Rik Kowall, Supervisor
Anthony L. Noble, Clerk
Mike Roman, Treasurer

Trustees
Scott Ruggles
Steve Anderson
Andrea C. Voorheis
Liz Fessler Smith

PLANNING COMMISSION MEETING

LOCATION: TOWNSHIP ANNEX, 7527 HIGHLAND ROAD, WHITE LAKE, MI 48383
THURSDAY, DECEMBER 04, 2025 – 6:30 PM

White Lake Township | 7525 Highland Rd | White Lake, MI 48383 | Phone: (248) 698-3300 | www.whitelaketwp.com

AGENDA

1. **CALL TO ORDER**
2. **ROLL CALL**
3. **PLEDGE OF ALLEGIANCE**
4. **APPROVAL OF AGENDA**
5. **APPROVAL OF MINUTES**
   A. September 18, 2025
6. **CALL TO THE PUBLIC (FOR ITEMS NOT ON THE AGENDA)**
7. **PUBLIC HEARING**
   A. Edendale Crossing
   Property Northwest corner of Bogie Lake Road and Cedar Island Road. Identified as parcel IDs: 12-29-476-016 through 12-29-476-024 (nine adjacent parcels total) Consisting of approximately 45.7 acres. Currently zoned R1-A (Single Family Residential) and AG (Agricultural).
   Requests:
   1) **Preliminary site plan approval recommendation**
   2) **Rezoning approval recommendation (R1-A & AG to PD (Planned Development)).**
   Applicant: PH Communities, LLC

   B. Jax Car Wash
   Property located on the northwest corner of Bogie Lake Road and Highland Road (M-59). Identified as parcel ID 12-20-276-034. Consisting of approximately 1.88 acres. Currently zoned PB (Planned Business).
   Requests:
   1) **Preliminary site plan approval recommendation**
   2) **Planned business approval**
   Applicant: BMW KAR WASH, LLC
8. **CONTINUING BUSINESS**
9. **NEW BUSINESS**
   A. The Avalon
   Properties located on the northwest corner of Highland Road (M-59) and Hill Road Identified as parcel IDs 12-20-101-003 & 12-20-126-006. Consisting of an approximate combined 110.02 acres. Currently zoned PD (Planned Development)
   Requests:
   1) **Final site plan approval**
   2) **Planned development agreement approval recommendation**
   Applicant: White Lake Hill, LLC
10. **OTHER BUSINESS**
    A. Approval of 2026 Meeting Dates
11. **LIAISON'S REPORT**
12. **COMMUNICATIONS**

13. NEXT MEETING DATE: January 15, 2026

14. ADJOURNMENT

Procedures for accommodations for persons with disabilities: The Township will follow its normal procedures for individuals with disabilities needing accommodations for effective participation in this meeting. **Please contact the Township Clerk's office at (248) 698-3300 X-7 at least five days in advance of the meeting.** An attempt will be made to provide reasonable accommodations.

WHITE LAKE TOWNSHIP
PLANNING COMMISSION
SEPTEMBER 18, 2025

CALL TO ORDER
Chairperson Carlock called the meeting to order at 6:30 P.M. She then led the Pledge of Allegiance.

ROLL CALL
Present:
Pete Meagher
Mona Sevic
Robert Seeley, Vice Chair
Debby Dehart
Merrie Carlock, Chairperson

Absent:
Scott Ruggles, Township Board Liaison
T. Joseph Seward

Others:
Sean O'Neil, Community Development Director
Matteo Passalacqua, Carlisle Wortman
Kristin Kolb, Township Attorney
Hannah Kennedy-Galley, Recording Secretary

APPROVAL OF AGENDA
It was MOVED by Commissioner Meagher, second by Commissioner Seeley to approve the agenda as presented. The motion carried with a voice vote: (5 yes votes).

APPROVAL OF MINUTES
A. August 21, 2025
It was MOVED by Commissioner Seeley, seconded by Commissioner Meagher to approve the minutes as presented. The motion carried with a voice vote: (5 yes votes).

CALL THE PUBLIC (FOR ITEMS NOT ON THE AGENDA)
Mary Earley, 5925 Pineridge Court, thanked the staff and Commissioners for preparing for tonight's meeting.

PUBLIC HEARING
A. Vertical Bridge Cell Tower
Property is located at the northwest corner of Cooley Lake Road and Eric Drive.
Consisting of approximately 5.23 acres and currently zoned SF (Suburban Farm).
Requests:
1) Special Land Use (SLU) Wireless Communication Antenna.
2) Preliminary and Final Site Plan
Applicant: Vertical Bridge c/o Haley Law Firm, PLC

Director O'Neil summarized the letters from Engineering and the Fire Marshal.

Mr. Passalacqua reviewed his letter with the Planning Commissioners.

Commissioner Sevic asked Mr. Passalacqua if cohosting other providers would require another tower, or addition of equipment. Mr. Passalacqua said the plan shows two co-location racks, which would host additional equipment. A new structure would not be erected.

Director O'Neil stated that the driveway met the 20' standard for a fire apparatus.

Commissioner Dehart asked staff if the applicant would need to come back to the Planning Commission if the owner wanted to increase the size of the tower. Mr. Passalacqua confirmed.

Commissioner Meagher reviewed the ordinance language from Article 4, section 51 of the Zoning Ordinance. He raised questions about the aesthetic of the cell tower and the potential of affecting nearby home properties. Director O'Neil stated he spoke with the Assessor, and there wouldn't be anything in an assessing aspect that would affect property value.

Wallace Haley, applicant, was present. He stated users drive the needs, and the need for the cell tower was driven by T-Mobile. He was aware that there are many residents against the proposed tower but added that the plans met the zoning ordinances. He added that under federal law, the Planning Commission cannot take health effects into their decisions.

Commissioner Meagher asked Mr. Haley about the tower affecting property values. Mr. Haley said any zoning decision can affect property values. He added there is stigma about cell towers.

Commissioner Dehart asked Mr. Haley if there would be lighting on the top of the tower for the FAA. Mr. Haley said no, because the tower is under 200', it will not require lighting.

Chairperson Carlock opened the public hearing at 7:04 P.M.

Mark James, Maddin Hauser, stated he represented Tammy Vickery. He stated his client demanded the applicant demonstrates how the cell tower will be harmonious with the surrounding area and demonstrates that there are no public property and land nearby the tower could be erected on. He stated that tonight's request for approval of the preliminary and final site plans is also not allowed

Jan Rethenwald, 2697 Ripple Court, stated she has a petition with 172 signatures of those who are opposed to the cell tower being placed in the neighborhood. She stated 5G's impact on health and inadequate landscaping as reasons for opposition.

Jacob Bashay, 3105 Eric Drive, spoke in opposition to the request. He said the cell tower will create an eyesore and alter the character of the neighborhood.

Pete Minna, 2875 Eric Drive, spoke in opposition to the applicant's request. He stated he and 16 other residents are opposed to the proposed cell tower location. He said studies do not show the negative

DRAFT

impact on the residents, animals, and property values. He said he spoke to Assessor Hieber himself and did not get a clear answer about the impact of the cell towers on his property value.

Selena Caros, 107 Newberry, listed local cell towers that were better located and better screened. She said the proposed cell tower will not be hidden, and in plain view. She added that the cell tower does not belong in residential areas like hers.

Susan Minna, 2875 Eric Drive, said she has lived at her home for 45 years, and she cannot make sense of the proposed location of the cell tower. She has concerns about the effects of the cell tower on the ecosystem.

Heather Sutton, 2460 Greenlawn, stated her opposition to the cell tower. Her sister's horse farm is next door to the property, and the horses will be affected. Her other sister lives close to the site as well, and she shared concerns about her chickens and the eggs they produce.

Art Kroll, 2736 Havenwood, stated his opposition to the cell tower and said it would be a detriment to the area. He suggested the cell tower be located near the ITC Corridor. He shared concerns about the adjacent horse farm and the resident who owns it.

Kirk Czarnecki, 2865 Eric Drive, stated Eric Road has a country setting with various wildlife. The proposed cell tower will change the country feel of the neighborhood.

Michele Czarnecki, 2865 Eric Drive, stated her opposition to the proposed cell tower. She said the placement will degrade the area of its beauty.

Christopher Wax, 3057 Ripple Way, stated no studies or statistics have been shared about the impact on property value. He shared his concerns about health as he is a father to young children.

Diane Knoll, 3262 Lacosta Court, shared facts about the negative impacts of cell towers near residential properties, including the prolonged exposure of electromagnetic waves.

Larry Catanzaro, 2772 Ona Lake Drive, stated he researched the negative impact of property values on properties that are near cell towers. He said the effects of the tower will be felt for years and years to come.

Debra Lesnew, 2785 Ripple Way, shared pictures of the cell tower behind Sunshine Farms on Bogie Lake.

Chris Chwalek, 6144 Warwick, shared his concerns about the cell tower and its impact on property value, quality of life, and health concerns.

Doug Sordel, 3234 Walden Cove, stated his opposition to the applicant's request. He said the proposed tower will overshadow Lake Ona and negatively impact the lake's wildlife. He asked if the proposed site was the optimal location, or if it was chosen for financial motivations.

Juergen Jenk, 2940 Ripple Way, said he is in favor of the proposed cell tower. He said he understood the need for the tower.

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Rick Lesnew, 2785 Ripple Way, said he has lived off Lake Ona since 1981, and it's quiet. He is in the process of rebuilding his home after a house fire, and now the cell tower will be in his view,

Tom Stevenson, 2924 Ford, stated there was a lack of effort from the applicant to obscure the tower. He stated he had never seen a cell tower held to such lower standards. He stated if the standard is high, companies will rise to meet it. He encouraged the Planning Commission to stand for their residents.

Mary Dixon, 3282 Lochmoor Court, stated she lived kitty corner to the proposed site. She said she enjoyed seeing the horses in the pasture from her condo. She stated Commerce Township would not be happy if her taxes were lowered. She stated that all life is biometric, and all organisms are tied to electric fields. She added it is very important to protect humanity and environment. Trees within proximity of the cell tower will die. She did not appreciate the idea of seeing the tower from her home.

Matthew Jervais, 5303 Cooley Lake Road, said his home is to the west of the tower. He said looking at the tower every day won't be good for the residents and will affect the neighborhood in a negative way. He said his American dream is under threat, as well as the surrounding neighbor's dreams.

Mark Rutger, 2541 Ripple Way, wanted to see correspondence between the applicant and ITC about a proposed tower. He suggested the Township help facilitate the conversation. He asked if there would be generators or air conditioners generating noise on the property. He also asked if the migratory pattern of birds is taken into accounts. He stated he moved to the Township to get out of the city, and the view is everything.

Rose Sznyr, 2531 Ripple Way, said she has lived at her home for 45 years, and is concerned about the property values especially. She did not want to see the subdivision being affected by the cell tower.

Lori Durbin, 2900 Eric Drive, expressed that the cell tower will be an eyesore, and is concerned about the cell tower's effects on her chickens and her eggs.

Laurie Popchyk, 3260 Walden Cove, said the tower machinery is negative. The sound the cell tower makes is a loud, droning sound. She stated concerns about the local wildlife and wanted to know if her taxes could be lowered if the proposal passed.

Dan Durbin, 2900 Eric, concurred with everything said in opposition of the cell tower.

David Maturn, 6142 Carey Road, said he moved to the area for the country setting, and said his cell service is great, and the cell tower isn't needed. He encouraged the Planning Commission to vote no.

Tammy Vickery, 3200 Eric Drive, said she was next door to the property. She said she researched online about cell tower effects on equines. She said there isn't a plan that shows the property owner's barn. She said anyone who votes on the proposal should see the area.

Erica Rezek, 3269 Pine Needle Drive, shared a picture of her front porch, and the proposed cell tower will be above her tree line in the front yard. She is concerned about selling her house in the future if the proposal is approved. She urged the Planning Commission to say

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Lane Rezek, 3269 Pine Needle, said cell phones can communicate through Wi-Fi and satellites. He asked the Planning Commission to vote no.

Josh 2909 Eric Drive, said he moved to the Township for the rural feel and

Johnanthan Knoll, 3262 Lacasta Court said satellites are the future of communication.

Brian, 2622 Ripple Way, spoke in opposition to the proposal.

Dave Recktenwald, 2697 Ripple Court, said 5G is not as far reaching as it claims to be. He spoke in opposition to the proposal.

Lydia Armstrong, 5575 Majestic Oaks, said she is opposed to the placement of the cell tower in order to protect safety and health. She shared the concerns of 5G radio frequencies.

Frank Greenhalgh, 2561 Ripple Way, spoke about the stability of the ground and was concerned the ground will not be able to support the tower. He shared concerns about multipath interference due to the cell signals. He suggested "small cells" devices.

Chairperson Carlock closed the public hearing at 8:28 P.M.

Director O'Neil stated that the 300' notice is required by law for special land use requests. The notices go out 15 days prior to the public hearing and are published in a local newspaper. He added that if the Planning Commission were to approve tonight's special land use and recommend the Township approve the preliminary, they could make a motion this evening that the final approval was contingent based on approval of the preliminary site plan. The Township Board would have to approve the preliminary site plan for the final site plan to be approved.

Director O'Neil said the arborvitaes need to be taller for screening purposes. He added that they became aware of the landscaping at the cell tower at Sunshine Farms and is requiring the landscaping to be replaced.

He added the Township will not get any financial gain from the cell tower. He said there is always an option to go to the Board of Review and have your taxes lowered for cause. He added the property owner's barn will be in the fall zone, but it will not be in the fall zone around the surrounding properties.

Mr. Haley said there are not 41 cell towers in the area. He said when a cell carrier wants to find a site, they try to find an area that has coverage that is lacking. He said the site acquisition teams scout the area and find an area that meets the zoning ordinance and engineering requirements. He added the cost is engineering driven, not costs.

Mr. Haley said the ITC towers on Cooley Lake Road had antennas, and the other one is an old Sprint tower. T-Mobile tried to convert the Sprint antennas to the T-Mobile antennas, and they were unsuccessful. He said the soil survey team were in the area for other confirmed sites, not multiple

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Township sites. Mr. Haley said T-Mobile does not use a shelter or needs air conditioning, and the generators are only used once a week for maintenance purposes.

Mr. Haley said he understood the residential aspect of the property and said the zoning ordinances were established by the Township. He said his client followed the zoning ordinances.

Mr. Haley added he would like to present photo sims for the Planning Commission. Director O'Neil said if Mr. Haley were to table his request, he wanted on record that the 90-day period would be put on hold. Mr. Haley said he would waive the clock until the next available Planning Commission meeting. Director O'Neil said the next available Planning Commission meeting is November 6, 2025, the next will be November 20, 2025.

It was MOVED by Commissioner Seeley, seconded by Commissioner Meagher to postpone the proposal by Vertical Bridge, until the applicant is prepared to return with photo representations and property value information, and historical information at the applicant's request with the Planning Commission and audience. The motion carried with a voice vote: (5 yes votes).

The Planning Commission recessed at 8:50 P.M. The Planning Commission returned from recess at 8:56 P.M.

B. 9101 Highland

Location: Property described as 9101 Highland Road, identified as parcel number 12-23-227-003, located south of Highland Road, west of Sunnybeach Boulevard, consisting of approximately 5.02 acres. Currently zoned RB (Restricted Business).
Requests:
1) Revised Special Land Use Approval
2) Final Site Plan Approval
Applicant: Affinity 10 Investments, LLC

Director O'Neil stated the applicant was looking to modify their previously requested land use by adding a third patio and was seeking that approval along with the final site plan approval this evening. He added that Engineering did not have any issues with the plans.

Mr. Passalacqua reviewed his letter.

Susan Bowers, Bowers and Associates, was present. She said the parking count is assumed to be 121. Four tenants will be on the west building, and three tenants will be in the east building.

Commissioner Sevic asked Ms. Bowers where the patio access would be. Ms. Bowers said a customer could travel along the frontage of the buildings east to west.

Director O'Neil requested sample boards and color elevations. Ms. Bowers said she can provide the items. There was a request to change the color of the fence from white to tan.

Chairperson Carlock opened the public hearing at 9:16 P.M.

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Kathleen Adams, 9120 Steep Hollow Drive, said she would prefer a brick fence over the vinyl fence. She raised concerns about backfilling and changing the parking count.

Megan Schulz, 987 Sunnybeach Blvd, said she understood the need for the patios, but it will add more noise to residents using their outside space.

Matthew Curtain, 935 Sunnybeach Blvd, asked about the setback of the fence and the residential properties. Director O'Neil confirmed the fence is 20' from the property line, with landscaping on both sides. The landscaping will be the applicant's responsibility. Mr. Curtain said a darker colored fence would be preferred.

Chairperson Carlock closed the public hearing at 9:26 P.M.

It was MOVED by Commissioner Seeley, seconded by Commissioner Sevic to approve the revised special land use for 9101 Highland, identified as parcel number 12-23-227-003, as presented to include a third patio. The motion carried with a voice vote: (5 yes votes).

It was MOVED by Commissioner Seeley , seconded by Commissioner Sevic to approve the final site plan for 9101 Highland, identified as parcel number 12-23-227-003, subject to addressing all staff and consultant comments, and to include the composition and color of the privacy fences , and the applicant will provide colored elevations and samples. The motion carried with a voice vote: (5 yes votes).

C. 2026 - 2031 Capital Improvement Plan (CIP)

Chairperson Carlock opened the public hearing at 9:30 P.M.

Mary Earley, 5925 Pineridge Court, stated she likes the plan.

Chairperson Carlock closed the public hearing at 9:32 P.M.

Commissioner Seeley stated he would like the addition of Mrs. Earley's name in the CIP document due to her editorial help. The Planning Commission concurred.

It was MOVED by Commissioner Meagher, seconded by Commissioner Dehart, to adopt the 2026 2031 to adopt the plan and recommend the Township Board accept the document. The motion carried with a roll call vote: (5 yes votes).

(Meagher/yes, Dehart/yes, Carlock/yes, Seeley/yes, Sevic/yes)

CONTINUING BUSINESS
None.

NEW BUSINESS
None.

DRAFT

OTHER BUSINESS
None.

DIRECTOR'S REPORT
Director O'Neil said there is a flyover drone video of the Civic Center on the website. Stanley Park was on track to be completed by October 15.

COMMUNICATIONS
The ZBA met last month; three cases were approved. Pete Piccinato was appointed to the Parks and Recreation Committee. Trunk or Treat will be held on Saturday, October 16, 2025.

NEXT MEETING DATE: November 6, 2025

ADJOURNMENT
MOTION by Commissioner Seeley, seconded by Sevic to adjourn at 9:40 P.M. The motion carried with a voice vote: (5 yes votes).

DRAFT

Director's Report

Project Name: Edendale Crossing

Description: Preliminary site plan approval recommendation and rezoning approval recommendation

Date on Agenda this packet pertains to: December 4, 2025

☒Public Hearing

☒Initial Submittal

☐Revised Plans

☒Preliminary Approval

☐Final Approval

☐Special Land Use

☒Rezoning

☐Other:

Contact	Consultants & Departments	Approval	Denial	Approved w/Conditions	Other	Comments
Sean O'Neil	Community Development Director	☐	☐	☐	☒	Based on comments from staff & consultants
Mike Leuffgen	DLZ	☐	☐	☒	☐	See letter dated 11/20/2025
Matteo Passalacqua	Carlisle Wortman Associates, Inc	☐	☐	☒	☐	See letter dated 11/25/25
Jason Hanifen	WLT Fire Marshal	☐	☐	☒	☐	See letter dated 11/24/25

DLZ
ARCHITECTURE • ENGINEERING • PLANNING
SURVEYING • CONSTRUCTION SERVICES

INNOVATIVE IDEAS
EXCEPTIONAL DESIGN
UNMATCHED CLIENT SERVICE

November 20, 2025

Sean O' Neil
Community Development Department
Charter Township of White Lake
7525 Highland Road
White Lake, Michigan 48383

RE: Edendale Crossing- Preliminary Site Plan Review – 3rd Review

Ref: DLZ No. 2545-7861-07 Design Professional: Kieft Engineering, Inc.

Dear Mr. O' Neil,

Our office has performed a Preliminary Site Plan review for the above-mentioned revised plan dated November 12, 2025. The plans were reviewed for feasibility based on general conformance with the Township Engineering Design Standards.

General Site Information

This 45.47-acre site is located on the north side of Cedar Island Road and west of Bogie Lake Road.

Site Improvement Information:

- Construction of a ~~123~~ 125-unit site condominium with private roads. The development is to be phased as follows: Phase I- 62 units; Phase II-63-units.
- Two entrances: One off Bogie Lake Road and one off Cedar Island Road.
- Extension of proposed sidewalk along Cedar Island Road with off site connection to the Huron Valley Schools property to the southeast.
- Water and sanitary sewer service.
- Storm water management facilities.

The following items should be noted with respect to Planning Commission review:

We note that comments from our October 15, 2025 review are in *italics*. Responses to those comments are in **bold.** New comments are in standard font. We note that no engineering response letter was received with this submittal.

Preliminary Site Plan Comments

General

1. *Plan by J. Eppink Partners, Inc. dated September 19, 2025- Sheet PSP-1- Site Data- Table- Parcel size is incorrect. Correct acreage is 45.47. This is also incorrect in the same table in the Proposed Density calculations as well as the Existing AG& R1-A Zoning Parallel Plan(Sheet PSP-2).* **Comment outstanding.**
2. Sheet 19-Cedar Island & White Lake Middle School Sidewalk Plan- Remove 'Proposed Pedestrian School Crossing' note to the west of Carla Hills Drive as this was where the safety path was previously proposed.

Paving/Grading

1. *The plan shows a proposed extension of an 8' wide path along the Cedar Island Road frontage. Please note the proposed sidewalk does not extend the entirety of the property width to the east and instead crosses Cedar Island Road and heads further east across Carla Hills Drive then onto Huron Valley Schools property where it terminates at the drive lane of the Middle School. This will require approval/easements from HVS and we question the safety of terminating the sidewalk at a drive lane. Comment addressed at this level of review. Per the design engineer, connection of the path to White Lake Middle School shall be coordinated with Huron Valley Schools. The FEP shall show final location of sidewalk connection to the school.* **We note that the current submittal shows connection to the White Lake Middle School parking lot. Pleas see our above comment regarding safety concerns of terminating the sidewalk at a drive lane.**
2. *The proposed sidewalk along the Bogie Lake Road frontage measures 5' wide. A 6' width is required per Zoning Ordinance Section 5.21. Please call out sidewalk width on plan as well. Comment partially addressed. The sidewalk label has been changed to now show a 6' wide sidewalk; however, based on plan scale provided, the sidewalk width measures 5'. Please revise width to 6' based on provided scale. In addition, please add a detail for the 6' wide, 4" thick concrete sidewalk on Sheet 16. Also change the label '(onsite & Bogie Lake Road)' to '(onsite)' for the 5' wide, 4" thick concrete sidewalk detail.* **Comment addressed. All requested revisions have been made.**
3. *Is the intent to dedicate right of way along the Bogie Lake Road and Cedar Island Road frontages or to provide easements for the proposed sidewalk/path along these frontages? Comment addressed. ROW to equal 60' width shall be dedicated for both road frontages.* ***We note that offsite easements will be required from ~~Carla Hills and~~ Huron Valley Schools for the proposed 8' wide concrete walk.*** **Comment is now outstanding due to the following requested clarification and change in sidewalk**

layout: The proposed 8' wide path along Cedar Island Road has now been shifted in its entirety to the north side of the road. The Existing Conditions Plan- Overall (Sheet 2) shows 43' existing ROW along Cedar Island Road in front of Parcel 12-29-476-007 while the Overall Site Plan and Notes (Sheet 3) shows the existing ROW in this area as 33'. Please clarify. The right of way along Parcel -007 will determine whether a sidewalk easement will need to be granted by this property owner. Additionally, please revise '8' Wide Safety Path Connection to Huron Valley School Parking Lot' reference notes on Sheets 3 and 5 from Sheet 17 to Sheet 19.

4. *Preliminary grading of the site has been proposed and demonstrates general drainage patterns. A more detailed grading review will be provided at the time of Final Engineering Plan submittal/review.* **Comment remains as a notation.**
5. *Provide plan indicating standard length fire truck access and turning radii so as to demonstrate adequate fire truck accessibility to and within the site. Comment addressed. Per design engineer, roads are per RCOC standards and support/provide adequate fire truck access.* **We note that there are a couple fire truck turning movements shown on the Cedar Island Entrance Plan (Sheet 9); movements show a standard (40' long) fire truck traversing the curb on Edendale Lane.**
6. *Is the intention for the sidewalks to cross from west to east for the eastern intersection of Mollygrace and Noraquin Drives? If so, please show connections on the east side of Mollygrace Drive.* **Comment addressed. Connections have been provided.**

<u>Watermain</u>

1. *We defer to the Township Fire Department regarding hydrant coverage.* **Comment remains as a notation.**
2. *The Township requires two or more sources of water supply in any watermain extensions over 600 LF. This plan shows internal looping of watermain as well as stubbing into the right of way on Cedar Island Rd. However, there is no secondary source of supply. There would be potential for all ~~123~~* **125** *homes to be out of water or have disruption of water quality during routine maintenance like valve exercising or hydrant flushing. The developer will need to provide a second connection point and sufficient valving so that approximately 20 homes maximum are out of water at any given time during routine maintenance or emergencies. Comment addressed. A secondary watermain connection has now been provided; a 12" watermain is now proposed along Cedar Island Road with stub shown adjacent to the southeast corner of Unit ~~47~~* **50. Comment remains as a notation.**
3. *Township Ordinance requires extension of utilities across property frontages; currently the plan proposes one stub out to the Cedar Island Road Right-of-Way at the Edendale Lane approach.* ***<u>We defer to the Township as to whether the watermain shall be required to be extended across the Cedar Island Road frontage and stubbed to the western property line.</u>*** *Please note that future expansion of the water system will be impacted by lack of access to watermain along Cedar Island Road. Please also note there are known contaminants related to the Huron Valley School site that may make the expansion of the Township water system desirable for nearby residents.* **Comment**

remains. Currently the proposed 12" diameter watermain along Cedar Island Road does not extend to the western property line and ends just south of Unit 50.

4. *Please reevaluate the layout of the watermain that travels north, then west, then north near Units 104 and 64-65. 90-degree bends shall be avoided.* **Comment addressed. The watermain layout has been revised such that 45-degree bends are now shown.**

Sanitary Sewer

1. *The plan proposes gravity sanitary sewer onsite which will flow to a proposed sanitary sewer pump station. This pump station will need to be designed to OCWRC standards. It should be noted that the plan also includes a significant amount of offsite sanitary sewer forcemain to connect to the existing system near the south end of the Huron Valley school campus along Bogie Road. This forcemain has been sized in accordance with the master plan for future flows from the north.* **Comment remains as a notation.**
2. ***We defer to the Township regarding the requirement to extend sanitary sewer along the Cedar Island Road frontage with a stub at the western property line.*** *Per Township Ordinance, utilities are required to be extended along property road frontages.* **Comment remains.**
3. *Off-site easements shall be required for installation and future maintenance along parts of the proposed forcemain which fall outside of the Bogie Lake Road Right-of-Way.* **Comment remains as a notation. Per the design engineer, this is in process with Huron Valley Schools. In addition, it appears that an easement shall also be required from Parcel 12-29-476-007.**

Stormwater Management

1. *Sheet 8- It appears the discharge from the detention pond will flow across Parcel #12-28-303-001 which may require a storm drainage easement unless the storm sewer can be extended to a point there is no conflict. Comment addressed. A ditch that will route where the drainage to Thompson Lake goes is now proposed within the existing road ROW.* **Comments remains as a notation.**
2. *Sheet 8- The proposed storm sewer layout along Bogie Lake Road will need to be clarified at the time of Final Site Plan/Final Engineering Plan to work with existing stormwater features, site drainage, and utility poles etc.* **Comment remains as a notation.**
3. *There are several comments/questions we have regarding the Detention Basin Calculations and Details Sheet 16. We have attached a red lined copy of the sheet for the design engineer's use.*

   Comment partially addressed, but sufficient for this level of review. Please provide the T_t numbers in the 100 Year Basin Calculations. See attached plan sheet for a few remaining questions that can be answered with the FSP/FEP submittals. Comment addressed.

Recommendation

The majority of our above comments have been addressed, and we feel comfortable with most items being addressed at the time of Final Site Plan (FSP), and Final Engineering Plan (FEP) reviews. The major outstanding items are in regard to the required sanitary sewer and watermain utility extensions to the western property line. Currently the plan does not meet this Ordinance requirement; we defer a decision on this item to the Township Board.

Please feel free to contact our office should you have any questions.

Sincerely,

DLZ Michigan

Michael Leuffgen, P.E.
Department Manager

Victoria Loemker, P.E.
Senior Engineer

Encl: Detention Basin Calculations and Details Red Lined Plan Sheet

Cc: Hannah Kennedy-Galley, Community Development, *via email*
Aaron Potter, DPS Director, White Lake Township, *via email*
Nick Spencer, Building Official, White Lake Township, *via email*
Jason Hanifen, Fire Marshall, White Lake Township, *via email*
Matteo Passalacqua, Carlisle Wortman, *via email*

X:\Projects\2025\2545\786107 WLT Edendale Crossing\Edendale Crossing-PSP Review.03\Review.03.docx

100 YEAR DETENTION BASIN CALCULATION (I.E. WITH OUTLET)

TOTAL CONTRIBUTING AREA — A = 45.47

HYDROLOGIC SOIL GROUP: B

RUNOFF COEFFICIENT
C = 0.95 (15.79) + 0.30 (27.68) + 1.00 (2) = 45.47
C = 0.56

		LENGTH		% SLOPE		
SHEET	K = 0.48	L= 230 FT	S= 1.5	V = KS^1/2 =	0.59	FT/S
SWALE	K = 1.20	L= 180 FT	S= 1.3	V = KS^1/2 =	1.37	FT/S
DITCH	K = 2.10	L= 300 FT	S= 1.0	V = KS^1/2 =	2.10	FT/S
PIPES	Longest Run	L= 2400		V =	3	FT/S

T_T = L / 3,600 V = HR 0.00 MIN; HR 0.00 MIN; HR 0.00 MIN; HR MIN — Provide these numbers.

T_C = ΣT_T = 20.0 MIN

I_{100} = 83.3 / $(T_C + 9.17)^{0.81}$ = 5.42 IN/HR

CHANNEL PROTECTION VOLUME CONTROL: RECHARGE
V_{CPVC} = 4,719 CA = 119,412 CF
CAN BE SUBTRACTED FROM V_{100D} IF INFILTRATED

SOILS INFILTRATION RATE FROM BORINGS = 5.00 IN/HR
ABOVE 0.5 IN/HR SUPPLEMENTAL MEASURES NOT REQUIRED
BETWEEN 0.24 IN/HR & 0.5 IN/HR, SUPPLEMENTAL MEASURES REQUIRED
BELOW 0.24 IN/HR, INFILTRATION IMPRACTICAL & WAIVED

EXTENDED DETENTION
V_{ED} = 6,897 CA = 174,525 CF

WATER QUALITY - REMOVAL OF TSS (80 MG/L OR 80% TSS REDUCTION)

MECHANICAL SEPARATOR
I_1 = 30.2 / $(T_C + 9.17)^{0.81}$ = 1.97 IN/HR

Q_{WQ} = CI_1A = 49.73 CFS

SEDIMENT FOREBAY — N/A
V_F = 0.15V_{WQ} = 545 CA = CF

DETENTION & FLOOD CONTROL
Q_{VRR} = 1.1055-0.206ln(A) = 0.319 CFS/AC
Q_{100P} = Q_{VRR}A = 14.513 CFS
V_{100R} = 18,985 CA = 480,406 CF ← 483,419 CF
Q_{100N} = CI_{100}A = 137.17 IN/HR ← 138.00 IN/HR
R = 0.206 - 0.15ln(Q_{100P}/Q_{100N}) = 0.543
100-YEAR STORAGE VOLUME
V_{100D} = V_{100R}R = 260,820 CF = 260,820 CF PER CPVC ← 262,898 CF

WAS VOLUME CONTORL MET FOR CPVC? Y or N: N

V_{100D} OR V_{ED} CONTROL? V100D 260,820 CF REQ'D

Q_{ED} = V_{ED} / 172,800 = 1.01 CFS

48 HOURS FOR RATE CONTROL

ORIFICE FORMULA
Q_A = 0.62 $(A_O)(2gH^{1/2})$
A_O = AREA ORIFICE PIPE
g = 32.2 FT/SEC^2
H = DEPTH OF BASIN ABOVE CENTERLINE OF OUTLET PIPE

FOREBAY — N/A
V_F = RIM = INVERT =
H = 0.00 FT
EXTENDED DETENTION OUTLET
A_O = Q_{ED} / $0.62\ (2gH)^{1/2}$ = SF = 0.000 IN^2

$A_{1'}$ = $\pi D^2/4$ = 0.785 IN^2

$A_O/A_{1'}$ = 0.00 → USE 0 1" HOLES EQ. SPACED AROUND STANDPIPE BOTTOM

DETENTION BASIN
EXTENDED DETENTION OUTLET
V_{ED} = HOLES = 963.50 INVERT = 961.00
H = 2.50 FT
A_O = Q_{ED} / $0.62\ (2gH)^{1/2}$ = 0.13 SF = 18.48724 IN^2

D_O = DIAMETER OF ORIFICE
D_O = $\sqrt{4A_O/\pi}$ = 0.40 FT = 4.85 INCH

$A_{1'}$ = $\pi D^2/4$ = 0.785398 IN^2

$A_O/A_{1'}$ = 23.54 → USE 24 1" HOLES EQ. SPACED AROUND STANDPIPE BOTTOM = 961.00

100-YEAR ALLOWABLE OUTLET
V_{100D} = RIM = 965.00 V_{ED} = = 963.50
H = 1.50 FT
A_O = Q_{100P} / $0.62\ (2gH)^{1/2}$ = 0.05 SF = 7.543 IN^2

$A_{1'}$ = $\pi D^2/4$ = 0.785 IN^2

$A_O/A_{1'}$ = 9.60 → USE 10 1" HOLES EQ. SPACED AROUND V_{ED} ELEVATION = 963.50

"C" CALCULATION

TOTAL SITE AREA = 45.47 ACRES

PAVEMENT AREAS:

ROADS: = 157,000 SF

SIDEWALKS: = 78,923 SF

FUTURE DRIVEWAYS: SAY (800 SF) x (125 DRIVES) = 100,000 SF

TOTAL PAVEMENT AREA = 335,923 SF = 7.72 ACRES @ C = 0.95

ROOF AREAS:
ASSUME (2,800 SF) x (125 HOMES) = 350,000 SF = 8.04 ACRES @ C = 0.95

DETENTION BASIN AREA: 2.00 ACRES @ C = 1.00 (AVERAGE)

GREENBELT AREAS: 27.68 ACRES @ C = 0.20

$$\text{"C"} = \left(\frac{7.72\ \text{ACRES}}{45.47\ \text{AC}} \times 0.95\right) + \left(\frac{8.04\ \text{ACRES}}{45.47\ \text{AC}} \times 0.95\right) + \left(\frac{27.71\ \text{ACRES}}{45.47\ \text{AC}} \times 0.20\right) + \left(\frac{2.00\ \text{ACRES}}{45.47\ \text{AC}} \times 1.00\right) = 0.495 = \underline{0.50}$$

VOLUME PROVIDED:
A_1 = @ 961.00 = 55,000 SF
A_2 = @ 965.00 = 84,200 SF
$V = \frac{H}{3}(A_1 + A_2 + \sqrt{A_1 \times A_2}) = 276{,}334$ CF, OK

DETENTION BASIN

EXISTING WATER ELEVATION = NONE
100 YEAR DESIGN HIGH WATER ELEVATION = 965.00
1' FREEBOARD ELEVATION = 966.00
STORAGE REQUIRED = 260,820 CF
STORAGE PROVIDED = 276,334 CF
SO-2 STANDPIPE RIM = 963.50
OVERFLOW MANHOLE RIM = 965.00
LOWEST EMERGENCY OVERFLOW CATCH BASIN ON N. SIDE IN ENTRY ROAD (OFF BOGIE LAKE ROAD) = 966.75
BOTTOM = 960.00

APPROXIMATE DETENTION BASIN 10 YEAR OUTFLOW CALCULATION

Q = ACI; A = 45.47 ACRES; C = 0.50; I = $\frac{175}{T+25}$; T = 30 MINUTES+/-.

I = $\frac{175}{30+25}$ = 3.18; Q = (45.47)(0.50)(3.18) = 72.30 CFS

USE 36" OUTLET PIPE @ 1.00%; Q = 66.60 CFS; V = 9.42 FPS

NOTE: ESTIMATED TIME BASED ON THE LONGEST STORM SEWER RUN ≈ 2,400 LF
THUS, 2,400 LF ÷ 3 FPS (ASSUMED) = 800 SECONDS = 13.33 MINUTES
USE 10 MINUTES TO BE CONSERVATIVE.
20 MINUTES (INITIAL T_C) + 10 MINUTES = 30 MINUTES

Northwest Area Storm Run-off Calculation Comparison

"EXISTING CONDITIONS"
PRESENTLY 4.80 ACRES FLOWS OFF-SITE TO THE NORTHWEST.
EXISTING C = 0.30
FOR A 10 YEAR STORM Q_{10} = ACI
A = 4.80 ACRES
C = 0.30
I = $\frac{175}{T+25}$; T = 20 MINUTES; I = $\frac{175}{20+25}$ = 3.89

Q_{10} = (4.80)(0.30)(3.89) = 5.60 CFS EXISTING

PROPOSED "C" CALCULATION
(13 HOMES)(REAR ROOF=1,600 SF) = 20,800 SF = 0.48 ACRES @ C = 0.95
REMAINING 2.52 ACRES @ C = 0.30

$$\text{"C"} = \left(\frac{0.48\ \text{ACRES}}{3.00\ \text{AC}} \times 0.95\right) + \left(\frac{2.52\ \text{ACRES}}{3.00\ \text{AC}} \times 0.30\right) = \cancel{0.41}\ 0.37$$
(4.32 / 4.80 / 4.80)

A = 3.00 ACRES ← Why using 3.00AC and not accounting for total 4.80 AC?
C = 0.41
I = 3.89
Q_{10} = (3.00)(0.41)(3.89) = 4.79 CFS PROPOSED
4.80 0.37 6.91
THUS, THERE IS LESS PROPOSED STORM WATER RUN-OFF THAT WILL BE FLOWING TO THE LEACH BASIN IN THE NORTHWEST AREA THEN THE EXISTING STORM WATER RUN-OFF FOR A TEN YEAR STORM.

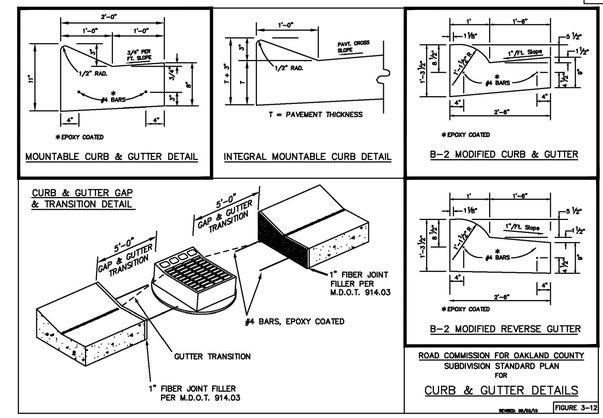
Storm Water Facilities Maintenance Plan

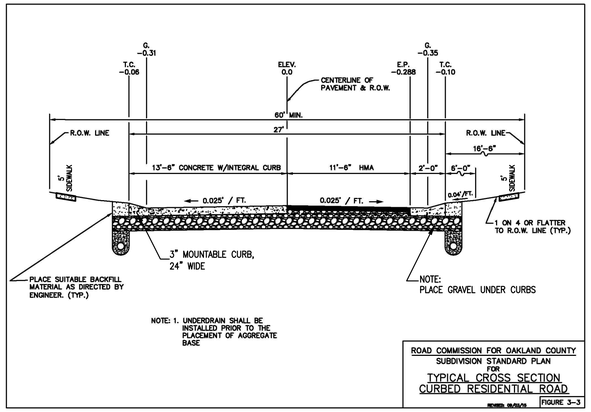
The "Edendale Crossing" Homeowners Association shall be responsible for the maintenance of all the storm water facilities. (Note: The developer is responsible until the HOA exists).

These facilities include the following:
- *Detention Basin*
- *Pretreatment Structure Manholes*
- *Manholes, Rear Yard Catch Basins, Leach Basins, End Sections & connecting pipe work*
- *Rear yard swales (within easements)*

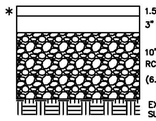
The HOA shall hired a qualified contractor to do the following Maintenance Schedule (including report kept on record):

1. *The (2) Pretreatment Structures shall be inspected by a qualified contractor on a semi-annual basis (twice/year) and necessary action taken to clean out the structures in accordance with the manufacturers guidelines.*
2. *The Detention Basin shall be inspected on any annual basis by a qualified contractor and/or civil engineer to insure it is functioning as designed.*
3. *The storm structures & swales shall be inspected on a bi-annual basis (every two years). This is an "above ground" visual inspection to determine if any structures are "failing", (i.e. ground has sank around structure, etc.).*

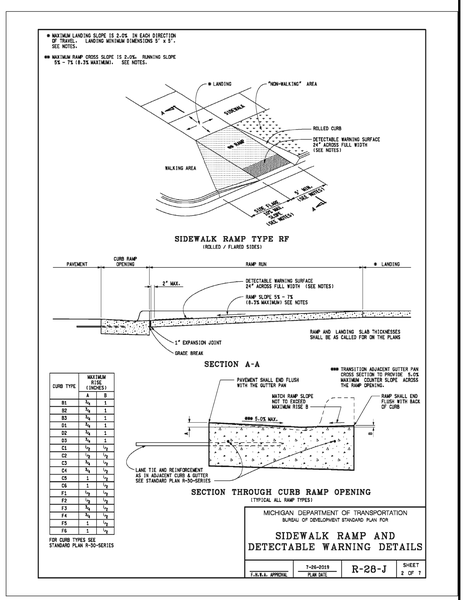




HMA

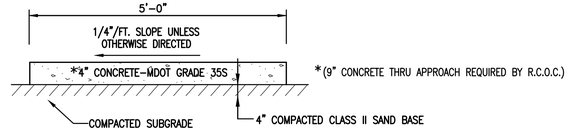


SS-1H @ 0.10/GAL/SYD BETWEEN LIFTS COMMERCIAL A.D.T. COULD WARRANT A DIFFERENT TYPE HMA MIXTURE



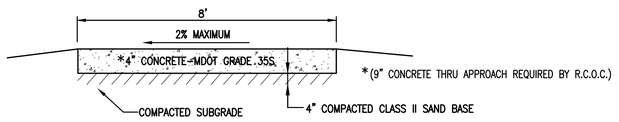
TYPICAL ROAD SECTION "A-A"

(SEE RCOC DETAIL SHEET 22 OF 25)



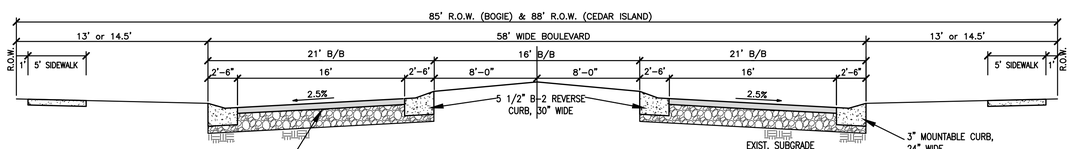
5' WD. 4" THICK CONCRETE SIDEWALK

(ONSITE & BOGIE LAKE ROAD)



8' WD, 4" THICK CONCRETE SIDEWALK

CEDAR ISLAND ROAD R.O.W.



BOULEVARD ROAD SECTION "B"-"B"

TOTAL SITE

RESIDENTIAL UNITS = 123 REU/UNIT = 123 REU'S

OVERALL SANITARY DESIGN

"AVERAGE FLOW"
123 REU'S @ 2.70 PERSONS/REU = 332.1 PERSONS
332.1 PERSONS x 100 GPCD = 33,210 GPD = 0.03321 MGPD
x 1.55 (conversion)
Q = 0.0515 CFS

"PEAK FLOW"
123 REU'S @ 2.70 PERSONS/REU = 332.1 PERSONS/1000 = 0.3321 = P

Q = 100 x (18 + √P)/(4 + √P) = 405.93 GPCD

332 PERSONS x 405.93 GPCD = 134,769 GPD = 0.13477 MGPD
x 1.55 (conversion)
Q = REQUIRED = 0.2089 CFS

NOTE: AN 8" TRUSS PIPE @ 0.40% CAN CARRY 0.765 CFS @ 2.19 FPS.
A 10" TRUSS PIPE @ 0.30% CAN CARRY 1.194 CFS @ 2.19 FPS.

STATE OF MICHIGAN — PATRICK COLIN McWILLIAMS — LICENSE NO. 6201031658 — PROFESSIONAL ENGINEER

DATE	ISSUE
9-19-2025	PER DLZ (8-26-2025)

PROPRIETOR:
PH COMMUNITIES, LLC
8255 CASCADE AVENUE, SUITE 110
COMMERCE TOWNSHIP, MICHIGAN 48382
(248) 242-6838

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PROFESSIONAL ENGINEERS AND PROFESSIONAL SURVEYORS
5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346
PHONE (248) 625-5251 www.kiefteng.com FAX (248) 625-7110

DATE	7-2-2025	CKD. BY	DATE
DRAWN	GF		
DESIGN	PCM		
SECTION	29	T- 3 -N. R- 8 -E.	

72 HOURS (3 WORKING DAYS) BEFORE YOU DIG CALL MISS DIG (800) 482-7171 OR 811

Detention Basin Calculations & Details
"EDENDALE CROSSING" SITE CONDOMINIUM
PART OF THE SOUTHEAST 1/4 OF SECTION 29, T3N, R8E
WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

SCALE N/A
SHEET 16 OF 17
KE 2025.010

G:\2025\010 PH Homes - Bogie & Cedar Island\CAD\Edendale Crossing.dwg, 16 Calcs, 9/10/2025 4:02:43 PM

Carlisle | Wortman
ASSOCIATES, INC.
117 NORTH FIRST STREET SUITE 70 ANN ARBOR, MI 48104 734.662.2200 734.662.1935 FAX

November 25, 2025

Preliminary Site Plan / Site Condominium / Planned Development Review
for
White Lake Charter Township, Michigan

Applicant:	PH Communities LLC
Project Name:	Edendale Crossing
Plan Date:	July 2, 2025
First Revision:	September 19, 2025
Second Revision	November 12, 2025
Location:	Northwest corner of Bogie Lake Road and Cedar Island Road Parcel IDs: 12-29-476-016 through 12-29-476-024 (nine adjacent parcels total)
Action Requested:	Preliminary Site Plan / Site Condominium / Planned Development Approval

PROJECT NARRATIVE

The applicant is requesting preliminary site plan approval as well as site condominium and planned development approval to construct a 125-unit site condominium using the Planned Development (PD) zoning option. The largest parcel included in the project is 34.76 acres and zoned AG, Agricultural (Five acre minimum lots). The eight remaining parcels are zoned R1-A, Single Family (One acre minimum lots). A rezoning application was submitted concurrently with the site plan. Review of rezoning criteria is provided in this report. Approval of the plan will require the condition that the lots be combined into one parcel. The resulting parcel would be 45.47 acres. This review will be conducted with the assumption the lot combination has been approved.

The PD District is intended to provide for the location and various types of planned land use on large parcels held in common ownership. Single family detached housing is allowed under the district uses. The PD district is intended to result in a unique, planned development that includes such techniques as open space preservation.

For PD developments, the Planning Commission holds a public hearing and recommends approval, conditional approval, or denial of the site plan to the Township Board. The Township Board then reviews the application and grants approval if the Board determines that the plan satisfies all requirements for preliminary plan approval. Development agreements are required for review prior to final site plan review

Benjamin R. Carlisle, *President* John L. Enos, *Vice President* Douglas J. Lewan, *Principal*
David Scurto, *Principal* Sally M. Elmiger, *Principal* R. Donald Wortman, *Principal* Craig Strong, *Principal*
Paul Montagno, *Principal* Megan Masson-Minock, *Principal* Laura Kreps, *Senior Associate*
Richard K. Carlisle, *Past President/Senior Principal*

by the Planning Commission. The Planning Commission approves or denies the final site plan and recommends approval or denial of the development agreement to the Township Board. The Township Board has final authority over the approval of the development agreement.

A Community Impact Statement (CIS) is required and provided in the application.

Items to be Address: *Approval of the plan will require the condition that the lots be combined into one parcel.*

SITE DESCRIPTION

Lot Area:	45.47 gross acres / 36 net acres
Frontage:	Approx. 809.9 feet along Bogie Lake / Approx. 1,375 feet along Cedar Island Road
Address:	Bogie Road Lot TBD / 5805 – 6605 Cedar Island Road
Current Use:	Vacant

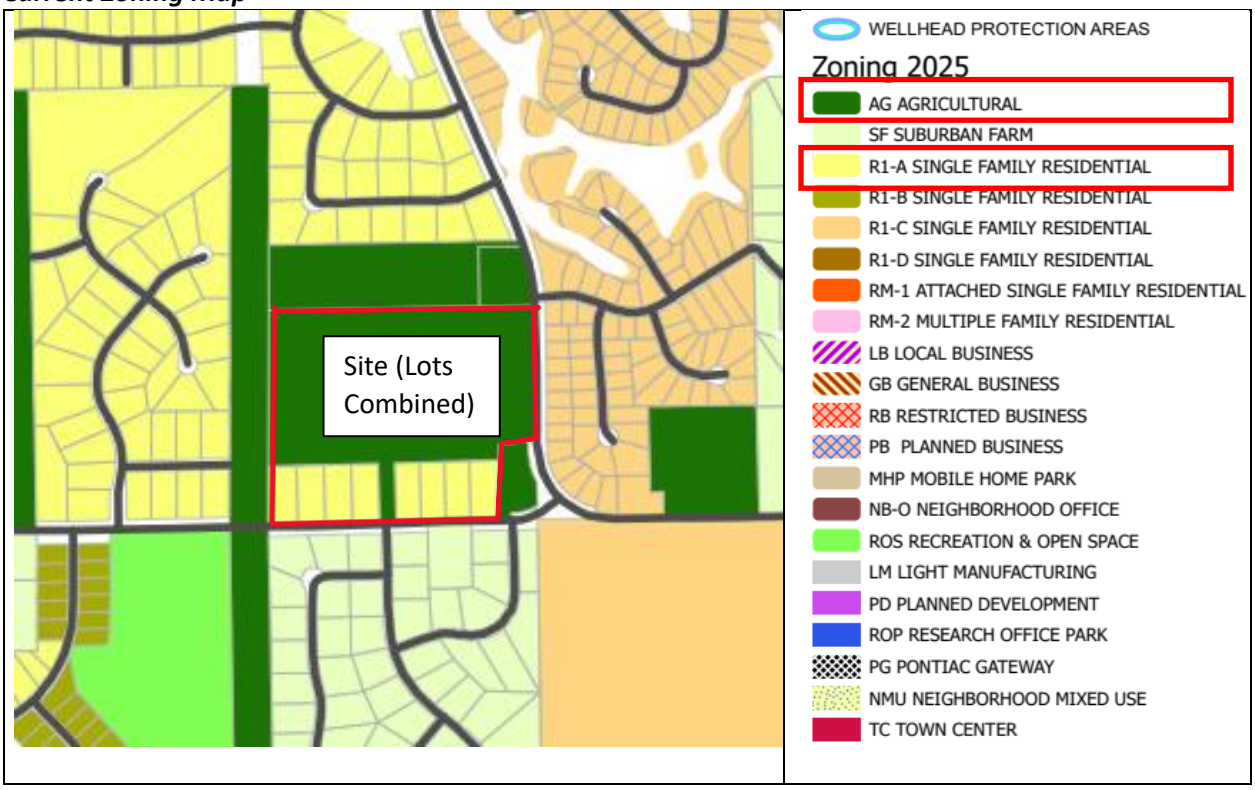
Aerial image of the site

Source: NearMap July 2025

	North	East	South	West
Surrounding Zoning	*AG, Agricultural*	*R1-C, Single Family Residential*	*Suburban Farm*	*AG, Agricultural*
Surrounding Land Uses	*Single Family Home / Landscaping Yard*	*Single Family Homes*	*Single Family Homes*	*Electrical Utility Lines*
Future Land-Use Map	*Neighborhood Residential*	*Neighborhood Residential*	*Agricultural / Rural Residential*	*Agricultural / Rural Residential*

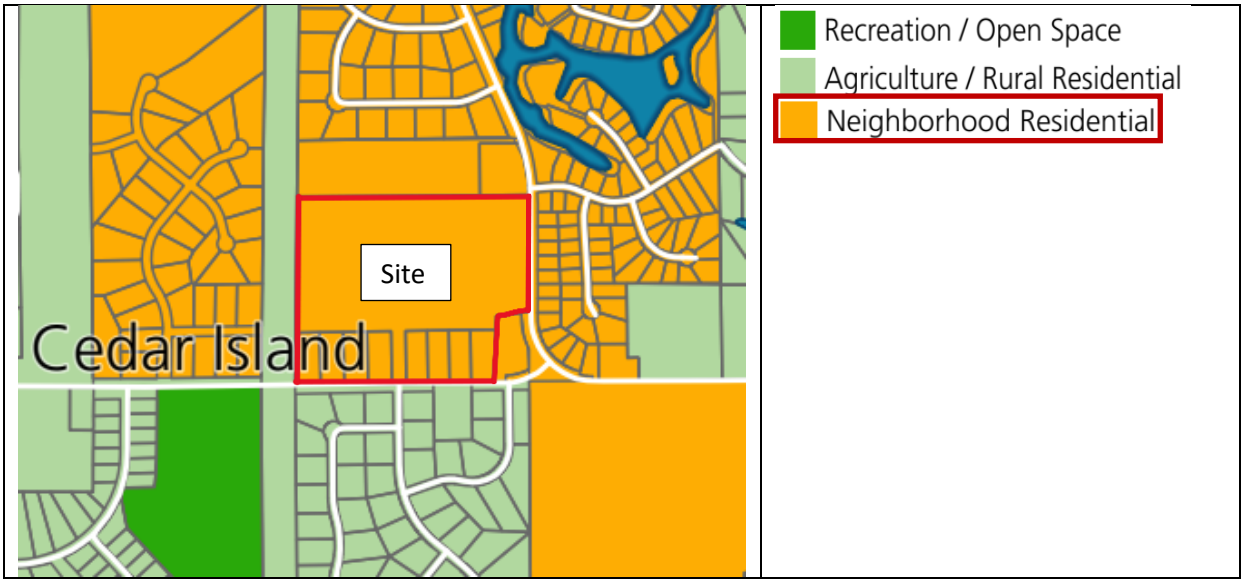
Current Zoning	**AG Agricultural / R1-A Single Family Residential** *AG: The Agricultural District is established as a district in which the principal use of land is for farming, dairying, forestry operations and other agricultural activities. The intent of this article is to protect land needed for agricultural pursuits from encroachment by untimely and unplanned residential, commercial or industrial development.* *R1-A: The Single-Family Residential Districts are established as districts in which the principal use of land is for single family dwellings, located in neighborhoods that include open space and that preserve sensitive natural environmental features.*

Current Zoning Map



Future Land Use	**Neighborhood Residential** *Description: "Maintains existing neighborhoods and provides for denser residential development in places where there is infrastructure to support the density and ensuring density is within the context of the surrounding neighborhood.* *Example of Uses: "Small-lot single family, duplexes, multi-family, parks, convalescent or nursing homes"*

Future Land Use Map



The zoning and Master Plan compatibility of the development is assessed in the Planned Development and Community Impact Statement portions of this review.

Item to be Addressed: *Addressed in other portions of this review.*

PLANNED DEVELOPMENT

Standards for PD projects are outlined in Section 6.7 of the zoning ordinance. This portion of the report will review those standards to identify any potential issues with the proposed development.

Sheet 3 of the site plan indicates the project will be implemented in two phases. Phase 1 will include 62 units and focus on portions of the site adjacent to Bogie Lake and Cedar Island Roads. Phase 2 will include the remaining 63 units and fill out the northwestern portion of the site. If the proposed development will be constructed in phases, only those phases that will be complete within two years shall be granted final approval by the Planning Commission. If deemed necessary for the protection of adjacent land uses, and/or proper development, the Township may condition approval upon a particular order of development when a phased approach is to be utilized in a planned development project. A schedule for the proposed phases is required.

Design Standards

Only single family residential is proposed within the site thus negating the requirement for buffer areas between uses.

Pedestrian pathways are provided along the Bogie Lake and Cedar Island roads as well as along both sides of internal streets. Several paths are proposed weaving between and behind units. The CIS states that walking trails adjacent to homes are desirable and considered a premium feature for buyers. About 20% of the proposed homes would be adjacent to proposed trails.

The majority of passive recreation open space is provided behind units in the northwest portion of the site. Other open spaces are small parks, the detention area, and existing wooded areas through the central and perimeter portions of the site.

Façade renderings and basic floor plans for housing units are shown on Sheet A-1. All models range between 2,100 sqft to 2,700 sqft and offer four bedrooms and two and a half baths. Two car attached garages are provided on all models. Brick and vinyl siding are the predominant exterior materials. The proportions of brick and siding proposed on the façade of the units is complementary, however it is recommended that the brick be included in similar proportions on the side/rear elevations as well.

Access to the site and utility assessments will be evaluated later in this report.

Compatibility to Master Plan

As noted earlier in this report, the proposed project area is designated as Neighborhood Residential on the 2024 Master Plan Future Land Use map. While this designation calls for dense development (2 to 8 units per acre), it also cites a need to ensure such density is in context with surrounding neighborhoods. Nearby developments do provide single family housing however lots range from approximately 15,000 square feet to 50,000 square feet in size. Density for this designation is outlined as two to eight units per acre. Corresponding zones are R1-C, R1-D, RM-1, RM-2, and PD.

The Housing section of the Master Plan does indicate that the Township needs new housing as existing stock ages. Reference is made to the need for “missing middle” housing which promotes a wide array of housing types (mostly attached single-family products).

The Goals and Objectives portion of the Master Plan offers insight on the future vision residents have for the Township. Top goals identified by residents related to preserving the community’s natural features, small town rural character, and providing multi-modal transportation. The site does not contain any major natural features however the plan does call for the retention of some of the site’s existing vegetation. The density proposed does not fit a small-town character and is more akin to denser suburbs. Few alternate transit options exist in the Township, however the site’s proximity to education facilities to the south offers an opportunity for bike and pedestrian connections that would allow non-vehicular access to nearby schools. The project does propose connecting the site to the Huron Valley School site as part of a community benefit.

The Action Plan portion of the Master Plan provides guidance on how to achieve the Township’s goals. The provision of new housing in the Township is a key topic in this section. Reference is made to providing

more housing to meet demand, provide entry level/affordable housing to attract new residents, and support for aging-in-place and existing housing stock. The proposed development does offer additional new dwelling units to address demand and promote resident growth. The CIS references the taxable value of the homes being approximately $250,000. This would indicate the total value of the homes would be around the $500,000 amount. The CIS cites that smaller lots are more affordable and easier to maintain for busy families and retirees.

The proposed development offers more housing in a community and region that is currently experiencing shortages. This both aides and challenges the community's goals for additional housing in that the strong market is keeping existing and new unit values high. The density of the development does not match its surroundings however does meet some characteristics and needs outlined in the Master Plan. The Master Plan is clear in the goals of preserving natural features and providing adequate infrastructure to protect them. The site plan provides tree surveys including an inventory of existing trees and how many are to remain. However, the table indicating the total number of trees onsite is not clear. A table should be added to the site plan clearly stating how many trees are onsite and how many are to remain.

The proposed utility lines along Bogie Lake Road do align with the Master Plan's community facilities goal of expanding water/sewer infrastructure throughout the Township. If this system will have additional capacity, this could be considered a public benefit for existing residents or future developments to utilize.

The area for the proposed development is identified in the Master Plan as one of three redevelopment sites. The primary considerations for this site in the plan are:

- The Development of single-family detached and attached dwellings with adequate area reserved for outdoor recreation for both active and passive activities.
- Setbacks from Bogie Lake Road would allow for a landscape zone with street trees and a shared pathway.
- The setback line for residential single-family homes would be 35 feet from the ROW.
- Access points on Bogie Lake Road and Cedar Island Road would serve an internalized street network, in order to reduce traffic.
- Residential densities along Bogie Lake Road would be one dwelling per acre. Internal residential development could be higher if developed adjacent to the recreation open space.

The current plan proposes high density through unit count and proposed lot standards as well as offers passive recreation. Lots are setback from Bogie Lake Road by no less than 40 feet. Single lot front yard setbacks are proposed to be 25 feet from the ROW.

The CIS provides the following information relating to compliance with the Master Plan:

"Edendale Crossing specifically meets the stated goals in the Master Plan including (1) the preservation of existing trees, woodlots, and natural features, (2) the creation of open space for active and passive recreation, (3) pedestrian connections to schools and off-site connections, (4) provides large setbacks, water features, and landscape at Bogie Lake Road to preserve the rural character, (5) the creation of new housing opportunities in the Township, and (6) the extension and improvement of community services such as utilities and road improvements."

Additional information is provided in the CIS on pages 2 through 4 regarding the site plan and its relevance

to the Master Plan, rural character, road frontage, and community benefits.
Neighborhood Residential on the future eland use map does call for denser residential development. The surrounding neighborhood does not directly reflect the level of density proposed. Water infrastructure does not currently exist in the area but is proposed to be extended by the applicant. The proposed extension of the sewer to the site is supported by the Sanitary Sewer Master Plan.

When referring to density, R1-C, R1-D, RM-1, RM-2, and PD are corresponding zoning districts for the "Neighborhood Residential" future land use designation. The range of 2 to 8 units per acre is provided in the Cedar Island Road and Bogie Lake Road sub-area plan. The project does retain a traditional neighborhood design and lot size which allows for some natural area preservation and open space.

Community benefits are listed as:

> **Road Improvements** that will benefit increase safety and ease turning movements for existing residents, Thompson Lane, and school bound traffic through the widening of the road to provide a consistent center turn lane as suggested by RCOC.
>
> **CWA Comment:** These improvements would likely be required under a permitted by right R1-D development, however unlikely for an R1-A or AG permitted by right development.
>
> **The 1-mile extension of the Sanitary force main** that delivers on the goals of the Master Plan through the expansion of infrastructure and enabling connection to existing residents along the route as well as future expansion north along Bogie Lake Road.
>
> **CWA Comment:** This investment does align with the Sanitary Sewer Master Plan. This investment would also be necessary for a permitted by right dense residential development however the ability to serve future development or existing sites could be a community benefit.
>
> **Preservation of Natural Features** including the preservation of existing regulated trees, hedge rows, and significant non-regulated trees and vegetation. This provides open space within the neighborhood, but more importantly maintains regional green corridors and tree canopy for animal habitat, bird migration, and general greening of White Lake Township.
>
> **CWA Comment:** A permitted by right single family home residential development does not require open space or natural preservation.
>
> **Pavement extension of Cedar Island Road** so that Cedar Island will now be paved from Bogie Lake Road to west of the proposed Edendale entrance.
>
> **CWA Comment:** The paving of Cedar Island Road from the development entrance to Bogie Lake Road will improve and encourage the use of the south development entrance given most vehicles will be headed to Bogie Lake Road.
>
> **Sidewalk Connections to Lakeland Schools.** Installation of sidewalks along the entire Bogie Lake Road and Cedar Island Road frontages including the extension of those sidewalks to the Bogie Lake / Cedar Island intersection and further south onto the school property to the existing parking lot for connection into the school campus that will allow greater walkability within the township

and safe access to school for White Lake Township students.
CWA Comment: Sidewalks are required for all new developments and redevelopments in the Township. The pedestrian connection to the nearby school complex is not required and does offer non-motorized access to a facility residents will likely utilize. The implementation of the pathway will need to be coordinated with the school district and should be reoriented to not terminate into a parking lot. Pathways within the development not adjacent to roads are not required in permitted by right projects.

Pages 8 and 9 outline the applicant's specific elements of the PD proposal.

The Planning Commission will need to consider the site's proposed layout, density, recreation space, pathway connections, and natural features protection and how they align with the Master Plan.

Land Use

Single family detached housing is the only use identified for the site which is permissible in the PD district.

Dimensional and Density Standards

Sheet PSP-2 provides two parallel plans. One plan depicts the site developed under the current zoning (R1-A and AG). The other shows the site developed under the R1-D zoning which is the most comparable to the level of density proposed in the preliminary plan. Under current zoning, the site could be developed into 12 lots, each with a single family home. The site developed under R1-D would allow for 109 lots, each with a single family home. Per the lack of regulated wetlands, major natural features, and no requirement for open space in permitted by right R1-D and Condominium developments, the proposed development footprints of the two parallel plans are valid.

Per the Master Plan Future Land Use designation, the R1-D zoning district is the relevant zoning designation to compare deviations to. Density and dimensional deviations are provided in the Area, Width, Height, Setbacks portion of this review. For reference, proposed density is 3.47 units per net acre while providing 20.7% open space. Density under R1-D would be 3 units per net acre with no requirement for open space.

Items to be Addressed:

1) *A schedule for the proposed phases is required.*
2) *The proportions of brick and siding proposed on the façade of the units is complementary, however it is recommended that the brick also be included in a similar proportion on the side and rear elevations.*
3) *A table should be added to the site plan clearly stating how many trees are onsite and how many are to remain.*
4) *The implementation of the pathway to the school complex will need to be coordinated with the school district and should be reoriented to not terminate into a parking lot.*
5) *A draft development agreement will be required during final site plan review.*
6) *The Planning Commission will need to consider the site's proposed layout, density, recreation space, pathway connections, and natural features protection and how they align with the Master Plan and proposed community benefits.*

COMMUNITY IMPACT STATEMENT

Section 3.1.10 and 6.6 of the zoning ordinance outline the need for a Community Impact Statement (CIS) for Planned Developments and the like. A CIS for the proposed development dated November 11, 2025 has been included in the application and reviewed below.

Information is provided by the applicant as to the rationale for proposing only single family detached units in the project.

General

The CIS provides relevant information about the development regarding overall size, density, site amenities and woodland preservation. 125 single family homes are proposed resulting in a 2.7 unit per gross acre, 3.47 net acre density. Lots are smaller than permitted under the densest single family home zone (R1-D). Reference is made to the Master Plan and the redevelopment site referenced for the development area. This information is reviewed in the PD section of this report.

Community Facilities and Services

The applicant states the site is anticipated to add approximately 338 new residents and have a low impact on police and fire services. Increased calls to police are estimated to be six to eight per year with an additional 20 to 25 calls to fire/emergency services per year.

The project is proposing to extend an existing sanitary force main up Bogie Lake Road to the site as well as the installation of a pump station. We defer to Township Engineering on the specifications of this improvement however we note that it may only be considered a public benefit if there is additional capacity for neighboring uses or future development to utilize.

Primary axle loaded truck traffic is anticipated during construction but not upon completion. The statement indicates trucks will likely use M-59, a quarter mile to the north, to access and exit the community.

No other significant impacts or needs are anticipated for community services or facilities. One item for consideration is the anticipated traffic upon completion. As noted in this review, RCOC should be consulted prior to preliminary site plan to highlight any required improvements to Bogie Lake Road, Cedar Island Road, or the adjacent intersection.

Economics

The site is anticipated to generate approximately 216 temporary jobs (construction) and no permanent jobs as a function of the development itself. Statistics are provided that state the construction investment and occupancy of the homes could support over 290 full time jobs. It is estimated that the proposed development will contribute roughly $990,000 per year to White Lake Township and local schools from annual property taxes.

Environment

The site has gentle slopes and existing mature tree clusters. No wetlands or waterbodies are present. The CIS states that no major environmental impacts are expected per water, sewer, and stormwater infrastructure. Information is given on the impact the development will have on the site or its surrounding area. As noted in this review, a specific tree count for trees to be removed and to remain should be provided along with the existing tree surveys in the site plan.

Noise

Noise is anticipated during construction. After completion, noises common with residential developments are to be expected. The CIS states existing and proposed landscaping will assist in mitigating noises.

Traffic

A traffic impact study dated September 28, 2025 was provided in the application and is reviewed in detail in the Access and Circulation portion of this report. The CIS states the traffic impact to Bogie Lake and Cedar Island roads would be minimal. Morning trips would increase by approx. 82 and evening trips would increase by approx. 111. The project does incorporate traffic improvements such as the paving of Cedar Island road from Bogie Lake Road to the developments access point, and the addition of a left hand turn lane and right hand taper lanes. The Road Commission of Oakland County approval of the access to Bogie Lake and Cedar Island Roads will be required.

Mapping

The overhead image provided in the CIS imprints the development into an existing satellite image.

Items to be Addressed: *All items to be addressed are noted throughout this review.*

REZONING

A rezoning to PD requires a site plan showing the specific use and layout of a proposed project. The applicant may request deviations from similar use standards, and the community may negotiate on and off site community benefits. Once approved, the site plan is the only permitted use of the land.

Section 7.13 of the White Lake Township Zoning Ordinance outlines the criteria the Planning Commission and Township Board are to utilize when assessing any petition for an amendment to the Official Zoning Map. Below is a review of the materials provided by the applicant as they relate to the proposed rezoning.

1) *Consistency with the goals, policies and future land use map of the White Lake Township Master Plan, including any subarea or corridor studies. If conditions have changed since the Master Plan was adopted, the consistency with recent development trends in the area.*

   Applicant Response: Edendale Crossing is consistent with the goals and objectives of the White Lake Township Master Plan and its Future Land Use Map. The site is identified as a residential Development Opportunity Zone and envisions a residential neighborhood with a density between

2 – 8 dwelling units per acre. We are offering single-family homes with 3.7 residences per net acre density.

CWA Comment: Provided in the PD review portion of this report.

2) *Compatibility of the site's physical, geological, hydrological and other environmental features with the host of uses permitted in the proposed zoning district.*

Applicant Response: The site is currently undeveloped with a former agricultural use. There are no wetlands or significant natural features on site other than existing trees and vegetation areas, most of which will remain. A stormwater detention basin will be located along Bogie Lake Road to provide a setback and landscape buffer to the road.

CWA Comment: Provided in the Natural Resources review portion of this report.

3) *Evidence the applicant cannot receive a reasonable return on investment through developing the property with one (1) of the uses permitted under the current zoning.*

Applicant Response: Rezoning AG land is required to develop residential neighborhoods consistent with the Master Plan and Future Land Use Plan. Using the PD option allows creative design techniques that preserve natural features and create open space, while the proposed 125 residences enable the costly extension of the sanitary force main to the northern end of the site.

CWA Comment: Agriculture and R1-A would not allow for a subdivision of this magnitude to be built. While the ROI on developing the site as zoned would not be comparable to 125 single family homes, other residential zones may offer more comparable ROI.

4) *The compatibility of all the potential uses allowed in the proposed zoning district with surrounding uses and zoning in terms of land suitability, impacts on the environment, density, nature of use, traffic impacts, aesthetics, infrastructure and potential influence on property values.*

Applicant Response: The Master Plan has designated this area to be a “more dense neighborhood residential area.” Edendale Crossing provides a high-quality neighborhood, compatible with nearby single-family neighborhoods. Neighborhoods immediate adjacent are buffered by an ITC corridor to the west and a commercial nursery and cell phone tower to the north, thereby providing separation from existing uses.

CWA Comment: Provided in the PD, Natural Resources, Area-Width-Height-Setbacks, Access and Circulation, and other portions of this review.

5) *The capacity of Township utilities and services sufficient to accommodate the uses permitted in the requested district without compromising the "health, safety and welfare" of the Township.*

Applicant Response: Edendale Crossing will not strain or place undue hardship on Township services, which are discussed in future sections of this report. Additionally, this project will extend the sanitary force main one mile, expanding the availability of sanitary sewer to the north.

CWA Comment: Provided in the Essential Services and Utilities portion of this review.

6) *The capability of the street system to safely and efficiently accommodate the expected traffic generated by uses permitted in the requested zoning district.*

Applicant Response: A detailed traffic Impact Study was completed by Fleis & Vandenbrink and has been submitted to the Twp for review. The TIS recommends center left hand turn and right-hand taper improvements which will enable the streets to operate at their same Level of Service or an improved Level of Service at AM, PM, and School PM peak periods. The Carlisle Wortman report considered moving the proposed Cedar Island entrance to the west to align with Mayfair Drive, however we do not feel that is warranted because although there is not a posted speed limit on Cedar Island Road (a dirt road), it is approaching the Bogie Lake Road intersection and is within a school zone, and therefore traffic moves at a slower rate of speed. Maintaining the entrance as proposed enables the applicant to extend pavement to the entrance seven hundred' west of Bogie Lake Road.

CWA Comment: Provided in the Access and Circulation portion of this review.

7) *The apparent demand for the types of uses permitted in the requested zoning district in relation to the amount of land in the township currently zoned and available to accommodate the demand.*

Applicant Response: There is a strong demand for housing in the Township and surrounding areas. The Master Plan has identified this and calls for denser housing developments. PH Homes has built many homes in White Lake Township over the last several decades and estimates a 2.5% - 5% growth in the demand for new and replacement homes in the Township over the next several years.

CWA Comment: There is strong demand for housing in the Township and region. The Master Plan designation of this area as redevelopment site indicates the anticipation of denser housing in this area of the community.

8) *The boundaries of the requested rezoning district are reasonable in relationship to its surroundings, and construction on the site will be able to meet the dimensional regulations for the zoning district listed in the Schedule of Regulations.*

Applicant Response: The use of the PD district is reasonable for the site to achieve the goals of the Master Plan. The proposed site plan provides all exterior boundary dimensional standards.

CWA Comment: The use of the PD district is reasonable for the site to achieve the goals of the Master Plan.

9) *The requested zoning district is considered to be more appropriate from the township's perspective than another zoning district.*

Applicant Response: The rezoning of the property is consistent with the uses promoted in the Master Plan and the proposed density is less than half of the density envisioned within the Master Plan.

CWA Comment: As noted in this review, the proposed density is higher than any permitted by right single family zoning district in the Township. Unless community benefits are provided and accepted by the Planning Commission and Township Board, R1-D may be a feasible district to pursue development under.

10) *If the request is for a specific use, is rezoning the land more appropriate than amending the list of permitted or special land uses in the current zoning district to allow the use?*

Applicant Response: Yes, the PD is consistent with the Zoning Ordinance and Master Plan.

CWA Comment: A text amendment to permitted and special uses is not more appropriate.

11) *The requested rezoning will not create an isolated and unplanned spot zone.*

Applicant Response: No, this will not create spot zoning. The area is predominantly single-family residential, and this will add to the fabric and character of White Lake Township.

CWA Comment: No PD zoning is nearby the site however single family residential uses are prominent in the area.

12) *The request has not previously been submitted within the past one (1) year, unless conditions have changed or new information has been provided.*

Applicant Response: This project has not been previously submitted within the past year.

CWA Comment: No rezoning request has been made within the past year for the site.

13) *An offer of conditions submitted as part of a conditional rezoning request shall bear a reasonable and rational relationship to the property for which rezoning is requested.*

Applicant Response: This is not proposed as a Conditional Rezoning application.

CWA Comment: As noted in this review, rezoning to a PD requires a site plan showing the specific use and layout of a proposed project. The applicant may request deviations from similar use standards and the community may negotiate community benefits. Once approved, the site plan is the only permitted use of the land.

14) *Other factors deemed appropriate by the Planning Commission and Township Board.*

Applicant Response: Not provided.

CWA Comment: Provided in this review.

Items to be addressed: *Items to be addressed regarding rezoning are covered throughout this review.*

NATURAL RESOURCES

Topography: Sheet 2 shows the existing site topography. The site has a gentle slope going east to west for two thirds of the site then sloping back down at the western end of the lot. Proposed grading will retain a slight rolling hill effect with steeper sloping near the detention basin, and northern portion of the site.

We defer to Township Engineering for any concerns with the proposed grading plans as well as any issues cited regarding stormwater management and natural environment protection.

Wetlands: Sheet 3 states no wetlands are onsite. EGLE wetland mapper confirms no wetlands are present on the lots.

Woodland: Mature woodlands cover the majority of the sites northeast and southeast corners. The center and western half of the site is relatively clear. The site plan states that a portion of the woodlands in the northeastern portion of the site and the area between units lining Edendale Lane and Mollygrace Lane will remain as open space/existing trees. While no count of trees to removed was provided, 86 quality trees are to remain. It appears a large portion of existing trees will be removed for the proposed development.

The Community Impact Statement indicates that 20% open space will be maintained with a significant preservation of existing trees and natural features. Information on how existing trees will be protected during grading and construction is provided on Sheet L-4.

Soils: Soil survey maps indicate that spinks loamy sand, fix sandy loam, and ormas loamy sand soils are present.

Water: Site does not contain any natural water bodies. Sheet 3 states the site is not within any floodplain. Thompson Lake is approximately 430 feet northeast.

General Notes: The use of a PD district does allow for the consideration of requiring the preservation of natural features as a benefit to the development and community.

Source: Google Maps 2025

Items to be Addressed: *Any cited concerns from Township Engineering.*

AREA, WIDTH, HEIGHT, SETBACKS

Lot calculations and setbacks are provided on Sheet 3. Comparison tables between the proposed standards and R1-D standards is provided in the CIS. Standard bulk and lot regulations for the PD zoning district are set forth in Section 3.1.10. and Section 3.11. Notes on Sheet 3 provide proposed lot and setback information as well as one typical lot and development envelope layout.

Planned Development District Standards

Planned Development	R1-D Parallel Plan	Proposed PD	Deviation
Building Setbacks			
Front	30 feet	25 feet	5 foot reduction
Side	10 feet	10 feet	None
Rear	30 feet	30 feet	None
Wetland	N/A	N/A	N/A

Unit Lot Standards			
Minimum Lot Area	12,000 sqft	7,750 sqft (average)	Approx. 4,250 sqft reduction
Minimum Lot Width	80 feet	62 feet	18 feet reduction
Maximum Lot Coverage	30%	34%	4% increase
Depth to Width	Approx. 2 to 1	Approx. 2 to 1	None
Planned Development	**Required**	**Proposed**	**Deviation**
Development Setbacks			
Front	40 feet	24 feet from Bogie Lake Road ROW (See notes below) 30 feet from Cedar Island ROW	16 feet reduction 10 foot reduction
Side	25 feet each side	N/A	N/A
Rear	Determined by PC	0 feet at West Lot Line / 20 feet and 46 feet at North Lot Line	Unknown
Wetland	N/A	N/A	N/A
Density			
	Determined by Net Acreage / 3 units per acre	3.47 units per acre	.47 more units per acre
Lot Standards			
Minimum Lot Area	10 acres	45.47 gross acres	Yes
Minimum Lot Width	TBD	809.9 feet	TBD
Maximum Lot Coverage	TBD	TBD	TBD
Depth to Width	4 to 1	Less than 1 to 1	Yes
Building Height			
	30 feet or 2 stories	30 feet or 2 stories	None
Floor Area			
Two Story	1,500 sqft w/ 900 sqft first floor	Approx. 2,100 sqft to 2,700 sqft w/ 1,100 first floor	None

Setbacks are shown to be 20 feet and 46 feet along the north property line and 0 feet along the west property line from individual unit boundaries.

We do note that only two units boundaries are 40 feet from Bogie Lake Road right of way. The remainder of the homes are approximately 285 feet from the road.

Items to be Addressed: *Planning Commission to determine if requested district and development standard deviations are acceptable.*

ACCESS & CIRCULATION

Vehicle Access & Circulation

The site is accessed via a boulevard entrance off Bogie Lake Road and another off Cedar Island Road. 60 foot right-of-way streets are proposed throughout the development. Section 6.4 outlines standards for access management. Public roads in the Township are either the jurisdiction on Michigan Department of Transportation (MDOT) or Road Commission of Oakland County (RCOC). The Planning Commission may waive standards for access per Section 6.4.F however permits will be required from RCOC for the proposed access points. Below is a review of the proposed access points per the standards of the zoning ordinance.

Edendale Lane / Bogie Lake Intersection

A 45 mph speed limit requires that the proposed access drive should be 350 feet from driveways on the same side or opposite side of the road. This standard is not met in relation to the distance from the Thompson Lane / Bogie Lake Road intersection. A waiver is required from the Planning Commission per Section 6.4.F. RCOC approval shall also be required for the proposed access drive.

Edendale Lane / Cedar Island Intersection

Cedar Island is a dirt road. The site plan shows pavement being extended west to the proposed access drive intersection. The speed limit is unposted, and the area is somewhat rural so a 55 mph limit is assumed. This requires that the proposed access drive should be 455 feet from driveways on the same side or opposite side of the road. The distance between the proposed drive at Cedar Island Road and Carla Hills drive is 273 feet.

Per Sheet 3, it appears there is an opportunity that the Cedar Island boulevard access and Mayfair Drive could be aligned. This modification would likely put the access point in conformance with distance from existing drive regulations and put the intersection further from Bogie Lake Road. The CIS states the applicant does not feel this is warranted because the area along Cedar Island Road in question is a school zone and therefore traffic moves at a slower rate of speed. If this modification is not made, the proposed drive at Cedar Island will need a waiver from the Planning Commission per Section 6.4.F. RCOC approval will be required for the proposed access drive.

Dimensions for the boulevard access points are provided on Sheet 16. Per the design requirements outlined in table 6.4.C.X, the entrance drive width is sufficient however the exit drive is not wide enough and requires a waiver from the Planning Commission.

Traffic Study

The determination of need form submitted in the application provides guidance on the type of traffic study needed for certain developments. The form indicates that the site is expected to generated 750+ driveway trips per day. This warrants the submission of a Traffic Impact Study (TIS). A TIS dated September 28th, 2025 has been provided by FLEIS&VANDENBRINK.

The study was conducted during the school year and accounts for peak travel times for school activity. The Bogie Lake Road / Cedar Island Road intersection currently operates at grades “E, C, and D” for

eastbound traffic and at grades "A and B" for northbound traffic. The development is expected to generate 1,258 average daily trips. Future operations estimate that the grades of service for the northbound traffic will remain "A and B" however the eastbound traffic grades will drop to "E, D, and F".

The study concludes with a recommendation that exclusive left turn lanes and right turn lanes be incorporated into the Cedar Island approach to the Bogie Lake Road intersection. These improvements have not been incorporated into the project design. The project does propose adding a center turn lane to Bogie Lake Road from the south end of the Edendale Lane entrance north past the Thompson Lane intersection. Acceleration and deceleration lanes have also been added to Bogie Lake Road at the Edendale Lane entrance. These improvements are in response to preliminary notes provided by RCOC.

Per their preliminary review, RCOC has indicated that the location of the proposed development entrances in relation to existing intersections is acceptable.

Non-Motorized Access and Circulation

Sections 5.20 and 5.21 provide requirements for site sidewalks and pathways. Eight foot wide concrete paths are shown along Clear Island and Bogie Lake Roads. The pathways are predominantly outside of the ROW's which will require the granting of easements to the Township. On Sheet 17, the developer has provided a safety path extension from the Edendale Lane / Cedar Island Road intersection to the Huron Valley School campus to the east. This would improve non-motorized connectivity and potentially reduce the amount of vehicle traffic during drop off / pickup times.

Internal sidewalks are shown along all streets as well as cross development pedestrian pathways. These sidewalks are required to be five feet wide as shown on Sheet 16.

Public Transit

No public transit is accessible near the site.

White Lake Township is served by the Western Oakland Transportation Authority which provides scheduled transportation for Township residents with specific needs.

***Items to be Addressed**:*

1) *Township Engineering concerns.*
2) *Township Public Safety concerns.*
3) *The Road Commission of Oakland County approval of the access to Bogie Lake and Cedar Island Roads will be required.*
4) *The Planning Commission will need to consider a waiver from the opposite side driveway distance between the Edendale Lane / Bogie Lake Road intersection and Thompson Lane / Bogie Lake Road intersection.*
5) *The Planning Commission will need to consider a waiver from the opposite side driveway distance between the Edendale Lane / Cedar Island Road intersection and Carla Hills Drive / Cedar Island Road intersection.*
6) *Planning Commission will need to consider a waiver to allow the boulevard exit drives to be 21 feet wide instead of 22 feet wide.*

7) *Pathways are predominantly outside of the ROW's which will require the granting of easements to the Township.*

PARKING & LOADING

Section 5.11 outlines requirements for off-street parking. Sheet 3 states parking is provided via two garage spaces as well as driveway space for each unit. This meets the ordinance standards.

There are no loading zone requirements for single family developments.

***Items to be Addressed**: None*

ESSENTIAL SERVICES & UTILITIES

The site is not currently served by water or sewer. To address density, the project proposes bringing a force main sanitary line up from south of the Lakeland High School site. This will require a pump station proposed in the northeast corner of the development near unit 20. A water main connection is proposed from existing water lines along Bogie Lake Road. We defer to Township Engineering on the feasibility and capacity of the design of the system.

No circulation plan was provided for emergency vehicles. Notes on Sheet 3 provide information regarding fire lanes and hydrant placement. We defer to Township Public Safety to determine the feasibility of site design and hydrant placement.

Items to be Addressed:

1) *Any cited concerns of Township Engineering.*
2) *Any cited concerns of Township Public Safety.*

LANDSCAPING & SCREENING

The applicant has provided a landscape plan on Sheets L-1, L-2, and L-3. Landscaping plans are required at final site plan review.

Section 5.19.D provides requirements for screening along property lines as it relates to adjacent districts and is reviewed below.

Greenbelts

Property Line	Required	Provided	Compliant
North (AG)	Landscaping, Berms, Obscuring Fencing, and/or Screen Wall 53 deciduous trees, 53 evergreen trees, 424 shrubs	31 existing trees, 15 deciduous trees, 9 evergreen trees, and surrounding brush vegetation.	No / Waiver Requested

East (ROW)	Greenbelt 23 trees and 184 shrubs	29 trees and 228 shrubs	Yes
South (ROW)	Greenbelt 44 trees and 352 shrubs	78 trees, 28 existing trees, 300 shrubs, and existing brush vegetation	No / Waiver Requested
West (AG / ITC Corridor)	Landscaping, Berms, Obscuring Fencing, and/or Screen Wall 43 deciduous Trees, 43 evergreen trees, 344 shrubs	No new plantings / No major existing vegetation	No / Waiver Requested

The landscaping plan states the installation of required screening along the North and South property lines would disturb the existing trees and is not recommended. No landscaping is provided along the west property line per the ITC Corridor. However, west of the ITC lines is a R1-A zoned residential development of which the ITC lines will not obscure view from.

The landscaping plan states that existing vegetation along the property's north and south lot lines will serve as site screening. Additional screening in the way of new landscaping has been included along the western ends of the north and south lot lines to enhance visual shielding from existing neighboring uses. An aerial of the site is provided below for reference.

Source: Google Maps 2025

Interior Landscaping

Interior landscaping is not required for Condominium developments.

Residential Entrance Landscaping

Standards for residential development entryways is outlined in Section 5.19.F. The Bogie Lake entrance Meets plant count requirements. The ordinance states that the first 150 lineal feet of the entrance along the street is to be landscaped. Dimensions are not provided on the drawing but this standard does not appear to be met. We note that certain landscaping along this entrance would potentially conflict with driveways for units 20, 21, 19, and 18.

The Cedar Island entrance fulfills all plant count requirements however two trees required for the drive island have been moved to the curbside due to size constraints. This entrance offers more lineal feet of landscaping however it does not appear to meet the 150 foot length requirement. We note that certain landscaping along this entrance would potentially conflict with driveways for units 1 and 2.

Minimum Plant Size and Species

The proposed plantings and species meet the requirements of Section 5.19.H.

Mechanical Equipment Screening

Per the proposal to bring water and sewer in to service the site, a pump station, transformer, and generator are proposed at the sites northeast corner. There is no new landscaping proposed to screen this equipment however given its location at the main entrance of the development, screening should be provided.

Items to be Addressed:

1) *Planning Commission to consider waiving the requirement to landscape the first 150 feet along both development entrance roads per conflicts with proposed unit driveways.*
2) *Planning Commission to consider waiving requested greenbelt landscaping deviations along the West, North, and South property lines.*
3) *Landscaped screening should be provided for the water/sewer equipment proposed in the northeast corner of the site.*

PERFORMANCE STANDARDS

No issues are anticipated regarding performance standards outlined in Section 5.18. Sheet 3 indicates that no street lighting is proposed and that individual dwelling unit lighting will be provided. The Township has the ability to require lighting where it deems it is necessary for safety and security.

Lighting requirements are reviewed during final site plan review.

Items to be Addressed: *None*

SIGNAGE

Sheet L-4 provides specifications for monument signage proposed at the Bogie Lake Road and Cedar Island Road entrances. Stone veneer is the predominant finish for the sign. Signs are administratively reviewed by the Township.

Items to be Addressed: *None.*

ARCHITECTURE & LAYOUT

Site layout and unit architecture is discussed in other portions of this review.

Items to be Addressed: *Addressed in other portions of this review.*

CONDOMINIUM DOCUMENTS

Draft master deeds are required for final site plan review. Section 6.1.F outlines regulations for condominium development designs. Standards relevant to zoning and site design are reviewed below. We defer to Township Engineering for items referring to utility layout and capacity.

Streets

Sheet 3 states that all internal roads are to be private. A separate application to the Township requesting the roads be private must be provided. Street designs are compliant however we defer to Township Engineering regarding technical aspects of the proposed streets.

Blocks

Blocks, streets, and pedestrian designs conform to requirements.

Easements

As noted earlier in this report, easements will be needed for portions of the pathways along Bogie Lake and Cedar Island Roads. No public facilities are offered within the development. We defer to Township Engineering regarding the proposed water/sewer utilities along Bogie Lake Road and the necessary easements to ensure the Township has access.

Condominium Lots

As noted earlier in this review, the proposed density for the site is 3.47 units per acre utilizing approximately 62 foot wide, 7,750 square foot lots. Section 6.1.F.iv states that condominium lots shall be appropriate for the location and the type of development contemplated. Lots of these sizes and proportions are not permitted in the Township under conventional single-family zoning districts. This consideration is discussed more in depth in the Planned Development portion of this review.

Corner lots are to be 20 feet wider than a standard lot. The development proposes to offer approximately 10 to 15 feet wider corner lots. Condominium layout requirements state front-to-front lot orientation shall be utilized where possible. The proposed layout accomplishes this standard along most streets. However, there are several corner lots throughout the development which given the reduced lot size and setbacks, could put the side and rear walls of adjacent homes 40 feet from each other. Decks, patios, and backyard utilization should be contemplated when considering the request for corner lot setbacks and lot sizes.

Public Dedications

The site is not offering any public amenities such as parks or schools.

Trees and Natural Features

As noted in the Natural Features and Landscaping portions of this review, the development is proposing to persevere existing trees along the eastern half of the north and south property line as well as down the middle of the development between dwelling units. Removal of remaining trees must be justified to the Planning Commission. The PD zoning allows the Township flexibility to require additional preservation and necessary protection for trees to remain during construction as this could be considered a public benefit.

Condominium Documents

A draft master deed shall be provided during final site plan review

Items to be Addressed:

1) *Concerns cited by Township Engineering.*
2) *Concerns cited by Township Counsel.*
3) *A private road application is required.*
4) *Planning Commission to consider waiving the requirement that corner lots be 20 feet wider than a standard lot. The development is proposing to offer approximately 10 to 15 feet wide corner lots.*
5) *A draft master deed will be required during final site plan review.*

SUMMARY

The Planned Development preliminary site plan is substantially complete and should be placed on a Planning Commission agenda. A public hearing is required for the review of all PD projects.

Below are potential conditions for items that should be addressed in the final site plan, and waivers/modifications/determinations the Planning Commission and Township Board will need to consider.

Waivers / Modifications / Determinations

1) *The Planning Commission will need to consider the site's proposed layout, density, recreation space, pathway connections, and natural features protection and how they align with the Master Plan and proposed community benefits.*
2) *Planning Commission to determine if requested district and development standard deviations are acceptable.*
3) *The Planning Commission will need to consider a waiver from the opposite side driveway distance between the Edendale Lane / Bogie Lake Road intersection and Thompson Lane / Bogie Lake Road intersection.*
4) *The Planning Commission will need to consider a waiver from the opposite side driveway distance between the Edendale Lane / Cedar Island Road intersection and Carla Hills Drive / Cedar Island Road intersection.*
5) *Planning Commission will need to consider a waiver to allow the boulevard exit drives to be 21 feet wide instead of 22 feet wide.*
6) *Planning Commission to consider waiving the requirement to landscape the first 150 feet along both development entrance roads per conflicts with proposed unit driveways.*
7) *Planning Commission to consider waiving requested greenbelt landscaping deviations along the West, North, and South property lines.*
8) *Planning Commission to consider waiving the requirement that corner lots be 20 feet wider than a standard lot. The development is proposing to offer approximately 10 to 15 feet wide corner lots.*

Potential Conditions

1) *Any cited concerns from Township Engineering.*
2) *Any cited concerns from Township Public Safety.*
3) *Any cited concerns from Township Counsel.*
4) *A schedule for the proposed phases is required.*
5) *A table should be added to the site plan clearly stating how many trees are onsite and how many are to remain.*
6) *The implementation of the pathway to the school complex will need to be coordinated with the school district and should be reoriented to not terminate into a parking lot.*
7) *The Road Commission of Oakland County approval of the access to Bogie Lake and Cedar Island Roads will be required.*
8) *The proportions of brick and siding proposed on the façade of the units is complementary, however it is recommended that the brick also be included in a similar proportion on the side and rear elevations. This may be addressed at final site plan review.*
9) *Landscaped screening should be provided for the water/sewer equipment proposed in the northeast corner of the site.*

Items to be addressed at Final Site Plan Review

1) *Final approval of the plan will require the condition that the lots be combined into one parcel.*
2) *A draft development agreement will be required during final site plan review.*

3) *Pathways are predominantly outside of the ROW's which will require the granting of easements to the Township.*
4) *A draft master deed will be required during final site plan review.*
5) *A private road application is required.*

Respectfully,

CARLISLE/WORTMAN ASSOC., INC.
Matteo Passalacqua
Community Planner

Fire Department
Charter Township of White Lake

7420 Highland Road
White Lake, MI 48383
Office (248) 698-3993
www.whitelaketwp.com/fire

Site / Construction Plan Review

To: Sean O'Neil, Planning Department Director

Date: 11-24-2025

Project: Edendale Crossing

Job #: 2025.010

Date on Plans: 11-12-2025

The Fire Department has the following comments with regards to the 3rd review of preliminary site plans for the project known as Edendale Crossing

1. The access drive and parking lot shall be designed and maintained to support the imposed loads of fire apparatus and shall be surfaced so as to provide all weather driving capabilities.

2. The required turning radius shall accommodate the largest Fire Department apparatus (40') and provide a turn radius profile throughout entire plan showing apparatus movement on future plans.

3. The angle of approach/Departure to and from White Lake roads shall not exceed 8 degrees.

4. Where fire hydrants or fire department connections are subject to impact by a motor vehicle, guard posts or other approved means shall comply with section 312.

5. All fire lanes shall be conspicuously posted with uniform "NO PARKING FIRE LANE" signs as prescribed by the fire code official. The location and spacing of the signs, mounted or erected, shall be as directed by the fire code official.

Jason Hanifen
Fire Marshal
Charter Township of White Lake
(248)698-3993
jhanifen@whitelaketwp.com

Plans are reviewed using the International Fire Code (IFC), 2021 Edition and Referenced NFPA Standards.

SITE PLAN

"Edendale Crossing"

SITE CONDOMINIUM

PART OF THE SOUTHEAST 1/4 OF SECTION 29, T3N, R8E,
WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN,

NOTE:
THE CONDOMINIUM ASSOCIATION WILL BE RESPONSIBLE FOR MAINTAINING THE STORM SEWER SYSTEM

ENGINEER & SURVEYOR

KIEFT ENGINEERING, INC.
5852 SOUTH MAIN STREET, STE 1
CLARKSTON, MICHIGAN 48346
Phone (248) 625-5251
Fax # (248) 625-7110
Attn: Patrick McWilliams
Email: pmcwilliams@kiefteng.com

Patrick C. McWilliams
STATE OF MICHIGAN
PATRICK COLIN McWILLIAMS
LICENSE NO. 6201031658
REGISTERED PROFESSIONAL ENGINEER

LANDSCAPE ARCHITECT

J EPPINK PARTNERS, INC.
27 SOUTH SQUIRREL RD. - STE 104
AUBURN HILLS, MICHIGAN 48326
Phone (248) 922-0789
Attn: Jim Eppink
Email: jim@jeppink.com

PROPERTY DESCRIPTION

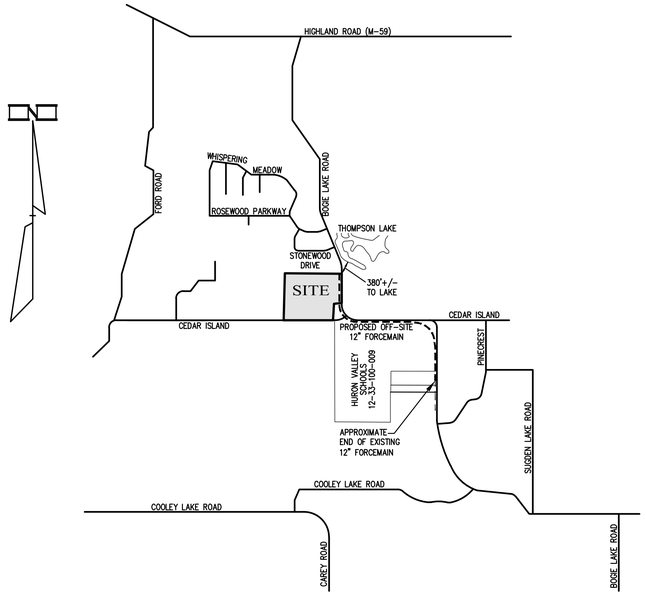
PARCELS 12-29-476-016 thru 12-29-476-024:

PROPOSED PARCEL COMBINATION DESCRIPTION:
PART OF THE SOUTHEAST 1/4 OF SECTION 29, T3N, R8E, WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN, DESCRIBED AS: BEGINNING AT POINT ON THE SOUTH LINE OF SAID SECTION 29, SAID LINE ALSO BEING THE CENTERLINE OF CEDAR ISLAND ROAD, VARIABLE WIDTH, LOCATED S 89°50'00" W 244.18 FEET ALONG SAID SOUTH LINE FROM THE SOUTHEAST CORNER OF SECTION 29, T3N, R8E; THENCE CONTINUING ALONG SAID SOUTH LINE S 89°50'00" W 1379.73 FEET; THENCE N 01°23'00" E 1297.00 FEET; THENCE S 89°55'52" E 1609.36 FEET TO THE EAST LINE OF SAID SECTION 29, SAID EAST LINE ALSO BEING THE CENTERLINE OF BOGIE LAKE ROAD, VARIABLE WIDTH; THENCE ALONG SAID EAST LINE S 00°44'40" W 809.90 FEET; THENCE S 84°04'15" W 226.85 FEET; THENCE S 03°06'02" W 458.08 FEET TO SAID SOUTH LINE OF SECTION 29 AND TO THE POINT OF BEGINNING. CONTAINING 45.47 ACRES. SUBJECT TO RIGHTS-OF-WAY FOR CEDAR ISLAND AND BOGIE LAKE ROADS. ALSO SUBJECT TO ANY OTHER RIGHTS-OF-WAYS, RESTRICTIONS AND EASEMENTS OF RECORD.

NOTES:

"THE SOIL EROSION CONTROLS WILL BE MAINTAINED WEEKLY AND AFTER EVERY STORM EVENT".

-GENERAL CONTRACTOR WILL BE RESPONSIBLE FOR THE MAINTENANCE OF THE SOIL EROSION CONTROLS.



LOCATION MAP
SCALE: 1" = 2000'

PROPRIETOR/BUILDER

PH COMMUNITIES, LLC
8255 CASCADE AVENUE, SUITE 110
COMMERCE TOWNSHIP, MICHIGAN 48382
Phone (248) 242-6838
Contact: Craig Piasecki
Email: craigp@myphhome.com

SHEET INDEX

PSP-1 PRELIMINARY SITE PLAN SUMMARY
PSP-2 PARALLEL PLAN & ANALYSIS
1) COVER SHEET
2) EXISTING CONDITIONS PLAN - OVERALL
3) OVERALL SITE PLAN & NOTES
4) SITE PLAN - NORTHEAST
5) SITE PLAN - SOUTHEAST
6) SITE PLAN - SOUTHWEST
7) SITE PLAN - NORTHWEST
8) OFF-SITE STORM SEWER OUTLET PLAN & PRETREATMENT STRUCTURES
9) OFF-SITE SANITARY FORCEMAIN PLAN - OVERALL
10) OFF-SITE SANITARY FORCEMAIN PLAN - SOUTH CONNECTION
11) OFF-SITE SANITARY FORCEMAIN PLAN
12) OFF-SITE SANITARY FORCEMAIN PLAN
13) OFF-SITE SANITARY FORCEMAIN PLAN
14) OFF-SITE SANITARY FORCEMAIN PLAN
15) OFF-SITE SANITARY FORCEMAIN PLAN - NORTH PUMP STATION & TREE CHART
16) DETENTION BASIN CALCULATIONS & DETAILS
17) CEDAR ISLAND ROAD & WHITE LAKE MIDDLE SCHOOL SIDEWALK PLAN
L-1 COMMON AREA LANDSCAPE PLAN
L-2 LANDSCAPE PLAN - ENTRANCE & SCREENING
L-3 LANDSCAPE PLAN - ENTRANCE & SCREENING
L-4 LANDSCAPE DETAILS & PLANT LIST
A-1 PRELIMINARY ARCHITECTURE

REVISION INDEX

REV. #	DESCRIPTION	DATE	SHEET NUMBERS 1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
1	PER DLZ (8-26-2025)	9-19-2025	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
2	PER RCOC MTG (10-27-2025) PER DLZ (10-15-25)	10-29-2025	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
3	PER CLIENT/PLANNER (11-7-2025)	11-12-2025	X		X	X	X	X	X	X	X	X							X		X

DATE: 7-2-2025
SHEET 1 OF 19
KE 2025.010

G:\2025\010 PH Homes - Bogie & Cedar Island\CAD\Edendale Crossing.dwg, 1 Cover, 11/12/2025 12:19:05 PM

PASSIVE OPEN SPACE

EXISTING TREES & PASSIVE OPEN SPACE

Mollygrace Lane

Edendale Lane

North Entrance

PARK

EXISTING TREES & OPEN SPACE

20' Storm Water Easement

DETENTION

BOGIE LAKE ROAD

Norahquin Lane

OPEN SPACE

South Entrance

Cedar Island Road (Variable Width)

Community Walking Path. Exact Location to be Determined in Field During Construction

SITE DATA

Parcel Size :	47.47 acres
Current Zoning :	AG + R1-A
Proposed Zoning :	PD (Planned Dev.)
Master Plan Use :	Neighborhood Res. Permits: small lot single-family, duplex, & multi family. (R1C / RM1 / RM2)
Proposed Density :	125 Residences 3.47 DU / NET AC (Total Site area less road easements, detention, & utility easements 47.47 ac - 9.47 ac = 36 ac / 125 = 3.47)
Proposed Open Space :	9.42 acres 20.72%

Roads: 60' ROW (28' back of curb)

STATE OF MICHIGAN
REGISTERED LANDSCAPE ARCHITECT
JAMES T. EPPINK
LANDSCAPE ARCHITECT
No. 1309

J EPPINK PARTNERS, INC
Urban Design Studio

Landscape Architecture
Traditional Town Planning

27 Squirrel Road
Suite 104
Auburn Hills, MI 48326
248.922.0789

The ideas and design concepts expressed herein and the graphically displayed arrangement of their components represented by this drawing have been developed for the exclusive use of the specified project and are the sole property of J EPPINK PARTNERS, INC. Any conveyance or disclosure of the ideas or design concepts or use of any graphically displayed arrangements of their components shall be at the discretion of and only through the expressed written consent of J EPPINK PARTNERS, INC

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Project:

Edendale Crossing

Bogie Lake Road
White Lake Township, MI

Owner:

PH Homes

8255 Cascade Ave
Suite 110
Commerce Twp, MI 48382
248-242-6838

Sheet:

Preliminary Site Plan Summary

Issues / Revisions

Per Twp Review	09-19-25
Per Twp Review	11-12-25

Drawn by: LZ

Checked By: JTE

Date: September 19, 2025

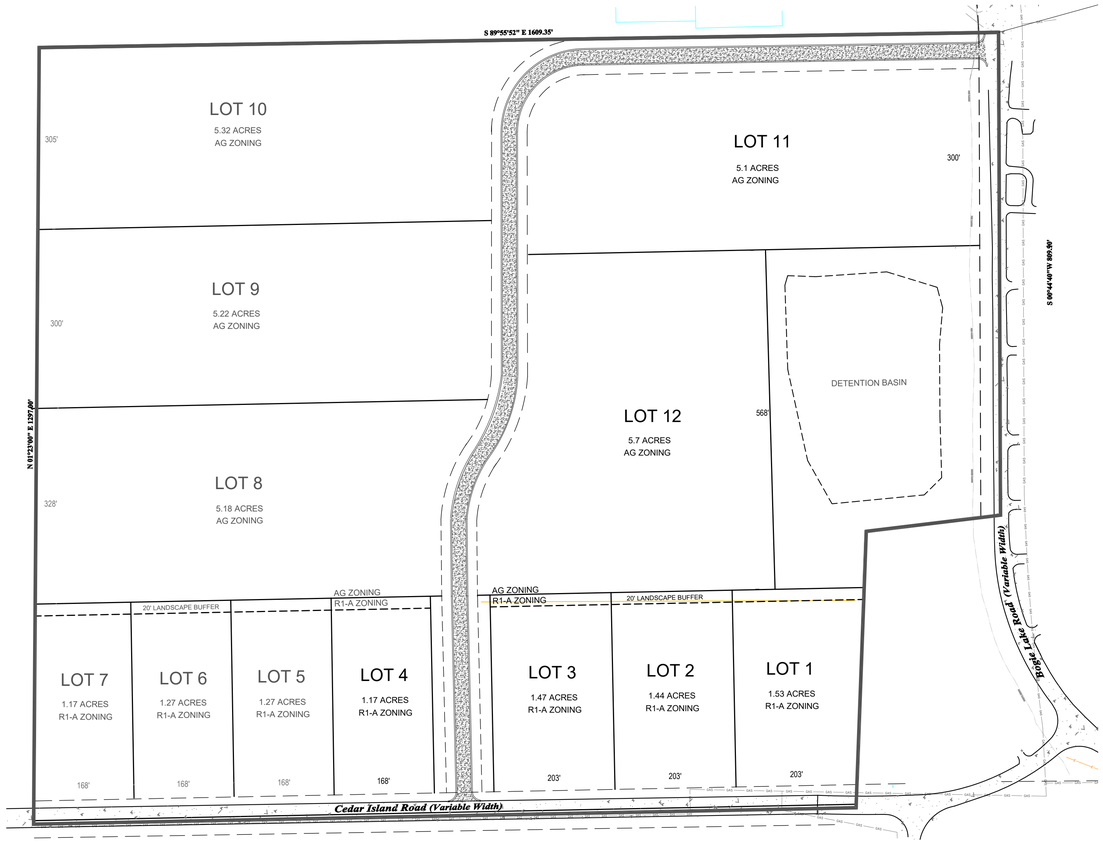
Scale: Scale: 1" = 60'

Not for Construction

Sheet: PSP-1

EXISTING ZONING PARALLEL PLAN : AG + R1-A

Scale: 1" = 120'



AG Agricultural District 3.1.1

F. DEVELOPMENT STANDARDS

Lot Size
Minimum lot area: 5 acres
Minimum lot width: 300 feet

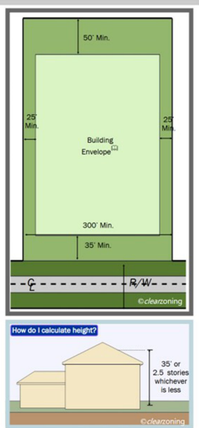
Lot Coverage
Maximum lot coverage: 30%

Setbacks
Minimum front yard setback: 35 feet
Minimum rear yard setback: 50 feet
Minimum side yard setback: 25 feet one side
50 feet total of two sides

Building Height
Maximum building height: 35 feet or 2.5 stories, whichever is less

NOTES
- For additions to the above requirements, please refer to §3.11 Notes to District Standards: A, D, E, J, K, L, P, Q, R, S, T, V

(Amended by Ord. 58-24A, 6-18-2024)



R1-A Single Family Residential District 3.1.3

E. DEVELOPMENT STANDARDS

Lot Size
Minimum lot area: 1 acre
Minimum lot width: 150 feet

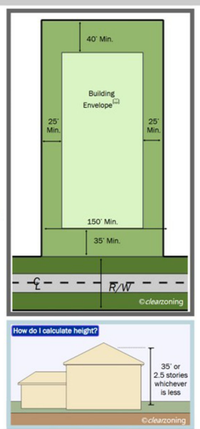
Maximum Lot Coverage 30%

Setbacks
Minimum front yard setback: 35 feet
Minimum rear yard setback: 40 feet
Minimum side yard setback: 25 feet one side
50 feet total of two sides

Building Height
Maximum building height: 35 feet or 2.5 stories, whichever is less

NOTES
- For additions to the above requirements, please refer to §3.11 Notes to District Standards: A, D, F, J, K, L, P, Q, R, S, T, V, W

(Amended by Ord. 58-24A, 6-18-2024)



EXISTING AG & R1-A ZONING : PARALLEL PLAN

34.79 acres = AG, Agricultural (allows 5-acre lots)

10.71 acres = R1-A, Single Family (allows 1-acre lots)

A conceptual site plan (parallel plan) using AG and R1-A zoning standards permits 12 residential lots

MASTER PLANNED DESIGNATED ZONING PARALLEL PLAN : R1-D ZONING

Scale: 1" = 120'

R1-D Single Family Residential District 3.1.6

E. DEVELOPMENT STANDARDS

Lot Size
Minimum lot area: 12,000 square feet
Minimum lot width: 80 feet

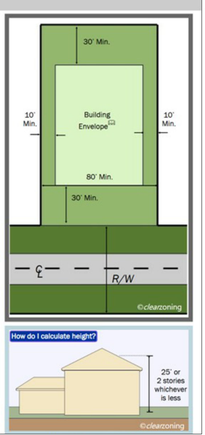
Maximum Lot Coverage
25% for lots served by a private septic system
30% for lots served by public sanitary sewer

Setbacks
Minimum front yard setback: 30 feet
Minimum rear yard setback: 30 feet
Minimum side yard setback: 10 feet one side
20 feet total of two sides

Building Height
Maximum building height: 25 feet or 2 stories, whichever is less

NOTES
- For additions to the above requirements, please refer to §3.11 Notes to District Standards: A, D, F, J, K, L, P, Q, R, S, T, V, W

(Amended by Ord. 58-24A, 6-18-2024)



R1-D ZONING : PARALLEL PLAN

45.47 acres = R1-D Zoning (as indicated by the White Lake Twp Master Plan)

A conceptual site plan (parallel plan) using R1-D zoning standards permits 109 residential lots assuming private septic systems per lot

A conceptual site plan (parallel plan) using a combination of R1-C, R1-D, RM, & RM2 zoning standards would permit a substantially greater number of residential dwellings than depicted here. These alternate zoning districts, envisioned within the Master Plan as appropriate for this location, would permit more density than the R1-D zoning classification.

R1-D ZONING : PARALLEL PLAN

The White Lake Township Master Plan identifies the subject site, located at Bogie Lake Road and Cedar Island Road as one of three "Development Opportunities" within the Township.

The Township's Future Land Use Plan designates the subject site as "Neighborhood Residential" which is defined as:

> A district that "*maintains existing neighborhoods and provides for denser residential development in places where there is infrastructure to support the density and ensuring density is within the context of the surroudning neighborhood*"
>
> Example of Uses include "*Small-lot single-family, duplexes, multi-family, parks, and convalescent or nursing homes*".

The Neighborhood Residential designation within the Master Plan calls for:
- "Dense Development"
- A permitted density of two - eight (2 - 8) units per acre
- Indicates R1-C, R1-D, RM, RM-2, and PD are appropriate zoning classifications for this area

The Community Goals within the Master Plan call for:
- Preservation of natural features
- Provide for adequate infrastructure expansion
- Enhance pedestrian circulation and connection to nearby schools
- Provide new housing types to meet demand within the Township
- Provide passive or active recreation

R1-D development standards provide approximately 109 dwelling units based on the parallel plan. However, developing the property under the permitted PD process enables PH Homes to incorporate additional important features and community benefits including the extension of the sanitary sewer force main to the northern boundary of the property, preserving natural woodlots and hedgerows within the site, maintaining more than 20% neighborhood open space and trails, creating pedestrian pathways and connections to the nearby schools, and establishing a single-family neighborhood that has only 15% more homes than would be permitted under straight R1-D zoning. (16 additional homes or 125 homes vs 109 homes).

Item A.

STATE OF MICHIGAN
REGISTERED LANDSCAPE ARCHITECT
JAMES T. EPPINK
LANDSCAPE ARCHITECT
No. 1309

J EPPINK PARTNERS, INC
Urban Design Studio

Landscape Architecture
Traditional Town Planning
27 Squirrel Road
Suite 104
Auburn Hills, MI 48326
248.922.0789

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© 2025 J EPPINK PARTNERS, INC

Project:

Edendale Crossing

Bogie Lake Road
White Lake Township, MI

Owner:

PH Homes

8255 Cascade Ave
Suite 110
Commerce Twp, MI 48382
248-242-6838

Sheet:

Parallel Plan & Analysis

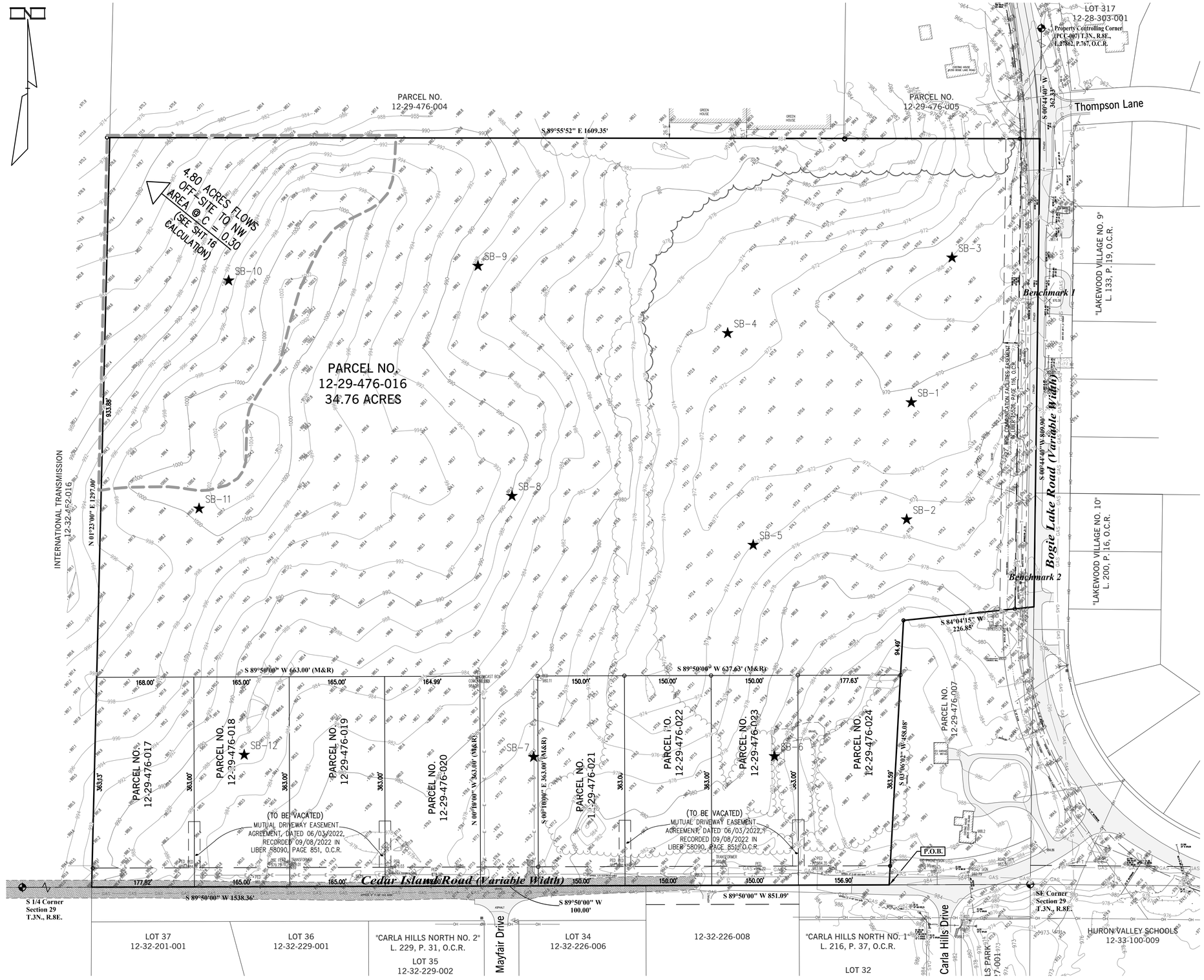
Issues / Revisions

Per Twp Review	09-19-25
Per Twp Review	11-12-25

Drawn by: LZ
Checked By: JTE
Date: September 19, 2025
Scale: As Noted

Not for Construction

Sheet: PSP-2



LEGEND

- STORM SEWER
- SANITARY SEWER
- WATERMAIN
- GAS MAIN
- UNDERGROUND ELECTRIC
- STORM MANHOLE
- CATCH BASIN
- INLET
- REARYARD CATCH BASIN
- END SECTION
- SANITARY MANHOLE
- GATE VALVE AND WELL
- HYDRANT
- 990 — EXISTING CONTOURS
- OH — OVERHEAD TELE, ELEC, CATV
- POWER POLE
- LIGHT POLE
- +966.7 — GRADE
- SOIL BORING
- EXISTING ASPHALT
- EXISTING CONCRETE
- (R) — REMOVE TREE
- DEMOLITION LIMITS

Benchmarks:

BM-1
ARROW OF EXISTING HYDRANT LOCATED 306'+/- SOUTH OF THOMPSON ROAD ON THE WEST SIDE OF BOGIE LAKE ROAD.
ELEVATION = 971.63 (NAVD 88)

BM-2
ARROW OF EXISTING HYDRANT LOCATED 450'+/- NORTH OF CEDAR ISLAND ROAD ON THE WEST SIDE OF BOGIE LAKE ROAD.
ELEVATION = 983.26 (NAVD 88)

BM-3
MAG NAIL IN NORTH FACE OF POWER POLE LOCATED 50'+/- EAST OF THE NORTH ENTRANCE OF LAKELAND H.S. ON THE SOUTH SIDE OF BOGIE LAKE ROAD.
ELEVATION = 981.05 (NAVD 88)

BM-4
ARROW OF EXISTING HYDRANT LOCATED 165'+/- EAST OF THE MIDDLE ENTRANCE OF LAKELAND H.S. ON THE SOUTH SIDE OF BOGIE LAKE ROAD.
ELEVATION = 968.44 (NAVD 88)

BM-5
ARROW OF EXISTING HYDRANT LOCATED 80'+/- SOUTH OF FOX N HOUNDS DRIVE ON THE WEST SIDE OF BOGIE LAKE ROAD.
ELEVATION = 973.23 (NAVD 88)

BM-6
RR SPIKE IN EAST FACE OF POWER POLE LOCATED 15'+/- SOUTH OF THE SOUTH ENTRANCE OF LAKELAND H.S. ON THE WEST SIDE OF BOGIE LAKE ROAD.
ELEVATION = 974.42 (NAVD 88)

PARCELS 12-29-476-016 thru 12-29-476-024:

PROPOSED PARCEL COMBINATION DESCRIPTION:
PART OF THE SOUTHEAST 1/4 OF SECTION 29, T3N, R8E, WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN, DESCRIBED AS: BEGINNING AT POINT ON THE SOUTH LINE OF SAID SECTION 29, SAID LINE ALSO BEING THE CENTERLINE OF CEDAR ISLAND ROAD, VARIABLE WIDTH, LOCATED S 89°50'00" W 244.18 FEET ALONG SAID SOUTH LINE FROM THE SOUTHEAST CORNER OF SECTION 29, T3N, R8E; THENCE CONTINUING ALONG SAID SOUTH LINE S 89°50'00" W 1379.73 FEET; THENCE N 01°23'00" E 1297.00 FEET; THENCE S 89°55'52" E 1609.36 FEET TO THE EAST LINE OF SAID SECTION 29, SAID EAST LINE ALSO BEING THE CENTERLINE OF BOGIE LAKE ROAD, VARIABLE WIDTH; THENCE ALONG SAID EAST LINE S 00°44'40" W 809.90 FEET; THENCE S 84°04'15" W 226.85 FEET; THENCE S 03°06'02" W 458.08 FEET TO SAID SOUTH LINE OF SECTION 29 AND TO THE POINT OF BEGINNING. CONTAINING 45.47 ACRES. SUBJECT TO RIGHTS-OF-WAY FOR CEDAR ISLAND AND BOGIE LAKE ROADS. ALSO SUBJECT TO ANY OTHER RIGHTS-OF-WAYS, RESTRICTIONS AND EASEMENTS OF RECORD.

STATE OF MICHIGAN
PATRICK COLIN McWILLIAMS
LICENSE NO. 6201031658
REGISTERED PROFESSIONAL ENGINEER

DATE	ISSUE
9-19-2025	PER DLZ (8-26-2025)
10-29-2025	PER RCOC MEETING (10-27-2025) & DLZ (10-15-2025)

PROPRIETOR:
PH COMMUNITIES, LLC
8255 CASCADE AVENUE, SUITE 110
COMMERCE TOWNSHIP, MICHIGAN 48382
(248) 242-6838

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KIEFT ENGINEERING

KIEFT ENGINEERING, INC.
PROFESSIONAL ENGINEERS AND PROFESSIONAL SURVEYORS
5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346
PHONE (248) 625-5251 www.kiefteng.com FAX (248) 625-7110

DATE 7-2-2025	CKD. BY	DATE
DRAWN GF		
DESIGN PCM		
SECTION 29	T- 3 -N. R- 8 -E.	

72 HOURS (3 WORKING DAYS) BEFORE YOU DIG CALL MISS DIG (800) 482-7171 OR 811

Existing Conditions Plan - Overall

"EDENDALE CROSSING" SITE CONDOMINIUM
PART OF THE SOUTHEAST 1/4 OF SECTION 29, T3N, R8E
WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

SCALE	1" = 80'
SHEET	2 OF 19
KE	2025.010

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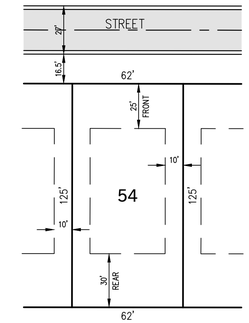
GENERAL NOTES

1) PROPERTY SIDWELL NUMBERS: 12-29-476-016 THRU 12-29-476-024: SITE AREA = 45.47 ACRES
2) ZONING: EXISTING - AG (AGRICULTURAL)
   PROPOSED - PD (PLANNED DEVELOPMENT)
3) PROPOSED USE: SINGLE FAMILY RESIDENTIAL (SITE CONDOMINIUM).
4) MINIMUM UNIT SIZE PROPOSED: 7,750 SF, WIDTH 62 FEET, AVERAGE UNIT SIZE 8,624 SF.
5) PROPOSED SETBACK REQUIREMENTS:
   TOTAL UNITS PROPOSED - 125
   FRONT SETBACK - 25 FT
   REAR SETBACKS - 30 FT
   SIDE YARD SETBACKS - 10 FT (EACH SIDE), 22 FT BETWEEN HOMES.
   ALL UNITS HAVE AT LEAST 62 FT OF FRONTAGE AT THE FRONT 25 FT SETBACK
6) STREETS ARE 60 FOOT WIDE RIGHT-OF-WAY W/23' WIDE ASPHALT WITH 24" MOUNTABLE CONCRETE CURB AND GUTTER (27' WIDE TOTAL)(5,245 LF TOTAL ROAD LENGTH). THE DEVELOPER INTENDS ALL ROADS TO BE PRIVATE.
7) SEWAGE DISPOSAL: TO BE CONNECTED TO ON-SITE PROPOSED PUMP STATION OUT-LETTING TO MUNICIPAL SANITARY FORCEMAIN SYSTEM (5,066 LF) TO BE CONSTRUCTED ALONG BOGIE LAKE ROAD.
8) WATER SUPPLY: AN 8" WATERMAIN IS PROPOSED TO BE CONNECTED TO THE EXISTING 12" MUNICIPAL WATERMAIN ALONG BOGIE LAKE ROAD.
9) PUBLIC UTILITIES (GAS, ELECTRIC, TELEPHONE & CABLE) SHALL BE INSTALLED UNDERGROUND.
10) NO BRUSH OR GRASS CLIPPINGS WILL BE STORED OR DISPOSED OF INTO THE COMMON/PARK AREAS OR DETENTION BASIN.
11) ALL YARD WASTE TO BE REMOVED FROM SITE.
12) PUBLIC SIDEWALKS ARE PROPOSED AS PER EXISTING ORDINANCE REQUIREMENTS.
13) INDIVIDUAL PLOT PLANS AND GRADING SHALL BE PREPARED BY A LICENSED ENGINEER OR SURVEYOR.
14) PROPOSED SITE GRADES SHALL MATCH EXISTING GRADES AT THE PROPERTY LINE WHERE OFF-SITE GRADING RIGHTS DO NOT EXIST.
15) ALL DISTURBED AREAS SHALL BE RE-VEGETATED.
16) DETENTION BASIN SIDE SLOPES SHALL BE LEFT 1 ON 6.
17) REAR AND SIDE-YARD DRAINAGE EASEMENTS WILL BE SHOWN ON THE GRADING PLAN.
18) ALL FINAL ROAD GRADES WILL COMPLY WITH ROAD COMMISSION FOR OAKLAND COUNTY STANDARDS.
19) TYPICAL UNIT COVERAGE: AVERAGE HOUSE FOOTPRINT = 2,400 SF, AVERAGE DRIVEWAY = 500 SF;
    TOTAL UNIT COVERAGE = 2,900 SF
    TYPICAL UNIT COVERAGE (%) = 2,900 SF/8,624 SF = 34% (OR LESS).
20) REQUIRED PERMITS/APPROVALS:
    -WHITE LAKE TOWNSHIP - ENGINEERING PLANS APPROVAL
    -O.C.W.R.C. - SOIL EROSION PERMIT
    -O.C.W.R.C. - WATERMAIN APPROVAL
    -O.C.W.R.C. - SANITARY SEWER APPROVAL
    -M.D.E.Q. - WATERMAIN PERMIT
    -M.D.E.Q. - SANITARY SEWER PERMIT
    -M.D.E.Q. - NPDES NOTICE OF COVERAGE PERMIT
    -M.D.E.Q. - WETLANDS STORM DISCHARGE PERMIT TO OFF-SITE LAKE
    -R.C.O.C. - APPROACH & UNDERGROUND PERMITS
21) THERE ARE NO WETLANDS ON THIS SITE.
22) EACH HOME SHALL HAVE A 2 CAR GARAGE AND DRIVEWAYS WHICH WILL ACCOMMODATE THE REQUIRED OFF-STREET PARKING.
23) OFF-SITE IMPROVEMENTS SHALL BECOME PUBLIC.
24) ALL SIDEWALKS MUST COMPLY WITH ADA STANDARDS.
25) NO STREET LIGHTING IS PROPOSED. EXTERIOR LIGHTS SHALL BE INSTALLED ON INDIVIDUAL HOMES.
26) TRASH PICKUP FOR THE HOMES WILL BE CURBSIDE.
27) PARKING IS NOT ALLOWED ON ANY OF THE BOULEVARD ROAD SECTIONS. PARKING IS ALLOWED ON ONE SIDE ONLY (OPPOSITE THE FIRE HYDRANTS/WATERMAIN).
28) FIRE LANES PROVIDED ALONG ALL (4) ROADS (27' WIDE).
29) INDIVIDUAL BUILDING ADDRESSES SHALL BE 6" MINIMUM.
30) STORM SEWER & STORM WATER MANAGEMENT SYSTEM SHALL BE OWNED, OPERATED & MAINTAINED REGULARLY BY THE CONDOMINIUM ASSOCIATION.
31) SINCE ALL PROPOSED BUILDINGS WILL BE SINGLE FAMILY DETACHED HOUSING, THERE COULD BE MANY DIFFERENT TYPES & STYLES OF HOMES. REQUIREMENTS SUCH AS BUILDING MATERIALS & SIZING WILL BE PROVIDED WITHIN FUTURE CONDOMINIUM DOCUMENT.
32) THIS DEVELOPMENT IS PROPOSED TO BE RECORDED AS A CONDOMINIUM UNDER THE CURRENT RULES OF THE MICHIGAN CONDOMINIUM ACT.
33) LANDSCAPE PLAN PREPARED BY J. EPPINK PARTNERS, INC.
34) TWO PROJECT SIGNS WILL BE PROVIDED. SIGN DETAILS WILL BE SUBMITTED BY OTHERS.
35) THIS PROJECT DOES NOT LIE WITHIN THE 100 YEAR FLOOD PLAIN.
36) THERE WILL BE A 10 FT WIDE PRIVATE EASEMENT FOR PUBLIC UTILITIES GRANTED TO THE UTILITY COMPANIES. THERE WILL BE A 20 FT WIDE EASEMENT FOR SANITARY SEWER GRANTED TO WHITE LAKE TOWNSHIP AND CENTERED ON THE UTILITY AS SHOWN. THERE WILL BE A 20 FT WIDE EASEMENT FOR STORM SEWER CENTERED ON THE UTILITY AS SHOWN. THERE WILL BE A 20 FT WIDE EASEMENT FOR WATERMAIN GRANTED TO WHITE LAKE TOWNSHIP.



TYPICAL MINIMUM LOT

LEGEND

EXISTING		PROPOSED
	STORM SEWER	
	SANITARY SEWER	
	WATERMAIN	
GAS GAS	GAS MAIN	GAS GAS
E E	ELEC. TELE. CABLE	E E
OH OH	OVERHEAD WIRES	OH OH
⊘	STORM MANHOLE	●
□	CATCH BASIN	■
⊠	INLET	■
⊠	REARYARD CATCH BASIN	■
▽	END SECTION	▶
○	SANITARY MANHOLE	●
⊕	GATE VALVE AND WELL	⊕
α	HYDRANT	◀
970	CONTOURS	(970)
	MATCH ELEVATION	(M)
	TOP OF CURB	T/C
	TOP OF SIDEWALK	T/S
	TOP OF PAVEMENT	T/P
	TOP OF CONCRETE	TC
	TOP OF WALL	T/W
	BOTTOM OF WALL	B/W
	DITCH	D
	TREE PRESERVATION	

STATE OF MICHIGAN
PATRICK COLIN McWILLIAMS
LICENSED PROFESSIONAL ENGINEER
LICENSE NO. 6201031658

DATE	ISSUE
9-19-2025	PER DLZ (8-26-2025)
10-29-2025	PER ROSS MEETING (10-27-2025) & DLZ (10-15-2025)
11-12-2025	REVISED PER CLIENT/PLANNER-62' WIDE UNITS (11-7-2025)

PROPRIETOR:
PH COMMUNITIES, LLC
8255 CASCADE AVENUE, SUITE 110
COMMERCE TOWNSHIP, MICHIGAN 48382
(248) 242-6838

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5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346
PHONE (248) 625-5251 www.kiefteng.com FAX (248) 625-7110

DATE 7-2-2025	CKD. BY	DATE
DRAWN GF		
DESIGN PCM		
SECTION 29		

72 HOURS (3 WORKING DAYS) BEFORE YOU DIG CALL MISS DIG (800) 482-7171 OR 811

Overall Site Plan & Notes
"EDENDALE CROSSING" SITE CONDOMINIUM
PART OF THE SOUTHEAST 1/4 OF SECTION 29, T3N, R8E
WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

SCALE 1" = 80'
SHEET 3 OF 19
KE 2025.016

G:\2025\010 PH Homes - Bogie & Cedar Island\CAD\Edendale Crossing.dwg, 3 Overall, 11/12/2025 12:19:29 PM

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ISSUE	DATE
PER TWP LETTER (10-29-2025) & PLT (10-15-2025)	10-29-2025
REVISED PER CLIENT/PLANNER-42' WIDE UNITS	11-12-2025

PROPRIETOR:
PH COMMUNITIES, LLC
8255 CASCADE AVENUE, SUITE 110
COMMERCE TOWNSHIP, MICHIGAN 48382
(248) 242-6838

	DATE	CKD. BY
DATE	7-2-2025	
DRAWN	GF	
DESIGN	PCM	
SECTION	29	T- 3 -N, R- 8 -E.

Site/Grading Plan - Northeast
"EDENDALE CROSSING" SITE CONDOMINIUM
PART OF THE SOUTHEAST 1/4 OF SECTION 29, T3N, R8E
WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

KIEFT ENGINEERING, INC.
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PHONE (248) 625-5251 FAX (248) 625-7110
www.kiefteng.com

KIEFT ENGINEERING

STATE OF MICHIGAN
PATRICK COLIN McWILLIAMS
LICENSE NO. 6201031658
PROFESSIONAL ENGINEER

SCALE	1" = 30'
SHEET	4 OF 19
KE	2025.010

Edendale Lane

Bogie Lake Road (Variable Width)

(SEE SHEET 7)

(SEE SHEET 5)

(SEE SHEET 10)

O.C.W.R.C. 100 YEAR DETENTION BASIN
100 YEAR DESIGN PCM ELEVATION = 965.00
1' FREEBOARD ELEVATION = 966.00
BOTTOM ELEVATION = 960.00

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Item A.

72 HOURS
(3 WORKING DAYS)
BEFORE YOU DIG
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OR 811

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ISSUE	DATE
PER TWP REVIEW LETTER (10-29-2025)	10-29-2025
PER TWP REVIEW LETTER (10-29-2025) & DLZ (10-15-2025)	11-12-2025
REVISED PER CLIENT/PLANNER-42' WIDE UNITS (11-7-2025)	

PROPRIETOR:
PH COMMUNITIES, LLC
8255 CASCADE AVENUE, SUITE 110
COMMERCE TOWNSHIP, MICHIGAN 48382
(248) 242-6838

	DATE	CKD. BY
DATE	7-2-2025	
DRAWN	GF	
DESIGN	PCM	
SECTION	29	T- 3 -N, R- 8 -E,

Site/Grading Plan - Southeast
"EDENDALE CROSSING" SITE CONDOMINIUM
PART OF THE SOUTHEAST 1/4 OF SECTION 29, T3N, R8E
WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

KIEFT ENGINEERING, INC.
PROFESSIONAL ENGINEERS AND PROFESSIONAL SURVEYORS
5452 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346
PHONE (248) 625-5251 www.kiefteng.com FAX (248) 625-7110

KIEFT ENGINEERING

STATE OF MICHIGAN
PATRICK COLIN McWILLIAMS
LICENSE NO. 6201031658
PROFESSIONAL ENGINEER

SCALE	1" = 30'
SHEET	5 OF 19
KE	2025.010

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72 HOURS
(3 WORKING DAYS)
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ISSUE	DATE
SITE PLAN REVIEW	03-25-2025
PER ROAD METRIC COMMENTS	07-16-2025
PER ROAD METRIC COMMENTS (2025) & DLZ COMMENTS (2025)	09-05-2025
REVISED PER CLIENT/PLANNER-62' WIDE UNITS	11-7-2025
	11-12-2025

PROPRIETOR:
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8255 CASCADE AVENUE, SUITE 110
COMMERCE TOWNSHIP, MICHIGAN 48382
(248) 242-6838

DATE	7-2-2025
DRAWN	GF
DESIGN	PCM
SECTION	29

CKD. BY | DATE

T- 3 -N, R- 8 -E

Site/Grading Plan - Southwest

"EDENDALE CROSSING" SITE CONDOMINIUM

PART OF THE SOUTHEAST 1/4 OF SECTION 29, T3N, R8E
WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

KIEFT ENGINEERING, INC.
PROFESSIONAL ENGINEERS AND PROFESSIONAL SURVEYORS
5835Z SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346
PHONE (248) 625-5251 FAX (248) 625-7110
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KIEFT ENGINEERING

STATE OF MICHIGAN
PATRICK COLIN McWILLIAMS
LICENSE NO. 6201031658
LICENSED PROFESSIONAL ENGINEER

SCALE 1" = 30'

SHEET 6 OF 19

KE 2025.010

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72 HOURS
(3 WORKING DAYS)
BEFORE YOU DIG
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(800) 482-7171
OR 811

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ISSUE DATE	
10-28-2025	PER DOC REVIEW (10-22-2025) & DLZ (10-15-2025)
11-12-2025	PER DOC REVIEW (11-7-2025)
11-12-2025	REVISED PER CLIENT/PLANNER-42' WIDE UNITS

PROPRIETOR:
PH COMMUNITIES, LLC
8255 CASCADE AVENUE, SUITE 110
COMMERCE TOWNSHIP, MICHIGAN 48382
(248) 242-6838

	DATE	CK'D. BY
DATE	7-2-2025	
DRAWN	GF	
DESIGN	PCM	
SECTION	29	T- 3 -N, R- 8 -E,

Site/Grading Plan - Northeast

"EDENDALE CROSSING" SITE CONDOMINIUM

PART OF THE SOUTHEAST 1/4 OF SECTION 29, T3N, R8E
WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

KIEFT ENGINEERING, INC.
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PHONE (248) 625-5251 FAX (248) 625-7110
www.kieftengr.com

KIEFT ENGINEERING

STATE OF MICHIGAN
PATRICK COLIN McWILLIAMS
LICENSE NO. 62010316581
PROFESSIONAL ENGINEER

SCALE	1" = 30'
SHEET	7 OF 19
KE	2025.010

G:\2025\010 PH Homes - Bogie & Cedar Island\CAD\Edendale Crossing.dwg, 7 Site NW, 11/12/2025 12:20:15 PM

LAURA SAWCHUCK
LOT 317
12-28-303-001

AUTUMN GIBSON &
RYAN GAVIN
LOT 371
12-28-351-004

"LAKEWOOD VILLAGE NO. 9"
L. 133, P. 19, O.C.R.

MICHAEL ARQUETTE
LOT 372
12-28-351-005

BRIAN SIMMONS
LOT 373
12-28-351-006

ALEXANDER BRAJNIKOV
LOT 374
12-28-351-007

THOMAS & DONNA
WRATHELL
LOT 375
12-28-351-008

ANTHONY & GRACE
MADAFFER
LOT 376
12-28-351-009

AMY MILLS
LOT 377
12-28-351-023

"LAKEWOOD VILLAGE NO. 10"
L. 200, P. 16, O.C.R.

MAXWELL H
LOT 3
12-28-35

RICHARD & LINDA
KORNATOWSKI
12-29-476-005

EXISTING HOUSE
#1250 BOGIE LAKE ROAD

(SEE SHEET 10)

Thompson Lane

Bogie Lake Road (Variable Width)

MH-1
R 961.00
36" N 951.96
36" S 952.00

CB-1
R 962.40
36" N 952.77
36" S 952.87

CB-2
R 963.80
36" N 953.84
36" S 953.94

CB-3
R 965.00
36" N 954.74
36" S 954.84

CB-4
R 968.00
36" N 955.76
36" S 955.86

CB-5
R 970.00
36" N 956.51
36" S 956.61

CB-6
R 974.00
36" N 957.18
36" W 957.28

ES-1
36" N 950.00

196'-36" STORM SEWER OUTLET @ 1.00%

97'-36" @ 1.00%

77'-36" @ 1.00%

60'-36" @ 1.00%

92'-36" @ 1.00%

65'-36" @ 1.00%

94'-36" @ 0.61%

127'-36" STORM SEWER OUTLET @ 1.00%

RIGHT TURN LANE

NORTHBOUND LANE

CENTER TURN LANE

SOUTHBOUND LANE

150' CENTER TURN LANE TAPER

100' CENTER TURN LANE

300' CENTER TURN LANE TAPER

500' REQUIRED SIGHT DISTANCE

6' CONCRETE SIDEWALK

EX 33' R.O.W.

PROPOSED 12" F.M.

PROPOSED 12" F.M. (OPEN CUT)

8" SAN

VALVE VAULT
FG 968.00

8' x 5' CONCRETE PAD
FOR CONTROL PANEL
PUMP STATION
FG 970.00

6' x 6' CONCRETE
PAD FOR
TRANSFORMER

20' SANITARY EASEMENT

2nd OVERFLOW
MH-4
R 965.50
36" E 958.50
36" SW 960.18

OUTLET CONTROL
STANDPIPE SO-2
R 965.00, 5' DIA.
W/BARGRATE COVER

O.C.W.R.C. 100 YEAR DETENTION BASIN
100 YEAR DESIGN PCM ELEVATION = 965.00
1' FREEBOARD ELEVATION = 966.00
BOTTOM ELEVATION = 960.00

20

19

21

18

969.8 FG

969.0 FG

970.2 FG

969.5 FG

DATE	ISSUE
10-29-2025	PER RCOC MEETING (10-27-2025) & DLZ (10-15-2025)
11-12-2025	REVISED PER CLIENT/PLANNER-62' WIDE UNITS (11-7-2025)

PROPRIETOR:
PH COMMUNITIES, LLC
8255 CASCADE AVENUE, SUITE 110
COMMERCE TOWNSHIP, MICHIGAN 48382
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DATE	
DRAWN	GF
DESIGN	PCM
SECTION	29

CKD. BY | DATE

T- 3 -N. R- 8 -E.

72 HOURS (3 WORKING DAYS) BEFORE YOU DIG CALL MISS DIG (800) 482-7171 OR 811

Bogie Lake Road Entrance Plan

"EDENDALE CROSSING" SITE CONDOMINIUM
PART OF THE SOUTHEAST 1/4 OF SECTION 29, T3N, R8E
WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

SCALE 1" = 30'
SHEET 8 OF 19
KE 2025.010

G:\2025\010 PH Homes - Bogie & Cedar Island\CAD\Edendale Crossing.dwg, 8 Bogie Entrance, 11/12/2025 12:20:25 PM

Mollygrace Lane

Edendale Lane

Cedar Island Road (Variable Width)

Carla Hills Drive

Mayfair Drive

56 | 55 | 54 | 53 | 52 | 51 | 50

1 | 2 | 3

LOT 34
12-32-226-006

12-32-226-008

"CARLA HILLS NORTH NO. 1"
L. 216, P. 37, O.C.R.

CARLA HILLS PARK
12-32-227-001

EXISTING HOUSE
#6625 CEDAR ISLAND

EX GARAGE
F.F. 987.63

500' REQUIRED SIGHT DISTANCE

PROPOSED 12" WM LOOP

PROPOSED 8" CONCRETE WALK

APPROX. U/G ELECTRICAL CABLE

APPROX. 6" GAS MAIN

APPROX. 2" GAS MAIN

NOTE:
SEE SHEET 19 FOR SIDEWALK PLAN TO WHITE LAKE MIDDLE SCHOOL

DATE	ISSUE
10-29-2025	PER RCOC MEETING (10-27-2025) & DLZ (10-15-2025)
11-12-2025	REVISED PER CLIENT/PLANNER-62' WIDE UNITS (11-7-2025)

PROPRIETOR:
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DATE	CKD. BY	DATE
DRAWN GF		
DESIGN PCM		
SECTION 29	T- 3 -N. R- 8 -E.	

72 HOURS (3 WORKING DAYS) BEFORE YOU DIG CALL MISS DIG (800) 482-7171 OR 811

Cedar Island Entrance Plan

"EDENDALE CROSSING" SITE CONDOMINIUM
PART OF THE SOUTHEAST 1/4 OF SECTION 29, T3N, R8E
WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

SCALE 1" = 30'
SHEET 9 OF 19
KE 2025.010

G:\2025\010 PH Homes - Bogie & Cedar Island\CAD\Edendale Crossing.dwg, 9 Cedar Entrance, 11/12/2025 12:20:35 PM

Thompson Lake
WATER ELEVATION = 944.16

NOTE:
DITCH TO BE CONSTRUCTED WITHIN BOGIE LAKE ROAD R.O.W.

MH-1
R 961.00
36" N 951.96
36" S 952.00

ES-1
36" N 950.00

196'-36" STORM SEWER OUTLET @ 1.00%

77'-36" @ 1.00%

CB-1
R 962.40
36" N 952.77
36" S 952.87

97'-36" @ 1.00%

CB-2
R 963.80
36" N 953.84
36" S 953.94

60'-36" @ 1.00%

CB-3
R 965.00
36" N 954.74
36" S 954.84

92'-36" @ 1.00%

CB-4
R 968.00
36" N 955.76
36" S 955.86

65'-36" @ 1.00%

CB-5
R 970.00
36" N 956.51
36" S 956.61

94'-36" @ 0.61%

CB-6
R 974.00
36" N 957.18
36" W 957.28

Thompson Lane

Bogie Lake Road (Variable Width)

EX 60' R.O.W.

EX 33' R.O.W.

PROPOSED 12" F.M.

8" SAN

VALVE VAULT FG 968.00

8' x 5' CONCRETE PAD FOR CONTROL PANEL

PUMP STATION FG 970.00

6' x 6' CONCRETE PAD FOR TRANSFORMER

14' x 6' CONCRETE PAD FOR GENERATOR

EMBANKMENT HIGH, 80' LF+/-

EXISTING HOUSE #7250 BOGIE LAKE ROAD

127'-36" STORM SEWER OUTLET @ 1.00%

2nd OVERFLOW
MH-4
R 965.50
36" E 958.50
36" SW 960.18

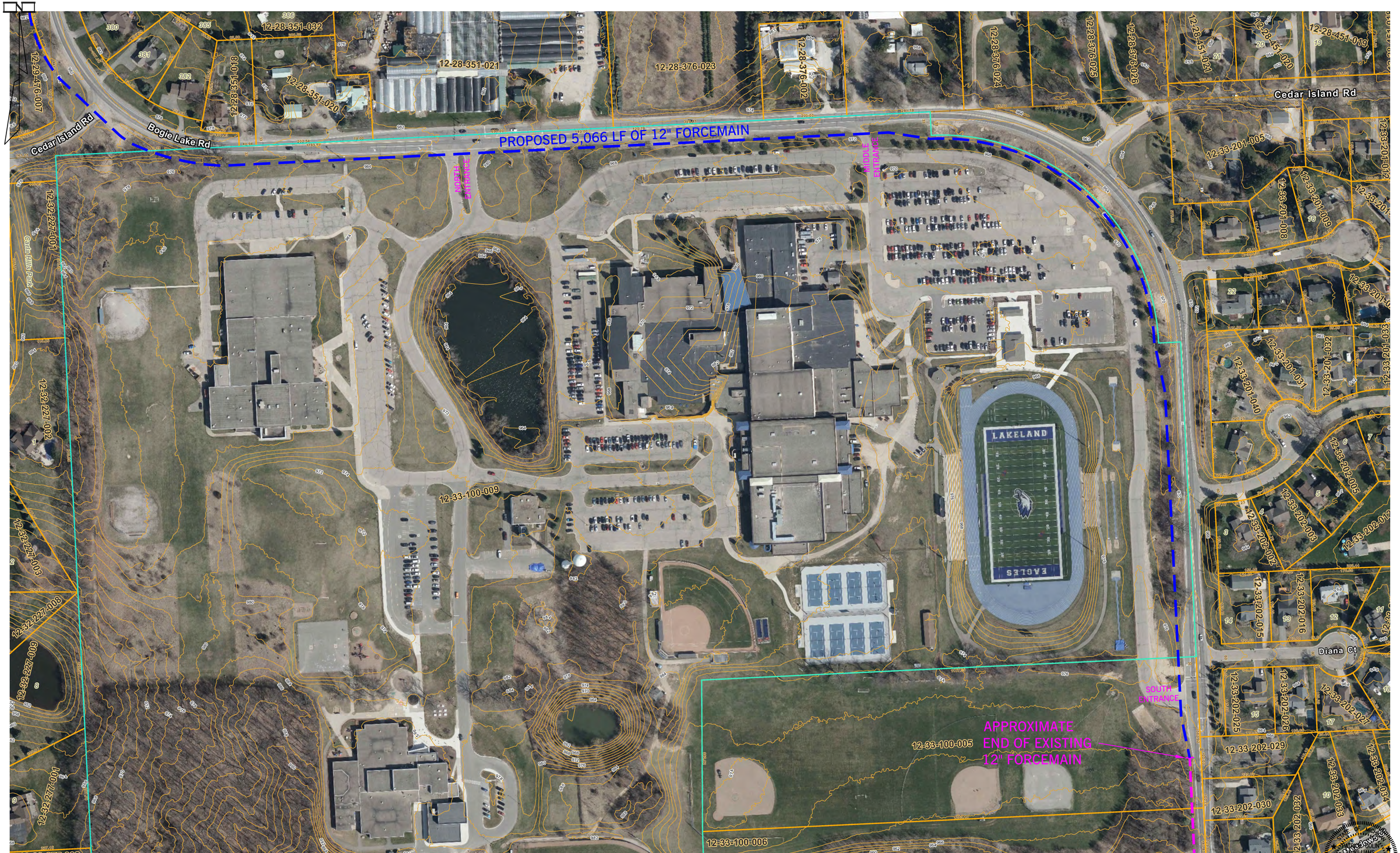
OUTLET CONTROL STANDPIPE SO-2
R 965.00, 5' DIA.
W/BARGRATE COVER

O.C.W.R.C. 100 YEAR DETENTION BASIN
100 YEAR DESIGN PCM ELEVATION = 965.00
1' FREEBOARD ELEVATION = 966.00
BOTTOM ELEVATION = 960.00

OUTLET CONTROL STANDPIPE SO-2
RIM 965.00, 5' DIA. W/BARGRATE COVER
100 YEAR OUTLET HOLES = (10) 1" DIA., @ 963.50
V_{ED} ELEVATION = 963.50
Q_{ED} OUTLET HOLES = (22) 1" DIA. @ I.E. 961.00
36" NE OUTLET PIPE = 960.50 (10 YEAR FLOW)
2' SUMP BOTTOM = 958.50

EX END 24" NE 941.87
EX END 24" N 947.98
EX END 24" S 950.12
EX END 24" SW 942.65
EX END 24" S 962.03
EX END 24" N 964.09
EX END 24" S 964.79
EX END 12" N 966.82
EX END 12" N 967.83
EX END 24" S 963.32

EX 12" WATERMAIN
EX GV R 969.10
EX HYD R# 971.61 R 969.77 S.O. 969.62
EX HYD R# 971.42 S.O. 959.61
EX HYD R# 970.42 S.O. 960.42
EX HYD R# 970.13 S.O. 960.13
EX HYD R# 969.93 S.O. 960.93
EX HYD R# 969.72 S.O. 960.72
EX HYD R# 969.52 S.O. 960.52
EX HYD R# 969.32 S.O. 960.32
EX HYD R# 969.12 S.O. 960.12
EX HYD R# 968.92 S.O. 959.92
EX HYD R# 968.72 S.O. 959.72
EX HYD R# 968.52 S.O. 959.52
EX HYD R# 968.32 S.O. 959.32
EX HYD R# 968.12 S.O. 959.12
EX HYD R# 967.92 S.O. 959.92
EX HYD R# 967.72 S.O. 959.72
EX HYD R# 967.52 S.O. 959.52
EX HYD R# 967.32 S.O. 959.32
EX HYD R# 967.12 S.O. 959.12
EX HYD R# 966.92 S.O. 958.92
EX HYD R# 966.72 S.O. 958.72
EX HYD R# 966.52 S.O. 958.52
EX HYD R# 966.32 S.O. 958.32
EX HYD R# 966.12 S.O. 958.12
EX HYD R# 965.92 S.O. 958.92
EX HYD R# 965.72 S.O. 958.72
EX HYD R# 965.52 S.O. 958.52
EX HYD R# 965.32 S.O. 958.32
EX HYD R# 965.12 S.O. 958.12
EX HYD R# 964.92 S.O. 958.92
EX HYD R# 964.72 S.O. 958.72
EX HYD R# 964.52 S.O. 958.52
EX HYD R# 964.32 S.O. 958.32
EX HYD R# 964.12 S.O. 958.12
EX HYD R#



DATE	ISSUE
9-19-2025	PER DLZ (8-26-2025)
10-29-2025	PER RCOC MEETING (10-27-2025) & DLZ (10-15-2025)

PROPRIETOR:
PH COMMUNITIES, LLC
8255 CASCADE AVENUE, SUITE 110
COMMERCE TOWNSHIP, MICHIGAN 48382
(248) 242-6838

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5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346
PHONE (248) 625-5251 www.kiefteng.com FAX (248) 625-7110

DATE	7-2-2025	
DRAWN	GF	
DESIGN	PCM	
SECTION	29	

CKD. BY | DATE

72 HOURS (3 WORKING DAYS) BEFORE YOU DIG CALL MISS DIG (800) 482-7171 OR 811

Off-Site Sanitary Forcemain Plan - Overall
"EDENDALE CROSSING" SITE CONDOMINIUM
PART OF THE SOUTHEAST 1/4 OF SECTION 29, T3N, R8E
WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

SCALE 1" = 100'
SHEET 11 OF 19
KE 2025.010

STATE OF MICHIGAN PATRICK C. WILLIAMS LICENSE NO. 6201031658 LICENSED PROFESSIONAL ENGINEER

G:\2025\010 PH Homes - Bogie & Cedar Island\CAD\Edendale Crossing.dwg, 11 PM, 11/12/2025 12:21:00 PM

"LAKEHAVEN ESTATES"
L. 203, P. 26, O.C.R.

LAKEHAVEN DRIVE

"LAKEHAVEN GLEN"
O.C.C.P. NO. 761

DIANA COURT

Bogie Lake Road (Variable Width)

(SEE SHEET 13)

PROPOSED 12" F.M. (OPEN CUT)

PROPOSED SANITARY EASEMENT

EX 12" WATERMAIN

EX 33' R.O.W.

ROAD EDGE

EX HYD
ARW 972.33
B 970.45
S.O. 969.96

FRONTIER FLAGGING

EX ASPHALT DRIVE

PROPOSED 156'-12" BORE

PROPOSED 12" F.M.

35' x 230' PERMANENT SANITARY SEWER EASEMENT

EX HYD
ARW 979.93
B 978.09

TRAFF. CTRL POLE
974.65

TRAFF. CTRL POLE
974.45

EX CB
R 977.24

SCHOOL SOUTH ENTRANCE

EXISTING 12" F.M. CONNECTOR START
EX SAN S.O.
R 971.74

EXISTING 12" SANITARY F.M.

EX 12" SANITARY

EX SAN MH
R 971.95

Benchmark 6

HURON VALLEY SCHOOLS
12-33-100-009

HURON VALLEY SCHOOLS
12-33-100-005

HURON VALLEY SCHOOLS
12-33-100-006

LEGEND

EXISTING		PROPOSED
	STORM SEWER	
	SANITARY SEWER	
	WATERMAIN	
GAS GAS GAS	GAS MAIN	GAS GAS GAS
E E	ELEC. TELE. CABLE	E E
⊘	STORM MANHOLE	◕
□	CATCH BASIN	■
⊠	INLET	◪
⊠	REARYARD CATCH BASIN	◪
▷	END SECTION	▶
○	SANITARY MANHOLE	●
⊕	GATE VALVE AND WELL	⊕
⚷	HYDRANT	⚷
970	CONTOURS	(70)
	MATCH ELEVATION	(M)
	TOP OF CURB	T/C
	TOP OF SIDEWALK	T/S
	TOP OF PAVEMENT	T/P
	TOP OF CONCRETE	TC
	TOP OF WALL	T/W
	BOTTOM OF WALL	B/W
	DITCH	D

STATE OF MICHIGAN
PATRICK COLIN McWILLIAMS
LICENSE NO. 6201031658
REGISTERED PROFESSIONAL ENGINEER

DATE	ISSUE
9-19-2025	PER DLZ (8-26-2025)
10-29-2025	PER RCOC MEETING (10-27-2025) & DLZ (10-15-2025)

PROPRIETOR:
PH COMMUNITIES, LLC
8255 CASCADE AVENUE, SUITE 110
COMMERCE TOWNSHIP, MICHIGAN 48382
(248) 242-6838

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DATE	7-2-2025	CKD. BY DATE
DRAWN	GF	
DESIGN	PCM	
SECTION	29	T- 3 -N. R- 8 -E.

72 HOURS (3 WORKING DAYS) BEFORE YOU DIG CALL MISS DIG (800) 482-7171 OR 811

Off-Site Sanitary Forcemain Plan - South Connection
"EDENDALE CROSSING" SITE CONDOMINIUM
PART OF THE SOUTHEAST 1/4 OF SECTION 29, T3N, R8E
WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

SCALE 1" = 30'
SHEET 12 OF 19
KE 2025.010

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"FOX N' HOUNDS ESTATES"
L. 140, P. 7, O.C.R.

"LAKEHAVEN ESTATES"
L. 203, P. 26, O.C.R.

FOX N HOUNDS DRIVE

LAKEHAVEN DRIVE

Bogie Lake Road (Variable Width)

ROAD EDGE

EX GW
R 969.51

BM 5

EX HYD
ARW 973.23
B 971.39

EX 53' R.O.W.

EX 33' R.O.W.

CABLE FLAGGING

FIBER FLAGGING

FRONTIER FLAGGING

FIBER OPTIC BOX
970.64

EX HYD
ARW 972.33
B 970.45
S.D. 969.96

EX 12" WATERMAIN

PROPOSED 12" F.M. (OPEN CUT)

PROPOSED 12" F.M.
(OPEN CUT)

20' SANITARY EASEMENT

PROPOSED SANITARY EASEMENT

EX ASPHALT DRIVE

(SEE SHEET 14)

(SEE SHEET 12)

HURON VALLEY SCHOOLS
12-33-100-009

HURON VAL
12-33-

LEGEND

	EXISTING	PROPOSED
STORM SEWER		
SANITARY SEWER		
WATERMAIN		
GAS MAIN	GAS GAS GAS	GAS GAS GAS
ELEC. TELE. CABLE	E E	E E
STORM MANHOLE		
CATCH BASIN		
INLET		
REARYARD CATCH BASIN		
END SECTION		
SANITARY MANHOLE		
GATE VALVE AND WELL		
HYDRANT		
CONTOURS	970	(70)
MATCH ELEVATION		(M)
TOP OF CURB		T/C
TOP OF SIDEWALK		T/S
TOP OF PAVEMENT		T/P
TOP OF CONCRETE		TC
TOP OF WALL		T/W
BOTTOM OF WALL		B/W
DITCH		D

STATE OF MICHIGAN
PATRICK COLIN McWILLIAMS
LICENSE NO. 6201031658
LICENSED PROFESSIONAL ENGINEER

DATE	ISSUE
9-19-2025	PER DLZ (8-26-2025)
10-29-2025	PER RCOC MEETING (10-27-2025) & DLZ (10-15-2025)

PROPRIETOR:
PH COMMUNITIES, LLC
8255 CASCADE AVENUE, SUITE 110
COMMERCE TOWNSHIP, MICHIGAN 48382
(248) 242-6838

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DATE	7-2-2025	CKD. BY	DATE
DRAWN	GF		
DESIGN	PCM		
SECTION	29	T- 3 -N. R- 8 -E.	

72 HOURS (3 WORKING DAYS) BEFORE YOU DIG CALL MISS DIG (800) 482-7171 OR 811

Off-Site Sanitary Forcemain Plan
"EDENDALE CROSSING" SITE CONDOMINIUM
PART OF THE SOUTHEAST 1/4 OF SECTION 29, T3N, R8E
WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

SCALE 1" = 30'
SHEET 13 OF 19
KE 2025.010

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12-28-376-022

12-28-376-023

S 1/4 Cor
Section 28
T3N, R8E

(SEE SHEET 15)

ROAD EDGE

PROPOSED 12" F.M. (OPEN CUT)

PROPOSED 90'-12" BORE

EX CB
R 967.42
FULL OF DIRT

EX 12" WATERMAIN

EX 33' R.O.W.

EX 53' R.O.W.

20' SANITARY EASEMENT

SCHOOL MIDDLE ENTRANCE

EX ASPHALT DRIVE

EX GATE

EX SIGN

EX CB
R 968.47
12" N 964.37
12" S 964.25

PP 970.4

PP 966.0

PEDESTAL 967.10

EX HYD
ARM 968.44
B 966.62

Benchmark 4

Bogie Lake Road
(Variable Width)

CEDAR ISLAND ROAD

EX ES
24" NE 960.00

EX ES
24" SW 960.04

EX HYD
ARM 967.21
B 963.36
S.O. 964.51

EX GW
R 964.75

HURON VALLEY SCHOOLS
12-33-100-009

EX 12" WATERMAIN

PROPOSED 12" F.M. (OPEN CUT)

ROAD EDGE

EX 33' R.O.W.

"FOX N' HOUNDS ESTATES"
L. 140, P. 7, O.C.R.

FOX N HOUN

(SEE SHEET 13)

TR 181 TR 182 TR 183 TR 184 TR 185 TR 187 TR 201 TR 202 TR 203 TR 204 TR 205 TR 206 TR 207 TR 208 TR 209 TR 210 TR 211 TR 212 TR 213 TR 215 TR 216 TR 217 TR 218 TR 219 TR 220

LEGEND

EXISTING		PROPOSED
GAS GAS GAS	STORM SEWER	
	SANITARY SEWER	
	WATERMAIN	
GAS GAS GAS	GAS MAIN	GAS GAS GAS
E E	ELEC. TELE. CABLE	E E
⊘	STORM MANHOLE	●
□	CATCH BASIN	■
▽	INLET	▼
⊠	REARYARD CATCH BASIN	■
⊡	END SECTION	▶
○	SANITARY MANHOLE	●
⊕	GATE VALVE AND WELL	⊕
⊕	HYDRANT	●
970	CONTOURS	(70)
	MATCH ELEVATION	(M)
	TOP OF CURB	T/C
	TOP OF SIDEWALK	T/S
	TOP OF PAVEMENT	T/P
	TOP OF CONCRETE	TC
	TOP OF WALL	T/W
	BOTTOM OF WALL	B/W
	DITCH	D

DATE	ISSUE
9-19-2025	PER DLZ (8-26-2025)
10-29-2025	PER RCOC MEETING (10-27-2025) & DLZ (10-15-2025)

PROPRIETOR:
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PHONE (248) 625-5251 www.kiefteng.com FAX (248) 625-7110

DATE 7-2-2025	CKD. BY	DATE
DRAWN GF		
DESIGN PCM		
SECTION 29	T- 3 -N. R- 8 -E.	

72 HOURS (3 WORKING DAYS) BEFORE YOU DIG CALL MISS DIG (800) 482-7171 OR 811

Off-Site Sanitary Forcemain Plan
"EDENDALE CROSSING" SITE CONDOMINIUM
PART OF THE SOUTHEAST 1/4 OF SECTION 29, T3N, R8E
WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

SCALE 1" = 30'
SHEET 14 OF 19
KE 2025.010

PATRICK COLIN McWILLIAMS LICENSE NO. 6201031658 LICENSED PROFESSIONAL ENGINEER STATE OF MICHIGAN

G:\2025\010 PH Homes - Bogie & Cedar Island\CAD\Edendale Crossing.dwg, 14 PA, 11/12/2025 12:21:15 PM

12-28-351-021

12-28-376-023

12-28-376-022

(SEE SHEET 16)

(SEE SHEET 14)

PROPOSED 200'-12" BORE

EX 12" WATERMAIN

ROAD EDGE

PROPOSED 12" F.M. (OPEN CUT)

EX 33' R.O.W.

EX HYD ARW 977.40 B 975.59

EX END 12" N 966.34

EX CB R 969.39

EX HYD ARW 972.45 B 970.62 S.O. 970.26

EX GW R 970.70

EX END 12" E 967.29

TR 170 (REMOVE)

20' SANITARY EASEMENT

EX 18" STORM

Benchmark 3

EX CB R 979.46 18" W 969.62 18" E 969.16

EX CB R 974.36

EX ES 12" W 964.64

EX 68'-12" STM @ 0.81%

EX CB R 969.05 12" W 964.09 15" S 964.49

SCHOOL NORTH ENTRANCE

EX ASPHALT DRIVE

HURON VALLEY SCHOOLS
12-33-100-009

LEGEND

EXISTING		PROPOSED
	STORM SEWER	
	SANITARY SEWER	
	WATERMAIN	
GAS GAS GAS	GAS MAIN	GAS GAS GAS
E E	ELEC. TELE. CABLE	E E
	STORM MANHOLE	
	CATCH BASIN	
	INLET	
	REARYARD CATCH BASIN	
	END SECTION	
	SANITARY MANHOLE	
	GATE VALVE AND WELL	
	HYDRANT	
970	CONTOURS	(70)
	MATCH ELEVATION	(M)
	TOP OF CURB	T/C
	TOP OF SIDEWALK	T/S
	TOP OF PAVEMENT	T/P
	TOP OF CONCRETE	TC
	TOP OF WALL	T/W
	BOTTOM OF WALL	B/W
	DITCH	D

STATE OF MICHIGAN
PATRICK COLIN McWILLIAMS
LICENSE NO. 6201031658
LICENSED PROFESSIONAL ENGINEER

DATE	ISSUE
9-19-2025	PER DLZ (8-26-2025)
10-29-2025	PER RCOC MEETING (10-27-2025) & DLZ (10-15-2025)

PROPRIETOR:
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DATE 7-2-2025	CKD. BY	DATE
DRAWN GF		
DESIGN PCM		
SECTION 29	T- 3 -N. R- 8 -E.	

72 HOURS (3 WORKING DAYS) BEFORE YOU DIG CALL MISS DIG (800) 482-7171 OR 811

Off-Site Sanitary Forcemain Plan
"EDENDALE CROSSING" SITE CONDOMINIUM
PART OF THE SOUTHEAST 1/4 OF SECTION 29, T3N, R8E
WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

SCALE 1" = 30'
SHEET 15 OF 19
KE 2025.010

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(SEE SHEET 17)

(SEE SHEET 15)

LOT 379
12-28-351-025

LOT 380
12-28-351-026

LOT 381
12-28-351-027

LOT 382
12-28-351-028

12-28-351-021

12-28-351-020

12-28-351-018

HURON VALLEY SCHOOLS
12-33-100-009

CEDAR ISLAND ROAD

Carla Hills Drive

CARLA HILLS PARK
12-32-221-001

EX. R.O.W.

EX. 33' R.O.W.

