SUPERIOR CHARTER TOWNSHIP PLANNING COMMISSION
SUPERIOR TOWNSHIP HALL
3040 N. PROSPECT, SUPERIOR TOWNSHIP, MI 48198
AGENDA
May 28, 2025 - 7:00 PM

1. CALL TO ORDER
2. ROLL CALL
3. DETERMINATION OF QUORUM
4. ADOPTION OF AGENDA
5. APPROVAL OF MINUTES
   - A. Approval of the April 23, 2025, Regular Meeting Minutes
6. CITIZEN PARTICIPATION
7. CORRESPONDENCE
8. PUBLIC HEARINGS, DELIBERATIONS AND ACTIONS
9. REPORTS
   - A. Planning and Zoning Monthly Report - April
10. OLD BUSINESS
11. NEW BUSINESS
    - A. STPC #25-01 Final Site Plan Approval – Prospect Pointe West Phase 3 (R-4)
    - B. STPC #23-05 Final Site Plan Approval – Brookwood Estates (PC)
12. POLICY DISCUSSION
    - A. Zoning Ordinance Rewrite
13. ADJOURNMENT

Thomas Brennan III, Commission Secretary
Michelle Marin, Planning & Zoning Administrator
3040 N. Prospect, Ypsilanti, MI 48198 734-482-6099

SUPERIOR CHARTER TOWNSHIP

Planning Commission
Regular Meeting Minutes - DRAFT
April 23, 2025, 7:00 PM
Township Hall - 3040 North Prospect
Superior Township, MI 48198

1. CALL TO ORDER

Chairman Gardner called the regular meeting to order at 7:00 p.m.

2. ROLL CALL

Present: Jay Gardner, Chair
Dr. Robert Steele, Vice Chair
Thomas Brennan, Secretary
Patrick McGill
Brenda McKinney, Board Representative
Nahid Sanii-Yahyai
Curt Wolf

Absent: Brenda McKinney, Board Representative

Also Present: Planning Consultants – Benjamin Carlisle and Michelle Marin, Carlisle Wortman

3. DETERMINATION OF QUORUM

A quorum was present.

4. ADOPTION OF AGENDA

MOTION by Brennan, supported by Sanii-Yahyai, to adopt the April 23, 2025, agenda as presented

Motion passed unanimously by voice vote.

5. APPROVAL OF MEETING MINUTES

A. Approval of the March 26, 2025 - Regular Meeting Minutes

MOTION by Sanii-Yahyai, supported by Brennan, to adopt the February 26, 2025, meeting minutes with amendment to correct page 2 to read “fourth” instead of “third” Wednesday.

Motion passed unanimously by voice vote.

6. CITIZEN PARTICIPATION

Jack Smiley – wants to ensure that the Zoning Ordinance gets improved to protect agriculture land. References Canton Twp losing its ag land. Jack doesn’t think 2-acre and 5-acre minimum lot sizes will protect agricultural land.

7. CORRESPONDANCE

Mr. Carlisle noted that correspondence from Canton Township was provided, indicating the public hearing notice for the amendment of the Master Plan.

MOTION by Brennan supported by Sanii-Yahyai, to receive the correspondence.

Motion passed unanimously by voice vote.

8. PUBLIC HEARINGS, DELIBERATIONS AND ACTIONS

None

9. REPORTS

None

10. OLD BUSINESS

None.

11. NEW BUSINESS

12. None.

13. POLICY DISCUSSION

A. Zoning Ordinance Re-write

Mr. Gardner offered suggested changes to the "Purpose" section, citing ambiguity with term "harmonious." Suggested changes received by Mr. Carlisle via email for inclusion in subsequent draft iterations.

Mr. Carlisle summarized the substantive changes proposed to Articles 8 and 9 of the zoning ordinance, regulating Site Plan Review and Conditional Use Review.

Discussion of administrative review needing the ability to defer to the Planning Commission.

Discussion among Planning Commissioners about the 180-day timeline that gets set. General consensus that removing the timeline of Planning Commission action is prudent.

Discussion of adding zoning compliance permitting and development agreement as an effect of site plan approval. Current ordinance is vague. This strengthens that allowance and discusses when it may happen in the development process when either conditioned by the PC, the Board, or as an administrative function of the planner and attorney.

The Commissioners asked a series of clarifying questions regarding the newly proposed standard of approval for conditional use review.

In general, Commissioners support the proposed substantive changes. Discussion of a reduction in the number of physical site plan sets and sizes of site plan sets required by applicants.

Mr. Carlisle discussed the zoning ordinance rewrite process in general. The next step is public input, including the state mandated public hearing and additional public engagement opportunities. Discussion among the Planning Commissioners regarding opportunities for public notification, including the Township newsletter, a message on the marquee sign at the Township building at the corner of Clark Rd and Prospect Rd, or a possible notice with utility bills.

Mr. Carlisle noted that there will be 2 additional draft zoning ordinance articles provided for discussion at the May Planning Commission meeting. The Brookwood Development may also be on the agenda at the May meeting.

14. ADJOURNMENT – *next regularly scheduled meeting on May 28, 2025*

MOTION by Brennan, supported by Sanii-Yahyai to adjourn the meeting.

Motion passed unanimously by voice vote.

The meeting was adjourned at 7:52 pm.

Meeting Minutes Respectfully submitted,

Thomas Brennan III, Planning Commission Secretary
Michelle Marin, Recording Secretary
3040 N. Prospect, Ypsilanti, MI 48198, 734-482-6099

MEMO

TO: Superior Charter Township Board of Trustees

FROM: Michelle Marin, Planning & Zoning Administrator

RE: Planning & Zoning Department Report

DATE: May 7, 2025

In April, I took over the responsibilities of Planning & Zoning Administrator from my former CWA colleague Diane Mulville-Friel. Below is a summary of the planning and zoning activities for the month of April 2025.

PROSPECT POINTE WEST

Prospect Pointe West is a four-phase single-family residential development project, on an ~67 acre parcel of land zoned R-4 an Urban Residential District. The development is located on the southwest corner of Geddes Road and Prospect Road, west of Hunters Creek Drive in the northeast quarter of Section 33. The applicant is proposing to develop Prospect Pointe West as a 157-unit site condominium.

The four (4) phases consist of the following number of units:

- Phase 1 – 39 units
- Phase 2 – 45 units
- Phase 3 – 26 units
- Phase 4 – 47 units

The proposed lot dimensions are 66' x 130' with a minimum lot size of 8,580 sf. The homes will range in size from 2,000 to 3,200 sf with sales prices starting in the $400,000s. The development has private roads with sidewalks on both sides and will be serviced by public sanitary sewer which will be designed as an extension of the existing Prospect Pointe development. Public water will also be extended from the existing subdivision. Each phase of the development is required to go through the Final Site Plan process.

The Final Site Plan for Prospect Pointe West Phase 1 (STPC #22-03) was approved by action of the Superior Township Planning Commission on April 26, 2023, and includes 39 single family lots. Building permits for individual homes are being issued and construction has commenced.

The Final Site Plan for Prospect Pointe West Phase 2 (STPC #24-01) was approved by action of the Superior Township Planning Commission on May 22, 2024, and includes 45 single family lots. The Development Agreement for Phase 2 has been recorded and a preconstruction meeting was held on September 10, 2024.

The Final Site Plan for Prospect Pointe West Phase 3 (STPC #25-01) was received by the Township in December 2024. Planning, Engineering, and Fire review memos were sent to the applicant on February 18,

2025. The applicant submitted a revised final site plan on April 21, 2025. The revised site plan is currently being reviewed. The final site plan must address all previous reviewer comments prior to being presented to the Planning Commission for consideration.

BROOKWOOD

Brookwood is a Master Planned Community on an ~84 acre parcel of land zoned Planned Community (PC) a Special District. The development is located on the east side of Leforge Road approximately 700 feet north of Clark Road in the southwest corner of Section 33. The applicant is proposing to develop Brookwood with 318 dwelling units divided into three (3) residential dwelling product types (i.e., stacked flats, duplex units, four-plex units, and attached townhomes).

The development is designed for renters and owners plus a section dedicated for people over 55 years of age. Stacked flats and duplexes are anticipated to rent from $1.50 - $2.50 per square foot. The townhomes will be for sale and priced per unit according to the market. The development will also include a clubhouse, amenity areas, paved parking areas, landscape improvement, and a continuous sidewalk network along private drives throughout the development and walking paths that connect amenities with various areas of the development. Existing public water and sanitary sewer mains will be extended to serve the development.

The Brookwood Superior Area Plan Amendment was approved at second reading by the Township Board on May 20, 2024.

The Brookwood Superior Preliminary Site Plan (STPC #23-05) was approved by action of the Superior Township Planning Commission on May 22, 2024, with the following conditions:

1) Address all items in the Township Engineers May 9, 2024, review.
2) Provide additional details on Natural Feature Plan including how the 25% slopes will be protected, and their integrity remain intact.
3) Provide a more detailed landscape plan that meets all landscape, screening, and woodland preservation requirements.
4) Provide lighting and photometric plan.
5) Provide a detailed narrative of the architectural concept for the site including materials details.

The applicant submitted a revised Final Site Plan (rev. May 5, 2025) with responses to Engineering and Planning review comments. The final site plan must address all previous reviewer comments prior to being presented to the Planning Commission for consideration.

GARRETT'S SPACE

Garrett's Space is proposed to be a residential center where young adults suffering from depression and anxiety are treated. The facility will include both in-patient and daily services, with a non-medical and non-institutional focus. Garrett's Space is proposed on seven (7) parcels that will be combined into one lot totaling approximately 76.0 acres. The property has historically been used as a single-family residence with an

address of 3900 Dixboro Road and is in Section 7 of the Township. The site includes significant natural resources including woodlands, steep slopes, a creek, floodplain, and wetlands.

The applicant proposes the following improvements:

1) Convert the existing home on the site to administrative offices
2) Construct a 10,100 square foot building to house 15 to 20 residents
3) Construct a 2,100 square foot building for recreational and therapy activities
4) Construction of a parking lot
5) Landscaping improvements
6) Create walking paths and lookouts through the site's natural features.
7) Expanding the sites well and sceptic system
8) Construct two (2) stormwater detention ponds

The applicant proposes a phased development:

- Phase 1: Use of the existing house for administrative offices and day programming. This phase does not include any overnight guests.
- Phase 2: Construction of the residential structure and creativity studio with parking areas, and utility and landscaping improvements. This phase includes expanded day programming and overnight residents.
- Phase 3: Additional ancillary elements, including the barn for gardening and therapeutic animals, and outdoor recreation and gathering spaces, will be constructed as funding allows.

Previous Township approvals are as follows:

- Property was rezoned from A-2 to Planned Community (PC) Special District via an Area Plan petition approved by the Township Board on July 17, 2023.

- The applicant recorded a Zoning and Land Use Agreement dated October 16, 2023, that limits uses, the number of residents and the number of employees.

- A Preliminary Site Plan (STPC 23-03) was approved by the Planning Commission with conditions on January 24, 2024.

- A Final Site Plan (STPC 23-03) was approved by the Planning Commission on September 25, 2024, with the following conditions:
  1) Obtain all outside agency approvals permits outlined in Township Engineer's memo dated 9/19/24.
  2) Combine existing seven (7) parcels into one parcel prior to receiving certificate of occupancy.
  3) Record conservation protection prior to certificate of occupancy.

- A Development Agreement was approved by the Township Board on October 21, 2024.

To date, the applicant has completed Final Site Plan conditions #1, #2, and #3:

1) OHM reviewed the Engineering Plans submittal (dated 12/20/24) and had no exceptions to the proposed development moving forward as shown on the plans as submitted.

2) The seven (7) parcels have been combined into one and a new parcel assigned (J -10-07-200-021). Furthermore, the Township Assessor has changed the zoning of this new parcel to PC.

3) Resolution No. 2025-13 to approve Garrett's Space Conservation Deed Restriction Agreement between Garrett's Space and the Township was approved by the Board of Trustees on March 17, 2025.

Building permits have been submitted and a preconstruction meeting was held on March 18, 2025. Preliminary site work has commenced. The approved Development Agreement requires the conservation area protection to be recorded prior to Certificate of Occupancy (CO) for the main residential structure to be newly constructed (Phase 2). A CO may be issued for the Phase 1 portion of the project if all building and fire codes and requirements are met for the change of use.

THE MEADOWS AT HAWTHORNE MILLS

The Meadows at Hawthorne Mills is a 215 unit single-family residential site condominium located on 71 acres of land located south of Geddes Road and east of Leforge Rd. The site includes private roads that provide two (2) access points to Geddes Road and has two (2) connection points with the adjacent Prospect Pointe West Development. In addition, there is a road stub for future development to the south. The proposed development will be served with public utilities. A sewer will connect from Leforge Road, and the Prospect Pointe Development and water will be looped throughout the development from Geddes Road. Stormwater management will be handled with four (4) proposed detention ponds located throughout the development.

The entire development received preliminary site plan approval on October 28, 2020. There are five (5) phases of development, and each phase required final site plan approval.

The final site plan for Phase 1 was approved by the Planning Commission with conditions on November 15, 2023. Phase 1 includes a total of 40 lots/units as well as construction of the roads and infrastructure items to directly serve those units, extension of a sanitary sewer from LeForge Road across the neighboring property to the west needed to service Phase 1, and mass grading of the entire site.

The final site plan for Phase 1 of the Meadows at Hawthorne Mill was set to expire and the applicant petitioned the Planning Commission to grant a one-year extension. On January 22, 2025, the Planning Commission granted an extension of the approved final site plan with the following conditions:

1. Provide a cost estimate for required woodland mitigation to be paid into Superior tree fund. Once a fund number is agreed upon with the Township, the applicant shall pay the amount to the Township.

2. All future homebuilders will be required to submit floor plans and elevations for review and approval by the Planning Commission.
3. Secure all required Washtenaw County Road Commission (WCRC) permits and right-of-way dedications to facilitate improvements at the intersection of Prospect and Geddes Rd as well as turn lane improvements for the private connection on Geddes Road.
4. Complete a Development Agreement and present to the Board of Trustees for approval prior to Phase 1 moving to the pre-construction phase of the development.

The Phase 1 final site plan extension will expire on November 15, 2025, unless conditions under Zoning Ordinance Section 10.08.C are met.

The applicant for the Meadows at Hawthorn Mills (Louis J. Eyde Family, LLC) is selling the property to Pulte Homes. Jared Kime of Atwell is working with Pulte to prepare necessary submissions including an amendment to the Phase 1 Final Site Plan. An application to amend the final site plan was received on March 13, 2025, and is under review. A summary of the changes proposed are as follows:

1. Phase 1 FSP revision
    a. Minor revisions to lot grading for Pulte standards
    b. Landscape revision and phasing of the tree impacts/mitigation calculations
    c. Reduction of mass grading to only phase 1 and the sanitary corridor going through future phases
    d. Would also include the necessary building elevations for PC review
2. Overall Engineering Plan update
    a. Raised road grades on south half of site to improve earthwork balance
    b. Associated lot grading revisions throughout site
    c. Some storm sewer modifications due to the lot changes in future phase areas
    d. Updated water main profiles due to new road elevations in future phase areas
    e. Overall landscape plan update with tree impacts/mitigation calculations

The Planning Commission has authority to determine whether a requested change is major or minor, in accordance with this Section 10.12. It is anticipated that the Planning Commission will be asked to act on the amended final site plan submittal at the June or July Planning Commission meeting.

Other outstanding items to be addressed by Pulte include:
1. Development Agreement – BOT approval
2. Intersection ROW dedication – BOT approval

ZONING BOARD OF APPEALS

The following one (1) case was reviewed at the ZBA meeting on April 9, 2025:

1) **ZBA #25-01 -- 3420 Deward Dr** – Motion by Member Gilbreath, supported by Member Winslow to approve a variance from Section 3.101 (Dimensional Standards) to allow a proposed single family dwelling addition to encroach into the required 50 ft rear yard setback. The motion carried.

The following application is scheduled to be reviewed by the ZBA on May 14, 2025:

1) **ZBA #25-02 – 7115 Plymouth-Ann Arbor Rd** - Variance from Section 3.101 (Dimensional Standards) to allow a proposed single family dwelling addition to encroach into the required 50 ft front yard setback.

Per bylaws, the ZBA consists of seven (7) regular and two (2) alternates members appointed by the Township Board. One (1) of the members must be a member of the Township Planning Commission and one member may be a member of the Township Board. The remaining members must reside in the unincorporated areas of the Township and represent the population distribution and various interests present. Current ZBA members include:

- Thomas Brennan, (Chair & PC Member)
- Rachel Smith
- Dana Greene (BOT)
- Tanya Markos-Vanno
- Meghan Winslow
- Jack Gilbreath
- Vacant

One (1) ZBA position remains vacant, and the Township is accepting applications.

The Township now has regular scheduled ZBA meetings the 2nd Wednesday of the month; if there are no agenda items, the meeting are cancelled.

PLANNING COMMISSION

The next Planning Commission meeting is scheduled for May 28, 2025. No Public Hearing agenda items are scheduled or anticipated.

Final site plans submitted for Brookwood (STPC 23-05) and Prospect Pointe West Phase 3 (STPC 25-01) are the new petitions submitted for the Planning Commission to consider at a future meeting. Conditional Use Permit/Preliminary Site Plan - DTE Grenada Substation Expansion (STPC #25-02) is anticipated to be resubmitted and considered at the July or August Planning Commission Meeting.

The Planning Commission is also functioning as the Zoning Ordinance Rewrite Steering Committee. At the April meeting, the Planning Commission reviewed and discussed the proposed revisions to the following zoning ordinance articles:

- Article 8: Site Plan Review
- Article 9: Conditional Use Review

Two additional draft articles are planned for Planning Commission review and discussion at the regular May meeting.

Per bylaws, the Planning Commission shall consist of seven (7) members serving three (3) year terms with eligibility for re-appointment. One member of the Township Board shall be appointed to the Planning Commission as an ex officio member and Township Board Representative, with full voting rights. The current Planning Commission is comprised of the following members:

- Jay Gardner, Chair (Term expires 2/28/2026)
- Robert Steele, Vice Chair (Term expires 2/28/2028)
- Thomas Brennan, Secretary (Term expires 2/28/2027)
- Patrick McGill (Term expires 2/28/2027)
- Brenda McKinney– Board Rep. (Term expires 11/7/2028)
- Nahid Sanii-Yahyai (Term expires 2/28/2026)
- Curt Wolf (Term expires 1/01/2028)

OTHER BUSINESS/NEWS

1) Michelle Marin of Carlisle Wortman Associates (CWA) began to serve as the Township Planning and Zoning Administrator. In April, Michelle reviewed 21 Certificates of Zoning Compliance and burn permits and responded to phone calls and email inquiries from the general public. Supported by Ben Carlisle, she also began the process of managing and/or attending the ZBA and Planning Commission meetings and responding to Board of Trustee inquiries.

2) Carlisle Wortman Associates staff also serve in the role as the Township Planner and review and manage projects that are paid from escrows including applicant inquiries and project coordination.

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

Date: February 17, 2025
Revised: May 21, 2025

Final Site Plan Review Phase 3
For
Superior Township, Michigan

Applicant: Diverse Real Estate

Project Name: Prospect Pointe West

Location: Southwest of Geddes Road and Prospect Road

Plan Date: November 22, 2024
Revised: May 21, 2025

Zoning: R-4 Single Family Residential

Action Requested: Final Site Plan Approval-Phase 3

PROJECT DESCRIPTION

The applicant received preliminary site plan approval for the development of a single-family site condominium. The development consists of 157 lots that are proposed to be developed in four phases.

The project is proposed in four phases. The applicant provided a phasing schedule on the Cover Page.

The project site is 67.63 gross acres in size. The project is located west of the existing Prospect Pointe neighborhood that is located at the southwest corner of Geddes Road and Prospect Road. The development has 833 feet of road frontage on Geddes Road. Access to the site is proposed to be provided through connections into the existing neighborhood.

Aerial Photograph

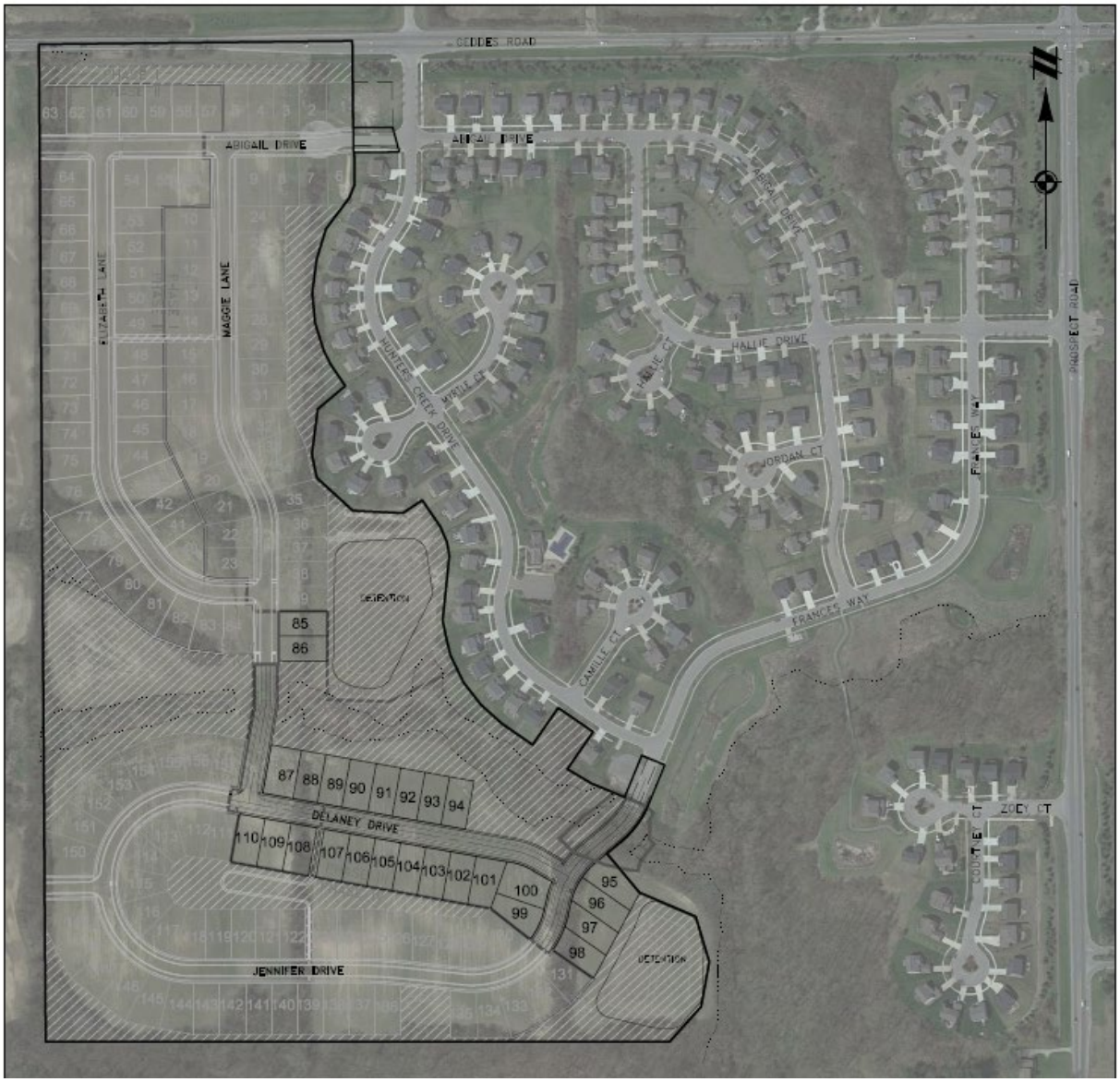


PRELIMINARY SITE PLAN APPROVAL

The Planning Commission approved the preliminary site plan on November 20, 2019.

PHASE 3

The applicant is seeking final site plan approval for Phase 3, which includes 26 lots. Access will be off Maggie Lane through Phase 1. The submitted final site plan for Phase 3 is consistent with the approved preliminary site plan.



Please note that future phases will require separate final site plan reviews.

FINAL SITE PLAN

The following items are requirements for the final site plan submittal:

1. **Detailed grading plan and utility plans**

   CWA Response: The applicant provided a detailed grading plan and utility plan that will be reviewed by the Township Engineer.

2. **Provide the regulatory status of each wetland along with verification from the EGLE**

   CWA Response: The applicant has obtained the required wetland permit from EGLE.

3. **Detailed tree inventory.**

   CWA Response: The applicant provided a detailed tree inventory. The landscape plan complies with the final engineering plan set.

4. **Details for ramps and cross walks.**

   CWA Response: Details for ramps and cross walks will be reviewed by the Township Engineer.

5. **Detailed landscaping plan.**

   CWA Response: The applicant provided a detailed landscape plan. Landscaping is in compliance.

6. **Detailed lighting plan**

   CWA Response: The applicant is not proposing any site lighting.

7. **Additional building information to determine compliance with Section 14.09.B. of the Zoning Ordinance.**

   CWA Response: The applicant provided building elevations on Sheets 43 through 45, along with a vinyl siding coverage chart demonstrating compliance with the standards of Section 14.09.B which require that no more than 50% of the total area of the front and side elevations are vinyl, aluminum, or steel.

8. **Phasing Plan**

   CWA Response: The applicant provided a phasing schedule on the Cover Page.

9. Outside Agency Approvals.

CWA Response: The applicant has obtained all outside agency approvals.

SUMMARY

We recommend final site plan approval.



CARLISLE/WORTMAN ASSOC., INC.
Benjamin R. Carlisle, AICP, LEED AP

cc: Emily Dabish Yahkind, Township Supervisor
Bill Balmes, CBO, Building Department
Bill Balmes, Building Department
George Tsakof, Township engineer

May 21, 2025

CHARTER TOWNSHIP OF SUPERIOR
3040 N. Prospect Road
Ypsilanti, MI 48198

Attention: **Angela Robinson, Township Clerk**

Regarding: **Prospect Pointe West – Phase 3**
Final Site Plan Review #2
OHM Job No. 0140-19-1050

Dear Ms. Robinson,

On behalf of the Township, we have reviewed the revised Final Site Plan submittal for Phase 3 on the above referenced project, dated April 21, 2025. The work included in this site plan submittal includes: utility construction, road construction, grading, sidewalks, and landscaping for Phase 3. Please note that construction of the Phase 1 utilities included most of the sanitary sewers and water mains needed to service this Phase 3. This Final Site Plan application also includes the mass grading for Phase 4 to be performed as part of Phase 3.

All of the items from our February 7, 2025 review letter have been addressed, and in our opinion this plan is ready for consideration by the Planning Commission.

Status of Permits and Other Agency Approvals

1. A Part 303 Wetland Permit and Part 31 Water Resources Protection Permit from the Michigan Department of Environment, Great Lakes, and Energy (EGLE) for disturbance of regulated wetland areas has been approved (Permit No. WRP036295 V.1), which was issued on March 16, 2023, and expires on March 16, 2028.
2. A Part 399 Permit for Water Supply Systems construction has been approved (Permit No. ACT-229388), which was issued by EGLE on February 6, 2023. As construction of the permitted water system commenced with Phase 1 of the development before the permit expiration date (2/6/2025) this permit will not expire.
3. A Part 41 Permit for Construction of Wastewater Systems has been approved (Permit No. P41003992 v.1), which was issued by EGLE on October 14, 2022. As construction of the permitted sanitary sewer system commenced with Phase 1 of the development before the permit expiration date (10/14/2024) this permit will not expire.
4. The stormwater management design plans for Phase 3 dated November 22, 2024, were reviewed by the Washtenaw County Water Resources Commission (WCWRC) and found to be technically correct and do not require revisions for the WCWRC. In addition, the Master Deed and Exhibit B drawings for the site condominium have been approved by the WCWRC.
5. A Soil Erosion and Sedimentation Control (SESC) permit has not yet been approved by WCWRC, but one was approved for Phases 1 and 2 and it is reasonably assured that one will be issued for Phases 3 and 4.
6. A Washtenaw County Road Commission (WCRC) permit (Permit No. 2022-000458) was issued on July 26, 2022, and expires on July 26, 2025, for the private road connections to Abigail Drive and Frances Way. A separate permit (Permit No. 2022-000681) was issued by WCRC for the construction access from Geddes Road within the Geddes Rd ROW. This permit was originally issued on November 21, 2022, with an expiration date of November 21, 2024. The WCRC has extended this permit expiration date to 11/21/25.

If you have any questions regarding our review, please do not hesitate to contact me at (734) 466-4585, or George Tsakoff at (734) 466-4439.

Sincerely,
OHM Advisors

_____
Cresson Slotten, PE
Senior Project Manager

cc: Emily Dabish Yahkind, Township Supervisor (via email)
Bill Balmes, CBO, Building Department (via email)
Michelle Marin, CWA (via email)
Ben Carlisle, CWA, Twp Planner (via email)
George Tsakoff, OHM
Claire Martin, OHM
file

PROSPECT POINTE WEST

A SINGLE FAMILY DEVELOPMENT

SUPERIOR TOWNSHIP, WASHTENAW COUNTY, MICHIGAN

FINAL SITE PLAN - PHASE 3

PROJECT CONTACTS

DEVELOPER / APPLICANT
DIVERSE REAL ESTATE LLC
13001 23 MILE ROAD, SUITE 200
SHELBY TWP, MICHIGAN 48315
CONTACT: AMIE ACKERMAN
PHONE: (248) 561-0001

CIVIL ENGINEER
ATWELL, LLC
311 NORTH MAIN STREET
ANN ARBOR, MICHIGAN 48104
CONTACT: MATT BUSH, P.E.
PHONE: (810) 923-6878

LEGAL DESCRIPTION

DESCRIPTION OF 67.99 ACRE PARCEL OF LAND LOCATED IN THE NORTHEAST 1/4 OF SECTION 33, TOWN 2 SOUTH, RANGE 7 EAST, SUPERIOR TOWNSHIP, WASHTENAW COUNTY, MICHIGAN, INCLUDING A PORTION OF LOT 200 OF AMENDED PLAT OF LOT 1 AND THE VACATED PORTION OF ABIGAIL DRIVE OF "PROSPECT POINTE SUBDIVISION NO. 1" AS RECORDED IN LIBER 36 OF PLATS, PAGE 64, WASHTENAW COUNTY RECORDS, ALSO INCLUDING A PORTION OF LOT 201 OF AMENDED PLAT OF LOT 199 AND THE VACATED PORTION OF FRANCES WAY OF "PROSPECT POINTE SUBDIVISION NO. 2" AS RECORDED IN LIBER 36 OF PLATS, PAGE 65, WASHTENAW COUNTY RECORDS, BEING MORE PARTICULARLY DESCRIBED AS: (AS SURVEYED BY ATWELL)

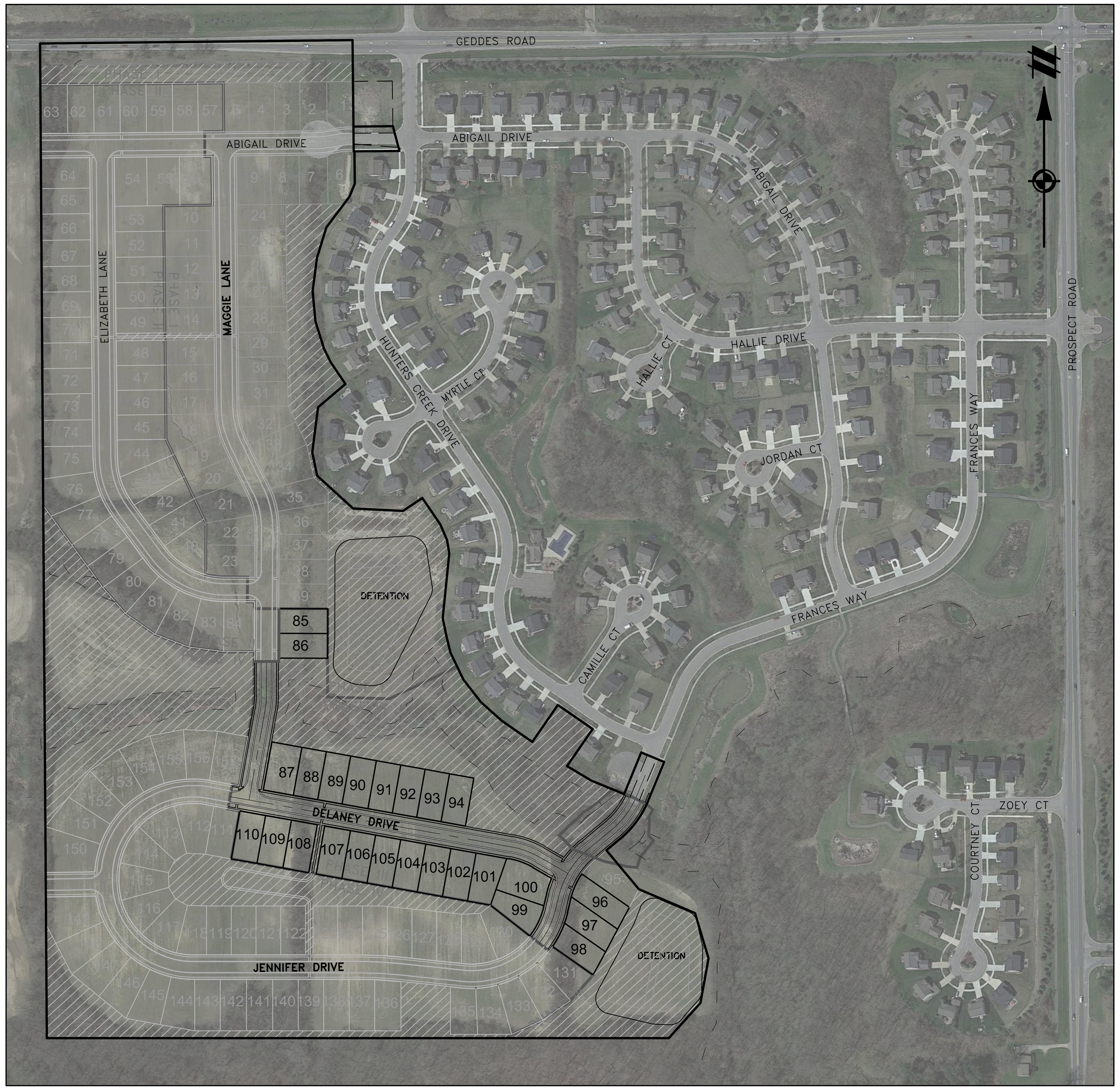
COMMENCING AT THE EAST 1/4 CORNER OF SECTION 33, TOWN 2 SOUTH, RANGE 7 EAST, SUPERIOR TOWNSHIP, WASHTENAW COUNTY, MICHIGAN; THENCE S87°25'50"W (RECORDED AS S87°41'00"W) 1079.06 FEET ALONG THE EAST-WEST 1/4 LINE OF SAID SECTION 33 FOR A **PLACE OF BEGINNING**; THENCE CONTINUING S87°25'50"W (RECORDED AS S87°41'00"W) 1658.89 FEET ALONG THE EAST-WEST 1/4 LINE OF SAID SECTION 33 TO THE CENTER POST OF SAID SECTION 33; THENCE N02°57'34"W (RECORDED AS N02°42'24"W) 2652.37 FEET ALONG THE NORTH-SOUTH 1/4 LINE OF SAID SECTION 33 TO THE NORTH 1/4 CORNER OF SAID SECTION 33; THENCE N86°48'36"E (RECORDED AS N87°03'46"E) 833.32 FEET ALONG THE NORTH LINE OF SAID SECTION 33 AND THE CENTERLINE OF GEDDES ROAD (VARIABLE WIDTH); THENCE S03°12'30"E (PLATTED AS S02°57'20"E) 230.61 FEET ALONG THE WESTERLY LINE OF PROSPECT POINTE SUBDIVISION NO. 1, AS RECORDED IN LIBER 35 OF PLATS, PAGE 67, WASHTENAW COUNTY RECORDS, ALSO BEING THE WEST LINE OF LOT 200 OF AMENDED PLAT OF LOT 1 AND THE VACATED PORTION OF ABIGAIL DRIVE OF "PROSPECT POINTE SUBDIVISION NO. 1" AS RECORDED IN LIBER 36 OF PLATS, PAGE 64, WASHTENAW COUNTY RECORDS; THENCE N86°47'30"E 105.00 FEET; THENCE S17°39'09"E (PLATTED AS S17°23'58"E) 68.15 FEET ALONG THE WEST LINE OF HUNTERS CREEK DRIVE (100 FEET WIDE) OF SAID PROSPECT POINTE SUBDIVISION NO. 1; THENCE S86°47'30"W (PLATTED AS S87°02'40"W) 120.00 FEET ALONG THE SOUTH LINE OF SAID LOT 200, ALSO BEING THE NORTH LINE OF LOT 86 OF SAID PROSPECT POINTE SUBDIVISION NO. 1; THENCE S03°12'30"E (PLATTED AS S02°57'20"E) 86.00 FEET ALONG THE WEST LINE OF SAID PROSPECT POINTE SUBDIVISION NO. 1; THENCE ALONG THE WESTERLY LINE OF PROSPECT POINTE SUBDIVISION NO. 2, AS RECORDED IN LIBER 35 OF PLATS, PAGE 99, WASHTENAW COUNTY RECORDS, FOR THE FOLLOWING TWENTY NINE (29) COURSES: S20°03'11"W (PLATTED AS S20°18'21"W) 37.01 FEET, S34°16'37"W (PLATTED AS S34°31'47"W) 103.24 FEET, S14°36'50"W (PLATTED AS S14°52'00"W) 85.12 FEET, S04°44'49"W (PLATTED AS S05°59'59"W) 89.33 FEET, S08°01'14"E (PLATTED AS S07°46'04"E) 81.01 FEET, S19°49'12"E (PLATTED AS S19°34'02"E) 76.46 FEET, S28°36'23"E (PLATTED AS S28°21'13"E) 40.86 FEET, S36°50'24"E (PLATTED AS S36°35'14") 69.56 FEET, S47°03'42"W (PLATTED AS S47°18'52"W) 95.59 FEET, S04°56'41"W (PLATTED AS S05°11'51"W) 120.87 FEET, S14°29'11"E (PLATTED AS S14°14'10"E) 63.68 FEET, S50°10'13"E (PLATTED AS S49°55'03"E) 129.94 FEET, S89°37'53"E (PLATTED AS S89°22'43"E) 133.38 FEET, N53°09'36"E (PLATTED AS N53°24'46"E) 62.06 FEET, S36°50'24"E (PLATTED AS S36°35'14"E) 85.67 FEET, S25°39'53"E (PLATTED AS S25°24'43"E) 44.78 FEET, S12°08'48"E (PLATTED AS S11°53'38"E) 36.45 FEET, S03°10'48"W (PLATTED AS S03°25'58"W) 173.12 FEET, S13°51'38"E (PLATTED AS S13°36'28"E) 37.88 FEET, S14°58'30"E (PLATTED AS S14°43'20"E) 14.00 FEET, S16°17'53"E (PLATTED AS S16°41'17"E) 42.30 FEET, S27°56'27"E (PLATTED AS S27°41'17"E) 80.08 FEET, S40°21'48"E (PLATTED AS S40°06'38"E) 75.94 FEET, S50°50'05"E (PLATTED AS S50°34'55"E) 75.85 FEET, S57°55'06"E (PLATTED AS S57°39'56"E) 98.34 FEET, N32°04'54"E (PLATTED AS N32°20'04"E) 120.00 FEET, S57°55'06"E (PLATTED AS S57°39'56"E) 112.81 FEET, S32°04'54"W (PLATTED AS S32°20'04"W) 120.00 FEET, S61°33'56"E (PLATTED AS S61°18'46"E) 74.87 FEET; THENCE S70°08'30"E (PLATTED AS N69°53'20"W) 94.83 FEET ALONG THE SOUTH LINE OF LOT 201 OF AMENDED PLAT OF LOT 199 AND THE VACATED PORTION OF FRANCES WAY OF "PROSPECT POINTE SUBDIVISION NO. 2" AS RECORDED IN LIBER 36 OF PLATS, PAGE 65, WASHTENAW COUNTY RECORDS; THENCE 8.22 FEET ALONG THE ARC OF A 197.00 FOOT RADIUS CIRCULAR CURVE TO THE LEFT, CHORD BEARING N21°03'12"E 8.22 FEET; THENCE N19°51'30"E 111.78 FEET; THENCE S70°08'30"E (PLATTED AS S69°53'20"E) 66.00 FEET ALONG THE SOUTH LINE OF HUNTERS CREEK DRIVE (66 FEET WIDE) OF SAID PROSPECT POINTE SUBDIVISION NO. 2; THENCE THE FOLLOWING TWO (2) COURSES ALONG THE EAST LINE OF SAID LOT 201, ALSO BEING THE WEST LINE OF SAID PROSPECT POINTE SUBDIVISION NO. 1: S19°51'30"W (PLATTED AS S20°06'40"W) 111.78 FEET AND 8.22 FEET ALONG THE ARC OF A 263.00 FOOT RADIUS CIRCULAR CURVE TO THE RIGHT, CHORD BEARING S20°45'13"W (PLATTED AS S21°00'23"W) 8.22 FEET; THENCE ALONG THE WESTERLY LINE OF SAID PROSPECT POINTE SUBDIVISION NO. 1 FOR THE FOLLOWING SEVEN (7) COURSES: 118.83 FEET ALONG THE ARC OF A 263.00 FOOT RADIUS NON TANGENTIAL CIRCULAR CURVE TO THE RIGHT, CHORD BEARING S34°35'35"W 117.82 FEET, S47°32'14"W (PLATTED AS S47°47'24"W) 48.01 FEET, S42°27'46"E 135.80 FEET (RECORDED AS S42°12'36"E 135.08 FEET AND PLATTED AS S42°12'36"E 135.80 FEET), S69°28'35"E (PLATTED AS S69°13'25"E) 162.02 FEET, S19°15'30"E (PLATTED AS S19°00'20"E) 125.77 FEET, S07°37'05"W (PLATTED AS S07°52'15") 120.86 FEET AND S39°20'09"W (PLATTED AS S39°35'19"W) 126.12 FEET TO THE PLACE OF BEGINNING, CONTAINING 67.99 ACRES OF LAND, MORE OR LESS, BEING SUBJECT TO THE RIGHTS OF THE PUBLIC OVER THE NORTHERLY 33 FEET THEREOF AS OCCUPIED BY SAID GEDDES ROAD AND SUBJECT TO EASEMENTS, CONDITIONS, RESTRICTIONS AND EXCEPTIONS OF RECORD, IF ANY.

PROJECT NARRATIVE

PROSPECT POINTE WEST IS LOCATED AT THE SOUTHWEST CORNER OF GEDDES ROAD AND PROSPECT ROAD, WEST OF HUNTERS CREEK DRIVE IN SUPERIOR TOWNSHIP. THIS PARCEL WAS ORIGINALLY PART OF THE PROSPECT POINTE DEVELOPMENT, A PLATTED SUBDIVISION, WHICH WAS PERMITTED THROUGH SUPERIOR TOWNSHIP APPROXIMATELY 10 YEARS AGO. PROSPECT POINTE WEST IS 67.99 ACRES AND IS ZONED R4, SINGLE FAMILY RESIDENTIAL DISTRICT, URBAN.

THE APPLICANT IS PROPOSING TO DEVELOP THE PROJECT AS A 157 - UNIT SITE CONDOMINIUM. THE PROPOSED LOT DIMENSIONS ARE 66' X 130' WITH A MINIMUM LOT SIZE OF 8,580 SF. THE HOMES WILL RANGE IN SIZE FROM 2,000 TO 3,200 SF WITH SALES PRICES STARTING IN THE $400,000S. THE DEVELOPMENT WILL BE CONSTRUCTED IN 4 PHASES. THIS PLAN IS FOR PHASE 3 OF THE DEVELOPMENT.

PROSPECT POINTE IS PROPOSED TO CONTAIN PRIVATE ROADS WITH SIDEWALKS ON BOTH SIDES, WHICH HAVE ALREADY RECEIVED APPROVAL FROM THE COUNTY ROAD COMMISSION BASED ON THE PREVIOUSLY APPROVED PLANS FOR THE PROJECT. THE DEVELOPMENT WILL BE SERVICED BY PUBLIC SANITARY SEWER WHICH WILL BE DESIGNED AS AN EXTENSION OFF OF THE EXISTING PROSPECT POINTE DEVELOPMENT. PUBLIC WATER WILL ALSO BE EXTENDED FROM THE EXISTING SUBDIVISION.



OVERALL DEVELOPMENT MAP

SCALE: 1" = 200'

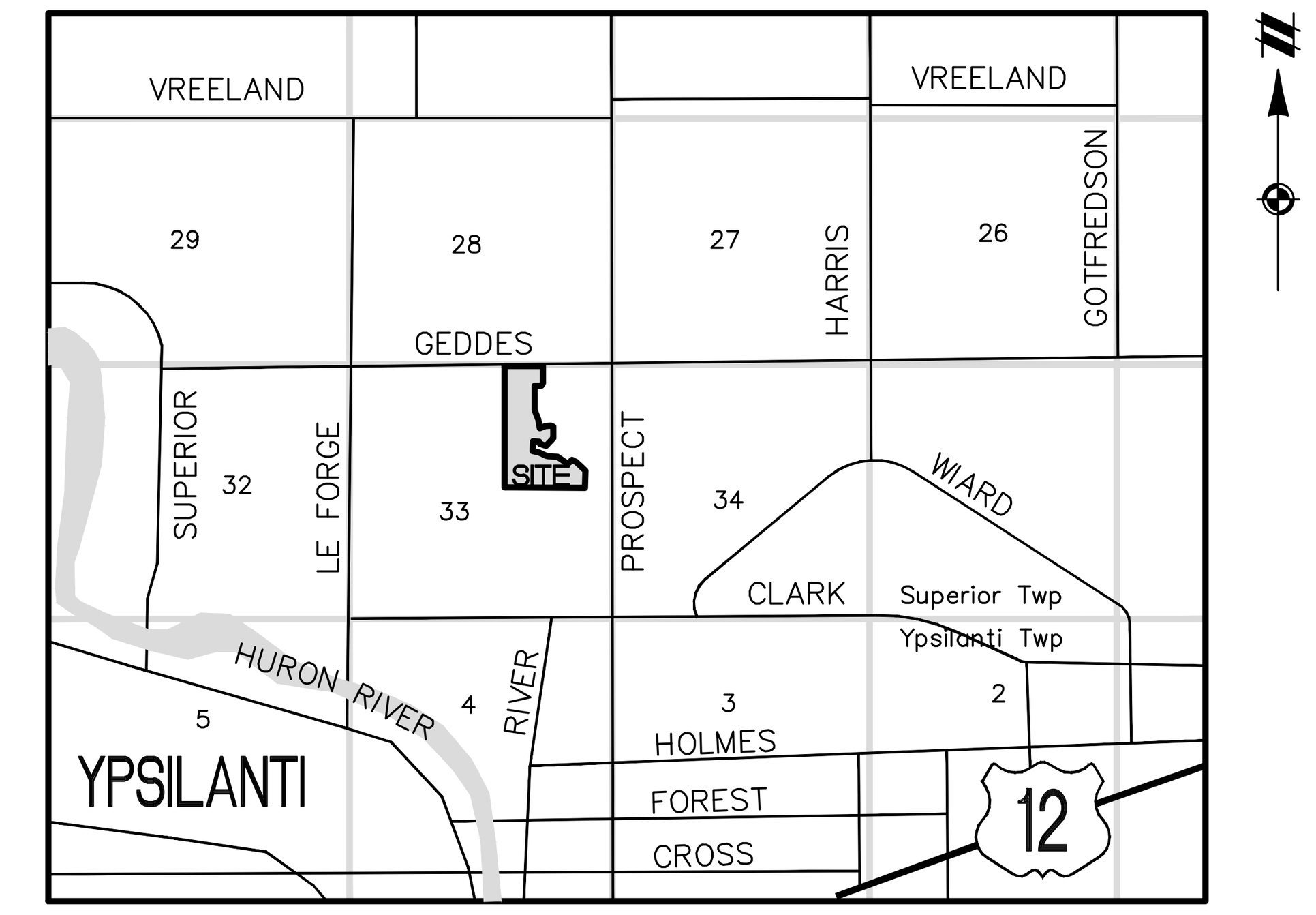
PHASING SCHEDULE

	# UNITS	START	COMPLETION
PHASE I	39	OCTOBER 2023	JULY 2024
PHASE II	45	JUNE 2024	APRIL 2025
PHASE III	26	JUNE 2025	APRIL 2026
PHASE IV	47	JUNE 2026	APRIL 2027

NOTES:
1. ACTUAL START OF PHASES III - IV SUBJECT TO ECONOMIC AND OTHER FACTORS

PERMITS AND APPROVALS

Agency	Status/Date Approved	Application/Permit Number
Superior Township Preliminary Site Plan	8/26/2020	
Superior Township Engineering Plan	6/1/2023	
WCWRC SESC PHASE 1/2	4/13/2023	SESC2023-0054
WCWRC SESC PHASE 3/4		
EGLE Wetlands Permit	3/16/2023	WRP036295
Washtenaw County Road Commission	11/21/2022	2022-000681
WCWRC - Stormwater	7/8/2022	1524
EGLE Water Supply (PA 399)	2/26/2023	ACT-229388
EGLE Waste Water Collection (Part 41)	10/14/2022	P41003992
NPDES Construction Stormwater Discharge PH 1/2	5/16/2023	MIR117620
NPDES Construction Stormwater Discharge PH 3/4		



VICINITY MAP
NOT TO SCALE

SHEET INDEX

1 COVER SHEET
2 OVERALL ORIGINAL CONDITIONS
3 ORIGINAL CONDITIONS & DEMOLITION PLAN
4 ORIGINAL CONDITIONS & DEMOLITION PLAN
5 TREE LIST
6 TREE LIST
7 NATURAL FEATURES PLAN
8 SOIL EROSION CONTROL PLAN
9 SOIL EROSION CONTROL PLAN
10 TEMPORARY CONSTRUCTION ACCESS DRIVE
11 SOIL EROSION CONTROL NOTES & DETAILS
12 OVERALL LAYOUT PLAN
13 LAYOUT PLAN
14 LAYOUT PLAN
15 OVERALL GRADING PLAN
16 GRADING PLAN
17 GRADING PLAN
18 OVERALL UTILITY PLAN
19 UTILITY PLAN
20 UTILITY PLAN
21 MAGGIE LANE PLAN & PROFILE
22 JENNIFER DRIVE & PROFILE 1
23 JENNIFER DRIVE PLAN & PROFILE 2
24 SANITARY PLAN & PROFILE
25 STORM PLAN AND PROFILES
26 STORM PLAN AND PROFILES
27 STORM PLAN AND PROFILES
28 STORM PLAN AND PROFILES
29 STORM PLAN AND PROFILES
30 OVERALL DRAINAGE AREA PLAN
31 DRAINAGE AREA PLAN
32 DRAINAGE AREA PLAN
33 SOUTH DETENTION BASIN DESIGN
34 STORMWATER CONVEYANCE CALCULATIONS
35 UTILITY STRUCTURE TABLE
36 INTERSECTION DETAILS
37 FIRE PROTECTION PLAN
38 INVASIVE SPECIES REMOVAL PLAN
39 DETAIL SHEET 1
40 DETAIL SHEET 2
41 TYPICAL BUILDING DETAILS
42 TYPICAL BUILDING DETAILS
43 SIDE AND REAR ELEVATIONS
44 SIDE AND REAR ELEVATIONS
45 SIDE AND REAR ELEVATIONS
46 SUPERIOR TOWNSHIP SANITARY DETAIL SHEET 1
47 SUPERIOR TOWNSHIP SANITARY DETAIL SHEET 2
48 SUPERIOR TOWNSHIP STORM DETAIL SHEET 1
49 SUPERIOR TOWNSHIP STORM DETAIL SHEET 2
50 SUPERIOR TOWNSHIP WATER DETAIL SHEET 1
51 SUPERIOR TOWNSHIP WATER DETAIL SHEET 2
L-1 LANDSCAPE PLAN
L-2 STORMWATER PLAN
L-3 LANDSCAPE DETAILS

SITE DATA

GROSS AREA:	67.99 ACRES
GEDDES ROAD ROW:	1.15 ACRES
NET AREA:	66.84 ACRES
EXISTING ZONING:	R4 - SINGLE FAMILY RESIDENTIAL
PROPOSED ZONING:	R4 - SINGLE FAMILY RESIDENTIAL
PROPOSED USE:	SINGLE FAMILY RESIDENTIAL SITE CONDOMINIUM
NUMBER OF PROPOSED LOTS TOTAL:	157
PROPOSED DENSITY (GROSS):	2.31
PROPOSED DENSITY (NET):	2.35
NUMBER OF PROPOSED LOTS PHASE 3:	26
LOT AREA PER DWELLING UNIT:	66' X 130' = 8580 SF (TYPICAL)
MINIMUM LOT WIDTH:	66'
LOT SETBACKS:	
FRONT-	25'
SIDE-	6' MIN. (16' TOTAL)
REAR-	35'
PROPOSED LOT COVERAGE:	MAX 25%
PROPOSED GENERAL COMMON ELEMENT (G.C.E.):	21.77 ACRES
WETLAND IMPACTS:	
REGULATED	0.50 ACRES
NON-REGULATED	0.06 ACRES

*FIRE DEPARTMENT NOTE: ROADWAYS AND BRIDGES TO BE CAPABLE OF SUPPORTING THE IMPOSED LOAD OF FIRE APPARATUS WEIGHTING 80,000 POUNDS

STATE OF MICHIGAN
KYLER SHEERIN
No. 68966
LICENSED PROFESSIONAL ENGINEER

Know what's **below.**
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NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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734.994.4000

SECTION 33
TOWN 2 SOUTH, RANGE 7 EAST
SUPERIOR TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
SE MICHIGAN LAND HOLDING LLC
PROSPECT POINTE WEST
FINAL SITE PLAN - PHASE 3
COVER SHEET

DATE
NOVEMBER 22, 2024

03-07-2025: PER TWP
04-21-2025: PER TWP
05-21-2025: PER TWP

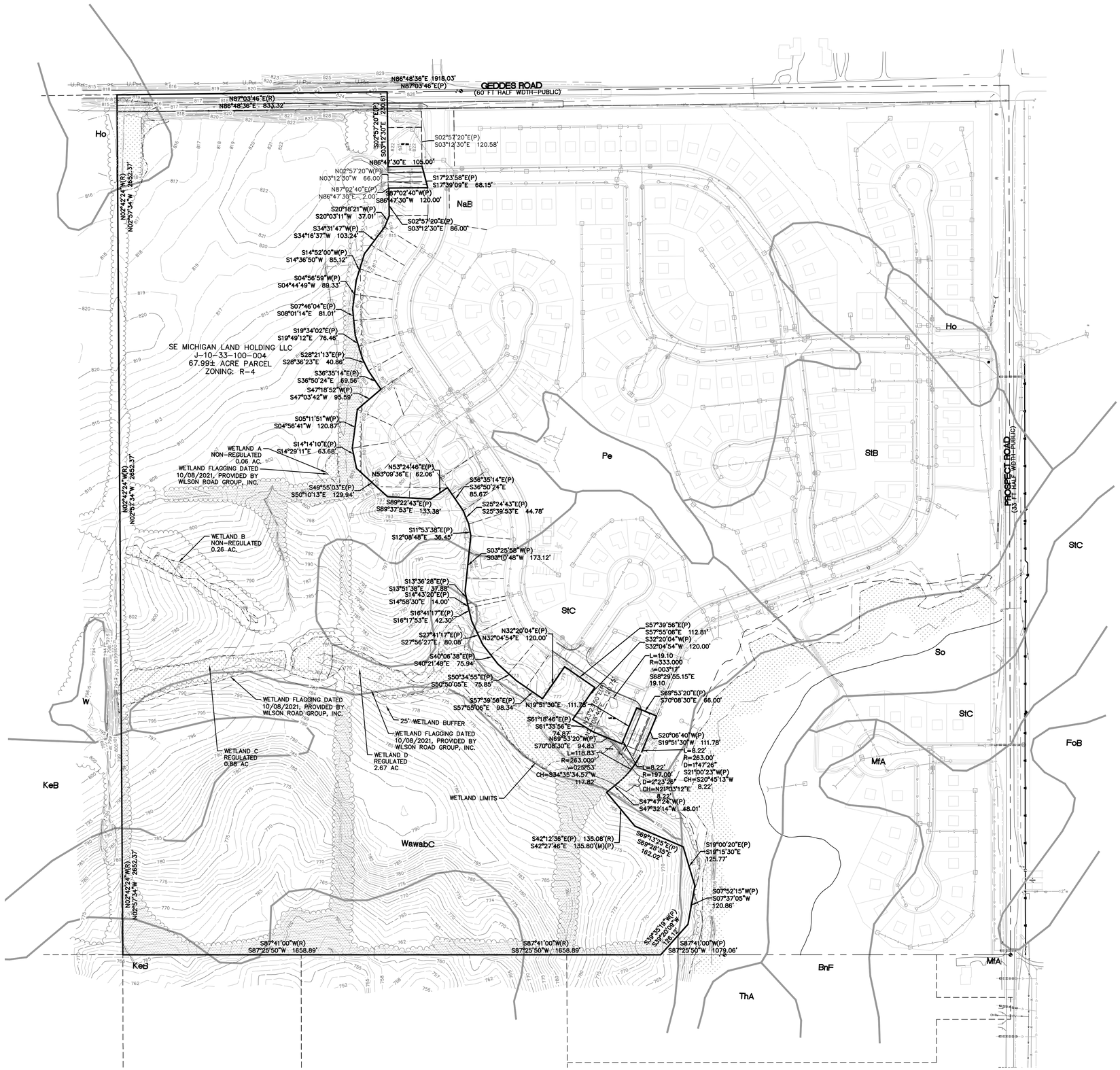
REVISIONS

0 100 200
SCALE: 1" = 200 FEET

DR.	SK	CH.	SS
P.M.	MB		
BOOK	--		
JOB	16000819		

SHEET NO.
1

K:\16000819\DWG\PLAN SETS\SITE - FINAL PHASE 3\16000819SF3-01-CV.DWG 5/21/2025 9:17 AM KYLER SHEERIN



LEGEND

- BOUNDARY LINE
- EXISTING EASEMENT
- SECTION LINE
- BOUNDARY/PROPERTY LINE
- 890 EXISTING CONTOUR
- EXISTING TREE LINE
- EXISTING CURB AND GUTTER
- EXISTING FENCE
- EXISTING BUILDING
- EXISTING STRUCTURE
- EXISTING WALL
- EXISTING WATER MAIN
- EXISTING SANITARY
- EXISTING GAS
- EXISTING STORM
- EXISTING OVERHEAD ELECTRICAL LINE
- EXISTING OVERHEAD TELEPHONE LINE
- EXIST. CULVERT
- EXIST. CATCH BASIN/INLET
- EXIST. HYDRANT
- EXIST. VALVE
- EXIST. SANITARY SEWER
- EXIST. UNSPECIFIED UTILITY
- EXISTING WETLAND
- EXISTING WETLAND BUFFER
- EXISTING SOILS LIMIT
- FoB EXISTING SOILS TYPE
- 1 EXISTING TEST PIT
- HEDGEROW TO BE REMOVED

BENCHMARKS

BM#1 ARROW ON HYDRANT SW CORNER OF LOT 1, NORTH SIDE OF ABIGAIL DR 150' WEST OF HUNTERS CREEK DR

ELEV=822.79 NAVD88

BM#2 ARROW ON HYDRANT SE CORNER OF LEAH LANE AND HUNTERS CREEK DRIVE

ELEV=798.38 NAVD88

BM#3 ARROW ON HYDRANT SW CORNER OF FRANCES WAY AND HUNTERS CREEK DRIVE

ELEV=771.22 NAVD88

TEST PIT LOCATIONS

TEST PIT ID	NORTHING (SPC MI S)	EASTING (SPC MI S)	ELEVATION (NAVD 88)
TP-1	283170.7	13327402.1	816.7
TP-2	283047.3	13327940.1	818.1
TP-3	282510.8	13327990.3	805.4
TP-4	282477.0	13327411.2	815.0
TP-5	281831.7	13327622.6	790.9
TP-6	281734.0	13328261.8	778.6
TP-7	281485.7	13328494.5	775.2
TP-8	281332.6	13328707.7	772.7
TP-9	280930.7	13329088.4	765.0
TP-10	280854.1	13328352.8	762.1
TP-11	280855.9	13328103.7	759.7
TP-12	280823.7	13327639.4	765.8

SOIL INFORMATION

BNC	BOYER LOAMY SAND, 6 TO 12 PERCENT SLOPES
BNF	BOYER LOAMY SAND, 25 TO 50 PERCENT SLOPES
FOB	FOX SANDY LOAM, TILL PLAIN, 2 TO 6 PERCENT SLOPES
HO	HOYTVILLE SILTY CLAY LOAM
KEB	KENDALLVILLE LOAM, 2 TO 6 PERCENT SLOPES
MDA	MATHERTON SANDY LOAM, 0 TO 4 PERCENT SLOPES
MFA	METAMORA SANDY LOAM, 0 TO 4 PERCENT SLOPES
NAB	NAPPANEE SILTY CLAY LOAM, 2 TO 6 PERCENT SLOPES
OSB	OSHTEMO LOAMY SAND, 0 TO 6 PERCENT SLOPES
PE	PEWAMO CLAY LOAM, 0 TO 2 PERCENT SLOPES
SB	SEBEWA LOAM, DISINTEGRATION MORAINE, 0 TO 2 PERCENT SLOPES
SO	SLOAN SILT LOAM, WET
SPB	SPINKS LOAMY SAND, 0 TO 6 PERCENT SLOPES
STB	ST. CLAIR CLAY LOAM, 2 TO 6 PERCENT SLOPES
STC	ST. CLAIR CLAY LOAM, 6 TO 12 PERCENT SLOPES
THA	THETFORD LOAMY SAND, 0 TO 4 PERCENT SLOPES
W	WATER
WAWABC	WAWASEE LOAM, 6 TO 12 PERCENT SLOPES

SCHEDULE B II – EXCEPTIONS (PER TITLE COMMITMENT ISSUED BY FIRST AMERICAN TITLE INSURANCE, FILE NO.: 755321, COMMITMENT DATE SEPTEMBER 07, 2016)

6. TERMS AND CONDITIONS CONTAINED IN AGREEMENT TO ESTABLISH THE PROSPECT POINTE DRAIN DRAINAGE DISTRICT AS DISCLOSED BY INSTRUMENT RECORDED IN LIBER 4366, PAGE 973. **(COVERS SUBJECT PARCEL AND ADDITIONAL LANDS, BLANKET IN NATURE.)**

7. TERMS AND CONDITIONS CONTAINED IN SUPERIOR CHARTER TOWNSHIP DEVELOPMENT AGREEMENT AS DISCLOSED BY INSTRUMENT RECORDED IN LIBER 4320, PAGE 260; FIRST AMENDMENT TO SUPERIOR CHARTER TOWNSHIP DEVELOPMENT AGREEMENT RECORDED IN LIBER 5023, PAGE 805, ASSIGNMENT OF DEVELOPER RIGHTS RECORDED IN LIBER 5061, PAGE 898. **(L.4320, P.260 COVERS SUBJECT PARCEL AND ADDITIONAL LANDS, BLANKET IN NATURE. L.5023, P.805 COVERS PROSPECT POINTE SUBDIVISION NO. 1 AND PROSPECT POINTE SUBDIVISION NO. 2. L.5061, P.898 COVERS SUBJECT PARCEL AND ADDITIONAL LANDS, BLANKET IN NATURE.)**

8. TERMS AND CONDITIONS CONTAINED IN PLANNED COMMUNITY AGREEMENT AS DISCLOSED BY INSTRUMENT RECORDED IN LIBER 1549, PAGE 467. **(COVERS SUBJECT PARCEL AND ADDITIONAL LANDS, BLANKET IN NATURE.)**

9. TERMS AND CONDITIONS CONTAINED IN SANITARY SEWER AGREEMENT AS DISCLOSED BY INSTRUMENT RECORDED IN LIBER 1549, PAGE 462. **(COVERS SUBJECT PARCEL AND ADDITIONAL LANDS, BLANKET IN NATURE.)**

10. RIGHT OF WAY IN FAVOR OF THE MICHIGAN BELL TELEPHONE COMPANY AND THE COVENANTS, CONDITIONS AND RESTRICTIONS CONTAINED IN INSTRUMENT RECORDED IN LIBER 1330, PAGE 362 AND LIBER 1793, PAGE 509. **(L.1793, P.509 AS SHOWN. L.1330, P.362 LIES APPROX. 500' EAST OF SUBJECT PARCEL.)**

Know what's **below.** **Call** before you dig.

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SECTION 33
TOWN 2 SOUTH, RANGE 7 EAST
SUPERIOR TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
SE MICHIGAN LAND HOLDING LLC

PROSPECT POINTE WEST
FINAL SITE PLAN – PHASE 3

OVERALL ORIGINAL CONDITIONS

DATE
NOVEMBER 22, 2024

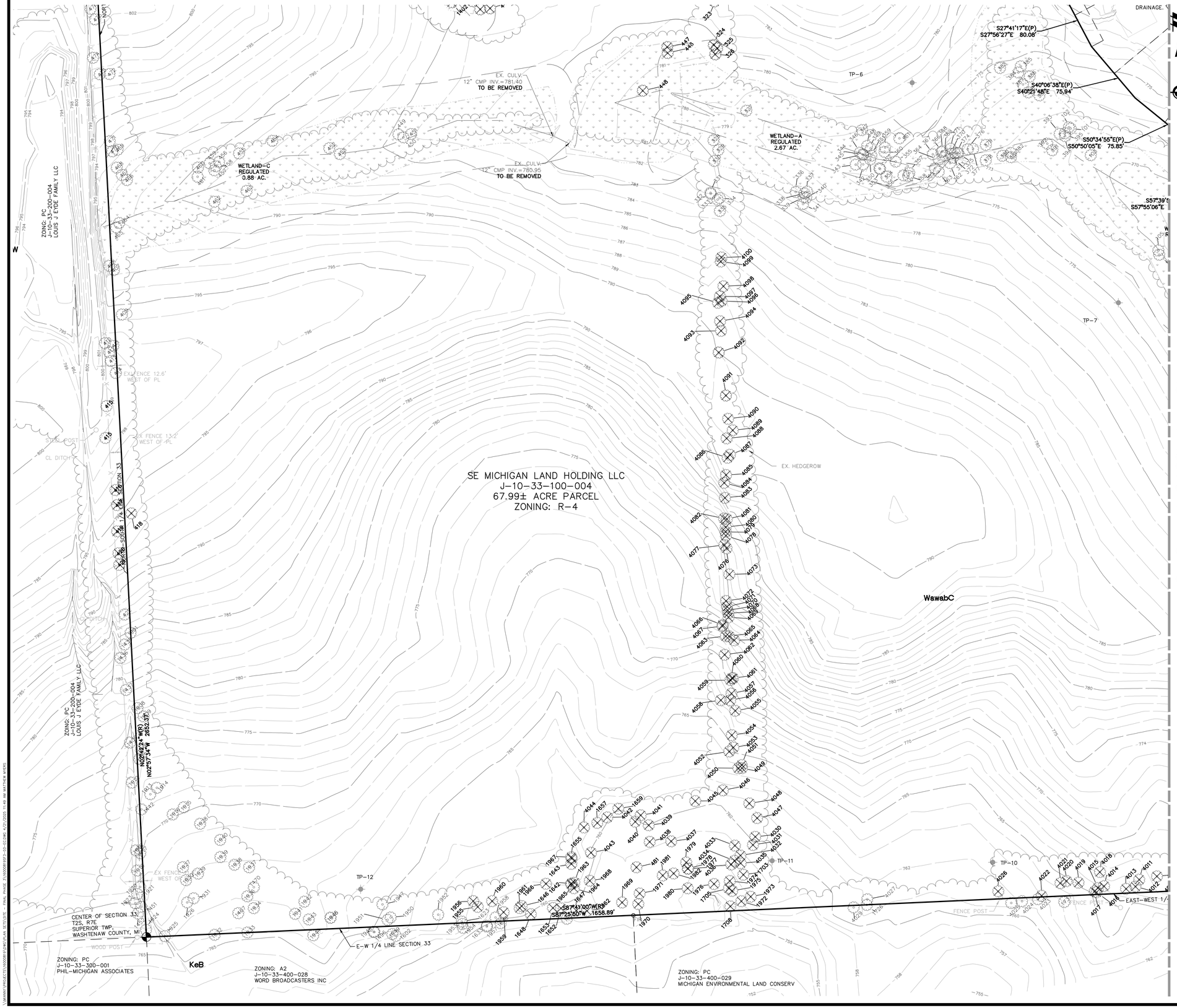
03-07-2025: PER TWP
04-21-2025: PER TWP

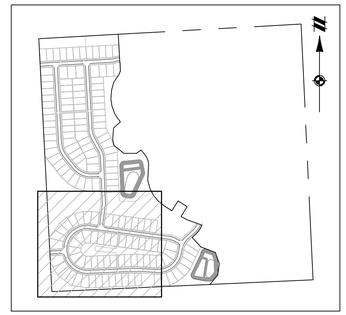
REVISIONS

0 75 150
SCALE: 1" = 150 FEET

DR. SK | CH. SS
P.M. MB
BOOK --
JOB 16000819
SHEET NO. 2

L:\ATWELL\PROJECTS\16000819\PROSPECTIVE RESTORE - FINAL PHASE 3\16000819-FSP-3-SITE.DWG 4/21/2025 11:48 AM MATTHEW MYERS





KEYMAP
SCALE: 1" = 750'

LEGEND

- BOUNDARY LINE
- EXISTING EASEMENT
- SECTION LINE
- BOUNDARY/PROPERTY LINE
- 890 EXISTING CONTOUR
- EXISTING TREE LINE
- EXISTING CURB AND GUTTER
- EXISTING FENCE
- EXISTING BUILDING
- EXISTING STRUCTURE
- EXISTING WALL
- W EXISTING WATER MAIN
- EXISTING SANITARY
- G EXISTING GAS
- C EXISTING STORM
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- EXIST. SANITARY SEWER
- EXIST. UNSPECIFIED UTILITY
- EXISTING WATER EDGE
- EXISTING WETLAND
- EXISTING WETLAND BUFFER
- EXISTING TREES
- EXISTING TREES TO BE REMOVED

BENCHMARKS

BM#1 ARROW ON HYDRANT SW CORNER OF LOT 1, NORTH SIDE OF ABIGAIL DR 150' WEST OF HUNTERS CREEK DR

ELEV=822.79 NAVD88

BM#2 ARROW ON HYDRANT SE CORNER OF LEAH LANE AND HUNTERS CREEK DRIVE

ELEV=798.38 NAVD88

BM#3 ARROW ON HYDRANT SW CORNER OF FRANCES WAY AND HUNTERS CREEK DRIVE

ELEV=771.22 NAVD88

NOTES

1) BEARINGS ARE BASED ON NAD83 MICHIGAN STATE PLANE COORDINATE SYSTEM,SOUTH ZONE, INTERNATIONAL FEET, GROUND DISTANCES. VERTICAL DATUM: NAVD88.

2) WATER MAIN, STORM SEWER, AND SANITARY SEWER UTILITY STRUCTURES HAVE BEEN FIELD LOCATED WHERE VISIBLE. UTILITY AND AS-BUILT MAPS HAVE BEEN REQUESTED AND SOME MAPS HAVE BEEN RECEIVED AT DATE OF THIS SURVEY. FRANCHISE UTILITY MAPS HAVE BEEN REQUESTED FROM THE APPROPRIATE FRANCHISE COMPANY, BUT NOT ALL MAPS HAVE BEEN RECEIVED AT DATE OF SURVEY. FRANCHISE UTILITY STRUCTURES HAVE BEEN FIELD LOCATED WHERE VISIBLE.

3) THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN-SERVICE OR ABANDONED.

4) SUBJECT PROPERTY AS SHOWN AND NOTED ON SURVEY DESCRIBES THE SAME PROPERTY AS SCHEDULE C PROPERTY DESCRIPTION (PER TITLE COMMITMENT ISSUED BY FIRST AMERICAN TITLE INSURANCE,
FILE NO.: 755321, COMMITMENT DATE SEPTEMBER 07, 2016)

5) SUBJECT PROPERTY IS NOT LOCATED WITHIN A FLOODPLAIN PER FIRM MAP NUMBER 26161C0288E DATED APRIL 3, 2012.

6) PROSPECT POINTE SUBDIVISION NO. 1 PLAT WAS AMENDED TO REMOVE ABIGAIL DRIVE STUB AS PUBLIC RIGHT-OF-WAY AS RECORDED IN LIBER 35, PAGES 67-68 AS OF 12/12/22 AND PROSPECT POINT SUBDIVISION NO. 2 PLAT WAS AMENDED TO REMOVE THE FRANCES WAY STUB AS A PUBLIC RIGHT OF WAY AS RECORDED IN LIBER 5426, PAGE 892, AS OF 11/5/22, AS REQUIRED BY THE WASHTENAW COUNTY ROAD COMMISSION.

811 Know what's **below.** **Call** before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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866.850.4200 www.atwell-group.com
201 N. MAIN STREET
ANN ARBOR, MI 48104
734.994.4000

SECTION 33
TOWN 2 SOUTH, RANGE 7 EAST
SUPERIOR TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
SE MICHIGAN LAND HOLDING LLC

PROSPECT POINTE WEST
FINAL SITE PLAN – PHASE 3

ORIGINAL CONDITIONS
& DEMOLITION PLAN

DATE
NOVEMBER 22, 2024

03-07-2025: PER TWP
04-21-2025: PER TWP

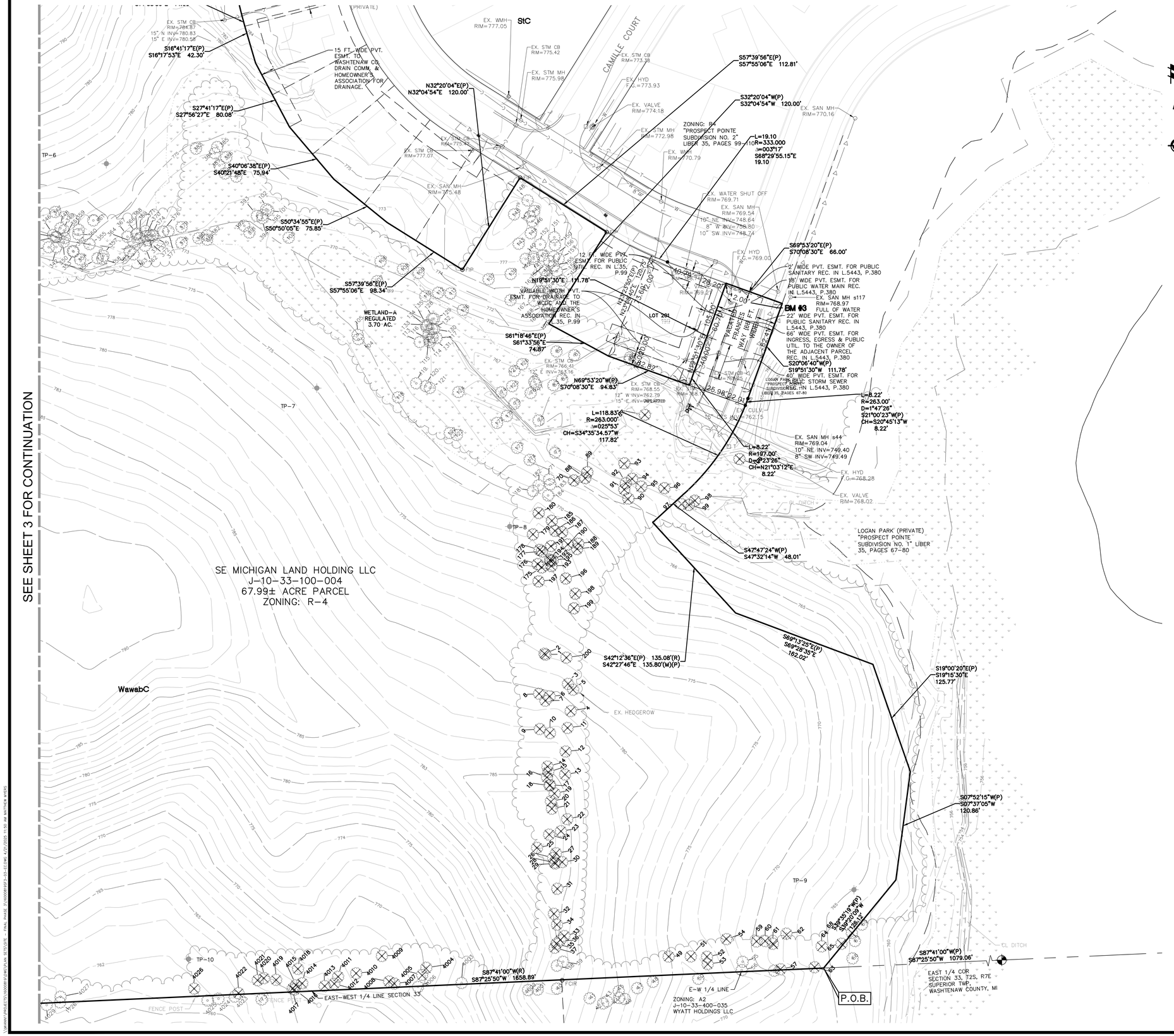
REVISIONS

0 25 50
SCALE: 1" = 50 FEET

DR.	SK
CH.	SS
P.M.	MB
BOOK	--
JOB	16000819
SHEET NO.	3

\\ATWELL\PROJECTS\16000819\DESIGN\SITE\FINAL SITE PLAN\16000819-SITE-DEMO.MXD 4/21/2025 11:58 AM MATTHEW.MOREY

SEE SHEET 3 FOR CONTINUATION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StC
EX. STM CB RIM=775.42
EX. STM MH RIM=775.98
CAMILLE COURT
EX. STM CB RIM=773.38
EX. HYD F.G.=773.93
EX. VALVE RIM=774.18
EX. STM MH RIM=772.98
EX. WMH RIM=770.79
EX. STM CB RIM=775.53
EX. STM CB RIM=777.07
EX. SAN MH RIM=775.48
EX. SAN MH RIM=770.16
EX. WATER SHUT OFF RIM=769.71
EX. SAN MH RIM=769.54
10" NE INV=748.64
8" W INV=748.80
10" SW INV=748.74
EX. HYD F.G.=769.00
EX. STM CB RIM=769.21
EX. STM CB RIM=766.61
12" E INV=763.16
EX. STM CB RIM=768.55
12" W INV=762.70
15" E INV=UNLISTED
EX. STM MH RIM=766.82
EX. CULV. INV=762.15
EX. SAN MH s44 RIM=769.04
10" NE INV=749.40
8" SW INV=749.49
EX. HYD F.G.=768.28
EX. VALVE RIM=768.02
EX. SAN MH s117 RIM=768.97 FULL OF WATER
BM #3
EX. HEDGEROW
EX. FENCE POST
EX. FENCE POST
EX. FENCE POST

TAG #	COMMON NAME	*BOTANICAL NAME*	DIAMETER (IN.)	CONDITION	LANDMARK	INVASIVE	EXEMPT	REMOVE
1	Pignut Hickory	*Carya glabra*	10	Good				Y
2	Black Cherry	*Prunus serotina*	21	Poor	Y		Y	Y
3	Red Oak	*Quercus rubra*	8.5	Good				Y
4	Black Walnut	*Juglans nigra*	8	Good				Y
5	Red Oak	*Quercus rubra*	12.5	Good				Y
6	Bur Oak	*Quercus macrocarpa*	20	Good	Y			Y
7	Pignut Hickory	*Carya glabra*	9	Fair				Y
8	Red Oak	*Quercus rubra*	13	Good				Y
9	Red Oak	*Quercus rubra*	13	Good				Y
10	Swamp White Oak	*Quercus bicolor*	11.5	Excellent				Y
11	Black Walnut	*Juglans nigra*	12	Excellent				Y
12	Black Walnut	*Juglans nigra*	14	Good				Y
13	Black Walnut	*Juglans nigra*	14	Good				Y
14	Black Cherry	*Prunus serotina*	15	Fair				Y
15	Box-elder	*Acer negundo*	18	Fair		Y	Y	Y
16	Pignut Hickory	*Carya glabra*	9	Good				Y
17	American Elm	*Ulmus americana*	10	Good				Y
18	Pignut Hickory	*Carya glabra*	12	Good				Y
19	Black Cherry	*Prunus serotina*	8	Fair				Y
20	Black Cherry	*Prunus serotina*	18	Good	Y			Y
21	Black Cherry	*Prunus serotina*	21	Good	Y			Y
22	Red Oak	*Quercus rubra*	9	Good				Y
23	Red Oak	*Quercus rubra*	8	Good				Y
24	Black Cherry	*Prunus serotina*	21	Fair	Y			Y
25	Apple/Crabapple	*Malus spp.*	8	Good				Y
26	Black Cherry	*Prunus serotina*	11	Good				Y
27	Black Cherry	*Prunus serotina*	18	Fair	Y			Y
28	Black Cherry	*Prunus serotina*	18	Good	Y			Y
29	Black Cherry	*Prunus serotina*	14	Good				Y
30	Black Walnut	*Juglans nigra*	16	Excellent				Y
31	Black Walnut	*Juglans nigra*	17	Good				Y
32	Black Walnut	*Juglans nigra*	20	Fair	Y			Y
33	Black Walnut	*Juglans nigra*	10	Good				Y
34	Black Walnut	*Juglans nigra*	19	Good	Y			Y
35	Red Oak	*Quercus rubra*	15	Good				Y
36	Red Oak	*Quercus rubra*	9	Good				Y
37	Red Oak	*Quercus rubra*	14	Good				Y
38	Red Oak	*Quercus rubra*	17	Good	Y			
39	Black Walnut	*Juglans nigra*	8.5	Good				Y
40	White Oak	*Quercus alba*	35	Fair	Y			
41	Black Cherry	*Prunus serotina*	8.5	Fair				Y
42	Black Cherry	*Prunus serotina*	16	Good				Y
43	Black Cherry	*Prunus serotina*	8	Good				Y
44	Black Cherry	*Prunus serotina*	8.5	Good				Y
45	Black Cherry	*Prunus serotina*	14.5	Fair				Y
46	White Oak	*Quercus alba*	20	Excellent	Y			
47	Black Cherry	*Prunus serotina*	17	Good				Y
48	American Elm	*Ulmus americana*	14.5	Good				Y
49	Box-elder	*Acer negundo*	14	Good		Y	Y	Y
50	White Oak	*Quercus alba*	42	Fair	Y			
51	Black Cherry	*Prunus serotina*	12	Good				Y
52	Black Cherry	*Prunus serotina*	11	Fair				Y
53	Black Cherry	*Prunus serotina*	17	Good				Y
54	Box-elder	*Acer negundo*	10.5	Good		Y	Y	Y
55	Black Cherry	*Prunus serotina*	18.5	Good	Y			Y
56	American Elm	*Ulmus americana*	11.5	Fair				
57	Black Cherry	*Prunus serotina*	24	Good				Y
58	Black Cherry	*Prunus serotina*	12	Good				
59	Box-elder	*Acer negundo*	11.5	Fair		Y	Y	Y
60	Box-elder	*Acer negundo*	9.5	Fair		Y	Y	Y
61	American Elm	*Ulmus americana*	10	Good				Y
62	Black Cherry	*Prunus serotina*	11	Good				Y
63	Black Cherry	*Prunus serotina*	9.5	Fair				Y
64	Cottonwood	*Populus deltoides*	11	Good		Y	Y	Y
65	Cottonwood	*Populus deltoides*	19	Good		Y	Y	Y
66	Black Walnut	*Juglans nigra*	14	Good				
67	Bitternut Hickory	*Carya cordiformis*	8.5	Good				
68	American Elm	*Ulmus americana*	10.5	Good				Y
69	Black Cherry	*Prunus serotina*	9	Good				
70	Box-elder	*Acer negundo*	8	Fair		Y	Y	Y
71	Black Cherry	*Prunus serotina*	14	Fair				
72	White Mulberry	*Morus alba*	14	Good				
73	Willow species	*Salix spp.*	20	Good				
74	Cottonwood	*Populus deltoides*	14	Good		Y	Y	
75	Cottonwood	*Populus deltoides*	33	Good	Y	Y	Y	
76	Black Walnut	*Juglans nigra*	18	Good	Y			
77	Swamp White Oak	*Quercus bicolor*	10	Good				
78	Swamp White Oak	*Quercus bicolor*	9.5	Good				
79	Basswood	*Tilia americana*	17.5	Good				
80	Black Walnut	*Juglans nigra*	17	Excellent				
81	Black Walnut	*Juglans nigra*	13.5	Excellent				
82	Swamp White Oak	*Quercus bicolor*	9	Fair				
83	Swamp White Oak	*Quercus bicolor*	9	Good				
84	Black Walnut	*Juglans nigra*	14	Excellent				
85	Box-elder	*Acer negundo*	9	Fair		Y	Y	
86	Black Walnut	*Juglans nigra*	20	Good	Y			
87	Cottonwood	*Populus deltoides*	28	Good	Y	Y	Y	Y
88	Box-elder	*Acer negundo*	13	Fair		Y	Y	Y
89	Cottonwood	*Populus deltoides*	28	Good	Y	Y	Y	Y
90	Black Walnut	*Juglans nigra*	10	Good				Y
91	Box-elder	*Acer negundo*	8.5	Fair		Y	Y	Y
92	White Mulberry	*Morus alba*	12	Good				Y
93	Cottonwood	*Populus deltoides*	35	Good	Y	Y	Y	Y
94	American Elm	*Ulmus americana*	19	Good	Y			Y
95	Box-elder	*Acer negundo*	11	Good		Y	Y	Y
96	Black Walnut	*Juglans nigra*	9	Good				Y
97	Black Cherry	*Prunus serotina*	12.5	Good				Y
98	Box-elder	*Acer negundo*	13	Fair		Y	Y	Y
99	Box-elder	*Acer negundo*	16	Fair		Y	Y	Y
100	Pignut Hickory	*Carya glabra*	14.5	Excellent				Y
101	Willow species	*Salix spp.*	14	Good				
102	Willow species	*Salix spp.*	9.5	Good				
103	Willow species	*Salix spp.*	17.5	Good				
104	Box-elder	*Acer negundo*	8	Fair		Y	Y	
105	Box-elder	*Acer negundo*	9	Fair		Y	Y	
106	Willow species	*Salix spp.*	20	Good				
107	Willow species	*Salix spp.*	12	Fair				
108	Box-elder	*Acer negundo*	8.5	Fair		Y	Y	
109	Red-Cedar	*Juniperus virginiana*	6.5	Good		Y	Y	
110	Box-elder	*Acer negundo*	9.5	Good		Y	Y	
111	Box-elder	*Acer negundo*	9.5	Good		Y	Y	
112	Apple/Crabapple	*Malus spp.*	9	Good				
113	Willow species	*Salix spp.*	17.5	Good				
114	Willow species	*Salix spp.*	13	Good				
115	Willow species	*Salix spp.*	11	Good				
116	Willow species	*Salix spp.*	12	Good				
117	Willow species	*Salix spp.*	17	Good				
118	Red Maple	*Acer rubrum*	8	Good				
119	Box-elder	*Acer negundo*	8	Good		Y	Y	
120	American Elm	*Ulmus americana*	17.5	Good				
121	Cottonwood	*Populus deltoides*	14	Good		Y	Y	
122	Black Walnut	*Juglans nigra*	9.5	Good				
123	Black Cherry	*Prunus serotina*	8	Good				
124	White Oak	*Quercus alba*	11	Good				
125	Cottonwood	*Populus deltoides*	26	Good	Y	Y	Y	
126	Swamp White Oak	*Quercus bicolor*	9	Good				
127	Cottonwood	*Populus deltoides*	40	Good	Y	Y	Y	
128	American Elm	*Ulmus americana*	8.5	Good				
129	Willow species	*Salix spp.*	9.5	Good				
130	Willow species	*Salix spp.*	9	Good				

TAG #	COMMON NAME	*BOTANICAL NAME*	DIAMETER (IN.)	CONDITION	LANDMARK	INVASIVE	EXEMPT	REMOVE
131	Willow species	*Salix spp.*	10	Good				Y
132	Willow species	*Salix spp.*	11.5	Good				Y
133	Willow species	*Salix spp.*	16.5	Good				Y
134	Willow species	*Salix spp.*	9	Good				Y
135	Willow species	*Salix spp.*	9	Good				Y
136	Box-elder	*Acer negundo*	10	Good		Y	Y	
137	American Elm	*Ulmus americana*	8	Poor			Y	
138	Black Cherry	*Prunus serotina*	10	Good				Y
139	Bitternut Hickory	*Carya cordiformis*	10.5	Good				Y
140	Bitternut Hickory	*Carya cordiformis*	14	Good				Y
141	Swamp White Oak	*Quercus bicolor*	9	Good				Y
142	Swamp White Oak	*Quercus bicolor*	12	Good				Y
143	White Mulberry	*Morus alba*	15	Fair				Y
144	Black Cherry	*Prunus serotina*	37	Fair	Y			Y
145	Apple/Crabapple	*Malus spp.*	12	Good				Y
146	Apple/Crabapple	*Malus spp.*	8	Good				Y
147	Basswood	*Tilia americana*	9.5	Good				Y
148	Bitternut Hickory	*Carya cordiformis*	8	Good				Y
149	Basswood	*Tilia americana*	16	Good				Y
150	Bitternut Hickory	*Carya cordiformis*	18	Excellent	Y			Y
151	American Elm	*Ulmus americana*	14	Excellent				Y
152	Basswood	*Tilia americana*	12	Good				Y
153	Black Walnut	*Juglans nigra*	13	Good				Y
154	Black Walnut	*Juglans nigra*	10.5	Good				Y
155	Black Walnut	*Juglans nigra*	17	Good				Y
156	Black Cherry	*Prunus serotina*	8	Good				Y
157	Bitternut Hickory	*Carya cordiformis*	8	Good				Y
158	Black Walnut	*Juglans nigra*	9	Good				Y
159	Bitternut Hickory	*Carya cordiformis*	11	Good				Y
160	Bitternut Hickory	*Carya cordiformis*	13	Excellent				Y
161	Bitternut Hickory	*Carya cordiformis*	8	Excellent				Y
162	American Elm	*Ulmus americana*	20	Good	Y			Y
163	Black Walnut	*Juglans nigra*	10	Fair				Y
164	Black Walnut	*Juglans nigra*	8	Good				Y
165	Black Walnut	*Juglans nigra*	8	Good				Y
166	Black Walnut	*Juglans nigra*	10	Good				Y
167	Swamp White Oak	*Quercus bicolor*	9	Good				Y
168	Black Walnut	*Juglans nigra*	15	Good				Y
169	Black Walnut	*Juglans nigra*	10.5	Fair				Y
170	Black Walnut	*Juglans nigra*	14	Excellent				Y
171	Box-elder	*Acer negundo*	9	Fair		Y	Y	
172	American Elm	*Ulmus americana*	8.5	Good				Y
173	Box-elder	*Acer negundo*	9	Good		Y	Y	
174	Black Oak	*Quercus velutina*	15	Good				Y
175	Black Cherry	*Prunus serotina*	10	Fair				Y
176	Box-elder	*Acer negundo*	10.5	Fair		Y	Y	Y
177	Black Cherry	*Prunus serotina*	9	Good				Y
178	Black Cherry	*Prunus serotina*	13.5	Good				Y
179	Black Cherry	*Prunus serotina*	11.5	Good				Y
180	Black Cherry	*Prunus serotina*	12	Good				Y
181	Swamp White Oak	*Quercus bicolor*	15	Good				Y
182	Swamp White Oak	*Quercus bicolor*	8	Good				Y
183	Black Cherry	*Prunus serotina*	9	Good				Y
184	Swamp White Oak	*Quercus bicolor*	13	Excellent				Y
185	Black Cherry	*Prunus serotina*	15	Fair				Y
186	Black Walnut	*Juglans nigra*	17	Good				Y
187	Black Walnut	*Juglans nigra*	21	Good	Y			Y
188	Box-elder	*Acer negundo*	15	Good		Y	Y	Y
189	Box-elder	*Acer negundo*	9	Good		Y	Y	Y
190	Box-elder	*Acer negundo*	9	Poor		Y	Y	Y
191	Black Cherry	*Prunus serotina*	11	Good				Y
192	Black Cherry	*Prunus serotina*	11	Good				Y
193	Black Cherry	*Prunus serotina*	11	Good				Y
194	Swamp White Oak	*Quercus bicolor*	8	Good				Y
195	Swamp White Oak	*Quercus bicolor*	9	Fair				Y
196	Swamp White Oak	*Quercus bicolor*	10	Good				Y
197	Black Cherry	*Prunus serotina*	8	Good				Y
198	Black Cherry	*Prunus serotina*	13	Fair				Y
199	Black Walnut	*Juglans nigra*	12.5	Good				Y
200	Bitternut Hickory	*Carya cordiformis*	8.5	Good				Y
201	Box-elder	*Acer negundo*	13	Poor		Y	Y	Y
202	Box-elder	*Acer negundo*	12.5	Fair		Y	Y	Y
203	Box-elder	*Acer negundo*	8	Fair		Y	Y	Y
204	Box-elder	*Acer negundo*	13	Poor		Y	Y	Y
205	Hawthorn	*Crataegus spp.*	9	Poor			Y	Y
206	Box-elder	*Acer negundo*	8.5	Fair		Y	Y	Y
207	Box-elder	*Acer negundo*	12	Good		Y	Y	Y
208	Box-elder	*Acer negundo*	10.5	Good		Y	Y	Y
209	Box-elder	*Acer negundo*	11.5	Fair		Y	Y	Y
210	Cottonwood	*Populus deltoides*	18	Good		Y	Y	Y
211	Box-elder	*Acer negundo*	8	Good		Y	Y	Y
212	Box-elder	*Acer negundo*	8	Good		Y	Y	Y
213	Box-elder	*Acer negundo*	9	Good		Y	Y	Y
214	Box-elder	*Acer negundo*	11.5	Good		Y	Y	Y
215	Box-elder	*Acer negundo*	9.5	Fair		Y	Y	Y
216	Box-elder	*Acer negundo*	12	Good		Y	Y	Y
217	Box-elder	*Acer negundo*	9	Good		Y	Y	Y
218	Hawthorn	*Crataegus spp.*	8	Fair				Y
219	Box-elder	*Acer negundo*	8.5	Fair		Y	Y	Y
220	Black Cherry	*Prunus serotina*	10.5	Poor			Y	Y
221	Box-elder	*Acer negundo*	8	Good		Y	Y	Y
222	Black Cherry	*Prunus serotina*	8	Good				Y
223	Black Cherry	*Prunus serotina*	8	Good				Y
224	Common Buckthorn	*Rhamnus cathartica*	9.5	Fair		Y	Y	Y
225	Apple/Crabapple	*Malus spp.*	9.5	Fair				Y
226	Apple/Crabapple	*Malus spp.*	8	Good				Y
227	Apple/Crabapple	*Malus spp.*	17	Fair				Y
228	Common Buckthorn	*Rhamnus cathartica*	8	Fair		Y	Y	Y
229	Black Cherry	*Prunus serotina*	8.5	Fair				Y
230	Black Cherry	*Prunus serotina*	13	Fair				Y
231	Black Cherry	*Prunus serotina*	13.5	Poor			Y	Y
232	Black Cherry	*Prunus serotina*	10.5	Fair				Y
233	Black Cherry	*Prunus serotina*	14	Good				Y
234	White Mulberry	*Morus alba*	9.5	Good				Y
235	Black Cherry	*Prunus serotina*	15	Fair				Y
236	Apple/Crabapple	*Malus spp.*	14	Fair				
237	Apple/Crabapple	*Malus spp.*	10.5	Poor			Y	
238	Black Cherry	*Prunus serotina*	16	Poor			Y	
239	Box-elder	*Acer negundo*	17	Poor		Y	Y	Y
240	Black Cherry	*Prunus serotina*	15.5	Fair				Y
241	Black Cherry	*Prunus serotina*	11	Poor			Y	
242	American Elm	*Ulmus americana*	13	Good				Y
243	American Elm	*Ulmus americana*	12	Good				
244	Box-elder	*Acer negundo*	8.5	Good		Y	Y	Y
245	Box-elder	*Acer negundo*	8.5	Good		Y	Y	Y
246	Apple/Crabapple	*Malus spp.*	17	Fair				Y
247	Black Cherry	*Prunus serotina*	8.5	Fair				
248	Willow species	*Salix spp.*	11	Fair				Y
249	Willow species	*Salix spp.*	9	Fair				Y
250	Willow species	*Salix spp.*	13	Good				Y
251	Willow species	*Salix spp.*	13	Good				Y
252	Red Maple	*Acer rubrum*	11	Good				Y
253	Willow species	*Salix spp.*	11	Fair				Y
254	Red Maple	*Acer rubrum*	11.5	Good				Y
255	Cottonwood	*Populus deltoides*	28	Fair	Y	Y	Y	
256	Willow species	*Salix spp.*	21	Fair				Y
257	Apple/Crabapple	*Malus spp.*	8.5	Good				
258	Apple/Crabapple	*Malus spp.*	12.5	Good				
259	Siberian Elm	*Ulmus pumila*	19	Fair				
260	Common Buckthorn	*Rhamnus cathartica*	9	Poor		Y	Y	

TAG #	COMMON NAME	*BOTANICAL NAME*	DIAMETER (IN.)	CONDITION	LANDMARK	INVASIVE	EXEMPT	REMOVE
261	Siberian Elm	*Ulmus pumila*	17.5	Fair				
262	American Elm	*Ulmus americana*	8	Good				
263	American Elm	*Ulmus americana*	10	Good				
264	American Elm	*Ulmus americana*	8.5	Fair				
265	American Elm	*Ulmus americana*	9.5	Fair				
266	American Elm	*Ulmus americana*	11.5	Fair				
267	Apple/Crabapple	*Malus spp.*	9.5	Fair				
268	American Elm	*Ulmus americana*	8	Fair				Y
269	Box-elder	*Acer negundo*	8.5	Fair		Y	Y	Y
270	Apple/Crabapple	*Malus spp.*	10.5	Good				Y
271	Common Buckthorn	*Rhamnus cathartica*	10.5	Fair		Y	Y	Y
272	American Elm	*Ulmus americana*	13.5	Fair				Y
273	Hawthorn	*Crataegus spp.*	8	Good				Y
274	Apple/Crabapple	*Malus spp.*	10.5	Good				Y
275	Hawthorn	*Crataegus spp.*	10.5	Good				
276	Hawthorn	*Crataegus spp.*	12.5	Fair				
277	Apple/Crabapple	*Malus spp.*	12.5	Fair				
278	Hawthorn	*Crataegus spp.*	10.5	Poor			Y	
279	Black Cherry	*Prunus serotina*	8.5	Fair				
280	Hawthorn	*Crataegus spp.*	8	Good				
281	Hawthorn	*Crataegus spp.*	9	Good				
282	Black Cherry	*Prunus serotina*	10.5	Fair				
283	Black Walnut	*Juglans nigra*	8	Excellent				
284	Box-elder	*Acer negundo*	10.5	Fair		Y	Y	
285	Hawthorn	*Crataegus spp.*	12	Good				
286	Box-elder	*Acer negundo*	11	Fair		Y	Y	
287	Box-elder	*Acer negundo*	12	Fair		Y	Y	
288	Box-elder	*Acer negundo*	8.5	Fair		Y	Y	
289	Apple/Crabapple	*Malus spp.*	12.5	Fair				
290	Hawthorn	*Crataegus spp.*	10	Fair				
291	Hawthorn	*Crataegus spp.*	11	Fair				
292	Hawthorn	*Crataegus spp.*	12.5	Fair				
293	Black Cherry	*Prunus serotina*	9.5	Good				
294	Apple/Crabapple	*Malus spp.*	8	Fair				
295	Apple/Crabapple	*Malus spp.*	10	Fair				
296	Apple/Crabapple	*Malus spp.*	8.5	Good				
297	Apple/Crabapple	*Malus spp.*	8.5	Good				
298	Black Cherry	*Prunus serotina*	8	Fair				
299	Hackberry	*Celtis occidentalis*	14.5	Good				
300	American Elm	*Ulmus americana*	12	Fair				
301	Apple/Crabapple	*Malus spp.*	11.5	Good				
302	Hawthorn	*Crataegus spp.*	8	Poor		Y		
303	Hawthorn	*Crataegus spp.*	10.5	Fair				
304	American Elm	*Ulmus americana*	8	Fair				Y
305	American Elm	*Ulmus americana*	9.5	Fair				Y
306	American Elm	*Ulmus americana*	8.5	Good				
307	Hawthorn	*Crataegus spp.*	10.5	Good				Y
308	American Elm	*Ulmus americana*	9	Good				Y
309	Box-elder	*Acer negundo*	12.5	Fair		Y	Y	Y
310	Common Buckthorn	*Rhamnus cathartica*	9	Fair		Y	Y	Y
311	Apple/Crabapple	*Malus spp.*	8.5	Good				Y
312	American Elm	*Ulmus americana*	9	Good				Y
313	Hawthorn	*Crataegus spp.*	8	Fair				Y
314	Hawthorn	*Crataegus spp.*	8	Fair				Y
315	American Elm	*Ulmus americana*	10	Good				Y
316	Red-Cedar	*Juniperus virginiana*	8	Good		Y	Y	Y
317	Black Cherry	*Prunus serotina*	11	Fair				Y
318	Black Cherry	*Prunus serotina*	8.5	Fair				Y
319	Black Cherry	*Prunus serotina*	15	Fair				Y
320	Hawthorn	*Crataegus spp.*	8	Fair				Y
321	Black Cherry	*Prunus serotina*	8.5	Fair				Y
322	Black Walnut	*Juglans nigra*	14.5	Fair				Y
323	American Elm	*Ulmus americana*	20	Poor	Y		Y	Y
324	Black Walnut	*Juglans nigra*	14	Good				Y
325	Black Walnut	*Juglans nigra*	19	Poor	Y		Y	Y
326	Black Walnut	*Juglans nigra*	8.5	Good				Y
327	Willow species	*Salix spp.*	10	Good				
328	Black Walnut	*Juglans nigra*	29	Excellent	Y			
329	Black Walnut	*Juglans nigra*	14	Good				
330	Black Walnut	*Juglans nigra*	19	Fair	Y			
331	Hackberry	*Celtis occidentalis*	8	Good				
332	Hackberry	*Celtis occidentalis*	9	Good				
333	Black Walnut	*Juglans nigra*	17.5	Good				
334	Black Walnut	*Juglans nigra*	14	Fair				
335	Black Walnut	*Juglans nigra*	27	Fair	Y			
336	Black Walnut	*Juglans nigra*	10.5	Good				
337	Black Walnut	*Juglans nigra*	16.5	Good				
338	Black Walnut	*Juglans nigra*	12	Good				
339	Black Cherry	*Prunus serotina*	14.5	Fair				
340	Black Walnut	*Juglans nigra*	10	Good				
341	Black Walnut	*Juglans nigra*	11.5	Good				
342	Cottonwood	*Populus deltoides*	8	Good		Y	Y	
343	Cottonwood	*Populus deltoides*	13	Good		Y	Y	
344	Cottonwood	*Populus deltoides*	10.5	Good		Y	Y	
345	Cottonwood	*Populus deltoides*	13	Good		Y	Y	
346	Cottonwood	*Populus deltoides*	12	Fair		Y	Y	
347	Willow species	*Salix spp.*	8	Good				
348	Cottonwood	*Populus deltoides*	14.5	Good		Y	Y	
349	Cottonwood	*Populus deltoides*	14	Good		Y	Y	
350	Cottonwood	*Populus deltoides*	9	Good		Y	Y	
351	Cottonwood	*Populus deltoides*	9	Good		Y	Y	
352	Cottonwood	*Populus deltoides*	9	Good		Y	Y	
353	Cottonwood	*Populus deltoides*	10	Good		Y	Y	
354	Cottonwood	*Populus deltoides*	22	Good		Y	Y	
355	Willow species	*Salix spp.*	15.5	Good				
356	Willow species	*Salix spp.*	8.5	Good				
357	Willow species	*Salix spp.*	10.5	Fair				
358	Cottonwood	*Populus deltoides*	12	Good		Y	Y	
359	Willow species	*Salix spp.*	8	Good				
360	Willow species	*Salix spp.*	10	Good				
361	Black Walnut	*Juglans nigra*	9.5	Good				
362	Cottonwood	*Populus deltoides*	14.5	Good		Y	Y	
363	Cottonwood	*Populus deltoides*	15	Good		Y	Y	
364	Cottonwood	*Populus deltoides*	17	Good		Y	Y	
365	Cottonwood	*Populus deltoides*	14	Good		Y	Y	
366	Cottonwood	*Populus deltoides*	14	Good		Y	Y	
367	Cottonwood	*Populus deltoides*	13.5	Good		Y	Y	
368	Willow species	*Salix spp.*	11.5	Good				
369	Cottonwood	*Populus deltoides*	9	Good		Y	Y	
370	American Elm	*Ulmus americana*	13	Good				
371	Cottonwood	*Populus deltoides*	10.5	Good		Y	Y	
372	Cottonwood	*Populus deltoides*	18.5	Good		Y	Y	
373	Cottonwood	*Populus deltoides*	12	Good		Y	Y	
374	Cottonwood	*Populus deltoides*	18	Good		Y	Y	
375	Cottonwood	*Populus deltoides*	12	Good		Y	Y	
376	Willow species	*Salix spp.*	12	Good				
377	Cottonwood	*Populus deltoides*	14.5	Good		Y	Y	
378	Cottonwood	*Populus deltoides*	9	Good		Y	Y	
379	Cottonwood	*Populus deltoides*	10	Good		Y	Y	
380	Willow species	*Salix spp.*	18.5	Fair				
381	Cottonwood	*Populus deltoides*	8	Good		Y	Y	
382	Willow species	*Salix spp.*	13.5	Good				
383	Cottonwood	*Populus deltoides*	11.5	Good		Y	Y	
384	Cottonwood	*Populus deltoides*	10	Good		Y	Y	
385	Willow species	*Salix spp.*	11	Fair				
386	Cottonwood	*Populus deltoides*	9.5	Good		Y	Y	
387	Cottonwood	*Populus deltoides*	9	Good		Y	Y	
388	Cottonwood	*Populus deltoides*	14	Good		Y	Y	
389	Cottonwood	*Populus deltoides*	10.5	Good		Y	Y	
391	Cottonwood	*Populus deltoides*	10	Fair		Y	Y	

TAG #	COMMON NAME	*BOTANICAL NAME*	DIAMETER (IN.)	CONDITION	LANDMARK	INVASIVE	EXEMPT	REMOVE
392	Cottonwood	*Populus deltoides*	16.5	Excellent		Y	Y	
393	Willow species	*Salix spp.*	25	Fair	Y			
394	American Elm	*Ulmus americana*	8.5	Fair				Y
395	Cottonwood	*Populus deltoides*	18	Good		Y	Y	
401	White Mulberry	*Morus alba*	12.5	Good				
402	Black Cherry	*Prunus serotina*	11	Poor			Y	
403	Common Apple	*Malus pumila*	9	Poor			Y	
404	Apple/Crabapple	*Malus spp.*	13	Poor			Y	
405	Sweet Cherry	*Prunus avium*	13	Excellent	Y			
406	Hackberry	*Celtis occidentalis*	18	Excellent				
407	Black Cherry	*Prunus serotina*	8	Good				
408	Box-elder	*Acer negundo*	8	Good		Y	Y	
409	American Elm	*Ulmus americana*	11	Excellent				
410	Apple/Crabapple	*Malus spp.*	8.5	Good				
411	Apple/Crabapple	*Malus spp.*	8	Good				
412	Apple/Crabapple	*Malus spp.*	22	Good				
413	Apple/Crabapple	*Malus spp.*	8.5	Good				
414	Apple/Crabapple	*Malus spp.*	12.5	Excellent				
415	Black Cherry	*Prunus serotina*	12.5	Fair				Y
415	Black Cherry	*Prunus serotina*	12.5	Fair				Y
416	Black Cherry	*Prunus serotina*	12.5	Poor			Y	Y
417	Black Cherry	*Prunus serotina*	9	Fair				Y
418	Peachleaf Willow	*Salix amygdaloides*	11	Good				Y
419	Black Cherry	*Prunus serotina*	20.5	Fair	Y			
420	Black Cherry	*Prunus serotina*	13	Good				
421	Black Cherry	*Prunus serotina*	8	Fair				
422	Black Cherry	*Prunus serotina*	8.5	Fair				
423	Common Buckthorn	*Rhamnus cathartica*	14	Fair			Y	Y
424	Siberian Elm	*Ulmus pumila*	11.5	Good				
425	Common Pear	*Pyrus communis*	15.5	Fair				
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TAG #	COMMON NAME	BOTANICAL NAME	DIAMETER (IN.)	CONDITION	LANDMARK	INVASIVE	EXEMPT	REMOVE
1708	Black Walnut	*Juglans nigra*	15	Good				Y
1726	Black Walnut	*Juglans nigra*	22	Good	Y			
1737	Black Walnut	*Juglans nigra*	19	Fair	Y			
1901	White Ash	*Fraxinus americana*	8.5	Good				
1908	Red Oak	*Quercus rubra*	19.5	Good	Y			
1909	Black Walnut	*Juglans nigra*	10	Good				
1910	Black Walnut	*Juglans nigra*	13	Good				
1911	Black Walnut	*Juglans nigra*	14	Excellent				
1912	Black Walnut	*Juglans nigra*	13	Good				
1913	American Elm	*Ulmus americana*	15	Good				
1914	Box-elder	*Acer negundo*	12	Good		Y	Y	
1915	American Elm	*Ulmus americana*	9	Good				
1916	Black Walnut	*Juglans nigra*	9	Good				
1917	Black Walnut	*Juglans nigra*	12	Good				
1918	Black Walnut	*Juglans nigra*	15	Good				
1919	Black Walnut	*Juglans nigra*	12	Good				
1920	American Elm	*Ulmus americana*	8	Good				
1921	Bitternut Hickory	*Carya cordiformis*	11	Excellent				
1923	Black Walnut	*Juglans nigra*	10.5	Fair				
1924	Black Walnut	*Juglans nigra*	9.5	Excellent				
1925	Black Walnut	*Juglans nigra*	16	Good				
1926	Box-elder	*Acer negundo*	13.5	Poor		Y	Y	
1927	Black Walnut	*Juglans nigra*	16	Good				
1928	Box-elder	*Acer negundo*	9	Fair		Y	Y	
1929	Box-elder	*Acer negundo*	11	Fair		Y	Y	
1930	Peachleaf Willow	*Salix amygdaloides*	20	Good				
1931	Box-elder	*Acer negundo*	10	Poor		Y	Y	
1932	Black Walnut	*Juglans nigra*	20	Excellent	Y			
1933	Black Walnut	*Juglans nigra*	20.5	Good	Y			
1934	Box-elder	*Acer negundo*	10	Dead		Y	Y	
1936	Box-elder	*Acer negundo*	8	Poor		Y	Y	
1937	Black Walnut	*Juglans nigra*	8.5	Good				
1938	Common Buckthorn	*Rhamnus cathartica*	11	Fair		Y	Y	
1939	American Elm	*Ulmus americana*	12	Good				
1940	Black Walnut	*Juglans nigra*	10	Good				
1941	Box-elder	*Acer negundo*	10	Dead		Y	Y	
1942	Black Walnut	*Juglans nigra*	8	Good				
1943	Black Walnut	*Juglans nigra*	16	Good				
1944	Bitternut Hickory	*Carya cordiformis*	11.5	Excellent				
1945	Red Oak	*Quercus rubra*	11	Good				
1946	Black Cherry	*Prunus serotina*	14	Poor			Y	
1947	American Elm	*Ulmus americana*	9	Fair				
1948	Black Walnut	*Juglans nigra*	12	Good				
1949	Black Walnut	*Juglans nigra*	12	Poor			Y	
1950	Box-elder	*Acer negundo*	8	Fair		Y	Y	
1951	Box-elder	*Acer negundo*	14	Good		Y	Y	
1952	Box-elder	*Acer negundo*	13	Good		Y	Y	
1953	Black Walnut	*Juglans nigra*	11	Fair				
1954	Black Walnut	*Juglans nigra*	21	Good	Y			
1955	Box-elder	*Acer negundo*	10.5	Fair		Y	Y	Y
1956	Box-elder	*Acer negundo*	10	Fair		Y	Y	Y
1957	Box-elder	*Acer negundo*	11	Good		Y	Y	
1958	Black Walnut	*Juglans nigra*	11	Fair				
1959	Box-elder	*Acer negundo*	14	Fair		Y	Y	Y
1960	Box-elder	*Acer negundo*	9.5	Fair		Y	Y	Y
1961	Box-elder	*Acer negundo*	11.5	Fair		Y	Y	Y
1962	Black Walnut	*Juglans nigra*	11	Excellent				Y
1963	Cottonwood	*Populus deltoides*	12.5	Excellent		Y	Y	Y
1964	Cottonwood	*Populus deltoides*	11.5	Good		Y	Y	Y
1965	Cottonwood	*Populus deltoides*	14	Excellent		Y	Y	Y
1966	Cottonwood	*Populus deltoides*	12.5	Good		Y	Y	Y
1967	Cottonwood	*Populus deltoides*	10.5	Good		Y	Y	Y
1968	Black Walnut	*Juglans nigra*	12.5	Excellent				Y
1969	Black Walnut	*Juglans nigra*	8	Good				Y
1970	Box-elder	*Acer negundo*	9	Good		Y	Y	Y
1971	Box-elder	*Acer negundo*	8	Poor		Y	Y	Y
1972	Box-elder	*Acer negundo*	15	Fair		Y	Y	Y
1973	Black Walnut	*Juglans nigra*	9	Good				Y
1974	Black Walnut	*Juglans nigra*	17.5	Good				Y
1975	Black Walnut	*Juglans nigra*	9	Good				Y
1976	Box-elder	*Acer negundo*	9.5	Fair		Y	Y	Y
1977	Box-elder	*Acer negundo*	14	Good		Y	Y	Y
1978	Box-elder	*Acer negundo*	8	Good		Y	Y	Y
1979	Box-elder	*Acer negundo*	11	Good		Y	Y	Y
1980	Box-elder	*Acer negundo*	8.5	Fair		Y	Y	Y
1981	Box-elder	*Acer negundo*	8	Dead		Y	Y	Y
1982	Box-elder	*Acer negundo*	8	Fair		Y	Y	Y
4001	Red Oak	*Quercus rubra*	11.3	Good				
4002	Red Oak	*Quercus rubra*	18.2	Good	Y			
4003	Box-elder	*Acer negundo*	9.5	Poor		Y	Y	
4004	Box-elder	*Acer negundo*	8	Poor		Y	Y	Y
4005	Box-elder	*Acer negundo*	8.5	Poor		Y	Y	Y
4006	Box-elder	*Acer negundo*	8	Fair		Y	Y	
4007	Box-elder	*Acer negundo*	9	Fair		Y	Y	Y
4008	Box-elder	*Acer negundo*	11	Fair		Y	Y	Y
4009	American Elm	*Ulmus americana*	11	Good				Y
4010	American Elm	*Ulmus americana*	9.5	Excellent				Y
4011	Box-elder	*Acer negundo*	12	Fair		Y	Y	Y
4012	Box-elder	*Acer negundo*	12	Poor		Y	Y	Y
4013	Box-elder	*Acer negundo*	14.5	Fair		Y	Y	Y
4014	Box-elder	*Acer negundo*	19.5	Good		Y	Y	Y
4015	Box-elder	*Acer negundo*	10	Fair		Y	Y	Y
4016	Box-elder	*Acer negundo*	15	Good		Y	Y	Y
4017	Box-elder	*Acer negundo*	8	Good		Y	Y	Y
4018	Box-elder	*Acer negundo*	10.5	Poor		Y	Y	Y
4019	Box-elder	*Acer negundo*	10	Fair		Y	Y	Y
4020	Box-elder	*Acer negundo*	16	Fair		Y	Y	Y
4021	Box-elder	*Acer negundo*	11.5	Fair		Y	Y	Y
4022	Box-elder	*Acer negundo*	21	Good		Y	Y	Y
4023	Box-elder	*Acer negundo*	9	Fair		Y	Y	
4024	Box-elder	*Acer negundo*	12.5	Fair		Y	Y	
4025	Black Walnut	*Juglans nigra*	22	Excellent	Y			
4026	Box-elder	*Acer negundo*	20	Good		Y	Y	Y
4027	Hackberry	*Celtis occidentalis*	10	Fair				
4029	American Elm	*Ulmus americana*	14.5	Good				
4030	Black Walnut	*Juglans nigra*	8	Good				Y
4031	Black Walnut	*Juglans nigra*	8.5	Excellent				Y
4032	Black Walnut	*Juglans nigra*	15	Good				Y
4033	Black Walnut	*Juglans nigra*	14	Good				Y
4034	Black Walnut	*Juglans nigra*	12.5	Good				Y
4035	Black Walnut	*Juglans nigra*	10	Good				Y
4036	Box-elder	*Acer negundo*	8.5	Fair		Y	Y	Y
4037	Box-elder	*Acer negundo*	10	Fair		Y	Y	Y
4038	Box-elder	*Acer negundo*	8	Fair		Y	Y	Y
4039	Black Walnut	*Juglans nigra*	9.5	Good				Y
4040	Black Walnut	*Juglans nigra*	8	Excellent				Y
4041	Black Walnut	*Juglans nigra*	13	Good				Y
4042	Cottonwood	*Populus deltoides*	43	Good	Y	Y	Y	Y
4043	Black Walnut	*Juglans nigra*	10.5	Excellent				Y
4044	Black Walnut	*Juglans nigra*	9.5	Good				Y
4045	Pussy Willow	*Salix discolor*	8	Good				Y
4046	Hackberry	*Celtis occidentalis*	10	Excellent				Y
4047	Black Walnut	*Juglans nigra*	10	Excellent				Y
4048	Black Walnut	*Juglans nigra*	13	Excellent				Y
4049	Black Walnut	*Juglans nigra*	10.5	Good				Y
4050	Black Walnut	*Juglans nigra*	18	Good	Y			Y
4051	Black Walnut	*Juglans nigra*	18	Good	Y			Y
4052	Black Walnut	*Juglans nigra*	23	Good	Y			Y
4053	Black Walnut	*Juglans nigra*	8.5	Fair				Y
4054	Black Walnut	*Juglans nigra*	13	Good				Y

TAG #	COMMON NAME	BOTANICAL NAME	DIAMETER (IN.)	CONDITION	LANDMARK	INVASIVE	EXEMPT	REMOVE
4055	Black Walnut	*Juglans nigra*	22	Excellent	Y			Y
4056	Black Walnut	*Juglans nigra*	11.5	Good				Y
4057	Black Walnut	*Juglans nigra*	8	Fair				Y
4058	White Ash	*Fraxinus americana*	8	Fair				Y
4059	Apple/Crabapple	*Malus spp.*	18.5	Fair				Y
4060	Black Cherry	*Prunus serotina*	16	Poor			Y	Y
4061	Black Cherry	*Prunus serotina*	18	Fair	Y			Y
4062	Black Cherry	*Prunus serotina*	45	Fair	Y			Y
4063	Black Cherry	*Prunus serotina*	17	Poor			Y	Y
4064	Black Walnut	*Juglans nigra*	15.5	Good				Y
4065	Black Cherry	*Prunus serotina*	8	Fair				Y
4066	American Elm	*Ulmus americana*	10.5	Good				Y
4067	Apple/Crabapple	*Malus spp.*	12	Fair				Y
4068	Black Walnut	*Juglans nigra*	11	Good				Y
4069	Black Walnut	*Juglans nigra*	8	Good				Y
4070	Black Walnut	*Juglans nigra*	12.5	Good				Y
4071	Black Walnut	*Juglans nigra*	16.5	Good				Y
4072	Black Cherry	*Prunus serotina*	17.5	Poor			Y	Y
4073	Black Walnut	*Juglans nigra*	27	Good	Y			Y
4076	Black Walnut	*Juglans nigra*	11	Good				Y
4077	Black Cherry	*Prunus serotina*	15	Poor			Y	Y
4078	Serviceberry	*Amelanchier spp.*	8	Good				Y
4079	Black Cherry	*Prunus serotina*	16	Poor			Y	Y
4080	Black Cherry	*Prunus serotina*	14	Fair				Y
4081	Black Cherry	*Prunus serotina*	18	Fair	Y			Y
4082	Apple/Crabapple	*Malus spp.*	13	Good				Y
4083	Hawthorn	*Crataegus spp.*	13	Good				Y
4084	Black Cherry	*Prunus serotina*	15	Poor			Y	Y
4085	Hawthorn	*Crataegus spp.*	8	Fair				Y
4086	Hawthorn	*Crataegus spp.*	12	Fair				Y
4087	Hawthorn	*Crataegus spp.*	15.5	Fair				Y
4088	Black Cherry	*Prunus serotina*	12	Good				Y
4089	Hawthorn	*Crataegus spp.*	8	Good				Y
4090	Hawthorn	*Crataegus spp.*	9.5	Excellent				Y
4091	Black Cherry	*Prunus serotina*	27	Poor	Y		Y	Y
4092	Black Walnut	*Juglans nigra*	28	Good	Y			Y
4093	American Elm	*Ulmus americana*	11	Good				Y
4094	Black Cherry	*Prunus serotina*	23	Fair	Y			Y
4095	American Elm	*Ulmus americana*	11	Good				Y
4096	Black Cherry	*Prunus serotina*	19	Poor	Y		Y	Y
4097	Black Cherry	*Prunus serotina*	17	Fair				Y
4098	Shagbark Hickory	*Carya ovata*	12	Excellent				Y
4099	Black Walnut	*Juglans nigra*	15.5	Excellent				Y
4100	Black Cherry	*Prunus serotina*	20	Fair	Y			Y

COMMON NAME	DIAMETER (IN.)	SOVEREIGN DIAMETER (IN.)
Basswood	18	54
Beech	18	45
Ohio Buckeye	18	
Catalpa	18	45
Black Cherry	18	54
American Elm	18	50
Fir	18	
Douglas Fir	18	
Kentucky Coffee Tree	18	40
Pine	18	
Sycamore	18	54
London Plane	18	54
Spruce	18	
Tulip-tree	18	54
Black Walnut	18	54
Shagbark Hickory	18	54
Pignut Hickory	18	54
Bitternut Hickory	16	35
Red Maple	16	48
Red Oak	16	48
Bur Oak	16	48
White Oak	16	48
Black Oak	16	48
Swamp White Oak	16	48
Birch	12	36
Cherry	12	36
Sweet Cherry	12	36
American Chestnut	6	18
Butternut	6	18

COMMON NAME	
Common Buckthorn	Y
Glossy Buckthorn	Y
Autumn Olive	Y
Honeysuckle	Y
Multiflora Rose	Y
Phramites	Y
Box-Elder	Y
Silver Maple	Y
Cottonwood	Y
Cottonwood	Y
Red-Cedar	Y

PHASE 1 AND 2 TREE REMOVAL / REPLACEMENT CALCULATIONS

TREE REMOVAL/REPLACEMENT CALCULATION		
REGULATED 8"-12" TREES REMOVED	**76 : 76**	REPLACEMENT TREES REQUIRED
REGULATED 12.1"-16" TREES REMOVED	**25 : 75**	REPLACEMENT TREES REQUIRED
REGULATED 16.1" & GREATER TREES REMOVED	**9 : 54**	REPLACEMENT TREES REQUIRED
TOTAL NUMBER OF REGULATED TREES REMOVED	**110 : 205**	REPLACEMENT TREES REQUIRED
TOTAL NUMBER OF LANDMARK TREES REMOVED	**3**	
TOTAL LANDMARK DBH REMOVED (INCHES)	**68 : 68**	REPLACEMENT TREES REQUIRED
TOTAL NUMBER OF REPLACEMENT TREES	**273**	TREES

PHASE 3 AND 4 TREE REMOVAL / REPLACEMENT CALCULATIONS

TREE REMOVAL/REPLACEMENT CALCULATION		
REGULATED 8"-12" TREES REMOVED	**101 : 101**	REPLACEMENT TREES REQUIRED
REGULATED 12.1"-16" TREES REMOVED	**19 : 57**	REPLACEMENT TREES REQUIRED
REGULATED 16.1" & GREATER TREES REMOVED	**7 : 42**	REPLACEMENT TREES REQUIRED
TOTAL NUMBER OF REGULATED TREES REMOVED	**127 : 200**	REPLACEMENT TREES REQUIRED
TOTAL NUMBER OF LANDMARK TREES REMOVED	**12**	
TOTAL LANDMARK DBH REMOVED (INCHES)	**271 : 271**	REPLACEMENT TREES REQUIRED
TOTAL NUMBER OF REPLACEMENT TREES	**471**	TREES

1. REMOVALS ON SHOWN ON SHEETS 5 AND 6 WITHIN THE PHASE 1 AND 2 AREA WERE REMOVED AS PART OF PHASE 1 MASS GRADING EFFORTS.
2. CLASSIFICATION: BASED ON SUBSECTION 14.05F (WOODLANDS AND TREE PRESERVATION) OF SUPERIOR TOWNSHIP ZONING ORDINANCE, LANDMARK CRITERIA CORRESPONDS TO LANDMARK TREE, AS REGULATED BY THIS SECTION, SHALL BE ANY TREE THAT HAS A DIAMETER AT BREAST HEIGHT (D.B.H.) OF 24 INCHES OR GREATER; OR THAT IS OF A TYPE AND D.B.H. EQUAL TO OR GREATER THAN THAT SHOWN IN THE ZONING ORDIANCE. A SOVEREIGN TREE, AS REGULATED BY THIS SECTION, SHALL BE ANY TREE THAT IS REGISTERED ON THE NATIONAL BIG TREE REGISTRY OR A SIMILAR NATIONAL OR STATE REGISTRY ACCEPTED BY THE PLANNING COMMISSION; THAT HAS BEEN DOCUMENTED BY THE TOWNSHIP, A HISTORIAN, OR OTHER MEANS ACCEPTED BY THE PLANNING COMMISSION TO BE CLOSELY ASSOCIATED WITH AN EVENT, PERSON, OR PLACE OF HISTORICAL SIGNIFICANCE TO THE TOWNSHIP; OR THAT IS OF A SPECIES AND DIAMETER AT BREAST HEIGHT (D.B.H.) EQUAL TO OR GREATER THAN THAT SHOWN UNDER SUBSECTION 14.05F4 LANDMARK & SOVEREIGN TREE STANDARDS.
3. NO REPLACEMENT NEEDED: NO REPLACEMENTS SHALL BE REQUIRED FOR FOLLOWING TREES OTHERWISE REGULATED BY THIS SECTION, SUBJECT TO DOCUMENTATION AND VERIFICATION AS PART OF THE REQUIRED PLAN INFORMATION, AND SUCH TREES SHALL NOT COUNT TOWARDS THE MINIMUM REQUIRED PERCENTAGE OF PRESERVED TREES:
   1.DYING AND DISEASED TREES.
   2.ANY INVASIVE WOODY SHRUB SPECIES LISTED IN SECTION 14.05F.3; INCLUDING COMMON BUCKTHORN (RHAMNUS CATHARTICA)
   3.ANY OF THE FOLLOWING SPECIES OF TREES: BOX ELDER (ACER NEGUNDO),SILVER MAPLE (ACER SACCHARINUM), COTTONWOOD (POPULUS DELTOIDS), AND RED CEDAR (JUNIPERUS VIRGINIANA).

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SECTION 33
TOWN 2 SOUTH, RANGE 7 EAST
SUPERIOR TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
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PROSPECT POINTE WEST
FINAL SITE PLAN – PHASE 3

TREE LIST

DATE
NOVEMBER 22, 2024

03-07-2025: PER TWP
04-21-2025: PER TWP

REVISIONS

NA NA NA
N/A

DR. SK | CH. SS
P.M. MB
BOOK --
JOB 16000819
SHEET NO.
6

\\MIANN1\PROJECTS\16000819\DWG\PLAN SETS\SITE – FINAL PHASE 3\16000819SF3-04-TL.DWG 4/21/2025 11:51 AM MATTHEW MYERS



LEGEND

- 12%–18% SLOPES
- 18%+ SLOPES
- REMOVE WOODS
- EXISTING WETLAND
- WETLAND IMPACTS
- LIMITS OF GRADING
- EXISTING SOILS LIMIT
- FoB EXISTING SOILS TYPE

NATURAL FEATURES NARRATIVE

NATURAL FEATURES ON THE SITE CONSIST OF WETLAND, TREES, SLOPES AND AGRICULTURAL FIELD. WITH TWO MAIN HIGH POINTS ON THE SITE, ONE IN THE NORTHERN PORTION AND THE SECOND ON THE FAR SOUTH SIDE. THE TOPOGRAPHY GENERALLY SLOPES TOWARD A WETLAND SWALE IN THE LOWER THIRD OF THE PROPERTY. THERE IS APPROXIMATELY 45 FEET OF TOPOGRAPHIC RELIEF ACROSS THE SITE. THERE ARE STEEP SLOPES ON THE SITE IN THE SOUTHERN PORTION IN THE AREA OF 18%.

THERE ARE FOUR WETLANDS ON THE SITE. THE TWO LARGER REGULATED WETLANDS (C AND D) ARE HYDRAULICALLY CONNECTED VIA A 12" CULVERT AND BOTH RUN EAST TO WEST ACROSS THE PROPERTY AND LEAD ALL THE WAY TO PROSPECT ROAD, WHERE IT'S CONNECTED TO ANOTHER LARGE WETLAND, BY A 12" CULVERT THAT FLOWS EAST TO WEST. THE TWO SMALLER, POCKET WETLANDS (A AND B), ARE JUST NORTH OF THE LARGER SYSTEM; THEY ARE DEPENDENT ON AGRICULTURAL TILE RUNOFF, WHICH WHEN DISTURBED THE TILE WILL BE REMOVED AND THE RESULTANT HYDROLOGICAL PATTERN WILL BE ALTERED. WETLAND A IS PREDOMINANTLY COTTONWOOD, ELM AND BOXELDER.

TREES ON THE SITE ALTHOUGH IN GOOD CONDITION, ARE NOT NECESSARILY HIGH QUALITY WITH RESPECT TO SPECIES. THE TREES EXIST LARGELY IN HEDGE ROWS AND SCATTERED CLUSTERS. THE PREDOMINANT SPECIES ARE ELM, BOXELDER AND POPLAR RANGING FROM 6"–24" WITH THE VAST MAJORITY IN THE 7"–13" RANGE.

SOIL INFORMATION

BNC	BOYER LOAMY SAND, 6 TO 12 PERCENT SLOPES
BNF	BOYER LOAMY SAND, 25 TO 50 PERCENT SLOPES
FOB	FOX SANDY LOAM, TILL PLAIN, 2 TO 6 PERCENT SLOPES
HO	HOYTVILLE SILTY CLAY LOAM
KEB	KENDALLVILLE LOAM, 2 TO 6 PERCENT SLOPES
MDA	MATHERTON SANDY LOAM, 0 TO 4 PERCENT SLOPES
MFA	METAMORA SANDY LOAM, 0 TO 4 PERCENT SLOPES
NAB	NAPPANEE SILTY CLAY LOAM, 2 TO 6 PERCENT SLOPES
OSB	OSHTEMO LOAMY SAND, 0 TO 6 PERCENT SLOPES
PE	PEWAMO CLAY LOAM, 0 TO 2 PERCENT SLOPES
SB	SEBEWA LOAM, DISINTEGRATION MORAINE, 0 TO 2 PERCENT SLOPES
SO	SLOAN SILT LOAM, WET
SPB	SPINKS LOAMY SAND, 0 TO 6 PERCENT SLOPES
STB	ST. CLAIR CLAY LOAM, 2 TO 6 PERCENT SLOPES
STC	ST. CLAIR CLAY LOAM, 6 TO 12 PERCENT SLOPES
THA	THETFORD LOAMY SAND, 0 TO 4 PERCENT SLOPES
W	WATER
WAWABC	WAWASEE LOAM, 6 TO 12 PERCENT SLOPES

NOTES

1) BEARINGS ARE BASED ON NAD83 MICHIGAN STATE PLANE COORDINATE SYSTEM,SOUTH ZONE, INTERNATIONAL FEET, GROUND DISTANCES. VERTICAL DATUM: NAVD88.

2) WATER MAIN, STORM SEWER, AND SANITARY SEWER UTILITY STRUCTURES HAVE BEEN FIELD LOCATED WHERE VISIBLE. UTILITY AND AS-BUILT MAPS HAVE BEEN REQUESTED AND SOME MAPS HAVE BEEN RECEIVED AT DATE OF THIS SURVEY. FRANCHISE UTILITY MAPS HAVE BEEN REQUESTED FROM THE APPROPRIATE FRANCHISE COMPANY, BUT NOT ALL MAPS HAVE BEEN RECEIVED AT DATE OF SURVEY. FRANCHISE UTILITY STRUCTURES HAVE BEEN FIELD LOCATED WHERE VISIBLE.

3) THE SURVEYOR MAKES NO GUARANTEES THAT THE UNDERGROUND UTILITIES SHOWN COMPRISE ALL SUCH UTILITIES IN THE AREA, EITHER IN-SERVICE OR ABANDONED.

4) SUBJECT PROPERTY AS SHOWN AND NOTED ON SURVEY DESCRIBES THE SAME PROPERTY AS SCHEDULE C PROPERTY DESCRIPTION (PER TITLE COMMITMENT ISSUED BY FIRST AMERICAN TITLE INSURANCE,
FILE NO.: 755321, COMMITMENT DATE SEPTEMBER 07, 2016)

5) SUBJECT PROPERTY IS NOT LOCATED WITHIN A FLOODPLAIN PER FIRM MAP NUMBER 26161C0288E DATED APRIL 3, 2012.

6) PROSPECT POINTE SUBDIVISION NO. 1 PLAT WAS AMENDED TO REMOVE ABIGAIL DRIVE STUB AS PUBLIC RIGHT-OF-WAY AS RECORDED IN LIBER 35, PAGES 67-68 AS OF 12/12/22 AND PROSPECT POINT SUBDIVISION NO. 2 PLAT WAS AMENDED TO REMOVE THE FRANCES WAY STUB AS A PUBLIC RIGHT OF WAY AS RECORDED IN LIBER 5426, PAGE 892, AS OF 11/5/22, AS REQUIRED BY THE WASHTENAW COUNTY ROAD COMMISSION.

WETLAND IMPACT SUMMARY

Wetland Impact	Wetland Area (acre)	EGLE Regulated	Regulated Wetland Impact Area (SF)	Regulated Wetland Impact Area (AC)	Estimated Cut Impact Volume (cubic yards)	Estimated Fill Impact Volume (cubic yards)	Estimated Net Impact Volume (cubic yards)
A1	3.69	Yes	14,480	0.33	0	2950	2950
A2	3.69	Yes	611	0.01	52	0	-52
B	0.72	Yes	6,892	0.16	41	295	254
D	0.06	No	0	0.00	-	-	-
Total		**-**	**21,983**	**0.50**	**93**	**3245**	**3152**

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WASHTENAW COUNTY, MICHIGAN

CLIENT
SE MICHIGAN LAND HOLDING LLC

PROSPECT POINTE WEST
FINAL SITE PLAN – PHASE 3

NATURAL FEATURES PLAN

DATE
NOVEMBER 22, 2024

03-07-2025: PER TWP
04-21-2025: PER TWP

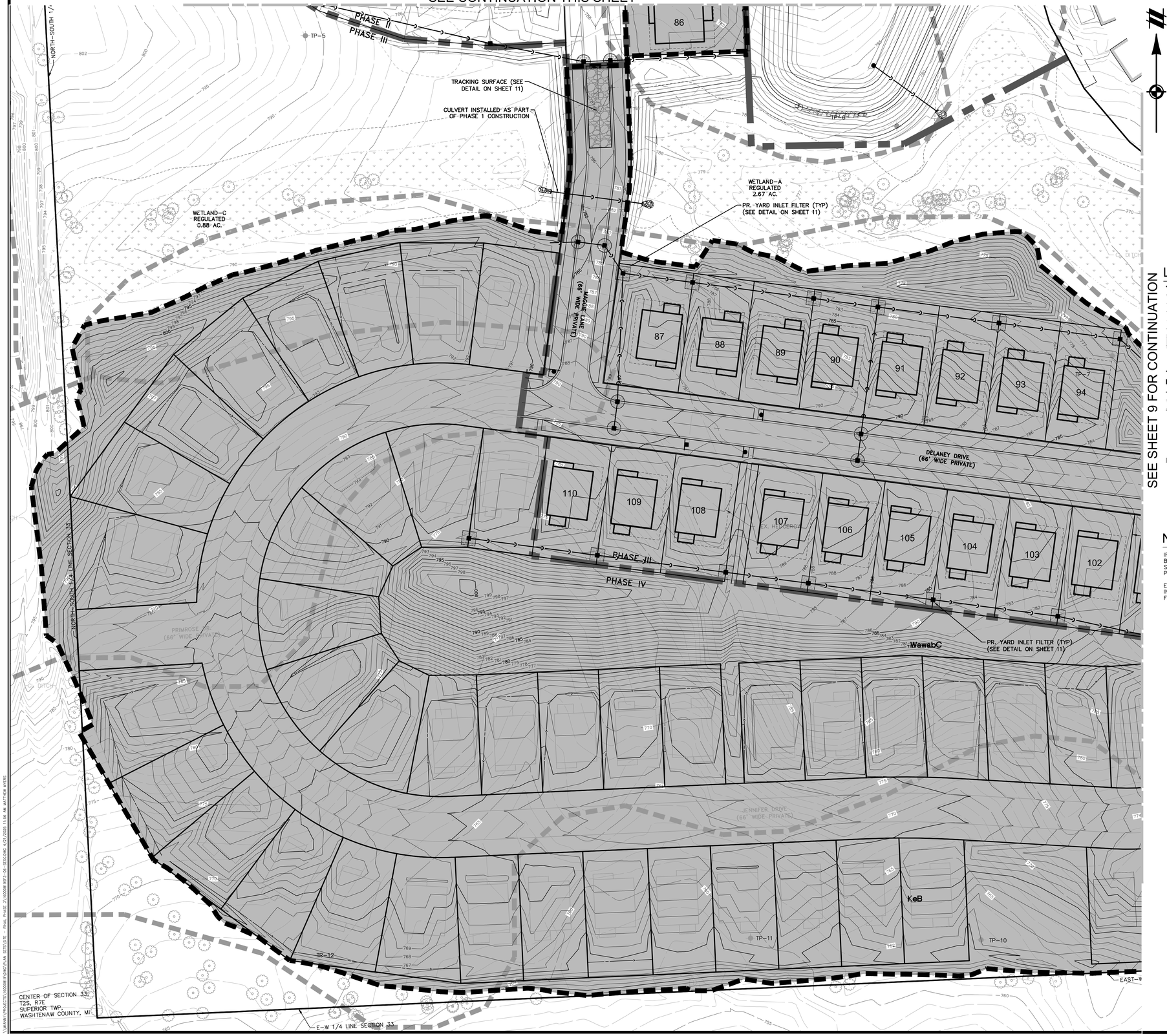
REVISIONS

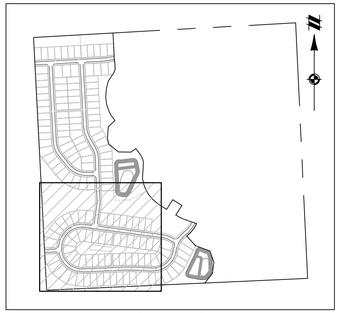
0 75 150
SCALE: 1" = 150 FEET

DR. SK | CH. SS
P.M. MB
BOOK ––
JOB 16000819
SHEET NO. 7

\\ANN1PROJECTS\16000819\DESIGN\SITE\16000819-FSP-PHASE 3\16000819-FSP-PHASE 3.DWG 4/21/2025 11:53 AM MATTHEW KIEFER

SEE CONTINUATION THIS SHEET





KEYMAP
SCALE: 1" = 750'

SEE SHEET 9 FOR CONTINUATION

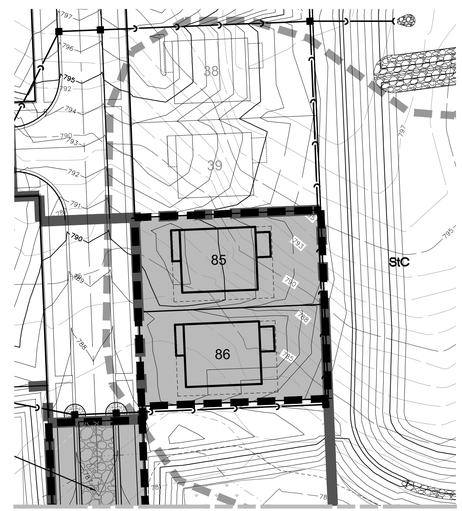
LEGEND

- PROPERTY LINE
- EASEMENT
- EXISTING 1' CONTOUR
- EXISTING 5' CONTOUR
- PHASE 1 GRADING 1' CONTOUR
- PHASE 1 GRADING 5' CONTOUR
- PROPOSED PHASE 2 1' CONTOUR
- PROPOSED PHASE 2 5' CONTOUR
- EXISTING MANHOLE/CATCH BASIN/END SECTION
- PROPOSED MANHOLE/CATCH BASIN/END SECTION
- PROPOSED SILT FENCE
- GRADING LIMITS
- TREE PROTECTION
- EXISTING CURB AND GUTTER
- PROPOSED CURB AND GUTTER
- PROPOSED SILT SACK INLET FILTER
- PROPOSED YARD INLET FILTER
- PROPOSED RIP-RAP
- EX. SOIL TYPE BOUNDARY
- Pe EX. SOIL TYPE LABEL
- PR. LIMIT OF DISTURBANCE

NOTES

IF STOCKPILING IS NECESSARY AND/OR CREATED, SILT FENCE SHALL BE INSTALLED AND MAINTAINED AROUND THE PERIMETER OF THE STOCKPILE IF THE STOCKPILE WILL BE ON-SITE FOR AN EXTENDED PERIOD OF TIME.

EMERGENCY ACCESS ALONG GEDDES TO BE MAINTAINED AT ALL TIMES, INCLUDING SNOW REMOVAL, UNTIL SECONDARY SITE ACCESS AT FRANCES WAY IS CONSTRUCTED.



SEE CONTINUATION THIS SHEET

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CLIENT
SE MICHIGAN LAND HOLDING LLC

PROSPECT POINTE WEST
FINAL SITE PLAN – PHASE 3

SOIL EROSION CONTROL PLAN

DATE
NOVEMBER 22, 2024

03-07-2025: PER TWP
04-21-2025: PER TWP

REVISIONS

0 25 50
SCALE: 1" = 50 FEET

DR. SK	CH. SS
P.M. MB	
BOOK --	
JOB 16000819	
SHEET NO. 8	

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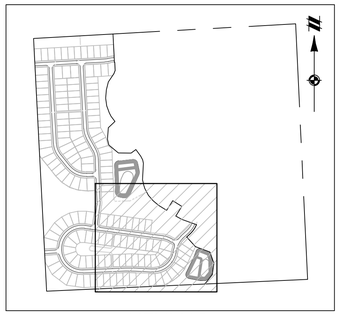

KEYMAP
SCALE: 1" = 750'

LEGEND

	PROPERTY LINE
	EASEMENT
588	EXISTING 1' CONTOUR
590	EXISTING 5' CONTOUR
588	PHASE 1 GRADING 1' CONTOUR
590	PHASE 1 GRADING 5' CONTOUR
588	PROPOSED 1' CONTOUR
590	PROPOSED 5' CONTOUR
	EXISTING MANHOLE/CATCH BASIN/END SECTION
	PROPOSED MANHOLE/CATCH BASIN/END SECTION
XX	PROPOSED SILT FENCE
	GRADING LIMITS
	TREE PROTECTION
	EXISTING CURB AND GUTTER
	PROPOSED CURB AND GUTTER
	PROPOSED SILT SACK INLET FILTER
	PROPOSED YARD INLET FILTER
	PROPOSED RIP-RAP
	EX. SOIL TYPE BOUNDARY
Pe	EX. SOIL TYPE LABEL
	PR. LIMIT OF DISTURBANCE
	PHASE LINE

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0 25 50
SCALE: 1" = 50 FEET

DR. SK	CH. SS
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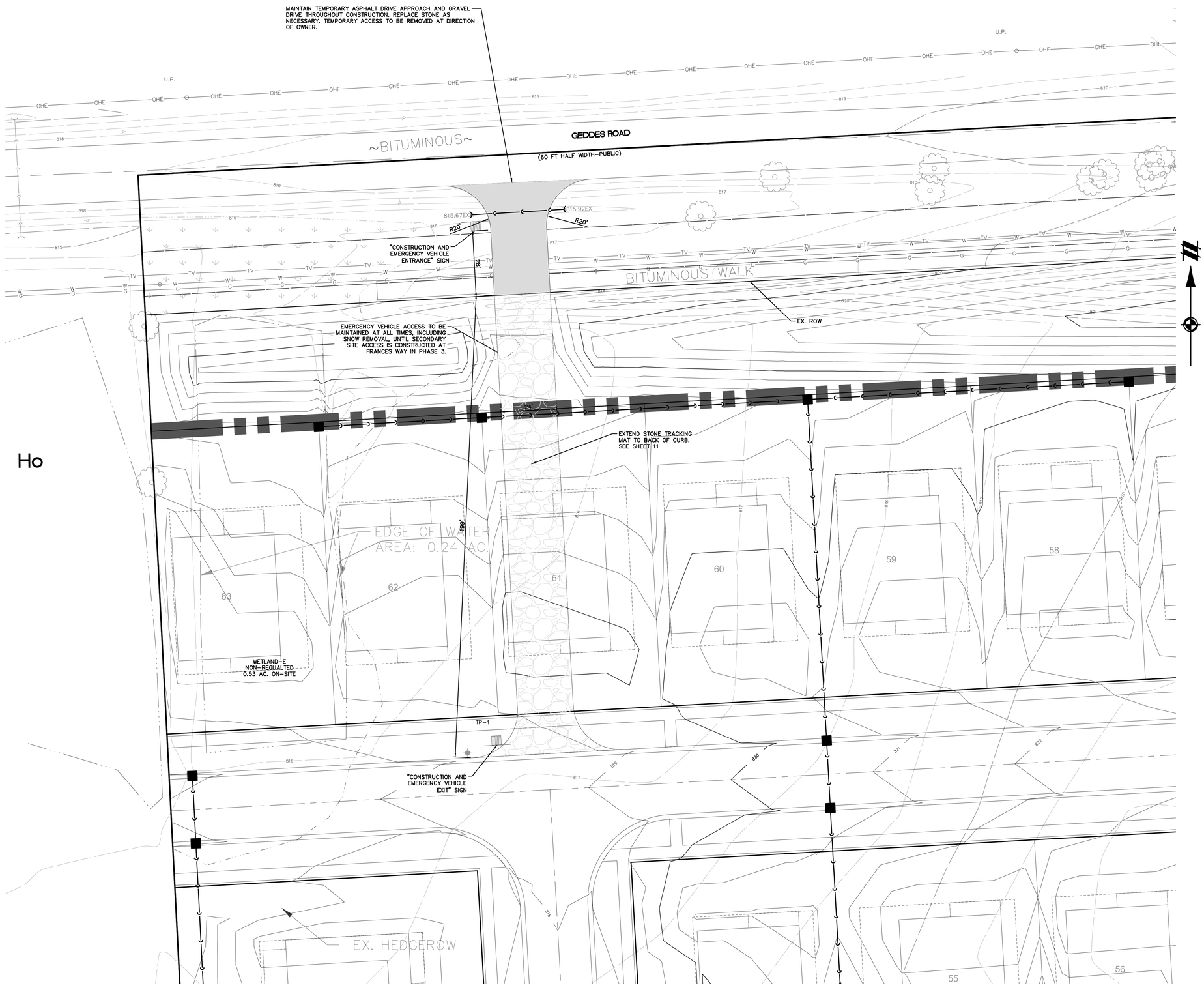
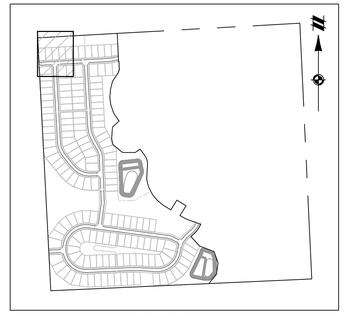
SHEET NO. 9	





KEYMAP
SCALE: 1" = 750'

LEGEND

	PROPERTY LINE
	EASEMENT
588	EXISTING 1' CONTOUR
590	EXISTING 5' CONTOUR
588	PHASE 1 GRADING 1' CONTOUR
590	PHASE 1 GRADING 5' CONTOUR
588	PROPOSED 1' CONTOUR
590	PROPOSED 5' CONTOUR
	EXISTING MANHOLE/CATCH BASIN/END SECTION
	PROPOSED MANHOLE/CATCH BASIN/END SECTION
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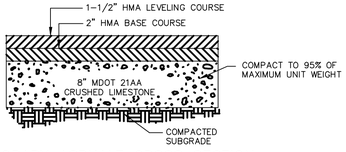
	PROPOSED RIP-RAP
	EX. SOIL TYPE BOUNDARY
Pe	EX. SOIL TYPE LABEL
	PR. LIMIT OF DISTURBANCE



TEMPORARY ASPHALT CROSS SECTION
NO SCALE

811
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TEMPORARY CONSTRUCTION ACCESS DRIVE

DATE
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REVISIONS

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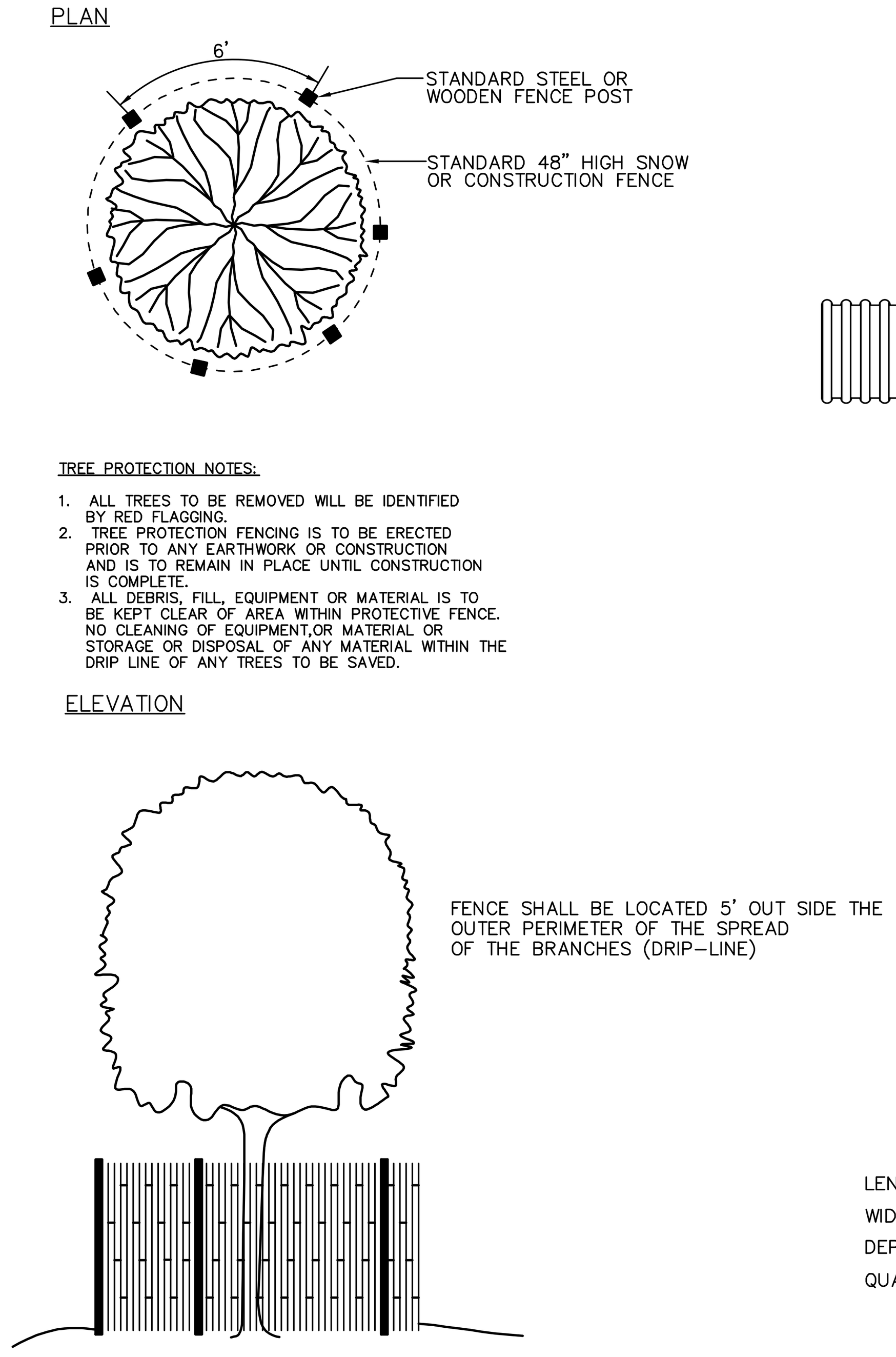
SHEET NO. 10	

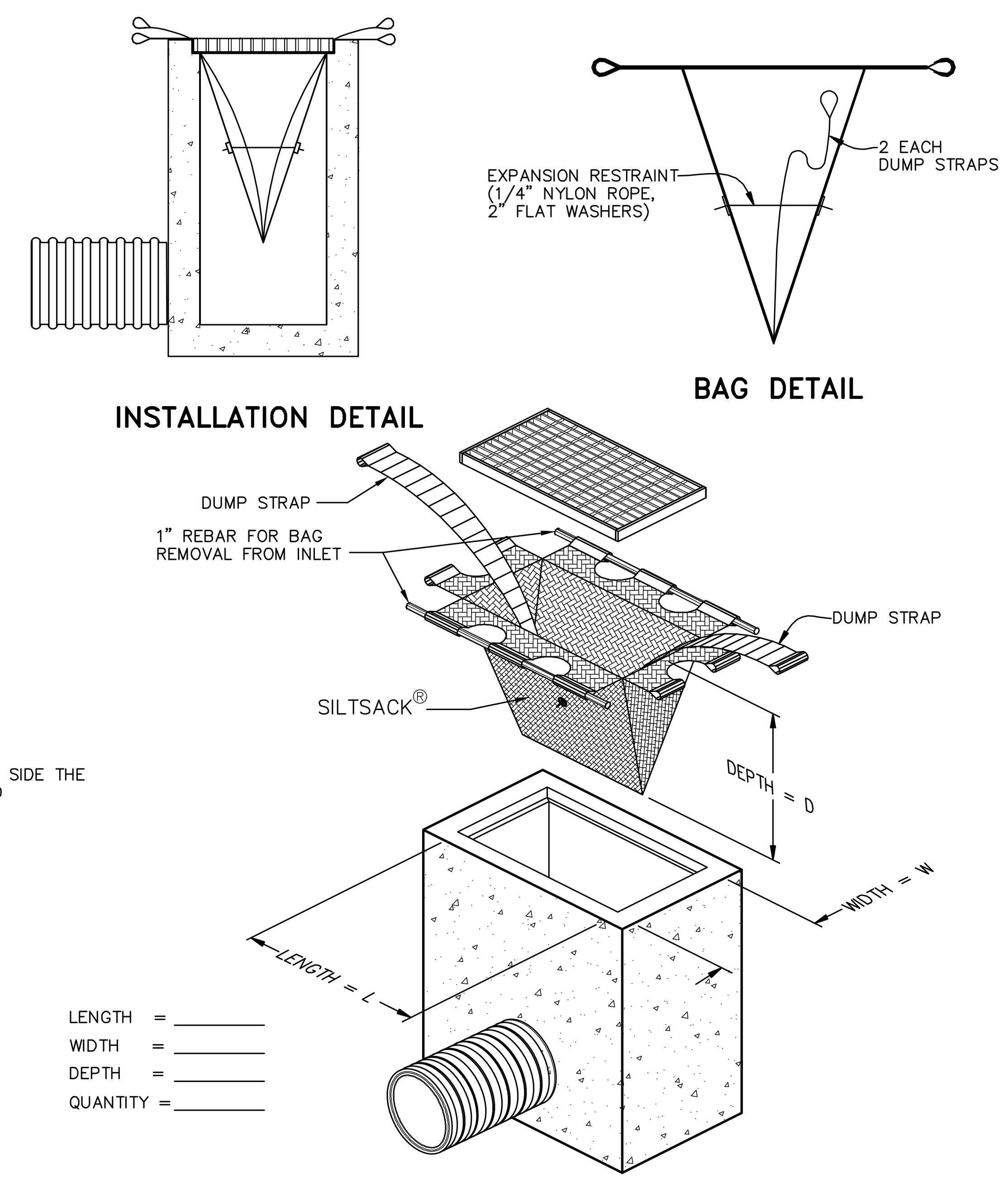


TREE PROTECTION NOTES:

1. ALL TREES TO BE REMOVED WILL BE IDENTIFIED BY RED FLAGGING.
2. TREE PROTECTION FENCING IS TO BE ERECTED PRIOR TO ANY EARTHWORK OR CONSTRUCTION AND IS TO REMAIN IN PLACE UNTIL CONSTRUCTION IS COMPLETE.
3. ALL DEBRIS, FILL, EQUIPMENT OR MATERIAL IS TO BE KEPT CLEAR OF AREA WITHIN PROTECTIVE FENCE. NO CLEANING OF EQUIPMENT,OR MATERIAL OR STORAGE OR DISPOSAL OF ANY MATERIAL WITHIN THE DRIP LINE OF ANY TREES TO BE SAVED.

