:



Lanes, Volumes, Timings
NE Friberg St & NW Lake Rd

PM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	35	512	0	0	324	15	0	0	0	14	0	35
Future Volume (vph)	35	512	0	0	324	15	0	0	0	14	0	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850						0.850
Flt Protected	0.950										0.950	
Satd. Flow (prot)	1770	3539	0	0	3539	1583	0	1863	0	0	1770	1583
Flt Permitted	0.523										0.757	
Satd. Flow (perm)	974	3539	0	0	3539	1583	0	1863	0	0	1410	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						36						42
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2643			4666			279			633	
Travel Time (s)		60.1			106.0			6.3			14.4	
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
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	42	612	0	0	387	18	0	0	0	17	0	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	42	612	0	0	387	18	0	0	0	0	17	42
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		36			36			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA			NA	Perm				Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5
Total Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%	50.0%
Maximum Green (s)	18.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	4.5	4.5			4.5	4.5		4.5			4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0	11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	0
Act Effct Green (s)	18.0	18.0			18.0	18.0					18.0	18.0
Actuated g/C Ratio	0.40	0.40			0.40	0.40					0.40	0.40
v/c Ratio	0.11	0.43			0.27	0.03					0.03	0.06
Control Delay	9.4	11.0			9.4	3.2					8.4	3.8
Queue Delay	0.0	0.0			0.0	0.0					0.0	0.0

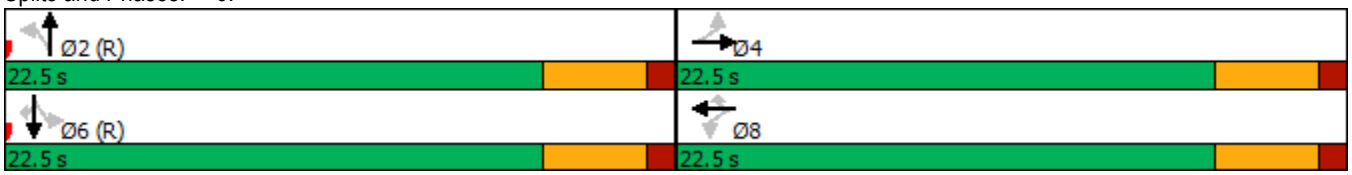
Lanes, Volumes, Timings
NE Friberg St & NW Lake Rd

PM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	9.4	11.0			9.4	3.2					8.4	3.8
LOS	A	B			A	A					A	A
Approach Delay		10.9			9.1						5.1	
Approach LOS		B			A						A	
Queue Length 50th (ft)	6	56			27	0					3	0
Queue Length 95th (ft)	21	90			53	m1					11	12
Internal Link Dist (ft)		2563			4586			199			553	
Turn Bay Length (ft)												
Base Capacity (vph)	389	1415			1415	654					564	658
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	0.11	0.43			0.27	0.03					0.03	0.06

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 9.9		Intersection LOS: A	
Intersection Capacity Utilization 40.8%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 6:



Lanes, Volumes, Timings
NW Parker St & NW Lake Rd

PM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	485	235	43	291	11	239	22	66	5	18	43
Future Volume (vph)	45	485	235	43	291	11	239	22	66	5	18	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.995			0.887			0.895	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	3522	0	1770	1652	0	1770	1667	0
Flt Permitted	0.536			0.239			0.709			0.689		
Satd. Flow (perm)	998	1863	1583	445	3522	0	1321	1652	0	1283	1667	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			281		10			79			51	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		4666			452			981			831	
Travel Time (s)		106.0			10.3			22.3			18.9	
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
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	54	580	281	51	348	13	286	26	79	6	22	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	54	580	281	51	361	0	286	105	0	6	73	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0		18.0	18.0	
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40		0.40	0.40		0.40	0.40	
v/c Ratio	0.14	0.78	0.35	0.29	0.26		0.54	0.15		0.01	0.10	
Control Delay	16.1	28.4	8.4	14.5	9.4		15.1	4.4		8.3	4.8	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	

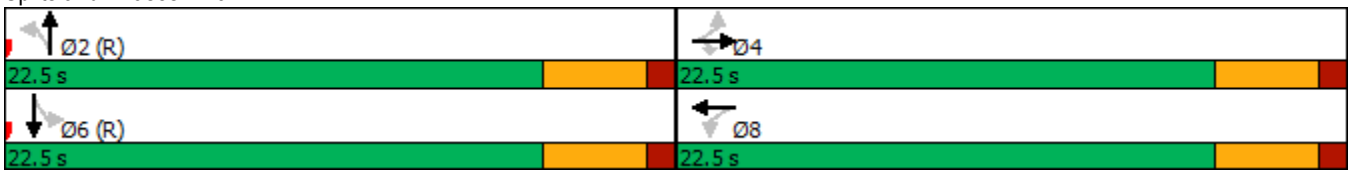
Lanes, Volumes, Timings
NW Parker St & NW Lake Rd

PM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	16.1	28.4	8.4	14.5	9.4		15.1	4.4		8.3	4.8	
LOS	B	C	A	B	A		B	A		A	A	
Approach Delay		21.5			10.0			12.2			5.1	
Approach LOS		C			A			B			A	
Queue Length 50th (ft)	11	141	0	8	30		53	4		1	3	
Queue Length 95th (ft)	m31	#255	67	30	52		111	24		6	20	
Internal Link Dist (ft)		4586			372			901			751	
Turn Bay Length (ft)												
Base Capacity (vph)	399	745	801	178	1414		528	708		513	697	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.14	0.78	0.35	0.29	0.26		0.54	0.15		0.01	0.10	

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 55			
Control Type: Pretimed			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 16.1		Intersection LOS: B	
Intersection Capacity Utilization 64.7%		ICU Level of Service C	
Analysis Period (min) 15			
# 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.			

Splits and Phases: 9:



Appendix E

2023 With Project Level of Services

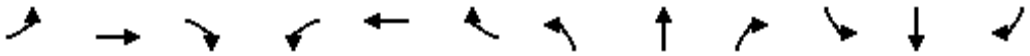
Lanes, Volumes, Timings
3: SE 192nd Ave & SE 1st St

AM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	55	136	50	220	214	51	32	232	224	57	244	73
Future Volume (vph)	55	136	50	220	214	51	32	232	224	57	244	73
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	0.97	0.95	0.95	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.960				0.850			0.850		0.965	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3398	0	3433	1863	1583	1770	3539	1583	1770	3415	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	3398	0	3433	1863	1583	1770	3539	1583	1770	3415	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		45				112			300		33	
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		687			2643			1144			1304	
Travel Time (s)		11.7			45.1			19.5			22.2	
Peak Hour Factor	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82	0.82
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	74	182	67	295	287	68	43	311	300	76	327	98
Shared Lane Traffic (%)												
Lane Group Flow (vph)	74	249	0	295	287	68	43	311	300	76	425	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	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	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	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	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6	3	7	4	1	3	8	
Permitted Phases						6			4			
Detector Phase	5	2		1	6	3	7	4	1	3	8	
Switch Phase												

Lanes, Volumes, Timings
3: SE 192nd Ave & SE 1st St

AM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	15.0	5.0	5.0	15.0	
Minimum Split (s)	9.5	22.5		9.5	22.5	22.5	9.5	22.5	9.5	22.5	22.5	
Total Split (s)	9.5	22.5		12.0	25.0	22.5	45.5	23.0	12.0	22.5	22.5	
Total Split (%)	9.3%	22.0%		11.7%	24.4%	22.0%	44.4%	22.4%	11.7%	22.0%	22.0%	
Maximum Green (s)	5.0	18.0		7.5	20.5	18.0	41.0	18.5	7.5	18.0	18.0	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max		None	Max	Max	None	C-Max	None	Max	Max	
Walk Time (s)		7.0			7.0	7.0		7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0	11.0		11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0		0		0	0	
Act Effct Green (s)	5.0	18.0		7.5	22.4	44.9	8.0	41.0	53.0	18.0	55.3	
Actuated g/C Ratio	0.05	0.18		0.07	0.22	0.44	0.08	0.40	0.52	0.18	0.54	
v/c Ratio	0.44	0.39		1.18	0.71	0.09	0.31	0.22	0.31	0.25	0.23	
Control Delay	56.1	32.5		155.1	48.8	1.2	49.9	20.8	2.5	38.8	12.9	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	56.1	32.5		155.1	48.8	1.2	49.9	20.8	2.5	38.8	12.9	
LOS	E	C		F	D	A	D	C	A	D	B	
Approach Delay		37.9			92.1			14.3			16.8	
Approach LOS		D			F			B			B	
Queue Length 50th (ft)	24	62		~119	179	0	27	68	0	43	73	
Queue Length 95th (ft)	44	89		#178	244	3	55	90	27	78	98	
Internal Link Dist (ft)		607			2563			1064			1224	
Turn Bay Length (ft)												
Base Capacity (vph)	167	633		251	407	756	708	1415	963	310	1856	
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	0.44	0.39		1.18	0.71	0.09	0.06	0.22	0.31	0.25	0.23	

Intersection Summary			
Area Type:	Other		
Cycle Length: 102.5			
Actuated Cycle Length: 102.5			
Offset: 0 (0%), Referenced to phase 4:NBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.18			
Intersection Signal Delay: 42.2		Intersection LOS: D	
Intersection Capacity Utilization 48.2%		ICU Level of Service A	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.

Lanes, Volumes, Timings
3: SE 192nd Ave & SE 1st St

AM PEAK

Queue shown is maximum after two cycles.

Splits and Phases: 3: SE 192nd Ave & SE 1st St

Lanes, Volumes, Timings
6: SE 1st St/NW Lake Rd & NE Fridberg Struck

AM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	57	179	1	0	338	9	0	0	0	31	0	32
Future Volume (vph)	57	179	1	0	338	9	0	0	0	31	0	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.999				0.850						0.850
Flt Protected	0.950										0.950	
Satd. Flow (prot)	1770	3536	0	0	3539	1583	0	1863	0	0	1770	1583
Flt Permitted	0.514										0.757	
Satd. Flow (perm)	957	3536	0	0	3539	1583	0	1863	0	0	1410	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		1				36						38
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2643			4666			279			633	
Travel Time (s)		60.1			106.0			6.3			14.4	
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
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	68	214	1	0	404	11	0	0	0	37	0	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	68	215	0	0	404	11	0	0	0	0	37	38
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA			NA	Perm				Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5
Total Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%	50.0%
Maximum Green (s)	18.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	4.5	4.5			4.5	4.5		4.5			4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0	11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	0
Act Effct Green (s)	18.0	18.0			18.0	18.0					18.0	18.0
Actuated g/C Ratio	0.40	0.40			0.40	0.40					0.40	0.40
v/c Ratio	0.18	0.15			0.29	0.02					0.07	0.06
Control Delay	10.3	9.0			10.5	2.9					8.8	3.9
Queue Delay	0.0	0.0			0.0	0.0					0.0	0.0

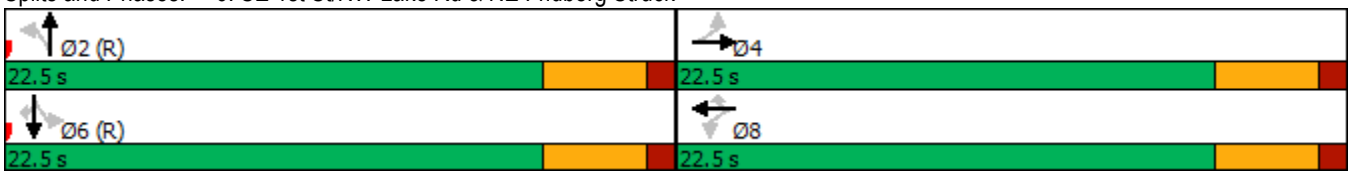
Lanes, Volumes, Timings
6: SE 1st St/NW Lake Rd & NE Fridberg Struck

AM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	10.3	9.0			10.5	2.9					8.8	3.9
LOS	B	A			B	A					A	A
Approach Delay		9.3			10.3						6.3	
Approach LOS		A			B						A	
Queue Length 50th (ft)	11	17			34	0					6	0
Queue Length 95th (ft)	30	33			64	m0					18	12
Internal Link Dist (ft)		2563			4586			199			553	
Turn Bay Length (ft)												
Base Capacity (vph)	382	1415			1415	654					564	656
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	0.18	0.15			0.29	0.02					0.07	0.06

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.29			
Intersection Signal Delay: 9.6		Intersection LOS: A	
Intersection Capacity Utilization 31.2%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 6: SE 1st St/NW Lake Rd & NE Fridberg Struck



Lanes, Volumes, Timings
9: NW Larkspur & NW Lake Rd

AM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	20	174	222	85	289	3	168	15	82	8	40	33
Future Volume (vph)	20	174	222	85	289	3	168	15	82	8	40	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.998			0.873			0.933	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	3532	0	1770	1626	0	1770	1738	0
Flt Permitted	0.542			0.628			0.701			0.682		
Satd. Flow (perm)	1010	1863	1583	1170	3532	0	1306	1626	0	1270	1738	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			265		3			98			39	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		4666			452			981			831	
Travel Time (s)		106.0			10.3			22.3			18.9	
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
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	24	208	265	102	346	4	201	18	98	10	48	39
Shared Lane Traffic (%)												
Lane Group Flow (vph)	24	208	265	102	350	0	201	116	0	10	87	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0		18.0	18.0	
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40		0.40	0.40		0.40	0.40	
v/c Ratio	0.06	0.28	0.33	0.22	0.25		0.39	0.16		0.02	0.12	
Control Delay	9.7	10.5	4.5	10.4	9.5		12.3	3.9		8.4	6.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	

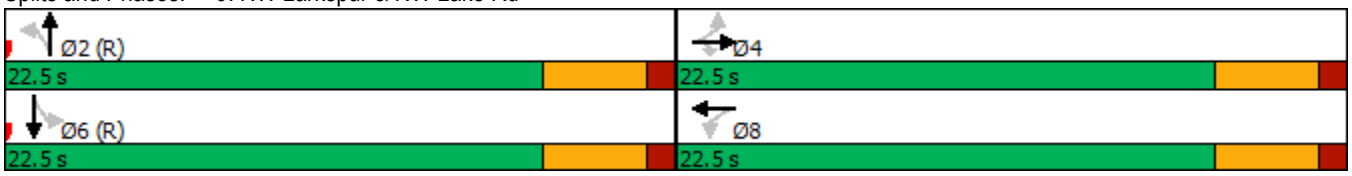
Lanes, Volumes, Timings
9: NW Larkspur & NW Lake Rd

AM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	9.7	10.5	4.5	10.4	9.5		12.3	3.9		8.4	6.1	
LOS	A	B	A	B	A		B	A		A	A	
Approach Delay		7.3			9.7			9.2			6.3	
Approach LOS		A			A			A			A	
Queue Length 50th (ft)	3	30	0	16	29		35	3		2	7	
Queue Length 95th (ft)	15	70	35	41	51		75	24		8	26	
Internal Link Dist (ft)		4586			372			901			751	
Turn Bay Length (ft)												
Base Capacity (vph)	404	745	792	468	1414		522	709		508	718	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.06	0.28	0.33	0.22	0.25		0.39	0.16		0.02	0.12	

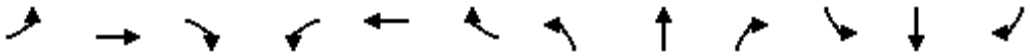
Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.39			
Intersection Signal Delay: 8.5		Intersection LOS: A	
Intersection Capacity Utilization 43.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 9: NW Larkspur & NW Lake Rd



Lanes, Volumes, Timings
3: NE 192nd Ave & SE 1st St

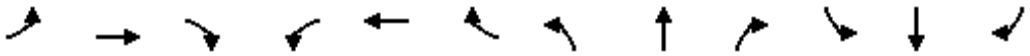
PM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	180	212	71	388	294	95	83	543	272	73	244	69
Future Volume (vph)	180	212	71	388	294	95	83	543	272	73	244	69
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	280		0	330		1000	200		220	270		0
Storage Lanes	2		0	2		1	1		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.97	0.95	0.95	0.97	1.00	1.00	1.00	0.95	1.00	1.00	0.95	0.95
Frt		0.962				0.850			0.850		0.967	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	3433	3405	0	3433	1863	1583	1770	3539	1583	1770	3422	0
Flt Permitted	0.950			0.950			0.950			0.950		
Satd. Flow (perm)	3433	3405	0	3433	1863	1583	1770	3539	1583	1770	3422	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		41				65			322		39	
Link Speed (mph)		40			40			40			40	
Link Distance (ft)		687			2643			1144			1304	
Travel Time (s)		11.7			45.1			19.5			22.2	
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
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	213	251	84	459	348	112	98	642	322	86	289	82
Shared Lane Traffic (%)												
Lane Group Flow (vph)	213	335	0	459	348	112	98	642	322	86	371	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		24			24			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	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	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	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	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Prot	NA		Prot	NA	pm+ov	Prot	NA	pm+ov	Prot	NA	
Protected Phases	5	2		1	6	3	7	4	1	3	8	

Lanes, Volumes, Timings
3: NE 192nd Ave & SE 1st St

PM PEAK

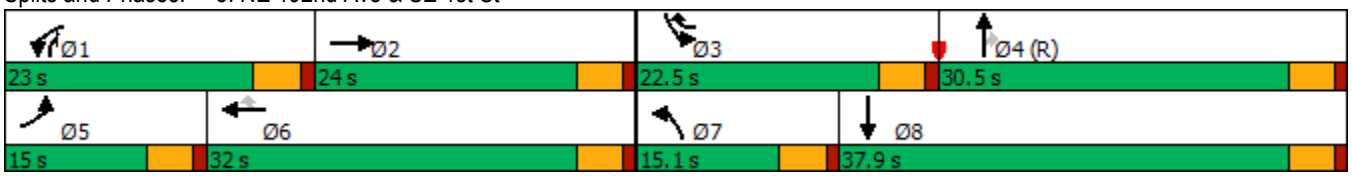


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases						6			4			
Detector Phase	5	2		1	6	3	7	4	1	3	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0	5.0	5.0	15.0	5.0	5.0	15.0	
Minimum Split (s)	9.5	22.5		9.5	22.5	22.5	9.5	22.5	9.5	22.5	22.5	
Total Split (s)	15.0	24.0		23.0	32.0	22.5	15.1	30.5	23.0	22.5	37.9	
Total Split (%)	15.0%	24.0%		23.0%	32.0%	22.5%	15.1%	30.5%	23.0%	22.5%	37.9%	
Maximum Green (s)	10.5	19.5		18.5	27.5	18.0	10.6	26.0	18.5	18.0	33.4	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.5	4.5		4.5	4.5	4.5	4.5	4.5	4.5	4.5	4.5	
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lead	Lag	Lead	Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	Max		None	Max	Max	None	C-Max	None	Max	Max	
Walk Time (s)		7.0			7.0	7.0		7.0		7.0	7.0	
Flash Dont Walk (s)		11.0			11.0	11.0		11.0		11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0		0		0	0	
Act Effct Green (s)	10.0	20.8		17.2	28.0	50.5	9.5	26.0	47.7	18.0	36.7	
Actuated g/C Ratio	0.10	0.21		0.17	0.28	0.50	0.10	0.26	0.48	0.18	0.37	
v/c Ratio	0.62	0.45		0.78	0.67	0.13	0.58	0.70	0.35	0.27	0.29	
Control Delay	51.5	32.9		49.4	39.4	6.7	57.3	38.2	2.8	38.0	21.7	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	51.5	32.9		49.4	39.4	6.7	57.3	38.2	2.8	38.0	21.7	
LOS	D	C		D	D	A	E	D	A	D	C	
Approach Delay		40.1			40.4			29.2			24.8	
Approach LOS		D			D			C			C	
Queue Length 50th (ft)	68	87		143	198	15	60	194	0	48	81	
Queue Length 95th (ft)	105	132		197	298	43	113	257	43	93	120	
Internal Link Dist (ft)		607			2563			1064			1224	
Turn Bay Length (ft)	280			330		1000	200		220	270		
Base Capacity (vph)	360	741		635	521	831	187	920	939	318	1280	
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	0.59	0.45		0.72	0.67	0.13	0.52	0.70	0.34	0.27	0.29	

Intersection Summary			
Area Type:	Other		
Cycle Length: 100			
Actuated Cycle Length: 100			
Offset: 0 (0%), Referenced to phase 4:NBT, Start of Green			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 34.0		Intersection LOS: C	
Intersection Capacity Utilization 58.6%		ICU Level of Service B	
Analysis Period (min) 15			

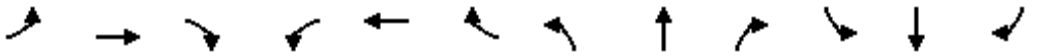
Lanes, Volumes, Timings
3: NE 192nd Ave & SE 1st St

Splits and Phases: 3: NE 192nd Ave & SE 1st St



Lanes, Volumes, Timings
6: SE 1st St/NW Lake Rd & NE Frodnerg Strunk

PM PEAK



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	512	0	0	358	15	0	0	0	30	0	35
Future Volume (vph)	73	512	0	0	358	15	0	0	0	30	0	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt						0.850						0.850
Flt Protected	0.950										0.950	
Satd. Flow (prot)	1770	3539	0	0	3539	1583	0	1863	0	0	1770	1583
Flt Permitted	0.503										0.757	
Satd. Flow (perm)	937	3539	0	0	3539	1583	0	1863	0	0	1410	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)						36						42
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		2643			4666			279			633	
Travel Time (s)		60.1			106.0			6.3			14.4	
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
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	87	612	0	0	428	18	0	0	0	36	0	42
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	612	0	0	428	18	0	0	0	0	36	42
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		36			36			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA			NA	Perm				Perm	NA	Perm
Protected Phases		4			8			2			6	
Permitted Phases	4			8		8	2			6		6
Minimum Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5
Total Split (s)	22.5	22.5		22.5	22.5	22.5	22.5	22.5		22.5	22.5	22.5
Total Split (%)	50.0%	50.0%		50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%	50.0%
Maximum Green (s)	18.0	18.0		18.0	18.0	18.0	18.0	18.0		18.0	18.0	18.0
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5		3.5	3.5	3.5
All-Red Time (s)	1.0	1.0		1.0	1.0	1.0	1.0	1.0		1.0	1.0	1.0
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0			0.0	0.0
Total Lost Time (s)	4.5	4.5			4.5	4.5		4.5			4.5	4.5
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0		7.0	7.0	7.0	7.0	7.0		7.0	7.0	7.0
Flash Dont Walk (s)	11.0	11.0		11.0	11.0	11.0	11.0	11.0		11.0	11.0	11.0
Pedestrian Calls (#/hr)	0	0		0	0	0	0	0		0	0	0
Act Effct Green (s)	18.0	18.0			18.0	18.0					18.0	18.0
Actuated g/C Ratio	0.40	0.40			0.40	0.40					0.40	0.40
v/c Ratio	0.23	0.43			0.30	0.03					0.06	0.06
Control Delay	11.0	11.0			9.3	3.1					8.8	3.8
Queue Delay	0.0	0.0			0.0	0.0					0.0	0.0

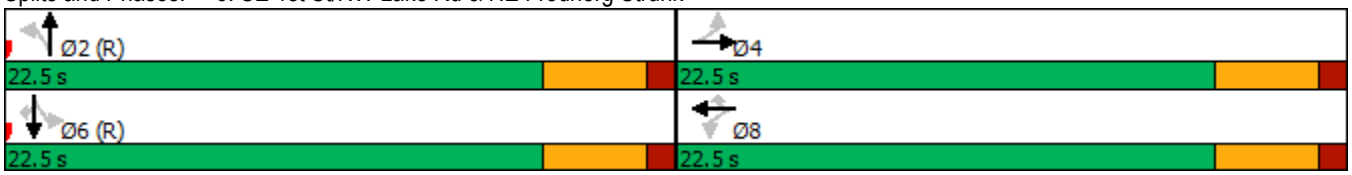
Lanes, Volumes, Timings
6: SE 1st St/NW Lake Rd & NE Frodnerg Strunk

PM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	11.0	11.0			9.3	3.1					8.8	3.8
LOS	B	B			A	A					A	A
Approach Delay		11.0			9.1						6.1	
Approach LOS		B			A						A	
Queue Length 50th (ft)	14	56			30	0					5	0
Queue Length 95th (ft)	38	90			57	m1					18	12
Internal Link Dist (ft)		2563			4586			199			553	
Turn Bay Length (ft)												
Base Capacity (vph)	374	1415			1415	654					564	658
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	0.23	0.43			0.30	0.03					0.06	0.06

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 45			
Control Type: Pretimed			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 10.0		Intersection LOS: A	
Intersection Capacity Utilization 41.9%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 6: SE 1st St/NW Lake Rd & NE Frodnerg Strunk



Lanes, Volumes, Timings
9: NW Lake Rd & NW Larkspur

PM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	488	245	43	289	11	251	22	66	5	18	44
Future Volume (vph)	46	488	245	43	289	11	251	22	66	5	18	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.850		0.995			0.887			0.894	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1863	1583	1770	3522	0	1770	1652	0	1770	1665	0
Flt Permitted	0.537			0.236			0.708			0.689		
Satd. Flow (perm)	1000	1863	1583	440	3522	0	1319	1652	0	1283	1665	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)			293		10			79			53	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		4666			452			981			831	
Travel Time (s)		106.0			10.3			22.3			18.9	
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
Growth Factor	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%	110%
Adj. Flow (vph)	55	583	293	51	346	13	300	26	79	6	22	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	55	583	293	51	359	0	300	105	0	6	75	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			12			12	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Turn Type	Perm	NA	Perm	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4		4	8			2			6		
Minimum Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (s)	22.5	22.5	22.5	22.5	22.5		22.5	22.5		22.5	22.5	
Total Split (%)	50.0%	50.0%	50.0%	50.0%	50.0%		50.0%	50.0%		50.0%	50.0%	
Maximum Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.5	3.5	3.5	3.5	3.5		3.5	3.5		3.5	3.5	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.5	4.5	4.5	4.5	4.5		4.5	4.5		4.5	4.5	
Lead/Lag												
Lead-Lag Optimize?												
Walk Time (s)	7.0	7.0	7.0	7.0	7.0		7.0	7.0		7.0	7.0	
Flash Dont Walk (s)	11.0	11.0	11.0	11.0	11.0		11.0	11.0		11.0	11.0	
Pedestrian Calls (#/hr)	0	0	0	0	0		0	0		0	0	
Act Effct Green (s)	18.0	18.0	18.0	18.0	18.0		18.0	18.0		18.0	18.0	
Actuated g/C Ratio	0.40	0.40	0.40	0.40	0.40		0.40	0.40		0.40	0.40	
v/c Ratio	0.14	0.78	0.36	0.29	0.25		0.57	0.15		0.01	0.11	
Control Delay	16.0	28.4	8.2	14.6	9.4		15.7	4.4		8.3	4.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0		0.0	0.0		0.0	0.0	

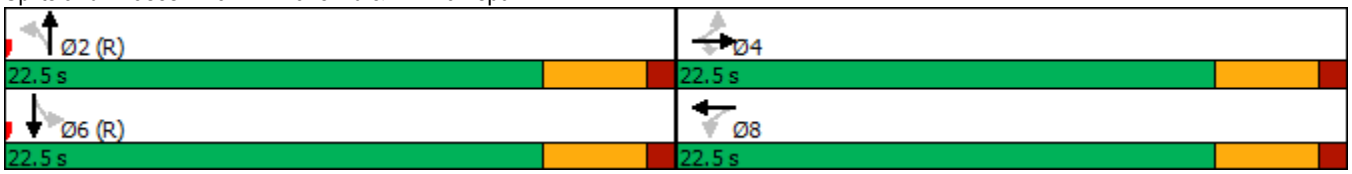
Lanes, Volumes, Timings
9: NW Lake Rd & NW Larkspur

PM PEAK

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Delay	16.0	28.4	8.2	14.6	9.4		15.7	4.4		8.3	4.7	
LOS	B	C	A	B	A		B	A		A	A	
Approach Delay		21.3			10.0			12.8			5.0	
Approach LOS		C			B			B			A	
Queue Length 50th (ft)	11	142	0	8	30		57	4		1	3	
Queue Length 95th (ft)	m31	#258	67	30	51		118	24		6	20	
Internal Link Dist (ft)		4586			372			901			751	
Turn Bay Length (ft)												
Base Capacity (vph)	400	745	809	176	1414		527	708		513	697	
Starvation Cap Reductn	0	0	0	0	0		0	0		0	0	
Spillback Cap Reductn	0	0	0	0	0		0	0		0	0	
Storage Cap Reductn	0	0	0	0	0		0	0		0	0	
Reduced v/c Ratio	0.14	0.78	0.36	0.29	0.25		0.57	0.15		0.01	0.11	

Intersection Summary			
Area Type:	Other		
Cycle Length: 45			
Actuated Cycle Length: 45			
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Green			
Natural Cycle: 55			
Control Type: Pretimed			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 16.2		Intersection LOS: B	
Intersection Capacity Utilization 65.6%		ICU Level of Service C	
Analysis Period (min) 15			
# 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.			

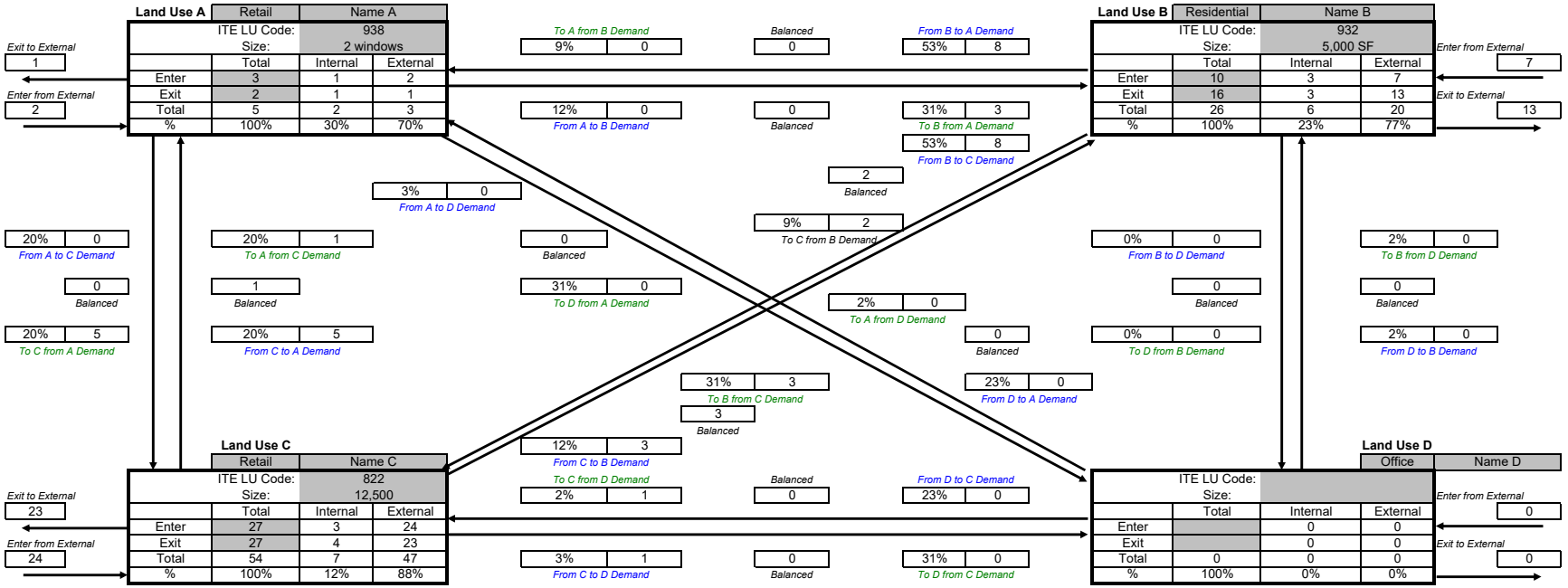
Splits and Phases: 9: NW Lake Rd & NW Larkspur



Appendix F

Internal Capture Rate Worksheet

Street PM Peak Internal Capture Rate Worksheet



Net External Trips for Multi-Use Development

	Name A	Name B	Name C	Name D	Total	
Enter	2	7	24	0	33	
Exit	1	13	23	0	38	
Total	3	20	47	0	71	INTERNAL CAPTURE
Single-Use	5	26	54	0	85	17%
Single-use %	0.302	0.23230769	0.12092593			

Internal Capture Rates for Trip Origins

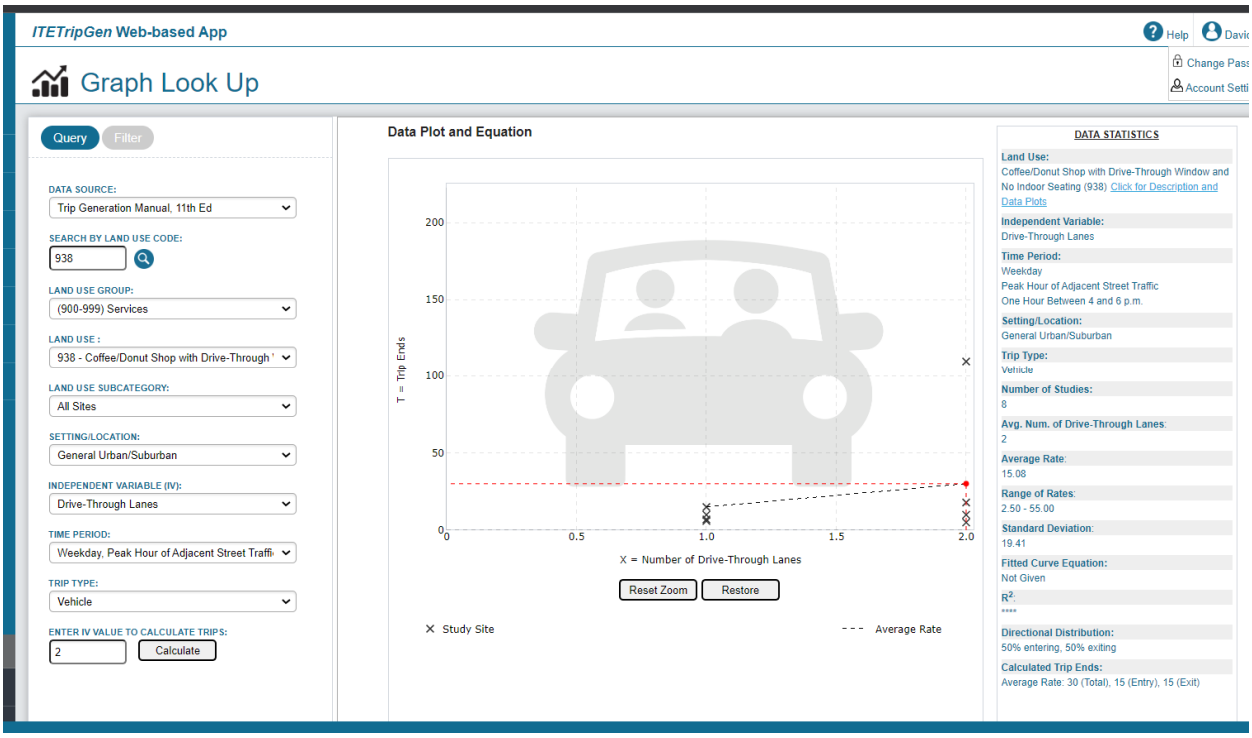
		Mid-day Peak	PM Peak of Street	Daily
from OFFICE	to Office	2%	1%	2%
	to Retail	20%	23%	22%
	to Residential	0%	2%	2%
from RETAIL	to Office	3%	3%	3%
	to Retail	29%	20%	30%
	to Residential	7%	12%	11%
from RESIDENTIAL	to Office	0%	0%	0%
	to Retail	34%	53%	38%
	to Residential	0%	0%	0%

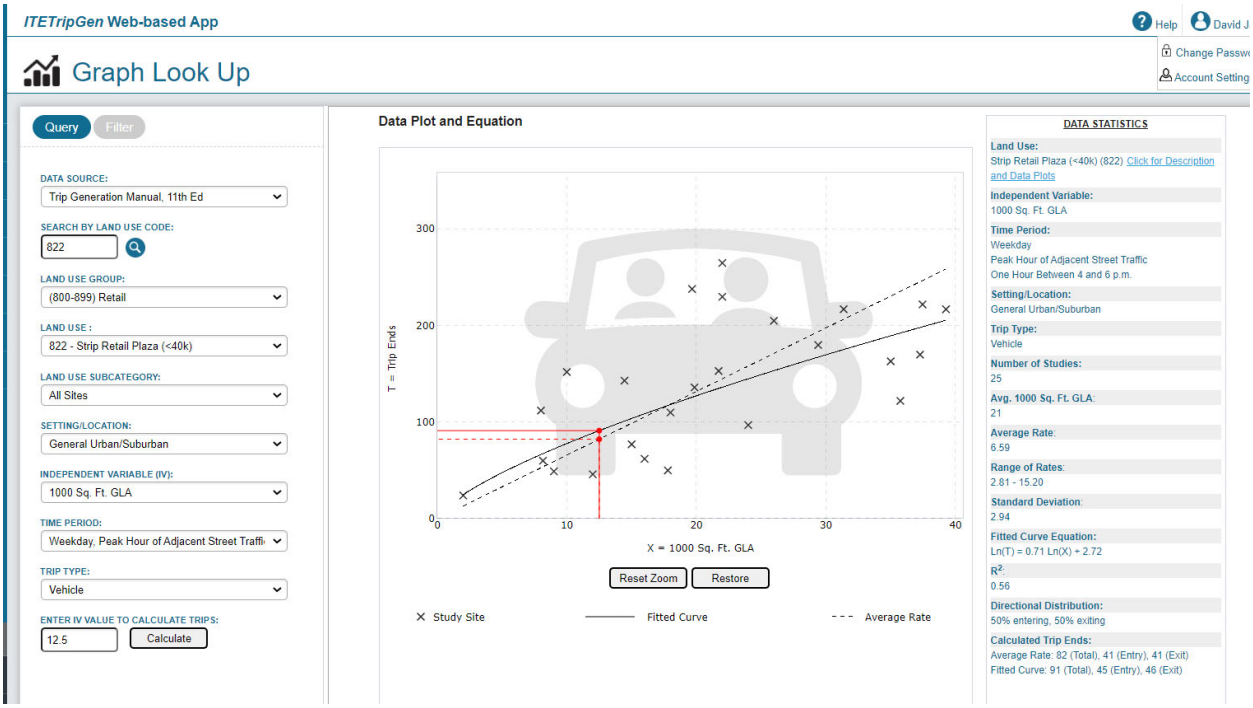
Internal Capture Rates for Trip Destinations

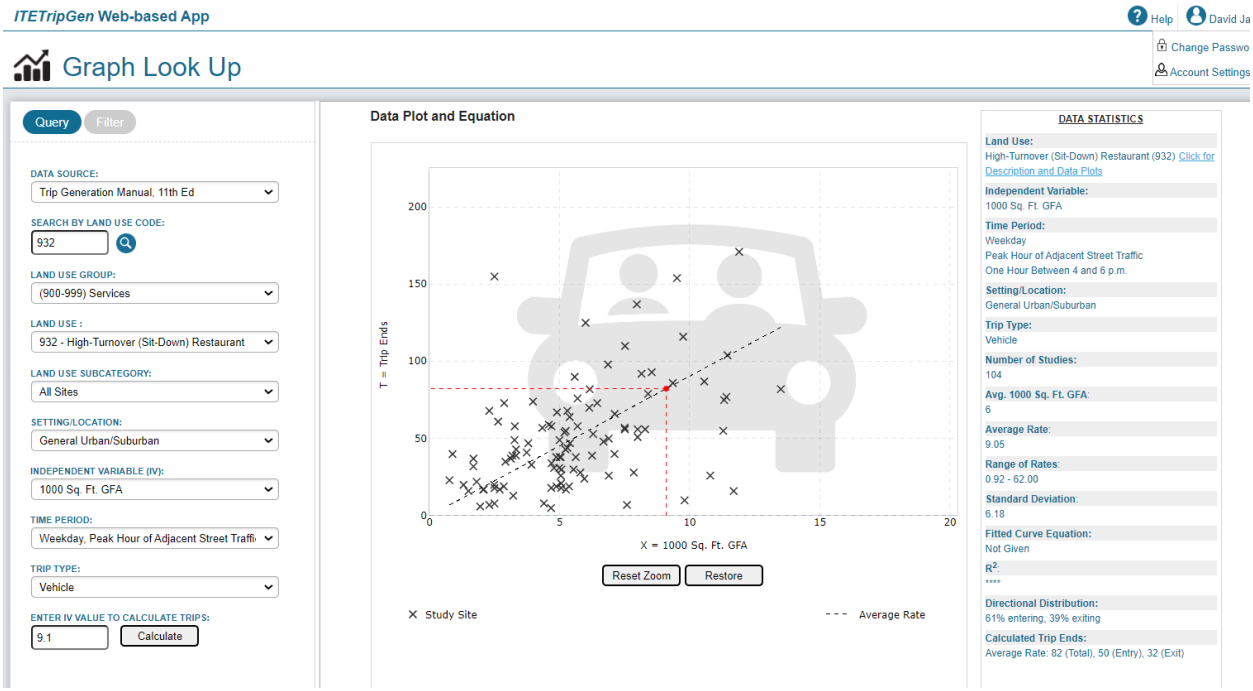
		Mid-day Peak	PM Peak of Street	Daily
to OFFICE	from Office	6%	6%	2%
	from Retail	38%	31%	15%
	from Residential	0%	0%	0%
to RETAIL	from Office	4%	2%	4%
	from Retail	31%	20%	28%
	from Residential	5%	9%	9%
to RESIDENTIAL	from Office	0%	2%	3%
	from Retail	37%	31%	33%
	from Residential	0%	0%	0%

Appendix G

PM Peak Trip Calculcation


ITETripGen Web-based App
Help
Graph Look Up
Change Pass
Account Setti
Query
Filter
DATA SOURCE:
Trip Generation Manual, 11th Ed
SEARCH BY LAND USE CODE:
938
LAND USE GROUP:
(900-999) Services
LAND USE :
938 - Coffee/Donut Shop with Drive-Through
LAND USE SUBCATEGORY:
All Sites
SETTING/LOCATION:
General Urban/Suburban
INDEPENDENT VARIABLE (IV):
Drive-Through Lanes
TIME PERIOD:
Weekday, Peak Hour of Adjacent Street Traffi
TRIP TYPE:
Vehicle
ENTER IV VALUE TO CALCULATE TRIPS:
2
Calculate
Data Plot and Equation
T = Trip Ends
X = Number of Drive-Through Lanes
Reset Zoom
Restore
Study Site
Average Rate
DATA STATISTICS
Land Use:
Coffee/Donut Shop with Drive-Through Window and No Indoor Seating (938) Click for Description and Data Plots
Independent Variable:
Drive-Through Lanes
Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.
Setting/Location:
General Urban/Suburban
Trip Type:
Vehicle
Number of Studies:
8
Avg. Num. of Drive-Through Lanes:
2
Average Rate:
15.08
Range of Rates:
2.50 - 55.00
Standard Deviation:
19.41
Fitted Curve Equation:
Not Given
R²:
Directional Distribution:
50% entering, 50% exiting
Calculated Trip Ends:
Average Rate: 30 (Total), 15 (Entry), 15 (Exit)


ITETripGen Web-based App
Help
David J
Graph Look Up
Change Passw
Account Setting
Query
Filter
DATA SOURCE:
Trip Generation Manual, 11th Ed
SEARCH BY LAND USE CODE:
822
LAND USE GROUP:
(800-899) Retail
LAND USE :
822 - Strip Retail Plaza (<40k)
LAND USE SUBCATEGORY:
All Sites
SETTING/LOCATION:
General Urban/Suburban
INDEPENDENT VARIABLE (IV):
1000 Sq. Ft. GLA
TIME PERIOD:
Weekday, Peak Hour of Adjacent Street Traffi
TRIP TYPE:
Vehicle
ENTER IV VALUE TO CALCULATE TRIPS:
12.5
Calculate
Data Plot and Equation
T = Trip Ends
X = 1000 Sq. Ft. GLA
Reset Zoom
Restore
Study Site
Fitted Curve
Average Rate
DATA STATISTICS
Land Use:
Strip Retail Plaza (<40k) (822) Click for Description and Data Plots
Independent Variable:
1000 Sq. Ft. GLA
Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.
Setting/Location:
General Urban/Suburban
Trip Type:
Vehicle
Number of Studies:
25
Avg. 1000 Sq. Ft. GLA:
21
Average Rate:
6.59
Range of Rates:
2.81 - 15.20
Standard Deviation:
2.94
Fitted Curve Equation:
Ln(T) = 0.71 Ln(X) + 2.72
R²:
0.56
Directional Distribution:
50% entering, 50% exiting
Calculated Trip Ends:
Average Rate: 82 (Total), 41 (Entry), 41 (Exit)
Fitted Curve: 91 (Total), 45 (Entry), 46 (Exit)


ITETripGen Web-based App
Help
David Ja
Change Passwo
Account Settings
Graph Look Up
Query
Filter
DATA SOURCE:
Trip Generation Manual, 11th Ed
SEARCH BY LAND USE CODE:
932
LAND USE GROUP:
(900-999) Services
LAND USE :
932 - High-Turnover (Sit-Down) Restaurant
LAND USE SUBCATEGORY:
All Sites
SETTING/LOCATION:
General Urban/Suburban
INDEPENDENT VARIABLE (IV):
1000 Sq. Ft. GFA
TIME PERIOD:
Weekday, Peak Hour of Adjacent Street Traffi
TRIP TYPE:
Vehicle
ENTER IV VALUE TO CALCULATE TRIPS:
9.1
Calculate
Data Plot and Equation
T = Trip Ends
X = 1000 Sq. Ft. GFA
Reset Zoom
Restore
Study Site
Average Rate
DATA STATISTICS
Land Use:
High-Turnover (Sit-Down) Restaurant (932) Click for Description and Data Plots
Independent Variable:
1000 Sq. Ft. GFA
Time Period:
Weekday
Peak Hour of Adjacent Street Traffic
One Hour Between 4 and 6 p.m.
Setting/Location:
General Urban/Suburban
Trip Type:
Vehicle
Number of Studies:
104
Avg. 1000 Sq. Ft. GFA:
6
Average Rate:
9.05
Range of Rates:
0.92 - 62.00
Standard Deviation:
6.18
Fitted Curve Equation:
Not Given
R2:
****
Directional Distribution:
61% entering, 39% exiting
Calculated Trip Ends:
Average Rate: 82 (Total), 50 (Entry), 32 (Exit)

COMMUNITY DEVELOPMENT DEPARTMENT
616 NE 4th Avenue
Camas, WA 98607
www.ci.camas.wa.us

Date Published: August 25, 2022

To Whom It May Concern:

Please find enclosed a Mitigated Determination of Non-Significance (MDNS) for **Oak Tree Station (SEPA22-09)** that was issued pursuant to the State Environmental Policy Act (SEPA) Rules, Chapter 197-11, Washington Administrative Code. The enclosed review comments reflect evaluation of the environmental checklist by the lead agency as required by WAC 197-11-330(1)(a)(i).

The following materials were submitted with the initial application:

- General application form and fee
- Applicant's narrative
- Site drawings and architectural elevations
- Traffic Report
- Tree Survey
- SEPA checklist
- Preliminary Stormwater Report
- Geotechnical Report

All application materials are available for review upon request from the Community Development Department.

Written comments may be submitted on this determination within fourteen (14) days of its issuance, after which the MDNS will be reconsidered in light of the comments received.

Please address all correspondence to:

City of Camas, SEPA Official
Community Development Department
616 NE Fourth Avenue
Camas, Washington 98607
communitydevelopment@cityofcamas.us

Distribution:

Applicant
Bureau of Indian Affairs
C-Tran
Camas School District
Camas Building Official, Brian Smith
Camas Communications Director, Bryan Rachal
Camas Engineering Department Managers and Staff
Camas Fire Department, Randy Miller
Camas Finance Director, Cathy Huber Nickerson
Camas Interim Community Development Director, Robert Maul
Camas Interim Mayor and City Council Members
Camas Parks and Recreation, Trang Lam
Camas Planning Manager and Staff
Camas Police Chief, Mitch Lackey
Camas Public Works Director, Steve Wall
Camas Public Library, Connie Urquhart
Camas-Washougal Post Record
Chinook Indian Nation
Cultural Resource Program, Cowlitz Indian Tribe
Cultural Resource Program, Yakama Indian Nation
Clark County Department of Environmental Services
Clark County Department of Transportation
Clark County Natural Resources Council
Clark Public Utilities
Department of Ecology
Department of Fish and Wildlife, Region 5
Department of Natural Resources, SEPA Center
Southwest Clean Air Agency
US Army Corps of Engineers
Vancouver - Clark Parks & Recreation
Washington Office of Archaeology & Historic Preservation
Washington State Department of Transportation
Washington State Parks and Recreation Commission, Environmental Program
Property Owners within 300 feet *(mailed the SEPA Determination & map)*

Site Plan for Oak Tree Station (CUP22-01)

State Environmental Policy Act
Mitigated Determination of Non-Significance

CASE NO: SEPA 22-09 Camas Food Cart Station

APPLICANT: Paul Williams
6168 NE HWY 99
Vancouver, WA 98665

REQUEST: Construction of an indoor/outdoor eating area with food carts, a drive-thru coffee shop, and a 12,574 square foot commercial building.

Location: Corner of NW Lake Road and NW Friberg-Strunk

Legal Description: SE ¼ of Section 29 Township 2 North, Range 3 East, Camas, WA, Parcel Number: 176162000.

SEPA Determination: Mitigated Determination of Non-Significance (MDNS)

Comment Deadline: **September 8, 2022, at 5:00 p.m.**

As lead agency under the State Environmental Policy Act (SEPA) Rules [Chapter 197-11, Washington Administrative Code (WAC)], the City of Camas must determine if there are possible significant adverse environmental impacts associated with this proposal. The options include the following:

- DS = Determination of Significance (The impacts cannot be mitigated through conditions of approval and, therefore, requiring the preparation of an Environmental Impact Statement (EIS).
- MDNS = Mitigated Determination of Non-Significance (The impacts can be addressed through conditions of approval), or;
- DNS = Determination of Non-Significance (The impacts can be addressed by applying the Camas Municipal Code).

Published in the Post Record on August 25, 2022 Legal Publication # 718310
Posted at Camas City Hall, Camas Library, City of Camas web site at: http://www.cityofcamas.us
Mailed to property owners within 300-feet on August 24, 2022

Determination:

Mitigated Determination of Non-Significance (MDNS). The City of Camas, as lead agency for review of this proposal, has determined that this proposal does not have a probable significant adverse impact on the environment. An Environmental Impact Statement (EIS) is not required under RCW 43.21C.030(2)(e). This decision was made after review of a completed environmental checklist, and other information on file with the City of Camas.

Date of Publication & Comment Period:

Publication date of this MDNS is **August 25, 2022 and** is issued under WAC 197-11-350. The lead agency will not act on this proposal until the close of the 14-day comment period, which ends on **September 8, 2022**. Comments may be sent by email to communitydevelopment@cityofcamas.us or regular mail to:

City of Camas SEPA Official
Community Development Department
616 NE Fourth Avenue
Camas, Washington 98607

Responsible Official: Robert Maul (360) 817-1568

Robert Maul, Interim Community Development Director and Responsible SEPA Official

August 25, 2022
Date of publication

SEPA Mitigation Measure for Camas Station (SEPA22-09)

The City of Camas has identified impacts by the proposed project that requires mitigation. In addition to the requirement that the development must comply with all City of Camas zoning and development regulations, the following SEPA condition of approval applies:

Traffic and Transportation
Per the Camas Design Standards Manual (CDSM), a Transportation Impact Study is required for the proposed development. A preliminary Traffic Impact Analysis (TIA) was prepared and submitted by the applicant's Engineer. The preliminary TIA was provided to the City of Vancouver's (COV) Sr. Civil Engineer for Streets & Transportation; and Clark County's Traffic Concurrency Engineer, for review comments.

City of Vancouver:
Based on the City of Vancouver's review of the preliminary TIA, the following comment was provided:

The assumption is that "a significant percentage of the 80 PM peak hour trips generated by this site will be traveling to/from the west along SE 1st Street to 192nd Ave and will therefore have an impact on the City of Vancouver's street system. The City of Vancouver does not need additional intersection analysis, but it is crucial that we capture the fees necessary to mitigate the impacts to our proportionate share projects." ***A condition is warranted.***

Condition: The applicant shall be required to provide trip distribution analysis identifying the number of PM peak hour trips being distributed to the following proportionate share intersections so that the City of Vancouver can calculate the necessary proportionate share fees for intersections noted in the Table below:

Proportionate Share Project Name	Fee Rate	Number of Trips	Proportionate Share Cost
NE 192nd Ave & NE 13th St	$400 per PM peak hour trip		
SE 192nd Ave & SE 34th St	$150 per PM peak hour trip		
192nd Ave & SR-14 ramp terminals	$2,000 per PM peak hour trip		
Total Proportionate Share Cost			**$XXXX**

Clark County:
Review comments have not been received from Clark County's Concurrency Engineer, however, when comments are received, they will be addressed in the final staff report for CUP22-01.