EX. 12" WATERMAIN

EX. 8" WATERMAIN

EX. 16" STORM

EX. 18" STORM

EX. 12" STORM

EX. 8" SANITARY

EX. CATV

EX. PARKING AREA

ROAD EDGE

PROPOSED 12" F.M.
(OPEN CUT)

PROPOSED SANITARY EASEMENT

PROPOSED SANITARY
FORCEMAIN EASEMENT
TO BE OBTAINED FROM -007

PROPOSED 253'-12" BORE

PROPOSED
12" WM LOOP

PROPOSED
24" S 975.30

PROPOSED 8' SAFETY PATH CONNECTION
TO HURON VALLEY SCHOOL PARKING LOT
(SEE SHEET 17)

EXISTING STRUCTURES TO BE REMOVED

EX HYD
#498 983.49
B 981.64

EX CB
#479 982.46
18" E 969.61

EX CB
#480 982.45
18" W 970.15
16" E 970.00

EX CB
#481 982.25
18" W 974.70
12" S 974.62
12" S 974.50

EX CB
#482 982.25
18" NW 974.70
12" S 974.62
12" S 974.50

EX MH
#483 982.25
18" W 974.75
12" E 974.25

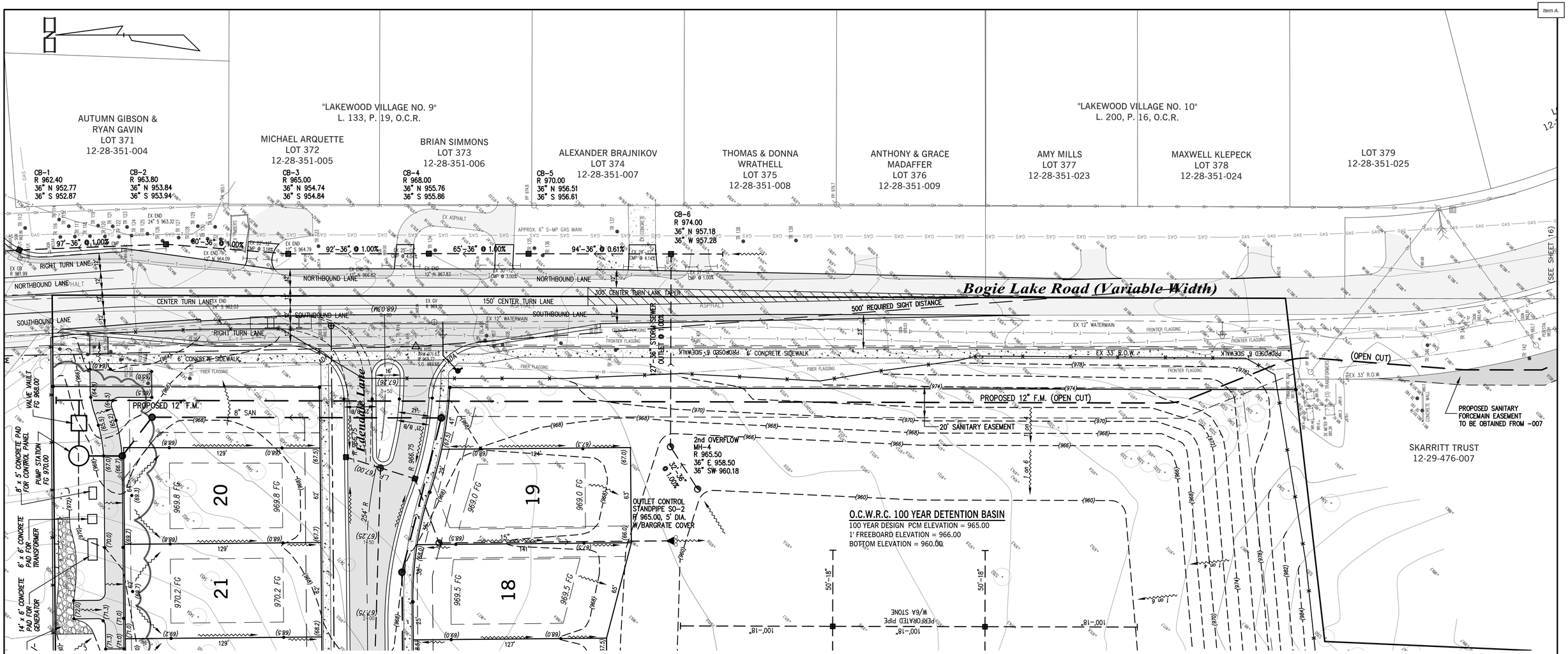
EX MH
#484 982.25
18" W 974.75
12" E 974.25

EX CB
#485 982.25
18" NW 974.70
12" S 974.62
12" S 974.50

EX CB
#486 982.25
18" NW 974.70
12" S 974.62
12" S 974.50

EX CB
#487 982.25
18" NW 974.70
12" S 974.62
12" S 974.50

EX CB



Tree List

Tag	Size (")	Spec.
101	28	OAK
102	12	ELM
103	10	ELM
104	TW 26, 24	OAK
105	10	ELM
106	10	ELM
107	10	ELM
108	28	HICKORY
109	20	ELM
110	24	ELM
111	8	BOX ELDER
112	12	BOX ELDER
113	6	APPLE
114	10	SPRUCE
115	10	SPRUCE
116	10	SPRUCE
117	10	SPRUCE
118	10	SPRUCE
119	10	SPRUCE
120	6	SPRUCE
121	10	SPRUCE
122	8	SPRUCE
123	6	SPRUCE
124	12	SPRUCE
125	10	SPRUCE
126	12	SPRUCE
127	6	SPRUCE
128	6	SPRUCE
129	16	SPRUCE
130	8	SPRUCE
131	8	SPRUCE
132	6	SPRUCE
133	16	APPLE
134	TW 20	MAPLE
135	12	SPRUCE
136	12	SPRUCE
137	38	MAPLE
138	24	MAPLE
139	24	MAPLE
140	6	MAPLE
141	28	WALNUT
142	28	TREE OF HEAVEN
143	QUAD 15, 10, 10,8	TREE OF HEAVEN
144	TRIPLE 6	TREE OF HEAVEN
145	TRIPLE 16, 10, 10	TREE OF HEAVEN
146	8	MAPLE
147	12	TREE OF HEAVEN
148	26	MULBERRY
149	26	HICKORY
150	12	MAPLE
151	12	MAPLE
152	TW 6	MAPLE
153	12	MAPLE
154	22	MAPLE
155	28	BOX ELDER
156	26	MAPLE
157	14	BOX ELDER
158	QUAD 28, 18, 12, 10	MAPLE
159	22	MAPLE
160	10	MAPLE
161	8	MAPLE
162	12	MAPLE
163	12	MAPLE
164	28	HICKORY
165	8	ELM
166	6	ELM
167	10	MAPLE
168	48	OAK
169	40	OAK
170	12	WALNUT
171	20	OAK
172	24	WALNUT
173	44	WALNUT
174	8	LOCUST
175	8	LOCUST
176	6	LOCUST
177	14	PINE
178	14	PINE
179	18	PINE
180	18	PINE
181	14	PINE
182	16	PINE
183	16	PINE
184	16	PINE
185	6	LOCUST
186	6	LOCUST
187	6	LOCUST
201	16	PINE
202	14	PINE
203	12	PINE
204	14	PINE
205	16	PINE
206	16	PINE
207	14	PINE
208	14	PINE
209	12	PINE
210	12	PINE
211	14	PINE
212	18	PINE
213	6	ELM
214	6	ELM
215	12	PINE
216	60	ELM
217	12	PINE
218	14	PINE
219	16	PINE
220	18	PINE
221	14	PINE
222	10	JUNIPER
223	16	PINE
224	10	JUNIPER
225	36	BOX ELDER
226	18	PINE
227	8	JUNIPER
228	8	JUNIPER
229	12	PINE
230	18	PINE
231	8	JUNIPER
232	16	MAPLE
233	TW 26, 24	OAK
234	30	HICKORY
235	10	OAK
236	32	OAK
237	30	OAK
238	14	OAK
239	42	OAK
240	8	HICKORY
241	26	ELM
242	12	OAK
243	38	OAK
244	30	OAK
245	10	POPLAR
246	6	WILLOW
247	TRIPLE 24,12,10	LOCUST
248	40	OAK
249	TRIPLE 18,16,12	OAK
250	10	MAPLE
251	TRIPLE 22,20,18	MAPLE
252	TW 12	HICKORY
253	8	BOX ELDER
254	16	BOX ELDER
255	8	ELM
256	28	WALNUT
257	TWIN 6	ELM
258	10	ELM
259	12	ELM
260	14	ELM
261	12	ELM
262	46	OAK
263	20	WALNUT
264	8	MAPLE
265	10	OAK
266	TRIPLE 14	MAPLE
267	10	MAPLE
268	14	MAPLE
269	10	OAK
270	14	ELM
271	14	OAK
272	12	OAK
273	8	OAK
274	8	OAK
275	16	WALNUT
276	10	MAPLE
277	12	WALNUT
278	24	WALNUT
279	8	LOCUST
280	TW 12	WALNUT
281	10	WALNUT
282	6	ELM
283	TW 6	LOCUST
284	8	WALNUT
285	24	WALNUT
286	14	LOCUST
345	TW 12, 20	BOX ELDER
346	26	BOX ELDER
401	12	TREE OF HEAVEN
402	TW 18, 20	CHERRY
403	38	OAK
406	40	OAK
407	10	JUNIPER
408	10	HICKORY
413	12	CHERRY
414	8	CHERRY
416	44	OAK
438	10	CHERRY
439	40	OAK
440	20	CHERRY
794	10	WALNUT
795	14	LOCUST
796	6	WALNUT
797	TW 8, 10	LOCUST
798	6	LOCUST
799	TW 6, 12	LOCUST
800	12	LOCUST
894	12	LOCUST
895	TW 8, 10	LOCUST
896	12	WALNUT
897	TW 12, 18	LOCUST
898	16	LOCUST
899	10	WALNUT
900	12	WALNUT
901	6	LOCUST
602	20	WALNUT
603	10	CHERRY
604	TW 30, 16	OAK
551	14	HICKORY
552	34	OAK
553	30	OAK
554	48	OAK
555	12	CHERRY
606	18	CHERRY
607	16	HICKORY
608	32	OAK
609	32	OAK
610	10	CHERRY
611	30	WALNUT
612	TW 18, 16	CHERRY
613	14	BOX ELDER
614	10	ELM
615	10	CHERRY
616	12	OAK
617	18	CHERRY
618	10	SASSAFRAS
619	26	OAK
620	8	CHERRY
621	10	ELM
622	20	POPLAR
623	TW 16, 16	OAK
624	24	CHERRY
625	12	OAK
626	42	OAK
627	20	OAK
628	30	WALNUT

Tree List (By Others)

NUMBER	SIZE	TYPE
5317	10	CHERRY
5318	10	BLACK CHERRY
5319	18	BLACK OAK
5320	18	BLACK OAK
5321	8	BUTTERNUT
5322	15,13	CHERRY
5323	10	BLACK OAK
5324	22,18,14	BLACK CHERRY
5325	18	BLACK CHERRY
5326	15,12,7	BLACK CHERRY
5327	18,16,10	BLACK CHERRY
5328	24,18	BLACK CHERRY
5329	8	BLACK OAK
5330	6	BOXELDER
5331	8	ELM
5332	8	ELM
5333	16	BLACK OAK
5334	10,8	ELM
5335	14	COTTONWOOD
5336	16	ASH
5337	9	BLACK OAK
5338	9	BLACK OAK
5339	9	ELM
5340	13	BLACK OAK
5341	13	BLACK OAK
5342	13	BLACK OAK
5343	16	PIN OAK
5344	16	BLACK CHERRY
5345	12,12	BOXELDER
5346	18	BOXELDER
5347	9	BOXELDER
5348	12	BLACK OAK
5349	13	PIN OAK
5350	11,9,5	BLACK CHERRY
5351	8	BLACK ASH, ASHEN
5352	8	BOXELDER
5353	24	BLACK CHERRY
5354	9,6	BLACK MULBERRY
5355	30,24	BLACK CHERRY
5356	30	PIN OAK
5357	12,12,5	BLACK CHERRY
5358	14	BLACK CHERRY
5359	13	BLACK CHERRY
5360	16,14,9	BLACK CHERRY
5361	13,13	BLACK CHERRY
5362	18,12	BLACK CHERRY
5363	18	BLACK CHERRY
5364	18,8	BLACK CHERRY
5365	8	BLACK CHERRY
5366	12	PIN OAK
5367	17,9	PIN OAK
5368	8	BOXELDER
5369	10	BLACK CHERRY
5370	22	BLACK CHERRY
5371	9	PIN OAK
5372	10	PIN OAK
5373	9	PIN OAK
5374	22,10,10	BLACK CHERRY
5375	9	BOXELDER
5376	9	BLACK CHERRY
5377	8	BLACK CHERRY
5378	9	BOXELDER
5379	10	BLACK CHERRY
5380	8	BOXELDER
5381	9	BLACK CHERRY
5382	9	BLACK CHERRY
5383	8	BLACK CHERRY
5384	20	BLACK CHERRY
5385	10	BLACK CHERRY
5386	13,12	BLACK CHERRY
5387	10	BLACK CHERRY
5388	8	PIN OAK
5389	18	BLACK CHERRY
5390	12,11,12,8	BLACK CHERRY
5391	10	BLACK CHERRY
5392	10	BLACK CHERRY
5393	10	PIN OAK
5394	36	BLACK CHERRY
5395	10	BLACK MULBERRY
5396	16	BLACK CHERRY

NUMBER	SIZE	TYPE
5397	24	BLACK CHERRY
5398	24	BLACK CHERRY
5399	18,8,9	BLACK CHERRY
5400	10	BLACK OAK
5401	9	BUTTERNUT
5402	15,15	BLACK CHERRY
5403	30	PIN OAK
5404	8	PIN OAK
5405	30	PIN OAK
5406	28	PIN OAK
5407	8	EASTERN RED CEDAR
5408	8	SHAGBARK HICKORY
5409	13	ELM
5410	13	PIN OAK
5411	8	PIN OAK
5412	10	COTTONWOOD
5413	11	BLACK CHERRY
5414	10	BLACK CHERRY
5415	11	BLACK CHERRY
5416	36	PIN OAK
5417	11	COTTONWOOD
5418	8	COTTONWOOD
5419	8	COTTONWOOD
5420	11	COTTONWOOD
5421	15	COTTONWOOD
5422	9	AMERICAN ELM
5423	9	COTTONWOOD
5424	9	COTTONWOOD
5425	8	BLACK CHERRY
5426	9	COTTONWOOD
5427	10	COTTONWOOD
5428	12	COTTONWOOD
5429	10	COTTONWOOD
5430	8	PIN OAK
5431	9	COTTONWOOD
5432	10	BLACK CHERRY
5433	10	BLACK CHERRY
5434	12	COTTONWOOD
5435	11	AMERICAN ELM
5436	11	PIN OAK
5437	8,7,5	PIN OAK
5438	9	BLACK CHERRY
5439	30	PIN OAK
5440	8	BLACK CHERRY
5441	9	PIN OAK
5442	9	PIN OAK
5443	32	PIN OAK
5444	8,4	PIN OAK
5445	11,5	PIN OAK
5446	8,5	PIN OAK
5447	8	PIN OAK
5448	8	WHITE PINE
5449	13	PIN OAK
5450	10	PIN OAK
5451	9	PIN OAK
5452	8	PIN OAK
5453	8	PIN OAK
5454	12	PIN OAK
5455	9	PIN OAK
5456	11	WHITE PINE
5457	15	PIN OAK
5458	12	PIN OAK
5459	10	PIN OAK
5460	9	PIN OAK
5461	8,6,4	BLACK MULBERRY
5462	9	PIN OAK
5463	12	PIN OAK
5464	9	PIN OAK
5465	9	PIN OAK
5466	10	PIN OAK
5467	10	PIN OAK
5468	10	WHITE PINE
5469	9	PIN OAK
5470	9	SCOTCH PINE
5471	9	PIN OAK
5472	9	SCOTCH PINE
5473	10	SCOTCH PINE
5474	9	PIN OAK
5475	9	PIN OAK
5476	2	PIN OAK

NUMBER	SIZE	TYPE
5477	9	PIN OAK
5478	8	PIN OAK
5479	8	PIN OAK
5480	14	PIN OAK
5481	8	PIN OAK
5482	8	BOXELDER
5483	12,10	BOXELDER
5484	10	BOXELDER
5485	6,6	BOXELDER
5486	15,9	BOXELDER
5487	8	BOXELDER
5488	8,6	BOXELDER
5489	8	BLACK MULBERRY
5491	18,12	PIN OAK
5492	9	BLACK CHERRY
5493	10	PIN OAK
5494	8	PIN OAK
5495	9	PIN OAK
5496	8,6,5	BLACK CHERRY
5497	9	BLACK CHERRY
5498	9	PIN OAK
5499	8	PIN OAK
5500	8,4	POPLAR
5501	8,4	POPLAR
5502	8	POPLAR
5503	8	BLACK CHERRY
5504	8,8	BLACK CHERRY
5505	12	BLACK CHERRY
5506	10	PIN OAK
5507	9	PIN OAK
5508	8	PIN OAK
5509	10	PIN OAK
5510	10	BLACK CHERRY
5511	9	PIN OAK
5512	11	PIN OAK
5513	11	POPLAR
5514	12	POPLAR
5515	9	PIN OAK
5516	9	PIN OAK
5517	9	PIN OAK
5518	10	PIN OAK
5519	9	BLACK CHERRY
5520	9	BLACK CHERRY
5521	9,4	BOXELDER
5522	9	BLACK CHERRY
5523	8	PIN OAK
5524	10,3,3	BLACK MULBERRY
5525	18,18,12	PIN OAK
5526	10	PIN OAK
5527	24	BLACK CHERRY
5528	8	BLACK CHERRY
5529	27,27,22	BLACK CHERRY
5530	17,6	AMERICAN ELM
5531	12	BLACK CHERRY
5532	18	PIN OAK
5533	8	PIN OAK
5534	12	ASPEN
5535	10	ASPEN
5536	11	ASPEN
5537	12,12	BLACK CHERRY
5538	8,8	BLACK CHERRY
5539	15	BLACK CHERRY
5540	20	BLACK CHERRY
5541	8	BLACK CHERRY
5542	13	BLACK CHERRY
5543	9	AMERICAN ELM
5544	24,20,16,12	PIN OAK
5545	11,9	PIN OAK
5546	11,9	PIN OAK
5547	10	PIN OAK
5548	9	PIN OAK
5549	9	POPLAR
5550	10	PIN OAK
5551	9	HORSE CHESTNUT
5552	24	WHITE ASH
5553	26	WHITE OAK
5554	48	WHITE OAK

EXISTING

STORM SEWER
SANITARY SEWER
WATERMAIN
GAS MAIN
ELEC. TELE. CABLE
STORM MANHOLE
CATCH BASIN
INLET
REARYARD CATCH BASIN
END SECTION
SANITARY MANHOLE
GATE VALVE AND WELL
HYDRANT
970 CONTOURS
MATCH ELEVATION
TOP OF CURB
TOP OF SIDEWALK
TOP OF PAVEMENT
TOP OF CONCRETE
TOP OF WALL
BOTTOM OF WALL
DITCH

LEGEND

PROPOSED

STORM SEWER
SANITARY SEWER
WATERMAIN
GAS MAIN
ELEC. TELE. CABLE
STORM MANHOLE
CATCH BASIN
INLET
REARYARD CATCH BASIN
END SECTION
SANITARY MANHOLE
GATE VALVE AND WELL
HYDRANT
(70) CONTOURS
(M) MATCH ELEVATION
T/C TOP OF CURB
T/S TOP OF SIDEWALK
T/P TOP OF PAVEMENT
TC TOP OF CONCRETE
T/W TOP OF WALL
B/W BOTTOM OF WALL
D DITCH

STATE OF MICHIGAN
PATRICK COLIN McWILLIAMS
LICENSE NO. 6201031658
PROFESSIONAL ENGINEER

DATE	ISSUE
9-19-2025	PER DLZ (8-26-2025)
10-29-2025	PER ROCC MEETING (10-27-2025) & DLZ (10-15-2025)
11-12-2025	REVISED PER CLIENT/PLANNER-62' WIDE UNITS (11-7-2025)

PROPRIETOR:
PH COMMUNITIES, LLC
8255 CASCADE AVENUE, SUITE 110
COMMERCE TOWNSHIP, MICHIGAN 48382
(248) 242-6838

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PROFESSIONAL ENGINEERS AND PROFESSIONAL SURVEYORS
5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346
PHONE (248) 625-5251 www.kiefteng.com FAX (248) 625-7110

DATE	7-2-2025	CKD. BY	DATE
DRAWN	GF		
DESIGN	PCM		
SECTION	29	T- 3 -N. R- 8 -E.	

72 HOURS (3 WORKING DAYS) BEFORE YOU DIG CALL MISS DIG (800) 482-7171 OR 811

Off-Site Sanitary Forcemain Plan - North Pump Station & Tree Chart
"EDENDALE CROSSING" SITE CONDOMINIUM
PART OF THE SOUTHEAST 1/4 OF SECTION 29, T3N, R8E
WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

SCALE 1" = 30'
SHEET 17 OF 19
KE 2025.010

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100 YEAR DETENTION BASIN CALCULATION (I.E. WITH OUTLET)

TOTAL CONTRIBUTING AREA — A = 45.47

HYDROLOGIC SOIL GROUP: B

RUNOFF COEFFICIENT
C = 0.95 (15.79) + 0.30 (27.68) + 1.00 (2) = 45.47
C = 0.56

		LENGTH		% SLOPE		
SHEET	K = 0.48	L= 230 FT	S= 1.5	V = KS$^{1/2}$ =	0.59	FT/S
SWALE	K = 1.20	L= 180 FT	S= 1.3	V = KS$^{1/2}$ =	1.37	FT/S
DITCH	K = 2.10	L= 300 FT	S= 1.0	V = KS$^{1/2}$ =	2.10	FT/S
PIPES	Longest Run	L= 2400		V =	3	FT/S

T_T = L = 0.00 HR = 0.00 MIN
3,600 V = 0.00 HR = 0.00 MIN
0.00 HR = 0.00 MIN
HR = MIN
$T_C = \Sigma T_T$ = 20.0 MIN

$I_{100} = \frac{83.3}{(T_C + 9.17)^{0.81}}$ = 5.42 IN/HR

CHANNEL PROTECTION VOLUME CONTROL: RECHARGE
V_{CPVC} = 4,719 CA = 119,412 CF
CAN BE SUBTRACTED FROM V_{100D} IF INFILTRATED

SOILS INFILTRATION RATE FROM BORINGS = 5.00 IN/HR
ABOVE 0.5 IN/HR SUPPLEMENTAL MEASURES NOT REQUIRED
BETWEEN 0.24 IN/HR & 0.5 IN/HR, SUPPLEMENTAL MEASURES REQUIRED
BELOW 0.24 IN/HR, INFILTRATION IMPRACTICAL & WAIVED

EXTENDED DETENTION
V_{ED} = 6,897 CA = 174,525 CF

WATER QUALITY - REMOVAL OF TSS (80 MG/L OR 80% TSS REDUCTION)

MECHANICAL SEPARATOR
$I_1 = \frac{30.2}{(T_C + 9.17)^{0.81}}$ = 1.97 IN/HR

Q_{WQ} = CI_1A = 49.73 CFS

SEDIMENT FOREBAY — N/A
V_F = 0.15V_{WQ} = 545 CA = CF

DETENTION & FLOOD CONTROL

Q_{VRR} = 1.1055-0.206ln(A) = 0.319 CFS/AC

Q_{100P} = Q_{VRR}A = 14.513 CFS

V_{100R} = 18,985 CA = 480,406 CF

Q_{100N} = CI_{100}A = 137.17 IN/HR

R = 0.206 - 0.15ln(Q_{100P}/Q_{100N}) = 0.543

100-YEAR STORAGE VOLUME
V_{100D} = V_{100R}R = 260,820 CF = 260,820 CF PER CPVC

WAS VOLUME CONTORL MET FOR CPVC? Y or N: N

V_{100D} OR V_{ED} CONTROL? V100D 260,820 CF REQ'D

$Q_{ED} = \frac{V_{ED}}{172{,}800}$ = 1.01 CFS

48 HOURS FOR RATE CONTROL

ORIFICE FORMULA
Q_A = 0.62 $(A_O)(2gH^{1/2}$
A_O = AREA ORIFICE PIPE
g = 32.2 FT/SEC^2
H = DEPTH OF BASIN ABOVE CENTERLINE OF OUTLET PIPE

FOREBAY — N/A
V_F = RIM = INVERT =
H = 0.00 FT
EXTENDED DETENTION OUTLET
$A_O = \frac{Q_{ED}}{0.62\ (2gH)^{1/2}}$ = SF = 0.000 IN^2

$A_{1'} = \frac{\pi D^2}{4}$ = 0.785 IN^2

$A_O/A_{1'}$ = 0.00 → USE 0 1" HOLES EQ. SPACED AROUND STANDPIPE BOTTOM

DETENTION BASIN
EXTENDED DETENTION OUTLET
V_{ED} = HOLES = 963.50 INVERT = 961.00
H = 2.50 FT
$A_O = \frac{Q_{ED}}{0.62\ (2gH)^{1/2}}$ = 0.13 SF = 18.48724 IN^2

D_O = DIAMETER OF ORIFICE
$D_O = \sqrt{\frac{4A_O}{\pi}}$ = 0.40 FT = 4.85 INCH

$A_{1'} = \frac{\pi D^2}{4}$ = 0.785398 IN^2

$A_O/A_{1'}$ = 23.54 → USE 24 1" HOLES EQ. SPACED AROUND STANDPIPE BOTTOM = 961.00

100-YEAR ALLOWABLE OUTLET
V_{100D} = RIM = 965.00 V_{ED} = = 963.50
H = 1.50 FT
$A_O = \frac{Q_{100P}}{0.62\ (2gH)^{1/2}}$ = 0.05 SF = 7.543 IN^2

$A_{1'} = \frac{\pi D^2}{4}$ = 0.785 IN^2

$A_O/A_{1'}$ = 9.60 → USE 10 1" HOLES EQ. SPACED AROUND V_{ED} ELEVATION = 963.50

DATE	ISSUE
9-19-2025	PER DLZ (8-26-2025)
10-29-2025	PER RCOC MEETING (10-27-2025) & DLZ (10-15-2025)

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"C" CALCULATION

TOTAL SITE AREA = 45.47 ACRES

PAVEMENT AREAS:

ROADS: = 157,000 SF

SIDEWALKS: = 78,923 SF

FUTURE DRIVEWAYS: SAY (800 SF) x (125 DRIVES) = 100,000 SF

TOTAL PAVEMENT AREA = 335,923 SF = 7.72 ACRES @ C = 0.95

ROOF AREAS:
ASSUME (2,800 SF) x (125 HOMES) = 350,000 SF = 8.04 ACRES @ C = 0.95

DETENTION BASIN AREA: 2.00 ACRES @ C = 1.00 (AVERAGE)

GREENBELT AREAS: 27.68 ACRES @ C = 0.20

$$\text{"C"} = \left(\frac{7.72\ \text{ACRES}}{45.47\ \text{AC}} \times 0.95\right) + \left(\frac{8.04\ \text{ACRES}}{45.47\ \text{AC}} \times 0.95\right) + \left(\frac{27.71\ \text{ACRES}}{45.47\ \text{AC}} \times 0.20\right) + \left(\frac{2.00\ \text{ACRES}}{45.47\ \text{AC}} \times 1.00\right) = 0.495 = \underline{0.50}$$

VOLUME PROVIDED:
A_1 = @ 961.00 = 55,000 SF
A_2 = @ 965.00 = 84,200 SF
$V = \frac{H}{3}(A_1 + A_2 + \sqrt{A_1 \times A_2}) = 276{,}334$ CF, OK

DETENTION BASIN

EXISTING WATER ELEVATION = NONE
100 YEAR DESIGN HIGH WATER ELEVATION = 965.00
1' FREEBOARD ELEVATION = 966.00
STORAGE REQUIRED = 260,820 CF
STORAGE PROVIDED = 276,334 CF
SO-2 STANDPIPE RIM = 963.50
OVERFLOW MANHOLE RIM = 965.00
LOWEST EMERGENCY OVERFLOW CATCH BASIN ON N. SIDE IN ENTRY ROAD (OFF BOGIE LAKE ROAD) = 966.75
BOTTOM = 960.00

APPROXIMATE DETENTION BASIN 10 YEAR OUTFLOW CALCULATION

Q = ACI; A = 45.47 ACRES; C = 0.50; $I = \frac{175}{T+25}$; T = 30 MINUTES+/-.

$I = \frac{175}{30+25} = 3.18$; Q = (45.47)(0.50)(3.18) = 72.30 CFS

USE 36" OUTLET PIPE @ 1.00%; Q = 66.60 CFS; V = 9.42 FPS

NOTE: ESTIMATED TIME BASED ON THE LONGEST STORM SEWER RUN ≈ 2,400 LF
THUS, 2,400 LF ÷ 3 FPS (ASSUMED) = 800 SECONDS = 13.33 MINUTES
USE 10 MINUTES TO BE CONSERVATIVE.
20 MINUTES (INITIAL T_C) + 10 MINUTES = 30 MINUTES

Northwest Area Storm Run-off Calculation Comparison

"EXISTING CONDITIONS"
PRESENTLY 4.80 ACRES FLOWS OFF-SITE TO THE NORTHWEST.
EXISTING C = 0.30
FOR A 10 YEAR STORM Q_{10} = ACI
A = 4.80 ACRES
C = 0.30
$I = \frac{175}{T+25}$; T = 20 MINUTES; $I = \frac{175}{20+25} = 3.89$

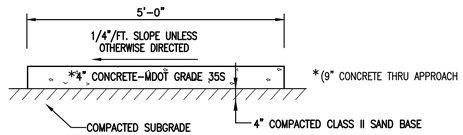
Q_{10} = (4.80)(0.30)(3.89) = 5.60 CFS EXISTING

PROPOSED "C" CALCULATION
(13 HOMES)(REAR ROOF=1,600 SF) = 20,800 SF = 0.48 ACRES @ C = 0.95
REMAINING 2.52 ACRES @ C = 0.30

$$\text{"C"} = \left(\frac{0.48\ \text{ACRES}}{3.00\ \text{AC}} \times 0.95\right) + \left(\frac{2.52\ \text{ACRES}}{3.00\ \text{AC}} \times 0.30\right) = 0.41$$

A = 3.00 ACRES
C = 0.41
I = 3.89
Q_{10} = (3.00)(0.41)(3.89) = 4.79 CFS PROPOSED

THUS, THERE IS LESS PROPOSED STORM WATER RUN-OFF THAT WILL BE FLOWING TO THE LEACH BASIN IN THE NORTHWEST AREA THEN THE EXISTING STORM WATER RUN-OFF FOR A TEN YEAR STORM.



5' WD. 4" THICK CONCRETE SIDEWALK
(ONSITE)

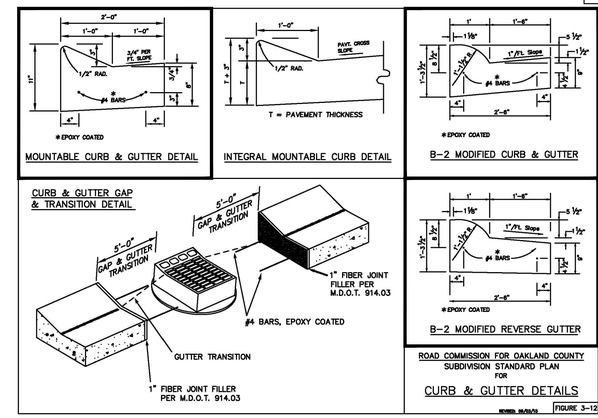
Storm Water Facilities Maintenance Plan

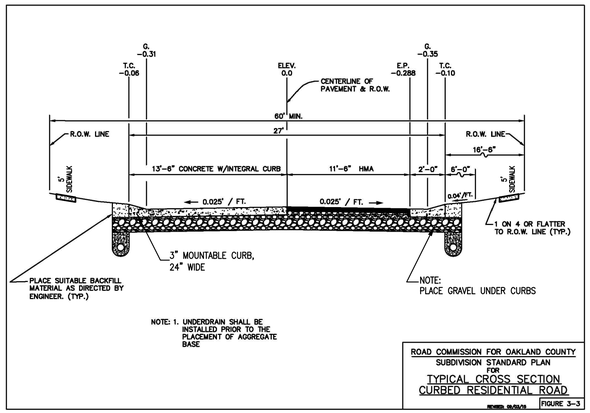
The "Edendale Crossing" Homeowners Association shall be responsible for the maintenance of all the storm water facilities. (Note: The developer is responsible until the HOA exists).

These facilities include the following:
- *Detention Basin*
- *Pretreatment Structure Manholes*
- *Manholes, Rear Yard Catch Basins, Leach Basins, End Sections & connecting pipe work*
- *Rear yard swales (within easements)*

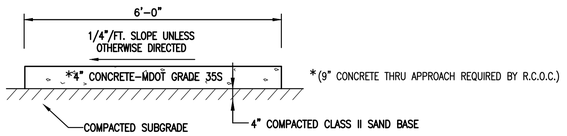
The HOA shall hired a qualified contractor to do the following Maintenance Schedule (including report kept on record):

1. *The (2) Pretreatment Structures shall be inspected by a qualified contractor on a semi-annual basis (twice/year) and necessary action taken to clean out the structures in accordance with the manufacturers guidelines.*
2. *The Detention Basin shall be inspected on any annual basis by a qualified contractor and/or civil engineer to insure it is functioning as designed.*
3. *The storm structures & swales shall be inspected on a bi-annual basis (every two years). This is an "above ground" visual inspection to determine if any structures are "failing", (i.e. ground has sank around structure, etc.).*

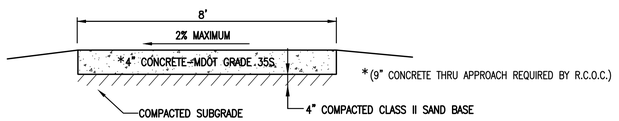




TYPICAL ROAD SECTION "A-A"
(SEE RCOC DETAIL SHEET 22 OF 25)

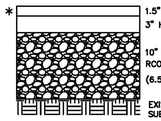


6' WD. 4" THICK CONCRETE SIDEWALK
(BOGIE LAKE ROAD & R.O.W.)

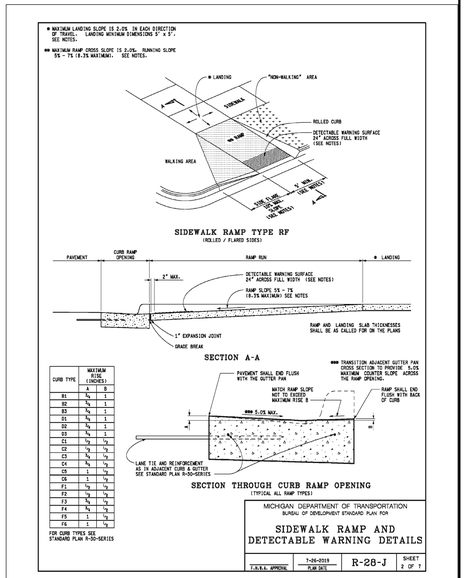


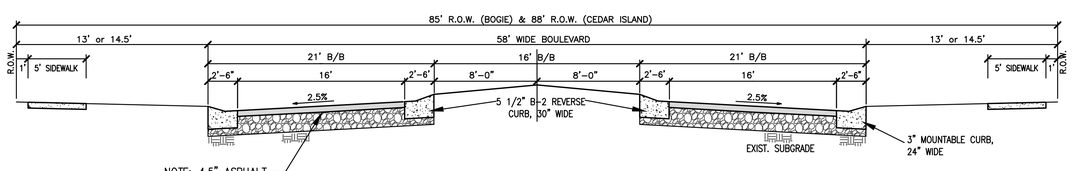
8' WD, 4" THICK CONCRETE SIDEWALK
CEDAR ISLAND ROAD R.O.W.

HMA



SS-1H @ 0.10/GAL/SYD BETWEEN LIFTS COMMERCIAL A.D.T. COULD WARRANT A DIFFERENT TYPE HMA MIXTURE





BOULEVARD ROAD SECTION "B"-"B"

TOTAL SITE

RESIDENTIAL UNITS = 123 REU/UNIT = 123 REU'S

OVERALL SANITARY DESIGN

"AVERAGE FLOW"
123 REU'S @ 2.70 PERSONS/REU = 332.1 PERSONS
332.1 PERSONS x 100 GPCD = 33,210 GPD = 0.03321 MGPD
x 1.55 (conversion)
Q = 0.0515 CFS

"PEAK FLOW"
123 REU'S @ 2.70 PERSONS/REU = 332.1 PERSONS/1000 = 0.3321 = P

$Q = 100 \times (18 + \sqrt{P})/(4 + \sqrt{P}) = 405.93$ GPCD

332 PERSONS x 405.93 GPCD = 134,769 GPD = 0.13477 MGPD
x 1.55 (conversion)
Q = REQUIRED = 0.2089 CFS

NOTE: AN 8" TRUSS PIPE @ 0.40% CAN CARRY 0.765 CFS @ 2.19 FPS.
A 10" TRUSS PIPE @ 0.30% CAN CARRY 1.194 CFS @ 2.19 FPS.

STATE OF MICHIGAN · PATRICK COLIN McWILLIAMS · LICENSE NO. 6201031658 · LICENSED PROFESSIONAL ENGINEER

PROPRIETOR:
PH COMMUNITIES, LLC
8255 CASCADE AVENUE, SUITE 110
COMMERCE TOWNSHIP, MICHIGAN 48382
(248) 242-6838

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KIEFT ENGINEERING, INC.
PROFESSIONAL ENGINEERS AND PROFESSIONAL SURVEYORS
5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346
PHONE (248) 625-5251 www.kiefteng.com FAX (248) 625-7110

DATE	7-2-2025	CKD. BY	DATE
DRAWN	GF		
DESIGN	PCM		
SECTION	29	T- 3 -N. R- 8 -E.	

72 HOURS (3 WORKING DAYS) BEFORE YOU DIG CALL MISS DIG (800) 482-7171 OR 811

Detention Basin Calculations & Details
"EDENDALE CROSSING" SITE CONDOMINIUM
PART OF THE SOUTHEAST 1/4 OF SECTION 29, T3N, R8E
WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

SCALE N/A
SHEET 18 OF 19
KE 2025.010

Edendale Lane

Cedar Island Road (Variable Width)

Carla Hills Drive

PROPOSED 60' R.O.W.

EX. 33' R.O.W.

EX R.O.W.

PROPOSED SCHOOL CROSSING & SPEED LIMITS SIGN–35 MPH PER R.C.O.C.

PROPOSED PEDESTRIAN SCHOOL CROSSING

500' REQUIRED SIGHT DISTANCE

P.P. (NO WIRES) (REMOVE)

PROPOSED 12" WM LOOP

12" WM

8" SAN

8" WM

PROPOSED 8' SAFETY PATH CONNECTION TO HURON VALLEY SCHOOL PARKING LOT

PROPOSED END 24" S 975.30

EX END 24" N 976.09

EX 12" WATERMAIN

EX 8" WATERMAIN

EX 10" CIPP LINER

EX 18" STORM

EX 12" R.O.W.

EX 33' R.O.W.

EX PARKING AREA

EX PARKING AREA

EX GARAGE F.F. 987.63

EXISTING HOUSE #6625 CEDAR ISLAND

LOT 381
12-28-351-027

LOT 382
12-28-351-028

12-28-351-018

"CARLA HILLS NORTH NO. 1"
L. 216, P. 37, O.C.R.

LOT 32
12-32-226-001

CARLA HILLS PARK
12-32-227-001

HURON VALLEY SCHOOLS
12-33-100-009

DATE	ISSUE
9-19-2025	PER DLZ (8-26-2025)
10-29-2025	PER RCOC MEETING (10-27-2025) & DLZ (10-15-2025)
11-12-2025	REVISED PER CLIENT/PLANNER-62' WIDE UNITS (11-7-2025)

PROPRIETOR:
PH COMMUNITIES, LLC
8255 CASCADE AVENUE, SUITE 110
COMMERCE TOWNSHIP, MICHIGAN 48382
(248) 242-6838

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5852 SOUTH MAIN STREET, SUITE 1, CLARKSTON, MICHIGAN 48346
PHONE (248) 625-5251 www.kieftenq.com FAX (248) 625-7110

DATE	CKD. BY	DATE
DRAWN GF		
DESIGN PCM		
SECTION 29	T- 3 -N. R- 8 -E.	

72 HOURS (3 WORKING DAYS) BEFORE YOU DIG CALL MISS DIG (800) 482-7171 OR 811

Cedar Island & White Lake Middle School Sidewalk Plan
"EDENDALE CROSSING" SITE CONDOMINIUM
PART OF THE SOUTHEAST 1/4 OF SECTION 29, T3N, R8E
WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

SCALE 1" = 30'
SHEET 19 OF 19
KE 2025.010

G:\2025\010 PH Homes - Bogie & Cedar Island\CAD\Edendale Crossing.dwg, 19 SW plan, 11/12/2025 12:22:00 PM

LANDSCAPE PLAN :

Scale: 1" = 60'

Restore disturbed areas with topsoil and hydroseed

Clump Red Maple (2)

Black Hills Spruce (3)

Clump Red Maple (1)

Concolor Fir (3)

Tulip Tree (2)

Crimson King Maple (3)

Tulip Tree (3)

Bur Oak (9)

Clump Red Maple (1)

Tulip Tree (3)

Black Hills Spruce (3)

Existing Trees/Woods to remain and serve as screening requirements along Northern property line.

See Tree Protection Detail . Sheet L-4.

Trees to be protected within limits of silt fence. See Grading Plan.

Restore disturbed areas with topsoil and hydroseed

Autumn Fest Sugar Maple (14)

Mollygrace Lane

Confolor Fir (2)

Crimson King Maple (1)

London Plane Tree (1)

Norway Spruce (1)

Crimson King Maple (2)

Concolor Fir (1)

Princeton Elm (14)

Norway Spruce (3)

London Plane Tree (2)

Concolor Fir (3)

Restore disturbed areas with topsoil and hydroseed

Community Park

Norway Spruce (1)

Eastern Red Bud (2)

Eastern Red Bud (2)

Eastern Red Bud (2)

Eastern Red Bud (2)

Red Oak (11)

River Birch (2)

Autumn Blaze Red Maple (4)

Princeton Elm (8)

Norahquin Lane

Swamp White Oak (18)

Mollygrace Lane

Black Hills Spruce (3)

Restore disturbed areas with topsoil and hydroseed

Greenspire Linden (11)

Bur Oak (6)

River Birch (2)

River Birch (3)

Autumn Fest Sugar Maple (13)

Edendale Lane

Autumn Blaze Red Maple (9)

Ginkgo Tree (9)

Greenspire Linden (11)

Eastern Red Bud (2)

Detention

Detention Basin Landscape. See chart on this sheet for seed mix

Irrigated Sod Lawn

Irrigated Landscape Bed

Irrigated Boulevard plantings

See "Bogie Lake Road Subdivision Entrance Landscape". Sheet L-2

Irrigated Sod Lawn

Bogie Lake Road (Variable Width)

See "Western Property Line Screening" Sheet L-2

Irrigated Planting Bed

Black Hills Spruce (2)

Serviceberry (2)

Restore disturbed areas with topsoil and hydroseed

Black Hills Spruce (2)

Bur Oak (3)

Norway Spruce (3)

Greenspire Linden (15)

Ginkgo Tree (12)

Black Hills Spruce (2)

Undulating 3' tall 20' berm

Irrigated Landscape Bed

Restore disturbed areas with topsoil and hydroseed

Irrigated sod lawn

Irrigated Planting Bed

Irrigated Boulevard plantings

Mollygrace Lane

Edendale Lane

Cedar Island Road (Variable Width)

See "South Property Line-West". Sheet L-3

See "South Property Line-East". Sheet L-3

LANDSCAPE REQUIREMENTS :

Street Tree Requirement :

Required: 1 tree per 60' (both sides of road)
4,825 lf street / 60 = 80.8 = 81 x 2 (each side of road) = 162 trees.

Provided: 167 trees.

*See Sheet L-2 for additional landscape requirements.

Detention Basin :

Stormwater Seed Mix

Economy Prairie Seed Mix

* Lawn Area Between Sidewalk and Street to be Irrigated Sod. Homeowner responsible for installation

3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 1-800-482-7171 FOR THE LOCATION OF UNDERGROUND FACILITIES

Item A.

STATE OF MICHIGAN REGISTERED LANDSCAPE ARCHITECT

JAMES T. EPPINK LANDSCAPE ARCHITECT No. 1309

Landscape Architect

J EPPINK PARTNERS, INC
Urban Design Studio

Landscape Architecture
Traditional Town Planning

27 Squirrel Road
Suite 104
Auburn Hills, MI 48326
248.922.0789

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Project:

Edendale Crossing

Bogie Lake Road
White Lake Township, MI

Owner:

PH Homes

8255 Cascade Ave
Suite 110
Commerce Twp, MI 48382
248-242-6838

Sheet:

Common Area Landscape Plan

Issues / Revisions

Per Twp Review	09-19-25
Per Twp Review	11-12-25

Drawn by: LZ

Checked By: JTE

Date: September 19, 2025

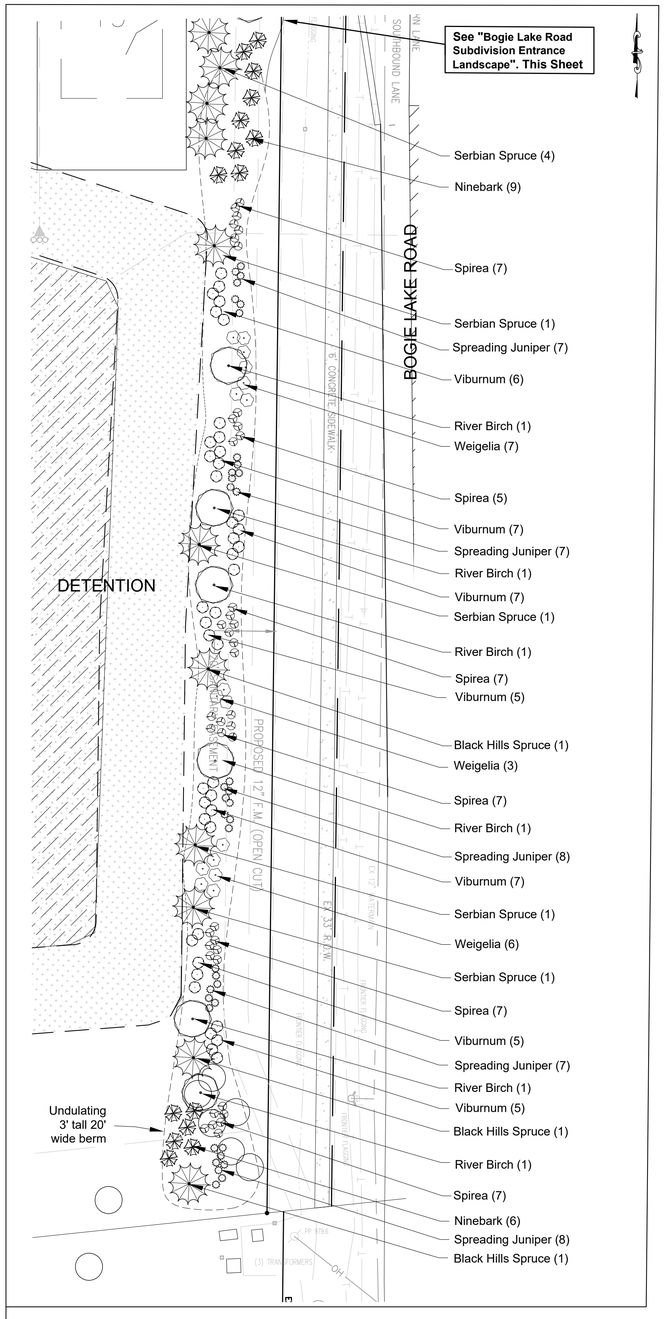
Scale: As Noted

Not for Construction

Sheet: L-1

LANDSCAPE PLAN : Western Property Line Screening

Scale: 1" = 30'



LANDSCAPE PLAN : Bogie Lake Road Subdivision Entrance Landscape

Scale: 1" = 20'

LANDSCAPE REQUIREMENTS :

Residential Entranceway Landscape Requirement :

Area of Coverage: First 150' of Entrance Drive

Requirement: 1 tree and 3 shrubs per each 300sf of area

Bogie Lake Road Entrance :

North Side of Bogie Lake Road :

Area: 1,265 sf
1,265 \ 300 = 4.2 = 4

Trees: 4 x 1 = 4
4 Trees Required
4 Trees Provided

Shrubs: 5 x 3 = 15
15 Shrubs Required
15 Shrubs Provided
within entrance planting area.

South Side of Bogie Lake Road :

Area: 824 sf
824 \ 300 = 2.7 = 3

Trees: 3 x 1 = 3
3Trees Required
3 Trees Provided

Shrubs: 3 x 3 = 9
9 Shrubs Required
9 Shrubs Provided
within entrance planting area.

Bogie Lake Road Entrance Island:

Area: 947 sf
947 \ 300 = 3

4 x 3 = 12

Trees: 3 x 1 = 3
3 Trees Required
3 Trees Provided

Shrubs: 12 Shrubs Required
15 Shrubs Provided

Cedar Island Road Entrance :

East Side of Cedar Island Road :

Area: 1,736 sf
1,736 \ 300 = 5.7 = 6

Trees: 6x 1 = 6
6 Trees Required
6 Trees Provided

Shrubs: 6 x 3 = 18
18 Shrubs Required
18 Shrubs Provided

West Side of Cedar Island Road :

Area: 2082 sf
2,082 \ 300 = 6.9 =7

Trees: 7 x 1 = 7
7 Trees Required
7 Trees Provided

Shrubs: 7 x 3 = 21
21 Shrubs Required
21 Shrubs Provided

Cedar Island Road Entrance Island:

Area: 2,172 sf
2,172 \ 300 = 7.2 = 8

Trees: 8 x 1 = 8
8 Trees Required
7 Trees Provided
*Remaining 1 required trees to be planted along the sides of the road due to spacing constraints in boulevard

Shrubs: 4 x 3 = 12
12 Shrubs Required
35 Shrubs Provided

Screening Requirement between uses :

North Property Line :

Requirement: Land Form Buffer (A-2): 3' berm with min. 2' wide crown and max. 3:1 slope. 20' wide. 1 large deciduous tree, 1 large evergreen tree and 8 shrubs per 30'.

Eastern portion: 832 LF : 832 / 30 - 27.7 = 28
Required: 28 Deciduous, 28 Evergreen, and 224 Shrubs on 3' berm
Provided: 31 Existing trees and surrounding brushy vegetation to remain and serve as required screening. Berming would disturb the existing vegetation and is not recommended **See Tree Tables Below

Western portion: 742 LF : 742 / 30 - 24.7 = 25
Required: 25 Deciduous, 25 Evergreen, and 200 Shrubs on 3' berm
Provided: 15 Deciduous and 9 Evergreen
Adjacent use is a cell tower lot. Applicant seeks a waiver for remaining plants.

South Property Line :

Requirement: Greenbelt (E): 20' wide. 1 large deciduous or evergreen tree and 8 shrubs per 30'.

Required: 1,311 LF / 30 = 43.7 = 44
44 Trees and 352 Shrubs

Provided: 78 New Trees and 300 Shrubs
40' wide greenbelt provided

28 Existing trees and surrounding brushy vegetation to remain and serve as part of the required screening. Berming in these locations would disturb the existing vegetation and is not recommended.
**See Tree Tables Below

East Property Line :

Requirement: Greenbelt (E): 20' wide. 1 large deciduous or evergreen tree and 8 shrubs per 30'.

Required: 685 lf / 30 = 22.8 = 23
23 Trees, 184 Shrubs

Provided: 20' wide greenbelt.
29 large evergreen/deciduous trees, 228 shrubs. on 3' tall 20' wide berm

West Property Line :

Requirement: No buffering is required adjacent to residentially zoned property

Tree Tables- Trees To Save

North Property Line Trees to Keep- Count Towards Required Buffer Trees

31 Quality trees to remain (highlighted)

Tree Number	Size	Type	Count for Req.
5485	6,6	Boxelder	
5489	6,6	Boxelder	
5490	8	Black Mulberry	x
5491	15,12	Pin Oak	x
5492	9	Black Cherry	x
5493	10	Pin Oak	x
5494	8	Pin Oak	x
5495	10	Pin Oak	x
5496	8,6,5	Black Cherry	x
5518	10	Poplar	
5519	9	Black Cherry	x
5520	8	Black Cherry	x
5521	9,4	Boxelder	
5522	9	Black Cherry	x
5523	13	Poplar	
5524	10,3,2	Black Mulberry	x
5525	18,18,12	Black Cherry	x
5526	10	Pin Oak	x
5527	24	Black Cherry	x
5528	9	Black Cherry	x
5529	27,27,22	Black Cherry	x
5530	17, 6	American Elm	x
5531	12	Black Cherry	x
5532	18	Pin Oak	x
5533	8	Aspen	x
5534	9	Aspen	x
5535	10	Aspen	x
5536	10	Aspen	x
5537	12, 12	Black Cherry	x
5538	8,8	Black Cherry	x
5539	15	Black Cherry	x
5540	20	Black Cherry	x
5541	9	Black Cherry	x
5542	13	Black Cherry	x
5543	8	American Elm	x
5544	24,20,16,12	Black Cherry	x

South Property Line Trees to Keep- Count Towards Required Frontage Trees

28 Quality trees to remain (highlighted)

Tree Number	Size	Type	Count for Req.
551	14	Hickory	x
552	34	Oak	x
553	30	Oak	x
554	48	Oak	x
602	20	Walnut	x
603	10	Cherry	x
604	30,18	Oak	x
606	18	Cherry	x
607	16	Hickory	x
608	32	Oak	x
609	32	Oak	x
610	10	Cherry	x
611	30	Walnut	x
612	18,16	Cherry	x
613	14	Boxelder	
614	10	Elm	x
615	10	Cherry	x
616	12	Oak	x
617	18	Cherry	x
618	10	Sassafras	x
619	26	Oak	x
620	8	Cherry	x
621	10	Elm	x
622	20	Poplar	
623	16,16	Oak	x
624	24	Cherry	x
625	12	Oak	x
626	42	Oak	x
627	20	Oak	x
628	30	Walnut	x

Central Forest Area

27 Quality trees to remain (do not count towards a specific landscape requirement)

Tree Number	Size	Type
5356	30	Pin Oak
5357	12,12,5	Black Cherry
5360	16,14,12	Black Cherry
5361	15,13	Black Cherry
5362	18	Pin Oak
5363	18	Black Cherry
5364	18,8	Black Cherry
5365	8	Black Cherry
5366	12	Pin Oak
5367	11,9	Pin Oak
5368	8	Boxelder
5369	10	Black Cherry
5370	22	Black Cherry
5371	9	Pin Oak
5372	10	Pin Oak
5373	9	Pin Oak
5374	22,10,10	Black Cherry
5375	8	Boxelder
5376	9	Black Cherry
5377	8	Black Cherry
5378	9	Boxelder
5379	10	Black Cherry
5385	18	Black Cherry
5386	12,12	Black Cherry
5387	10	Black Cherry
5388	8	Pin Oak
5389	18	Black Cherry
5390	12,12,12,8	Black Cherry
5391	10	Black Cherry
5392	19	Black Cherry

EXISTING TREES TO REMAIN :

86 Regulated trees to remain on site.

Additional smaller, non-regulated trees, buffers, and natural vegetative growth and shrubby areas to remain on site adjacent to the Cedar Island Frontage as well as within the central natural preservation areas of the neighborhood. The preservation areas are intended to be a community benefit for the preservation of woodland canopy, natural buffering along Cedar Island Road, and the continuous natural habitat for wildlife.

Item A.

STATE OF MICHIGAN
JAMES T. EPPINK
LANDSCAPE ARCHITECT
No. 1309
REGISTERED LANDSCAPE ARCHITECT

J EPPINK PARTNERS, INC
Urban Design Studio
Landscape Architecture
Traditional Town Planning
27 Squirrel Road
Suite 104
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248.922.0789

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Project:

Edendale Crossing

Bogie Lake Road
White Lake Township, MI

Owner:

PH Homes

8255 Cascade Ave
Suite 110
Commerce Twp, MI 48382
248-242-6838

Sheet:

Landscape Plan-Entrance & Screening Areas

Issues / Revisions

Per Twp Review	09-19-25
Per Twp Review	11-12-25

Drawn by: LZ

Checked By: JTE

Date: September 19, 2025

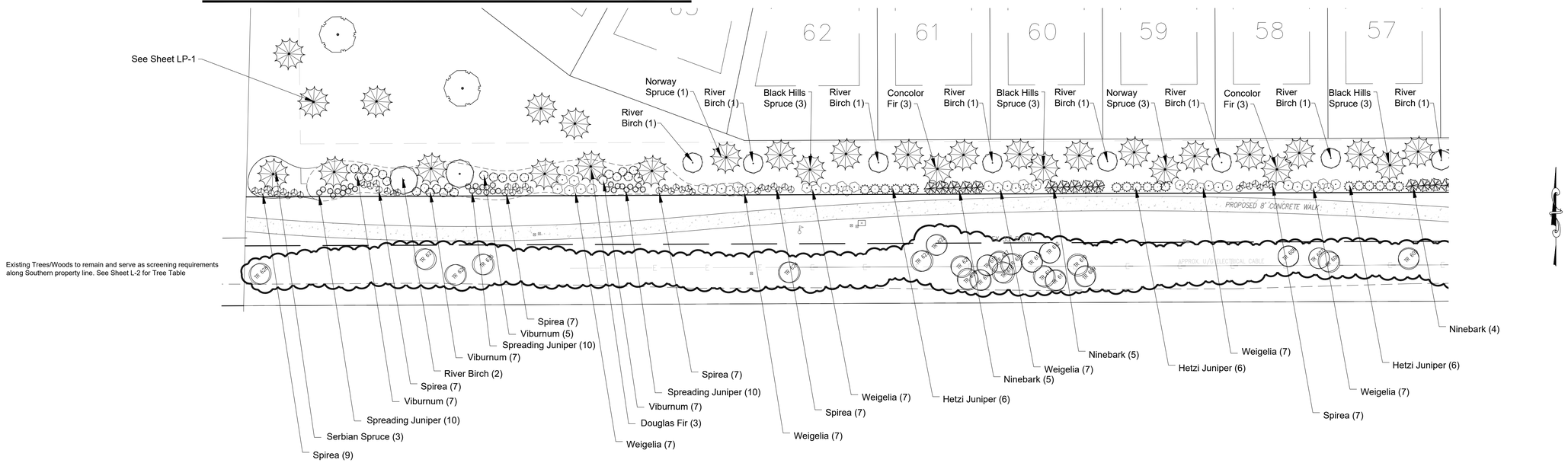
Scale: As Noted

Not for Construction

Sheet: L-2

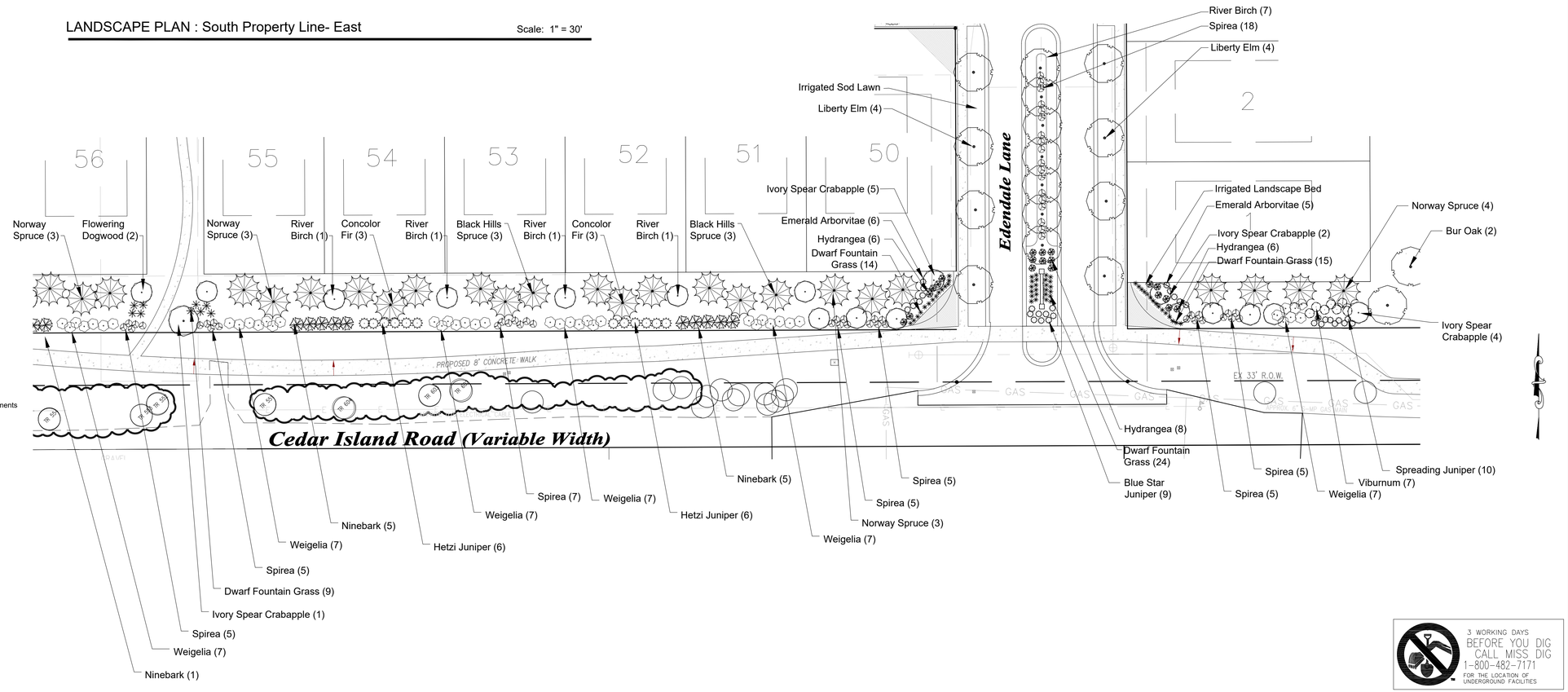
LANDSCAPE PLAN : South Property Line- West

Scale: 1" = 30'



LANDSCAPE PLAN : South Property Line- East

Scale: 1" = 30'



3 WORKING DAYS
BEFORE YOU DIG
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1-800-482-7171
FOR THE LOCATION OF UNDERGROUND FACILITIES

STATE OF MICHIGAN
REGISTERED LANDSCAPE ARCHITECT
JAMES T. EPPINK
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Project:

Edendale Crossing

Bogie Lake Road
White Lake Township, MI

Owner:

PH Homes

8255 Cascade Ave
Suite 110
Commerce Twp, MI 48382
248-242-6838

Sheet:

Landscape Plan-Entrance & Screening Areas

Issues / Revisions

Per Twp Review	09-19-25
Per Twp Review	11-12-25

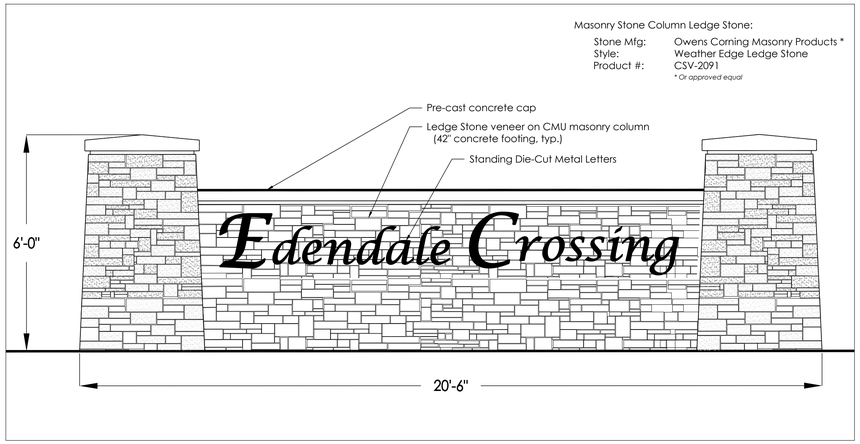
Drawn by: LZ
Checked By: JTE
Date: September 19, 2025
Scale: As Noted

Not for Construction

Sheet: L-3

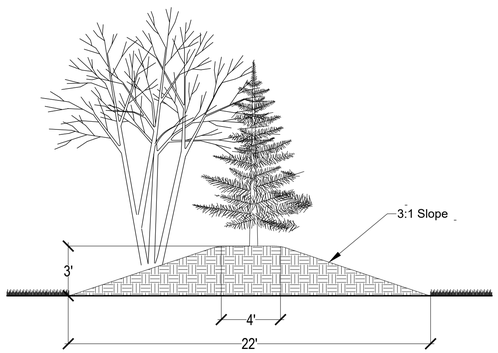
ENTRANCE MONUMENT SIGN (BOGIE LAKE ROAD & CEDAR ISLAND ROAD):

SCALE: 1" = 2'



LANDSCAPE PLAN : Berm Cross Section

Scale: Not to Scale



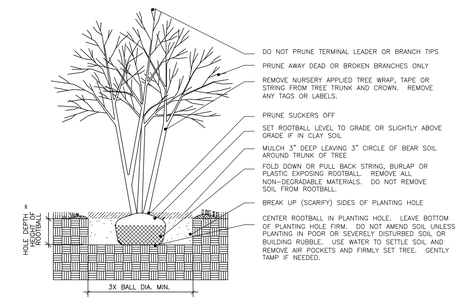
PLANTING LIST :

Quant	Description	Size/Root
21	Abies Concolor Concolor Fir	7' / B&B
6	Acer platanoides 'Crimson King' Crimson King Maple	2.5" / B&B
4	Acer Rubrum Clump Red Maple	2.2" / B&B
13	Acer Rubrum Red Maple 'Autumn Blaze'	2.2" / B&B
27	Acer saccharum 'JFS-KW8" Autumn Fest Maple	2.2" / B&B
2	Amalanchier arborea Serviceberry	7' / B&B
38	Betula nigra River Birch	7' / B&B
10	Cercis canadensis 'Forest Pansy' Forest Pansy Redbud	2" / B&B
2	Cornus florida Flowering dogwood	2" / B&B
27	Ginkgo biloba Ginkgo	2.5" / B&B
8	Liriodendron Tulipifera Tulip Tree	2.5" / B&B
19	Malus 'Ivory Spear' Ivory Spear Crabapple	2" / B&B
3	Platanus x acerifolia London Plane Tree	2.5" / B&B
33	Picea glauca densata Black Hills Spruce	7' / B&B
3	Pseudotsuga mensiesii Douglas Fir	7' / B&B
11	Picea omorika Serbian Spruce	7' / B&B
31	Picea abies Norway Spruce	7' / B&B
37	Tilia cordata Greenspire Linden	2.5" / B&B
27	Ulmus americana 'Princeton' Princeton Elm	2.5" / B&B
8	Ulmus americana 'American Liberty' Liberty Elm	2.5" / B&B
20	Quercus macrocarpa Bur Oak	2.5" / B&B
11	Quercus rubra Red Oak	2.5" / B&B
18	Quercus bicolor Swamp White Oak	2.5" / B&B
Shrubs		
48	Hydrangea paniculata 'Little Quickfire' Little Quickfire Hydrangea	#5 / Container
45	Phisocarpus opulifolius 'Diablo' Diablo Ninebark	#5 / Container
87	Weigelia florida 'Bokraspiwi' Spilled Wine Weigla	#2 / Container
21	Weigela florida 'Alexandra' Wine and Roses Weiglea	#3 / Container
44	Thuja occidentalis Emerald Arborvitae	#5 / Container
144	Spiraea x bumalda Anthony Waterer Spirea	#2 / Container
76	Juniperus horizontalis Blue Rug Juniper	#3 / Container
30	Juniperus Hetzi Col. Hetzi Juniper	#5 / Container
74	Viburnum dentatum 'Ralph Senior' Autumn Jazz Viburnum	#2 / Container
14	Juniperus squamata 'Blue Star' Blue Star Juniper	#3 / Container
Perennials		
127	Pennisetum alopecuroides 'Hameln' Dwarf Fountain Grass	#2 / Container

PLANTING NOTES :

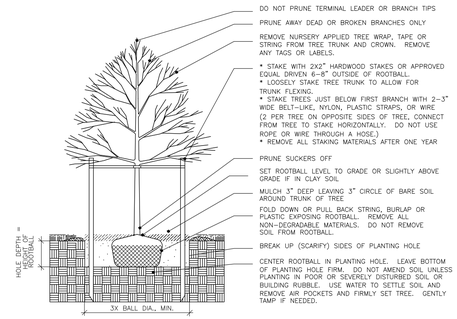
1. Contractor shall be responsible for contacting and coordinating with all pertinent utility companies 72 hours in advance of any digging to make themselves familiar with all underground utilities, pipes and structures. Contractor shall take sole responsibility for any cost incurred due to damage of said utilities or structures.
2. Contractor shall not willfully proceed with construction as designed when it is obvious that unknown obstructions and/or grade differences exist. Such conditions shall immediately be brought to the attention of the Owner's Representative. The contractor shall assume full responsibility for all necessary revisions due to failure to give such notification.
3. Any discrepancies between dimensioned layout and actual field conditions shall be reported to the Owner's Representative. Failure to make such discrepancies known will result in contractor's responsibility and liability for any changes and associated costs.
4. Contractor shall be responsible for any coordination with subcontractors as required to accomplish construction installation operations.
5. Contractor shall provide and maintain positive surface drainage.
6. Contractor shall be responsible for any existing materials that are damaged during construction.
7. See Plant & Material List and Planting Details for planting requirements, materials and execution.
8. All trees shall have a clay loam or clay root ball. Trees with sand root balls will not be accepted.
9. All tree varieties and substitutions, or deviations to the landscape plan must be approved prior to installation. Any plant material delivered to site not previously approved may be rejected and are the sole responsibility of the contractor.
10. The contractor shall "water in" and fertilize all plants immediately after planting.
11. Contractor shall install 3" depth Shredded Hardwood Mulch in all shrub and tree planting beds. Peat Moss is to be installed in all perennial flower area. Such beds shall have no shredded mulch, typ.
12. The contractor shall guarantee and maintain all trees, shrubs, ground cover and other plant materials for two years from the date of installation, including labor and removal and disposal of dead material.
13. All plant material shall be grade 1 northern nursery grown from a local source. All trees and plant material shall meet the current standards of the American Society of Nurseryman.
14. Contractor shall adhere to all soil erosion prevention methods as directed by the Municipal Ordinance including maintaining silt fencing and ensuring that soil, silt and other debris is prevented from leaving site or entering area drains, sewer inlets, creeks or natural areas.
15. Contractor shall protect existing irrigation system throughout construction, and shall modify the existing irrigation system as needed to ensure that all lawn and landscape areas within the project area receive irrigation coverage, and that the system operates correctly and efficiently. Contractor shall also install a rain detection and shut-off sensor onto the system.
16. Trees shall not be installed closer than 4' from a property line.
17. Contractor shall ensure that a 25' clear vision zone is maintained at each intersection as depicted, and must ensure that no limbs or obstructions exist between the grade and 8' above the grade within this zone.

PLANTING DETAILS :



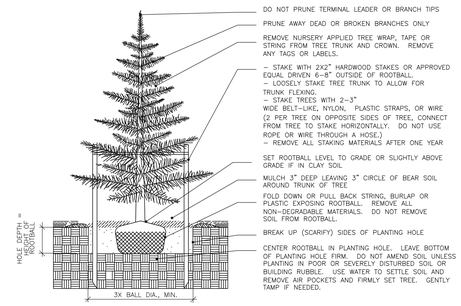
MULTI-STEM TREE PLANTING , TYP.

NOT TO SCALE



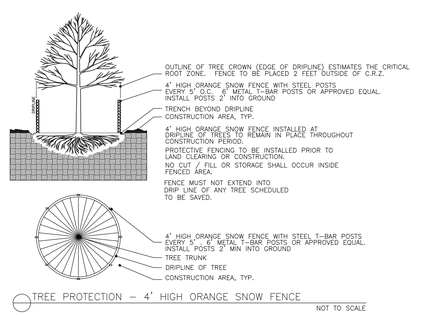
DECIDUOUS TREE PLANTING DETAIL, TYP.

NOT TO SCALE



EVERGREEN TREE PLANTING DETAIL, TYP.

NOT TO SCALE



TREE PROTECTION – 4' HIGH ORANGE SNOW FENCE

NOT TO SCALE

3 WORKING DAYS
BEFORE YOU DIG
CALL MISS DIG
1-800-482-7171
FOR THE LOCATION OF UNDERGROUND FACILITIES

Item A.

STATE OF MICHIGAN
REGISTERED LANDSCAPE ARCHITECT
JAMES T. EPPINK
LANDSCAPE ARCHITECT
No. 1309

J EPPINK PARTNERS, INC
Urban Design Studio

Landscape Architecture
Traditional Town Planning

27 Squirrel Road
Suite 104
Auburn Hills, MI 48326
248.922.0789

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Project:

Edendale Crossing

Bogie Lake Road
White Lake Township, MI

Owner:

PH Homes

8255 Cascade Ave
Suite 110
Commerce Twp, MI 48382
248-242-6838

Sheet:

Landscape Details & Plant List

Issues / Revisions

Per Twp Review	09-19-25
Per Twp Review	11-12-25

Drawn by:
LZ

Checked By
JTE

Date
September 19, 2025

Scale
As Noted

Not for Construction

Sheet
L-4

The Stratford
4 Bedrooms

Elevation ‘A’

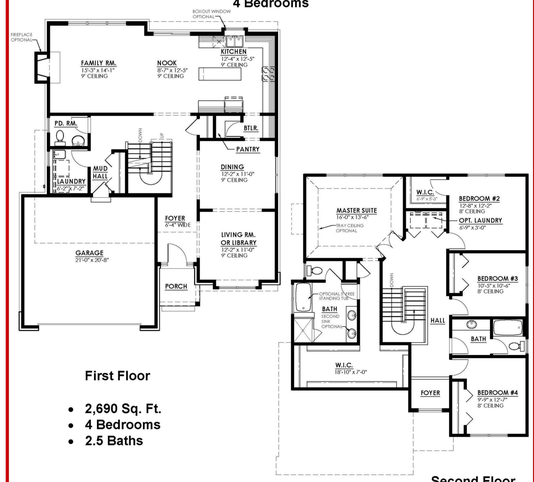
Elevation ‘B’

Elevation ‘C’

www.myphhome.com
Laura 248.390.7792

The floor plans and elevations are an artist's depiction and are meant as a guide. Renderings do not accurately depict the legal description of the property, boundaries, or dimensions. We cannot provide any guarantees that the actual elevation will not differ from the artist's depiction. The builder reserves the right to make changes in prices, materials, or specifications without notice or obligation.

The Stratford
4 Bedrooms



First Floor

- 2,690 Sq. Ft.
- 4 Bedrooms
- 2.5 Baths

Second Floor

www.myphhome.com
Laura 248.390.7792

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August 6, 2021

Single Family Home: "The Stratford" Four Bedroom. 2,690 SF. 2.5 Bathrooms. Three+ elevation options

The Manchester
4 Bedrooms

Elevation ‘A’

Elevation ‘B’

Elevation ‘C’

www.myphhome.com
Laura 248.390.7792

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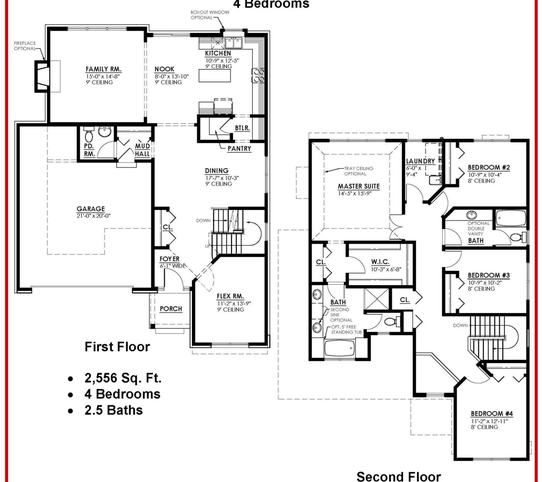
The Manchester
4 Bedrooms



First Floor

- 2,556 Sq. Ft.
- 4 Bedrooms
- 2.5 Baths

Second Floor

www.myphhome.com
Laura 248.390.7792

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August 6, 2021

Single Family Home: "The Manchester" Four Bedroom. 2,556 SF. 2.5 Bathrooms. Three+ elevation options

Architectural Materials and Design Standards:

Exterior Color packages for Single Family Homes

Package 1
Siding: Fieldstone Flint
Brick: Port Huron
Shingles: Rustic Black
Shutters: Black

Package 2
Siding: Heritage Linen
Brick: North Hampton
Shingles: Natural Timber
Shutters: Musket Brown

Package 3
Siding: Rich Mocha
Brick: Meadow
Shingles: Thunderstorm Grey
Shutters: Musket Brown

Package 4
Siding: Lakeshore Grey
Brick: Mulberry
Shingles: Virginia Slate
Shutters: Black

Package 5
Siding: Desert Cactus
Brick: Bessemer Grey
Shingles: Weathered wood
Shutters: Tuxedo Grey

Package 6
Siding: Blue Slate
Brick: Petoskey
Shingles: Aged Wood
Shutters: Tuxedo Grey

***Trim to be either White OR match siding color, Garage doors will match trim.**

Exterior Materials list for Edendale Crossing

Single Family Homes

Siding: Napco or Spiegel Grove Vinyl siding STYLE:D4.5
COLORS: Fieldstone Flint, Heritage Linen, Rich Mocha, Lakeshore Grey, Desert Cactus

Shingle: Tamko 30 year Dimensional Shingle
COLOR: Rustic Black, Natural Timber, Thunderstorm Grey, Virginia Slate, Aged Wood, Weathered Wood

Front Door: 2 Panel Fiberglass Door with 12” sidelights

Garage Door: Embossed panel steel sectional garage door.
COLOR: White or Match Trim

Brick: Triangle Brick or Forterra Brick Queen Size
COLOR: Port Huron, North Hampton, Meadow, Mulberry, Bessemer Grey, Petoskey

Windows: Jeldwen Single hung Vinyl

The Rathmore
4 Bedrooms

Elevation ‘A’

Elevation ‘B’

Elevation ‘C’

www.myphhome.com
Laura 248.390.7792

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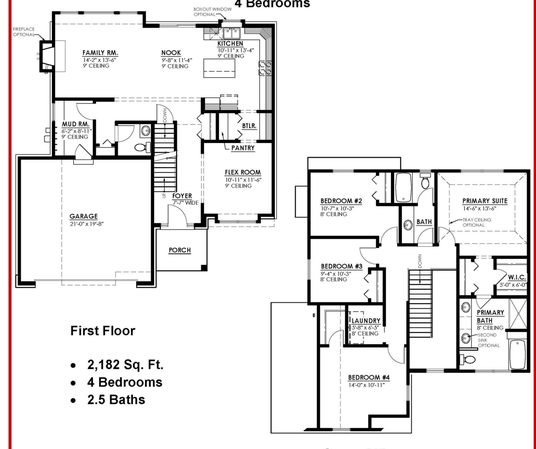
The Rathmore
4 Bedrooms



First Floor

- 2,182 Sq. Ft.
- 4 Bedrooms
- 2.5 Baths

Second Floor

www.myphhome.com
Laura 248.390.7792

The floor plans and elevations are an artist's depiction and are meant as a guide. Renderings do not accurately depict the legal description of the property, boundaries, or dimensions. We cannot provide any guarantees that the actual elevation will not differ from the artist's depiction. The builder reserves the right to make changes in prices, materials, or specifications without notice or obligation.
August 9, 2022

Single Family Home: "The Rathmore" Four Bedroom. 2,182 SF. 2.5 Bathrooms. Three+ elevation options

STATE OF MICHIGAN
REGISTERED LANDSCAPE ARCHITECT
JAMES T. EPPINK
LANDSCAPE ARCHITECT
No. 1309

J EPPINK PARTNERS, INC
Urban Design Studio
Landscape Architecture
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27 Squirrel Road
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Project:
Edendale Crossing
Bogie Lake Road
White Lake Township, MI

Owner:
PH Homes
8255 Cascade Ave
Suite 110
Commerce Twp, MI 48382
248-242-6838

Sheet:
Preliminary Architecture

Issues / Revisions
Per Twp Review 09-19-25
Per Twp Review 11-12-25

Drawn by: LZ
Checked By: JTE
Date: September 19, 2025
Scale: As Noted
Not for Construction
Sheet: A-1

November 11, 2025, UPDATE

Edendale Crossing

A Proposed Residential Neighborhood
White Lake Township, Michigan

Project Applicant / Developer:

PH Communities, LLC

8255 Cascade Ave, Suite 110
Commerce Twp, MI 48382
248-242-6838
Attn: Craig Piasecki
craigp@myphhome.com

Development Team Consultants:

Civil Engineer & Surveyor:

Kieft Engineering, Inc.
Patrick McWilliams
5852 South Main Street, Ste 1
Clarkston, MI 48346
248-625-5251
pmcwilliams@kiefteng.com

Planning & Landscape Architecture:

J Eppink Partners, Inc.
Jim Eppink
27 S. Squirrel Rd, Ste 104
Auburn Hills, MI 48326
248-922-0789
jim@jeppink.com

Site Data:

Parcel Size:
45.47 - acres

Location:
Northwest corner Bogie Lake Road & Cedar Island Road, within Section 29 of White Lake Township, MI

Existing Zoning:
AG – Agricultural &
R1-A – Single-Family Residential

Proposed Zoning:
PD – Planned Development Residential Single Family Site Condominium

Proposed Uses:
125 Single Family Homes

Community Impact Statement

Edendale Crossing is a proposed single-family residential community to be located on west side of Bogie Lake Road, north of Cedar Island Road, in Section 29 of White Lake Township, Michigan. The 45.47-acre site is a combination of nine adjacent parcels. PH Homes proposes to rezone the parcels from AG & R1-A to PD (Planned Development). The details of the proposed development are depicted within the attached site plan submission documents.

The new neighborhood will feature 125 new single-family homes that will front a series of private roads and open space areas. The neighborhood will have entrances onto both Bogie Lake Road and Cedar Island Road and be connected internally with sidewalks and walking trails. Key features of the neighborhood include the preservation of a mature tree-row that runs north and south at the center of the property, the preservation of more than 20% open space with passive and active recreational opportunities, as well as an extension of the sidewalk system beyond the neighborhood and leading to the nearby Lakewood Elementary School and Lakeland High School at Bogie Lake Road.

As a condition of the Planned Development site plan process, the nine existing parcels will be combined into one parcel, and the Edendale Crossing neighborhood will be constructed as two phases (see the “Site Plan” sheet 3)

UPDATED INFORMATION IN RESPONSE TO PREVIOUS SUBMISSION AND WHITE LAKE TOWNSHIP REVIEW REPORTS:

1. **Attached Multi-Family Alternatives:** PH Homes explored adding additional attached multi-family homes into the development, however after discussions with multiple real estate professionals, analysis of the White Lake Township housing market, and a review of the surrounding areas, it was determined that neither for-sale or for-lease multi-family residential would do well at this site. Real estate professionals and analysis of the market confirmed that this area of the Township is best suited for single-family residential homes. White Lake Township, and surrounding areas are experiencing high demand for new, attainably priced, for-sale, single-family homes, and we believe the homes at Edendale Crossing will be successful and help to meet that demand.

2. **Lot Size:** PH Homes has increased its proposed lot size from 60’ wide to 62’ wide, now matching lot sizes approved at the Trailside Meadow development. The Edendale Crossing lots are larger than the Trailside lots (62’x125’ vs 62’x120’) and the Edendale front yard is larger (25’ vs 20’) thank Trailside. Edendale’s side yard setback of 10’ + 10’ and rear yard setback of 30’, match the R1-D standard as well those approved at Trailside Meadow.

3. **Master Plan Analysis:** PH Homes has further reviewed the objectives and standards of the White Lake Township and believe that Edendale Crossing delivers on the goals, objectives, and standards set forth in the recently updated Master Plan. The Master Plan identify this location as one of three "Key Development Opportunities" within the Township.
    a. **Proposed Land Use:** The Master Plan identifies this, and a majority of the surrounding areas in this portion of the Township as "Neighborhood Residential" on its Future Land Use map. "Neighborhood Residential envisions infill development that maintains existing neighborhoods and provides for denser residential in places where there is infrastructure to support the density that is 'within the context' of surrounding neighborhoods.
    b. **Supporting Infrastructure**: Edendale Crossing proposes to extend the Sanitary Sewer force main nearly a mile from the south, meeting the goals of the Master Plan towards the expansion of utility infrastrcuture throughout the community. The extension of the sanitary sewer will be funded by PH Homes, and in addition to serving the homes within Edendale Crossing, it will be available to serve existing homes along Bogie Lake Road as well as future development to the north. Additionally, Edendale will improve Bogie Lake Road and a section of Cedar Island Road including widening, paving, and adding crosswalks and sidewalks.
    c. **Proposed Density:** The Master Plan specifically calls for a density between 2-8 dwelling units per acre at this location. The Master Plan goes on to identify R1-D as a zoning classification which may be consider as a starting point for this location. R1-D allows 3-units per acre and a parallel plan included in the submission demonstrates that the site can support 109 R1-D lots, however, the R1-D plan would not be required to provide any open space, natural feature preservation, or other neighborhood or community amenities. Edendale Crossing proposes only 16 additional homes more than the parallel plan (125 total homes proposed), and also provides more than 20% open space, natural vegetation preservation, trails, and walks. These community features are specifically called out in the Master Plan goals and objectives as desired attributes in the Township and needed in this area.
    d. **"Within the Context."** The Master Plan states that proposed development should be "within the context" of surrounding existing development. The Master Plan does not define "*within the context*" to be "exactly like" surrounding development, but within the context or generally similar to. Edendale Crossing is certainly within the context of surrounding development and also within the plans outlined in the Master Plan. The Master Plan, in its analysis identified not only this property this property, but a majority of the surrounding neighborhoods, as Neighborhood Residential. It also designated that Neighborhood Residential could appropriately have a density of between 2-8 units per acre, and in fact R1-D zoning should be a comparative zoning classification for this location. Edendale Crossing proposes, only 16 more single-family homes than R1-D zoning would provide and only 3.47 units per acre, which is on the very low end of the anticipated 2-8 units per acre permitted within Neighborhood Residential Zoning. The Master Plan therefore deemed that single-family homes, within the prescribed 2-8 unit density range, and certainly at the low end of that range, are "within the context" of surrounding residential as envisioned within the newly adopted Master Plan.
    e. **Meeting Additional Goals of the Master Plan – Single Family Housing:** The Master Plan identifies that there is great demand for housing within White Lake Township. It specifically noted that, although there is a long-term goal of providing greater housing diversity, the Master Plan acknowledges that most respondents are not seeking diverse housing typologies. In fact, the Master Plan identified that only 6% of White Lake Township residents indicated that they would seek multi-family housing in the future, whereas more than 80% of the respondents indicated that they would seek single-family housing options. This comports with PH Homes' market analysis and that of local real estate advisors that single-family housing is in demand and appropriate for this site.

f. **Meeting Additional Goals of the Master Plan – Maintain Small Town Character:** Edendale Crossing promotes "small town character" through the development of appropriately sized home sites with an emphasis on preservation of natural vegetation and open space as well as walkability within the neighborhood and to nearby destinations like the schools.

4. **Rural Frontage at the exterior Roads.** Edendale Crossing is designed to maintain maximum rural character and buffering along its exterior roads. The two homes at either side of the Bogie Lake entrance are 40' from the right-of-way and 65' from the edge of the road, with significant landscape plantings proposed along both lot lines. The balance of the homes along Bogie Lake are more than 285' setback from the road and are buffered by the detention basin and dense landscape planting along Bogie Lake, thereby maintaining a green and buffered frontage. The homes backing to Cedar Island have been shifted further north than in the previous plan. The rear lot line is now 30' from the right-of-way and 75' to the edge of the road. The back of the homes will be no closer than 105' from the edge of the road. More than two dozen additional evergreens and decidious trees have been added to the Cedar Island landscape buffering and existing trees and vegetation that will remain, maintaining the natural, green Cedar Island appearance.

5. **Bogie Lake and Cedar Island Road:** The Road Commission of Oakland County (RCOC) has completed a preliminary review and provided directional feedback to PH Homes. Kieft Engineering has incorporated that feedback into the submitted plans. They include:
    a. Adding a continuous center turn lane into Bogie Lake Road beginning south of our entrance and continuing north of the existing Thompson Lane entrance. This combination of lane widening and addition of a continuous center turn provide safe turning movements from our proposed entrance as well as into Thompson Lane and existing homes and individual driveways along Bogie Lake.
    b. Adding acell and decell lanes at our Bogie Lake Road entrance
    c. RCOC validated that proposed location of the Cedar Island entrance stating that it was appropriately positioned between the two roads on the south side of Cedar Island. They further validated our planned paving of Cedar Island to our entrance.
    d. RCOC directed us to relocate our proposed sidewalk extension to the schools and have the crosswalk crossing at the intersection of Bogie Lake and Cedar Island rather than our earlier location mid-block on Cedar Island.
    e. RCOC reviewed and validated our proposed curb-cut locations in relationship to adjacent curb-cuts, opposing road, the posted speed limits, and view distances at Bogie Lake and Cedar Island.

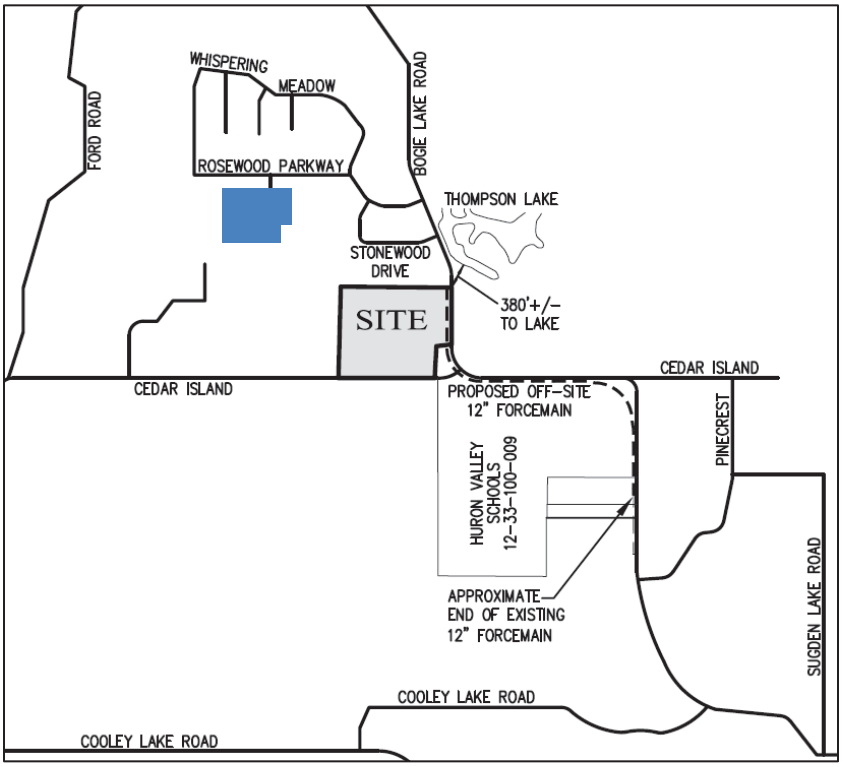
6. **Community Benefits**: PH Homes is proud of the Community Benefits Edendale Crossing will bring to its future residents and also to the entire White Lake Township community. They include:
    a. **Road Improvements** that will benefit increase safety and ease turning movements for existing residents, Thompson Lane, and school bound traffic through the widening of the road to provide a consistent center turn lane as suggested by RCOC.
    b. **The 1-mile extension of the Sanitary force main** that delivers on the goals of the Master Plan through the expansion of infrastrcuture and enabling connection to existing residents along the route as well as future expansion north along Bogie Lake Road.
    c. **Preservation of Natural Features** including the preservation of existing regulated trees, hedge rows, and significant non-regulated trees and vegetation. This provides open space within the neighborhood, but more importantly maintains regional green corridors and tree canopy for animal habitat, bird migration, and general greening of White Lake Township.
    d. **Pavement extension of Cedar Island Road** so that Cedar Island will now be paved from Bogie Lake Road to west of the proposed Edendale entrance.

e. **Sidewalk Connections to Lakeland Schools.** Installation of sidewalks along the entire Bogie Lake Road and Cedar Island Road frontages including the extension of those sidewalks to the Bogie Lake / Cedar Island intersection and further south onto the school property to the existing parking lot for connection into the school campus that will allow greater walkability within the township and safe access to school for White Lake Township students.

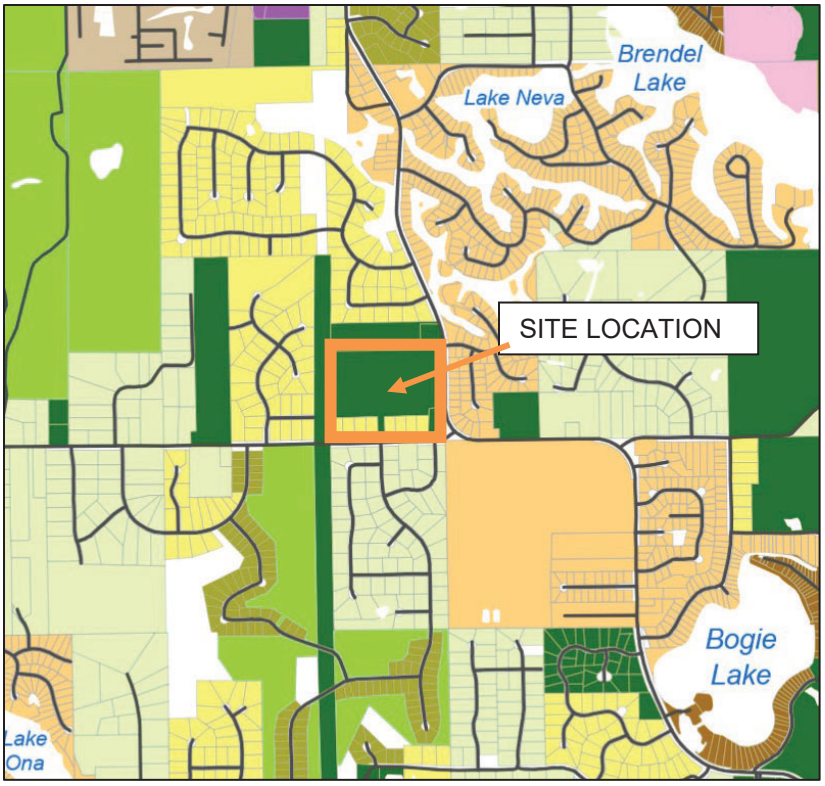
7. **Site Plan Submission Updates:** The attached submitted plans address the items noted above as well as all additional comments received in the DLZ review report dated October 15, 2025 and October 10, 2025, the Carlisle Wortman Associates review report dated October 14, 2025, and the comments received from the Road Commission of Oakland County at an October 27, 2025 meeting.

Community Impact Statement and project information:

In accordance with Section 6.6 of the White Lake Township Zoning Ordinance, we are providing the following information related to how Edendale Crossing will integrate with public utilities, public services, traffic, the economy, environmental conditions, and adjacent land uses. Additional information is provided related to the Planned Development process and compliance with the Township's Zoning Ordinance and Master Plan.



Location Map:
Edendale Crossing is located west of Bogie Lake Road and north of Cedar Island Road in Section 29 of White Lake Township. Lakeland Elementary School and Lakeland High School are located to the immediate southeast.



White Lake Township Zoning Map:

Edendale Crossing is zoned R1-A & AG. The northern 34.76 acres are currently zoned AG, Agricultural. Eight Individual southern parcels fronting Cedar Island Road, totaling 10.71 acres, are currently zoned R1-A single-family. As part of the Planned Development process, the applicant will combine the nine parcels into a single parcel.

White Lake Township Master Plan & Future Land Use Map:

The Endendale Crossing site is identified as a “Key Development Opportunity” within White Lake Twp Master Plan. The Master Plan specifically calls for the Edendale Crossing property to be a Redevelopment Site focused on “Neighborhood Residential” which “provides a denser residential development” and may include uses such as “small-lot single-family homes, duplexes, or multi-family homes…”

Planned Development Process:

The Township Master Plan states that parcels, such as this, that are identified as "Neighborhood Residential" areas, should be developed using R1-C, R1-D, RM-1, RM-2, or Planned Development (PD) standards to "*maintain existing neighborhoods and provide for denser residential development in places where there is infrastrcuture to support the density and ensuring density is within the context of the surrounding neighborhoods*". The Township Zoning Ordinance allows the Planned Development process to be used within the above noted zoning districts. PH Homes is requesting PD approval for this site and has provided supporting detail within the accompanying Site Plan submission documents and reports.

Compatibility with the White Lake Township Master Plan:

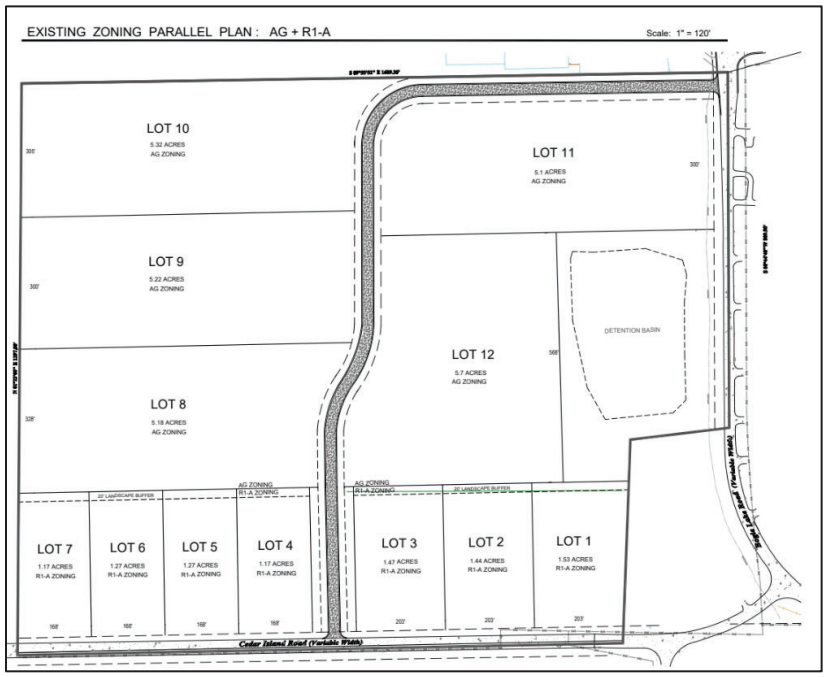
Edendale Crossing is consistant with the goals and objectives of the White Lake Township Master Plan and Future Land Use Map which identifies this location as a Development Opportunity Zone and specifically calls for the Cedar Island Road & Bogie Lake Road property to be a Redevelopment Site focused on Traditional Single-Family residential homes with areas reserved for active and passive activities.

The Master Plan identifies the housing shortage in White Lake Township and specifically the demand for moderately priced homes. With the understanding that large lots inherently result in higher priced new homes because of the proportionally longer lot width and therefore higher cost of road and utility improvements for large lot homes, the Master Plan specifically calls for more dense developments in this area with permitted densities ranging from 2 – 8 units per acre. Edendale Crossing proposes only 3.7 units per acre which is on the low side of the permitted desnity in the Neighborhood Residential district. The village sized lots (60' x 125' minimum) are reminiscent of small-town mid-Michigan and provide less mainteance and upkeep for busy families and retired seniors in the community.

Edendale Crossing specifically meets the stated goals in the Master Plan including (1) the preservation of existing trees, woodlots, and natural features, (2) the creation of open space for active and passive recreation, (3) pedestrian connections to schools and off-site connections, (4) provides large setbacks, water features, and landscape at Bogie Lake Road to preserve the rural character, (5) the creation of new housing opportunities in the Township, and (6) the extension and improvement of community services such as utilities and road improvements.

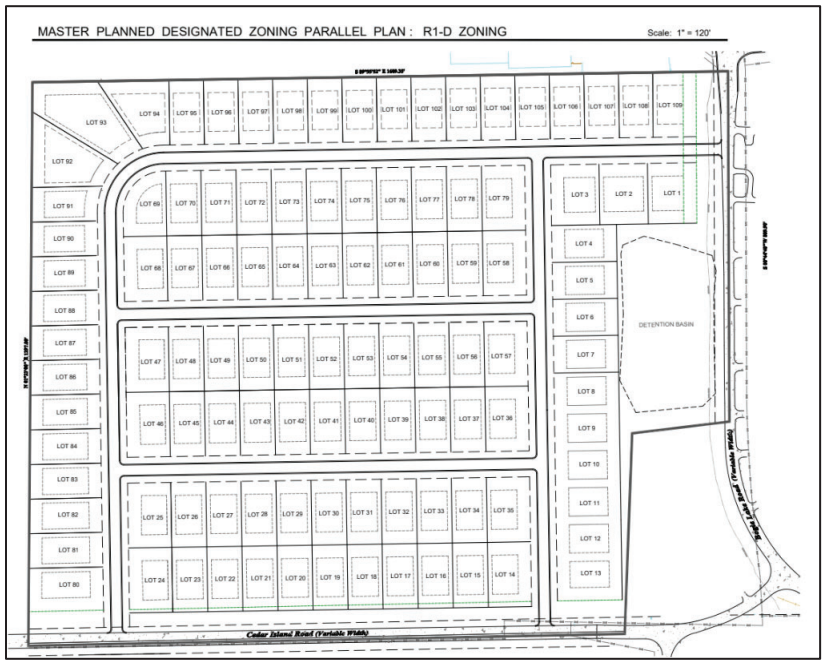
Parallel Plans:

Two parallel plans are included in the site plan documents.



AG + R1-A Parallel Plan:

The first Parallel Plan assumes development under the existing AG and R1-A zoning and achieves twelve total units that meet the applicable zoning standards.



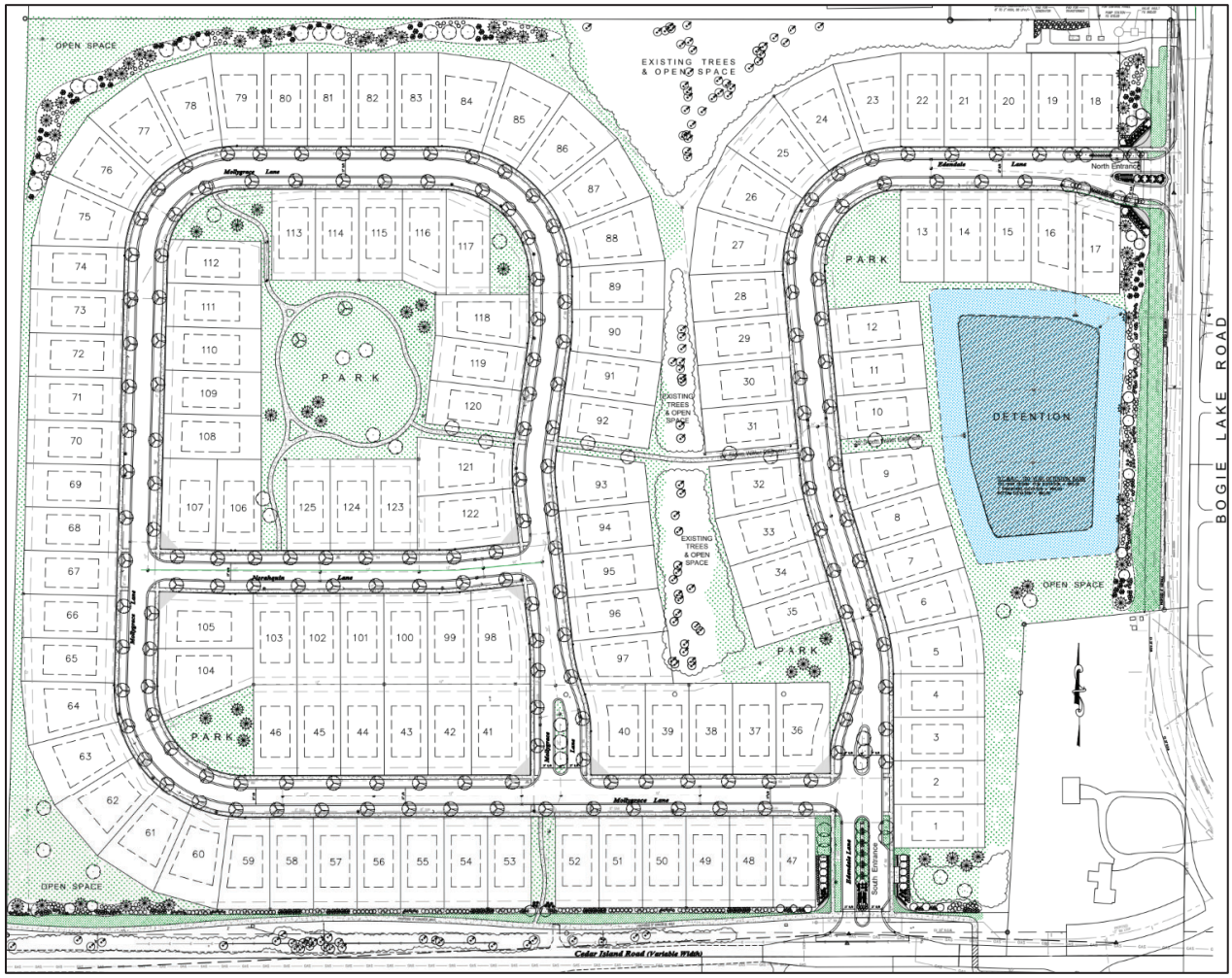
R1-D Parallel Plan:

The second Parallel Plan assumes development under R1-D zoning, which is identified as a preferred zoning standard for the Neighborhood Residential classification in the Master Plan. The R1-D parallel plan achieves 109 total units that meet the R1-D zoning standards, but it does not preserve natural features, provide open space or off-site amenities such as pedestrian connections to the schools, nor does it extend the sanitary force main from the south, as would be permitted in straight R1-D zoning.

The proposed Edendale Crossing PD site plan proposes 16 additional home sites (125 total residences) than the R1-D parallel plan, and preserves natural features throughout the site, provides greater than 20% open space, expands the pedestrian systems and connections to the schools, and extends the sanitary force main nearly a mile from south of the high school. The Edendale Crossing PD site plan, while similar in density and residential use to the R1-D parallel plan, is far superior to the R1-D plan because of its additional neighborhood features and

amenities, extension of the sanitary sewer, Cedar Island road improvement, connections to the pedestrian systems, and ability to provide village size lots and therefore more moderately priced homes.

Edendale Crossing – description of the proposed neighborhood:



PH Homes proposes to develop 125 single-family residences within the 45.47-acre Edendale Crossing neighborhood, equaling a 3.47 residences per net-acre density. The neighborhood will maintain 20.7% open space within the neighborhood, a significant preservation of existing trees and natural features on site, beautiful residential architecture, and construction materials, and have connected sidewalks and trails throughout.

Specific elements of the PD Site Plan include:

- Phasing: The neighborhood will be developed as a two-phase project
- Roads: 28’ wide private roads will be constructed within a 60’ wide private road easement
- Architecture: Renderings, floor plans, and high-end building materials are included.
  Homes sizes will range from approximately 2,180 sf – 2,690 sf
  Homes will have 2-car garages and will park a minimum of two cars on the driveway
- Walks: Sidewalks will be located on both sides of the roads and walking trails will connect the open spaces. Real estate data shows that walking trails adjacent to homes are desirable

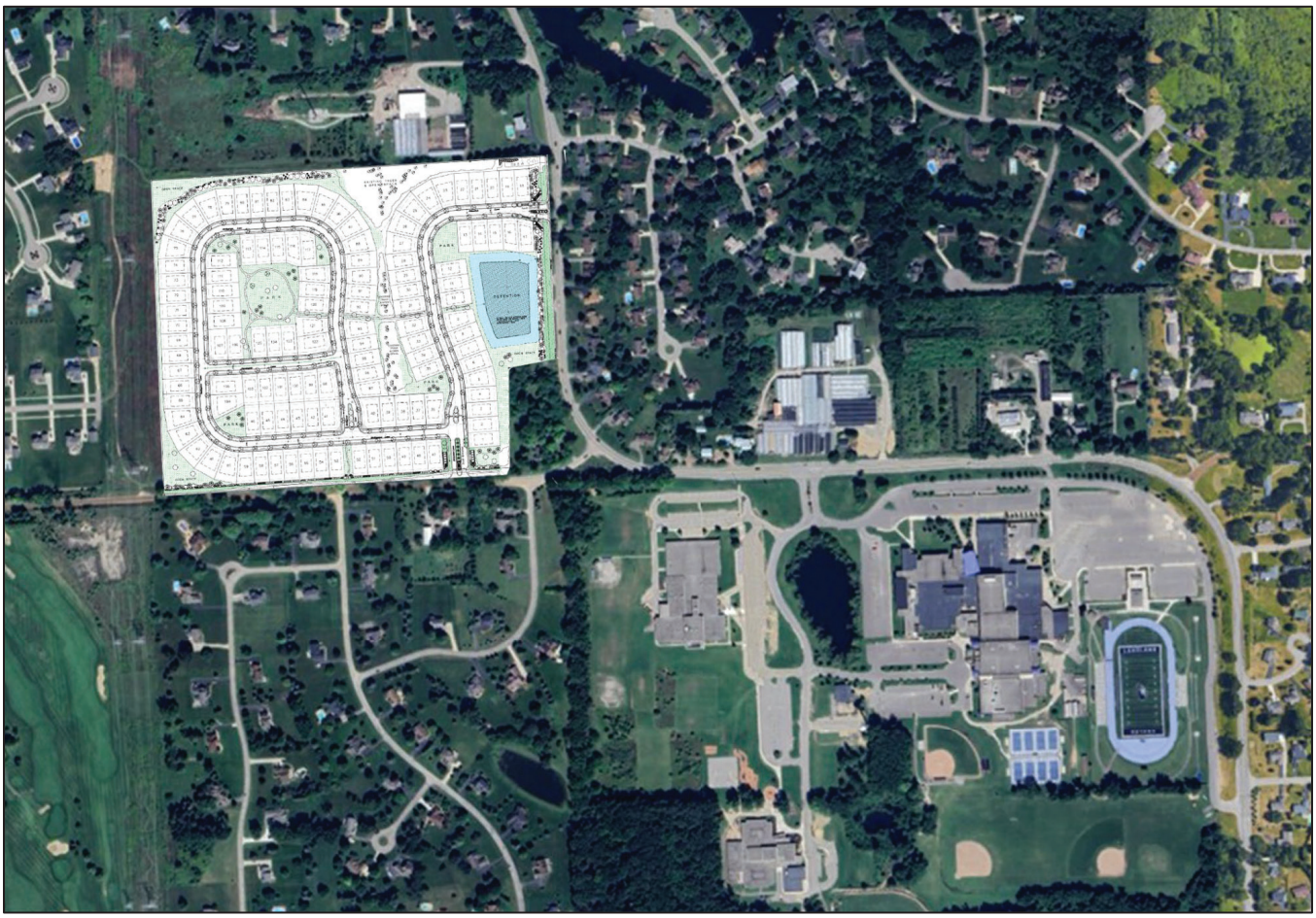
and considered a premium feature for buyers. Twenty percent of the proposed homes within the neighborhood will be adjacent to rear or side yard trails (80% will not have adjacent trails)

- Connection: The sidewalk system is proposed to cross Cedar Island Road, implementing 'Safe Routes to School' standards, and connect to Lakeland Elementary School property
- Open Space: Edendale Crossing will preserve 20.7% open space throughout the neighborhood which Will include the preservation of natural trees and habitat within the middle portion of the site as well as along Cedar Island Road. Passive and active recreational opportunities are available within the walking trails, neighborhood parks, and open play areas
- Utilities: The neighborhood will be served by water from the existing 12" watermain at Bogie Lake
- Road. PH Homes proposes extending the Sanitary Force Main line 5,066' north along Bogie Lake Road from its current termination point south of the high school to the northeast corner of the Edendale site. Sufficient capacity exists within the system to enable further extension to go north if needed in the future.
- Improvements: PH Homes proposes to improve and pave approximately 700 lin.ft. of Cedar Island Road from Bogie Lake Road to the proposed neighborhood entrance. Additionally new 8' wide safety paths will be extended the length of Cedar Island Road and Bogie Lake Rd

Planned Development District Standards:

Planned Development	R1-D Parallel Plan	Proposed PD	Deviation
Building Setbacks			
Front	30'	25'	5'
Side	10' + 10'	10' + 10'	0
Rear	30'	30'	0
Wetland	N/A	N/A	N/A
Unit Lot Standards			
Min Lot Area	12,000 sf	7,500 sf	4,500 sf
Min Lot Width	80'	60'	20'
Min Lot Coverage	30%	38%	8%
Depth to Width	2 : 1	2: 1	0
Development Setbacks			
Front	40'	44'	-4'
Side	25' + 25'	40'	-15'
Rear	Determined	Determined	N/A
Wetland	N/A	N/A	N/A
Lot Standards			
Min Lot Area	10 acres	45.47 acres	0
Min Lot Width	TBD	809.9'	TBD
Min Lot Coverage	TBD	TBD	TBD
Depth to Width	4 : 1	1 : 1	0
Building Height			
	30' of 2 stories	30' or 2 stories	0
Floor Area			
Two Story	1,500 sf w/ 900 sf first floor	2,180 sf w/ 1,100 sf first floor	0

Edendale Crossing Area Setting Plan:



Rezoning Criteria:

1. ***Consistency with the Township's Master Plan***:
    a. As discussed above, Edendale Crossing is consistant with the goals and objectives of the White Lake Township Master Plan and its Future Land Use Map. The site is identified as a residential Development Opportunity Zone and envisions a residential neighborhood with a density between 2 – 8 dwelling units per acre. We are offering single-family homes with 3.7 residences per net acre density.

2. ***Consistency with the site's physical, geographical, and hydrological features of the site***:
    a. The site is currently undeveloped with a former agricultural use. There are no wetlands or significant natural features on site other than existing trees and vegetation areas, most of which will remain. A stormwater detention basin will be located along Bogie Lake Road to provide a setback and landscape buffer to the road.

3. ***Evidence the applicant cannot make a reasonable return on investment through the development under existing zoning***:
    a. Rezoning AG land is required to develop residential neighborhoods consistent with the Master Plan and Future Land Use Plan. Using the PD option allows creative design techniques that preserve natural features and create open space, while the proposed 125 residences enable the costly extension of the sanitary force main to the northern end of the site.

4. ***Compatibility of the proposed use with surrounding uses and zoning districts***:
    a. The Master Plan has designated this area to be a "more dense neighborhood residential area." Edendale Crossing provides a high-quality neighborhood, compatible with nearby single-family neighborhoods. Neighborhoods immediate adjacent are buffered by an ITC corridor to the west and a commercial nursery and cell phone tower to the north, thereby providing seperation from existing uses.

5. ***Capacity of Twp utilities and services sufficient to accomidate the proposed uses***:
    a. Edendale Crossing will not strain or place undue hardship on Township services, which are discussed in future sections of this report. Additionally, this project will extend the sanitary force main one mile, expanding the availability of sanitary sewer to the north.

6. ***Capability of the street system to safely and efficiently accomidate the expected traffic***:
    a. A detailed traffic Impact Study was completed by Fleis & Vandenbrink and has been submitted to the Twp for review. The TIS recommends center left hand turn and right-hand taper improvements which will enable the streets to operate at their same Level of Service or an improved Level of Service at AM, PM, and School PM peak periods. The Carlisle Wortman report considered moving the proposed Cedar Island entrance to the west to align with Mayfair Drive, however we do not feel that is warranted because although there is not a posted speed limit on Cedar Island Road (a dirt road), it is approaching the Bogie Lake Road intersection and is within a school zone, and therefore traffic moves at a slower rate of speed. Maintaining the entrance as proposed enables the applicant to extend pavement to the entrance seven hundred' west of Bogie Lake Road.

7. ***Apparent demand form proposed single-family homes***:
    a. There is a strong demand for housing in the Township and surrounding areas. The Master Plan has identified this and calls for denser housing developments. PH Homes has built many homes in White Lake Township over the last several decades and estimates a 2.5% - 5% growth in the demand for new and replacement homes in the Township over the next several years.

8. ***The boundaries of the rezoning parcel are reasonable and can accomidate dimensional regulations***:
    a. The use of the PD distrcit is reasonable for the site to achieve the goals of the Master Plan. The proposed site plan provides all exterior boundary dimensional standards.

9. ***The requested zoning district is more appropriate from the Township's perspective***:
    a. The rezoning of the property is consistent with the uses promoted in the Master Plan and the proposed density is less than half of the density envisioned within the Master Plan.

10. ***Is the rezoning to PD more appropriate than other zoning options***:
    a. Yes, the PD is consistent with the Zoning Ordinance and Master Plan.

11. ***Will the rezoning create an isolated spot zone***:
    a. No, this will not create spot zoning. The area is predominantly single-family residential, and this will add to the fabric and character of White Lake Township.

12. ***This project has not been previously submitted within the past year***.

13. ***This is not proposed as a Conditional Rezoning application***.

Impact on Adjacent Uses:

Endendale Crossing is adjacent to similar existing residential land uses including SF (Suburban Farm) to the south, R1-A (Single Family) to the west, and R1-C (Single Family) to the east. The proposed Endendale Crossing homes are compatible with all adjacent land uses and neighborhoods and will fit well into the community. Endendale Crossing will be compliant with all Township ordinances standards beginning with the constrcution phase and then well after the homes are complete. Endendale Crossing will not exceed the Township's regulated noise levels, nor will it generate any smoke, dust, or other irritants beyond a typical residential neighborhood.

Community Facilities and Services:

Estimated demand for Police, Fire, and Public Safety Services:
The 125 new homes within Endendale Crossing will add approximately 338 residents (average of 2,7 residents per home) or less than 1% to the Township's current population of more than 32,000 people. This small number of new residents in the Township will add a proportionately small additional demand to the Police and Fire services. In 2024, the White Lake Township Police and Fire Departments reported 24,767 and 3,345 calls for service, respectively, which are the total number of calls Township-wide, and include other calls such as traffic stops, beyond the calls only to residential homes. Based on Township statistics, it can be assumed that Endendale Crossing may add 6-8 additional police calls per year and up to an additional 20-25 fire / emergency calls per year.

Estimated Number of Sewer and Water Taps:
Edendale Crossing proposes a 5,066' extension of the existing 12" Sanitary force main, which currently terminates at the southern end of the Lakeland High School property, north along Bogie Lake Road to the northern boundary of the applicant property. On-site sewage disposal will be routed to an on-site proposed pump station outletting to the extended municipal force main at the northeastern corner of the applicant property. A new 8" watermain is proposed to be connected to the existing 12" municipal watermain along Bogie Lake Road. See Kieft Engineering Sheet 9 of 16 for details.

Estimated Number of Axle Loading of Truck Trips daily over proposed route through Township:
Loading fatigue from the pavement from truckloads to and from the site during the proposed constrcution should not be a concern along the primary traffic route. Bogie Lake Road is a well-maintained collector road with the site located just one and one quarter miles south of M-59, ensuring that trucks will not have to travel onto local streets or through existing neighborhoods to access the site.

Description of other significant impacts or needs related to community facilities:
There are no additional significant impacts on community facilities. Endendale Crossing is designed to meet all technical standards of White Lake Township and associated county and state standards. Roads will be built to county standards, including sidewalks throughout the neighborhood as well as walks and trails along Bogie Lake Road and Cedar Island Road. The proposed roads within Endendale Crossing are proposed to be private. All public utilities (Gas, Electric, Telephone, & Cable) will be installed underground. Stormwater is designed to conform with all applicable requirements of the OCWRC 100-year standards and will be managed on-site through a network of improvements including storm sewer, rain gardens, and a detention basin which will outlet to the existing northern exit point at a controlled rate not to exceed the current outflow.

Economics:

Anticipated number of construction and permanent jobs:
According to the National Association of Home Builders study titled *The Economic Impact of Home Building in a Typical Local Area, Income, Jobs, and Taxes Generated* dated April 2015, the anticipated number of construction jobs associated with the proposed 123-home development will be approximately 216 (the number of local constrcution jobs supported per construction of 100-single family homes in a typical local area is 176 according to the NAHB). Although there will be no permanent on-site jobs post construction, the development of new residential homes stimulates job growth across a wide range of industries and contributes significantly to the economic well-being of a community. A 2020 study by the National Association of Home Builders found that for every $1,000,000 in constrcution capital investments supports eleven full-time jobs, and that the constrcution of one hundred single-family homes generates as many as 290 full-time jobs.

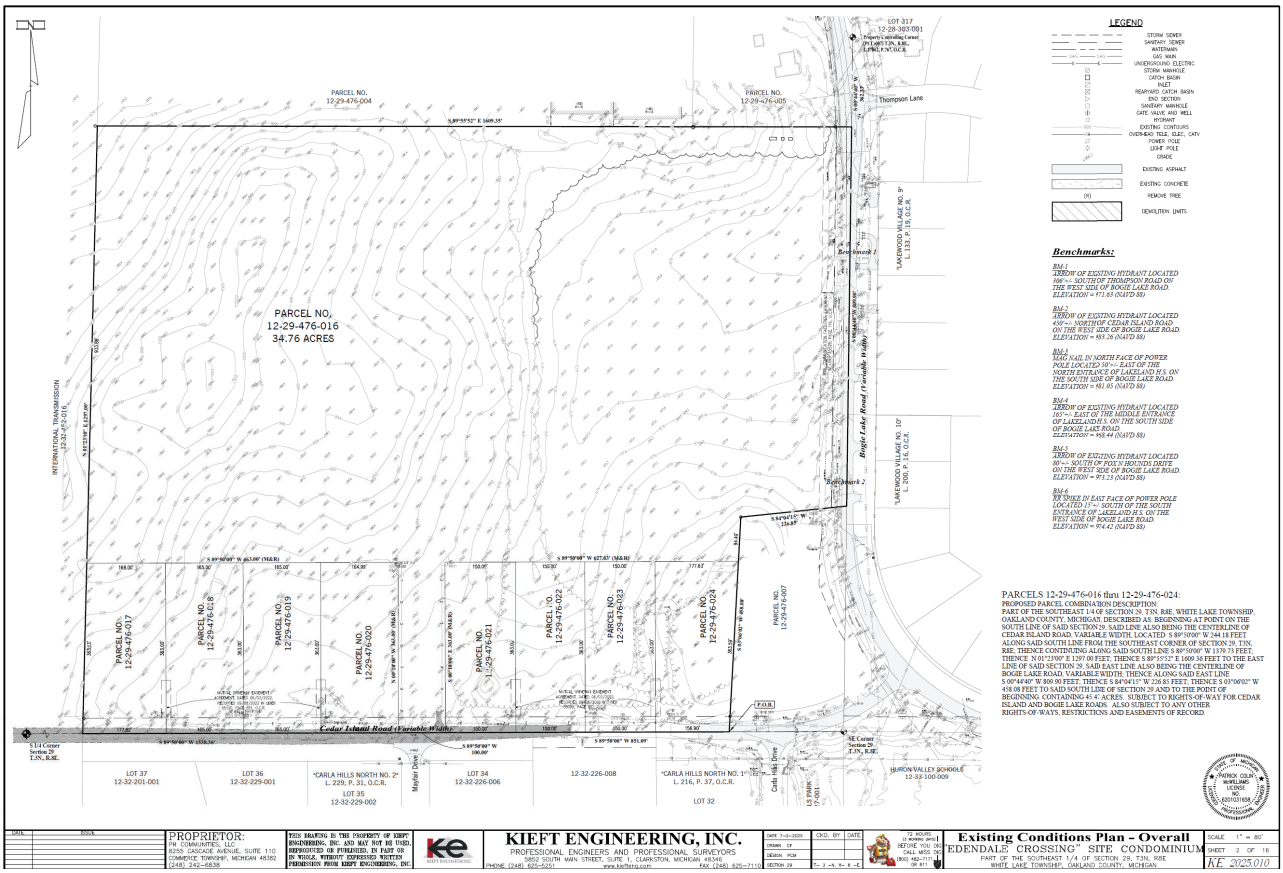
Anticipated tax revenues to the Township and School District:
Property assessments are estimated at 50% of the property's Market Value. However, property owners pay taxes based on the property's taxable value. Taxable value is the lesser of the Assessed Value (SEV) or the prior year's taxable value minus losses, increased by the lesser of 5% or the Consumer Price Index, plus additions. ownership.

The published 2025 White Lake Township principal residence millage rate is 31.6857. If the typical taxable value of an Edendale Crossing home is $250,000, the anticipated total property tax associated with the average home in this development would be $7,921. The anticipated total tax revenue for the proposed 125-home neighborhood would be approximately $990,125 annually.

Environment:

Existing Natural Features:
The boundary and topographic survey shown below and included in the site plan submission documents, identify the existing conditions of the site. The Endendale Crossing site gently slopes from the southwest to the northeast. There are no wetlands, streams, or waterways on site and the existing trees, primarily located within a vegetative hedgerow that runs north and south in the center of the site, will remain as an open natural feature within the proposed neighborhood. Existing tree inventory data and locations of larger trees and vegetative masses are identified on the topographical survey, and the landscape plans identify all existing trees and vegetative areas that will remain. Additional existing vegetative buffering along the southern boundary (Cedar Island Road) will remain

within general common area open space as depicted in the Site Plan. Areas of the site and individual tree tag numbers of trees that will remain are indicated on the Civil Engineering and Landscape plans.



No Hazardous Materials or Pollution:
Edendale Crossing is proposed to be a residential neighborhood. There will be no manufacturing or storage of any hazardous materials or pollutants on site. Existing groundwater quality and existing levels will not be impacted because the homes will be serviced by public water and will not have individual ground wells that would draw from the groundwater. As stated above, stormwater will be managed on-site through a network of improvements including storm sewers, rain gardens, and a detention basin which will outlet to the existing northern exit point at a controlled rate not to exceed the current outflow.

Noise:
Minimal low-level construction noise may be occasionally noticed during the constrcution period, however the proposed single family home neighborhood, similar in use to the existing adjacent residential neighborhoods, is not expected to generate any discernible level of noise once constructed. The existing hedgerow of trees, existing vegetation, proposed tree plantings, and open space throughout the neighborhood will help to mitigate any noise that may exist from time to time.

Traffic:

The 125 new Edendale Crossing homes will have access onto Bogie Lake Road and Cedar Island Road from its internal network of streets. A detailed traffic Impact Study was completed by Fleis & Vandenbrink and has been submitted to the Twp for review. The traffic study completed traffic counts during school days to ensure that it captured residential, transient, and school traffic typical to existing conditions of the area.

Fleis & Vandenbrink completed an analysis of projected traffic that will be generated by the 125 proposed homes and found that the neighborhood traffic would have minimal impact on Bogie Lake or Cedar Island Roads. Projections of morning peak traffic activity may add up to 82 additional morning trips, and evening peak hour traffic activity may add up to 111 additional evening trips. Edendale Crossing proposes specific improvement and mitigation features including the paving of Cedar Island from Bogie Lake to the proposed entrance of the neighborhood at Cedar Island, as well as center left hand turn and right-hand taper improvements which will enable the existing roads to operate at their same Level of Service or an improved Level of Service at AM, PM, and School PM peak periods.

Community Impact Statement prepared by:

J Eppink Partners, Inc
Land Planning & Urban Design Studio
27 South Squirrel Road – Suite 104
Auburn Hills, MI 48326
248-922-0789

WHITE LAKE TOWNSHIP
NOTICE OF PUBLIC HEARING

Notice is hereby given of a public hearing by the White Lake Township Planning Commission on **Thursday, December 4th, 2025, at 6:30 P.M.** at the Township Annex, 7527 Highland Road, White Lake, Michigan 48383, to consider the following changes to the zoning map:

Property described as parcel numbers 12-29-476-016, 12-29-476-017, 12-29-476-018, 12-29-476-019, 12-29-476-020, 12-29-476-021, 12-29-476-022, 12-29-476-023 and 12-29-476-024 (9 adjacent parcels total), located on west side of Bogie Lake Road, north of Cedar Island Road, consisting of approximately 45.47 acres.

Applicants request to rezone the property from **(AG) Agricultural & (R1-A) Single Family Residential to (PD) Planned Development** or any other appropriate zoning district.

Persons interested are requested to be present. Pertinent information relative to this rezoning request is on file at the Community Development Department and may be examined at any time during regular business hours of 8:00 a.m. to 5:00 p.m. Persons interested may visit the Community Development Department, contact the Community Development Department by telephone at 248-698-3300, ext. 2, or attend the Public Hearing on the date specified. Written comments are also welcome at 7525 Highland Road, White Lake, MI 48383. Individuals with disabilities requiring auxiliary aid or services should contact the Clerk's Office at least 5 days before the hearing.

Sean O'Neil, AICP
Community Development Director

Director's Report

Project Name: Jax Car Wash

Description: Preliminary Site Plan approval and PB Approval

Date on Agenda this packet pertains to: December 4th, 2025

☒Public Hearing

☒Initial Submittal

☐Revised Plans

☒Preliminary Approval

☐Final Approval

☒Planned Business

☐Rezoning

☐Other:

Contact	Consultants & Departments	Approval	Denial	Approved w/Conditions	Other	Comments
Sean O'Neil	Community Development Director	☐	☐	☐	☒	Based on comments from staff & consultants
Mike Leuffgen	DLZ	☐	☐	☒	☐	See letter dated 10/30/2025
Matteo Passalacqua	Carlisle Wortman Associates, Inc	☐	☐	☒	☐	See letter dated 10/29/2025
Jason Hanifen	WLT Fire Marshal	☐	☐	☒	☐	See letter dated 10/22/2025

DLZ
ARCHITECTURE • ENGINEERING • PLANNING
SURVEYING • CONSTRUCTION SERVICES

INNOVATIVE IDEAS
EXCEPTIONAL DESIGN
UNMATCHED CLIENT SERVICE

October 30, 2025

Sean O' Neil
Community Development Department
Charter Township of White Lake
7525 Highland Road
White Lake, Michigan 48383

RE: Jax Kar Wash- Preliminary Site Plan Review – 2nd Review

Ref: DLZ No. 2545-7861-10 Design Professional: PEA Group

Dear Mr. O' Neil,

Our office has performed a Preliminary Site Plan review for the above-mentioned revised plan dated October 9, 2025. The plans were reviewed for feasibility based on general conformance with the Township Engineering Design Standards.

General Site Information

This 1.88 acre site is located at the northwest corner of M-59 and Bogie Lake Road.

Site Improvement Information:

- Construction of an approximately 5,555 sf manned car wash.
- Associated paved and curbed parking area, including an ADA parking space.
- Water and sanitary sewer service.
- Storm water management facilities.

The following items should be noted with respect to Planning Commission review:

Please note that comments from our September 26, 2025 review are in *italics*. Responses to those comments are in **bold.** New comments are in standard font.

a) *The plan shows that the western lot line is to be moved further east. Has this property transfer and updated property legal description been done and recorded with Oakland County? We defer to the Township regarding this item. We note that the property line shift and transfer of property to the adjacent parcel to the west will impact whether Jax will need to grant an off-site easement to the*

proposed Panera Bread (property to the west) for placement of a portion of Panera's parking on the Jax property. It will also impact the legal description for an access easement across the Jax southern drive (see below Comment c) for Panera's benefit. **Comment remains. Design engineer has noted that the westerly property line is to be reconfigured. Confirmation of the reconfiguration shall be required at the time of Final Engineering Plan submittal.**

b) *Verify BM elevations for BMs 300 and 301. The elevations for these two benchmarks are approximately 2' higher than the identical benchmarks shown on the previous Cosmo's Car Wash plan for this parcel.* **Comment partially addressed. Design engineer has stated that the benchmarks for the former Cosmo's Car Wash had incorrect descriptions. Please place a PS seal and signature on Sheet C-1.0 as certification that a PS has prepared and reviewed the topographic survey.**

c) *An access easement for the southern drive from the western property line drive connection to Bogie Lake Road will need to be provided/shown on the plan.* **Comment remains. A 27' wide easement is now shown on the plan. Provide easement document and exhibit at time of FEP submittal.**

d) *The five (5) proposed parking spaces to the south indicate there will be five (5) employees maximum on site at one time. Is this number accurate and does it include persons drying vehicles after they exit the car wash as well as the person at the attendant booth? Does this number include on site management ?* **Comment outstanding. Per design engineer, "Jax Kar Wash operates numerous locations throughout southeastern Michigan, five parking spaces is sufficient for their business operations." We defer to the Township whether the 5 spaces meet Township requirements for number of required employee spaces.**

e) *Clarify why the two proposed parking spaces at the SE corner of the vacuum area have bumper blocks shown. Currently curbing is proposed so there would be no need for bumper blocks. We note there is also a bumper block detail shown on Sheet C-9.0. We also note that the architect's exterior rendering showing the ADA space up close, shows bumper blocks. Please check that all plans are consistent with what is intended for parking spaces.* **Comment partially addressed. The bumper blocks have been removed; however, please remove bumper block detail from Sheet C-9.0 and bumper blocks on the architects rendering, as stated in our original above comment.**

f) *A one way drive to enter the vacuum area with a width of 13' is proposed. Zoning Ordinance 5.11 Q. v. requires a minimum 20' width for one way drives.* **Comment addressed. The one way drive lane is now shown as 21' wide.**

g) *Provide fire truck turning radii plan that also demonstrates ingress, internal circulation, and egress of a standard 40' length fire truck on the site.* **Comment addressed. Fire truck turning radii plan has now been provided.**

h) *Add note to plan indicating that applicant/ owner shall repair and /or clean up (a lot of grass growing in between existing sidewalk slabs) any of the existing sidewalks located along property frontages. We note there are several damaged sections of existing sidewalk along the Bogie Lake Road and M-59 frontages.* **Comment partially addressed. Notes regarding the above comment have been added to plan Sheet C-3.1; however, move arrow on note for Bogie Lake Road sidewalk. Currently arrow points to Bogie Lake Road.**

i) *We defer to the Township regarding the requirement for sidewalk along Audbon Drive (Reference Zoning Ordinance Sections 5.20 and 5.21). We note that the proposed Panera Bread to the west Preliminary Site Plan showed a proposed sidewalk across their Audbon Drive frontage.* **Comment remains.**

j) *ADA parking space will need to meet ADA standards in terms of slopes and dimensions; further details will be required at the time of Final Site Plan/Final Engineering Plan submittal.* **Comment remains. Slopes and dimensions have been added to the Preliminary Site Plan. Grades shall be reviewed at the time of FSP/FEP submittal.**

k) *Provide ADA space dimensions in accordance with the requirements of Zoning Ordinance Section 5.11 O. iii. For van access. Dimensions shall be 8' parking space and 8' loading area. Currently a 12' wide space and 5.5' loading zone are shown.* **Comment addressed. Van accessible dimensions per Township Zoning Ordinance have been added.**

l) *Move sidewalk ramp, adjacent to the proposed ADA space, to the north to align with the loading zone.* **Comment partially addressed. Please clarify if the northernmost sidewalk portion is flush with the ADA loading area elevation. The intent for this area regarding the proposed grades and relative to the ramp is not clear. Additional grading will be required on the FEP to confirm compliance with ADA standards.**

m) *Preliminary grading of the site has been proposed and demonstrates general drainage patterns; a detailed grading review will be performed at time of Final Site Plan/Final Engineering Plan review to ensure positive drainage on entire site.* **Comment remains as a notation.**

n) *An off-site grading and construction easement shall be required for off-site grading to the west. In addition, an off-site grading easement shall be required from Meijer for proposed off-site grading SE of the site.* **Comment remains.**

o) *Sheet C-9.0-Chain Link Fence Detail- We defer to the Township as to whether the fence shall be decorative or whether chain link is acceptable. The fence shall be a minimum of 42" in height. Please reference White Lake Township Engineering Design Standards Section B.6. which states " Any portion of a retaining wall more than 30" high shall have provided at the top of said wall a decorative railing not less than 42"high (non-residential uses) meeting the requirements of Section 1012.3 of the Michigan Building Code."* **Comment partially addressed. Fence is now indicated on Sheet C-3.1 to be a 42" high decorative fence. Please remove Chain Link Fence Detail on Sheet C-9.0.**

p) *Show pre versus post development storm drainage that is being routed to the existing storm sewer structure near the corner of Highland Road and Bogie Lake Road.* **Comment addressed. Calculations have been provided, and it has been demonstrated that there is sufficient capacity in the existing storm sewer to accommodate developed flows.**

q) *The applicant will need to provide information detailing whether this site falls under the Meijer Storm Water Management Facilities Easement, Maintenance Agreement and Lien document or if a new agreement will be required for this development. Likely a new agreement will be required and supporting exhibits will need to be provided.* **Comment partially addressed. Per the design engineer,**

the site falls within the Meijer Stormwater Management tributary area. Comment regarding a new agreement is outstanding.

r) *Provide details on the FSP/FEP for the water quality units. The units will be required to remove 80% of TSS.* **Comment remains.**

s) *The proposed north/south storm sewer connecting to existing Catch Basin Ex B is too close to the existing sanitary sewer manhole to the west. A minimum 10' horizontal separation is required.* **Comment addressed. Storm sewer has been adjusted in this area such that there is now 10' horizontal separation between it and the sanitary sewer manhole.**

t) *The storm sewer between proposed CB2 and CB3 shall be upsized to 18" diameter. Otherwise, a restriction at CB3 will occur.* **Comment addressed. Sewer has been upsized to 18" diameter.**

u) *Verify rim and invert information for the two existing storm sewer connection points. As built data all show these elevations at approximately 1' higher than those shown on the Jax plan.* **Comment addressed. PEA confirms that the rim and invert elevations provided were field measured by their firm.**

v) *Show existing 54' wide sanitary sewer easement that is on the Meijer sign property located SE of the Jax site.* **Comment remains. Design engineer states this will be added to the FSP/FEP.**

w) *The plan shows connection of the proposed sanitary sewer lead to the existing 18" diameter sanitary sewer along the M-59 frontage. The plan shows an existing sanitary sewer lead to the east(invert of approximately 970.00') of the area of the current proposed connection and we question why this lead is not being utilized. The existing 18" sewer is approximately 25' deep at the area where the current connection is proposed and connection to this sewer may result in potential construction trenching too close to the existing road.* **Comment addressed. The proposed sanitary sewer is now shown as connecting to the existing lead.**

x) *The existing sanitary sewer diameter along M-59 and that which crosses Bogie Lake Road is mislabeled. The sewer diameter is 18". Please revise.* **Comment addressed. Sewer diameter has been revised.**

y) *Currently a 500 gallon oil/water separator is proposed. Provide support documentation to demonstrate that this size separator will be sufficient to service the proposed car wash operation. In addition, is a water reclamation system proposed? If so, please show on plan. Lastly, is MH Structure A on the plan proposed to be a monitoring MH?* **Comment partially addressed. An internal water reclamation system is proposed. MH Structure A is labeled as a monitoring manhole. Although the design engineer states Jax uses a 500 gallon oil/water separator, provide support documentation for the proposed 500 gallon capacity.**

z) *Provide cleanouts every 75' for proposed sanitary sewer lead.* **Comment addressed. Cleanouts have been provided.**

aa) *We defer to the Township Fire Department regarding hydrant coverage.* **Comment remains as a notation.**

bb) *Sheet C-1.0- Provide diameter of existing watermain along M-59 frontage.* **Comment addressed. Diameter has been provided.**

cc) *Sheet C-6.0- Public Utility Easement note- Watermain easements shall be 20' wide.* **Comment addressed. Note has been updated.**

dd) *Sheet C-6.0-Refer To section- None of these notes, design, or details are shown on Sheet C-9.0.* **Comment addressed. The note has been removed from this sheet.**

Recommendation

The majority of the above comments have been addressed, and we are recommending approval of the Preliminary Site Plan; any remaining comments shall be required to be addressed at the time of Final Site Plan/Final Engineering Plan submittal.

Please feel free to contact our office should you have any questions.

Sincerely,

DLZ Michigan

Michael Leuffgen, P.E.
Department Manager

Victoria Loemker, P.E.
Senior Engineer

Cc: Hannah Kennedy-Galley, Community Development, White Lake Township, *via email*
Aaron Potter, DPS Director, White Lake Township, *via email*
Jason Hanifen, Fire Marshall, White Lake Township, *via email*
Nick Spencer, Building Official, White Lake Township, *via email*

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Carlisle | Wortman
ASSOCIATES, INC.

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October 29, 2025

Preliminary Site Plan / Planned Business Review
for
White Lake Charter Township, Michigan

Applicant:	BMW KAR WASH, LLC
Project Name:	JAX Car Wash (Meijer Outlot)
Plan Date:	September 10, 2025
First Revision	October 9, 2025
Location:	Northwest corner of Bogie Lake Road and Highland Road (M-59) Parcel ID: 12-20-276-034
Action Requested:	Preliminary Site Plan / Planned Business Approval

PROJECT NARRATIVE

The applicant is requesting preliminary site plan approval to construct a 5,555 sqft automobile wash establishment (car wash) in an outlot of the Meijer Planned Business district. Automobile wash establishments are principal permitted uses in the PB zoning district.

The PB Planned Business District is primarily a commercial district intended to permit, with Township approval, private and/or public development in a coordinated and cohesive arrangement which may be more difficult to achieve under more conventional, piecemeal development designed to conform with standard zoning requirements. It is further intended that the PB District be located along major thoroughfares, such as M-59.

For PB developments, the Planning Commission holds a public hearing and recommends approval, conditional approval, or denial of the site plan to the Township Board. The Township Board then reviews the application and grants approval if the Board determines that the plan satisfies all requirements for preliminary plan approval. Development agreements are required for review prior to final site plan review by the Planning Commission. The Planning Commission approves or denies the final site plan and recommends approval or denial of the development agreement to the Township Board. The Township Board has final authority over the approval of the development agreement.

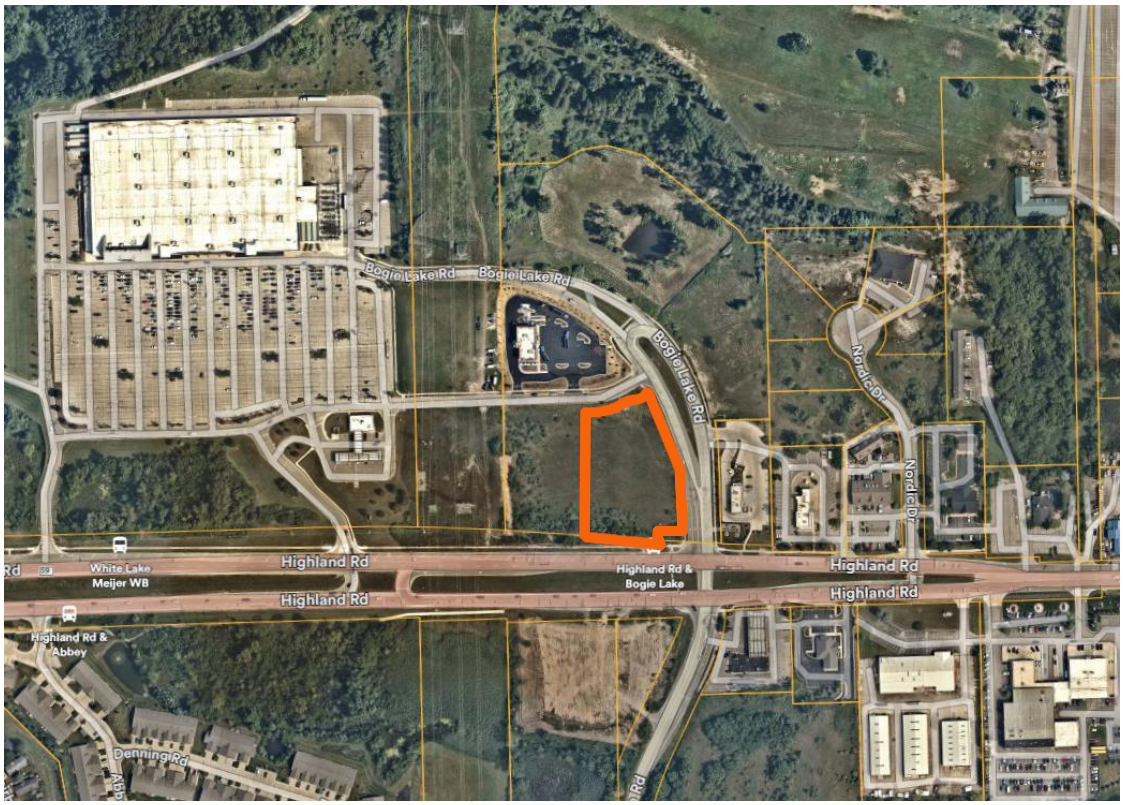
Items to be Address: *None*

Benjamin R. Carlisle, *President* John L. Enos, *Vice President* Douglas J. Lewan, *Principal*
David Scurto, *Principal* Sally M. Elmiger, *Principal* R. Donald Wortman, *Principal* Craig Strong, *Principal*
Paul Montagno, *Principal* Megan Masson-Minock, *Principal* Laura Kreps, *Senior Associate*
Richard K. Carlisle, *Past President/Senior Principal*

SITE DESCRIPTION

Lot Area:	1.88 gross acres (81,920 square feet)
Frontage:	Approx. 384 feet along Bogie Lake / Approx. 193 feet along Highland Road (M-59) - Proposed
Address:	6001 Highland Road
Current Use:	Vacant

Aerial image of the site



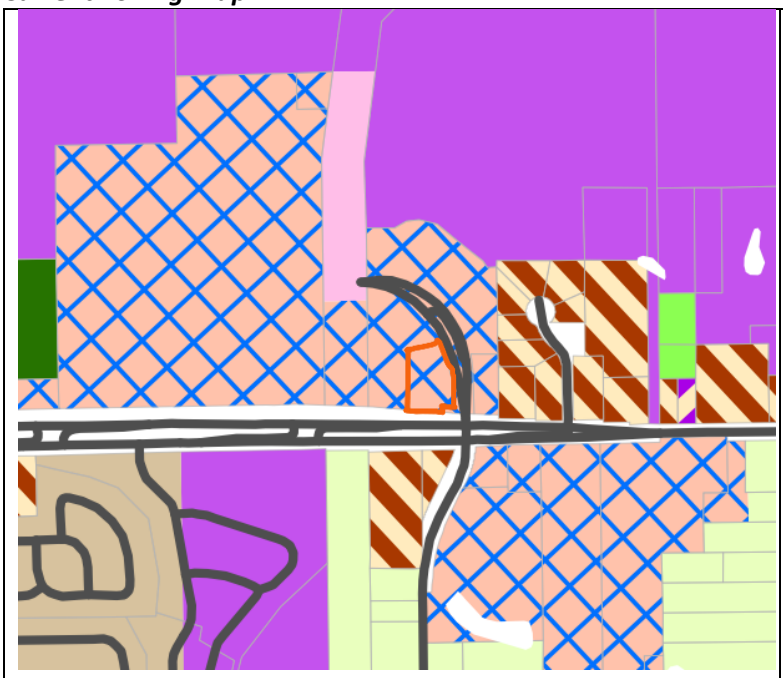
Source: NearMap July 2025

	North	East	South	West
Surrounding Zoning	*PB, Planned Business*	*PB, Planned Business*	*GB, General Business*	*PB, Planned Business*
Surrounding Land Uses	*Commercial*	*Commercial*	*Vacant*	*Vacant*
Future Land-Use Map	*Commercial Corridor*	*Commercial Corridor*	*Commercial Corridor*	*Commercial Corridor*

Current Zoning	**PB, Planned Business** *The PB Planned Business District is primarily a commercial district intended to permit, with Township approval, private and/or public development in a coordinated and cohesive arrangement which may be more difficult to achieve under more conventional, piecemeal development designed to conform with standard zoning requirements. To that end it becomes possible to permit greater flexibility in the types of land uses, land use arrangements and development requirements than would otherwise apply. It is further intended that the PB District be located along major thoroughfares, such as M-59, as opposed to locations in residential neighborhood areas where conflicts of land uses may arise more easily.* *Development standards, as approved in a development plan, in this district shall result in a project that is superior to one constructed under standard zoning requirements and shall be mutually acceptable to the applicant(s) and the Township. Therefore, any PB Plan shall be substantially consistent with the Township Master Plan, desirable principals of land use planning, zoning ordinance standards and other applicable development requirements. In order to achieve these objectives, approval of a PB development requires approval of both a Site Plan and PB Agreement which sets forth specific physical, functional, amenity and design features and other related requirements considered essential to the development.*

Jax Car Wash / Planned Business Review
Preliminary Site Plan Review / First Revision
October 29, 2025

Current Zoning Map



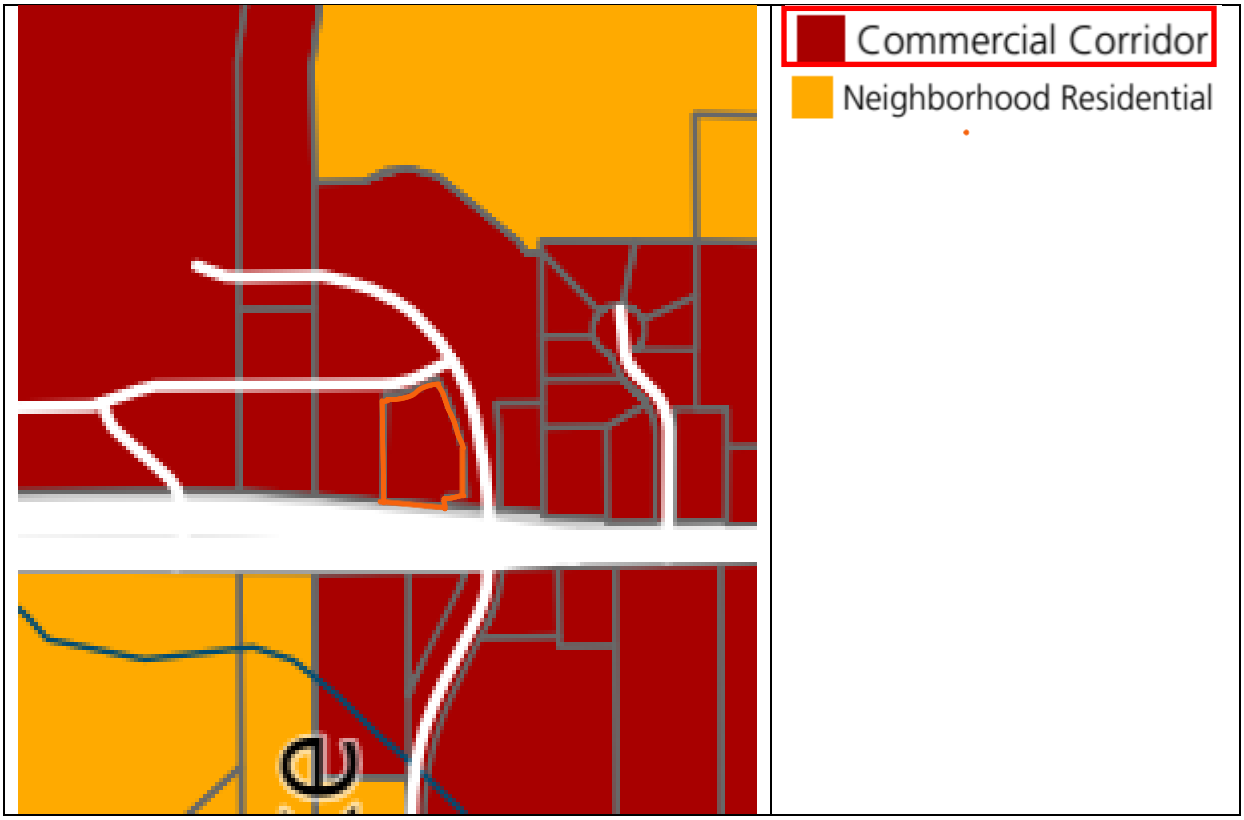
WELLHEAD PROTECTION AREAS

Zoning 2025

- AG AGRICULTURAL
- SF SUBURBAN FARM
- R1-A SINGLE FAMILY RESIDENTIAL
- R1-B SINGLE FAMILY RESIDENTIAL
- R1-C SINGLE FAMILY RESIDENTIAL
- R1-D SINGLE FAMILY RESIDENTIAL
- RM-1 ATTACHED SINGLE FAMILY RESIDENTIAL
- RM-2 MULTIPLE FAMILY RESIDENTIAL
- LB LOCAL BUSINESS
- GB GENERAL BUSINESS
- RB RESTRICTED BUSINESS
- PB PLANNED BUSINESS
- MHP MOBILE HOME PARK
- NB-O NEIGHBORHOOD OFFICE
- ROS RECREATION & OPEN SPACE
- LM LIGHT MANUFACTURING
- PD PLANNED DEVELOPMENT
- ROP RESEARCH OFFICE PARK
- PG PONTIAC GATEWAY
- NMU NEIGHBORHOOD MIXED USE
- TC TOWN CENTER

Future Land Use	**Commercial Corridor** *Description: "Provides regional goods and services to residents and non-residents. Includes large box stores and drive thrus."* *Example of Uses: "Large grocery, outlet, mixed-use, restaurants"*

Future Land Use Map



Sheet C-3.0 proposes a new western lot line. This proposal reduces the current lot size and allocates more land to the neighboring lot to the west. The site plan for the lot to the west does not reflect what was approved by the Planning Commission in January of 2025. This review will be conducted as if the lot modification is approved however a modified site plan may be required for the neighboring lot to the west.

The zoning and Master Plan compatibility of the development is assessed in the Planned Business portion of this review.

Item to be Addressed: *Western lot line modification approval will be required for final site plan approval and may require a modified site plan for the development directly west of the site.*

PLANNED BUSINESS

Standards for PB projects are outlined in Section 6.7 of the zoning ordinance. This portion of the report will review those standards to identify any potential issues with the proposed development.

Required information

The site plan provides required information for review.

Design Standards

Pedestrian pathways are recommended along all frontage streets and sidewalk connections to all uses within the development, to parking lots and to sidewalks fronting the road right-of-way. While recommended, Section 5.21 and 5.22 require these pathways and shall be reviewed in the Access and Circulation portion of this report.

All current and proposed uses within the PB are complementary and do not require extensive buffering.

The proposed building is to scale with the other outlot developments. Sides visible from roadways are similar to the building's main faced. Articulation is provided via the building's main facades as well as color variation. Developments along Highland Road (M-59) must meet architectural requirements which are reviewed in Architecture and Layout portion of this report.

Access to the site and utility assessments will be evaluated later in this report.

Compatibility to Master Plan

As noted earlier in this report, the proposed project area is designated as Commercial Corridor on the 2024 Master Plan Future Land Use map. Examples of uses in this district specifically list large grocery stores with outlots. Car washes primary operations do not provide goods but do provide services and are not uncommon for outlot development.

The Goals and Objectives portion of the Master Plan offers insight on the future vision residents have for the Township. One of the top goals identified by residents related to site development is providing multi-modal transportation. Few alternate transit options exist in the Township, however the site has the opportunity to offer pedestrian connections to neighboring developments.

Land Use

Car washing and vacuuming are the only uses identified for the site which is permissible in the PB district.

Dimensional and Density Standards

No parallel plan was provided to show the development of the site under a specific zoning district. However, no dimensional or density deviations are being proposed so a parallel plan is not necessary. The Planning Commission will need to determine if the 10 foot side setback being proposed is acceptable.

Community Benefit

A community benefit is required as part of any PB or PD development. The applicant response letter dated October 15, 2025 states a contribution to the Corridor Improvement Authority Fund is being offered as the community benefit.

Items to be Addressed:

1) *A draft development agreement will be required during final site plan review.*
2) *The Planning Commission will need to determine if the 10 foot side setback being proposed is acceptable.*
3) *The Planning Commission will need to determine if the contribution to the CIA is a sufficient community benefit.*

COMMUNITY IMPACT STATEMENT

Section 3.1.10 and 6.6 of the zoning ordinance outline the need for a Community Impact Statement (CIS) for Planned Development and Business projects. A waiver may be requested from providing a CIS if a development is not perceived to have a noticeable impact on Township services or residents. The application response letter dated October 15, 2025 states the applicant is requesting a waiver from providing a CIS due to the sites size.

Items to be Addressed: *Planning Commission to consider the request to waive the requirement that a CIS be provided by the applicant.*

NATURAL RESOURCES

Topography: Sheet C-1.0 shows the existing site topography. The gently slopes from north to south with the highest point being 991.1 feet and the lowest point being 979.1.

Wetlands: Sheet C-1.0 shows that there are no wetlands onsite. EGLE wetland mapper confirms no wetlands are present on the lots.

Woodland: There are no major woodlands on site. There are small tree and shrub clusters on the southern edge of the site along Highland Road. A few single trees and shrubs a scattered throughout the site.

Soils: Sheet C-3.0 states that the site consists of 50B – udipsamments and undulating.

Water: Site does not contain any natural water bodies. Sheet C-1.0 states the site is not within any floodplain.

Source: Google Maps 2025

Items to be Addressed: *Any concerns cited from Township Engineering.*

AREA, WIDTH, HEIGHT, SETBACKS

Lot calculations and setbacks are provided on Sheet C-3.0. Standard bulk and lot regulations for the PB zoning district are set forth in Section 3.1.16 and Section 3.11.

Planned Business District Standards

Planned Business	Required	Proposed PB	Compliant
Building Setbacks			
Front	60 feet	137.5 feet (M-59) 133.7 feet (Bogie Lake Road) 64.7 feet (Audbon Drive)	Yes
Side	TBD	10 feet	TBD
Rear	N/A	N/A	N/A
Wetland	N/A	N/A	N/A
Building Height			
	35 feet or 2 stories	22.5 feet / 1 story	Yes
Lot Standards			
Minimum Lot Area	10 acres	1.88 gross acres	No (see note below)
Minimum Lot Width	TBD	193 feet (M-59)	TBD
Maximum Lot Coverage	TBD	7.65%	TBD
Maximum Depth to Width	4 to 1	Less than 4 to 1	Yes

A minimum lot area of 10 acres is required in the PB District. While the lot area does not meet the minimum requirement, the Meijer outlots were contemplated at the time of the initial development. A waiver from the minimum area requirement is not necessary.

As noted earlier in this review, the site plan proposes a new location for the western lot line.

Per Section 3.11.D, the site has three front yards.

Items to be Addressed: *None*

ACCESS & CIRCULATION

Vehicle Access & Circulation

Access to public roads in the Township are either the jurisdiction on Michigan Department of Transportation (MDOT) or Road Commission of Oakland County (RCOC). The Planning Commission may waive standards for access per Section 6.4.F however permits will be required from RCOC for the proposed access points. Below is a review of the proposed access points per the standards of the zoning ordinance.

A shared access drive is proposed with the retail development directly west of the car wash. Cross site circulation is encouraged, however the site plan dated December 9, 2024 for the lot directly west of the car wash (parcel ID 12-20-276-035) does not offer an option for this connection. The applicant should confirm cross connection is feasible with adjacent property owner or remove the connection from the site plan. If cross connection is sought by both property owners, a revised site plan will be required for parcel ID 12-20-276-035.

Bogie Lake Intersection

The site is accessed via a single two way 27 foot wide drive on Bogie Lake Road. Vehicles will be able to turn right into the car wash stacking area or proceed forward to access the vacuum stations. A 25 mph speed limit requires that the proposed access drive should be 130 feet from driveways on the same side or opposite side of the road as well as intersections. The proposed access drive is approximately 150 feet from the M-59/Bogie Lake Road intersection and 332 feet from the Bogie Lake Road/Audbon Drive intersection.

No traffic study was provided with the application. The applicant states the location of the access drive is ideal for reasonable access to the site. We note the site's limitations in accessing Bogie Lake or Audbon drive however traffic looking to enter from northbound Bogie Lake Road will need to wait for traffic heading southbound to clear. This may be prolonged if the light for traffic heading south is red. A similar issue may present when exiting traffic is attempting to turn left onto Bogie Lake Road to head into the Meijer development.

Non-Motorized Access and Circulation

Sections 5.20 and 5.21 provide requirements for site sidewalks and pathways. Existing sidewalks run along Highland Road (M-59) and Bogie Lake road. The widths of these walkways are not provided. The applicant

shall be required to repair/replace any broken sections of concrete within the frontage sidewalks adjacent to the site along Bogie Lake Road and Highland Road (M-59), as determined by the Township Engineering Consultant. The applicant response letter dated October 15, 2025 acknowledges this responsibility.

The frontage along Audbon drive requires a six foot wide sidewalk. This sidewalk should align with the sidewalk proposed along Audbon Drive relating to the new retail center to the west.

Internal, seven foot wide sidewalks are shown along western vacuum parking spaces.

Public Transit

Public Transit access is available via the SMART Bus Highland Road Route 759. The line runs east/west between Oakland University and Bogie Lake Road along Highland Road (M-59). The accessible Westbound stop is located at the Highland Road (M-59) and Sunny Beach Boulevard intersection. The accessible eastbound stop is located along Highland Road (M-59) at the White Lake Marketplace development. The route operates from approximately 6:00am until 11:00pm on weekdays and 9:00am until 6:00pm on Saturdays.

White Lake Township is also served by the Western Oakland Transportation Authority which provides schedule transportation for Township residents with specific needs.

***Items to be Addressed**:*

1) *Township Engineering concerns.*
2) *Township Public Safety concerns.*
3) *Applicant should confirm cross connection is feasible with adjacent property owner or remove the connection from the site plan. If cross connection is sought by both property owners, a revised site plan will be required for parcel ID 12-20-276-035.*
4) *The Applicant shall be required to repair/replace any broken sections of concrete within the frontage sidewalks adjacent to the site along Bogie Lake Road and Highland Road (M-59), as determined by the Township Engineering Consultant.*
5) *A six foot wide sidewalk is required along Audbon Drive and should align with the development to west's new sidewalk.*
6) *Consideration should be given to relocating the access drive per potential traffic conflicts with Bogie Lake Road / Highland Road (M-59) intersection traffic.*

PARKING & LOADING

Section 5.11 outlines requirements for off-street parking. Automobile car wash is required to have one spot for each employee plus stacking spaces as indicated in 5.11.M.i in the Zoning Ordinance, which requires seven times the maximum capacity of the auto wash. Sheet C-3.0 shows that there are five spaces for internal washed cars thus requiring 35 stacking spaces.

The applicant has provided five employee parking spaces, 35 stacking spaces prior to entering the car wash, and two stacking spaces for exiting the car wash. There will also be 20 vacuum spaces of which one will be handicap accessible. These meet the amount of parking spaces required in the Zoning Ordinance.

Sheet C-3.1 shows the dimensions of the parking and stacking spaces. The parking spaces will be nine feet wide and 18 feet long. The stacking spaces will be 12.5 feet wide by 20 feet long. The vacuum spaces will be 12 feet wide and 19 feet long with 29 feet wide maneuvering lane. There will be one barrier free access space that will be 16 feet wide and 19 feet long. These meet the requirements for parking space dimensions in the Zoning Ordinance.

There will be one loading space at the south side of the parking lot that will be 10 feet wide and 50 feet long. This meets the requirements of Section 5.11.P.i. in the Zoning Ordinance.

***Items to be Addressed**: None*

ESSENTIAL SERVICES & UTILITIES

The site is served by water or sewer. Sheet C-6.0 provides a preliminary utility layout. Section 4.11.D requires site drainage to be designed in a manner that does not create runoff into neighboring properties or roadways. We defer to township engineering to assess the proposed utility systems.

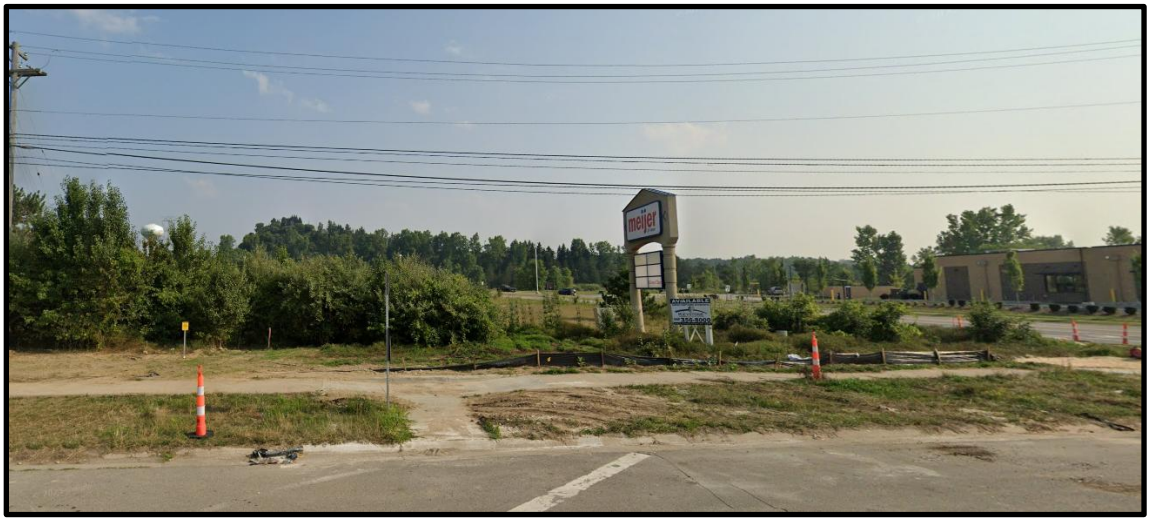
No circulation plan was provided for emergency vehicles. We defer to Township Public Safety to determine the feasibility of site design and hydrant placement.

Items to be Addressed:

1) *Any cited concerns of Township Engineering.*
2) *Any cited concerns of Township Public Safety.*

LANDSCAPING & SCREENING

The applicant has provided a preliminary landscape plan on Sheets L-1.0, and L-1.1. Landscaping plans are approved during final site plan. Below is a review of the proposed plan with items to be addressed at final site plan review. Below is a screenshot from August 2025 showing the current conditions.



Source: Google Street View 2025

Section 5.19.D provides requirements for screening along property lines as it relates to adjacent districts and is reviewed below.

Greenbelts

Property Line	Required	Provided	Compliant
North (ROW)	159.33 feet – 5 large deciduous or evergreen trees and 42 shrubs	8 large deciduous or evergreen trees, and 42 shrubs.	Yes
East (ROW)	384.48 feet – 13 large deciduous or evergreen trees and 103 shrubs	13 large deciduous and evergreen trees, and 103 shrubs	Yes
South (ROW)	231.6 feet – 8 large deciduous or evergreen trees and 62 shrubs	8 large deciduous and evergreen trees, and 62 shrubs	Yes
West	332.2 feet – 11 large deciduous or evergreen trees and 88 shrubs	1 large deciduous or evergreen trees, and 88 shrubs.	No

The applicant is not compliant with the greenbelt standards on the west side of the site. A waiver has been requested for additional trees per the existence of underground utility lines.

Interior Landscaping

Section 5.19 E. provides the requirements for interior landscaping which requires at least fifteen percent (15%) of the total lot area to be landscaped and one (1) deciduous or evergreen tree and five (5) shrubs are required to be planted for every three hundred (300) square feet.

The site is 73,735 square feet, and 15% of that is 11,060 square feet. The applicant needs to provide 37 deciduous or evergreen trees, and 185 shrubs. The applicant is in compliance with the interior landscaping standards. There is a note on Sheet L-1.0 stating that the interior shrubs will be detailed at the final site plan review.

Minimum Plant Size and Species

Section 5.19 H. provides the requirements for minimum plant size. All plant sizes meet standards. The Plant Schedule on Sheet L-1.0 has the Nikko Deutzia, Grey Owl Juniper, Abbotswood, and Dense Anglo-Japanese Yew at 24 inches in height. The plant species are in compliance with the zoning ordinance.

Trash Receptacle, Transformer, and Mechanical Equipment Screening

Sheet C-9.0 shows the details of the dumpster enclosure. The enclosure will be located at the southern end of the building next to the car wash exit. The proposed enclosure meets the Standards of Section 5.19 N. in the Zoning Ordinance.

The transformer pad will be screened by eight ornamental trees that will be three feet in height. No information was provided about the height of the electrical transformer. Proposed screening will need to be as tall as the equipment in order to comply.

Items to be Addressed:

1) *Planning Commission to consider waiver to allow for one deciduous or evergreen tree along the western greenbelt instead of the required eight trees.*
2) *Bushes must be thirty (30) inches in height or spread.*
3) *Height of screening for transformer should be added to the landscape plan.*

PERFORMANCE STANDARDS

The performance standards are outlined in Section 5.18. The applicant has provided a photometric site plan on the last sheet in the drawing set. Lighting is reviewed and approved during final site plan review. Site footcandle limits for commercial uses is 0.5 fc. The site is proposing an average of 0.6 fc. This will need to be modified, or a waiver will be required. Additional footcandle measurements will be needed for walkways, building, and parking areas. Light pole distance from property lines will be required on the plan to confirm the proposed height of the poles is acceptable.

If there is a speaker system, then it needs to meet the requirements of Section 5.18.A. in the Zoning Ordinance.

Items to be Addressed:

1) *Site footcandle limits for commercial uses is 0.5 fc. The site is proposing an average of 0.6 fc. This will need to be modified or a waiver will be required.*
2) *Additional footcandle measurements will be needed for walkways, building, and parking areas.*
3) *Light pole distance from property lines will be required on the plan to confirm the proposed height of the poles is acceptable.*

SIGNAGE

Sheet L-3 provides specifications for monument signage proposed at the Bogie Lake Road and Cedar Island Road entrances. Stone veneer is the predominant finish for the sign. Signs are administratively reviewed by the Township.

Items to be Addressed: *None.*

ARCHITECTURE & LAYOUT

The building's north, east, and south facades share similar architectural features with varied articulation. Proposed exterior building materials are horizontal siding, painted CMU block, brick, and painted metal coping. While brick is proposed, it is not the dominant material.

Garage doors are not permitted to face streets. The Planning Commission will need to consider a waiver for the north and south façade garage doors. Windows are provided on all three front facades. Front facades must offer at least 30% window coverage. The south elevation offers 14.4% window coverage, the North elevation offers 25.2% window coverage, and the East elevation offers 13.9% window coverage.

The west elevation or side of the building is visible from the street and has been updated in revised drawings to offer architectural cues similar to that of the north and south facades.

Items to be Addressed:

1) *Planning Commission to consider whether proposed exterior construction materials are appropriate.*
2) *Planning Commission to consider waiving the prohibition of garage doors facing Highland Road and Audbon Drive.*

SUMMARY

The Planned Business preliminary site plan is substantially complete. Included below is a list of potential conditions the Planning Commission could apply for preliminary site plan approval. Also included are waivers the Planning Commission and Township Board will need to consider, and items that may be addressed at final site plan.

Waivers / Modifications / Determinations

1) *The Planning Commission will need to determine if the 10 foot side setback being proposed is acceptable.*
2) *The Planning Commission will need to determine if the contribution to the CIA is a sufficient community benefit.*
3) *Planning Commission to consider whether proposed exterior construction materials are appropriate.*
4) *Planning Commission to consider waiving the prohibition of garage doors facing Highland Road and Audbon Drive.*
5) *Planning Commission to consider the request to waive the requirement that a CIS be provided by the applicant.*
6) *Consideration should be given to relocating the access drive per potential traffic conflicts with Bogie Lake Road / Highland Road (M-59) intersection traffic.*

Preliminary Site Plan Potential Conditions

1) *The applicant should confirm cross connection is feasible with adjacent property owner or remove the connection from the site plan. If cross connection is sought by both property owners, a revised site plan will be required for parcel ID 12-20-276-035.*
2) *The Applicant shall be required to repair/replace any broken sections of concrete within the frontage sidewalks adjacent to the site along Bogie Lake Road and Highland Road (M-59), as determined by the Township Engineering Consultant.*
3) *A six foot wide sidewalk is required along Audbon Drive and should align with the development to west's new sidewalk.*
4) *Any cited concerns of Township Engineering.*
5) *Any cited concerns of Township Public Safety.*

Items to be addressed at Final Site Plan Review

1) *Western lot line modification approval will be required for final site plan approval and may require a modified site plan for the development directly west of the site.*
2) *A draft development agreement will be required during final site plan review.*
3) *Planning Commission to consider waiver to allow for one deciduous or evergreen tree along the western greenbelt instead of the required eight trees.*
4) *Bushes must be thirty (30) inches in height or spread.*
5) *Height of screening for transformer should be added to the landscape plan.*
6) *Site footcandle limits for commercial uses is 0.5 fc. The site is proposing an average of 0.6 fc. This will need to be modified or a waiver will be required.*
7) *Additional footcandle measurements will be needed for walkways, building, and parking areas.*
8) *Light pole distance from property lines will be required on the plan to confirm the proposed height of the poles is acceptable.*

Respectfully,

CARLISLE/WORTMAN ASSOC., INC.
Matteo Passalacqua
Community Planner

Fire Department
Charter Township of White Lake

7420 Highland Road
White Lake, MI 48383
Office (248) 698-3993
www.whitelaketwp.com/fire

Site / Construction Plan Review

To: Sean O'Neil, Planning Department Director

Date: 10-22-2025

Project: Jax Kar Wash

Job #: 25-0885

Date on Plans: 10-10-2025

The Fire Department has the following comments with regards to the 2nd review of preliminary site plans for the project known as Jax Kar Wash

1. The Fire Department has no further comments at this time.

Jason Hanifen
Fire Marshal
Charter Township of White Lake
(248)698-3993
jhanifen@whitelaketwp.com

Plans are reviewed using the International Fire Code (IFC), 2015 Edition and Referenced NFPA Standards.

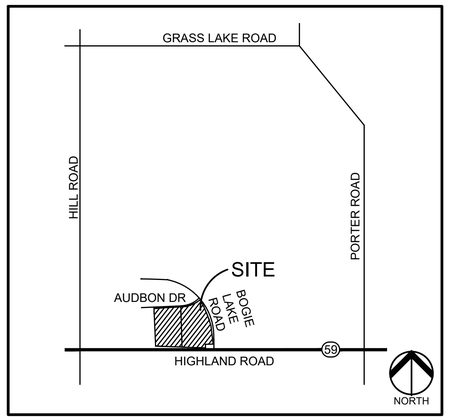
PRELIMINARY SITE PLANS

JAX KAR WASH

HIGHLAND ROAD (M-59)

WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

PERMIT / APPROVAL SUMMARY		
DATE SUBMITTED	DATE APPROVED	PERMIT / APPROVAL



LOCATION MAP
NO SCALE

INDEX OF DRAWINGS	
NUMBER	TITLE
	COVER SHEET
C-1.0	TOPOGRAPHIC SURVEY
C-3.0	OVERALL SITE PLAN
C-3.1	PRELIMINARY SITE PLAN
C-3.2	FIRE TRUCK MANEUVERING PLAN
C-4.0	PRELIMINARY GRADING PLAN
C-6.0	PRELIMINARY UTILITY PLAN
C-8.0	STORM WATER MANAGEMENT PLAN
C-9.0	NOTES AND DETAILS
L-1.0	PRELIMINARY LANDSCAPE PLAN
L-1.1	LANDSCAPE DETAILS
PFP-2	OVERALL FLOOR PLAN
PE-2	ELEVATIONS
1 OF 1	PHOTOMETRIC SITE PLAN

DESIGN TEAM

APPLICANT

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LANDSCAPE ARCHITECT

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CONTACT: JANET EVANS, PLA
PHONE: 844.813.2949
EMAIL: JEVANS@PEAGROUP.COM

REVISIONS	
DESCRIPTION	DATE
TWP. COMMENTS	10/9/2025

LEGAL DESCRIPTION:
(PER SURVEY OAKLAND)

(TAX PARCEL #12-20-276-040)

T3N, R8E, SEC 20 PART OF NE 1/4 BEG AT PT DIST N 00-31-08 E 198.92 FT & N 89-58-09 E 519.78 FT & S 87-30-16 E 513.36 FT FROM CEN OF SEC, TH N 00-39-06 E 312.07 FT, TH E 222.10 FT, TH S 01-30-56 W 332.20 FT, TH N 84-42-00 W 189.40 FT, TH ALG CURVE TO LEFT, RAD 5821.58 FT, CHORD BEARS N 84-52-11 W 28.38 FT, DIST OF 28.38 FT TO BEG 1.62 A 1-16-25 FR 037

LEGAL DESCRIPTION:
(PER SURVEY OAKLAND)

(TAX PARCEL #12-20-276-034)

T3N, R8E, SEC 20 PART OF NE 1/4 BEG AT PT DIST N 00-31-08 E 198.92 FT & N 89-58-09 E 519.78 FT & S 87-21-59 E 541.74 FT & S 84-42-00 E 189.40 FT FROM CEN OF SEC, TH N 01-30-56 E 332.20 FT, TH N 90-00-00 E 15.98 FT, TH ALG CURVE TO LEFT, RAD 233 FT, CHORD BEARS N 75-11-17 E 119.13 FT, DIST OF 120.47 FT, TH N 60-22-37 E 36.86 FT, TH ALG CURVE TO RIGHT, RAD 966.50 FT, CHORD BEARS S 19-25-09 E 233.59 FT, DIST OF 234.17 FT, TH S 03-10-30 E 150.32 FT, TH N 88-29-04 W 63.50 FT, TH S 01-30-56 W 30.03 FT, TH N 84-42-00 W 194.54 FT TO BEG 1.88 A 10-7-14 FR 032

LEGEND:

- EX. OH. ELEC, POLE & GUY WIRE
- EX. U.G. CABLE TV & PEDESTAL
- EX. U.G. COMMUNICATION LINE, PEDESTAL & MANHOLE
- EX. U.G. ELEC,MANHOLE, METER & HANDHOLE
- EX. GAS LINE
- EX. GAS VALVE & GAS LINE MARKER
- EX. TRANSFORMER & IRRIGATION VALVE
- EX. WATER MAIN
- EX. HYDRANT, GATE VALVE & POST INDICATOR VALVE
- EX. WATER VALVE BOX & SHUTOFF
- EX. SANITARY SEWER
- EX. SANITARY CLEANOUT & MANHOLE
- EX. COMBINED SEWER MANHOLE
- EX. STORM SEWER
- EX. CLEANOUT & MANHOLE
- EX. SQUARE, ROUND & BEEHIVE CATCH BASIN
- EX. YARD DRAIN & ROOF DRAIN
- EX. UNIDENTIFIED STRUCTURE
- EX. MAILBOX, SIGN & LIGHTPOLE
- EX. FENCE
- EX. GUARD RAIL
- EX. DEC, TREE, CONIFEROUS TREE & SHRUB
- EX. TREE TAG, & TREE LINE
- EX. SPOT ELEVATION
- EX. CONTOUR
- EX. WETLAND

- IRON FOUND / SET
- NAIL FOUND / NAIL & CAP SET
- BRASS PLUG SET
- MONUMENT FOUND / SET
- SECTION CORNER FOUND
- R M C — RECORDED / MEASURED / CALCULATED

REFERENCE DRAWINGS:

WATER MAIN	COSMOS CAR WASH, DRAINAGE PLAN, KHA, JOB NO. 190125008, DATED 8/30/22 MEIJER OFF-SITE SANITARY SEWER EXT., SDA, JOB NO. WH00-006, DATED 2/11/03 MEIJER UTILITY PLAN, SSOE, INC., JOB NO 95-6165-10, SHT C400B
SANITARY SEWER	COSMOS CAR WASH, DRAINAGE PLAN, KHA, JOB NO. 190125008, DATED 8/30/22 MEIJER OFF-SITE SANITARY SEWER EXT., SDA, JOB NO. WH00-006, DATED 2/11/03 MEIJER UTILITY PLAN, SSOE, INC., JOB NO 95-6165-10, SHT C400B
STORM SEWER	COSMOS CAR WASH, DRAINAGE PLAN, KHA, JOB NO. 190125008, DATED 8/30/22 MEIJER OFF-SITE SANITARY SEWER EXT., SDA, JOB NO. WH00-006, DATED 2/11/03 MEIJER UTILITY PLAN, SSOE, INC., JOB NO 95-6165-10, SHT C400B
ELECTRIC	COSMOS CAR WASH, DRAINAGE PLAN, KHA, JOB NO. 190125008, DATED 8/30/22 MEIJER OFF-SITE SANITARY SEWER EXT., SDA, JOB NO. WH00-006, DATED 2/11/03 MEIJER UTILITY PLAN, SSOE, INC., JOB NO 95-6165-10, SHT C400B
TELEPHONE	COSMOS CAR WASH, DRAINAGE PLAN, KHA, JOB NO. 190125008, DATED 8/30/22 MEIJER OFF-SITE SANITARY SEWER EXT., SDA, JOB NO. WH00-006, DATED 2/11/03 MEIJER UTILITY PLAN, SSOE, INC., JOB NO 95-6165-10, SHT C400B VERIZON, GEORESULT, EMAIL DATED 8/15/25
GAS	MEIJER OFF-SITE SANITARY SEWER EXT., SDA, JOB NO. WH00-006, DATED 2/11/03 MEIJER UTILITY PLAN, SSOE, INC., JOB NO 95-6165-10, SHT C400B DTE TRANSMISSION, NO. 6281, DATED 8/1/25 CE QS MAP 03-58-20-1, DATED 8/7/25
CATV	COMCAST, EMAIL DATED 8/16/25
FLOOD PLAIN	FEMA F.I.R.M. MAP 26125C0318F, DATED 9/29/06

BENCHMARKS:
(GPS DERIVED - NAVD88)

BM #300
ARROW ON HYDRANT BEING ±17' SOUTHWESTERLY FROM THE WESTERLY BACK OF CURB OF BOGIE LAKE ROAD AND ±147' SOUTHEASTERLY FROM THE CENTERLINE OF AUDBON DRIVE.
ELEV - 988.47

BM #301
ARROW ON HYDRANT BEING ±16' WEST FROM THE WESTERLY BACK OF CURB OF BOGIE LAKE ROAD AND ±87' NORTH FROM THE NORTHERLY BACK OF CURB OF HIGHLAND ROAD (M-59).
ELEV - 982.42

BM #304
UTILITY POLE ±46' NORTHWEST FROM HYDRANT LOCATED 19' DIRECTLY NORTH FROM SIDEWALK ON NORTHSIDE OF HIGHLAND ROAD (M-59).
ELEV - 976.38

FLOODPLAIN NOTE:
BY GRAPHICAL PLOTTING, SITE IS WITHIN ZONE 'X', AREA DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN PER FLOOD INSURANCE RATE MAP NUMBER 26125C0318F DATED SEPTEMBER 29, 2006.

NOT FOR CONSTRUCTION

PEA GROUP
t: 844.813.2949
www.peagroup.com

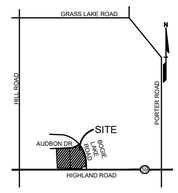
STATE OF MICHIGAN — JAMES B. BUTLER — ENGINEER — No. 60605 — PROFESSIONAL ENGINEER

NORTH

0 15 30 60
SCALE: 1" = 30'

811 Know what's below. Call before you dig.

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS MADE OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.



CLIENT
BMW KAR WASH LLC
26777 CENTRAL PARK BLVD, SUITE 180
SOUTHFIELD, MICHIGAN 48034

PROJECT TITLE
JAX KAR WASH
WHITE LAKE, MICHIGAN

REVISIONS	
TWP. COMMENTS	10-9-25

ORIGINAL ISSUE DATE:
SEPTEMBER 10, 2025

DRAWING TITLE
TOPOGRAPHIC SURVEY

PEA JOB NO.	25-0885
P.M.	JPB
DN.	SWS
DES.	SWS

DRAWING NUMBER:
C-1.0

S:\PROJECTS\2025\25-0885 JAX KAR WASH – WHITE LAKE (2)\DWG\2_SITE_PLAN\C-1.0TOPO-25-0885.dwg PLOT DATE: 10/9/2025 BY: John Steterton

LEGAL DESCRIPTION:
(PER SURVEY OAKLAND)

(TAX PARCEL #12-20-276-040)

T3N, R8E, SEC 20 PART OF NE 1/4 BEG AT PT DIST N 00-31-08 E 198.92 FT & N 89-58-09 E 519.78 FT & S 87-30-16 E 513.36 FT FROM CEN OF SEC, TH N 00-39-06 E 312.07 FT, TH E 222.10 FT, TH S 01-30-56 W 332.20 FT, TH N 84-42-00 W 189.40 FT, TH ALG CURVE TO LEFT, RAD 5821.58 FT, CHORD BEARS N 84-52-11 W 28.38 FT, DIST OF 28.38 FT TO BEG 1.62 A 1-16-25 FR 037

LEGAL PROPOSED TO BE AMENDED

LEGAL DESCRIPTION:
(PER SURVEY OAKLAND)

(TAX PARCEL #12-20-276-034)

T3N, R8E, SEC 20 PART OF NE 1/4 BEG AT PT DIST N 00-31-08 E 198.92 FT & N 89-58-09 E 519.78 FT & S 87-21-59 E 541.74 FT & S 84-42-00 E 189.40 FT FROM CEN OF SEC, TH N 01-30-56 E 332.20 FT, TH N 90-00-00 E 15.98 FT, TH ALG CURVE TO LEFT, RAD 233 FT, CHORD BEARS N 75-11-17 E 119.13 FT, DIST OF 120.47 FT, TH N 60-22-37 E 36.86 FT, TH ALG CURVE TO RIGHT, RAD 966.50 FT, CHORD BEARS S 19-25-09 E 233.59 FT, DIST OF 234.17 FT, TH S 03-10-30 E 150.32 FT, TH N 88-29-04 W 63.50 FT, TH S 01-30-56 W 30.03 FT, TH N 84-42-00 W 194.54 FT TO BEG 1.88 A 10-7-14 FR 032

LEGAL PROPOSED TO BE AMENDED

SITE DATA TABLE:

EXISTING SITE AREA: 1.88 ACRES (81,920 SQ.FT.) GROSS AND NET
PROPOSED SITE AREA: 1.73 ACRES (75,258 SQ.FT.) GROSS AND NET

ZONING: PB – PLANNED BUSINESS

PROPOSED USE: VEHICLE WASH (AUTOMATIC) (5,555 SF) + ATTENDANT BOOTH (50 SF)

BUILDING INFORMATION:
MAXIMUM ALLOWABLE BUILDING HEIGHT = 45 FEET (3 STORIES)

PROPOSED BUILDING HEIGHT = 22'–5" (1 STORY)

BUILDING FOOTPRINT AREA = 5,555 SQ.FT. + 50 SQ.FT. = 5,605 SQ.FT.

BUILDING LOT COVERAGE = 5,605 / 73,258 = 7.65%

SETBACK REQUIREMENTS:	REQUIRED:	PROPOSED:
FRONT (SOUTH):	VARIES	137.57'
SIDE (EAST):	20'	133.76'
SIDE (WEST):	10'	10'
REAR (NORTH):	20'	64.69'

PARKING CALCULATIONS:

VEHICLE EMPLOYEE SPACES = 1 SPACE PER EMPLOYEE ON LARGEST SHIFT.