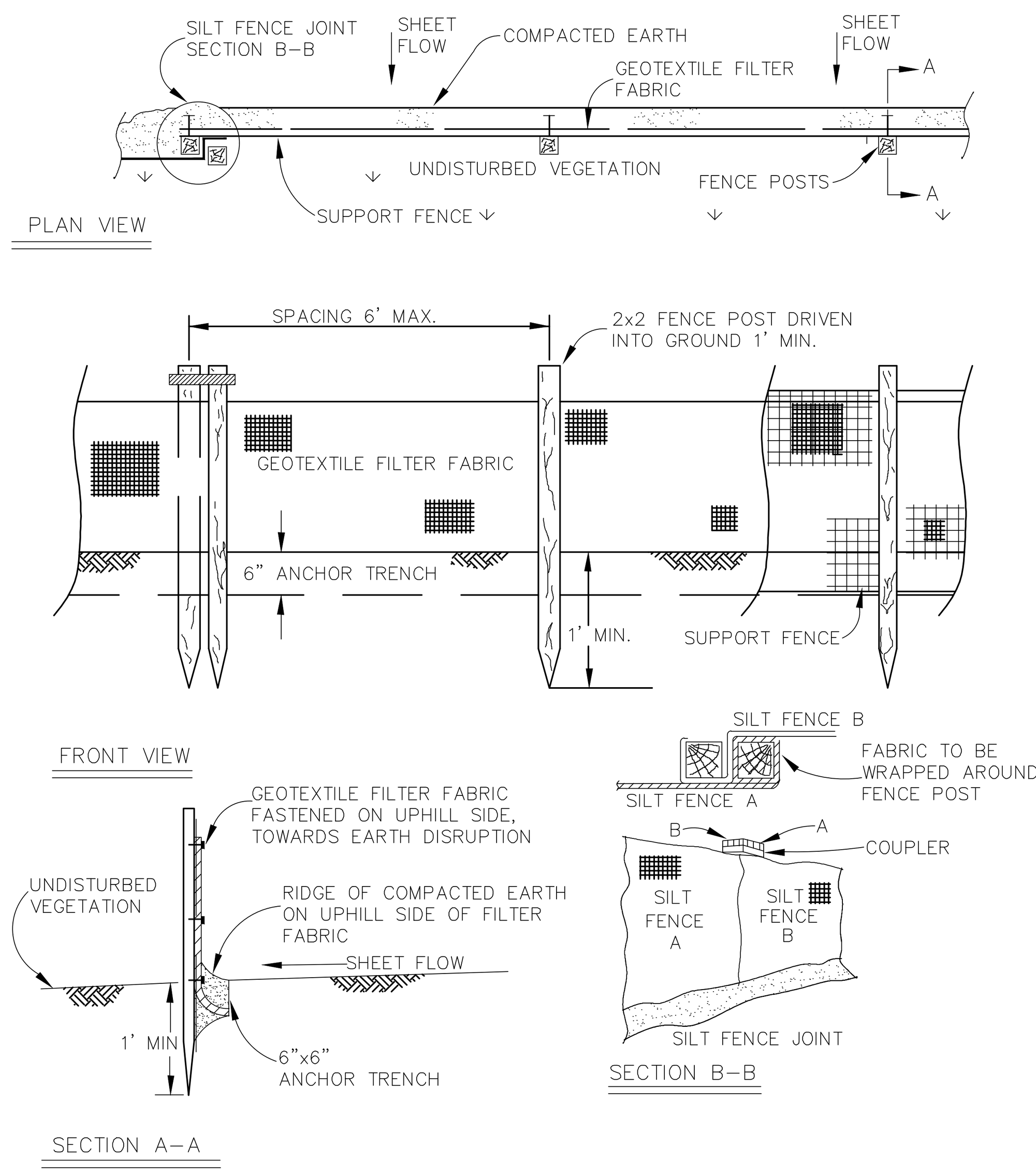
TREE PROTECTION FENCE DETAIL

NO SCALE



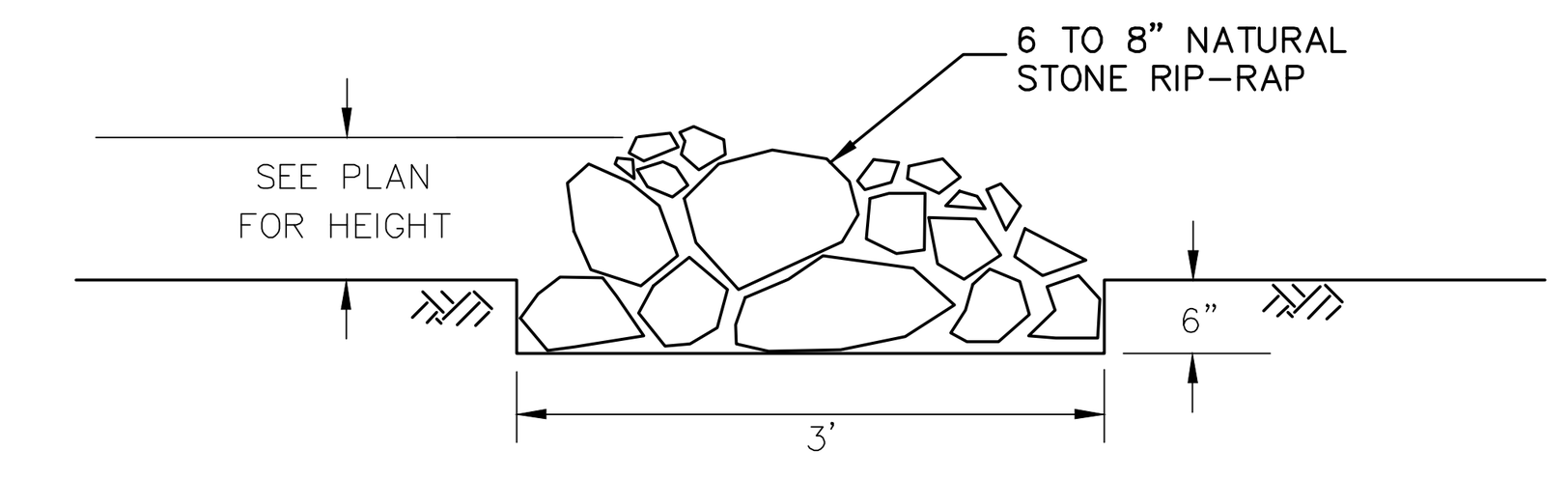
SILTSACK DETAIL

NO SCALE



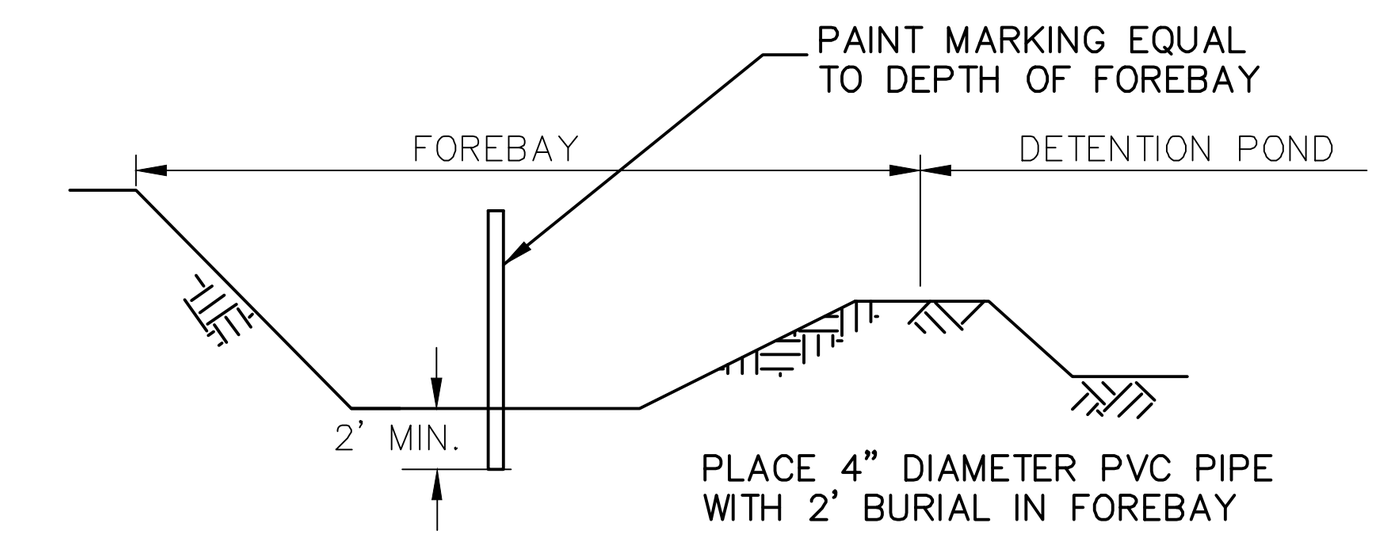
SILTFENCE DETAIL

NO SCALE



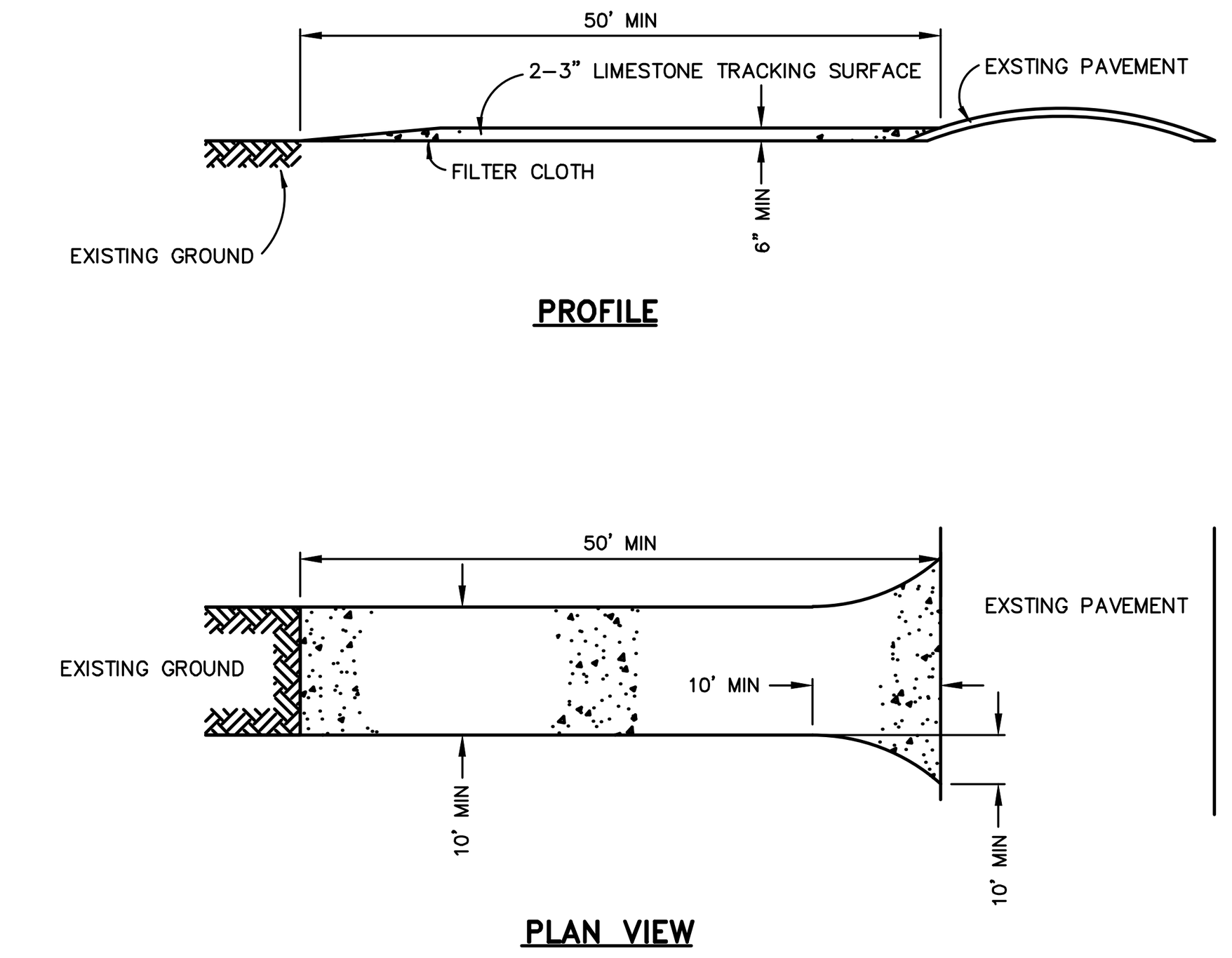
SEDIMENT FOREBAY RIP-RAP BARRIER DETAIL

NO SCALE



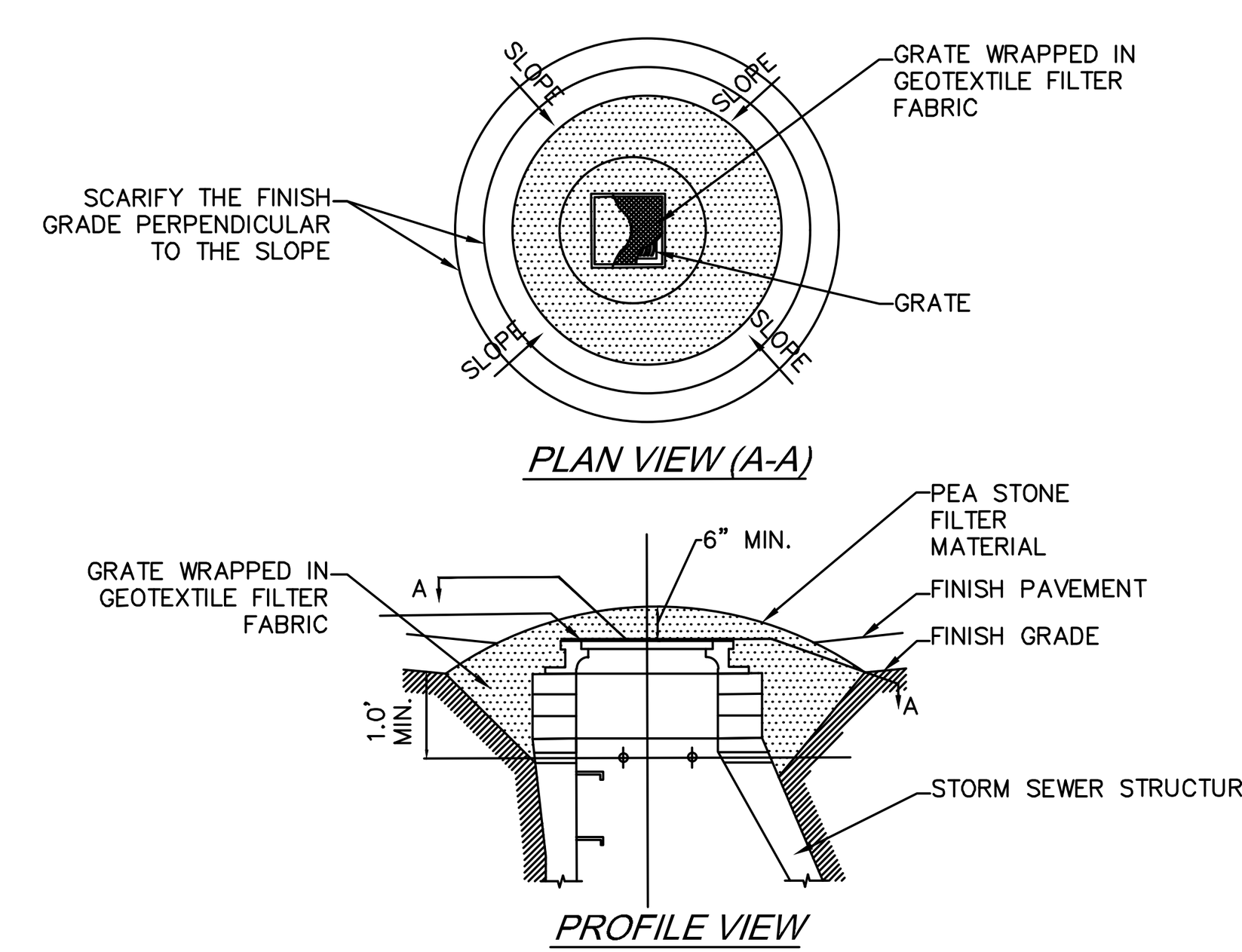
SEDIMENT FOREBAY MARKER DETAIL

NO SCALE



TRACKING SURFACE

NO SCALE



LOW POINT INLET FILTER

NO SCALE

SOIL EROSION AND SEDIMENTATION CONTROL NOTES:

1. THE SMALLEST PRACTICAL AREA OF LAND SHALL BE EXPOSED AT ANY ONE TIME DURING DEVELOPMENT.
2. WHEN LAND IS EXPOSED DURING DEVELOPMENT, THE EXPOSURE SHALL BE KEPT TO THE SHORTEST PERIOD OF TIME.
3. TEMPORARY VEGETATION AND/OR MULCHING SHALL BE BE USED TO PROTECT CRITICAL AREAS EXPOSED DURING DEVELOPMENT.
4. THE PERMANENT FINAL VEGETATION AND STRUCTURES SHALL BE INSTALLED AS SOON AS PRACTICAL IN DEVELOPMENT.
5. THE DEVELOPMENT PLAN SHOULD BE FITTED TO THE TOPOGRAPHY AND SOIL SO AS TO CREATE THE LEAST SOIL EROSION POTENTIAL.
6. REFER TO WASHTENAW COUNTY STANDARD DETAILS OF THE SESC BMP MEASURES AS THEY CORRESPOND WITH THIS PLAN.
7. ALL EROSION AND SEDIMENT CONTROL WORK SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE TOWNSHIP AND THE WASHTENAW COUNTY DRAIN COMMISSIONER.
8. THE CONTRACTOR SHALL MAKE DAILY INSPECTIONS TO DETERMINE EFFECTIVENESS OF EROSION AND SEDIMENT CONTROL MEASURES, AND ANY NECESSARY REPAIRS SHALL BE PERFORMED WITHOUT DELAY.
9. EROSION AND ANY SEDIMENTATION FROM WORK ON THIS SITE SHALL BE CONTAINED ON THE SITE AND NOT ALLOWED TO COLLECT ON ANY OFF-SITE AREAS OR IN WATERWAYS. WATERWAYS INCLUDE NATURAL AND MAN-MADE OPEN DITCHES, STREAMS, STORM DRAINS, LAKES AND PONDS.
10. EROSION AND ANY SEDIMENTATION CONTROL MEASURES ARE TO BE PLACED PRIOR TO OR AS THE FIRST STEP IN CONSTRUCTION. SEDIMENT CONTROL PRACTICES WILL BE APPLIED AS A PERIMETER DEFENSE AGAINST ANY TRANSPORTING OF SILT OFF THE SITE.
11. PERMANENT SOIL EROSION CONTROL MEASURES FOR ALL SLOPES, CHANNELS, DITCHES, OR ANY DISTURBED LAND AREA SHALL BE COMPLETED WITHIN 5 CALENDAR DAYS AFTER FINAL GRADING OR THE FINAL EARTH CHANGE HAS BEEN COMPLETED. WHEN IT IS NOT POSSIBLE TO PERMANENTLY STABILIZE A DISTURBED AREA AFTER AN EARTH CHANGE HAS BEEN COMPLETED OR WHERE SIGNIFICANT EARTH CHANGE ACTIVITY CEASES, TEMPORARY SOIL EROSION CONTROL MEASURES SHALL BE MAINTAINED UNTIL PERMANENT SOIL EROSION CONTROL MEASURES ARE IMPLEMENTED. ALL PERMANENT SOIL EROSION CONTROL MEASURES WILL BE IMPLEMENTED AND ESTABLISHED BEFORE A CERTIFICATE OF COMPLIANCE IS ISSUED.
12. A WATER TRUCK SHALL BE AVAILABLE TO WATER DOWN THE SITE ON A DAILY BASIS FOR DUST CONTROL.
13. ALL MUD/DIRT TRACKED ONTO EXISTING CITY/COUNTY ROADS FROM THIS SITE, DUE TO CONSTRUCTION, SHALL BE PROMPTLY REMOVED BY THE CONTRACTOR/BUILDER, AS DIRECTED BY THE TOWNSHIP. MUD MAT DAILY MAINTENANCE WILL INCLUDE THE ADDITION OF EXTRA LAYERS OF STONE AS NECESSARY.
14. DURING CONSTRUCTION OF THE STORM SEWER SYSTEM, STRAW BALES, STONE FILTERS OR OTHER APPROVED MEANS, WILL PROTECT THE ENDS OF ALL OPEN PIPES.
15. PROMPTLY UPON THE BACKFILLING OF STORM STRUCTURES, INLET FILTERS WILL BE PLACED AROUND THE STRUCTURE PER DETAILS.
16. WITHIN FIVE (5) DAYS AFTER COMPLETION OF PAVING, A 16-FOOT STRIP AROUND PAVED AREAS SHALL BE PROTECTED FROM SOIL EROSION BY AN APPROVED METHOD CONSISTENT WITH THE GROWING SEASON.
17. ANY REMAINING DENUDED AREA SHALL BE SEEDED AND MULCHED WITHIN 5 DAYS AFTER COMPLETION OF FINAL GRADING. SEED MIX AND APPLICATION RATES SHALL BE PER MDOT CLASS A SEED.
18. SOIL EROSION AND SEDIMENTATION CONTROL MEASURES SHALL BE MAINTAINED ON A DAILY BASIS TO ENSURE PROPER FUNCTIONING. SEDIMENT DEPOSIT MUST BE REMOVED WHEN ACCUMULATION REACHES 1/3 TO 1/2 OF THE HEIGHT OF THE SILT FENCE AND SHOULD BE REMOVED AFTER EACH STORM EVENT. FABRIC SHALL BE REPLACED PROMPTLY IF IT DECOMPOSES OR BECOMES INEFFECTIVE PRIOR TO THE END OF THE EXPECTED USEABLE LIFE.
19. THAT ALL EROSION CONTROL MEASURES ARE INSTALLED IN ACCORDANCE WITH THE FOLLOWING SEQUENCE OF CONSTRUCTION
    - 19.1. INSTALL SILT FENCE/STRAW BERMS AS SHOWN ON PLANS.
    - 19.2. STRIP AND STOCKPILE TOPSOIL AND GRADE SITE.
    - 19.3. INSTALL ON-SITE AND OFF-SITE STORM SEWER SYSTEMS COMPLETE, IMMEDIATELY INSTALL STONE FILTERS ON ALL PIPE INLETS AND CATCH BASINS AND ESTABLISH VEGETATION ON ALL DITCHES, SWALES, AND DISTURBED AREAS.
    - 19.4. INSTALL ALL PUBLIC UTILITIES (GAS, ELECTRICITY, AND TELEPHONE)
    - 19.5. INSTALL PAVEMENT COMPLETE REPAIR AND/OR REPLACE STONE FILTERS AS REQUIRED.
    - 19.6. FINISH GRADE, REDISTRIBUTE TOPSOIL, ESTABLISH VEGETATION AND/OR LANDSCAPE ALL DISTURBED AREAS.
    - 19.7. CLEAN PAVEMENT, WALKS, CULVERTS, WATERCOURSES, AND STORM SEWER SYSTEMS OF ALL SEDIMENT IN CONJUNCTION WITH THE REMOVAL OF ALL TEMPORARY EROSION CONTROL MEASURES. REESTABLISHED VEGETATION AS NECESSARY.
20. SHOULD DEWATERING BE NECESSARY, DISCHARGE SHALL BE ROUTED THROUGH A SEDIMENT FOREBAY, FILTER BAG OVER A WELL VEGETATED AREA OR OTHER APPROVED FILTERING MECHANISM PRIOR TO BEING DISCHARGED FROM THE SITE. DISCHARGE MUST BE LIMITED TO A NON-EROSIVE VELOCITY.
21. SOIL EROSION WILL BE CONTROLLED DURING AND AFTER CONSTRUCTION TO PROTECT ADJACENT PROPERTIES OR FACILITIES.
22. EROSION CONTROL BLANKET/MATTING SHALL BE INSTALLED ON SLOPES AT OR NEAR MAXIMUM ALLOWABLE GRADE AND AS NEEDED TO EFFECTIVELY ESTABLISH BOTH TEMPORARY AND PERMANENT VEGETATIVE COVER.
23. IF STOCKPILING IS NECESSARY AND/OR CREATED, SILT FENCE SHALL BE INSTALLED AND MAINTAINED AROUND THE PERIMETER OF THE STOCKPILE IF THE STOCKPILE WILL BE ON-SITE FOR AN EXTENDED PERIOD OF TIME.
24. AT THE TIME OF PLANT AND SEED DELIVERY, A WCWRC LANDSCAPE REVIEWER MUST BE PRESENT. THE QUANTITY AND SPECIES DELIVERED WILL BE REVIEWED ON SITE. CONTACT CATIE WYTYCHAK AT WYRYCHAKC@WASHTENAW.ORD OR (734) 222-6813.

NOTE: NO WORK WITHIN REGULATED WETLANDS UNTIL EGLE PERMIT IS ISSUED

SOIL EROSION CONSTRUCTION SEQUENCE

1. NOTIFY SOIL EROSION OFFICE 48 HOURS BEFORE WORK IS TO BEGIN.
2. PRIOR TO CONSTRUCTION, INSTALL TEMPORARY STONE ACCESS DRIVES AT ENTRANCE, SILT FENCE, TREE PROTECTION FENCE, AND EROSION CONTROL MEASURES ON EXISTING STORM INLETS AS DESIGNATED ON THE SESC PLAN.
3. INSTALL UNDERGROUND UTILITIES (I.E. SANITARY, STORM, AND WATER MAIN.). INSTALL INLET FILTER PROTECTION ON PROPOSED STORM SEWER STRUCTURES. (6/1/25 – 15 DAYS)
4. PAVING ACTIVITIES. REMOVE STONE ACCESS DRIVE WHEN COMPLETE. (11/01/25 – 10 DAYS)
5. INSTALL PUBLIC UTILITIES (ELECTRIC, TELEPHONE, AND CABLE T.V.). (11/15/25 – 30 DAYS)
6. FINAL GRADING AND INSTALLATION OF LANDSCAPING. ESTABLISH PERMANENT VEGETATION FOR REMAINING DISTURBED AREAS. (04/15/25 – 45 DAYS)
7. CLEAN OUT STORM SEWER SYSTEM. CLEAN OUT SEDIMENT AND RESTORE SEDIMENT FOREBAY AND DETENTION POND TO DESIGN SPECIFICATIONS. (MAY 2025 – 15 DAYS)
8. CALL SOIL EROSION OFFICE FOR FINAL INSPECTION. REMOVE TEMPORARY SOIL EROSION MEASURES UPON APPROVAL. (JULY 2026)

Maintenance Tasks and Schedule (during construction)

Tasks	Storm Sewer System	Catch Basin Sumps	Catch Basin Inlet Castings	Channels	Outflow Control Structures	Rip-Rap	Storm Detention Areas	Subsurface Infiltration Bed	Wetlands	Emergency Overflow	Schedule
Inspect for sediment accumulation	*	*			*		*	*	*		Weekly
Removal of sediment accumulation	*	*			*		*	*	*		As needed* and prior to turnover
Inspect for floatables and debris	*	*	*	*	*		*	*	*	*	Quarterly
Cleaning of floatables and debris	*	*	*	*	*		*	*	*	*	Quarterly and at turnover
Inspection for erosion				*	*	*	*		*	*	Weekly
Reestablish permanent vegetation on eroded slopes				*			*		*	*	As needed* and prior to turnover
Replacement of gravel jackets					*						As needed*
Mowing				*			*			*	0 to 2 times per yr.
Inspect structural elements during wet weather and compare as-built plans (by a professional engineer reporting to the Developer)	*			*	*	*	*		*	*	Annually and at turnover
Make adjustments or replacements as determined by pre-turnover inspection	*			*	*	*	*		*	*	As needed*

* "as needed" means when sediment has accumulated to a maximum of one foot depth.

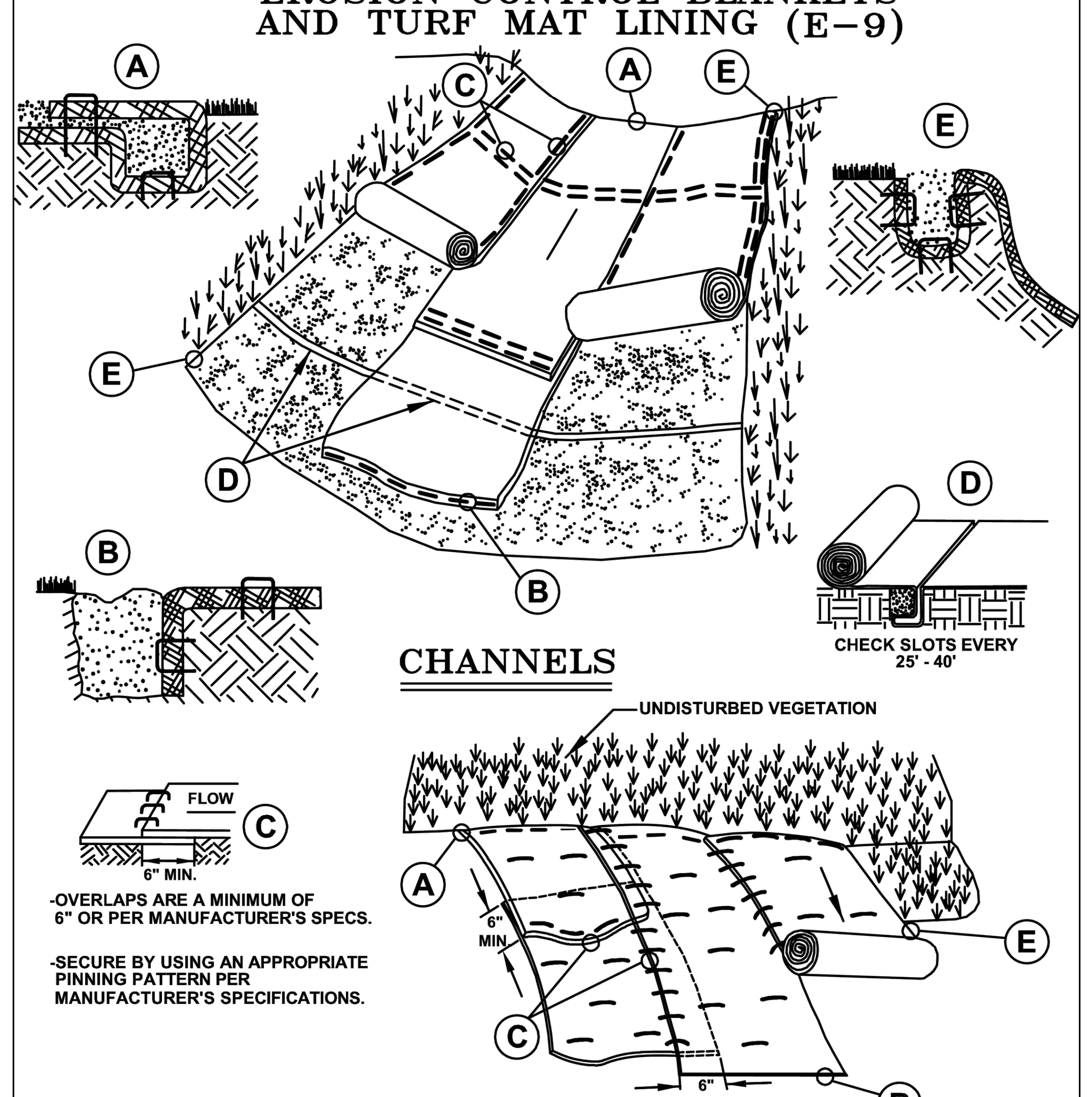
Contractor is responsible for maintaining Soil Erosion and Sedimentation Control measures during construction

Maintenance Tasks and Schedule (following construction)

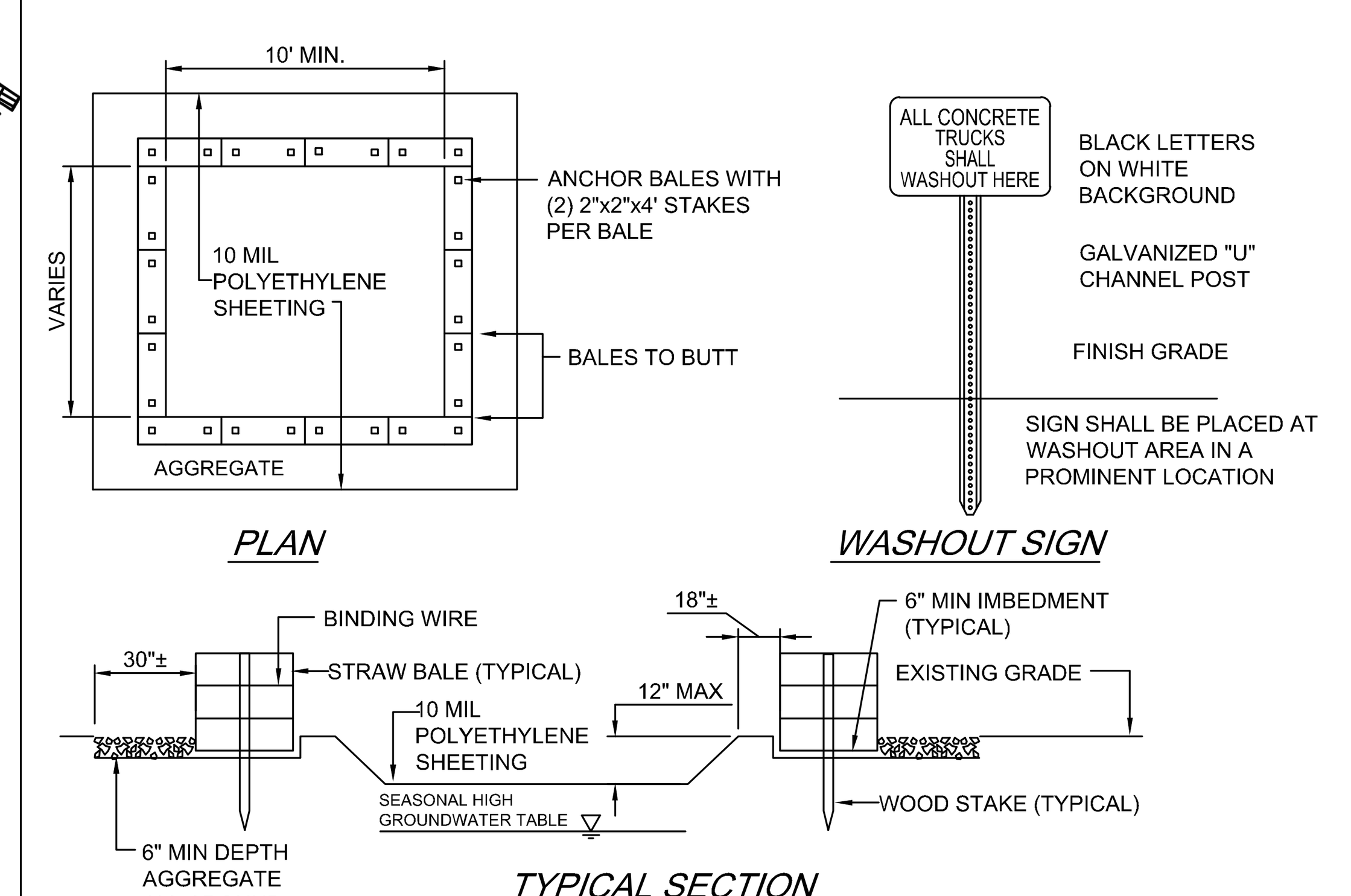
Tasks	Streets	Storm Sewer System	Catch Basin Sumps	Catch Basin Inlet Castings	Channels	Outflow Control Structures	Filtration Basins	Storm Detention Areas	Subsurface Infiltration Bed	Wetlands	Woodlands	Emergency Overflow	Schedule	Annual Cost
Inspect for sediment accumulation		*	*			*	*	*	*	*			Annually	$300.00
Removal of sediment accumulation		*	*			*	*	*	*	*			Every 5-10 yrs as needed	$1,000.00
Inspect for floatables and debris		*	*	*	*	*	*	*	*	*		*	Annually	$300.00
Cleaning of floatables and debris		*	*	*	*	*	*	*	*	*		*	Annually	$400.00
Inspection for erosion					*	*	*	*		*		*	Annually	$300.00
Inspect wetlands and woodlands for invasive species. Remove or treat as needed										*	*		Annually (removal or treatment every 3-5 years as needed)	$800.00
Reestablish permanent vegetation on eroded slopes					*		*	*		*		*	As needed	$500.00
Replacement of gravel jackets						*							Every 3-5 yrs as needed	$700.00
Clean streets	*												Semi-annually	$400.00
Mowing	*				*		*	*				*	0 to 2 times per yr.	$400.00
Inspect structural elements during wet weather and compare as-built plans (by a professional engineer reporting to the condominium association)						*							Annually	$400.00
Make adjustments or replacements as determined by wet weather inspection		*			*	*	*	*	*	*		*	As needed	$500.00
Keep records of all inspections and maintenance activities and report to condominium association		*			*	*	*	*	*	*		*	Annually	
Keep records of all costs for inspections, maintenance and repairs. Report to condominium association		*	*	*	*	*	*	*	*	*	*	*	Annually	
Condominium association reviews cost effectiveness of the preventative maintenance program and makes necessary adjustments		*	*	*	*	*	*	*	*	*	*	*	Annually	
Condominium association to have a professional engineer carry out emergency inspections upon identification of severe problems.		*	*	*	*	*	*	*	*	*	*	*	As needed	$200.00
														$6,200.00

The Condominium Association will assess its members to pay for all maintenance activities on an annual basis

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.



NOTES:

1. CONTAINMENT MUST BE STRUCTURALLY SOUND AND LEAK FREE AND CONTAIN ALL LIQUID WASTES.
2. CONTAINMENT DEVICES MUST BE OF SUFFICIENT QUANTITY OR VOLUME TO COMPLETELY CONTAIN THE LIQUID WASTES GENERATED.
3. WASHOUT MUST BE CLEANED OR NEW FACILITIES CONSTRUCTED AND READY TO USE ONCE ASHOUT IS 75% FULL.
4. WASHOUT AREA(S) SHALL BE INSTALLED IN A LOCATION EASILY ACCESSIBLE BY CONCRETE TRUCKS.
5. ONE OR MORE AREAS MAY BE INSTALLED ON THE CONSTRUCTION SITE AND MAY BE RELOCATED AS CONSTRUCTION PROGRESSES.
6. AT LEAST WEEKLY REMOVE ACCUMULATION OF SAND AND AGGREGATE AND DISPOSE OF PROPERLY.

CONCRETE WASHOUT AREA

NO SCALE

SITE INFORMATION

SITE LOCATION: NORTHEAST 1/4 OF SECTION 33, SUPERIOR TOWNSHIP, MICHIGAN.

1. ULTIMATE RECEIVING WATER: HURON RIVER, VIA SUPERIOR DRAIN NO. 1
2. SITE SOILS INFORMATION: PER THE NRCS WEB SURVEY FOR WASHTENAW COUNTY; BNC. BNF, FOB, HO, KEB, MDA, MFA, NAB, OSB, PE , SB, SO, SPB, STB, STC, THA, WAWABC
3. APPROXIMATE AREA OF DISTURBANCE: 28± ACRES IN PHASE 3 & 4
4. THIS PROJECT BOUNDARY IS APPROXIMATELY 60 FEET FROM AN UN-NAMED WATERCOURSE

\\MIANN1\PROJECTS\16000819\DWG\PLAN SETS\SITE – FINAL PHASE 3\16000819SF3-06-SESC.DWG 4/21/2025 1:14 PM MATTHEW MYERS

811 Know what's **below.** **Call** before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
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ANN ARBOR, MI 48104
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SECTION 33
TOWN 2 SOUTH, RANGE 7 EAST
SUPERIOR TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
SE MICHIGAN LAND HOLDING LLC
PROSPECT POINTE WEST
FINAL SITE PLAN – PHASE 3

SOIL EROSION CONTROL NOTES & DETAILS

DATE
NOVEMBER 22, 2024

03-07-2025: PER TWP
04-21-2025: PER TWP

REVISIONS

NA NA NA
N/A

DR. SK	CH. SS
P.M. MB	
BOOK --	
JOB 16000819	
SHEET NO. 11	

Parcel Table		Parcel Table	
Parcel #	Area (S.F.)	Parcel #	Area (S.F.)
85	8,580	91	8,580
86	8,580	92	8,580
87	10,530	93	8,580
88	8,580	94	8,580
89	8,580	95	10,534
90	9,100	96	10,221
		97	9,651
		98	9,170
		99	8,979
		100	11,292
		101	9,451
		102	8,840
		103	8,840
		104	8,840
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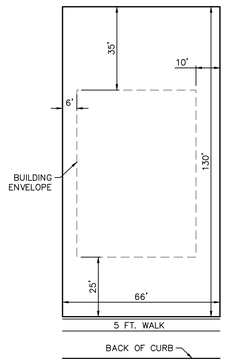
		106	8,840
		107	9,100
		108	9,100
		109	9,100
		110	9,100



TYPICAL 66' LOT DETAIL

N.T.S.

SITE DATA

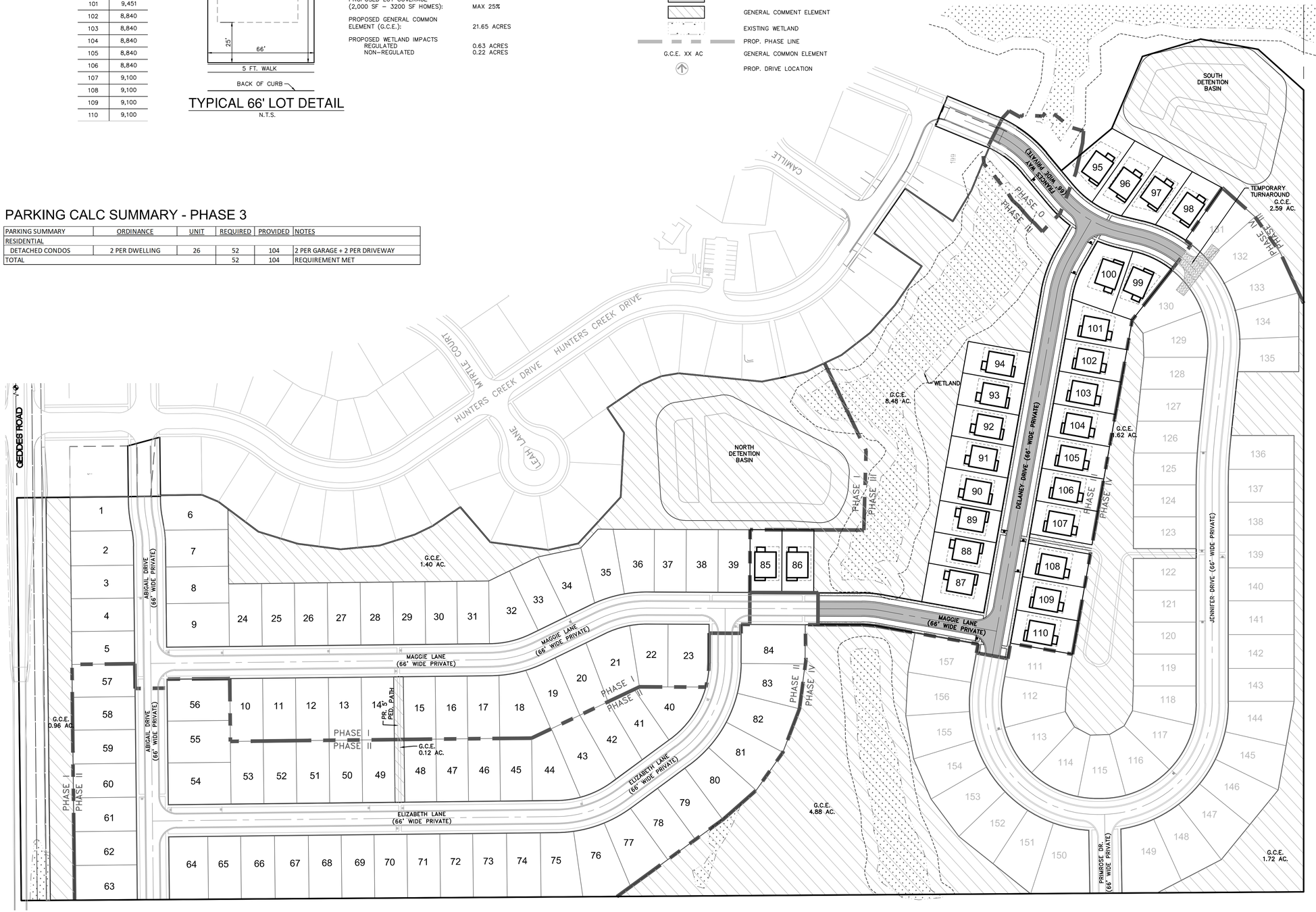
GROSS AREA:	67.99 ACRES
GEDDES ROAD ROW:	1.15 ACRES
NET AREA:	66.84 ACRES
EXISTING ZONING:	R4 SINGLE FAMILY RESIDENTIAL
PROPOSED ZONING:	R4 SINGLE FAMILY RESIDENTIAL
PROPOSED USE:	SINGLE FAMILY RESIDENTIAL SITE CONDOMINIUM
NUMBER OF PROPOSED LOTS:	157
PROPOSED DENSITY (GROSS):	2.31
PROPOSED DENSITY (NET):	2.35
LOT AREA PER DWELLING UNIT:	66' X 130' = 8580 SF (TYPICAL)
MINIMUM LOT WIDTH:	66'
LOT SETBACKS:	
FRONT	25'
SIDE	6' MIN. (16' TOTAL)
REAR	35'
PROPOSED LOT COVERAGE (2,000 SF – 3200 SF HOMES):	MAX 25%
PROPOSED GENERAL COMMON ELEMENT (G.C.E.):	21.65 ACRES
PROPOSED WETLAND IMPACTS	
REGULATED	0.63 ACRES
NON-REGULATED	0.22 ACRES

LEGEND

- BOUNDARY LINE
- EXIST. EASEMENT
- SECTION LINE
- BOUNDARY/PROPERTY LINE
- EXIST. SETBACK
- EXIST. TREE LINE
- EXIST. CURB AND GUTTER
- EXIST. BUILDING
- EXIST. WETLAND BUFFER
- PROP. SETBACK
- PROP. LOT LINE
- PROP. ROAD CENTERLINE
- PROP. BACK OF CURB
- PROP. WALK
- PROP. ASPH.
- GENERAL COMMENT ELEMENT
- EXISTING WETLAND
- PROP. PHASE LINE
- G.C.E. XX AC — GENERAL COMMON ELEMENT
- PROP. DRIVE LOCATION

PARKING CALC SUMMARY - PHASE 3

PARKING SUMMARY	ORDINANCE	UNIT	REQUIRED	PROVIDED	NOTES
RESIDENTIAL					
DETACHED CONDOS	2 PER DWELLING	26	52	104	2 PER GARAGE + 2 PER DRIVEWAY
TOTAL			52	104	REQUIREMENT MET



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SECTION 33
TOWN 2 SOUTH, RANGE 7 EAST
SUPERIOR TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
SE MICHIGAN LAND HOLDING LLC

PROSPECT POINTE WEST
FINAL SITE PLAN – PHASE 3

OVERALL LAYOUT PLAN

DATE
NOVEMBER 22, 2024

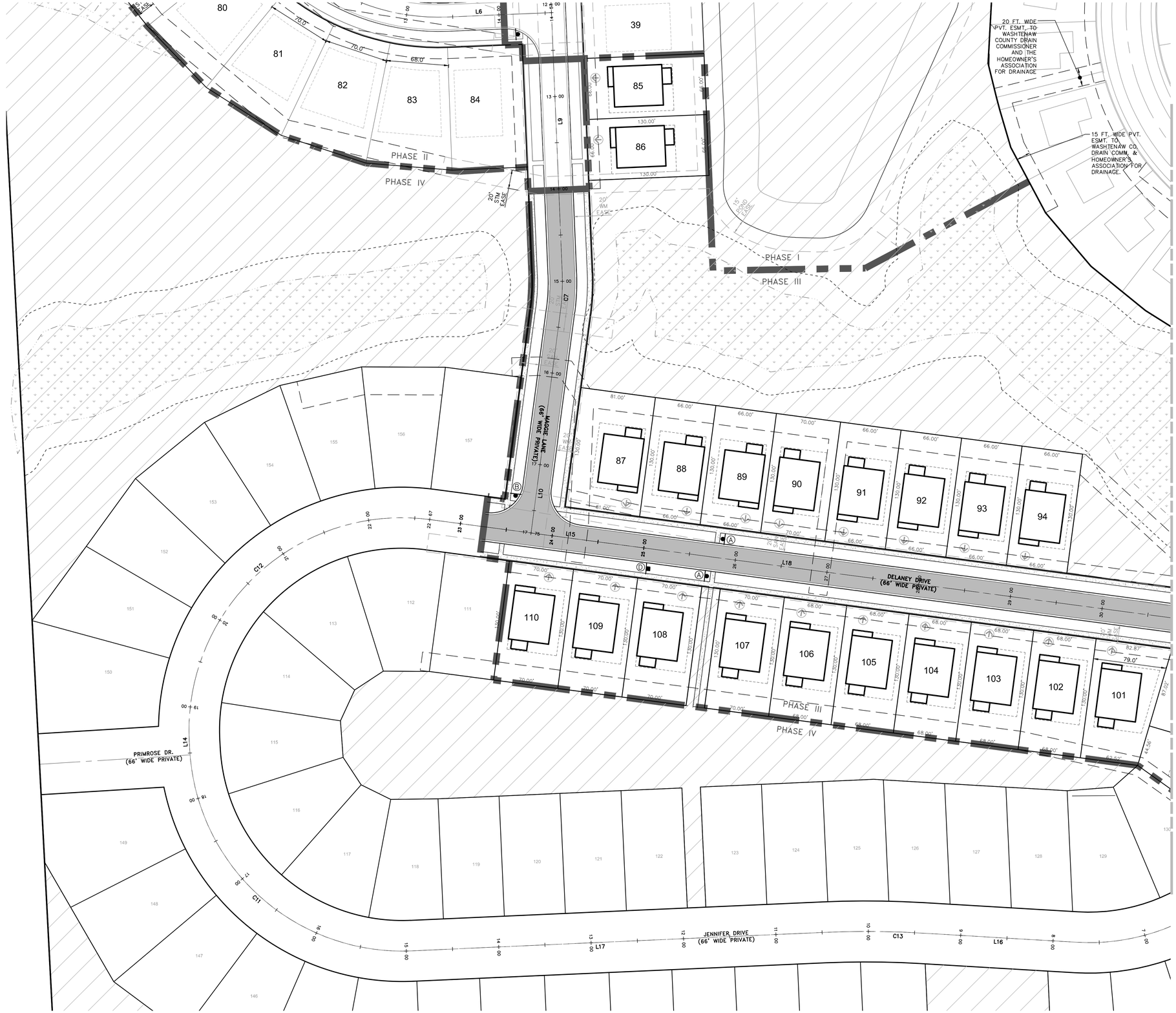
03-07-2025: PER TWP
04-21-2025: PER TWP

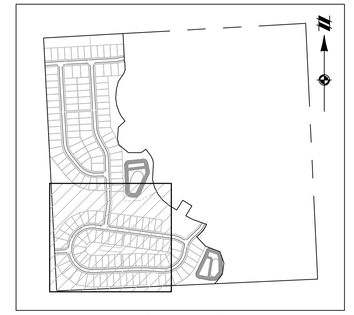
REVISIONS

0 50 100
SCALE: 1" = 100 FEET

DR.	SK
CH.	SS
P.M.	MB
BOOK	--
JOB	16000819
SHEET NO.	12

\\ATWELL\PROJECTS\16000819\DISCIPLINE\SITE\SITE - FINAL PHASE 3\16000819-SITE-FINAL PHASE 3.DWG 4/21/2025 11:39 AM MATTHEW MYERS





KEYMAP
SCALE: 1" = 750'

LEGEND

- BOUNDARY LINE
- EXIST. EASEMENT
- SECTION LINE
- BOUNDARY/PROPERTY LINE
- EXIST. SETBACK
- EXIST. TREE LINE
- EXIST. CURB AND GUTTER
- EXIST. BUILDING
- EXIST. WETLAND BUFFER
- PROP. SETBACK
- PROP. LOT LINE
- PROP. ROAD CENTERLINE
- PROP. BACK OF CURB
- PROP. WALK
- PROP. ASPH.
- GENERAL COMMON ELEMENT
- PROP. PHASE LINE
- EXIST. WETLAND
- GCE XX AC — GENERAL COMMON ELEMENT
- GARAGE/DRIVEWAY LOCATION INDICATOR

SIGN LEGEND

- (A) W11A-2 PEDESTRIAN CROSSING SIGN
- (B) R1-1 STOP SIGN
- (C) D3-1 STREET NAME SIGN
- (D) 'NO PARKING' FIRE LANE SIGN

FRANCES WAY, JENNIFER DR., DELANEY DR.

ALIGNMENT LINE TABLE

Line #	Length	Direction	Start Point	End Point
L11	60.27	S19° 51' 29.48"W	(13328960.63,281542.12)	(13328940.16,281485.43)
L12	86.82	S47° 32' 13.57"W	(13328879.11,281393.89)	(13328815.06,281335.27)
L13	38.17	S10° 54' 11.78"W	(13328744.49,281209.10)	(13328737.27,281171.62)
L14	8.86	N2° 57' 34.43"W	(13327538.96,281194.13)	(13327538.50,281202.98)
L15	233.73	S82° 26' 42.68"E	(13327798.44,281442.86)	(13328030.13,281412.13)
L16	168.78	N86° 36' 24.80"W	(13328497.81,280985.53)	(13328329.32,280995.52)
L17	446.79	S87° 25' 49.58"W	(13328225.30,280996.27)	(13327778.96,280976.24)
L18	820.96	S82° 26' 42.68"E	(13327798.44,281442.86)	(13328612.26,281334.92)
L19	88.32	S62° 44' 35.31"E	(13328687.36,281311.38)	(13328765.87,281270.93)

ALIGNMENT CURVE TABLE

CURVE #	RADIUS	LENGTH	DELTA	CHD. BEARING	CHORD
C8	230.00'	111.11'	27°40'44"	S33°41'52"W	110.03'
C9	230.00'	147.06'	36°38'02"	S29°13'13"W	144.57'
C10	230.00'	331.14'	82°29'23"	S52°08'53"W	303.27'
C11	230.00'	359.72'	89°36'36"	N47°45'52"W	324.16'
C12	230.00'	403.49'	100°30'52"	N47°17'51"E	353.70'
C13	1000.00'	104.07'	5°57'46"	N89°35'18"W	104.02'
C14	230.00'	79.09'	19°42'07"	S72°35'39"E	78.70'

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SECTION 33
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SUPERIOR TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
SE MICHIGAN LAND HOLDING LLC

PROSPECT POINTE WEST
FINAL SITE PLAN – PHASE 3
LAYOUT PLAN

DATE
NOVEMBER 22, 2024

03-07-2025: PER TWP
04-21-2025: PER TWP

REVISIONS

SCALE: 1" = 50 FEET

DR. SK | CH. SS
P.M. MB
BOOK --
JOB 16000819
SHEET NO. 13

\\ANN1PROJECTS\16000819\DESIGN\SITE\SITE - FINAL PHASE 3\16000819-FSP3-SITE-LAYOUT.DWG 4/21/2025 10:01 AM MATTHEW MYERS

SEE SHEET 13 FOR CONTINUATION

15 FT. WIDE PVT. ESMT. TO WASHTENAW CO. DRAIN COMM. & HOMEOWNER'S ASSOCIATION FOR DRAINAGE.

CAMILLE CT

~BITUMINOUS~

ZONING: R4
"PROSPECT POINTE SUBDIVISION NO. 2"
LIBER 35, PAGES 99-110

12 FT. WIDE PVT. ESMT. FOR PUBLIC UTIL. REC. IN L.35, P.99

VARIABLE WIDTH PVT. ESMT. FOR DRAINAGE TO WCDC AND THE HOMEOWNER'S ASSOCIATION REC. IN L.35, P.99

LOT 201

2' WIDE PVT. ESMT. FOR PUBLIC SANITARY REC. IN L.5443, P.380

18' WIDE PVT. ESMT. FOR PUBLIC WATER MAIN REC. IN L.5443, P.380

22' WIDE PVT. ESMT. FOR PUBLIC SANITARY REC. IN L.5443, P.380

66' WIDE PVT. ESMT. FOR INGRESS, EGRESS & PUBLIC UTIL. TO THE OWNER OF THE ADJACENT PARCEL REC. IN L.5443, P.380

40' WIDE PVT. ESMT. FOR PUBLIC STORM SEWER REC. IN L.5443, P.380

LOGAN PARK (PRIVATE) "PROSPECT POINTE SUBDIVISION NO. 1" LIBER 35, PAGES 67-80

PHASE I
PHASE III
PHASE IV

DELANEY DRIVE (66' WIDE PRIVATE)

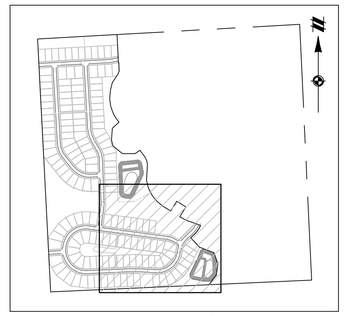
FRANCES WAY (66' WIDE PRIVATE)

JENNIFER DRIVE (66' WIDE PRIVATE)

PROP 45 LF BOULDER WALL (1-2' TALL)

PROP. 250 LF BOULDER WALL (1-2' TALL)

ZONING: A2
J-10-33-400-035
WYATT HOLDINGS LLC



KEYMAP
SCALE: 1" = 750'

LEGEND

- BOUNDARY LINE
- EXIST. EASEMENT
- SECTION LINE
- BOUNDARY/PROPERTY LINE
- EXIST. SETBACK
- EXIST. TREE LINE
- EXIST. CURB AND GUTTER
- EXIST. BUILDING
- EXIST. WETLAND BUFFER
- PROP. SETBACK
- PROP. LOT LINE
- PROP. ROAD CENTERLINE
- PROP. BACK OF CURB
- PROP. WALK
- PROP. ASPH.
- GENERAL COMMON ELEMENT
- PROP. PHASE LINE
- EXIST. WETLAND
- GCE XX AC — GENERAL COMMON ELEMENT
- GARAGE/DRIVEWAY LOCATION INDICATOR

SIGN LEGEND

- (A) W11A-2 PEDESTRIAN CROSSING SIGN
- (B) R1-1 STOP SIGN
- (C) D3-1 STREET NAME SIGN
- (D) 'NO PARKING' FIRE LANE SIGN



R1-1 SIGN DETAIL
NO SCALE



W11A-2 SIGN DETAIL
NO SCALE

FRANCES WAY, JENNIFER DR., DELANEY DR.

ALIGNMENT LINE TABLE

Line #	Length	Direction	Start Point	End Point
L11	60.27	S19° 51' 29.48"W	(13328960.63,281542.12)	(13328940.16,281485.43)
L12	86.82	S47° 32' 13.57"W	(13328879.11,281393.89)	(13328815.06,281335.27)
L13	38.17	S10° 54' 11.78"W	(13328744.49,281209.10)	(13328737.27,281171.62)
L14	8.86	N2° 57' 34.43"W	(13327538.96,281194.13)	(13327538.50,281202.98)
L15	233.73	S82° 26' 42.68"E	(13327798.44,281442.86)	(13328030.13,281412.13)
L16	168.78	N86° 36' 24.80"W	(13328497.81,280985.53)	(13328329.32,280995.52)
L17	446.79	S87° 25' 49.58"W	(13328225.30,280996.27)	(13327778.96,280976.24)
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REVISIONS

0 25 50
SCALE: 1" = 50 FEET

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P.M. MB
BOOK --
JOB 16000819
SHEET NO.
14

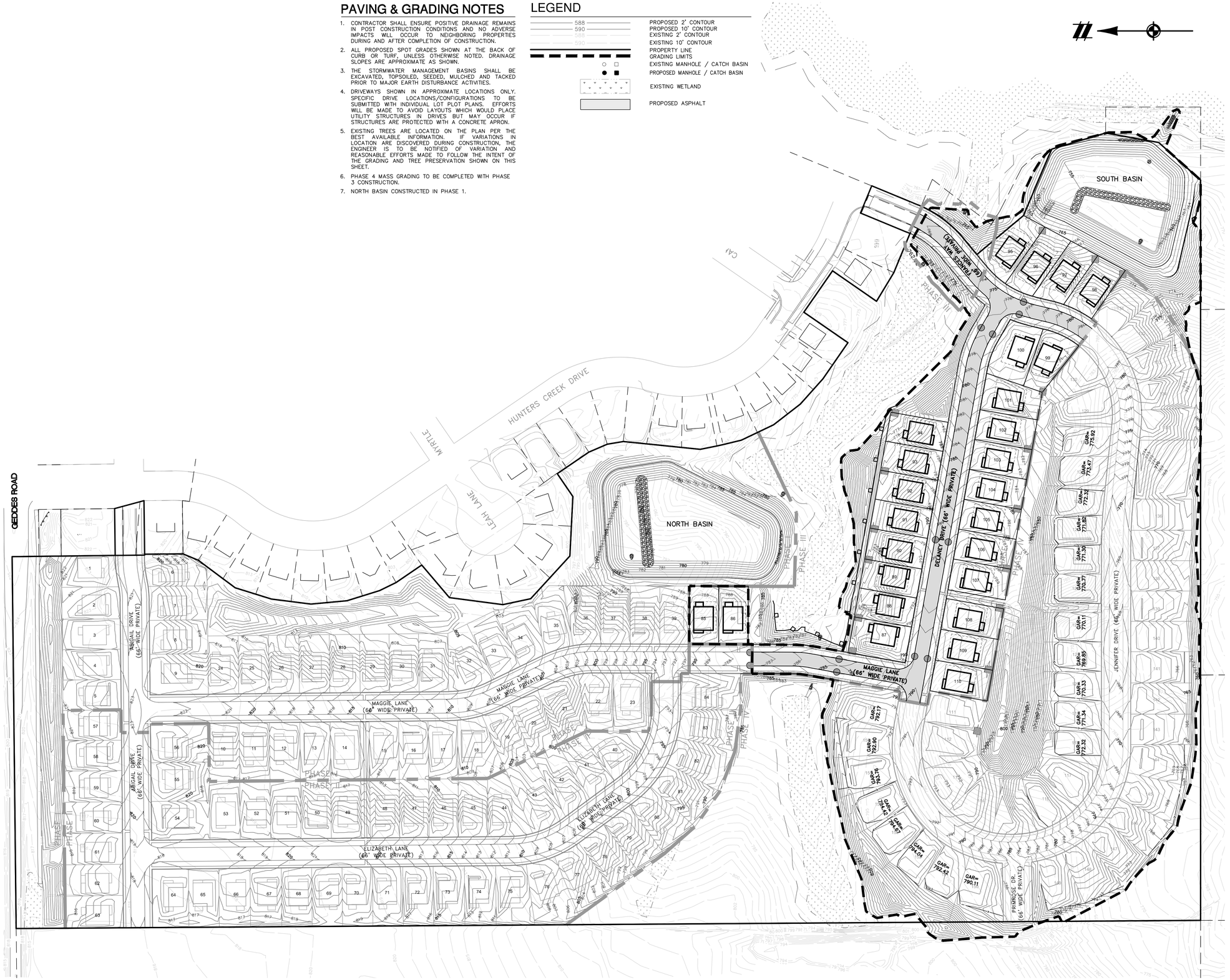
I:\ATWELL PROJECTS\16000819\CAD\PLAN SETS\FSP - PHASE 3\16000819FSP3-PH LOAD - 4/21/2025 12:50:36 PM MATTHEW MYERS

PAVING & GRADING NOTES

1. CONTRACTOR SHALL ENSURE POSITIVE DRAINAGE REMAINS IN POST CONSTRUCTION CONDITIONS AND NO ADVERSE IMPACTS WILL OCCUR TO NEIGHBORING PROPERTIES DURING AND AFTER COMPLETION OF CONSTRUCTION.
2. ALL PROPOSED SPOT GRADES SHOWN AT THE BACK OF CURB OR TURF, UNLESS OTHERWISE NOTED. DRAINAGE SLOPES ARE APPROXIMATE AS SHOWN.
3. THE STORMWATER MANAGEMENT BASINS SHALL BE EXCAVATED, TOPSOILED, SEEDED, MULCHED AND TACKED PRIOR TO MAJOR EARTH DISTURBANCE ACTIVITIES.
4. DRIVEWAYS SHOWN IN APPROXIMATE LOCATIONS ONLY. SPECIFIC DRIVE LOCATIONS/CONFIGURATIONS TO BE SUBMITTED WITH INDIVIDUAL LOT PLOT PLANS. EFFORTS WILL BE MADE TO AVOID LAYOUTS WHICH WOULD PLACE UTILITY STRUCTURES IN DRIVES BUT MAY OCCUR IF STRUCTURES ARE PROTECTED WITH A CONCRETE APRON.
5. EXISTING TREES ARE LOCATED ON THE PLAN PER THE BEST AVAILABLE INFORMATION. IF VARIATIONS IN LOCATION ARE DISCOVERED DURING CONSTRUCTION, THE ENGINEER IS TO BE NOTIFIED OF VARIATION AND REASONABLE EFFORTS MADE TO FOLLOW THE INTENT OF THE GRADING AND TREE PRESERVATION SHOWN ON THIS SHEET.
6. PHASE 4 MASS GRADING TO BE COMPLETED WITH PHASE 3 CONSTRUCTION.
7. NORTH BASIN CONSTRUCTED IN PHASE 1.

LEGEND

588	PROPOSED 2' CONTOUR
590	PROPOSED 10' CONTOUR
588	EXISTING 2' CONTOUR
590	EXISTING 10' CONTOUR
	PROPERTY LINE
	GRADING LIMITS
	EXISTING MANHOLE / CATCH BASIN
	PROPOSED MANHOLE / CATCH BASIN
	EXISTING WETLAND
	PROPOSED ASPHALT



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REVISIONS

0 50 100
SCALE: 1" = 100 FEET

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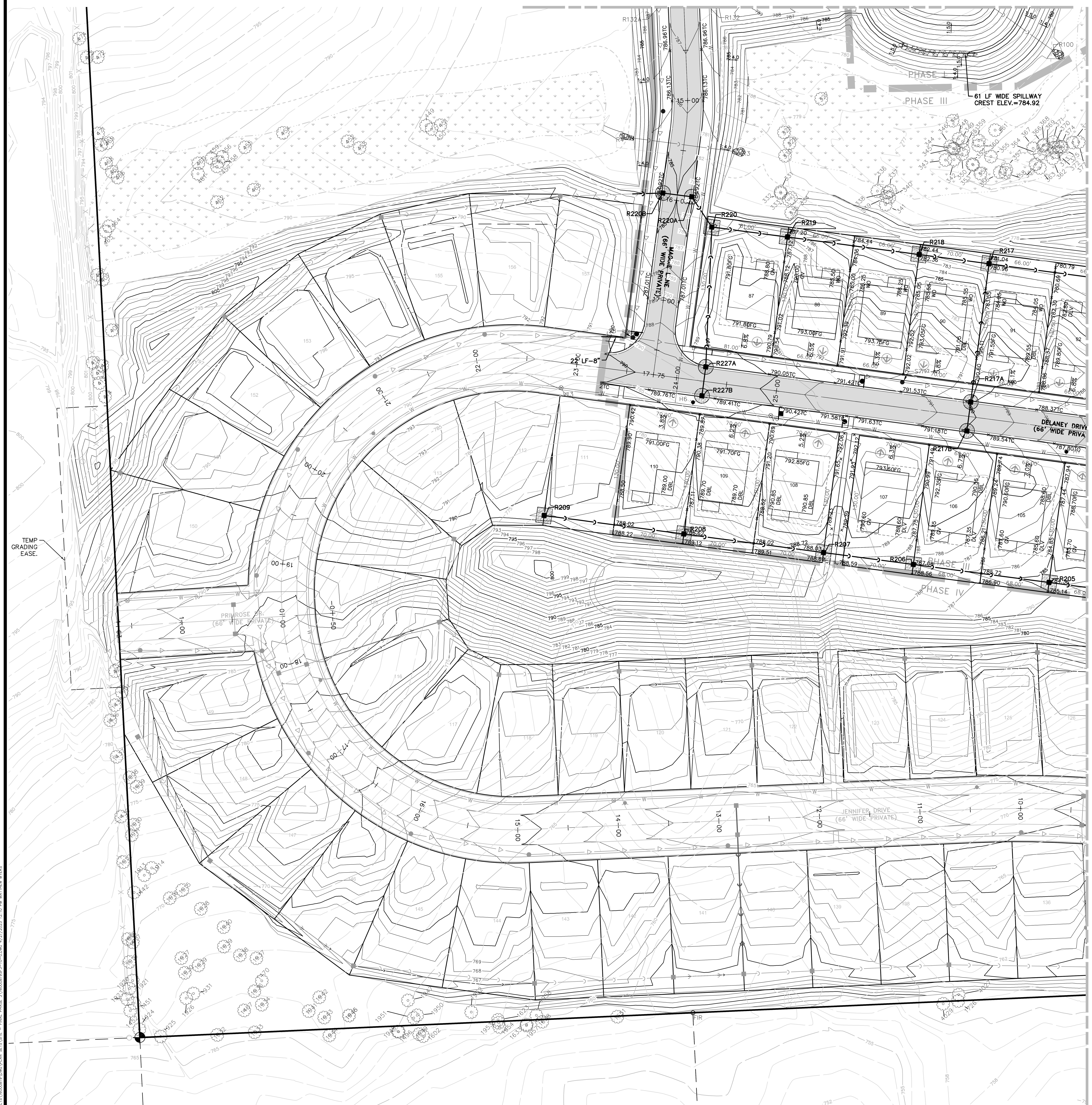
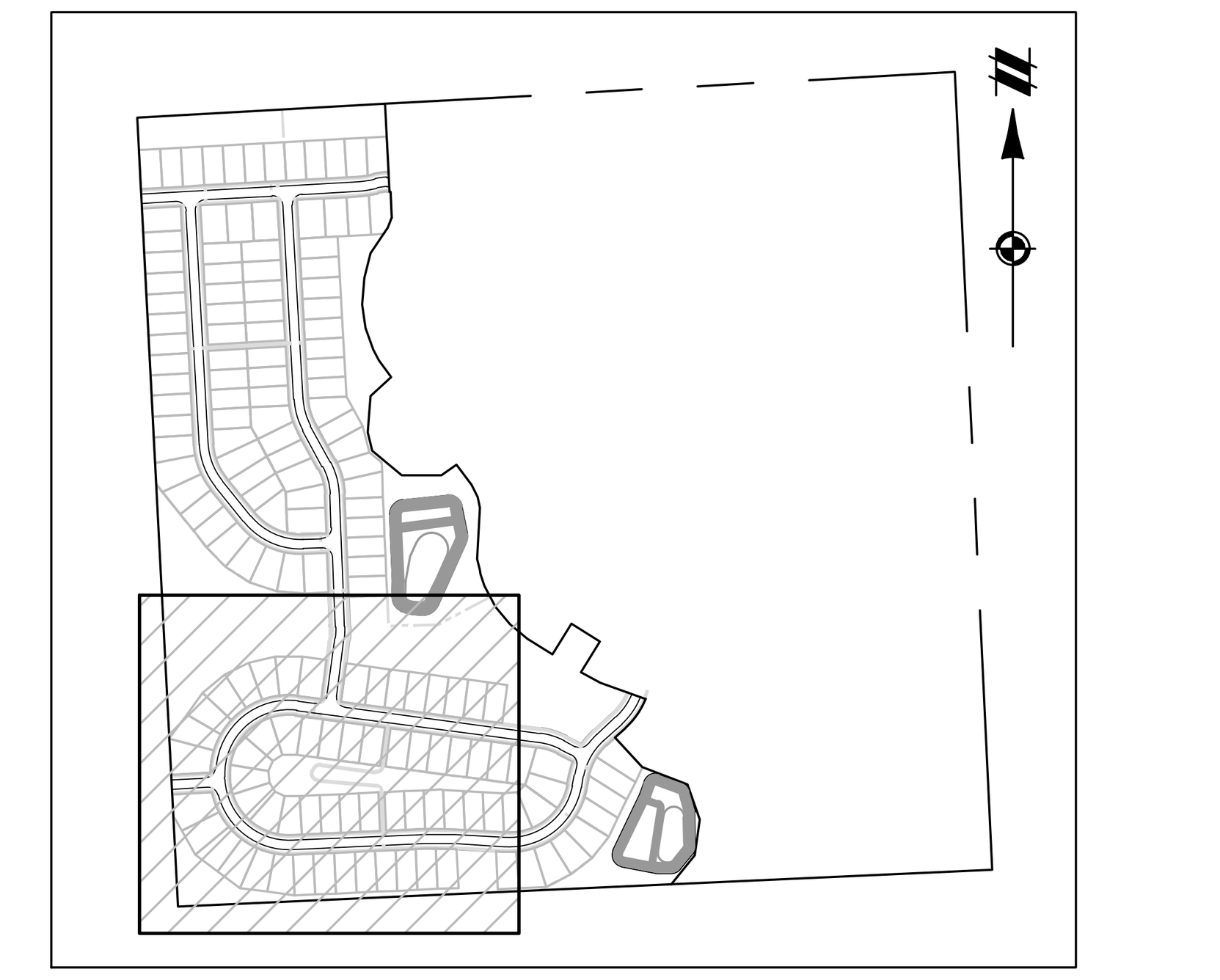
SHEET NO. 15	

SEE BELOW FOR CONTINUATION



SEE SHEET 17 FOR CONTINUATION



KEYMAP
SCALE: 1" = 750'

LEGEND

- PROPOSED 1' CONTOUR
- PROPOSED 5' CONTOUR
- EXISTING 1' CONTOUR
- EXISTING 5' CONTOUR
- PROPERTY LINE
- GRADING LIMITS
- EXISTING MANHOLE / CATCH BASIN
- PROPOSED MANHOLE / CATCH BASIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING WATER MAIN MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER MANHOLE
- EXISTING WETLAND
- PROPOSED ASPHALT
- PROPOSED CONCRETE
- PROPOSED EMERGENCY OVERFLOW ROUTE

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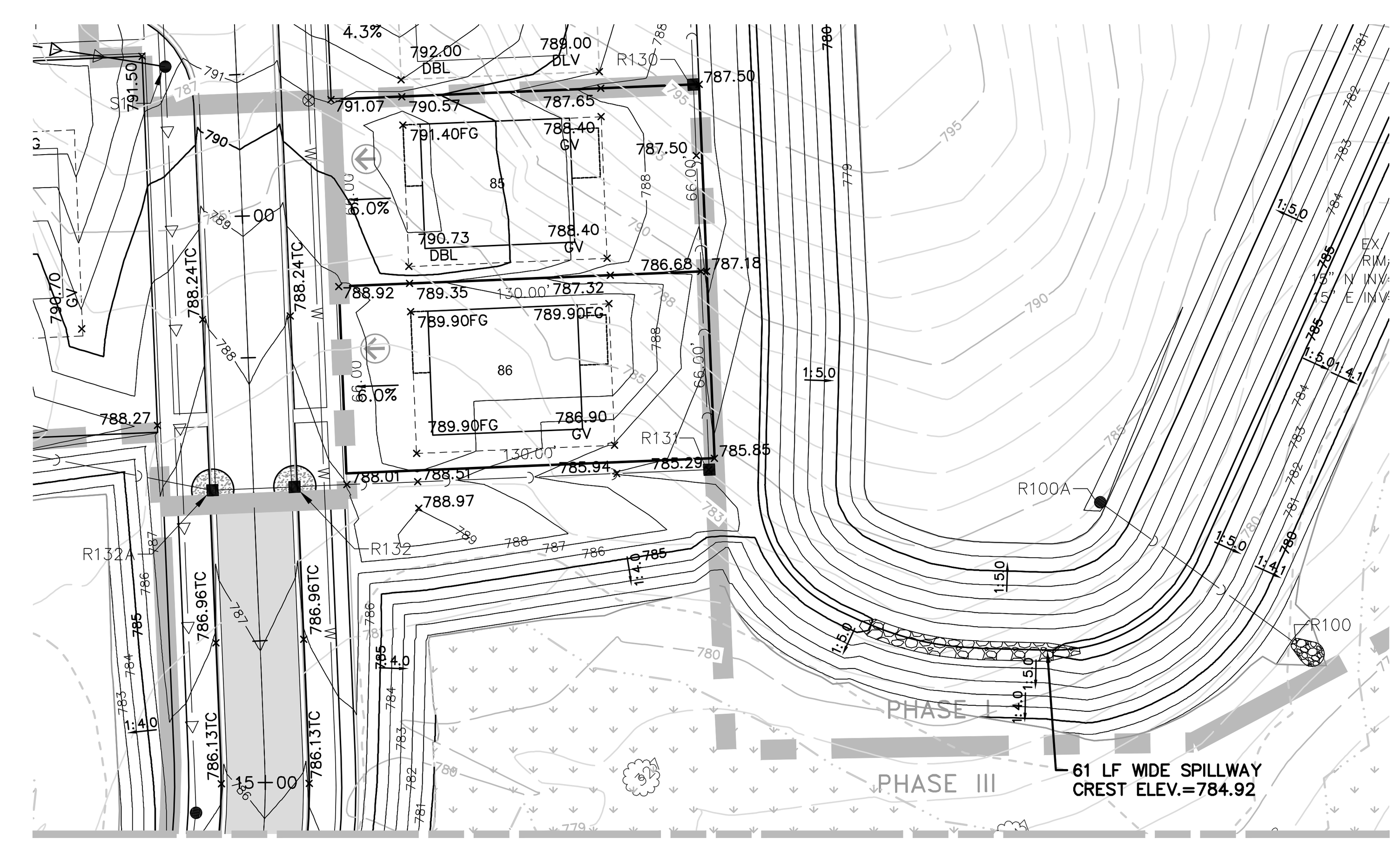

SEE ABOVE FOR CONTINUATION

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SCALE: 1" = 50 FEET

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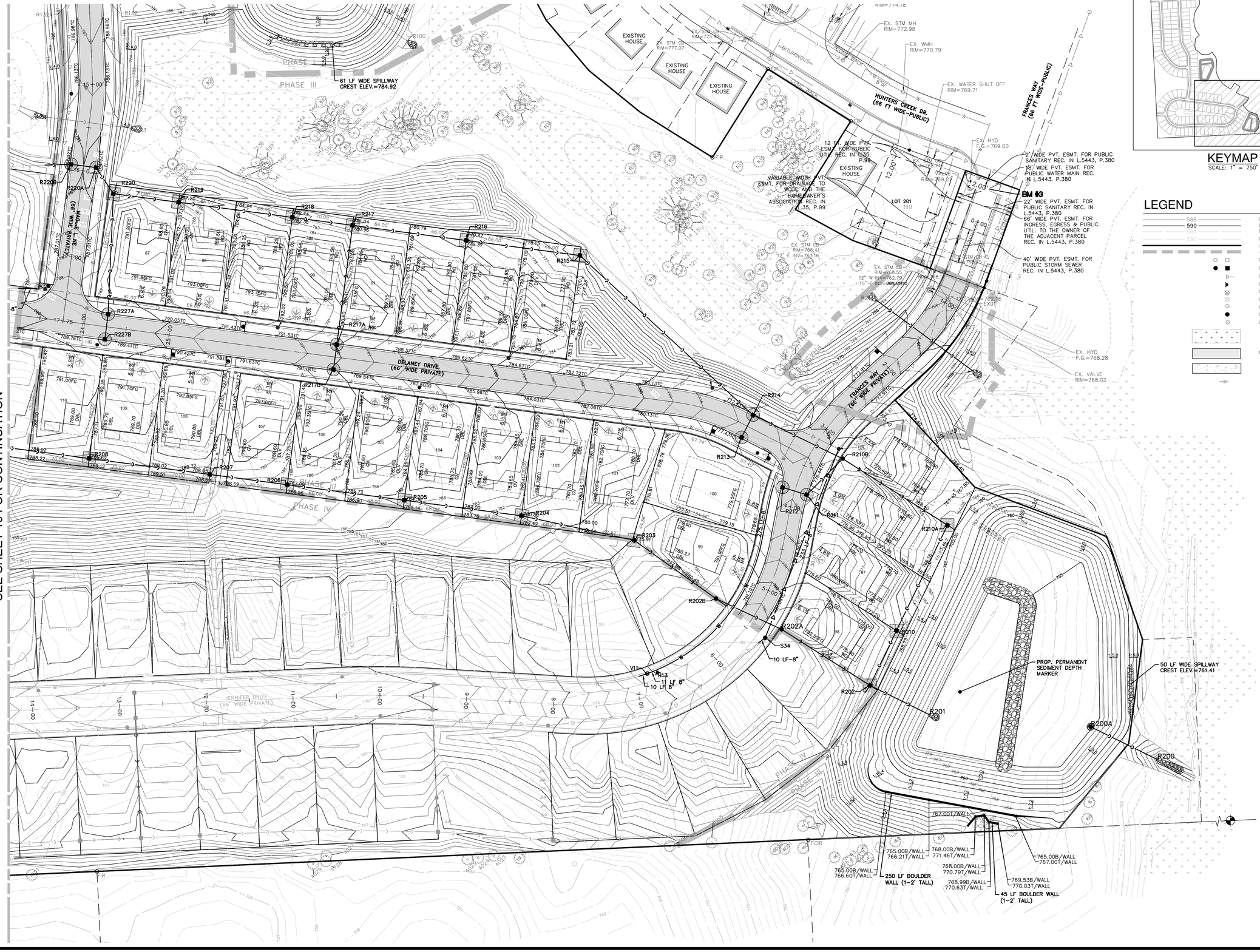
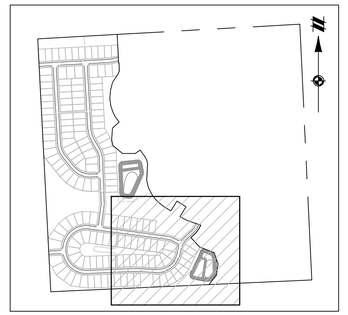
SEE SHEET 16 FOR CONTINUATION





KEYMAP
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BOOK	--
JOB	16000819
SHEET NO.	17

\\ANNARBOR\PROJECTS\16000819\PLAN SET\SITE - FINAL PHASE 3\16000819SP3-10-SITE 4/21/2025 12:13 PM MATTHEW MYERS

INITIAL UTILITY BASIS OF DESIGN

No. of Single Family Lots:			157 Lots
No. of Users per Lot:			3.5 Persons
Total Expected Population Served:			550 Persons
Average Daily Flow (per capita):			100 G.P.D.
Peaking Factor:	$18+\sqrt{(\text{POP}/1000)}$ / $4+\sqrt{(\text{POP}/1000)}$ =		3.95
Average Demand:	POP * 100 =		**55,000 G.P.D.**
	=		38.2 G.P.M.
	=		0.085 C.F.S.
Peak Demand:	55,000	* 3.95 =	**217,392 G.P.D.**
		=	151.0 G.P.M.
		=	0.336 C.F.S.

ULTIMATE UTILITY BASIS OF DESIGN

	Prospect Pointe West		157 Lots
	Future Service Area		45 Lots
Total No. of Single Family Lots:			202 Lots
No. of Users per Lot:			3.5 Persons
Total Expected Population Served:			707 Persons
Average Daily Flow (per capita):			100 G.P.D.
Peaking Factor:	$18+\sqrt{(\text{POP}/1000)}$ / $4+\sqrt{(\text{POP}/1000)}$ =		3.89
Average Flow:	POP * 100 =		**70,700 G.P.D.**
	=		49.1 G.P.M.
	=		0.109 C.F.S.
Peak Flow:	70,700	* 3.89 =	**275,169 G.P.D.**
		=	191.1 G.P.M.
		=	0.426 C.F.S.

Pipe Capacity:	8	in. diameter	A=	0.349 sf
	0.40%	slope	R=	0.167 ft
	0.013	Manning's 'n'		
		Manning's Capacity =		0.766 C.F.S.
		Velocity Flowing Full =		2.20 F.P.S.

NOTES

1. ALL UTILITIES SHALL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH THE REQUIREMENTS OF THE AUTHORITY HAVING JURISDICTION.
2. CONTRACTOR SHALL COORDINATE SCHEDULING AND PROCEDURES WITH THE AUTHORITY HAVING JURISDICTION PRIOR TO PERFORMING THE PROPOSED CONNECTIONS TO THE EXISTING WATER MAIN.
3. 10' HORIZONTAL SEPARATION SHALL BE MAINTAINED BETWEEN WATER MAINS AND SEWERS.
4. A MINIMUM VERTICAL SEPARATION OF 18" SHALL BE MAINTAINED BETWEEN CROSSING UTILITIES, UNLESS OTHERWISE APPROVED BY THE ENGINEER.
5. ALL PROPOSED STORM SEWER SHALL BE R.C.P. CL-IV UNLESS OTHERWISE NOTED.
6. LOW HEAD (FLAT TOP) STRUCTURES SHALL BE PROVIDED FOR STORM STRUCTURES WITH LESS THAN FOUR FEET OF COVER.
7. ALL PROPOSED WATER MAIN SHALL BE DUCTILE IRON THICKNESS CL-54, AS APPROVED. WATER LEADS SHALL BE 1" TYPE K COPPER, UNLESS OTHERWISE APPROVED. ALL GATE VALVES, EXCEPT HYDRANT SHUTOFFS, SHALL BE INSTALLED IN WELLS.
8. ALL WATERMAIN SHALL BE INSTALLED 5.5' DEEP. NO PIPE WILL BE ALLOWED DEEPER THAN 10' DEEP.
9. ALL SANITARY LEADS SHALL BE 6" PVC SDR 23.5 LAID AT 1% MINIMUM SLOPE.
10. ALL SANITARY SEWER PIPES SHALL BE PVC SDR 26 TO 20 FEET DEPTH AND PVC TRUSS PIPE FOR SANITARY SEWER DEEPER THAN 20 FT FROM FINISHED GRADE.
11. SANITARY SEWERS LOCATED OUTSIDE OF THE ROAD RIGHT OF WAY SHALL BE LOCATED WITHIN A 20' WIDE EASEMENT.
12. THE MINIMUM COVER OVER SANITARY SEWER IS 4'.
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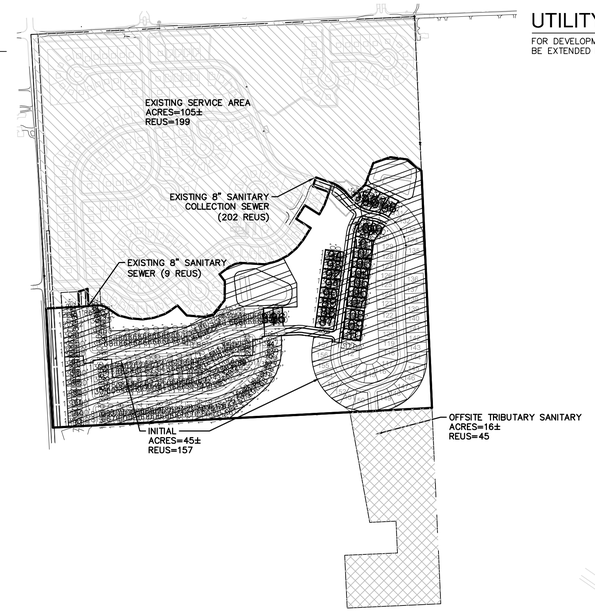
19. SEE SHEETS 19 THROUGH 20 FOR UTILITY EASEMENTS.



UTILITY SERVICE DISTRICT MAP
SCALE: 1" = 500 FEET

UTILITY NARRATIVE

FOR DEVELOPMENT OF PHASE 3, ALL UTILITIES NEEDED TO SERVICE LOTS 87-110 SHALL BE EXTENDED FROM THE PHASE 1 & 2 STUBS.

LEGEND

PROPERTY LINE
EXISTING STORM SEWER
PROPOSED STORM SEWER
EXISTING MANHOLE/CATCH BASIN/END SECTION
PROPOSED MANHOLE/CATCH BASIN/END SECTION
EXISTING WATER MAIN
PROPOSED WATER MAIN
EXISTING HYDRANT
PROPOSED HYDRANT
EXISTING GATE VALVE & WELL
PROPOSED GATE VALVE & WELL
EXISTING SANITARY SEWER
PROPOSED SANITARY SEWER
EXISTING SANITARY SEWER MANHOLE
PROPOSED SANITARY SEWER MANHOLE
PROPOSED EASEMENT
EXISTING WETLAND

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WASHTENAW COUNTY, MICHIGAN

CLIENT
SE MICHIGAN LAND HOLDING LLC

PROSPECT POINTE WEST
FINAL SITE PLAN – PHASE 3

OVERALL UTILITY PLAN

DATE
NOVEMBER 22, 2024

03-07-2025: PER TWP
04-21-2025: PER TWP

REVISIONS

0 50 100
SCALE: 1" = 100 FEET

DR. SK	CH. SS
P.M. MB	
BOOK --	
JOB 16000819	
SHEET NO. 18	

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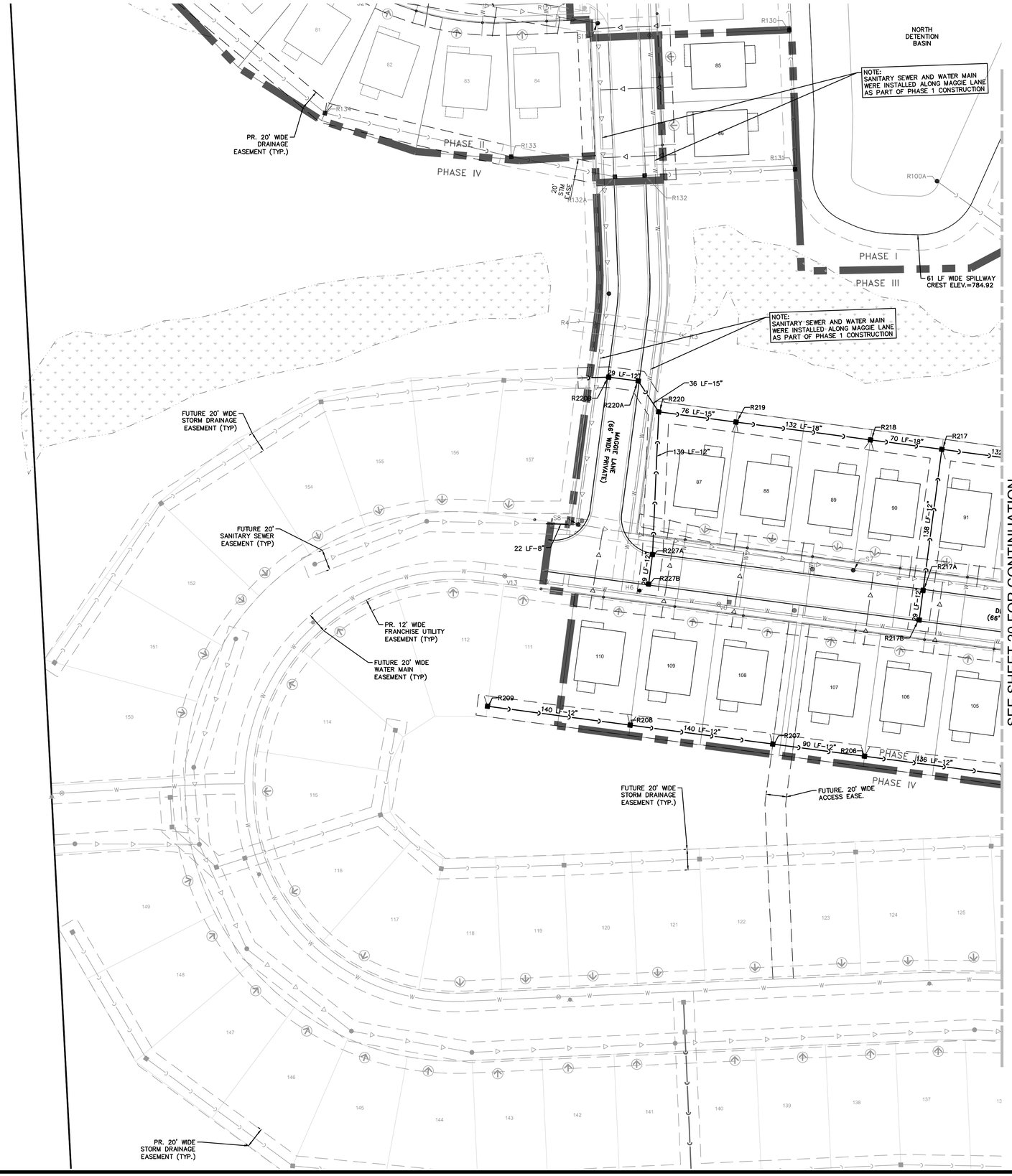

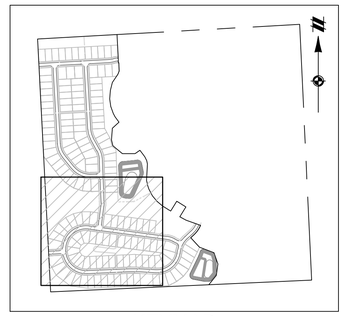

KEYMAP
SCALE: 1" = 750'

LEGEND

- PROPERTY LINE
- EXISTING STORM SEWER
- PROPOSED STORM SEWER
- EXISTING MANHOLE/CATCH BASIN/END SECTION
- PROPOSED MANHOLE/CATCH BASIN/END SECTION
- EXISTING WATER MAIN
- PROPOSED WATER MAIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING SANITARY SEWER
- PROPOSED SANITARY SEWER
- EXISTING SANITARY SEWER MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- PROPOSED EASEMENT
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SCALE: 1" = 50 FEET

DR. SK	CH. SS
P.M. MB	
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JOB 16000819	
SHEET NO. 19	

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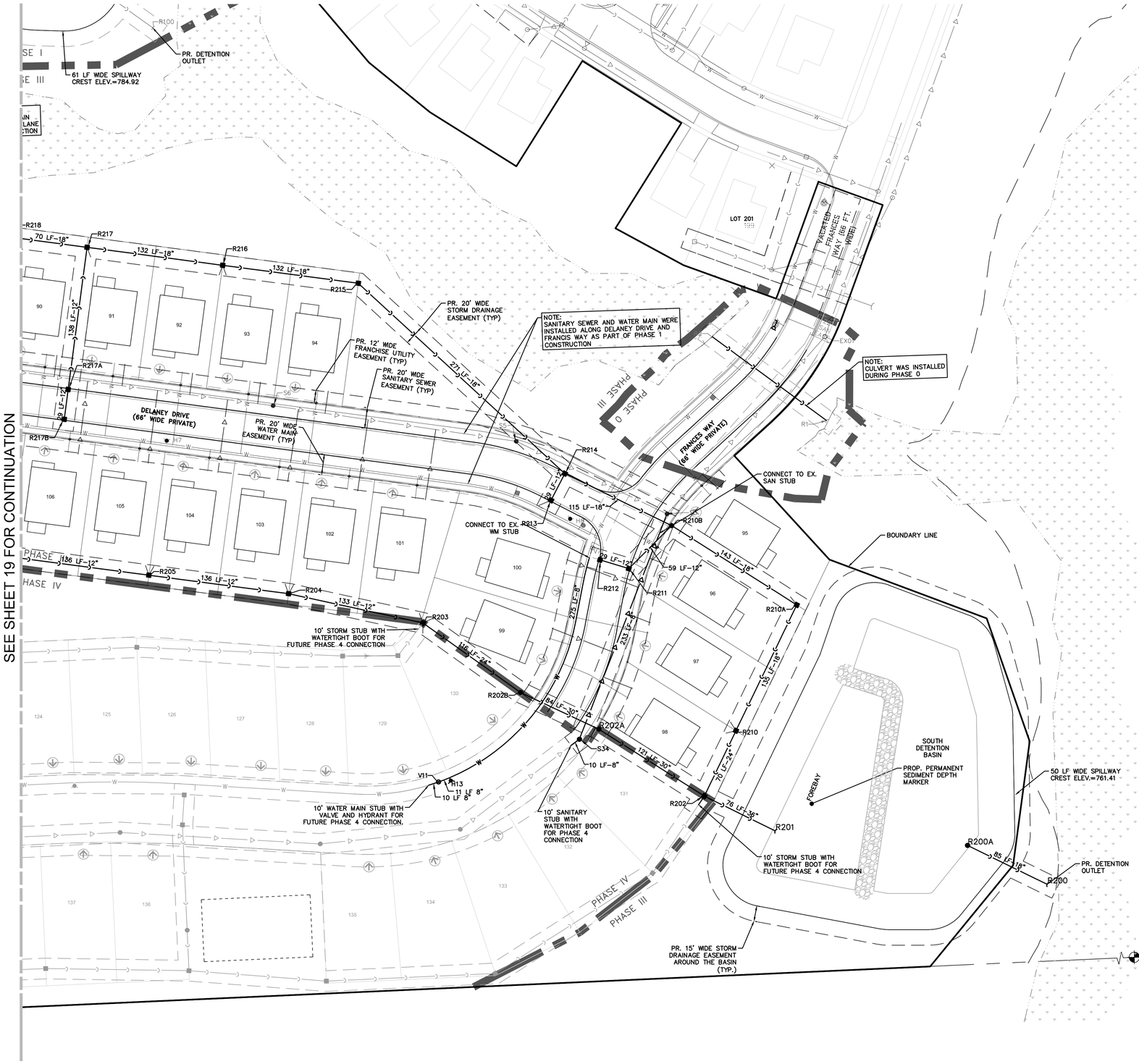

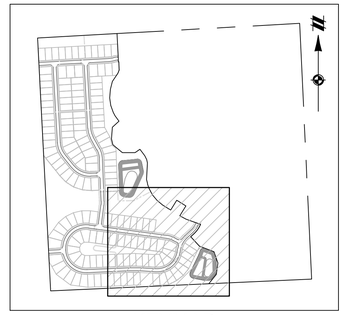

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PROSPECT POINTE WEST
FINAL SITE PLAN – PHASE 3
UTILITY PLAN

DATE
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04-21-2025: PER TWP

REVISIONS

SCALE: 1" = 50 FEET

DR. SK | CH. SS
P.M. MB
BOOK --
JOB 16000819
SHEET NO. 20

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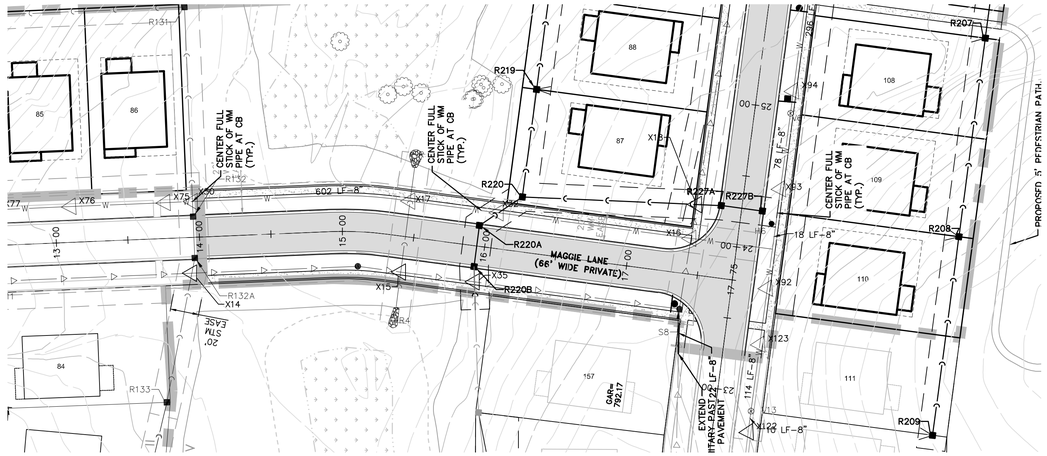

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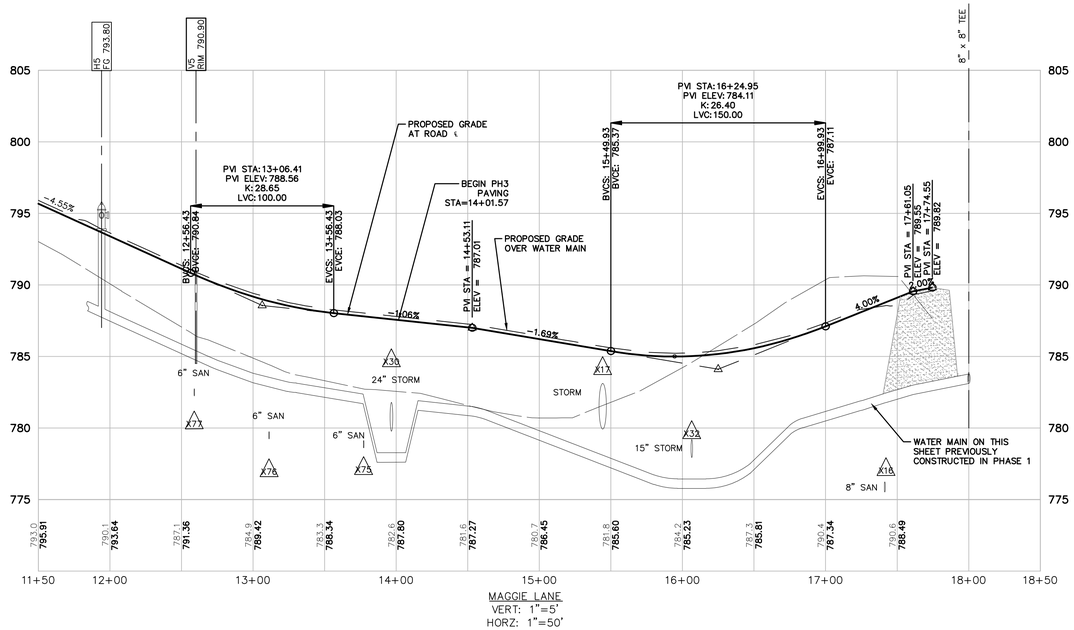

MAGGIE LANE
VERT: 1"=5'
HORZ: 1"=50'

LEGEND

- PROPOSED 1' CONTOUR
- PROPOSED 5' CONTOUR
- EXISTING 1' CONTOUR
- EXISTING 5' CONTOUR
- PROPERTY LINE
- GRADING LIMITS
- EXISTING MANHOLE / CATCH BASIN
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- PROPOSED SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER MANHOLE
- EXISTING WETLAND
- PROPOSED ASPHALT
- PROPOSED CONCRETE

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MAGGIE LANE PLAN & PROFILE

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DR. SK	CH. SS
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BOOK --	
JOB 16000819	
SHEET NO. 21	

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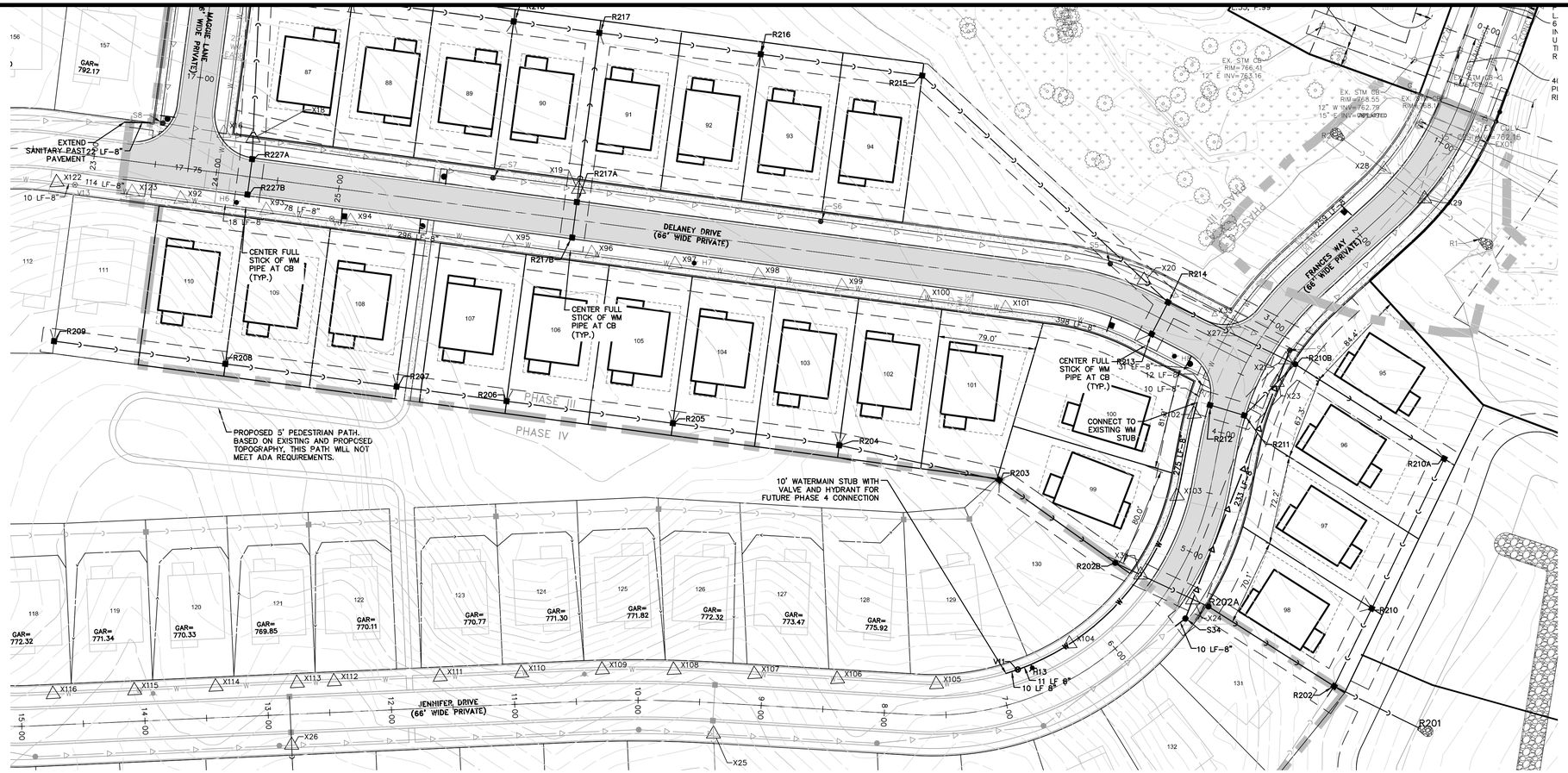
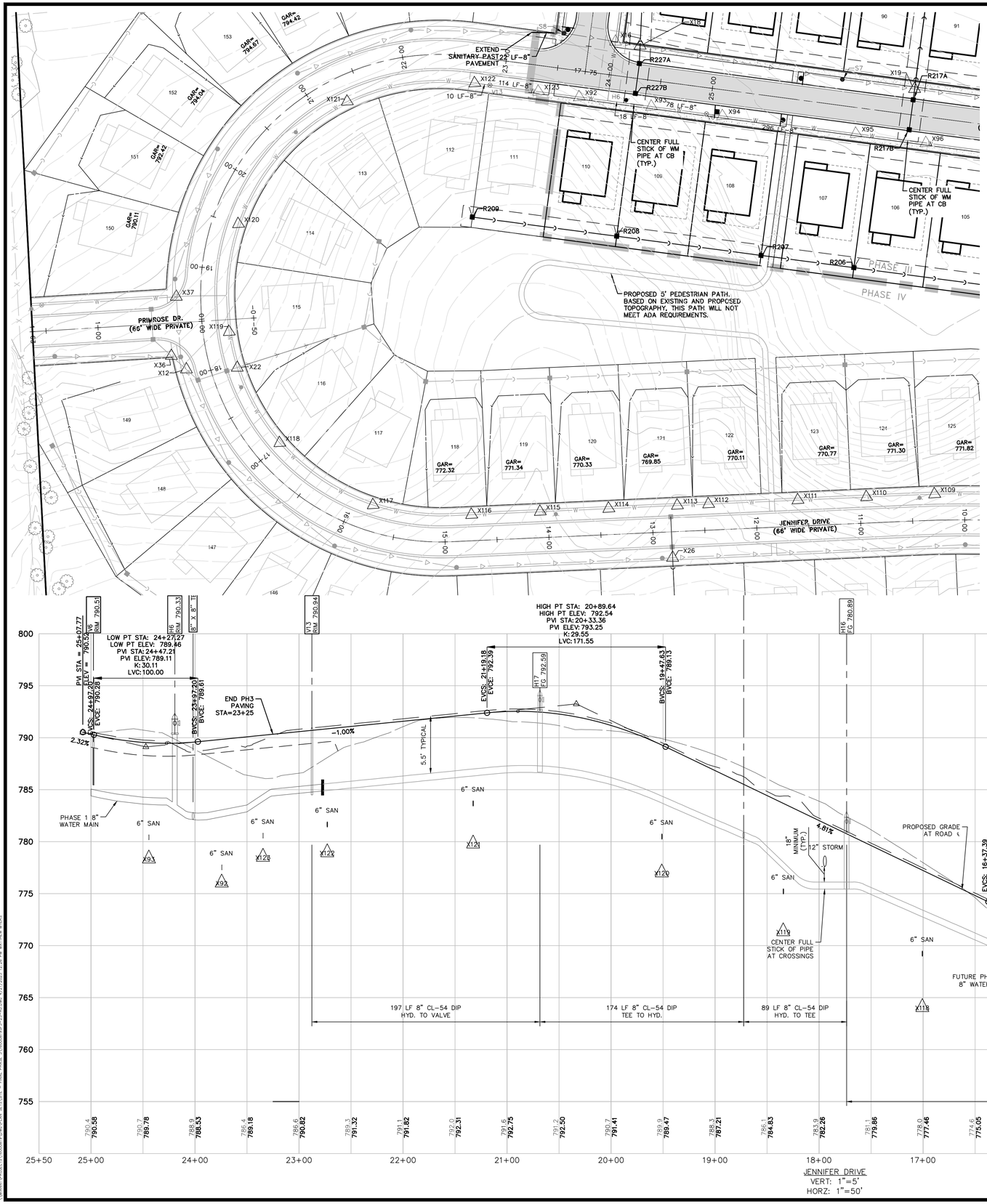
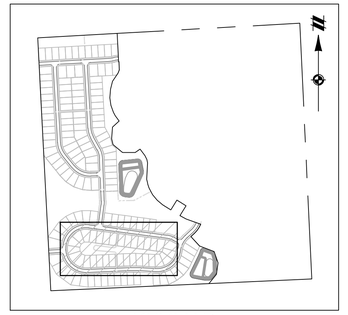

DELANEY DRIVE (66' WIDE PRIVATE)
JENNIFER DRIVE (66' WIDE PRIVATE)
FRANCI'S WAY (66' WIDE PRIVATE)
PHASE III
PHASE IV
PROPOSED 5' PEDESTRIAN PATH. BASED ON EXISTING AND PROPOSED TOPOGRAPHY, THIS PATH WILL NOT MEET ADA REQUIREMENTS.
10' WATERMAIN STUB WITH VALVE AND HYDRANT FOR FUTURE PHASE 4 CONNECTION
CENTER FULL STICK OF WM PIPE AT CB (TYP.)
CONNECT TO EXISTING WM STUB
EXTEND SANITARY PAST 22' PAVEMENT
22 LF-8"
114 LF-8"
10 LF-8"
78 LF-8"
286 LF-8"
398 LF-8"
259 LF-8"
31 LF-8"
12 LF-8"
10 LF-8"
278 LF-8"
234 LF-8"
11 LF 8"
10 LF 8"
EX. STM CB RIM=766.41 12" E INV=763.16
EX. STM CB RIM=768.55 12" W INV=763.79 15" E INV=UNKNOWN
EX. STM MH RIM=768.15
EX. 8" DIP WATER MAIN
EX. 12" DIP WATER MAIN
EX. 8" DIP WATER MAIN
EX. 8" DIP WATER MAIN
EX. 8





KEYMAP
SCALE: 1" = 750'

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- PROPOSED 5' CONTOUR
- EXISTING 1' CONTOUR
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734.994.4000

SECTION 33
TOWN 2 SOUTH, RANGE 7 EAST
SUPERIOR TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
SE MICHIGAN LAND HOLDING LLC

PROSPECT POINTE WEST
FINAL SITE PLAN – PHASE 3
JENNIFER DRIVE PLAN & PROFILE 2

DATE
NOVEMBER 22, 2024

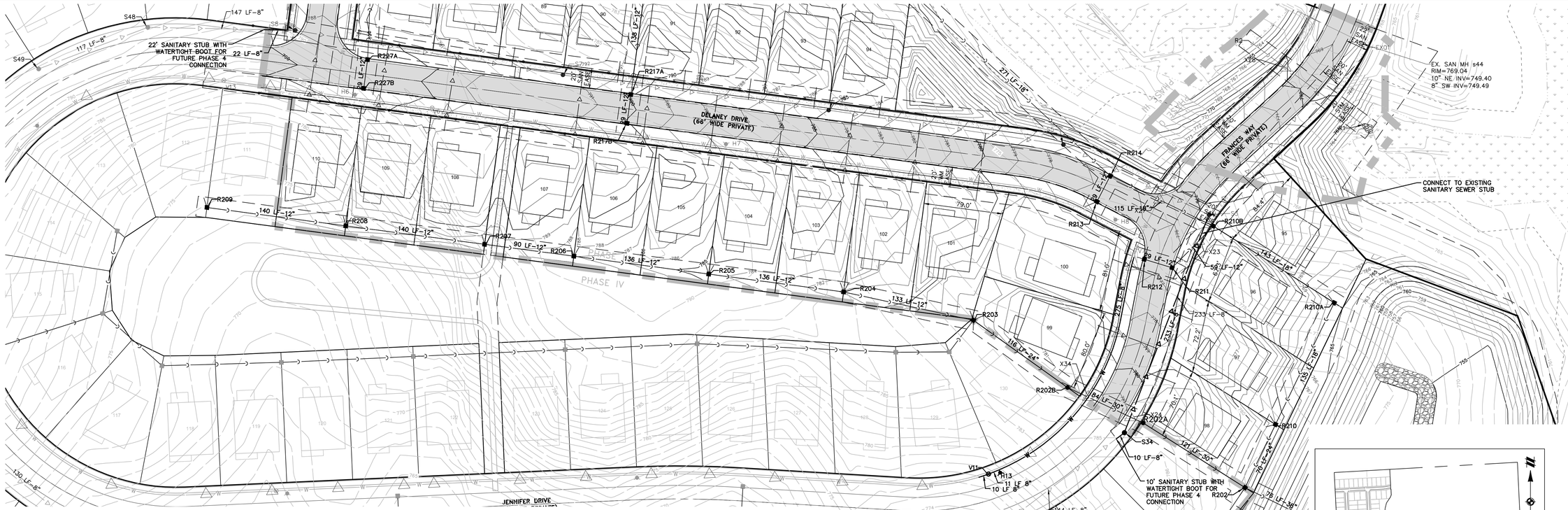
03-07-2025: PER TWP
04-21-2025: PER TWP

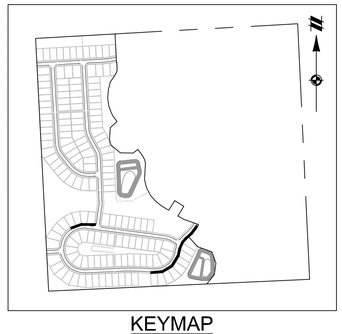
REVISIONS

SCALE: 1" = 50 FEET

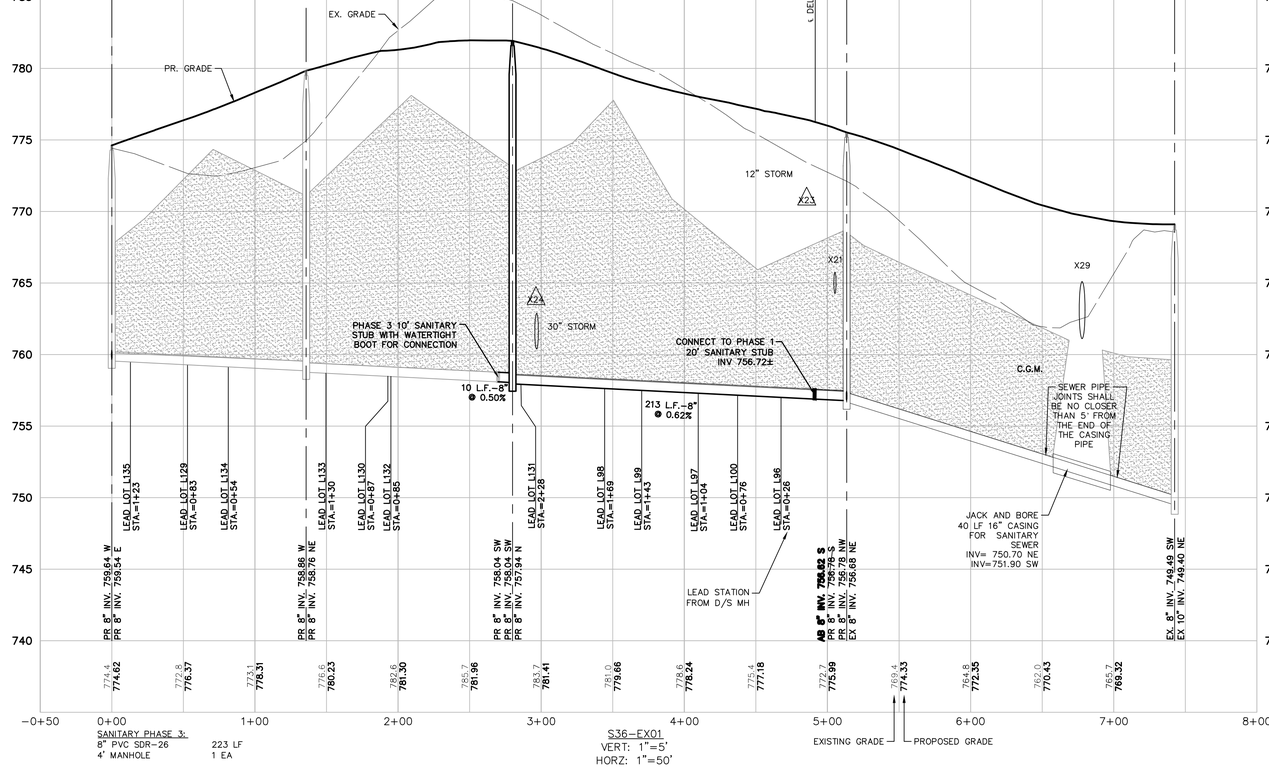
DR.	SK
CH.	SS
P.M.	MB
BOOK	--
JOB	16000819
SHEET NO.	23

G:\ANN\PROJECTS\16000819\CAD\PLAN SETS\SITE - FINAL PHASE 3\16000819P3-25-50.DWG 4/21/2025 12:28 PM MATTHEW MYERS





KEYMAP
SCALE: 1" = 750'


S36
4" DIA. MH RIM 774.62
S35
4" DIA. MH RIM 779.84
S34
4" DIA. MH RIM 781.92
S3
4" DIA. MH RIM 775.53
EX01
4" DIA. EX MH RIM 769.04
EX. GRADE
PR. GRADE
℄ DELANEY DRIVE
12" STORM
30" STORM
X23
X24
X21
X29
PHASE 3 10' SANITARY STUB WITH WATERTIGHT BOOT FOR CONNECTION
10 L.F.-8" @ 0.50%
CONNECT TO PHASE 1 20' SANITARY STUB INV 756.72±
213 L.F.-8" @ 0.62%
C.G.M.
SEWER PIPE JOINTS SHALL BE NO CLOSER THAN 5' FROM THE END OF THE CASING PIPE
JACK AND BORE 40 LF 16" CASING FOR SANITARY SEWER INV= 750.70 NE INV=751.90 SW
LEAD STATION FROM D/S MH
LEAD LOT L135 STA.=1+23
LEAD LOT L129 STA.=0+63
LEAD LOT L134 STA.=0+54
LEAD LOT L133 STA.=1+20
LEAD LOT L130 STA.=0+97
LEAD LOT L132 STA.=0+85
LEAD LOT L131 STA.=2+28
LEAD LOT L98 STA.=1+59
LEAD LOT L99 STA.=1+43
LEAD LOT L97 STA.=1+04
LEAD LOT L100 STA.=0+76
LEAD LOT L96 STA.=0+26
PR 8" INV. 759.64 W
PR 8" INV. 759.54 E
PR 8" INV. 758.86 W
PR 8" INV. 758.76 NE
PR 8" INV. 758.04 SW
PR 8" INV. 758.04 SW
PR 8" INV. 757.94 N
AB 8" INV. 756.82 S
PR 8" INV. 756.78 S
PR 8" INV. 756.78 NW
EX 8" INV. 756.68 NE
EX 10" INV. 749.40 NE
EX. 8" INV. 749.49 SW
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782.6 781.30
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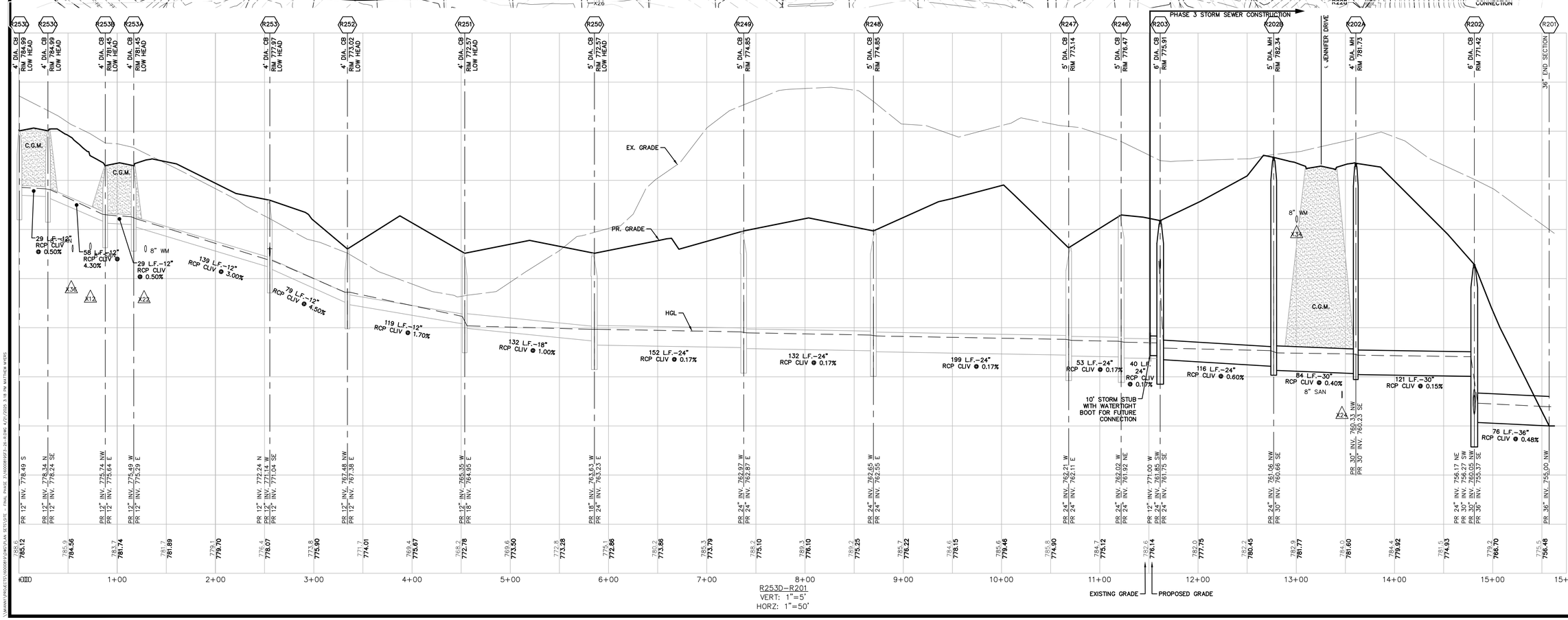
KEYMAP
SCALE: 1" = 750'

PHASE 3 STORM SEWER CONSTRUCTION



R253D–R201
VERT: 1"=5'
HORZ: 1"=50'

811
Know what's below.
Call before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
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SECTION 33
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SUPERIOR TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
SE MICHIGAN LAND HOLDING LLC
PROSPECT POINTE WEST
FINAL SITE PLAN – PHASE 3
STORM PLAN AND PROFILES

DATE
NOVEMBER 22, 2024

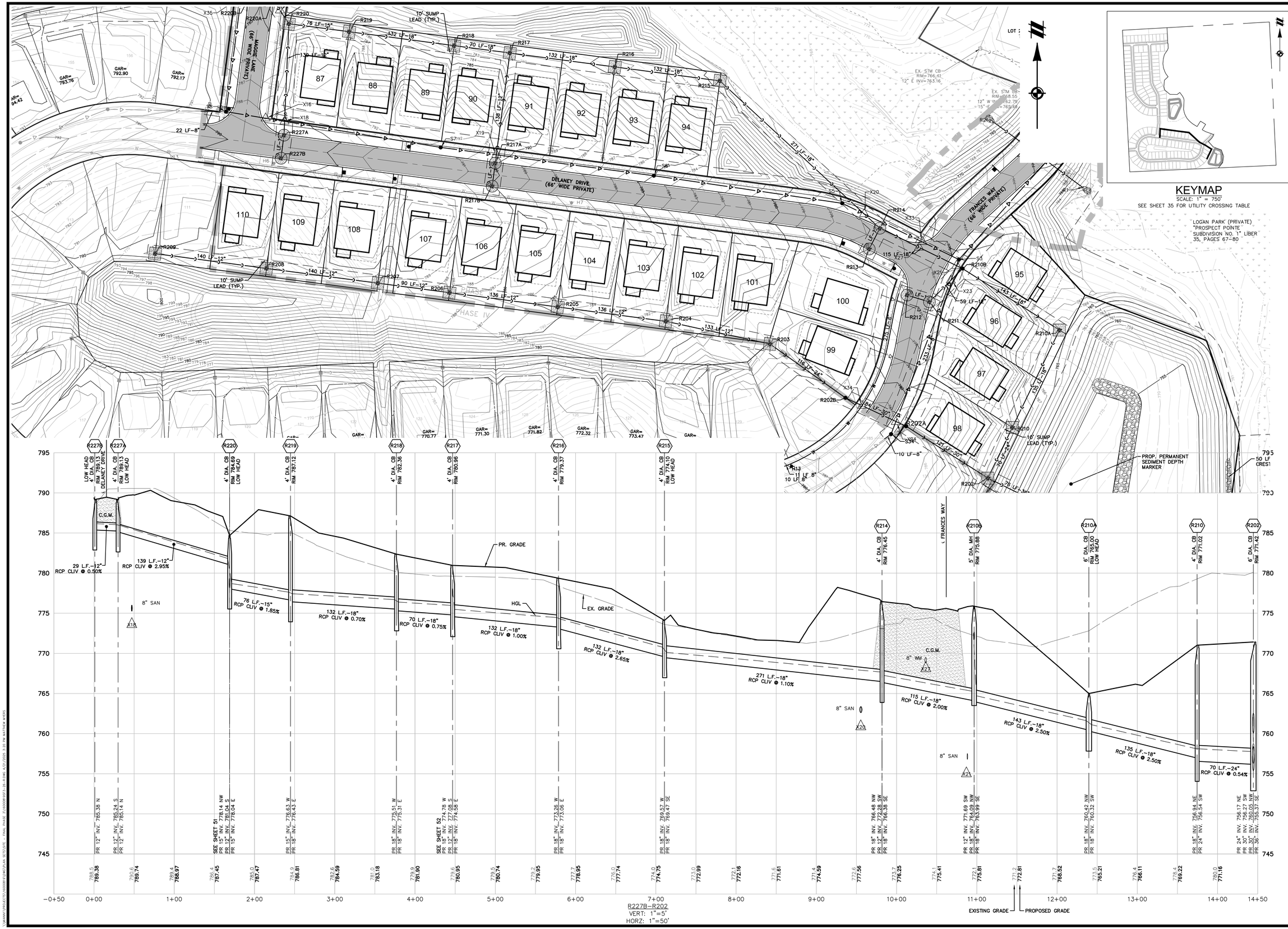
03-07-2025: PER TWP
04-21-2025: PER TWP

REVISIONS

SCALE: 1" = 50 FEET

DR. SK | CH. SS
P.M. MB
BOOK --
JOB 16000819
SHEET NO.
25

I:\ATWELL\PROJECTS\16000819\CAD\FSA SERVICES - FINAL PHASE 3\16000819F3-SHEETS.DWG 4/21/2025 8:18 AM MATTHEW.WEBB



KEYMAP
SCALE: 1" = 750'
SEE SHEET 35 FOR UTILITY CROSSING TABLE

R227B–R202
VERT: 1"=5'
HORZ: 1"=50'

811
Know what's below. Call before you dig.
THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

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FINAL SITE PLAN – PHASE 3
STORM PLAN AND PROFILES

DATE
NOVEMBER 22, 2024

03-07-2025: PER TWP
04-21-2025: PER TWP

REVISIONS

SCALE: 1" = 50 FEET

DR. SK	CH. SS
P.M. MB	
BOOK --	
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SHEET NO. 26	

I:\ATWELL\PROJECTS\16000819 SPECIAL\04 SPECS\SITE - FINAL PHASE 3\16000819 SP3 - FSP.DWG 4/21/2025 3:33 PM MATTHEW KOPEC

811 Know what's below. Call before you dig.

THE LOCATIONS OF EXISTING STRUCTURES AND UTILITIES AS SHOWN ON THESE PLANS ARE BASED ON FIELD SURVEY AND/OR RECORDS. THEY ONLY, AND ARE NOT BEING REPRESENTED AS BEING, THE EXACT OWNER OR ITS REPRESENTATIVE THE EXACT LOCATION OF ALL STRUCTURES AND UTILITIES BEFORE THE COMMENCEMENT OF ANY EXCAVATION OR CONSTRUCTION WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
IT IS THE CONTRACTOR'S SOLE RESPONSIBILITY TO NOTIFY THE OWNER'S REPRESENTATIVE PRIOR TO COMMENCEMENT OF ANY WORK IN THE VICINITY OF ANY ADJACENT PROPERTIES. ANY CONSTRUCTION OBSERVATION BY THE OWNER'S REPRESENTATIVE IS IN THE WORK, OF ANY ADJACENT PROPERTIES, SHALL IN NO WAY RELIEVE THE CONTRACTOR OF HIS RESPONSIBILITY FOR SAFETY OF PERSONS OR PROPERTY.

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SECTION 33
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STORM PLAN AND PROFILES
FINAL SITE PLAN – PHASE 3
PROSPECT POINTE WEST

CLIENT
SE MICHIGAN LAND HOLDING LLC

DATE
NOVEMBER 22, 2024

REVISIONS
01-07-2025: PER TWP
04-21-2025: PER TWP

SCALE: 1" = 50' FEET

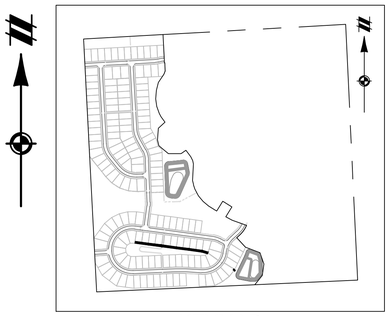
DR. SK | CH. SS
P.M. MB
BOOK --
JOB 16000819
SHEET NO. 27

KEYMAP
SCALE: 1" = 750'

SEE SHEET 35 FOR UTILITY CROSSING TABLE



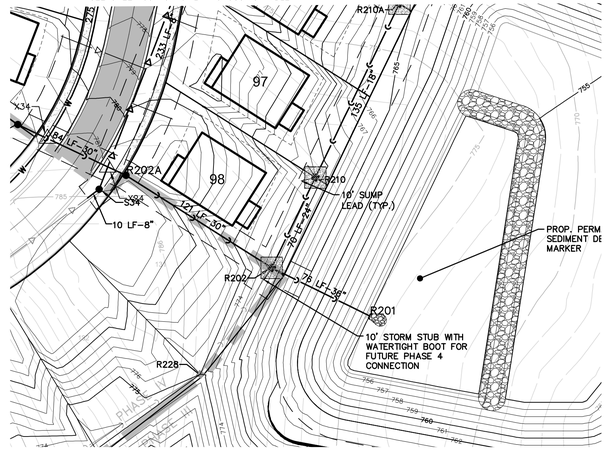


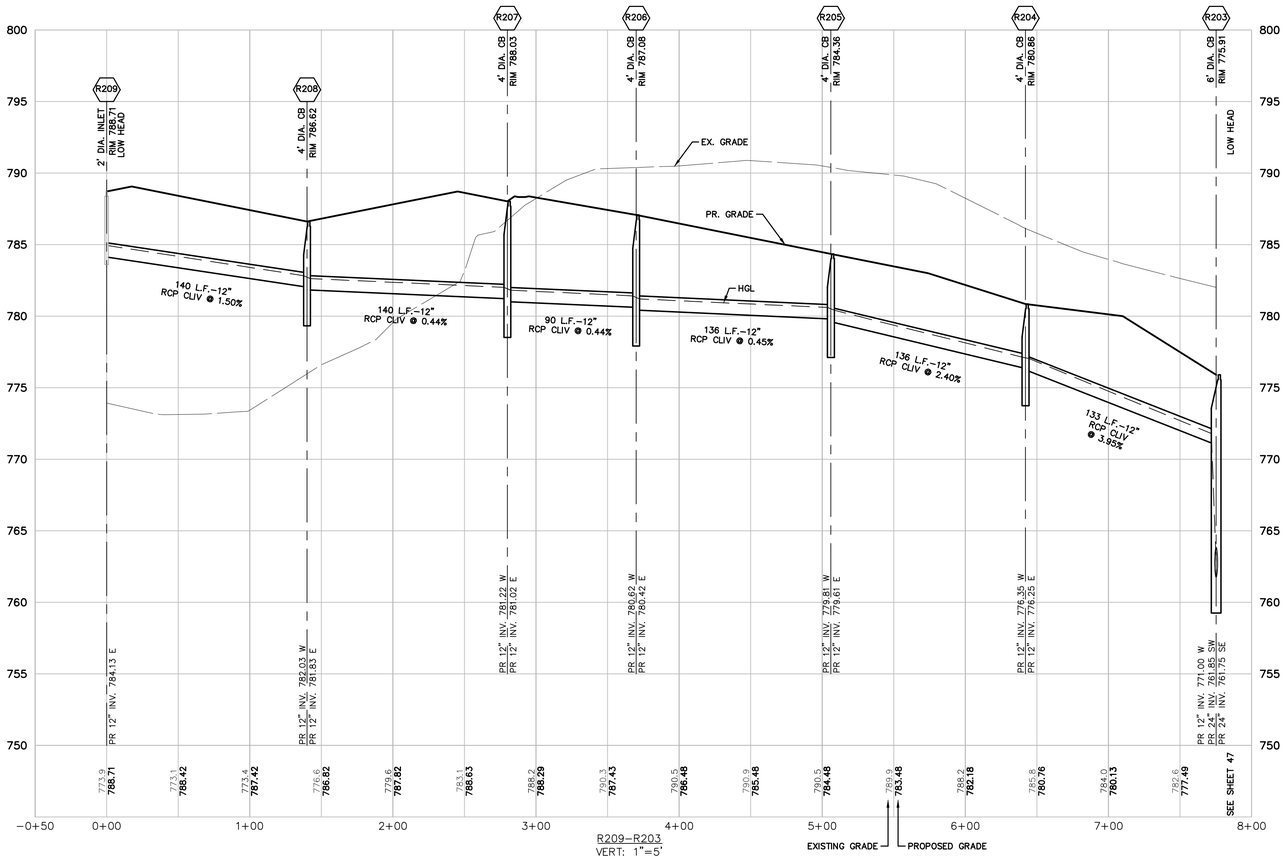


KEYMAP

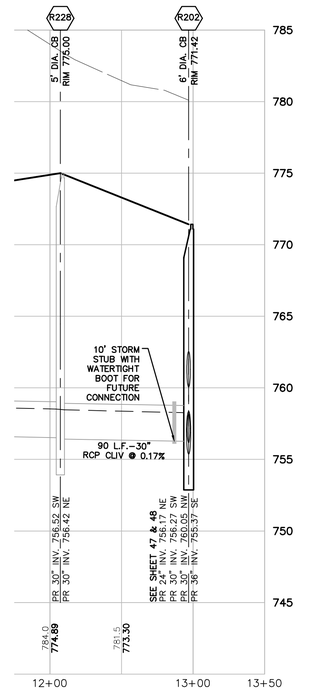
SCALE: 1" = 750'

SEE SHEET 35 FOR UTILITY CROSSING TABLE





R209–R203
VERT: 1"=5'
HORZ: 1"=50'



R235–R202
VERT: 1"=5'
HORZ: 1"=50'

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SECTION 33
TOWN 2 SOUTH, RANGE 7 EAST
SUPERIOR TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
SE MICHIGAN LAND HOLDING LLC

PROSPECT POINTE WEST
FINAL SITE PLAN – PHASE 3
STORM PLAN AND PROFILES

DATE
NOVEMBER 22, 2024

03-07-2025: PER TWP
04-21-2025: PER TWP

REVISIONS

SCALE: 1" = 50 FEET

DR. SK	CH. SS
P.M. MB	
BOOK --	
JOB 16000819	
SHEET NO. 28	

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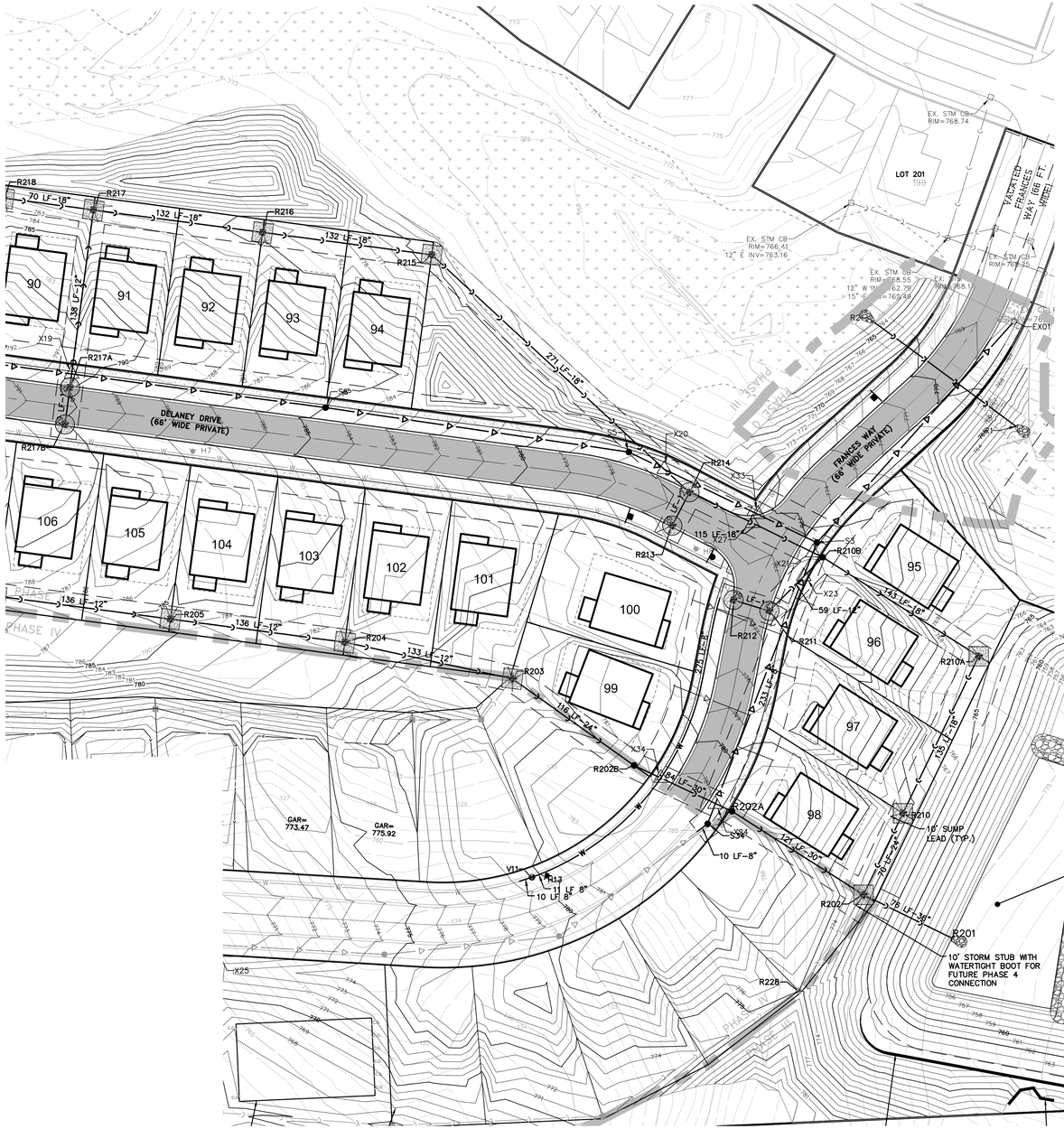
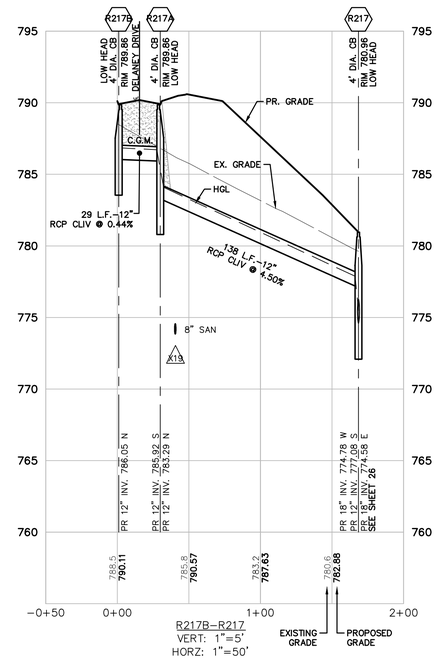
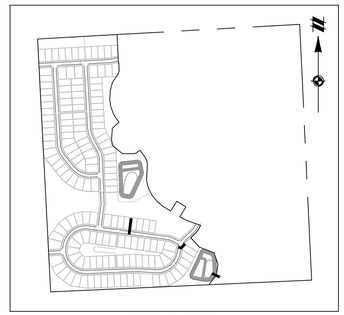


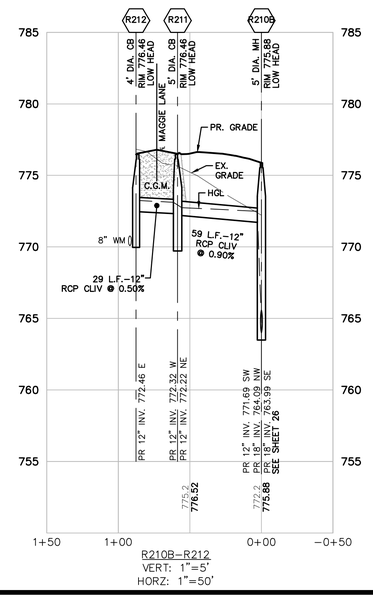


R217B–R217
VERT: 1"=5'
HORZ: 1"=50'

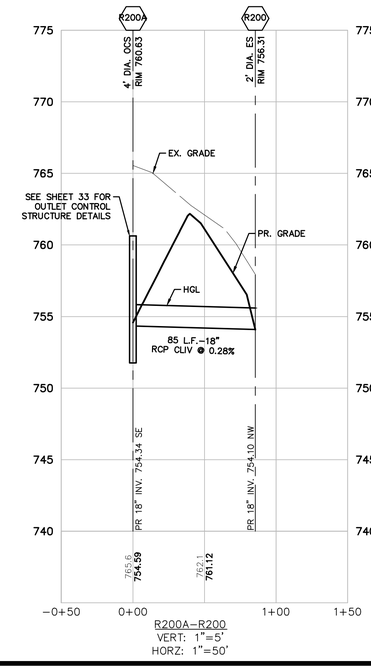


KEYMAP
SCALE: 1" = 750'

SEE SHEET 35 FOR UTILITY CROSSING TABLE



R210B–R212
VERT: 1"=5'
HORZ: 1"=50'



R200A–R200
VERT: 1"=5'
HORZ: 1"=50'

811
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PROSPECT POINTE WEST
FINAL SITE PLAN – PHASE 3
STORM PLAN AND PROFILES

DATE
NOVEMBER 22, 2024

03-07-2025: PER TWP
04-21-2025: PER TWP

REVISIONS

SCALE: 1" = 50 FEET

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P.M.	MB
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JOB	16000819
SHEET NO.	29

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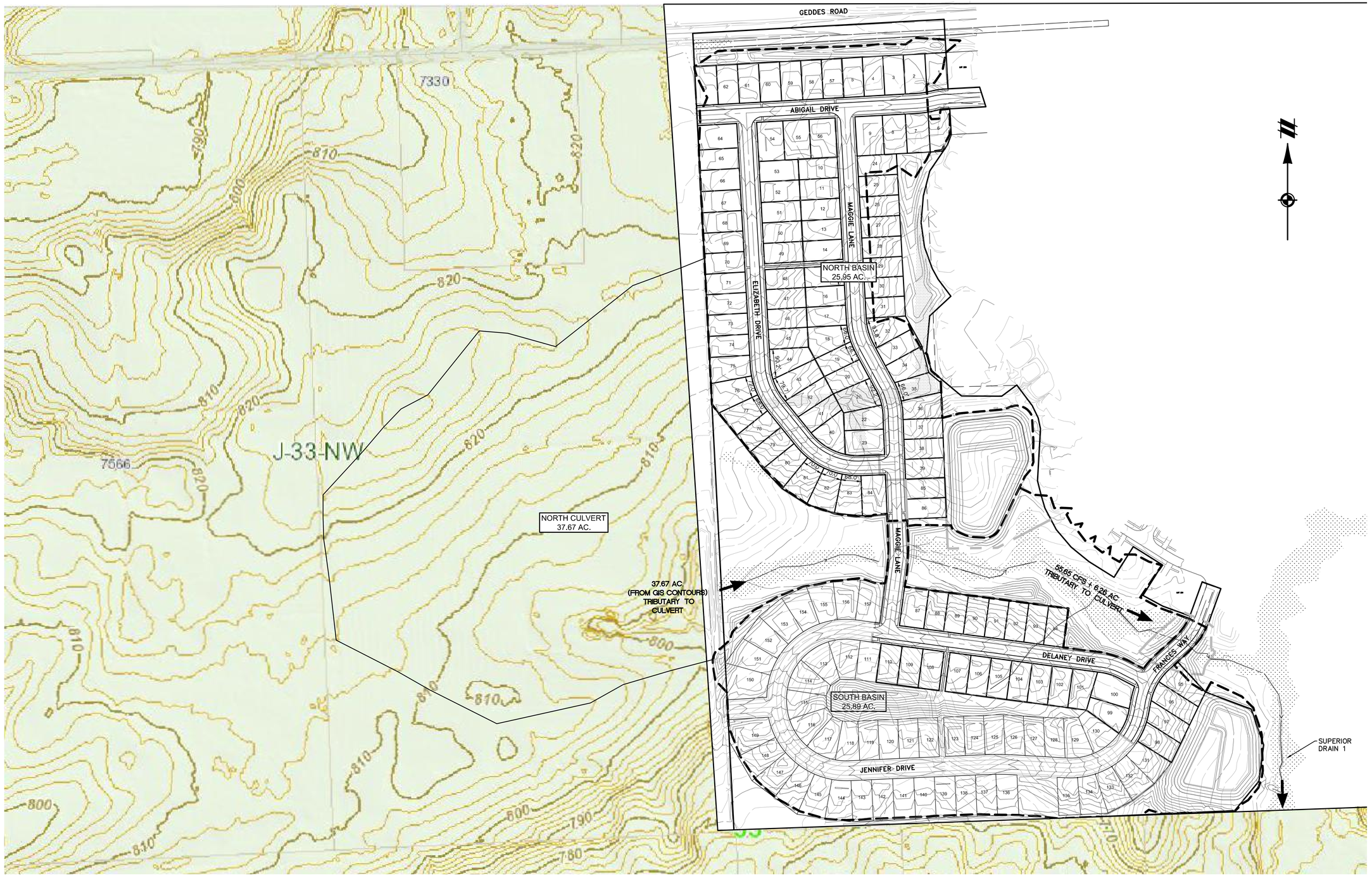

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FINAL SITE PLAN – PHASE 3
OVERALL DRAINAGE AREA PLAN

DATE
NOVEMBER 22, 2024

03-07-2025: PER TWP
04-21-2025: PER TWP

REVISIONS

0 75 150
SCALE: 1" = 150 FEET

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JOB 16000819	
SHEET NO. 30	



LEGEND

- PROPOSED 1' CONTOUR
- PROPOSED 5' CONTOUR
- EXISTING 1' CONTOUR
- EXISTING 5' CONTOUR
- PROPERTY LINE
- GRADING LIMITS
- EXISTING MANHOLE / CATCH BASIN
- PROPOSED MANHOLE / CATCH BASIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
- PROPOSED GATE VALVE & WELL
- EXISTING WATER MAIN MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER MANHOLE
- EXISTING WETLAND
- PROPOSED ASPHALT
- PROPOSED CONCRETE

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FINAL SITE PLAN – PHASE 3
DRAINAGE AREA PLAN

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REVISIONS

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SCALE: 1" = 50 FEET

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LEGEND

- PROPOSED 1' CONTOUR
- PROPOSED 5' CONTOUR
- EXISTING 1' CONTOUR
- EXISTING 5' CONTOUR
- PROPERTY LINE
- GRADING LIMITS
- EXISTING MANHOLE / CATCH BASIN
- PROPOSED MANHOLE / CATCH BASIN
- EXISTING HYDRANT
- PROPOSED HYDRANT
- EXISTING GATE VALVE & WELL
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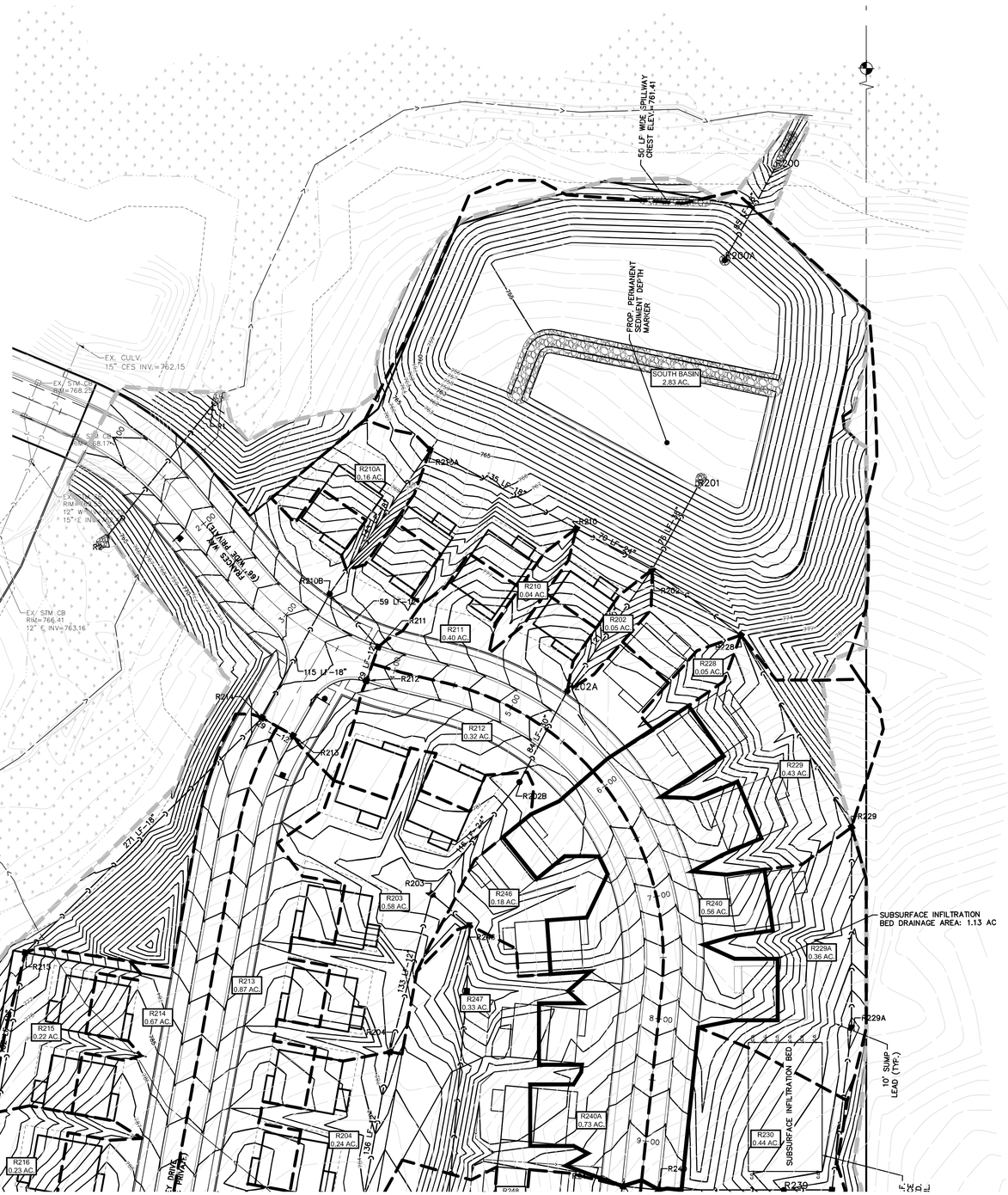
- EXISTING WATER MAIN MANHOLE
- PROPOSED SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER MANHOLE
- EXISTING WETLAND
- PROPOSED ASPHALT
- PROPOSED CONCRETE



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Project:	Prospect Point WEST	Date:	3/18/2022
Location:	Pittsfield Township, Washtenaw County		
Description:	South Detention Basin		

W1 Determining Post-Development Cover Types, Areas, Curve Numbers and runoff coefficients

Total Contributing Drainage Area = 25.89 Acres

Rational Method Variables

Cover Type	Soil Type	Area (sf)	Area (ac)	Runoff Coef	(c)(Area)
Paved Parking Lots, roofs, driveways	-	332,419	7.63	0.95	315,798
Water Surfaces	-	50,000	1.15	1.00	50,000
Developed Open Space, Good Condition	B	723,054	16.60	0.30	216,916
Developed Open Space, Good Condition	D	22,288	0.51	0.45	10,030
				Total - Sum (c)(Area) =	592,744
				Area Total (sf)=	1,127,762
				Weighted C-Sum(c)(Area)/Sum(ac) or Sum(sf)=	**0.53**

NRCS Variables

Pervious Cover Type	Soil Type	Area (sf)	Area (ac)	Curve Number	(CN)(Area)
Developed Open Space, Good Condition	B	723,054	16.60	61	44,106,307
Developed Open Space, Good Condition	D	22,288	0.51	80	1,783,080
	Total - Sum (CN)(Area) =				45,889,387
	Area Total - Sum(ac) of Sum(sf)=				745,343
	Weighted CN-Sum(CN)(Area)/Sum(ac) or Sum(sf)=				**62**

NRCS Variables

Impervious Cover Type	Soil Type	Area (sf)	Area (ac)	Curve Number	(CN)(Area)
Paved Parking Lots, roofs, driveways	-	332,419	7.63	98	32,577,042
Impervious, Ponds	-	50,000	1.15	98	4,900,000
	Total - Sum (CN)(Area) =				37,477,042
	Area Total - Sum(ac) of Sum(sf)=				382,419
	Weighted CN-Sum(CN)(Area)/Sum(ac) or Sum(sf)=				**98**

W2 First Flush Runoff Calculations (Vff)

A.	Vff = (1") (1/12) (43560/1) (C) AC =		**49,809**	cf

W3 Predevelopment Bankfull Runoff Calculations (Vbf-pre)

A.	2 year/24 hour storm event	P =	2.35	in
B.	Pervious Cover CN *(good condition woods or meadow)*	CN =	59	
C.	S = (1000/CN)-10	S =	6.95	in
D.	Q = (P-0.2S)^2/(P+0.8S)	Q =	0.12	in
E.	Pervious Cover Area	Area =	1,127,762	sf
F.	V_{bf-pre} = Q(1/12)Area	V_{bf-pre} =	**10,955**	cf

W4 Pervious Cover Post-development Bankfull Runoff Calculations (Vbf-per-post)

A.	2 year/24 hour storm event	P =	2.35	in
B.	Pervious Cover CN	CN =	62	
C.	S = (1000/CN)-10	S =	6.24	in
D.	Q = (P-0.2S)^2/(P+0.8S)	Q =	0.17	in
E.	Pervious Cover Area	Area =	745,343	sf
F.	$V_{bf-per-post}$ = Q(1/12)Area	$V_{bf-per-post}$ =	**10,265**	cf

W5 Impervious Cover Post-development Bankfull Runoff Calculations (Vbf-imp-post)

A.	2 year/24 hour storm event	P =	2.35	in
B.	Impervious Cover CN	CN =	98	
C.	S = (1000/CN)-10	S =	0.20	in
D.	Q = (P-0.2S)^2/(P+0.8S)	Q =	2.12	in
E.	Pervious Cover Area	Area =	382,419	sf
F.	$V_{bf-imp-post}$ = Q(1/12)Area	$V_{bf-imp-post}$ =	**67,614**	cf

W6 Pervious Cover Post-development 100-year Storm Runoff Calculations (V100-per-post)

A.	100 year storm event	P =	5.11	in
B.	Pervious Cover CN	CN =	62	
C.	S = (1000/CN)-10	S =	6.24	in
D.	Q = (P-0.2S)^2/(P+0.8S)	Q =	1.48	in
E.	Pervious Cover Area	Area =	745,343	sf
F.	$V_{100-imp-post}$ = Q(1/12)Area	$V_{100-imp-post}$ =	**91,677**	cf

W7 Impervious Cover Post-development 100-year Storm Runoff Calculations (V100-imp-post)

A.	100 year storm event	P =	5.11	in
B.	Pervious Cover CN	CN =	98	
C.	S = (1000/CN)-10	S =	0.20	in
D.	Q = (P-0.2S)^2/(P+0.8S)	Q =	4.87	in
E.	Pervious Cover Area	Area =	382,419	sf
F.	$V_{100-imp-post}$ = Q(1/12)Area	$V_{100-imp-post}$ =	**155,294**	cf

W8 Determine Time of Concentration (Tc-hrs)

User specified; assume 22 minutes from storm sewer calcualtions - use 20 min

Total Time of Concentration (hrs) = 0.33

W9 Runoff Summary & Onsite Infiltration Requirement

A. Runoff Summary from Previous Worksheets

V_{ff} =	**49,809**	**cf***			
V_{bf-pre} =	10,955	cf			
$V_{bf-per-post}$ =	10,265	cf	**Total BF Volume ($V_{bf-post}$)**		
$V_{bf-imp-post}$ =	67,614	cf		**77,879**	cf
$V_{100-per-post}$ =	91,677	cf	**Total 100-year Volume (V_{100})**		
$V_{100-imp-post}$ =	155,294	cf		**246,971**	cf

B. Determine Onsite Infiltration Requirement

$V_{bf-post}$ =	77,879	cf
V_{bf-pre} =	10,955	cf
Bankfull Volume Difference =	**66,925**	**cf***

Onsite Infiltration Requirement (V_{inf}) = Bankfull Difference= **66,925** cf

W10 Detention / Retention Requirement

A.	Q_p = 238.6 (T_c) ^ -0.82	587.37	cfs/in-mi^2
B.	Total Site Area	25.89	ac
C.	$Q_{100} = Q_{100-per} + Q_{100-imp}$	6.35	in
D.	Peak Flow (PF) = (Q_p*Q_{100}*A)/640	150.857	cfs
E.	Delta = PF - 0.15A	146.973	cfs
F.	V_{det} = (Delta/PF) x V_{100} - V_{inf}*	**240,613**	cf

* V_{inf} refers to total infiltration provided per worksheet W11

W11 Determine Applicable BMPs and Associated Volume Credits

Proposed BMP	Area (ft²)	Storage Depth (ft)	Storage Volume (ft³)	Ave. Design Infil. Rate (in/hr)*	Infil. During Storm (ft³)	Total Volume Reduction (ft³)
Underground Infiltration Bed	6,300	0.60	1,134	3.78	11,907	13,041

Total Volume Reduction Credit by Proposed Structural BMPs (Vinf) = **13,041** cf

* A void volume of 0.30 was assumed when calculating storage volume

* Per Geotecnical investigation, includes a factor of safety of 2.