ENGINEERING
NORTHWEST PLLC

SEPA ENVIRONMENTAL CHECKLIST

Purpose of checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

Instructions for applicants:

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals:

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

A. Background [HELP]

1. Name of proposed project, if applicable:

Oak Tree Station

2. Name of applicant:

Oak Tree Station LLC

3. Address and phone number of applicant and contact person:

Paul Williams 6168 NE HWY 99, Vancouver WA, 98665 (360)931-3122

4. Date checklist prepared:

January 24th, 2022

5. Agency requesting checklist:

City of Camas

6. Proposed timing or schedule (including phasing, if applicable):

Construction would likely begin upon approval and procurements of all applicable reviews and permits

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

No plans at this time

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal. This project will impact and mitigate the existing wetland in the southwest corner of the project. One large Oregon White Oak onsite which will remain.

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain. None

10. List any government approvals or permits that will be needed for your proposal, if known. None

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

Oak Tree Station will supply the Camas area with a wide variety of food from around the world & drinks that are local experience. Oak Tree station will also offering amazing Tap Beer / Wine / Cider Cart that operates year round. Why limit yourself to one restaurant when you can have over 20 restaurants at your fingertips.
Oak Tree Station will be will provide indoor and outdoor eating area. The indoor eating area will be design to capture nature lighting into a large open dinner area. The focus point for the outdoor dinner area is the large existing white Oak which the patio area stretches too. The outdoor eating area will included a covered area and uncover area from the sunny warm days. Our family friendly astrosphere ensures that you and your entire family will have an enjoyable experience.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you

are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

B. Environmental Elements [HELP]

1. *Earth* [help]

a. General description of the site: The iste is 14.0 in size and slopes from the middle of the side to the east and west

(circle one): Flat, rolling, hilly, steep slopes, mountainous, other _____

b. What is the steepest slope on the site (approximate percent slope)? The approximate steepest slope is 5%

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils. The navitve soil on site is silty loam

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe. No surface indication or history of undatable soils in the immediate vicinity

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.

Site grading to construct building pads, parking, and other associated improvments. Preliminary estimates show that the site may require more than 3,000 cubic yards of fill. Fill will be imported from an approved site.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Yes, erosion could occur if adequate measure were not implement. Stormwater and Erosion Control Plans will be prepared and implemented by the applicant, which will meet or exceed he requiremens imposed by the City of Camas Code.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Approximately 55% of the site will be covered with impervious surfaces after construction.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

The project will implement temporary erosion conrol measures during the construction to precent silt-laden stormwater from leaving he project site. These will meet the City of Camas and DOE standards. All disturbed area will be planted with permanent vegetation to minimize long term erosion. The project will also construct a stormwater infiliration facility that will meet he City of Camas stormwater code. Refer to preliminary development plan for information regarding stormwater and erosion conrol.

2. *Air* [help]

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

Short term exhaust emissions and dust generated from construction equipment are expected. Long term impacts include standard vehicle emissions. Other emission sourse include building emissions from heating, ventilation and air conditioning.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

No offsite sources of emissions or odors exist that would adversely affect the proposed development

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

Water will be utilized for dust control as needed during construction as well as the implementation of all local, state and federal regulations. The construction of the building will comply with standards of the Environmental Protection Agency and all other applicable local, state and federal standards.

3. Water [help]

a. Surface Water: [help]

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.
To the far east is a small seasonal stream on the adjacent parcel.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

No

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

None

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

No

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

No

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

No

b. Ground Water: [help]

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.

No groundwater will withdraw from a well for drinking water. This project will connect to public water and sewer. The storm water plan for this project proposes the uses of storm filters to treat storm water.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.
None

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

This project proposes to use storm filter catch basin to collection, treat and depose of the storm water runoff. Calculations and information regarding the drainage facilities are included in the Preliminary Stromwater Report.

2) Could waste materials enter ground or surface waters? If so, generally describe.
No

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe. This project will maintain existing drainage patterns a flow discharge. See project stormwater technical report

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

This proposal will meet or exceed City of Camas water quality and quantity standards provided for by the City of Camas Storm water Ordinance. This project may implement Department of Ecology approved Chitosan chemical treatment of runoff during construction. At treatment levels used, any residual trace of Chitosan in the treated stromwater is negligible and results in no negative impacts for downstream fish or riparian habitats.

4. Plants [help]

a. Check the types of vegetation found on the site:

__x__deciduous tree: alder, maple, aspen, other
__x__evergreen tree: fir, cedar, pine, other
__x__shrubs
__x__grass
__x__pasture
____crop or grain
____ Orchards, vineyards or other permanent crops.
___ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
____water plants: water lily, eelgrass, milfoil, other
__x__other types of vegetation

b. What kind and amount of vegetation will be removed or altered?
All vegetation will be removed form areas depicted for the future buildings, parking, utilities and other on site improvements during construction activates as shown on the Preliminary Site Plan unless otherwise shown to remain on the Preliminary Landscape Plan.

c. List threatened and endangered species known to be on or near the site.
None to the Applicant's knowledge.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:
A landscaping plan, with the proposed use of native plants, will be prepared for the site as required by City of Camas Code.

e. List all noxious weeds and invasive species known to be on or near the site.
None to the Applicant's knowledge

5. Animals [help]

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site.

Examples include:

birds: hawk, heron, eagle, songbirds, other:
mammals: deer, bear, elk, beaver, other:
fish: bass, salmon, trout, herring, shellfish, other _____
Songbirds and rodents

b. List any threatened and endangered species known to be on or near the site.
None to the Applicant's knowledge

c. Is the site part of a migration route? If so, explain. No

d. Proposed measures to preserve or enhance wildlife, if any:
Landscaping, which includes trees, shrubs and groundcovers, will be installed that will provide some habitat for wildlife.

e. List any invasive animal species known to be on or near the site.
None to the Applicant's knowledge

6. Energy and Natural Resources [help]

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc. This project will meet Washington state energy compliance standards

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:
All construction on the site will be designed to comply with the state adopted codes and policies related to energy conservation.

7. Environmental Health [help]

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

1) Describe any known or possible contamination at the site from present or past uses.
None to the Applicant's knowledge

2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.
None to the Applicant's knowledge

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.
None to the Applicant's knowledge

4) Describe special emergency services that might be required.

Additional police and fire/emergency may be required. No special emergency services will be required.

5) Proposed measures to reduce or control environmental health hazards, if any:

The Applicant will comply with applicable local, state and federal regulations during construction and operation of the project. All construction will be inspected according to industry requirements and standards.

b. Noise

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?
Existing traffic noise from adjacent roadways exist, but it should not affect the proposed project.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.
Development of the site would create short-term construction noise. Costomers will create vehicle noise in the long-term.

3) Proposed measures to reduce or control noise impacts, if any:
Construction activities will not occur after 8:00 p.m. or before 7 a.m

8. Land and Shoreline Use [help]

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe. No existing single family homes on-site.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated, how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use? No

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how:
None to the applicant's knowledge

c. Describe any structures on the site. Three existing single family homes and outbuildings

d. Will any structures be demolished? If so, what?
None to the applicant's knowledge

e. What is the current zoning classification of the site? development are zoned Community Commercial

f. What is the current comprehensive plan designation of the site? zoned Community Commercial

g. If applicable, what is the current shoreline master program designation of the site?
None to the applicant's knowledge

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.
No

i. Approximately how many people would reside or work in the completed project? 50 employees

j. Approximately how many people would the completed project displace?
None

j. Proposed measures to avoid or reduce displacement impacts, if any:
None

L. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:
The proposed use is consistent with the comprehensive plan and exisisting zoning

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any:
None

9. Housing [help]

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing. None

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing. No existing homes onsite

c. Proposed measures to reduce or control housing impacts, if any:
None

10. Aesthetics [help]

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

It is estimated that the buildings will be 26 feet tall. The principle exterior building materials will be hardi plank and other materials.

b. What views in the immediate vicinity would be altered or obstructed?
Views across the site may be obstructed with the construction of the buidings

b. Proposed measures to reduce or control aesthetic impacts, if any:
Landscaping and artichtectural elements

11. Light and Glare [help]

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?
Typical commercial parkng lot and building lighting will occur in the nighttime hours.

b. Could light or glare from the finished project be a safety hazard or interfere with views?
The installation of illuminated materials will minimize dispersion on the site and will not conistute a safety hazard

c. What existing off-site sources of light or glare may affect your proposal?
There are some amounts of light level gnereated off site but they are unlikely to affect the proposal

d. Proposed measures to reduce or control light and glare impacts, if any:
The lighting plan for the proposal will be designed to minimize off site glare

12. Recreation [help]

a. What designated and informal recreational opportunities are in the immediate vicinity?
Walking trail located around the outdoor eating area

b. Would the proposed project displace any existing recreational uses? If so, describe.
None

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:
None

13. Historic and cultural preservation [help]

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers ? If so, specifically describe.
None

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

There are no known historic, archaeological, scientific or cultural evidence or landmarks on or next to the site.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

If any cultural artifacts are discovered during construction on the site, all development will cease and all appropriate federal, state, county and tribal agencies will be contacted.

14. Transportation [help]

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any. This project will access NW Friberg-Strunk Street which is a public street

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop? No public transit system in the area

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate? 97 parking stalls

d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private). The project will access onto NW Friberg-Strunk Street which fronts the project. Currently frontage improvements exist along NW Friberg-Strunk Street and SE 1st Street.

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe. None

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates? This project will generate 1,400 daily vehicular trips. Small percent will be deliver trucks. Data used to estimate traffic generation is Institute of Transportation Engeering manual

g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe. No

h. Proposed measures to reduce or control transportation impacts, if any: This project will pay City of Camas traffic impact fees

15. Public Services [help]

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.

The need for additional fire/emergency and police protection may be needed

b. Proposed measures to reduce or control direct impacts on public services, if any.

Provide urban utilities, pay taxes and imact fees

16. Utilities [help]

a. Circle utilities currently available at the site:
electricity, natural gas, ***water***, ***refuse service***, telephone, ***sanitary sewer***, septic system, other _____

c. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

Electricity –Clark Public Utilities
Sewer –City of Camas
Telephone–Qwest
Water –City of Camas
Refuse Service –Waste Connections
Natural Gas –Northwest Natural

C. Signature [HELP]

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: _____

Name of signee Paul Williams P.E.

Position and Agency/Organization Civil Engineer, Engineering Northwest PLLC

Date Submitted: _____

D. Supplemental sheet for nonproject actions [HELP]

(**IT IS NOT NECESSARY** to use this sheet for project actions)

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, be aware of the extent the proposal, or the types of activities likely to result from the proposal, would affect the item at a greater intensity or at a faster rate than if the proposal were not implemented. Respond briefly and in general terms.

1. How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?

Proposed measures to avoid or reduce such increases are:

2. How would the proposal be likely to affect plants, animals, fish, or marine life?

Proposed measures to protect or conserve plants, animals, fish, or marine life are:

3. How would the proposal be likely to deplete energy or natural resources?

Proposed measures to protect or conserve energy and natural resources are:

4. How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection; such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?

Proposed measures to protect such resources or to avoid or reduce impacts are:

5. How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?

Proposed measures to avoid or reduce shoreline and land use impacts are:

6. How would the proposal be likely to increase demands on transportation or public services and utilities?

Proposed measures to reduce or respond to such demand(s) are:

7. Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.

COMMUNITY DEVELOPMENT DEPARTMENT

616 NE 4th Avenue

November 28, 2022

Re: SEPA Addendum to Oak Tree Station (SEPA 22-09)

The Addendum below includes an updated SEPA Checklist submitted by the applicant on November 16, 2022. The SEPA Checklist addresses the Category IV Wetland on site. There was a Wetland Report dated October 13, 2022, by Ecological Land Services that was submitted to the City on November 16, 2022. The updated SEPA Checklist and Wetland Report will not affect the SEPA Mitigated Determination of Non-Significance that was issued on August 25, 2022.

Sincerely,

Madeline Sutherland, AICP
Planner

Addendum

ENGINEERING NORTHWEST PLLC

SEPA ENVIRONMENTAL CHECKLIST

Purpose of checklist:

Governmental agencies use this checklist to help determine whether the environmental impacts of your proposal are significant. This information is also helpful to determine if available avoidance, minimization or compensatory mitigation measures will address the probable significant impacts or if an environmental impact statement will be prepared to further analyze the proposal.

Instructions for applicants:

This environmental checklist asks you to describe some basic information about your proposal. Please answer each question accurately and carefully, to the best of your knowledge. You may need to consult with an agency specialist or private consultant for some questions. You may use "not applicable" or "does not apply" only when you can explain why it does not apply and not when the answer is unknown. You may also attach or incorporate by reference additional studies reports. Complete and accurate answers to these questions often avoid delays with the SEPA process as well as later in the decision-making process.

The checklist questions apply to all parts of your proposal, even if you plan to do them over a period of time or on different parcels of land. Attach any additional information that will help describe your proposal or its environmental effects. The agency to which you submit this checklist may ask you to explain your answers or provide additional information reasonably related to determining if there may be significant adverse impact.

Instructions for Lead Agencies:

Please adjust the format of this template as needed. Additional information may be necessary to evaluate the existing environment, all interrelated aspects of the proposal and an analysis of adverse impacts. The checklist is considered the first but not necessarily the only source of information needed to make an adequate threshold determination. Once a threshold determination is made, the lead agency is responsible for the completeness and accuracy of the checklist and other supporting documents.

Use of checklist for nonproject proposals:

For nonproject proposals (such as ordinances, regulations, plans and programs), complete the applicable parts of sections A and B plus the SUPPLEMENTAL SHEET FOR NONPROJECT ACTIONS (part D). Please completely answer all questions that apply and note that the words "project," "applicant," and "property or site" should be read as "proposal," "proponent," and "affected geographic area," respectively. The lead agency may exclude (for non-projects) questions in Part B - Environmental Elements –that do not contribute meaningfully to the analysis of the proposal.

A. Background [HELP]

1. Name of proposed project, if applicable:

Oak Tree Station

2. Name of applicant:

Oak Tree Station LLC

3. Address and phone number of applicant and contact person:

Paul Williams 6168 NE HWY 99, Vancouver WA, 98665 (360)931-3122

4. Date checklist prepared:

November 16, 2022

5. Agency requesting checklist:

City of Camas

6. Proposed timing or schedule (including phasing, if applicable):

Construction would likely begin upon approval and procurements of all applicable reviews and permits.

7. Do you have any plans for future additions, expansion, or further activity related to or connected with this proposal? If yes, explain.

No plans at this time.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

This project will impact and mitigate the existing wetland in the northeast corner of the project. One large Oregon White Oak onsite which will remain.

9. Do you know whether applications are pending for governmental approvals of other proposals directly affecting the property covered by your proposal? If yes, explain.

None

10. List any government approvals or permits that will be needed for your proposal, if known.

None

11. Give brief, complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)

Oak Tree Station will supply the Camas area with a wide variety of food from around the world & drinks that are local experiences. Oak Tree station will also offer an amazing Tap Beer / Wine / Cider Cart that operates year-round. Why limit yourself to one restaurant when you can have over 20 restaurants at your fingertips.

Oak Tree Station will be will provide indoor and outdoor eating areas. The indoor eating area will be designed to capture natural lighting into a large open dining area. The focus point for the outdoor dining area is the large existing white Oak which the patio area stretches to. The outdoor eating area will include a covered area and an uncovered area for the sunny warm days. Our family-friendly astrosphere ensures that you and your entire family will have an enjoyable experience. The project is also proposing a commercial building which will be located on the north boundary of the project site.

12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township, and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site(s). Provide a legal description, site plan, vicinity map, and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications related to this checklist.

The lcoation is Parcel No. 176162000 located at the northeast corner of NW Freiberg-Strunk St and NW Lake Rd in Camas, WA.

B. Environmental Elements [HELP]

1. *Earth* [help]

a. General description of the site: The iste is 14.0 in size and slopes from the middle of the side to the east and west

(circle one): Flat, rolling, hilly, steep slopes, mountainous, other _____

b. What is the steepest slope on the site (approximate percent slope)?

The approximate steepest slope is 5%

c. What general types of soils are found on the site (for example, clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any agricultural land of long-term commercial significance and whether the proposal results in removing any of these soils.

The navitve soil on site is silty loam.

d. Are there surface indications or history of unstable soils in the immediate vicinity? If so, describe.

No surface indication or history of unstable soils in the immediate vicinity.

e. Describe the purpose, type, total area, and approximate quantities and total affected area of any filling, excavation, and grading proposed. Indicate source of fill.

Site grading to construct building pads, parking, and other associated improvments. Preliminary estimates show that the site may require more than 3,000 cubic yards of fill. Fill will be imported from an approved site.

f. Could erosion occur as a result of clearing, construction, or use? If so, generally describe.

Yes, erosion could occur if adequate measure were not implement.

Stormwater and Erosion Control Plans will be prepared and implemented by the applicant, which will meet or exceed he requirements imposed by the City of Camas Code.

g. About what percent of the site will be covered with impervious surfaces after project construction (for example, asphalt or buildings)?

Approximately 85% of the site will be covered with impervious surfaces after construction.

h. Proposed measures to reduce or control erosion, or other impacts to the earth, if any:

The project will implement temporary erosion control measures during the construction to percent silt-laden stormwater from leaving the project site. These will meet the City of Camas and DOE standards. All disturbed areas will be planted with permanent vegetation to minimize long-term erosion. The project will also construct a stormwater facility that will meet the City of Camas stormwater code. Refer to the preliminary development plan for information regarding stormwater and erosion control.

2. Air [help]

a. What types of emissions to the air would result from the proposal during construction, operation, and maintenance when the project is completed? If any, generally describe and give approximate quantities if known.

Short term exhaust emissions and dust generated from construction equipment are expected. Long term impacts include standard vehicle emissions. Other emission sourse include building emissions from heating, ventilation and air conditioning.

b. Are there any off-site sources of emissions or odor that may affect your proposal? If so, generally describe.

No offsite sources of emissions or odors exist that would adversely affect the proposed development.

c. Proposed measures to reduce or control emissions or other impacts to air, if any:

Water will be utilized for dust control as needed during construction as well as the implementation of all local, state and federal regulations. The construction of the building will comply with standards of the Environmental Protection Agency and all other applicable local, state and federal standards.

3. Water [help]

a. Surface Water: [help]

1) Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, saltwater, lakes, ponds, wetlands)? If yes, describe type and provide names. If appropriate, state what stream or river it flows into.

There is an small Category IV wetland in the northeast portion of the site, as detailed in the Critical Areas Determination provided by Ecological Land Services. About 250 feet off-site to the east is a small seasonal stream on the adjacent parcel.

2) Will the project require any work over, in, or adjacent to (within 200 feet) the described waters? If yes, please describe and attach available plans.

Yes. The small wetland will be displaced by the project.

3) Estimate the amount of fill and dredge material that would be placed in or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.

The estimated amount of fill is 0.02 acres, which will be placed in the northeast portion of the site. This area will become parking, so the source of the fill material will be crushed rock. Mitigation for the displaced wtland will be at the Terrace Mitigiation Bank.

4) Will the proposal require surface water withdrawals or diversions? Give general description, purpose, and approximate quantities if known.

No.

5) Does the proposal lie within a 100-year floodplain? If so, note location on the site plan.

No.

6) Does the proposal involve any discharges of waste materials to surface waters? If so, describe the type of waste and anticipated volume of discharge.

No.

b. Ground Water: [help]

1) Will groundwater be withdrawn from a well for drinking water or other purposes? If so, give a general description of the well, proposed uses and approximate quantities withdrawn from the well. Will water be discharged to groundwater? Give general description, purpose, and approximate quantities if known.

No groundwater will withdraw from a well for drinking water. This project will connect to public water and sewer. The storm water plan for this project proposes the uses of storm filters to treat storm water.

2) Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (for example: Domestic sewage; industrial, containing the following chemicals. . . ; agricultural; etc.). Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans the system(s) are expected to serve.

None.

c. Water runoff (including stormwater):

1) Describe the source of runoff (including storm water) and method of collection and disposal, if any (include quantities, if known). Where will this water flow? Will this water flow into other waters? If so, describe.

This project proposes to use storm filter catch basin to collection, treat and depose of the storm water runoff. Calculations and information regarding the drainage facilities are included in the Preliminary Stromwater Report.

2) Could waste materials enter ground or surface waters? If so, generally describe.

No.

3) Does the proposal alter or otherwise affect drainage patterns in the vicinity of the site? If so, describe.

This project will maintain existing drainage patterns a flow discharge. See project stormwater technical report.

d. Proposed measures to reduce or control surface, ground, and runoff water, and drainage pattern impacts, if any:

This proposal will meet or exceed City of Camas water quality and quantity standards provided for by the City of Camas Storm water Ordinance. This project may implement Department of Ecology approved Chitosan chemical treatment of runoff during construction. At treatment levels used, any residual trace of Chitosan in the treated stromwater is negligible and results in no negative impacts for downstream fish or riparian habitats.

4. Plants [help]

a. Check the types of vegetation found on the site:

__x__deciduous tree: alder, maple, aspen, other
__x__evergreen tree: fir, cedar, pine, other
__x__shrubs
__x__grass
__x__pasture
____crop or grain
____ Orchards, vineyards or other permanent crops.
___ wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
____water plants: water lily, eelgrass, milfoil, other
__x__other types of vegetation

b. What kind and amount of vegetation will be removed or altered?

All vegetation will be removed form areas depicted for the future buildings, parking, utilities and other on site improvements during construction activates as shown on the Preliminary Site Plan unless otherwise shown to remain on the Preliminary Landscape Plan.

c. List threatened and endangered species known to be on or near the site.

None to the Applicant's knowledge.

d. Proposed landscaping, use of native plants, or other measures to preserve or enhance vegetation on the site, if any:

A landscaping plan, with the proposed use of native plants, will be prepared for the site as required by City of Camas Code.

e. List all noxious weeds and invasive species known to be on or near the site.

None to the Applicant's knowledge.

5. Animals [help]

a. List any birds and other animals which have been observed on or near the site or are known to be on or near the site.

Examples include:

birds: hawk, heron, eagle, songbirds, other:
mammals: deer, bear, elk, beaver, other:
fish: bass, salmon, trout, herring, shellfish, other _____

Songbirds and rodents.

b. List any threatened and endangered species known to be on or near the site.

None to the Applicant's knowledge.

c. Is the site part of a migration route? If so, explain.

No.

d. Proposed measures to preserve or enhance wildlife, if any:

Landscaping, which includes trees, shrubs and groundcovers, will be installed that will provide some habitat for wildlife.

e. List any invasive animal species known to be on or near the site.

None to the Applicant's knowledge.

6. Energy and Natural Resources [help]

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

This project will meet Washington state energy compliance standards.

b. Would your project affect the potential use of solar energy by adjacent properties? If so, generally describe.

No.

c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:

All construction on the site will be designed to comply with the state adopted codes and policies related to energy conservation.

7. Environmental Health [help]

a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill, or hazardous waste, that could occur as a result of this proposal? If so, describe.

1) Describe any known or possible contamination at the site from present or past uses.

None to the Applicant's knowledge.

2) Describe existing hazardous chemicals/conditions that might affect project development and design. This includes underground hazardous liquid and gas transmission pipelines located within the project area and in the vicinity.

None to the Applicant's knowledge.

3) Describe any toxic or hazardous chemicals that might be stored, used, or produced during the project's development or construction, or at any time during the operating life of the project.

None to the Applicant's knowledge.

4) Describe special emergency services that might be required.

Additional police and fire/emergency may be required. No special emergency services will be required.

5) Proposed measures to reduce or control environmental health hazards, if any:

The Applicant will comply with applicable local, state and federal regulations during construction and operation of the project. All construction will be inspected according to industry requirements and standards.

b. Noise

1) What types of noise exist in the area which may affect your project (for example: traffic, equipment, operation, other)?

Existing traffic noise from adjacent roadways exist, but it should not affect the proposed project.

2) What types and levels of noise would be created by or associated with the project on a short-term or a long-term basis (for example: traffic, construction, operation, other)? Indicate what hours noise would come from the site.

Development of the site would create short-term construction noise. Costomers will create vehicle noise in the long-term.

3) Proposed measures to reduce or control noise impacts, if any:

Construction activities will not occur after 8:00 p.m. or before 7 a.m.

8. Land and Shoreline Use [help]

a. What is the current use of the site and adjacent properties? Will the proposal affect current land uses on nearby or adjacent properties? If so, describe.

There are no existing single family homes on-site.

b. Has the project site been used as working farmlands or working forest lands? If so, describe. How much agricultural or forest land of long-term commercial significance will be converted to other uses as a result of the proposal, if any? If resource lands have not been designated,

how many acres in farmland or forest land tax status will be converted to nonfarm or nonforest use?

No.

1) Will the proposal affect or be affected by surrounding working farm or forest land normal business operations, such as oversize equipment access, the application of pesticides, tilling, and harvesting? If so, how:

None to the applicant's knowledge.

c. Describe any structures on the site.

None.

d. Will any structures be demolished? If so, what?

None to the applicant's knowledge

e. What is the current zoning classification of the site?

Community Commercial

f. What is the current comprehensive plan designation of the site?

Community Commercial

g. If applicable, what is the current shoreline master program designation of the site?

Not applicable.

h. Has any part of the site been classified as a critical area by the city or county? If so, specify.

No prior classification; however there is an Oregon white oak and a small isolated Class IV wetland, as described in the Critical Areas Determination.

i. Approximately how many people would reside or work in the completed project?

50 employees; no residents.

j. Approximately how many people would the completed project displace?

None.

j. Proposed measures to avoid or reduce displacement impacts, if any:

None.

L. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

The proposed use is consistent with the comprehensive plan and existing zoning.

m. Proposed measures to reduce or control impacts to agricultural and forest lands of long-term commercial significance, if any:

None.

9. Housing [help]

a. Approximately how many units would be provided, if any? Indicate whether high, middle, or low-income housing.

None.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle, or low-income housing.

None.

c. Proposed measures to reduce or control housing impacts, if any:

None.

10. Aesthetics [help]

a. What is the tallest height of any proposed structure(s), not including antennas; what is the principal exterior building material(s) proposed?

It is estimated that the buildings will be 26 feet tall. The principal exterior building materials will be Hardie plank and other materials.

b. What views in the immediate vicinity would be altered or obstructed?

Views across the site may be obstructed with the construction of the buidings.

b. Proposed measures to reduce or control aesthetic impacts, if any:

Landscaping and artichtectural elements, and preservation of the Oregon white oak tree.

11. Light and Glare [help]

a. What type of light or glare will the proposal produce? What time of day would it mainly occur?

Typical commercial parkng lot and building lighting will occur in the nighttime hours.

b. Could light or glare from the finished project be a safety hazard or interfere with views?

The installation of illuminated materials will minimize dispersion on the site and will not conistute a safety hazard.

c. What existing off-site sources of light or glare may affect your proposal?

There are some amounts of light level gnereated off site but they are unlikely to affect the proposal.

d. Proposed measures to reduce or control light and glare impacts, if any:

The lighting plan for the proposal will be designed to minimize off-site glare.

12. Recreation [help]

a. What designated and informal recreational opportunities are in the immediate vicinity?

Walking trail located around the outdoor eating area.

b. Would the proposed project displace any existing recreational uses? If so, describe.

None.

c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:

None.

13. Historic and cultural preservation [help]

a. Are there any buildings, structures, or sites, located on or near the site that are over 45 years old listed in or eligible for listing in national, state, or local preservation registers ? If so, specifically describe.

None.

b. Are there any landmarks, features, or other evidence of Indian or historic use or occupation? This may include human burials or old cemeteries. Are there any material evidence, artifacts, or areas of cultural importance on or near the site? Please list any professional studies conducted at the site to identify such resources.

There are no known historic, archaeological, scientific or cultural evidence or landmarks on or next to the site.

c. Describe the methods used to assess the potential impacts to cultural and historic resources on or near the project site. Examples include consultation with tribes and the department of archeology and historic preservation, archaeological surveys, historic maps, GIS data, etc.

Several methods were used to assess potential impacts to cultural resources, as described in the submitted survey reports, which were obtained from DAHP following consultation with them. Jamie Dudman of DAHP wrote that:

> *"I have searched our GIS and currently we are showing no intersecting archaeological sites and three cultural resource surveys for the parcel 176162000."*

Ms. Dudman's email and the attachments have been provided to the city for the record.

More specifically, two archeological surveys were performed, and accepted by DAHP. The 1998 Cultural Resources Study of the North Dwyer Creek Master Plan Study Area utilized a pedestrian survey and shovel testing. The 2008 Cultural Resources Survey of the Lake Road project utilized walking parallel adjacent transects and sixteen shovel test probes. No cultural resources were found on the subject property.

d. Proposed measures to avoid, minimize, or compensate for loss, changes to, and disturbance to resources. Please include plans for the above and any permits that may be required.

If any cultural artifacts are discovered during construction on the site, all development will cease and all appropriate federal, state, county and tribal agencies will be contacted.

14. Transportation [help]

a. Identify public streets and highways serving the site or affected geographic area and describe proposed access to the existing street system. Show on site plans, if any.

This project will access NW Friberg-Strunk Street which is a public street.

b. Is the site or affected geographic area currently served by public transit? If so, generally describe. If not, what is the approximate distance to the nearest transit stop?

No public transit system in the area.

c. How many additional parking spaces would the completed project or non-project proposal have? How many would the project or proposal eliminate?

97 new parking spaces.

d. Will the proposal require any new or improvements to existing roads, streets, pedestrian, bicycle or state transportation facilities, not including driveways? If so, generally describe (indicate whether public or private).

The project will access onto NW Friberg-Strunk Street which fronts the project. Currently frontage improvements exist along NW Friberg-Strunk Street and SE 1st Street.

e. Will the project or proposal use (or occur in the immediate vicinity of) water, rail, or air transportation? If so, generally describe.

None.

f. How many vehicular trips per day would be generated by the completed project or proposal? If known, indicate when peak volumes would occur and what percentage of the volume would be trucks (such as commercial and nonpassenger vehicles). What data or transportation models were used to make these estimates?

This project will generate 1,400 daily vehicular trips. Small percent will be delivery trucks. Data used to estimate traffic generation is Institute of Transportation Engeering manual.

g. Will the proposal interfere with, affect or be affected by the movement of agricultural and forest products on roads or streets in the area? If so, generally describe.

No.

h. Proposed measures to reduce or control transportation impacts, if any:

This project will pay City of Camas traffic impact fees.

15. Public Services [help]

a. Would the project result in an increased need for public services (for example: fire protection, police protection, public transit, health care, schools, other)? If so, generally describe.

The need for additional fire/emergency and police protection may be needed.

b. Proposed measures to reduce or control direct impacts on public services, if any.

Provide urban utilities, pay taxes and imact fees.

16. Utilities [help]

a. Circle utilities currently available at the site:

electricity, natural gas, ***water***, ***refuse service***, telephone, ***sanitary sewer***, septic system, other _____

c. Describe the utilities that are proposed for the project, the utility providing the service, and the general construction activities on the site or in the immediate vicinity which might be needed.

Electricity –Clark Public Utilities
Sewer –City of Camas

Telephone–Qwest
Water –City of Camas
Refuse Service –Waste Connections
Natural Gas –Northwest Natural

C. Signature [HELP]

The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature: _____

Name of signee James D. Howsley

Position and Agency/Organization Attorney, Jordan Ramis PC

Date Submitted: Nov 16, 2022

D. Supplemental sheet for nonproject actions [HELP]

(**IT IS NOT NECESSARY** to use this sheet for project actions)

Because these questions are very general, it may be helpful to read them in conjunction with the list of the elements of the environment.

When answering these questions, be aware of the extent the proposal, or the types of activities likely to result from the proposal, would affect the item at a greater intensity or at a faster rate than if the proposal were not implemented. Respond briefly and in general terms.

1. How would the proposal be likely to increase discharge to water; emissions to air; production, storage, or release of toxic or hazardous substances; or production of noise?

Proposed measures to avoid or reduce such increases are:

2. How would the proposal be likely to affect plants, animals, fish, or marine life?

Proposed measures to protect or conserve plants, animals, fish, or marine life are:

3. How would the proposal be likely to deplete energy or natural resources?

Proposed measures to protect or conserve energy and natural resources are:

4. How would the proposal be likely to use or affect environmentally sensitive areas or areas designated (or eligible or under study) for governmental protection; such as parks, wilderness, wild and scenic rivers, threatened or endangered species habitat, historic or cultural sites, wetlands, floodplains, or prime farmlands?

Proposed measures to protect such resources or to avoid or reduce impacts are:

5. How would the proposal be likely to affect land and shoreline use, including whether it would allow or encourage land or shoreline uses incompatible with existing plans?

Proposed measures to avoid or reduce shoreline and land use impacts are:

6. How would the proposal be likely to increase demands on transportation or public services and utilities?

Proposed measures to reduce or respond to such demand(s) are:

7. Identify, if possible, whether the proposal may conflict with local, state, or federal laws or requirements for the protection of the environment.

Madeline Sutherland

From: DAHP Record Request (DAHP) <Recordrequest@dahp.wa.gov>
Sent: Monday, October 31, 2022 1:45 PM
To: Joseph Schaefer; DAHP Record Request (DAHP)
Cc: James D. Howsley
Subject: RE: Oak Tree Station Archeology Reports
Attachments: 1344969_Redacted.pdf; 1352033_Redacted.pdf; Exemption Log.pdf

Hi Joseph,

Thank you so much for the Property Request Form and all the documentation. I have searched our GIS and currently we are showing no intersecting archaeological sites and three cultural resource surveys for the parcel 176162000. I redacted archaeological site information when discussed in the surveys under RCW 42.56.300, since these sites are currently not showing as being located on parcel 176162000. This email has 2 surveys and the corresponding exemption log attached. The third survey is too big to include with this email, so I will send it in a separate email.

Please let me know if you have any questions.

Thanks,
Jamie

Best Regards,

Jamie Dudman *(she/her)* | Records Manager
360-515-8416 (c)

Please note that this email and any reply to this message is a public record subject to disclosure under RCW 42.56.

From: Joseph Schaefer <joseph.schaefer@jordanramis.com>
Sent: Friday, October 28, 2022 2:27 PM
To: Dudman, Jamie (DAHP) <Jamie.Dudman@dahp.wa.gov>; DAHP Record Request (DAHP) <Recordrequest@dahp.wa.gov>
Cc: James D. Howsley <jamie.howsley@jordanramis.com>
Subject: RE: Oak Tree Station Archeology Reports

External Email

Ms. Dudman, attached is the completed request form. There is a notation above the signature that authorizes DAHP to send the records to us directly.

Thanks

Joseph Schaefer | Paralegal/Land Use Specialist
Direct: (503) 598-5584

jordanramis.com | (888) 598-7070
Portland Metro | Bend | Vancouver WA

JORDAN RAMIS

DISCLAIMER: This e-mail is for the sole use of the intended recipient(s). It contains information that is confidential and/or legally privileged. If you believe that it has been sent to you in error, please notify the sender by reply e-mail and delete the message. Any disclosure, copying, distribution or use of this information by someone other than the intended recipient is prohibited.

From: Dudman, Jamie (DAHP) <Jamie.Dudman@dahp.wa.gov>
Sent: Friday, October 28, 2022 11:37 AM
To: Joseph Schaefer <joseph.schaefer@jordanramis.com>
Cc: James D. Howsley <jamie.howsley@jordanramis.com>
Subject: RE: Oak Tree Station Archeology Reports

Hi Joseph,

To obtain cultural resource records for a landowner, please fill out the attached Property Request Form, have the landowner sign it, and email it back to me with the requested documentation. If they would like the records released to you, please have them make a notation of that. Let me know if you have any questions.

Thanks,
Jamie

Best Regards,

Jamie Dudman *(she/her)* | Records Manager
Department of Archaeology & Historic Preservation
PO Box 48343 | Olympia, WA 98504-8343
360-515-8416 (c) | www.dahp.wa.gov

My schedule: Monday – Friday, 7:00 AM – 3:30 PM
Please note that this email and any reply to this message is a public record subject to disclosure under RCW 42.56.

From: Joseph Schaefer <joseph.schaefer@jordanramis.com>
Sent: Friday, October 28, 2022 11:28 AM
To: Dudman, Jamie (DAHP) <Jamie.Dudman@dahp.wa.gov>
Cc: James D. Howsley <jamie.howsley@jordanramis.com>
Subject: Oak Tree Station Archeology Reports

External Email

Ms. Dudman:

We represent Oak Tree Station, LLC, the owner of Parcel No. 176162000 in Clark County. This is a vacant 4-acre property at the northeast corner of NW Friberg and NW Lake in Camas.

In speaking with Becca in your office this morning, she indicated that DAHP has two archeological surveys of this property; one from Sept 2021 and another from Sept 2022. She also indicated that you would be able to send us those. Hopefully you can send them as pdfs through email.

Please let us know if you need any other information.

Thanks

Joseph

Joseph Schaefer | Paralegal/Land Use Specialist
Direct: (503) 598-5584

jordanramis.com | (888) 598-7070
Portland Metro | Bend | Vancouver WA

JORDAN RAMIS

TOP WORK PLACES 2022

DISCLAIMER: This e-mail is for the sole use of the intended recipient(s). It contains information that is confidential and/or legally privileged. If you believe that it has been sent to you in error, please notify the sender by reply e-mail and delete the message. Any disclosure, copying, distribution or use of this information by someone other than the intended recipient is prohibited.

Notice of Proposed Devleopment

"Oak Tree Station"

Project Description:

Oak Tree Station will supply the Camas area with a wide variety of food from around the world & drinks that are local experience. Oak Tree station will also offering amazing Tap Beer / Wine / Cider Cart that operates year-round. Why limit yourself to one restaurant when you can have over 20 restaurants at your fingertips. Oak Tree Station will be will provide indoor and outdoor eating areas. The indoor eating area will be design to capture nature lighting into a large open dinner area. The focus point for the outdoor dinner area is the large existing white Oak which the patio area stretches too. The outdoor eating area will include a covered area and uncover area for the sunny warm days. Our family friendly astrosphere ensures that you and your entire family will have an enjoyable experience. The project is also proposing a 12,574 square-foot commercial building which will be located on the project north boundary line.

Applications applied for with City:

Conditional use permit;
Site Plan Approval

Public Hearing Schedule:

(will be filed in 14 or more days prior to a hearing)

Hearing Date/Time: 12-14-22 5:00 PM

Hearing Location: 616 NE 4th Ave.,
Camas, WA 98607

For information regarding this project contact::

Applicant contact: Paul Williams,
Engineering Northwest PLLC
6168 NE HWY 99 Suite 103
Phone: 360-931-3122

City Contact: Madeline Sutherland,
City of Camas Community Development Dept.
616 NE 4th Avenue Camas, WA 98607
Phone: 360-817-7237
Email: msutherland@cityofcamas.us

OAK TREE
STATION

SPRING 2023

A PLACE WHERE COMMUNITY GATHERS

CREATIVE EXCEPTIONAL + DIVERSE FOOD WANTED

OAKTREESTATION.COM

FOOD CART

From: Hahn, Eric
To: Anita Ashton
Cc: Curleigh (Jim) Carothers; David Jardin; Lopossa, Ryan
Subject: RE: CUP22-01 Oak Tree Food Carts Preliminary TIA
Date: Wednesday, May 11, 2022 5:34:21 PM
Attachments: image002.png
image003.png
image004.png
image005.png

WARNING: This message originated outside the City of Camas Mail system. DO NOT CLICK on links or open attachments unless you recognize the sender and are expecting the content. If you are unsure, click the Phish Alert button to redirect the email for ITD review.

Anita,

This prelim study doesn't provide any trip distribution information, but it's safe to assume that a significant percentage of the 80 PM peak hour trips generated by this site will be traveling to/from the west along SE 1st Street to 192nd Ave and will therefore have an impact on the City of Vancouver's street system.

Again, the City of Vancouver does not need additional intersection analysis, but it is crucial that we capture the fees necessary to mitigate the impacts to our proportionate share projects. **Therefore, the City of Vancouver requests trip distribution analysis identifying the number of PM peak hour trips being distributed to the following proportionate share intersections so that we can calculate the necessary proportionate share fees:**

Proportionate Share Project Name	Fee Rate	Number of Trips	Proportionate Share Cost
NE 192nd Ave & NE 13th St	$400 per PM peak hour trip		
SE 192nd Ave & SE 34th St	$150 per PM peak hour trip		
192nd Ave & SR-14 ramp terminals	$2,000 per PM peak hour trip		
Total Proportionate Share Cost			**$XXXX**

Let me know if you have questions.

Eric Hahn, PE | Sr. Civil Engineer
CITY OF VANCOUVER, WASHINGTON
Public Works | *Streets & Transportation* | *TDRS*
Marine Park Engineering – 4500 SE Columbia Way
P.O. Box 1995 • Vancouver, WA, 98668-1995
P: (360) 487-7702 | Fax: (360) 487-7139 | TTY: (360) 487-8602
www.cityofvancouver.us

From: Anita Ashton <AAshton@cityofcamas.us>
Sent: Monday, May 2, 2022 5:34 PM
To: Hahn, Eric <Eric.Hahn@cityofvancouver.us>; David Jardin <David.Jardin@clark.wa.gov>
Cc: Curleigh (Jim) Carothers <jcarothers@cityofcamas.us>
Subject: CUP22-01 Oak Tree Food Carts Preliminary TIA

CAUTION: This email originated from outside of the City of Vancouver. Do not click links or open attachments unless you recognize the sender and know the content is safe.

This may be a bit premature, as they haven't been TC'd and there wil be revised TIA required, but wanted to get it on your radar.
This one is located at the northeast corner of NW Friberg-Strunk St. and NW Lake Road.

That's it for tonight. Thanks

Anita Ashton
Project Manager
Community Development Engineering
Desk 360-817-7231
www.cityofcamas.us | aashton@cityofcamas.us

NOTICE OF PUBLIC DISCLOSURE: This e-mail account is public domain. Any correspondence from or to this e-mail account may be a public record. Accordingly, this e-mail, in whole or in part may be subject to disclosure pursuant to RCW 42.56, regardless of any claim of confidentiality or privilege asserted by an external party.

From: David Jardin
To: Anita Ashton; Hahn, Eric
Subject: RE: CUP22-01 Oak Tree Food Carts Preliminary TIA
Date: Tuesday, August 16, 2022 4:59:38 PM
Attachments: image011.png
image012.png
image013.png
image014.png
image001.png
image002.png
Trip Generation.pdf
Internal Trip Evaluation.pdf

WARNING: This message originated outside the City of Camas Mail system. DO NOT CLICK on links or open attachments unless you recognize the sender and are expecting the content. If you are unsure, click the Phish Alert button to redirect the email for ITD review.

Good Afternoon Anita:

I apologize for the delay. Time got away from me.

Lots of stuff here. I don't know if this stuff needs to be entered into the record because my conclusion is no additional analysis or information is necessary, but I wanted you to have my analysis worksheets for this development so you could see how I arrived where I did.

So for brevity, here is county staff's conclusion to add if necessary. (Full evaluation below)

"County concurrency staff used the applicant's distribution information presented in the traffic study to determine if peak hour trips would be impacting regionally significant intersections and corridors under county jurisdiction within 2 miles of the subject site. Staff's review found that the proposed development is not expected to impact the regionally significant intersections and corridors by adding 5 or more new peak hour trips to those locations; therefore, Concurrency has no further comments and requires no further concurrency related analysis. The proposed development site is located on parcel number 176162000 in Camas."

Initially, here is my 2 cents (I am very late in my review so I am very sorry for stating what you have probably already addressed)

Please note that the reported trip generation appears to be under represented as submitted. The traffic study Table 2 and the plan, as shown on sheet P04 Concept Site Plan, do not appear reflect all land uses represented. The Food Cart Pod trip generation appears to be missing from the trip generation summary. Also, the applicant uses an ITE LUC 932 for the proposed 4,704 SF food court. Because this structure is represented as a food court, is it not reasonable to assume that there will be multiple restaurant tenants located within the structure? That being said, by definition it could not be a 'High-turnover sit-down restaurant' facility.

Land Use: 932
High-Turnover (Sit-Down) Restaurant

Description

This land use consists of sit-down, full-service eating establishments with a typical duration of stay of 60 minutes or less. This type of restaurant is usually moderately priced, frequently belongs to a restaurant chain, and is commonly referred to as casual dining. Generally, these restaurants serve lunch and dinner; they may also be open for breakfast and are sometimes open 24 hours a day. These restaurants typically do not accept reservations. A patron commonly waits to be seated, is served by wait staff, orders from a menu, and pays after the meal.

Some facilities offer carry-out for a small proportion of its customers. Some facilities within this land use may also contain a bar area for serving food and alcoholic drinks.

Fast casual restaurant (Land Use 930), fine dining restaurant (Land Use 931), fast-food restaurant without drive-through window (Land Use 933), and fast-food restaurant with drive-through window (Land Use 934) are related uses.

It appears that ITE LUC 933 Fast Food without Drive Through is a better fit.

Land Use: 933
Fast-Food Restaurant without Drive-Through Window

Description

This land use includes any fast-food restaurant without a drive-through window. This type of restaurant is characterized by a large carry-out clientele, long hours of service (some are open for breakfast, all are open for lunch and dinner, some are open late at night or 24 hours a day) and high turnover rates for eat-in customers. These limited-service eating establishments do not provide table service. A patron generally orders from a menu board and pays before receiving the meal. A typical duration of stay for an eat-in customer is less than 30 minutes. Fast casual restaurant (Land Use 930), high-turnover (sit-down) restaurant (Land Use 932), and fast-food restaurant with drive-through window (Land Use 934) are related uses.

Clark County Concurrency

County concurrency has reviewed the submitted traffic study for the Oak Tree Food Carts. The applicant's submitted information proposes to construct a 600 square-foot coffee kiosk with 2 drive-through windows, 2 food cart pods totaling 22 food carts, a 4,704 square-foot food court structure, and a 12,574 square-foot multi-tenant shopping center. The applicant's traffic information prepared by Engineering Northwest dated January 20, 2022 suggests that there will be a net new total of 119 AM peak hour trips, 120 PM peak hour trips and an average daily trip (ADT) volume of 1,491. However, county staff's review of the submitted traffic study and proposed development plan suggests that the trip generation for this development is under-represented.

County staff used the plan submitted within the applicant's traffic study, the ITE Trip Generation Manual 11th Edition and the ITE Trip Generation Handbook 3rd Edition to perform an independent trip generation evaluation. County staff used ITE Land Use Codes 820 – Shopping Center, 926 – Food Cart Pod, 933 –

Fast-Food without Drive Through and 938 – Coffee/Donut Shop with Drive Through to determine the initial trips generated by the proposed development. The ITE Trip Generation Handbook 3rd Edition was used to determine if pass by reductions were applicable to the land use, and to determine internal capture reductions as well. County concurrency's evaluation yielded a total net new trip generation estimate of 141 AM peak hour trips, 205 PM Peak hour trips, and 2,421 ADT's.

County concurrency staff used the applicant's distribution information presented in the traffic study to determine if peak hour trips would be impacting regionally significant intersections and corridors under county jurisdiction within 2 miles of the subject site. Staff's review found that the proposed development is not expected to impact the regionally significant intersections and corridors by adding 5 or more new peak hour trips to those locations; therefore, Concurrency has no further comments and requires no further concurrency related analysis. The proposed development site is located on parcel number 176162000 in Camas.

David Jardin
Concurrency Engineer
PUBLIC WORKS TRANSPORTATION/COMMUNITY DEVELOPMENT - DEVELOPMENT ENGINEERING

Desk: 564.397.4354
Cell: 360.818.3307

From: Anita Ashton <AAshton@cityofcamas.us>
Sent: Friday, July 29, 2022 11:18 AM
To: Hahn, Eric <Eric.Hahn@cityofvancouver.us>; David Jardin <David.Jardin@clark.wa.gov>
Subject: RE: CUP22-01 Oak Tree Food Carts Preliminary TIA

CAUTION: This email originated from outside of Clark County. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Morning,

I'm starting to work on the staff report for the above noted project, which is currently due by the end of August. The attached TIA, while dated January 2022, it was revised and resubmitted in May. They are going to be conditioned to resubmit using the current 11th Edition ITE manual instead of the 10th Edition as noted in the attached TIA.

I received comments from Eric in May, based on the initial report. Those conditions will be in the staff report, as well as any comments/conditions from David. Thanks and stay cool this weekend.

Anita Ashton
Project Manager
Community Development Engineering
Desk 360-817-7231
www.cityofcamas.us | aashton@cityofcamas.us

From: Anita Ashton
Sent: Monday, May 2, 2022 5:34 PM
To: Hahn, Eric <Eric.Hahn@cityofvancouver.us>; David Jardin <David.Jardin@clark.wa.gov>
Cc: Curleigh (Jim) Carothers <jcarothers@cityofcamas.us>
Subject: CUP22-01 Oak Tree Food Carts Preliminary TIA

This may be a bit premature, as they haven't been TC'd and there wil be revised TIA required, but wanted to get it on your radar.
This one is located at the northeast corner of NW Friberg-Strunk St. and NW Lake Road.

That's it for tonight. Thanks

Anita Ashton
Project Manager
Community Development Engineering
Desk 360-817-7231
www.cityofcamas.us | aashton@cityofcamas.us

NOTICE OF PUBLIC DISCLOSURE: This e-mail account is public domain. Any correspondence from or to this e-mail account may be a public record. Accordingly, this e-mail, in whole or in part may be subject to disclosure pursuant to RCW 42.56, regardless of any claim of confidentiality or privilege asserted by an external party.

From: Anita Ashton
To: Larry Bonife
Cc: paulwilliamspe@gmail.com; Robert Maul; Curleigh (Jim) Carothers; Madeline Sutherland
Subject: CUP22-01 Oak Tree Food Carts
Date: Wednesday, September 7, 2022 4:46:00 PM
Attachments: image002.png
image003.png
image004.png
image005.png

Hey Larry,

As the hearing has been postponed there is time for the TIA to be revised and resubmitted with the following issues addressed:

- Revise and resubmit the TIA using the current 11th Edition ITE manual;
- The revised TIA is to include both the AM and PM Peak Hour trips for the food carts. The previous TIA did not include either AM or PM trips and was conditioned accordingly.
- The revised TIA is also to provide AM/PM trips for the allowed / proposed uses for the commercial building.
- Provide a trip generation that extends west to NE 192nd Avenue and south to SR 14 and to intersections/roads under Clark County jurisdiction within 2 miles of the proposed development.
- The TIA is to be prepared under supervision of a registered Civil Engineer with a traffic engineering background, per the CDSM.

Thanks

Anita Ashton
Project Manager
Community Development Engineering
Desk 360-817-7231
www.cityofcamas.us | aashton@cityofcamas.us

From: Anita Ashton
To: paulwilliamspe@gmail.com; Larry Bonife
Cc: Curleigh (Jim) Carothers; Robert Maul; Madeline Sutherland
Subject: CUP22-01 Oak Tree Station - Revised TIA Comments
Date: Monday, November 21, 2022 3:35:00 PM
Attachments: TRAFFIC IMPACT ANALYSIS v3_11-16-2022.pdf
image002.png
image003.png
image004.png
image005.png

Paul,
In reference to the Traffic Impact Analysis (TIA) dated November 1, 2022, please note that the following items need to be addressed:

- Camas engineering staff is not in support of the use of ITE LUC 932 High Turnover Sit Down Restaurant for the 22 food carts that are being proposed.
- The appropriate section for the food carts/pods is LUC 926. PM peak hour trips in LUC 926 Food carts are substantially higher than High Turnover Sit Down Restaurant.
- Please use LUC 926, PM Peak Hour of Adjacent Street Traffic. The food cart/pod LUC includes limited covered seating or dining, and may include the sale of alcoholic beverages.
- Please provide justification for any internalization (internal capture) or pass-by reductions. The 3rd Edition Trip Generation Handbook does not provide pass-by information Table for LUC 926.
- The City of Vancouver requires a trip distribution of the number of PM peak hour trips generated by this use through the following intersections on 192nd Avenue;
    - NE 192nd Ave. & NE 13th Street
    - NE 192nd Ave. & SE 34th Street
    - NE 192nd Ave. & SR-14 ramps
    - The project will be required to pay proportionate share fees for the number of PM peak hour trips to the above intersections.
- Empirical data is mentioned in the TIA. Please provide documentation of this data.

If you wish to talk through this with staff next Tuesday (11/29) or Wednesday (11/30), let us know.
Thanks

James E Carothers, PE
Engineering Manager/City Engineer
Desk 360-817-7230
www.cityofcamas.us | jcarothers@cityofcamas.us

Anita Ashton
Project Manager
Community Development Engineering
Desk 360-817-7231
www.cityofcamas.us | aashton@cityofcamas.us

From: Robert Maul
To: Anita Ashton; Curleigh (Jim) Carothers
Cc: Madeline Sutherland
Subject: FW: CUP22-01 Oak Tree Station - Revised TIA Comments
Date: Monday, November 21, 2022 4:50:11 PM
Attachments: image001.png

To keep you in the loop.