CAR WASH PRIOR TO TUNNEL SPACES = 7 SPACES X NUMBER OF INTERNAL WASHED CARS.

CAR WASH AFTER TUNNEL STACKING SPACES = 2 SPACES

REQUIRED:

VEHICLE EMPLOYEE PARKING SPACES = 5 EMPLOYEE X 1 SPACE/EMPLOYEES = 5 PARKING SPACES

CAR WASH PRIOR TO TUNNEL STACKING SPACES = 7 SPACES X 5 INTERNAL WASHED CARS = 35 STACKING SPACES.

CAR WASH AFTER TUNNEL STACKING SPACES = 2 SPACES

PROVIDED:

VEHICLE EMPLOYEE SPACES = 5 PARKING SPACES
CAR WASH PRIOR TO TUNNEL SPACES = 35 STACKING SPACES.
CAR WASH EXITING TUNNEL SPACES = 2 STACKING SPACES

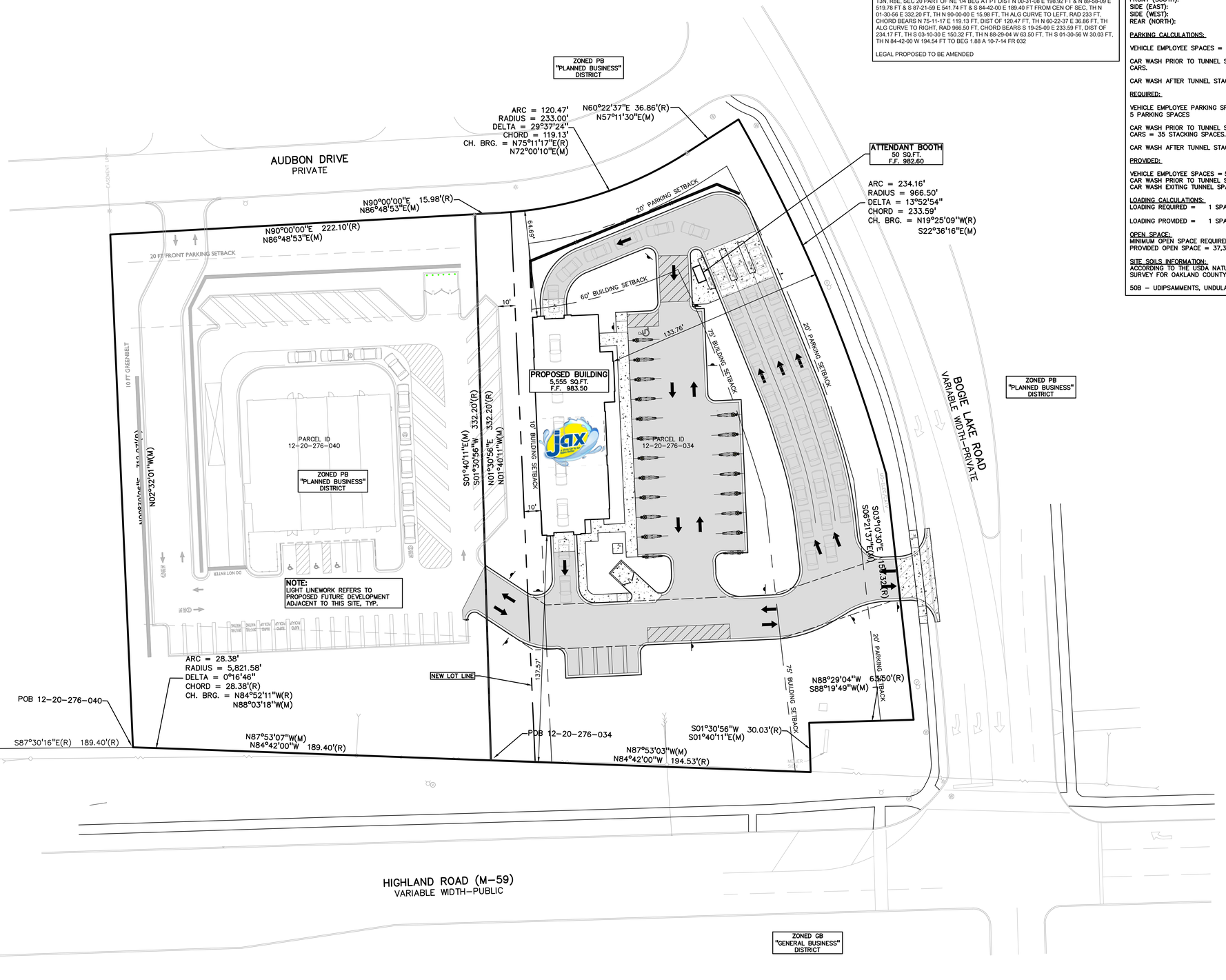
LOADING CALCULATIONS:
LOADING REQUIRED = 1 SPACE (10' x 50')

LOADING PROVIDED = 1 SPACE (10' X 50')

OPEN SPACE:
MINIMUM OPEN SPACE REQUIRED = 30%
PROVIDED OPEN SPACE = 37,368 / 75,258 = 49.65%

SITE SOILS INFORMATION:
ACCORDING TO THE USDA NATURAL RESOURCES CONSERVATION SERVICE WEB SOIL SURVEY FOR OAKLAND COUNTY, THE SITE CONSISTS OF THE FOLLOWING SOIL TYPES:

50B – UDIPSAMMENTS, UNDULATING



PEA GROUP
t: 844.813.2949
www.peagroup.com

STATE OF MICHIGAN
JAMES P. BUTLER
ENGINEER
No. 60605
PROFESSIONAL ENGINEER

NORTH

0 15 30 60
SCALE: 1" = 30'

811 Know what's below. Call before you dig.

CAUTION!!
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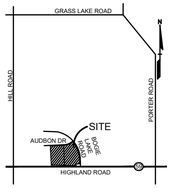


CLIENT
BMW KAR WASH LLC
26777 CENTRAL PARK BLVD, SUITE 180
SOUTHFIELD, MICHIGAN 48034

PROJECT TITLE
JAX KAR WASH
WHITE LAKE, MICHIGAN

REVISIONS

TWP. COMMENTS	10-9-25

ORIGINAL ISSUE DATE:
SEPTEMBER 10, 2025

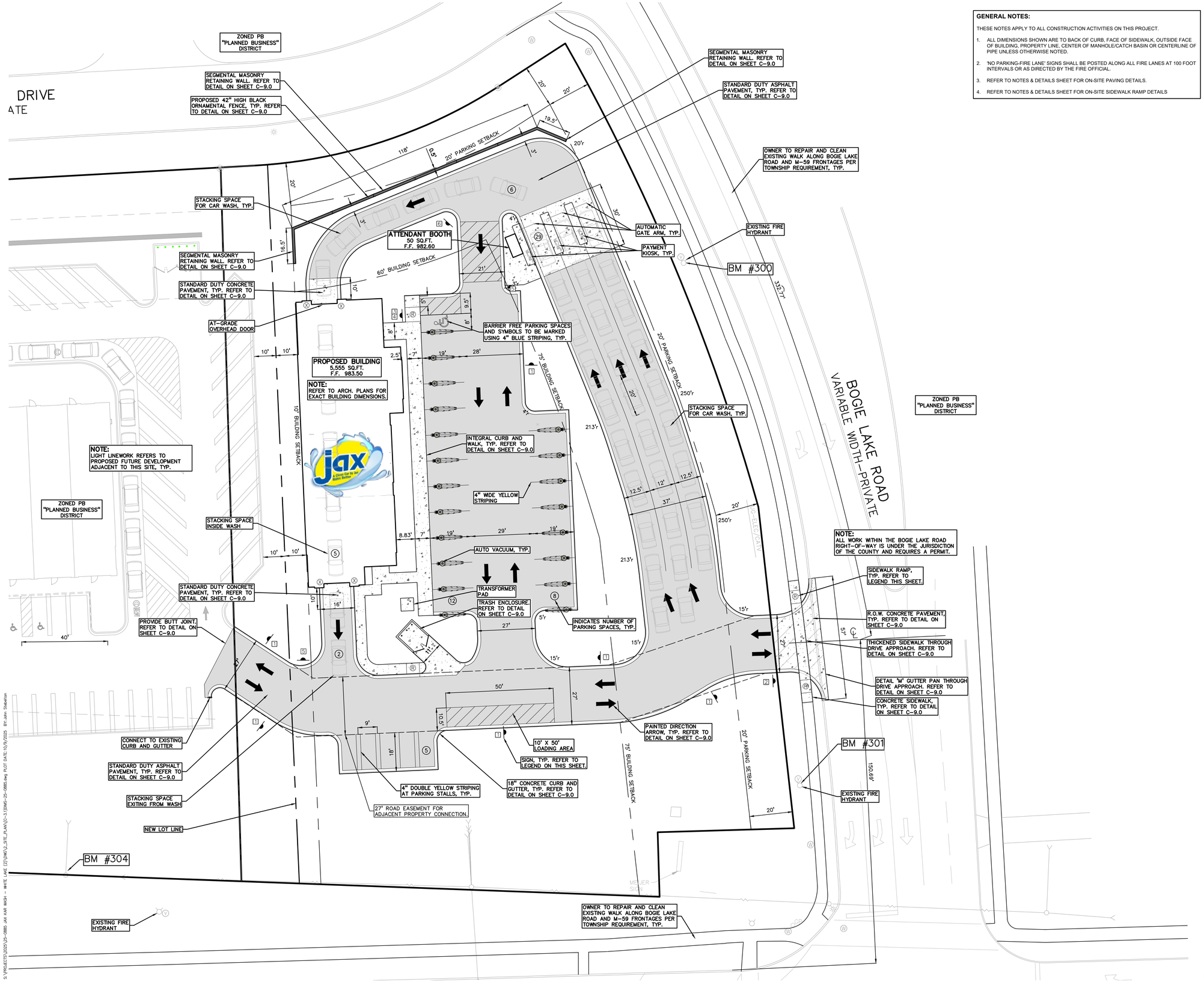
DRAWING TITLE
OVERALL SITE PLAN

PEA JOB NO.	25-0885
P.M.	JPB
DN.	SWS
DES.	SWS

DRAWING NUMBER:
C-3.0

NOT FOR CONSTRUCTION

S:\PROJECTS\2025\25-0885 JAX KAR WASH – WHITE LAKE (2)\CIVIL\C_SITE_PLAN\(C-3.0)ALL-25-0885.dwg PLOT DATE: 10/9/2025 BY: Jon Sheldon



GENERAL NOTES:

THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT.

1. ALL DIMENSIONS SHOWN ARE TO BACK OF CURB, FACE OF SIDEWALK, OUTSIDE FACE OF BUILDING, PROPERTY LINE, CENTER OF MANHOLE/CATCH BASIN OR CENTERLINE OF PIPE UNLESS OTHERWISE NOTED.
2. 'NO PARKING-FIRE LANE' SIGNS SHALL BE POSTED ALONG ALL FIRE LANES AT 100 FOOT INTERVALS OR AS DIRECTED BY THE FIRE OFFICIAL.
3. REFER TO NOTES & DETAILS SHEET FOR ON-SITE PAVING DETAILS.
4. REFER TO NOTES & DETAILS SHEET FOR ON-SITE SIDEWALK RAMP DETAILS

LEGEND:

- CONCRETE PAVEMENT (STD DUTY, HEAVY DUTY, R.O.W. ONLY)
- ASPHALT PAVEMENT (STD DUTY, HEAVY DUTY, DEEP STRENGTH)
- GRAVEL
- WETLAND
- CONCRETE CURB AND GUTTER
- REVERSE GUTTER PAN
- SETBACK LINE
- SIGN
- LIGHTPOLE
- FENCE
- GUARD RAIL

SIGN LEGEND:

'NO PARKING FIRE LANE' SIGN	1
'STOP' SIGN	2
'BARRIER FREE PARKING' SIGN	3
'VAN ACCESSIBLE' SIGN	4
'DO NOT ENTER' SIGN	5
'BY-PASS LANE' SIGN	6

REFER TO DETAIL SHEET FOR SIGN DETAILS

SIDEWALK RAMP LEGEND:

SIDEWALK RAMP 'TYPE R'	R
CURB DROP ONLY	X

REFER TO LATEST MDOT R-28 STANDARD RAMP AND DETECTABLE WARNING DETAILS

PEA GROUP
t: 844.813.2949
www.peagroup.com

STATE OF MICHIGAN — JAMES PETER BUTLER — SIGNATURE — No. 60605 — PROFESSIONAL ENGINEER

NORTH

0 10 20 40

SCALE: 1" = 20'

811 Know what's below. Call before you dig.

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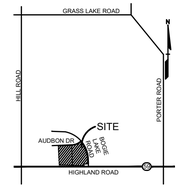


CLIENT

BMW KAR WASH LLC
26777 CENTRAL PARK BLVD, SUITE 180
SOUTHFIELD, MICHIGAN 48034

PROJECT TITLE

JAX KAR WASH
WHITE LAKE, MICHIGAN

REVISIONS

TWP. COMMENTS	10-9-25

ORIGINAL ISSUE DATE:
SEPTEMBER 10, 2025

DRAWING TITLE

PRELIMINARY SITE PLAN

PEA JOB NO.	25-0885
P.M.	JPB
DN.	SWS
DES.	SWS

DRAWING NUMBER:

C-3.1

NOT FOR CONSTRUCTION

S:\PROJECTS\2025\25-0885 JAX KAR WASH - WHITE LAKE (2)\DWG\25_SITE_PLAN\C-3.1DWG 25-0885.dwg PLOT DATE: 10/9/2025 BY: John Steterton

DRIVE
ATE

BM #300

BM #301

BM #304

BOGIE LAKE ROAD
VARIABLE WIDTH-PRIVATE

30'±OZ'

40LF Aerial Fire Truck

150' MAXIMUM DEAD END FOR FIRE TRUCK MANEUVERING PATH.

FIRE TRUCK MANEUVERING PATH, TYP.

MEIJER SIGN

GENERAL NOTES:

THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT.

1. ALL DIMENSIONS SHOWN ARE TO BACK OF CURB, FACE OF SIDEWALK, OUTSIDE FACE OF BUILDING, PROPERTY LINE, CENTER OF MANHOLE/CATCH BASIN OR CENTERLINE OF PIPE UNLESS OTHERWISE NOTED.
2. 'NO PARKING-FIRE LANE' SIGNS SHALL BE POSTED ALONG ALL FIRE LANES AT 100 FOOT INTERVALS OR AS DIRECTED BY THE FIRE OFFICIAL.
3. REFER TO NOTES & DETAILS SHEET FOR ON-SITE PAVING DETAILS.
4. REFER TO NOTES & DETAILS SHEET FOR ON-SITE SIDEWALK RAMP DETAILS

LEGEND:

- CONCRETE PAVEMENT (STD DUTY / HEAVY DUTY / R.O.W. ONLY)
- ASPHALT PAVEMENT (STD DUTY / HEAVY DUTY / DEEP STRENGTH)
- GRAVEL
- WETLAND
- CONCRETE CURB AND GUTTER
- REVERSE GUTTER PAN
- SETBACK LINE
- SIGN
- LIGHTPOLE
- FENCE
- GUARD RAIL

SIGN LEGEND:

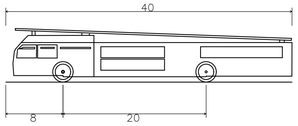
'NO PARKING FIRE LANE' SIGN	[1]
'STOP' SIGN	[2]
'BARRIER FREE PARKING' SIGN	[3]
'VAN ACCESSIBLE' SIGN	[4]
'DO NOT ENTER' SIGN	[5]
'BY-PASS LANE' SIGN	[6]

REFER TO DETAIL SHEET FOR SIGN DETAILS

SIDEWALK RAMP LEGEND:

SIDEWALK RAMP 'TYPE R'	(R)
CURB DROP ONLY	(X)

REFER TO LATEST MDOT R-28 STANDARD RAMP AND DETECTABLE WARNING DETAILS



40LF Aerial Fire Truck	
Overall Length	40.000ft
Overall Width	8.167ft
Overall Body Height	7.500ft
Min Body Ground Clearance	0.750ft
Track Width	8.167ft
Lock-to-lock time	5.00s
Max Wheel Angle	45.00°

PEA GROUP
t: 844.813.2949
www.peagroup.com

STATE OF MICHIGAN — JAMES BUTLER — LICENSED PROFESSIONAL ENGINEER — No. 60605

NORTH

0 10 20 40
SCALE: 1" = 20'

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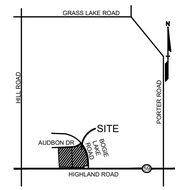

CLIENT

BMW KAR WASH LLC
26777 CENTRAL PARK BLVD, SUITE 180
SOUTHFIELD, MICHIGAN 48034

PROJECT TITLE

JAX KAR WASH
WHITE LAKE, MICHIGAN

REVISIONS

TWP. COMMENTS	10-9-25

ORIGINAL ISSUE DATE:
SEPTEMBER 10, 2025

DRAWING TITLE

FIRE TRUCK MANEUVERING PLAN

PEA JOB NO.	25-0885
P.M.	JPB
DN.	SWS
DES.	SWS

DRAWING NUMBER:
C-3.2

NOT FOR CONSTRUCTION

S:\PROJECTS\2025\25-0885 JAX KAR WASH - WHITE LAKE (2)\DWG\2_SITE_PLAN\[C-3.2]TRUCK-25-0885.dwg PLOT DATE:10/9/2025 BY:John Sibelton

RETAINING WALL NOTE:

TOP OF WALL (T/W) AND BOTTOM OF WALL (B/W) GRADES ARE THE FINISH GRADE AT THE TOP AND BOTTOM OF THE RETAINING WALL, NOT ACTUAL TOP AND BOTTOM OF THE WALL STRUCTURE.

EARTHWORK BALANCING NOTE:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPORTING OR EXPORTING ALL MATERIALS AS REQUIRED TO PROPERLY GRADE THIS PROJECT TO THE FINISHED ELEVATIONS SHOWN ON THE APPROVED PLANS. THE CONTRACTOR SHALL MAKE THEIR OWN DETERMINATION OF CUT AND FILL QUANTITIES AND ALLOW FOR REMOVAL OF EXCESS OR IMPORTATION OF ADDITIONAL MATERIAL AT NO ADDITIONAL COST TO THE OWNER.

BENCHMARKS:
(GPS DERIVED - NAVD88)

BM #300
ARROW ON HYDRANT BEING ±17' SOUTHWESTERLY FROM THE WESTERLY BACK OF CURB OF BOGIE LAKE ROAD AND ±147' SOUTHEASTERLY FROM THE CENTERLINE OF AUDBON DRIVE.
ELEV.- 988.47

BM #301
ARROW ON HYDRANT BEING ±16' WEST FROM THE WESTERLY BACK OF CURB OF BOGIE LAKE ROAD AND ±87' NORTH FROM THE NORTHERLY BACK OF CURB OF HIGHLAND ROAD (M-59).
ELEV.- 982.42

BM #304
UTILITY POLE ±46' NORTHWEST FROM HYDRANT LOCATED 19' DIRECTLY NORTH FROM SIDEWALK ON NORTHSIDE OF HIGHLAND ROAD (M-59).
ELEV.- 976.38

GRADING LEGEND:

- ×698.35 — EXISTING SPOT ELEVATION
- 698.35 — PROPOSED SPOT ELEVATION: TYPICALLY TOP OF PAVEMENT IN PAVED AREAS, GUTTER GRADE IN CURB LINES.
- 670 — EXISTING CONTOUR
- 922 — PROPOSED CONTOUR
- PROPOSED REVERSE GUTTER PAN
- PROPOSED RIDGE LINE
- PROPOSED SWALE/DITCH

ABBREVIATIONS

T/C = TOP OF CURB	F = FLUSH WALK
T/P = TOP OF PAVEMENT	G = GUTTER GRADE
T/S = TOP OF SIDEWALK	FF = FINISH FLOOR
T/W = TOP OF WALL	FG = FINISH GRADE
B/W = BOTTOM OF WALL	RIM = RIM ELEVATION

REFER TO GRADING NOTES ON SHEET C-9.0

SIDEWALK RAMP LEGEND:

- SIDEWALK RAMP 'TYPE R' — Ⓡ
- CURB DROP ONLY — Ⓧ

REFER TO LATEST MDOT R-28 STANDARD RAMP AND DETECTABLE WARNING DETAILS

PEA GROUP
t: 844.813.2949
www.peagroup.com

NORTH

0 10 20 40
SCALE: 1" = 20'

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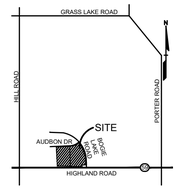


CLIENT
BMW KAR WASH LLC
26777 CENTRAL PARK BLVD, SUITE 180
SOUTHFIELD, MICHIGAN 48034

PROJECT TITLE
JAX KAR WASH
WHITE LAKE, MICHIGAN

REVISIONS

TWP. COMMENTS	10-9-25

ORIGINAL ISSUE DATE:
SEPTEMBER 10, 2025

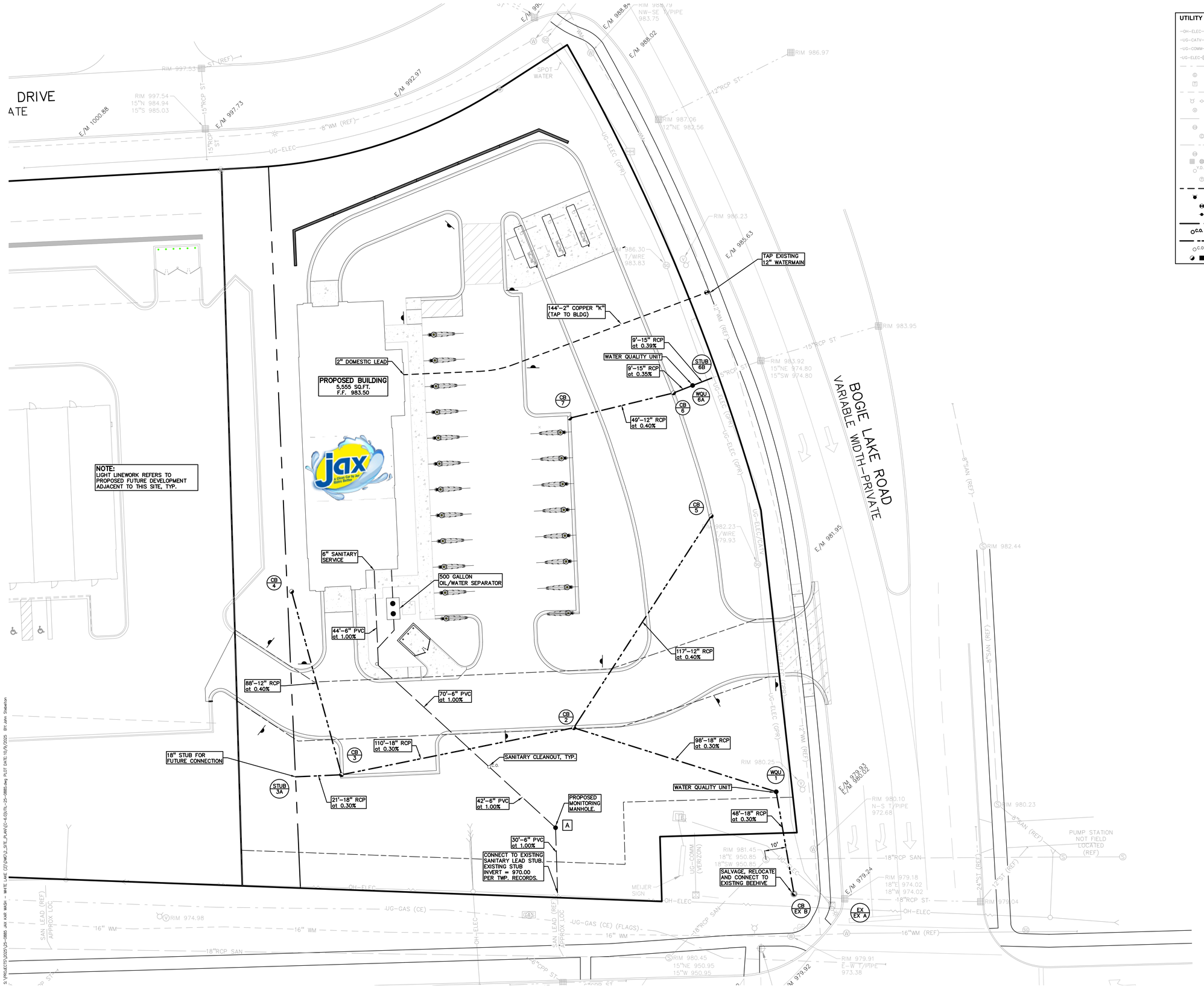
DRAWING TITLE
PRELIMINARY GRADING PLAN

PEA JOB NO.	25-0885
P.M.	JPB
DN.	SWS
DES.	SWS

DRAWING NUMBER:
C-4.0

NOT FOR CONSTRUCTION

S:\PROJECTS\2025\25-0885 JAX KAR WASH - WHITE LAKE (2)\DWG\3_SITE_PLAN\C-4.0(RAGE-25-0885.dwg PLOT DATE:10/9/2025 BY:John Stapleton



UTILITY LEGEND:

- EX. OH. ELEC, POLE & GUY WIRE
- EX. U.G. CABLE TV & PEDESTAL
- EX. U.G. COMMUNICATION LINE, PEDESTAL & MANHOLE
- EX. U.G. ELEC.MANHOLE, METER & HANDHOLE
- EX. GAS LINE
- EX. GAS VALVE & GAS LINE MARKER
- EX. TRANSFORMER & IRRIGATION VALVE
- EX. WATER MAIN
- EX. HYDRANT, GATE VALVE & POST INDICATOR VALVE
- EX. WATER VALVE BOX & SHUTOFF
- EX. SANITARY SEWER
- EX. SANITARY CLEANOUT & MANHOLE
- EX. COMBINED SEWER MANHOLE
- EX. STORM SEWER
- EX. CLEANOUT & MANHOLE
- EX. SQUARE, ROUND, & BEEHIVE CATCH BASIN
- EX. YARD DRAIN & ROOF DRAIN
- EX. UNIDENTIFIED STRUCTURE
- PROPOSED WATER MAIN
- PROPOSED HYDRANT AND GATE VALVE
- PROPOSED TAPPING SLEEVE, VALVE & WELL
- PROPOSED POST INDICATOR VALVE
- PROPOSED SANITARY SEWER
- PROPOSED SANITARY CLEANOUT & MANHOLE
- PROPOSED STORM SEWER
- PROPOSED STORM SEWER CLEANOUT & MANHOLE
- PROPOSED CATCH BASIN, INLET & YARD DRAIN

NOTE:
CONTRACTOR TO VERIFY ALL QUANTITIES. ANY DEVIATIONS TO THE PLAN QUANTITIES SHALL BE BROUGHT TO THE ATTENTION OF PEA GROUP FOR VERIFICATION, PRIOR TO BIDDING.

PREMIUM TRENCH BACKFILL NOTE:
ALL UTILITIES UNDER PAVEMENT OR WITHIN 3' OF THE EDGE OF PAVEMENT (OR WITHIN THE 45° LINE OF INFLUENCE OF PAVEMENT) SHALL HAVE M.D.O.T. CLASS II GRANULAR BACKFILL COMPACTED TO 95% MAX. DRY DENSITY (ASTM D-1557).

PUBLIC UTILITY EASEMENTS:
ALL SANITARY SEWERS 8" AND LARGER IN DIAMETER ARE TO BE PUBLIC AND SHALL BE LOCATED IN A 20' WIDE EASEMENT. ALL WATER MAIN SHALL BE LOCATED IN A 20' WIDE EASEMENT.

WHITE LAKE TOWNSHIP STORM SEWER FRAME AND COVER NOTES

CATCH BASIN - CURB
FRAME: EJ 7045
COVER: MDOT TYPE "K"

CATCH BASIN - MOUNTABLE CURB
FRAME: EJ 7065
COVER: TYPE "M1"

CATCH BASIN - PAVEMENT
FRAME: EJ 5100Z
COVER: TYPE "M1" 5105 GRATE

CATCH BASIN - YARD
FRAME: MDOT EJ 1040-02

MANHOLE
FRAME: EJ 1060
COVER: MDOT TYPE "A"

PEA GROUP
t: 844.813.2949
www.peagroup.com

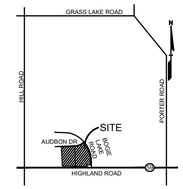
STATE OF MICHIGAN
JAMES PATRICK BUTLER
LICENSED
No. 60605
PROFESSIONAL ENGINEER

NORTH

0 10 20 40
SCALE: 1" = 20'

811 Know what's below. Call before you dig.

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE LOCATIONS AND ELEVATIONS BASED ON, OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.



CLIENT
BMW KAR WASH LLC
26777 CENTRAL PARK BLVD, SUITE 180
SOUTHFIELD, MICHIGAN 48034

PROJECT TITLE
JAX KAR WASH
WHITE LAKE, MICHIGAN

REVISIONS

TWP. COMMENTS	10-9-25

ORIGINAL ISSUE DATE:
SEPTEMBER 10, 2025

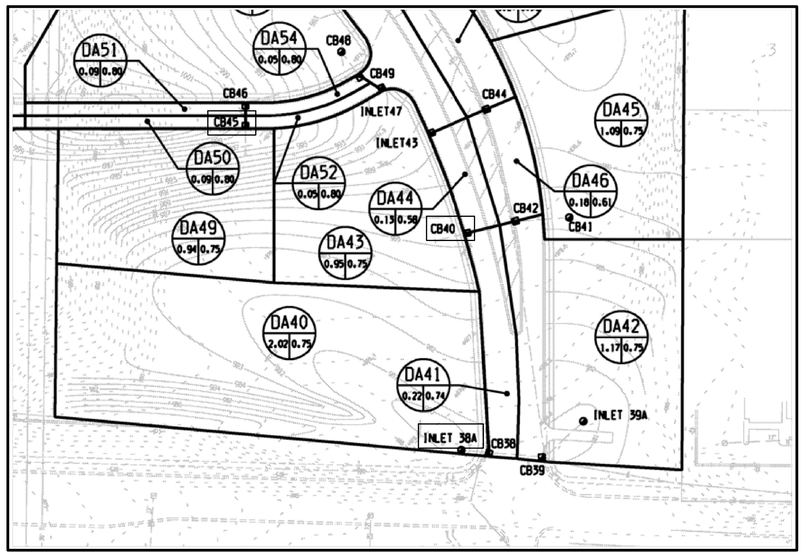
DRAWING TITLE
PRELIMINARY UTILITY PLAN

PEA JOB NO.	25-0885
P.M.	JPB
DN.	SWS
DES.	SWS

DRAWING NUMBER:
C-6.0

NOT FOR CONSTRUCTION

S:\PROJECTS\2025\25-0885 JAX KAR WASH - WHITE LAKE (2)\DWG\3_SITE_PLAN\C-6.0\TL-25-0885.dwg PLOT DATE: 10/9/2025 BY: John Steketee



PRE-DEVELOPMENT DRAINAGE MAP
NOT TO SCALE

POST-DEVELOPMENT DRAINAGE MAP
SEE SHEET FOR SCALE

STORM WATER RUNOFF PRE AND POST CALCULATIONS

time concentration (t) = 15 min
10 yr intensity (I) = $30.2p^{0.22}/(Tc + 9.17)^{0.81}$ = 3.80 in/hr
p = 10 years

PRE-DEVELOPMENT

* per existing MEIJER-227 plans

OUTLET	* EXISTING CAPACITY (CFS)	AREA NUMBER	AREA (ACRE)	C-VALUE	Q = CIA (CFS)
CB45	***3.11**	DA49	0.94	0.75	2.68
INLET 38A	***6.58**	DA40	2.02	0.75	5.75
CB40	***4.1**	DA43	0.95	0.75	0.71

time concentration (t) = 15 min
10 yr intensity (I) = $30.2p0.22/(Tc + 9.17)0.81$ = 3.80 in/hr
p = 10 years

POST-DEVELOPMENT

* per existing MEIJER-227 plans

OUTLET	* EXISTING CAPACITY (CFS)	AREA NUMBER	AREA (ACRE)	C-VALUE	Q = CIA (CFS)
CB45	***3.11**	DA49	0.94	0.75	**2.68**
INLET 38A	***6.58**	DA40	0.78	0.75	2.21
		2	0.08	0.78	0.24
		3	0.13	0.88	0.43
		4	0.21	0.53	0.42
		5	0.17	0.68	0.44
		EXB	0.48	0.30	0.54
	capacity >	Total	1.84	0.61	**4.28**
CB40	***4.1**	DA43	0	-	-
		6	0.70	0.52	1.39
		7	0.32	0.90	1.08
	capacity >	Total	1.02	0.64	**2.47**

PEA GROUP
t: 844.813.2949
www.peagroup.com

STATE OF MICHIGAN
JAMES P. BAKER
No. 39805
PROFESSIONAL ENGINEER

NORTH
0 20 40 80
SCALE: 1" = 40'

811 Know what's below. Call before you dig.

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE AND NOT GUARANTEED. NO REPRESENTATION IS MADE OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

CLIENT
BMW KAR WASH LLC
26777 CENTRAL PARK BLVD, SUITE 180
SOUTHFIELD, MICHIGAN 48034

PROJECT TITLE
JAX KAR WASH
WHITE LAKE, MICHIGAN

REVISIONS

TWP. COMMENTS	10-9-25

ORIGINAL ISSUE DATE:
SEPTEMBER 10, 2025

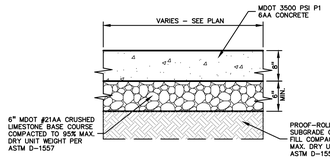
DRAWING TITLE
STORM WATER MANAGEMENT PLAN

PEA JOB NO.	25-0885
P.M.	JPB
DN.	SWS
DES.	SWS

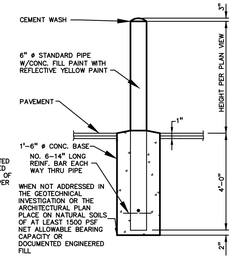
DRAWING NUMBER:
C-8.0

NOT FOR CONSTRUCTION

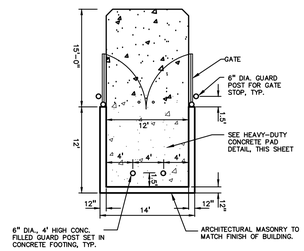
S:\PROJECTS\2025\25-0885 JAX KAR WASH - WHITE LAKE (2)\DWG\2_SITE_PLAN\[C-8.0]MAP-25-0885.dwg PLOT DATE: 10/9/2025 BY: John Stakerton



HEAVY DUTY CONCRETE PAD DETAIL
NOT TO SCALE

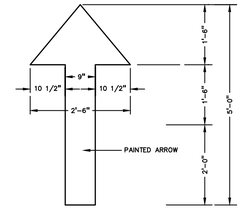


6" DIA. GUARD POST DETAIL
NOT TO SCALE



SINGLE DUMPSTER ENCLOSURE DETAIL
NOT TO SCALE

ASPHALT MIX DESIGN CHART					
COMMERCIAL ADT 0–300	COMMERCIAL ADT 301–1000	COMMERCIAL ADT 1001–3400	COMMERCIAL ADT 3401	APPLICATION RATE (LB/YD²), MINIMUM – MAXIMUM	COURSE APPLICATION
2EL	2EML	2EMH	2EH	435–550	BASE
3EL	3EML	3EMH	3EH	330–410	BASE AND/OR LEVELING
4EL	4EML	4EMH	4EH	220–275	LEVELING AND/OR TOP
5EL	5EML	5EMH	5EH	165–220	TOP
PG 58–28	PG 64–28	PG 64–28	PG 70–28P		

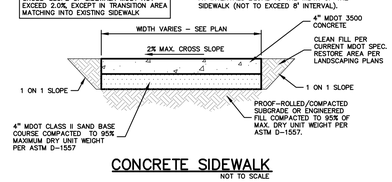


NOTE:
TRAFFIC MARKINGS SHOULD BE STRIPE USING WHITE TRAFFIC PAINT UNLESS OTHERWISE NOTED ON THE PLANS.

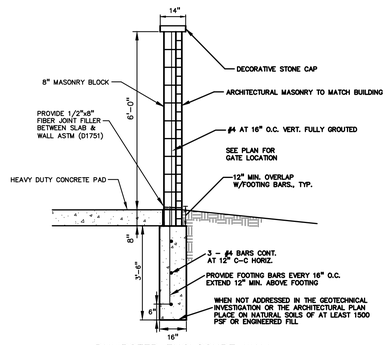
PAINTED DIRECTIONAL ARROW
NOT TO SCALE

NOTE:
CROSS–SLOPE OF SIDEWALK MUST NOT EXCEED 2.0%, EXCEPT IN TRANSITION AREA MATCHING INTO EXISTING SIDEWALK

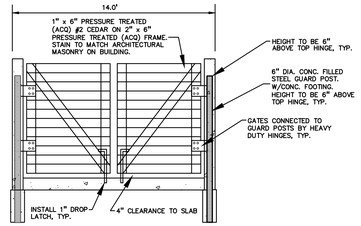
PROVIDE 1" DEPTH SAWCUT CONTROL JOINTS AT INTERVALS EQUAL TO THE WIDTH OF THE SIDEWALK (NOT TO EXCEED 8' INTERVAL).



CONCRETE SIDEWALK
NOT TO SCALE

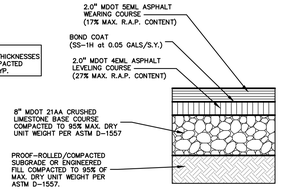


DUMPSTER ENCLOSURE WALL CROSS SECTION
NOT TO SCALE



TRASH ENCLOSURE GATE DETAIL
NOT TO SCALE

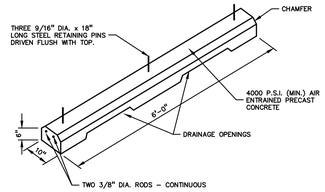
NOTE:
ALL SPECIFIED THICKNESSES ARE FINAL COMPACTED THICKNESSES, TYP.



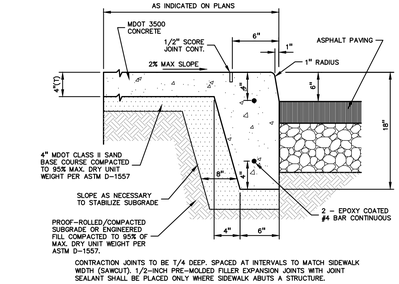
STANDARD DUTY ASPHALT DETAIL
(NOT FOR USE IN THE RIGHT–OF–WAY)
NOT TO SCALE

AGGREGATE BASE NOTE:
THIS PAVEMENT SECTION DESIGN ASSUMES THE USE OF MDOT 21AA CRUSHED LIMESTONE BASE MATERIAL THAT MEETS THE REQUIREMENTS OF MDOT STANDARD SPECIFICATION SECTION 902 FOR AGGREGATES. IF CRUSHED CONCRETE AGGREGATE BASE IS PROPOSED IN LIEU OF THE SPECIFIED CRUSHED LIMESTONE MATERIAL, PEA GROUP WILL REQUIRE A MINIMUM 25% INCREASE IN BASE THICKNESS. HOWEVER, IF TESTING DOCUMENTATION IS PROVIDED TO PEA GROUP THAT SHOWS THAT THE CRUSHED CONCRETE MATERIAL MEETS ALL REQUIREMENTS OF MDOT SPECIFICATION SECTION 902, THEN THE 25% INCREASE IN THICKNESS MAY BE REEVALUATED.

ASPHALT MATERIAL NOTES:
HOT–MIX ASPHALT MIXTURES UTILIZING RECYCLED ASPHALT PAVEMENT (RAP) MUST MEET MDOT SPECIAL PROVISION 12SP501(E), THE BINDER GRADE FOR THIS WORK IS P064–28. IF ASPHALT MIXES CONTAINING RAP ARE TO BE SUPPLIED FOR THIS PROJECT, THE ASPHALT BINDER MUST BE REVISED PER MDOT "TIER 1" OR "TIER 2" REQUIREMENTS (RAP CONTENT UP TO 27% MAXIMUM). TIER 3 MIXES ARE NOT ACCEPTABLE ON THIS PROJECT. AN ASPHALT MIX DESIGN FOR ALL SPECIFIED MIXES SHOULD BE FORWARDED TO PEA GROUP FOR REVIEW PRIOR TO CONSTRUCTION



CONCRETE PARKING BUMPER
NOT TO SCALE



CONTRACTION JOINTS TO BE T/4 DEEP, SPACED AT INTERVALS TO MATCH SIDEWALK WIDTH (SAWCUT), 1/2–INCH PRE–MOLDED FILLER EXPANSION JOINTS WITH JOINT SEALANT SHALL BE PLACED ONLY WHERE SIDEWALK ABUTS A STRUCTURE.

INTEGRAL CURB AND SIDEWALK
NOT TO SCALE

SINGLE TRASH ENCLOSURE DETAILS

GENERAL NOTES:

THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT.

1. ALL CONSTRUCTION, WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH CURRENT OSHA, MDOT AND MUNICIPALITY STANDARDS AND REGULATIONS.
2. THE CONTRACTOR SHALL NOTIFY THE TOWNSHIP ENGINEER AND/OR THE AUTHORITY HAVING JURISDICTION 3 BUSINESS DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION.
3. THE CONTRACTOR SHALL CONTACT THE ENGINEER SHOULD THEY ENCOUNTER ANY DESIGN ISSUES DURING CONSTRUCTION. IF THE CONTRACTOR MAKES DESIGN MODIFICATIONS WITHOUT THE WRITTEN DIRECTION OF THE DESIGN ENGINEER, THE CONTRACTOR DOES SO AT HIS OWN RISK.
4. UNLESS OTHERWISE AGREED UPON BETWEEN THE OWNER AND CONTRACTOR, THE CONTRACTOR SHALL PAY ALL MUNICIPAL, COUNTY, AND STATE PERMIT, INSPECTION, AND/OR TESTING FEES. THE CONTRACTOR SHALL ALSO PROVIDE THE NECESSARY BONDS AND INSURANCE REQUIRED TO COMPLETE THE PROJECT
5. THE CONTRACTOR SHALL NOTIFY THE APPROPRIATE 811/ONE CALL UTILITY LOCATING CENTER, THE CITY ENGINEER AND/OR THE AUTHORITY HAVING JURISDICTION 3 BUSINESS DAYS PRIOR TO THE BEGINNING OF CONSTRUCTION. IF NO NOTIFICATION IS GIVEN AND DAMAGE RESULTS, SAID DAMAGE WILL BE REPAIRED AT SOLE EXPENSE OF THE CONTRACTOR. IF EXISTING UTILITY LINES ARE ENCOUNTERED THAT CONFLICT IN LOCATION WITH NEW CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE DESIGN ENGINEER SO THAT THE CONFLICT MAY BE RESOLVED.
6. CONTRACTOR SHALL VERIFY THAT THE PLANS AND SPECIFICATIONS ARE THE VERY LATEST PLANS AND SPECIFICATIONS AND FURTHERMORE, VERIFY THAT THESE PLANS AND SPECIFICATIONS HAVE BEEN APPROVED. ALL ITEMS CONSTRUCTED BY THE CONTRACTOR PRIOR TO RECEIVING FINAL APPROVAL, HAVING TO BE ADJUSTED OR RE-DONE, SHALL BE AT THE CONTRACTORS EXPENSE. SHOULD THE CONTRACTOR ENCOUNTER A CONFLICT BETWEEN THESE PLANS AND/OR SPECIFICATIONS, THEY SHALL SEEK CLARIFICATION IN WRITING FROM THE ENGINEER BEFORE COMMENCEMENT OF CONSTRUCTION. FAILURE TO DO SO SHALL BE AT SOLE EXPENSE TO THE CONTRACTOR.
7. ANY WORK WITHIN THE STREET OR HIGHWAY RIGHTS-OF-WAY SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AGENCIES HAVING JURISDICTION AND SHALL NOT BEGIN UNTIL ALL NECESSARY PERMITS HAVE BEEN ISSUED FOR THE WORK.
8. ALL PROPERTIES OR FACILITIES IN THE SURROUNDING AREAS, PUBLIC OR PRIVATE, DESTROYED OR OTHERWISE DISTURBED DUE TO CONSTRUCTION, SHALL BE REPLACED AND/OR RESTORED TO THE ORIGINAL CONDITION BY THE CONTRACTOR.
9. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY BARRICADING, SIGNAGE, LIGHTS AND TRAFFIC CONTROL DEVICES TO PROTECT THE WORK AND SAFELY MAINTAIN TRAFFIC IN ACCORDANCE WITH LOCAL REQUIREMENTS AND THE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (LATEST EDITION). THE DESIGN ENGINEER, OWNER, TOWNSHIP AND STATE SHALL NOT BE HELD LIABLE FOR ANY CLAIMS RESULTING FROM ACCIDENTS OR DAMAGES CAUSED BY THE CONTRACTOR'S FAILURE TO COMPLY WITH TRAFFIC AND PUBLIC SAFETY REGULATIONS DURING THE CONSTRUCTION PERIOD.
10. THE USE OF CRUSHED CONCRETE IS PROHIBITED ON THE PROJECT WITHIN 100 FEET OF ANY WATER COURSE (STREAM, RIVER, COUNTY DRAIN, ETC.) AND LAKE, REGARDLESS OF THE APPLICATION OR LOCATION OF THE WATER COURSE OR LAKE RELATIVE TO THE PROJECT LIMITS.
11. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO ADJUST THE TOP OF ALL EXISTING AND PROPOSED STRUCTURES (MANHOLES, CATCH BASINS, INLETS, GATE WELLS ETC.) WITHIN GRADED AND /OR PAVED AREAS TO FINAL GRADE SHOWN ON THE PLANS. ALL SUCH ADJUSTMENTS SHALL BE INCIDENTAL TO THE JOB AND WILL NOT BE PAID FOR SEPARATELY.

GENERAL GRADING AND EARTHWORK NOTES:

THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT

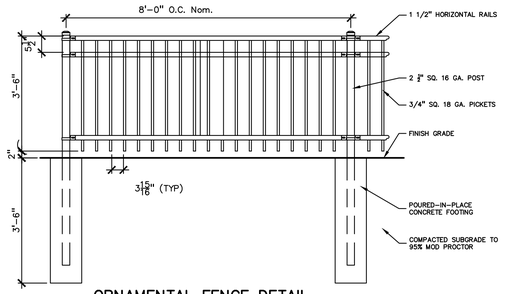
1. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING TREES AND BRUSH AND REMOVE ALL THAT ARE NECESSARY TO GRADE SITE.
2. ALL GRADES ARE TO TOP OF PAVEMENT UNLESS OTHERWISE NOTED.
3. THE STAGING OF CONSTRUCTION ACTIVITIES SHALL OCCUR ONLY WITHIN THE SITE BOUNDARIES. ANY CONSTRUCTION ACTIVITIES OUTSIDE OF THE SITE BOUNDARIES SHALL BE AT THE SOLE RESPONSIBILITY AND RISK OF THE CONTRACTOR.
4. ALL SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL MEET THE REQUIREMENTS OF THE AUTHORIZED PUBLIC AGENCY OF JURISDICTION. AN EROSION CONTROL PERMIT MUST BE SECURED FROM THE COUNTY PRIOR TO CONSTRUCTION.
5. ALL EARTHWORK AND GRADING OPERATIONS SHALL BE PERFORMED IN ACCORDANCE WITH THE SOILS INVESTIGATION AND REPORT.
6. REFER TO SOIL EROSION CONTROL PLAN FOR ADDITIONAL SOIL EROSION AND SEDIMENTATION CONTROL MEASURES AND NOTES.
7. THE DETENTION BASIN SIDE SLOPES AND ALL SLOPE EXCEEDING 1:4 MUST BE STABILIZED BY SODDING OR BY PLACING A MULCH BLANKET PEGGED IN PLACE OVER SEED.
8. ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED OR SODDED IN ACCORDANCE WITH THE LANDSCAPE PLANS. PROVIDE A MINIMUM OF 3" OF TOPSOIL IN THESE AREAS UNLESS OTHERWISE NOTED.
9. THE CONTRACTOR SHALL NOTE EXISTING UNDERGROUND UTILITIES WITHIN AND ADJACENT TO THE SITE. BACKFILL FOR EXISTING UTILITY TRENCHES SHALL BE EXAMINED CRITICALLY. ANY TRENCHES FOUND TO HAVE SOFT, UNSTABLE OR UNSUITABLE BACKFILL MATERIAL, IN THE OPINION OF THE THIRD PARTY TESTING COMPANY, THAT ARE TO BE WITHIN THE ZONE OF INFLUENCE OF PROPOSED BUILDINGS OR PAVEMENT SHALL BE COMPLETELY EXCAVATED AND BACKFILLED WITH SUITABLE MATERIAL.
10. ON-SITE FILL CAN BE USED IF THE SPECIFIED COMPACTION REQUIREMENTS CAN BE ACHIEVED. IF ON-SITE SOIL IS USED, IT SHOULD BE CLEAN AND FREE OF FROZEN SOIL, ORGANICS, OR OTHER DELETERIOUS MATERIALS.
11. THE FINAL SUBGRADE/EXISTING AGGREGATE BASE SHOULD BE THOROUGHLY PROOFROLLED USING A FULLY LOADED TANDEM AXLE TRUCK OR FRONT END LOADER UNDER THE OBSERVATION OF A GEOTECHNICAL/PAVEMENT ENGINEER. LOOSE OR YIELDING AREAS THAT CANNOT BE MECHANICALLY STABILIZED SHOULD BE REINFORCED USING GEOGRIDS OR REMOVED AND REPLACED WITH ENGINEERED FILL OR AS DICTATED BY FIELD CONDITIONS.
12. SUBGRADE UNDERCUTTING, INCLUDING BACKFILLING SHALL BE PERFORMED TO REPLACE MATERIALS SUSCEPTIBLE TO FROST HEAVING AND UNSTABLE SOIL CONDITIONS. ANY EXCAVATIONS THAT MAY BE REQUIRED BELOW THE TOPSOIL IN FILL AREAS OR BELOW SUBGRADE IN CUT AREAS WILL BE CLASSIFIED AS SUBGRADE UNDERCUTTING.
13. SUBGRADE UNDERCUTTING SHALL BE PERFORMED WHERE NECESSARY AND THE EXCAVATED MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR. ANY SUBGRADE UNDERCUTTING SHALL BE BACKFILLED AS RECOMMENDED IN THE GEOTECHNICAL ENGINEERING REPORT FOR THE PROJECT.
14. ANY SUB-GRADE WATERING REQUIRED TO ACHIEVE REQUIRED DENSITY SHALL BE CONSIDERED INCIDENTAL TO THE JOB.

NOTES:
1.) FENCE
MANUFACTURER: AMERISTAR (OR APPROVED EQUAL)
PHONE #: 888.333.3422
PRODUCT: MONTAGE PLUS MAJESTIC
3 RAIL COMMERCIAL
FINISH: POWDER COAT/BLACK

2.) FENCING TO MEET STATE & LOCAL CODES

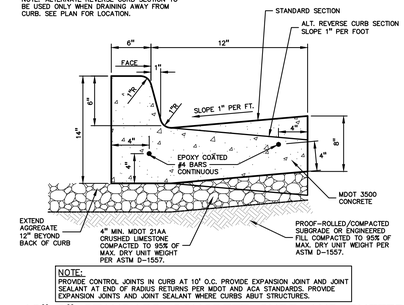
3.) INSTALLATION PER MANUFACTURER'S RECOMMENDATION

4.) SUBMIT SHOP DRAWINGS PRIOR TO INSTALLATION FOR APPROVAL



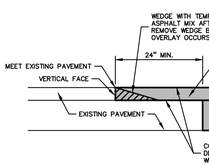
ORNAMENTAL FENCE DETAIL
NOT TO SCALE

NOTE: ALTERNATE REVERSE CURB SECTION TO BE USED ONLY WHEN DRAINING AWAY FROM CURB. SEE PLAN FOR LOCATION.

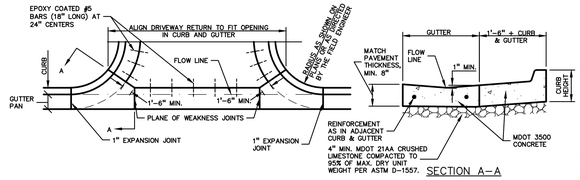


NOTE:
PROVIDE CONTROL JOINTS IN CURB AT 10' O.C. PROVIDE EXPANSION JOINT AND JOINT SEALANT AT END OF RADIUS RETURNS PER MDOT AND ACA STANDARDS. PROVIDE EXPANSION JOINTS AND JOINT SEALANT WHERE CURBS ABUT STRUCTURES.

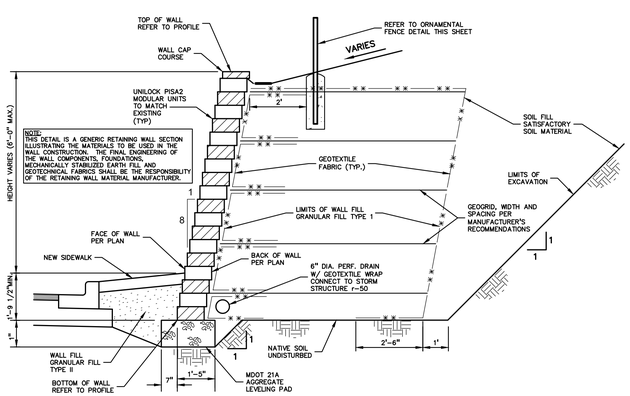
18"x6" STANDARD CONCRETE CURB AND GUTTER
NOT TO SCALE



BUTT JOINT DETAIL
NOT TO SCALE

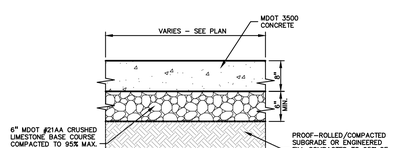


MDOT DRIVEWAY OPENING–DETAIL 'M'
NOT TO SCALE

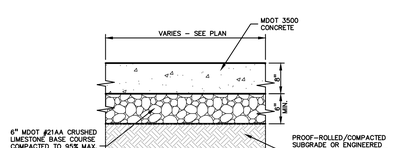


SEGMENTED RETAINING WALL
NOT TO SCALE

NOT TO SCALE



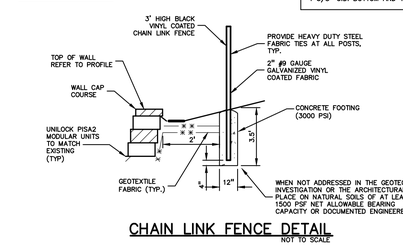
R.O.W. CONCRETE DETAIL
NOT TO SCALE



STANDARD DUTY CONCRETE DETAIL
NOT TO SCALE

NOTE:
FENCE POST TO BE SCHEDULE 40 PIPE WEIGHT.

2.5" O.D. LINE POST
3.0" O.D. CORNER POST
1 5/8" O.D. BOTTOM AND TOP RAIL



CHAIN LINK FENCE DETAIL
NOT TO SCALE

NOT FOR CONSTRUCTION

PEA GROUP
t: 844.813.2949
www.peagroup.com

NORTH

0 10 20 40

SCALE: 1" = 20'

811 Know what's below. Call before you dig.

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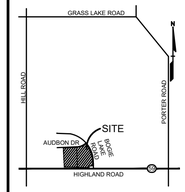


CLIENT

BMW KAR WASH LLC
26777 CENTRAL PARK BLVD, SUITE 180
SOUTHFIELD, MICHIGAN 48034

PROJECT TITLE

JAX KAR WASH
WHITE LAKE, MICHIGAN

REVISIONS

TWP. COMMENTS	10-9-25

ORIGINAL ISSUE DATE:
SEPTEMBER 10, 2025

DRAWING TITLE

NOTES AND DETAILS

PEA JOB NO.	25-0885
P.M.	JPB
DN.	SWS
DES.	SWS

DRAWING NUMBER:

C-9.0

S:\PROJECTS\2025\25-0885 JAX KAR WASH - WHITE LAKE (2)\DWG\2_SITE_PLAN\C-9.0\NOTE-25-0885.dwg PLOT DATE: 10/9/2025 BY: John Stoetzon

PLANT SCHEDULE

CODE	QTY	BOTANICAL NAME	COMMON NAME	SIZE	CONTAINER	SPACING	DESIGNATION	REMARKS
DECIDUOUS TREES								
ARS2.5	3	ACER RUBRUM 'SCARSEN'	SCARLET SENTINEL MAPLE	2.5" CAL.	B&B	PER PLAN	NATIVE	
CBFF2.5	4	CARPINUS BETULUS 'FRANS FONTAINE'	FRANS FONTAINE HORNBEAM	2.5" CAL.	B&B	PER PLAN	NON-NATIVE	
CA2.5	2	CARPINUS CAROLINIANA	AMERICAN HORNBEAM	2.5" CAL.	B&B	PER PLAN	NATIVE	
GBM2.5	4	GINKGO BIL OBA 'MAGYAR'	MAGYAR MAIDENHAIR TREE	2.5" CAL.	B&B	PER PLAN	NON-NATIVE	
NS2.5	2	NYSSA SYLVATICA	TUPELO	2.5" CAL.	B&B	PER PLAN	NATIVE	
QBM2.5	7	QUERCUS BICOLOR 'BONNIE AND MIKE'	BEACON® OAK	2.5" CAL.	B&B	PER PLAN	NATIVE	
SR2.5	8	SYRINGA RETICULATA 'IVORY SILK'	IVORY SILK JAPANESE TREE LILAC	2.5" CAL.	B&B	PER PLAN	NON-NATIVE	
TA2.5	4	TILIA AMERICANA 'AMERICAN SENTRY'	AMERICAN SENTRY LINDEN	2.5" CAL.	B&B	PER PLAN	NATIVE	
	34	SUBTOTAL:						
EVERGREEN TREES								
PGD8	4	PICEA GLAUCA 'DENSATA'	BLACK HILLS SPRUCE	8' HT.	B&B	PER PLAN	NATIVE	
PO8	6	PICEA OMORIKA	SERBIAN SPRUCE	8' HT.	B&B	PER PLAN	NON-NATIVE	
	10	SUBTOTAL:						
ORNAMENTAL TREES								
AL8	3	AMELANCHIER LAEVIS	ALLEGHENY SERVICEBERRY	8' HT.	B&B	PER PLAN	NATIVE	MULTI-TRUNK
CC2	3	CERCIS CANADENSIS	EASTERN REDBUD	2" CAL.	B&B	PER PLAN	NATIVE	
CCF8	2	CERCIS CANADENSIS 'FOREST PANSY'	FOREST PANSY EASTERN REDBUD	8' HT.	B&B	PER PLAN	NATIVE	MULTI-TRUNK
MM2.5	6	MALUS X 'JARMIN'	MARILEE® CRABAPPLE	2.5" CAL.	B&B	PER PLAN	NON-NATIVE	
	14	SUBTOTAL:						
SHRUBS								
AL30	61	ARONIA MELANOCARPA 'UCONNAM165'	LOW SCAPE MOUND® BLACK CHOKEBERRY	30"HT.	B&B OR CONT.	24" O.C.	NATIVE	
DG30	15	DEUTZIA GRACILIS 'NIKKO'	NIKKO DEUTZIA	30" HT.	B&B OR CONT.	36"O.C.	NON-NATIVE	
DK36	97	DIERVILLA X 'G2X8854'	KODIAK® ORANGE DIERVILLA	36" HT.	B&B OR CONT.	4' O.C.	NON-NATIVE	
IVH30	27	ITEA VIRGINICA 'HENRY'S GARNET'	HENRY'S GARNET SWEETSPIRE	30" HT.	B&B OR CONT.	5' O.C.	NON-NATIVE	
JX30	42	JUNIPERUS X 'GREY OWL'	GREY OWL JUNIPER	24" SPRD	CONT.	PER PLAN	ADAPTED NATIVE	
PF30	38	POTENTILLA FRUTICOSA 'ABBOTSWOOD'	ABBOTSWOOD BUSH CINQUEFOIL	30"HT.	B&B OR CONT.	36"O.C.	NATIVE	
TM30	15	TAXUS X MEDIA 'DENSIFORMIS'	DENSE ANGLO-JAPANESE YEW	30" HT.	B&B OR CONT.	42" O.C.	NON-NATIVE	
TH36	8	TAXUS X MEDIA 'HICKSII'	HICKS ANGLO-JAPANESE YEW	3` HT.	B&B OR CONT.	30" O.C.	NON-NATIVE	
	303	SUBTOTAL:						

NOTES PER WHITE LAKE TOWNSHIP ZONING ORDINANCE:

ALL REQUIRED LANDSCAPE AREAS IN EXCESS OF 200 SF SHALL BE IRRIGATED. IRRIGATION PLANS TO BE PROVIDED DURING CDS,PLANS BY OTHERS.

ALL REQUIRED IRRIGATION SYSTEMS SHALL INCLUDE A RAIN SENSOR OR SIMILAR MEASURE TO ENSURE IRRITATION DOES NOT OCCUR DURING OR SHORTLY AFTER PRECIPITATION EVENTS.

SHREDDED HARDWOOD MULCH SHALL BE DOUBLE SHREDDED QUALITY.

PINE TREES ARE PROHIBITED IN WHITE LAKE TWPS.

TREES SHALL NOT BE PLANTED CLOSER THAN 4' FEET FROM THE PROPERTY LINE.

ALL LANDSCAPE PLANTINGS SHALL BE GUARANTEED FOR 2 YEARS. THOSE WHICH ARE DISEASED OR DEAD MUST BE REPLACED IN CONFORMANCE WITH THE APPROVED LANDSCAPE PLAN. THE PLANTS MUST BE REPLACED WITH PLANTINGS OF THE SAME SIZE AS THOSE WHICH WERE REMOVED.

A CASH BOND OR STANDBY LETTER OF CREDIT IN AN AMOUNT EQUAL TO 125% OF THE COST TO INSTALL ANY INCOMPLETE IMPROVEMENTS AND 100% OF ANY INSTALLED IMPROVEMENTS MUST BE POSTED FOR TWO YEARS DURING WHICH THE GUARANTEE IS IN EFFECT. THE COMMUNITY DEVELOPMENT DIRECTOR OR HIS DESIGNEE SHALL REVIEW THE AMOUNT OF THE GUARANTEED FOR REASONABLENESS PRIOR TO APPROVAL.

KEY:

= DECIDUOUS TREES

= EVERGREEN TREES

= SHRUBS

= IRRIGATED SEED LAWN IRRIGATION PLANS BY OTHERS

= RESTORE LAWN

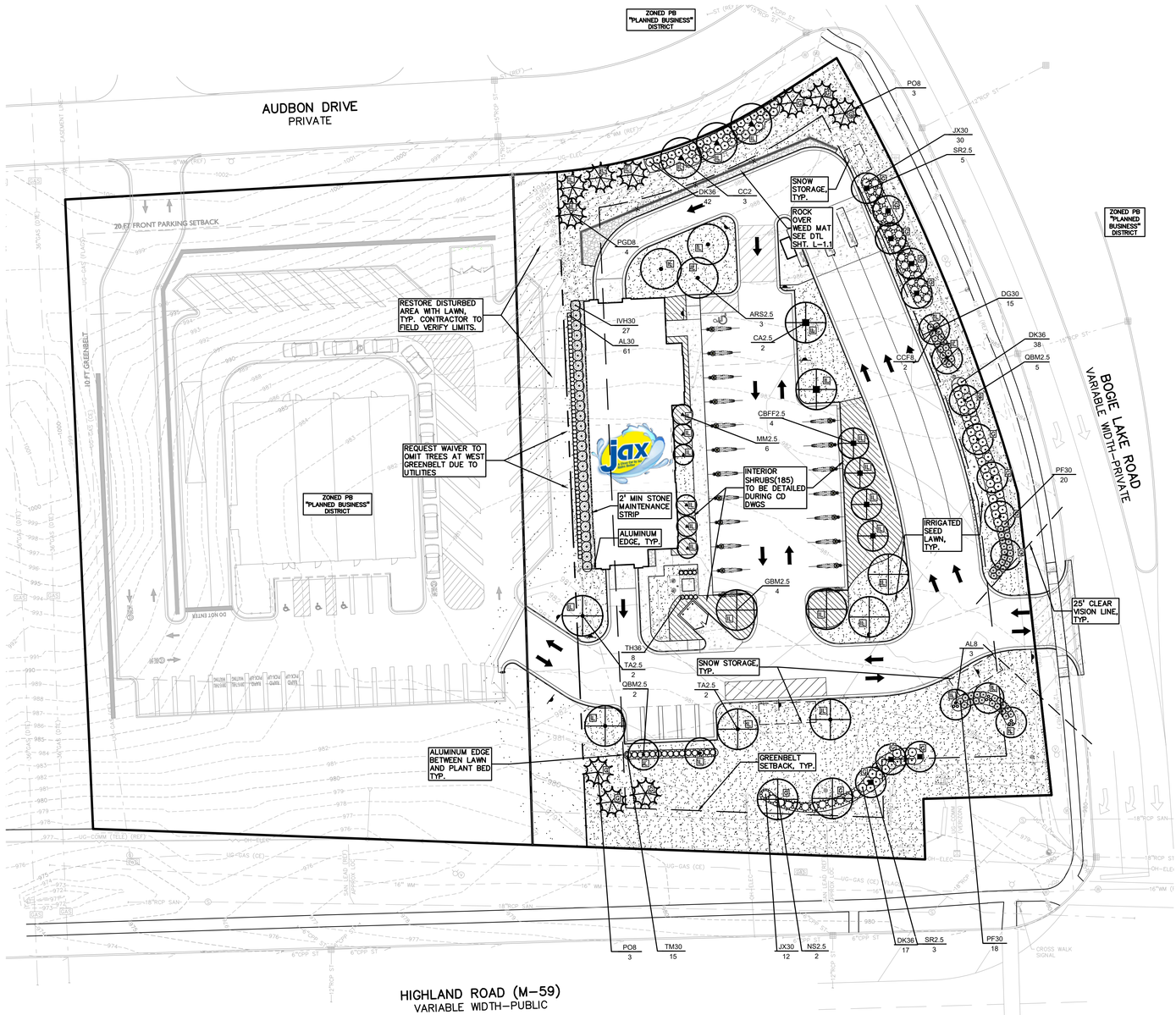
= INTERIOR SHRUBS (185) TO BE DETAILED DURING CD DWGS

= RIVER ROCK OVER FABRIC SEE DETAIL SHEET L–1.1

= SNOW STORAGE AREA

LETTER DESIGNATION FOR ORDINANCE TREES
G = GREENBELT TREES
IL = INTERIOR LANDSCAPE TREES

IRRIGATION PLANS(WITH RAIN SENSOR) TO BE PROVIDED DURING CDS, PLANS BY OTHERS



LANDSCAPE CALCULATIONS:

PER WHITE LAKE TOWNSHIP ZONING ORDINANCE
ZONING, PB – PLANNED BUSINESS

GREENBELT= G
1 LARGE DEC OR EVG TREE AND 8 SHRUBS PER 30 LF
REQUIRED:
WEST GREENBELT 332.2 LF / 30 = 11.07 DEC OR EVG TREES
11.1 X 8 = 88.8 = 88 SHRUBS
AUDBON DR. 159.33 LF / 30 = 5.3 = 5 DEC OR EVG TREES
5.3 X 8 = 42.4 = 42 SHRUBS
HIGHLAND RD. 231.6 LF / 30 = 7.7 = 8 DEC OR EVG TREES
7.7 X 8 = 61.6 = 62 SHRUBS
BOGIE LAKE RD. 384.48 LF / 30 = 12.8 = 13 DEC OR EVG TREES
12.8 X 8 = 102.5 = 103 SHRUBS

PROVIDED:
WEST GREENBELT: 1 DEC TREE AND 88 SHRUBS. REQUESTING WAIVER FOR ADDITIONAL TREES DUE TO UTILITIES ON WEST SIDE OF BUILDING.
AUDBON DR.: 8 DEC OR EVG TREES AND 42 SHRUBS
HIGHLAND RD.: 8 PROPOSED DEC OR EVG TREES AND 62 SHRUBS
BOGIE LAKE RD.: 13 PROPOSED DEC OR EVG TREES AND 103 SHRUBS

INTERIOR LANDSCAPE= IL
15% OF TOTAL LOT AREA MUST BE LANDSCAPED.
1 DEC, EVG, OR ORN TREE AND 5 SHRUBS PER 300 SF REQUIRED AREA

REQUIRED: 73,735 SF(W/IN ROW) X 15% = 11,060 SF
11,060 SF / 300 SF = 37 DEC, ORN, OR EVG TREES
37 X 5 = 185 SHRUBS

PROVIDED: 37 DEC, ORN OR EVG TREES, AND 185 SHRUBS TO BE DETAILED DURING CD DRAWINGS

PARKING LOT LANDSCAPE PARKING AREAS WITH MORE THAN 10 SPACES AND USED FOR COMMERCIAL / OFFICE SPACE NEEDS 20 SF PER SPACE.
1 LARGE DEC TREE OR 1 ORN TREE AND 3 SHRUBS REQUIRED PER 100 SF REQUIRED PARKING AREA LANDSCAPE.

PROVIDED: NONE, SINCE LESS THAN 10 PARKING SPACES

GENERAL PLANTING NOTES:

1. LANDSCAPE CONTRACTOR SHALL VISIT SITE, INSPECT EXISTING SITE CONDITIONS AND REVIEW PROPOSED PLANTING AND RELATED WORK. IN CASE OF DISCREPANCY BETWEEN PLAN AND PLANT LIST, PLAN SHALL GOVERN QUANTITIES. CONTACT LANDSCAPE ARCHITECT WITH ANY CONCERNS.
2. CONTRACTOR SHALL VERIFY LOCATIONS OF ALL ON SITE UTILITIES PRIOR TO BEGINNING CONSTRUCTION ON HIS/HER PHASE OF WORK. ELECTRIC, GAS, TELEPHONE, CABLE TELEVISION MAY BE LOCATED BY CALLING MISS DIG 1–800–482–7171. ANY DAMAGE OR INTERRUPTION OF SERVICES SHALL BE THE RESPONSIBILITY OF CONTRACTOR. CONTRACTOR SHALL COORDINATE ALL RELATED ACTIVITIES WITH OTHER TRADES ON THE JOB AND SHALL REPORT ANY UNACCEPTABLE JOB CONDITIONS TO OWNER'S REPRESENTATIVE PRIOR TO COMMENCING.
3. ALL PLANT MATERIAL TO BE PREMIUM GRADE NURSERY STOCK AND SHALL SATISFY AMERICAN ASSOCIATION OF NURSERYMEN STANDARD FOR NURSERY STOCK. ALL LANDSCAPE MATERIAL SHALL BE NORTHERN GROWN, NO. 1. GRADE.
4. CONTRACTOR IS RESPONSIBLE FOR VERIFYING ALL QUANTITIES SHOWN ON LANDSCAPE PLAN PRIOR TO PRICING THE WORK.
5. THE OWNER'S REPRESENTATIVE RESERVES THE RIGHT TO REJECT ANY PLANT MATERIAL NOT MEETING SPECIFICATIONS.
6. ALL SINGLE STEM SHADE TREES TO HAVE STRAIGHT TRUNKS AND SYMMETRICAL CROWNS.
7. ALL SINGLE TRUNK SHADE TREES TO HAVE A CENTRAL LEADER; TREES WITH FORKED OR IRREGULAR TRUNKS WILL NOT BE ACCEPTED.
8. ALL MULTI STEM TREES SHALL BE HEAVILY BRANCHED AND HAVE SYMMETRICAL CROWNS. ONE SIDED TREES OR THOSE WITH THIN OR OPEN CROWNS SHALL NOT BE ACCEPTED.
9. ALL EVERGREEN TREES SHALL BE HEAVILY BRANCHED AND FULL TO THE GROUND, SYMMETRICAL IN SHAPE AND NOT SHEARED FOR THE LAST FIVE GROWING SEASONS.
10. ALL TREES TO HAVE CLAY OR CLAY LOAM BALLS, TREES WITH SAND BALLS WILL BE REJECTED.
11. NO MACHINERY IS TO BE USED WITHIN THE DRIP LINE OF EXISTING TREES; HAND GRADE ALL LAWN AREAS WITHIN THE DRIP LINE OF EXISTING TREES.
12. ALL TREE LOCATIONS SHALL BE STAKED BY LANDSCAPE CONTRACTOR AND ARE SUBJECT TO THE APPROVAL OF THE LANDSCAPE ARCHITECT PRIOR TO INSTALLATION OF THE PLANT MATERIAL, IF INCLUDED IN CONTRACT.
13. IT IS MANDATORY THAT POSITIVE DRAINAGE IS PROVIDED AWAY FROM ALL BUILDINGS.
14. ALL PLANTING BEDS SHALL RECEIVE 3" DOUBLE SHREDDED HARDWOOD BARK MULCH WITH PRE EMERGENT, SEE SPECIFICATIONS. SHREDDED PALETTE AND DYED MULCH WILL NOT BE ACCEPTED.
15. ALL LANDSCAPED AREAS SHALL RECEIVE 3" COMPACTED TOPSOIL.
16. SEE SPECIFICATIONS FOR ADDITIONAL COMMENTS, REQUIREMENTS, PLANTING PROCEDURES AND WARRANTY STANDARDS.
17. FOR NON–LAWN SEED MIX AREAS, AS NOTED ON PLAN, BRUSH MOW ONCE SEASONALLY FOR INVASIVE SPECIES CONTROL.
18. CONTRACTOR SHALL NOT INSTALL PLANTS UNDER BUILDING OVERHANG AND SHALL NOTIFY LANDSCAPE ARCHITECT IF DRAWINGS CONFLICT WITH BUILDING OVERHANGS.
19. TREES SHALL NOT CONFLICT/ BLOCK PROPOSED REGULATORY/ DIRECTION SIGNAGE, MONUMENT SIGNS, ADDRESS OR LIGHT POLES. SHIFT TREES AS NECESSARY TYP.

NOT FOR CONSTRUCTION

PEA GROUP
t: 844.813.2949
www.peagroup.com

STATE OF MICHIGAN — JANET L. EVANS — LANDSCAPE ARCHITECT — NO. 3302 — REGISTERED

NORTH

0 15 30 60
SCALE: 1" = 30'

811 Know what's below. Call before you dig.

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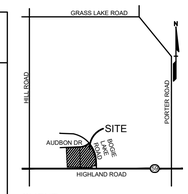


CLIENT
BMW KAR WASH LLC
26777 CENTRAL PARK BLVD, SUITE 180
SOUTHFIELD, MICHIGAN 48034

PROJECT TITLE
JAX KAR WASH
WHITE LAKE, MICHIGAN

REVISIONS

TWP. COMMENTS	10-9-25

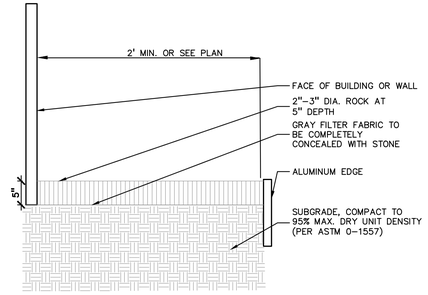
ORIGINAL ISSUE DATE:
SEPTEMBER 10, 2025

DRAWING TITLE
PRELIMINARY LANDSCAPE PLAN

PEA JOB NO.	25-0885
P.M.	JPB
DN.	TC
DES.	JLE

DRAWING NUMBER:
L-1.0

S:\PROJECTS\2025\25-0885 JAX KAR WASH – WHITE LAKE (2)\DWG\2_SITE_PLAN\L-1.0_LANDSCAPE-25-0885.dwg PLOT DATE: 10/9/2025 BY: Charlotte L'Esperance



6 ROCK EDGE DETAIL

SCALE: 1 1/2" = 1'–0"

TREE PROTECTION WILL BE ERECTED PRIOR TO START OF CONSTRUCTION ACTIVITIES AND SHALL REMAIN IN PLACE UNTIL CONSTRUCTION IS COMPLETE

NO PERSON MAY CONDUCT ANY ACTIVITY WITHIN THE DRIP LINE OF ANY TREE DESIGNATED TO REMAIN; INCLUDING, BUT NOT LIMITED TO PLACING SOLVENTS, BUILDING MATERIAL, CONSTRUCTION EQUIPMENT OR SOIL DEPOSITS WITHIN DRIP LINES

GRADE CHANGES MAY NOT OCCUR WITHIN THE DRIP LINE OF PROTECTED TREES

DURING CONSTRUCTION, NO PERSON SHALL ATTACH ANY DEVICE OR WIRE TO ANY REMAINING TREE

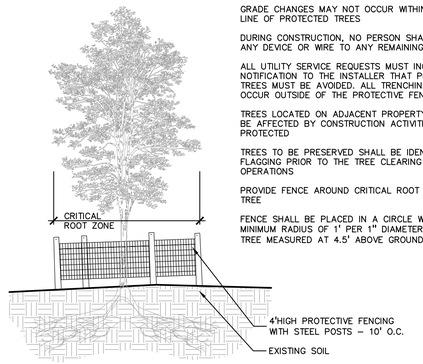
ALL UTILITY SERVICE REQUESTS MUST INCLUDE NOTIFICATION TO THE INSTALLER THAT PROTECTED TREES MUST BE AVOIDED. ALL TRENCHING SHALL OCCUR OUTSIDE OF THE PROTECTIVE FENCING

TREES LOCATED ON ADJACENT PROPERTY THAT MAY BE AFFECTED BY CONSTRUCTION ACTIVITIES MUST BE PROTECTED

TREES TO BE PRESERVED SHALL BE IDENTIFIED WITH FLAGGING PRIOR TO THE TREE CLEARING OPERATIONS

PROVIDE FENCE AROUND CRITICAL ROOT ZONE OF TREE

FENCE SHALL BE PLACED IN A CIRCLE WITH A MINIMUM RADIUS OF 1' PER 1" DIAMETER OF THE TREE MEASURED AT 4.5' ABOVE GROUND



3 TREE PROTECTION DETAIL

SCALE: 1" = 3'–0"

PEA GROUP
t: 844.813.2949
www.peagroup.com

STATE OF MICHIGAN – JANET L. EVANS – LANDSCAPE ARCHITECT – NO. 3905 – REGISTERED

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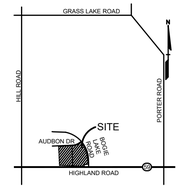
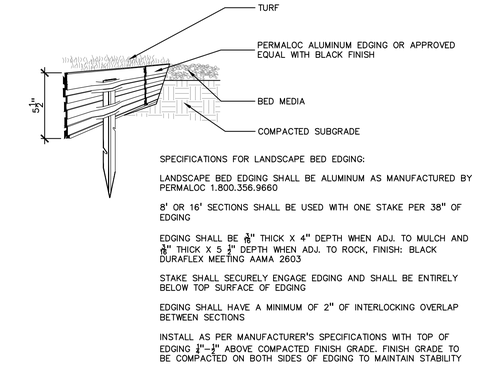


CLIENT

BMW KAR WASH LLC
26777 CENTRAL PARK BLVD, SUITE 180
SOUTHFIELD, MICHIGAN 48034

PROJECT TITLE

JAX KAR WASH
WHITE LAKE, MICHIGAN



SPECIFICATIONS FOR LANDSCAPE BED EDGING:

LANDSCAPE BED EDGING SHALL BE ALUMINUM AS MANUFACTURED BY PERMALOC 1.800.356.9660

8' OR 16' SECTIONS SHALL BE USED WITH ONE STAKE PER 38" OF EDGING

EDGING SHALL BE $\frac{3}{8}$" THICK X 4" DEPTH WHEN ADJ. TO MULCH AND $\frac{1}{8}$" THICK X 5 $\frac{1}{2}$" DEPTH WHEN ADJ. TO ROCK, FINISH: BLACK DURAFLEX MEETING AAMA 2603

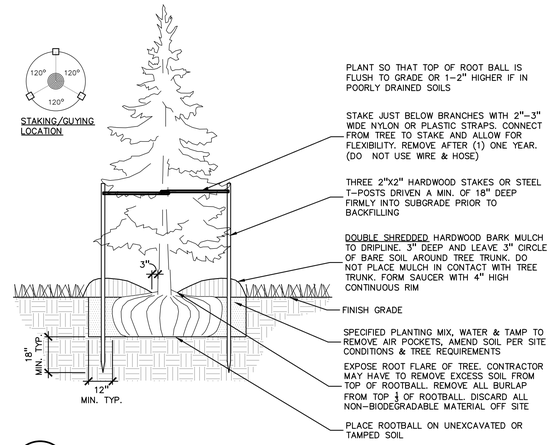
STAKE SHALL SECURELY ENGAGE EDGING AND SHALL BE ENTIRELY BELOW TOP SURFACE OF EDGING

EDGING SHALL HAVE A MINIMUM OF 2" OF INTERLOCKING OVERLAP BETWEEN SECTIONS

INSTALL AS PER MANUFACTURER'S SPECIFICATIONS WITH TOP OF EDGING 1"–2" ABOVE COMPACTED FINISH GRADE. FINISH GRADE TO BE COMPACTED ON BOTH SIDES OF EDGING TO MAINTAIN STABILITY

5 ALUMINUM EDGE DETAIL

SCALE: 1/2" = 1'–0"



PLANT SO THAT TOP OF ROOT BALL IS FLUSH TO GRADE OR 1–2" HIGHER IF IN POORLY DRAINED SOILS

STAKE JUST BELOW BRANCHES WITH 2"–3" WIDE NYLON OR PLASTIC STRAPS. CONNECT FROM TREE TO STAKE AND ALLOW FOR FLEXIBILITY. REMOVE AFTER (1) ONE YEAR. (DO NOT USE WIRE & HOSE)

THREE 2"X2" HARDWOOD STAKES OR STEEL T–POSTS DRIVEN A MIN. OF 18" DEEP FIRMLY INTO SUBGRADE PRIOR TO BACKFILLING

DOUBLE SHREDDED HARDWOOD BARK MULCH TO DRIPLINE. 3" DEEP AND LEAVE 3" CIRCLE OF BARE SOIL AROUND TREE TRUNK. DO NOT PLACE MULCH IN CONTACT WITH TREE TRUNK. FORM SAUCER WITH 4" HIGH CONTINUOUS RIM

FINISH GRADE

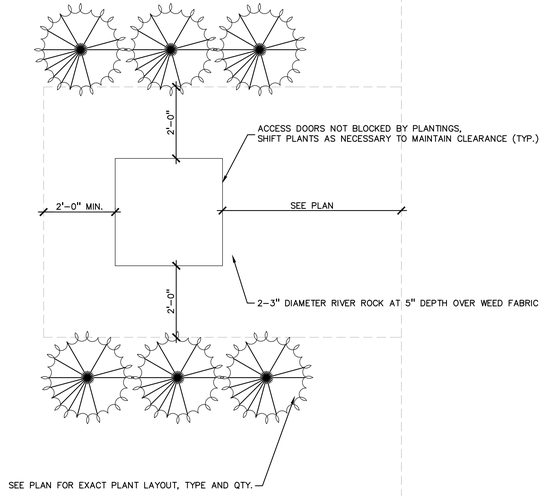
SPECIFIED PLANTING MIX, WATER & TAMP TO REMOVE AIR POCKETS, AMEND SOIL PER SITE CONDITIONS & TREE REQUIREMENTS

EXPOSE ROOT FLARE OF TREE. CONTRACTOR MAY HAVE TO REMOVE EXCESS SOIL FROM TOP OF ROOTBALL. REMOVE ALL BURLAP FROM TOP $\frac{1}{3}$ OF ROOTBALL. DISCARD ALL NON–BIODEGRADABLE MATERIAL OFF SITE

PLACE ROOTBALL ON UNEXCAVATED OR TAMPED SOIL

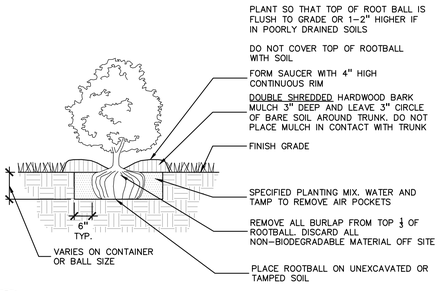
2 EVERGREEN TREE PLANTING DETAIL

SCALE: 1" = 3'–0"



7 TRANSFORMER SCREEN DETAIL

NOT TO SCALE



PLANT SO THAT TOP OF ROOT BALL IS FLUSH TO GRADE OR 1–2" HIGHER IF IN POORLY DRAINED SOILS

DO NOT COVER TOP OF ROOTBALL WITH SOIL

FORM SAUCER WITH 4" HIGH CONTINUOUS RIM

DOUBLE SHREDDED HARDWOOD BARK MULCH 3" DEEP AND LEAVE 3" CIRCLE OF BARE SOIL AROUND TRUNK. DO NOT PLACE MULCH IN CONTACT WITH TRUNK

FINISH GRADE

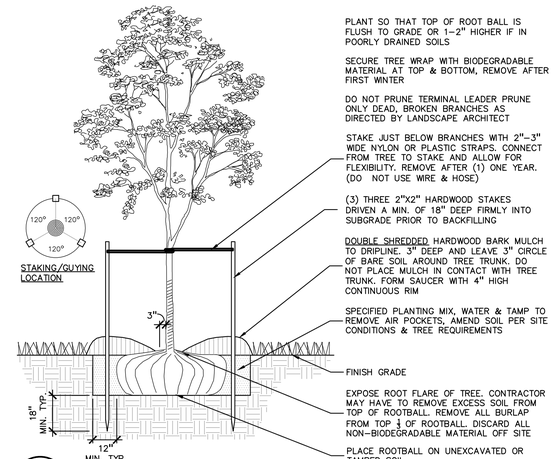
SPECIFIED PLANTING MIX. WATER AND TAMP TO REMOVE AIR POCKETS

REMOVE ALL BURLAP FROM TOP $\frac{1}{3}$ OF ROOTBALL. DISCARD ALL NON–BIODEGRADABLE MATERIAL OFF SITE

PLACE ROOTBALL ON UNEXCAVATED OR TAMPED SOIL

4 SHRUB PLANTING DETAIL

SCALE: 1" = 2'–0"



PLANT SO THAT TOP OF ROOT BALL IS FLUSH TO GRADE OR 1–2" HIGHER IF IN POORLY DRAINED SOILS

SECURE TREE WRAP WITH BIODEGRADABLE MATERIAL AT TOP & BOTTOM, REMOVE AFTER FIRST WINTER

DO NOT PRUNE TERMINAL LEADER PRUNE ONLY DEAD, BROKEN BRANCHES AS DIRECTED BY LANDSCAPE ARCHITECT

STAKE JUST BELOW BRANCHES WITH 2"–3" WIDE NYLON OR PLASTIC STRAPS. CONNECT FROM TREE TO STAKE AND ALLOW FOR FLEXIBILITY. REMOVE AFTER (1) ONE YEAR. (DO NOT USE WIRE & HOSE)

(3) THREE 2"X2" HARDWOOD STAKES DRIVEN A MIN. OF 18" DEEP FIRMLY INTO SUBGRADE PRIOR TO BACKFILLING

DOUBLE SHREDDED HARDWOOD BARK MULCH TO DRIPLINE. 3" DEEP AND LEAVE 3" CIRCLE OF BARE SOIL AROUND TREE TRUNK. DO NOT PLACE MULCH IN CONTACT WITH TREE TRUNK. FORM SAUCER WITH 4" HIGH CONTINUOUS RIM

SPECIFIED PLANTING MIX, WATER & TAMP TO REMOVE AIR POCKETS, AMEND SOIL PER SITE CONDITIONS & TREE REQUIREMENTS

FINISH GRADE

EXPOSE ROOT FLARE OF TREE. CONTRACTOR MAY HAVE TO REMOVE EXCESS SOIL FROM TOP OF ROOTBALL. REMOVE ALL BURLAP FROM TOP $\frac{1}{3}$ OF ROOTBALL. DISCARD ALL NON–BIODEGRADABLE MATERIAL OFF SITE

PLACE ROOTBALL ON UNEXCAVATED OR TAMPED SOIL

1 DECIDUOUS TREE PLANTING DETAIL

SCALE: 1" = 3'–0"

REVISIONS	
TWP. COMMENTS	10-9-25

ORIGINAL ISSUE DATE:
SEPTEMBER 10, 2025

DRAWING TITLE

LANDSCAPE DETAILS

PEA JOB NO.	25-0885
P.M.	JPB
DN.	TC
DES.	JLE

DRAWING NUMBER:

L-1.1

NOT FOR CONSTRUCTION

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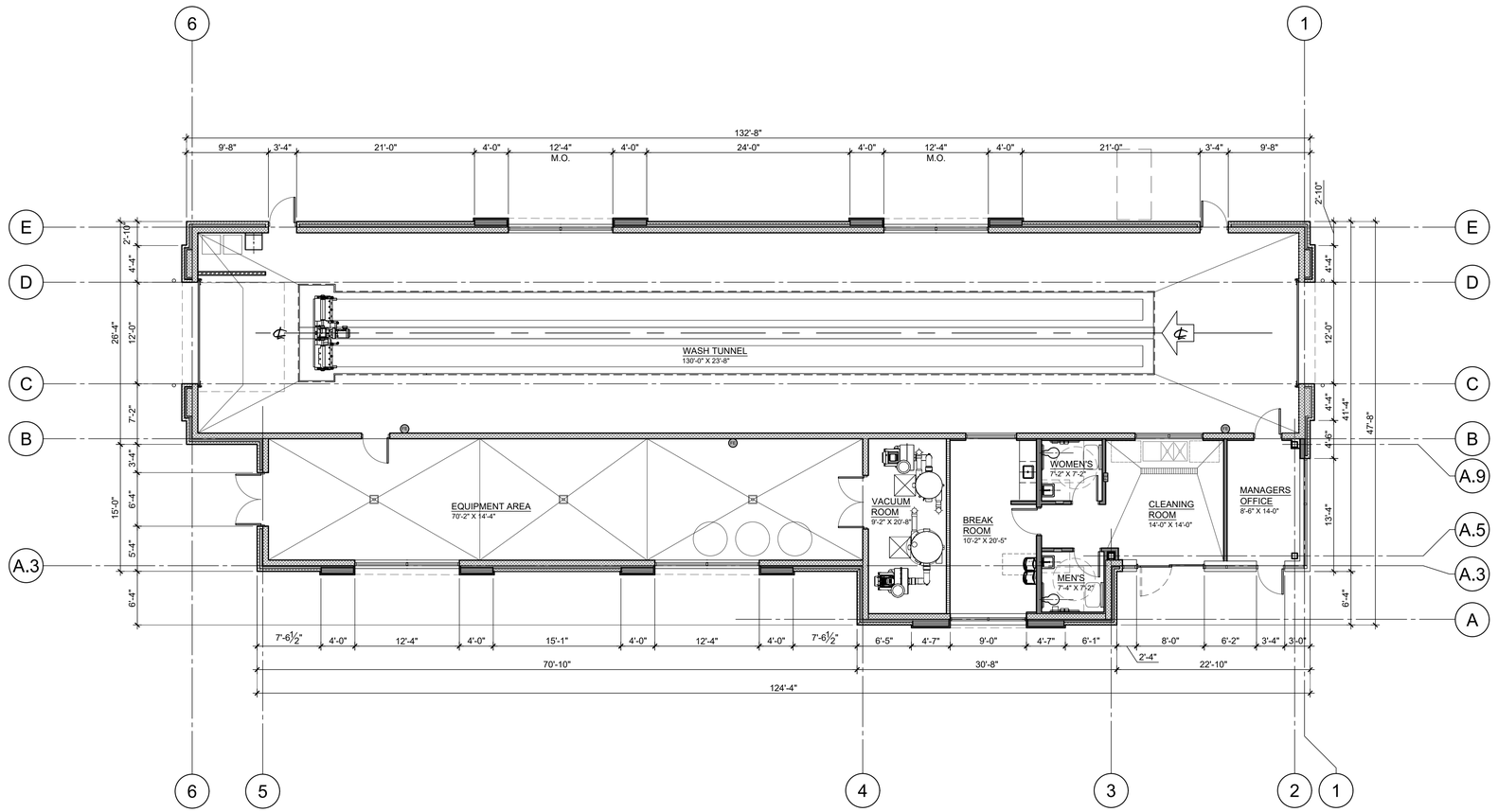
design to inspire
26261 Evergreen Road, Suite #123
Southfield, MI 48076 | 248.619.2354



OVERALL FLOOR PLAN
SCALE: 1/8" = 1'-0"

NORTH

1

STATE OF MICHIGAN
DAVID SCOTT SPENCER
ARCHITECT
No. 1301054459
LICENSED ARCHITECT

PROJECT NAME:
JAX KAR WASH
WHITE LAKE TWP, MI 48383

ISSUED FOR:	DATE:
SITE PLAN APPROVAL	9-3-25
SITE PLAN RE-SUBMITTAL	10-9-25

DRAWING DATE: 10-9-25

PROJECT NUMBER: 25073

SHEET NUMBER: PFP-2

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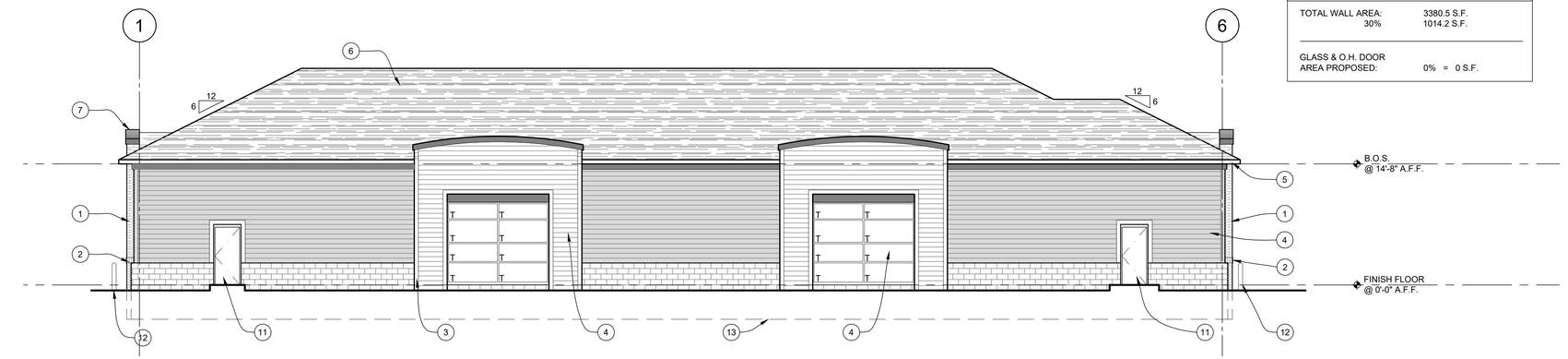


GLASS CALCULATIONS

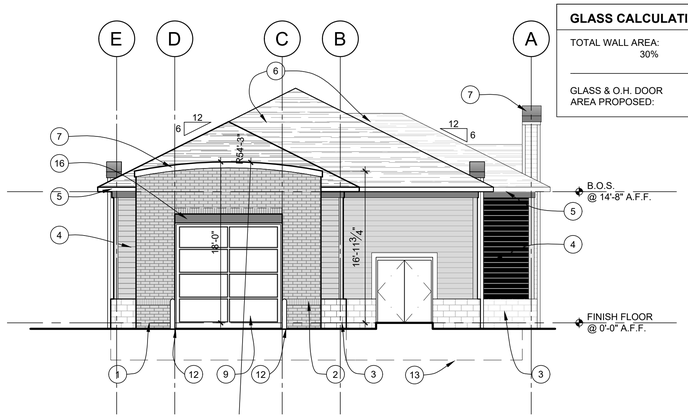
TOTAL WALL AREA:	3380.5 S.F.
30%	1014.2 S.F.
GLASS & O.H. DOOR AREA PROPOSED:	0% = 0 S.F.

WEST ELEVATION

SCALE: 1/8" = 1'-0" A-101 **4**

EXTERIOR MATERIAL SCHEDULE

1	4" UTILITY BRICK
2	½" RECESSED BRICK SOLDIER COURSE
3	8" SPLIT-FACE CMU BLOCK
4	HORIZONTAL LAP SIDING W/ TRIM
5	1X6 FASCIA BOARD WRAPPED IN ALUMINUM (JAX BLUE)
6	ASPHALT SHINGLES
7	PRE-FINISHED METAL COPING (JAX BLUE)
8	1" TINTED LOW 'E' INSUL. GLAZING IN CLEAR ANOD. ALUM. THERMAL BREAK FRAMES.
9	12'W x 10'H GLASS SECTIONAL INSULATED OVERHEAD GRADE DOOR w/ MOTOR OPERATED OPENER & INSULATED (TEMPERED GLASS)
10	CLEAR ANOD. ALUM. ENTRY DOOR W/ TEMPERED GLASS
11	HOLLOW METAL DOOR & FRAME (PAINT TO MATCH ADJACENT WALL COLOR)
12	6" DIA. CONC. FILLED STEEL GUARD POSTS
13	CONCRETE TRENCH FOOTING BELOW
14	DASHED LINE DENOTED PROPOSED SIGNAGE LOCATION
15	1" TINTED INSUL. SPANDREAL IN CLEAR ANOD. ALUM. THERMAL BREAK FRAMES.
16	ALUMINUM COMPOSITE METAL PANEL SYSTEM (A.C.M.) SEE EXTERIOR COLOR SCHEDULE FOR MORE INFO.
17	DASHED LINE DENOTES 5/8" GYP. BD. DRAFT STOP ON FACE OF ROOF TRUSS BEYOND.

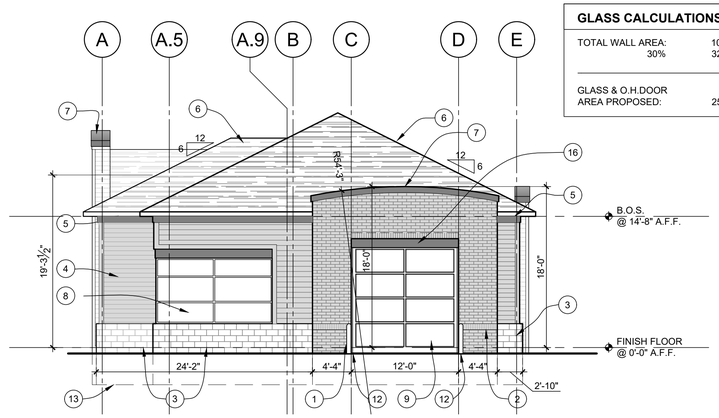


GLASS CALCULATIONS

TOTAL WALL AREA:	1063.3 S.F.
30%	318.9 S.F.
GLASS & O.H. DOOR AREA PROPOSED:	14.4% = 153.3 S.F.

SOUTH ELEVATION

SCALE: 1/8" = 1'-0" A-101 **3**



GLASS CALCULATIONS

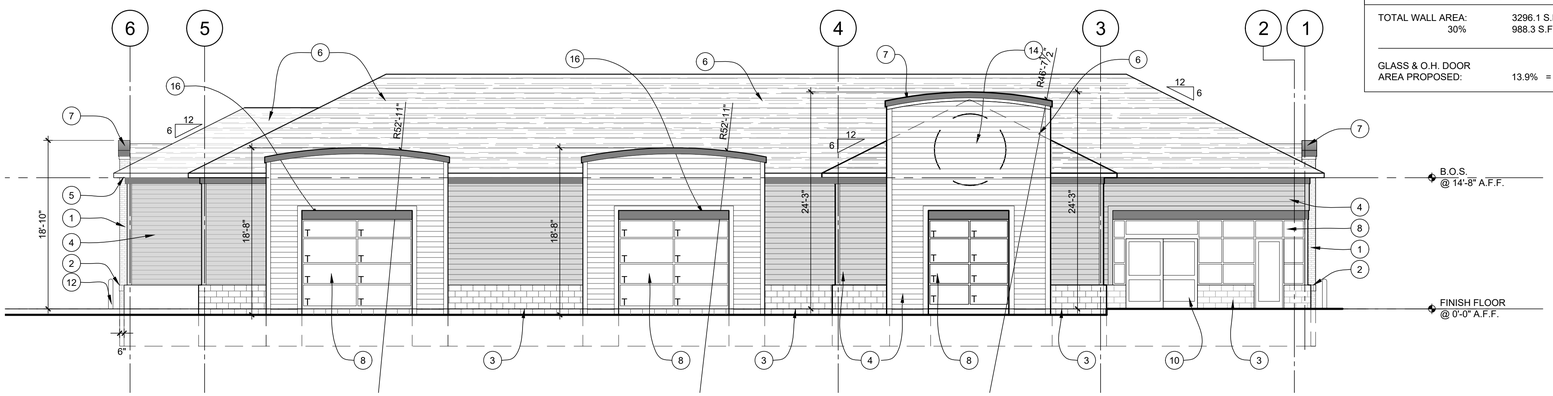
TOTAL WALL AREA:	1068.6 S.F.
30%	320.6 S.F.
GLASS & O.H.DOOR AREA PROPOSED:	25.2% = 269.1 S.F.

NORTH ELEVATION

SCALE: 1/8" = 1'-0" A-101 **2**

EXTERIOR COLOR SCHEDULE

COLOR GRAPHIC	DESCRIPTION	MATERIAL REF. I.D.
	ACM - COLOR 1 MANUFACTURER: REYNOBOND COLOR: JAX BLUE, OWNER TO VERIFY.	16
	HORIZONTAL LAP SIDING W/ TRIM COLOR -1 MANUFACTURER: HARDIE PLANK LAP SIDING COLOR: TIMBER BARK	4
	HORIZONTAL LAP SIDING W/ TRIM COLOR -2 MANUFACTURER: HARDIE PLANK PRODUCT: HORIZONTAL LAP SIDING COLOR: COBBLE STONE	4
	CMU MANUFACTURER: NATIONAL BLOCK COMPANY COLOR: CHUKAR	3
	UTILITY BRICK MANUFACTURER: TBD COLOR: TBD	1
	UTILITY BRICK SOLDIER COURSE MANUFACTURER: TBD COLOR: TBD	2
	ASPHALT SHINGLES MANUFACTURER: MALARKEY ROOFING PRODUCTS COLOR: WEATHERED WOOD PLUS	6



GLASS CALCULATIONS

TOTAL WALL AREA:	3296.1 S.F.
30%	988.3 S.F.
GLASS & O.H. DOOR AREA PROPOSED:	13.9% = 459.5 S.F.

EAST ELEVATION

SCALE: 1/8" = 1'-0" A-101 **1**

TEMPERED GLAZING NOTES

"I" DENOTES AREAS ON ELEVATIONS

1. GLAZING IN AN INDIVIDUAL FIXED OR OPERABLE PANEL ADJACENT TO A DOOR WHERE THE NEAREST EXPOSED EDGE OF THE GLAZING IS WITHIN A 24 INCH ARC OF EITHER VERTICAL EDGE OF THE DOOR IN A CLOSED POSITION & WHERE THE BOTTOM EXPOSED EDGE OF GLAZING IS LESS THAN 60 INCHES ABOVE THE WALKING SURFACE SHALL BE TEMPERED.
2. GLAZING IN AN INDIVIDUAL FIXED OR OPERABLE PANEL WHICH MEETS ALL OF THE FOLLOWING CONDITIONS SHALL BE TEMPERED:
   - 2.1 EXPOSED AREA OF AN INDIVIDUAL PANE GREATER THAN 9 SQUARE FEET
   - 2.2 EXPOSED BOTTOM EDGE LESS THAN 18 INCHES ABOVE THE FLOOR
   - 2.3 EXPOSED TOP EDGE GREATER THAN 36 INCHES ABOVE THE FLOOR
   - 2.4 ONE OR MORE WALKING SURFACES WITHIN 36 INCHES HORIZONTALLY OF THE PLANE OF THE GLAZING.
3. ALL GLAZING IN SWINGING DOORS IS TO BE TEMPERED.

STATE OF MICHIGAN
DAVID SCOTT BRAUER
ARCHITECT
No. 1301054459
LICENSED ARCHITECT

F.A.studio
design to inspire
26261 Evergreen Road, Suite #123
Southfield, MI 48076 | 248.619.2354

PROJECT NAME:
JAX KAR WASH
WHITE LAKE TWP, MI 48383

ISSUED FOR:	DATE:
SITE PLAN APPROVAL	9-3-25
SITE PLAN RE-SUBMITTAL	10-9-25

DRAWING DATE: 10-8-24

PROJECT NUMBER: 25073

SHEET NUMBER: PE-2

Proposed Exterior Renderings for:

Proposed Exterior Renderings for:

WDGE1 LED
Architectural Wall Sconce

Catalog Number

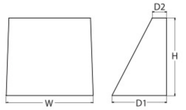
Notes

Type

Hit the Tab key or mouse over the page to see all interactive elements.

Specifications

Depth (D1): 5.5"
Depth (D2): 1.5"
Height: 8"
Width: 9"
Weight: (without options) 9 lbs



Introduction

The WDGE LED family is designed to meet specifier's every wall-mounted lighting need in a widely accepted shape that blends with any architecture. The clean rectilinear design comes in four sizes with lumen packages ranging from 1,200 to 25,000 lumens, providing true site-wide solution.

WDGE1 delivers up to 2,000 lumens with a soft, non-pixelated light source, creating a visually comfortable environment. The compact size of WDGE1, with its integrated emergency battery backup option, makes it an ideal over-the-door wall-mounted lighting solution.

WDGE LED Family Overview

Luminaire	Standard EM, 0°C	Cold EM, -20°C	Sensor	Lumens (4000K)					
				P1	P2	P3	P4	P5	P6
WDGE1 LED	4W	--	--	1,200	2,000	--	--	--	--
WDGE2 LED	10W	18W	Standalone / nLight	1,200	2,000	3,000	4,500	6,000	--
WDGE3 LED	15W	18W	Standalone / nLight	7,500	8,500	10,000	12,000	--	--
WDGE4 LED	--	--	Standalone / nLight	12,000	16,000	18,000	20,000	22,000	25,000

Ordering Information

EXAMPLE: WDGE1 LED P2 40K 80CRI VF MVOLT SRM PE DDBXD

Series	Package	Color Temperature	CRI	Distribution	Voltage	Mounting
WDGE1 LED	P1 P2	27K 2700K 30K 3000K 35K 3500K 40K 4000K 50K[1] 5000K	80CRI 90CRI	VF Visual comfort forward throw VW Visual comfort wide	MVOLT 347[1]	**Shipped included** SRM Surface mounting bracket ICW Indirect Canopy/Ceiling Washer bracket (dry/damp locations only)[2] **Shipped separately** AWS 3/8inch Architectural wall spacer PBBW Surface-mounted back box (top, left, right conduit entry) Use when there is no junction box available.

Options		Finish			
E4WH[3]	Emergency battery backup, Certified in CA Title 20 MAEDBS (4W, 0°C min)	DDBXD	Dark bronze	DDBTXD	Textured dark bronze
PE[4]	Photocell, Button Type	DBLXD	Black	DBLBXD	Textured black
DS	Dual switching (comes with 2 drivers and 2 light engines; see page 3 for details)	DNAXD	Natural aluminum	DNATXD	Textured natural aluminum
DMG	0-10V dimming wires pulled outside fixture (for use with an external control, ordered separately)	DWHXD	White	DWHGXD	Textured white
BCE	Bottom conduit entry for back box (PBBW). Total of 4 entry points.	DSSXD	Sandstone	DSSTXD	Textured sandstone
BAA	Buy American(n) Act Compliant				

Accessories
Ordered and shipped separately.
WDGEAWS DDBXD — WDGE 3/8inch Architectural Wall Spacer (specify finish)
WDGEPBBW DDBXD U — WDGE1 surface-mounted back box (specify finish)

NOTES
1 50K not available in 90CRI.
2 347V not available with E4WH, DS or PE.
3 E4WH not available with PE or DS.
4 PE not available with DS.
5 Not qualified for DLC. Not available with E4WH.

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D-Series Size 0
LED Area Luminaire

d-series

Catalog Number

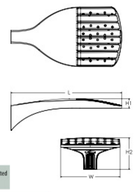
Notes

Type

Hit the Tab key or mouse over the page to see all interactive elements.

Specifications

EPA: 0.44 ft² (0.04 m²)
Length: 26.18" (66.5 cm)
Width: 14.06" (35.7 cm)
Height H1: 2.26" (5.7 cm)
Height H2: 7.46" (18.9 cm)
Weight: 23 lbs (10.4 kg)



Introduction

The modern styling of the D-Series features a highly refined aesthetic that blends seamlessly with its environment. The D-Series offers the benefits of the latest in LED technology into a high performance, high efficacy, long-life luminaire.

The photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density. D-Series outstanding photometry aids in reducing the number of poles required in area lighting applications, with typical energy savings of 70% and expected service life of over 100,000 hours.

design select

Items marked by a shaded background qualify for the Design Select program and ship in 15 days or less. To learn more about Design Select, visit www.acuitybrands.com/designselect. *See ordering tree for details

Design Select options indicated by this color background.

Ordering Information

EXAMPLE: DSX0 LED P6 40K 70CRI T3M MVOLT SPA NLTAIR2 PIRHN DDBXD

DSX0 LED

Series	LEDs	Color temperature[1]	Color Rendering Index[1]	Distribution	Voltage	Mounting
DSX0 LED	**Forward optics** P1 P5 P2 P6 P3 P7 P4 **Rotated optics** P10[1] P12[1] P11[1] P13[1]	(this section 70CRI only) 30K 3000K 40K 4000K 50K 5000K 27K 2700K 30K 3000K 35K 3500K 40K 4000K 50K 5000K	70CRI 70CRI 70CRI 80CRI 80CRI 80CRI 80CRI 80CRI	AFR Automotive front row T1S Type I short T2M Type II medium T3M Type III medium T3LG Type III low-glare[1] T4M Type IV medium T4LG Type IV low-glare[1] TFTM Forward throw medium T5M Type V medium T5LG Type V low-glare T5W Type V wide BLC3 Type III backlight control[1] BLC4 Type IV backlight control[1] LCCO Left corner cutoff[1] RCCO Right corner cutoff[1]	MVOLT (120V-277V)[2,3] HVOLT (347V-480V)[3,4] XVOLT (277V-480V)[3,5] 120[6,24] 208[6,24] 240[6,24] 277[6,24] 347[6,24] 480[6,24]	**Shipped included** SPA Square pole mounting (4@ drilling, 3.5" min. SQ pole) RPA Round pole mounting (4@ drilling, 3" min. RND pole) SPA5 Square pole mounting (4@ drilling, 3" min. SQ pole)[7] RPA5 Round pole mounting (4@ drilling, 3" min. RND pole)[7] SPA8N Square narrow pole mounting (4@ drilling, 3" min. SQ pole) WBA Wall bracket[8] MA Mast arm adapter (mounts on 2 3/8" OD horizontal tenon)

Control options	Other options	Finish (required)
Shipped installed NLTAIR2 PIRHN nLight AIR gen 2 enabled with bi-level motion / ambient sensor, 8-40' mounting height, ambient sensor enabled at 2fc.[9,10,11,12,13] PIR High/low, motion/ambient sensor, 8-40' mounting height, ambient sensor enabled at 2fc.[9,10,11,12,13] PER NEMA twist-lock receptacle only (controls ordered separately)[14] PERS Five-pin receptacle only (controls ordered separately)[14,15] PER7 Seven-pin receptacle only (controls ordered separately)[14,15] FAO Field adjustable output[11,16] BL30 Bi-level switched dimming, 30%[16,17] BL50 Bi-level switched dimming, 50%[16,17] DMG 0-10v dimming wires pulled outside fixture (for use with an external control, ordered separately)[17]	**Shipped installed** HS Houseside Shield (Black finish standard)[18] L90 Left rotated optics[1] R90 Right rotated optics[1] CCE Coastal Construction[19] HA 50°C ambient operation[20] BAA Buy American(n) Act and/or Build America Buy America Qualified SF Single fuse (120, 277, 347V)[16] DF Double fuse (208, 240, 480V)[16] **Shipped separately** EGSR External Glare Shield (reversible, field install required, matches housing finish) BSDB Bird Spikes (field install required)	DDBXD Dark Bronze DBLXD Black DNAXD Natural Aluminum DWHXD White DDBTXD Textured dark bronze DBLBXD Textured black DNATXD Textured natural aluminum DWHGXD Textured white

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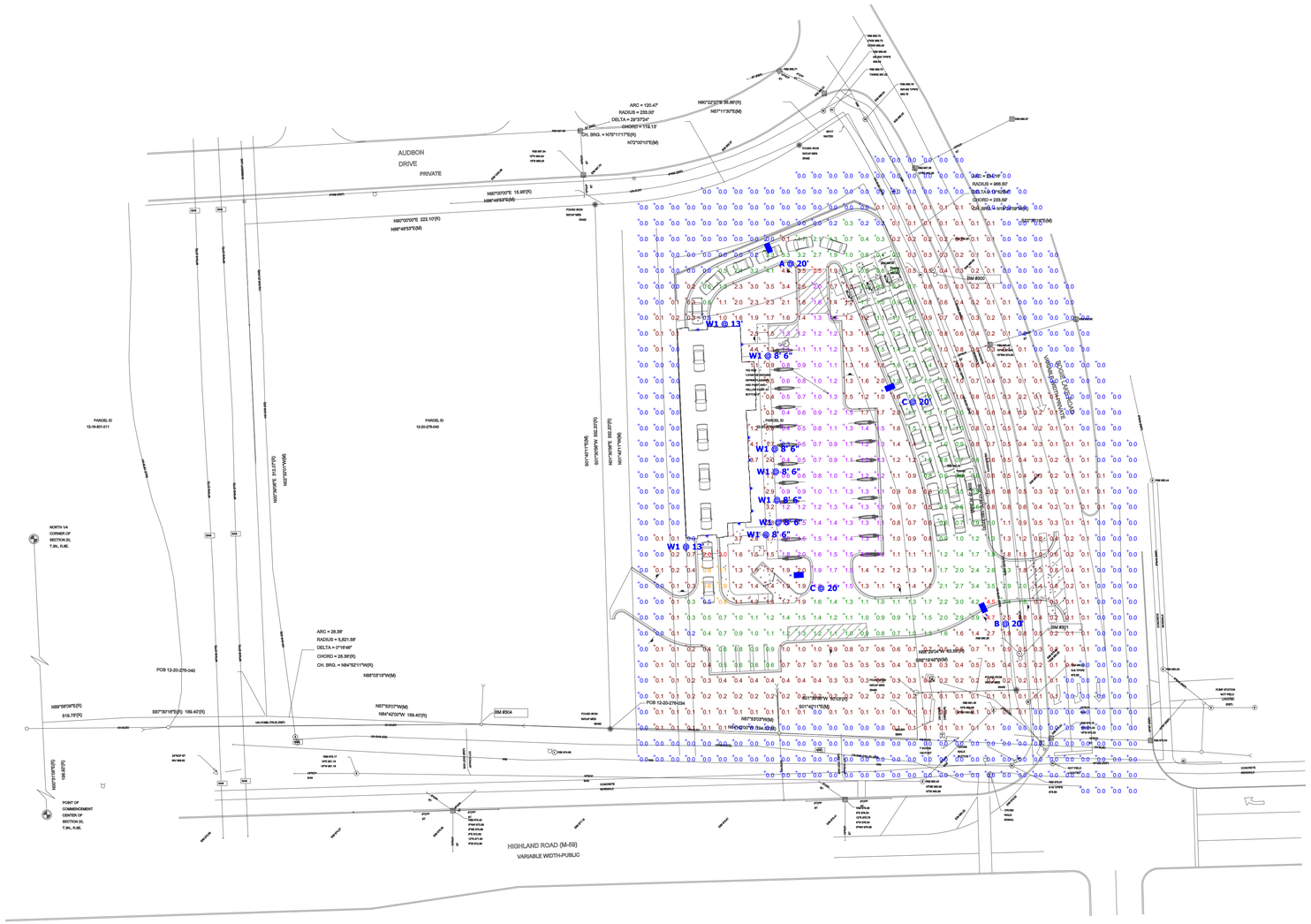

Plan View
Scale - 1" = 40ft

Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min	Avg/Max
OVERALL	+	0.6 fc	4.7 fc	0.0 fc	N/A	N/A	0.1:1
SITE CIRCULATION	+	1.3 fc	4.5 fc	0.2 fc	22.5:1	6.5:1	0.3:1
VACUUM AREA	+	1.2 fc	2.5 fc	0.3 fc	8.3:1	4.0:1	0.5:1
CAR WASH ENTRANCE/EXIT	+	1.0 fc	2.0 fc	0.5 fc	4.0:1	2.0:1	0.5:1

Schedule

Symbol	Label	QTY	Manufacturer	Catalog Number	Description	Lamp	Number Lamps	Lumens per Lamp	LLF	Wattage	Mounting Height
	A	1	Lithonia Lighting	DSX0 LED P7 40K 80CRI BLC4	D-Series Size 0 Area Luminaire P7 Performance Package 4000K CCT 80 CRI Type 4 Extreme Backlight Control	LED	1	14006	0.9	170.81	20'-0"
	B	1	Lithonia Lighting	DSX0 LED P7 40K 80CRI TFTM	D-Series Size 0 Area Luminaire P7 Performance Package 4000K CCT 80 CRI Forward Throw	LED	1	19053	0.9	170.81	20'-0"
	C	2	Lithonia Lighting	DSX0 LED P7 40K 80CRI T5W	D-Series Size 0 Area Luminaire P7 Performance Package 4000K CCT 80 CRI Type 5 Wide	LED	1	19784	0.9	170.81	20'-0"
	W1	8	Lithonia Lighting	WDGE1 LED P0 40K 80CRI VW	WDGE1 LED WITH P0 - PERFORMANCE PACKAGE, 4000K, 80CRI, VISUAL COMFORT WIDE OPTIC	LED	1	760	0.9	6.7947	8'-6" & 13'-0"

Ordering Note
FOR INQUIRIES CONTACT GASSER BUSH AT QUOTES@GASSERBUSH.COM OR 734-266-6705.

Drawing Note
THIS DRAWING WAS GENERATED FROM AN ELECTRONIC IMAGE FOR ESTIMATION PURPOSE ONLY. LAYOUT TO BE VERIFIED IN FIELD BY OTHERS.

General Note
1. SEE SCHEDULE FOR LUMINAIRE MOUNTING HEIGHT.
2. SEE LUMINAIRE SCHEDULE FOR LIGHT LOSS FACTOR.
3. CALCULATIONS ARE SHOWN IN FOOTCANDLES AT: 0' - 0"

THE ENGINEER AND/OR ARCHITECT MUST DETERMINE APPLICABILITY OF THE LAYOUT TO EXISTING / FUTURE FIELD CONDITIONS. THIS LIGHTING LAYOUT REPRESENTS ILLUMINATION LEVELS CALCULATED FROM LABORATORY DATA TAKEN UNDER CONTROLLED CONDITIONS IN ACCORDANCE WITH ILLUMINATING ENGINEERING SOCIETY APPROVED METHODS. ACTUAL PERFORMANCE OF ANY MANUFACTURER'S LUMINAIRE MAY VARY DUE TO VARIATION IN ELECTRICAL VOLTAGE, TOLERANCE IN LAMPS, AND OTHER VARIABLE FIELD CONDITIONS. MOUNTING HEIGHTS INDICATED ARE FROM GRADE AND/OR FLOOR UP.

THESE LIGHTING CALCULATIONS ARE NOT A SUBSTITUTE FOR INDEPENDENT ENGINEERING ANALYSIS OF LIGHTING SYSTEM SUITABILITY AND SAFETY. THE ENGINEER AND/OR ARCHITECT IS RESPONSIBLE TO REVIEW FOR MICHIGAN ENERGY CODE AND LIGHTING QUALITY COMPLIANCE.

UNLESS EXEMPT, PROJECT MUST COMPLY WITH LIGHTING CONTROLS REQUIRMENTS DEFINED IN ASHRAE 90.1 2013. FOR SPECIFIC INFORMATION CONTACT GBA CONTROLS GROUP AT CONTROLS@GASSERBUSH.COM OR 734-266-6705.

GBA

JAX KAR WASH - WHITE LAKE
PHOTOMETRIC SITE PLAN
GASSER BUSH ASSOCIATES
PREPARED FOR: O'DONNELL ELECTRIC, LLC
WWW.GASSERBUSH.COM

Designer NW/KB
Date 9/8/2025 rev. 10/13/2025
Scale Not to Scale
Drawing No. #25-48064-V2
1 of 1

WHITE LAKE TOWNSHIP
NOTICE OF PUBLIC HEARING

Notice is hereby given the Planning Commission of the Cha p of White Lake will hold a public hearing on **Thursday, December 4th, 2025, at 6:30 P.M.** at the White Lake Township Annex, 7527 Highland Road, White Lake, Michigan, 48383 to consider an additional building to be constructed within the **Planned Business District.**

Property described as parcel number 12-20-276-034, located at the northwest corner of Highland Road (M-59) and Bogie Lake Road, consisting of approximately 1.88 acres, currently zoned (PB) Planned Business.

The purpose of this public hearing is to receive public comment on the proposed preliminary site plan for the above Planned Business zoned property, consisting of a 5,555 square foot automobile wash establishment.

Persons interested are requested to be present. Pertinent information relative to this request is on file at the Community Development Department and may be examined at any time during regular business hours of 8 a.m. to 5 p.m. Persons interested may visit the Community Development Department, contact the Community Development Department by telephone at 248-698-3300, ext. 2, or attend the Public Hearing on the date specified. Written comments are also welcome at 7525 Highland Road, White Lake, Michigan, 48383. Individuals with disabilities requiring auxil s or services should contact the Clerk's Office at least 5 days before ing.

Sean O'Neil, AICP
Community Development Director

Director's Report

Project Name: Avalon

Description: Final site plan approval

Date on Agenda this packet pertains to: December 4, 2025

☐Public Hearing

☒Initial Submittal

☐Revised Plans

☐Preliminary Approval

☒Final Approval

☐Special Land Use

☐Rezoning

☐Other:

Contact	Consultants & Departments	Approval	Denial	Approved w/Conditions	Other	Comments
Sean O'Neil	Community Development Director	☐	☐	☐	☒	Based on comments from staff & consultants
Mike Leuffgen	DLZ	☒	☐	☒	☐	See letter dated 10/21/2025
Matteo Passalacqua	Carlisle Wortman Associates, Inc	☐	☐	☒	☐	See letter dated 10/21/2025
Jason Hanifen	WLT Fire Marshal	☐	☐	☒	☐	See letter dated 10/20/2025

DLZ
ARCHITECTURE • ENGINEERING • PLANNING
SURVEYING • CONSTRUCTION SERVICES

INNOVATIVE IDEAS
EXCEPTIONAL DESIGN
UNMATCHED CLIENT SERVICE

October 21, 2025

Sean O' Neil, Director
Community Development Department
Charter Township of White Lake
7525 Highland Road
White Lake, Michigan 48383

RE: The Avalon- f.k.a. White Lake Hill- Final Site Plan Review – Avalon Apartment Homes and Residence at Avalon- 3rd Review

~~**Watermain Easement (from Huron Valley Schools) Exhibit Review-1st Review**~~

Ref: DLZ No. 2145-7233-21 Design Professional: PEA Group

Dear Mr. O' Neil,

Our office has performed the above-mentioned Final Site Plan review for the revised plan dated September 30, 2025. The plan was reviewed for feasibility based on conformance with the Township Engineering Design Standards

General Site Information

This site is located on the north side of M-59 and east of Ormond Road. The property is located on both sides of Hill Road: across from former Brooks Elementary School and West of Meijers. Total site acreage is approximately 110.02 acres.

Site Improvement Information:

- Multi-Family-Avalon Apartment Homes-Construction of a ~~two (2) phase~~ Planned Development consisting of 366 total multi-family units for lease on the west side of Hill Road. Associated clubhouse and pool as part of multi-family development will also be constructed ~~as part of Phase I. It appears that currently only Phase I (219 multi-family units) is proposed.~~

- Multi-Family-Avalon Apartment Homes-Associated paved and curbed parking including three (3) ADA accessible parking spaces and maneuvering aisles for clubhouse and pool. The 2 story multi-family buildings will provide for parking via a two car garage per unit; 1 guest space is allotted in front of the garages for each unit. Single story ranch buildings shall have individual garages and driveways for parking. Internal private streets and drives are also proposed with points of access off M-59 and Hill Road.
- Single Family-Residence at Avalon- Proposes 68 single family condominium homes on the east side of Hill Road. This portion of the development will have a proposed paved and private road for the single-family condominium homes with one point of access off Hill Road.
- Site to be serviced by watermain and sanitary sewer.
- Multi-Family -Avalon Apartment Homes-Storm water runoff is proposed to be detained via a: 1) Detention basin at the northwest corner of Hill Road and M-59- with discharge to existing storm sewer south of basin; 2) Two detention basins located on the west side of Hill Road and located on the northern portion of the multi-family portion with discharge to existing culvert under Hill Road.
- Single Family-Residence at Avalon-Storm water runoff is proposed to be detained via a: 1) Detention basin on the northern portion of the site with discharge to the existing wetlands to the SW; 2) Detention basin on the southern portion with discharge to the existing wetlands to the SW.

We offer the following comments:

Note that comments from our October 11, 2022 Preliminary Site Plan review letter that were outstanding or remaining as notations are listed below:

a) *We defer to the Township as to whether 6-foot-wide sidewalk is required on both sides of Hill Road. None is proposed at this time. Township Zoning Ordinance 5.21 requires a minimum of 6 foot width for sidewalks along major roadways. Comment outstanding. We continue to defer to the Township with regard to this item. Note that an 8' wide path has now been added along a portion of the west side only of the Hill Road frontage and that two road crossings of the path have been proposed near the Hill Road entrances in order to connect the multi-family to the single-family units. The locations for the path crossings should be reviewed for proper pavement markings and pedestrian crossing signage. Comment addressed at this level of review. Per the design engineer, this item was discussed at a Township Zoom meeting on March 25, 2022. It was determined that an 8' wide path will be added along the western side of Hill Road from M-59 to the single family entrance. Paths are also now shown along the frontage for Units 81-84 and 85-87 only as the adjacent areas pose an issue*

with regulated wetlands and stream encroachment. The developer agreed at the meeting to make a contribution to the White Lake Sidewalk Fund to supplement pathway areas not installed along Hill Road. We note that single family Units 81-87 have now been eliminated and that the paths along those frontages also eliminated.

We note that portions of the proposed sidewalk along the western side of Hill Road are proposed outside the future ROW. This sidewalk locations shall be either adjusted to inside the future ROW or an easement shall be provided. In addition, our comment with respect to the proper pavement markings and pedestrian crossing signage for Hill Road crossing will need to be addressed at the time of FSP/FEP submittal.

The proposed 8' wide path along the west side of Hill Road is proposed to be constructed as part of the Phase II multi-family portion of the project. We defer to the Township as to whether the path shall be required to be constructed as part of Phase I per Township Zoning Ordinance 5.21 requirements. Comment outstanding. It appears that phasing for the development has been eliminated. Please clarify this as phasing shall impact timing of the installation of the 8' wide bike path along Hill Road. **Comment addressed. Per the design engineer, phasing for the multi- family development has been eliminated. The 8' wide path along the west side of Hill Road shall be constructed with the multi-family portion; the path on the east side shall be constructed with the single family portion.**

We note that the proposed path crossing on Hill Road is now shown much further south (than previously shown) of the proposed single-family entrance on the east side of Hill Road. Please provide the rationale for the crossing being further south as the intent is for the crossing to connect into the future sidewalk along the single-family drive entrance. **Comment addressed. Sidewalk crossing has been adjusted.**

We continue to note that the developer intends to provide a contribution to the WLT Sidewalk Fund for the portion of sidewalk along Hill Road that will not be constructed, due to wetland impacts, as per agreement with the Township. We also note that the path is now shown inside the proposed future ROW thus eliminating the need for an easement. Comment outstanding. We note that a portion of the proposed pathway on the west side of Hill Road is shown outside the proposed future ROW and that an easement for this portion shall be required. **Comment remains as a notation. In addition, an easement shall be required for a portion of the sidewalk (outside of the proposed right of way) that is proposed along the east side of Hill Road.**

b) *The following single-family lots present conflicts with either the proposed house, required grading, or the potential deck/patio encroaching into the wetlands setback:1,27,28,40,61, and 88. Impacts to the wetlands buffer will need to be removed. Comment outstanding. The wetlands setback/buffer for all wetlands was not shown on the initial Preliminary Site Plan submittal dated December 8, 2021. There are now units in the single family portion of this development as well as other areas of the development where grading is proposed in the wetlands setback/buffer which is not allowable. The following single family units will require revision with respect to grading in the wetlands setback: 1-7,20,27,28,39,40,52-54,61,75,76,84,85, and 88. In addition, the proposed retaining wall adjacent grading to the northwest of multi-family Unit 19 will also require adjustment with respect to grading in the wetlands buffer. Since the units listed border EGLE regulated wetlands, our office concurs with the recommendation by Barr Engineering, Inc Wetland Delineation Report (dated February 9, 2022) recommending that Barr's wetland boundary determination and jurisdictional opinion be reviewed by EGLE prior to undertaking any activity near or within any identified wetlands; the proposed layout as submitted may require revision, in response to EGLE's review, to unit/ lot layout in the single family phase, thus impacting the preliminary site layout. Comment addressed. Per a meeting with the Township on March 25, 2022, it was agreed that grading within the 25' wetland setback would be acceptable. A wetland restoration plan shall be required at the time of FSP submittal. Plan shall include a timeline for restoration of the wetland buffers. Note that the developer shall also be required to comply with all EGLE requirements with respect to grading and regulated wetlands. A note shall be provided on the FSP with regard to the wetland buffer restoration. In addition, a note has been added (Notes 1&2- in duplicate) to plan Sheets C-3.0 and C-3.0A that a wetland determination and jurisdictional opinion shall be done by EGLE prior to FSP approval. Please comment on the status of the above items. Comment partially addressed. Although grading plan sheets show a timeline for wetland buffer restoration and reference to the landscaping plans for the restoration plan, there is no restoration plan on the landscaping sheets. In addition, we note that there is also no landscaping plan in general for the single-family portion of this development.*

Comment partially addressed. Sheets LS-10 and LS-15 have been provided. These sheets indicated areas that are to receive wetland buffer restoration; however, please extend restoration label on Sheet LS-10 to cover buffer disturbance in the areas south of Lots 34-37 (single family portion) including the detention basin outlet and sidewalk connection from Hill Road. We note that a landscaping plan has now been submitted for the single family portion of the development.

A wetland determination and jurisdictional opinion from EGLE was provided; however, this expired on August 16, 2025 as the opinion is only valid for three years. A reassessment from EGLE shall be required. In addition, please correct date on plan Sheet C-3.30 under Development Note 1- Date

should be August 16, 2022. **The wetland determination and reassessment have now been addressed at this level of review. Per the design engineer response, EGLE has agreed that the wetland delineation is still accurate. The applicants wetland consultant shall visit the site prior to application for a wetlands permit from EGLE. The approved wetlands permit from EGLE shall be required at time of FEP approval.**

Comment above regarding date correction remains outstanding.

c) *Clarify if there is an existing drainage easement on the property south of the single-family Detention Ponds 1 and 3. An easement will be required for discharge of drainage off site. In addition, the design engineer will be required to demonstrate that there will be no downstream impacts from the proposed development in terms of stormwater discharge flows. Engineer will need to demonstrate that adequate downstream capacity exists to handle post development flow. Comment remains as a notation and can be further clarified at the time of FSP/FEP. Design engineer has stated in their February 15, 2022 review response letter: "There is not an easement in place. There is an existing stream which provides the historical drainage route through the said parcel to a box culvert under M-59. Since the development will have a 100-year detention basin and will discharge stormwater at an agricultural rate, the downstream ditch should have adequate capacity. A detailed engineering analysis will be provided to the township and MDOT during the construction plan phase." It is understood that in the event insufficient capacity is found in the box culvert that modifications may be required in terms of detention basin storage capacity which may impact site layout. Comment addressed. MDOT will need to concur regarding hydraulic calculations and the existing box culvert capacity.* **Comment remains. The design engineer notes that hydraulic calculations and other documents shall be submitted to MDOT upon MDOT ROW permit application and to DLZ on the Final Engineering Plan.**

d) *Extend the sanitary sewer to the north property line along Hill Road. Comment remains. Applicant indicated that the topography near the northern property restricts construction of the sanitary sewer at this location and would require a construction easement from the adjacent property owner. Township Ordinance requires extension to the limits of the property line, and the sanitary sewer master plan indicates that gravity sanity sewer is ultimately proposed north of this location. We defer to the Township if a variance can be granted on this requirement or if completion of this item will be a condition of approval. Comment addressed. Discussion with the Township concluded that the sewer shall not be extended to the north property line and that an easement for future sanitary sewer extension shall be provided. In addition, the developer shall be required to deposit a monetary fee or escrow with the Township as assurance to supplement the future sewer extension. Comment remains*

as a notation relative to Phase II. Comment remains. It appears that the plan as currently shown is not to be phased. Please clarify as phasing shall impact the timing of construction of portions of the sanitary sewer. In addition, it also appears as if an easement for future sewer extension is no longer required. The future sewer extension is now shown inside and 10' from the proposed 43' ROW line. Please verify. **Comment remains. Per discussion with the design engineer and our office, the sanitary sewer along Hill Road will be installed at the time of all initial infrastructure. The easement shown on the plan will be left due to the depth of the sewer at the proposed northern stub. In addition, the applicant/developer has agreed to fund future installation/extension of public sanitary sewer between the end of the proposed construction and the north property line of Avalon.**

e) *With nearly 60 feet of elevation change, the designer should ensure that sufficient pressure exists at the higher elevations for a bathroom on the 2nd story. The water may have to come from Pressure District 4 to service units with higher elevations as it appears that there will be insufficient pressure on the northern portions of the proposed development. To interconnect between the pressure districts, at least one PRV may be required. We suggest that the Township request escrow funds with regard to this item such that DLZ can model the water system to determine any deficiencies that may exist regarding water pressures and/or capacities. Our office has performed modeling of the proposed water system, see attached water model results; In all scenarios the area at the northeast corner of Aurora Circle experienced the lowest resulting pressure. There is a need for a handful of homes in this vicinity to have individual booster pumps to ensure adequate pressure given the various scenarios. It can also not be understated that the proposed design places an incredibly high criticality rating on the existing 16" watermain along M59. This is the only supply proposed to serve the nearly 500 residential units. If something were to happen to this watermain there is no second source or storage to feed this area temporarily. DLZ recommends a second water supply be installed to provide redundancy to the proposed distribution system. Please note that in order to stay within the same pressure district the source would need to be from south of the existing Pressure Reducing Valves that exist on either side of the existing Meijer store. Comment addressed at this level of review. As a condition of the Township engineer's recommendation for Preliminary Site Plan approval, the developer acknowledges the critical issue of not having a redundant source of water supply for the proposed development. The design engineer has stated that a second supply connection is being researched. We request commentary regarding the above as the current plan submittal does not demonstrate the secondary water feed. In addition, this secondary feed shall be required to be installed as part of Phase I of the development. Comment partially addressed. A secondary water feed is now shown off site as an 8" diameter line connecting into the existing 12" Meijer watermain to the east. DLZ will need to model the proposed improvements to verify if the proposed pipe size is*

sufficient or if the 8" loop should be upgraded to a larger pipe size. In addition, it appears that the plan as currently shown is not to be phased. Please clarify as phasing shall impact the timing of construction of portions of the watermain. **Comment remains. Per discussion with the design engineer and DLZ, DLZ will model the proposed improvements. In addition, the redundant watermain shall be installed with the initial infrastructure for construction of the multifamily and Hill Road portions of the development.**

f) *Sanitary sewage from this development is tributary to the existing Meijer sanitary sewer pump station located at the Northeast corner of Highland Road and Bogie Lake Road; an analysis will need to be provided that indicates there is sufficient capacity within the existing pump station, or if upgrades will be necessary to support the additional discharges.* **Comment remains and can be addressed at time of Construction Plan submittal. Design engineer states in their review response letter dated February 15, 2022: "Since an 18" sewer has been stubbed to the Hill Road/M-59 intersection, it is our understanding that the pump station and force main were designed for future development along Hill Road and Ormond Roads. A detailed analysis will be conducted during the construction plan phase." Please note that the pump station was designed for future upgrades at a time when additional flows dictate the need. Per discussion with PEA and DLZ, DLZ will confirm that no improvements will be required to the pump station. This will be done at time of Final Engineering Plan review.**

g) *Pond 2 located in the single-family section of the development (see plan Sheet P-5.1) proposes discharge to the adjacent wetlands to the west. Clarify where drainage from this wetland shall be routed as it appears from existing topography that there is no outlet from this wetland. In addition, a portion of this wetland is located off site; an off-site drainage easement would be required. Additional topographical survey information will be required for the property to the south of the wetlands in order to clarify the drainage path. The design engineer has noted that the discharge from the proposed pond (now labeled as Pond 5) will discharge at an agricultural rate and follow its natural off site drainage course. The difference in pre and post development area discharging from proposed Pond 5 to the existing wetlands is an increase of 0.2 acres. We can consider this item complete for this level of review, however the capacity for the receiving wetland to accommodate the increased runoff volume will need to be demonstrated at the time of Final Site Plan/Final Site Plan/Final Engineering Plan submittal. Comment addressed. The discharge will also need to be permitted by EGLE.* **Comment remains as a notation.**

h) *All public or Private roads are required to be built to RCOC standards.* **Comment remains as a notation. All new roads are proposed to be private.**

i) *Specify the proposed width of the shared access driveways for Lots 81-84 and 85-88 of the single-family portion. These drives shall be built to private access drive standards of White Lake as specified*

in the Zoning Ordinance Section 5.16. Section C. ii. requires two points of access for such drives to an adjacent public or private road. Section D. ii. requires that access driveways shall be able to accommodate emergency vehicles. Comment partially addressed. Two points of access for each of the drives are now proposed, however, Ordinance 5.16 C.i. requires a 30' wide easement width for an access drive; 25' is proposed for Lots 81-84 and 85-88. In addition, Zoning Ordinance Section 5.16 C. iii. regarding setbacks shall be met (Unit 85 is not in compliance). Also specify on plan that the 20' drive widths proposed are measured as 20' from the edge of the gutter line per Ordinance 5.16 C. v. Please also provide fire truck turning radius for these private access drives. Comment addressed. Fire truck movements have been provided and show that while tight, the trucks will be able to traverse the drives. **Comment rescinded. These lots as well as the configuration for these lots are no longer proposed.**

j) *End sections for the three detention basins proposed on the single-family portion will be required to be located outside the wetland setback. Comment partially addressed. Our office finds the basin outlet locations acceptable and that the outlet pipes for Basins 4 and 5 shall be constructed within the wetlands setback and the land restored to its natural preconstruction condition. Note that location of the basin end sections shall be subject to review and approval by EGLE. EGLE may require revision of the end section locations. Our office recommends the Township require a wetland setback restoration plan and that the developer be required to post a bond amount to guarantee proper and timely completion of restoration of the wetland buffer setbacks in these two areas should EGLE approve the end section locations. Comment addressed for this level of review. The design engineer notes a wetland setback restoration plan shall be provided at the time of FSP/FEP submittal. A note shall be provided on the FSP/FEP regarding wetland setback restoration. Comment outstanding relative to the Final Site Plan. A wetland restoration plan has not been submitted. Reference Comment b) of this letter. We note that a note regarding wetland restoration was added to the current plan.* **Comment addressed. Wetland buffer restoration details are now on landscape plan sheets. Please reference Comment b) of this letter for further notes/comments.**

k) *Proposed future decks or patios for Lots 12,15,82, and 83 of the single-family portion of the development appear to encroach into the proposed storm sewer easement. Please revise. Comment outstanding. A 12' wide deck or patio would only allow for 5' of easement on one side of the storm sewer relative to Units 82 and 83; 6' minimum is required. In addition, Units 9-12 would have a similar issue. Unit 80- the deck or patio could only be placed on the NE area of the rear of the house. Units 85 and 86 would not have enough space for a deck or patio without storm sewer easement encroachment. This comment remains outstanding. Since the lot numbering and count has changed and no such table has been included and no utility information included with the current submittal, we are unable to review requested changes or provide comment. All numbers for data tables will*

need to match up. Comment outstanding regarding deck placement in storm sewer easements. See Unit 10 of the single-family developmental portion. In addition, for the current multi-family building layout, rear patio/deck placements shall be evaluated now by the design engineer as it appears there are areas where a proposed 12' wide standard patio and/or deck would encroach into the storm sewer easement. Example: Building 32. **Comment partially addressed. Engineer has clarified that the ranch style apartments will not have decks and that Unit 10 (single family) will not have deck encroachment into the storm sewer easement. Please modify the note on Sheets C-3.33 and C-7.33 to include the word 'patios' in it. We note that the design engineer has indicated that language pertaining to decks (and patios) not encroaching into the storm sewer easements be included in the Master Deed.**

l) *Specify watermain diameter for the watermain proposed in the single-family portion of the development.* **Comment addressed. Watermain diameter (8") has now been specified.**

m) *Sheet C-3.3- What is the intent regarding the installation of an access drive to and overflow spillway work on the Meijer Detention basin? How does this relate to the Avalon development?* **Comment addressed. Per the design engineer: " The berm adjacent to Meijer detention basin will be restored to the original design elevations, the overflow spillway replaced, and access drive installed due to disturbance during installation of the proposed water main and as requested by Meijer as a condition of installing the water main."**

n) Please add notes to the plan regarding the timing of installation of the following:1) Sanitary sewer along Hill Road (during construction of multi-family residential); 2) 8' wide paths along Hill Road (west side with multi-family; east side with single family); 3)Off site watermain (during multifamily construction).

Watermain Easement from Huron Valley Schools- Exhibit Comments- Exhibit Prepared by PEA and dated January 26, 2023 **We note that the revised exhibit was not received as part of this submittal. The design engineer has noted that the updated exhibit will be submitted separately.**

1. *Easement description and exhibit shall be sealed and signed by a Registered Land Surveyor.*
2. *Easement description does not list an area of the easement. Please provide.*
3. *Variable Width Watermain Easement Description- Line 11- Change 'to' to 'along.'*
4. *We note that the watermain easement as shown on the Huron Valley Schools property on the current Avalon Final Site plan(Sheet C-7.3) shall match the layout shown on the easement exhibit. Currently the easement shown on the Final Site Plan does not match that shown on the easement exhibit.*

Final Site Plan Comments

Note that comments from our previous review dated September 2, 2025 are shown in *italics*. Responses to those comments are in **bold**. New comments are in standard font.

General

1. *Please provide clarification as to whether the current submittal is only for Phase I or for both Phases I and II. Comment outstanding. It appears as if submittal is now not phased. Please clarify.* **Comment addressed. Per design engineer, phasing is no longer proposed.**
2. *Sheet C-1.0 – BM- Please label BM information in box as BM 300 (reference Sheets C-1.0 and C-1.1).* **Comment outstanding. The box, located above the 'Floodplain Note' box ,that says 'Benchmark' : please include 'BM300' wording in this box.**
3. *Maintain 10' horizontal separation for watermain, sanitary sewer, and storm sewer relative to proposed trees. We note that there are some areas on the landscape plan where trees are proposed to be planted directly over utilities. Ex. Sheet LS-2- water service lead for Building 6 and Sheet LS-3- water service for Building 11. Please check the entirety of the landscape plan for such conflicts. Comment outstanding. In addition, please add a note to the cover sheet of the landscape plan regarding separation between trees and proposed watermain, sanitary sewer, and storm sewer.* **Comment partially addressed. A note regarding horizontal separation has been added to the landscape plan sheets with the exception of the following sheets: LS-3, LS-8, and LS-10. Please add this note to these sheets as well.**

Paving/Grading

1. *Sheet-3.1- We recommend that the ADA space proposed east of the clubhouse be placed on the west side (adjacent to proposed 5'wide sidewalk) of this parking lot so as to avoid crossing of interior traffic circulation lane by persons with disabilities. Is this space intended to allow ADA parking near the mailboxes? Please clarify. Comment outstanding regarding location of ADA space east of clubhouse. We also note there is an ADA space near where the mail kiosk is proposed on the west side of the clubhouse.* **Comment addressed. Space east of clubhouse is an ADA space with EV charging station.**
2. *Although the barrier free parking stall details are shown on Sheet C-13.1, neither detail corresponds with that shown on Sheet C-3.1. In addition, regular ADA spaces and van accessible space shall be per dimensions outlined in WLT Zoning Ordinance 5.11 O. ii. and iii.* **Comment addressed. Space**

dimensions meet or exceed Township width requirements for regular ADA and van accessible ADA spaces.

3. *Sheet C-3.1- Parking spaces currently shown on plan are inconsistent in terms of labeling width and depth. Please ensure at least both dimensions are shown for at least one space for each parking lot. For example, Building 47 space has been labeled with dimensions, while Building 49 has not. Comment partially addressed. Provide typical parking space width dimension for spaces located east of the clubhouse/pool.* **Comment addressed. Parking space dimensions have now been provided.**
4. *Sheet C-3.0-Multi-Family Site Data-The number of ADA spaces listed does not match that shown on this plan sheet. We count 3 van accessible spaces and 1 standard ADA space.* **Comment addressed. ADA parking count has been corrected.**

Sanitary Sewer

1. Sheet LS-11 -West side of entrance off M-59- Please relocate the portion of brick wall and pier that are inside the storm sewer easement. These structures will need to be located outside of the storm sewer easement. In addition, relocate the end pier out of the storm sewer easement on the east side of the M-59 entrance.

Stormwater Management

1. *Sheet C-12.0-Pond No. 2(multi-family-northern most next to Hill Road) is mislabeled as Pond No. 1. Please revise label.* **Comment addressed. Pond label has been corrected.**
2. *Please review and revise the Pond labels and page labels, the plans are confusing with there being multiple pond 1 and pond 2 labels (multi-unit and single family developments each have these).* **Comment addressed. Ponds have been renamed/renumbered.**

The following cursory review comments have been provided as a courtesy and can be addressed on the Final Engineering Plan. We note that the below comments do not comprise all Final Engineering comments; additional comments shall be provided at the time of Final Engineering Plan review.:

Note that comments from our previous review dated September 2, 2025 are shown in *italics*. Responses to those comments are in **bold**. New comments are in standard font.

Final Engineering Plan Comments-

General

1. *Plan shall contain notes per White Lake Township Engineering Design Standards Section A. 8. a.-d.* **Comment outstanding.**
2. *Provide at least two permanent benchmarks on NAVD 88 datum. Benchmarks are required at least every 1,200 feet.* **Comment outstanding.**
3. *Provide soil boring reports that were prepared by CTI and McDowell.* **Comment outstanding.**
4. *The topographical survey shows existing overhead electrical lines on the parcel west of Hill Road. Clarify as to whether these lines shall remain or be relocated and as to whether an easement for the lines exists. In the event the lines are to be relocated, the easements (if existing) will need to be vacated.* **Comment outstanding.**

Paving/Grading

1. *ADA accessible ramps will be required on sidewalk adjacent to ADA parking spaces. Ramp slopes shall meet ADA requirements.* **Comment outstanding.**
2. *Structural wall calculations, that have been signed and sealed by a Registered Structural Engineer, verifying the wall integrity and the ability to support lateral and vertical stresses will need to be provided for retaining walls over 30" tall.* **Comment outstanding.**
3. *Retaining walls >30" in height shall require a decorative fence or railing at the top that is a minimum of 36" in height.* **Comment outstanding.**
4. *Cover sheet- Hill Road is mislabeled as Hall Road. Sheets LS-8,9,11, and 13 – M-59 is mislabeled as Hall Road. Please revise.* **Comment partially addressed. Cover sheet road mislabeling has been corrected. Landscape sheet mislabeling remains outstanding.**

Watermain

1. *We defer to the Fire Department regarding items related to fire suppression and hydrant coverage.* **Comment remains.**
2. *Additional gate wells will be required to meet isolation requirements.* **Comment remains.**

Sanitary Sewer

1. *A manhole will need to be added along Hill Road between Manholes H and I. There is approximately 516 feet between manholes.* **Comment outstanding. An additional manhole shall be required**

between Manholes I and J as the footage between these two manholes is approximately 435'. 10 States Standards allows a maximum of 400' between manholes for sewer < 15" in diameter.

Recommendation

The majority of our comments have been addressed. We are now recommending approval subject to any remaining comments being addressed on the Final Engineering Plan.

Please feel free to contact our office should you have any questions.

Sincerely,

DLZ Michigan

Michael Leuffgen, P.E.
Department Manager

Victoria Loemker, P.E.
Senior Engineer

Cc: Matteo Passalacqua, CWA, *via email*
Hannah Kennedy-Galley, Community Development, *via email*
Aaron Potter, DPS Director, White Lake Township, *via email*
Jason Hanifen, Fire Marshal, White Lake Township, *via email*

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Carlisle | Wortman
ASSOCIATES, INC.
117 NORTH FIRST STREET SUITE 70 ANN ARBOR, MI 48104 734.662.2200 734.662.1935 FAX

October 21, 2025

Final Site Plan Review
for
White Lake Charter Township, Michigan

Applicant:	White Lake Hill LLC
Project Name:	The Avalon Multi-Family / Single-Family Condominium
Plan Date:	July 3rd, 2024
First Revision	May 8th, 2025
Second Revision	September 30th, 2025
Location:	Northwest corner of Highland Road (M-59) and Hill Road Parcel ID: 12-20-101-003 & 12-20-126-006
Action Requested:	Final site plan review

PROJECT NARRATIVE

The Applicant is requesting final site plan approval for a new residential housing development which will include three-hundred sixty-six (366) multi-family units and sixty-eight (68) single-family home condominium, which is a permitted use in the PD Planned Development zoning district. The multi-family component of the development will offer single- and two-story buildings. Single-family condos will be detached, however no architectural renderings of models were provided.

It is important to note that the overall layout and unit count of the development has been modified since preliminary site plan approval. Notable modifications are outlined below:

- Multi-Family unit count decreased from three-hundred ninety-four (394) units to three-hundred sixty-six (366) units (5.6 units per acre).
- Internal road layouts in the southcentral portion of the site have been modified.
- Ranch style attached units have been substituted for the two story, twelve (12) unit buildings in the central portion of the site.
- Parking and mail facilities have been provided directly west of the clubhouse.

The project encompasses two (2) parcels separated by Hill Road. The multi-family development will be constructed on the west side of Hill Road on 69.0 acres. The single-family detached condominium

Benjamin R. Carlisle, *President* John L. Enos, *Vice President* Douglas J. Lewan, *Principal*
David Scurto, *Principal* Sally M. Elmiger, *Principal* R. Donald Wortman, *Principal* Craig Strong, *Principal*
Paul Montagno, *Principal* Megan Masson-Minock, *Principal* Laura Kreps, *Senior Associate*
Richard K. Carlisle, *Past President/Senior Principal*

development will be on the east side of Hill Road on 41.1 acres. The multi-family portion of the project was initially proposed in phases however the phase notes have been removed from Sheet C-3.0. The project is now proposed to be constructed under a single phase which will commence in spring of 2026 and be concluded in spring of 2029.

A Clubhouse building is proposed at the main entrance from Highland Road (M-59). It will be 5,428 sqft and offer amenities such as package delivery storage, exercise areas, pet wash and event rooms. Management offices will be located in the building along with onsite maintenance operations.

The site is currently vacant. The Planning Commission made a recommendation to the Township Board to approve the preliminary site plan at the July 7th, 2022 regular meeting. Preliminary site plan approval was granted October 18th, 2022 by the Township Board and extended in October of 2023. Phase 3 is being proposed as a condominium development and will require final site plan approval by the Township Board.

The purpose of final site plan review is to determine if the proposed use and site are consistent with Township ordinances and other applicable county, state, and federal laws and regulations and to identify reasonable conditions that may be necessary to mitigate potential negative impacts to surrounding properties and the community.

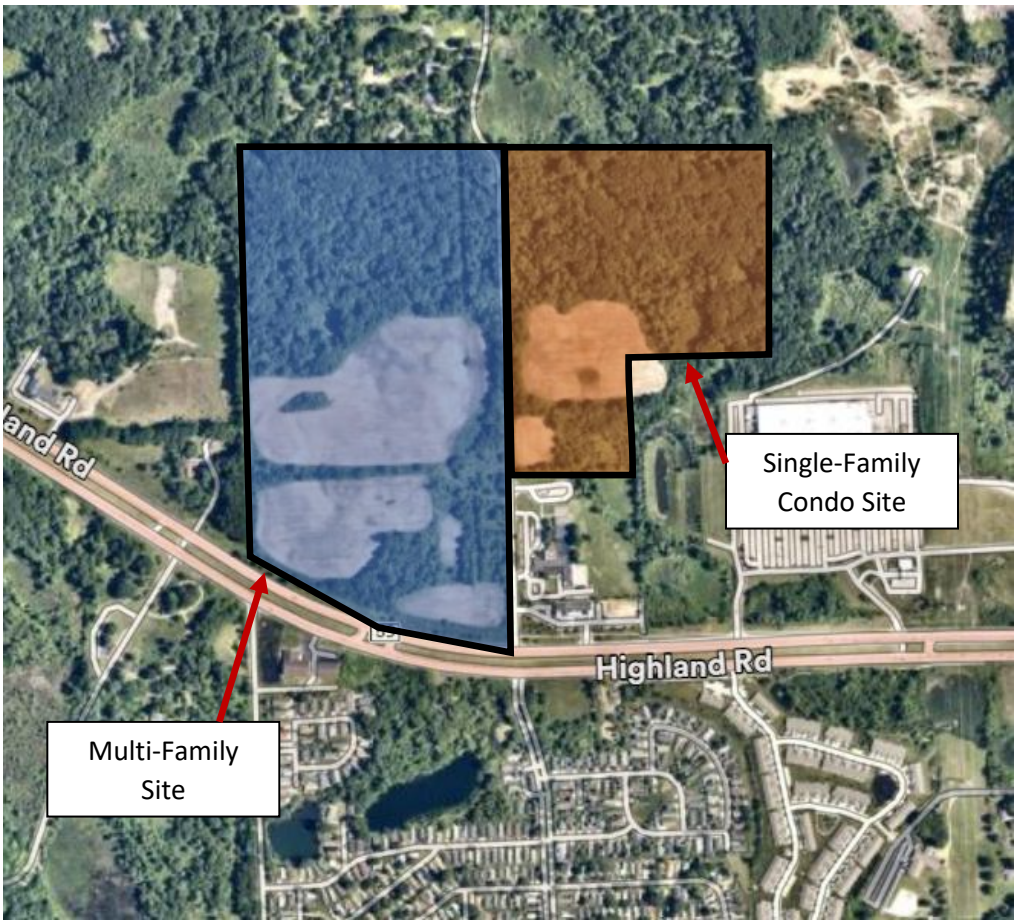
Preliminary site plans are reviewed by the Planning Commission with recommendations then provided to the Township Board for approval, approval with conditions or denial. Final site plan review and approval is conducted solely by the Planning Commission. In instances of Planned Developments, draft development agreements are required for review by the Planning Commission at final site plan review. The Planning Commission may then recommend approval or approval with conditions of the development agreement to the Township Board.

Since preliminary site approval has been granted, this review focuses on information relating to final site plan and planned development district conformance as well as any noted items of concern from prior reviews requiring attention.

SITE DESCRIPTION

Lot Area:	68.96 acres (Multi-family site) 41.06 acres (Single-family condo site)
Frontage:	Multi-Family Site Approx. 2,450 feet along Hill Road & 1,375 feet along Highland Road (M-59) Single-Family Condo Site Approx. 1,600 feet along Hill Road
Address:	TBD
Current Use:	Vacant

Aerial image of the site

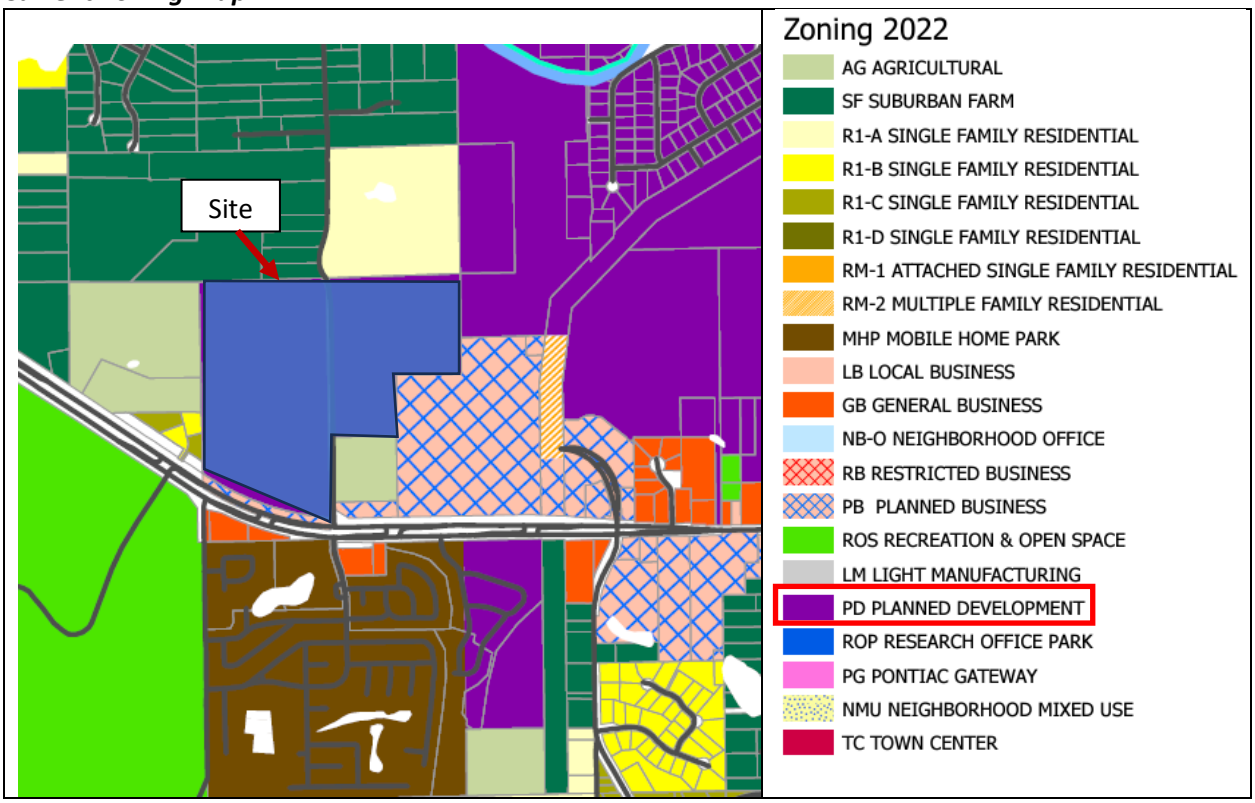


Source: NearMap June 2024

	North	East	South	West
Surrounding Zoning	*R1-A, Single Family Residential / SF, Suburban Farms*	*PB, Planned Business / PD, Planned Development / Ag Agricultural*	*PB, Planned Business / Ag Agricultural*	*Ag Agricultural / R1-B, Single Family Residential / R1-C, Single Family Residential*
Surrounding Land Uses	*Single Family Homes*	*Educational / Retail / Commercial Shopping / Vacant*	*Retail / Single Family Homes*	*Place of Worship / Vacant / Single Family Homes*
Future Land-Use Map	*Agricultural Rural Residential*	*Commercial Corridor / Agricultural Rural Residential*	*Manufactured Residential / Commercial Corridor*	*Commercial Corridor*

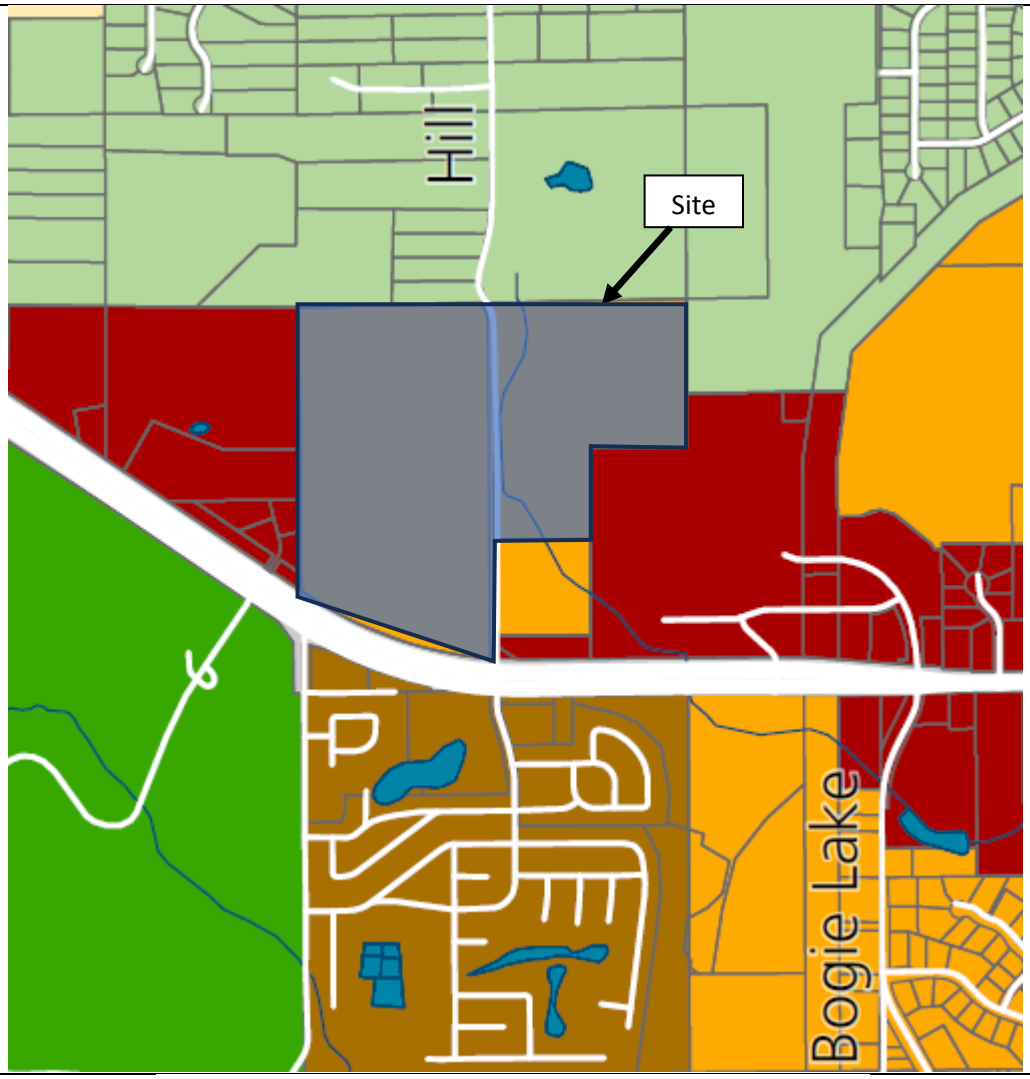
Current Zoning	**Planned Development** *The PD, Planned Development District is intended to provide for the location and various types of planned land use on large parcels held in common ownership and includes such alternate terms as cluster zoning, planned development, community unit plan, planned residential development and other similar terminology. Uses planned may include single-family detached housing, single-family attached housing, multiple-family housing, local commercial business, office uses, and similar activities. The PD District is intended to result in a unique, planned development that includes such techniques as open space preservation. A public hearing shall be held prior to formal consideration of the PD.*

Current Zoning Map



Future Land Use	**Neighborhood Residential** *Maintains existing neighborhoods and provides for denser residential development in places where there is infrastructure to support the density and ensuring density is within context of the surrounding neighborhood.*

Future Land Use Map



Future Land Use Framework

Sources: Michigan Open Data Portal, Oakland County, White Lake Township

- Recreation / Open Space
- Agriculture / Rural Residential
- Suburban Residential
- Neighborhood Residential
- Manufactured Residential
- Neighborhood Commercial
- Commercial Corridor
- Pontiac Lake Gateway
- Production / Technology

Items to be Addressed: *Draft development agreement is required at final site plan review.*

NATURAL RESOURCES

Topography: Sheets C-1.0 through C-1.3 shows existing site topography. The entire site is characterized by rolling hills and steep slopes. We note existing topographic conditions, proposed grading, and proposed soil erosion control information are not provided for the lot east of Hill Road. Proposed grading is shown on Sheets C-5.1 through C-5.33. Extensive grading is proposed throughout the site to accommodate stormwater detention ponds and shore up site roads and structures. A note on Sheet C-6.1 indicates approximately seventy point five (70.5) acres are to be disturbed. We defer to Township Engineering for any concerns with the proposed grading plans.

Wetlands: Sheets C-1.1 through C-1.33 indicate approximately eighteen (18) regulated and/or unregulated wetlands within the site located west of Hill Road. Sheet C-3.0 provides notes as it relates to wetland fill and restoration. The Multi-Family Site Data Table indicates EGLE Wetland areas to be impacted is 0.34 acres of the sites 0.64 acres of wetland identified. The Engineering review dated October 11th, 2022 highlights the required wetland fill, restoration and protection requirements for the final site plan review. An EGLE wetland identification report dated August 16, 2022 was provided showing the department's outline of regulated wetlands. The report's findings are binding for three years. The applicant has stated in a response letter dated October 2nd, 2025 that per conversations with EGLE, the WIR is still likely accurate but that the site will be inspected again prior to application for a wetland permit. The applicant states a wetland permit will be supplied to the Township once it has been issued. We defer to the Township Engineer on whether the appropriate information has been provided.

Woodland: Mature woodlands exist primarily in the northern portion of the site with open fields in the southcentral area. Landscaping plans shown on Sheet LS-1 indicate that the majority of existing woodland will be cleared with the exception of the northern border and large detention area proposed north of the Hill Road entrance into the multi-family development.

Soils: Brown sand, Clayey sand, Sandy clay and Stiff blue clay.

Water: Sheet C-1.0 provides a note stating the site is within zone "X" area determined to be outside of the 0.2% annual chance floodplain per flood insurance rate map number 26125C0318F, effective September 29, 2006. Per the Michigan Department of Environment, Great Lakes, and Energy (EGLE), wetlands are on and adjacent to the site.

Items to be Addressed:

1) *Any cited concerns from Township Engineering.*
2) *Provide updated WIR if determined necessary by EGLE.*
3) *Obtain EGLE wetland permit.*

AREA, WIDTH, HEIGHT, SETBACKS

Proposed building envelopes and setback standards are shown on Sheet C-3.0 for multi-family portion of the project. Setback, typical lot sizes and unit dimensions were not provided for the single family detached site. Measurements are taken from the property lines.

PD Planned Development District Developmental Standards

Multi-Family	Required:	Proposed:	Complies
Setbacks			
Front	40 feet	74 feet (Highland Road) 50 feet (Hill Road)	Yes
Side	25 feet / 50 feet total	50 feet (west)	Yes
Rear	105 feet	105 feet	Yes
Between Buildings	Section 3.11.G	25 feet	Complies
Building Height			
	30 foot maximum	Ranging from 16' 8.5" to 25.2"	Yes
	2 stories maximum	2 story maximum	Yes
Lot Coverage	TBD	20.3%	TBD

The single family detached portion of the development remains as presented and approved in the original preliminary site plan. Typical lot sizes range from 8,370 square feet to 22,317 square feet. Minimum lot widths are 65 feet. Setbacks are:

- 25 feet front yard
- 8 feet side yard
- 35 feet rear yard

Individual lot layouts with unit model concepts and basic floorplans are included in the final site plan. Units range from approximately 1,500 square feet to 2,700 sqft. Singel and two story models are included and offer three to four bedroom / two to two and a half bathrooms floorplans. All models include an attached two car garage.

Section 3.11.G outlines requirements for attached multi-family building spacing. Distances between separate buildings is provided on a table on Sheet C-3.0. Part U of the section specifies setbacks from sidewalks and/or roads. Structures shall have a minimum setback of twenty-five (25) feet from the back of sidewalk or twenty-five (25) feet from back of curb for developments without sidewalks. These dimensions are shown on Sheet C-3.0 from the front of multi-family buildings and the sidewalk or curb however we note the preliminary site plan provided for building setbacks from curb to be no less than 25 feet with or without sidewalks.

Items to be Addressed: *None*

ACCESS & CIRCULATION

Site access management standards are outlined in Section 6.4. The multifamily site is accessed via two ingress/egress drives. Primary access is via Highland Road (M-59). A secondary access drive is located along Hill Road. The single-family site is accessed via one boulevard located 578 feet north of the multifamily site Hill Road access.

Sheets C-3.1, 3.2, 3.30, 3.31, 3.32, and 3.33 provide internal roadway and pathways as well as egress / ingress dimensions. While the site layout and unit count for the multifamily site has changed since preliminary site plan approval, the location of access points has remained unchanged. A Traffic Impact Study dated July 30, 2025, was provided in the revised final site plan. The study indicates that the current road network and design is adequate to service the site and existing traffic. The only recommendation provided is the installation of a westbound right and turn lane into the site from Highland Road (M-59). This recommendation has been incorporated into the design.

Highland Road (M-59) entry is accommodated with a right turn deceleration lane. Egress is limited to right turn only. The Hill Road entrance will accommodate both left and right turn egress. A shoulder has been provided for traffic entering from the north. No shoulder lane is proposed for traffic to bypass vehicles turning left into the development form the south. We defer to Township Engineering on the proposed design and dimensions of both entryways as well as Highland Road (M-59) and Hill Road improvements.

The single-family site access provides a deceleration lane for northbound traffic entering the site off Hill Road.

Internal roads are proposed to be twenty-eight (28) feet wide in the multifamily site and twenty seven (27) feet wide in the single-family site. Emergency vehicle circulation plans are provided on Sheets 15.1, 15.2, and 15.30. We defer to public safety on the validity of these designs.

We note the design and layout of sidewalks and pathways in the landscaping portion of this review.

***Items to be Addressed**:*

1) *Any concerns cited by Township Engineering*
2) *Any concerns cited by Township Public Safety*

PARKING & LOADING

Section 5.11 outlines requirements for off-street parking. Sheet C-3.0 provides parking locations and calculations for residents and visitors. For multi-family developments, the zoning ordinance requires two (2) spaces per dwelling unit plus 1/4 of a space per bedroom for guest parking in common areas. The parking calculations within the Multi-Family Site Data Table indicate nine-hundred twenty-eight (928) parking spaces are required. One thousand, one hundred seventy-three (1,173) parking spaces are provided.

Seven-hundred thirty-two (732) of the spaces are garage parking for residents. Three hundred sixty-six (366) spaces are located in driveways and sixty-five (65) are located in twelve (12) unit building parking lots as well as clubhouse parking. To ensure driveways and spaces in front of garages are sufficient for

parking space standards, length and width dimensions of those parking areas have been added to the plans. All parking spaces and drive aisles met design standards.

Three (3) ADA parking spaces are provided in lots adjacent to the clubhouse. All are designated as van accessible.

A note on Sheet C.3-1 indicates all parking lot striping will conform to the dimensions provided on Sheet C.13-1.

***Items to be Addressed**: None*

ESSENTIAL SERVICES & UTILITIES

Sheets C-7.1 through C-7.33 provide overall site utility plans as well as water, sewer and storm system notes. Details for utility layouts, designs and detention ponds are provided on Sheets C-11.1 through 12.32. The site will be serviced by existing water and sewer system infrastructure. We defer to Township Engineering regarding any concerns of design, capacity and location.

The site's five (5) detention ponds will handle drainage from five (5) separate areas dedicated to each pond. A portion of the single family detached site will drain into wetland R. Calculations for the system are provided on Sheet C-11.1 and 11.2. A note on Sheet C-7.1 states that gas and electrical utilities will be installed in a manner that ensures proper placement as it relates to pavement and landscaping.

Emergency vehicle circulation is provided on Sheets C-15.1 through 15.30. We defer to Township public Safety on the validity of the sites design relating to emergency services.

Final site plan reviews require applicants to identify the location of all underground and aboveground storage tanks for such uses as fuel storage, waste, old holding tanks, collection of contaminated stormwater, and similar uses. We do not anticipate the storage of hazardous or contaminated materials onsite.

Items to be Addressed:

1) *Any cited concerns of Township Engineering.*
2) *Any cited concerns from Township Public Safety.*

LANDSCAPING & SCREENING

Landscaping and screening details are provided on Sheets LS-1 through 13. Section 5.19 outlines site landscaping requirements.

Section 5.19.D provides requirements for screening along property lines as it relates to adjacent districts. Sheet LS-1 provides the entire multi-family site landscaping requirements and proposals. Those standards are reviewed below:

Greenbelts

Property Line	Required	Provided	Complaint
North (Residential District)	Depth: 20 feet - 38 feet 1 large deciduous or evergreen tree and 4 shrubs for every 15 linear feet (83 trees and 333 shrubs)Varies between greenbelt and/or screen wall-obscuring fence. *Note: The Applicant is requesting to retain existing vegetation and natural features as the means for providing buffering and screening from the northern residential district.*	Depth: 50 feet Existing	Yes Waiver Required
East (Hill Road)	Depth: 20 feet 1 large deciduous, 1 evergreen tree and 8 shrubs for every 30 linear feet (69 trees and 553 shrubs) *Note: The Applicant is requesting to remove approximately 367 feet from greenbelt calculation in return for retaining the existing vegetation and natural features.*	Depth: 50 feet 69 large deciduous trees and 553 shrubs	Yes Waiver Required
South (Highland Road M-59)	Depth: 20 feet 1 large deciduous, 1 evergreen tree and 8 shrubs for every 30 linear feet (46 trees and 368 shrubs) *Note: The decorative wall along portions of Highland Road (M-59) serve as screening from the road.*	Depth: 50 feet 46 trees and 370+ shrubs	Yes Yes
West (Residential District)	Depth: 20 feet - 38 feet 1 large deciduous or evergreen tree and 4 shrubs for every 15 linear feet (99 trees and 395 shrubs). Varies between greenbelt and/or screen wall-obscuring fence. *Note: The Applicant is requesting to remove approximately 418 feet from greenbelt calculation in return for retaining the existing vegetation and natural features.*	Depth: 50 feet 99 large deciduous trees and 287 existing shrubs	Yes Waiver Required

Interior Landscaping

Interior landscaping areas are required to equal at least fifteen (15) percent of the total lot area. One (1) large deciduous, small ornamental deciduous, or evergreen tree and five (5) shrubs shall be planted for every three hundred (300) square feet of required interior landscaping area.

Standard	Required	Provided	Complaint
Lot Area	344,121 sqft (15%)	344,121 sqft	Yes
Deciduous Trees	1,147 trees	1,027 trees	No / Waiver Required
Shrubs	5,735 shrubs	4,492 shrubs	No / Waiver Required

Interior tree and shrub counts are deficient and require waivers as proposed.

Waivers

Per Section 5.19.B.iii and v, the Planning Commission may waive or modify certain landscaping requirements. The greenbelt areas in question contain thick mature woodlands and appear to provide natural screening from the adjacent properties or rights-of-way. Sheets C-6.1 through C-6.33 outline the limitations of earth disturbance. Interior landscaping is substantial. With the exception of open space and water detention areas, no portions of the site are void of designed landscaping. An aerial image of the site from September of 2025 is below for reference.

Source: NearMap September 2025

Residential Entranceway Landscaping

Gateway signage is proposed for both entryways to the facility. Construction materials consist of brick veneer, stone veneer, limestone capping and decorative metal fencing. Maximum heights for walls and fences is six (6) feet of which no proposed portions of the structures exceed. Signage proposed on at the entryways will be reviewed and permitted administratively by the Township.

Part F of Section 5.19 outlines requirements for residential development entryway landscaping. The first one hundred fifty (150) lineal feet of entrance drive or street shall be landscaped. Sheet LS-8 provides landscaping layouts for both entryways however no table showing planting counts dedicated to the requirements is provided. This information should be included in table form and added to Sheet LS-8 for both entrances.

Parking Lot Landscaping

Any off-street parking areas containing ten (10) or more parking spaces shall have parking lot landscaping as prescribed in the table provided in Section 5.19.G. The only portion of the site that requires this standard is the parking adjacent to the proposed clubhouse building.

Twenty-four (24) parking spaces are provided for the clubhouse building. Below, we have reviewed the parking lot landscaping against the ordinance requirements.

Multi-Family Use	Required	Provided	Complaint
Lot Area	360 sqft	405 sqft	Yes
Deciduous or Ornamental Trees	4 trees	4 trees	Yes
Shrubs	12 shrubs	12 shrubs	Yes
Curbs	6 inch concrete	2’	Yes
Lot Islands	50 sqft area minimum and at least 5 feet wide	N/A	N/A

Minimum Plant Size

All proposed plant sizes and species meet landscaping requirements.

Trash Receptacles

All requirements for trash receptacles have been satisfied.

Mechanical Equipment Screening

No ground mounted or rooftop mounted mechanical equipment is provided on the site plan. We note that if such equipment is proposed, it must be screened via the requirements set forth in Section 5.19.N.ii.