Proposed BMP	Ave. Design Infil. Rate (ft/hr)*	Volume Rate (cf/hr)	Estimated Drawdown Time (hrs)
Infiltration Basin	0.3150	1,985	0.57

W12 Infiltration / Detention Summary

Total Infiltration Required per WCWRC Rules:	66,925	cf
Total Infiltration Provided:	13,041	cf
Difference:	(53,884)	cf
% Deficiency:	80.5%	
Pro-Rated 20% Detention Penalty:	**16.1%**	
Detention Required:	227,572	cf
Detention Required w/ Pro-Rated Penalty:	264,217	cf
Total Detention Volume Required:	**264,217**	cf
Adjusted First Flush Volume: $V_{ff} - V_{inf}$ =	**36,768**	cf

Basin Stage-Storage Summary:

Elev.	Area	Avg. Area	Depth	Forebay Volume	Basin Volume	Cumulative Volume
762.0	68,375	65,925	1.0	0	65,925	352,313
761.0	63,475	60,613	1.0	0	60,613	286,388
760.0	57,750	55,950	1.0	0	55,950	225,775
759.0	54,150	51,950	1.0	0	51,950	169,825
758.0	49,750	38,475	1.0	0	38,475	117,875
757.0	27,200	25,450	1.0	16,488	25,450	79,400
756.0	23,700	22,038	1.0	7,175	22,038	37,463
755.0	20,375	16,500	0.5	0	8,250	8,250
754.5	12,625	6,313	0.0	0	0	Outlet Elevation

Total Detention Provided:	**286,388**	cf
Vff Elev.=	**755.98**	
Vbf Elev.=	**756.96**	
V100 Elev.=	**760.63**	
Freeboard =	**1.37**	

Forebay Sizing

Required Volume (Vfb)=0.05*V100 **12,349** cf

Forebay Stage-Storage Summary:

Elev.	Area	Avg. Area	Depth	Volume	Cumulative Volume
757.0	17,775	16,488	1.0	16,488	23,663
756.0	15,200	14,350	0.5	7,175	7,175
755.5	13,500				

Vfb Elev.= **756.31**

Outlet Control Structure Sizing

1. Standpipe outlet holes sizing - "first flush" runoff

First Flush discharge should be detained for 24 hours

Qff = (Vff-Vinf) / 24 hrs / 3600 sec	Qff=	0.426	cfs		
hff(ave) = 2/3 x (Xff - Xo)	hff(ave) =	0.984	ft		
Aff(required) = Qff / 0.62 x sqrt(2*32.2*h)	A(required) =	0.086	sf		
Selected Orifice Diameter =		**1.5**	in		
Area of each orifice =		0.012	sf		
Number of orifice holes required =		**7**	**holes at elev.**	**754.50**	

Check First Flush discharge release time

Aff(actual) =	0.0859	ft²	
Qff = A x 0.62 x sqrt(2*32.2*h) =	0.4240	cfs	
Tff = Vff / (Qff x 3600)	32.6	hrs	O.K.

2. Standpipe outlet holes sizing - "Bankfull flood" discharge

Bankfull should discharge within 36 to 48 hours

Check release from first flush holes only

hbf(ave) = 2/3 x (Xbf - Xo)	hbf(ave) =	1.642	ft	
Qbf = 0.62 x Aff x sqrt(2*32.2*h) =	Qbf =	0.548	cfs	
Tbf = Vbf / (Qbf x 3600) =	Tbf =	39.5	hrs	O.K.

3. Standpipe outlet holes sizing - "100-yr flood" discharge

Q100 = Qa	Q100 =	3.883	cfs	
Release from above holes				
hff = (X100-Xo)	hff =	6.134	ft	
hbf = (X100-Xff)	hbf =	4.658	ft	
Q = A x 0.62 x sqrt(64.4*hff) + A x 0.62 x sqrt(64.4*hbf) =		1.059	cfs	
Remaining flow =	Q100-Q=	2.825	cfs	
A = Q100 /(.62 x sqrt(2*32.2*h))	A(required) =	0.263	sf	
Selected Orifice Diameter =		**2.75**	in	
Area of each orifice =		0.0412	sf	
Number of orifice holes required =	=	**3**	**holes at elev.**	**756.96**

Check that the actual flow rate does not exceed the allowable flow rate

Qff=.62 x #ff holes x A x sqrt(2 x 32.2 x (X100-Xbot))	=	1.059	cfs	
Qbf=.62 x #bf holes x A x sqrt(2 x 32.2 x (X100-Xff))	=	0.000	cfs	
Qmax=Qff+Qbf+(.62 x #100 holes x A x sqrt(2 x 32.2 x (X100-Xbf))		2.387	cfs	O.K.

Check "100-yr discharge" holes discharge release time

hall(ave) = 2/3 x (X100 - Xbf) + (Xbf - Xo) =	hall(ave) =	4.91	ft	
Qall = .62 x #ff holes x A x sqrt(2 x 32.2 x h) =	Qall =	0.947	cfs	
hbf(ave) = 2/3 x (X100 - Xbf) +(Xbf - Xff) =	hbf(ave) =	3.43	ft	
Qbf+100 = A x 0.62 x #bf holes x sqrt(2 x 32.2 x h) =	Qbf+100 =	0.000	cfs	
h100(ave) = 2/3 x (X100 - Xbf) =	h100(ave) =	2.45	ft	
Q100 = A x 0.62 x #100 holes x sqrt(2 x 32.2 x h) =	Q100(ave) =	0.963	cfs	
Vrem = V100-Vbf =	Vrem =	186,338	cf	
T100 = Tbf + ((Vrem)/(Qboth+Q100ave)) =	T100 =	66.6	hrs	O.K.

4. Riser Outlet Pipe Design

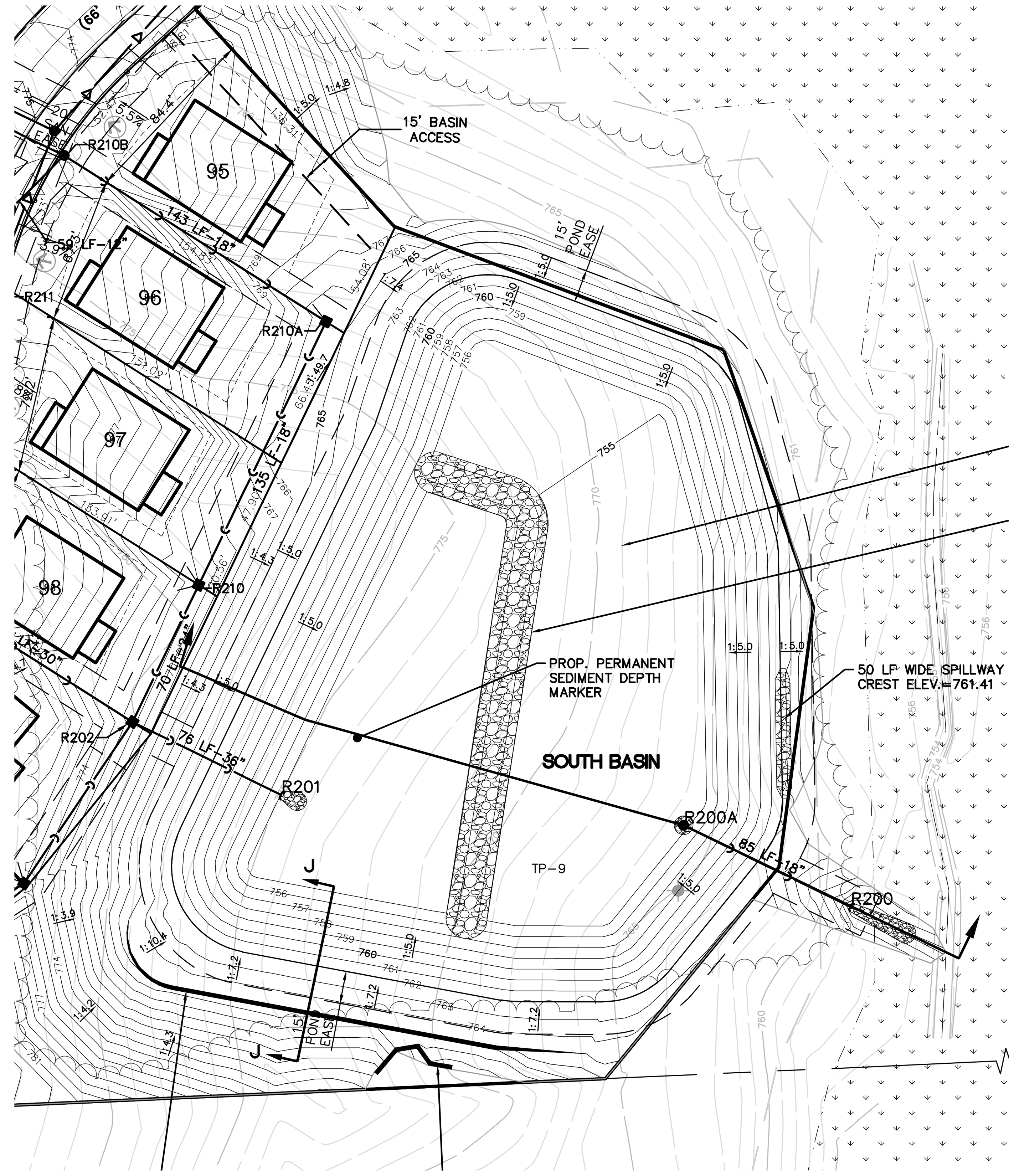
Outlet pipe designed to handle the 100-year restricted flow

100-year restricted flow =	Q =	3.88	cfs
Choose outflow pipe diameter =	d =	**18**	in
Choose outflow pipe slope =	S =	**0.18**	%
Assume roughness factor	n =	0.013	
Flow velocity at 100-yr restricted flow (Mannings) =	V =	2.52	fps
Design Pipe Capacity =	=	4.46	cfs

Basin Overflow Weir

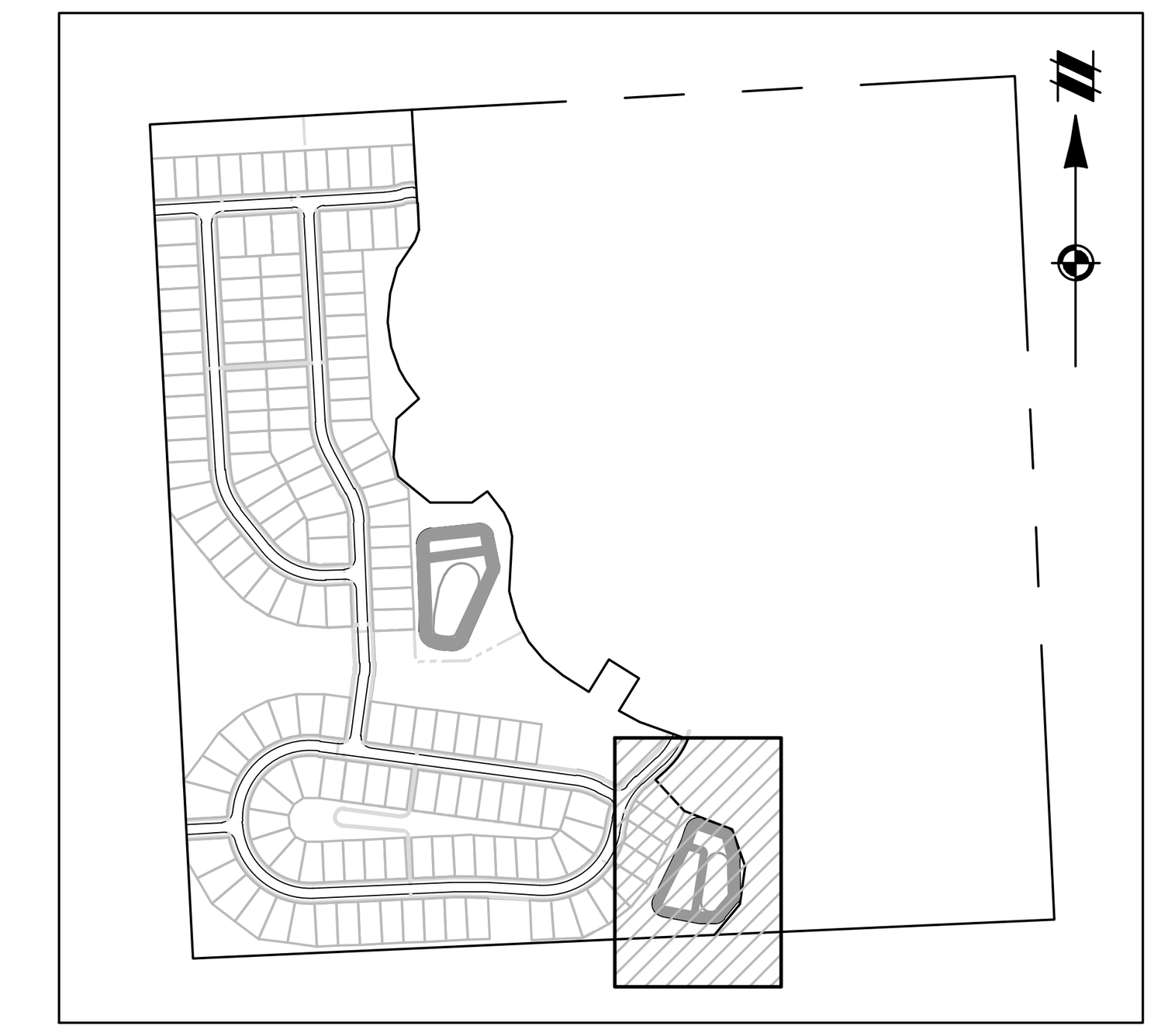
Drainage Area, A =	25.89	ac	
C-Factor (C) =	0.53		
Time of Conc. (T) =	25.5	min	
Intensity (I)	5.45	in/hr	I = 275/(T+25)
Design Flow (Q) =	74.72	cfs	C x I x A
Weir Coef (C)=	3.33		
Invert of Weir =	**761.13**		
Height of Weir (H) =	0.9		
Min. Width of Weir (B) =	**27.9**	ft	
L=Q/(C x H^(3/2))			

SOUTH BASIN



BOTTOM TO BE SLOPED TO THE OUTLET AT 1%

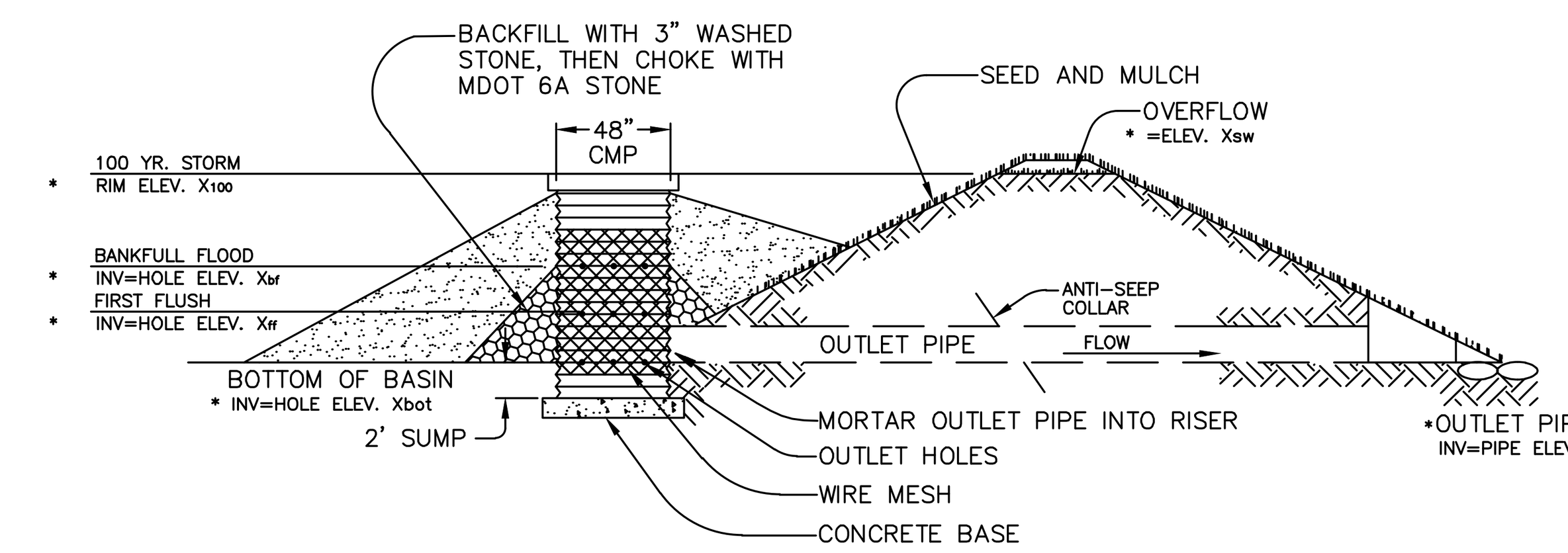
STONE FORBAY BERM TO ENSURE FORBAY DRAINS DRY (130± CY OF STONE)



KEYMAP

SCALE: 1" = 750'

PROFILE VIEW

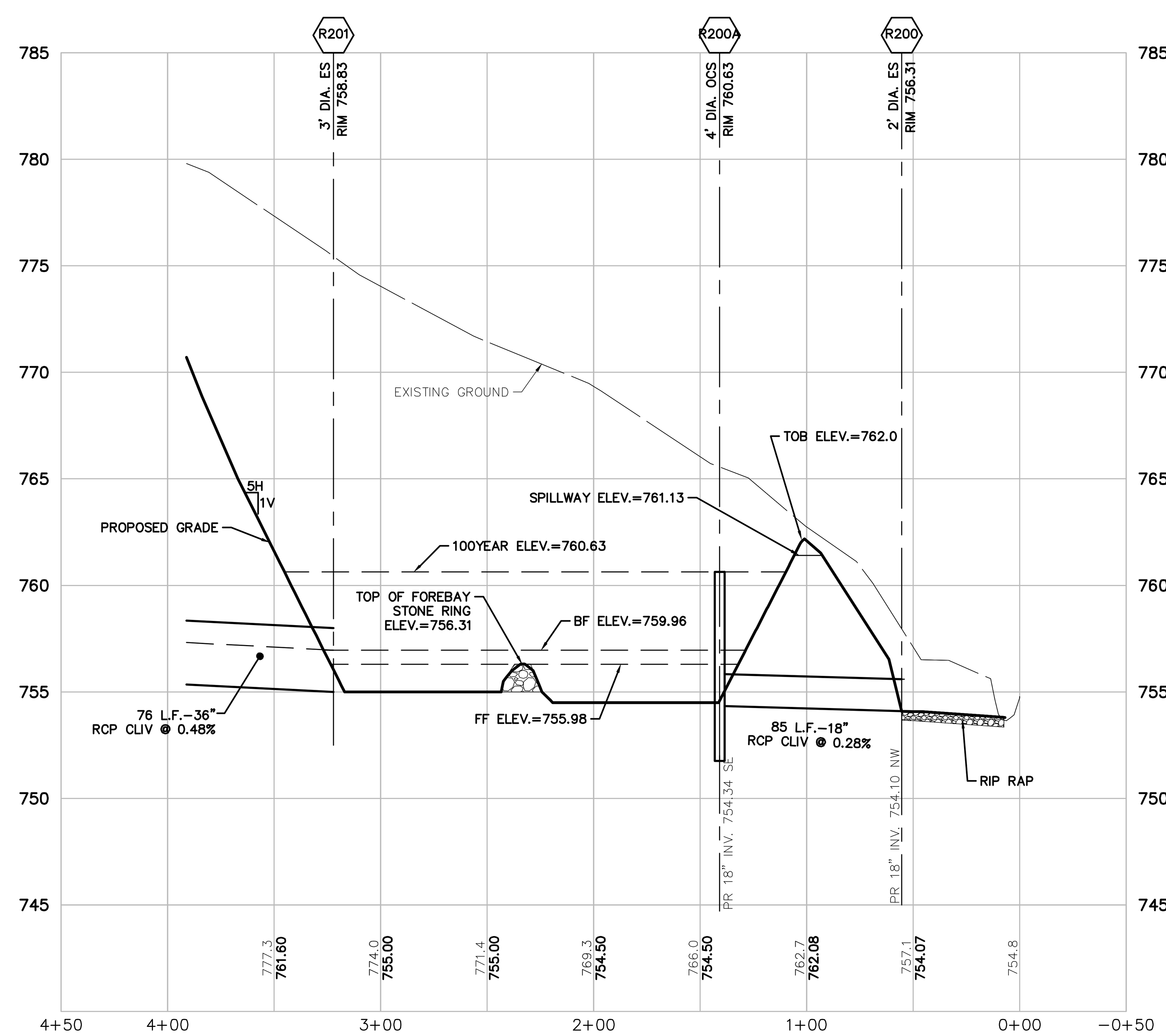


* SEE OUTLET STRUCTURE TABLE BELOW FOR NUMBER AND SIZE OF HOLES.

POND OUTLET RISER DETAIL

NO SCALE

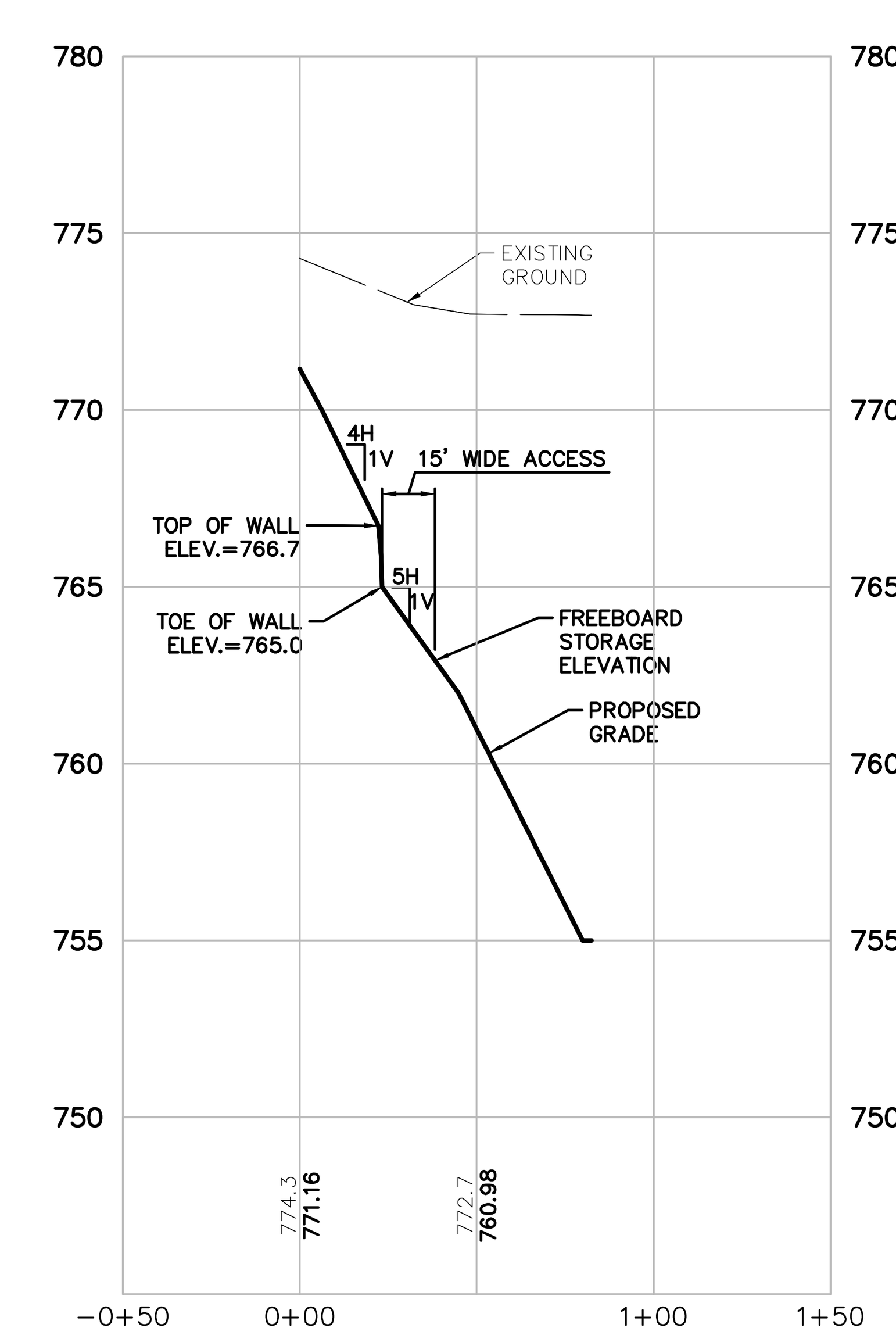
	OUTLET INVERT (Xout)	INVERT AT RISER	DESIGN FLOOD WSE (X100)	FIRST FLUSH DISCHARGE INV./ORIFICE SIZE (Xbot)			BANK FULL DISCHARGE INV./ORIFICE SIZE (Xff)			DESIGN FLOOD DISCHARGE INV./ORIFICE SIZE (Xbf)			TOP OF STAND PIPE ELEVATION (X100)	POND CREST ELEVATION	MIN EMERGENCY SPILLWAY ELEVATION (Xsw)
				INV.	ORIFICE DIA.	# OF HOLES	INV.	ORIFICE DIA.	# OF HOLES	INV.	ORIFICE DIA.	# OF HOLES			
SOUTH	754.1	754.34	760.63	754.50	1.50	7	N/A	N/A	N/A	756.96	2.75	3	760.63	762	761.13



SOUTH POND SECTION

VERT: 1"=5'

HORZ: 1"=50'



SECTION J-J

VERT: 1"=5'

HORZ: 1"=50'

Know what's **below.** **Call** before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:

CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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734.994.4000

SECTION 33
TOWN 2 SOUTH, RANGE 7 EAST
SUPERIOR TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
SE MICHIGAN LAND HOLDING LLC
PROSPECT POINTE WEST
FINAL SITE PLAN - PHASE 3
SOUTH DETENTION BASIN DESIGN

DATE
NOVEMBER 22, 2024

03-07-2025: PER TWP
04-21-2025: PER TWP

REVISIONS

0 25 50
SCALE: 1" = 50 FEET

DR.	SK	CH.	SS
P.M.	MB		
BOOK	--		
JOB	16000819		
SHEET NO.	33		

\\MIANN1\PROJECTS\16000819\DWG\PLAN SETS\SITE - FINAL PHASE 3\16000819SF3-17-POND.DWG 4/21/2025 12:56 PM MATTHEW MYERS

	FROM STRUCT	TO STRUCT	A TRIB AREA (AC)	C RUNOFF COEFF	AxC EQUIV AREA	CA DESIGN SUM AxC	T TIME CONC. (MIN)	I INTEN-SITY (IN/HR)	Q FLOW CAxI (CFS)	Qc PIPE CAPAC. (CFS) * see above	D PIPE DIAM. (IN)	L PIPE LENGTH (FT)	S PIPE SLOPE (%)	HGq MIN HG for Q (%)	HGv MIN HG for Vmin (%)	HG HGL SLOPE (%)	VI VEL. FULL (FPS)	TI TIME OF FLOW (MIN)	H.G.L. ELEV. UPPER END	H.G.L. ELEV. LOWER END	RIM/GROUND ELEV. UPPER END	RIM/GROUND ELEV. LOWER END	INVERT ELEV. UPPER END	INVERT ELEV. LOWER END
	INPUT																								
	R119	R118	0.27	0.44	0.12	0.12	20.0	3.89	0.47	3.09	12	70	0.75	0.02	0.44	0.44	3.9	0.3	812.71	812.40	814.96	814.93	812.13	811.60
	R118	R117	0.48	0.50	0.24	0.36	20.3	3.86	1.39	2.36	12	140	0.44	0.15	0.44	0.44	3.0	0.8	812.24	811.63	814.93	817.23	811.40	810.79
	R117	R115A	0.41	0.47	0.19	0.68	21.1	3.80	2.58	2.64	12	147	0.55	0.52	0.44	0.44	0.52	3.4	0.7	811.63	810.86	817.23	820.35	810.69	809.88
	R115A	R115	0.37	0.76	0.28	0.96	21.8	3.74	3.59	7.56	12	50	4.50	1.02	0.44	0.44	1.02	6.6	0.1	810.86	810.56	820.35	820.35	809.68	808.38
	R115	R114	0.30	0.75	0.23	1.19	21.9	3.73	4.44	4.48	15	144	0.48	0.47	0.32	0.47	3.6	0.7	810.56	809.88	820.35	816.80	808.18	807.48
	R114	R113	0.12	0.56	0.06	2.49	22.6	3.68	9.15	10.50	18	45	1.00	0.76	0.32	0.59	5.9	0.1	809.88	809.54	816.80	815.90	806.65	806.20
	R113	R112	0.40	0.53	0.21	4.64	22.7	3.67	17.02	17.02 *	18	141	2.01	2.63	0.25	2.63	8.4	0.3	809.54	805.84	815.90	815.92	806.10	803.27
	R112	R111	0.49	0.55	0.27	4.91	23.0	3.65	17.90	17.90 *	18	136	2.26	2.90	0.25	2.90	8.9	0.3	805.84	801.89	815.92	815.06	803.07	800.00
	R111	R110	0.28	0.52	0.15	5.06	23.3	3.62	18.33	18.33 *	18	87	2.39	3.05	0.25	3.05	9.2	0.2	801.89	799.24	815.06	813.55	799.80	797.71
	R110	R109	0.35	0.54	0.19	5.72	23.5	3.61	20.64	20.64 *	24	132	0.67	0.83	0.17	0.83	5.9	0.4	799.24	798.14	813.55	809.84	797.31	796.43
	R109	R108	0.48	0.55	0.27	6.20	23.8	3.58	21.44	21.44 *	24	132	0.73	0.90	0.17	0.90	6.2	0.4	798.14	796.96	809.84	807.21	796.23	795.27
	R108	R107	0.43	0.52	0.22	6.21	24.3	3.55	22.04	22.04 *	24	110	0.78	0.95	0.17	0.95	6.4	0.3	796.96	795.91	807.21	802.00	795.17	794.31
	R107	R106	0.56	0.52	0.29	6.50	24.6	3.53	22.93	30.35	24	137	1.80	1.03	0.17	1.03	9.7	0.2	794.66	793.25	802.00	796.73	794.11	791.65
	R106	R105	0.59	0.51	0.30	6.80	24.8	3.51	23.90	29.50	24	123	1.70	1.12	0.17	1.12	9.4	0.2	792.43	791.06	796.73	795.15	791.55	789.46
	R105	R104	0.33	0.57	0.19	6.99	25.0	3.50	24.47	30.35	24	116	1.80	1.17	0.17	1.17	9.7	0.2	790.22	788.86	795.15	792.18	789.36	787.26
	R150	R102B	0.92	0.73	0.67	8.52	25.2	3.49	29.70	30.35	24	76	1.80	1.72	0.17	1.72	9.7	0.1	788.70	787.39	792.18	796.34	787.16	785.79
	R102B	R102A	1.08	0.74	0.80	9.32	25.3	3.48	32.43	46.77	30	29	1.30	0.62	0.13	0.62	9.5	0.1	787.20	787.01	796.34	796.34	785.39	785.01
	R102A	R102	1.09	0.74	0.81	10.13	25.4	3.47	35.17	46.77	30	147	1.30	0.74	0.13	0.74	9.5	0.3	784.59	783.51	796.34	787.00	783.41	781.51
	R102	R101	0.38	0.54	0.21	13.94	25.7	3.45	48.12	48.12 *	36	58	0.50	0.52	0.10	0.52	6.7	0.1	780.14	779.84	787.00	781.85	778.31	778.02
	R120	R117	0.30	0.43	0.13	0.13	20.0	3.89	0.51	4.36	12	138	1.50	0.02	0.44	0.44	5.6	0.4	815.76	813.69	819.29	817.23	814.96	812.89
	R129	R128	0.33	0.50	0.17	0.17	20.0	3.89	0.66	2.36	12	136	0.44	0.03	0.44	0.44	3.0	0.8	817.93	817.34	820.54	820.95	816.43	815.83
	R128	R127	0.16	0.50	0.08	0.25	20.8	3.82	0.96	2.36	12	72	0.44	0.07	0.44	0.44	3.0	0.4	817.34	817.02	820.95	820.31	815.73	815.42
	R127	R125A	0.39	0.47	0.18	0.43	21.2	3.79	1.63	2.36	12	144	0.44	0.21	0.44	0.44	3.0	0.8	817.02	816.39	820.31	820.60	815.32	814.68
	R125A	R125	0.65	0.71	0.46	0.89	22.0	3.72	3.31	3.31 *	12	29	0.44	0.87	0.44	0.87	3.0	0.2	816.39	816.14	820.60	820.63	814.58	814.46
	R125	R124	0.53	0.71	0.38	1.27	22.2	3.71	4.71	5.27	12	145	2.19	1.75	0.44	1.75	6.7	0.4	816.14	813.61	820.63	814.81	814.36	811.19
	R124	R123	0.49	0.30	0.15	1.42	22.6	3.68	5.77	6.62	15	152	1.05	0.80	0.32	0.80	5.4	0.5	813.61	812.40	814.81	816.83	810.99	809.40
	R123	R122A	0.18	0.48	0.09	1.66	23.1	3.64	6.04	7.08	15	109	1.20	0.87	0.32	0.87	5.8	0.3	812.40	811.45	816.83	821.36	809.30	807.99
	R122A	R122	0.17	0.61	0.11	1.77	23.4	3.62	6.40	6.40 *	15	91	0.44	0.98	0.32	0.98	3.5	0.1	811.45	811.16	821.36	821.36	807.79	807.66
	R122	R121	0.15	0.64	0.10	1.87	23.5	3.61	6.75	6.75 *	15	105	0.85	1.09	0.32	1.09	4.9	0.4	811.16	810.01	821.36	817.53	807.56	806.67
	R121	R113	0.14	0.52	0.07	1.94	23.9	3.58	6.94	6.94 *	15	41	0.65	1.16	0.32	1.16	4.2	0.2	810.01	809.54	817.53	815.90	806.57	806.30
	R114B	R114A	0.83	0.73	0.60	0.60	20.0	3.89	2.33	4.78	12	29	1.80	0.43	0.44	0.44	6.1	0.1	813.92	813.80	817.02	817.02	813.52	813.00
	R114A	R114	0.92	0.70	0.64	1.24	20.1	3.88	4.81	4.85	12	105	1.85	1.82	0.44	1.82	6.2	0.3	813.57	811.65	817.02	816.80	812.80	810.85
	R109B	R109A	0.67	0.35	0.24	0.24	20.0	3.89	0.93	2.36	12	29	0.44	0.07	0.44	0.44	3.0	0.2	810.53	810.41	813.90	813.90	809.73	809.61
	R109A	R110	0.67	0.35	0.23	0.47	20.2	3.87	1.82	3.47	12	146	0.95	0.26	0.44	0.44	4.4	0.6	809.56	808.91	813.90	813.55	809.51	808.11
	R149	R148	0.12	0.35	0.04	0.04	20.0	3.89	0.16	5.40	12	159	2.30	0.00	0.44	0.44	6.9	0.4	802.02	798.37	805.22	801.54	801.22	797.57
	R148	R147	0.33	0.57	0.19	0.23	20.4	3.85	0.89	5.40	12	76	2.30	0.06	0.44	0.44	6.9	0.2	798.27	796.51	801.54	799.80	797.47	795.71
	R147	R102	0.13	0.54	0.07	0.30	20.6	3.84	1.15	7.56	12	151	4.50	0.10	0.44	0.44	9.6	0.3	790.51	783.71	799.80	787.00	789.71	782.91
	R146A	R146	0.53	0.74	0.39	0.39	20.0	3.89	1.52	2.36	12	29	0.44	0.18	0.44	0.44	3.0	0.2	813.66	813.54	816.87	816.87	812.86	812.74
	R146	R145	0.11	0.77	0.09	0.48	20.2	3.87	1.86	3.56	12	100	1.00	0.27	0.44	0.44	4.5	0.4	812.78	812.34	816.87	815.56	812.54	811.54
	R145	R144	0.26	0.53	0.14	0.62	20.6	3.84	2.38	2.52	12	138	0.50	0.45	0.44	0.44	3.2	0.7	812.07	811.45	815.56	815.53	811.34	810.65
	R144	R143	0.37	0.55	0.20	0.82	21.3	3.78	3.10	3.11	12	138	0.76	0.76	0.44	0.44	0.76	4.0	0.6	811.25	810.20	815.53	818.00	810.45	809.40
	R143	R142	0.08	0.35	0.03	0.85	21.9	3.73	3.17	3.19	12	136	0.80	0.79	0.44	0.44	4.1	0.6	809.99	808.91	818.00	818.48	809.20	808.11
	R142	R141	0.22	0.57	0.13	0.98	22.5	3.68	3.61	3.65	12	136	1.05	1.03	0.44	1.03	4.7	0.5	808.68	807.29	818.48	815.00	807.91	806.49
	R141	R140	0.25	0.54	0.14	1.12	23.0	3.65	4.08	4.09	12	140	1.32	1.31	0.44	1.31	5.2	0.4	807.08	805.24	815.00	810.50	806.29	804.44
	R140	R139	0.28	0.52	0.14	1.26	23.4	3.62	4.56	4.58	12	85	1.65	1.64	0.44	1.64	5.8	0.2	805.03	803.63	810.50	808.00	804.24	802.83
	R139	R138	0.49	0.08	1.87	23.6	3.60	6.73	6.76	6.76	12	68	3.60	3.57	0.44	3.57	8.6	0.1	803.41	800.99	808.00	806.20	802.63	800.19
	R138	R137	0.04	0.35	0.01	1.88	23.7	3.59	6.76	6.94	12	127	3.80	3.60	0.44	3.60	8.8	0.2	800.63	796.05	806.20	800.00	800.09	795.25
	R137	R136	0.30	0.51	0.16	2.04	23.9	3.58	7.30	7.34	12	141	4.25	4.20	0.44	4.20	9.4	0.3	795.78	789.87	800.00	794.00	795.05	789.07
	R136	R134	0.28	0.52	0.14	2.18	24.2	3.56	7.75	10.34	15	183	2.56	1.44	0.32	1.44	8.4	0.4	789.87	785.19	794.00	788.50	788.87	784.19
	R134	R133	0.38	0.54	0.20	2.38	24.6	3.53	8.40	13.08	18	186	1.55	0.64	0.25	0.64	7.4	0.4	785.19	782.30	788.50	785.61	783.99	781.10
	R133	R132A	0.35	0.49	0.17	2.55	25.0	3.50	8.93	12.39	24	103	0.30	0.16	0.17	0.17	3.9	0.4	782.07	781.89	785.61	787.28	780.60	780.29
	R132A	R132	0.16	0.67	0.11	2.66	25.4	3.47	9.24	9.33	24	29	0.17	0.17	0.17	0.17	3.2	0.2	781.80	781.75	787.28	787.28	780.19	780.15
	R132	R131	0.57	0.76	0.43	3.09	25.6	3.46	10.69	10.85	24	147	0.23	0.22	0.22	0.22	3.5	0.7	781.64	781.31	787.28	785.33	780.05	779.71
	R131	R130	0.23	0.45	0.10	3.19	26.3	3.41	10.88	11.08	24	136	0.24	0.23	0.17	0.23	3.5	0.6	781.20	780.88	785.33	787.00	779.61	779.28
	R130	R102	0.16	0.64	0.11	3.30	26.9	3.37	11.13	14.79	30	132	0.13	0.07	0.13	0.13	3.0	0.7	780.88	780.71	787.00	787.00	778.88	778.71
	R139B	R139A	0.75	0.35	0.26	0.26	20.0	3.89	1.01	2.52	12	29	0.50	0.08	0.44	0.44	3.2	0.2	805.86	805.73	809.64	809.64	805.07	804.93
	R139A	R139	0.77	0.35	0.27	0.53	20.2	3.87	2.05	3.74	12	145	1.10	0.33	0.44	0.44	4.8	0.5	805.53	803.93	809.64	808.00	804.73	803.13
	R151	R150	1.16	0.74	0.86	0.86	20.0	3.89	3.34	3.38	12	29	0.90	0.88	0.44	0.88	4.3	0.1	789.02	788.76	792.18	792.18	788.22	787.96
*	R253D	R253C	1.21	0.50	0.60	0.60	20.0	3.89	2.33	2.52	12	29	0.50	0.43	0.44	0.44	3.2	0.2	779.27	779.14	784.99	784.99	778.49	778.34
*	R253C	R253B	0.10	0.72	0.07	0.67	20.2	3.87	2.59	7.39	12	58	4.30	0.53	0.44	0.44	0.53	9.4	0.1	779.04	776.54	784.99	781.45	778.24	775.74
*	R253B	R253A	0.07	0.71	0.05	0.72	20.3	3.86	2.78	2.78 *	12	29	0.50	0.61	0.44	0.61	3.2	0.2	776.47	776.29	781.45	781.45	775.64	775.49
*	R253A	R253	0.36	0.74	0.27	0.99	20.5	3.85	3.81	6.17	12	139	3.00	1.14	0.44	1.14	7.9	0.3	776.09	771.94	781.45	777.80	775.29	771.14
*	R253	R252	0.28	0.52	0.15	1.17	20.8	3.82	4.47	7.56	12	79	4.50	1.57	0.44	1.57	9.6	0.1	771.84	768.61	777.80	773.97	771.04	767.48
*	R252	R251	0.36	0.48	0.17	1.34	20.9	3.81	5.11	5.11 *	12	119	1.70	2.06	0.44	2.06	5.9	0.3	768.61	766.15	773.97	772.57	767.38	765.35
*	R251	R250	0.05	1.43	0.08	1.42	21.2	3.79	5.38	10.50	18	132	1.00	0.26	0.25	0.26	5.9	0.4	765.18	764.84	772.57	772.57	764.95	763.63
*	R250	R249	0.05	3.22	0.17	1.59	21.6	3.76	5.97	9.33	24	152	0.17	0.07	0.17	0.17	3.0	0.9	764.84	764.57	772.57	774.85	763.23	762.97
*	R249	R248	0.05	0.80	0.04	1.63	22.5	3.68	6.01	9.33	24	132	0.17	0.07	0.17	0.17	3.0	0.7	764.48	764.25	774.85	774.85	762.87	762.65
*	R248	R247	0.08	0.95	0.08	1.71	23.2	3.63	6.21	9.33	24	199	0.17	0.08	0.17	0.17	3.0	1.1	764.16	763.81	774.85	773.28	762.55	762.21
*	R247	R246	0.33	0.57	0.19	1.90	24.3	3.55	6.74	9.33	24	53	0.17	0.09	0.17	0.17	3.0	0.3	763.71	763.62	773.28	776.47	762.11	762.02
*	R246	R203	0.18	0.62	0.11	2.01	24.6	3.53	7.09	9.33	24	40	0.17	0.10	0.17	0.17	3.0	0.2	763.52	763.45	776.47	775.91	761.92	761.85
*	R203	R202B	0.58	0.43	0.25	3.05	24.8	3.51	10.72	17.52	24	116	0.60	0.22	0.17	0.22	5.6	0.3	762.92	762.66	775.91	781.40	761.75	761.06
*	R202B	R202A	0.00	0.00	0.00	3.05	25.1	3.49	10.72	25.94	30	84	0.40	0.07	0.13	0.13	5.3	0.3	762.43	762.33	781.40	781.73	760.66	760.33
*	R202A	R202	0.00	0.00	0.00	3.05	25.4	3.47	10.72	15.89	30	121	0.15	0.07	0.13	0.13	3.2	0.6	762.20	762.05	781.73	771.42	760.23	760.05
*	R202	R201	0.05	0.35	0.02	13.26	26.0	3.43	45.50	46.21	36	76	0.48	0.47	0.10	0.47	6.5	0.2	757.31	756.96	771.42	758.83	755.37	755.00

	FROM STRUCT	TO STRUCT	A TRIB AREA (AC)	C RUNOFF COEFF	AxC EQUIV AREA	CA DESIGN SUM AxC	T TIME CONC. (MIN)	I INTEN-SITY (IN/HR)	Q FLOW CAxI (CFS)	Qc PIPE CAPAC. (CFS) * see above	D PIPE DIAM. (IN)	L PIPE LENGTH (FT)	S PIPE SLOPE (%)	HGq MIN HG for Q (%)	HGv MIN HG for Vmin (%)	HG HGL SLOPE (%)	VI VEL. FULL (FPS)	TI TIME OF FLOW (MIN)	H.G.L. ELEV. UPPER END	H.G.L. ELEV. LOWER END	RIM/GROUND ELEV. UPPER END	RIM/GROUND ELEV. LOWER END	INVERT ELEV. UPPER END	INVERT ELEV. LOWER END
	INPUT																							
	R254	R253	0.07	0.35	0.03	0.03	20.0	3.89	0.12	7.56	12	84	4.50	0.00	0.44	0.44	9.6	0.1	776.80	773.04	783.80	777.80	776.00	772.24
*	R209	R208	0.37	0.55	0.20	0.20	20.0	3.89	0.78	4.36	12	140	1.50	0.05	0.44	0.44	5.6	0.4	784.93	782.83	788.71	786.62	784.13	782.03
*	R208	R207	0.37	0.55	0.20	0.40	20.4	3.85	1.54	2.36	12	140	0.44	0.19	0.44	0.44	3.0	0.8	782.63	782.02	786.62	788.03	781.83	781.22
*	R207	R206	0.10	0.43	0.04	0.44	21.2	3.79	1.67	2.36	12	90	0.44	0.22	0.44	0.44	3.0	0.5	781.82	781.42	788.03	787.08	781.02	780.62
*	R206	R205	0.09	0.86	0.08	0.52	21.7	3.75	1.95	2.39	12	136	0.45	0.30	0.44	0.44	3.0	0.7	781.21	780.61	787.08	784.36	780.42	779.81
*	R205	R204	0.25	0.54	0.14	0.66	22.4	3.69	2.44	5.52	12	136	2.40	0.47	0.44	0.47	7.0	0.3	780.41	777.15	784.36	780.86	779.61	776.35
*	R204	R203	0.24	0.55	0.13	0.79	22.7	3.67	2.90	7.08	12	133	3.95	0.66	0.44	0.66	9.0	0.2	777.05	771.80	780.86	775.91	776.25	771.00
	R224	R223	0.12	0.96	0.11	0.11	20.0	3.89	0.43	2.36	12	186	0.44	0.01	0.44	0.44	3.0	1.0	783.81	783.00	799.69	800.29	783.02	782.20
	R223	R222	0.12	0.55	0.07	0.18	21.0	3.80	0.68	2.36	12	184	0.44	0.04	0.44	0.44	3.0	1.0	782.89	782.09	800.29	792.47	782.10	781.29
	R222	R221	0.12	0.76	0.09	0.27	22.0	3.72	1.01	2.36	12	179	0.44	0.08	0.44	0.44	3.0	1.0	781.98	781.20	792.47	789.59	781.19	780.40
	R221	R220B	0.29	0.52	0.15	0.42	23.0	3.65	1.53	2.64	12	102	0.55	0.18	0.44	0.44	3.4	0.5	780.98	780.54	789.59	784.67	780.30	779.64
*	R220B	R220A	0.94	0.72	0.67	1.09	23.5	3.61	3.93	5.04	12	110	2.78	1.09	0.44	1.09	7.2	0.3	780.21	779.86	784.67	784.67	779.64	779.06
*	R220A	R220	0.36	0.64	0.23	1.32	23.6	3.60	4.75	9.14	15	36	2.00	0.54	0.32	0.54	7.4	0.1	779.33	779.14	784.67	784.69	778.86	778.14
*	R220	R219	0.03	0.35	0.01	2.13	23.7	3.59	7.65	8.79	15	76	1.85	1.40	0.32	1.40	7.2	0.2	778.70	777.63	784.69	787.26	778.04	776.63
*	R219	R218	0.10	0.39	0.04	2.17	23.9	3.58	7.77	8.79	18	132	0.70	0.55	0.25	0.55	5.0	0.4	777.43	776.71	787.12	782.36	776.43	775.51
*	R218	R217	0.23	0.38	0.09	2.26	24.3	3.55	8.02	9.10	18	70	0.75	0.58	0.25	0.58	5.2	0.2	776.39	775.98	782.36	780.96	775.31	774.78
*	R217	R216	0.13	0.54	0.07	2.60	24.5	3.54	9.19	10.50	18	132	1.00	0.77	0.25	0.77	5.9	0.4	775.98	774.56	780.96	779.37	774.58	773.26
*	R216	R215	0.23	0.56	0.13	2.73	24.9	3.51	9.57	17.10	18	132	2.65	0.83	0.25	0.83	9.7	0.2	774.26	770.77	779.37	774.10	773.06	769.57
*	R215	R214	0.22	0.57	0.12	2.85	25.1	3.49	9.96	11.02	18	271	1.10	0.90	0.25	0.90	6.2	0.7	770.12	767.68	774.10	776.45	769.47	766.48
*	R214	R210B	0.67	0.74	0.50	3.98	25.8	3.44	13.71	14.85	18	115	2.00	1.70	0.25	1.70	8.4	0.2	767.24	765.29	776.45	775.58	766.38	764.43
*	R210B	R210A	0.00	0.00	0.00	4.50	26.0	3.43	15.44	16.61	18	143	2.50	2.16	0.25	2.16	9.4	0.3	764.71	761.62	775.88	765.00	763.99	760.42
*	R210A	R210	0.16	0.35	0.06	4.56	26.3	3.41	15.56	16.61	18	135	2.50	2.19	0.25	2.19	9.4	0.2	761.10	758.14	765.00	771.02	760.32	756.94
*	R210	R202	0.04	0.35	0.02	4.58	26.5	3.40	15.56	16.62	24	70	0.54	0.47	0.17	0.47	5.3	0.2	758.10	757.77	771.02	771.42	756.54	756.17
	R227B	R227A	0.87	0.68	0.59	0.59	20.0	3.89	2.29	2.52	12	29	0.50	0.41	0.44	0.44	3.2	0.2	786.16	786.04	789.13	789.13	785.38	785.24
*	R227A	R220	0.30	0.70	0.21	0.80	20.2	3.87	3.10	6.12	12	139	2.95	0.76	0.44	0.76	7.8	0.3	785.94	781.84	789.13	784.69	785.14	781.04
	R217B	R217A	0.15	0.73	0.11	0.11	20.0	3.89	0.43	2.36	12	29	0.44	0.01	0.44	0.44	3.0	0.2	786.85	786.72	789.86	789.86	786.05	785.92
*	R217A	R217	0.20	0.79	0.16	0.27	20.2	3.87	1.05	7.54	12	138	4.48	0.09	0.44	0.44	9.6	0.2	784.09	777.88	789.86	780.96	783.29	777.08
	R214	R214B	0.87	0.73	0.63	0.63	20.0	3.89	2.45	2.52	12	29	0.50	0.47	0.44	0.47	3.2	0.2	773.22	773.08	776.45	776.45	772.43	772.28
	R212	R211	0.32	0.73	0.23	0.23	20.0	3.89	0.89	2.52	12	29	0.50	0.06	0.44	0.44	3.2	0.2	773.24	773.12	776.46	776.46	772.46	772.32
*	R211	R210B	0.40	0.73	0.29	0.52	20.2	3.87	2.01	3.38	12	59	0.90	0.32	0.44	0.44	4.3	0.2	772.75	772.49	776.46	775.88	772.22	771.69
	R237	R236	0.00	0.00	0.00	0.00	20.0	3.89	0.00	7.56	12	142	4.50	0.00	0.44	0.44	9.6	0.2	773.33	766.92	780.26	770.06	772.53	766.12
	R236	R235	0.42	0.46	0.19	0.19	20.2	3.87	0.74	5.63	12	177	2.50	0.04	0.44	0.44	7.2	0.4	766.82	762.41	770.06	766.51	766.02	761.61
	R235	R234	0.53	0.53	0.28	0.47	20.6	3.84	1.80	2.36	12	181	0.44	0.26	0.44	0.44	3.0	1.0	762.30	761.51	766.51	765.71	761.51	760.71
	R234	R233	0.17	0.63	0.11	0.58	21.6	3.76	2.18	2.36	12	138	0.44	0.37	0.44	0.44	3.0	0.8	761.41	760.80	765.71	764.00	760.61	760.00
	R233	R232A	0.30

SANITARY SEWER TABLE

NUMBER	SIZE	DESC.	ELEVATION	INVERTS	NORTHING EASTING
EX01	4' DIA	EX MH	RIM=769.04	PR. 8" SW INV.749.49	N = 281452.169 E = 13328953.306
EX02	4' DIA	EX MH	RIM=821.35	PR. 8" W INV.810.65	N = 281376.437 E = 13328093.851
S3	4' DIA	MH	RIM=775.53	PR. 8" S INV.756.78 PR. 8" NE INV.756.68 PR. 8" NW INV.756.78	N = 281280.998 E = 13328800.922
S5	4' DIA	MH	RIM=778.15	PR. 8" W INV.764.12 PR. 8" SE INV.764.02	N = 281351.117 E = 13328655.459
S6	4' DIA	MH	RIM=784.99	PR. 8" W INV.772.88 PR. 8" E INV.772.78	N = 281385.533 E = 13328420.819
S7	4' DIA	MH	RIM=791.84	PR. 8" W INV.774.32 PR. 8" E INV.774.22	N = 281420.768 E = 13328155.145
S8	4' DIA	MH	RIM=789.18	PR. 8" N INV.775.77 PR. 8" E INV.775.67 PR. 8" W INV.779.23	N = 281465.319 E = 13327887.681
S9	4' DIA	MH	RIM=786.22	PR. 8" N INV.777.01 PR. 8" S INV.776.91	N = 281689.985 E = 13327917.477
S11	4' DIA	MH	RIM=791.19	PR. 8" N INV.779.03 PR. 8" S INV.778.63 PR. 8" W INV.779.52	N = 281953.240 E = 13327906.605
S12	4' DIA	MH	RIM=802.78	PR. 8" NW INV.791.54 PR. 8" S INV.790.24	N = 282199.651 E = 13327896.428
S15	4' DIA	MH	RIM=808.95	PR. 8" N INV.798.02 PR. 8" SW INV.797.92	N = 282401.433 E = 13327790.767
S16	4' DIA	MH	RIM=814.92	PR. 8" N INV.804.06 PR. 8" S INV.803.96	N = 282670.347 E = 13327765.928
S17	4' DIA	MH	RIM=821.44	PR. 8" S INV.810.66	N = 282969.883 E = 13327749.233
S18	4' DIA	MH	RIM=822.54	PR. 8" W INV.811.78 PR. 8" E INV.811.68	N = 283155.006 E = 13327887.549
S19	4' DIA	MH	RIM=823.01	PR. 8" S INV.812.60	N = 283150.486 E = 13327806.438
S21	4' DIA	MH	RIM=796.51	PR. 8" NW INV.788.08 PR. 8" E INV.787.98	N = 281986.022 E = 13327698.460
S22	4' DIA	MH	RIM=801.06	PR. 8" NW INV.790.72 PR. 8" SE INV.790.62	N = 282064.932 E = 13327602.329
S23	4' DIA	MH	RIM=807.05	PR. 8" N INV.796.14 PR. 8" SE INV.796.04	N = 282183.057 E = 13327507.132
S24	4' DIA	MH	RIM=810.48	PR. 8" N INV.799.99 PR. 8" S INV.799.89	N = 282295.245 E = 13327461.399
S26	4' DIA	MH	RIM=818.68	PR. 8" N INV.803.41 PR. 8" S INV.803.31	N = 282560.488 E = 13327445.545
S27	4' DIA	MH	RIM=820.00	PR. 8" N INV.804.87 PR. 8" S INV.804.77	N = 282832.066 E = 13327430.409
S29	4' DIA	MH	RIM=818.16	PR. 8" E INV.807.86 PR. 8" W INV.806.46 PR. 8" S INV.806.36	N = 283128.152 E = 13327405.736
S30	4' DIA	MH	RIM=817.53	PR. 8" E INV.807.56	N = 283122.041 E = 13327296.096
S31	4' DIA	MH	RIM=823.24	PR. 8" W INV.813.03	N = 283145.053 E = 13327708.964
* S34	4' DIA	MH	RIM=781.92	PR. 8" SW INV.758.04 PR. 8" N INV.757.94 PR. 8" SW INV.758.04	N = 281063.434 E = 13328716.396
S35	4' DIA	MH	RIM=779.84	PR. 8" NE INV.758.76 PR. 8" W INV.758.86	N = 280976.457 E = 13328601.412
S36	4' DIA	MH	RIM=774.62	PR. 8" W INV.759.64 PR. 8" E INV.759.54	N = 280962.351 E = 13328466.338
S37	4' DIA	MH	RIM=769.93	PR. 8" W INV.760.71 PR. 8" E INV.760.61	N = 280973.391 E = 13328273.206
S39	4' DIA	MH	RIM=767.93	PR. 8" W INV.763.15 PR. 8" E INV.763.05	N = 280960.320 E = 13327981.952
S40	4' DIA	MH	RIM=770.46	PR. 8" W INV.764.24 PR. 8" E INV.764.14	N = 280951.443 E = 13327784.151
S41	4' DIA	MH	RIM=772.83	PR. 8" NW INV.764.93 PR. 8" E INV.764.83	N = 280972.173 E = 13327666.927
S42	4' DIA	MH	RIM=778.27	PR. 8" NW INV.769.00 PR. 8" SE INV.768.90	N = 281052.302 E = 13327565.182
S43	4' DIA	MH	RIM=784.04	PR. 8" N INV.773.58 PR. 8" SE INV.773.48 PR. 8" W INV.772.70	N = 281153.906 E = 13327519.032
S43A	4' DIA	MH	RIM=786.82	PR. 8" W INV.773.40 PR. 8" E INV.773.30	N = 281154.427 E = 13327397.925
S44	4' DIA	MH	RIM=786.90	PR. 8" N INV.776.86 PR. 8" S INV.776.76	N = 281228.837 E = 13327513.580
S46	4' DIA	MH	RIM=791.61	PR. 8" S INV.781.88	N = 281353.897 E = 13327554.439
S48	4' DIA	MH	RIM=791.71	PR. 8" W INV.781.98 PR. 8" E INV.781.88	N = 281468.316 E = 13327740.226
S49	4' DIA	MH	RIM=792.64	PR. 8" E INV.783.15	N = 281426.686 E = 13327631.274
STUB	???' DIA	STUB	RIM=773.38	PR. 8" E INV.773.60	N = 281153.186 E = 13327377.859

WATER MAIN STRUCTURE TABLE

NUMBER	DESCRIPTION	ELEVATION	NORTHING EASTING
H1	HYD	FG/RIM=822.68	N = 283123.903 E = 13327787.722
H2	HYD	FG/RIM=817.33	N = 283168.423 E = 13327283.697
H3	HYD	FG/RIM=816.34	N = 282739.999 E = 13327809.119
H4	HYD	FG/RIM=807.60	N = 282370.079 E = 13327857.417
H5	HYD	FG/RIM=793.80	N = 282007.135 E = 13327951.419
H6	HYD	FG/RIM=790.33	N = 281400.920 E = 13327947.309
H7	HYD	FG/RIM=787.67	N = 281351.727 E = 13328318.229
H8	HYD	FG/RIM=776.51	N = 281276.252 E = 13328707.509
H9	HYD	FG/RIM=818.16	N = 283098.273 E = 13327462.644
H10	HYD	FG/RIM=821.88	N = 282721.857 E = 13327483.624
H11	HYD	FG/RIM=812.60	N = 282371.261 E = 13327503.165
H12	HYD	FG/RIM=800.64	N = 282088.154 E = 13327644.003
* H13	HYD	FG/RIM=780.11	N = 281023.510 E = 13328592.338
H14	HYD	FG/RIM=769.53	N = 281018.455 E = 13328229.289
H15	HYD	FG/RIM=768.77	N = 281002.778 E = 13327879.694
H16	HYD	FG/RIM=780.89	N = 281124.786 E = 13327577.166
H17	HYD	FG/RIM=792.59	N = 281370.041 E = 13327629.701
H18	HYD	FG/RIM=786.98	N = 281200.132 E = 13327375.543
V1	GV	FG/RIM=823.11	N = 283194.259 E = 13327693.130
V2	GV	FG/RIM=817.53	N = 283171.975 E = 13327293.514
V3	GV	FG/RIM=822.65	N = 283140.544 E = 13327789.799
V4	GV	FG/RIM=810.40	N = 282473.697 E = 13327851.966
V5	GV	FG/RIM=790.90	N = 281941.315 E = 13327957.140
V6	GV	FG/RIM=790.51	N = 281387.670 E = 13328024.404
V7	GV	FG/RIM=776.68	N = 281248.297 E = 13328729.120
V8	GV	FG/RIM=818.16	N = 283088.455 E = 13327466.196
V9	GV	FG/RIM=814.75	N = 282437.326 E = 13327502.487
V10	GV	FG/RIM=792.75	N = 282013.922 E = 13327873.415
* V11	GV	FG/RIM=779.68	N = 281022.119 E = 13328580.511
V12	GV	FG/RIM=769.04	N = 281005.282 E = 13327868.570
V13	GV	FG/RIM=790.94	N = 281415.279 E = 13327816.226
V14	GV	FG/RIM=786.94	N = 281203.742 E = 13327385.338

UTILITY CROSSING TABLE

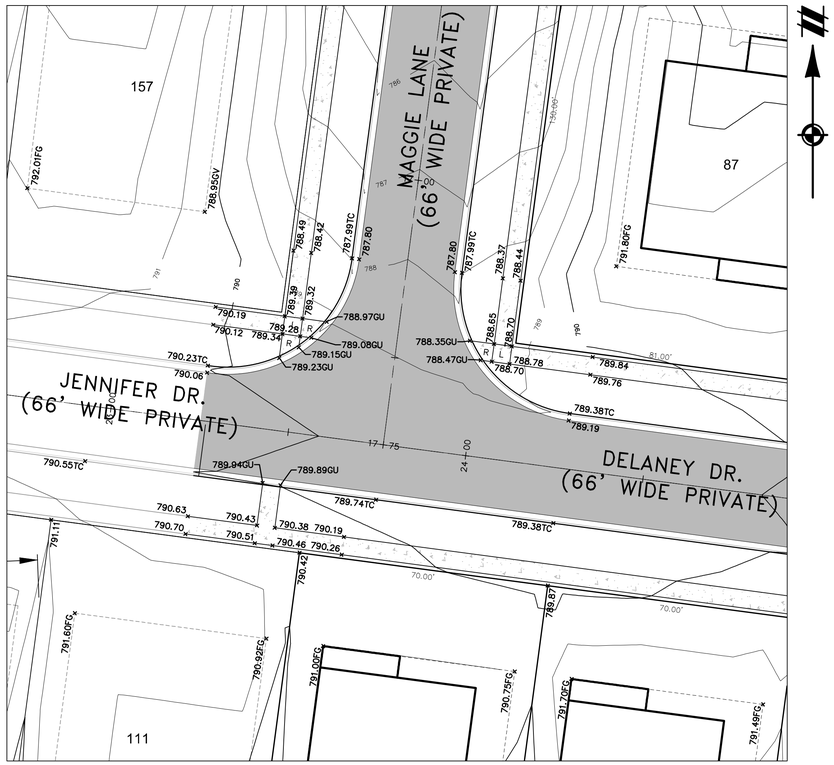
CROSSING	CROSSING PIPE 1		CROSSING PIPE 2	
X1.	12" ST. T/P	810.50	12" W.M. B/P	814.40
X2.	12" ST. B/P	814.54	12" W.M. T/P	813.04
X3.	12" ST. B/P	814.05	8" SAN. T/P	811.64
X4.	15" ST. T/P	808.96	8" SAN. B/P	810.40
X5.	8" SAN. T/P	809.57	8" W.M. B/P	812.43
X6.	15" ST. T/P	809.57	8" W.M. B/P	815.73
X7.	12" ST. B/P	812.41	8" W.M. T/P	810.91
X8.	12" ST. B/P	809.22	8" SAN. T/P	804.24
X9.	12" ST. B/P	804.45	8" SAN. B/P	802.29
X10.	24" ST. B/P	785.93	8" SAN. T/P	784.32
X11.	24" ST. B/P	787.57	8" W.M. T/P	786.07
X12.	12" ST. B/P	779.05	8" SAN. T/P	772.79
X13.	8" SAN. T/P	782.65	8" W.M. B/P	787.83
X14.	24" ST. B/P	780.08	8" SAN. T/P	778.30
X15.	36" ST. B/P	780.05	8" SAN. B/P	777.52
X16.	8" SAN. T/P	776.14	6" W.M. B/P	782.60
X17.	36" ST. B/P	779.92	8" W.M. T/P	778.10
X18.	12" ST. B/P	784.44	8" SAN. T/P	776.02
X19.	12" ST. B/P	782.65	8" SAN. T/P	774.59
X20.	18" ST. B/P	766.54	8" SAN. B/P	763.37
X21.	18" ST. B/P	764.03	8" SAN. T/P	757.54
X22.	12" ST. B/P	777.55	8" W.M. T/P	776.05
X23.	12" ST. B/P	771.69	8" SAN. T/P	757.64
X24.	30" ST. B/P	760.09	8" SAN. T/P	758.58
X25.	12" ST. B/P	766.33	8" SAN. T/P	761.03
X26.	15" ST. B/P	764.38	8" SAN. T/P	762.84
X27.	18" ST. T/P	767.03	8" W.M. B/P	768.83
X28.	48" ST. B/P	760.70	8" W.M. T/P	759.20
X29.	48" ST. B/P	760.63	8" SAN. T/P	752.24
X30.	24" ST. B/P	778.77	8" W.M. T/P	778.27
X31.	30" ST. T/P	786.07	8" W.M. B/P	790.73
X32.	15" ST. B/P	778.24	8" W.M. T/P	776.74
X33.	8" SAN. T/P	759.75	8" W.M. B/P	768.63
X34.	30" ST. T/P	763.36	8" W.M. B/P	775.73
X35.	12" ST. B/P	779.61	8" SAN. T/P	777.17
X36.	12" ST. B/P	779.89	8" SAN. T/P	772.96
X37.	8" SAN. T/P	775.88	8" W.M. B/P	780.03
X38.	24" ST. B/P	786.70	8" W.M. T/P	785.20
X50.	6" SAN. T/P	808.48	12" W.M. B/P	811.70
X51.	6" SAN. T/P	809.77	12" W.M. B/P	812.40
X52.	6" SAN. T/P	810.96	12" W.M. B/P	813.50
X53.	6" SAN. T/P	812.15	12" W.M. B/P	814.7
X54.	6" SAN. T/P	813.35	12" W.M. B/P	815.80
X55.	6" SAN. T/P	814.02	12" W.M. B/P	816.70
X56.	6" SAN. T/P	814.03	12" W.M. B/P	816.90
X57.	6" SAN. T/P	813.08	12" W.M. B/P	816.00
X58.	6" SAN. T/P	812.85	12" W.M. B/P	815.50
X59.	6" SAN. T/P	812.45	12" W.M. B/P	814.80
X60.	6" SAN. T/P	812.11	12" W.M. B/P	814.20
X61.	6" SAN. T/P	807.46	8" W.M. B/P	811.43
X62.	6" SAN. T/P	809.71	8" W.M. B/P	812.43
X63.	6" SAN. T/P	810.91	8" W.M. B/P	813.73
X64.	6" SAN. T/P	812.00	8" W.M. B/P	814.93
X65.	6" SAN. T/P	812.53	8" W.M. B/P	815.63
X66.	6" SAN. T/P	810.49	8" W.M. B/P	813.13
X67.	6" SAN. T/P	808.33	8" W.M. B/P	811.13
X68.	6" SAN. T/P	806.42	8" W.M. B/P	809.03
X69.	6" SAN. T/P	803.13	8" W.M. B/P	807.03
X70.	6" SAN. T/P	801.97	8" W.M. B/P	804.93
X71.	6" SAN. T/P	797.31	8" W.M. B/P	800.43
X72.	6" SAN. T/P	795.20	8" W.M. B/P	797.93
X73.	6" SAN. T/P	792.52	8" W.M. B/P	795.13
X74.	6" SAN. T/P	790.18	8" W.M. B/P	792.53
X75.	6" SAN. T/P	779.11	8" W.M. B/P	781.83
X76.	6" SAN. T/P	779.74	8" W.M. B/P	782.93
X77.	6" SAN. T/P	782.82	8" W.M. B/P	784.83
X78.	6" SAN. T/P	784.49	8" W.M. B/P	788.63
X79.	6" SAN. T/P	787.44	8" W.M. B/P	791.63
X80.	6" SAN. T/P	792.08	8" W.M. B/P	793.83
X81.	6" SAN. T/P	794.31	8" W.M. B/P	796.73
X82.	6" SAN. T/P	795.12	8" W.M. B/P	798.93
X83.	6" SAN. T/P	796.72	8" W.M. B/P	800.43
X84.	6" SAN. T/P	798.50	8" W.M. B/P	801.83
X85.	6" SAN. T/P	801.60	8" W.M. B/P	804.53
X86.	6" SAN. T/P	804.47	8" W.M. B/P	807.53
X87.	6" SAN. T/P	806.12	8" W.M. B/P	809.13
X88.	6" SAN. T/P	807.56	8" W.M. B/P	810.63
X89.	6" SAN. T/P	809.12	8" W.M. B/P	812.23
X90.	6" SAN. T/P	810.60	8" W.M. B/P	813.73
X91.	6" SAN. T/P	812.02	8" W.M. B/P	815.13
X92.	6" SAN. T/P	777.77	8" W.M. B/P	783.93
X93.	6" SAN. T/P	780.66	8" W.M. B/P	783.53
X94.	6" SAN. T/P	781.82	8" W.M. B/P	784.73
X95.	6" SAN. T/P	782.59	8" W.M. B/P	785.43
X96.	6" SAN. T/P	781.27	8" W.M. B/P	783.83
X97.	6" SAN. T/P	779.46	8" W.M. B/P	782.03
X98.	6" SAN. T/P	777.60	8" W.M. B/P	780.13
X99.	6" SAN. T/P	774.04	8" W.M. B/P	778.13
X100.	6" SAN. T/P	773.47	8" W.M. B/P	776.13
X101.	6" SAN. T/P	771.54	8" W.M. B/P	774.13
X102.	6" SAN. T/P	768.21	8" W.M. B/P	771.03
X103.	6" SAN. T/P	770.97	8" W.M. B/P	772.93
X104.	6" SAN. T/P	773.43	8" W.M. B/P	776.13
X105.	6" SAN. T/P	770.36	8" W.M. B/P	772.43
X106.	6" SAN. T/P	768.32	8" W.M. B/P	769.93
X107.	6" SAN. T/P	766.13	8" W.M. B/P	768.33
X108.	6" SAN. T/P	764.96	8" W.M. B/P	767.73
X109.	6" SAN. T/P	762.91	8" W.M. B/P	767.23
X110.	6" SAN. T/P	763.02	8" W.M. B/P	766.73
X111.	6" SAN. T/P	763.10	8" W.M. B/P	766.23
X112.	6" SAN. T/P	763.37	8" W.M. B/P	765.63
X113.	6" SAN. T/P	763.52	8" W.M. B/P	765.53
X114.	6" SAN. T/P	763.96	8" W.M. B/P	765.83
X115.	6" SAN. T/P	764.29	8" W.M. B/P	766.33
X116.	6" SAN. T/P	764.62	8" W.M. B/P	766.83
X117.	6" SAN. T/P	765.41	8" W.M. B/P	768.03
X118.	6" SAN. T/P	769.47	8" W.M. B/P	772.73
X119.	6" SAN. T/P	775.46	8" W.M. B/P	778.63
X120.	6" SAN. T/P	780.73	8" W.M. B/P	783.73
X121.	6" SAN. T/P	783.93	8" W.M. B/P	786.33
X122.	6" SAN. T/P	781.89	8" W.M. B/P	784.93
X123.	6" SAN. T/P	780.82	8" W.M. B/P	784.33
X124.	6" SAN. T/P	808.90	12" W.M. B/P	811.00
X125.	6" SAN. T/P	803.06	8" W.M. B/P	806.03

STORM SEWER TABLE

NUMBER	SIZE	DESC.	RIM ELEV.	INVERTS	NORTHING EASTING
EX00	4' DIA.	CB	807.18	EX. 15" N 802.23	N = 282685.132 E = 13327970.823
EX01	4' DIA.	CB	810.20	PR. 12" N 804.65 EX. 15" S 804.45	N = 282811.215 E = 13327948.149
EX02	4' DIA.	CB	811.12	EX. 12" W 807.12	N = 282938.116 E = 13328050.132
R1	3' DIA.	ES		48 inch Concrete Pipe. 48" NW 761.00	N = 281371.183 E = 13328954.916
R2	3' DIA.	ES		48 inch Concrete Pipe. 48" SE 761.26	N = 281452.001 E = 13328844.654
R3	4' DIA.	ES		PR. 60" W 778.62	N = 281650.253 E = 13327986.638
R4	4' DIA.	ES		PR. 60" E 778.86	N = 281663.269 E = 13327888.498
R5	4' DIA.	CB	815.29	PR. 12" S 806.58 EX. 12" E 806.59	N = 282918.597 E = 13327940.383
R100	2' DIA.	ES		PR. 18" NW 776.12	N = 281750.420 E = 13328304.687
R100A	4' DIA.	OCS	784.34	PR. 18" SE 776.35	N = 281799.528 E = 13328236.634
R101	4' DIA.	ES		PR. 36" W 778.02	N = 282078.815 E = 13328145.602
R102	7' DIA.	CB	787.00	PR. 30" W 781.51 PR. 30" S 778.71 PR. 12" N 782.91 PR. 36" E 778.31	N = 282078.815 E = 13328087.577
R102A	4' DIA.	CB	796.34	PR. 30" W 785.01 PR. 30" E 783.41	N = 282072.770 E = 13327941.202
R102B	4' DIA.	CB	796.34	PR. 30" E 785.39 PR. 24" SW 785.79	N = 282071.573 E = 13327912.227
R105	4' DIA.	CB	795.15	PR. 24" N 789.46 PR. 24" E 789.36	N = 282038.814 E = 13327766.955
R106	4' DIA.	CB	796.73	PR. 24" NW 791.65 PR. 24" S 791.55	N = 282161.770 E = 13327761.877
R107	4' DIA.	CB	802.00	PR. 24" NW 794.31 PR. 24" SE 794.11	N = 282282.428 E = 13327697.662
R108	4' DIA.	CB	807.21	PR. 24" N 795.27 PR. 24" SE 795.17	N = 282379.662 E = 13327645.979
R109	5' DIA.	CB	809.84	PR. 24" N 796.43 PR. 24" S 796.23	N = 282511.015 E = 13327636.598
R109A	4' DIA.	CB	813.90	PR. 12" E 809.61 PR. 12" W 809.51	N = 282650.963 E = 13327777.525
R109B	4' DIA.	CB	813.90	PR. 12" W 809.73	N = 282652.577 E = 13327806.480
R110	4' DIA.	CB	813.55	PR. 18" N 797.71 PR. 24" S 797.31 PR. 12" E 808.11	N = 282642.810 E = 13327631.252
R111	4' DIA.	CB	815.06	PR. 18" N 800.00 PR. 18" S 799.80	N = 282729.815 E = 13327626.403
R112	4' DIA.	CB	815.92	PR. 18" N 803.27 PR. 18" S 803.07	N = 282865.604 E = 13327618.834
R113	5' DIA.	CB	815.90	PR. 15" E 806.30 PR. 18" S 806.10 PR. 18" W 806.20	N = 283006.076 E = 13327611.005
R114	4' DIA.	CB	816.80	PR. 15" N 807.48 PR. 18" E 806.65 PR. 12" W 810.85	N = 283002.865 E = 13327565.784
R114A	4' DIA.	CB	817.02	PR. 12" W 813.00 PR. 12" E 812.80	N = 282997.012 E = 13327460.777
R114B	4' DIA.	CB	817.02	PR. 12" E 813.52	N = 282995.398 E = 13327431.821
R115	4' DIA.	CB	820.35	PR. 12" N 808.38 PR. 15" S 808.18	N = 283147.141 E = 13327557.742
R115A	4' DIA.	CB	820.35	PR. 12" N 809.88 PR. 12" S 809.68	N = 283176.096 E = 13327556.128
R117	4' DIA.	CB	817.23	PR. 12" W 810.79 PR. 12" S 810.69 PR. 12" E 812.89	N = 283322.369 E = 13327547.976
R118	4' DIA.	CB	814.93	PR. 12" W 811.60 PR. 12" E 811.40	N = 283314.578 E = 13327408.193
R119	2' DIA.	INLET	814.96	PR. 12" E 812.13	N = 283310.682 E = 13327338.301
R120	2' DIA.	INLET	819.29	PR. 12" W 814.96	N = 283330.048 E = 13327685.762
R121	4' DIA.	CB	817.53	PR. 15" E 806.67 PR. 15" W 806.57	N = 283007.627 E = 13327652.312
R122	4' DIA.	CB	821.36	PR. 15" E 807.66 PR. 15" W 807.56	N = 283013.540 E = 13327757.316
R122A	4' DIA.	CB	821.36	PR. 15" E 807.99 PR. 15" W 807.79	N = 283015.154 E = 13327786.271
R123	4' DIA.	CB	816.83	PR. 15" E 809.40 PR. 15" W 809.30	N = 283021.214 E = 13327895.006
R124	4' DIA.	CB	814.81	PR. 12" N 811.19 PR. 15" W 810.99	N = 283031.670 E = 13328046.659
R125	4' DIA.	CB	820.63	PR. 12" N 814.46 PR. 12" S 814.36	N = 283176.216 E = 13328038.603
R125A	4' DIA.	CB	820.60	PR. 12" N 814.68 PR. 12" S 814.58	N = 283205.468 E = 13328036.972
R127	4' DIA.	CB	820.31	PR. 12" W 815.42 PR. 12" S 815.32	N = 283349.177 E = 13328028.962
R128	4' DIA.	CB	820.95	PR. 12" W 815.83 PR. 12" E 815.73	N = 283345.185 E = 13327957.340
R129	2' DIA.	INLET	820.54	PR. 12" E 816.43	N = 283337.617 E = 13327821.551
R130	5' DIA.	CB	787.00	PR. 24" S 779.28 PR. 30" N 778.88	N = 281946.927 E = 13328093.024
R131	7' DIA.	CB	785.33	PR. 24" W 779.71 PR. 24" N 779.61	N = 281811.043 E = 13328098.636
R132	4' DIA.	CB	787.28	PR. 24" W 780.15 PR. 24" E 780.05	N = 281804.998 E = 13327952.261
R132A	4' DIA.	CB	787.28	PR. 24" W 780.29 PR. 24" E 780.19	N = 281803.801 E = 13327923.285
R133	4' DIA.	CB	785.61	PR. 18" W 781.10 PR. 24" E 780.60	N = 281823.349 E = 13327822.474
* R134	4' DIA.	CB	788.50	PR. 15" NW 784.19 PR. 18" E 783.99	N = 281865.747 E = 13327641.369
* R136	4' DIA.	CB	794.00	PR. 12" NW 789.07 PR. 15" SE 788.87	N = 281983.009 E = 13327501.180
* R137	4' DIA.	CB	800.00	PR. 12" NW 795.25 PR. 12" SE 795.05	N = 282093.029 E = 13327413.516
* R138	4' DIA.	CB	806.20	PR. 12" N 800.19 PR. 12" SE 800.09	N = 282192.657 E = 13327334.132
* R139	4' DIA.	CB	808.00	PR. 12" N 802.83 PR. 12" S 802.63 PR. 12" E 803.13	N = 282260.398 E = 13327330.630
* R139A	4' DIA.	CB	809.64	PR. 12" E 804.93 PR. 12" W 804.73	N = 282287.329 E = 13327473.378
* R139B	4' DIA.	CB	809.64	PR. 12" W 805.07	N = 282292.705 E = 13327501.875
* R140	4' DIA.	CB	810.50	PR. 12" N 804.44 PR. 12" S 804.24	N = 282345.514 E = 13327326.209
* R141	4' DIA.	CB	815.00	PR. 12" N 806.49 PR. 12" S 806.29	N = 282485.327 E = 13327318.963

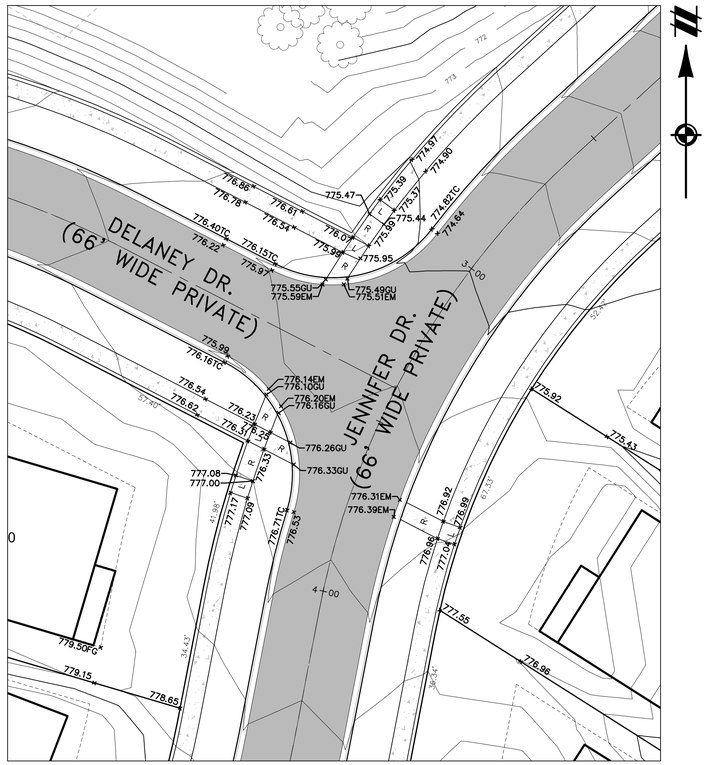
STORM SEWER TABLE

NUMBER	SIZE	DESC.	RIM ELEV.	INVERTS	NORTHING EASTING
R142	4' DIA.	CB	818.48	PR. 12" N 808.11 PR. 12" S 807.91	N = 282621.149 E = 13327390.923
R143	4' DIA.	CB	818.00	PR. 12" N 809.40 PR. 12" S 809.20	N = 282756.966 E = 13327304.883
R144	4' DIA.	CB	815.53	PR. 12" N 810.65 PR. 12" S 810.45	N = 282894.581 E = 13327277.740
R145	4' DIA.	CB	815.56	PR. 12" N 811.54 PR. 12" S 811.34	N = 282982.604 E = 13327290.707
R146	4' DIA.	CB	816.87	PR. 12" N 812.74 PR. 12" S 812.54	N = 283131.941 E = 13327285.569
R146A	4' DIA.	CB	816.87	PR. 12" S 812.86	N = 283160.233 E = 13327284.072
R147	4' DIA.	CB	799.80	PR. 12" NW 795.71 PR. 12" S 789.71	N = 282228.290 E = 13328081.342
R148	4' DIA.	CB	801.54	PR. 12" N 797.57 PR. 12" SE 797.47	N = 282393.926 E = 13328039.857
R149	2' DIA.	INLET	805.22	PR. 12" S 801.22	N = 282447.639 E = 13328000.155
R150	4' DIA.	CB	792.18	PR. 12" S 787.96 PR. 24" W 787.26 PR. 24" NE 787.16	N = 282003.249 E = 13327878.002
R151	4' DIA.	CB	792.18	PR. 12" N 788.22	N = 281974.577 E = 13327879.199
* R200	2' DIA.	ES		PR. 18" NW 754.10	N = 280925.506 E = 13329167.768
* R200A	4' DIA.	OCS	760.63	PR. 18" SE 754.34	N = 280963.262 E = 13329090.961
* R201	3' DIA.	ES		PR. 36" NW 755.00	N = 280974.862 E = 13329089.594
* R202	6' DIA.	CB	771.42	PR. 24" NE 756.17 PR. 30" SW 756.27 PR. 30" NW 760.05 PR. 36" SE 755.37	N = 281026.853 E = 13328637.028
* R202A	4' DIA.	MH	781.73	PR. 30" NW 760.33 PR. 30" SE 760.23	N = 281073.165 E = 13328735.189
* R202B	5' DIA.	MH	782.34	PR. 24" NW 761.06 PR. 30" SE 760.66	N = 281108.593 E = 13328659.542
* R203	6' DIA.	CB	775.91	PR. 12" W 771.00 PR. 24" SE 761.75 PR. 24" SW 761.85	N = 281175.748 E = 13328565.624
* R204	4' DIA.	CB	780.86	PR. 12" W 776.35 PR. 12" E 776.25	N = 281203.984 E = 13328435.825
* R205	4' DIA.	CB	784.36	PR. 12" W 779.81 PR. 12" E 779.61	N = 281221.864 E = 13328301.005
* R206	4' DIA.	CB	787.08	PR. 12" W 780.62 PR. 12" E 780.42	N = 281239.745 E = 13328166.186
* R207	4' DIA.	CB	788.03	PR. 12" W 781.22 PR. 12" E 781.02	N = 281251.577 E = 13328076.967
* R208	4' DIA.	CB	786.62	PR. 12" E 781.83 PR. 12" W 782.03	N = 281269.984 E = 13327938.182
* R209	2' DIA.	INLET	788.71	PR. 12" E 782.65	N = 281288.390 E = 13327799.398
* R210	4' DIA.	CB	771.02	PR. 18" NE 756.94 PR. 24" SW 756.54	N = 281071.678 E = 13328867.500
* R210A	6' DIA.	CB	765.00	PR. 18" NW 760.42 PR. 18" SW 760.32	N = 281193.133 E = 13328926.194
* R210B	5' DIA.	MH	775.88	PR. 12" SW 771.69 PR. 18" SE 763.99 PR. 18" NW 764.09	N = 281269.719 E = 13328805.473
* R211	5' DIA.	CB	776.46	PR. 12" W 772.32 PR. 12" NE 772.22	N = 281228.188 E = 13328764.127
* R212	4' DIA.	CB	776.46	PR. 12" E 772.46	N = 281236.611 E = 13328736.377
* R213	4' DIA.	CB	776.45	PR. 12" NE 772.43	N = 281294.180 E = 13328689.088
* R214	4' DIA.	CB	776.45	PR. 18" NW 766.48 PR. 12" SW 772.28 PR. 18" SE 766.38	N = 281319.959 E = 13328702.369
* R215	4' DIA.	CB	774.10	PR. 18" W 769.57 PR. 18" SE 769.47	N = 281503.744 E = 13328503.074
* R216	4' DIA.	CB	779.37	PR. 18" W 773.26 PR. 18" E 773.06	N = 281521.099 E = 13328372.220
* R217	4' DIA.	CB	780.96	PR. 18" W 774.78 PR. 18" E 774.58 PR. 12" S 777.08	N = 281538.453 E = 13328241.366
* R217A	4' DIA.	CB	789.86	PR. 12" S 785.92 PR. 12" N 783.29	N = 281401.156 E = 13328223.157
* R217B	4' DIA.	CB	789.86	PR. 12" N 786.05	N = 281372.407 E = 13328219.344
* R218	4' DIA.	CB	782.36	PR. 18" W 775.51 PR. 18" E 775.31	N = 281547.657 E = 13328171.974
* R219	4' DIA.	CB	787.12	PR. 15" W 776.63 PR. 18" E 776.43	N = 281565.011 E = 13328041.119
* R220	4' DIA.	CB	784.69	PR. 15" NW 778.14 PR. 15" E 778.04 PR. 12" S 781.04	N = 281574.946 E = 13327965.959
* R220A	4' DIA.	CB	784.67	PR. 15" SE 778.86 PR. 12" W 779.06	N = 281604.962 E = 13327946.047
* R220B	4' DIA.	CB	784.67	PR. 12" E 779.64 PR. 12" W 779.74	N = 281608.775 E = 13327917



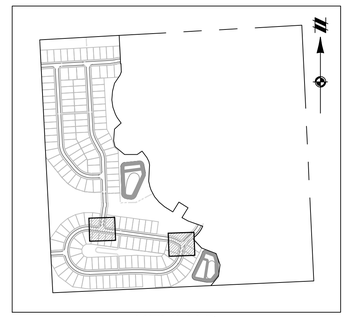
JENNIFER DR. + MAGGIE LANE + DELANEY DR.

SCALE: 1"=20'



JENNIFER DR. + DELANEY DR.

SCALE: 1"=20'



KEYMAP

SCALE: 1" = 750'

811

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SUPERIOR TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
SE MICHIGAN LAND HOLDING LLC

PROSPECT POINTE WEST
FINAL SITE PLAN – PHASE 3

INTERSECTION DETAILS

DATE
NOVEMBER 22, 2024

03-07-2025: PER TWP
04-21-2025: PER TWP

REVISIONS

0 10 20
SCALE: 1" = 20 FEET

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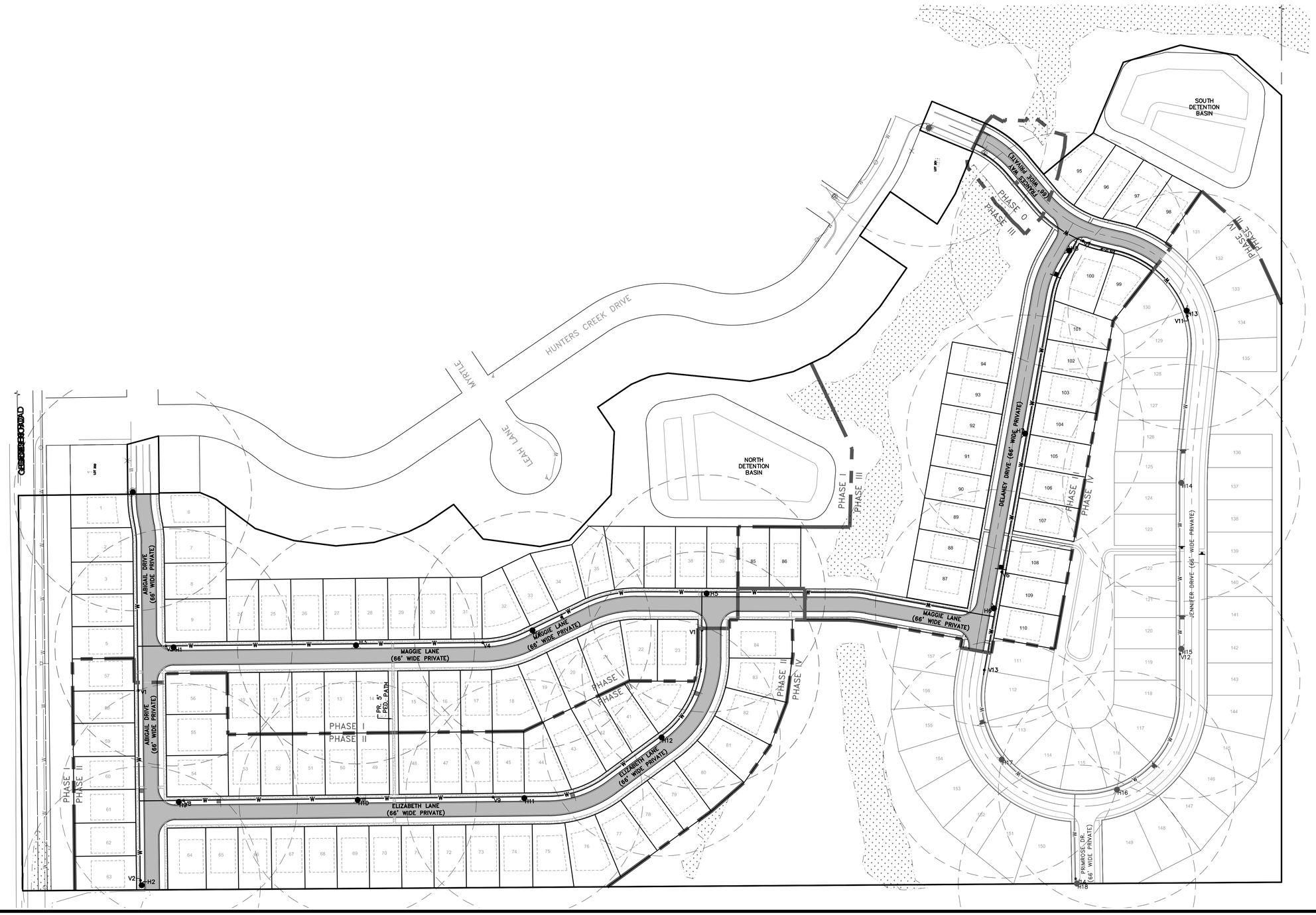
BOOK --	
JOB 16000819	
SHEET NO. 36	

LEGEND

- PROPOSED WATER MAIN
- EXISTING WATER MAIN
- 250' RADIUS HYDRANT COVERAGE (TYP.)
- PROPOSED PAVEMENT
- PROPOSED HYDRANT
- 'NO PARKING – FIRE LANE' SIGN



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FIRE PROTECTION PLAN

DATE
NOVEMBER 22, 2024

03-07-2025: PER TWP
04-21-2025: PER TWP

REVISIONS

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SCALE: 1" = 100 FEET

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JOB 16000819	
SHEET NO. 37	

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INVASIVE SHRUB ERADICATION AND MANAGEMENT PLAN FOR PROSPECT POINTE WEST

1.0 PLAN GOALS AND OBJECTIVES

As part of the development project, an invasive shrub inventory and management plan is proposed. The inventory and management plan are required for a development plan defined by the Superior Charter Township's Woodlands & Tree Preservation, subsection 14.05F of *Article 14 Special Development Provisions* of the Township's zoning ordinance. The goal of the management plan is to eliminate or reduce the presence and growth of four (4) species of invasive woody shrubs during and after the construction of the Project.

Atwell conducted a site visit to inventory the general locations of the following four (4) invasive woody shrub species within the Site boundaries: common (European) and glossy buckthorn (*Rhamnus cathartica* and *Frangula alnus*, respectively), autumn-olive (*Elaeagnus umbellata*), honeysuckle (*Lonicera tatarica*), and multi-flora rose (*Rosa multiflora*). Atwell also noted the percentage of the site covered by these species and their growth extent, range, condition, and size.

2.0 INVENTORY FINDINGS

Atwell conducted the invasive shrub inventory site visit on February 28, 2017 and identified 14 areas containing a predominance (>50%) of the above-listed invasive shrub species within scrub-shrub, forested, or tree line areas. These areas are located particularly along the perimeter of the property boundary and along the tree lines that intersect the agricultural fields. The southern periphery of the Site also contains a shrub layer dominated by those four invasive shrubs.

Along the perimeter of the Site, common buckthorn is especially prolific, although these areas contain a few individual honeysuckle, autumn-olive, and occasional multi-flora rose plants. These areas contain many common buckthorn seedlings and saplings. The larger buckthorns are scattered, with small multi-stem trees, and with diameters varying in size from about 1.0 inch to 12.0 inches diameter at breast height (dbh). Overall, these invasive buckthorn shrub plants appear to be in fair to good condition, with little to no evidence of decay or damage.

There are select areas, particularly in the tree lines within the eastern portion of the Site, that contain a dominance of invasive honeysuckle (>50%) shrubs, with scattered buckthorn, multi-flora rose, and autumn-olive sapling plants. The honeysuckle shrubs in these areas vary in size from 2.0 dbh inches to 7.0 inches dbh. Overall, these shrub plants appear to be in fair to good condition, with little to no evidence of decay or damage.

The forested areas along the southern perimeter of the Site contain a dense invasive shrub understory consisting primarily of buckthorn, honeysuckle, and multi-flora rose. These areas contain small (less than 10 feet tall) shrubs that are in fair to good health; with little to no evidence of decay or damage. Trees observed along the southern property boundary include: oaks (*Quercus spp.*), maples (*Acer spp.*), hickories (*Carya spp.*), cottonwood, American elm (*Ulmus americana*), and basswood (*Tilia americana*).

Overall, Atwell noted that invasive shrub density was inversely proportional to native herbaceous, shrub, and tree sapling growth, which indicates that these invasive shrubs are suppressing the vigor of native plants.

3.0 CONTROL METHODS

3.1 <u>Developed Areas</u>

Mechanical Control

Equipment, such as bulldozers will be used for on-site grading and vegetation removal in the developed areas. Vegetation removal, site grading, and construction will eradicate the invasive shrubs in developed areas.

Stockpiled soils will be kept on-site, and a construction barrier will be placed around the perimeter of stockpiles to prevent spread of invasive species and sediment.

1.1 Undeveloped Areas

Herbicide & Stump Cut Treatment

Undeveloped areas can be defined as those lands that will not be subject to buildings, permanent infrastructure, or maintained landscape planting and management. The undeveloped areas include planned natural areas and natural grade buffers, wetlands, wetland and stream setbacks, etc., that are planned to remain in the aftermath of construction.

Invasive shrubs tend to increase in undeveloped and natural areas following ground disturbance or vegetation disturbance. As a result, undeveloped areas that are to be permanently retained will not be subject to soil or vegetation disturbance during construction and development activities; the only exception will be the invasive shrub removal in undeveloped areas.

The four (4) invasive shrub species will be controlled through two rounds of treatments—one during the initial construction phases and a second follow-up control visit. The first control round will consist of stump cutting and herbicide treatments within all undeveloped areas during construction phases. In undeveloped areas, stump cutting with herbicidal application will be an effective means to eradicate/control the four (4) invasive shrub species. While cutting removes the canopy of invasive shrubs, the herbicide treatment is necessary to kill roots and prevent re-sprout. Cut stump treatments are usually preferred over broadcast herbicidal spraying, because stump treatments can more easily avoid non-target species during herbicide application. The most effective time to cut and chemically treat the stumps is from late summer through the fall; however, cutting and herbicidal application can be conducted during winter as well.

In construction areas, a construction barrier will be placed around the drip line perimeter of protected trees in order to protect them from damage. However, removal of the four (4) invasive shrub species will still need to occur near and beneath these trees. Removal of invasive shrub species and other site grading activities within the protected zone of a landmark tree or sovereign tree shall be done with care.

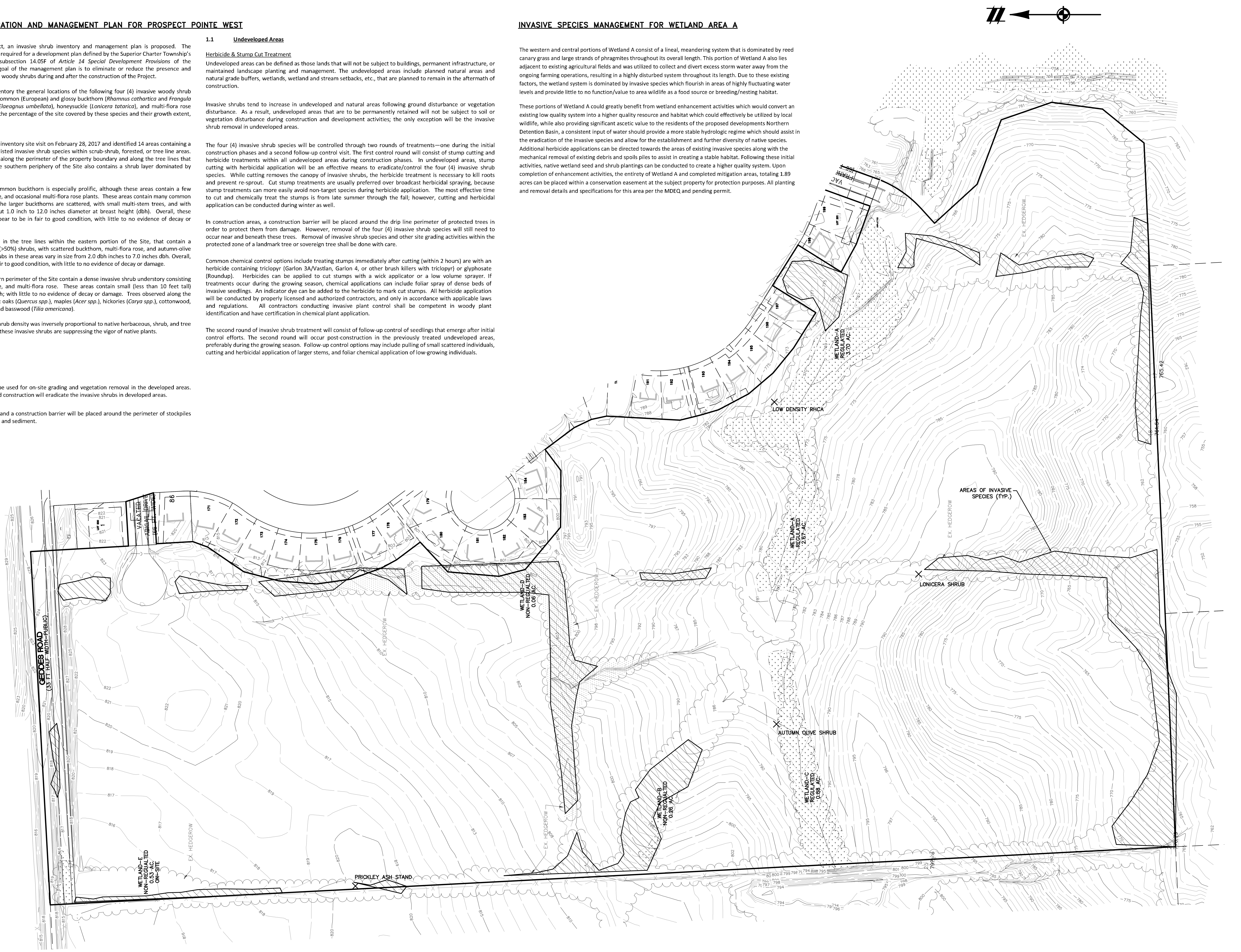
Common chemical control options include treating stumps immediately after cutting (within 2 hours) are with an herbicide containing triclopyr (Garlon 3A/Vastlan, Garlon 4, or other brush killers with triclopyr) or glyphosate (Roundup). Herbicides can be applied to cut stumps with a wick applicator or a low volume sprayer. If treatments occur during the growing season, chemical applications can include foliar spray of dense beds of invasive seedlings. An indicator dye can be added to the herbicide to mark cut stumps. All herbicide application will be conducted by properly licensed and authorized contractors, and only in accordance with applicable laws and regulations. All contractors conducting invasive plant control shall be competent in woody plant identification and have certification in chemical plant application.

The second round of invasive shrub treatment will consist of follow-up control of seedlings that emerge after initial control efforts. The second round will occur post-construction in the previously treated undeveloped areas, preferably during the growing season. Follow-up control options may include pulling of small scattered individuals, cutting and herbicidal application of larger stems, and foliar chemical application of low-growing individuals.

INVASIVE SPECIES MANAGEMENT FOR WETLAND AREA A

The western and central portions of Wetland A consist of a lineal, meandering system that is dominated by reed canary grass and large strands of phragmites throughout its overall length. This portion of Wetland A also lies adjacent to existing agricultural fields and was utilized to collect and divert excess storm water away from the ongoing farming operations, resulting in a highly disturbed system throughout its length. Due to these existing factors, the wetland system is dominated by invasive species which flourish in areas of highly fluctuating water levels and provide little to no function/value to area wildlife as a food source or breeding/nesting habitat.

These portions of Wetland A could greatly benefit from wetland enhancement activities which would convert an existing low quality system into a higher quality resource and habitat which could effectively be utilized by local wildlife, while also providing significant ascetic value to the residents of the proposed developments Northern Detention Basin, a consistent input of water should provide a more stable hydrologic regime which should assist in the eradication of the invasive species and allow for the establishment and further diversity of native species. Additional herbicide applications can be directed towards the areas of existing invasive species along with the mechanical removal of existing debris and spoils piles to assist in creating a stable habitat. Following these initial activities, native wetland seed and shrub plantings can be conducted to create a higher quality system. Upon completion of enhancement activities, the entirety of Wetland A and completed mitigation areas, totaling 1.89 acres can be placed within a conservation easement at the subject property for protection purposes. All planting and removal details and specifications for this area per the MDEQ and pending permit.



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PROSPECT POINTE WEST
FINAL SITE PLAN – PHASE 3
INVASIVE SPECIES REMOVAL PLAN

DATE
NOVEMBER 22, 2024

03-07-2025: PER TWP
04-21-2025: PER TWP

REVISIONS

SCALE: 1" = 100 FEET

DR. SK	CH. SS
P.M. MB	
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JOB 16000819	
SHEET NO. 38	

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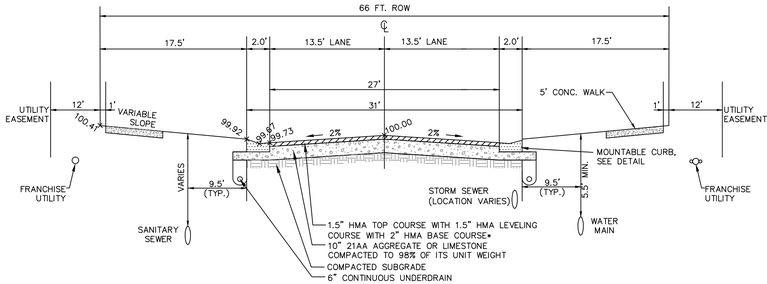
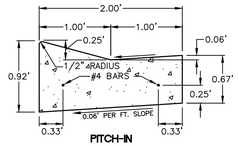


RESIDENTIAL ROADWAYS (PRIVATE)
NOT TO SCALE

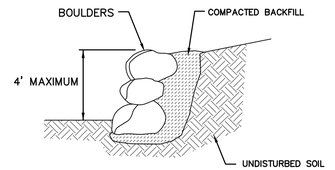
* NOTES:
1. REFER TO CURRENTLY APPROVED WCRC HMA MIX DESIGNS AND BINDER REQUIREMENTS PRIOR TO CONSTRUCTION.
2. ALL PROPOSED UTILITIES SHALL BE WITHIN THE RIGHT-OF-WAY OR WITHIN AN EASEMENT OUTSIDE OF THE RIGHT-OF-WAY.

ASSUMED SECTION:
1.5" LVSP WEARING COURSE with 3% max air voids
1.5" LVSP LEVELING COURSE
2" 4E1 BASE COURSE
All HMA shall limit RAP to 25%



MOUNTABLE CURB & GUTTER
NO SCALE

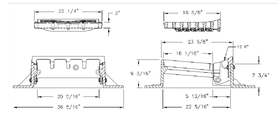
NOTE:
1. BASE AND SUBBASE AGGREGATES TO EXTEND MINIMUM 1'-0" BEHIND BACK OF CURB.
2. CURB CATCH BASIN CASTING TO BE EJIW 7065 WITH M1 GRATE OR APPROVED ALTERNATE, SEE BELOW.



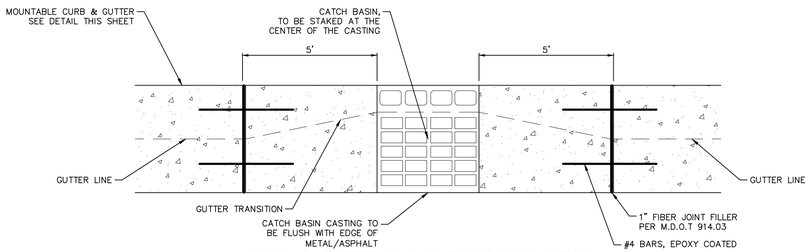
BOULDER WALL
NO SCALE

7065 CATCH BASIN CURB INLET
Heavy duty
With 7045 Type M1 grate and 7060 T1 back
Approximate 195 sq. in. open area
Accepts 7045 grates
Special lettered grate
"DUMP NO WASTE!" lettering and fish image

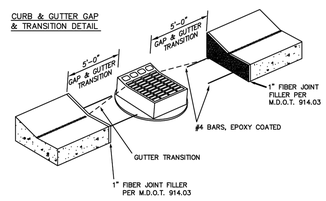




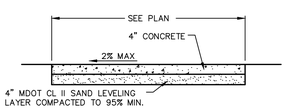
7065 CATCH BASIN CURB CASTING
NO SCALE



CURB & GUTTER GAP & TRANSITION DETAIL PLAN VIEW
NO SCALE



CURB & GUTTER GAP & TRANSITION DETAIL
NO SCALE



NOTE: WALKS TO BE 6" THICK THROUGH DRIVES

CONCRETE SIDEWALK SECTION
NOT TO SCALE

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DETAIL SHEET 1

DATE
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03-07-2025: PER TWP
04-21-2025: PER TWP

REVISIONS
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N/A

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P.M. MB
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SHEET NO.
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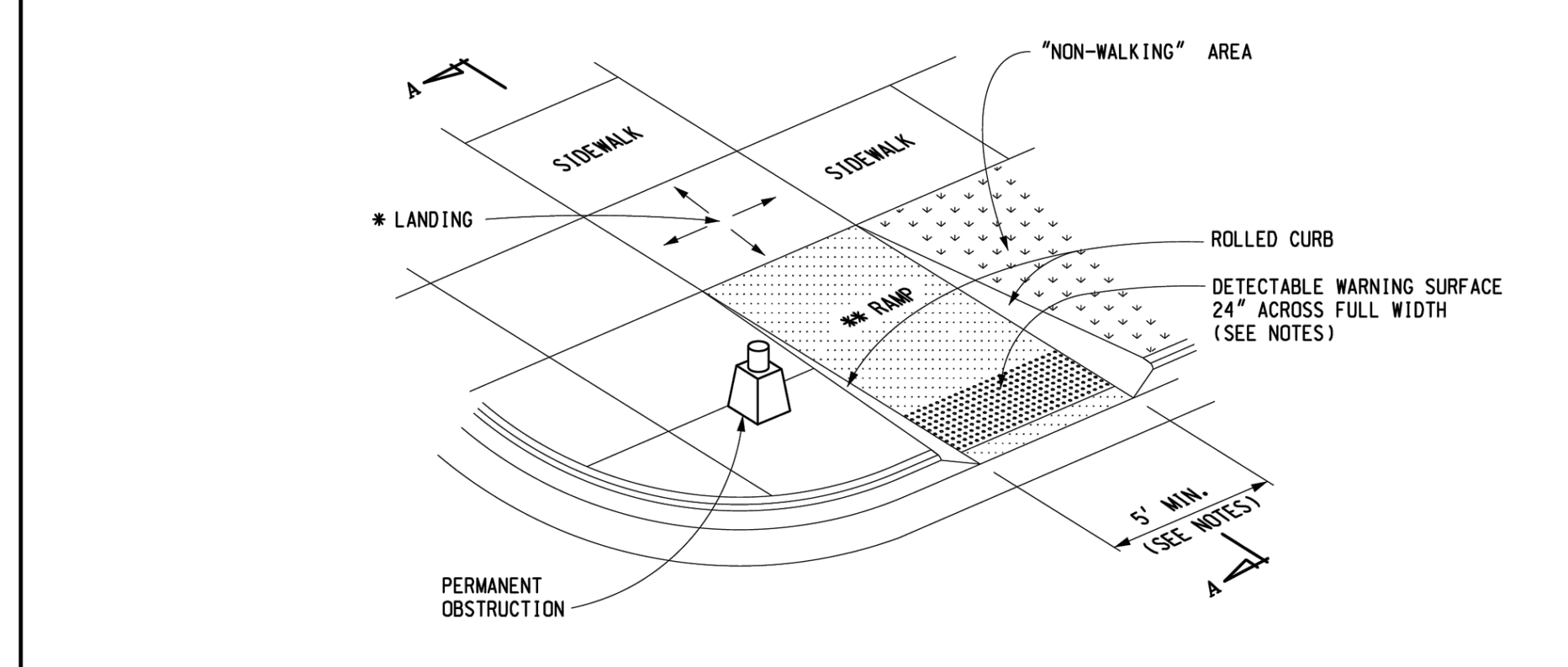
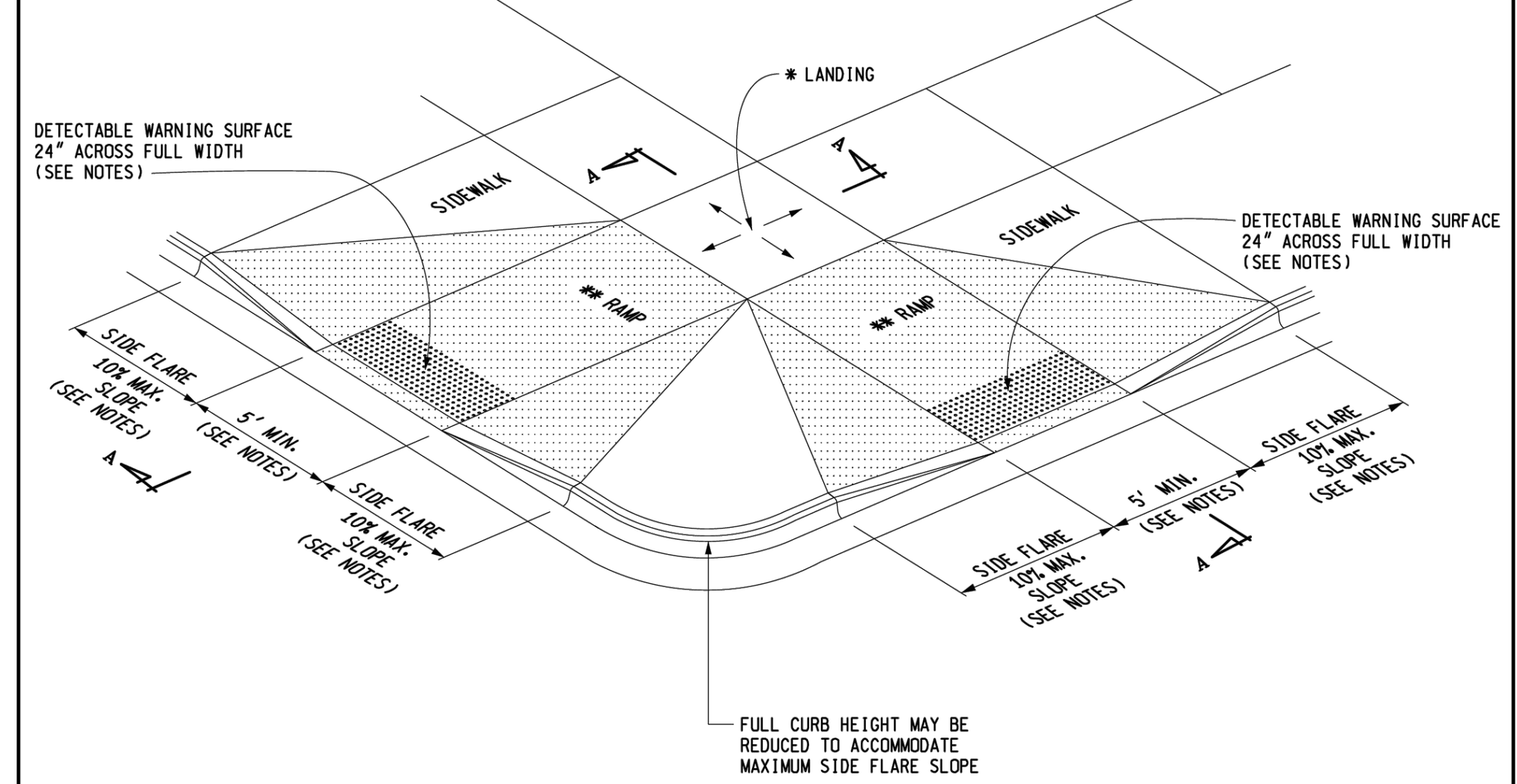
* MAXIMUM LANDING SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. MINIMUM DIMENSIONS 5' x 5'. SEE NOTES.

** MAXIMUM RAMP CROSS SLOPE IS 2.0%, RUNNING SLOPE 5% - 7% (8.3% MAXIMUM). SEE NOTES.



SIDEWALK RAMP TYPE R
(ROLLED SIDES)



SIDEWALK RAMP TYPE F
(FLARED SIDES, TWO RAMPS SHOWN)

MDOT Michigan Department of Transportation	DEPARTMENT DIRECTOR Kirk T. Steudle	MICHIGAN DEPARTMENT OF TRANSPORTATION BUREAU OF DEVELOPMENT STANDARD PLAN FOR
PREPARED BY DESIGN DIVISION	APPROVED BY: DIRECTOR, BUREAU OF FIELD SERVICES	SIDEWALK RAMP AND DETECTABLE WARNING DETAILS
DRAWN BY: B.L.T. CHECKED BY: W.K.P.	APPROVED BY: DIRECTOR, BUREAU OF DEVELOPMENT	F.H.W.A. APPROVAL / 3-15-2016 PLAN DATE / R-28-J / SHEET 1 OF 7

* MAXIMUM LANDING SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. MINIMUM DIMENSIONS 5' x 5'. SEE NOTES.

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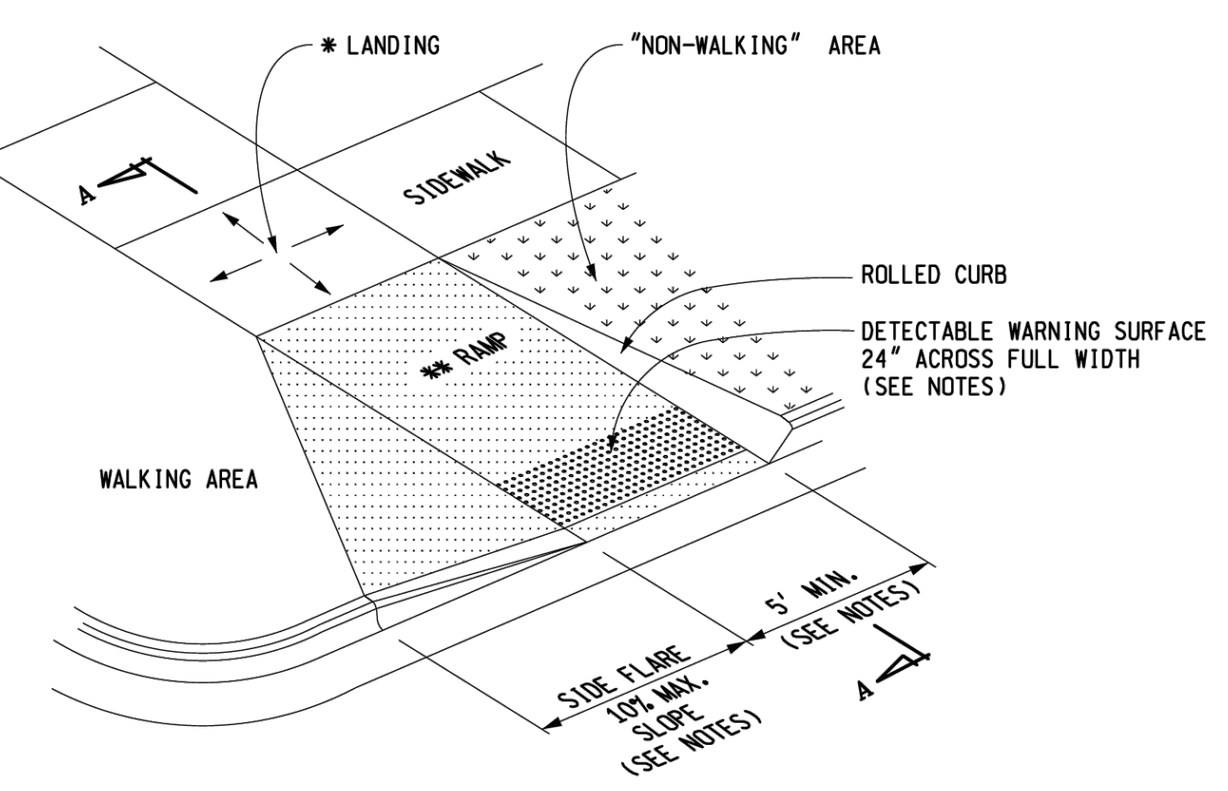
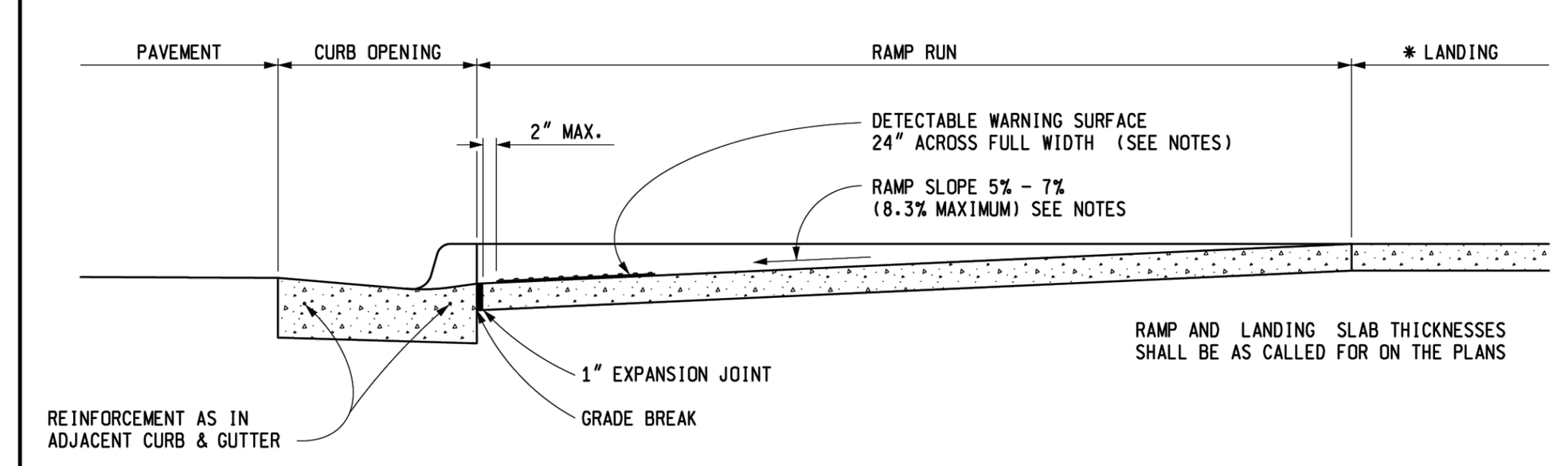
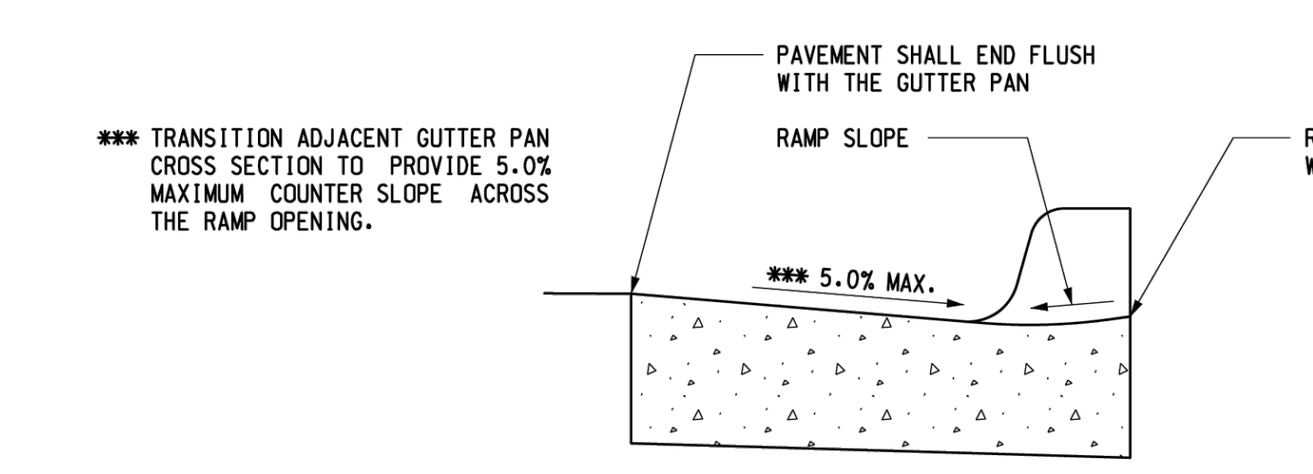


SIDEWALK RAMP TYPE RF
(ROLLED / FLARED SIDES)



SECTION A-A



SECTION THROUGH CURB OPENING
(TYPICAL ALL RAMP TYPES)

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR
SIDEWALK RAMP AND DETECTABLE WARNING DETAILS
F.H.W.A. APPROVAL | 3-15-2016 PLAN DATE | R-28-J | SHEET 2 OF 7

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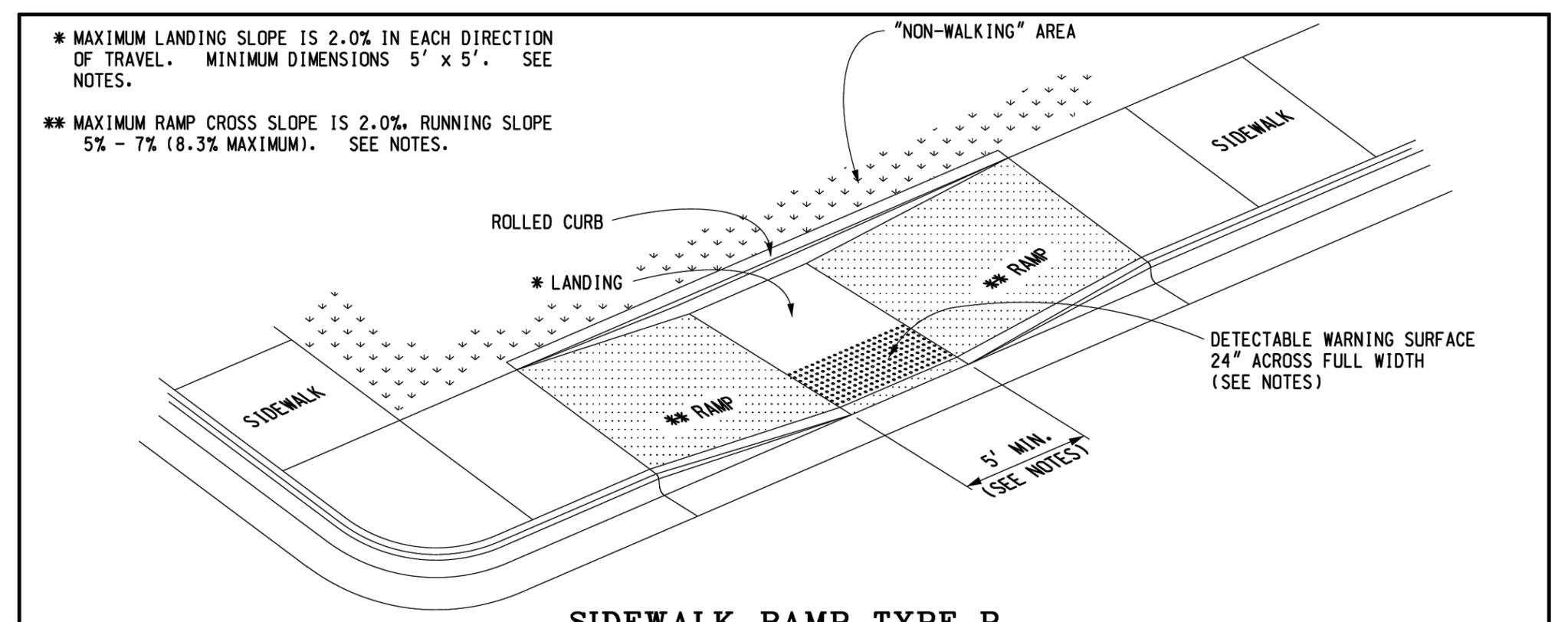
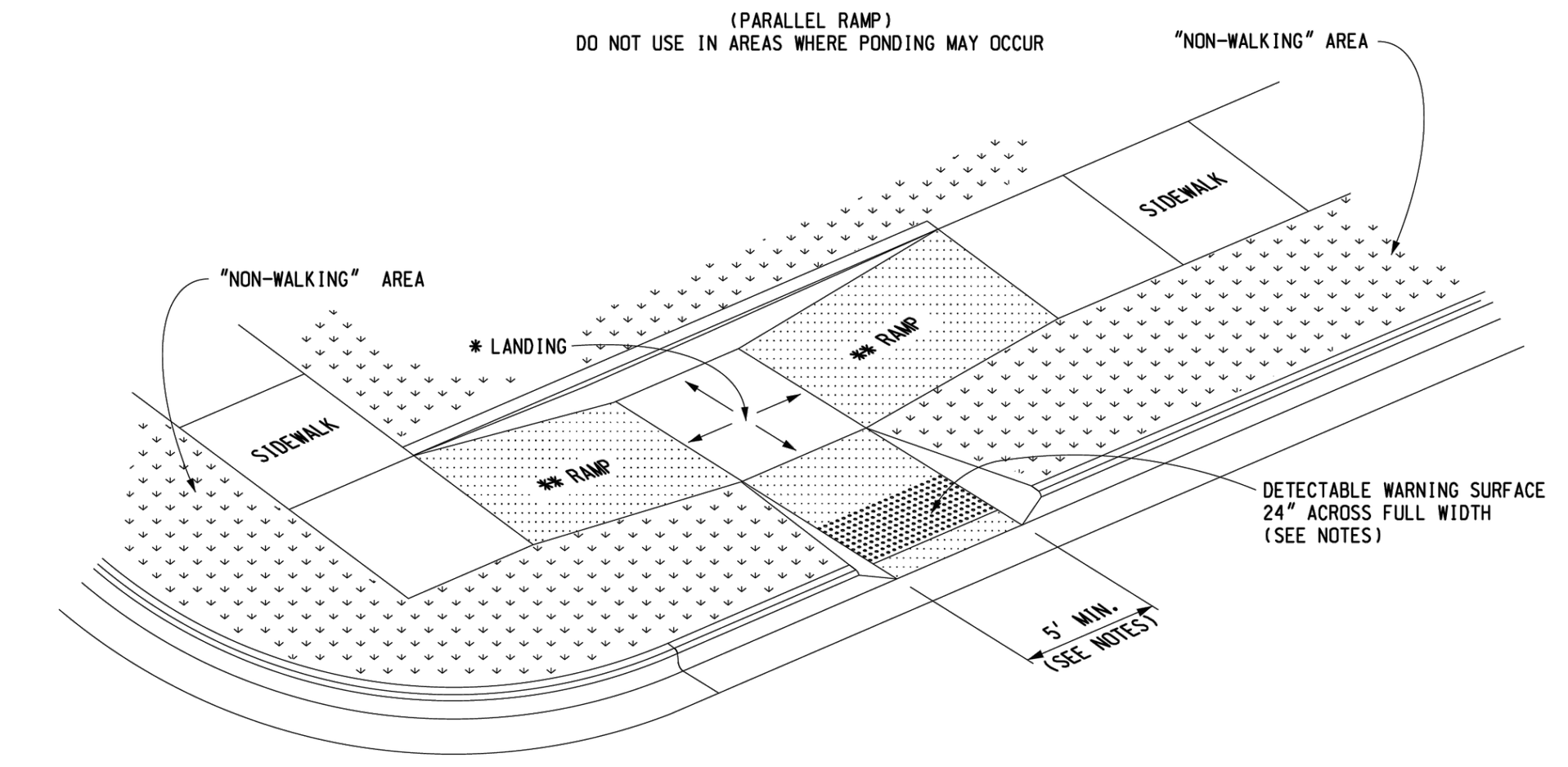
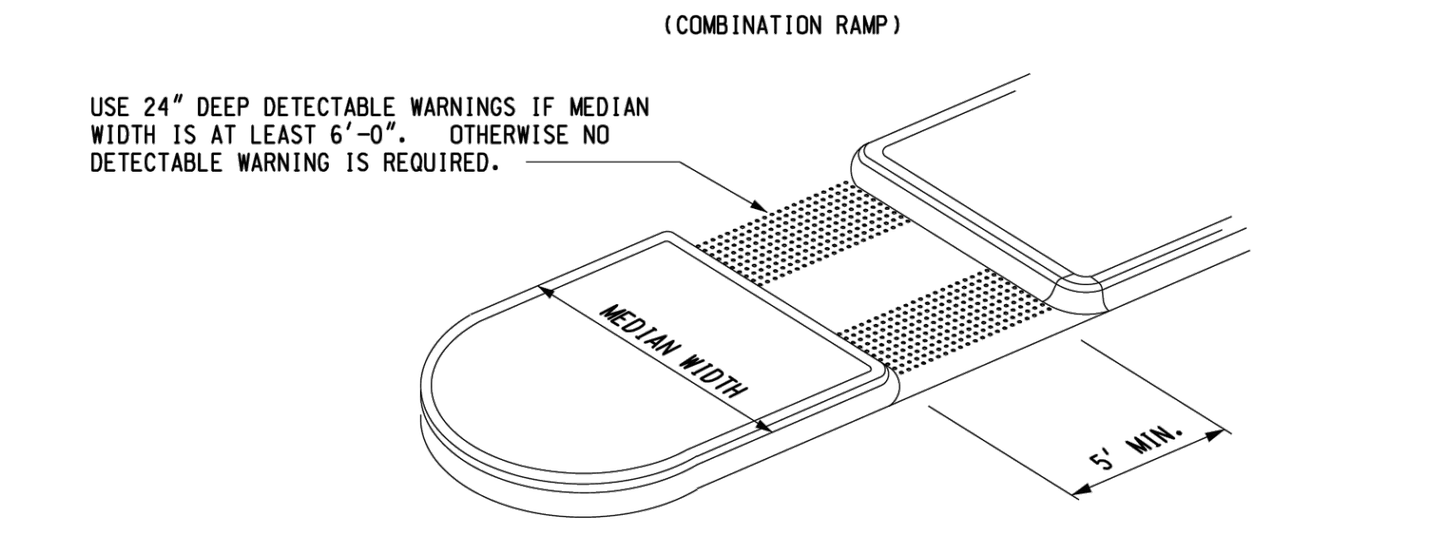


SIDEWALK RAMP TYPE P
(PARALLEL RAMP)
DO NOT USE IN AREAS WHERE PONDING MAY OCCUR



SIDEWALK RAMP TYPE C
(COMBINATION RAMP)

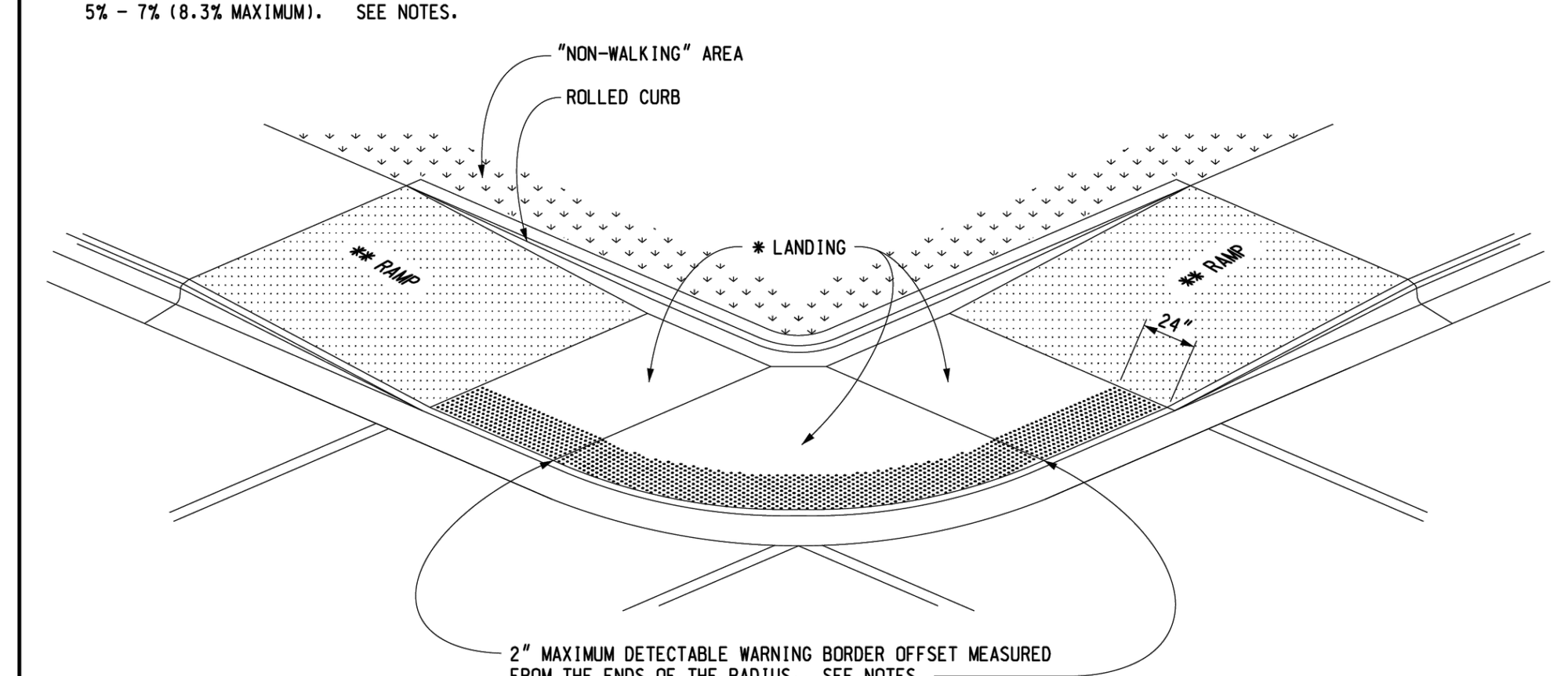


SIDEWALK RAMP TYPE M
(MEDIAN ISLAND)

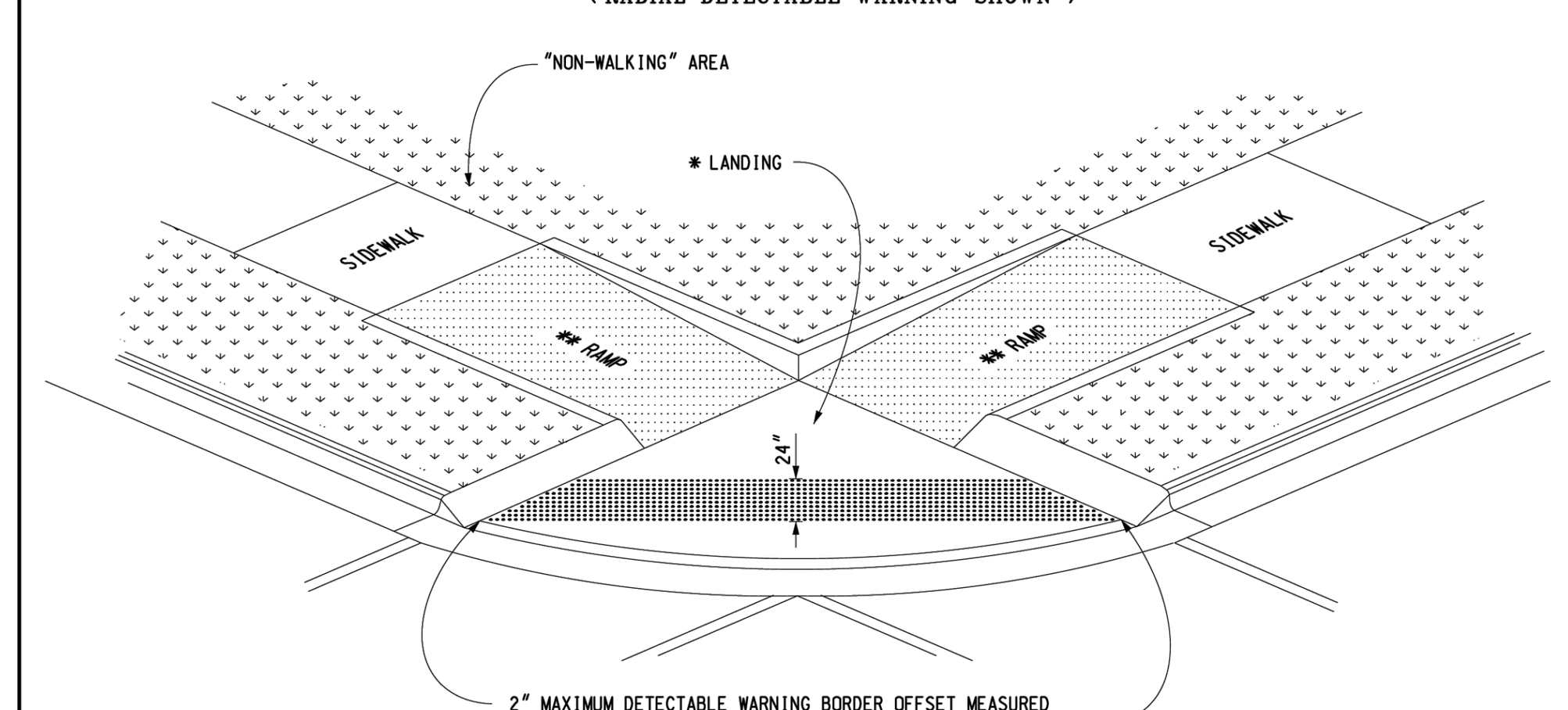
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR
SIDEWALK RAMP AND DETECTABLE WARNING DETAILS
F.H.W.A. APPROVAL | 3-15-2016 PLAN DATE | R-28-J | SHEET 3 OF 7

* MAXIMUM LANDING SLOPE IS 2.0% IN EACH DIRECTION OF TRAVEL. MINIMUM DIMENSIONS 5' x 5'. SEE NOTES.

** MAXIMUM RAMP CROSS SLOPE IS 2.0%, RUNNING SLOPE 5% - 7% (8.3% MAXIMUM). SEE NOTES.



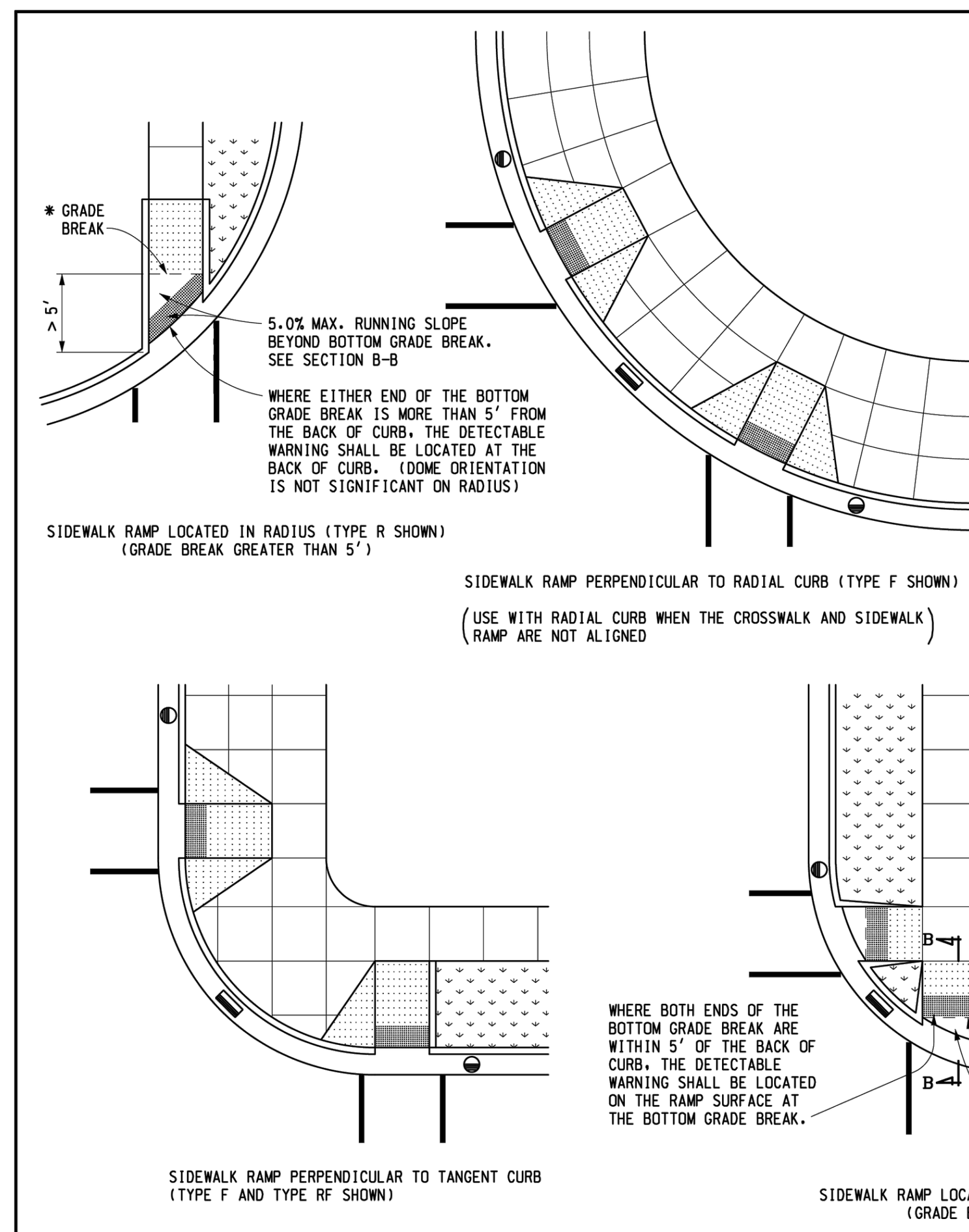
(RADIAL DETECTABLE WARNING SHOWN)



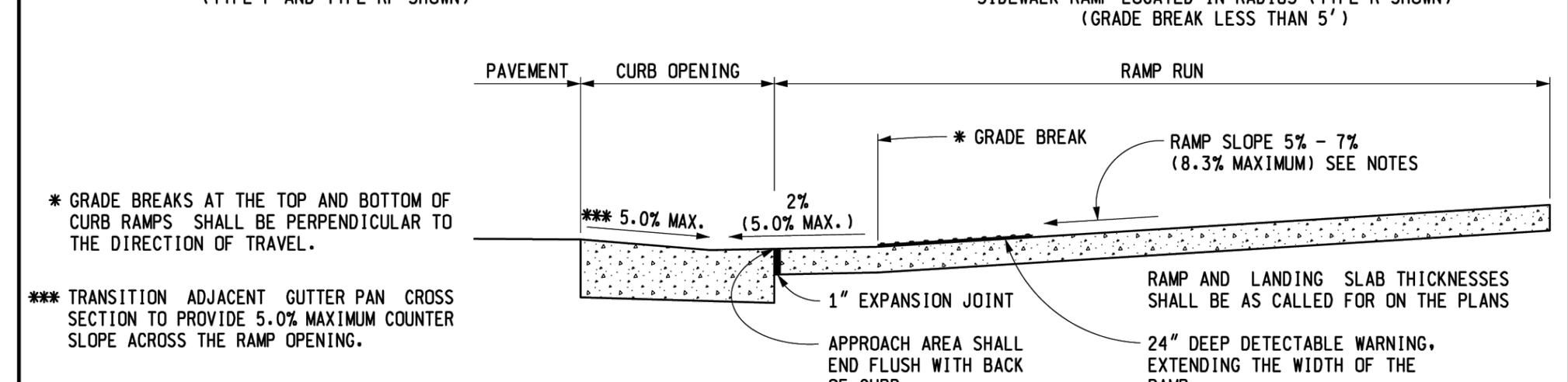
(TANGENT DETECTABLE WARNING SHOWN)

SIDEWALK RAMP TYPE D
(DEPRESSED CORNER)
USE ONLY WHEN INDEPENDENT DIRECTIONAL RAMPS CAN NOT BE CONSTRUCTED FOR EACH CROSSING DIRECTION

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR
SIDEWALK RAMP AND DETECTABLE WARNING DETAILS
F.H.W.A. APPROVAL | 3-15-2016 PLAN DATE | R-28-J | SHEET 4 OF 7



LEGEND
SLOPED SURFACE
DETECTABLE WARNING
"NON-WALKING" AREA
CROSSWALK MARKING
PREFERRED LOCATION OF DRAINAGE INLET (TYP.)
ALTERNATE LOCATION OF DRAINAGE INLET (TYP.)