From: Paul Williams [mailto:paulwilliamspe@gmail.com]
Sent: Monday, November 21, 2022 4:42 PM
To: Larry Bonife <larry@oaktreestation.com>; Jamie Howsley <jamie.howsley@jordanramis.com>
Cc: Robert Maul <RMaul@cityofcamas.us>
Subject: RE: CUP22-01 Oak Tree Station - Revised TIA Comments

WARNING: This message originated outside the City of Camas Mail system. DO NOT CLICK on links or open attachments unless you recognize the sender and are expecting the content. If you recognize the sender as a city employee and you see this message this email is a phishing email. If you are unsure, click the Phish Alert button to redirect the email for ITD review.

Hi Jamie, Larry:

Anita is requesting that the project use ITE 926 (Food Cart Pods). ITE 926 is not appropriate land use for this site because ITE only studies 4 sites during the summer months. Food carts parked on gravel surfaces with limited cover seating areas are not equivalent to what this project proposes. This project is proposing that all the food carts have a permanent connection to water and sewer which is not typical for the four 4 sites that were surveyed for ITE 926. Also, the project proposes to have a covered walkway for each cart that connects to a larger building. Below is the definition for ITE 926 Food Cart Pods.

ITE 926

Description
A food cart pod is a group of food carts or food trucks congregated in an established location, such as a parking lot, on a semi-permanent or regular basis. A food cart pod typically operates during both the lunch and dinner timeframes. A food cart pod often includes limited covered seating or a dining area. A food cart pod may also include the sale of alcoholic beverages.

Additional Data
All data were collected in the summer months. Most sites were located along public transit routes and some were accessible by bike or multi-use paths. The independent variable “food cart” is defined for the purpose of this land use as the number of food carts open at the time of the study.

Thanks Paul

Engineering Northwest PLLC
Paul Williams P.E.
6168 NE HWY 99 STE 100
Vancouver WA 98665
CELL: 360-931-3122

From: Anita Ashton
Sent: Monday, November 21, 2022 3:35 PM
To: paulwilliamspe@gmail.com; Larry Bonife
Cc: Curleigh (Jim) Carothers; Robert Maul; Madeline Sutherland
Subject: CUP22-01 Oak Tree Station - Revised TIA Comments

Paul,
In reference to the Traffic Impact Analysis (TIA) dated November 1, 2022, please note that the following items need to be addressed:

1. Camas engineering staff is not in support of the use of ITE LUC 932 High Turnover Sit Down Restaurant for the 22 food carts that are being proposed.
2. The appropriate section for the food carts/pods is LUC 926. PM peak hour trips in LUC 926 Food carts are substantially higher than High Turnover Sit Down Restaurant.
3. Please use LUC 926, PM Peak Hour of Adjacent Street Traffic. The food cart/pod LUC includes limited covered seating or dining, and may include the sale of alcoholic beverages.
4. Please provide justification for any internalization (internal capture) or pass-by reductions. The 3rd Edition Trip Generation Handbook does not provide pass-by information Table for LUC 926.
5. The City of Vancouver requires a trip distribution of the number of PM peak hour trips generated by this use through the following intersections on 192nd Avenue;
    1. NE 192nd Ave. & NE 13th Street
    2. NE 192nd Ave. & SE 34th Street
    3. NE 192nd Ave. & SR-14 ramps
    4. The project will be required to pay proportionate share fees for the number of PM peak hour trips to the above intersections.
1. Empirical data is mentioned in the TIA. Please provide documentation of this data.

If you wish to talk through this with staff next Tuesday (11/29) or Wednesday (11/30), let us know.
Thanks

James E Carothers, PE
Engineering Manager/City Engineer
Desk 360-817-7230
www.cityofcamas.us | jcarothers@cityofcamas.us

Anita Ashton
Project Manager
Community Development Engineering
Desk 360-817-7231
www.cityofcamas.us | aashton@cityofcamas.us

NOTICE OF PUBLIC DISCLOSURE: This e-mail account is public domain. Any correspondence from or to this e-mail account may be a public record. Accordingly, this e-mail, in whole or in part may be subject to disclosure pursuant to RCW 42.56, regardless of any claim of confidentiality or privilege asserted by an external party.

From: Anita Ashton
To: paulwilliamspe@gmail.com; Larry Bonife
Cc: "jamie.howsley@jordanramis.com"; Robert Maul; Curleigh (Jim) Carothers; Madeline Sutherland
Subject: RE: CUP22-01 Oak Tree Station - Revised TIA Comments -DRAFT
Date: Tuesday, November 22, 2022 5:10:00 PM
Attachments: image006.png

All,
The Monday, November 21, 2022 email, which included "items to be addressed" were review comments from the City Engineer, James Carothers, P.E.

As stated below, staff is not in support of the use of LUC 932 for High Turnover Sit Down Restaurant for calculating trips for the food carts. Per the ITE Manual LUC 932 applies as follows:

Land Use: 932
High-Turnover (Sit-Down) Restaurant
Description
This land use consists of sit-down, full-service eating establishments with a typical duration of stay of 60 minutes or less. This type of restaurant is usually moderately priced, frequently belongs to a restaurant chain, and is commonly referred to as casual dining. General, these restaurants serve lunch and dinner; they may also be open for breakfast and are sometimes open 24 hours a day. These restaurants typically do not accept reservations. A patron commonly waits to be seated, is served by wait staff, orders from a menu, and pays after the meal.

Staff finds that the proposed food carts do not fit this land use designation (LUC 932).

While staff finds that the LUC 926 Food Carts designation is adequate for the food carts, staff would be willing to consider working with the applicant's consultant to come up with a congruent scenario from the ITE Trip Generation Manual, 11th Edition. Specifically, using LUC 933 *Fast-food Restaurant without Drive-through Window* may be an amenable solution provided that the comparison used is the number of employees. Additionally, Staff finds that the use of seats and/or square footage is not an adequate fit.

As stated in the email below, the following items are to be addressed:

4. Please provide justification for any internalization (internal capture) or pass-by reductions. The 3rd Edition Trip Generation Handbook does not provide pass-by information Table for LUC 926.
5. The City of Vancouver requires a trip distribution of the number of PM peak hour trips generated by this use through the following intersections on 192nd Avenue;
    a. NE 192nd Ave. & NE 13th Street
    b. NE 192nd Ave. & SE 34th Street
    c. NE 192nd Ave. & SR-14 ramps
    d. The project will be required to pay proportionate share fees for the number of PM peak hour trips to the above intersections.
6. Empirical data is mentioned in the TIA. Please provide documentation of this data.

James E Carothers, PE
Engineering Manager/City Engineer
Desk 360-817-7230
www.cityofcamas.us | jcarothers@cityofcamas.us

From: Robert Maul <RMaul@cityofcamas.us>
Sent: Monday, November 21, 2022 4:50 PM
To: Anita Ashton <AAshton@cityofcamas.us>; Curleigh (Jim) Carothers <jcarothers@cityofcamas.us>
Cc: Madeline Sutherland <MSutherland@cityofcamas.us>
Subject: FW: CUP22-01 Oak Tree Station - Revised TIA Comments

To keep you in the loop.

From: Paul Williams [mailto:paulwilliamspe@gmail.com]
Sent: Monday, November 21, 2022 4:42 PM
To: Larry Bonife <larry@oaktreestation.com>; Jamie Howsley <jamie.howsley@jordanramis.com>
Cc: Robert Maul <RMaul@cityofcamas.us>
Subject: RE: CUP22-01 Oak Tree Station - Revised TIA Comments

WARNING: This message originated outside the City of Camas Mail system. DO NOT CLICK on links or open attachments unless you recognize the sender and are expecting the content. If you recognize the sender as a city employee and you see this message this email is a phishing email. If you are unsure, click the Phish Alert button to redirect the email for ITD review.

Hi Jamie, Larry:

Anita is requesting that the project use ITE 926 (Food Cart Pods). ITE 926 is not appropriate land use for this site because ITE only studies 4 sites during the summer months. Food carts parked on gravel surfaces with limited cover seating areas are not equivalent to what this project proposes. This project is proposing that all the food carts have a permanent connection to water and sewer which is not typical for the four 4 sites that were surveyed for ITE 926. Also, the project proposes to have a covered walkway for each cart that connects to a larger building. Below is the definition for ITE 926 Food Cart Pods.

ITE 926

Description
A food cart pod is a group of food carts or food trucks congregated in an established location, such as a parking lot, on a semi-permanent or regular basis. A food cart pod typically operates during both the lunch and dinner timeframes. A food cart pod often includes limited covered seating or a dining area. A food cart pod may also include the sale of alcoholic beverages.

Additional Data
All data were collected in the summer months. Most sites were located along public transit routes and some were accessible by bike or multi-use paths. The independent variable “food cart” is defined for the purpose of this land use as the number of food carts open at the time of the study.

Thanks Paul

Engineering Northwest PLLC
Paul Williams P.E.
6168 NE HWY 99 STE 100
Vancouver WA 98665
CELL: 360-931-3122

From: Anita Ashton
Sent: Monday, November 21, 2022 3:35 PM
To: paulwilliamspe@gmail.com; Larry Bonife
Cc: Curleigh (Jim) Carothers; Robert Maul; Madeline Sutherland
Subject: CUP22-01 Oak Tree Station - Revised TIA Comments

Paul,
In reference to the Traffic Impact Analysis (TIA) dated November 1, 2022, please note that the following items need to be addressed:

1. Camas engineering staff is not in support of the use of ITE LUC 932 High Turnover Sit Down Restaurant for the 22 food carts that are being proposed.
2. The appropriate section for the food carts/pods is LUC 926. PM peak hour trips in LUC 926 Food carts are substantially higher than High Turnover Sit Down Restaurant.
3. Please use LUC 926, PM Peak Hour of Adjacent Street Traffic. The food cart/pod LUC includes limited covered seating or dining, and may include the sale of alcoholic beverages.
4. Please provide justification for any internalization (internal capture) or pass-by reductions. The 3rd Edition Trip Generation Handbook does not provide pass-by information Table for LUC 926.
5. The City of Vancouver requires a trip distribution of the number of PM peak hour trips generated by this use through the following intersections on 192nd Avenue;
    a. NE 192nd Ave. & NE 13th Street
    b. NE 192nd Ave. & SE 34th Street
    c. NE 192nd Ave. & SR-14 ramps
    d. The project will be required to pay proportionate share fees for the number of PM peak hour trips to the above intersections.
6. Empirical data is mentioned in the TIA. Please provide documentation of this data.

If you wish to talk through this with staff next Tuesday (11/29) or Wednesday (11/30), let us know. Thanks

James E Carothers, PE
Engineering Manager/City Engineer
Desk 360-817-7230
www.cityofcamas.us | jcarothers@cityofcamas.us

Anita Ashton
Project Manager
Community Development Engineering
Desk 360-817-7231
www.cityofcamas.us | aashton@cityofcamas.us

NOTICE OF PUBLIC DISCLOSURE: This e-mail account is public domain. Any correspondence from or to this e-mail account may be a public record. Accordingly, this e-mail, in whole or in part may be subject to disclosure pursuant to RCW 42.56, regardless of any claim of confidentiality or privilege asserted by an external party.

From: Larry Bonife
To: Anita Ashton; James D. Howsley; Rob Kyne; Robert Maul; Paul Williams
Subject: Fwd: FW: CUP22-01 Oak Tree Station - Revised TIA Comments -DRAFT
Date: Monday, November 28, 2022 2:40:20 PM
Attachments: 1944A2248BC645D9A6C19A3E63A61FFA.png

Anita, we want to thank you for working together on all these steps to getting our CUP herring and moving forward with the permit process. At this time we would like you to correspond with James Howsley on the traffic study and impact fees. We feel we would like to have Paul work through James to meet all the requirements and James may be better suited to represent us as a third party consultant. Hopefully this will be a more efficient way to move forward from here. I have tagged all parties interested in this process; thank you for your understanding.
Sincerely,

---------- Forwarded message ---------
From: **Paul Williams** <paulwilliamspe@gmail.com>
Date: Wed, Nov 23, 2022 at 3:06 PM
Subject: FW: CUP22-01 Oak Tree Station - Revised TIA Comments -DRAFT
To: Larry Bonife <larrycmi@icloud.com>, Larry Bonife <larrybonife51@gmail.com>

Here you go. Thanks Paul

Engineering Northwest PLLC

Paul Williams P.E.

6168 NE HWY 99 STE 100

Vancouver WA 98665

CELL: 360-931-3122

From: Paul Williams
Sent: Wednesday, November 23, 2022 10:41 AM
To: Anita Ashton; Larry Bonife
Cc: jamie.howsley@jordanramis.com; Robert Maul; Curleigh (Jim) Carothers; Madeline

Sutherland
Subject: RE: CUP22-01 Oak Tree Station - Revised TIA Comments -DRAFT

Hi Anita:

Calculating the number of trips for ITE 933 (employees) is more than the number of proposed parking stalls. The project can't simply accommodate the number of parking stalls needed when analyzing the land use under ITE 933. The client has explained that the project intents to provide other venues/events during the summer months which would result in customers staying longer than 60 min. This proposal is a unique project in Camas and also unique to the Clark County area.

Can we meet to discuss the land use selection?

Thanks, Paul

Engineering Northwest PLLC

Paul Williams P.E.

6168 NE HWY 99 STE 100

Vancouver WA 98665

CELL: 360-931-3122

From: Anita Ashton
Sent: Tuesday, November 22, 2022 5:10 PM
To: paulwilliamspe@gmail.com; Larry Bonife
Cc: jamie.howsley@jordanramis.com; Robert Maul; Curleigh (Jim) Carothers; Madeline Sutherland
Subject: RE: CUP22-01 Oak Tree Station - Revised TIA Comments -DRAFT

All,

The Monday, November 21, 2022 email, which included "items to be addressed" were review comments from the City Engineer, James Carothers, P.E.

As stated below, staff is not in support of the use of LUC 932 for High Turnover Sit Down Restaurant for calculating trips for the food carts. Per the ITE Manual LUC 932 applies as follows:

Land Use: 932

High-Turnover (Sit-Down) Restaurant

Description

This land use consists of sit-down, full-service eating establishments with a typical duration of stay of 60 minutes or less. This type of restaurant is usually moderately priced, frequently belongs to a restaurant chain, and is commonly referred to as casual dining. General, these restaurants serve lunch and dinner; they may also be open for breakfast and are sometimes open 24 hours a day. These restaurants typically do not accept reservations. A patron commonly waits to be seated, is served by wait staff, orders from a menu, and pays after the meal.

Staff finds that the proposed food carts do not fit this land use designation (LUC 932).

While staff finds that the LUC 926 Food Carts designation is adequate for the food carts, staff would be willing to consider working with the applicant's consultant to come up with a congruent scenario from the ITE Trip Generation Manual, 11th Edition. Specifically, using LUC 933 *Fast-food Restaurant without Drive-through Window* may be an amenable solution provided that the comparison used is the number of employees. Additionally, Staff finds that the use of seats and/or square footage is not an adequate fit.

As stated in the email below, the following items are to be addressed:

1. Please provide justification for any internalization (internal capture) or pass-by reductions. The 3rd Edition Trip Generation Handbook does not provide pass-by information Table for LUC 926.
2. The City of Vancouver requires a trip distribution of the number of PM peak hour trips generated by this use through the following intersections on 192nd Avenue;

    1. NE 192nd Ave. & NE 13th Street
    2. NE 192nd Ave. & SE 34th Street
    3. NE 192nd Ave. & SR-14 ramps
    4. The project will be required to pay proportionate share fees for the number of PM peak hour trips to the above intersections.

1. Empirical data is mentioned in the TIA. Please provide documentation of this data.

City of Camas

James E Carothers, PE
Engineering Manager/City Engineer
Desk 360-817-7230
www.cityofcamas.us | jcarothers@cityofcamas.us

From: Robert Maul <RMaul@cityofcamas.us>
Sent: Monday, November 21, 2022 4:50 PM
To: Anita Ashton <AAshton@cityofcamas.us>; Curleigh (Jim) Carothers <jcarothers@cityofcamas.us>
Cc: Madeline Sutherland <MSutherland@cityofcamas.us>
Subject: FW: CUP22-01 Oak Tree Station - Revised TIA Comments

To keep you in the loop.

From: Paul Williams [mailto:paulwilliamspe@gmail.com]
Sent: Monday, November 21, 2022 4:42 PM
To: Larry Bonife <larry@oaktreestation.com>; Jamie Howsley <jamie.howsley@jordanramis.com>
Cc: Robert Maul <RMaul@cityofcamas.us>
Subject: RE: CUP22-01 Oak Tree Station - Revised TIA Comments

WARNING: This message originated outside the City of Camas Mail system. DO NOT CLICK on links or open attachments unless you recognize the sender and are expecting the content. If you recognize the sender as a city employee and you see this message this email is a phishing email. If you are unsure, click the Phish Alert button to redirect the email for ITD review.

Hi Jamie, Larry:

Anita is requesting that the project use ITE 926 (Food Cart Pods). ITE 926 is not appropriate land use for this site because ITE only studies 4 sites during the summer months. Food carts parked on gravel surfaces with limited cover seating areas are not equivalent to what this project proposes. This project is proposing that all the food carts have a permanent connection to water and sewer which is not typical for the four 4 sites that were surveyed for ITE 926. Also, the project proposes to have a covered walkway for each cart that connects to a larger building. Below is the definition for ITE 926 Food Cart Pods.

ITE 926

Description

A food cart pod is a group of food carts or food trucks congregated in an established location, such as a parking lot, on a semi-permanent or regular basis. A food cart pod typically operates during both the lunch and dinner timeframes. A food cart pod often includes limited covered seating or a dining area. A food cart pod may also include the sale of alcoholic beverages.

Additional Data

All data were collected in the summer months. Most sites were located along public transit routes

and some were accessible by bike or multi-use paths. The independent variable “food cart” is defined for the purpose of this land use as the number of food carts open at the time of the study.

Thanks Paul

Engineering Northwest PLLC

Paul Williams P.E.

6168 NE HWY 99 STE 100

Vancouver WA 98665

CELL: 360-931-3122

From: Anita Ashton
Sent: Monday, November 21, 2022 3:35 PM
To: paulwilliamspe@gmail.com; Larry Bonife
Cc: Curleigh (Jim) Carothers; Robert Maul; Madeline Sutherland
Subject: CUP22-01 Oak Tree Station - Revised TIA Comments

Paul,

In reference to the Traffic Impact Analysis (TIA) dated November 1, 2022, please note that the following items need to be addressed:

1. Camas engineering staff is not in support of the use of ITE LUC 932 High Turnover Sit Down Restaurant for the 22 food carts that are being proposed.
2. The appropriate section for the food carts/pods is LUC 926. PM peak hour trips in LUC 926 Food carts are substantially higher than High Turnover Sit Down Restaurant.
3. Please use LUC 926, PM Peak Hour of Adjacent Street Traffic. The food cart/pod LUC includes limited covered seating or dining, and may include the sale of alcoholic beverages.
4. Please provide justification for any internalization (internal capture) or pass-by reductions. The 3rd Edition Trip Generation Handbook does not provide pass-by information Table for LUC 926.
5. The City of Vancouver requires a trip distribution of the number of PM peak hour trips generated by this use through the following intersections on 192nd Avenue;

nd th

1. NE 192 Ave. & NE 13 Street
2. NE 192nd Ave. & SE 34th Street
3. NE 192nd Ave. & SR-14 ramps
4. The project will be required to pay proportionate share fees for the number of PM peak hour trips to the above intersections.

1. Empirical data is mentioned in the TIA. Please provide documentation of this data.

If you wish to talk through this with staff next Tuesday (11/29) or Wednesday (11/30), let us know. Thanks

City of Camas

James E Carothers, PE
Engineering Manager/City Engineer
Desk 360-817-7230
www.cityofcamas.us | jcarothers@cityofcamas.us

City of Camas

Anita Ashton
Project Manager

Community Development Engineering
Desk 360-817-7231
www.cityofcamas.us | aashton@cityofcamas.us

NOTICE OF PUBLIC DISCLOSURE: This e-mail account is public domain. Any correspondence from or to this e-mail account may be a public record. Accordingly, this e-mail, in whole or in part may be subject to disclosure pursuant to RCW 42.56, regardless of any claim of confidentiality or privilege asserted by an external party.

STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY
Southwest Region Office
PO Box 47775, Olympia, WA 98504-7775 • 360-407-6300

September 8, 2022

Robert Maul, SEPA Responsible Official
City of Camas
Community Development Department
616 NE Fourth Avenue
Camas, WA 98607

Dear Robert Maul:

Thank you for the opportunity to comment on the mitigated determination of nonsignificance for the Oak Tree Station Project (SEPA22-09) as proposed by Paul Williams. The Department of Ecology (Ecology) reviewed the environmental checklist and has the following comment(s):

SHORELANDS & ENVIRONMENTAL ASSISTANCE: Meghan Tait, (360) 210-2783

Thank you for providing the Department of Ecology (Ecology) an opportunity to review and comment on the proposed commercial development, Oak Tree Station. We have the following comments for your consideration.

The SEPA checklist does not adequately identify the potential impacts of the proposal on elements of the environment, especially as it relates to fish and wildlife habitat, water resources, and water quality. Potential impacts must be identified along with appropriate mitigation measures.

The wetland delineation conducted for parcel 176162000 titled *The Thomas Property NW Lake Road & NW Friberg-Strunk Street Wetland Delineation & Assessment* dated November 25, 2019 shows that the majority of the property is encumbered by wetland and wetland buffer.

Any impacts to wetland and wetland buffer habitats require the application of mitigation sequencing and compensatory mitigation. The required mitigation sequencing is avoidance, minimization, and then compensatory mitigation for any unavoidable wetland and wetland buffer impacts associated with a project. See Ecology's website for more information on avoidance and minimization.

In the event impacts to wetlands and wetland buffers are unavoidable, a compensatory mitigation and monitoring plan must be submitted to the City of Camas for review and consideration, per their Critical Area Code 16.53.030.

The wetlands delineated on this property would be considered waters of the state subject to the applicable requirements of state law (see RCW 90.48 and WAC 173.201A) and possibly

require a permit under Section 401 of the Clean Water Act (33 USC §1341) and 40 CFR Section 121.2). A local government critical areas permit may also be required.

- Contact the U.S. Army Corps of Engineers (Corps) to determine whether the wetlands on the property are under federal jurisdiction.
- For any wetlands over which the U.S. Army Corps of Engineers does not take jurisdiction, contact Ecology
- For wetlands that the Corps determines are federally jurisdictional, submit a JARPA form to Ecology at ecyrefedpermits@ecy.wa.gov.
- Contact the local government to determine their permit process
- A mitigation plan for unavoidable wetland impacts following the standards in Wetland Mitigation in Washington State – Part 1: Agency Policies and Guidance (Ecology Publication #21-06-003) is required for both federally-regulated and non-federally-regulated wetlands.

Should an individual Corps permit be required, a water quality certification will also be required from Ecology. If the wetland is determined to be not subject to the Corps jurisdiction, it remains a jurisdictional wetland for Ecology and will require permitting by this agency and, potentially, the local jurisdiction in regards to applicable critical areas requirements.

For questions or technical assistance, contact the Wetland Specialist Meghan Tait via email, meghan.tait@ecy.wa.gov, or phone, 360-210-2783.

SOLID WASTE MANAGEMENT: Derek Rockett (360) 407-6287

All grading and filling of land must utilize only clean fill. All other materials may be considered solid waste and permit approval may be required from your local jurisdictional health department prior to filling. All removed debris resulting from this project must be disposed of at an approved site. Contact the local jurisdictional health department for proper management of these materials.

TOXICS CLEANUP: Sam Meng (360) 999-9587

No confirmed or suspected cleanup sites within a quarter of mile from the project area. No comment. For questions contact Sam Meng with the Toxics Cleanup Program at the Southwest Regional Office at (360) 999-9587.

WATER QUALITY/WATERSHED RESOURCES UNIT:
Brian Johnson (360) 624-5741

Erosion control measures must be in place prior to any clearing, grading, or construction. These control measures must be effective to prevent stormwater runoff from carrying soil and other pollutants into surface water or stormdrains that lead to waters of the state. Sand, silt, clay particles, and soil will damage aquatic habitat and are considered to be pollutants.

Any discharge of sediment-laden runoff or other pollutants to waters of the state is in violation of Chapter 90.48 RCW, Water Pollution Control, and WAC 173-201A, Water

Quality Standards for Surface Waters of the State of Washington, and is subject to enforcement action.

Construction Stormwater General Permit:
The following construction activities require coverage under the Construction Stormwater General Permit:

1. Clearing, grading and/or excavation that results in the disturbance of one or more acres **and** discharges stormwater to surface waters of the State; and
2. Clearing, grading and/or excavation on sites smaller than one acre that are part of a larger common plan of development or sale, if the common plan of development or sale will ultimately disturb one acre or more **and** discharge stormwater to surface waters of the State.
    a) This includes forest practices (including, but not limited to, class IV conversions) that are part of a construction activity that will result in the disturbance of one or more acres, **and** discharge to surface waters of the State; and
3. Any size construction activity discharging stormwater to waters of the State that Ecology:
    a) Determines to be a significant contributor of pollutants to waters of the State of Washington.
    b) Reasonably expects to cause a violation of any water quality standard.

If there are known soil/ground water contaminants present on-site, additional information (including, but not limited to: temporary erosion and sediment control plans; stormwater pollution prevention plan; list of known contaminants with concentrations and depths found; a site map depicting the sample location(s); and additional studies/reports regarding contaminant(s)) will be required to be submitted. For additional information on contaminated construction sites, please contact Carol Serdar at Carol.Serdar@ecy.wa.gov, or by phone at (360) 742-9751.

Additionally, sites that discharge to segments of waterbodies listed as impaired by the State of Washington under Section 303(d) of the Clean Water Act for turbidity, fine sediment, high pH, or phosphorous, or to waterbodies covered by a TMDL may need to meet additional sampling and record keeping requirements. See condition S8 of the Construction Stormwater General Permit for a description of these requirements. To see if your site discharges to a TMDL or 303(d)-listed waterbody, use Ecology's Water Quality Atlas at: https://fortress.wa.gov/ecy/waterqualityatlas/StartPage.aspx.

The applicant may apply online or obtain an application from Ecology's website at: http://www.ecy.wa.gov/programs/wq/stormwater/construction/ - Application. Construction site operators must apply for a permit at least 60 days prior to discharging stormwater from construction activities and must submit it on or before the date of the first public notice.

Ecology's comments are based upon information provided by the lead agency. As such, they may not constitute an exhaustive list of the various authorizations that must be obtained or legal requirements that must be fulfilled in order to carry out the proposed action.

If you have any questions or would like to respond to these comments, please contact the appropriate reviewing staff listed above.

Department of Ecology
Southwest Regional Office

(GMP:202204319)

cc: Meghan Tait, SEA
Derek Rockett, SWM
Sam Meng, TCP
Brian Johnson, WQ

From: David Jardin
To: Hahn, Eric; Anita Ashton
Cc: Patrick, Jennifer
Subject: RE: CUP22-01 Oak Tree Station - Revised TIA Comments
Date: Sunday, December 11, 2022 3:19:40 PM
Attachments: image011.png
image012.png
image013.png
image014.png

WARNING: This message originated outside the City of Camas Mail system. DO NOT CLICK on links or open attachments unless you recognize the sender and are expecting the content. If you recognize the sender as a city employee and you see this message this email is a phishing email. If you are unsure, click the Phish Alert button to redirect the email for ITD review.

Good Afternoon:

County concurrency has reviewed the Oak Tree Station traffic study. The Oak Tree Station development seeks to construct a 12,574 square-foot multi-tenant retail structure, a 22 unit food cart pod with an associated 5,900 square-foot covered seating area, a coffee kiosk with 2 drive-through windows and no indoor seating along with other associated appurtenances. Staff used the applicant's distribution to determine anticipated vehicle assignments approaching intersections under county jurisdiction. Staff concluded that because this development is not expected generate more than 5 new peak hour trips on regionally significant intersections and corridors under county jurisdiction, county concurrency has no further comments and requires no further concurrency related analysis. The proposed development site is located on parcel numbered 176162000 in Camas.

I concur. The land uses should be accurately represented for trip generation i.e. ITE LUC 926 for Food Cart Pod, ITE LUC 822 for Strip Retail Plaza <40,000 sq ft. and ITE LUC 938 for the proposed coffee/donut shop with 2 drive-through lanes and no indoor seating, as these land uses are the most current as identified in the ITE Trip Generation Manual 11th Edition.

Pass by should be accounted for where there is supporting data as documented in the ITE Handbook. In the case of Strip Retail Plaza, pass by as identified under ITE LUC 820 should be allowed because the proposed square footage is within the lowest ranges of the data and prior to the breakout of LUC 822 (it is new with the 11th Edition), the proposed multi-tenant retail structure would have been viewed as shopping center – ITE LUC 820.

Internal capture may be allowed for the uses proposed onsite and should be evaluated using the guidance provided in the ITE Trip Generation Handbook.

David Jardin
Concurrency Engineer
PUBLIC WORKS TRANSPORTATION/COMMUNITY DEVELOPMENT - DEVELOPMENT ENGINEERING

Desk: 564.397.4354
Cell: 360.818.3307

From: Hahn, Eric <Eric.Hahn@cityofvancouver.us>
Sent: Thursday, December 1, 2022 11:58 AM
To: Anita Ashton <AAshton@cityofcamas.us>
Cc: Patrick, Jennifer <Jennifer.Patrick@cityofvancouver.us>; David Jardin <David.Jardin@clark.wa.gov>
Subject: RE: CUP22-01 Oak Tree Station - Revised TIA Comments

CAUTION: This email originated from outside of Clark County. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Anita,

Here are my comments:

- As you've already noticed, the report completely ignores the trip generation associated with the food carts.
- The internal capture percentages seem much too high. What did they use to justify internal capture?
- To reiterate your comments below, the project will be required to pay proportionate share fees for the PM peak hour trips distributed to the intersections identified below:
  - NE 192nd Ave. & NE 13th Street
  - NE 192nd Ave. & SE 34th Street
  - NE 192nd Ave. & SR-14 ramps

Let me know if you have any questions.

Eric Hahn, PE | Senior Civil Engineer
CITY OF VANCOUVER, WASHINGTON
Public Works | *Streets & Transportation* | *TDRS*
Marine Park Engineering – 4500 SE Columbia Way
P.O. Box 1995 • Vancouver, WA, 98668-1995
P: (360) 487-7702 | Fax: (360) 487-7139 | TTY: (360) 487-8602
www.cityofvancouver.us

From: Anita Ashton <AAshton@cityofcamas.us>
Sent: Monday, November 21, 2022 3:40 PM
To: Hahn, Eric <Eric.Hahn@cityofvancouver.us>; David Jardin <David.Jardin@clark.wa.gov>

Cc: Patrick, Jennifer <Jennifer.Patrick@cityofvancouver.us>
Subject: FW: CUP22-01 Oak Tree Station - Revised TIA Comments

CAUTION: This email originated from outside of the City of Vancouver. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hey Eric/David,

Attached is the latest revised TIA for the Oak Tree Station Food Carts, as well as comments from Staff that are included below. There's a hearing scheduled on December 14th, so if you have any addition comments, let me know. Have a wonderful Thanksgiving holiday! A

Anita Ashton
Project Manager
Community Development Engineering
Desk 360-817-7231
www.cityofcamas.us | aashton@cityofcamas.us

From: Anita Ashton
Sent: Monday, November 21, 2022 3:35 PM
To: paulwilliamspe@gmail.com; Larry Bonife <larry@oaktreestation.com>
Cc: Curleigh (Jim) Carothers <jcarothers@cityofcamas.us>; Robert Maul <RMaul@cityofcamas.us>; Madeline Sutherland <MSutherland@cityofcamas.us>
Subject: CUP22-01 Oak Tree Station - Revised TIA Comments

Paul,
In reference to the Traffic Impact Analysis (TIA) dated November 1, 2022, please note that the following items need to be addressed:

- Camas engineering staff is not in support of the use of ITE LUC 932 High Turnover Sit Down Restaurant for the 22 food carts that are being proposed.
- The appropriate section for the food carts/pods is LUC 926. PM peak hour trips in LUC 926 Food carts are substantially higher than High Turnover Sit Down Restaurant.
- Please use LUC 926, PM Peak Hour of Adjacent Street Traffic. The food cart/pod LUC includes limited covered seating or dining, and may include the sale of alcoholic beverages.
- Please provide justification for any internalization (internal capture) or pass-by reductions. The 3rd Edition Trip Generation Handbook does not provide pass-by information Table for LUC 926.
- The City of Vancouver requires a trip distribution of the number of PM peak hour trips generated by this use through the following intersections on 192nd Avenue;
    - NE 192nd Ave. & NE 13th Street
    - NE 192nd Ave. & SE 34th Street
    - NE 192nd Ave. & SR-14 ramps
    - The project will be required to pay proportionate share fees for the number of PM peak hour trips to the above intersections.
- Empirical data is mentioned in the TIA. Please provide documentation of this data.

If you wish to talk through this with staff next Tuesday (11/29) or Wednesday (11/30), let us know. Thanks

James E Carothers, PE
Engineering Manager/City Engineer
Desk 360-817-7230
www.cityofcamas.us | jcarothers@cityofcamas.us

Anita Ashton
Project Manager
Community Development Engineering
Desk 360-817-7231
www.cityofcamas.us | aashton@cityofcamas.us

NOTICE OF PUBLIC DISCLOSURE: This e-mail account is public domain. Any correspondence from or to this e-mail account may be a public record. Accordingly, this e-mail, in whole or in part may be subject to disclosure pursuant to RCW 42.56, regardless of any claim of confidentiality or privilege asserted by an external party.

From:	Curleigh (Jim) Carothers
To:	James D. Howsley; Robert Maul
Cc:	Madeline Sutherland; Anita Ashton; Larry Bonife; Rob Kyne; Joseph Schaefer
Subject:	RE: Staff Report Clarifcation
Date:	Wednesday, December 14, 2022 11:50:01 AM
Attachments:	image004.png image005.png image006.png image007.png image008.png

Jamie,
Condition 42 was left over based on an earlier traffic analysis submittal that was not considering the traffic impacts from the food carts. My understanding is that the traffic analysis update that will be submitted will incorporate the food carts in the analysis. This being the case, condition 42 should be stricken.

Please let me know if there are further questions. Thank you.

James E Carothers, PE
Engineering Manager/City Engineer
Desk 360-817-7230
www.cityofcamas.us | jcarothers@cityofcamas.us

From: James D. Howsley <jamie.howsley@jordanramis.com>
Sent: Tuesday, December 13, 2022 5:25 PM
To: Robert Maul <RMaul@cityofcamas.us>
Cc: James D. Howsley <jamie.howsley@jordanramis.com>; Curleigh (Jim) Carothers <jcarothers@cityofcamas.us>; Madeline Sutherland <MSutherland@cityofcamas.us>; Anita Ashton <AAshton@cityofcamas.us>; Larry Bonife <larrybonife51@gmail.com>; Rob Kyne <robkyne79@gmail.com>; Joseph Schaefer <joseph.schaefer@jordanramis.com>
Subject: Staff Report Clarifcation

WARNING: This message originated outside the City of Camas Mail system. DO NOT CLICK on links or open attachments unless you recognize the sender and are expecting the content. If you recognize the sender as a city employee and you see this message this email is a phishing email. If you are unsure, click the Phish Alert button to redirect the email for ITD review.

Robert,

Our team is a bit confused by the statement on item 42 on page 25 which reads:

> "In order to not impact the traffic systems in the AM and PM peak hours the food carts should be conditioned to have operating hours no earlier than 11:00 AM and no later than 3:30 PM Weekdays"

I don't think the City is trying to limit the hours of operation here and this seems worded funny. I think the intent the City is trying to achieve is that the workers will not be opening up the carts in AM or PM times, not the customers. Can you provide a clarification? Happy to jump on a call tomorrow.

Best,

Jamie

James D. Howsley | Attorney
Direct: (360) 567-3913

jordanramis.com | (888) 598-7070
Portland | Bend | Vancouver WA

JORDAN RAMIS

DISCLAIMER: This e-mail is for the sole use of the intended recipient(s). It contains information that is confidential and/or legally privileged. If you believe that it has been sent to you in error, please notify the sender by reply e-mail and delete the message. Any disclosure, copying, distribution or use of this information by someone other than the intended recipient is prohibited.

From: Lauren Hollenbeck
To: Madeline Sutherland; Robert Maul; Anita Ashton
Subject: FW: Comments regarding 2 projects on Friberg-Strunk Rd.
Date: Friday, April 22, 2022 12:56:23 PM
Attachments: image001.jpg
image002.png
image003.png
image004.png
image005.png

Forwarding this email per her request below. Comments are concerning Lacamas Tech and the Food Court proposal.

Lauren Hollenbeck
Senior Planner
Desk 360-817-7253
Cell 360-314-7537
www.cityofcamas.us | lhollenbeck@cityofcamas.us

From: Karin Nosrati, DC <bforback@gmail.com>
Sent: Friday, April 22, 2022 12:03 PM
To: Lauren Hollenbeck <LHollenbeck@cityofcamas.us>
Subject: Comments regarding 2 projects on Friberg-Strunk Rd.

WARNING: This message originated outside the City of Camas Mail system. DO NOT CLICK on links or open attachments unless you recognize the sender and are expecting the content. If you are unsure, click the Phish Alert button to redirect the email for ITD review.

Hi, Ms. Hollenbeck,

Could you please forward these comments to the appropriate parties?

We are located adjacent to the outermost parts of the City of Camas and hope that new construction is of the character that any person living within Camas city limits would be proud to live next to. I encourage planners to visit our residential subdivision and observe that we lend a sophisticated flair to any new potential neighborhood business, expecting the same in return.

As a neighbor living at the corner of Friberg and NE 13th Street, I would like to make a couple of comments/suggestions regarding two building projects:

Warehouse at the corner of Friberg and NE 13th:

We request that there will be

1. dark sky lighting (we are an immediately adjacent neighbor, and are already receiving too much light from a too bright traffic light); also to benefit the wildlife abundant in the area
2. no additional noise during resting hours 8 p.m. to 8 a.m. (e.g. no beeping sounds from trucks backing up, engine noises, etc.)

3. no spaces that might invite homeless camps
4. no warehouse growing of plants that emit odors (e.g. marijuana)

Eateries at the corner of Friberg and Lake Road:

This project could be viewed as an attractive nuisance for minors. Due to the proximity of the high school and the fact that juniors and seniors (ages 16, 17, and 18) are allowed to leave campus during a short lunch period, special measures should be taken to avoid injuries or deaths. The signal light is the only safe place to cross Friberg Road. Some barrier (fence?) or building orientation needs to force students to cross at the signal light at the corner of Friberg and Lake Road. Other options might include a strictly enforced 20 mph speed limit during school hours with an on-demand signal light that stops traffic closer to Union High School than the corner with Lake Road. Before and after school there may also be 14 and 15-year-olds trying to cross unsafely unless precautions are taken.

Could you please reply to this email with a confirmation of receipt?

Thank you,
Karin Nosrati
20107 NE 14th Street
Camas, WA 98607
360-254-1585

JORDAN RAMIS

Jamie D. Howsley
jamie.howsley@jordanramis.com
WA Direct Dial: (360) 567-3913
OR Direct Dial: (503) 598-5503

PacWest, 27th Floor
1211 SW Fifth Avenue
Portland, OR 97204
T (503) 598-7070
F (503) 598-7373

January 3, 2023

VIA E-MAIL ONLY

Joe Turner, Hearings Officer
c/o Madeline Sutherland
City of Camas
616 NE 4th Ave
Camas WA 98607
E-mail: msutherland@cityofcamas.us

Re: Oak Tree Traffic Study and TIF Fees

Dear Mr. Turner:

Thank you for leaving the record open to allow the applicant to submit additional information regarding the trip generation and related traffic information. A traffic study from Hann Lee & Associates of today's date will provide the technical traffic information for the record. This letter is to provide additional background information about the market strategy for this project and it's location among the surrounding uses and larger community. That geographic context informs the reality of how the food service uses on the site will relate to the larger community in a manner that is not captured by the standard mathematics of traffic engineering.

The food cart pods have capacity for 22 carts. Because food cart pods are a relatively new land use, there is limited data available on trip generation from the standard reference, the ITE Trip Generation Manual, 11th Edition. Food cart pods are ITE Land Use Code 931. However, the trip generation estimate was derived from only four studies, which is an unusually small data set. Like any estimate derived from a small data set, the accuracy is suspect.

Therefore, the applicant hired Hann Lee & Associates to perform more specific analysis of trip generation at three food cart pods around the Portland metropolitan area: Happy Valley Station Food Carts (22 carts); Troutdale Station Food Carts (23 carts); and Eastport Food Carts (25 carts). These three examples were selected due to their east side locations and similar sizes to the proposed 22 carts pod in Camas. That study indicates an average pm peak hour trip generation of 3.31 trips per cart. That trip generation estimate would normally result in a specified TIF fee. However, none of the studied food cart pods are located across the street from a growing high school, so even this data is less than ideal.

In Washington the vesting statute for land use ordinances, RCW 58.17.033, does not apply to municipal TIF ordinances. *New Castle Investments v. City of La Center*, 98 Wn App 224, 989 P2d 569 (1999). As a result, the TIF fee need not be conclusively determined in this proceeding, and the applicant intends to pursue a reduced TIF fee in a separate proceeding after the land use approval, because the location of the pod and other food service uses will result in an exceptional number of pedestrian and pass by trips that are not captured by the conventional engineering methodologies.

The marketing strategy for this project is the location, across the street from Union High School. You may be aware that Subway already has a successful sandwich shop right within the school itself. The

JORDAN RAMIS

applicant's market research indicates that the high school enrollment now exceeds 2,000 students, aka voracious teenagers. And as the surrounding area develops, the student population will increase proportionally. Instead of expecting the hungry teens to climb into their cars and drive west over to the 192nd corridor for some Popeyes Louisiana Kitchen, Wendy's, Café Yumm, or Sonic, as they frequently do today, the applicant is bringing numerous food choices to within walking distance of the school. The City of Camas supports pedestrian oriented development, and you may have noticed that the site plan shows the generous sidewalks along the street frontage and within this site. This approach is seen at the Hillsdale Food Park in SW Portland, across from Wells High School (formerly Wilson), although that pod is much smaller, with only five carts.

The applicant anticipates that lunch will be the peak hour of business. Because this is an off peak traffic time, and the teens are unlikely to drive across the street, there are no adverse impacts to the surrounding street traffic from the teens walking over for lunch. Later in the day, like all high schools, Union hosts a variety of after school programs and events. These activities are widely staggered over the afternoon and evening hours, as any family that has attempted to have a regularly scheduled dinner knows all too well. This project's location across from the high school means two things for purposes of the TIF.

First, because this site is located well away from employment uses, and away from the arterial routes from those uses to residential areas, the typical 5:00 pm to 6:00 pm rush of workers grabbing dinner on the way home is not likely to occur. The second point is that most customers during the hours after classes end until late in the evening when the activities wind up will be pedestrians catching a bite on their way to or from school activities, or at most they will be pass by trips during inclement weather. Because the after school activities are staggered throughout the late afternoon and evening, the proposed food service uses will not generate a peak hour of trips like the typical food service uses located on arterial streets. Rather, the customers are spread more evenly throughout the late afternoon and evening. For example, the annual peak hours of the food service uses will be on Friday nights at 6:30 pm when the football team is playing at home (the games start at 7:00 pm); and over the lunch hour on graduation day (which is held on a Saturday at 10:00 am). Both of these annual peak events are outside the pm peak hour of commuter traffic on the surrounding streets.

Thus the unusual location of the proposed food service uses—far from an arterial street but across the street from Union High School—means that unlike most food service uses, there will not be a large number of pm peak hour trips. The applicant looks forward to working out an agreeable formula for calculating the TIF following completion of the land use decision.

Thank you for your assistance in this case, and please let us know if additional information would be helpful.

Sincerely,

JORDAN RAMIS PC

Jamie D. Howsley
Admitted in Oregon and Washington

H. Lee & Associates, PLLC
Civil Engineering, Traffic Engineering, and Planning

P.O. Box 1849
Vancouver, WA 98668
Phone: (360) 727-3119

MEMORANDUM

JEONG HANN LEE STATE OF WASHINGTON 43845 PROFESSIONAL ENGINEER 1/3/23

To: Clark County Staff

From: H. Lee & Associates, PLLC

Date: January 3, 2023

Subject: Revised Oak Tree Station Traffic Impact Study

INTRODUCTION

H. Lee & Associates, PLLC (HLA) has revised the original Oak Tree Station traffic impact study conducted by Engineering Northwest on November 1, 2022. The revisions addressed comments by the City of Camas staff in regard to the project's trip generation. To remedy the concerns by city staff, HLA conducted a special trip generation study for the food cart portion of the project. In addition, the trip generation for the strip retail plaza was revised to be in alignment with the practices recommended in the most recent Institute of Transportation Engineers (ITE) Trip Generation, 11th Edition, 2021.

Per agreement with city staff, HLA focused on the trip generation and the 2027 "With Project" levels of service analysis revisions. The existing condition and background information in the Engineering Northwest traffic impact study was not revised since they do not influence the conclusions of the revised traffic impact study.

It should be noted that HLA already had recent traffic counts less than a year old at the City of Camas study area intersections. Therefore, the HLA traffic counts were used in the revised analysis.

PROJECT DESCRIPTION/STUDY AREA INTERSECTIONS

The proposed Oak Tree Station is located at the northwest corner of the NW Friberg-Strunk Street/NW Lake Road intersection in Camas, Washington and is comprised of tax lot 176162-000. The proposed project is the development of a 12,574 square foot commercial building, 600 square foot coffee shop with a drive thru, and a 4,704 square foot indoor eating area serving 22 food carts. Access will be provided from an existing driveway onto NW Friberg-Strunk Street and constructing a new right in, right out driveway onto NW Lake Road. Figure 1 shows the project site vicinity and Figure 2 shows the project's site plan.

The revised traffic impact study included the following City of Camas intersections:

- NW Lake Road/NW Friberg-Strunk Street/SE 1st Street
- NW Lake Road/NW Parker Street/NW Larkspur Street

- NW Friberg-Strunk Street/Project Access
- NW Lake Road/Project Access

No City of Vancouver intersections were included in the levels of service analysis. Instead, the trip distribution and assignment were extended to City of Vancouver intersections where the city is collecting pro-rata share fees for future improvements.

Figure 3 shows the existing lane configurations and traffic control at these intersections.

EXISTING TRAFFIC VOLUMES

A.M. and P.M. peak hour traffic counts were obtained at the study area intersections by H. Lee & Associates, PLLC (HLA) in March 2022. Per the Highway Capacity Manual (HCM) 7th Edition, peak 15-minute traffic volumes were multiplied by four (4) to arrive at the peak hour traffic volumes. With this methodology of developing peak hour traffic volumes, the peak hour factor (PHF) is set to 1.00 because the peaking has already occurred by multiplying the peak 15-minute traffic volume by four (4). The existing condition traffic volumes are presented in Figure 4. The existing traffic counts can be referenced in Appendix A.

2027 "WITHOUT PROJECT" TRAFFIC VOLUMES

The 2027 "Without Project" condition was analyzed as the future baseline condition for the traffic analysis and to define a baseline by which project impacts are determined. The 2027 "Without Project" condition traffic volumes were derived by using a 2.0 percent annual, compounded growth factor and adding traffic generated by "in process" developments. The "in-process" traffic volumes were obtained from the City of Camas staff and can be referenced in Appendix B. Figure 5 shows the 2027 "Without Project" traffic volumes.

TRIP GENERATION SURVEY FOR FOOD CARTS

Since ITE's Trip Generation, 11th Edition, 2021does not have sufficient information for the Food Cart Pod land use, HLA conducted a special trip generation survey to establish local rates specific to the proposed food cart station with indoor seating use to be able to properly estimate the trip generation of the proposed Oak Tree Station.

The trip generation survey methodology was based on the *Trip Generation Handbook, 3rd Edition*, Chapter 9 (Institute of Transportation Engineers (ITE), August 2014). The *Trip Generation Handbook* calls for at least three sites to be studied and five preferred. Per conversations with City of Camas staff, three similar sites were surveyed as part of the trip generation survey. The three sites that were surveyed are summarized below:

- Happy Valley Station Food Carts – 13551 SE 145th Avenue, Happy Valley, OR 97015
  22 food cart kitchens

- Troutdale Station Food Carts – 151 SW 257th Drive, Troutdale, OR 97060
  23 food cart kitchens

- Eastport Food Carts – 3905 SE 82nd Avenue, Portland, OR 97266
  25 food cart kitchens

Trip generation surveys were conducted at the survey sites on a typical Tuesday, Wednesday, or Thursday from one hour before opening to one hour after closing. The days each facility were counted are summarized below:

- Happy Valley Station Food Carts – 12/20/2017
- Troutdale Station Food Carts – 12/13/2022
- Eastport Food Carts – 12/13/2022

It should be noted that the Happy Valley Station Food Cart data was collected in 2017 for a previous project and reused in this study.

The trip generation rates for weekday daily; and peak hour of adjacent street one hour between 4:00 and 6:00 P.M. were derived from the data collected based on an overall weighted average of all three sites. The independent variable chosen was the total number of food cart kitchens of each station. It should be noted that none of the three sites surveyed are open during the A.M. peak hour and therefore no A.M. peak hour rate was derived.

Attachment C contains the data utilized to derive the daily and P.M. peak hour trip generation rates.

The daily trip generation rate is derived in Table 1. The daily rate was derived using a weighted average. The daily trip generation rate derived for the food cart station with indoor seating use is 24.77 trips per food cart kitchen. The standard deviation is 8.56 which is 34.6% of the weighted average. The standard deviation is within the recommended range to use by the ITE *Trip Generation Handbook* which recommends the standard deviation to be within 55 percent of the weighted average.

Table 1. Derived Daily Trip Generation Rate

Food Cart Station	Number of Food Cart Kitchens	Daily Trips	Daily Rate
Happy Valley Station Food Carts	22	627	28.50
Troutdale Station Food Carts	23	723	31.43
Eastport Food Carts	25	384	15.36
Totals	70	1,734	24.77[1]
Standard Deviation			8.56

[1]Weighted Average

The P.M. peak hour trip generation rate is derived in Table 2. The P.M. peak hour rate was derived using a weighted average. The P.M. peak hour trip generation rate derived for the food cart station with indoor seating use is 3.31 P.M. peak hour trips per food cart kitchen. The standard deviation is 1.03 which is 31.1% of the weighted average. The standard deviation is within the recommended range to use by the ITE *Trip Generation Handbook* which recommends the standard deviation to be within 55 percent of the weighted average.

Table 2. Derived P.M. Peak Hour Trip Generation Rate

Food Cart Station	Number of Food Cart Kitchens	P.M. Peak Hour Trips[2]	P.M. Peak Hour Rate
Happy Valley Station Food Carts	22	92	4.18
Troutdale Station Food Carts	23	85	3.70
Eastport Food Carts	25	55	2.20
Totals	70	232	3.31[1]
Standard Deviation			1.03

[1]Weighted Average
[2]Inbound 54%, Outbound 46%

TRIP GENERATION

Estimates of daily and P.M. peak hour trips generated by food cart station with indoor seating use were developed from the survey conducted by HLA that is detailed in the previous "Trip Generation Survey for Food Carts" section. Estimates of daily, A.M. peak hour, and P.M. peak hour trips generated by the strip retail plaza and coffee/donut shop with drive-thru window and no indoor seating uses were developed from rates published in "Trip Generation, 11th Edition" (Institute of Transportation Engineers, 2021). The proposed project is expected to generate 1,010 daily, 32 A.M peak hour (19 in, 13 out), and 125 P.M. peak hour (66 in, 59 out) net new trips. Table 3 summarizes the project's trip generation.

TRIP DISTRIBUTION AND ASSIGNMENT

A generalized peak hour trip distribution was developed from a select zone assignment from RTC's regional model. Attachment D contains the select zone assignment model run traffic volume plot. Figure 6a shows the resulting trip distribution pattern and assignment of net new project-generated trips. Figure 6b shows the resulting trip distribution pattern and assignment of the pass-by trips.

Table 3. Trip Generation for Oak Tree Station

	Amount	Average Daily	A.M. Peak			P.M. Peak		
			In	Out	Total	In	Out	Total
Food Cart Station – HLA								
Rate per food cart kitchen		25.10	-	-	-	1.79	1.52	3.31
Trips	22 units	552	-	-	-	40	33	73
Pass-By Trips – 43%		(237)	-	-	-	(16)	(15)	(31)
Net Total for Food Cart Station		315	-	-	-	24	18	42
Strip Retail Plaza (<40k sf) – ITE LUC 822								
Rate per 1,000 square feet (ksf)		54.45	1.42	0.94	2.36	3.29	3.30	6.59
Trips	12.574	685	18	12	30	42	41	83
Coffee/Donut Shop with Drive-Thru Window and No Indoor Seating – ITE LUC 938								
Rate per 1,000 square feet (ksf)		179.00	19.90	19.91	39.81	7.54	7.54	15.08
Trips	0.600	107	12	12	24	4	5	
Pass-By Trips – 90% AM – 98% PM		(96)	(11)	(11)	(22)	(4)	(5)	(31)
Net Total for ITE LUC 938		11	1	1	2	-	-	-
Gross Site Total		1,344	30	24	54	86	79	165
Pass-By Total		(334)	(11)	(11)	(22)	(20)	(20)	(40)
Net Site Total		**1,010**	**19**	**13**	**32**	**66**	**59**	**125**

2027 "WITH PROJECT" TRAFFIC VOLUMES AND LEVELS OF SERVICE

The traffic volumes shown in Figures 5, 6a, and 6b were combined to arrive at the 2027 "With Project" A.M. and P.M. peak hour traffic volumes. Figure 7 shows these traffic volumes. Levels of service were calculated for the 2027 "With Project" condition based on the traffic volumes shown in Figure 7 and the lane configurations previously shown in Figure 3. Appendix E contains the level of service worksheets for the 2027 "With Project" condition.