Pathways

Pathway and sidewalk standards are required for preliminary site plan review. Pathways along Highland Road (M-59) and Hill Road meet the ordinance standards however portions of the pathway near Hill Road are on the development property. An easement dedicating Township access and public use will be required for these portions of the pathway.

We note that internal five (5) foot sidewalks are required on both sides of internal development roads. Some areas of the development only provide sidewalks on one side of the road. While it is preferable to provide five (5) foot wide sidewalks to both sides of roads, we note the preliminary site plan was approved

with sidewalks on one side of the multi-family development roads. This approval may carry over to the final site plan.

Snow Storage

Snow storage areas are not provided on the site plan. The response letter dated October 2nd, 2025 states snow will be plowed to the side of the roads then moved to open space areas if needed.

Retaining Walls

We note retaining walls shown on Sheets C-5.5 through 5.8 as well as details for wall construction on Sheet 13.1. Retaining walls over thirty (30) inches in height shall require a decorative fence or railing at the top that is a minimum of thirty-six (36) inches in height. We note several areas along the proposed walls that exceed thirty (30) inches in height and will require decorative fencing or railings. Notes on Sheets C-5.5 through 5.8 indicate that all portions of retaining walls over thirty (30) inches shall contain a decorative fence or railing that is at least thirty-six (36) inches tall.

Open Space and Recreation

Sheet C-14 provides open space and recreation area layouts and calculations for the multi- and single-family housing phases. The single-family condominium development proposes open space for approximately 21.9% of the net site area. The multi-family proposed open space covers approximately 36.8% of net lot area.

Multi-family developments require recreation areas as outlined in Section 3.11.C. Five-thousand (5,000) square feet of recreation space is required for the first unit with an additional one-hundred (100) square feet for each additional unit. Three-hundred sixty-six (366) multi-family units would require 41,500 square feet of recreational space. The revised plan indicates that 150,493 square feet of recreation space is provided via the clubhouse, pool, dog park, and gazebo area. The site also offers natural preserves via protected woodlands area and open spaces predominantly between buildings 50 and 56. The Planning Commission will need to determine whether these spaces are acceptable as required recreation space. Including internal pathways that traverse the open spaces and offer pedestrian access across the development would be considered passive recreation.

Items to be Addressed:

1) *Waiver from northern buffer and screening requirements in return to retain existing woodlands and natural features as the means for providing buffering and screening from the northern residential district.*
2) *Waiver required to remove approximately three-hundred sixty-seven (367) feet from the east greenbelt calculation in return for retaining the existing woodlands and natural features.*
3) *Waiver required to remove approximately four-hundred eighteen (418) feet from the west greenbelt calculation in return for retaining the existing woodlands and natural features.*
4) *Waiver required to reduce required west greenbelt shrub count from three-hundred ninety-five (395) shrubs to two-hundred ninety-seven (297) shrubs.*
5) *Waiver to allow one thousand twenty seven (1,027) interior trees and four thousand four hundred ninety two (4,492) interior shrubs.*

6) *Entryway landscaping planting and counts should be added in table form to Sheet LS-8 for both entrances.*
7) *Planning Commission to consider if open space areas proposed as recreation space are acceptable.*
8) *Easements shall be granted to the Township for portions of the pathways that are on development property.*

LIGHTING & NOISE

Lighting Requirements

Section 5.18.G provides site lighting requirements, which are reviewed on the final site plan. Sheet LS-14provides general details and locations for site amenities.

Decorative poles and lights are shown at each road entrance with details included on Sheet LS-11. Building and bollard lighting is provided around the clubhouse. A photometric plan is provided and meets footcandle standards. The Township has the ability to require lighting where it deems it is necessary for safety and security.

Noise Requirements

We note no proposed site activity that would exceed noise levels when measured at lot lines.

Items to be Addressed: *None*

SIGNAGE

Proposed monument signage is shown in detail on Sheets LS-11, 12, and 13. No signage information was provided for the single family detached site. Locations for monument signage are at the Highland Road (M-59) main entrance, the secondary entrance off Hill Road and at the corner of the Highland Road (M-59) and Hill Road intersection. Signs are reviewed and permitted administratively by the Township however applications may be presented to the Planning Commission for review. Per Section 5.9.I, the development is eligible for two (2) monument signs at development entrances. Sign square footage shall not exceed thirty (30) sqft or be more than six (6) feet tall. We note the plaza sign will require a variance as it exceeds the maximum monument sign count allowable. The Applicant should provide lettering dimensions to determine if further variances will be necessary per sign size allowances.

Sheet C-13 provides general details and dimensions of site signage including parking, traffic, emergency vehicle, no lawnmowing zone and pedestrian crossing signs. Sheet C-3.1 and 3.2 provide proposed locations of site signage.

Items to be Addressed: *Applications for site signage will need to conform to the requirements in Section 5.9. or variances will be required from the Zoning Board of Appeals.*

ARCHITECTURE & LAYOUT

Architectural information required at final site plan review includes the types of facing materials to be used on structures.

The site plan provides both elevations and floor plans for all multi-family housing units as well as the clubhouse. Architectural information was provided for the single family detached portion of the project however no elevation of exterior construction materials was provided. A material board for the single family homes should be provided to the Planning Commission at final site plan review. We recommend that exterior construction materials and coverage should be similar to that of the attached units.

Sheet CH-6 shows the primary materials used for the clubhouse elevations will be stone and brick with horizontal vinyl siding as an accent material. Sheets 4-A and 4-B provide elevations for two (2) story twelve (12) unit buildings. Exterior materials proposed for these units are brick, horizontal siding, and shake siding. Sheets A103-106 indicate the same materials for the single story attached units highlighting a consistency amongst exterior designs and materials across the development. We note that on all residential unit buildings, the predominant side and rear exterior construction materials are horizontal siding and brick.

Sheet LS-13 provides the location of proposed amenities within the development. Fountains are to be located in the detention pond in the northcentral portion of the site as well as in the southeastern pond adjacent to the Highland Road (M-59) and Hill Road intersection. A pool is proposed in the rear yard of the clubhouse. Non-motorized amenities include decorative benches, trash and pet waste receptacles, dog walk areas and bicycle racks.

We note that no exterior construction sample materials were included in the final site plan. These materials will need to be available for the Planning Commission upon final site plan review.

Final site plan requires applicants to provide information regarding the proposed use of heavy equipment as well as the potential above or below ground storage of hazardous materials. We note that a portion of the clubhouse is dedicated to maintenance operations which is common for apartment complexes. While no information has been provided about onsite machinery or equipment, we anticipate onsite vehicles, we do not anticipate the occurrence of larger equipment being used on a regular basis. Should that change, the Applicant will need to receive prior approval from the Township.

Items to be Addressed:

1) *Exterior construction material board for both attached and detached units will be required for Planning Commission review.*
2) *We recommend that exterior construction materials and coverage for detached units should be similar to that of the attached units.*

SINGLE FAMILY CONDOMINIUM

As stated earlier in this report, the single-family condominium portion of the development was granted preliminary site plan approval October 18th, 2022 for drawings dated May 10th, 2022 and revised

September 29th, 2022. We note that no changes have been proposed to the layout or unit count for this portion of the development in the final site plan.

Design standards for condominium developments are outlined in Section 6.1 of the zoning ordinance. Below is a review of those standards relating to the single family detached site condominium portion of the development.

Streets

All internal roads are to be private. A separate application to the Township requesting the roads be private shall be required. Street designs appear compliant however the distance of each road should be added to the plan. We defer to Township Engineering regarding technical aspects of the proposed streets.

Blocks

Blocks, streets, and pedestrian designs conform to requirements.

Easements

We defer to Engineering relating to the placement of utility easements. The applicant has stated all pathways located within the developments property line will have access easement rights granted to the Township.

Condominium Lots

Lot sizes were approved in during the preliminary site plan review. Per the standard lot design proposed for the PD designation, the proposed lots meet condominium requirements.

Public Dedications

The site is not offering any public amenities such as parks or schools.

Trees and Natural Features

Sheet LS-10 provides landscaping detail for the single family detached condo site. Wetland preservation areas are shown predominantly in the northwest and southeast corner of the site. Portions south of the development footprint are indicated for preservation as well. Greenbelts are required where conflicting land uses abut each other or along major roads. The only portion of the site abutting commercial use is in the southeast corner adjacent to the Meijer development. Both lots contain mature woodlands that serve as a current visual buffer between the two sites.

The greenbelt along Hill Road is proposed to be 460 feet long of the total 1,625 foot frontage span. The Applicant is requesting to remove approximately 1,165 feet from greenbelt calculation in return for retaining the existing vegetation and natural features.

Condominium Documents

A draft master deed shall be provided during final site plan review

Items to be Addressed:

1) *Road Distances should be added to the final site plan.*
2) *Planning Commission to consider waiving screening between Meijer lot and single family condominium portion of development per existing natural woodlands that serve as a visual screen.*
3) *Planning Commission to consider waiver to remove approximately one thousand one hundred sixty five (1,165) feet from the west greenbelt along Hill Road calculation of the detached single family housing condominium in return for retaining the existing woodlands and natural features.*

SUMMARY

The final site plan is substantially complete. We recommend the site plan be placed on the Planning Commissions agenda for review. All waivers / modifications / determinations necessary from the Planning Commission for the final site plan to be approved are listed below. Potential conditions to final site plan approval are provided as well.

Waivers / Modifications / Determinations

1) *Waiver from northern buffer and screening requirements in return to retain existing woodlands and natural features as the means for providing buffering and screening from the northern residential district.*
2) *Waiver to remove approximately three-hundred sixty-seven (367) feet from the east greenbelt calculation in return for retaining the existing woodlands and natural features.*
3) *Waiver to remove approximately four-hundred eighteen (418) feet from the west greenbelt calculation in return for retaining the existing woodlands and natural features.*
4) *Waiver to reduce required west greenbelt shrub count from three-hundred ninety-five (395) shrubs to two-hundred ninety-seven (297) shrubs.*
5) *Waiver to allow one thousand twenty seven (1,027) interior trees and four thousand four hundred ninety two (4,492) interior shrubs.*
6) *Waiver from screening between Meijer lot and single family condominium portion of development per existing natural woodlands that serve as a visual screen.*
7) *Waiver to remove approximately one thousand one hundred sixty five (1,165) feet from the west greenbelt along Hill Road calculation of the detached single family housing condominium in return for retaining the existing woodlands and natural features.*
8) *Planning Commission to consider if open space areas proposed as recreation space are acceptable.*

Potential Conditions

1) *Any cited concerns from Township Engineering are addressed.*
2) *Any cited concerns from Township Public Safety are addressed.*
3) *Draft development agreement is required at final site plan review.*

4) *Provide updated wetland identification report if determined necessary by EGLE*
5) *Obtain EGLE wetland permit.*
6) *Entryway landscaping planting and counts should be included in table form and added to Sheet LS-8 for both entrances.*
7) *Easements shall be granted to the Township for portions of the pathways that are on development property.*
8) *Road lengths for the single family condominium development should be added to the final site plan.*
9) *Exterior construction material board for both attached and detached units will be required for Planning Commission review.*
10) *(Optional) We recommend that exterior construction materials and coverage for detached units should be similar to that of the attached units.*

Respectfully,

CARLISLE/WORTMAN ASSOC., INC.
Matteo Passalacqua
Community Planner

Fire Department
Charter Township of White Lake

7420 Highland Road
White Lake, MI 48383
Office (248) 698-3993
www.whitelaketwp.com/fire

Site / Construction Plan Review

To: Sean O'Neil, Planning Department Director

Date: 10-20-2025

Project: Avalon

Job #: 2021-0084

Date on Plans: 09-30-2025

The Fire Department has the following comments with regards to the Final site plan for the project known as The Avalon:

1. Multifamily phase.
    a. **All proposed street names shall be submitted for approval:**
    Pending Comment from previous reviews -
    Avoid the following:
    - Name changes at jogs and curves.
    - Duplicate names.
    - Names that could be mispronounced or are difficult to pronounce.
    - Names that are spelled or pronounced close to an existing street/road name.
    Reference the Township map for guidance.
2. Until the street names have been identified, and approved, building addressing cannot be assigned.
3. Submit a current apparatus turn radius profile based on a 40' truck.
4. Courtesy Comment – Fire protection plans shall be submitted to the Building Department; this includes the Fire Department Connection (FDC) detail. The Fire Department reserves the right to make adjustments to the FDC locations during the construction plan review. All buildings requiring an FDC shall also require a "RED Rotating Flow Indication Beacon" mounted on the exterior of the wall surface, above the FDC, at minimum 10' from finished grade.

Jason Hanifen
Fire Marshal
Charter Township of White Lake
(248)698-3993
jhanifen@whitelaketwp.com

Plans are reviewed using the International Fire Code (IFC), 2015 Edition and Referenced NFPA Standards.

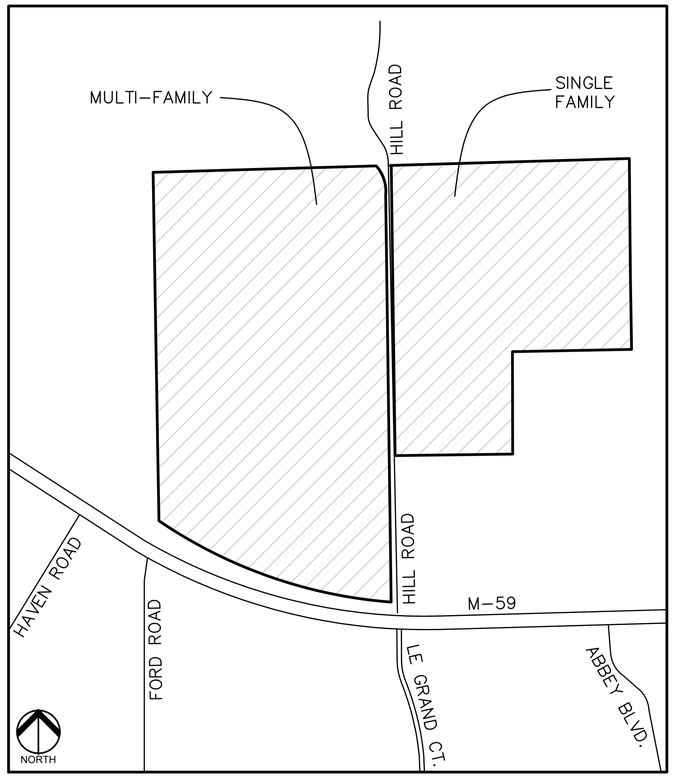
FINAL SITE PLAN

THE AVALON - PUD
AVALON APARTMENT HOMES & RESIDENCE AT AVALON

M-59 AND HILL ROAD

WHITE LAKE TOWNSHIP, OAKLAND COUNTY, MICHIGAN

PERMIT / APPROVAL SUMMARY			
DATE SUBMITTED	DATE APPROVED	PERMIT / APPROVAL	NOTES
7/3/2024		TWP FINAL SITE PLAN APPROVAL	
		TWP ENGINEERING APPROVAL	
		EGLE ACT 399 PERMIT	
		EGLE PART 41 CONSTRUCTION PERMIT	
		EGLE PART 301/303	
		RCOC R.O.W.	PRELIM REVIEW AND DISCUSSION
		OCWRC STORMWATER	
		OCWRC SESC	
		MDOT R.O.W.	PRELIM REVIEW AND DISCUSSION



LOCATION MAP
SCALE: 1" = 400'

DESIGN TEAM

OWNER/APPLICANT/DEVELOPER

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PEA GROUP

INDEX OF DRAWINGS - AVALON APARTMENT HOMES	
NUMBER	TITLE
	COVER SHEET
C-1.0	OVERALL TOPOGRAPHIC SURVEY
C-1.1	TOPOGRAPHIC SURVEY - SOUTH
C-1.2	TOPOGRAPHIC SURVEY - NORTH
C-1.3	TOPOGRAPHIC SURVEY - EAST
~~C-2.1~~	~~DEMOLITION PLAN - SOUTH~~
~~C-2.2~~	~~DEMOLITION PLAN - NORTH~~
~~C-2.3~~	~~DEMOLITION PLAN - EAST~~
C-3.0	OVERALL SITE PLAN
C-3.1	SITE PLAN - SOUTH
C-3.2	SITE PLAN - NORTH
C-3.3	SITE PLAN - EAST
~~C-4.1~~	~~EAST WELBERY ROAD PLAN & PROFILE 0+00 - 11+00~~
~~C-4.2~~	~~SOUTH WELBERY ROAD PLAN & PROFILE 11+00 - 20+00~~
~~C-4.3~~	~~WEST WELBERY ROAD PLAN & PROFILE 20+00 - 27+00~~
~~C-4.4~~	~~OLMSTEAD DRIVE ROAD PLAN & PROFILE 27+00 - 34+00~~
~~C-4.5~~	~~OLMSTEAD DRIVE ROAD PLAN & PROFILE 34+00 - 39+00~~
~~C-4.6~~	~~NORTH TAYLOR STREET PLAN & PROFILE 0+00 - 4+50~~
~~C-4.7~~	~~NORTH TAYLOR STREET PLAN & PROFILE 4+50 - 14+00~~
~~C-4.8~~	~~SOUTH TAYLOR STREET PLAN & PROFILE 14+00 - 23+00~~
~~C-4.9~~	~~WEST TAYLOR STREET PLAN & PROFILE 23+00 - 29+50~~
~~C-4.10~~	~~BARRETT WAY PLAN & PROFILE 0+00 - 6+50~~
~~C-4.11~~	~~NORTH WELBERY ROAD PLAN & PROFILE 0+00 - 9+00~~
C-5.1	GRADING PLAN - 1
C-5.2	GRADING PLAN - 2
C-5.3	GRADING PLAN - 3
C-5.4	GRADING PLAN - 4
C-5.5	GRADING PLAN - 5
C-5.6	GRADING PLAN - 6
C-5.7	GRADING PLAN - 7
C-5.8	GRADING PLAN - 8
~~C-5.9~~	~~GRADING PLAN DETAILS - M-59~~
~~C-5.10~~	~~GRADING PLAN DETAILS - SOUTH ENTRANCE~~
~~C-5.11~~	~~GRADING PLAN DETAILS - NORTH ENTRANCE~~
~~C-5.12~~	~~GRADING PLAN DETAILS - INTERSECTIONS~~
C-6.1	SOIL EROSION CONTROL PLAN - 1
C-6.2	SOIL EROSION CONTROL PLAN - 2
C-6.3	SOIL EROSION CONTROL PLAN - 3
C-6.4	SOIL EROSION CONTROL PLAN - 4
C-6.5	SOIL EROSION CONTROL PLAN - 5
C-6.6	SOIL EROSION CONTROL PLAN - 6
C-6.7	SOIL EROSION CONTROL PLAN - 7
C-7.1	OVERALL UTILITY PLAN - SOUTH
C-7.2	OVERALL UTILITY PLAN - NORTH
C-7.3	OVERALL UTILITY PLAN - EAST
~~C-8.1~~	~~SANITARY SEWER PLAN & PROFILE - C TO EX.~~
~~C-8.2~~	~~SANITARY SEWER PLAN & PROFILE - STUB TO C~~
~~C-8.3~~	~~SANITARY SEWER PLAN & PROFILE - H TO EX.~~
~~C-8.4~~	~~SANITARY SEWER PLAN & PROFILE - K TO H~~
~~C-8.5~~	~~SANITARY SEWER PLAN & PROFILE - STUB TO K~~
~~C-8.6~~	~~SANITARY SEWER PLAN & PROFILE - P TO C~~
~~C-8.7~~	~~SANITARY SEWER PLAN & PROFILE - T TO P~~
~~C-8.8~~	~~SANITARY SEWER PLAN & PROFILE - O2 TO V~~
~~C-8.9~~	~~SANITARY SEWER PLAN & PROFILE - K2 TO O~~
~~C-8.10~~	~~SANITARY SEWER PLAN & PROFILE - N TO F2~~
~~C-8.11~~	~~SANITARY SEWER PLAN & PROFILE - D3 TO F2~~
~~C-8.12~~	~~SANITARY SEWER PLAN & PROFILE - O2 TO J~~
~~C-8.13~~	~~SANITARY SEWER PLAN & PROFILE - Q2 TO Q2~~
~~C-8.14~~	~~SANITARY SEWER PLAN & PROFILE - W2 TO Q2~~
~~C-8.15~~	~~SANITARY SEWER PLAN & PROFILE - X2 TO P2~~
~~C-8.16~~	~~SANITARY SEWER PLAN & PROFILE - V TO O2~~
~~C-8.17~~	~~SANITARY SEWER PLAN & PROFILE - F3 TO D3 + G3 TO D3~~
~~C-9.1~~	~~WATER MAIN PLAN & PROFILE - M59 0+00 TO 8+50~~
~~C-9.2~~	~~WATER MAIN PLAN & PROFILE - M59 8+50 TO 15+00~~
~~C-9.3~~	~~WATER MAIN PLAN & PROFILE - SOUTHERN ENTRANCE~~
~~C-9.4~~	~~WATER MAIN PLAN & PROFILE - ROAD 1 0+00 TO 11+00~~
~~C-9.5~~	~~WATER MAIN PLAN & PROFILE - NORTHERN ENTRANCE~~
~~C-9.6~~	~~WATER MAIN PLAN & PROFILE - ROAD 2~~
~~C-9.7~~	~~WATER MAIN PLAN & PROFILE - ROAD 1 17+00 TO 28+50~~
~~C-9.8~~	~~WATER MAIN PLAN & PROFILE - ROAD 1 28+50 TO 39+00~~
~~C-9.9~~	~~WATER MAIN PLAN & PROFILE - ROAD 3 0+00 TO 11+00~~
~~C-9.10~~	~~WATER MAIN PLAN & PROFILE - ROAD 3 11+00 TO 19+50~~
~~C-9.11~~	~~WATER MAIN PLAN & PROFILE - ROAD 3 19+50 TO 29+00~~
~~C-9.12~~	~~WATER MAIN PLAN & PROFILE - ROAD 4~~
~~C-9.13~~	~~WATER MAIN PLAN & PROFILE - HILL ROAD 0+00 TO 11+00~~
~~C-9.14~~	~~WATER MAIN PLAN & PROFILE - HILL ROAD 11+00 TO 23+00~~
~~C-9.15~~	~~WATER MAIN PLAN & PROFILE - HILL ROAD TO MEIJER 1~~
~~C-9.16~~	~~WATER MAIN PLAN & PROFILE - HILL ROAD TO MEIJER 2~~
~~C-10.1~~	~~STORM SEWER PLAN~~
~~C-10.2~~	~~STORM SEWER PLAN~~
~~C-10.3~~	~~STORM SEWER PLAN~~
~~C-10.4~~	~~STORM SEWER PLAN~~
~~C-10.5~~	~~STORM SEWER PROFILES~~
~~C-10.6~~	~~STORM SEWER PROFILES~~
~~C-10.7~~	~~STORM SEWER PROFILES~~
~~C-10.8~~	~~STORM SEWER PROFILES~~
~~C-10.9~~	~~STORM SEWER PROFILES~~
~~C-10.10~~	~~STORM SEWER PROFILES~~
~~C-10.11~~	~~STORM SEWER PROFILES~~
~~C-10.12~~	~~STORM SEWER PROFILES~~
~~C-10.13~~	~~STORM SEWER PROFILES~~
~~C-10.14~~	~~STORM SEWER PROFILES~~
~~C-11.0~~	~~DRAINAGE AREA PLAN~~
C-11.1	STORM SEWER CALCULATIONS
C-11.2	STORM SEWER CALCULATIONS
C-12.0	OVERALL DRAINAGE AREAS
C-12.1	DETENTION POND 1
C-12.2	DETENTION POND 2
C-12.3	DETENTION POND 3
C-12.4	OVERALL DRAINAGE AREAS PLAN
C-13.0	NOTES AND DETAILS - 1
C-13.1	NOTES AND DETAILS - 2
C-14.0	OPEN SPACE PLAN
C-15.1	FIRE SAFETY PLAN - SOUTH
C-15.2	FIRE SAFETY PLAN - NORTH
	ADDITIONAL DRAWINGS
1 OF 1	SOIL EROSION AND SEDIMENT CONTROL DETAILS
1 OF 2	SANITARY SEWER DETAILS AND NOTES
2 OF 2	SANITARY SEWER DETAILS AND NOTES
1 OF 1	WATER MAIN STANDARD DETAILS
1 OF 1	STORM SEWER STANDARD DETAILS
LS-1	OVERALL LANDSCAPE PLAN VIEW
LS-2	LANDSCAPE PLANTING DETAIL
LS-3	LANDSCAPE PLANTING DETAIL
LS-4	LANDSCAPE PLANTING DETAIL
LS-5	LANDSCAPE PLANTING DETAIL
LS-6	LANDSCAPE PLANTING DETAIL
LS-7	LANDSCAPE PLANTING DETAIL
LS-8	ENTRANCE LANDSCAPE PLANTING DETAIL
LS-9	CLUBHOUSE AND BUILDING FOUNDATION LANDSCAPE
LS-10	SINGLE FAMILY PLANTING DETAIL
LS-10A	MATERIAL LIST, PLANT DETAILS & NOTES
LS-11	ENTRANCE MONUMENT ELEVATIONS
LS-12	ENTRANCE MONUMENTS ELEVATIONS
LS-13	GATEWAY ENTRANCE SIGN MONUMENTS
LS-14	SITE AMENITY PLAN
LS-15	SOD & SEEDING REFERENCE PLAN
GB	PHOTOMETRIC LAYOUT
CH-4	FIRST FLOOR PLAN - CLUBHOUSE
CH-6	BUILDING ELEVATIONS - CLUBHOUSE
CH-7	BUILDING ELEVATIONS - CLUBHOUSE
CH-8	BUILDING SECTIONS - CLUBHOUSE
2	FIRST FLOOR PLAN - 2-STORY BUILDINGS
3-A	SECOND FLOOR - 2-STORY BUILDINGS
4-A	ELEVATIONS - 2-STORY BUILDINGS
4-B	ELEVATIONS - 2-STORY BUILDINGS
A-100	UNIT FLOOR PLAN - SINGLE STORY RANCH BUILDING
A-101	BUILDING FLOOR PLANS - SINGLE STORY RANCH BUILDING
A-102	BUILDING FLOOR PLANS - SINGLE STORY RANCH BUILDING
A-103	BUILDING ELEVATIONS - SINGLE STORY RANCH BUILDING
A-104	BUILDING ELEVATIONS - SINGLE STORY RANCH BUILDING
A-105	BUILDING ELEVATIONS - SINGLE STORY RANCH BUILDING
A-106	BUILDING ELEVATIONS - SIGNLE STORY RANCH BUILDING
1 OF 3	SINGLE FAMILY HOME FLOOR PLANS
2 OF 3	SINGLE FAMILY HOME FLOOR PLANS
3 OF 3	SINGLE FAMILY HOME FLOOR PLANS

INDEX OF DRAWINGS - HILL ROAD	
NUMBER	TITLE
C-1.20	TOPOGRAPHIC SURVEY
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C-3.20	SITE PLAN
C-4.21	ROAD PLAN & PROFILE
C-4.22	ROAD PLAN & PROFILE
C-4.23	ROAD PLAN & PROFILE
C-6.23	SOIL EROSION CONTROL PLAN
C-13.20	NOTES AND DETAILS
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NUMBER	TITLE
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C-1.31	TOPOGRAPHIC SURVEY - SOUTH
C-1.32	TOPOGRAPHIC SURVEY - WEST
C-1.33	TOPOGRAPHIC SURVEY - EAST
~~C-2.30~~	~~DEMOLITION PLAN~~
C-3.30	DIMENSION AND PAVING PLAN - OVERALL
C-3.31	DIMENSION AND PAVING PLAN - SOUTH
C-3.32	DIMENSION AND PAVING PLAN - WEST
C-3.33	DIMENSION AND PAVING PLAN - EAST
~~C-4.30~~	~~MORRIS BOULEVARD PLAN & PROFILE 0+00 - 3+90~~
~~C-4.31~~	~~HUNT DRIVE PLAN & PROFILE 0+00 - 10+00~~
~~C-4.32~~	~~HUNT DRIVE PLAN & PROFILE 10+00 - 13+75~~
~~C-4.33~~	~~McKEE COURT PLAN & PROFILE 13+75 - 23+00~~
~~C-4.34~~	~~McKEE COURT PLAN & PROFILE 23+00 - 31+50~~
C-5.31	GRADING PLAN - SOUTH
C-5.32	GRADING PLAN - WEST
C-5.33	GRADING PLAN - EAST
C-6.31	SOIL EROSION CONTROL PLAN - SOUTH
C-6.32	SOIL EROSION CONTROL PLAN - WEST
C-6.33	SOIL EROSION CONTROL PLAN - EAST
C-7.31	UTILITY PLAN - SOUTH
C-7.32	UTILITY PLAN - WEST
C-7.33	UTILITY PLAN - EAST
~~C-8.31~~	~~SANITARY SEWER PLAN & PROFILE - HUNT DRIVE - G TO O~~
~~C-8.32~~	~~SANITARY SEWER PLAN & PROFILE - HUNT DRIVE - O TO K~~
~~C-8.33~~	~~SANITARY SEWER PLAN & PROFILE - McKEE WAY - A TO E~~
~~C-8.34~~	~~SANITARY SEWER PLAN & PROFILE - McKEE COURT - E TO T~~
~~C-8.35~~	~~SANITARY SEWER PLAN & PROFILE - McKEE COURT - I TO J~~
~~C-9.30~~	~~WATER MAIN PLAN & PROFILE - MORRIS BOULEVARD~~
~~C-9.31~~	~~WATER MAIN PLAN & PROFILE - HUNT DRIVE 0+00 - 10+00~~
~~C-9.32~~	~~WATER MAIN PLAN & PROFILE - HUNT DRIVE - 10+00 - 13+75~~
~~C-9.33~~	~~WATER MAIN PLAN & PROFILE - McKEE WAY - 13+75 - 23+00~~
~~C-9.34~~	~~WATER MAIN PLAN & PROFILE - McKEE COURT 23+00 - 31+50~~
~~C-9.35~~	~~WATER MAIN PLAN & PROFILE - McKEE COURT TO SCHOOL~~
~~C-10.31~~	~~STORM SEWER PLAN - SOUTH~~
~~C-10.32~~	~~STORM SEWER PLAN - WEST~~
~~C-10.33~~	~~STORM SEWER PLAN - EAST~~
~~C-11.30~~	~~DRAINAGE PLAN~~
C-11.31	DESIGN CALCULATIONS
C-12.30	OVERALL DRAINAGE PLAN
C-12.31	DETENTION POND 4
C-12.32	DETENTION POND 5
C-12.33	OVERALL EXISTING DRAINAGE AREAS
C-13.31	DETAILS
~~C-14.30~~	~~OPEN SPACE PLAN~~
C-15.30	SAFETY PLAN

STATE OF MICHIGAN
BRETT STURGEON HOLLANDSWORTH
LICENSED PROFESSIONAL ENGINEER
License No. 6201064940

REVISIONS	
DESCRIPTION	DATE
ORIGINAL ISSUE DATE - DRAFT	12/4/2023
MEIJER REVISIONS	2/12/2024
ISSUED FOR FINAL SITE PLAN SUBMITTAL	7/3/2024
ISSUED FOR FINAL SITE PLAN SUBMITTAL	5/8/2025
ISSUED FOR FINAL SITE PLAN SUBMITTAL	9/30/2025

LEGEND:

- EX. OH. ELEC. POLE & GUY WIRE
- EX. U.G. CABLE TV & PEDESTAL
- EX. U.G. COMMUNICATION LINE, PEDESTAL & MANHOLE
- EX. U.G. ELEC.MANHOLE, METER & HANDHOLE
- EX. GAS LINE
- EX. GAS VALVE & GAS LINE MARKER
- EX. TRANSFORMER & IRRIGATION VALVE
- EX. WATER MAIN
- EX. HYDRANT, GATE VALVE & POST INDICATOR VALVE
- EX. WATER VALVE BOX & SHUTOFF
- EX. SANITARY SEWER
- EX. SANITARY CLEANOUT & MANHOLE
- EX. COMBINED SEWER MANHOLE
- EX. STORM SEWER
- EX. CLEANOUT & MANHOLE
- EX. SQUARE, ROUND & BEEHIVE CATCH BASIN
- EX. YARD DRAIN & ROOF DRAIN
- EX. UNIDENTIFIED STRUCTURE
- EX. MAILBOX, SIGN & LIGHTPOLE
- EX. FENCE
- EX. GUARD RAIL
- EX. DEC. TREE, CONIFEROUS TREE & SHRUB
- EX. TREE TAG, & TREE LINE
- EX. SPOT ELEVATION
- EX. CONTOUR
- EX. WETLAND
- IRON FOUND / SET
- NAIL FOUND / NAIL & CAP SET
- BRASS PLUG SET
- MONUMENT FOUND / SET
- SECTION CORNER FOUND
- R M C RECORDED / MEASURED / CALCULATED

LEGAL DESCRIPTION
(Per Hubbell, Roth & Clark, Inc.)

PARCEL ID 12-20-101-003

That part of the West ½ of the Northwest ¼ of Section 20, Township 3 North, Range 8 East, White Lake Township, Oakland County, Michigan, lying northerly of Highland Road (M-59), more particularly described as: BEGINNING at the Northwest corner of said section; thence South 89 degrees 39 minutes 41 seconds East 1331.52 feet along the north section line; thence South 01 degrees 14 minutes 20 seconds West 2443.61 feet to the northerly right of way line of Highland Road (M-59); thence along said right of way and a curve to the right 1423.36 feet, said curve having a radius of 2664.79 feet, a central angle of 30 degrees 36 minutes 14 seconds, and a chord bearing North 69 degrees 03 minutes 39 seconds West 1406.50 feet to the west section line; thence North 01 degrees 01 minutes 40 seconds East 1948.57 feet along said section line to the POINT OF BEGINNING. Said property contains 68.96 acres, more or less.

PARCEL ID 12-20-126-006

Part of the Northwest ¼ of Section 20, Township 3 North, Range 8 East, White Lake Township, Oakland County, Michigan, described as: BEGINNING at the North ¼ corner of said section; thence South 01 degrees 26 minutes 55 seconds West 1067.66 feet along the North–South ¼ line of said section; thence North 89 degrees 02 minutes 22 seconds West 665.95 feet; thence South 01 degrees 22 minutes 34 seconds West 575.58 feet; thence North 88 degrees 42 minutes 12 seconds West 660.13 feet; thence North 01 degrees 14 minutes 20 seconds East 1624.88 feet to the north line of said section; thence South 89 degrees 39 minutes 41 seconds East 1331.52 feet along said north line to the POINT OF BEGINNING. Said property contains 41.06 acres, more or less.

BENCHMARK:
ARROW ON A HYDRANT LOCATED AT THE ENTRANCE OF A MULTI-USE COMMERCIAL BUILDING, APPROX. 60' EAST FROM THE CENTERLINE OF HILL ROAD AND APPROX. 230' NORTH FROM THE CENTERLINE OF THE WEST BOUND LANE OF M-59/HIGHLAND ROAD.
ELEV. – 974.59 NAVD88 DATUM (USGS)

FLOODPLAIN NOTE:
BY GRAPHICAL PLOTTING, SITE IS WITHIN ZONE 'X', AREA DETERMINED TO BE OUTSIDE OF THE 0.2% ANNUAL CHANCE FLOODPLAIN PER FLOOD INSURANCE RATE MAP NUMBER 26125C0318F, EFFECTIVE SEPTEMBER 29, 2006.

PEA GROUP
t: 844.813.2949
www.peagroup.com

STATE OF MICHIGAN
BRETT STURGEON HOLLANDSWORTH
LICENSED PROFESSIONAL ENGINEER
License No. 6201064949

NORTH

0 75 150 300
SCALE: 1" = 150'

811 Know what's below. Call before you dig.

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

KEY MAP

CLIENT
WHITE LAKE HILL, LLC
31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - MULTI FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

REVISIONS	
DRAFT	2/19/24
ISSUED FOR OWNER REVIEW	4/24/24
FINAL SITE PLAN REVIEW	7/3/24
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
DECEMBER 4, 2023

DRAWING TITLE
OVERALL TOPOGRAPHIC SURVEY

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-1.0

MATCHLINE (SEE SHEET C-1.2)
MATCHLINE (SEE SHEET C-1.3)
PARCEL ID 12-20-101-003
M-7A (RE-DRILL)
M-7
M-6A
M-6
M-5A
M-5
M-4
M-3
M-2A
M-2
M-1A
M-1
SOIL BORING LOCATION, TYP. REFER TO REPORTS BY CTI AND MCDOWELL
25' REQUIRED WETLAND SETBACK, TYP.
WETLAND AREA I 0.17 ACRES EGLE REGULATED
WETLAND A 2.26-AC EGLE REGU
WETLAND AREA B 0.14 ACRES EGLE UNREGULATED
WETLAND AREA A 0.05 ACRES EGLE UNREGULATED
WETLANDS FLAGGED BY BARR ENGINEERING
33' R.O.W. LINE
HILL ROAD (66' WIDE PUBLIC R.O.W.)
HIGHLAND ROAD (VARIABLE WIDTH R.O.W.)
RADIUS = 2,664.79'
CH. BRNG. = N75°11'19"W
DELTA = 30°31'15"
ARC = 1,420.36'
CHORD = 1,403.35'
OHW
OHW ELEC
VERIFY
ASPHALT
CONC
DITCH
SIDEWALK
12" WATER MAIN
8" SANITARY SEWER
RIM 972.75
RIM 973.76
RIM 974.43
RIM 975.17
RIM 974.63
RIM 974.06
RIM 972.74
RIM 972.31
RIM 970.17
RIM 969.52
RIM 969.42
RIM 970.48
RIM 969.64
RIM 969.47
RIM 969.30
RIM 969.14
RIM 968.97
RIM 968.80
RIM 968.63
RIM 968.47
RIM 968.30
RIM 968.14
RIM 967.97
RIM 967.80
RIM 967.64
RIM 967.47
RIM 967.30
RIM 967.14
RIM 966.97
RIM 966.80
RIM 966.64
RIM 966.47
RIM 966.30
RIM 966.14
RIM 965.97
RIM 965.80
RIM 965.64
RIM

N86°12'16"E 1331.52'

S03°10'26"E 1948.57'

WETLAND AREA H
0.10 ACRES
EGLE REGULATED

WETLAND AREA G
0.10 ACRES
EGLE UNREGULATED

WETLANDS FLAGGED BY BARR ENGINEERING

WETLAND AREA N
0.08 ACRES
EGLE REGULATED

WETLAND AREA Q
0.04 ACRES
EGLE UNREGULATED

WETLAND AREA P
0.01 ACRES
EGLE UNREGULATED

SOIL BORING LOCATION, TYP. REFER TO REPORTS BY CTI AND MCDOWELL

PARCEL ID 12-20-126-006

WETLAND AREA F
0.01 ACRES
EGLE UNREGULATED

WETLAND AREA D
2.29 ACRES
EGLE UNREGULATED

UPLAND ISLAND AREA E
0.07 ACRES
EGLE UNREGULATED

WETLAND AREA L
0.08 ACRES
EGLE UNREGULATED

WETLAND AREA C
0.11 ACRES
EGLE UNREGULATED

WETLAND AREA D
2.29 ACRES
EGLE UNREGULATED

WETLAND AREA M
0.06 ACRES
EGLE UNREGULATED

WETLAND AREA K
0.04 ACRES
EGLE REGULATED

WETLAND AREA J
0.53 ACRES
EGLE REGULATED

25' REQUIRED WETLAND SETBACK, TYP.

WETLAND AREA O
0.06 ACRES
EGLE REGULATED

33' R.O.W. LINE

HILL ROAD
(66' WIDE PUBLIC R.O.W.)

WETLAND AREA J
0.53 ACRES
EGLE REGULATED

WETLAND AREA I
0.17 ACRES
EGLE REGULATED

WETLAND AREA R
2.26 ACRES
EGLE REGULATED

WATER

M-7A (RE-DRILL)

MATCHLINE (SEE SHEET C-1.1)

LEGEND:

- EX. OH, ELEC, POLE & GUY WIRE
- EX. U.G. CABLE TV & PEDESTAL
- EX. U.G. COMMUNICATION LINE, PEDESTAL & MANHOLE
- EX. U.G. ELEC.MANHOLE, METER & HANDHOLE
- EX. GAS LINE
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- EX. WATER VALVE BOX & SHUTOFF
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- EX. COMBINED SEWER MANHOLE
- EX. STORM SEWER
- EX. CLEANOUT & MANHOLE
- EX. SQUARE, ROUND & BEEHIVE CATCH BASIN
- EX. YARD DRAIN & ROOF DRAIN
- EX. UNIDENTIFIED STRUCTURE
- EX. MAILBOX, SIGN & LIGHTPOLE
- EX. FENCE
- EX. GUARD RAIL
- EX. DEC. TREE, CONIFEROUS TREE & SHRUB
- EX. TREE TAG, & TREE LINE
- EX. SPOT ELEVATION
- EX. CONTOUR
- EX. WETLAND

- IRON FOUND / SET
- NAIL FOUND / NAIL & CAP SET
- BRASS PLUG SET
- MONUMENT FOUND / SET
- SECTION CORNER FOUND
- R M C — RECORDED / MEASURED / CALCULATED

PEA GROUP
t: 844.813.2949
www.peagroup.com

STATE OF MICHIGAN
BRETT STURGEON HOLLANDSWORTH
LICENSED PROFESSIONAL ENGINEER
License No. 6201064949

NORTH

0 30 60 120
SCALE: 1" = 60'

811 Know what's below. Call before you dig.

CAUTION!!
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KEY MAP

CLIENT
WHITE LAKE HILL, LLC
31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - MULTI FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

REVISIONS	
DRAFT	2/19/24
ISSUED FOR OWNER REVIEW	4/24/24
FINAL SITE PLAN REVIEW	7/3/24
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
DECEMBER 4, 2023

DRAWING TITLE
TOPOGRAPHIC SURVEY - NORTH

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-1.2

LEGEND:

- EX. OH, ELEC, POLE & GUY WIRE
- EX. U.G. CABLE TV & PEDESTAL
- EX. U.G. COMMUNICATION LINE, PEDESTAL & MANHOLE
- EX. U.G. ELEC.MANHOLE, METER & HANDHOLE
- EX. GAS LINE
- EX. GAS VALVE & GAS LINE MARKER
- EX. TRANSFORMER & IRRIGATION VALVE
- EX. WATER MAIN
- EX. HYDRANT, GATE VALVE & POST INDICATOR VALVE
- EX. WATER VALVE BOX & SHUTOFF
- EX. SANITARY SEWER
- EX. SANITARY CLEANOUT & MANHOLE
- EX. COMBINED SEWER MANHOLE
- EX. STORM SEWER
- EX. CLEANOUT & MANHOLE
- EX. SQUARE, ROUND & BEEHIVE CATCH BASIN
- EX. YARD DRAIN & ROOF DRAIN
- EX. UNIDENTIFIED STRUCTURE
- EX. MAILBOX, SIGN & LIGHTPOLE
- EX. FENCE
- EX. GUARD RAIL
- EX. DEC. TREE, CONIFEROUS TREE & SHRUB
- EX. TREE TAG, & TREE LINE
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- IRON FOUND / SET
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NORTH

0 20 40 80
SCALE: 1" = 40'

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31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
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WHITE LAKE TWP, MI

REVISIONS	
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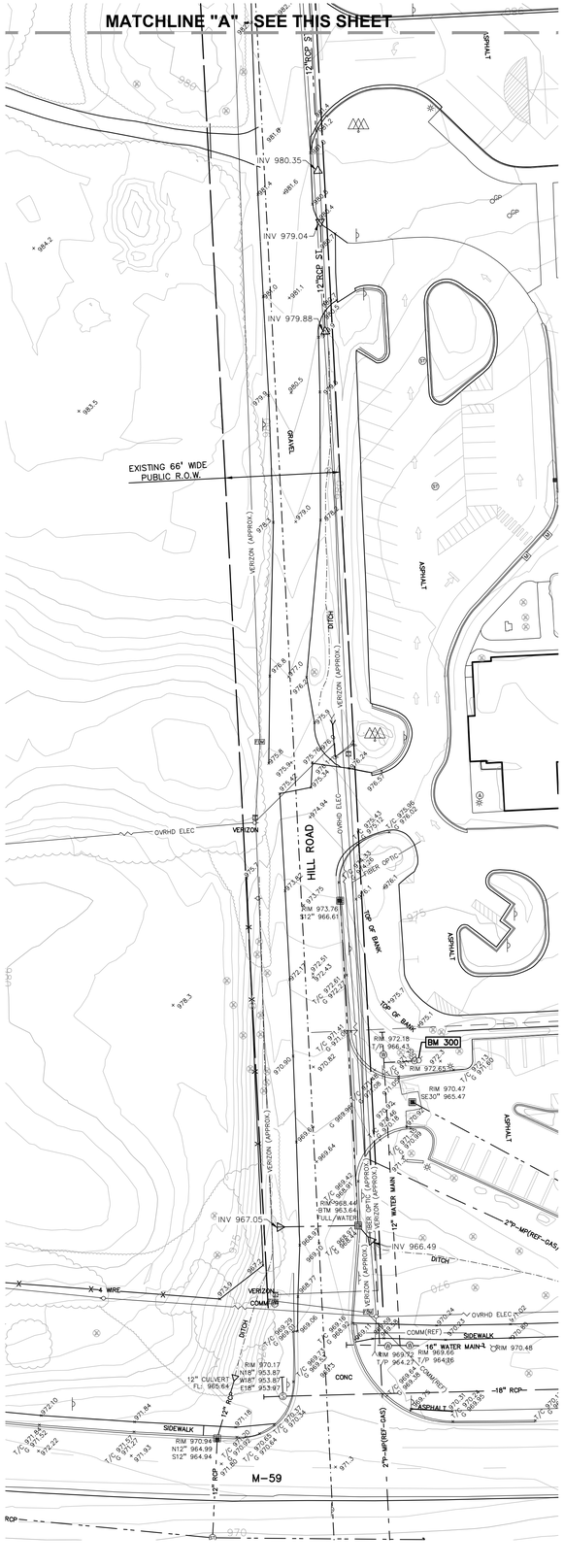
FINAL SITE PLAN REVIEW	9/30/25

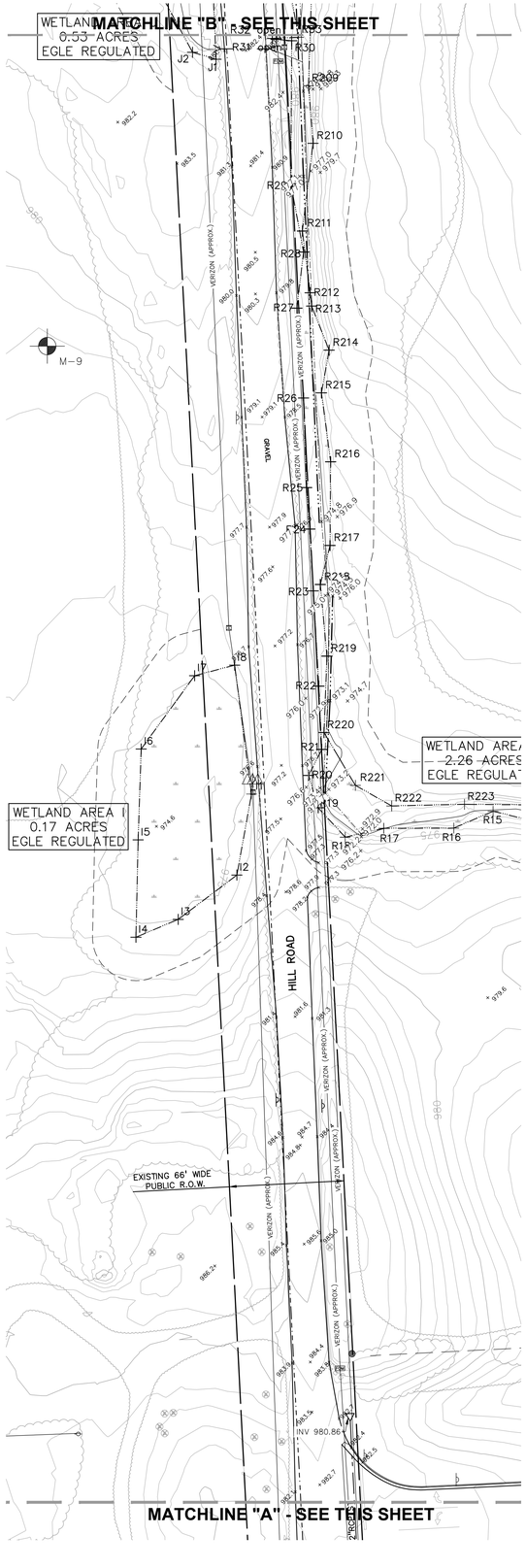
ORIGINAL ISSUE DATE:
DECEMBER 4, 2023

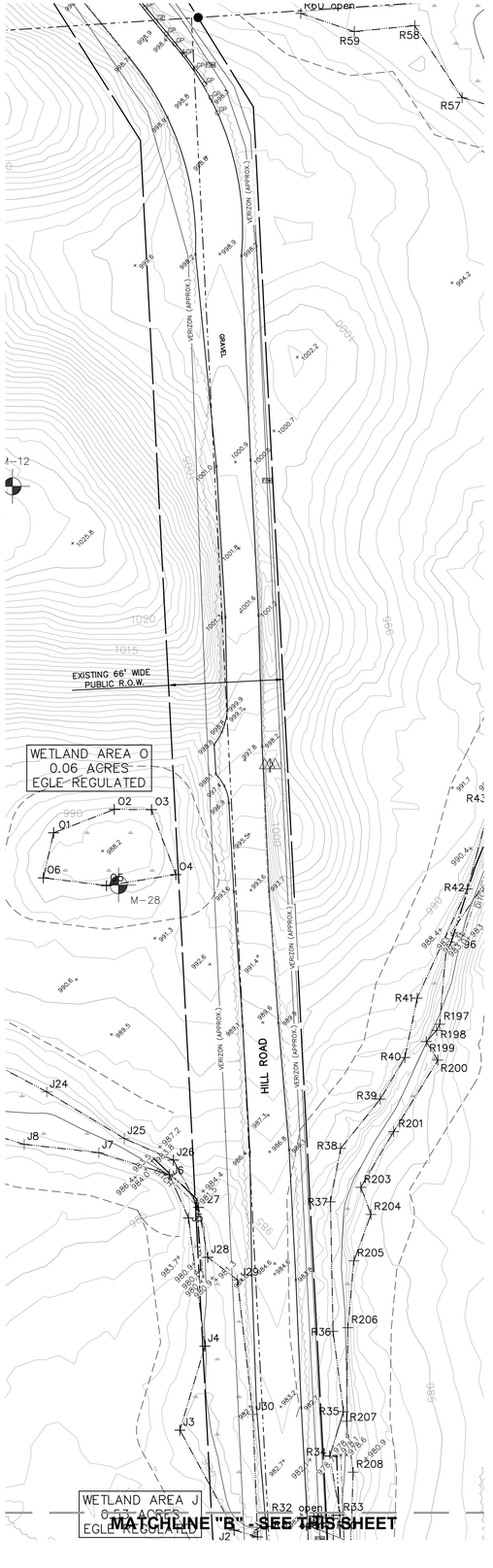
DRAWING TITLE
TOPOGRAPHIC SURVEY - EAST

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-1.3







LEGEND:

OH-ELEC	EX. OH, ELEC, POLE & GUY WIRE
UG-CATV	EX. U.G. CABLE TV & PEDESTAL
UG-COMM	EX. U.G. COMMUNICATION LINE, PEDESTAL & MANHOLE
UG-ELEC	EX. U.G. ELEC,MANHOLE, METER & HANDHOLE
	EX. GAS LINE
	EX. GAS VALVE & GAS LINE MARKER
	EX. TRANSFORMER & IRRIGATION VALVE
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	EX. STORM SEWER
	EX. CLEANOUT & MANHOLE
	EX. SQUARE, ROUND & BEEHIVE CATCH BASIN
	EX. YARD DRAIN & ROOF DRAIN
	EX. UNIDENTIFIED STRUCTURE
	EX. MAILBOX, SIGN & LIGHTPOLE
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	EX. DEC. TREE, CONIFEROUS TREE & SHRUB
	EX. TREE TAG, & TREE LINE
	EX. SPOT ELEVATION
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	EX. WETLAND
	IRON FOUND / SET
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	SECTION CORNER FOUND
R M C	RECORDED / MEASURED / CALCULATED

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NORTH

0 20 40 80
SCALE: 1" = 40'

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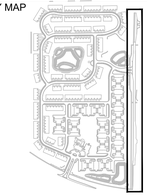
KEY MAP



CLIENT
WHITE LAKE HILL, LLC
31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - HILL ROAD
HIGHLAND ROAD
WHITE LAKE TWP, MI

REVISIONS	
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

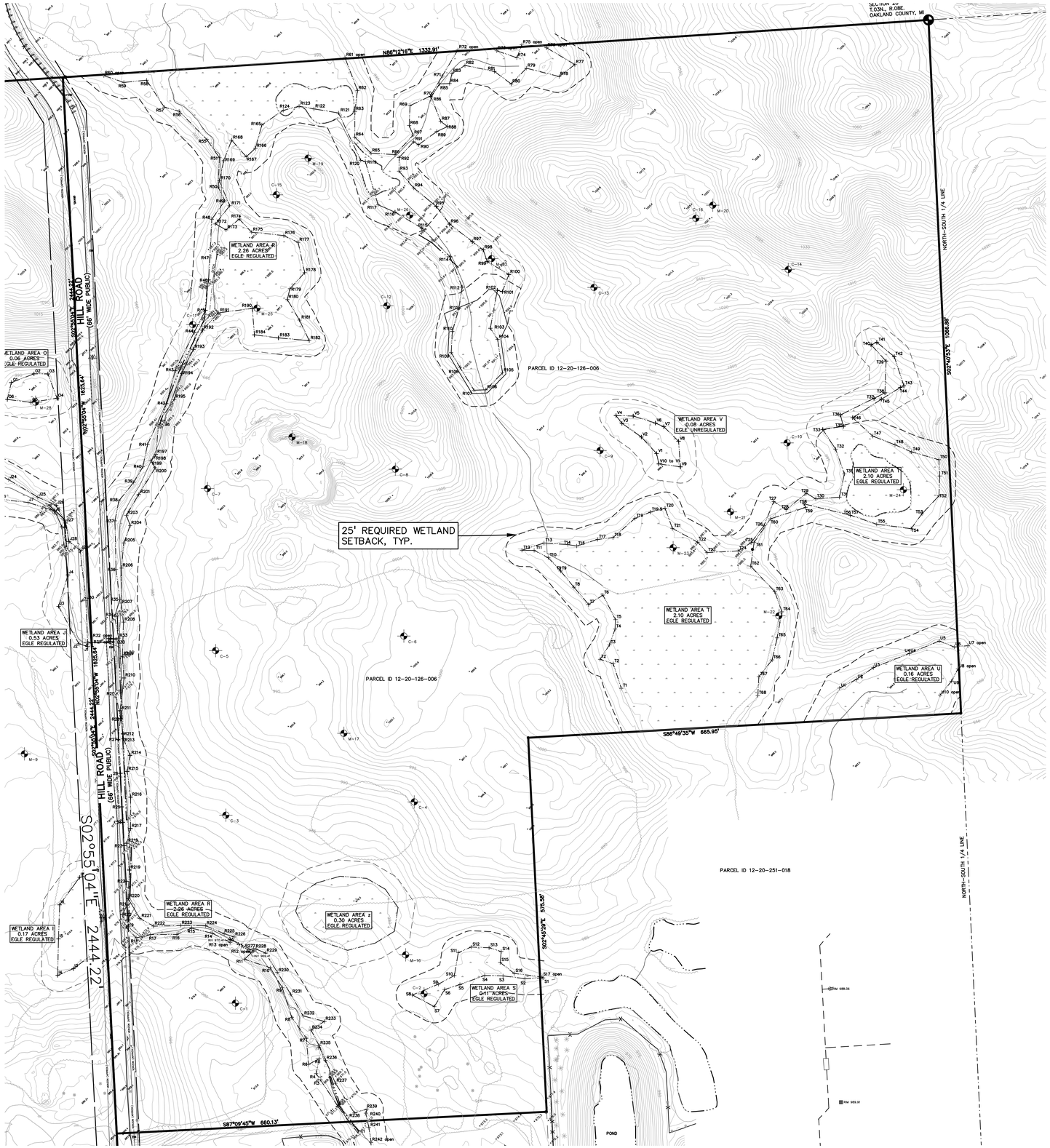
ORIGINAL ISSUE DATE:
MAY 8, 2025

DRAWING TITLE
TOPOGRAPHIC SURVEY

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-1.20

S:\PROJECTS\2021\2021-0084 WHITE LAKE MIXED USE\ENG\CONSTRUCTION\HILL ROAD\(C-1.0) TOPO-210084 HILL.dwg



LEGEND:

EX. OH. ELEC, POLE & GUY WIRE	
EX. U.G. CABLE TV & PEDESTAL	
EX. U.G. COMMUNICATION LINE, PEDESTAL & MANHOLE	
EX. U.G. ELEC.MANHOLE, METER & HANDHOLE	
EX. GAS LINE	
EX. GAS VALVE & GAS LINE MARKER	
EX. TRANSFORMER & IRRIGATION VALVE	
EX. WATER MAIN	
EX. HYDRANT, GATE VALVE & POST INDICATOR VALVE	
EX. WATER VALVE BOX & SHUTOFF	
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EX. STORM SEWER	
EX. CLEANOUT & MANHOLE	
EX. SQUARE, ROUND & BEEHIVE CATCH BASIN	
EX. YARD DRAIN, U.G. ROOF DRAIN & DOWNSPOUT	
EX. UNIDENTIFIED STRUCTURE	
EX. MAILBOX, SIGN, LIGHTPOLE & GUARD POST	
EX. FENCE	
EX. GUARD RAIL	
EX. DEC, TREE, CONIFEROUS TREE & SHRUB	
EX. TREE TAG, & TREE LINE	
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IRON FOUND / SET	
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BRASS PLUG SET	
MONUMENT FOUND / SET	
SECTION CORNER FOUND	
R M C — RECORDED / MEASURED / CALCULATED	
GNSS — GLOBAL NAVIGATION SATELLITE SYSTEM	

REFERENCE DRAWINGS:

WATER MAIN	XXXXXXXXXX
SANITARY SEWER	XXXXXXXXXX
STORM SEWER	XXXXXXXXXX
COMBINED SEWER	XXXXXXXXXX
ELECTRIC	XXXXXXXXXX
TELEPHONE	XXXXXXXXXX
GAS	XXXXXXXXXX
PETROLEUM	XXXXXXXXXX
CATV	XXXXXXXXXX
FLOOD PLAIN	XXXXXXXXXX
OTHER	XXXXXXXXXX
OTHER	XXXXXXXXXX
OTHER	XXXXXXXXXX

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NORTH

0 20 40 80
SCALE: 1" = 40'

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KEY MAP

CLIENT
WHITE LAKE HILL, LLC
31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - SINGLE FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

REVISIONS	
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
MAY 8, 2025

DRAWING TITLE
TOPOGRAPHIC SURVEY - OVERALL

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-1.30

S:\PROJECTS\2021\2021-0084 WHITE LAKE MIXED USE\DWG\CONSTRUCTION\1-SINGLE FAMILY\C-1.0 TOPO-21-0084.dwg

LEGEND:

OH-ELEC	EX. OH. ELEC, POLE & GUY WIRE
UG-CATV	EX. U.G. CABLE TV & PEDESTAL
UG-COMM	EX. U.G. COMMUNICATION LINE, PEDESTAL & MANHOLE
UG-ELEC	EX. U.G. ELEC.MANHOLE, METER & HANDHOLE
	EX. GAS LINE
	EX. GAS VALVE & GAS LINE MARKER
	EX. TRANSFORMER & IRRIGATION VALVE
	EX. WATER MAIN
	EX. HYDRANT, GATE VALVE & POST INDICATOR VALVE
	EX. WATER VALVE BOX & SHUTOFF
	EX. SANITARY SEWER
	EX. SANITARY CLEANOUT & MANHOLE
	EX. COMBINED SEWER MANHOLE
	EX. STORM SEWER
	EX. CLEANOUT & MANHOLE
	EX. SQUARE, ROUND & BEEHIVE CATCH BASIN
	EX. YARD DRAIN, U.G. ROOF DRAIN & DOWNSPOUT
	EX. UNIDENTIFIED STRUCTURE
	EX. MAILBOX, SIGN, LIGHTPOLE & GUARD POST
	EX. FENCE
	EX. GUARD RAIL
	EX. DEC. TREE, CONIFEROUS TREE & SHRUB
	EX. TREE TAG, & TREE LINE
	EX. SPOT ELEVATION
	EX. CONTOUR
	EX. WETLAND
	IRON FOUND / SET
	NAIL FOUND / NAIL & CAP SET
	BRASS PLUG SET
	MONUMENT FOUND / SET
	SECTION CORNER FOUND
R M C	RECORDED / MEASURED / CALCULATED
GNSS	GLOBAL NAVIGATION SATELLITE SYSTEM

REFERENCE DRAWINGS:

WATER MAIN	XXXXXXXXXX
SANITARY SEWER	XXXXXXXXXX
STORM SEWER	XXXXXXXXXX
COMBINED SEWER	XXXXXXXXXX
ELECTRIC	XXXXXXXXXX
TELEPHONE	XXXXXXXXXX
GAS	XXXXXXXXXX
PETROLEUM	XXXXXXXXXX
CATV	XXXXXXXXXX
FLOOD PLAIN	XXXXXXXXXX
OTHER	XXXXXXXXXX
OTHER	XXXXXXXXXX
OTHER	XXXXXXXXXX

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NORTH

0 20 40 80
SCALE: 1" = 40'

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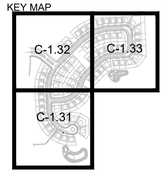
KEY MAP



CLIENT
WHITE LAKE HILL, LLC
31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - SINGLE FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

REVISIONS	
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

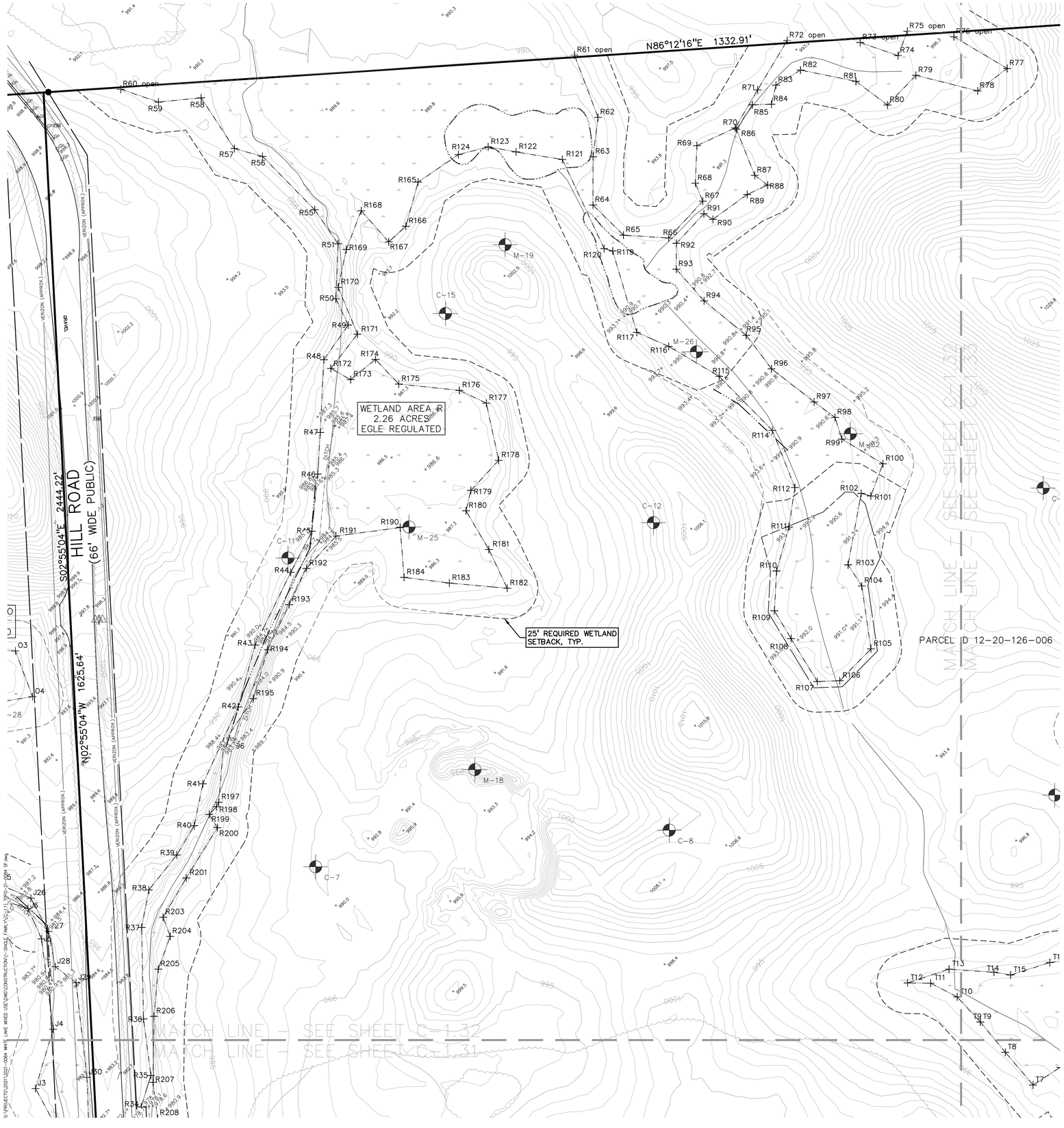
ORIGINAL ISSUE DATE:
MAY 8, 2025

DRAWING TITLE
TOPOGRAPHIC SURVEY - SOUTH

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-1.31

S:\PROJECTS\2021\2021-0084 WHITE LAKE MIXED USE\DWG\CONSTRUCTION\1-SINGLE FAMILY\C-1.1 TOPO-21-0084 SF.dwg



LEGEND:

–OH–ELEC–W–	EX. OH, ELEC, POLE & GUY WIRE
–UG–CATV–TV–	EX. U.G. CABLE TV & PEDESTAL
–UG–COMM–	EX. U.G. COMMUNICATION LINE, PEDESTAL & MANHOLE
–UG–ELEC–	EX. U.G. ELEC,MANHOLE, METER & HANDHOLE
	EX. GAS LINE
GAS	EX. GAS VALVE & GAS LINE MARKER
T	EX. TRANSFORMER & IRRIGATION VALVE
	EX. WATER MAIN
	EX. HYDRANT, GATE VALVE & POST INDICATOR VALVE
	EX. WATER VALVE BOX & SHUTOFF
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	EX. SANITARY CLEANOUT & MANHOLE
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	EX. SQUARE, ROUND & BEEHIVE CATCH BASIN
	EX. YARD DRAIN, U.G. ROOF DRAIN & DOWNSPOUT
	EX. UNIDENTIFIED STRUCTURE
U GAS CATV	EX. MAILBOX, SIGN, LIGHTPOLE & GUARD POST
X	EX. FENCE
	EX. GUARD RAIL
	EX. DEC. TREE, CONIFEROUS TREE & SHRUB
T224	EX. TREE TAG, & TREE LINE
998.91	EX. SPOT ELEVATION
970	EX. CONTOUR
	EX. WETLAND
	IRON FOUND / SET
	NAIL FOUND / NAIL & CAP SET
	BRASS PLUG SET
	MONUMENT FOUND / SET
	SECTION CORNER FOUND
R M C	RECORDED / MEASURED / CALCULATED
GNSS	GLOBAL NAVIGATION SATELLITE SYSTEM

REFERENCE DRAWINGS:

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SANITARY SEWER	XXXXXXXXXXX
STORM SEWER	XXXXXXXXXXX
COMBINED SEWER	XXXXXXXXXXX
ELECTRIC	XXXXXXXXXXX
TELEPHONE	XXXXXXXXXXX
GAS	XXXXXXXXXXX
PETROLEUM	XXXXXXXXXXX
CATV	XXXXXXXXXXX
FLOOD PLAIN	XXXXXXXXXXX
OTHER	XXXXXXXXXXX
OTHER	XXXXXXXXXXX
OTHER	XXXXXXXXXXX

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NORTH

0 20 40 80
SCALE: 1" = 40'

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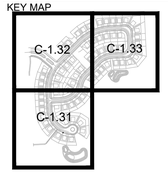

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FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - SINGLE FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

REVISIONS	
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
MAY 8, 2025

DRAWING TITLE
TOPOGRAPHIC SURVEY - WEST

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-1.32

T.03N., R.08E.
OAKLAND COUNTY, MI

NORTH-SOUTH 1/4 LINE

S02°40'53"E 1066.88'

MATCH LINE SEE SHEET C-1.32

MATCH LINE SEE SHEET C-1.33

PARCEL ID 12-20-126-006

25' REQUIRED WETLAND SETBACK, TYP.

WETLAND AREA V
0.08 ACRES
EGLE UNREGULATED

WETLAND AREA T
2.10 ACRES
EGLE REGULATED

R75 open
R76 open
R74
R77
R79
R78
R80
R100

C-9
C-10
C-13
C-14
C-16
M-20
M-21
M-23
M-24

LEGEND:

OH ELEC	EX. OH, ELEC, POLE & GUY WIRE
UG CATV	EX. U.G. CABLE TV & PEDESTAL
UG COMM	EX. U.G. COMMUNICATION LINE, PEDESTAL & MANHOLE
UG ELEC	EX. U.G. ELEC,MANHOLE, METER & HANDHOLE
	EX. GAS LINE
GAS	EX. GAS VALVE & GAS LINE MARKER
T	EX. TRANSFORMER & IRRIGATION VALVE
	EX. WATER MAIN
	EX. HYDRANT, GATE VALVE & POST INDICATOR VALVE
W	EX. WATER VALVE BOX & SHUTOFF
	EX. SANITARY SEWER
S	EX. SANITARY CLEANOUT & MANHOLE
	EX. COMBINED SEWER MANHOLE
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	EX. UNIDENTIFIED STRUCTURE
	EX. MAILBOX, SIGN, LIGHTPOLE & GUARD POST
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GAS	XXXXXXXXXX
PETROLEUM	XXXXXXXXXX
CATV	XXXXXXXXXX
FLOOD PLAIN	XXXXXXXXXX
OTHER	XXXXXXXXXX
OTHER	XXXXXXXXXX
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NORTH

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SCALE: 1" = 40'

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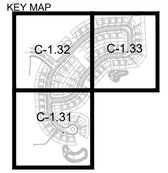

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PROJECT TITLE
THE AVALON - SINGLE FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

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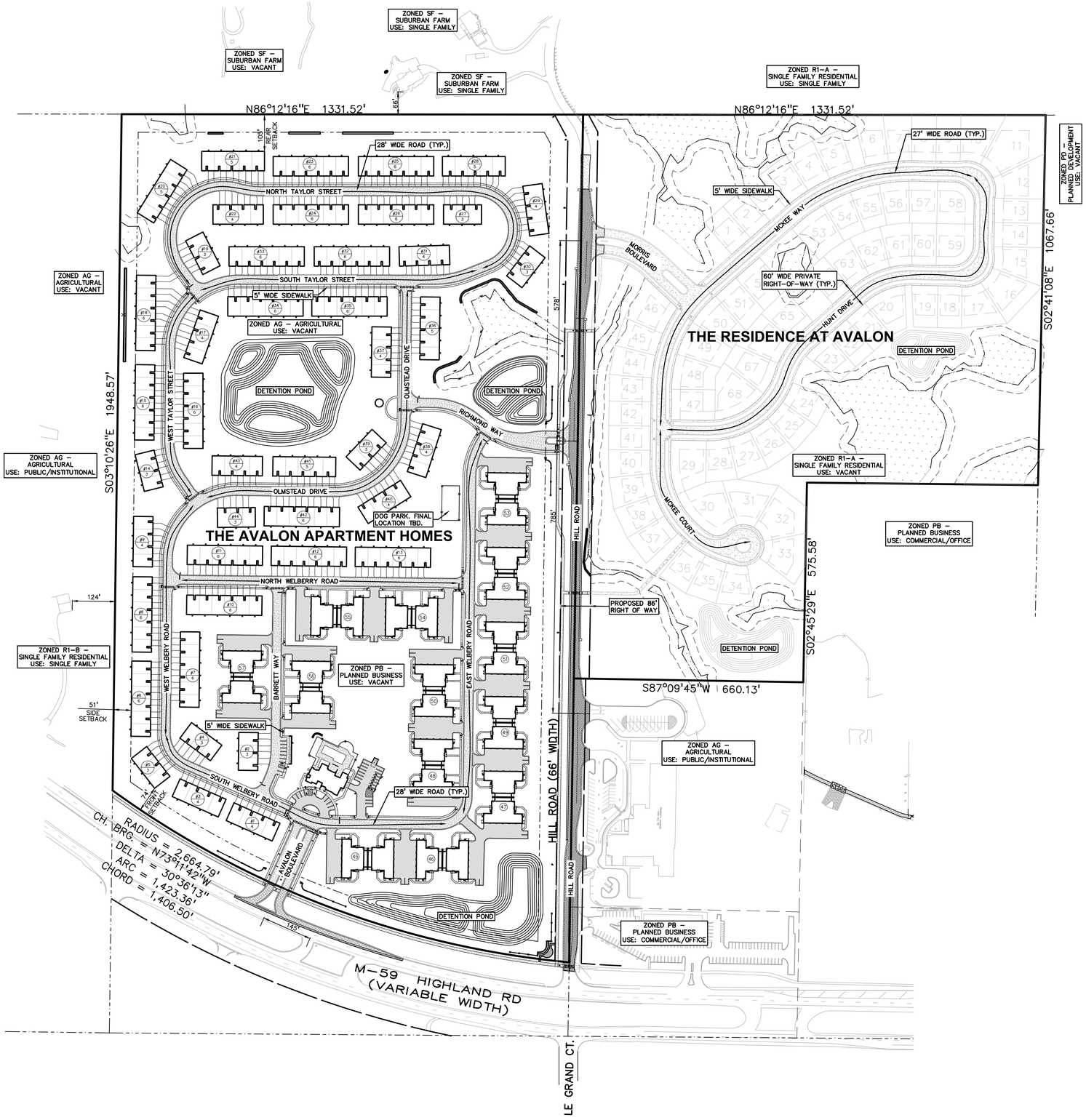
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
MAY 8, 2025

DRAWING TITLE
TOPOGRAPHIC SURVEY - EAST

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-1.33



GENERAL NOTES:

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2. 'NO PARKING–FIRE LANE' SIGNS SHALL BE POSTED ALONG ALL FIRE LANES AT 100 FOOT INTERVALS OR AS DIRECTED BY THE FIRE OFFICIAL.
3. REFER TO NOTES & DETAILS SHEET FOR ON–SITE PAVING DETAILS.
4. REFER TO NOTES & DETAILS SHEET FOR ON–SITE SIDEWALK RAMP DETAILS

TRASH COLLECTION NOTE:

ALL UNITS WILL BE SERVED BY INDIVIDUAL TRASH CARTS PROVIDED BY WASTE COLLECTION COMPANY

LEGEND:

- CONCRETE PAVEMENT (STD DUTY / HEAVY DUTY / R.O.W. ONLY)
- ASPHALT PAVEMENT (STD DUTY / HEAVY DUTY / DEEP STRENGTH)
- GRAVEL
- WETLAND
- CONCRETE CURB AND GUTTER
- REVERSE GUTTER PAN
- SETBACK LINE
- SIGN
- LIGHTPOLE
- FENCE
- GUARD RAIL

MULTI–FAMILY SITE DATA TABLE:

SITE AREA: 68.96 ACRES GROSS
0.64 WETLAND ACRES
65.88 ACRES NET (NO R.O.W. OR REMAINING WETLAND AREA)
24.22 ACRES OPEN SPACE

ZONING: EXISTING: PB, PLANNED BUSINESS
AG, AGRICULTURAL

PROPOSED: PD, PLANNED DEVELOPMENT

PROPOSED USE: 366 MULTI–FAMILY UNITS (FOR LEASE) (5.6 UNITS PER ACRE)

SCHEDULE OF DEVELOPMENT: MULTI–FAMILY SPRING 2026 – SPRING 2029

BUILDING INFORMATION:
MAXIMUM ALLOWABLE BUILDING HEIGHT = 30 FEET (2 STORIES)
PROPOSED MAX BUILDING HEIGHT: MULTI–FAMILY = 25.2 FEET (2 STORIES)

44 SINGLE STORY 3–6 UNIT RANCH BUILDINGS = 210 UNITS
15 2–STORY 12–PLEX BUILDINGS = 156 UNITS

BUILDING FOOTPRINT AREA:
SINGLE STORY RANCH BUILDINGS = 5,898–11,735 SQ.FT.
2–STORY BUILDINGS = 11,981 SQ.FT.
CLUBHOUSE = 6,658 SQ.FT.
TOTAL SF = 575,551 SQ.FT.

BUILDING LOT COVERAGE = 13.2/64.88 = 20.3%

MINIMUM LOT SIZE:
FIRST UNIT = 10,000 SF
52 – 3 BEDROOM UNITS x 4,500 SF = 234,000
314 – 2 BEDROOM UNITS x 4,000 SF = 1,256,000
MINIMUM LOT SIZE REQUIRED = 1,490,000 (34.2 ACRES)

TOTAL LOT SIZE PROVIDED =
68.96 AC. (GROSS) – 0.64 AC. (WETLAND) – 2.44 AC. (R.O.W.) – 4.98 AC. (STORM) = 60.90 ACRES

SETBACK REQUIREMENTS:	PD:	PROPOSED:
FRONT:	40'	74'
SIDE:	25' (50' TOTAL)	50'
REAR:	105' (APPROVED PD)	105'

SEPARATION REQUIREMENTS SECTION 3.11.G. LENGTH	REQUIRED	MIN. PROVIDED
56'	24'	25'
109.08'	34'	51.95'
112'	36'	64'
145.08'	42'	60.66'
150.63'	44'	66.22'
181.08'	50'	N/A
218.08'	56'	58.17'

PARKING CALCULATIONS:

MULTI–FAMILY = 2 PER DWELLING UNIT + 1/4 SPACE PER BEDROOM FOR GUEST PARKING IN COMMON AREAS

TOTAL MULTI–FAMILY GUEST PARKING REQUIRED = 784 BEDROOMS/4 = 196 SPACES

TOTAL REQUIRED PARKING = 928 SPACES

TOTAL PROPOSED PARKING SPACES = 1,173 (732 RESIDENT PARKING IN GARAGE)
(366 GUEST PARKING IN DRIVEWAYS)
(65 GUEST SPACES INC. 3 H/C SPACES)
(10 MAIL SPACES IN 1 H/C SPACE)

TOTAL PARKING SPACES NOT ASSOCIATED WITH INDIVIDUAL UNITS = 75 SPACES
TOTAL REQUIRED ADA SPACES = 51–75 = 3 SPACES
TOTAL ADA SPACES PROVIDED = 4 SPACES WITH 3 VAN SPACE

OPEN SPACE:
MINIMUM OPEN SPACE REQUIRED = 15% OF NET SITE AREA
PROVIDED OPEN SPACE = 24.22/65.88 = 36.8%

WETLANDS:
EGLE WETLAND IMPACT: 0.34 ACRES

SINGLE FAMILY SITE DATA TABLE:

SITE AREA: 41.06 ACRES GROSS
4.48 WETLAND ACRES
35.00 ACRES NET (NO R.O.W. OR WETLAND AREA)
7.68 OPEN SPACE ACRES

ZONING: EXISTING: R1–A, SINGLE FAMILY RESIDENTIAL

PROPOSED: PD, PLANNED DEVELOPMENT

PROPOSED USE: 68 UNIT SINGLE FAMILY HOME CONDOMINIUM (1.9 UNITS PER ACRE)

OPEN SPACE:
MINIMUM OPEN SPACE REQUIRED = 15% OF NET SITE AREA
PROVIDED OPEN SPACE = 7.69/35.00 = 22.0%

WETLANDS:
EGLE WETLAND IMPACT: 0.72 ACRES

DEVELOPMENT NOTES:

1. EGLE COMPLETED A LEVEL 3 WETLAND IDENTIFICATION PROGRAM REPORT ON AUGUST 4, 2022.
2. UPON COMPLETION OF ANY WORK WITHIN THE WETLAND SETBACK, THE AREA SHALL BE RESTORED TO ITS NATIVE VEGETATIVE STATE.
3. A WETLAND SETBACK RESTORATION PLAN AND A WETLAND RESTORATION BOND SHALL BE REQUIRED TO ENSURE PROPER RESTORATION.
4. A SIDEWALK ALONG HILL ROAD SHALL BE CONSTRUCTED AS SHOWN ON THE SITE PLAN. TO LIMIT WETLAND IMPACTS AND REDUCE SIDEWALKS TO "NO WHERE", A CONTRIBUTION TO THE WHITE LAKE SIDEWALK FUND SHALL BE ESTABLISHED.
5. BASE ON A DETAILED ENGINEERING ANALYSIS, THE PROPOSED MAXIMUM ALLOWABLE DISCHARGE RATE FROM THE PROPOSED DEVELOPMENT DOES NOT EXCEED THE EXISTING RUNOFF FOR THE 100–YEAR STORM EVENT. THE PROPOSED CONTRIBUTING FLOW THROUGH THE CULVERT UNDER M–59 IS NOT INCREASED BY THE DEVELOPMENT.
6. THE DEVELOPER SHALL CONSTRUCT A SANITARY SEWER LINE ALONG HILL ROAD TO THE FURTHEST EXTEND POSSIBLE. TO SUPPLEMENT THE SHORTENED LENGTH A CONTRIBUTION TO THE TOWNSHIP SANITARY SEWER FUND SHALL BE MADE. IN ADDITION, A CONSTRUCTION EASEMENT SHALL BE PROVIDED TO THE TOWNSHIP AT THE NORTH END OF THE PROPERTY ALONG HILL ROAD.
7. A SECONDARY WATERMAIN CONNECTION IS TO BE PROVIDED.

PEA GROUP
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STATE OF MICHIGAN
BRETT STURGEON HOLLANDSWORTH
LICENSED PROFESSIONAL ENGINEER
License No. 6201064949

NORTH

0 75 150 300
SCALE: 1" = 150'

811 Know what's below. Call before you dig.

CAUTION!!
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KEY MAP

CLIENT
WHITE LAKE HILL, LLC
31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - MULTI FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

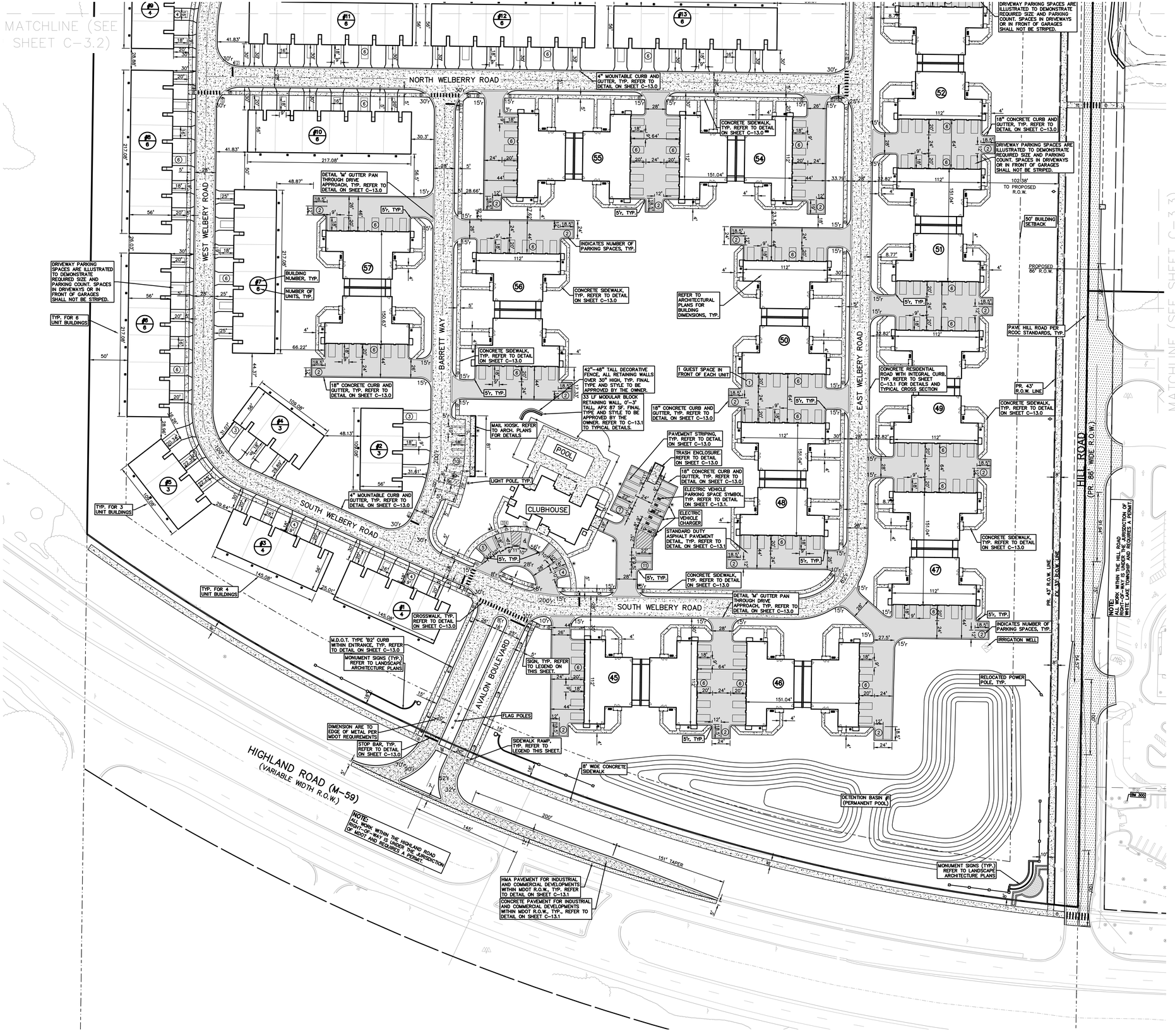
REVISIONS	
DRAFT	2/19/24
ISSUED FOR OWNER REVIEW	4/24/24
FINAL SITE PLAN REVIEW	7/3/24
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
DECEMBER 4, 2023

DRAWING TITLE
OVERALL SITE PLAN

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-3.0



LEGEND:

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- ASPHALT PAVEMENT (STD DUTY / HEAVY DUTY / DEEP STRENGTH)
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- WETLAND
- CONCRETE CURB AND GUTTER
- REVERSE GUTTER PAN
- SETBACK LINE
- SIGN
- LIGHTPOLE
- FENCE
- GUARD RAIL

SIGN LEGEND:

'NO PARKING FIRE LANE' SIGN	[1]
'STOP' SIGN	[2]
'BARRIER FREE PARKING' SIGN	[3]
'VAN ACCESSIBLE' SIGN	[4]
'CROSSWALK' SIGN	[5]
'DO NOT ENTER' SIGN	[6]
'SIDEWALK ENDS' SIGN	[7]
'NO PARKING LOADING ZONE' SIGN	[8]

REFER TO DETAIL SHEET FOR SIGN DETAILS

SIDEWALK RAMP LEGEND:

SIDEWALK RAMP 'TYPE R'	(R)
SIDEWALK RAMP 'TYPE F'	(F)
SIDEWALK RAMP 'TYPE P'	(P)
SIDEWALK RAMP 'TYPE C'	(C)
SIDEWALK RAMP 'TYPE D'	(D)
CURB DROP ONLY	(X)

REFER TO LATEST MDOT R-28 STANDARD RAMP AND DETECTABLE WARNING DETAILS

GENERAL NOTES:

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Brett S. Hollandsworth

NORTH

0 30 60 120
SCALE: 1" = 60'

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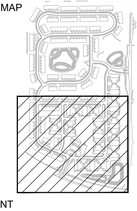

CLIENT
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31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - MULTI FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

REVISIONS	
DRAFT	2/19/24
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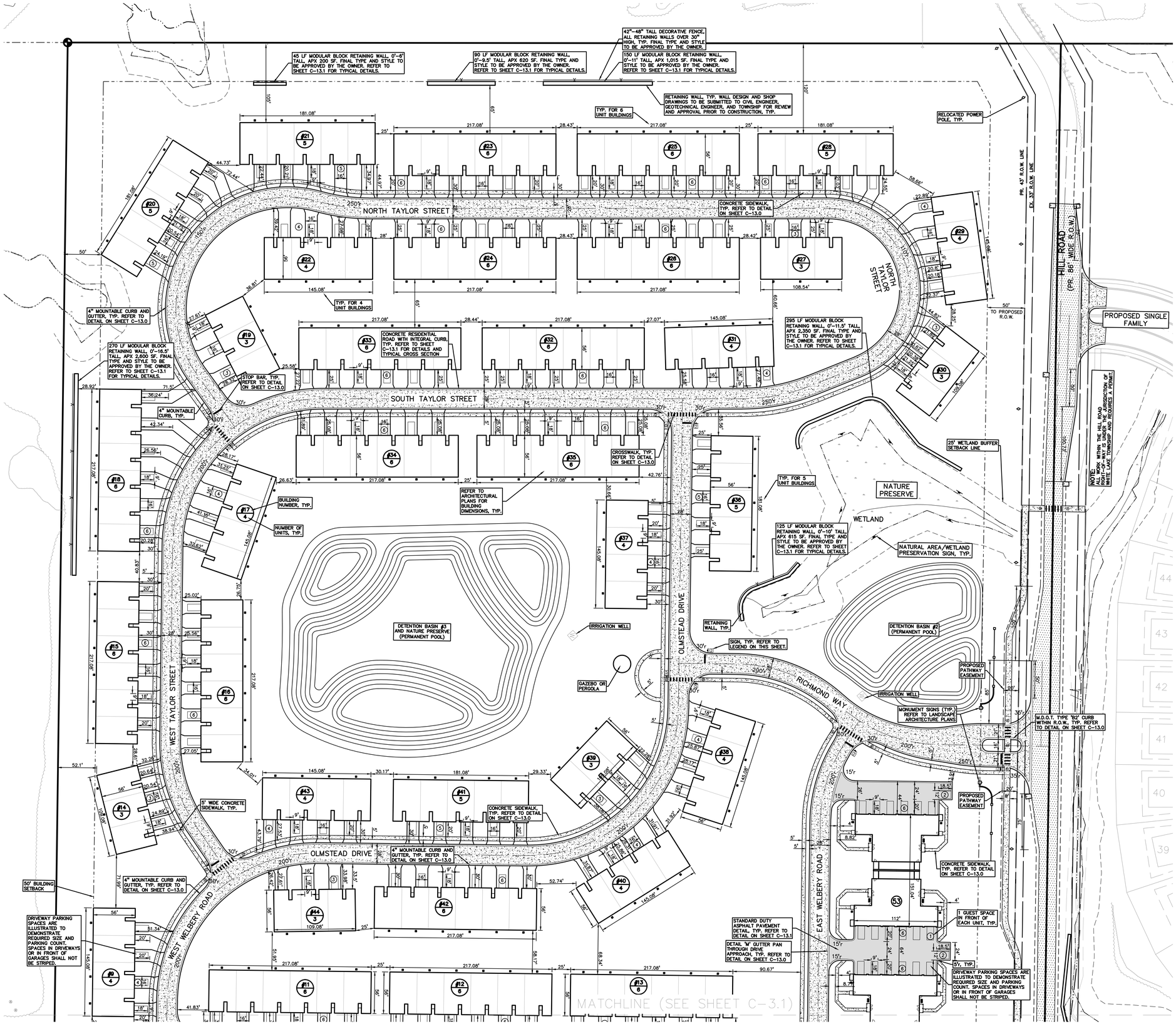
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
DECEMBER 4, 2023

DRAWING TITLE
SITE PLAN - SOUTH

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-3.1



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SIGN LEGEND:

'NO PARKING FIRE LANE' SIGN	[1]
'STOP' SIGN	[2]
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REFER TO DETAIL SHEET FOR SIGN DETAILS

SIDEWALK RAMP LEGEND:

SIDEWALK RAMP 'TYPE R'	(R)
SIDEWALK RAMP 'TYPE F'	(F)
SIDEWALK RAMP 'TYPE P'	(P)
SIDEWALK RAMP 'TYPE C'	(C)
SIDEWALK RAMP 'TYPE D'	(D)
CURB DROP ONLY	(X)

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NORTH

0 30 60 120
SCALE: 1" = 60'

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KEY MAP

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31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

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WHITE LAKE TWP, MI

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FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
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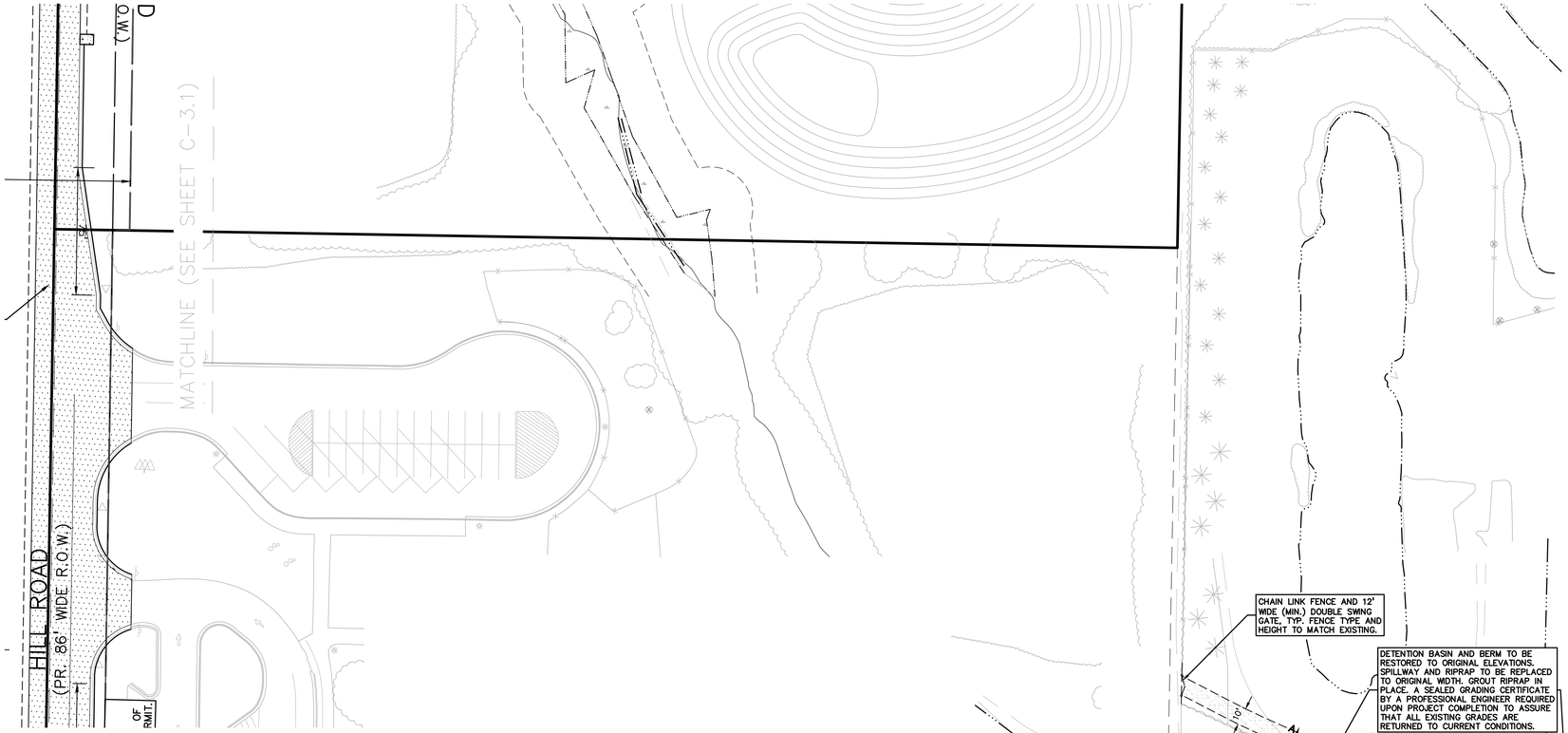
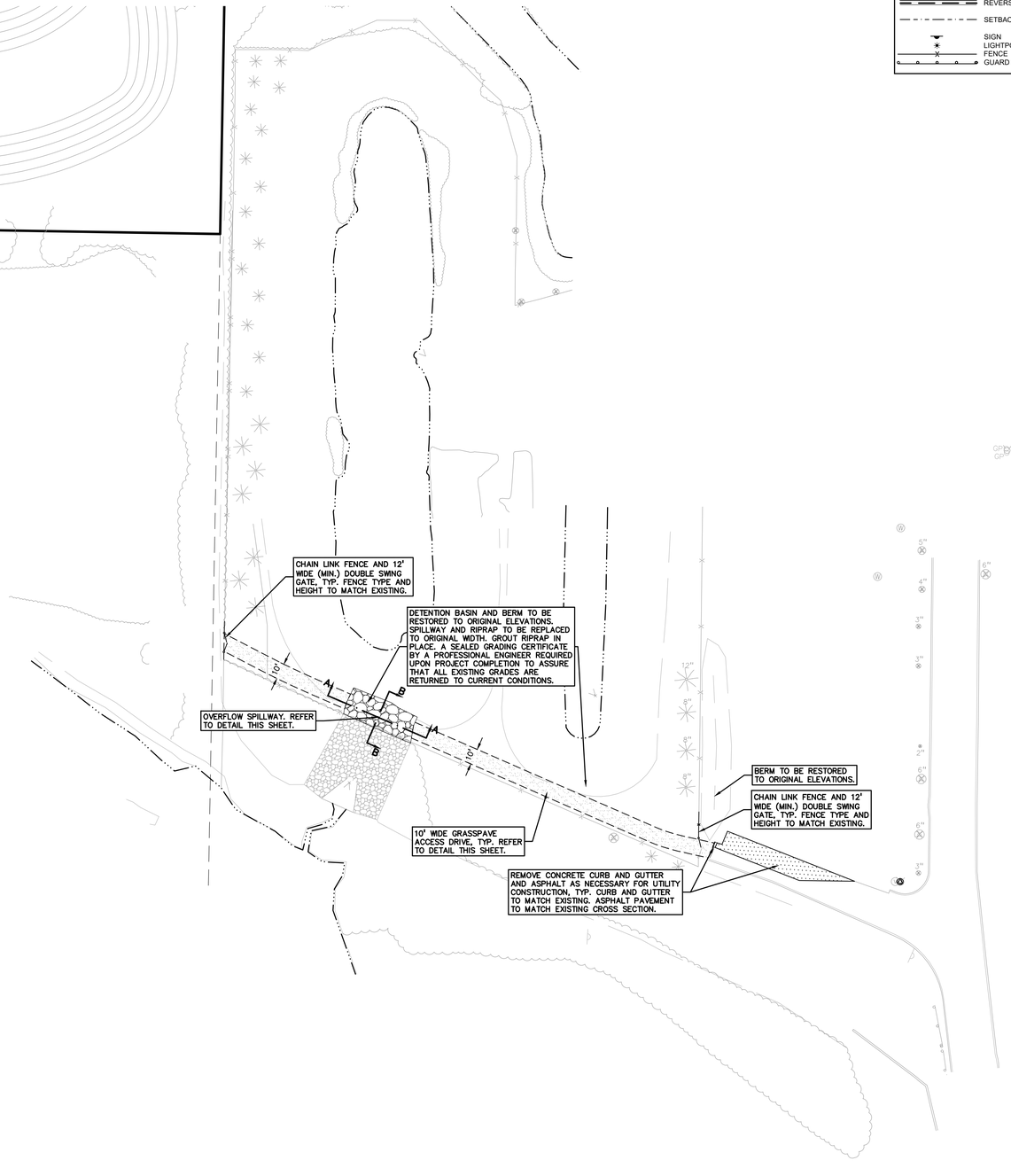
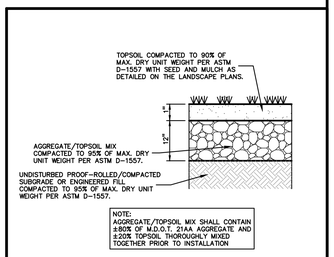
DRAWING TITLE
SITE PLAN - NORTH

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

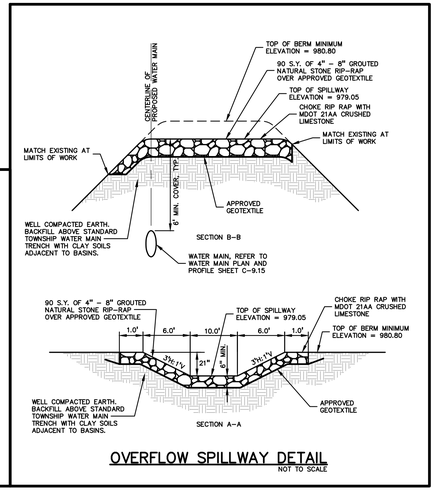
DRAWING NUMBER:
C-3.2







GRASSPAVE ACCESS DRIVE DETAIL
NOT TO SCALE



OVERFLOW SPILLWAY DETAIL
NOT TO SCALE

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0 20 40 80
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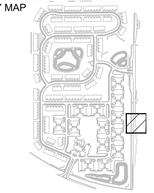

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31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - MULTI FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

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DRAFT	2/19/24
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FINAL SITE PLAN REVIEW	7/3/24
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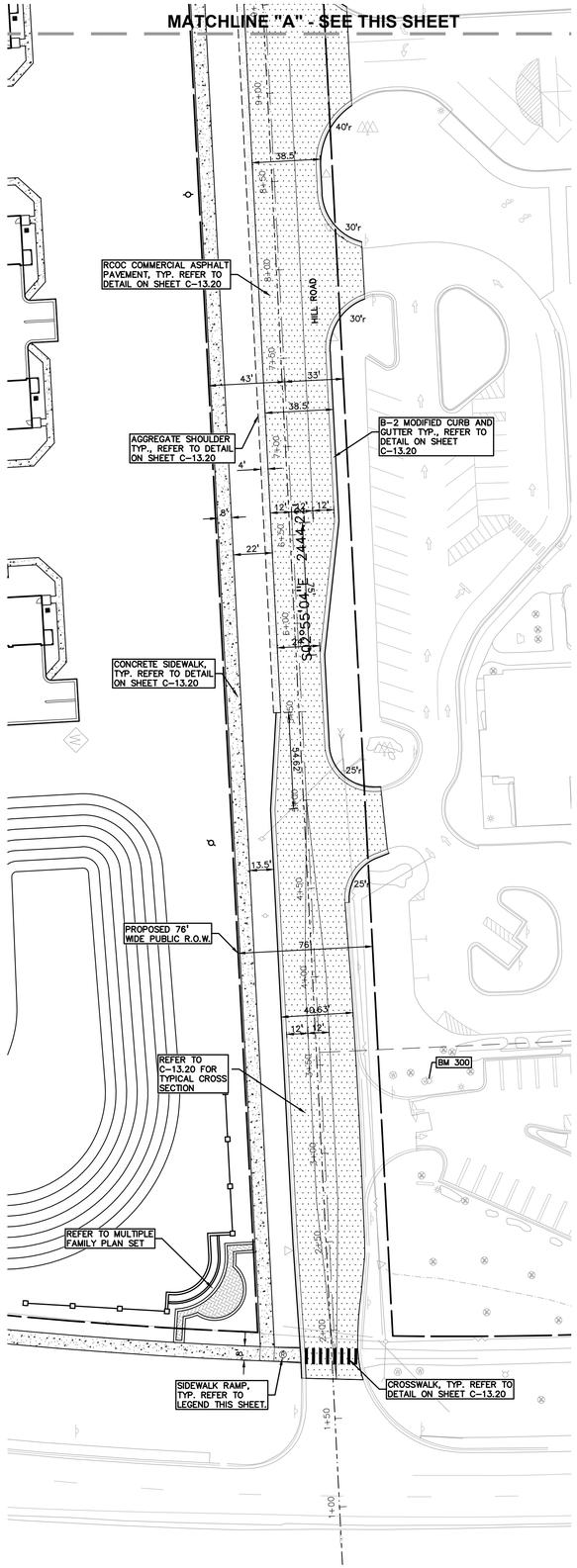
FINAL SITE PLAN REVIEW	9/30/25

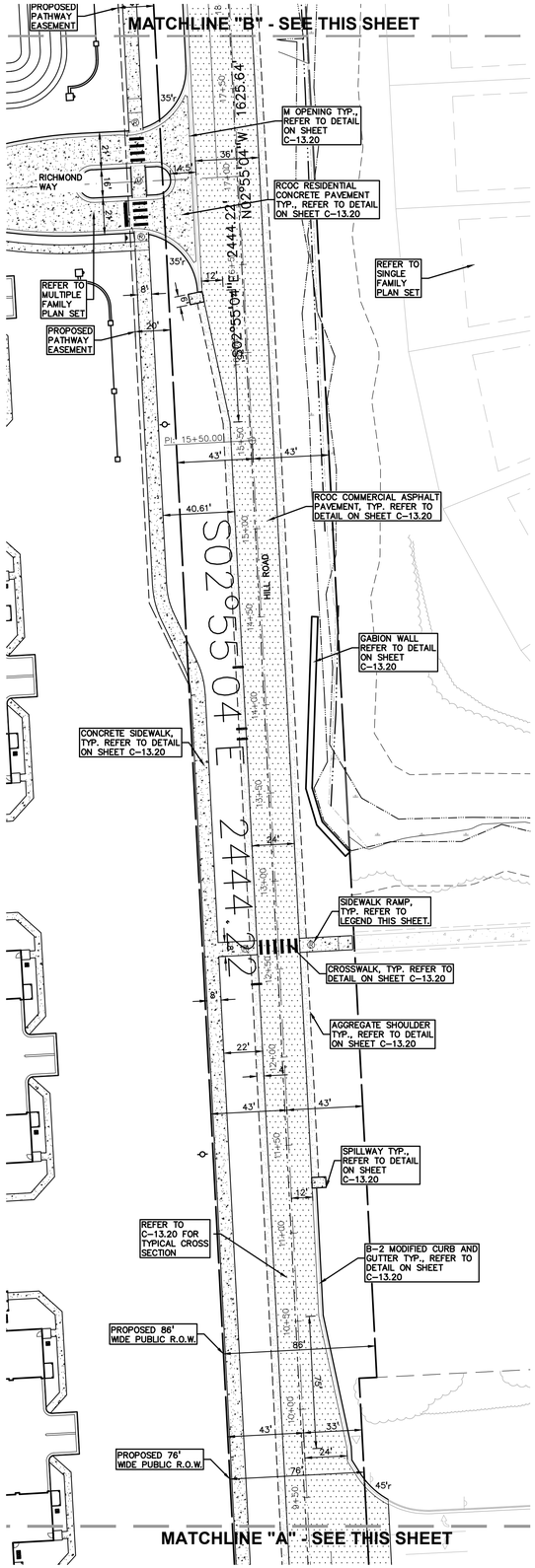
ORIGINAL ISSUE DATE:
DECEMBER 4, 2023

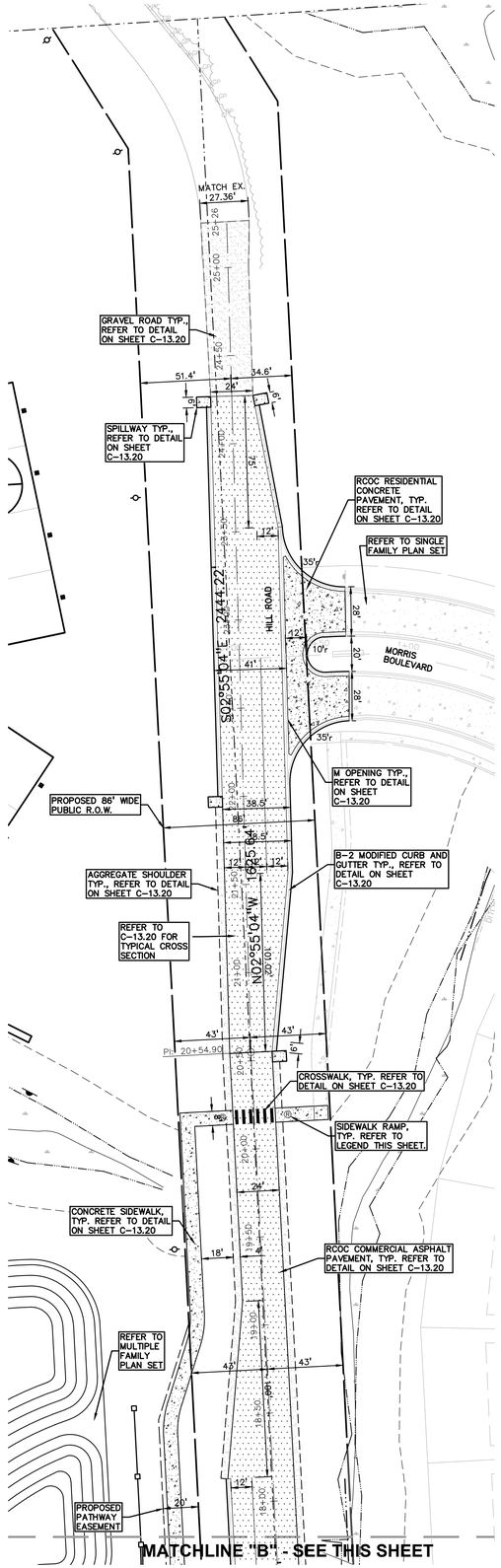
DRAWING TITLE
SITE PLAN - EAST

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-3.3







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'NO PARKING FIRE LANE' SIGN	[1]
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REFER TO DETAIL SHEET FOR SIGN DETAILS

SIDEWALK RAMP LEGEND:

SIDEWALK RAMP 'TYPE R'	(R)
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SIDEWALK RAMP 'TYPE P'	(P)
SIDEWALK RAMP 'TYPE C'	(C)
SIDEWALK RAMP 'TYPE D'	(D)
CURB DROP ONLY	(X)

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License No. 6201064949

NORTH

0 20 40 80
SCALE: 1" = 40'

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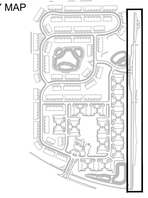
KEY MAP



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31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - HILL ROAD
HIGHLAND ROAD
WHITE LAKE TWP, MI

REVISIONS	
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

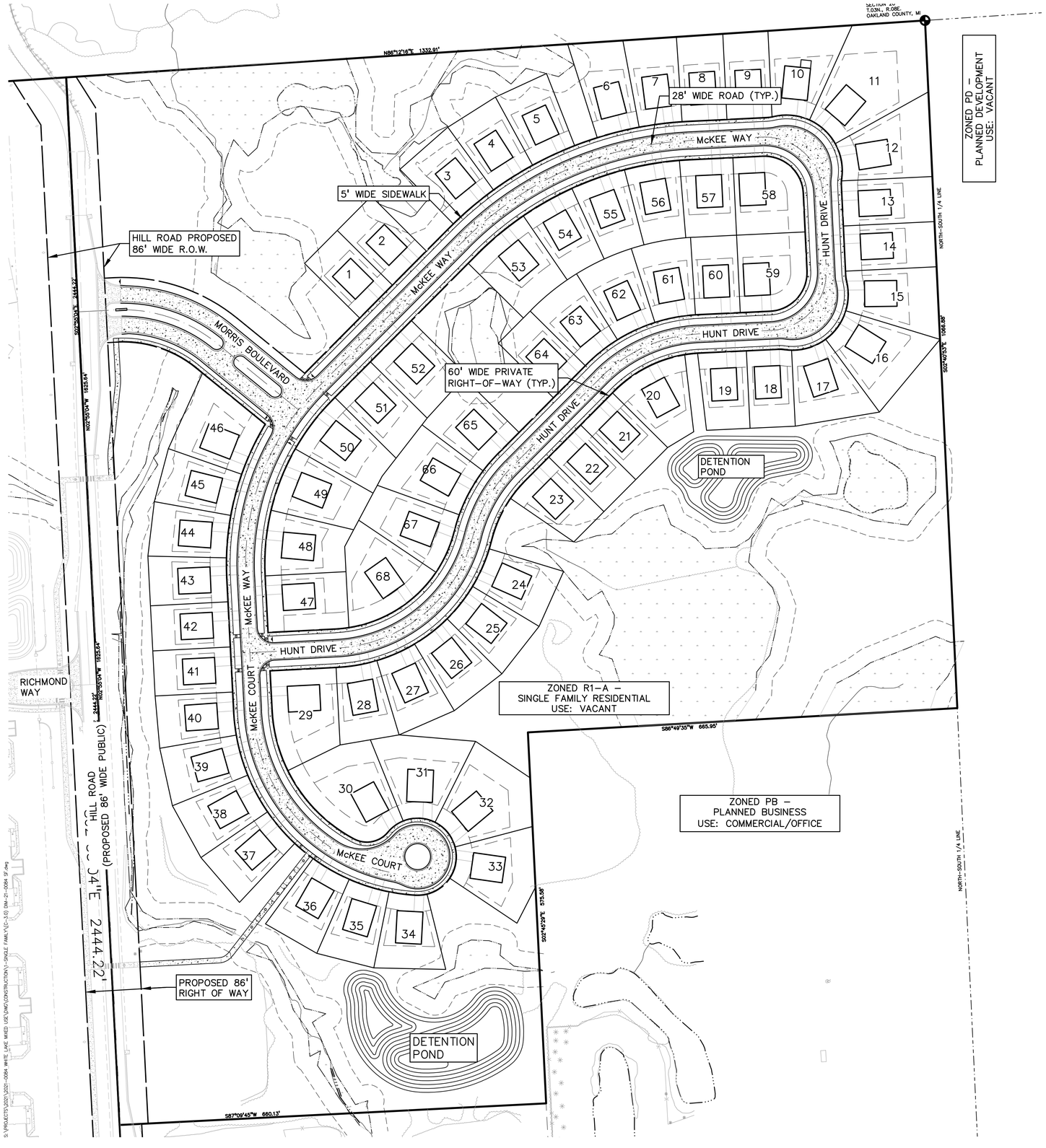
ORIGINAL ISSUE DATE:
MAY 8, 2025

DRAWING TITLE
SITE PLAN

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-3.20

S:\PROJECTS\2021-0084 WHITE LAKE MIXED USE\DWG\CONSTRUCTION\HILL ROAD\[C-13] DWG-210084 HILL.dwg



GENERAL NOTES:

THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT.

1. ALL DIMENSIONS SHOWN ARE TO BACK OF CURB, FACE OF SIDEWALK, OUTSIDE FACE OF BUILDING, PROPERTY LINE, CENTER OF MANHOLE/CATCH BASIN OR CENTERLINE OF PIPE UNLESS OTHERWISE NOTED.
2. 'NO PARKING-FIRE LANE' SIGNS SHALL BE POSTED ALONG ALL FIRE LANES AT 100 FOOT INTERVALS OR AS DIRECTED BY THE FIRE OFFICIAL.
3. REFER TO NOTES & DETAILS SHEET FOR ON-SITE PAVING DETAILS.
4. REFER TO NOTES & DETAILS SHEET FOR ON-SITE SIDEWALK RAMP DETAILS

TRASH COLLECTION NOTE:

ALL UNITS WILL BE SERVED BY INDIVIDUAL TRASH CARTS PROVIDED BY WASTE COLLECTION COMPANY

LEGEND:

- CONCRETE PAVEMENT (STD DUTY / HEAVY DUTY / R.O.W. ONLY)
- ASPHALT PAVEMENT (STD DUTY / HEAVY DUTY / DEEP STRENGTH)
- GRAVEL
- WETLAND
- CONCRETE CURB AND GUTTER
- REVERSE GUTTER PAN
- SETBACK LINE
- SIGN
- LIGHTPOLE
- FENCE
- GUARD RAIL

SIDEWALK RAMP LEGEND:

SIDEWALK RAMP 'TYPE R'	Ⓡ
SIDEWALK RAMP 'TYPE F'	Ⓕ
SIDEWALK RAMP 'TYPE P'	Ⓟ
SIDEWALK RAMP 'TYPE C'	Ⓒ
SIDEWALK RAMP 'TYPE D'	Ⓓ
CURB DROP ONLY	Ⓧ

REFER TO LATEST MDOT R-28 STANDARD RAMP AND DETECTABLE WARNING DETAILS

SIGN LEGEND:

'NO PARKING FIRE LANE' SIGN	[1]
'STOP' SIGN	[2]
'BARRIER FREE PARKING' SIGN	[3]
'VAN ACCESSIBLE' SIGN	[4]
'CROSSWALK' SIGN	[5]
'DO NOT ENTER' SIGN	[6]
'SIDEWALK ENDS' SIGN	[7]
'NO PARKING LOADING ZONE' SIGN	[8]

REFER TO DETAIL SHEET FOR SIGN DETAILS

GENERAL NOTES:

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3. REFER TO NOTES & DETAILS SHEET FOR ON-SITE PAVING DETAILS.
4. REFER TO NOTES & DETAILS SHEET FOR ON-SITE SIDEWALK RAMP DETAILS

Parcel Area Table	
PARCEL NO.	AREA (S.F.)
1	8,640
2	8,955
3	10,620
4	9,464
5	9,451
6	10,831
7	9,986
8	9,339
9	9,328
10	12,947
11	22,384
12	13,596
13	9,873
14	9,869
15	12,273
16	13,724
17	11,232
18	8,370
19	8,592
20	10,718
21	8,400
22	8,400
23	9,196
24	9,276
25	9,276
26	9,276
27	9,276
28	9,249
29	13,814
30	17,057
31	13,816
32	15,352
33	12,715
34	9,860

Parcel Area Table	
PARCEL NO.	AREA (S.F.)
35	9,400
36	9,628
37	9,628
38	9,659
39	9,431
40	8,836
41	8,400
42	8,400
43	8,732
44	9,038
45	8,975
46	12,734
47	10,961
48	10,602
49	11,325
50	11,255
51	10,019
52	10,957
53	12,174
54	9,126
55	9,126
56	9,126
57	9,696
58	11,955
59	11,955
60	8,464
61	9,455
62	9,455
63	9,401
64	8,400
65	10,630
66	12,031
67	11,105
68	13,812

SINGLE FAMILY SITE DATA TABLE:

SITE AREA: 41.06 ACRES GROSS
4.48 WETLAND ACRES
35.00 ACRES NET (NO R.O.W. OR WETLAND AREA)
7.68 OPEN SPACE ACRES

ZONING: EXISTING: R1-A, SINGLE FAMILY RESIDENTIAL
PROPOSED: PD, PLANNED DEVELOPMENT

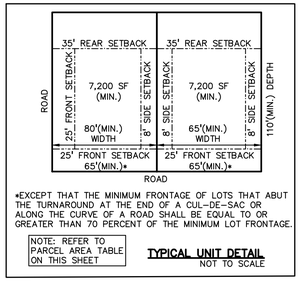
PROPOSED USE: 68 UNIT SINGLE FAMILY HOME CONDOMINIUM (1.9 UNITS PER ACRE)

OPEN SPACE:
MINIMUM OPEN SPACE REQUIRED = 15% OF NET SITE AREA
PROVIDED OPEN SPACE = 7.69/35.00 = 22.0%

WETLANDS:
EGLE WETLAND IMPACT: 0.72 ACRES

DEVELOPMENT NOTES:

1. EGLE COMPLETED A LEVEL 3 WETLAND IDENTIFICATION PROGRAM REPORT ON AUGUST 4, 2022.
2. UPON COMPLETION OF ANY WORK WITHIN THE WETLAND SETBACK, THE AREA SHALL BE RESTORED TO ITS NATIVE VEGETATIVE STATE.
3. A WETLAND SETBACK RESTORATION PLAN AND A WETLAND RESTORATION BOND SHALL BE REQUIRED TO ENSURE PROPER RESTORATION.
4. A SIDEWALK ALONG HILL ROAD SHALL BE CONSTRUCTED AS SHOWN ON THE SITE PLAN. TO LIMIT WETLAND IMPACTS AND REDUCE SIDEWALKS TO "NO WHERE", A CONTRIBUTION TO THE WHITE LAKE SIDEWALK FUND SHALL BE ESTABLISHED.
5. BASE ON A DETAILED ENGINEERING ANALYSIS, THE PROPOSED MAXIMUM ALLOWABLE DISCHARGE RATE FROM THE PROPOSED DEVELOPMENT DOES NOT EXCEED THE EXISTING RUNOFF FOR THE 100-YEAR STORM EVENT. THE PROPOSED CONTRIBUTING FLOW THROUGH THE CULVERT UNDER M-59 IS NOT INCREASED BY THE DEVELOPMENT.
6. THE DEVELOPER SHALL CONSTRUCT A SANITARY SEWER LINE ALONG HILL ROAD TO THE FURTHEST EXTEND POSSIBLE. TO SUPPLEMENT THE SHORTENED LENGTH A CONTRIBUTION TO THE TOWNSHIP SANITARY SEWER FUND SHALL BE MADE. IN ADDITION, A CONSTRUCTION EASEMENT SHALL BE PROVIDED TO THE TOWNSHIP AT THE NORTH END OF THE PROPERTY ALONG HILL ROAD.
7. A SECONDARY WATERMAIN CONNECTION IS TO BE PROVIDED.



*EXCEPT THAT THE MINIMUM FRONTAGE OF LOTS THAT ABUT THE TURNAROUND AT THE END OF A CUL-DE-SAC OR ALONG THE CURVE OF A ROAD SHALL BE EQUAL TO OR GREATER THAN 70 PERCENT OF THE MINIMUM LOT FRONTAGE.

NOTE: REFER TO PARCEL AREA TABLE ON THIS SHEET

TYPICAL UNIT DETAIL
NOT TO SCALE

PEA GROUP
t: 844.813.2949
www.peagroup.com

STATE OF MICHIGAN
BRETT STURGEON HOLLANDSWORTH
LICENSED PROFESSIONAL ENGINEER
License No. 6201064949

NORTH

0 40 80 160
SCALE: 1" = 80'

811 Know what's below. Call before you dig.

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE LOCATIONS AND ARE NOT WARRANTED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

KEY MAP

CLIENT
WHITE LAKE HILL, LLC
31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - SINGLE FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

REVISIONS

FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

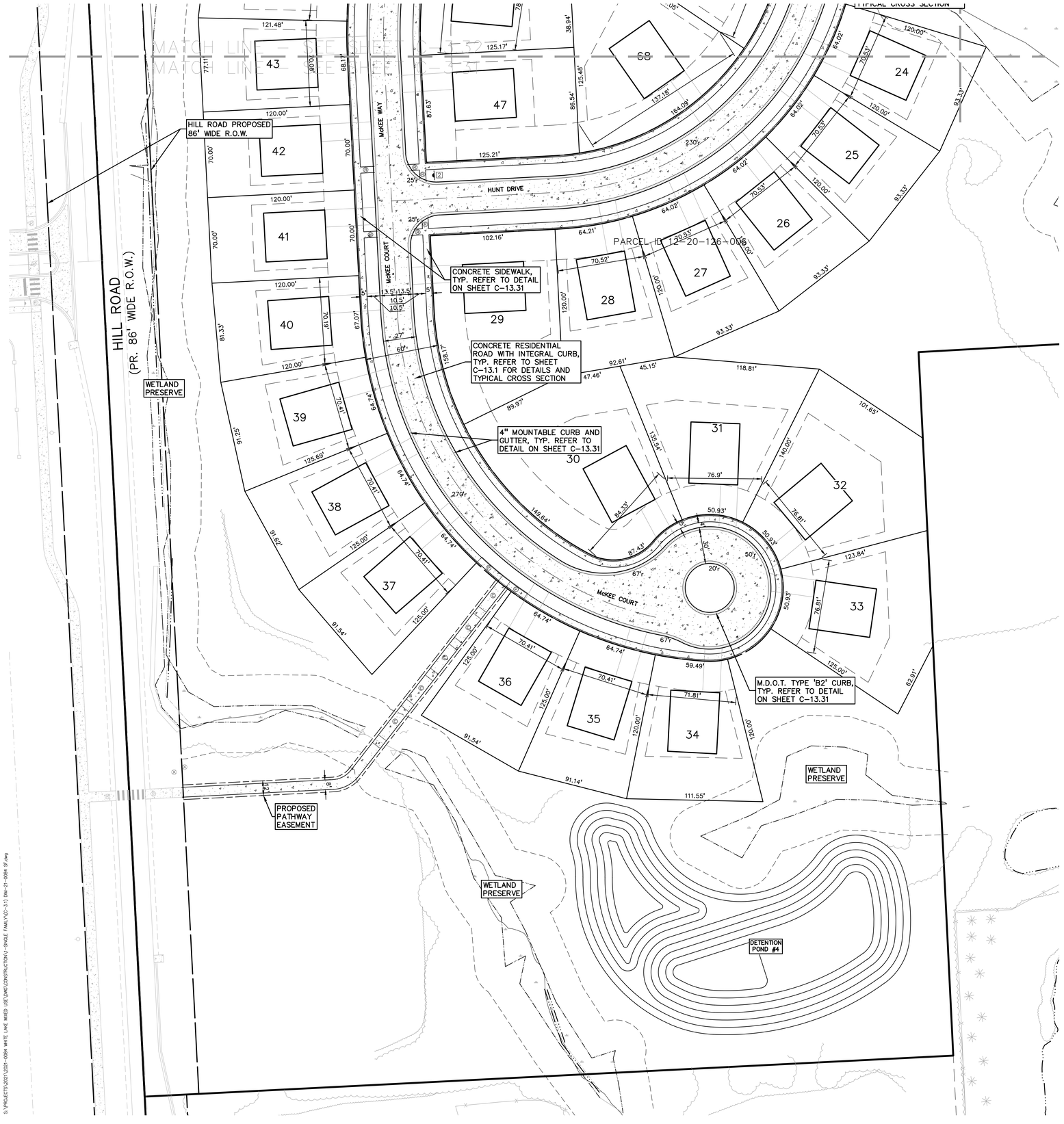
ORIGINAL ISSUE DATE:
MAY 8, 2025

DRAWING TITLE
DIMENSION AND PAVING PLAN - OVERALL

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-3.30

S:\PROJECTS\2021\2021-0084 WHITE LAKE MIXED USE\DWG\CONSTRUCTION\1-SINGLE FAMILY\(C-3.0) DIM-21-0084 SF.dwg



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- ASPHALT PAVEMENT (STD DUTY / HEAVY DUTY / DEEP STRENGTH)
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- REVERSE GUTTER PAN
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SIDEWALK RAMP LEGEND:

SIDEWALK RAMP 'TYPE R'	Ⓡ
SIDEWALK RAMP 'TYPE F'	Ⓕ
SIDEWALK RAMP 'TYPE P'	Ⓟ
SIDEWALK RAMP 'TYPE C'	Ⓒ
SIDEWALK RAMP 'TYPE D'	Ⓓ
CURB DROP ONLY	Ⓧ

REFER TO LATEST MDOT R-28 STANDARD RAMP AND DETECTABLE WARNING DETAILS

SIGN LEGEND:

'NO PARKING FIRE LANE' SIGN	[1]
'STOP' SIGN	[2]
'BARRIER FREE PARKING' SIGN	[3]
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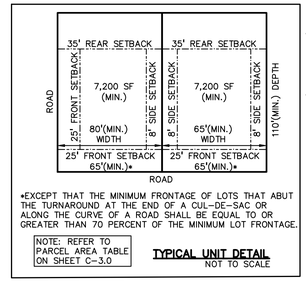
REFER TO DETAIL SHEET FOR SIGN DETAILS



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NORTH

0 20 40 80
SCALE: 1" = 40'

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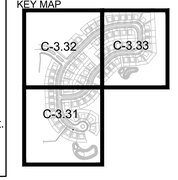

CLIENT
WHITE LAKE HILL, LLC
31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - SINGLE FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

REVISIONS	
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
MAY 8, 2025

DRAWING TITLE
DIMENSION AND PAVING PLAN - SOUTH

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-3.31

S:\PROJECTS\2021\2021-0084 WHITE LAKE MIXED USE\DWG\CONSTRUCTION\1-SINGLE FAMILY\[C-3.1] DIM-21-0084 SF.dwg

LEGEND:

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SIDEWALK RAMP LEGEND:

SIDEWALK RAMP 'TYPE R'	Ⓡ
SIDEWALK RAMP 'TYPE F'	Ⓕ
SIDEWALK RAMP 'TYPE P'	Ⓟ
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REFER TO LATEST MDOT R-28 STANDARD RAMP AND DETECTABLE WARNING DETAILS

SIGN LEGEND:

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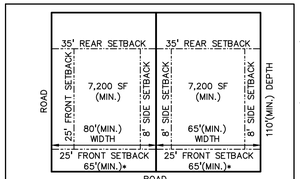

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LICENSED PROFESSIONAL ENGINEER

NORTH

0 20 40 80
SCALE: 1" = 40'

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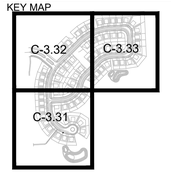

CLIENT
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31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - SINGLE FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

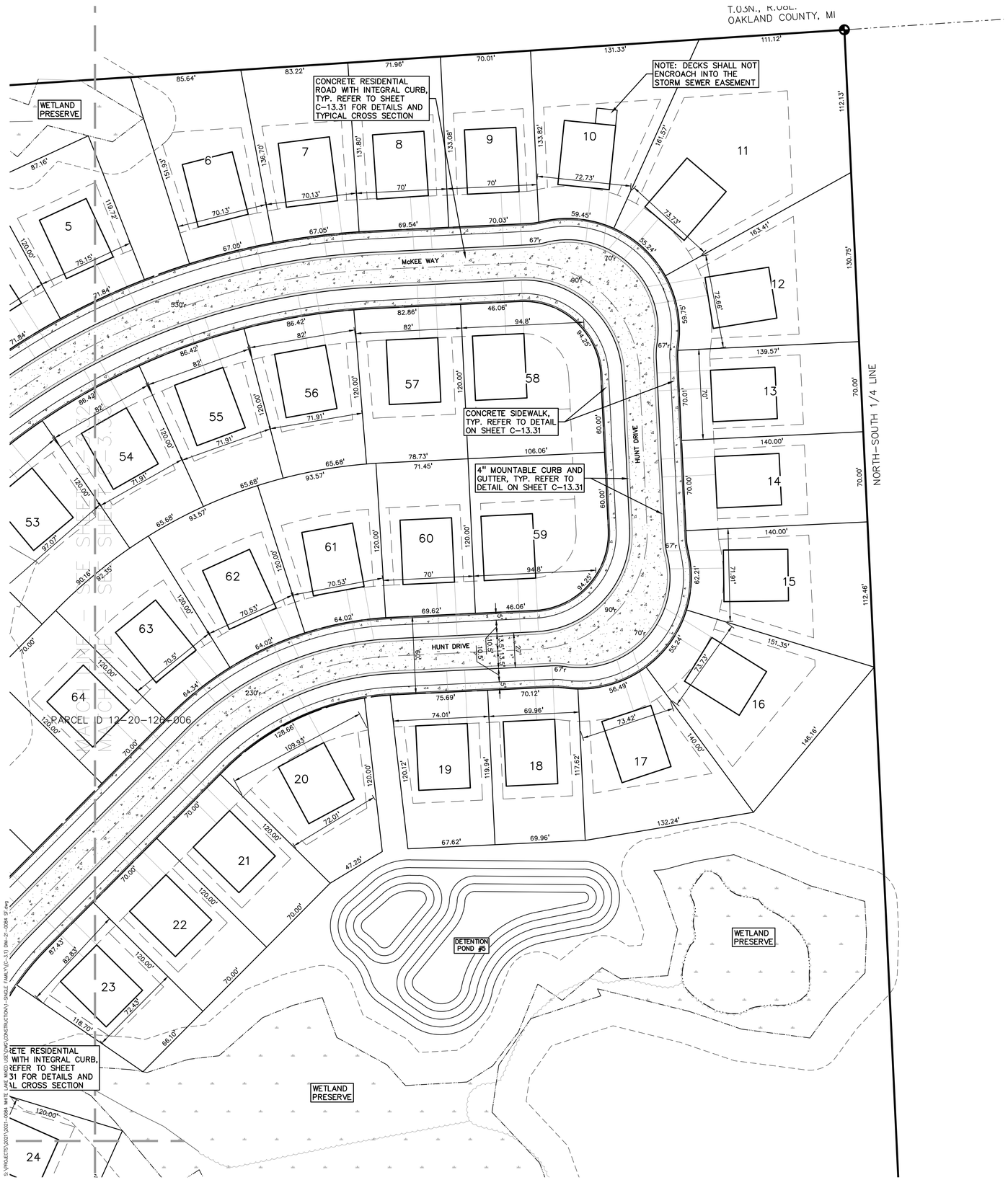
REVISIONS	
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
MAY 8, 2025

DRAWING TITLE
DIMENSION AND PAVING PLAN - WEST

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-3.32



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SIDEWALK RAMP LEGEND:

SIDEWALK RAMP 'TYPE R'	Ⓡ
SIDEWALK RAMP 'TYPE F'	Ⓕ
SIDEWALK RAMP 'TYPE P'	Ⓟ
SIDEWALK RAMP 'TYPE C'	Ⓒ
SIDEWALK RAMP 'TYPE D'	Ⓓ
CURB DROP ONLY	Ⓧ

REFER TO LATEST MDOT R-28 STANDARD RAMP AND DETECTABLE WARNING DETAILS

SIGN LEGEND:

'NO PARKING FIRE LANE' SIGN	1
'STOP' SIGN	2
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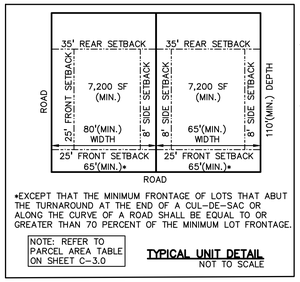

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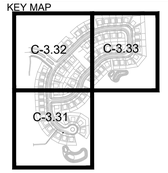

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HIGHLAND ROAD
WHITE LAKE TWP, MI

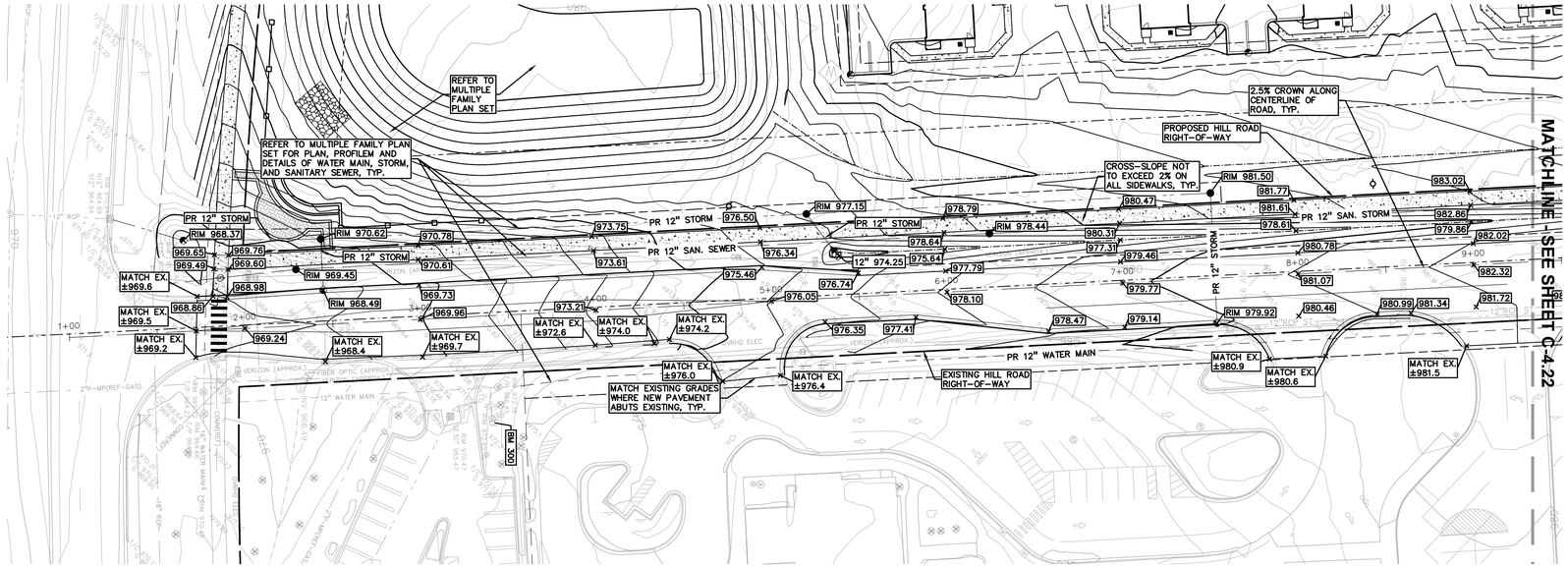
REVISIONS	
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
MAY 8, 2025

DRAWING TITLE
DIMENSION AND PAVING PLAN - EAST

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-3.33



GENERAL GRADING AND EARTHWORK NOTES:

THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT

1. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING TREES AND BRUSH AND REMOVE ALL THAT ARE NECESSARY TO GRADE SITE.
2. ALL GRADES ARE TO TOP OF PAVEMENT UNLESS OTHERWISE NOTED.
3. THE STAGING OF CONSTRUCTION ACTIVITIES SHALL OCCUR ONLY WITHIN THE SITE BOUNDARIES. ANY CONSTRUCTION ACTIVITIES OUTSIDE OF THE SITE BOUNDARIES SHALL BE AT THE SOLE RESPONSIBILITY AND RISK OF THE CONTRACTOR.
4. ALL SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL MEET THE REQUIREMENTS OF THE AUTHORIZED PUBLIC AGENCY OF JURISDICTION. AN EROSION CONTROL PERMIT MUST BE SECURED FROM THE COUNTY PRIOR TO CONSTRUCTION.
5. ALL EARTHWORK AND GRADING OPERATIONS SHALL BE PERFORMED IN ACCORDANCE WITH THE SOILS INVESTIGATION AND REPORT.
6. REFER TO SOIL EROSION CONTROL PLAN FOR ADDITIONAL SOIL EROSION AND SEDIMENTATION CONTROL MEASURES AND NOTES.
7. THE DETENTION BASIN SIDE SLOPES AND ALL SLOPE EXCEEDING 1:6 MUST BE STABILIZED BY SODDING OR BY PLACING A MULCH BLANKET PEGGED IN PLACE OVER SEED.
8. ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED OR SODDED IN ACCORDANCE WITH THE LANDSCAPE PLANS. PROVIDE A MINIMUM OF 3" OF TOPSOIL IN THESE AREAS UNLESS OTHERWISE NOTED.
9. THE CONTRACTOR SHALL NOTE EXISTING UNDERGROUND UTILITIES WITHIN AND ADJACENT TO THE SITE. BACKFILL FOR EXISTING UTILITY TRENCHES SHALL BE EXAMINED CRITICALLY. ANY TRENCHES FOUND TO HAVE SOFT, UNSTABLE OR UNSUITABLE BACKFILL MATERIAL IN THE OPINION OF THE THIRD PARTY TESTING COMPANY, THAT ARE TO BE WITHIN THE ZONE OF INFLUENCE OF PROPOSED BUILDINGS OR PAVEMENT SHALL BE COMPLETELY EXCAVATED AND BACKFILLED WITH SUITABLE MATERIAL.
10. ON-SITE FILL CAN BE USED IF THE SPECIFIED COMPACTION REQUIREMENTS CAN BE ACHIEVED. IF ON-SITE SOIL IS USED, IT SHOULD BE CLEAN AND FREE OF FROZEN SOIL, ORGANICS, OR OTHER DELETERIOUS MATERIALS.
11. THE FINAL SUBGRADE/EXISTING AGGREGATE BASE SHOULD BE THOROUGHLY PROOFROLLED USING A FULLY LOADED TANDEM AXLE TRUCK OR FRONT END LOADER UNDER THE OBSERVATION OF A GEOTECHNICAL/PAVEMENT ENGINEER. LOOSE OR YIELDING AREAS THAT CANNOT BE MECHANICALLY STABILIZED SHOULD BE REINFORCED USING GEOGRIDS OR REMOVED AND REPLACED WITH ENGINEERED FILL OR AS DICTATED BY FIELD CONDITIONS.
12. SUBGRADE UNDERCUTTING, INCLUDING BACKFILLING SHALL BE PERFORMED TO REPLACE MATERIALS SUSCEPTIBLE TO FROST HEAVING AND UNSTABLE SOIL CONDITIONS. ANY EXCAVATIONS THAT MAY BE REQUIRED BELOW THE TOPSOIL IN FILL AREAS OR BELOW PROPOSED SUBGRADE IN CUT AREAS WILL BE CLASSIFIED AS SUBGRADE UNDERCUTTING.
13. SUBGRADE UNDERCUTTING SHALL BE PERFORMED WHERE NECESSARY AND THE EXCAVATED MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR. ANY SUBGRADE UNDERCUTTING SHALL BE BACKFILLED AS RECOMMENDED IN THE GEOTECHNICAL ENGINEERING REPORT FOR THE PROJECT.
14. ANY SUBGRADE WATERING REQUIRED TO ACHIEVE REQUIRED DENSITY SHALL BE CONSIDERED INCIDENTAL TO THE JOB.

GRADING LEGEND:

- 980.91 / 622.50 — EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION: TYPICALLY TOP OF PAVEMENT IN PAVED AREAS, GUTTER GRADE IN CURB LINES.
- 670 — EXISTING CONTOUR
- 922 — PROPOSED CONTOUR
- PROPOSED REVERSE GUTTER PAN
- PROPOSED RIDGE LINE
- PROPOSED SWALE/DITCH

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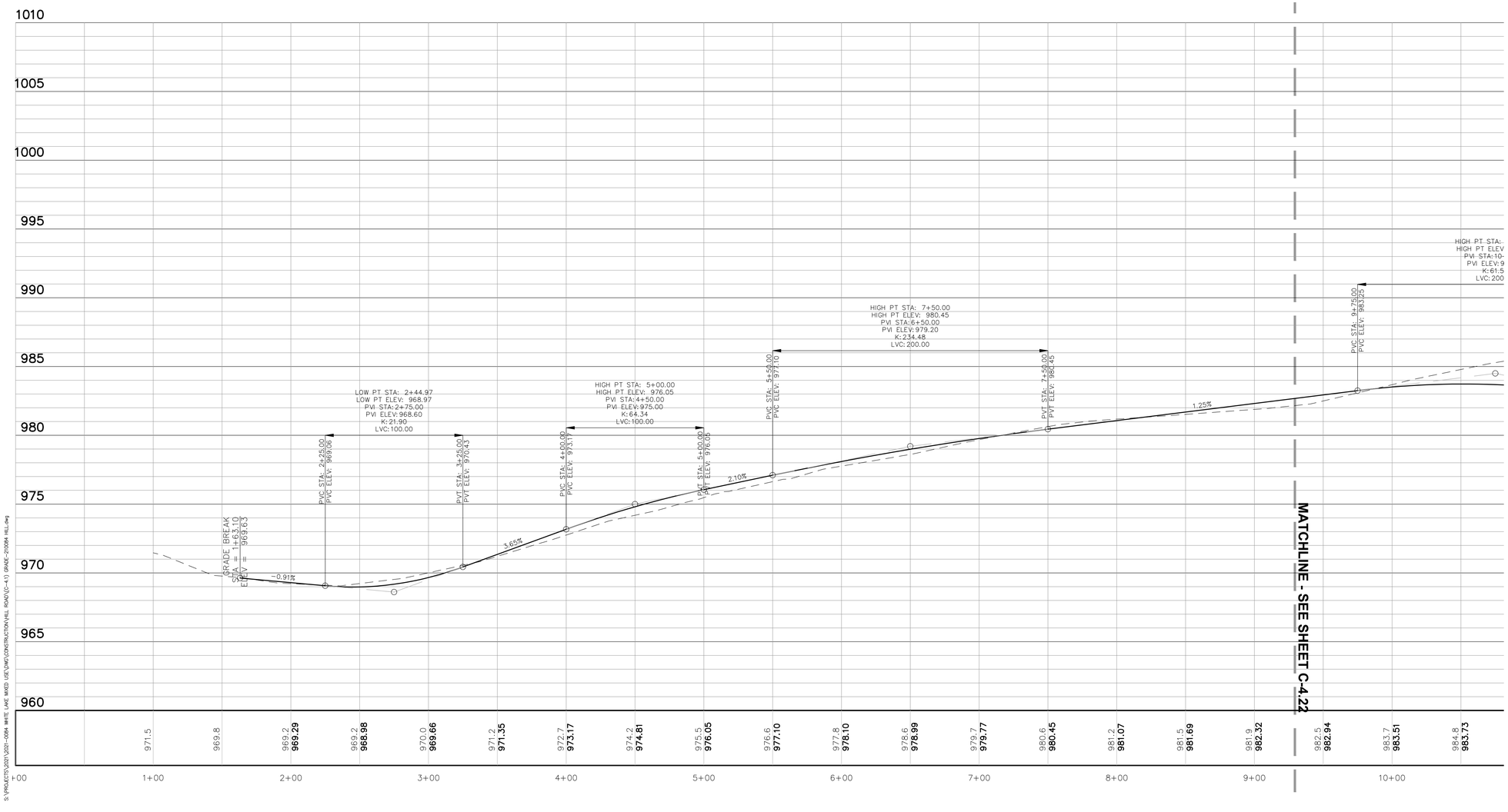

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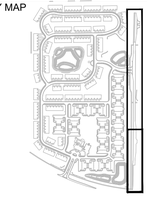

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FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - HILL ROAD
HIGHLAND ROAD
WHITE LAKE TWP, MI

REVISIONS

FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

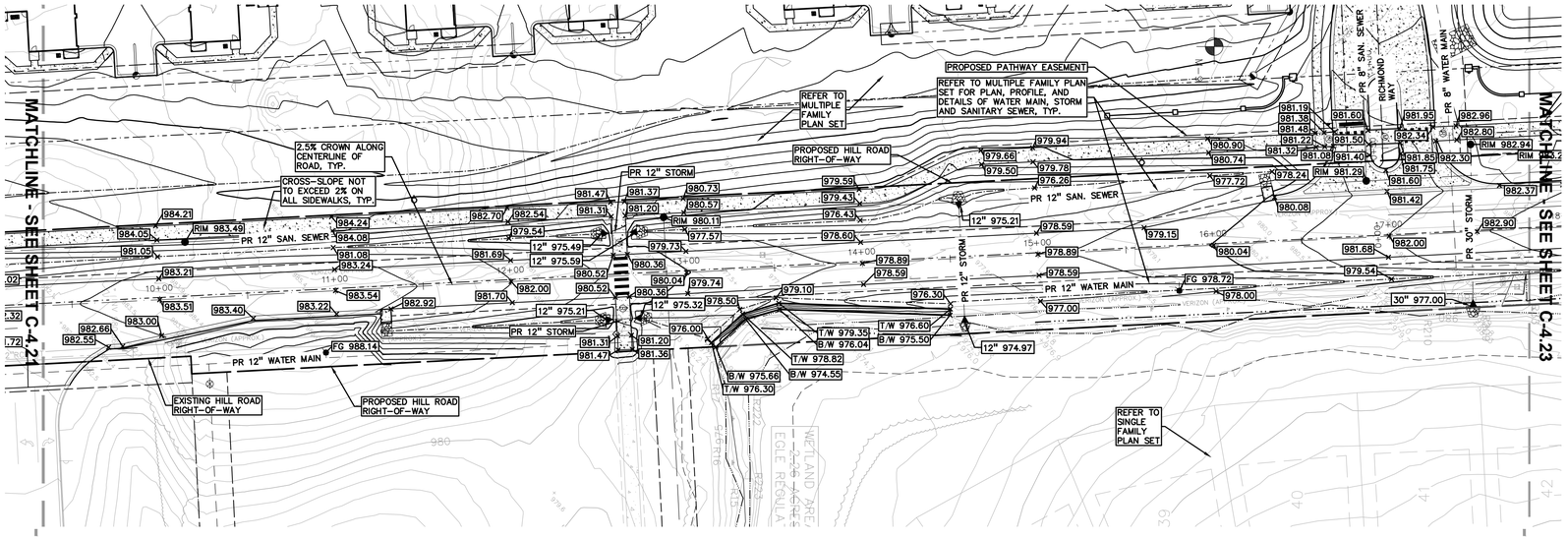
ORIGINAL ISSUE DATE:
MAY 8, 2025

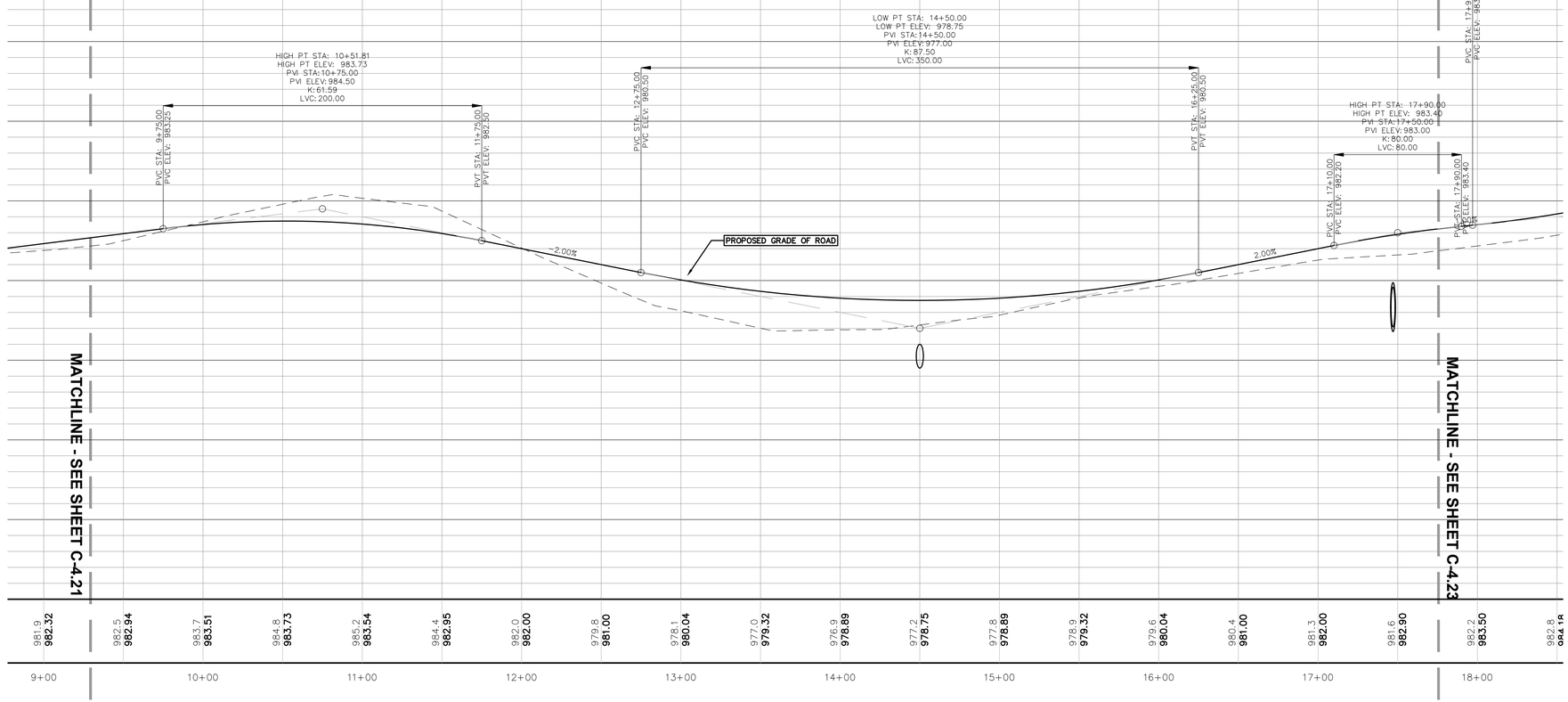
DRAWING TITLE
ROAD PLAN & PROFILE

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-4.21

S:\PROJECTS\2021\2021-0084 WHITE LAKE MIXED USE\CIVIL\CONSTRUCTION\HILL ROAD\[C-4.1] GRADE-21-0084 HILL.dwg





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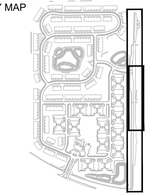

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DRAWING NUMBER:
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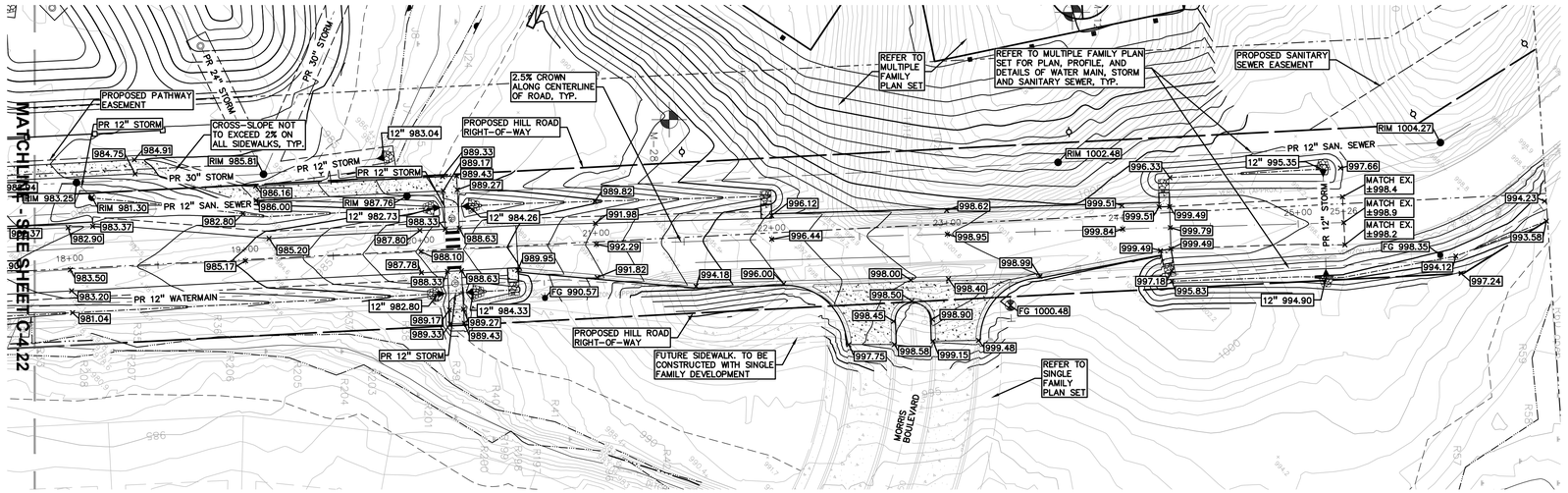
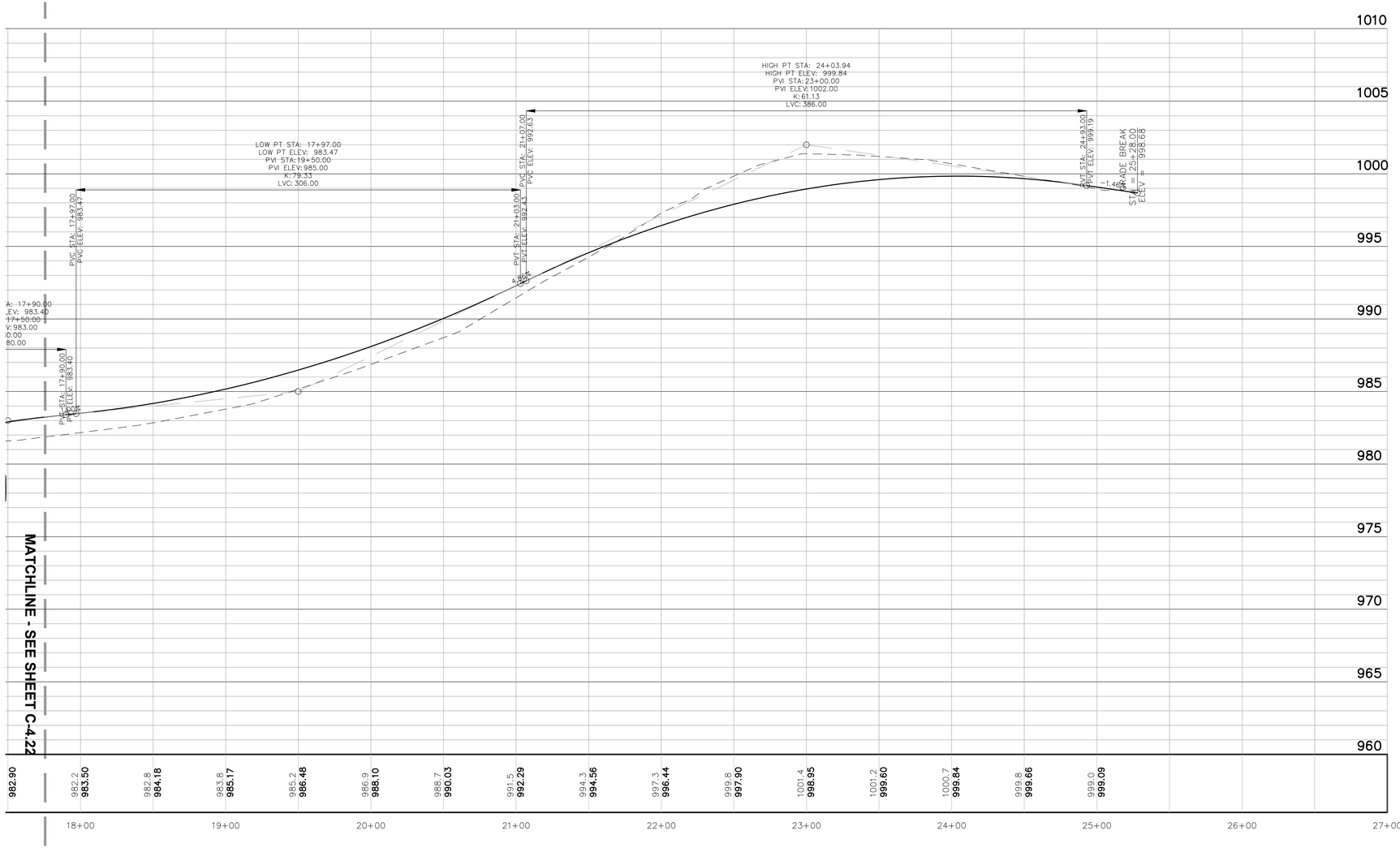
S:\PROJECTS\2021-0084 WHITE LAKE MIXED USE\PWT\CONSTRUCTION\HILL ROAD\[C-4.1] GRADE-210084 HILL.dwg





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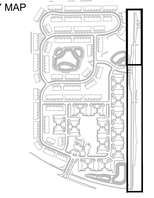

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ROAD PLAN & PROFILE

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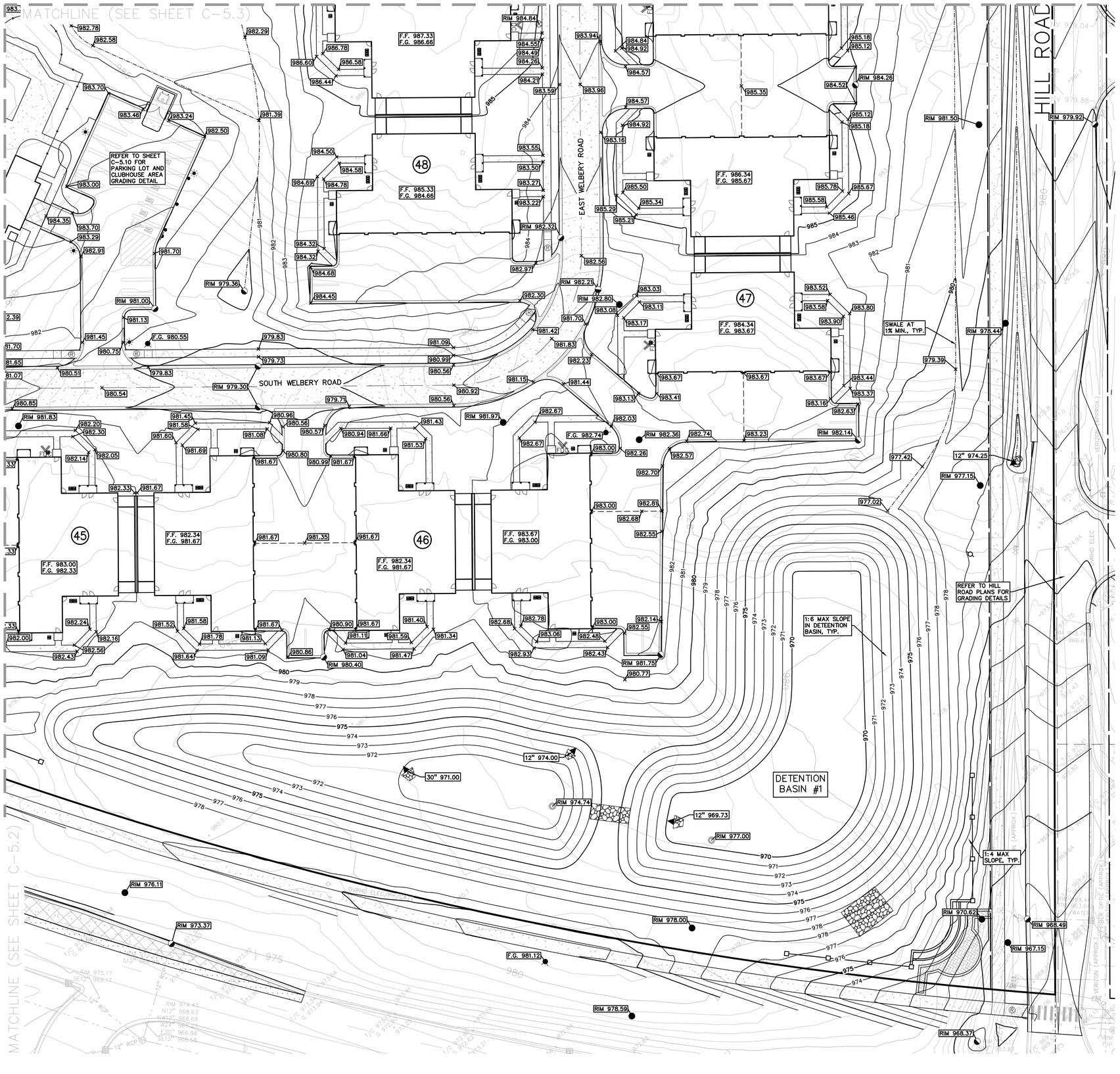
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-4.23

S:\PROJECTS\2021\2021-0084 WHITE LAKE MIXED USE\DWG\CONSTRUCTION\HILL ROAD\(C-4.1) GRADE- 210084 HILL.dwg



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GENERAL GRADING AND EARTHWORK NOTES:

THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT

1. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING TREES AND BRUSH AND REMOVE ALL THAT ARE NECESSARY TO GRADE SITE.
2. ALL GRADES ARE TO TOP OF PAVEMENT UNLESS OTHERWISE NOTED.
3. THE STAGING OF CONSTRUCTION ACTIVITIES SHALL OCCUR ONLY WITHIN THE SITE BOUNDARIES. ANY CONSTRUCTION ACTIVITIES OUTSIDE OF THE SITE BOUNDARIES SHALL BE AT THE SOLE RESPONSIBILITY AND RISK OF THE CONTRACTOR.
4. ALL SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL MEET THE REQUIREMENTS OF THE AUTHORIZED PUBLIC AGENCY OF JURISDICTION. AN EROSION CONTROL PERMIT MUST BE SECURED FROM THE COUNTY PRIOR TO CONSTRUCTION.
5. ALL EARTHWORK AND GRADING OPERATIONS SHALL BE PERFORMED IN ACCORDANCE WITH THE SOILS INVESTIGATION AND REPORT.
6. REFER TO SOIL EROSION CONTROL PLAN FOR ADDITIONAL SOIL EROSION AND SEDIMENTATION CONTROL MEASURES AND NOTES.
7. THE DETENTION BASIN SIDE SLOPES AND ALL SLOPE EXCEEDING 1:6 MUST BE STABILIZED BY SODDING OR BY PLACING A MULCH BLANKET PEGGED IN PLACE OVER SEED.
8. ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED OR SODDED IN ACCORDANCE WITH THE LANDSCAPE PLANS. PROVIDE A MINIMUM OF 3" OF TOPSOIL IN THESE AREAS UNLESS OTHERWISE NOTED.
9. THE CONTRACTOR SHALL NOTE EXISTING UNDERGROUND UTILITIES WITHIN AND ADJACENT TO THE SITE. BACKFILL FOR EXISTING UTILITY TRENCHES SHALL BE EXAMINED CRITICALLY. ANY TRENCHES FOUND TO HAVE SOFT, UNSTABLE OR UNSUITABLE BACKFILL MATERIAL, IN THE OPINION OF THE THIRD PARTY TESTING COMPANY, THAT ARE TO BE WITHIN THE ZONE OF INFLUENCE OF PROPOSED BUILDINGS OR PAVEMENT SHALL BE COMPLETELY EXCAVATED AND BACKFILLED WITH SUITABLE MATERIAL.
10. ON-SITE FILL CAN BE USED IF THE SPECIFIED COMPACTION REQUIREMENTS CAN BE ACHIEVED. IF ON-SITE SOIL IS USED, IT SHOULD BE CLEAN AND FREE OF FROZEN SOIL, ORGANICS, OR OTHER DELETERIOUS MATERIALS.
11. THE FINAL SUBGRADE/EXISTING AGGREGATE BASE SHOULD BE THOROUGHLY PROOFROLLED USING A FULLY LOADED TANDEM AXLE TRUCK OR FRONT END LOADER UNDER THE OBSERVATION OF A GEOTECHNICAL/PAVEMENT ENGINEER. LOOSE OR YIELDING AREAS THAT CANNOT BE MECHANICALLY STABILIZED SHOULD BE REINFORCED USING GEOGRIDS OR REMOVED AND REPLACED WITH ENGINEERED FILL OR AS DICTATED BY FIELD CONDITIONS.
12. SUBGRADE UNDERCUTTING, INCLUDING BACKFILLING SHALL BE PERFORMED TO REPLACE MATERIALS SUSCEPTIBLE TO FROST HEAVING AND UNSTABLE SOIL CONDITIONS. ANY EXCAVATIONS THAT MAY BE REQUIRED BELOW THE TOPSOIL IN FILL AREAS OR BELOW PROPOSED SUBGRADE IN CUT AREAS WILL BE CLASSIFIED AS SUBGRADE UNDERCUTTING.
13. SUBGRADE UNDERCUTTING SHALL BE PERFORMED WHERE NECESSARY AND THE EXCAVATED MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR. ANY SUBGRADE UNDERCUTTING SHALL BE BACKFILLED AS RECOMMENDED IN THE GEOTECHNICAL ENGINEERING REPORT FOR THE PROJECT.
14. ANY SUBGRADE WATERING REQUIRED TO ACHIEVE REQUIRED DENSITY SHALL BE CONSIDERED INCIDENTAL TO THE JOB.

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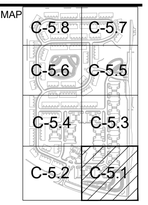

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DRAWING TITLE

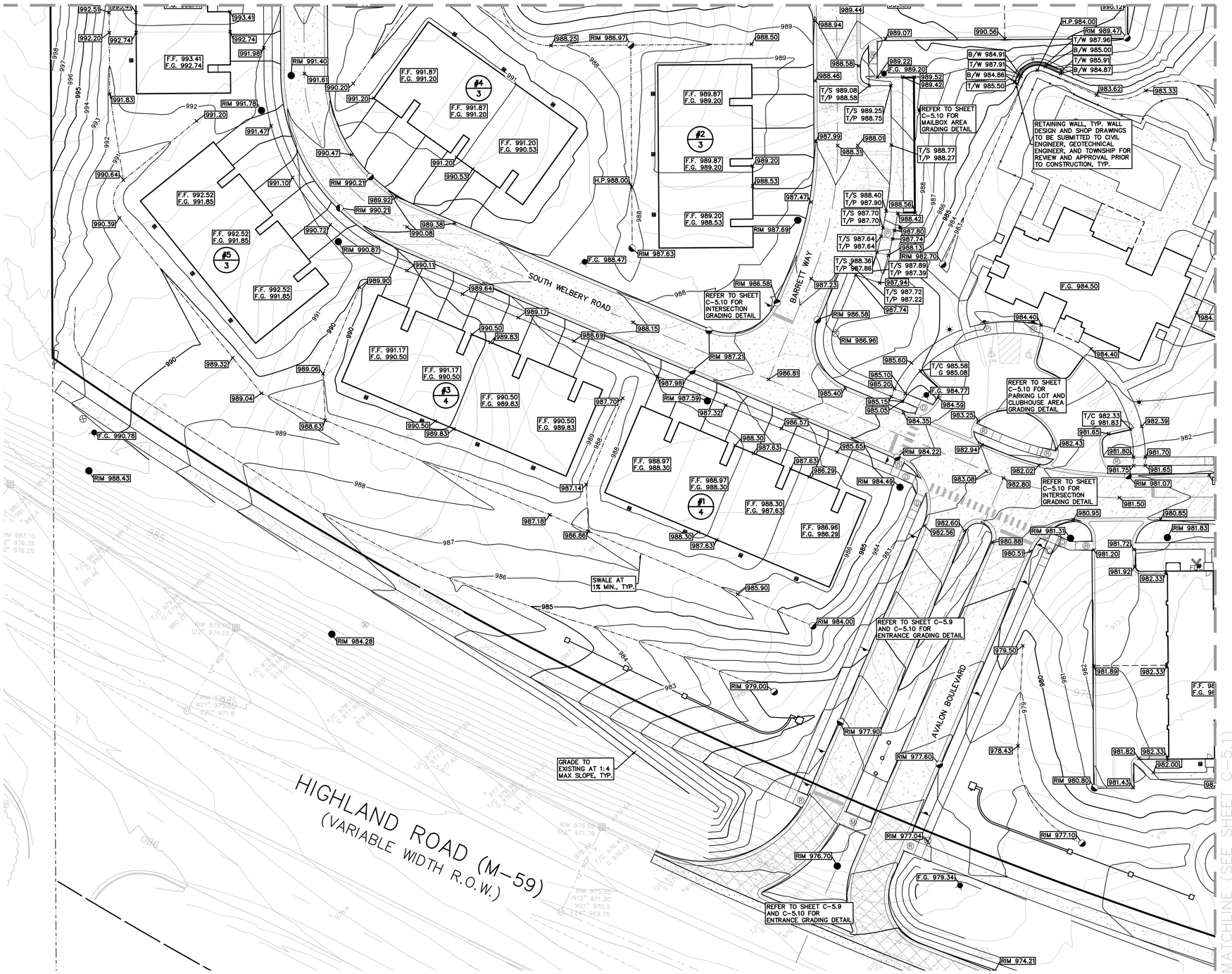
GRADING PLAN - 1

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:

C-5.1

MATCHLINE (SEE SHEET C-5.4)



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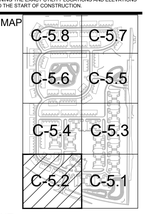

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FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

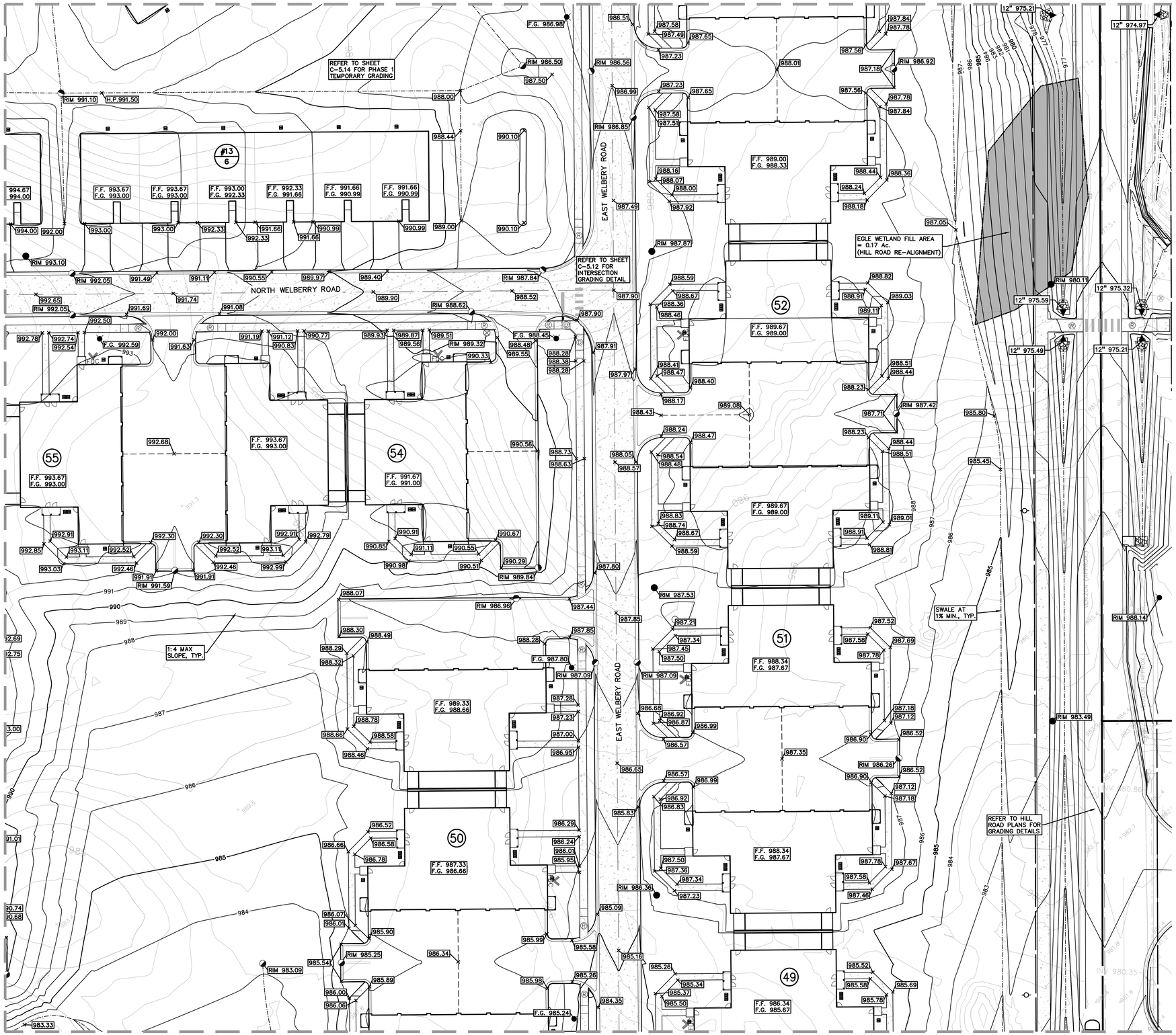
ORIGINAL ISSUE DATE:
DECEMBER 4, 2023

DRAWING TITLE
GRADING PLAN - 2

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-5.2

MATCHLINE (SEE SHEET C-5.5)



GRADING LEGEND:

- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION: TYPICALLY TOP OF PAVEMENT IN PAVED AREAS, GUTTER GRADE IN CURB LINES.
- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED REVERSE GUTTER PAN
- PROPOSED RIDGE LINE
- PROPOSED SWALE/DITCH

ABBREVIATIONS

T/C = TOP OF CURB	G = GUTTER GRADE
T/P = TOP OF PAVEMENT	FG = FINISH GRADE
T/S = TOP OF SIDEWALK	RIM = RIM ELEVATION
T/W = TOP OF WALL	B/W = BOTTOM OF WALL

REFER TO GRADING NOTES ON SHEET C-5.1.

RETAINING WALL NOTE:
TOP OF WALL (T/W) AND BOTTOM OF WALL (B/W) GRADES ARE THE FINISH GRADE AT THE TOP AND BOTTOM OF THE RETAINING WALL, NOT ACTUAL TOP AND BOTTOM OF THE WALL STRUCTURE.

ALL RETAINING WALLS OVER 30" HIGH WILL HAVE A 42" HIGH DECORATIVE FENCE ON TOP.