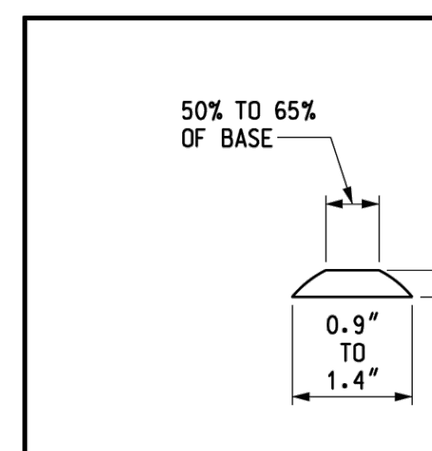


* GRADE BREAKS AT THE TOP AND BOTTOM OF CURB RAMPS SHALL BE PERPENDICULAR TO THE DIRECTION OF TRAVEL.

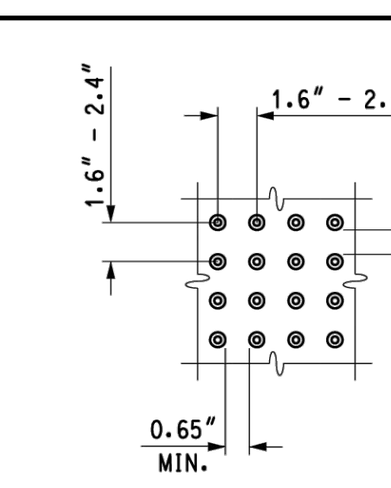
*** TRANSITION ADJACENT GUTTER PAN CROSS SECTION TO PROVIDE 5.0% MAXIMUM COUNTER SLOPE ACROSS THE RAMP OPENING.

SECTION B-B
SIDEWALK RAMP ORIENTATION

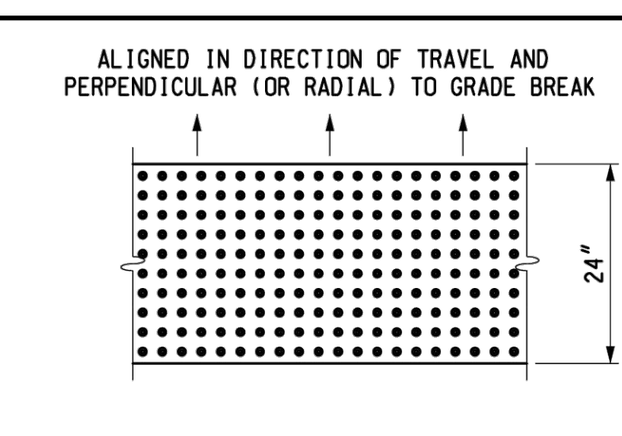
MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR
SIDEWALK RAMP AND DETECTABLE WARNING DETAILS
F.H.W.A. APPROVAL | 3-15-2016 PLAN DATE | R-28-J | SHEET 6 OF 7



DOME SECTION



DOME SPACING



DOME ALIGNMENT

DETECTABLE WARNING DETAILS

NOTES:

DETAILS SPECIFIED ON THIS PLAN APPLY TO ALL CONSTRUCTION, RECONSTRUCTION, OR ALTERATION OF STREETS, CURBS, OR SIDEWALKS IN THE PUBLIC RIGHT OF WAY.

SIDEWALK RAMPS ARE TO BE LOCATED AS SPECIFIED ON THE PLANS OR AS DIRECTED BY THE ENGINEER.

RAMPS SHALL BE PROVIDED AT ALL CORNERS OF AN INTERSECTION WHERE THERE IS EXISTING OR PROPOSED SIDEWALK AND CURB. RAMPS SHALL ALSO BE PROVIDED AT MARKED AND/OR SIGNALIZED MID-BLOCK CROSSINGS.

SURFACE TEXTURE OF THE RAMP SHALL BE THAT OBTAINED BY A COARSE BROOMING, TRANSVERSE TO THE RUNNING SLOPE.

SIDEWALK SHALL BE RAMPED WHERE THE DRIVEWAY CURB IS EXTENDED ACROSS THE WALK.

CARE SHALL BE TAKEN TO ASSURE A UNIFORM GRADE ON THE RAMP. WHERE CONDITIONS PERMIT, IT IS DESIRABLE THAT THE SLOPE OF THE RAMP BE IN ONLY ONE DIRECTION, PARALLEL TO THE DIRECTION OF TRAVEL.

RAMP WIDTH SHALL BE INCREASED, IF NECESSARY, TO ACCOMMODATE SIDEWALK SNOW REMOVAL EQUIPMENT NORMALLY USED BY THE MUNICIPALITY.

WHEN 5' MINIMUM WIDTHS ARE NOT FEASIBLE, RAMP WIDTH MAY BE REDUCED TO NOT LESS THAN 4' AND LANDINGS TO NOT LESS THAN 4' x 4'.

DETECTABLE WARNING SURFACE COVERAGE IS 24" MINIMUM IN THE DIRECTION OF RAMP/PATH TRAVEL AND THE FULL WIDTH OF THE RAMP/PATH OPENING EXCLUDING CURBED OR FLARED CURB TRANSITION AREAS. A BORDER OFFSET NOT GREATER THAN 2" MEASURED ALONG THE EDGES OF THE DETECTABLE WARNING IS ALLOWABLE. FOR RADIAL CURB THE OFFSET IS MEASURED FROM THE ENDS OF THE RADIUS.

FOR NEW ROADWAY CONSTRUCTION, THE RAMP CROSS SLOPE MAY NOT EXCEED 2.0%. FOR ALTERATIONS TO EXISTING ROADWAYS, THE CROSS SLOPE MAY BE TRANSITIONED TO MEET AN EXISTING ROADWAY GRADE. THE CROSS SLOPE TRANSITION SHALL BE APPLIED UNIFORMLY OVER THE FULL LENGTH OF THE RAMP.

THE MAXIMUM RUNNING SLOPE OF 8.3% IS RELATIVE TO A FLAT (0%) REFERENCE. HOWEVER, IT SHALL NOT REQUIRE ANY RAMP OR SERIES OF RAMPS TO EXCEED 15 FEET IN LENGTH.

DRAINAGE STRUCTURES SHOULD NOT BE PLACED IN LINE WITH RAMPS. THE LOCATION OF THE RAMP SHOULD TAKE PRECEDENCE OVER THE LOCATION OF THE DRAINAGE STRUCTURE. WHERE EXISTING DRAINAGE STRUCTURES ARE LOCATED IN THE RAMP PATH OF TRAVEL, USE A MANUFACTURER'S ADA COMPLIANT GRATE. OPENINGS SHALL NOT BE GREATER THAN ½". ELONGATED OPENINGS SHALL BE PLACED SO THAT THE LONG DIMENSION IS PERPENDICULAR TO THE DOMINANT DIRECTION OF TRAVEL.

TRANSITION THE GUTTER PAN CROSS SECTION SUCH THAT THE COUNTER SLOPE IN THE DIRECTION OF RAMP TRAVEL IS NOT GREATER THAN 5.0%. MAINTAIN THE NORMAL GUTTER PAN CROSS SECTION ACROSS DRAINAGE STRUCTURES.

THE TOP OF THE JOINT FILLER FOR ALL RAMP TYPES SHALL BE FLUSH WITH THE ADJACENT CONCRETE.

CROSSWALK AND STOP LINE MARKINGS, IF USED, SHALL BE SO LOCATED AS TO STOP TRAFFIC SHORT OF RAMP CROSSINGS. SPECIFIC DETAILS FOR MARKING APPLICATIONS ARE GIVEN IN THE "MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES".

FLARED SIDES WITH A SLOPE OF 10% MAXIMUM, MEASURED ALONG THE ROADSIDE CURB LINE, SHALL BE PROVIDED WHERE AN UNOBSTRUCTED CIRCULATION PATH LATERALLY CROSSES THE SIDEWALK RAMP. FLARED SIDES ARE NOT REQUIRED WHERE THE RAMP IS BORDERED BY LANDSCAPING, UNPAVED SURFACE OR PERMANENT FIXED OBJECTS. WHERE THEY ARE NOT REQUIRED, FLARED SIDES CAN BE CONSIDERED IN ORDER TO AVOID SHARP CURB RETURNS AT RAMP OPENINGS.

DETECTABLE WARNING PLATES MUST BE INSTALLED USING FABRICATED OR FIELD CUT UNITS CAST AND/OR ANCHORED IN THE PAVEMENT TO RESIST SHIFTING OR HEAVING.

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR
SIDEWALK RAMP AND DETECTABLE WARNING DETAILS
F.H.W.A. APPROVAL | 3-15-2016 PLAN DATE | R-28-J | SHEET 7 OF 7

NOTE: CONTRACTOR RESPONSIBLE TO USE THE MOST CURRENT MDOT DETAILS AND SPECIFICATIONS, AS APPLICABLE.

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NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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SECTION 33
TOWN 2 SOUTH, RANGE 7 EAST
SUPERIOR TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
SE MICHIGAN LAND HOLDING LLC
PROSPECT POINTE WEST
FINAL SITE PLAN - PHASE 3
DETAIL SHEET 2

DATE
NOVEMBER 22, 2024

03-07-2025: PER TWP
04-21-2025: PER TWP

REVISIONS

NA NA NA
N/A

DR. SK	CH. SS
P.M. MB	
BOOK --	
JOB 16000819	
SHEET NO. 40	

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Prospect Pointe West

THE AUSTIN

2,724-3,172 Sq. Ft. | 4-5 Bedrooms | 2.5-3 Baths

Lombardo HOMES



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Nature Series

THE AUSTIN

Lombardo H•O•M•E•S

2,708-3,121 Sq. Ft. | 4-5 Bedrooms | 2.5-3 Baths



Rev. 3/4/21

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Nature Series

THE AUSTIN

Lombardo H•O•M•E•S

First Floor Options



Garage options vary by community. Please see sales manager for details.

Rev. 9/10/21

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Nature Series

THE AUSTIN

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Second Floor Options



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Prospect Pointe West

THE BLOOMINGTON

2,181-2,479 Sq. Ft. | 3-4 Bedrooms | 2.5-3 Baths

Lombardo HOMES





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Nature Series

THE BLOOMINGTON

Lombardo H•O•M•E•S

2,185-2,276 Sq. Ft. | 3-4 Bedrooms | 2.5-3 Baths



Rev. 7/8/21

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Nature Series

THE BLOOMINGTON

Lombardo H•O•M•E•S

First Floor Options



Garage options vary by community. Please see sales manager for details.

Rev. 3/29/21

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Nature Series

THE BLOOMINGTON

Lombardo H•O•M•E•S

Second Floor Options



Rev. 2/19/21

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SECTION 33
TOWN 2 SOUTH, RANGE 7 EAST
SUPERIOR TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
SE MICHIGAN LAND HOLDING LLC

PROSPECT POINTE WEST
FINAL SITE PLAN – PHASE 3

TYPICAL BUILDING DETAILS

DATE
NOVEMBER 22, 2024

03-07-2025: PER TWP
04-21-2025: PER TWP

REVISIONS

NA NA NA
N/A

DR. SK	CH. SS
P.M. MB	
BOOK --	
JOB 16000819	
SHEET NO. 41	

\\MIANN1\PROJECTS\16000819\DWG\PLAN SETS\SITE – FINAL PHASE 3\16000819SF3-21-DT.DWG 4/21/2025 1:05 PM MATTHEW MYERS

Prospect Pointe West

THE COLUMBIA

2,432-2,707 Sq. Ft. | 4 Bedrooms | 2.5-3 Baths

Lombardo HOMES







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Nature Series

THE COLUMBIA

2,432-2,782 Sq. Ft. | 4 Bedrooms | 2.5-3 Baths

Lombardo H•O•M•E•S



Second Floor Plan



First Floor Plan

This depiction represents an artist's conception of the elevation and floor plan and is not intended to be an exact representation or show specific detailing. Plans remain subject to change without notice. Drawings are not to scale. All measurements shown are approximate and not necessarily to scale. Location, size and construction of doors, windows, wall, fireplaces and any other items depicted may vary depending on elevation preference or choice of options and are subject to change without notice. Some options and elevations shown may not be available in every neighborhood; see Sales Manager for details. Due to normal construction tolerances, the room sizes shown may vary slightly. The Builder may change home design, materials, features and methods of construction without prior notice. Model homes may contain some optional features not available through the Builder.

Rev. 3/4/23

Nature Series

THE COLUMBIA

First Floor Options

Lombardo H•O•M•E•S



Garage options vary by community. Please see sales manager for details.

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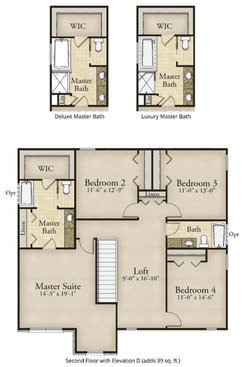
Nature Series

THE COLUMBIA

Second Floor Options

Lombardo H•O•M•E•S



Second Floor with Elevation D (adds 39 sq. ft.)

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Rev. 3/4/23

Prospect Pointe West

THE DAVENPORT

1,856-2,247 Sq. Ft. | 3 Bedrooms | 2 Baths

Lombardo HOMES









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Nature Series

THE DAVENPORT

1,856-2,005 Sq. Ft. | 3 Bedrooms | 2 Baths

Lombardo H•O•M•E•S



First Floor Plan

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Rev. 4/6/23

Nature Series

THE DAVENPORT

Floor Plan Options

Lombardo H•O•M•E•S



Garage options vary by community. Please see sales manager for details.

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Rev. 4/6/23

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WASHTENAW COUNTY, MICHIGAN

CLIENT
SE MICHIGAN LAND HOLDING LLC

PROSPECT POINTE WEST
FINAL SITE PLAN – PHASE 3

TYPICAL BUILDING DETAILS

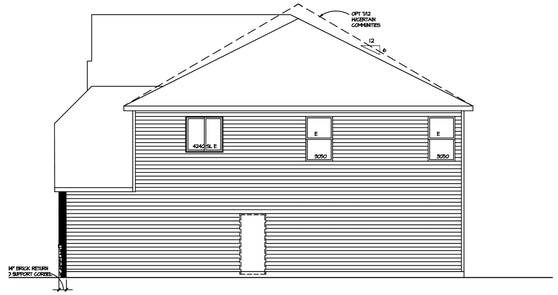
DATE
NOVEMBER 22, 2024

03-07-2025: PER TWP
04-21-2025: PER TWP

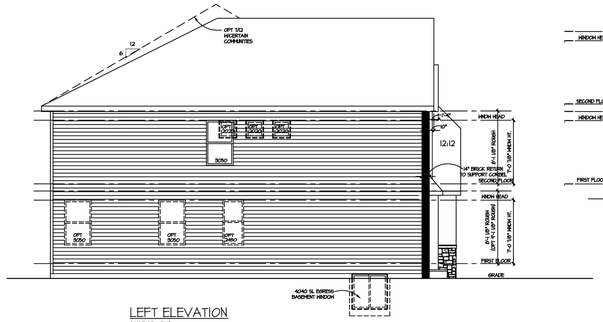
REVISIONS
NA NA NA
N/A

DR. SK | CH. SS
P.M. MB
BOOK —
JOB 16000819
SHEET NO. 42

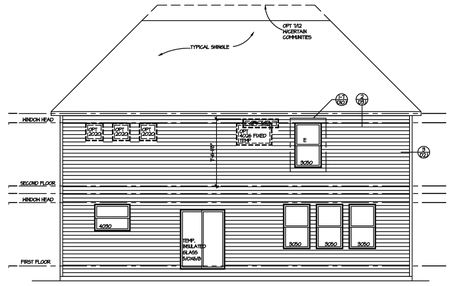
I:\ATWELL\PROJECTS\16000819\PLANSET\16000819-FSP-PHASE 3\16000819-FSP-PHASE 3-SITE.DWG 4/21/2025 1:05:56 PM MATTHEW MYERS



RIGHT ELEVATION
SCALE: 1/8" = 1'-0"



LEFT ELEVATION
SCALE: 1/8" = 1'-0"



REAR ELEVATION
SCALE: 1/8" = 1'-0"

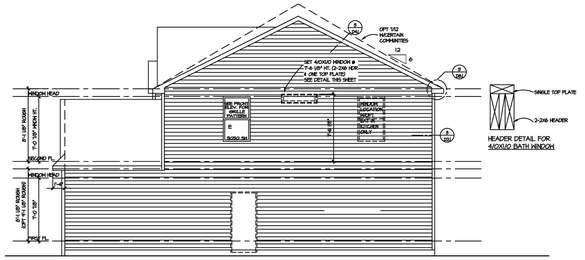
AUSTIN E SIDE AND REAR ELEVATIONS

Lombardo HOMES
1650 E. Maple Rd., Suite 200
Shelby Township, MI 48315

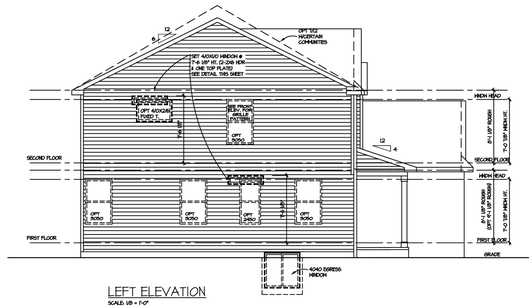
PLAN NAME:	THE AUSTIN
JOB NUMBER:	4062-0118
	MI
SHEET NO.	5.2.1

LAYER	SHEET FILE	SHEET NAME	BY
A-ELEV	P52.E1-S	FRONT ELEVATION	DSC
A-ELEV	P52.E2-S	RIGHT ELEVATION	DSC
A-ELEV	P52.E3-S	REAR ELEVATION	DSC
A-ELEV	P52.E4-S	LEFT ELEVATION	DSC
A-ELEV	P52.E5-S	FRONT ELEVATION	DSC
A-ELEV	P52.E6-S	RIGHT ELEVATION	DSC
A-ELEV	P52.E7-S	REAR ELEVATION	DSC
A-ELEV	P52.E8-S	LEFT ELEVATION	DSC
A-ELEV	P52.E9-S	FRONT ELEVATION	DSC
A-ELEV	P52.E10-S	RIGHT ELEVATION	DSC
A-ELEV	P52.E11-S	REAR ELEVATION	DSC
A-ELEV	P52.E12-S	LEFT ELEVATION	DSC

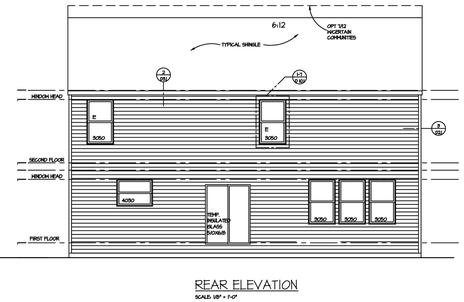
SHEET SCALE: (UNLESS NOTED OTHERWISE) 1/8" = 1'-0" ON 11X17 PAPER, 1/4" = 1'-0" ON 24X36 PAPER WHEN PRINTED AT 200%



RIGHT ELEVATION
SCALE: 1/8" = 1'-0"



LEFT ELEVATION
SCALE: 1/8" = 1'-0"



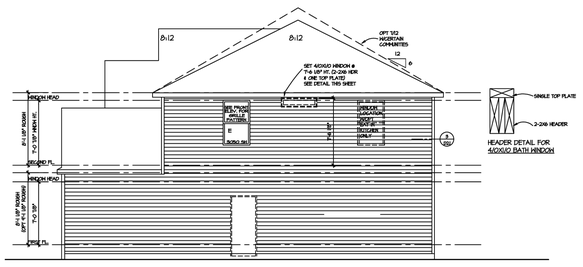
REAR ELEVATION
SCALE: 1/8" = 1'-0"

BLOOMINGTON C SIDE AND REAR ELEVATIONS

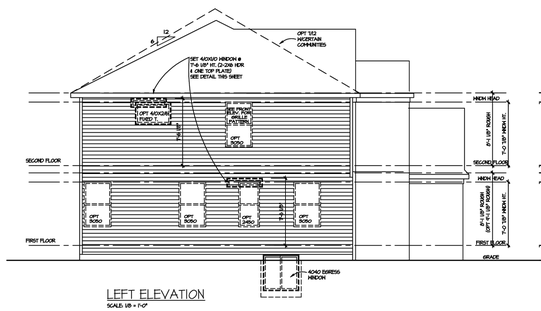
PLAN NAME:	THE BLOOMINGTON
JOB NUMBER:	5103-1118
	MI
SHEET NO.	5.2.1

LAYER	SHEET FILE	SHEET NAME	BY
A-ELEV	P52.E1-S	FRONT ELEVATION	DSC
A-ELEV	P52.E2-S	RIGHT ELEVATION	DSC
A-ELEV	P52.E3-S	REAR ELEVATION	DSC
A-ELEV	P52.E4-S	LEFT ELEVATION	DSC
A-ELEV	P52.E5-S	FRONT ELEVATION	DSC
A-ELEV	P52.E6-S	RIGHT ELEVATION	DSC
A-ELEV	P52.E7-S	REAR ELEVATION	DSC
A-ELEV	P52.E8-S	LEFT ELEVATION	DSC
A-ELEV	P52.E9-S	FRONT ELEVATION	DSC
A-ELEV	P52.E10-S	RIGHT ELEVATION	DSC
A-ELEV	P52.E11-S	REAR ELEVATION	DSC
A-ELEV	P52.E12-S	LEFT ELEVATION	DSC

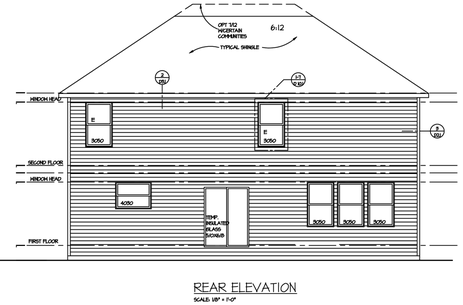
SHEET SCALE: (UNLESS NOTED OTHERWISE) 1/8" = 1'-0" ON 11X17 PAPER, 1/4" = 1'-0" ON 24X36 PAPER WHEN PRINTED AT 200%



RIGHT ELEVATION
SCALE: 1/8" = 1'-0"



LEFT ELEVATION
SCALE: 1/8" = 1'-0"



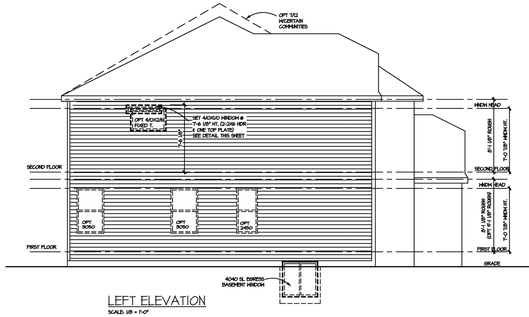
REAR ELEVATION
SCALE: 1/8" = 1'-0"

BLOOMINGTON E SIDE AND REAR ELEVATIONS

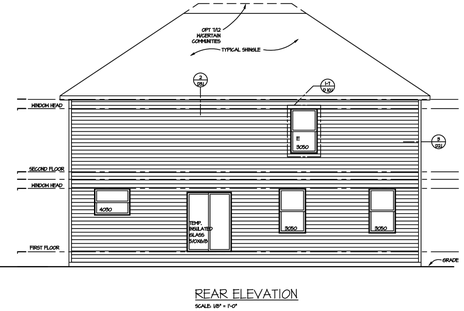
PLAN NAME:	THE BLOOMINGTON
JOB NUMBER:	5103-1118
	MI
SHEET NO.	5.2.1

LAYER	SHEET FILE	SHEET NAME	BY
A-ELEV	P52.E1-S	FRONT ELEVATION	DSC
A-ELEV	P52.E2-S	RIGHT ELEVATION	DSC
A-ELEV	P52.E3-S	REAR ELEVATION	DSC
A-ELEV	P52.E4-S	LEFT ELEVATION	DSC
A-ELEV	P52.E5-S	FRONT ELEVATION	DSC
A-ELEV	P52.E6-S	RIGHT ELEVATION	DSC
A-ELEV	P52.E7-S	REAR ELEVATION	DSC
A-ELEV	P52.E8-S	LEFT ELEVATION	DSC
A-ELEV	P52.E9-S	FRONT ELEVATION	DSC
A-ELEV	P52.E10-S	RIGHT ELEVATION	DSC
A-ELEV	P52.E11-S	REAR ELEVATION	DSC
A-ELEV	P52.E12-S	LEFT ELEVATION	DSC

SHEET SCALE: (UNLESS NOTED OTHERWISE) 1/8" = 1'-0" ON 11X17 PAPER, 1/4" = 1'-0" ON 24X36 PAPER WHEN PRINTED AT 200%



LEFT ELEVATION
SCALE: 1/8" = 1'-0"



REAR ELEVATION
SCALE: 1/8" = 1'-0"

COLUMBIA D SIDE AND REAR ELEVATIONS

PLAN NAME:	THE COLUMBIA
JOB NUMBER:	4995-618
	MI
SHEET NO.	5.2.1

LAYER	SHEET FILE	SHEET NAME	BY
A-ELEV	P52.E1-S	FRONT ELEVATION	DSC
A-ELEV	P52.E2-S	RIGHT ELEVATION	DSC
A-ELEV	P52.E3-S	REAR ELEVATION	DSC
A-ELEV	P52.E4-S	LEFT ELEVATION	DSC
A-ELEV	P52.E5-S	FRONT ELEVATION	DSC
A-ELEV	P52.E6-S	RIGHT ELEVATION	DSC
A-ELEV	P52.E7-S	REAR ELEVATION	DSC
A-ELEV	P52.E8-S	LEFT ELEVATION	DSC
A-ELEV	P52.E9-S	FRONT ELEVATION	DSC
A-ELEV	P52.E10-S	RIGHT ELEVATION	DSC
A-ELEV	P52.E11-S	REAR ELEVATION	DSC
A-ELEV	P52.E12-S	LEFT ELEVATION	DSC

SHEET SCALE: (UNLESS NOTED OTHERWISE) 1/8" = 1'-0" ON 11X17 PAPER, 1/4" = 1'-0" ON 24X36 PAPER WHEN PRINTED AT 200%

TYPICAL ELEVATIONS AND FLOORPLANS SHOWN - FOR REPRESENTATIVE PURPOSES ONLY

811
Know what's below.
Call before you dig.
THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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SECTION 33
TOWN 2 SOUTH, RANGE 7 EAST
SUPERIOR TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
SE MICHIGAN LAND HOLDING LLC

PROSPECT POINTE WEST
FINAL SITE PLAN – PHASE 3

SIDE AND REAR ELEVATIONS

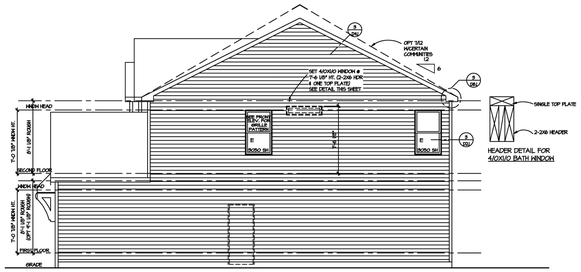
DATE
NOVEMBER 22, 2024

03-07-2025: PER TWP
04-21-2025: PER TWP

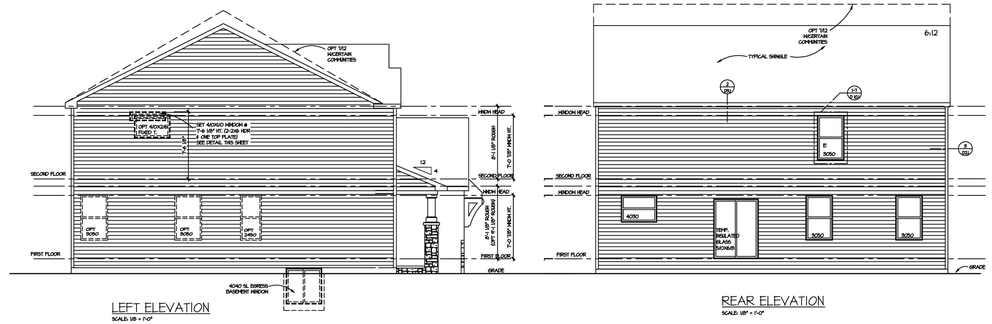
REVISIONS
NA NA NA
N/A

DR. SK | CH. SS
P.M. MB
BOOK —
JOB 16000819
SHEET NO. 43

\\ANN1PROJECTS\16000819\SP\PLAN SETS\FSP - FINAL PHASE 3\16000819P3-1-1-COMC 3/7/2025 4:34 PM BRYAN MEMPER



RIGHT ELEVATION
SCALE: 1/8" = 1'-0"



LEFT ELEVATION
SCALE: 1/8" = 1'-0"

REAR ELEVATION
SCALE: 1/8" = 1'-0"

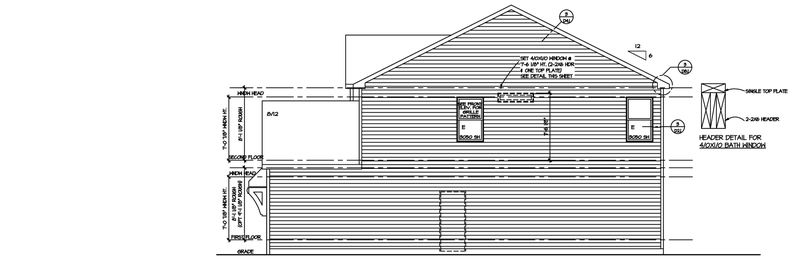
COLUMBIA E SIDE AND REAR ELEVATIONS

Lombardo HOMES
1650 Lombardo Center, Suite 300
Shelby Township, MI 48315

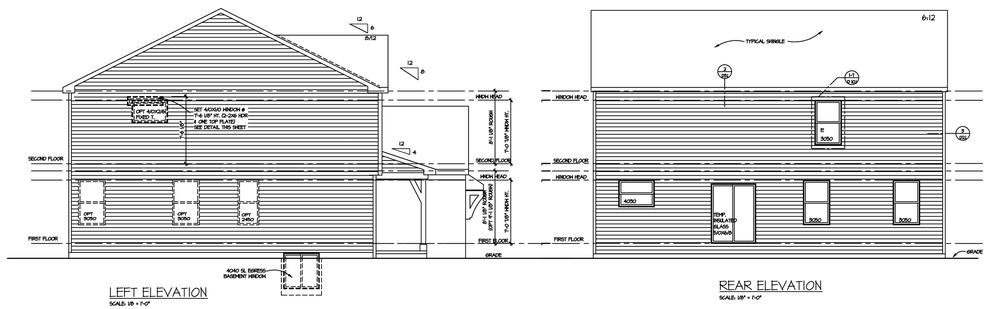
SHEET	SHEET NAME	REV
A1.0	FRONT ELEVATION	DEC
A2.0	RIGHT ELEVATION	DEC
A2.1	LEFT ELEVATION	DEC
A2.2	REAR ELEVATION	DEC
A3.0	FIRST FLOOR PLAN	DEC
A3.1	SECOND FLOOR PLAN	DEC
A4.0	BUILDING SECTION	DEC
A5.0	FOUNDATION PLAN	DEC
A5.1	FOUNDATION DETAILS	DEC
A5.2	FOUNDATION DETAILS	DEC
A6.0	ROOF FRAMING PLAN	DEC
A6.1	ROOF FRAMING DETAILS	DEC
A6.2	ROOF FRAMING DETAILS	DEC

PLAN NAME: THE COLUMBIA
JOB NUMBER: 4495-618
MI
SHEET NO.: 5.2.1

SHEET SCALE: (UNLESS NOTED OTHERWISE) 1/8" = 1'-0" ON 11X17 PAPER, 1/4" = 1'-0" ON 24X36 PAPER WHEN PRINTED AT 200%



RIGHT ELEVATION
SCALE: 1/8" = 1'-0"



LEFT ELEVATION
SCALE: 1/8" = 1'-0"

REAR ELEVATION
SCALE: 1/8" = 1'-0"

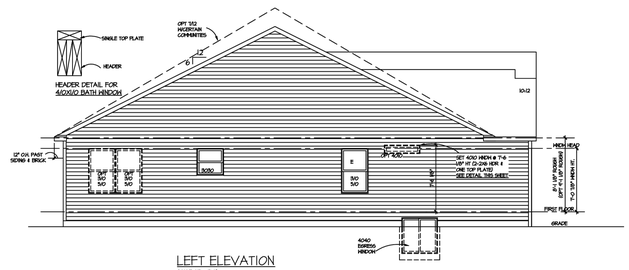
COLUMBIA F SIDE AND REAR ELEVATIONS

Lombardo HOMES
1650 Lombardo Center, Suite 300
Shelby Township, MI 48315

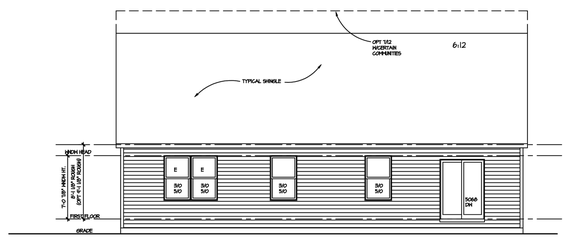
SHEET	SHEET NAME	REV
A1.0	FRONT ELEVATION	DEC
A2.0	RIGHT ELEVATION	DEC
A2.1	LEFT ELEVATION	DEC
A2.2	REAR ELEVATION	DEC
A3.0	FIRST FLOOR PLAN	DEC
A3.1	SECOND FLOOR PLAN	DEC
A4.0	BUILDING SECTION	DEC
A5.0	FOUNDATION PLAN	DEC
A5.1	FOUNDATION DETAILS	DEC
A5.2	FOUNDATION DETAILS	DEC
A6.0	ROOF FRAMING PLAN	DEC
A6.1	ROOF FRAMING DETAILS	DEC
A6.2	ROOF FRAMING DETAILS	DEC

PLAN NAME: THE COLUMBIA
JOB NUMBER: 4495-618
MI
SHEET NO.: 5.2.1

SHEET SCALE: (UNLESS NOTED OTHERWISE) 1/8" = 1'-0" ON 11X17 PAPER, 1/4" = 1'-0" ON 24X36 PAPER WHEN PRINTED AT 200%



LEFT ELEVATION
SCALE: 1/8" = 1'-0"



REAR ELEVATION
SCALE: 1/8" = 1'-0"

DAVENPORT A SIDE AND REAR ELEVATIONS

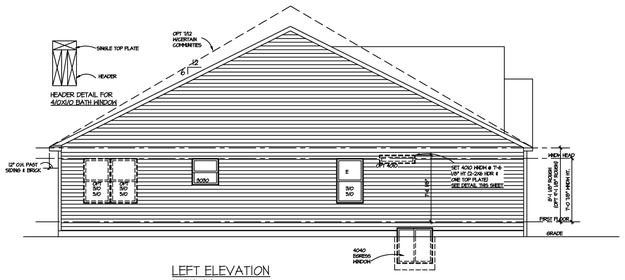
FIRST FLOOR

Lombardo HOMES
1650 Lombardo Center, Suite 300
Shelby Township, MI 48315

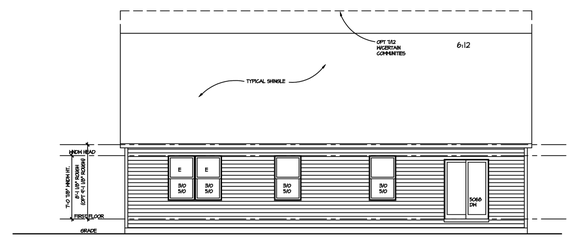
SHEET	SHEET NAME	REV
A1.0	FRONT ELEVATION	DEC
A2.0	RIGHT ELEVATION	DEC
A2.1	LEFT ELEVATION	DEC
A2.2	REAR ELEVATION	DEC
A3.0	FIRST FLOOR PLAN	DEC
A3.1	SECOND FLOOR PLAN	DEC
A4.0	BUILDING SECTION	DEC
A5.0	FOUNDATION PLAN	DEC
A5.1	FOUNDATION DETAILS	DEC
A5.2	FOUNDATION DETAILS	DEC
A6.0	ROOF FRAMING PLAN	DEC
A6.1	ROOF FRAMING DETAILS	DEC
A6.2	ROOF FRAMING DETAILS	DEC

PLAN NAME: THE DAVENPORT
JOB NUMBER: 4453-518
MI
SHEET NO.: 5.2.1

SHEET SCALE: (UNLESS NOTED OTHERWISE) 1/8" = 1'-0" ON 11X17 PAPER, 1/4" = 1'-0" ON 24X36 PAPER WHEN PRINTED AT 200%



LEFT ELEVATION
SCALE: 1/8" = 1'-0"



REAR ELEVATION
SCALE: 1/8" = 1'-0"

DAVENPORT B SIDE AND REAR ELEVATIONS

FIRST FLOOR

Lombardo HOMES
1650 Lombardo Center, Suite 300
Shelby Township, MI 48315

SHEET	SHEET NAME	REV
A1.0	FRONT ELEVATION	DEC
A2.0	RIGHT ELEVATION	DEC
A2.1	LEFT ELEVATION	DEC
A2.2	REAR ELEVATION	DEC
A3.0	FIRST FLOOR PLAN	DEC
A3.1	SECOND FLOOR PLAN	DEC
A4.0	BUILDING SECTION	DEC
A5.0	FOUNDATION PLAN	DEC
A5.1	FOUNDATION DETAILS	DEC
A5.2	FOUNDATION DETAILS	DEC
A6.0	ROOF FRAMING PLAN	DEC
A6.1	ROOF FRAMING DETAILS	DEC
A6.2	ROOF FRAMING DETAILS	DEC

PLAN NAME: THE DAVENPORT
JOB NUMBER: 4453-518
MI
SHEET NO.: 5.2.1

SHEET SCALE: (UNLESS NOTED OTHERWISE) 1/8" = 1'-0" ON 11X17 PAPER, 1/4" = 1'-0" ON 24X36 PAPER WHEN PRINTED AT 200%

TYPICAL ELEVATIONS AND FLOORPLANS SHOWN - FOR REPRESENTATIVE PURPOSES ONLY

Know what's below. Call before you dig.

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734.994.4000

SECTION 33
TOWN 2 SOUTH, RANGE 7 EAST
SUPERIOR TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
SE MICHIGAN LAND HOLDING LLC

PROSPECT POINTE WEST
FINAL SITE PLAN – PHASE 3

SIDE AND REAR ELEVATIONS

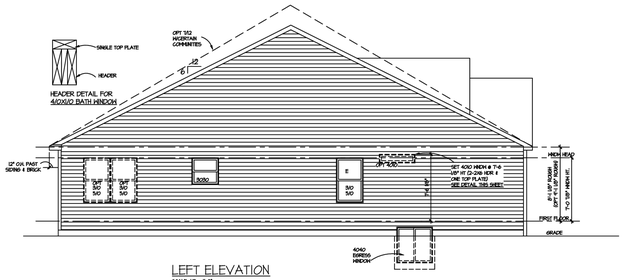
DATE
NOVEMBER 22, 2024

03-07-2025: PER TWP
04-21-2025: PER TWP

REVISIONS
NA NA NA
N/A

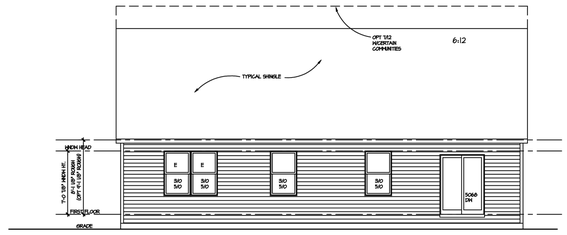
DR. SK | CH. SS
P.M. MB
BOOK —
JOB 16000819
SHEET NO. 44

\\ANN1\PROJECTS\16000819\SHP\PLAN SETS\FSP - FINAL PHASE 3\16000819SP3-34-SDMC 3/7/2025 4:08 PM BRYAN KASPERS



LEFT ELEVATION

SCALE: 1/8" = 1'-0"



REAR ELEVATION

SCALE: 1/8" = 1'-0"

DAVENPORT C SIDE AND REAR ELEVATIONS

FIRST FLOOR

Lombardo HOMES
1650 E. Big Beaver
Suite 100
Troy, MI 48083
Shelby Township, MI 48316

LAYER	SHEET NOTES	BY	DATE	MODEL/UNDER SHEET BY
A0.0	COVER SHEET	DCL		
A0.0(2)	ELEVATION & FINAL REVIEW	DCL		
A0.0(3)	ELEVATION & FINAL REVIEW	DCL		
A0.0(4)	ELEVATION & FINAL REVIEW	DCL		
A2.0(2)	2ND FLR PLAN	DCL		
A2.0(3)	2ND FLR PLAN	DCL		
A2.0(4)	2ND FLR PLAN	DCL		

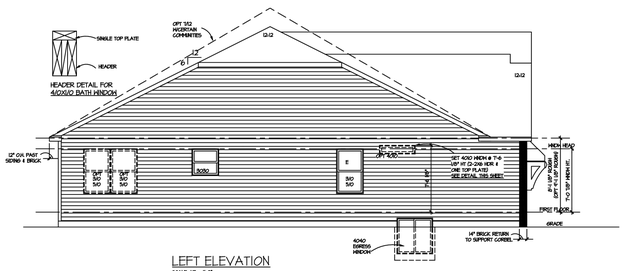
PLAN NAME: THE DAVENPORT

JOB NUMBER: 4453-518

MI

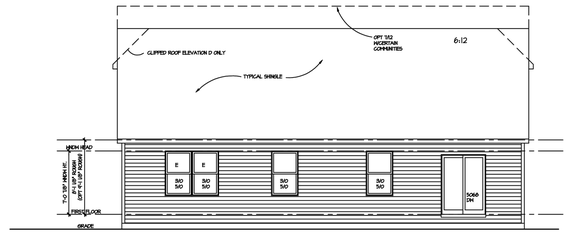
SHEET NO.: 5.2.1

SHEET SCALE: (UNLESS NOTED OTHERWISE) 1/8" = 1'-0" ON 11X17 PAPER, 1/4" = 1'-0" ON 24X36 PAPER WHEN PRINTED AT 200%



LEFT ELEVATION

SCALE: 1/8" = 1'-0"



REAR ELEVATION

SCALE: 1/8" = 1'-0"

DAVENPORT D SIDE AND REAR ELEVATIONS

FIRST FLOOR

Lombardo HOMES
1650 E. Big Beaver
Suite 100
Troy, MI 48083
Shelby Township, MI 48316

LAYER	SHEET NOTES	BY	DATE	MODEL/UNDER SHEET BY
A0.0	COVER SHEET	DCL		
A0.0(2)	ELEVATION & FINAL REVIEW	DCL		
A0.0(3)	ELEVATION & FINAL REVIEW	DCL		
A0.0(4)	ELEVATION & FINAL REVIEW	DCL		
A2.0(2)	2ND FLR PLAN	DCL		
A2.0(3)	2ND FLR PLAN	DCL		
A2.0(4)	2ND FLR PLAN	DCL		

PLAN NAME: THE DAVENPORT

JOB NUMBER: 4453-518

MI

SHEET NO.: 5.2.1

SHEET SCALE: (UNLESS NOTED OTHERWISE) 1/8" = 1'-0" ON 11X17 PAPER, 1/4" = 1'-0" ON 24X36 PAPER WHEN PRINTED AT 200%

VINYL SIDING CALCULATIONS

Austin E	Front	750.6	92.4	49.4	0	8%	
	Left	821.7	15	380.4	15	45%	
	Right	773.9	46.67	334.2	46.67	40%	
		2346.2	154.07	764	61.67		32%
Bloomington C	Front	585.3	108.54	215	26.34	40%	
	Left	803.2	2.45	400.6	0	50%	
	Right	795.5	15	392.5	15	48%	
		2184	125.99	1008.1	41.34		47%
Bloomington E	Front	661.5	91.72	85.4	12	13%	
	Left	725	0	261.9	0	36%	
	Right	664.8	15	261.9	15	38%	
		2051.3	106.72	609.2	27		30%
Columbia D	Front	580.1	110.3	159.8	8	32%	
	Left	766.6	0	311.2	0	41%	
	Right	737.7	30	306.12	30	39%	
		2084.4	140.3	777.12	38		38%
Columbia E	Front	658.9	99.56	84.4	12	13%	
	Left	895.3	0	468	0	52%	
	Right	889	30	460	30	50%	
		2443.2	129.56	1012.4	42		42%
Columbia F	Front	600	163.4	246	63	42%	
	Left	895.3	0	468	0	52%	
	Right	889	30	460	30	50%	
		2384.3	193.4	1174	93		49%
Davenport A	Front	490	63	162.7	0	38%	
	Left	803.2	24	300.9	0	39%	
	Right	807.2	0	300.9	0	37%	
		2100.4	87	764.5	0		38%
Davenport B	Front	478.8	71.2	67.6	0	17%	
	Left	803.2	24	300.9	0	39%	
	Right	807.2	0	300.9	0	37%	
		2089.2	95.2	669.4	0		34%
Davenport C	Front	460.1	71.3	49.8	0	13%	
	Left	803.2	24	300.9	0	39%	
	Right	807.2	0	300.9	0	37%	
		2070.5	95.3	651.6	0		33%
Davenport D	Front	526	120.3	0	0	0%	
	Left	803.2	24	300.9	0	39%	
	Right	807.2	0	300.9	0	37%	
		2136.4	144.3	601.8	0		30%

TYPICAL ELEVATIONS AND FLOORPLANS SHOWN - FOR REPRESENTATIVE PURPOSES ONLY

811 Know what's **below.** **Call** before you dig.

THE LOCATIONS OF EXISTING UNDERGROUND UTILITIES ARE SHOWN IN AN APPROXIMATE WAY ONLY AND HAVE NOT BEEN INDEPENDENTLY VERIFIED BY THE OWNER OR ITS REPRESENTATIVE. THE CONTRACTOR SHALL DETERMINE THE EXACT LOCATION OF ALL EXISTING UTILITIES BEFORE COMMENCING WORK, AND AGREES TO BE FULLY RESPONSIBLE FOR ANY AND ALL DAMAGES WHICH MIGHT BE OCCASIONED BY THE CONTRACTOR'S FAILURE TO EXACTLY LOCATE AND PRESERVE ANY AND ALL UNDERGROUND UTILITIES.

NOTICE:
CONSTRUCTION SITE SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR; NEITHER THE OWNER NOR THE ENGINEER SHALL BE EXPECTED TO ASSUME ANY RESPONSIBILITY FOR SAFETY OF THE WORK, OF PERSONS ENGAGED IN THE WORK, OF ANY NEARBY STRUCTURES, OR OF ANY OTHER PERSONS.

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SECTION 33
TOWN 2 SOUTH, RANGE 7 EAST
SUPERIOR TOWNSHIP
WASHTENAW COUNTY, MICHIGAN

CLIENT
SE MICHIGAN LAND HOLDING LLC
PROSPECT POINTE WEST
FINAL SITE PLAN – PHASE 3
SIDE AND REAR ELEVATIONS

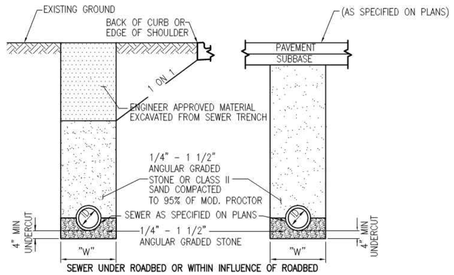
DATE
NOVEMBER 22, 2024

03-07-2025: PER TWP
04-21-2025: PER TWP

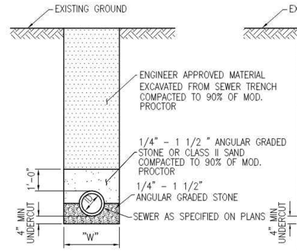
REVISIONS
NA NA NA
N/A

DR. SK | CH. SS
P.M. MB
BOOK --
JOB 16000819
SHEET NO. 45

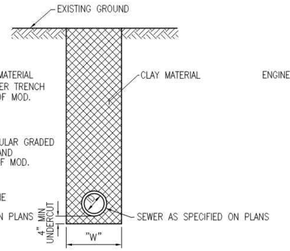
\\ANN1\PROJECTS\16000819\CAD\PLAN SETS\FPE - FINAL PHASE 3\16000819FP3-1-SSHM 11/6/2025 4:07 PM BRYAN HUMPERT



PLASTIC PIPE TRENCH DETAIL A



PLASTIC PIPE TRENCH DETAIL B



PLASTIC PIPE CLAY BACKFILL TRENCH DETAIL

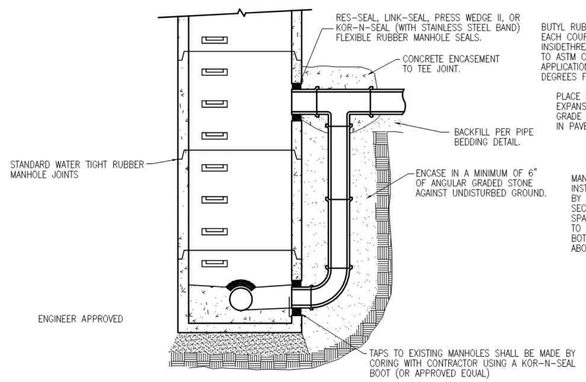
THE FOLLOWING ARE MINIMUM TRENCH WIDTHS:

I.D. PIPE SIZE (INCHES)	LESS THAN 18	21	24	30	36
"W" TRENCH WIDTH (FEET)	3.0	3.5	4.0	5.0	6.0

I.D. PIPE SIZE (INCHES)	42	48	54	60	66	72	78
"W" TRENCH WIDTH (FEET)	7.0	8.0	9.5	10.0	10.5	11.0	11.5

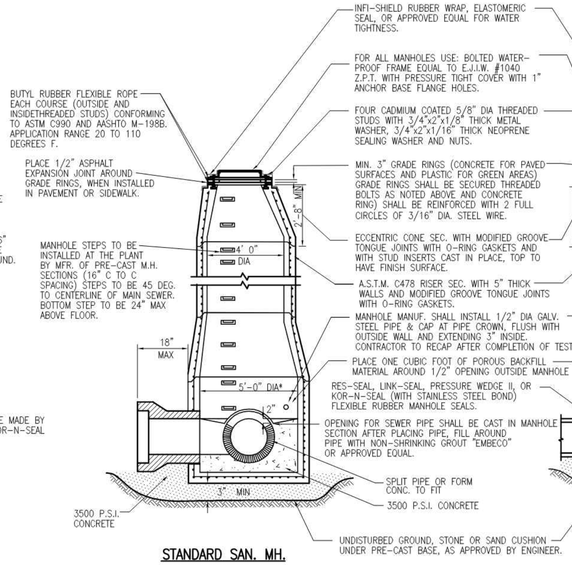
I.D. PIPE SIZE (INCHES)	84	90	96	102	108
"W" TRENCH WIDTH (FEET)	12.0	12.5	13.0	13.5	14.0

ESTIMATED PAVEMENT REMOVAL WIDTH IS TO BE TRENCH WIDTH "W" PLUS 1' EACH SIDE OF THE TRENCH (6' MINIMUM).



EXTERNAL DROP CONECTION
(HYDROGEN SULFIDE PROTECTION)

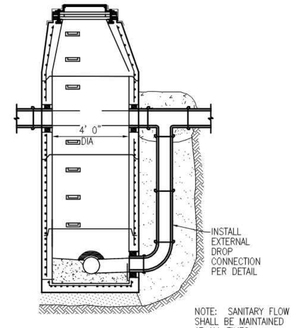
DIA OF SEWER	DIA OF DROP CONNECTION
8" & 10"	8"
12",15" & 18"	12"
21",24" & 30"	18"
36" & 42"	24"



STANDARD SAN. MH.
FOR SEWERS 24" THRU 42"

* MANHOLE DIAMETER TO MEET MANUFACTURERS REQUIREMENTS FOR BOTH STRAIGHT THRU & RIGHT ANGLE INSTALLATION

STANDARD SAN. MH.
FOR SEWERS 8" THRU 21"



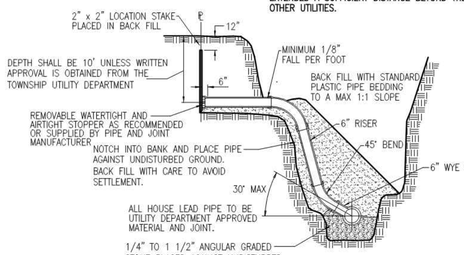
NOTE: SANITARY FLOW SHALL BE MAINTAINED AT ALL TIMES.

SANITARY MH. BUILT OVER EX SANITARY LINE
(SAME AS STANDARD SAN MH EXCEPT AS INDICATED HERE)
(HYDROGEN SULFIDE PROTECTION)

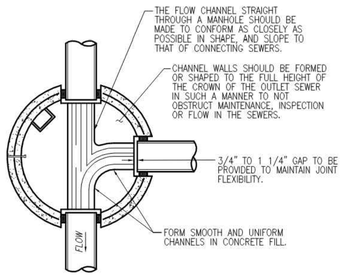
SANITARY SEWER CONSTRUCTION NOTES

1. ALL MANHOLE RIMS SHALL BE SET TO GRADE AS FURNISHED BY THE ENGINEER.
2. RISERS ON SANITARY SEWERS SHALL BE INSTALLED WHERE SEWER ARE OVER 10' DEEP TO A DEPTH OF 10'.
3. PLACE ONE 6" WYE FOR EACH LOT ON SANITARY SEWERS UNLESS OTHERWISE SPECIFIED.
4. ALL MANHOLES SHALL USE ECCENTRIC CONES PLACED TOWARD THE PROPERTY LINE UNLESS OTHERWISE NOTED.
5. INFILTRATION FOR ANY SECTION OF SEWERS BETWEEN MANHOLES SHALL NOT EXCEED 200 GALLONS PER INCH IN DIAMETER PER MILE OF SEWER PER 24 HRS.
6. NO FOOTING OR ROOF DRAINS SHALL BE CONNECTED TO THE PROPOSED SEWER.
7. DIFFERENTIAL OF EXCAVATION AROUND EXISTING MANHOLES SHALL NOT EXCEED 6 FEET.
8. NO CONNECTION RECEIVING STORM WATER, SURFACE WATER, OF GROUND WATER SHALL BE MADE TO SANITARY SEWERS.
9. ALL SEWERS SHALL BE SUBJECT TO TELEVISION INSPECTION AND AIR INFILTRATION OR EXFILTRATION TESTS, OR A COMBINATION OF SAME WITHIN 30 DAY OF BACKFILL, PRIOR TO ACCEPTANCE. ALL SEWERS OVER 24" DIAMETER SHALL BE SUBJECTED TO INFILTRATION TESTS. ALL SEWERS OF 24" DIAMETER OR SMALLER, WHERE THE GROUND WATER LEVEL ABOVE THE TOP OF THE SEWER IS OVER 2 FEET, SHALL BE SUBJECTED TO INFILTRATION TESTS. ALL SEWERS OF 24" DIAMETER OR LESS, WHERE THE GROUND WATER LEVEL ABOVE THE TOP OF THE SEWER IS 2 FEET OR LESS, SHALL BE SUBJECTED TO AIR TESTS OR EXFILTRATION TESTS.
10. ALL SEWER SYSTEM CONSTRUCTION SHALL CONFORM TO THE CURRENT STANDARDS AND GENERAL SPECIFICATIONS OF THE AGENCY OR AGENCIES HAVING JURISDICTION OF THE SEWER SYSTEM AND CONSTRUCTION AREA.
11. ALL SEWERS SHALL BE TELEVISED, WITH TEST RESULTS APPROVED BY THE TOWNSHIP UTILITY DEPARTMENT PRIOR TO PLACING THE SEWER IN SERVICE.
12. NO SEWER SHALL BE CONSTRUCTED LESS THAN 8" IN DIAMETER.
13. ALL STUBS SHALL HAVE A WATER AND AIR TIGHT BULKHEAD.
14. ALL ELEVATIONS ARE BASED ON NAVD 88 (ORIGINAL)
15. THE MINIMUM DIAMETER OF MANHOLES SHALL BE 48 INCHES, LARGER DIAMETERS ARE PREFERABLE FOR LARGER DIAMETER SEWERS. A MINIMUM ACCESS DIAMETER OF 22 INCHES SHALL BE PROVIDED.
16. CONTRACTOR SHALL PERFORM 9 POINT MANDREL TESTING PER SECTION X, OPEN CUT SEWERS OF THE SPECIFICATIONS.
17. SANITARY SEWER SHALL BE COMPOSITE ABS OR PVC TRUSS PIPE CONFORMING TO REQUIREMENTS OF ASTM D-2680 OR, PVC PIPE CONFORMING TO ASTM D-3034 (SDR 26) MAY BE USED WHERE DEPTH IS LESS THAN 15'.
18. JOINTS FOR PLASTIC PIPE SHALL BE PUSH-ON TYPE OR IN SPECIAL APPLICATIONS SOLVENT JOINTS, WHERE SPECIFIED, SHALL CONFORM TO ASTM D-3112 AND F-477. SOLVENT-CEMENTED JOINTS, WHERE SPECIFIED, SHALL CONFROM TO ASTM D-2855.
19. JOINTS ON TRUSS PIPE SHALL CONSIST OF ABS PLASTIC COUPLINGS CHEMICALLY CEMENTED TO THE ENDS OF THE PIPE BEING CONNECTED. SOLVENTS AND METHODS USED IN MAKING THE CHEMICAL BOND SHALL BE IN ACCORDANCE WITH MANUFACTURER'S PRINTED INSTRUCTIONS, AND THE INSTALLATION TECHNIQUE SHALL CONFORM TO ASTM D - 2321, OR LATEST REVISION.
20. MANHOLE STEPS TO BE PLASTIC COATED MEETING THE REQUIREMENTS IN ASTM D2146, TYPE II, GRADE 49108, M.A. INDUSTRIES P.S.I. POLYPROPYLENE, OR E.J.I.W. 8502.
21. A VIDEOTAPE (WITH LOG AND LEAD LOCATIONS) SHALL BE SUBMITTED AND APPROVED BY THE TOWNSHIP PRIOR TO THE FINAL ACCEPTANCE. SAID VIDEOTAPE SHALL BE PERFORMED PRIOR TO FINAL ACCEPTANCE OF THE SYSTEM.
22. PRIOR TO ANY EXCAVATION, THE CONTRACTOR SHALL TELEPHONE MISS DIG (800-482-7171) A MINIMUM OF 30 DAYS AFTER DAYS AFTER COMPLETION OF BACKFILL. FOR THE LOCATION IF UNDER GROUND PIPELINE AND CABLE FACILITIES AND SHALL ALSO NOTIFY REPRESENTATIVES.
23. MINIMUM DEPTH TO TOP OF PIPE SHALL BE 4 FEET.
24. THE MAXIMUM DEPTH TO INVERT OF ANY SANITARY SEWER SHALL NOT EXCEED THE DEPTH RECOMMENDED BY THE MANUFACTURER FOR EACH SIZE AND CLASS AND PIPE.
25. INLET AND OUTLET PIPES SHALL BE JOINED TO THE MANHOLE WITH A GASKETED FLEXIBLE WATERTIGHT CONNECTION THAT ALLOWS DIFFERENTIAL SETTLEMENT OF THE PIPE AND MANHOLE WALL TO TAKE PLACE.
26. A BENCH SHALL BE PROVIDED ON EACH SIDE OF ANY MANHOLE CHANNEL WHEN THE PIPE DIAMETER IS LESS THAN THE MANHOLE DIAMETER. THE BENCH SHOULD BE SLOPED NO LESS THAN 1/2 INCH PER FOOT. NO LATERAL SEWER, SERVICE CONNECTION, OR DROP MANHOLE PIPE SHALL DISCHARGE ONTO THE SURFACE OF THE BENCH.
27. WHERE WORK IS TO BE PERFORMED IN THE VICINITY OF A SUPERIOR TOWNSHIP MAIN, CONTRACTOR SHALL NOTIFY THE SUPERIOR TOWNSHIP UTILITY DEPARTMENT AT (734) 480-5500 AT LEAST 3 WORKING DAYS PRIOR TO START OF CONSTRUCTION AS WELL AS TOWNSHIP ENGINEER TO SCHEDULE INSPECTION.
28. AN ELASTOMERIC SEAL OR RUBBER WRAP SHALL BE PLACED AROUND EACH MANHOLE FRAME AND CONE SECTION FOR WATER TIGHTNESS.

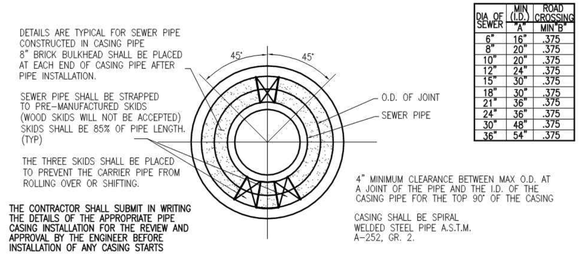
NOTE:
IN THE EVENT THAT OTHER UTILITIES ARE TO BE INSTALLED IN THE EASEMENT ADJACENT TO THE THE PROPERTY LINE, THE SEWER LEAD SHALL BE EXTENDED A SUFFICIENT DISTANCE BEYOND THE OTHER UTILITIES.



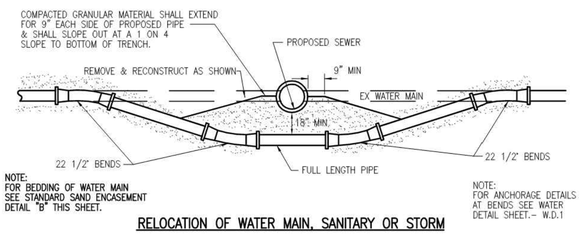
HOUSE LEAD DETAIL



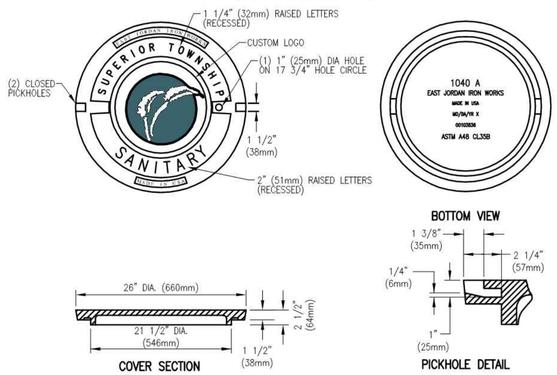
CHANNEL DETAIL



PIPE BARREL SUPPORT FOR SANITARY SEWER CONSTRUCTED IN CASING PIPE



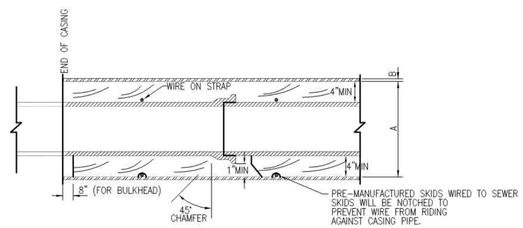
RELOCATION OF WATER MAIN, SANITARY OR STORM



COVER SECTION

PICKHOLE DETAIL

STANDARD COVER & FRAME



STANDARD CASING SECTION

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COUNTY: WASHTENAW
CITY/VILLAGE/TOWNSHIP: CHARTER TOWNSHIP OF SUPERIOR
SCALE: H: NTS V: N/A
HORIZ DATUM: N/A
VERT DATUM: N/A
000-00-0000
REVISIONS:

CHARTER TOWNSHIP OF SUPERIOR
SECTION | TOWN | RANGE
PROJ MGR
ENG / ARCH: DLG/LGL
CADD: DK
DATE: OCT 2003
REVISIONS:

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CHARTER TOWNSHIP OF SUPERIOR
STANDARD SANITARY DETAILS

SHEET 1 OF 2

DRAWING PATH: S:\CVT\Superior Twp\Standards\CADD\sanitary\SuperiorSand1.dwg Dec 20, 2011 - 4:23pm

SANITARY SEWER ACCEPTANCE TESTS

GENERAL

ALL SANITARY SEWERS SHALL BE SUBJECTED TO INFILTRATION, EXFILTRATION OR LOW PRESSURE AIR TESTS, OR A COMBINATION THEREOF PRIOR TO FINAL ACCEPTANCE BY THE TOWNSHIP. IN ADDITION, ALL PVC AND ABS PLASTIC SEWERS SHALL BE SUBJECTED TO DEFLECTION TESTING BY MEANS OF A NINE-POINT MANDREL DEFLECTION TEST.

THE TOWNSHIP'S INSPECTOR SHALL BE PRESENT FOR ALL TESTING OPERATIONS. IF TESTING IS TO BE DONE BY THE CONTRACTOR, ONLY PROPERLY TRAINED PERSONNEL SHALL BE ALLOWED TO PERFORM THE TESTING WORK. IF TESTING IS TO BE DONE BY MUNICIPAL AGENCY WORK FORCES, THEN THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING WITH THE INSPECTOR IN ORDER TO SCHEDULE THE TESTING.

IN THE EVENT THAT THE SEWER PIPE FAILS ANY OF THE REQUIRED TESTS, THE CONTRACTOR SHALL BE RESPONSIBLE FOR REPAIRING THE PIPE AND REPEATING THE TEST UNTIL ACCEPTABLE RESULTS ARE ACHIEVED.
THE METHOD OF TESTING AND MEASUREMENT SHALL BE APPROVED BY THE TOWNSHIP. THE CONTRACTOR SHALL PROVIDE ALL NECESSARY EQUIPMENT AND LABOR FOR MAKING THE TESTS.

INFILTRATION TEST

ALL SANITARY SEWERS THAT ARE OVER TWENTY-FOUR (24) INCHES IN DIAMETER SHALL BE SUBJECTED TO AN INFILTRATION TEST. ALSO, ALL SANITARY SEWERS THAT ARE TWENTY-FOUR (24) INCHES IN DIAMETER AND SMALLER AND WHERE THE GROUND WATER LEVEL IS MORE THAN TWO (2) FEET ABOVE THE TOP OF THE SEWER SHALL BE SUBJECTED TO AN INFILTRATION TEST.

THE INFILTRATION RATE FOR ALL SANITARY SEWERS SHALL NOT EXCEED A MAXIMUM OF TWO HUNDRED (200) GALLONS PER INCH DIAMETER PER MILE OF SEWER PER TWENTY-FOUR (24) HOURS.

LOW PRESSURE AIR TEST

ALL SANITARY SEWERS THAT ARE TWENTY-FOUR (24) INCHES IN DIAMETER OR SMALLER AND WHERE THE GROUND WATER LEVEL IS TWO (2) FEET OR LESS ABOVE THE TOP OF THE SEWER SHALL BE SUBJECTED TO A LOW PRESSURE AIR TEST.

THE PROCEDURE FOR AIR TESTING OF SEWERS SHALL BE AS FOLLOWS:

THE SEWER LINE SHALL BE TESTED IN INCREMENTS BETWEEN MANHOLES. THE LINE SHALL BE CLEANED AND PLUGGED AT EACH MANHOLE. SUCH PLUGS SHALL BE DESIGNED TO HOLD AGAINST THE TEST PRESSURE AND SHALL PROVIDE AN AIRTIGHT SEAL. ONE OF THE PLUGS SHALL HAVE AN ORIFICE THROUGH WHICH AIR CAN BE INTRODUCED INTO THE SEWER. AN AIR SUPPLY LINE SHALL BE CONNECTED TO THE ORIFICE. THE SUPPLY LINE SHALL BE FITTED WITH SUITABLE CONTROL VALVES AND A PRESSURE GAUGE FOR CONTINUALLY MEASURING THE AIR PRESSURE IN THE SEWER. THE PRESSURE GAUGE SHALL HAVE A MINIMUM DIAMETER OF THREE AND ONE-HALF (3-1/2) INCHES AND A RANGE OF 0 – 10 PSIG. THE GAUGE SHALL HAVE MINIMUM DIVISIONS OF 0-10 PSIG AND ACCURACY OF PLUS OR MINUS (+/-) 0.04 PSIG.

THE SEWER SHALL BE PRESSURIZED TO 4 PSIG GREATER THAN THE GREATEST BACK PRESSURE CAUSED BY GROUND WATER OVER THE TOP OF THE SEWER PIPE. AT LEAST TWO (2) MINUTES SHALL BE ALLOWED FOR THE AIR PRESSURE TO STABILIZE BETWEEN THREE AND ONE HALF (3.5) AND FOUR (4) PSIG. IF NECESSARY, AIR SHALL BE ADDED TO THE SEWER TO MAINTAIN A PRESSURE OF 3.5 PSIG OR GREATER.

AFTER THE STABILIZATION PERIOD, THE AIR SUPPLY CONTROL VALVE SHALL BE CLOSED SO THAT NO MORE AIR WILL ENTER THE SEWER. THE SEWER AIR PRESSURE SHALL BE NOTED AND TIMING FOR THE TEST BEGUN. THE TEST SHALL NOT BEGIN IF THE AIR PRESSURE IS LESS THAN THREE AND ONE HALF (3.5) PSIG, OR SUCH OTHER PRESSURE AS IS NECESSARY TO COMPENSATE FOR GROUND WATER LEVEL.

THE TIME REQUIRED FOR THE AIR PRESSURE TO DECREASE ONE (1.0) PSIG DURING THE TEST SHALL NOT BE LESS THAN THE TIME SHOWN IN THE FOLLOWING AIR TEST TABLES. THE CONTRACTOR SHALL USE THE APPROPRIATE TEST TABLE BASED UPON THE SEWER PIPE MATERIAL.

AIR TEST TABLE FOR VITRIFIED CLAY AND CONCRETE PIPE

	SPECIFICATION TIME (MIN:SEC) REQUIRED FOR PRESSURE DROP FROM 3-1/2 TO 2-1/2 PSIG WHEN TESTING ONE PIPE DIAMETER ONLY PIPE DIAMETER, INCHES														
LENGTH OF LINE, FEET	4	6	8	10	12	15	18	21	24	27	30	33	36	39	42
25	0:04	0:10	0:18	0:22	0:27	0:32	0:36	0:45	0:54	1:03	1:12	1:21	1:30	1:39	1:50
50	0:09	0:21	0:36	0:45	0:54	1:03	1:12	1:30	1:48	2:06	2:42	2:42	3:00	3:18	3:39
75	0:14	0:32	0:54	1:08	1:21	1:34	1:48	2:15	2:42	3:09	3:36	4:03	4:30	4:57	5:29
100	0:18	0:42	1:12	1:30	1:48	2:06	2:24	3:00	3:36	4:12	4:48	5:24	6:00	6:36	7:18
125	0:22	0:52	1:30	1:52	2:15	2:38	3:00	3:45	4:30	5:15	6:00	6:45	7:30	8:15	9:08
150	0:27	1:03	1:48	2:15	2:42	3:09	3:36	4:30	5:24	6:18	7:12	8:06	9:00	9:54	10:57
175	0:32	1:14	2:06	2:38	3:09	3:40	4:12	5:15	6:18	7:21	8:24	9:27	10:30	11:33	12:47
200	0:36	1:24	2:24	3:00	3:36	4:12	4:48	6:00	7:12	8:24	9:36	10:48	12:00	13:12	14:36
225	0:40	1:34	2:42	3:22	4:03	4:44	5:24	6:45	8:06	9:27	10:48	12:09	13:30	14:51	16:26
250	0:45	1:45	3:00	3:45	4:30	5:15	6:00	7:30	9:00	10:30	12:00	13:30	15:00	16:30	18:16
275	0:50	1:56	3:18	4:08	4:57	5:46	6:36	8:15	9:54	11:33	13:12	14:51	16:30	18:09	20:06
300	0:54	2:06	3:36	4:30	5:24	6:18	7:12	9:00	10:48	12:36	14:24	16:12	18:00	19:48	21:54
350	1:03	2:27	4:12	5:15	6:18	7:21	8:24	10:30	12:36	14:42	16:48	18:54	21:00	23:06	25:33
400	1:12	2:48	4:48	6:00	7:12	8:24	9:36	12:00	14:24	16:48	19:12	21:36	24:00	26:24	29:12
450	1:21	3:09	5:24	6:45	8:06	9:27	10:48	13:30	16:12	18:54	21:36	24:18	27:00	29:42	32:51
500	1:30	3:30	6:00	7:30	9:00	10:30	12:00	15:00	18:00	21:00	24:00	27:00	30:00	33:00	36:30

NOTE: THIS TABLE IS TAKEN FROM THE NATIONAL CLAY PIPE INSTITUTE (NCPI) TABLES WHICH ARE BASED UPON ASTM C828 "TEST METHOD FOR LOW PRESSURE AIR TEST FOR VITRIFIED CLAY PIPE LINES" AND ASTM C924 "STANDARD PRACTICE FOR TESTING CONCRETE PIPE SEWER LINES BY LOW PRESSURE AIR TEST METHOD."

AIR TEST TABLE FOR PVC AND ABS PIPE
MINIMUM SPECIFIED TIME REQUIRED FOR A 1.0 PSIG PRESSURE DROP
FOR SIZE AND LENGTH OF PIPE INDICATED FOR Q=0.0015*

THE MINIMUM HOLDING TIME FOR THE PRESSURE TO DROP FROM 3.5 TO 2.5 PSIG (GREATER THAN ADDED GROUND WATER PRESSURE) SHALL NOT BE LESS THAN THAT GIVEN IN THE FOLLOWING TABLE FOR EACH TESTED RUN OF SEWER BETWEEN MANHOLES:

NOTE: AIR TESTING SHOULD NOT BE USED IF THE AIR PRESSURE REQUIRED FOR THE TEST EXCEEDS 9 PSIG.

PIPE DIAMETER INCHES	MINIMUM TIME MINUTES	LENGTH FOR MINIMUM TIME, FT.	TIME FOR LONGER LENGTH, S	SPECIFICATION TIME FOR LENGTH (L) SHOWN, MINUTES 100 FT	150 FT	200 FT	250 FT	300 FT	350 FT	400 FT	450 FT
4	3:46	597	0.380 L	3:46	3:46	3:46	3:46	3:46	3:46	3:46	3:46
6	5:40	398	0.854 L	5:40	5:40	5:40	5:40	5:40	5:40	5:42	6:24
8	7:34	298	1.520 L	7:34	7:34	7:34	7:34	7:36	8:52	10:08	11:24
10	9:26	239	2.374 L	9:26	9:26	9:26	9:53	11:52	13:51	15:49	17:48
12	11:20	199	3.418 L	11:20	11:20	11:24	14:15	17:05	19:56	22:47	25:38
15	14:10	159	5.342 L	14:10	14:10	17:48	22:15	26:42	31:09	35:36	40:04
18	17:00	133	7.692 L	17:00	19:13	25:38	32:03	38:27	44:52	51:16	57:41
21	19:50	114	10.470 L	19:50	26:10	34:54	43:37	52:21	61:00	69:48	78:31
24	22:40	99	13.674 L	22:47	34:11	45:34	56:58	68:22	79:46	91:10	102:33
27	25:30	88	17.306 L	28:51	43:16	57:41	72:07	86:32			
30	28:20	80	21.366 L	35:37	53:25	71:13	89:02	106:50			
33	31:10	72	25.852 L	43:05	64:38	86:10	107:43	129:16			
36	34:00	66	30.768 L	51:17	76:55	102:34	128:12	153:50			

NOTE: THIS TABLE IS TAKEN FROM ASTM F1417 "STANDARD TEST METHOD FOR INSTALLATION AND ACCEPTANCE OF PLASTIC GRAVITY SEWER LINES USING LOW PRESSURE AIR TEST." ASTM F1417 CONFORMS TO UNI-BELL "RECOMMENDED PRACTICE FOR LOW PRESSURE AIR TESTING OF INSTALLED SEWER PIPE" (UNI-B-6-98)

* Q IS THE ALLOWABLE LEAKAGE RATE IN CUBIC FEET/MINUTE/SQUARE FOOT OF INSIDE SURFACE AREA OF PIPE

EXFILTRATION TEST

EXFILTRATION OR LEAKAGE FROM THE SEWER LINE CAN BE MEASURED BY RECORDING THE WATER LEVEL DROP OVER A GIVEN PERIOD OF TIME IN A STANDPIPE PLACED AND CONNECTED IN THE UPSTREAM MANHOLE. THE MEASURED DROP IN THE TIME PERIOD CAN BE CONVERTED BY CALCULATIONS TO THE LEAKAGE RATE IN TERMS OF GALLONS PER INCH OF PIPE DIAMETER PER MILE PER DAY.

EXFILTRATION TESTS MAY BE SUBSTITUTED FOR LOW PRESSURE AIR TESTS WHERE APPROVED BY THE TOWNSHIP ENGINEER. EXFILTRATION TESTS WILL NOT BE ALLOWED WHERE THE EXTERNAL WATER PRESSURE EXCEEDS FOUR (4) FEET.

FOR THE PURPOSE OF EXFILTRATION TESTING, THE INTERNAL WATER LEVEL SHALL BE EQUAL TO THE EXTERNAL WATER LEVEL PLUS FOUR (4) FEET AS MEASURED FROM THE TOP OF THE HIGHEST PIPE IN THE SYSTEM BEING TESTED. THIS COULD BE EITHER A HOUSE LEAD OR A LATERAL. HOWEVER, THE MAXIMUM TOTAL HEIGHT OF WATER ABOVE THE INVERT OF THE PIPE AT THE LOWER END SHALL NOT EXCEED SIXTEEN (16) FEET. A PROSPECTIVE TEST THAT WOULD EXCEED THIS SIXTEEN (16) FOOT LIMIT SHOULD NOT BE TAKEN. THE LINE UNDER CONSTRUCTION CAN BE BROKEN DOWN INTO SMALLER SECTIONS SUCH THAT THE MAXIMUM HEAD OF SIXTEEN (16) FEET WILL NOT BE EXCEEDED.

THE MAXIMUM EXFILTRATION RATE SHALL BE THE SAME AS THAT PERMITTED FOR THE INFILTRATION TEST. THE EXFILTRATION TEST PROCEDURE IS SUMMARIZED AS FOLLOWS:

1) ALL SERVICE LATERALS, STUBS AND FITTINGS INTO THE SEWER LINE(S) BEING TESTED SHOULD BE PROPERLY CAPPED OR PLUGGED, AND CAREFULLY BRACED TO RESIST THE THRUST ACTIONS DEVELOPED BY THE INTERNAL WATER PRESSURE. IN PREPARING THE BLOCKING OF PLUGS OR END CAPS, IT IS EXTREMELY IMPORTANT TO RECOGNIZE THAT THE FIVE (5) TO TEN (10) FEET OF HEAD IN THE STANDPIPE WILL EXERT CONSIDERABLE THRUST AGAINST THE PLUGS OR CAPS.

2) A PLUG IS INSERTED AND TIGHTENED IN THE INLET PIPE OF THE DOWNSTREAM MANHOLE TO WHICH THE WATER SUPPLY CONNECTION IS MADE FOR FILLING THE PIPE.

3) THE UPPER MANHOLE IS PLUGGED AND SECURELY TIGHTENED FOR CONNECTION TO THE STANDPIPE. THE STANDPIPE IS THEN PLACED IN THIS MANHOLE AND CONNECTED TO THE TAPPED PLUG. THE STANDPIPE MUST BE CAPABLE OF HANDLING FROM FIVE (5) TO TEN (10) FEET OF WATER HEAD TO DETERMINE THE TIGHTNESS AND SOUNDNESS OF THE SEWER LINE, AS SPECIFIED AND DIRECTED BY THE ENGINEER.

4) WATER IS INTRODUCED INTO THE LINE AT THE DOWNSTREAM (LOWER) MANHOLE UNTIL THE STANDPIPE IN THE UPSTREAM MANHOLE HAS BEEN COMPLETELY FILLED. BY FILLING THE LINE FROM THE LOWEST LEVEL, THE AIR IN THE LINE IS EASILY PUSHED AHEAD AND, FINALLY DISPELLED THROUGH THE STANDPIPE AT THE UPPER END OF THE TEST SECTION. CARE SHOULD BE TAKEN TO MINIMIZE ENTRAPPED AIR THAT WILL GIVE DISTORTED TEST RESULTS. THE RATE OF DROP IN THE STANDPIPE MAY BE QUITE RAPID UNTIL THE AIR HAS BEEN EXPELLED.

5) AFTER FILLING WITH WATER, THE LINE MUST BE ALLOWED TO STAND FOR AT LEAST FOUR (4) HOURS BEFORE BEGINNING THE TEST. DURING THIS TIME SOME WATER ABSORPTION INTO THE MANHOLE STRUCTURES AND SEWER PIPE WILL TAKE PLACE. AFTER THE WATER ABSORPTION HAS STABILIZED, THE WATER LEVEL IN THE STANDPIPE IS CHECKED AND WATER ADDED IF NECESSARY.

6) THE TEST IS NOW READY TO BEGIN. THE DROP IN THE STANDPIPE IS MEASURED AND RECORDED OVER A FIFTEEN (15) MINUTE PERIOD. TO VERIFY THE FIRST RESULTS, A SECOND FIFTEEN (15) MINUTE TEST IS SUGGESTED. THIS WILL ALSO VERIFY WHETHER A STABLE CONDITION EXISTS IN THE LINE.

7) THE MEASURED DROPS IN THE STANDPIPE ARE CONVERTED TO LEAKAGE IN TERMS OF GALLONS PER INCH DIAMETER PER MILE PER DAY.

8) ANOTHER COMMONLY USED METHOD OF CONDUCTING WATER EXFILTRATION TESTING IS TO UTILIZE THE MANHOLE IN LIEU OF A STANDPIPE. THE TEST PROCEDURE IS EXACTLY AS OUTLINED FOR USING THE STANDPIPE. HOWEVER, SINCE THE MANHOLE IS LARGER IN DIAMETER THAN THE STANDPIPE, THIS METHOD NORMALLY REQUIRES A MINIMUM TWO (2) HOUR TEST PERIOD IN ORDER TO BE ABLE TO RECORD A MEASURABLE WATER LEVEL DROP. MANHOLE LEAKAGE MUST ALSO BE CONSIDERED IN THE LEAKAGE RATE AND TEST RESULTS.

9) CAUTION SHOULD BE TAKEN ABOUT CONDUCTING EXFILTRATION TESTS ON SEWER LINES LAID ON STEEP GRADES. CONSIDERATION MUST BE GIVEN TO THE DOWNSTREAM PORTION OF THE SYSTEM TO PREVENT EXCESSIVE PRESSURES IN THESE LOWER LINES. FOR THESE INSTALLATIONS AND WHERE THE UPSTREAM MANHOLES ARE VERY DEEP, IT IS NOT ADVISABLE TO FILL THE STANDPIPE OR MANHOLE TO THE TOP WHEN PERFORMING THE TEST.

DEFLECTION TEST FOR PLASTIC PIPE

DEFLECTION GAUGE (MANDREL): MANDREL TESTING SHALL TAKE PLACE TO ENSURE THE FLEXIBLE PIPE HAS BEEN PROPERLY BEDDED AND BACK-FILLED. THE DEFLECTION TEST MUST BE CONDUCTED NO LESS THAN 30 DAYS AFTER INSTALLATION OF THE FINAL BACKFILL. THE MAXIMUM ALLOWABLE DEFLECTION IS 5 PERCENT. INSTALLATION SHALL CONFORM TO ASTM 2321-89. A NINE-ARM (POINT) MANDREL SHALL BE USED. CHERNE FIXED STEEL DEFLECTION OR APPROVED EQUAL.

VIDEOTAPING

AS A MEANS OF INSURING THAT PIPE LAYING WAS PROPERLY DONE AND THAT ALL JOINTS ARE IN A "HOME" POSITION, THE CONTRACTOR SHALL PROVIDE VIDEOTAPING OF ALL OF THE PIPE LAID THAT IS THIRTY-SIX (36) INCHES IN DIAMETER AND SMALLER. THIS VIDEOTAPING SHALL BE DONE NO SOONER THAN THIRTY (30) DAYS AFTER COMPLETION OF BACKFILL. THE CONTRACTOR SHALL PROVIDE FORTY-EIGHT (48) HOURS NOTICE TO THE TOWNSHIP PRIOR TO VIDEOTAPING SO THAT A REPRESENTATIVE MAY BE PRESENT. A SATISFACTORY REVIEW OF THE VIDEOTAPE BY THE TOWNSHIP SHALL BE A CONDITION FOR SEWER ACCEPTANCE BY THE TOWNSHIP. TYPICAL ITEMS TO BE REVIEWED ON THE VIDEOTAPE WILL INCLUDE PIPE DEFLECTION, PIPE SETTLEMENT, LEAD CONNECTIONS, JOINTS AND PIPE CLEANLINESS. IF THE VIDEOTAPE REVIEW REVEALS UNSATISFACTORY CONDITIONS, THE CONTRACTOR SHALL CORRECT THE CONDITIONS AND SHALL RE-VIDEOTAPE THE AFFECTED PIPE SECTIONS FOR REVIEW BY THE TOWNSHIP.

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OHM

COUNTY WASHTENAW | CITY/VILLAGE/TOWNSHIP CHARTER TOWNSHIP OF SUPERIOR | SCALE H: NTS V: N/A | HORIZ DATUM N/A | VERT DATUM N/A

JOB # 000-00-0000

REVISIONS:

DATE OCT 2003 | CADD DK | ENG / ARCH DLG/JSL | PROJ MGR | SECTION | TOWN | RANGE | CITY/VILLAGE/TOWNSHIP CHARTER TOWNSHIP OF SUPERIOR

REVISIONS:

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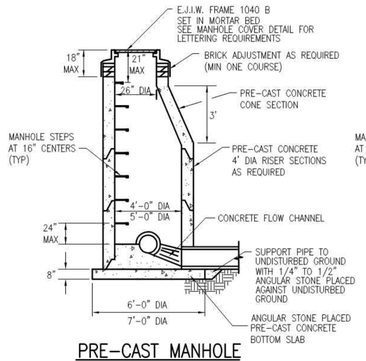
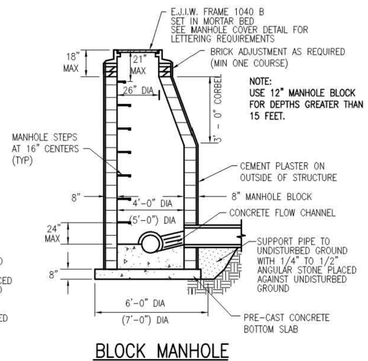
CHARTER TOWNSHIP OF SUPERIOR
STANDARD SANITARY DETAILS

SHEET 2 OF 2

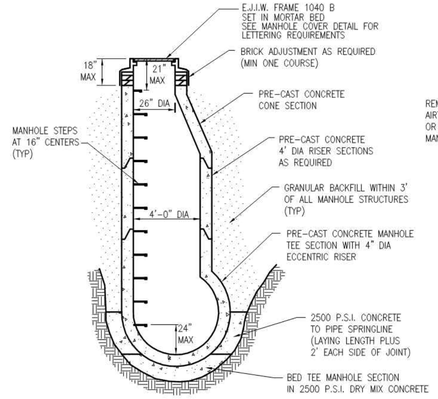


PRE-CAST MANHOLE

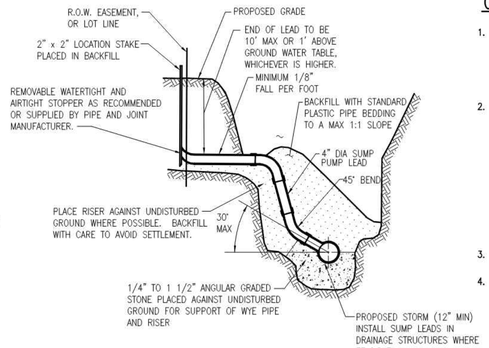


BLOCK MANHOLE

STANDARD MANHOLE DETAILS



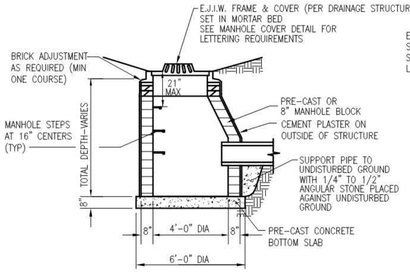
PRE-CAST TEE MANHOLE DETAIL



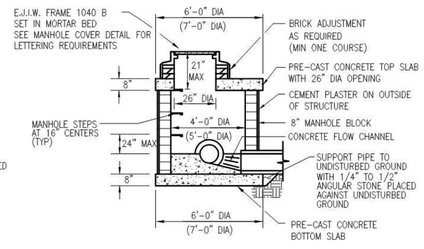
HOUSE LEAD DETAIL FOR 4" DIA
PLASTIC SUMP PUMP LEADS

GENERAL NOTES FOR STORM SEWER CONSTRUCTION

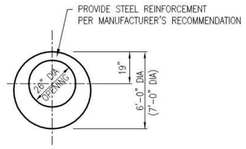
1. ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE STANDARDS AND SPECIFICATIONS OF CHARTER TOWNSHIP OF SUPERIOR.
   A. TYPE AND CLASS OF PIPE SHALL BE AS SPECIFIED ON PLANS.
   B. SAND BEDDING SHALL BE USED THROUGHOUT, UNLESS OTHERWISE SPECIFIED ON THE PLAN.
   C. ALL END SECTIONS 18" AND LARGER SHALL BE PROVIDED WITH A GALVANIZED BAR SCREEN.
2. CONTRACTOR SHALL CONSTRUCT MANHOLES WITH PRECAST REINFORCED CONCRETE IN LIEU OF CONCRETE, BRICK AND BLOCK MANHOLES IN ACCORDANCE WITH THE FOLLOWING CONDITIONS:
   A. NO OPENINGS SHALL BE MADE IN PRECAST UNITS WHICH WOULD LEAVE LESS THAN 12" OF UNDISTURBED PRECAST STRUCTURE WALL BETWEEN PIPES (AS MEASURED BETWEEN OUTSIDE PIPE WALLS) OR WOULD REMOVE MORE THAN 40% OF THE CIRCUMFERENCE ALONG ANY HORIZONTAL PLANE.
   B. STRUCTURES FOR SEWERS LARGER THAN 18", OR THOSE NOT MEETING THE OPENING REQUIREMENTS, MAY BE BUILT OF BLOCK OR BRICK UP TO A MINIMUM OF 8" ABOVE THE TOP OF SEWER, WITH PRECAST UNITS BEING USED ABOVE THIS POINT. WHERE PRECAST UNITS REST ON THE BLOCK OR BRICK, THE GROOVE IN THE PRECAST UNIT SHALL BE FILLED WITH MORTAR.
   C. OPENINGS FOR THE OUTLET SEWER SHALL BE PRECAST WITH A DIAMETER OF 3 INCHES LARGER THAN THE OUTSIDE DIAMETER OF THE OUTLET PIPE. ALL OTHER OPENINGS SHALL BE MADE IN THE FIELD AFTER THE MANHOLE HAS BEEN CONSTRUCTED.
3. ALL VERTICAL OPENINGS IN CONCRETE BLOCK STRUCTURE WALLS SHALL BE COMPLETELY FILLED WITH MORTAR. ALL VERTICAL WALL JOINTS SHALL BE CEMENT POINTED.
4. CONCRETE PIPE REQUIREMENTS:
   A. THE CONTRACTOR SHALL PROVIDE REINFORCED CONCRETE PIPE AS SPECIFIED ON THE PLANS.
   B. ALL ROUND REINFORCED CONCRETE PIPE SHALL HAVE MODIFIED GROOVE TONGUE JOINTS WITH O-RING TYPE RUBBER GASKET, PER A.S.T.M. SPECIFICATIONS C443. ALL ELLIPTICAL CONCRETE PIPE SHALL HAVE GROOVE TONGUE JOINTS WITH BITUMINOUS (DEWITT #10) JOINT MATERIAL AND INSIDE MORTAR POINTING. ELLIPTICAL CONCRETE PIPE JOINTS SHALL ALSO BE WRAPPED PER A.S.T.M. SPECIFICATION C877 FOR EXTERNAL SEALING BANDS FOR NON-CIRCULAR CONCRETE PIPE.
   C. THE INSIDE JOINT OF PIPE SIZES OVER 27" DIAMETER SHALL BE POINTED UP WITH MORTAR UPON COMPLETION OF BACKFILLING OPERATIONS.
   D. WHERE UNSTABLE GROUND CONDITIONS ARE ENCOUNTERED, STONE BEDDING SHALL BE USED AS DIRECTED BY THE ENGINEER IN ORDER TO PROVIDE A STABLE FOUNDATION FOR PIPE AND MANHOLES.
   E. ALL PIPES ENTERING OR LEAVING A MANHOLE SHALL BE ADEQUATELY SUPPORTED WITH 1/4" TO 1/2" ANGULAR GRADED STONE FILL FROM UNDISTURBED EARTH TO SPRINGLINE OR WITH APPROVED CRUSHED AGGREGATE.



CATCH BASIN DETAIL



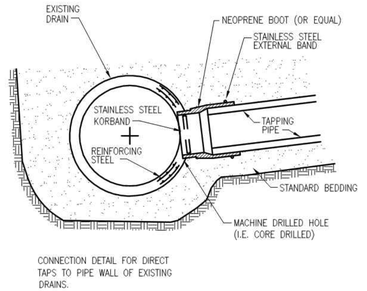
LOW HEAD MANHOLE AND CATCH BASIN DETAIL



PRE-CAST CONCRETE TOP
SLAB DETAIL, 8" THICK

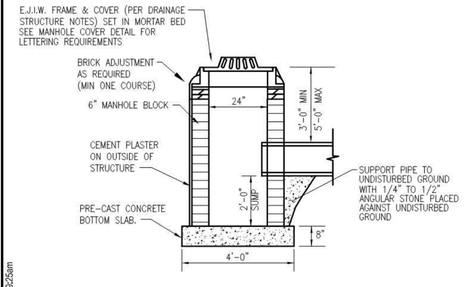
DRAINAGE STRUCTURE REQUIREMENTS:

1. ALL STRUCTURE(S) SHALL BE 4' IN DIAMETER UNLESS OTHERWISE INDICATED ON CONSTRUCTION DRAWINGS. 2' DIAMETER CATCH BASINS AND INLETS SHALL BE USED ONLY WITH PRIOR TOWNSHIP APPROVAL.
2. MANHOLE STEPS SHALL BE STEEL, ENCASED WITH POLYPROPYLENE PLASTIC OR APPROVED EQUIVALENT TO M.A. INDUSTRIES, INC., PS-1 FOR BRICK, OR PS-1B FOR BLOCK, EAST JORDAN IRON WORKS 8503 (OR APPROVED EQUAL). MANHOLE STEPS AT 16" CENTERS.
3. CATCH BASIN STEPS SHALL BE EAST JORDAN IRON WORKS 8502 PLASTIC COATED (OR APPROVED EQUAL).
4. MANHOLE COVERS AND FRAMES SHALL BE EAST JORDAN IRON WORKS 1040, TYPE "B" COVER OR AS PER CONSTRUCTION DRAWINGS.
5. CATCH BASIN AND INLET FRAME AND COVER SHALL BE:
   A. EAST JORDAN IRON WORKS 5080, TYPE "M1" COVER WITH STRAIGHT FACE CURB AND GUTTER (OR AS APPROVED EQUAL).
   B. EAST JORDAN IRON WORKS 5080, TYPE "M1" COVER WITH MOUNTABLE CURB AND GUTTER AND INTEGRAL CURB AND GUTTER (OR AS APPROVED EQUAL).
   C. EAST JORDAN IRON WORKS 1040, TYPE "02" COVER (BEEHIVE) TO BE USED ON OPEN DITCHES AND SWALES, REAR YARD CATCH BASIN (OR AS APPROVED EQUAL). IF WITHIN 8' OF ROAD, TYPE "N" COVER (LOW BEEHIVE) SHALL BE USED.
   D. FRAMES SHALL BE SET IN FULL BED OF MORTAR AND THE SIDE SHALL BE OVERLAPPED TO PREVENT LEAKAGE.
6. A PROPER CHANNEL SHALL BE CONSTRUCTED WITHIN THE EXISTING MANHOLE OR OTHER STRUCTURE AT WHICH THE CONNECTION IS TO BE MADE TO DIRECT THE FLOW TO THE EXISTING OUTLET IN A MANNER WHICH WILL TEND TO CREATE THE LEAST AMOUNT OF TURBULENCE. THE CHANNEL SHALL BE CONSTRUCTED TO THE SAME SIZE AS THE INSIDE DIAMETER OF THE EXISTING PIPES, AND SHALL BE BUILT TO HEIGHT OF 1/3 THE EXISTING PIPE DIAMETER WITH A MINIMUM OF 2% SLOPE ON THE BENCHES.
7. STANDARD BRICK ADJUSTMENT: MINIMUM OF ONE COURSE AND A MAXIMUM OF 5 COURSES OF BRICK.
   A. ALL BRICKS AND BLOCKS USED FOR ADJUSTMENT SHALL BE CONCRETE.
   B. BLOCK USED FOR STANDARD CATCH BASINS AND MANHOLES SHALL BE 8" (FOR 0'-15' DEEP) AND 12" (FOR 15'-25' DEEP). BLOCK USED FOR 2' DIAMETER INLETS AND CATCH BASINS SHALL BE 6".
   C. PRECAST REINFORCED CONCRETE SECTION AS MINIMUM SHALL CONFORM TO A.S.T.M. C-478.
   D. CONCRETE BASE FOR MANHOLE, CATCH BASIN, AND INLET SHALL BE MDOT GRADE 30P (MIN), 8" THICK, 3000 PSI.
8. PLASTER ALL OUTSIDE MASONRY SURFACES WITH 1:2 1/2 MASONRY CEMENT (TYPE II) 1/2" THICK.
9. WHEN TAPPING INTO AN EXISTING STRUCTURE A BRICK COLLAR SHALL BE PLACED 12" THICK AROUND THE PIPE AND EXTENDED 12" BEYOND THE OPENING. IF PRE-CAST SECTION IS TAPPED, BEND MESH AND USE AS REINFORCEMENT WITH BRICK COLLAR.
10. ALL PRECAST RISER(S) SHALL BE PLACED IN A FULL BED OR MORTAR. ALL JOINTS & LIFTHOLES SHALL BE POINTED UP WITH MORTAR ON THE OUTSIDE AND INSIDE.
11. HINGED BAR GRATES WILL BE REQUIRED FOR HEADWALLS PER W.C.D.C. AND/OR MDOT STANDARDS, WHICHEVER IS STRICTER.
    A. ALL VERTICAL AND HORIZONTAL BARS SHALL BE TACK-WELDED TO THE ANGLE FRAME.
    B. THE BAR GRATE SCREEN SHALL BE HOT-DIPPED GALVANIZED AFTER FABRICATION IS COMPLETE.



CONNECTION DETAIL FOR DIRECT
TAPS TO PIPE WALL OF EXISTING
DRAINS.

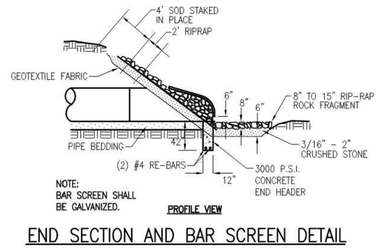
KOR-N-TEE TAP
FOR CONCRETE PIPE



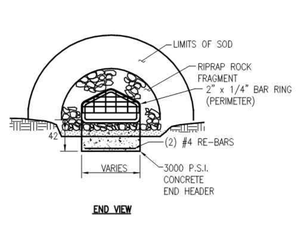
2' DIA CATCH BASIN DETAIL

NOT TO SCALE

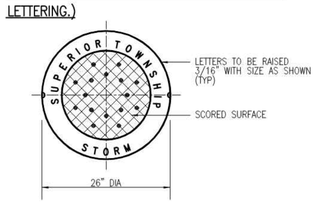
(NOTE: 2' DIA CATCH BASIN SHALL NOT BE USED UNLESS PRIOR APPROVAL IS OBTAINED FROM TOWNSHIP ENGINEER.)

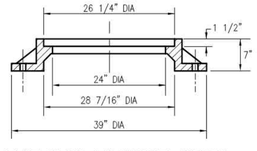


END SECTION AND BAR SCREEN DETAIL

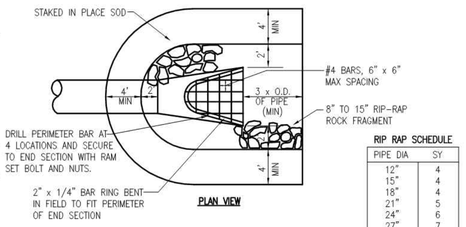


(NOTE: LETTERING SHALL BE USED ONLY FOR PUBLIC STORM SYSTEM. ALL OTHERS SHALL HAVE NO LETTERING.)





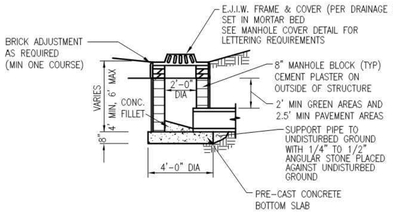
CAST IRON MANHOLE COVER
E.J.I.W. 1040



RIP RAP SCHEDULE

PIPE DIA	SY
12"	4
15"	4
18"	4
21"	5
24"	6
27"	7
30"	8
36"	10
42"	12
48"	14

(NOTE: MINIMUM REQUIREMENTS FOR RIP-RAP MATERIAL SHALL MEET MDOT SPECIFICATION 8.19.02.)



2' DIA INLET DETAIL

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CHARTER TOWNSHIP OF SUPERIOR

CHARTER TOWNSHIP OF SUPERIOR
STANDARD STORM SEWER DETAILS

SHEET
1
OF 2

CITY/VILLAGE/TOWNSHIP	CHARTER TOWNSHIP OF SUPERIOR
COUNTY	WASHTENAW
SCALE	NTS
JOB NO.	000-00-0000
HORZ DATUM	N/A
VERT DATUM	N/A
DATE	OCT 2003
CADD	DK
ENG / ARCH	DLG/GL
PROJ MGR	
SECTION	
TOWN	
RANGE	
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REVISIONS	

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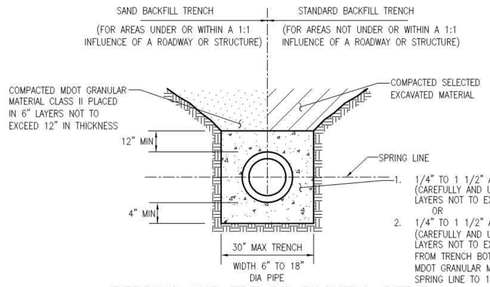
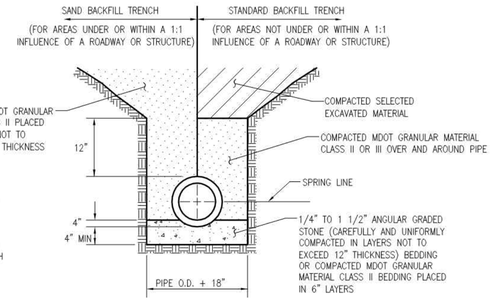
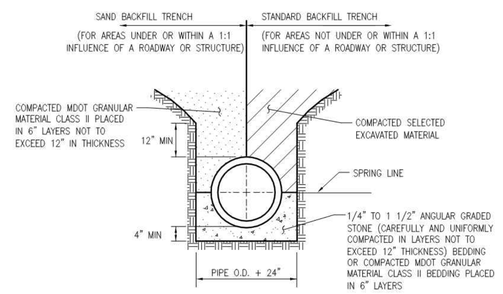


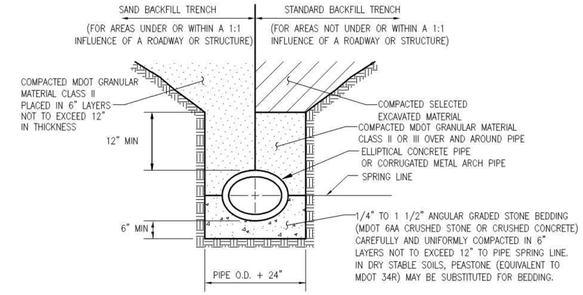
BEDDING AND TRENCH BACKFILL DETAIL FOR 18" DIAMETER AND SMALLER PIPE (PVC SOLID WALL, AND TRUSS PIPE)



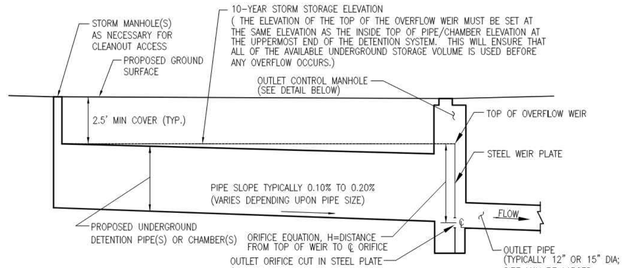
BEDDING AND TRENCH BACKFILL DETAIL FOR 24" DIAMETER AND SMALLER PIPE



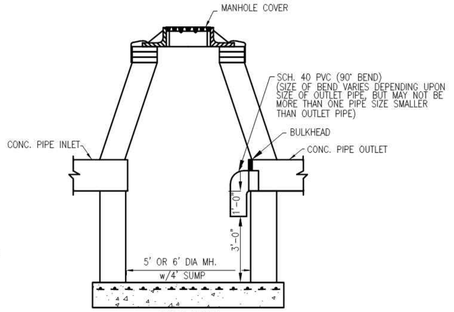
BEDDING AND TRENCH BACKFILL DETAIL FOR 27" DIAMETER AND LARGER PIPE



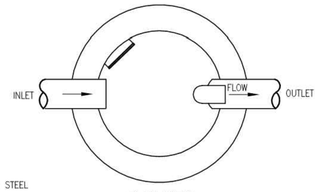
BEDDING AND TRENCH BACKFILL DETAIL FOR ELLIPTICAL CONCRETE PIPE OR CORRUGATED METAL ARCH PIPE



DETENTION SYSTEM PROFILE



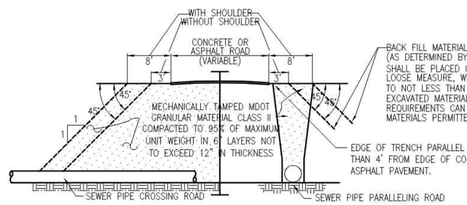
SIDE VIEW



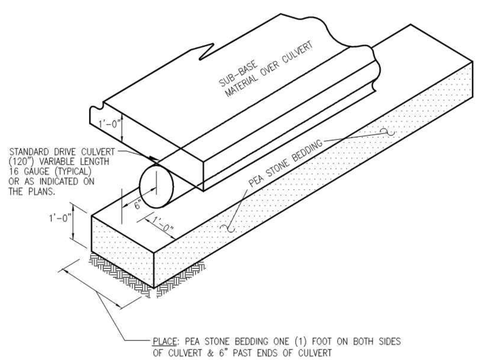
PLAN VIEW

OIL/GAS SEPARATOR PLACEMENT DETAIL FOR 18" DIAMETER AND SMALLER OUTLET PIPE

(FOR OUTLET PIPES LARGER THAN 18" IN DIAMETER, AN ALTERNATE DESIGN MUST BE APPROVED BY THE TOWNSHIP ENGINEER)



SAND OR GRAVEL BACKFILL DETAILS FOR SEWERS UNDER CONCRETE OR ASPHALT PAVEMENTS, SIDEWALKS, DRIVEWAYS AND PARKING AREAS



DRIVE CULVERT BEDDING DETAIL

GENERAL NOTES FOR STORM SEWER CONSTRUCTION

1. PIPE BEDDING AND BACKFILLING:

BEDDING SHALL EXTEND A MINIMUM OF 4" BELOW PIPE, UNLESS OTHERWISE NOTED ON CONSTRUCTION PLANS. BEDDING SHALL BE UNIFORM IN GRADE. HOWEVER, IF THE EXISTING NATIVE SOILS MEET THE REQUIREMENTS FOR MDOT GRANULAR MATERIAL CLASS II (MINIMUM 4" THICK), THEN STORM STORM SEWER MAY BE LAID DIRECTLY ON COMPACTED NATIVE SUBGRADE SOILS.

BACKFILL SHALL BE COMPACTED ABOVE PIPE OR AS INDICATED ON CONSTRUCTION DRAWINGS. TRENCH BACKFILL SHALL BE OF A SUITABLE MATERIAL AND SHALL BE FREE OF ANY ORGANIC MATERIALS AND ROCKS LARGER THAN 3" IN SIZE. BACKFILL SHALL BE RAMPED INTO TRENCH AND COMPACTED WITH A SMALL DOZER OR OTHER, APPROVED METHODS. WHERE TRENCH IS WITHIN A 1:1 INFLUENCE OF STREETS, ALLEYS, SIDEWALKS, DRIVEWAYS AND PARKING AREAS, SAND BACKFILL SHALL BE USED WHICH SHALL CONSIST OF MDOT GRANULAR MATERIAL CLASS II OR III COMPACTED IN 6" LAYERS NOT TO EXCEED 12" TO A DENSITY OF 95% AS DETERMINED BY AASHTO T99. ALL BACKFILL PLACED WITHIN A 1:1 INFLUENCE OF STRUCTURES SHALL BE APPROVED SAND, PLACED IN 1' LAYERS AND COMPACTED. NO FROZEN MATERIAL SHALL BE BURIED MORE THAN 4' BELOW THE FINAL ELEVATION OF THE GROUND.

TRENCHES WHICH ARE TO BE LEFT OPEN OVERNIGHT SHALL BE ENCLOSED WITH SUITABLE FENCING AND LIGHTED BARRICADES, UNLESS OTHERWISE APPROVED BY THE TOWNSHIP.

2. SUMP PUMP LEAD REQUIREMENTS:

ALL SUMP PUMP LEADS CONNECTED TO A DRAIN SHALL BE PRE-MANUFACTURED.

SUMP PUMP MAINS AND LEADS SHALL BE A SDR 35, NON-PERFORATED, SOLID WALL, PVC, ARMCO TRUSS PIPE, OR APPROVED EQUAL, WITH PREMIUM JOINTS.

TAPS TO 12" STORM SEWER SHALL BE MADE WITH A FERNCO EZ TAP OR APPROVED EQUAL. TAPS TO OTHER SIZE STORM SEWER SHALL BE MADE WITH A ROMAC SADDLE, KOR-N-TEE LATERAL CONNECTOR FOR CONCRETE PIPE, OR APPROVED EQUAL.

ENDS OF ALL 4" SUMP PUMP LEADS SHALL BE TEMPORARILY CAPPED AND THEIR LOCATION STAKED, WITNESSED AND RECORDED.

ALL SUMP PUMP LEADS TO BE TAKEN TO THE PROPERTY LINE, EASEMENT LINE OR AS INDICATED ON THE PLAN.

SUMP PUMP CLEANOUTS SHALL BE A MINIMUM INSIDE DIAMETER OF 24" AND BE CONSTRUCTED AT CHANGES OF ALIGNMENT, ENDS OF SUMP PUMP MAINS OR AS INDICATED ON THE PLAN.

3. RESTORATION REQUIREMENTS:

ALL DISTURBED AREAS WITHIN THE RIGHT-OF-WAY SHALL BE RESTORED AS FOLLOWS, UNLESS OTHERWISE NOTED ON CONSTRUCTION DRAWINGS:

FINISH GRADE

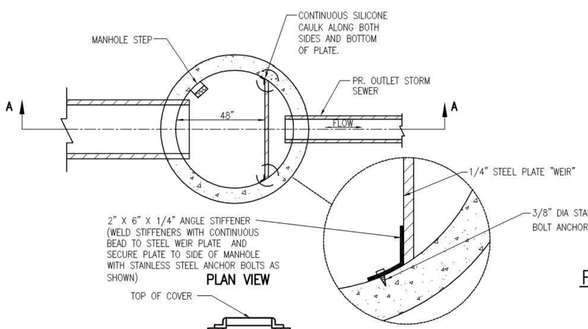
PLACE 3" THICKNESS OF "QUALITY" TOPSOIL ACCEPTABLE TO THE ENGINEER.

APPLY SOD OR SEED AND FERTILIZER AS FOLLOWS:

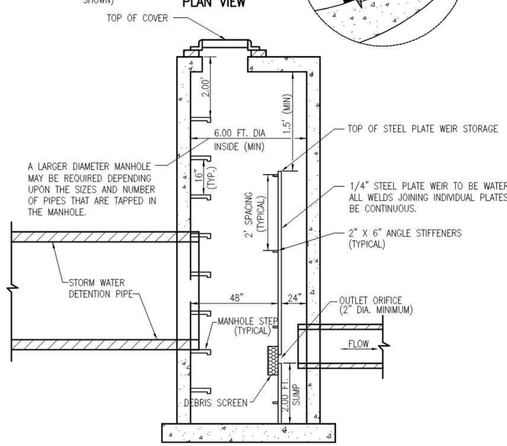
	LOCATION	SODDING/ SEEDING REQUIREMENTS	FERTILIZER REQUIREMENT
SEED AND FERTILIZER	SLOPES & DITCH BANKS, ETC.	MDOT "ROADSIDE" MIX (50% PERENNIAL RYE, 15% KENTUCKY BLUE, 35% RED FESCUE) APPLIED AT 100 LBS/ACRE	240 LBS/ACRE OF CHEMICAL FERTILIZER NUTRIENTS IN EQUAL PROPORTIONS OF NITROGEN, PHOSPHORIC ACID AND POTASH. (MUST BE A SLOW-RELEASE FERTILIZATION)
	OTHER AREAS	MDOT "CLASS A" MIX (30% PERENNIAL RYE, 30% KENTUCKY BLUE, 40% RED FESCUE) APPLIED AT 100 LBS/ACRE	240 LBS/ACRE OF CHEMICAL FERTILIZER NUTRIENTS IN EQUAL PROPORTIONS OF NITROGEN, PHOSPHORIC ACID AND POTASH. (MUST BE A SLOW-RELEASE FERTILIZATION)
SOD	DITCH BOTTOMS, SLOPES EXCEEDING 3:1, AND AT STRUCTURES	3" TOPSOIL WITH CLASS A SOD	

APPLY STRAW MULCH AT THE RATE OF 2-3 BALES/1000 SQUARE FEET.

THE CONTRACTOR SHALL BE RESPONSIBLE TO INSURE THE GROWTH OF ALL SEEDED AREAS, AND SHALL RE-SEED AS NECESSARY TO ACCOMPLISH THIS.



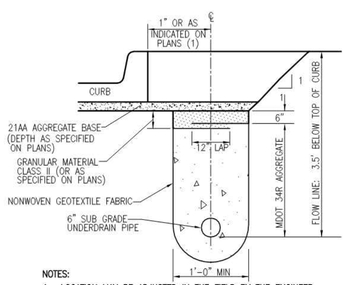
PLAN VIEW



SECTION A-A

6 FT. DIA OUTLET MANHOLE

TYPICAL UNDERGROUND DETENTION AND OUTLET MANHOLE DETAILS



NOTES:

1. LOCATION MAY BE ADJUSTED IN THE FIELD BY THE ENGINEER.
2. ALL UNDERDRAIN SHALL BE APPROVED PLASTIC PIPE. METAL PIPE SHALL NOT BE USED.
3. ALL UNDERDRAIN SHALL OUTLET TO DRAINAGE STRUCTURE.
4. UNDERDRAIN CONNECTIONS (AT LOW POINTS) SHALL BE MADE AS CLOSE TO THE STRUCTURE INVERT AS PRACTICAL, WITH A SPIRAL WRAP OF THE STRUCTURE USED TO MAKE THE TRANSITION FROM THE REQUIRED FLOW LINE DEPTH TO STRUCTURE INVERT.

SUBGRADE UNDERDRAIN, 6"

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OHM

DATE OCT 2003 | CADD DK | ENG / ARCH DLG/GL | PROJ MGR | SECTION | TOWN | RANGE | CITY/VILLAGE/TOWNSHIP CHARTER TOWNSHIP OF SUPERIOR | COUNTY WASHTENAW

REVISIONS:

SCALE H: NTS V: N/A

HORIZ DATUM N/A | VERT DATUM N/A

JOB NO. 000-00-0000

REVISIONS:

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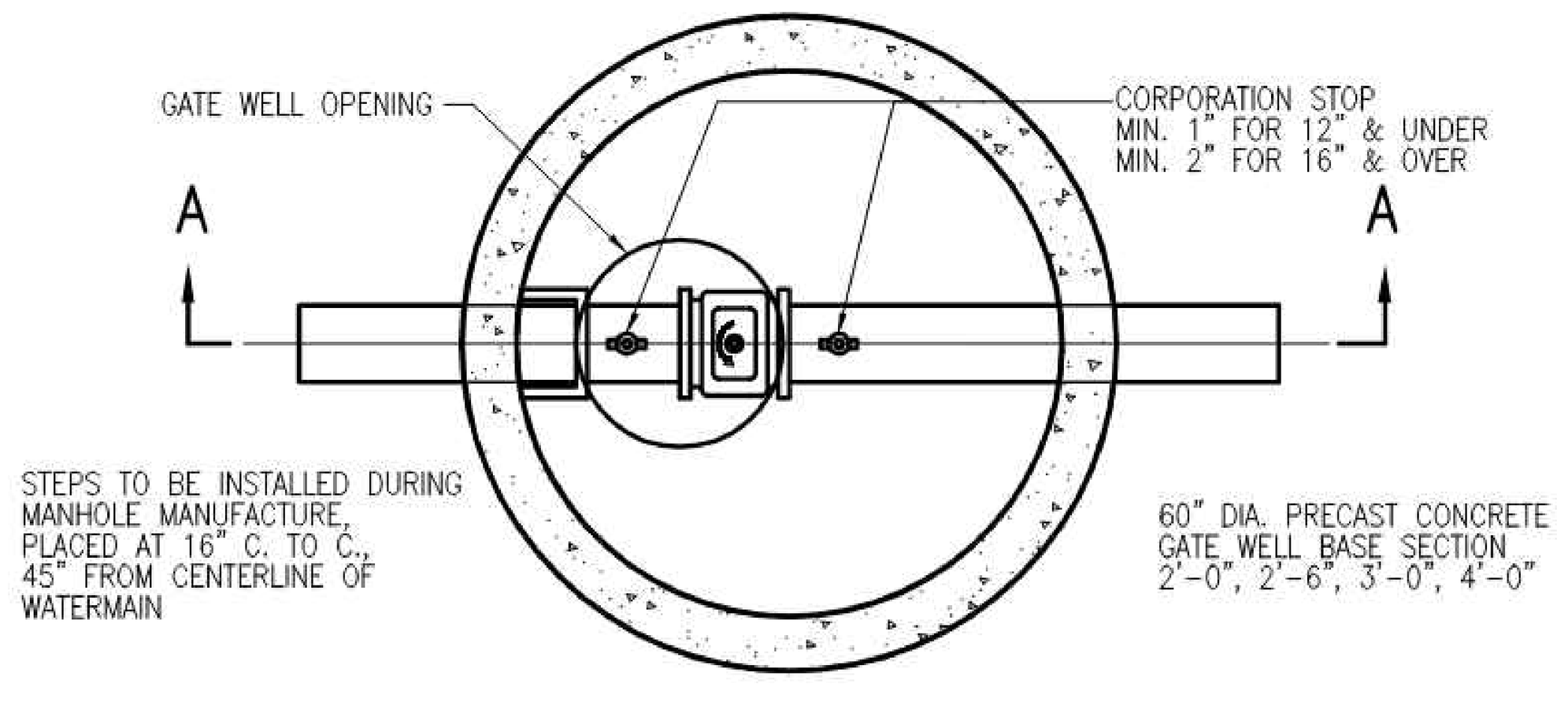
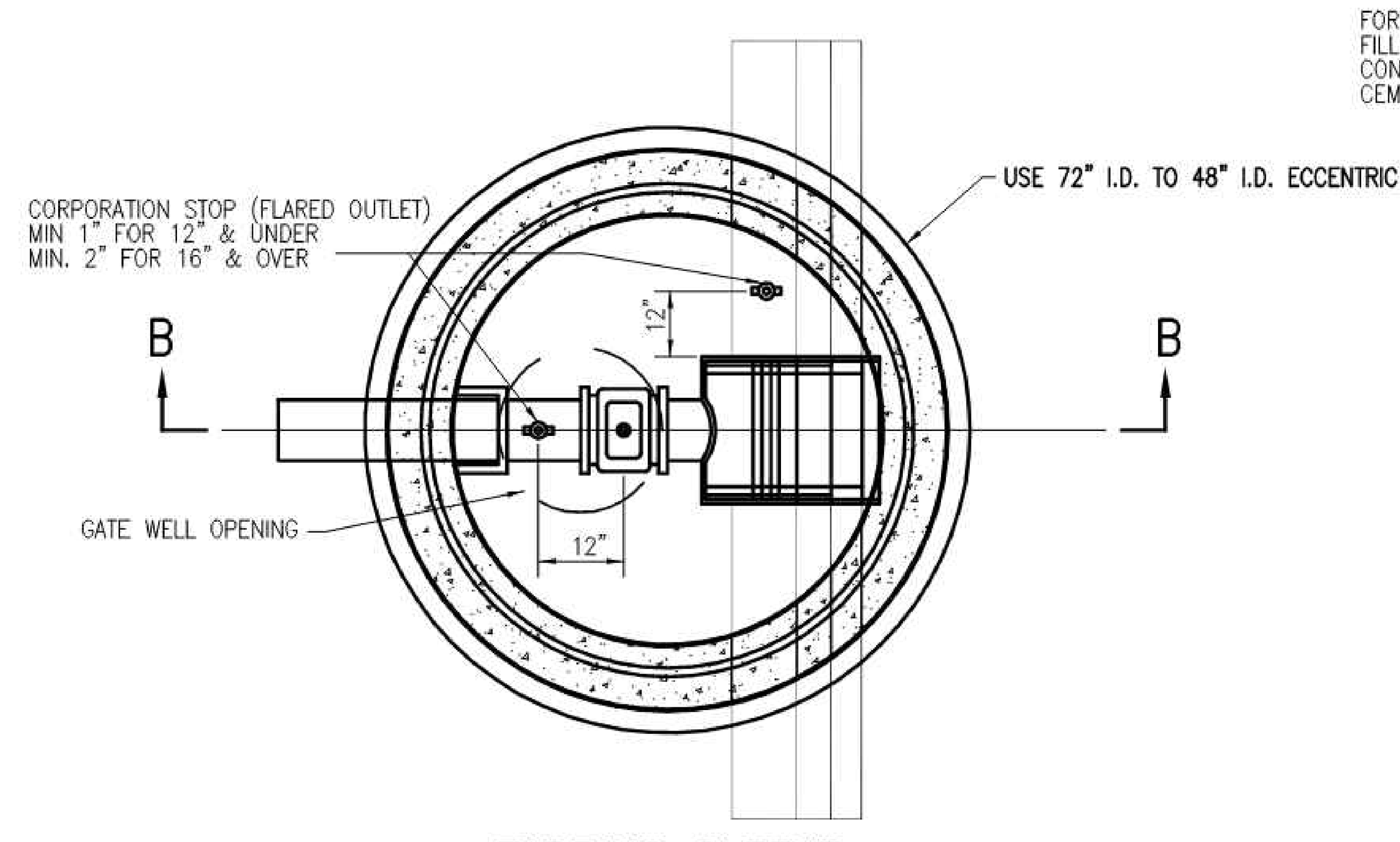
CHARTER TOWNSHIP OF SUPERIOR STANDARD STORM SEWER DETAILS

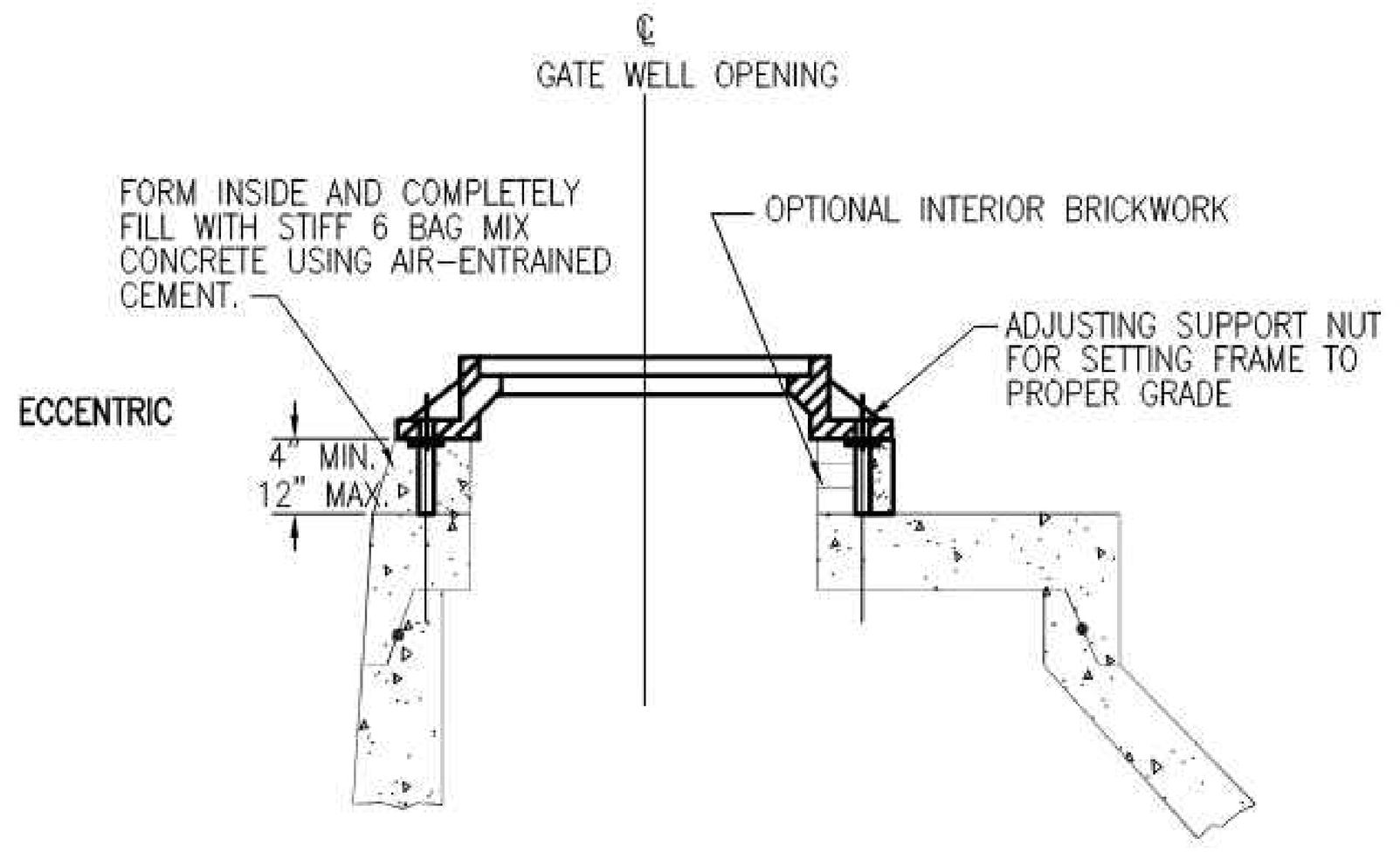
SHEET 2 OF 2



PLAN GATE WELL TYPICAL

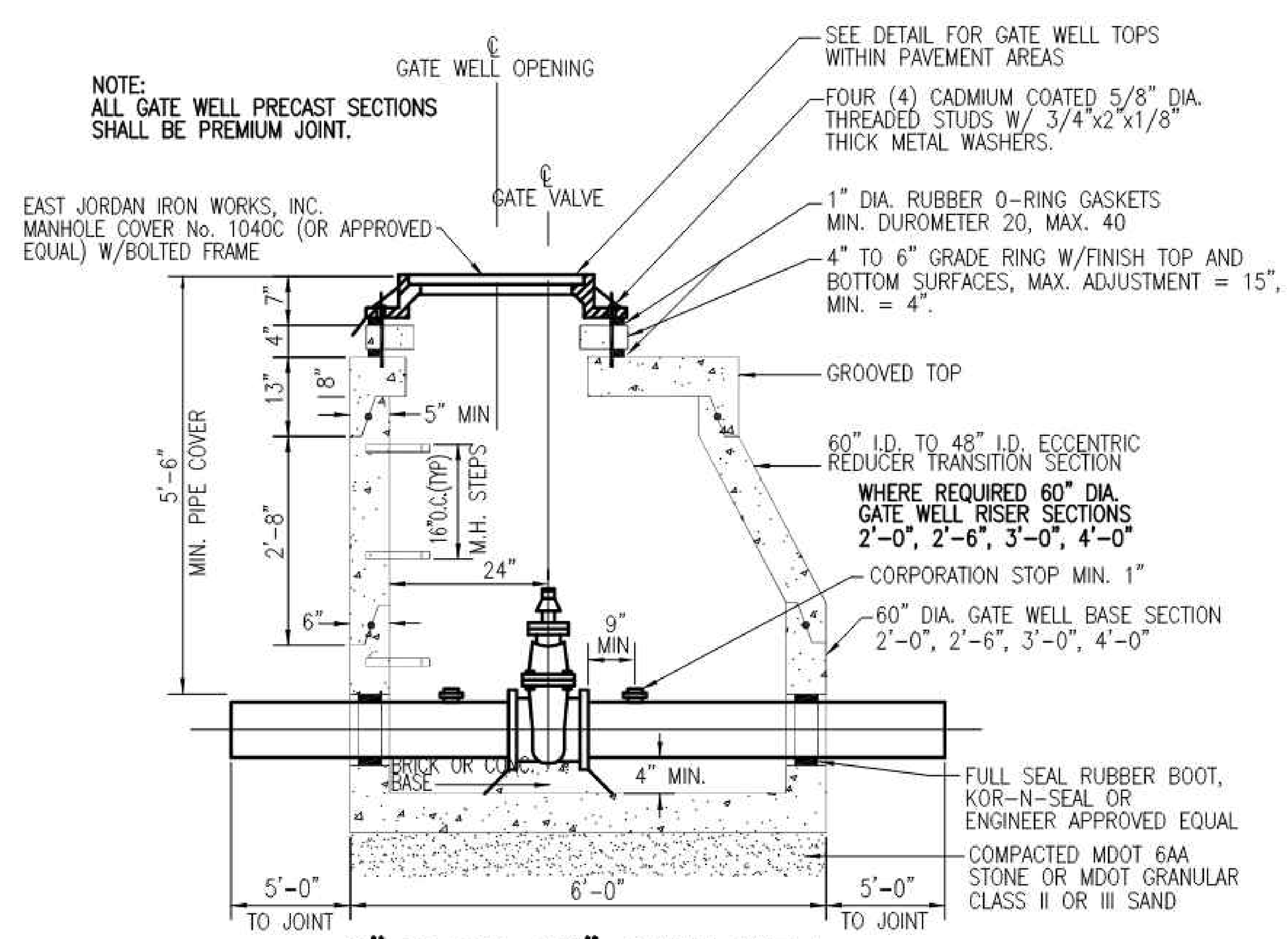


TAPPING SLEEVE VALVE & WELL TYPICAL

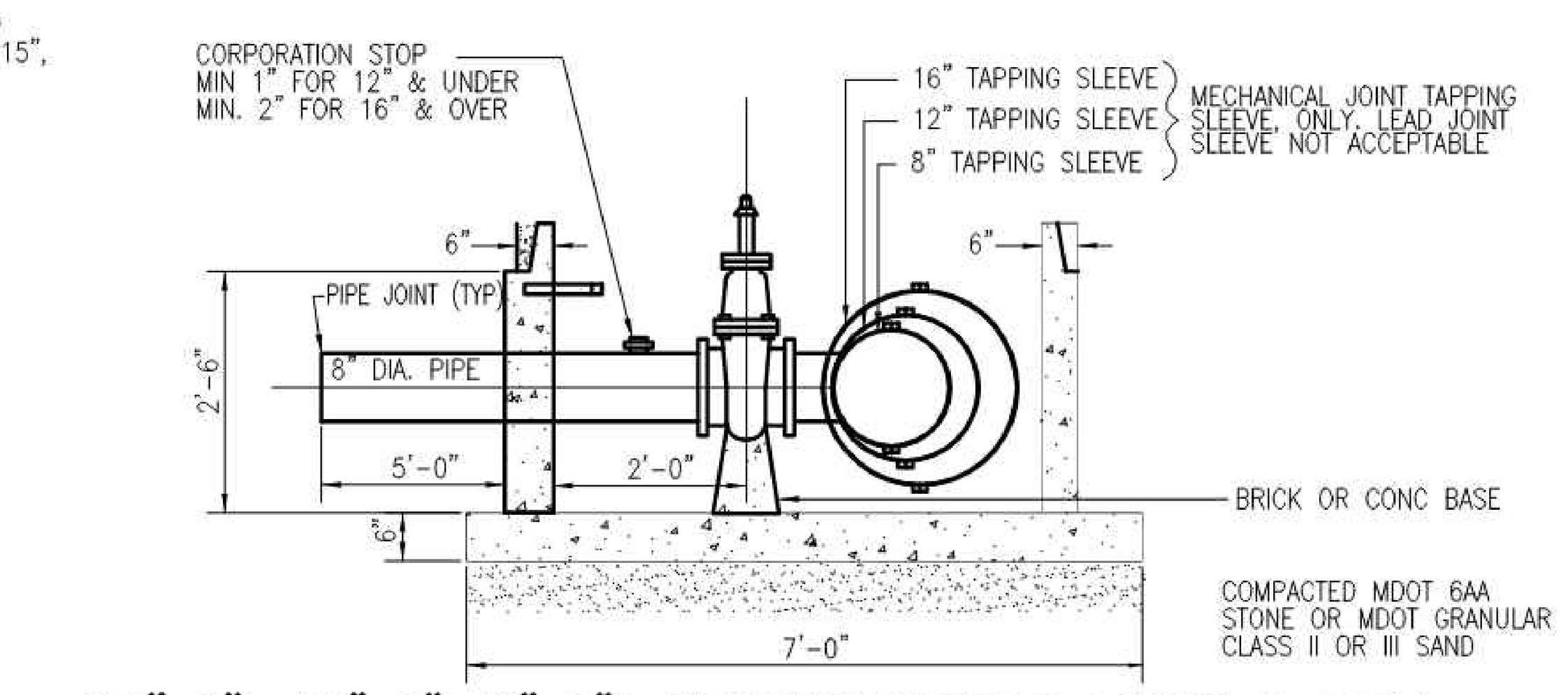


GATE WELL TOPS WITHIN PAVEMENT AREAS

RUBBER 'O' RINGS SHALL NOT BE USED IN PAVEMENT



6" THRU 12" GATE WELL

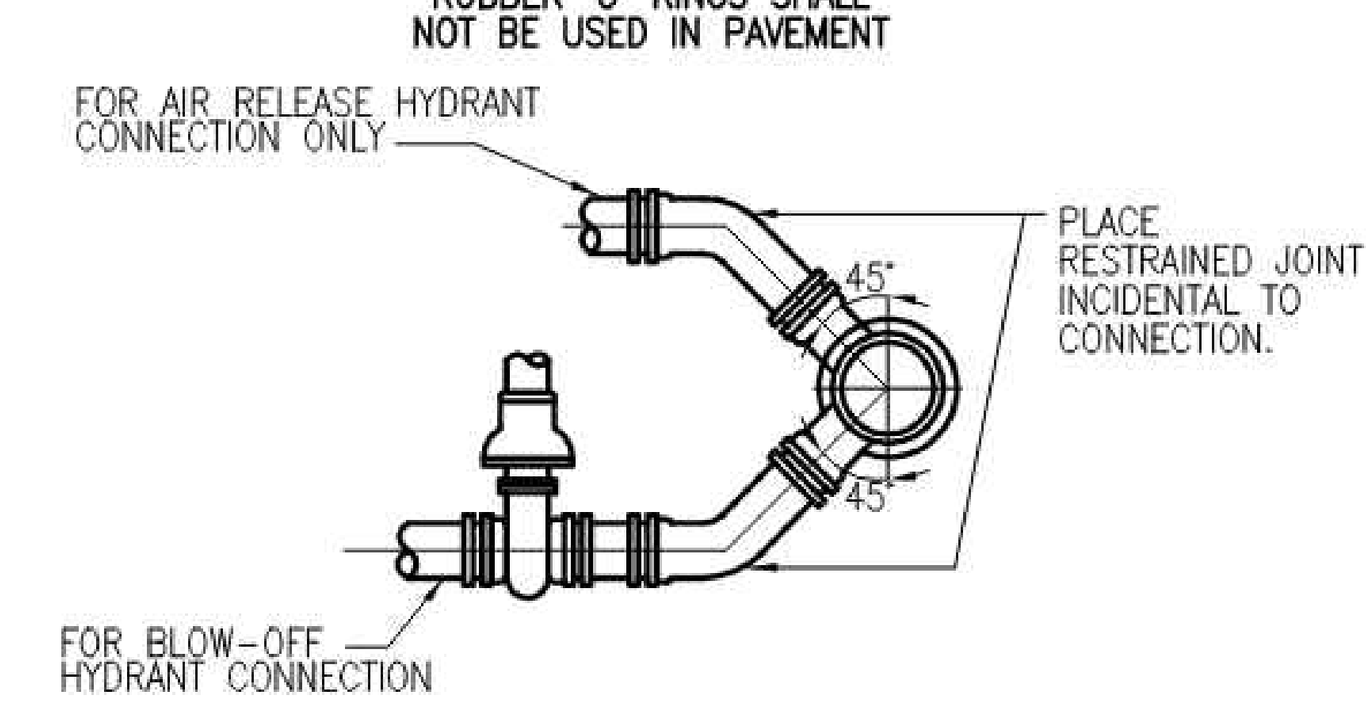


16"x8", 12"x8", 8"x8"* TAPPING SLEEVE, VALVE & WELL

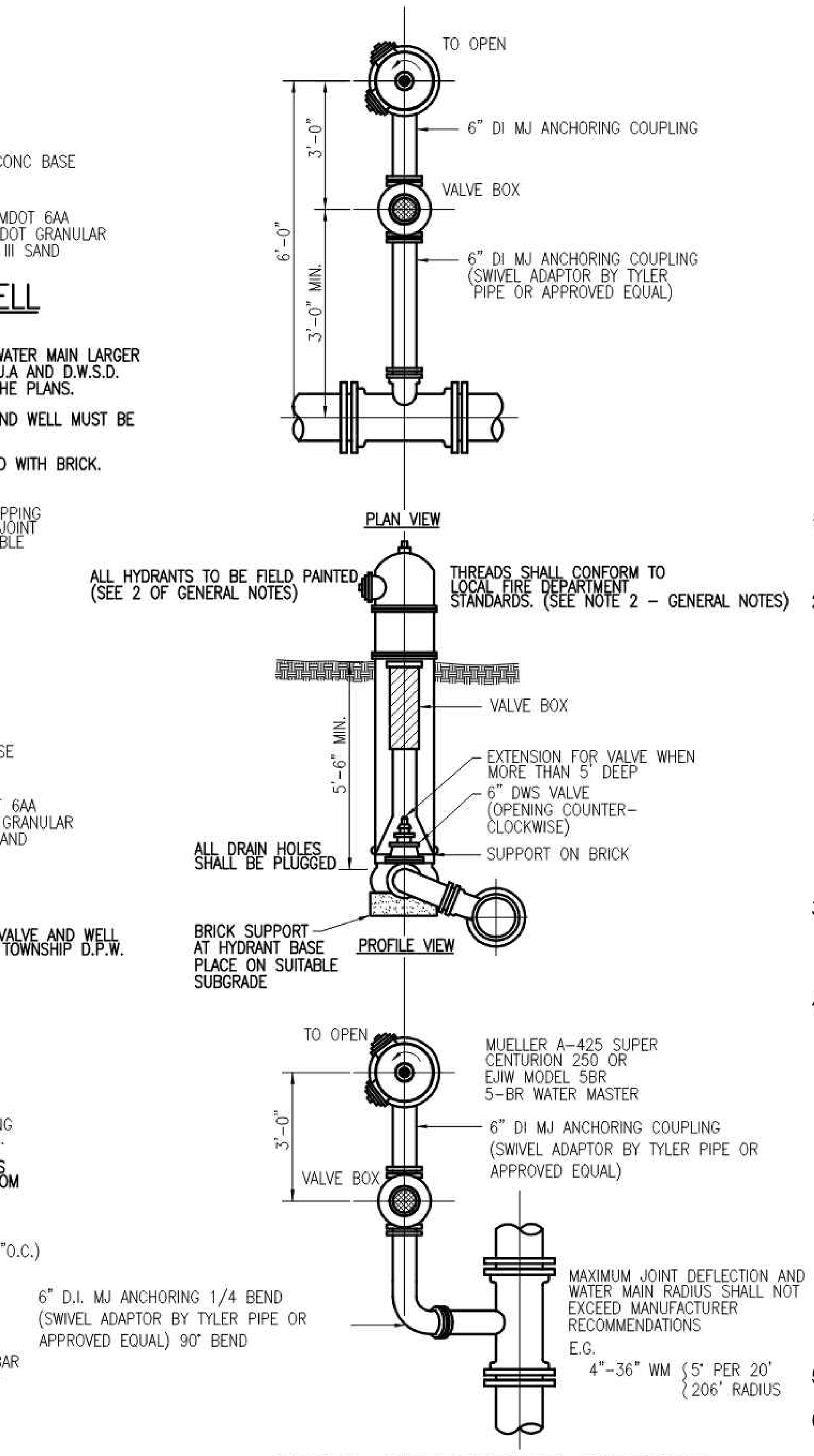
NOTES:
TAPPING SLEEVE VALVE AND WELL FOR WATER MAIN LARGER THAN 16" DIAMETER SHALL BE PER Y.C.U.A AND D.W.S.D. STANDARDS, AND MUST BE SHOWN ON THE PLANS.

*USE OF 8"x8" TAPPING SLEEVE VALVE AND WELL MUST BE APPROVED BY SUPERIOR TOWNSHIP

OPENING IN PRECAST BASE TO BE FILLED WITH BRICK.

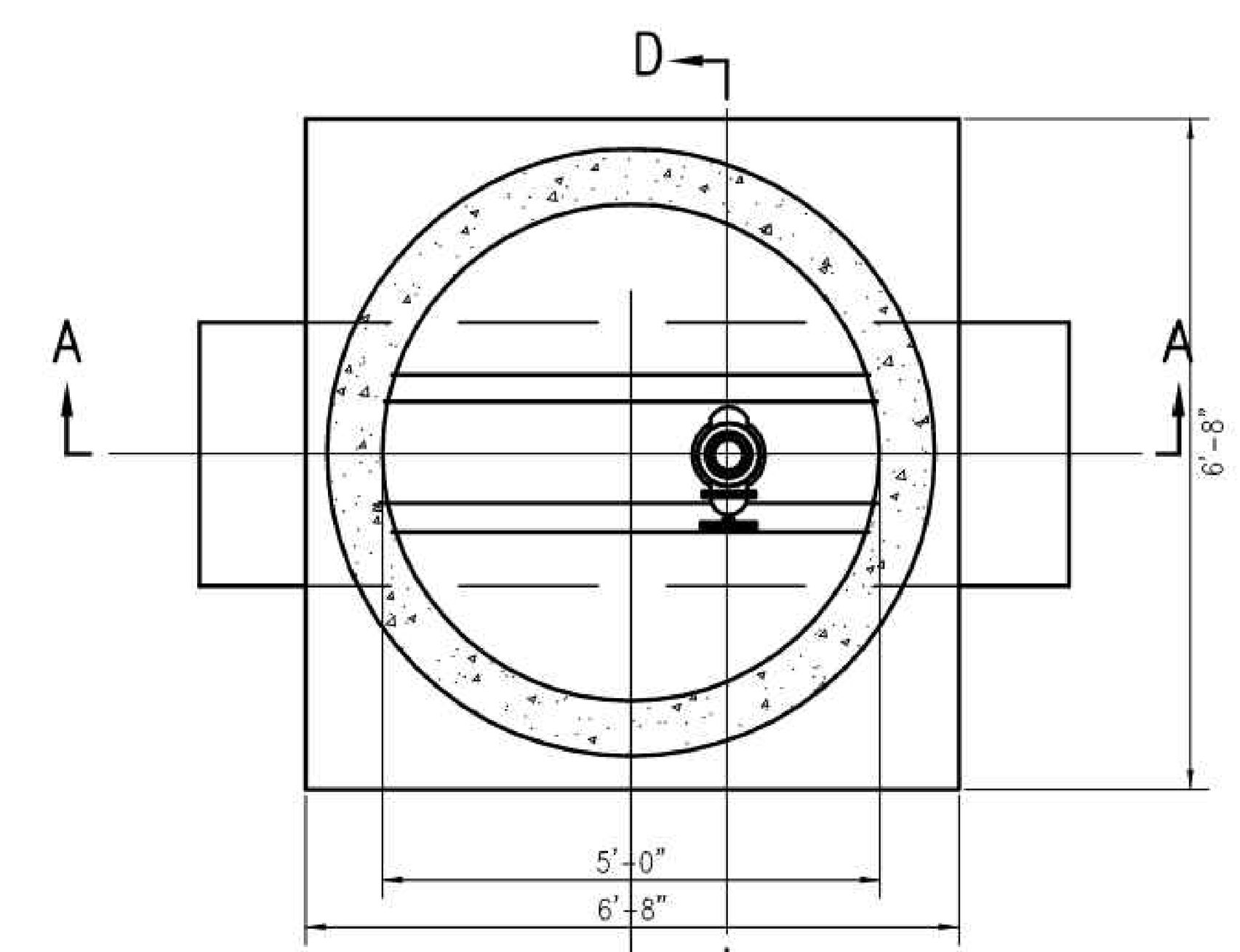


AIR RELEASE AND BLOW-OFF CONNECTION

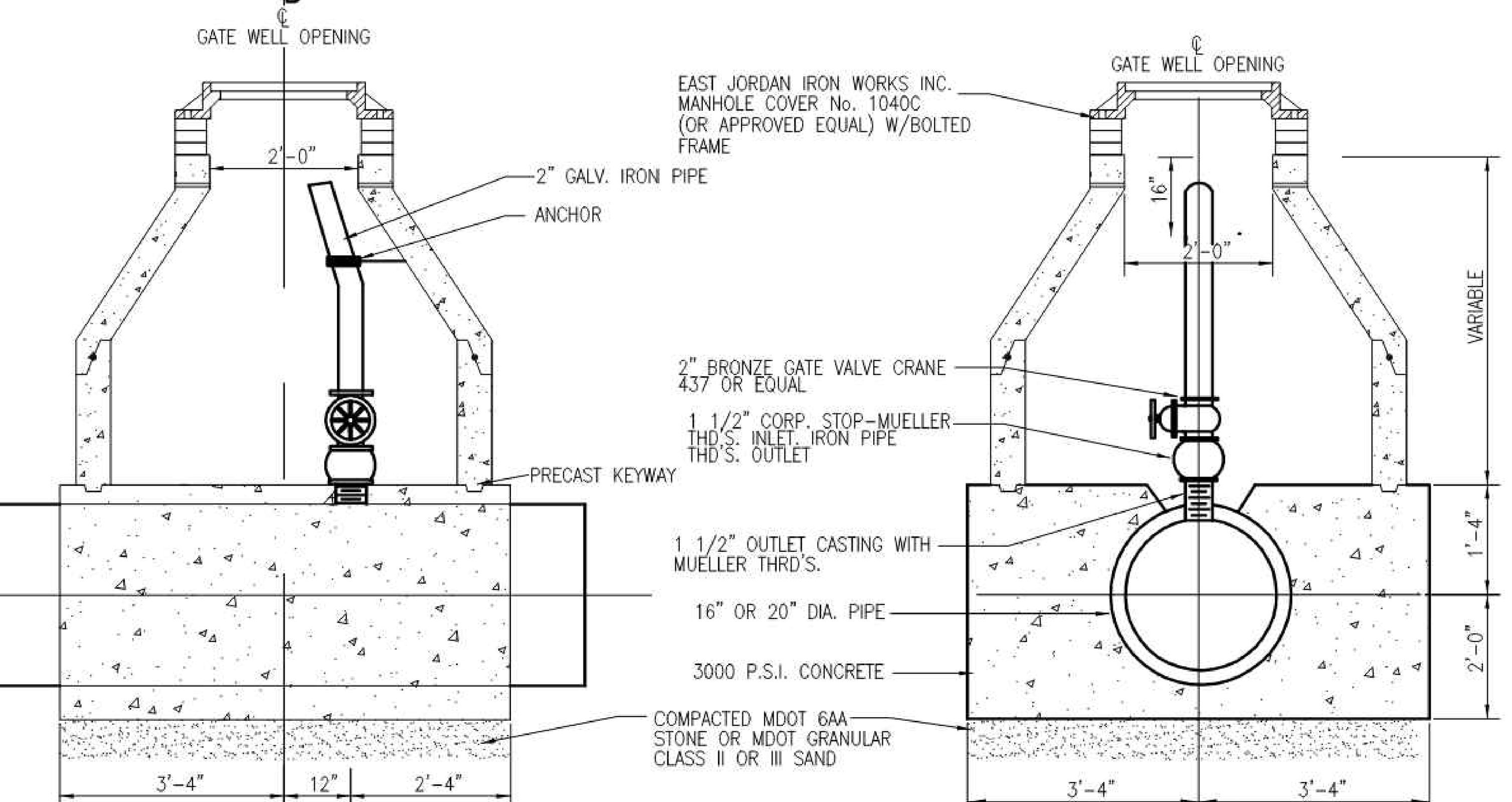


DETAIL OF HYDRANT SETTINGS

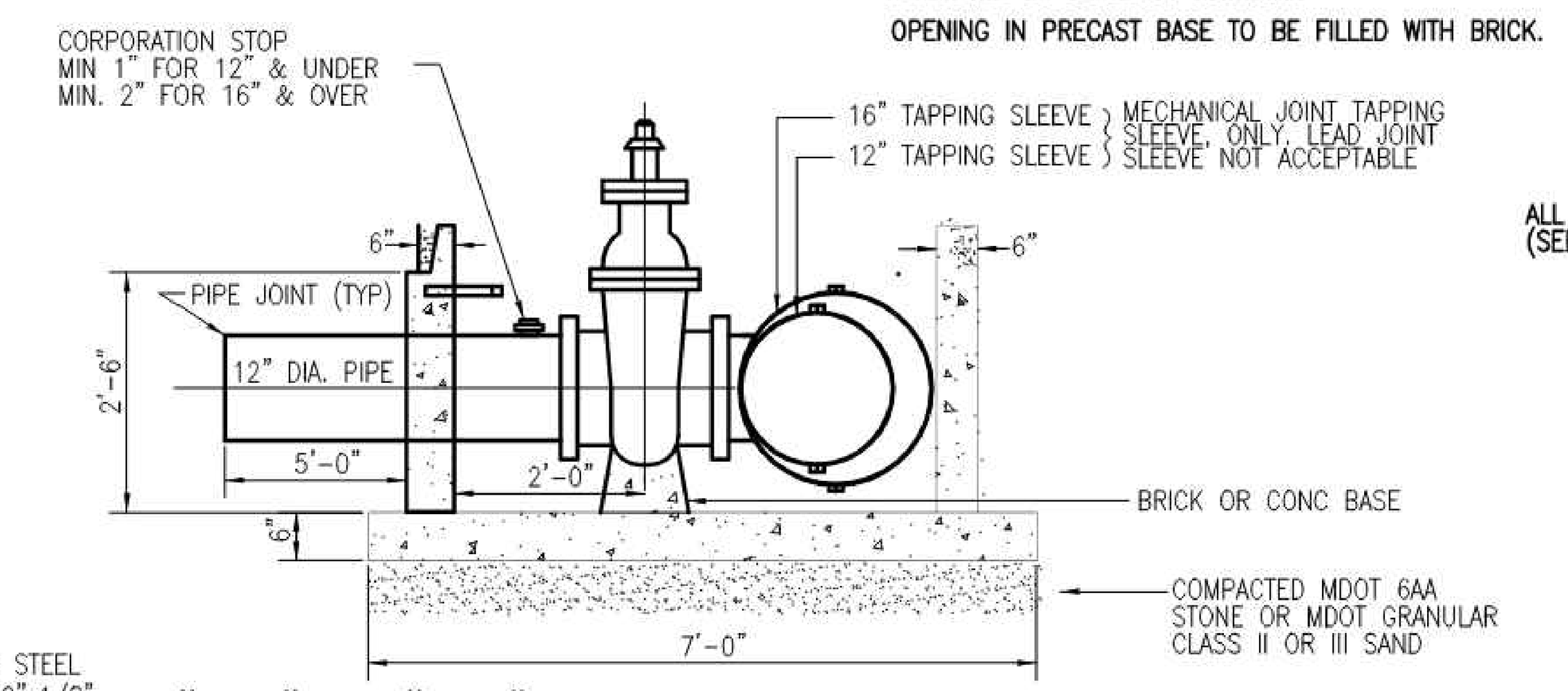
NOTE:
ALL HYDRANTS TO BE FULLY RESTRAINED BY MECHANICAL JOINTS APPROVED BY TOWNSHIP ENGINEER.



NOTES:
ALL AIR RELEASE WELLS SHALL BE PRECAST STRUCTURES.
ALL AIR RELEASE VALVES SHALL BE AUTOMATIC.