According to the HCM, there are six levels of service (LOS) by which the operational performance of an intersection may be described. These levels of service range between LOS "A" which indicates a relatively free-flowing condition and LOS "F" which indicates operational breakdown. LOS D is the City of Camas' adopted level of service standard for arterial/collector intersections. For non-arterial/collector intersections, LOS C is the adopted level of service standard.

The 2027 "With Project" A.M. and P.M. peak hour levels of service at the study area intersections are summarized in Table 4. As shown in Table 4, all of the study area intersections are projected to operate within the acceptable levels of service standards in the 2027 "With Project" condition.

Table 4. 2027 "Without Project" Levels of Service

Signalized Intersection	A.M. Peak Hour LOS	A.M. Peak Hour Average Delay (sec)	P.M. Peak Hour LOS	P.M. Peak Hour Average Delay (sec)
NW Lake Road/NW Friberg-Strunk Street/SE 1st Street	C	21.3	B	12.4
NW Lake Road/NW Parker Street/NW Larkspur Street	B	12.8	B	14.9
Unsignalized Intersection				
NW Friberg-Strunk Street/Project Access				
Southbound Left	A	7.9	A	8.4
Westbound Approach	B	11.0	B	13.3
NW Lake Road/Project Access				
Southbound Right	A	9.4	A	9.5

PROPORTIONATE SHARE FEES

The City of Vancouver is currently collecting proportionate share fees at the following City of Vancouver intersections:

- NE 192nd Avenue/NE 13th Street
- SE 192nd Avenue/SE 34th Street
- SE 192nd Avenue/SR-14 Westbound Ramps

The proportionate share fees are based on a cost per P.M. peak hour trip and P.M. peak hour project trip impact. The cost per P.M. peak hour trip of the proportionate share fees was obtained from City of Vancouver staff. Table 5 summarizes the required proportionate share fees for the Oak Tree Station based on the cost per P.M. peak hour trip and P.M. peak hour project trip impact.

It should be noted that the pro-rata share contributions identified is for the entire Oak Tree Station project. If the project is to be constructed by phase, the City of Vancouver should allow the pro-rata share contributions to be paid by phase based on the identified portion trip generation for each proposed use.

Table 5. Pro-Rata Share Contributions

Intersection	P.M. Peak Hour Impact: Project P.M. Peak Hour Trip Impact	P.M. Peak Hour Impact: Cost Per P.M. Peak Hour Trip Impact	P.M. Peak Hour Impact: Pro-rata Share Contribution Required
NE 192nd Avenue/NE 13th Street	19 P.M.	$400.00	$7,600.00
SE 192nd Avenue/SE 34th Street	17 P.M.	$150.00	$2,550.00
SE 192nd Avenue/SR-14 Westbound Ramps	11 P.M.	$2,000.00	$22,000.00

CONCLUSION

Based on the traffic impact analysis documented in this report, no physical, off-site mitigation would be needed. However, proportionate share fees toward three City of Vancouver pro-rata share contribution improvement projects will be required by the City of Vancouver. As previously discussed, if the project is to be constructed by phase, the City of Vancouver should allow the pro-rata share contributions to be paid by phase based on the identified portion trip generation for each proposed use.

Figure 1. Site Vicinity Map
Figure 2 Site Plan
Figure 3. Existing Land Configurations and Traffic Control
Figure 4. Existing Traffic Volumes
Figure 5. 2027 “Without Project” Traffic Volumes
Figure 6a. Trip Distribution and Assignment
Figure 6b. Pass-by Trips
Figure 7. 2027 “With Project” Traffic Volumes

Attachment A – Existing Traffic Counts
Attachment B – In Process Traffic
Attachment C – Food Cart Trip Generation Survey Data
Attachment D – RTC Select Zone Assignment
Attachment E – 2027 “With Project” Levels of Service Worksheets

Oak Tree Station TIA
Camas, WA

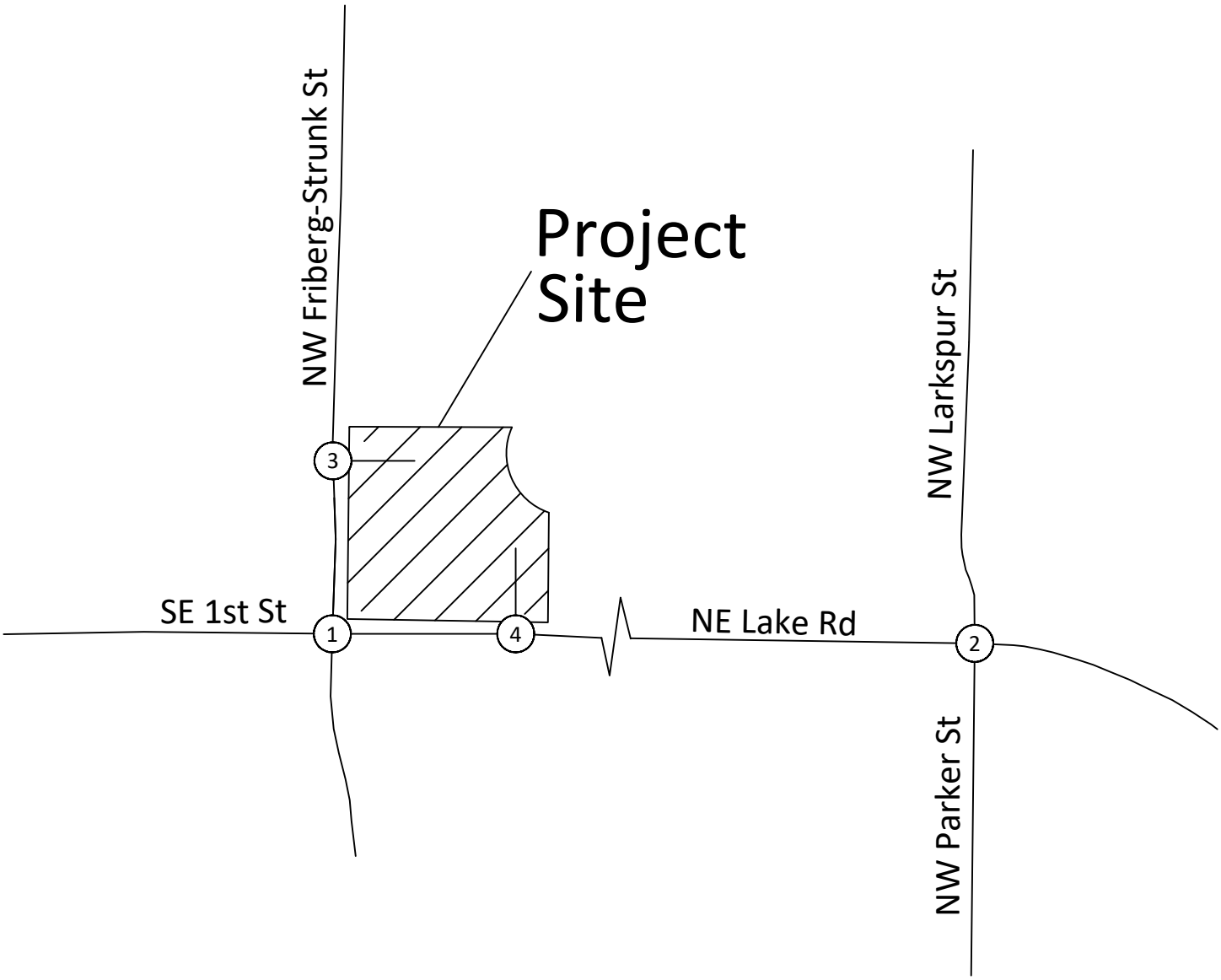


FIGURE 1
Vicinity Map

NOT TO SCALE

22047_Figures.Dwg

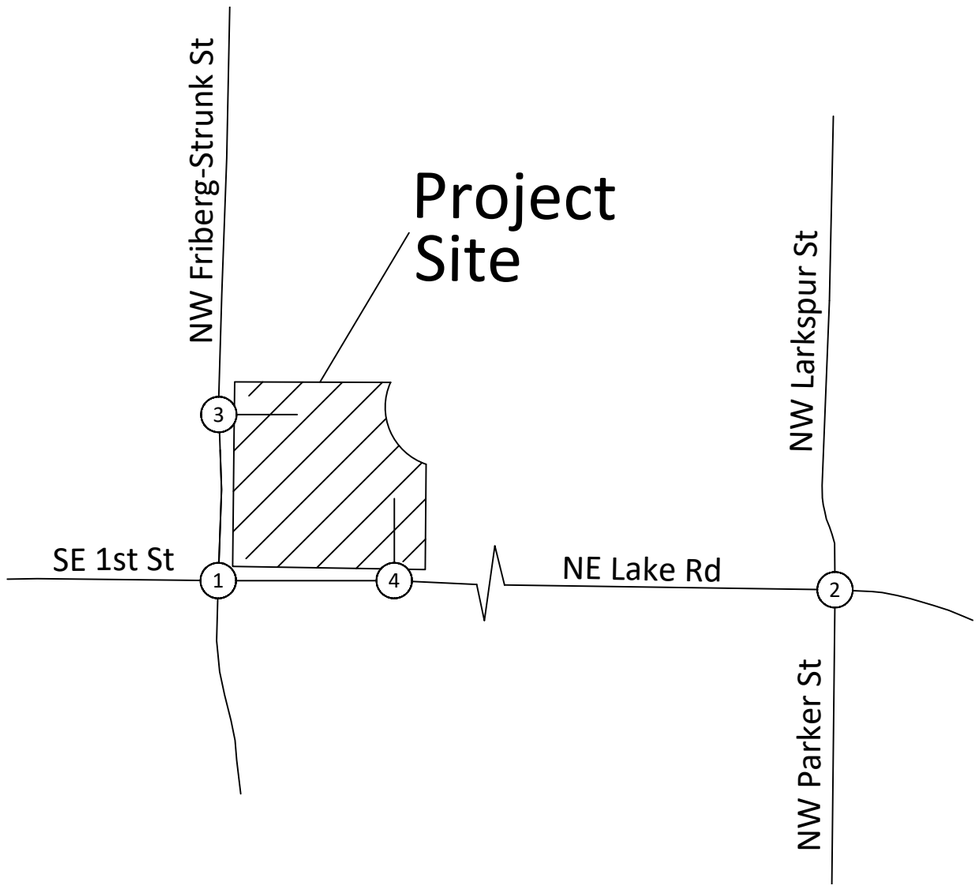
Oak Tree Station TIA
Camas, WA

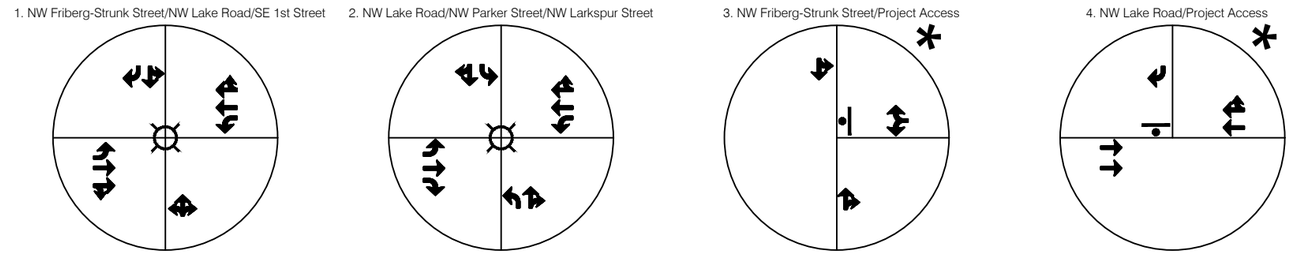
FIGURE 2
Site Plan

NOT TO SCALE

22047_Figures.Dwg

Oak Tree Station TIA
Camas, WA





LEGEND

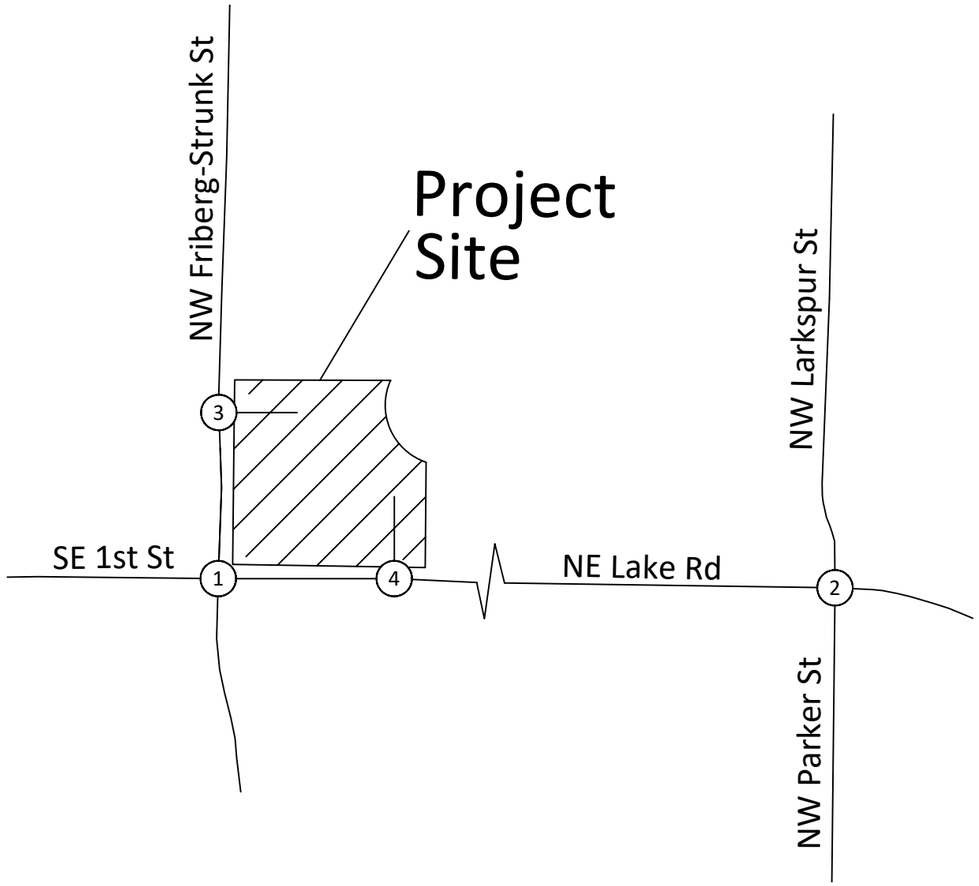
- Lane Usage
- Traffic Signal
- Stop Sign
- Roundabout
- * 2027 "With Project" Lane Configuration

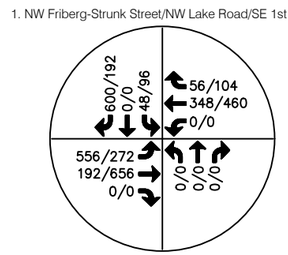
NOT TO SCALE

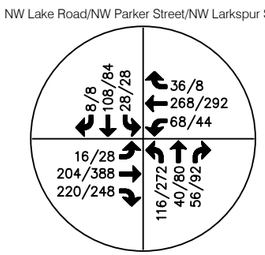
FIGURE 3
Existing Lane Configuration and Traffic Control

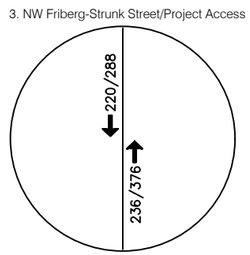
22047_Figures.Dwg

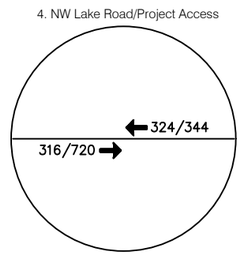
Oak Tree Station TIA
Camas, WA











LEGEND

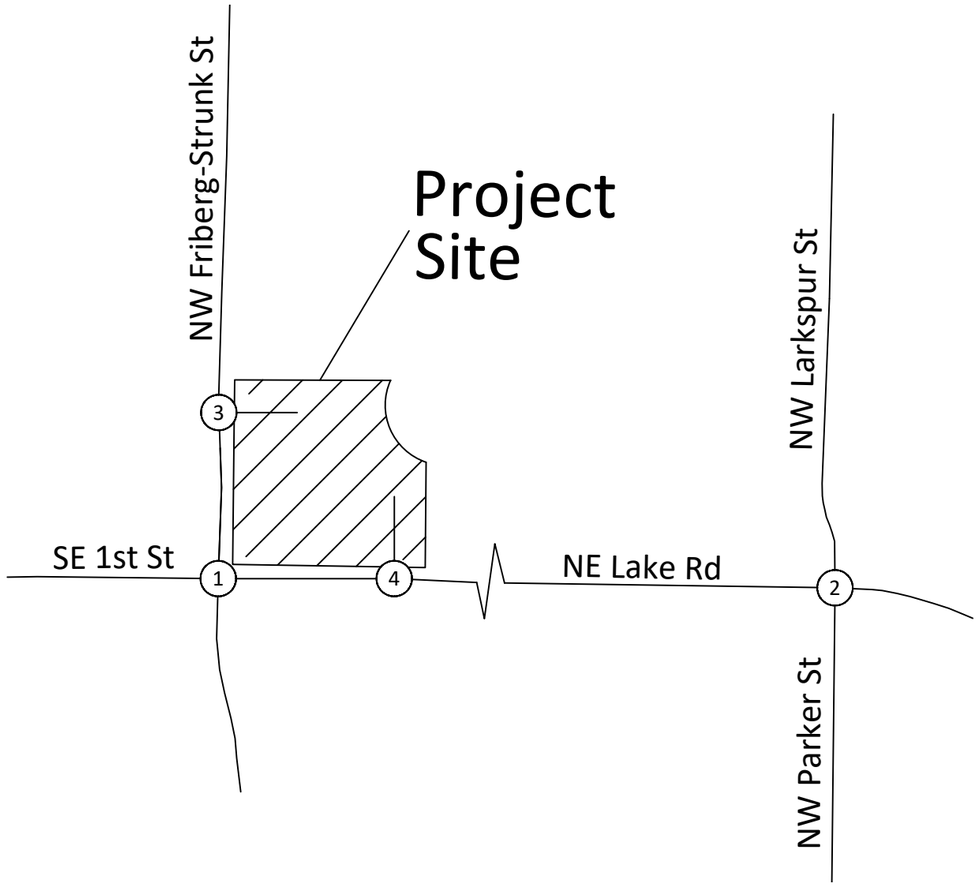
128/200 A.M./P.M. Peak Hour Traffic Volume

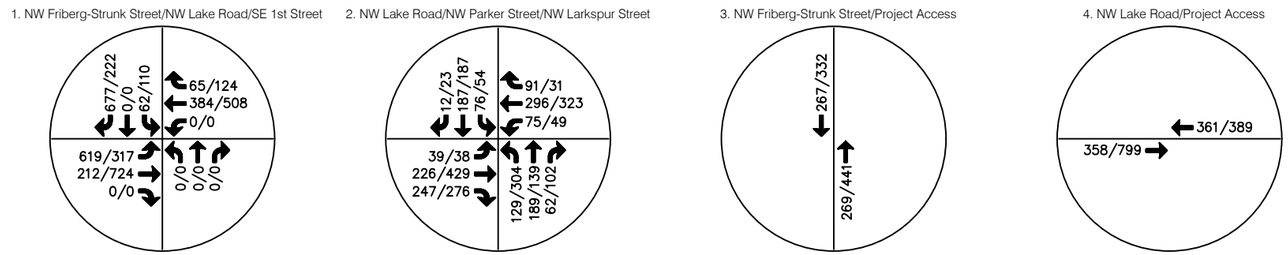
NOT TO SCALE

FIGURE 4
Existing A.M. and P.M.
Peak Hour Traffic Volumes

22047_Figures.Dwg

Oak Tree Station TIA
Camas, WA





LEGEND

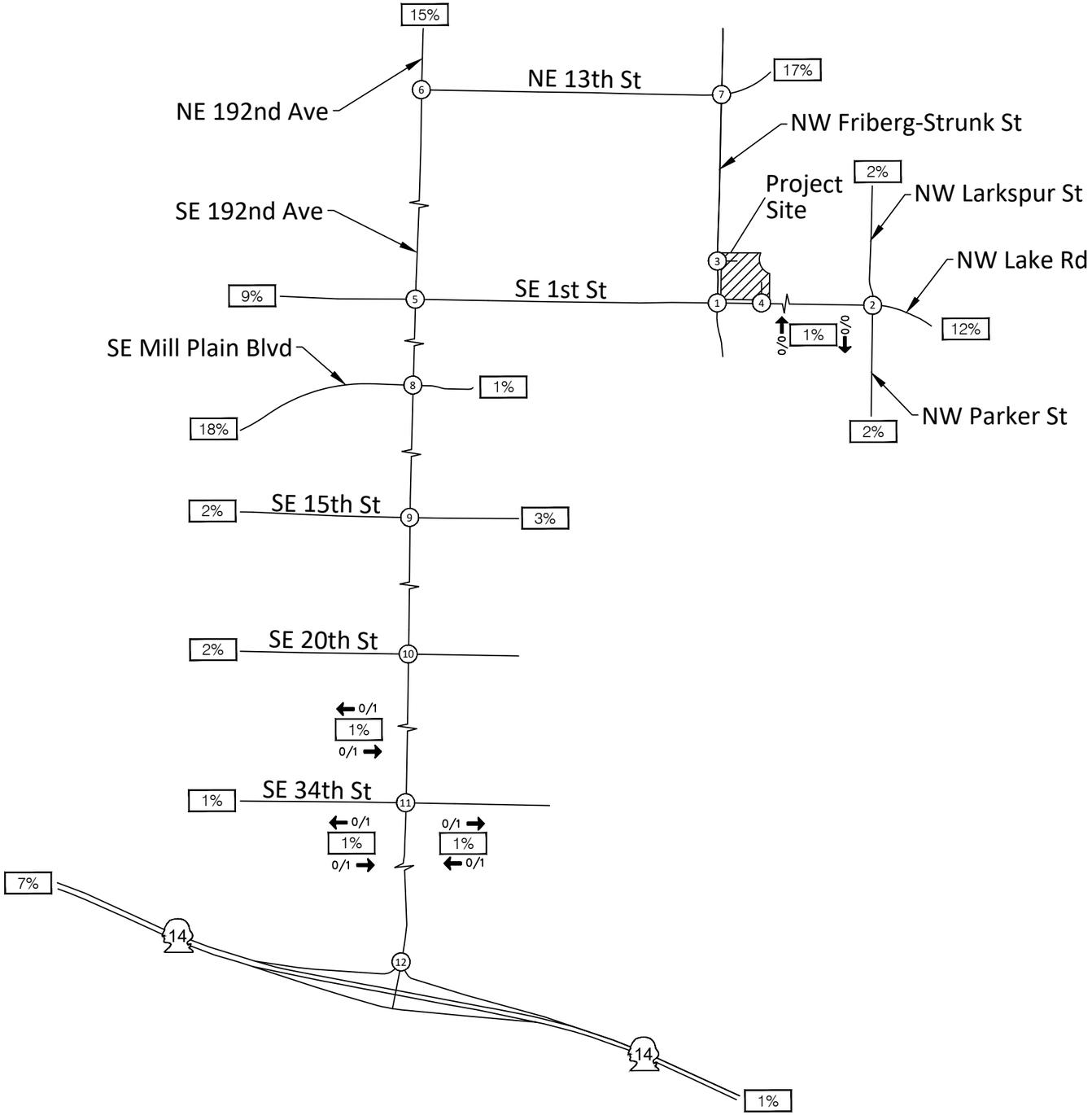
128/200 A.M./P.M. Peak Hour Traffic Volume

NOT TO SCALE

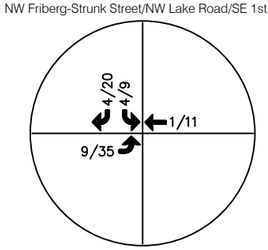
FIGURE 5
2027 "Without Project"
A.M. and P.M. Peak Hour Traffic Volumes

22047_Figures.Dwg

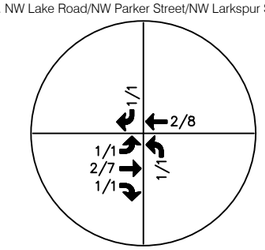
Oak Tree Station TIA
Camas, WA



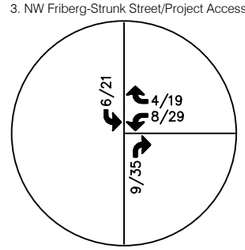
1. NW Friberg-Strunk Street/NW Lake Road/SE 1st Street



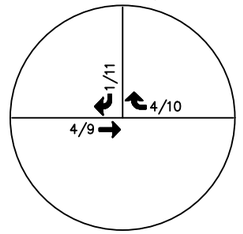
2. NW Lake Road/NW Parker Street/NW Larkspur Street



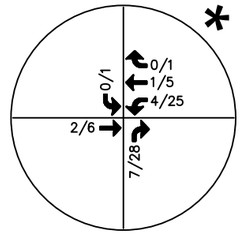
3. NW Friberg-Strunk Street/Project Access



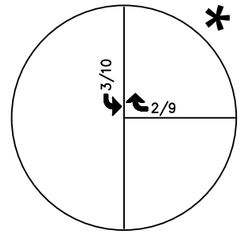
4. NW Lake Road/Project Access



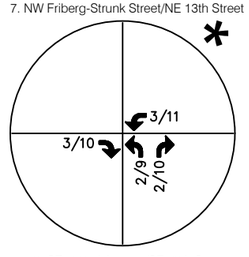
5. SE 192nd Avenue/SE 1st Street



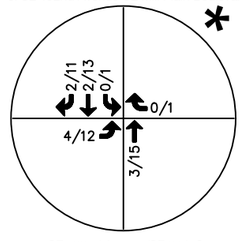
6. NE 192nd Avenue/NE13th Street



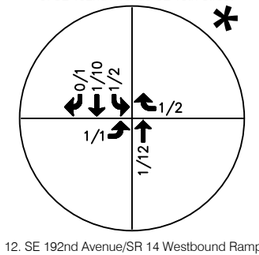
7. NW Friberg-Strunk Street/NE 13th Street



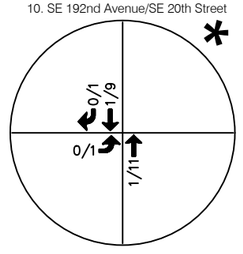
8. SE 192nd Avenue/SE Mill Plain Boulevard



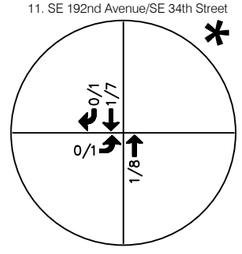
9. SE 192nd Avenue/SE 15th Street



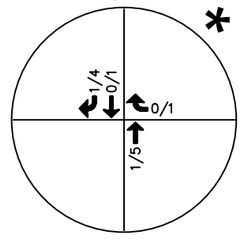
10. SE 192nd Avenue/SE 20th Street



11. SE 192nd Avenue/SE 34th Street



12. SE 192nd Avenue/SR 14 Westbound Ramps



LEGEND

128/200 A.M./P.M. Peak Hour Traffic Volume

10% Peak Hour Trip Distribution

* Not Study Area Intersections. Shown for Trip Distribution and Assignment Purposes Only

NOT TO SCALE

FIGURE 6a
Trip Distribution and Assignment Traffic Volumes

22047_Figures.Dwg

Oak Tree Station TIA
Camas, WA

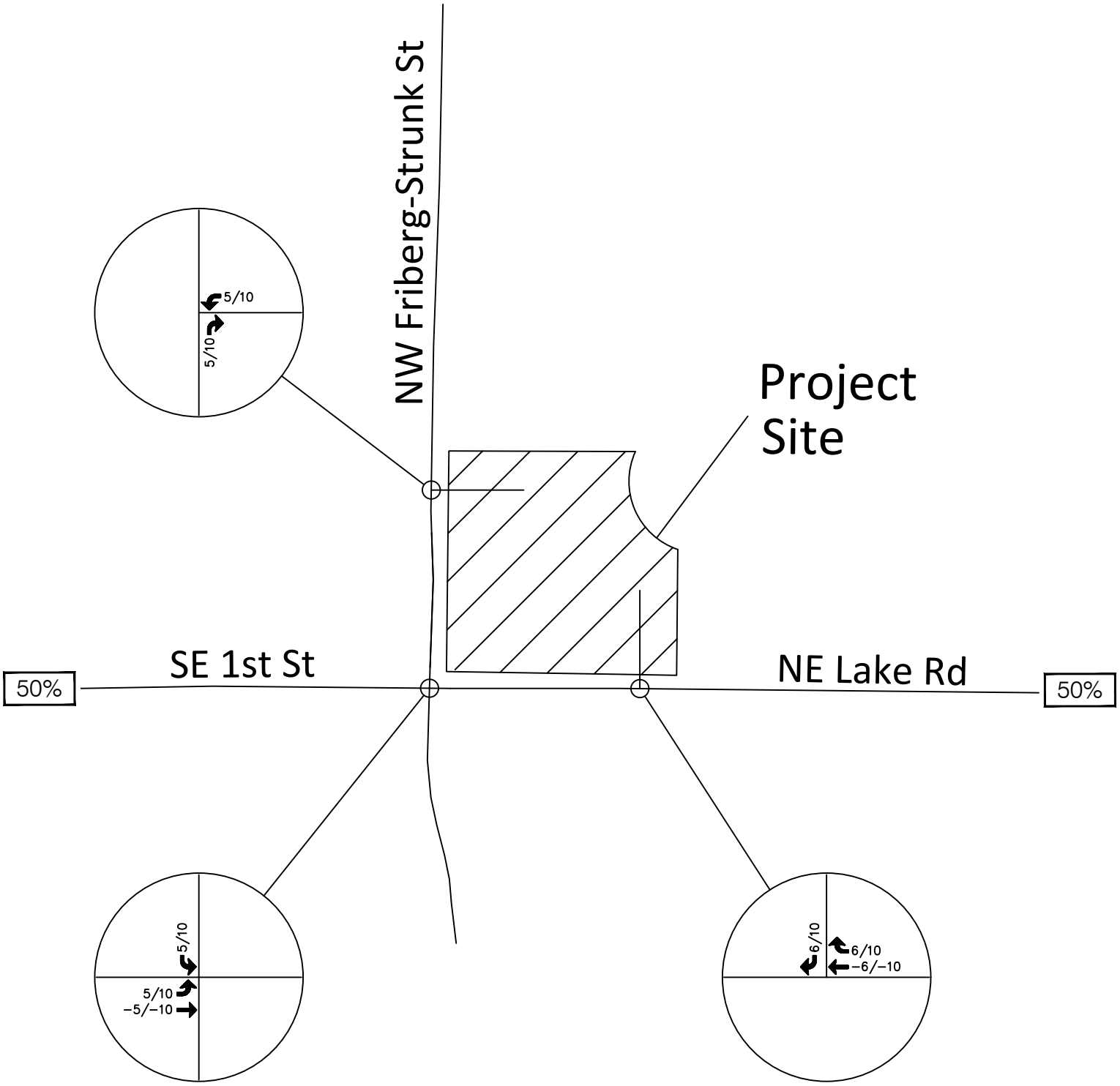
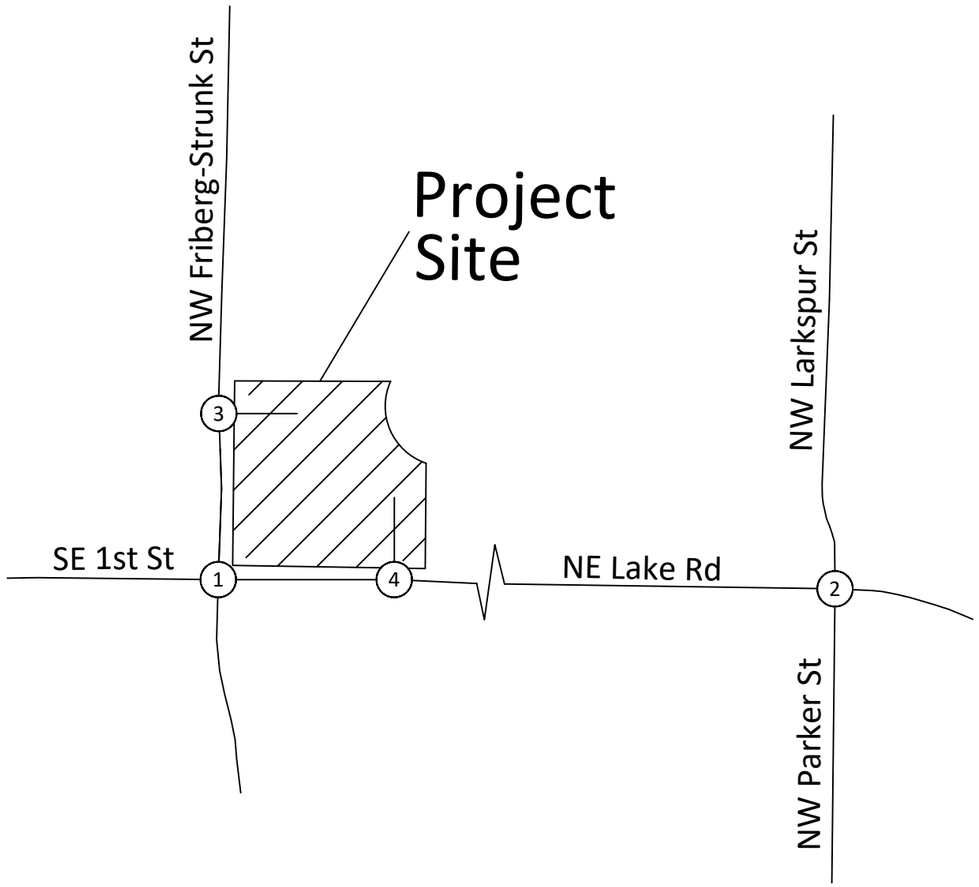


FIGURE 6b
Pass-By Trips
Trip Distribution and Assignment
Traffic Volumes

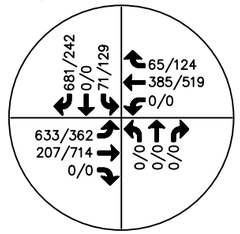
NOT TO SCALE

22047_Figures.Dwg

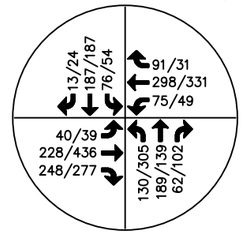
Oak Tree Station TIA
Camas, WA



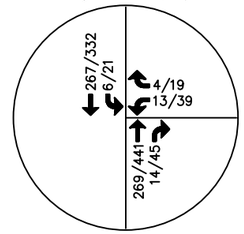
1. NW Friberg-Strunk Street/NW Lake Road/SE 1st Street



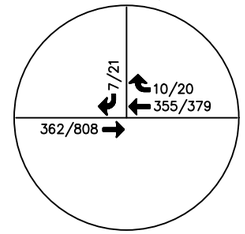
2. NW Lake Road/NW Parker Street/NW Larkspur Street



3. NW Friberg-Strunk Street/Project Access



4. NW Lake Road/Project Access



LEGEND

128/200 A.M./P.M. Peak Hour Traffic Volume

NOT TO SCALE

FIGURE 7
2027 "With Project"
A.M. and P.M. Peak Hour Traffic Volumes

22047_Figures.Dwg

ATTACHMENT A

Intersection: NW Lake Road/NW Friberg-Strunk Street/SE 1st Street Date: 03/02/22
AM Peak Hour Turning Movement Volumes

	SB				WB				NB				EB				
Time	SBR	SBT	SBL	Trucks	WBR	WBT	WBL	Trucks	NBR	NBT	NBL	Trucks	EBR	EBT	EBL	Trucks	Total
15 Minute Totals																	
7:00 - 7:15 AM	15	0	9	1	14	36	0	2	0	0	1	0	0	42	12	1	129
7:15 - 7:30 AM	25	0	14	1	9	42	0	2	0	0	0	0	0	39	36	2	165
7:30 - 7:45 AM	28	0	15	1	17	45	0	3	0	0	0	0	0	63	29	2	197
7:45 - 8:00 AM	30	0	25	2	17	69	0	1	1	0	0	0	0	95	42	4	279
8:00 - 8:15 AM	31	0	17	2	20	60	0	2	0	0	2	0	0	62	61	7	253
8:15 - 8:30 AM	79	0	14	9	10	60	0	0	0	0	0	0	0	78	147	14	388
8:30 - 8:45 AM	150	0	12	9	14	87	0	3	0	0	0	0	0	48	139	2	450
8:45 - 9:00 AM	19	0	12	5	8	99	0	1	0	0	0	0	0	55	22	4	215
															Peak 15 Total		450
Hourly Total by 15 minutes																	
7:00 - 8:00 AM	98	0	63	5	57	192	0	8	1	0	1	0	0	239	119	9	770
7:15 - 8:15 AM	114	0	71	6	63	216	0	8	1	0	2	0	0	259	168	15	894
7:30 - 8:30 AM	168	0	71	14	64	234	0	6	1	0	2	0	0	298	279	27	1,117
7:45 - 8:45 AM	290	0	68	22	61	276	0	6	1	0	2	0	0	283	389	27	1,370
8:00 - 9:00 AM	279	0	55	25	52	306	0	6	0	0	2	0	0	243	369	27	1,306
Peak Hour 7:45 - 8:45 AM	290	0	68	22	61	276	0	6	1	0	2	0	0	283	389	27	1,370
Peak Hour Factor		0.55				0.83				0.38				0.75			0.76
Peak Hour % Trucks		6%				2%				0%				4%			
Peak 15 Min % Trucks		6%				3%				0%				1%			

Intersection: NW Lake Road/NW Friberg-Strunk Street/SE 1st Street Date: 03/01/22
PM Peak Hour Turning Movement Volumes

	SB				WB				NB				EB				
Time	SBR	SBT	SBL	Trucks	WBR	WBT	WBL	Trucks	NBR	NBT	NBL	Trucks	EBR	EBT	EBL	Trucks	Total
15 Minute Totals																	
4:00 - 4:15 PM	27	0	3	0	23	117	0	3	0	0	0	0	0	114	59	1	343
4:15 - 4:30 PM	42	0	13	1	18	80	0	0	0	0	0	0	0	137	56	1	346
4:30 - 4:45 PM	21	0	14	0	25	91	0	2	0	0	0	0	0	145	59	4	355
4:45 - 5:00 PM	31	0	18	1	29	83	0	3	0	0	0	0	0	130	65	0	356
5:00 - 5:15 PM	34	0	25	0	28	111	0	0	0	0	0	0	0	155	77	2	430
5:15 - 5:30 PM	48	0	24	0	26	115	0	2	0	0	0	0	0	164	68	1	445
5:30 - 5:45 PM	40	0	18	0	23	107	0	4	0	0	0	0	0	162	69	1	419
5:45 - 6:00 PM	35	0	19	0	18	104	0	0	0	0	0	0	0	151	56	0	383
															Peak 15 Total		445
Hourly Total by 15 minutes																	
4:00 - 5:00 PM	121	0	48	2	95	371	0	8	0	0	0	0	0	526	239	6	1,400
4:15 - 5:15 PM	128	0	70	2	100	365	0	5	0	0	0	0	0	567	257	7	1,487
4:30 - 5:30 PM	134	0	81	1	108	400	0	7	0	0	0	0	0	594	269	7	1,586
4:45 - 5:45 PM	153	0	85	1	106	416	0	9	0	0	0	0	0	611	279	4	1,650
5:00 - 6:00 PM	157	0	86	0	95	437	0	6	0	0	0	0	0	632	270	4	1,677
Peak Hour 5:00 - 6:00 PM	157	0	86	0	95	437	0	6	0	0	0	0	0	632	270	4	1,677
Peak Hour Factor		0.84				0.94				0.00				0.97			0.94
Peak Hour % Trucks		0%				1%				0%				0%			
Peak 15 Min % Trucks		0%				3%				0%				1%			

Intersection: NW Lake Road/NW Parker Street/NW Larkspur Street Date: 03/02/22
AM Peak Hour Turning Movement Volumes

	SB				WB				NB				EB				
Time	SBR	SBT	SBL	Trucks	WBR	WBT	WBL	Trucks	NBR	NBT	NBL	Trucks	EBR	EBT	EBL	Trucks	Total
15 Minute Totals																	
7:00 - 7:15 AM	2	8	1	0	1	40	9	2	1	6	11	0	17	30	0	1	126
7:15 - 7:30 AM	1	13	2	0	0	42	8	1	5	5	15	1	17	26	3	0	137
7:30 - 7:45 AM	6	17	5	1	2	52	16	4	3	13	10	0	41	34	2	2	201
7:45 - 8:00 AM	2	27	7	0	9	67	17	1	14	10	29	1	55	51	4	0	292
8:00 - 8:15 AM	4	14	8	0	7	57	17	3	15	17	18	1	32	37	1	4	227
8:15 - 8:30 AM	4	9	10	3	7	65	19	2	15	6	26	2	30	51	5	4	247
8:30 - 8:45 AM	6	23	7	0	8	50	36	1	28	19	20	1	15	36	3	2	251
8:45 - 9:00 AM	6	15	6	0	11	69	19	2	48	14	29	2	19	35	6	3	277
															Peak 15 Total		292
Hourly Total by 15 minutes																	
7:00 - 8:00 AM	11	65	15	1	12	201	50	8	23	34	65	2	130	141	9	3	756
7:15 - 8:15 AM	13	71	22	1	18	218	58	9	37	45	72	3	145	148	10	6	857
7:30 - 8:30 AM	16	67	30	4	25	241	69	10	47	46	83	4	158	173	12	10	967
7:45 - 8:45 AM	16	73	32	3	31	239	89	7	72	52	93	5	132	175	13	10	1,017
8:00 - 9:00 AM	20	61	31	3	33	241	91	8	106	56	93	6	96	159	15	13	1,002
Peak Hour 7:45 - 8:45 AM	16	73	32	3	31	239	89	7	72	52	93	5	132	175	13	10	1,017
Peak Hour Factor		0.84				0.95				0.81				0.73			0.87
Peak Hour % Trucks		2%				2%				2%				3%			
Peak 15 Min % Trucks		0%				1%				2%				0%			

Intersection: NW Lake Road/NW Parker Street/NW Larkspur Street Date: 03/01/22

PM Peak Hour Turning Movement Volumes

	SB				WB				NB				EB				
Time	SBR	SBT	SBL	Trucks	WBR	WBT	WBL	Trucks	NBR	NBT	NBL	Trucks	EBR	EBT	EBL	Trucks	Total
15 Minute Totals																	
4:00 - 4:15 PM	4	13	5	1	9	90	8	2	13	15	38	2	23	77	6	0	301
4:15 - 4:30 PM	3	11	4	1	3	67	14	0	9	15	31	2	24	83	11	2	275
4:30 - 4:45 PM	5	5	6	0	2	70	9	1	11	25	36	1	26	104	10	1	309
4:45 - 5:00 PM	4	18	5	0	5	72	4	0	15	10	27	2	39	82	5	1	286
5:00 - 5:15 PM	4	13	3	0	3	69	9	0	14	22	62	1	39	93	10	1	341
5:15 - 5:30 PM	5	19	14	0	6	68	13	3	17	15	63	3	35	94	3	1	352
5:30 - 5:45 PM	2	21	7	1	2	73	11	0	23	20	68	1	62	97	7	0	393
5:45 - 6:00 PM	3	6	8	0	1	53	15	0	24	21	47	0	45	70	6	0	299
															Peak 15 Total		393
Hourly Total by 15 minutes																	
4:00 - 5:00 PM	16	47	20	2	19	299	35	3	48	65	132	7	112	346	32	4	1,171
4:15 - 5:15 PM	16	47	18	1	13	278	36	1	49	72	156	6	128	362	36	5	1,211
4:30 - 5:30 PM	18	55	28	0	16	279	35	4	57	72	188	7	139	373	28	4	1,288
4:45 - 5:45 PM	15	71	29	1	16	282	37	3	69	67	220	7	175	366	25	3	1,372
5:00 - 6:00 PM	14	59	32	1	12	263	48	3	78	78	240	5	181	354	26	2	1,385
Peak Hour 5:00 - 6:00 PM	14	59	32	1	12	263	48	3	78	78	240	5	181	354	26	2	1,385
Peak Hour Factor		0.69				0.93				0.89				0.84			0.88
Peak Hour % Trucks		1%				1%				1%				0%			
Peak 15 Min % Trucks		3%				0%				1%				0%			

Intersection: NW Friberg-Strunk Street/Project Access Date: 03/02/22

AM Peak Hour Turning Movement Volumes

	SB				WB				NB				EB				
Time	SBR	SBT	SBL	Trucks	WBR	WBT	WBL	Trucks	NBR	NBT	NBL	Trucks	EBR	EBT	EBL	Trucks	Total
15 Minute Totals																	
7:00 - 7:15 AM	0	24	0	1	0	0	0	0	0	26	0	2	0	0	0	0	50
7:15 - 7:30 AM	0	39	0	1	0	0	0	0	0	45	0	2	0	0	0	0	84
7:30 - 7:45 AM	0	43	0	1	0	0	0	0	0	46	0	3	0	0	0	0	89
7:45 - 8:00 AM	0	55	0	2	0	0	0	0	0	59	0	3	0	0	0	0	114
8:00 - 8:15 AM	0	48	0	2	0	0	0	0	0	81	0	5	0	0	0	0	129
8:15 - 8:30 AM	0	93	0	9	0	0	0	0	0	157	0	7	0	0	0	0	250
8:30 - 8:45 AM	0	162	0	9	0	0	0	0	0	153	0	3	0	0	0	0	315
8:45 - 9:00 AM	0	31	0	5	0	0	0	0	0	30	0	3	0	0	0	0	61
															Peak 15 Total		315
Hourly Total by 15 minutes																	
7:00 - 8:00 AM	0	161	0	5	0	0	0	0	0	176	0	9	0	0	0	0	337
7:15 - 8:15 AM	0	185	0	6	0	0	0	0	0	231	0	12	0	0	0	0	416
7:30 - 8:30 AM	0	239	0	14	0	0	0	0	0	343	0	17	0	0	0	0	582
7:45 - 8:45 AM	0	358	0	22	0	0	0	0	0	450	0	17	0	0	0	0	808
8:00 - 9:00 AM	0	334	0	25	0	0	0	0	0	421	0	17	0	0	0	0	755
Peak Hour 7:45 - 8:45 AM	0	358	0	22	0	0	0	0	0	450	0	16.5	0	0	0	0	808
Peak Hour Factor		0.55				0.00				0.72				0.00			0.64
Peak Hour % Trucks		6%				0%				4%				0%			
Peak 15 Min % Trucks		4%				0%				4%				0%			

Intersection: NW Friberg-Strunk Street/Project Access Date: 03/01/22

PM Peak Hour Turning Movement Volumes

	SB				WB				NB				EB				
Time	SBR	SBT	SBL	Trucks	WBR	WBT	WBL	Trucks	NBR	NBT	NBL	Trucks	EBR	EBT	EBL	Trucks	Total
15 Minute Totals																	
4:00 - 4:15 PM	0	30	0	0	0	0	0	0	0	82	0	2	0	0	0	0	112
4:15 - 4:30 PM	0	55	0	1	0	0	0	0	0	74	0	1	0	0	0	0	129
4:30 - 4:45 PM	0	35	0	0	0	0	0	0	0	84	0	3	0	0	0	0	119
4:45 - 5:00 PM	0	49	0	1	0	0	0	0	0	94	0	2	0	0	0	0	143
5:00 - 5:15 PM	0	59	0	0	0	0	0	0	0	105	0	1	0	0	0	0	164
5:15 - 5:30 PM	0	72	0	0	0	0	0	0	0	94	0	2	0	0	0	0	166
5:30 - 5:45 PM	0	58	0	0	0	0	0	0	0	92	0	3	0	0	0	0	150
5:45 - 6:00 PM	0	54	0	0	0	0	0	0	0	74	0	0	0	0	0	0	128
															Peak 15 Total		166
Hourly Total by 15 minutes																	
4:00 - 5:00 PM	0	169	0	2	0	0	0	0	0	334	0	7	0	0	0	0	503
4:15 - 5:15 PM	0	198	0	2	0	0	0	0	0	357	0	6	0	0	0	0	555
4:30 - 5:30 PM	0	215	0	1	0	0	0	0	0	377	0	7	0	0	0	0	592
4:45 - 5:45 PM	0	238	0	1	0	0	0	0	0	385	0	7	0	0	0	0	623
5:00 - 6:00 PM	0	243	0	0	0	0	0	0	0	365	0	5	0	0	0	0	608
Peak Hour 4:45 - 5:45 PM	0	238	0	1	0	0	0	0	0	385	0	6.5	0	0	0	0	623
Peak Hour Factor		0.83				0.00				0.92				0.00			0.94
Peak Hour % Trucks		0%				0%				2%				0%			
Peak 15 Min % Trucks		0%				0%				2%				0%			

Intersection: NW Lake Road/Project Access Date: 03/02/22

AM Peak Hour Turning Movement Volumes

	SB				WB				NB				EB				
Time	SBR	SBT	SBL	Trucks	WBR	WBT	WBL	Trucks	NBR	NBT	NBL	Trucks	EBR	EBT	EBL	Trucks	Total
15 Minute Totals																	
7:00 - 7:15 AM	0	0	0	0	0	50	0	2	0	0	0	0	0	51	0	3	101
7:15 - 7:30 AM	0	0	0	0	0	50	0	2	0	0	0	0	0	53	0	0	103
7:30 - 7:45 AM	0	0	0	0	0	70	0	3	0	0	0	0	0	78	0	2	148
7:45 - 8:00 AM	0	0	0	0	0	93	0	1	0	0	0	0	0	121	0	3	214
8:00 - 8:15 AM	0	0	0	0	0	81	0	2	0	0	0	0	0	79	0	0	160
8:15 - 8:30 AM	0	0	0	0	0	91	0	0	0	0	0	0	0	92	0	2	183
8:30 - 8:45 AM	0	0	0	0	0	94	0	3	0	0	0	0	0	60	0	4	154
8:45 - 9:00 AM	0	0	0	0	0	99	0	1	0	0	0	0	0	67	0	0	166
															Peak 15 Total		214
Hourly Total by 15 minutes																	
7:00 - 8:00 AM	0	0	0	0	0	263	0	8	0	0	0	0	0	303	0	8	566
7:15 - 8:15 AM	0	0	0	0	0	294	0	8	0	0	0	0	0	331	0	5	625
7:30 - 8:30 AM	0	0	0	0	0	335	0	6	0	0	0	0	0	370	0	7	705
7:45 - 8:45 AM	0	0	0	0	0	359	0	6	0	0	0	0	0	352	0	9	711
8:00 - 9:00 AM	0	0	0	0	0	365	0	6	0	0	0	0	0	298	0	6	663
Peak Hour 7:45 - 8:45 AM	0	0	0	0	0	359	0	6	0	0	0	0	0	352	0	9	711
Peak Hour Factor		0.00				0.95				0.00				0.73			0.83
Peak Hour % Trucks		0%				2%				0%				3%			
Peak 15 Min % Trucks		0%				2%				0%				0%			