NOTE:
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PEA GROUP
t: 844.813.2949
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STATE OF MICHIGAN
BRETT STURGEON HOLLANDSWORTH
LICENSED PROFESSIONAL ENGINEER
License No. 6201064949

NORTH

0 15 30 60
SCALE: 1" = 30'

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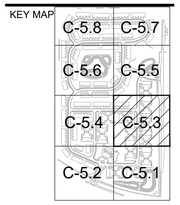
KEY MAP



CLIENT
WHITE LAKE HILL, LLC
31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - MULTI FAMILY
HIGHLAND ROAD
WHITE LAKE TWP. MI

REVISIONS	
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ORIGINAL ISSUE DATE:
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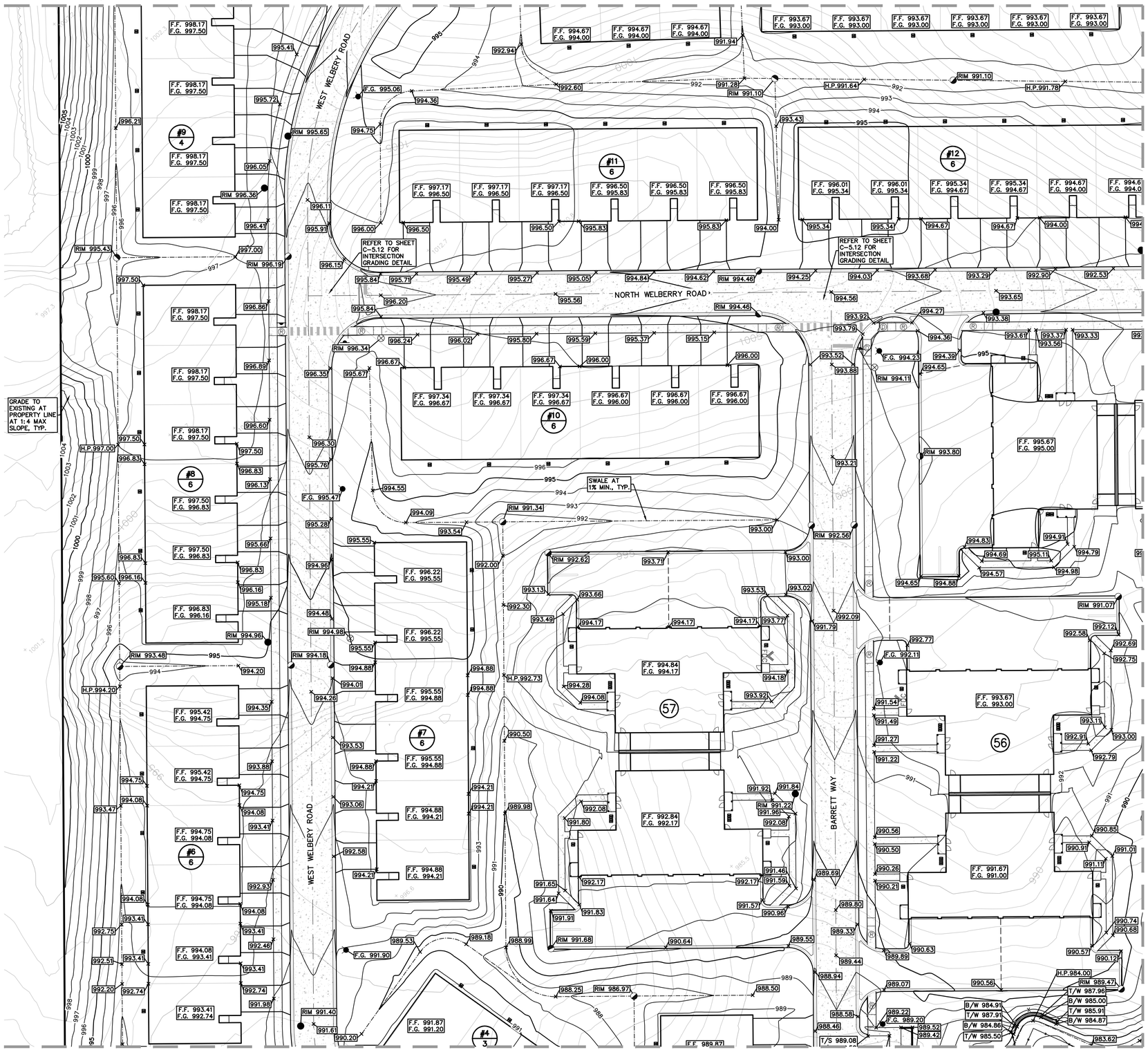
DRAWING TITLE
GRADING PLAN - 3

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-5.3



GRADING LEGEND:

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- PROPOSED SPOT ELEVATION: TYPICALLY TOP OF PAVEMENT IN PAVED AREAS, GUTTER GRADE IN CURB LINES.
- EXISTING CONTOUR
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ABBREVIATIONS

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REFER TO GRADING NOTES ON SHEET C-5.1.

RETAINING WALL NOTE:
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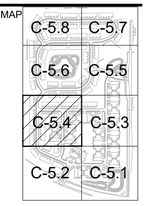

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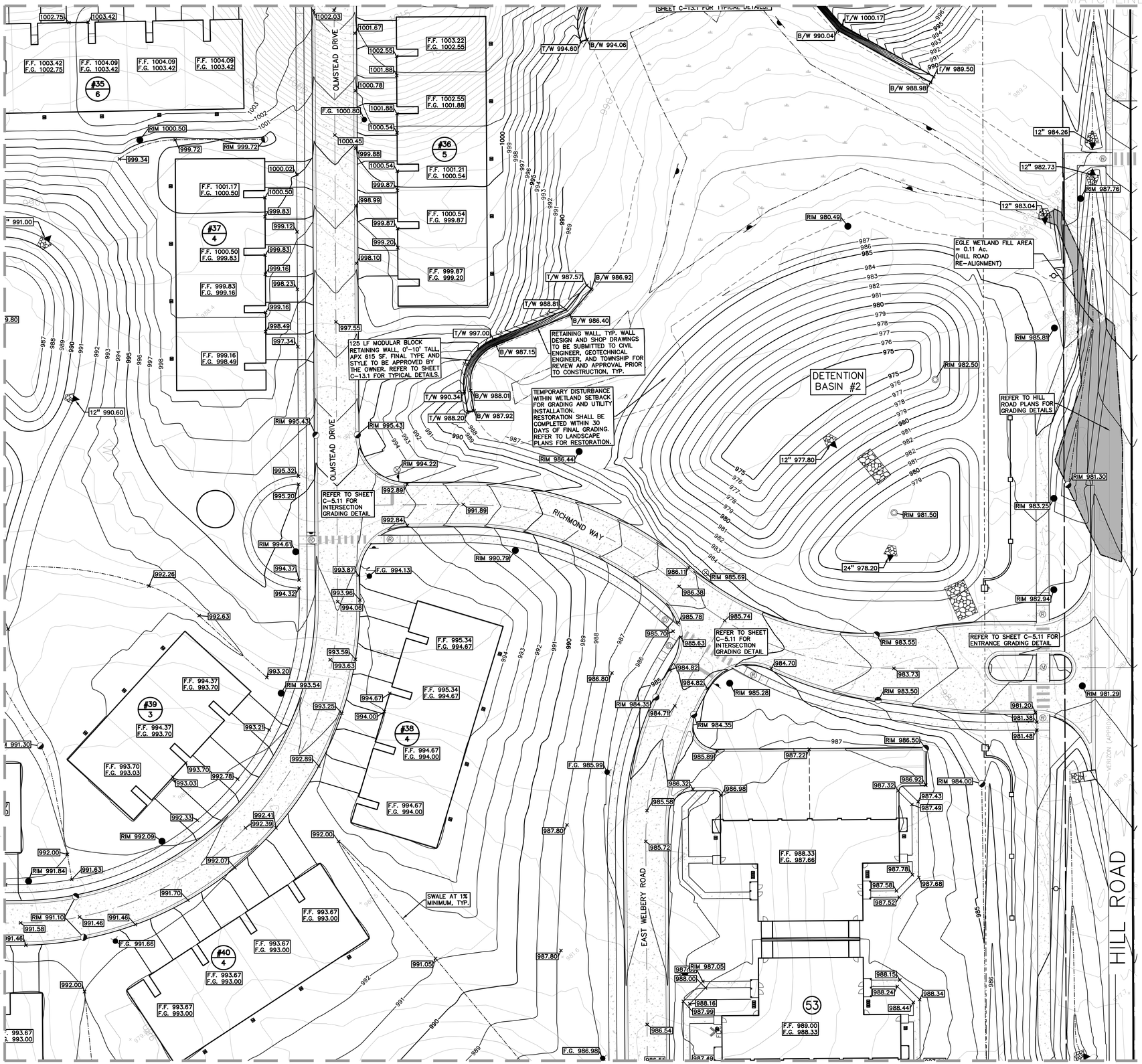
DRAWING TITLE
GRADING PLAN - 4

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-5.4

MATCHLINE (SEE SHEET C-5.7)



MATCHLINE (SEE SHEET C-5.6)

MATCHLINE (SEE SHEET C-5.3)

GRADING LEGEND:

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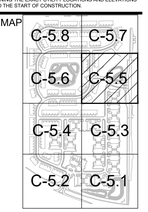

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DRAWING TITLE
GRADING PLAN - 5

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-5.5

MATCHLINE (SEE SHEET C-5.8)

MATCHLINE (SEE SHEET C-5.4)

MATCHLINE (SEE SHEET C-5.5)

RETAINING WALL, TYP. WALL DESIGN AND SHOP DRAWINGS TO BE SUBMITTED TO CIVIL ENGINEER, GEOTECHNICAL ENGINEER, AND TOWNSHIP FOR REVIEW AND APPROVAL PRIOR TO CONSTRUCTION, TYP.

270 LF MODULAR BLOCK RETAINING WALL, 0'-16.5' TALL, APX 2,600 SF. FINAL TYPE AND STYLE TO BE APPROVED BY THE OWNER. REFER TO SHEET C-13.1 FOR TYPICAL DETAILS.

GRADE TO EXISTING AT PROPERTY LINE AT 1:4 MAX SLOPE, TYP.

WEST TAYLOR STREET

1:6 SLOPE IN DETENTION BASIN, TYP.

DETENTION BASIN #3

SWALE AT 1% MINIMUM, TYP.

OLMSTEAD DRIVE

REFER TO SHEET C-5.12 FOR INTERSECTION GRADING DETAIL

GRADING LEGEND:

- +496.91 — EXISTING SPOT ELEVATION
- 622.50 — PROPOSED SPOT ELEVATION: TYPICALLY TOP OF PAVEMENT IN PAVED AREAS, GUTTER GRADE IN CURB LINES.
- 670 — EXISTING CONTOUR
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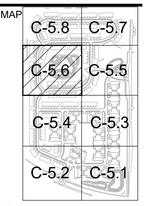

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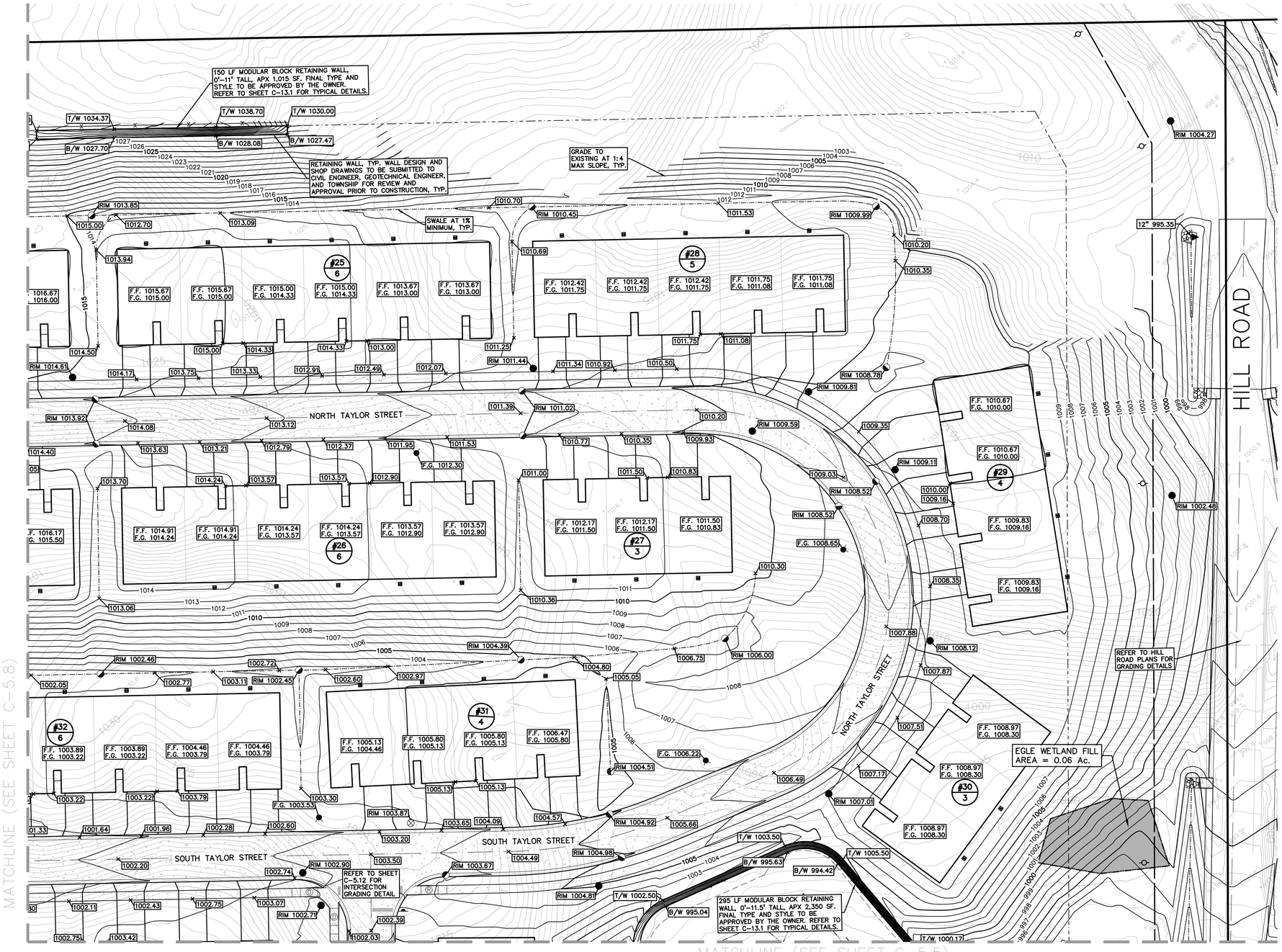
DRAWING TITLE
GRADING PLAN - 6

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-5.6



GRADING LEGEND:

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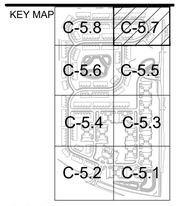

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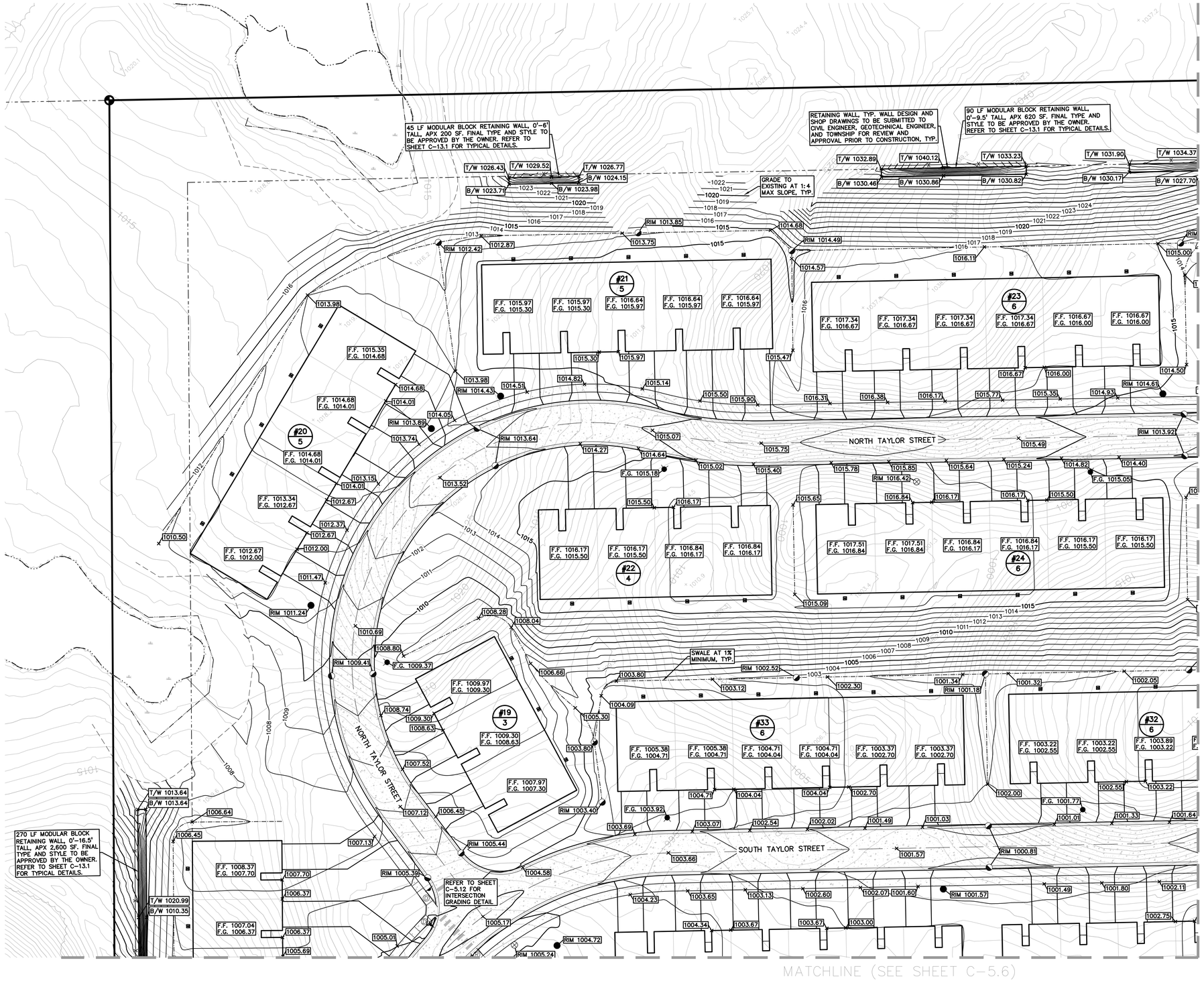
DRAWING TITLE
GRADING PLAN - 7

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-5.7



GRADING LEGEND:

- +698.91 — EXISTING SPOT ELEVATION
- 622.50 — PROPOSED SPOT ELEVATION: TYPICALLY TOP OF PAVEMENT IN PAVED AREAS, GUTTER GRADE IN CURB LINES.
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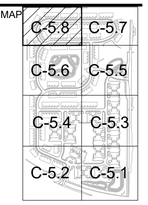

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DRAWING TITLE
GRADING PLAN - 8

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-5.8

GRADING LEGEND:

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GENERAL GRADING AND EARTHWORK NOTES:

THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT

1. CONTRACTOR SHALL FIELD VERIFY ALL EXISTING TREES AND BRUSH AND REMOVE ALL THAT ARE NECESSARY TO GRADE SITE.
2. ALL GRADES ARE TO TOP OF PAVEMENT UNLESS OTHERWISE NOTED.
3. THE STAGING OF CONSTRUCTION ACTIVITIES SHALL OCCUR ONLY WITHIN THE SITE BOUNDARIES. ANY CONSTRUCTION ACTIVITIES OUTSIDE OF THE SITE BOUNDARIES SHALL BE AT THE SOLE RESPONSIBILITY AND RISK OF THE CONTRACTOR.
4. ALL SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL MEET THE REQUIREMENTS OF THE AUTHORIZED PUBLIC AGENCY OF JURISDICTION. AN EROSION CONTROL PERMIT MUST BE SECURED FROM THE COUNTY PRIOR TO CONSTRUCTION.
5. ALL EARTHWORK AND GRADING OPERATIONS SHALL BE PERFORMED IN ACCORDANCE WITH THE SOILS INVESTIGATION AND REPORT.
6. REFER TO SOIL EROSION CONTROL PLAN FOR ADDITIONAL SOIL EROSION AND SEDIMENTATION CONTROL MEASURES AND NOTES.
7. THE DETENTION BASIN SIDE SLOPES AND ALL SLOPE EXCEEDING 1:6 MUST BE STABILIZED BY SODDING OR BY PLACING A MULCH BLANKET PEGGED IN PLACE OVER SEED.
8. ALL DISTURBED AREAS SHALL BE SEEDED AND MULCHED OR SODDED IN ACCORDANCE WITH THE LANDSCAPE PLANS. PROVIDE A MINIMUM OF 3" OF TOPSOIL IN THESE AREAS UNLESS OTHERWISE NOTED.
9. THE CONTRACTOR SHALL NOTE EXISTING UNDERGROUND UTILITIES WITHIN AND ADJACENT TO THE SITE. BACKFILL FOR EXISTING UTILITY TRENCHES SHALL BE EXAMINED CRITICALLY. ANY TRENCHES FOUND TO HAVE SOFT, UNSTABLE OR UNSUITABLE BACKFILL MATERIAL, IN THE OPINION OF THE THIRD PARTY TESTING COMPANY, THAT ARE TO BE WITHIN THE ZONE OF INFLUENCE OF PROPOSED BUILDINGS OR PAVEMENT SHALL BE COMPLETELY EXCAVATED AND BACKFILLED WITH SUITABLE MATERIAL.
10. ON-SITE FILL CAN BE USED IF THE SPECIFIED COMPACTION REQUIREMENTS CAN BE ACHIEVED. IF ON-SITE SOIL IS USED, IT SHOULD BE CLEAN AND FREE OF FROZEN SOIL, ORGANICS, OR OTHER DELETERIOUS MATERIALS.
11. THE FINAL SUBGRADE/EXISTING AGGREGATE BASE SHOULD BE THOROUGHLY PROOFROLLED USING A FULLY LOADED TANDEM AXLE TRUCK OR FRONT END LOADER UNDER THE OBSERVATION OF A GEOTECHNICAL/PAVEMENT ENGINEER. LOOSE OR YIELDING AREAS THAT CANNOT BE MECHANICALLY STABILIZED SHOULD BE REINFORCED USING GEOGRIDS OR REMOVED AND REPLACED WITH ENGINEERED FILL OR AS DICTATED BY FIELD CONDITIONS.
12. SUBGRADE UNDERCUTTING, INCLUDING BACKFILLING SHALL BE PERFORMED TO REPLACE MATERIALS SUSCEPTIBLE TO FROST HEAVING AND UNSTABLE SOIL CONDITIONS. ANY EXCAVATIONS THAT MAY BE REQUIRED BELOW THE TOPSOIL IN FILL AREAS OR BELOW PROPOSED SUBGRADE IN CUT AREAS WILL BE CLASSIFIED AS SUBGRADE UNDERCUTTING.
13. SUBGRADE UNDERCUTTING SHALL BE PERFORMED WHERE NECESSARY AND THE EXCAVATED MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR. ANY SUBGRADE UNDERCUTTING SHALL BE BACKFILLED AS RECOMMENDED IN THE GEOTECHNICAL ENGINEERING REPORT FOR THE PROJECT.
14. ANY SUBGRADE WATERING REQUIRED TO ACHIEVE REQUIRED DENSITY SHALL BE CONSIDERED INCIDENTAL TO THE JOB.

EARTHWORK BALANCING NOTE:

THE CONTRACTOR SHALL BE RESPONSIBLE FOR IMPORTING OR EXPORTING ALL MATERIALS AS REQUIRED TO PROPERLY GRADE THIS PROJECT TO THE FINISHED ELEVATIONS SHOWN ON THE APPROVED PLANS. THE CONTRACTOR SHALL MAKE THEIR OWN DETERMINATION OF CUT AND FILL QUANTITIES AND ALLOW FOR REMOVAL OF EXCESS OR IMPORTATION OF ADDITIONAL MATERIAL AT NO ADDITIONAL COST TO THE OWNER.

SIDEWALK RAMP LEGEND:

SIDEWALK RAMP 'TYPE R'	Ⓡ
SIDEWALK RAMP 'TYPE F'	Ⓕ
SIDEWALK RAMP 'TYPE P'	Ⓟ
SIDEWALK RAMP 'TYPE C'	Ⓒ
SIDEWALK RAMP 'TYPE D'	Ⓓ
CURB DROP ONLY	Ⓧ

REFER TO LATEST MDOT R-28 STANDARD RAMP AND DETECTABLE WARNING DETAILS

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STATE OF MICHIGAN
BRETT STURGEON HOLLANDSWORTH
LICENSED PROFESSIONAL ENGINEER
License No. 6201064949

NORTH

0 20 40 80
SCALE: 1" = 40'

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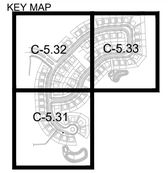
KEY MAP



CLIENT

WHITE LAKE HILL, LLC
31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE

THE AVALON - SINGLE FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

REVISIONS

FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
MAY 8, 2025

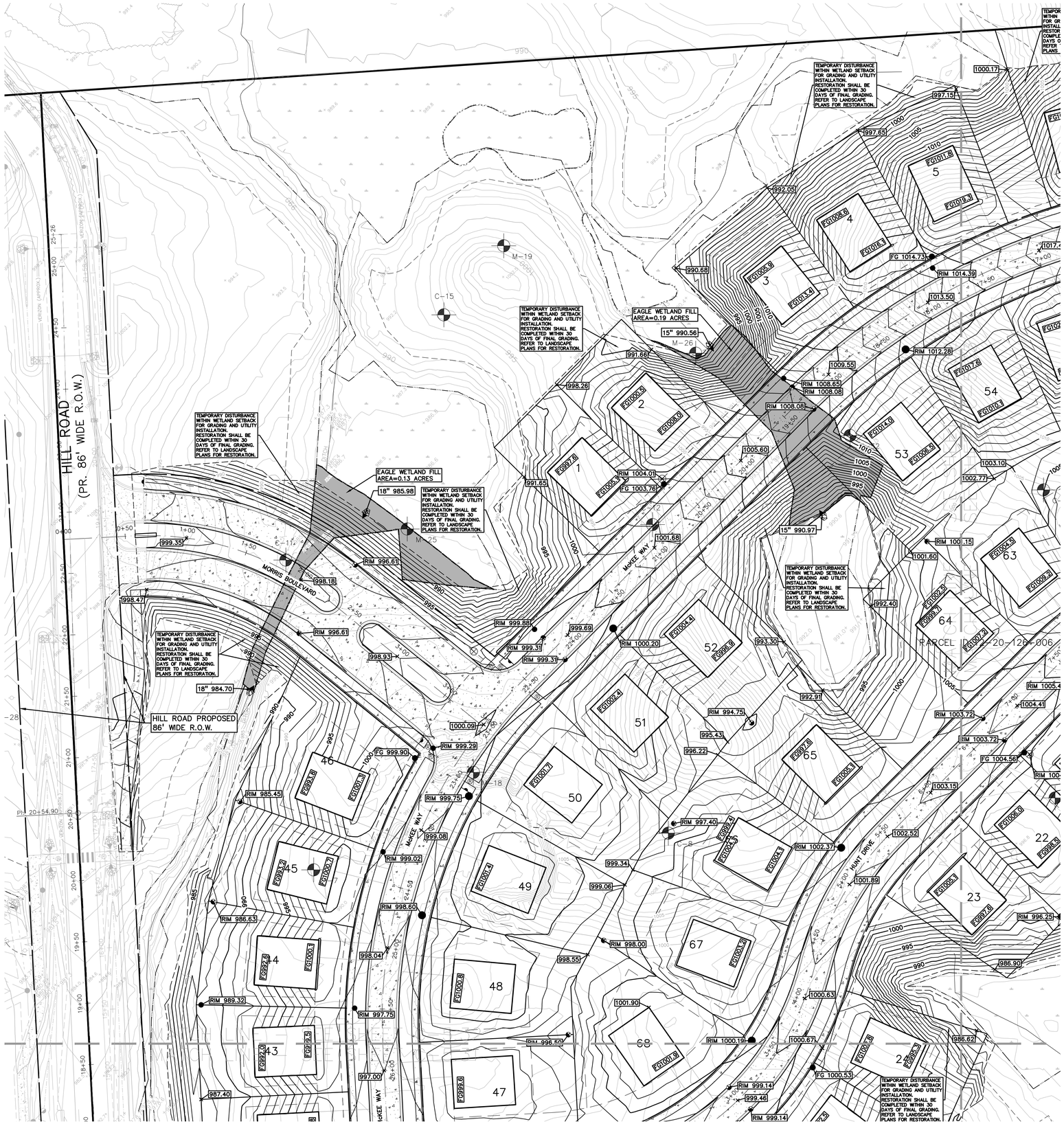
DRAWING TITLE

GRADING PLAN - SOUTH

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:

C-5.31



GRADING LEGEND:

- EXISTING SPOT ELEVATION
- PROPOSED SPOT ELEVATION: TYPICALLY TOP OF PAVEMENT IN PAVED AREAS, GUTTER GRADE IN CURB LINES.
- EXISTING CONTOUR
- PROPOSED CONTOUR
- PROPOSED REVERSE GUTTER PAN
- PROPOSED RIDGE LINE
- PROPOSED SWALE/DITCH

ABBREVIATIONS

T/C = TOP OF CURB	G = GUTTER GRADE
T/P = TOP OF PAVEMENT	FG = FINISH GRADE
T/S = TOP OF SIDEWALK	RIM = RIM ELEVATION
T/W = TOP OF WALL	B/W = BOTTOM OF WALL

REFER TO GRADING NOTES ON SHEET C-5.1.

SIDEWALK RAMP LEGEND:

SIDEWALK RAMP 'TYPE R'	Ⓡ
SIDEWALK RAMP 'TYPE F'	Ⓕ
SIDEWALK RAMP 'TYPE P'	Ⓟ
SIDEWALK RAMP 'TYPE C'	Ⓒ
SIDEWALK RAMP 'TYPE D'	Ⓓ
CURB DROP ONLY	Ⓧ

REFER TO LATEST MDOT R-28 STANDARD RAMP AND DETECTABLE WARNING DETAILS

NOTE:

PRIOR TO ANY CONSTRUCTION OR GRADING ON THE SITE, SILT FENCE SHALL BE INSTALLED AT THE UPLAND EDGE OF NATURAL FEATURES SETBACKS OR ANY PROPOSED LIMIT OF GRADING. THE SILT FENCING SHALL BE REMOVED AFTER CONSTRUCTIONS ONCE THE AREA IS STABILIZED AND VEGETATION HAD BEEN ESTABLISHED

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NORTH

0 20 40 80
SCALE: 1" = 40'

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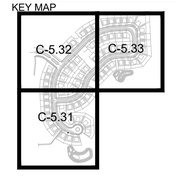

CLIENT
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31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - SINGLE FAMILY
HIGHLAND ROAD
WHITE LAKE TWP., MI

REVISIONS

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FINAL SITE PLAN REVIEW	9/30/25

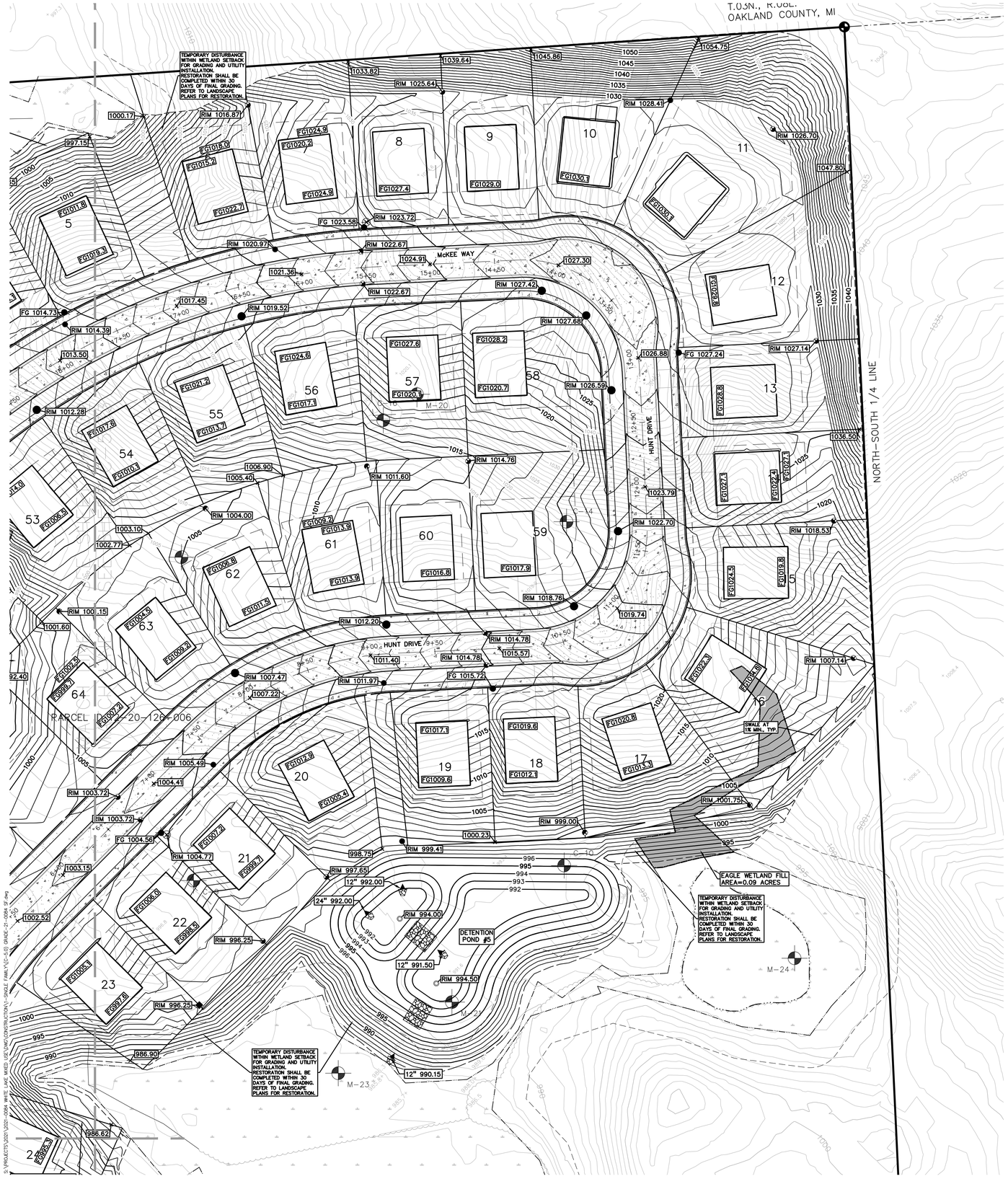
ORIGINAL ISSUE DATE:
MAY 8, 2025

DRAWING TITLE
GRADING PLAN - WEST

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-5.32

S:\PROJECTS\2021\2021-0084 WHITE LAKE MIXED USE\DWG\CONSTRUCTION\1-SINGLE FAMILY\C-5.0 GRADE-21-0084 SF.dwg



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SIDEWALK RAMP LEGEND:

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REFER TO LATEST MDOT R-28 STANDARD RAMP AND DETECTABLE WARNING DETAILS

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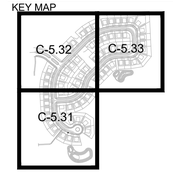

CLIENT

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31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE

THE AVALON - SINGLE FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

REVISIONS	
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
MAY 8, 2025

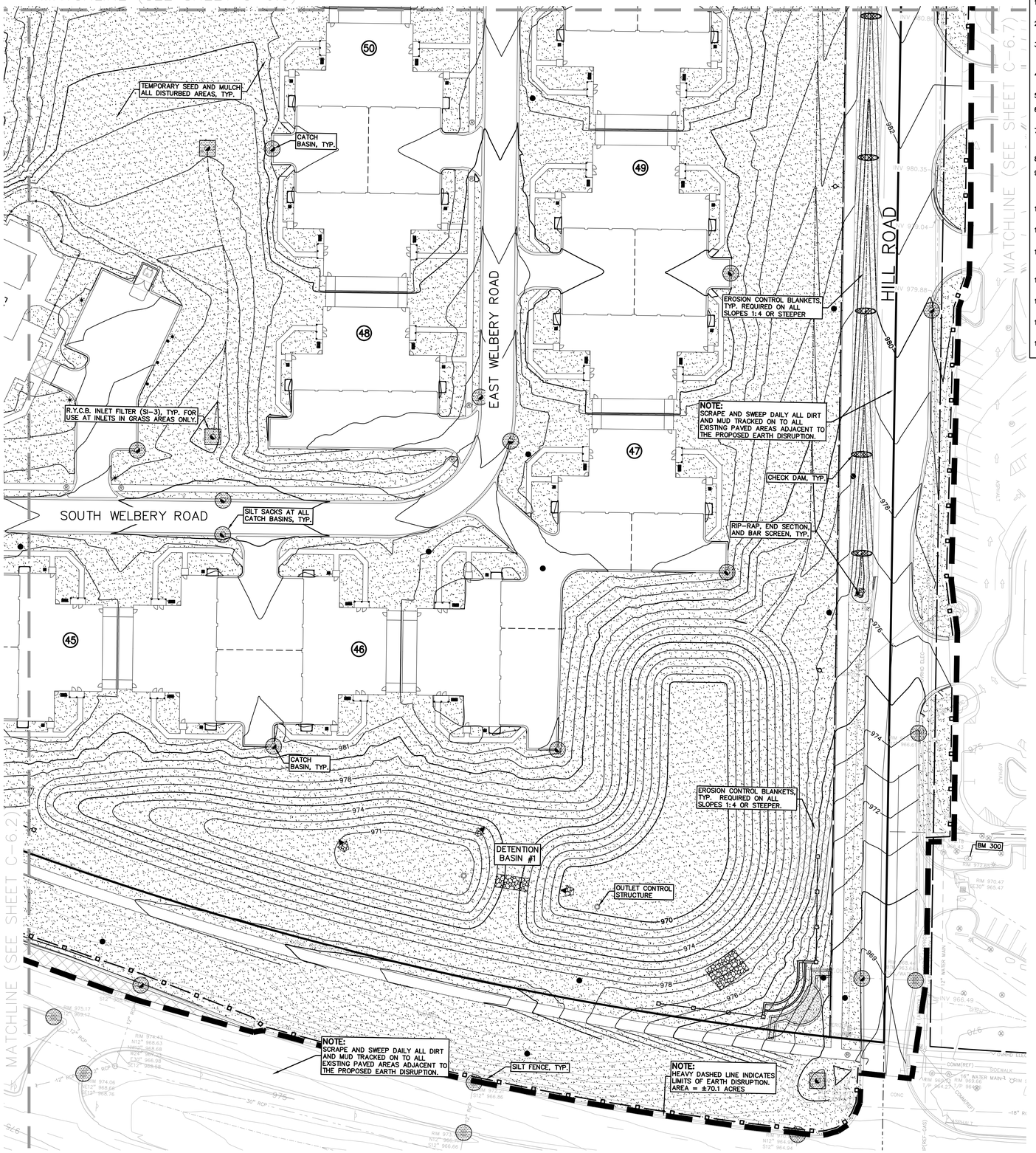
DRAWING TITLE

GRADING PLAN - EAST

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:

C-5.33



SOIL EROSION AND SEDIMENTATION CONTROL SEQUENCE OF CONSTRUCTION

1. SEE OAKLAND COUNTY W.R.C. SOIL EROSION AND SEDIMENTATION CONTROL DETAILS SHEET FOR ALL SOIL EROSION CONTROL RELATED DETAILS.
2. PLACE SILT FENCE & INSTALL INLET FILTERS ON EXISTING STORM SEWER STRUCTURES, ACCORDING TO PLANS.
3. INSTALL TEMPORARY CRUSHED CONCRETE ACCESS DRIVE AT ALL CONSTRUCTION ENTRANCES. (80'x24'x8" W/MINIMUM OF 1"–3" CRUSHED CONCRETE – NO FINES).
4. REMOVE CURB, PAVEMENT, TREES, ETC. AS DIRECTED ON THE DEMOLITION PLAN.
5. STRIP AND STOCKPILE TOPSOIL FOR RESTORATION REQUIREMENTS.
6. DISPOSE OF ALL EXCESS, UNSUITABLE MATERIALS OFF SITE IN A LEGAL MANNER. NO BURN OR BURY PITS ALLOWED.
7. UNSUITABLE MATERIALS CONSIST OF, BUT ARE NOT NECESSARILY LIMITED TO THE FOLLOWING: CONCRETE, ASPHALT, TREES, BRUSH, STUMPS, ROOTS, OR OTHER MISCELLANEOUS DEBRIS OR TRASH.
8. MASS GRADE THE SITE IN ACCORDANCE WITH THE PLANS.
9. INSTALL SEED, MULCH AND EROSION CONTROL BLANKETS AS SHOWN ON THE PLAN WITHIN 5 DAYS OF COMPLETION OF MASS GRADING OR WHENEVER DISTURBED AREAS WILL REMAIN UNCHANGED FOR 30 DAYS OR GREATER. 3–4" TOPSOIL WILL BE USED WHERE VEGETATION IS REQUIRED.
10. COMPLETE ROUGH GRADING OF SITE AND INSTALL UTILITIES. PLACE INLET FILTERS AT ALL INLETS AND CATCH BASINS, AS SHOWN.
11. FINISH GRADE AND PAVE SITE AS PROPOSED TO DRAIN TO STORM SEWER SYSTEM. REPAIR INLET FILTERS AS REQUIRED.
12. APPLY TOPSOIL, SEED AND MULCH/SOD TO ALL DISTURBED AREAS UPON COMPLETION OF GRADING. THE CONTRACTOR SHALL STAGE CONSTRUCTION ACTIVITIES IN ORDER TO MINIMIZE THE EXPOSURE OF UNSTABILIZED AREAS.
13. CLEAN PAVEMENT AND STORM SEWERS. REMOVE SILT FENCE, AND INLET FILTERS ONCE VEGETATION HAS BEEN ESTABLISHED.
14. CLEAN DETENTION BASIN AND OVERFLOW SPILLWAYS AND REPAIR RIPRAP AS NECESSARY.
15. ALL DIRT AND MUD TRACKED ONTO PUBLIC ROADS SHALL BE REMOVED DAILY.
16. STREET CATCH BASINS TO BE PERIODICALLY CLEANED AND FILTER CLOTH CHANGED AND MAINTAINED.

SYMBOLS EROSION CONTROL:

- (SP-2) SILT FENCE
- (SI-2A) LOW POINT INLET FILTER
- (SI-3) RYCB INLET FILTER
- (E-3) CHECK DAM
- (SP-9) TEMPORARY STONE ACCESS DRIVE
- (E-9) EROSION CONTROL BLANKET
- (E-7) RIPRAP
- TEMPORARY SEED AND MULCH

REFER TO O.C.W.R.C. SOIL EROSION AND SEDIMENTATION CONTROL DETAILS SHEET FOR ALL DEVICE DETAILS.

EROSION CONTROL QUANTITIES:

SILT FENCE	11,891 L.F.
R.Y.C.B. INLET FILTER	37 EA.
LOW POINT INLET FILTER	102 EA.
TEMPORARY CONSTRUCTION ACCESS DRIVE	2 EA.
EROSION CONTROL BLANKETS	17,994 S.Y.
TEMPORARY SEED AND MULCH	177,263 S.Y.
CHECK DAM	29 EA.
END SECTION RIP RAP	29 EA.
SPILLWAY RIP RAP	13 EA.

SEQUENCE OF CONSTRUCTION:

START DAY	END DAY	
1	210	INSTALL CRUSHED CONCRETE ACCESS APPROACH AT SITE ROAD APPROACH.
1	239	INSTALL TEMPORARY SOIL EROSION CONTROL MEASURES, SILT FENCES, INLET PROTECTION, ETC. AS NECESSARY.
1	240	MAINTAIN A 25' BUFFER OF VEGETATION AROUND PERIMETER OF SITE WHERE POSSIBLE.
1	30	REMOVE ALL VEGETATION, TREES AND BRUSH FROM THE PROPOSED CONSTRUCTION AREA UNLESS MARKED TO REMAIN. STRIP AND STOCKPILE TOPSOIL AS REQUIRED RESTORATION. ALL STOCKPILES MUST BE GRADED AND SEEDED.
5	30	REMOVE ALL PAVEMENT, CURB, UTILITIES, ETC. AS REQUIRED TO INSTALL THE PROPOSED WORK AS SHOWN ON THE TOPOGRAPHIC SURVEY AND DEMOLITION PLAN.
5	60	DISPOSE OF ALL EXCESS/UNSUITABLE MATERIALS OFF SITE IN A LEGAL MANNER. NO ON–SITE BURN OR BURY PITS ALLOWED.
30	60	ROUGH GRADE SITE. SEED AND MULCH BLANKETS MUST BE INSTALLED AS SHOWN WITHIN 5 DAYS OF FINAL GRADE. REPAIR AND/OR RE–INSTALL ANY TEMPORARY SOIL EROSION CONTROL MEASURES THAT WERE DAMAGED DURING GRADING OPERATIONS.
60	100	INSTALL SITE UTILITIES (STORM SEWER, SANITARY SEWER, WATER MAIN ETC.). INSTALL INLET PROTECTION AT ALL PROPOSED CATCH BASINS.
60	210	TEMPORARY SEEDING MUST BE PROVIDED IN AREAS NOT TO BE WORKED ON FOR 15 DAYS OR LONGER.
100	180	BEGIN CONSTRUCTION OF BUILDING.
160	180	FINE GRADE SITE AND PREPARE FOR SITE PAVING OPERATIONS.
180	210	INSTALL ALL PAVEMENT, SIDEWALKS, CURBING AS PROPOSED. IF PERMANENT LANDSCAPING IS NOT TO BE INSTALLED SOON AFTER PAVING IS COMPLETE, ALL AREAS WITHIN 20 FEET OF BACK OF CURB MUST BE TEMPORARILY SEEDED. REPAIR INLET PROTECTION, SILT FENCE AND ANY OTHER DAMAGED SOIL EROSION CONTROL MEASURES AS NECESSARY.
210	239	FINAL GRADE, REDISTRIBUTE STOCKPILED TOPSOIL, ESTABLISH VEGETATION AND INSTALL ALL PERMANENT LANDSCAPING IN ALL DISTURBED AREAS NOT BUILT.
230	240	CLEAN PAVEMENT AND REMOVE ALL TEMPORARY SOIL EROSION CONTROL MEASURES. RE–ESTABLISH VEGETATION AS REQUIRED.
240	240	REMOVE SEDIMENTATION CONTROLS ONCE ENTIRE SITE HAS BEEN PERMANENTLY STABILIZED.

SOIL EROSION MAINTENANCE SCHEDULE AND NOTES:

1. THE SOIL EROSION CONTROLS WILL BE MAINTAINED WEEKLY AND AFTER EVERY STORM EVENT BY:

   TBD

2. IF ANY DAMAGE HAS OCCURRED AS A RESULT OF STORM WATER DISCHARGE FROM THE SITE, THE FOLLOWING STEPS SHALL BE IMPLEMENTED.
3. ANY DEBRIS OR DIRT ON ANY PAVED AREA RESULTING FROM CONSTRUCTION TRAFFIC SHALL BE CLEANED IN A PROMPT MANNER BY THE CONTRACTOR. THE CONSTRUCTION DRIVE SHALL BE CLEANED AT THE END OF EACH DAY.
4. ALL DIRT AND MUD TRACKED ONTO PAVED AREAS SHALL BE REMOVED BY THE CONTRACTOR DAILY BY SCRAPING. STREET SWEEPING IS REQUIRED WEEKLY.
5. SILT FENCE MAINTENANCE SHALL INCLUDE THE REMOVAL OF ANY BUILT UP SEDIMENT WHEN THE SEDIMENT HEIGHT ACCUMULATES TO 1/3 TO 1/2 OF THE HEIGHT OF THE FENCE. THE CONTRACTOR IS RESPONSIBLE TO REMOVE, REPLACE, RETRENCH OR REBACKFILL THE SILTATION FENCE SHOULD IT FALL OR BE DAMAGED DURING CONSTRUCTION.
6. INLET FILTER MAINTENANCE SHALL INCLUDE THE REMOVAL OF ANY ACCUMULATED SILT OR OTHER DEBRIS. THE REMOVAL OF SILT SHOULD BE WITH THE USE OF A STIFF BRISTLE BROOM OR SQUARE POINT SHOVEL. IF INLET FILTERS CAN NOT BE CLEANED OR ARE DAMAGED, THEN THE FABRIC MUST BE REPLACED.
7. CONTRACTOR SHALL PROVIDE WATER TRUCK TO WATER DOWN THE SITE ON A DAILY BASIS AS REQUIRED TO MAINTAIN DUST CONTROL.
8. IF HIGH GROUNDWATER IS ANTICIPATED OR ENCOUNTERED DURING CONSTRUCTION A DEWATERING PLAN MUST BE SUBMITTED TO THE CITY ENGINEERING DIVISION FOR REVIEW.

GENERAL SITE CONDITIONS:

1. ACCORDING TO THE GEOTECHNICAL INVESTIGATION BY MCDOWELL & ASSOCIATES DATED DECEMBER 28, 2004, THE SITE CONSISTS OF THE FOLLOWING SOIL TYPES:

   BROWN SAND, CLAYEY SAND, SANDY CLAY, AND STIFF BLUE CLAY

2. TOTAL DISTURBED AREA = ±70.5 ACRES
3. N.P.D.E.S. NOTICE OF COVERAGE IS REQUIRED

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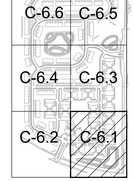

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31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - MULTI FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

REVISIONS	
DRAFT	2/19/24
ISSUED FOR OWNER REVIEW	4/24/24
FINAL SITE PLAN REVIEW	7/3/24
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

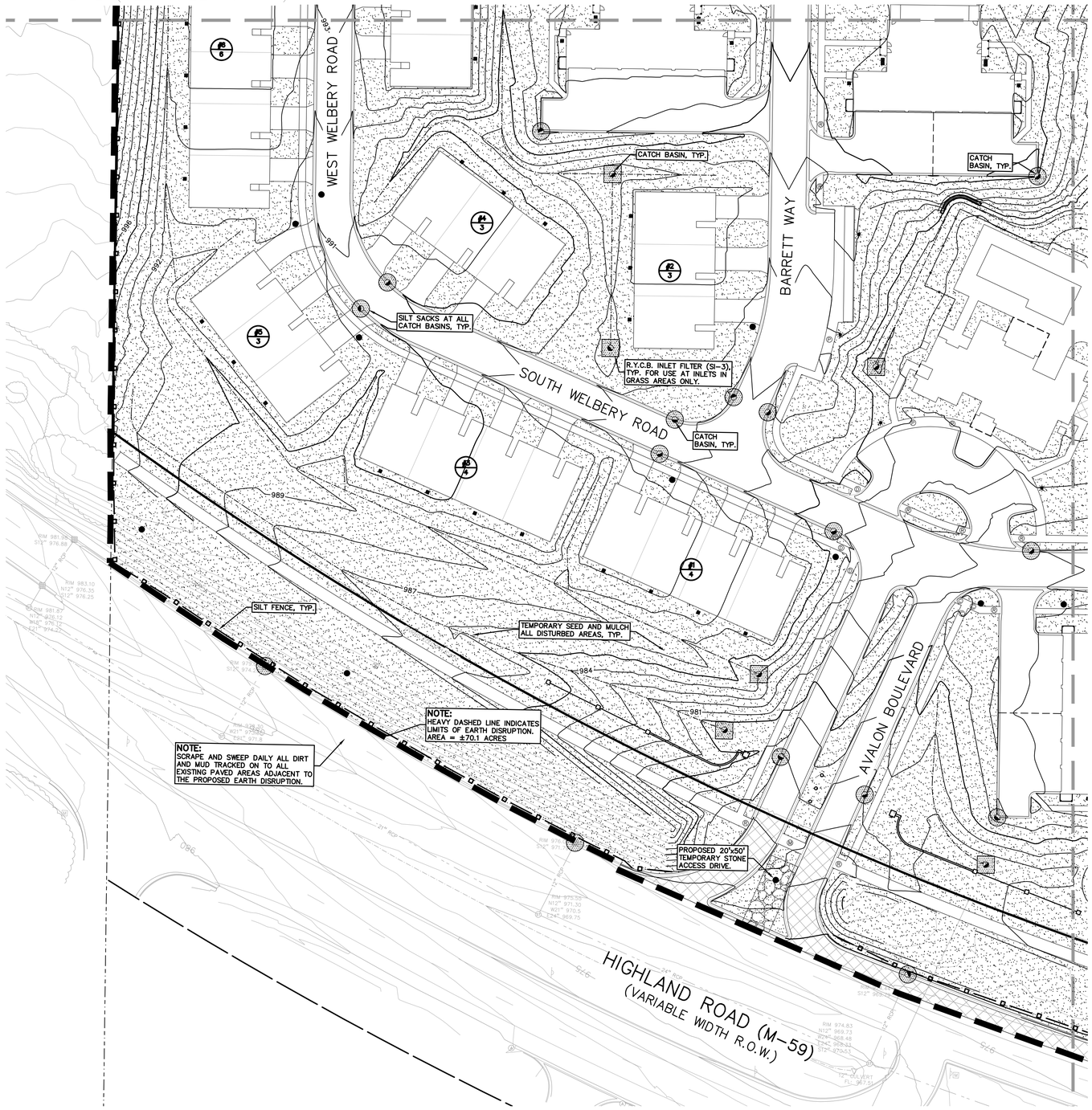
ORIGINAL ISSUE DATE:
DECEMBER 4, 2023

DRAWING TITLE
SOIL EROSION CONTROL PLAN - 1

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-6.1

MATCHLINE (SEE SHEET C-6.4)



SYMBOLS EROSION CONTROL:

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REFER TO O.C.W.R.C. SOIL EROSION AND SEDIMENTATION CONTROL DETAILS SHEET FOR ALL DEVICE DETAILS.

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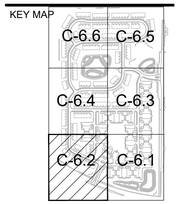

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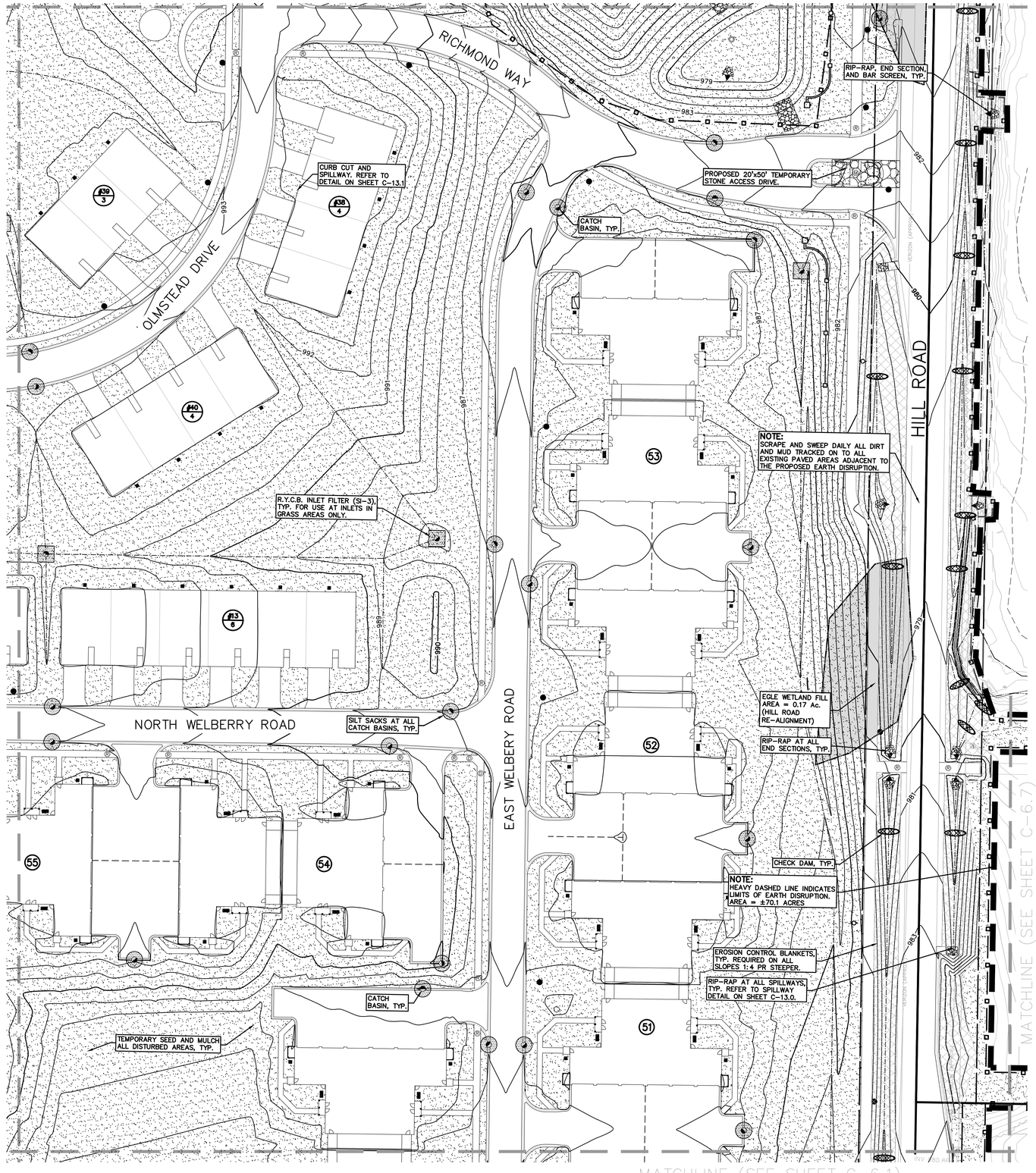
ORIGINAL ISSUE DATE:
DECEMBER 4, 2023

DRAWING TITLE
SOIL EROSION CONTROL PLAN - 2

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-6.2

MATCHLINE (SEE SHEET C-6.5)



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- (SP-9) TEMPORARY STONE ACCESS DRIVE
- (E-9) EROSION CONTROL BLANKET
- (E-7) RIPRAP
- TEMPORARY SEED AND MULCH

REFER TO O.C.W.R.C. SOIL EROSION AND SEDIMENTATION CONTROL DETAILS SHEET FOR ALL DEVICE DETAILS.

PEA GROUP
t: 844.813.2949
www.peagroup.com

STATE OF MICHIGAN
BRETT STURGEON HOLLANDSWORTH
LICENSED PROFESSIONAL ENGINEER
License No. 6201064949

NORTH

0 20 40 80
SCALE: 1" = 40'

811 Know what's below. Call before you dig.

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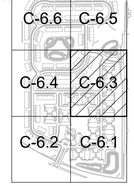
KEY MAP



CLIENT
WHITE LAKE HILL, LLC
31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - MULTI FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

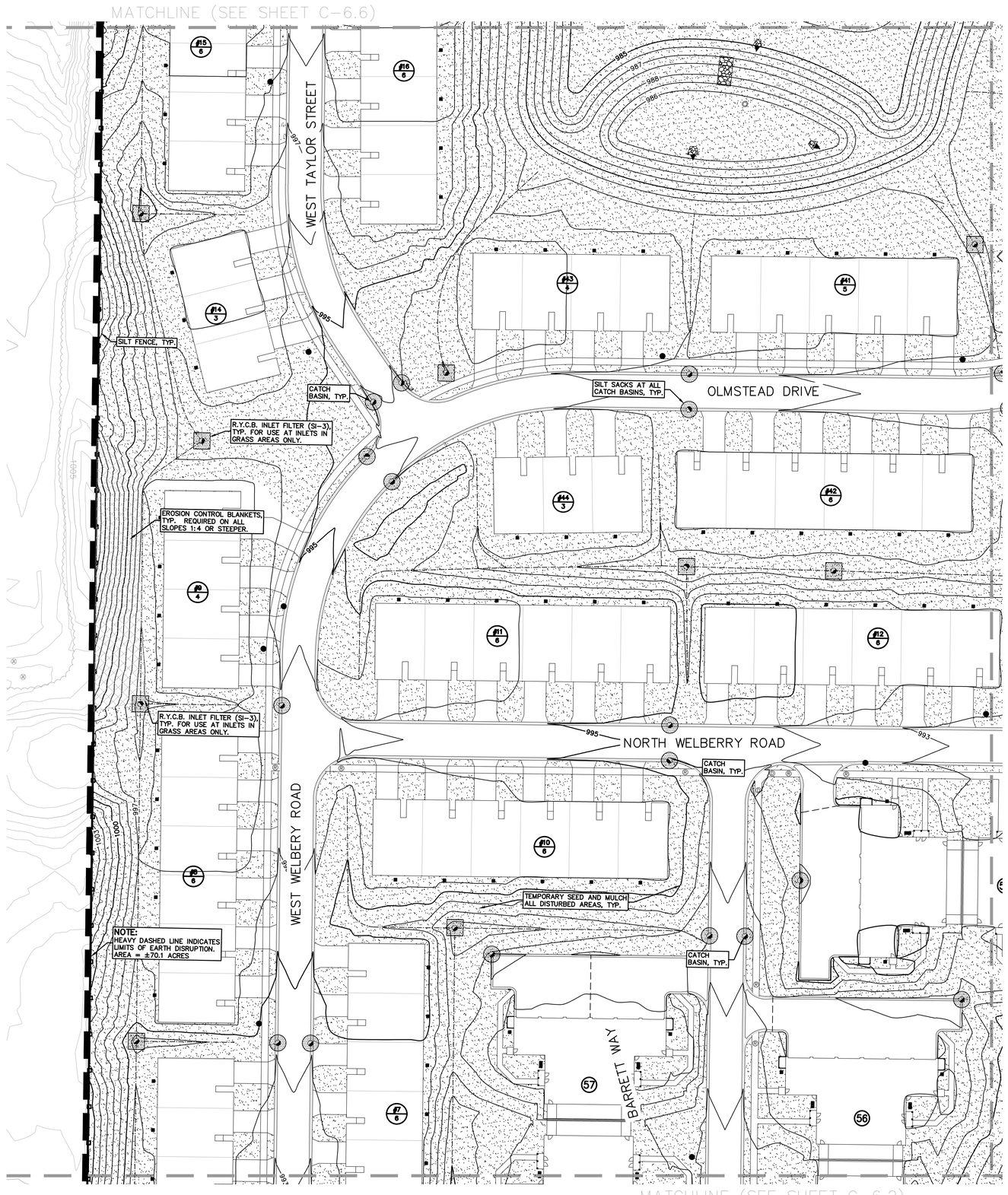
REVISIONS	
DRAFT	2/19/24
ISSUED FOR OWNER REVIEW	4/24/24
FINAL SITE PLAN REVIEW	7/3/24
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
DECEMBER 4, 2023

DRAWING TITLE
SOIL EROSION CONTROL PLAN - 3

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-6.3



SYMBOLS EROSION CONTROL:

- (SP-2) SILT FENCE
- (SI-2A) LOW POINT INLET FILTER
- (SI-3) RYCB INLET FILTER
- (E-3) CHECK DAM
- (SP-9) TEMPORARY STONE ACCESS DRIVE
- (E-9) EROSION CONTROL BLANKET
- (E-7) RIPRAP
- TEMPORARY SEED AND MULCH

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NORTH

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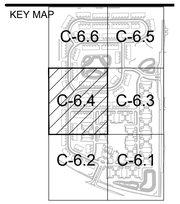

CLIENT
WHITE LAKE HILL, LLC
31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - MULTI FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

REVISIONS	
DRAFT	2/19/24
ISSUED FOR OWNER REVIEW	4/24/24
FINAL SITE PLAN REVIEW	7/3/24
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
DECEMBER 4, 2023

DRAWING TITLE
SOIL EROSION CONTROL PLAN - 4

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-6.4

SYMBOLS EROSION CONTROL:

- (SP-2) SILT FENCE
- (SI-2A) LOW POINT INLET FILTER
- (SI-3) RYCB INLET FILTER
- (E-3) CHECK DAM
- (SP-9) TEMPORARY STONE ACCESS DRIVE
- (E-9) EROSION CONTROL BLANKET
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- TEMPORARY SEED AND MULCH

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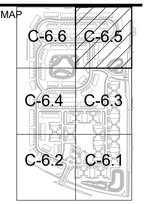

CLIENT
WHITE LAKE HILL, LLC
31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - MULTI FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

REVISIONS	
DRAFT	2/19/24
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ORIGINAL ISSUE DATE:
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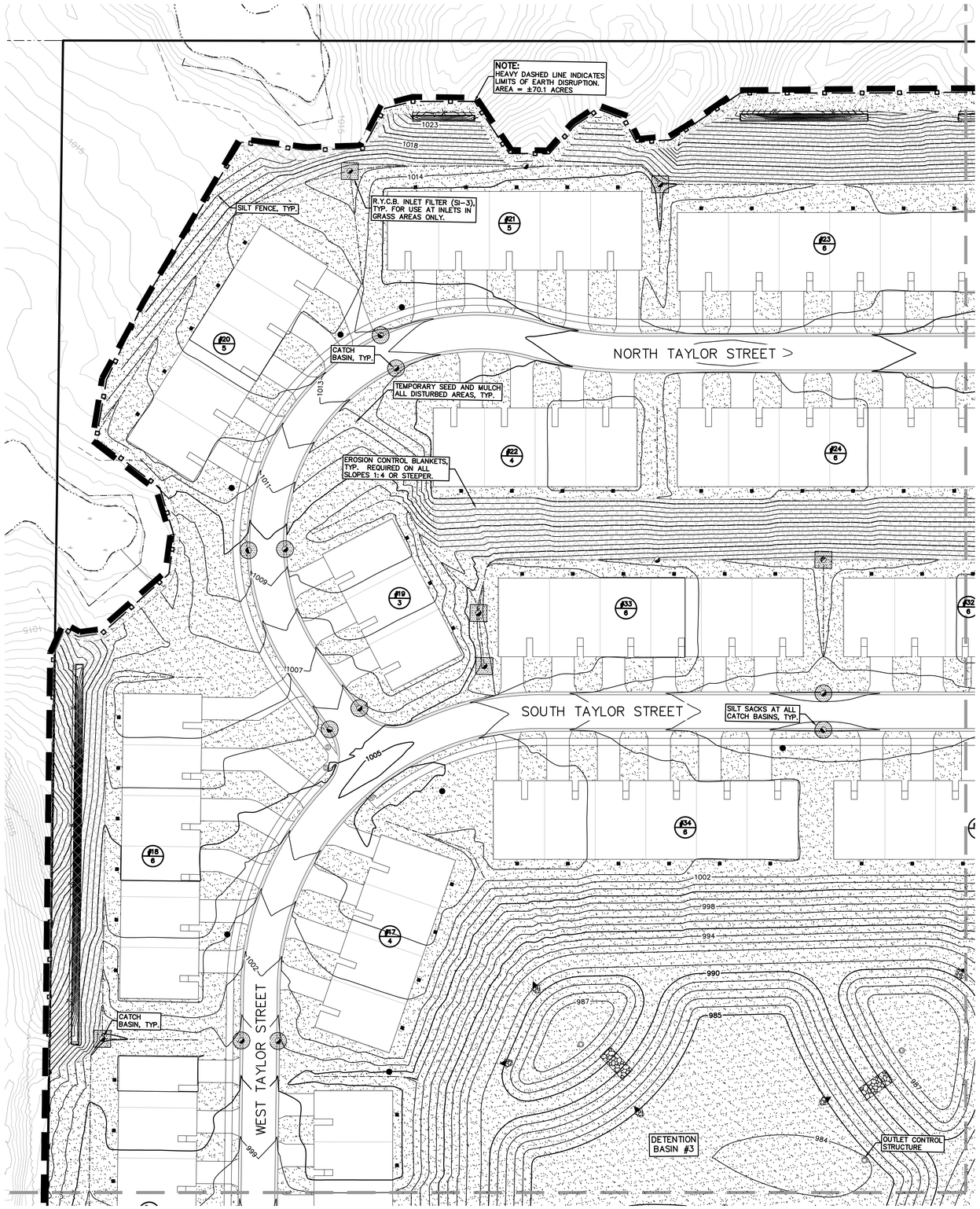
DRAWING TITLE
SOIL EROSION CONTROL PLAN - 5

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-6.5



SYMBOLS EROSION CONTROL:

- (SP-2) SILT FENCE
- (SI-2A) LOW POINT INLET FILTER
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- (E-3) CHECK DAM
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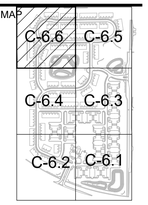

CLIENT
WHITE LAKE HILL, LLC
31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - MULTI FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

REVISIONS	
DRAFT	2/19/24
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FINAL SITE PLAN REVIEW	7/3/24
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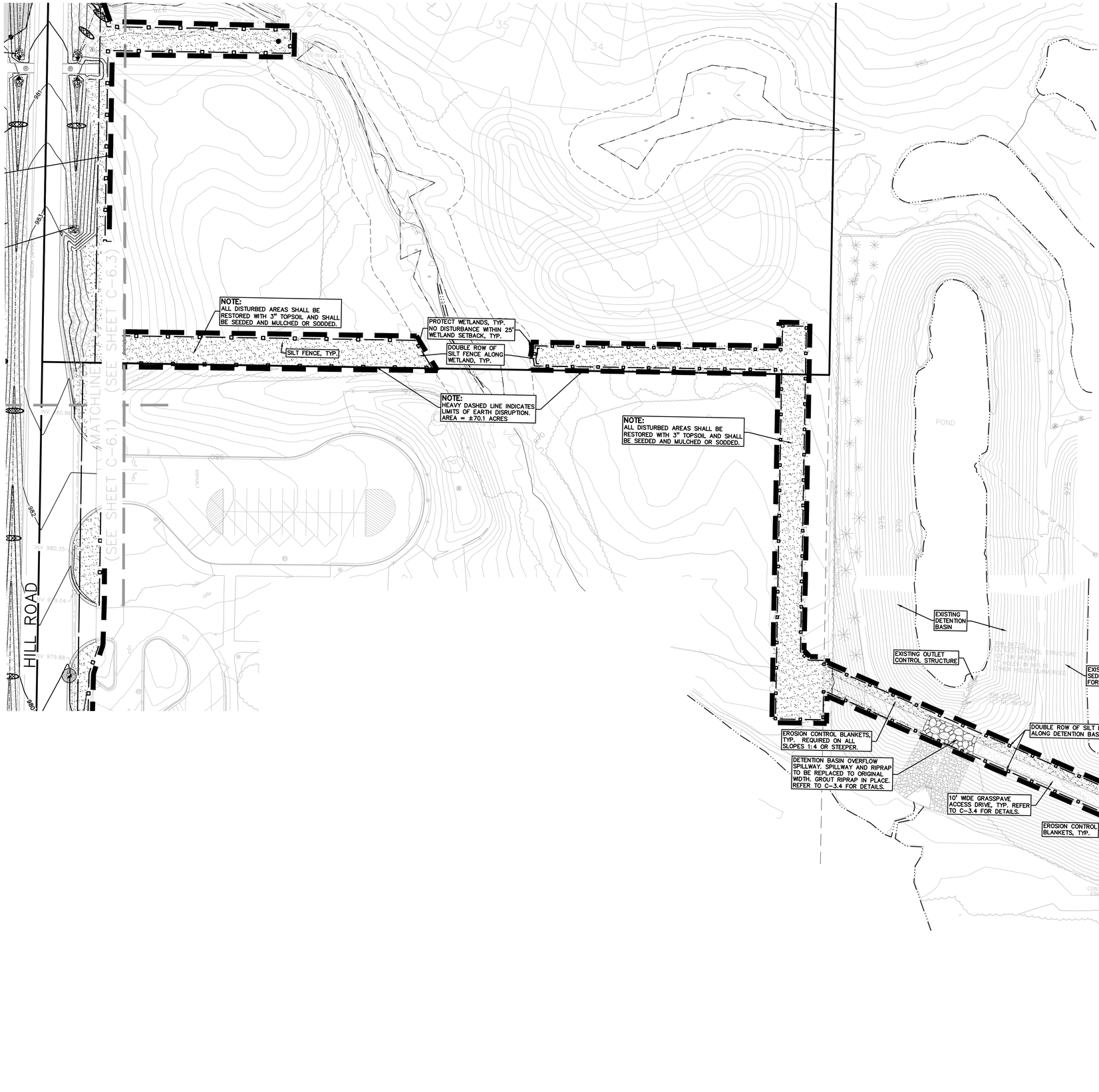
ORIGINAL ISSUE DATE:
DECEMBER 4, 2023

DRAWING TITLE
SOIL EROSION CONTROL PLAN - 6

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-6.6



SYMBOLS EROSION CONTROL:

- (SP-2) SILT FENCE
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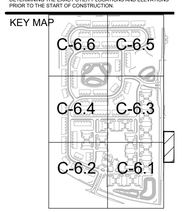


CLIENT
WHITE LAKE HILL, LLC
31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - MULTI FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

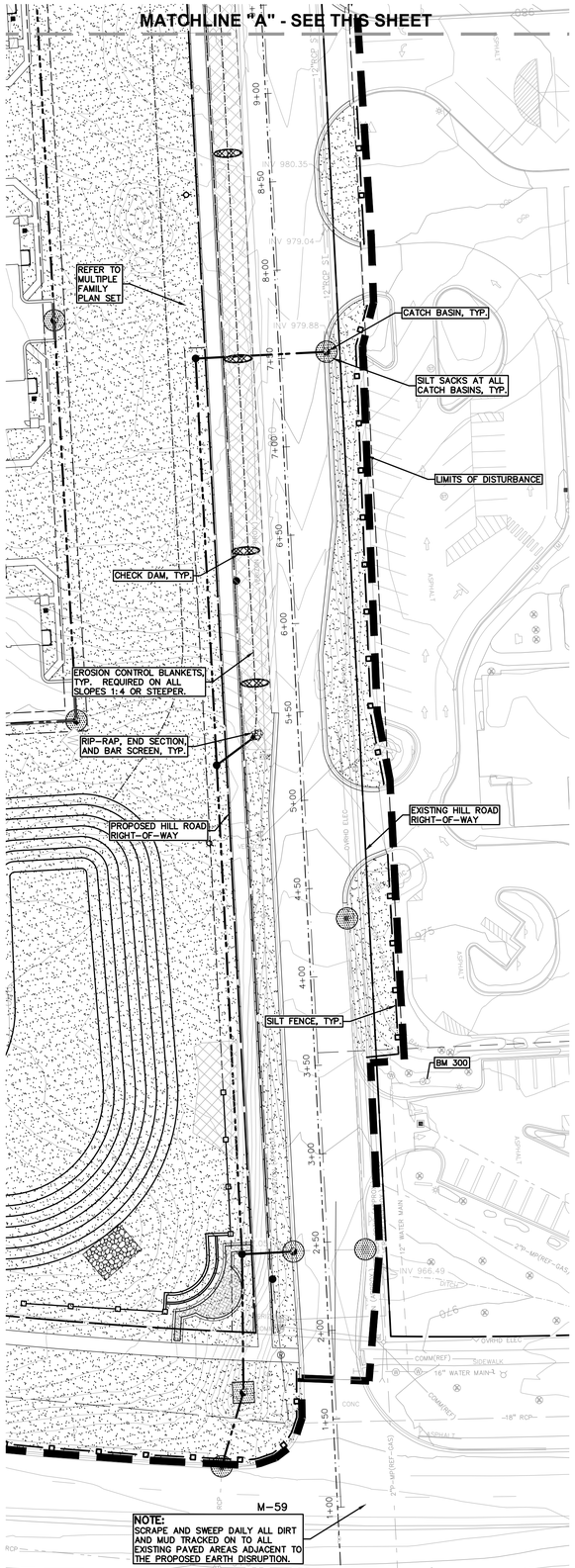
REVISIONS	
DRAFT	2/19/24
ISSUED FOR OWNER REVIEW	4/24/24
FINAL SITE PLAN REVIEW	7/3/24
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

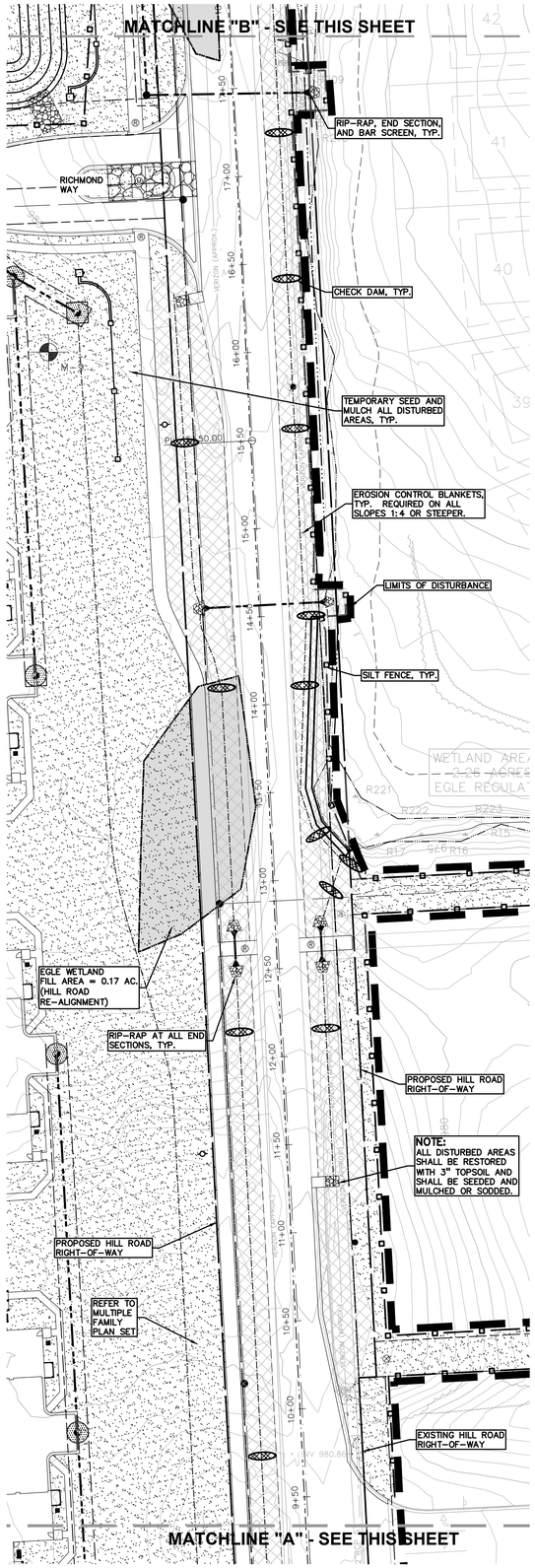
ORIGINAL ISSUE DATE:
DECEMBER 4, 2023

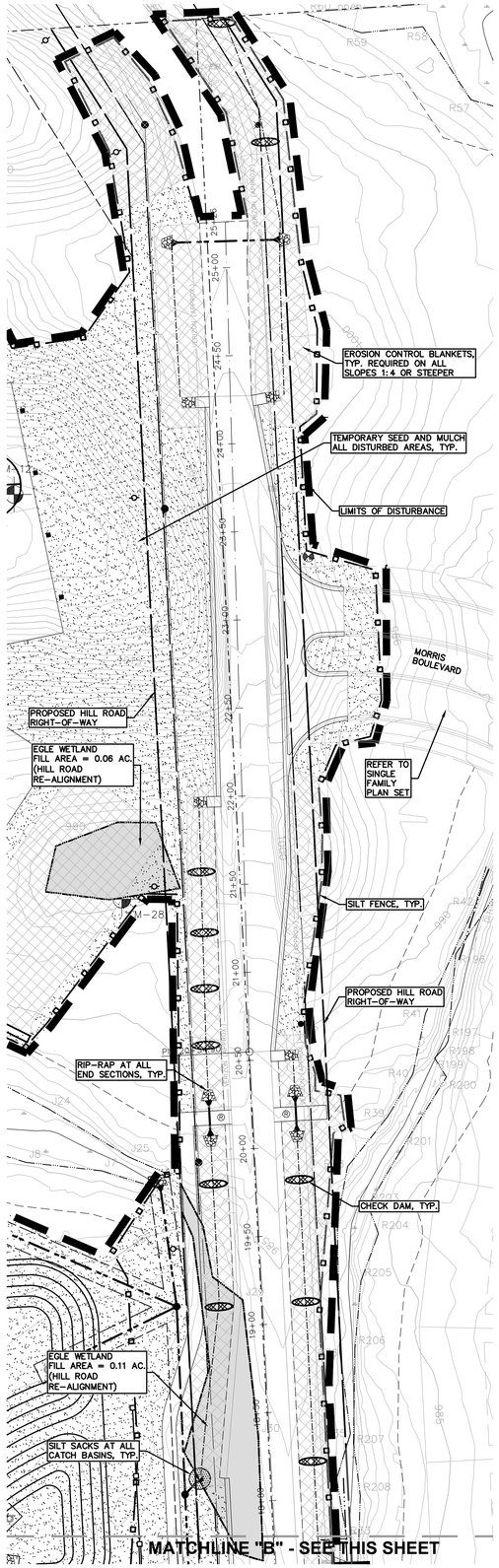
DRAWING TITLE
SOIL EROSION CONTROL PLAN - 7

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-6.7







SYMBOLS EROSION CONTROL:

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NORTH

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SCALE: 1" = 40'

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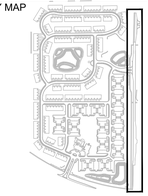

CLIENT
WHITE LAKE HILL, LLC
31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - HILL ROAD
HIGHLAND ROAD
WHITE LAKE TWP, MI

REVISIONS	
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
MAY 8, 2025

DRAWING TITLE
SOIL EROSION CONTROL PLAN

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-6.23

S:\PROJECTS\2021\2021-0084 WHITE LAKE MIXED USE\DWG\CONSTRUCTION\HILL ROAD\(C-6.1) SESC-2100H HILL.dwg

HILL ROAD
(PR. 86' WIDE R.O.W.)
HILL ROAD PROPOSED
86' WIDE R.O.W.
McKEE WAY
HUNT DRIVE
McKEE COURT
McKEE COURT
PARCEL ID 12-20-126-006
NOTE:
HEAVY DASHED LINE INDICATES LIMITS OF EARTH DISRUPTION.
AREA = ±26.8 ACRES
CATCH BASIN, TYP.
R.Y.C.B. INLET FILTER (SI-3), TYP. FOR USE AT INLETS IN GRASS AREAS ONLY.
TEMPORARY SEED AND MULCH ALL DISTURBED AREAS, TYP.
EROSION CONTROL BLANKETS, TYP. REQUIRED ON ALL SLOPES 1:4 OR STEEPER.
SILT SACKS AT ALL CATCH BASINS, TYP.
EAGLE WETLAND FILL AREA=0.30 ACRES
SILT FENCE, TYP.
DETENTION POND #4
OUTLET CONTROL STRUCTURE
43
47
68
24
25
41
26
27
28
29
40
39
31
30
32
38
37
36
35
34
33
C-1
C-2
C-3
C-4
C-5
C-6
SCS
INV 972.41
INV 969.41
INV 969.41
INV 972.41
INV 972.41
INV 969.41
INV 969.41
INV 969

SYMBOLS: EROSION CONTROL:

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- (SI-2A) LOW POINT INLET FILTER
- (SI-3) RYCB INLET FILTER
- (SP-9) TEMPORARY STONE ACCESS DRIVE
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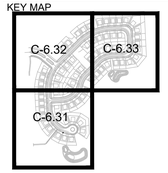

CLIENT
WHITE LAKE HILL, LLC
31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - SINGLE FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

REVISIONS	
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
MAY 8, 2025

DRAWING TITLE
SOIL EROSION CONTROL PLAN - WEST

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-6.32

S:\PROJECTS\2021\2021-0084 WHITE LAKE MIXED USE\CIVIL\CONSTRUCTION\1-SINGLE FAMILY\C-6.0 SESC-2I-0084 SF.dwg

SYMBOLS: EROSION CONTROL:

- (SP-2) SILT FENCE
- (SI-2A) LOW POINT INLET FILTER
- (SI-3) RYCB INLET FILTER
- (SP-9) TEMPORARY STONE ACCESS DRIVE
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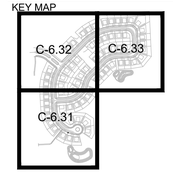

CLIENT
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31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - SINGLE FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

REVISIONS

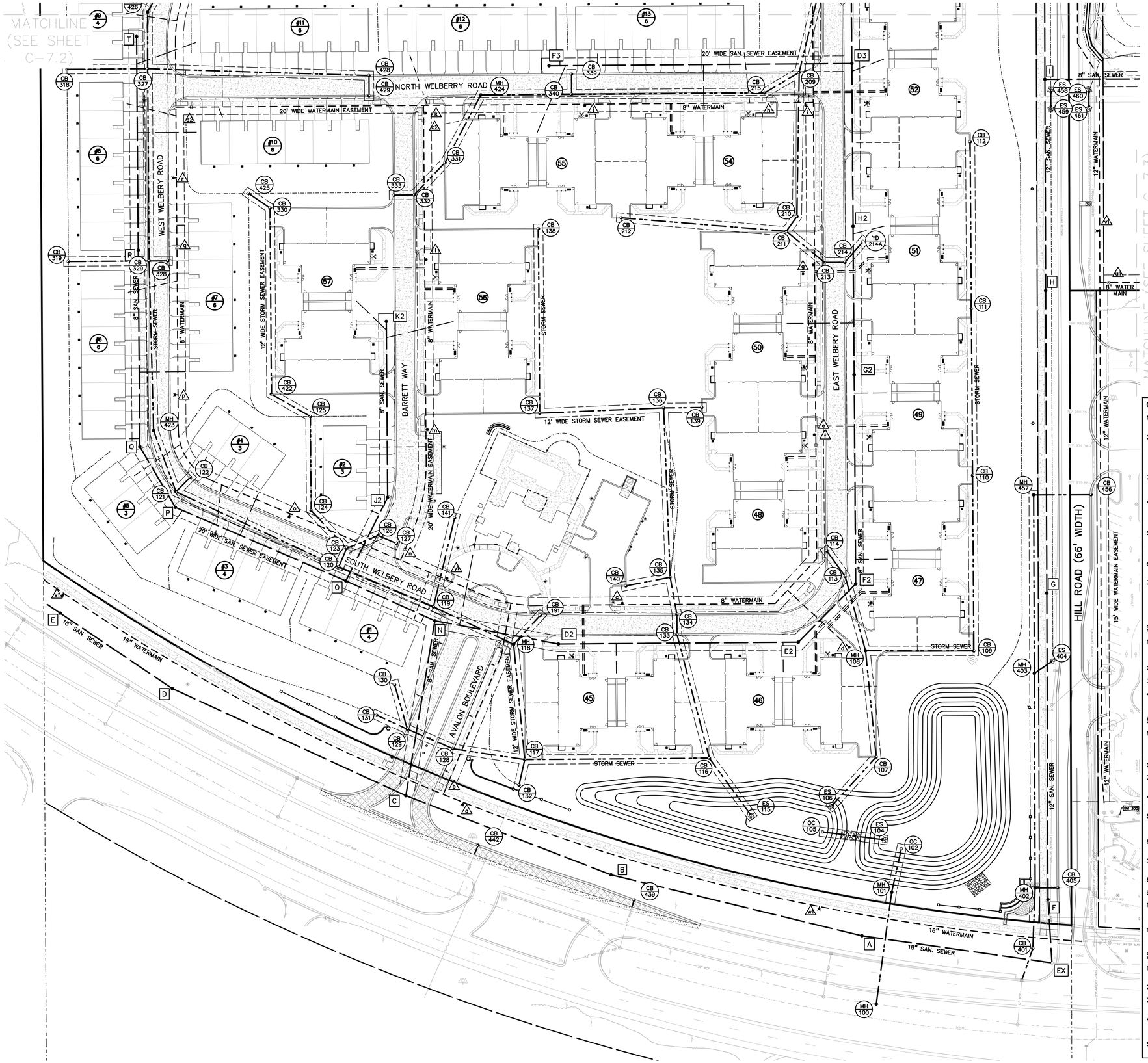
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
MAY 8, 2025

DRAWING TITLE
SOIL EROSION CONTROL PLAN - EAST

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-6.33



UTILITY LEGEND:

- EX. OH. ELEC, POLE & GUY WIRE
- EX. U.G. CABLE TV & PEDESTAL
- EX. U.G. COMMUNICATION LINE, PEDESTAL & MANHOLE
- EX. U.G. ELEC.MANHOLE, METER & HANDHOLE
- EX. GAS LINE
- EX. GAS VALVE & GAS LINE MARKER
- EX. TRANSFORMER & IRRIGATION VALVE
- EX. WATER MAIN
- EX. HYDRANT, GATE VALVE & POST INDICATOR VALVE
- EX. WATER VALVE BOX & SHUTOFF
- EX. SANITARY SEWER
- EX. SANITARY CLEANOUT & MANHOLE
- EX. COMBINED SEWER MANHOLE
- EX. STORM SEWER
- EX. CLEANOUT & MANHOLE
- EX. SQUARE, ROUND, & BEEHIVE CATCH BASIN
- EX. YARD DRAIN & ROOF DRAIN
- EX. UNIDENTIFIED STRUCTURE
- PROPOSED WATER MAIN
- PROPOSED HYDRANT AND GATE VALVE
- PROPOSED TAPPING SLEEVE, VALVE & WELL
- PROPOSED POST INDICATOR VALVE
- PROPOSED SANITARY SEWER
- PROPOSED SANITARY CLEANOUT & MANHOLE
- PROPOSED STORM SEWER
- PROPOSED STORM SEWER CLEANOUT & MANHOLE
- PROPOSED CATCH BASIN, INLET & YARD DRAIN

NOTE: NO DECKS TO BE CONSTRUCTED WITHIN UTILITY EASEMENTS

GENERAL UTILITY NOTES:

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE TOWNSHIP.
2. ALL TRENCHES UNDER OR WITHIN THREE (3) FEET OR THE FORTY-FIVE (45) DEGREE ZONE OF INFLUENCE LINE OF EXISTING AND/OR PROPOSED PAVEMENT, BUILDING PAD OR DRIVE APPROACH SHALL BE BACKFILLED WITH SAND COMPACTED TO AT LEAST NINETY-FIVE (95) PERCENT OF MAXIMUM UNIT WEIGHT (ASTM D-1557). ALL OTHER TRENCHES TO BE COMPACTED TO 90% OR BETTER.
3. WHERE EXISTING MANHOLES OR SEWER PIPE ARE TO BE TAPPED, DRILL HOLES 4" CENTER TO CENTER, AROUND PERIPHERY OF OPENING TO CREATE A PLANE OF WEAKNESS JOINT BEFORE BREAKING SECTION OUT.
4. THE LOCATIONS AND DIMENSIONS SHOWN ON THE PLANS FOR EXISTING UTILITIES ARE IN ACCORDANCE WITH AVAILABLE INFORMATION WITHOUT UNCOVERING AND MEASURING. THE DESIGN ENGINEER DOES NOT GUARANTEE THE ACCURACY OF THIS INFORMATION OR THAT ALL EXISTING UNDERGROUND FACILITIES ARE SHOWN. CONTRACTOR SHALL FIELD VERIFY UTILITIES.
5. THE CONTRACTOR SHALL COORDINATE TO ENSURE ALL REQUIRED PIPES, CONDUITS, CABLES AND SLEEVES ARE PROPERLY PLACED FOR THE INSTALLATION OF GAS, ELECTRIC, PHONE, CABLE, IRRIGATION, ETC. IN SUCH A MANNER THAT WILL FACILITATE THEIR PROPER INSTALLATION PRIOR TO THE PLACEMENT OF THE PROPOSED PAVEMENT AND LANDSCAPING.
6. PIPE LENGTHS INDICATED ARE FROM CENTER OF STRUCTURE AND TO END OF FLARED END SECTION UNLESS NOTED OTHERWISE.
7. CONTRACTOR SHALL INSPECT ALL EXISTING PUBLIC STORM SEWER, SANITARY SEWER AND WATER MAIN STRUCTURES WITHIN THE LIMITS OF CONSTRUCTION AND WITH THE GOVERNING AGENCY INSPECTOR PRIOR TO ESTABLISHING FINAL GRADE. NOTIFY THE ENGINEER, OWNER/DEVELOPER, AND GOVERNING AGENCY IF STRUCTURE IS DEEMED TO BE STRUCTURALLY UNSOUND AND/OR IN NEED OF REPAIR.

STORM SEWER NOTES:

1. ALL STORM SEWER 12" DIAMETER OR LARGER SHALL BE REINFORCED CONCRETE PIPE (RCP C-76) CLASS IV WITH MODIFIED TONGUE AND GROOVE JOINT WITH RUBBER GASKETS UNLESS SPECIFIED OTHERWISE (ASTM C-443).
2. ALL STORM SEWER LEADS SHALL BE CONSTRUCTED AT 1.00% MINIMUM SLOPE.
3. ALL STORM SEWER 10" OR LESS AND/OR LEADS SHALL BE SDR 26.
4. JOINTS FOR P.V.C. PIPE SHALL BE ELASTOMERIC (RUBBER GASKET) AS SPECIFIED IN A.S.T.M. DESIGNATION D-3212.

WATER MAIN NOTES:

1. ALL WATER MAIN SHALL BE INSTALLED WITH A MINIMUM COVER OF 6.0' BELOW FINISH GRADE. WHEN WATER MAINS MUST DIP TO PASS UNDER A STORM SEWER OR SANITARY SEWER, THE SECTIONS WHICH ARE DEEPER THAN NORMAL SHALL BE KEPT TO A MINIMUM LENGTH BY THE USE OF VERTICAL TWENTY TWO AND A HALF (22.5°) DEGREE BENDS, PROPERLY ANCHORED.
2. ALL TEES, BENDS, CONNECTIONS, ETC. ARE CONSIDERED INCIDENTAL TO THE JOB.
3. PHYSICAL CONNECTIONS SHALL NOT BE MADE BETWEEN EXISTING AND NEW WATER MAINS UNTIL REQUIRED TESTING IS SATISFACTORILY COMPLETED.
4. MAINTAIN 10' HORIZONTAL CLEARANCE BETWEEN OUTER EDGE OF WATERMAIN AND ANY SANITARY/STORM SEWER OR STRUCTURE.
5. NO PHYSICAL CONNECTION TO THE EXISTING WATER MAIN CAN BE MADE UNTIL ALL NEW WATER MAIN PASSES PRESSURE AND BACTERIOLOGICAL TESTS TO THE SATISFACTION OF THE TOWNSHIP.
6. ALL WATER MAIN AND FITTINGS (3" DIAMETER AND LARGER) SHALL BE DUCTILE IRON, CLASS 54, UNLESS OTHERWISE NOTED.
7. WATER MAIN SERVICE LEADS SHALL BE TYPE 'K' ANNEALED SEAMLESS COPPER WITH FLARED FITTINGS, UNLESS OTHERWISE NOTED.
8. ALL FIRE HYDRANTS SHALL BE EJW #5BR MODEL #250 PER TOWNSHIP STANDARDS.
9. ALL HYDRANTS TO BE A MINIMUM OF 5' FROM BACK OF CURB, TYP.
10. ALL NECESSARY FITTINGS, THRUST BLOCKS, RESTRAINING GLANDS, BLOW OFFS, ETC. FOR WATER MAIN ARE CONSIDERED INCIDENTAL TO THIS PROJECT. THE CONTRACTOR SHALL INSTALL THESE ITEMS AS NECESSARY AND AS REQUIRED BY THE TOWNSHIP.
11. THE WATER MAIN CONTRACTOR SHALL NOTIFY THE INSPECTION SECTION OF THE WHITE LAKE TOWNSHIP WATER DEPARTMENT AT 248-698-7700 AT LEAST THREE WORKING DAYS IN ADVANCE OF STARTING CONSTRUCTION.

SANITARY SEWER NOTES:

1. DOWNSPOUTS, WEEP TILE, FOOTING DRAINS OR ANY CONDUIT THAT CARRIES STORM OR GROUND WATER SHALL NOT BE ALLOWED TO DISCHARGE INTO A SANITARY SEWER.
2. ALL SANITARY LEADS SHALL BE CONSTRUCTED AT 1.00% MINIMUM SLOPE.
3. ALL SANITARY SEWER 8" OR LARGER SHALL BE P.V.C. TRUSS PIPE (ASTM D2680) AND FITTINGS, WITH ELASTOMERIC GASKET JOINTS PER ASTM D3212 UNLESS OTHERWISE NOTED.
4. ALL SANITARY SEWER LEADS SHALL BE POLYVINYL CHLORIDE (PVC) SDR 23.5 PIPE AND FITTINGS. ALL JOINTS TO BE ELASTOMERIC GASKET JOINTS PER ASTM D3212 UNLESS OTHERWISE NOTED.
5. SANITARY LEADS SHALL BE PROVIDED WITH CLEANOUTS EVERY 100 FEET AND AT EVERY BEND AS SHOWN. ALL CLEANOUTS TO BE PROVIDED WITH E.J.I.W. #1565 BOX OR EQUAL.

PEA GROUP
t: 844.813.2949
www.peagroup.com

STATE OF MICHIGAN
BRETT STURGEON HOLLANDSWORTH
LICENSED PROFESSIONAL ENGINEER
License No. 6201064949

NORTH

0 30 60 120
SCALE: 1" = 60'

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KEY MAP

CLIENT
WHITE LAKE HILL, LLC
31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - MULTI FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

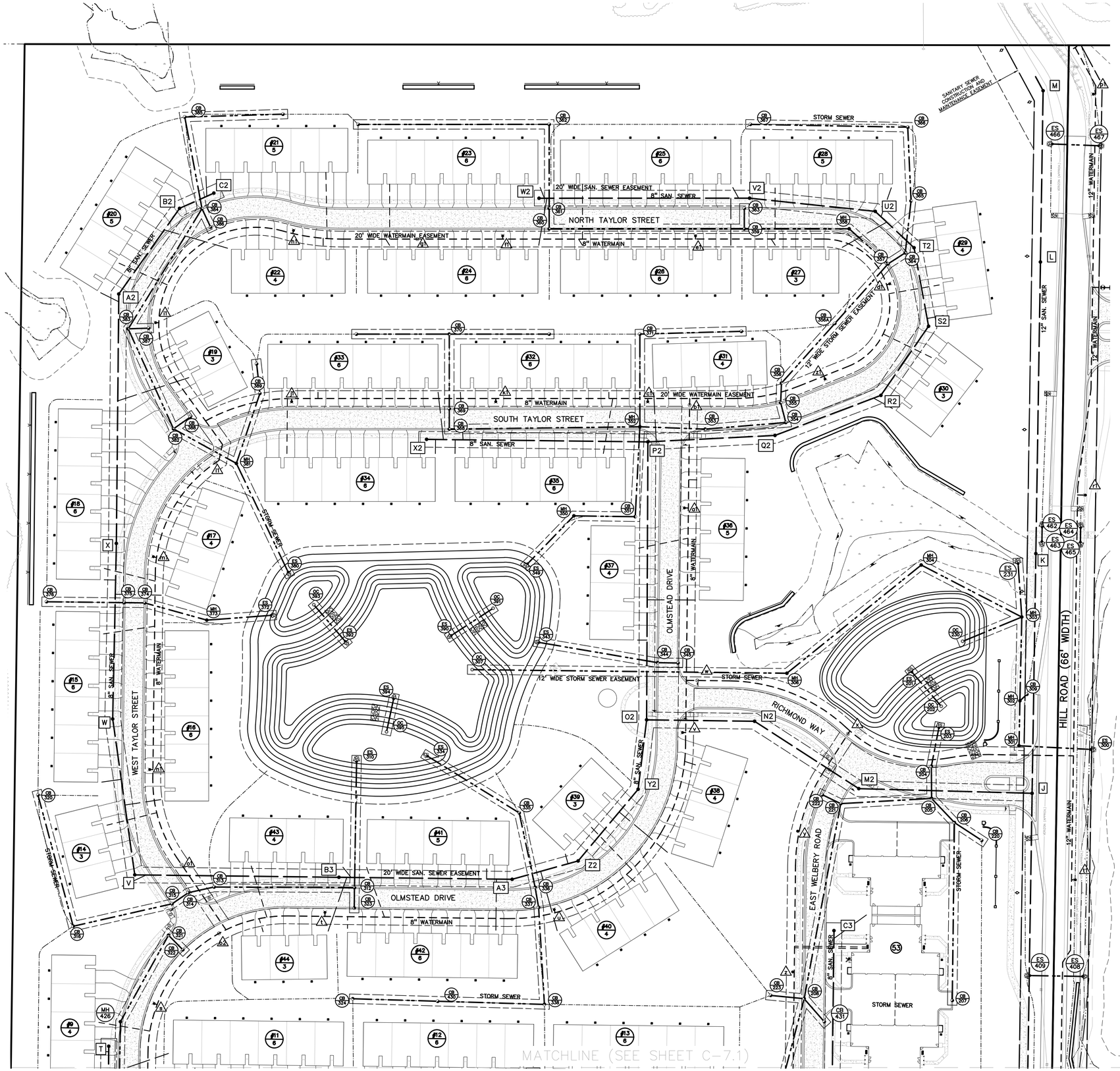
REVISIONS	
DRAFT	2/19/24
ISSUED FOR OWNER REVIEW	4/24/24
FINAL SITE PLAN REVIEW	7/3/24
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
DECEMBER 4, 2023

DRAWING TITLE
OVERALL UTILITY PLAN - SOUTH

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-7.1



NOTE: NO DECKS TO BE CONSTRUCTED WITHIN UTILITY EASEMENTS

UTILITY LEGEND:

- EX. OH. ELEC, POLE & GUY WIRE
- EX. U.G. CABLE TV & PEDESTAL
- EX. U.G. COMMUNICATION LINE, PEDESTAL & MANHOLE
- EX. U.G. ELEC,MANHOLE, METER & HANDHOLE
- EX. GAS LINE
- EX. GAS VALVE & GAS LINE MARKER
- EX. TRANSFORMER & IRRIGATION VALVE
- EX. WATER MAIN
- EX. HYDRANT, GATE VALVE & POST INDICATOR VALVE
- EX. WATER VALVE BOX & SHUTOFF
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- EX. SANITARY CLEANOUT & MANHOLE
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- EX. STORM SEWER
- EX. CLEANOUT & MANHOLE
- EX. SQUARE, ROUND, & BEEHIVE CATCH BASIN
- EX. YARD DRAIN & ROOF DRAIN
- EX. UNIDENTIFIED STRUCTURE
- PROPOSED WATER MAIN
- PROPOSED HYDRANT AND GATE VALVE
- PROPOSED TAPPING SLEEVE, VALVE & WELL
- PROPOSED POST INDICATOR VALVE
- PROPOSED SANITARY SEWER
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- PROPOSED STORM SEWER
- PROPOSED STORM SEWER CLEANOUT & MANHOLE
- PROPOSED CATCH BASIN, INLET & YARD DRAIN

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NORTH

0 30 60 120
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KEY MAP

CLIENT
WHITE LAKE HILL, LLC
31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - MULTI FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

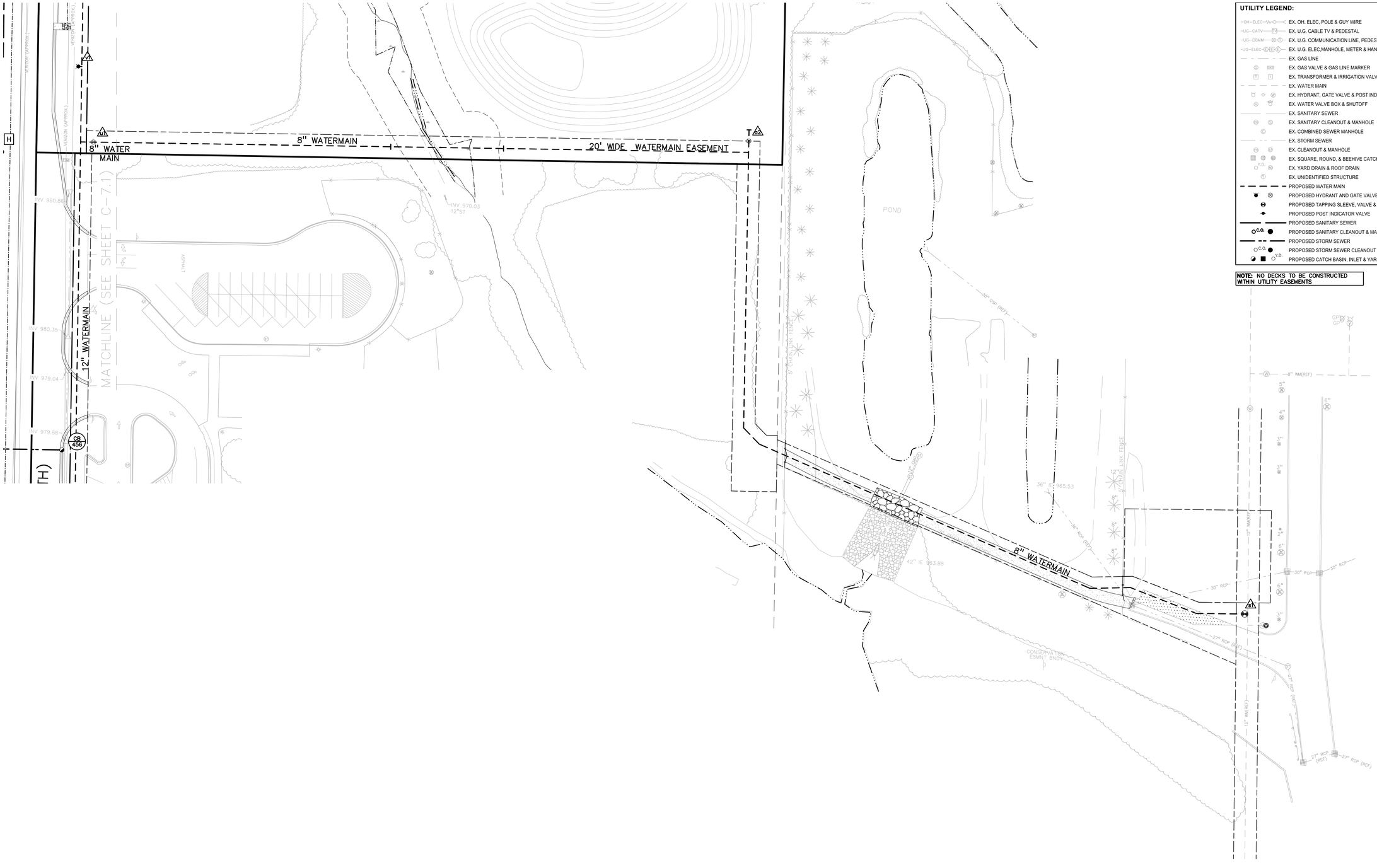
REVISIONS	
DRAFT	2/19/24
ISSUED FOR OWNER REVIEW	4/24/24
FINAL SITE PLAN REVIEW	7/3/24
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
DECEMBER 4, 2023

DRAWING TITLE
OVERALL UTILITY PLAN - NORTH

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-7.2



UTILITY LEGEND:

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- EX. U.G. CABLE TV & PEDESTAL
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- EX. UNIDENTIFIED STRUCTURE
- PROPOSED WATER MAIN
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- PROPOSED TAPPING SLEEVE, VALVE & WELL
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- PROPOSED STORM SEWER
- PROPOSED STORM SEWER CLEANOUT & MANHOLE
- PROPOSED CATCH BASIN, INLET & YARD DRAIN

NOTE: NO DECKS TO BE CONSTRUCTED WITHIN UTILITY EASEMENTS

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LICENSED PROFESSIONAL ENGINEER
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NORTH

0 20 40 80
SCALE: 1" = 40'

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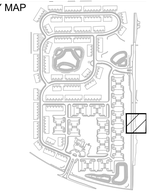
KEY MAP



CLIENT
WHITE LAKE HILL, LLC
31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - MULTI FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

REVISIONS	
DRAFT	2/19/24
ISSUED FOR OWNER REVIEW	4/24/24
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ORIGINAL ISSUE DATE:
DECEMBER 4, 2023

DRAWING TITLE
OVERALL UTILITY PLAN - EAST

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-7.3

UTILITY LEGEND:

- EX. OH, ELEC, POLE & GUY WIRE
- EX. U.G. CABLE TV & PEDESTAL
- EX. U.G. COMMUNICATION LINE, PEDESTAL & MANHOLE
- EX. U.G. ELEC,MANHOLE, METER & HANDHOLE
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- EX. TRANSFORMER & IRRIGATION VALVE
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- EX. COMBINED SEWER MANHOLE
- EX. STORM SEWER
- EX. CLEANOUT & MANHOLE
- EX. SQUARE, ROUND, & BEEHIVE CATCH BASIN
- EX. YARD DRAIN & ROOF DRAIN
- EX. UNIDENTIFIED STRUCTURE
- PROPOSED WATER MAIN
- PROPOSED HYDRANT AND GATE VALVE
- PROPOSED TAPPING SLEEVE, VALVE & WELL
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- PROPOSED SANITARY CLEANOUT & MANHOLE
- PROPOSED STORM SEWER
- PROPOSED STORM SEWER CLEANOUT & MANHOLE
- PROPOSED CATCH BASIN, INLET & YARD DRAIN

NOTE: NO DECKS TO BE CONSTRUCTED WITHIN UTILITY EASEMENTS

GENERAL UTILITY NOTES:

1. ALL WORKMANSHIP AND MATERIALS SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF THE TOWNSHIP.
2. ALL TRENCHES UNDER OR WITHIN THREE (3) FEET OR THE FORTY-FIVE (45) DEGREE ZONE OF INFLUENCE LINE OF EXISTING AND/OR PROPOSED PAVEMENT, BUILDING PAD OR DRIVE APPROACH SHALL BE BACKFILLED WITH SAND COMPACTED TO AT LEAST NINETY-FIVE (95) PERCENT OF MAXIMUM UNIT WEIGHT (ASTM D-1557). ALL OTHER TRENCHES TO BE COMPACTED TO 90% OR BETTER.
3. WHERE EXISTING MANHOLES OR SEWER PIPE ARE TO BE TAPPED, DRILL HOLES 4" CENTER TO CENTER, AROUND PERIPHERY OF OPENING TO CREATE A PLANE OF WEAKNESS JOINT BEFORE BREAKING SECTION OUT.
4. THE LOCATIONS AND DIMENSIONS SHOWN ON THE PLANS FOR EXISTING UTILITIES ARE IN ACCORDANCE WITH AVAILABLE INFORMATION WITHOUT UNCOVERING AND MEASURING. THE DESIGN ENGINEER DOES NOT GUARANTEE THE ACCURACY OF THIS INFORMATION OR THAT ALL EXISTING UNDERGROUND FACILITIES ARE SHOWN. CONTRACTOR SHALL FIELD VERIFY UTILITIES.
5. THE CONTRACTOR SHALL COORDINATE TO ENSURE ALL REQUIRED PIPES, CONDUITS, CABLES AND SLEEVES ARE PROPERLY PLACED FOR THE INSTALLATION OF GAS, ELECTRIC, PHONE, CABLE, IRRIGATION, ETC. IN SUCH A MANNER THAT WILL FACILITATE THEIR PROPER INSTALLATION PRIOR TO THE PLACEMENT OF THE PROPOSED PAVEMENT AND LANDSCAPING.
6. PIPE LENGTHS INDICATED ARE FROM CENTER OF STRUCTURE AND TO END OF FLARED END SECTION UNLESS NOTED OTHERWISE.
7. CONTRACTOR SHALL INSPECT ALL EXISTING PUBLIC STORM SEWER, SANITARY SEWER AND WATER MAIN STRUCTURES WITHIN THE LIMITS OF CONSTRUCTION AND WITH THE GOVERNING AGENCY INSPECTOR PRIOR TO ESTABLISHING FINAL GRADE. NOTIFY THE ENGINEER, OWNER/DEVELOPER, AND GOVERNING AGENCY IF STRUCTURE IS DEEMED TO BE STRUCTURALLY UNSOUND AND/OR IN NEED OF REPAIR.

STORM SEWER NOTES:

1. ALL STORM SEWER 12" DIAMETER OR LARGER SHALL BE REINFORCED CONCRETE PIPE (RCP C-76) CLASS IV WITH MODIFIED TONGUE AND GROOVE JOINT WITH RUBBER GASKETS UNLESS SPECIFIED OTHERWISE (ASTM C-443).
2. ALL STORM SEWER LEADS SHALL BE CONSTRUCTED AT 1.00% MINIMUM SLOPE.
3. ALL STORM SEWER 10" OR LESS AND/OR LEADS SHALL BE SDR 26.
4. JOINTS FOR P.V.C. PIPE SHALL BE ELASTOMERIC (RUBBER GASKET) AS SPECIFIED IN A.S.T.M. DESIGNATION D-3212.

WATER MAIN NOTES:

1. ALL WATER MAIN SHALL BE INSTALLED WITH A MINIMUM COVER OF 6.0' BELOW FINISH GRADE. WHEN WATER MAINS MUST DIP TO PASS UNDER A STORM SEWER OR SANITARY SEWER, THE SECTIONS WHICH ARE DEEPER THAN NORMAL SHALL BE KEPT TO A MINIMUM LENGTH BY THE USE OF VERTICAL TWENTY TWO AND A HALF (22.5°) DEGREE BENDS, PROPERLY ANCHORED.
2. ALL TEES, BENDS, CONNECTIONS, ETC. ARE CONSIDERED INCIDENTAL TO THE JOB.
3. PHYSICAL CONNECTIONS SHALL NOT BE MADE BETWEEN EXISTING AND NEW WATER MAINS UNTIL REQUIRED TESTING IS SATISFACTORILY COMPLETED.
4. MAINTAIN 10' HORIZONTAL CLEARANCE BETWEEN OUTER EDGE OF WATERMAIN AND ANY SANITARY/STORM SEWER OR STRUCTURE.
5. NO PHYSICAL CONNECTION TO THE EXISTING WATER MAIN CAN BE MADE UNTIL ALL NEW WATER MAIN PASSES PRESSURE AND BACTERIOLOGICAL TESTS TO THE SATISFACTION OF THE TOWNSHIP.
6. ALL WATER MAIN AND FITTINGS (3" DIAMETER AND LARGER) SHALL BE DUCTILE IRON, CLASS 54, UNLESS OTHERWISE NOTED.
7. WATER MAIN SERVICE LEADS SHALL BE TYPE 'K' ANNEALED SEAMLESS COPPER WITH FLARED FITTINGS, UNLESS OTHERWISE NOTED.
8. ALL FIRE HYDRANTS SHALL BE EJIW #5BR MODEL #250 PER TOWNSHIP STANDARDS.
9. ALL HYDRANTS TO BE A MINIMUM OF 5' FROM BACK OF CURB, TYP.
10. ALL NECESSARY FITTINGS, THRUST BLOCKS, RESTRAINING GLANDS, BLOW OFFS, ETC. FOR WATER MAIN ARE CONSIDERED INCIDENTAL TO THIS PROJECT. THE CONTRACTOR SHALL INSTALL THESE ITEMS AS NECESSARY AND AS REQUIRED BY THE TOWNSHIP.
11. THE WATER MAIN CONTRACTOR SHALL NOTIFY THE INSPECTION SECTION OF THE WHITE LAKE TOWNSHIP WATER DEPARTMENT AT 248-698-7700 AT LEAST THREE WORKING DAYS IN ADVANCE OF STARTING CONSTRUCTION.

SANITARY SEWER NOTES:

1. DOWNSPOUTS, WEEP TILE, FOOTING DRAINS OR ANY CONDUIT THAT CARRIES STORM OR GROUND WATER SHALL NOT BE ALLOWED TO DISCHARGE INTO A SANITARY SEWER.
2. ALL SANITARY LEADS SHALL BE CONSTRUCTED AT 1.00% MINIMUM SLOPE.
3. ALL SANITARY SEWER 8" OR LARGER SHALL BE P.V.C. TRUSS PIPE (ASTM D2680) AND FITTINGS, WITH ELASTOMERIC GASKET JOINTS PER ASTM D3212 UNLESS OTHERWISE NOTED.
4. ALL SANITARY SEWER LEADS SHALL BE POLYVINYL CHLORIDE (PVC) SDR 23.5 PIPE AND FITTINGS. ALL JOINTS TO BE ELASTOMERIC GASKET JOINTS PER ASTM D3212 UNLESS OTHERWISE NOTED.
5. SANITARY LEADS SHALL BE PROVIDED WITH CLEANOUTS EVERY 100 FEET AND AT EVERY BEND AS SHOWN. ALL CLEANOUTS TO BE PROVIDED WITH E.J.I.W. #1565 BOX OR EQUAL.

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BRETT STURGEON HOLLANDSWORTH
LICENSED PROFESSIONAL ENGINEER
License No. 6201064949

NORTH

0 20 40 80
SCALE: 1" = 40'

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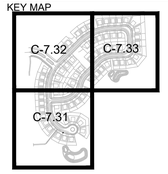
KEY MAP



CLIENT
WHITE LAKE HILL, LLC
31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - SINGLE FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

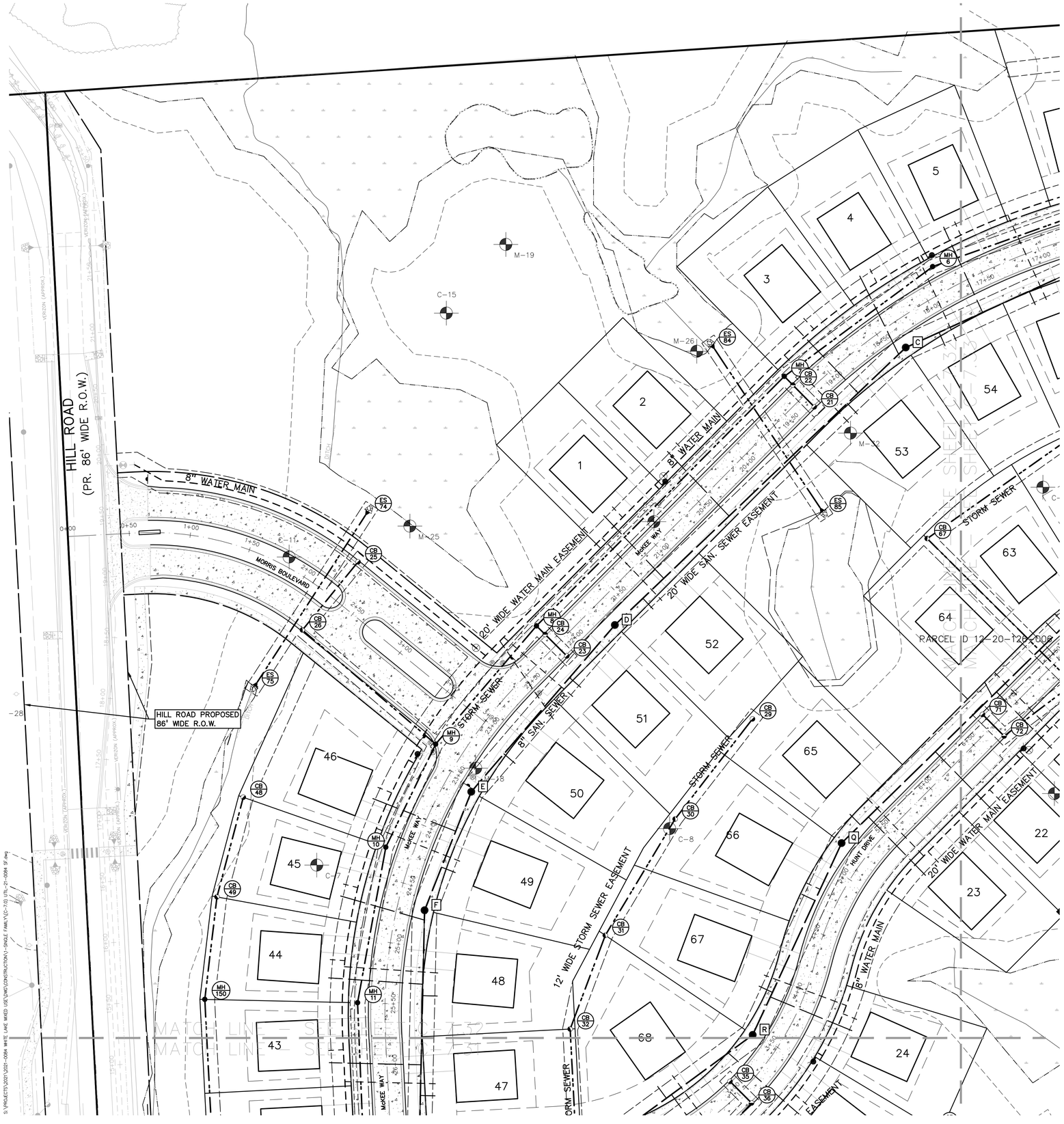
REVISIONS	
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

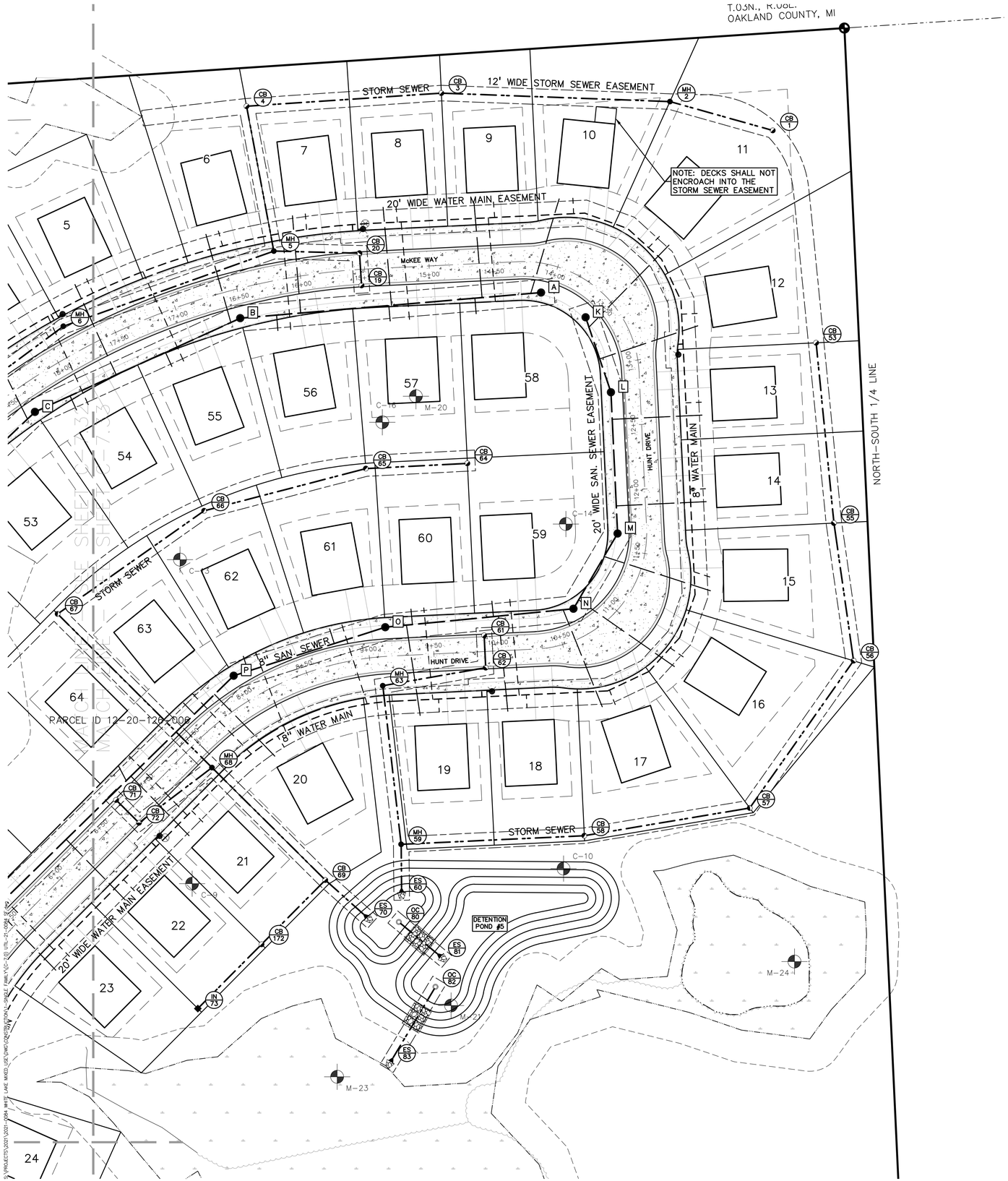
ORIGINAL ISSUE DATE:
MAY 8, 2025

DRAWING TITLE
UTILITY PLAN - SOUTH

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-7.31


HILL ROAD
(PR. 86' WIDE R.O.W.)
HILL ROAD PROPOSED
86' WIDE R.O.W.
8" WATER MAIN
MORRIS BOULEVARD
McKEE WAY
20' WIDE WATER MAIN EASEMENT
20' WIDE SAN. SEWER EASEMENT
8" SAN. SEWER
STORM SEWER
12' WIDE STORM SEWER EASEMENT
HUNT DRIVE
RAVINE
RAVINE
RAVIN



UTILITY LEGEND:

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- EX. U.G. CABLE TV & PEDESTAL
- EX. U.G. COMMUNICATION LINE, PEDESTAL & MANHOLE
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NORTH

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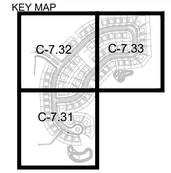

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WHITE LAKE TWP, MI

REVISIONS	
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
MAY 8, 2025

DRAWING TITLE

UTILITY PLAN - EAST

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:

C-7.33

STORM SEWER SYSTEM DESIGN

Location: Oakland County

I = B/(T+D)^E B = 50.12 D = 9.17 E = 0.81
C = varies
T = 20 (min.) Pipe "n" Value = 0.013

FROM STR	TO STR	AREA (A) (Acres)	COEF. C	A x C	TOTAL AREA (AxC)	TOTAL AREA (Acres)	TIME t (min.)	INT. I (in/hr)	FLOW Q (cfs)	PIPE CAP. (cfs)	PIPE DIA. (in.)	PIPE LENGTH (ft.)	PIPE SLOPE (%)	MIN HG PER "Q"	VEL. FULL (ft./sec)	TIME FLOW (min.)	H.G.L. ELEV. UP STREAM	H.G.L. ELEV. DOWN STREAM	RIM ELEV. UP STREAM	RIM ELEV. DOWN STREAM	INVERT ELEV. UP STREAM	INVERT ELEV. DOWN STREAM	PIPE COVER UP STREAM	PIPE COVER DOWN STREAM	HGL COVER UP STREAM	HGL COVER DOWN STREAM
112	111	0.17	0.60	0.10	0.10	0.17	20.00	3.26	0.33	2.52	12	215	0.50	0.01%	3.2	1.1	983.64	982.57	987.27	986.26	982.84	981.77	3.26	3.33	3.63	3.69
111	110	0.33	0.60	0.20	0.30	0.50	21.10	3.17	0.94	3.38	12	215	0.90	0.07%	4.3	0.8	982.57	980.63	986.26	984.26	981.77	979.83	3.33	3.26	3.69	3.63
110	109	0.33	0.60	0.20	0.49	0.82	21.90	3.10	1.53	3.38	12	227	0.90	0.18%	4.3	0.9	980.63	978.69	984.26	982.14	979.83	977.79	3.26	3.18	3.63	3.45
109	108	0.25	0.60	0.15	0.64	1.07	22.80	3.03	1.95	2.20	12	140	0.38	0.30%	2.8	0.8	978.69	978.27	982.14	982.36	977.79	977.26	3.18	3.93	3.45	4.08
108	107	0.00	0.00	0.00	1.42	2.37	23.60	2.97	4.22	4.09	12	138	1.32	1.41%	5.2	0.4	978.27	976.34	982.36	981.75	977.26	975.44	3.93	5.14	4.08	5.41
107	106	0.36	0.60	0.21	1.64	2.73	24.00	2.94	4.81	4.66	12	84	1.71	1.82%	5.9	0.2	976.34	974.80	981.75	975.34	975.44	974.00	5.14	0.17	5.41	0.54
114	113	0.61	0.60	0.37	0.37	0.61	20.00	3.26	1.19	2.11	12	41	0.35	0.11%	2.7	0.3	978.82	978.77	982.32	982.21	977.90	977.76	3.25	3.29	3.50	3.44
113	108	0.69	0.60	0.41	0.78	1.30	20.30	3.23	2.52	2.52	12	99	0.50	0.50%	3.2	0.5	978.77	978.27	982.21	982.36	977.76	977.26	3.29	3.93	3.44	4.08
322	321	0.13	0.60	0.08	0.08	0.13	20.00	3.26	0.25	2.25	12	26	0.40	0.00%	2.9	0.2	990.21	990.10	994.04	994.04	989.41	989.30	3.46	3.57	3.83	3.93
321	426	0.38	0.60	0.23	0.31	0.51	20.20	3.24	1.00	2.25	12	126	0.40	0.08%	2.9	0.7	990.10	989.60	994.04	995.65	989.30	988.80	3.57	5.69	3.93	6.05
426	327	0.00	0.00	0.00	0.31	0.51	20.90	3.18	1.00	2.25	12	73	0.40	0.08%	2.9	0.4	989.60	989.31	995.65	996.19	988.80	988.51	5.69	6.52	6.05	6.88
327	329	0.00	0.00	0.00	1.14	2.01	21.30	3.15	3.58	4.09	15	248	0.40	0.31%	3.3	1.2	989.31	988.32	996.19	994.18	988.31	987.32	6.44	5.42	6.88	5.86
329	423	0.32	0.60	0.19	1.60	2.79	22.50	3.05	4.89	5.00	15	219	0.60	0.57%	4.1	0.9	988.32	987.00	994.18	991.40	987.32	986.00	5.42	3.96	5.86	4.40
423	121	0.00	0.00	0.00	1.60	2.79	23.40	2.98	4.89	5.00	15	84	0.60	0.57%	4.1	0.3	987.00	986.50	991.40	990.21	986.00	985.50	3.96	3.27	4.40	3.71
121	120	0.55	0.60	0.33	2.12	3.65	23.70	2.96	6.27	7.91	15	231	1.50	0.94%	6.5	0.6	986.50	983.03	990.21	987.21	985.50	982.03	3.27	3.75	3.71	4.18
120	119	0.31	0.60	0.18	4.47	7.56	24.30	2.92	13.04	13.29	18	132	1.60	1.54%	7.5	0.3	982.53	980.41	987.21	984.22	981.33	979.21	4.18	3.31	4.68	3.81
119	118	0.49	0.60	0.29	4.95	8.36	24.60	2.90	14.33	22.62	24	114	1.00	0.40%	7.2	0.3	978.41	977.27	984.22	981.31	976.81	975.67	5.16	3.39	5.81	4.04
118	117	0.00	0.00	0.00	5.23	8.83	24.90	2.88	15.04	15.89	30	149	0.15	0.13%	3.2	0.8	974.27	974.05	981.31	980.80	972.27	972.05	6.25	5.96	7.04	6.76
117	116	0.20	0.60	0.12	6.73	11.33	25.70	2.82	19.00	20.51	30	238	0.25	0.21%	4.2	0.9	974.05	973.45	980.80	980.61	972.05	971.45	5.96	6.37	6.76	7.16
116	115	0.34	0.60	0.20	10.21	17.13	26.60	2.76	28.22	29.00	30	90	0.50	0.47%	5.9	0.3	973.45	973.00	980.61	974.08	971.45	971.00	6.37	0.28	7.16	1.08
429	428	0.41	0.60	0.25	0.25	0.41	20.00	3.26	0.81	2.52	12	26	0.50	0.05%	3.2	0.1	990.86	990.73	994.46	994.46	990.06	989.93	3.23	3.36	3.60	3.73
428	327	0.37	0.60	0.22	0.47	0.78	20.10	3.25	1.53	2.52	12	285	0.50	0.18%	3.2	1.5	990.73	989.31	994.46	996.19	989.93	988.51	3.36	6.52	3.73	6.88
318	327	0.71	0.50	0.36	0.36	0.71	20.00	3.26	1.17	2.11	12	104	0.35	0.11%	2.7	0.6	991.67	991.31	995.43	996.19	990.87	990.51	3.39	4.52	3.76	4.88
319	329	0.33	0.60	0.20	0.20	0.33	20.00	3.26	0.65	2.11	12	104	0.35	0.03%	2.7	0.6	989.68	989.32	993.48	994.18	988.88	988.52	3.43	4.49	3.80	4.86
328	329	0.13	0.60	0.08	0.08	0.13	20.00	3.26	0.26	2.11	12	24	0.35	0.01%	2.7	0.1	990.40	990.32	994.18	994.18	989.60	989.52	3.41	3.49	3.78	3.86
122	121	0.31	0.60	0.18	0.18	0.31	20.00	3.26	0.60	2.52	12	26	0.50	0.03%	3.2	0.1	986.63	986.50	990.21	990.21	985.83	985.70	3.21	3.34	3.58	3.71
425	330	0.74	0.60	0.45	0.45	0.74	20.00	3.26	1.45	3.56	12	33	1.00	0.17%	4.5	0.1	987.31	986.97	991.34	992.62	986.51	986.17	3.66	5.28	4.03	5.65
330	422	0.12	0.60	0.07	0.52	0.86	20.10	3.25	1.69	3.56	12	240	1.00	0.22%	4.5	0.9	986.97	984.57	992.62	991.68	986.17	983.77	5.28	6.74	5.65	7.11
422	125	0.00	0.00	0.00	0.52	0.86	21.00	3.17	1.69	5.04	12	58	2.00	0.22%	6.4	0.2	984.57	983.41	991.68	986.97	983.77	982.61	6.74	3.19	7.11	3.56
125	124	0.96	0.60	0.58	1.09	1.82	21.20	3.16	3.45	4.09	15	121	0.40	0.29%	3.3	0.6	983.41	982.93	986.97	987.63	982.41	981.93	3.12	4.27	3.56	4.71
124	123	0.17	0.60	0.10	1.20	1.99	21.80	3.11	3.71	6.64	18	67	0.40	0.13%	3.8	0.3	982.93	982.66	987.63	987.21	981.73	981.46	4.20	4.04	4.71	4.55
123	120	0.21	0.60	0.12	2.17	3.61	22.10	3.08	6.68	7.43	18	26	0.50	0.40%	4.2	0.1	982.66	982.53	987.21	987.21	981.46	981.33	4.04	4.18	4.55	4.68
127	126	0.52	0.60	0.31	0.31	0.52	20.00	3.26	1.03	2.11	12	26	0.35	0.08%	2.7	0.2	983.01	982.92	986.58	986.58	982.21	982.12	3.20	3.29	3.57	3.66
126	123	0.89	0.60	0.53	0.85	1.41	20.20	3.24	2.75	2.76	12	44	0.60	0.59%	3.5	0.2	982.92	982.66	986.58	987.21	982.12	981.86	3.29	4.18	3.66	4.55
141	119	0.31	0.60	0.18	0.18	0.31	20.00	3.26	0.60	2.11	12	118	0.35	0.03%	2.7	0.7	978.82	978.41	982.70	984.22	978.02	977.61	3.51	5.45	3.87	5.81
191	118	0.47	0.60	0.28	0.28	0.47	20.00	3.26	0.92	2.11	12	51	0.35	0.07%	2.7	0.3	977.45	977.27	981.07	981.31	976.65	976.47	3.26	3.68	3.62	4.04
130	129	1.31	0.60	0.79	0.79	1.31	20.00	3.26	2.57	7.47	12	60	4.40	0.52%	9.5	0.1	976.99	974.73	984.00	977.90	976.19	973.57	6.64	3.16	7.01	3.17
129	128	0.00	0.00	0.00	1.23	2.05	20.10	3.25	4.00	4.09	15	64	0.40	0.38%	3.3	0.3	974.73	974.49	977.90	977.60	973.37	973.11	3.09	3.05	3.17	3.11
128	117	0.25	0.60	0.15	1.38	2.30	20.40	3.23	4.45	4.57	15	94	0.50	0.47%	3.7	0.4	974.49	974.05	977.60	980.80	973.11	972.65	3.05	6.72	3.11	6.76
131	129	0.74	0.60	0.44	0.44	0.74	20.00	3.26	1.44	5.63	12	43	2.50	0.16%	7.2	0.1	975.45	974.73	979.00	977.90	974.65	973.57	3.18	3.16	3.55	3.17
132	117	0.00	0.00	0.00	0.00	0.00	20.00	3.26	0.00	2.11	12	34	0.35	0.00%	2.7	0.2	974.05	974.05	977.10	980.80	972.86	972.75	3.07	6.89	3.05	6.76
138	137	0.39	0.60	0.23	0.23	0.39	20.00	3.26	0.76	3.19	12	238	0.80	0.05%	4.1	1.0	986.69	984.79	991.07	989.47	985.89	983.99	4.01	4.32	4.38	4.68
137	136	0.14	0.60	0.09	0.32	0.53	21.00	3.17	1.01	4.22	12	160	1.40	0.08%	5.4	0.5	981.79	979.55	989.47	983.09	980.99	978.75	7.32	3.17	7.68	3.54
136	135	1.72	0.60	1.03	1.55	2.59	21.50	3.13	4.86	4.91	12	219	1.90	1.86%	6.3	0.6	979.55	975.40	983.09	979.36	978.75	974.60	3.17	3.59	3.54	3.96
135	134	0.85	0.60	0.51	2.40	3.99	22.10	3.08	7.38	7.57	18	49	0.52	0.49%	4.3	0.2	975.40	975.14	979.36	979.30	974.20	973.94	3.45	3.64	3.96	4.15
134	133	0.69	0.60	0.42	2.81	4.69	22.30	3.07	8.62	8.66	18	26	0.68	0.67%	4.9	0.1	975.14	974.97	979.30	979.31	973.94	973.77	3.64	3.83	4.15	4.34
133	116	0.77	0.60	0.46	3.27	5.45	22.40	3.06	10.01	10.08	18	165	0.92	0.91%	5.7	0.5	974.97	973.45	979.31	980.61	973.77	972.25	3.83	6.65	4.34	7.16
139	136	0.34	0.60	0.20	0.20	0.34	20.00	3.26	0.66	7.13	12	49	4.00	0.03%	9.1	0.1	981.51	979.55	985.57	983.09	980.71	978.75	3.69	3.17	4.05	3.54
140	135	0.56	0.60	0.33	0.33	0.56	20.00	3.26	1.09	5.96	12	58	2.80	0.09%	7.6	0.1	977.03	975.40	981.00	979.36	976.23	974.60	3.61	3.59	3.97	3.96
333	332	0.13	0.60	0.08	0.08	0.13	20.00	3.26	0.25	2.52	12	26	0.50	0.01%	3.2	0.1	988.74	988.61	992.56	992.35	987.94	987.81	3.45	3.37	3.82	3.73
332	331	0.18	0.60	0.11	0.18	0.31	20.10	3.25	0.60	2.11	12	58	0.35	0.03%	2.7	0.4	988.61	988.41	992.35	993.80	987.81	987.61	3.37	5.02	3.73	5.39
331	424	0.20	0.60	0.12	0.30	0.50	20.50	3.22	0.97	2.52	12	99	0.50	0.07%	3.2	0.5	988.41	987.92	993.80	993.29	987.61	987.12	5.02	5.00	5.39	5.37
424	340	0.00	0.00	0.00	0.30	0.50	21.00	3.17	0.97	2.98	12	117	0.70	0.07%	3.8	0.5	987.92	987.10	993.29	992.05	987.12	986.30	5.00	4.58	5.37	4.95
340	215	0.29	0.60	0.17	0.70	1.17	21.50	3.13	2.19	4.06	12	249	1.30	0.38%	5.2	0.8	987.10	983.87	992.05	988.62	986.30	983.07	4.58	4.39	4.95	4.75
215	209	0.53	0.60	0.32	1.02	1.69	22.30	3.07	3.12	7.56	12	52	4.50	0.77%	9.6	0.1	983.87	981.54	988.62	987.84	983.07	980.74	4.39	5.94	4.75	6.31
209	208	0.39	0.60	0.23	1.91	3.18	22.40	3.06	5.83	6.64	18	128	0.40	0.31%	3.8	0.6	981.54	981.02	987.84	986.56	980.34	979.82	5.80	5.03	6.31	5.54
208	221	0.39	0.60	0.23	3.21	5.35	23.00	3.01	9.67	10.12	24	253	0.20	0.18%	3.2	1.3	981.02	980.52	986.56	984.35	979.42	978.92	4.89	3.18	5.54	3.83
221	205	0.50	0.60	0.30	3.97	6.62	24.30	2.92	11.59	12.39	24	116	0.30	0.26%	3.9	0.5	980.52	980.17	984.35	983.50	978.92	978.57	3.18	2.68	3.83	3.33
205	204	0.45	0.60	0.27	4.85	8.08	24.80	2.88	13.97	14.31	24	41	0.40	0.38%	4.6	0.2	980.17	980.01	983.50	983.55	978.57	978.41	2.68	2.89	3.33	3.54
204	203	0.15	0.60	0.09	4.94	8.23	25.00	2.87	14.17	14.48	24	51	0.41	0.39%	4.6	0.2	980.01	979.80	983.55	980.68	978.41	978.20	2.89	0.23	3.54	0.88
339	340	0.37	0.60	0.22	0.22	0.37	20.00	3.26	0.73	2.11	12	26	0.35	0.04%	2.7	0.2	987.19	987.10	992.05	992.05	986.39	986.30	4.49	4.58	4.86	4.95
212	211	0.18	0.60	0.11	0.11	0.18	20.00	3.26	0.35	5.16	12	214	2.10	0.01%	6.6	0.5	987.59	983.10	991.59	986.96	986.79	982.30	3.63	3.49	4.00	3.85
211	210	0.42	0.60	0.25	0.60	1.00	20.50	3.22	1.92	2.11	12	24	0.35	0.29%	2.7	0.1	983.10	983.02	986.96	989.84	982.30	982.22	3.49	6.45	3.85	6.81
210	209	0.10	0.60	0.06	0.66	1.10	20.60	3.21	2.11	3.19	12	186	0.80	0.35%	4.1	0.8	983.02	981.54	989.84	987.84	982.22	980.74	6.45	5.94	6.81	6.31
214	213	0.26	0.60	0.15	0.15	0.26	20.00	3.26	0.51	2.11	12	26	0.35	0.02%	2.7	0.2	983.42	983.33	987.09	987.09	982.62	982.53	3.30	3.40	3.67	3.76
213	211	0.14	0.60	0.09	0.24	0.40	20.20	3.24	0.78	2.11	12	64	0.35	0.05%	2.7	0.4	983.33	983.10	987.09	986.96	982.53	982.30	3.40	3.49	3.76	3.85
431	208	0.55	0.60	0.33	0.33	0.55	20.00	3.26	1.07	3.56	12	39	1.00	0.09%	4.5	0.1	982.91	982.52	986.85	986.56	982.11	981.72	3.57	3.67	3.93	4.04
223	208	1.24	0.60	0.74	0.74	1.24	20.00	3.26	2.42	3.56	12	43	1.00	0.46%	4.5	0.2	982.45	982.02	986.50	986.56	981.65	981.22	3.68	4.17	4.05	4.54
222	221	0.77	0.60	0.46	0.46	0.77	20.00	3.26	1.51	2.11	12	26	0.35	0.18%	2.7	0.2	980.61	980.52	984.35	984.35	979.81	979.72	3.37	3.46	3.74	3.83
207	206	0.16	0.60	0.10	0.10	0.16	20.00	3.26	0.32	3.56	12	227	1.00	0.01%	4.5	0.8	983.49	981.22	986.92	986.50	982.69	980.42	3.07	4.91	3.43	5.28
206	205	0.23	0.60	0.14	0.60	1.00	20.80	3.19	1.92	2.11	12	42	0.35	0.29%	2.7	0.3	980.30	980.17	986.50	983.50	979.42	979.27	5.91	3.06	6.20	3.33
220	206	0.61	0.60	0.36	0.36	0.61	20.00	3.26	1.19	2.11	12	42	0.35	0.11%	2.7	0.3	980.37	980.30	984.00	986.50	979.57	979.42	3.27	5.91	3.63	6.20
320	316	0.64	0.53	0.34	0.34	0.64	20.00	3.26	1.10	2.52	12	173	0.50	0.10%	3.2	0.9	990.85	989.98	994.74	995.09	990.05	989.18	3.52	4.74	3.89	5.11
316	315	0.53	0.60	0.32	0.66	1.17	20.90	3.18	2.09	2.52	12	129	0.50	0.35%	3.2	0.7	989.98	989.33	995.09	993.83	989.18	988.53	4.74	4.12	5.11	4.49
315	314	0.74	0.60	0.44	1.10	1.91	21.60	3.12	3.44	5.75	18	25	0.30	0.11%	3.3	0.1	988.33	988.26	993.83	993.76	987.13	987.06	4.98	4.99	5.49	5.50
314	313	0.40	0.60	0.24	1.34	2.31	21.70	3.12	4.18	5.75	18	34	0.30	0.16%	3.3	0.2	988.26	988.16	993.76	992.91	987.06	986.96	4.99	4.24	5.50	4.75
313	312	0.24	0.60	0.14	1.49	2.55	21.90	3.10	4.61	5.75	18	179	0.30	0.19%	3.3	0.9	988.16	987.62	992.91	992.40	986.96	986.42	4.24	4.26	4.75	4.77
312	310	0.27	0.60	0.16	1.82	3.11	22.80	3.03	5.51	10.12	24	161	0.20	0.06%	3.2	0.8	987.62	987.30	992.40	988.03	986.02	985.70	4.12	0.08	4.77	0.73
323	312	0.28	0.60	0.17	0.17	0.28	20.00	3.26	0.55	2.11	12	26	0.35	0.02%	2.7	0.2	987.71	987.62	992.40	992.40	986.91	986.82	4.31	4.41	4.68	4.77
324	430	0.86	0.60	0.51	0.51	0.86	20.00	3.26	1.68	2.02	12	108	0.32	0.22%	2.6	0.7	988.10	987.86	991.10	991.10	987.15	986.80	2.79	3.13	3.00	3.24
430	338	0.32	0.60	0.19	0.71	1.18	20.70	3.20	2.26	3.23	15	136	0.25	0.12%	2.6	0.9	987.86	987.70	991.10	991.10	986.70	986.36	2.96	3.30	3.24	3.40
338	337	0.36	0.60	0.21	0.92	1.53	21.60	3.12	2.87	3.23	15	124	0.25	0.20%	2.6	0.8	987.70	987.45	991.10	991.10	986.36	986.05	3.30	3.61	3.40	3.65
337	336	0.87	0.60	0.52	1.44	2.40	22.40	3.06	4.41	4.46	18	26	0.18	0.18%	2.5	0.2	987.45	987.41	991.10	991.10	985.95	985.91	3.44	3.49	3.65	3.69
336	335	0.73	0.60	0.44	1.88	3.13	22.60	3.04	5.72	8.16	24	97	0.13	0.06%	2.6	0.6	987.41	987.28	991.10	991.30	985.81	985.68	3.04	3.37	3.69	4.02
335	334	0.24	0.60	0.14	2.02	3.37	23.20	3.00	6.07	8.16	24	138	0.13	0.07%	2.6	0.9	987.28	987.10	991.30	987.98	985.68	985.50	3.37	0.23	4.02	0.88
362	361	0.45	0.55	0.25	0.25	0.45	20.00	3.26	0.82	2.25	12	107	0.40	0.05%	2.9	0.6	1009.50	1009.08	1013.85	1013.92	1008.70	1008.28	3.98	4.48	4.34	4.84

NOTE:

STORM SEWER AND DETENTION CALCULATIONS USE AN AVERAGE C FACTOR OF 0.60 FOR MULTIPLE FAMILY DEVELOPMENTS PER TOWNSHIP ENGINEERING DESIGN STANDARDS

PEA GROUP
t: 844.813.2949
www.peagroup.com

STATE OF MICHIGAN
BRETT STURGEON HOLLANDSWORTH
LICENSED PROFESSIONAL ENGINEER
License No. 6201064949

811 Know what's below. Call before you dig.

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

KEY MAP

CLIENT
WHITE LAKE HILL, LLC
31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - MULTI FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

REVISIONS

DRAFT	2/19/24
ISSUED FOR OWNER REVIEW	4/24/24
FINAL SITE PLAN REVIEW	7/3/24
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
DECEMBER 4, 2023

DRAWING TITLE
STORM SEWER CALCULATIONS

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-11.1

NOTE:

STORM SEWER AND DETENTION CALCULATIONS USE AN AVERAGE C FACTOR OF 0.60 FOR MULTIPLE FAMILY DEVELOPMENTS PER TOWNSHIP ENGINEERING DESIGN STANDARDS

STORM SEWER SYSTEM DESIGN

Location: Oakland County

I = B/(T+D)^E B = 50.12 D = 9.17 E = 0.81
C = varies
T = 20 (min.) Pipe "n" Value = 0.013

FROM STR	TO STR	AREA (A) (Acres)	COEF. C	A x C	TOTAL AREA (AxC)	TOTAL AREA (Acres)	TIME t (min.)	INT. I (in/hr)	FLOW Q (cfs)	PIPE CAP. (cfs)	PIPE DIA. (in.)	PIPE LENGTH (ft.)	PIPE SLOPE (%)	MIN HG PER "Q"	VEL. FULL (ft./sec)	TIME FLOW (min.)	H.G.L. ELEV. UP STREAM	H.G.L. ELEV. DOWN STREAM	RIM ELEV. UP STREAM	RIM ELEV. DOWN STREAM	INVERT ELEV. UP STREAM	INVERT ELEV. DOWN STREAM	PIPE COVER UP STREAM	PIPE COVER DOWN STREAM	HGL COVER UP STREAM	HGL COVER DOWN STREAM
361	360	0.30	0.60	0.18	0.43	0.75	20.60	3.21	1.38	2.25	12	26	0.40	0.15%	2.9	0.2	1009.08	1008.97	1013.92	1013.92	1008.28	1008.17	4.48	4.58	4.84	4.95
360	359	0.28	0.60	0.17	0.60	1.03	20.80	3.19	1.91	3.82	12	248	1.15	0.29%	4.9	0.9	1008.97	1006.12	1013.92	1011.02	1008.17	1005.32	4.58	4.54	4.95	4.90
359	358	0.34	0.60	0.20	1.03	1.74	21.70	3.12	3.20	3.77	12	134	1.12	0.81%	4.8	0.5	1006.12	1004.62	1011.02	1009.59	1005.32	1003.82	4.54	4.61	4.90	4.97
358	357	0.00	0.00	0.00	1.03	1.74	22.20	3.07	3.20	4.58	12	67	1.65	0.81%	5.8	0.2	1004.62	1003.52	1009.59	1008.52	1003.82	1002.72	4.61	4.63	4.97	5.00
357	356A	0.21	0.60	0.13	2.26	3.97	22.40	3.06	6.92	9.14	15	102	2.00	1.15%	7.4	0.2	1003.52	1001.49	1008.52	1006.00	1002.52	1000.49	4.56	4.08	5.00	4.51
356A	356	0.00	0.00	0.00	2.26	3.97	22.60	3.04	6.92	9.14	15	102	2.00	1.15%	7.4	0.2	1001.49	999.44	1006.00	1004.51	1000.49	998.44	4.08	4.62	4.51	5.06
356	355	0.43	0.60	0.26	2.52	4.40	22.80	3.03	7.64	8.76	15	25	1.84	1.40%	7.1	0.1	999.44	998.99	1004.51	1004.92	998.44	997.99	4.62	5.50	5.06	5.94
355	354	0.14	0.60	0.08	2.61	4.54	22.90	3.02	7.87	9.14	15	26	2.00	1.49%	7.4	0.1	998.99	998.47	1004.92	1004.98	997.99	997.47	5.50	6.08	5.94	6.51
354	353	0.42	0.60	0.25	2.86	4.96	23.00	3.01	8.61	11.51	18	103	1.20	0.67%	6.5	0.3	998.47	997.23	1004.98	1003.67	997.27	996.03	6.01	5.93	6.51	6.44
353	352	0.06	0.60	0.03	2.89	5.02	23.30	2.99	8.64	14.85	18	83	2.00	0.68%	8.4	0.2	997.23	995.57	1003.67	1002.90	996.03	994.37	5.93	6.82	6.44	7.33
352	351	0.00	0.00	0.00	5.29	9.01	23.50	2.98	15.73	25.29	24	115	1.25	0.48%	8.1	0.2	995.57	994.13	1002.90	999.72	993.97	992.53	6.68	4.94	7.33	5.59
351	350	0.18	0.60	0.11	5.39	9.19	23.70	2.96	15.97	25.29	24	78	1.25	0.50%	8.1	0.2	994.13	993.16	999.72	1000.50	992.53	991.56	4.94	6.70	5.59	7.35
350	349	0.00	0.00	0.00	5.39	9.19	23.90	2.95	15.97	18.24	24	86	0.65	0.50%	5.8	0.2	993.16	992.60	1000.50	993.49	991.56	991.00	6.70	0.24	7.35	0.89
363	359	0.37	0.60	0.22	0.22	0.37	20.00	3.26	0.73	2.11	12	26	0.35	0.04%	2.7	0.2	1006.21	1006.12	1011.02	1011.02	1005.41	1005.32	4.45	4.54	4.81	4.90
367	366	1.21	0.52	0.63	0.63	1.21	20.00	3.26	2.04	2.98	12	200	0.70	0.33%	3.8	0.9	1006.08	1004.68	1010.45	1009.99	1005.28	1003.88	3.99	4.94	4.36	5.31
366	365	0.24	0.60	0.14	0.77	1.44	20.90	3.18	2.44	2.52	12	94	0.50	0.47%	3.2	0.5	1004.68	1004.21	1009.99	1008.78	1003.88	1003.41	4.94	4.20	5.31	4.56
365	364	0.21	0.60	0.12	0.89	1.65	21.40	3.14	2.80	2.87	12	67	0.65	0.62%	3.7	0.3	1004.21	1003.78	1008.78	1008.52	1003.41	1002.98	4.20	4.37	4.56	4.74
364	357	0.36	0.60	0.22	1.11	2.01	21.70	3.12	3.45	3.56	12	26	1.00	0.94%	4.5	0.1	1003.78	1003.52	1008.52	1008.52	1002.98	1002.72	4.37	4.63	4.74	5.00
370	369	1.38	0.60	0.83	0.83	1.38	20.00	3.26	2.70	2.76	12	95	0.60	0.58%	3.5	0.5	997.32	996.75	1001.18	1000.81	996.52	995.95	3.50	3.70	3.86	4.06
369	368	1.02	0.60	0.61	1.44	2.40	20.50	3.22	4.63	6.21	18	26	0.35	0.19%	3.5	0.1	996.75	996.66	1000.81	1000.81	995.55	995.46	3.55	3.65	4.06	4.15
368	352	0.86	0.60	0.52	1.96	3.26	20.60	3.21	6.28	7.05	18	243	0.45	0.36%	4.0	1.0	996.66	995.57	1000.81	1002.90	995.46	994.37	3.65	6.82	4.15	7.33
371	352	0.73	0.60	0.44	0.44	0.73	20.00	3.26	1.44	2.11	12	118	0.35	0.16%	2.7	0.7	998.98	998.57	1002.45	1002.90	998.18	997.77	3.10	3.97	3.47	4.33
385	384	1.84	0.47	0.87	0.87	1.84	20.00	3.26	2.85	2.11	12	119	0.35	0.64%	2.7	0.7	1009.30	1008.54	1012.42	1013.64	1008.15	1007.74	3.10	4.73	3.12	5.10
384	383	0.41	0.60	0.25	1.32	2.58	20.70	3.20	4.22	5.96	12	180	2.80	1.40%	7.6	0.4	1008.54	1003.51	1013.64	1009.41	1007.74	1002.71	4.73	5.53	5.10	5.90
383	382	0.33	0.60	0.20	1.55	2.97	21.10	3.17	4.90	6.17	12	140	3.00	1.90%	7.9	0.3	1003.51	999.31	1009.41	1005.39	1002.71	998.51	5.53	5.70	5.90	6.07
382	381	0.18	0.60	0.11	1.76	3.32	21.40	3.14	5.54	6.17	12	91	3.00	2.42%	7.9	0.2	999.31	996.57	1005.39	1004.72	998.51	995.77	5.70	7.78	6.07	8.14
381	380	0.00	0.00	0.00	1.99	3.70	21.60	3.12	6.22	6.27	12	154	3.10	3.05%	8.0	0.3	996.57	991.80	1004.72	992.25	995.77	991.00	7.78	0.08	8.14	0.45
386	384	0.33	0.60	0.20	0.20	0.33	20.00	3.26	0.65	3.56	12	26	1.00	0.03%	4.5	0.1	1009.80	1009.54	1013.64	1013.64	1009.00	1008.74	3.47	3.73	3.84	4.10
387	383	0.05	0.60	0.03	0.03	0.05	20.00	3.26	0.11	3.56	12	26	1.00	0.00%	4.5	0.1	1005.77	1005.51	1009.41	1009.41	1004.97	1004.71	3.27	3.53	3.64	3.90
388	382	0.18	0.60	0.11	0.11	0.18	20.00	3.26	0.35	2.11	12	26	0.35	0.01%	2.7	0.2	1001.91	1001.81	1005.44	1005.39	1001.11	1001.01	3.17	3.20	3.54	3.57
389	381	0.38	0.60	0.23	0.23	0.38	20.00	3.26	0.74	3.56	12	94	1.00	0.04%	4.5	0.3	999.51	998.57	1003.40	1004.72	998.71	997.77	3.52	5.78	3.89	6.14
376	375	0.60	0.60	0.36	0.36	0.60	20.00	3.26	1.18	2.25	12	99	0.40	0.11%	2.9	0.6	996.38	995.99	999.82	1000.57	995.58	995.19	3.07	4.22	3.44	4.59
375	374	0.50	0.59	0.29	0.65	1.10	20.60	3.21	2.09	2.44	12	26	0.47	0.34%	3.1	0.1	995.99	995.86	1000.57	1000.57	995.19	995.06	4.22	4.34	4.59	4.71
374	373	0.29	0.60	0.17	0.82	1.39	20.70	3.20	2.64	3.06	12	82	0.74	0.55%	3.9	0.4	995.86	995.26	1000.57	999.97	995.06	994.46	4.34	4.34	4.71	4.71
373	372	0.00	0.00	0.00	0.82	1.39	21.10	3.17	2.64	5.04	12	83	2.00	0.55%	6.4	0.2	993.46	991.80	999.97	992.25	992.66	991.00	6.14	0.08	6.51	0.45
345	344	0.34	0.60	0.21	0.21	0.34	20.00	3.26	0.67	2.11	12	26	0.35	0.04%	2.7	0.2	992.03	991.94	995.43	995.43	991.23	991.14	3.04	3.13	3.40	3.49
344	343	0.25	0.60	0.15	0.36	0.59	20.20	3.24	1.15	2.11	12	154	0.35	0.10%	2.7	1.0	991.94	991.40	995.43	991.85	991.14	990.60	3.13	0.08	3.49	0.45
404	403	0.68	0.60	0.41	0.41	0.68	20.00	3.26	1.33	6.00	12	27	2.84	0.14%	7.6	0.1	975.05	974.29	975.29	977.15	974.25	973.49	-0.13	2.49	0.24	2.86
403	402	0.00	0.00	0.00	0.41	0.68	20.10	3.25	1.33	5.63	12	277	2.50	0.14%	7.2	0.6	973.27	966.35	977.15	970.62	972.47	965.55	3.51	3.90	3.88	4.27
402	401	0.00	0.00	0.00	0.69	1.15	20.70	3.20	2.22	2.25	12	78	0.40	0.39%	2.9	0.5	966.35	966.04	970.62	968.37	965.55	965.24	3.90	1.97	4.27	2.33
401	400	0.24	0.60	0.15	0.84	1.40	21.20	3.16	2.65	2.67	12	44	0.56	0.55%	3.4	0.2	966.04	965.79	968.37	966.97	965.24	964.99	1.97	0.81	2.33	1.18
405	402	0.48	0.60	0.29	0.29	0.48	20.00	3.26	0.93	2.11	12	29	0.35	0.07%	2.7	0.2	966.50	966.40	968.49	970.62	965.70	965.60	1.62	3.85	1.99	4.22
409	408	1.49	0.60	0.89	0.89	1.49	20.00	3.26	2.91	2.11	12	69	0.35	0.67%	2.7	0.4	976.23	975.77	976.46	976.22	975.21	974.97	0.08	0.08	0.23	0.45
449	371	0.00	0.00	0.00	0.00	0.00	20.00	3.26	0.00	2.11	12	129	0.35	0.00%	2.7	0.8	999.43	998.98	1004.39	1002.45	998.63	998.18	4.59	3.10	4.96	3.47
451	370	0.00	0.00	0.00	0.00	0.00	20.00	3.26	0.00	2.11	12	127	0.35	0.00%	2.7	0.8	997.77	997.32	1002.46	1001.18	996.97	996.52	4.32	3.50	4.69	3.86
452	370	0.00	0.00	0.00	0.00	0.00	20.00	3.26	0.00	2.11	12	118	0.35	0.00%	2.7	0.7	997.73	997.32	1002.52	1001.18	996.93	996.52	4.42	3.50	4.79	3.86
453	389	0.00	0.00	0.00	0.00	0.00	20.00	3.26	0.00	2.11	12	38	0.35	0.00%	2.7	0.2	999.65	999.51	1003.80	1003.40	998.85	998.71	3.79	3.52	4.15	3.89
454	385	0.00	0.00	0.00	0.00	0.00	20.00	3.26	0.00	2.11	12	125	0.35	0.00%	2.7	0.8	1009.39	1009.30	1013.85	1012.42	1008.59	1008.15	4.09	3.10	4.46	3.12
455	362	0.00	0.00	0.00	0.00	0.00	20.00	3.26	0.00	2.11	12	243	0.35	0.00%	2.7	1.5	1010.36	1009.50	1014.49	1013.85	1009.56	1008.70	3.77	3.98	4.14	4.34
456	457	0.00	0.00	0.00	0.00	0.00	20.00	3.26	0.00	2.11	12	74	0.35	0.00%	2.7	0.5	976.29	976.03	980.14	981.50	975.49	975.23	3.48	5.11	3.85	5.47
457	403	0.00	0.00	0.00	0.00	0.00	20.50	3.22	0.00	3.90	12	230	1.20	0.00%	5.0	0.8	976.03	973.27	981.50	977.15	975.23	972.47	5.11	3.51	5.47	3.88
FOREBAY TO POND																										
105	104	0.00	0.00	0.00	0.00	0.00	20.00	3.26	0.24	2.11	12	78	0.35	0.00%	2.7	0.5	0.00	0.00	974.74	972.33	970.00	969.73	3.57	1.44	974.74	972.33
202	201	0.00	0.00	0.00	0.00	0.00	20.00	3.26	0.07	2.11	12	58	0.35	0.00%	2.7	0.4	0.00	0.00	981.50	976.14	978.00	977.80	2.33	-2.83	981.50	976.14
231	303	2.54	0.60	1.52	1.52	2.54	20.00	3.26	4.97	6.17	12	69	3.00	1.95%	7.9	0.1	0.00	0.00	984.29	985.81	983.04	980.97	0.08	3.67	0.00	0.00
391	390	0.00	0.00	0.00	0.00	0.00	20.00	3.26	0.09	2.52	12	64	0.50	0.00%	3.2	0.3	0.00	0.00	989.80	983.08	985.32	985.00	3.31	-3.08	989.80	983.08
393	392	0.00	0.00	0.00	0.00	0.00	20.00	3.26	0.04	2.52	12	62	0.50	0.00%	3.2	0.3	0.00	0.00	989.30	983.08	985.31	985.00	2.82	-3.09	989.30	983.08
395	394	0.00	0.00	0.00	0.00	0.00	20.00	3.26	0.08	2.25	12	44	0.40	0.00%	2.9	0.3	0.00	0.00	987.50	983.08	985.00	984.83	1.33	-2.92	987.50	983.08
POND OUTLETS																										
102	101	4.85	0.60	2.91	2.91	4.85	20.00	3.26	2.45	3.56	12	57	1.00	0.47%	4.5	0.2	0.00	0.00	977.00	978.00	968.03	967.46	7.80	9.38	0.00	0.00
101	100	0.00	0.00	0.00	2.91	4.85	20.20	3.24	2.45	3.56	12	146	1.00	0.47%	4.5	0.5	0.00	0.00	978.00	972.04	967.46	966.00	9.38	4.87	0.00	0.00

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811 Know what's below. Call before you dig.