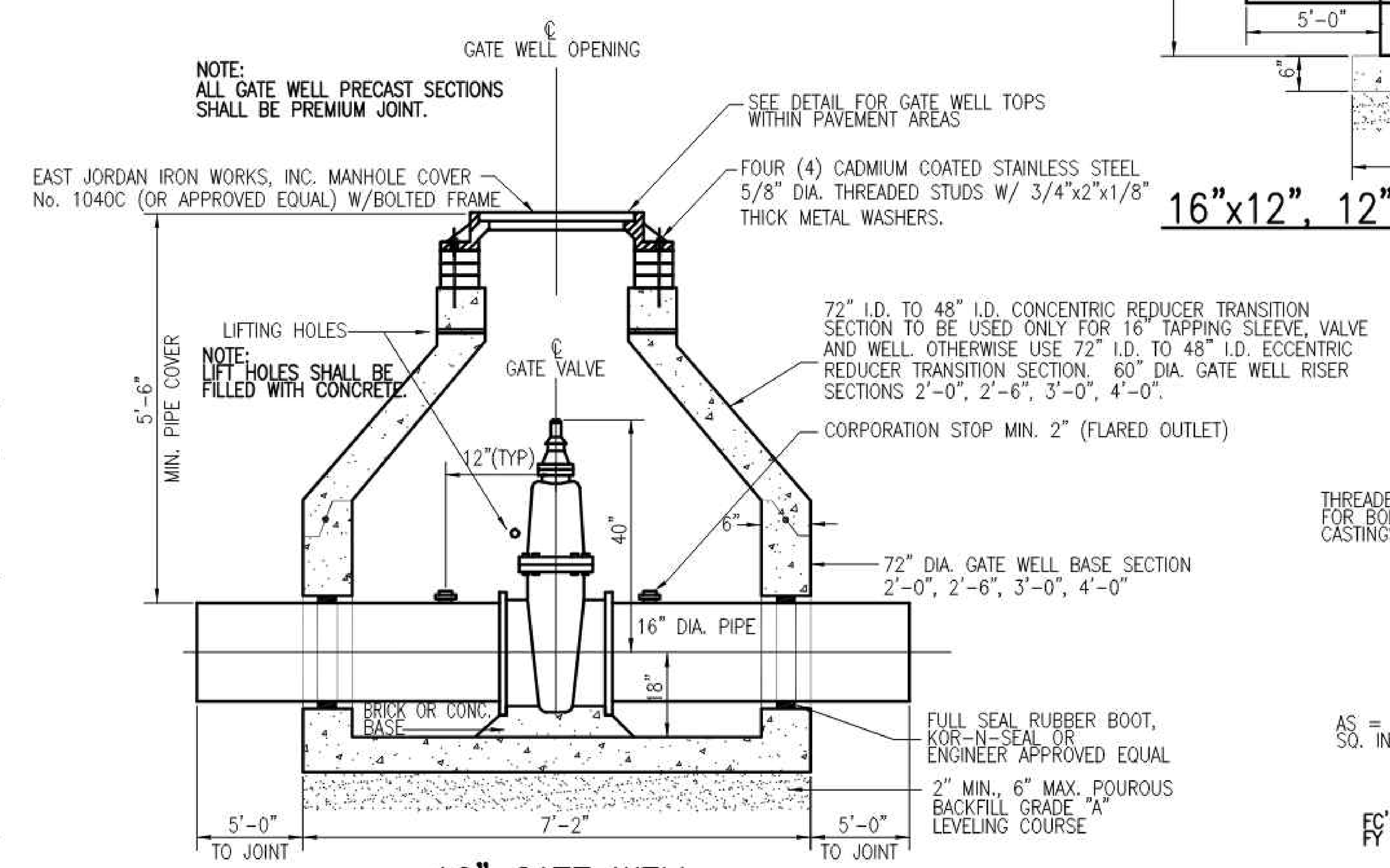


STANDARD AIR RELEASE & WELL FOR 16" & 20" WATER MAIN

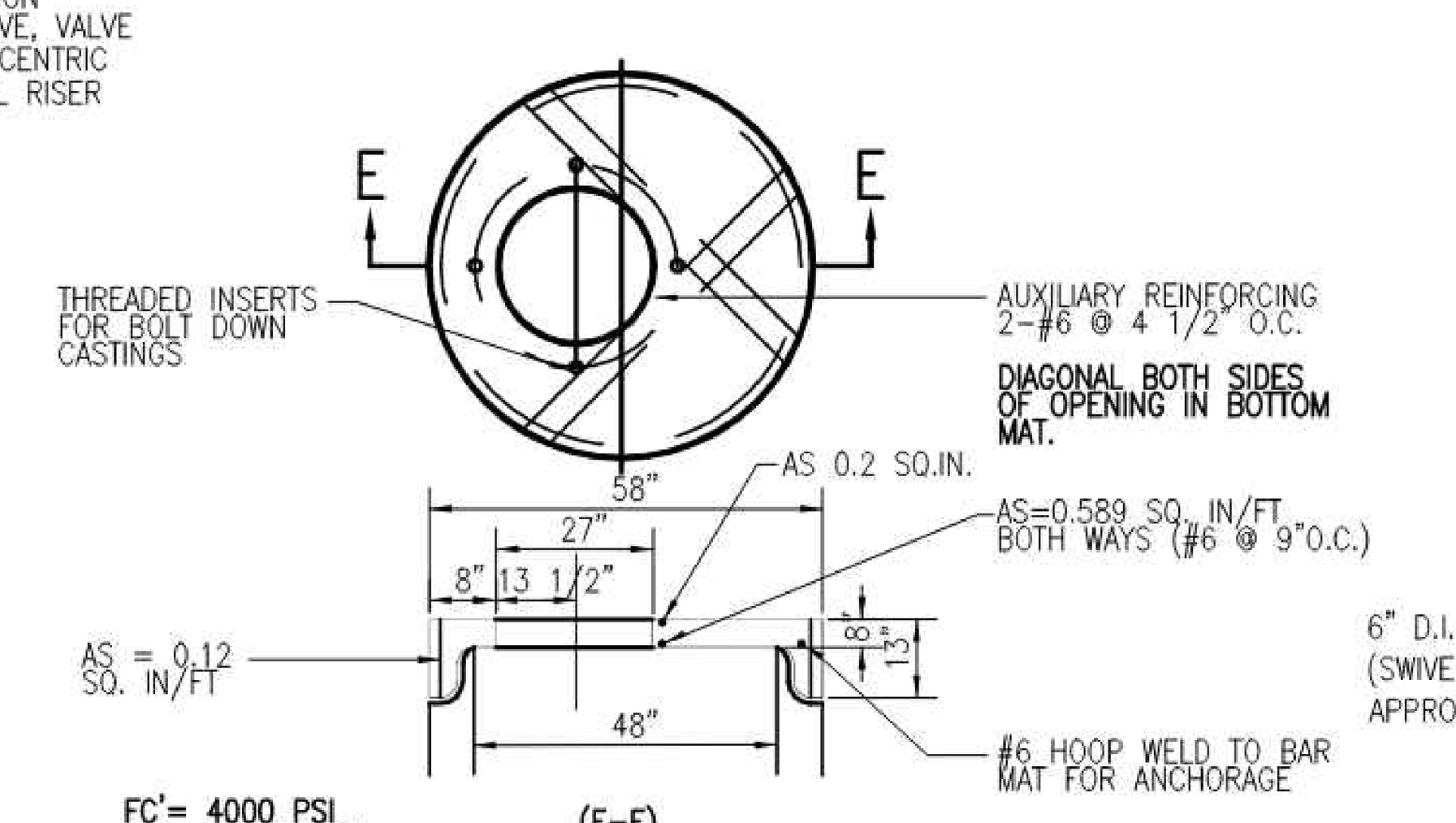


16"x12", 12"x12"* TAPPING SLEEVE, VALVE & WELL

*NOTE:
USE OF 12"x12" TAPPING SLEEVE VALVE AND WELL MUST BE APPROVED BY SUPERIOR TOWNSHIP D.P.W.



16" GATE WELL



GROOVED TOP DETAIL

NOTE:
AS=CROSS-SECTION AREA OF REINFORCING STEEL, IN SQUARE INCHES PER FOOT.

WATER MAIN NOTES

1. All construction procedures and materials used on all water main projects shall conform to Ypsilanti Community Utilities Authority (Y.C.U.A), Detroit Water System Department (D.W.S.D.), and The Charter Township of Superior current Standards and Specifications.
2. All hydrants shall be Mueller A-425-Super-Centurion 250 or E.J.I.W. 5-BR Water Master and shall conform to AWWA current standards and shall have a 5 1/4" valve opening which closes with the water pressure. Hydrants shall be traffic style with breakable flange and coupling. Hydrants shall have a swivel flange to allow bonnet to be turned 360 degrees without removing the bonnet, and barrel flanges shall be integrally cast with the barrel. Inlet shoe shall have a bronze valve seat, which can be removed without digging. Inlet connection shall be 6" mechanical joint, ASA-A21-11. Stem threads shall be sealed with double "O" rings and shall be permanently lubricated with all weather grease. Hose connections: Two (2) 4 1/2" pumper nozzles facing the centerline of the road unless otherwise directed by the Township. Pumper connections shall have: National Standard Threads on one pumper connection (4 1/2" I.D., 4 threads per inch, 5.389 minor dia., 5.761 major dia., 5.586 pitch dia.) and Storz Fitting on the other pumper connection (RLS Manufacturing). Operating Nut: (1) 1 1/2" P-F pentagon, open left. Drain holes in hydrant shall be plugged and watertight. Hydrants shall be painted red above the ground and black below. All hydrants shall be constructed with companion valve in a three piece piece adjustable cast iron valve box.
3. All water mains shall be ductile iron as per the following specification. Ductile iron pipe shall be ANSI 1-A21.51 (AWWA-C151) std. wall thickness, cement lined with bituminous seal coat Class 54 for sizes 6" through 16" Class 55 for 24" pipe, pipe sizes larger than 24" in nominal diameter shall meet all the requirements of the current AWWA C100 for ductile iron pipe.
4. Gate Valves shall be iron body, fully bronze mounted, E.J.I.W. resilient wedge, non-rising stem, opening counterclockwise with 2" square operating nut conforming to Y.C.U.A. and D.W.S.D. specifications. All gate valves with operating nuts at a distance 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 ground surface when an extension stem is used. It shall be held in place by two extension stem guide assemblies. Each assembly shall be comprised of a "J" bracket and "L" bracket supplied by E.J.I.W. The stem guides shall be located opposite from each other, and shall be suitably fastened to the wall of the gate well. In addition, a "stop" shall be welded to the extension stem in a location that will prevent the extension stem from slipping off the operating nut. Details of extension stem and method of installation shall be approved by the engineer prior to installation. All precast concrete gate well sections shall be manufactured to conform with ASTM C478, standard specifications for precast reinforced concrete manhole sections, except wall thickness, shall be shown on these details. All joints for precast concrete gate well sections shall be "modified grooved tongue" with gasket manufactured to conform with ASTM C443, standard specification for joints for circular concrete sewer and culvert pipe rubber gaskets. All gate well covers shall be E.J.I.W. #1040C with bolted frame and have words "Superior Township Water Main and Logo" in raised letters on the frame cover, or approved equal.
5. Tapping sleeve shall be mechanical joint with DWS Mechanical Joint Tapping Gate Valve. Lead joint sleeves shall not be used.
6. No installation of water main is to be attempted without Township's inspector being present. Unless otherwise specified on plans, top of all water mains shall be 5.5 ft. below existing or proposed road centerline, or 5.5 ft. below existing or proposed ground, whichever results in lower elevation. An 18" minimum vertical clearance between storm or sanitary sewer shall be maintained.
7. Three (3) working days before you dig, dial MISS DIG at 1-800-482-7171.
8. 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.
9. The design engineer shall furnish Superior Township with mylar "Record" water main plans along with a computer disk using the most recent release of AutoCAD, upon job completion. Plans shall locate all water mains, hydrants and gate valves and wells.
10. Where work is to be performed in the vicinity of a Superior Township main, contractor shall notify the Superior Township Utility Deprtment at (734) 480-5500 at least 3 working days prior to start of construction as well as township engineer to schedule inspection.
11. All pipe and all pipe fittings shall be made in the U.S.A.
12. All bolts on all flanged and mechanical joint fittings shall be domestic origin high strength, low alloy COR-BLUE steel bolts or approved equal. These bolts shall meet the current provisions of American National Standard ANSI/AWWA C111/A21.11-90 for rubber gasket joints for ductile iron pressure pipes and fittings. Bolt manufac-turer's certificate of compliance must accompany each shipment.
13. BACKFILL NOTE: Under road surfaces, pavement, sidewalk, curb, driveways and where the edge of the trench is within 3 (three) feet of the pavement or as called for on the plans, the trench depth shall be 4 (four) inches lower than the proposed water main elevation. The trench width shall be the outside diameter plus 16 (sixteen) inches for pipe diameters up to 36 (thirty-six) inches and larger. The trench shall be backfilled by placing granular material by the "controlled Density Method" or other means having approval of the engineer and compacting it to 95 (ninety-five) percent of its maximum unit weight.
14. "Mega Lugs," "Field Lock Gaskets," or a mechanical joint restraint system shall be used instead of concrete thrust blocks for joint restraint.
15. All bolts used in securing fittings to the water main shall be "COR-BLUE" bolts or approved equal.
16. All buried bolts, nuts and washers shall be "COR-BLUE" or equivalent and poly-wrapped.
17. Like size to like size tapping sleeves shall not be used with transite pipe.
18. Where water main is located under pavement, the Township shall not be responsible for repairing pavement within the easement in the event that maintenance or repairs to the water main become necessary.
19. Mechanical and slip-on joints for ductile iron shall be in accordance with AWWA C111 (ANSI A21.11)
20. All fire hydrant joints shall be totally restrained by use of "Mega Lugs" or other approved restrained joint.
21. Fittings for ductile iron pipe shall be ductile iron or cast iron and shall meet requirements of AWWA C110 (ANSI A21.10) or AWWA C153 (ANSI A21.53). Ductile iron fittings shall be rated for 350 psi, pipe 24" diameter and less and 250 psi for pipe sizes over 24" diameter, except that ductile iron flanged fitting shall be rated for 250 psi for all pipe diameters.
22. Manhole steps shall be steel encased with polypropylene plastic or approved equivalent to M.A. Industries, Inc., PS-1 for brick, or PS-18 for block, East Jordan Iron Works 8502 (or approved equal). Manhole steps at 16" centers.
23. Maximum joint deflection and water main radius shall not exceed manufacturer recommendations (e.g. 4"-36" WM - 5' per 20' or 206' radius).

DRAWING PATH: S:\CVT\SuperiorTwp\Standards\CADD\watermain\SuperiorWM01.dwg May 27, 2010 - 9:18am

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DATE	CADD	ENG / ARCH	PROJ MGR	SECTION	TOWN	RANGE	COUNTY	CITY/VILLAGE/TOWNSHIP	SCALE	HORIZ DATUM	VERT DATUM
OCT 2003	DK	DLG/JGL					WASHTENAW	CHARTER TOWNSHIP OF SUPERIOR	H: NTS V: N/A	N/A	N/A

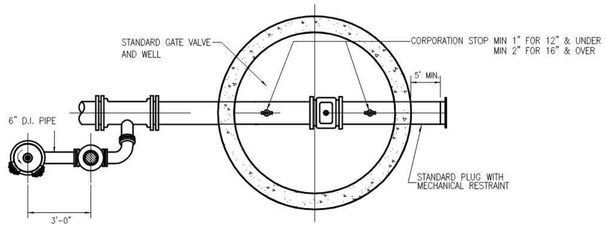
JOB # 000-00-0000

CLIENT: CHARTER TOWNSHIP OF SUPERIOR

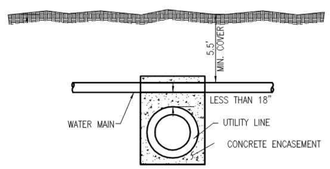
REVISIONS:

CHARTER TOWNSHIP OF SUPERIOR
STANDARD WATER MAIN DETAILS

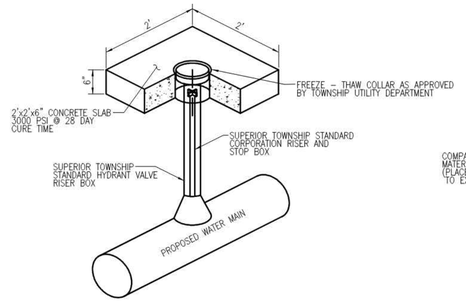
SHEET 1 OF 2



END OF WATER LINE ASSEMBLY FOR WATER MAINS



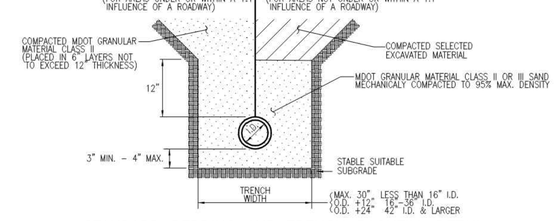
UTILITY CROSSING WITH LESS THAN 18" CLEARANCE



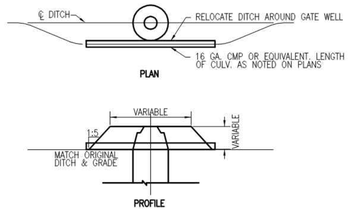
STOP BOX IN PAVEMENT

WATER STOP BOX REQUIREMENTS

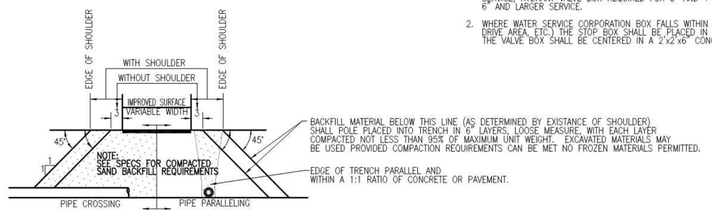
1. TWO HOLE ARCH PATTERN (ERIE PATTERN) TYPE WITH 1" UPPER AND 5' EXTENDED LENGTH WITH 42" ROD (FORD STOP BOX PART NO. EA1-50-40-42R OR APPROVED EQUAL). SMALL BOX REQUIRED FOR 3/4" AND 1" SERVICE; LARGE BOX REQUIRED FOR 1-1/2" AND 2" SERVICE; HYDRANT VALVE BOX REQUIRED FOR 3" AND 4" SERVICE; GATE WELL REQUIRED FOR 6" AND LARGER SERVICE.
2. WHERE WATER SERVICE CORPORATION BOX FALLS WITHIN A PAVED AREA (PARKING LOT, SERVICE DRIVE AREA, ETC.) THE STOP BOX SHALL BE PLACED IN A STANDARD HYDRANT VALVE BOX. THE VALVE BOX SHALL BE CENTERED IN A 2'x2'x6" CONCRETE SLAB.



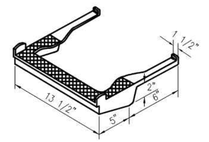
STANDARD BEDDING AND TRENCH BACKFILL DETAIL FOR WATER MAIN



DITCH ENCLOSURE AT GATE WELL

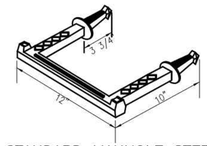


BACKFILL IN THE AREA OF STREETS, ALLEYS SIDEWALKS, DRIVES & PARKING LOTS



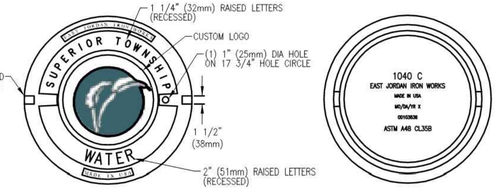
E.J.I.W. 8502

OR

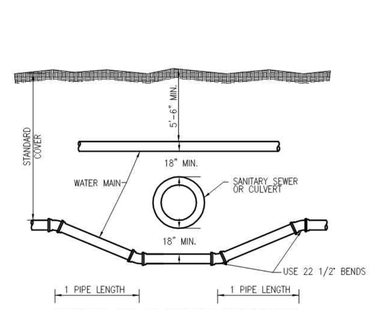


STANDARD MANHOLE STEP

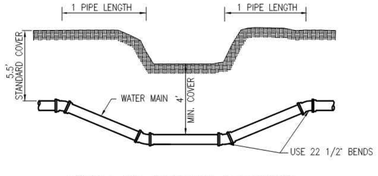
M.A. PSI-375



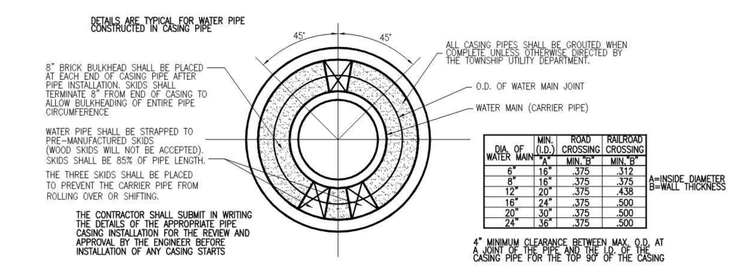
STANDARD COVER & FRAME



SEWER OR CULVERT CROSSING



DITCH OR STREAM CROSSING



DIA. OF WATER MAIN	MIN. (I.D.)	ROAD CROSSING	RAILROAD CROSSING
	"A"	MIN. "B"	MIN. "B"
6"	16"	.375	.312
8"	16"	.375	.375
12"	20"	.375	.438
16"	24"	.375	.500
20"	30"	.375	.500
24"	36"	.375	.500

A=INSIDE DIAMETER
B=WALL THICKNESS

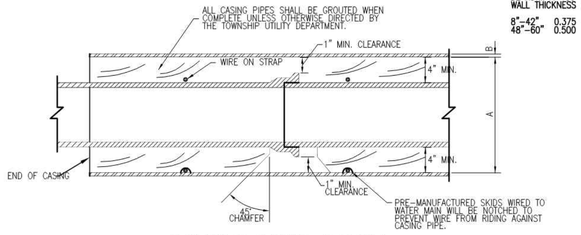
4" MINIMUM CLEARANCE BETWEEN MAX. O.D. AT A JOINT OF THE PIPE AND THE I.D. OF THE CASING PIPE FOR THE TOP 90° OF THE CASING

PIPE BARREL SUPPORT FOR WATER MAIN CONSTRUCTED IN CASING PIPE

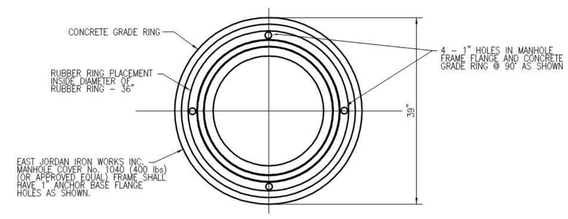
CASING SHALL BE SPIRAL WELDED STEEL PIPE A.S.T.M. A-252, GR. 2.

UNLESS OTHERWISE SPECIFIED, MINIMUM CASING PIPE SHALL BE ASTM A-139 GRADE B. WALL THICKNESS AS FOLLOWS:

8"-42"	0.375
48"-60"	0.500



STANDARD CASING SECTION



CAST IRON GATE WELL COVER AND GRADE RING

DRAWING PATH: S:\CVT\Superior Twp\Standards\CAD\watermain\SuperiorWM02.dwg May 27, 2010 - 9:23am

OHM

WWW.OHM-ADVISORS.COM

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CLIENT: CHARTER TOWNSHIP OF SUPERIOR

CITY/VILLAGE/TOWNSHIP: CHARTER TOWNSHIP OF SUPERIOR

COUNTY: WASHTENAW

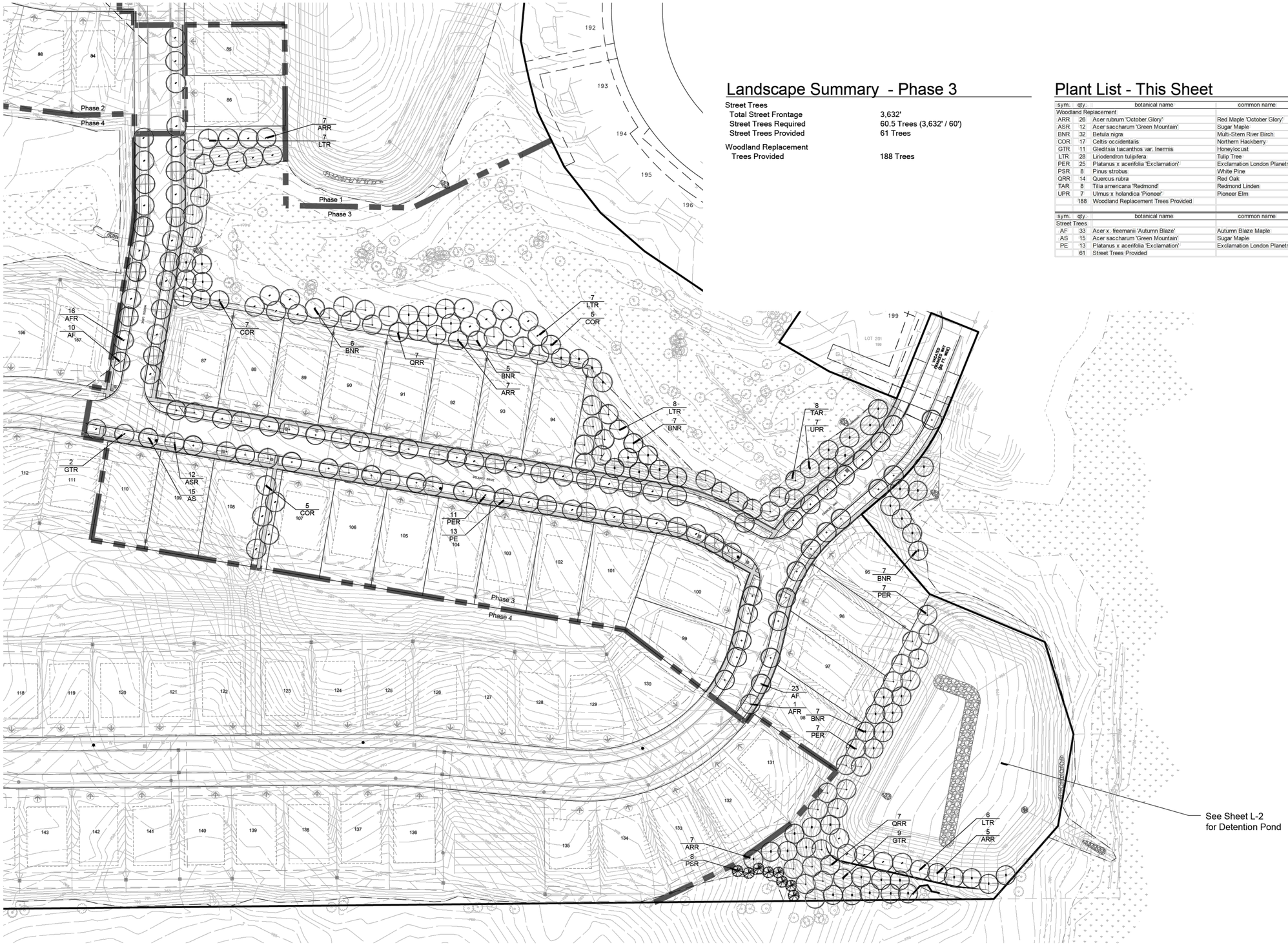
RANGE | TOWN | SECTION | PROJ.MGR | ENG / ARCH: DLG/JGL | CADD: DK | DATE: OCT 2003

SCALE: H: NTS V: N/A | JOB #: 000-00-0000 | HORIZ.DATUM: N/A | VERT.DATUM: N/A

REVISIONS:

CHARTER TOWNSHIP OF SUPERIOR
STANDARD WATER MAIN DETAILS

SHEET 2 OF 2



Landscape Summary - Phase 3

Street Trees	
Total Street Frontage	3,632'
Street Trees Required	60.5 Trees (3,632' / 60')
Street Trees Provided	61 Trees
Woodland Replacement	
Trees Provided	188 Trees

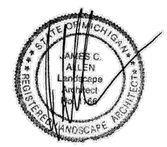
Plant List - This Sheet

sym.	qty.	botanical name	common name	caliper	spacing	root	height
Woodland Replacement							
ARR	26	Acer rubrum 'October Glory'	Red Maple 'October Glory'	2.5"	as shown	B&B	
ASR	12	Acer saccharum 'Green Mountain'	Sugar Maple	2.5"	as shown	B&B	
BNR	32	Betula nigra	Multi-Stem River Birch		as shown	B&B	10'-12'
COR	17	Celtis occidentalis	Northern Hackberry	2.5"	as shown	B&B	
GTR	11	Gleditsia tiacanthos var. Inermis	Honeylocust	2.5"	as shown	B&B	
LTR	28	Liriodendron tulipifera	Tulip Tree	2.5"	as shown	B&B	
PER	25	Platanus x acerifolia 'Exclamation'	Exclamation London Planetree	2.5"	as shown	B&B	
PSR	8	Pinus strobus	White Pine		as shown	B&B	6'-7'
QRR	14	Quercus rubra	Red Oak	2.5"	as shown	B&B	
TAR	8	Tilia americana 'Redmond'	Redmond Linden	2.5"	as shown	B&B	
UPR	7	Ulmus x holandica 'Pioneer'	Pioneer Elm	2.5"	as shown	B&B	
	188	Woodland Replacement Trees Provided					

sym.	qty.	botanical name	common name	caliper	spacing	root	height
Street Trees							
AF	33	Acer x. freemanii 'Autumn Blaze'	Autumn Blaze Maple	2.5"	as shown	B&B	
AS	15	Acer saccharum 'Green Mountain'	Sugar Maple	2.5"	as shown	B&B	
PE	13	Platanus x acerifolia 'Exclamation'	Exclamation London Planetree	2.5"	as shown	B&B	
	61	Street Trees Provided					

ALLENDESIGN
LAND PLANNING / LANDSCAPE ARCHITECTURE
557 Carpenter
Northville, Michigan 48167
e. jca@wideopenwest.com
t. 248.467.4668

Seal:



Title:

Landscape Plan

Project:

Propsect Point Phase 3
Superior Township, Michigan

Prepared for:

SE Michigan Land Holdings LLC
13001 23 Mile Road, Suite 200
Shelby Township, Michigan 48315

Revision:	Issued:
Review	November 22, 2024

Job Number:
21-075

Drawn By:	Checked By:
jca	jca

0' 15' 30' 60'

NORTH
1"=60'

Sheet No.

L-1

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South Pond



Storm Water Seed Mix

Native Connections
3815 N Westnedge Ave, Kalamazoo, MI 49004
(P) 269.459.9900
info@nativeconnections.net
www.nativeconnections.net

Stormwater Mix

An economical mix specifically designed to withstand the low water quality and highly variable conditions associated with stormwater features. Approximately half of the species are salt tolerant and most species will do well in mesic to wet hydrology with others filling in the wettest and driest ends of the spectrum. The high native seed count and heavy annual nurse crop in this mix ensure full and aggressive establishment in a wide range of site conditions.

Total Seeding Rate: 34.2 lbs per acre
2.81 lbs grasses + 1.89 lbs forbs + 30 lbs nurse crop
105 native seeds per sq ft

Call, email or visit our website for pricing.

Grasses, Sedges & Rushes		PLS Oz/acre	Seeds/sq ft
Andropogon gerardii	Big Bluestem	2.00	1.16
Carex bebbii	Bebb's oval sedge	2.00	1.99
Carex vulpinoidea	Fox Sedge	2.00	5.74
Eleocharis palustris	Great Spike Rush	1.00	1.17
Elymus virginicus	Virginia Wild Rye	18.00	1.74
Juncus effusus	Soft Rush	0.50	1.48
Juncus tenuis	Path Rush	0.50	11.48
Juncus torreyi	Torrey's Rush	0.25	9.18
Panicum virgatum	Switchgrass	7.00	2.35
Schoenoplectus (S. americanus)	Three square Rush	1.00	2.97
Schoenoplectus (S. tuberculosus)	Soft-stem Bulrush	1.00	3.71
Sorghastrum nutans	Indian Grass	4.00	3.11
	Total Grasses	41.75	56.20
Forbs		**PLS Oz/acre**	**Seeds/sq ft**
Alisma subcordatum	Common Water Plantain	2.00	2.10
Asclepias incarnata	Swamp Milkweed	1.00	0.11
Aster simplex	Panicled Aster	0.25	0.38
Aster umbellatus (Doellingeria a.)	Flat-topped Aster	0.25	0.38
Bidens cernua	Nodding Bur Marigold	1.00	0.45
Echinacea purpurea	Purple Coneflower	4.00	0.61
Helenium autumnale	Sneezeweed	0.75	2.24
Iris virginica	Virginia Blue Flag	0.75	0.49
Lobelia siphilitica	Great Blue Lobelia	0.50	1.49
Mimulus ringens	Monkey Flower	0.25	13.20
Monarda fistulosa	Wild Bergamot	0.50	0.50
Oenothera biennis	Common Evening Primrose	1.00	2.07
Penstemon digitalis	Foxglove Beard	0.50	0.53
Physostegia virginiana	Obedient Plant	0.50	0.13
Polygonum amphibium (Persicaria a.)	Pennsylvania Smartweed	2.75	0.82
Rudbeckia hirta	Black-eyed Susan	4.00	8.49
Verbena hastata	Blue Vervain	2.00	9.34
Zizia aurea	Golden Alexander	2.00	0.65
	Total Forbs	26.00	55.12
Temporary Grass Cover		**Oz/acre**	**Seeds/sq ft**
Lolium multiflorum	Annual Ryegrass	112.00	34.71
Avena sativa	Seed Oats	368.00	8.46
	Total Temp Grasses	480.00	43.16

Note to Contractor:
1. When Ordering Seed Mix, Annual Ryegrass Shall not Exceed 56 Oz/acre.

34,435 s.f. Total Area
34.2 lbs. per Acre Application Rate
27.0 lbs. of Storm Water Seed Mix Required

Live Plantings

qty.	botanical name	common name	spacing	container
Phase 3				
1,210	Agastache nepetoides	Yellow Giant Hyssop	24" o.c.	2" Pot or cells
1,210	Asclepias incarnata	Swamp Milkweed	24" o.c.	2" Pot or cells
1,210	Carex grayi	Gray's Sedge	24" o.c.	2" Pot or cells
1,210	Doellingeria umbellata	Flat-Top White Aster	24" o.c.	2" Pot or cells
1,210	Eupatorium perfoliatum	Boneset	24" o.c.	2" Pot or cells
1,210	Eutrochium maculatum	Joe-Pye Weed	24" o.c.	2" Pot or cells
1,210	Helenium autumnale	Sneezeweed	24" o.c.	2" Pot or cells
33,949 s.f. of Wet Meadow Area				

Notes

1. No Chemicals are Allowed in Stormwater Features or Buffer Zones with the Following Exception: Invasive Spacies may be Treated with Chemicals by a Certified Applicator. Mowing is Allowed Only Twice a Year.
2. Soils Must be Amended with a Composted Organic Material. Soils Must be Free of Construction Debris and Subsoils. Soils Must Contain 20%-30% Compost.
3. Infiltration Basin Soils must Contain 20%-30% Compost, 70%-80% Topsoil with a Maximum of 10% Clay.
4. At the time of plant and seed delivery, a WCWRC landscape reviewer must be present. The quantity and species delivered will be reviewed on site. Contact Catie Wytychak at wytychakc@ewashtenaw.org or (734) 222-6813 to coordinate.
5. All Seeded Areas to Receive Bio-degradable Seed Mats.
6. Prior to Spreading Planting Soil or Planting Seeds and/or Live Plugs, Infiltration Testing Must be Performed to Confirm that the Design for the Infiltration Rate has been Achieved.

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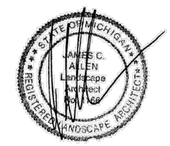

Title:

Stormwater Plan

Project:

Propsect Point Phase 3
Superior Township, Michigan

Prepared for:

SE Michigan Land Holdings LLC
13001 23 Mile Road, Suite 200
Shelby Township, Michigan 48315

Revision:	Issued:
Review	November 22, 2024

Job Number:
21-075

Drawn By:	Checked By:
jca	jca

0' 25' 50'
NORTH
1"=50'

Know what's **below.** **Call** before you dig.

Sheet No.
L-2

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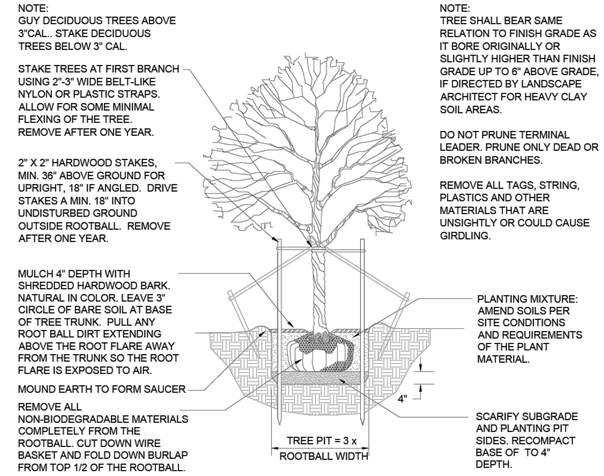
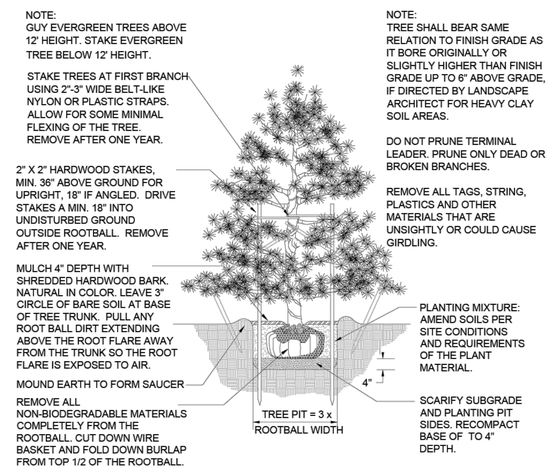


DECIDUOUS TREE PLANTING DETAIL

Not to scale



EVERGREEN TREE PLANTING DETAIL

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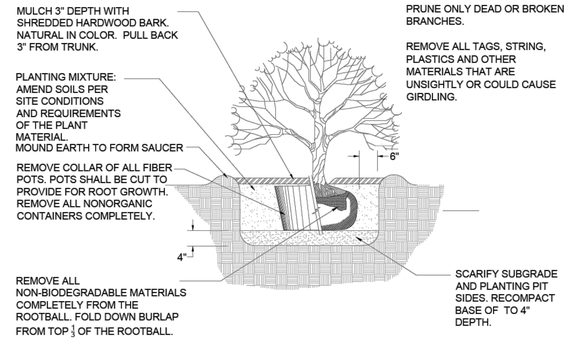


SHRUB PLANTING DETAIL

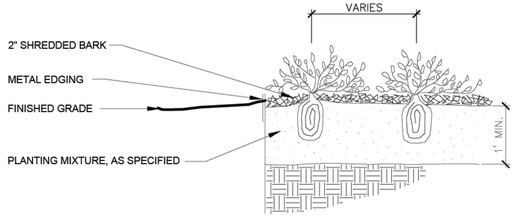
NOT TO SCALE

MAINTENANCE NOTES

a. Maintenance procedures and frequencies to be followed shall be specified on the site plan, along with the manner in which the effectiveness, health, and intended functions of the screening elements and plant materials on the site will be ensured.
b. Adequate provisions shall be made to regularly supply water to all required plant materials as necessary to ensure proper growth and development.
c. Plant materials shall be kept in a neat, orderly and healthy growing condition, free from weeds, debris and refuse. Tree stakes, guy wires and tree wrap shall be removed after one (1) year.
d. Pruning of plant materials shall be limited to the minimum necessary to ensure proper maturation of plants to achieve their intended purpose.
e. All required screening elements and plant materials shall be planted and maintained in accordance with an approved site plan. Failure to maintain required screening, including the removal and replacement of dead or diseased plant materials, shall be a violation of this Ordinance.
f. The replacement or removal of plant materials in a manner not consistent with an approved site plan shall be a violation of this Ordinance.

LANDSCAPE NOTES

1. All plants shall be north Midwest American region grown, No. 1 grade plant materials, and shall be true to name, free from physical damage and wind burn.
2. Plants shall be full, well-branched, and in healthy vigorous growing condition.
3. Plants shall be watered before and after planting is complete.
4. All trees must be staked, fertilized and mulched and shall be guaranteed to exhibit a normal growth cycle for at least two (2) full years following Township approval.
5. All material shall conform to the guidelines established in the most recent edition of the American Standard for Nursery Stock.
6. Provide clean backfill soil, using material stockpiled on site. Soil shall be screened and free of any debris, foreign material, and stone.
7. "Agriform" tabs or similar slow-release fertilizer shall be added to the planting pits before being backfilled.
8. Amended planting mix shall consist of 1/3 screened topsoil, 1/3 sand and 1/3 peat, mixed well and spread to the depth as indicated in planting details.
9. All plantings shall be mulched per planting details located on this sheet.
10. The Landscape Contractor shall be responsible for all work shown on the landscape drawings and specifications.
11. No substitutions or changes of location, or plant types shall be made without the approval of the Landscape Architect.
12. The Landscape Architect shall be notified in writing of any discrepancies between the plans and field conditions prior to installation.
13. The Landscape Contractor shall be responsible for maintaining all plant material in a vertical condition throughout the guaranteed period.
14. The Landscape Architect shall have the right, at any stage of the installation, to reject any work or material that does not meet the requirements of the plans and specifications, if requested by owner.
15. Contractor shall be responsible for checking plant quantities to ensure quantities on drawings and plant list are the same. In the event of a discrepancy, the quantities on the plans shall prevail.
16. The Landscape Contractor shall seed and mulch or sod (as indicated on plans) all areas disturbed during construction, throughout the contract limits.
17. A pre-emergent weed control agent, "Preen" or equal, shall be applied uniformly on top of all mulching in all planting beds.
18. Sod shall be two year old "Baron/Cheriadelphi" Kentucky Blue Grass grown in a sod nursery on loam soil.



PERENNIAL PLANTING DETAIL

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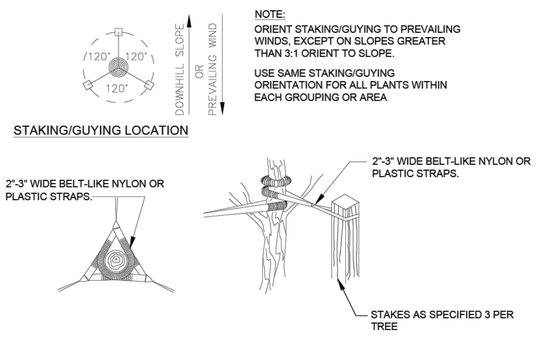

TREE STAKING DETAIL

Not to scale

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LAND PLANNING / LANDSCAPE ARCHITECTURE
557 Carpenter
Northville, Michigan 48167
e. jca@wideopenwest.com
t. 248.467.4668

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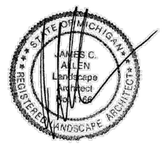

Title:

Landscape Details

Project:

Propsect Point Phase 3
Superior Township, Michigan

Prepared for:

SE Michigan Land Holdings LLC
13001 23 Mile Road, Suite 200
Shelby Township, Michigan 48315

Revision:	Issued:
Review	November 22, 2024

Job Number:

21-075

Drawn By:	Checked By:
jca	jca

811
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Sheet No.

L-3

Carlisle | Wortman
ASSOCIATES, INC.

117 NORTH FIRST STREET SUITE 70 ANN ARBOR, MI 48104 734.662.2200 734.662.1935 FAX

Date: May 22, 2025

Final Site Plan Review
For
Superior Township, Michigan

Applicant:	Brookwood Estates, LLC (Christopher L. Garner)
Project Name:	Brookwood Superior
Location:	East side of Leforge Rd, south of Geddes Rd, north of W. Clark Rd (PIN: J-10-33-300-001)
Initial Plan Date:	July 26, 2024 (last revision May 5, 2025)
Current Zoning:	PC, Planned Community District
Action Requested:	Final Site Plan Approval

PROJECT DESCRIPTION

A Final Site Plan application has been submitted to improve an approximately 84.5 gross acres (70.6 net acres) parcel of land situated on the east side of Leforge Road approximately 700 feet north of Clark Road land (see aerial photograph below). The parcel (PIN: J-10-33-300-001) is located in the southwest corner of Section 33 and zoned Planned Community (PC) Special District. The property is undeveloped and has historically been used for farming. Significant natural resources exist onsite including woodlands, steep slopes, wetlands, and a small stream located in the northeast corner. The property is located outside the 100 year floodplain.

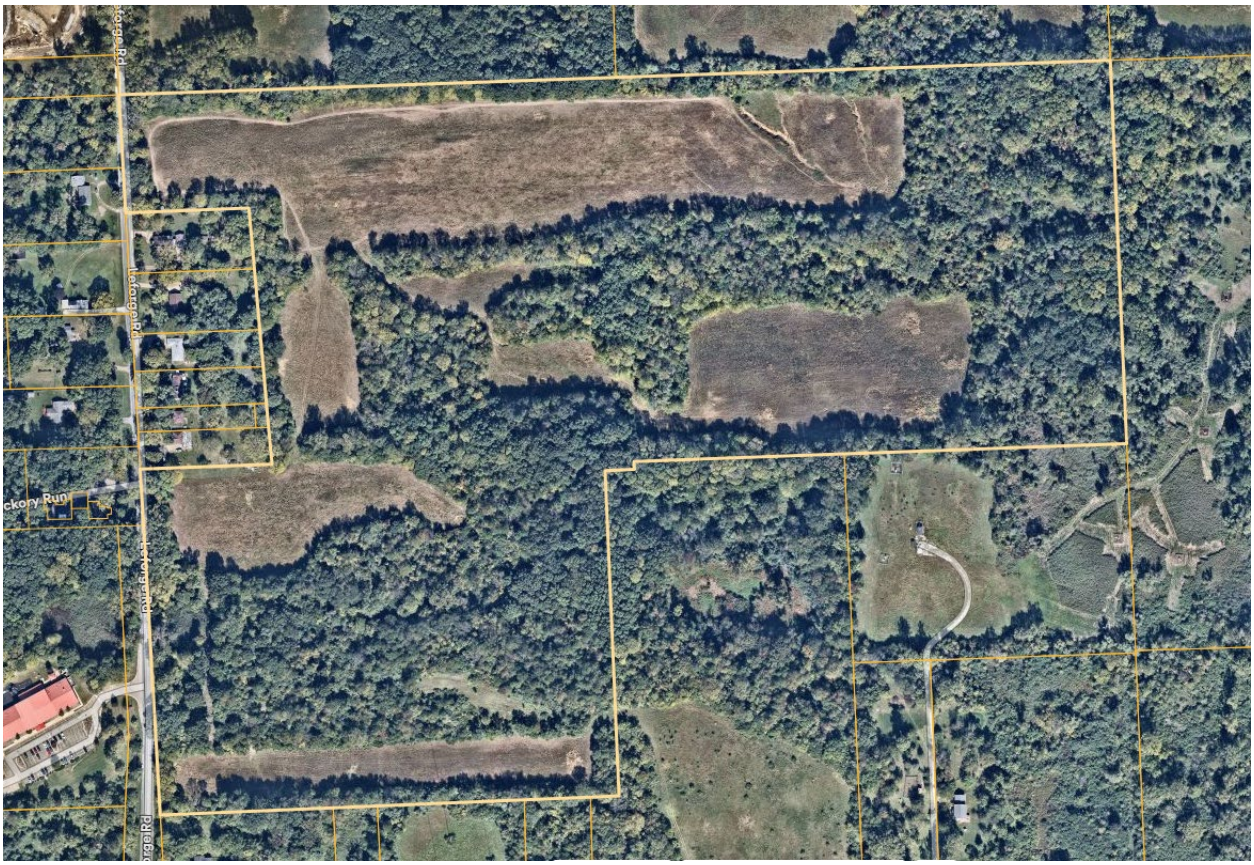
The applicant has designed the development to maintain a significant amount of the existing natural features on site including:

- Inclusion of 20-to-50-foot open space buffers along the parcel boundaries;
- Preservation of 5.3 acres of wetlands (100% of the wetlands on site);
- Preservation of 30.0 acres of woodlands (58.1 % of woodland on site), and;

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

- Preservation of steeps slopes (0% encroachment of steep slopes on greater than 25%).

Figure 1. Aerial View of Subject Site



The proposal is to develop a Master Planned Community designed for renters and owners plus a section dedicated to people over 55 years of age. The development will include three (3) residential dwelling unit types (stacked flats, duplex units, four-plex units, and attached townhomes) that are clustered to by product types. The stacked flats and duplexes are anticipated to rent from $1.50 - $2.50 per square foot and townhomes will be for sale and priced per unit according to the market.

As part of the final site plan, the applicant, Brookwood Estates, LLC, proposes the following improvements to the site:

1) Construct 302 dwelling units divided into three (3) residential dwelling product types. Please note that the 302 dwelling units is a reduction of 16 units from the preliminary site plan. This reduction was a result of steep slope preservation.
2) Construct a 3,225 square foot clubhouse building with an outdoor patio and rooms dedicated to recreation and administrative offices.

3) Paved parking areas around the stacked flats and duplexes.
4) Landscaping improvements.
5) A 15,600 square foot "amenity area" readily available to occupants of the stacked flats.
6) Continuous sidewalk network along private drives throughout the development and preserved woodlands are transected by walking paths that connect amenities and with various areas of the development.
7) Extend existing public water and sanitary sewer mains to serve the development.
8) Four (4) stormwater detention ponds.

As noted under the "Development Schedule" on sheet 06, the project is to be developed as one phase with anticipated construction time of 36 months. Building construction will proceed from front (closest to Leforge) to back as follows:

- Site work (1-36 months)
- Townhomes (3-24 months)
- Stacked flats, (7-36 months)
- Duplex/4-Plex (7-36 months)

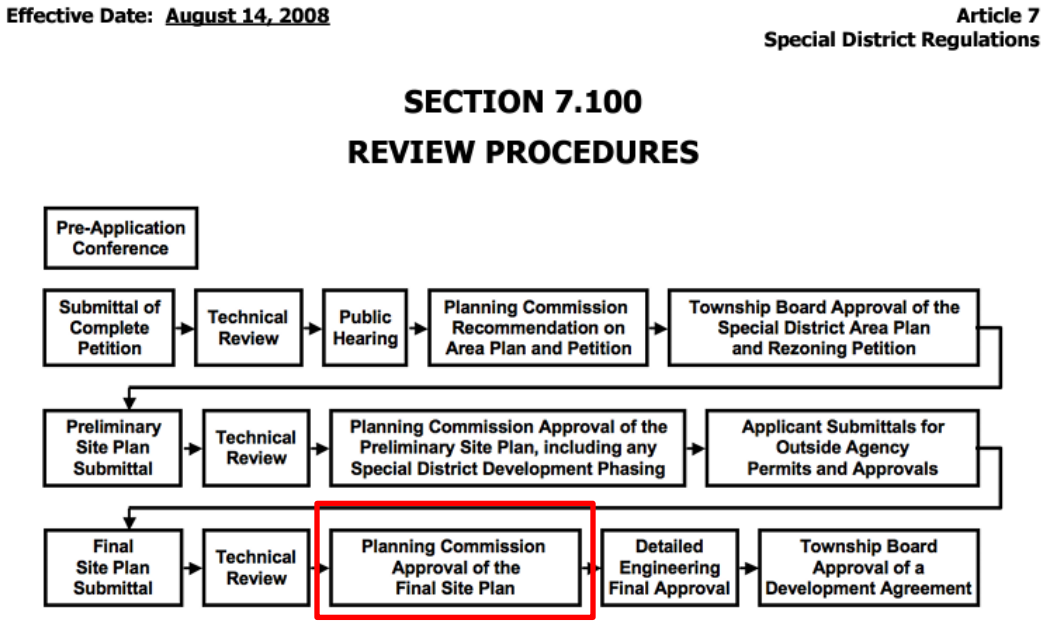
Because the project is not phased, conditions and requirements under Section 7.105 (Phasing of Development) do not apply and the Planning Commission can approve the entire final site plan in one action

The Zoning and existing land uses for the subject site and surrounding parcels are identified in the following table:

Direction	Zoning	Existing Use
North	PM and PC	Single Family Residential and Vacant
South	R3, R4, and A2	Vacant and Rural Residential
East	R3, R4, and A2	Vacant
West	PSP, R4, R7, A2	Rural Residential and Institutional

PROCESS

Section 7.100 of the Zoning Ordinance outlines the Special District Approval Process for site plans. The diagram below and box highlighted in red indicates where the Brookwood Development is in the overall review process.



AREA PLAN

The Planned Community (PC) Area Plan originally approved for this site in 2006, expired and an amended Planned Community (PC) Area Plan petition was submitted. The amended Area Plan was approved by the Township Board on May 20, 2024 (Ord. #174-27).

PRELIMINARY SITE PLAN

The Preliminary Site Plan (STPC #23-05) was approved by the Planning Commission on May 22, 2024, with the following conditions:

1) Address all items in the Township Engineers May 9, 2024, review.

2) Provide additional details on Natural Feature Plan including how the 25% slopes will be protected, and their integrity remain intact.

3) Provide a more detailed landscape plan that meets all landscape, screening, and woodland preservation requirements.

4) Provide lighting and photometric plan.

5) Provide a detailed narrative of the architectural concept for the site including materials details.

FINAL SITE PLAN CONDITIONS OF APPROVAL

Each application for site plan approval shall include all required information for the type of site plan under review, as specified in Section 10.07 (Required Site Plan Information). The applicant submitted a final site plan that aimed to address the preliminary site plan approval conditions on November 22, 2024. Following review and identification of outstanding items, a revised final site plan submission was provided on May 5, 2025. Below is a review of how the revised site plan submission addresses the outstanding items identified in our review dated January 24, 2025:

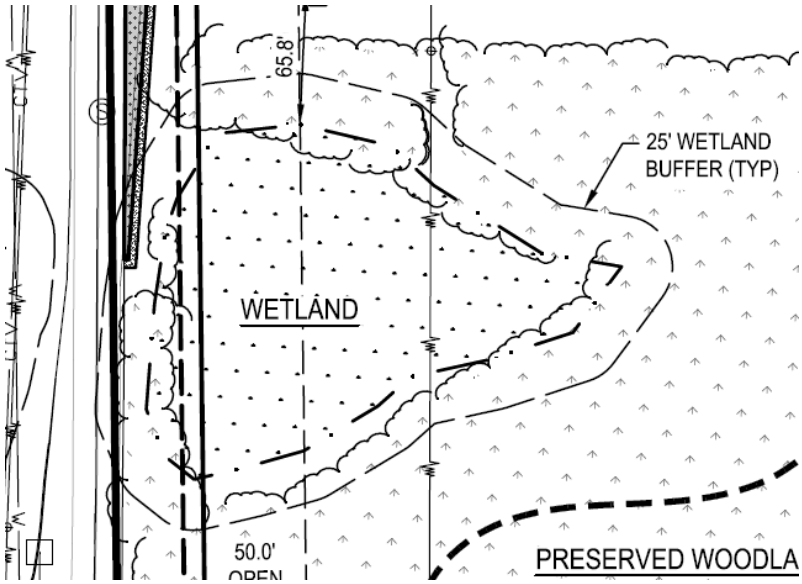
1. **Address all items in the Township Engineers January 8, 2025, review.**

   Engineering will be reviewed in a separate memo.

2. **Provide additional details on Natural Feature Plan including how the 25% slopes will be protected, and their integrity remain intact.**

   Sheet 06, provide details on the wetland areas delineation process (e.g., who and when the survey was completed) and how requirements of subsection 14.05B (Watercourses and Wetlands) will be addressed. The applicant indicated in their May 5, 2025, response letter that the wetlands were delineated by Marx Wetlands, LLC on May 31, 2022, and June 1, 2022. The revised plan set indicates that locations of the 25-foot wetland boundary setback where no grading, hardscapes, or structures are proposed. It appears that the only hardscape or structure proposed within a wetland boundary setback is a portion of the Leforge Road concrete approach and sidewalk within the ROW as shown in Figure 2 below. As noted, the applicant is preserving 5.3 acres of wetlands which is 100% of onsite wetland. Only wetland impact is in the LaForge ROW.

   Figure 2. Proposed hardscape or structure in wetland boundary setback area



As part of final engineering, the applicant shall obtain all necessary permits for such work from the Road Commission and/or EGLE.

Sheet 05, the legend needs to define two (2) kinds of steep slope areas: (1) areas 25% or greater, and (2) areas between 12% and 25%). Notes need to be added that steep slope areas (25% or greater) are not being built upon and areas with slopes (between 12% and 25%) that are being encroached upon, will meet requirements of subsections 14.05C. 1-3.

The revised site plan includes the required notes regarding slopes and encroachment areas. The applicant is not encroaching into any steep slope area greater than 25% with structures and have eliminated 16 units to preserve steep slope areas. Final grading will be reviewed as part of final engineering to maintain site slope integrity.

3. **Provide a more detailed landscape plan that meets all landscape, screening, and woodland preservation requirements.**

   A detailed landscape plan has been provided that meets all landscape including buffer trees, street trees and required tree mitigation and replacement. A total of 1,244 trees and 736 shrubs will be planted on site.

4. **Provide lighting and photometric plan.**

   The applicant is proposing a total of seventy-two (72) pole mounted lights. The lights are all fully shielded LEDs. The photometric plan and fixtures meet all requirements set forth in section 14.11; however, we note that building fixtures were not provided.

5. **Provide a detailed narrative of the architectural concept for the site including materials details.**

The applicant has submitted detailed architectural elevations for the clubhouse, stacked flats, townhomes, and attached units (duplexes). As previously discussed, the attached units include both front-loaded and side-loaded garage configurations. The overall architecture, design, and material palette are consistent with the approved area plan. The only notable deviation is a change to the roofline of the stacked flats.

The primary exterior materials across all building types include face block, face brick, and siding. However, the applicant should clarify the specific type of siding proposed. Staff recommends the use of a material other than vinyl siding to ensure long-term durability and aesthetic quality consistent with the development's overall character.

SUMMARY

We recommended final site plan approval with the following conditions:

1. Clarify siding material. Staff recommends the use of a material other than vinyl siding to ensure long-term durability and aesthetic quality consistent with the development's overall character.
2. Provide building fixtures for final engineering review.

CARLISLE/WORTMAN ASSOC., INC.
Benjamin R. Carlisle, AICP, LEED AP

CARLISLE/WORTMAN ASSOC., INC.
Michelle Marin, AICP

cc: Emily Dabish Yahkind, Township Supervisor
Angela Robinson, Township Clerk
Bill Balmes, Building Department
George Tsakof, Township Engineer

May 21, 2025

CHARTER TOWNSHIP OF SUPERIOR
3040 N. Prospect Road
Ypsilanti, MI 48198

Attention: **Angela Robinson, Township Clerk**

Regarding: **Brookwood**
Final Site Plan Review No. 2
OHM Job No. 0140-23-1030

Dear Ms. Robinson,

On behalf of Superior Township, we have reviewed the revised Final Site Plan resubmittal for the above referenced project with a revision date of May 20, 2025. The previous review by OHM Advisors on January 8, 2025 also included Engineering Review comments. Not all of those detailed items have been addressed in this Final Site Plan submittal as we anticipate an Engineering Plan resubmittal with these revisions at a later date.

Regarding this revised Final Site Plan submittal, in our opinion this plan is ready for consideration by the Planning Commission.

We do offer the following comment for the benefit of the Applicant's Engineer:

Sanitary Sewer

1. The inclusion of details for the private pump station is noted, and they will be reviewed as part of the next Engineering Review submittal.

Permits and Other Agency Approvals

1. The Washtenaw County Water Resources Commissioner's Office (WCWRC) has reviewed this Final Site Plan and has approved the stormwater management design. They have noted that construction plan review and approval by the WCWRC is required prior to the pre-construction stage of the development.
2. The Washtenaw County Road Commission (WCRC) has reviewed and approved the site plan for this development. Administrative items need to be addressed by the Applicant prior to the issuance of a Right-of-Way Permit for the improvements in the LeForge Road right-of-way, so issuance of this permit is reasonably assured.
3. A Soil Erosion and Sedimentation Control (SESC) permit from the WCWRC has not yet been approved, but it is reasonably assured that one will be issued prior to the pre-construction stage of the development.
4. An EGLE Part 301 Inland Lakes and Streams/Part 303 Wetlands Protection Permit is required for this site. EGLE staff has indicated this permit will likely meet their Minor Permit (MP) categories, and issuance of this permit is reasonably assured.

5. A Michigan Department of Environment, Great Lakes and Energy (EGLE) PA 399 Water Main Permit will be required for this development. OHM will assist the Applicant's Engineer in the application process for this permit through the Engineering Review process.
6. Two EGLE Part 41 Sanitary Sewer Permits will be required for this development. One permit will be required for the public gravity sanitary sewers to be constructed, and a separate permit will be required for the private sanitary pump station and force main. OHM will assist the Applicant's Engineer in the application process for these permits through the Engineering Review process.

If you have any questions regarding our review, please do not hesitate to contact me at (734) 466-4585, or George Tsakoff at (734) 466-4439.

Sincerely,

OHM Advisors

_____

Cresson Slotten, PE
Senior Project Manager

cc: Emily Dabish Yahkind, Township Supervisor (via e-mail)
Bill Balmes, Building Department (via e-mail)
Ben Carlisle, CWA, Twp Planner (via email)
Michelle Marin, CWA (via email)
George Tsakoff, OHM Advisors
Claire Martin, OHM Advisors
file

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BROOKWOOD SUPERIOR TOWNSHIP

FINAL SITE PLANS

P.I.N.: J-10-33-300-001

SUPERIOR TOWNSHIP, WASHTENAW COUNTY, MICHIGAN
SECTION 33, T-02-S, R-07-E

PROPERTY OWNER

SB INVEST LP
23944 EUREKA ROAD, SUITE 107
TAYLOR, MI 48180
(734) 507-5200 p
ATTN: CHRIS GARNER

ARCHITECT

HOBBS AND BLACK ARCHITECTS
100 N. STATE STREET
ANN ARBOR, MI, 48104
(734) 663-4189 p
ATTN: TOM DILLENBECK

CIVIL ENGINEER

GIFFELS WEBSTER
1025 E. MAPLE ROAD, SUITE 100
BIRMINGHAM, MI 48009
(856) 781-8950 p
(856) 781-8951 f
ATTN: JOSH RATLIFF, PE

LANDSCAPE ARCHITECT

GIFFELS WEBSTER
1025 E. MAPLE ROAD, SUITE 100
BIRMINGHAM, MI 48009
(856) 781-8950 p
(856) 781-8951 f
ATTN: MARK HANSEN, BLA, RLA

BENCHMARK DATA

NAVD88 DATUM

BENCHMARK NO. 1
ARROW ON HYDRANT LOCATED ON THE WEST SIDE OF LEFORGE ROAD AT ADDRESS 1661 LEFORGE ROAD.
ELEVATION=770.19'

BENCHMARK NO. 2
ARROW ON HYDRANT (1969) LOCATED ON THE WEST SIDE OF LEFORGE ROAD AT ADDRESS 1679 LEFORGE ROAD.
ELEVATION=793.82'

BENCHMARK NO. 3
ARROW ON HYDRANT (1969) LOCATED ON THE WEST SIDE OF LEFORGE ROAD AT ADDRESS 1751 LEFORGE ROAD.
ELEVATION=808.34'

giffels webster

Sanitary Sewer Basis of Design
Project Name Brookwood Superior Twp
Project Number 20249.00

Prepared By MBJDR
Working Date May 20, 2025

Sanitary District: A

Residential Use

Multi-Family

Stacked Flat	2.10	persons per unit	x	194	units	407	persons
Duplex	2.50	persons per unit	x	92	units	230	persons
					Total =	**637**	**Persons**

Average Flow= Population x Per Capita Capacity

=	637	persons	x	100	gpcpd			
=	63,740	gpd	=	**0.099**	cfs			

Peaking Factor= $18 + \sqrt{637}$ people / 1,000
$4 + \sqrt{637}$ people / 1,000
= 3.92

Peak Flow= Population x Per Capita Capacity x Peaking Factor

=	637	persons	x	100	gpcpd	x	3.92	
=	249711	gpd	=	**0.39**	cfs			
=	173.41	gpm						

The proposed sewer 10" @ 0.30% = 1.42 cfs, is adequate for the calculated flows.

Sanitary District: B

Residential Use

Multi-Family

Stacked Flat	2.10	persons per unit	x	156	units	328	persons
Duplex	2.50	persons per unit	x	56	units	140	persons
					Total =	**468**	**Persons**

Average Flow= Population x Per Capita Capacity

=	468	persons	x	100	gpcpd			
=	46,760	gpd	=	**0.072**	cfs			

Peaking Factor= $18 + \sqrt{468}$ people / 1,000
$4 + \sqrt{468}$ people / 1,000
= 3.99

Peak Flow= Population x Per Capita Capacity x Peaking Factor

=	468	persons	x	100	gpcpd	x	3.99	
=	186526	gpd	=	**0.29**	cfs			
=	129.53	gpm						

The proposed sewer 8" @ 0.40% = 0.90 cfs, is adequate for the calculated flows.

Sanitary District: C

Residential Use

Multi-Family

Townhome	3.00	persons per unit	x	16	units	48	persons
					Total =	**48**	**Persons**

Average Flow= Population x Per Capita Capacity

=	48	persons	x	100	gpcpd			
=	4,800	gpd	=	**0.007**	cfs			

Peaking Factor= $18 + \sqrt{48}$ people / 1,000
$4 + \sqrt{48}$ people / 1,000
= 4.32

Peak Flow= Population x Per Capita Capacity x Peaking Factor

=	48	persons	x	100	gpcpd	x	4.32	
=	20728	gpd	=	**0.03**	cfs			
=	14.39	gpm						

The proposed sewer 8" @ 0.40% = 0.90 cfs, is adequate for the calculated flows.

giffels webster

Watermain Basis of Design
Project Name Brookwood Superior Twp
Project Number 20249.00

Prepared By MBJDR
Working Date May 20, 2025

Residential Use

Multi-Family

Stacked Flat	2.10	persons per unit	x	194	units	407	persons
Duplex	2.50	persons per unit	x	92	units	230	persons
Townhome	3.00	persons per unit	x	16	units	48	persons
					Total =	**685**	**Persons**

Average Flow= Population x Per Capita Capacity

=	685	Persons	x	100	gpcpd			
=	68,540	gpd	=	**0.1061**	cfs			
=	47.60	gpm	=	**0.0685**	mgd			

Peak Flow= Population x Per Capita Capacity x 2

=	685	Persons	x	100	gpcpd	x	2.00	
=	137,080	gpd	=	**0.2121**	cfs			
=	95.19	gpm	=	**0.1371**	mgd			



N

LOCATION MAP
(NOT TO SCALE)

SHEET INDEX

01	COVER
02	TOPOGRAPHIC SURVEY
03	SESC PLAN
04	SESC NOTES & DETAILS
05	NATURAL FEATURES PLAN
06	OVERALL PLAN
07	OVERALL GRADING PLAN
08	OVERALL UTILITY PLAN
09	GENERAL PLAN
10	GENERAL PLAN
11	GENERAL PLAN
12	UTILITY PLAN
13	UTILITY PLAN
14	UTILITY PLAN
15	DIMENSIONAL STANDARDS PLAN
16	GRADING PLAN
17	GRADING PLAN
18	GRADING PLAN
19	GRADING PLAN
20	GRADING PLAN
21	GRADING PLAN
22	GRADING PLAN
23	GRADING PLAN
24	GRADING PLAN
25	GRADING PLAN
26	ROAD, SAN, WM PLAN & PROFILE
27	ROAD, SAN, WM PLAN & PROFILE
28	ROAD, SAN, WM PLAN & PROFILE
29	ROAD, SAN, WM PLAN & PROFILE
30	ROAD, SAN, WM PLAN & PROFILE
31	ROAD, SAN, WM PLAN & PROFILE
32	ROAD, SAN, WM PLAN & PROFILE
33	ROAD, SAN, WM PLAN & PROFILE
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35	APPROACH PLAN
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41	SANITARY FORCEMAIN PLAN & PROFILE
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43	SANITARY PUMP STATION DETAILS
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46	STORM PLAN & PROFILE
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49	STORM PLAN & PROFILE
50	STORM PLAN & PROFILE
51	STORM PLAN & PROFILE
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54	STORM PLAN & PROFILE
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60	BASIN 1 DETAILS
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62	BASIN 2 CALCULATIONS & DETAILS
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68	BASIN 5 CALCULATIONS
69	BASIN 5 DETAILS
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71	FIRE ACCESS PLAN
72	DETAILS

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L-101	TYPICAL LANDSCAPE PLAN
L-102	LANDSCAPE DETAILS
L-103	SIGN DETAILS
L-104	DUMPSTER DETAILS
L-201	TREE REMOVAL PLAN
L-202	TREE REMOVAL PLAN
L-203	TREE REMOVAL PLAN
L-204	TREE INVENTORY
L-205	TREE INVENTORY

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AC-201	CLUBHOUSE COMPOSITE EXTERIOR ELEVATIONS
AF-101	STACKED FLATS COMPOSITE FIRST FLOOR PLANS
AF-102	STACKED FLATS COMPOSITE FLOOR PLANS 2ND & 3RD FLOORS
AF-201	STACKED FLATS COMPOSITE EXTERIOR ELEVATIONS
AF-202	STACKED FLATS COMPOSITE EXTERIOR ELEVATIONS
AF-203	STACKED FLATS COMPOSITE END UNIT EXTERIOR ELEVATIONS
AF-204	STACKED FLATS EXTERIOR ELEVATIONS
AF-205	STACKED FLATS EXTERIOR ELEVATIONS
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AT-101	TOWNHOME FLOOR PLANS
AT-102	TOWNHOME FLOOR PLANS
AT-103	TOWNHOME FLOOR PLANS
AT-201	TOWNHOME COMPOSITE EXTERIOR ELEVATIONS
AU-101	ATTACHED UNIT COMPOSITE FLOOR PLANS
AU-201	ATTACHED UNIT COMPOSITE EXTERIOR ELEVATIONS
AU-202	ATTACHED UNIT COMPOSITE EXTERIOR ELEVATIONS

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L202	PHOTOMETRIC CALCULATION AREA A
L203	PHOTOMETRIC CALCULATION AREA B
L204	PHOTOMETRIC CALCULATION AREA C

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1 OF 2	STANDARD SANITARY DETAILS
2 OF 2	STANDARD SANITARY DETAILS
1 OF 2	STANDARD STORM SEWER DETAILS
2 OF 2	STANDARD STORM SEWER DETAILS
1 OF 2	STANDARD WATER MAIN DETAILS
2 OF 2	STANDARD WATER MAIN DETAILS

LEGAL DESCRIPTION

(PER TAX RECORDS)

BEGINNING AT THE WEST 1/4 CORNER OF SECTION 33, THENCE NORTH 87 DEGREES 41 MINUTES 30 SECONDS EAST, 2696.01 FEET; THENCE SOUTH 02 DEGREES 42 MINUTES EAST, 971.99 FEET; THENCE SOUTH 87 DEGREES 41 MINUTES 30 SECONDS WEST, 1341.39 FEET; THENCE SOUTH 03 DEGREES 06 MINUTES EAST, 21.88 FEET; THENCE SOUTH 87 DEGREES 39 MINUTES 30 SECONDS WEST, 79.20 FEET; THENCE SOUTH 03 DEGREES 06 MINUTES EAST, 934.65 FEET; THENCE SOUTH 87 DEGREES 39 MINUTES 30 SECONDS WEST, 1255.20 FEET; THENCE NORTH 03 DEGREES 30 MINUTES WEST, 922.46 FEET; THENCE NORTH 87 DEGREES 41 MINUTES 30SECONDS EAST, 358.19 FEET; THENCE NORTH 05 DEGREES 21 MINUTES WEST, 695.92 FEET; THENCE SOUTH 87 DEGREES 41 MINUTES 30 SECONDS WEST, 335.72 FEET; THENCE NORTH 03 DEGREES 30 MINUTES WEST, 312.10 FEET TO THE POINT OF BEGINNING. PART OF THE SOUTHWEST 1/4 OF SECTION 33, TOWN 02 SOUTH, RANGE 07 EAST.

(PER DUTHLER SURVEY DATED JULY 22, 2022, JOB # 220630LS)

LEGAL DESCRIPTION:

PART OF THE SOUTHWEST 1/4 OF SECTION 33, TOWN 2 SOUTH, RANGE 7 EAST, SUPERIOR TOWNSHIP, WASHTENAW COUNTY, STATE OF MICHIGAN, DESCRIBED AS: BEGINNING AT THE WEST 1/4 CORNER OF SAID SECTION 33; THENCE N.87°56'32"E., 2696.00 FEET ALONG THE EAST-WEST 1/4 LINE OF SAID SECTION 33 AS FENCED, MONUMENTED, AND PREVIOUSLY SURVEYED TO THE CENTER POST OF SAID SECTION 33; THENCE ALONG THE NORTH-SOUTH 1/4 LINE OF SAID SECTION 33 AS FENCED, MONUMENTED, AND PREVIOUSLY SURVEYED, S.02°27'10"E., 1035.48 FEET TO A LINE ESTABLISHED BY DEED RECORDED IN LIBER 3891, PAGE 492, AND MORTGAGE RECORDED IN LIBER 1467, PAGE 421 WASHTENAW COUNTY RECORDS, AND AS MONUMENTED, TAXED, FENCED, AND OCCUPIED; THENCE ALONG SAID LINE, S.87°56'50"W., 1340.80 FEET TO THE WEST 1/16TH LINE OF SAID SECTION 33; THENCE ALONG SAID 1/16TH LINE, N.02°51'03"W., 41.51 FEET; THENCE S.87°54'32"W., 79.38 FEET ALONG A LINE ESTABLISHED BY QUIT CLAIM DEED LIBER 5451, PAGE 467, AND MONUMENTED; THENCE ALONG A LINE AS MONUMENTED, FENCED, AND OCCUPIED, S.02°50'58"E., 944.76 FEET TO A LINE ESTABLISHED BY QUIT CLAIM DEED LIBER 5408, PAGE 574, QUIT CLAIM DEED LIBER 5116, PAGE 465, MONUMENTATION, FENCED, AND OCCUPIED; THENCE ALONG SAID LINE, S.87°35'37"W., 1255.01 FEET TO THE WEST LINE OF SAID SECTION 33; THENCE ALONG SAID WEST LINE, N.03°14'54"W, 939.48 FEET (922.46 FEET RECORD); THENCE N.87°56'32"E., 358.19 FEET; THENCE N.05°05'58"W., 695.92 FEET; THENCE S.87°56'32"W., 335.72 FEET TO THE WEST LINE OF SAID SECTION 33; THENCE ALONG SAID WEST LINE, N.03°14'54"W, 312.05 FEET (312.10 FEET RECORD) TO THE POINT OF BEGINNING AND CONTAINING 84.500 ACRES.

SUBJECT TO THE RIGHTS OF THE PUBLIC FOR HIGHWAY PURPOSES ALONG LEFORGE ROAD. SUBJECT TO ALL EASEMENTS, RESTRICTIONS, AND RIGHT OF WAYS OF RECORD.

giffels webster

Engineers
Surveyors
Planners
Landscape Architects

1025 East Maple Road
Suite 100
Birmingham, MI 48009
p (248) 852-3100
f (313) 962-5068
www.giffelswebster.com

Executive:	AW
Manager:	JR
Designer:	JR / AR
Quality Control:	-
Section:	33
	T-02-S R-07-E

Professional Seal:

STATE OF MICHIGAN
JOSHUA D. RATLIFF SR.
ENGINEER
No. 6201065198
LICENSED PROFESSIONAL ENGINEER

811 Know what's **below.** **Call** before you dig.

DATE:	ISSUE:
11/18/2024	FINAL SITE PLAN SUBMITTAL
01/17/2025	WCRC RESUBMITTAL
02/28/2025	WCWRC RESUBMITTAL
05/01/2025	WCWRC RESUBMITTAL
05/05/2025	TOWNSHIP FSP RESUBMITTAL
05/06/2025	SESC SUBMITTAL
05/13/2025	FSP LANDSCAPE REVISIONS
05/20/2025	STEEP SLOPE REVISIONS

Developed For:

GARNER PROPERTY MANAGEMENT

23944 EUREKA ROAD, SUITE 105
TAYLOR, MI 48180

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(734) 287-6619

COVER

BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

Date:	07.26.2024
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Project:	20249.00

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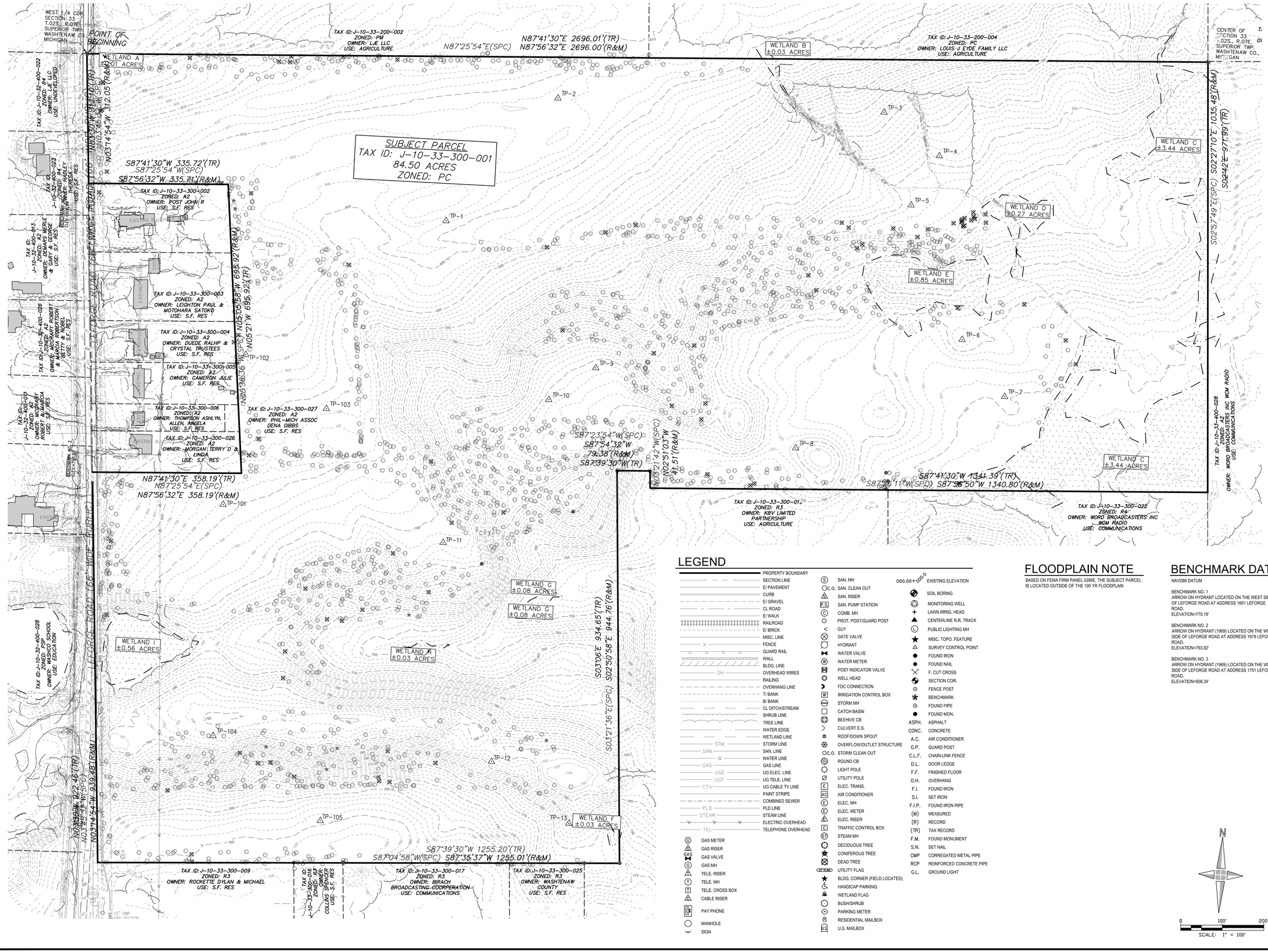

LEGEND

- PROPERTY BOUNDARY
- SECTION LINE
- E/ PAVEMENT
- CURB
- E/ GRAVEL
- CL ROAD
- E/ WALK
- RAILROAD
- E/ BRICK
- MISC. LINE
- FENCE
- GUARD RAIL
- WALL
- BLDG. LINE
- OVERHEAD WIRES
- RAILING
- OVERHANG LINE
- T/ BANK
- B/ BANK
- CL DITCH/STREAM
- SHRUB LINE
- TREE LINE
- WATER EDGE
- WETLAND LINE
- STORM LINE
- SAN. LINE
- WATER LINE
- GAS LINE
- UG ELEC. LINE
- UG TELE. LINE
- UG CABLE TV LINE
- PAINT STRIPE
- COMBINED SEWER
- PLD LINE
- STEAM LINE
- ELECTRIC OVERHEAD
- TELEPHONE OVERHEAD
- GAS METER
- GAS RISER
- GAS VALVE
- GAS MH
- TELE. RISER
- TELE. MH
- TELE. CROSS BOX
- CABLE RISER
- PAY PHONE
- MANHOLE
- SIGN
- SAN. MH
- SAN. CLEAN OUT
- SAN. RISER
- SAN. PUMP STATION
- COMB. MH
- PROT. POST/GUARD POST
- GUY
- GATE VALVE
- HYDRANT
- WATER VALVE
- WATER METER
- POST INDICATOR VALVE
- WELL HEAD
- FDC CONNECTION
- IRRIGATION CONTROL BOX
- STORM MH
- CATCH BASIN
- BEEHIVE CB
- CULVERT E.S.
- ROOF/DOWN SPOUT
- OVERFLOW/OUTLET STRUCTURE
- STORM CLEAN OUT
- ROUND CB
- LIGHT POLE
- UTILITY POLE
- ELEC. TRANS.
- AIR CONDITIONER
- ELEC. MH
- ELEC. METER
- ELEC. RISER
- TRAFFIC CONTROL BOX
- STEAM MH
- DECIDUOUS TREE
- CONIFEROUS TREE
- DEAD TREE
- UTILITY FLAG
- BLDG. CORNER (FIELD LOCATED)
- HANDICAP PARKING
- WETLAND FLAG
- BUSH/SHRUB
- PARKING METER
- RESIDENTIAL MAILBOX
- U.S. MAILBOX
- 000.00+000.0 EXISTING ELEVATION
- SOIL BORING
- MONITORING WELL
- LAWN IRRIG. HEAD
- CENTERLINE R.R. TRACK
- PUBLIC LIGHTING MH
- MISC. TOPO. FEATURE
- SURVEY CONTROL POINT
- FOUND IRON
- FOUND NAIL
- F. CUT CROSS
- SECTION COR.
- FENCE POST
- BENCHMARK
- FOUND PIPE
- FOUND MON.
- ASPH. ASPHALT
- CONC. CONCRETE
- A.C. AIR CONDITIONER
- G.P. GUARD POST
- C.L.F. CHAIN-LINK FENCE
- D.L. DOOR LEDGE
- F.F. FINISHED FLOOR
- O.H. OVERHANG
- F.I. FOUND IRON
- S.I. SET IRON
- F.I.P. FOUND IRON PIPE
- (M) MEASURED
- (R) RECORD
- (TR) TAX RECORD
- F.M. FOUND MONUMENT
- S.N. SET NAIL
- CMP CORREGATED METAL PIPE
- RCP REINFORCED CONCRETE PIPE
- G.L. GROUND LIGHT

FLOODPLAIN NOTE

BASED ON FEMA FIRM PANEL 0288E, THE SUBJECT PARCEL IS LOCATED OUTSIDE OF THE 100 YR FLOODPLAIN

BENCHMARK DATA

NAVD88 DATUM

BENCHMARK NO. 1
ARROW ON HYDRANT LOCATED ON THE WEST SIDE OF LEFORGE ROAD AT ADDRESS 1661 LEFORGE ROAD.
ELEVATION=770.19'

BENCHMARK NO. 2
ARROW ON HYDRANT (1969) LOCATED ON THE WEST SIDE OF LEFORGE ROAD AT ADDRESS 1679 LEFORGE ROAD.
ELEVATION=793.82'

BENCHMARK NO. 3
ARROW ON HYDRANT (1969) LOCATED ON THE WEST SIDE OF LEFORGE ROAD AT ADDRESS 1751 LEFORGE ROAD.
ELEVATION=808.34'

N

0 100' 200'

SCALE: 1" = 100'

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Landscape Architects

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Designer:	JR / AR
Quality Control:	-
Section:	33
	T-02-S R-07-E

Professional Seal:

STATE OF MICHIGAN
ANTHONY LOUIS GONZALEZ
PROFESSIONAL SURVEYOR
No. 4001056165
LICENSED PROFESSIONAL SURVEYOR

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TOPOGRAPHIC SURVEY

BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

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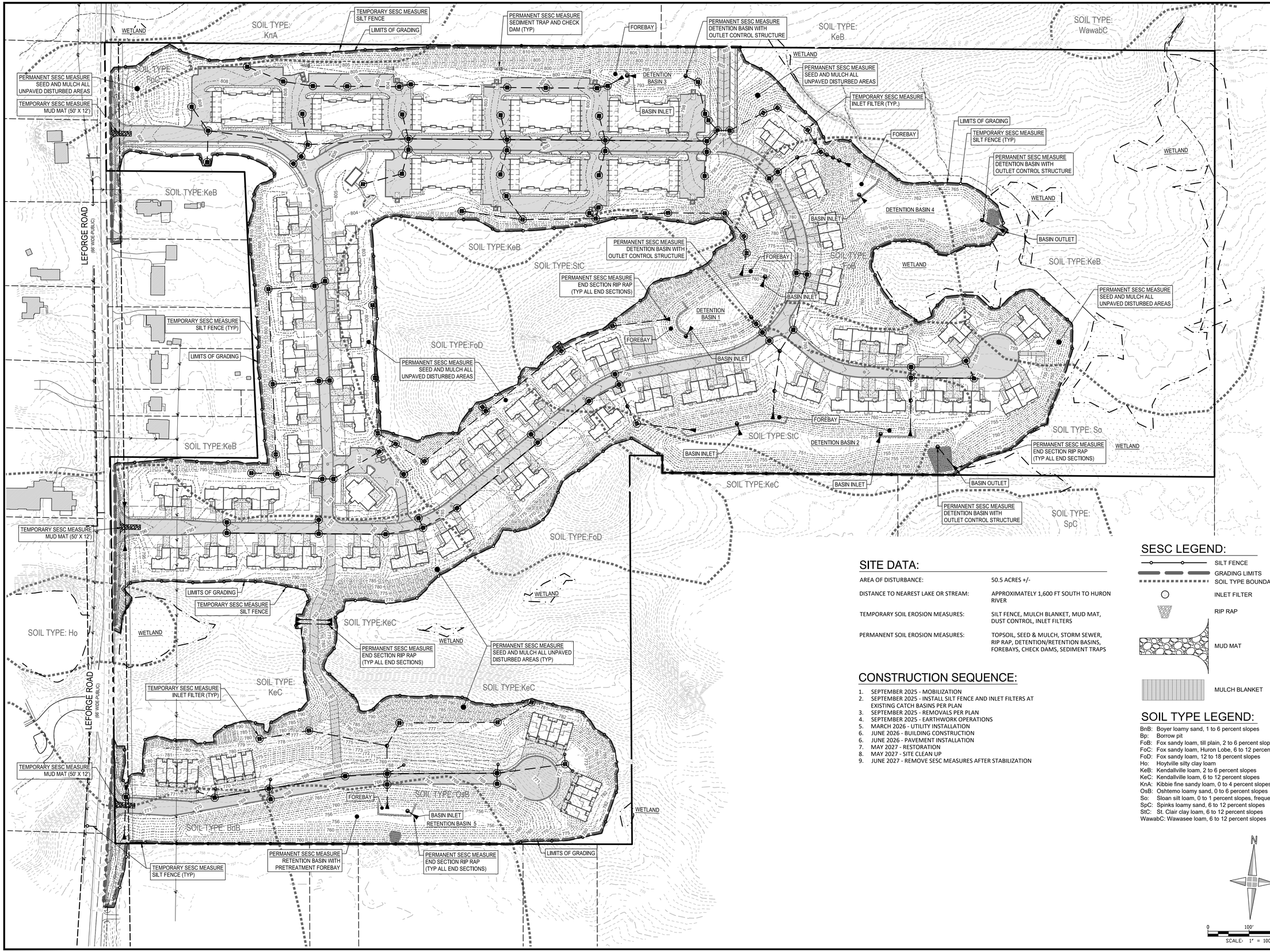

SITE DATA:

AREA OF DISTURBANCE:	50.5 ACRES +/-
DISTANCE TO NEAREST LAKE OR STREAM:	APPROXIMATELY 1,600 FT SOUTH TO HURON RIVER
TEMPORARY SOIL EROSION MEASURES:	SILT FENCE, MULCH BLANKET, MUD MAT, DUST CONTROL, INLET FILTERS
PERMANENT SOIL EROSION MEASURES:	TOPSOIL, SEED & MULCH, STORM SEWER, RIP RAP, DETENTION/RETENTION BASINS, FOREBAYS, CHECK DAMS, SEDIMENT TRAPS

CONSTRUCTION SEQUENCE:

1. SEPTEMBER 2025 - MOBILIZATION
2. SEPTEMBER 2025 - INSTALL SILT FENCE AND INLET FILTERS AT EXISTING CATCH BASINS PER PLAN
3. SEPTEMBER 2025 - REMOVALS PER PLAN
4. SEPTEMBER 2025 - EARTHWORK OPERATIONS
5. MARCH 2026 - UTILITY INSTALLATION
6. JUNE 2026 - BUILDING CONSTRUCTION
6. JUNE 2026 - PAVEMENT INSTALLATION
7. MAY 2027 - RESTORATION
8. MAY 2027 - SITE CLEAN UP
9. JUNE 2027 - REMOVE SESC MEASURES AFTER STABILIZATION

SESC LEGEND:

- SILT FENCE
- GRADING LIMITS
- SOIL TYPE BOUNDARY
- INLET FILTER
- RIP RAP
- MUD MAT
- MULCH BLANKET

SOIL TYPE LEGEND:

BnB: Boyer loamy sand, 1 to 6 percent slopes
Bp: Borrow pit
FoB: Fox sandy loam, till plain, 2 to 6 percent slopes
FoC: Fox sandy loam, Huron Lobe, 6 to 12 percent slopes
FoD: Fox sandy loam, 12 to 18 percent slopes
Ho: Hoytville silty clay loam
KeB: Kendallville loam, 2 to 6 percent slopes
KeC: Kendallville loam, 6 to 12 percent slopes
KnA: Kibbie fine sandy loam, 0 to 4 percent slopes
OsB: Oshtemo loamy sand, 0 to 6 percent slopes
So: Sloan silt loam, 0 to 1 percent slopes, frequently flooded
SpC: Spinks loamy sand, 6 to 12 percent slopes
StC: St. Clair clay loam, 6 to 12 percent slopes
WawabC: Wawasee loam, 6 to 12 percent slopes

N

0 100' 200'
SCALE: 1" = 100'

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JOSHUA D. RATLIFF SR.
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No. 6201065198
LICENSED PROFESSIONAL ENGINEER

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SESC PLAN

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WASHTENAW COUNTY
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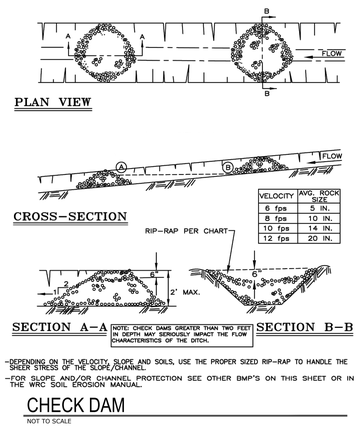
SOIL EROSION AND SEDIMENTATION CONTROL NOTES:

1. CONTRACTOR SHALL COMPLY WITH REQUIREMENTS OF THE SOIL EROSION AND SEDIMENTATION CONTROL ACT OF THE STATE OF MICHIGAN, PART 91 OR ACT 451, OF THE PUBLIC ACTS OF 1994 AND THE REQUIREMENTS OF SUPERIOR TOWNSHIP AND THE WASHTENAW COUNTY WATER RESOURCE COMMISSION.
2. A SOIL EROSION AND SEDIMENTATION CONTROL PERMIT WILL BE REQUIRED FROM THE WASHTENAW COUNTY WATER RESOURCES COMMISSIONER'S OFFICE.
3. THE CONTRACTOR SHALL CONDUCT OPERATIONS IN A MANNER THAT WILL REDUCE ACCELERATED EROSION TO THE PRACTICAL MINIMUM AND PREVENT DAMAGING SILTATION TO EXISTING SEWERS AND WATER COURSES LEADING FROM THE WORK SITE.
4. THE CONTRACTOR SHALL CONDUCT WORK IN SUCH A MANNER AS TO PREVENT THE ENTRY OF FUELS, OILS, BITUMINOUS MATERIALS, CHEMICALS, SEWERAGE OR OTHER HARMFUL MATERIALS INTO NEARBY LAKES AND STREAMS.
5. WASTE DISPOSAL AREAS SHALL BE SELECTED BY THE CONTRACTOR WITH FULL CONSIDERATION OF EROSION AND SEDIMENT CONTROL, SELECTION OF DISPOSAL SITE, AND CONTROL OF OPERATIONS,AND THE RESTORATION OF SAID AREAS SHALL BE SUBJECT TO THE APPROVAL OF THE ENGINEER.
6. EXCAVATION FROM THE RIGHT-OF-WAY, CHANNELS, OR OTHER MATERIAL SHALL NOT BE DEPOSITED IN OR NEAR RIVERS, STREAMS OR PONDS WHERE IT MAY ENTER THE WATERWAY.
7. AT THE COMPLETION OF EACH DAY'S CONSTRUCTION, CARE SHALL BE TAKEN TO ENSURE THAT MINIMAL EROSION WILL OCCUR IN TRENCHES AND TO STOCKPILED MATERIALS UNTIL RESUMPTION OF WORK.
8. CONTRACTOR SHALL CONFINE OPERATIONS TO THE MINIMUM AMOUNT OF WORKING SPACE PRACTICAL TO MINIMIZE SOIL EROSION.
9. THE PROJECT WILL BE CONTINUALLY INSPECTED BY THE ENGINEER FOR EROSION CONTROL COMPLIANCE. DEFICIENCIES WILL BE CORRECTED BY THE CONTRACTOR IMMEDIATELY UPON NOTICE OF SUCH DEFICIENCIES. FAILURE TO CORRECT THE DEFICIENCIES MAY RESULT IN THE ISSUANCE OF A STOP WORK ORDER AND THERE WILL BE NO CONTRACT TIME EXTENSION GRANTED FOR THIS TYPE OF STOPPAGE.
9. TEMPORARY SOIL EROSION CONTROL MEASURES CONSISTING OF SILT FENCE, INLET FILTERS, MULCHING, AND GEOTEXTILE AND STONE SHALL BE IMPLEMENTED THROUGHOUT THE ENTIRE CONSTRUCTION PHASE OF THE PROJECT, AND SHALL BE REMOVED BY THE CONTRACTOR AFTER THE PERMANENT SOIL EROSION MEASURES HAVE BEEN COMPLETED.
10. STRAW MULCH WITH NETTING TIE DOWN, HIGH VELOCITY MULCH BLANKET OR OTHER APPROVED MULCH SHALL BE PLACED ON DISTURBED SLOPES WHERE DIRECTED BY THE ENGINEER.
11. STREET SWEEPING OR MUD REMOVAL SHALL BE PERFORMED DAILY FOR MUD TRACKED ONTO PUBLIC STREETS.
12. SILT FENCE SHALL BE INSTALLED AND MAINTAINED ALONG THE DOWN-SLOPE SURFACE, PERPENDICULAR TO THE DIRECTION OF SHEET FLOW, FOR ALL OPEN-CUT SEWER INSTALLATION AREAS.
13. PERMANENT SOIL EROSION MEASURES CONSISTING OF STORM SEWER, BIOTREATMENT STRUCTURES, AND THE MIXTURE SEED AND MULCH BLANKET SHALL BE COMPLETED WITHIN 5 CALENDAR DAYS OF FINAL GRADING. IN THE EVENT IT IS NOT POSSIBLE TO PERMANENTLY STABILIZE THE AREA DUE TO SITE CONDITIONS AND/OR SEASONAL LIMITATIONS, THE TEMPORARY MEASURES SHALL REMAIN IN FORCE AND SHALL BE MAINTAINED BY THE CONTRACTOR UNTIL SUCH TIME AS IT IS PRACTICAL TO COMPLETE THE PERMANENT SOIL EROSION CONTROL MEASURES.
14. THE ENGINEER SHALL HAVE FULL AUTHORITY TO TEMPORARILY SUSPEND WORK IN THE EVENT THAT ANY OF THE ABOVE REQUIREMENTS ARE NOT BEING MET BY THE CONTRACTOR, OR IF CONDITIONS INDICATE THAT ADDITIONAL TEMPORARY CONTROL MEASURES ARE WARRANTED, IN THE OPINION OF THE ENGINEER.
15. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE MAINTENANCE OF THE SOIL EROSION CONTROL MEASURES WITHIN THE CONSTRUCTION AREA UNTIL FULL COMPLETION OF THE PROJECT.
16. THE SOIL EROSION CONTROLS WILL BE MAINTAINED WEEKLY AND AFTER EVERY STORM EVENT BY THE CONTRACTOR.
17. ACTIVITIES WITHIN WETLAND LIMITS AND CONSERVATION EASEMENT WILL REQUIRE PERMIT FROM EGLE.

MAINTENANCE SCHEDULE:

THE CONTRACTOR SHALL INSPECT SESC MEASURES WEEKLY UNDER NORMAL CONDITIONS, WITHIN 24 HOURS OF EACH RAIN EVENT, AND DAILY DURING A PROLONGED RAIN EVENT BY DESIGNATED CONTRACTOR.

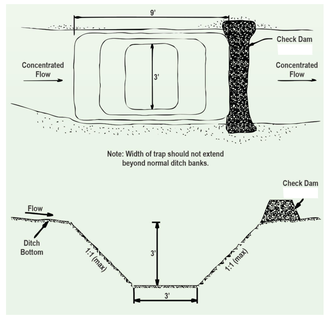
MEASURE	MAINTENANCE SCHEDULE
SILT FENCE	INSTALL AT THE START OF CONSTRUCTION PER PLAN. REMOVE ACCUMULATED SEDIMENTS WHEN DEPTH REACHES ½ TO ⅔ THE HEIGHT OF THE FENCE. FABRIC SHALL BE REPLACED IF DAMAGED.
INLET FILTER	INSTALL AT THE START OF CONSTRUCTION PER PLAN. REMOVE ACCUMULATED SEDIMENTS. FILTER SHALL BE REPLACED IF DAMAGED.
DUST CONTROL	WATER SHALL BE APPLIED TO EXPOSED AREAS BY THE CONTRACTOR IN THE EVENT OF EXCESSIVE AIRBORNE DUST. DUST CONTROL SHALL BE APPLIED AS DIRECTED BY THE ENGINEER OR SOIL EROSION PERMITTING AGENCY.
VEGETATION (PERM)	SEED SHALL BE WATERED AND MULCH MAINTAINED UNTIL VIGOROUS TURF HAS BEEN ESTABLISHED.
MUD MAT	INSTALL AT THE START OF CONSTRUCTION PER PLAN. REMOVE ACCUMULATED SEDIMENTS, ADD STONE AS NEEDED AND REQUIRED BY THE ENGINEER, AND REPLACE GEOTEXTILE IF DAMAGED.



-DEPENDING ON THE VELOCITY, SLOPE AND SOILS, USE THE PROPER SIZED RIP-RAP TO HANDLE THE SHEER STRESS OF THE SLOPE/CHANNEL.

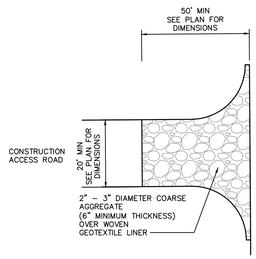
-FOR SLOPE AND/OR CHANNEL PROTECTION SEE OTHER BMP'S ON THIS SHEET OR IN THE WRC SOIL EROSION MANUAL.

CHECK DAM
NOT TO SCALE



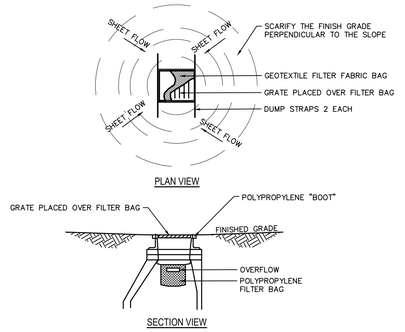
NOTES:
- SEDIMENT VOLUME IS LESS THAN 5 CYDS
- REMOVE DEPOSITED SEDIMENT WHEN IT REACHES 50% OF THE TRAPS'S CAPACITY
- REMOVE SEDIMENT AND STABILIZE TRAP WHEN SITE IS PERMANENTLY STABILIZED.

SEDIMENT TRAP
NOT TO SCALE



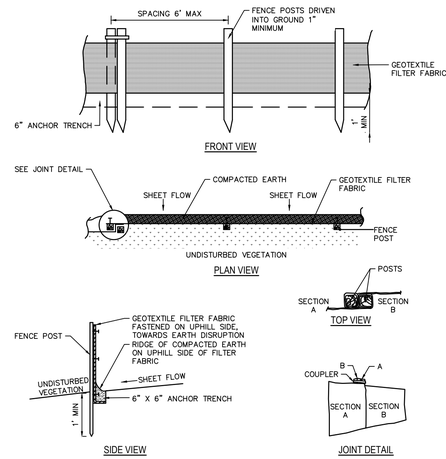
NOTE:
1. ENSURE MUDMAT AND SEDIMENT IS NOT TRANSPORTED ONTO PAVED ROADS. AGGREGATE PAD REQUIRED TO PROVIDE BUFFER AREA FOR VEHICLES TO DROP MUD AND SEDIMENT THEREBY CONTROLLING DUST AND SEDIMENT FROM SURFACE RUNOFF.
2. INSTALL AND MAINTAIN AS SPECIFIED ON SOIL EROSION AND SEDIMENTATION CONTROL PLAN.

AGGREGATE MUD MAT
NOT TO SCALE



NOTE:
1. TEMPORARY SEDIMENT INLET FILTER TO BE INSTALLED ON ALL PAVED CATCH BASINS OR STORM INLETS, OR AS SPECIFIED ON THE SOIL EROSION CONTROL PLAN.
2. INLET FILTER TO BE SIMILAR TO "STREAMGUARD" AS MANUFACTURED BY STORMWATER SERVICES CORPORATION OR "SILTSACK" AS MANUFACTURED BY ATLANTIC CONSTRUCTION FABRICS, INC.
3. CLEAN FILTER AS NEEDED, OR AS REQUIRED BY THE SOIL EROSION AND SEDIMENT CONTROL PLAN.

SEDIMENT INLET FILTER
NOT TO SCALE



SEDIMENT CONTROL FENCE
NOT TO SCALE

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SESC NOTES & DETAILS

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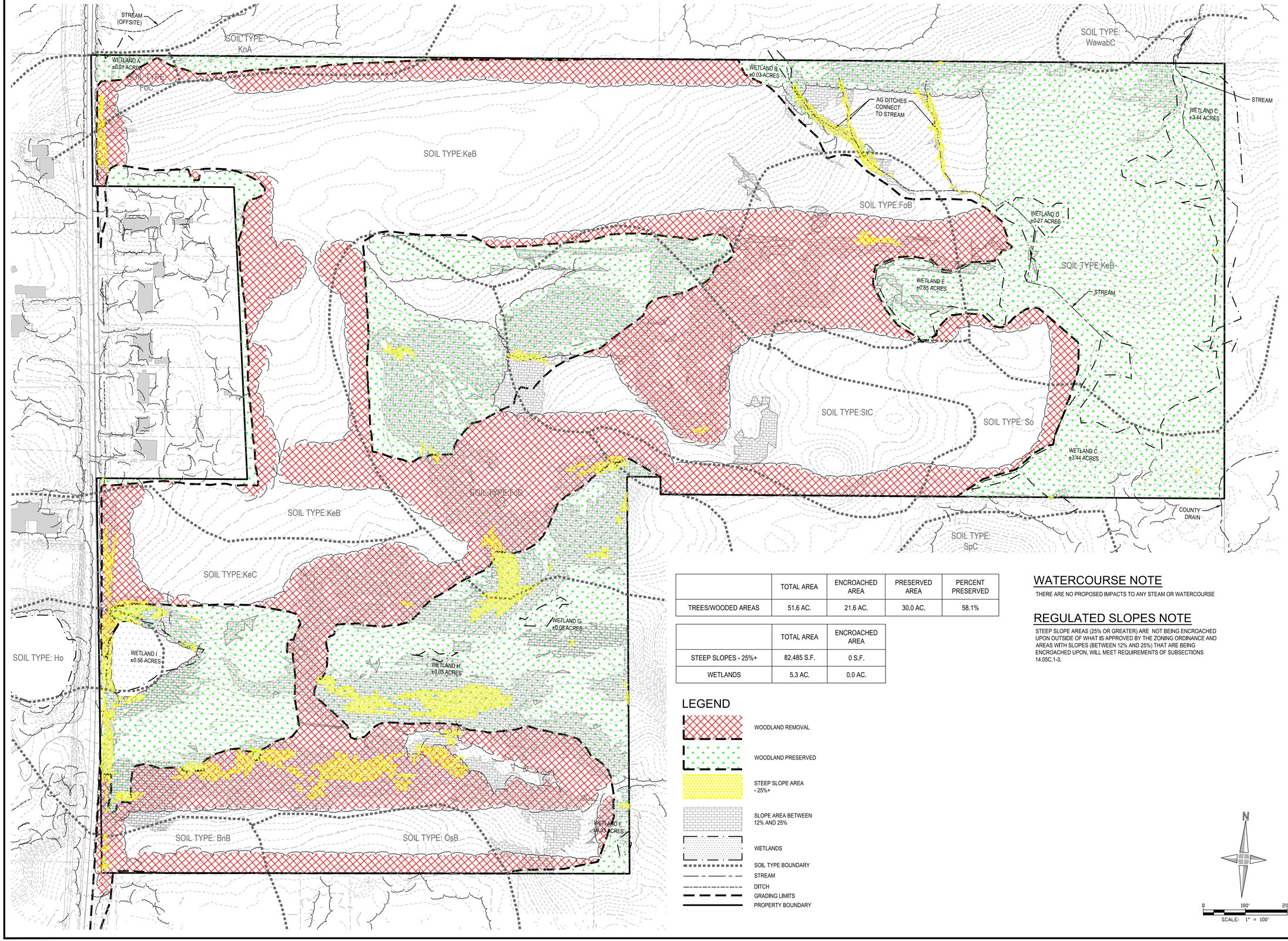

	TOTAL AREA	ENCROACHED AREA	PRESERVED AREA	PERCENT PRESERVED
TREES/WOODED AREAS	51.6 AC.	21.6 AC.	30.0 AC.	58.1%

	TOTAL AREA	ENCROACHED AREA
STEEP SLOPES - 25%+	82,485 S.F.	0 S.F.
WETLANDS	5.3 AC.	0.0 AC.

LEGEND

- WOODLAND REMOVAL
- WOODLAND PRESERVED
- STEEP SLOPE AREA - 25%+
- SLOPE AREA BETWEEN 12% AND 25%
- WETLANDS
- SOIL TYPE BOUNDARY
- STREAM
- DITCH
- GRADING LIMITS
- PROPERTY BOUNDARY

WATERCOURSE NOTE

THERE ARE NO PROPOSED IMPACTS TO ANY STEAM OR WATERCOURSE

REGULATED SLOPES NOTE

STEEP SLOPE AREAS (25% OR GREATER) ARE NOT BEING ENCROACHED UPON OUTSIDE OF WHAT IS APPROVED BY THE ZONING ORDINANCE AND AREAS WITH SLOPES (BETWEEN 12% AND 25%) THAT ARE BEING ENCROACHED UPON, WILL MEET REQUIREMENTS OF SUBSECTIONS 14.05C.1-3.

N

0 100' 200'

SCALE: 1" = 100'

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NATURAL FEATURES PLAN

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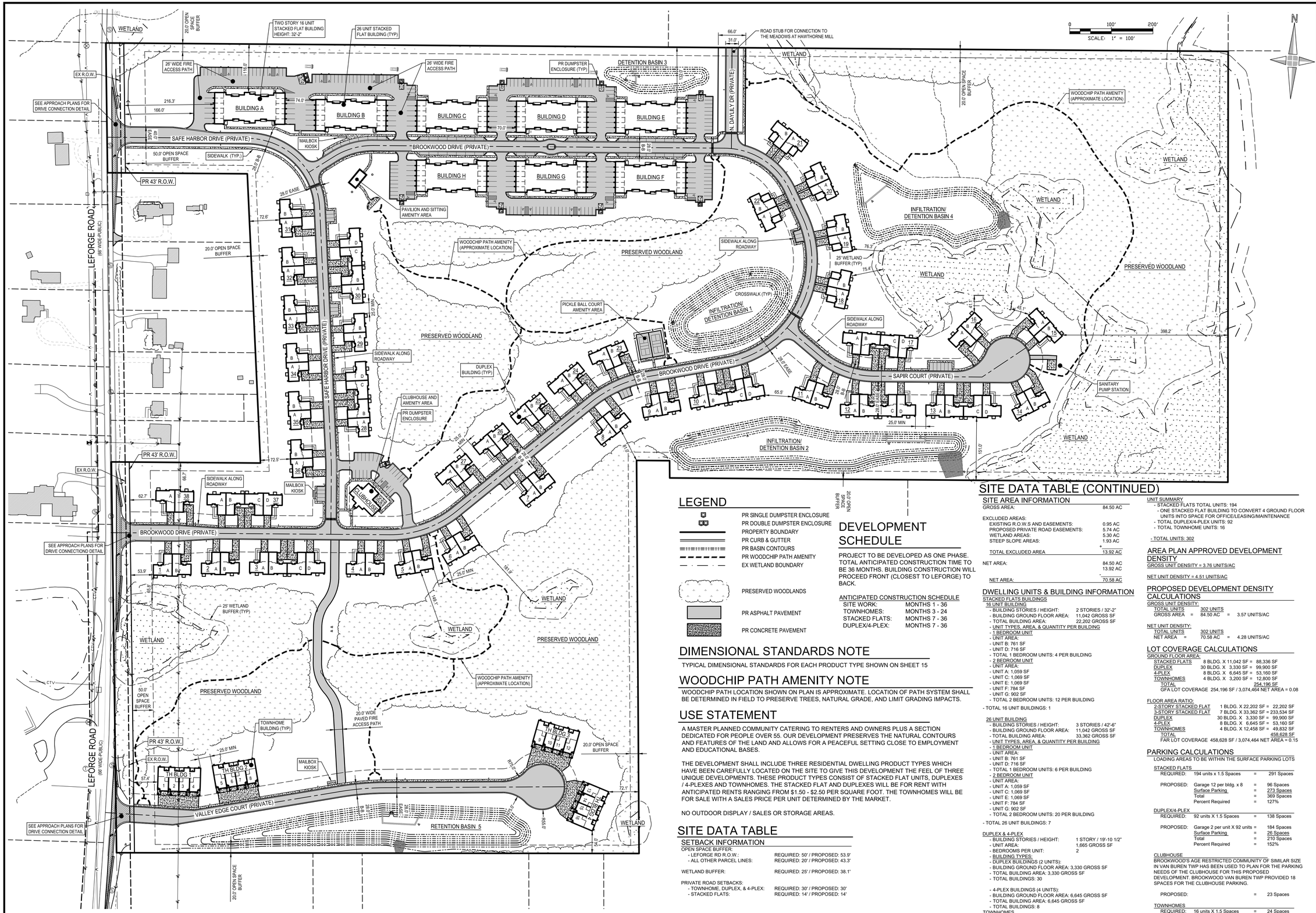

LEGEND

- PR SINGLE DUMPSTER ENCLOSURE
- PR DOUBLE DUMPSTER ENCLOSURE
- PROPERTY BOUNDARY
- PR CURB & GUTTER
- PR BASIN CONTOURS
- PR WOODCHIP PATH AMENITY
- EX WETLAND BOUNDARY
- PRESERVED WOODLANDS
- PR ASPHALT PAVEMENT
- PR CONCRETE PAVEMENT

DEVELOPMENT SCHEDULE

PROJECT TO BE DEVELOPED AS ONE PHASE. TOTAL ANTICIPATED CONSTRUCTION TIME TO BE 36 MONTHS. BUILDING CONSTRUCTION WILL PROCEED FRONT (CLOSEST TO LEFORGE) TO BACK.

ANTICIPATED CONSTRUCTION SCHEDULE

SITE WORK:	MONTHS 1 - 36
TOWNHOMES:	MONTHS 3 - 24
STACKED FLATS:	MONTHS 7 - 36
DUPLEX/4-PLEX:	MONTHS 7 - 36

DIMENSIONAL STANDARDS NOTE

TYPICAL DIMENSIONAL STANDARDS FOR EACH PRODUCT TYPE SHOWN ON SHEET 15

WOODCHIP PATH AMENITY NOTE

WOODCHIP PATH LOCATION SHOWN ON PLAN IS APPROXIMATE. LOCATION OF PATH SYSTEM SHALL BE DETERMINED IN FIELD TO PRESERVE TREES, NATURAL GRADE, AND LIMIT GRADING IMPACTS.

USE STATEMENT

A MASTER PLANNED COMMUNITY CATERING TO RENTERS AND OWNERS PLUS A SECTION DEDICATED FOR PEOPLE OVER 55. OUR DEVELOPMENT PRESERVES THE NATURAL CONTOURS AND FEATURES OF THE LAND AND ALLOWS FOR A PEACEFUL SETTING CLOSE TO EMPLOYMENT AND EDUCATIONAL BASES.

THE DEVELOPMENT SHALL INCLUDE THREE RESIDENTIAL DWELLING PRODUCT TYPES WHICH HAVE BEEN CAREFULLY LOCATED ON THE SITE TO GIVE THIS DEVELOPMENT THE FEEL OF THREE UNIQUE DEVELOPMENTS. THESE PRODUCT TYPES CONSIST OF STACKED FLAT UNITS, DUPLEXES / 4-PLEXES AND TOWNHOMES. THE STACKED FLAT AND DUPLEXES WILL BE FOR RENT WITH ANTICIPATED RENTS RANGING FROM $1.50 - $2.50 PER SQUARE FOOT. THE TOWNHOMES WILL BE FOR SALE WITH A SALES PRICE PER UNIT DETERMINED BY THE MARKET.

NO OUTDOOR DISPLAY / SALES OR STORAGE AREAS.

SITE DATA TABLE

SETBACK INFORMATION

OPEN SPACE BUFFER:	
- LEFORGE RD R.O.W.:	REQUIRED: 50' / PROPOSED: 53.9'
- ALL OTHER PARCEL LINES:	REQUIRED: 20' / PROPOSED: 43.3'
WETLAND BUFFER:	REQUIRED: 25' / PROPOSED: 38.1'
PRIVATE ROAD SETBACKS:	
- TOWNHOME, DUPLEX, & 4-PLEX:	REQUIRED: 30' / PROPOSED: 30'
- STACKED FLATS:	REQUIRED: 14' / PROPOSED: 14'

SITE DATA TABLE (CONTINUED)

SITE AREA INFORMATION

GROSS AREA:	84.50 AC
EXCLUDED AREAS:	
EXISTING R.O.W.S AND EASEMENTS:	0.95 AC
PROPOSED PRIVATE ROAD EASEMENTS:	5.74 AC
WETLAND AREAS:	5.30 AC
STEEP SLOPE AREAS:	1.93 AC
TOTAL EXCLUDED AREA	13.92 AC
NET AREA:	84.50 AC
	13.92 AC
NET AREA:	70.58 AC

DWELLING UNITS & BUILDING INFORMATION

STACKED FLATS BUILDINGS

16 UNIT BUILDING
- BUILDING STORIES / HEIGHT: 2 STORIES / 32'-2"
- BUILDING GROUND FLOOR AREA: 11,042 GROSS SF
- TOTAL BUILDING AREA: 22,202 GROSS SF
- UNIT TYPES, AREA, & QUANTITY PER BUILDING
- 1 BEDROOM UNIT
- UNIT AREA:
- UNIT B: 761 SF
- UNIT D: 716 SF
- TOTAL 1 BEDROOM UNITS: 4 PER BUILDING
- 2 BEDROOM UNIT
- UNIT AREA:
- UNIT A: 1,059 SF
- UNIT C: 1,069 SF
- UNIT E: 1,069 SF
- UNIT F: 784 SF
- UNIT G: 902 SF
- TOTAL 2 BEDROOM UNITS: 12 PER BUILDING

- TOTAL 16 UNIT BUILDINGS: 1

26 UNIT BUILDING
- BUILDING STORIES / HEIGHT: 3 STORIES / 42'-6"
- BUILDING GROUND FLOOR AREA: 11,042 GROSS SF
- TOTAL BUILDING AREA: 33,362 GROSS SF
- UNIT TYPES, AREA, & QUANTITY PER BUILDING
- 1 BEDROOM UNIT
- UNIT AREA:
- UNIT B: 761 SF
- UNIT D: 716 SF
- TOTAL 1 BEDROOM UNITS: 6 PER BUILDING
- 2 BEDROOM UNIT
- UNIT AREA:
- UNIT A: 1,059 SF
- UNIT C: 1,069 SF
- UNIT E: 1,069 SF
- UNIT F: 784 SF
- UNIT G: 902 SF
- TOTAL 2 BEDROOM UNITS: 20 PER BUILDING

- TOTAL 26 UNIT BUILDINGS: 7

DUPLEX & 4-PLEX
- BUILDING STORIES / HEIGHT: 1 STORY / 19'-10 1/2"
- UNIT AREA: 1,665 GROSS SF
- BEDROOMS PER UNIT: 2
- BUILDING TYPES:
- DUPLEX BUILDINGS (2 UNITS):
- BUILDING GROUND FLOOR AREA: 3,330 GROSS SF
- TOTAL BUILDING AREA: 3,330 GROSS SF
- TOTAL BUILDINGS: 30

- 4-PLEX BUILDINGS (4 UNITS):
- BUILDING GROUND FLOOR AREA: 6,645 GROSS SF
- TOTAL BUILDING AREA: 6,645 GROSS SF
- TOTAL BUILDINGS: 8

TOWNHOMES
- BUILDING STORIES / HEIGHT: 3 STORIES / 42'-5 1/2"
- BUILDING GROUND FLOOR AREA: 3,200 GROSS SF
- TOTAL BUILDING AREA: 12,458 GROSS SF
- UNITS PER BUILDING: 4
- SINGLE UNIT AREA: 2,518 GROSS SF
- SINGLE UNIT BEDROOMS: 2 BEDROOMS + DEN

- TOTAL TOWNHOME BUILDINGS: 4

UNIT SUMMARY
- STACKED FLATS TOTAL UNITS: 194
- ONE STACKED FLAT BUILDING TO CONVERT 4 GROUND FLOOR UNITS INTO SPACE FOR OFFICE/LEASING/MAINTENANCE
- TOTAL DUPLEX/4-PLEX UNITS: 92
- TOTAL TOWNHOME UNITS: 16

- TOTAL UNITS: 302

AREA PLAN APPROVED DEVELOPMENT DENSITY

GROSS UNIT DENSITY = 3.76 UNITS/AC

NET UNIT DENSITY = 4.51 UNITS/AC

PROPOSED DEVELOPMENT DENSITY CALCULATIONS

GROSS UNIT DENSITY:
TOTAL UNITS 302 UNITS
GROSS AREA = 84.50 AC = 3.57 UNITS/AC

NET UNIT DENSITY:
TOTAL UNITS 302 UNITS
NET AREA = 70.58 AC = 4.28 UNITS/AC

LOT COVERAGE CALCULATIONS

GROUND FLOOR AREA:

STACKED FLATS	8 BLDG. X 11,042 SF =	88,336 SF
DUPLEX	30 BLDG. X 3,330 SF =	99,900 SF
4-PLEX	8 BLDG. X 6,645 SF =	53,160 SF
TOWNHOMES	4 BLDG. X 3,200 SF =	12,800 SF
TOTAL		254,196 SF

GFA LOT COVERAGE 254,196 SF / 3,074,464 NET AREA = 0.08

FLOOR AREA RATIO:

2-STORY STACKED FLAT	1 BLDG. X 22,202 SF =	22,202 SF
3-STORY STACKED FLAT	7 BLDG. X 33,362 SF =	233,534 SF
DUPLEX	30 BLDG. X 3,330 SF =	99,900 SF
4-PLEX	8 BLDG. X 6,645 SF =	53,160 SF
TOWNHOMES	4 BLDG. X 12,458 SF =	49,832 SF
TOTAL		458,628 SF

FAR LOT COVERAGE 458,628 SF / 3,074,464 NET AREA = 0.15

PARKING CALCULATIONS

LOADING AREAS TO BE WITHIN THE SURFACE PARKING LOTS

STACKED FLATS

REQUIRED:	194 units x 1.5 Spaces	=	291 Spaces
PROPOSED:	Garage 12 per bldg. x 8	=	96 Spaces
	Surface Parking	=	273 Spaces
	Total	=	369 Spaces
	Percent Required	=	127%

DUPLEX/4-PLEX

REQUIRED:	92 units X 1.5 Spaces	=	138 Spaces
PROPOSED:	Garage 2 per unit X 92 units	=	184 Spaces
	Surface Parking	=	26 Spaces
	Total	=	210 Spaces
	Percent Required	=	152%

CLUBHOUSE

BROOKWOOD'S AGE RESTRICTED COMMUNITY OF SIMILAR SIZE IN VAN BUREN TWP HAS BEEN USED TO PLAN FOR THE PARKING NEEDS OF THE CLUBHOUSE FOR THIS PROPOSED DEVELOPMENT. BROOKWOOD VAN BUREN TWP PROVIDED 18 SPACES FOR THE CLUBHOUSE PARKING.

PROPOSED:		=	23 Spaces

TOWNHOMES

REQUIRED:	16 units X 1.5 Spaces	=	24 Spaces
PROPOSED:	Garage 2 per unit X 16 units	=	32 Spaces
	Total	=	32 Spaces
	Percent Required	=	133%

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Manager:	JR
Designer:	JR / AR
Quality Control:	-
Section:	33
	T-02-S R-07-E

Professional Seal:

STATE OF MICHIGAN
JOSHUA D. RATLIFF SR.
ENGINEER
No. 6201065198
LICENSED PROFESSIONAL ENGINEER

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05/06/2025	SESC SUBMITTAL
05/13/2025	FSP LANDSCAPE REVISIONS
05/20/2025	STEEP SLOPE REVISIONS

Developed For:

GARNER PROPERTY MANAGEMENT

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OVERALL PLAN

BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

Date:	07.26.2024
Scale:	1"=100'
Sheet:	06
Project:	20249.00

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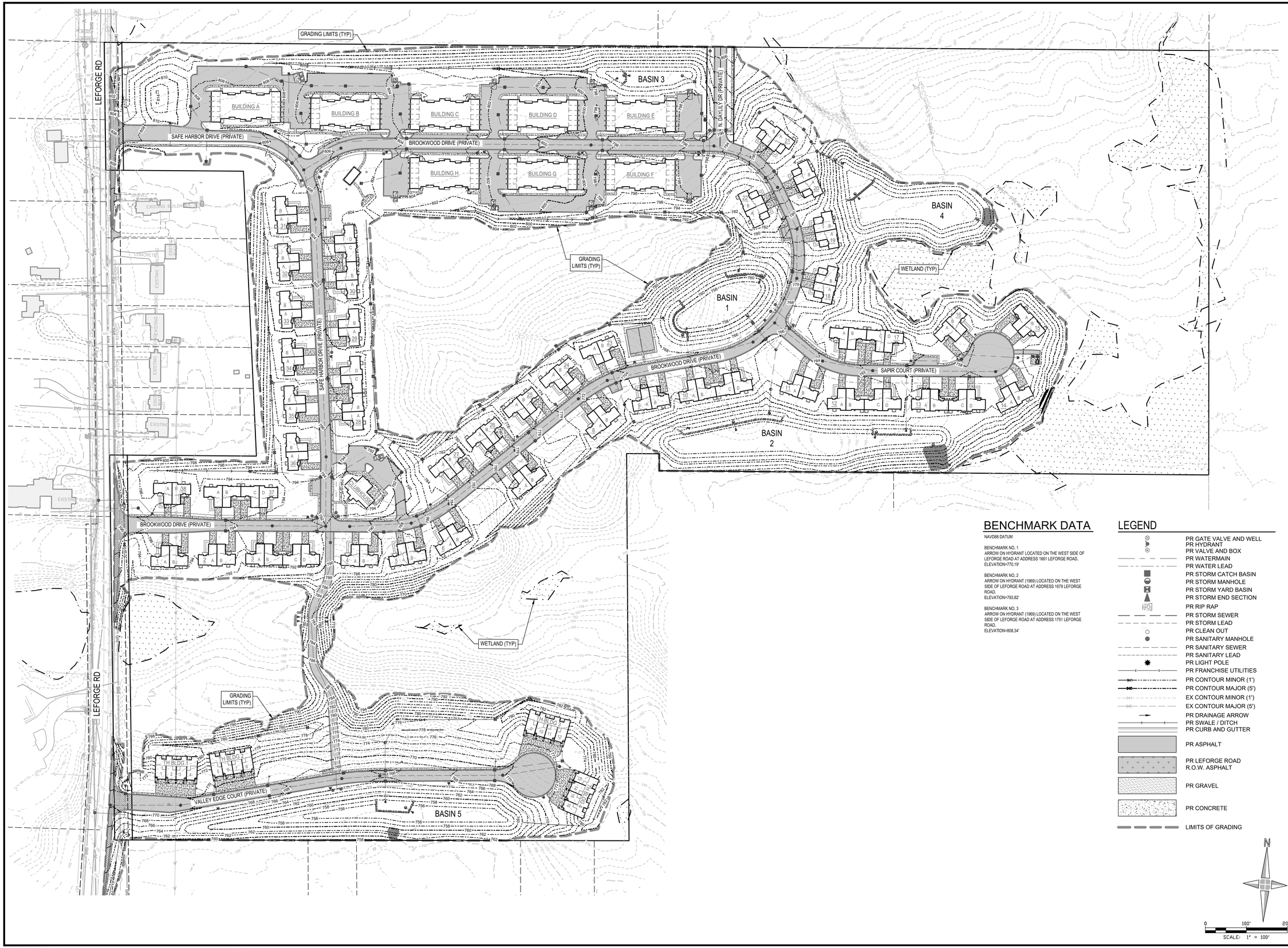

BENCHMARK DATA

NAVD88 DATUM

BENCHMARK NO. 1
ARROW ON HYDRANT LOCATED ON THE WEST SIDE OF LEFORGE ROAD AT ADDRESS 1661 LEFORGE ROAD.
ELEVATION=770.19'

BENCHMARK NO. 2
ARROW ON HYDRANT (1969) LOCATED ON THE WEST SIDE OF LEFORGE ROAD AT ADDRESS 1679 LEFORGE ROAD.
ELEVATION=793.82'

BENCHMARK NO. 3
ARROW ON HYDRANT (1969) LOCATED ON THE WEST SIDE OF LEFORGE ROAD AT ADDRESS 1751 LEFORGE ROAD.
ELEVATION=808.34'

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- PR STORM LEAD
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- PR DRAINAGE ARROW
- PR SWALE / DITCH
- PR CURB AND GUTTER
- PR ASPHALT
- PR LEFORGE ROAD R.O.W. ASPHALT
- PR GRAVEL
- PR CONCRETE
- LIMITS OF GRADING

N

0 100' 200'
SCALE: 1" = 100'

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OVERALL GRADING PLAN

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SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

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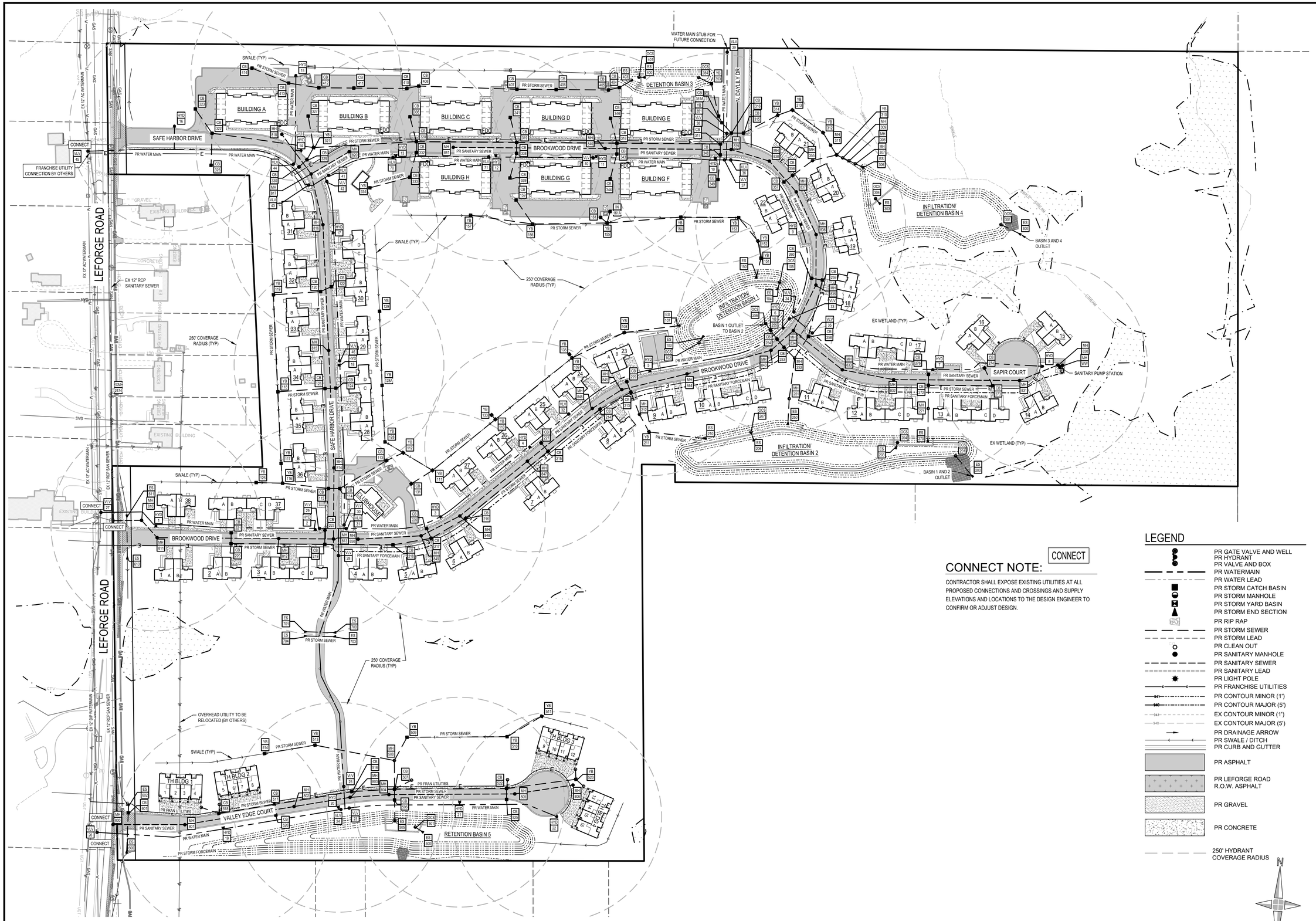

CONNECT NOTE:

CONNECT

CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AT ALL PROPOSED CONNECTIONS AND CROSSINGS AND SUPPLY ELEVATIONS AND LOCATIONS TO THE DESIGN ENGINEER TO CONFIRM OR ADJUST DESIGN.

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- PR GRAVEL
- PR CONCRETE
- 250' HYDRANT COVERAGE RADIUS

N

0 100' 200'

SCALE: 1" = 100'

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OVERALL UTILITY PLAN

BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

Date:	07.26.2024
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Sheet:	08
Project:	20249.00

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SCALE: 1" = 50'

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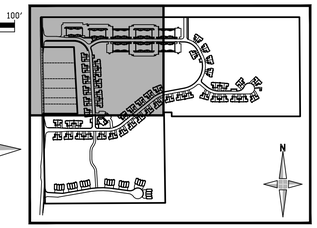

KEY MAP

NOT TO SCALE

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- PR GRAVEL
- PR CONCRETE
- PR STOP SIGN (R1-1)
- PR HANDICAP PARKING SIGN (R7-8)
- PR NO PARKING SIGN (R8-3a)
- PR DIVIDED ROAD SIGN (R4-7)
- PR SINGLE DUMPSTER ENCLOSURE
- PR DOUBLE DUMPSTER ENCLOSURE
- PR WOODCHIP PATH AMENITY
- EX WETLAND BOUNDARY
- PROPERTY BOUNDARY

TRAFFIC SIGNING:

ITEM	MMUTCD CODE	DESCRIPTION	SIZE
Ⓐ	R1-1	STOP SIGN	30"x30"
Ⓑ	R7-8	HANDICAP PARKING ONLY	12"x18"
Ⓒ	R8-3a	NO PARKING	24"x30"
Ⓓ	R4-7	DIVIDED ROAD	24"x30"
Ⓔ		EMERGENCY VEHICLES ONLY	24"x30"

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GENERAL PLAN

BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

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Sheet:	09
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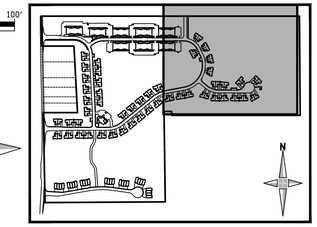

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GENERAL PLAN

BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

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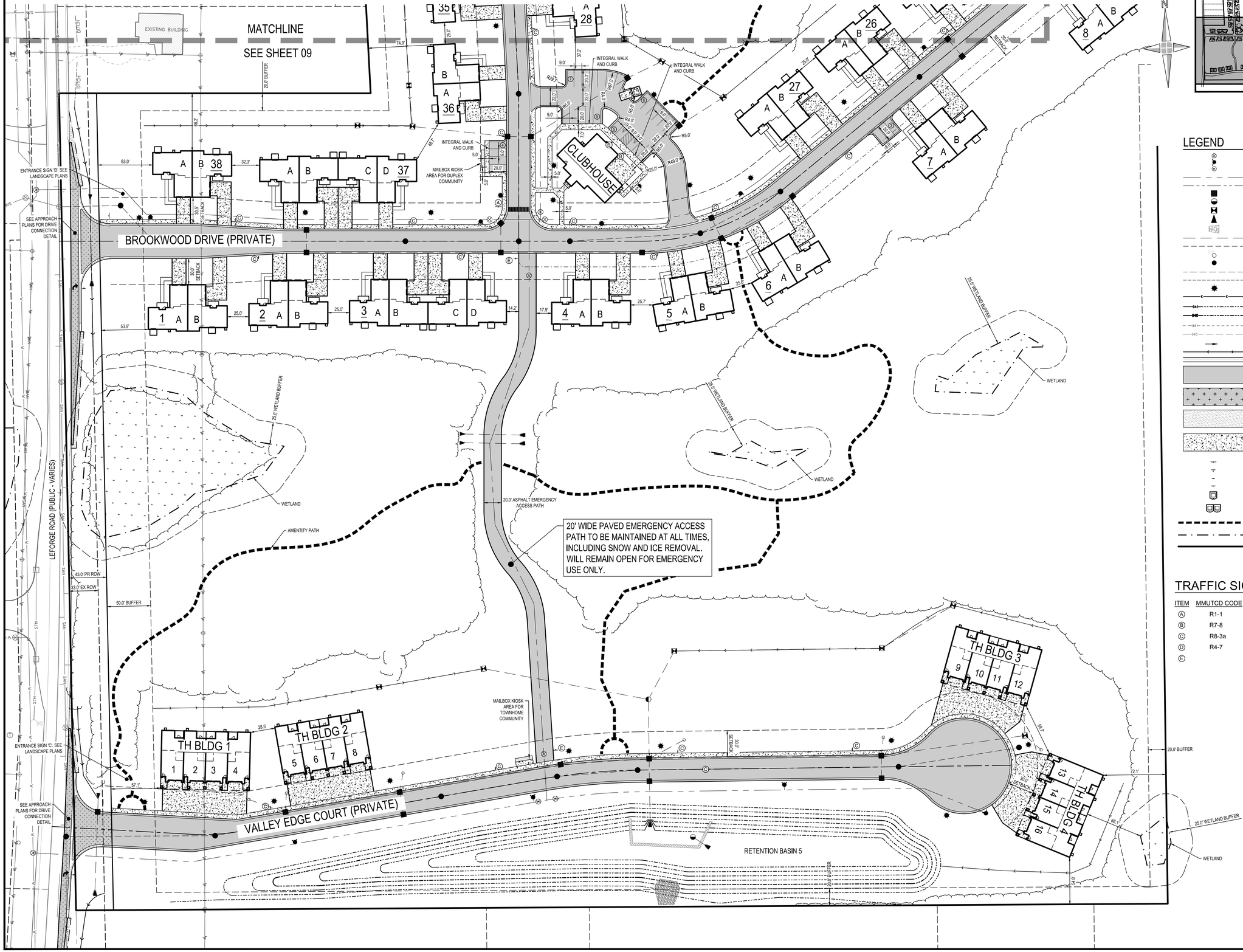

KEY MAP

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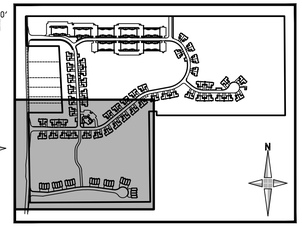

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- PR CONCRETE
- PR STOP SIGN (R1-1)
- PR HANDICAP PARKING SIGN (R7-8)
- PR NO PARKING SIGN (R8-3a)
- PR DIVIDED ROAD SIGN (R4-7)
- PR SINGLE DUMPSTER ENCLOSURE
- PR DOUBLE DUMPSTER ENCLOSURE
- PR WOODCHIP PATH AMENITY
- EX WETLAND BOUNDARY
- PROPERTY BOUNDARY

TRAFFIC SIGNING:

ITEM	MMUTCD CODE	DESCRIPTION	SIZE
(A)	R1-1	STOP SIGN	30"x30"
(B)	R7-8	HANDICAP PARKING ONLY	12"x18"
(C)	R8-3a	NO PARKING	24"x30"
(D)	R4-7	DIVIDED ROAD	24"x30"
(E)		EMERGENCY VEHICLES ONLY	24"x30"

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Section:	33
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ENGINEER
No. 6201065198
LICENSED PROFESSIONAL ENGINEER

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02/28/2025	WCWRC RESUBMITTAL
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05/06/2025	SESC SUBMITTAL
05/13/2025	FSP LANDSCAPE REVISIONS
05/20/2025	STEEP SLOPE REVISIONS

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GENERAL PLAN

BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

Date:	07.26.2024
Scale:	1"=50'
Sheet:	11
Project:	20249.00

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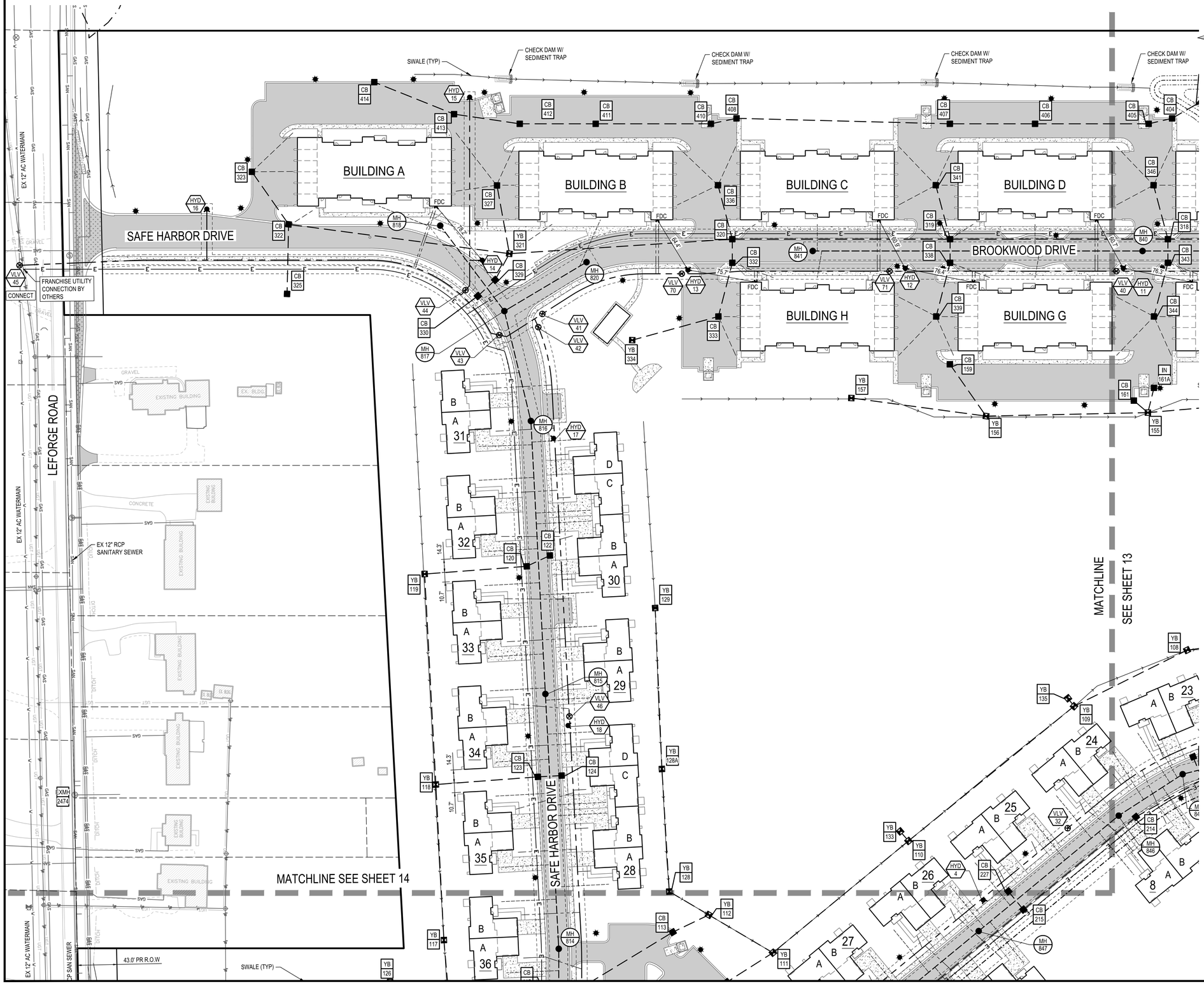
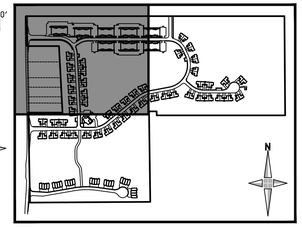


KEY MAP

NOT TO SCALE



LEGEND

- PR GATE VALVE AND WELL
- PR HYDRANT
- PR VALVE AND BOX
- PR WATERMAIN
- PR WATER LEAD
- PR STORM CATCH BASIN
- PR STORM MANHOLE
- PR STORM YARD BASIN
- PR STORM END SECTION
- PR RIP RAP
- PR STORM SEWER
- PR STORM LEAD
- PR CLEAN OUT
- PR SANITARY MANHOLE
- PR SANITARY SEWER
- PR SANITARY LEAD
- PR LIGHT POLE
- PR FRANCHISE UTILITIES
- PR CONTOUR MINOR (1')
- PR CONTOUR MAJOR (5')
- EX CONTOUR MINOR (1')
- EX CONTOUR MAJOR (5')
- PR DRAINAGE ARROW
- PR SWALE / DITCH
- PR CURB AND GUTTER

NOTES:

1. SEE SHEET 57 FOR UTILITY CALCULATIONS
2. SEE SHEET 15 FOR UTILITY DIMENSIONAL PLANS

CONNECT NOTE: CONNECT

CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AT ALL PROPOSED CONNECTIONS AND CROSSINGS AND SUPPLY ELEVATIONS AND LOCATIONS TO THE DESIGN ENGINEER TO CONFIRM OR ADJUST DESIGN.

EASEMENT NOTES

1. WATERMAIN EASEMENT WIDTH 12', UNLESS OTHERWISE NOTED
2. SANITARY SEWER & FORCEMAIN EASEMENT WIDTH 20' UNLESS OTHERWISE NOTED
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SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

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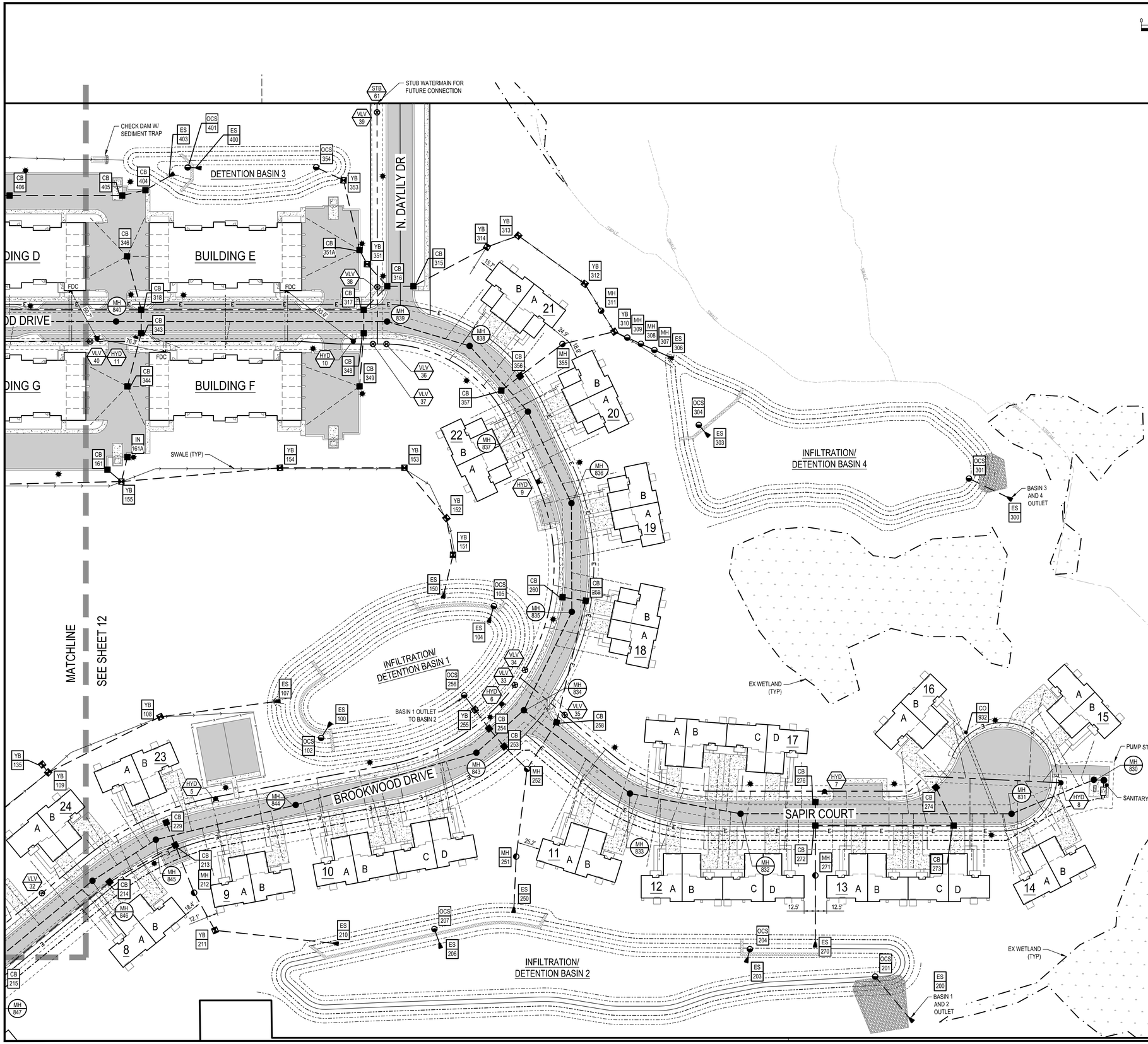
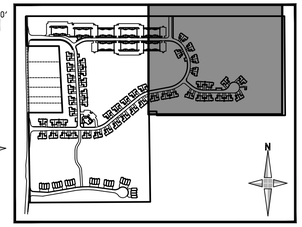


0 50' 100'
SCALE: 1" = 50'



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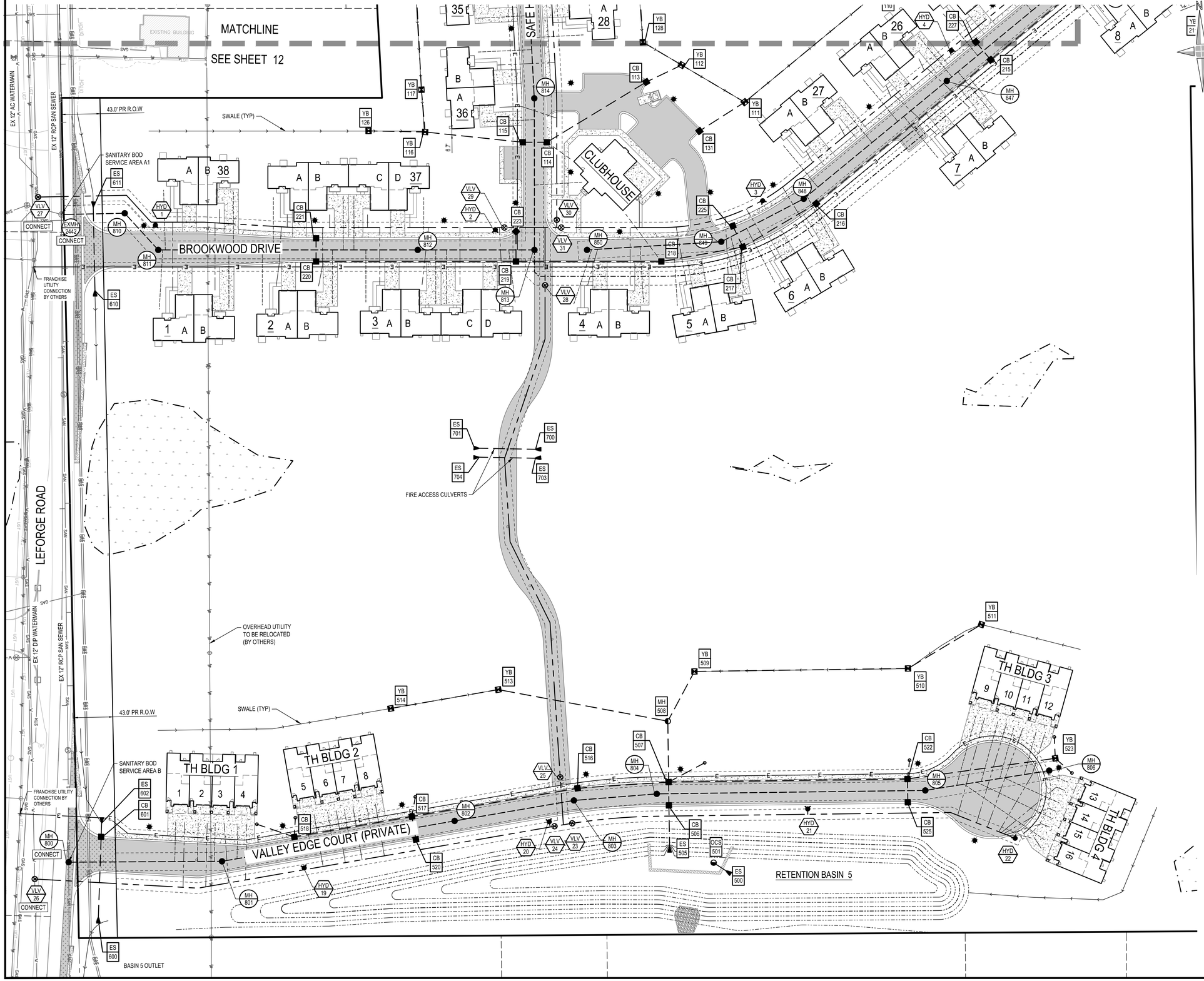

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UTILITY PLAN

BROOKWOOD SUPERIOR TOWNSHIP

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WASHTENAW COUNTY
MICHIGAN

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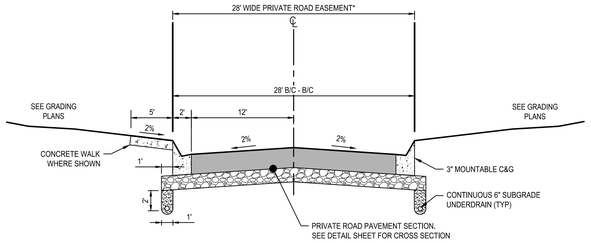
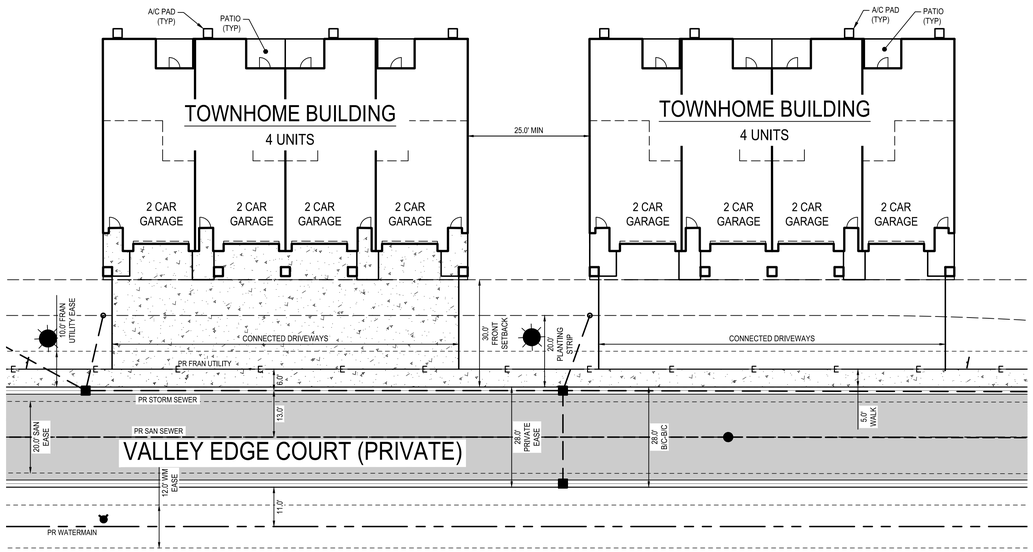


* PRIVATE EASEMENT FOR N DAYLILY DR 66' WIDE

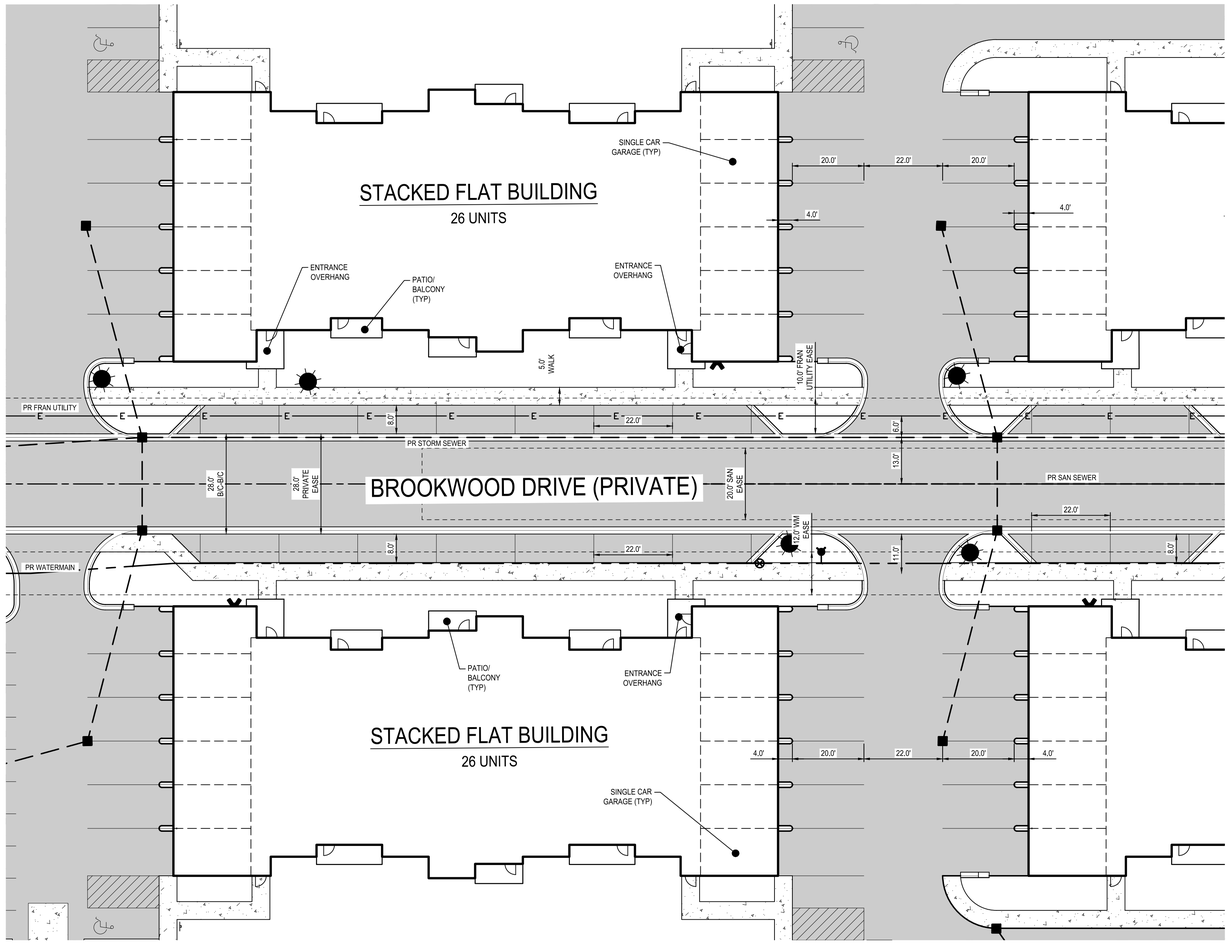
PRIVATE ROAD CROSS SECTION

NOT TO SCALE



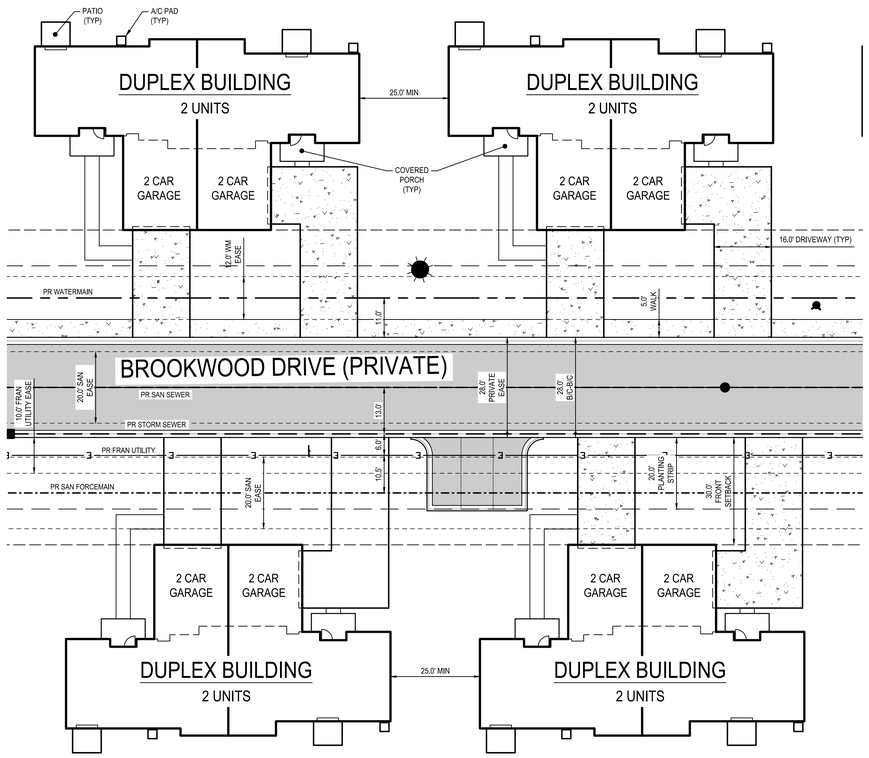
TOWNHOME TYPICAL LAYOUT

SCALE: 1" = 20'



STACKED FLATS TYPICAL LAYOUT

SCALE: 1" = 20'



ATTACHED UNIT TYPICAL LAYOUT

SCALE: 1" = 20'

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DIMENSIONAL STANDARDS PLAN

BROOKWOOD SUPERIOR TOWNSHIP

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WASHTENAW COUNTY
MICHIGAN

Date:	07.26.2024
Scale:	SEE SHEET
Sheet:	15
Project:	20249.00

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BENCHMARK DATA

NAVD88 DATUM

BENCHMARK NO. 1
ARROW ON HYDRANT LOCATED ON THE WEST SIDE OF LEFORGE ROAD AT ADDRESS 1661 LEFORGE ROAD.
ELEVATION=770.19'

BENCHMARK NO. 2
ARROW ON HYDRANT (1969) LOCATED ON THE WEST SIDE OF LEFORGE ROAD AT ADDRESS 1679 LEFORGE ROAD.
ELEVATION=793.82'

BENCHMARK NO. 3
ARROW ON HYDRANT (1969) LOCATED ON THE WEST SIDE OF LEFORGE ROAD AT ADDRESS 1751 LEFORGE ROAD.
ELEVATION=808.34'

LEGEND

- PR GATE VALVE AND WELL
- PR HYDRANT
- PR VALVE AND BOX
- PR WATERMAIN
- PR WATER LEAD
- PR STORM CATCH BASIN
- PR STORM MANHOLE
- PR STORM YARD BASIN
- PR STORM END SECTION
- PR RIP RAP
- PR STORM SEWER
- PR STORM LEAD
- PR CLEAN OUT
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- PR CONTOUR MINOR (1')
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- EX CONTOUR MINOR (1')
- EX CONTOUR MAJOR (5')
- PR DRAINAGE ARROW
- PR SWALE / DITCH
- PR CURB AND GUTTER
- LIMITS OF GRADING

SPOT GRADE LEGEND

900.00	PR SPOT ELEVATION
900.00 FG	PR FINISH GRADE
900.00 T/C	PR TOP OF CURB ELEVATION
900.00 G	PR GUTTER ELEVATION
900.00 TP	PR TOP OF PAVEMENT ELEVATION
900.00 T/W	PR TOP OF WALK ELEVATION
900.00 T/W F	PR TOP OF WALK ELEVATION FLUSH W/ PAVEMENT
900.00 HP	PR HIGH POINT ELEVATION
900.00 RIM	PR RIM ELEVATION
900.00 TWALL	PR TOP OF WALL ELEVATION
900.00 BWALL	PR BOTTOM OF WALL ELEVATION
900.00 M	PR MATCH EXISTING ELEVATION
900.00 EX	EX SPOT ELEVATION
F.F.E. 900.00	PR FINISHED FLOOR ELEVATION

N

0 30' 60'
SCALE: 1" = 30'

KEY MAP
NOT TO SCALE

BUILDING A
F.F.E. 809.37

BUILDING B
F.F.E. 806.87

BUILDING C
F.F.E. 804.37

BUILDING H
F.F.E. 804.37

F.F.E. 806.09
F.F.E. 804.10
F.F.E. 804.87

MATCHLINE SEE SHEET 17

MATCHLINE SEE SHEET 19

EXISTING BUILDING

EX. BLDG.