Intersection: NW Lake Road/Project Access Date: 03/01/22

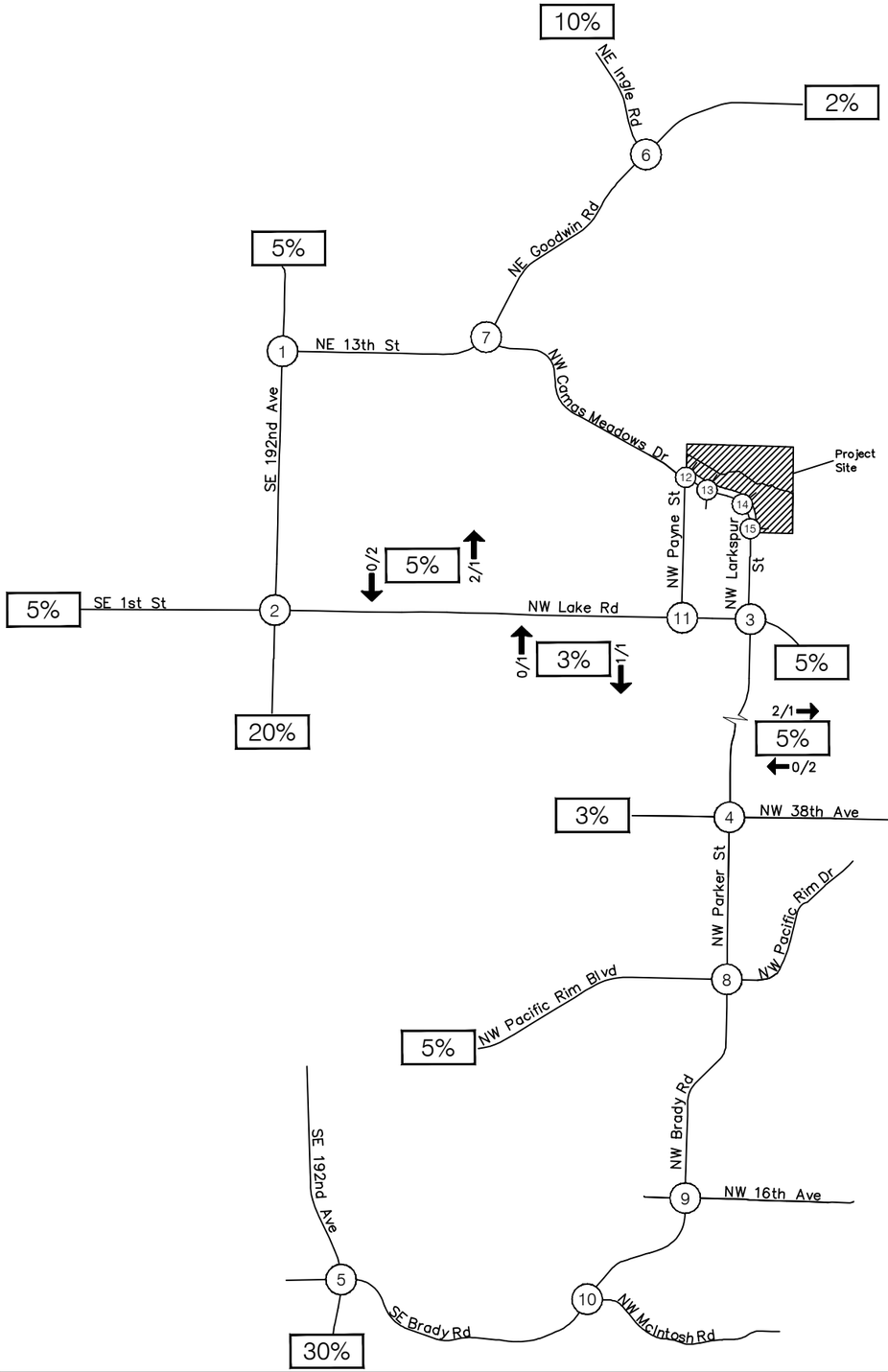
PM Peak Hour Turning Movement Volumes

	SB				WB				NB				EB				
Time	SBR	SBT	SBL	Trucks	WBR	WBT	WBL	Trucks	NBR	NBT	NBL	Trucks	EBR	EBT	EBL	Trucks	Total
15 Minute Totals																	
4:00 - 4:15 PM	0	0	0	0	0	107	0	3	0	0	0	0	0	117	0	1	224
4:15 - 4:30 PM	0	0	0	0	0	84	0	0	0	0	0	0	0	150	0	0	234
4:30 - 4:45 PM	0	0	0	0	0	81	0	2	0	0	0	0	0	159	0	2	240
4:45 - 5:00 PM	0	0	0	0	0	81	0	3	0	0	0	0	0	148	0	0	229
5:00 - 5:15 PM	0	0	0	0	0	81	0	0	0	0	0	0	0	180	0	4	261
5:15 - 5:30 PM	0	0	0	0	0	87	0	2	0	0	0	0	0	188	0	4	275
5:30 - 5:45 PM	0	0	0	0	0	86	0	4	0	0	0	0	0	180	0	2	266
5:45 - 6:00 PM	0	0	0	0	0	69	0	0	0	0	0	0	0	170	0	3	239
															Peak 15 Total		275
Hourly Total by 15 minutes																	
4:00 - 5:00 PM	0	0	0	0	0	353	0	8	0	0	0	0	0	574	0	3	927
4:15 - 5:15 PM	0	0	0	0	0	327	0	5	0	0	0	0	0	637	0	6	964
4:30 - 5:30 PM	0	0	0	0	0	330	0	7	0	0	0	0	0	675	0	10	1,005
4:45 - 5:45 PM	0	0	0	0	0	335	0	9	0	0	0	0	0	696	0	10	1,031
5:00 - 6:00 PM	0	0	0	0	0	323	0	6	0	0	0	0	0	718	0	13	1,041
Peak Hour 5:00 - 6:00 PM	0	0	0	0	0	323	0	6	0	0	0	0	0	718	0	13	1,041
Peak Hour Factor		0.00				0.93				0.00				0.95			0.95
Peak Hour % Trucks		0%				2%				0%				2%			
Peak 15 Min % Trucks		0%				5%				0%				1%			

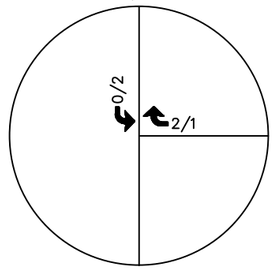
ATTACHMENT B

Residential: 100% Built out (42 SFR Lots)
Commercial: 0% Built out

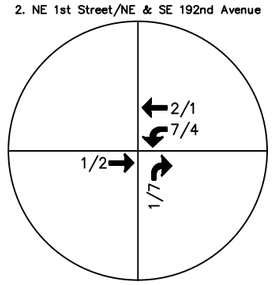
Parklands at Camas Meadows TIA
Camas, WA



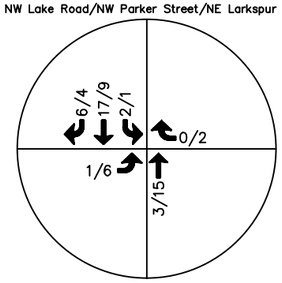
1. NE 13th Street/NE 192nd Avenue



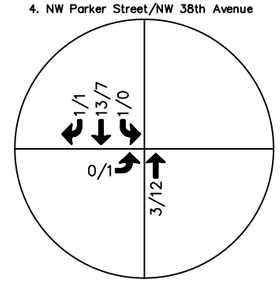
2. NE 1st Street/NE & SE 192nd Avenue



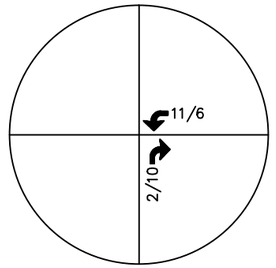
3. NW Lake Road/NW Parker Street/NE Larkspur Street



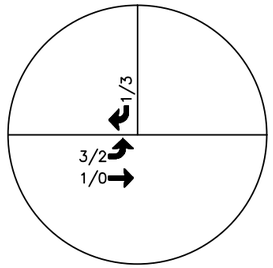
4. NW Parker Street/NW 38th Avenue



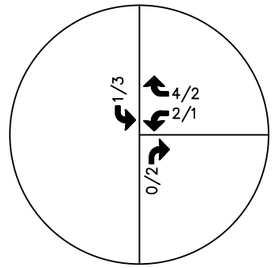
5. SE Brady Road/SE 192nd Avenue



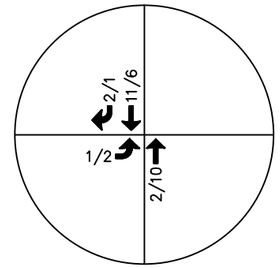
6. NE Goodwin Road/NE Ingle Road



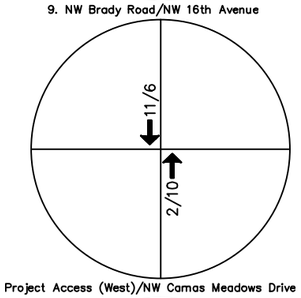
7. NE Goodwin Road/NW Camas Meadows Drive



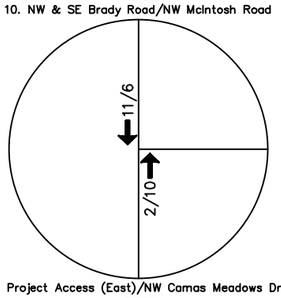
8. NW Parker Street/NW Pacific Rim Boulevard/NW Pacific Rim Drive



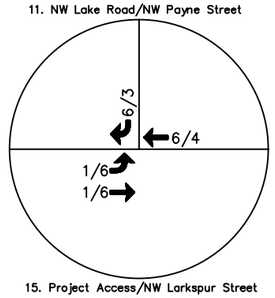
9. NW Brady Road/NW 16th Avenue



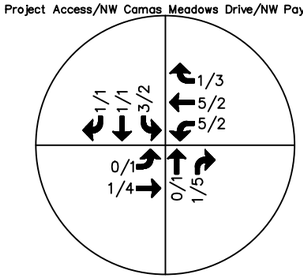
10. NW & SE Brady Road/NW McIntosh Road



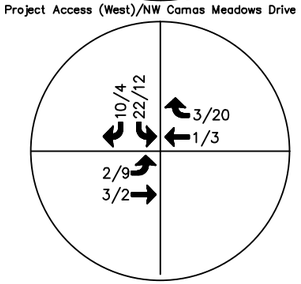
11. NW Lake Road/NW Payne Street



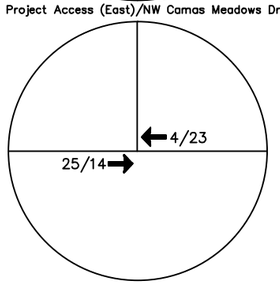
12. Project Access/NW Camas Meadows Drive/NW Payne Street



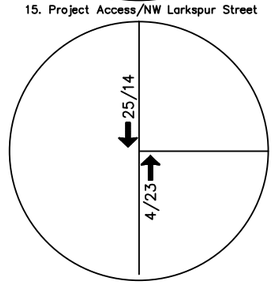
13. Project Access (West)/NW Camas Meadows Drive



14. Project Access (East)/NW Camas Meadows Drive



15. Project Access/NW Larkspur Street



NOT TO SCALE

LEGEND

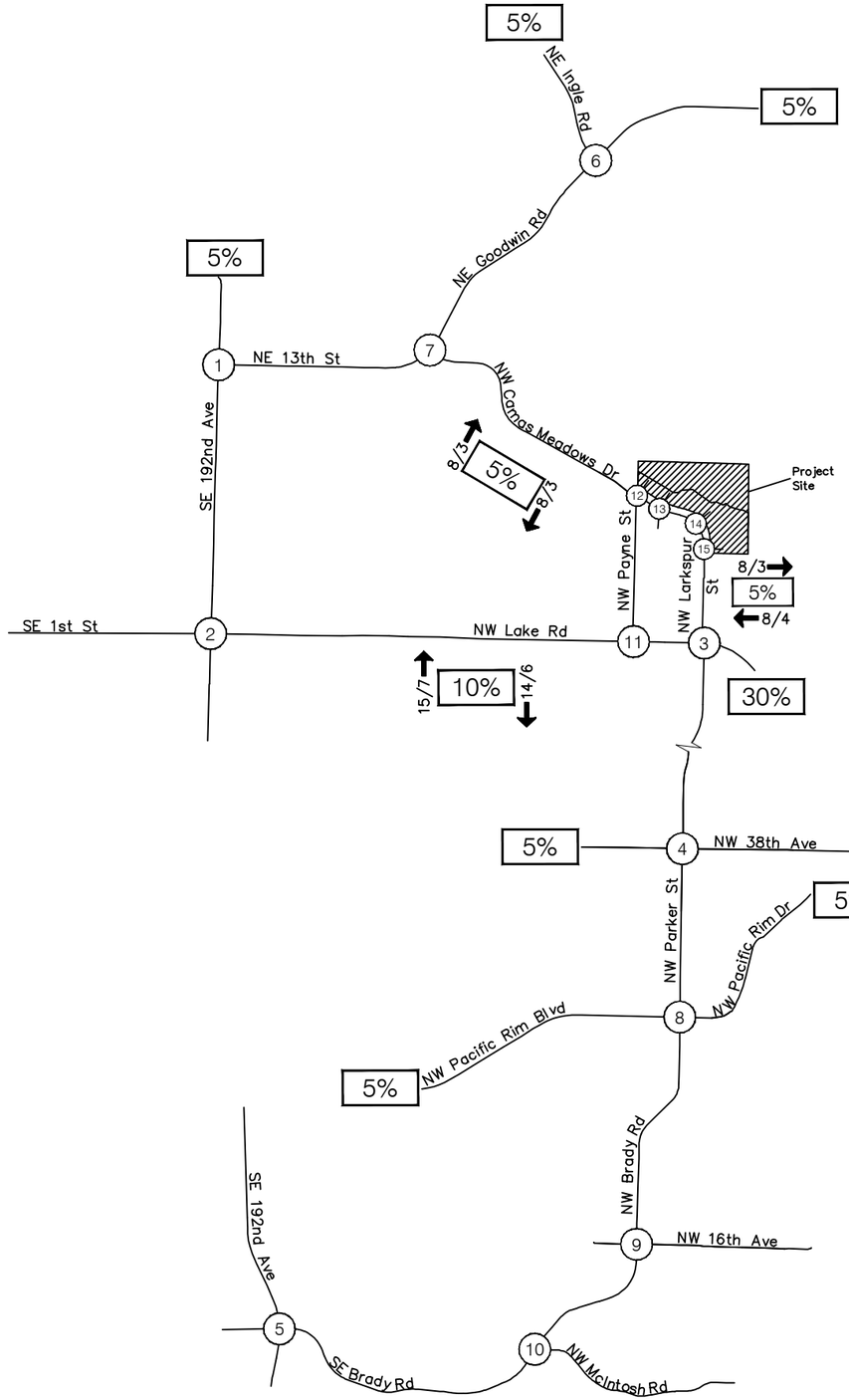
128/200 A.M./P.M. Peak Hour Traffic Volume

10% A.M. and P.M. Peak Hour Trip Distribution

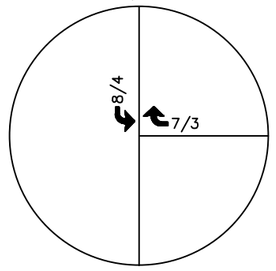
FIGURE 6a
"Residential"
Trip Distribution and Assignment
Traffic Volum

315021.0Figures.Dwg

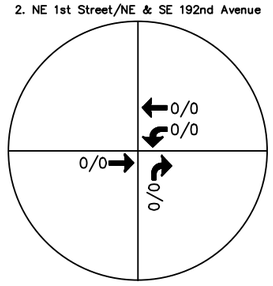
Parklands at Camas Meadows TIA
Camas, WA



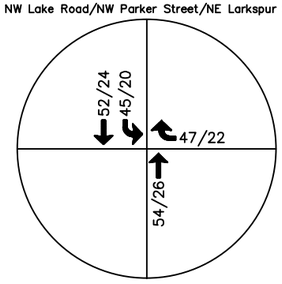
1. NE 13th Street/NE 192nd Avenue



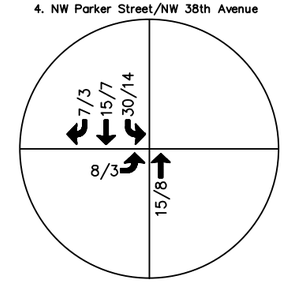
2. NE 1st Street/NE & SE 192nd Avenue



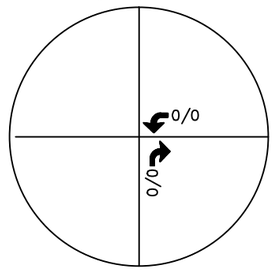
3. NW Lake Road/NW Parker Street/NE Larkspur Street



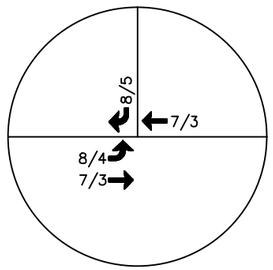
4. NW Parker Street/NW 38th Avenue



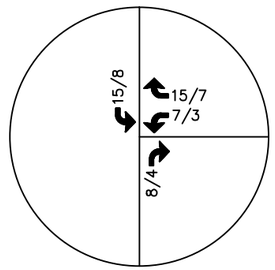
5. SE Brady Road/SE 192nd Avenue



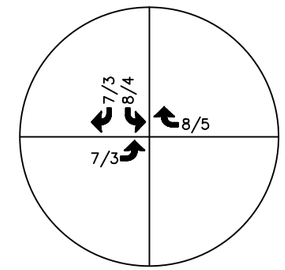
6. NE Goodwin Road/NE Ingle Road



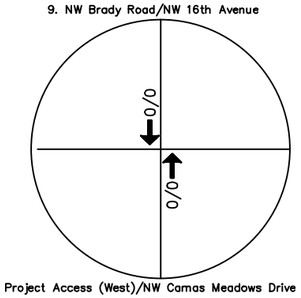
7. NE Goodwin Road/NW Camas Meadows Drive



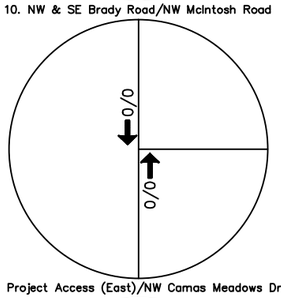
8. NW Parker Street/NW Pacific Rim Boulevard/NW Pacific Rim Drive



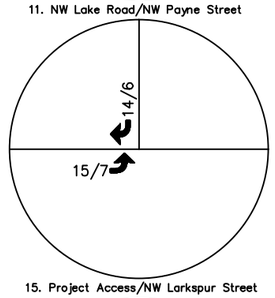
9. NW Brady Road/NW 16th Avenue



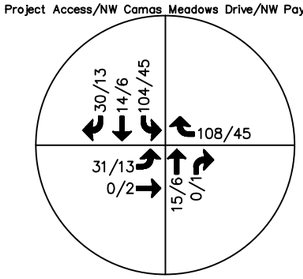
10. NW & SE Brady Road/NW McIntosh Road



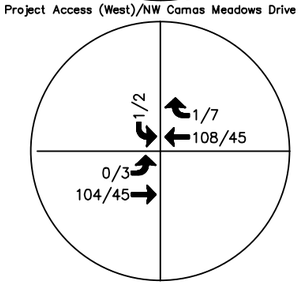
11. NW Lake Road/NW Payne Street



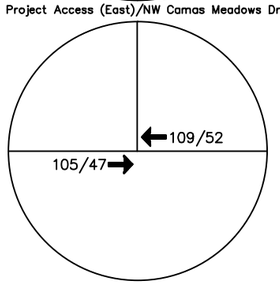
12. Project Access/NW Camas Meadows Drive/NW Payne Street



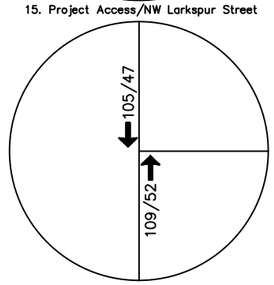
13. Project Access (West)/NW Camas Meadows Drive



14. Project Access (East)/NW Camas Meadows Drive



15. Project Access/NW Larkspur Street



NOT TO SCALE

LEGEND

100/128 A.M./P.M. Peak Hour Traffic Volumes

10% A.M. and P.M. Peak Hour Trip Distribution

FIGURE 6b
"Coffee Shop/Quality Restaurant"
Trip Distribution and Assignment
Traffic Volum

315021.0Figures.Dwg

Parklands at Camas Meadows TIA
Camas, WA

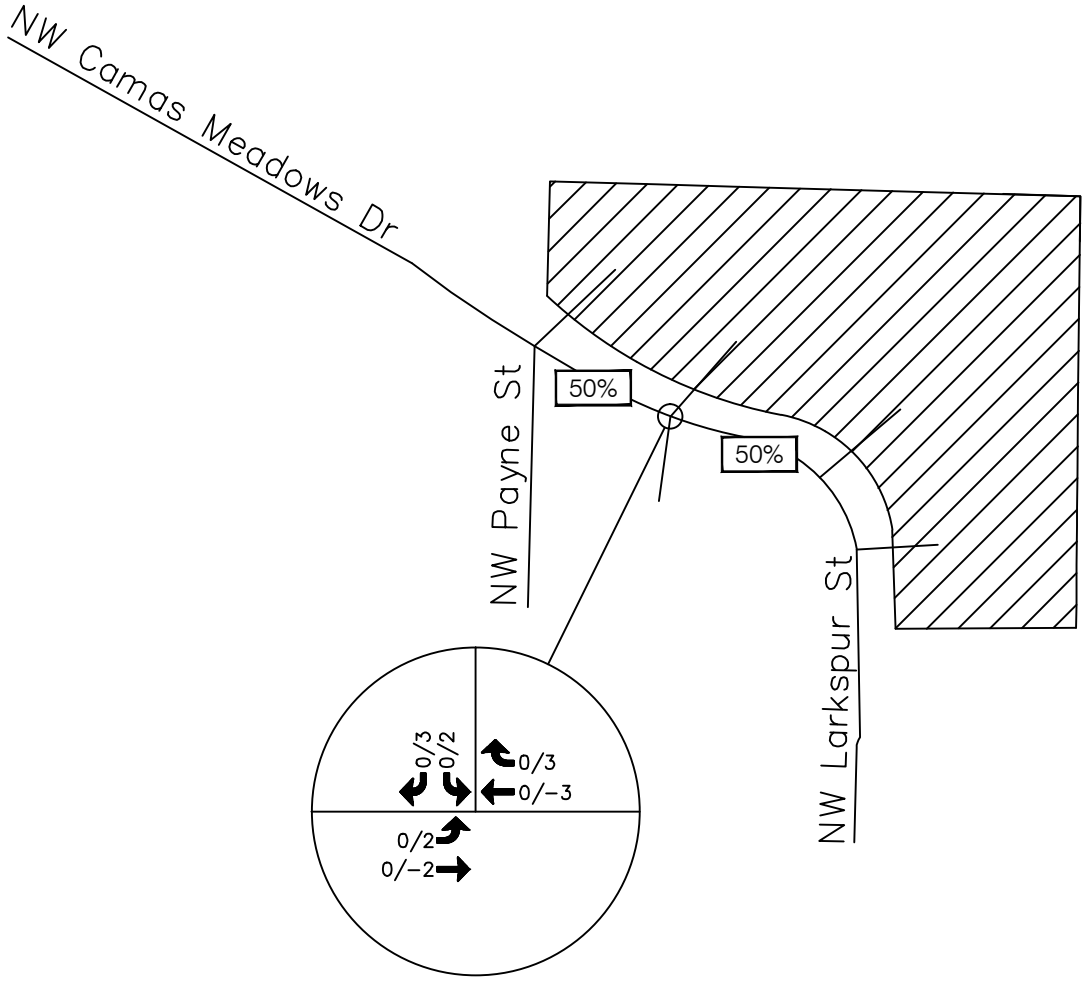
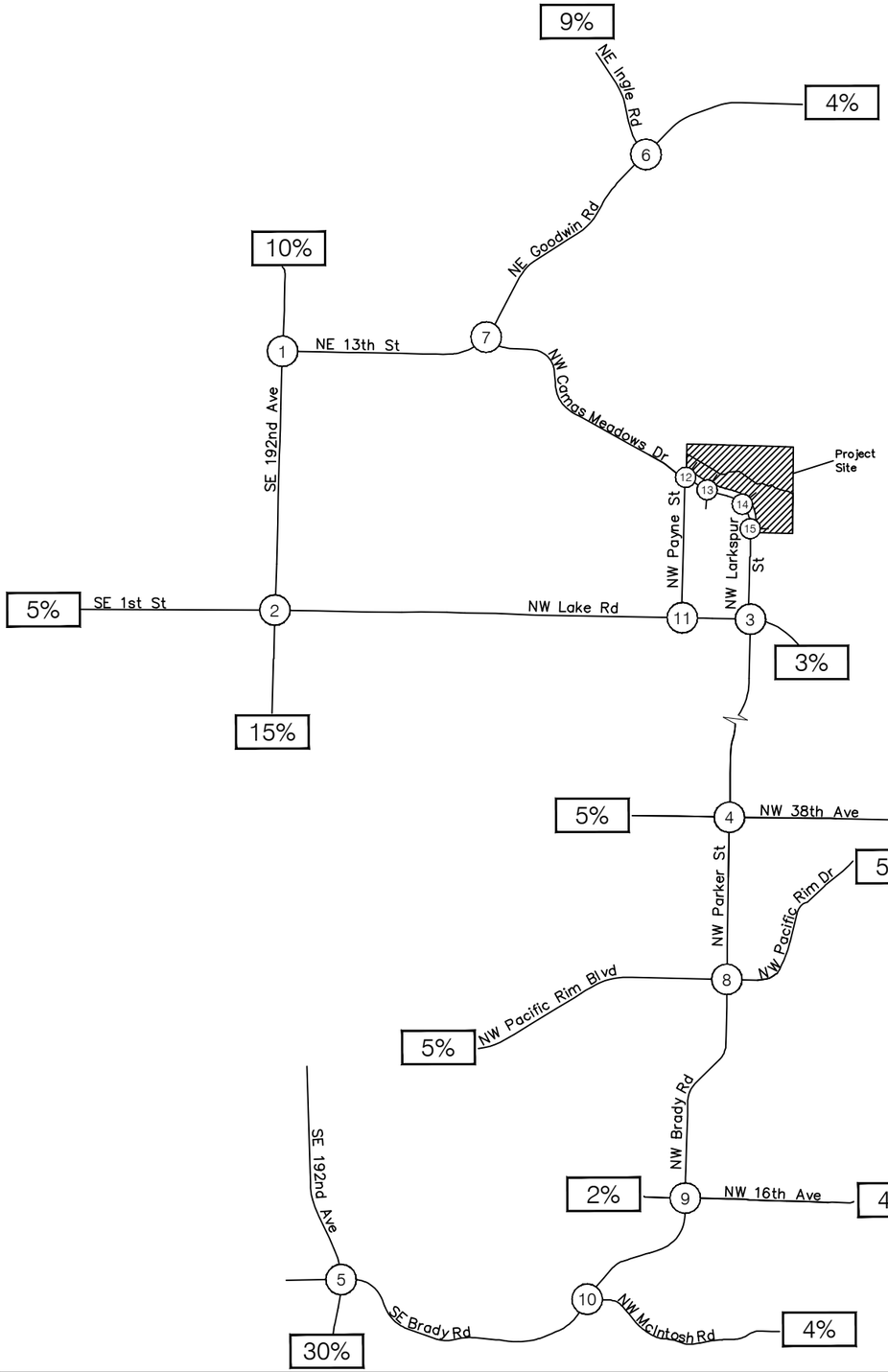


FIGURE 6c
"Quality Restaurant"
Pass-By Trips
Traffic Volumes

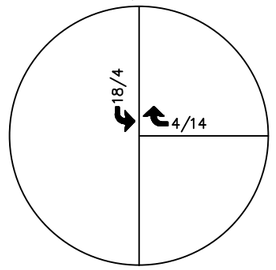
NOT TO SCALE

315021.0Figures.Dwg

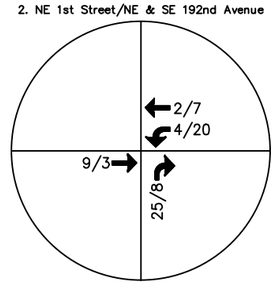
Parklands at Camas Meadows TIA
Camas, WA



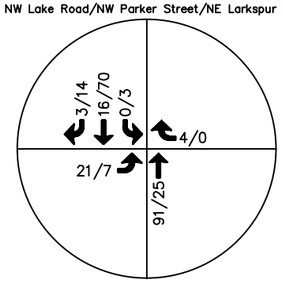
1. NE 13th Street/NE 192nd Avenue



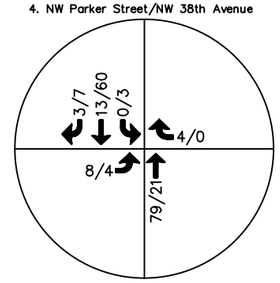
2. NE 1st Street/NE & SE 192nd Avenue



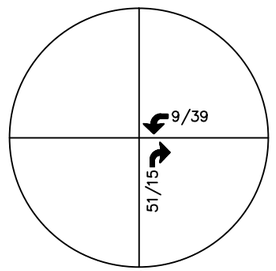
3. NW Lake Road/NW Parker Street/NE Larkspur Street



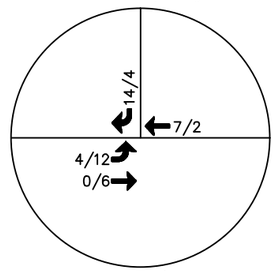
4. NW Parker Street/NW 38th Avenue



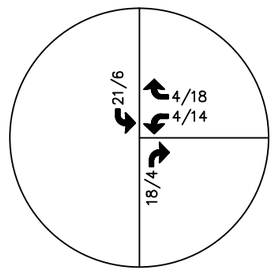
5. SE Brady Road/SE 192nd Avenue



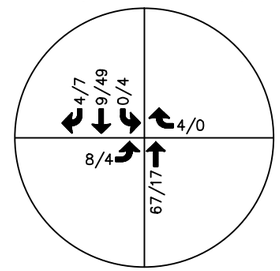
6. NE Goodwin Road/NE Ingle Road



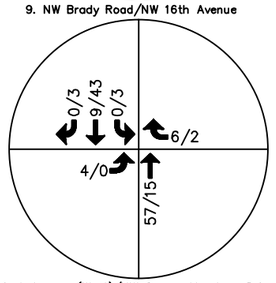
7. NE Goodwin Road/NW Camas Meadows Drive



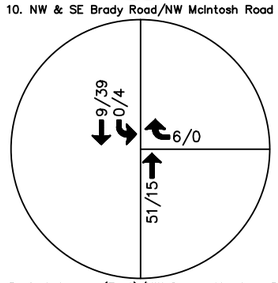
8. NW Parker Street/NW Pacific Rim Boulevard/NW Pacific Rim Drive



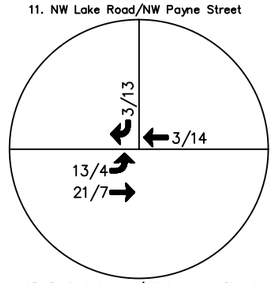
9. NW Brady Road/NW 16th Avenue



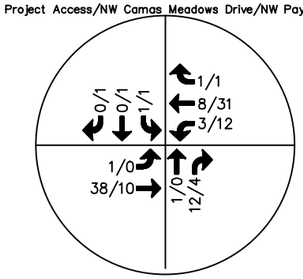
10. NW & SE Brady Road/NW McIntosh Road



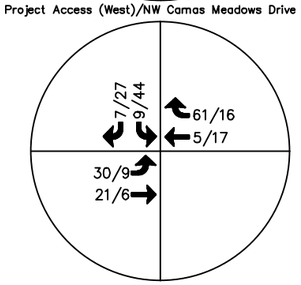
11. NW Lake Road/NW Payne Street



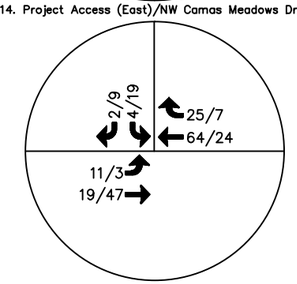
12. Project Access/NW Camas Meadows Drive/NW Payne Street



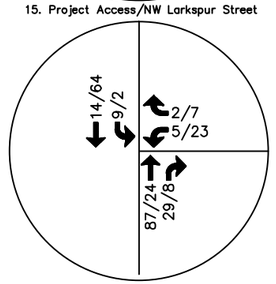
13. Project Access (West)/NW Camas Meadows Drive



14. Project Access (East)/NW Camas Meadows Drive



15. Project Access/NW Larkspur Street



NOT TO SCALE

LEGEND

100/128 A.M./P.M. Peak Hour Traffic Volumes

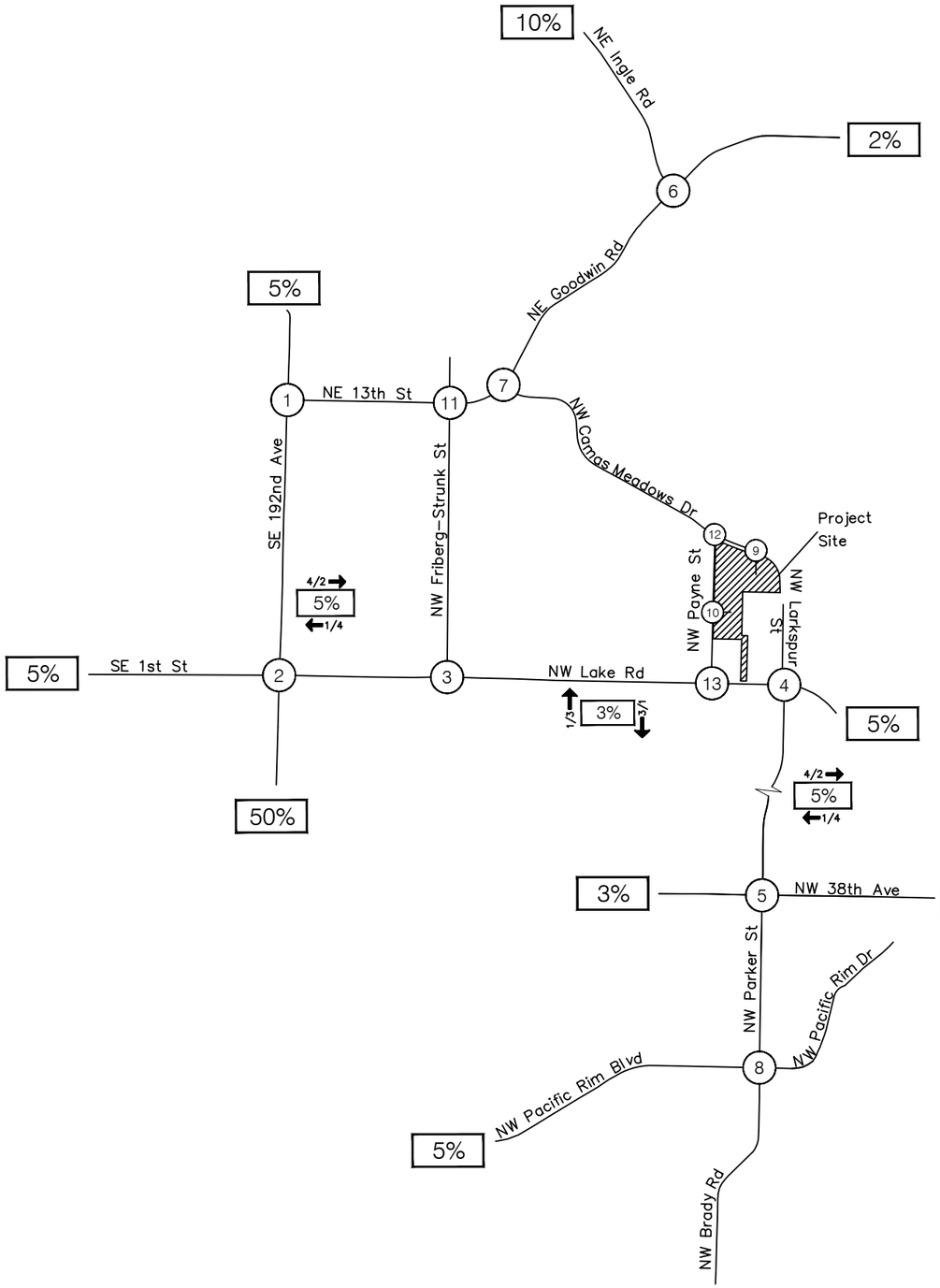
10% A.M. and P.M. Peak Hour Trip Distribution

FIGURE 6d
"Business Park"
Trip Distribution and Assignment
Traffic Volum

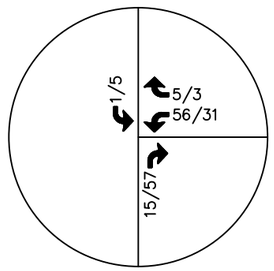
315021.0Figures.Dwg

75% Built out

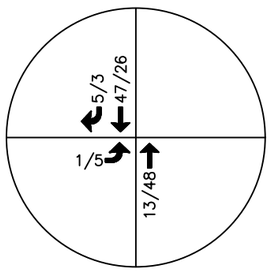
Village at Camas Meadows TIA
Camas, WA



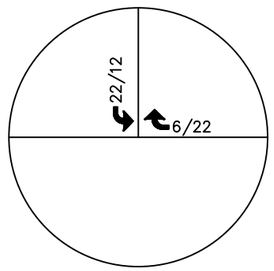
1. NE 13th Street/NE 192nd Avenue



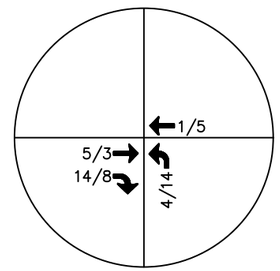
2. NE 1st Street/NE & SE 192nd Avenue



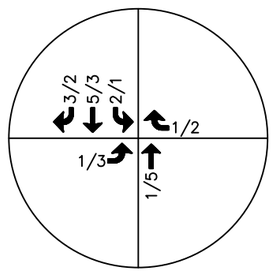
3. NW Lake Road/NW Friberg–Strunk Street



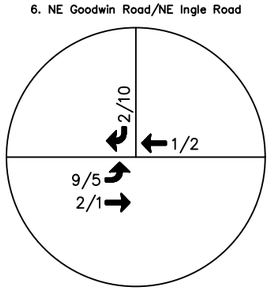
4. NW Lake Road/NW Parker Street/NE Larkspur Street



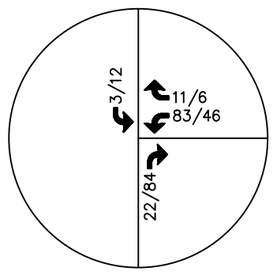
5. NW Parker Street/NW 38th Avenue



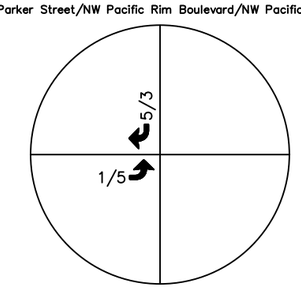
6. NE Goodwin Road/NE Ingle Road



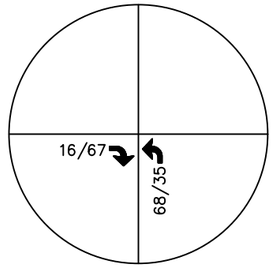
7. NE Goodwin Road/NW Camas Meadows Drive



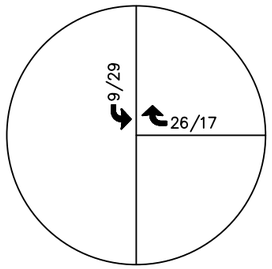
8. NW Parker Street/NW Pacific Rim Boulevard/NW Pacific Rim Drive



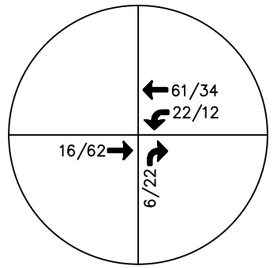
9. NW Camas Meadows Drive/Project Access



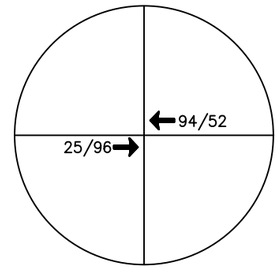
10. NW Payne Street/Project Access



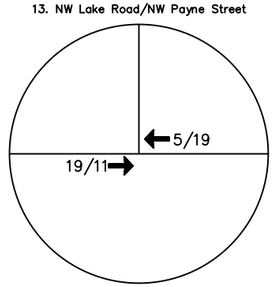
11. NW Friberg–Strunk Street/NE 13th Street/NE Goodwin Road



12. NW Payne Street/NW Camas Meadows Drive



13. NW Lake Road/NW Payne Street



LEGEND

128/200 A.M./P.M. Peak Hour Traffic Volume

10% A.M. and P.M. Peak Hour Trip Distribution

NOT TO SCALE

FIGURE 6
Trip Distribution and Assignment
Traffic Volum

16025_Figures.Dwg

50% Build out for Phases 1-6:
GME Phases 1-3: 100%
GME Phases 4-6: 0%

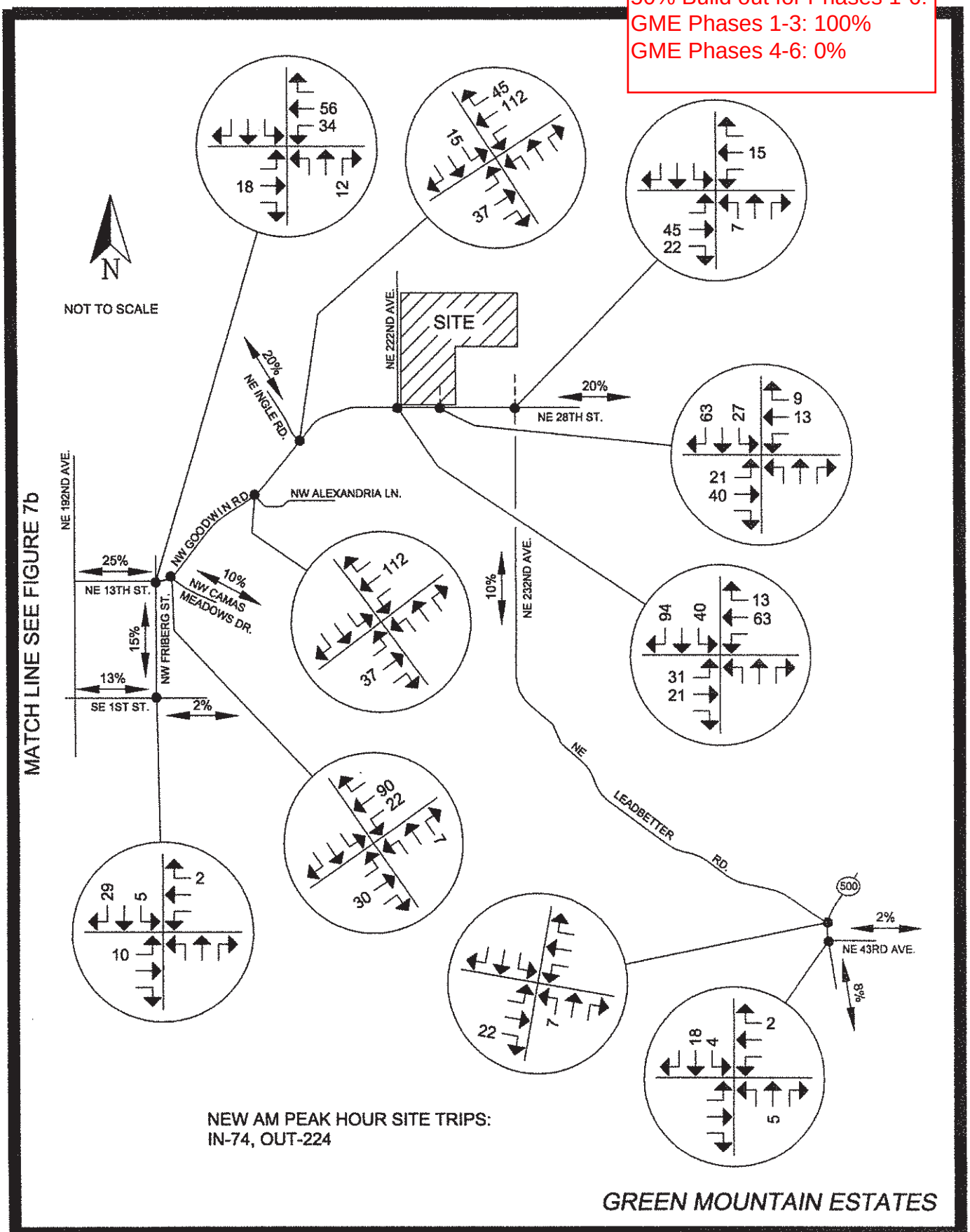


FIGURE 7a
SITE TRAFFIC DISTRIBUTION/
ASSIGNMENT, AM PEAK HOUR

KELLY ENGINEERING
316 E. Fourth Plain, A-2, Vancouver, WA 98663
Phone: 360-433-7530

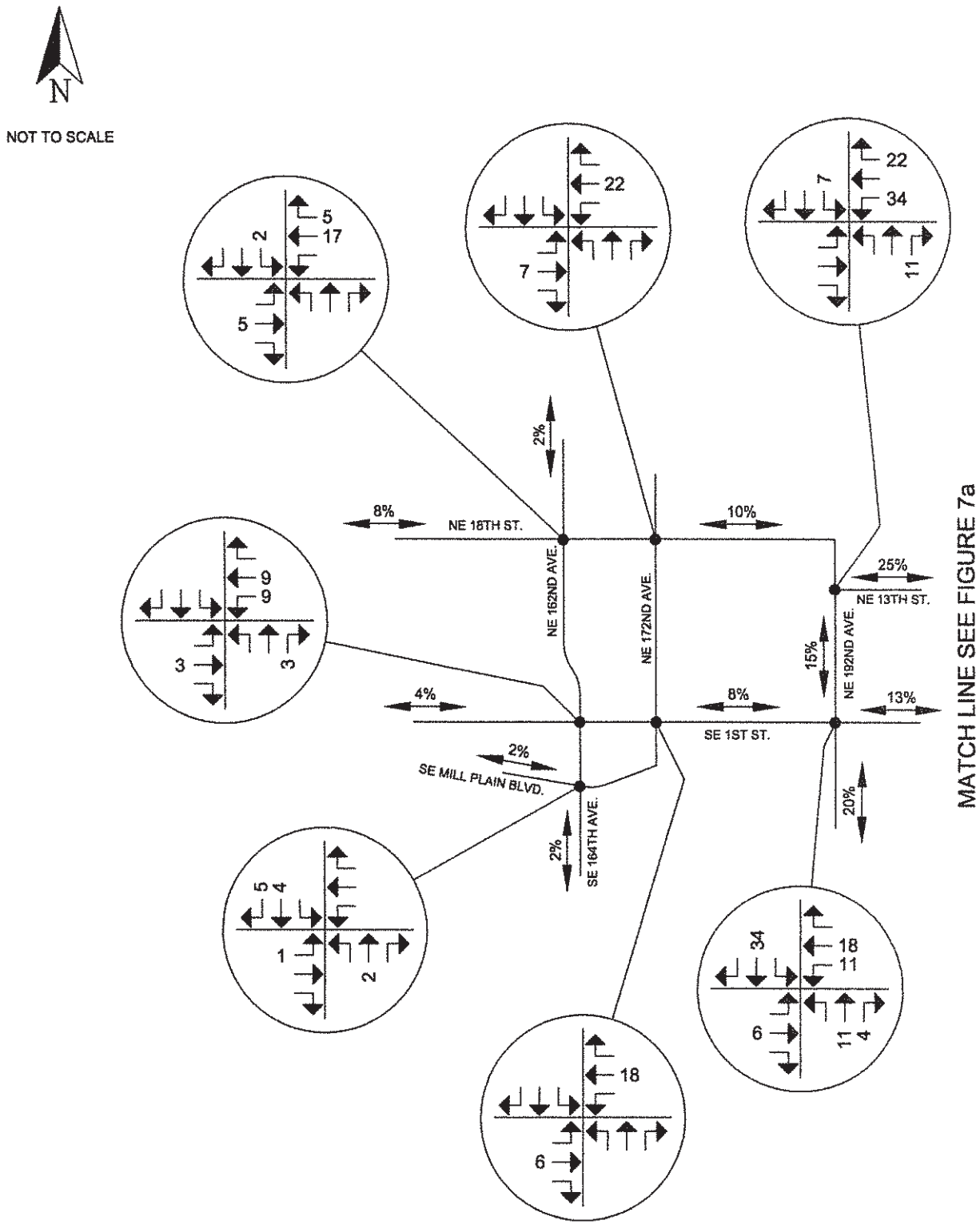


FIGURE 7b
SITE TRAFFIC DISTRIBUTION/
ASSIGNMENT, AM PEAK HOUR

KELLY ENGINEERING
316 E. Fourth Plain, A-2, Vancouver, WA 98663
Phone: 360-433-7530

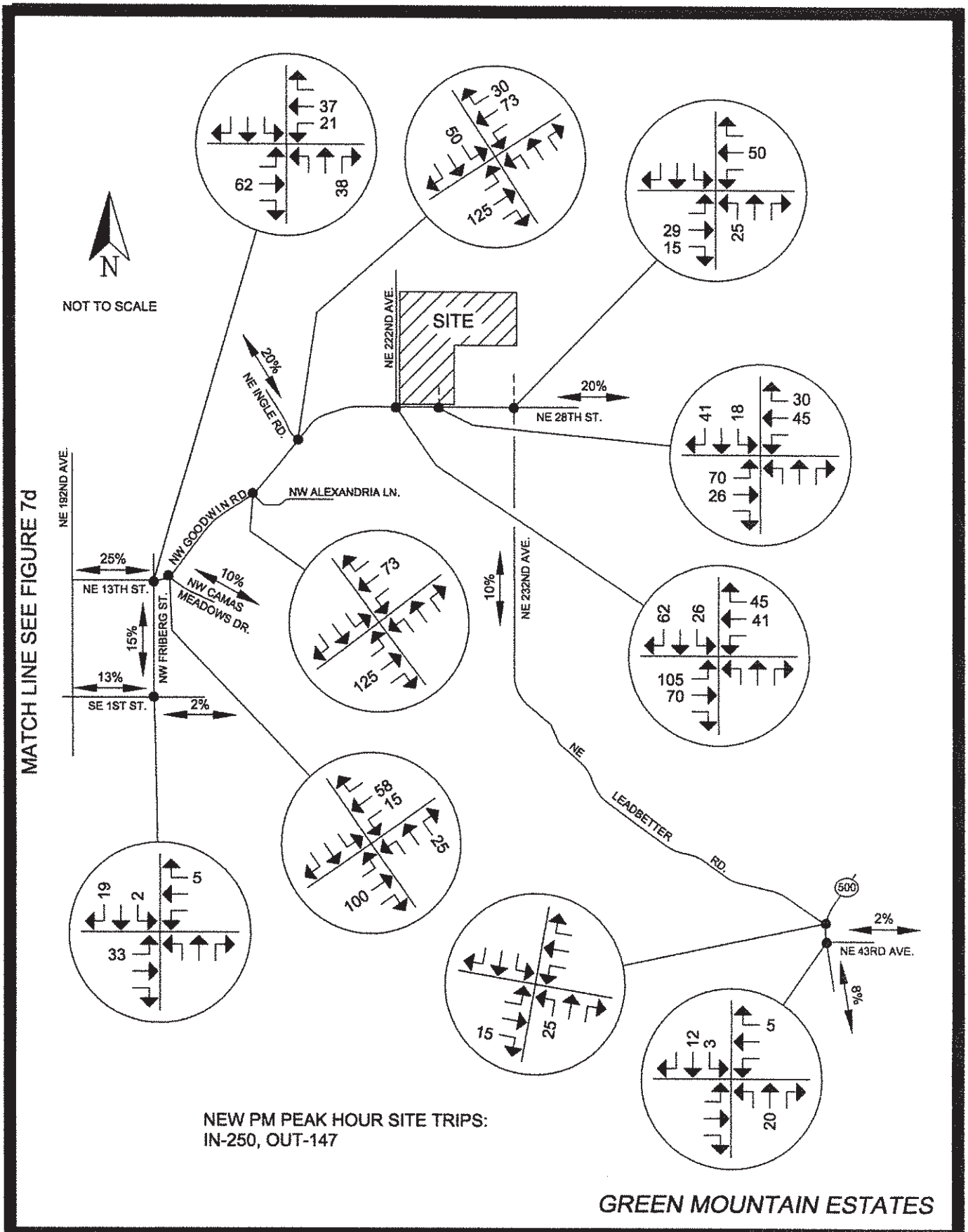


FIGURE 7c
SITE TRAFFIC DISTRIBUTION/ ASSIGNMENT, PM PEAK HOUR

KELLY ENGINEERING
316 E. Fourth Plain, A-2, Vancouver, WA 98663
Phone: 360-433-7530