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

KEY MAP

CLIENT
WHITE LAKE HILL, LLC
31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - MULTI FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

REVISIONS

DRAFT	2/19/24
ISSUED FOR OWNER REVIEW	4/24/24
FINAL SITE PLAN REVIEW	7/3/24
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
DECEMBER 4, 2023

DRAWING TITLE
STORM SEWER CALCULATIONS

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-11.2

STORM SEWER SYSTEM DESIGN

Region Michigan
Location: Oakland County

I = B/(T+D)^E B = 175.00 D = 25.00 E = 1.00
C = varies
T = 20 (min.) Pipe "n" Value = 0.013

FROM STR	TO STR	AREA (A) (Acres)	COEF. C	A x C	TOTAL AREA (AxC)	TOTAL AREA (Acres)	TIME t (min.)	INT. I (in/hr)	FLOW Q (cfs)	PIPE CAP. (cfs)	PIPE DIA. (in.)	PIPE LENGTH (ft.)	PIPE SLOPE (%)	MIN HG PER "Q"	VEL. FULL (ft./sec)	TIME FLOW (min.)	H.G.L. ELEV. UP STREAM	H.G.L. ELEV. DOWN STREAM	RIM ELEV. UP STREAM	RIM ELEV. DOWN STREAM	INVERT ELEV. UP STREAM	INVERT ELEV. DOWN STREAM	PIPE COVER UP STREAM	PIPE COVER DOWN STREAM	HGL COVER UP STREAM	HGL COVER DOWN STREAM
1	2	0.66	0.35	0.23	0.23	0.66	20.00	3.89	0.89	3.56	12	83	1.00	0.06%	4.5	0.3	1022.80	1021.98	1026.70	1028.41	1022.00	1021.18	3.53	6.06	3.90	6.43
2	3	0.00	0.00	0.00	0.23	0.66	20.30	3.86	0.89	3.56	12	177	1.00	0.06%	4.5	0.6	1021.98	1020.21	1028.41	1025.64	1021.18	1019.41	6.06	5.07	6.43	5.43
3	4	0.43	0.35	0.15	0.38	1.09	20.90	3.81	1.45	7.13	12	151	4.00	0.17%	9.1	0.3	1020.21	1014.17	1025.64	1016.87	1019.41	1013.37	5.07	2.34	5.43	2.71
4	5	0.35	0.35	0.12	0.51	1.44	21.20	3.79	1.91	2.11	12	114	0.35	0.29%	2.7	0.7	1014.17	1013.77	1016.87	1020.97	1013.37	1012.97	2.34	6.83	2.71	7.20
5	6	0.00	0.00	0.00	0.68	1.94	21.90	3.73	2.54	5.04	12	173	2.00	0.51%	6.4	0.4	1013.77	1010.31	1020.97	1014.39	1012.97	1009.51	6.83	3.71	7.20	4.08
6	7	0.00	0.00	0.00	0.68	1.94	22.30	3.70	2.54	7.56	12	151	4.50	0.51%	9.6	0.3	1010.31	1003.52	1014.39	1008.65	1009.51	1002.72	3.71	4.77	4.08	5.13
7	8	0.00	0.00	0.00	1.01	2.89	22.60	3.68	3.71	6.22	12	288	3.05	1.09%	7.9	0.6	1003.52	994.74	1008.65	999.88	1002.72	993.94	4.77	4.77	5.13	5.14
8	9	0.00	0.00	0.00	1.26	3.60	23.20	3.63	4.57	4.79	15	127	0.55	0.50%	3.9	0.5	994.74	994.04	999.88	999.29	993.74	993.04	4.70	4.80	5.14	5.24
9	10	0.00	0.00	0.00	1.50	4.28	23.70	3.59	5.38	5.59	15	94	0.75	0.70%	4.6	0.3	988.04	987.34	999.29	999.02	987.04	986.34	10.80	11.24	11.24	11.68
10	11	0.00	0.00	0.00	1.50	4.28	24.00	3.57	5.38	5.59	15	129	0.75	0.70%	4.6	0.5	987.34	986.37	999.02	997.75	986.34	985.37	11.24	10.94	11.68	11.37
11	12	0.00	0.00	0.00	1.50	4.28	24.50	3.54	5.38	6.46	15	110	1.00	0.70%	5.3	0.3	986.37	985.28	997.75	996.61	985.37	984.28	10.94	10.90	11.37	11.34
12	13	0.00	0.00	0.00	1.79	5.12	24.80	3.51	6.30	6.46	15	61	1.00	0.95%	5.3	0.2	985.28	984.67	996.61	995.53	984.28	983.67	10.90	10.43	11.34	10.87
13	14	0.22	0.35	0.08	3.07	8.76	25.00	3.50	10.73	16.61	18	165	2.50	1.04%	9.4	0.3	984.67	980.53	995.53	991.24	983.47	979.33	10.36	10.20	10.87	10.71
14	15	0.29	0.35	0.10	4.01	11.45	25.30	3.48	13.94	16.61	18	131	2.50	1.76%	9.4	0.2	980.53	977.25	991.24	987.89	979.33	976.05	10.20	10.13	10.71	10.64
15	16	0.00	0.00	0.00	4.36	12.47	25.50	3.47	15.12	27.71	24	131	1.50	0.45%	8.8	0.2	977.25	975.38	987.89	979.21	975.65	973.69	9.99	3.27	10.64	3.83
16	17	0.27	0.35	0.09	5.04	14.39	25.70	3.45	17.38	18.24	24	34	0.65	0.59%	5.8	0.1	975.38	975.18	979.21	979.00	973.69	973.47	3.27	3.28	3.83	3.82
17	86	0.13	0.35	0.05	5.08	14.52	25.80	3.44	17.50	18.24	24	179	0.65	0.60%	5.8	0.5	975.18	974.10	979.00	977.19	973.37	972.20	3.38	2.74	3.82	3.09
86	18	0.36	0.35	0.13	5.21	14.88	26.30	3.41	17.76	20.51	30	40	0.25	0.19%	4.2	0.2	974.10	974.00	977.19	974.25	972.10	972.00	2.30	-0.54	3.09	0.25
19	20	0.21	0.35	0.07	0.07	0.21	20.00	3.89	0.28	3.56	12	25	1.00	0.01%	4.5	0.1	1017.59	1017.34	1022.67	1022.67	1016.79	1016.54	4.71	4.96	5.08	5.33
20	5	0.29	0.35	0.10	0.17	0.50	20.10	3.88	0.67	5.04	12	66	2.00	0.04%	6.4	0.2	1017.34	1016.02	1022.67	1020.97	1016.54	1015.22	4.96	4.58	5.33	4.95
21	22	0.45	0.35	0.16	0.16	0.45	20.00	3.89	0.61	3.56	12	25	1.00	0.03%	4.5	0.1	1003.97	1003.72	1008.08	1008.08	1003.17	1002.92	3.74	3.99	4.11	4.36
22	7	0.50	0.35	0.17	0.33	0.94	20.10	3.88	1.28	5.04	12	10	2.00	0.13%	6.4	0.0	1003.72	1003.52	1008.08	1008.65	1002.92	1002.72	3.99	4.77	4.36	5.13
23	24	0.39	0.35	0.13	0.13	0.39	20.00	3.89	0.52	3.56	12	25	1.00	0.02%	4.5	0.1	995.19	994.94	999.31	999.31	994.39	994.14	3.75	4.00	4.11	4.36
24	8	0.32	0.35	0.11	0.25	0.71	20.10	3.88	0.96	5.04	12	10	2.00	0.07%	6.4	0.0	994.94	994.74	999.31	999.88	994.14	993.94	4.00	4.77	4.36	5.14
25	26	0.34	0.35	0.12	0.12	0.34	20.00	3.89	0.46	3.56	12	72	1.00	0.02%	4.5	0.3	991.48	990.76	996.61	996.61	990.68	989.96	4.76	5.48	5.12	5.84
26	9	0.35	0.35	0.12	0.24	0.68	20.30	3.86	0.93	2.52	12	144	0.50	0.07%	3.2	0.7	990.76	990.04	996.61	999.29	989.96	989.24	5.48	8.88	5.84	9.24
27	28	0.43	0.35	0.15	0.15	0.43	20.00	3.89	0.58	3.56	12	25	1.00	0.03%	4.5	0.1	991.23	990.98	996.04	996.04	990.43	990.18	4.45	4.70	4.81	5.06
28	12	0.42	0.35	0.15	0.29	0.84	20.10	3.88	1.14	5.04	12	10	2.00	0.10%	6.4	0.0	990.98	990.78	996.04	996.61	990.18	989.98	4.70	5.47	5.06	5.84
29	30	0.66	0.35	0.23	0.23	0.66	20.00	3.89	0.90	2.52	12	104	0.50	0.06%	3.2	0.5	991.30	990.79	994.75	997.40	990.50	989.99	3.08	6.25	3.45	6.61
30	31	0.20	0.35	0.07	0.30	0.86	20.50	3.85	1.16	2.11	12	111	0.35	0.11%	2.7	0.7	990.79	990.40	997.40	998.00	989.99	989.60	6.25	7.24	6.61	7.60
31	32	0.52	0.35	0.18	0.48	1.38	21.20	3.79	1.83	2.11	12	82	0.35	0.27%	2.7	0.5	990.40	990.11	998.00	996.50	989.60	989.31	7.24	6.02	7.60	6.39
32	33	0.50	0.35	0.18	0.66	1.88	21.70	3.75	2.47	2.52	12	140	0.50	0.48%	3.2	0.7	990.11	989.41	996.50	998.07	989.31	988.61	6.02	8.29	6.39	8.65
33	34	0.00	0.00	0.00	0.97	2.77	22.40	3.69	3.58	3.82	15	113	0.35	0.31%	3.1	0.6	987.07	986.72	998.07	996.87	985.91	985.52	10.72	9.91	11.00	10.15
34	13	0.00	0.00	0.00	1.20	3.42	23.00	3.65	4.36	5.25	18	61	0.25	0.17%	3.0	0.3	986.72	986.57	996.87	995.53	985.52	985.37	9.64	8.46	10.15	8.97
35	36	0.48	0.35	0.17	0.17	0.48	20.00	3.89	0.65	3.56	12	25	1.00	0.03%	4.5	0.1	993.52	993.27	999.14	999.14	992.72	992.47	5.25	5.50	5.62	5.87
36	37	0.41	0.35	0.14	0.31	0.89	20.10	3.88	1.21	2.52	12	62	0.50	0.11%	3.2	0.3	993.27	992.96	999.14	999.10	992.47	992.16	5.50	5.78	5.87	6.14
37	33	0.00	0.00	0.00	0.31	0.89	20.40	3.85	1.21	3.56	12	105	1.00	0.11%	4.5	0.4	992.96	991.91	999.10	998.07	992.16	991.11	5.78	5.79	6.14	6.15
38	39	0.29	0.35	0.10	0.10	0.29	20.00	3.89	0.40	3.56	12	25	1.00	0.01%	4.5	0.1	991.42	991.17	996.29	996.29	990.62	990.37	4.51	4.76	4.87	5.12
39	34	0.36	0.35	0.12	0.23	0.65	20.10	3.88	0.88	5.04	12	10	2.00	0.06%	6.4	0.0	991.17	990.97	996.29	996.87	990.37	990.17	4.76	5.53	5.12	5.90
40	41	0.34	0.35	0.12	0.12	0.34	20.00	3.89	0.46	4.36	12	186	1.50	0.02%	5.6	0.6	989.61	986.82	993.43	990.50	988.81	986.02	3.46	3.31	3.82	3.68
41	45	0.26	0.35	0.09	0.21	0.60	20.60	3.84	0.81	7.13	12	54	4.00	0.05%	9.1	0.1	985.32	983.17	990.50	986.88	984.52	982.37	4.81	3.35	5.18	3.71
45	42	0.73	0.35	0.25	0.47	1.33	20.70	3.83	1.78	2.11	12	208	0.35	0.25%	2.7	1.3	983.17	982.44	986.88	985.50	982.37	981.64	3.35	2.69	3.71	3.06
42	43	1.07	0.35	0.37	0.84	2.40	22.00	3.72	3.13	3.23	15	107	0.25	0.23%	2.6	0.7	982.44	982.17	985.50	990.67	981.44	981.17	2.62	8.06	3.06	8.50
43	44	0.00	0.00	0.00	0.84	2.40	22.70	3.67	3.13	3.23	15	25	0.25	0.23%	2.6	0.2	982.17	982.11	990.67	990.67	981.17	981.11	8.06	8.12	8.50	8.56
44	14	0.00	0.00	0.00	0.84	2.40	22.90	3.65	3.13	3.23	15	10	0.25	0.23%	2.6	0.1	982.11	982.08	990.67	991.24	981.11	981.08	8.12	8.72	8.56	9.16
46	47	0.44	0.35	0.15	0.15	0.44	20.00	3.89	0.59	3.56	12	33	1.00	0.03%	4.5	0.1	981.00	980.67	985.79	985.99	980.20	979.87	4.42	4.95	4.79	5.32
47	15	0.58	0.35	0.20	0.36	1.02	20.10	3.88	1.39	3.56	12	92	1.00	0.15%	4.5	0.3	980.67	979.75	985.99	987.89	979.87	978.95	4.95	7.77	5.32	8.14
48	49	0.29	0.35	0.10	0.10	0.29	20.00	3.89	0.39	3.56	12	84	1.00	0.01%	4.5	0.3	982.04	981.20	985.45	986.63	981.24	980.40	3.04	5.06	3.41	5.43
49	150	0.31	0.35	0.11	0.21	0.60	20.30	3.86	0.81	2.11	12	84	0.35	0.05%	2.7	0.5	981.20	980.91	986.63	989.32	980.40	980.11	5.06	8.05	5.43	8.42
150	50	0.00	0.00	0.00	0.21	0.60	20.80	3.82	0.81	2.52	12	147	0.50	0.05%	3.2	0.8	980.91	980.17	989.32	985.90	980.11	979.37	8.05	5.36	8.42	5.73
50	51	0.33	0.35	0.12	0.33	0.93	21.60	3.76	1.22	2.52	12	151	0.50	0.12%	3.2	0.8	980.17	979.42	985.90	985.60	979.37	978.62	5.36	5.82	5.73	6.18
51	52	0.34	0.35	0.12	0.44	1.27	22.40	3.69	1.64	5.04	12	179	2.00	0.21%	6.4	0.5	979.42	975.83	985.60	981.30	978.62	975.03	5.82	5.10	6.18	5.47
52	16	0.38	0.35	0.13	0.58	1.65	22.90	3.65	2.11	2.52	12	109	0.50	0.35%	3.2	0.6	975.83	975.38	981.30	979.21	975.03	974.49	5.10	3.56	5.47	3.83
53	55	0.17	0.35	0.06	0.06	0.17	20.00	3.89	0.23	7.56	12	140	4.50	0.00%	9.6	0.2	1020.74	1014.43	1027.14	1018.53	1019.94	1013.63	6.03	3.73	6.40	4.10
55	56	0.37	0.35	0.13	0.19	0.54	20.20	3.87	0.73	7.56	12	108	4.50	0.04%	9.6	0.2	1008.43	1003.59	1018.53	1007.14	1007.63	1002.79	9.73	3.18	10.10	3.55
56	57	0.31	0.35	0.11	0.30	0.85	20.40	3.85	1.15	7.13	12	139	4.00	0.10%	9.1	0.3	1003.59	998.02	1007.14	1001.75	1002.79	997.22	3.18	3.36	3.55	3.73
57	58	0.22	0.35	0.08	0.38	1.07	20.70	3.83	1.44	5.04	12	130	2.00	0.16%	6.4	0.3	998.02	995.43	1001.75	999.00	997.22	994.63	3.36	3.21	3.73	3.57
58	59	0.22	0.35	0.08	0.45	1.29	21.00	3.80	1.72	3.19	12	142	0.80	0.23%	4.1	0.6	995.43	994.29	999.00	999.41	994.63	993.49	3.21	4.76	3.57	5.12
59	60	0.00	0.00	0.00	0.78	2.22	21.60	3.76	2.92	7.13	12	37	4.00	0.67%	9.1	0.1	994.29	992.80	999.41	993.25	993.49	992.00	4.76	0.08	5.12	0.45
61	62	0.27	0.35	0.10	0.10	0.27	20.00	3.89	0.37	3.56	12	25	1.00	0.01%	4.5	0.1	1009.93	1009.68	1014.78	1014.78	1009.13	1008.88	4.49	4.74	4.86	5.11
62	63	0.66	0.35	0.23	0.33	0.93	20.10	3.88	1.26	6.67	12	81	3.50	0.13%	8.5	0.2	1009.68	1006.85	1014.78	1011.97	1008.88	1006.05	4.74	4.76	5.11	5.13
63	59	0.00	0.00	0.00	0.33	0.93	20.30	3.86	1.26	7.56	12	123	4.50	0.13%	9.6	0.2	1000.85	995.29	1011.97	999.41	1000.05	994.49	10.76	3.76	11.13	4.12
64	65	0.46	0.35	0.16	0.16	0.46	20.00	3.89	0.63	7.13	12	79	4.00	0.03%	9.1	0.1	1010.37	1007.23	1014.76	1011.60	1009.57	1006.43	4.02	4.01	4.39	4.37
65	66	0.34	0.35	0.12	0.28	0.80	20.10	3.88	1.09	7.13	12	129	4.00	0.09%	9.1	0.2	1006.23	1001.05	1011.60	1004.89	1005.43	1000.25	5.01	3.47	5.37	3.83
66	67	0.55	0.35	0.19	0.47	1.35	20.30	3.86	1.82	5.04	12	139	2.00	0.26%	6.4	0.4	1001.05	998.28	1004.89	1001.15	1000.25	997.48	3.47	2.50	3.83	2.87
67	68	0.65	0.35	0.23	0.70	1.99	20.70	3.83	2.67	3.23	15	169	0.25	0.17%	2.6	1.1	998.28	997.86	1001.15	1005.49	997.28	996.86	2.43	7.19	2.87	7.63
68	69	0.00	0.00	0.00	0.98	2.80	21.80	3.74	3.66	10.21	15	123	2.50	0.32%	8.3	0.2	996.76	993.67	1005.49	997.65	995.76	992.67	8.29	3.54	8.73	3.98
69	70	0.11	0.35	0.04	1.13	3.24	22.00	3.72	4.22	9.33	24	43	0.17	0.03%	3.0	0.2	993.67	993.60	997.65	993.79	992.07	992.00	3.33	-0.46	3.98	0.19
71	72	0.43	0.35	0.15	0.15	0.43	20.00	3.89	0.58	3.56	12	25	1.00	0.03%	4.5	0.1	999.36	999.11	1003.72	1003.72	998.56	998.31	3.99	4.24	4.35	4.60
72	68	0.38	0.35	0.13	0.28	0.81	20.10	3.88	1.10	2.52	12	71	0.50	0.09%	3.2	0.4	999.11	998.76	1003.72	1005.49	998.31	997.96	4.24	6.36	4.60	6.73
73	172	0.08	0.35	0.03	0.03	0.08	20.00	3.89	0.11	2.11	12	70	0.35	0.00%	2.7	0.4	993.68	993.68	996.25	996.25	992.56	992.32	2.52	2.76	2.57	2.57
172	69	0.24	0.35	0.09	0.11	0.32	20.40	3.85	0.44	2.11	12	70	0.35	0.02%	2.7	0.4	993.68	993.67	996.25	997.65	992.32	992.07	2.76	4.41	2.57	3.98
74	75	0.00	0.00	0.00	0.00	0.00	20.00	3.89	0.00	9.10	18	170	0.75	0.00%	5.2	0.6	987.18	985.90	0.75	0.75	985.98	984.70	-986.93	-985.66	-986.43	-985.15
76	77	0.18	0.35	0.06	5.27	15.06	20.00	3.89	20.50	4.65	12	59	1.70	33.13%	5.9	0.2	991.36	971.80	973.17	973.75	972.00	971.00	0.00	1.58	-18.19	1.95
78	79	1.94	0.35	0.68	5.95	16.99	20.00	3.89	23.13	5.56	18	89	0.28	4.85%	3.1	0.5	976.26	971.95	972.71	971.35	971.00	970.75	0.00	-1.10	-3.55	-0.60
80	81	0.32	0.35	0.11	2.02	5.78	20.00	3.89	7.87	3.90	12	42	1.20	4.89%	5.0	0.1	994.35	992.30	993.17	992.95	992.00	991.50	0.00	0.28	-1.18	0.65
82	83	0.62	0.35	0.22	2.24	6.40	20.00	3.89	8.71	5.04	12	67	2.00	5.99%	6.4	0.2	994.99	990.95	992.67	988.24	991.50	990.15	0.00	-3.08	-2.32	-2.71
85	84	0.80	0.35	0.28	0.28	0.80	20.00	3.89	1.08	3.23	15	163	0.25	0.03%	2.6	1.0	991.97	991.56	0.75	0.75	990.97	990.56	-991.66	-991.25	-991.22	-990.81
91	90	0.00	0.00	0.00	0.00	0.00	20.00	3.89	0.00	7.32	12	27	4.22	0.00%	9.3	0.0	978.71	977.58	978.50	977.37	977.91	976.78	-0.58	-0.58	-0.21	-0.21

S:\PROJECTS\2021\2021-0084 WHITE LAKE MIXED USE\PWO\CONSTRUCTION\1-SINGLE FAMILY\[C-11.0 DRAINAGE-2]-0084 SF.dwg

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BRETT STURGEON HOLLANDSWORTH
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License No. 6201064949

NORTH

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KEY MAP

CLIENT

WHITE LAKE HILL, LLC
31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE

THE AVALON - SINGLE FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

REVISIONS

FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
MAY 8, 2025

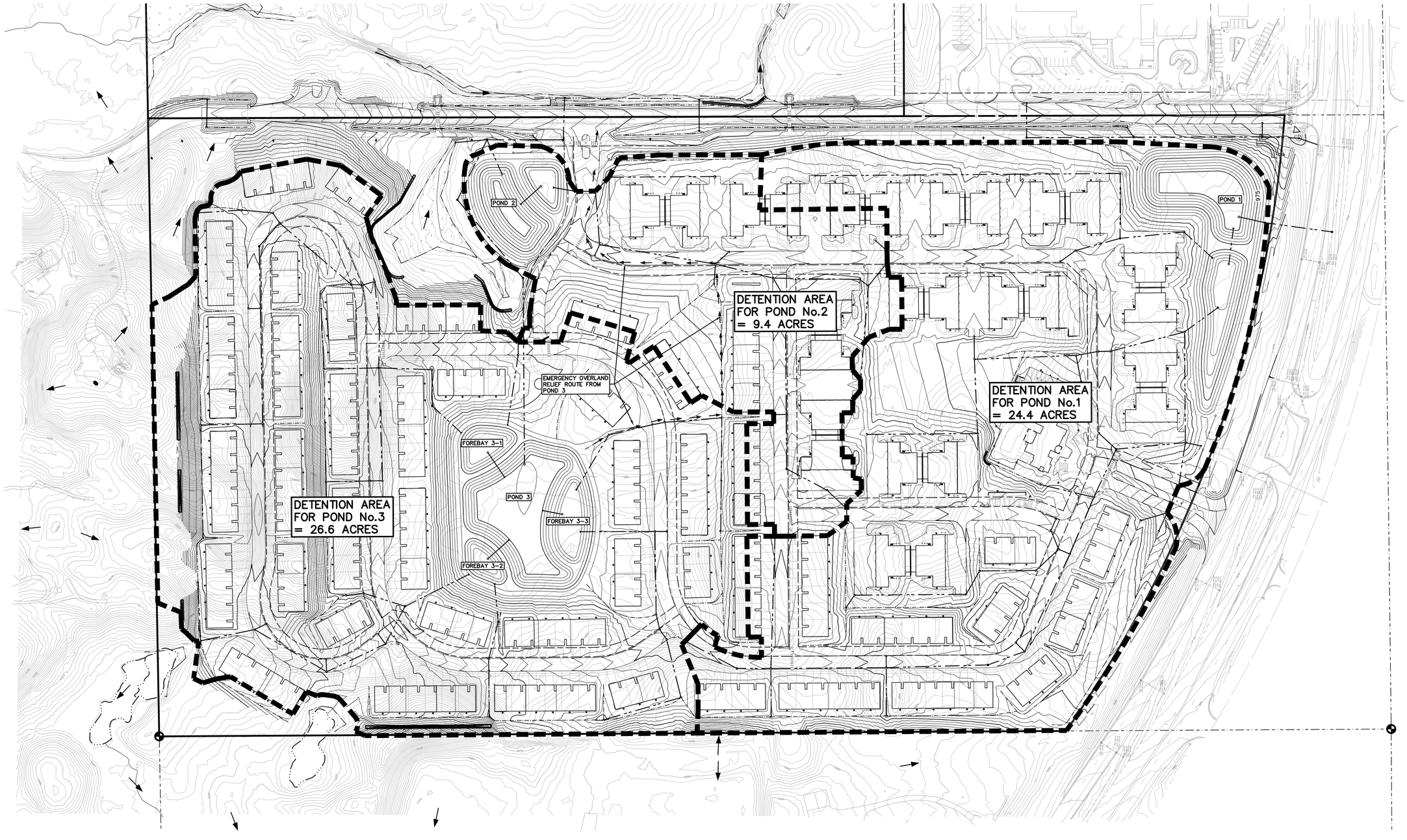
DRAWING TITLE

DESIGN CALCULATIONS

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:

C-11.31



NOTE:

STORM SEWER AND DETENTION CALCULATIONS USE AN AVERAGE C FACTOR OF 0.60 FOR MULTIPLE FAMILY DEVELOPMENTS PER TOWNSHIP ENGINEERING DESIGN STANDARDS

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NORTH

0 50 100 200
SCALE: 1" = 100'

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KEY MAP

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31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - MULTI FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

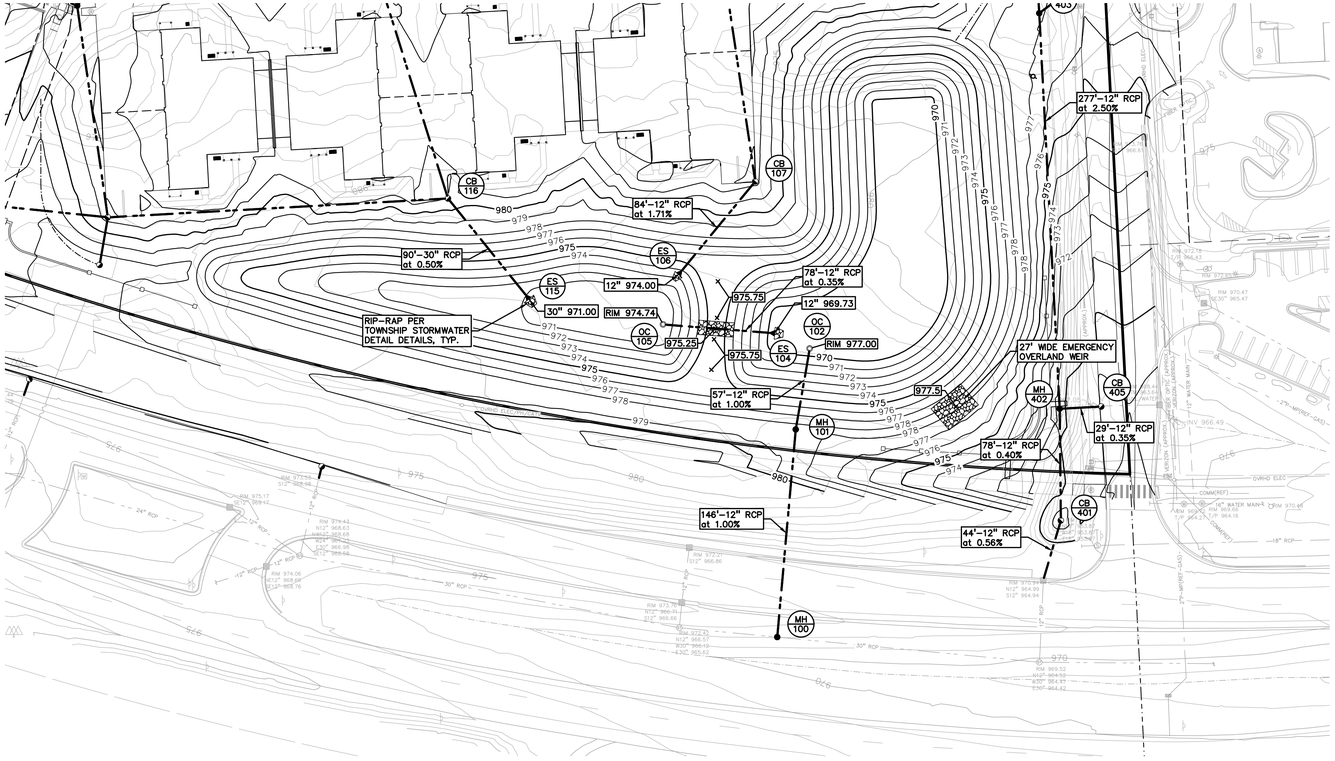
REVISIONS	
DRAFT	2/19/24
ISSUED FOR OWNER REVIEW	4/24/24
FINAL SITE PLAN REVIEW	7/3/24
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
DECEMBER 4, 2023

DRAWING TITLE
OVERALL DRAINAGE AREAS

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-12.0



Detention Basin		
Contributing Area (A):	24.5	acre
Allowable Discharge (Qa)	2.45	cfs (0.1*area)
Coefficient of Runoff (Cr):	0.60	
Forebay Storage Volume Required (1-yr Design Storm)		
Qo = ((Qa)/(A)(Cr):	0.17	cfs/acre impervious
T = -25 + ((2700/Qo))^0.5:	101.03	minutes
Vs = (4320(T)/(T+25)) - 40Qo(T):	2,776	cf/acre impervious
Vt = (Vs)(A)(Cr):	40,807	cf
Detention Storage Volume Required (100-yr Design Storm)		
Qo = ((Qa)/(A)(Cr):	0.17	cfs/acre impervious
T = -25 + ((10312.5/Qo))^0.5:	221.30	minutes
Vs = (16500(T)/(T+25)) - 40Qo(T):	13,320	cf/acre impervious
Vt = (Vs)(A)(Cr):	195,804	cf

Storage Provided in Forebay

1-yr Storage Elevation: 974.74

Elev. (ft)	Area (sf)	Vol. (cf)	Total Vol. (cf)
970.0	0	0	0
971.0	3,495	1,748	1,748
972.0	7,040	5,268	7,015
973.0	10,635	8,838	15,853
974.0	14,565	12,600	28,453
975.0	18,920	16,743	45,195

Forebay Restriction Design		
Basin Outlet Elevation:	970.00	
Storage Elevation:	974.74	
Avg. Head over Orifice (Hw):	2.37	ft
Allowable Discharge (Qa): (48 hrs)	0.24	cfs
Standpipe Restriction Hole Dia:	1.50	in
Standpipe Restriction Hole Area:	0.0123	sft
Number of Restriction Holes:	2	
Total Hole Area:	0.0245	sft
Actual Discharge (Q)	0.19	cfs
Q = 0.62 * A * (2 * G * Hw)^0.5		
Drain Time:	60	hrs

Detention Volume minus Forebay:	154,997	cf
100-yr Storage Elevation:	976.00	Calc.
100-yr Storage Elevation:	977.00	Provided

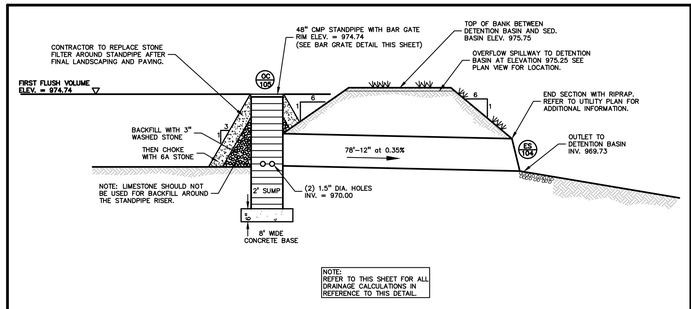
Elev. (ft)	Area (sf)	Vol. (cf)	Total Vol. (cf)
969	0	0	0
970	11,595	5,798	5,798
971	14,990	13,293	19,090
972	18,620	16,805	35,895
973	22,485	20,553	56,448
974	26,570	24,528	80,975
975	30,880	28,725	109,700
976	60,300	45,590	155,290
977	68,980	64,640	219,930

100-yr Detention Basin Restriction Design		
Basin Outlet Elevation:	969.00	
Storage Elevation:	977.00	
Avg. Head over Orifice: (2/3h)	5.33	ft
Allowable Discharge (Qa)	2.45	cfs
Standpipe Restriction Hole Dia.:	6	in
Standpipe Restriction Hole Area:	0.1963	sft
Number of Restriction Holes:	1	
Total Hole Area:	0.1963	sft
Actual Discharge (Q)	2.25	cfs
Q = 0.62 * A * (2 * G * Hw)^0.5		

100 Year Emergency Overflow Weir		
Flow (Q): 215/(t+25) x A x C	37.2	cfs
Time (T): Overland, Storm & Fill Pond	60	min
Length of Spillway (L):	31	ft
Depth of Water over Spillway (H):	0.50	ft
Uses Cipoletti Weir Equation (Q=3.367 * L * H^3/2)		

NOTE:

STORM SEWER AND DETENTION CALCULATIONS USE AN AVERAGE C FACTOR OF 0.60 FOR MULTIPLE FAMILY DEVELOPMENTS PER TOWNSHIP ENGINEERING DESIGN STANDARDS

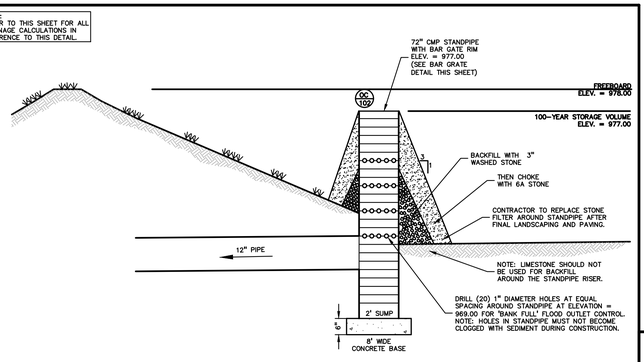


NOTE: REFER TO THIS SHEET FOR ALL DRAINAGE CALCULATIONS IN REFERENCE TO THIS DETAIL.

SEDIMENTATION BASIN RISER DETAIL (FOREBAY)

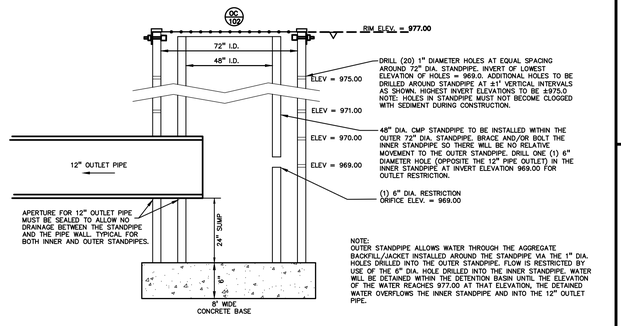
NOT TO SCALE

NOTE: REFER TO THIS SHEET FOR ALL DRAINAGE CALCULATIONS IN REFERENCE TO THIS DETAIL.



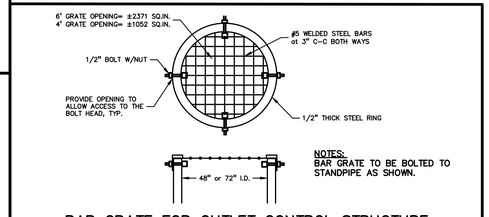
DETENTION BASIN OUTLET CONTROL STRUCTURE DETAIL

NOT TO SCALE



OUTLET CONTROL STANDPIPE DETAIL (OC102)

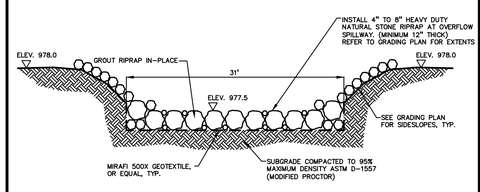
NOT TO SCALE



NOTES:
BAR GRATE TO BE BOLTED TO STANDPIPE AS SHOWN.

BAR GRATE FOR OUTLET CONTROL STRUCTURE

NOT TO SCALE



RIP–RAP OVERFLOW WEIR DETAIL

NOT TO SCALE

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NORTH

0 25 50 100
SCALE: 1" = 50'

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KEY MAP

CLIENT
WHITE LAKE HILL, LLC
31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - MULTI FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

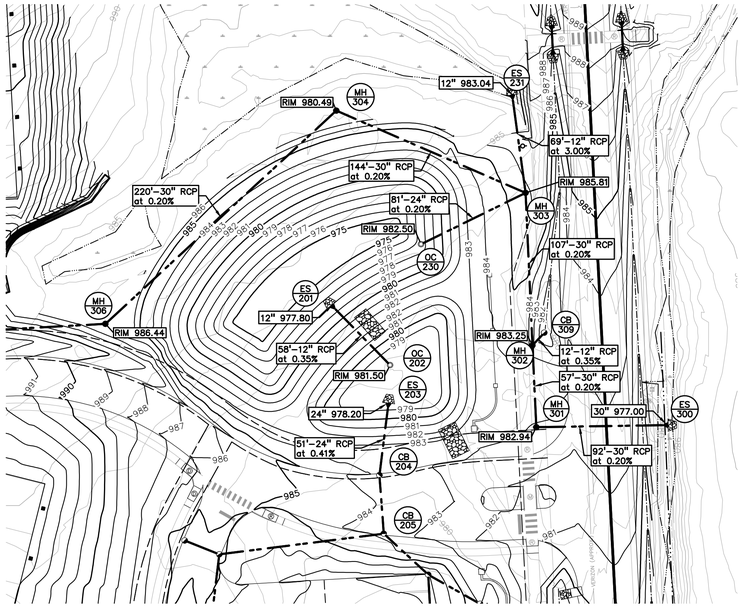
REVISIONS	
DRAFT	2/19/24
ISSUED FOR OWNER REVIEW	4/24/24
FINAL SITE PLAN REVIEW	7/3/24
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
DECEMBER 4, 2023

DRAWING TITLE
DETENTION POND 1

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-12.1



Detention Basin		
Contributing Area (A):	9.5	acre
Allowable Discharge (Qa)	1.90	cfs (0.2*area)
Coefficient of Runoff (Cr):	0.60	
Forebay Storage Volume Required (1-yr Design Storm)		
Qo = ((Qa)/(A)(Cr):	0.33	cfs/acre impervious
T = -25 + ((2700/Qo))^0.5:	65.45	minutes
Vs = (4320(T)/(T+25)) - 40Qo(T):	2,262	cf/acre impervious
Vt = (Vs)(A)(Cr):	12,893	cf
Detention Storage Volume Required (100-yr Design Storm)		
Qo = ((Qa)/(A)(Cr):	0.33	cfs/acre impervious
T = -25 + ((10312.5/Qo))^0.5:	151.78	minutes
Vs = (16500(T)/(T+25)) - 40Qo(T):	12,163	cf/acre impervious
Vt = (Vs)(A)(Cr):	69,329	cf
Detention Volume minus Forebay:	**56,436**	**cf**
Storage Provided in Detention Basin		
1-yr Storage Elevation:	981.34	
100-yr Storage Elevation:	981.69	Calc.
100-yr Storage Elevation:	982.00	Provided

Elev. (ft)	Area (sf)	Vol. (cf)	Total Vol. (cf)
978.2	1,740	0	0
979.0	2,775	1,806	1,806
980.0	4,300	3,538	5,343
981.0	6,000	5,150	10,493
982.0	7,940	6,970	17,463

Forebay Restriction Design		
Basin Outlet Elevation:	978.20	
Storage Elevation:	981.34	
Avg. Head over Orifice (Hw):	1.57	ft
Allowable Discharge (Qa): (48 hrs)	0.07	cfs
Standpipe Restriction Hole Dia:	1.00	in
Standpipe Restriction Hole Area:	0.0055	sft
Number of Restriction Holes:	2	
Total Hole Area:	0.0109	sft
Actual Discharge (Q)	0.07	cfs
Q = 0.62 * A * (2 * G * Hw)^0.5		
Drain Time:	53	hrs

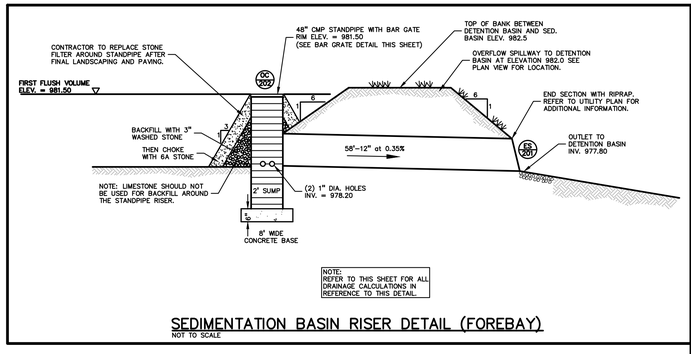
Elev. (ft)	Area (sf)	Vol. (cf)	Total Vol. (cf)
978	9,542	0	0
979	12,242	10,892	10,892
980	15,160	13,701	24,593
981	18,300	16,730	41,323
982	21,670	19,985	61,308
982.5	33,194	15,701	77,009

100-yr Detention Basin Restriction Design		
Basin Outlet Elevation:	978.00	
Storage Elevation:	982.00	
Avg. Head over Orifice: (2/3h)	2.67	ft
Allowable Discharge (Qa)	1.90	cfs
Standpipe Restriction Hole Dia.:	6.5	in
Standpipe Restriction Hole Area:	0.2303	sft
Number of Restriction Holes:	1	
Total Hole Area:	0.2303	sft
Actual Discharge (Q)	1.87	cfs
Q = 0.62 * A * (2 * G * Hw)^0.5		

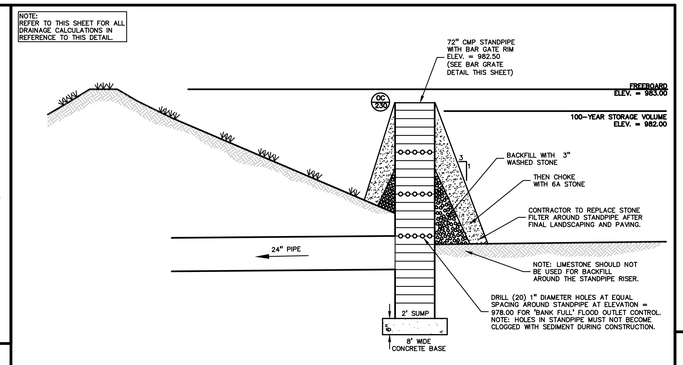
100 Year Emergency Overflow Weir		
Flow (Q): 215/(t+25) x A x C	17.5	cfs
Time (T): Overland, Storm & Fill Pond	45	min
Length of Spillway (L):	15	ft
Depth of Water over Spillway (H):	0.50	ft
Uses Cipoletti Weir Equation (Q=3.367 * L * H^3/2)		

NOTE:

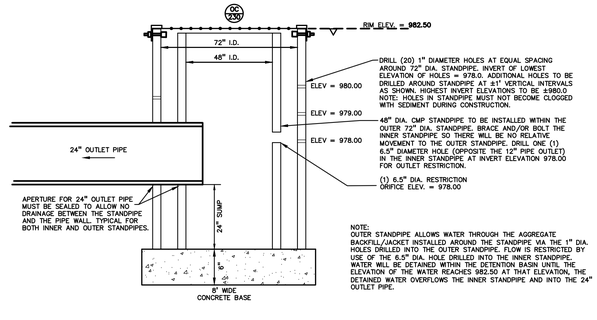
STORM SEWER AND DETENTION CALCULATIONS USE AN AVERAGE C FACTOR OF 0.60 FOR MULTIPLE FAMILY DEVELOPMENTS PER TOWNSHIP ENGINEERING DESIGN STANDARDS



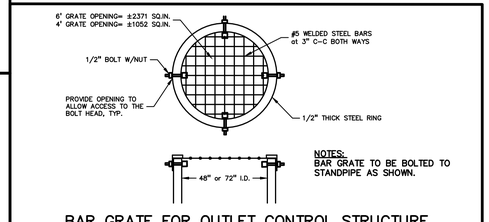
SEDIMENTATION BASIN RISER DETAIL (FOREBAY)
NOT TO SCALE



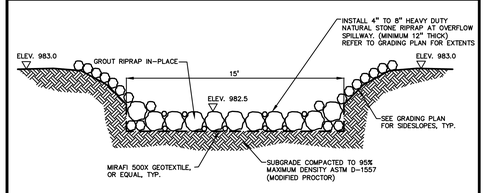
DETENTION BASIN OUTLET CONTROL STRUCTURE DETAIL
NOT TO SCALE



OUTLET CONTROL STANDPIPE DETAIL (OC230)
NOT TO SCALE



BAR GRATE FOR OUTLET CONTROL STRUCTURE
NOT TO SCALE



RIP-RAP OVERFLOW WEIR DETAIL
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HIGHLAND ROAD
WHITE LAKE TWP, MI

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DRAFT	2/19/24
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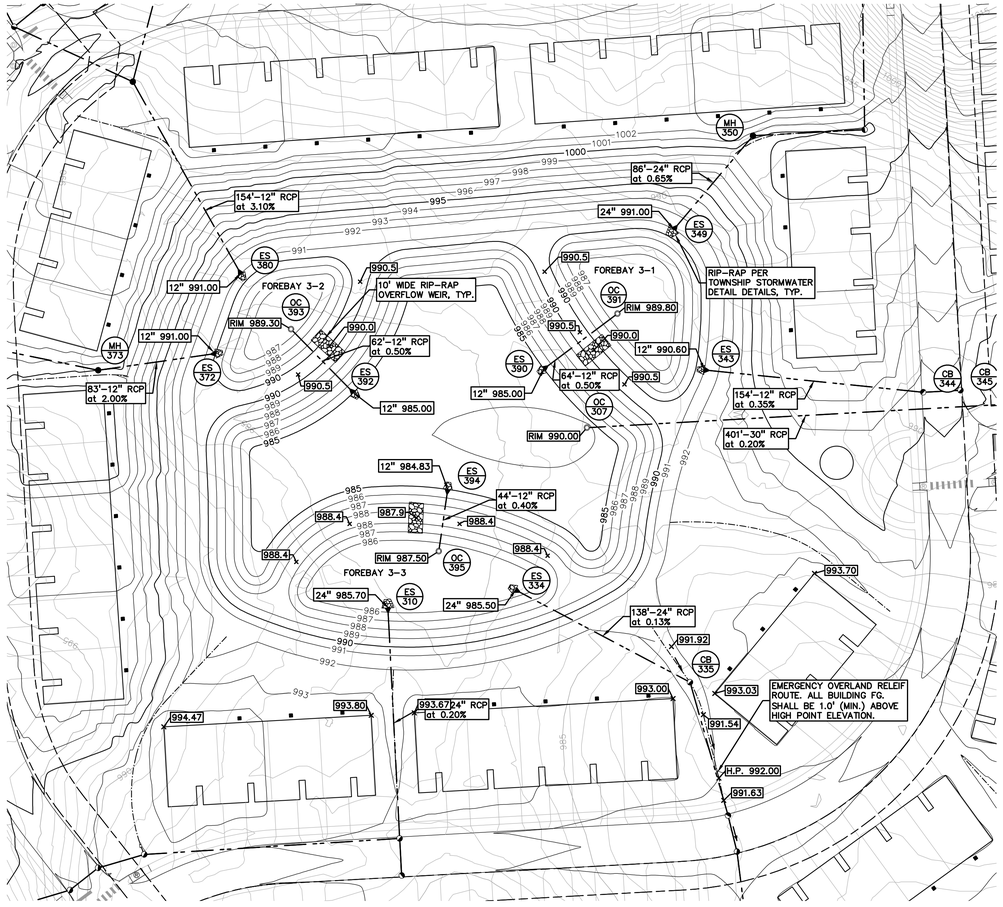
FINAL SITE PLAN REVIEW	7/3/24
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
DECEMBER 4, 2023

DRAWING TITLE
DETENTION POND 2

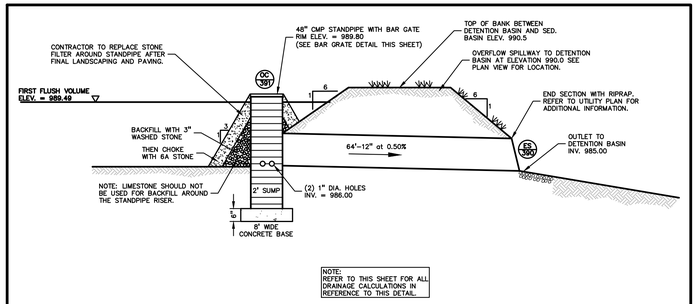
PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-12.2

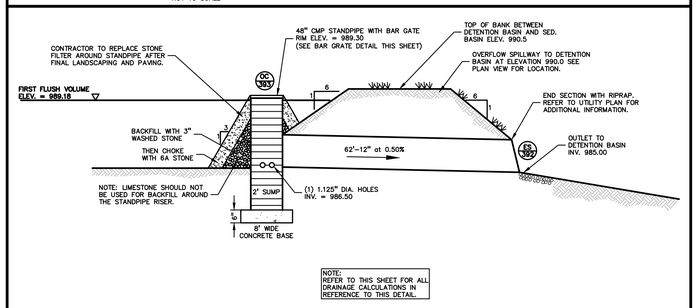


NOTE:

STORM SEWER AND DETENTION CALCULATIONS USE AN AVERAGE C FACTOR OF 0.60 FOR MULTIPLE FAMILY DEVELOPMENTS PER TOWNSHIP ENGINEERING DESIGN STANDARDS



SEDIMENTATION BASIN RISER DETAIL (FOREBAY 3-1)
NOT TO SCALE



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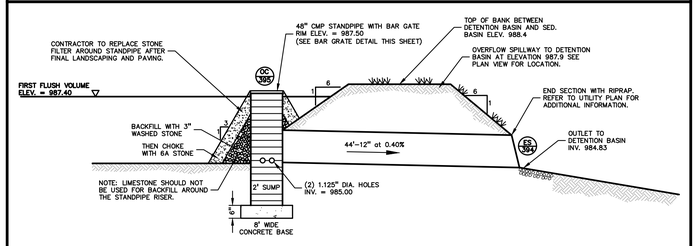
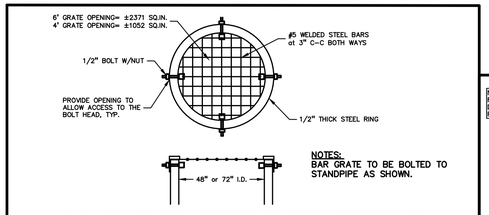
NOT TO SCALE

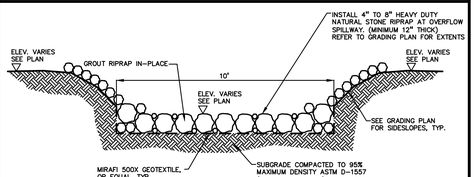


SEDIMENTATION BASIN RISER DETAIL (FOREBAY 3-3)
NOT TO SCALE

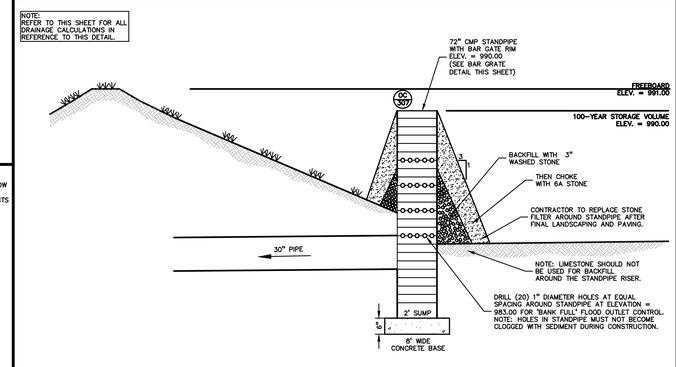


NOTES:
BAR GRATE TO BE BOLTED TO STANDPIPE AS SHOWN.

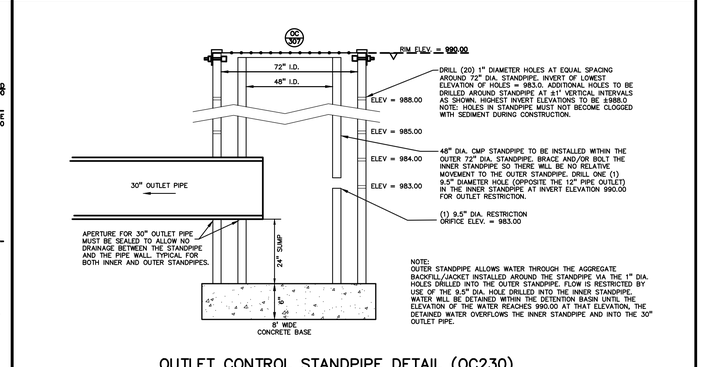
BAR GRATE FOR OUTLET CONTROL STRUCTURE
NOT TO SCALE



RIP-RAP OVERFLOW WEIR DETAIL
NOT TO SCALE



DETENTION BASIN OUTLET CONTROL STRUCTURE DETAIL
NOT TO SCALE



OUTLET CONTROL STANDPIPE DETAIL (OC230)
NOT TO SCALE

Detention Basin			
Contributing Area (A):		26.8	acre
Allowable Discharge (Qa)		5.36	cfs (0.2*area)
Coefficient of Runoff (Cr):		0.60	
Forebay 3-1 Storage Volume Required (1-yr Design Storm)			
Contributing Area (A1):		11.00	acre
Allowable Discharge (Qa)		2.20	cfs (0.2*area)
Qo = ((Qa)/(A)(Cr):		0.33	cfs/acre impervious
T = -25 + ((2700/Qo))^0.5:		65.45	minutes
Vs = (4320(T)/(T+25)) - 40Qo(T):		2,262	cf/acre impervious
Vt = (Vs)(A)(Cr):		14,929	cf
Forebay 3-2 Storage Volume Required (1-yr Design Storm)			
Contributing Area (A1):		5.30	acre
Allowable Discharge (Qa)		1.06	cfs (0.2*area)
Qo = ((Qa)/(A)(Cr):		0.33	cfs/acre impervious
T = -25 + ((2700/Qo))^0.5:		65.45	minutes
Vs = (4320(T)/(T+25)) - 40Qo(T):		2,262	cf/acre impervious
Vt = (Vs)(A)(Cr):		7,193	cf
Forebay 3-3 Storage Volume Required (1-yr Design Storm)			
Contributing Area (A1):		10.50	acre
Allowable Discharge (Qa)		2.10	cfs (0.2*area)
Qo = ((Qa)/(A)(Cr):		0.33	cfs/acre impervious
T = -25 + ((2700/Qo))^0.5:		65.45	minutes
Vs = (4320(T)/(T+25)) - 40Qo(T):		2,262	cf/acre impervious
Vt = (Vs)(A)(Cr):		14,251	cf
Detention Storage Volume Required (100-yr Design Storm)			
Qo = ((Qa)/(A)(Cr):		0.33	cfs/acre impervious
T = -25 + ((10312.5/Qo))^0.5:		151.78	minutes
Vs = (16500(T)/(T+25)) - 40Qo(T):		12,163	cf/acre impervious
Vt = (Vs)(A)(Cr):		195,581	cf
Storage Provided in Detention Basin			
Forebay 3-1: 1-yr Storage Elevation:		989.49	
Forebay 3-2: 1-yr Storage Elevation:		989.18	
Forebay 3-3: 1-yr Storage Elevation:		987.40	
100-yr Storage Elevation:			
Forebay 3-1			
Elev. (ft)	**Area (sf)**	**Vol. (cf)**	**Total Vol. (cf)**
986.0	0	0	0
987.0	3,004	1,502	1,502
988.0	4,754	3,879	5,381
989.0	6,678	5,716	11,097
990.0	8,828	7,753	18,850
Forebay Restriction Design			
Basin Outlet Elevation:		986.00	
Storage Elevation:		989.49	
Avg. Head over Orifice (Hw):		1.75	ft
Allowable Discharge (Qa): (48 hrs)		0.09	cfs
Standpipe Restriction Hole Dia:		1.000	in
Standpipe Restriction Hole Area:		0.0055	sft
Number of Restriction Holes:		2	
Total Hole Area:		0.0109	sft
Actual Discharge (Q)		0.07	cfs
Q = 0.62 * A * (2 * G * Hw)^0.5			
Drain Time:		58	hrs
Forebay 3-2			
Elev. (ft)	**Area (sf)**	**Vol. (cf)**	**Total Vol. (cf)**
986.5	0	0	0
987.0	1,618	405	405
988.0	2,889	2,254	2,658
989.0	4,329	3,609	6,267
990.0	5,995	5,162	11,429
Forebay Restriction Design			
Basin Outlet Elevation:		986.50	
Storage Elevation:		989.18	
Avg. Head over Orifice (Hw):		1.34	ft
Allowable Discharge (Qa): (48 hrs.)		0.04	cfs
Standpipe Restriction Hole Dia:		1.125	in
Standpipe Restriction Hole Area:		0.0069	sft
Number of Restriction Holes:		1	
Total Hole Area:		0.0069	sft
Actual Discharge (Q)		0.04	cfs
Q = 0.62 * A * (2 * G * Hw)^0.5			
Drain Time:		50	hrs
Forebay 3-3			
Elev. (ft)	**Area (sf)**	**Vol. (cf)**	**Total Vol. (cf)**
985.0	0	0	0
986.0	6,179	3,090	3,090
987.0	8,447	7,313	10,403
988.0	10,941	9,694	20,097
Forebay Restriction Design			
Basin Outlet Elevation:		985.00	
Storage Elevation:		987.40	
Avg. Head over Orifice (Hw):		1.20	ft
Allowable Discharge (Qa)		0.08	cfs
Standpipe Restriction Hole Dia.:		1.125	in
Standpipe Restriction Hole Area:		0.0069	sft
Number of Restriction Holes:		2	
Total Hole Area:		0.0138	sft
Actual Discharge (Q)		0.08	cfs
Q = 0.62 * A * (2 * G * Hw)^0.5			
Drain Time:		55	hrs
100-yr Detention Basin Restriction Design			
Detention Required:		195,581	cf
Detention minus forebay volume:		159,208	cf
Elev. (ft)	**Area (sf)**	**Vol. (cf)**	**Total Vol. (cf)**
985	28,698	0	0
986	31,207	29,953	29,953
987	36,371	33,789	63,742
988	41,761	39,066	102,808
989	47,377	44,569	147,377
990	53,219	50,298	197,675
991	91,148	85,328	283,003
100-yr Storage Elevation:		989.24	
Volume Safety Factor: (Use)		990.00	
100-yr Detention Basin Restriction Design			
Basin Outlet Elevation:		983.00	
Storage Elevation:		990.00	
Avg. Head over Orifice (2/3h):		4.67	ft
Allowable Discharge (Qa)		5.36	cfs
Standpipe Restriction Hole Dia.:		9.5	in
Standpipe Restriction Hole Area:		0.4920	sft
Number of Restriction Holes:		1	
Total Hole Area:		0.4920	sft
Actual Discharge (Q)		5.29	cfs
Q = 0.62 * A * (2 * G * Hw)^0.5			

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NORTH

0 25 50 100
SCALE: 1" = 50'

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CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EITHER EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

KEY MAP

CLIENT
WHITE LAKE HILL, LLC
31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - MULTI FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

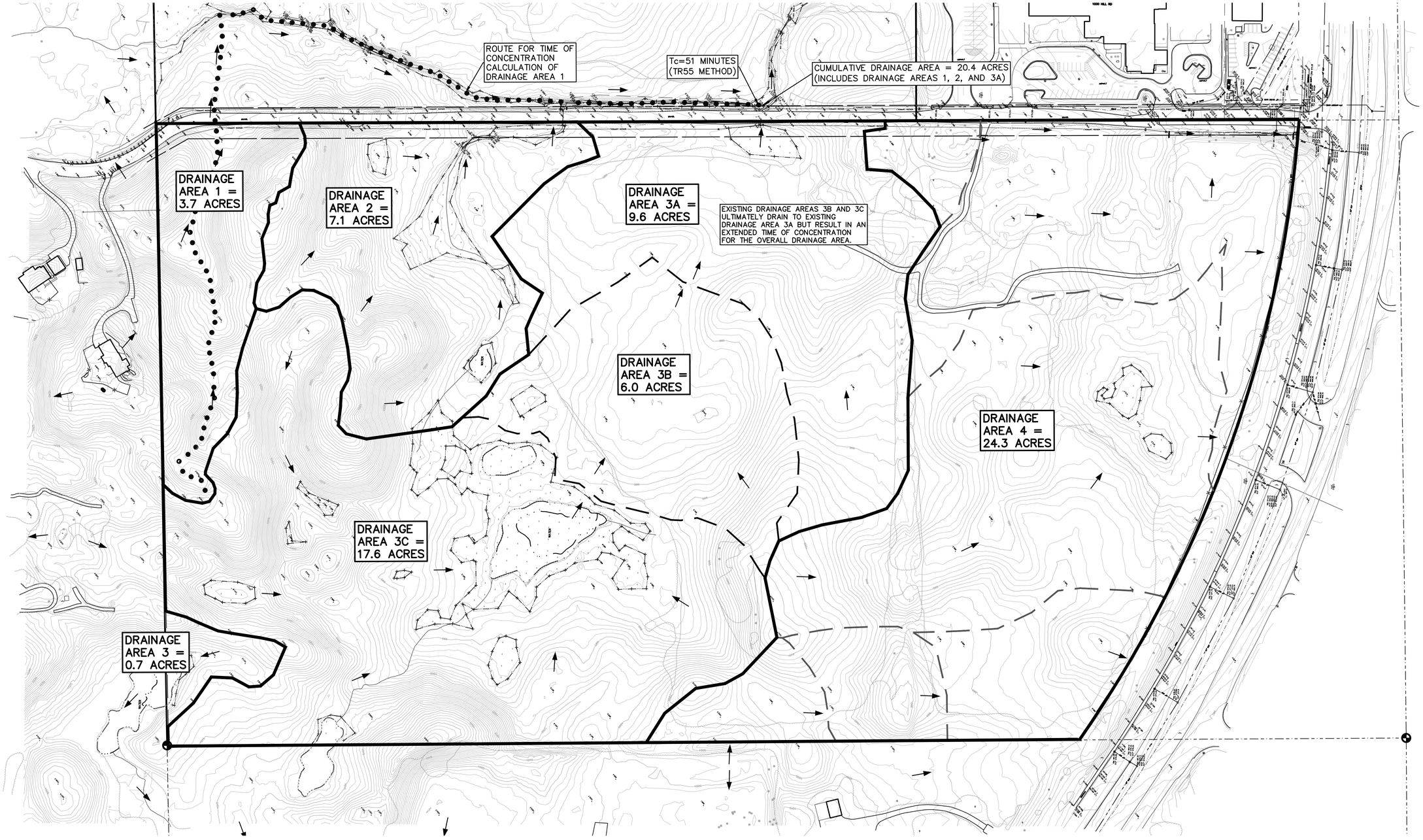
REVISIONS	
DRAFT	2/19/24
ISSUED FOR OWNER REVIEW	4/24/24
FINAL SITE PLAN REVIEW	7/3/24
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
DECEMBER 4, 2023

DRAWING TITLE
DETENTION POND 3

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-12.3



EXISTING PEAK RUNOFF

OAKLAND COUNTY 100-YEAR DESIGN STORM
I = B/(T+D)^E; B=83.18, D=9.17, E=0.81
AT T=51 MINUTES, I=3.01 IN/HR

Q = C * I * A; C=0.20 FOR GREEN SPACE, A=20.4 ACRES
Q = EXISTING 100-YEAR PEAK RUNOFF = 12.29 CFS

PROPOSED DISCHARGE TO EXISTING CREEK
WHITE LAKE TOWNSHIP MAXIMUM ALLOWABLE DISCHARGE RATE = 0.2 CFS/ACRE
POND 2 CONTRIBUTING DRAINAGE AREA = 9.5 ACRES
POND 3 CONTRIBUTING DRAINAGE AREA = 26.8 ACRES

100-YEAR MAXIMUM ALLOWABLE DISCHARGE RATE FROM POND 2 = 1.90 CFS
100-YEAR MAXIMUM ALLOWABLE DISCHARGE RATE FROM POND 3 = 5.36 CFS
100-YEAR TOTAL ALLOWABLE DISCHARGE RATE FROM PONDS 2 AND 3 = 7.26 CFS

OAKLAND COUNTY 100-YEAR DESIGN STORM
I = B/(T+D)^E; B=83.18, D=9.17, E=0.81
AT T=151 MINUTES (PER WHITE LAKE TOWNSHIP DETENTION CALCULATIONS), I=1.36 IN/HR

ADDITIONAL UNIMPROVED (EXISTING WETLAND TO REMAIN) AND HILL ROAD DRAINAGE NOT ROUTED THROUGH DETENTION BASINS = 6.75 ACRES
Q = C * I * A; C=0.20 FOR GREEN SPACE, A=6.75 ACRES
Q = EXISTING 100-YEAR PEAK RUNOFF = 1.84 CFS

TOTAL PEAK DISCHARGE RATE FROM SITE = 9.1 CFS

PROPOSED PEAK RUNNOFF/DISCHARGE RATE

THE PROPOSED MAXIMUM ALLOWABLE DISCHARGE RATE FROM PROPOSED DEVELOPMENT DOES NOT EXCEED THE EXISTING RUNOFF FOR THE 100-YEAR STORM EVENT. THE PROPOSED CONTRIBUTING FLOW THROUGH THE CULVERT UNDER M-59 IS NOT INCREASED BY THE DEVELOPMENT.

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NORTH

0 50 100 200
SCALE: 1" = 100'

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KEY MAP

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31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - MULTI FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

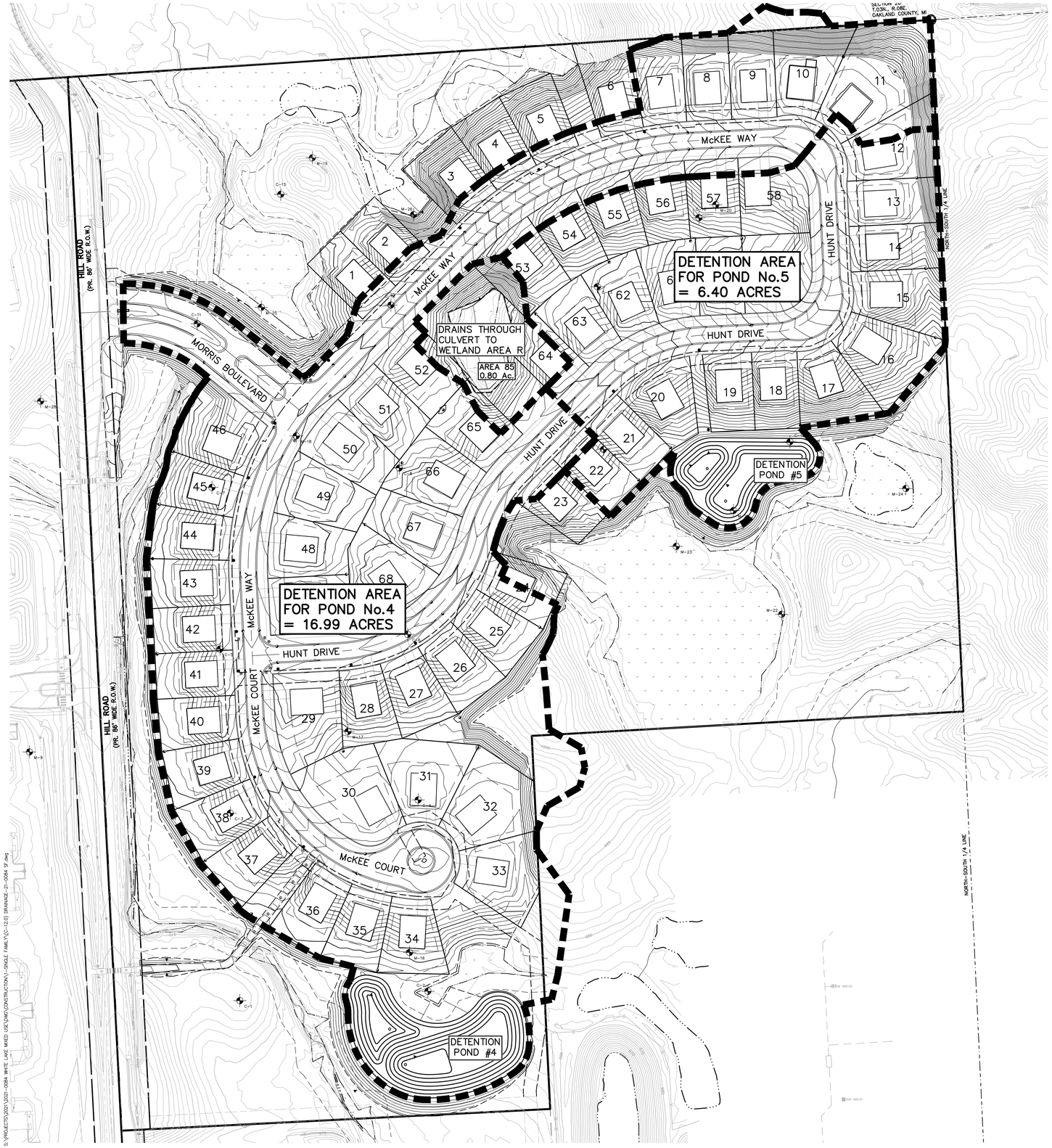
REVISIONS	
DRAFT	2/19/24
ISSUED FOR OWNER REVIEW	4/24/24
FINAL SITE PLAN REVIEW	7/3/24
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
DECEMBER 4, 2023

DRAWING TITLE
OVERALL EXISTING DRAINAGE AREAS

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-12.4



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0 40 80 160
SCALE: 1" = 80'

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KEY MAP

CLIENT
WHITE LAKE HILL, LLC
31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - SINGLE FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

REVISIONS	
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
MAY 8, 2025

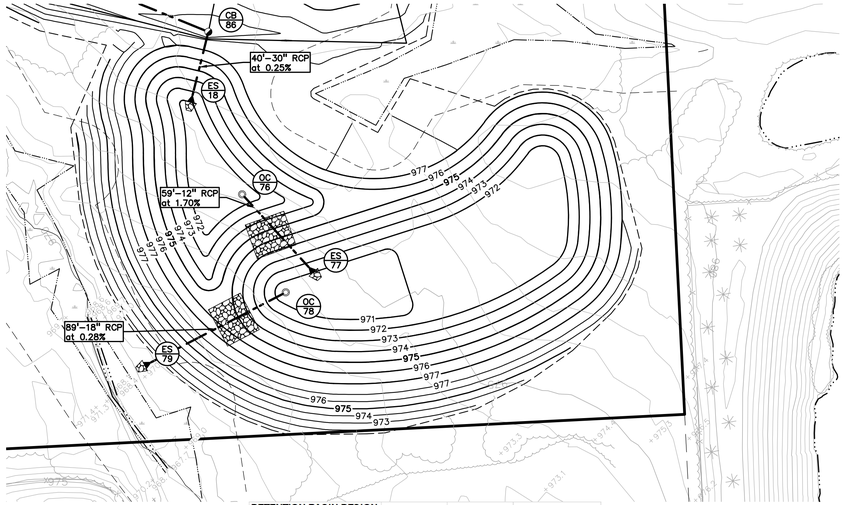
DRAWING TITLE
OVERALL DRAINAGE PLAN

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-12.30

S:\PROJECTS\2021\2021-0084 WHITE LAKE MIXED USE\DWG\CONSTRUCTION\1-SINGLE FAMILY\C-12.00 DRAINAGE-21-0084 9".dwg

POND #4



DETENTION BASIN DESIGN
(PER WHITE LAKE TOWNSHIP STANDARDS)

Detention Basin		
Contributing Area (A):	17.0	acre
Allowable Discharge (Qa)	3.40	cfs (0.2*area)
Coefficient of Runoff (Cr):	0.35	
Forebay Storage Volume Required (1-yr Design Storm)		
Qo = ((Qa)/(A)(Cr):	0.57	cfs/acre impervious
T = -25 + ((2700/Qo))^0.5:	43.82	minutes
Vs = (4320(T)/(T+25)) - 40Qo(T):	1,752	cf/acre impervious
Vt = (Vs)(A)(Cr):	10,424	cf
Detention Storage Volume Required (100-yr Design Storm)		
Qo = ((Qa)/(A)(Cr):	0.57	cfs/acre impervious
T = -25 + ((10312.5/Qo))^0.5:	109.51	minutes
Vs = (16500(T)/(T+25)) - 40Qo(T):	10,936	cf/acre impervious
Vt = (Vs)(A)(Cr):	65,069	cf
Storage Provided in Forebay		
1-yr Storage Elevation:	974.89	

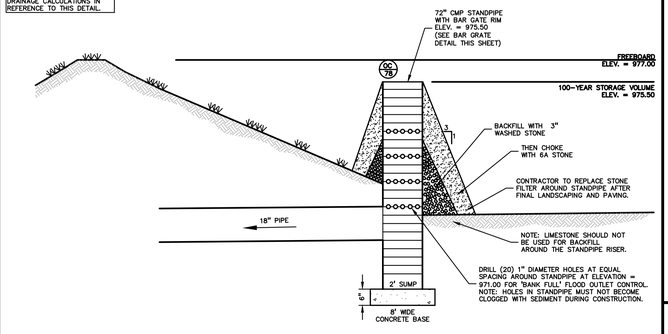
Elev. (ft)	Area (sf)	Vol. (cf)	Total Vol. (cf)
972	1,400	0	0
973	2,700	2,050	2,050
974	4,400	3,550	5,600
975	6,400	5,400	11,000

Forebay Restriction Design		
Basin Outlet Elevation:	972.00	
Storage Elevation:	974.89	
Avg. Head over Orifice (Hw):	1.45	ft
Allowable Discharge (Qa): (48 hrs)	0.06	cfs
Standpipe Restriction Hole Dia:	1.35	in
Standpipe Restriction Hole Area:	0.0099	sft
Number of Restriction Holes:	1	
Total Hole Area:	0.0099	sft
Actual Discharge (Q)	0.06	cfs
Q = 0.62 * A * (2 * G * Hw)^0.5		
Drain Time:	49	hrs
Detention Volume minus Forebay:	**54,645**	**cf**
100-yr Storage Elevation:	975.41	Calc.
100-yr Storage Elevation:	975.50	Provided

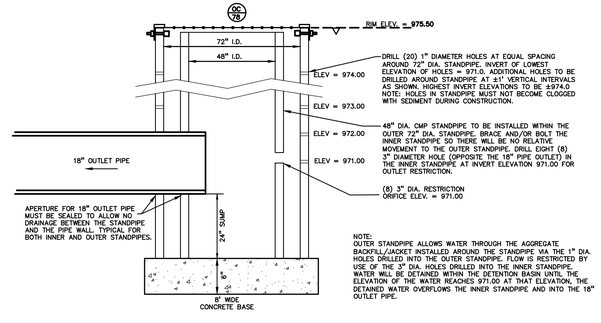
Elev. (ft)	Area (sf)	Vol. (cf)	Total Vol. (cf)
971	2,000	0	0
972	8,500	5,250	5,250
973	11,200	9,850	15,100
974	14,200	12,700	27,800
975	17,300	15,750	43,550
975	24,800	0	43,550
976	29,400	27,100	70,650

100-yr Detention Basin Restriction Design		
Basin Outlet Elevation:	971.00	
Storage Elevation:	975.50	
Avg. Head over Orifice: (2/3h)	3.00	ft
Allowable Discharge (Qa)	3.40	cfs
Standpipe Restriction Hole Dia.:	3	in
Standpipe Restriction Hole Area:	0.0491	sft
Number of Restriction Holes:	8	
Total Hole Area:	0.3925	sft
Actual Discharge (Q)	3.38	cfs
Q = 0.62 * A * (2 * G * Hw)^0.5		
100 Year Emergency Overflow Weir		
Flow (Q): 215/(t+25) x A x C	15.1	cfs
Time (T): Overland, Storm & Fill Pond	60	min
Length of Spillway (L):	13	ft
Depth of Water over Spillway (H):	0.50	ft
Uses Cipoletti Weir Equation (Q=3.367 * L * H^3/2)		
Emergency Overflow Weir Elevation:	976.50	Provided
Top of Berm Elevation:	977.00	Provided

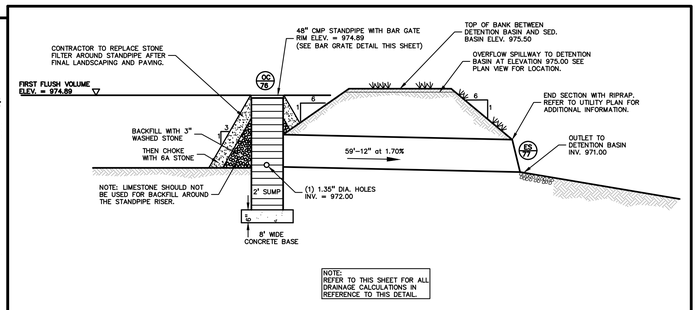
NOTE:
REFER TO THIS SHEET FOR ALL DRAINAGE CALCULATIONS IN REFERENCE TO THIS DETAIL.



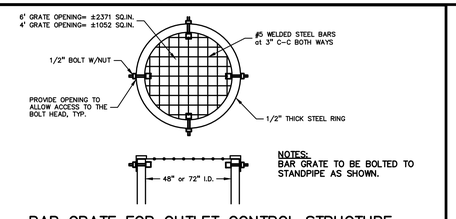
DETENTION BASIN OUTLET CONTROL STRUCTURE DETAIL
NOT TO SCALE



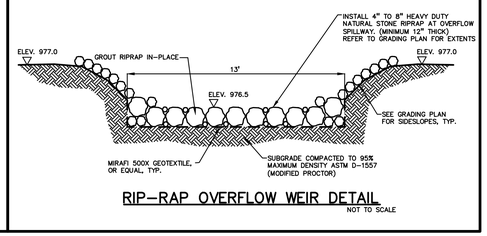
OUTLET CONTROL STANDPIPE DETAIL (OC102)
NOT TO SCALE



SEDIMENTATION BASIN RISER DETAIL (FOREBAY)
NOT TO SCALE



BAR GRATE FOR OUTLET CONTROL STRUCTURE
NOT TO SCALE



RIP-RAP OVERFLOW WEIR DETAIL
NOT TO SCALE

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NORTH

0 20 40 80
SCALE: 1" = 40'

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KEY MAP

CLIENT
WHITE LAKE HILL, LLC
31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - SINGLE FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

REVISIONS

FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
MAY 8, 2025

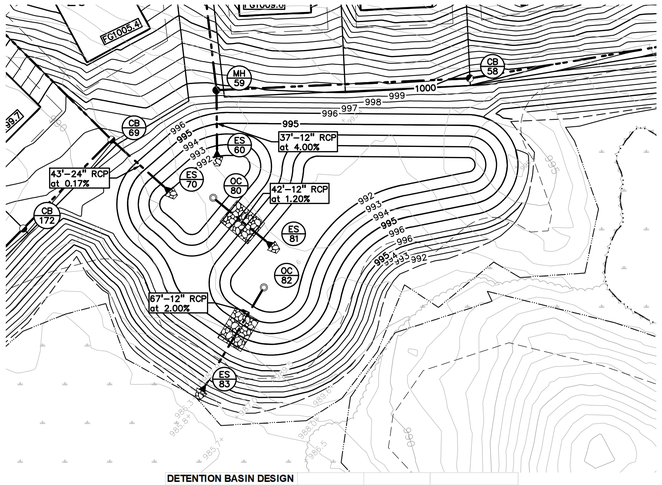
DRAWING TITLE
DETENTION POND 4

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-12.31

S:\PROJECTS\2021\2021-0084 WHITE LAKE MIXED USE\DWG\CONSTRUCTION\1-SINGLE FAMILY\C-12.1 POND DETAILS-P1-0084.dwg

POND #5



DETENTION BASIN DESIGN
(PER WHITE LAKE TOWNSHIP STANDARDS)

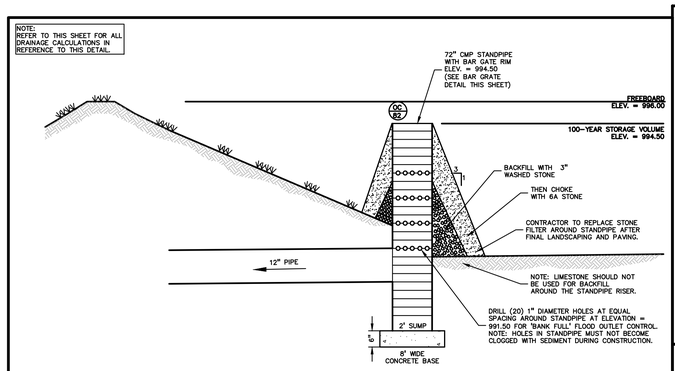
Detention Basin		
Contributing Area (A):	6.5	acre
Allowable Discharge (Qa)	1.30	cfs (0.2"area)
Coefficient of Runoff (Cr):	0.35	
Forebay Storage Volume Required (1-yr Design Storm)		
Qo = ((Qa)/(A)(Cr):	0.57	cfs/acre impervious
T = -25 + ((2700/Qo))^0.5:	43.82	minutes
Vs = (4320(T)/(T+25)) - 40Qo(T):	1,752	cf/acre impervious
Vt = (Vs)(A)(Cr):	3,986	cf
Detention Storage Volume Required (100-yr Design Storm)		
Qo = ((Qa)/(A)(Cr):	0.57	cfs/acre impervious
T = -25 + ((10312.5/Qo))^0.5:	109.51	minutes
Vs = (16500(T)/(T+25)) - 40Qo(T):	10,936	cf/acre impervious
Vt = (Vs)(A)(Cr):	24,879	cf
Storage Provided in Forebay		
1-yr Storage Elevation:	993.88	

Elev. (ft)	Area (sf)	Vol. (cf)	Total Vol. (cf)
992	1,200	0	0
993	2,100	1,650	1,650
994	3,200	2,650	4,300

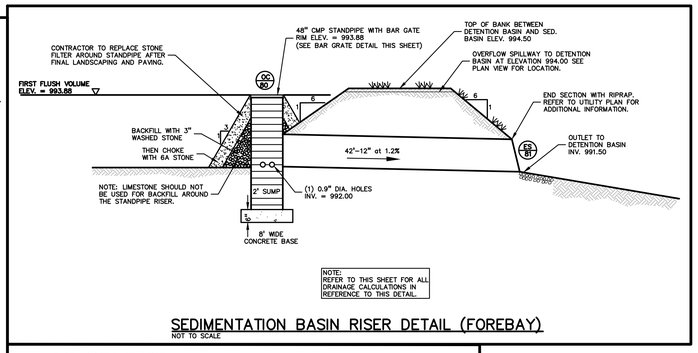
Forebay Restriction Design		
Basin Outlet Elevation:	992.00	
Storage Elevation:	993.88	
Avg. Head over Orifice (Hw):	0.94	ft
Allowable Discharge (Qa): (48 hrs)	0.02	cfs
Standpipe Restriction Hole Dia:	0.90	in
Standpipe Restriction Hole Area:	0.0044	sft
Number of Restriction Holes:	1	
Total Hole Area:	0.0044	sft
Actual Discharge (Q)	0.02	cfs
Q = 0.62 * A * (2 * G * Hw)^0.5		
Drain Time:	52	hrs
Detention Volume minus Forebay:	**20,894**	**cf**
100-yr Storage Elevation:	994.50	Calc.
100-yr Storage Elevation:	994.50	Provided

Elev. (ft)	Area (sf)	Vol. (cf)	Total Vol. (cf)
991.5	2,700	0	0
992	3,700	1,600	1,600
993	6,000	4,850	6,450
994	8,500	7,250	13,700
994	12,900	0	13,700
995	16,000	14,450	28,150

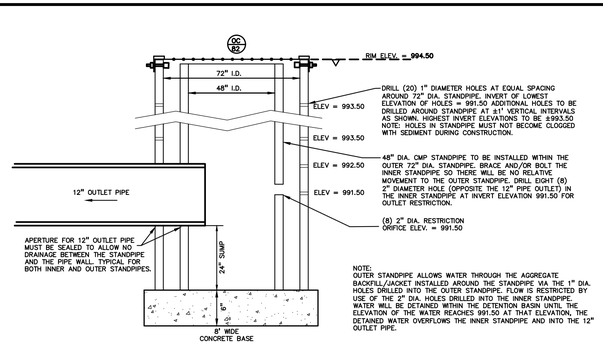
100-yr Detention Basin Restriction Design		
Basin Outlet Elevation:	991.50	
Storage Elevation:	994.50	
Avg. Head over Orifice: (2/3h)	2.00	ft
Allowable Discharge (Qa)	1.30	cfs
Standpipe Restriction Hole Dia.:	2	in
Standpipe Restriction Hole Area:	0.0218	sft
Number of Restriction Holes:	8	
Total Hole Area:	0.1744	sft
Actual Discharge (Q)	1.23	cfs
Q = 0.62 * A * (2 * G * Hw)^0.5		
100 Year Emergency Overflow Weir		
Flow (Q): 215/(t+25) x A x C	5.8	cfs
Time (T): Overland, Storm & Fill Pond	60	min
Length of Spillway (L):	5	ft
Depth of Water over Spillway (H):	0.50	ft
Uses Cipoletti Weir Equation (Q=3.367 * L * H^3/2)		
Emergency Overflow Weir Elevation:	995.50	Provided
Top of Berm Elevation:	996.00	Provided



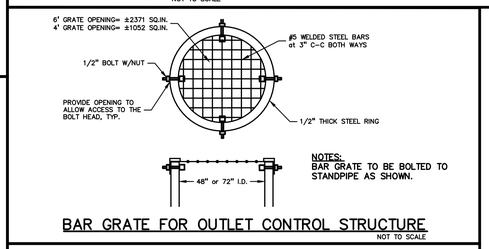
DETENTION BASIN OUTLET CONTROL STRUCTURE DETAIL
NOT TO SCALE



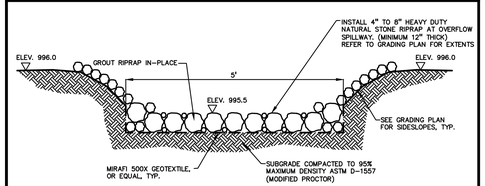
SEDIMENTATION BASIN RISER DETAIL (FOREBAY)
NOT TO SCALE



OUTLET CONTROL STANDPIPE DETAIL (OC102)
NOT TO SCALE



BAR GRATE FOR OUTLET CONTROL STRUCTURE
NOT TO SCALE



RIP-RAP OVERFLOW WEIR DETAIL
NOT TO SCALE

PEA GROUP
t: 844.813.2949
www.peagroup.com

STATE OF MICHIGAN
BRETT STURGEON HOLLANDSWORTH
License No. 6201064949
LICENSED PROFESSIONAL ENGINEER

NORTH

0 20 40 80
SCALE: 1" = 40'

811 Know what's below. Call before you dig.

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

KEY MAP

CLIENT
WHITE LAKE HILL, LLC
31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - SINGLE FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

REVISIONS	
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

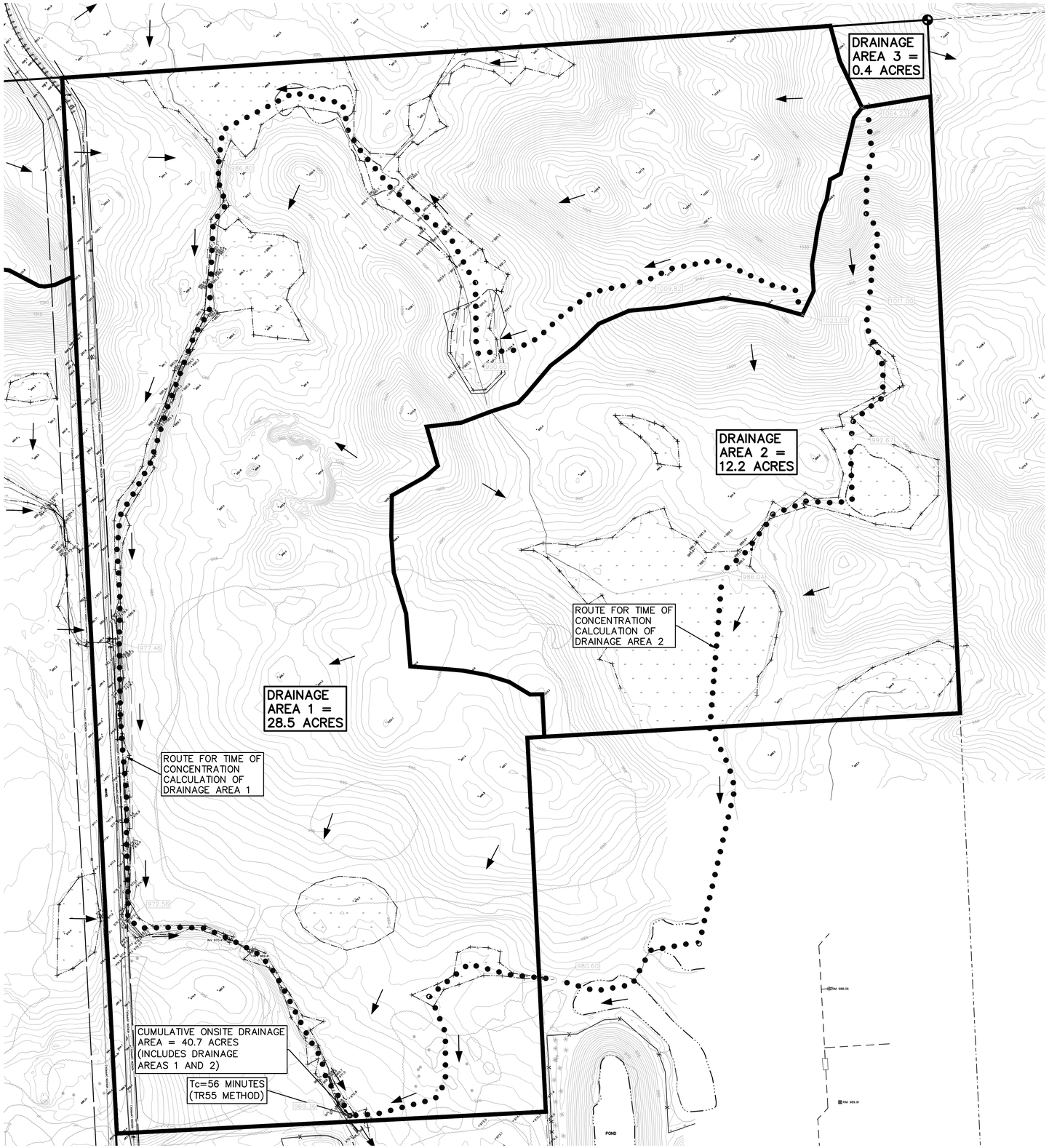
ORIGINAL ISSUE DATE:
MAY 8, 2025

DRAWING TITLE
DETENTION POND 5

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-12.32

S:\PROJECTS\2021\2021-0084 WHITE LAKE MIXED USE\DWG\CONSTRUCTION\-SINGLE FAMILY\(C-12) POND DETAILS-2-25-0084 SF.dwg



EXISTING PEAK RUNOFF

OAKLAND COUNTY 100-YEAR DESIGN STORM
I = B/(T+D)^E; B=83.18, D=9.17, E=0.81
AT T=56 MINUTES, I=2.82 IN/HR

Q = C * I * A; C=0.20 FOR GREEN SPACE, A=40.7 ACRES
Q = EXISTING 100-YEAR PEAK RUNOFF = 22.95 CFS

PROPOSED DISCHARGE TO EXISTING CREEK
WHITE LAKE TOWNSHIP MAXIMUM ALLOWABLE DISCHARGE RATE = 0.2 CFS/ACRE
POND 1 CONTRIBUTING DRAINAGE AREA = 17.0 ACRES
POND 2 CONTRIBUTING DRAINAGE AREA = 6.5 ACRES

100-YEAR MAXIMUM ALLOWABLE DISCHARGE RATE FROM POND 1 = 3.40 CFS
100-YEAR MAXIMUM ALLOWABLE DISCHARGE RATE FROM POND 2 = 1.30 CFS
100-YEAR TOTAL ALLOWABLE DISCHARGE RATE FROM PONDS 1 AND 2 = 4.70 CFS

OAKLAND COUNTY 100-YEAR DESIGN STORM
I = B/(T+D)^E; B=83.18, D=9.17, E=0.81
AT T=109 MINUTES (PER WHITE LAKE TOWNSHIP DETENTION CALCULATIONS), I=1.74 IN/HR

ADDITIONAL UNIMPROVED (EXISTING WETLAND TO REMAIN) AND HILL ROAD DRAINAGE NOT ROUTED THROUGH DETENTION BASINS = 17.3 ACRES
Q = C * I * A; C=0.20 FOR GREEN SPACE, A=17.3 ACRES
Q = EXISTING 100-YEAR PEAK RUNOFF = 6.02 CFS

TOTAL PEAK DISCHARGE RATE FROM SITE = 10.72 CFS

PROPOSED PEAK RUNNOFF/DISCHARGE RATE

THE PROPOSED MAXIMUM ALLOWABLE DISCHARGE RATE FROM PROPOSED DEVELOPMENT DOES NOT EXCEED THE EXISTING RUNOFF FOR THE 100-YEAR STORM EVENT. THE PROPOSED CONTRIBUTING FLOW THROUGH THE CULVERT UNDER M-59 IS NOT INCREASED BY THE DEVELOPMENT.

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NORTH

0 40 80 160
SCALE: 1" = 80'

811 Know what's below. Call before you dig.

CAUTION!!
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REVISIONS	
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
MAY 8, 2025

DRAWING TITLE
OVERALL EXISTING DRAINAGE AREAS

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-12.33

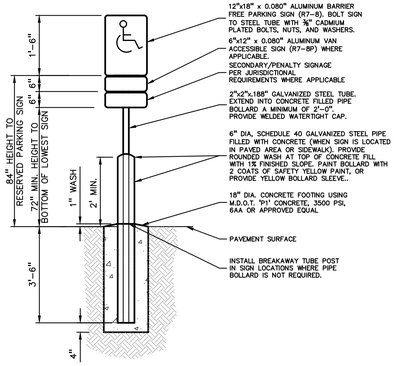
CONSTRUCTION MATERIAL SUBMITTALS

UNLESS REQUIRED OTHERWISE IN THE PROJECT SPECIFICATIONS, THE CONTRACTOR SHALL ONLY SUBMIT THE FOLLOWING CONSTRUCTION MATERIAL SUBMITTALS, AS APPLICABLE TO THE PLANS, FOR REVIEW BY THE ENGINEER. UNLESS APPROVED IN ADVANCE AND IN WRITING BY THE ENGINEER, ANY MATERIAL SUBMITTALS PROVIDED TO THE ENGINEER FOR REVIEW IN ADDITION TO THIS LIST SHALL BE RETURNED TO THE CONTRACTOR WITHOUT A REVIEW BEING PERFORMED.

1. SOIL EROSION AND SEDIMENTATION CONTROL MEASURES
2. UTILITY TRENCH BACKFILL MATERIAL WITH ALL MATERIAL DATA INCLUDED IN THE SUBMITTAL BEING DATED WITHIN 60 DAYS OF THE SUBMITTAL UNLESS APPROVED OTHERWISE BY THE ENGINEER
3. RIP RAP MATERIAL WITH ALL MATERIAL DATA INCLUDED IN THE SUBMITTAL BEING DATED WITHIN 60 DAYS OF THE SUBMITTAL UNLESS APPROVED OTHERWISE BY THE ENGINEER
4. STORM AND SANITARY SEWER PIPING INCLUDING JOINTS
5. STORM AND SANITARY SEWER STRUCTURES
6. STORM AND SANITARY SEWER STRUCTURE FRAME AND COVERS INCLUDING CLEAN OUTS
7. WATER DISTRIBUTION SYSTEM PIPING INCLUDING JOINTS
8. WATER DISTRIBUTION SYSTEM STRUCTURES
9. WATER DISTRIBUTION SYSTEM STRUCTURE FRAME AND COVERS
10. WATER DISTRIBUTION SYSTEM SHUT OFF BOXES
11. WATER DISTRIBUTION SYSTEM FIRE HYDRANTS
12. WATER DISTRIBUTION SYSTEM GATE VALVES
13. STORM WATER MANAGEMENT OUTLET CONTROL STRUCTURES INCLUDING COVERS OR GRATES
14. STORM WATER MANAGEMENT OUTLET SEDIMENTATION BASIN RISERS INCLUDING GRATES
15. STORM WATER MANAGEMENT MECHANICAL PRE-TREATMENT UNITS INCLUDING COVERS
16. STORM WATER MANAGEMENT OIL/GREASE SEPARATORS
17. STORM WATER MANAGEMENT UNDERGROUND DETENTION SYSTEM MATERIAL AND SHOP DRAWINGS DEPICTING THE LAYOUT OF THE SYSTEM
18. PAVEMENT AGGREGATE BASE MATERIAL WITH ALL MATERIAL DATA INCLUDED IN THE SUBMITTAL BEING DATED WITHIN 60 DAYS OF THE SUBMITTAL UNLESS APPROVED OTHERWISE BY THE ENGINEER
19. PAVEMENT UNDERDRAIN MATERIAL AND BACKFILL WITH ALL BACKFILL MATERIAL DATA INCLUDED IN THE SUBMITTAL BEING DATED WITHIN 60 DAYS OF THE SUBMITTAL UNLESS APPROVED OTHERWISE BY THE ENGINEER
20. PAVEMENT MIX DESIGNS SUBMITTED FOR REVIEW BY THE ENGINEER MUST FOLLOW THE CURRENT MDOT REVIEW CHECKLISTS AS SUMMARIZED BELOW AND ALL MATERIAL DATA INCLUDED IN THE SUBMITTAL BEING DATED WITHIN 60 DAYS OF THE SUBMITTAL UNLESS APPROVED OTHERWISE BY THE ENGINEER:
    - 8.1. CONCRETE MIX DESIGN REVIEW CHECKLIST (FORM 2000)
    - 8.2. SUPERPAVE MIX DESIGN CHECKLIST (FORM 1862)
    - 8.3. MARSHALL MIX DESIGN CHECKLIST (FORM 1849)
21. SITE FENCING AND GATES INCLUDING FOOTINGS
22. SITE RAILINGS INCLUDING FOOTING OR EMBEDMENTS
23. ANY ITEMS SHOWN IN THE PLANS OR DETAIL SHEETS THAT SPECIFICALLY STATE FOR THE CONTRACTOR TO SUBMIT A SHOP DRAWING TO THE ENGINEER FOR REVIEW. THESE ITEMS INCLUDE, BUT ARE NOT LIMITED TO:
    - RETAINING WALL MATERIAL AND STRUCTURAL CALCULATIONS
    - TRENCH DRAIN MATERIAL AND SHOP DRAWING DEPICTING THE LAYOUT OF THE SYSTEM
    - ANY SPECIALITY ITEMS SHOWN IN THE PLANS OR DETAIL SHEETS THAT SPECIFICALLY DO NOT STATE FOR THE CONTRACTOR SHALL SUBMIT A SHOP DRAWING TO THE ENGINEER FOR REVIEW BUT THE CONTRACTOR REQUESTS TO BE REVIEWED. THE CONTRACTOR'S REQUEST FOR REVIEW MUST BE IN WRITING AND APPROVED BY THE ENGINEER PRIOR TO SUBMITTING THE INFORMATION.

BARRIER FREE SIGN NOTES:

1. ONE SIGN IS REQUIRED AT EACH BARRIER FREE PARKING SPACE.
2. ALL SIGNS SHALL COMPLY WITH THE LATEST STANDARDS OF THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD).
3. WHEN TWO BARRIER FREE PARKING SPACES ARE ADJACENT AND FACING EACH OTHER, TWO SIGNS ARE REQUIRED, BUT CAN BE MOUNTED ON THE SAME POST.
4. SIGN POSTS SHALL BE 2" NOM. SQUARE 14-GAUGE GALVANIZED STEEL TUBE WITH 7/16" HOLES AT 1" CENTERS. POSTS SHALL TELESCOPE INSIDE ANCHOR POSTS A MINIMUM OF 12".
5. ANCHOR POSTS SHALL BE 2.25" NOM. SQUARE 12-GAUGE GALVANIZED STEEL POST, A MINIMUM OF 3 FEET LONG.
6. IF THESE NOTES AND DETAILS CONFLICT WITH LOCAL CODES AND ORDINANCES, THE STRICTER REQUIREMENT SHOULD BE USED.
7. ALTERNATE MATERIALS MAY BE USED IF IN COMPLIANCE WITH A.D.A. GUIDELINES AND LOCAL REQUIREMENTS.



BARRIER FREE SIGN AND POST DETAIL
NOT TO SCALE

12" x 18" (R7-8) GREEN BORDER AND LEGEND WHITE SYMBOL, BLUE BACKGROUND. REFLECTORIZED

DET 2

BARRIER FREE PARKING SIGN DETAIL
NOT TO SCALE

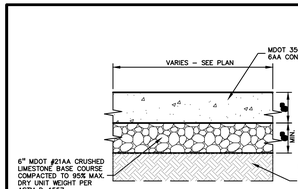
12" x 18" (R7-8) GREEN BORDER AND LEGEND WHITE SYMBOL, BLUE BACKGROUND. REFLECTORIZED

NOTE: MAY ONLY BE USED AT 11' WIDE SPACES LOCATED ON THE LEFT SIDE OF A 5' WIDE AISLE, OR 8' WIDE SPACES LOCATED TO THE LEFT OF 8' WIDE AISLES

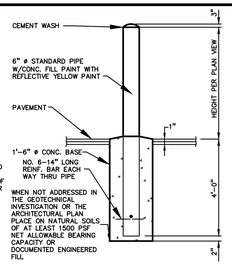
6" x 12" (R7-8P) GREEN BORDER AND LEGEND REFLECTORIZED

DET 3

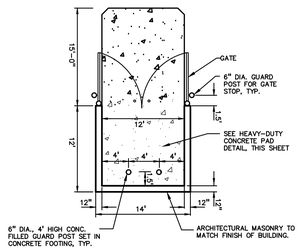
VAN ACCESSIBLE PARKING SIGN DETAIL
NOT TO SCALE



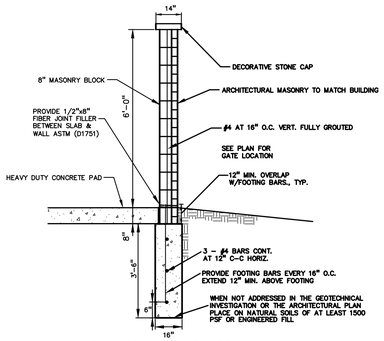
HEAVY DUTY CONCRETE PAD DETAIL
NOT TO SCALE



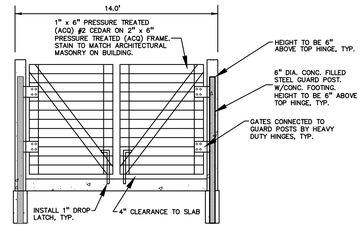
6" DIA. GUARD POST DETAIL
NOT TO SCALE



SINGLE DUMPSTER ENCLOSURE DETAIL
NOT TO SCALE

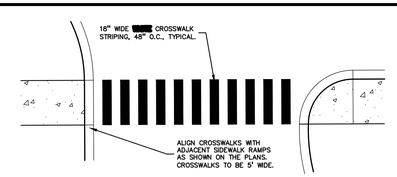


DUMPSTER ENCLOSURE WALL CROSS SECTION
NOT TO SCALE

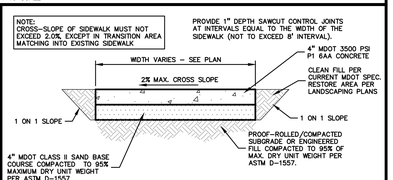


TRASH ENCLOSURE GATE DETAIL
NOT TO SCALE

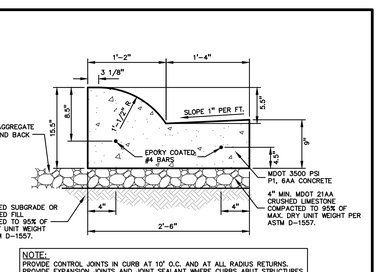
SINGLE TRASH ENCLOSURE DETAILS
NOT TO SCALE



STRIPED CROSSWALK DETAIL
NOT TO SCALE

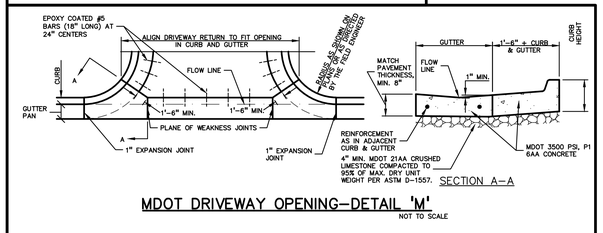


CONCRETE SIDEWALK
NOT TO SCALE

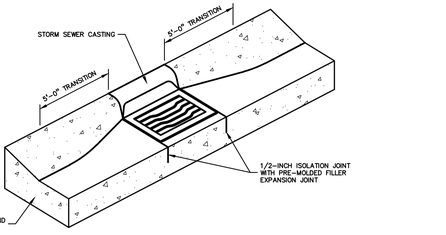


NOTE:
PROVIDE CONTROL JOINTS IN CURB AT 10' O.C. AND AT ALL RADIUS RETURNS.
PROVIDE EXPANSION JOINTS AND JOINT SEALANT WHERE CURBS ABUT STRUCTURES.

MDOT CURB DETAIL "B-2" (MODIFIED)
NOT TO SCALE

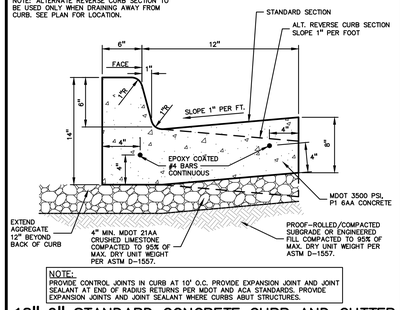


MDOT DRIVEWAY OPENING-DETAIL 'M'
NOT TO SCALE



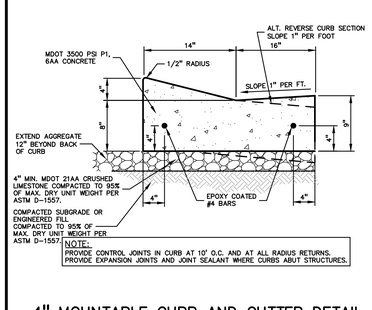
CURB TRANSITION DETAIL FOR ROLL CURB/MOUNTABLE CURB TO STRAIGHT CURB AND GUTTER AT DRAINAGE STRUCTURE
NOT TO SCALE

NOTE: ALTERNATE REVERSE CURB SECTION TO BE USED ONLY WHEN DRAINING AWAY FROM CURB. SEE PLAN FOR LOCATION.



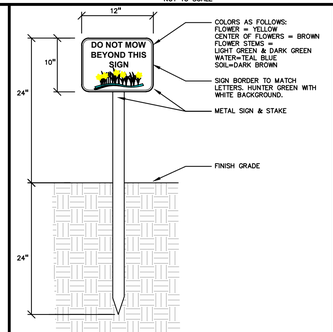
NOTE:
PROVIDE CONTROL JOINTS IN CURB AT 10' O.C. PROVIDE EXPANSION JOINT AND JOINT SEALANT AT END OF RADIUS RETURNS PER MDOT AND ACA STANDARDS. PROVIDE EXPANSION JOINTS AND JOINT SEALANT WHERE CURBS ABUT STRUCTURES.

18"x6" STANDARD CONCRETE CURB AND GUTTER
NOT TO SCALE



NOTE:
PROVIDE CONTROL JOINTS IN CURB AT 10' O.C. AND AT ALL RADIUS RETURNS.
PROVIDE EXPANSION JOINTS AND JOINT SEALANT WHERE CURBS ABUT STRUCTURES.

4" MOUNTABLE CURB AND GUTTER DETAIL
NOT TO SCALE



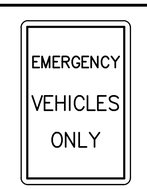
"DO NOT MOW" SIGN DETAIL
NOT TO SCALE

12" x 18" RED ON WHITE REFLECTORIZED 7'-0" MOUNTING HEIGHT (LR7-22)

NO PARKING SIGN DETAIL
NOT TO SCALE

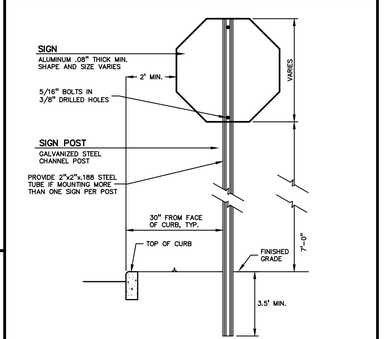
30" x 30" WHITE ON RED REFLECTORIZED 7'-0" MOUNTING HEIGHT (R1-1)

STOP SIGN DETAIL
NOT TO SCALE

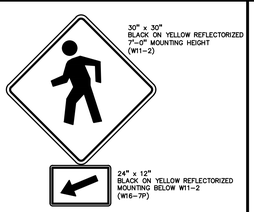


24" x 30" RED ON WHITE REFLECTORIZED 7'-0" MOUNTING HEIGHT

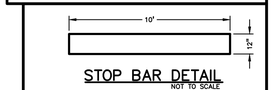
EMERGENCY VEHICLES ONLY SIGN DETAIL
NOT TO SCALE



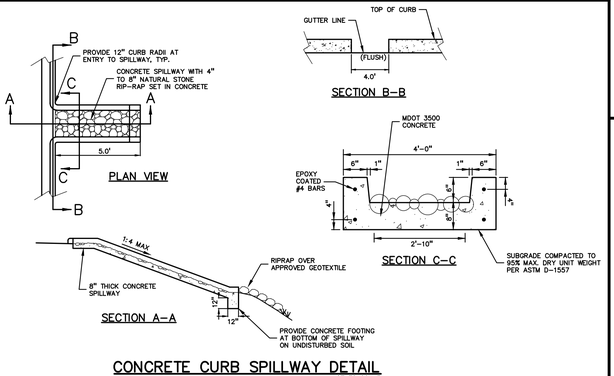
SIGN AND POST INSTALLATION IN LANDSCAPED AREAS
NOT TO SCALE



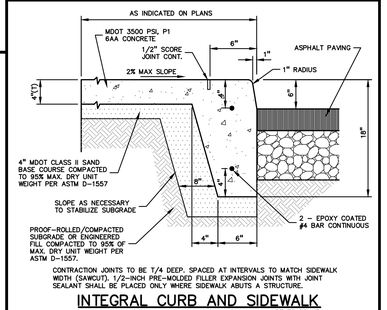
CROSSWALK SIGN DETAIL
NOT TO SCALE



STOP BAR DETAIL
NOT TO SCALE



CONCRETE CURB SPILLWAY DETAIL
NOT TO SCALE



INTEGRAL CURB AND SIDEWALK
NOT TO SCALE

PEA GROUP
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STATE OF MICHIGAN
BRETT STURGEON HOLLANDSWORTH
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KEY MAP

CLIENT
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31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
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HIGHLAND ROAD
WHITE LAKE TWP, MI

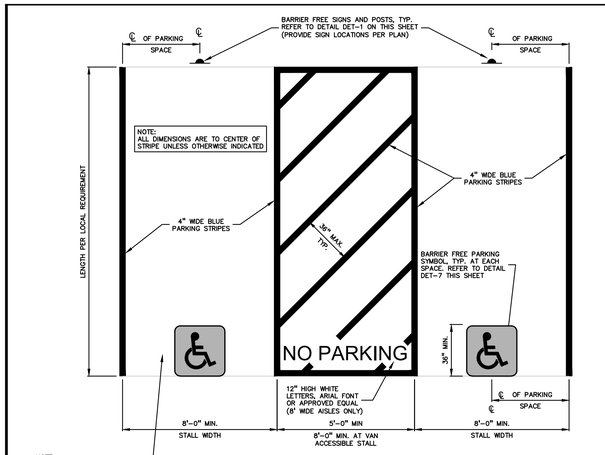
REVISIONS	
DRAFT	2/19/24
ISSUED FOR OWNER REVIEW	4/24/24
FINAL SITE PLAN REVIEW	7/3/24
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
DECEMBER 4, 2023

DRAWING TITLE
NOTES AND DETAILS - 1

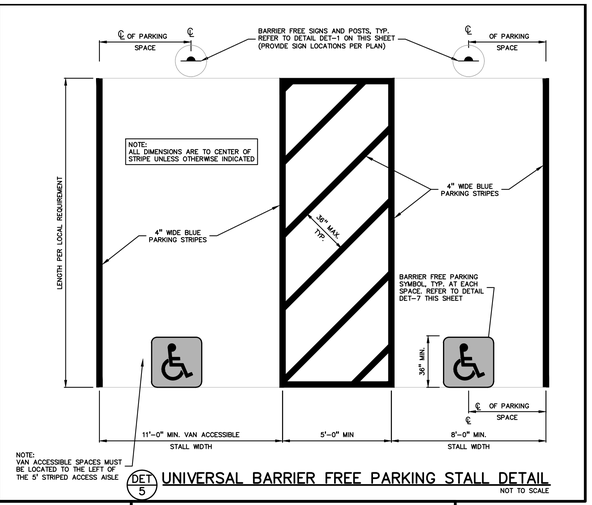
PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-13.0



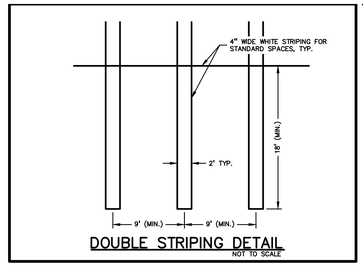
ALTERNATE BARRIER FREE PARKING STALL DETAIL

NOT TO SCALE



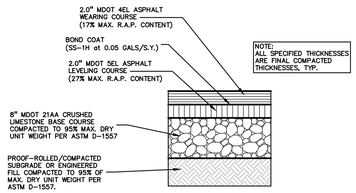
UNIVERSAL BARRIER FREE PARKING STALL DETAIL

NOT TO SCALE



DOUBLE STRIPING DETAIL

NOT TO SCALE



STANDARD DUTY ASPHALT DETAIL

(NOT FOR USE IN THE RIGHT-OF-WAY)

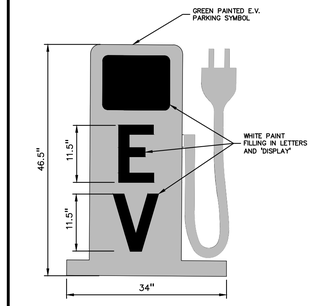
NOT TO SCALE

AGGREGATE BASE NOTE:
THIS PAVEMENT SECTION DESIGN ASSUMES THE USE OF MDOT 21AA CRUSHED LIMESTONE BASE MATERIAL THAT MEETS THE REQUIREMENTS OF MDOT STANDARD SPECIFICATION SECTION 902 FOR AGGREGATES. IF CRUSHED CONCRETE AGGREGATE BASE IS PROPOSED IN LIEU OF THE SPECIFIED CRUSHED LIMESTONE MATERIAL, PEA GROUP WILL REQUIRE A MINIMUM 25% INCREASE IN BASE THICKNESS. HOWEVER, IF TESTING DOCUMENTATION IS PROVIDED TO PEA GROUP THAT SHOWS THAT THE CRUSHED CONCRETE MATERIAL MEETS ALL REQUIREMENTS OF MDOT SPECIFICATION SECTION 902, THEN THE 25% INCREASE IN THICKNESS MAY BE REEVALUATED.

ASPHALT MATERIAL NOTES:
HOT-MIX ASPHALT MIXTURES UTILIZING RECYCLED ASPHALT PAVEMENT (RAP) MUST MEET MDOT SPECIAL PROVISION 12SP501(E). THE BINDER GRADE FOR THIS WORK IS PG64-28. IF ASPHALT MIXES CONTAINING RAP ARE TO BE SUPPLIED FOR THIS PROJECT, THE ASPHALT BINDER MUST BE REVISED PER MDOT "TIER 1" OR "TIER 2" REQUIREMENTS (RAP CONTENT UP TO 27% MAXIMUM). TIER 3 MIXES ARE NOT ACCEPTABLE ON THIS PROJECT. AN ASPHALT MIX DESIGN FOR ALL SPECIFIED MIXES SHOULD BE FORWARDED TO PEA GROUP FOR REVIEW PRIOR TO CONSTRUCTION

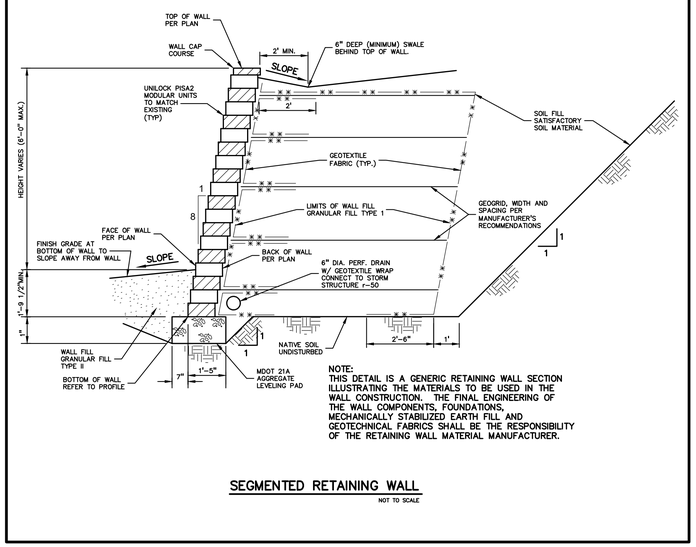
ASPHALT MIX DESIGN CHART

COMMERCIAL ADT 0-300	COMMERCIAL ADT 301-1000	COMMERCIAL ADT 1001-3400	COMMERCIAL ADT 3401	APPLICATION RATE (LB/YD²), MINIMUM - MAXIMUM	COURSE APPLICATION
2EL	2EML	2EMH	2EH	435-550	BASE
3EL	3EML	3EMH	3EH	330-410	BASE AND/OR LEVELING
4EL	4EML	4EMH	4EH	220-275	LEVELING AND/OR TOP
5EL	5EML	5EMH	5EH	165-220	TOP
PG 58-28	PG 64-28	PG 64-28	PG 70-28P		



EV PARKING SYMBOL

NOT TO SCALE

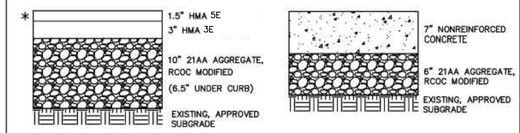


NOTE:
THIS DETAIL IS A GENERIC RETAINING WALL SECTION ILLUSTRATING THE MATERIALS TO BE USED IN THE WALL CONSTRUCTION. THE FINAL ENGINEERING OF THE WALL COMPONENTS, FOUNDATIONS, MECHANICALLY STABILIZED EARTH FILL AND GEOTECHNICAL FABRICS SHALL BE THE RESPONSIBILITY OF THE RETAINING WALL MATERIAL MANUFACTURER.

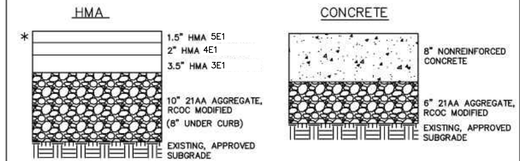
SEGMENTED RETAINING WALL

NOT TO SCALE

SINGLE FAMILY RESIDENTIAL SUBDIVISIONS



INDUSTRIAL AND COMMERCIAL DEVELOPMENTS COLLECTOR STREETS



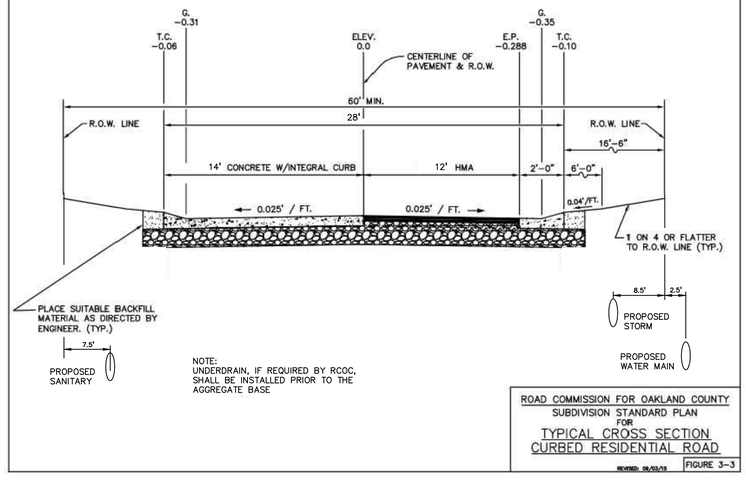
•OR AS APPROVED BY GEOTECH ANALYSIS

* SS - 1H @ 0.10/GAL./SYD. BETWEEN LIFTS COMMERICAL A.D.T. COULD WARRANT A DIFFERENT TYPE HMA MIXTURE

HMA

- TOP COURSE AWI = 260
- 5% MIN. A.C. CONTENT
- TARGET AIR VOIDS = 3%

ROAD COMMISSION FOR OAKLAND COUNTY
SUBDIVISION STANDARD PLAN FOR
STREET PAVEMENT
REVISED: 09/03/15 | FIGURE 3-5



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ROAD COMMISSION FOR OAKLAND COUNTY
SUBDIVISION STANDARD PLAN FOR
TYPICAL CROSS SECTION CURBED RESIDENTIAL ROAD
REVISED: 09/03/15 | FIGURE 3-3

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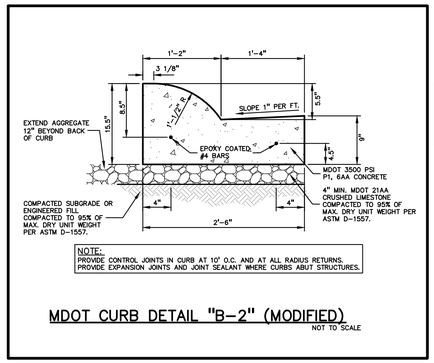
ORIGINAL ISSUE DATE:
DECEMBER 4, 2023

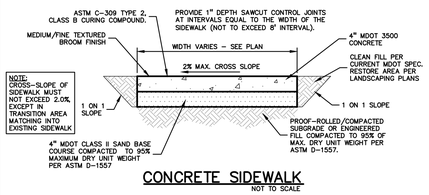
DRAWING TITLE
NOTES AND DETAILS - 2

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

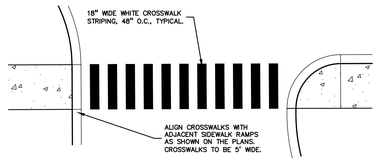
DRAWING NUMBER:
C-13.1



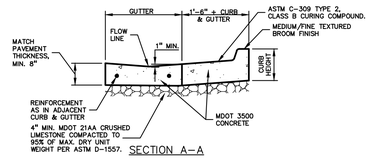
MDOT CURB DETAIL "B-2" (MODIFIED)
NOT TO SCALE



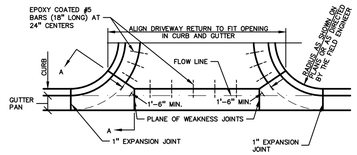
CONCRETE SIDEWALK
NOT TO SCALE



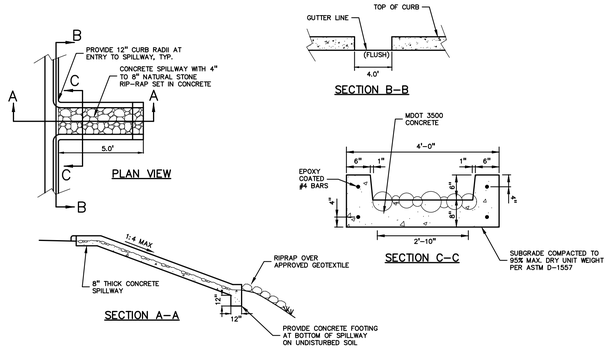
STRIPED CROSSWALK DETAIL
NOT TO SCALE



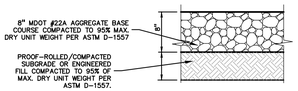
SECTION A-A



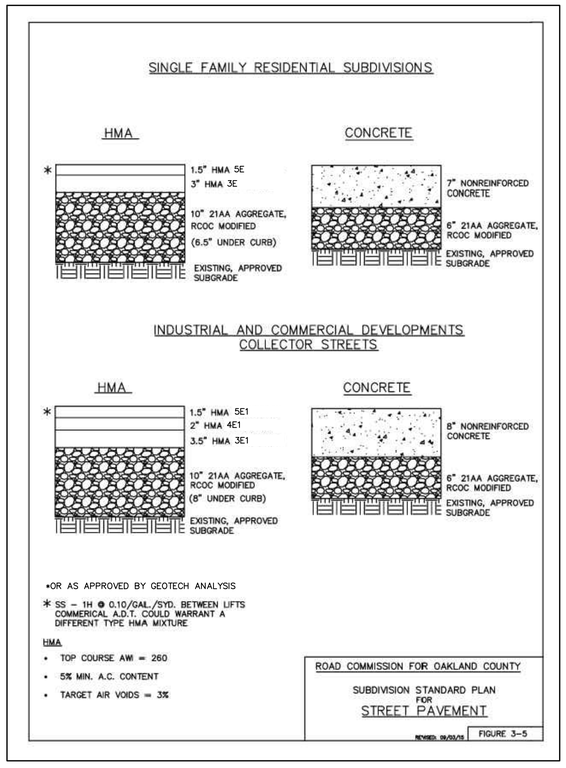
MDOT DRIVEWAY OPENING-DETAIL 'M'
NOT TO SCALE

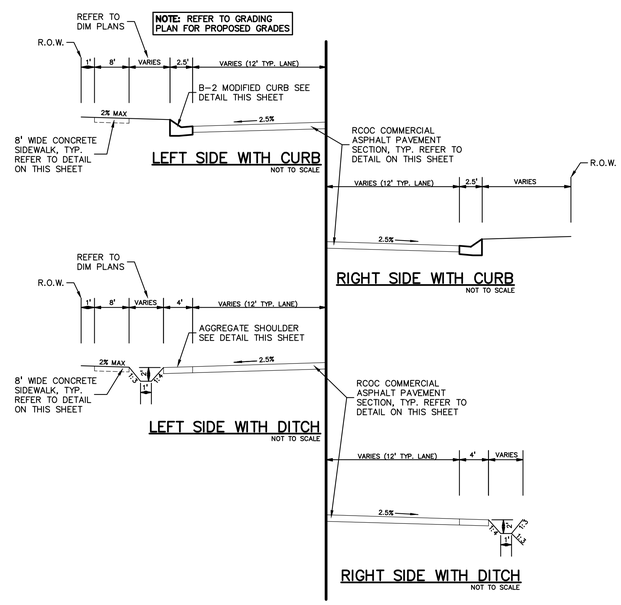


CONCRETE CURB SPILLWAY DETAIL
NOT TO SCALE



GRAVEL SHOULDER DETAIL
NOT TO SCALE





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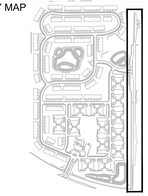

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FARMINGTON HILLS, MI 48334

PROJECT TITLE
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HIGHLAND ROAD
WHITE LAKE TWP, MI

REVISIONS	
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
MAY 8, 2025

DRAWING TITLE
NOTES AND DETAILS

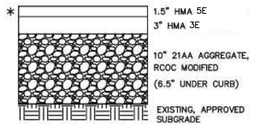
PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-13.20

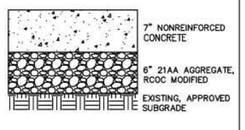
S:\PROJECTS\2021\2021-0084 WHITE LAKE MIXED USE\DWG\CONSTRUCTION\HILL ROAD\[C-13.1] DETAILS-210084.dwg

SINGLE FAMILY RESIDENTIAL SUBDIVISIONS

HMA

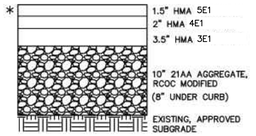


CONCRETE



INDUSTRIAL AND COMMERCIAL DEVELOPMENTS COLLECTOR STREETS

HMA



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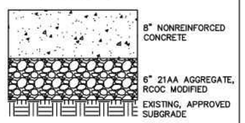

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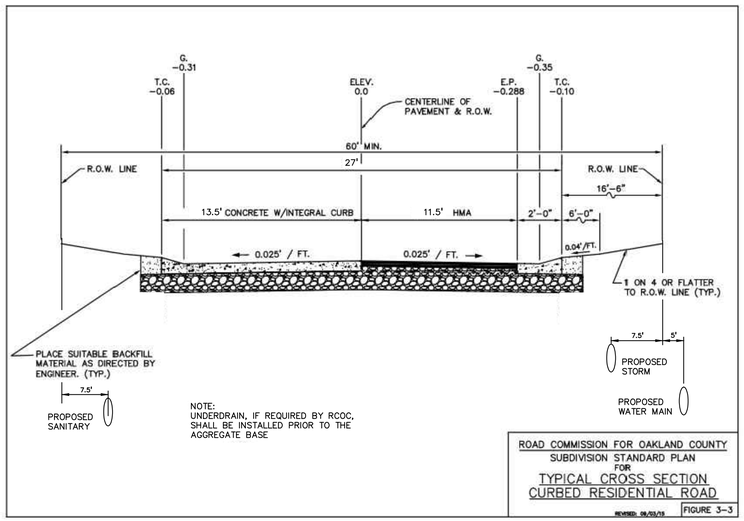
ROAD COMMISSION FOR OAKLAND COUNTY
SUBDIVISION STANDARD PLAN FOR
STREET PAVEMENT
REVISED: 09/03/15 | FIGURE 3-5



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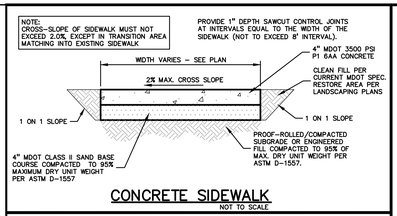
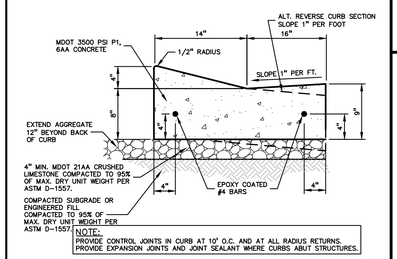
ROAD COMMISSION FOR OAKLAND COUNTY
SUBDIVISION STANDARD PLAN FOR
TYPICAL CROSS SECTION CURBED RESIDENTIAL ROAD
REVISED: 09/03/15 | FIGURE 3-3

NOTE:
CROSS-SLOPE OF SIDEWALK MUST NOT EXCEED 2.0%, EXCEPT IN TRANSITION AREA MATCHING INTO EXISTING SIDEWALK

PROVIDE 1" DEPTH SAWCUT CONTROL JOINTS AT INTERVALS EQUAL TO THE WIDTH OF THE SIDEWALK (NOT TO EXCEED 8' INTERVAL).

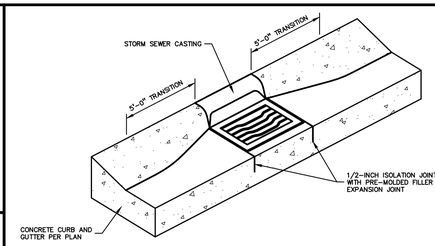


CONCRETE SIDEWALK
NOT TO SCALE

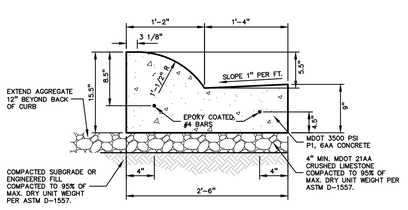


NOTE:
PROVIDE CONTROL JOINTS IN CURB AT 10' O.C. AND AT ALL RADIUS RETURNS.
PROVIDE EXPANSION JOINTS AND JOINT SEALANT WHERE CURBS ABUT STRUCTURES.

4" MOUNTABLE CURB AND GUTTER DETAIL
NOT TO SCALE



CURB TRANSITION DETAIL FOR ROLL CURB/MOUNTABLE CURB TO STRAIGHT CURB AND GUTTER AT DRAINAGE STRUCTURE
NOT TO SCALE



NOTE:
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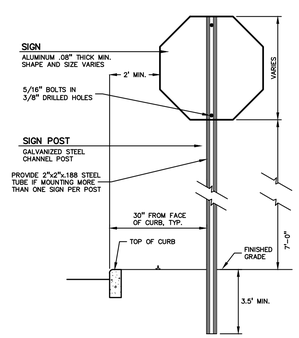
PROVIDE EXPANSION JOINTS AND JOINT SEALANT WHERE CURBS ABUT STRUCTURES.

MDOT CURB DETAIL "B-2" (MODIFIED)
NOT TO SCALE

30" x 30"
WHITE ON RED REFLECTORIZED
7'–0" MOUNTING HEIGHT
(R1-1)

STOP SIGN DETAIL
NOT TO SCALE



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KEY MAP

CLIENT
WHITE LAKE HILL, LLC
31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - SINGLE FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

REVISIONS	
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

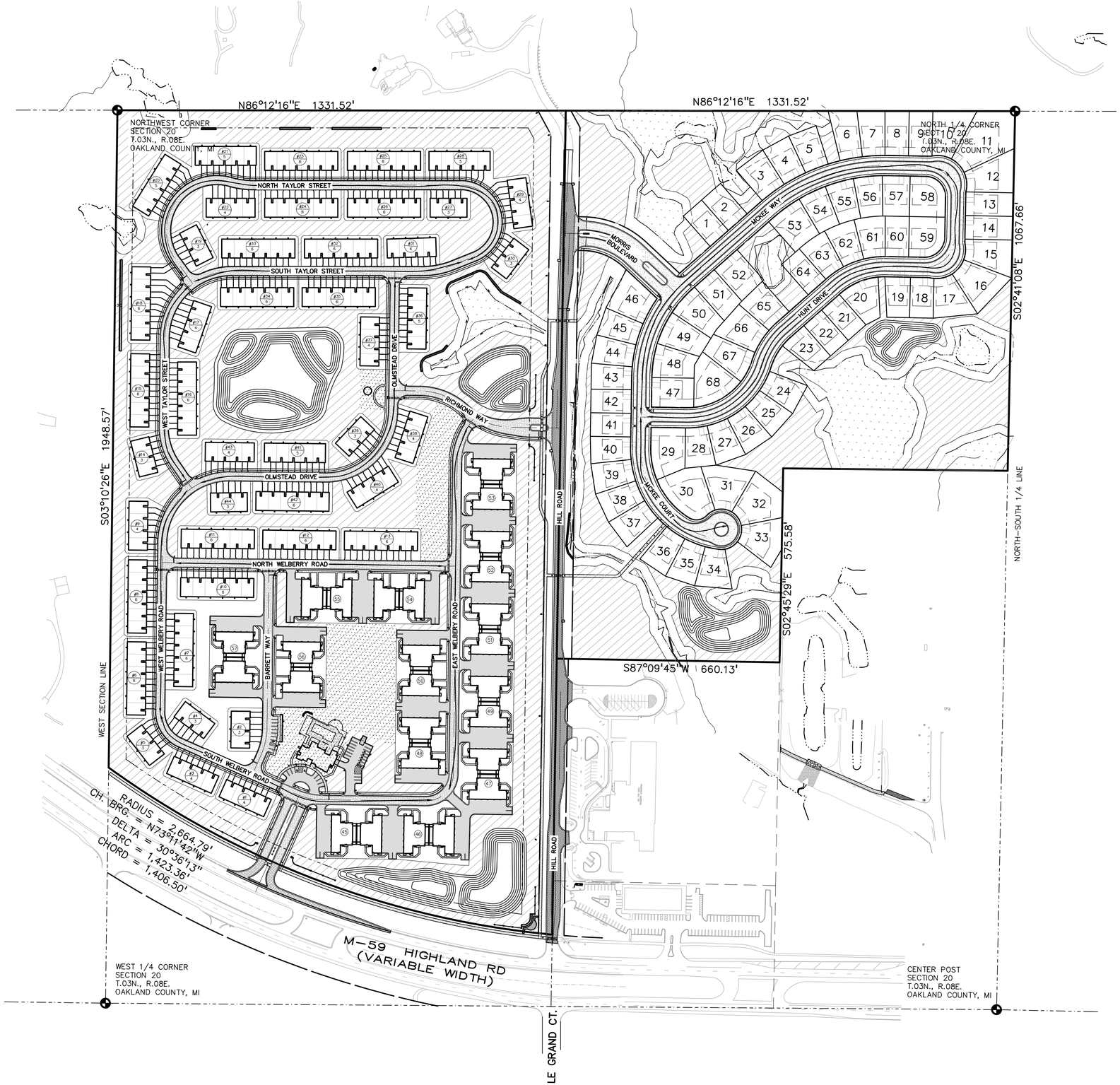
ORIGINAL ISSUE DATE:
MAY 8, 2025

DRAWING TITLE
DETAILS

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-13.31

S:\PROJECTS\2021\2021-0084 WHITE LAKE MIXED USE\DWG\CONSTRUCTION\1-SINGLE FAMILY\(C-13.0) NOTES AND DETAILS-21-0084 SF.dwg



LEGEND

IRON FOUND	BRASS PLUG SET	SEC. CORNER FOUND	
IRON SET	MONUMENT FOUND	R RECORDED	
NAIL FOUND	MONUMENT SET	M MEASURED	
NAIL & CAP SET		C CALCULATED	

EXISTING	PROPOSED	
ELEC., PHONE OR CABLE TV O.H. LINE, POLE & GUY WIRE		
UNDERGROUND CABLE TV, CATV PEDESTAL		
TELEPHONE U.G. CABLE, PEDESTAL & MANHOLE		
ELECTRIC U.G. CABLE, MANHOLE, METER & HANDHOLE		
GAS MAIN, VALVE & GAS LINE MARKER		
WATERMAIN, HYD., GATE VALVE, TAPPING SLEEVE & VALVE		
SANITARY SEWER, CLEANOUT & MANHOLE		
STORM SEWER, CLEANOUT & MANHOLE		
COMBINED SEWER & MANHOLE		
SQUARE, ROUND & BEEHIVE CATCH BASIN, YARD DRAIN		
POST INDICATOR VALVE		
WATER VALVE BOX/HYDRANT VALVE BOX, SERVICE SHUTOFF		
MAILBOX, TRANSFORMER, IRRIGATION CONTROL VALVE		
UNIDENTIFIED STRUCTURE		
SPOT ELEVATION		
CONTOUR LINE		
FENCE		
GUARD RAIL		
STREET LIGHT		
SIGN		
CONCRETE		
ASPHALT		
GRAVEL SHOULDER		
WETLAND		

SINGLE FAMILY OPEN SPACE TABLE:

SITE AREA: 41.06 ACRES GROSS
4.48 WETLAND ACRES
35.00 ACRES NET (NO R.O.W. OR WETLAND AREA)
7.68 OPEN SPACE ACRES

ZONING: EXISTING: R1-A, SINGLE FAMILY RESIDENTIAL

PROPOSED: PD, PLANNED DEVELOPMENT

PROPOSED USE: 68 UNIT SINGLE FAMILY HOME CONDOMINIUM (1.9 UNITS PER ACRE)

OPEN SPACE:
MINIMUM OPEN SPACE REQUIRED = 15% OF NET SITE AREA
PROVIDED OPEN SPACE = 7.69/35.00 = 22.0%

WETLANDS:
EGLE WETLAND IMPACT: 0.72 ACRES

MULTI-FAMILY OPEN SPACE TABLE:

SITE AREA: 68.96 ACRES GROSS
0.64 WETLAND ACRES
65.88 ACRES NET (NO R.O.W. OR WETLAND AREA)
24.22 ACRES OPEN SPACE

ZONING: EXISTING: PB, PLANNED BUSINESS
AG, AGRICULTURAL

PROPOSED: PD, PLANNED DEVELOPMENT

PROPOSED USE: 366 MULTI-FAMILY UNITS FOR LEASE (5.6 UNITS PER ACRE)

OPEN SPACE:
MINIMUM OPEN SPACE REQUIRED = 15% OF NET SITE AREA
PROVIDED OPEN SPACE = 24.22/65.88 = 36.8%
RECREATION SPACE REQUIRED = 5,000 SF FIRST UNIT + 100 SF/EA ADDITIONAL UNIT X 365 UNITS = 41,500 SF
RECREATION SPACE PROVIDED = 150,493 SF (CLUBHOUSE, POOL, DOG PARK, & GAZEBO AREA)

WETLANDS:
EGLE WETLAND IMPACT: 0.34 ACRES

LEGEND:

OPEN SPACE

RECREATIONAL SPACE

NORTH

0 75 150 300

SCALE: 1" = 150'

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KEY MAP

PEA GROUP
t: 844.813.2949
www.peagroup.com

STATE OF MICHIGAN
BRETT STURGEON HOLLANDSWORTH
LICENSED PROFESSIONAL ENGINEER
License No. 6201064949

CLIENT

WHITE LAKE HILL, LLC
31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE

THE AVALON - MULTI FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

REVISIONS	
DRAFT	2/19/24
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FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
DECEMBER 4, 2023

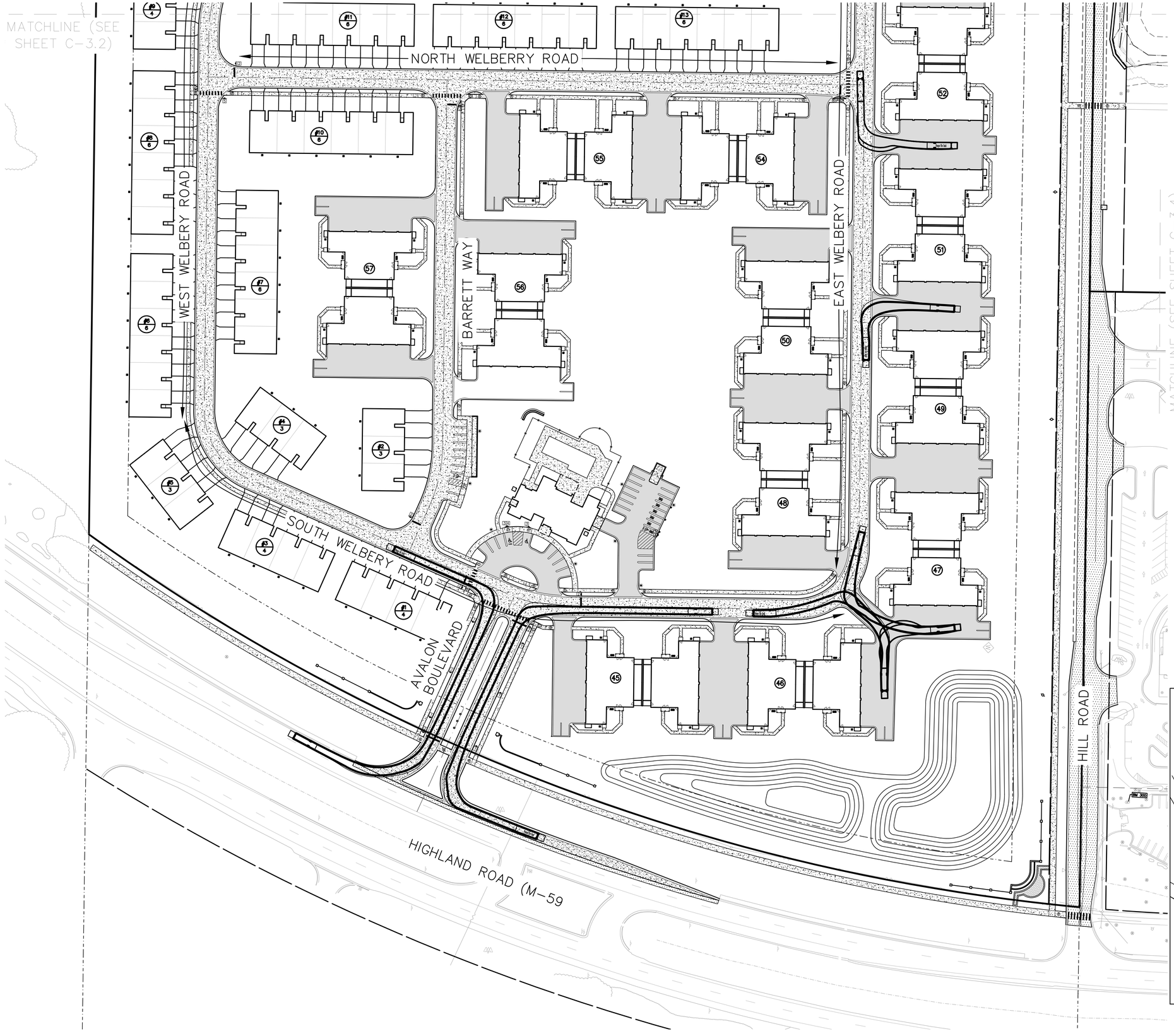
DRAWING TITLE

OPEN SPACE PLAN

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:

C-14.0



LEGEND:

- CONCRETE PAVEMENT (STD DUTY / HEAVY DUTY / R.O.W. ONLY)
- ASPHALT PAVEMENT (STD DUTY / HEAVY DUTY / DEEP STRENGTH)
- GRAVEL
- WETLAND
- CONCRETE CURB AND GUTTER
- REVERSE GUTTER PAN
- SETBACK LINE
- SIGN
- LIGHTPOLE
- FENCE
- GUARD RAIL

SIGN LEGEND:

'NO PARKING FIRE LANE' SIGN	[1]
'STOP' SIGN	[2]
'BARRIER FREE PARKING' SIGN	[3]
'VAN ACCESSIBLE' SIGN	[4]
'CROSSWALK' SIGN	[5]
'DO NOT ENTER' SIGN	[6]
'SIDEWALK ENDS' SIGN	[7]
'NO PARKING LOADING ZONE' SIGN	[8]

REFER TO DETAIL SHEET FOR SIGN DETAILS

SIDEWALK RAMP LEGEND:

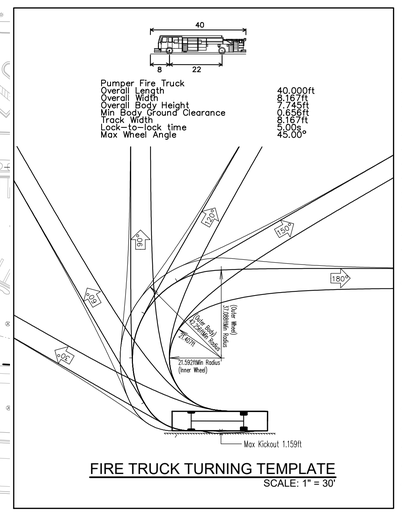
SIDEWALK RAMP 'TYPE R'	(R)
SIDEWALK RAMP 'TYPE F'	(F)
SIDEWALK RAMP 'TYPE P'	(P)
SIDEWALK RAMP 'TYPE C'	(C)
SIDEWALK RAMP 'TYPE D'	(D)
CURB DROP ONLY	(X)

REFER TO LATEST MDOT R-28 STANDARD RAMP AND DETECTABLE WARNING DETAILS

GENERAL NOTES:

THESE NOTES APPLY TO ALL CONSTRUCTION ACTIVITIES ON THIS PROJECT.

1. **ALL DIMENSIONS SHOWN ARE TO BACK OF CURB, FACE OF SIDEWALK, OUTSIDE FACE OF BUILDING, PROPERTY LINE, CENTER OF MANHOLE/CATCH BASIN OR CENTERLINE OF PIPE UNLESS OTHERWISE NOTED.**
2. **'NO PARKING-FIRE LANE' SIGNS SHALL BE POSTED ALONG ALL FIRE LANES AT 100 FOOT INTERVALS OR AS DIRECTED BY THE FIRE OFFICIAL.**
3. **REFER TO NOTES & DETAILS SHEET FOR ON-SITE PAVING DETAILS.**
4. **REFER TO NOTES & DETAILS SHEET FOR ON-SITE SIDEWALK RAMP DETAILS**



FIRE TRUCK TURNING TEMPLATE
SCALE: 1" = 30'

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NORTH

0 30 60 120
SCALE: 1" = 60'

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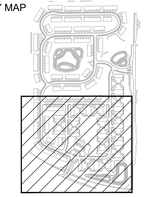
KEY MAP



CLIENT
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FARMINGTON HILLS, MI 48334

PROJECT TITLE
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WHITE LAKE TWP, MI

REVISIONS	
DRAFT	2/19/24
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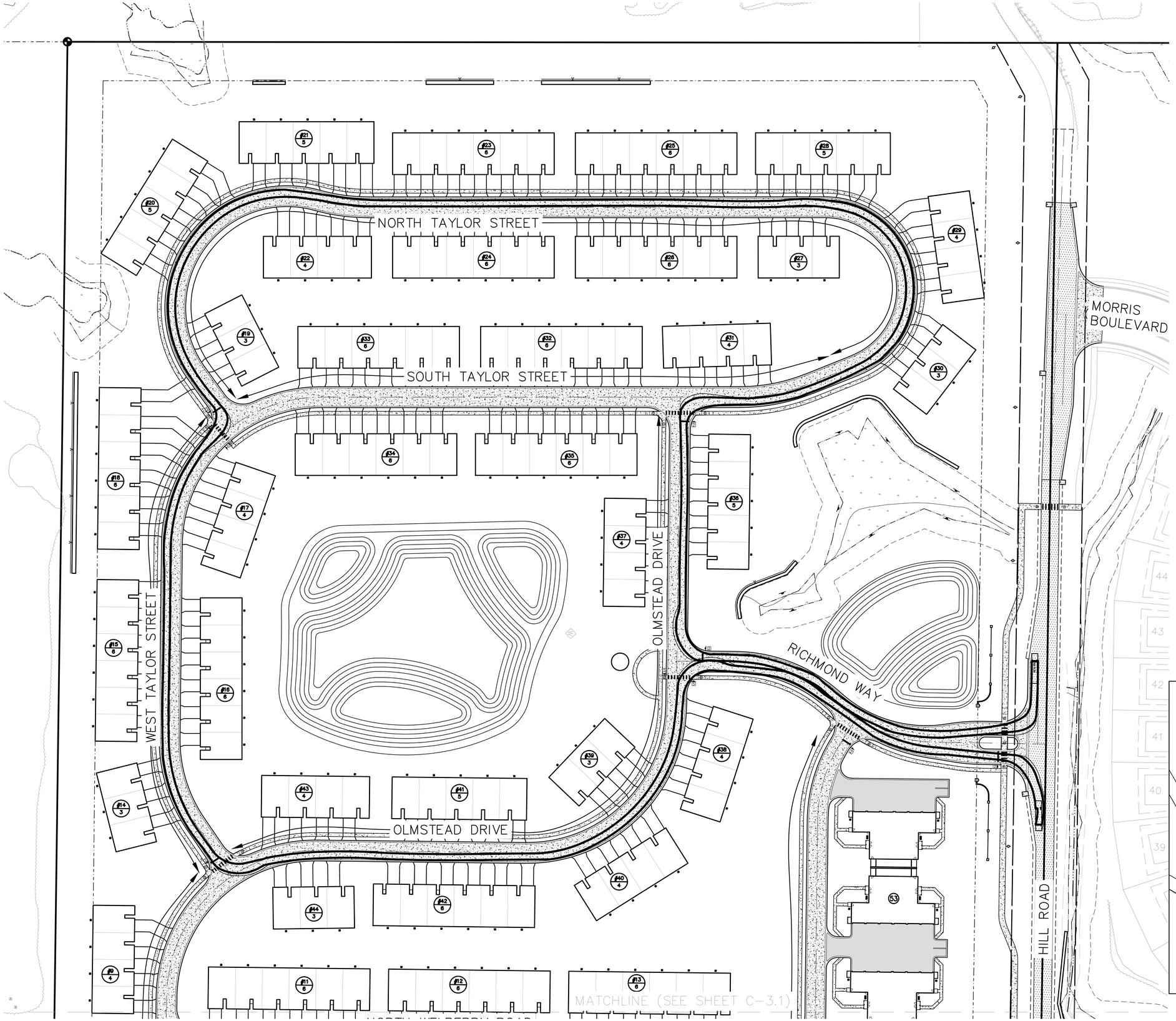
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
DECEMBER 4, 2023

DRAWING TITLE
FIRE SAFETY PLAN - SOUTH

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-15.1



LEGEND:

- CONCRETE PAVEMENT (STD DUTY / HEAVY DUTY / R.O.W. ONLY)
- ASPHALT PAVEMENT (STD DUTY / HEAVY DUTY / DEEP STRENGTH)
- GRAVEL
- WETLAND
- CONCRETE CURB AND GUTTER
- REVERSE GUTTER PAN
- SETBACK LINE
- SIGN
- LIGHTPOLE
- FENCE
- GUARD RAIL

SIGN LEGEND:

'NO PARKING FIRE LANE' SIGN	[1]
'STOP' SIGN	[2]
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'VAN ACCESSIBLE' SIGN	[4]
'CROSSWALK' SIGN	[5]
'DO NOT ENTER' SIGN	[6]
'SIDEWALK ENDS' SIGN	[7]
'NO PARKING LOADING ZONE' SIGN	[8]

REFER TO DETAIL SHEET FOR SIGN DETAILS

SIDEWALK RAMP LEGEND:

SIDEWALK RAMP 'TYPE R'	Ⓡ
SIDEWALK RAMP 'TYPE F'	Ⓕ
SIDEWALK RAMP 'TYPE P'	Ⓟ
SIDEWALK RAMP 'TYPE C'	Ⓒ
SIDEWALK RAMP 'TYPE D'	Ⓓ
CURB DROP ONLY	Ⓧ

REFER TO LATEST MDOT R-28 STANDARD RAMP AND DETECTABLE WARNING DETAILS

GENERAL NOTES:

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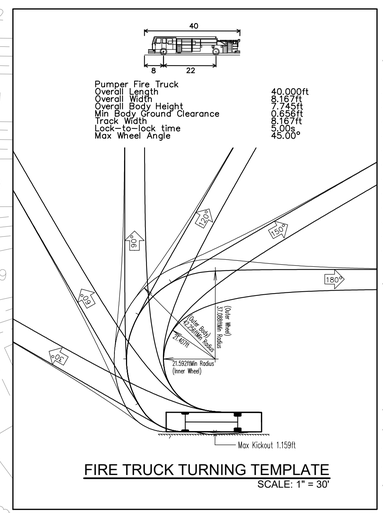
4. REFER TO NOTES & DETAILS SHEET FOR ON–SITE SIDEWALK RAMP DETAILS



FIRE TRUCK TURNING TEMPLATE
SCALE: 1" = 30'

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STATE OF MICHIGAN
BRETT STURGEON HOLLANDSWORTH
LICENSED PROFESSIONAL ENGINEER
License No. 6201064949

NORTH

0 30 60 120
SCALE: 1" = 60'

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KEY MAP

CLIENT
WHITE LAKE HILL, LLC
31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - MULTI FAMILY
HIGHLAND ROAD
WHITE LAKE TWP, MI

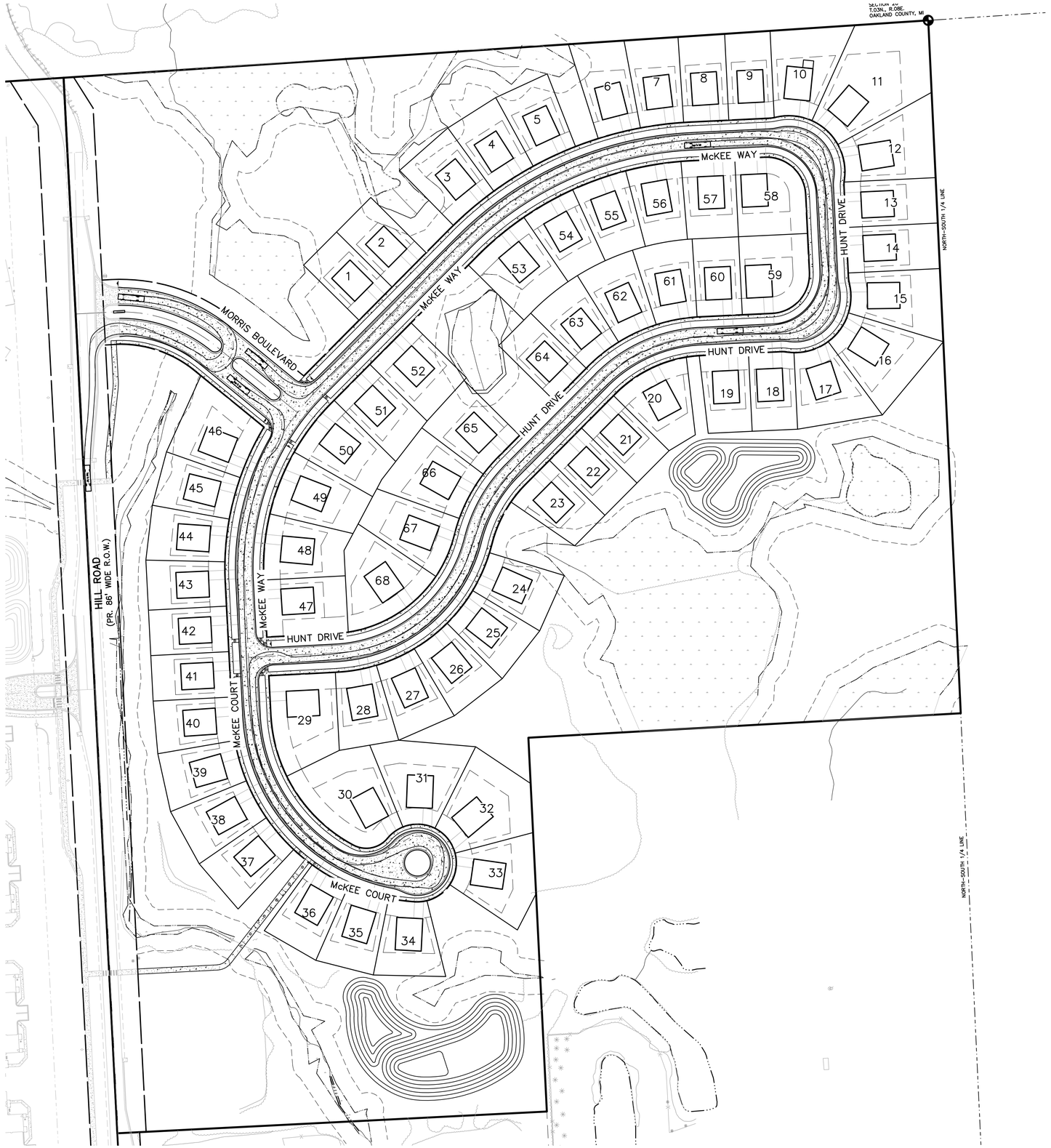
REVISIONS	
DRAFT	2/19/24
ISSUED FOR OWNER REVIEW	4/24/24
FINAL SITE PLAN REVIEW	7/3/24
FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
DECEMBER 4, 2023

DRAWING TITLE
FIRE SAFETY PLAN - NORTH

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-15.2



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SIGN LEGEND:

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REFER TO DETAIL SHEET FOR SIGN DETAILS

SIDEWALK RAMP LEGEND:

SIDEWALK RAMP 'TYPE R'	(R)
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SIDEWALK RAMP 'TYPE P'	(P)
SIDEWALK RAMP 'TYPE C'	(C)
SIDEWALK RAMP 'TYPE D'	(D)
CURB DROP ONLY	(X)

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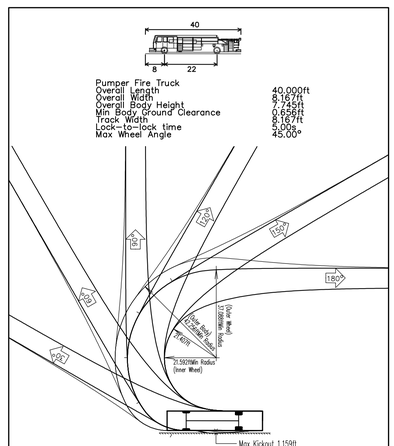

FIRE TRUCK TURNING TEMPLATE
SCALE: 1" = 30'

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NORTH

0 40 80 160
SCALE: 1" = 80'

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KEY MAP

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PROJECT TITLE
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REVISIONS	
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FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
MAY 8, 2025

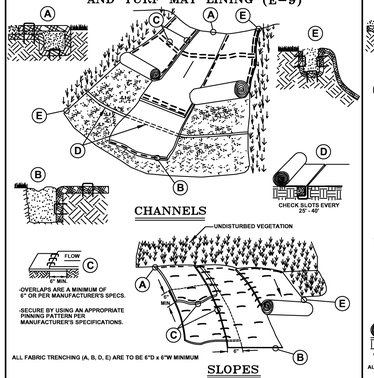
DRAWING TITLE
SAFETY PLAN

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
C-15.30

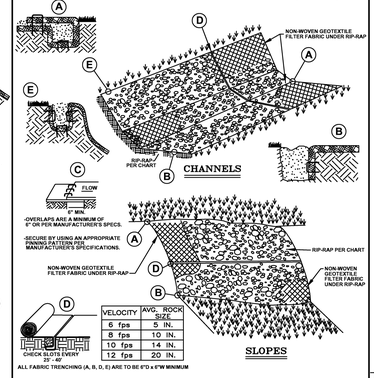
S:\PROJECTS\2021\2021-0084 WHITE LAKE MIXED USE\DWG\CONSTRUCTION\1-SINGLE FAMILY\C-15.00 SAFETY-21-0084 SP.dwg

EROSION CONTROL BLANKETS AND TURF MAT LINING (E-9)



DEPENDING ON THE VELOCITY, SLOPE, SOILS, USE PROPER BLANKET OR TURF MAT LINING PER MANUFACTURER'S SPECIFICATIONS TO HANDLE THE SHEER STRESSES OF THE SLOPE/CHANNEL.

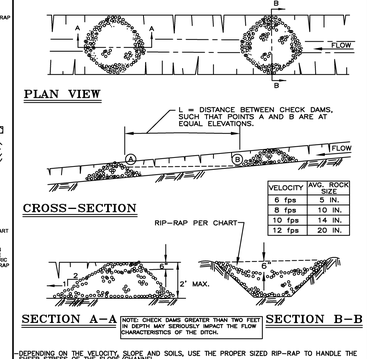
RIP-RAP: CHANNELS AND SLOPES (E-10)



VELOCITY	AVG. ROCK SIZE
6 fps	5 IN.
8 fps	10 IN.
10 fps	14 IN.
12 fps	20 IN.

DEPENDING ON THE VELOCITY, SLOPE AND SOILS, USE THE PROPER SIZED RIP-RAP AND NON-WOVEN GEOTEXTILE FABRIC TO HANDLE THE SHEER STRESS OF THE SLOPE/CHANNEL.

CHECK DAMS (E-3)



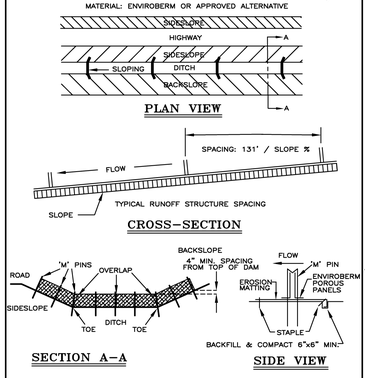
VELOCITY	AVG. ROCK SIZE
6 fps	5 IN.
8 fps	10 IN.
10 fps	14 IN.
12 fps	20 IN.

-DEPENDING ON THE VELOCITY, SLOPE AND SOILS, USE THE PROPER SIZED RIP-RAP TO HANDLE THE SHEER STRESS OF THE SLOPE/CHANNEL.

-FOR SLOPE AND/OR CHANNEL PROTECTION SEE OTHER BMP'S ON THIS SHEET OR IN THE WRC SOIL EROSION MANUAL.

CHECK DAMS ALTERNATIVE "A" (E-3A)

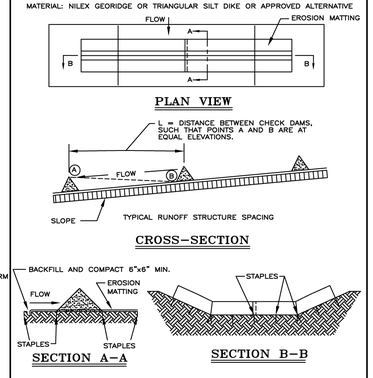
MATERIAL: ENVIROBERM OR APPROVED ALTERNATIVE



-FOR SLOPE AND/OR CHANNEL PROTECTION SEE OTHER BMP'S ON THIS SHEET OR IN THE WRC SOIL EROSION MANUAL.

CHECK DAMS ALTERNATIVE "B" (E-3B)

MATERIAL: NILEX GEORIDGE OR TRIANGULAR SILT DIKE OR APPROVED ALTERNATIVE



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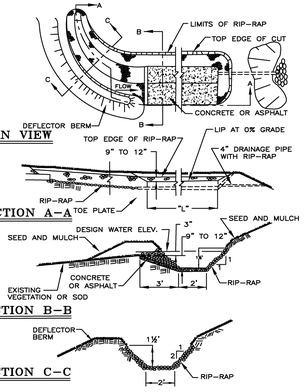
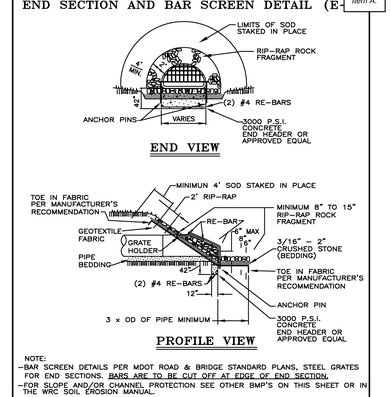
LEVEL SPREADER (E-4)



RIP-RAP, END SECTION AND BAR SCREEN DETAIL (E-

Item A.

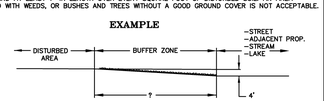


NOTE:
-BAR SCREEN DETAILS PER MDOT ROAD & BRIDGE STANDARD PLANS, STEEL GRATES FOR END SECTIONS. BARS ARE TO BE CUT OFF AT EDGE OF END SECTION.
-FOR SLOPE AND/OR CHANNEL PROTECTION SEE OTHER BMP'S ON THIS SHEET OR IN THE WRC SOIL EROSION MANUAL.

VEGETATIVE BUFFER ZONE (SP-1)

THE GRAPH SHOWN BELOW IS USED TO DETERMINE THE ADEQUACY OF AN EXISTING VEGETATIVE BUFFER ZONE FOR USE AS A SEDIMENT FILTER. THIS GRAPH IS ONLY APPLICABLE IF THE VEGETATION IS 90% DENSE AND AT LEAST 1" IN LENGTH OVER EVERY SQUARE FOOT OF DISTURBED SOIL. AN AREA COVERED WITH WEEDS, OR BUSHES AND TREES WITHOUT A GOOD GROUND COVER IS NOT ACCEPTABLE.

EXAMPLE

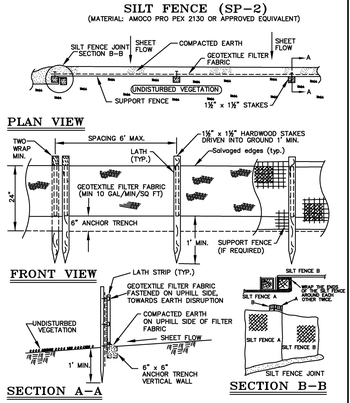


LENGTH OF BUFFER ZONE ?
% OF SLOPE OF BUFFER ZONE = 5%
WHAT IS THE ACCEPTABLE LENGTH OF THE BUFFER ZONE?

PLOT IN GRAPH BELOW
BUFFER ZONE IS ACCEPTABLE AT 65'

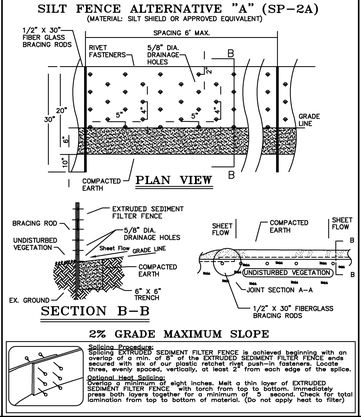
SILT FENCE (SP-2)

(MATERIAL: AMOCO PRO PEX 2130 OR APPROVED EQUIVALENT)



SILT FENCE ALTERNATIVE "A" (SP-2A)

(MATERIAL: SILT SHIELD OR APPROVED EQUIVALENT)



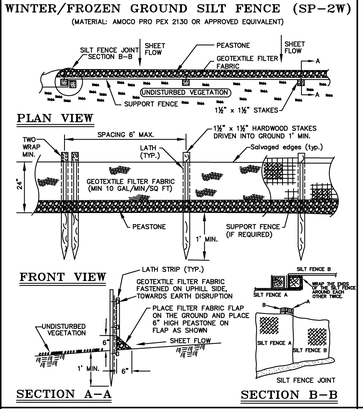
2% GRADE MAXIMUM SLOPE

Splicing Procedure:
Splicing EXTRUDED SEDIMENT FILTER FENCE is achieved beginning with an overlap of a min. of 6" of the EXTRUDED SEDIMENT FILTER FENCE ends encased with a 6" over lap plastic retainer. Use push-in fasteners to locate through both sides of overlap vertically, at least 3" from each edge of the splice.

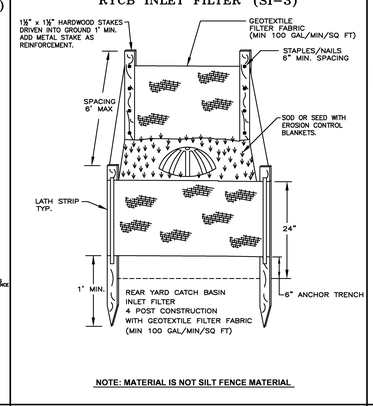
Optional Heat Splicing:
Overlap 2 minimum 6" long inches. Melt a thin layer of EXTRUDED SEDIMENT FILTER FENCE with torch from top to bottom. Immediately press both layers together for a minimum of .5 second. Check for total lamination from top to bottom of material. (Do not apply heat to filter)

WINTER/FROZEN GROUND SILT FENCE (SP-2W)

(MATERIAL: AMOCO PRO PEX 2130 OR APPROVED EQUIVALENT)

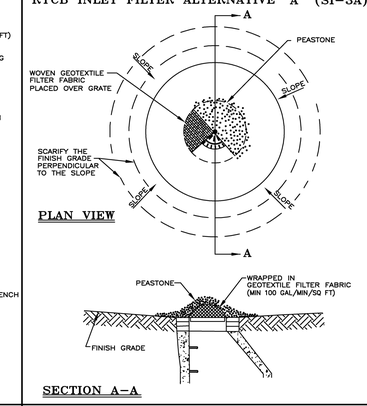


RYCB INLET FILTER (SI-3)



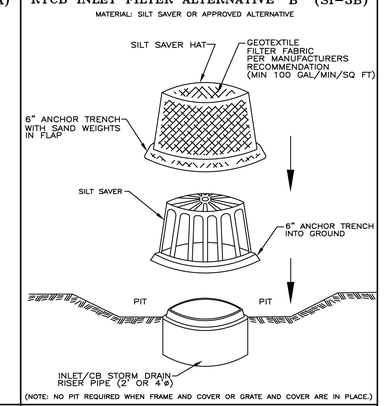
NOTE: MATERIAL IS NOT SILT FENCE MATERIAL

RYCB INLET FILTER ALTERNATIVE "A" (SI-3A)



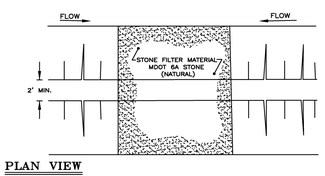
RYCB INLET FILTER ALTERNATIVE "B" (SI-3B)

MATERIAL: SILT SAVER OR APPROVED ALTERNATIVE

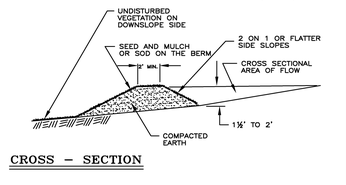


(NOTE: NO PIT REQUIRED WHEN FRAME AND COVER OR GRATE AND COVER ARE IN PLACE.)

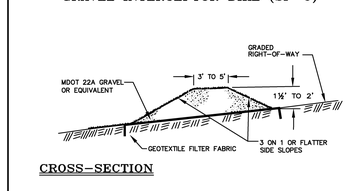
EARTH DIVERSION BERM WITH STONE OUTLET FILTER (SP-4)



EARTH DIVERSION BERM (E-2)



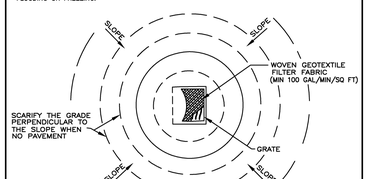
GRAVEL INTERCEPTOR DIKE (SP-6)



-PLACE GEOTEXTILE FABRIC UNDER STONE WITH 6 INCH MIN. OVERLAP AND TRENCHED IN 6 INCH MIN.
-FOR SLOPE AND/OR CHANNEL PROTECTION SEE OTHER BMP'S ON THIS SHEET OR IN THE WRC SOIL EROSION MANUAL.

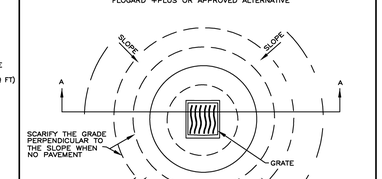
LOW POINT INLET FILTER (SI-2)

ALTERNATIVE INLET FILTER MUST BE USED IN AREAS THAT MAY BECOME A SAFETY HAZARD DUE TO FLOODING OR FREEZING.

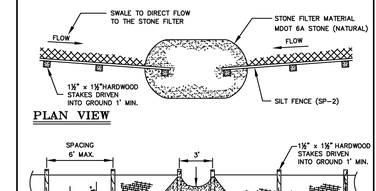


LOW POINT INLET FILTER ALT. "A" (SI-2A)

MATERIAL: CATCH-ALL, ULTRA-URBAN FILTERS, FLOGARD +PLUS OR APPROVED ALTERNATIVE

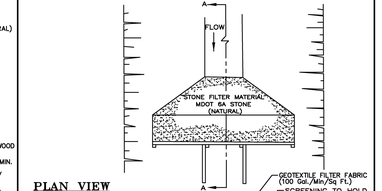


SILT FENCE GRAVEL FILTER (SP-3)



-PLACE GEOTEXTILE FABRIC UNDER STONE WITH 6 INCH MIN. OVERLAP AND TRENCHED IN 6 INCH MIN.

DITCH SEDIMENT TRAP (SO-4)

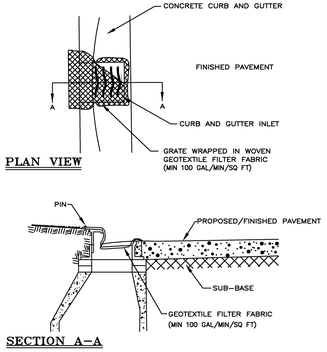


NOTE:
FOR SLOPE AND/OR CHANNEL PROTECTION SEE OTHER BMP'S ON THE SHEET OR IN THE WRC SOIL EROSION MANUAL.

CURB AND GUTTER INLET FILTER (SI-4)

(BEFORE AND AFTER PAVING)

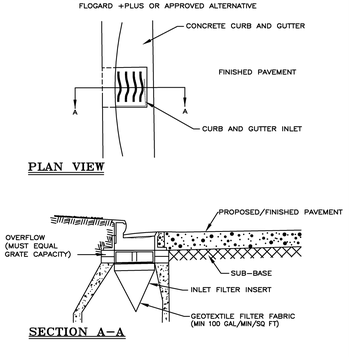
ALTERNATIVE INLET FILTER MUST BE USED IN AREAS THAT MAY BECOME A SAFETY HAZARD DUE TO FLOODING OR FREEZING.



CURB AND GUTTER INLET FILTER ALTERNATIVE "A" (SI-4A)

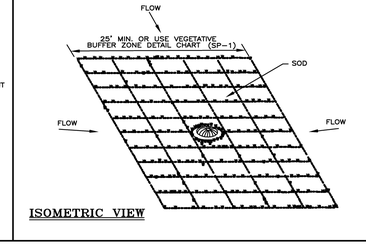
(BEFORE AND AFTER PAVING)

MATERIAL: CATCH-ALL, ULTRA-URBAN FILTERS, FLOGARD +PLUS OR APPROVED ALTERNATIVE

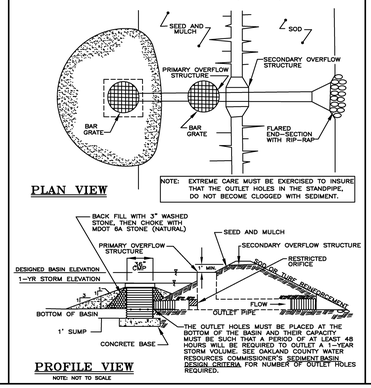


SOD INLET FILTER (SI-1)

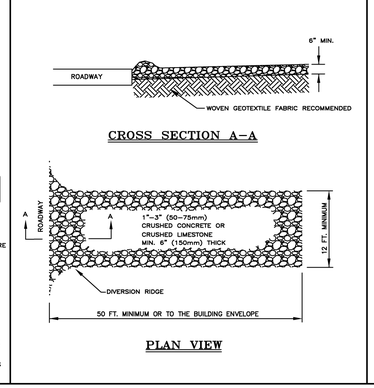
DEFINITION	SOD INLET FILTERS ARE PADS OF SOD PLACED AROUND A STORM DRAIN INLET OR CATCH BASIN.
PURPOSE	SOD INLET FILTERS ARE INSTALLED TO SLOW THE FLOW OF WATER INTO AN INLET OR CATCH BASIN AND TO FILTER OUT SEDIMENT IN THE PROCESS.
WHERE APPLICABLE	SOD INLET FILTERS SHOULD ONLY BE USED TO HANDLE LIGHT CONCENTRATIONS OF SEDIMENT. THEY ARE BEST USED AFTER FINAL GRADING IS COMPLETE AND DURING THE ESTABLISHMENT OF A VEGETATIVE COVER.



TEMPORARY DETENTION BASIN OUTLET STONE FILTER (SO-2)

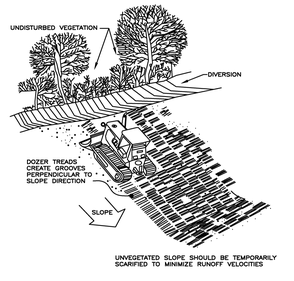


TEMPORARY STONE ACCESS DRIVE (SP-9)



SURFACE ROUGHENING AND SCARIFICATION (E-8)

THIS IS AN EASY AND ECONOMICAL WAY TO REDUCE SOIL EROSION. IT IS SIMPLY THE PLACING OF HORIZONTAL GROOVES IN A SLOPE PERPENDICULAR TO THE FLOW OF RUNOFF. THIS CAN BE DONE BY EITHER DISC HARROWING, BACK BLADING OR JUST RUNNING THE TREADS OF A CRAWLER TRACTOR PERPENDICULAR TO THE SLOPE AS SHOWN BELOW.



UNVEGETATED SLOPE SHOULD BE TEMPORARILY SCARIFIED TO MINIMIZE RUNOFF VELOCITIES

NOTE:

WHILE PERFORMING WORK INVOLVING GROUNDS MAINTENANCE AND/OR THE CONSTRUCTION/MAINTENANCE OF ANY INFRASTRUCTURE, INCLUDING ROADS, WATER MAINS, SANITARY SEWERS, STORM DRAINS AND STORM WATER BEST MANAGEMENT PRACTICES (BMPS), CONTRACTORS SHALL MINIMIZE POLLUTION FROM STORM WATER RUNOFF THAT CAN AFFECT WATER QUALITY RELATED TO WORK ACTIVITIES. POLLUTANTS THAT COULD IMPAIR WATER QUALITY MAY INCLUDE FUEL, GREASE AND OIL, NUTRIENTS, BACTERIA AND PATHOGENS, LITTER AND DEBRIS, AND SOIL EROSION AND SEDIMENTATION. APPLICABLE BMPS SHALL BE IMPLEMENTED BY THE CONTRACTOR TO THE MAXIMUM EXTENT PRACTICABLE TO PROTECT WATER QUALITY AND WILDLIFE HABITAT.

SOIL EROSION AND SEDIMENTATION CONTROL DETAILS

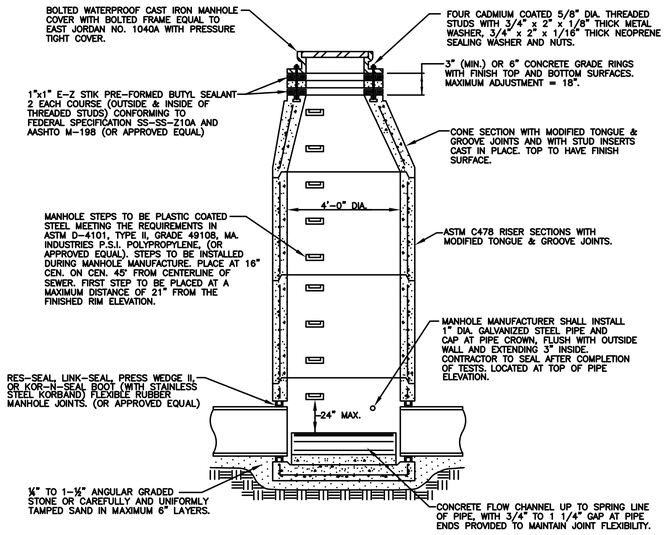
REVISION BLOCK			
Date Source / Source Date:		N/A	
Rev. No.	Rev. By	Rev. Date:	Description:
1	K	3-22-07	PROPOSED DETAIL EDITS
2	LK	2-26-09	STANDARDS COMMITTEE APPROVAL / NAME CHANGES
3	DS	3-25-11	SILT FENCE ALTERNATIVE "A" DETAIL (SP-2A) ADDED
4	DS	4-15-13	STANDARDS COMMITTEE APPROVAL / NOTE CHANGES

ORIG. DATE:	01/01/01
SCALE:	NONE
DESIGNED BY:	WRC
DRAWN BY:	Mapping

WRC WATER RESOURCES COMMISSIONER
Jim Nash

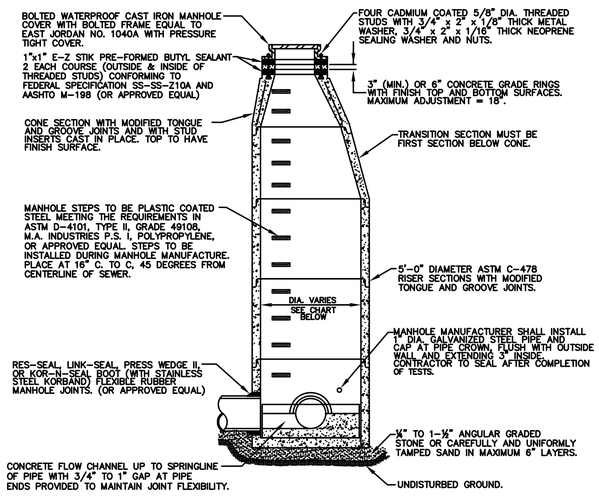
ONE PUBLIC WORKS DRIVE, BLDG 95 WEST
WATERFORD, MICHIGAN
48328-1907

SHEET NO.: 1 of 228



STANDARD MANHOLE

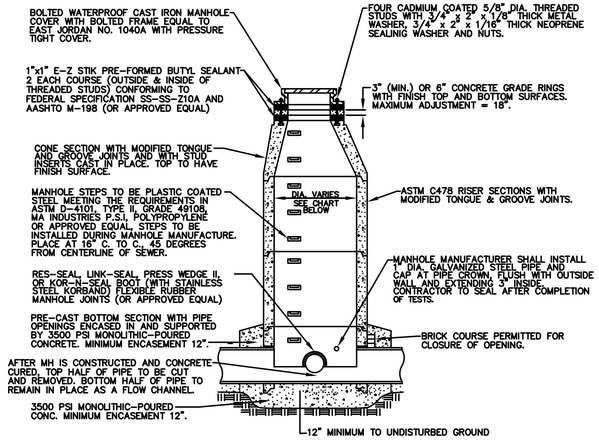
MAX. PIPE SIZE FOR STRAIGHT THRU INSTALLATION	MAX. PIPE SIZE FOR RIGHT ANGLE INSTALLATION
24"	18"



STANDARD OVERSIZED MANHOLE

MANHOLE SIZING CHART

MANHOLE DIAMETER	MAX. PIPE SIZE FOR STRAIGHT THRU INST.	MAX. PIPE SIZE FOR RIGHT ANGLE INST.
5'	36"	24"
6'	42"	36"
7'	60"	42"



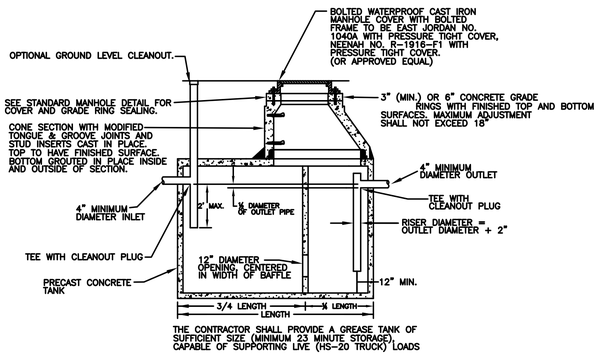
MANHOLE CONSTRUCTED OVER EXISTING SEWER

MANHOLE SIZING CHART

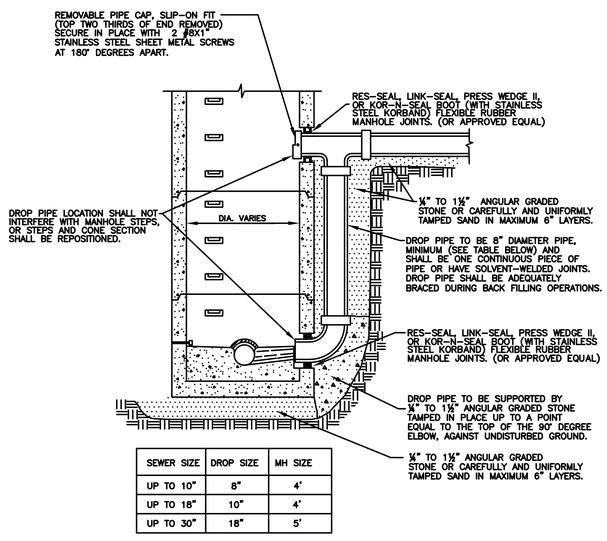
MANHOLE DIAMETER	MAX. PIPE SIZE FOR STRAIGHT THRU INST.
4'	24"
5'	36"
6'	42"
7'	60"

SANITARY SEWER CONSTRUCTION NOTES

1. ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF THE LOCAL UNIT OF GOVERNMENT AND THE WATER RESOURCES COMMISSIONER (WRC). ALL SANITARY SEWER CONSTRUCTION SHALL HAVE FULL-TIME INSPECTION SUPERVISED BY A STATE OF MICHIGAN LICENSED PROFESSIONAL ENGINEER PROVIDED BY, OR CAUSED TO BE PROVIDED BY, THE LOCAL UNIT OF GOVERNMENT.
2. AT ALL CONNECTIONS TO WRC SEWERS OF EXTENSIONS, AND BEFORE START OF CONSTRUCTION, THE CONTRACTOR MUST OBTAIN A SEWER INSPECTION PERMIT ISSUED BY WRC. GRAVITY SEWER PERMIT CHANGES ARE $250 FOR EACH CONNECTION PLUS $25 FOR EACH MANHOLE CONSTRUCTED. PRESSURE SEWER PERMIT CHARGES ARE $250 PER 2,460 L.F. OF FORCE MAIN WITH A MINIMUM PERMIT FEE OF $250. FAILURE TO PASS ANY TEST SEGMENT WILL RESULT IN AN ADDITIONAL CHARGE TO THE CONTRACTOR FOR EACH RETEST, IN ACCORDANCE WITH THE ABOVE PRICE SCHEDULE. THE CONTRACTOR SHALL ALSO HAVE POSTED WITH WRC A $5,000 SURETY BOND AND $500 CASH DEPOSIT. THE CONTRACTOR SHALL NOTIFY THE LOCAL UNIT OF GOVERNMENT AND WRC (248-858-1105) 24 HOURS PRIOR TO THE BEGINNING OF ANY CONSTRUCTION. FINAL ACCEPTANCE TESTS MUST BE WITNESSED BY COUNTY PERSONNEL AND MUST BE SCHEDULED BY MUNICIPALITY OR IT'S CONSULTANT IN ADVANCE WITH 24 HOUR NOTICE AT 248-858-1105.
3. NO SEWER INSTALLATION SHALL HAVE AN INFILTRATION EXCEEDING 100 GALLONS PER INCH DIAMETER PER MILE OF PIPE IN A 24 HOUR PERIOD, AND NO SINGLE RUN OF SEWER BETWEEN MANHOLES SHALL EXCEED 100 GALLONS PER INCH DIAMETER PER MILE. AIR TESTS IN LIEU OF INFILTRATION TESTS SHALL BE AS SPECIFIED IN THE WATER RESOURCES COMMISSIONER STANDARDS. ONLY PIPE AND PIPE JOINTS APPROVED BY WRC MAY BE USED FOR SANITARY SEWER CONSTRUCTION.
4. LOCATED IN THE FIRST MANHOLE UPSTREAM FROM THE POINT OF ALL CONNECTIONS TO AN EXISTING WRC SEWER, OR EXTENSION THERETO, A TEMPORARY 12-INCH DEEP SUMP SHALL BE PROVIDED IN THE FIRST MANHOLE ABOVE THE CONNECTION WHICH WILL BE FILLED IN AFTER SUCCESSFUL COMPLETION OF ANY ACCEPTANCE TEST UP TO THE STANDARD FILLET PROVIDED FOR THE FLOW CHANNEL. A WATERTIGHT BULKHEAD SHALL BE PROVIDED ON THE DOWNSTREAM SIDE OF THE SUMP MANHOLE.
5. AT ALL TIMES WHEN LAYING OF NEW PIPE IS NOT ACTUALLY IN PROGRESS, THE UPSTREAM OPEN END OF THE PIPE SHALL BE CLOSED BY TEMPORARY WATERTIGHT PLUGS OR BY OTHER APPROVED MEANS. IF WATER IS IN THE TRENCH WHEN WORK IS RESUMED, THE PLUG SHALL NOT BE REMOVED UNTIL THE DANGER OF WATER ENTERING THE PIPE HAS PASSED.
6. ALL BUILDING LEADS AND RISERS SHALL BE SIX INCH SDR 23.5 ABS PIPE WITH CHEMICALLY FUSED JOINTS OR AN APPROVED EQUAL PIPE AND JOINT. BUILDING LEADS TO BE FURNISHED WITH REMOVABLE AIRTIGHT AND WATERTIGHT STOPPERS.
7. ALL RIGID SEWER PIPE SHALL BE INSTALLED IN CLASS "B" BEDDING OR BETTER. ALL FLEXIBLE, SEMI-FLEXIBLE, OR COMPOSITE SEWER PIPE SHALL BE INSTALLED IN CONFORMANCE TO WRC SPECIFICATIONS.
8. ALL NEW MANHOLES SHALL HAVE WRC APPROVED FLEXIBLE, WATERTIGHT SEALS WHERE PIPES PASS THROUGH WALLS. MANHOLES SHALL BE OF PRE CAST SECTIONS WITH MODIFIED GROOVE TONGUE AND RUBBER GASKET TYPE JOINTS. PRE CAST MANHOLE CONE SECTIONS SHALL BE WRC APPROVED MODIFIED ECCENTRIC CONE TYPE. ALL MANHOLES SHALL BE PROVIDED WITH BOLTED, WATERTIGHT COVERS.
9. AT ALL CONNECTIONS TO MANHOLES ON WRC SEWERS, OR EXTENSIONS THERETO, DROP CONNECTIONS WILL BE REQUIRED WHEN THE DIFFERENCE IN INVERT ELEVATIONS EXCEEDS 18 INCHES.
10. TAPS TO EXISTING MANHOLES SHALL BE MADE BY CORING. THE CONTRACTOR SHALL PLACE A KOR-N-SEAL BOOT (OR WRC APPROVED EQUAL) AFTER CORING IS COMPLETED. BLIND DRILLING WILL ONLY BE PERMITTED IN LIEU OF CORING WITH PRIOR WRC APPROVAL.
11. MANHOLES CONSTRUCTED DIRECTLY ON WRC SEWERS SHALL BE PROVIDED WITH COVERS READING "WATER RESOURCES COMMISSIONER-SANITARY" IN RAISED LETTERS.
12. NO GROUND WATER, STORM WATER, CONSTRUCTION WATER, DOWN SPOUT DRAINAGE OR WEEP TILE DRAINAGE SHALL BE ALLOWED TO ENTER ANY SANITARY SEWER INSTALLATION.
13. PRIOR TO ANY EXCAVATION, THE CONTRACTOR SHALL TELEPHONE MISS DIG (800-482-7171) FOR THE LOCATION OF UNDERGROUND PIPELINE AND CABLE FACILITIES AND SHALL ALSO NOTIFY REPRESENTATIVES OF OTHER UTILITIES LOCATED IN THE VICINITY OF THE WORK.
14. AN 18 INCH MINIMUM VERTICAL SEPARATION AND A 10 FOOT MINIMUM HORIZONTAL SEPARATION MUST BE MAINTAINED BETWEEN SANITARY SEWER AND WATER MAIN.
15. NEW MANHOLES BUILT OVER AN EXISTING SANITARY SEWER SHALL HAVE MONOLITHIC POURED BOTTOMS.
16. IF THE STRUCTURE FALLS WITHIN THE ROADBED OF A GRAVEL ROAD OR WITHIN THE UNPAVED SHOULDER OF A PAVED ROAD, THE COVER SHALL BE SIX (6") INCHES BELOW THE FINISHED GRAVEL SURFACE.