GRAVEL

CONCRETE

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GRADING PLAN

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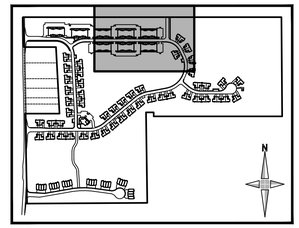

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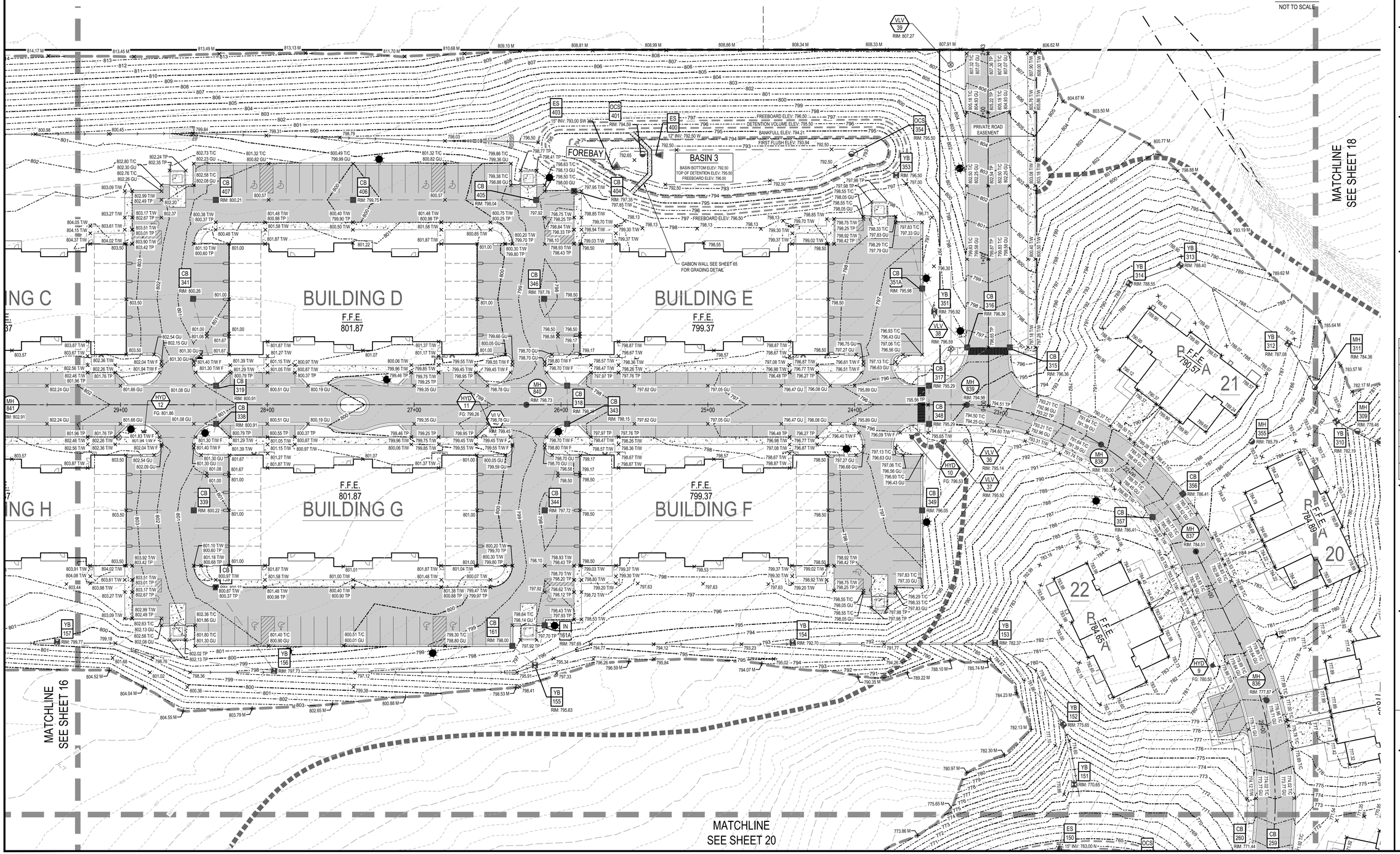
NOT TO SCALE



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(734) 287-6619

GRADING PLAN

BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

Date:	07.26.2024
Scale:	1"=30'
Sheet:	17
Project:	20249.00

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BENCHMARK DATA

NAVD88 DATUM

BENCHMARK NO. 1
ARROW ON HYDRANT LOCATED ON THE WEST SIDE OF LEFORGE ROAD AT ADDRESS 1661 LEFORGE ROAD.
ELEVATION=770.19'

BENCHMARK NO. 2
ARROW ON HYDRANT (1969) LOCATED ON THE WEST SIDE OF LEFORGE ROAD AT ADDRESS 1679 LEFORGE ROAD.
ELEVATION=793.82'

BENCHMARK NO. 3
ARROW ON HYDRANT (1969) LOCATED ON THE WEST SIDE OF LEFORGE ROAD AT ADDRESS 1751 LEFORGE ROAD.
ELEVATION=808.34'

LEGEND

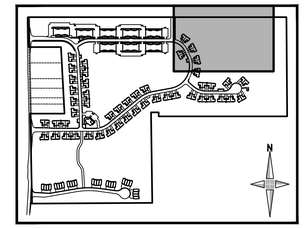
- PR GATE VALVE AND WELL
- PR HYDRANT
- PR VALVE AND BOX
- PR WATERMAIN
- PR WATER LEAD
- PR STORM CATCH BASIN
- PR STORM MANHOLE
- PR STORM YARD BASIN
- PR STORM END SECTION
- PR RIP RAP
- PR STORM SEWER
- PR STORM LEAD
- PR CLEAN OUT
- PR SANITARY MANHOLE
- PR SANITARY SEWER
- PR SANITARY LEAD
- PR LIGHT POLE
- PR FRANCHISE UTILITIES
- PR CONTOUR MINOR (1')
- PR CONTOUR MAJOR (5')
- EX CONTOUR MINOR (1')
- EX CONTOUR MAJOR (5')
- PR DRAINAGE ARROW
- PR SWALE / DITCH
- PR CURB AND GUTTER
- LIMITS OF GRADING

SPOT GRADE LEGEND

- 900.00 — PR SPOT ELEVATION
- 900.00 FG — PR FINISH GRADE
- 900.00 T/C — PR TOP OF CURB ELEVATION
- 900.00 G — PR GUTTER ELEVATION
- 900.00 TP — PR TOP OF PAVEMENT ELEVATION
- 900.00 T/W — PR TOP OF WALK ELEVATION
- 900.00 T/W F — PR TOP OF WALK ELEVATION FLUSH W/ PAVEMENT
- 900.00 HP — PR HIGH POINT ELEVATION
- 900.00 RIM — PR RIM ELEVATION
- 900.00 TWALL — PR TOP OF WALL ELEVATION
- 900.00 BWALL — PR BOTTOM OF WALL ELEVATION
- 900.00 M — PR MATCH EXISTING ELEVATION
- 900.00 EX — EX SPOT ELEVATION
- F.F.E. 900.00 — PR FINISHED FLOOR ELEVATION

N

0 30' 60'
SCALE: 1" = 30'



KEY MAP
NOT TO SCALE

MATCHLINE
SEE SHEET 17

MATCHLINE
SEE SHEET 21

FOREBAY

GABION WALL SEE SHEET 67
FOR GRADING DETAIL

BASIN 4
INFILTRATION BASIN: 763.00 - 764.00
BOTTOM OF DETENTION ELEV: 763.00
REQUIRED DETENTION ELEV: 765.66
FREEBOARD ELEV: 766.66

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05/20/2025	STEEP SLOPE REVISIONS

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SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

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LEGEND

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- PR WATERMAIN
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900.00 T/C	PR TOP OF CURB ELEVATION
900.00 G	PR GUTTER ELEVATION
900.00 TP	PR TOP OF PAVEMENT ELEVATION
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900.00 T/W F	PR TOP OF WALK ELEVATION FLUSH W/ PAVEMENT
900.00 HP	PR HIGH POINT ELEVATION
900.00 RIM	PR RIM ELEVATION
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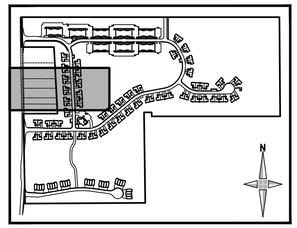

KEY MAP
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SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

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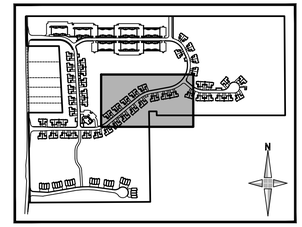

MATCHLINE
SEE SHEET 17

MATCHLINE
SEE SHEET 19

MATCHLINE
SEE SHEET 21

MATCHLINE
SEE SHEET 23

BASIN 1
INFILTRATION BASIN: 758.00 - 761.00
BOTTOM OF DETENTION ELEV: 761.00
REQUIRED DETENTION ELEV: 763.68
FREEBOARD ELEV: 764.68

BASIN 2
INFILTRATION BASIN: 753.00 - 751.00
BOTTOM OF DETENTION ELEV: 753.00
REQUIRED DETENTION ELEV: 754.76
FREEBOARD ELEV: 755.76

FOREBAY 1A
FOREBAY 1B
FOREBAY 2A

GABION WALL SEE SHEET 60 FOR GRADING DETAIL
GABION WALL SEE SHEET 63 FOR GRADING DETAIL

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SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

Date:	07.26.2024
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SPOT GRADE LEGEND

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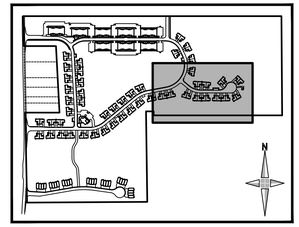

KEY MAP
NOT TO SCALE

MATCHLINE
SEE SHEET 18

MATCHLINE
SEE SHEET 20

BASIN 1
BASIN: 758.00 - 761.00
TENTION ELEV: 761.00
TENTION ELEV: 763.68
RD ELEV: 764.68

BASIN 2
INFILTRATION BASIN: 753.00 - 751.00
BOTTOM OF DETENTION ELEV: 753.00
REQUIRED DETENTION ELEV: 754.76
FREEBOARD ELEV: 755.76

FOREBAY 1B
FOREBAY 2A
FOREBAY 2B

GABION WALL SEE SHEET 60 FOR GRADING DETAIL
GABION WALL SEE SHEET 63 FOR GRADING DETAIL
TIERED BOULDER WALLS SEE SHEET 72 FOR DETAIL

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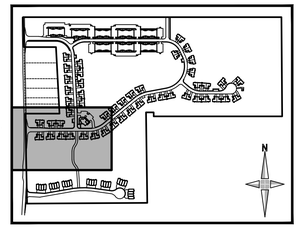

MATCHLINE SEE SHEET 19

MATCHLINE SEE SHEET 23

MATCHLINE SEE SHEET 24

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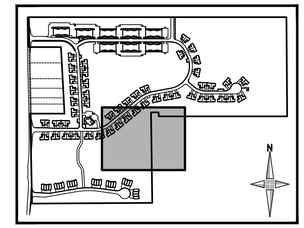
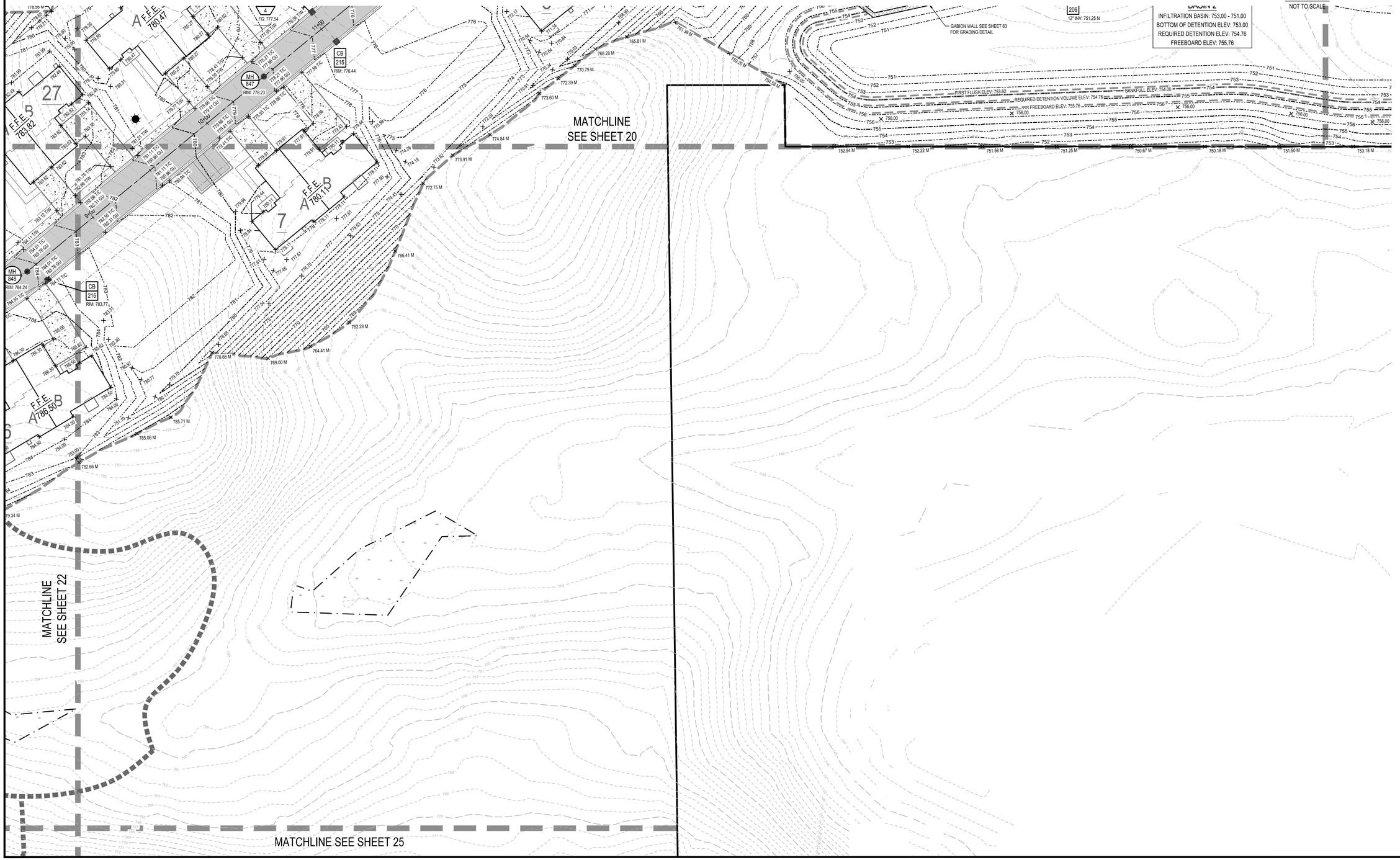
N

0 30' 60'
SCALE: 1" = 30'



KEY MAP
NOT TO SCALE



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JOSHUA D. RATLIFF SR.
ENGINEER
No. 6201065198
LICENSED PROFESSIONAL ENGINEER

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05/20/2025	STEEP SLOPE REVISIONS

Developed For:

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GRADING PLAN

BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

Date:	07.26.2024
Scale:	1"=30'
Sheet:	23
Project:	20249.00

H:\20\20200\20249.00 Brookwood Superior Twp\Design\CAD\Engineering Plans\25 GRADING PLAN.dwg

BENCHMARK DATA

NAVD88 DATUM

BENCHMARK NO. 1
ARROW ON HYDRANT LOCATED ON THE WEST SIDE OF LEFORGE ROAD AT ADDRESS 1661 LEFORGE ROAD.
ELEVATION=770.19'

BENCHMARK NO. 2
ARROW ON HYDRANT (1969) LOCATED ON THE WEST SIDE OF LEFORGE ROAD AT ADDRESS 1679 LEFORGE ROAD.
ELEVATION=793.82'

BENCHMARK NO. 3
ARROW ON HYDRANT (1969) LOCATED ON THE WEST SIDE OF LEFORGE ROAD AT ADDRESS 1751 LEFORGE ROAD.
ELEVATION=808.34'

LEGEND

- PR GATE VALVE AND WELL
- PR HYDRANT
- PR VALVE AND BOX
- PR WATERMAIN
- PR WATER LEAD
- PR STORM CATCH BASIN
- PR STORM MANHOLE
- PR STORM YARD BASIN
- PR STORM END SECTION
- PR RIP RAP
- PR STORM SEWER
- PR STORM LEAD
- PR CLEAN OUT
- PR SANITARY MANHOLE
- PR SANITARY SEWER
- PR SANITARY LEAD
- PR LIGHT POLE
- PR FRANCHISE UTILITIES
- PR CONTOUR MINOR (1')
- PR CONTOUR MAJOR (5')
- EX CONTOUR MINOR (1')
- EX CONTOUR MAJOR (5')
- PR DRAINAGE ARROW
- PR SWALE / DITCH
- PR CURB AND GUTTER
- LIMITS OF GRADING

SPOT GRADE LEGEND

900.00	PR SPOT ELEVATION
900.00 FG	PR FINISH GRADE
900.00 T/C	PR TOP OF CURB ELEVATION
900.00 G	PR GUTTER ELEVATION
900.00 TP	PR TOP OF PAVEMENT ELEVATION
900.00 T/W	PR TOP OF WALK ELEVATION
900.00 T/W F	PR TOP OF WALK ELEVATION FLUSH W/ PAVEMENT
900.00 HP	PR HIGH POINT ELEVATION
900.00 RIM	PR RIM ELEVATION
900.00 TWALL	PR TOP OF WALL ELEVATION
900.00 BWALL	PR BOTTOM OF WALL ELEVATION
900.00 M	PR MATCH EXISTING ELEVATION
900.00 EX	EX SPOT ELEVATION
F.F.E. 900.00	PR FINISHED FLOOR ELEVATION

N

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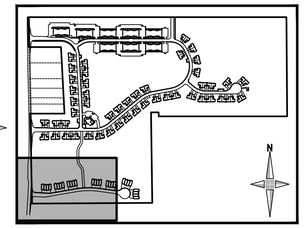

MATCHLINE SEE SHEET 22

MATCHLINE SEE SHEET 25

TH BLDG 1
F.F.E.
772.03
1 2 3 4

TH BLDG 2
F.F.E.
770.77
5 6 7 8

BASIN 5
BOTTOM OF BASIN ELEV: 756.00
REQUIRED RETENTION ELEV: 760.67
FREEBOARD ELEV: 761.67

SEE SHEET 69 FOR BASIN 5 GRADING DETAIL

FOREBAY

FIRST FLUSH ELEV: 756.91
BANKFULL ELEV: 757.16
REQUIRED RETENTION VOLUME ELEV: 760.67
FREEBOARD ELEV: 761.67

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- PR RIP RAP
- PR STORM SEWER
- PR STORM LEAD
- PR CLEAN OUT
- PR SANITARY MANHOLE
- PR SANITARY SEWER
- PR SANITARY LEAD
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- LIMITS OF GRADING

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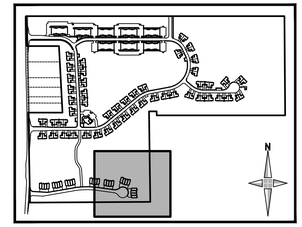

KEY MAP
NOT TO SCALE

MATCHLINE
SEE SHEET 23

MATCHLINE
SEE SHEET 24

TH BLDG 3
F.F.E. 773.45
9 10 11 12

TH BLDG 4
F.F.E. 773.44
13 14 15 16

YB 511 RIM: 779.54
YB 510 RIM: 779.00
YB 509 RIM: 775.15
YB 523 RIM: 772.62
MH 508 RIM: 773.76
MH 805 RIM: 769.91
MH 806 RIM: 772.18
CB 522 RIM: 769.36
CB 525 RIM: 769.36
CB 506 RIM: 765.82
OCS 501 RIM: 758.28
ES 505 24" INV: 756.20 N
ES 500 12" INV: 756.00 NW
HYD 21 FG: 767.51
HYD 22 FG: 771.22

BASIN 5
BOTTOM OF BASIN ELEV: 756.00
REQUIRED RETENTION ELEV: 760.67
FREEBOARD ELEV: 761.67

FREEBOARD ELEV: 761.67
REQUIRED RETENTION VOLUME ELEV: 760.67
BANKFULL ELEV: 757.16
FIRST FLUSH ELEV: 756.91

SEE SHEET 69 FOR BASIN 5 GRADING DETAIL

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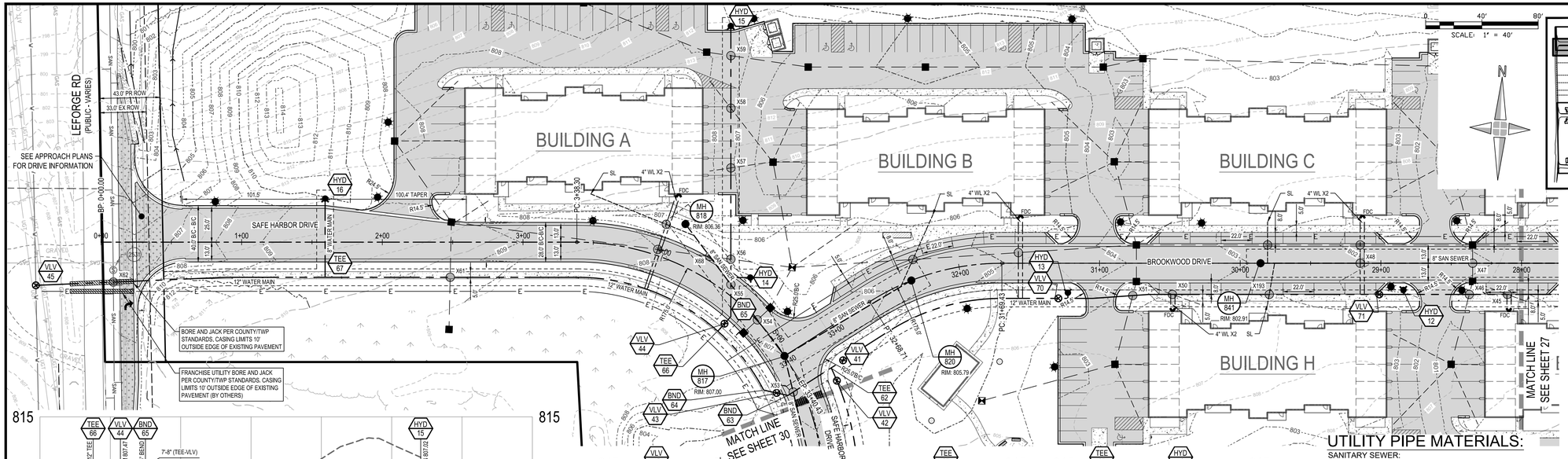
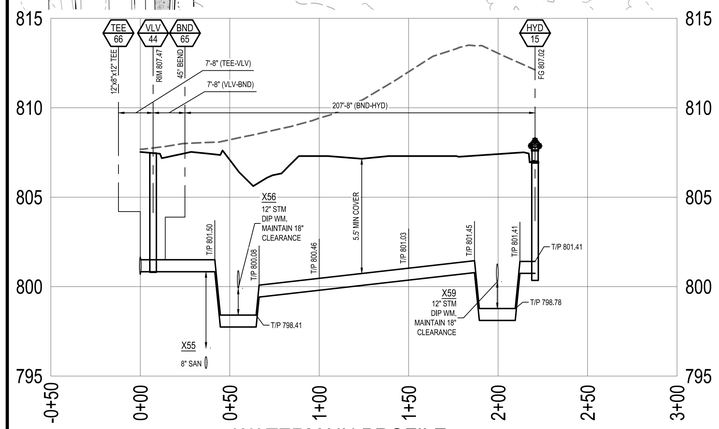
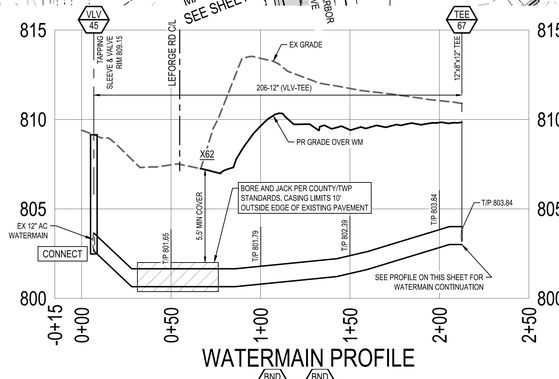
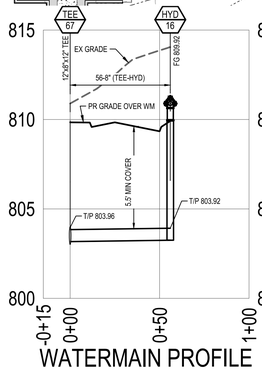
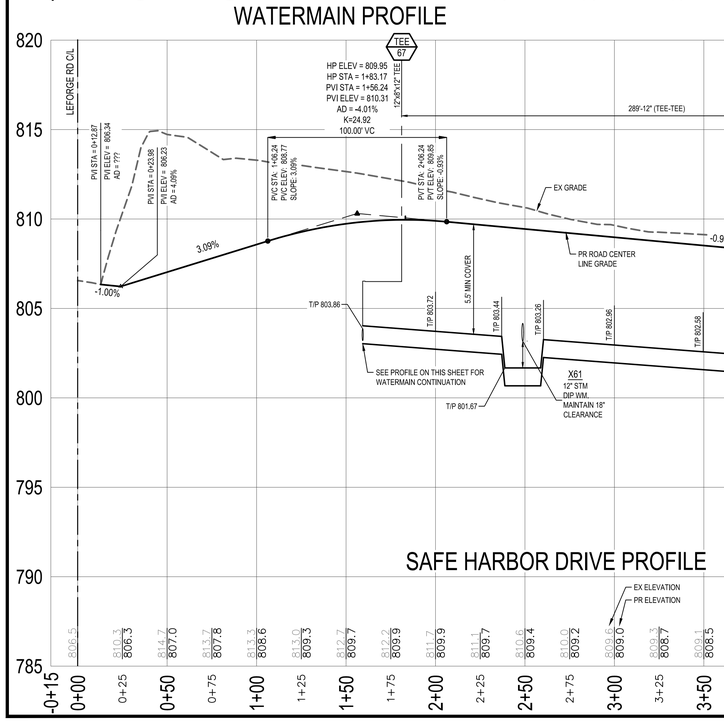
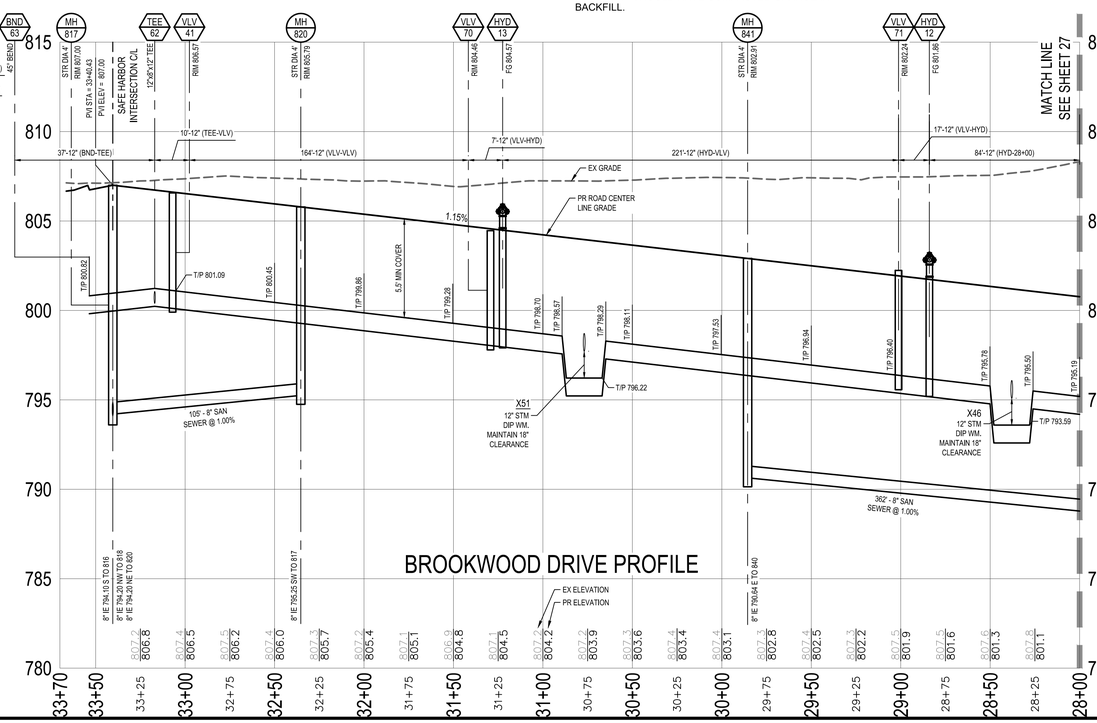






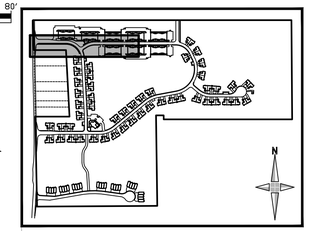






KEY MAP

NOT TO SCALE



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- PR CURB AND GUTTER
- PR ASPHALT
- PR LEFORGE ROAD R.O.W. ASPHALT
- PR GRAVEL
- PR CONCRETE

UTILITY PIPE MATERIALS:

SANITARY SEWER:
ABS OR PVC TRUSS PIPE, SDR 26 PIPE, OR APPROVED EQUAL

SANITARY LEAD, SL:
6" PVC SDR 23.5, OR APPROVED EQUAL

WATERMAIN:
DIP CL 54, OR APPROVED EQUAL

WATER LEAD, WL:
TOWN HOME, DUPLEX, & QUADPLEX WATER LEADS
1" DIA - COPPER TYPE 'K', OR APPROVED EQUAL
STACKED FLAT WATER LEADS
4" DIA - DIP CL 54, OR APPROVED EQUAL

NOTES:

1. CGM - COMPACTED CL II GRANULAR MATERIAL
2. AT WATERMAIN CROSSINGS, ONE FULL LENGTH OF WATER PIPE SHALL BE LOCATED SO BOTH JOINTS WILL BE AS FAR FROM THE SEWER AS POSSIBLE.
3. ALL WATERMAIN SHALL BE INSTALLED AT A MINIMUM DEPTH OF 5.5'.
4. DIMENSIONS TO CURBS ARE TO GUTTER LINE, UNLESS OTHERWISE NOTED. CURB RADII DIMENSIONS ARE TO BACK OF CURB, UNLESS OTHERWISE NOTED.
5. SEE SHEET 12 FOR ROAD CROSS SECTION
6. SEE SHEET 52 FOR UTILITY CROSSING CHART
7. SEE SHEET 52 FOR SANITARY LEAD CHART
8. ANY WATER MAIN, SANITARY SEWER AND STRUCTURES THAT ARE UNDER OR WITHIN A 1-ON-1 INFLUENCE OF PAVEMENT SHOULD HAVE COMPACTED GRANULAR BACKFILL.

CONNECT NOTE: CONNECT

CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AT ALL PROPOSED CONNECTIONS AND CROSSINGS AND SUPPLY ELEVATIONS AND LOCATIONS TO THE DESIGN ENGINEER TO CONFIRM OR ADJUST DESIGN.

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MICHIGAN

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Project:	20249.00

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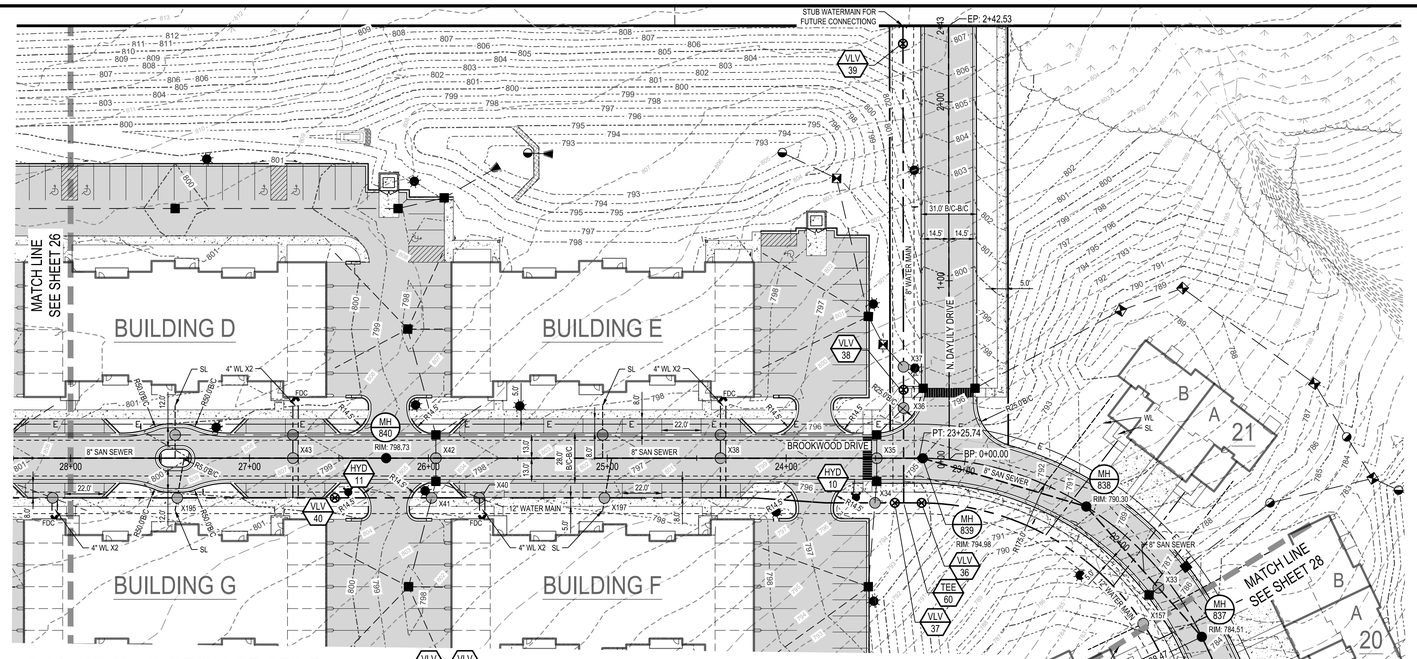

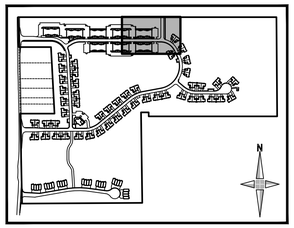

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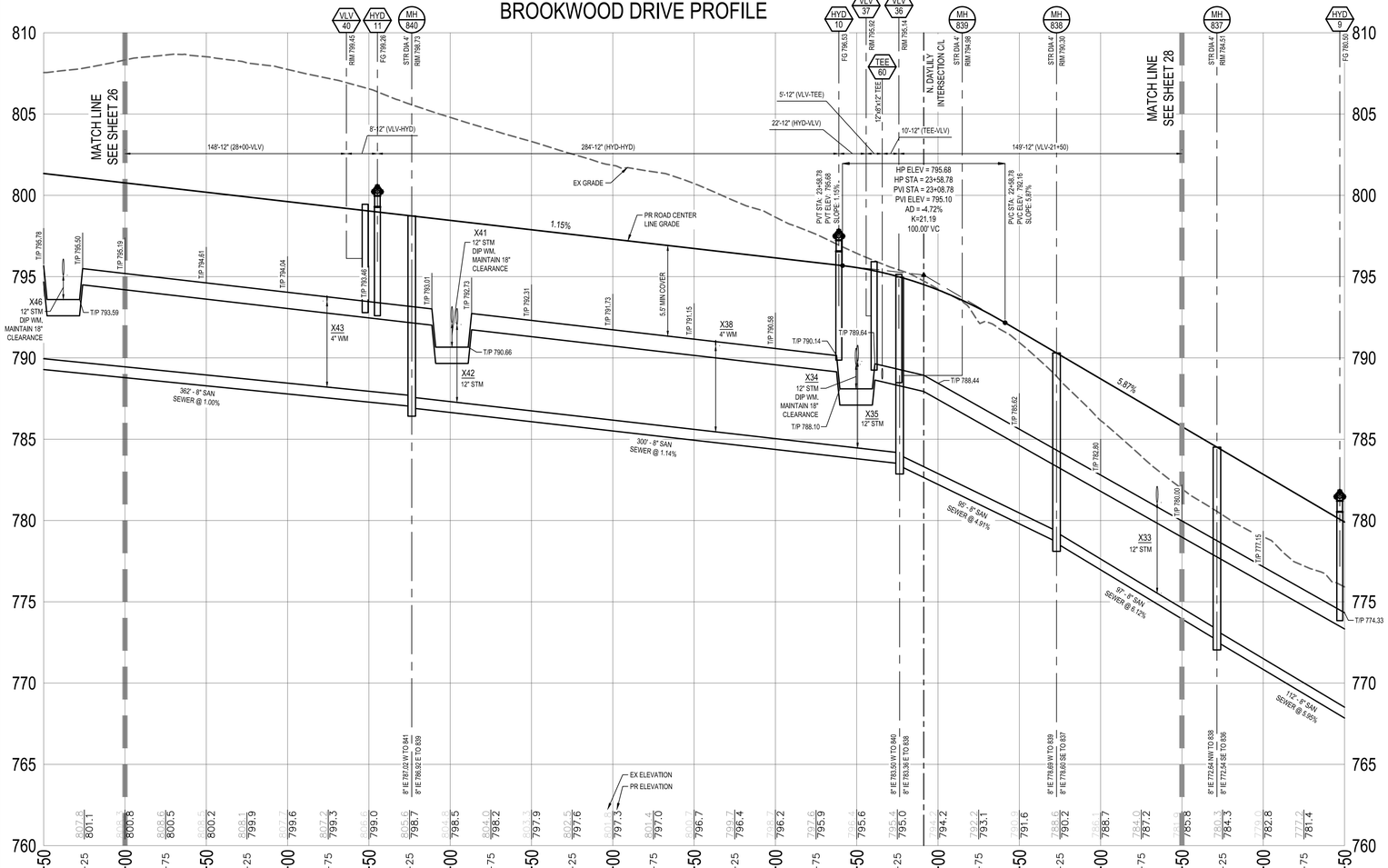
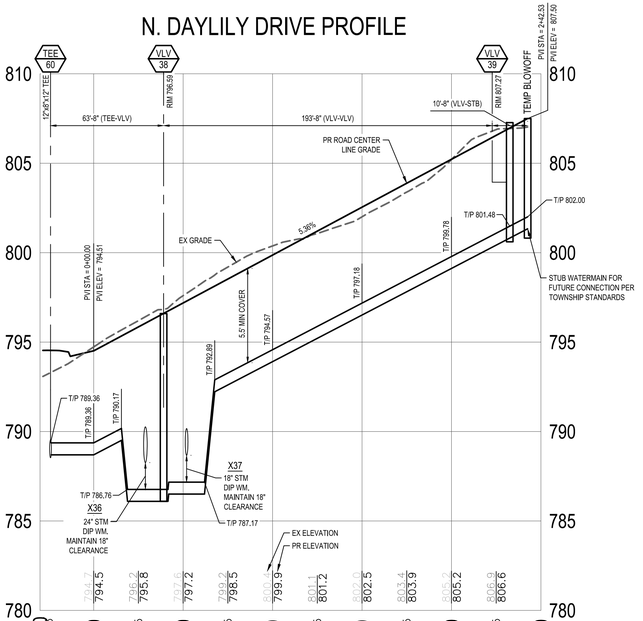
BROOKWOOD DRIVE PROFILE



N. DAYLILY DRIVE PROFILE



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MICHIGAN

Date:	07.26.2024
Scale:	1"=40'
Sheet:	27
Project:	20249.00

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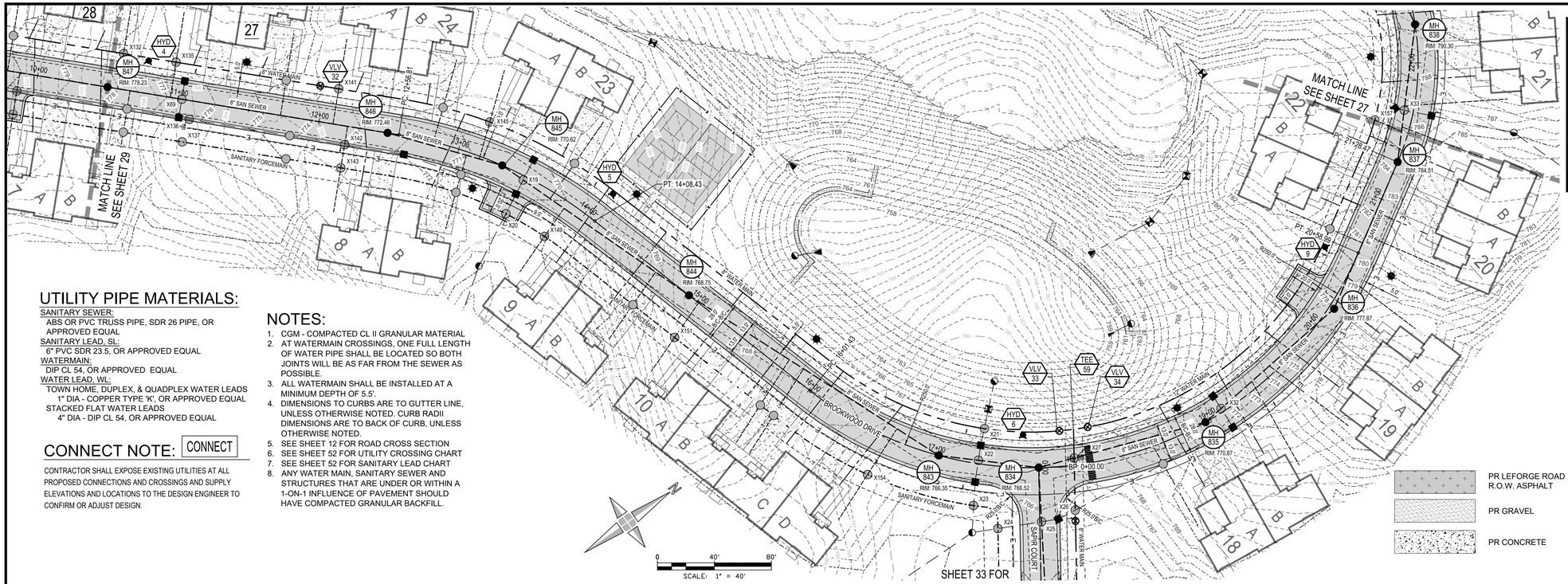
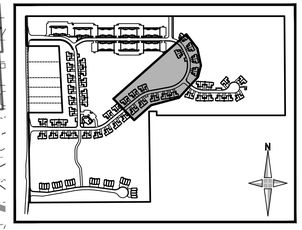


KEY MAP

NOT TO SCALE



LEGEND

- PR GATE VALVE AND WELL
- PR HYDRANT
- PR VALVE AND BOX
- PR WATERMAIN
- PR WATER LEAD
- PR STORM CATCH BASIN
- PR STORM MANHOLE
- PR STORM YARD BASIN
- PR STORM END SECTION
- PR RIP RAP
- PR STORM SEWER
- PR STORM LEAD
- PR CLEAN OUT
- PR SANITARY MANHOLE
- PR SANITARY SEWER
- PR SANITARY LEAD
- PR LIGHT POLE
- PR FRANCHISE UTILITIES
- PR CONTOUR MINOR (1')
- PR CONTOUR MAJOR (5')
- EX CONTOUR MINOR (1')
- EX CONTOUR MAJOR (5')
- PR DRAINAGE ARROW
- PR SWALE / DITCH
- PR CURB AND GUTTER
- PR LEFORGE ROAD R.O.W. ASPHALT
- PR GRAVEL
- PR CONCRETE
- PR ASPHALT

UTILITY PIPE MATERIALS:

SANITARY SEWER:
ABS OR PVC TRUSS PIPE, SDR 26 PIPE, OR APPROVED EQUAL
SANITARY LEAD, SL:
6" PVC SDR 23.5, OR APPROVED EQUAL
WATERMAIN:
DIP CL 54, OR APPROVED EQUAL
WATER LEAD, WL:
TOWN HOME, DUPLEX, & QUADPLEX WATER LEADS
1" DIA - COPPER TYPE 'K', OR APPROVED EQUAL
STACKED FLAT WATER LEADS
4" DIA - DIP CL 54, OR APPROVED EQUAL

CONNECT NOTE: CONNECT

CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AT ALL PROPOSED CONNECTIONS AND CROSSINGS AND SUPPLY ELEVATIONS AND LOCATIONS TO THE DESIGN ENGINEER TO CONFIRM OR ADJUST DESIGN.

NOTES:

1. CGM - COMPACTED CL II GRANULAR MATERIAL
2. AT WATERMAIN CROSSINGS, ONE FULL LENGTH OF WATER PIPE SHALL BE LOCATED SO BOTH JOINTS WILL BE AS FAR FROM THE SEWER AS POSSIBLE.
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6. SEE SHEET 52 FOR UTILITY CROSSING CHART
7. SEE SHEET 52 FOR SANITARY LEAD CHART
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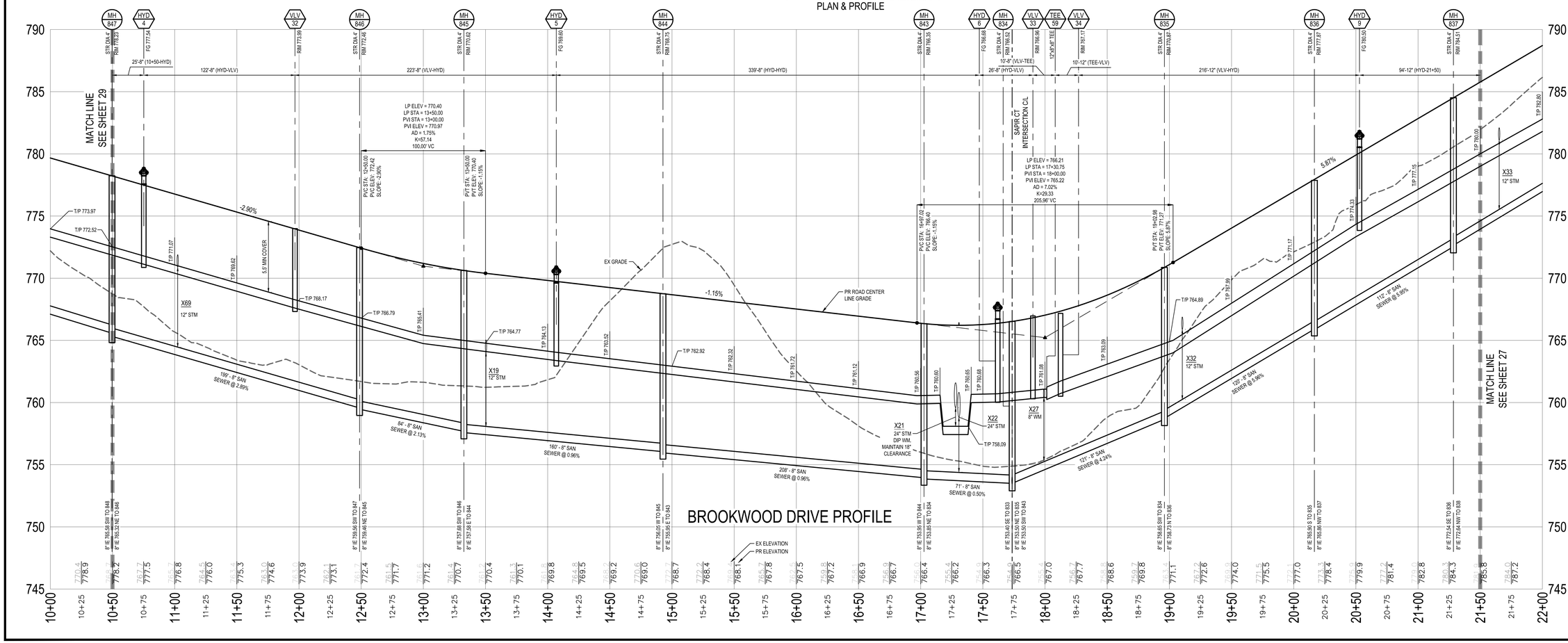
SHEET 33 FOR PLAN & PROFILE



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Professional Seal:

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JOSHUA D. RATLIFF SR.
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No. 6201065198
LICENSED PROFESSIONAL ENGINEER

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Developed For:

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ROAD, SAN, WM PLAN & PROFILE

BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

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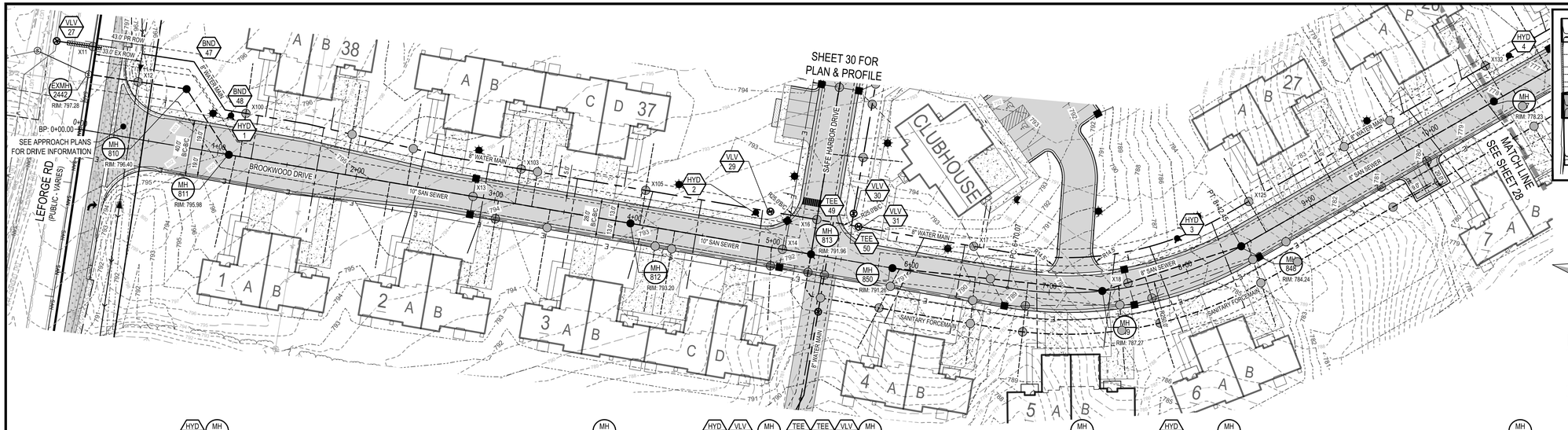
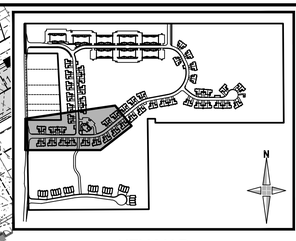
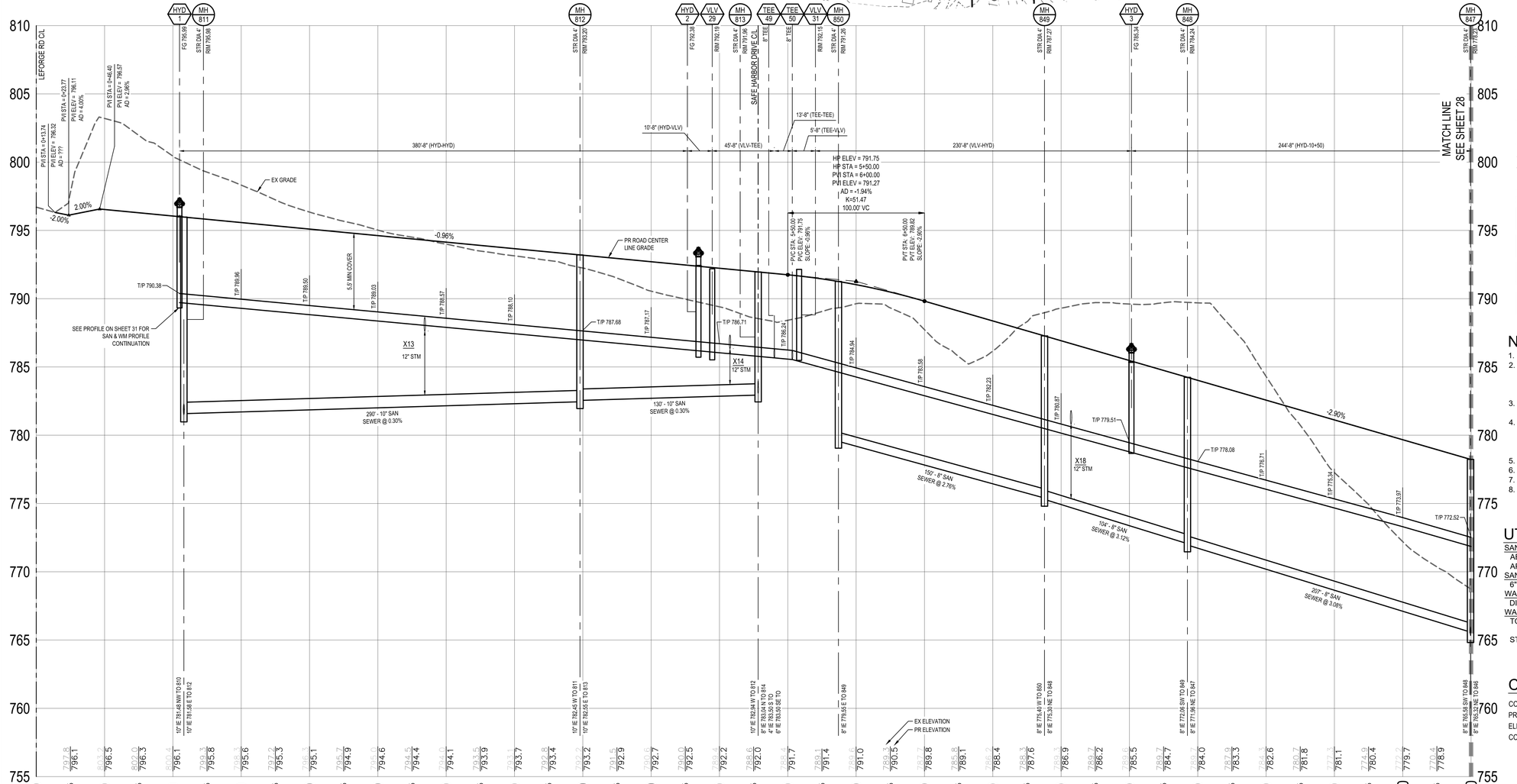




KEY MAP
NOT TO SCALE

N
0 40' 80'
SCALE: 1" = 40'



BROOKWOOD DRIVE PROFILE

LEGEND

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- PR HYDRANT
- PR VALVE AND BOX
- PR WATERMAIN
- PR WATER LEAD
- PR STORM CATCH BASIN
- PR STORM MANHOLE
- PR STORM YARD BASIN
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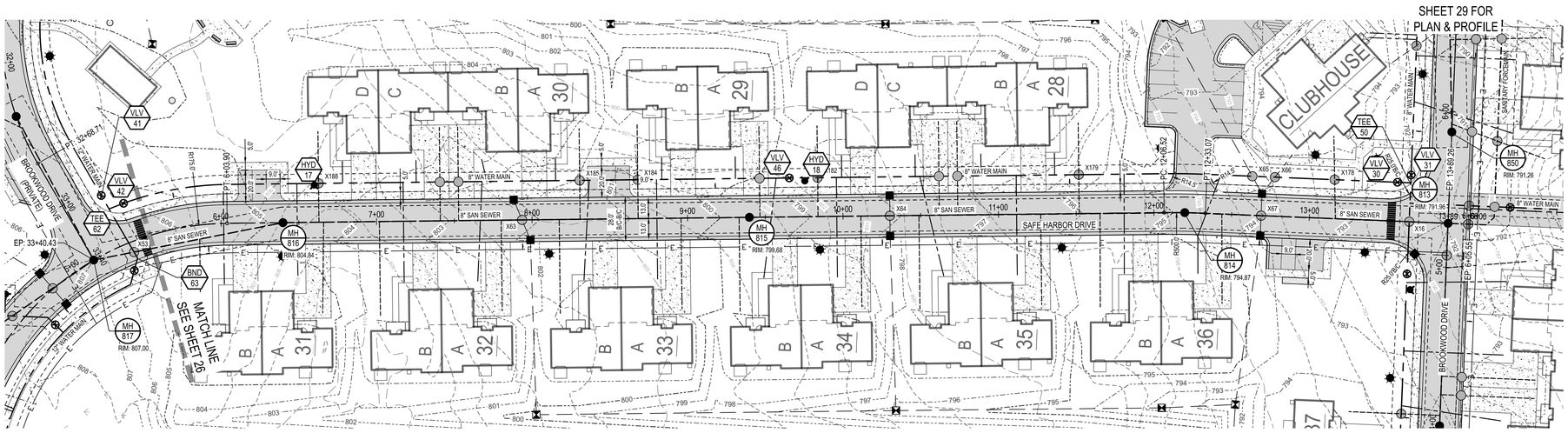

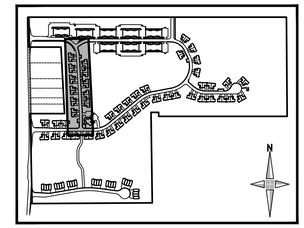

KEY MAP

NOT TO SCALE

SCALE: 1" = 40'

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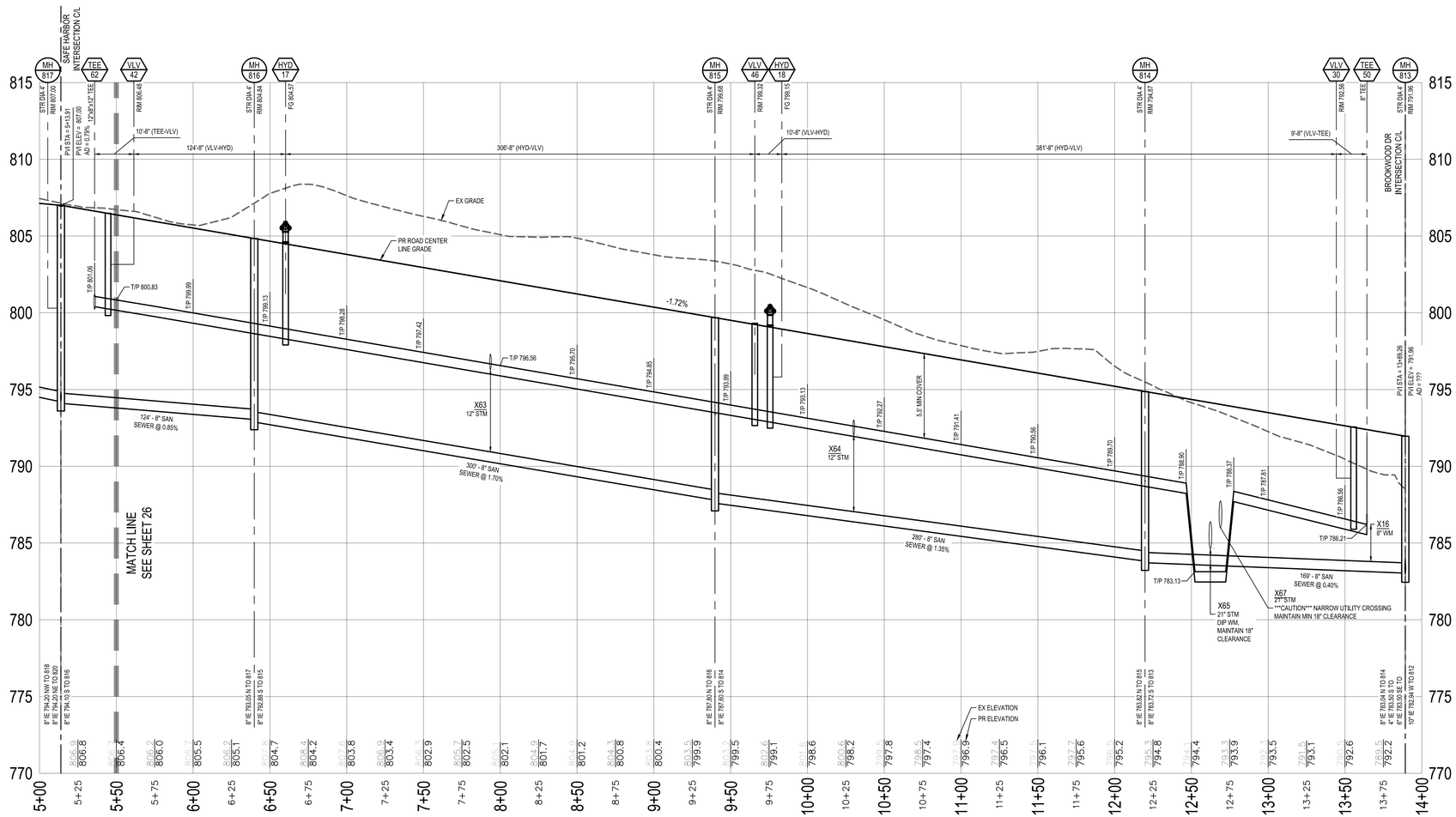

SAFE HARBOR DRIVE PROFILE

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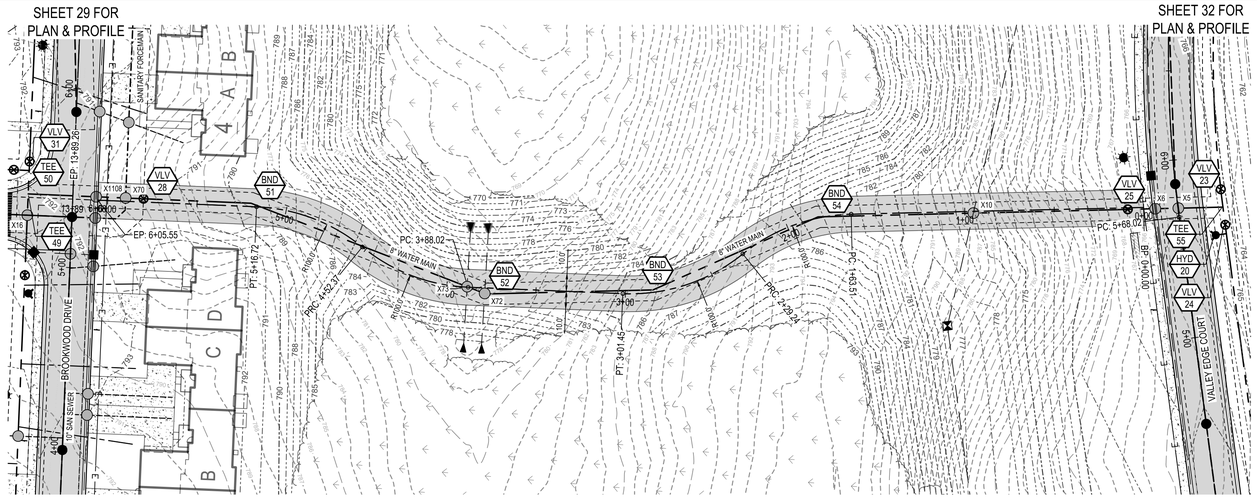

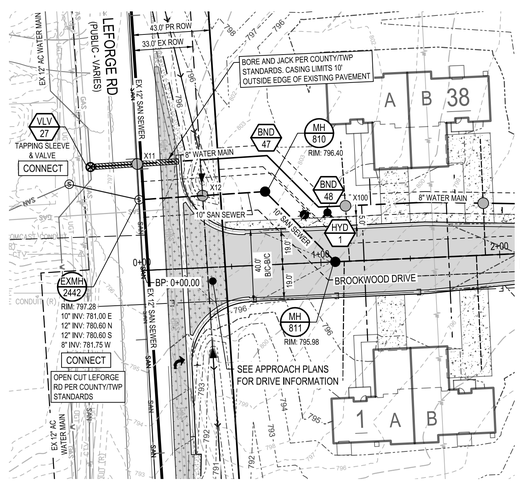

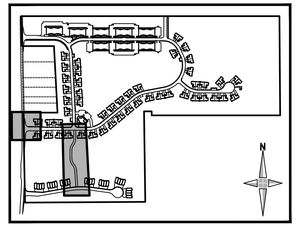

KEY MAP

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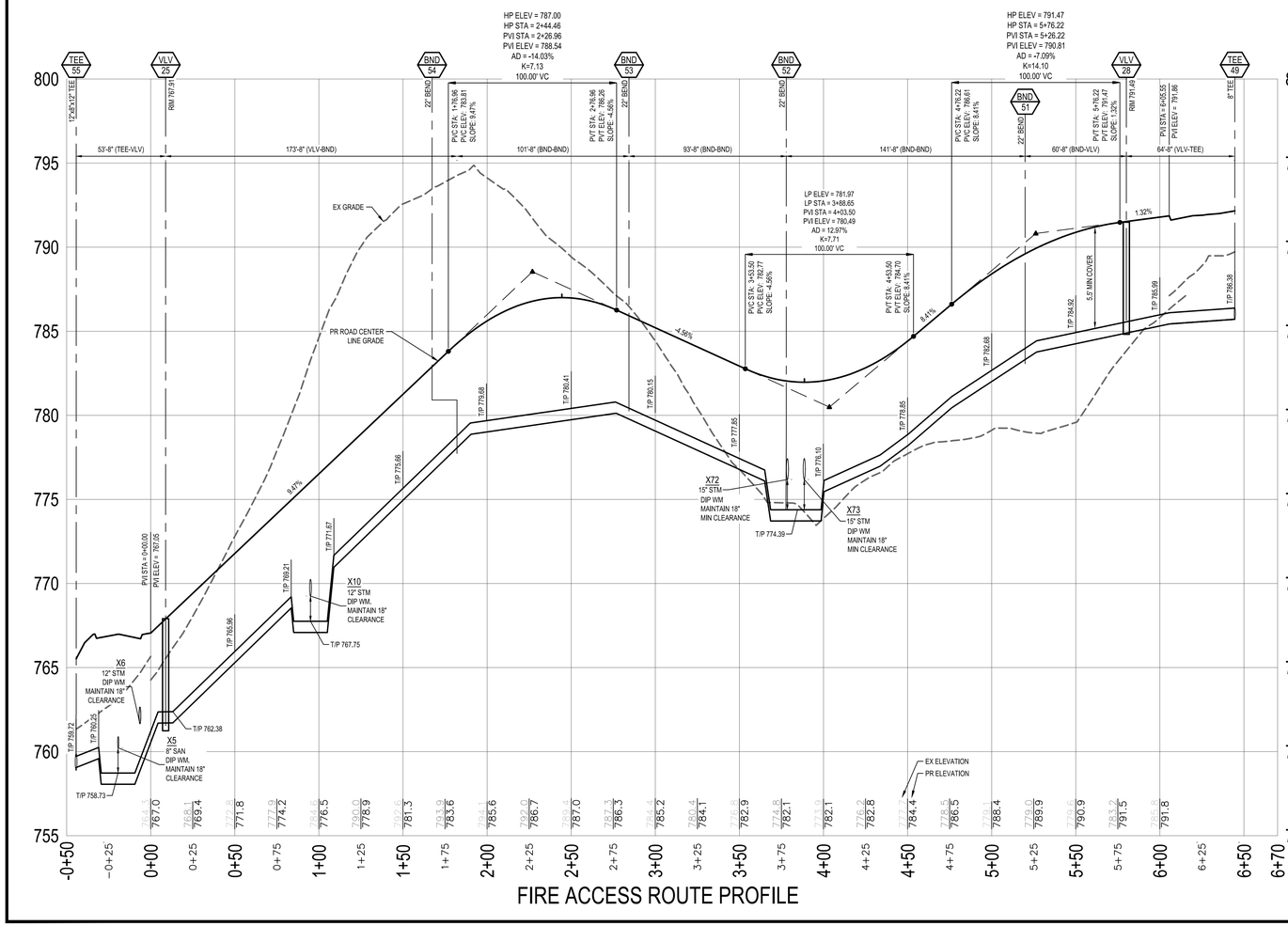

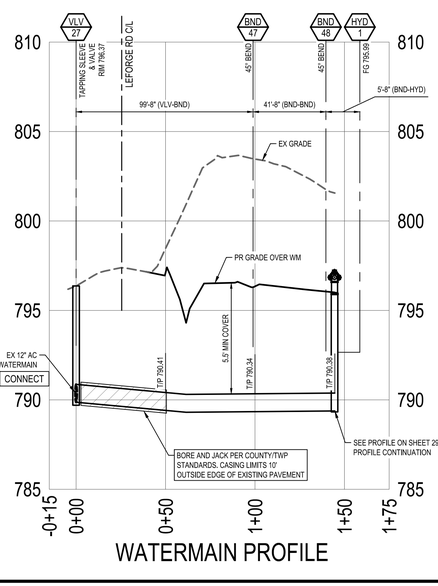

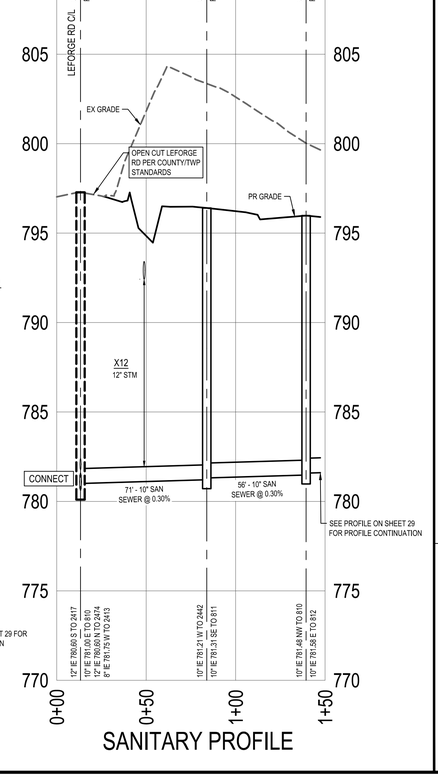

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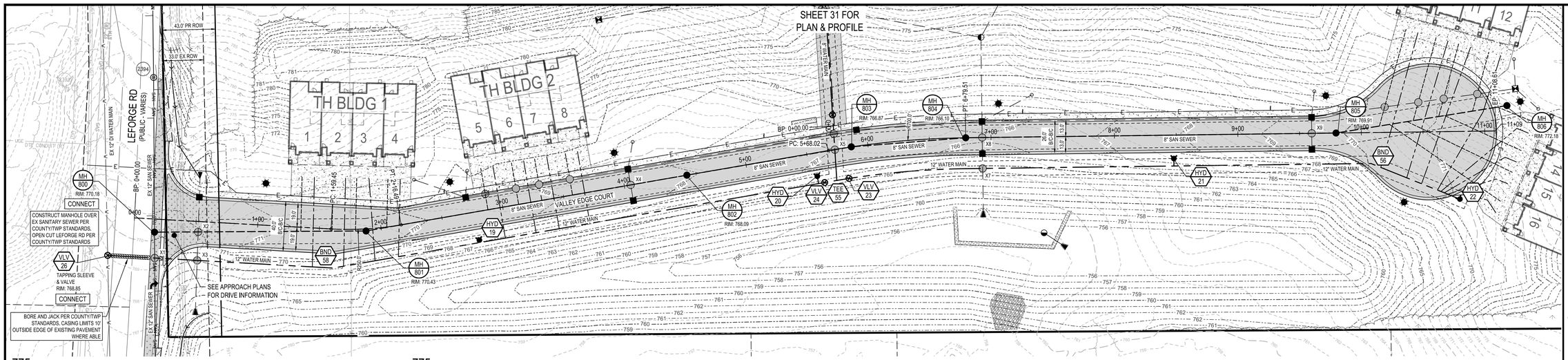

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- PR LIGHT POLE
- PR FRANCHISE UTILITIES
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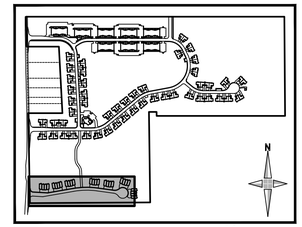

KEY MAP
NOT TO SCALE

0 40' 80'
SCALE: 1" = 40'

VALLEY EDGE COURT PROFILE

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Quality Control:	-
Section:	33
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Professional Seal:

STATE OF MICHIGAN
JOSHUA D. RATLIFF SR.
ENGINEER
No. 6201065198
LICENSED PROFESSIONAL ENGINEER

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05/20/2025	STEEP SLOPE REVISIONS

Developed For:

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TAYLOR, MI 48180

chris@livegpm.com
(734) 287-6619

ROAD, SAN, WM PLAN & PROFILE

BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

Date:	07.26.2024
Scale:	1"=40'
Sheet:	32
Project:	20249.00

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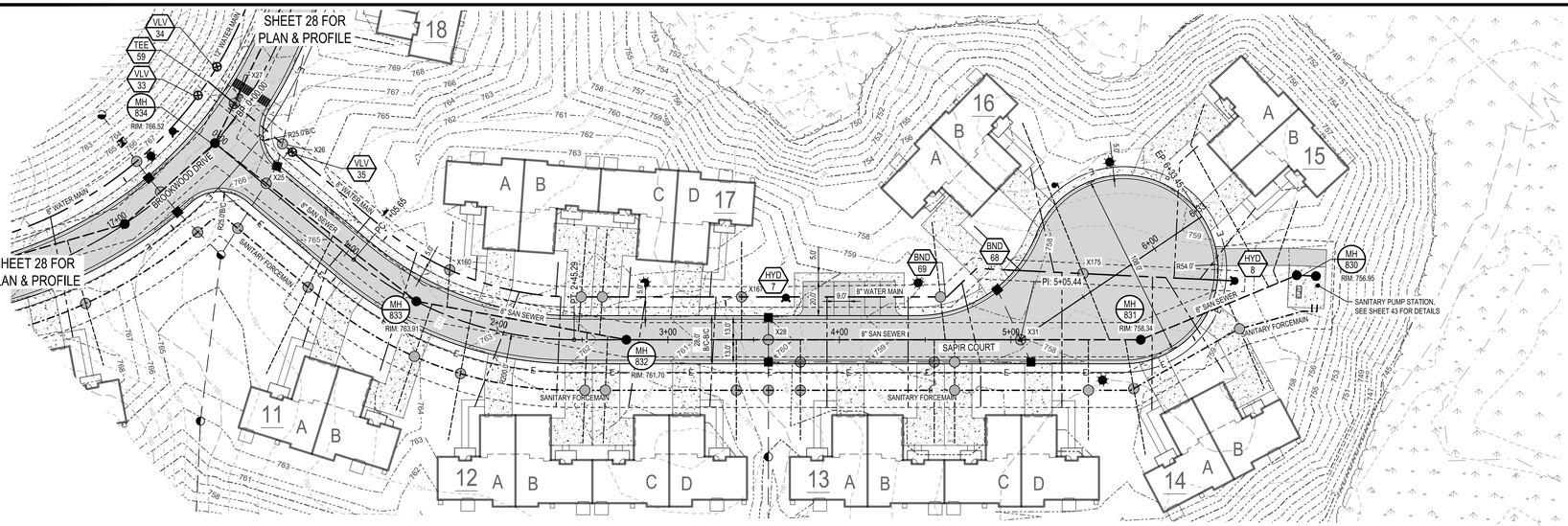

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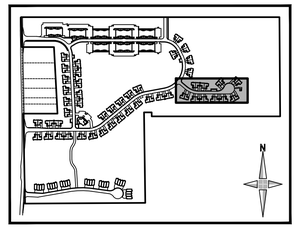

KEY MAP
NOT TO SCALE

UTILITY PIPE MATERIALS:

SANITARY SEWER:
ABS OR PVC TRUSS PIPE, SDR 26 PIPE, OR APPROVED EQUAL
SANITARY LEAD, SL:
6" PVC SDR 23.5, OR APPROVED EQUAL
WATERMAIN:
DIP CL 54, OR APPROVED EQUAL
WATER LEAD, WL:
TOWN HOME, DUPLEX, & QUADPLEX WATER LEADS
1" DIA - COPPER TYPE 'K', OR APPROVED EQUAL
STACKED FLAT WATER LEADS
4" DIA - DIP CL 54, OR APPROVED EQUAL

CONNECT NOTE: CONNECT

CONTRACTOR SHALL EXPOSE EXISTING UTILITIES AT ALL PROPOSED CONNECTIONS AND CROSSINGS AND SUPPLY ELEVATIONS AND LOCATIONS TO THE DESIGN ENGINEER TO CONFIRM OR ADJUST DESIGN.

NOTES:

1. CGM - COMPACTED CL II GRANULAR MATERIAL
2. AT WATERMAIN CROSSINGS, ONE FULL LENGTH OF WATER PIPE SHALL BE LOCATED SO BOTH JOINTS WILL BE AS FAR FROM THE SEWER AS POSSIBLE.
3. ALL WATERMAIN SHALL BE INSTALLED AT A MINIMUM DEPTH OF 5.5'.
4. DIMENSIONS TO CURBS ARE TO GUTTER LINE, UNLESS OTHERWISE NOTED. CURB RADII DIMENSIONS ARE TO BACK OF CURB, UNLESS OTHERWISE NOTED.
5. SEE SHEET 12 FOR ROAD CROSS SECTION
6. SEE SHEET 52 FOR UTILITY CROSSING CHART
7. SEE SHEET 52 FOR SANITARY LEAD CHART
8. ANY WATER MAIN, SANITARY SEWER AND STRUCTURES THAT ARE UNDER OR WITHIN A 1-ON-1 INFLUENCE OF PAVEMENT SHOULD HAVE COMPACTED GRANULAR BACKFILL.

LEGEND

- PR GATE VALVE AND WELL
- PR HYDRANT
- PR VALVE AND BOX
- PR WATERMAIN
- PR WATER LEAD
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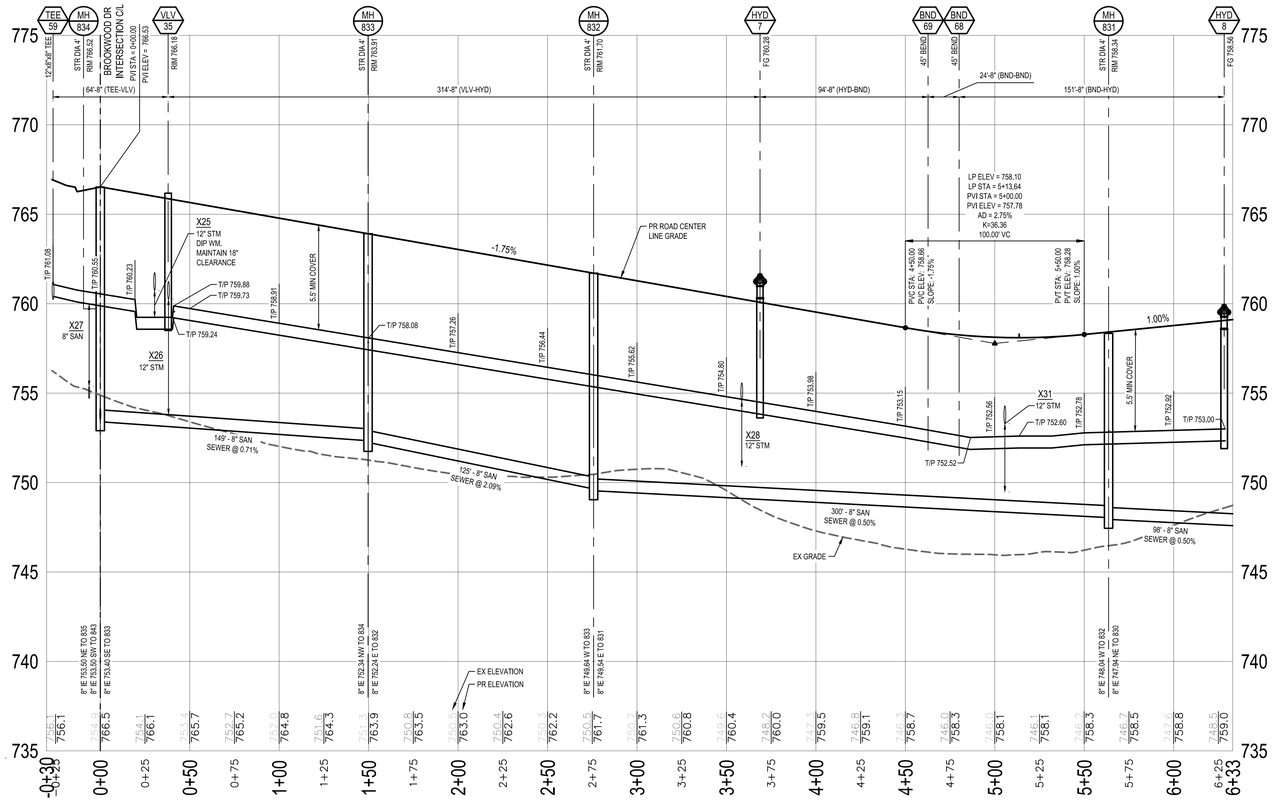
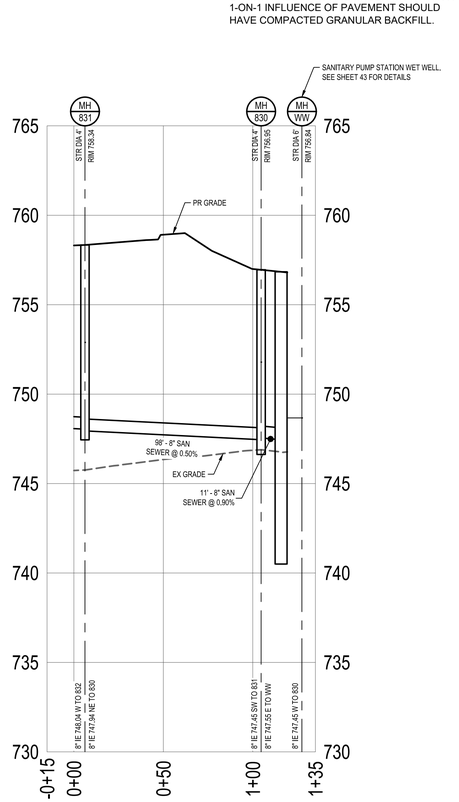


SAPIR COURT PROFILE



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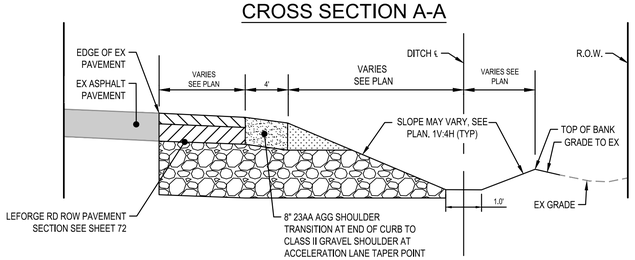
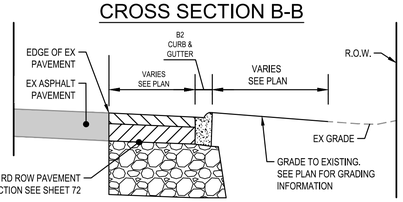
CROSS SECTION A-A



CROSS SECTION B-B



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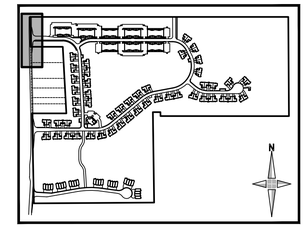

KEY MAP
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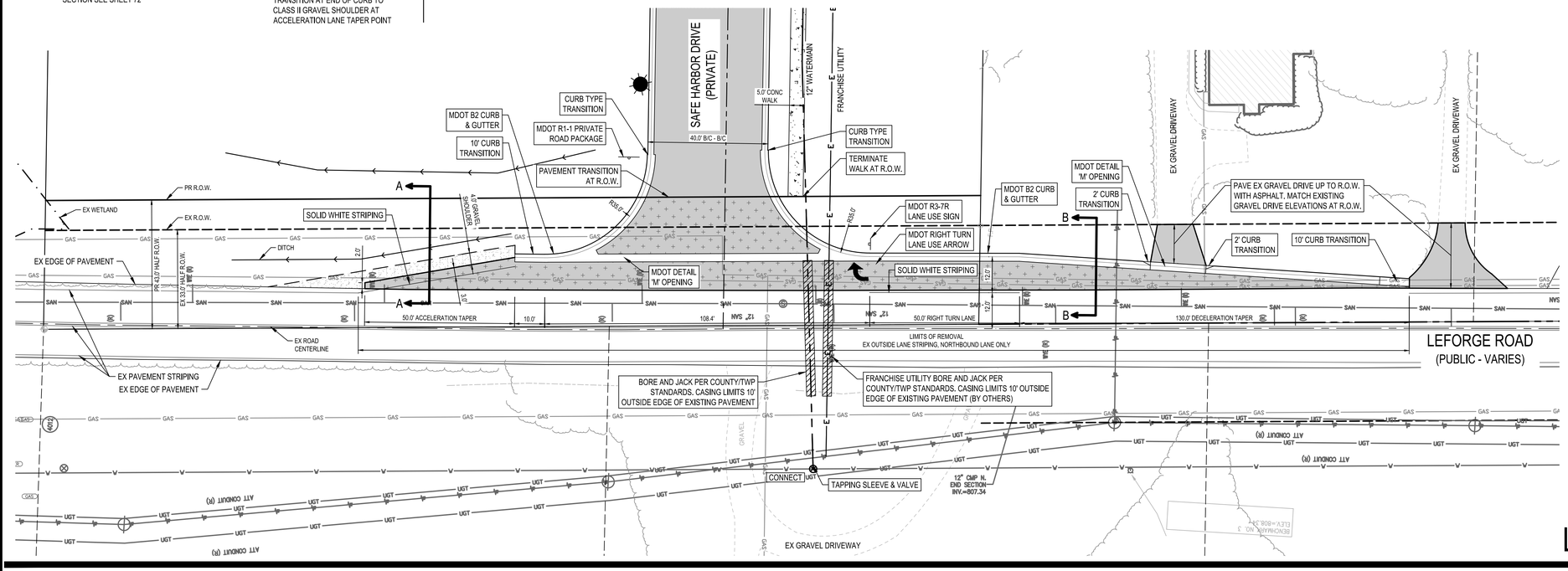

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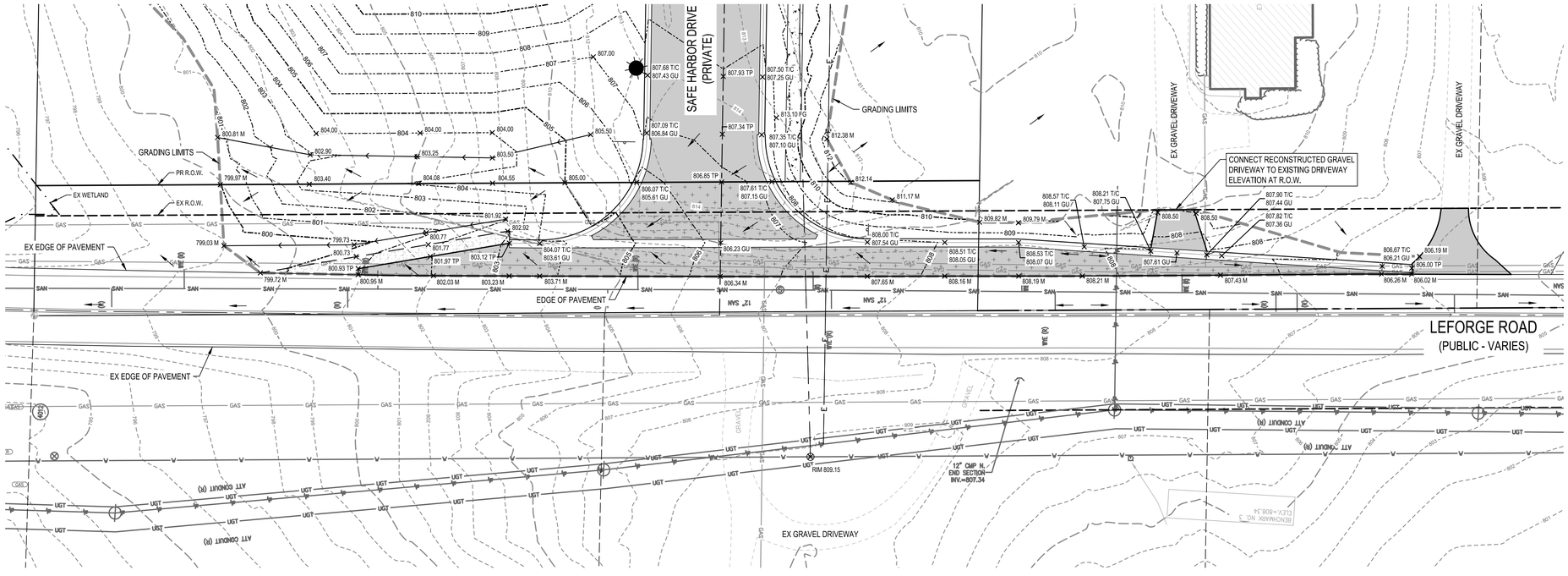
LAYOUT & UTILITY PLAN



SPOT GRADE LEGEND

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Developed For:

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APPROACH PLAN

BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

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Project:	20249.00

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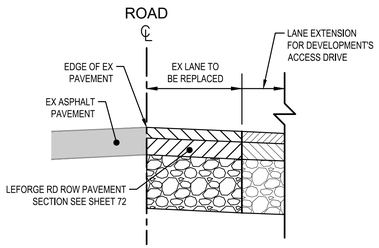
CROSS SECTION C-C



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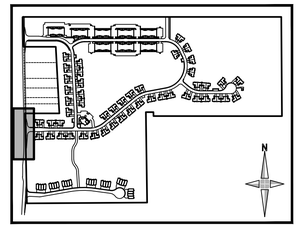

KEY MAP
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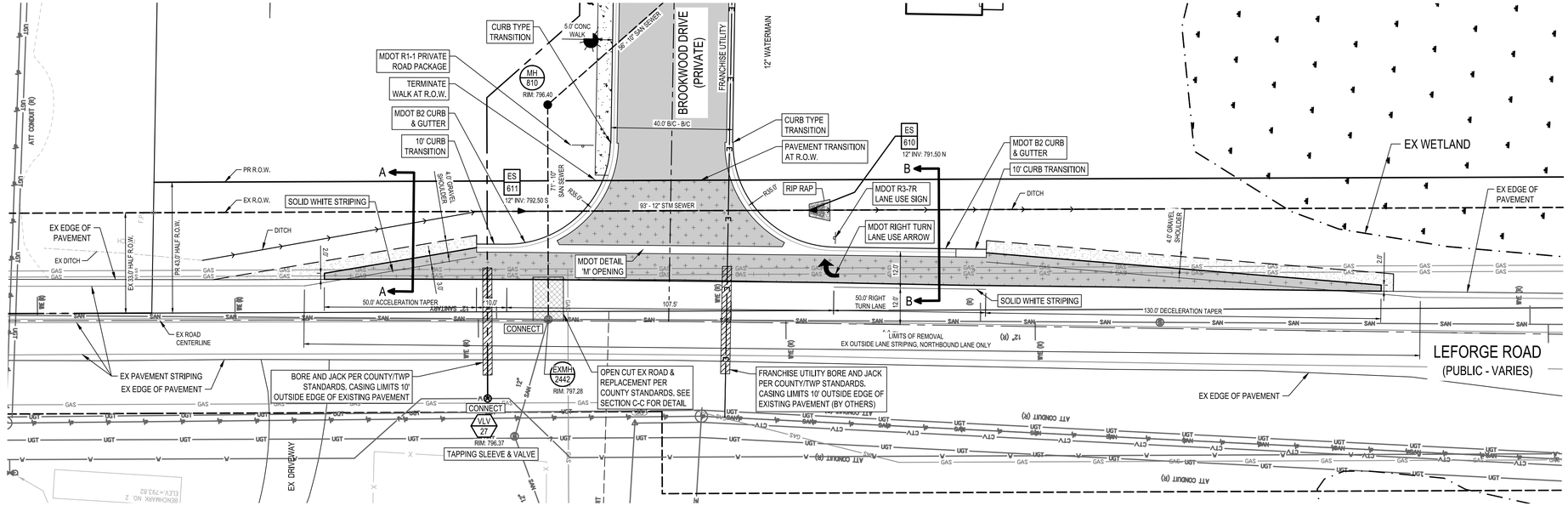

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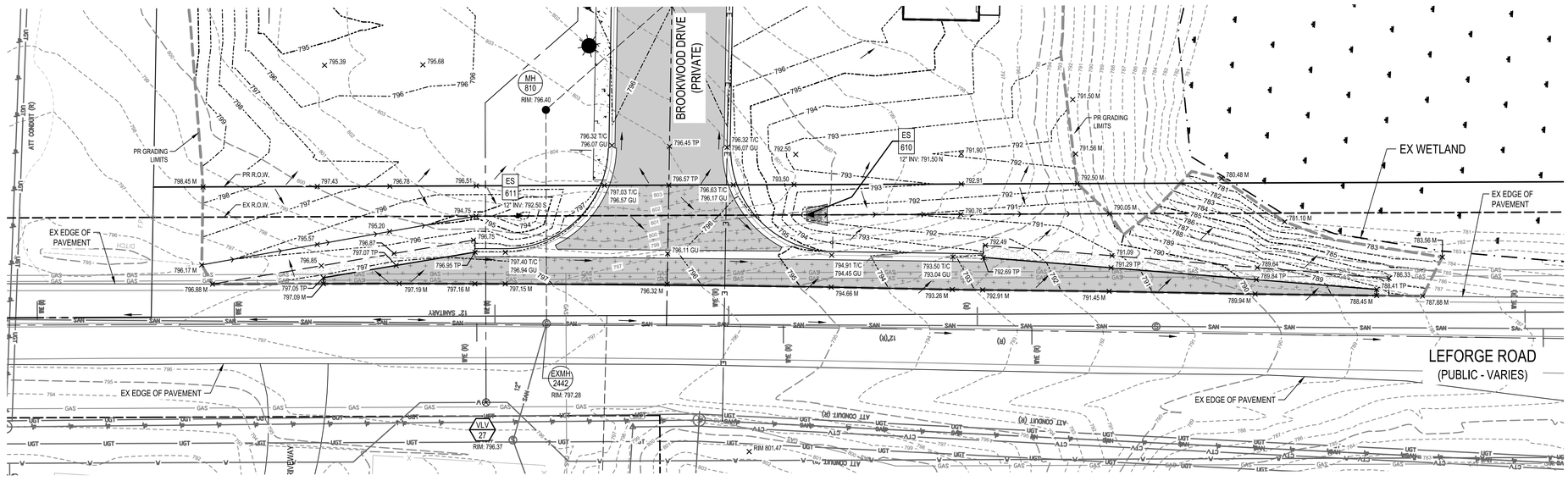
LAYOUT & UTILITY PLAN



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APPROACH PLAN

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WASHTENAW COUNTY
MICHIGAN

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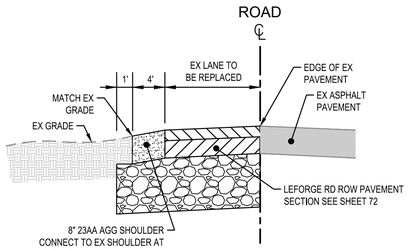
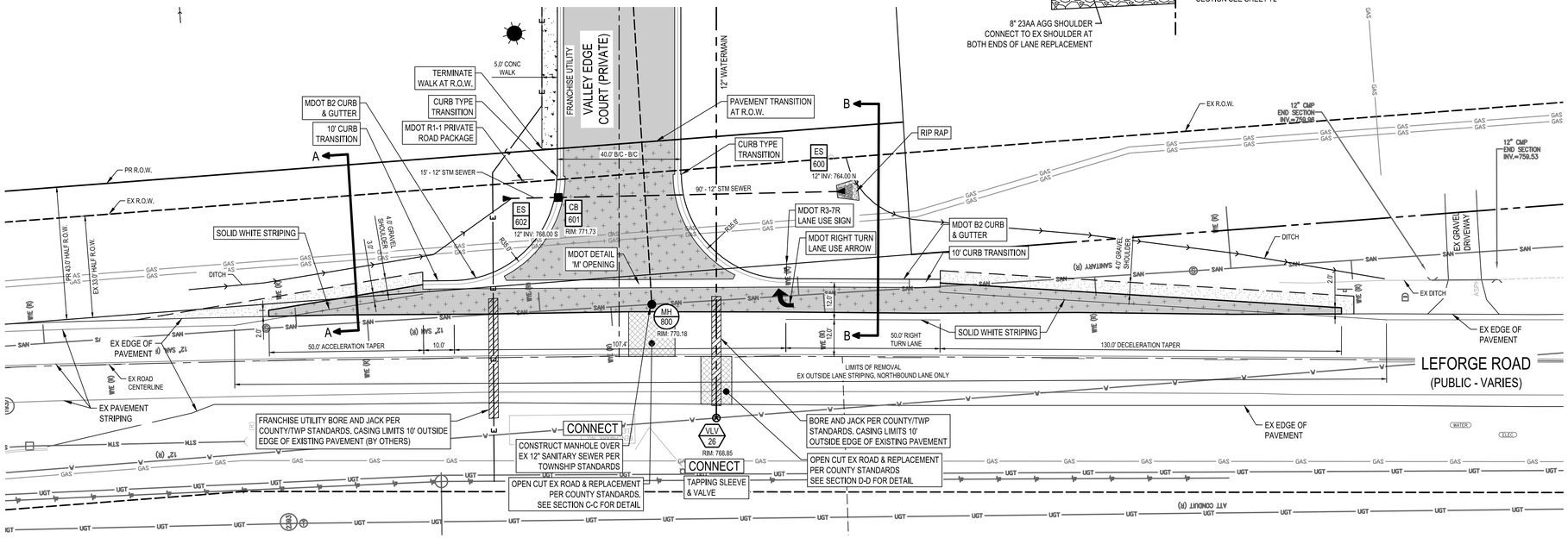
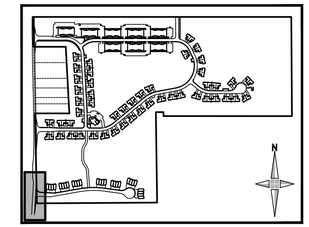
CROSS SECTION D-D





LAYOUT & UTILITY PLAN



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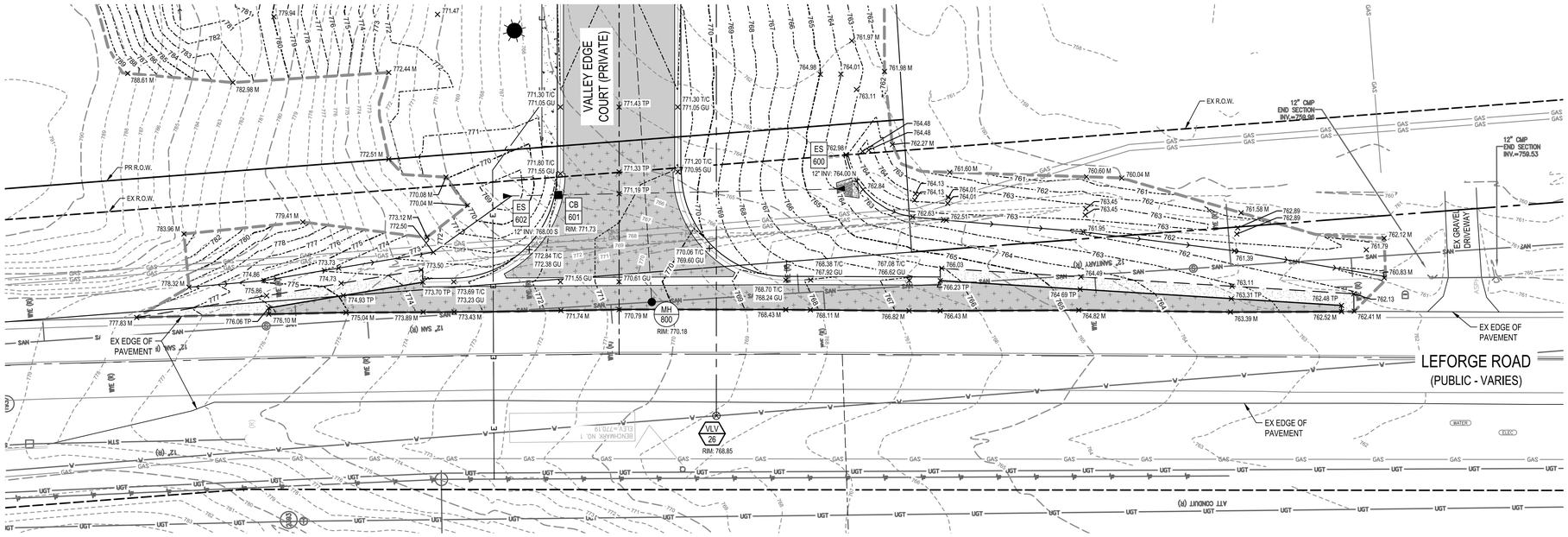

GRADING PLAN

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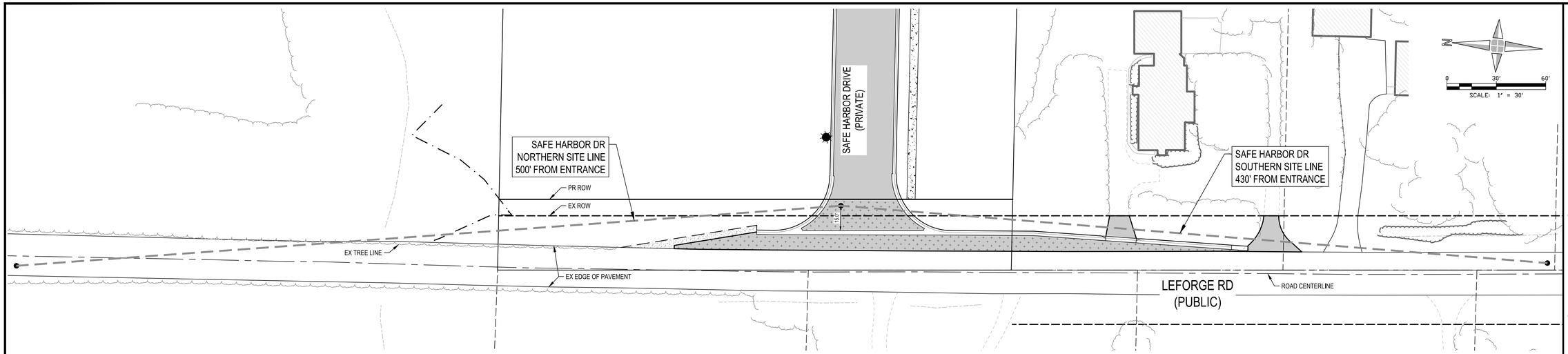

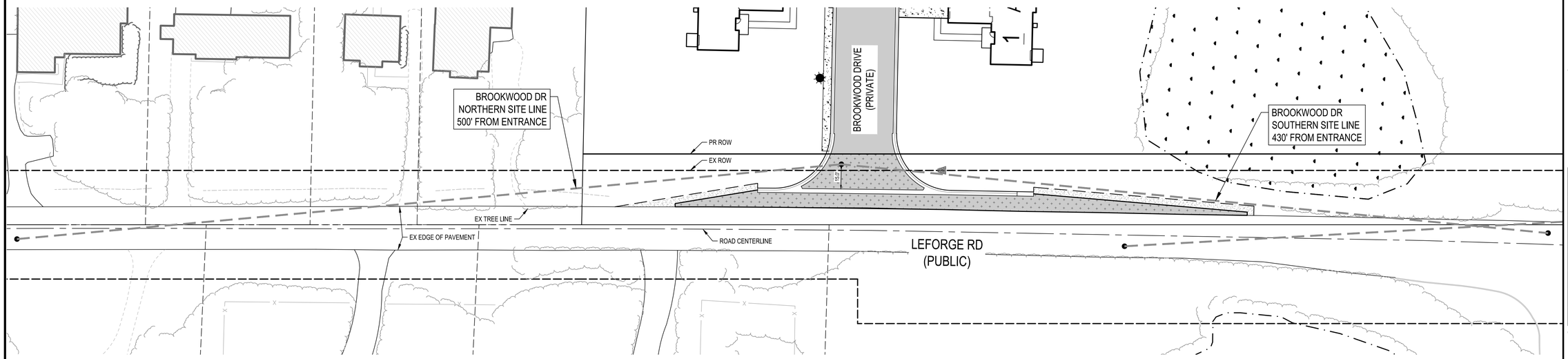

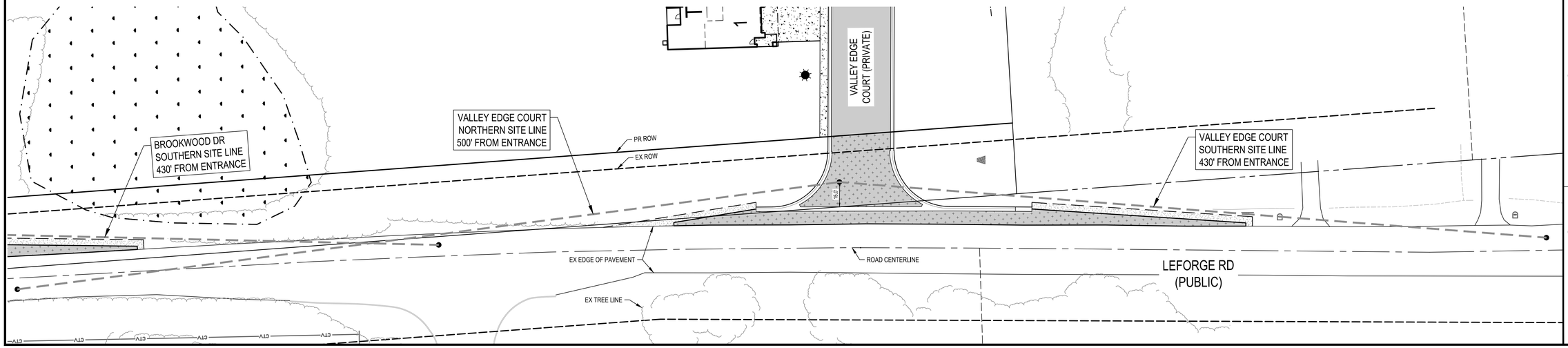

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APPROACH SITE DISTANCE PLAN

BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

Date:	07.26.2024
Scale:	1" = 30'
Sheet:	37
Project:	20249.00

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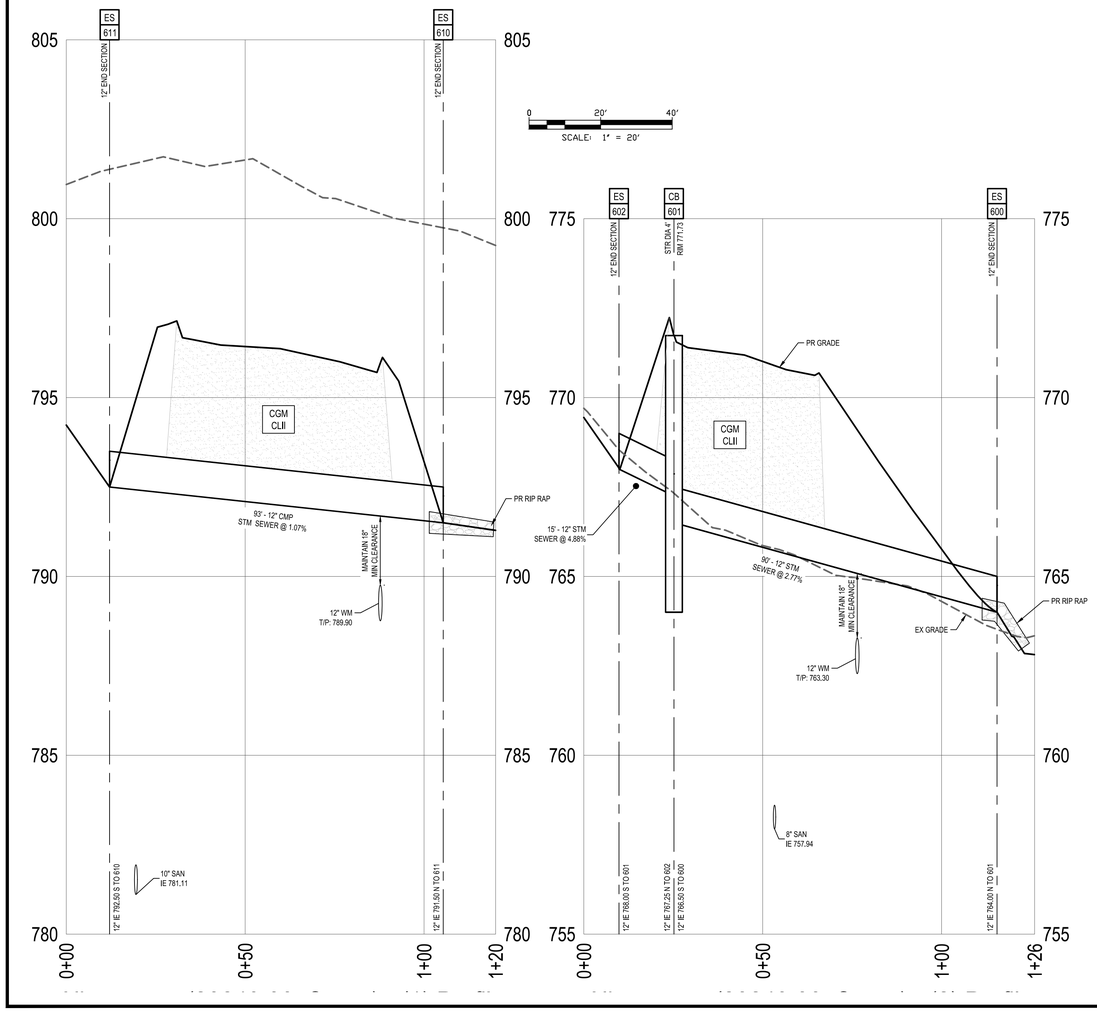

UTILITY NOTES:

1. ALL TRENCHES WITHIN A ONE ON ONE SLOPE OF PAVEMENT SHALL BE BACKFILLED WITH SAND (MDOT CLASS II MINIMUM) AND MECHANICALLY COMPACTED IN NOT MORE THAN 9" LAYER TO 95% MAXIMUM DRY DENSITY PER MODIFIED PROCTER COMPACTION TEST ASTM D-1557. COMPACTED SAND BACKFILL SHALL ALSO BE PROVIDED FOR ALL SEWER TRENCHES LOCATED UNDER, OR WITHIN, THREE FEET OF PAVEMENT.
2. A MINIMUM VERTICAL CLEARANCE OF 18 INCHES IS REQUIRED AT UTILITY CROSSINGS (MEASURED FROM THE OUTSIDE OF PIPE TO THE OUTSIDE OF PIPE). POSITIVE PROVISIONS SHALL BE MADE TO ENSURE THAT ALL UTILITY TRENCHES ARE FREE DRAINING DURING ALL PHASES OF CONSTRUCTION.
3. THE MINIMUM SLOPE FOR A BUILDING LEAD IS 1%. LEADS SHALL ONLY BE CONNECTED TO THE MAIN LINE WITH WYES.
4. ROADWAY, DRIVEWAY AND PARKING AREA CROSSINGS SHALL BE TEMPORARILY CONDITIONED IMMEDIATELY AFTER CROSSING BY PLACING 8" OF MDOT 22A GRAVEL OR SLAG AGGREGATE, AND SHALL BE MAINTAINED IN GOOD, DUST FREE CONDITION UNTIL PAVEMENT RESTORATION IS MADE.
5. THE CONTRACTOR SHALL COORDINATE THE REMOVAL OF ALL UTILITY LINES AND STRUCTURES, AS OUTLINED ON THE DEMOLITION PLAN, WITH THE INSTALLATION OF UTILITY IMPROVEMENTS.
6. CONTRACTOR SHALL BE REQUIRED TO COORDINATE THE INSTALLATION OF GAS, ELECTRIC, PHONE, CABLE, SPRINKLERS ETC., IN SUCH A MANNER THAT WILL FACILITATE THEIR PROPER INSTALLATION PRIOR TO PLACING THE PAVEMENT MATERIALS. ENSURE THAT ALL REQUIRED PIPES, CONDUITS, CABLES AND SLEEVES ARE PROPERLY PLACED AND THAT THE TRENCHES ARE PROPERLY BACKFILLED AND COMPACTED.
7. THE CONTRACTOR SHALL REMOVE UTILITIES, WHICH HAVE BEEN ABANDONED IN PLACE, AS REQUIRED TO COMPLETE INSTALLATION OF NEW UTILITIES. WHENEVER ABANDONED UTILITIES ARE CUT, CONTRACTOR SHALL COMPLETELY CAP BOTH ENDS TO PREVENT THE INFILTRATION OF SOILS.
8. NO CONNECTION MAY BE MADE TO ANY EXISTING WATER MAIN UNTIL THE NEW MAIN HAS PASSED ALL PRESSURE AND BACTERIOLOGICAL TESTING.
9. WATER LEADS SHALL HAVE A MINIMUM OF 5.5 FEET OF COVER.

DEMOLITION NOTES:

1. WITH THE EXCEPTION OF AN AMOUNT OF EXCAVATED MATERIALS SUFFICIENT FOR BACKFILLING AND CONSTRUCTION OF FILLS AS CALLED FOR ON THE PLANS AND AS INDICATED BELOW, ALL BROKEN CONCRETE, STONE AND EXCESS EXCAVATED MATERIALS SHALL BE DISPOSED OF BY THE CONTRACTOR.
2. THE CONTRACTOR WILL BE REQUIRED TO OBTAIN THEIR OWN DISPOSAL GROUND, AND WILL RECEIVE NO ADDITIONAL COMPENSATION FOR DISPOSING OF ANY OF THE EXCESS MATERIALS. MATERIALS ACCEPTABLE TO THE ENGINEER MAY BE DISPOSED OF ON-SITE AT THE CONTRACTORS EXPENSE IN A MANNER APPROVED IN ADVANCE BY THE ENGINEER.
3. THE EDGE OF EXISTING PAVEMENT SHALL BE CLEANED OF EARTH AND OTHER FOREIGN MATERIAL BEFORE ADJACENT POURS ARE PLACED.
4. THE CONTRACTOR SHALL COORDINATE WITH AFFECTED UTILITY COMPANIES FOR THE REMOVAL OR RELOCATION OF UTILITY AND LIGHT POLES.
5. STREET SIGNS IN THE WAY OF CONSTRUCTION WILL BE REMOVED AND RESET IMMEDIATELY IN A TEMPORARY LOCATION, AS APPROVED BY THE ENGINEER.
6. THE CONTRACTOR SHALL PROTECT ALL EXISTING SIGNS AND POSTS SCHEDULED TO REMAIN, AS DIRECTED BY THE ENGINEER.
7. ALL UNDERGROUND UTILITIES NOT INDICATED FOR REMOVAL SHALL BE PROTECTED THROUGHOUT CONSTRUCTION.
8. THE CONTRACTOR SHALL BE RESPONSIBLE FOR PROTECTING ALL PRIVATE PROPERTY (INCLUDING BUILDINGS AND FOUNDATIONS) THROUGHOUT CONSTRUCTION AND SHALL MAINTAIN SAFE PEDESTRIAN ACCESS AT ALL TIMES.
9. EXISTING PAVEMENTS, SIDEWALKS, CURBS, DRIVEWAYS, GUTTERS, CROSSWALKS, AND OTHER BITUMINOUS OR CONCRETE SURFACES TO BE REMOVED, SHALL BE REMOVED TO THE LIMITS SHOWN OR AS REQUIRED BY THE ENGINEER. REMOVAL SHALL BE CAREFULLY DONE AND TO A NEAT LINE. CONCRETE SAWS OR OTHER MECHANICAL EQUIPMENT APPROVED BY THE ENGINEER SHALL BE USED ON THIS WORK.
10. THE REMOVAL OF PAVEMENT, CURBS AND WALKS SHALL INCLUDE ALL REQUIRED SAWCUTTING. CURB REMOVAL IS INCIDENTAL TO PAVEMENT REMOVAL.

GENERAL NOTES:

1. ALL CONSTRUCTION SHALL BE PERFORMED IN ACCORDANCE WITH THE CURRENT STANDARDS AND SPECIFICATIONS OF SUPERIOR TOWNSHIP, WASHTENAW COUNTY WATER RESOURCES COMMISSIONER, AND THE MICHIGAN DEPARTMENT OF ENVIRONMENT, GREAT LAKES AND ENERGY.
2. ALL WORK WITHIN THE ROAD COMMISSION FOR WASHTENAW COUNTY RIGHT-OF-WAY SHALL BE IN ACCORDANCE WITH ROAD COMMISSION SUPPLEMENTAL PERMIT SPECIFICATIONS AND BY PERMIT ONLY.
3. ALL PERMITS REQUIRED SHALL BE OBTAINED BY THE CONTRACTOR. ALL PERMIT FEES, BONDS, AND INSURANCE REQUIRED BY THE ISSUING AGENCIES SHALL BE PROVIDED BY THE CONTRACTOR, AND MUST BE KEPT CURRENT. THE CONTRACTOR IS RESPONSIBLE FOR ALL OTHER FEES, INSPECTION COSTS, ETC., AND SHALL ADHERE TO ALL REQUIREMENTS SET FORTH IN SAID PERMITS.
4. 72 HOURS PRIOR TO EXCAVATION, THE CONTRACTOR SHALL NOTIFY MISS DIG (1-800-482-7171) FOR LOCATION OF UNDERGROUND AND CABLE FACILITIES, AND SHALL NOTIFY REPRESENTATIVES OF OTHER UTILITIES LOCATED IN THE VICINITY OF THE WORK.
5. UTILITY INFORMATION SHOWN ON THE PLANS WAS OBTAINED FROM UTILITY OWNERS AND MAY OR MAY NOT BE ACCURATE AND COMPLETE. CONTRACTOR SHALL VERIFY AND/OR OBTAIN ANY INFORMATION NECESSARY REGARDING THE PRESENCE OF UNDERGROUND UTILITIES WHICH MIGHT HAVE AN EFFECT ON THIS PROJECT, AND SHALL BE RESPONSIBLE FOR ANY DAMAGE TO ANY PUBLIC OR PRIVATE UTILITIES, SHOWN OR NOT SHOWN ON THE PLANS.
6. THE UTILITY POLES SHOWN ON THESE DRAWINGS ARE INTENDED TO SHOW ONLY THE LOCATION OF EXISTING POLES. THE CONTRACTOR IS RESPONSIBLE FOR DETERMINING THE QUANTITY AND DIRECTION OF OVERHEAD LINES. THE COST FOR SUPPORTING AND RELOCATING POLES SHALL BE INCIDENTAL TO THE PROJECT.
7. THE CONTRACTOR SHALL PROVIDE FOR CONTROLLED ACCESS TO THE SITE FOR USE BY THE VARIOUS WORK FORCES, EMERGENCY VEHICLES, OCCUPANTS, VISITORS, ETC. THROUGHOUT CONSTRUCTION, THIS ACCESS MUST PROVIDE FOR THE REMOVAL OF MUD FROM VEHICLES TIRES. ROADWAYS AND DRIVEWAYS SHALL BE MAINTAINED AND OPEN FOR EMERGENCY VEHICLES AT ALL TIMES. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO NOTIFY THE RESIDENTS AND BUSINESSES, WHOSE DRIVEWAYS ARE AFFECTED BY HIS SCHEDULE, 24 HOURS IN ADVANCE. CONTRACTOR SHALL SCHEDULE CONSTRUCTION AT NON-PEAK USE HOURS AND SHALL MINIMIZE DRIVEWAY CLOSURE BY EXPEDITING CONSTRUCTION.
8. DURING CONSTRUCTION, CONTRACTOR MAY ENCOUNTER SPRINKLER HEADS, PIPING, LIGHTING, AND BURIED ELECTRICAL CABLE, MAILBOXES, FENCES, SIGNS, ETC. CONTRACTOR SHALL REPLACE AND/OR RESTORE ALL COMPONENTS OF SUCH SYSTEMS. THIS WORK SHALL BE INCIDENTAL TO THE PROJECT.
9. RIGHT-OF-WAYS AND FRONT OF LOTS DISTURBED BY CONSTRUCTION SHALL BE RESTORED BY TOPSOIL, SEED AND MULCH.
10. THE CONTRACTOR IS REQUIRED TO CONFINE CONSTRUCTION ACTIVITIES TO THE LIMITS OF THE SITE AS SHOWN ON THE CONSTRUCTION PLANS. ANY DAMAGE OR DISRUPTION TO ADJACENT SITES IS THE RESPONSIBILITY OF THE CONTRACTOR TO CORRECT IMMEDIATELY. NO OFF-SITE WORK SHALL BE PERFORMED OUTSIDE OF PUBLIC RIGHTS-0F-WAY OR DEDICATED EASEMENTS WITHOUT PRIOR WRITTEN APPROVAL OF THE PROPERTY OWNER.
11. GREAT CARE SHALL BE TAKEN TO AVOID DAMAGE TO VEGETATION OUTSIDE THE CLEARING AND GRUBBING LIMITS. NO DRIVING OR PARKING OF VEHICLES AND/OR STORAGE OF MATERIALS AND SUPPLIES SHALL BE PERMITTED OUTSIDE THE LIMITS OF CONSTRUCTION.
12. THE PROTECTION OF EXISTING TREES, AS REQUIRED, SHALL BE SOLELY THE CONTRACTOR'S RESPONSIBILITY.
13. FINAL CLEANUP AND RESTORATION SHALL CONSIST OF FINE GRADING OF CONSTRUCTION AREAS, REMOVAL OF CONSTRUCTION SIGNS, ETC. TOPSOIL SHALL BE SPREAD OVER ALL DISTURBED AREAS, FOLLOWED BY SEED, FERTILIZER AND EROSION MAT OR STRAW MULCH, OR AS FURTHER REQUIRED BY THE LANDSCAPING PLANS AND SPECIFICATIONS. ALL REQUIRED RESTORATION ITEMS NOT SPECIFICALLY IDENTIFIED AS A PAY ITEM SHALL BE CONSIDERED INCIDENTAL TO THE CONTRACT.
14. ALL RESTORATION SHALL BE SPECIFIED ON THE PLANS AND IN THE SPECIFICATIONS. NON PAY ITEMS SHALL BE INCIDENTAL TO THE PROJECT.
16. ALL CULVERTS REMOVED DURING CONSTRUCTION SHALL BE PLACED BACK IN THEIR ORIGINAL POSITION. THIS WORK IS INCIDENTAL TO THE PROJECT. ANY CULVERTS SHOWN ON PLAN DAMAGED BY THE CONTRACTOR DURING REMOVAL, SHALL BE REPLACED WITH NEW CULVERTS AT THE CONTRACTOR'S EXPENSE.
17. THE CONTRACTOR SHALL PROVIDE NECESSARY SIGNS, BARRICADES, AND LIGHTS TO PROTECT THE TRAFFIC AND THE WORK AS DIRECTED BY THE FIELD ENGINEER OR THE ROAD COMMISSION. ALL TRAFFIC CONTROL SHALL BE IN ACCORDANCE WITH THE MICHIGAN MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD.)
18. ALL LOT MARKERS AND MONUMENT POINTS DISTURBED DURING CONSTRUCTION SHALL BE REPLACED BY A REGISTERED LAND SURVEYOR AT THE EXPENSE OF THE CONTRACTOR.
19. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL DEWATERING REQUIRED TO CONSTRUCT THE PROPOSED UTILITIES. COST OF DEWATERING SHALL BE INCIDENTAL TO THE PROJECT.

GRADING NOTES:

1. EXCESS EXCAVATION SHALL BE DISPOSED OF BY THE CONTRACTOR. COST OF DISPOSAL WILL BE INCIDENTAL TO THE PROJECT.
2. THE FINAL SUB-GRADE SHALL BE THOROUGHLY PROOF-ROLLED UNDER THE OBSERVATION OF THE SOILS ENGINEER.
3. NO FROZEN MATERIAL SHALL BE PERMITTED AS BACKFILL UNDER ANY ROADWAY, DRIVEWAY OR PARKING AREA.
4. PRIOR TO THE START OF ANY FILLING, THE CONTRACTOR SHALL REMOVE ALL TOPSOIL AND ALL OTHER UNACCEPTABLE SOIL FROM THE FILL AREAS, AND PROPERLY BACKFILL WITH ACCEPTABLE SOIL.
5. PRIOR TO THE PLACEMENT OF ANY BASE ASPHALT OR LEVELING COURSE, THE CURBS SHALL BE PARTIALLY BACKFILLED AND THE SUB-GRADE SHALL BE PROOF-ROLLED UNDER THE SUPERVISION OF THE SOILS ENGINEER.
6. ALL SIDEWALK AND PATHWAYS IN ANY PUBLIC R.O.W. SHALL BE INSPECTED BY THE AGENCY WITH JURISDICTION.

PAVING NOTES:

1. THE PAVING CONTRACTOR SHALL BE REQUIRED TO COORDINATE THE INSTALLATION OF GAS, ELECTRIC, PHONE, CABLE, SPRINKLERS, ETC. IN SUCH A MANNER THAT WILL FACILITATE THEIR PROPER INSTALLATION PRIOR TO PLACING THE PAVEMENT MATERIALS. ENSURE THAT ALL REQUIRED PIPES, CONDUITS, CABLES AND SLEEVES ARE PROPERLY PLACED AND THAT THE TRENCHES ARE PROPERLY BACKFILLED AND COMPACTED.
2. BUTT JOINTS SHALL BE PLACED AT ALL LOCATIONS WHERE AN EXISTING ASPHALT PAVEMENT SURFACE IS BEING DISTURBED BY REMOVALS AND/OR THE INSTALLATION OF NEW ASPHALT PAVEMENT.
3. ALL PAVEMENT AREAS SHOULD BE CLEARED AND GRUBBED BY REMOVING SURFACE VEGETATION, TOPSOIL, DEBRIS AND OTHER DELETERIOUS MATERIALS.
4. THE PLACEMENT OF THE FINAL ASPHALT LIFT SHALL BE DELAYED UNTIL THE MAJORITY OF THE CONSTRUCTION ACTIVITIES HAVE BEEN COMPLETED, OR AS APPROVED BY THE OWNER. A BOND COAT OF SS-1H EMULSION SHALL BE APPLIED (AT A RATE OF 0.10 GALLONS/S.Y.D.) BETWEEN THE LEVELING AND WEARING COURSE WHEN 48 HOURS HAVE ELAPSED BETWEEN PLACEMENTS.
6. PROPOSED AGGREGATE BASE SHALL EXTEND A MINIMUM OF 1 FOOT BEYOND THE PAVEMENT EDGE/BACK OF CURB.
7. BARRIER FREE SIGNAGE SHALL BE PLACED IN FRONT OF EVERY DESIGNATED BARRIER FREE STALL. THE CONTRACTOR SHALL COORDINATE STANDARD AND VAN ACCESSIBILITY SIGNAGE AS INDICATED ON THE PLANS.
8. ALL BARRIER FREE RAMPS, WALK, LANDINGS AND CURBS SHALL BE A.D.A. COMPLIANT AND MEET MDOT STANDARD PLAN R-28.

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APPROACH NOTES & CULVERTS WITHIN R.O.W. PROFILES

BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

Date:	07.26.2024
Scale:	1" = 20'
Sheet:	38
Project:	20249.00

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DISTANCE BETWEEN TRAFFIC SIGNS, "D"

"D" DISTANCES	POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)										
	25	30	35	40	45	50	55	60	65	70	75
D (FEET)	250	300	350	400	450	500	550	600	650	700	750

GUIDELINES FOR LENGTH OF LONGITUDINAL BUFFER SPACE, "B"

"B" LENGTHS	SPEED* MPH (PRIOR TO WORK AREA)										
	20	25	30	35	40	45	50	55	60	65	70	75
B (FEET)	33	50	83	132	181	230	279	329	411	476	542	625

* POSTED SPEED, OFF-PEAK 85TH PERCENTILE SPEED PRIOR TO WORK STARTING, OR THE ANTICIPATED OPERATING SPEED.

MINIMUM MERGING TAPER LENGTH, "L" (FEET)

OFFSET (FEET)	POSTED SPEED LIMIT, MPH (PRIOR TO WORK AREA)										
	25	30	35	40	45	50	55	60	65	70	75
1	11	15	21	27	45	50	55	60	65	70	75
2	21	30	41	54	90	100	110	120	130	140	150
3	32	45	62	80	135	150	165	180	195	210	225
4	42	60	82	107	180	200	220	240	260	280	300
5	53	75	103	134	225	250	275	300	325	350	375
6	63	90	123	160	270	300	330	360	390	420	450
7	73	105	143	187	315	350	385	420	455	490	525
8	84	120	164	214	360	400	440	480	520	560	600
9	94	135	184	240	405	450	495	540	585	630	675
10	105	150	205	267	450	500	550	600	650	700	750
11	115	165	225	294	495	550	605	660	715	770	825
12	125	180	245	320	540	600	660	720	780	840	900
13	136	195	266	347	585	650	715	780	845	910	975
14	146	210	286	374	630	700	770	840	910	980	1050
15	157	225	307	400	675	750	825	900	975	1050	1125

NOT TO SCALE

MDOT Michigan Department of Transportation	NOT TO SCALE	MAINTAINING TRAFFIC TYPICAL NO: 101-GEN-SPACING-CHARTS	"B", "D" AND "L" TABLES CHANNELIZING DEVICE SPACING, SIGN BORDER KEY. AND ROLL-AHEAD SPACING	DATE: MAY 2021 SHEET: 1 OF 3
FILE: 101-GEN-SPACING-CHARTS.dgn				

GUIDELINES FOR ROLL-AHEAD DISTANCES FOR TMA VEHICLES - TEST LEVEL 2

WEIGHT OF TMA VEHICLE	PREVAILING SPEED (POSTED SPEED PRIOR TO WORK ZONE)	ROLL-AHEAD DISTANCE* (DISTANCE FROM FRONT OF TMA VEHICLE TO WORK AREA)
5.5 TONS (STATIONARY)	40 MPH OR LESS	25 FT

* ROLL-AHEAD DISTANCES ARE CALCULATED USING A 4,410 POUND IMPACT VEHICLE WEIGHT.

GUIDELINES FOR ROLL-AHEAD DISTANCES FOR TMA VEHICLES - TEST LEVEL 3

WEIGHT OF TMA VEHICLE	PREVAILING SPEED (POSTED SPEED PRIOR TO WORK ZONE)	ROLL-AHEAD DISTANCE* (DISTANCE FROM FRONT OF TMA VEHICLE TO WORK AREA)
5 TONS (MOBILE)	45 MPH	100 FT
	50-55 MPH	150 FT
	60-75 MPH	175 FT
12 TONS (STATIONARY)	45 MPH	25 FT
	50-55 MPH	25 FT
	60-75 MPH	50 FT

* ROLL-AHEAD DISTANCES ARE CALCULATED USING A 10,000 POUND IMPACT VEHICLE WEIGHT.

MDOT Michigan Department of Transportation	NOT TO SCALE	MAINTAINING TRAFFIC TYPICAL NO: 101-GEN-SPACING-CHARTS	"B", "D" AND "L" TABLES CHANNELIZING DEVICE SPACING, SIGN BORDER KEY AND ROLL AHEAD SPACING	DATE: MAY 2021 SHEET: 3 OF 3
FILE: 101-GEN-SPACING-CHARTS.dgn				

THE FORMULAS FOR THE MINIMUM LENGTH OF A MERGING TAPER IN DERIVING THE "L" VALUES SHOWN IN THE ABOVE TABLES ARE AS FOLLOWS:

"L" = $\frac{W \times S^2}{60}$ WHERE POSTED SPEED PRIOR TO THE WORK AREA IS 40 MPH OR LESS

"L" = W X S WHERE POSTED SPEED PRIOR TO THE WORK AREA IS 45 MPH OR GREATER

L = MINIMUM LENGTH OF MERGING TAPER
S = POSTED SPEED LIMIT IN MPH PRIOR TO WORK AREA
W = WIDTH OF OFFSET

TYPES OF TAPERS	TAPER LENGTH
UPSTREAM TAPERS	
MERGING TAPER	L - MINIMUM
SHIFTING TAPER	1/2 L - MINIMUM
SHOULDER TAPER	1/3 L - MINIMUM
2 TO 1 LANE ROAD TAPER	100' - MAXIMUM
DOWNSTREAM TAPERS (USE IS RECOMMENDED)	100' (PER LANE)

MAXIMUM SPACING FOR CHANNELIZING DEVICES

WORK ZONE SPEED LIMIT	DRUM AND 42" DEVICE SPACING (FT)		NIGHTTIME 42" DEVICE SPACING (FT)	
	TAPER	TANGENT	TAPER	TANGENT
< 45 MPH	1 x SPEED LIMIT	2 x SPEED LIMIT	25 FEET	50 FEET
≥ 45 MPH	50 FEET	100 FEET	25 FEET	50 FEET

SIGN OUTLINE KEY

DASHED OUTLINES INDICATE A SIGN THAT EXISTS ON SITE, AND NEEDS TO BE COVERED.



SOLID OUTLINES INDICATE A SIGN THAT IS TO BE PLACED ON THE PROJECT.



NOT TO SCALE

MDOT Michigan Department of Transportation	NOT TO SCALE	MAINTAINING TRAFFIC TYPICAL NO: 101-GEN-SPACING-CHARTS	"B", "D" AND "L" TABLES CHANNELIZING DEVICE SPACING SIGN BORDER KEY AND ROLL-AHEAD SPACING	DATE: MAY 2021 SHEET: 2 OF 3
FILE: 101-GEN-SPACING-CHARTS.dgn				

THE FOLLOWING NOTES APPLY IF CALLED FOR ON THE TRAFFIC TYPICAL

GENERAL NOTES

G1: SEE GEN-SPACING-CHARTS FOR COMMON VALUES INCLUDING:
D = DISTANCE BETWEEN TRAFFIC CONTROL DEVICES
W = MINIMUM LENGTH OF TAPER
B = LENGTH OF LONGITUDINAL BUFFER
ROLL AHEAD DISTANCE

G2: DISTANCE BETWEEN SIGNS, "D". THE VALUES FOR WHICH ARE SHOWN IN TYPICAL GEN-KEY ARE APPROXIMATE AND MAY NEED ADJUSTING AS DIRECTED BY THE ENGINEER.

G3: ALL TEMPORARY SIGNS, TYPE III BARRICADES, THEIR SUPPORT SYSTEMS AND LIGHTING MUST MEET NATIONAL COOPERATIVE HIGHWAY RESEARCH PROGRAM REPORT 350 (NCHRP 350) TEST LEVEL 3, OR MANUAL FOR ASSESSING SAFETY HARDWARE, MASH TEST LEVEL 3 OR THE CURRENT EDITION OF THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES. THE CURRENT EDITION OF THE STANDARD SPECIFICATIONS FOR CONSTRUCTION, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS. ONLY DESIGNS AND MATERIALS APPROVED BY MDOT WILL BE ALLOWED.

G4: DO NOT STORE EQUIPMENT, MATERIALS OR PERFORM WORK IN ESTABLISHED BUFFER AREAS.

G5: ALL EXISTING PAVEMENT MARKINGS WHICH ARE IN CONFLICT WITH EITHER PROPOSED CHANGES IN TRAFFIC PATTERNS OR PROPOSED TEMPORARY TRAFFIC MARKINGS SHALL BE REMOVED BEFORE ANY CHANGE IS MADE IN THE TRAFFIC PATTERN. EXEMPTION WILL BE MADE FOR TRAFFIC PATTERNS FOR WORK LESS THAN THREE DAYS THAT ARE ADEQUATELY DELINEATED BY OTHER TRAFFIC CONTROL DEVICES.

SIGN NOTES

S1: ALL NON-APPLICABLE SIGNING WITHIN THE CIA MUST BE MODIFIED TO FIT CONDITIONS, COVERED, OR REMOVED, FOR GUIDANCE SEE THE WORK ZONE SAFETY AND MOBILITY MANUAL, SECTIONS 6.01.09 AND 6.01.10.

S2: R5-1Bb SIGNS ARE ONLY REQUIRED ON FREEWAY PROJECTS WITH A DURATION OF 15 DAYS OR LONGER OR NON-FREEWAY PROJECTS WITH A DURATION OF 30 DAYS OR LONGER. TO APPLY THIS TYPICAL WITHOUT R5-1Bb SIGNS, REMOVE THE SIGNS AND CONSOLIDATE THE SEQUENCE AS APPROPRIATE.

S3: R5-1Bc IS ONLY REQUIRED IN THE INITIAL SIGNING SEQUENCE IN THE WORK ZONE. OMIT THIS SIGN IN SUBSEQUENT SEQUENCES IN THE SAME WORK ZONE.

S4: ADDITIONAL SIGNING AND/OR ELONGATED SIGNING SEQUENCES SHOULD BE USED WHEN TRAFFIC VOLUMES ARE SIGNIFICANT ENOUGH TO CREATE BACKUPS BEYOND THE W20-5 SIGNS.

S5: PLACE ADDITIONAL SPEED LIMIT SIGNS REFLECTING THE WORK ZONE SPEED AFTER EACH MAJOR CROSSROAD THAT INTERSECTS THE WORK ZONE, OR AFTER EACH ENTRANCE RAMP THAT COMES ONTO THE FREEWAY WHERE THE REDUCED SPEED IS IN EFFECT. PLACE ADDITIONAL SPEED LIMIT SIGNS AT INTERVALS ALONG THE WORK AREA SUCH THAT NO DRIVER WILL TRAVEL MORE THAN 1 MILE WITHOUT SEEING A WORK REDUCED SPEED LIMITS ARE UTILIZED IN THE WORK AREA, PLACE ADDITIONAL SPEED LIMIT SIGNS RETURNING TRAFFIC TO ITS NORMAL SPEED BEYOND THE LIMITS OF THE WORK AREA AS INDICATED. IF PERMANENT SIGNS DISPLAYING THE CORRECT SPEED LIMIT ARE POSTED, OMIT ALL W3-5b AND R2-1 SIGNS AND REDUCE SPACING ACCORDINGLY.

S6: FABRICATE SPECIAL SIGNS IN ACCORDANCE WITH CURRENT SIGNING DESIGN STANDARDS.

S7: PLACE ADDITIONAL RB-3 SIGNS AT A MAXIMUM 500' SPACING THROUGHOUT THE WORK ZONE.

S8: WHEN SPEED LIMIT SIGNS CANNOT BE PLACED SIDE BY SIDE AS SHOWN, PLACE THEM "D" DISTANCE APART.

S9: STOP SIGNS NOT REQUIRED IF SIGNALS ARE ON 4-WAY FLASHING RED. STOP AHEAD SIGNS ARE NOT REQUIRED IF THERE IS ADEQUATE VISIBILITY OF THE STOP SIGN OR IF SIGNALS ARE BEING USED TO CONTROL TRAFFIC.

S10: PLACE REDUCED SPEED ZONE AHEAD SIGN (W3-5b) HERE WHEN USING A SPEED REDUCTION IN THIS DIRECTION.

S11: THE NUMBER OF W1-6 SHIFT SIGNS TO PLACE FOR A SHIFT IS AS FOLLOWS: SHIFTS 6FT OR LESS, PLACE ONE W1-6(R/L)
SHIFTS 6FT TO 12FT, PLACE TWO W1-6(R/L)
SHIFTS 12FT OR MORE, PLACE THREE OR MORE W1-6(R/L) SIGNS DEPENDING UPON LENGTH OF SHIFT AND AS PER THE ENGINEER.

S12: PLACE R2-1 SIGNS AS DETAILED IN NOTE 55 WHEN THERE IS A SPEED REDUCTION IN THIS DIRECTION

TRAFFIC REGULATOR NOTES

TR1: TRAFFIC REGULATORS MUST FOLLOW ALL THE REQUIREMENTS IN THE STANDARD SPECIFICATIONS, THE STANDARD PLANS AND APPLICABLE SPECIAL PROVISIONS, THE CURRENT VERSIONS OF THE TRAFFIC REGULATORS INSTRUCTION MANUAL AND THE VIDEO "HOW TO SAFELY REGULATE TRAFFIC IN MICHIGAN". THE MAXIMUM DISTANCE BETWEEN THE TRAFFIC REGULATORS IS DETERMINED BY THE ROADWAY ADT, GEOMETRICS, AND AS DIRECTED BY THE ENGINEER.

TR2: PROVIDE APPROPRIATE BALLOON LIGHTING TO SUFFICIENTLY ILLUMINATE TRAFFIC REGULATOR'S STATIONS WHEN TRAFFIC REGULATING IS ALLOWED DURING THE HOURS OF DARKNESS.

TR3: PROVIDE EITHER A STOP/SLOW AFAD OR A RED/YELLOW LENS AFAD, MEETING THE REQUIREMENTS OF THE MMUTCD

TEMPORARY TRAFFIC CONTROL DEVICE NOTES

TCD1: THE MAXIMUM DISTANCE IN FEET BETWEEN CHANNELIZING DEVICES IN A TAPER SHOULD NOT EXCEED 1.0 TIMES THE WORK ZONE SPEED LIMIT IN MPH FOR ROADWAYS WITH A POSTED WORK ZONE SPEED LIMIT LESS THAN 45 MPH AND SHOULD NOT EXCEED 50 FEET ON ROADWAYS WITH A POSTED WORK ZONE SPEED LIMIT OF 45 MPH OR GREATER. THE SPACING FOR 42 INCH CHANNELIZING DEVICE TAPERS ARE NOT TO EXCEED 25 FEET AT NIGHT.

TCD2: THE MAXIMUM DISTANCE IN FEET BETWEEN CHANNELIZING DEVICES IN A TANGENT SHOULD NOT EXCEED TWICE THE WORK ZONE SPEED LIMIT IN MPH FOR ROADWAYS WITH A POSTED WORK ZONE SPEED LIMIT LESS THAN 45 MPH AND SHOULD NOT EXCEED 100 FEET ON ROADWAYS WITH A POSTED WORK ZONE SPEED LIMIT OF 45 MPH OR GREATER. THE SPACING FOR 42 INCH CHANNELIZING DEVICE TANGENTS ARE NOT TO EXCEED 50 FEET AT NIGHT.

TCD3: TYPE III BARRICADES MUST BE LIGHTED FOR OVERNIGHT CLOSURES.

TCD4: WHEN THE HAUL ROAD IS NOT IN USE, PLACE LIGHTED TYPE III BARRICADES WITH "ROAD CLOSED" EXTENDING COMPLETELY ACROSS THE HAUL ROAD.

TCD5: USE OBJECT MARKER SIGNS IN LIEU OF THE TYPE B HIGH INTENSITY LIGHT SHOWN IN THE STANDARD PLAN FOR TEMPORARY CONCRETE BARRIER (R-53, AND R-126) WHEN USED WITH A TEMPORARY SIGNAL SYSTEM. THE OBJECT MARKERS MUST BE A MINIMUM OF 12 INCHES IN WIDTH AND 36 INCHES IN HEIGHT AND HAVE ORANGE AND WHITE RETROREFLECTIVE SHEETING. THE RETROREFLECTIVE SHEETING MUST HAVE ALTERNATING DIAGONAL ORANGE AND WHITE STRIPES SLOPING DOWNWARD AT AN ANGLE OF 45 DEGREES IN THE DIRECTION VEHICULAR TRAFFIC IS TO PASS.

TCD6: PLACE LIGHTED ARROW PANELS AS CLOSE TO THE BEGINNING OF TAPERS AS PRACTICAL, BUT NOT IN A MANNER THAT WILL OBSCURE OR CONFUSE APPROACHING MOTORISTS WHEN PHYSICAL LIMITATIONS RESTRICT PLACEMENT. IN CURBED SECTIONS, IF ARROW BOARD CANNOT BE PLACED BEHIND CURB, PLACE ARROW BOARD IN THE CLOSED LANE AS CLOSE TO THE BEGINNING OF TAPER AS POSSIBLE.

TCD7: ADDITIONAL TYPE III BARRICADES MAY BE REQUIRED TO COMPLETELY CLOSE OFF ROAD FROM EDGE OF PAVEMENT TO EDGE OF PAVEMENT.

TCD8: WHERE THE SHIFTED SECTION IS SHORTER THAN 600 FEET, A DOUBLE REVERSE CURVE SIGN (WCM-11) CAN BE USED INSTEAD OF THE FIRST REVERSE CURVE SIGN, AND THE SECOND REVERSE CURVE SIGN CAN BE OMITTED.

TCD9: RUMBLE STRIPS ARE TO BE PLACED AS SPECIFIED IN THE CONTRACT. IF NOT SPECIFIED IN THE CONTRACT, PLACE RUMBLE STRIPS AS SHOWN, AND IN ACCORDANCE WITH THE RUMBLE STRIP MANUFACTURER'S RECOMMENDATIONS. AN ARRAY OF RUMBLE STRIPS CONTAINS THREE RUMBLE STRIPS. PLACE THE RUMBLE STRIPS IN THE ARRAY AT A CONSISTENT DISTANCE, BETWEEN 10' AND 20' APART.

TCD10: SEE THE WORK ZONE SAFETY AND MOBILITY MANUAL, PORTABLE CHANGEABLE MESSAGE SIGN GUIDELINES FOR RECOMMENDED AND CORRECT PCMS MESSAGING. STAGGER PCMS THAT ARE ON OPPOSING SIDES OF THE ROAD 1000 FEET FROM EACH OTHER.

RAMP NOTES

RMP1: WHEN CONDITIONS ALLOW, ES-1 SIGNS MUST BE REMOVED OR COVERED AND CHANNELIZING DEVICES MUST BE POSITIONED TO ENABLE RAMP TRAFFIC TO DIVERGE IN A FREE MANNER

RMP2: STOP AND YIELD CONDITIONS SHOULD BE AVOIDED WHENEVER PRACTICAL.
R1-1 SIGNS: WHERE ROADWAYS YIELD SIGNS MAY BE USED IN PLACE OF R1-2 SIGNS. WHEN R-1 SIGNS ARE USED, W3-1 SIGNS MUST BE USED IN PLACE OF W3-2 SIGNS. CONSIDERATION SHOULD BE GIVEN TO CLOSING THE RAMP TO COMPLETE WORK TO ALLOW AN ADEQUATE MERGE DISTANCE. WORK SHOULD BE EXPEDITED TO AVOID THE STOP AND/OR YIELD CONDITIONS.

MDOT Michigan Department of Transportation	NOT TO SCALE	MAINTAINING TRAFFIC TYPICAL NO: 102-GEN-NOTES	TRAFFIC TYPICALS NOTE SHEET	DATE: MAY 2022 SHEET: 1 OF 2
FILE: 102-GEN-NOTES.dgn				

THE FOLLOWING NOTES APPLY IF CALLED FOR ON THE TRAFFIC TYPICAL

SIGNAL NOTES

SIG1: EXISTING SIGNAL MUST BE EITHER 4-WAY FLASHING RED, BAGGED, OR TURNED OFF.

SIG2: SIGNAL IS IN OPERATION.

SIG3: DELINEATE THE WORK ZONE AREA WITH 28 INCH CONES FOR DAYTIME WORK, OR 42 INCH CHANNELIZING DEVICES FOR NIGHTTIME WORK.

SIG4: THE CONTRACTOR MUST HAVE A DESIGNATED SPOTTER IF THE AERIAL BUCKET TRUCK IS LOCATED OVER ACTIVE TRAVEL LANES.