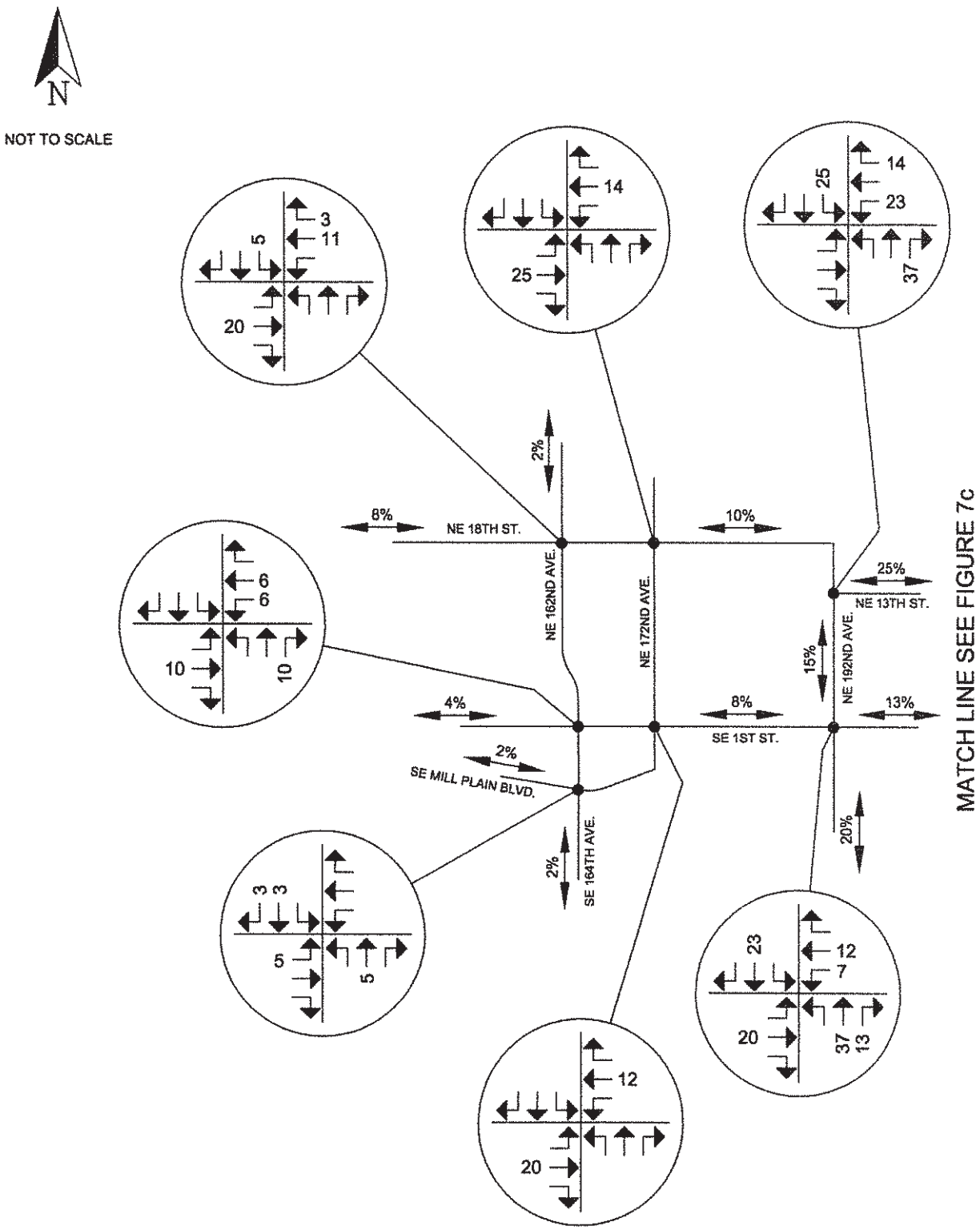
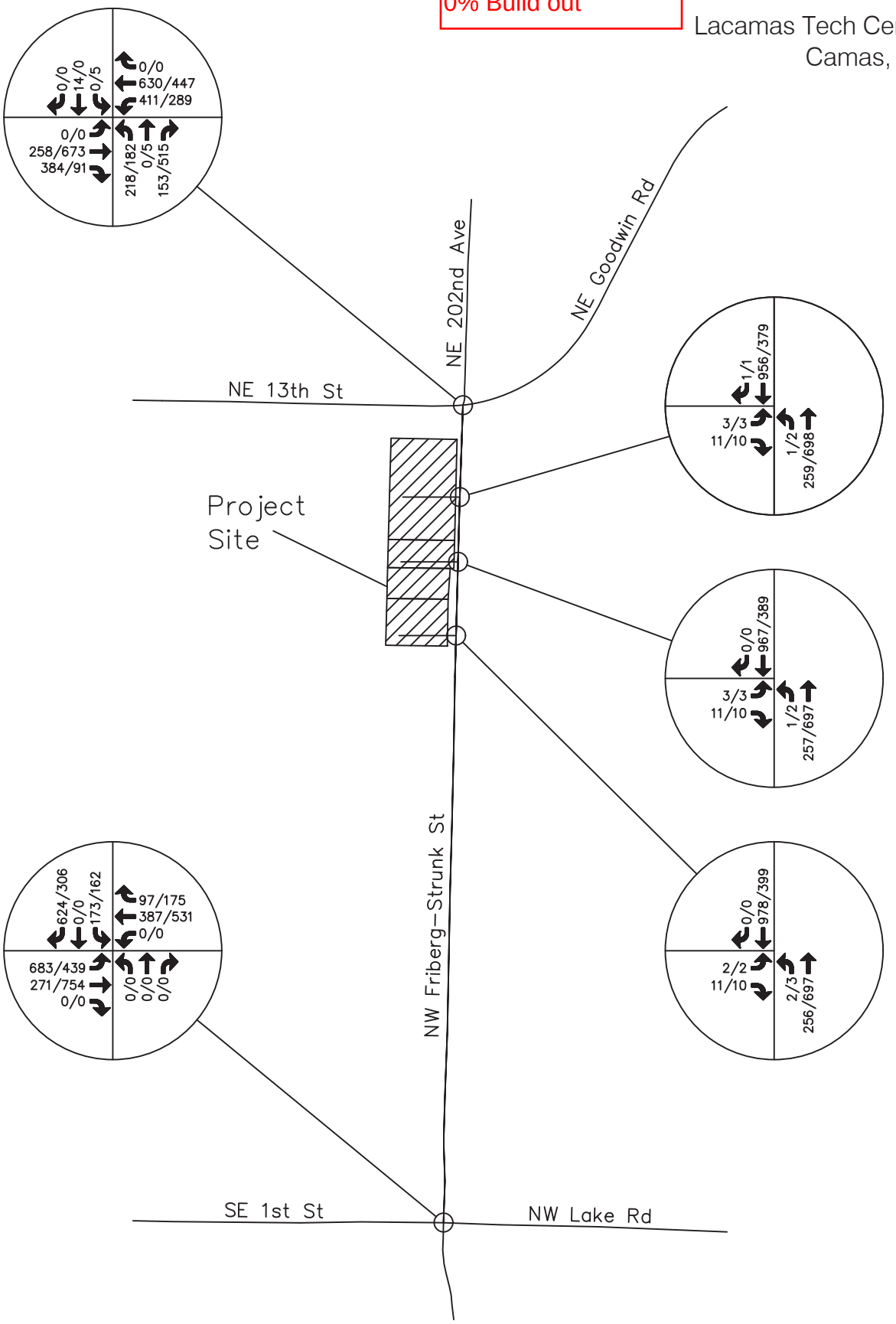


FIGURE 7d
SITE TRAFFIC DISTRIBUTION/
ASSIGNMENT, PM PEAK HOUR

KELLY ENGINEERING
316 E. Fourth Plain, A-2, Vancouver, WA 98663
Phone: 360-433-7530

0% Build out

Lacamas Tech Center
Camas, WA



LEGEND

128/200 A.M./P.M. Peak Hour Traffic Volume

NOT TO SCALE

FIGURE 7
2022 "With Project"
A.M. and P.M. Peak Hour Traffic Volumes

18047_Figures.Dwg

ATTACHMENT C

H. Lee & Associates, PLLC - Trip Generation Summary

Food Cart Facility	Food Cart Units	Daily Trips	AM Trips	PM Trips	Daily Rate	AM Rate	PM Rate
Happy Valley Food Carts	22	627	0	92	28.50	0.00	4.18
Troutdale Station Food Carts	23	723	0	85	31.43	0.00	3.70
Eastport Food Carts	25	384	0	55	15.36	0.00	2.20
Totals	**70**	**1734**	**0**	**232**			

	AM		PM	
	In	Out	In	Out
	0	0	57	35
	0	0	41	44
	0	0	28	27
Totals	**0**	**0**	**126**	**106**
			54%	46%

Derived Weighted Average Rates	Daily	AM	PM
	24.77	0.00	3.31
Standard Deviation	8.56	0.00	1.03

Eastport Food Carts (North Entrance)
Date 12/13/22

North Access

Time	IN	OUT	Total
9:00 - 9:15	0	0	0
9:15 - 9:30	0	0	0
9:30 - 9:45	1	3	4
9:45 - 10:00	1	2	3
10:00 - 10:15	0	1	1
10:15 - 10:30	3	2	5
10:30 - 10:45	2	2	4
10:45 - 11:00	0	0	0
11:00 - 11:15	2	1	3
11:15 - 11:30	1	0	1
11:30 - 11:45	1	1	2
11:45 - 12:00	2	1	3
12:00-12:15	2	3	5
12:15-12:30	2	2	4
12:30-12:45	3	3	6
12:45-1:00	3	7	10
1:00-1:15	3	4	7
1:15-1:30	2	2	4
1:30-1:45	1	3	4
1:45-2:00	2	2	4
2:00-2:15	2	2	4
2:15-2:30	3	2	5
2:30-2:45	3	4	7
2:45-3:00	3	5	8
3:00-3:15	1	1	2
3:15-3:30	4	2	6
3:30-3:45	3	3	6
3:45-4:00	3	3	6
4:00-4:15	2	2	4
4:15-4:30	2	6	8
4:30-4:45	3	1	4
4:45-5:00	3	3	6
5:00-5:15	6	5	11
5:15-5:30	4	5	9
5:30-5:45	4	4	8
5:45-6:00	3	3	6
6:00-6:15	2	2	4
6:15-6:30	2	4	6
6:30-6:45	5	4	9
6:45-7:00	3	2	5
7:00-7:15	3	4	7
7:15-7:30	4	2	6
7:30-7:45	3	5	8
7:45-8:00	5	4	9
8:00-8:15	0	2	2
8:15-8:30	2	2	4
8:30 - 8:45	0	0	0
8:45 - 9:00	0	0	0
9:00 - 9:15	1	2	3
9:15 - 9:30	0	2	2
9:30 - 9:45	1	3	4
9:45 - 10:00	1	1	2
Totals	112	129	241

South & East Access

Time	IN	OUT	Total
9:00 - 9:15	0	0	0
9:15 - 9:30	0	0	0
9:30 - 9:45	1	1	2
9:45 - 10:00	0	0	0
10:00 - 10:15	0	1	1
10:15 - 10:30	0	1	1
10:30 - 10:45	1	1	2
10:45 - 11:00	2	1	3
11:00 - 11:15	0	0	0
11:15 - 11:30	3	0	3
11:30 - 11:45	2	2	4
11:45 - 12:00	3	2	5
12:00-12:15	2	3	5
12:15-12:30	3	1	4
12:30-12:45	3	3	6
12:45-1:00	0	3	3
1:00-1:15	1	2	3
1:15-1:30	1	0	1
1:30-1:45	1	0	1
1:45-2:00	0	3	3
2:00-2:15	0	0	0
2:15-2:30	1	0	1
2:30-2:45	1	2	3
2:45-3:00	1	0	1
3:00-3:15	2	1	3
3:15-3:30	1	0	1
3:30-3:45	1	2	3
3:45-4:00	1	1	2
4:00-4:15	2	2	4
4:15-4:30	2	2	4
4:30-4:45	3	3	6
4:45-5:00	2	2	4
5:00-5:15	2	2	4
5:15-5:30	2	2	4
5:30-5:45	4	2	6
5:45-6:00	3	4	7
6:00-6:15	1	3	4
6:15-6:30	4	2	6
6:30-6:45	4	1	5
6:45-7:00	1	4	5
7:00-7:15	5	4	9
7:15-7:30	2	4	6
7:30-7:45	1	3	4
7:45-8:00	0	0	0
8:00-8:15	1	1	2
8:15-8:30	1	0	1
8:30 - 8:45	0	1	1
8:45 - 9:00	0	0	0
9:00 - 9:15	0	0	0
9:15 - 9:30	0	0	0
9:30 - 9:45	0	0	0
9:45 - 10:00	0	0	0
Totals	71	72	143

Combined Access

Time	IN	OUT	Total
9:00 - 9:15	0	0	0
9:15 - 9:30	0	0	0
9:30 - 9:45	2	4	6
9:45 - 10:00	1	2	3
10:00 - 10:15	0	2	2
10:15 - 10:30	3	3	6
10:30 - 10:45	3	3	6
10:45 - 11:00	2	1	3
11:00 - 11:15	2	1	3
11:15 - 11:30	4	0	4
11:30 - 11:45	3	3	6
11:45 - 12:00	5	3	8
12:00-12:15	4	6	10
12:15-12:30	5	3	8
12:30-12:45	6	6	12
12:45-1:00	3	10	13
1:00-1:15	4	6	10
1:15-1:30	3	2	5
1:30-1:45	2	3	5
1:45-2:00	2	5	7
2:00-2:15	2	2	4
2:15-2:30	4	2	6
2:30-2:45	4	6	10
2:45-3:00	4	5	9
3:00-3:15	3	2	5
3:15-3:30	5	2	7
3:30-3:45	4	5	9
3:45-4:00	4	4	8
4:00-4:15	4	4	8
4:15-4:30	4	8	12
4:30-4:45	6	4	10
4:45-5:00	5	5	10
5:00-5:15	8	7	15
5:15-5:30	6	7	13
5:30-5:45	8	6	14
5:45-6:00	6	7	13
6:00-6:15	3	5	8
6:15-6:30	6	6	12
6:30-6:45	9	5	14
6:45-7:00	4	6	10
7:00-7:15	8	8	16
7:15-7:30	6	6	12
7:30-7:45	4	8	12
7:45-8:00	5	4	9
8:00-8:15	1	3	4
8:15-8:30	3	2	5
8:30 - 8:45	0	1	1
8:45 - 9:00	0	0	0
9:00 - 9:15	1	2	3
9:15 - 9:30	0	2	2
9:30 - 9:45	1	3	4
9:45 - 10:00	1	1	2
Totals	183	201	384

Oak Tree Station
Date 12/13/22

Count

Time	IN	OUT	Total
10:00 - 10:15	5	1	6
10:15 - 10:30	2	3	5
10:30 - 10:45	3	4	7
10:45 - 11:00	5	0	5
11:00 - 11:15	12	5	17
11:15 - 11:30	10	5	15
11:30 - 11:45	12	10	22
11:45 - 12:00	16	8	24
12:00-12:15	11	6	17
12:15-12:30	20	7	27
12:30-12:45	9	9	18
12:45-1:00	5	14	19
1:00-1:15	20	7	27
1:15-1:30	10	16	26
1:30-1:45	4	10	14
1:45-2:00	8	8	16
2:00-2:15	11	7	18
2:15-2:30	4	12	16
2:30-2:45	3	13	16
2:45-3:00	8	10	18
3:00-3:15	8	4	12
3:15-3:30	7	9	16
3:30-3:45	7	10	17
3:45-4:00	14	5	19
4:00-4:15	11	13	24
4:15-4:30	11	8	19
4:30-4:45	9	9	18
4:45-5:00	11	5	16
5:00-5:15	9	6	15
5:15-5:30	10	12	22
5:30-5:45	12	16	28
5:45-6:00	10	10	20
6:00-6:15	14	15	29
6:15-6:30	12	13	25
6:30-6:45	9	6	15
6:45-7:00	6	12	18
7:00-7:15	8	18	26
7:15-7:30	6	4	10
7:30-7:45	3	13	16
7:45-8:00	5	10	15
8:00-8:15	0	6	6
8:15-8:30	0	0	0
8:30 - 8:45	0	1	1
8:45 - 9:00	0	0	0
9:00 - 9:15	1	1	2
9:15 - 9:30	0	0	0
9:30 - 9:45	0	1	1
9:45 - 10:00	0	0	0
Totals	361	362	723

Happy Vally Food Carts Combined Accesses
Date 12/20/17

	East Access		South Access				
Time	In	Out	In	Out	Total In	Total Out	
10:00 - 10:15	1	3	0	0	1	3	
10:15 - 10:30	2	1	0	0	2	1	
10:30 - 10:45	3	2	0	0	3	2	
10:45 - 11:00	2	2	0	0	2	2	
11:00 - 11:15	4	1	0	1	4	2	
11:15 - 11:30	3	3	1	0	4	3	
11:30 - 11:45	11	4	9	2	20	6	
11:45 - 12:00	11	8	10	3	21	11	
12:00-12:15	5	6	7	5	12	11	
12:15-12:30	9	8	6	7	15	15	
12:30-12:45	4	0	2	10	6	10	
12:45-1:00	2	4	0	6	2	10	
1:00-1:15	3	8	4	10	7	18	
1:15-1:30	5	2	2	2	7	4	
1:30-1:45	3	0	2	2	5	2	
1:45-2:00	2	3	3	3	5	6	
2:00-2:15	8	7	2	4	10	11	
2:15-2:30	3	6	3	0	6	6	
2:30-2:45	1	5	4	5	5	10	
2:45-3:00	3	2	2	3	5	5	
3:00-3:15	4	6	2	0	6	6	
3:15-3:30	5	2	2	7	7	9	
3:30-3:45	4	2	4	3	8	5	
3:45-4:00	5	5	3	1	8	6	
4:00-4:15	2	7	4	5	6	12	
4:15-4:30	6	4	2	4	8	8	
4:30-4:45	3	2	3	4	6	6	
4:45-5:00	3	0	4	2	7	2	
5:00-5:15	2	5	7	2	9	7	
5:15-5:30	12	3	8	5	20	8	
5:30-5:45	6	5	8	6	14	11	
5:45-6:00	9	7	5	2	14	9	
6:00-6:15	6	7	5	2	11	9	
6:15-6:30	7	3	1	9	8	12	
6:30-6:45	4	5	6	8	10	13	
6:45-7:00	2	5	5	8	7	13	
7:00-7:15	2	0	0	3	2	3	
7:15-7:30	3	3	4	5	7	8	
7:30-7:45	1	7	4	7	5	14	
7:45-8:00	1	8	0	7	1	15	
8:00-8:15	0	0	1	3	1	3	
8:15-8:30	0	0	0	1	0	1	
8:30 - 8:45	0	0	0	0	0	0	
8:45 - 9:00	0	0	0	2	0	2	Total
Totals	**172**	**161**	**135**	**159**	**307**	**320**	**627**

ATTACHMENT D

km²

MEMORANDUM

TO: Grant Stonex, H. Lee and Associates
FROM: Mark Harrington, Transportation Planner
DATE: December 21, 2022
SUBJECT: Select Zone Assignment for TAZ 1779

Enclosed are plots showing auto volumes and distributions (additional volumes) during the PM peak 1 hour for the years 2015 and 2040. TAZ 1779 was selected for auto assignment. Please note a new TAZ numbering scheme – 425 is now 1779. These assignments are based on the 2040 RTP adopted in March 2019.

.

- 2015 Base HWY w/ 2015 Demand – TAZ 1779
- 2040 RTP w/ 2040 Demand – TAZ 1779
- TAZ Maps
- Land Use

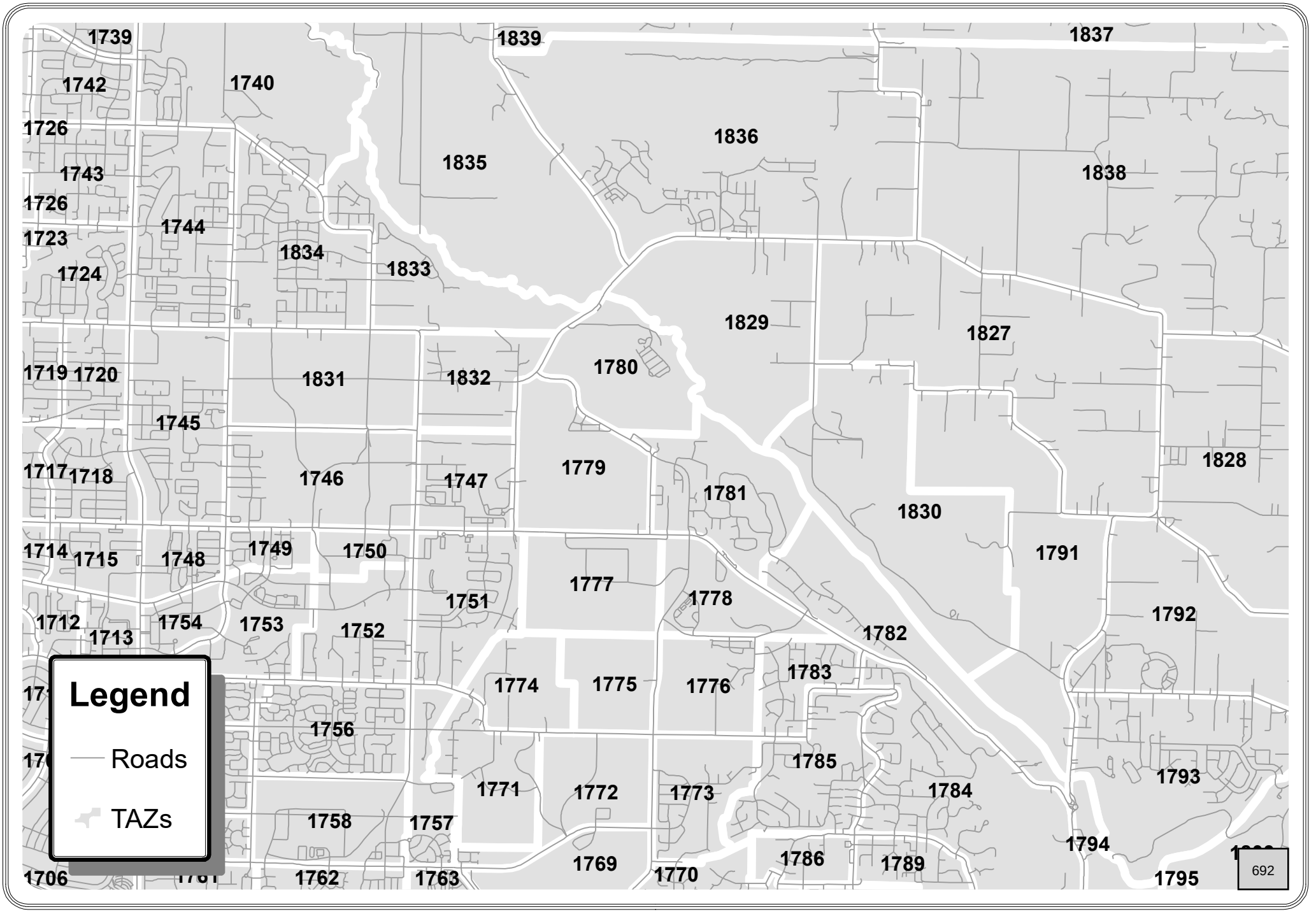
TAZ	2015 HH	2015 Jobs	2040 HH	2040 Jobs
1779	6	309	36	2151

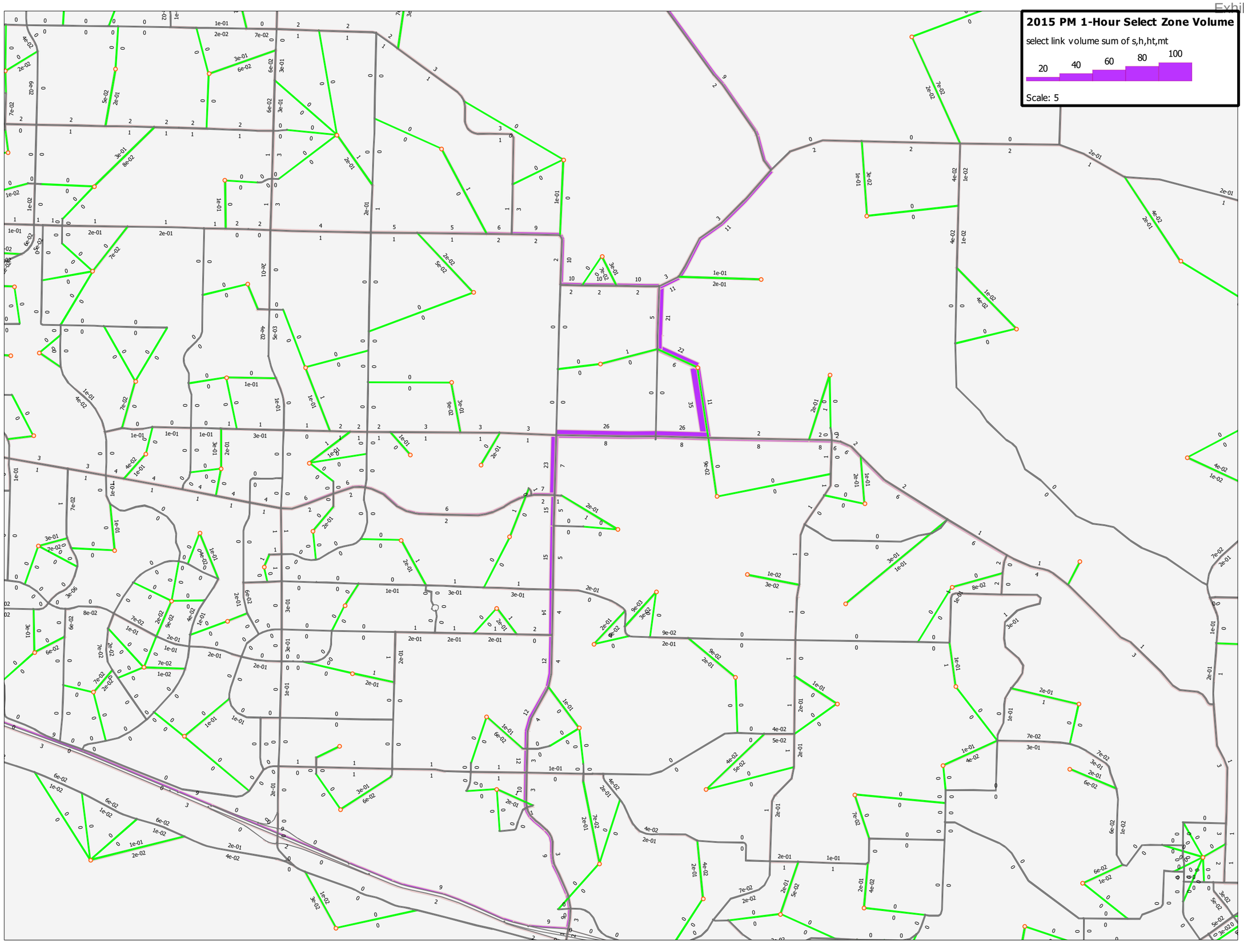
An invoice will be sent to you under a separate cover for 2 hours of staff time and other costs. If you have any questions, please let me know.

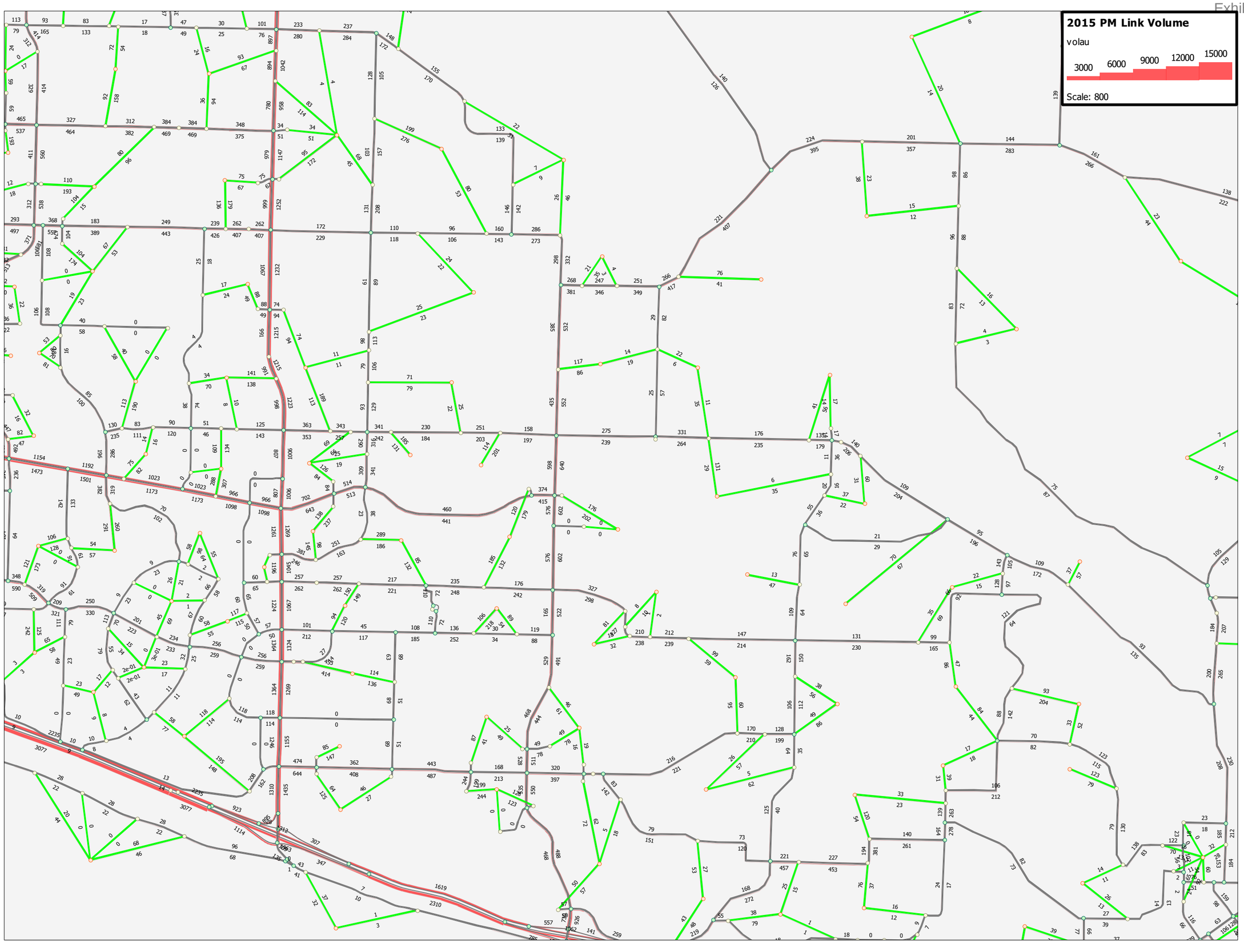
Enclosures:

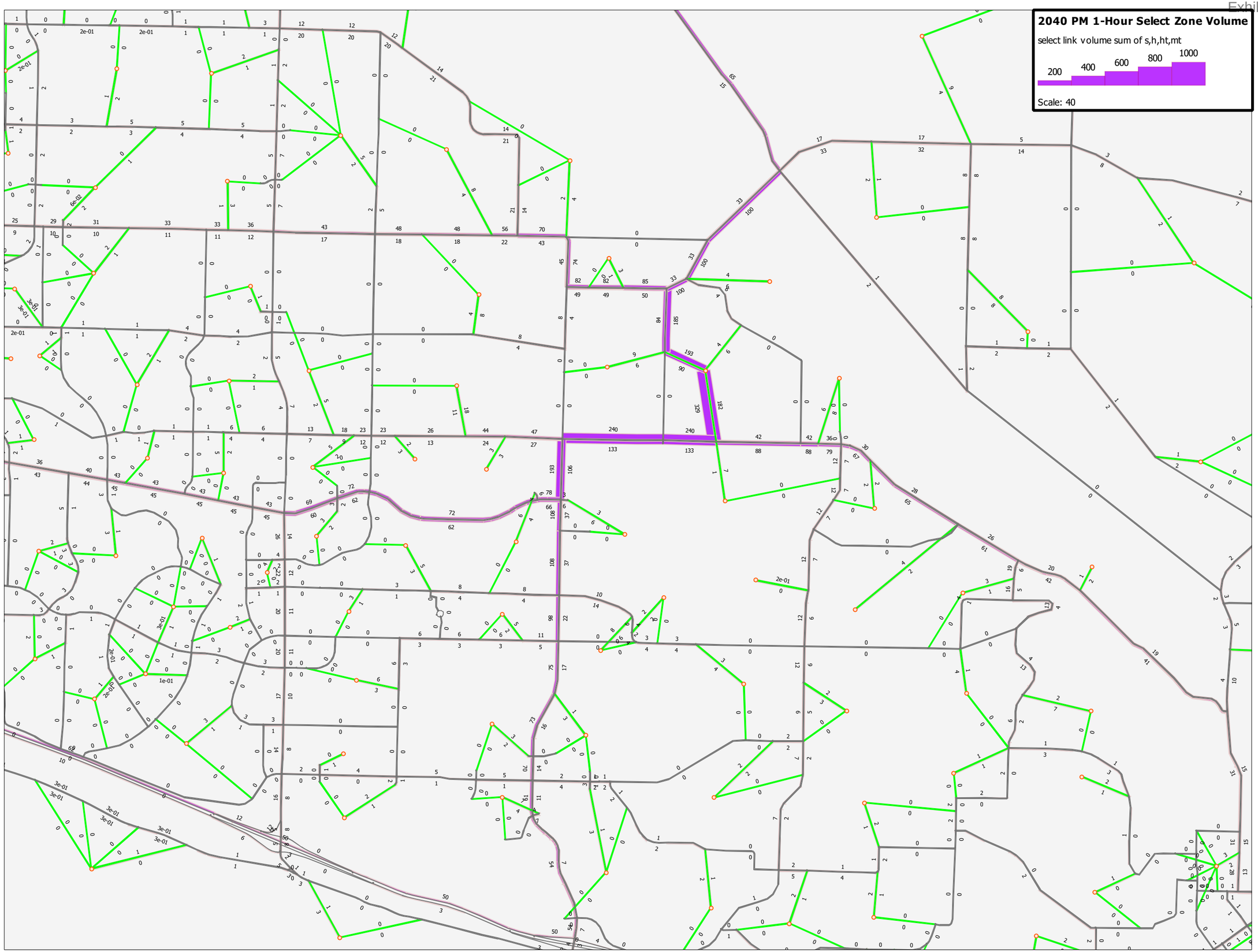
cc: Shari Harer, RTC

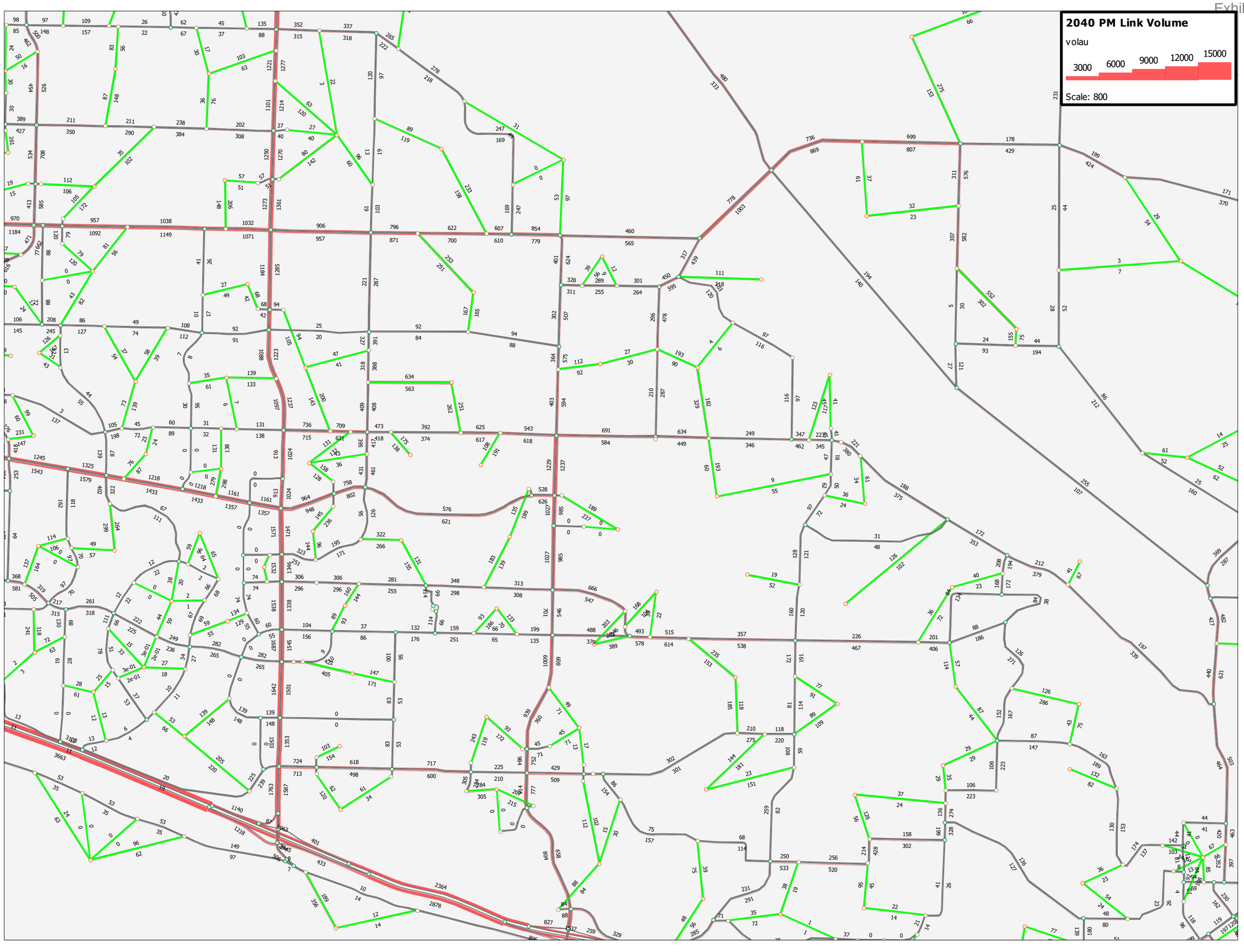
TAZ MAP


1739
1839
1837
1742
1740
1726
1836
1743
1835
1838
1726
1744
1723
1834
1833
1724
1829
1827
1719
1720
1831
1832
1780
1745
1828
1717
1718
1746
1747
1779
1781
1830
1714
1715
1748
1749
1750
1791
1777
1778
1751
1792
1712
1754
1753
1752
1782
1713
1783
1774
1775
1776
1756
1785
1793
1771
1772
1773
1784
1758
1757
1794
1769
1786
1789
1706
1762
1763
1770
1795
692
Legend
Roads
TAZs


2015 PM 1-Hour Select Zone Volume
select link volume sum of s,h,ht,mt
20
40
60
80
100
Scale: 5


2015 PM Link Volume
volau
3000
6000
9000
12000
15000
Scale: 800


2040 PM 1-Hour Select Zone Volume
select link volume sum of s,h,ht,mt
200
400
600
800
1000
Scale: 40


2040 PM Link Volume
volau
3000
6000
9000
12000
15000
Scale: 800

ATTACHMENT E

Oak Tree Station

Vistro File: O:\...\WP AM.vistro
Report File: O:\...\WP AM.pdf

Scenario: Base Scenario
12/29/2022

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	NW Lake Road/NW Friberg-Strunk Street/SE 1st Street	Signalized	HCM 7th Edition	WB Right	0.948	21.3	C
2	NW Lake Road/NW Larkspur Road/NW Parker Street	Signalized	HCM 7th Edition	SB Thru	0.509	12.8	B
3	NW Friberg-Strunk Street/Project Access	Two-way stop	HCM 7th Edition	WB Left	0.023	11.4	B
4	NW Lake Road/Project Access	Two-way stop	HCM 7th Edition	SB Right	0.008	9.3	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: NW Lake Road/NW Friberg-Strunk Street/SE 1st Street

Control Type:	Signalized	Delay (sec / veh):	21.3
Analysis Method:	HCM 7th Edition	Level Of Service:	C
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.948

Intersection Setup

Name				NW Friberg-Strunk Street			SE 1st Street			NW Lake Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	100.00	100.00	320.00	100.00	100.00	190.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	25.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				NW Friberg-Strunk Street			SE 1st Street			NW Lake Road		
Base Volume Input [veh/h]	0	0	0	71	0	681	633	207	0	0	385	65
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	6.00	6.00	6.00	1.00	1.00	1.00	3.00	3.00	3.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	71	0	681	633	207	0	0	385	65
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	18	0	170	158	52	0	0	96	16
Total Analysis Volume [veh/h]	0	0	0	71	0	681	633	207	0	0	385	65
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	10	5	10	0	5	10	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	15	0	0	18	18	0	6	0	0	9	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	6.0	20.0	6.0	0.0	20.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	71	71	71	71	71	71	71	71	71
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	20	20	52	28	39	39	0	12	12
g / C, Green / Cycle	0.28	0.28	0.72	0.39	0.55	0.55	0.00	0.16	0.16
(v / s)_i Volume / Saturation Flow Rate	0.00	0.05	0.44	0.35	0.05	0.05	0.00	0.12	0.13
s, saturation flow rate [veh/h]	1900	1405	1538	1795	1885	1885	1767	1855	1763
c, Capacity [veh/h]	579	492	1115	701	1043	1043	0	303	288
d1, Uniform Delay [s]	0.00	19.39	4.85	20.48	7.53	7.53	0.00	28.52	28.58
k, delay calibration	0.11	0.11	0.49	0.33	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.13	2.45	12.39	0.04	0.04	0.00	3.87	4.30
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.14	0.61	0.90	0.10	0.10	0.00	0.76	0.77
d, Delay for Lane Group [s/veh]	0.00	19.52	7.30	32.88	7.57	7.57	0.00	32.39	32.88
Lane Group LOS	A	B	A	C	A	A	A	C	C
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.00	0.83	3.34	10.95	0.61	0.61	0.00	3.78	3.68
50th-Percentile Queue Length [ft/ln]	0.00	20.72	83.40	273.65	15.36	15.36	0.00	94.57	92.12
95th-Percentile Queue Length [veh/ln]	0.00	1.49	6.00	16.37	1.11	1.11	0.00	6.81	6.63
95th-Percentile Queue Length [ft/ln]	0.00	37.30	150.12	409.30	27.65	27.65	0.00	170.22	165.82

Movement, Approach, & Intersection Results

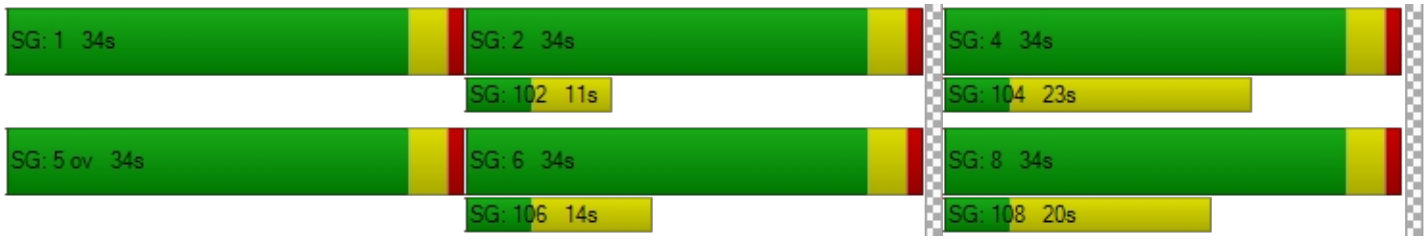
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	19.52	19.52	7.30	32.88	7.57	7.57	0.00	32.59	32.88
Movement LOS	A	A	A	B	B	A	C	A	A	A	C	C
d_A, Approach Delay [s/veh]	0.00			8.45			26.64			32.63		
Approach LOS	A			A			C			C		
d_I, Intersection Delay [s/veh]	21.26											
Intersection LOS	C											
Intersection V/C	0.948											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	27.19	27.19	27.19	27.19
l_p,int, Pedestrian LOS Score for Intersection	1.705	2.558	2.856	2.580
Crosswalk LOS	A	B	C	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	842	842	842	842
d_b, Bicycle Delay [s]	11.94	11.94	11.94	11.94
l_b,int, Bicycle LOS Score for Intersection	1.560	2.800	2.253	1.931
Bicycle LOS	A	C	B	A

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: NW Lake Road/NW Larkspur Road/NW Parker Street

Control Type:	Signalized	Delay (sec / veh):	12.8
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.509

Intersection Setup

Name	NW Parker Street			NW Larkspur Street			NW Lake Road					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	340.00	100.00	100.00	140.00	100.00	100.00	215.00	100.00	100.00	232.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			25.00			40.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NW Parker Street			NW Larkspur Street			NW Lake Road					
Base Volume Input [veh/h]	130	189	62	76	187	13	40	228	248	75	298	91
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	130	189	62	76	187	13	40	228	248	75	298	91
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	33	47	16	19	47	3	10	57	62	19	75	23
Total Analysis Volume [veh/h]	130	189	62	76	187	13	40	228	248	75	298	91
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	9.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Overlap	ProtPer	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups									2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	10	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	12	0	0	15	0	0	9	9	0	9	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	0.0	20.0	6.0	0.0	6.0	6.0	6.0	20.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	C
C, Cycle Length [s]	44	44	44	44	44	44	44	44	44	44
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	19	12	19	9	17	10	20	17	11	11
g / C, Green / Cycle	0.43	0.27	0.43	0.21	0.38	0.23	0.45	0.38	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.09	0.14	0.06	0.11	0.03	0.12	0.15	0.06	0.11	0.11
s, saturation flow rate [veh/h]	1433	1792	1322	1878	1198	1900	1615	1184	1885	1737
c, Capacity [veh/h]	755	493	687	390	612	428	731	600	470	433
d1, Uniform Delay [s]	7.86	13.56	7.71	15.60	8.79	15.14	7.85	9.04	13.99	14.02
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.11	0.81	0.07	1.05	0.04	1.03	0.27	0.09	0.61	0.69
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.17	0.51	0.11	0.51	0.07	0.53	0.34	0.13	0.43	0.44
d, Delay for Lane Group [s/veh]	7.97	14.37	7.78	16.64	8.83	16.17	8.12	9.14	14.60	14.71
Lane Group LOS	A	B	A	B	A	B	A	A	B	B
Critical Lane Group	No	Yes	Yes	No	No	No	Yes	Yes	No	No
50th-Percentile Queue Length [veh/ln]	0.56	1.81	0.35	1.70	0.18	1.72	1.05	0.36	1.45	1.38
50th-Percentile Queue Length [ft/ln]	14.03	45.15	8.85	42.46	4.51	43.08	26.23	9.09	36.22	34.39
95th-Percentile Queue Length [veh/ln]	1.01	3.25	0.64	3.06	0.32	3.10	1.89	0.65	2.61	2.48
95th-Percentile Queue Length [ft/ln]	25.26	81.28	15.94	76.42	8.11	77.55	47.21	16.36	65.20	61.91

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	7.97	14.37	14.37	7.78	16.64	16.64	8.83	16.17	8.12	9.14	14.64	14.71
Movement LOS	A	B	B	A	B	B	A	B	A	A	B	B
d_A, Approach Delay [s/veh]	12.19			14.20			11.73			13.76		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	12.83											
Intersection LOS	B											
Intersection V/C	0.509											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	14.04	14.04	14.04	14.04
l_p,int, Pedestrian LOS Score for Intersection	2.270	2.082	2.559	2.365
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1356	1356	1356	1356
d_b, Bicycle Delay [s]	2.29	2.29	2.29	2.29
l_b,int, Bicycle LOS Score for Intersection	2.188	2.015	2.411	1.942
Bicycle LOS	B	B	B	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: NW Friberg-Strunk Street/Project Access

Control Type:	Two-way stop	Delay (sec / veh):	11.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.023

Intersection Setup

Name	NW Friberg-Strunk Street		NW Friberg-Strunk Street			
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	NW Friberg-Strunk Street		NW Friberg-Strunk Street			
Base Volume Input [veh/h]	269	14	6	267	13	4
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	4.00	4.00	4.00	4.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	269	14	6	267	13	4
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	67	4	2	67	3	1
Total Analysis Volume [veh/h]	269	14	6	267	13	4
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			Yes
Number of Storage Spaces in Median	0	0	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.00	0.00	0.02	0.01
d_M, Delay for Movement [s/veh]	0.00	0.00	7.85	0.00	11.40	9.86
Movement LOS	A	A	A	A	B	A
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.01	0.00	0.09	0.09
95th-Percentile Queue Length [ft/ln]	0.00	0.00	0.36	0.00	2.14	2.14
d_A, Approach Delay [s/veh]	0.00		0.17		11.04	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	0.41					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 4: NW Lake Road/Project Access

Control Type:	Two-way stop	Delay (sec / veh):	9.3
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.008

Intersection Setup

Name			NW Lake Road		NW Lake Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			NW Lake Road		NW Lake Road	
Base Volume Input [veh/h]	0	7	0	362	355	10
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	0.00	2.00	2.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	7	0	362	355	10
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	2	0	91	89	3
Total Analysis Volume [veh/h]	0	7	0	362	355	10
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.01	0.00	0.00	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	9.35	0.00	0.00	0.00	0.00
Movement LOS		A		A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.03	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	0.63	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	9.35		0.00		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.09					
Intersection LOS	A					

Oak Tree Station

Vistro File: O:\...\WP PM.vistro
Report File: O:\...\WP PM.pdf

Scenario: Base Scenario
12/29/2022

Intersection Analysis Summary

ID	Intersection Name	Control Type	Method	Worst Mvmt	V/C	Delay (s/veh)	LOS
1	NW Lake Road/NW Friberg-Strunk Street/SE 1st Street	Signalized	HCM 7th Edition	WB Right	0.752	12.4	B
2	NW Lake Road/NW Larkspur Road/NW Parker Street	Signalized	HCM 7th Edition	SB Thru	0.710	14.9	B
3	NW Friberg-Strunk Street/Project Access	Two-way stop	HCM 7th Edition	WB Left	0.086	13.9	B
4	NW Lake Road/Project Access	Two-way stop	HCM 7th Edition	SB Right	0.026	9.5	A

V/C, Delay, LOS: For two-way stop, these values are taken from the movement with the worst (highest) delay value. For all other control types, they are taken for the whole intersection.