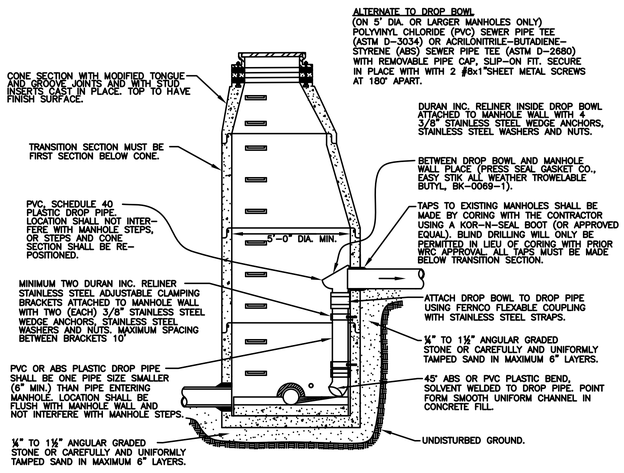
DOUBLE-COMPARTMENT GREASE INTERCEPTOR TANK FOR OUTLET PIPE BURIAL 42" AND DEEPER



SEWER SIZE	DROP SIZE	MH SIZE
UP TO 10"	8"	4'
UP TO 18"	10"	4'
UP TO 30"	18"	5'

EXTERIOR DROP CONNECTION

(REQUIRES ADVANCED APPROVAL BY WRC)



INTERIOR DROP CONNECTION

REVISION BLOCK			
Parcel Base / Source Date: N/A			
Rev. No.:	Rev. By:	Rev. Date:	Description:
1	RRH	8-31-10	FIXED NOTES THAT HAD "GROOVE TONGUE" TO READ "TONGUE AND GROOVE"
2	DS	3-23-11	REMOVED STANDARD MONITORING MANHOLE
3	KB	6-21-16	ADDED NOTE "REQUIRES ADVANCED APPROVAL BY WRC" AND UPDATE PHONE # IN NOTE #2
4	KB	7-22-20	UPDATED MH STEPS TO ASTM# D-4101

SANITARY SEWER DETAILS AND NOTES

ORIG. DATE:	08/21/02
SCALE:	NO SCALE
DESIGNED BY:	WRC
DRAWN BY:	WRC Mapping

WRC WATER RESOURCES COMMISSIONER
Jim Nash

ONE PUBLIC WORKS DRIVE, BLDG 95 WEST
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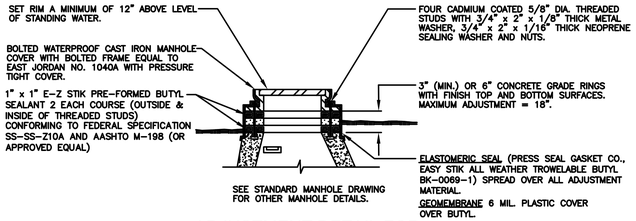
48328-1907

SHEET NO.: 1 of 2

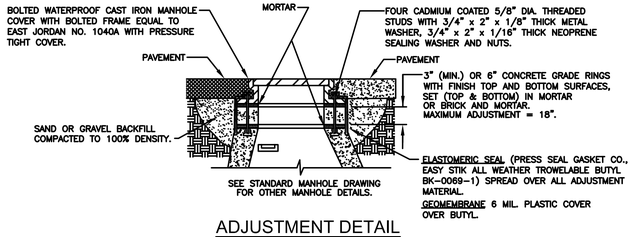
Plotfile Name: d:\SDs\s.ctb
File Location: J:\Drafti\Mapping\ut\BEST ANSI\REDSET\NLS\Products\Standard Sheets\sani1-05.dwg

MANHOLE RIM ADJUSTMENT CHART

MANHOLE LOCATION	SET RIM ELEVATION
DITCH	12" ABOVE FINISH GRADE
FLOOD PLAIN	12" ABOVE STANDING WATER
GRAVEL ROAD / SHOULDER	6" BELOW FINISH GRADE
PAVEMENT / GREENBELT	FLUSH WITH FINISH GRADE



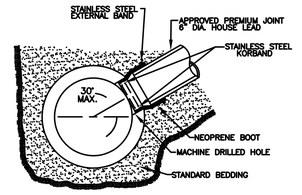
ADJUSTMENT DETAIL FOR
MANHOLE TOPS WITHIN FLOOD PRONE AREAS



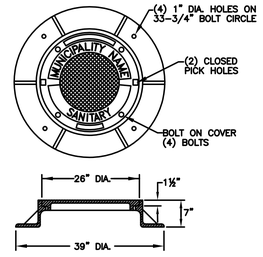
ADJUSTMENT DETAIL
MANHOLE TOPS WITHIN PAVEMENT AREAS

WATER RESOURCES COMMISSIONER
GRAVITY BUILDING LEAD REQUIREMENTS AND DETAILS

1. ALL BUILDING LEAD WORK MUST BE PERFORMED UNDER WATER RESOURCES COMMISSIONER (WRC) AND/OR LOCAL UNIT OF GOVERNMENT INSPECTION.
2. FOR ALL WRC-OPERATED SYSTEMS, CALL 248-858-1110 24-HOURS IN ADVANCE OR WORK TO SCHEDULE INSPECTION.
3. NO SANITARY SEWER MAY BE USED AS A CLEANOUT OF DEWATERING OUTLET.
4. WHERE AN EXISTING BUILDING LEAD IS BEING EXTENDED, DISSIMILAR TYPES AND SIZES OF PIPE SHALL BE JOINED USING AN WRC APPROVED ADAPTER.
5. APPROVED BUILDING LEAD PIPE FOR GRAVITY SEWER LEADS:
   A. ABS PLASTIC, ASTM D2751, SDR 23.5.
   B. PVC PLASTIC, ASTM D3034, SDR 23.5 OR ASTM D2665, SCHEDULE 40.
   C. DUCTILE IRON PIPE, AMERICAN WATER WORKS ASSOCIATION (AWWA) C-104/A21.4, CLASS 54. JOINTS SHALL BE SUPER BEL TITE, TYTON, TY-SEAL, MULTI-TITE, DUAL-TITE, OR VERI-TITE.
   D. ANY DEVIATIONS FROM SPECIFIED ABOVE REQUIRE APPROVAL BY WRC.
6. ALLOWABLE TYPES OF SEWER PIPE ADAPTERS:
   A. FERNCO ADAPTER/REDUCER DONUTS.
   B. FERNCO FLEXIBLE COUPLING.
   C. MISSION CLAY BAND-SEAL COUPLING.
   D. SMITH-BLAIR STAINLESS STEEL REPAIR CLAMP.
   E. HURON-CLINTON O-RING ADAPTER.
   F. HAMILTON-KENT GEAR GRIP ADAPTER.
   G. PLANT FABRICATED JOINT CONVERSION PIPE.

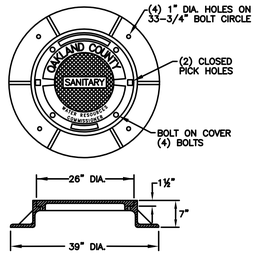


KOR-N-TEE TAP FOR CONCRETE PIPE



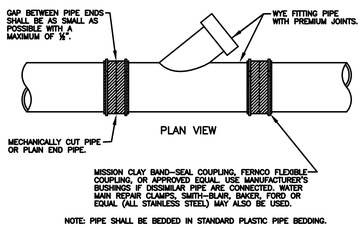
EAST JORDAN IRON WORKS
HEAVY DUTY MATERIAL ASTM A48 CL.35
COVER WT., 150 LBS., CATALOG NO. 1040A
PATTERN NO. 1040A, PRODUCT NO. 1040XX OAKCOSTD.
2" RAISED LETTERS, 1" RAISED LETTERS
ALL RECESSED FLUSH.

LOCAL MUNICIPALITIES MANHOLE COVER

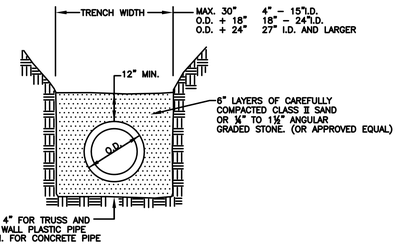


EAST JORDAN IRON WORKS
HEAVY DUTY MATERIAL ASTM A48 CL.35
COVER WT., 150 LBS., CATALOG NO. 1040APT
PATTERN NO. 1040A, PRODUCT NO. NCR09-1280 C
2" RAISED LETTERS, 1" RAISED LETTERS, 3/4" RAISED LETTERS
ALL RECESSED FLUSH.

W.R.C. LETTERED MANHOLE COVER

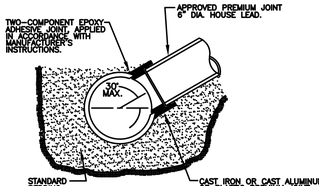


WYE PIPE INSERTION WITH FLEXIBLE COUPLINGS
(RIGID PIPE)



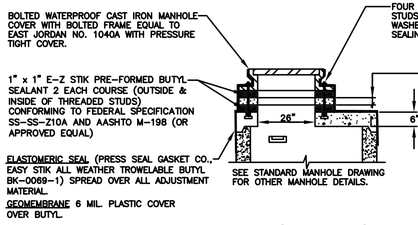
NOTE:
APPROVAL MAY BE GIVEN TO ALTERNATE MATERIALS AND METHODS TO ACHIEVE CLASS B BEDDING.

STANDARD BEDDING
(CLASS B)

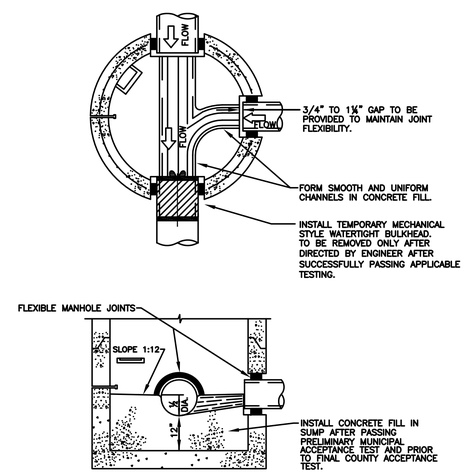


NOTE: SURFACE OF MAIN SEWER SHALL BE CLEANED WITH AN ABRASIVE GRINDER PRIOR TO EPOXY APPLICATION. DUE TO VARIATION OF SET-UP TIME OF EPOXY ADHESIVE WITH TEMPERATURE, ANCHOR STRAPS SHALL BE USED TO SECURE SADDLE IN POSITION IN COLD WEATHER OR WHENEVER WORK IS TO PROCEED PRIOR TO COMPLETE CURE OF EPOXY.

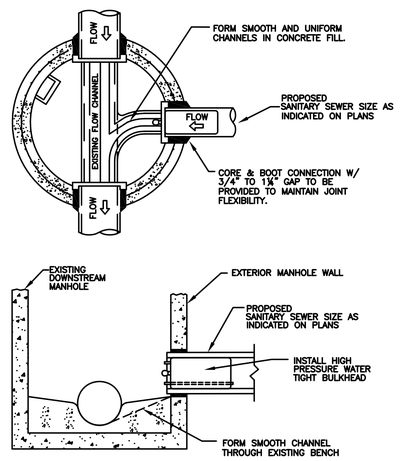
SEWER TAP-ALL SIZES OF MAIN SEWER PIPES
VITRIFIED CLAY



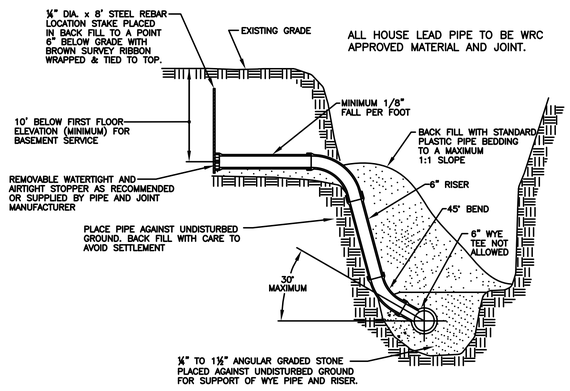
FLAT TOP MANHOLE



SUMP MANHOLE FOR TESTING,
CLEANING AND DEWATERING



TESTING BULKHEAD WITH PIPE TAP



HOUSE LEAD DETAIL

REVISION BLOCK			
Parcel Base / Source Date: N/A			
Rev. No.:	Rev. By:	Rev. Date:	Description:
1	DS	06/28/06	ADDED TESTING BULKHEAD WITH PIPE TAP DETAIL
2	tz	05/28/09	MOVED DETAILS FROM SHEET 1 ONTO SHEET 2
3	tz	07/14/09	STANDARDS COMMITTEE APPROVAL FOR DETAIL CHANGES
4	DS	02/03/14	REPLACE/UPDATE OCDC WITH WRC FOR THE MANHOLE COVER DETAIL

SANITARY SEWER DETAILS AND NOTES

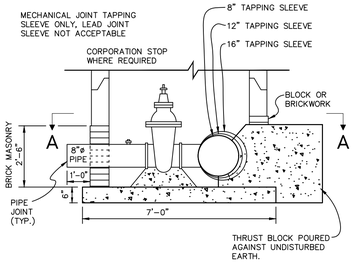
ORIG. DATE:	05-09-03
SCALE:	NO SCALE
DESIGNED BY:	MWD
DRAWN BY:	Mapping Staff

WRC WATER RESOURCES COMMISSIONER
Jim Nash

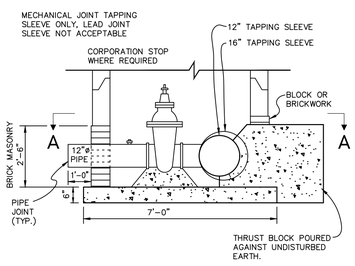
ONE PUBLIC WORKS DRIVE, BLDG 95 WEST
WATERFORD, MICHIGAN
48328-1907

SHEET NO.:
2 of 2

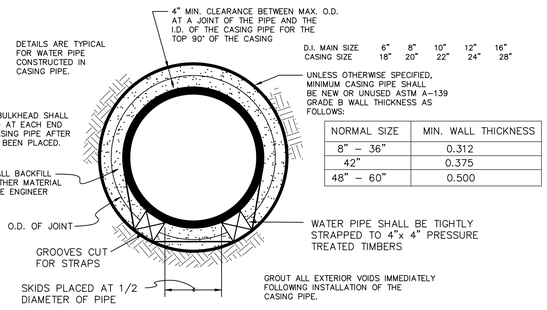
Drafting Name: DSDocs.dft
File Path/Name: P:\Data\Mapping\AUTOCAD\STANDARDS\DETAILS\Appx\Public\Sanitary\Standard\SanDocs.dwg



16" X 8", 12" X 8", 8" X 8"
TAPPING SLEEVE, VALVE & WELL
(B-B)



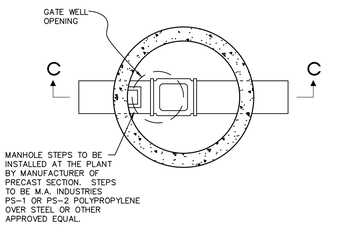
16" X 12", 12" X 12"
TAPPING SLEEVE, VALVE & WELL
(B-B)



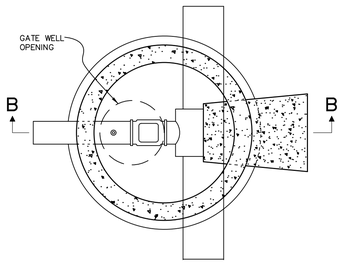
NORMAL SIZE	MIN. WALL THICKNESS
8" – 36"	0.312
42"	0.375
48" – 60"	0.500

Drawing not to scale.

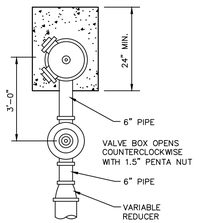
PIPE BARREL SUPPORT FOR WATER MAIN
CONSTRUCTED IN CASING

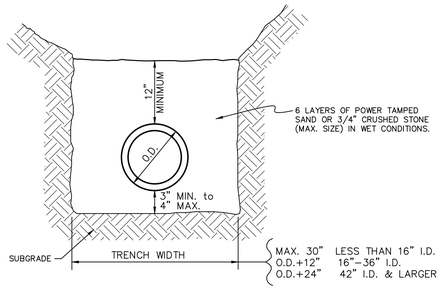


PLAN GATE WELL – TYPICAL
(D-D)

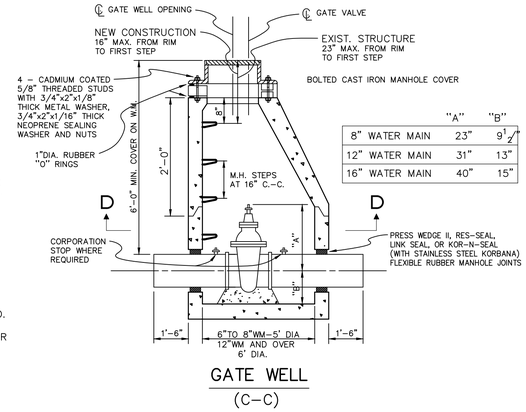


PLAN TAPPING SLEEVE, VALVE & WELL – TYPICAL
(A-A)





Drawing not to scale.
STANDARD BEDDING
FOR WATER PIPE



	"A"	"B"
8" WATER MAIN	23"	9 1/2"
12" WATER MAIN	31"	13"
16" WATER MAIN	40"	15"

GATE WELL
(C-C)

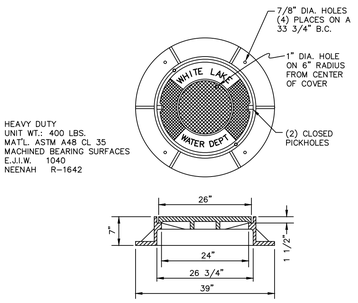
WATER MAIN NOTES

1. All construction procedures and materials used on this project shall conform to White Lake Township current standards and specifications.
2. All hydrants shall be East Jordan Iron Works 5BR–250 traffic model. Self–draining hydrants shall not be used. Valve shall have 1–1/2" pentagon nut and shall open counter–clockwise. Provide two 4.5" pumper outlets with 5" Storz quick connect nozzles (Harrington Integral Hydrant Storz, Model HIHS) as manufactured by Harrington, Inc. of Erie, PA.
3. All hydrants shall be field painted with a heavy coat of bright safety red polyurethane or alkyd gloss enamel, except for the Storz fittings and caps, which shall be left unpainted.
4. Johnson and Anderson, Inc. field personnel will affix to the fixed collar of each Storz connection 1" wide 3M Scotch reflective tape, color coded per NFPA 291 guidelines flow capacity.
5. All water mains shall be ductile iron pipe Class 54, cement lined with push on joints. Mechanical joints allowed only for tapping sleeves, hydrants & hydrant valves. Only Cor–Blue bolts shall be used for assembling mechanical joints. All bends, tees, valves and hydrant tees shall have a poured concrete thrust block as detailed on this sheet. Joints which have thrust blocks bearing on soil of questionable stability shall be fully restrained utilizing Tyler swivel ells and adapters or a system approved by the Township Engineer. HDPE pipe for directional boring, if approved by the Township Engineer, shall meet all of the requirements of the MDEQ and shall be DR9 (200 psi), and shall have two #8 tracer wires, terminated in the nearest gate well at the highest step.
6. Tapping sleeve shall be mechanical joint or approved equal. Ductile Iron or Stainless steel are allowed.
7. Specifications shall include direction of operation of all valves. All valves shall be counter clockwise open.
8. All necessary easements shall be provided in the name of White Lake Township before acceptance of the water distribution system.
9. The design engineer shall furnish White Lake Township with one reproducible sets of "As–Built" water main plans or an AutoCAD file upon completion of the job.
10. All required cross–connection devices shall be installed as required by the local plumbing inspector and in accordance with the standards of the Michigan Department of Public Health.
11. Gate well frame and cover shall be as follows: East Jordan heavy manhole cover, base flange type #1040 or Neenah Foundry heavy duty #R–1642 Manhole frame, solid lid cover shall be non–rocking and marked "White Lake Water Department"
12. Gate valves shall be AWWA approved and of a double disc or resilient wedge design with push on joints, 16" gate valves may be mechanical joint provided Cor–Blue bolts are used. All gate valves with operating nuts greater than 5' below ground surface shall be provided with an extension stem. The length of the extension shall be such that it will be within 5' of the ground surface when an extension is used it shall be held in place by an extension stem guide suitably fastened to the wall of the gate well.
13. 1" corporation stops are to placed on the main at each side of each main line gate valve and at such other locations as may be required by the engineer.
14. All pipe and fittings shall be subjected to a hydro–static pressure test of 150 PSI for a 2 hour duration; Township Engineer must be present. Maximum segment 2000 feet except that longer segments may be tested with allowable leakage based on 2000 feet.
15. 2 consecutive safe bacteria samples shall be taken from the water system approx. 24 hours apart at points established by the Township Engineer. Samples shall be taken by the Township Engineer.
16. Filling, flushing and sampling of water main can only be performed with a "Jumper" Line, the jumper shall be equipped with an approved RPZ type of backflow preventer.
17. Adjustments on gate wells shall be limited to 23" maximum from top of rim to first step in accordance with MIOSHA Rule 341.
18. All new water service lines shall have a minimum nominal size of 1". Services from 1" to 2" may be type K copper tubing or plastic DR–9 (200 PSI rated) meeting ASTM D2737–03 (Standard Specification for Polyethylene (PE) plastic tubing). ASTM Designation and pressure rating shall be stamped on the pipe by the manufacturer. Plastic pipe shall also meet AWWA C–901 Specifications. All sizes shall relate to the copper tubing outside diameter standard size (CTS). Copper pipe joints shall be flared. Fittings shall adapt to the plastic pipe with compression to iron pipe thread adapter. Plastic pipes shall be either compression style with a steel insert or may be fusion welded in the larger sizes.

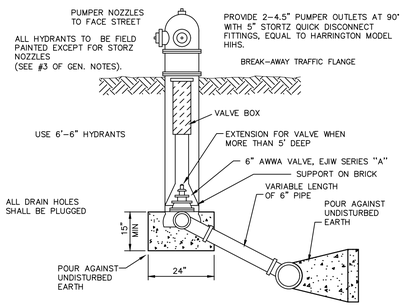
    Plastic water service pipes shall be traced with two #10 copper tracer wires or two #12 copper coated steel or stainless steel wires insulated with a minimum of 30 mils of polyethylene insulation. The tracer wires shall be terminated to supply line so as to be locatable at the building and the curb box without digging.

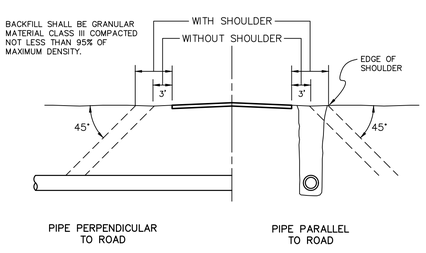
    Water services sizes 3" and greater shall be Class 54 cement lined ductile iron with push on joints or HDPE DR–9 (200 PSI rated) with fusion welded joints and fittings, DIPS (Ductile Iron Pipe Size).

    A stop box shall be installed at the property or easement line and shall be equivalent to an A.Y. McDonald Mfg. 6100 flare regular pattern ball valve. The curb box shall have a 1" riser pipe with an Erie 2–hole pattern cover equivalent to A.Y. McDonald Mfg. 5601L. Stop box shall be protected with a 2"x4" painted blue extending 4 feet above ground.
19. Standard pipe cover shall be 6'–0".
20. Air release manholes shall consist of a standard 5' diameter gate well style structure with a ValMatic Model 25C air release valve mounted on a 1" corporation stop. Air release shall be equipped with the vacuum check option. A 1/2" diameter galvanized pipe air discharge shall be extended to within 12" of the top of the structure. A gooseneck trap shall be installed at the top of the riser to prevent debris & water from entering the valve.

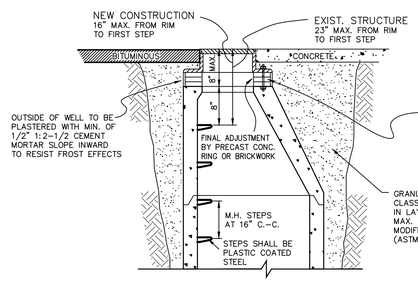


GATE WELL COVER & FRAME

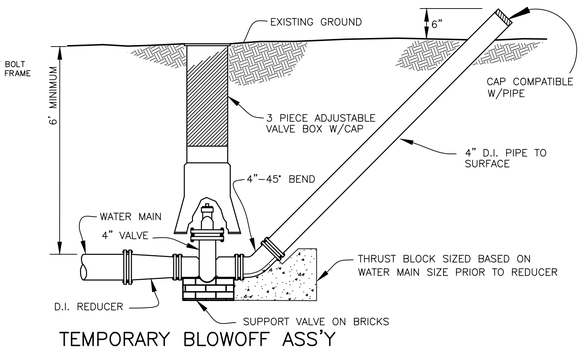




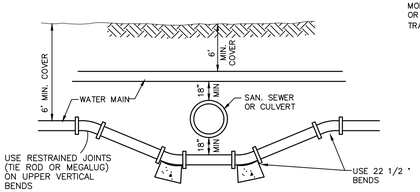
BACKFILL IN THE AREA OF STREETS,
ALLEYS, SIDEWALKS, DRIVES & PARKING AREAS



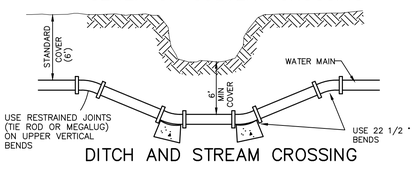
GATE WELL TOPS WITHIN PAVEMENT AREAS



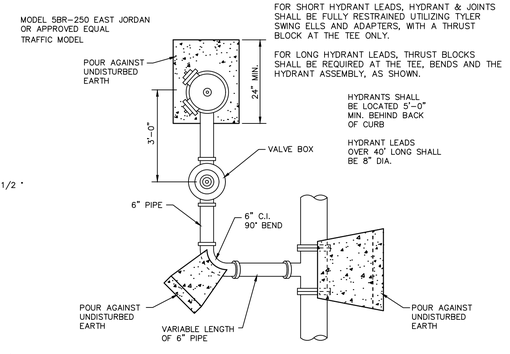
TEMPORARY BLOWOFF ASS'Y



SEWER OR CULVERT CROSSING

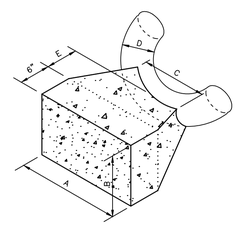


DITCH AND STREAM CROSSING



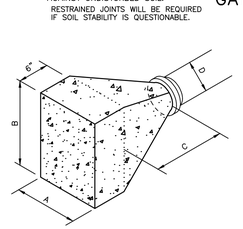
DETAIL OF HYDRANT SETTINGS

NOTE: 3000 PSI CONCRETE TO BE USED. THRUST BLOCK TO ABUT & REST AGAINST UNDISTURBED SOIL. RESTRAINED JOINTS WILL BE REQUIRED IF SOIL STABILITY IS QUESTIONABLE.



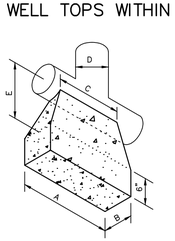
FOR 90° BENDS OR SMALLER

D	A	B	C	E MIN
20"	8"	6.5'	3.5'	2.5'
16"	6"	4'	2.5'	2'
12"	4"	3'	2'	1.75'
10"	3'	3'	2'	1.75'
8"	3'	2'	2'	1.5'
6"	2'	1.5'	2'	1.25'



FOR PLUGS

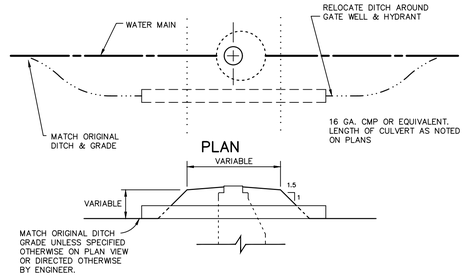
D	A	B	C MIN
20"	7'	5'	2.5'
16"	4.8'	4.8'	2'
12"	4.3'	3'	1.75'
10"	3'	2'	1.5'
8"	2.8'	2.5'	1.5'
6"	1.5'	1.5'	0.25'



FOR TEES

D	A	B	C	E MIN
20"	6.5'	4.5'	3.5'	3'
16"	4.7'	4.7'	2.5'	2.75'
12"	4'	3'	2.5'	2.5'
10"	3'	2'	2'	2.25'
8"	2.7'	2'	2'	2.25'
6"	2'	2'	2'	2.25'

THRUST BLOCK DETAILS



PROFILE
DITCH ENCLOSURE AT GATE WELL

DRAWN: CAD
DESIGN: OA
CHECKED: –

SCALE: VERT. –
HORZ. AS NOTED

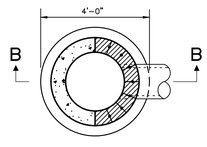
REVISIONS	MARK	ADDENDUM/CHANGE ORDER	DATE	MARK	ADDENDUM/CHANGE ORDER	DATE	MARK	ADDENDUM/CHANGE ORDER	DATE	MARK	ADDENDUM/CHANGE ORDER	DATE
		GENERAL REVISION TO CAD	12/29/95		GW & NUT SIZE	07/23/98		CLARIFY HYD. SPEC	02/07/01		REV. HYD, THRUST, AIR REL.	03/29/04
		ADD NOTE 17	11/04/97		PIPE CIVER & FLANGE TAPE	05/12/99		5–BR HYD, WS STAKE	02/27/02		HDPE, HYD, VALVES	07/18/05
		REVISE HYD. & THRUSTING	05/18/98		ADD BLOWOFF	07/06/99		ADD NOTE 19	07/23/03		UPDATED TITLE BLOCK	04/30/13

Johnson&Anderson
4494 Elizabeth Lake Road
Waterford, Michigan 48328
tel (248) 681-7800 fax (248) 681-2660
1060 W. Norton Avenue, Suite 7
Muskegon, Michigan 49441
tel (231) 780-3100 fax (231) 780-3115
2291 Water Street, Suite 6
Port Huron, Michigan 48060
tel (810) 987-7820 fax (810) 987-7895

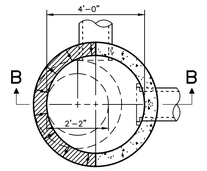
White Lake Township
7525 Highland Road (M-59)
White Lake, Michigan 48383
248-698-3300

WATER MAIN STANDARD DETAILS

JOB NO.
DATE ISSUED
SHEET NO.



SECTION A–A



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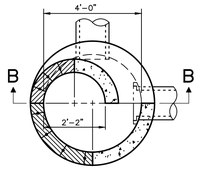

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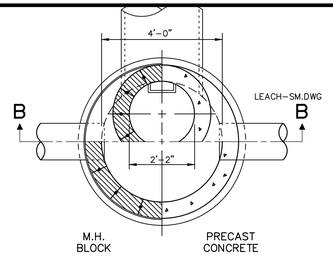

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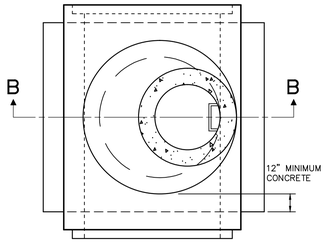
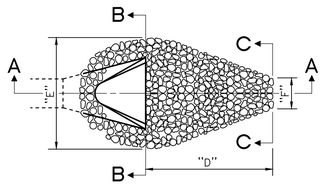


SECTION A–A

PIPE DIA.	"D"	"E"	"F"	S.Y.
12"	5'–0"	6'–6"	3'–0"	4
15"	5'–0"	7'–0"	3'–0"	4
18"	5'–0"	7'–6"	3'–6"	4
21"	5'–6"	8'–0"	4'–0"	5
24"	6'–0"	8'–6"	4'–6"	6
27"	6'–6"	9'–0"	5'–0"	7
30"	7'–0"	9'–9"	5'–6"	8
33"	7'–6"	10'–3"	5'–6"	9
36"	8'–0"	10'–9"	6'–0"	10
42"	9'–0"	11'–9"	6'–6"	12
48"	10'–0"	13'–0"	7'–0"	14



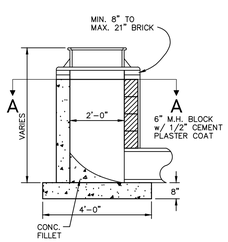
PLAN VIEW

STORM SEWER NOTES

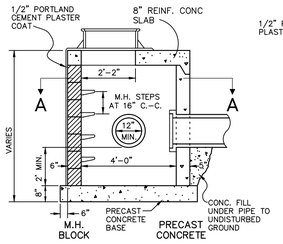
1. PRECAST CONC. RISERS SHALL MEET A.S.T.M. C478
2. DIAMETER OF CONC. BASE: I.D. + 2(WALL) + 8"
3. MANHOLE STEP SPACING SHALL MEET MIOSHA REQUIREMENTS. NO MORE THAN 21" FROM RIM TO FIRST STEP. MAX. 16" O.C. STEPS SHALL BE CAST POLYPROPYLENE REINFORCED WITH A 1/2" STEEL ROD.
4. WALL THICKNESS OF BLOCK STRUCTURES SHALL BE:

DEPTH	THICKNESS
0–8'	6"
8–15'	8"
OVER 15'	12"

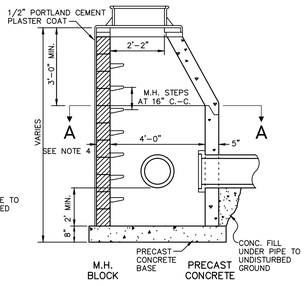
5. MINIMUM I.D. OF STRUCTURE FOR: 36"to 42" = 5'–0"
   48"to 54" = 6'–0"
   LARGER DIAMETER STRUCTURES MAY BE REQUIRED DEPENDING ON PIPING CONFIGURATION.
6. ALL LIFTING HOLES AND VOIDS IN INTERIOR JOINTS SHALL BE FILLED BY MORTAR.
7. THE FINGER DRAIN DETAIL SHALL BE USED AT ALL LOW POINT CATCH BASINS IN PAVEMENT AREAS. THE DETAIL MAY BE OMITTED WITH THE APPROVAL OF THE TOWNSHIP ENGINEER IN AREAS WITH VERY POROUS SOILS AND NO GROUNDWATER PROBLEMS.
8. PRECAST ONE PIECE BASES AND RISERS ARE ACCEPTABLE FOR INLETS, CATCH BASINS AND MANHOLES
9. FRAMES & COVERS WITH INLET CAPACITY (1.0 CFS/90 SQ IN)
   –TRAFFIC AND PARKING AREAS: MDOT "D" (EJIW 5105) 1.9 CFS*
   –REAR YARD AND DITCH INLETS: (EJIW 1040–02) 2.1 CFS*
   –MANHOLES: MDOT "A" (EJIW 1060)
   –CURB AND GUTTER INLETS: MDOT "K" (EJIW 7045) 1.8 CFS*
   –MOUNTABLE CURB & GUTTER: (EJIW 7065) 2.2 CFS*
   –*MAY VARY DUE TO MANUFACTURER CHANGES
10. CONTACT THE TOWNSHIP ENGINEER 48 HOURS PRIOR TO CONSTRUCTION TO SCHEDULE INSPECTION. FULL TIME INSPECTION WILL BE REQUIRED FOR ALL UNDERGROUND STORM SEWER CONSTRUCTION. PHONE (248) 334–9901
11. THE CONTRACTOR SHALL CONTACT MISS DIG 72 HOURS BEFORE CONSTRUCTION AT (800) 482–7171 TO LOCATE EXISTING UNDERGROUND UTILITIES.
12. PRIOR TO START OF CONSTRUCTION, CONTRACTOR SHALL HAVE IN HIS POSSESSION A CURRENT SOIL EROSION CONTROL PERMIT AS ISSUED BY WHITE LAKE TOWNSHIP.
13. A 2' DEEP SUMP SHALL BE USED IN ANY STRUCTURE SUBJECT TO A WATER DROP GREATER THAN 2.0' FROM AN INLET PIPE.
14. ALLOWABLE STORM SEWER PIPE TYPES:
   –12" AND UP: RCP ASTM C–76 MIN. CLASS 3, MIN CLASS 4 UNDER TRAFFIC AREAS, RUBBER JOINT
   –6" TO 15": SCH 40 PVC OR SDR 23.5 PVC WITH RUBBER OR GLUE JOINT
   –6" TO 48": SMOOTH BORE CORRUGATED HIGH DENSITY POLYETHYLENE WITH NEOPRENE LINED JOINTS OR BETTER
15. THE MINIMUM PIPE SIZE IN PUBLIC RIGHT–OF–WAY OR EASEMENTS AND FOR PIPES CARRYING OFF–SITE STORM WATER SHALL BE 12"
16. ALL PIPE ENDS NOT WITHIN A STRUCTURE SHALL HAVE A CONCRETE OR METAL FLARE END SECTION (FES) WITH A BAR SCREEN ON PIPES 18" AND LARGER EXCEPT THOSE WITHIN A SECURE FENCED AREA NEED NO BAR SCREEN.
17. ALL DRAINAGE STRUCTURES WITHIN THE ROAD SHALL BE SEALED WITH WRAPPED GEOTEXTILE PER RCOC STANDARDS



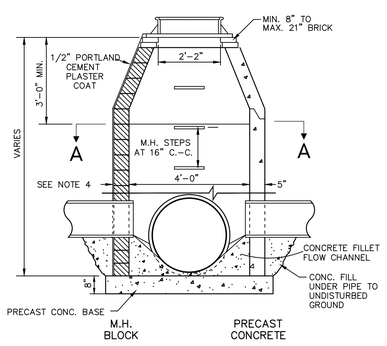
SECTION B–B
24" INLET



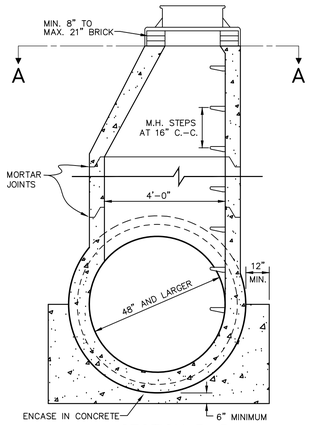
SECTION B–B
STRUCTURE WITH SLAB COVER
(CATCH BASIN SHOWN)



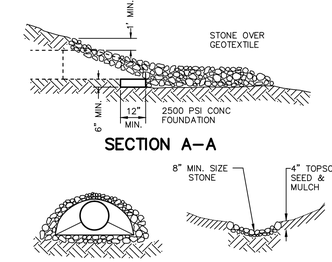
SECTION B–B
STANDARD CATCH BASIN



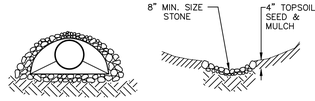
SECTION B–B
STANDARD STORM MANHOLE



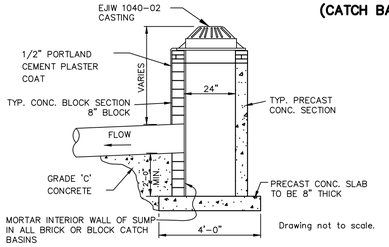
SECTION B–B
STANDARD PRECAST CONCRETE MANHOLE TEE



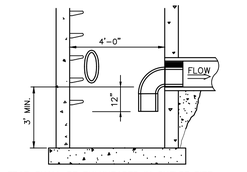
SECTION A–A



SECTION B–B SECTION C–C
PLAIN STONE RIP–RAP



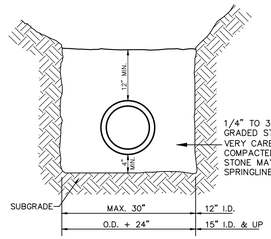
STANDARD REAR YARD CATCH BASIN



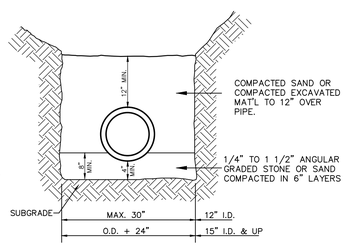
TRAP SHALL BE BULKHEADED IN OUTLET PIPE AND SHALL BE A SCH 40 PVC ASSY WITH A PIPE AREA NO LESS THAN 50% OF THE OUTLET PIPE.

ALTERNATE: USE "THE SNOUT" BASIN TRAP SYSTEM

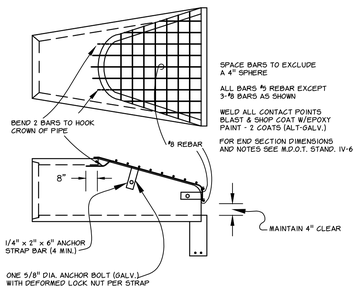
TRAPPED CATCH BASIN



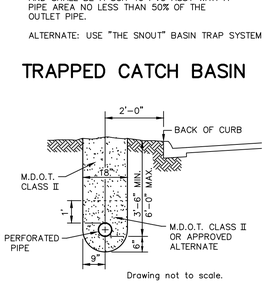
PIPE BEDDING
FOR PLASTIC PIPE



CLASS "B" BEDDING
FOR SEWER PIPE
LESS THAN 48"

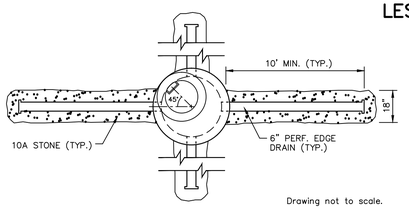


BAR SCREEN DETAIL



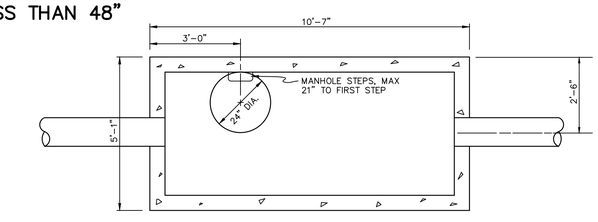
Drawing not to scale.

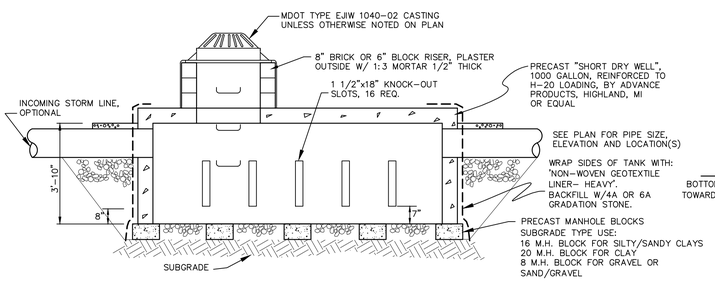
EDGE DRAIN DETAIL



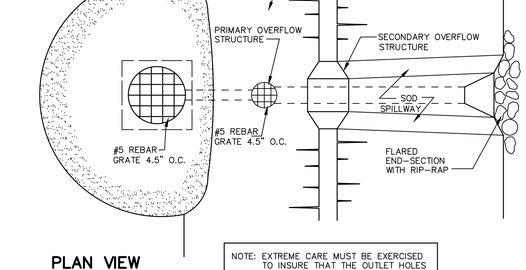
Drawing not to scale.

PLAN



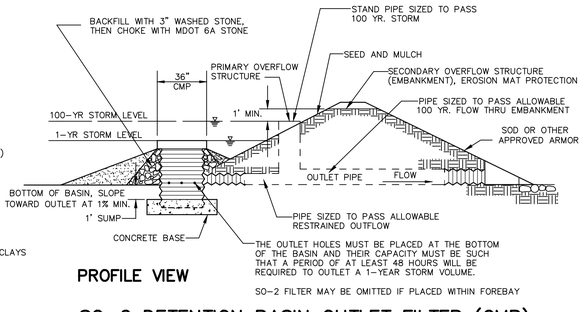


1000 GALLON LEACHING/SETTLING BASIN



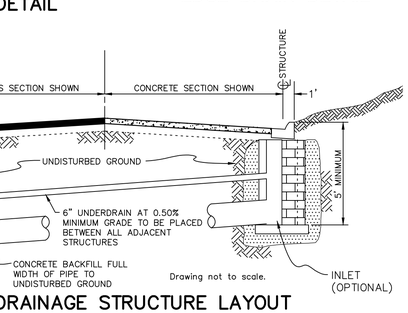
PLAN VIEW

NOTE: EXTREME CARE MUST BE EXERCISED TO INSURE THAT THE OUTLET HOLES IN THE STANDPIPE, DO NOT BECOME CLOGGED WITH SEDIMENT.



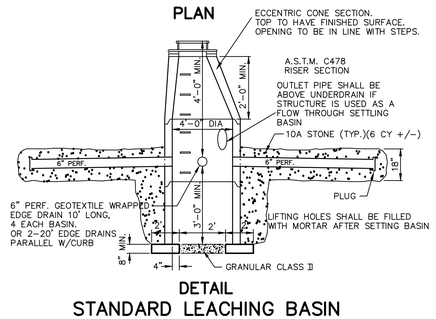
PROFILE VIEW

SO–2 DETENTION BASIN OUTLET FILTER (CMP)
(SEE OCDC STANDARD DETAILS FOR SEDIMENT BASIN OR FOREBAY OUTLET STRUCTURE)



Drawing not to scale.

DRAINAGE STRUCTURE LAYOUT



DETAIL
STANDARD LEACHING BASIN

DRAWN: CAD
DESIGN: OA
CHECKED: –

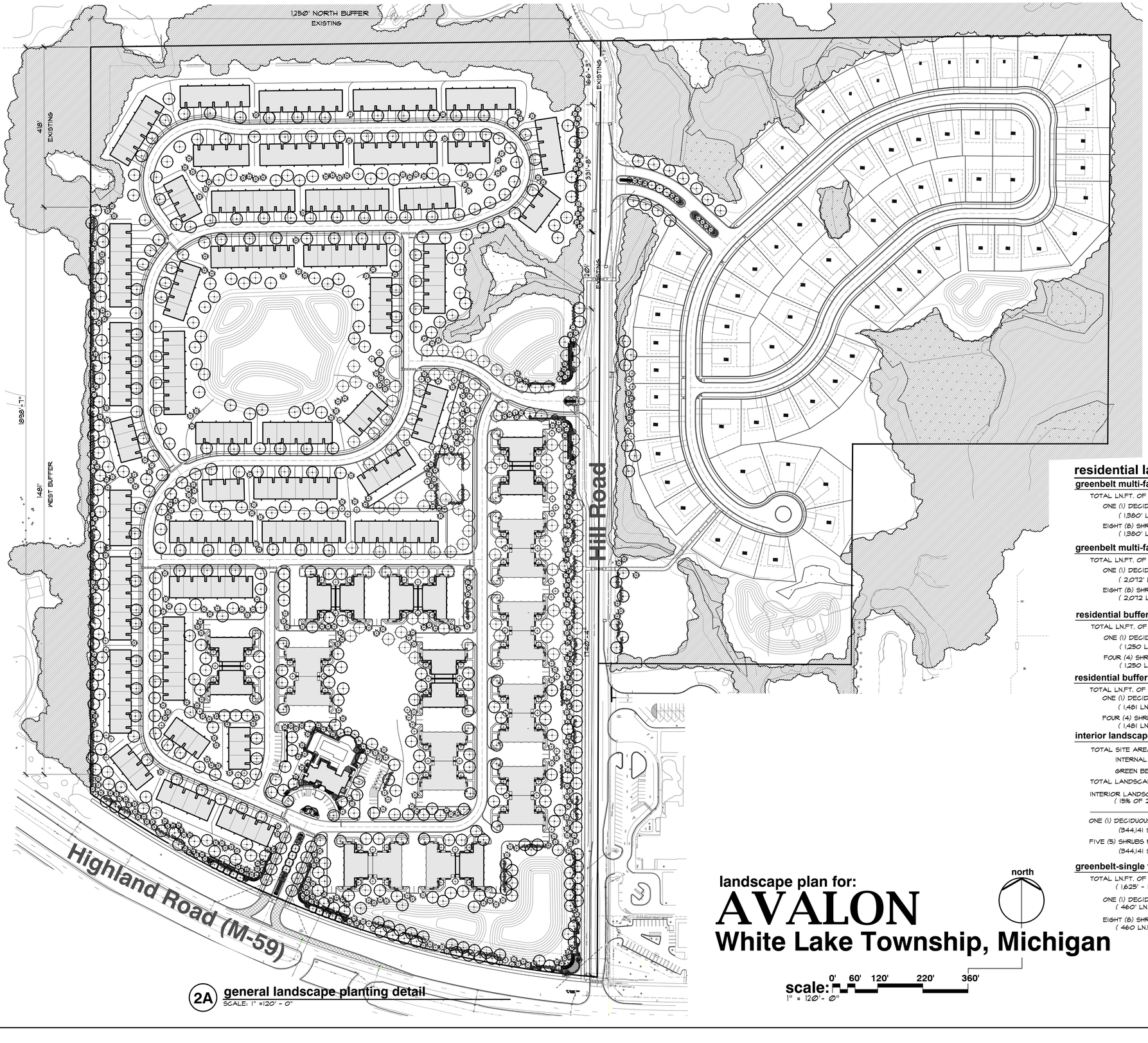
SCALE: VERT. –
HORZ. AS NOTED

REVISIONS	MARK	ADDENDUM/CHANGE ORDER	DATE	MARK	ADDENDUM/CHANGE ORDER	DATE	MARK	ADDENDUM/CHANGE ORDER	DATE
		FIRST ISSUE	08/16/95		REVISE	10–03–02		REVISE	06–01–07
		ADD SO–1	06–17–96		REVISE	12–17–03		UPDATED TITLE BLOCK	04/30/13
		NEW BAR GRATE	11–03–97		SEC REFERENCE	05–17–05			

Johnson&Anderson
4494 Elizabeth Lake Road, Waterford, Michigan 48328, tel (248) 681-7800 fax (248) 681-2660
1060 W. Norton Avenue, Suite 7, Muskegon, Michigan 49441, tel (231) 780-3100 fax (231) 780-3115
3910 Lapeer Road, Port Huron, Michigan 48060, tel (810) 987-7820 fax (810) 987-7895
White Lake Township
7525 Highland Road (M-59)
White Lake, Michigan 48383
248-698-3300

STORM SEWER
STANDARD DETAILS

JOB NO.
DATE ISSUED 08/16/95
SHEET NO.



2A **general landscape planting detail**
SCALE: 1" =120' - 0"

sheet index

LS-1	OVERALL LANDSCAPE PLAN VIEW
LS-2	LANDSCAPE PLANTING DETAIL (MULTI- FAMILY)
LS-3	LANDSCAPE PLANTING DETAIL (MULTI- FAMILY)
LS-4	LANDSCAPE PLANTING DETAIL (MULTI- FAMILY)
LS-5	LANDSCAPE PLANTING DETAIL (MULTI- FAMILY)
LS-6	LANDSCAPE PLANTING DETAIL (MULTI- FAMILY)
LS-7	LANDSCAPE PLANTING DETAIL (MULTI- FAMILY)
LS-8	ENTRANCE LANDSCAPE PLANTING DETAIL
LS-9	CLUBHOUSE AND BUILDING FOUNDATION LANDSCAPE PLANTING DETAIL
LS-10	LANDSCAPE PLANTING DETAIL (SINGLE FAMILY)
LS-10A	LANDSCAPE NOTES AND DETAILS
LS-11	ENTRANCE MONUMENT ELEVATIONS
LS-12	ENTRANCE MONUMENT ELEVATIONS
LS-13	GATEWAY ENTRANCE SIGN MONUMENT
LS-14	AMENITY REFERENCE PLAN
LS-15	SOD, SEEDING & IRRIGATION REFERENCE PLAN

residential landscape requirements:

greenbelt multi-family (Highland Road M-59)	REQUIRED	PROVIDED
TOTAL LN.FT. OF GREENBELT FRONTAGE 1,380'±		
ONE (1) DECIDUOUS OR EVERGREEN TREE PER 30 LN.FT.	46	46
(1,380' LN.FT. / 30 LN.FT. = 46 TREES)		
EIGHT (8) SHRUB PER 30 LN.FT.	368	370+
(1,380' LN.FT. / 30 LN.FT. = 46 x 8-SHRUBS = 368 SHRUBS)		

greenbelt multi-family (Hill Road)	REQUIRED	PROVIDED
TOTAL LN.FT. OF GREENBELT FRONTAGE 2,072'±		
ONE (1) DECIDUOUS OR EVERGREEN TREE PER 30 LN.FT.	69	69
(2,072' LN.FT. / 30 LN.FT. = 69.06 TREES)		
EIGHT (8) SHRUB PER 30 LN.FT.	553	553
(2,072 LN.FT. / 30 LN.FT. =69.01 x 8-SHRUBS = 552.5 SHRUBS)		

residential buffer (north property line)	REQUIRED	PROVIDED
TOTAL LN.FT. OF NORTH PROPERTY LINE 1,250'±		
ONE (1) DECIDUOUS OR EVERGREEN TREE PER 15 LN.FT.	83	EXISTING
(1,250 LN.FT. / 15 LN.FT. = 83.33 TREES)		
FOUR (4) SHRUB PER 15 LN.FT.	333	EXISTING
(1,250 LN.FT. / 15 LN.FT. = 83.33 X 4 = 333.33 SHRUBS)		

residential buffer (west property line)	REQUIRED	PROVIDED
TOTAL LN.FT. OF WEST PROPERTY LINE 1,481'±		
ONE (1) DECIDUOUS OR EVERGREEN TREE PER 15 LN.FT.	99	99
(1,481 LN.FT. / 15 LN.FT. = 98.73 TREES)		287 + EXISTING
FOUR (4) SHRUB PER 15 LN.FT.	395	EXISTING
(1,481 LN.FT. / 15 LN.FT. =98.73 X 4 SHRUBS = 394.93 SHRUBS)		

interior landscape (multi-family)

TOTAL SITE AREA (LESS R.O.W. AREA)	2,896,910 SQ.FT. (66.50 AC.) ±
INTERNAL ROAD AREA	260,724 SQ.FT. (5.98 AC.) ±
GREEN BELT AND BUFFER AREA	342,044 SQ.FT. (7.85 AC.) ±
TOTAL LANDSCAPE SITE AREA	2,294,142 SQ.FT. (52.66 AC.) ±
INTERIOR LANDSCAPE AREA	344,121 SQ.FT. ±
(15% OF 2,294,142 SQ.FT.) = 344,121.3 SQ.FT.+)	

	REQUIRED	PROVIDED
ONE (1) DECIDUOUS, ORNAMENTAL OR EVERGREEN TREE PER 300 SQ.FT.	1,147	1027
(344,141 SQ.FT. / 300 SQ.FT. = 1,147.13 TREES)		
FIVE (5) SHRUBS PER 300 SQ.FT.	5735	4492
(344,141 SQ.FT. / 300 SQ.FT. = 1,147.13 X 5 = 5735.65		

greenbelt-single family (Hill Road)	REQUIRED	PROVIDED
TOTAL LN.FT. OF GREENBELT FRONTAGE 1,625'±		
(1,625' - 1,165 EXISTING WOODS AND VEGETATION = 460')		
ONE (1) DECIDUOUS OR EVERGREEN TREE PER 30 LN.FT.	16	20+
(460' LN.FT. / 30 LN.FT. = 15.33 TREES)		
EIGHT (8) SHRUB PER 30 LN.FT.	123	125+
(460 LN.FT. / 30 LN.FT. =15.33 x 8-SHRUBS = 122.67 SHRUBS)		

north

landscape plan for:

AVALON

White Lake Township, Michigan

scale: 0' 60' 120' 220' 360'
1" = 120'- 0"

FPA
FELINO A. PASCUAL and ASSOCIATES
Community Land Planner and registered Landscape Architect
24333 Orchard Lake Rd, Suite G
Farmington Hills, MI 48336
ph. (248) 557-5588
fax. (248) 557-5416

seal:
STATE OF MICHIGAN
FELINO A. PASCUAL
LANDSCAPE ARCHITECT
No. 4333
REGISTERED LANDSCAPE ARCHITECT

client:
WHITE LAKE HILL, LLC
31550 Northwestern Hwy
Farmington Hills, Michigan

project:
AVALON
A PLANNED MIXED USE RESIDENTIAL COMMUNITY

project location:
White Lake Twp. Michigan
Highland Road & Hill Road

sheet title:
GENERAL LANDSCAPE PLANTING DETAIL

job no./issue/revision date:

LP22.056.07	REVIEW	7-27-2022
LP22.056.08	REVIEW	8-18-2022
LP22.056.08 TWP. REV.		8-25-2022
LP23.104.10	SITE UPDATE	10-2-2023
LS24.030.04	REVIEW	4-8-2024
LS24.030.05	SPA	5-20-2024
LS25.047.04	SPA	4-15-2025
LS25.047.09	TWP COMMENTS, SITE PLAN UPDATES	9-23-2025

drawn by: **JP, JM, LA**
checked by: **FP**
date: **4-15-2025**

notice:

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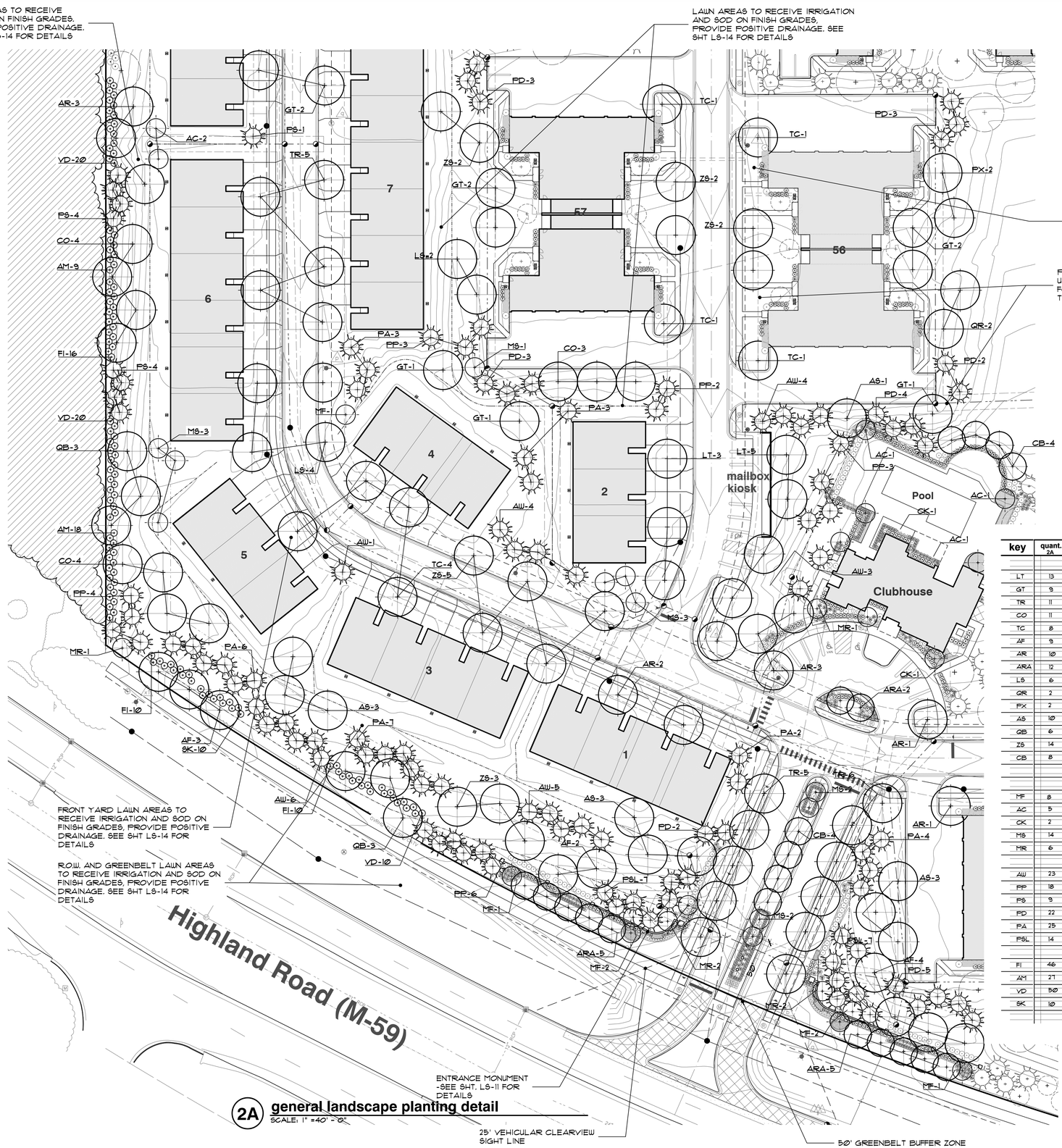
3 WORKING DAYS
BEFORE YOU DIG
CALL MISS DIG
1-800-482-7171
For free location of public utility lines

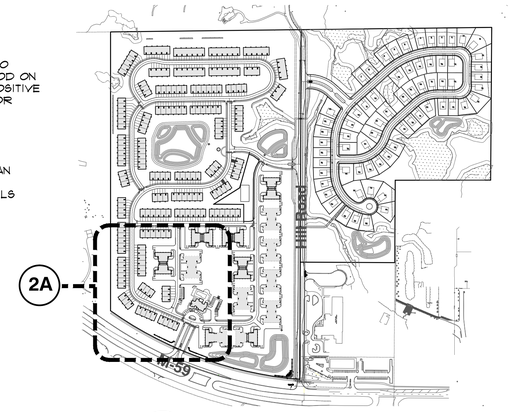
The location and elevations of existing underground utilities as shown on this drawing are only approximate. no guarantee is either expressed or implied as to the completeness of accuracy. contractor shall be exclusively responsible for determining the exact location and elevation prior to the start of construction

project no:
LS25.047.04

sheet no:
LS-1 of 16



2A **general landscape planting detail**
SCALE: 1" =40' -0"



key reference location map
NO SCALE

plant material list

key	quant. 2A	botanical name	common name	size	comments
		DECIDUOUS TREES			
LT	13	LIRIODENDRON TULIPIFERA	TULIPTREE	2 1/2" BB	
GT	9	GLEDITSIA TRI. INERMIS 'SKYCOLE'	SKYLINE LOCUST	2 1/2" BB	
TR	11	TILIA AMERICANA 'REDMOND'	REDMOND LINDEN	2 1/2" BB	
CO	11	CELTIS OCCIDENTALIS	NORTHERN HACKBERRY	2 1/2" BB	
TC	8	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LINDEN	2 1/2" BB	
AF	9	ACER X. FREEMANII'	AUTUMN BLAZE RED MAPLE	2 1/2" BB	
AR	10	ACER RUBRUM	RED MAPLE	2 1/2" BB	
ARA	12	ACER RUBRUM 'ARMSTRONG'	ARMSTRONG RED MAPLE	2 1/2" BB	
LS	6	LIQUIDAMBAR STYRACIFLUA	AMERICAN SWEETGUM	2 1/2" BB	
QR	2	QUERCUS RUBRA	RED OAK	2 1/2" BB	
PX	2	PLATANUS X ACERFOLIA	LONDON PLANETREE	2 1/2" BB	
AS	10	ACER SACCHARUM	SUGAR MAPLE	2 1/2" BB	
QB	6	QUERCUS 'BICOLOR'	SWAMP WHITE OAK	2 1/2" BB	
ZS	14	ZELKOVA SERATA 'GREENVASE'	GREENVASE ZELKOVA	2 1/2" BB	
CB	8	CARPINUS BETULUS 'FASTIGIATA'	COLUMNAR EUROPEAN HORNBEAM	2 1/2" BB	
MF	8	MALUS FLORIBUNDA	JAPANESE FLOWERING CRABAPPLE	2" BB	
AC	5	AMECHANCIER CANADENSIS	AUTUMN BRILLIANCE SERVICEBERRY	8' BB	
CK	2	CORNUS KOUSA	KOUSA DOGWOOD	2" BB	
MS	14	MALUS SNOWDRIFT	SNOWDRIFT CRABAPPLE	2" BB	
MR	6	MALUS RED VELVET	RED VELVET CRABAPPLE	2" BB	
		EVERGREEN TREES			
AW	23	ABIES CONCOLOR	CONCOLOR WHITE FIR	8' BB	
PP	18	PICEA PUNGENS	COLORADO GREEN SPRUCE	8' BB	
PS	9	PSEUDOTSUGA MENZIESII	DOUGLAS FIR	8' BB	
PD	22	PICEA GLAUCA 'DENSATA'	BLACK HILL SPRUCE	8' BB	
PA	25	PICEA ABIES	NORWAY SPRUCE	8' BB	
PSL	14	PSEUDOTSUGA MENZIESII	DOUGLAS FIR	10' BB	
		SHRUBS			
FI	46	FORSYTHIA INTERMEDIA	BORDER FORSYTHIA	30" CONT.	60" O.C. SPACING
AM	27	ARONIA MELANOCARPA	BLACK CHOKEBERRY	30" CONT.	60" O.C. SPACING
VD	50	VIBURNUM D. 'SYNNESTVEDT'	CHICAGO LUSTRE VIBURNUM	30" CONT.	60" O.C. SPACING
SK	10	SYRINGA PATULA 'MISS KIM'	MISS KIM LILAC	30" CONT.	60" O.C. SPACING

ALL TREES WILL BE PLANTED NO CLOSER THAN FOUR (4') FEET FROM PROPERTY LINES.

WHERE POSSIBLE, TREES TO BE LOCATED OUTSIDE OF PUBLIC UTILITY EASEMENT (SANITARY SEWER, WATER MAIN) AND STORM SEWER. IN NO CASE SHALL TREES BE PLANTED CLOSER THAN 5 FEET FROM THESE UTILITIES"

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fax. (248) 557-5416

seal:
STATE OF MICHIGAN FELINO A. PASCUAL LANDSCAPE ARCHITECT No. 4333 REGISTERED LANDSCAPE ARCHITECT

client:

WHITE LAKE HILL, LLC
31550 Northwestern Hwy
Farmington Hills, Michigan

project:

AVALON
A PLANNED MIXED USE RESIDENTIAL COMMUNITY

project location:

White Lake Twp. Michigan
Highland Road & Hill Road

sheet title:

GENERAL LANDSCAPE PLANTING DETAIL

job no./issue/revision date:

LP22.056.07	REVIEW	7-27-2022
LP22.056.08	REVIEW	8-18-2022
LP22.056.08 TWP. REV.		8-25-2022
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LS25.047.04	SPA	4-15-2025
LS25.047.09	TWP COMMENTS, SITE PLAN UPDATES	9-23-2025

drawn by: JP, JM, LA
checked by: FP
date: 4-15-2025
notice:
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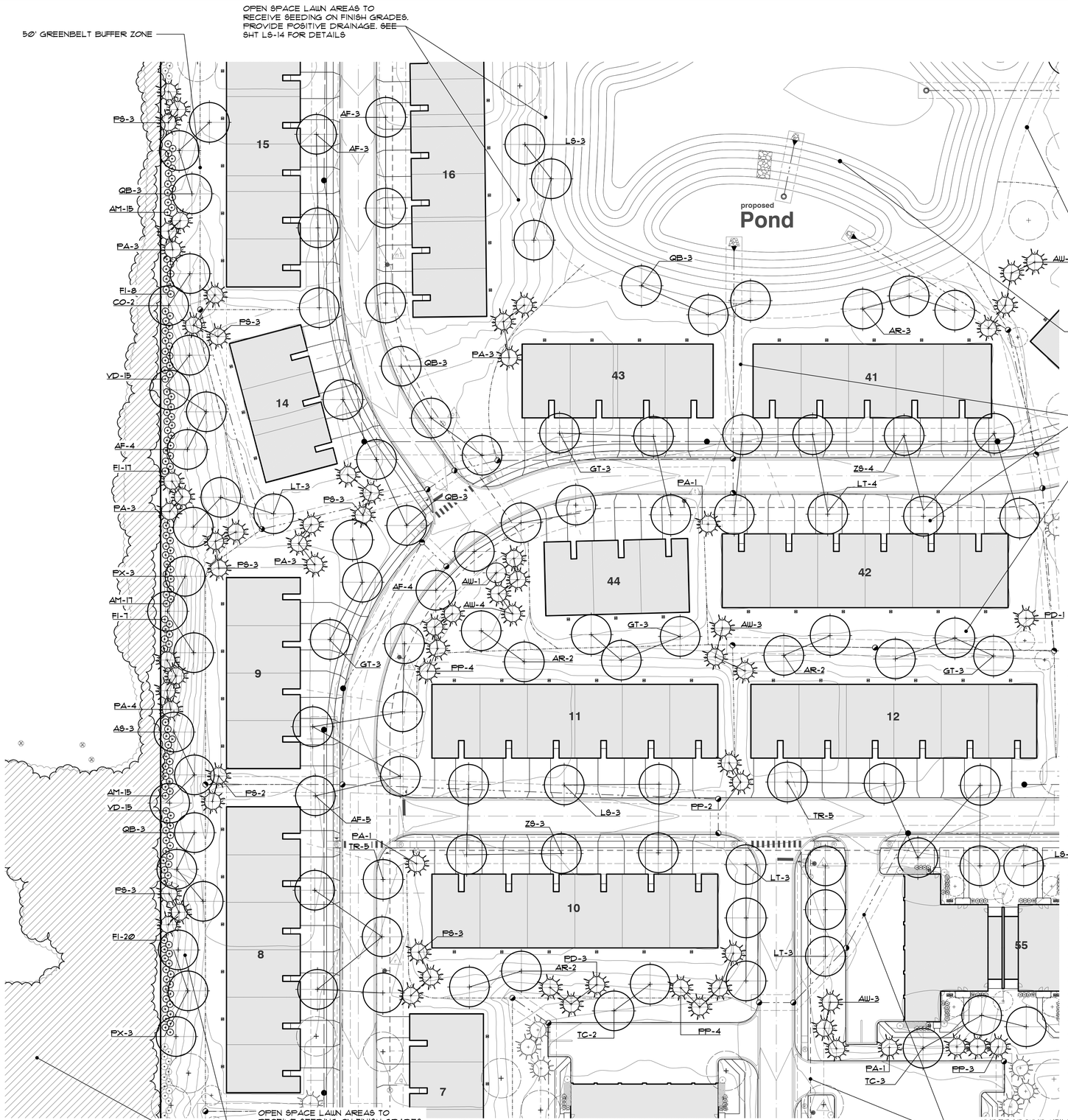
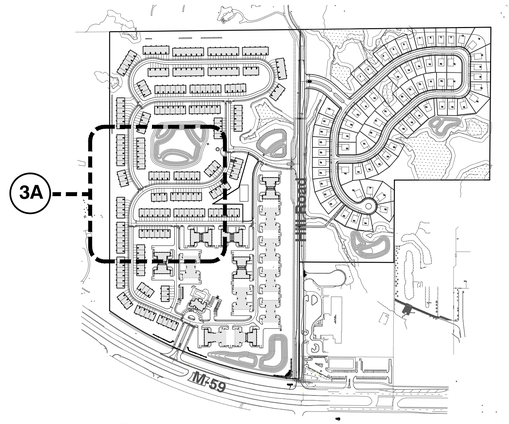
project no: LS25.047.04

sheet no: LS-2 of 16



3A **general landscape planting detail**
SCALE: 1" =40' - 0"



key reference location map
NO SCALE

plant material list

key	quant. 4A	botanical name	common name	size	comments
		DECIDUOUS TREES			
LT	13	LIRIODENDRON TULIPIFERA	TULIPTREE	2 1/2" BB	
GT	12	GLEDITSIA TRI. INERMIS 'SKYCOLE'	SKYLINE LOCUST	2 1/2" BB	
TR	10	TILIA AMERICANA 'REDMOND'	REDMOND LINDEN	2 1/2" BB	
CO	2	CELTIS OCCIDENTALIS	NORTHERN HACKBERRY	2 1/2" BB	
AF	18	ACER X. 'FREEMANII'	AUTUMN BLAZE RED MAPLE	2 1/2" BB	
AR	9	ACER RUBRUM	RED MAPLE	2 1/2" BB	
TC	10	TILIA CORDATA 'GLENLEVEN'	GLENLEVEN LINDEN	2 1/2" BB	
LS	7	LIQUIDAMBAR STYRACIFLUA	AMERICAN SWEETGUM	2 1/2" BB	
QR	-	QUERCUS RUBRA	RED OAK	2 1/2" BB	
AS	3	ACER SACCHARUM	SUGAR MAPLE	2 1/2" BB	
QB	15	QUERCUS 'BICOLOR'	SWAMP WHITE OAK	2 1/2" BB	
ZS	7	ZELKOVA SERATA 'GREENVASE'	GREENVASE ZELKOVA	2 1/2" BB	
PX	6	PLATINUS X ACERIFOLIA	LONDON PLANETREE	2 1/2" BB	
CC	1	CERCIS CANADENSIS	EASTERN REDBUD	8' BB	
		EVERGREEN TREES			
AW	14	ABIES CONCOLOR	CONCOLOR WHITE FIR	8' BB	
PP	13	PICEA PUNGENS	COLORADO GREEN SPRUCE	8' BB	
PS	20	PSEUDOTSUGA MENZIESII	DOUGLAS FIR	8' BB	
PD	4	PICEA GLAUCA 'DENSATA'	BLACK HILL SPRUCE	8' BB	
PA	18	PICEA ABIES	NORWAY SPRUCE	8' BB	
		SHRUBS			
FI	52	FORSYTHIA INTERMEDIA	BORDER FORSYTHIA	30" CONT.	60" O.C. SPACING
AM	47	ARONIA MELANOCARPA	BLACK CHOKEBERRY	30" CONT.	60" O.C. SPACING
VD	30	VIBURNUM D. 'SYNNESTVEDT'	CHICAGO LUSTRE VIBURNUM	30" CONT.	60" O.C. SPACING

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seal:
STATE OF MICHIGAN REGISTERED FELINO A. PASCUAL LANDSCAPE ARCHITECT No. 4833 LANDSCAPE ARCHITECT

client:
WHITE LAKE HILL, LLC
31550 Northwestern Hwy
Farmington Hills, Michigan

project:
AVALON
A PLANNED MIXED USE RESIDENTIAL COMMUNITY

project location:
White Lake Twp. Michigan
Highland Road & Hill Road

sheet title:
GENERAL LANDSCAPE PLANTING DETAIL

job no./issue/revision date:

LP22.056.07	REVIEW	7-27-2022
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LS25.047.04	SPA	4-15-2025
LS25.047.09	TWP COMMENTS, SITE PLAN UPDATES	9-23-2025

drawn by: **JP, JM, LA**
checked by: **FP**
date: **4-15-2025**

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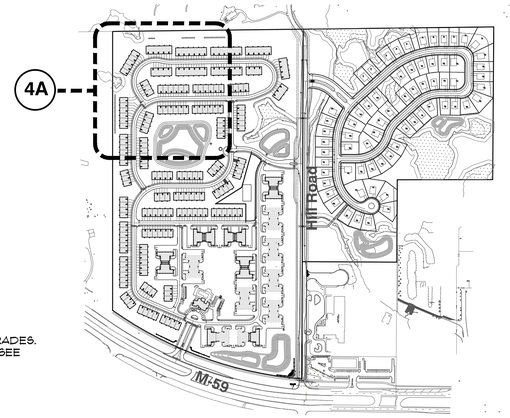
project no: **LS25.047.04**

sheet no: **LS-3 of 16**

4A **general landscape planting detail**
SCALE: 1" =40' - 0"



key reference location map
NO SCALE

plant material list

key	quant. 4A	botanical name	common name	size	comments
		DECIDUOUS TREES			
LT	10	LIRIODENDRON TULIPIFERA	TULIPTREE	2 1/2" BB	
GT	7	GLEDITSIA TRI. INERMIS 'SKYCOLE'	SKYLINE LOCUST	2 1/2" BB	
TR	4	TILIA AMERICANA 'REDMOND'	REDMOND LINDEN	2 1/2" BB	
CO	3	CELTIS OCCIDENTALIS	NORTHERN HACKBERRY	2 1/2" BB	
AF	5	ACER X. FREEMANII'	AUTUMN BLAZE RED MAPLE	2 1/2" BB	
AR	9	ACER RUBRUM	RED MAPLE	2 1/2" BB	
AFC	3	ACER PLATANOIDES 'CRIMSON KING'	CRIMSON KING NORWAY MAPLE	2 1/2" BB	
LS	4	LIQUIDAMBAR STYRACIFLUA	AMERICAN SWEETGUM	2 1/2" BB	
QR	14	QUERCUS RUBRA	RED OAK	2 1/2" BB	
AS	1	ACER SACCHARUM	SUGAR MAPLE	2 1/2" BB	
QB	11	QUERCUS 'BICOLOR'	SWAMP WHITE OAK	2 1/2" BB	
ZS	9	ZELKOVA SERATA 'GREENVASE'	GREENVASE ZELKOVA	2 1/2" BB	
		EVERGREEN TREES			
AW	12	ABIES CONCOLOR	CONCOLOR WHITE FIR	8' BB	
PP	6	PICEA PUNGENS	COLORADO GREEN SPRUCE	8' BB	
PS	11	PSEUDOTSUGA MENZIESII	DOUGLAS FIR	8' BB	
PD	3	PICEA GLAUCA 'DENSATA'	BLACK HILL SPRUCE	8' BB	
		SHRUBS			
FI	18	FORSYTHIA INTERMEDIA	BORDER FORSYTHIA	30" CONT.	60" O.C. SPACING
AM	20	ARONIA MELANOCARPA	BLACK CHOKEBERRY	30" CONT.	60" O.C. SPACING
VD	40	VIBURNUM D. 'SYNNESTVEDT'	CHICAGO LUSTRE VIBURNUM	30" CONT.	60" O.C. SPACING

ALL TREES WILL BE PLANTED NO CLOSER THAN FOUR (4) FEET FROM PROPERTY LINES.

WHERE POSSIBLE, TREES TO BE LOCATED OUTSIDE OF PUBLIC UTILITY EASEMENT (SANITARY SEWER, WATER MAIN AND STORM SEWER). IN NO CASE SHALL TREES BE PLANTED CLOSER THAN 5 FEET FROM THESE UTILITIES.

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seal:
STATE OF MICHIGAN — FELINO A. PASCUAL — LANDSCAPE ARCHITECT — No. 4333 — REGISTERED LANDSCAPE ARCHITECT

client:
WHITE LAKE HILL, LLC
31550 Northwestern Hwy
Farmington Hills, Michigan

project:
AVALON
A PLANNED MIXED USE RESIDENTIAL COMMUNITY

project location:
White Lake Twp. Michigan
Highland Road & Hill Road

sheet title:
GENERAL LANDSCAPE PLANTING DETAIL

job no./issue/revision date:

LP22.056.07	REVIEW	7-27-2022
LP22.056.08	REVIEW	8-18-2022
LP22.056.08	TWP. REV.	8-25-2022
LP23.104.10	SITE UPDATE	10-2-2023
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LS25.047.09	TWP COMMENTS SITE PLAN UPDATES	9-23-2025

drawn by: **JP, JM, LA**
checked by: **FP**
date: **4-15-2025**

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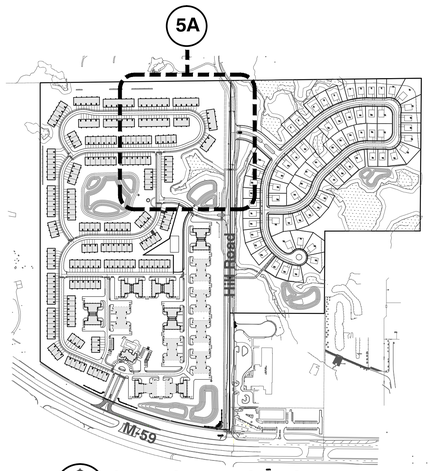
project no: **LS25.047.04**

sheet no: **LS-4 of 16**



key reference location map
NO SCALE

RETAINING WALL. SEE ENGINEERING PLAN FOR DETAILS

FRONT YARD LAWN AREAS TO RECEIVE IRRIGATION AND SOD ON FINISH GRADES, PROVIDE POSITIVE DRAINAGE. SEE SHT LS-14 FOR DETAILS

OPEN SPACE LAWN AREAS TO RECEIVE SEEDING ON FINISH GRADES, PROVIDE POSITIVE DRAINAGE. SEE SHT LS-14 FOR DETAILS

ADJACENT LANDSCAPE PLANTINGS. SEE SHT. LS-4 FOR DETAILS

UNDERGROUND UTILITIES-SEE ENGINEERING PLAN FOR FINAL LOCATIONS, SIZES, TYPES, ELEVATIONS AND DETAILS

HATCHING DENOTES EXISTING WOODS AND VEGETATION TO REMAIN

50' GREENBELT BUFFER ZONE

R.O.W. AND GREENBELT LAWN AREAS TO RECEIVE IRRIGATION AND SOD ON FINISH GRADES, PROVIDE POSITIVE DRAINAGE. SEE SHT LS-14 FOR DETAILS

RETAINING WALL. SEE ENGINEERING PLAN FOR DETAILS

HATCHING DENOTES EXISTING WOODS AND VEGETATION TO REMAIN

AREAS TO RECEIVE DETENTION POND SEED MIX ON 4" TOP SOIL WITH STRAW BLANKET ON FINISH GRADES. SEE SHT LS-14 FOR DETAILS

UPPER 1/3 AREAS OF DETENTION TO RECEIVE FRAIRIE SEED MIX ON 2" TOPSOIL WITH STRAW BLANKET ON FINISH GRADES. SEE SHT LS-14 FOR DETAILS

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proposed Pond

Hill Road

Meridian Landings

plant material list

key	quant. 5A	botanical name	common name	size	comments
		DECIDUOUS TREES			
GT	6	GLEDITSIA TRI. INERMIS 'SKYCOLE'	SKYLINE LOCUST	2 1/2" BB	
TR	7	TILIA AMERICANA 'REDMOND'	REDMOND LINDEN	2 1/2" BB	
CO	2	CELTIS OCCIDENTALIS	NORTHERN HACKBERRY	2 1/2" BB	
AF	8	ACER X. 'FREEMANII'	AUTUMN BLAZE RED MAPLE	2 1/2" BB	
AR	10	ACER RUBRUM	RED MAPLE	2 1/2" BB	
LS	3	LIQUIDAMBAR STYRACIFLUA	AMERICAN SWEETGUM	2 1/2" BB	
QR	5	QUERCUS RUBRA	NORTHERN RED OAK	2 1/2" BB	
QB	15	QUERCUS 'BICOLOR'	SWAMP WHITE OAK	2 1/2" BB	
ZS	8	ZELKOVA SERATA 'GREENVASE'	GREENVASE ZELKOVA	2 1/2" BB	
APC	2	ACER PLATANOIDES 'CRIMSON KING'	CRIMSON KING NORWAY MAPLE	2 1/2" BB	
OV	7	OSTRYA VIRGINIANA	AMERICAN HOPHORNBEAM	2 1/2" BB	
AS	3	ACER SACCHARUM	SUGAR MAPLE	2 1/2" BB	
MF	2	MALUS FLORIBUNDA	JAPANESE FLOWERING CRABAPPLE	2" BB	
		EVERGREEN TREES			
AW	16	ABIES CONCOLOR	CONCOLOR WHITE FIR	8' BB	
PP	13	PICEA PUNGENS	COLORADO GREEN SPRUCE	8' BB	
PD	17	PICEA GLAUCA 'DENSATA'	BLACK HILL SPRUCE	8' BB	
		SHRUBS			
FI	13	FORSYTHIA INTERMEDIA	BORDER FORSYTHIA	30" CONT.	60" O.C. SPACING
VD	28	VIBURNUM D. 'SYNNESTVEDT'	CHICAGO LUSTRE VIBURNUM	30" CONT.	60" O.C. SPACING

5A general landscape planting detail
SCALE: 1" =40' - 0"

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LANDSCAPE ARCHITECT
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project:

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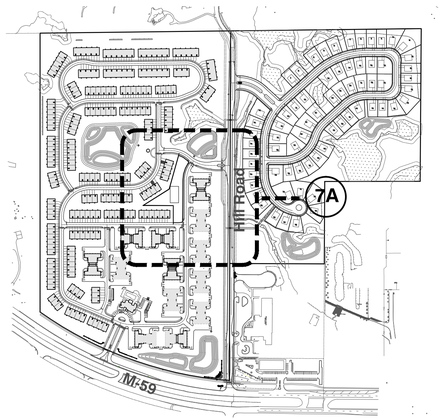
project no: **LS25.047.04**

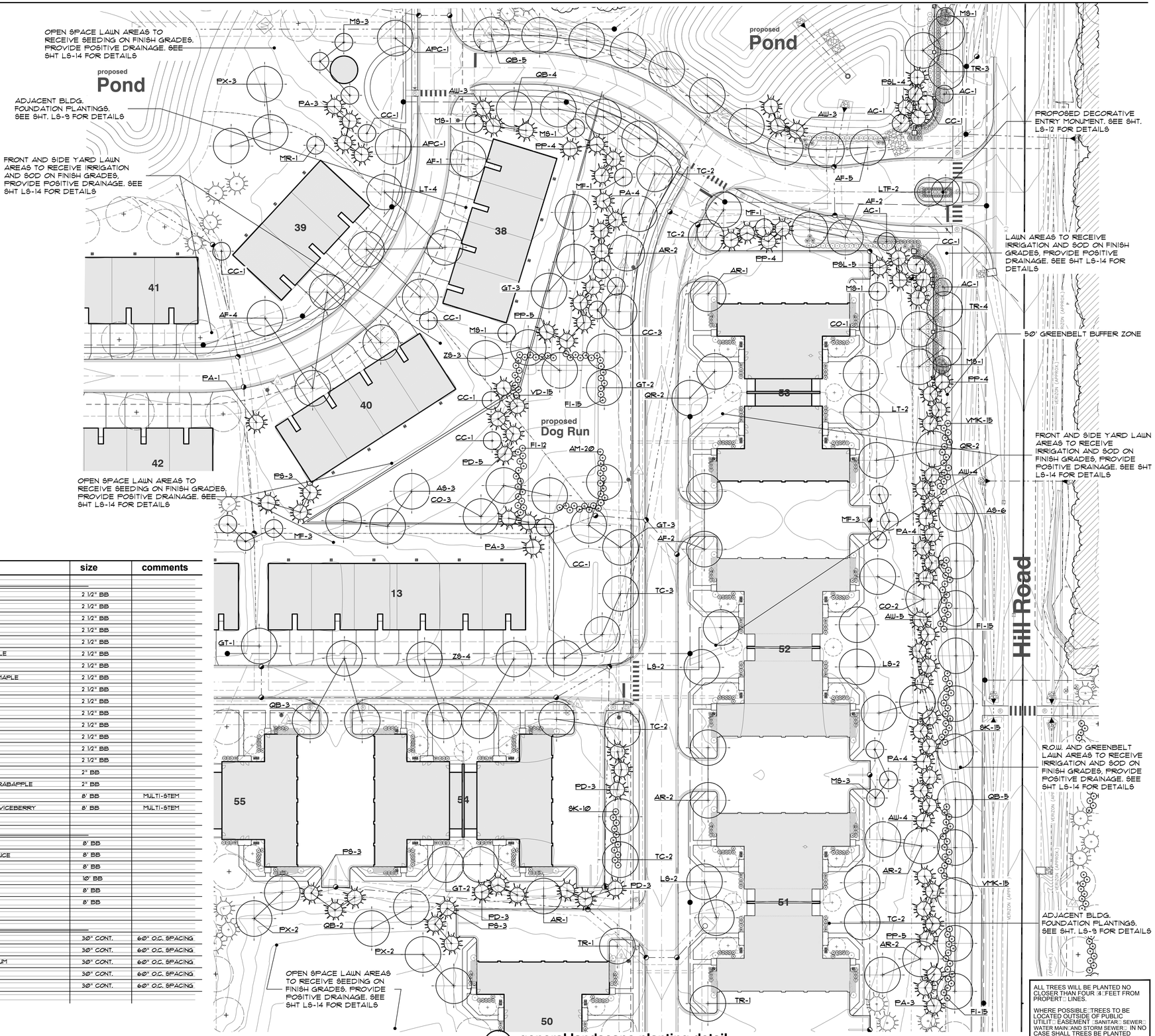
sheet no: **LS-5** of 16



key reference location map
NO SCALE

plant material list

key	quant. 4A	botanical name	common name	size	comments
		DECIDUOUS TREES			
LT	6	LIRIODENDRON TULIPIFERA	TULIPTREE	2 1/2" BB	
GT	11	GLEDITSIA TRI. INERMIS 'SKYCOLE'	SKYLINE LOCUST	2 1/2" BB	
TC	13	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LINDEN	2 1/2" BB	
TR	9	TILIA AMERICANA 'REDMOND'	REDMOND LINDEN	2 1/2" BB	
CO	6	CELTIS OCCIDENTALIS	NORTHERN HACKBERRY	2 1/2" BB	
AF	14	ACER X. 'FREEMANII'	AUTUMN BLAZE RED MAPLE	2 1/2" BB	
AR	10	ACER RUBRUM	RED MAPLE	2 1/2" BB	
APC	2	ACER PLATANOIDES 'CRIMSON KING'	CRIMSON KING NORWAY MAPLE	2 1/2" BB	
LS	6	LIQUIDAMBAR STYRACIFLUA	AMERICAN SWEETGUM	2 1/2" BB	
QR	4	QUERCUS RUBRA	NORTHERN RED OAK	2 1/2" BB	
QB	18	QUERCUS 'BICOLOR'	SWAMP WHITE OAK	2 1/2" BB	
PX	7	PLATANUS X ACERIFOLIA	LONDON PLANE TREE	2 1/2" BB	
ZS	7	ZELKOVA SERATA 'GREENVASE'	GREENVASE ZELKOVA	2 1/2" BB	
AS	9	ACER SACCHARUM	SUGAR MAPLE	2 1/2" BB	
LTF	1	LIRIODENDRON TULIPIFERA 'FASTIGATIA'	COLUMNAR TULIPTREE	2 1/2" BB	
MS	12	MALUS 'SNOWDRIFT'	SNOWDRIFT CRAB	2" BB	
MF	9	MALUS FLORIBUNDA	JAPANESE FLOWERING CRABAPPLE	2" BB	
CC	11	CERCIS CANADENSIS	EASTERN REDBUD	8' BB	MULTI-STEM
AC	4	AMELANCHIER X.G. 'AUTUMN BRILLIANCE'	AUTUMN BRILLIANCE SERVICEBERRY	8' BB	MULTI-STEM
		EVERGREEN TREES			
AW	19	ABIES CONCOLOR	CONCOLOR WHITE FIR	8' BB	
PP	22	PICEA PUNGENS	COLORADO GREEN SPRUCE	8' BB	
PS	9	PSEUDOTSUGA MENZIESII	DOUGLAS FIR	8' BB	
PSL	9	PSEUDOTSUGA MENZIESII	DOUGLAS FIR	10' BB	
PA	22	PICEA ABIES	NORWAY SPRUCE	8' BB	
PD	14	PICEA GLAUCA 'DENSATA'	BLACK HILL SPRUCE	8' BB	
		SHRUBS			
FI	57	FORSYTHIA INTERMEDIA	BORDER FORSYTHIA	30" CONT.	60" O.C. SPACING
AM	20	ARONIA MELANOCARPA	BLACK CHOKEBERRY	30" CONT.	60" O.C. SPACING
VD	30	VIBURNUM D. 'SYNNESTVEDT'	CHICAGO LUSTRE VIBURNUM	30" CONT.	60" O.C. SPACING
VMK	15	VIBURNUM D. 'X BURKWOOD!! MOHAWK	MOHAWK VIBURNUM	30" CONT.	60" O.C. SPACING
SK	25	SYRINGA PATULA 'MISS KIM'	MISS KIM LILAC	30" CONT.	60" O.C. SPACING



6A general landscape planting detail
SCALE: 1" =40' - 0"

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seal:
STATE OF MICHIGAN — FELINO A. PASCUAL — LANDSCAPE ARCHITECT — No. 4333 — REGISTERED LANDSCAPE ARCHITECT

client:
WHITE LAKE HILL, LLC
31550 Northwestern Hwy
Farmington Hills, Michigan

project:
AVALON
A PLANNED MIXED USE RESIDENTIAL COMMUNITY

project location:
White Lake Twp. Michigan
Highland Road & Hill Road

sheet title:
GENERAL LANDSCAPE PLANTING DETAIL

job no./issue/revision date:

LP22.056.07	REVIEW	7-27-2022
LP22.056.08	REVIEW	8-18-2022
LP22.056.08	TWP. REV.	8-25-2022
LP23.104.10	SITE UPDATE	10-2-2023
LS24.030.04	REVIEW	4-8-2024
LS24.030.05	SPA	5-20-2024
LS25.047.04	SPA	4-15-2025
LS25.047.09	TWP COMMENTS SITE PLAN UPDATES	9-23-2025

drawn by: JP, JM, LA
checked by: FP
date: 4-15-2025
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project no: LS25.047.04

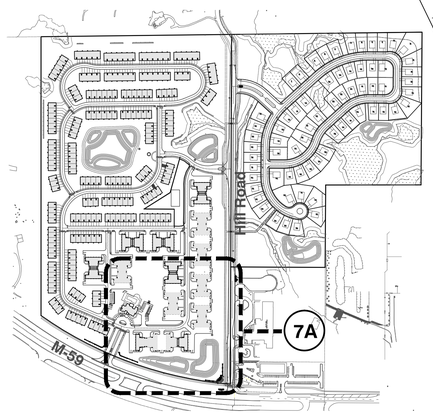
sheet no: LS-6 of 16

OPEN SPACE LAWN AREAS TO RECEIVE SEEDING ON FINISH GRADES. PROVIDE POSITIVE DRAINAGE. SEE SHT LS-14 FOR DETAILS

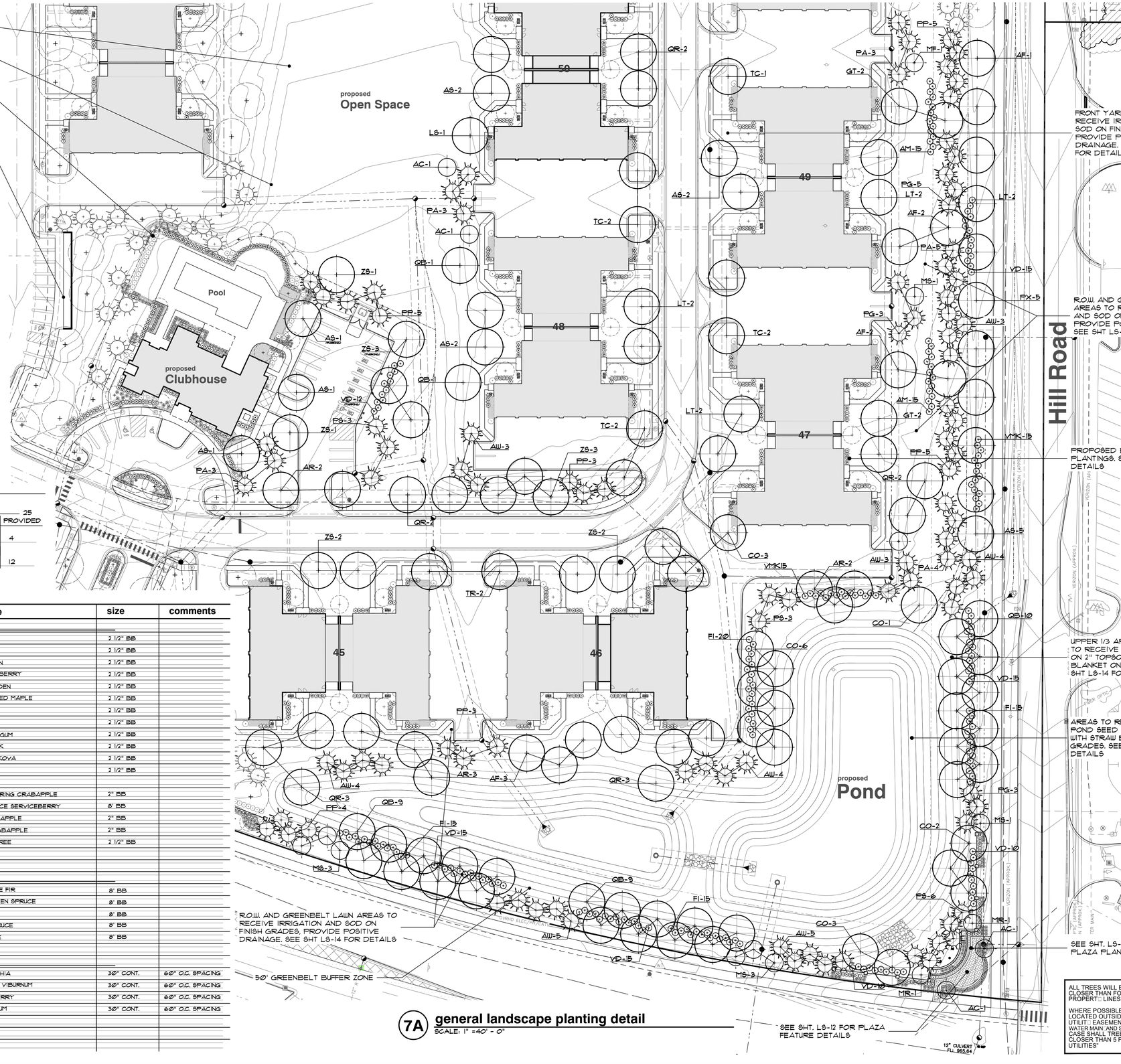
PROPOSED UNDERGROUND UTILITIES-SEE ENGINEERING PLAN FOR FINAL LOCATIONS, SIZES, TYPES, ELEVATIONS AND DETAILS

SEE SHT. LS-9 FOR ADJACENT CLUBHOUSE FOUNDATION LANDSCAPE PLANTING DETAILS.

MAIL BOX KIOSH LOCATION



key reference location map
NO SCALE



7A general landscape planting detail
SCALE: 1" =40' - 0"

parking lot landscape plantings (clubhouse)

	REQUIRED	PROVIDED
PARKING LOT LANDSCAPE AREA (15 SQ.FT. PER SPACES (27 SPACES X 15 SQ.FT = 405 SQ.FT.)		25
ONE (1) DECIDUOUS, ORNAMENTAL OR EVERGREEN TREE PER 100 SQ.FT. (405 SQ.FT. / 100 SQ.FT. = 4.05 TREES)	4	4
THREE (3) SHRUBS PER 100 SQ.FT. (SEE SHT LS-9) (405 SQ.FT. / 100 SQ.FT. = 4.05 X 3 = 12.15 SHRUBS)	12	12

plant material list

key	quant. 7A	botanical name	common name	size	comments
		DECIDUOUS TREES			
LT	6	LIRIODENDRON TULIPIFERA	TULIPTREE	2 1/2" BB	
GT	4	GLEDITSIA TRI. INERMIS 'SKYCOLE'	SKYLINE LOCUST	2 1/2" BB	
TR	2	TILIA AMERICANA 'REDMOND'	REDMOND LINDEN	2 1/2" BB	
CO	12	CELTIS OCCIDENTALIS	NORTHERN HACKBERRY	2 1/2" BB	
TC	7	TILIA CORDATA 'GREENSPIRE'	GREENSPIRE LINDEN	2 1/2" BB	
AF	8	ACER X. FREEMANII'	AUTUMN BLAZE RED MAPLE	2 1/2" BB	
AR	8	ACER RUBRUM	RED MAPLE	2 1/2" BB	
AS	14	ACER SACCHARUM	SUGAR MAPLE	2 1/2" BB	
LS	1	LIQUIDAMBAR STYRACIFLUA	AMERICAN SWEETGUM	2 1/2" BB	
QB	30	QUERCUS 'BICOLOR'	SWAMP WHITE OAK	2 1/2" BB	
ZS	12	ZELKOVA SERATA 'GREENVASE'	GREENVASE ZELKOVA	2 1/2" BB	
QR	11	QUERCUS RUBRA	RED OAK	2 1/2" BB	
MF	1	MALUS FLORIBUNDA	JAPANESE FLOWERING CRABAPPLE	2" BB	
AC	4	AMECHANCIER CANADENSIS	AUTUMN BRILLIANCE SERVICEBERRY	8' BB	
MS	8	MALUS SNOWDRIFT	SNOWDRIFT CRABAPPLE	2" BB	
MR	2	MALUS RED VELVET	RED VELVET CRABAPPLE	2" BB	
PX	5	PLATINUS X ACERIFOLIA	LONDON PLANETREE	2 1/2" BB	
		EVERGREEN TREES			
AW	31	ABIES CONCOLOR	CONCOLOR WHITE FIR	8' BB	
PP	25	PICEA PUNGENS	COLORADO GREEN SPRUCE	8' BB	
PS	12	PSEUDOTSUGA MENZIESII	DOUGLAS FIR	8' BB	
PG	11	PICEA GLAUCA 'DENSATA'	BLACK HILL SPRUCE	8' BB	
PA	18	PICEA ABIES	NORWAY SPRUCE	8' BB	
		SHRUBS			
FI	65	FORSYTHIA INTERMEDIA	BORDER FORSYTHIA	30" CONT.	60" O.C. SPACING
VD	80	VIBURNUM D. 'SYNNESTVEDT'	CHICAGO LUSTRE VIBURNUM	30" CONT.	60" O.C. SPACING
AM	30	ARONIA MELANOCARPA	BLACK CHOKEBERRY	30" CONT.	60" O.C. SPACING
VMK	30	VIBURNUM D. 'X BURKWOODII' MOHAWK	MOHAWK VIBURNUM	30" CONT.	60" O.C. SPACING

ALL TREES WILL BE PLANTED NO CLOSER THAN FOUR '4' FEET FROM PROPERTY LINES.

WHERE POSSIBLE, TREES TO BE LOCATED OUTSIDE OF PUBLIC UTILITY EASEMENT (SANITAR, SEWER, WATER MAIN AND STORM SEWER). IN NO CASE SHALL TREES BE PLANTED CLOSER THAN 5 FEET FROM THESE UTILITIES.

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seal:
STATE OF MICHIGAN REGISTERED FELINO A. PASCUAL LANDSCAPE ARCHITECT No. 1433 LANDSCAPE ARCHITECT

client:
WHITE LAKE HILL, LLC
1550 Northwestern Hwy
armington Hills, Michigan

project:
AVALON
A PLANNED MIXED USE RESIDENTIAL COMMUNITY

project location:
White Lake Twp. Michigan
Highland Road & Hill Road

sheet title:
GENERAL LANDSCAPE PLANTING DETAIL

job no./issue/revision date:

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LS24.030.05	SPA	5-20-2024
LS25.047.04	SPA	4-15-2025
LS25.047.09	TWP COMMENTS, SITE PLAN UPDATES	9-23-2025

drawn by: JP, JM, LA
checked by: FP
date: 4-15-2025

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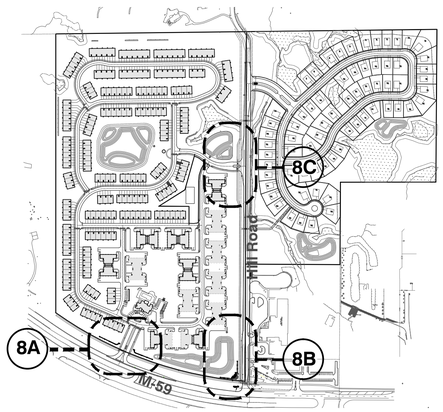
project no: LS25.047.04

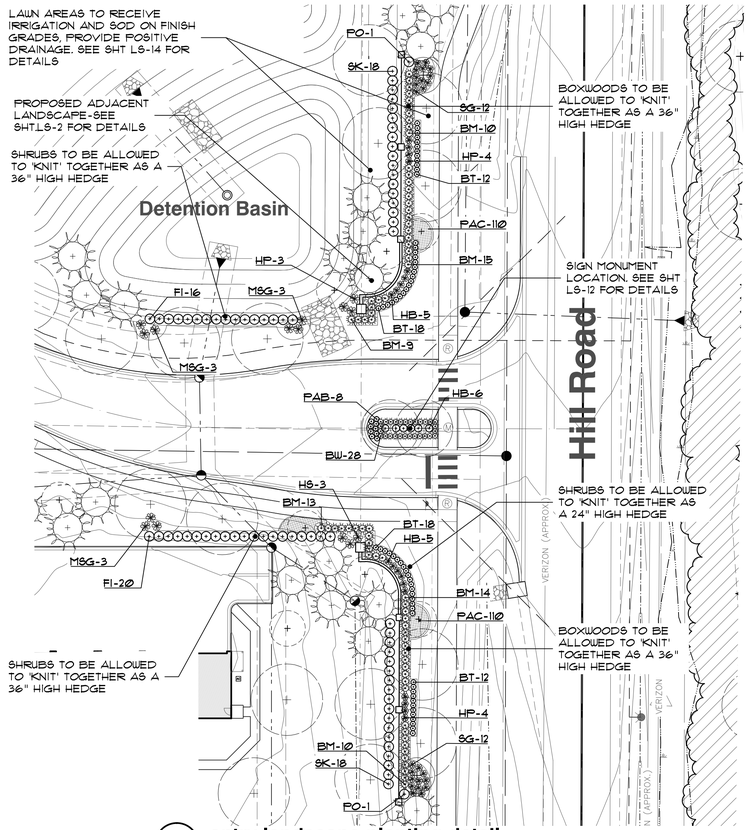
sheet no: LS-7 of 16

plant material list

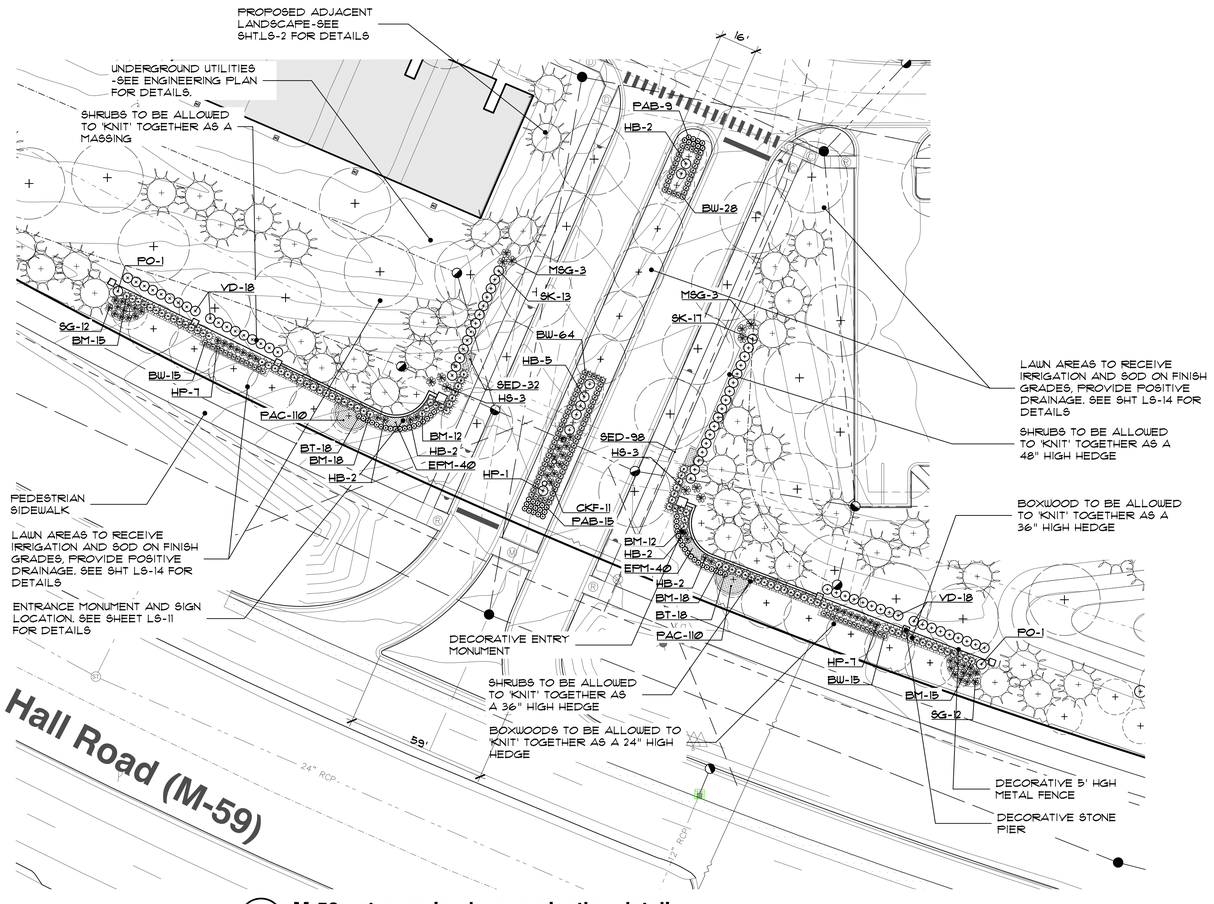
key	quant. 5A	quant. 5B	quant. 5C	botanical name	common name	size	comments
				SHRUBS			
BW	122	26	48	BUXUS X 'GREEN VELVET'	GREEN VELET BOXWOOD	18" CONT	24" O.C. SPACING
BM	108	43	51	BUXUS X 'GREEN MOUNTAIN'	GREEN MOUNTAIN BOXWOOD	30" CONT	36" O.C. SPACING
VD	36	-	-	VIBURNUM DENSATA 'SYNNESTVEDT'	CHICAGO LUSTRE VIBURNUM	#3 CONT.	60" O.C. SPACING
FI	-	-	36	FORSYTHIA INTERMEDIA	BORDER FORSYTHIA	#5 CONT	60" O.C. SPACING
BT	18	25	60	BERBERIS THUNBERGII 'CRIMSON PYGMY'	CRIMSON PYGMY BARBERRY	#3 CONT.	24" O.C. SPACING
HP	15	-	11	HYDRANGEA P. 'BULK'	QUICK FIRE HYDRANGEA	#5 CONT.	36" O.C. SPACING
HB	15	8	16	HYDRANGEA P. 'ILVOBO'	BOBO HYDRANGEA	#5 CONT	36" O.C. SPACING
HS	6	-	3	HIBISCUS SYRIACUS 'ALTHEA'	ALTHEA SHARON OF SHARON	#5 CONT.	60" O.C. SPACING
SG	24	24	48	PHYSOCARPUS OPULIFOLIUS 'SEWARD'	SUMMER WINE NINEBARK	#5 CONT.	42" O.C. SPACING
PO	2	4	2	SPIRAEA X.B. BUMALDA 'GOLDFLAME'	GOLDFLAME SPIREA	#5 CONT	36" O.C. SPACING
SK	30	-	36	SYRINGA PATULA 'MISS KIM'	MISS KIM LILAC		48" O.C. SPACING
	376	130	311	BIT TOTAL			
				PERENNIALS AND GRASSES			
MSG	6	-	9	MISCANTHUS SINENSIS 'GRACILLIMUS'	JAPANESE SILVER MAIDEN GRASS	#3 CONT.	36" O.C. SPACING
EPM	80	-	-	ECHINACEA 'PIXIE MEADOWBRITE'	'PIXIE MEADOWBRITE' PURPLE CONEFLOWERS	32/FLAT	10" O.C. SPACING
PAC	220	-	220	GERANIUM 'DILY'S'	DILY'S HARDY GERANIUM	32/FLAT	10" O.C. SPACING
PAB	24	-	8	PACHYSANDRA TERMINALIS 'GREEN CARPET'	GREEN CARPET PACHYSANDRA	#3 CONT.	10" O.C. SPACING
CKF	11	12	-	CALAMAGROSTIS ACUTIFLORA 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	#3 CONT.	36" O.C. SPACING
PAH		17		PENNISETUM ALOPECUROIDES 'HAMELN'	HAMELN DWARF FOUNTAIN GRASS	#3 CONT.	36" O.C. SPACING
HOS	-	9	-	HOSTA 'PATRIOT'	'PATRIOT HOSTA	#1 CONT.	18" O.C. SPACING



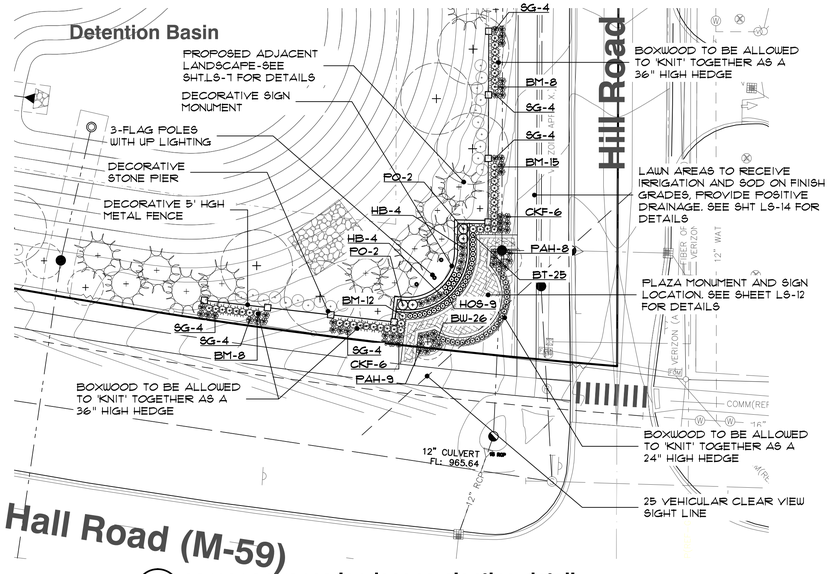
key reference location map
NO SCALE



8C entry landscape planting detail
SCALE: 1" =30' - 0"



8A M-59 entrance landscape planting detail
SCALE: 1" =40' - 0"



8B corner entrance landscape planting detail
SCALE: 1" =30' - 0"

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seal:
STATE OF MICHIGAN
FELINO A. PASCUAL
LANDSCAPE ARCHITECT
No. 4333
REGISTERED LANDSCAPE ARCHITECT

client:

WHITE LAKE HILL, LLC
31550 Northwestern Hwy
Farmington Hills, Michigan

project:

AVALON
A PLANNED MIXED USE RESIDENTIAL COMMUNITY

project location:

White Lake Twp. Michigan
Highland Road & Hill Road

sheet title:

ENTRANCE LANDSCAPE PLANTING DETAIL

job no./issue/revision date:

LP22.056.07	REVIEW	7-27-2022
LP22.056.08	REVIEW	8-18-2022
LP22.056.08	TWP. REV.	8-25-2022
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LS24.030.04	REVIEW	4-8-2024
LS24.030.05	SPA	5-20-2024
LS25.047.04	SPA	4-15-2025
LS25.047.09	TWP COMMENTS, SITE PLAN UPDATES	9-23-2025

drawn by:
JP, JM, LA

checked by:
FP

date:
4-15-2025

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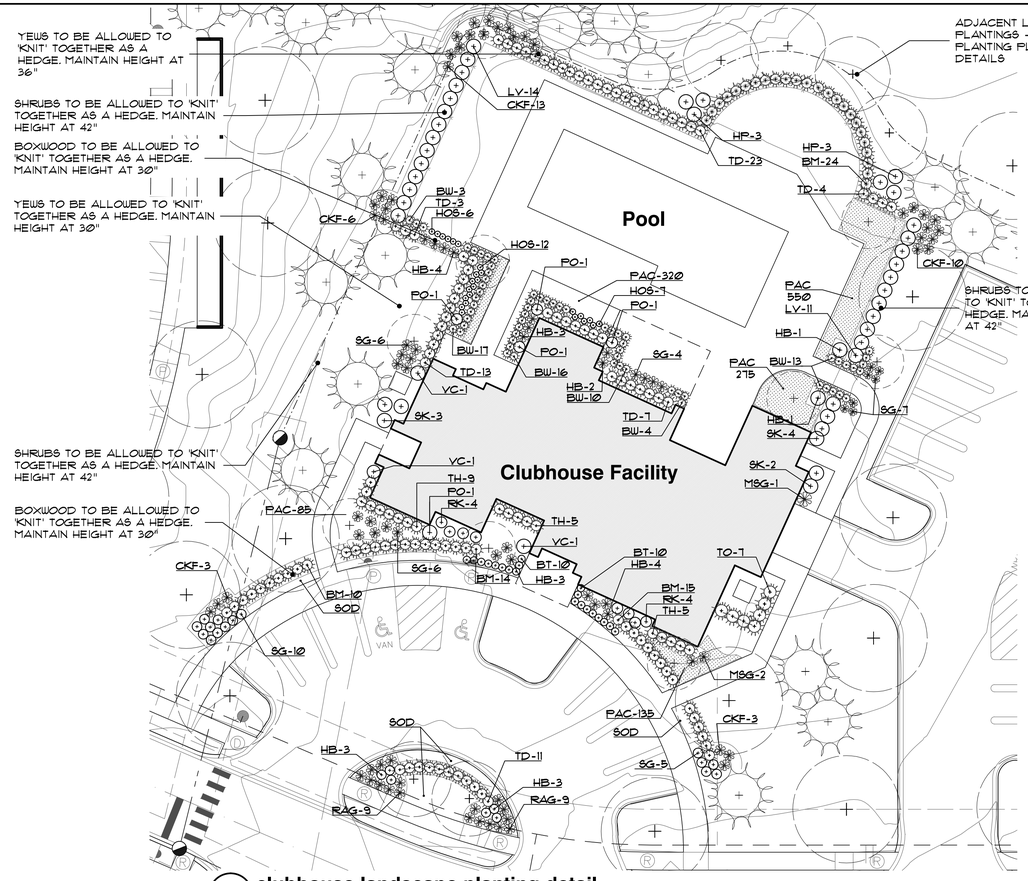
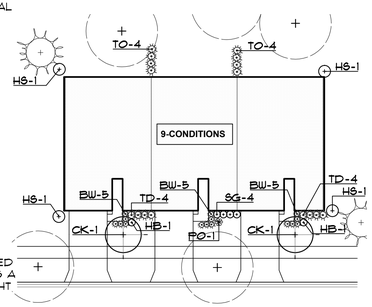
project no:
LS25.047.04

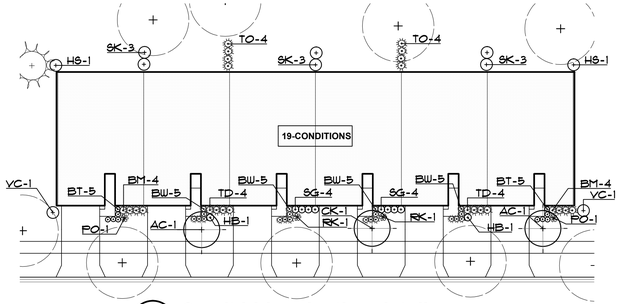
sheet no:
LS-8 of 16



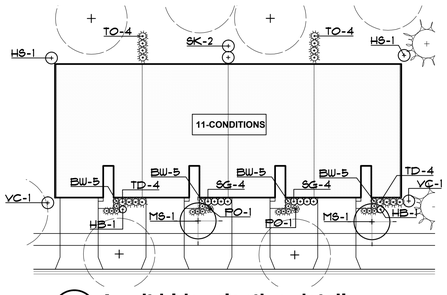
9A clubhouse landscape planting detail
SCALE: 1" =20' - 0"



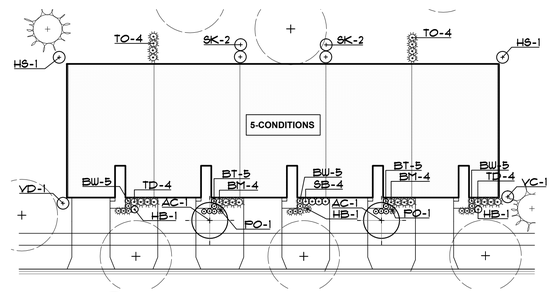
9B 3-unit bldg. planting detail
SCALE: 1" =30' - 0"



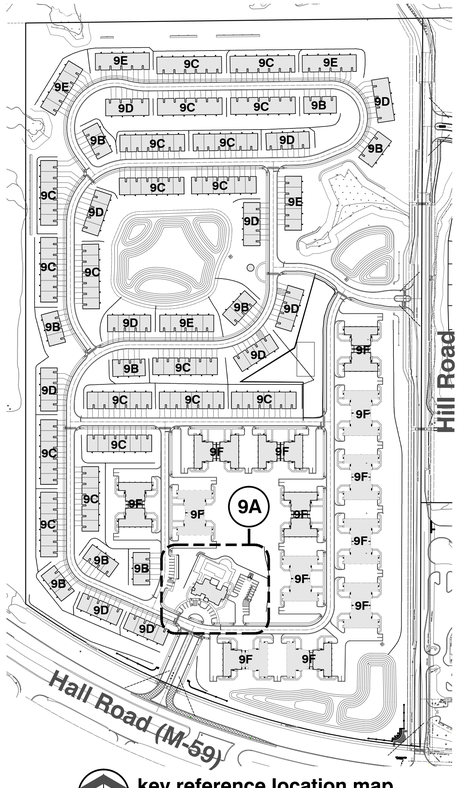
9C 6-unit bldg. planting detail
SCALE: 1" =30' - 0"



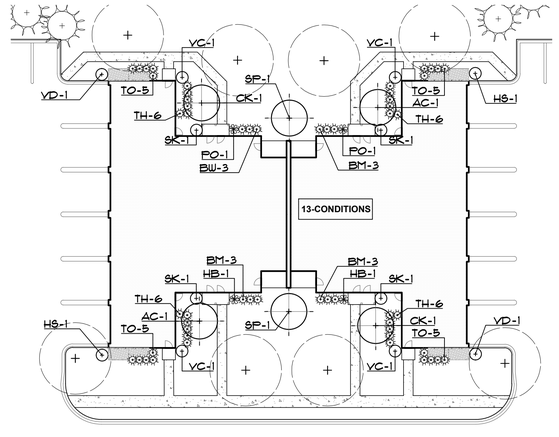
9D 4-unit bldg. planting detail
SCALE: 1" =30' - 0"



9E 5-unit bldg. planting detail
SCALE: 1" =30' - 0"



key reference location map
NO SCALE



9F 12-unit bldg. planting detail
SCALE: 1" =30' - 0"

LANDSCAPE BEDS ADJACENT AND NEXT TO BUILDING SHALL BE EXCAVATED OF ALL BUILDING MATERIALS AND POOR SOILS A MIN. OF 12"-16" DEPTH. BACK FILL WITH GOOD, MEDIUM TEXTURED PLANTING SOILS. ADD A MIN. 4" OF TOPSOIL OVERFILL TO FINISH GRADE. PROVIDE POSITIVE DRAINAGE.

plant material list

key	quant. 9A	quant. 9B	quant. 9C	quant. 9D	quant. 9E	quant. 9F	botanical name	common name	size	comments
							ORNAMENTAL TREES			
SP	-	-	-	-	-	26	SYRINGA RETICULA 'IVORY SILK'	IVORY SILK JAPANESE TREE LILAC	2" BB	
MS	-	-	-	22	-	-	MALUS SARGENTII	SARGENT CRAB	2" BB	
AC	-	-	38	-	10	26	AMELANCHIER X.G. 'AUTUMN BRILLIANCE'	AUTUMN BRILLIANCE SERVISBERRY	8' BB	MULTI-STEM
CK	-	18	19	-	-	26	CORNUS KOUSA	KOUSA DOGWOOD	2" BB	
TOTALS	-	18	57	22	10	78	185-ORNAMENTAL TREES			
							SHRUBS			
TD	61	72	152	88	40	-	TAXUS X.M. DENSIFORMIS	JAPANESE DENSE YEW	24" CONT.	36" O.C. SPACING
BM	63	-	152	-	75	156	BUXUS 'GREEN MOUNTAIN'	GREEN MOUNTAIN BOXWOOD	30" CONT	36" O.C. SPACING
BW	63	135	380	220	50	-	BUXUS VARDAR VALLEY'	VARDAR VALLEY BOXWOOD	30" CONT	36" O.C. SPACING
VD	-	-	-	-	5	26	VIBURNUM DENSATA 'SYNNESTVEDT'	CHICAGO LUSTRE VIBURNUM	36" CONT.	60" O.C. SPACING
LV	25	-	-	-	-	-	LIGUSTRUM X. 'VICARYI'	VICARY PRIVET	36" CONT.	60" O.C. SPACING
RAG	18	-	-	-	-	-	RHUS AROMATICA 'GRO-LOW'	GRO-LOW FRAGRANT SUMAC	24" CONT	42" O.C. SPACING
BT	20	-	190	-	50	-	BERBERIS THUNBERGII 'CRIMSON PYGMY'	CRIMSON PYGMY BARBERRY	15" CONT.	24" O.C. SPACING
HP	6	-	-	-	-	-	HYDRANGEA P. 'BULK'	QUICK FIRE HYDRANGEA	30" CONT.	36" O.C. SPACING
HB	24	18	38	22	15	26	HYDRANGEA P. 'ILVOBO'	BOBO HYDRANGEA	30" CONT	36" O.C. SPACING
HS	-	36	38	22	10	26	HIBISCUS SYRIACUS 'ALTHEA'	ALTHEA SHARON OF SHARON	36" CONT.	48" O.C. SPACING
TO	7	72	152	88	40	260	THUJA OCCIDENTALIS 'TECHNY'	TECHNY ARBORVITAE	6' BB	48" O.C. SPACING
VC	3	-	38	22	5	52	VIBURNUM CARLESII	KOREAN SPICE VIBURNUM	36" CONT	48" O.C. SPACING
RK	8	-	38	-	-	-	ROSA X OSA EASY 'DOUBLE RED'	OSO EASY DOUBLE RED RED ROSA	30" CONT.	48" O.C. SPACING
PO	6	9	38	22	10	26	PHYSOCARPUS OPULIFOLIUS 'SEWARD'	SUMMER WINE NINEBARK	30" CONT.	42" O.C. SPACING
SG	32	36	152	88	-	-	SPIRAEA X.B. BUMALDA 'GOLDFLAME'	GOLDFLAME SPIREA	24" CONT	36" O.C. SPACING
SK	9	-	171	22	20	52	SYRINGA PATULA 'MISS KIM'	MISS KIM DWARF LILAC	3 'BB	48" O.C. SPACING
TH	19	-	-	-	-	312	TAXUS X.M. 'HICKSII'	HICKS YEWS	24" CONT.	36" O.C. SPACING
TOTALS	364	378	1,539	594	320	936	4,131-SHRUBS			
							PERENNIALS AND GRASSES			
MSG	3	-	-	-	-	-	MISCANTHUS SINENSIS 'GRACILLIMUS'	JAPANESE SILVER MAIDEN GRASS	#3 CONT.	36" O.C. SPACING
PAH	-	-	-	-	-	-	PENNISETUM ALOPECUROIDES 'HAMELN'	DWARF FOUNTAIN GRASS	#3 CONT.	36" O.C. SPACING
CKF	35	-	-	-	-	-	CALAMAGROSTIS ACUTIFLORA 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	#3 CONT.	36" O.C. SPACING
HOS	25	-	-	-	-	-	HOSTA 'PATRIOT'	PATRIOT HOSTA	#1 CONT.	18" O.C. SPACING
PAC	1365	-	-	-	-	-	PACHYSANDRA TERMINALIS 'GREEN CARPET'	GREEN CARPET PACHYSANDRA	32/FLAT	10" O.C. SPACING
DLY	-	-	-	-	-	-	HEMEROCALLIS 'HAPPY RETURN'	HAPPY RETURN DAYLILY	#1 CONT.	18" O.C. SPACING

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A PLANNED MIXED USE RESIDENTIAL COMMUNITY

project location:

White Lake Twp. Michigan
Highland Road & Hill Road

sheet title:

CLUBHOUSE & BUILDING FOUNDATION LANDSCAPE PLANTING PLAN

job no./issue/revision date:

LP22.056.07	REVIEW	7-27-2022
LP22.056.08	REVIEW	8-18-2022
LP22.056.08	TWP. REV.	8-25-2022
LP23.104.10	SITE UPDATE	10-2-2023
LS24.030.04	REVIEW	4-8-2024
LS24.030.05	SPA	5-20-2024
LS25.047.04	SPA	4-15-2025
LS25.047.09	TWP COMMENTS, SITE PLAN UPDATES	9-23-2025

drawn by: **JP, JM, LA**
checked by: **FP**
date: **4-15-2025**

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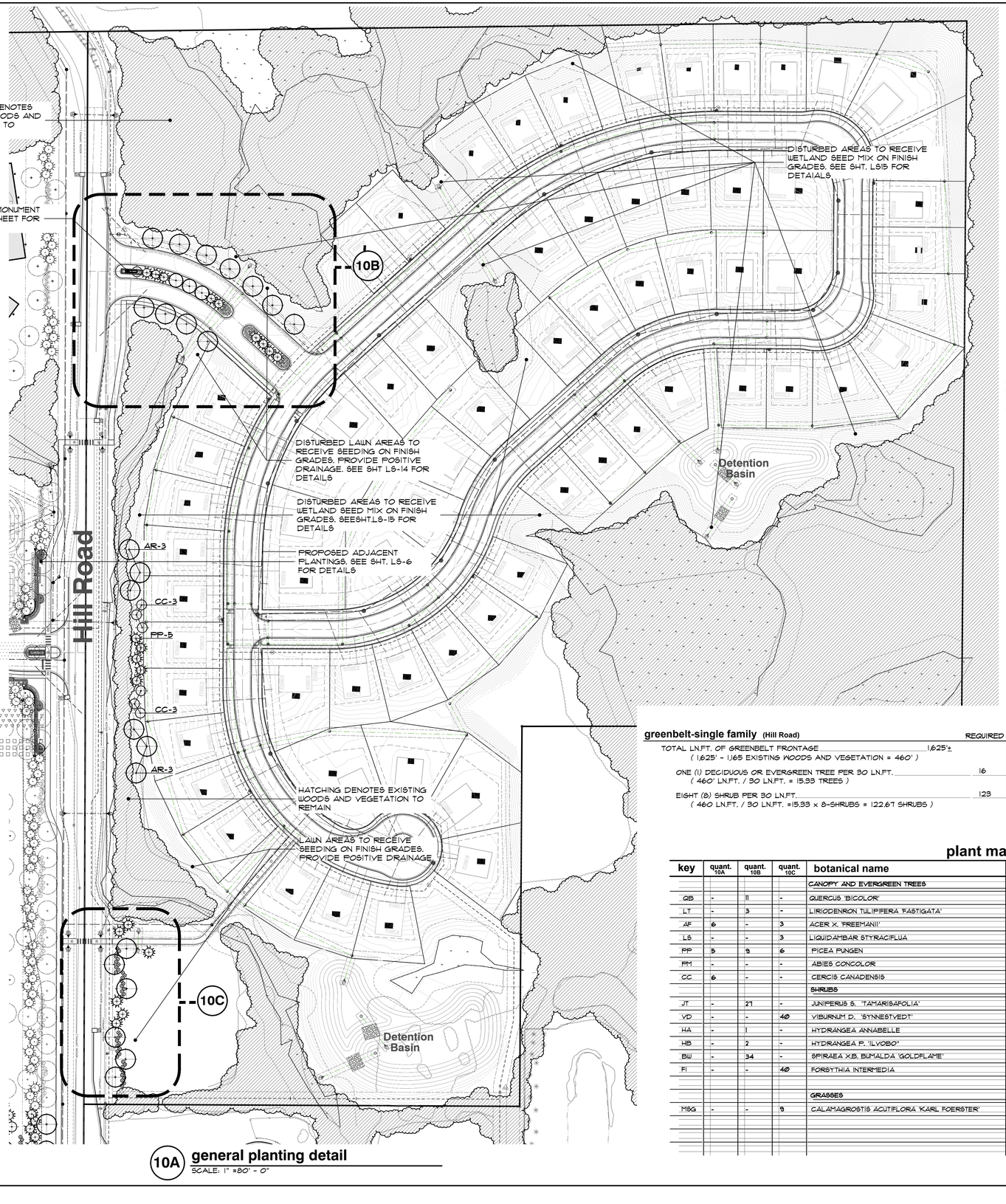
For free location of public utility lines

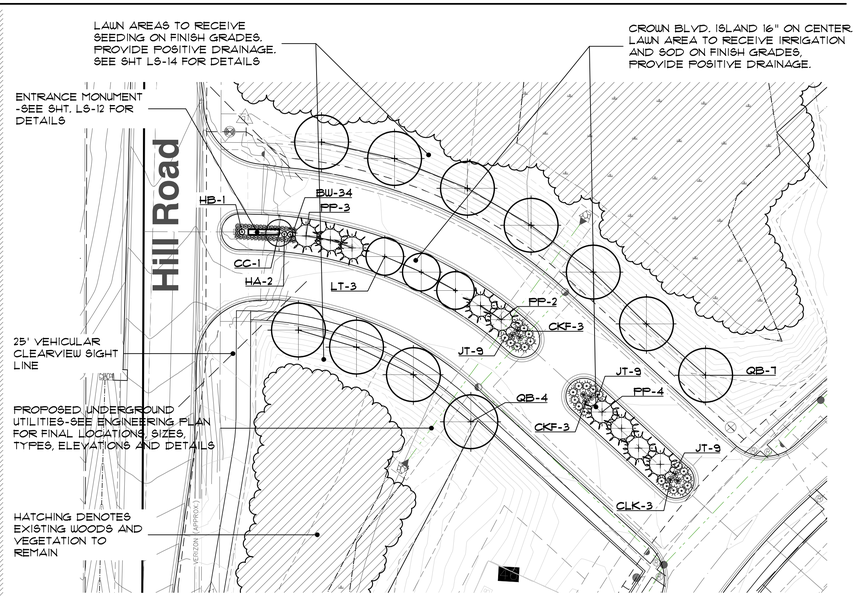
The location and elevations of existing underground utilities as shown on this drawing are only approximate. no guarantee is either expressed or implied as to the completeness of accuracy. contractor shall be exclusively responsible for determining the exact location and elevation prior to the start of construction

project no: **LS25.047.04**

sheet no: **LS-9 of 16**



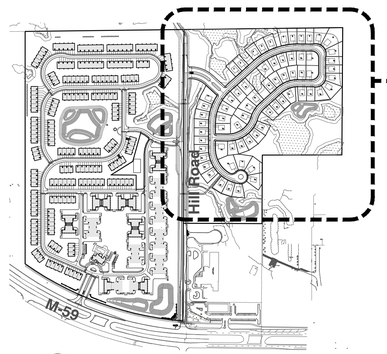
10A general planting detail
SCALE: 1" =80' - 0"



10B greenbelt planting detail
SCALE: 1" =40' - 0"

greenbelt-single family (Hill Road)

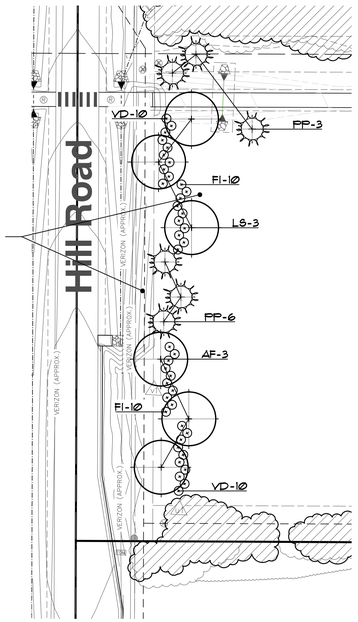
	REQUIRED	PROVIDED
TOTAL LN.FT. OF GREENBELT FRONTAGE (1,625' - 1,165 EXISTING WOODS AND VEGETATION = 460')	1,625'±	
ONE (1) DECIDUOUS OR EVERGREEN TREE PER 30 LN.FT. (460' LN.FT. / 30 LN.FT. = 15.33 TREES)	16	20+
EIGHT (8) SHRUB PER 30 LN.FT. (460 LN.FT. / 30 LN.FT. =15.33 x 8-SHRUBS = 122.67 SHRUBS)	123	125+



key reference location map
NO SCALE

plant material list

key	quant. 10A	quant. 10B	quant. 10C	botanical name	common name	size	comments
				CANOPY AND EVERGREEN TREES			
QB	-	11	-	QUERCUS 'BICOLOR'	SWAMP WHITE OAK	2 1/2" BB	
LT	-	3	-	LIRIODENRON TULIPIFERA 'FASTIGATA'	COLUMNAR TULIP TREE	2 1/2" BB	
AF	6	-	3	ACER X. 'FREEMANII'	AUTUMN BLAZE RED MAPLE	2 1/2" BB	
LS	-	-	3	LIQUIDAMBAR STYRACIFLUA	AMERICAN SWEETGUM	2 1/2" BB	
FP	5	9	6	PICEA PUNGEN	COLORADO GREEN SPRUCE	6' BB	
FM	-	-	-	ABIES CONCOLOR	DOUGLAS FIR	6' BB	
CC	6	-	-	CERCIS CANADENSIS	EASTERN REDBUD	6' BB	
				SHRUBS			
JT	-	21	-	JUNIPERUS S. 'TAMARISAPOLIA'	TAM'S JUNIPER	30" CONT.	42" O.C. SPACING
VD	-	-	40	VIBURNUM D. 'SYNNESTVEDT'	CHICAGO LUSTRE VIBURNUM	36" CONT.	60" O.C. SPACING
HA	-	1	-	HYDRANGEA ANNABELLE	ANNABELLE HYDRANGEA	30" CONT.	42" O.C. SPACING
HB	-	2	-	HYDRANGEA P. 'ILVOBO'	BOBO HYDRANGEA	30" CONT.	42" O.C. SPACING
BW	-	34	-	SPIRAEA X.B. BUMALDA 'GOLDFLAME'	GREEN VELVET BOXWOOD	18 CONT	24" O.C. SPACING
FI	-	-	40	FORSYTHIA INTERMEDIA	BORDER FORSYTHIA	36" CONT.	60" O.C. SPACING
				GRASSES			
M&G	-	-	9	CALAMAGROSTIS ACUTIFLORA 'KARL FOERSTER'	KARL FOERSTER FEATHER REED GRASS	#3 CONT.	36" O.C. SPACING



10C greenbelt planting detail
SCALE: 1" =40' - 0"

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seal:
STATE OF MICHIGAN — FELINO A. PASCUAL — LANDSCAPE ARCHITECT — No. 4333 — REGISTERED LANDSCAPE ARCHITECT

client:
WHITE LAKE HILL, LLC
31550 Northwestern Hwy
Farmington Hills, Michigan

project:
AVALON
A PLANNED MIXED USE RESIDENTIAL COMMUNITY

project location:
White Lake Twp. Michigan
Highland Road & Hill Road

sheet title:
SINGLE FAMILY PLANTING DETAIL

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project no: **LS25.047.04**

sheet no: **LS-10 of 16**

general landscape notes:

1. LANDSCAPE CONTRACTOR SHALL VISIT THE SITE, INSPECT EXISTING CONDITIONS, REVIEW PROPOSED PLANTINGS AND RELATED WORK, CONTACT THE OWNER AND/OR LANDSCAPE ARCHITECT WITH ANY CONCERNS OR DISCREPANCY BETWEEN THE PLAN, PLANT MATERIAL LIST, AND/OR SITE CONDITIONS.

2. PRIOR TO BEGINING OF CONSTRUCTION ON ANY WORK, CONTRACTORS SHALL VERIFY LOCATIONS OF ALL ON SITE UTILITIES, GAS, ELECTRIC, TELEPHONE, CABLE TO BE LOCATED BY CONTACTING MISS DIG 1-800-482-7171, ANY DAMAGE OR INTERRUPTION OF SERVICES SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. COORDINATE ALL RELATED WORK ACTIVITIES WITH OTHER TRADES AND REPORT ANY UNACCEPTABLE JOB CONDITIONS TO OWNER PRIOR TO COMMENCING

3. NUMERICAL VALUE ON THE LANDSCAPE QUANTITIES SPECIFIED ON THE PLAN TAKE PRECEEDENCE OVER GRAPHIC REPRESENTATION. VERIFY ANY CONCERN-DISCREPANCY WITH LANDSCAPE ARCHITECT.

4. ALL CONSTRUCTION AND PLANT MATERIAL LOCATION TO BE ADJUSTED ON SITE IF NECESSARY

5. ALL SUBSTITUTIONS OR DEVIATIONS FROM THE LANDSCAPE PLAN MUST BE APPROVED BY WHITE LAKE TOWNSHIP AND LANDSCAPE ARCHITECT

6. ALL LARGE TREES AND EVERGREENS TO BE STAKED, GUYED AND WRAPPED AS DETAIL SHOWN ON PLAN.

7. PLANT BEDS TO BE DRESSED WITH MIN. 4" OF FINELY DOUBLE SHREDDED HARDBARK MULCH.

8. DIG SHRUB PITS 1' LARGER THAN SHRUB ROOT BALLS AND TREE PITS 2' LARGER THAN ROOT BALL. BACK FILL WITH ONE PART TOP SOIL AND ONE PART SOIL FROM EXCAVATED PLANTING HOLE.

9. NATURAL COLOR, FINELY SHREDDED HARDWOOD BARK MULCH REQUIRED FOR ALL PLANTINGS.

10. REMOVE ALL TWINE, WIRE AND BURLAP FROM TREE AND SHRUB EARTH BALLS, AND FROM TREE TRUNKS. 4" THICK BARK MULCH FOR TREES IN 4' DIA. CIRCLE WITH 3" PULLED AWAY FROM TRUNK , 4" THICK BARK MULCH FOR SHRUBS AND 4" THICK BARK MULCH FOR PERENNIALS.

11. PLANT MATERIAL QUALITY & INSTALLATION SHALL BE IN ACCORDANCE WITH THE CURRENT AMERICAN ASSOCIATION OF NURSERYTMEN LANDSCAPE STANDARDS.

12. PROVIDE PEAT SOD FOR ALL NEW AND DISTURBED LAWN AREAS UNLESS NOTED OTHERWISE.

13. ALL PLANTING AREAS TO BE PREPARED WITH APPROPRIATE SOIL MIXTURES AND FERTILIZER BEFORE PLANT INSTALLATION.

14. PLANT TREES AND SHRUBS GENERALLY NO CLOSER THEN THE FOLLOWING DISTANCES FROM SIDEWALKS, CURBS AND PARKING STALLS:
   a). SHADE TREES_____5 FT.
   b). ORNAMENTAL AND EVERGREEN TREES (CRABS, PINE, SPRUCE, ETC.)_____10 FT.
   c). SHRUBS THAT ARE LESS THAN 1 FOOT TALL AND WIDE AT MATURITY_____2 FT.

15. NO TREES OR EVERGREENS TO BE INSTALLED OVER ANY PROPOSED OR EXISTING UTILITY LINES AS SHOWN ON THE OVERALL LANDSCAPE PLAN. SEE ENGINEERING PLANS FOR LOCATION AND DETAILS.

16. TREES OR EVERGREENS TO BE INSTALLED MUST MAINTAIN A MINIMUM DISTANCE OF 4' FROM ANY PROPERTY LINES

17. ALL LAWN AREAS AND LANDSCAPE BEDS TO BE FULLY IRRIGATED WITH A AUTOMATIC UNDERGROUND SYSTEMS. IRRIGATION SYSTEM TO HAVE SEPARATE ZONES FOR LAWN AREAS, PARKING ISLANDS, AND SHRUB BEDS WITH DIFFERENT CONTROL MOISTURE LEVEL ADJUSTMENT PER ZONE AS REQUIRED

18. UNLESS NOTED OTHERWISE, LANDSCAPE BEDS ADJACENT TO LAWN TO RECIEVE EDGING. EDGING SHALL BE 4" X 1/8" METAL (FINISH BLACK OR GREEN) OR APPROVED EQUAL AND TO BE INSTALLED WITH HORIZONTAL METAL STAKES AT 32" O.C. OR PER MANUFACTERER'S SPECIFICATION.

19. ALL NEW PARKING ISLANDS AND LANDSCAPE BEDS ADJACENT AND NEXT TO BUILDING SHALL BE EXCAVATED OF ALL BUILDING MATERIALS AND POOR SOILS A MIN. OF 16"-18" DEPTH. BACK FILL WITH GOOD, MEDIUM TEXTURED PLANTING SOILS. ADD A MIN. 4" OF TOPSOIL OVERFILL TO FINISH GRADE. PROVIDE POSITIVE DRAINAGE.

20. WATERING OF ALL PLANTS AND TREES TO BE PROVIDED IMMEDIATELY AND MULCHING WITHIN 24 HOURS AFTER INSTALLATION.

21. ALL TREE PITS TO BE TESTED FOR PROPER DRAINAGE PRIOR TO TREE PLANTING. PROVIDE APPROPERATES DRAINAGE SYSTEM AS REQUIRED IF THE TREE PIT DOES NOT DRAIN SUFFICIENTLY.

22. THE LANDSCAPE CONTRACTOR SHALL GUARANTEE ALL LANDSCAPE PLANT MATERIALS AND IRRIGATION INSTALLATION FOR A PERIOD OF TWO YEAR BEGINNING AFTER THE COMPLETION OF LANDSCAPE INSTALLTION DATE APPROVED BY THE CITY OR LANDSCAPE ARCHITECT. THE CONTRACTOR SHALL REPLACE DURING AND AT THE END OF THE GUARANTEE PERIOD, ANY DEAD OR UNACCEPTABLE PLANTS, AS DETERMINED BY THE TOWNSHIP OR LANDSCAPE ARCHITECT, WITHOUT COST TO THE OWNER.

planting landscape notes:

GENERAL NOTES:

1. PLANT MATERIALS TO BE INSTALLED ACCORDING TO THE WHITE LAKE TOWNSHIP AND CURRENT AMERICAN ASSOCIATION OF NURSERYMEN'S STANDARDS.

2. PLANT MATERIALS TO BE GUARANTEED FOR 2 YEARS. REPLACE FALLING MATERIAL WITHIN 1 YEAR, OR THE NEXT APPROPRIATE PLANTING PERIOD.

3. PLANT MATERIALS TO BE OF PREMIUM QUALITY, NO. 1 GRADE NORTHERN NURSURY GROWN, IN HEALTHY CONDITION, FREE OF PESTS AND DISEASES.

4. MULCH IS TO BE NATURAL COLORED, FINELY SHREDDED HARDWOOD BARK OF 4" THICK BARK MULCH FOR TREES IN 4' DIA. CIRCLE W/3" PULLED AWAY FROM TRUNK, 3" THICK BARK MULCH FOR SHRUBS AND 2" THICK BARK MULCH FOR PERRENIALS.

5. CALL MISS DIG AT 1-800-482-7171 PRIOR TO ANY CONSTRUCTION.

DECIDUOUS & EVERGREEN TREE:

1. TREE SHALL BE INSTALLED SAME RELATIONSHIP TO FINISH GRADE AS IT BORE ORIGINALLY OR SLIGHTLY HIGHER THAN FINISH GRADE UP TO 6" ABOVE GRADE, IF DIRECTED BY LANDSCAPE ARCHITECT FOR HEAVY CLAY SOIL AREAS.
2. DO NOT PRUNE TERMINAL LEADER. PRUNE ONLY DEAD OR BROKEN BRANCHES.
3. REMOVE ALL TAGS, STRING, PLASTICS AND OTHER MATERIALS THAT ARE UNSLIGHTLY AND COULD CAUSE GIRDLING.
4. REMOVE TREE STAKES, GUY WIRES AND TREE WRAP AFTER ONE WINTER SEASON.

SHRUB:

1. SHRUB SHALL BE INSTALLED SAME RELATIONSHIP TO FINISH GRADE AS IT BORE ORIGINALLY OR SLIGHTLY HIGHER THAN FINISH GRADE UP TO 4" ABOVE GRADE, IF DIRECTED BY LANDSCAPE ARCHITECT FOR HEAVY CLAY SOIL AREAS.
2. DO NOT PRUNE TERMINAL LEADER. PRUNE ONLY DEAD OR BROKEN BRANCHES.
3. REMOVE ALL TAGS, STRING, PLASTICS AND OTHER MATERIALS THAT ARE UNSLIGHTLY AND COULD CAUSE GIRDLING.

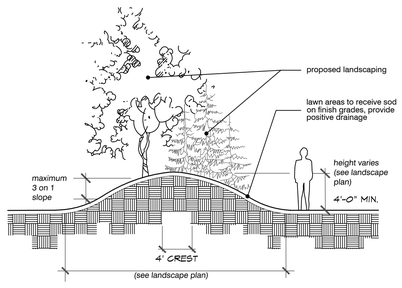
landscape maintenance notes:

LANDSCAPE MAINTENANCE PROCEDURES AND FREQUENCIES TO BE FOLLOWED SHALL BE SPECIFIED ON THE LANDSCAPE PLAN, ALONG WITH THE MANNER IN WHICH THE EFFECTIVENESS, HEALTH AND INTENDED FUNCTIONS OF THE VARIOUS LANDSCAPE AREAS ON THE SITE WILL BE ENSURED.

1. LANDSCAPING SHALL BE KEPT IN A NEAT, ORDERLY AND HEALTHY GROWING CONDITION, FREE FROM DEBRIS AND REFUSE.

2. PRUNING SHALL BE MINIMAL AT THE TIME OF INSTALLATION, ONLY TO REMOVE DEAD OR DISEASED BRANCHES, SUBSEQUENT PRUNING SHALL ASSURE PROPER MATURATION OF PLANTS TO ACHIEVE THEIR APPROVED PURPOSE.

3. ALL DEAD OR DISEASED PLANT MATERIAL SHALL BE REMOVED AND REPLACED WITHIN SIX (6) MONTHS AFTER IT DIES, OR IN THE NEXT PLANTING SEASON, WHICHEVER OCCURS FIRST. THE PLANTING SEASON FOR DECIDUOUS PLANTS SHALL BE BETWEEN MARCH 15 AND NOVEMBER 15 OR UNTIL THE PREPARED SOIL BECOMES FROZEN. THE PLANTING SEASON FOR EVERGREEN PLANTS SHALL BE BETWEEN MARCH 1 AND JUNE 1. PLANT MATERIAL INSTALLED TO REPLACE DEAD OR DISEASED MATERIAL SHALL BE AS CLOSE AS PRACTICAL TO THE SIZE OF THE MATERIAL IT IS INTENDED TO REPLACE.



berm planting detail
no scale

detention basin seed mix

A WETLAND SEED MIX FOR SATURATED SOILS IN A DETENTION POND OR FOR SEEDING A SATURATED BASIN□THIS MIX WILL TOLERATE HIGHL□ FLUCTUATING WATER LE□ELS AND POOR WATER □UALIT□ ASSOCIATED WITH URBAN STORMWATER WETLANDS AND PONDS. FOR DETENTION BASINS THAT EXPERIENCE LONG□DR□ PERIODS□USE THE ECONOM□ PRAIRIE SEED MIX IN THE UPPER THIRD TO HALF OF THE BASIN AREA IN COMBINATION WITH THIS MIX. THIS SEED MIX INCLUDES AT LEAST 10 OF 12 NATI□E PERMANENT GRASS AND SEDGE SPECIES AND 13 OF 17 NATI□E FORB SPECIES. APPL□ AT 36.22 PLS POUNDS PER ACRE.

BOTANICAL NAME	COMMON NAME	PLS O□/ACRE
PERMANENT GRASSES/SEDGES		
BOLBOSCHOENUS FLU□IATILIS	RI□ER BULRUSH	1.00
CAREX CRISTATELLA	CRESTED O□AL SEDGE	0.50
CAREX LURIDA	BOTTLEBRUSH SEDGE	3.00
CAREX □ULPINOIDEA	BROWN FOX SEDGE	2.00
EL□MUS □IRGINICUS	□IRGINIA WILD R□E	24.00
GL□CERIA STRIATA	FOWL MANNA GRASS	1.00
□UNCUS EFFUSUS	COMMON RUSH	1.00
LEERSIA OR□□OIDES	RICE CUT GRASS	1.00
PANICUM □IRGATUM	SWITCH GRASS	2.00
SCHOENOPLECTUS TABERNAEMONTANI	GREAT BULRUSH	3.00
SCIRPUS ATRO□IRENS	DARK GREEN RUSH	2.00
SCIRPUS C□PERINUS	WOOL GRASS	1.00
	TOTAL	41.50
TEMPORARY COVER		
A□ENA SATI□A	COMMON OAT	512.00
	TOTAL	512.00
FORBS		
ALISMA SUBCORDATUM	COMMON WATER PLANTAIN	2.50
ASCLEPIAS INCARNATA	SWAMP MILKWEED	2.00
BIDENS SPP. BIDENS	SPECIES	2.00
EUPATORIUM PERFOLIATUM	COMMON BONESET	1.00
HELENIUM AUTUMNALE	SNEE□EWEED	2.00
IRIS □IRGINICA □. SHRE□EI	BLUE FLAG	4.00
L□COPUS AMERICANUS	COMMON WATER HOREHOUND	0.50
MIMULUS RINGENS	MONKE□ FLOWER	1.00
PENTHORUM SEDOIDES	DITCH STONECROP	0.50
PERSICARIA SPP.	PINKWEED SPECIES	2.00
RUDBECKIA SUBTOMENTOSA	SWEET BLACK-E□ED SUSAN	1.00
RUDBECKIA TRILOBA	BROWN-E□ED SUSAN	1.50
SAGITTARIA LATIFOLIA	COMMON ARROWHEAD	1.00
SENNA HEBECARPA	WILD SENNA	2.00
S□MPH□OTRICHUM LANCEOLATUM	PANICLED ASTER	0.50
S□MPH□OTRICHUM NO□AE-ANGLIAE	NEW ENGLAND ASTER	0.50
THALICTRUM DAS□CARPUM	PURPLE MEADOW RUE	2.00
	TOTAL	26.00

lawn area:

SOD LAWN AREAS SHALL BE KENTUCKY BLUE GRASS BLEND GRASS IN A SOD NURSERY ON LOAM SOIL. SOD TO BE INSTALLED ON MINIMUM 4" TOPSOIL.

SEEDED LAWN AREAS SHALL CONSIST OF THE FOLLOWING TYPES AND PROPORTIONS:

5% PERENNIAL RYE GRASS
10% RED FESCUE
25% CHEWING FESCUE
60% KENTUCKY BLUE GRASS

SEED MIX SHALL BE APPLIED AT A RATE OF 200 POUNDS PER ACRE AND WEED CONTENT SHALL NOT EXCEED 1%. SEED, PROVIDE A MINIMUM 4" TOP SOIL ON ALL SEEDED LAWN AREA

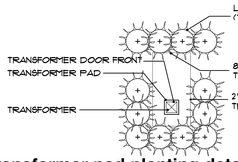
ALL TREES WILL BE PLANTED NO CLOSER THAN FOUR (4□FEET FROM PROPERT□ LINES.

WHERE POSSIBLE□TREES TO BE LOCATED OUTSIDE OF PUBLIC UTILIT□ EASEMENT □SANITAR□ SEWER□ WATER MAIN□AND STORM SEWER□, IN NO CASE SHALL TREES BE PLANTED CLOSER THAN 5 FEET FROM THESE UTILITIES"

economy prairie seed mix

THIS PRAIRIE SEED MIX OFFERS AN ECONOMICAL WA□ TO ESTABLISH A PRAIRIE. IN ADDITION TO NATI□E PRAIRIE GRASSES□FLOWERING SPECIES PRO□IDE COLOR THROUGHOUT THE GROWING SEASON AND FOOD SOURCES FOR BIRDS AND BUTTERFLIES. ADDING SEED OR PLANT PLUGS AT A LATER DATE IS A WONDERFUL WAY TO INCREASE A PRAIRIE'S RICHNESS AND DIVERSITY. THIS SEED MIX INCLUDES AT LEAST 6 OF 7 NATI□E PERMANENT GRASS AND SEDGE SPECIES AND 10 OF 13 NATI□E FORB SPECIES. APPL□ AT 40.95 PLS POUNDS PER ACRE.

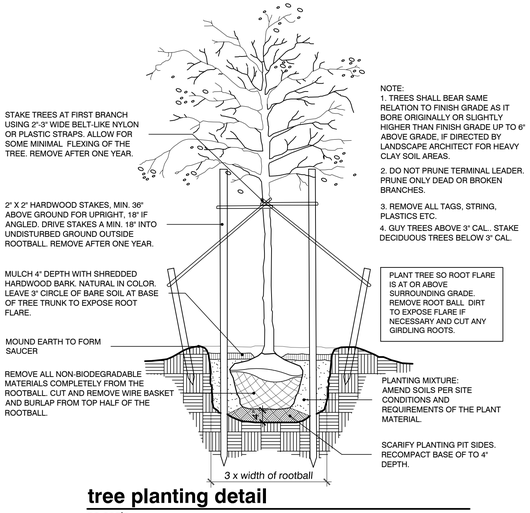
BOTANICAL NAME	COMMON NAME	PLS O□/ACRE
PERMANENT GRASSES/SEDGES		
ANDROPOGON GERARDII	BIG BLUESTEM	12.00
BOUTELOUA CURTIPENDULA	SIDE-OATS GRAMA	16.00
CAREX SPP.	PRAIRIE SEDGE SPECIES	3.00
EL□MUS CANADENSIS	CANADA WILD R□E	24.00
PANICUM □IRGATUM	SWITCH GRASS	2.50
SCHI□ACH□RIUM SCOPARIUM	LITTLE BLUESTEM	32.00
SORGHASTRUM NUTANS	INDIAN GRASS	12.00
	TOTAL	101.50
TEMPORARY COVER		
A□ENA SATI□A	COMMON OAT 512.00	
	TOTAL	512.00
FORBS		
ASCLEPIAS S□RIACA	COMMON MILKWEED	1.00
ASCLEPIAS TUBEROSA	BUTTERFL□ WEED	1.00
CHAMAECRISTA FASCICULATA	PARTRIDGE PEA	10.00
COREOPSIS LANCEOLATA	SAND COREOPSIS	6.00
ECHINACEA PURPUREA	BROAD-LEA□ED PURPLE CONEFLOWER	8.00
HELIOPSIS HELIANTHOIDES	FALSE SUNFLOWER	0.25
MONARDA FISTULOSA	WILD BERGAMOT	0.50
PENSTEMON DIGITALIS	FOXGLO□E BEARD TONGUE	1.00
RATIBIDA PINNATA	□ELLOW CONEFLOWER	4.00
RUDBECKIA HIRTA	BLACK-E□ED SUSAN	8.00
SOLIDAGO SPECIOSA	SHOW□ GOLDENROD	0.50
S□MPH□OTRICHUM LAE□E	SMOOTH BLUE ASTER	1.00
S□MPH□OTRICHUM NO□AE-ANGLIAE	NEW ENGLAND ASTER	0.50
	TOTAL	41.75



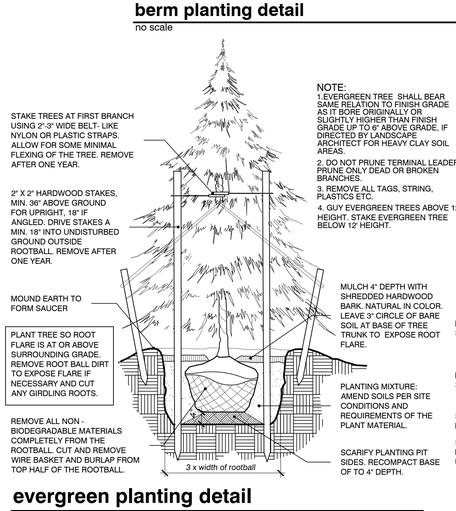
transformer pad planting detail
SCALE 1"=20'-0"

A MINIMUM OF 2' SEPARATION BETWEEN TRANSFORMER AND FULL GROWN SHRUBS AND TREES. GROUND COVERS ALLOWED UP TO TRANSFORMER PAD IF MAINTAINED BELOW 4" FULL GROWTH. IF TRANSFORMER FACES TOWARDS THE HOUSE, THEN THE SAME CONDITIONS EXIST. NO FULL GROWTH IN FRONT OF THE TRANSFORMER FOR AT LEAST A MINIMUM OF 8'. THERE ARE NO WAIVERS GRANTED TO THE ABOVE CONDITION. DETAIL PER THE DETROIT EDISON COMPANY-SERVICE PLANNING DEPARTMENT (9-11-98)

SEE ENGINEERING PLANS FOR PROPOSED LOCATIONS, TOTAL NUMBER OF TRANSFORMERS AND FINAL LOCATION PER DETROIT EDISON REQUIREMENTS.



tree planting detail
no scale



evergreen planting detail
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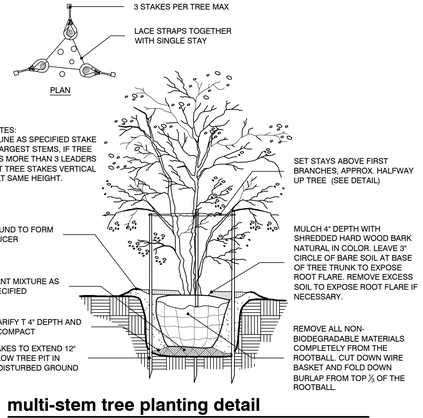
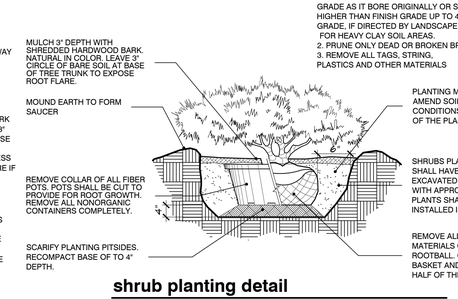
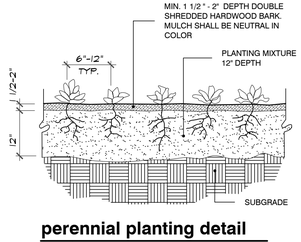


multi-stem tree planting detail
no scale



shrub planting detail
no scale



perennial planting detail
no scale

FELINO A. PASCUAL and ASSOCIATES
Community Land Planner and registered Landscape Architect
24333 Orchard Lake Rd, Suite G
Farmington Hills, MI 48336
ph. (248) 557-5588
fax. (248) 557-5416

seal:
STATE OF MICHIGAN REGISTERED FELINO A. PASCUAL LANDSCAPE ARCHITECT No. 4333 LANDSCAPE ARCHITECT

client:
WHITE LAKE HILL, LLC
31550 Northwestern Hwy
Farmington Hills, Michigan

project:
AVALON
A PLANNED MIXED USE RESIDENTIAL COMMUNITY

project location:
White Lake Twp. Michigan
Highland Road & Hill Road

sheet title:
LANDSCAPE MATERIAL LIST, PLANT DETAILS & NOTES

job no./issue/revision date:

LP22.056.07	REVIEW	7-27-2022
LP22.056.08	REVIEW	8-18-2022
LP22.056.08	TWP. REV.	8-25-2022
LP23.104.10	SITE UPDATE	10-2-2023
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LS25.047.04	SPA	4-15-2025
LS25.047.09	TWP COMMENTS, SITE PLAN UPDATES	9-23-2025

drawn by: **JP, JM, LA**
checked by: **FP**
date: **4-15-2025**
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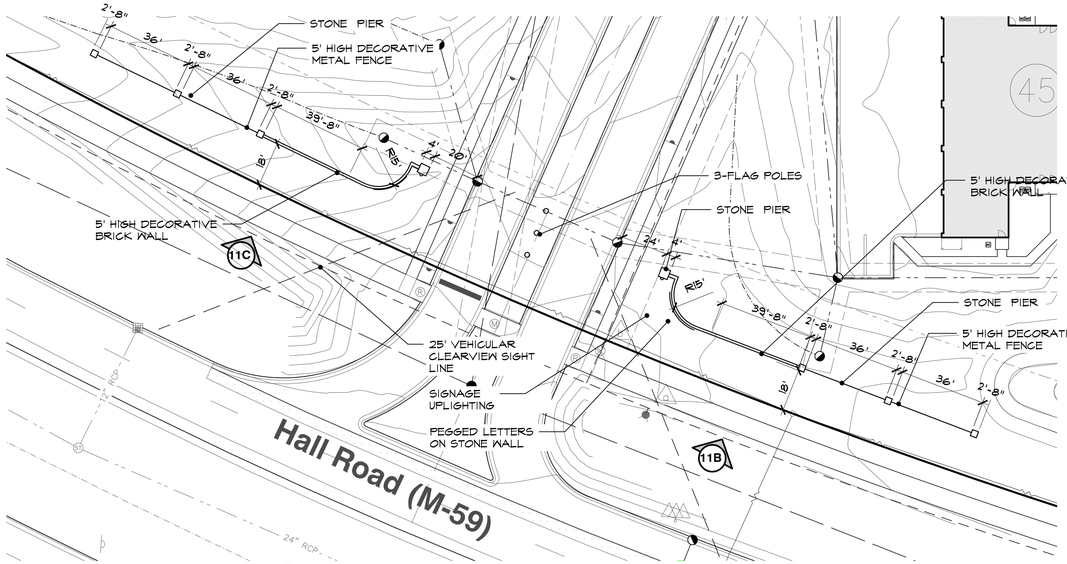
project no:
LS25.047.04

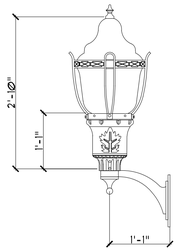
sheet no:
LS-10A of 16



11A entry sign monument site plan
SCALE: 1" =30' - 0"

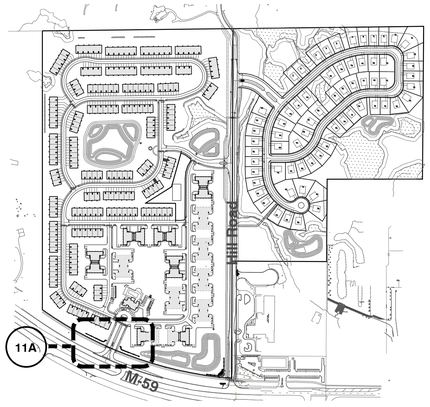
entry wall monument / pier/ signage / notes:

1. LOCATE AND STAKE ALL EXISTING AND PROPOSED UTILITIES PRIOR TO CONSTRUCTION. COORDINATE ANY ADJUSTMENTS WITH LANDSCAPE ARCHITECT.
2. ALL ENTRY WALL LIGHTING SHALL BE CONTROLLED WITH A 'PHOTO-EYE' SWITCH. ALL LIGHTING SHALL BE SHIELDED FROM PUBLIC ROW.'S AND ADJACENT PROPERTIES.
3. SEE LANDSCAPE PLAN FOR PROPOSED PLANTINGS ADJACENT TO PROPOSED ENTRY SIGN MONUMENT ON SHT. L9-8
4. VERIFY SOIL BEARING CAPACITY PRIOR TO TO ENTRY SIGN MONUMENT & PIER CONSTRUCTION. IF SOIL BEARING CAPACITY FALLS BELOW STANDARD REQUIREMENTS, CONSULT STRUCTURAL ENGINEER FOR RECOMMENDATION OF FINAL ENTRY MONUMENT & PIER FOOTING DESIGN.
5. SIGN TEXT AND LOGO TO BE BACK LIGHTED DIMENSIONAL LETTERS. PRIOR TO SIGN INSTALLATION, PERMITS TO BE OBTAINED PER WHITE LAKE TOWNSHIP REQUIREMENTS AND APPROVALS.
6. ALL INFORMATION CONTAINED HEREIN IS SUBJECT TO APPROVAL, AND PERMITS PERMITS TO BE OBTAINED PRIOR TO CONSTRUCTION.
7. FOOTINGS SHALL BEAR ON FIRM, UNDISTURBED SOIL WITH AN ASSUMED SAFE BEARING CAPACITY OF 2000 P.S.I. IF SOIL OF THIS CAPACITY IS NOT FOUND AT THE ELEVATIONS INDICATED, FOOTINGS SHALL BE ENLARGED OR LOWERED AT THE DIRECTION OF THE ARCHITECT. VERIFY FOUNDATION SOIL BEARING PRESSURE IN FIELD BY SOILS ENGINEER.
8. MINIMUM CONCRETE STRENGTH TO BE 3000 P.S.I. @ 28 DAYS, U.O.N.: SLABS SHALL BE 3500 P.S.I. MIN. U.O.N.: EXPOSED CONCRETE SHALL BE 4000 P.S.I. WITH 6% ± 1% ENTRAINED AIR U.O.N.
9. ALL CONCRETE WORK AND PLACEMENT SHALL CONFORM TO THE LATEST RECOMMENDATIONS OF A.C.I.
10. PROVIDE DOWELS INTO FOUNDATION TO MATCH SIZE AND SPACING OF VERTICAL REINFORCEMENT AT ALL WALLS, UNLESS OTHERWISE NOTED.
11. PROVIDE MINIMUM 3" CONCRETE COVER FOR REINFORCEMENT BARS BELOW GRADE AND MINIMUM 2" CONCRETE COVER FOR REINFORCEMENT BARS ABOVE GRADE.