SIG5: THE LOWEST POINT OF THE BUCKET MAY NOT TRAVEL BELOW 14 FOOT VERTICAL CLEARANCE. THE CONTRACTOR MUST UTILIZE AN ALTERNATE SET UP, OR PLACE THE INTERSECTION IN A 4 WAY STOP IF THE 14 FOOT VERTICAL CLEARANCE IS COMPROMIZED. USE TRAFFIC REGULATORS TO CONTROL TRAFFIC THROUGH THE INTERSECTION WHEN TRAFFIC IS PLACED IN A 4 WAY STOP.

SIG6: DELINEATE THE TRUCK WITH CHANNELIZING DEVICES. THE POSITION OF THE TRUCK MAY BE MOVED TO FACILITATE WORK.

MAINTENANCE AND SURVEYING NOTES

MS1: WHENEVER STOPPING SIGHT DISTANCE EXISTS TO THE REAR, THE SHADOW VEHICLES SHOULD MAINTAIN THE RECOMMENDED DISTANCE FROM THE WORK AREA AND PROCEED AT THE SAME SPEED. THE SHADOW VEHICLE SHOULD SLOW DOWN AND TRAVEL AT A FARTHER DISTANCE TO PROVIDE ADEQUATE SIGHT DISTANCE IN ADVANCE OF VERTICAL OR HORIZONTAL CURVES.

MS2: WORKERS OUTSIDE OF VEHICLES SHOULD WORK WITHIN 150' OF WORK VEHICLES WITH AN ACTIVATED BEACON, BETWEEN THE "BEGIN WORK CONVOY" SIGN AND THE "END WORK CONVOY" SIGN, OR BETWEEN THE "WORK ZONE BEGINS" AND "END ROAD WORK" SIGN.

MS3: WORK OR SHADOW VEHICLES WITH OR WITHOUT A TMA MAY BE USED TO SEPARATE THE WORK SPACE FROM TRAFFIC. IF USED, THE VEHICLES SHOULD BE PARKED ACCORDING TO THE ROLL AHEAD DISTANCE TABLES.

MS4: WORK AND SHADOW VEHICLES SHALL BE APPROPRIATELY EQUIPPED WITH AN ACTIVATED AMBER BEACON.

MS5: WHEN WORKERS ARE OUTSIDE THEIR VEHICLES IN AN EXISTING LANE WHILE A MOBILE OPERATION IS OCCURRING DURING THE NIGHTTIME HOURS, CHANNELIZING DEVICES TO DELINEATE OPEN OR CLOSED LANES AT 50 FT SPACING MUST BE USED. AN EXAMPLE OF AN OPERATION (BUT NOT LIMITED TO) IS THE LAYOUT OF CONCRETE PATCHES.

MS6: W21-6 AND W20-1 SIGNS MAY BE SUBSTITUTED AS DETERMINED BY THE TYPE OF WORK TAKING PLACE AS PER THE ENGINEER.

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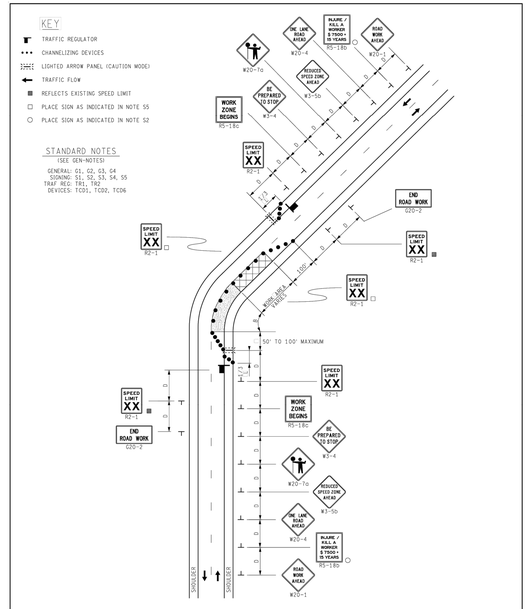
KEY
TRAFFIC REGULATOR
CHANNELIZING DEVICES
LIGHTED ARROW PANEL (CAUTION MODE)
TRAFFIC FLOW
REFLECTS EXISTING SPEED LIMIT
PLACE SIGN AS INDICATED IN NOTE 55
PLACE SIGN AS INDICATED IN NOTE 52
STANDARD NOTES
(SEE GEN-NOTES)
GENERAL: G1, G2, G3, G4
SIGNING: S1, S2, S3, S4, S5
TRAF REG: TR1, TR2
DEVICES: TCD1, TCD2, TCD6
W20-1
W20-4
R5-1Bb
W3-4
R5-1Bc
W3-5a
W20-1
W20-4
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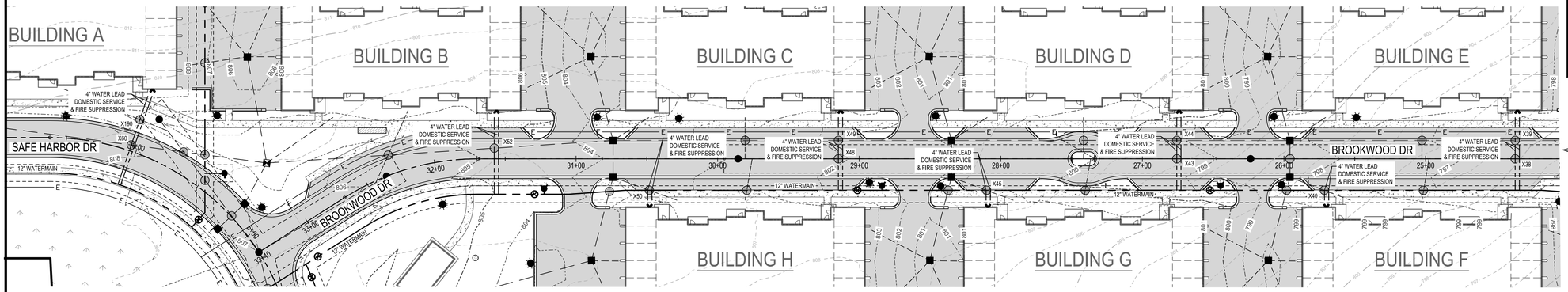
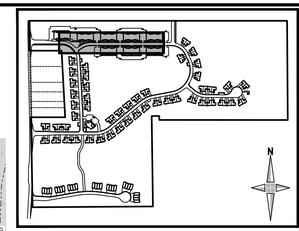
W3-5a
R5-1Bc





KEY MAP
NOT TO SCALE

N

0 40' 80'
SCALE: 1" = 40'

LEGEND

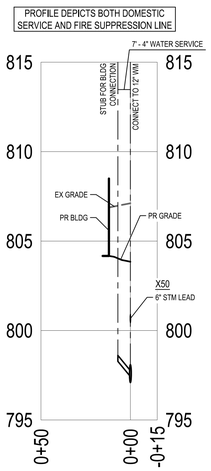
- PR GATE VALVE AND WELL
- PR HYDRANT
- PR VALVE AND BOX
- PR WATERMAIN
- PR WATER LEAD
- PR STORM CATCH BASIN
- PR STORM MANHOLE
- PR STORM YARD BASIN
- PR STORM END SECTION
- PR RIP RAP
- PR STORM SEWER
- PR STORM LEAD
- PR CLEAN OUT
- PR SANITARY MANHOLE
- PR SANITARY SEWER
- PR SANITARY LEAD
- PR LIGHT POLE
- PR FRANCHISE UTILITIES
- PR CONTOUR MINOR (1')
- PR CONTOUR MAJOR (5')
- EX CONTOUR MINOR (1')
- EX CONTOUR MAJOR (5')
- PR DRAINAGE ARROW
- PR SWALE / DITCH
- PR CURB AND GUTTER
- PR ASPHALT
- PR LEFORGE ROAD R.O.W. ASPHALT
- PR GRAVEL
- PR CONCRETE

UTILITY PIPE MATERIALS:

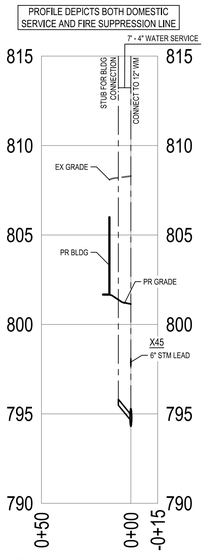
WATER LEAD, WL:
LEADS GREATER THAN 2": DIP CL 54
OR APPROVED EQUAL

NOTES:

1. CGM - COMPACTED CL II GRANULAR MATERIAL
3. ALL WATERMAIN & LEADS SHALL BE INSTALLED AT A MINIMUM DEPTH OF 5.5'.
6. SEE SHEET 52 FOR UTILITY CROSSING CHART
8. WATER MAIN THAT IIS UNDER OR WITHIN A 1-ON-1 INFLUENCE OF PAVEMENT SHOULD HAVE COMPACTED GRANULAR BACKFILL.



BLDG H WATER LEAD PROF



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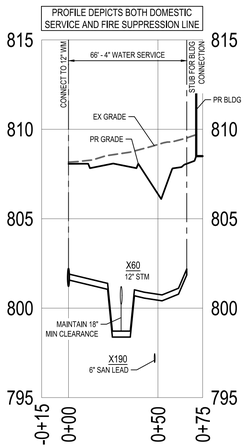

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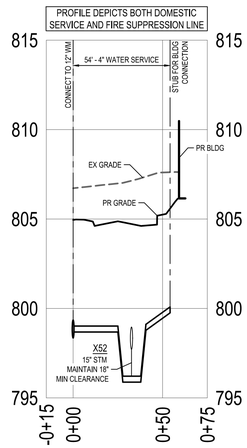

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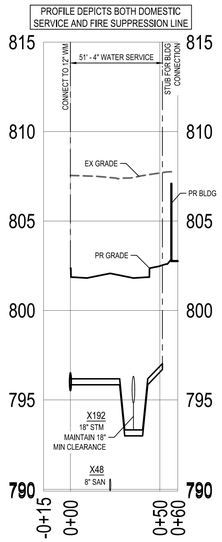

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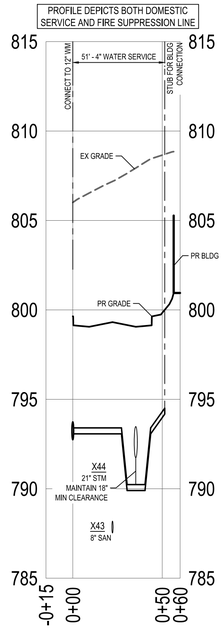

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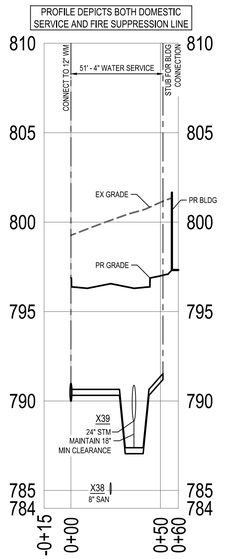

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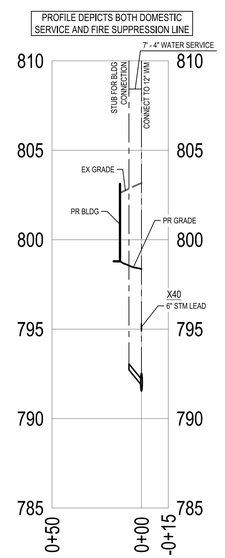

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05/05/2025	TOWNSHIP FSP RESUBMITTAL
05/06/2025	SESC SUBMITTAL
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STACKED FLAT WATER LEAD PROFILES

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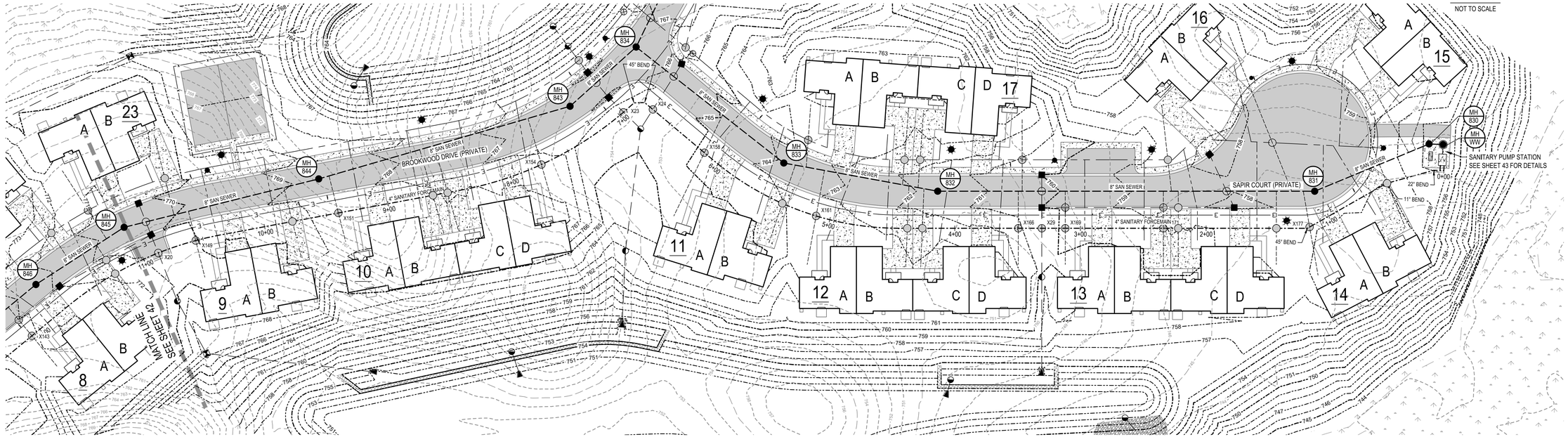

KEY MAP
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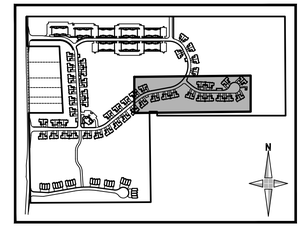

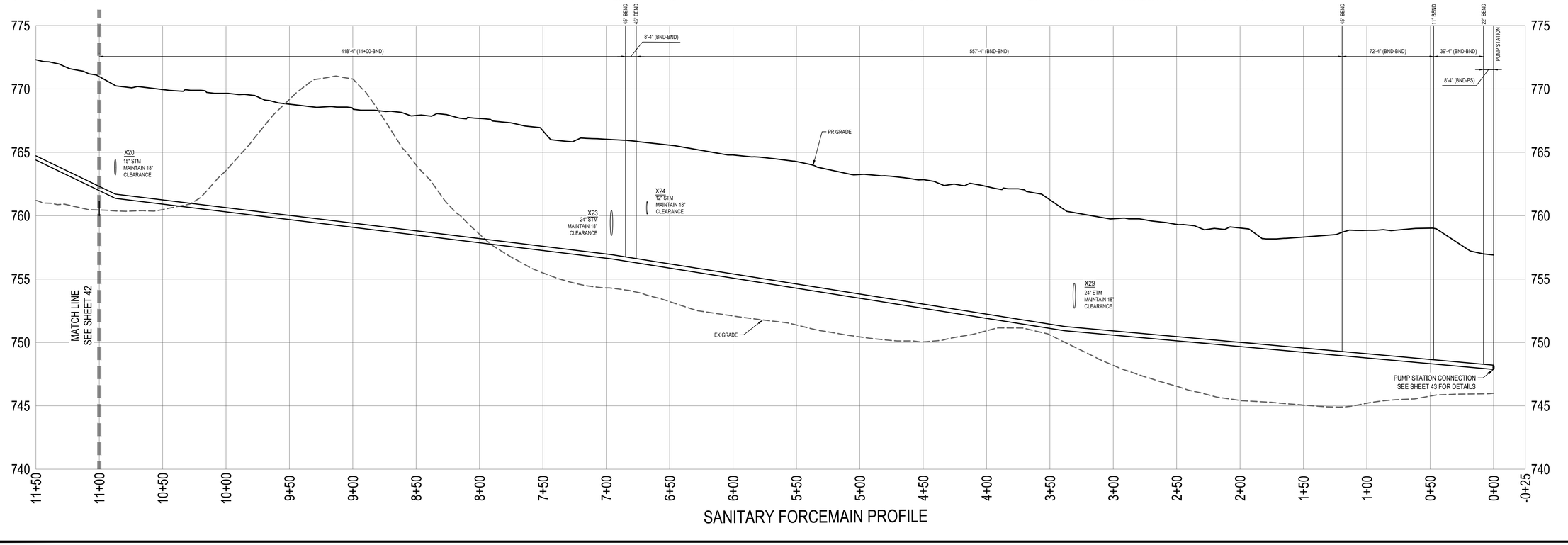

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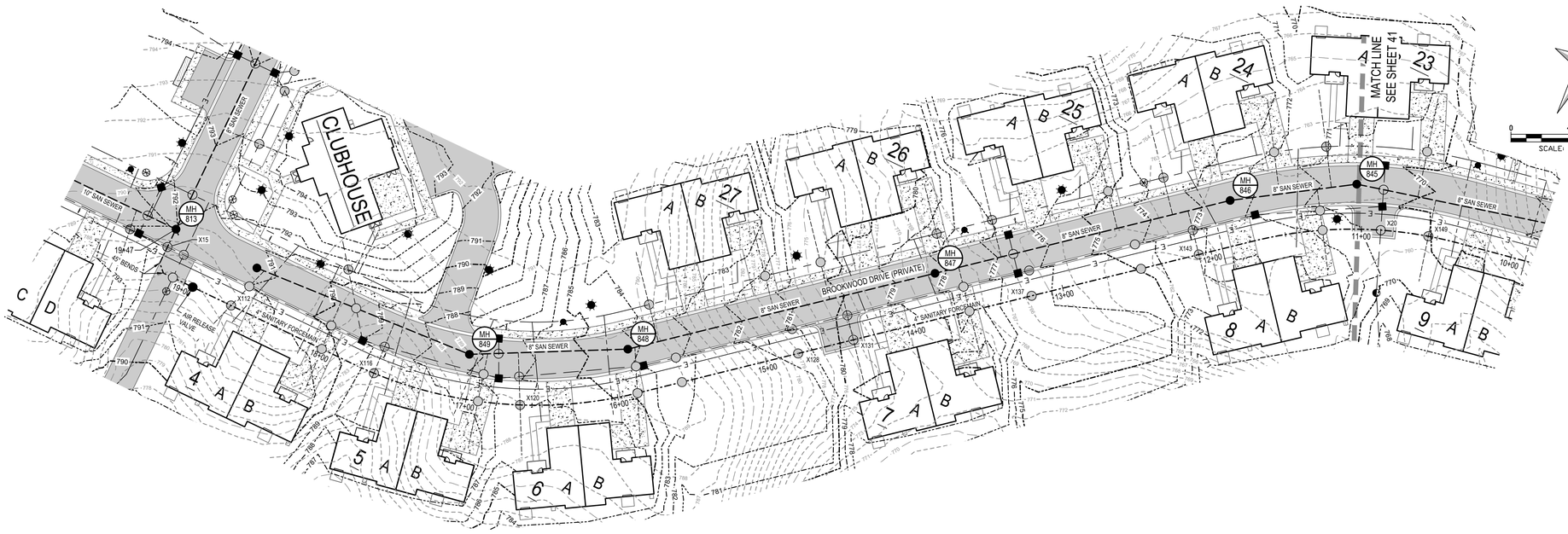

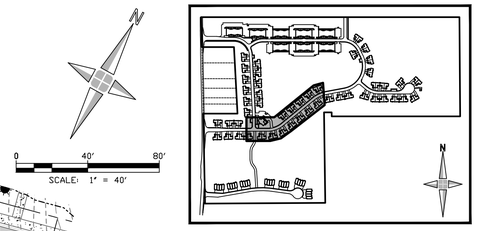

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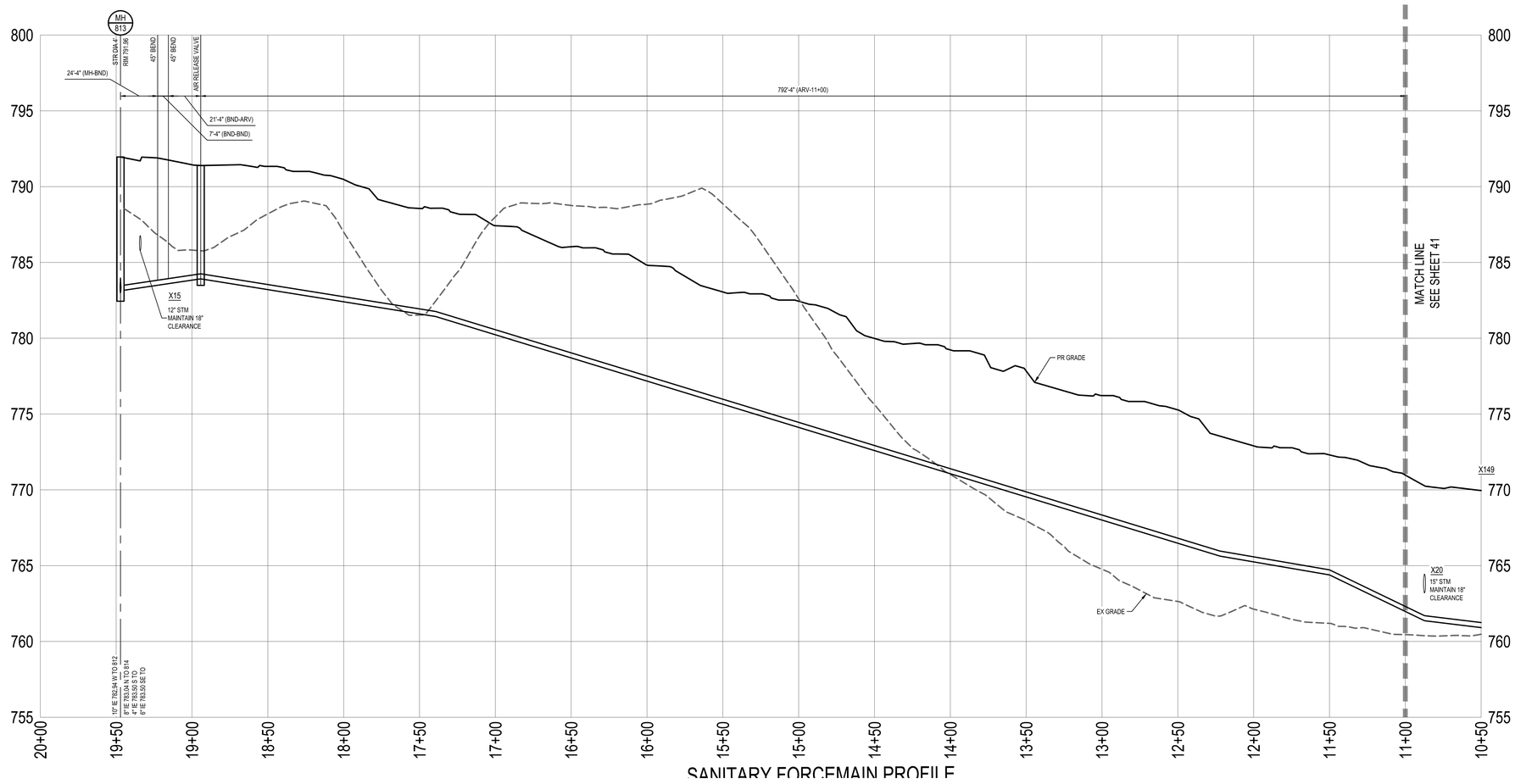

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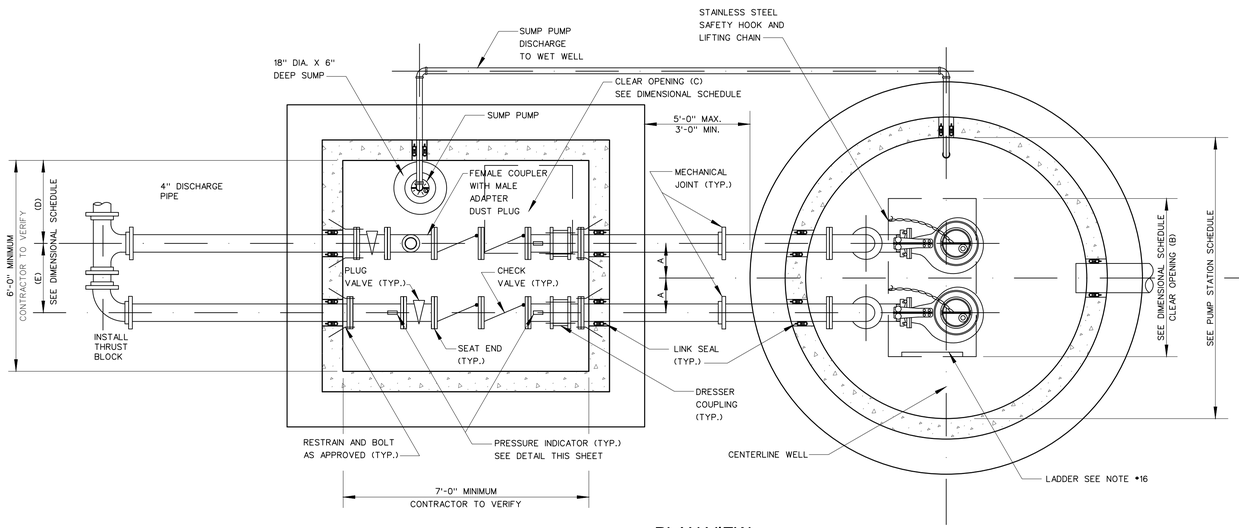
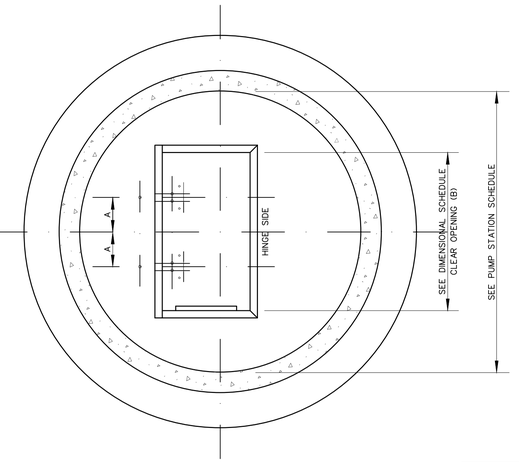
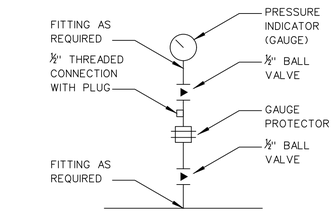


PLAN VIEW
BASE ELEVATION



PLAN VIEW
GRADE ELEVATION



NOTES:
1. GAUGE PROTECTOR: ELASTOMERIC
2. PIPING ½" EXCEPT AS APPROVED

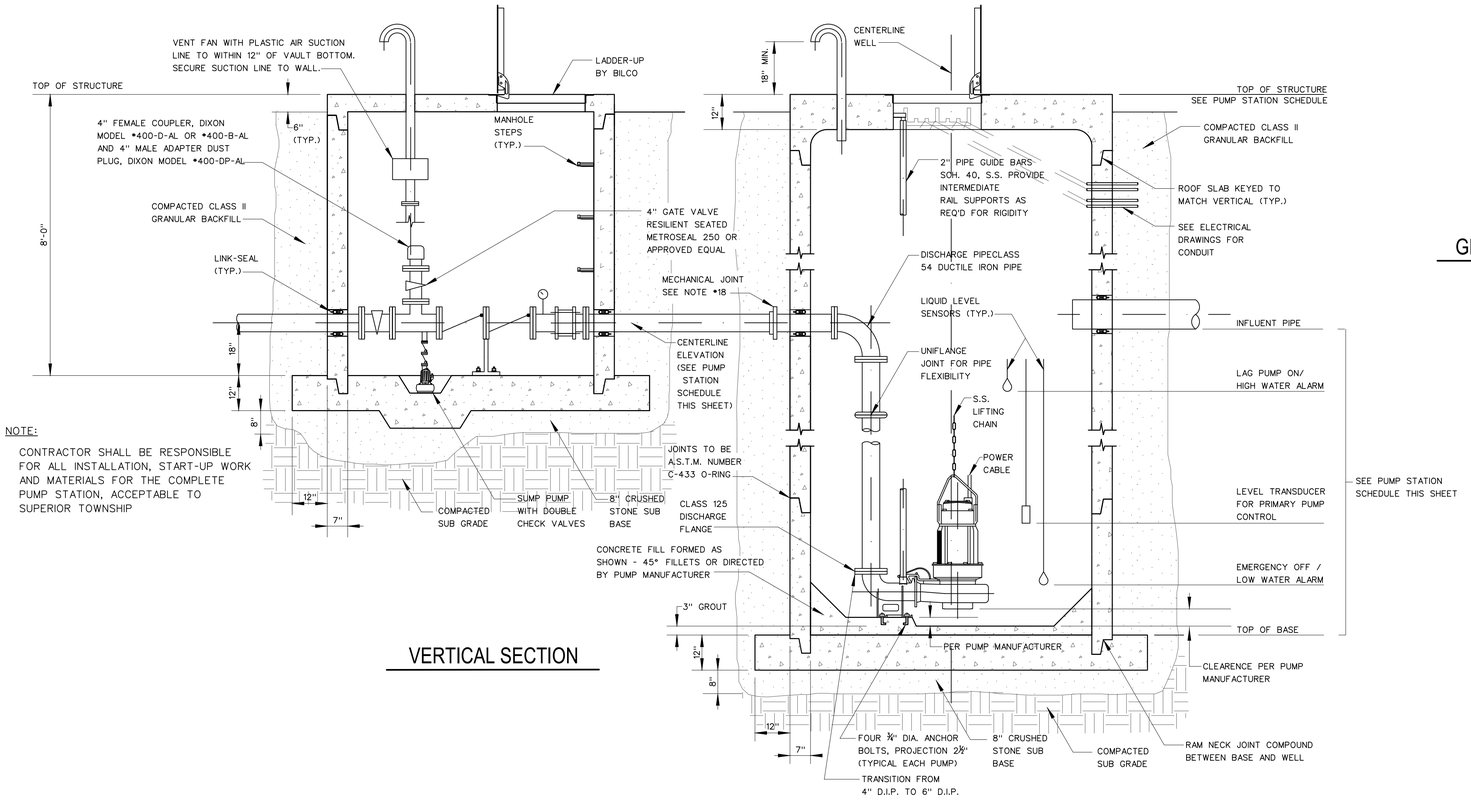
PRESSURE INDICATOR POST

DIMENSIONAL SCHEDULE

℄ DISCHARGE PIPE TO C ℄ OF WET WELL	A	12"
CLEAR OPENING OF WET WELL HATCH	B	70"
CLEAR OPENING OF VALVE VAULT HATCH	C	24"x36"
℄ DISHARGE PIPE TO INSIDE FACE OF SUMP PUMP SIDE OF VALVE VAULT	D	30"
℄ TO ℄ DISCHARGE PIPES IN VALVE VAULT	E	24"
℄ DISHARGE PIPE TO INSIDE FACE OF OPPOSITE SIDE OF VALVE VAULT	F	18"

PUMP STATION 7.6 SCHEDULE

NUMBER OF PUMPS	TWO
WETWELL DIAMETER	6'
TOP OF WETWELL ELEVATION	SEE PROFILE
GRAVITY INLET INVERT	747.45
GRAVITY INLET PIPE DIAMETER	8"
TOP OF BASE ELEV.	741.00
DISCHARGE PIPE DIAMETER	4" D.I.P.
DISCHARGE PIPE CENTERLINE ELEV.	750.50
HIGH WATER ALARM SIGNAL ELEV.	745.45
LEAD PUMP ON ELEV.	744.45
PUMPS OFF ELEV.	743.45
EMERGENCY OFF ELEV.	743.20
CAPACITY (EACH) GPM	131
TOTAL DYNAMIC HEAD (FT.)	70.95
MOTOR H.P. (3–PHASE)	6.5
MOTOR R.P.M.	3340
MANUFACTURER	FLYGT
MODEL NO./IMPELLER	NP 3102.070 SH3
IMPELLER	256



VERTICAL SECTION

NOTE:

CONTRACTOR SHALL BE RESPONSIBLE FOR ALL INSTALLATION, START-UP WORK AND MATERIALS FOR THE COMPLETE PUMP STATION, ACCEPTABLE TO SUPERIOR TOWNSHIP

GENERAL NOTES

1. CONTRACTOR SHALL FURNISH LOCKS (WHICH MEET SUPERIOR TOWNSHIP REQUIREMENTS) WITH ONE MASTER KEY FOR THE EQUIPMENT ENCLOSURE, SAFETY SWITCHES AND HATCHES.
2. SHOP DRAWINGS SHALL BE SUBMITTED FOR APPROVAL BEFORE FABRICATION OF EQUIPMENT AND STRUCTURES.
3. ACCESS COVER, ANCHOR BOLTS, AND PUMP LOCATION IN WET WELL SHALL BE CONFIRMED WITH APPROVED SHOP DRAWINGS PRIOR TO CONSTRUCTION.
4. PIPING SHALL BE PAINTED PER SUPERIOR TOWNSHIP SPECIFICATIONS. (EPOXY COATED PIPE AND PVC PIPE SHALL NOT BE PAINTED)
5. SEAL ALL PIPE AND CONDUIT OPENINGS WITH NON–SHRINK GROUT UNLESS OTHERWISE SHOWN OR SPECIFIED.
6. DO NOT LOCATE LIQUID LEVEL SENSORS OR EMERGENCY FLOATS NEAR INFLUENT STREAM.
7. EXHAUST FAN SHALL BE RATED AT 294 CFM AT 0.125 S.P., GREENHECK MODEL DSQ–75–D OR APPROVED EQUAL.
8. POWER METER ENCLOSURE SHALL BE FURNISHED BY DETROIT EDISON CO. AND INSTALLED BY CONTRACTOR.
9. PRECAST VALVE VAULT AND PUMP STATION WET WELL SHALL BE PROVIDED WITH REINFORCING STEEL TO MEET H–20 LIVE LOADS AND DEAD LOADS AS INDUCED BY STRUCTURE DEPTH. THE STRUCTURAL DIMENSIONS SHOWN SUCH AS WALL THICKNESS ARE FOR GUIDANCE ONLY. WET WELL SHALL BE A MINIMUM OF C76 CLASS IV CONCRETE.
10. STRUCTURE MANUFACTURER'S SHOP DRAWING SUBMITTAL SHOULD INCLUDE STRUCTURAL AND BOUYANCY CALCULATIONS BY A REGISTERED PROFESSIONAL ENGINEER IN THE STATE OF MICHIGAN
11. TWO INSTALLED PRESSURE INDICATORS ARE REQUIRED ON PUMP SIDE OF VALVES. IN ADDITION ONE INSTALLED PRESSURE GAUGE ON DOWNSTREAM END OF VALVE IS REQUIRED.
12. CONTRACTOR SHALL SUPPLY SPARE IMPELLER AND OTHER PARTS AS INDICATED IN SPECIFICATIONS.
13. CONTRACTOR SHALL PLACE WET WELL AND VALVE VAULT VENTS SUCH THAT THEY DO NOT FACE THE CONTROL PANEL.
14. ALL PIPE OPENINGS IN CAST STRUCTURES ARE TO BE CAST IN PLACE OR CORED. NO BREAK–OUTS WITH SLEDGEHAMMERS OR JACK HAMMERS IN THE FIELD.
15. SEE SPECIFICATIONS FOR SUMP PUMP INFORMATION:
    SUMP PUMP DISCHARGE PIPING SHALL BE 2" HDPE SDR 11 AND INCLUDE TWO (2) CHECK VALVES FOLLOWED BY ONE (1) BALL VALVE.
16. LADDER SPECIFICATION:
    A. FIBERGLASS LADDER AS MANUFACTURED BY IMCO OR APPROVED EQUAL
    B. LADDER RUNGS @ 18" O.C.
    C. ATTACH TO WET WELL WITH STANDOFF CLIPS AS REQUIRED
    D. PROVIDE A LADDER–UP BY BILCO (VALVE VAULT ONLY)
17. PUMPS SHALL BE EXPLOSION PROOF, SEE SPECIFICATIONS.
18. THE JOINT NEEDS TO BE RESTRAINED BY ONE OF THE FOLLOWING APPROVED METHODS:
    A. RESTRAIN JOINT TO WETWELL STRUCTURE
    B. USE MECHANICAL JOINT RESTRAINT OR FIELD–LOCK GASKET

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SANITARY PUMP STATION DETAILS

BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

Date:	07.26.2024
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Project:	20249.00

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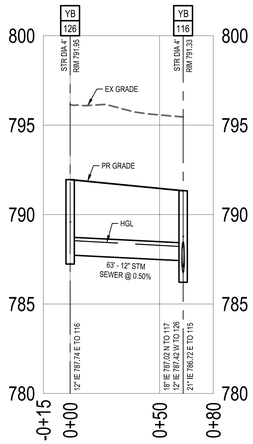

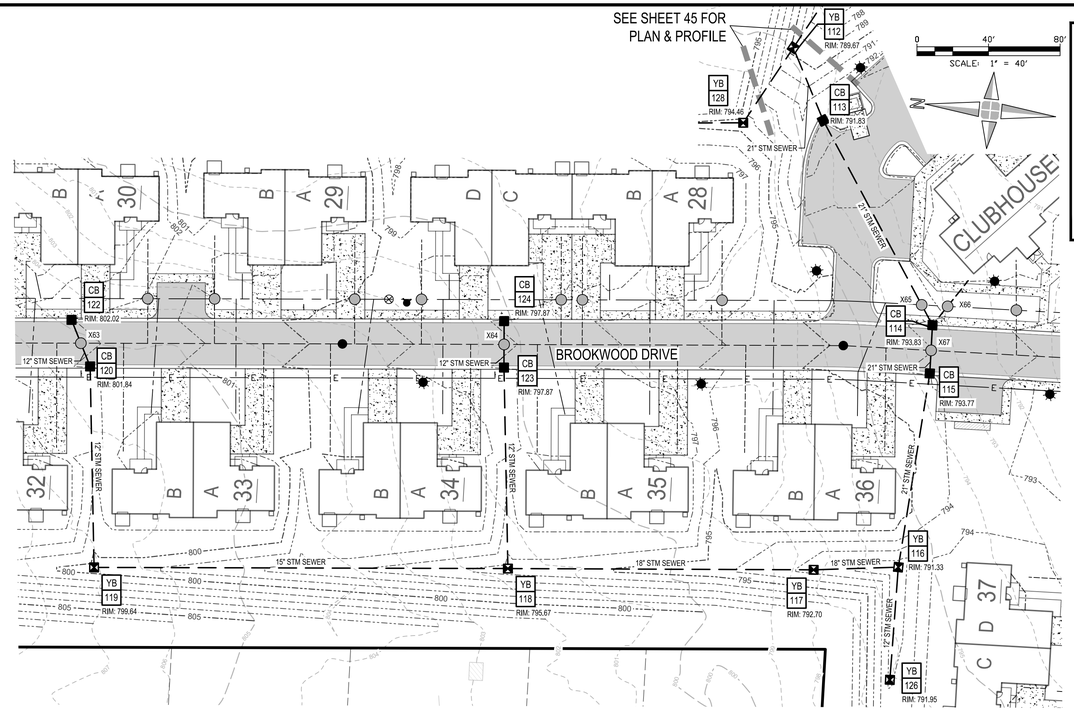

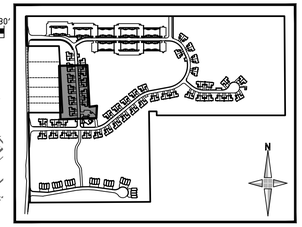

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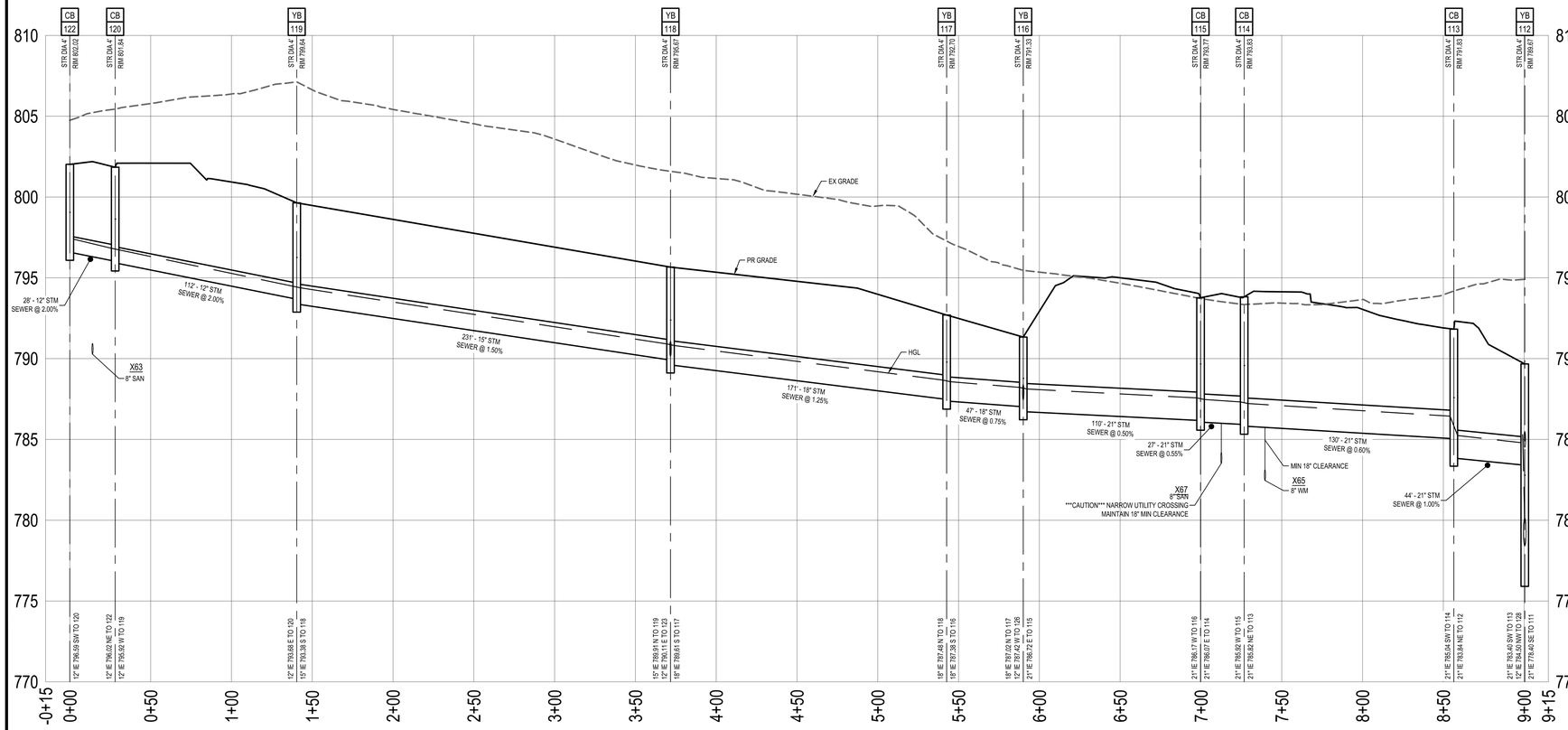

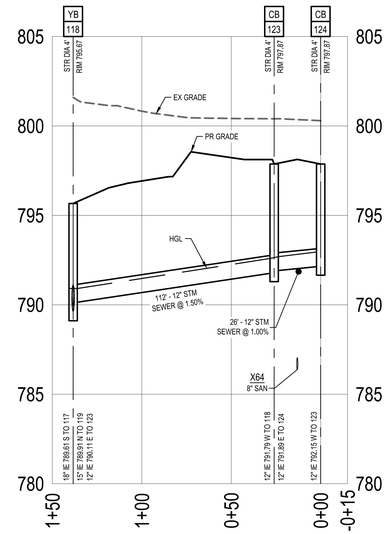

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STORM PLAN & PROFILE

BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

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Sheet:	44
Project:	20249.00

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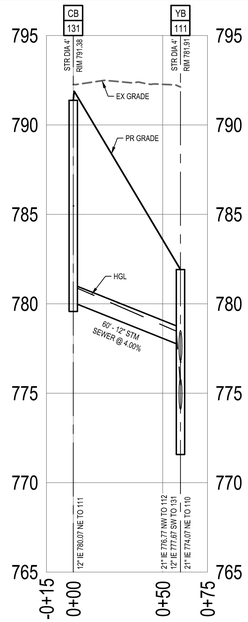

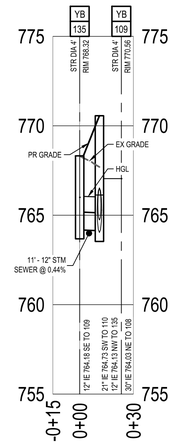

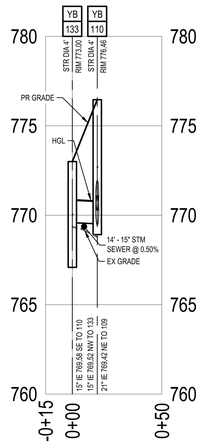

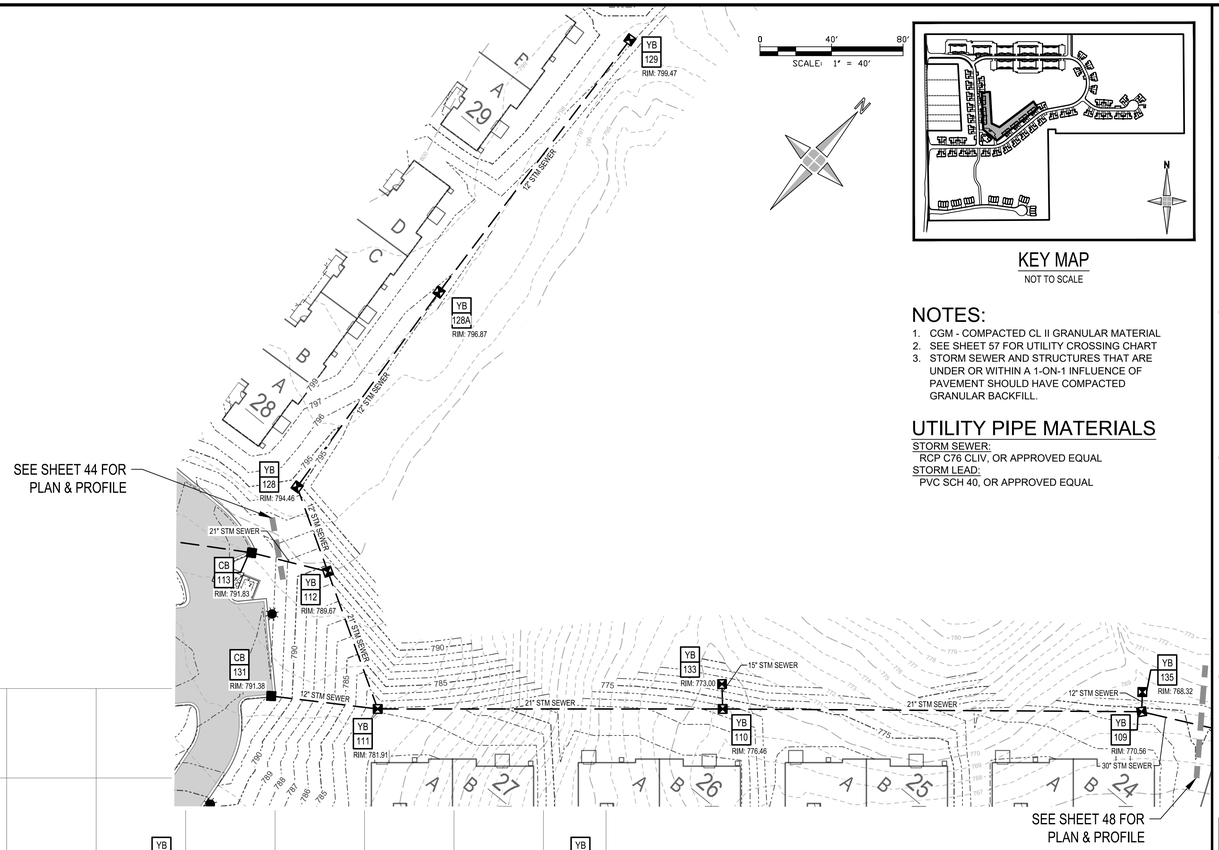

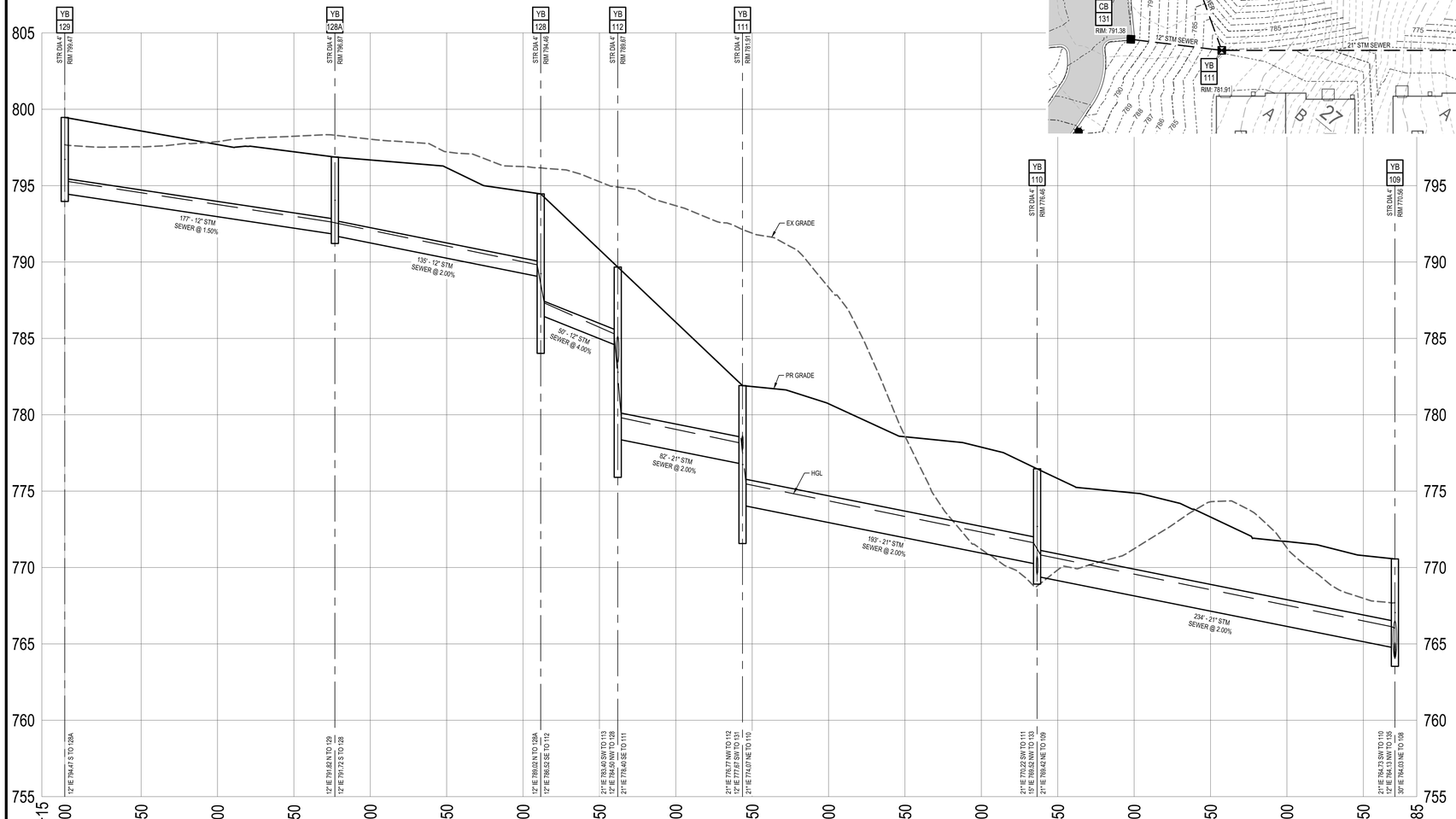

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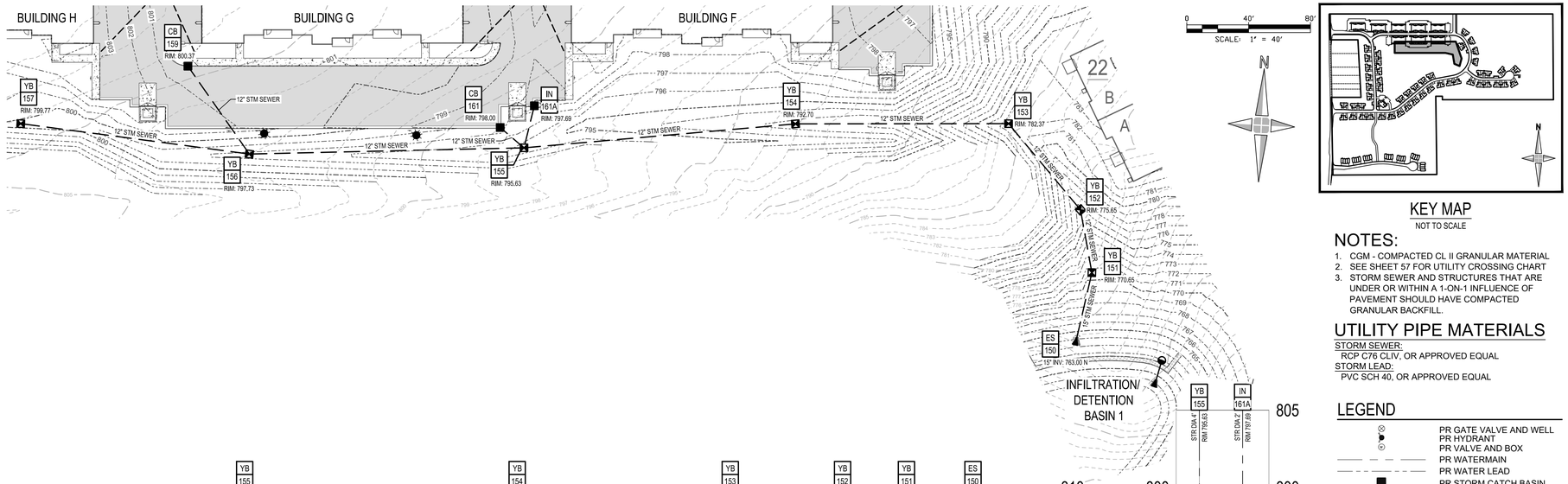

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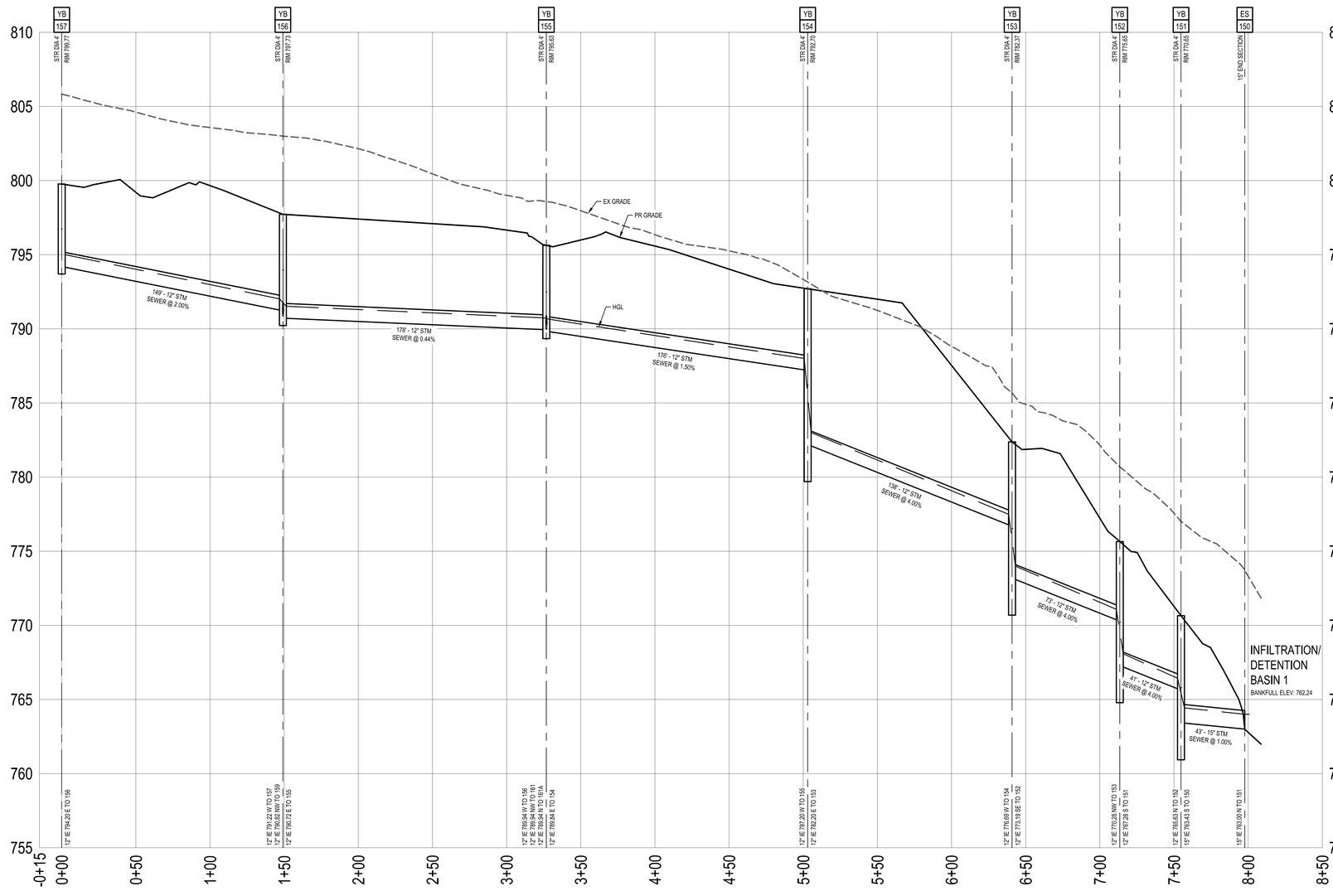

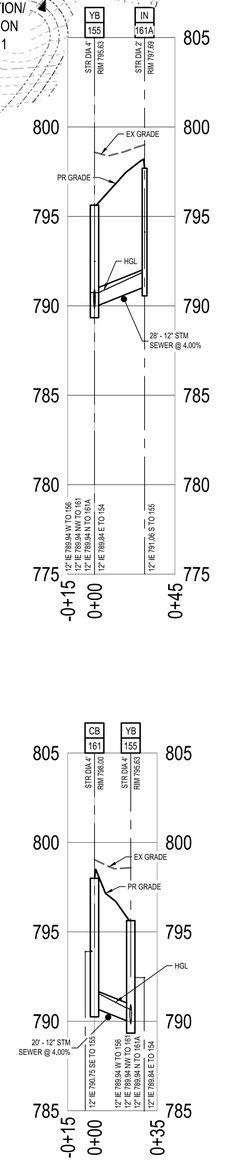

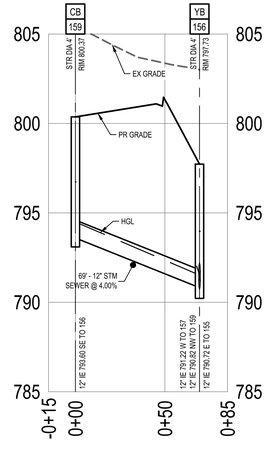

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STORM PLAN & PROFILE

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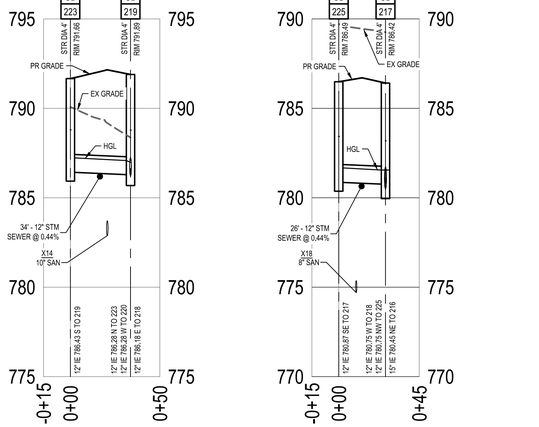

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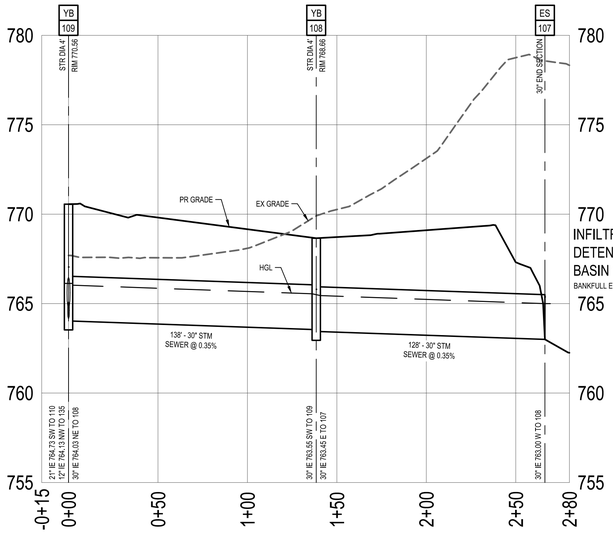

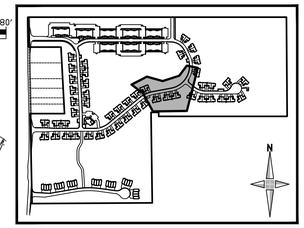

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- PR STORM YARD BASIN
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- PR RIP RAP
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- PR ASPHALT
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- PR GRAVEL
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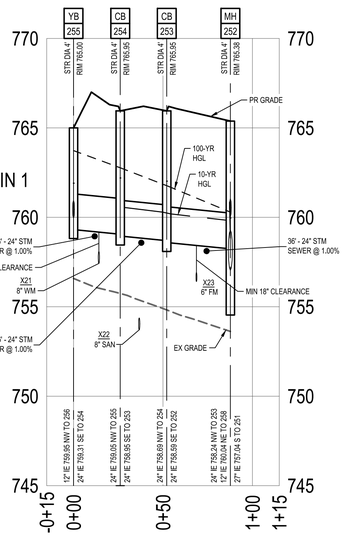

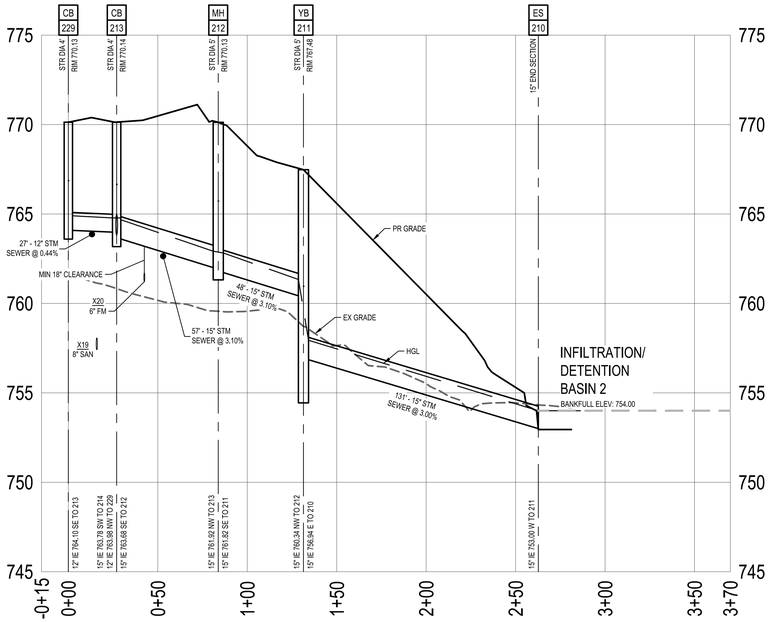

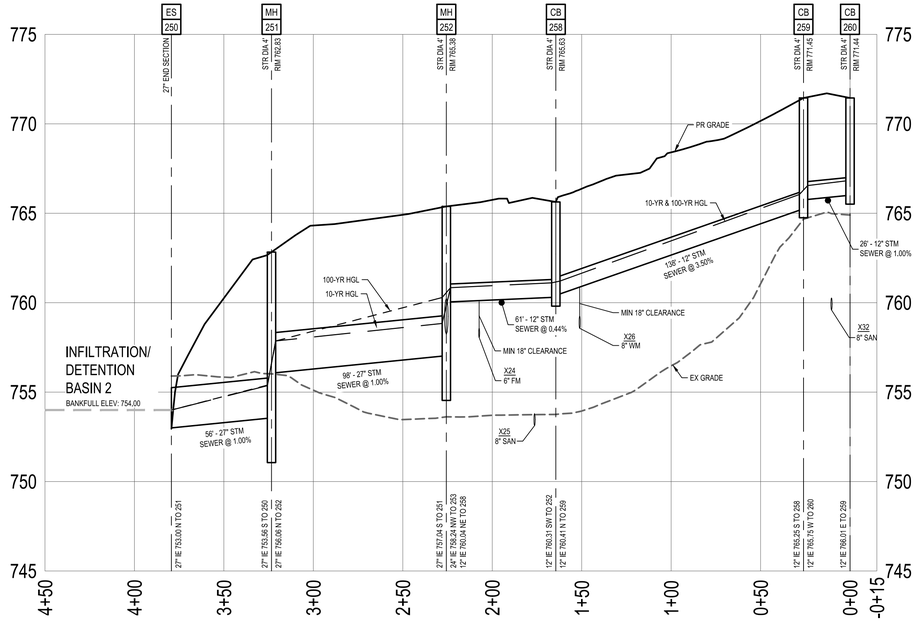

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ENGINEER
No. 6201065198
LICENSED PROFESSIONAL ENGINEER

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05/20/2025	STEEP SLOPE REVISIONS

Developed For:

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STORM PLAN & PROFILE

BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

Date:	07.26.2024
Scale:	1"=40'
Sheet:	48
Project:	20249.00

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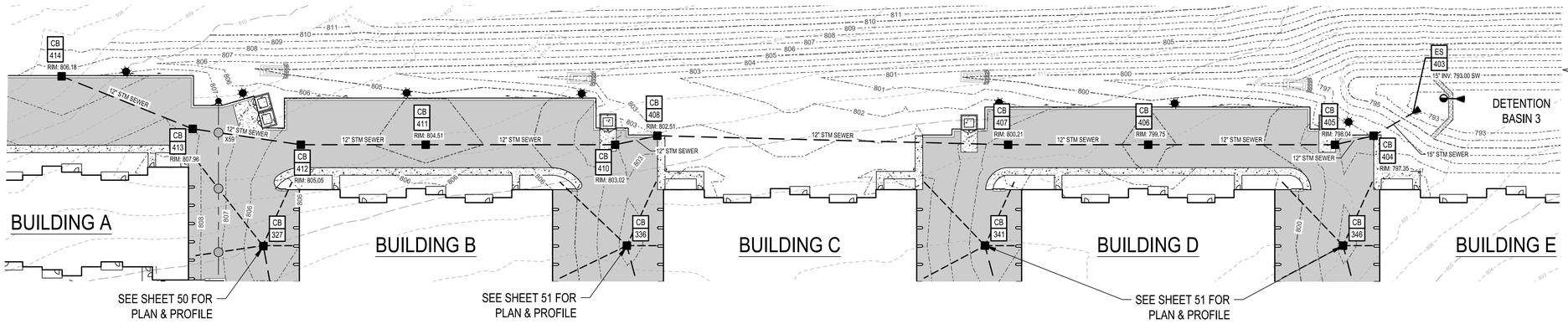

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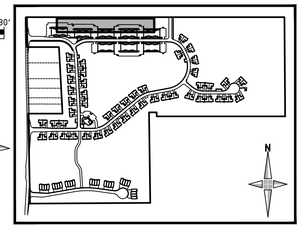
SCALE: 1" = 40'



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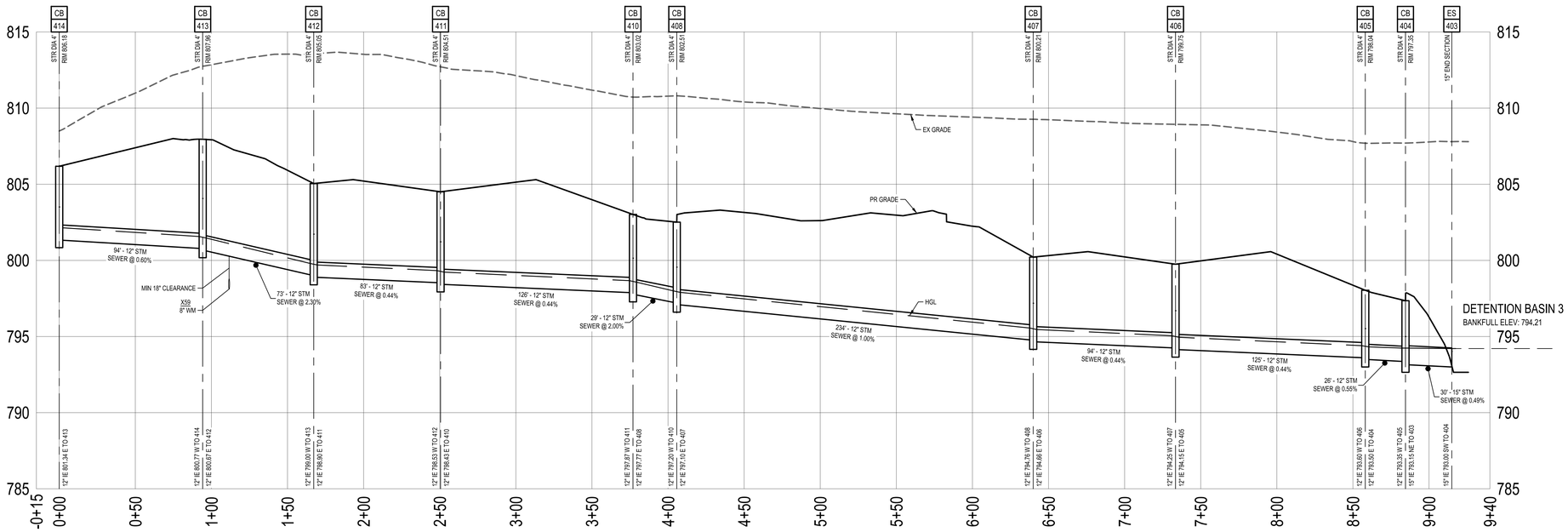

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BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

Date:	07.26.2024
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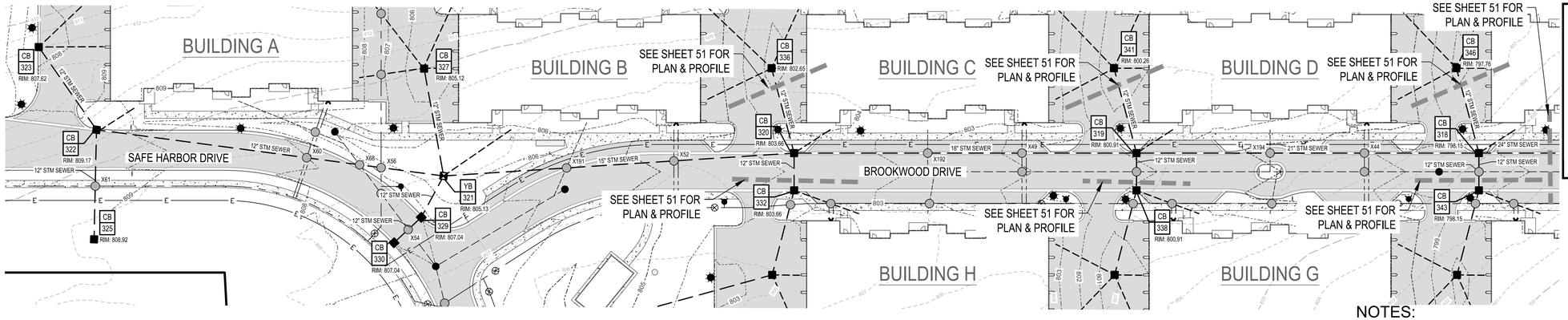

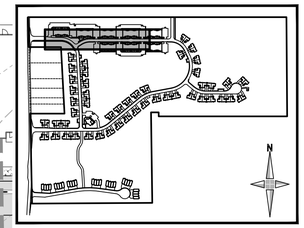

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SCALE: 1" = 40'

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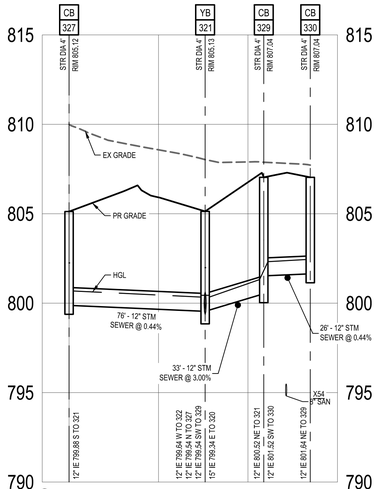

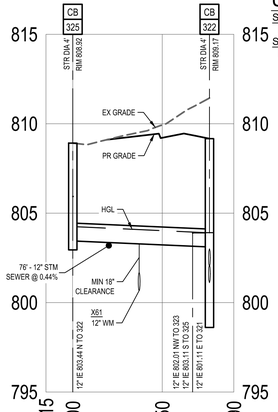

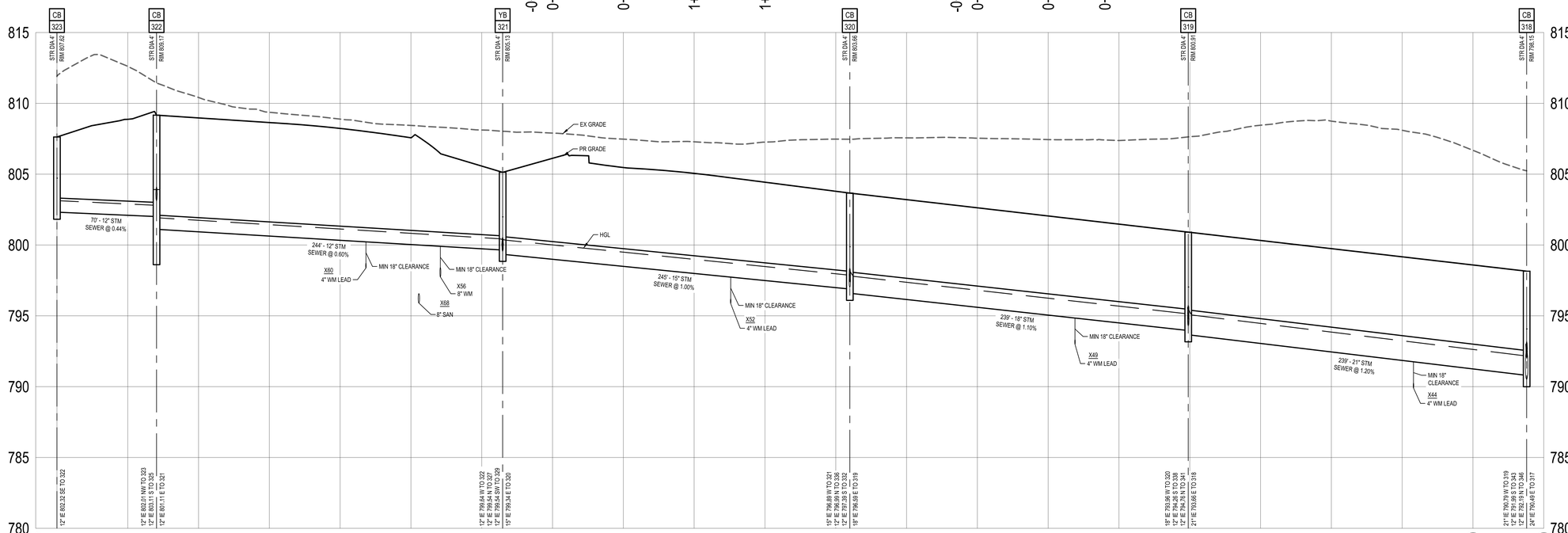

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SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

Date:	07.26.2024
Scale:	1"=40'
Sheet:	50
Project:	20249.00

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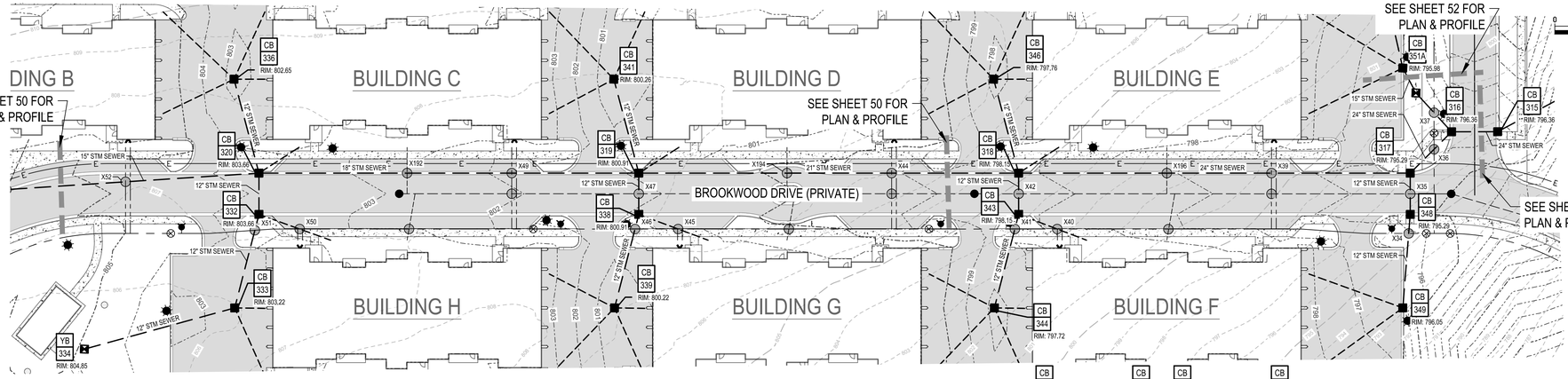

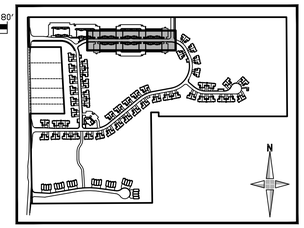

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NOT TO SCALE

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- PR HYDRANT
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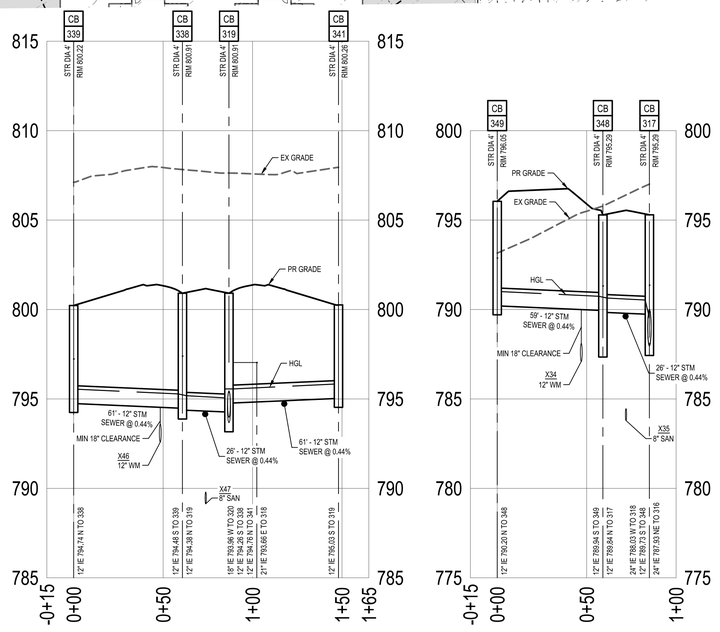

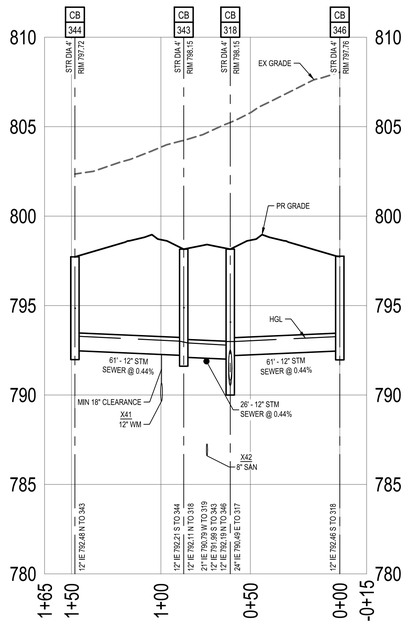

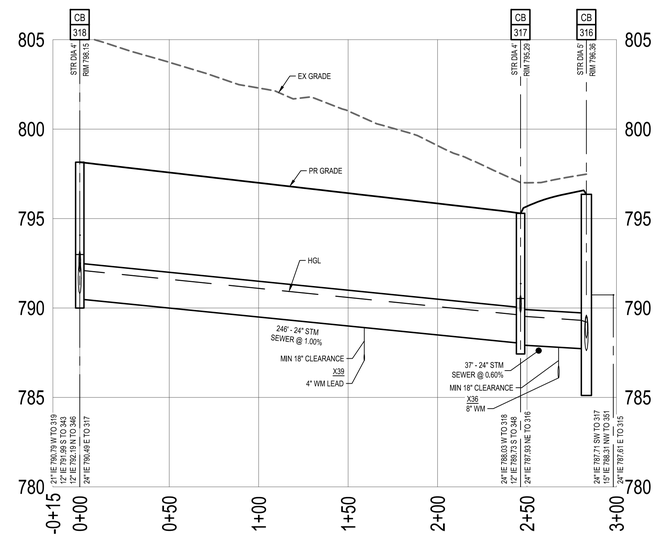

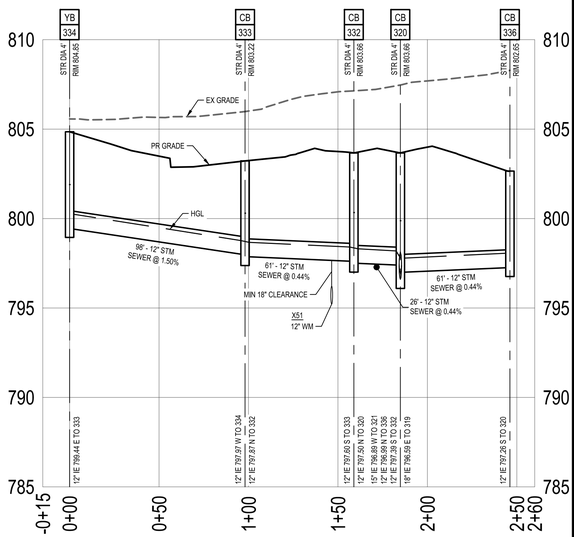

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SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

Date:	07.26.2024
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Sheet:	51
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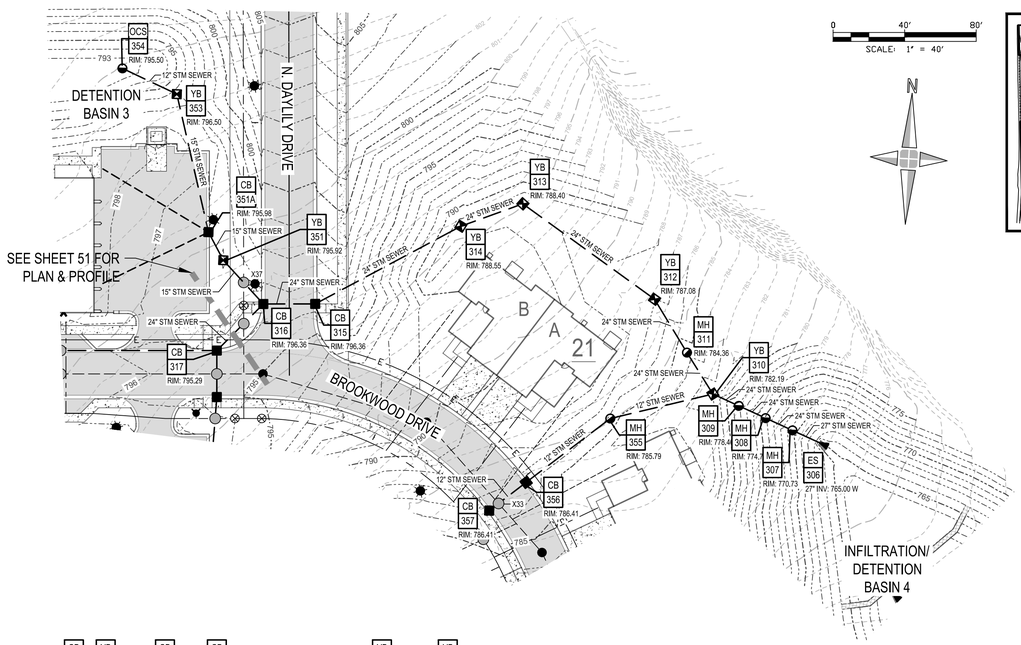

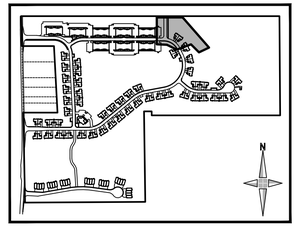

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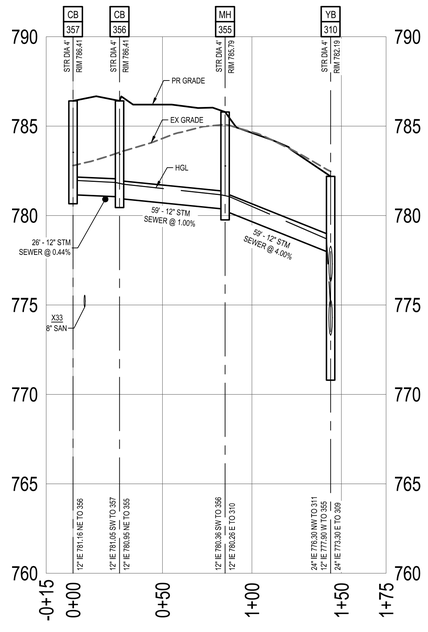

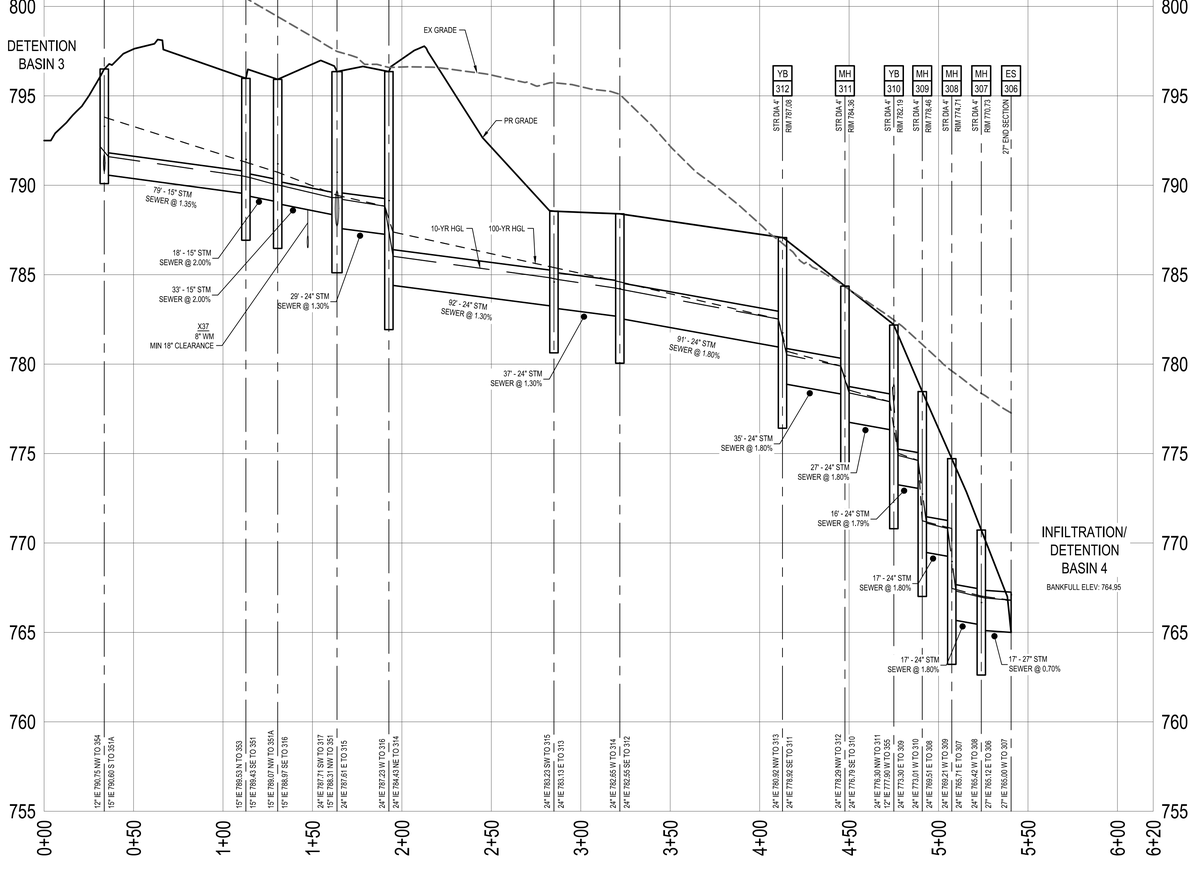

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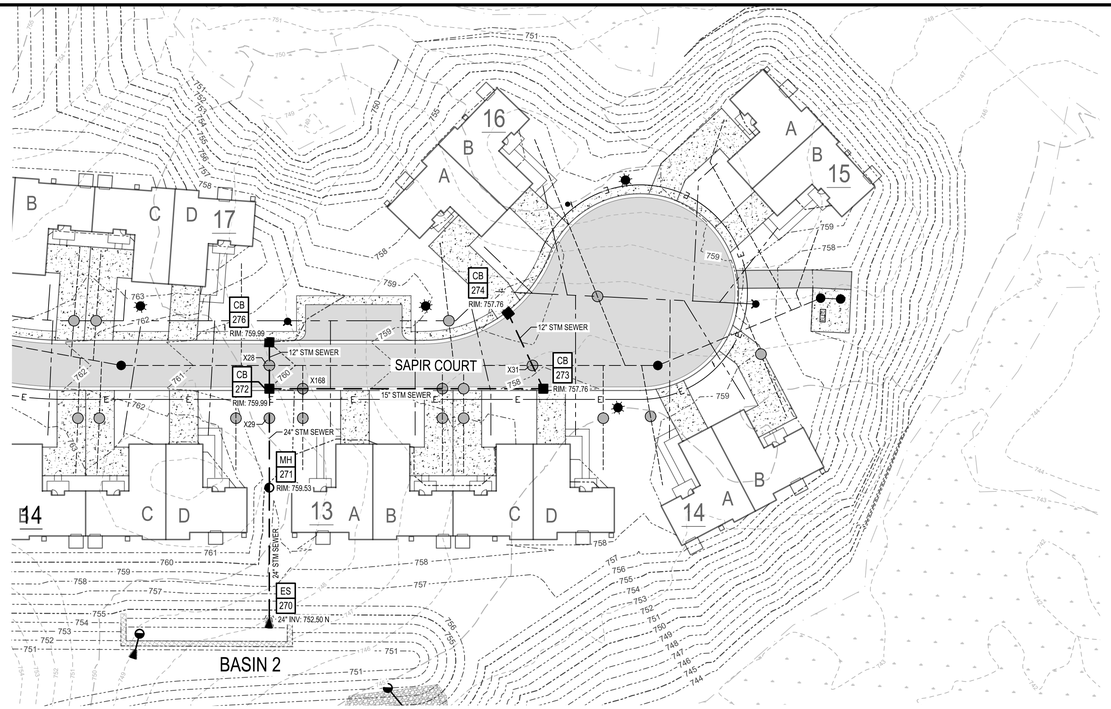

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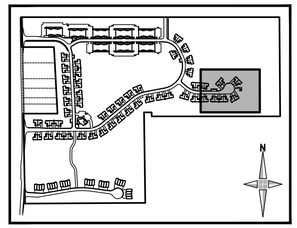

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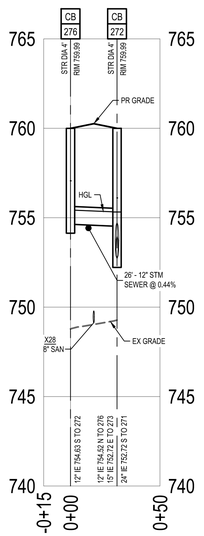

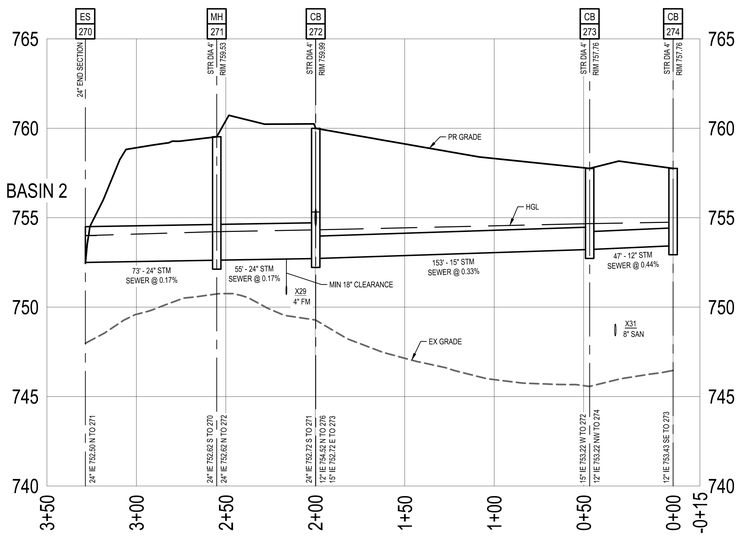

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Manager:	JR
Designer:	JR / AR
Quality Control:	-
Section:	33
	T-02-S R-07-E

Professional Seal:

STATE OF MICHIGAN
JOSHUA D. RATLIFF SR.
ENGINEER
No. 6201065198
LICENSED PROFESSIONAL ENGINEER

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01/17/2025	WCRC RESUBMITTAL
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05/13/2025	FSP LANDSCAPE REVISIONS
05/20/2025	STEEP SLOPE REVISIONS

Developed For:

GARNER PROPERTY MANAGEMENT

23944 EUREKA ROAD, SUITE 105
TAYLOR, MI 48180

chris@livegpm.com
(734) 287-6619

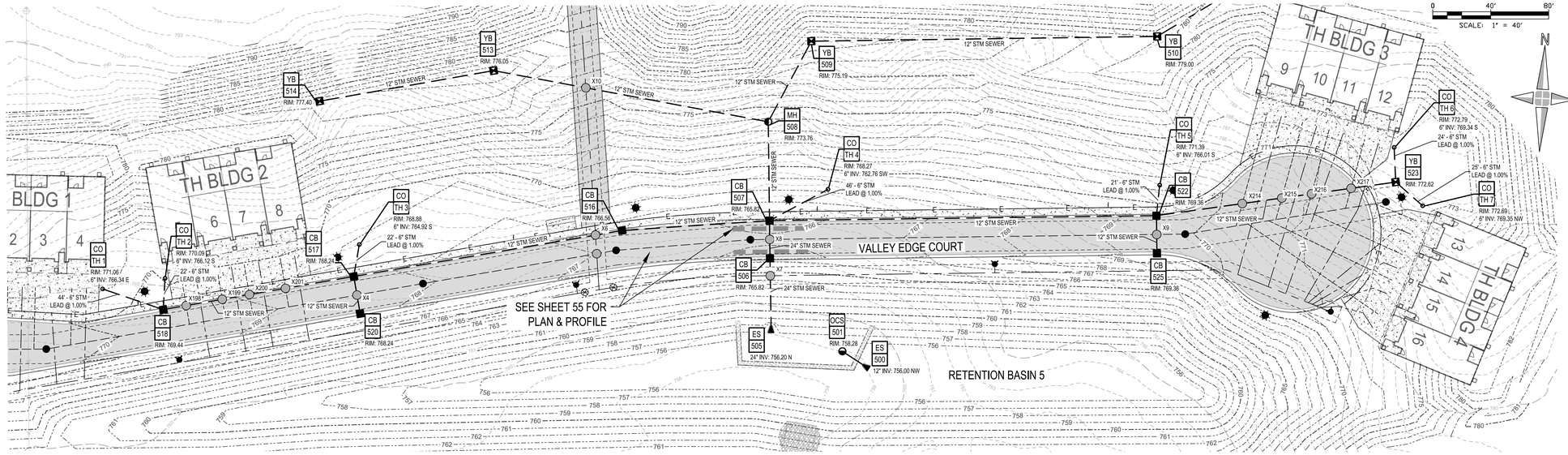
STORM PLAN & PROFILE

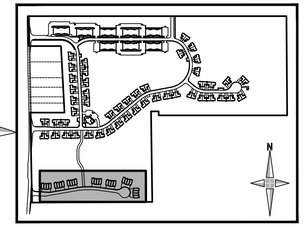
BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

Date:	07.26.2024
Scale:	1"=40'
Sheet:	53
Project:	20249.00

H:\20\20200\20249.00 Brookwood Superior Twp\Design\CAD\Engineering Plans\53 STORM PLAN & PROFILE.dwg





KEY MAP

NOT TO SCALE

LEGEND

- PR GATE VALVE AND WELL
- PR HYDRANT
- PR VALVE AND BOX
- PR WATERMAIN
- PR WATER LEAD
- PR STORM CATCH BASIN
- PR STORM MANHOLE
- PR STORM YARD BASIN
- PR STORM END SECTION
- PR RIP RAP
- PR STORM SEWER
- PR STORM LEAD
- PR CLEAN OUT
- PR SANITARY MANHOLE
- PR SANITARY SEWER
- PR SANITARY LEAD
- PR LIGHT POLE
- PR FRANCHISE UTILITIES
- PR CONTOUR MINOR (1')
- PR CONTOUR MAJOR (5')
- EX CONTOUR MINOR (1')
- EX CONTOUR MAJOR (5')
- PR DRAINAGE ARROW
- PR SWALE / DITCH
- PR CURB AND GUTTER
- PR ASPHALT
- PR LEFORGE ROAD R.O.W. ASPHALT
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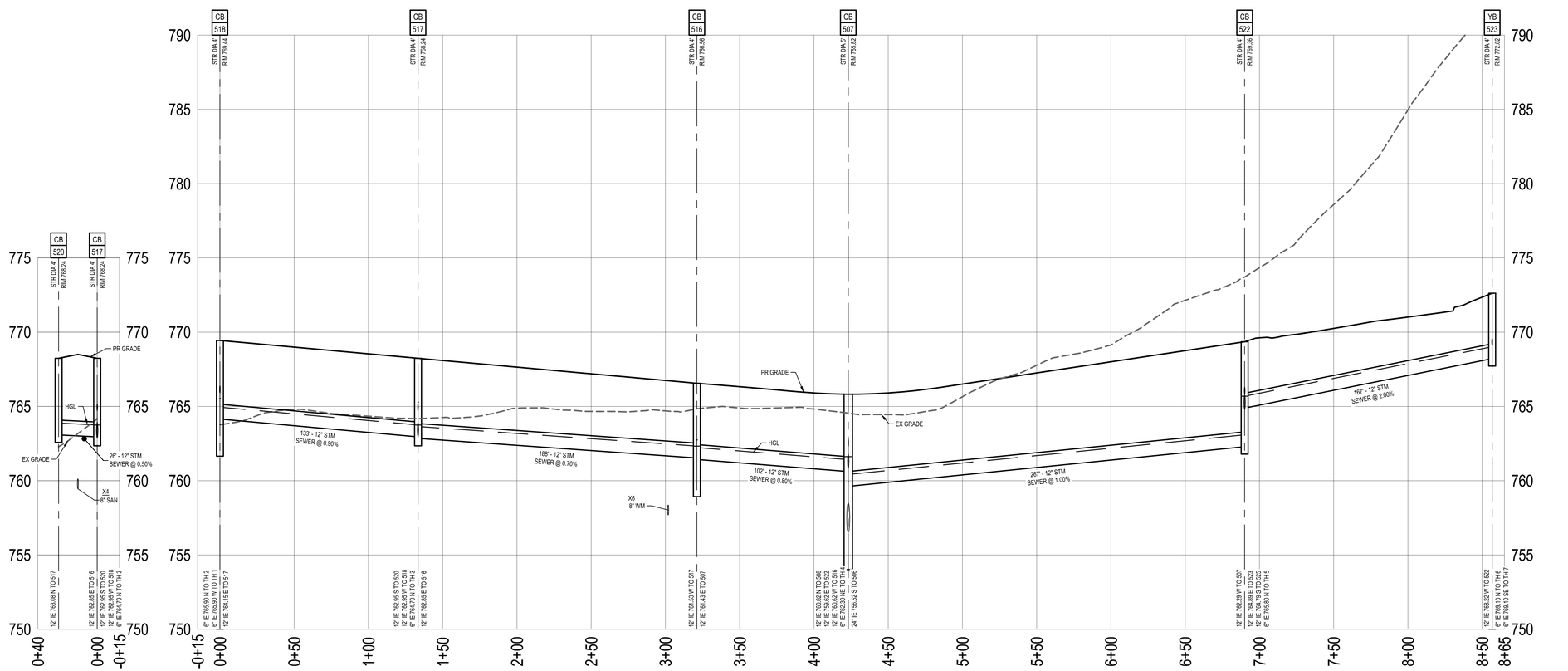

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SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

Date:	07.26.2024
Scale:	1"=40'
Sheet:	54
Project:	20249.00

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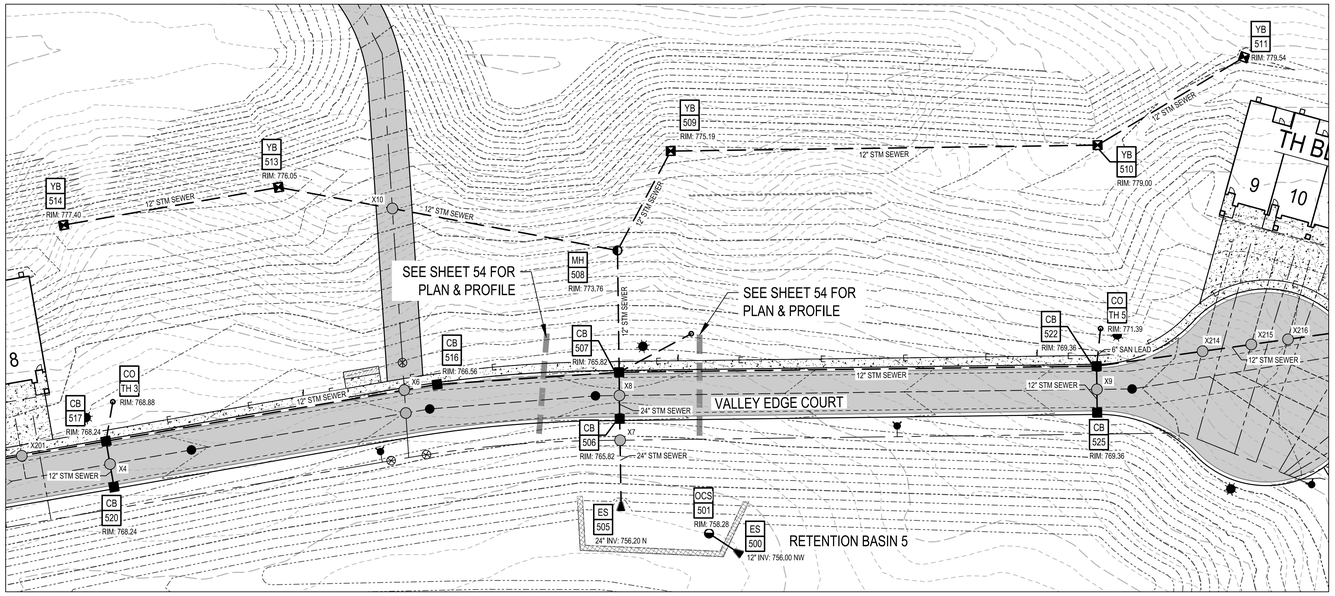

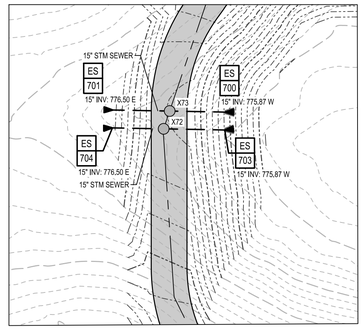

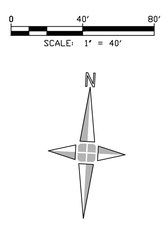

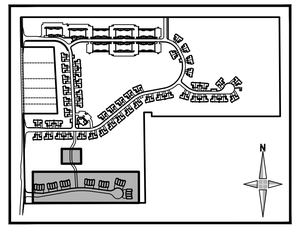

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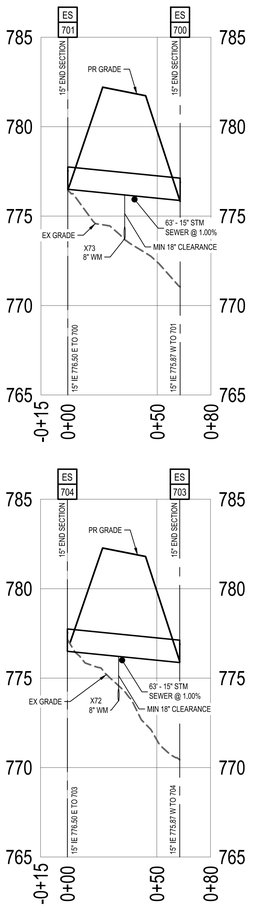

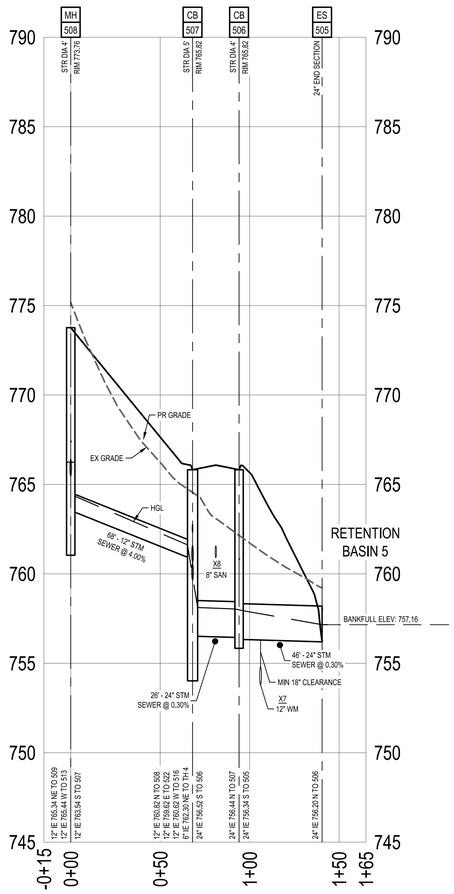

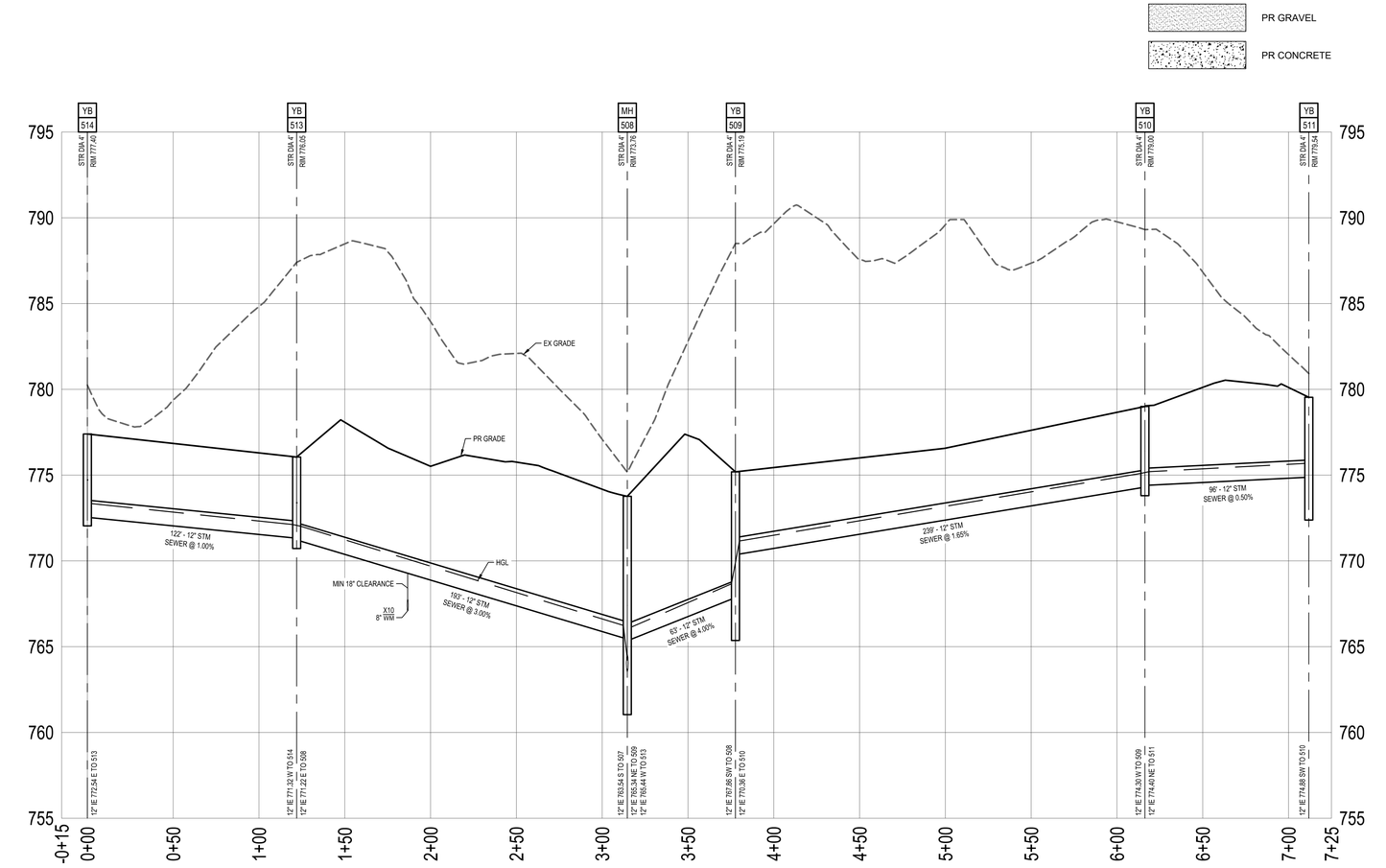

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Sheet:	55
Project:	20249.00

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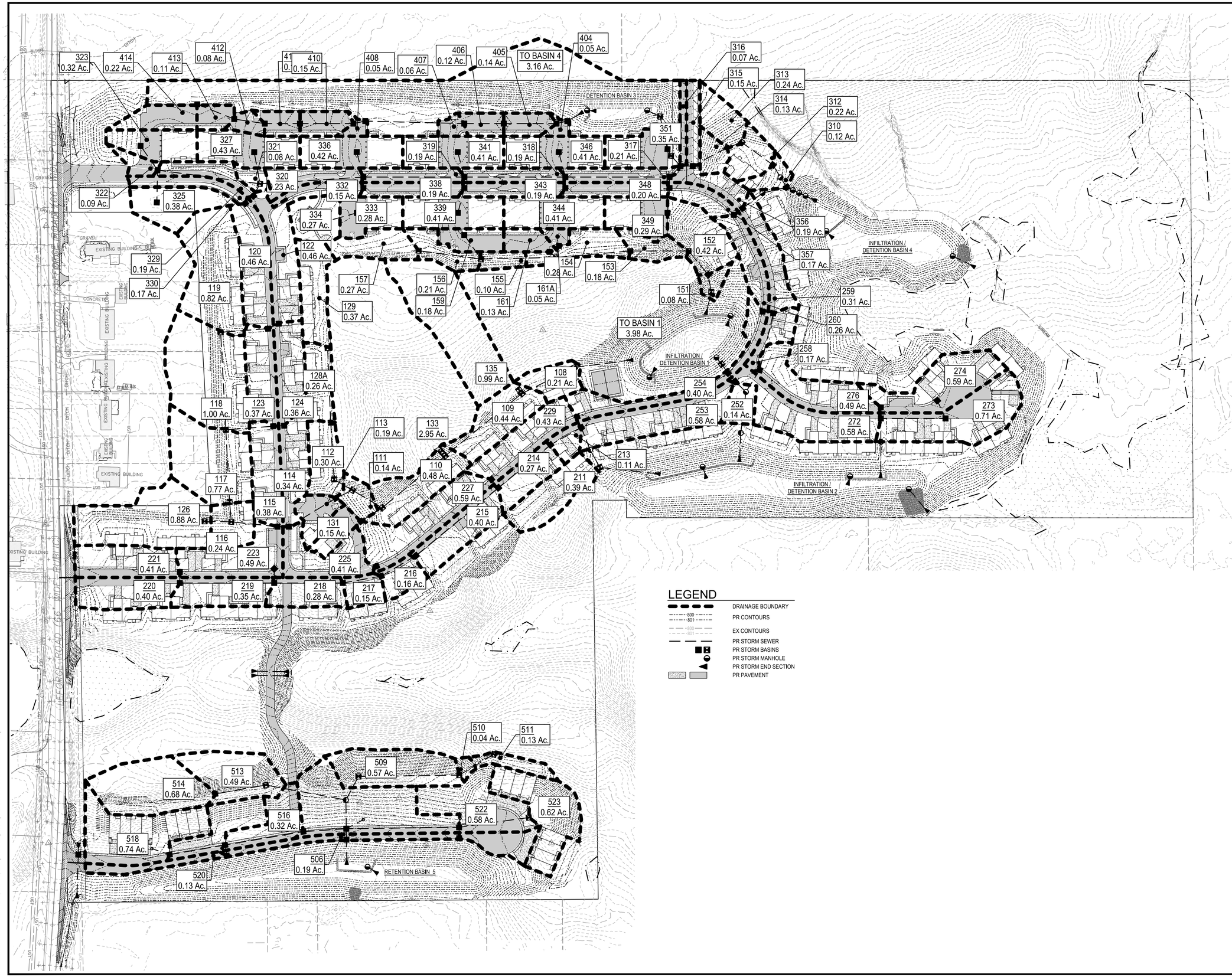

LEGEND

- DRAINAGE BOUNDARY
- 800 PR CONTOURS
- 801 PR CONTOURS
- 800 EX CONTOURS
- 801 EX CONTOURS
- PR STORM SEWER
- PR STORM BASINS
- PR STORM MANHOLE
- PR STORM END SECTION
- PR PAVEMENT

H:\20\2020\20249.00 Brookwood Superior Twp\Design\CAD\Engineering Plans\56 DRAINAGE AREA PLAN.dwg

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DRAINAGE AREA PLAN

BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

Date:	07.26.2024
Scale:	1"=100'
Sheet:	56
Project:	20249.00

ON-SITE STORM SEWER CONVEYANCE SYSTEM DESIGN

Project: Brookwood Superior
Date: April 29, 2025
Revision: 0
Community: Superior Twp
County: Washtenaw

I = B/(T+D)^E B = 175.0 D = 25.0 E = 1
C = varies
T = 20 (min.) C = Using composite Basin 'C' factors to size storm.

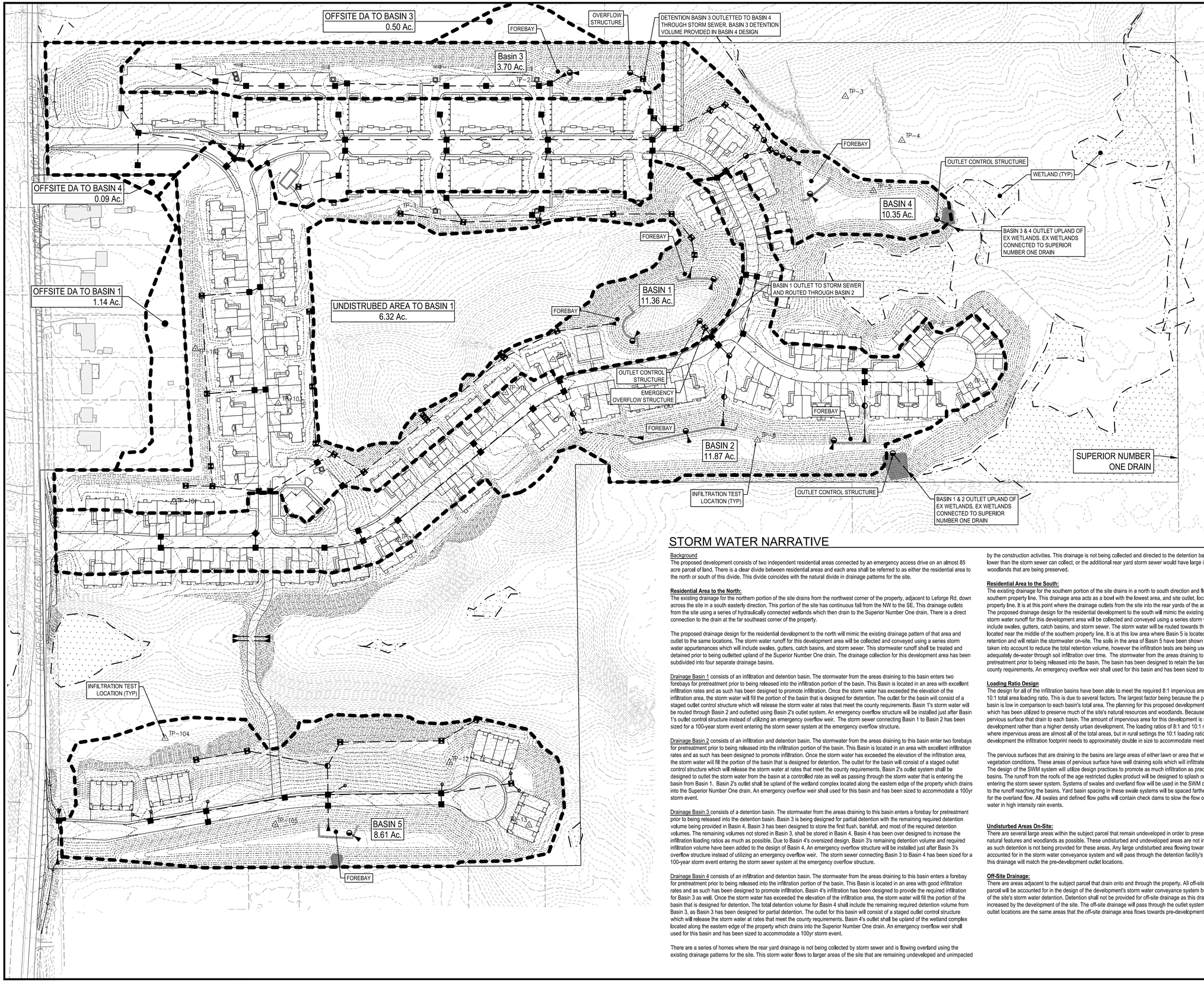
FROM MH INPUT	TO MH	INCRE-MENT ACRES (A)	C	EQUIV. AREA 100% ACRES CA	TOTAL AREA 100% ACRES SUM CA	T TIME (MIN.)	I (IN PER HOUR)	Q=CIA C.F.S. FLOW	CAPAC-ITY OF SEWER (C.F.S.)	DIAM. OF PIPE (IN.)	LENGTH OF LINE (FT.)	SLOPE OF PIPE (%)	MIN HG BASED ON "Q" (%)	VEL. FLOW FULL (FT./ SEC.)	TIME OF FLOW (MIN.)	H.G.L. ELEV. UPPER END	H.G.L. ELEV. LOWER END	GROUND ELEV. UPPER END	GROUND ELEV. LOWER END	INVERT ELEV. UPPER END	INVERT ELEV. LOWER END
122	120	0.46	0.53	0.25	0.25	20.00	3.89	0.96	5.04	12	28	2.00	0.07	6.4	0.1	797.39	796.83	802.00	801.80	796.59	796.03
120	119	0.46	0.53	0.25	0.49	20.10	3.88	1.91	5.04	12	112	2.00	0.29	6.4	0.3	796.73	794.48	801.80	799.60	795.93	793.68
119	118	0.82	0.53	0.43	0.92	20.40	3.85	3.56	7.91	15	231	1.50	0.30	6.5	0.6	794.38	790.91	799.60	795.60	793.38	789.91
118	117	1.00	0.53	0.53	1.84	21.00	3.80	6.99	11.74	18	171	1.25	0.44	6.6	0.4	790.81	788.67	795.60	792.70	789.61	787.47
117	116	0.77	0.53	0.41	2.25	21.40	3.77	8.47	9.10	18	47	0.75	0.65	5.2	0.2	788.57	788.22	792.70	791.30	787.37	787.02
116	115	0.24	0.53	0.13	2.84	21.60	3.76	10.66	11.20	21	110	0.50	0.45	4.7	0.4	788.12	787.57	791.30	793.70	786.72	786.17
115	114	0.38	0.53	0.20	3.04	22.00	3.72	11.32	11.75	21	27	0.55	0.51	4.9	0.1	787.47	787.32	793.70	793.80	786.07	785.92
114	113	0.34	0.53	0.18	3.22	22.10	3.72	11.97	12.27	21	130	0.60	0.57	5.1	0.4	787.22	786.44	793.80	791.80	785.82	785.04
113	112	0.19	0.53	0.10	3.32	22.50	3.68	12.23	15.84	21	44	1.00	0.60	6.6	0.1	785.24	784.80	791.80	789.60	783.84	783.40
112	111	0.30	0.53	0.16	3.82	22.60	3.68	14.03	22.41	21	82	2.00	0.78	9.3	0.1	779.80	778.17	789.60	781.90	778.40	776.77
111	110	0.14	0.53	0.07	3.97	22.70	3.67	14.57	22.41	21	193	2.00	0.85	9.3	0.3	775.47	771.62	781.90	776.40	774.07	770.22
110	109	0.48	0.53	0.25	5.25	23.00	3.65	19.16	22.41	21	234	2.00	1.46	9.3	0.4	770.82	766.13	776.40	770.50	769.42	764.73
109	108	0.44	0.53	0.23	5.83	23.40	3.62	21.09	24.27	30	138	0.35	0.26	4.9	0.5	766.03	765.55	770.50	768.60	764.03	763.55
108	107	0.21	0.53	0.11	5.94	23.90	3.58	21.27	24.27	30	128	0.35	0.27	4.9	0.4	765.45	765.00	768.60	765.80	763.45	763.00
124	123	0.36	0.53	0.19	0.19	20.00	3.89	0.74	3.56	12	26	1.00	0.04	4.5	0.1	792.95	792.69	797.80	797.80	792.15	791.89
123	118	0.37	0.53	0.19	0.38	20.10	3.88	1.49	4.36	12	112	1.50	0.18	5.6	0.3	792.59	790.91	797.80	795.60	791.79	790.11
														3.0							
126	116	0.88	0.53	0.47	0.47	20.00	3.89	1.81	2.52	12	63	0.50	0.26	3.2	0.3	788.54	788.22	791.90	791.30	787.74	787.42
														3.0							
129	128A	0.37	0.53	0.20	0.20	20.00	3.89	0.77	4.36	12	177	1.50	0.05	5.6	0.5	796.27	792.62	799.40	796.80	794.47	791.82
128A	128	0.26	0.53	0.14	0.34	20.50	3.85	1.30	5.04	12	135	2.00	0.13	6.4	0.3	792.52	789.82	796.80	794.40	791.72	789.02
128	112	0.00	0.53	0.00	0.34	20.80	3.82	1.30	7.13	12	50	4.00	0.13	9.1	0.1	787.32	785.30	794.40	789.60	786.52	784.50
														3.0							
131	111	0.15	0.53	0.08	0.08	20.00	3.89	0.31	7.13	12	60	4.00	0.01	9.1	0.1	780.87	778.47	791.30	781.90	780.07	777.67
														3.0							
133	110	2.95	0.35	1.03	1.03	20.00	3.89	4.01	4.57	15	14	0.50	0.39	3.7	0.1	770.87	770.82	773.00	776.40	769.59	769.52
														3.0							
135	109	0.99	0.35	0.35	0.35	20.00	3.89	1.35	2.36	12	11	0.44	0.14	3.0	0.1	766.05	766.03	768.30	770.50	764.18	764.13
														3.0							
														3.0							
157	156	0.27	0.53	0.15	0.15	20.00	3.89	0.57	5.04	12	149	2.00	0.03	6.4	0.4	795.00	792.02	799.70	797.70	794.20	791.22
156	155	0.21	0.53	0.11	0.35	20.40	3.85	1.35	2.36	12	178	0.44	0.14	3.0	1.0	791.52	790.74	797.70	795.60	790.72	789.94
155	154	0.10	0.53	0.05	0.50	21.40	3.77	1.89	4.36	12	176	1.50	0.28	5.6	0.5	790.64	788.00	795.60	792.70	789.84	787.20
154	153	0.28	0.53	0.15	0.65	21.90	3.73	2.42	7.13	12	138	4.00	0.46	9.1	0.3	783.00	777.49	792.70	782.30	782.20	776.69
153	152	0.18	0.53	0.10	0.74	22.20	3.71	2.76	7.13	12	73	4.00	0.60	9.1	0.1	773.99	771.08	782.30	775.60	773.19	770.28
152	151	0.42	0.53	0.22	0.96	22.30	3.70	3.57	7.13	12	41	4.00	1.00	9.1	0.1	768.08	766.43	775.60	770.60	767.28	765.63
151	150	0.08	0.53	0.04	1.01	22.40	3.69	3.71	6.46	15	43	1.00	0.33	5.3	0.1	764.43	764.00	770.60	764.50	763.43	763.00
														3.0							
159	156	0.18	0.53	0.10	0.10	20.00	3.89	0.38	7.13	12	69	4.00	0.01	9.1	0.1	794.39	791.62	800.30	797.70	793.59	790.82
														3.0							
161	155	0.13	0.53	0.07	0.07	20.00	3.89	0.27	7.13	12	20	4.00	0.01	9.1	0.0	791.55	790.74	798.00	795.60	790.75	789.94
														3.0							
161A	155	0.05	0.53	0.03	0.03	20.00	3.89	0.11	7.13	12	28	4.00	0.00	9.1	0.1	791.86	790.74	797.60	795.60	791.06	789.94
														3.0							
														3.0							
221	220	0.41	0.62	0.26	0.26	20.00	3.89	1.00	3.56	12	26	1.00	0.08	4.5	0.1	788.57	788.31	794.00	794.00	787.77	787.51
220	219	0.40	0.62	0.25	0.50	20.10	3.88	1.95	2.52	12	223	0.50	0.30	3.2	1.2	788.21	787.09	794.00	791.80	787.41	786.29
219	218	0.35	0.62	0.22	1.03	21.30	3.78	3.88	5.04	12	162	2.00	1.18	6.4	0.4	786.99	783.75	791.80	788.90	786.19	782.95
218	217	0.28	0.62	0.18	1.20	21.70	3.75	4.50	5.34	12	93	2.25	1.60	6.8	0.2	783.65	781.56	788.90	786.40	782.85	780.76
217	216	0.15	0.62	0.09	1.55	21.90	3.73	5.77	11.19	15	95	3.00	0.80	9.1	0.2	781.46	778.61	786.40	783.70	780.46	777.61
216	215	0.16	0.62	0.10	1.65	22.10	3.72	6.12	10.81	15	253	2.80	0.90	8.8	0.5	778.51	771.44	783.70	776.40	777.51	770.44
215	214	0.40	0.62	0.25	2.26	22.60	3.68	8.31	9.36	15	160	2.10	1.65	7.6	0.3	770.24	766.88	776.40	771.80	769.24	765.88
214	213	0.27	0.62	0.17	2.43	22.90	3.65	8.87	10.01	15	83	2.40	1.89	8.2	0.2	766.78	764.78	771.80	770.10	765.78	763.78
213	212	0.11	0.62	0.07	2.76	23.10	3.64	10.06	11.37	15	57	3.10	2.42	9.3	0.1	764.68	762.92	770.10	770.10	763.68	761.92
212	211	0.00	0.62	0.00	2.76	23.20	3.63	10.06	11.37	15	48	3.10	2.42	9.3	0.1	762.82	761.34	770.10	767.40	761.82	760.34
211	210	0.39	0.62	0.24	3.01	23.30	3.62	10.90	11.19	15	131	3.00	2.85	9.1	0.2	757.94	754.00	767.40	754.50	756.94	753.00
														3.0							
223	219	0.49	0.62	0.30	0.30	20.00	3.89	1.18	2.36	12	34	0.44	0.11	3.0	0.2	787.24	787.09	791.60	791.80	786.44	786.29
														3.0							
225	217	0.41	0.62	0.25	0.25	20.00	3.89	0.99	2.36	12	26	0.44	0.08	3.0	0.1	781.68	781.56	786.40	786.40	780.88	780.76
														3.0							
227	215	0.59	0.62	0.37	0.37	20.00	3.89	1.43	2.36	12	26	0.44	0.16	3.0	0.1	771.75	771.64	776.40	776.40	770.95	770.84
														3.0							
229	213	0.43	0.62	0.27	0.27	20.00	3.89	1.05	2.36	12	27	0.44	0.09	3.0	0.1	764.90	764.78	770.10	770.10	764.10	763.98
														3.0							
														3.0							
254	253	0.40	1.62	0.65	0.65	20.10	3.88	2.53	22.62	24	26	1.00	0.01	7.2	0.1	760.55	760.29	765.90	765.90	758.95	758.69
253	252	0.58	0.62	0.36	1.01	20.20	3.87	3.92	22.62	24	36	1.00	0.03	7.2	0.1	760.19	759.84	765.90	765.30	758.59	758.24
252	251	0.14	0.62	0.09	1.56	20.30	3.86	6.01	30.97	27	98	1.00	0.04	7.8	0.2	758.84	757.86	765.30	762.80	757.04	756.06
251	250	0.00	0.62	0.00	1.56	20.50	3.85	6.01	30.97	27	56	1.00	0.04	7.8	0.1	755.36	754.00	762.80	755.60	753.56	753.00
														3.0							
260	259	0.26	0.62	0.16	0.16	20.00	3.89	0.62	3.56	12	26	1.00	0.03	4.5	0.1	766.81	766.55	771.40	771.40	766.01	765.75
259	258	0.31	0.62	0.19	0.35	20.10	3.88	1.36	6.67	12	138	3.50	0.14	8.5	0.3	766.05	761.21	771.40	765.60	765.25	760.41
258	252	0.17	0.62	0.11	0.45	20.40	3.85	1.75	2.36	12	61	0.44	0.24	3.0	0.3	761.11	760.84	765.60	765.30	760.31	760.04
														3.0							
274	273	0.59	0.62	0.36	0.36	20.00	3.89	1.42	2.36	12	47	0.44	0.16	3.0	0.3	754.75	754.67	757.70	757.70	753.43	753.22
273	272	0.71	0.62	0.44	0.80	20.30	3.86	3.10	3.71	15	153	0.33	0.23	3.0	0.8	754.67	754.32	757.70	759.90	753.22	752.72
272	271	0.58	0.62	0.36	1.46	21.10	3.80	5.56	9.33	24	55	0.17	0.06	3.0	0.3	754.32	754.22	759.90	759.50	752.72	752.62
271	270	0.00	0.62	0.00	1.46	21.40	3.77	5.56	9.33	24	73	0.17	0.06	3.0	0.4	754.22	754.00	759.50	754.80	752.62	752.50
														3.0							
276	272	0.49	0.62	0.30	0.30	20.00	3.89	1.17	2.36	12	26	0.44	0.11	3.0	0.1	755.43	755.32	759.90	759.90	754.63	754.52
														3.0							
														3.0							
323	322	0.32	0.67	0.21	0.21	20.00	3.89	0.83	2.36	12	70	0.44	0.05	3.0	0.4	803.12	802.81	807.60	809.10	802.32	802.01
322	321	0.09	0.67	0.06	0.53	20.40	3.85	2.04	2.76	12	244	0.60	0.33	3.5	1.2	801.91	800.44	809.10	805.10	801.11	799.64
321	320	0.08	0.67	0.05	1.11	21.60	3.76	4.17	6.46	15	245	1.00	0.42	5.3	0.8	800.34	797.89	805.10	803.60	799.34	796.89
320	319	0.23	0.67	0.15	2.02	22.40	3.69	7.44	11.02	18	239	1.10	0.50	6.2	0.6	797.79	795.16	803.60	800.90	796.59	793.96
319	318	0.19	0.67	0.12	2.82	23.00	3.65	10.28	17.36	21	239	1.20	0.42	7.2	0.6	795.06	792.19	800.90	798.10	793.66	790.79
318	317	0.19	0.67	0.13	3.62	23.60	3.60	13.05	22.62	24	246	1.00	0.33	7.2	0.6	792.09	789.63	798.10	795.20	790.49	788.03
317	316	0.21	0.67	0.14	4.09	24.20	3.56	14.54	17.52	24	37	0.60	0.41	5.6	0.1	789.53	789.31	795.20	796.30	787.93	787.71
316	315	0.07	0.67	0.05	6.46	24.30	3.55	22.94	25.79	24	29	1.30	1.03	8.2	0.1	789.21	788.83	796.30	796.30	787.61	787.23
315	314	0.15	0.67	0.10	6.56	24.40	3.54	23.24	25.79	24	92	1.30	1.06	8.2	0.2	786.03	784.83	796.30	788.50	784.43	783.23
314	313	0.13	0.67	0.09	6.65	24.60	3.53	23.45	25.79	24	37	1.30	1.07	8.2	0.1	784.73	784.25	788.50	788.40	783.13	782.65
313	312	0.24	0.67	0.16	6.80	24.70	3.52	23.96	30.35	24	91	1.80	1.12	9.7	0.2	784.15	782.52	788.40	787.00	782.55	780.92
312	311	0.22	0.67	0.15	6.96	24.90	3.51	24.39	30.35	24	35	1.80	1.16	9.7	0.1	780.52	779.89	787.00	784.30	778.92	778.29
311	310	0.00	0.67	0.00	6.96	25.00	3.50	24.39	30.35	24	27	1.80	1.16	9.7	0.0	778.39	777.90	784.30	782.10	776.79	776.30
310	309	0.12	0.67	0.08	7.28	25.00	3.50	25.46	30.35	24	16	1.80	1.27	9.7	0.0	774.90	774.61	782.10	778.40	773.30	773.01
309	308	0.00	0.67	0.00	7.28	25.00	3.50	25.46	30.35	24	17	1.80	1.27	9.7	0.0	771.11	770.81	778.40	774.70	769.51	769.21
308	307	0.00	0.67	0.00	7.28	25.00	3.50	25.46	30.35	24	17	1.80	1.27	9.7	0.0	767.31	767.02	774.70	770.70	765.71	765.42
307	306	0.00	0.67	0.00	7.28	25.00	3.50	25.46	25.91	27	17	0.70	0.68	6.5	0.0	766.92	766.80	770.70	767.60	765.12	765.00
														3.0							
325	322	0.38	0.67	0.26	0.26	20.00	3.89	1.00	2.36	12	76	0.44	0.08	3.0	0.4	804.24	803.91	808.90	809.10	803.44	803.11
														3.0							
327	321	0.43	0.67	0.29	0.29	20.00	3.89	1.12	2.36	12	76	0.44	0.10	3.0	0.4	800.68	800.34	805.10	805.10	799.88	799.54
														3.0							
330	329	0.17	0.67	0.11	0.11	20.00	3.89	0.45	2.36	12	26	0.44	0.02	3.0	0.1	802.44	802.32	807.00	807.00	801.64	801.52
329	321	0.19	0.67	0.13	0.24	20.10	3.88	0.93	6.17	12	33	3.00	0.07	7.9	0.1	801.32	800.34	807.00	805.10	800.52	799.54
														3.0							
334	333	0.27	0.67	0.18	0.18	20.00	3.89	0.71	4.36	12	98	1.50	0.04	5.6	0.3	800.24	798.77	804.80	803.20	799.44	797.97
333	332	0.28	0.67	0.19	0.37	20.30	3.86	1.44	2.36	12	61	0.44	0.16	3.0	0.3	798.67	798.41	803.20	803.60	797.87	797.61
332	320	0.15	0.67	0.10	0.47	20.60	3.84	1.81	2.36	12	26	0.44	0.26	3.0	0.1	798.31	798.19	803.60	803.60	797.51	797.39
														3.0							
336	320	0.42	0.67	0.28	0.28	20.00	3.89	1.09	2.36	12	61	0.44	0.09	3.0	0.3	798.06	797.79	802.60	803.60	797.26	796.99
														3.0							
339	338	0.41	0.67	0.28	0.28	20.00	3.89	1.08	2.36	12	61	0.44	0.09	3.0	0.3	795.54	795.28	800.20	800.90	794.74	794.48
338	319	0.19	0.67	0.12	0.40	20.30	3.86	1.55	2.36	12	26	0.44	0.19	3.0	0.1	795.18	795.06	800.90	800.90	794.38	794.26
														3.0							
341	319	0.41	0.67	0.28	0.28	20.00	3.89	1.08	2.36	12	61	0.44	0.09	3.0	0.3	795.83	795.56	800.20	800.90	795.03	794.76
														3.0							
344	343	0.41	0.67	0.28	0.28	20.00	3.89	1.07	2.36	12	61	0.44	0.09	3.0	0.3	793.28	793.01	797.70	798.10	792.48	792.21
343	318	0.19	0.67	0.13	0.40	20.30	3.86	1.55	2.36	12	26	0.44	0.19	3.0	0.1	792.91	792.79	798.10	798.10	792.11	791.99
														3.0							
346	318	0.41	0.67	0.28	0.28	20.00	3.89	1.08	2.36	12	61	0.44	0.09	3.0	0.3	793.26	792.99	797.70	798.10	792.46	792.19
														3.0							
349	348	0.29	0.67	0.19	0.19	20.00	3.89	0.75	2.36	12	59	0.44	0.04	3.0	0.3	791.00	790.74	796.00	795.20	790.20	789.94
348	317	0.20	0.67	0.13	0.32	20.30	3.86	1.25	2.36	12	26	0.44	0.12	3.0	0.1	790.64	790.53	795.20	795.20	789.84	789.73
														3.0							
353	351A	4.27	0.49	2.09	2.09	24.10	3.56	7.46	7.51	15	79	1.35	1.33	6.1	0.2	791.60	790.53	796.50	795.90	790.60	789.53
351A	351	0.00	0.67	0.00	2.09	24.30	3.55	7.46	9.14	15	18	2.00	1.33	7.4	0.0	790.43	790.07	795.90	795.90	789.43	789.07
351	316	0.35	0.67	0.24	2.33	24.30	3.55	8.26	9.14	15	33	2.00	1.64	7.4	0.1	789.97	789.31	795.90	796.30	788.97	788.31
														3.0							
357	356	0.17	0.67	0.11	0.11	20.00	3.89	0.45	2.36	12	26	0.44	0.02	3.0	0.1	781.96	781.85	786.40	786.40	781.16	781.05
356	355	0.19	0.67	0.12	0.24	20.10	3.88	0.93	3.56	12	59	1.00	0.07	4.5	0.2	781.75	781.16	786.40	785.70	780.95	780.36
355	310	0.00	0.67	0.00	0.24	20.30	3.86	0.93	7.13	12	59	4.00	0.07	9.1	0.1	781.06	778.70	785.70	782.10	780.26	777.90
														3.0							
														3.0							

ON-SITE STORM SEWER CONVEYANCE SYSTEM DESIGN

Project: Brookwood Superior
Date: April 29, 2025
Revision: 0
Community: Superior Twp
County: Washtenaw

I = B/(T+D)^E B = 175.0 D = 25.0 E = 1
C = varies
T = 20 (min.) C = Using composite Basin 'C' factors to size storm.

FROM MH INPUT	TO MH	INCRE-MENT ACRES (A)	C	EQUIV. AREA 100% ACRES CA	TOTAL AREA 100% ACRES SUM CA	T TIME (MIN.)	I (IN PER HOUR)	Q=CIA C.F.S. FLOW	CAPAC-ITY OF SEWER (C.F.S.)	DIAM. OF PIPE (IN.)	LENGTH OF LINE (FT.)	SLOPE OF PIPE (%)	MIN HG BASED ON "Q" (%)	VEL. FLOW FULL (FT./ SEC.)	TIME OF FLOW (MIN.)	H.G.L. ELEV. UPPER END	H.G.L. ELEV. LOWER END	GROUND ELEV. UPPER END	GROUND ELEV. LOWER END	INVERT ELEV. UPPER END	INVERT ELEV. LOWER END
414	413	0.22	0.51	0.11	0.11	20.00	3.89	0.45	2.76	12	94	0.60	0.02	3.5	0.4	802.14	801.57	806.10	807.90	801.34	800.77
413	412	0.11	0.51	0.06	0.17	20.40	3.85	0.66	5.40	12	73	2.30	0.03	6.9	0.2	801.47	799.80	807.90	805.00	800.67	799.00
412	411	0.08	0.51	0.04	0.21	20.60	3.84	0.82	2.36	12	83	0.44	0.05	3.0	0.5	799.70	799.33	805.00	804.50	798.90	798.53
411	410	0.12	0.51	0.06	0.28	21.10	3.80	1.05	2.36	12	126	0.44	0.09	3.0	0.7	799.23	798.67	804.50	803.00	798.43	797.87
410	408	0.15	0.51	0.08	0.35	21.80	3.74	1.32	5.04	12	29	2.00	0.14	6.4	0.1	798.57	798.00	803.00	802.50	797.77	797.20
408	407	0.05	0.51	0.02	0.38	21.90	3.73	1.41	5.56	12	234	1.00	0.16	4.5	0.9	797.90	795.56	802.50	800.20	797.10	794.76
407	406	0.06	0.51	0.03	0.41	22.80	3.66	1.50	2.36	12	94	0.44	0.18	3.0	0.5	795.46	795.05	800.20	799.70	794.66	794.25
406	405	0.12	0.51	0.06	0.47	23.30	3.62	1.71	2.36	12	125	0.44	0.23	3.0	0.7	794.95	794.40	799.70	798.00	794.15	793.60
405	404	0.14	0.51	0.07	0.54	24.00	3.57	1.93	2.64	12	26	0.55	0.29	3.4	0.1	794.30	794.15	798.00	797.30	793.50	793.35
404	403	0.05	0.51	0.02	0.56	24.10	3.56	2.01	4.57	15	30	0.50	0.10	3.7	0.1	794.15	794.00	797.30	794.50	793.15	793.00
511	510	0.13	0.53	0.07	0.07	20.00	3.89	0.27	2.52



STORM WATER NARRATIVE

Background

The proposed development consists of two independent residential areas connected by an emergency access drive on an almost 85 acre parcel of land. There is a clear divide between residential areas and each area shall be referred to as either the residential area to the north or south of this divide. This divide coincides with the natural divide in drainage patterns for the site.

Residential Area to the North:

The existing drainage for the northern portion of the site drains from the northwest corner of the property, adjacent to Leforge Rd, down across the site in a south easterly direction. This portion of the site has continuous fall from the NW to the SE. This drainage outlets from the site using a series of hydraulically connected wetlands which then drain to the Superior Number One drain. There is a direct connection to the drain at the far southeast corner of the property.

The proposed drainage design for the residential development to the north will mimic the existing drainage pattern of that area and outlet to the same locations. The storm water runoff for this development area will be collected and conveyed using a series storm water appurtenances which will include swales, gutters, catch basins, and storm sewer. This stormwater runoff shall be treated and detained prior to being outletted upland of the Superior Number One drain. The drainage collection for this development area has been subdivided into four separate drainage basins.

Drainage Basin 1 consists of an infiltration and detention basin. The stormwater from the areas draining to this basin enters two forebays for pretreatment prior to being released into the infiltration portion of the basin. This Basin is located in an area with excellent infiltration rates and as such has been designed to promote infiltration. Once the storm water has exceeded the elevation of the infiltration area, the storm water will fill the portion of the basin that is designed for detention. The outlet for the basin will consist of a staged outlet control structure which will release the storm water at rates that meet the county requirements. Basin 1's storm water will be routed through Basin 2 and outletted using Basin 2's outlet system. An emergency overflow structure will be installed just after Basin 1's outlet control structure instead of utilizing an emergency overflow weir. The storm sewer connecting Basin 1 to Basin 2 has been sized for a 100-year storm event entering the storm sewer system at the emergency overflow structure.

Drainage Basin 2 consists of an infiltration and detention basin. The stormwater from the areas draining to this basin enter two forebays for pretreatment prior to being released into the infiltration portion of the basin. This Basin is located in an area with excellent infiltration rates and as such has been designed to promote infiltration. Once the storm water has exceeded the elevation of the infiltration area, the storm water will fill the portion of the basin that is designed for detention. The outlet for the basin will consist of a staged outlet control structure which will release the storm water at rates that meet the county requirements. Basin 2's outlet system shall be designed to outlet the storm water from the basin at a controlled rate as well as passing through the storm water that is entering the basin from Basin 1. Basin 2's outlet shall be upland of the wetland complex located along the eastern edge of the property which drains into the Superior Number One drain. An emergency overflow weir shall used for this basin and has been sized to accommodate a 100yr storm event.

Drainage Basin 3 consists of a detention basin. The stormwater from the areas draining to this basin enters a forebay for pretreatment prior to being released into the detention basin. Basin 3 is being designed for partial detention with the remaining required detention volume being provided in Basin 4. Basin 3 has been designed to store the first flush, bankfull, and most of the required detention volumes. The remaining volumes not stored in Basin 3, shall be stored in Basin 4. Basin 4 has been over designed to increase the infiltration loading ratios as much as possible. Due to Basin 4's oversized design, Basin 3's remaining detention volume and required infiltration volume have been added to the design of Basin 4. An emergency overflow structure will be installed just after Basin 3's overflow structure instead of utilizing an emergency overflow weir. The storm sewer connecting Basin 3 to Basin 4 has been sized for a 100-year storm event entering the storm sewer system at the emergency overflow structure.

Drainage Basin 4 consists of an infiltration and detention basin. The stormwater from the areas draining to this basin enters a forebay for pretreatment prior to being released into the infiltration portion of the basin. This Basin is located in an area with good infiltration rates and as such has been designed to promote infiltration. Basin 4's infiltration has been designed to provide the required infiltration for Basin 3 as well. Once the storm water has exceeded the elevation of the infiltration area, the storm water will fill the portion of the basin that is designed for detention. The total detention volume for Basin 4 shall include the remaining required detention volume from Basin 3, as Basin 3 has been designed for partial detention. The outlet for this basin will consist of a staged outlet control structure which will release the storm water at rates that meet the county requirements. Basin 4's outlet shall be upland of the wetland complex located along the eastern edge of the property which drains into the Superior Number One drain. An emergency overflow weir shall used for this basin and has been sized to accommodate a 100yr storm event.

There are a series of homes where the rear yard drainage is not being collected by storm sewer and is flowing overland using the existing drainage patterns for the site. This storm water flows to larger areas of the site that are remaining undeveloped and unimpacted by the construction activities. This drainage is not being collected and directed to the detention basins because either the elevations are lower than the storm sewer can collect, or the additional rear yard storm sewer would have large impacts to the site's existing woodlands that are being preserved.

Residential Area to the South:

The existing drainage for the southern portion of the site drains in a north to south direction and flows towards the middle of the southern property line. This drainage area acts as a bowl with the lowest area, and site outlet, located near the middle of the southern property line. It is at this point where the drainage outlets from the site into the rear yards of the adjacent private properties to the south. The proposed drainage design for the residential development to the south will mimic the existing drainage pattern of this area. The storm water runoff for this development area will be collected and conveyed using a series storm water appurtenances which will include swales, gutters, catch basins, and storm sewer. The storm water will be routed towards the lowest part of the area, which is located near the middle of the southern property line. It is at this low area where Basin 5 is located. Basin 5 has been designed for retention and will retain the stormwater on-site. The soils in the area of Basin 5 have been shown to infiltrate. Infiltration has not been taken into account to reduce the total retention volume, however the infiltration tests are being used to show that the basin will adequately de-water through soil infiltration over time. The stormwater from the areas draining to this basin enters a forebay for pretreatment prior to being released into the basin. The basin has been designed to retain the back-to-back 100-yr storm events per county requirements. An emergency overflow weir shall used for this basin and has been sized to accommodate a 100yr storm event.

Loading Ratio Design

The design for all of the infiltration basins have been able to meet the required 8:1 impervious area loading ratio but all cannot meet the 10:1 total area loading ratio. This is due to several factors. The largest factor being because the percentage of impervious area for each basin is low in comparison to each basin's total area. The planning for this proposed development consists of a cluster development which has been utilized to preserve much of the site's natural resources and woodlands. Because of this, there are large areas of pervious surface that drain to each basin. The amount of impervious area for this development is more reflective of a less dense rural development rather than a higher density urban development. The loading ratios of 8:1 and 10:1 make more sense in an urban setting where impervious areas are almost all of the total areas, but in rural settings the 10:1 loading ratio is very hard to achieve and for this development the infiltration footprint needs to approximately double in size to accommodate meet the 10:1 loading ratio.

The pervious surfaces that are draining to the basins are large areas of either lawn or area that will naturalize to pre-development vegetation conditions. These areas of pervious surface have well draining soils which will infiltrate runoff prior to it reaching the basins. The design of the SWM system will utilize design practices to promote as much infiltration as practical prior to the runoff reaching the basins. The runoff from the roofs of the age restricted duplex product will be designed to splash on grade and flow overland prior to entering the storm sewer system. Systems of swales and overland flow will be used in the SWM design to help promote infiltration prior to the runoff reaching the basins. Yard basin spacing in these swale systems will be spaced farther apart allowing for longer travel paths for the overland flow. All swales and defined flow paths will contain check dams to slow the flow of runoff and to allow for ponding of water in high intensity rain events.

Undisturbed Areas On-Site:

There are several large areas within the subject parcel that remain undeveloped in order to preserve as much of the site's existing natural features and woodlands as possible. These undisturbed and undeveloped areas are not increasing the site's stormwater runoff, as such detention is not being provided for these areas. Any large undisturbed area flowing towards a detention facility will be accounted for in the storm water conveyance system and will pass through the detention facility's outlet system. The ultimate outlet for this drainage will match the pre-development outlet locations.

Off-Site Drainage:

There are areas adjacent to the subject parcel that drain onto and through the property. All off-site drainage draining onto the subject parcel will be accounted for in the design of the development's storm water conveyance system but will NOT be included in the design of the site's storm water detention. Detention shall not be provided for off-site drainage as this drainage is not part of, created, or increased by the development of the site. The off-site drainage will pass through the outlet systems of the detention basins. These outlet locations are the same areas that the off-site drainage area flows towards pre-development.

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05/01/2025	WCWRC RESUBMITTAL
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Developed For:

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STORM WATER MANAGEMENT PLAN

BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

Date:	07.26.2024
Scale:	1"=100'
Sheet:	58
Project:	20249.00

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Basin 1: Detention Design

Project Name Brookwood Superior Township
Project Number 20249.00

Completed By JDR
Working Date February 13, 2025
Jurisdiction Washtenaw County

BASIN 1

Worksheet 1 Rational Method Variables for First Flush runoff

Total Site Area = A_{total} =	11.36	acres	=	494,842	sf			
Total Site Area Exluding "Self Crediting" BMPs = A =	11.36	acres	=	494,842	sf			

Runoff Volume Work Sheets

Rational Method Variables for First Flush runoff

Cover Type	Soil Type	Area (ft²)	Area (ac)	Runoff Coefficient C	C x Area
Impervious	B	150,230	3.45	0.95	3.28
Woods - Grass Combination	B	344,612	7.91	0.35	2.77
Total		494,842	11.36		6.05
Weighted C= Area x C / Area		=	6.05 / 11.36	=	0.53

NRCS Variables for bankfull and 100-year runoff calculations

Cover Type	Soil Type	Area (ft²)	Area (ac)	Curve Number	CN x Area
Impervious	B	150,230	3.45	98	337.98
Woods - Grass Combination	B	344,612	7.91	58	458.85
Total		494,842	11.36		796.83
Weighted CN= Area x CN / Area		=	796.83 / 11.36	=	70.14
Weighted $CN_{pervious}$ = $Area_{pervious}$ x $CN_{pervious}$ / $Area_{pervious}$		=	458.85 / 7.91	=	58.00

Worksheet 2 First Flush Volume

The first inch of rain in a 24-hour storm.

V_{ff}=	3,630	x	A	x	C			
=	3,630	x	11.36	x	0.53			
=	21,944	cubic feet						

Worksheet 3 Pre-Development Bankfull Runoff Calculations

Volume for the 2 year / 24 hour storm event: P = 2.35 in

The pre-development land cover will be Good Cover Woods or Meadow. Determine the associated soil hydrologic group for the entire site and choose the curve number.