Intersection Level Of Service Report
Intersection 1: NW Lake Road/NW Friberg-Strunk Street/SE 1st Street

Control Type:	Signalized	Delay (sec / veh):	12.4
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.752

Intersection Setup

Name				NW Friberg-Strunk Street			SE 1st Street			NW Lake Road		
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	150.00	100.00	100.00	320.00	100.00	100.00	190.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	1	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	49.21	0.00	0.00	0.00
Speed [mph]	25.00			40.00			40.00			40.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name				NW Friberg-Strunk Street			SE 1st Street			NW Lake Road		
Base Volume Input [veh/h]	0	0	0	129	0	242	362	714	0	0	519	124
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	0.00	0.00	0.00	0.00	0.00	0.00	1.00	1.00	1.00	3.00	3.00	3.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	0	0	129	0	242	362	714	0	0	519	124
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	0	0	32	0	61	91	179	0	0	130	31
Total Analysis Volume [veh/h]	0	0	0	129	0	242	362	714	0	0	519	124
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	0.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	Permiss	Permiss	Permiss	Permiss	Permiss	Overlap	Protecte	Permiss	Permiss	Protecte	Permiss	Permiss
Signal Group	0	8	0	0	4	4	5	2	0	1	6	0
Auxiliary Signal Groups						4,5						
Lead / Lag	-	-	-	-	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	0	10	0	0	10	10	5	10	0	5	10	0
Maximum Green [s]	0	30	0	0	30	30	30	30	0	30	30	0
Amber [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
All red [s]	0.0	1.0	0.0	0.0	1.0	1.0	1.0	1.0	0.0	1.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	0.0	3.0	0.0	0.0	3.0	3.0	3.0	3.0	0.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	5	0	5	0	0	5	0
Pedestrian Clearance [s]	0	15	0	0	18	18	0	6	0	0	9	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	0.0	2.0	0.0	0.0	2.0	2.0	2.0	2.0	0.0	2.0	2.0	0.0
Minimum Recall		No			No	No	No	No		No	No	
Maximum Recall		No			No	No	No	No		No	No	
Pedestrian Recall		No			No	No	No	No		No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	0.0	6.0	0.0	0.0	6.0	6.0	20.0	6.0	0.0	20.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	C	C	R	L	C	C	L	C	C
C, Cycle Length [s]	45	45	45	45	45	45	45	45	45
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	2.00	2.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	2.00	2.00	0.00	2.00	2.00	2.00	2.00	2.00	2.00
g_i, Effective Green Time [s]	10	10	26	12	23	23	0	11	11
g / C, Green / Cycle	0.22	0.22	0.58	0.27	0.51	0.51	0.00	0.25	0.25
(v / s)_i Volume / Saturation Flow Rate	0.00	0.09	0.15	0.20	0.19	0.19	0.00	0.18	0.18
s, saturation flow rate [veh/h]	1900	1513	1615	1795	1885	1885	1767	1855	1733
c, Capacity [veh/h]	498	493	930	480	968	968	0	457	427
d1, Uniform Delay [s]	0.00	14.79	4.77	15.16	6.58	6.58	0.00	15.57	15.60
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.00	0.28	0.15	2.44	0.23	0.23	0.00	2.19	2.41
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.00	0.26	0.26	0.75	0.37	0.37	0.00	0.72	0.73
d, Delay for Lane Group [s/veh]	0.00	15.07	4.91	17.59	6.81	6.81	0.00	17.77	18.01
Lane Group LOS	A	B	A	B	A	A	A	B	B
Critical Lane Group	No	No	Yes	Yes	No	No	No	No	Yes
50th-Percentile Queue Length [veh/ln]	0.00	0.93	0.60	2.96	1.27	1.27	0.00	2.73	2.60
50th-Percentile Queue Length [ft/ln]	0.00	23.19	14.89	74.12	31.85	31.85	0.00	68.25	64.95
95th-Percentile Queue Length [veh/ln]	0.00	1.67	1.07	5.34	2.29	2.29	0.00	4.91	4.68
95th-Percentile Queue Length [ft/ln]	0.00	41.74	26.80	133.42	57.32	57.32	0.00	122.86	116.90

Movement, Approach, & Intersection Results

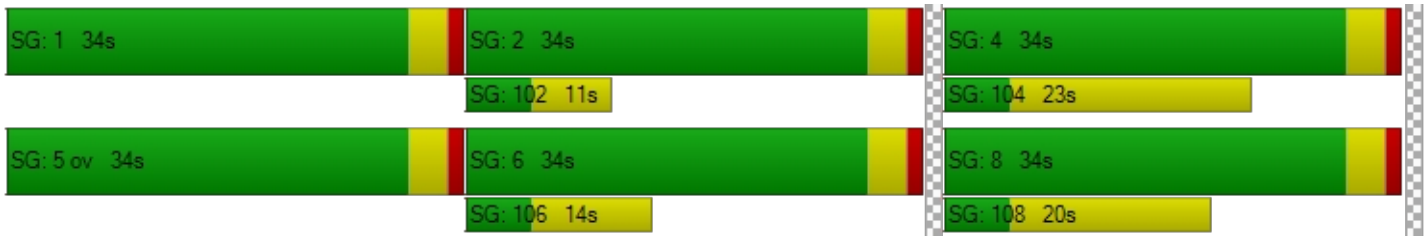
d_M, Delay for Movement [s/veh]	0.00	0.00	0.00	15.07	15.07	4.91	17.59	6.81	6.81	0.00	17.86	18.01
Movement LOS	A	A	A	B	B	A	B	A	A	A	B	B
d_A, Approach Delay [s/veh]	0.00			8.44			10.44			17.89		
Approach LOS	A			A			B			B		
d_I, Intersection Delay [s/veh]	12.38											
Intersection LOS	B											
Intersection V/C	0.752											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	14.39	14.39	14.39	14.39
l_p,int, Pedestrian LOS Score for Intersection	1.679	2.276	2.815	2.834
Crosswalk LOS	A	B	C	C
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1334	1334	1334	1334
d_b, Bicycle Delay [s]	2.49	2.49	2.49	2.49
l_b,int, Bicycle LOS Score for Intersection	1.560	2.172	2.447	2.090
Bicycle LOS	A	B	B	B

Sequence

Ring 1	1	2	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	-	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-



Intersection Level Of Service Report
Intersection 2: NW Lake Road/NW Larkspur Road/NW Parker Street

Control Type:	Signalized	Delay (sec / veh):	14.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.710

Intersection Setup

Name	NW Parker Street			NW Larkspur Street			NW Lake Road					
Approach	Northbound			Southbound			Eastbound			Westbound		
Lane Configuration												
Turning Movement	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right	Left	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	1	0	0	1	0	0	1	0	0	1	0	0
Entry Pocket Length [ft]	340.00	100.00	100.00	140.00	100.00	100.00	215.00	100.00	100.00	232.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	35.00			25.00			40.00			35.00		
Grade [%]	0.00			0.00			0.00			0.00		
Curb Present	No			No			No			No		
Crosswalk	Yes			Yes			Yes			Yes		

Volumes

Name	NW Parker Street			NW Larkspur Street			NW Lake Road					
Base Volume Input [veh/h]	305	139	102	54	187	24	39	436	277	49	331	31
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	1.00	1.00	1.00	3.00	3.00	3.00	0.00	0.00	0.00	0.00	0.00	0.00
Proportion of CAVs [%]	0.00											
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Right Turn on Red Volume [veh/h]	0	0	0	0	0	0	0	0	0	0	0	0
Total Hourly Volume [veh/h]	305	139	102	54	187	24	39	436	277	49	331	31
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	76	35	26	14	47	6	10	109	69	12	83	8
Total Analysis Volume [veh/h]	305	139	102	54	187	24	39	436	277	49	331	31
Presence of On-Street Parking	No		No	No		No	No		No	No		No
On-Street Parking Maneuver Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
Local Bus Stopping Rate [/h]	0	0	0	0	0	0	0	0	0	0	0	0
v_do, Outbound Pedestrian Volume crossing	0			0			0			0		
v_di, Inbound Pedestrian Volume crossing m	0			0			0			0		
v_co, Outbound Pedestrian Volume crossing	0			0			0			0		
v_ci, Inbound Pedestrian Volume crossing mi	0			0			0			0		
v_ab, Corner Pedestrian Volume [ped/h]	0			0			0			0		
Bicycle Volume [bicycles/h]	0			0			0			0		

Intersection Settings

Located in CBD	No
Signal Coordination Group	-
Cycle Length [s]	60
Coordination Type	Free Running
Actuation Type	Fully actuated
Offset [s]	9.0
Offset Reference	Lead Green - Beginning of First Green
Permissive Mode	SingleBand
Lost time [s]	16.00

Phasing & Timing

Control Type	ProtPer	Permiss	Permiss	ProtPer	Permiss	Permiss	ProtPer	Permiss	Overlap	ProtPer	Permiss	Permiss
Signal Group	3	8	0	7	4	0	5	2	2	1	6	0
Auxiliary Signal Groups									2,3			
Lead / Lag	Lead	-	-	Lead	-	-	Lead	-	-	Lead	-	-
Minimum Green [s]	5	10	0	5	10	0	5	10	10	5	10	0
Maximum Green [s]	30	30	0	30	30	0	30	30	30	30	30	0
Amber [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
All red [s]	1.0	1.0	0.0	1.0	1.0	0.0	1.0	1.0	1.0	1.0	1.0	0.0
Split [s]	0	0	0	0	0	0	0	0	0	0	0	0
Vehicle Extension [s]	3.0	3.0	0.0	3.0	3.0	0.0	3.0	3.0	3.0	3.0	3.0	0.0
Walk [s]	0	5	0	0	5	0	0	5	5	0	5	0
Pedestrian Clearance [s]	0	12	0	0	15	0	0	9	9	0	9	0
Delayed Vehicle Green [s]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Rest In Walk		No			No			No			No	
I1, Start-Up Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
I2, Clearance Lost Time [s]	2.0	2.0	0.0	2.0	2.0	0.0	2.0	2.0	2.0	2.0	2.0	0.0
Minimum Recall	No	No		No	No		No	No	No	No	No	
Maximum Recall	No	No		No	No		No	No	No	No	No	
Pedestrian Recall	No	No		No	No		No	No	No	No	No	
Detector Location [ft]	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Detector Length [ft]	20.0	6.0	0.0	20.0	6.0	0.0	6.0	6.0	6.0	20.0	6.0	0.0
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Exclusive Pedestrian Phase

Pedestrian Signal Group	0
Pedestrian Walk [s]	0
Pedestrian Clearance [s]	0

Lane Group Calculations

Lane Group	L	C	L	C	L	C	R	L	C	C
C, Cycle Length [s]	53	53	53	53	53	53	53	53	53	53
L, Total Lost Time per Cycle [s]	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00	4.00
l1_p, Permitted Start-Up Lost Time [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
l2, Clearance Lost Time [s]	0.00	2.00	0.00	2.00	0.00	2.00	0.00	0.00	2.00	2.00
g_i, Effective Green Time [s]	23	17	23	10	22	15	29	22	16	16
g / C, Green / Cycle	0.44	0.31	0.44	0.18	0.41	0.29	0.55	0.41	0.29	0.29
(v / s)_i Volume / Saturation Flow Rate	0.20	0.14	0.04	0.12	0.03	0.23	0.17	0.05	0.10	0.10
s, saturation flow rate [veh/h]	1491	1754	1260	1818	1185	1900	1615	971	1900	1844
c, Capacity [veh/h]	728	547	631	326	615	547	883	444	561	544
d1, Uniform Delay [s]	10.57	14.68	9.02	20.36	9.60	17.59	6.62	10.78	14.69	14.71
k, delay calibration	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11	0.11
I, Upstream Filtering Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
d2, Incremental Delay [s]	0.39	0.56	0.06	2.15	0.04	2.72	0.20	0.11	0.34	0.35
d3, Initial Queue Delay [s]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Rp, platoon ratio	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
PF, progression factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00

Lane Group Results

X, volume / capacity	0.42	0.44	0.09	0.65	0.06	0.80	0.31	0.11	0.33	0.33
d, Delay for Lane Group [s/veh]	10.96	15.24	9.08	22.51	9.65	20.31	6.82	10.89	15.03	15.06
Lane Group LOS	B	B	A	C	A	C	A	B	B	B
Critical Lane Group	Yes	No	No	Yes	No	Yes	No	Yes	No	No
50th-Percentile Queue Length [veh/ln]	1.99	2.06	0.32	2.46	0.22	4.49	1.18	0.30	1.54	1.51
50th-Percentile Queue Length [ft/ln]	49.68	51.57	8.12	61.46	5.54	112.33	29.48	7.39	38.38	37.70
95th-Percentile Queue Length [veh/ln]	3.58	3.71	0.58	4.43	0.40	7.97	2.12	0.53	2.76	2.71
95th-Percentile Queue Length [ft/ln]	89.43	92.82	14.62	110.63	9.98	199.24	53.06	13.31	69.08	67.86

Movement, Approach, & Intersection Results

d_M, Delay for Movement [s/veh]	10.96	15.24	15.24	9.08	22.51	22.51	9.65	20.31	6.82	10.89	15.04	15.06
Movement LOS	B	B	B	A	C	C	A	C	A	B	B	B
d_A, Approach Delay [s/veh]	12.85			19.77			14.79			14.55		
Approach LOS	B			B			B			B		
d_I, Intersection Delay [s/veh]	14.87											
Intersection LOS	B											
Intersection V/C	0.710											

Other Modes

g_Walk,mi, Effective Walk Time [s]	9.0	9.0	9.0	9.0
M_corner, Corner Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
M_CW, Crosswalk Circulation Area [ft²/ped]	0.00	0.00	0.00	0.00
d_p, Pedestrian Delay [s]	18.40	18.40	18.40	18.40
l_p,int, Pedestrian LOS Score for Intersection	2.338	2.061	2.735	2.417
Crosswalk LOS	B	B	B	B
s_b, Saturation Flow Rate of the bicycle lane	2000	2000	2000	2000
c_b, Capacity of the bicycle lane [bicycles/h]	1126	1126	1126	1126
d_b, Bicycle Delay [s]	5.09	5.09	5.09	5.09
l_b,int, Bicycle LOS Score for Intersection	2.461	1.997	2.800	1.899
Bicycle LOS	B	A	C	A

Sequence

Ring 1	1	2	3	4	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 2	5	6	7	8	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 3	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ring 4	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Intersection Level Of Service Report
Intersection 3: NW Friberg-Strunk Street/Project Access

Control Type:	Two-way stop	Delay (sec / veh):	13.9
Analysis Method:	HCM 7th Edition	Level Of Service:	B
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.086

Intersection Setup

Name	NW Friberg-Strunk Street		NW Friberg-Strunk Street			
Approach	Northbound		Southbound		Westbound	
Lane Configuration						
Turning Movement	Thru	Right	Left	Thru	Left	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	1	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	40.00		40.00		30.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	No		No		Yes	

Volumes

Name	NW Friberg-Strunk Street		NW Friberg-Strunk Street			
Base Volume Input [veh/h]	441	45	21	332	39	19
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	2.00	0.00	0.00	0.00	0.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	441	45	21	332	39	19
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	110	11	5	83	10	5
Total Analysis Volume [veh/h]	441	45	21	332	39	19
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Free	Free	Stop
Flared Lane			No
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance			Yes
Number of Storage Spaces in Median	0	0	1

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.00	0.02	0.00	0.09	0.03
d_M, Delay for Movement [s/veh]	0.00	0.00	8.38	0.00	13.91	11.94
Movement LOS	A	A	A	A	B	B
95th-Percentile Queue Length [veh/ln]	0.00	0.00	0.06	0.00	0.40	0.40
95th-Percentile Queue Length [ft/ln]	0.00	0.00	1.48	0.00	9.92	9.92
d_A, Approach Delay [s/veh]	0.00		0.50		13.27	
Approach LOS	A		A		B	
d_I, Intersection Delay [s/veh]	1.05					
Intersection LOS	B					

Intersection Level Of Service Report
Intersection 4: NW Lake Road/Project Access

Control Type:	Two-way stop	Delay (sec / veh):	9.5
Analysis Method:	HCM 7th Edition	Level Of Service:	A
Analysis Period:	15 minutes	Volume to Capacity (v/c):	0.026

Intersection Setup

Name			NW Lake Road		NW Lake Road	
Approach	Southbound		Eastbound		Westbound	
Lane Configuration						
Turning Movement	Left	Right	Left	Thru	Thru	Right
Lane Width [ft]	12.00	12.00	12.00	12.00	12.00	12.00
No. of Lanes in Entry Pocket	0	0	0	0	0	0
Entry Pocket Length [ft]	100.00	100.00	100.00	100.00	100.00	100.00
No. of Lanes in Exit Pocket	0	0	0	0	0	0
Exit Pocket Length [ft]	0.00	0.00	0.00	0.00	0.00	0.00
Speed [mph]	30.00		40.00		40.00	
Grade [%]	0.00		0.00		0.00	
Crosswalk	Yes		Yes		Yes	

Volumes

Name			NW Lake Road		NW Lake Road	
Base Volume Input [veh/h]	0	21	0	808	379	20
Base Volume Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Heavy Vehicles Percentage [%]	2.00	0.00	2.00	2.00	5.00	5.00
Growth Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
In-Process Volume [veh/h]	0	0	0	0	0	0
Site-Generated Trips [veh/h]	0	0	0	0	0	0
Diverted Trips [veh/h]	0	0	0	0	0	0
Pass-by Trips [veh/h]	0	0	0	0	0	0
Existing Site Adjustment Volume [veh/h]	0	0	0	0	0	0
Other Volume [veh/h]	0	0	0	0	0	0
Total Hourly Volume [veh/h]	0	21	0	808	379	20
Peak Hour Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Other Adjustment Factor	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000
Total 15-Minute Volume [veh/h]	0	5	0	202	95	5
Total Analysis Volume [veh/h]	0	21	0	808	379	20
Pedestrian Volume [ped/h]	0		0		0	

Intersection Settings

Priority Scheme	Stop	Free	Free
Flared Lane			
Storage Area [veh]	0	0	0
Two-Stage Gap Acceptance	No		
Number of Storage Spaces in Median	0	0	0

Movement, Approach, & Intersection Results

V/C, Movement V/C Ratio	0.00	0.03	0.00	0.01	0.00	0.00
d_M, Delay for Movement [s/veh]	0.00	9.54	0.00	0.00	0.00	0.00
Movement LOS		A		A	A	A
95th-Percentile Queue Length [veh/ln]	0.00	0.08	0.00	0.00	0.00	0.00
95th-Percentile Queue Length [ft/ln]	0.00	1.98	0.00	0.00	0.00	0.00
d_A, Approach Delay [s/veh]	9.54		0.00		0.00	
Approach LOS	A		A		A	
d_I, Intersection Delay [s/veh]	0.16					
Intersection LOS	A					

Memo from Community Development Engineering

TO: Madeline Sutherland, Planner

FROM: Anita Ashton, Project Manager

DATE: January 17, 2023

SUBJECT: CUP22-01 Oak Tree Station – Revised Traffic Impact Analysis (TIA), Dated January 3, 2023
Camas Staff, City of Vancouver, and Clark County Responses to Revised TIA.

Below are the Special Conditions of Approval (SCOA) from the staff report dated December 7, 2022, for CUP22-01, which were conditioned to be addressed in a revised TIA. A revised TIA (Exhibit 47) was prepared by H. Lee & Associates and submitted on January 3, 2023.

Special Conditions of Approval (SCOA)
Prior to Final Engineering Plan Submittal:

43. The applicant shall be required to submit the updated TIA for review and approval by Camas staff, the City of Vancouver, and Clark County."
44. The applicant shall be required to provide an updated trip distribution analysis, based on the current ITE manual, for review by the City of Camas, City of Vancouver, and Clark County. The updated trip distribution is to include City of Camas intersections; will provide the City of Vancouver with the number of PM peak hour trips to the proportionate share intersections; and allow for Clark County to determine if there are 5 or more PM peak hour trips impacting regionally significant intersections or corridors under Clark County jurisdiction within 2 miles of the project.
45. The applicant shall provide an updated trip distribution analysis that identifies the number of PM Peak Hour trips that are distributed to City of Vancouver's proportionate share intersections: NE 192nd Avenue & NE 13th Street; SE 192nd Avenue & SE 34th Street; and SE 192 Avenue & SR-14 Ramps.
46. Staff recommends a condition of approval that prior to final engineering plan submittal, the applicant should be required to submit an updated TIA for staff to reassess the LOS at all study intersections.

SCOA #43:
This condition was met with the submittal of the revised TIA prepared by H. Lee & Associates (HLA) dated January 3, 2023.

SCOA #44:
Camas Staff Comments:

Food Cart Station:

The discussion on pages 2 thru 4 address a survey conducted by HLA of three food cart stations of similar size, in and around the Portland area. "The data collected was based on the PM Peak hours as none of the three food cart stations are open during the AM Peak hours."

Table 3 'Trip Generation for Oak Tree Station', on page 5 shows the Pass-by Trips calculated at 43%.

- While staff is not opposed to a pass-by rate for this use, staff is unable to determine how the applicant arrived at a pass-by rate of 43%.

Staff finds that the applicant should address how the pass-by percentage of 43% for food carts was determined.

Staff finds that the Clark County Concurrency review, dated January 12, 2023, which assumed a 0% pass-by for food carts, seems to overstate the actual number of new trips for the site.

LUC 938 Coffee/Donut Shop with Drive-Thru Window, No Indoor Seating:

The information shown in, *Table 3 'Trip Generation for Oak Tree Station'*, page 5 appears to be based on the 10th Edition ITE Manual as noted below:

- The number of AM and PM peak hour trips are shown to be based on the square footage of the Coffee/Donut Shop with Drive-Through Window, which is per the 10th Edition ITE Manual.
    - The *11th Edition ITE Manual, LUC 938,* calculates trip generation based on the number of drive-thru windows.
    - The estimated number of trips PM Peak hour trips, per window = 17.15 trips
    - Based on the number of drive-thru lanes (2), the estimated total PM Peak hour trips = 34.3 PM Peak hour trips
- The percentage of pass-by trips are shown to be calculated at 90% AM - 98% for PM trips.
    - *The 3rd Edition Trip Generation Handbook, LUC 938*, the pass-by trips for PM Peak hour ranges from 83% to 95% with the average pass-by PM Peak hour percentage of 89%.
    - Based on the average percentage above, the non-pass-by trips in the PM peak hour = 11%
    - 34.3 PM Peak * 0.11 = 3.77 Trips (New PM Peak Hour Trips)

As trip distribution information is provided for in-process traffic for future developments, staff recommends that the revised TIA should be re-submitted with Table 3 revised per the 11th Edition ITE Manual data for LUC 938, and the corrected pass-by information per the 3rd Edition Trip Generation Handbook for LUC 938.

However, for the purpose of the applicant's traffic study with the assumptions for analyzing intersection levels of service (LOS), staff finds that the calculated difference in the number of PM Peak hour pass-by trips is de-minimis.

City of Vancouver Concurrency Comments dated January 12, 2023: "*The applicant has provided PM peak hour trip distribution through the City of Vancouver's proportionate share intersections."* The requested information is shown in *Table 5 Pro-Rata Share Contributions*, on page 6 of the revised TIA and noted below in COA #45 discussion.

Clark County Concurrency Comments dated January 12, 2023: "*County concurrency has reviewed the Revised Oak Tree Station Traffic Impact Study prepared by H. Lee & Associates, PLLC dated January 3, 2023. The Oak Tree Station development seeks to construct a 12,574 square-foot multi-tenant retail structure, a 22-unit food cart pod with an associated 5,900 square-foot covered seating area, a coffee kiosk with 2 drive-through windows and no indoor seating along with other associated appurtenances. Staff used the applicant's distribution to determine anticipated vehicle assignments approaching intersections under county jurisdiction.*

Staff concluded that because this development is not expected generate more than 5 new peak hour trips on regionally significant intersections and corridors under county jurisdiction, county concurrency has no further comments and requires no further concurrency related analysis."

Clark County staff identified inconsistencies in the TIA, specifically the use of the 10th Edition ITE Manual for LUC 938, as noted in Camas staff comments; the pass-by percentage for LUC 938 from the 3rd

Generation Trip Distribution Handbook, as noted in Camas staff comments; and the percentage of pass-by trips for the food carts, as noted in Camas staff comments.

SCOA #45:

Table 5, shown below and on page 6, provides the required updated trip distribution analysis that identifies the number of PM Peak hour trips that are distributed to COV's proportionate share intersections.

Table 5. Pro-Rata Share Contributions

Intersection	P.M. Peak Hour Impact		
	Project P.M. Peak Hour Trip Impact	Cost Per P.M. Peak Hour Trip Impact	Pro-rata Share Contribution Required
NE 192nd Avenue/NE 13th Street	19 P.M.	$400.00	$7,600.00
SE 192nd Avenue/SE 34th Street	17 P.M.	$150.00	$2,550.00
SE 192nd Avenue/SR-14 Westbound Ramps	11 P.M.	$2,000.00	$22,000.00

Total Proportionate Share Amount = $32,150.00

The City of Vancouver requests that a condition of approval be enforced for the project, requiring the developer to pay the calculated proportionate share fees to the City of Vancouver prior to final permit approval of the project.

Staff finds that Special Condition of Approval #74, in the Staff Report dated December 7, 2022, for CUP22-01, addresses the COV's request for a condition of approval.

Staff recommends that Special COA #74 should be revised to read as follows:

Prior to Building Permit Approval:

74. Prior to building permit issuance, the applicant shall be required to pay the proportionate share amount of $32,150.00 to the City of Vancouver and to provide Camas staff with documentation of payment of said proportionate share amount.

SCOA #46:

Camas Staff Comments: The discussion on page 5 addresses the '2027 "With Project" Traffic Volumes and Levels of Service and states that "As shown in Table 4, all of the study area intersections are projected to operate within the acceptable levels of service standards in the 2027 "With Project" condition."

- However, Table 4 on page 6 has a scrivener's error as it is titled '2027 "Without Project" Levels of Service'.
- As indicated on page 5, the title of Table 4 should read '2027 "With Project" Levels of Service'.

If the applicant is resubmitting a revised TIA, staff finds that the scrivener's error noted above should be addressed.

Overall, Camas staff concurs with the findings of the H. Lee & Associates TIA dated January 3, 2023.

Staff concurs that TIF should be calculated at the time of building permit application. Staff will consider data provided by the applicant's traffic engineer at that time.

From: Hahn, Eric
To: Anita Ashton
Cc: Lopossa, Ryan; Curleigh (Jim) Carothers; David Jardin
Subject: RE: CUP22-01 Oak Tree Station - Revised TIA
Date: Thursday, January 12, 2023 3:30:34 PM
Attachments: image001.png

WARNING: This message originated outside the City of Camas Mail system. DO NOT CLICK on links or open attachments unless you recognize the sender and are expecting the content. If you recognize the sender as a city employee and you see this message this email is a phishing email. If you are unsure, click the Phish Alert button to redirect the email for ITD review.

Anita,

The applicant has provided PM peak hour trip distribution through the City of Vancouver's proportionate share intersections. Here is a list of the proportionate share projects identified by the applicant, along with the calculated proportionate share fees:

Table 5. Pro-Rata Share Contributions

Intersection	P.M. Peak Hour Impact		
	Project P.M. Peak Hour Trip Impact	Cost Per P.M. Peak Hour Trip Impact	Pro-rata Share Contribution Required
NE 192nd Avenue/NE 13th Street	19 P.M.	$400.00	$7,600.00
SE 192nd Avenue/SE 34th Street	17 P.M.	$150.00	$2,550.00
SE 192nd Avenue/SR-14 Westbound Ramps	11 P.M.	$2,000.00	$22,000.00

The City of Vancouver requests that a condition of approval be enforced for the project, requiring the developer to pay the calculated proportionate share fees to the City of Vancouver prior to final permit approval of the project.

I have no objections or further comments. Let me know if you have any questions.

Eric Hahn, PE | Senior Civil Engineer
CITY OF VANCOUVER, WASHINGTON
Public Works | *Streets & Transportation* | *TDRS*
Marine Park Engineering – 4500 SE Columbia Way
P.O. Box 1995 • Vancouver, WA, 98668-1995
P: (360) 487-7702 | Fax: (360) 487-7139 | TTY: (360) 487-8602
www.cityofvancouver.us

From: Anita Ashton <AAshton@cityofcamas.us>
Sent: Wednesday, January 11, 2023 4:56 PM
To: Hahn, Eric <Eric.Hahn@cityofvancouver.us>; David Jardin <David.Jardin@clark.wa.gov>

Subject: FW: CUP22-01 Oak Tree Station - Revised TIA

CAUTION: This email originated from outside of the City of Vancouver. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hey Guys,
Just wanted to double check to see if you have time to review the revised TIS and provide comments by Friday, January 13, 2023.
Thanks

Anita Ashton
Engineering Project Manager
Community Development
Desk 360-817-7231
www.cityofcamas.us | aashton@cityofcamas.us

From: Anita Ashton
Sent: Friday, January 6, 2023 2:53 PM
To: 'David Jardin' <David.Jardin@clark.wa.gov>; Hahn, Eric <Eric.Hahn@cityofvancouver.us>
Cc: Curleigh (Jim) Carothers <jcarothers@cityofcamas.us>
Subject: CUP22-01 Oak Tree Station - Revised TIA

Afternoon and happy new year!!

We've received the revised TIA for the above noted project. Camas staff review and comments are to be submitted to the hearings examiner by 5:00 on January 17, 2023. If you could review and provide comments to us by Friday, January 13, 2023, that would be great.

Have a great weekend.

Anita Ashton
Engineering Project Manager
Community Development
Desk 360-817-7231
www.cityofcamas.us | aashton@cityofcamas.us

NOTICE OF PUBLIC DISCLOSURE: This e-mail account is public domain. Any correspondence from or to this e-mail account may be a public record. Accordingly, this e-mail, in whole or in part may be subject to disclosure pursuant to RCW 42.56, regardless of any claim of confidentiality or privilege asserted by an external party.

From: David Jardin
To: Anita Ashton; Hahn, Eric
Subject: RE: CUP22-01 Oak Tree Station - Revised TIA
Date: Thursday, January 12, 2023 6:32:34 PM

WARNING: This message originated outside the City of Camas Mail system. DO NOT CLICK on links or open attachments unless you recognize the sender and are expecting the content. If you recognize the sender as a city employee and you see this message this email is a phishing email. If you are unsure, click the Phish Alert button to redirect the email for ITD review.

Good Evening Anita:

I am very sorry for the delay. Clark County Concurrency has reviewed the additional traffic information submitted by H. Lee & Associates and have the following comments.

County concurrency has reviewed the Revised Oak Tree Station Traffic Impact Study prepared by H. Lee & Associates, PLLC dated January 3, 2023.. The Oak Tree Station development seeks to construct a 12,574 square-foot multi-tenant retail structure, a 22 unit food cart pod with an associated 5,900 square-foot covered seating area, a coffee kiosk with 2 drive-through windows and no indoor seating along with other associated appurtenances. Staff used the applicant's distribution to determine anticipated vehicle assignments approaching intersections under county jurisdiction. Staff concluded that because this development is not expected generate more than 5 new peak hour trips on regionally significant intersections and corridors under county jurisdiction, county concurrency has no further comments and requires no further concurrency related analysis. The proposed development site is located on parcel numbered 176162000 in Camas.

Staff's review of the revised traffic study identified inconsistencies between:

- The proposed plan (Figure 2 Site Plan) and what was reported in the trip generation table provided (Table 3) for the Coffee/Donut Shop with Drive-Thru Window and No Indoor Seating
    - The applicant indicated that they were using the Institute of Transportation Engineers (ITE) Trip Generation Manual 11th Edition to determine trip generation for the proposed coffee/donut shop with drive-thru window and no indoor seating, ITE LUC 938. The applicant's engineer reported the trip generation based on 1,000 square feet; the 11th Edition ITE no longer uses square feet as an independent variable. The independent variable used in the 11th Edition is Number of Drive-Thru Lanes.
        - Staff used Figure 2, from the traffic study, and estimated the trip generation based on 2 Drive-Thru Lanes. The estimated trip generation is as follows:
            - ADT: 358 (179 Enter: 179 Exit)
            - AM Peak Hour: 80 (40 Enter: 40 Exit)
            - PM Peak Hour: 30 (15 Enter: 15 Exit)
        - The applicant's engineer also used a pass by rate that is not in the ITE Trip Generation Handbook, nor was there accepted locally collected data to support the applicant's use of pass by of 90% in the AM and 98% in the PM. The pass by typically used for ITE LUC 938 is 83%. This would result in an estimated trip generation of:

- ADT: 61
- AM Peak Hour: 14
- PM Peak Hour: 5

It should be noted that the use of square footage in the table may have been a typo, as the trip generation rates shown in the table are the rates used, per lane, in the ITE manual.

- The applicant's traffic engineer submitted locally collected trip generation data for the proposed 22-food cart pod. The engineer provided information to determine the trip generation rates for ADT and PM Peak Hour Trips. County staff's initial review of the collected data appears to have been collected and processed in compliance with the ITE Trip Generation Handbook, 3rd Edition. The trip generation rates proposed appear to be a reasonable representation of a food cart pod of over 20 food carts. However, the ADT rate proposed based on the data collected, 24.77 in Table 1, was not the trip generation rate shown in Table 3. The ADT calculation appears to have used the 25.1 ADT/Food Cart Kitchen instead of the 24.77 ADT/Food Cart Kitchen rate.
- The applicant's engineer also used a pass by rate that is not in the ITE Trip Generation Handbook, nor was there accepted locally collected data to support the applicant's use of pass by of 43%. Because there is no data to support the application of pass by reductions, pass by should not be accepted in determining the net new trips generated by the food cart pod. Removing the pass by reductions calculated and applying the ADT rate, 24.77 ADT/Food Cart Kitchen, as reported in the collected data would result in an estimated trip generation of:
    - ADT: 545
    - AM Peak Hour: -
    - PM Peak Hour: 73

County staff's evaluation of the trip generation table found in the applicant's traffic study, Table 3, found that the number of trips generated by this proposed development may have been under-represented based on the locally collected data, the ITE Trip Generation Manual 11th Edition and the available opportunities for pass by reduction as found in the ITE Trip Generation Handbook 3rd Edition. The trip generation table should be updated to better reflect the uses proposed along with the pass by reductions available to the specific land uses.

The expected trips associated with the proposed site based on staff's evaluation is as follows:

Net New Trips – Site Total:
ADT: **1,291**
AM Peak Hour: **44**
PM Peak Hour: **161**

David Jardin
Concurrency Engineer
COMMUNITY DEVELOPMENT - DEVELOPMENT ENGINEERING

Desk: 564.397.4354
Cell: 360.818.3307

From: Anita Ashton <AAshton@cityofcamas.us>
Sent: Wednesday, January 11, 2023 4:56 PM
To: Hahn, Eric <Eric.Hahn@cityofvancouver.us>; David Jardin <David.Jardin@clark.wa.gov>
Subject: FW: CUP22-01 Oak Tree Station - Revised TIA

CAUTION: This email originated from outside of Clark County. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Hey Guys,
Just wanted to double check to see if you have time to review the revised TIS and provide comments by Friday, January 13, 2023.
Thanks

Anita Ashton
Engineering Project Manager
Community Development
Desk 360-817-7231
www.cityofcamas.us | aashton@cityofcamas.us

From: Anita Ashton
Sent: Friday, January 6, 2023 2:53 PM
To: 'David Jardin' <David.Jardin@clark.wa.gov>; Hahn, Eric <Eric.Hahn@cityofvancouver.us>
Cc: Curleigh (Jim) Carothers <jcarothers@cityofcamas.us>
Subject: CUP22-01 Oak Tree Station - Revised TIA

Afternoon and happy new year!!

We've received the revised TIA for the above noted project. Camas staff review and comments are to be submitted to the hearings examiner by 5:00 on January 17, 2023. If you could review and provide comments to us by Friday, January 13, 2023, that would be great.

Have a great weekend.

Anita Ashton
Engineering Project Manager
Community Development
Desk 360-817-7231
www.cityofcamas.us | aashton@cityofcamas.us

NOTICE OF PUBLIC DISCLOSURE: This e-mail account is public domain. Any correspondence from or to this e-mail account may be a public record. Accordingly, this e-mail, in whole or in part may be subject to disclosure pursuant to RCW 42.56, regardless of any claim of confidentiality or privilege asserted by an external party.

JORDAN RAMIS

Jamie D. Howsley
jamie.howsley@jordanramis.com
WA Direct Dial: (360) 567-3913
OR Direct Dial: (503) 598-5503

PacWest, 27th Floor
1211 SW Fifth Avenue
Portland, OR 97204
T (503) 598-7070
F (503) 598-7373

January 24, 2023

VIA EMAIL ONLY

Joe Turner, Hearing Examiner
c/o Madeline Sutherland, Assistant Planner
City of Camas
616 NE 4th Ave
Camas WA 98607

E-mail: msutherland@cityofcamas.us

Re: **Oak Tree Station**
Our File No. 56123-80430

Dear Mr. Hearing Examiner:

This letter is to serve as the applicant's final submittal and will address several topics that have arisen in the staff report, the hearing, and the open record period. We wish to thank staff again for their continued assistance with this application for this unique combination of retail and food service uses.

Transportation Issues

Last week the city raised several questions regarding the traffic study, and in particular its analysis of the food cart pod trip generation. As we understand it, there are 42 Phase 1 pm peak trips for the food cart pod and the coffee drive through. Phase 2 is the retail plaza, which has 83 pm peak hour trips. These two phases will be developed, and the TIF fees will be paid, separately. But for the TIA analysis it appears that the City of Vancouver, Clark County and the City of Camas agree that from a concurrency standpoint there are no intersections that will trigger additional mitigation beyond the TIF. Importantly, the City notes that the City and Applicant can address any de minimis change to the TIA to establish the TIF following the final CUP decision and that there will not be an impact for concurrency purposes. We therefore appear to be in alignment with the City that there may be some work to do post decision, but it won't impact the intersections in any manner.

Furthermore on this point, the applicant will likely seek TIF relief for this particular application from City Council in the very near future. As the Examiner knows, TIF fees do not vest until building permit under the *New Castle v. La Center* case and therefore the applicant and City will have sufficient time to address these in the near future.

Address Change

Please note that the applicant's full address is 6168 NW Hwy 99, Suite 103, Vancouver, WA 98665. And also please not that our office moved since the original hearing and we therefore also request a copy of the final decision to my attention at the new Jordan Ramis address, PacWest 27th floor, 1211 SW Fifth Avenue, Portland, OR 97204.

Final Argument on Conditions of Approval

Page 3 and Condition 48 relate to the wetlands. The wetland is exempt from critical area review due to the size. We recognize that the applicant will need to obtain a Nationwide permit from the US Army Corps of Engineers and provide mitigation. As mentioned at the hearing, the applicant received confirmation for available credit in the Terrace Mitigation Bank which the City is aware of. We just want to make sure that it is clear in the record.

Page 4 on the third paragraph from the bottom of the staff report identifies the food cart station as having an area of 5,000 square feet. We believe that the word approximately may be missing in front of 5,000 square feet because in accordance with the submission exhibit the actual area is only 4,799 square feet.

Page 5 describes the drive aisle width. The 24 foot width will be sufficient for the service vehicles, yet the staff report requires 26 feet of width, without reference to a code section. The staff report would unlawfully delegate approval of the drive aisle width to the service providers, when the city has the sole authority to approve the site plan, and there is no code requirement for 26 feet of width. Therefore, the city must approve the code compliant design as submitted, and proposed Condition 51 must be removed.

Plant selection is described on page 6. The staff report indicates all plants will need to be per the approved City's Landscape list and per the Camas Design Manual. However code only requires that street trees be selected from that list, and we would certainly extend that to any public plantings. The private plantings are not required by code to be restricted to the City's list. The only list we must follow for private landscaping is that selected species may not be on the invasive species identified in the most current edition of the Clark County Noxious Weed List. Please modify the draft Condition 49 to clarify the distinction between the public right-of-way and private site requirements.

On Page 14 it incorrectly states that the site is 3.95 acres. We believe it should be 3.59 acres.

For stormwater, on page 15 staff recommends a condition that the entirely of our conveyance be limited to on site and not disturb the City's parcel to the east. This appears to be contrary to the applicant's prior discussions regarding a gravity conveyance pipe from the site to near the stream, which will disturb less than 0.1 acres on the City's lot. Of course stormwater will be detained and treated on the site consistent with standard engineering practices, after which the property is allowed to discharge at the predevelopment rate. That the City owns the adjacent property does not provide the city with authority to disallow the predevelopment flow of stormwater. The applicant requests that draft Condition 61 be revised to allow the discharge pipe and outflow as designed subject to the approval of the City during engineering review.

On page 21, the staff report recommends—without citation to the code authority—pedestrian crossings on site across the parking lot aisles be a concrete or a distinct material clearly defining the crossing rather than painted. We reviewed Chapter 18.11 governing parking and do not see such a requirement. Unless authority is demonstrated, the final decision must ensure that this recommendation is not a condition of approval. The applicant will provide clear pedestrian demarcations for its own liability, but this does not need to be a condition of approval.

JORDAN RAMIS

As discussed at the hearing, the proposed Condition 42 that required the food carts be limited to 11:00 am to 3:00 pm on weekdays must be removed, in order to allow the food services to be provided through the late afternoon and early evening hours.

Finally, we brought up at the hearing the ability to do some light work within the dripline of the oak tree in order to help preserve it. We believe the Hearing Examiner understood our request in this regard.

Conclusion

We appreciate the careful consideration of our final argument for this project. And again we wish to thank staff for their continued cooperation on this unique land use in the City of Camas.

Best regards,

JORDAN RAMIS PC

James D. Howsley

Jamie D. Howsley
Admitted in Oregon and Washington

cc: Client

Oak Tree Station (CUP22-01)
Index of Exhibits

Exhibit No.	Title/Description	Date Submitted
1	Application Form	1/31/2022
2	Pre-Application Meeting Notes	3/11/2022
3	Narrative_1st Submittal	3/11/2022
4	Development Plans_1st Submittal	3/11/2022
5	Tree Report	5/18/2022
6	Traffic Impact Analysis_1st Submittal	3/11/2022
7	Preliminary Stormwater Reprot_1st Submittal	3/11/2022
8	SEPA Checklist_1st Submittal	3/11/2022
9	Development Sign	3/11/2022
10	Mailing Labels	3/11/2022
11	Mailing Labels Map	3/11/2022
12	Elevations Food Carts	8/16/2022
13	Elevations Commercial Building	5/18/2022
14	Comment Review Letter	7/29/2022
15	Preliminary Stormwater Report_2nd Submittal	5/18/2022
16	Traffic Impact Analysis_2nd Submittal	5/18/2022
17	SEPA Checklist_2nd Submittal	8/22/2022
18	Narrative_2nd Submittal	6/1/2022
19	Development Plans_2nd Submittal	5/18/2022
20	SEPA MDNS	8/25/2022
21	Design Review Committee Staff Report	8/23/2022
22	Incomplete Application Review Letter_1	4/8/2022
23	Incomplete Application Review Letter_2	5/31/2022
24	Complete Application Review Letter	6/13/2022
25	Notice of Application	7/7/2022
26	Notice of Public Hearing	8/18/2022
27	Notice of Canceled Public Hearing	9/7/22
28	Notice of Public Hearing	11/24/22
29	Letter to Staff	11/15/22
30	Wetland Report	10/13/22
31	Updated Traffic Impact Analysis	11/1/22
32	SEPA Distribution Packet - Addendum	11/16/22
33	Arch Report Records Request	10/31/22
34	Updated Development Sign	11/29/22
35	May 5, 2022, Email from Eric Hahn, City of Vancouver	12/7/22
36	August 16, 2022, Email from David Jardin, Clark County	12/7/22
37	September 7, 2022, Email to Applicant	12/7/22
38	November 21, 2022, Email to Applicant	12/7/22
39	November 21, 2022, Email from Applicant's Traffic Eng.	12/7/22
40	November 22, 2022, Email to Applicant	12/7/22
41	November 28, 2022, Email from Applicant	12/7/22
42	Ecology Comment	9/8/22

Oak Tree Station (CUP22-01)
Index of Exhibits

43	Clark County Comments regarding Revised TIA	12/11/22
44	December 14, 2022, Emails between Applicant & Staff	12/14/22
45	Nosrati Public Comment	04/22/22
46	Applicant Letter to Hearings Examiner re: Traffic Study & TIF Fees	1/3/23
47	Revised Traffic Impact Study	1/3/23
48	Staff Memo Revised Traffic Impact Analysis	1/17/22
49	Applicant's Response	1/24/23

BEFORE THE LAND USE HEARINGS EXAMINER
FOR THE CITY OF CAMAS, WASHINGTON

Regarding an application by Paul Williams to construct an indoor/outdoor eating area with food carts, drive-thru coffee shop, and a 12,574 square foot commercial building at NW Lake Road and NW Friberg-Strunk Street, in the City of Camas, Washington	**F I N A L O R D E R** **CUP22-01** **(Oak Tree Station)**

A. SUMMARY

1. The applicant, Paul Williams, requests conditional use, site plan review, design review, and SEPA to construct and operate an indoor/outdoor eating area with food carts, a drive-thru coffee shop, and a 12,574 square foot commercial building on a 3.95-acre parcel located at the northeast corner of the intersection of NW Lake Road and NW Friberg-Strunk Street, known as Parcel Number 176162-000.

2. The site and properties to the north are zoned CC (Community Commercial). Properties to the east are zoned BP (Business Park). Properties to the southeast, across NW Lake Road, are zoned LI/B (Light Industrial/Business Park). Properties southwest, across NW Lake Road, are zoned R-2 (Low density residential, two lots per acre). Properties to the west, across NW Friberg-Strunk Street, are located in the City of Vancouver and zoned GC (General Commercial).

3. Additional basic facts about the site and surrounding land and applicable approval standards are provided in the Staff Report to the Hearing Examiner dated December 7, 2022 (the "Staff Report").

4. City of Camas Hearing Examiner Joe Turner (the "examiner") conducted a public hearing to receive testimony and evidence about the application. City staff recommended the examiner approve the application subject to conditions set out in the Staff Report. The applicant accepted those findings and conditions with certain exceptions. One person testified in writing with concerns about the safety of high school students crossing NW Friberg-Strunk Street. (Exhibit 45). Contested issues in the case include:

a. Whether traffic generated by the proposed development will exceed the capacity of area streets or create a hazard;

b. Whether the proposed development will encourage high school students to jaywalk across NW Friberg-Strunk Street;

c. Whether the Staff Report lists the correct size of the site;

d. Whether the City defer approval authority regarding drive aisle widths to the local solid waste provider;

e. Whether on-site landscaping is subject to the City's Landscape list and Design Manual;

f. Whether the applicant can construct off-site stormwater facilities on the adjacent City owned property; and

g. Whether the City has the authority to regulate on-site pedestrian crossings.

5. Based on the findings provided or incorporated herein, the examiner approves the application subject to the conditions at the end of this final order.

B. HEARING AND RECORD HIGHLIGHTS

1. The examiner received testimony at a public hearing about this application on December 14, 2022. All exhibits and records of testimony are filed at the City of Camas. At the beginning of the hearing, the examiner described how the hearing would be conducted and how interested persons could participate. The examiner disclaimed any *ex parte* contacts, bias, or conflicts of interest. The following is a summary by the examiner of selected testimony and evidence offered at the public hearing.

2. City planner Madeline Sutherland summarized the Staff Report.

a. She noted that there is a wetland on the site, but it is exempt from regulation due to its small size. The applicant proposed to fill the wetland.

b. She requested the examiner delete condition of approval 42 of the Staff Report, limiting the hours of operation of the facility.[1] As discussed in Exhibit 44, that condition was based on an earlier version of the applicant's traffic study that did not address peak hour traffic.

3. Attorney Jamie Howsley appeared on behalf of the applicant and raised the following issues.

a. Although the on-site wetland is exempt from regulation by the City, the Washington Department of Ecology ("ECY") and U.S. Army Corps of Engineers (the "Corps") will require mitigation for filling the wetland. The applicant will mitigate for these impacts by purchasing credits at the Terrace Mitigation Bank.

b. There is a limited amount of data regarding traffic generation by food carts. The Institute of Traffic Engineers ("ITE") trip generation manual is limited to four studies. This facility, located across the street from a high school, is likely to generate a higher number of pass-by trips. He requested the examiner hold the record open to allow the applicant the opportunity to submit additional evidence on that issue.

c. He requested the examiner modify condition 28 of the Staff Report to read "Except as specifically allowed by an arborist report, the development shall not encroach into the 'Tree Protection Zone' and shall follow the recommendations listed in

[1] The examiner deleted certain conditions as requested by staff and the applicant. Therefore, the condition numbers in this Final Order vary from the condition numbers in the Staff Report.

the Arborist Report by Certified Arborist Consultations dated March 19, 2022, to ensure the survival of the Oregon White Oak."

d. There are marked crosswalks and traffic signals at the intersection of Lake Road and NW Friberg-Strunk Street which will provide a safe pedestrian crossing for students at the adjacent Union High School who wish to patronize this facility. The hazard of mid-block pedestrian crossings are obvious and there is no need to install barriers to prevent such crossings.

4. At the end of the hearing the examiner held the record open for three weeks, until January 4, 2023, to allow all parties the opportunity to submit new testimony and evidence, for an additional two weeks, until January 17, 2023, to allow all parties an opportunity to respond to the new evidence, and for a final week, until January 24, 2023, to allow the applicant to submit a final written argument. The record in this case closed at 5:00 p.m. on January 24, 2023. The following exhibits were submitted during the open record period:

a. A letter from Mr. Howsley dated January 3, 2023 (Exhibit 46);

b. A revised traffic impact study dated January 3, 2023 (Exhibit 47);

c. City staff's January 17, 2023, response to the revised traffic impact study (Exhibit 48); and

d. Mr. Howsley's final argument (Exhibit 49).

C. DISCUSSION

1. City staff recommended approval of the application, based on the affirmative findings in the Staff Report. The applicant accepted those findings with certain exceptions.

2. The examiner concludes that the affirmative findings in the Staff Report show that the proposed use does or can comply with the applicable standards for approval of a conditional use permit, site plan review, design review, and SEPA. The examiner adopts the affirmative findings in the Staff Report as his own, except to the extent they are inconsistent with the following findings.

3. The applicant submitted a revised traffic study addressing most of the issues raised in the Staff Report (Exhibit 47). Staff generally concur with the revised traffic study and concluded that traffic from this development will not require off-site improvements, with the exception of proportional share contributions towards intersection improvements in the City of Vancouver. Staff concluded that any remaining issues can be addressed during the final engineering review process. There is no substantial evidence to the contrary. Therefore, conditions of approval 43 and 45 of the Staff Report can be deleted.

4. The examiner finds that the proposed development will not encourage unsafe pedestrian crossings of NW Friberg-Strunk Street. As area resident Karin Nosrati noted, Camas Union High School is located across NW Friberg-Strunk Street from the site and students from the school are likely to patronize the site during lunch and after school hours. (Exhibit 45). The applicant appears to agree that many students from the school will patronize this use. (Exhibit 46). The high school's driveway aligns with Dwyer Creek Drive, a stub street abutting the north boundary of the storage facility north of the site. The junction of Dwyer Creek Drive and NW Friberg-Strunk Street is an "intersection area" as defined by RCW 46.04.220. This intersection area is also an unmarked "crosswalk" as defined by RCW 46.04.160, where pedestrians may legally cross the street and WAC 132E-16-040(1) requires that oncoming drivers stop for such pedestrians. The examiner finds that this crosswalk provides a safe crossing for students to access the site.

5. Mr. Howsley argued that the site contains 3.59-acres, not 3.95-acres as listed on pages 16 and 19 of the Staff Report (page 2 of the Staff Report indicates that the site contains 3.59-acres). However, the Clark County GIS website and the applicant's plan sheets all identify the site as 3.95-acres (See pages 1, 4, and 6 of Exhibit 7). Mr. Howsley failed to provide any evidence to support his assertion that the site contains is 3.59-acres of area.

6. The applicant objects to condition 51 of the Staff Report, which requires garbage and recycling provider approval of drive aisle widths adjacent to the trash enclosures. The examiner agrees that the City has no authority to delegate approval of the drive aisle width to the service providers. CMC 13.80.050.C(2) authorizes the public works director or duly appointed designee to approve the location of solid waste and recycling containers, considering "[t]he standards of this section and accessibility to city disposal trucks." However, there is nothing to prohibit the public works director or designee from consulting with the service providers on this issue. Condition of approval 51 of the Staff Report should be modified to that effect.

7. Condition 49 of the Staff Report requires that all landscape plants on the site be consistent with "[t]he approved City's Landscape list and the Camas Design Manual planting specifications and landscape notes." The examiner finds, based on the text of CMC 18.13.050.D, that the species, size, and spacing requirements of the Design Standards Manual only apply to street trees required as part of the frontage improvements. This standard does not apply to landscaping outside of the public right-of-way.

a. The "Plant Materials" section of the Design Standards is not limited to street trees. However, the Code does not require compliance with this section of the Design Standards. CMC 18.13.050.D is the only Code section that references the Design Standards and it is expressly limited to street trees.

b. However, landscaping outside of the public right-of-way is required to comply with the remainder of CMC 18.13.050, including CMC 18.13.050.B which requires that "Landscaping and trees shall be selected and located to deter sound, filter air contaminants, curtail erosion, minimize stormwater run-off, contribute to living privacy,

reduce the visual impacts of large buildings and paved areas, screen, and emphasize or separate outdoor spaces of different uses or character" and CMC 18.13.050.C which requires "[a] minimum of sixty percent native vegetation (or adapted to northwest climate), or drought-tolerant vegetation, and fifty percent evergreen." For plants not on the approved City list, a characteristic card should be submitted to the City for review and approval to demonstrate compliance with these requirements. Condition 49 of the Staff Report should be modified to that effect.

8. Based on the topographic maps in the record, stormwater falling on the site currently sheet flows east, downhill, towards the adjacent City owned property. The applicant proposed to maintain this existing stormwater flow pattern, collecting and detaining stormwater runoff from the site prior to discharging it to the east at less than predevelopment rates, replicating existing conditions. However, absent express permission from the City, the applicant has no right to enter the adjacent City owned property to construct stormwater facilities. All stormwater treatment, detention, discharge, and dispersal must occur on the site, unless the City approves improvements in the public rights of way or on its property to the east. Condition 61 of the Staff Report should be modified to that effect.

9. Page 21 of the Staff Report recommends that pedestrian crossings within the site be constructed of "[a] concrete or distinct material that clearly defines the pedestrian connections to be provided…" The Staff Report does not include a condition of approval regulating the design of such on-site pedestrian connections and the examiner is unable to find anything in the Code that regulates pedestrian connections within a private development. Therefore, the examiner will treat the "Pedestrian Connection" finding on page 21 of the Staff Report as a recommendation, not a condition that the applicant is required to follow.

D. CONCLUSION

Based on the above findings and discussion provided or incorporated herein, the examiner concludes that CUP22-01 (Oak Tree Station) should be approved, because it does or can comply with the applicable standards of the Camas Municipal Code and the Revised Code of the State of Washington.

E. DECISION

Based on the findings, discussion, and conclusions provided or incorporated herein and the public record in this case, the examiner hereby approves CUP22-01 (Oak Tree Station).

STANDARD CONDITIONS OF APPROVAL:

1. Final engineering site improvement plans shall be prepared in accordance with the Camas Design Standards Manual (CDSM) and CMC 17.19.040.
    a. Per CMC 17.19.040.C.a: All utilities designed to serve the development shall be placed underground. Those utilities to be located beneath paved surfaces, including all service connections, shall be installed prior to application of any surface materials.