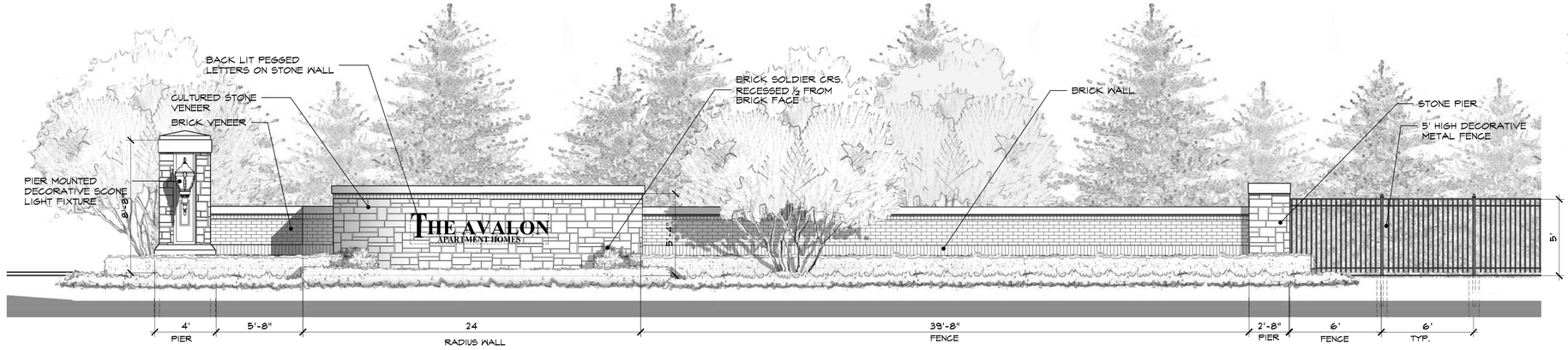


decorative acorn light fixture
(2-CONDITIONS)

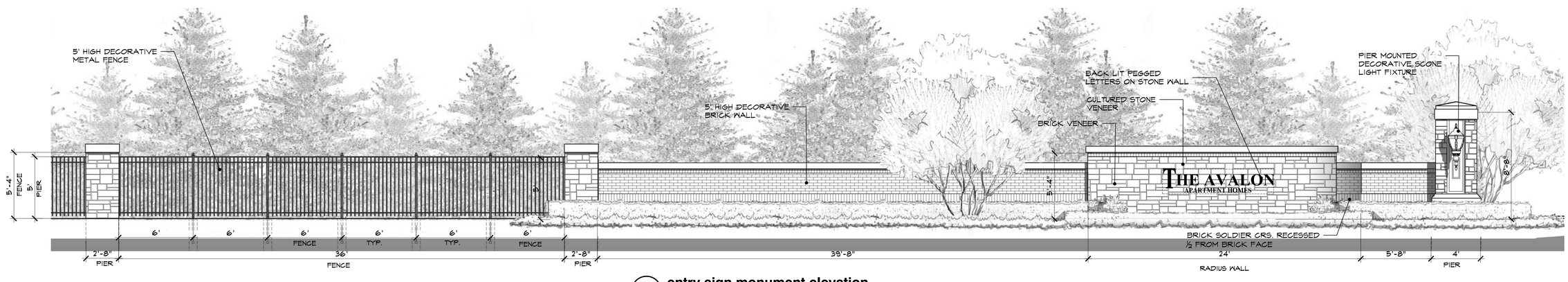
LIGHTING SHALL BE AN APPROVED FIXTURE BY THE INTERNATIONAL DARK SKY ASSOCIATION (IDA) AS A DARK SKY FRIENDLY LIGHT.



key reference location map
NO SCALE



11B entry sign monument elevation
SCALE: 1/4" =1' - 0"



11C entry sign monument elevation
SCALE: 1/4" =1' - 0"

FPA
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fax. (248) 557-5416

seal:

STATE OF MICHIGAN
FELINO A. PASCUAL
LANDSCAPE ARCHITECT
No. 4333
REGISTERED LANDSCAPE ARCHITECT

client:

WHITE LAKE HILL, LLC
31550 Northwestern Hwy
Farmington Hills, Michigan

project:

AVALON
A PLANNED MIXED USE RESIDENTIAL COMMUNITY

project location:

White Lake Twp. Michigan
Highland Road & Hill Road

sheet title:

ENTRANCE SIGN MONUMENT

job no./issue/revision date:

LP22.056.07	REVIEW	7-27-2022
LP22.056.08	REVIEW	8-18-2022
LP22.056.08	TWP. REV.	8-25-2022
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LS25.047.04	SPA	4-15-2025
LS25.047.09	TWP COMMENTS, SITE PLAN UPDATES	9-23-2025

drawn by:
JP, JM, LA

checked by:
FP

date:
4-15-2025

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For free location of public utility lines

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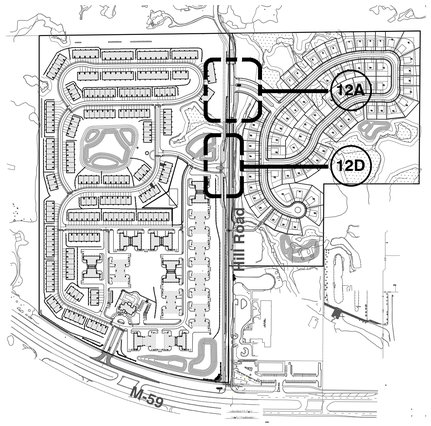
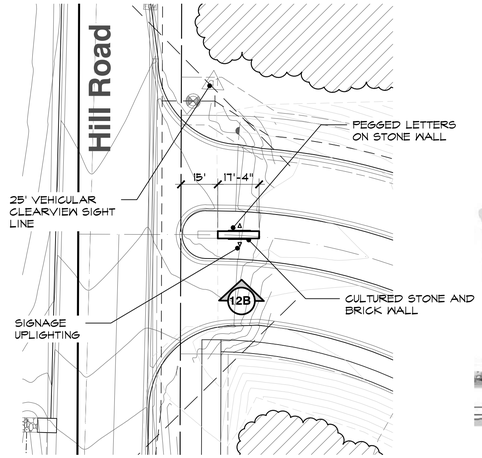
project no:
LS25.047.04

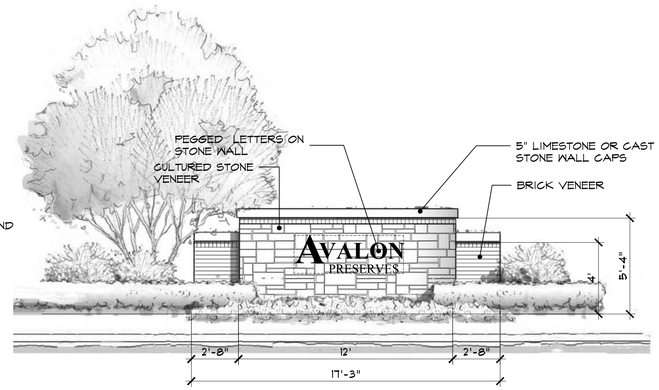
sheet no:
LS-11 of 16



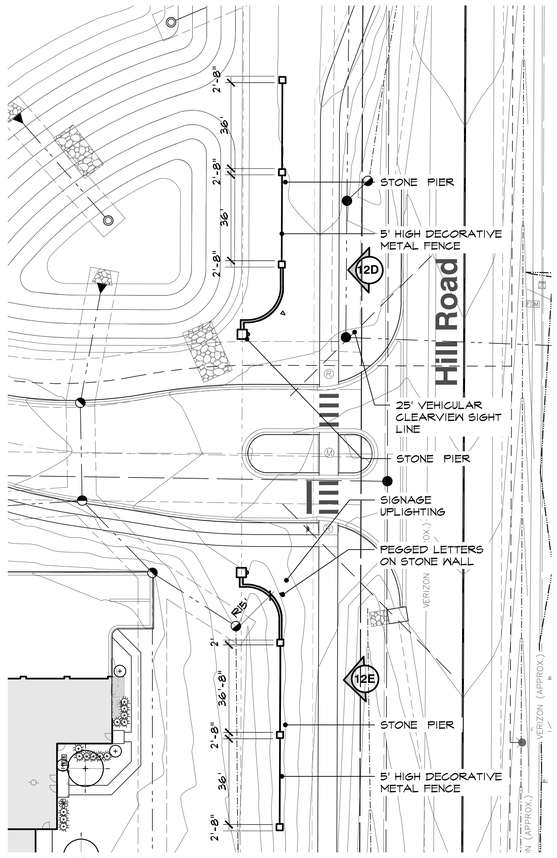
key reference location map
NO SCALE



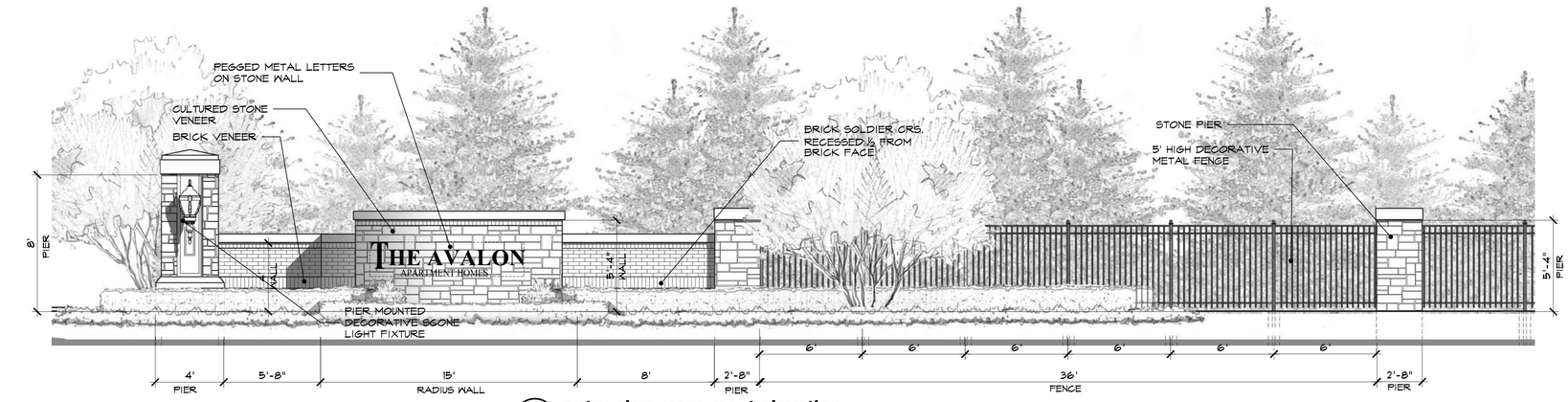
12A entry sign monument site plan
SCALE: 1" =20' - 0"



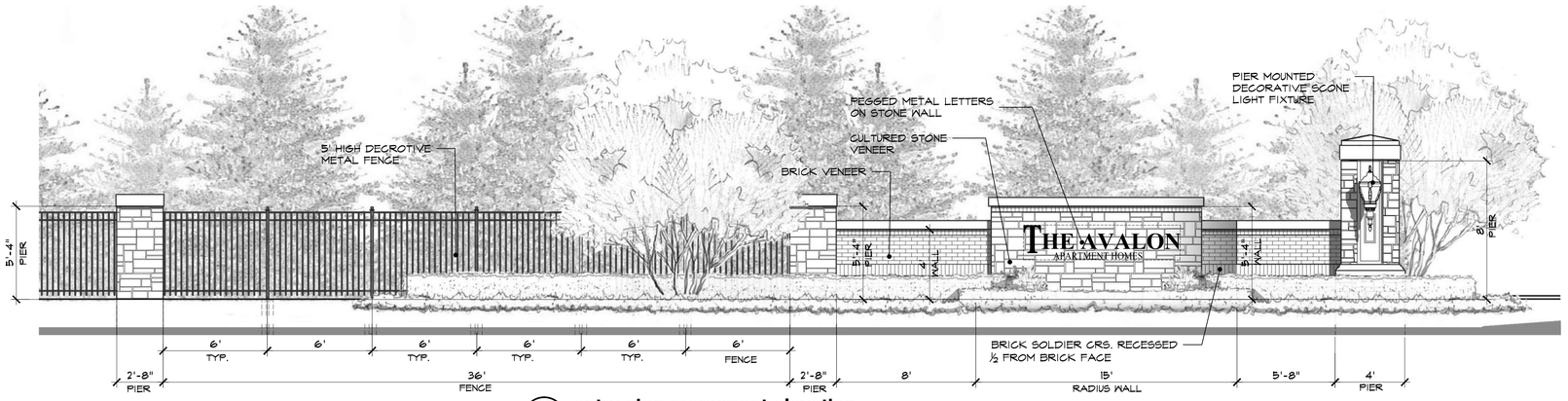
12B blvd. entry sign monument elevation
SCALE: 1/4" =1' - 0"



12C entry sign monument site plan
SCALE: 1" =20' - 0"



12D entry sign monument elevation
SCALE: 1/4" =1' - 0"



12E entry sign monument elevation
SCALE: 1/4" =1' - 0"

FELINO A. PASCUAL and ASSOCIATES
Community Land Planner and registered Landscape Architect
24333 Orchard Lake Rd, Suite G
Farmington Hills, MI 48336
ph. (248) 557-5588
fax. (248) 557-5416

seal:

STATE OF MICHIGAN — FELINO A. PASCUAL — LANDSCAPE ARCHITECT — No. 4833 — REGISTERED — LANDSCAPE ARCHITECT

client:

WHITE LAKE HILL, LLC
31550 Northwestern Hwy
Farmington Hills, Michigan

project:

AVALON
A PLANNED MIXED USE RESIDENTIAL COMMUNITY

project location:

White Lake Twp. Michigan
Highland Road & Hill Road

sheet title:

ENTRANCE SIGN MONUMENT

job no./issue/revision date:

LP22.056.07	REVIEW	7-27-2022
LP22.056.08	REVIEW	8-18-2022
LP22.056.08	TWP. REV.	8-25-2022
LP23.104.10	SITE UPDATE	10-2-2023
LS24.030.04	REVIEW	4-8-2024
LS24.030.05	SPA	5-20-2024
LS25.047.04	SPA	4-15-2025
LS25.047.09	TWP COMMENTS, SITE PLAN UPDATES	9-23-2025

drawn by: **JP, JM, LA**
checked by: **FP**
date: **4-15-2025**

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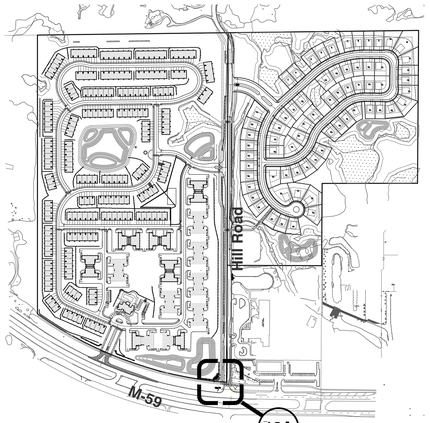
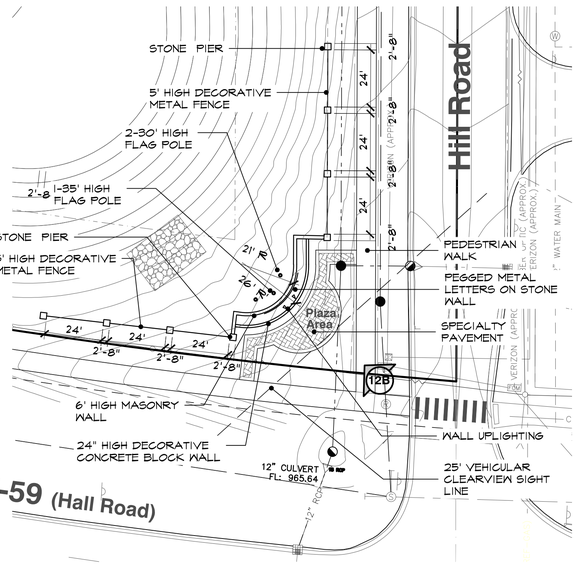
project no: **LS25.047.04**

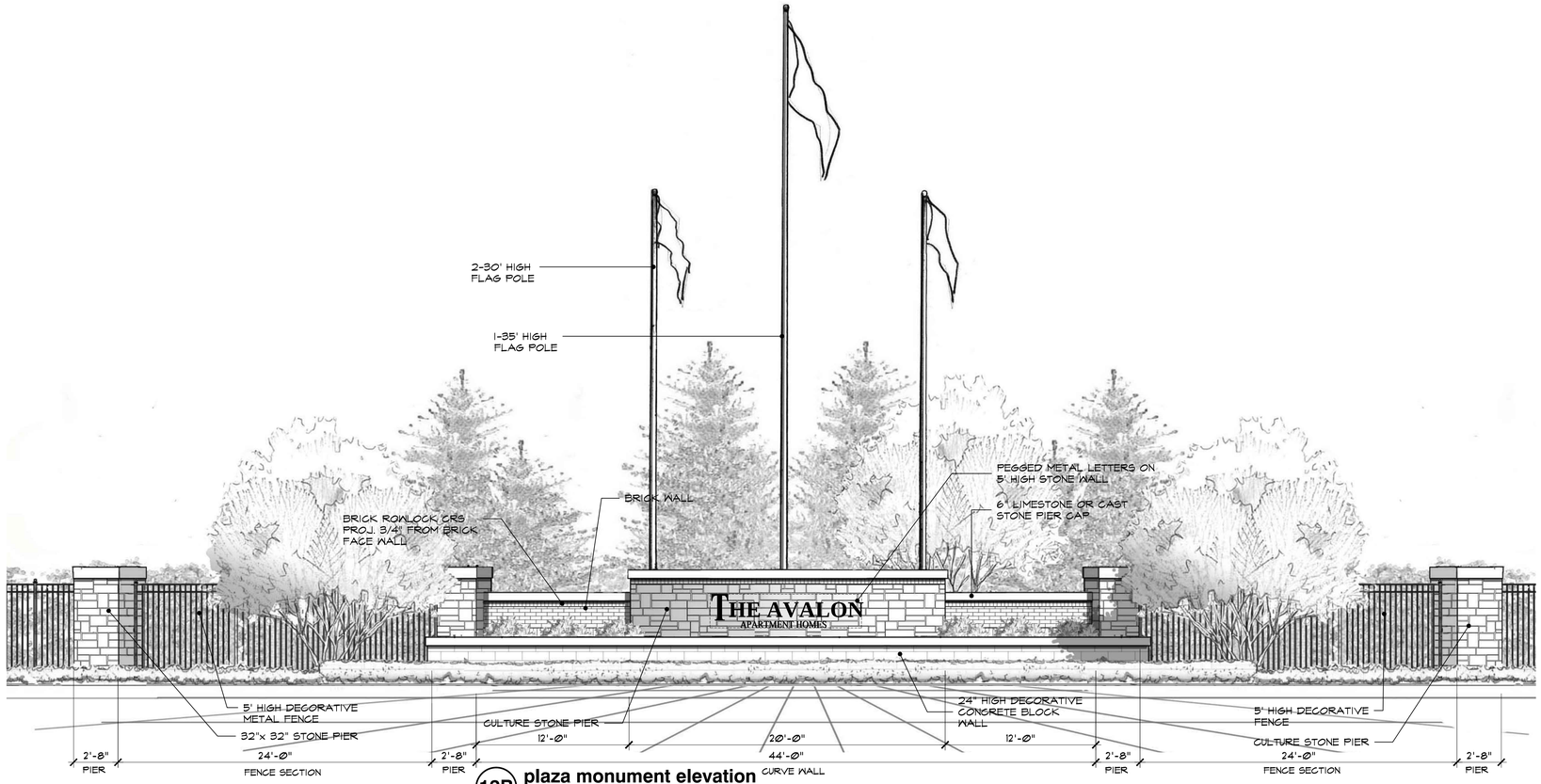
sheet no: **LS-12 of 16**



key reference location map
NO SCALE



13A plaza monument site plan
SCALE: 1" =30' - 0"



12B plaza monument elevation
SCALE: 1/4" =1' - 0"

FELINO A. PASCUAL and ASSOCIATES
Community Land Planner and registered Landscape Architect
24333 Orchard Lake Rd, Suite G
Farmington Hills, MI 48336
ph. (248) 557-5588
fax. (248) 557-5416

seal:

client:

WHITE LAKE HILL, LLC
31550 Northwestern Hwy
Farmington Hills, Michigan

project:

AVALON
A PLANNED MIXED USE RESIDENTIAL COMMUNITY

project location:

White Lake Twp. Michigan
Highland Road & Hill Road

sheet title:
GATEWAY ENTRANCE SIGN MONUMENT

job no./issue/revision date:

LP22.056.07	REVIEW	7-27-2022
LP22.056.08	REVIEW	8-18-2022
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drawn by:
JP, JM, LA

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FP

date:
4-15-2025

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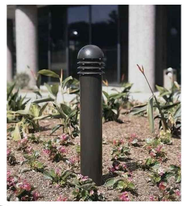
project no:
LS25.047.04

sheet no:
LS-13 of 16

A decorative pole and light

DECORATIVE BLVD. ISLAND SITE FIXTURE LIGHTS AND ALUMINUM POLE.



B bollard light

BY LITHONIA LIGHTS OR EQUAL MODEL. DSXB LED (D-SERIES LED BOLLARD 8"DIA.X42" HST.) OR EQUAL

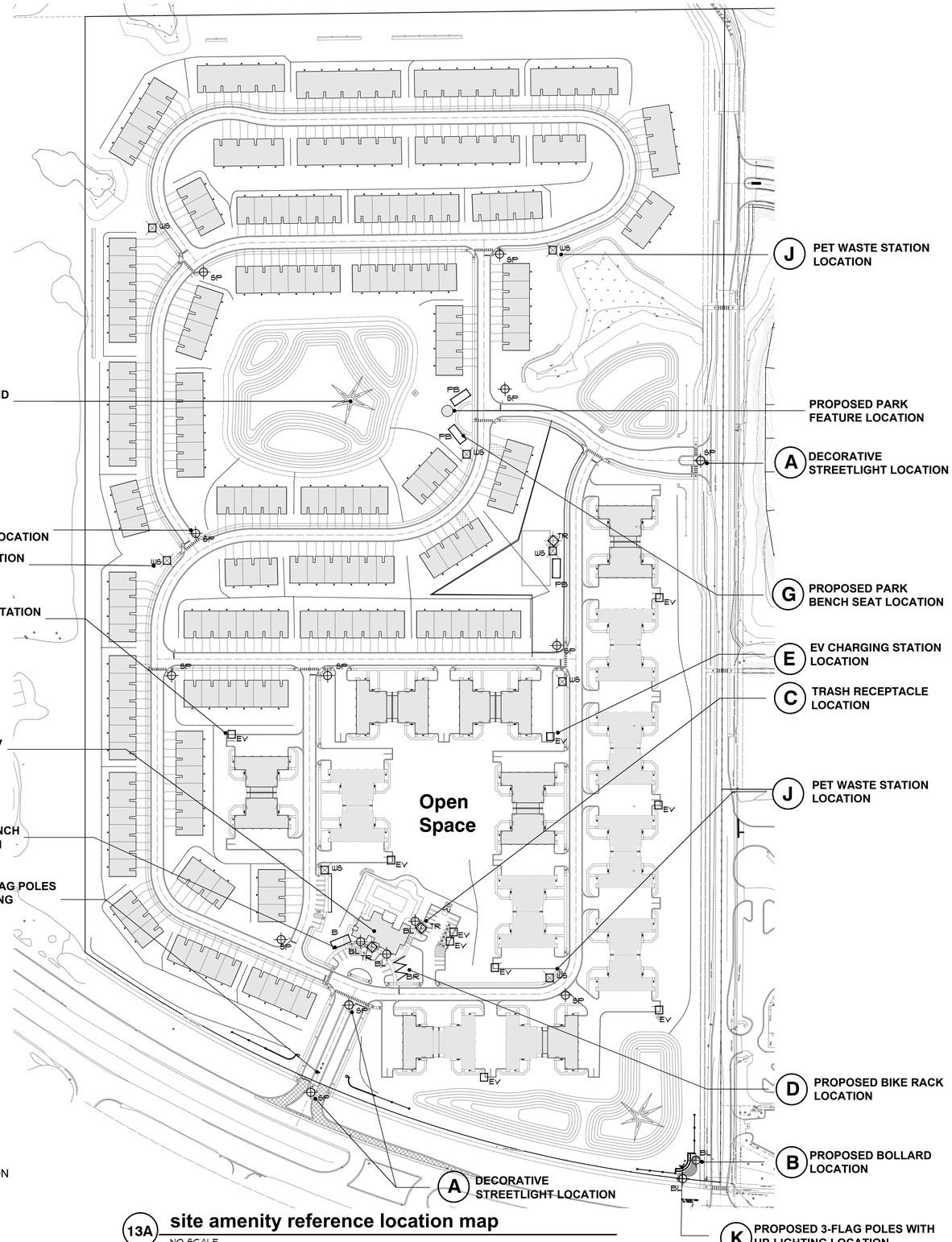
C trash receptacle

MANUFACTURED BY BY ANOVA, INC.
WWW.ANOVAFURNISHINGS.COM
DESCRIPTION: 32 GAL
FINISH: TEXTURE PEWTER

D bicycle rack

BIKE RACK BY DUMOR, INC. MODEL NO. 130-20 (S-2 SURFACE PLATE MOUNT) 2 3/8" O.D. BLACK POWER-COATED LOOP OR EQUAL

E EV charging station



I PROPOSED POND FOUNTAIN

A DECORATIVE STREETLIGHT LOCATION

J PET WASTE STATION LOCATION

E EV CHARGING STATION LOCATION

F PROPOSED BENCH SEAT LOCATION

K PROPOSED 3-FLAG POLES WITH UP-LIGHTING LOCATION

J PET WASTE STATION LOCATION

PROPOSED PARK FEATURE LOCATION

A DECORATIVE STREETLIGHT LOCATION

G PROPOSED PARK BENCH SEAT LOCATION

E EV CHARGING STATION LOCATION

C TRASH RECEPTACLE LOCATION

J PET WASTE STATION LOCATION

D PROPOSED BIKE RACK LOCATION

B PROPOSED BOLLARD LOCATION

A DECORATIVE STREETLIGHT LOCATION

K PROPOSED 3-FLAG POLES WITH UP-LIGHTING LOCATION

site amenity key

- BR — BIKE RACK
- FB — PARK BENCH SEAT
- B — BENCH SEAT
- BL — BOLLARD LIGHT
- SP — STREET POLE LIGHT
- WS — PET WASTE STATION
- TR — TRASH RECEPTACLE
- EV — EV CHANGING STATION

13A site amenity reference location map

NO SCALE

K flag pole with uplighting

BY ZERO WASTE USA
12316 WORLD TRADE DRIVE #102
SAN DIEGO, CA. 92128
PH. 800-784-2563
WWW.ZEROWASTEUSA.COM

MODEL NO. JJBOO6-BLACK
DESCRIPTION: SENTRY DOG WASTE STATION (13"H X 13"W)

J pet waste station

I pond fountain

H dog walk

G park bench seating

6' WIDE PARK BENCH SEAT BY DUMOR, INC.
MODEL NO. 34-60D (S-1)
SUPPORT: S-1 EMBEDMENT
FINISH: BLACK POWER-COATED

F decorative bench seating

MANUFACTURED BY BY ANOVA, INC.
WWW.ANOVAFURNISHINGS.COM
MODEL NO. LEXC6
DESCRIPTION: 6' WIDE CONTOUR BENCH
FINISH: TEXTURE PEWTER

FPA
FELINO A. PASCUAL and ASSOCIATES
Community Land Planner and registered Landscape Architect
24333 Orchard Lake Rd, Suite G
Farmington Hills, MI 48336
ph. (248) 557-5588
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WHITE LAKE HILL, LLC
31550 Northwestern Hwy
Farmington Hills, Michigan

project:

AVALON
A PLANNED MIXED USE RESIDENTIAL COMMUNITY

project location:

White Lake Twp. Michigan
Highland Road & Hill Road

sheet title:

SITE AMENITY PLAN

job no./issue/revision date:

LP22.056.07	REVIEW	7-27-2022
LP22.056.08	REVIEW	8-18-2022
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drawn by: JP, JM, LA

checked by: FP

date: 4-15-2025

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project no: LS25.047.04

sheet no: LS-14 of 16

detention basin seed mix

A WETLAND SEED MIX FOR SATURATED SOILS IN A DETENTION POND OR FOR SEEDING A SATURATED BASIN, THIS MIX WILL TOLERATE HIGHLY FLUCTUATING WATER LEVELS AND POOR WATER QUALITY ASSOCIATED WITH URBAN STORMWATER WETLANDS AND PONDS. FOR DETENTION BASINS THAT EXPERIENCE LONG, DRY PERIODS, USE THE ECONOMY PRAIRIE SEED MIX IN THE UPPER THIRD TO HALF OF THE BASIN AREA IN COMBINATION WITH THIS MIX. THIS SEED MIX INCLUDES AT LEAST 10 OF 12 NATIVE PERMANENT GRASS AND SEDGE SPECIES AND 13 OF 17 NATIVE FORB SPECIES. APPLY AT 36.22 PLS POUNDS PER ACRE.

BOTANICAL NAME	COMMON NAME	PLS OZ/ACRE
PERMANENT GRASSES/SEDGES		
BOLBOSCHOENUS FLUVIATILIS	RIVER BULRUSH	1.00
CAREX CRISTATELLA	CRESTED OVAL SEDGE	0.50
CAREX LURIDA	BOTTLEBRUSH SEDGE	3.00
CAREX VULPINOIDEA	BROWN FOX SEDGE	2.00
ELYMUS VIRGINICUS	VIRGINIA WILD RYE	24.00
GLYCERIA STRIATA	FOWL MANNA GRASS	1.00
JUNCUS EFFUSUS	COMMON RUSH	1.00
LEERSIA ORYZOIDES	RICE CUT GRASS	1.00
PANICUM VIRGATUM	SWITCH GRASS	2.00
SCHOENOPLECTUS TABERNAEMONTANI	GREAT BULRUSH	3.00
SCIRPUS ATROVIRENS	DARK GREEN RUSH	2.00
SCIRPUS CYPERINUS	WOOL GRASS	1.00
	TOTAL	41.50
TEMPORARY COVER		
AVENA SATIVA	COMMON OAT	512.00
	TOTAL	512.00
FORBS		
ALISMA SUBCORDATUM	COMMON WATER PLANTAIN	2.50
ASCLEPIAS INCARNATA	SWAMP MILKWEED	2.00
BIDENS SPP. BIDENS	SPECIES	2.00
EUPATORIUM PERFOLIATUM	COMMON BONESET	1.00
HELENIUM AUTUMNALE	SNEEZEWEED	2.00
IRIS VIRGINICA V. SHREVEI	BLUE FLAG	4.00
LYCOPUS AMERICANUS	COMMON WATER HOREHOUND	0.50
MIMULUS RINGENS	MONKEY FLOWER	1.00
PENTHORUM SEDOIDES	DITCH STONECROP	0.50
PERSICARIA SPP.	PINKWEED SPECIES	2.00
RUDBECKIA SUBTOMENTOSA	SWEET BLACK-EYED SUSAN	1.00
RUDBECKIA TRILOBA	BROWN-EYED SUSAN	1.50
SAGITTARIA LATIFOLIA	COMMON ARROWHEAD	1.00
SENNA HEBECARPA	WILD SENNA	2.00
SYMPHYOTRICHUM LANCEOLATUM	PANICLED ASTER	0.50
SYMPHYOTRICHUM NOVAE-ANGLIAE	NEW ENGLAND ASTER	0.50
THALICTRUM DASYCARPUM	PURPLE MEADOW RUE	2.00
	TOTAL	26.00

economy prairie seed mix

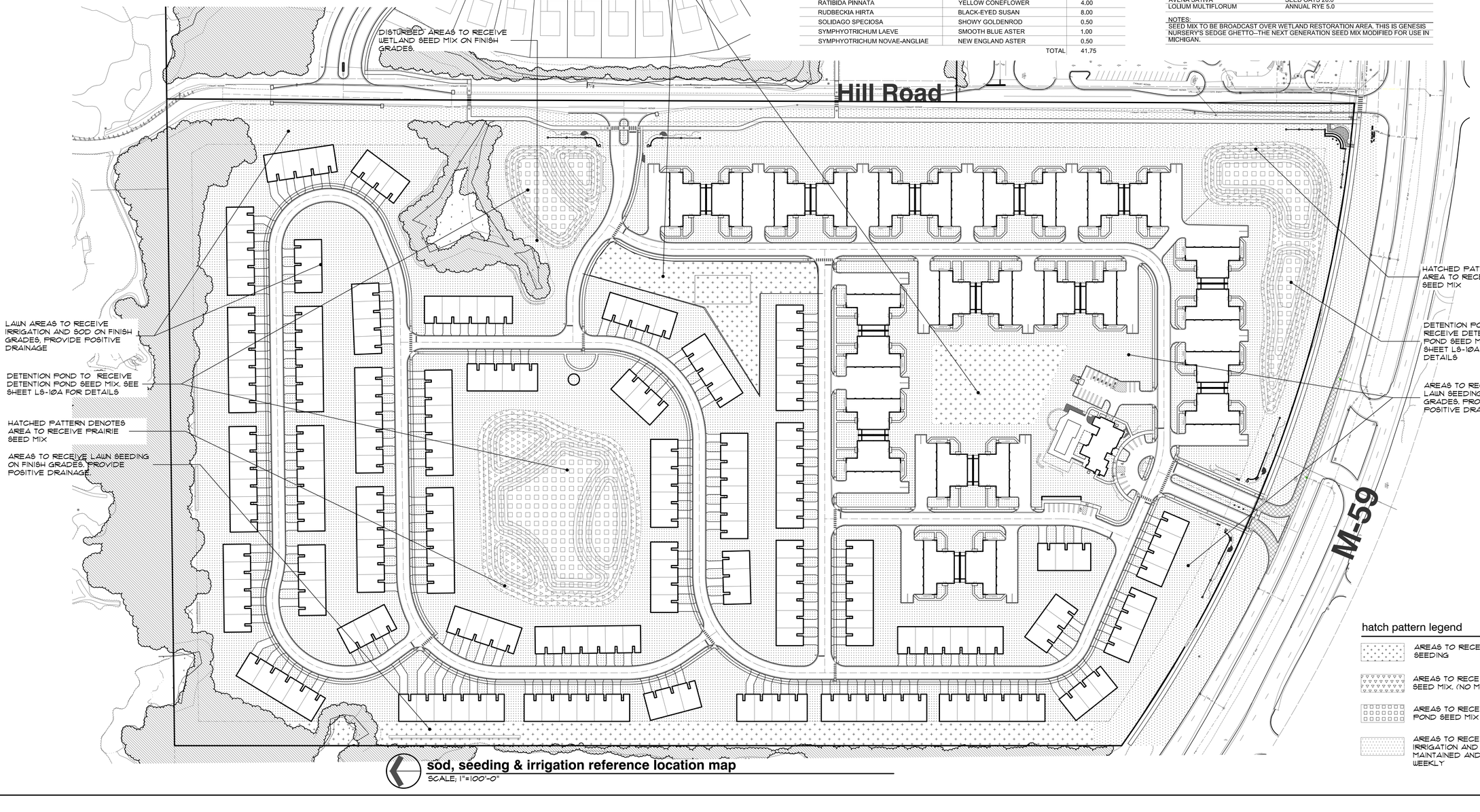
THIS PRAIRIE SEED MIX OFFERS AN ECONOMICAL WAY TO ESTABLISH A PRAIRIE. IN ADDITION TO NATIVE PRAIRIE GRASSES, FLOWERING SPECIES PROVIDE COLOR THROUGHOUT THE GROWING SEASON AND FOOD SOURCES FOR BIRDS AND BUTTERFLIES. ADDING SEED OR PLANT PLUGS AT A LATER DATE IS A WONDERFUL WAY TO INCREASE A PRAIRIE'S RICHNESS AND DIVERSITY. THIS SEED MIX INCLUDES AT LEAST 6 OF 7 NATIVE PERMANENT GRASS AND SEDGE SPECIES AND 10 OF 13 NATIVE FORB SPECIES. APPLY AT 40.95 PLS POUNDS PER ACRE.

BOTANICAL NAME	COMMON NAME	PLS OZ/ACRE
PERMANENT GRASSES/SEDGES		
ANDROPOGON GERARDII	BIG BLUESTEM	12.00
BOUTELOUA CURTIPENDULA	SIDE-OATS GRAMA	16.00
CAREX SPP.	PRAIRIE SEDGE SPECIES	3.00
ELYMUS CANADENSIS	CANADA WILD RYE	24.00
PANICUM VIRGATUM	SWITCH GRASS	2.50
SCHIZACHYRIUM SCOPARIUM	LITTLE BLUESTEM	32.00
SORGHASTRUM NUTANS	INDIAN GRASS	12.00
	TOTAL	101.50
TEMPORARY COVER		
AVENA SATIVA	COMMON OAT 512.00	
FORBS		
ASCLEPIAS SYRIACA	COMMON MILKWEED	1.00
ASCLEPIAS TUBEROSA	BUTTERFLY WEED	1.00
CHAMAECRISTA FASCICULATA	PARTRIDGE PEA	10.00
COREOPSIS LANCEOLATA	SAND COREOPSIS	6.00
ECHINACEA PURPUREA	BROAD-LEAVED PURPLE CONEFLOWER	8.00
HELIOPSIS HELIANTHOIDES	FALSE SUNFLOWER	0.25
MONARDA FISTULOSA	WILD BERGAMOT	0.50
PENSTEMON DIGITALIS	FOXGLOVE BEARD TONGUE	1.00
RATIBIDA PINNATA	YELLOW CONEFLOWER	4.00
RUDBECKIA HIRTA	BLACK-EYED SUSAN	8.00
SOLIDAGO SPECIOSA	SHOWY GOLDENROD	0.50
SYMPHYOTRICHUM LAEVE	SMOOTH BLUE ASTER	1.00
SYMPHYOTRICHUM NOVAE-ANGLIAE	NEW ENGLAND ASTER	0.50
	TOTAL	41.75

wetland seed mix:

SPECIES	COMMON NAME	RATE (LBS./AC.)
ALISMA SUBCORDATUM	COMMON WATER PLANTAIN	0.375
ASCLEPIAS INCARNATA	SWAMP MILKWEED	0.062
ASTER NOVA-ANGLIAE	NEW ENGLAND ASTER	0.062
ASTER SIMPLEX	PANICLED ASTER	0.031
BIDENS CERNUA	NODDING BUR MARIGOLD	0.312
BIDENS FRONDOSA	COMMON BEGGAR'S TICK	0.125
BOLTONIA LATISQUAMA	FALSE ASTER	0.188
CAREX BEBBII	BEBB'S SEDGE	0.125
CAREX COMOSA	BOTTLEBRUSH GRASS	0.125
CAREX LUPULINA C	COMMON HOP SEDGE	0.062
CAREX STIPATA	AWL-FRUITED SEDGE	0.125
CAREX SCOPARIA	POINTED BROOM SEDGE	0.125
CAREX VULPINOIDEA	FOX SEDGE	0.500
ELEOCHARIS SPECIES	SPIKE RUSH SPECIES	0.062
ELYMUS VIRGINICUS	VIRGINIA WILD RYE	1.500
EUPATORIUM MACULATUM	SPOTTED JOE PYE WEED	0.125
GLYCERIA STRIATA	FOWL MANNA GRASS	0.125
HELENIUM AUTUMNALE	SNEEZEWEED	0.250
IRIS VIRGINICA	SOUTHERN BLUE FLAG	0.188
JUNCUS SPECIES	RUSH SPECIES	0.062
LEERSIA ORYZOIDES	RICE CUT GRASS	0.188
LUDWIGIA POLYCARPA	FALSE LOOSESTRIFE	0.001
MIMULUS RINGENS	MONKEYFLOWER	0.031
ONOCLEA SENSIBILIS	SENSITIVE FERN	0.031
PENTHORUM SEDOIDES	DITCH STONECROP	0.001
POLYGONUM HYDROPIPEROIDES	MILD WATER PEPPER	0.750
RUDBECKIA LACINIATA	GREEN CONEFLOWER	0.125
SAGITTARIA LATIFOLIA	DUCK POTATO	0.062
SCIRPUS ATROVIRENS	DARK GREEN RUSH	1.250
SCIRPUS FLUVIATILIS	RIVER BULRUSH	0.125
SCIRPUS PENDULUS	RED BULRUSH	0.031
SCIRPUS VALIDUS	SOFT STEM BULRUSH	0.031
SPARGANIUM EURYCARPUM	COMMON BUR-REED	0.062
VERONONIA FASCICULATA	COMMON IRONWEED	0.062
VERBENA HASTATA	BLUE VERVAIN	0.125
	TOTAL	7.404
COVER CROP		
AVENA SATIVA	SEED OATS 20.0	
LOLIUM MULTIFLORUM	ANNUAL RYE 5.0	

NOTES:
SEED MIX TO BE BROADCAST OVER WETLAND RESTORATION AREA. THIS IS GENESIS NURSERY'S SEDGE GHETTO--THE NEXT GENERATION SEED MIX MODIFIED FOR USE IN MICHIGAN.



sod, seeding & irrigation reference location map
SCALE; 1"=100'-0"

FPA
FELINO A. PASCUAL and ASSOCIATES
Community Land Planner and registered Landscape Architect
24333 Orchard Lake Rd, Suite G
Farmington Hills, MI 48336
ph. (248) 557-5588
fax. (248) 557-5416

seal:
STATE OF MICHIGAN · FELINO A. PASCUAL · LANDSCAPE ARCHITECT · No. 4333 · REGISTERED · LANDSCAPE ARCHITECT

client:
WHITE LAKE HILL, LLC
31550 Northwestern Hwy
Farmington Hills, Michigan

project:
AVALON
A PLANNED MIXED USE RESIDENTIAL COMMUNITY

project location:
White Lake Twp. Michigan
Highland Road & Hill Road

sheet title:
SOD & SEEDING REFERENCE PLAN

job no./issue/revision date:

LP22.056.07	REVIEW	7-27-2022
LP22.056.08	REVIEW	8-18-2022
LP22.056.08	TWP. REV.	8-25-2022
LP23.104.10	SITE UPDATE	10-2-2023
LS24.030.04	REVIEW	4-8-2024
LS24.030.05	SPA	5-20-2024
LS25.047.04	SPA	4-15-2025
LS25.047.09	TWP COMMENTS, SITE PLAN UPDATES	9-23-2025

drawn by:
JP, JM, LA
checked by:
FP
date:
4-15-2025

notice:
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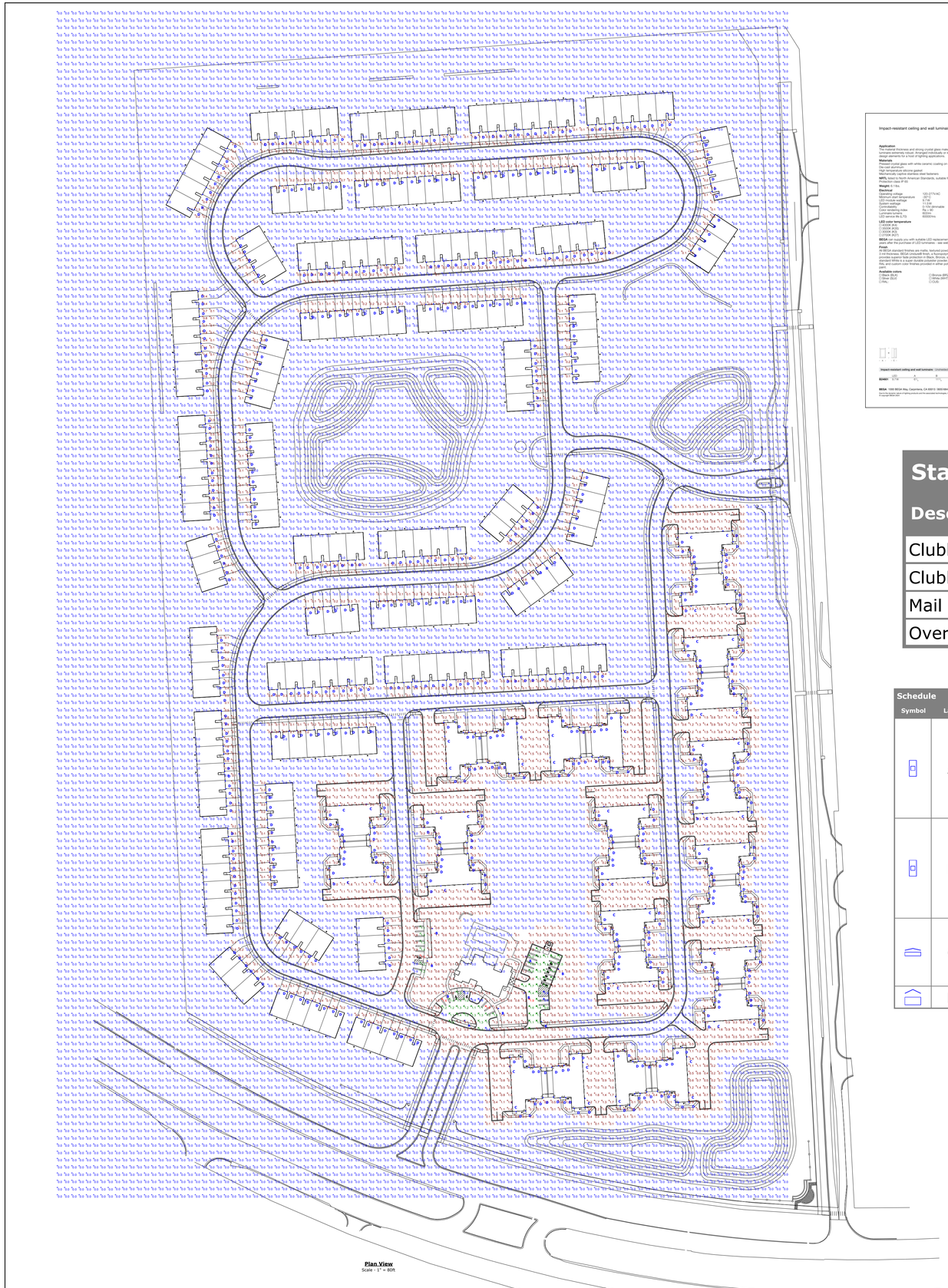
3 WORKING DAYS BEFORE YOU DIG CALL MISS DIG 1-800-482-7171 For free location of public utility lines

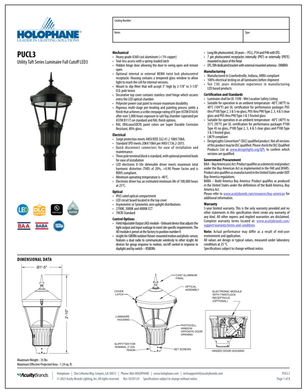
The location and elevations of existing underground utilities as shown on this drawing are only approximate. no guarantee is either expressed or implied as to the completeness of accuracy. contractor shall be exclusively responsible for determining the exact location and elevation prior to the start of construction

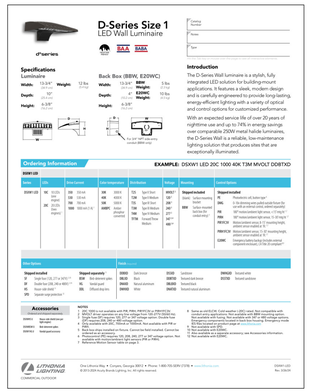
project no:
LS25.047.04

sheet no:
LS-15 of 16



Plan View
Scale - 1" = 80ft





Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
Clubhouse Parking	X	1.2 fc	1.6 fc	0.8 fc	2.0:1	1.5:1
Clubhouse Parking	X	1.3 fc	1.9 fc	0.8 fc	2.4:1	1.6:1
Mail Kiosk Parking	□	1.2 fc	1.5 fc	0.9 fc	1.7:1	1.3:1
Overall	+	0.1 fc	3.2 fc	0.0 fc	N/A	N/A

Schedule

Symbol	Label	QTY	Manufacturer	Catalog	Description	Lamp Output	LLF	Input Power	Mounting Height
	A	1	Holophane	PUCL3 P40 30K xxxx FC5 CLGL	Taft LED Post-Top Full Cutoff Lantern 70W 3000 series CCT Type 5 distribution zero uplight Clear tempered glass lens No HSS, 3000K	8552	0.9	69.03	20'
	B	8	Holophane	PUCL3 P30 30K xxxx FC4 CLGL	Taft LED Post-Top Full Cutoff Lantern 60W 3000 series CCT Type 4 distribution zero uplight Clear tempered glass lens No HSS, 3000K	6134	0.9	58.5	20'
	C	52	Lithonia Lighting	DSXW1 LED 20C 530 30K TFTM MVOLT	DSXW1 LED WITH (2) 10 LED LIGHT ENGINES, TYPE TFTM OPTIC, 3000K, @ 530mA.	4066	0.9	34.9	13'
	D	679	BEGA		24 601 K3 3000K	603	0.9	12	6'

General Note
1. SEE SCHEDULE FOR LUMINAIRE MOUNTING HEIGHT.
2. SEE LUMINAIRE SCHEDULE FOR LIGHT LOSS FACTOR.
3. CALCULATIONS ARE SHOWN IN FOOTCANDLES AT: 0' - 0"

THE ENGINEER AND/OR ARCHITECT MUST DETERMINE APPLICABILITY OF THE LAYOUT TO EXISTING / FUTURE FIELD CONDITIONS. THIS LIGHTING LAYOUT REPRESENTS ILLUMINATION LEVELS CALCULATED FROM LABORATORY DATA TAKEN UNDER CONTROLLED CONDITIONS IN ACCORDANCE WITH ILLUMINATING ENGINEERING SOCIETY APPROVED METHODS. ACTUAL PERFORMANCE OF ANY MANUFACTURER'S LUMINAIRE MAY VARY DUE TO VARIATION IN ELECTRICAL VOLTAGE, TOLERANCE IN LAMPS, AND OTHER VARIABLE FIELD CONDITIONS. MOUNTING HEIGHTS INDICATED ARE FROM GRADE AND/OR FLOOR UP.

THESE LIGHTING CALCULATIONS ARE NOT A SUBSTITUTE FOR INDEPENDENT ENGINEERING ANALYSIS OF LIGHTING SYSTEM SUITABILITY AND SAFETY. THE ENGINEER AND/OR ARCHITECT IS RESPONSIBLE TO REVIEW FOR MICHIGAN ENERGY CODE AND LIGHTING QUALITY COMPLIANCE.

UNLESS EXEMPT, PROJECT MUST COMPLY WITH LIGHTING CONTROLS REQUIRMENTS DEFINED IN ASHRAE 90.1 2019. FOR SPECIFIC INFORMATION CONTACT GBA CONTROLS GROUP AT ASG@GASSERBUSH.COM OR 734-266-6705.

Alternates Note
THE USE OF FIXTURE ALTERNATES MUST BE RESUBMITTED TO THE CITY FOR APPROVAL.

Drawing Note
THIS DRAWING WAS GENERATED FROM AN ELECTRONIC IMAGE FOR ESTIMATION PURPOSE ONLY. LAYOUT TO BE VERIFIED IN FIELD BY OTHERS.

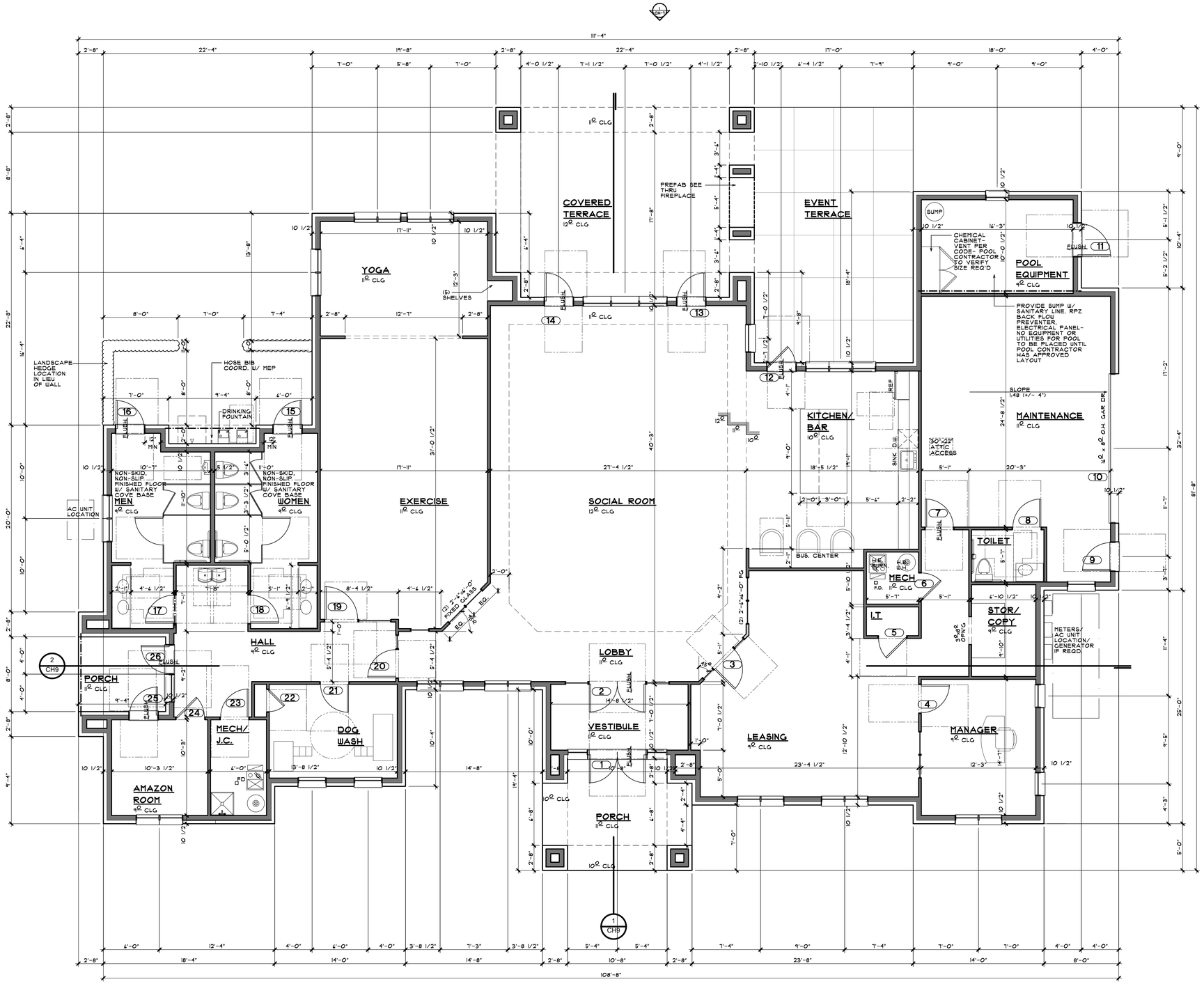
Ordering Note
FOR INQUIRIES CONTACT GASSER BUSH AT QUOTES@GASSERBUSH.COM OR 734-266-6705.

Mounting Height Note
MOUNTING HEIGHT IS MEASURED FROM GRADE TO FACE OF FIXTURE. POLE HEIGHT SHOULD BE CALCULATED AS THE MOUNTING HEIGHT LESS BASE HEIGHT.

WHITE LAKE AVALON APARTMENTS
WHITE LAKE, MICHIGAN
GASSER BUSH ASSOCIATES
WWW.GASSERBUSH.COM

Designer KS
Date 09/22/2025
Scale Not to Sc
Drawing #24-311

NOTE: STRUCTURE SHOWN FOR REFERENCE ONLY. REFER TO STRUCTURAL DRAWINGS BY OTHERS FOR ADDITIONAL INFORMATION.



FIRST FLOOR PLAN

SCALE: 3/16" = 1'-0"

SQUARE FOOTAGE	
IST FLOOR	4495 SQ. FT.
MAINT. AREA	540 SQ. FT
TOTAL	5035 SQ. FT.
TOTAL EXTERIOR	5428 SQ. FT.

1 FLOOR PLAN

SCALE: 3/16" = 1'-0"

ALL INTERIOR PARTITION DIMENSIONS ARE 3 1/2" UNLESS NOTED OTHERWISE.

BEFORE CONSTRUCTION OBTAIN WINDOW & DOOR ROUGH OPENING SIZES FROM WINDOW/DOOR SUPPLIER.

TRUSS DESIGNER/FABRICATOR SEE SHEET #2 FOR ADDITIONAL NOTES & INFORMATION

SEE SHEET #T-1 THRU L-1 FOR ADDITIONAL NOTES REGARDING DRAWINGS & CONSTRUCTION.

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SHEET TITLE: FIRST FLOOR PLAN

PRELIMINARY

CLIENT/PROJECT: SHAPIRO DEVELOPMENT
COMMUNITY BUILDING
GENOA TOWNSHIP, MICHIGAN

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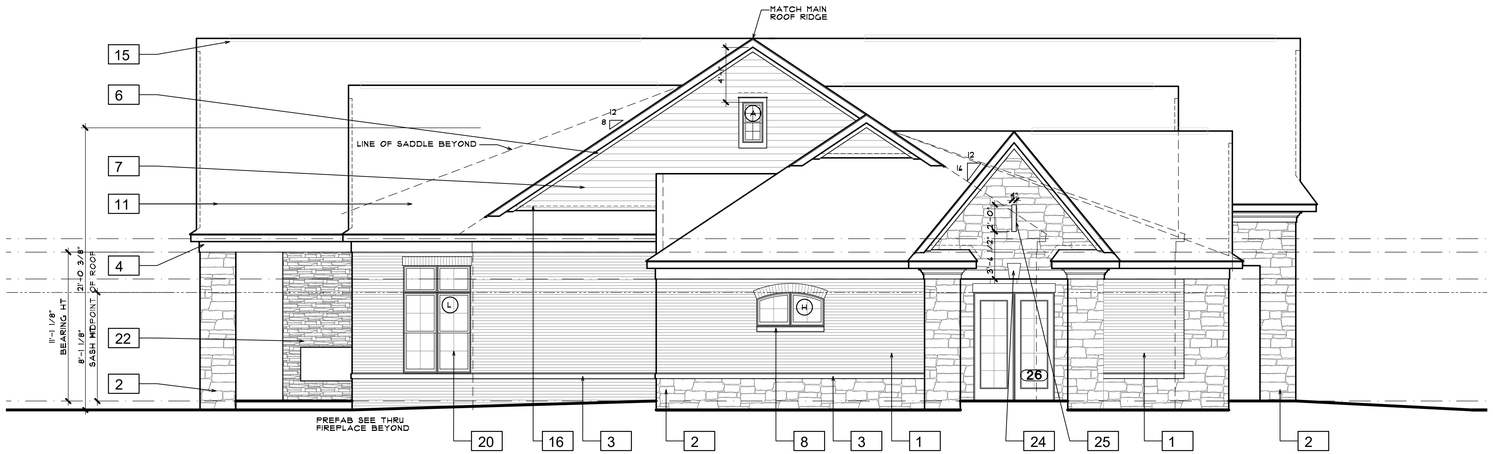
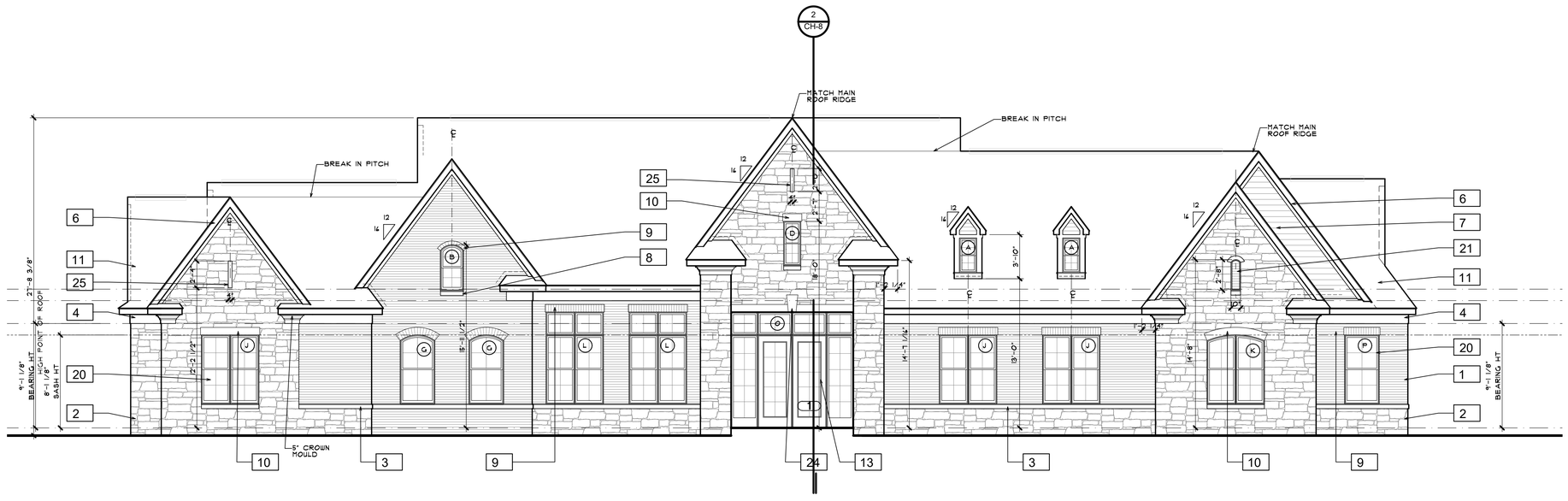


2 CH6 LEFT SIDE ELEVATION

SCALE: 3/16" = 1'-0"



1 CH6 FRONT ELEVATION

SCALE: 3/16" = 1'-0"

PROVIDE NON-COMB. ROOF SHTG. FROM EDGE OF RATED CONST. AND EXTEND MIN. 4'-0" BEYOND (BOTH SIDES OF COMMON WALL)

EXTERIOR MATERIAL LEGEND (GENOVA)

KEY NAME	MATERIAL
1	Brick (Field)
2	Stone
3	Stone Band
4	Trim (Fascia & Frieze)
5	Trim (1x6)
6	Trim (1x6 Rake & 1x4 Trim)
7	Horizontal Vinyl Siding
8	Brick Window sills
9	Brick Soldier course
10	Stone header
11	Roofing: Asphalt
12	Soffit
13	Entry Doors (Full Lite)
14	Service door
15	Roof Vent
16	Metal Flashing
17	Caulking
18	Gutters and Downspouts @ Main Roof
19	Fixed glass
20	Single Hung Window
21	Decorative Gable Vent
22	Stone @ Exterior Fireplace
23	Garage Door
24	Stone Key
25	Stone Accent

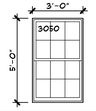
DRAINAGE

PROVIDE GUTTERS AND DOWNSPOUTS FOR DRAINAGE OF ROOF WATER. ROOF WATER, DOWNSPOUTS ARE TO BE LOCATED SO THAT THE DISCHARGE WILL NOT SPILL ON OR FLOW ACROSS ANY PORCHES, WALKS OR DRIVES.

TYP. WINDOW DESIGNATION

GENERAL REFERENCE FOR ROUGH OPENING SIZES ONLY.

CONSULT WITH WINDOW MANUFACTURER FOR EXACT WINDOW SIZES & REQUIREMENTS.



ALL INTERIOR PARTITION DIMENSIONS ARE 3 1/2" UNLESS NOTED OTHERWISE.

BEFORE CONSTRUCTION OBTAIN WINDOW & DOOR ROUGH OPENING SIZES FROM WINDOW/DOOR SUPPLIER.

TRUSS DESIGNER/FABRICATOR SEE SHEET #2 FOR ADDITIONAL NOTES & INFORMATION

SEE SHEET #T-1 THRU L-1 FOR ADDITIONAL NOTES REGARDING DRAWINGS & CONSTRUCTION.

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SHEET TITLE: BUILDING ELEVATIONS

PRELIMINARY

CLIENT/PROJECT: SHAPIRO DEVELOPMENT
COMMUNITY BUILDING
GENOA TOWNSHIP, MICHIGAN

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SHEET NUMBER: CH-6

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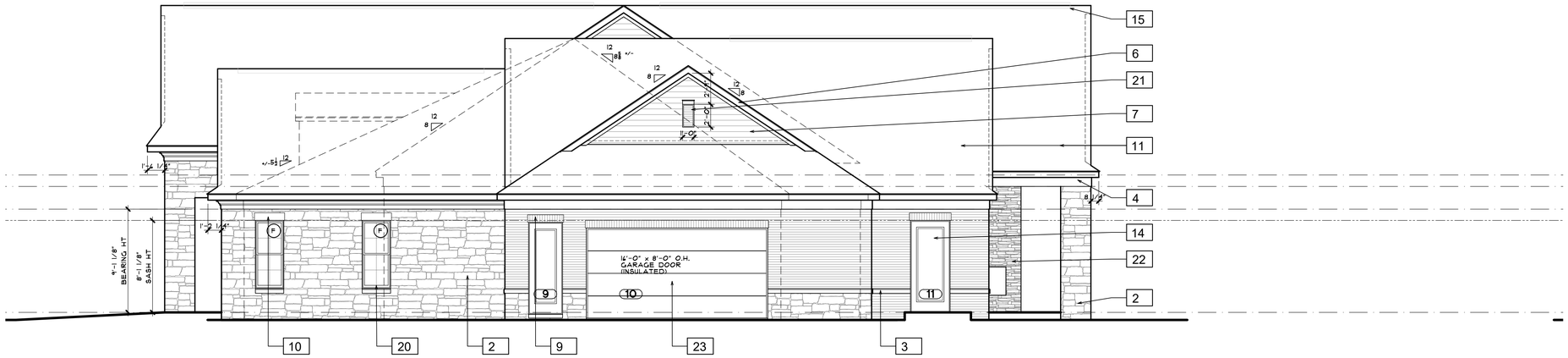
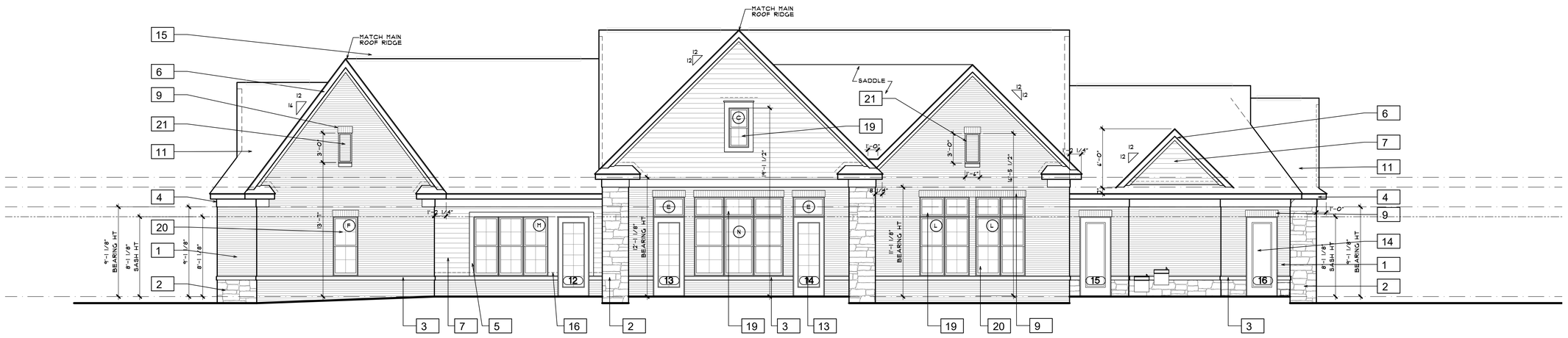


2 CH7 RIGHT SIDE ELEVATION

SCALE: 1/4" = 1'-0"



1 CH7 REAR ELEVATION

SCALE: 1/4" = 1'-0"

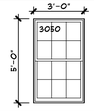
DRAINAGE

PROVIDE GUTTERS AND DOWNSPOUTS FOR DRAINAGE OF ROOF WATER. ROOF WATER DOWNSPOUTS ARE TO BE LOCATED SO THAT THE DISCHARGE WILL NOT SPILL ON OR FLOW ACROSS ANY PORCHES, WALKS OR DRIVES.

TYP. WINDOW DESIGNATION

GENERAL REFERENCE FOR ROUGH OPENING SIZES ONLY.

CONSULT WITH WINDOW MANUFACTURER FOR EXACT WINDOW SIZES & REQUIREMENTS.



ALL INTERIOR PARTITION DIMENSIONS ARE 3 1/2" UNLESS NOTED OTHERWISE.

BEFORE CONSTRUCTION OBTAIN WINDOW & DOOR ROUGH OPENING SIZES FROM WINDOW/DOOR SUPPLIER.

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248▪334▪5000

SHEET TITLE: BUILDING ELEVATIONS

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CLIENT/PROJECT: SHAPIRO DEVELOPMENT
COMMUNITY BUILDING
GENOA TOWNSHIP, MICHIGAN

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item A.

DRAINAGE

PROVIDE GUTTERS AND DOWNSPOUTS FOR DRAINAGE OF ROOF WATER. ROOF WATER DOWNSPOUTS ARE TO BE LOCATED SO THAT THE DISCHARGE WILL NOT SPILL ON OR FLOW ACROSS ANY PORCHES, WALKS OR DRIVES.

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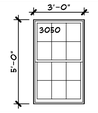

2 CH-8 BUILDING SECTION

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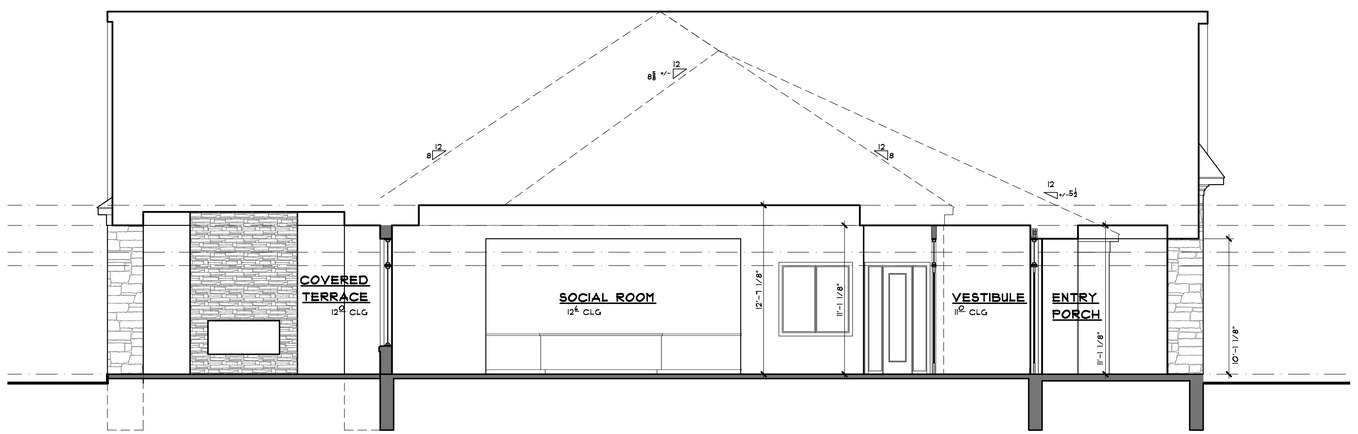
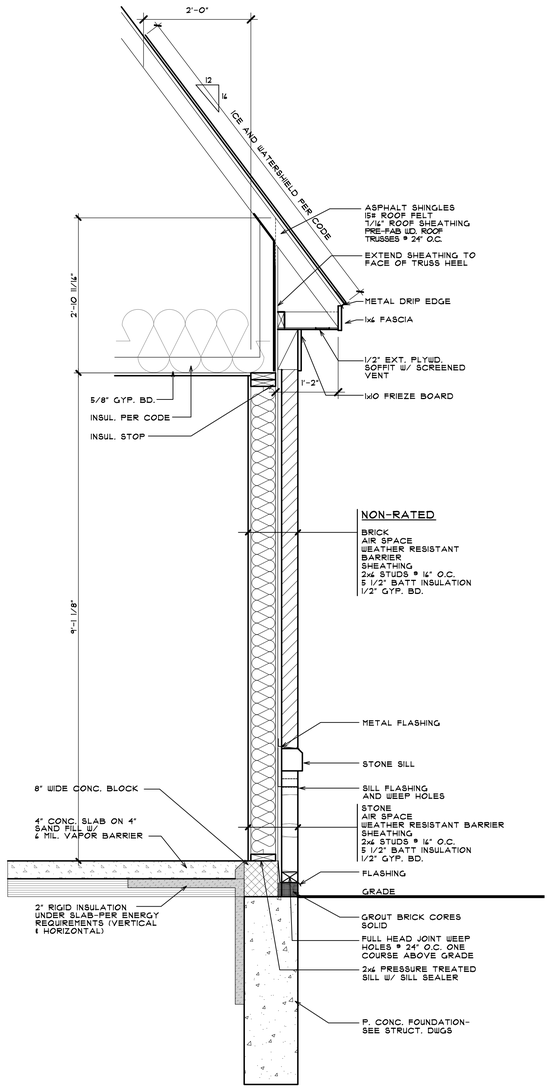


1 CH-8 BUILDING SECTION

SCALE: 3/16" = 1'-0"



3 C8 WALL SECTION

SCALE: 3/4" = 1'-0"

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Bloomfield Hills, MI 48302
248•334•5000

SHEET TITLE: BUILDING SECTIONS

PRELIMINARY

CLIENT/PROJECT: SHAPIRO DEVELOPMENT
COMMUNITY BUILDING
GENOA TOWNSHIP, MICHIGAN

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PROVIDE BLOCKING FOR FUTURE GRAB BARS AS PER OPTION "B" SECTION 1004.11.3.2 SEE DETAILS ON SHEET #10 FOR REQUIRED LOCATIONS

2 HOUR FIRE WALL

2 HOUR FIRE WALL TO EXTEND TO END OF WALL

MATCH LINE

8'–0" DROPPED CEILING HT. IN SHADED AREA

3/8" PLYWOOD OR ½" DRYWALL DRAFTSTOP IN TRUSS SPACE

LINE OF DECK ABOVE

12" x 12" DROP SOFFIT VERIFY HT.

NOTE: PATIO SLAB TO BE FLUSH WITH INTERIOR FLOOR ON ACCESSIBLE UNITS ONLY & 4" BELOW FLOOR ON ALL OTHER UNITS

Bath
Bedroom #1
Closet
Porch
CONC. SLAB
EGRESS (2) 3'–0" x 6'–0"
Dining Room
Living Room
Unit A
Kitchen
RANGE w/ HOOD FAN
D.W.
6' X 3' ISLAND
Foyer A
CLOSET
Foyer B
Porch
CONC. SLAB SLOPE ¼"
FLUSH
8"x8" BOXED WOOD COLUMN AROUND TR'D 4x4 POST – TYP.
Bedroom #2
Bath
Closet
LINEN
Laundry
4'–0" OPEN'G
W.H.
F.D.
FURN
REF.
PAN
Vest A
Vest B
Closet
Water Meter Room
Foyer C
Porch
UP 16r.

LOAD BEARING WALL
(2) 1 3/4"x14" LVL
(2) 2x12
(2) 2x8
(2) 2x10
(3)2x6
L6 x 4 x 5/16
(2) 1½" x 11 7/8" LVLs
2x10 P.T. JOISTS @ 16" o/c
14" DEEP FLOOR TRUSS @ 19.2" o/c
1 HR. FIRE RATED
2x8 RAFTERS & 2x6 CLG JST @ 16"o/c
4x4 TR'D POST
VERIFY DOOR & METER ROOM SIDE PER UTILITY LOCATION ON SITE
OPEN ABOVE
(2) 2x12 @ 16" o/c
(2) 2x10 STUDS @ 16" o/c
(2) 2x4 STUDS @ 16" o/c
3/8" PLYWOOD OR ½" DRYWALL DRAFTSTOP IN TRUSS SPACE ABOVE WALL
1 HR. FIRE RATED
20 MIN FIRE DOOR
RAISED CONCRETE
4" CURB
16'–0"x7'–0" OVERHEAD DOOR
LINE OF SECOND FLOOR ABOVE
LINE OF DECK ABOVE

Garage A
SLOPE FLOOR 4" TO DOOR
Garage B
SLOPE FLOOR 4" TO DOOR
Garage C
SLOPE FLOOR 4" TO DOOR

NOTE:
THE DOORS SEPERATING THE GARAGES & THE APARTMENTS SHALL HAVE A 20 MINUTE FIRE RATING IN COMPLIANCE WITH SECTION 716.5.3. DOORS SHALL HAVE A DOOR CLOSER AND A SELF CLOSING LATCH DEVICE AS PER SECTION 406.3.4 2012 MICHIGAN BUILDING CODE.

WALL TYPE KEY
- NO FIRE RATING
- 1 HOUR FIRE RATED PARTITION
- 2 HOUR FIRE RATED WALL
- LOAD BEARING

22" DEEP TRUSSES @ 19.2" o/c
22" DEEP TRUSS GIRDER
22" DEEP FLOOR TRUSS @ 19.2" o/c
GIRDER TRUSS
2x10 P.T. @ 16" o/c
(3) 1 3/4"x18" LVL
(3) 2x6 BR'G & (2) 2x6 F.H. @ EACH END
(2) TIE DOWN HOLDOWNS
(1) STRAP TIE HOLDOWN
6x6 TR'D POST
SIMPSON #STHD–14 STRAP TIE HOLDOWN – (1) ADJACENT TO EACH END OF GARAGE DOORS. 14" EMBEDMENT IN CONCRETE FOOTING, FILL BLOCK SOLID w./ CONCRETE (TYPICAL)

65'–8"
147'–0 1/2" FULL BUILDING
75'–6 1/4" HALF BUILDING
56'–0"
112'–0" FULL BUILDING
56'–0" HALF BUILDING

First Floor Plan

Scale: 1/4" = 1'-0"

Type "B" Units

ALL UNITS EXCEPT FOR:
BUILDINGS #3, #4 & #9 – SEE SHEET #10
BUILDING #10 – SEE SHEET #11

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Sheet Contents:
First Floor Plan

Job:	18173
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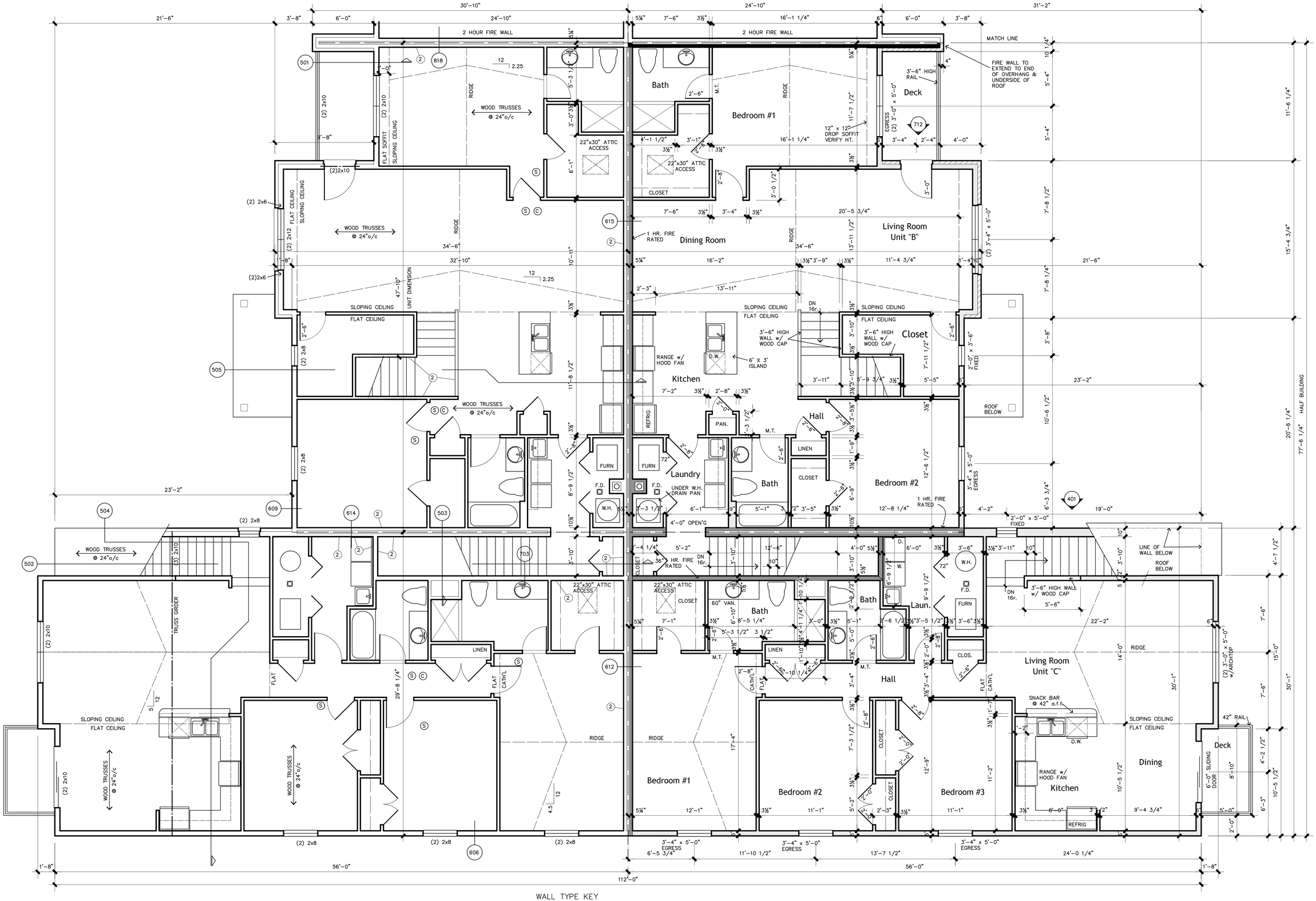
Date:	27JUN18
Sheet Number:	2



WALL TYPE KEY

- NO FIRE RATING
- 1 HOUR FIRE RATED PARTITION
- 2 HOUR FIRE RATED WALL
- LOAD BEARING

Second Floor Plan

Scale: 1/4" = 1'-0"

ALL UNITS "B" & "C" ARE NOT ACCESSIBLE UNITS.

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Sheet Contents:

Second Floor

Job:	18173
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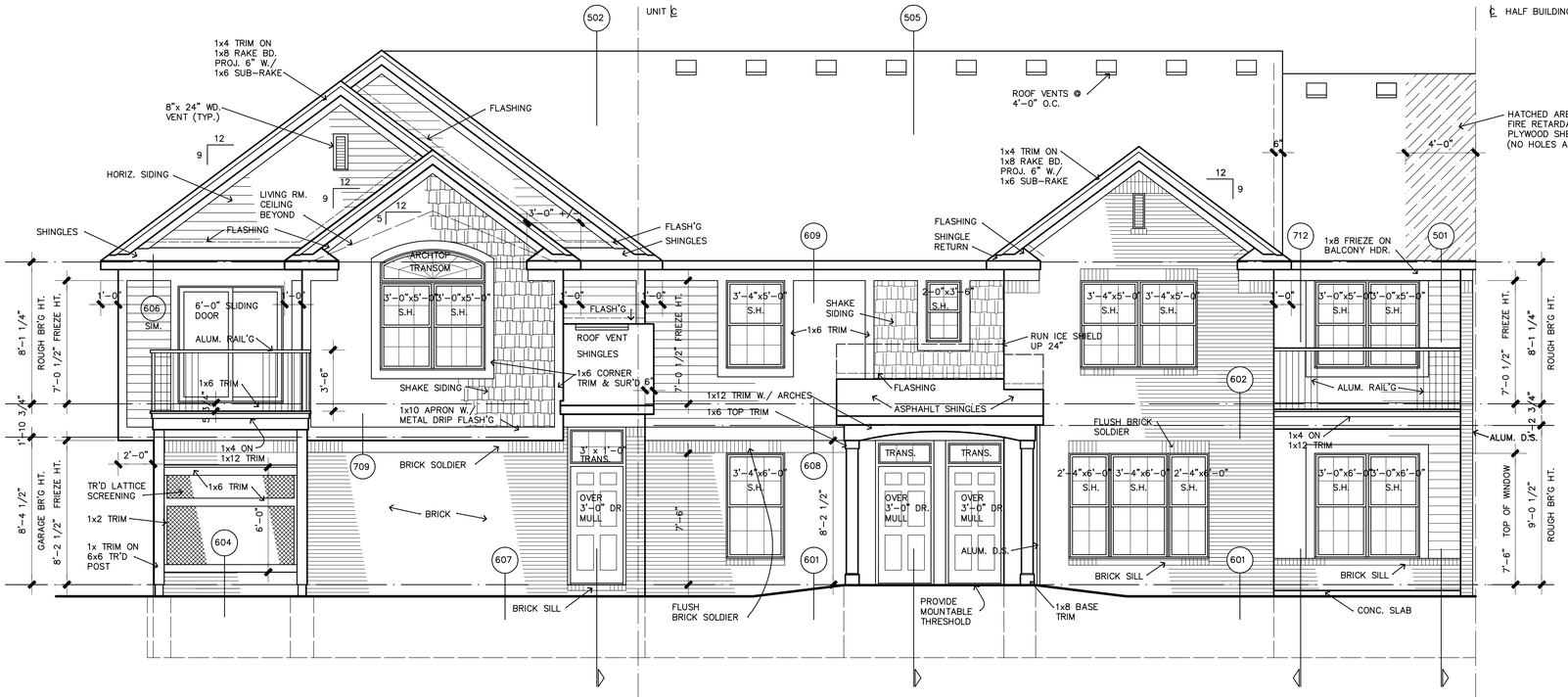
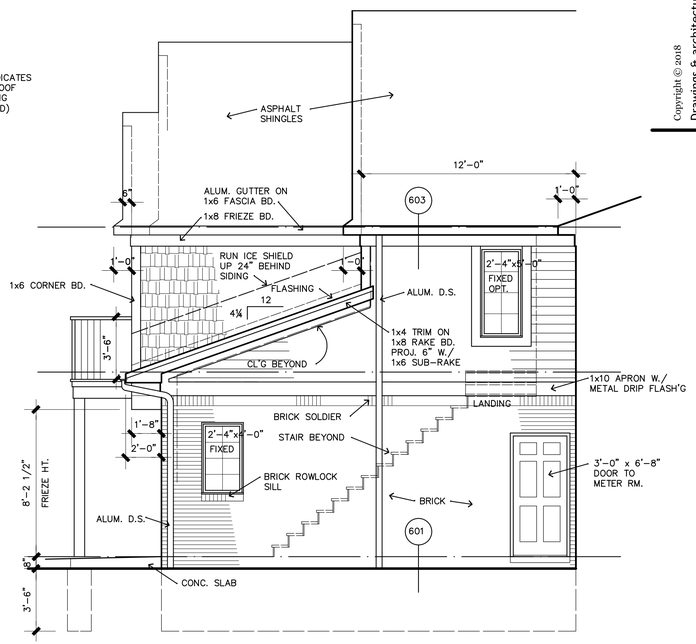


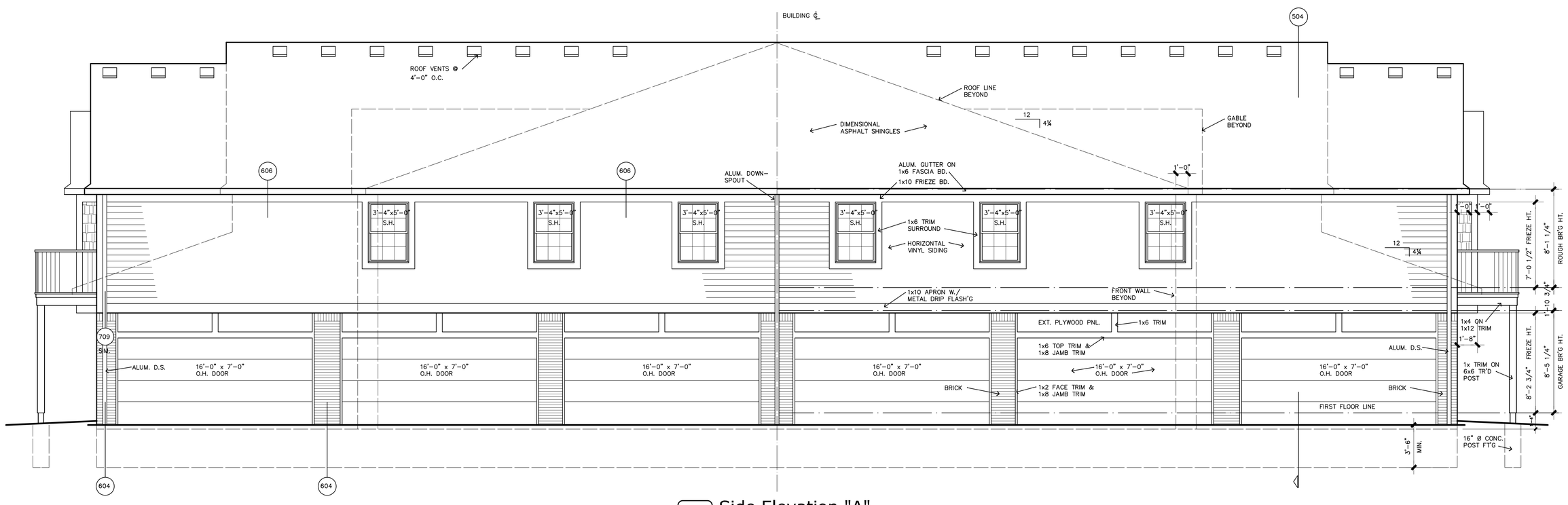
Front/Rear Elevation "A"

Scale: 1/4" = 1'-0"



Partial Elevation "A"

Scale: 1/4" = 1'-0"



Side Elevation "A"

Scale: 1/4" = 1'-0"

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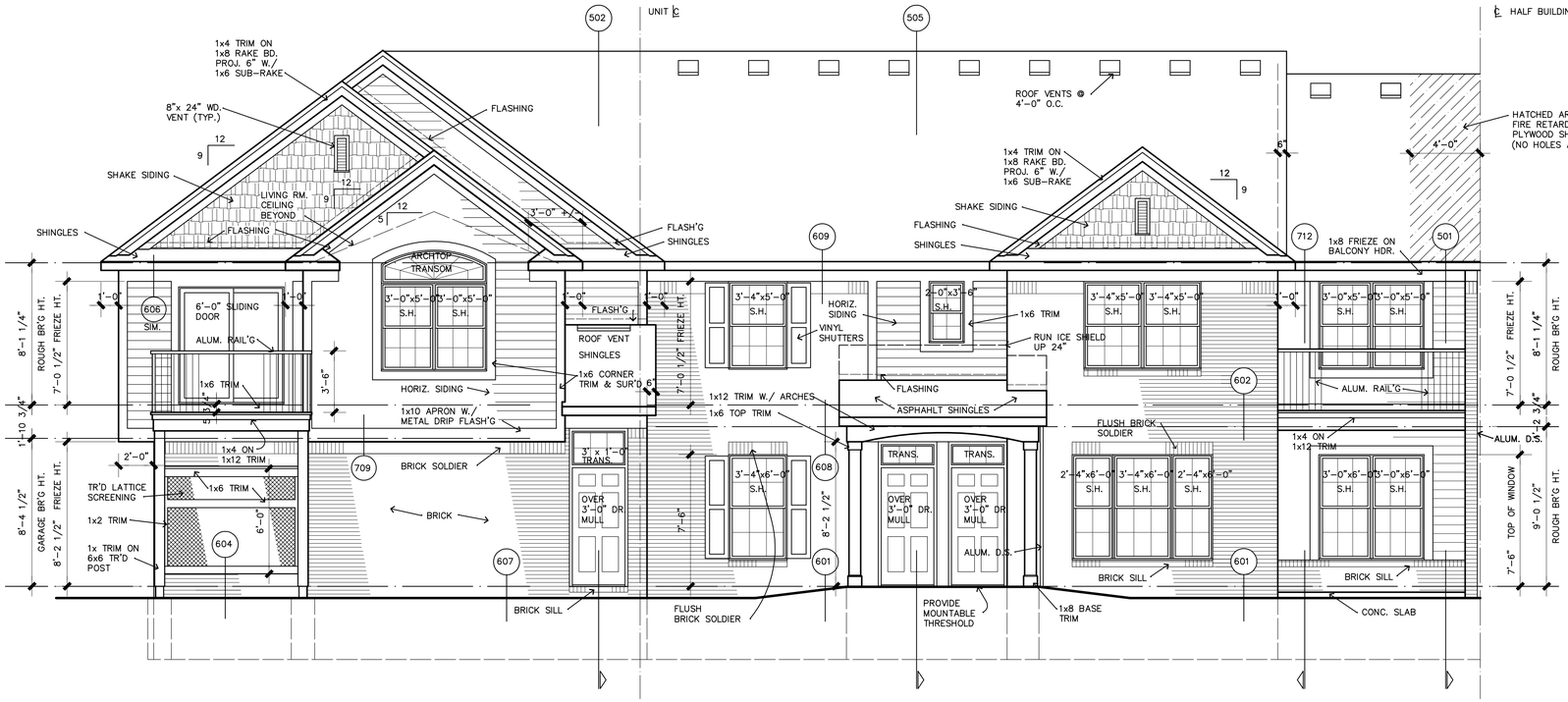
Sheet Contents:

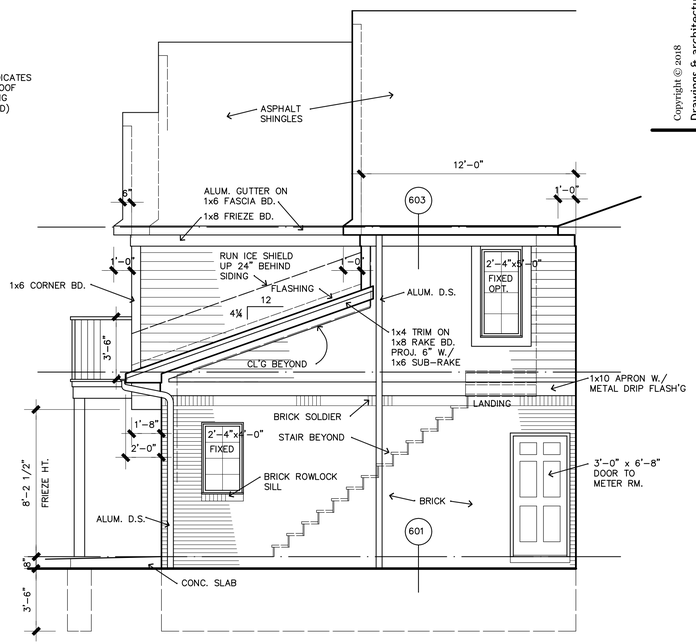
Elevations

Job:	18173
Drawn by:	MAK
Date:	17JUL18
Sheet Number:	4-A



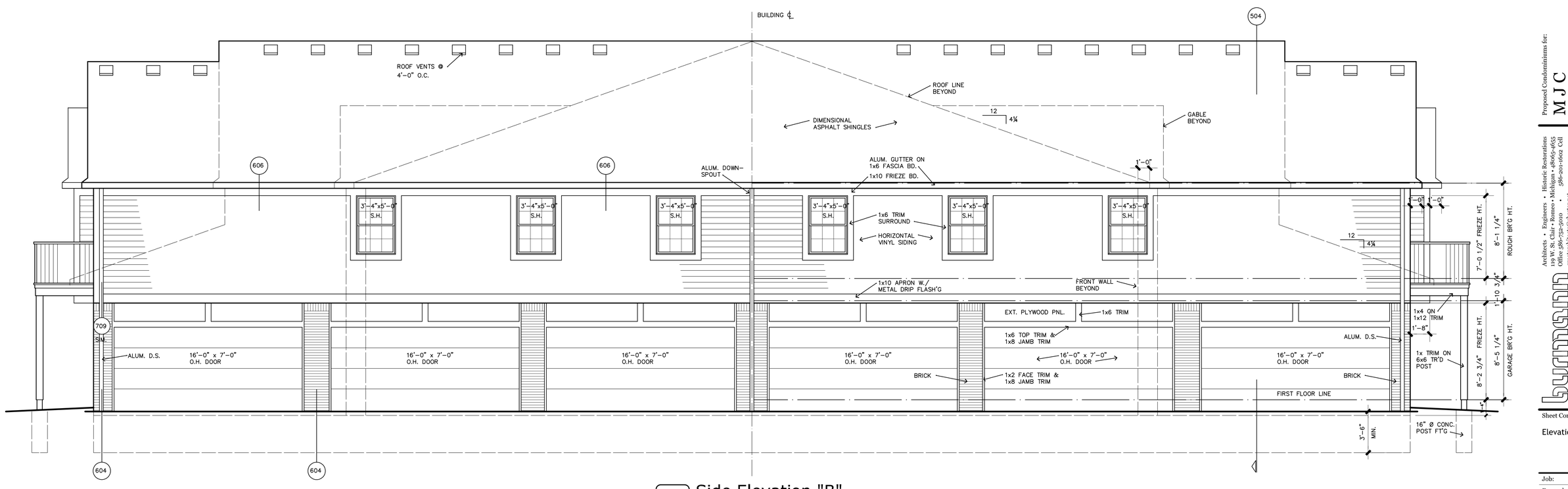
Front/Rear Elevation "B"

Scale: 1/4" = 1'-0"



401 Partial Elevation "B"

Scale: 1/4" = 1'-0"



Side Elevation "B"

Scale: 1/4" = 1'-0"

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Sheet Contents:

Elevations

Job:	18173
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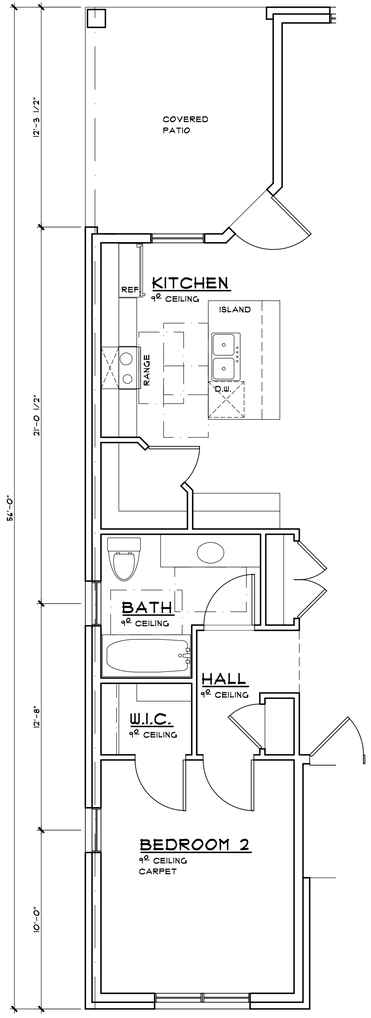
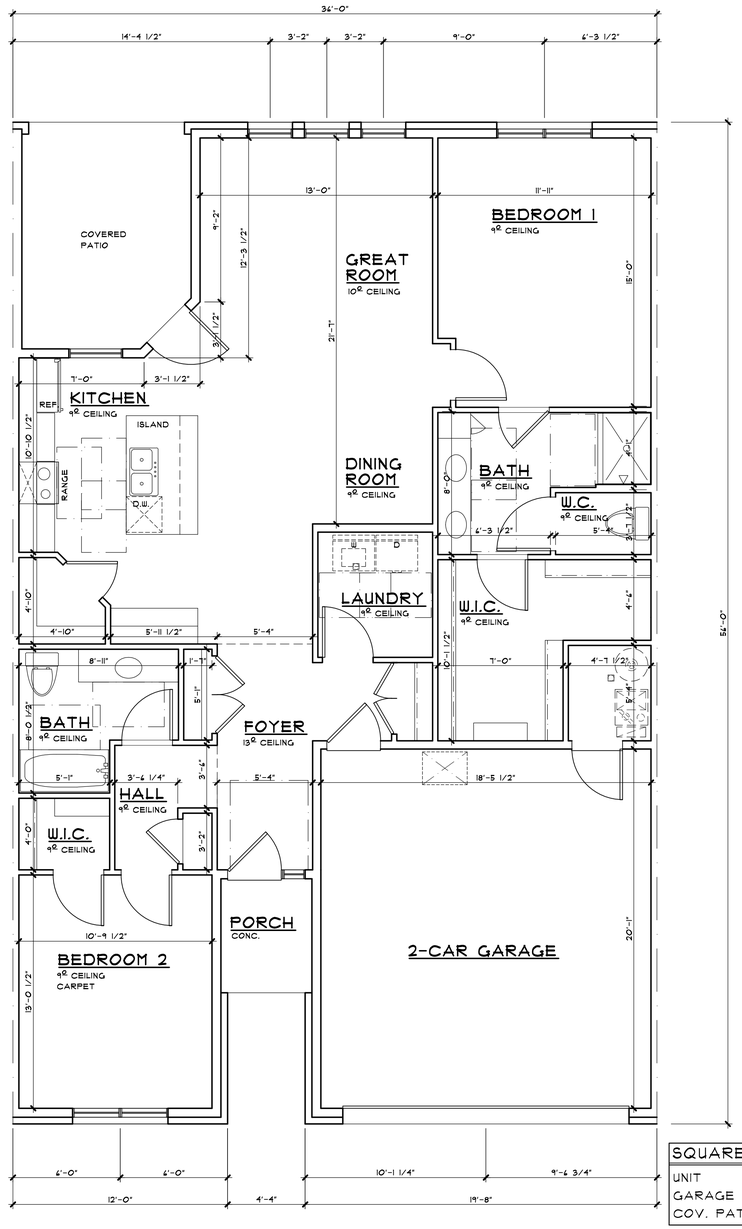
Date:	27JUN18
Sheet Number:	4-B



UNIT FLOOR PLAN - LEFT SIDE END

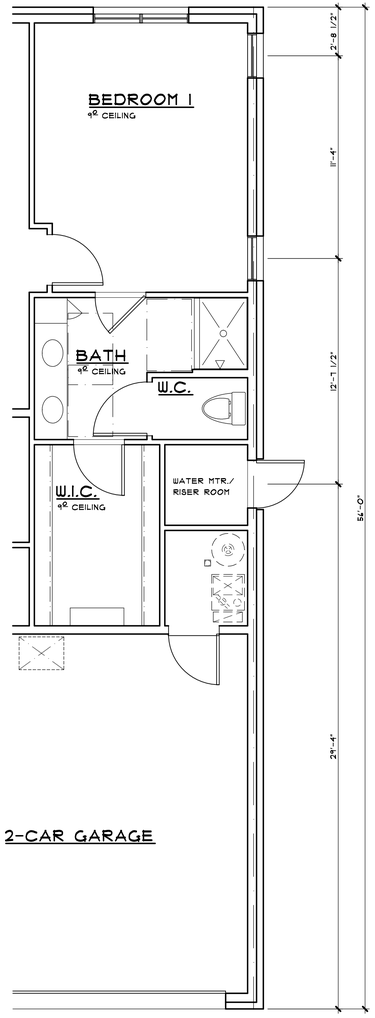
SCALE: 1/4" = 1'-0"



SQUARE FOOTAGE	
UNIT	1,426 SQ FT
GARAGE	403 SQ FT
COV. PAT.	122 SQ FT

UNIT FLOOR PLAN

SCALE: 1/4" = 1'-0"



UNIT FLOOR PLAN - RIGHT SIDE END

SCALE: 1/4" = 1'-0"

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SHEET TITLE: UNIT FLOOR PLAN

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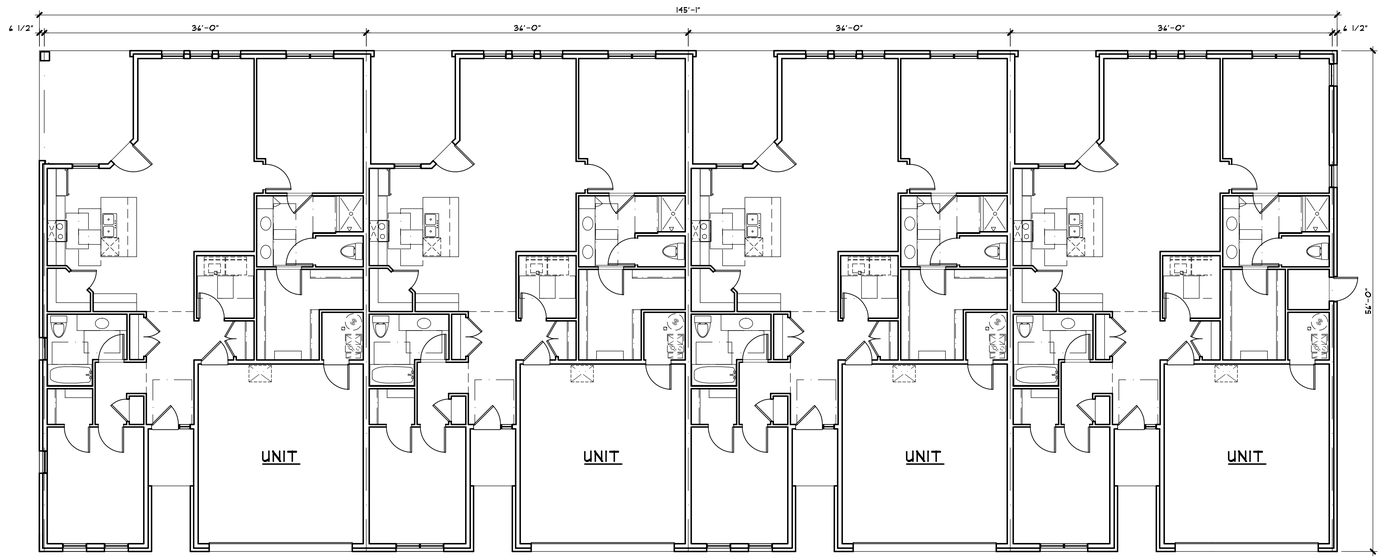
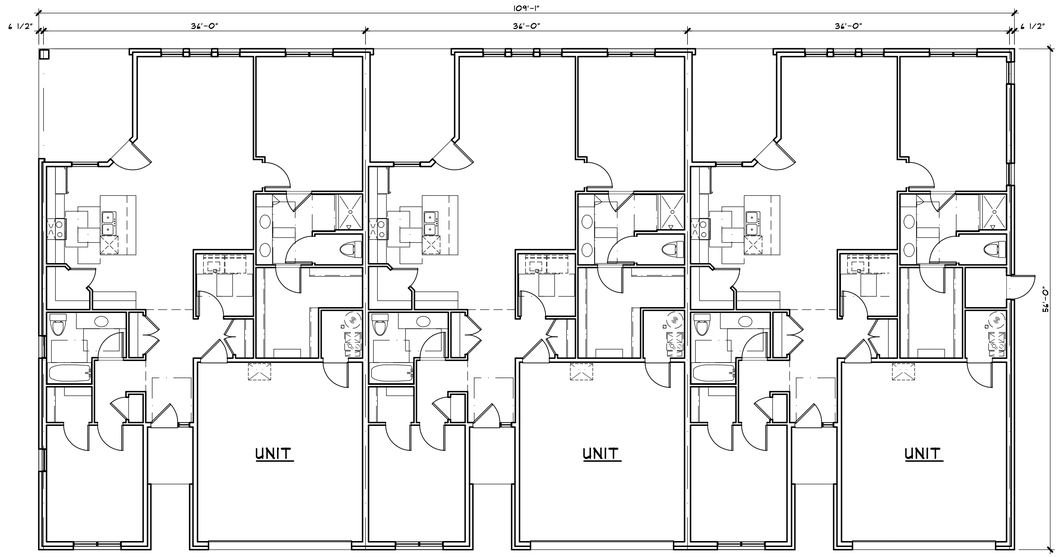


4 UNIT BUILDING FLOOR PLAN

SCALE: 1/8" = 1'-0"



3 UNIT BUILDING FLOOR PLAN

SCALE: 1/8" = 1'-0"

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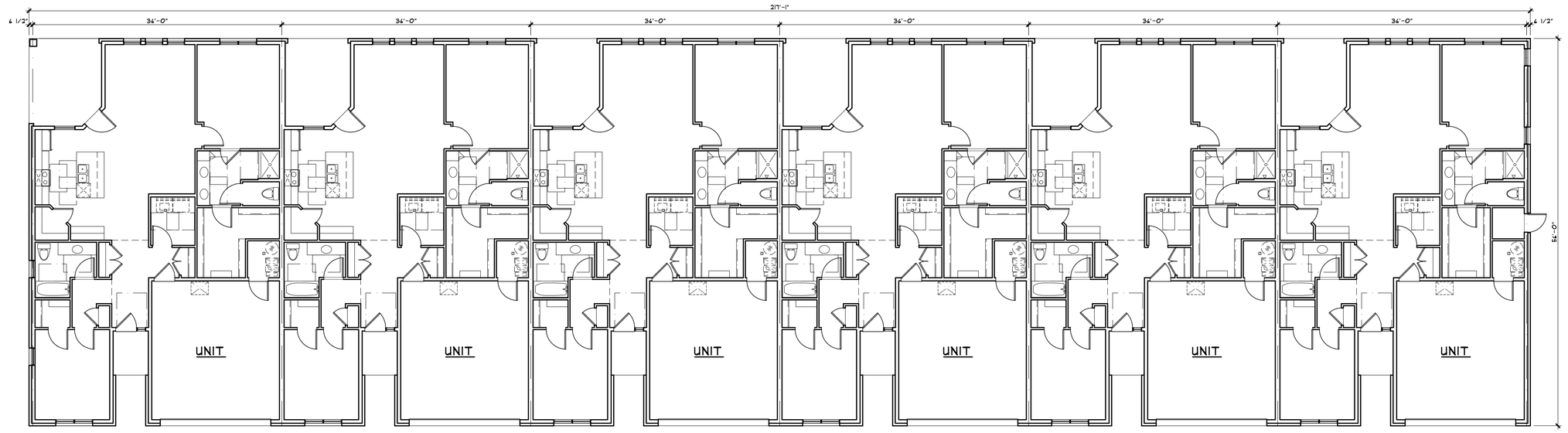
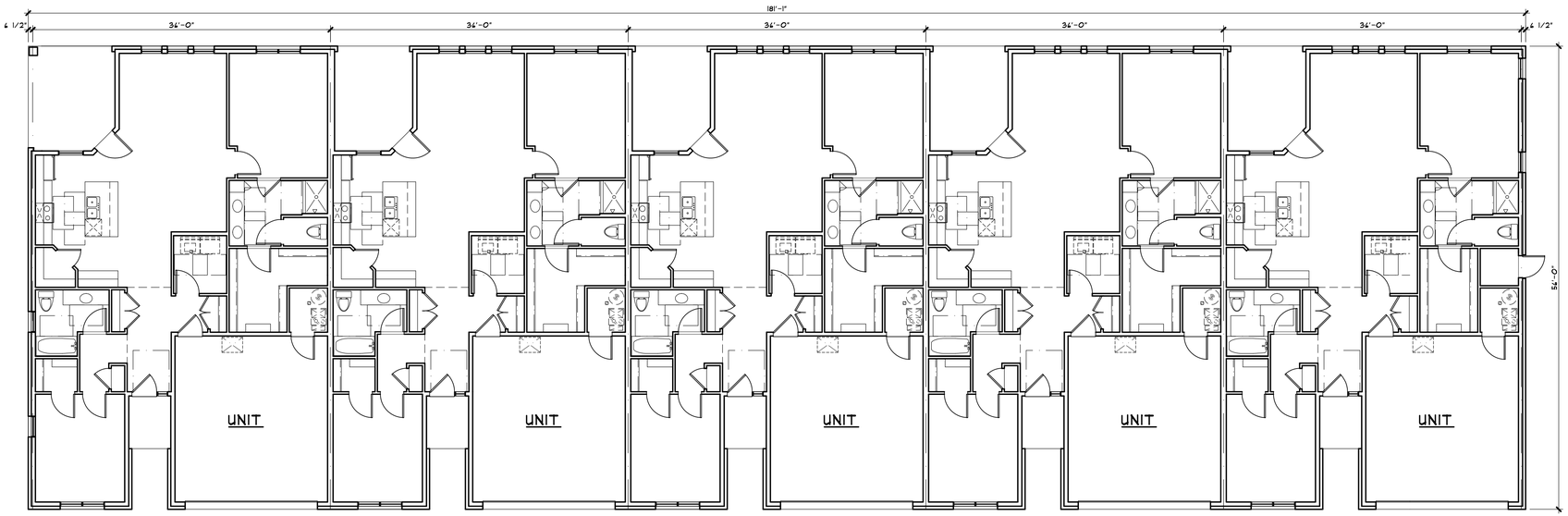


6 UNIT BUILDING FLOOR PLAN

SCALE: 1/8" = 1'-0"



5 UNIT BUILDING FLOOR PLAN

SCALE: 1/8" = 1'-0"

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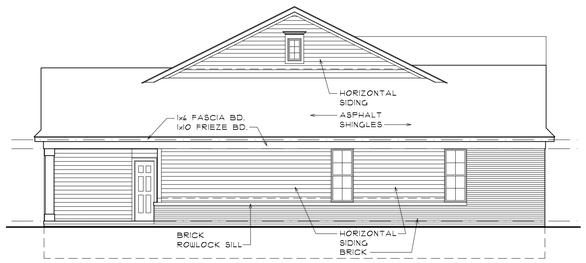
3 UNIT REAR ELEVATION 'A' and 'C' ('B' SIMILAR)

SCALE: 1/8" = 1'-0"

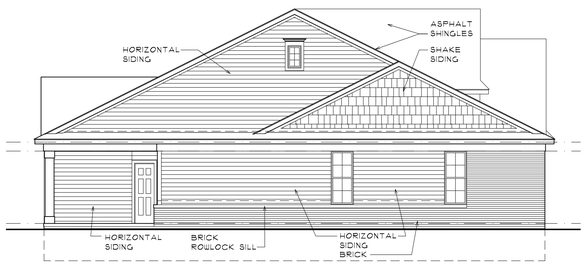


LEFT SIDE ELEVATION 'A' and 'C'

SCALE: 1/8" = 1'-0"

3 UNIT FRONT ELEVATION 'A'

SCALE: 1/8" = 1'-0"

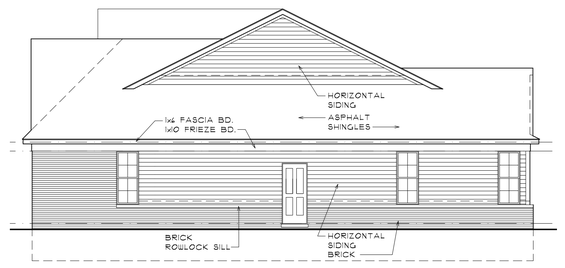


LEFT SIDE ELEVATION 'B'

SCALE: 1/8" = 1'-0"

3 UNIT FRONT ELEVATION 'B'

SCALE: 1/8" = 1'-0"



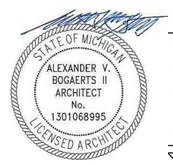
RIGHT SIDE ELEVATION 'B' ('A' and 'C' SIMILAR)

SCALE: 1/8" = 1'-0"

NOTE:
SEE BUILDING RENDERINGS FOR ALL BUILDING MATERIAL COLORS. 3 DIFFERENT COLOR SCHEMES PROPOSED FOR A, B, AND C. 3RD SCHEME C SIMILAR TO 4 AND 6 UNIT RENDERINGS.
ELEVATIONS RENDERED:
4 UNIT FRONT ELEVATION 'B'
6 UNIT FRONT ELEVATION 'A'

3 UNIT FRONT ELEVATION 'C'

SCALE: 1/8" = 1'-0"



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SHEET TITLE
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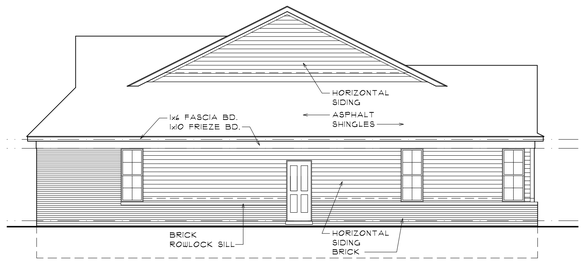

RIGHT SIDE ELEVATION 'B' ('A' and 'C' SIMILAR)

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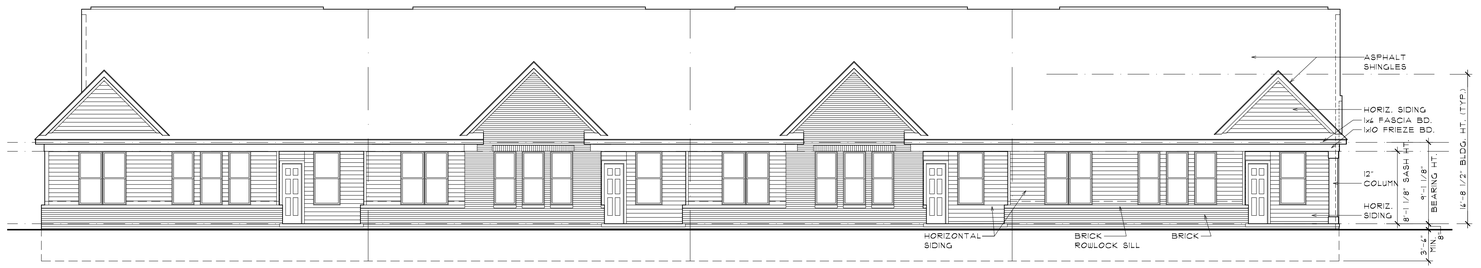

REAR ELEVATION 'A' and 'C' ('B' SIMILAR)

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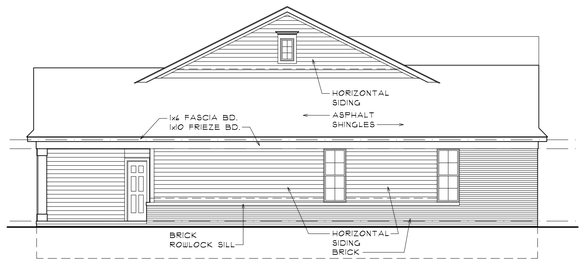
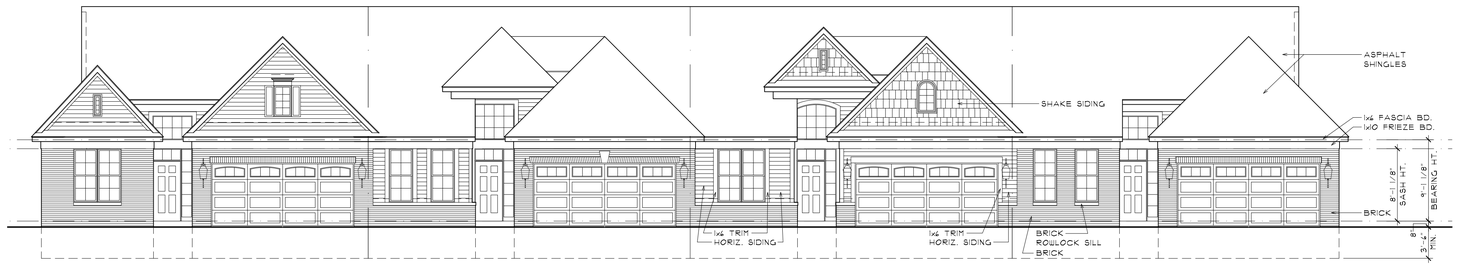


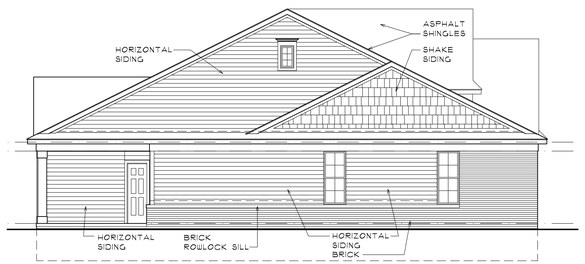
LEFT SIDE ELEVATION 'A' and 'C'

SCALE: 1/8" = 1'-0"



4 UNIT FRONT ELEVATION 'A'

SCALE: 1/8" = 1'-0"



LEFT SIDE ELEVATION 'B'

SCALE: 1/8" = 1'-0"

4 UNIT FRONT ELEVATION 'B'

SCALE: 1/8" = 1'-0"

4 UNIT FRONT ELEVATION 'C'

SCALE: 1/8" = 1'-0"

NOTE:
SEE BUILDING RENDERINGS FOR ALL BUILDING MATERIAL COLORS. 3 DIFFERENT COLOR SCHEMES PROPOSED FOR A, B, AND C. 3RD SCHEME C SIMILAR TO 4 AND 6 UNIT RENDERINGS.
ELEVATIONS RENDERED:
4 UNIT FRONT ELEVATION 'B'
6 UNIT FRONT ELEVATION 'A'

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item A.

SHEET TITLE: BUILDING ELEVATIONS

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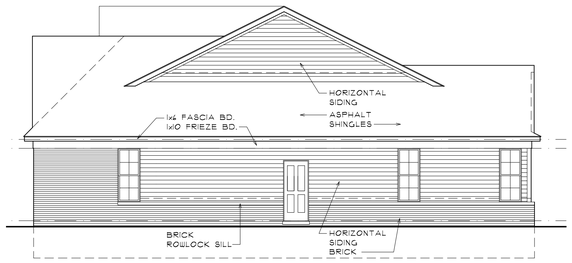
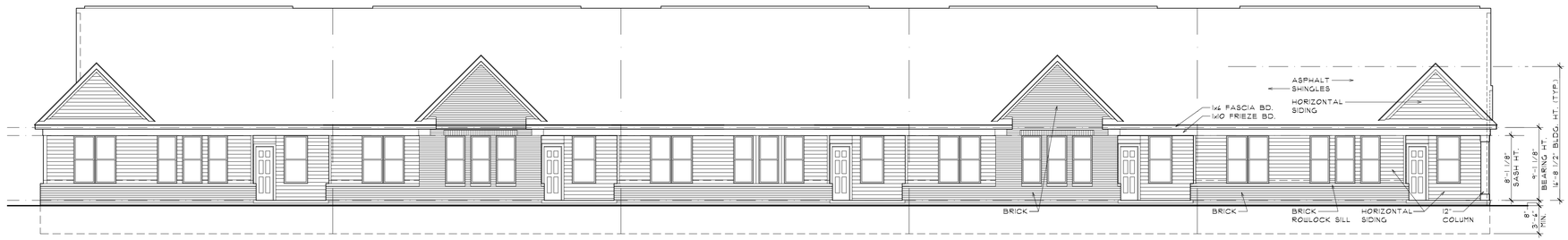


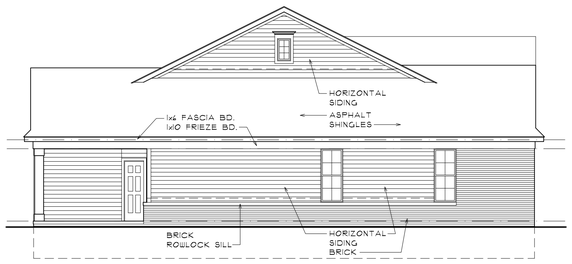
RIGHT SIDE ELEVATION 'B' ('A' and 'C' SIMILAR)

SCALE: 1/8" = 1'-0"



REAR ELEVATION 'A' and 'C' ('B' SIMILAR)

SCALE: 1/8" = 1'-0"

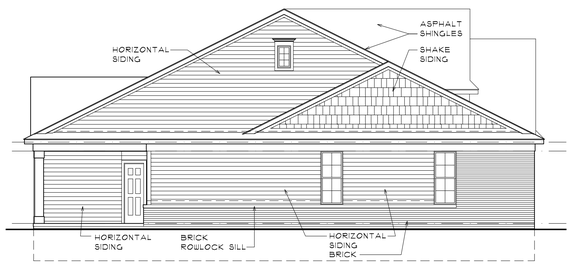


LEFT SIDE ELEVATION 'A' and 'C'

SCALE: 1/8" = 1'-0"

5 UNIT FRONT ELEVATION 'A'

SCALE: 1/8" = 1'-0"



LEFT SIDE ELEVATION 'B'

SCALE: 1/8" = 1'-0"

5 UNIT FRONT ELEVATION 'B'

SCALE: 1/8" = 1'-0"

NOTE:
SEE BUILDING RENDERINGS FOR ALL BUILDING MATERIAL COLORS. 3 DIFFERENT COLOR SCHEMES PROPOSED FOR A, B, AND C. 3RD SCHEME C SIMILAR TO 4 AND 6 UNIT RENDERINGS.
ELEVATIONS RENDERED:
4 UNIT FRONT ELEVATION 'B'
6 UNIT FRONT ELEVATION 'A'

5 UNIT FRONT ELEVATION 'C'

SCALE: 1/8" = 1'-0"

STATE OF MICHIGAN
ALEXANDER V. BOGAERTS II
ARCHITECT
No. 1301068995
LICENSED ARCHITECT

Alexander V. Bogaerts + Associates, P.C. ▪ Architecture ▪ Planning ▪ Interior Design
2445 Franklin Road
Bloomfield Hills, MI 48302
248 ▪ 334 ▪ 5000

SHEET TITLE
BUILDING ELEVATIONS

CLIENT/PROJECT
WHITE LAKE HILL, LLC
AVALON - RANCHES
WHITE LAKE TOWNSHIP, MICHIGAN

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- ■ PRELIMINARY 2022-03-29
- ☐ BIDS
- ☐ PERMITS
- ☐ CONSTRUCTION

REVISIONS
2022-03-29
SITE PLAN APPROVAL

DRAWN BY
CAD FILENAME
CHECKED BY
JOB NUMBER 2451
DATE 2022-03-29
SHEET NUMBER A105

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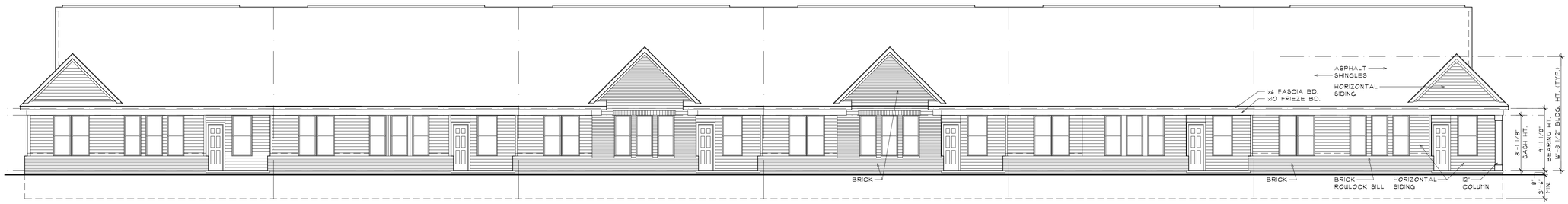
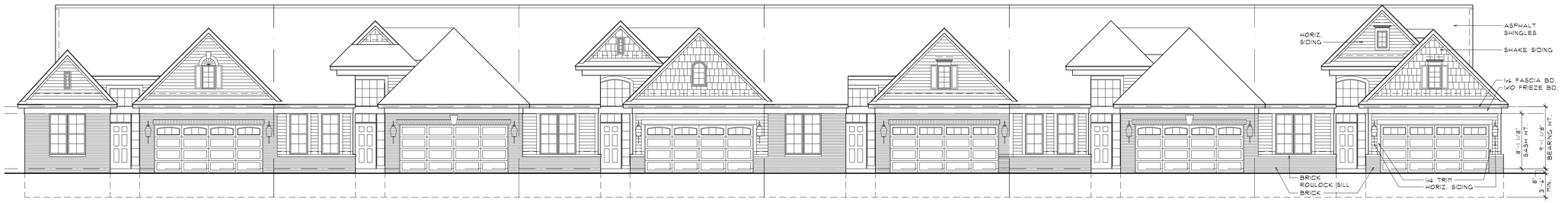


REAR ELEVATION 'A' and 'C' ('B' SIMILAR)

SCALE: 1/8" = 1'-0"



6 UNIT FRONT ELEVATION 'A'

SCALE: 1/8" = 1'-0"

NOTE:
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ELEVATIONS RENDERED:
4 UNIT FRONT ELEVATION 'B'
6 UNIT FRONT ELEVATION 'A'

NOTE:
REFER TO SHEET A105 FOR BUILDING SIDE ELEVATIONS

6 UNIT FRONT ELEVATION 'B'

SCALE: 1/8" = 1'-0"

6 UNIT FRONT ELEVATION 'C'

SCALE: 1/8" = 1'-0"

Alexander V. Bogaerts + Associates, P.C. ▪ Architecture ▪ Planning ▪ Interior Design
2445 Franklin Road
Bloomfield Hills, MI 48302
248 ▪ 334 ▪ 5000

SHEET TITLE
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REVISIONS
2022-04-01
SITE PLAN APPROVAL

DRAWN BY
CAD FILENAME
CHECKED BY
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DATE 2022-03-29
SHEET NUMBER A106

STATE OF MICHIGAN
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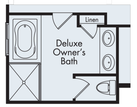
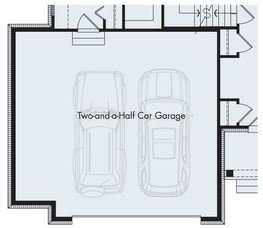
ABERDEEN

First Level	1,182 sf
Second Level	1,091 sf
Total	**2,273 sf**

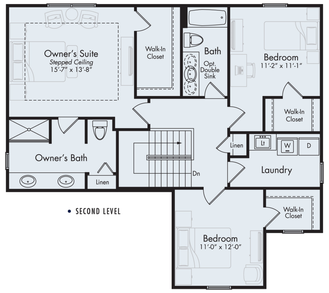
The Aberdeen is designed for entertaining and flexible family living. There's smart space for everything – main-floor study, a mud room with an optional bench, island kitchen with walk-in pantry, large family room with fireplace, and options for a covered porch or harvest room off the dining area. Upstairs, there's a convenient laundry room, private wing with an elegant owner's suite, complete with its own luxurious bath and walk-in closet. There are also options for an oversized 2.5-car or 3-car garage.



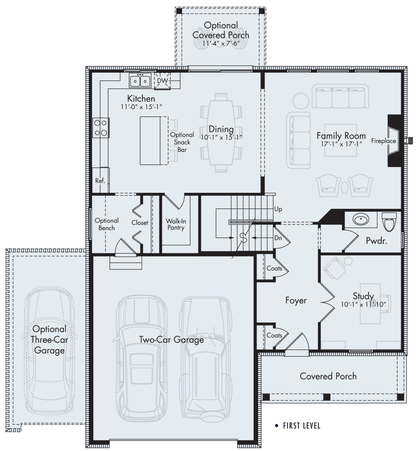
• OPTIONAL DELUXE OWNER'S BATH



• OPTIONAL TWO-AND-A-HALF CAR GARAGE



• SECOND LEVEL



• FIRST LEVEL

• OPTIONAL EXPANDED DINING ROOM

• OPTIONAL HARVEST ROOM

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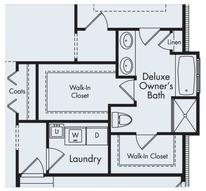
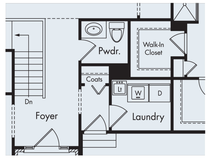
BERKSHIRE

First Level	1,653 sf

We designed the Berkshire to offer modern, single-level living with a casual touch. The kitchen, family room and dining area have all been brought together to create an open flow for relaxed family times and lively entertaining. Whether you were unwinding in the family room or gathering in the spacious island kitchen, you'll love the natural sunlight that comes in from all the windows in the main living area. The owner's suite showcases the stepped ceiling, spacious private bath and twin walk-in closets. Another wing at the front of the home contains two spacious bedrooms with walk-in closets and access to a second full bath.

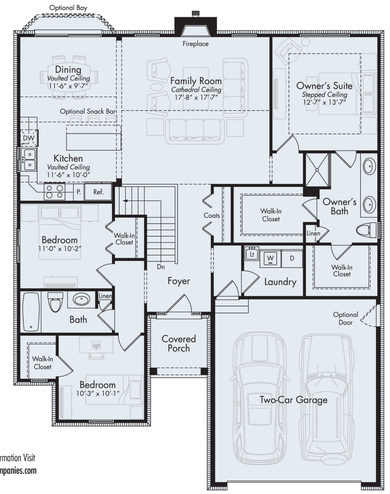


• OPTIONAL DELUXE OWNER'S BATH



• OPTIONAL POWDER ROOM

• OPTIONAL LIBRARY



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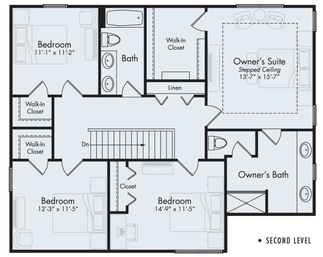
BURBANK

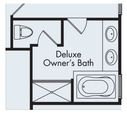
First Level	1,332 sf
Second Level	1,160 sf
Total	**2,492 sf**

The two-story Burbank is a stunning open concept plan with an L-shaped living area that includes the family room, oversized dining room and enormous island kitchen. The optional lanai vastly increases the living space and brings the outdoors into this spacious home. The main floor also includes a secluded study, guest closet, powder room, mud room, walk-in pantry and laundry room. No convenience was overlooked, including the option of a 2.5- or 3-car garage.

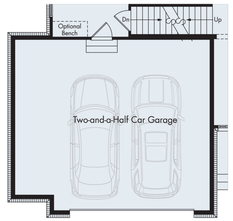
Upstairs, the owner's suite features a stepped ceiling, spacious bath with an optional whirlpool tub and oversized walk-in closet. Three more large bedrooms share a central bath with double sinks.



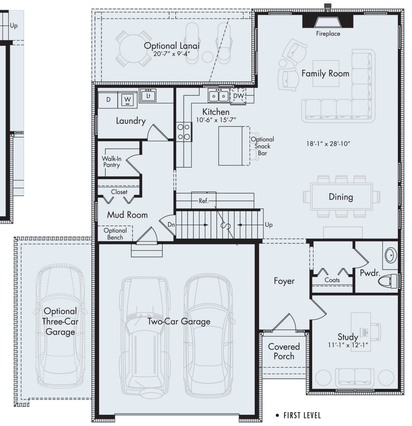
• SECOND LEVEL



• OPTIONAL DELUXE OWNER'S BATH



• OPTIONAL TWO-AND-A-HALF CAR GARAGE



• FIRST LEVEL

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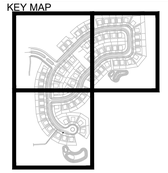
KEY MAP



CLIENT
WHITE LAKE HILL, LLC
31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - SINGLE FAMILY
HIGHLAND ROAD
WHITE LAKE TWP., MI

REVISIONS

FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
MAY 8, 2025

DRAWING TITLE
SINGLE FAMILY HOME FLOOR PLANS

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
1 OF 3

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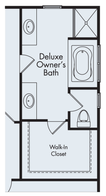
CAMPBELL

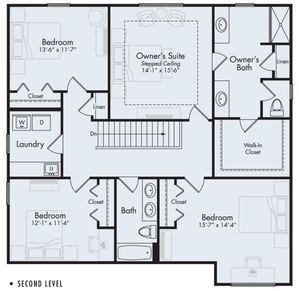
First Level	1,217 sf
Second Level	1,402 sf
Total	**2,619 sf**

The four-bedroom Campbell is an ideal family home with two spacious levels. The foyer opens to reveal the family room with it's centered fireplace and triple windows. This sunny dining room with its sliding glass doorwall can extend outdoors for an optional covered porch. The U-shaped kitchen is centered on a convenient island with snack bar seating. The main floor also includes a secluded study, powder room, mud room and walk-in pantry.

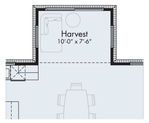
The upper level showcases the owner's suite with stepped ceiling, spacious bath with twin vanities, and large walk-in closet. There is also an option to include a whirlpool tub. There are three more bedrooms on the second floor along with a full bath and oversized laundry room.



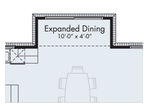
• OPTIONAL DELUXE OWNER'S BATH



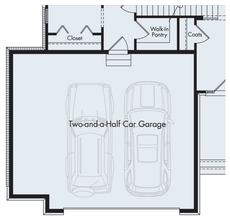
• SECOND LEVEL



• OPTIONAL HARVEST ROOM



• OPTIONAL EXPANDED DINING ROOM



• OPTIONAL TWO-AND-A-HALF CAR GARAGE

• FIRST LEVEL

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CYPRESS

First Level	1,539 sf

If you're looking for the perfect ranch floor plan with no wasted space, then the Cypress is ideal for you! The open island kitchen, dining area with its optional bay window, and family room with a cozy fireplace, will keep your family together and enhance the connections during special times hosted at your home. The Cypress also keeps privacy in mind with the elegant owner's suite and two additional bedrooms and a full bath nicely separated from the living space. The 2-car garage opens to a large mud room with a closet and adjacent laundry room.

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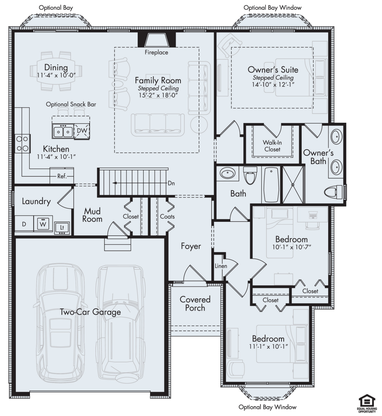

• FIRST LEVEL

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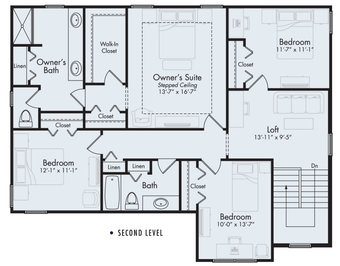
DAVENPORT

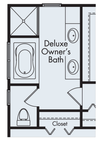
First Level	1,411 sf
Second Level	1,293 sf
Total	**2,704 sf**

Fall in love with the spacious open flow of the Davenport's main floor living area. The Davenport offers an imaginatively designed two-story home with an inviting central family room with a cozy fireplace and triple windows. The adjoining kitchen is a dream with lots of counter space and a functional island with optional snack bar seating. The dining room is extended beyond the balance of the room with triple windows and a French door. A flex-room is a pleasant surprise off this area with its double doors and double window. The first floor also offers a powder room, mud room, laundry and walk-in pantry.

The second floor showcases four bedrooms including the owner's suite with its stepped ceiling, plenty of closet space and an elegant bath with the option of a spa tub and stall shower. There is an option for a second bedroom suite with a full bath on this level or a large loft as the standard. A covered front porch adds a distinctive touch to the home as well as an optional 2.5-car or 3-car garage.

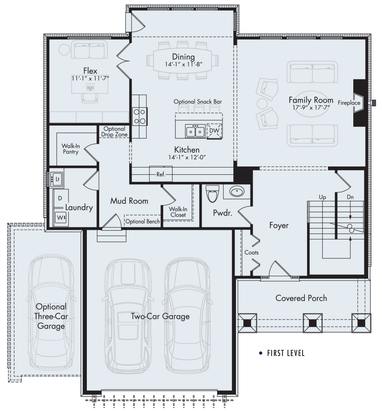


• SECOND LEVEL



• OPTIONAL DELUXE OWNER'S BATH

• OPTIONAL BEDROOM BATH



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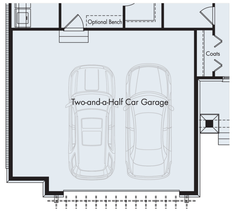

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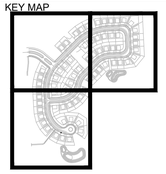
KEY MAP



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2 OF 3

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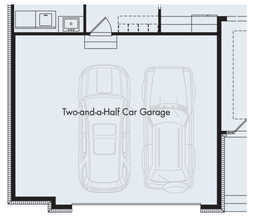
EASTWIND

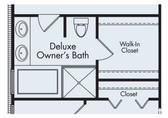
First Level 1,848 sf

Love the open layouts offered by modern ranch designs, but want more space? The Eastwind is the floor plan for you – with no wasted space. The kitchen, with its oversized island, is the heart of the home with the adjoining dining and family room and a cozy fireplace, abundant windows and stepped ceiling. This creative space will keep your guests well entertained during special occasions.

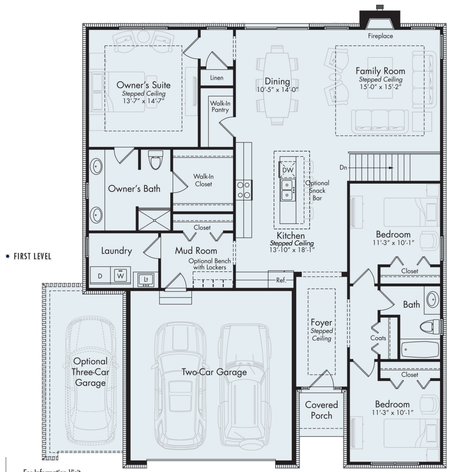
Two bedrooms are tucked away off the foyer with a central bath to share. An owner's suite offers an extra measure of privacy and elegance with its stepped ceiling, spacious bath and an optional soaking tub and large walk-in closet. The garage offers options for 2.5-cars and 3-cars, opens to a mud room with optional bench and lockers and a central laundry room.



• OPTIONAL TWO-AND-A-HALF CAR GARAGE



• OPTIONAL DELUXE OWNER'S BATH



• FIRST LEVEL

• OPTIONAL FIRST LEVEL LAUNDRY

All information contained herein was accurate at the time of publication. In order to maintain the high degree of quality and incorporate improvements with greater facilities and economy, we reserve the right to make changes in price, specifications, or materials or to change or discontinue models without notice or obligation. Floor plan dimensions are approximate. Renderings are artist's conception.
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For Information Visit MJCCompanies.com

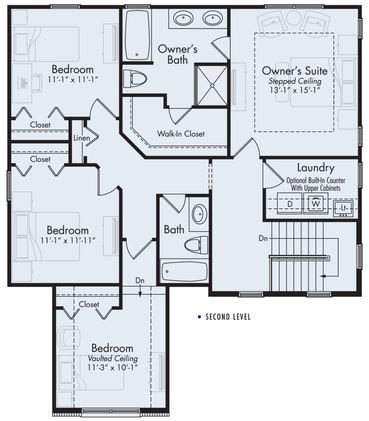
EVANSTON IV

First Level 797 sf
Second Level 1,139 sf
Total 1,936 sf

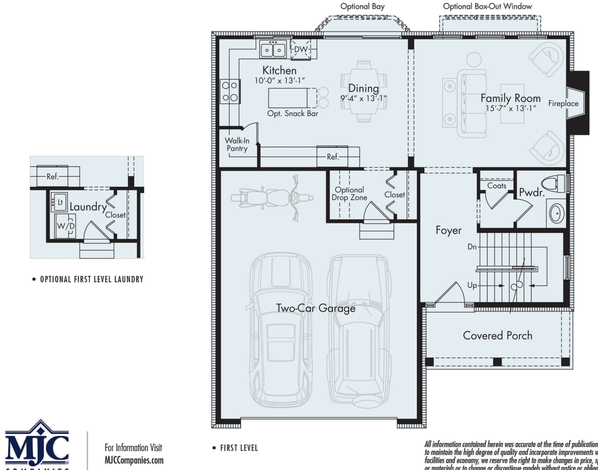
This home is a two-story masterpiece. Featuring a charming front porch with columns, the Evanston IV opens to a large foyer with a guest closet and powder room. The huge U-shaped kitchen, a dining area and family room are bathed in sunlight from lots of windows and sliding glass doorwall with options for a bay and box-out windows to further enhance the open feeling.

Upstairs, the owner's suite boasts a stepped ceiling, elegant bath with separate tub, shower and walk-in closet. There are three more bedrooms on the second floor, along with a central bath and convenient laundry room.

The garage opens to an optional drop zone or second laundry area.



• SECOND LEVEL



• FIRST LEVEL

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For Information Visit MJCCompanies.com

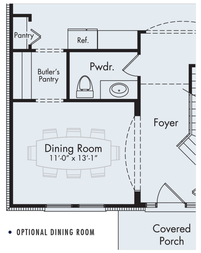
WASHINGTON

First Level 1,147 sf
Second Level 1,092 sf
Total 2,239 sf

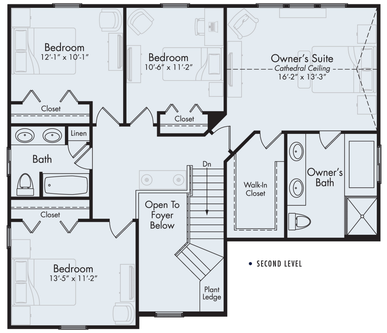
The Washington is a very unique floor plan that lives large thanks to its two-story foyer and very open, flowing first floor living area. The foyer opens to a cozy library or optional formal dining room with butler's pantry. The spacious island kitchen, dining nook and family room keep the family connected and engaged.

The second level owner's suite offers a cathedral ceiling, triple windows and an elegant spa bath with separate tub and shower. Three additional bedrooms share a central bath and space for a study station.

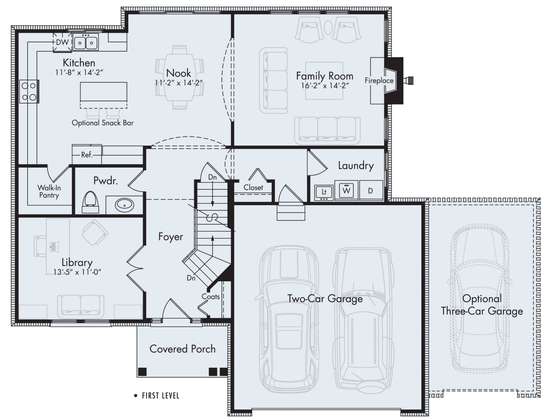
A 2-car or optional 3-car garage leads to a mud room and convenient laundry. You'll love this home from the moment you enter from the covered porch.



• OPTIONAL DINING ROOM



• SECOND LEVEL



• FIRST LEVEL

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PEA GROUP
t: 844.813.2949
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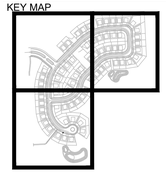
811 Know what's below. Call before you dig.

CAUTION!!
THE LOCATIONS AND ELEVATIONS OF EXISTING UNDERGROUND UTILITIES AS SHOWN ON THIS DRAWING ARE ONLY APPROXIMATE. NO GUARANTEE IS EXPRESSED OR IMPLIED AS TO THE COMPLETENESS OR ACCURACY THEREOF. THE CONTRACTOR SHALL BE EXCLUSIVELY RESPONSIBLE FOR DETERMINING THE EXACT UTILITY LOCATIONS AND ELEVATIONS PRIOR TO THE START OF CONSTRUCTION.

KEY MAP



CLIENT
WHITE LAKE HILL, LLC
31550 NORTHWESTERN HWY
FARMINGTON HILLS, MI 48334

PROJECT TITLE
THE AVALON - SINGLE FAMILY
HIGHLAND ROAD
WHITE LAKE TWP. MI

REVISIONS

FINAL SITE PLAN REVIEW	5/8/25
FINAL SITE PLAN REVIEW	9/30/25

ORIGINAL ISSUE DATE:
MAY 8, 2025

DRAWING TITLE
SINGLE FAMILY HOME FLOOR PLANS

PEA JOB NO.	2021-0084
P.M.	JC
DN.	BSH/JEB
DES.	BSH

DRAWING NUMBER:
3 OF 3

S:\PROJECTS\2021\2021-0084 WHITE LAKE MIXED USE\DWG\CONSTRUCTION\1-SINGLE FAMILY\FLOOR PLANS-21-0084.dwg

DRAFT

PLANNED DEVELOPMENT AGREEMENT
THE AVALON

THIS PLANNED DEVELOPMENT AGREEMENT (the "Agreement"), dated _____, 2025 (the "Effective Date"), is made and entered into by and between the **CHARTER TOWNSHIP OF WHITE LAKE**, a Michigan municipal corporation, having the address of 7525 Highland Road, White Lake, Michigan 48383, hereinafter referred to as and called the "Township", and **WHITE LAKE HILL, LLC**, a Michigan limited liability company, whose address is 31550 Northwestern Hwy., Ste. 200, Farmington Hills, MI 48334 ("Avalon").

RECITALS:

A. Avalon is the fee owner of the real property in White Lake Township, Michigan, which is more particularly described on **Exhibit A**, attached hereto and made a part hereof (hereinafter referred to as the "Property").

B. The Property is zoned PD, Planned Development District, and is currently master planned Neighborhood Residential.

C. This Planned Development encompasses two (2) parcels separated by Hill Road and consists of approximately 110 +/- acres (68.96 acres for Multi-Family and 41.06 acres for Single-family Condominium site) of real property as described on Exhibit A. The vacant Property is located on the northwest corner of Highland Road (M-59) and Hill Road.

D. Avalon has applied to the Township to develop the Property as a three-hundred sixty-six (366) unit multi-family and sixty-eight (68) single-family condominium units, including an approximately 5,428 sq. ft. clubhouse and other amenities such as package delivery storage, exercise areas, pet wash and event rooms, using the Planned Development (PD) process under the Township's Zoning Ordinance (the "Development").

E. The Planning Commission recommended approval with conditions of the Preliminary Site Plan dated May 16, 2022 at its July 7, 2022 Planning Commission Meeting, after having held a public hearing on that date.

F. On October 18, 2022, the Township Board considered and approved the Preliminary Site Plan dated September 29, 2022 and subject to conditions.

G. On October 17, 2023, the Preliminary Site Plan approval was extended by the Township Board in accordance with Section 6.7.A.iii.c.

H. Following Township Board approval of the Preliminary Site Plan dated September 29, 2022, a revised Site Plan, dated May 8, 2025 (with a revised date of September 15, 2025), was submitted, which revised Site Plan reduces the number of units in multi-family, modifies the internal road layout in the southcentral portion of the site, substitutes ranch style attached units for the two-story 12-unit buildings and provides parking and mail facilities west of the clubhouse), which is attached hereto as **Exhibit B** and referred to as the "PD Plan." All references in this Agreement to the PD Plan shall be deemed to refer to the revised Site Plan attached hereto as **Exhibit B**.

I. The Township considered and relied upon the representations by Avalon of certain public benefits of the Avalon PD, which benefits were summarized in Avalon's Written Statement dated [November 3, 2025].

J. Avalon has represented its objectives to create alternative, high quality multi-family and single-family housing options that appeal to a wide range of demographics in White Lake Township, all consistent with the Master Plan objective to provide for a diversity of residential housing. Avalon further desires to construct an open park area and related parking, to be dedicated to the Township in furtherance of community wellness, social engagement, and outdoor recreation. In addition to increasing the diversity of residential housing, the Project proposes pedestrian connectivity throughout the project and along Highland Road, Hill Road and neighboring properties ("Statement of Planning Objectives to be Achieved by the Development" in accordance with Section 6.7(B)(i)(b)(1)).

K. Avalon intends to offer for sale the 68 single family residential site condominiums on the portion of the property located on the east side of Hill Road. With respect to the 366 multi-family units located on the west side of Hill Road, Avalon intends to lease those units ("Statement of Intent" in accordance with Section 6.7(B)(i)(b)(2)).

J. The Township desires to ensure that the real property that is depicted on the PD Plan is developed in accordance with, and used for the purposes permitted by the approved PD Plan, the related documents and undertakings of Avalon, and all applicable laws, ordinances, regulations, and standards; and Avalon desires to proceed with obtaining engineering division approval of the proposed site plan and the issuance of permits required to develop the Property in accordance with the approved PD Plan.

NOW, THEREFORE, it is hereby agreed as follows:

1. The Township has granted its approval of the PD Plan and this Agreement under the Planned Development Approval Process of Section 6.7 of the Township's Zoning Ordinance, which approval is subject to the terms and conditions of this Agreement. The parties agree and acknowledge that the Property shall be developed only in accordance with:

a. all applicable provisions of the White Lake "Township Code of Ordinances," including (without limitation) Section 6.7 of the Zoning Ordinance (the Zoning Ordinance in effect as of the date of this Agreement) relating to Planned Developments, except as amended by this Agreement and the PD Documents.

b. the PD Plan attached hereto as Exhibit B, as such PD Plan was approved by the Planning Commission on _____, 2025, which PD Plan shall also constitute the approved final site plan and landscape plan for the Development, because Avalon chose to submit the PD Plan in sufficient detail so as to allow the PD Plan to act as the final site plan and landscape plan for the Development;

c. engineering construction plan review and approval by the Township's Engineering Consultant, which plans shall be submitted by Avalon in accordance with all applicable laws, ordinances, regulations and standards; and

d. this Agreement.

The items listed in 1.a. through d. above are referred to in this Agreement as the "PD Documents."

2. The permitted use of the Property shall be those permitted in the PD, Planned Development District.

3. The Township's approval of the PD Documents, and the use of the Property and any development thereof, are subject to compliance with this Agreement and the following conditions:

a. Submission by Avalon of engineering construction plans and approval by the Township's Engineering Consultant. Such plans shall comply with all applicable ordinances, standards, rules, regulations, and requirements of the Township as determined by the Engineering Consultant, including without limitation its comments in the October 21, 2025 correspondence to the Community Development Director relating to the PD Plan.

b. The requirements of the Township as determined by the Planning Consultant, including without limitation its comments in the October 21,

2025 letter report issued by Mr. Matteo Passalacqua, of Carlisle Wortman Associates, Inc., the Township's Planning Consultant, relating to the PD Plan.

c. The requirements of the Township Fire Department, including without limitation its comments in the October 20, 2025 correspondence to the Community Development Department relating to the PD Plan.

d. Conditions imposed on the Development by the Planning Commission during site plan review, conditions recommended by the Township's Planning Consultant and Engineer and any other staff, and other reasonable conditions, which may be subsequently imposed on the site plan, landscape plan, and engineering plans that are not contrary to this Agreement and the approved PD Plan.

e. All improvements shown on the PD Plan and PD Documents completed at Avalon sole cost and expense, in accordance with applicable ordinances, rules, standards and regulations. Avalon shall develop the Property in one zoning phase. However, Avalon may, but is not obligated to develop the Development in so called "construction" phases. Prior to the start of construction, Avalon shall submit a preliminary construction phasing plan ("Phasing Plan") to the Community Development Director and Township Staff, which may, after approval by the Community Development Director, be revised and amended throughout the term of this Agreement.

f. The only deviations from otherwise applicable Township ordinances that shall be permitted are those deviations as depicted on the approved PD Plan, and which are set forth in Exhibit D attached hereto and incorporated herein ("Deviations").

g. Avalon shall install a park to be known as the "Avalon Bark and Play," as depicted on the PD Plan. Avalon agrees, on behalf of itself and all future owners of the Property, upon completion of Avalon Bark and Play to execute dedication documents for that portion of the Property on which Avalon Bark and Play is sited and as legally described on attached Exhibit ___ to the Township for the benefit of the public. After execution and recording of appropriate conveyance documents for the park to the Township, the Township shall be responsible for the maintenance, repair, replacement, management and operation of the park. Dedication of the park shall be effectuated via quit claim deed in a form acceptable to the Township and Avalon, which shall contain certain restrictions on the use of the park property, including, but not limited to, (i) Avalon retaining certain easement rights in the land, including but not limited to, to facilitate construction and operation of the Development, and for maintenance and repair of the for

the park in the event the Township fails to maintain the park as required under this Agreement (subject to reasonable terms and conditions acceptable to the Township and Avalon), and (ii) requirements that the property be used as the Avalon Park and Play consistent with this Agreement and PD Plan for a minimum of twenty (20) years from the Effective Date of this Agreement. At the expiration of twenty (20) years, if the Township determines that use of the land as the Avalon Bark and Play is no longer in the best interest of the Township, the land may be used for general passive recreational purposes at the discretion of the Township.

.

Avalon shall ensure that the proposed use on the Property shall not exceed the performance criteria found in the Township's Zoning Ordinance, Section 4.47.

h. Architectural style, elevation features and materials must be consistent with Avalon representations to the Planning Commission at its Planning Commission Meeting on _____, 2025, and in accordance with the PD Plan.

i. The proposed development schedule for the development of the Property is attached as **Exhibit C**, which may be modified by Avalon as necessary or appropriate, with the Township's consent.

j. The Traffic Impact Study prepared by Fishbeck, dated July 30, 2025, is incorporated by reference into this Agreement. Avalon acknowledge the reliance by the Township on this traffic study in the approval of the PD Plan.

k. The Community Impact Study prepared by M. Shapiro Real Estate Group, dated February 25, 2022, is incorporated by reference into this Agreement. Avalon acknowledge the reliance by the Township on this study in the approval of the PD Plan.

4. The Zoning Board of Appeals shall have no jurisdiction over the Property or the application of this Agreement.

5. Except for deviations specifically approved by the Township under this Agreement, if any, and the approved PD Plan, the Township Code of Ordinances, Zoning Ordinance and all applicable regulations of the Township, shall apply to the Property, and any violation of such Codes, Ordinances and regulations by Avalon, its successors or assigns, or occupant of the Property shall be deemed a breach of this Agreement, as well as a violation of the Township Code or Ordinance.

6. (a) Any breach of this Agreement shall constitute a nuisance *per se* which shall be abated. The parties therefore agree that, in the event of a breach of this Agreement by Avalon, which is not cured in accordance with this Agreement, the Township, in addition to any other relief to which it may be entitled at law or in equity, shall be entitled under this Agreement to an order of a court of competent jurisdiction providing for relief in the form of injunctive relief or specific performance requiring abatement of the nuisance *per se*. Except in emergency circumstances, Avalon shall be provided notice of the deficiencies from the Township and shall be afforded an opportunity to timely correct in the manner as set forth in Section (b) below.

(b) In the event of a breach of this Agreement, the Township may notify Avalon of the occurrence of the breach and issue a written notice requiring the breach be cured within thirty (30) days; provided, however, that if the breach, by its nature, cannot be cured within thirty (30) days, Avalon shall not be in the breach hereunder if Avalon commences the cure within the thirty (30) day period and diligently pursues the cure to completion. Failure to comply with such notice shall, in addition to the remedy provided in subsection (c) below and any other relief to which the Township may be entitled in equity or at law, render Avalon liable to the Township in any suit for enforcement for actual costs incurred by the Township including, but not limited to, actual attorneys' fees and costs, expert witness fees and the like.

(c) In addition to the above described remedies, in the event the breach is due to a failure to maintain and develop the Property in a first class condition, in accordance with this Agreement, using commercially reasonable standards consistent with the PD plan and this Agreement, and the Township provided the notice described in subsection (b), above, which notice sets forth the date, time and place of a hearing before the Township Board for the purpose of allowing Avalon to be heard as to why the Township should not proceed to perform the maintenance which has not been undertaken. In that hearing, the time for curing such deficiencies and the hearing itself may be extended. If, following the hearing, the Township Board shall determine that the deficiency has not been cured within the time specified at the hearing, then upon five (5) days written notice to Avalon, the Township shall thereupon have the power and authority, but not the obligation, to enter upon the Property or cause its agents or contractors to enter upon the Property to cure such deficiency as reasonably found by the Township to be appropriate and/or necessary, in a manner so as to reasonably minimize any interference with the business operations on the Property and the cost and expense of such curative action, including the cost of notices by the Township and actual legal, planning, and engineering fees and costs incurred by the Township, shall be paid by Avalon. Such amount shall constitute a lien on the Property and the Township may require such costs and expenses to be paid prior to the commencement of work. If such costs and expenses have not been paid within sixty (60) days of a billing to Avalon, all unpaid amounts be a) placed on a delinquent tax roll of the Township as to the Property and shall accrue interest and penalties and shall be collected as and shall be deemed delinquent real property taxes according to the laws made and provided for the collection of delinquent real property taxes in the discretion of the Township; or b) assessed against Avalon and collected as a special assessment on the next annual Township tax roll; or c) collected by use of the applicable provisions of

Michigan law providing for foreclosure by advertisement, Avalon having specifically granted the Township the required power of sale to do so; or d) collected by suit against owner. If suit is initiated, the Owner shall pay actual attorney fees and costs. The selection of remedy shall be at the sole option of the Township, and election of one remedy shall not waive the use of any other remedy

7. This Agreement may not be amended except in writing signed by the parties and recorded in the same manner as this Agreement.

8. The parties understand and agree that if any part, term, or provision of this Agreement is held by a court of competent jurisdiction, and as a final enforceable judgment, to be illegal or in conflict with any law of the State of Michigan or the United States, the validity of the remaining portions or provisions of this Agreement shall not be affected, and the rights and obligations of the parties shall be construed and enforced as if this Agreement did not contain the particular part, term, or provisions held to be invalid.

9. This Agreement shall be governed by the laws of the State of Michigan, both as to interpretation and performance. In the event of any litigation relating to this Agreement or the PD, the parties consent to the venue in and to the exclusive jurisdiction of the courts of and in the State of Michigan, including the federal courts.

10. No waiver of any breach of this Agreement shall be held to be a waiver of any other or subsequent breach. A delay in enforcement of any provision of this Agreement shall not be construed as a waiver or estoppel of the Township's right to eventually enforce, or take action to enforce, the terms of this Agreement. All remedies afforded in this Agreement shall be taken and construed as cumulative; that is, all remedies afforded in this Agreement are in addition to every other remedy provided by law.

11. The signers of this Agreement warrant and represent that they have the authority to sign this Agreement on behalf of their respective principals and the authority to bind each party to this Agreement according to its terms. Further, each of the parties represent that the execution of this Agreement has been duly authorized and is binding on such parties.

12. This Agreement shall run with the land described herein as the Property and bind the parties, their heirs, successors, and assigns. This Agreement shall be recorded in the Oakland County Register of Deeds by the Township. The parties acknowledge that the Property is subject to changes in ownership and/or control at any time, but that heirs, successors, and assigns shall take their interest subject to the terms of this Agreement. All references to "Avalon" in this Agreement shall also include its heirs, successors, and assigns. This Agreement shall become effective as of the Effective Date.

13. (a) Avalon has negotiated with the Township the terms of the PD Documents, including this Agreement, and such documentation represents the product of the joint efforts and mutual agreements of Avalon and the Township.

(b) The parties agree that this Agreement and its terms, conditions, and requirements are lawful and consistent with the intent and provisions of local ordinances, state and federal law, and the Constitutions of the State of Michigan and the United States of America. Avalon has offered and agreed to proceed with the undertakings and obligations as set forth in this Agreement in order to protect the public health, safety, and welfare and provide material advantages and development options for Avalon, all of which undertakings and obligations the parties agree are necessary in order to ensure public health, safety, and welfare, to ensure compatibility with adjacent uses of land, to promote use of the Property in a socially, environmentally, and economically desirable manner, and to achieve other reasonable and legitimate objectives of the parties, as authorized under applicable Township codes and ordinances and the Michigan Zoning Enabling Act, MCL 125.3101, *et seq.,* as amended. It is also agreed and acknowledged that the terms, conditions, obligations, and requirements of this Agreement are clearly and substantially related to the burdens to be created by the development and use of the Property under the approved PD, and are, without exception, clearly and substantially related to the Township's legitimate interests in protecting the public health, safety and general welfare. Furthermore, Avalon fully accepts and agrees to the final terms, conditions, requirements and obligations of the PD Documents, and Avalon shall not be permitted in the future to claim that the effect of the PD Documents results in an unreasonable limitation upon uses of all or any portion of the property described in attached Exhibit A, or claim that enforcement of the PD Documents causes an inverse condemnation, other condemnation or taking of all or any portion of the property described in attached Exhibit A.

14. Avalon acknowledges that, at the time of the execution of this Agreement, Avalon has not yet obtained engineering approvals for the development of the Property. Avalon acknowledges that the Township's Engineering Consultant may impose additional conditions other than those contained in this Agreement during their plan reviews and approvals as authorized by law; provided, however, that such conditions shall not be inconsistent with the PD Plan or PD Documents and shall not change or eliminate any development right authorized thereby. The plans approved by the Engineering Consultant and any conditions imposed thereby, shall be incorporated into and made a part of this Agreement automatically upon issuance of the Engineering Consultant's approval of same and without the necessity of amending this Agreement, and shall be enforceable against Avalon in the event it proceeds with the development of the Property.

15. It is understood that construction of some of the improvements included in the PD Documents may require the approval of other governmental agencies.

16. None of the terms or provisions of this Agreement shall be deemed to create a partnership or joint venture between the Avalon and the Township.

17. The recitals contained in this Agreement and all exhibits attached to this Agreement and referred to herein shall for all purposes be deemed to be incorporated in this Agreement by this reference and made a part of this Agreement.

18. This Agreement, together with the PD Documents, are intended as the complete integration of all understandings between the parties related to the subject matter herein. No prior contemporaneous addition, deletion, or other amendment shall have any force or effect whatsoever, unless embodied herein in writing. No subsequent notation, renewal, addition, deletion or other amendment shall have any force or effect unless embodied in a written amendatory or other agreement executed by the parties required herein and recorded in the Oakland County Records, other than additional conditions, which may be attached to site plan approvals as stated in Section 14 above.

19. The parties intend that this Agreement shall create no third-party beneficiary interest except for an assignment pursuant to this Agreement. The parties are not presently aware of any actions by them or any of their authorized representatives that would form the basis for interpretation construing a different intent and in any event expressly disclaim any such acts or actions, particularly in view of the integration of this Agreement.

20. Where there is a question with regard to applicable regulations for a particular aspect of the development, or with regard to clarification, interpretation, or definition of terms or regulations, and there are no apparent express provisions of the PD Documents which apply, the Township Director of Community Development, in the reasonable exercise of its discretion, shall determine the regulations of the Township's Zoning Ordinance, as that Ordinance may have been amended, or other Township Ordinances that shall be applicable, provided that such determination is not inconsistent with the nature and intent of this Agreement and the PD Documents. In the event of a conflict or inconsistency between two or more provisions of the PD Documents, the more restrictive provision, as determined in the reasonable discretion of the Township Council, shall apply. In the event there exists any conflict between this Agreement and the PD Plans and current and future Township Zoning Ordinance provisions, this Agreement and the PD Plan shall apply.

[Signatures on Next Page]

DRAFT

IN WITNESS WHEREOF, the parties hereto have set their hands on the day and year set forth with the notarization of their signatures.

AVALON:

WHITE LAKE HILL LLC, a Michigan limited liability company

_____
_
By:
Its:

STATE OF MICHIGAN)
) ss
COUNTY OF OAKLAND)

On this ____ day of _____, 2025, before me personally appeared _____, the _____ of White Lake Hill LLC, a Michigan limited liability company, who acknowledged that he/she signed this agreement on behalf of said company.

_____
Notary Public
Oakland County, Michigan
Acting in Oakland County, Michigan
My Commission Expires: _____

[*signature of Township on following page*]

DRAFT

TOWNSHIP:

CHARTER TOWNSHIP OF WHITE LAKE, a Michigan municipal corporation

_____

By: Rik Kowall

Its: Township Supervisor

_____

By: Anthony Noble

Its: Township Clerk

STATE OF MICHIGAN)
) ss
COUNTY OF OAKLAND)

On this ____ day of _____, 2025, before me personally appeared Rik Kowall, the Township Supervisor, and Anthony Noble, the Township Clerk, who acknowledged that they signed and attested to this Agreement on behalf of the Township of White Lake.

_____

Notary Public
Oakland County, Michigan
Acting in Oakland County, Michigan
My Commission Expires: _____

Exhibits:
A – Property Legal Description
B – PD Plans
C – Development Schedule

DRAFT

Drafted Jointly By:
Lisa J. Hamameh, Esq.
Rosati Schultz Joppich & Amtsbuechler, P.C.
27555 Executive Drive, Suite 250
Farmington Hills, MI 48331-3550

When Recorded, Return To:
Township Clerk
Township of White Lake
7525 Highland Road
White Lake, MI 48383

and

Alexandra E. Dieck, Esq.
Bodman
201 S. Division Street
Suite 400
Ann Arbor, MI 48104

DRAFT

EXHIBIT A

PROPERTY LEGAL DESCRIPTION

Legal description of certain property located in the Township of White Lake, County of Oakland, State of Michigan, further described as follows:

That part of the West ½ of the Northwest ¼ of Section 20, Township 3 North, Range 8 East, White Lake Township, Oakland County, Michigan, lying northerly of Highland Road (M-59), more particularly described as: BEGINNING at the Northwest corner of said section; thence South 89 degrees 39 minutes 41 seconds East 1331.52 feet along the north section line; thence South 01 degrees 14 minutes 20 seconds West 2443.61 feet to the northerly right of way line of Highland Road (M-59); thence along said right of way a curve to the right 1423.36 feet, said curve having a radius of 2664.79 feet, a central angle of 30 degrees 36 minutes 14 seconds, and a chord bearing North 69 degrees 03 minutes 39 seconds West 1406.50 feet to the west section line; thence North 01 degrees 01 minutes 40 seconds East 1948.57 feet along said section line to the POINT OF BEGINNING. Said property contains 68.96 acres, more or less.

and

Part of the Northwest ¼ Section 20, Township 3 North, Range 8 East, White Lake Township, Oakland County, Michigan, described as: BEGINNING at the North ¼ corner of said section; thence South 01 degrees 26 minutes 55 seconds West 1067.66 feet along the North-South ¼ line of said section; thence North 89 degrees 02 minutes 22 seconds West 665.95 feet; thence South 01 degrees 22 minutes 34 seconds West 575.58 feet; thence North 88 degrees 42 minutes 12 seconds West 660.13 feet; thence North 01 degrees 14 minutes 20 seconds East 1624.88 feet to the north line of said section; thence South 89 degrees 39 minutes 41 seconds East 1331.52 feet along said north line to the POINT OF BEGINNING. Said property contains 41.06 acres, more or less.

Tax Parcel Identification Nos.: 12-20-101-003 and 12-20-126-006

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EXHIBIT B

PD PLANS
(attached)

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C

Development Schedule

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EXHIBIT D

Deviations

1.	Sec. 5.19.D	20–38 ft greenbelt, 1 large tree & 4 shrubs per 15 ft	Preserve existing 50' of woodland buffer and retain existing well screened vegetation. Provide no new plantings within this greenbelt
2.	Sec. 5.19.D	Continuous 20 ' greenbelt with required plantings along Hill Rd	Preserve existing 50' buffer and remove 367 ft from calculation, retain existing well screened vegetation. Provide no new plantings within the 367' of greenbelt
3.	Sec. 5.19.D	Continuous 20'-38' greenbelt with required plantings	Preserve 50' buffer and remove 418 ft from calculation, retain existing well screened vegetation. Provide no new plantings within greenbelt
4.	Sec. 5.19.D	395 shrubs required interior	Provide 287 shrubs, retain natural features
5.	Sec. 5.19.E	1,147 trees & 5,735 shrubs required	Provide 1,027 trees & 1,200 shrubs
6.	Sec. 5.19.D	Greenbelt buffer between residential & commercial	Rely on existing mature woodlands and not disturb existing well screened vegetation. No new plantings proposed.
7.	Sec. 5.19.D	Continuous greenbelt along Hill Rd	Remove 1,165 ft from calculation, retain existing vegetation
8.	Sec. 3.11.C	41,500 sq ft recreation space required	150,493 sq ft recreation space with clubhouse, pool, dedicated dog park and playground, etc.
9.	Sec. 5.9.I	Max 2 monument signs, 30 sq ft each, 6 ft high	in addition to two monument signs, allow plaza sign exceeding count/size per site plan and administrative approval by planning administrator
10.	Sec. 5.9.D	Temporary signage no longer than 90 days and may not exceed 32 sq ft	Allow two temp signage to continue throughout the Completion Date of Avalon with 2

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			signs on M59 to not exceed 32 sq ft each
11.	Sec. 3.11.U	25' from back of sidewalk	20' from Back of sidewalk
12.	Sec. 20-62.b.q.a10	Multiple access points required for a single family development	Boulevard access in lieu of multiple access points
13.	Sec. 20-62.b.1.a.2	Extension of roads to adjoining properties	No connect to adjacent properties
14.	Sec. 6.1.F.i.d	Roads within site condo to be dedicated	Roads within site condo to remain private

Additional Deviations

1. The Township Zoning Ordinance requires that all construction shall be complete within twenty-four months of receipt of building permits as set forth in Section 6.8(I). Avalon is requesting a deviation for completion of the Development. The Development shall be complete within six (6) years from the start of site construction ("Completion Date"), provided, however, that Avalon may request extensions, based upon hardship and subject to the Township Board's review and approval, which shall not be unreasonably withheld, conditioned, or delayed. Extensions shall be requested at least ninety (90) days prior to the expiration of the Completion Date or any subsequent extension, and additional conditions may be imposed for any extension period at the Township Board's discretion.

2. Notwithstanding anything contained herein to the contrary, to the extent Avalon requires minor modifications to the PD Plan, in addition to the matters set forth in Section 6.7. E.(i)-(ii), inclusive, of the Township Zoning Ordinance, the Director of Community Development shall be permitted to approve the following minor modifications administratively, provided such minor modifications are consistent with the spirit of the PD Documents: (a) an increase in the size of any building, provided that the size of other buildings is decreased so that all buildings within the Development do not exceed the density limitation set forth in the PD Documents; (b) changes in elevations and architectural features which do not alter the character of the use; (c) correcting non-material errors; (d) changes requested by the Township, County, or State.

3. The Township Zoning Ordinance does not provide for the erection and development of model homes and sales offices in conjunction with development of Property. In furtherance of its leasing and sales activities, and in accordance with the terms and conditions of this Agreement Avalon may erect and maintain up to three (3) models on single-family portion of the Property and two (2) buildings containing models in the multi-family portion of the Property, in furtherance of its

leasing and sales activities, and in accordance with the terms and conditions of this Agreement. Notwithstanding anything to the contrary contained elsewhere in this Agreement, Avalon shall have the right to maintain a sales and/or leasing office, a construction office, models units, storage areas and reasonable parking incidental to the foregoing, and such access to, from and over the Development as may be reasonable to enable development and sale and/or leasing of the Project by the Avalon. Notwithstanding anything contained herein to the contrary, any construction office will be removed upon issuance of certificates of occupancy for the final building.

4. The Township Zoning Ordinance requires developer to obtain all outside permits prior to site clearing under Section 6.1. Avalon shall be entitled to apply for grading permit(s) and any related grading pre-construction meeting with the Township to perform early site clearing and grading on the Property, or any portion thereof, upon Applicant obtaining all required third-party soil erosion control permit(s) from relevant municipal or governmental entities outside the Township.

5. Avalon shall be entitled to the issuance of building permits for model homes, units for leasing and/or for sale, and the clubhouse provided that (i) all underground utilities for each respective construction phase wherein such model home, unit, building or clubhouse is located are complete; (ii) an adequate gravel subsurface base for all entranceways and internal drive areas to provide access to such model home, building, unit or Clubhouse is installed; (iii) upon deposit of the performance guarantee set forth in Section 7 below, if any.

6. Avalon shall be entitled to issuance of a temporary or final certificate of occupancy for any building, individual model unit located within a building, and/or Clubhouse, subject to installation and maintenance of an adequate gravel subsurface base for all entranceways and internal drive areas to provide access for such building, unit and/or Clubhouse. Notwithstanding anything contained herein to the contrary, no occupancy permits shall be granted without review and approval by the fire and building departments. Upon issuance of a temporary certificate of occupancy, Avalon shall be permitted to utilize such building, individual model unit located within a building, and/or Clubhouse for sales and development purposes, including, but not limited to, staging with furniture and utilizing in connection with leasing and sales tours to potential buyers and lessees. Notwithstanding anything contained herein to the contrary, to the extent that landscaping, final paving, and or other so-called "punch list" items are not yet complete at the time of issuance, the Township may issue a temporary certificate of occupancy subject to the financial guarantee described in Section 7 below remaining in place with a firm commitment by Avalon for completion within nine (9) months of issuance of such temporary certificate of occupancy.

7. Section 7.4 of the Township Zoning Ordinance requires that applicants deposit

either a cash deposit, certified check or irrevocable bank letter of credit as the form of completion guarantee. For this development, Avalon is requesting a deviation from the Zoning Ordinance such that the performance guarantee collectively for the entire Project, required by the Township shall together mean: (i) an irrevocable bank letter of credit or cash, or combination thereof (at the option of Avalon), in a collective amount not to exceed $250,000 (the "Cash or LOC"), and (ii) surety bond or multiple surety bonds (at the option of Avalon) which together equal the total amount determined by the Township Planning Administrator, which such amount shall be equal to the percentage of the estimated costs of the improvements to be constructed under the PD Plan as proposed by Avalon and reviewed by the Township engineering consultant, less the amount of the Cash or LOC. Upon the satisfactory completion, as determined by the Township, of the improvements required under the PD Plan, or any portion thereof, to the extent the Development is constructed in separate "construction phases," Avalon shall be entitled to, and Township shall approve, a reduction in the amount of the bond or Cash or LOC corresponding with the completed improvements, within thirty (30) days of completion of the improvements in the Development, or such construction phase, provided, however, any surety bond shall be reduced first, prior to return of/reduction in the Cash or LOC such that the Township shall retain the Cash or LOC (or a portion thereof) until completion of the Development.

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WHITE LAKE TOWNSHIP
7527 HIGHLAND ROAD, WHITE LAKE, MI 48383
TOWNSHIP ANNEX
2026 PUBLIC MEETING DATES
PLANNING COMMISSION, ZBA, AND PARKS REC MEETINGS START AT 6:30 P.M.
CORRIDOR IMPROVEMENT AUTHORITY MEETINGS START AT 5:00 P.M.

JANUARY		JULY	
NO 1ST CIA MTG		CORRIDOR IMPROVEMENT AUTHORITY	7/2/2026
NO 1ST PLANNING COMMISSION MTG		PLANNING COMMISSION (1ST MTG)	7/2/2026
PARKS AND RECREATION	1/14/2026	PARKS AND RECREATION	7/8/2026
PLANNING COMMISSION (2ND MTG)	1/15/2026	PLANNING COMMISSION (2ND MTG)	7/16/2026
ZONING BOARD OF APPEALS	1/22/2026	ZONING BOARD OF APPEALS	7/23/2026
FEBRUARY		**AUGUST**	
CORRIDOR IMPROVEMENT AUTHORITY	2/5/2026	CORRIDOR IMPROVEMENT AUTHORITY	8/6/2026
PLANNING COMMISSION (1ST MTG)	2/5/2026	PLANNING COMMISSION (1ST MTG)	8/6/2026
PARKS AND RECREATION	2/11/2026	PARKS AND RECREATION	8/12/2026
PLANNING COMMISSION (2ND MTG)	2/19/2026	PLANNING COMMISSION (2ND MTG)	8/20/2026
ZONING BOARD OF APPEALS	2/26/2026	ZONING BOARD OF APPEALS	8/27/2026
MARCH		**SEPTEMBER**	
CORRIDOR IMPROVEMENT AUTHORITY	3/5/2026	CORRIDOR IMPROVEMENT AUTHORITY	9/3/2026
PLANNING COMMISSION (1ST MTG)	3/5/2026	PLANNING COMMISSION (1ST MTG)	9/3/2026
PARKS AND RECREATION	3/11/2026	PARKS AND RECREATION	9/9/2026
PLANNING COMMISSION (2ND MTG)	3/19/2026	PLANNING COMMISSION (2ND MTG)	9/17/2026
ZONING BOARD OF APPEALS	3/26/2026	ZONING BOARD OF APPEALS	9/24/2026
APRIL		**OCTOBER**	
CORRIDOR IMPROVEMENT AUTHORITY	4/2/2026	CORRIDOR IMPROVEMENT AUTHORITY	10/1/2026
PLANNING COMMISSION (1ST MTG)	4/2/2026	PLANNING COMMISSION (1ST MTG)	10/1/2026
PARKS AND RECREATION	4/8/2026	PARKS AND RECREATION	10/14/2026
PLANNING COMMISSION (2ND MTG)	4/16/2026	PLANNING COMMISSION (2ND MTG)	10/15/2026
ZONING BOARD OF APPEALS	4/23/2026	ZONING BOARD OF APPEALS	10/22/2026
MAY		**NOVEMBER**	
CORRIDOR IMPROVEMENT AUTHORITY	5/7/2026	CORRIDOR IMPROVEMENT AUTHORITY	11/5/2026
PLANNING COMMISSION (1ST MTG)	5/7/2026	PLANNING COMMISSION (1ST MTG)	11/5/2026
PARKS AND RECREATION	5/13/2026	PARKS AND RECREATION	11/11/2026
PLANNING COMMISSION (2ND MTG)	5/21/2026	ZONING BOARD OF APPEALS	11/12/2026
ZONING BOARD OF APPEALS	5/28/2026	PLANNING COMMISSION (2ND MTG)	11/26/2026
JUNE		**DECEMBER**	
CORRIDOR IMPROVEMENT AUTHORITY	6/4/2026	CORRIDOR IMPROVEMENT AUTHORITY	12/3/2026
PLANNING COMMISSION (1ST MTG)	6/4/2026	PLANNING COMMISSION (1ST MTG)	12/3/2026
PARKS AND RECREATION	6/10/2026	PARKS AND RECREATION	12/9/2026
PLANNING COMMISSION (2ND MTG)	6/18/2026	ZONING BOARD OF APPEALS	12/10/2026
ZONING BOARD OF APPEALS	6/25/2026	PLANNING COMMISSION (2ND MTG)	12/17/2026

MEETING DATES & TIMES ARE SUBJECT TO CHANGE

For more information, contact 248-698-3300 or visit www.whitelaketwp.com