2. Installation of public improvements shall be in accordance with CMC 17.21 Procedures for Public Improvements.
3. The engineering site plans shall be prepared by a licensed civil engineer in Washington State and submitted to the City's Community Development (CDEV) Engineering Department for review and approval. Submittal requirements for first review are as follows:
    a. Final engineering civil site improvement plans are not to be submitted until after Planning issues the land-use decision.
    b. Submit four (4) full size sets and one (1) half size set of plans;
    c. One (1) PDF copy of final (TIR) stormwater report;
    d. Stamped preliminary engineer's estimate.
4. Community Development (CDEV) Engineering is responsible for plan review (PR) and construction inspection (CI) of all the civil site improvements outside of building footprints.
5. CDEV shall collect a total three-percent plan review and construction inspection (PR&CI) fee for the proposed development outside of the building footprints.
    a. The three-percent fee is based on a stamped engineer's estimate.
    b. A preliminary engineer's estimate is to be submitted prior to or with first review.
    c. Payment of the one-percent plan review (PR) fee is to be paid prior to first review.
    d. Payment of the two-percent construction inspection (CI) fee is to be paid prior to release of approved construction drawings by CDEV Engineering Department.
    e. Plans, profiles, and structural calculations for retaining walls over 4-feet in height are to be submitted to engineering for review and approval.
    f. Under no circumstances will the applicant be permitted to begin construction or any land-disturbing activities prior to final engineering plan approval.
6. Per CMC 17.21.030, prior to any land-disturbing activities of an acre or more, the applicant shall submit:
    a. A copy of the NPDES General Construction Stormwater Permit (GCSWP), which is issued by the Washington State Department of Ecology;
    b. A copy of the Stormwater Pollution Prevention Plan (SWPPP), which is required as a component of the NPDES GCSWP permit.
7. Per CMC 14.06.200, prior to commencing any land-disturbing activities of more than an acre, the applicant shall submit an Erosion Control Bond in the amount of 200-percent of the cost for erosion control measures.
8. Prior to construction, temporary fencing shall be installed that clearly marks in the field the critical area buffers and shall remain throughout permitted construction activities.

9. If applicable, existing wells and septic tanks and septic drain fields shall be decommissioned in accordance with State and County guidelines per CMC 17.19.020(A3).
10. In the event that any item of archaeological interest is uncovered during the course of a permitted ground disturbing action or activity, all ground disturbing activities shall immediately cease, and the applicant shall notify the City and Department of Archaeology and Historic Preservation (DAHP).
11. A separate new construction permit shall be required from the Fire Marshal's office. Two sets of plan specifications, and other information as may be necessary to determine compliance with fire and life safety code and standards shall be submitted to the Fire Marshal's office.
12. Permit(s) and inspections are required by the Fire Marshal's Office for this project. Please contact the Fire Marshal's office at 360-834-6191, or rmiller@ci.camas.wa.us for submittal information. Permit forms and submittal instructions are available online or can be picked up at the Fire Marshal's office at 605 NE 3rd Avenue.
13. A building permit shall be required prior to commencement of construction of any structures.
14. At the time of building permit issuance, the applicant shall pay the appropriate impact fees in accordance with the provisions of CMC 3.88.
15. Per CMC 18.18.070.B, prior to issuance of final occupancy permits, all public and private improvements shall be completed in accordance with CMC 17.21.070 Final Acceptance.
16. Final Acceptance is issued by the Community Development Engineering Department.
17. Prior to Final Acceptance, the applicant shall remove all temporary erosion prevention and sediment control measures from the site at completion of all site improvements, which includes stabilization of all disturbed soil.
18. Prior to Final Acceptance, final as-built construction drawing submittals shall meet the requirements of the Camas Design Standards Manual (CDSM).
19. As-builts are to be submitted as PDFs and in either AutoCAD or Carlson formats. The cover sheet for the as-builts is to include the originally approved and signed cover sheet.
20. Per CMC 17.21.070.E A letter of Final Acceptance will be issued once all items listed in 17.21.070.B-C are completed.
21. Per CMC 18.18.070.B, prior to issuance of final occupancy permits, all public and private improvements shall be completed in accordance with CMC 17.21.070 Final Acceptance.
22. The applicant will be responsible for maintenance of all on-site private improvements, including but not limited to the private stormwater system; the private water and fire line system; the private sanitary sewer system, including

STEP tanks; the parking areas; pedestrian pathways; any retaining walls; and onsite fencing, lighting, and landscaping.

23. The applicant shall take appropriate measures to ensure landscaping success for a minimum of three (3) years after issuance of Certificate of Occupancy. If plantings fail to survive, the property owner shall promptly replace them.
24. The applicant will be required to purchase all permanent traffic control signs, street name signs, street lighting, and traffic control markers for the proposed development.
25. Work within the city right-of-way (ROW) will require submittal and approval of a traffic control plan (TCP) prior to start of any work.
26. Regulations for installation of public improvements, improvement agreements, bonding, final platting, and final acceptance can be found at CMC 17.21.
27. The applicant will be responsible for ensuring that private utilities; underground power, telephone, gas, CATV, interior street/parking lighting, and associated appurtenances are installed.

SPECIAL CONDITIONS OF APPROVAL:

Planning:

28. Except as specifically allowed by an arborist report, the development shall not encroach into the 'Tree Protection Zone' and shall follow the recommendations listed in the Arborist Report by Certified Arborist Consultations dated March 19, 2022, to ensure the survival of the Oregon White Oak.
29. A conservation covenant shall be recorded with the County to ensure the long-term preservation of the Oregon White Oak
30. Any existing off-site trees should not be removed if proposed without permission from the property owner.
31. Street trees shall be planted every 30 linear feet within the existing planter strips where there are missing trees and shall comply with the City's Street Tree Manual.
32. The five-foot L1 landscape buffer along the northern property line must include high and low shrubs.
33. Watering system shall maintain the proposed landscaping for a period to ensure that plants are well established.
34. A parking lot planter strip shall be provided every 15 spaces and be landscaped in accordance with CMC 18.13.060. Wheel stops are required adjacent to planter areas to protect landscaping from car overhangs per CMC 18.13.060.F.
35. Landscape, parking and building lighting shall be low voltage, non-glare, and indirect lighting is directed, hooded, or shielded away from neighboring properties.
36. If additional signage is proposed, additional approval per CMC 18.15 is required prior to receiving building permit approval for the sign. Signs located on

buildings or incorporated into the landscaping are unobtrusive and vandal resistant.

37. Examples of the perimeter fencing and outdoor furniture samples at the food cart station shall be submitted to the city for approval.
38. Street lighting (poles, lamps) is substantially similar or architecturally more significant than other street lighting existing on the same street and do not conflict with any City approved street lighting plans for the street.
39. Lighting is incorporated into the landscape and illuminates the quality of the natural environment. Street light poles and lamps shall be compatible with other nearby lighting on the same street.
40. If retaining walls are proposed, they must meet CMC 18.17.060.
41. Future uses within the commercial space shall include only the permitted uses in CMC 18.07.030 Table 1.

Prior to Final Engineering Plan Submittal:

42. Based on the revised traffic report dated January 3, 2023, the applicant shall provide documentation on how the pass-by percentage of 43-percent was determined for the food carts.
43. The applicant shall submit a revised copy of the January 3, 2023, TIA (Exhibit 47) to correct the scrivener error on page 6, Table 4, to read "Table 4 – '2027 With Project Levels of Service'".

Prior to Final Engineering Plan Approval:

Planning:

44. The applicant will be required to obtain a Nationwide permit from the US Army Corps of Engineers.
45. A mitigation plan is required per CMC 16.51.180 and shall be submitted prior to engineering plan approval.
46. The applicant shall submit to the city for review and approval a final landscape plan consistent with the landscaping standards in CMC Chapter 18.13. Plants utilized within the right-of-way will need to be per the approved City's Landscape list and per the Camas Design Manual planting specifications and landscape notes. For plants not on the approved City list, a characteristic card should be submitted to the City for review and approval. Irrigation and landscaping improvements should be installed or bonded for prior to final acceptance.
47. Temporary construction fencing is required prior to construction around the Oregon White Oak Tree Protection Zone and shall remain throughout permitted construction activities.

Engineering:

48. The locations of trash enclosures and the minimum drive aisle widths, shown as 24-feet, where adjacent to the trash enclosures shall be approved by the public

works director to ensure that city disposal trucks have adequate access to the solid waste and recycling containers.

[Roads]

49. The site plans shall be revised with the following revisions to the NW Lake Road drive access:
    a. The drive access is to be restricted to a right-in/right-out access only and signed accordingly.
    b. The drive access is to be a minimum 24-foot wide paved access width.
    c. The curb radii is to be a minimum of 35-feet on each side of the drive access.
50. The site plans are to be revised to show removal and replacement of those segments of sidewalks along NW Lake Road and NW Friberg-Strunk Street that are worn, damaged, and less than five-feet in width with ADA compliant six-foot wide sidewalks.

[Transportation]

51. The site plans and the landscape plans are to include the minimum 400-foot site distance triangle at the drive access location on NW Friberg-Strunk Street.
52. The site plans and the landscape plans are to include the site distance triangles at both drive access locations on NW Lake Road.
53. A note shall be added to the final landscaping plans stating that the applicant is required to maintain all vegetation at a height not to exceed 42-inches within the site distance triangle as shown on the site plans and the landscape plans.

[Sanitary Sewage]

54. The applicant shall be required to submit sanitary sewer utility plans with the following revisions to the private onsite sanitary sewer system:
    a. The locations of each of the STEP tanks are to be accessible for maintenance and inspections.
    b. STEP tanks located within paved surfaces are to be designed with traffic rated access lids.
    c. The applicant is responsible for sizing of the STEP tanks for the future uses. Specifications, design, and calculations for sizing the STEP tanks for each of the proposed uses, are to be submitted for to the city review and approval prior to installation.
55. A note is to be added to the sanitary sewer utility plans stating, “All components of the onsite private sanitary sewer system, including the STEP tanks shall be privately owned and maintained by the property owners, with a right-of-entry granted to the city for inspection purposes.

[Stormwater]

56. The preliminary March TIR shall be revised and resubmitted for approval, clearly addressing the increase in impervious surface, both pollution generating and non-pollution generating, and the decrease in pervious surface.

57. The preliminary March TIR be revised and resubmitted verifying that MR's #1 - #9 are still being met with the increase in impervious surface, both pollution generating and non-pollution generating, and the decrease in pervious surface. Additionally, MRs #9 is to be addressed in the revised TIR.

58. The stormwater plans are to be submitted for approval with the collection and conveyance system, treatment and detention system, and proposed dispersion system located, in its entirety, on the site of the proposed development, unless otherwise approved by the City. Dispersal to the stormwater conveyance system in NW Lake Road is not approved.

59. A note is to be added to the stormwater plans that states, "All components of the onsite stormwater system shall be owned and maintained by the applicant/property owner, with right-of-entry granted to the city for inspections purposes."

[Water]

60. The applicant shall be required to submit revised onsite water utility plans for review and approval with the following changes:

    a. An above-ground RPBA, is to be located behind the water meter and is to be accessible for inspections and testing.

61. The water utility plans and the landscape plans are to be submitted with the location and size of the irrigation meter and backflow prevention device.

62. The applicant shall be required to submit water utility plans with the following revisions to the fire line water system:

    a. A note is to be added to the water utility plans stating that "all components of the onsite private water system and fire line, including fire hydrants shall be privately owned and maintained by the property owners with right-of-entry granted to the city for inspection purposes."

    b. A note is to be added to the water utility plans stating that "all private fire hydrants are to be ordered direct from the factory and factory painted powder coated red."

[Erosion Control]

63. The applicant is required to submit a set of erosion and sediment control (ESC) plans addressing the onsite land-disturbing activities for review and approval.

Fire Marshal:

64. The applicant shall be required to provide a design for a 'No Parking and Towing' sign for review and approval.

    a. Said sign is to include contact information for a towing company.

    b. The applicant shall be required to install the 'No Parking and Towing' signs prior to final acceptance.

<u>Prior to Land-Disturbing Activities:</u>

65. The NPDES GCSWP permit, an electronic copy of the SWPPP, and the Erosion and Sediment Control bond are to be submitted to the city.

Prior to Final Acceptance:

Planning:

66. Irrigation and landscaping should be installed or bonded for prior to final acceptance.

Engineering:

67. The applicant is required to provide a design for a 'No Parking and Towing' sign for review and approval.
    a. Said sign is to include contact information for a towing company, as the city does not provide towing on private roads, nor does the city enforce no parking on private roads.
    b. The applicant shall be required to install the 'No Parking and Towing' signs prior to final acceptance.
68. The applicant shall remove all temporary erosion prevention and sediment control measures from the site at completion of all site improvements, which includes stabilization of all disturbed soil, prior to issuance of Final Acceptance from CDEV Engineering.
69. Final as-built construction drawing submittals shall meet the requirements of the Camas Design Standards Manual (CDSM).
    a. As-builts are to be submitted as PDFs and in either AutoCAD or Carlson formats. The cover sheet for the as-builts is to include the originally approved and signed cover sheet.
70. The two-year warranty maintenance bond is to be submitted in accordance with CMC 17.21.070.A Upon final acceptance of the development improvements a two-year (2) warranty bond commences.

Prior to Building Permit Approval:

71. Prior to building permit issuance, the applicant shall be required to pay the proportionate share amount of $ $32,150.00 to the City of Vancouver and to provide Camas staff with documentation of payment of said proportionate share amount.

Prior to Final Occupancy:

Planning:

72. Detailed construction plans for any new building signage shall be submitted for city review and approval.
73. Unless construction of site improvements commences within two (2) years of issuance of this decision, this permit will expire.

DATED this 6 day of February 2023.

Joe Turner, AICP
City of Camas Land Use Hearings Examiner

STAFF REPORT
American Marble & Granite Sign
File No. MAJVAR22-03
Report Date: December 7, 2022

TO	Hearings Examiner	**HEARING DATE**	December 14, 2022
PROPOSAL	To raise the height of an existing freestanding sign.		
LOCATION	The site is located at 1900 SE 8th Ave in the SW 1/4 Section 12, Township 1 North, Range 3 East, of the Willamette Meridian; and described as tax parcel 87181000.		
APPLICANT/ OWNER	Chris Monteleon 1900 SE 8th Ave Camas, WA 98607	**OWNER**	Paul Varsek 1900 SE 8th Ave Camas, WA 98607
APPLICATION SUBMITTED	9/7/2022	**APPLICATION COMPLETE**	10/26/2022
PUBLIC NOTICES	A Notice of Application was mailed to property owners within 300 feet of the site and published in the Post Record on November 11, 2022. Legal publication #756480.		

APPLICABLE LAW: The application was submitted on 9/7/2022, and the applicable codes are those codes that were in effect at the date of the application's first submittal. Camas Municipal Code (CMC) Title 16 Environment, Title 17 Land Development, and Title 18 Zoning, specifically (but not limited to): Chapter 17.11 Subdivision, Chapter 18.11 - Parking, Chapter 18.13 - Landscaping, and Chapter 18.55 Administrative Procedures. [Note: Citations from Camas Municipal Code (CMC) are indicated in *italic* type.]

SUMMARY

An application has been made to the City of Camas for Major Variance approval to extend the height of an existing freestanding sign. The site is zoned Light Industrial (LI) with an existing warehouse on site. The proposal includes the request to replace the existing sign with a taller freestanding sign.

The subject site is bordered to the east and west by Light Industrial zoned properties with warehouses and small retail buildings. To the north is Multi-Family Residential (MF-18) zoned land with residential uses on site. The site is bordered to the south by an SR-14 on-ramp that was recently improved.

The proposed Major Variance does or can comply with the applicable standards of the Camas Municipal Code (CMC) and Revised Code of Washington (RCW).

Chapter 18.45 Variance

A. CMC 18.45.040.B - Approval of a major variance must demonstrate with findings of compliance with all of the following criteria:

1. The variance shall not constitute a grant of special privilege inconsistent with the limitation upon uses of other properties in the vicinity and zone in which the subject property is located;

DISCUSSION: Per CMC 18.15.050 Table 1, freestanding signs are permitted in the Commercial, Industrial, and Park zones subject to footnote 2, which does not allow signs to *"exceed ten percent of the size of the wall area in combination with all other permitted signs on the same plane and visible from public view."* The site is zoned Light Industrial, therefore allowing a freestanding sign. There is currently a freestanding sign at the rear of the lot, facing State Route 14 (SR-14). The sign is 25 feet in height. SR-14 has recently been improved which raised the side facing the subject property. SR-14 now blocks the freestanding sign on site (Exhibit 7). The applicant is proposing to raise the sign to 37 feet in height so the sign may be seen over SR-14.

The lot directly west, Bellus Motors, has an existing sign that sits 40 feet high (Exhibit 6). The applicant is requesting a variance to increase their sign height to 37 feet so it may be seen over SR-14. As it sits now, the freestanding sign is blocked.

FINDING: Due to other freestanding signs within the vicinity that stand taller than the one proposed with this major variance application, staff finds the request does not grant a special privilege.

2. That such variance is necessary, because of special circumstances or conditions relating to the size, shape, topography, location, or surroundings of the subject property, to provide it with use, rights, and privileges permitted to other properties in the vicinity and in the zone in which the subject property is located;

FINDING: As discussed above, the variance is necessary for the sign to be visible to the public and is necessary due to the increased height of SR-14.

3. The granting of such variance will not be materially detrimental to the public welfare or injurious to the property or improvements in the vicinity and in the zone in which the subject property is located.

The freestanding sign will comply with the current sign regulations. Freestanding signs are allowed in the Light Industrial zone. Per CMC 18.1.040.B.10., freestanding signs are not allowed in combination with wall signs, projecting sign, or monument sign. The building currently has two wall signs that are proposed to be removed and will be conditioned as such.

The freestanding sign may not exceed ten percent of the wall façade CMC 18.15.050 Table 1 Footnote 2. The building wall is 1,220 square feet and the sign will be 108 square feet, making up less than 9% of the wall façade. The sign will include an electronic message board sign that will not exceed 30% of the entire sign area per CMC 18.15.040.

The sign will be along SR-14, as such, staff reached out to the Washington Department of Transportation (WSDOT) for additional requirements. WSDOT does not regulate sign height and has no further comments on this application (Exhibit 15).

FINDING: Staff finds the sign complies with the freestanding and electronic message board signs in CMC 18.15 and will not be detrimental to the public welfare.

PUBLIC COMMENTS

As of the writing of this staff report, staff has not received written public comments. Any public comments received after drafting this staff report will be entered into the record and forwarded to the Hearings Examiner.

CONCLUSION

Based on the above findings and discussion provided in this staff report, staff concludes that American Marble & Granite Sign (MAJVAR22-03) should be approved because it does comply with the applicable standards if all the conditions of approval are met.

RECOMMENDATION

Staff recommends APPROVAL of the preliminary plat of American Marble & Granite Sign (MAJVAR22-03) subject to the following conditions of approval:

CONDITIONS OF APPROVAL

1. The wall signs on the rear building wall shall be removed prior to installing the freestanding sign.
2. The freestanding sign shall not be taller than 37 feet and shall comply with the sign requirements in CMC 18.15.
3. A building permit will be required prior to installing the freestanding sign.

City of Camas WASHINGTON

Community Development Department | Planning
616 NE Fourth Avenue | Camas, WA 98607
(360) 817-1568
communitydevelopment@cityofcamas.us

General Application Form

Case Number: MAJVAR22-03

Applicant Information

Applicant/Contact:: Chris Monteleon — *Phone:* (360) 693-9081

Address: 1900 SE 8th Ave. — permitting@garrettsign.com
Street Address — *E-mail Address*

Camas — WA — 98607
City — *State* — *ZIP Code*

Property Information

Property Address:
Street Address: 1900 SE 8th Ave. — *County Assessor # / Parcel #*:

City: Camas — *State*: WA — *ZIP Code*: 98607

Zoning District — Site Size

Description of Project

Brief description:
Sign Variance (1) Illuminated Pylon sign 37'-0"

Are you requesting a consolidated review per CMC 18.55.020(B)? YES ☐ NO ☐

Permits Requested: ☐ Type I ☐ Type II ☐ Type III ☐ Type IV, BOA, Other

Property Owner or Contract Purchaser

Owner's Name: *Phone:* (360) 833-9905

Last: Varsek — *First*: Paul

E mail Address: *Street Address*: 1900 SE 8th Ave. — *Apartment/Unit #*:

City: Camas — *State*: WA — *Zip*: 98607

Signature

I authorize the applicant to make this application. Further, I grant permission for city staff to conduct site inspections of the property.

Signature: [signature] **Date:** 8-26-22

Note: If multiple property owners are party to the application, an additional application form must be signed by each owner. If it is impractical to obtain a property owner signature, then a letter of authorization from the owner is required.

Date Submitted: Pre-Application Date:

Staff: Related Cases # ☐ Electronic Copy Submitted

Receipt # 706025
09-07-22
BY: CKAFOUROS
Validation of Fees

Revised: 01/22/2019

Application Checklist and Fees [updated on January 1, 2022]

◊ Annexation	$863 - 10% petition; $3,669 - 60% petition	001-00-345-890-00		$
◊ Appeal Fee		001-00-345-810-00	$399.00	$
◊ Archaeological Review		001-00-345-810-00	$137.00	$
◊ Binding Site Plan	$1,879 + $24 per unit	001-00-345-810-00		$
◊ Boundary Line Adjustment		001-00-345-810-00	$103.00	$
◊ Comprehensive Plan Amendment		001-00-345-810-00	$5,826.00	$
◊ Conditional Use Permit				
Residential	$3,417 + $105 per unit	001-00-345-810-00		$
Non-Residential		001-00-345-810-00	$4,328.00	$
◊ Continuance of Public Hearing		001-00-345-810-00	$524.00	$
◊ Critical or Sensitive Areas (fee per type)		001-00-345-810-00	$775.00	$
(wetlands, steep slopes or potentially unstable soils, streams and watercourses, vegetation removal, wildlife habitat)				
◊ Design Review				
Minor		001-00-345-810-00	$433.00	$
Committee		001-00-345-810-00	$2,375.00	$
◊ Development Agreement	$877 first hearing; $530 ea. add'l hearing/continuance	001-00-345-810-00		$
◊ Engineering Department Review - ***Fees Collected at Time of Engineering Plan Approval***				
Construction Plan Review & Inspection		***(3% of approved estimated construction costs)***		
Modification to Approved Construction Plan Review		***(Fee shown for information only)***	$420.00	
Single Family Residence (SFR) - Stormwater Plan Review		***(Fee shown for information only)***	$208.00	
Gates/Barrier on Private Street Plan Review		***(Fee shown for information only)***	$1,041.00	
◊ Fire Department Review				
Short Plat or other Development Construction Plan Review & Insp.		115-09-345-830-10	$284.00	$
Subdivision or PRD Construction Plan Review & Inspection		115-09-345-830-10	$354.00	$
Commercial Construction Plan Review & Inspection		115-09-345-830-10	$424.00	$
◊ Home Occupation				
Minor - Notification (No fee)			$0.00	
Major		001-00-321-900-00	$69.00	$
◊ LI/BP Development	$4,328 + $41.00 per 1000 sf of GFA	001-00-345-810-00		$
◊ Minor Modifications to approved development		001-00-345-810-00	$346.00	$
◊ Planned Residential Development	$35 per unit + subdivision fees	001-00-345-810-00		$
◊ Plat, Preliminary				
Short Plat	4 lots or less: $1,936 per lot	001-00-345-810-00		$
Short Plat	5 lots or more: $7,1755 + $250 per lot	001-00-345-810-00		$
Subdivision	$7,175 + $250 per lot	001-00-345-810-00		$
◊ Plat, Final:				
Short Plat		001-00-345-810-00	$200.00	$
Subdivision		001-00-345-810-00	$2,375.00	$
◊ Plat Modification/Alteration		001-00-345-810-00	$1,196.00	$
◊ Pre-Application (Type III or IV Permits)				
No fee for Type I or II				
General		001-00-345-810-00	$354.00	$
Subdivision (Type III or IV)		001-00-345-810-00	$911.00	$
◊ SEPA		001-00-345-890-00	$810.00	$
◊ Shoreline Permit		001-00-345-890-00	$1,196.00	$
◊ Sign Permit				
General Sign Permit	(Exempt if building permit is required)	001.00.322.400.00	$41.00	$
Master Sign Permit		001.00.322.400.00	$126.00	$
◊ Site Plan Review				
Residential	$1,151 + $34 per unit	001-00-345-810-00		$
Non-Residential	$2,876 + $68 per 1000 sf of GFA	001-00-345-810-00		$
Mixed Residential/Non Residential	(see below)	001-00-345-810-00		$
	$4,055 + $34 per res unit + $68 per 1000 sf of GFA			
◊ Temporary Use Permit		001-00-321-990-00	$80.00	$
◊ Variance (Minor)		001-00-345-810-00	$695.00	$
◊ Variance (Major)		001-00-345-810-00	$1,295.00	$ 1,295.00
◊ Zone Change (single tract)		001-00-345-810-00	$3,345.00	$

Adopted by RES 1023 AUG 2005; Revised by RES 1113 SEPT 2007; Revised by RES 1163 OCT 2009; Revised by RES 1204 NOV 2010; Revised by RES 15-001 JAN 2015; Revised by RES 15-007 MAY 2015; Revised by RES 15-018 DEC 2015; Revised by RES 16-019 NOV 2016; Revised by RES 17-015 NOV 2017; Revised by RES 18-003 APRIL 2018; Revised by RES 18-013 NOV 2018; Revised by RES 19-018 DEC 2019 Revised by RES20-014 DEC 2020

Fees reviewed & approved by Planner: MS

Initial ***Date***

For office use only

Total Fees Due: $ 1,295.00

C:\Users\abaldwin\Desktop\DAILY PERMITS\Planning Fee Schedule 2022

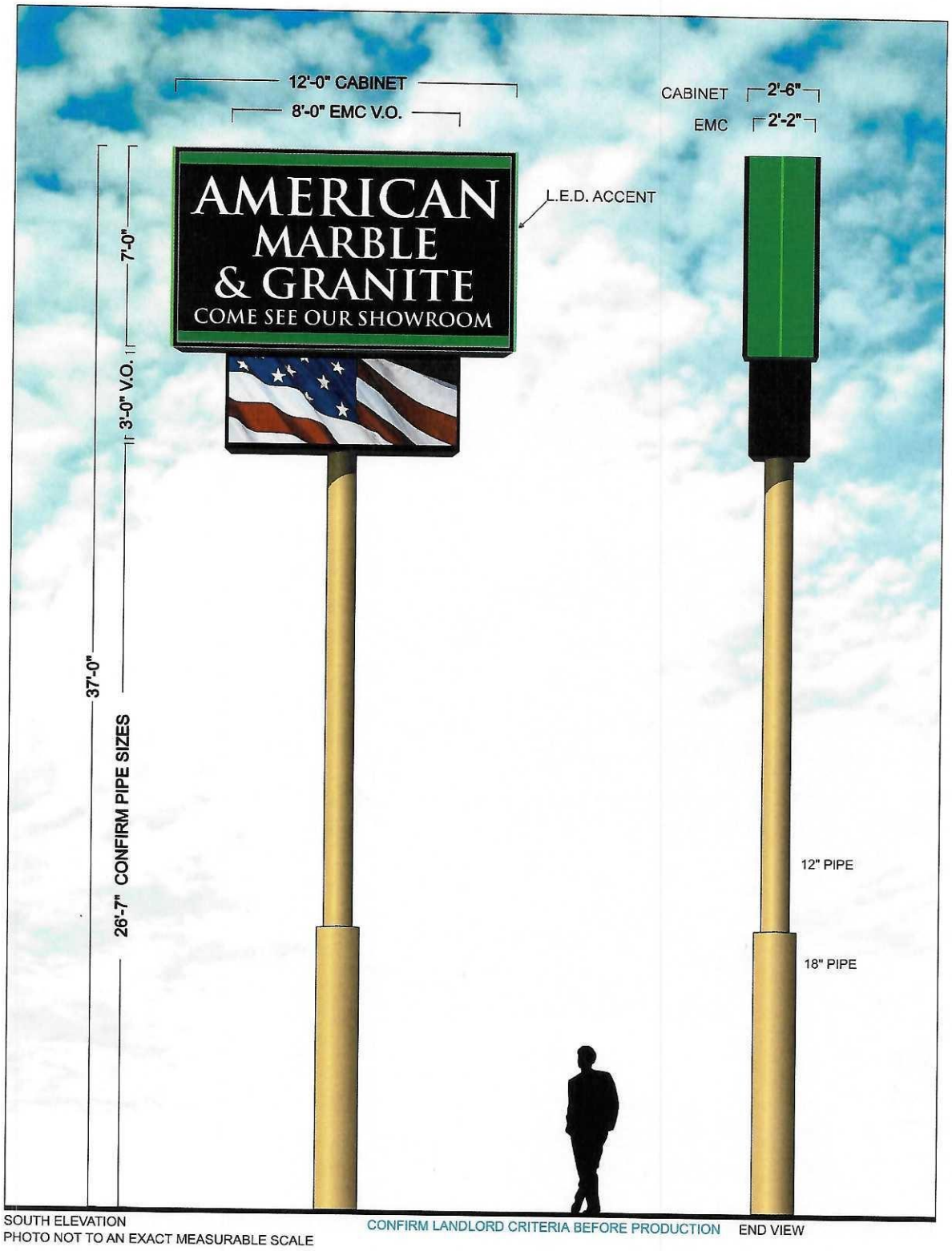
GARRETT SIGN

Date: 10/3/2022
Topic: American Marble & Granite

Address: 1900 SE 8th Ave., Camas, WA 98607
Jurisdiction: City of Camas
Parcel: 87181000
Zone: Light Industrial (LI)

Applying for a variance to change the max height of (1) double-faced freestanding pylon sign with electronic message center to replace out existing sign on the South Elevation for American Marble & Granite located at 1900 SE 8th Ave., Camas, WA 98607.

A. We are applying for a variance to increase the allowed height of the permitted freestanding sign from 25' to 37' tall in order to be visible from the road after highway 14 was raised above the existing sign's max height. The current sign is now not visible from traffic heading in either direction. For comparison, their neighbor Bellus Motors currently has an illuminated freestanding sign standing at 40' tall, however more than twice the square footage. Since hwy. 14 has been raised the Owners can only speculate how much that decreased business, especially to new customers, but they can say their projected growth certainly slowed from that point on. Visibility of 8+ million cars a year passing by their business played a major factor in determining the location for their business and original sign. The new proposed sign would adhere to the maximum square footage allowance, we're only asking for the additional height to be approved so it can been seen as intended from Hwy. 14. American Marble & Granite has been a well respected, family owned business for almost 30 years and only want the opportunity to reach their full potential and grow by attracting new business and revenue for your community.
B. Construction of sign will be fabricated from stamped engineered plans based off of 130mph wind load calculations. It will consist of an 18" x .375" steel base pipe with 12" x .375 steel pipe middle transition with a 6" x .375 steel pipe top transition all certified welded together with multiple caps, inner rings and plug welds . The top 7' -0" x 12'-0" double-faced illuminated cabinet is framed with 2"x 2" x .125" thick square tubing skinned with .125" aluminum. The face panels are illuminated with 3/16" polycarbonate. The lower 3'-0" x 8'-0" double-faced electronic message center to be framed with 2"x 2" structural angle iron. All components of signs and pipes to be primed and painted with UV resistant Matthew's paint. All structures and footing for the freestanding sign will be engineered to meet to code and be able to withstand the required wind pressure of 30 mph per square foot and 130mph winds. The sign cabinet and Electronic Message Center lighting will have auto-dimming features and photo eye to meet the allowable luminance of 5000 nits during the day and 500 nits at night.
C. This sign will be replacing the existing pylon sign and the South elevation wall signs and banner. Those existing signs will be taken down.
D. CMC 18.15.050 – Size of wall is 20' x 61' = 1,220 sf. Total area of sign is 108 sf. (8.85% of Wall Elevation)
E. CMC 18.15.100– This project will not require any temporary signs.



SOUTH ELEVATION
PHOTO NOT TO AN EXACT MEASURABLE SCALE

CONFIRM LANDLORD CRITERIA BEFORE PRODUCTION

END VIEW

GARRETT SIGN
811 HARNEY STREET VANCOUVER, WA 98660
(360) 693-9081 • (800) 994-1191 • FAX (360) 693-5949
WWW.GARRETTSIGN.COM

AMERICAN
MARBLE & GRANITE
1900 SE 8TH AVE., CAMAS, WA 98607

DATE: 8/17/22 | SCALE: 3/16"=1'-0" | DRW: CK
DESIGN #: AMERICANmarble_py1s | SALE: CM | REDRAW# 9

THIS ORIGINAL ARTWORK IS THE PROPERTY OF GARRETT SIGN. BY ACCEPTING THIS COPY YOU AGREE TO PAY FOR ALL COSTS OF IT'S DEVELOPMENT IF USED WITHOUT WRITTEN AUTHORIZATION

APPROVES THIS SUBMITTED DESIGN AND IT FULLY MEETS OUR SIGN CRITERIA. IF THE SIGNS ARE RENTALS THEY ARE RECOGNIZED AS THE PROPERTY OF GARRETT SIGN. ACCESS TO THE PROPERTY FOR REMOVAL OF THE SIGNS WILL BE ALLOWED WITHOUT DELAY. THE LANDLORD WILL NOT LEAN OR ATTACH ANY CLAIM. CONSIDERED ABANDONED OR ASSESSED ANY FEES AGAINST RENTAL SIGNS. THE TERMS OF THIS APPROVAL WILL TRANSFER TO FUTURE PROPERTY OWNERS.

PRINT NAME | LANDLORD SIGNATURE & DATE | ACCEPTED BY & DATE

DOUBLE-FACED, ILLUMINATED PYLON SIGN:

- TOP CABINET HAS BACK-LIT FACE PANELS WITH VINYL GRAPHICS AND RETAINERS. TWO-TONE PAINT SCHEME FOR CABINET VS. RETAINERS.
- GREEN L.E.D. ACCENT BANDS ON EACH SIDE OF CABINET.
- FULL COLOR L.E.D. ELECTRONIC MESSAGE CENTER (10mm - 90 x 240 MATRIX).
- CONFIRM ALL PIPE AND FOOTING SIZES.

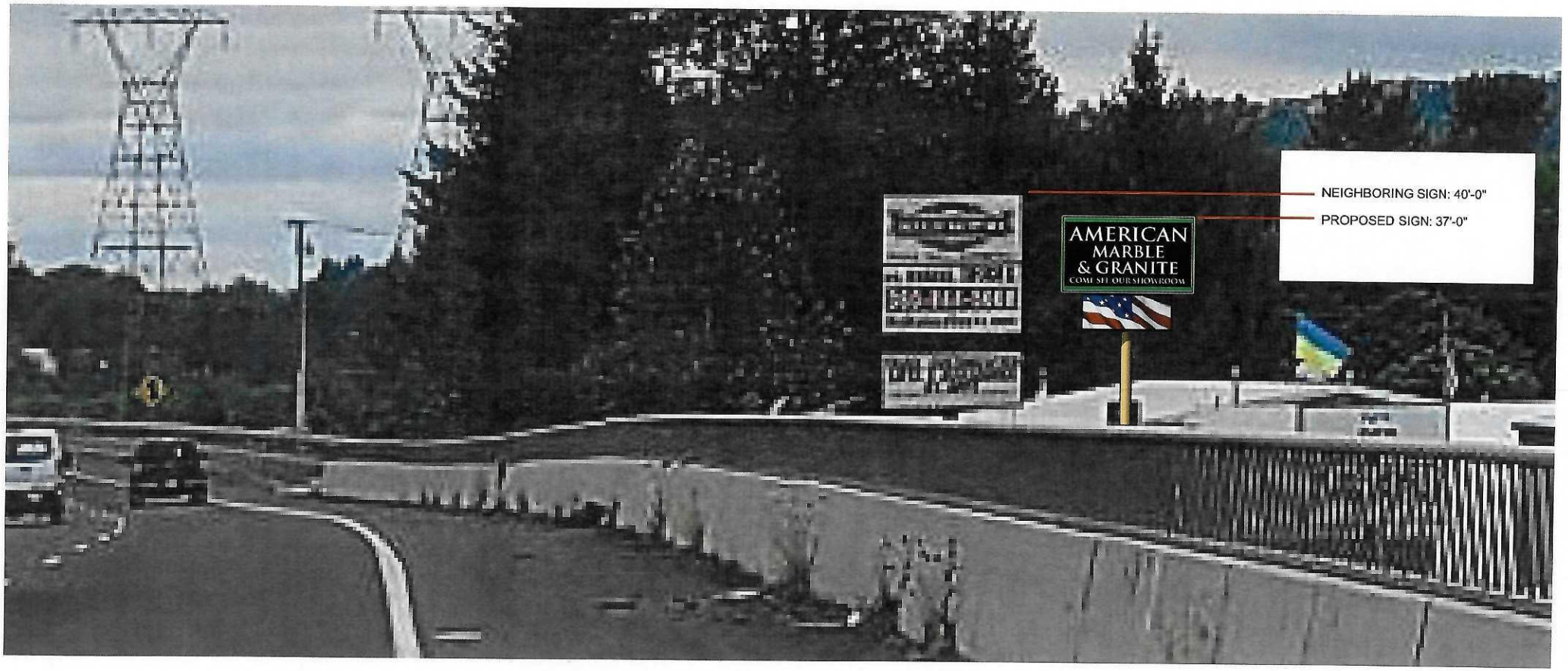
SITE PLAN

GARRETT SIGN
811 HARNEY STREET VANCOUVER, WA 98660
(360) 693-9081 • (800) 994-1191 • FAX (360) 693-5948
WWW.GARRETTSIGN.COM

AMERICAN MARBLE & GRANITE
1900 SE 8TH AVE., CAMAS, WA 98607

DATE:9/28/2022	SCALE: 1/8" = 1'-0"	DRW: AG
PLAN: Site Plan	ELEVATION: South	
DESIGN #: AMERICANmarble_py1s		REDRAW:

762


NEIGHBORING SIGN: 40'-0"
PROPOSED SIGN: 37'-0"
AMERICAN
MARBLE
& GRANITE
COME SEE OUR SHOWROOM

SOUTH ELEVATION -EXISTING PYLON SIGN

PHOTO NOT TO AN EXACT MEASURABLE SCALE

GARRETT SIGN
811 HARNEY STREET VANCOUVER, WA 98660
(360) 693-9081 • (800) 994-1191 • FAX (360) 693-5948
WWW.GARRETTSIGN.COM

AMERICAN
MARBLE & GRANITE
1900 SE 8TH AVE., CAMAS, WA 98607

DATE: 9/28/22	SCALE: NONE	DRW: CA
DESIGN #: AMERICANmarble_py1s		SALE: CM
		REDRAW#

_____ APPROVES THIS SUBMITTED DESIGN AND IT FULLY MEETS OUR SIGN CRITERIA. IF THE SIGNS ARE RENTALS THEY ARE RECOGNIZED AS THE PROPERTY OF GARRETT SIGN. ACCESS TO THE PROPERTY FOR REMOVAL OF THE SIGNS WILL BE ALLOWED WITHOUT DELAY. THE LANDLORD WILL NOT LEAN OR ATTACH ANY CLAIM, CONSIDERED ABANDONED OR ASSESSED ANY FEES AGAINST RENTAL SIGNS. THE TERMS OF THIS APPROVAL WILL TRANSFER TO FUTURE PROPERTY OWNERS.

PRINT NAME

LANDLORD SIGNATURE & DATE

THIS ORIGINAL ARTWORK IS THE PROPERTY OF GARRETT SIGN. BY ACCEPTING THIS COPY YOU AGREE TO PAY FOR ALL COSTS OF IT'S DEVELOPMENT IF USED WITHOUT WRITTEN AUTHORIZATION

ACCEPTED BY & DATE

SOUTH ELEVATION

PHOTO NOT TO AN EXACT MEASURABLE SCALE

GARRETT SIGN
811 HARNEY STREET VANCOUVER, WA 98660
(360) 693-9081 • (800) 994-1191 • FAX (360) 693-5948
WWW.GARRETTSIGN.COM

AMERICAN MARBLE & GRANITE

1900 SE 8TH AVE., CAMAS, WA 98607

DATE: 9/27/22	SCALE: NONE	DRW: CA
DESIGN #: AMERICANmarble_permit1		SALE: CM
		REDRAW# 10

_____ APPROVES THIS SUBMITTED DESIGN AND IT FULLY MEETS OUR SIGN CRITERIA. IF THE SIGNS ARE RENTALS THEY ARE RECOGNIZED AS THE PROPERTY OF GARRETT SIGN. ACCESS TO THE PROPERTY FOR REMOVAL OF THE SIGNS WILL BE ALLOWED WITHOUT DELAY. THE LANDLORD WILL NOT LEAN OR ATTACH ANY CLAIM, CONSIDERED ABANDONED OR ASSESSED ANY FEES AGAINST RENTAL SIGNS. THE TERMS OF THIS APPROVAL WILL TRANSFER TO FUTURE PROPERTY OWNERS.

PRINT NAME

LANDLORD SIGNATURE & DATE

THIS ORIGINAL ARTWORK IS THE PROPERTY OF GARRETT SIGN. BY ACCEPTING THIS COPY YOU AGREE TO PAY FOR ALL COSTS OF IT'S DEVELOPMENT IF USED WITHOUT WRITTEN AUTHORIZATION

ACCEPTED BY & DATE

SLAB GALLERY

SHOWROOM

Notice of Proposed Development

American Marble & Granite
1900 SE 8th Ave., Camas, WA 98607
Freestanding Sign Variance

An application is on file with the City of Camas for review of a major variance application for a light industrial pylon sign to establish the height of 37' as to be visible from Highway 14. For information regarding this project please contact:

Garrett Sign Co.
Chris Monteleon
(360) 693-9081

Camas Washington:
City Planner
Madeline Sutherland, AICP
communitydevelopment@cityofcamas.us
360-817-7237

SITE PLAN

PUBLIC HEARING SCHEDULE

HEARING DATE / TIME: Dec. 14, 2022 5pm

LOCATION: City Hall 616 NE 4th Ave., Camas, WA

COMMUNITY DEVELOPMENT DEPARTMENT
616 NE 4th Avenue
Camas, WA 98607
www.ci.camas.wa.us

9/19/2022

Chris Monteleon
1900 SE 8th Ave
Sent via email permitting@garrettsign.com

RE: American Marble & Granite Sign (MAJVAR22-03) Application Completeness Review

Dear Chris Monteleon,

Thank you for your application submittal for the American Marble & Granite Sign. There are items that need to be addressed with your application. The purpose of this letter is to inform you that the above application submitted on 9/7/2022, has been deemed incomplete in accordance with Camas Municipal Code (CMC) Section 18.55.130. You have 180 days from the date of application to submit the missing information pursuant to CMC 18.55.130.C. If the below requested information is submitted, staff will again verify whether the application is complete.

Items necessary for completeness:

- Narrative addressing approval criteria per CMC 18.45.040.
- The narrative shall also address the type of sign and size per 18.15.040.B.8 - LED Signs, 18.15.040.B.10 - Freestanding Signs, 18.15.050-Table 1-Footnote 2.

If you have any questions, please contact me at msutherland@cityofcamas.us

Respectfully,

Madeline Sutherland, AICP
Planner

COMMUNITY DEVELOPMENT DEPARTMENT
616 NE 4th Avenue
Camas, WA 98607
www.ci.camas.wa.us

9/19/2022
Updated 9/21/22

Chris Monteleon
1900 SE 8th Ave
Sent via email permitting@garrettsign.com

RE: American Marble & Granite Sign (MAJVAR22-03) Application Completeness Review

Dear Chris Monteleon,

Thank you for your application submittal for the American Marble & Granite Sign. There are items that need to be addressed with your application. The purpose of this letter is to inform you that the above application submitted on 9/7/2022, has been deemed incomplete in accordance with Camas Municipal Code (CMC) Section 18.55.130. You have 180 days from the date of application to submit the missing information pursuant to CMC 18.55.130.C. If the below requested information is submitted, staff will again verify whether the application is complete.

Items necessary for completeness:

- Narrative addressing approval criteria per CMC 18.45.040.
- The narrative shall also address the type of sign and size per 18.15.040.B.8 - LED Signs, 18.15.040.B.10 - Freestanding Signs, 18.15.050-Table 1-Footnote 2.
- Development sign per CMC 18.55.110.H.

If you have any questions, please contact me at msutherland@cityofcamas.us

Respectfully,

Madeline Sutherland, AICP
Planner

COMMUNITY DEVELOPMENT DEPARTMENT
616 NE 4th Avenue
Camas, WA 98607
www.ci.camas.wa.us

October 7, 2022

Chris Monteleon
1900 SE 8th Ave
Sent via email permitting@garrettsign.com

RE: American Marble & Granite Sign (MAJVAR22-03) Application Completeness Review

Dear Chris Monteleon,

Thank you for your application submittal for the American Marble & Granite Sign. There are items that need to be addressed with your application. The purpose of this letter is to inform you that the above application submitted on 9/7/2022 and resubmitted on 10/4/2022, has been deemed incomplete in accordance with Camas Municipal Code (CMC) Section 18.55.130. You have 180 days from the date of application to submit the missing information pursuant to CMC 18.55.130.C. If the below requested information is submitted, staff will again verify whether the application is complete.

Items necessary for completeness:

- Development sign per CMC 18.55.110.H.

If you have any questions, please contact me at msutherland@cityofcamas.us

Respectfully,

Madeline Sutherland, AICP
Planner

COMMUNITY DEVELOPMENT DEPARTMENT
616 NE 4th Avenue
Camas, WA 98607
www.ci.camas.wa.us

October 26, 2022

Chris Monteleon
1900 SE 8th Ave
Camas, WA 98607
sent via email permitting@garrettsign.com

RE: American Marble & Granite Sign (MAJVAR22-03) Application Completeness Review

Dear Chris Monteleon,

The purpose of this letter is to inform you that the above application submitted on 9/7/2022, and resubmitted on 10/4/2022, and 10/21/22 has been deemed complete in accordance with Camas Municipal Code (CMC) Section 18.55.130. Staff will begin reviewing the application and contact you should we have questions/comments.

If you have any questions, please email me: msutherland@cityofcamas.us

Respectfully,

Madeline Sutherland, AICP
Planner

Notice of Application and Public Hearing

American Marble & Granite Sign (File No. MAJVAR22-03)

NOTICE IS HEREBY GIVEN that an application for the "American Marble & Granite Sign" to extend an existing freestanding sign requesting Major Variance approval was received on 9/7/2022, by Chris Monteleon, and deemed technically complete on 10/26/2022.

LOCATION: The site is located at 1900 SE 8th Ave in the SW 1/4 Section 12, Township 1 North, Range 3 East, of the Willamette Meridian; and described as tax parcel 87181000.

SCHEDULED PUBLIC HEARING: A virtual and in-person public hearing will be held before the city's hearings examiner on **December 14, 2022 at 5 pm**. Instructions and a link to participate will be available on the agenda page of the city's website at least seven days prior to the meeting. The agenda is located at the following link: www.cityofcamas.us/yourgovernment/minuteagendavideo

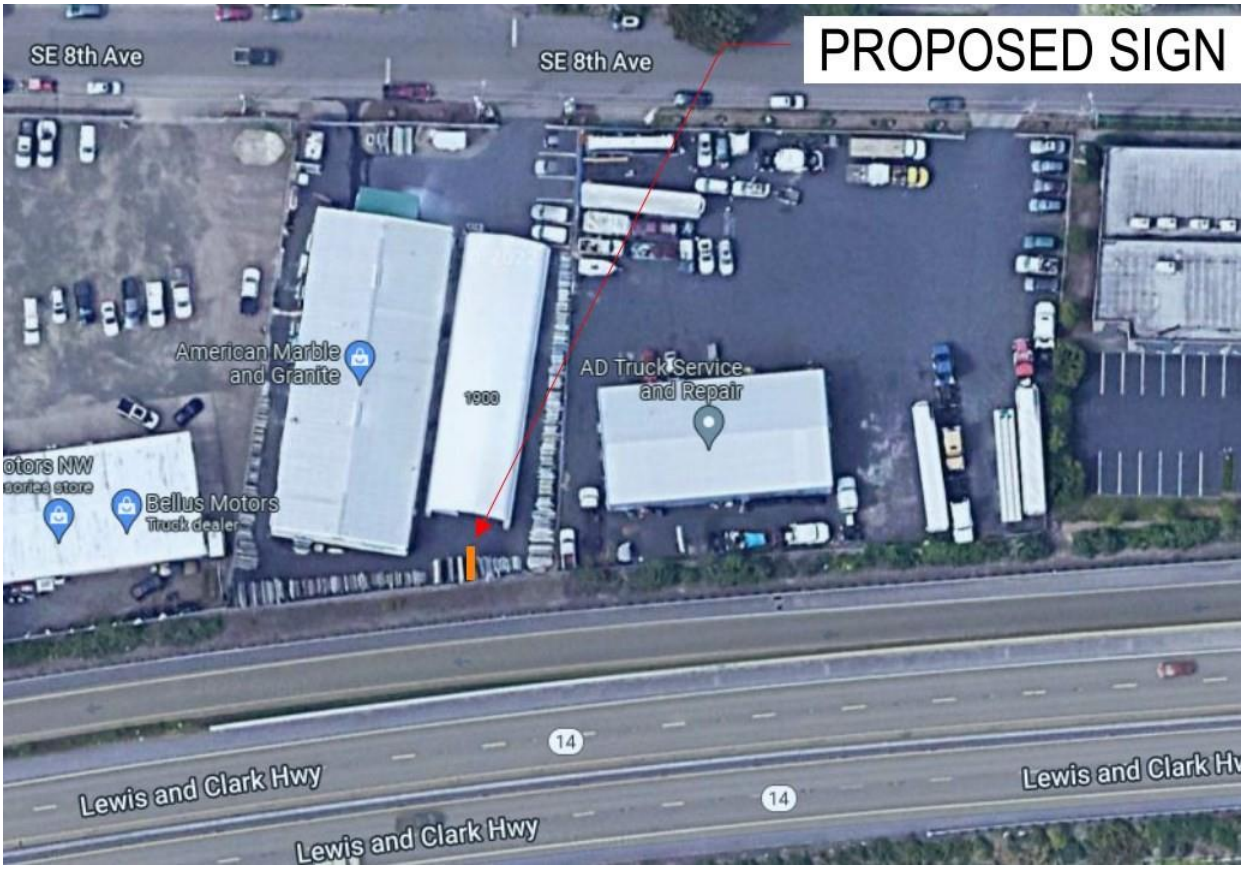
APPLICATION MATERIALS: The American Marble and Granite Sign Major Variance application included the following: narrative, site photos, development sign, and other required submittal documents. These documents are available for review at the Community Development Department (616 NE 4th Ave., Camas, WA) during regular business hours Monday – Friday 8 am-5 pm.

PARTICIPATE: All citizens are entitled to have equal access to the services, benefits, and programs of the City of Camas. Please contact the City Clerk at (360) 834-6864 for special accommodations if needed. The City will provide translators for non-English speaking persons who request assistance at least three working days prior to a public meeting.

Public comments and questions are encouraged, and there are several opportunities available to interested citizens. *It is preferable that written comments be received five days prior to the public hearing, in order to be available with the online agenda and materials.* With that said, comments can also be accepted during the public hearing. The public hearing will follow the quasi-judicial process described within Camas Municipal Code §18.55.180. Comments related to this development may be submitted as follows: (1) In person by testifying at the public hearing; (2) by regular mail to Planning Division staff, Madeline Sutherland, Planner, at the Camas City Hall, 616 NE 4th Avenue, Camas, WA 98607; (3) by email to: communitydevelopment@cityofcamas.us; or (4) by phone (360) 817-7237. **For questions related to this application, please contact Madeline Sutherland, Planner, at (360) 817-7237 or communitydevelopment@cityofcamas.us.**

Published in the Post Record on 11/17/22
Posted at Camas City Hall, Camas Library, City of Camas web site at: http://www.cityofcamas.us
Mailed to property owners within 300-feet on 11/16/22
Legal Publication # 756480

Excerpt from Major Variance Application
American Marble & Granite Sign (File #MAJVAR22-03)



Madeline Sutherland

From: Barsness, Jeff <BarsneJ@wsdot.wa.gov>
Sent: Monday, September 19, 2022 10:13 AM
To: Madeline Sutherland
Subject: RE: [EXTERNAL] SR 14 Freestanding Sign

WARNING: This message originated outside the City of Camas Mail system. DO NOT CLICK on links or open attachments unless you recognize the sender and are expecting the content. If you are unsure, click the Phish Alert button to redirect the email for ITD review.

Hi Madeline,

Most of our requirements for signing along state highways are about the size & location but I couldn't find anything that would regulate the height of them. At this time WSDOT doesn't have any comments on this application. Thanks for checking with us!

Jeff

From: Madeline Sutherland <MSutherland@cityofcamas.us>
Sent: Wednesday, September 14, 2022 10:30 AM
To: Barsness, Jeff <BarsneJ@wsdot.wa.gov>
Subject: [EXTERNAL] SR 14 Freestanding Sign

WARNING: This email originated from outside of WSDOT. Please use caution with links and attachments.

Hi Jeff,

I have a major variance application under review to extend the height of an existing freestanding sign along SR 14 at 1900 SE 8th Ave Camas, WA 98607. Attached is the application submittal. I am wondering if WSDOT has any regulations or concerns with signage heights along SR 14. If you have any conditions, I'd be happy to add them to the staff report.

Thanks,

Madeline Sutherland, AICP
Planner
Desk 360-817-7237
Cell 360-326-5524
www.cityofcamas.us | msutherland@cityofcamas.us

NOTICE OF PUBLIC DISCLOSURE: This e-mail account is public domain. Any correspondence from or to this e-mail account may be a public record. Accordingly, this e-mail, in whole or in part may be subject to disclosure pursuant to RCW 42.56, regardless of any claim of confidentiality or privilege asserted by an external party.