CN_{pre} = 58.0

$S = \frac{1000}{CN_{pre}} - 10 = \frac{1000}{58.0} - 10 = 7.241$ in

$Q = \frac{(P-0.2S)^2}{(P+0.8S)} = \frac{(2.35 - 0.2 \times 7.241)^2}{(2.35 + 0.8 \times 7.241)} = 0.100$ in

$V_{pre\ bf}$= Q x A = 0.100 x 494,842 / 12 = 4,118 cubic feet

Worksheet 4 and 5 Post-Development Bankfull Runoff Calculations

Pervious Cover Post-Development Bankfull Runoff Calculations

Volume for the 2 year / 24 hour storm event: P = 2.35 in

$CN_{pervious}$ = 58.0 (Pervious cover CN from NRCS Variables Worksheet)

$S = \frac{1000}{CN_{pervious}} - 10 = \frac{1000}{58.0} - 10 = 7.241$ in

$Q = \frac{(P-0.2S)^2}{(P+0.8S)} = \frac{(2.35 - 0.2 \times 7.241)^2}{(2.35 + 0.8 \times 7.241)} = 0.100$ in

Pervious Cover Area, $A_{pervious}$ = 344,612 sf (From NRCS Variable worksheet)

$V_{pervious\ bf}$= Q x A = 0.100 x 344,612 / 12 = 2,868 cubic feet

Impervious Cover Post-Development Bankfull Runoff Calculations

Volume for the 2 year / 24 hour storm event: P = 2.35 in

$CN_{impervious}$ = 98.0 (Impervious cover CN from NRCS Variables Worksheet)

$S = \frac{1000}{CN_{impervious}} - 10 = \frac{1000}{98.0} - 10 = 0.204$ in

$Q = \frac{(P-0.2S)^2}{(P+0.8S)} = \frac{(2.35 - 0.2 \times 0.204)^2}{(2.35 + 0.8 \times 0.204)} = 2.122$ in

Impervious Cover Area, $A_{impervious}$ = 150,230 sf (From NRCS Variable worksheet)

$V_{impervious\ bf}$= Q x A = 2.122 x 150,230 / 12 = 26,562 cubic feet

Worksheets 6 and 7 Post-Development 100 Year Storm Runoff Volume Calculations

Pervious Cover Post-Development 100 Year Storm Runoff Calculations

100 Year Storm Event: P = 5.11 in

$CN_{pervious}$ = 58.0 (Pervious cover CN from NRCS Variables Worksheet)

$S = \frac{1000}{CN_{pervious}} - 10 = \frac{1000}{58.0} - 10 = 7.241$ in

$Q_{100\ per} = \frac{(P-0.2S)^2}{(P+0.8S)} = \frac{(5.11 - 0.2 \times 7.241)^2}{(5.11 + 0.8 \times 7.241)} = 1.230$ in

Pervious Cover Area, $A_{pervious}$ = 344,612 sf

$V_{pervious\ 100}$= $Q_{100\ per}$ x A = 1.230 x 344,612 / 12 = 35,316 cubic feet

Impervious Cover Post-Development Backfull Runoff Calculations

100 Year Storm Event: P = 5.11 in

$CN_{impervious}$ = 98.0 (Pervious cover CN from NRCS Variables Worksheet)

$S = \frac{1000}{CN_{impervious}} - 10 = \frac{1000}{98.0} - 10 = 0.204$ in

$Q_{100\ imp} = \frac{(P-0.2S)^2}{(P+0.8S)} = \frac{(5.11 - 0.2 \times 0.204)^2}{(5.11 + 0.8 \times 0.204)} = 4.873$ in

Impervious Cover Area, $A_{impervious}$ = 150,230 sf (From NRCS Variable worksheet)

$V_{impervious\ 100}$= $Q_{100\ imp}$ x A = 4.873 x 150,230 / 12 = 61,006 cubic feet

Worksheet 8 Determine Time of Concentration for Applicble Flow Types ($T_{c\ bas}$)

Flow Type	K	Change in Elevation (ft)	Length (L)	Slope % (S)	$S^{0.5}$	V=K*S^0.5	Tc=L/(V*3600)
Sheet Flow (no more than 300')	0.48	4	300	1.27	1.13	0.54	0.15
Waterway	1.20	5	336	1.49	1.22	1.46	0.06
Waterway	1.20	44	700	6.29	2.51	3.01	0.06
					Total Time of Concentration (Tc) =		0.28 hr

Worksheet 9 Runoff Summary & Onsite Infiltration Requirement

Runoff Summary

First Flush Volume (Vff) =	21,944	cubic feet
Pre-Development Bankfull Runoff Volume ($V_{pre\ bf}$) =	4,118	cubic feet
Pervious Cover Post-Development Bankfull Volume ($V_{pervious\ bf}$) =	2,868	cubic feet
Impervious Cover Post-Development Bankfull Volume ($V_{impervious\ bf}$) =	26,562	cubic feet
Total Post-Development Bankfull Volume (V_{bf}) =	**29,429**	**cubic feet**
Pervious Cover Post-Development 100-year Volume ($V_{pervious\ 100}$) =	35,316	cubic feet
Impervious Cover Post-Development 100-year Volume ($V_{impervious\ 100}$) =	61,006	cubic feet
Total Post-Development 100-year Volume (V_{100}) =	**96,322**	**cubic feet**

Onsite Infiltration Requirement

Subtract the pre-development bakfull from the post-development bnkfull volumes.

Total Post-Development Bankfull Volume (V_{bf}) =	29,429	cubic feet
Total Pre-Development Bankfull Runoff Volume ($V_{pre\ bf}$) =	4,118	cubic feet
Bankfull Volume Difference	**25,312**	**cubic feet**

Compare the Bankfull Volume Difference with the First Flush Volume. The GREATER of the two is the on-site infiltration.

Onsite Infiltration Requirement (V_{inf}) =	**25,312**	**cubic feet**

Worksheet 10 Detention / Retention Requirement

Detention

Peak of Unit Hydrograph, Q_p = 238.6 * $(T_c)^{-0.82}$ = 238.6 * 0.28 $^{-0.82}$

Q_p = 672.44 cfs/in-mi²

Total Site Area (ac) exluding "Self-Crediting" BMPs, A= 11.36 ac

$Q_{100} = Q_{100\ per} + Q_{100\ imp} = 1.230 + 4.873 = 6.103$ in

Peak Flow, PF = Qp*Q100*A = 672.44 * 6.103 * 11.36 = 640

Peak Flow, PF = 72.84 cfs

Δ = PF - 0.15 * A

Δ = 72.84 - 0.15 * 11.36

Δ = 71.14 cfs

$V_{det} = \frac{\Delta}{PF} * V_{100} = \frac{71.14}{73} * 96,322 = 94,068$ cubic feet **Not inlcuding infiltration reduction credit or penalty

Retention

V_{ret} = 2 * V_{100} = 2 * 96,322 = 192,644 cubic feet

Worksheet 11 Determine Applicable BMP and Associated Volume Credits

Proposed BMP[A]	Area (ft²)	Storage Volume[B] (ft³) Surface	Storage Volume[B] (ft³) Soil	Avg. Design Infiltration Rate (in/hr)	Infiltration Volume During Storm[C] (ft³)	Total Volume Reduction[D] (ft³)	
Pervious Pavt. w/Infiltration Bed	0	0	0	0.00	0	0	
Infiltration Basin	17,175	51,525	0	3.75	32,203	83,728	** See Basin Infiltration Design
Subsurface Infiltration Bed	0	0	0	0.00	0	0	
Infiltration Trench	0	0	0	0.00	0	0	
Bioretention systems	0	0	0	0.00	0	0	
Rain Gardens	0	0	0	0.00	0	0	
Dry Well	0	0	0	0.00	0	0	
Bioswale	0	0	0	0.00	0	0	
Vegetated Filter Strip	0	0	0	0.00	0	0	
Green Roof	0	0	0	0.00	0	0	
				Total Reduction Credit by Proposed Structural BMPs (ft³) =		83,728	
				Runoff Volume Infiltration Requirement (V_{inf}) =		25,312	
				Runoff Volume Credit (ft³) =		58,417	

[A] Complete checklist from Section VI for each structural BMP type

[B] Storage volume as defined in individual BMP write-ups

[C] Approximated as the average design infiltration rate over 6 hours multiplied by the BMP area: infiltration rate x 6 hours x BMP area x Unit conversions - Infiltration Volume (ft³)

[D] Total Volume Reduction Credit is the sum of storage volume and the infiltration volume during storm.

Worksheet 12 Natural Features Inventory

Existing Natural Resources	Mapped (Y, N, N/A)	Total Area (ac)	Protected / Undisturbed Area (ac)
Waterbodies	N	0.00	0.00
Floodplains	N	0.00	0.00
Riparian Areas	N	0.00	0.00
Wetlands	N	0.00	0.00
Woodlands	N	0.00	0.00
Natural Drainage Area	N	0.00	0.00
Steep Slopes, 15%-25%	N	0.00	0.00
Steep Slopes, over 25%	N	0.00	0.00
Special Habtat Areas	N	0.00	0.00
Other	N	0.00	0.00
Total Existing		**0.00**	**0.00**

Worksheet 13 Summary

Stormwater Management Summary

Minimum Onsite Infiltration requirements, V_{inf} =	25,312	cubic feet
Designed/Provided Infiltration Volume =	83,728	cubic feet
% Minimum Required Infiltration Provided =	331%	
Total Calculated Detention Volume, V_{det} =	94,068	cubic feet
Net Required Detention Volume (V_{det} - Design/Provided Infiltration Volume) =	**10,340**	**cubic feet**

Detention Volume Increase for site where the required infiltration volume cannot be achieved

% Required Infiltration NOT provided (100%-Min. Req. Infiltration provided) =	0%	
Net % Penalty (20% x % Reduced infiltration NOT provided) =	0.00%	
Total Required Detention Volume, inc. penalty	**10,340**	**cubic feet**
((100% + Net % Penalty) x V_{det})		

Basin Stage Storage Vouume Summary

Required Forebay Volume, V_{fb} =	4,703	cubic feet (V_{fb} = 0.05 x $V_{det\ 100}$)
Required First Flush Volume, V_{ff} =	21,944	cubic feet
Required Bankfull Volume, V_{bf} =	29,429	cubic feet
Total Required Detention Volume =	10,340	cubic feet

Forebay Volume Design

Required Forebay Volume, V_{fb} =	4,703	cf (V_{fb} = 0.05 x $V_{det\ 100}$)
Area to Forebay 1A =	354,173	sf
Area to Forebay 1B =	97,368	sf
% to Forebay 1A =	78.4	%
Forebay 1A Volume =	**3,689**	**cf**
% to Forebay 1B =	21.6	%
Forebay 1B Volume =	**1,014**	**cf**

Storage Volume Provided

Forebay 1A Volume

Elevation	Area (sf)	Incremental Volume (cft)	Cumulative Volume (cft)
764	2,425		
		2,065	4,228
763	1,725		
		1,387	2,163
762	1,075		
		776	776
761	511		

Forebay Volume Provided= 4,228 cubic feet

Forebay 1A Volume Required= 3,689 cubic feet

Forebay 1B Volume

Elevation	Area (sf)	Incremental Volume (cft)	Cumulative Volume (cft)
764	1,128		
		864	1,241
763	625		
		377	377
762	175		

Forebay Volume Provided= 1,241 cubic feet

Forebay 1B Volume Required= 1,014 cubic feet

Detention Pond (Includes Forebay Volumes)

Elevation	Area (sf)	Incremental Volume (cft)	Forebay Volumes (cft)	Cumulative Volume (cft)
765	34,900			
		30,892		108,978
764	27,050			
		25,980	2,929	78,086
763	24,925			
		23,893	2,251	49,177
762	22,875			
		21,880	1,153	23,033
761	20,900			

Detention Volume Provided= 108,978 cubic feet

Detention Volume Required= 10,340 cubic feet

Forebay 1A Required Volume Elevation Calculation

Forebay storage volume required= V_{fb}= 3,689 Z_{fb}= E_1 + $(V_{fb} - V_1)/(V_2 - V_1)$ x $(E_2 - E_1)$

Forebay volume below required amount= V_1= 2,163

Forebay volume above required amount= V_2= 4,228

Forebay elev below required amount= E_1= 763.00 Z_{fb}= 763.74

Forebay elev above required amount= E_2= 764.00

Forebay 1B Required Volume Elevation Calculation

Forebay storage volume required= V_{fb}= 1,014 Z_{fb}= E_1 + $(V_{fb} - V_1)/(V_2 - V_1)$ x $(E_2 - E_1)$

Forebay volume below required amount= V_1= 377

Forebay volume above required amount= V_2= 1,241

Forebay elev below required amount= E_1= 763.00 Z_{fb}= 763.74

Forebay elev above required amount= E_2= 764.00

First Flush Elevation Calculation

First Flush storage volume required= V_{ff}= 21,944 Z_{ff}= E_1 + $(V_{ff} - V_1)/(V_2 - V_1)$ x $(E_2 - E_1)$

Basin volume below required amount= V_1= 0

Basin volume above required amount= V_2= 51,525

Basin elevation below required amount= E_1= 758.00 Z_{ff}= 759.28

Basin elevation above required amount= E_2= 761.00

Bankfull Elevation Calculation

Bankfull storage volume required= V_{bf}= 29,429 Z_{bf}= E_1 + $(V_{bf} - V_1)/(V_2 - V_1)$ x $(E_2 - E_1)$

Basin volume below required amount= V_1= 0

Basin volume above required amount= V_2= 51,525

Basin elevation below required amount= E_1= 758.00 Z_{bf}= 759.71

Basin elevation above required amount= E_2= 761.00

Total Required Detention Elevation Calculation

***Outlet Design Note:** For sizing the OCS, the design is assuming the Required Detention Volume = V_{det} - V_{inf} (Min Req. Infiltration)

Total Required Detention storage volume required= *V_{det}= 68,757 Z_{det}= E_1 + $(V_{det} - V_1)/(V_2 - V_1)$ x $(E_2 - E_1)$

Basin volume below required amount= V_1= 49,177

Basin volume above required amount= V_2= 78,086

Basin elevation below required amount= E_1= 763.00 Z_{det}= 763.68

Basin elevation above required amount= E_2= 764.00

Basin Stage Storage Elevation Summary

Forebay 1A Required Volume Elev, Z_{fb} =	763.74
Forebay 1B Required Volume Elev, Z_{fb} =	763.74
First Flush Elev, Z_{ff} =	759.28
Bankfull Elev, Z_{bf} =	759.71
Total Required Detention Elev, Z_{det} =	763.68
Freeboard Elev, Z_{fb} =	764.68

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Basin 1: Infiltration Basin Design

Project Name Brookwood Superior
Project Number 20249.00

Completed By JDR
Working Date July 11, 2024
Jurisdiction Washtenaw County

Average Bed Area

The infiltration area of the infiltration basin. This is the area to be considered when evaluating the loading rate.

Average Bed Area = Area of bioretention at ponding depth + bottom area of bioretention / 2

Average Bed Area = (20,900 + 13,450) / 2 = 17,175 sf

Volume Reduction Calculations

Storage Volume

Infiltration Top Elev	761							
Infiltration Bottom Elev	758							
Max Design Water Depth	3.00	ft						
Surface Storage Volume (ft³) =	Avg Bed Area	x	Max Design Water Depth	=	17,175	x	3.00	
Surface Storage Volume (ft³) =	51,525	cubic feet						

Infiltration Volume During Storm

Infiltration Rate	3.75	in/hr	Soil boring TP-9					
Infiltration Volume =	Average Bed Area (ft²) x infiltration design rate (in/hr) x 6 hr / 12							
Infiltration Volume =	17,175	x	3.75	x	6 / 12			
Infiltration Volume =	32,203	cubic feet						
Total Volume Reduction Credit =	83,728	cubic feet						

Impervious Load Area

Surface Area should generally not exceed a maximum loading ratio of 8:1 (impervious drainage area to infiltration area)

Impervious Drainage Area =	150,230	sf						
Infiltration area =	17,175	sf						
Impervious Area Loading =	Impervious Drainage Area / Infiltration Area		=	150,230 / 17,175				
Loading =	8.75	>	8					

Total Loading Ratio

Drainage Area=	494,842	sf						
Infiltration area =	17,175	sf						
Maximum Loading =	Drainage Area / Infiltration Area		=	494,842 / 17,175				
Loading =	28.81	>	10					

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Developed For:

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BASIN 1 CALCULATIONS

BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

Date:	07.26.2024
Scale:	1" = 30'
Sheet:	59
Project:	20249.00

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OUTLET STRUCTURE CALCULATIONS

Forebay 1A Outlet Structure Calculations

h_{req} =	$2/3(Z_B - Z_d)$	=	0.667	* (	763.74	-	761.00	)	
h_{req} =	1.83	ft							
Orifice Selection									
Hole Dia =	0.75	inch			**Total Restrictor Area**				
Number of Holes =	3				A_{ridor} =	0.0092	ft^2		
$Q_{act\ for}$ =	$0.62 \times A_{ridor} \times (64.4 \times h_{req})^{0.5}$		=	0.062	cfs				
Dewatering Time =	V_{for}	=	4,703	=	21.12	hr			
	Q_{act} for		0.062						

Forebay 1B Outlet Structure Calculations

h_{req} =	$2/3(Z_B - Z_d)$	=	0.667	* (	763.74	-	762.00	)	
h_{req} =	1.16	ft							
Orifice Selection									
Hole Dia =	0.75	inch			**Total Restrictor Area**				
Number of Holes =	1				A_{ridor} =	0.0031	ft^2		
$Q_{act\ for}$ =	$0.62 \times A_{ridor} \times (64.4 \times h_{req})^{0.5}$		=	0.016	cfs				
Dewatering Time =	V_{for}	=	1,014	=	17.16	hr			
	Q_{act} for		0.016						

Allowable Outflow Calculation

Based on Acreage						Property Area=	11.36	acres	
Q_d =	0.15	cfs/acre							
=	0.15	cfs/acre	x	11.36	acres				
=	1.70	cfs							

1-Stage Outlet Structure Calculations

Required Volume Discharge	Required Detention Volume shall be released within 72 hours, maximum								
Max Allowable Release Rate, Q_{allow} =	1.70	cfs							
h_{req} =	$2/3(Z_{det} - Z_d)$	=	0.667	* (	763.68	-	761.00	)	
h_{req} =	1.78	ft							
Orifice Selection									
Hole Dia =	1.5	inch			**Total Restrictor Area**				
Number of Holes =	6				A_{ridor} =	0.0736	ft^2		
$Q_{act\ det}$ =	$0.62 \times A_{ridor} \times (64.4 \times h_{req})^{0.5}$		=	0.49	cfs				
Dewatering Time =	V_{det}	=	68,757	=	**39.04**	**hr**			
	$Q_{act\ det}$		0.49						
Max Allowable vs Actual Q	Q_{allow} =	1.70	cfs	>	$Q_{act\ det}$ =	0.49	cfs		

Overflow Structure and Pipe Calculations

Overflow pipe from pond shall be designed to handle the 10-yr storm event for the area draining to the basin.

10-year Storm Event Calculation

Basin Area =	11.36	ac
Offsite and Undisturbed Areas to Basin =	7.46	ac
Total Area, A =	18.82	ac
Basin C Factor, C =	0.53	
Offsite and Undisturbed C-Factor, C =	0.35	
Weighted C Factor, C =	0.46	
Time of Concentration, T_c =	30	min
Rainfall Intensity, I =	175 / (T_c + 25)	
Rainfall Intensity, I =	3.18	in/hr
Q_{10-yr} =	C x I x A	
Q_{10-yr} =	27.54	cfs

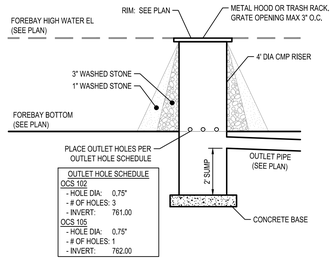
Overflow Pipe Sizing

In an overflow condition, the overflow pipe from the pond will be surcharged. Because of the surcharge condition, the pipe will be sized using the orfice calculations.

Outlet Pipe Dia	24	in					
Overflow Pipe Area, $A_{overflw}$ =	3.14	sf					
Overflow Pipe Invert =	759.85						
Overflow Structure Rim =	765.00						
Surchage Height, h =	5.15	ft					
Avg Outlet Height, h_{avg} =	0.67 x h	=	3.45	ft			
$Q_{overflow}$ =	$0.62 \times A_{overflw} \times (64.4 \times h_{avg})^{0.5}$						
$Q_{overflow}$ =	**29.02**	**cfs**	**>**	**Q_{10-yr} =**	**27.54**	**cfs**	

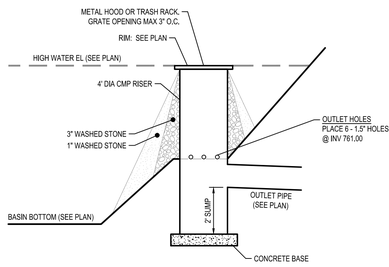
Basin Stage Storage Elevation Summary

Forebay 1A Required Volume Elev, Z_{fb} =	763.74
Forebay 1B Required Volume Elev, Z_{fb} =	763.74
First Flush Elev, Z_{ff} =	759.28
Bankfull Elev, Z_{bf} =	759.71
Total Required Detention Elev, Z_{det} =	763.68
Freeboard Elev, Z_{fb} =	764.68



OCS 102 & 105 DETAIL

N.T.S.



OCS 256 DETAIL

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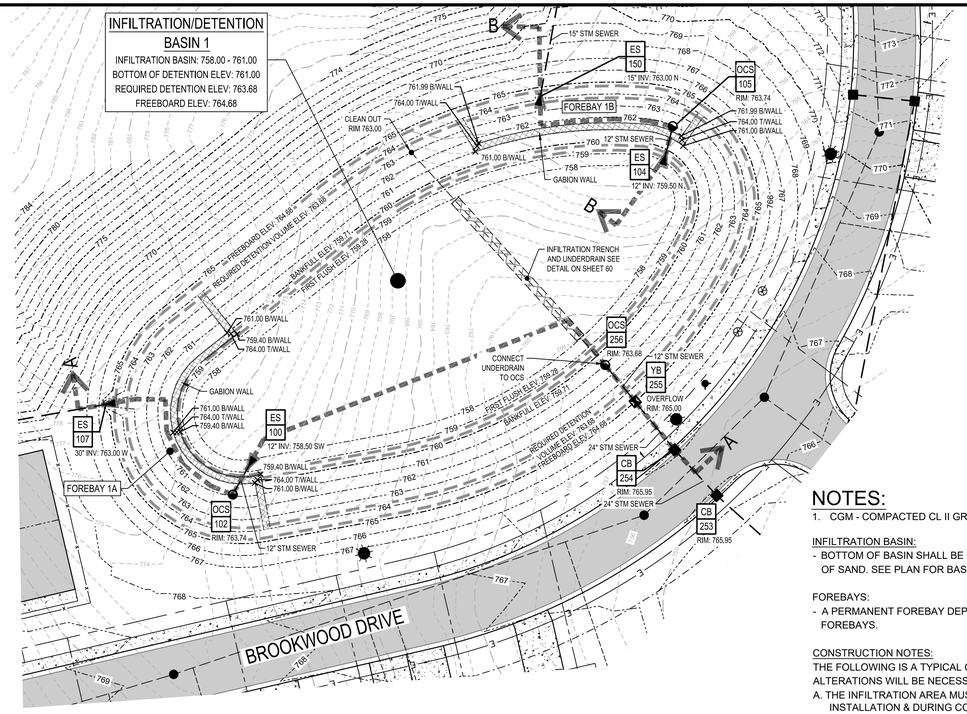


UTILITY PIPE MATERIALS

STORM SEWER:
RCP C76 CLIV, OR APPROVED EQUAL

STORM LEAD:
PVC SCH 40, OR APPROVED EQUAL

NOTES:

1. CGM - COMPACTED CL II GRANULAR MATERIAL

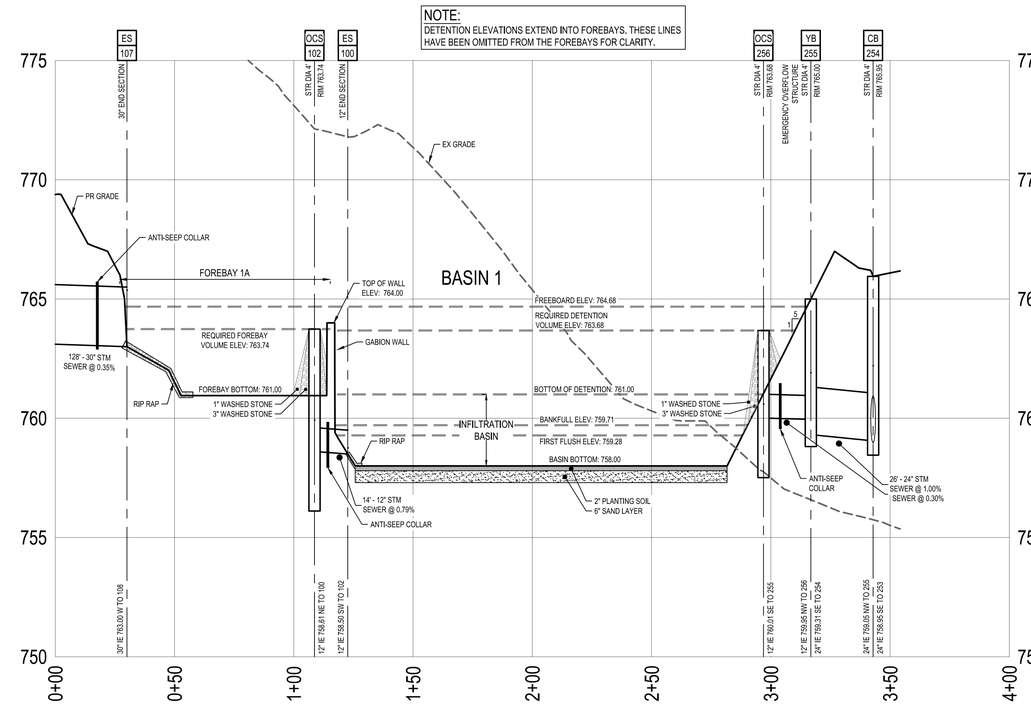
INFILTRATION BASIN:
- BOTTOM OF BASIN SHALL BE CONSTRUCTED WITH 2" OF PLANTING SOIL OVER 6" OF SAND. SEE PLAN FOR BASIN BOTTOM ELEVATION.

FOREBAYS:
- A PERMANENT FOREBAY DEPTH MARKER SHALL BE INSTALLED IN ALL FOREBAYS.

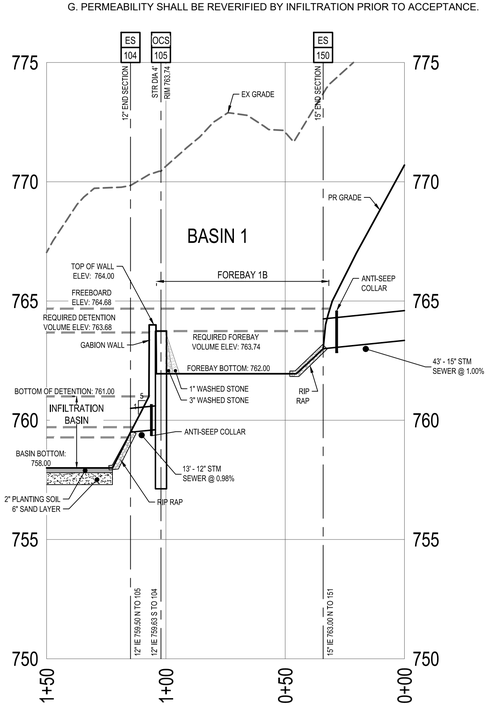
CONSTRUCTION NOTES:
THE FOLLOWING IS A TYPICAL CONSTRUCTION SEQUENCE; HOWEVER, ALTERATIONS WILL BE NECESSARY DEPENDING ON DESIGN VARIATIONS.

A. THE INFILTRATION AREA MUST BE PROTECTED FROM COMPACTION PRIOR TO INSTALLATION & DURING CONSTRUCTION.
B. INFILTRATION BASINS MUST NOT BE PLACED ON AREAS OF RECENT FILL, OR COMPACTED FILL, UNLESS OTHERWISE SHOWN IN PLANS. ANY GRADE ADJUSTMENTS REQUIRING FILL MUST BE DONE USING THE STONE SUB-BASE MATERIAL. AREAS OF HISTORICAL FILL (>5 YEARS) MAY BE CONSIDERED FOR INFILTRATION BASINS.
C. INSTALLATION AND MAINTENANCE OF PROPER EROSION AND SEDIMENT CONTROL MEASURES MUST BE FOLLOWED DURING CONSTRUCTION.
D. EXCAVATE INFILTRATION BASIN BOTTOM TO A UNIFORM, LEVEL UNCOMPACTED SUBGRADE FREE FROM ROCKS AND DEBRIS. DO NOT COMPACT SUBGRADE. EXCAVATION SHOULD BE PERFORMED WITH THE LIGHTEST PRACTICAL EQUIPMENT. EXCAVATION EQUIPMENT SHOULD BE PLACED OUTSIDE THE LIMITS OF THE INFILTRATION BASIN.
E. TOPSOIL STABILIZATION AND SEED MUST BE APPLIED TO THE DISTURBED AREA.
F. DO NOT REMOVE EROSION AND SEDIMENT CONTROL MEASURES UNTIL SITE IS FULLY STABILIZED.
G. PERMEABILITY SHALL BE REVERIFIED BY INFILTRATION PRIOR TO ACCEPTANCE.

NOTE:
DETENTION ELEVATIONS EXTEND INTO FOREBAYS. THESE LINES HAVE BEEN OMITTED FROM THE FOREBAYS FOR CLARITY.



BASIN 1 SECTION A - A



BASIN 1 SECTION B - B

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11/18/2024	FINAL SITE PLAN SUBMITTAL
01/17/2025	WCRC RESUBMITTAL
02/28/2025	WCWRC RESUBMITTAL
05/01/2025	WCWRC RESUBMITTAL
05/05/2025	TOWNSHIP FSP RESUBMITTAL
05/06/2025	SESC SUBMITTAL
05/13/2025	FSP LANDSCAPE REVISIONS
05/20/2025	STEEP SLOPE REVISIONS

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BASIN 1 DETAILS

BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

Date:	07.26.2024
Scale:	1" = 30'
Sheet:	60
Project:	20249.00

H:\2012020\20249.00 Brookwood Superior Twp\Design\CAD\Engineering Plans\59 BASIN 1 CALCULATIONS.dwg

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Basin 2: Detention Design

Project Name Brookwood Superior Township
Project Number 20249.00

Completed By JDR
Working Date February 13, 2025
Jurisdiction Washtenaw County

Worksheet 1 Rational Method Variables for First Flush runoff

Total Site Area = A_{total} =	11.87	acres	=	517,057	sf				
Total Site Area Exluding "Self Crediting" BMPs = A =	11.87	acres	=	517,057	sf				

Runoff Volume Work Sheets

Rational Method Variables for First Flush runoff

Cover Type	Soil Type	Area (ft^2)	Area (ac)	Runoff Coefficient C	C x Area
Impervious	B	229,032	5.26	0.95	4.99
Woods - Grass Combination	B	288,025	6.61	0.35	2.31
Total		517,057	11.87		7.31
Weighted C=	Area x C	=	7.31	=	0.62
	Area		11.87		

NRCS Variables for bankfull and 100-year runoff calculations

Cover Type	Soil Type	Area (ft^2)	Area (ac)	Curve Number	CN x Area
Impervious	B	229,032	5.26	98	515.27
Woods - Grass Combination	B	288,025	6.61	58	383.50
Total		517,057	11.87		898.77
Weighted CN=	Area x CN	=	898.77	=	75.72
	Area		11.87		
Weighted $CN_{pervious}$ =	$Area_{pervious}$ x $CN_{pervious}$	=	383.50	=	58.00
	$Area_{pervious}$		6.61		

Worksheet 2 First Flush Volume

The first inch of rain in a 24-hour storm.

V_{ff} =	3,630	x	A	x	C				
=	3,630	x	11.87	x	0.62				
=	26,532	cubic feet							

Worksheet 3 Pre-Development Bankfull Runoff Calculations

Volume for the 2 year / 24 hour storm event P = 2.35 in

The pre-development land cover will be Good Cover Woods or Meadow. Determine the associated soil hydrocgic group for the entire site and choose the curve number.

CN_{pre} =	58.0								
S =	1000	-	10	=	1000	-	10		
	CN_{pre}				58.0				
S =	7.241	in							
Q =	$(P-0.2S)^2$	=	(2.35	-	0.2	*	7.241	)^2	
	(P+0.8S)		(2.35	+	0.8	*	7.241	)	
Q =	0.100	in							
$V_{pre\ bf}$ =	Q	x	A	=	0.100	x	517,057		
=			12				12		
=	4,302	cubic feet							

Worksheet 4 and 5 Post-Development Bankfull Runoff Calculations

Pervious Cover Post-Development Bankfull Runoff Calculations

Volume for the 2 year / 24 hour storm event P = 2.35 in

$CN_{pervious}$ =	58.0	Pervious cover CN from NRCS Variables Worksheet							
S =	1000	-	10	=	1000	-	10		
	$CN_{pervious}$				58.0				
S =	7.241	in							
Q =	$(P-0.2S)^2$	=	(2.35	-	0.2	*	7.241	)^2	
	(P+0.8S)		(2.35	+	0.8	*	7.241	)	
Q =	0.100	in							
Pervious Cover Area, $A_{pervious}$ =	288,025	sf	From NRCS Variable worksheet						
$V_{pervious\ bf}$ =	Q	x	A	=	0.100	x	288,025		
=			12				12		
=	2,397	cubic feet							

Impervious Cover Post-Development Bankfull Runoff Calculations

Volume for the 2 year / 24 hour storm event P = 2.35 in

$CN_{impervious}$ =	98.0	Impervious cover CN from NRCS Variables Worksheet							
S =	1000	-	10	=	1000	-	10		
	$CN_{impervious}$				98.0				
S =	0.204	in							
Q =	$(P-0.2S)^2$	=	(2.35	-	0.2	*	0.204	)^2	
	(P+0.8S)		(2.35	+	0.8	*	0.204	)	
Q =	2.122	in							
Impervious Cover Area, $A_{impervious}$ =	229,032	sf	From NRCS Variable worksheet						
$V_{impervious\ bf}$ =	Q	x	A	=	2.122	x	229,032		
=			12				12		
=	40,494	cubic feet							

Worksheets 6 and 7 Post-Development 100 Year Storm Runoff Volume Calculations

Pervious Cover Post-Development 100 Year Storm Runoff Calculations

100 Year Storm Event P = 5.11 in

$CN_{pervious}$ =	58.0	Pervious cover CN from NRCS Variables Worksheet							
S =	1000	-	10	=	1000	-	10		
	$CN_{pervious}$				58.0				
S =	7.241	in							
$Q_{100\ per}$ =	$(P-0.2S)^2$	=	(5.11	-	0.2	*	7.241	)^2	
	(P+0.8S)		(5.11	+	0.8	*	7.241	)	
$Q_{100\ per}$ =	1.230	in							
Pervious Cover Area, $A_{pervious}$ =	288,025	sf							
$V_{pervious\ 100}$ =	$Q_{100\ per}$	x	A	=	1.230	x	288,025		
=			12				12		
=	29,517	cubic feet							

Impervious Cover Post-Development Backfull Runoff Calculations

100 Year Storm Event P = 5.11 in

$CN_{impervious}$ =	98.0	Pervious cover CN from NRCS Variables Worksheet							
S =	1000	-	10	=	1000	-	10		
	$CN_{impervious}$				98.0				
S =	0.204	in							
$Q_{100\ imp}$ =	$(P-0.2S)^2$	=	(5.11	-	0.2	*	0.204	)^2	
	(P+0.8S)		(5.11	+	0.8	*	0.204	)	
$Q_{100\ imp}$ =	4.873	in							
Impervious Cover Area, $A_{impervious}$ =	229,032	sf	From NRCS Variable worksheet						
$V_{impervious\ 100}$ =	$Q_{100\ imp}$	x	A	=	4.873	x	229,032		
=			12				12		
=	93,006	cubic feet							

Worksheet 8 Determine Time of Concentration for Applicble Flow Types ($T_{c\ max}$)

Flow Type	K	Change in Elevation (ft)	Length (L)	Slope % (S)	$S^{0.5}$	V=K*$S^{0.5}$	Tc=L/(V*3600)	
Sheet Flow (no more than 300')	0.48	11	300	3.50	1.87	0.90	0.09	
Waterway	1.20	4	502	0.89	0.94	1.13	0.12	
Waterway	1.20	25	260	9.46	3.08	3.69	0.02	
Waterway	1.20	11	416	2.52	1.59	1.91	0.06	
Waterway	1.20	9	571	1.56	1.25	1.50	0.11	
					Total Time of Concentration (Tc) =		0.40	hr

Worksheet 9 Runoff Summary & Onsite Infiltration Requirement

Runoff Summary

First Flush Volume (Vff) =	26,532	cubic feet
Pre-Development Bankfull Runoff Volume ($V_{pre\ bf}$) =	4,302	cubic feet
Pervious Cover Post-Development Bankfull Volume ($V_{pervious\ bf}$) =	2,397	cubic feet
Impervious Cover Post-Development Bankfull Volume ($V_{impervious\ bf}$) =	40,494	cubic feet
Total Post-Development Bankfull Volume (V_{bf}) =	**42,891**	**cubic feet**
Pervious Cover Post-Development 100-year Volume ($V_{pervious\ 100}$) =	29,517	cubic feet
Impervious Cover Post-Development 100-year Volume ($V_{impervious\ 100}$) =	93,006	cubic feet
Total Post-Development 100-year Volume (V_{100}) =	**122,523**	**cubic feet**

Onsite Infiltration Requirement

Subtract the pre-development bakfull from the post-development bnkfull volumes.

Total Post-Development Bankfull Volume (V_{bf}) =	42,891	cubic feet
Total Pre-Development Bankfull Runoff Volume ($V_{pre\ bf}$) =	4,302	cubic feet
Bankfull Volume Difference	**38,588**	**cubic feet**

Compare the Bankfull Volume Difference with the First Flush Volume. The GREATER of the two is the on-site infiltration.

Onsite Infiltration Requirement (V_{inf}) =	**38,588**	**cubic feet**

Worksheet 10 Detention / Retention Requirement

Detention

Peak of Unit Hydrograph, Q_p =	238.6	*	$(T_c)^{-0.82}$	=	238.6	*	0.40	$^{-0.82}$
Q_p =	503.74	cfs/in-mi^2						
Total Site Area (ac) exluding "Self-Crediting" BMPs, A=			11.87	ac				
Q_{500} =	$Q_{100\ per}$	*	$Q_{100\ imp}$	=	1.230	*	4.873	
Q_{500} =	6.103	in						
Peak Flow, PF =	Qp*Q100*A	=	503.74	*	6.103	*	11.87	
	640				640			
Peak Flow, PF =	57.02	cfs						
Δ =	PF	-	0.15	*	A			
Δ =	57.02	-	0.15	*	11.87			
Δ =	55.24	cfs						
V_{det} =	Δ	*	V_{100}	=	55.24	*	122,523	
	PF				57			
V_{det} =	118,697	cubic feet			**Not inlcuding infiltration reduction credit or penalty			

Retention

V_{ret} =	2	*	V_{100}	=	2	*	122,523	
V_{ret} =	245,046	cubic feet						

Worksheet 11 Determine Applicable BMP and Associated Volume Credits

Proposed BMP[A]	Area (ft^2)	Storage Volume[B] (ft^3)		Avg. Design Infiltration Rate (in/hr)	Infiltration Volume During Storm[C] (ft^3)	Total Volume Reduction[D] (ft^3)	
		Surface	Soil				
Pervious Pavt. w/Infiltration Bed	0	0	0	0.00	0	0	
Infiltration Basin	30,800	61,600	0	10.00	154,000	215,600	** See Basin Infiltration Design
Subsurface Infiltration Bed	0	0	0	0.00	0	0	
Infiltration Trench	0	0	0	0.00	0	0	
Bioretention systems	0	0	0	0.00	0	0	
Rain Gardens	0	0	0	0.00	0	0	
Dry Well	0	0	0	0.00	0	0	
Bioswale	0	0	0	0.00	0	0	
Vegetated Filter Strip	0	0	0	0.00	0	0	
Green Roof	0	0	0	0.00	0	0	
				Total Reduction Credit by Proposed Structural BMPs (ft^3) =		215,600	
				Runoff Volume Infiltration Requirement (V_{inf}) =		38,588	
				Runoff Volume Credit (ft^3) =		177,012	

[A] Complete checklist from Section VI for each structural BMP type

[B] Storage volume as defined in individual BMP write-ups

[C] Approximated as the average design infiltration rate over 6 hours multiplied by the BMP area: infiltration rate x 6 hours x BMP area x Unit conversions - Infiltration Volume (ft^3)

[D] Total Volume Reduction Credit is the sum of storage volume and the infiltration volume during storm.

Worksheet 12 Natural Features Inventory

Existing Natural Resources	Mapped (Y, N, N/A)	Total Area (ac)	Protected / Undisturbed Area (ac)
Waterbodies	N	0.00	0.00
Floodplains	N	0.00	0.00
Riparian Areas	N	0.00	0.00
Wetlands	N	0.00	0.00
Woodlands	N	0.00	0.00
Natural Drainage Area	N	0.00	0.00
Steep Slopes, 15%-25%	N	0.00	0.00
Steep Slopes, over 25%	N	0.00	0.00
Special Habtat Areas	N	0.00	0.00
Other	N	0.00	0.00
Total Existing		**0.00**	**0.00**

Worksheet 13 Summary

Stormwater Management Summary

Minimum Onsite Infiltration requirements, V_{inf} =	38,588	cubic feet
Designed/Provided Infiltration Volume =	215,600	cubic feet
% Minimum Required Infiltration Provided =	559%	
Total Calculated Detention Volume, V_{det} =	118,697	cubic feet
Net Required Detention Volume (V_{det} - Design/Provided Infiltration Volume) =	**-96,903**	**cubic feet**

Detention Volume Increase for site where the required infiltration volume cannot be achieved

% Required Infiltration NOT provided (100%-Min. Req. Infiltration provided) =	0%	
Net % Penalty (20% x % Reduced infiltration NOT provided) =	0.00%	
Total Required Detention Volume, inc. penalty	**-96,903**	**cubic feet**

[(100% + Net % Penalty) xV_{det}]

Basin Stage Storage Voume Summary

Required Forebay Volume, V_{fb} =	5,935	cubic feet	V_{fb} = 0.05 x $V_{det,100}$
Required First Flush Volume, V_{ff} =	26,532	cubic feet	
Required Bankfull Volume, V_{bf} =	42,891	cubic feet	
Total Required Detention Volume =	-96,903	cubic feet	

Forebay Volume Design

Required Forebay Volume, V_{fb} =	5,935	cf
Area to Forebay 2A =	348,246	sf
Area to Forebay 2B =	112,905	sf
% to Forebay 2A =	75.5	%
Forebay 2A Volume =	**4,482**	**cf**
% to Forebay 2B =	24.5	%
Forebay 2B Volume =	**1,453**	**cf**

Storage Volume Provided

Forebay 2A Volume

Elevation	Area (sft)	Incremental Volume (cft)	Cumulative Volume (cft)
755	3,750		
		3,077	4,865
754	2,450		
		1,788	1,788
753	1,200		

Forebay Volume Provided= 4,865 cubic feet

Forebay 1A Volume Required= 4,482 cubic feet

Forebay 2B Volume

Elevation	Area (sft)	Incremental Volume (cft)	Cumulative Volume (cft)
754.5	1,350		
		1,117	1,780
753.5	900		
		662	662
752.5	450		

Forebay Volume Provided= 1,780 cubic feet

Forebay 1B Volume Required= 1,453 cubic feet

Detention Pond (Includes Forebay Volumes)

Elevation	Area (sft)	Incremental Volume (cft)	Forebay Volumes (cft)	Cumulative Volume (cft)
755	48,302			
		45,498	3,636	91,818
754	42,750			
		40,007	2,678	42,685
753	37,325			

Detention Volume Provided= 91,818 cubic feet

Detention Volume Required= -96,903 cubic feet

Forebay 2A Required Volume Elevation Calculation

Forebay storage volume required=	V_{fb}=	4,482	Z_{fb}=	E_1	+	$(V_{fb} - V_1)$ / $(V_2 - V_1)$	x (E_2-E_1)
Forebay volume below required amount=	V_1=	1,788					
Forebay volume above required amount=	V_2=	4,865					
Forebay elevation below required amount=	E_1=	754.00	Z_{fb}=	754.88			
Forebay elevation above required amount=	E_2=	755.00					

Forebay 2B Required Volume Elevation Calculation

Forebay storage volume required=	V_{fb}=	1,453	Z_{fb}=	E_1	+	$(V_{fb} - V_1)$ / $(V_2 - V_1)$	x (E_2-E_1)
Forebay volume below required amount=	V_1=	662					
Forebay volume above required amount=	V_2=	1,780					
Forebay elevation below required amount=	E_1=	753.50	Z_{fb}=	754.21			
Forebay elevation above required amount=	E_2=	754.50					

First Flush Elevation Calculation

First Flush storage volume required=	V_{ff}=	26,532	Z_{ff}=	E_1	+	$(V_{ff} - V_1)$ / $(V_2 - V_1)$	x (E_2-E_1)
Basin volume below required amount=	V_1=	0					
Basin volume above required amount=	V_2=	61,600					
Basin elevation below required amount=	E_1=	751.00	Z_{ff}=	751.86			
Basin elevation above required amount=	E_2=	753.00					

Bankfull Elevation Calculation

Bankfull storage volume required=	V_{bf}=	42,891	Z_{bf}=	E_1	+	$(V_{bf} - V_1)$ / $(V_2 - V_1)$	x (E_2-E_1)
Basin volume below required amount=	V_1=	0					
Basin volume above required amount=	V_2=	61,600					
Basin elevation below required amount=	E_1=	751.00	Z_{bf}=	752.39			
Basin elevation above required amount=	E_2=	753.00					

Total Required Detention Elevation Calculation

***Outlet Design Note: For sizing the OCS, the design is assuming the Required Detention Volume = V_{det} - V_{inf} (Min Req. Infiltration)**

Total Required Detention storage volume required=	*V_{det}=	80,108	Z_{det}=	E_1	+	$(V_{det} - V_1)$ / $(V_2 - V_1)$	x (E_2-E_1)
Basin volume below required amount=	V_1=	42,685					
Basin volume above required amount=	V_2=	91,818					
Basin elevation below required amount=	E_1=	754.00	Z_{det}=	754.76			
Basin elevation above required amount=	E_2=	755.00					

Basin Stage Storage Elevation Summary

Forebay 2A Required Volume Elev, Z_{fb} =	754.88
Forebay 2B Required Volume Elev, Z_{fb} =	754.21
First Flush Elev, Z_{ff} =	751.86
Bankfull Elev, Z_{bf} =	752.39
Total Required Detention Elev, Z_{det} =	754.76
Freeboard Elev, Z_{fb} =	755.76

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Basin 2: Infiltration Basin Design

Project Name Brookwood Superior
Project Number 20249.00

Completed By JDR
Working Date February 13, 2025
Jurisdiction Washtenaw County

Average Bed Area

The infiltration area of the infiltration basin. This is the area to be considered when evaluating the loading rate.

Average Bed Area = Area of bioretention at ponding depth + bottom area of bioretention

2

Average Bed Area = (37,325 + 24,275) = 30,800 sf

2

Volume Reduction Calculations

Storage Volume

Infiltration Top Elev	753								
Infiltration Bottom Elev	751								
Max Design Water Depth	2.00	ft							
Surface Storage Volume (ft^3) =	Avg Bed Area	x	Max Design Water Depth	=	30,800	x	2.00		
Surface Storage Volume (ft^3) =	61,600	cubic feet							

Infiltration Volume During Storm

Infiltration Rate	10.00	in/hr	Soil boring TP-8				
Infiltration Volume =	Average Bed Area (ft^2) x infiltration design rate (in/hr) x 6 hr						
	12						
Infiltration Volume =	30,800	x	10.00	x	6		
	12						
Infiltration Volume =	154,000	cubic feet					
Total Volume Reduction Credit =	215,600	cubic feet					

Impervious Load Area

Surface Area should generally not exceed a maximum loading ratio of 8:1 (impervious drainage area to infiltration area)

Impervious Drainage Area =	229,032	sf			
Infiltration area =	30,800	sf			
Impervious Area Loading =	Impervious Drainage Area	=	229,032		
	Infiltration Area		30,800		
Loading =	7.44	>	8		

Total Loading Ratio

Drainage Area=	517,057	sf			
Infiltration area =	30,800	sf			
Maximum Loading =	Drainage Area	=	517,057		
	Infiltration Area		30,800		
Loading =	16.79	≤	10		

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BASIN 2 CALCULATIONS

BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

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Project:	20249.00

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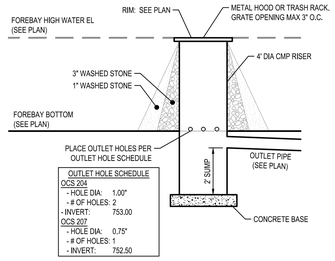
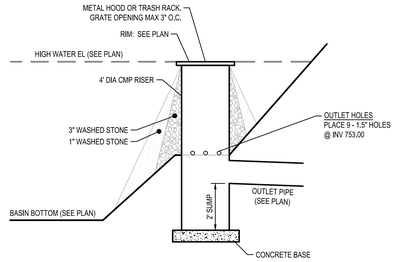
OUTLET CONTROL STRUCTURE CALCULATIONS

Basin Stage Storage Elevation Summary	
Forebay 2A Required Volume Elev, Z_{fa} =	754.88
Forebay 2B Required Volume Elev, Z_{fb} =	754.21
First Flush Elev, Z_{ff} =	751.86
Bankfull Elev, Z_{bf} =	752.39
Total Required Detention Elev, Z_{det} =	754.76
Freeboard Elev, Z_{fb} =	755.76



OCS 204 & 207 DETAIL
N.T.S.



OCS 256 DETAIL
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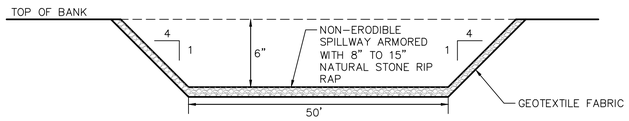

WEIR FLOWRATE CAPACITY, Q_{SP}

$Q_{SP} = L \times 3.367 \times H^{1.5}$

L = 50'

H = 0.5'

$Q_{SP} = 50 \times 3.367 \times 0.5^{1.5} = 59.5$ CFS

$Q_{100\text{-}YR} = 54.9$ CFS < Q_{SP}

OVERFLOW SPILLWAY DETAIL
N.T.S.

Forebay 2A Outlet Structure Calculations

h_{req} =	$2/3(Z_{fa} - Z_0)$	=	0.667	* (	754.88	-	753.00	)
h_{req} =	1.25	ft						
Hole Dia =	1	inch		**Total Restrictor Area**				
Number of Holes =	2			A_{tar} =	0.0109	ft^2		
$Q_{act\ fa}$ =	$0.62 \times A_{tar} \times (64.4 \times h_{req})^{0.5}$		=	0.061	cfs			
Dewatering Time =	V_{fa}	=	5,935	=	27.18	hr		
	Q_{act} for		0.061					

Forebay 2B Outlet Structure Calculations

h_{req} =	$2/3(Z_{fa} - Z_0)$	=	0.667	* (	754.21	-	752.50	)
h_{req} =	1.14	ft						
Hole Dia =	0.75	inch		**Total Restrictor Area**				
Number of Holes =	1			A_{tar} =	0.0031	ft^2		
$Q_{act\ fa}$ =	$0.62 \times A_{tar} \times (64.4 \times h_{req})^{0.5}$		=	0.016	cfs			
Dewatering Time =	V_{fa}	=	1,453	=	24.79	hr		
	Q_{act} for		0.016					

Allowable Outflow Calculation

Based on Acreage:					Property Area=	11.87	acres
Q_a=	0.15	cfs/acre					
=	0.15	cfs/acre	x	11.87	acres		
=	1.78	cfs					

1-Stage Outlet Structure Calculations

Required Volume Discharge — Required Detention Volume shall be released within 72 hours, maximum

Max Allowable Release Rate, Q_{allow} =	1.78	cfs						
h_{req} =	$2/3(Z_{det} - Z_0)$	=	0.667	* (	754.76	-	753.00	)
h_{req} =	1.17	ft						
Orifice Selection								
Hole Dia =	1.5	inch		**Total Restrictor Area**				
Number of Holes =	9			$A_{r\text{-}det}$ =	0.1104	ft^2		
$Q_{act\ det}$ =	$0.62 \times A_{r\text{-}det} \times (64.4 \times h_{req})^{0.5}$		=	0.60	cfs			
Dewatering Time =	V_{det}	=	80,108	=	**37.38**	**hr**		
	$Q_{act\ det}$		0.60					
Max Allowable vs Actual Q	Q_{allow} =	1.78	cfs	>	$Q_{act\ det}$ =	0.60	cfs	

Overflow Structure and Pipe Calculations

Overflow pipe from pond shall be designed to handle the 10-yr storm event for the area draining to the basin.

10-year Storm Event Calculation

Basin Area =	11.87	ac	
Upstream Areas to Basin =	18.82	ac	From Basin 1 Overflow Structure Calcs
Total Area, A =	30.69	ac	
Basin C Factor, C =	0.62		
Upstream Area, C Factor =	0.46		From Basin 1 Overflow Structure Calcs
Weighted C Factor, C =	0.52		
Time of Concentration, T_c =	55	min	
Rainfall Intensity, I =	$175 / (T_c + 25)$		
Rainfall Intensity, I =	2.19	in/hr	
$Q_{10\text{-}yr}$ =	C x I x A		
$Q_{10\text{-}yr}$ =	34.92	cfs	

Overflow Pipe Sizing

In an overflow condition, the overflow pipe from the pond will be surcharged. Because of the surcharge condition, the pipe will be sized using the orfice calculations.

Outlet Pipe Dia	27	in						
Overflow Pipe Area, A_{outfw} =	3.97	sf						
Overflow Pipe Invert =	749.30							
Overflow Structure Rim =	754.76							
Surchage Height, h =	5.46	ft						
Avg Outlet Height, h_{avg} =	0.67 x h	=	3.66	ft				
$Q_{overflow}$ =	$0.62 \times A_{outfw} \times (64.4 \times h_{avg})^{0.5}$							
$Q_{overflow}$ =	**37.82**	**cfs**	**>**	**$Q_{10\text{-}yr}$ =**	**34.92**	**cfs**		

100-YEAR STORM EVENT CALCULATIONS

Total Area, A =	30.69	ac	
Weighted C Factor, C =	0.52		
Time of Concentration, T_c =	55	min	
Rainfall Intensity, I =	$275 / (T_c + 25)$		
Rainfall Intensity, I =	3.44	in/hr	
$Q_{100\text{-}yr}$ =	C x I x A		
$Q_{100\text{-}yr}$ =	54.9	cfs	

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BASIN 2 CALCULATIONS & DETAILS

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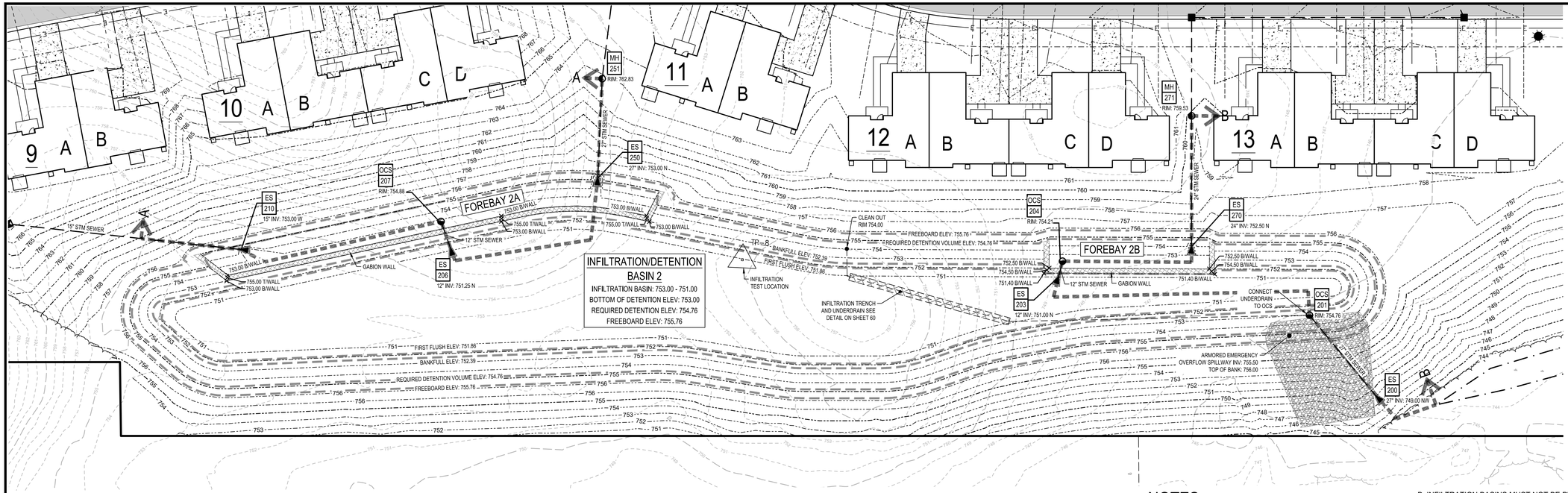


NOTES:

1. CGM - COMPACTED CL II GRANULAR MATERIAL

INFILTRATION BASIN:
- BOTTOM OF BASIN SHALL BE CONSTRUCTED WITH 2" OF PLANTING SOIL OVER 6" OF SAND. SEE PLAN FOR BASIN BOTTOM ELEVATION.

FOREBAYS:
- A PERMANENT FOREBAY DEPTH MARKER SHALL BE INSTALLED IN ALL FOREBAYS.

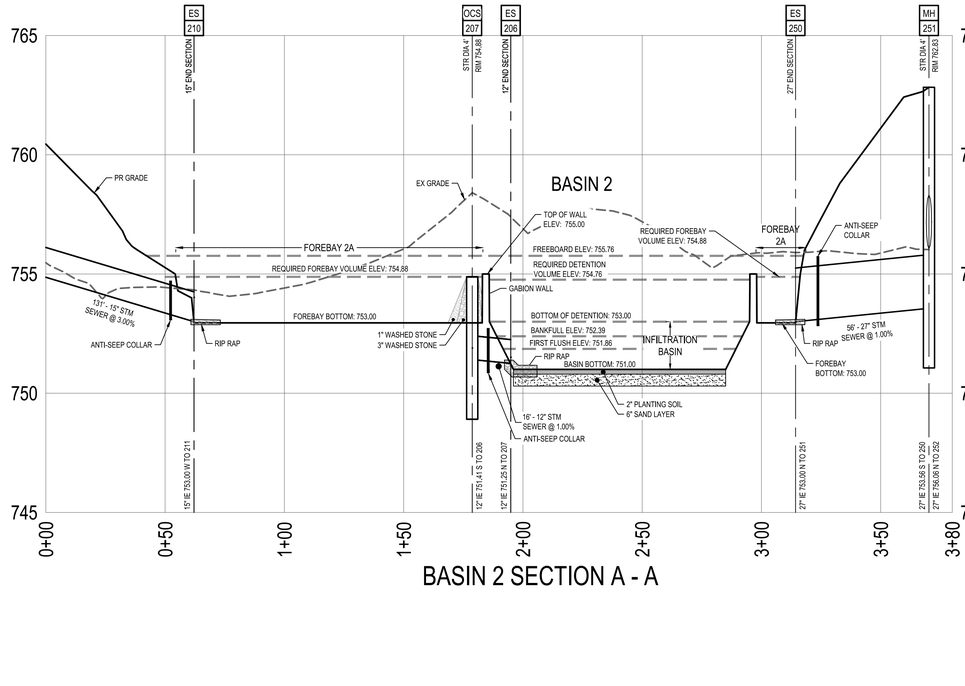
CONSTRUCTION NOTES:

THE FOLLOWING IS A TYPICAL CONSTRUCTION SEQUENCE; HOWEVER, ALTERATIONS WILL BE NECESSARY DEPENDING ON DESIGN VARIATIONS.

A. THE INFILTRATION AREA MUST BE PROTECTED FROM COMPACTION PRIOR TO INSTALLATION & DURING CONSTRUCTION.
B. INFILTRATION BASINS MUST NOT BE PLACED ON AREAS OF RECENT FILL, OR COMPACTED FILL, UNLESS OTHERWISE SHOWN IN PLANS. ANY GRADE ADJUSTMENTS REQUIRING FILL MUST BE DONE USING THE STONE SUB-BASE MATERIAL. AREAS OF HISTORICAL FILL (>5 YEARS) MAY BE CONSIDERED FOR INFILTRATION BASINS.
C. INSTALLATION AND MAINTENANCE OF PROPER EROSION AND SEDIMENT CONTROL MEASURES MUST BE FOLLOWED DURING CONSTRUCTION.
D. EXCAVATE INFILTRATION BASIN BOTTOM TO A UNIFORM, LEVEL UNCOMPACTED SUBGRADE FREE FROM ROCKS AND DEBRIS. DO NOT COMPACT SUBGRADE. EXCAVATION SHOULD BE PERFORMED WITH THE LIGHTEST PRACTICAL EQUIPMENT. EXCAVATION EQUIPMENT SHOULD BE PLACED OUTSIDE THE LIMITS OF THE INFILTRATION BASIN.
E. TOPSOIL STABILIZATION AND SEED MUST BE APPLIED TO THE DISTURBED AREA.
F. DO NOT REMOVE EROSION AND SEDIMENT CONTROL MEASURES UNTIL SITE IS FULLY STABILIZED.
G. PERMEABILITY SHALL BE REVERIFIED BY INFILTRATION PRIOR TO ACCEPTANCE.

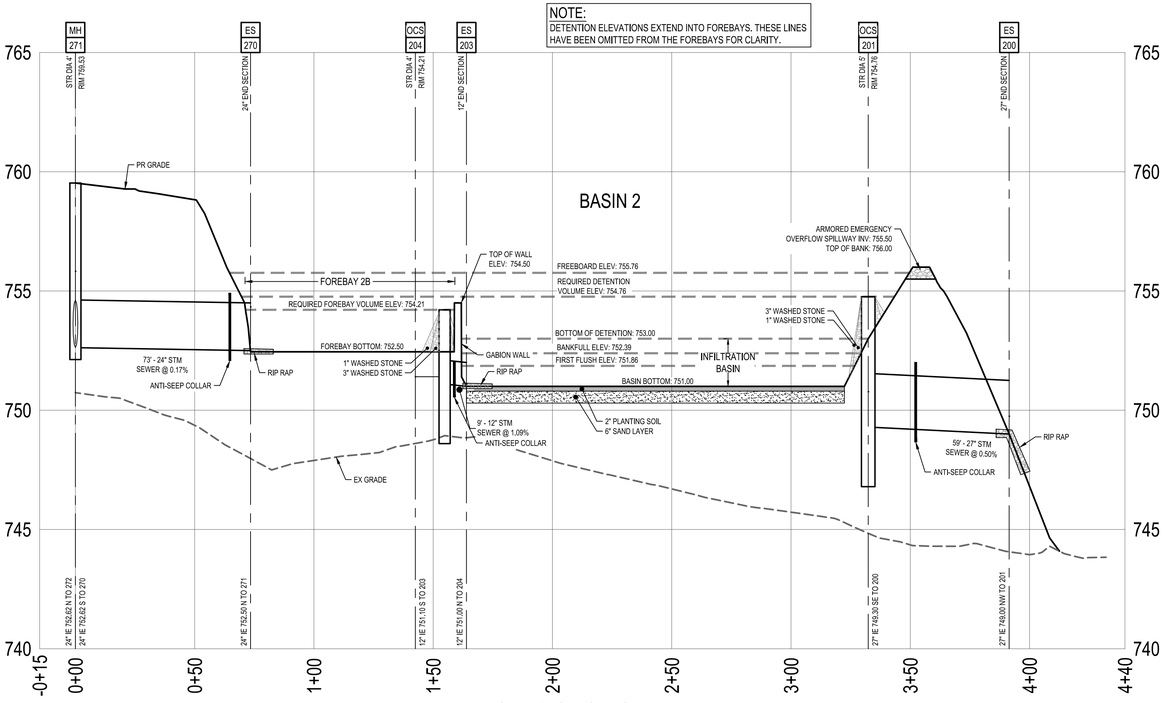
UTILITY PIPE MATERIALS

STORM SEWER:
RCP C76 CLIV, OR APPROVED EQUAL
STORM LEAD:
PVC SCH 40, OR APPROVED EQUAL



BASIN 2 SECTION A - A

NOTE:
DETENTION ELEVATIONS EXTEND INTO FOREBAYS. THESE LINES HAVE BEEN OMITTED FROM THE FOREBAYS FOR CLARITY.



BASIN 2 SECTION B - B

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Basin 3: Detention Design

Project Name Brookwood Superior Township

Project Number 20249.00

Completed By JDR
Working Date April 28, 2025
Jurisdiction Washtenaw County

Worksheet 1 Rational Method Variables for First Flush runoff

Total Site Area = A_{total} =	3.70	acres	=	161,172	sf
Total Site Area Exluding "Self Crediting" BMPs = A =	3.70	acres	=	161,172	sf

Runoff Volume Work Sheets
Rational Method Variables for First Flush runoff

Cover Type	Soil Type	Area (ft²)	Area (ac)	Runoff Coefficient C	C x Area
Impervious	B	42,339	0.97	0.95	0.92
Woods - Grass Combination	B	118,833	2.73	0.35	0.95
Total		161,172	3.70		1.88

Weighted C = (Area x C) / Area = 1.88 / 3.70 = 0.51

NRCS Variables for bankfull and 100-year runoff calculations

Cover Type	Soil Type	Area (ft²)	Area (ac)	Curve Number	CN x Area
Impervious	B	42,339	0.97	98	95.25
Woods - Grass Combination	B	118,833	2.73	58	158.23
Total		161,172	3.70		253.48

Weighted CN = (Area x CN) / Area = 253.48 / 3.70 = 68.51

Weighted $CN_{pervious}$ = ($Area_{pervious}$ x $CN_{pervious}$) / $Area_{pervious}$ = 158.23 / 2.73 = 58.00

Worksheet 2 First Flush Volume

The first inch of rain in a 24-hour storm.

V_{ff} = 3,630 x A x C
= 3,630 x 3.70 x 0.51
= 6,818 cubic feet

Worksheet 3 Pre-Development Bankfull Runoff Calculations

Volume for the 2 year / 24 hour storm event P = 2.35 in

The pre-development land cover will be Good Cover Woods or Meadow. Determine the associated soil hydroogic groupo for the entire site and choose the curve number.

CN_{pre} = 58.0

S = 1000 / CN_{pre} - 10 = 1000 / 58.0 - 10

S = 7.241 in

Q = (P-0.2S)² / (P+0.8S) = (2.35 - 0.2 * 7.241)² / (2.35 + 0.8 * 7.241)

Q = 0.100 in

$V_{pre\ bf}$ = Q x A / 12 = 0.100 x 161,172 / 12

= 1,341 cubic feet

Worksheet 4 and 5 Post-Development Bankfull Runoff Calculations

Pervious Cover Post-Development Bankfull Runoff Calculations

Volume for the 2 year / 24 hour storm event P = 2.35 in

$CN_{pervious}$ = 58.0 Pervious cover CN from NRCS Variables Worksheet

S = 1000 / $CN_{pervious}$ - 10 = 1000 / 58.0 - 10

S = 7.241 in

Q = (P-0.2S)² / (P+0.8S) = (2.35 - 0.2 * 7.241)² / (2.35 + 0.8 * 7.241)

Q = 0.100 in

Pervious Cover Area, $A_{pervious}$ = 118,833 sf From NRCS Variable worksheet

$V_{pervious\ bf}$ = Q x A / 12 = 0.100 x 118,833 / 12

= 989 cubic feet

Impervous Cover Post-Development Bankfull Runoff Calculations

Volume for the 2 year / 24 hour storm event P = 2.35 in

$CN_{impervious}$ = 98.0 Impervious cover CN from NRCS Variables Worksheet

S = 1000 / $CN_{impervious}$ - 10 = 1000 / 98.0 - 10

S = 0.204 in

Q = (P-0.2S)² / (P+0.8S) = (2.35 - 0.2 * 0.204)² / (2.35 + 0.8 * 0.204)

Q = 2.122 in

Impervious Cover Area, $A_{impervious}$ = 42,339 sf From NRCS Variable worksheet

$V_{impervious\ bf}$ = Q x A / 12 = 2.122 x 42,339 / 12

= 7,486 cubic feet

Worksheets 6 and 7 Post-Development 100 Year Storm Runoff Volume Calculations

Pervious Cover Post-Development 100 Year Storm Runoff Calculations

100 Year Storm Event P = 5.11 in

$CN_{pervious}$ = 58.0 Pervious cover CN from NRCS Variables Worksheet

S = 1000 / $CN_{pervious}$ - 10 = 1000 / 58.0 - 10

S = 7.241 in

$Q_{100\ per}$ = (P-0.2S)² / (P+0.8S) = (5.11 - 0.2 * 7.241)² / (5.11 + 0.8 * 7.241)

$Q_{100\ per}$ = 1.230 in

Pervious Cover Area, $A_{pervious}$ = 118,833 sf From NRCS Variable worksheet

$V_{pervious\ 100}$ = $Q_{100\ per}$ x A / 12 = 1.230 x 118,833 / 12

= 12,178 cubic feet

Impervous Cover Post-Development Backfull Runoff Calculations

100 Year Storm Event P = 5.11 in

$CN_{impervious}$ = 98.0 Pervious cover CN from NRCS Variables Worksheet

S = 1000 / $CN_{impervious}$ - 10 = 1000 / 98.0 - 10

S = 0.204 in

$Q_{100\ imp}$ = (P-0.2S)² / (P+0.8S) = (5.11 - 0.2 * 0.204)² / (5.11 + 0.8 * 0.204)

$Q_{100\ imp}$ = 4.873 in

Impervious Cover Area, $A_{impervious}$ = 42,339 sf From NRCS Variable worksheet

$V_{impervious\ 100}$ = $Q_{100\ imp}$ x A / 12 = 4.873 x 42,339 / 12

= 17,193 cubic feet

Worksheet 8 Determine Time of Concentration for Applicble Flow Types (T_{c-hrs})

Flow Type	K	Change in Elevation (ft)	Length (L)	Slope % (S)	$S^{0.5}$	$V=K*S^{0.5}$	Tc=L/(V*3600)
Sheet Flow (no more than 300')	0.48	3	300	1.00	1.00	0.48	0.17
Waterway	1.20	9	503	1.79	1.34	1.61	0.09
					Total Time of Concentration (Tc) =	0.26	hr

Worksheet 9 Runoff Summary & Onsite Infiltration Requirement

Runoff Summary

First Flush Volume (Vff) =	6,818	cubic feet
Pre-Development Bankfull Runoff Volume ($V_{pre\ bf}$) =	1,341	cubic feet
Pervious Cover Post-Development Bankfull Volume ($V_{pervious\ bf}$) =	989	cubic feet
Impervious Cover Post-Development Bankfull Volume ($V_{impervious\ bf}$) =	7,486	cubic feet
Total Post-Development Bankfull Volume (V_{bf}) =	**8,475**	**cubic feet**
Pervious Cover Post-Development 100-year Volume ($V_{pervious\ 100}$) =	12,178	cubic feet
Impervious Cover Post-Development 100-year Volume ($V_{impervious\ 100}$) =	17,193	cubic feet
Total Post-Development 100-year Volume (V_{100}) =	**29,371**	**cubic feet**

Onsite Infiltration Requirement

Subtract the pre-development bakfull from the post-development bnkfull volumes.

Total Post-Development Bankfull Volume (V_{bf}) =	8,475	cubic feet
Total Pre-Development Bankfull Runoff Volume ($V_{pre\ bf}$) =	1,341	cubic feet
Bankfull Volume Difference	**7,133**	**cubic feet**

Compare the Bankfull Volume Difference with the First Flush Volume. The GREATER of the two is the on-site infiltration.

Onsite Infiltration Requirement (V_{inf}) = 7,133 cubic feet

Worksheet 10 Detention / Retention Requirement

Detention

Peak of Unit Hydrograph, Q_p = 238.6 * $(T_c)^{-0.82}$ = 238.6 * $0.26^{-0.82}$

Q_p = 718.61 cfs/in-mi²

Total Site Area (ac) exluding "Self-Crediting" BMPs, A= 3.70 ac

Q_{100} = $Q_{100\ per}$ + $Q_{100\ imp}$ = 1.230 + 4.873

Q_{100} = 6.103 in

Peak Flow, PF = Qp*Q100*A / 640 = 718.61 * 6.103 * 3.70 / 640

Peak Flow, PF = 25.35 cfs

Δ = PF - 0.15 * A

Δ = 25.35 - 0.15 * 3.70

Δ = 24.80 cfs

V_{det} = Δ / PF * V_{100} = 24.80 / 25 * 29,371

V_{det} = 28,728 cubic feet **Not inlcuding infiltration reduction credit or penalty

Retention

V_{ret} = 2 * V_{100} = 2 * 29,371

V_{ret} = 58,742 cubic feet

Worksheet 11 Determine Applicable BMP and Associated Volume Credits

Proposed BMP[A]	Area (ft²)	Storage Volume[B] (ft³) Surface	Storage Volume[B] (ft³) Soil	Avg. Design Infiltration Rate (in/hr)	Infiltration Volume During Storm[C] (ft³)	Total Volume Reduction[D] (ft³)
Pervious Pavt. w/Infiltration Bed	0	0	0	0.00	0	0
Infiltration Basin	0	0	0	0.00	0	0
Subsurface Infiltration Bed	0	0	0	0.00	0	0
Infiltration Trench	0	0	0	0.00	0	0
Bioretention systems	0	0	0	0.00	0	0
Rain Gardens	0	0	0	0.00	0	0
Dry Well	0	0	0	0.00	0	0
Bioswale	0	0	0	0.00	0	0
Vegetated Filter Strip	0	0	0	0.00	0	0
Green Roof	0	0	0	0.00	0	0

**Infiltration for Basin 3 provided in Basin 4

Total Reduction Credit by Proposed Structural BMPs (ft³) = 0

Runoff Volume Infiltration Requirement (V_{inf}) = 7,133

Runoff Volume Credit (ft³) = -7,133

[A] Complete checklist from Section VI for each structural BMP type
[B] Storage volume as defined in individual BMP write-ups
[C] Approximated as the average design infiltration rate over 6 hours multiplied by the BMP area: infiltration rate x 6 hours x BMP area x Unit conversions - Infiltration Volume (ft³)
[D] Total Volum Reduction Credit is the sum of storage volume and the infiltration volume during storm.

Worksheet 12 Natural Features Inventory

Existing Natural Resources	Mapped (Y, N, N/A)	Total Area (ac)	Protected / Undisturbed Area (ac)
Waterbodies	N	0.00	0.00
Floodplains	N	0.00	0.00
Riparian Areas	N	0.00	0.00
Wetlands	N	0.00	0.00
Woodlands	N	0.00	0.00
Natural Drainage Area	N	0.00	0.00
Steep Slopes, 15%-25%	N	0.00	0.00
Steep Slopes, over 25%	N	0.00	0.00
Special Habtat Areas	N	0.00	0.00
Other	N	0.00	0.00
Total Existing		**0.00**	**0.00**

Worksheet 13 Summary

Stormwater Management Summary

Minimum Onsite Infiltration requirements, V_{inf} =	7,133	cubic feet
Designed/Provided Infiltration Volume =	7,133	cubic feet **Infiltration for Basin 3 provided in Basin 4
% Minimum Required Infiltration Provided =	100%	
Total Calculated Detention Volume, V_{det} =	28,728	cubic feet
Net Required Detention Volume (V_{det} - Design/Provided Infiltration Volume) =	**21,595**	**cubic feet**

Detention Volume Increase for site where the required infiltration volume cannot be achieved

% Required Infitration NOT provided (100%-Min. Req. Infiltration provided) =	0%	
Net % Penalty (20% x % Redued infiltration NOT provided) =	0.00%	
Total Required Detention Volume, inc. penalty	**21,595**	**cubic feet**
[(100% + Net % Penalty) xV_{det}]		

Basin Stage Storage Voume Summary

Required Forebay Volume, V_{fb} =	1,436	cubic feet	V_{fb} = 0.05 x $V_{det,100}$
Required First Flush Volume, V_{ff} =	6,818	cubic feet	
Required Bankfull Volume, V_{bf} =	8,475	cubic feet	
Total Required Detention Volume =	21,595	cubic feet	

Forebay Storage Volume Provided

Forebay Volume

Elevation	Area (sft)	Incremental Volume (cft)	Cumulative Volume (cft)
795	1,600		
		724	2,026
794.5	1,300		
		942	1,302
793.5	625		
		360	360
792.65	250		

Forebay Volume Provided= 2,026 cubic feet
Forebay Volume Required= 1,436 cubic feet

Detention Volume (Incudes Forebay Volume)

Elevation	Area (sft)	Incremental Volume (cft)	Cumulative Volume (cft)
795.5	10,250		
		8,866	19,182
794.5	7,550		
		6,285	10,316
793.5	5,100		
		4,031	4,031
792.5	3,050		

Detention Volume Provided= 19,182 cubic feet
Detention Volume Required= 21,595 cubic feet
Detention Volume Stored in Basin 4= 2,413 cubic feet

Forebay Required Volume Elevation Calculation

Forebay storage volume required=	V_{for}=	1,436	Z_{for}=	E_1 + (V_{for} - V_1) / (V_2 - V_1) x (E_2-E_1)
Forebay volume below required amount=	V_1=	1,302		
Forebay volume above required amount=	V_2=	2,026		
Forebay elev below required amount=	E_1=	794.50	Z_{for}=	794.59
Forebay elev above required amount=	E_2=	795.00		

First Flush Elevation Calculation

First Flush storage volume required=	V_{ff}=	6,818	Z_{ff}=	E_1 + (V_{ff} - V_1) / (V_2 - V_1) x (E_2-E_1)
Basin volume below required amount=	V_1=	4,031		
Basin volume above required amount=	V_2=	10,316		
Basin elev below required amount=	E_1=	793.50	Z_{ff}=	793.94
Basin elev above required amount=	E_2=	794.50		

Bankfull Elevation Calculation

Bankfull storage volume required=	V_{bf}=	8,475	Z_{bf}=	E_1 + (V_{bf} - V_1) / (V_2 - V_1) x (E_2-E_1)
Basin volume below required amount=	V_1=	4,031		
Basin volume above required amount=	V_2=	10,316		
Basin elev below required amount=	E_1=	793.50	Z_{bf}=	794.21
Basin elev above required amount=	E_2=	794.50		

Basin Stage Storage Elevation Summary

Forebay Required Volume Elev, Z_{for} =	794.59
First Flush Elev, Z_{ff} =	793.94
Bankfull Elev, Z_{bf} =	794.21
Top of Detention Elev, Z_{det} =	795.50
Freeboard Elev, Z_{fb} =	796.50

Forebay Outlet Structure Calculations

h_{avg} = 2/3(Z_{for} - Z_0) = 0.667 * (794.59 - 792.65)

h_{avg} = 1.30 ft

Hole Dia = 0.75 inch; Number of Holes = 1

Total Restrictor Area: A_{ofor} = 0.0031 ft²

$Q_{act\ for}$ = 0.62 x A_{ofor} x (64.4 x h_{avg})$^{0.5}$ = 0.017 cfs

Dewatering Time = V_{for} / Q_{act} for = 1,436 / 0.017 = 22.98 hr

Allowable Outflow Calculation

*Based on Acreage: 3.70 acres

Q_a= 0.15 cfs/acre

= 0.15 cfs/acre x 3.70 acres

= **0.56** cfs

3-Stage Outlet Structure Calculations

Stage 1: First Flush Discharge First Flush minimum release time shall be 24 hours

$Q_{min\ ff}$ = V_{ff} / (24 hr x 3,600 sec/hr) = 6,818 / 86,400

$Q_{min\ ff}$ = 0.079 cfs

$h_{ff\ avg}$ = 2/3(Z_{ff} - Z_0) = 0.667 * (793.94 - 792.50)

$h_{ff\ avg}$ = 0.96 ft

Orifice Selection

Hole Dia = 1 inch; Number of Holes = 2

Total Restrictor Area: A_{ff} = 0.0109 ft²

$Q_{act\ ff}$ = 0.62 x A_{ff} x (64.4 x $h_{ff\ avg}$)$^{0.5}$ = 0.053 cfs

Dewatering Time = V_{ff} / ($Q_{act\ ff}$ x 3,600) = 6,818 / (0.053 x 3,600) = **35.6 hr**

Stage 2: Bankfull Discharge Bankfull volume shall be released between 36 to 48 hours

Check release from First Flush holes only

$h_{bf\ avg}$ = 2/3(Z_{bf} - Z_0) = 0.667 * (794.21 - 792.50)

$h_{bf\ avg}$ = 1.14 ft

Q_{bf} = 0.62 x A_{ff} x (64.4 x $h_{bf\ avg}$)$^{0.5}$ = 0.058 cfs

T_{bf} = V_{bf} / (Q_{bf} x 3,600) = 8,475 / (0.058 x 3,600) = **40.68 hr**

Design: Holding time is between 36 - 48 hours. Bankfull discharge to be released through First Flush holes only.

Stage 3: Required Volume Discharge Required Detention Volume shall be released within 72 hours, maximum

Max Allowable Release Rate, Q_{allow} = 0.56 cfs

Calculate maximum flow passing througn First Flush and Bankfull (if included) orifices using total head

h_{ff} = Z_{det} - Z_0 = 795.50 - 792.50 = 3.00 ft

Q_{ff} = 0.62 x A_{ff} x (64.4 x h_{ff})$^{0.5}$ = 0.09 cfs

$Q_{max\ det}$ = Q_{allow} - Q_{ff} = 0.56 - 0.09 = 0.46 cfs

h_{det} = Z_{det} - Z_{bf} = 795.50 - 794.21 = 1.29 ft

$A_{max\ det}$ = $Q_{max\ det}$ / 0.62(64.4 x h_{det})$^{0.5}$ = 0.46 / .62(64.4 x 1.293)$^{0.5}$ = 0.081 sf

Orifice Selection

Hole Dia = 1.5 inch; Number of Holes = 6

Total Restrictor Area: A_{det} = 0.0736 ft²

Check to confirm the maximum allowable release rate has not been exceeded with the orifice design

Q_{det} = Q ff + 0.62xA_{det} (64.4 x h det)$^{0.5}$ = 0.09 + 0.42 = 0.51 cfs

Q_{det} = 0.51 cfs < Q_{allow} = 0.56 cfs

Check to confirm the Required Detention Volume discharge time is less than 72 hours

Calculate Flow through First Flush Orifices

$h_{all\ avg}$ = 2/3(Z_{det} - Z_{bf}) + (Z_{bf} - Z_0) = 0.67 x 1.29 + 1.71

$h_{all\ avg}$ = 2.57 ft

Q_{all} = 0.62 x A_{ff} x (64.4 x $h_{all\ avg}$)$^{0.5}$ = 0.09 cfs

Calculate Flow through Required Detention Volume Orifices

$h_{100\ avg}$ = 2/3(Z_{det} - Z_{bf}) = 0.67 x 1.29

$h_{100\ avg}$ = 0.86 ft

$Q_{100\ avg}$ = 0.62 x A_{det} x (64.4 x $h_{100\ avg}$)$^{0.5}$ = 0.34 cfs

Check to confirm that the Required Detention Volume is discharged in less than 72 hours

V_{rem} = V_{det} - V_{bf} = 19,182 - 8,475

V_{rem} = 10,707 cf

T_{bf} = 40.68 hr

T_{det} = T_{BF} + V_{rem}/(Q_{all} + $Q_{100\ avg}$)x3600

T_{det} = 47.65 hr < 72 hr

Overflow Structure and Pipe Calculations

Overflow pipe from pond shall be designed to handle the 10-yr storm event for the area draining to the basin.

10-year Storm Event Calculation

Basin Area =	3.70	ac
Offsite Area to Basin =	0.50	ac
Total Area, A =	4.20	ac
Basin C Factor, C =	0.51	
Offsite C Factor, C =	0.35	
Weighted C Factor, C =	0.49	
Time of Concentration, T_c =	25	min
Rainfall Intensity, I =	175 / (T_c + 25)	
Rainfall Intensity, I =	3.50	in/hr
Q_{10-yr} =	C x I x A	
Q_{10-yr} =	7.19	cfs

Overflow Pipe Sizing

In an overflow condition, the overflow pipe from the pond will be surcharged. Because of the surcharge condition, the pipe will be sized using the orfice calculations.

Outlet Pipe Dia	15	in
Overflow Pipe Area, A_{ovrflw} =	1.23	sf
Overflow Pipe Invert =	790.65	
Overflow Structure Rim =	796.50	
Surchage Height, h =	5.85	ft
Avg Outlet Height, h_{avg} =	0.67 x h = 3.92	ft

$Q_{overflow}$ = 0.62 x A_{ovrflw} x (64.4 x h_{avg})$^{0.5}$

$Q_{overflow}$ = 12.08 cfs > Q_{10-yr} = 7.19 cfs

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05/01/2025	WCWRC RESUBMITTAL
05/05/2025	TOWNSHIP FSP RESUBMITTAL
05/06/2025	SESC SUBMITTAL
05/13/2025	FSP LANDSCAPE REVISIONS
05/20/2025	STEEP SLOPE REVISIONS

Developed For:

GARNER PROPERTY MANAGEMENT

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BASIN 3 CALCULATIONS

BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

Date:	07.26.2024
Scale:	1"=40'
Sheet:	64
Project:	20249.00

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NOTES:

1. CGM - COMPACTED CL II GRANULAR MATERIAL

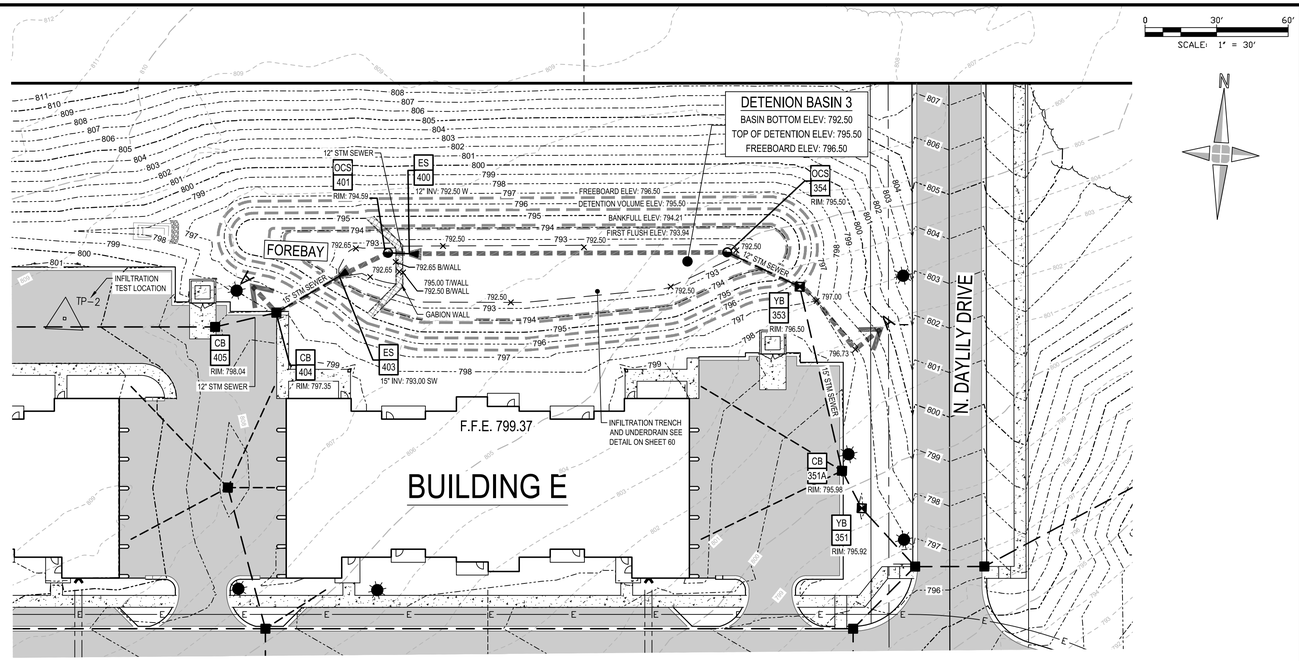
FOREBAYS:

- A PERMANENT FOREBAY DEPTH MARKER SHALL BE INSTALLED IN ALL FOREBAYS.

CONSTRUCTION NOTES:

THE FOLLOWING IS A TYPICAL CONSTRUCTION SEQUENCE; HOWEVER, ALTERATIONS WILL BE NECESSARY DEPENDING ON DESIGN VARIATIONS.

A. THE INFILTRATION AREA MUST BE PROTECTED FROM COMPACTION PRIOR TO INSTALLATION & DURING CONSTRUCTION.
B. INFILTRATION BASINS MUST NOT BE PLACED ON AREAS OF RECENT FILL, OR COMPACTED FILL, UNLESS OTHERWISE SHOWN IN PLANS. ANY GRADE ADJUSTMENTS REQUIRING FILL MUST BE DONE USING THE STONE SUB-BASE MATERIAL. AREAS OF HISTORICAL FILL (>5 YEARS) MAY BE CONSIDERED FOR INFILTRATION BASINS.
C. INSTALLATION AND MAINTENANCE OF PROPER EROSION AND SEDIMENT CONTROL MEASURES MUST BE FOLLOWED DURING CONSTRUCTION.
D. EXCAVATE INFILTRATION BASIN BOTTOM TO A UNIFORM, LEVEL UNCOMPACTED SUBGRADE FREE FROM ROCKS AND DEBRIS. DO NOT COMPACT SUBGRADE. EXCAVATION SHOULD BE PERFORMED WITH THE LIGHTEST PRACTICAL EQUIPMENT. EXCAVATION EQUIPMENT SHOULD BE PLACED OUTSIDE THE LIMITS OF THE INFILTRATION BASIN.
E. TOPSOIL STABILIZATION AND SEED MUST BE APPLIED TO THE DISTURBED AREA.
F. DO NOT REMOVE EROSION AND SEDIMENT CONTROL MEASURES UNTIL SITE IS FULLY STABILIZED.
G. PERMEABILITY SHALL BE REVERIFIED BY INFILTRATION PRIOR TO ACCEPTANCE.

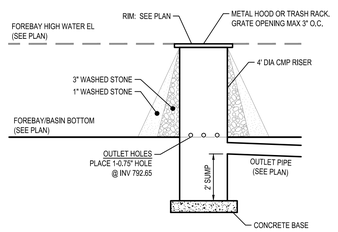


BASIN DETENTION DESIGN NOTE:

INFILTRATION AND REMAINDER OF DETENTION FOR BASIN 3 IS PROVIDED FOR IN THE BASIN 4 DESIGN. PLEASE SEE THE DESIGN CALCULATIONS FOR BASIN 4 ON SHEET 66 FOR DESIGN VERIFICATION.

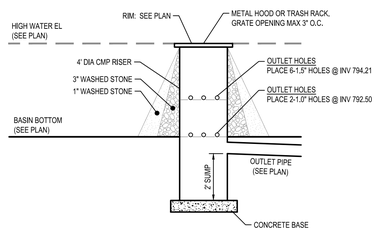
UTILITY PIPE MATERIALS

STORM SEWER:
RCP C76 CLIV, OR APPROVED EQUAL
STORM LEAD:
PVC SCH 40, OR APPROVED EQUAL



OCS 401 DETAIL

N.T.S.



OCS 354 DETAIL

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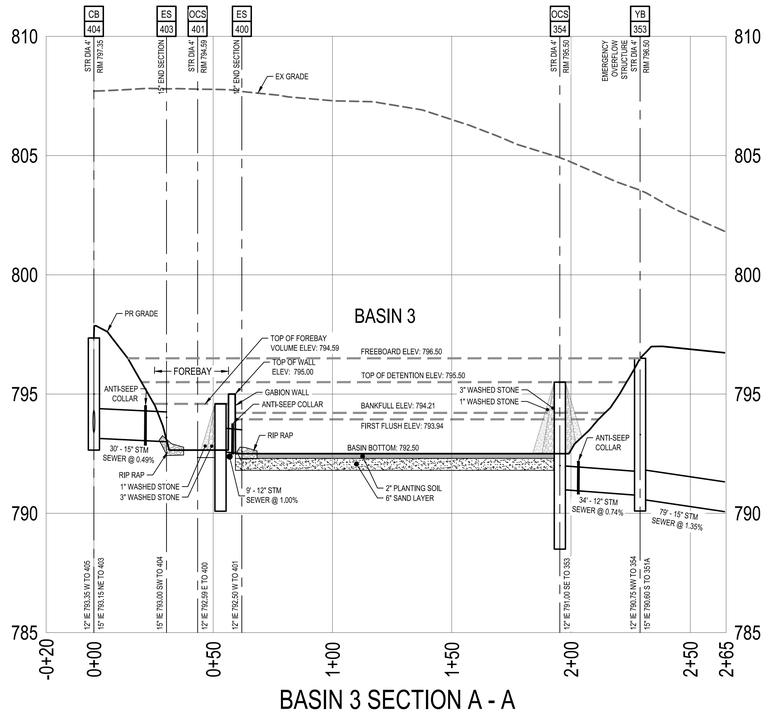

BASIN 3 SECTION A - A

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Quality Control:	-
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Basin 4: Detention Design

Project Name Brookwood Superior Township
Project Number 20249.00

Completed By JDR
Working Date February 14, 2025
Jurisdiction Washtenaw County

Worksheet 1 Rational Method Variables for First Flush runoff

Total Site Area = A_{total} =	10.35	acres	=	450,846	sf			
Total Site Area Exluding "Self Crediting" BMP's = A =	10.35	acres	=	450,846	sf			

Runoff Volume Work Sheets

Rational Method Variables for First Flush runoff

Cover Type	Soil Type	Area (ft^2)	Area (ac)	Runoff Coefficient C	C x Area
Impervious	B	242,060	5.56	0.95	5.28
Woods - Grass Combination	B	208,786	4.79	0.35	1.68
Total		450,846	10.35		6.96
Weighted C=	Area x C / Area	=	6.96 / 10.35	=	0.67

NRCS Variables for bankfull and 100-year runoff calculations

Cover Type	Soil Type	Area (ft^2)	Area (ac)	Curve Number	CN x Area
Impervious	B	242,060	5.56	98	544.58
Woods - Grass Combination	B	208,786	4.79	58	278.00
Total		450,846	10.35		822.58
Weighted CN=	Area x CN / Area	=	822.58 / 10.35	=	79.48
Weighted $CN_{pervious}$ =	$Area_{pervious}$ x $CN_{pervious}$ / $Area_{pervious}$	=	278.00 / 4.79	=	58.0

Worksheet 2 First Flush Volume

The first inch of rain in a 24-hour storm.

V_{ff} =	3,630	x	A	x	C	
=	3,630	x	10.35	x	0.67	
=	25,253	cubic feet				

Worksheet 3 Pre-Development Bankfull Runoff Calculations

Volume for the 2 year / 24 hour storm event P = 2.35 in

The pre-development land cover will be Good Cover Woods or Meadow. Determine the associated soil hydrologic groupo for the entire site and choose the curve number.

CN_{pre} = 58.0

S = 1000 / CN_{pre} - 10 = 1000 / 58.0 - 10 = 7.241 in

Q = $(P-0.2S)^2$ / $(P+0.8S)$ = $(2.35 - 0.2 * 7.241)^2$ / $(2.35 + 0.8 * 7.241)$ = 0.100 in

$V_{pre\ bf}$ =	Q	x	A	=	0.100	x	450,846
=			12				12
=	3,751	cubic feet					

Worksheet 4 and 5 Post-Development Bankfull Runoff Calculations

Pervious Cover Post-Development Bankfull Runoff Calculations

Volume for the 2 year / 24 hour storm event P = 2.35 in

$CN_{pervious}$ = 58.0 Pervious cover CN from NRCS Variables Worksheet

S = 1000 / $CN_{pervious}$ - 10 = 1000 / 58.0 - 10 = 7.241 in

Q = $(P-0.2S)^2$ / $(P+0.8S)$ = $(2.35 - 0.2 * 7.241)^2$ / $(2.35 + 0.8 * 7.241)$ = 0.100 in

Pervious Cover Area, $A_{pervious}$ = 208,786 sf From NRCS Variable worksheet

$V_{pervious\ bf}$ =	Q	x	A	=	0.100	x	208,786
=			12				12
=	1,737	cubic feet					

Impervious Cover Post-Development Bankfull Runoff Calculations

Volume for the 2 year / 24 hour storm event P = 2.35 in

$CN_{Impervious}$ = 98.0 Impervious cover CN from NRCS Variables Worksheet

S = 1000 / $CN_{Impervious}$ - 10 = 1000 / 98.0 - 10 = 0.204 in

Q = $(P-0.2S)^2$ / $(P+0.8S)$ = $(2.35 - 0.2 * 0.204)^2$ / $(2.35 + 0.8 * 0.204)$ = 2.122 in

Impervious Cover Area, $A_{Impervious}$ = 242,060 sf From NRCS Variable worksheet

$V_{impervious\ bf}$ =	Q	x	A	=	2.122	x	242,060
=			12				12
=	42,798	cubic feet					

Worksheets 6 and 7 Post-Development 100 Year Storm Runoff Volume Calculations

Pervious Cover Post-Development 100 Year Storm Runoff Calculations

100 Year Storm Event P = 5.11 in

$CN_{pervious}$ = 58.0 Pervious cover CN from NRCS Variables Worksheet

S = 1000 / $CN_{pervious}$ - 10 = 1000 / 58.0 - 10 = 7.241 in

$Q_{100\ per}$ = $(P-0.2S)^2$ / $(P+0.8S)$ = $(5.11 - 0.2 * 7.241)^2$ / $(5.11 + 0.8 * 7.241)$ = 1.230 in

Pervious Cover Area, $A_{pervious}$ = 208,786 sf

$V_{pervious\ 100}$ =	$Q_{100\ per}$	x	A	=	1.230	x	208,786
=			12				12
=	21,396	cubic feet					

Impervious Cover Post-Development Backfull Runoff Calculations

100 Year Storm Event P = 5.11 in

$CN_{Impervious}$ = 98.0 Pervious cover CN from NRCS Variables Worksheet

S = 1000 / $CN_{Impervious}$ - 10 = 1000 / 98.0 - 10 = 0.204 in

Q_{100} = $(P-0.2S)^2$ / $(P+0.8S)$ = $(5.11 - 0.2 * 0.204)^2$ / $(5.11 + 0.8 * 0.204)$ = 4.873 in

Impervious Cover Area, $A_{Impervious}$ = 242,060 sf From NRCS Variable worksheet

$V_{Impervious\ 100}$ =	$Q_{100\ imp}$	x	A	=	4.873	x	242,060
=			12				12
=	98,297	cubic feet					

Worksheet 8 Determine Time of Concentration for Applicble Flow Types ($T_{c\ max}$)

Flow Type	K	Change in Elevation (ft)	Length (L)	Slope % (S)	$S^{0.5}$	$V=K*S^{0.5}$	Tc=L/(V*3600)
Sheet Flow (no more than 300')	0.48	5	300	1.73	1.32	0.63	0.13
Waterway	1.20	13	1049	1.24	1.11	1.34	0.22
Waterway	1.20	34	694	4.90	2.21	2.66	0.07
					Total Time of Concentration (Tc) =		0.42 hr

Worksheet 9 Runoff Summary & Onsite Infiltration Requirement

Runoff Summary

First Flush Volume (Vff) =	25,253	cubic feet
Pre-Development Bankfull Runoff Volume ($V_{pre\ bf}$) =	3,751	cubic feet
Pervious Cover Post-Development Bankfull Volume ($V_{pervious\ bf}$) =	1,737	cubic feet
Impervious Cover Post-Development Bankfull Volume ($V_{impervious\ bf}$) =	42,798	cubic feet
Total Post-Development Bankfull Volume (V_{bf}) =	**44,535**	**cubic feet**
Pervious Cover Post-Development 100-year Volume ($V_{pervious\ 100}$) =	21,396	cubic feet
Impervious Cover Post-Development 100-year Volume ($V_{impervious\ 100}$) =	98,297	cubic feet
Total Post-Development 100-year Volume (V_{100}) =	**119,693**	**cubic feet**

Onsite Infiltration Requirement

Subtract the pre-development bakfull from the post-development bnkfull volumes.

Total Post-Development Bankfull Volume (V_{bf}) =	44,535	cubic feet
Total Pre-Development Bankfull Runoff Volume ($V_{pre\ bf}$) =	3,751	cubic feet
Bankfull Volume Difference	**40,784**	**cubic feet**

Compare the Bankfull Volume Difference with the First Flush Volume. The GREATER of the two is the on-site infiltration.

Onsite Infiltration Requirement (V_{inf}) =	**40,784**	**cubic feet**

Worksheet 10 Detention / Retention Requirement

Detention

Peak of Unit Hydrograph, Q_p = 238.6 * $(T_c)^{-0.82}$ = 238.6 * 0.42 $^{-0.82}$

Q_p = 483.54 cfs/in-mi^2

Total Site Area (ac) excluding "Self-Crediting" BMP's, A= 10.35 ac

Q_{100} = $Q_{100\ per}$ + $Q_{100\ imp}$ = 1.230 + 4.873

Q_{100} = 6.103 in

Peak Flow, PF = Qp*Q100*A = 483.54 * 6.103 * 10.35 = 640

Peak Flow, PF = 47.72 cfs = 640

Δ = PF - 0.15 * A

Δ = 47.72 - 0.15 * 10.35

Δ = 46.17 cfs

V_{det} = Δ * V_{100} = 46.17 * 119,693 = 48

PF

V_{det} = 115,799 cubic feet **Not inlcuding infiltration reduction credit or penalty

Retention

V_{ret} = 2 * V_{100} = 2 * 119,693

V_{ret} = 239,386 cubic feet

Worksheet 11 Determine Applicable BMP and Associated Volume Credits

Proposed BMP[A]	Area (ft^2)	Storage Volume[B] (ft^3) Surface	Storage Volume[B] (ft^3) Soil	Avg. Design Infiltration Rate (in/hr)	Infiltration Volume During Storm[C] (ft^3)	Total Volume Reduction[D] (ft^3)	
Pervious Pavt. w/Infiltration Bed	0	0	0	0.00	0	0	
Infiltration Basin	20,838	20,838	0	10.00	104,188	125,025	** See Basin Infiltration Design
Subsurface Infiltration Bed	0	0	0	0.00	0	0	
Infiltration Trench	0	0	0	0.00	0	0	
Bioretention systems	0	0	0	0.00	0	0	
Rain Gardens	0	0	0	0.00	0	0	
Dry Well	0	0	0	0.00	0	0	
Bioswale	0	0	0	0.00	0	0	
Vegetated Filter Strip	0	0	0	0.00	0	0	
Green Roof	0	0	0	0.00	0	0	
				Total Reduction Credit by Proposed Structural BMPs (ft^3) =		125,025	
				Runoff Volume Infiltration Requirement (V_{inf}) =		40,784	
				Runoff Volume Credit (ft^3) =		84,241	

[A] Complete checklist from Section VI for each structural BMP type

[B] Storage volume as defined in individual BMP write-ups

[C] Approximated as the average design infiltration rate over 6 hours multiplied by the BMP area infiltration rate x 6 hours x BMP area x Unit conversions - Infiltration Volume (ft^3)

[D] Total Volume Reduction Credit is the sum of storage volume and the infiltration volume during storm.

Worksheet 12 Natural Features Inventory

Existing Natural Resources	Mapped (Y, N, N/A)	Total Area (ac)	Protected / Undisturbed Area (ac)
Waterbodies	N	0.00	0.00
Floodplains	N	0.00	0.00
Riparian Areas	N	0.00	0.00
Wetlands	N	0.00	0.00
Woodlands	N	0.00	0.00
Natural Drainage Area	N	0.00	0.00
Steep Slopes, 15%-25%	N	0.00	0.00
Steep Slopes, over 25%	N	0.00	0.00
Special Habtat Areas	N	0.00	0.00
Other	N	0.00	0.00
Total Existing		**0.00**	**0.00**

Worksheet 13 Summary

Stormwater Management Summary

Minimum Onsite Infiltration requirements, V_{inf} =	40,784	cubic feet
Basin 3 Minimum Onsite Infiltration requirements =	7,133	cubic feet
Designed/Provided Infiltration Volume =	125,025	cubic feet
% Minimum Required Infiltration Provided =	261%	
Total Calculated Detention Volume, V_{det} =	115,799	cubic feet
Net Required Detention Volume (V_{det} - Design/Provided Infiltration Volume) =	**-9,226**	**cubic feet**

Detention Volume Increase for site where the required infiltration volume cannot be achieved

% Required Infiltration NOT provided (100%-Min. Req. Infiltration provided) =	0%	
Net % Penalty (20% x % Reduced infiltration NOT provided) =	0.00%	
Total Required Detention Volume, inc. penalty	**-9,226**	**cubic feet**
[(100% + Net % Penalty) x V_{det}]		

Basin 3 Stage Storage Voume Summary

Basin 3 Required Infiltration Volume =	7,133	cubic feet
Basin 3 Remaining Detention Volume =	2,413	cubic feet

Basin Stage Storage Voume Summary (Includes Storage Volumes from Basin 3)

Required Forebay Volume, V_{fb} =	5,790	cubic feet	V_{fb} = 0.05 x $V_{det,100}$
Total First Flush Volume, V_{ff} =	25,253	cubic feet	
Total Bankfull Volume, V_{bf} =	44,535	cubic feet	
Total Required Detention Volume =	-6,813	cubic feet	

Storage Volume Provided

Forebay Volume

Elevation	Area (sft)	Incremental Volume (cft)	Cumulative Volume (cft)
766	4,025		
		3,566	6,294
765	3,125		
		2,728	2,728
764	2,350		
	Forebay Volume Provided=	6,294	cubic feet
	Forebay 1 Volume Required=	5,790	cubic feet

Detention Pond (includes Forebay Volumes)

Elevation	Area (sft)	Incremental Volume (cft)	Forebay Volumes (cft)	Cumulative Volume (cft)
766	33,000			
		31,183	3,566	89,288
765	29,400			
		27,632	2,728	54,540
764	25,900			
		24,180	0	24,180
763	22,500			
	Detention Volume Provided=	89,288	cubic feet	
	Detention Volume Required=	-9,226	cubic feet	

Forebay Required Volume Elevation Calculation

Forebay storage volume required=	V_{fb}=	5,790	Z_{fb}=	E_1	+	(V_{fb} - V_1)	x	(E_2-E_1)
Forebay volume below required amount=	V_1=	2,728				(V_2 - V_1)		
Forebay volume above required amount=	V_2=	6,294						
Forebay elev below required amount=	E_1=	765.00	Z_{fb}=	765.86				
Forebay elev above required amount=	E_2=	766.00						

First Flush Elevation Calculation

First Flush storage volume required=	V_{ff}=	25,253	Z_{ff}=	E_1	+	(V_{ff} - V_1)	x	(E_2-E_1)
Basin volume below required amount=	V_1=	20,838				(V_2 - V_1)		
Basin volume above required amount=	V_2=	45,018						
Basin elev below required amount=	E_1=	763.00	Z_{ff}=	763.18				
Basin elev above required amount=	E_2=	764.00						

Bankfull Elevation Calculation

Bankfull storage volume required=	V_{bf}=	44,535	Z_{bf}=	E_1	+	(V_{bf} - V_1)	x	(E_2-E_1)
Basin volume below required amount=	V_1=	45,018				(V_2 - V_1)		
Basin volume above required amount=	V_2=	75,377						
Basin elev below required amount=	E_1=	764.00	Z_{bf}=	763.98				
Basin elev above required amount=	E_2=	765.00						

Total Required Detention Elevation Calculation

***Outlet Design Note: For sizing 3 stage outlet control, the design is assuming the Required Detention Volume = V_{det} - V_{inf} (Min Req. Infiltration) + Basin 3 Rem Volume**

Total Required Detention storage volume required=	*V_{det}=	77,428	Z_{det}=	E_1	+	(V_{det} - V_1)	x	(E_2-E_1)
Basin volume below required amount=	V_1=	54,540				(V_2 - V_1)		
Basin volume above required amount=	V_2=	89,288						
Basin elev below required amount=	E_1=	765.00	Z_{det}=	765.66				
Basin elev above required amount=	E_2=	766.00						

Basin Stage Storage Elevation Summary

Forebay Required Volume Elev, Z_{fb} =	765.86
First Flush Elev, Z_{ff} =	763.18
Bankfull Elev, Z_{bf} =	763.98
Total Required Detention Elev, Z_{det} =	765.66
Freeboard Elev, Z_{fb} =	766.66

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Basin 4: Infiltration Basin Design

Project Name Brookwood Superior
Project Number 20249.00

Completed By JDR
Working Date February 14, 2025
Jurisdiction Washtenaw County

Average Bed Area

The infiltration area of the infiltration basin. This is the area to be considered when evaluating the loading rate.

Average Bed Area = Area of bioretention at ponding depth + bottom area of bioretention / 2

Average Bed Area = 22,500 + 19,175 / 2 = 20,838 sf

Volume Reduction Calculations

Storage Volume

Infiltration Top Elev	763							
Infiltration Bottom Elev	762							
Max Design Water Depth	1.00	ft						
Surface Storage Volume (ft^3) =	Avg Bed Area	x	Max Design Water Depth	=	20,838	x	1.00	
Surface Storage Volume (ft^3) =	20,838	cubic feet						

Infiltration Volume During Storm

Infiltration Rate	10.00	in/hr	Soil boring TP-9					
Infiltration Volume =	Average Bed Area (ft^2) x infiltration design rate (in/hr) x 6 hr / 12							
Infiltration Volume =	20,838	x	10.00	x	6 / 12			
Infiltration Volume =	104,188	cubic feet						
Total Volume Reduction Credit =	125,025	cubic feet						

Impervious Load Area

Surface Area should generally not exceed a maximum loading ratio of 8:1 (impervious drainage area to infiltration area)

Impervious Drainage Area =	242,060	sf						
Infiltration area =	20,838	sf						
Impervious Area Loading =	Impervious Drainage Area / Infiltration Area			=	242,060 / 20,838			
Loading =	11.62	>	8					

Total Loading Ratio

Drainage Area=	450,846	sf						
Infiltration area =	20,838	sf						
Maximum Loading =	Drainage Area / Infiltration Area			=	450,846 / 20,838			
Loading =	21.64	≤	10					

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02/28/2025	WCWRC RESUBMITTAL
05/01/2025	WCWRC RESUBMITTAL
05/05/2025	TOWNSHIP FSP RESUBMITTAL
05/06/2025	SESC SUBMITTAL
05/13/2025	FSP LANDSCAPE REVISIONS
05/20/2025	STEEP SLOPE REVISIONS

Developed For:

GARNER PROPERTY MANAGEMENT

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BASIN 4 CALCULATIONS

BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

Date:	07.26.2024
Scale:	1"=40'
Sheet:	66
Project:	20249.00

H:\20\20200\20249.00 Brookwood Superior Twp\Design\CAD\Engineering Plans\66 BASIN 4 CALCULATIONS.dwg

OUTLET CONTROL STRUCTURE CALCULATIONS

Basin Stage Storage Elevation Summary		
Forebay Required Volume Elev. Z_{sv} =	765.86	
First Flush Elev. Z_{ff} =	763.18	
Bankfull Elev. Z_{bf} =	763.98	
Total Required Detention Elev. Z_{sd} =	765.66	
Freeboard Elev. Z_{fb} =	766.66	

Forebay Outlet Structure Calculations								
h_{avg} =	$2/3(Z_{sv} - Z_{ob})$	=	0.667	* (	765.86	-	764.00	)
h_{avg} =	1.24	ft						
Hole Dia =	1	inch			Total Restrictor Area			
Number of Holes =	2				A_{dov} =	0.0109	ft^2	
$Q_{act\ for}$ =	$0.62 \times A_{dov} \times (64.4 \times h_{avg})^{0.5}$	=	0.060	cfs				
Dewatering Time =	V_{sv}	=	5.790	=	26.63	hr		
	Q_{act} for		0.060					

Allowable Outflow Calculation						
*Based on Acreage	10.35	acres				
Q_a =	0.15	cfs/acre				
=	0.15	cfs/acre	x	10.35	acres	
=	**1.55**	cfs				

3-Stage Outlet Structure Calculations								
Stage 1: First Flush Discharge	First Flush minimum release time shall be 24 hours							
$Q_{min\ ff}$ =	V_{ff}	=	25,253					
	24 hr x 3,600 sec/hr		86,400					
$Q_{min\ ff}$ =	0.292	cfs						
$h_{ff\ avg}$ =	$2/3(Z_{ff} - Z_{ob})$	=	0.667	* (	763.18	-	763.00	)
$h_{ff\ avg}$ =	0.12	ft						
Orifice Selection								
Hole Dia =	1.25	inch			Total Restrictor Area			
Number of Holes =	10				A_{ff} =	0.0852	ft^2	
$Q_{act\ ff}$ =	$0.62 \times A_{ff} \times (64.4 \times h_{ff\ avg})^{0.5}$	=	0.148	cfs				
Dewatering Time =	V_{ff}	=	25,253	=	**47.44**	hr		
	$Q_{act\ ff} \times 3{,}600$		0.148 x 3,600					
Stage 2: Bankfull Discharge	Bankfull volume shall be released between 36 to 48 hours							
Check release from First Flush holes only								
$h_{bf\ avg}$ =	$2/3(Z_{bf} - Z_{ob})$	=	0.667	* (	763.98	-	763.00	)
$h_{bf\ avg}$ =	0.66	ft						
Q_{bf} =	$0.62 \times A_{ff} \times (64.4 \times h_{bf\ avg})^{0.5}$	=	0.343	cfs				
T_{bf} =	V_{bf}	=	44,535	=	**36.04**	hr		
	$Q_{bf} \times 3{,}600$		0.343 x 3,600					

Design: Holding time is between 36 - 48 hours. Bankfull discharge to be released through First Flush holes only.

Stage 3: Required Volume Discharge	Required Detention Volume shall be released within 72 hours, maximum							
Max Allowable Release Rate, Q_{allow} =	1.55	cfs						
Calculate maximum flow passing through First Flush and Bankfull (if included) orifices using total head								
h_{ff} =	$Z_{sed} - Z_{ff}$	=	765.66	-	763.00	=	2.66	ft
Q_{ff} =	$0.62 \times A_{ff} \times (64.4 \times h_{ff})^{0.5}$	=	0.69	cfs				
$Q_{max\ det}$ =	$Q_{allow} - Q_{ff}$	=	1.55	-	0.69	=	0.86	cfs
h_{det} =	$Z_{det} - Z_{bf}$	=	765.66	-	763.98	=	1.67	ft
$A_{max\ det}$ =	$Q_{max\ det}$	=		0.86		=	0.134	sf
	$0.62(64.4 \times h_{det})^{0.5}$		62(64.4 x	1.675	$)^{0.5}$			
Orifice Selection								
Hole Dia =	2	inch			Total Restrictor Area			
Number of Holes =	6				A_{det} =	0.1308	ft^2	
Check to confirm the maximum allowable release rate has not been exceeded with the orifice design								
Q_{det} =	$Q\ ff + 0.62xA_{det}(64.4 \times h\ det)^{0.5}$	=	0.69	+	0.84	=	1.53	cfs
Q_{det} =	1.53	cfs	<	Q_{allow} =	1.55	cfs		
Check to confirm the Required Detention Volume discharge time is less than 72 hours								
Calculate Flow through First Flush Orifices								
$h_{sf\ avg}$ =	$2/3(Z_{det} - Z_{sf}) + (Z_{sf} - Z_{ff})$	=	0.67	x	1.67	+	0.98	
$h_{sf\ avg}$ =	2.10	ft						
Q_{sf} =	$0.62 \times A_{ff} \times (64.4 \times h_{sf\ avg})^{0.5}$	=	0.61	cfs				
Calculate Flow through Required Detention Volume Orifices								
$h_{100\ avg}$ =	$2/3(Z_{det} - Z_{sf})$	=	0.67	x	1.67			
$h_{100\ avg}$ =	1.12	ft						
$Q_{100\ avg}$ =	$0.62 \times A_{det} \times (64.4 \times h_{100\ avg})^{0.5}$	=	0.69	cfs				
Check to confirm that the Required Detention Volume is discharged in less than 72 hours								
V_{sim} =	$V_{det} - V_{sf}$	=	77,428	-	44,535			
V_{sim} =	32,893	cf						
T_{sf} =	36.04	hr						
T_{det} =	$T_{sf} + V_{sim}/(Q_{det} + Q_{100\ avg})x3600$	=	43.06	hr	< 72 hr			

Overflow Structure and Pipe Calculations				
Overflow pipe from pond shall be designed to handle the 10-yr storm event for the area draining to the basin.				
10-year Storm Event Calculation				
Basin Area =	10.35	ac		
Upstream & Offsite Areas to Basin =	4.29	ac	From Basin 2 Overflow Structure Calcs	
Total Area, A =	14.64	ac		
Basin C Factor, C =	0.67			
Upstream & Offsite Area, C Factor =	0.49		From Basin 2 Overflow Structure Calcs	
Weighted C Factor, C =	0.62			
Time of Concentration, T_c =	45	min		
Rainfall Intensity, I =	$175 / (T_c + 25)$			
Rainfall Intensity, I =	2.50	in/hr		
Q_{10-yr} =	C x I x A			
Q_{10-yr} =	22.63	cfs		
Overflow Pipe Sizing				
In an overflow condition, the overflow pipe from the pond will be surcharged. Because of the surcharge condition, the pipe will be sized using the orfice calculations.				
Outlet Pipe Dia	24	in		
Overflow Pipe Area, A_{ovflw} =	3.14	sf		
Overflow Pipe Invert =	761.20			
Overflow Structure Rim =	765.65			
Surchage Height, h =	4.45	ft		
Avg Outlet Height, h_{avg} =	0.67 x h	=	2.98	ft
$Q_{overflow}$ =	$0.62 \times A_{ovflw} \times (64.4 \times h_{avg})^{0.5}$			
$Q_{overflow}$ =	**26.98**	**cfs**	**>**	**Q_{10-yr} =**	**22.63**	**cfs**

NOTES:

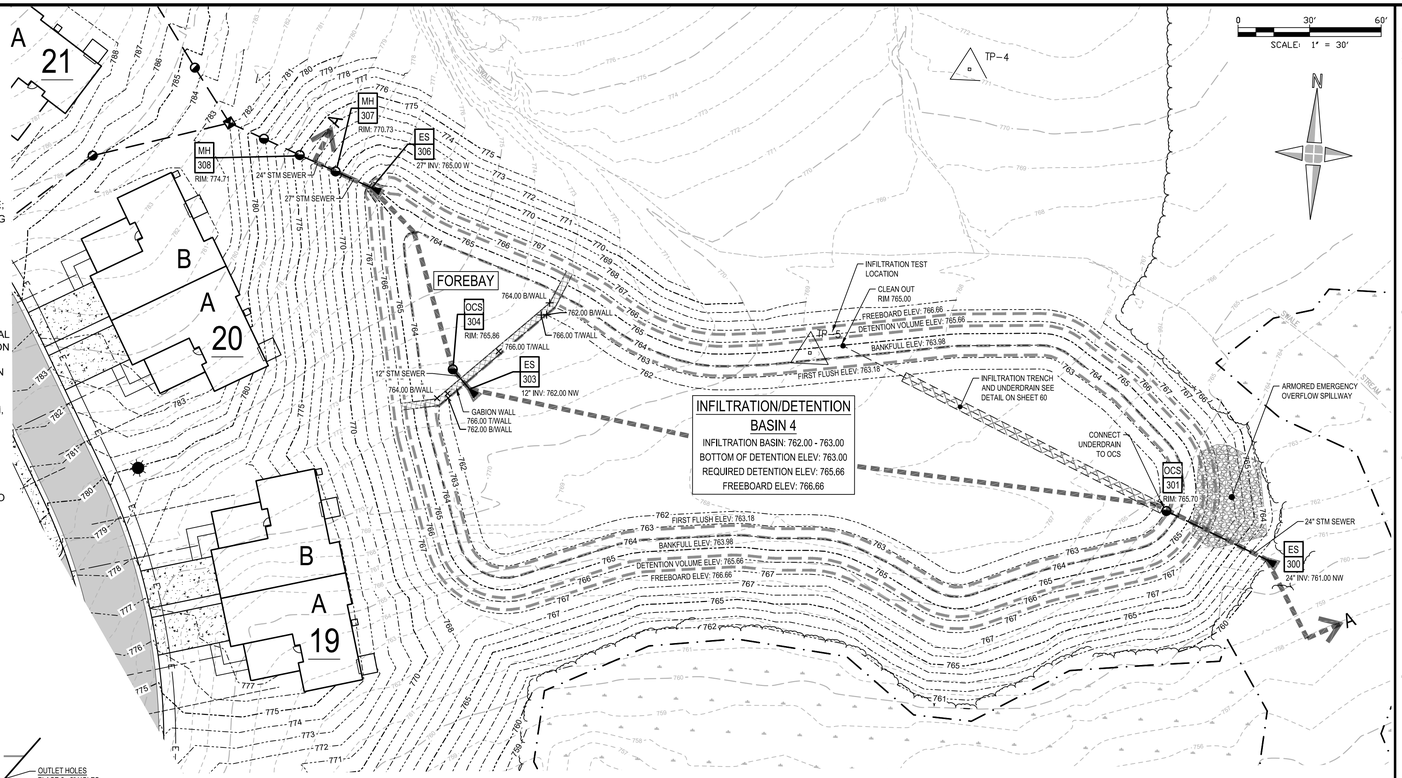
1. CGM - COMPACTED CL II GRANULAR MATERIAL

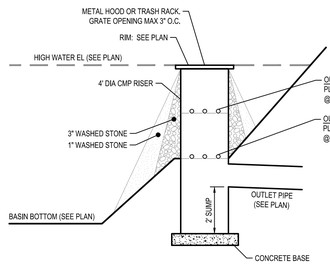
INFILTRATION BASIN:
- BOTTOM OF BASIN SHALL BE CONSTRUCTED WITH 2" OF PLANTING SOIL OVER 6" OF SAND. SEE PLAN FOR BASIN BOTTOM ELEVATION.

FOREBAYS:
- A PERMANENT FOREBAY DEPTH MARKER SHALL BE INSTALLED IN ALL FOREBAYS.

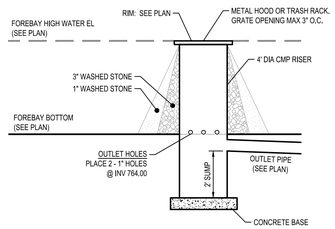
CONSTRUCTION NOTES:
THE FOLLOWING IS A TYPICAL CONSTRUCTION SEQUENCE; HOWEVER, ALTERATIONS WILL BE NECESSARY DEPENDING ON DESIGN VARIATIONS.

A. THE INFILTRATION AREA MUST BE PROTECTED FROM COMPACTION PRIOR TO INSTALLATION & DURING CONSTRUCTION.
B. INFILTRATION BASINS MUST NOT BE PLACED ON AREAS OF RECENT FILL, OR COMPACTED FILL, UNLESS OTHERWISE SHOWN IN PLANS. ANY GRADE ADJUSTMENTS REQUIRING FILL MUST BE DONE USING THE STONE SUB-BASE MATERIAL. AREAS OF HISTORICAL FILL (>5 YEARS) MAY BE CONSIDERED FOR INFILTRATION BASINS.
C. INSTALLATION AND MAINTENANCE OF PROPER EROSION AND SEDIMENT CONTROL MEASURES MUST BE FOLLOWED DURING CONSTRUCTION.
D. EXCAVATE INFILTRATION BASIN BOTTOM TO A UNIFORM, LEVEL UNCOMPACTED SUBGRADE FREE FROM ROCKS AND DEBRIS. DO NOT COMPACT SUBGRADE. EXCAVATION SHOULD BE PERFORMED WITH THE LIGHTEST PRACTICAL EQUIPMENT. EXCAVATION EQUIPMENT SHOULD BE PLACED OUTSIDE THE LIMITS OF THE INFILTRATION BASIN.
E. TOPSOIL STABILIZATION AND SEED MUST BE APPLIED TO THE DISTURBED AREA.
F. DO NOT REMOVE EROSION AND SEDIMENT CONTROL MEASURES UNTIL SITE IS FULLY STABILIZED.
G. PERMEABILITY SHALL BE REVERIFIED BY INFILTRATION PRIOR TO ACCEPTANCE.





OCS 301 DETAIL
N.T.S.



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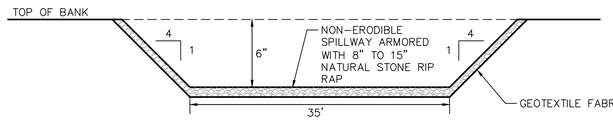
N.T.S.



OVERFLOW SPILLWAY DETAIL
N.T.S.

WEIR FLOWRATE CAPACITY, Q_{SP}

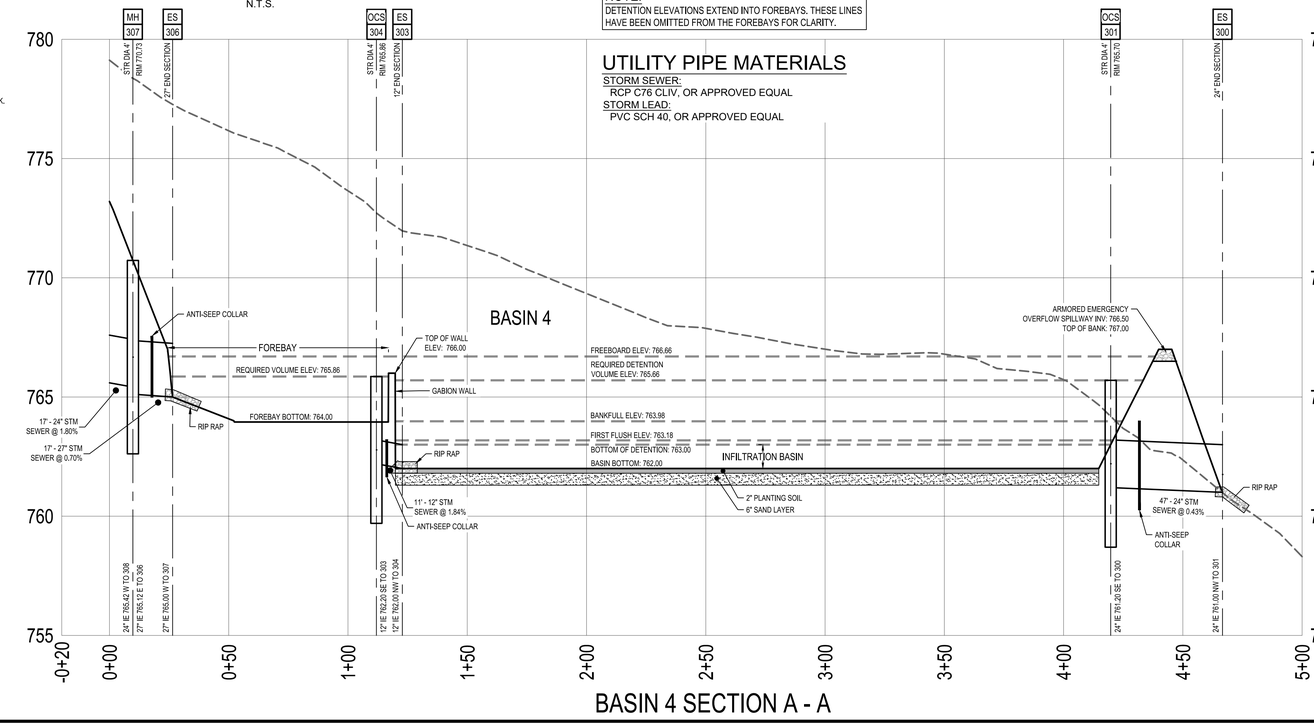
$Q_{SP} = L \times 3.367 \times H^{1.5}$
L = 35'
H = 0.5'
$Q_{SP} = 35 \times 3.367 \times 0.5^{1.5} = 41.7$ CFS
$Q_{100\text{-}YR} = 35.6$ CFS < Q_{SP}

100-YR STORM EVENT CALCULATIONS		
Total Area, A =	14.64	ac
Weighted C Factor, C =	0.62	
Time of Concentration, T_c =	45	min
Rainfall Intensity, I =	$175 / (T_c + 25)$	
Rainfall Intensity, I =	3.93	in/hr
$Q_{100\text{-}yr}$ =	C x I x A	
$Q_{100\text{-}yr}$ =	35.57	cfs

NOTE:
DETENTION ELEVATIONS EXTEND INTO FOREBAYS. THESE LINES HAVE BEEN OMITTED FROM THE FOREBAYS FOR CLARITY.

UTILITY PIPE MATERIALS

STORM SEWER:
RCP C76 CLIV, OR APPROVED EQUAL
STORM LEAD:
PVC SCH 40, OR APPROVED EQUAL



BASIN 4 SECTION A - A

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Designer:	JR / AR
Quality Control:	-
Section:	33
	T-02-S R-07-E

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11/18/2024	FINAL SITE PLAN SUBMITTAL
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02/28/2025	WCWRC RESUBMITTAL
05/01/2025	WCWRC RESUBMITTAL
05/05/2025	TOWNSHIP FSP RESUBMITTAL
05/06/2025	SESC SUBMITTAL
05/13/2025	FSP LANDSCAPE REVISIONS
05/20/2025	STEEP SLOPE REVISIONS

Developed For:

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BASIN 4 DETAILS

BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

Date:	07.26.2024
Scale:	1"=40'
Sheet:	67
Project:	20249.00

H:\20\20200\20249.00 Brookwood Superior Twp\Design\CAD\Engineering Plans\66 BASIN 4 CALCULATIONS.dwg

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Basin 5: Retention Design

Project Name Brookwood Superior Township
Project Number 20249.00

Completed By JDR
Working Date April 17, 2025
Jurisdiction Washtenaw County

BASIN 5

Worksheet 1 Rational Method Variables for First Flush runoff

Total Site Area = A_{total} =	8.61	acres	=	375,052	sf			
Total Site Area Exluding "Self Crediting" BMPs = A =	8.61	acres	=	375,052	sf			

Runoff Volume Work Sheets

Rational Method Variables for First Flush runoff

Cover Type	Soil Type	Area (ft^2)	Area (ac)	Runoff Coefficient C	C x Area
Impervious	B	111,587	2.56	0.95	2.43
Woods - Grass Combination	B	263,465	6.05	0.35	2.12
Total		375,052	8.61		4.55

Weighted C = Area x C / Area = 4.55 / 8.61 = 0.53

NRCS Variables for bankfull and 100-year runoff calculations

Cover Type	Soil Type	Area (ft^2)	Area (ac)	Curve Number	CN x Area
Impervious	B	111,587	2.56	98	251.05
Woods - Grass Combination	B	263,465	6.05	58	350.80
Total		375,052	8.61		601.85

Weighted CN = Area x CN / Area = 601.85 / 8.61 = 69.9

Weighted $CN_{pervious}$ = $Area_{pervious}$ x $CN_{pervious}$ / $Area_{pervious}$ = 350.80 / 6.05 = 58.0

Worksheet 2 First Flush Volume

The first inch of rain in a 24-hour storm.

V_{ff}=	3,630	x	A	x	C	
=	3,630	x	8.61	x	0.53	
=	16,518	cubic feet				

Worksheet 3 Pre-Development Bankfull Runoff Calculations

Volume for the 2 year / 24 hour storm event P = 2.35 in

The pre-development land cover will be Good Cover Woods or Meadow. Determine the associated soil hydrogic groupo for the entire site and choose the curve number.

CN_{pre} = 58.0

$S = \frac{1000}{CN_{pre}} - 10 = \frac{1000}{58.0} - 10 = 7.241$ in

$Q = \frac{(P-0.2S)^2}{(P+0.8S)} = \frac{(2.35 - 0.2 * 7.241)^2}{(2.35 + 0.8 * 7.241)} = 0.100$ in

$V_{pre\ bf}$ = Q x A = 0.100 x 375,052 = 12 = 3,121 cubic feet

Worksheet 4 and 5 Post-Development Bankfull Runoff Calculations

Pervious Cover Post-Development Bankfull Runoff Calculations

Volume for the 2 year / 24 hour storm event P = 2.35 in

$CN_{pervious}$ = 58.0 Pervious cover CN from NRCS Variables Worksheet

$S = \frac{1000}{CN_{pervious}} - 10 = \frac{1000}{58.0} - 10 = 7.241$ in

$Q = \frac{(P-0.2S)^2}{(P+0.8S)} = \frac{(2.35 - 0.2 * 7.241)^2}{(2.35 + 0.8 * 7.241)} = 0.100$ in

Pervious Cover Area, $A_{pervious}$ = 263,465 sf From NRCS Variable worksheet

$V_{pervious\ bf}$ = Q x A = 0.100 x 263,465 = 12 = 2,192 cubic feet

Impervious Cover Post-Development Bankfull Runoff Calculations

Volume for the 2 year / 24 hour storm event P = 2.35 in

$CN_{impervious}$ = 98.0 Impervious cover CN from NRCS Variables Worksheet

$S = \frac{1000}{CN_{impervious}} - 10 = \frac{1000}{98.0} - 10 = 0.204$ in

$Q = \frac{(P-0.2S)^2}{(P+0.8S)} = \frac{(2.35 - 0.2 * 0.204)^2}{(2.35 + 0.8 * 0.204)} = 2.122$ in

Impervious Cover Area, $A_{impervious}$ = 111,587 sf From NRCS Variable worksheet

$V_{impervious\ bf}$ = Q x A = 2.122 x 111,587 = 12 = 19,729 cubic feet

Worksheets 6 and 7 Post-Development 100 Year Storm Runoff Volume Calculations

Pervious Cover Post-Development 100 Year Storm Runoff Calculations

100 Year Storm Event P = 5.11 in

$CN_{pervious}$ = 58.0 Pervious cover CN from NRCS Variables Worksheet

$S = \frac{1000}{CN_{pervious}} - 10 = \frac{1000}{58.0} - 10 = 7.241$ in

$Q_{100\ per} = \frac{(P-0.2S)^2}{(P+0.8S)} = \frac{(5.11 - 0.2 * 7.241)^2}{(5.11 + 0.8 * 7.241)} = 1.230$ in

Pervious Cover Area, $A_{pervious}$ = 263,465 sf From NRCS Variable worksheet

$V_{pervious\ 100}$ = $Q_{100\ per}$ x A = 1.230 x 263,465 = 12 = 27,000 cubic feet

Impervious Cover Post-Development Backfull Runoff Calculations

100 Year Storm Event P = 5.11 in

$CN_{impervious}$ = 98.0 Pervious cover CN from NRCS Variables Worksheet

$S = \frac{1000}{CN_{impervious}} - 10 = \frac{1000}{98.0} - 10 = 0.204$ in

$Q_{100\ imp} = \frac{(P-0.2S)^2}{(P+0.8S)} = \frac{(5.11 - 0.2 * 0.204)^2}{(5.11 + 0.8 * 0.204)} = 4.873$ in

Impervious Cover Area, $A_{impervious}$ = 111,587 sf From NRCS Variable worksheet

$V_{impervious\ 100}$ = $Q_{100\ imp}$ x A = 4.873 x 111,587 = 12 = 45,314 cubic feet

Worksheet 8 Determine Time of Concentration for Applicble Flow Types ($T_{c\ total}$)

Flow Type	K	Change in Elevation (ft)	Length (L)	Slope % (S)	$S^{0.5}$	$V=K*S^{0.5}$	Tc=L/(V*3600)
Sheet Flow (no more than 300')	0.48	31	300	10.17	3.19	1.53	0.05
Waterway	1.20	3	484	0.70	0.84	1.01	0.13
					Total Time of Concentration (Tc) =		0.19 hr

Worksheet 9 Runoff Summary & Onsite Infiltration Requirement

Runoff Summary

First Flush Volume (Vff) =	16,518	cubic feet
Pre-Development Bankfull Runoff Volume ($V_{pre\ bf}$) =	3,121	cubic feet
Pervious Cover Post-Development Bankfull Volume ($V_{pervious\ bf}$) =	2,192	cubic feet
Impervious Cover Post-Development Bankfull Volume ($V_{impervious\ bf}$) =	19,729	cubic feet
Total Post-Development Bankfull Volume (V_{bf}) =	**21,922**	**cubic feet**
Pervious Cover Post-Development 100-year Volume ($V_{pervious\ 100}$) =	27,000	cubic feet
Impervious Cover Post-Development 100-year Volume ($V_{impervious\ 100}$) =	45,314	cubic feet
Total Post-Development 100-year Volume (V_{100}) =	**72,314**	**cubic feet**

Onsite Infiltration Requirement

Subtract the pre-development bankfull from the post-development bankfull volumes.

Total Post-Development Bankfull Volume (V_{bf}) =	21,922	cubic feet
Total Pre-Development Bankfull Runoff Volume ($V_{pre\ bf}$) =	3,121	cubic feet
Bankfull Volume Difference	**18,801**	**cubic feet**

Compare the Bankfull Volume Difference with the First Flush Volume. The GREATER of the two is the on-site infiltration.

Onsite Infiltration Requirement (V_{inf}) = 18,801 cubic feet

Worksheet 10 Detention / Retention Requirement

Detention

Peak of Unit Hydrograph, Q_p =	238.6	*	$(T_c)^{-0.82}$	=	238.6	*	0.19	-0.82
Q_p =	938.92	$cfs/in-mi^2$						
Total Site Area (ac) exluding "Self-Crediting" BMPs, A=			8.61	ac				
Q_{100} =	$Q_{100\ per}$	+	$Q_{100\ imp}$	=	1.230	+	4.873	
Q_{100} =	6.103	in						
Peak Flow, PF =	Qp*Q100*A	=	938.92	*	6.103	*	8.61	
	640				640			
Peak Flow, PF =	77.09	cfs						
Δ =	PF	-	0.15	*	A			
Δ =	77.09	-	0.15	*	8.61			
Δ =	75.80	cfs						
V_{det} =	Δ	*	V_{100}	=	75.80	*	72,314	
	PF				77.09			
V_{det} =	71,102	cubic feet			**Not inlcuding infiltration reduction credit or penalty			

Retention

V_{ret} =	2	*	V_{100}	=	2	*	72,314
V_{ret} =	144,627	cubic feet					

Worksheet 11 Determine Applicable BMP and Associated Volume Credits

Proposed BMP[A]	Area (ft^2)	Storage Volume[B] (ft^3)		Avg. Design Infiltration Rate (in/hr)	Infiltration Volume During Storm[C] (ft^3)	Total Volume Reduction[D] (ft^3)
		Surface	Soil			
Pervious Pavt. w/Infiltration Bed	0	0	0	0.00	0	0
Infiltration Basin	21,150	0	0	2.25	23,794	23,794
Subsurface Infiltration Bed	0	0	0	0.00	0	0
Infiltration Trench	0	0	0	0.00	0	0
Bioretention systems	0	0	0	0.00	0	0
Rain Gardens	0	0	0	0.00	0	0
Dry Well	0	0	0	0.00	0	0
Bioswale	0	0	0	0.00	0	0
Vegetated Filter Strip	0	0	0	0.00	0	0
Green Roof	0	0	0	0.00	0	0
		Total Reduction Credit by Proposed Structural BMPs (ft^3) =				23,794
				Runoff Volume Infiltration Requirement (V_{inf}) =		18,801
					Runoff Volume Credit (ft^3) =	4,993

[A] Complete checklist from Section VI for each structural BMP type

[B] Storage volume as defined in individual BMP write-ups

[C] Approximated as the average design infiltration rate over 6 hours multiplied by the BMP area: infiltration rate x 6 hours x BMP area x Unit conversions - Infiltration Volume (ft^3)

[D] Total Volume Reduction Credit is the sum of storage volume and the infiltration volume during storm.

Worksheet 12 Natural Features Inventory

Existing Natural Resources	Mapped (Y, N, N/A)	Total Area (ac)	Protected / Undisturbed Area (ac)
Waterbodies	N	0.00	0.00
Floodplains	N	0.00	0.00
Riparian Areas	N	0.00	0.00
Wetlands	N	0.00	0.00
Woodlands	N	0.00	0.00
Natural Drainage Area	N	0.00	0.00
Steep Slopes, 15%-25%	N	0.00	0.00
Steep Slopes, over 25%	N	0.00	0.00
Special Habtat Areas	N	0.00	0.00
Other	N	0.00	0.00
Total Existing		**0.00**	**0.00**

Worksheet 13 Summary

Stormwater Management Summary

Minimum Onsite Infiltration requirements, V_{inf} =	18,801	cubic feet
Designed/Provided Infiltration Volume =	23,794	cubic feet
% Minimum Required Infiltration Provided =	127%	
Total Calculated Detention Volume, V_{det} =	71,102	cubic feet
Net Required Detention Volume (V_{det} - Design/Provided Infiltration Volume) =	**47,308**	**cubic feet**

Detention Volume Increase for site where the required infiltration volume cannot be achieved

% Required Infiltration NOT provided (100%-Min. Req. Infiltration provided) =	0%	
Net % Penalty (20% x % Redued infiltration NOT provided) =	0.00%	
Total Required Detention Volume, inc. penalty	**47,308**	**cubic feet**
[(100% + Net % Penalty) xV_{det}]		

Basin Stage Storage Voume Summary

Required Forebay Volume, V_{fb} =	3,555	cubic feet	V_{fb} = 0.05 x $V_{det\ 100}$
Required First Flush Volume, V_{ff} =	16,518	cubic feet	
Required Bankfull Volume, V_{bf} =	21,922	cubic feet	
Total Required Retention Volume =	144,627	cubic feet	

Storage Volume Provided

Forebay Volume

Elevation	Area (sft)	Incremental Volume (cft)	Cumulative Volume (cft)
758.50	2,300		
		1,087	4,023
758.00	2,050		
		1,820	2,937
757.00	1,600		
		1,116	1,116
756.20	1,200		

Forebay Volume Provided= 4,023 cubic feet

Forebay Volume Required= 3,555 cubic feet

Retention Volume (Incudes Forebay Volume)

Elevation	Area (sft)	Incremental Volume (cft)	Cumulative Volume (cft)
761	51,350		
		47,191	160,118
760	43,150		
		39,082	112,928
759	35,150		
		31,377	73,846
758	27,750		
		24,375	42,469
757	21,150		
		18,093	18,093
756	15,200		

Retention Volume Provided= 160,118 cubic feet

Retention Volume Required= 144,627 cubic feet

Forebay Required Volume Elevation Calculation

Forebay storage volume required=	V_{fb}=	3,555	Z_{fb}=	E_1	+	$(V_{fb} - V_1)$	x	(E_2-E_1)
Forebay volume below required amount=	V_1=	2,937				$(V_2 - V_1)$		
Forebay volume above required amount=	V_2=	4,023						
Forebay elevation below required amount=	E_1=	758.00	Z_{fb}=	758.28				
Forebay elevation above required amount=	E_2=	758.50						

First Flush Elevation Calculation

First Flush storage volume required=	V_{ff}=	16,518	Z_{ff}=	E_1	+	$(V_{ff} - V_1)$	x	(E_2-E_1)
Basin volume below required amount=	V_1=	0				$(V_2 - V_1)$		
Basin volume above required amount=	V_2=	18,093						
Basin elevation below required amount=	E_1=	756.00	Z_{ff}=	756.91				
Basin elevation above required amount=	E_2=	757.00						

Bankfull Elevation Calculation

Bankfull storage volume required=	V_{bf}=	21,922	Z_{bf}=	E_1	+	$(V_{bf} - V_1)$	x	(E_2-E_1)
Basin volume below required amount=	V_1=	18,093				$(V_2 - V_1)$		
Basin volume above required amount=	V_2=	42,469						
Basin elevation below required amount=	E_1=	757.00	Z_{bf}=	757.16				
Basin elevation above required amount=	E_2=	758.00						

Total Required Retention Elevation Calculation

Total Required Retention storage volume required=	V_{ret}=	144,627	Z_{ret}=	E_1	+	$(V_{ret} - V_1)$	x	(E_2-E_1)
Basin volume below required amount=	V_1=	112,928				$(V_2 - V_1)$		
Basin volume above required amount=	V_2=	160,118						
Basin elevation below required amount=	E_1=	760.00	Z_{ret}=	760.67				
Basin elevation above required amount=	E_2=	761.00						

Basin Stage Storage Elevation Summary

Forebay Required Volume Elev, Z_{fb} =	758.28
First Flush Elev, Z_{ff} =	756.91
Bankfull Elev, Z_{bf} =	757.16
Total Required Retention Elev, Z_{ret} =	760.67
Freeboard Elev, Z_{fb} =	761.67

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Developed For:

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BASIN 5 CALCULATIONS

BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

Date:	07.26.2024
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Sheet:	68
Project:	20249.00

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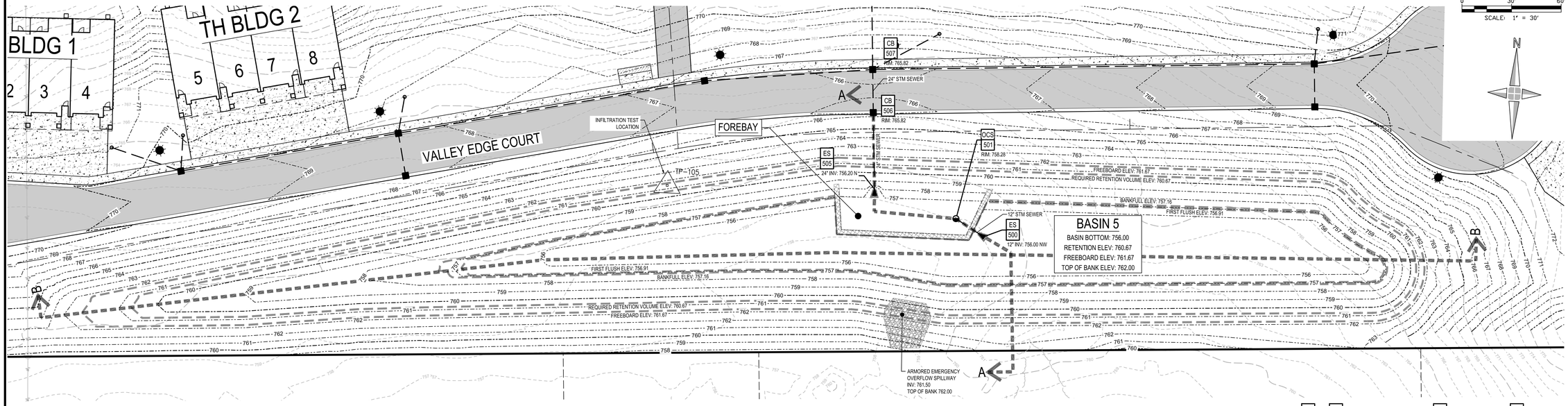
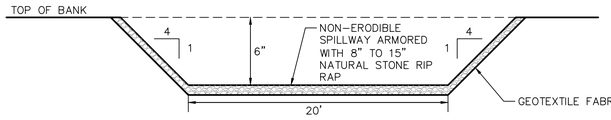


Overflow Storm Event Calculations		
100-year Storm Event Calculation		
Basin Area =	8.61	ac
Basin C Factor, C =	0.53	
Time of Concentration, T_c =	45	min
Rainfall Intensity, I =	275 / (T_c + 25)	
Rainfall Intensity, I =	3.93	in/hr
Q_{100-yr} =	C x I x A	
Q_{100-yr} =	17.88	cfs



WEIR FLOWRATE CAPACITY, Q_{SP}

$Q_{SP} = L \times 3.367 \times H^{1.5}$
L = 20'
H = 0.5'
$Q_{SP} = 20 \times 3.367 \times 0.5^{1.5} = 23.8$ CFS
$Q_{100\text{-}YR} = 17.9$ CFS $< Q_{SP}$

OVERFLOW SPILLWAY DETAIL

N.T.S.

UTILITY PIPE MATERIALS

STORM SEWER:
RCP C76 CLIV, OR APPROVED EQUAL
STORM LEAD:
PVC SCH 40, OR APPROVED EQUAL

NOTE:
DETENTION ELEVATIONS EXTEND INTO FOREBAY. THESE LINES HAVE BEEN OMITTED FROM THE FOREBAY FOR CLARITY.

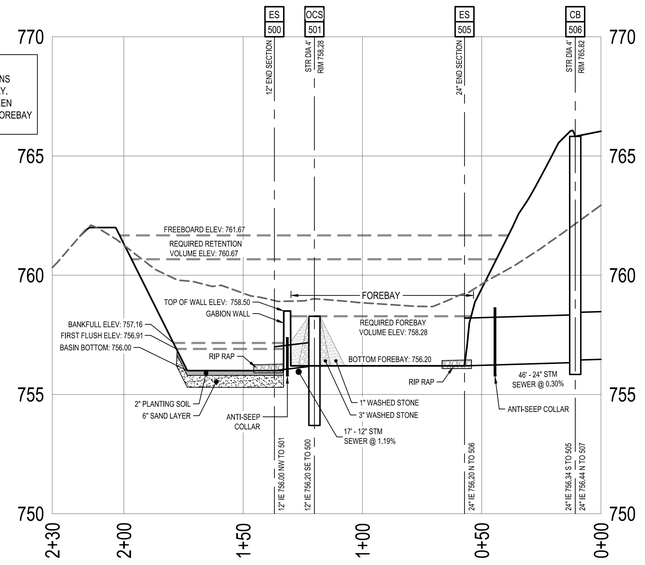
NOTES:

1. CGM - COMPACTED CL II GRANULAR MATERIAL

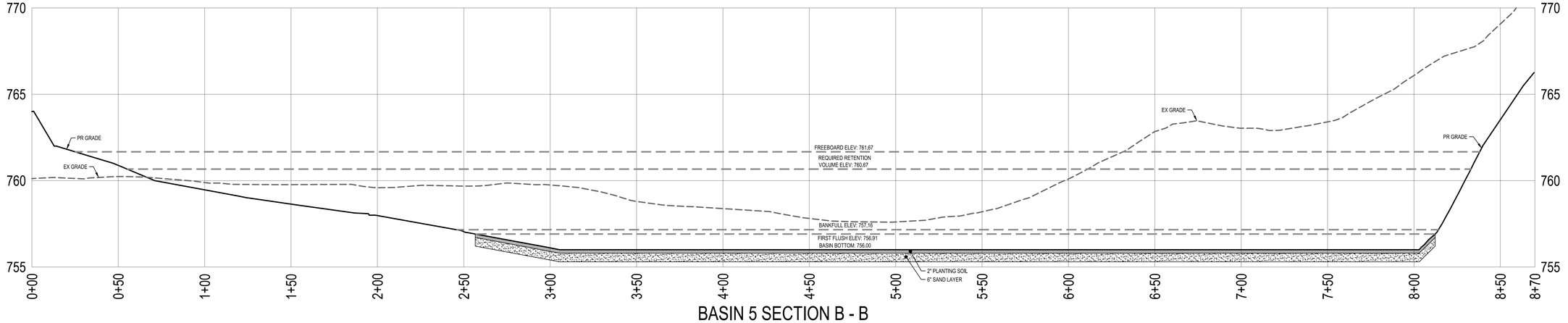
FOREBAYS:
- A PERMANENT FOREBAY DEPTH MARKER SHALL BE INSTALLED IN ALL FOREBAYS.

CONSTRUCTION NOTES:
THE FOLLOWING IS A TYPICAL CONSTRUCTION SEQUENCE; HOWEVER, ALTERATIONS WILL BE NECESSARY DEPENDING ON DESIGN VARIATIONS.

A. THE INFILTRATION AREA MUST BE PROTECTED FROM COMPACTION PRIOR TO INSTALLATION & DURING CONSTRUCTION.
B. INFILTRATION BASINS MUST NOT BE PLACED ON AREAS OF RECENT FILL, OR COMPACTED FILL, UNLESS OTHERWISE SHOWN IN PLANS. ANY GRADE ADJUSTMENTS REQUIRING FILL MUST BE DONE USING THE STONE SUB-BASE MATERIAL. AREAS OF HISTORICAL FILL (>5 YEARS) MAY BE CONSIDERED FOR INFILTRATION BASINS.
C. INSTALLATION AND MAINTENANCE OF PROPER EROSION AND SEDIMENT CONTROL MEASURES MUST BE FOLLOWED DURING CONSTRUCTION.
D. EXCAVATE INFILTRATION BASIN BOTTOM TO A UNIFORM, LEVEL UNCOMPACTED SUBGRADE FREE FROM ROCKS AND DEBRIS. DO NOT COMPACT SUBGRADE. EXCAVATION SHOULD BE PERFORMED WITH THE LIGHTEST PRACTICAL EQUIPMENT. EXCAVATION EQUIPMENT SHOULD BE PLACED OUTSIDE THE LIMITS OF THE INFILTRATION BASIN.
E. TOPSOIL STABILIZATION AND SEED MUST BE APPLIED TO THE DISTURBED AREA.
F. DO NOT REMOVE EROSION AND SEDIMENT CONTROL MEASURES UNTIL SITE IS FULLY STABILIZED.
G. PERMEABILITY SHALL BE REVERIFIED BY INFILTRATION PRIOR TO ACCEPTANCE.



BASIN 5 SECTION A - A



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BASIN 5 DETAILS

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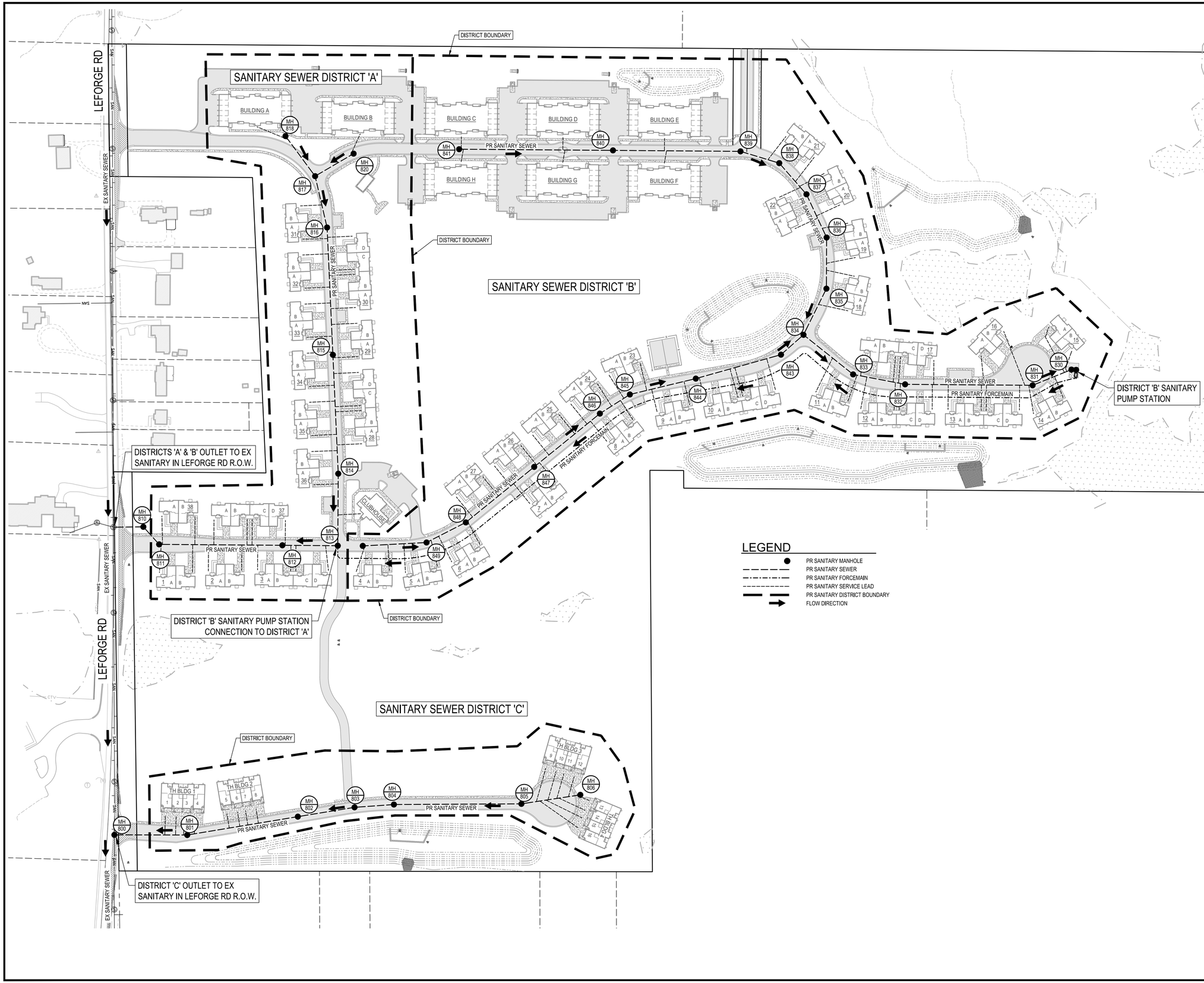

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SANITARY SERVICE AREAS DIAGRAM

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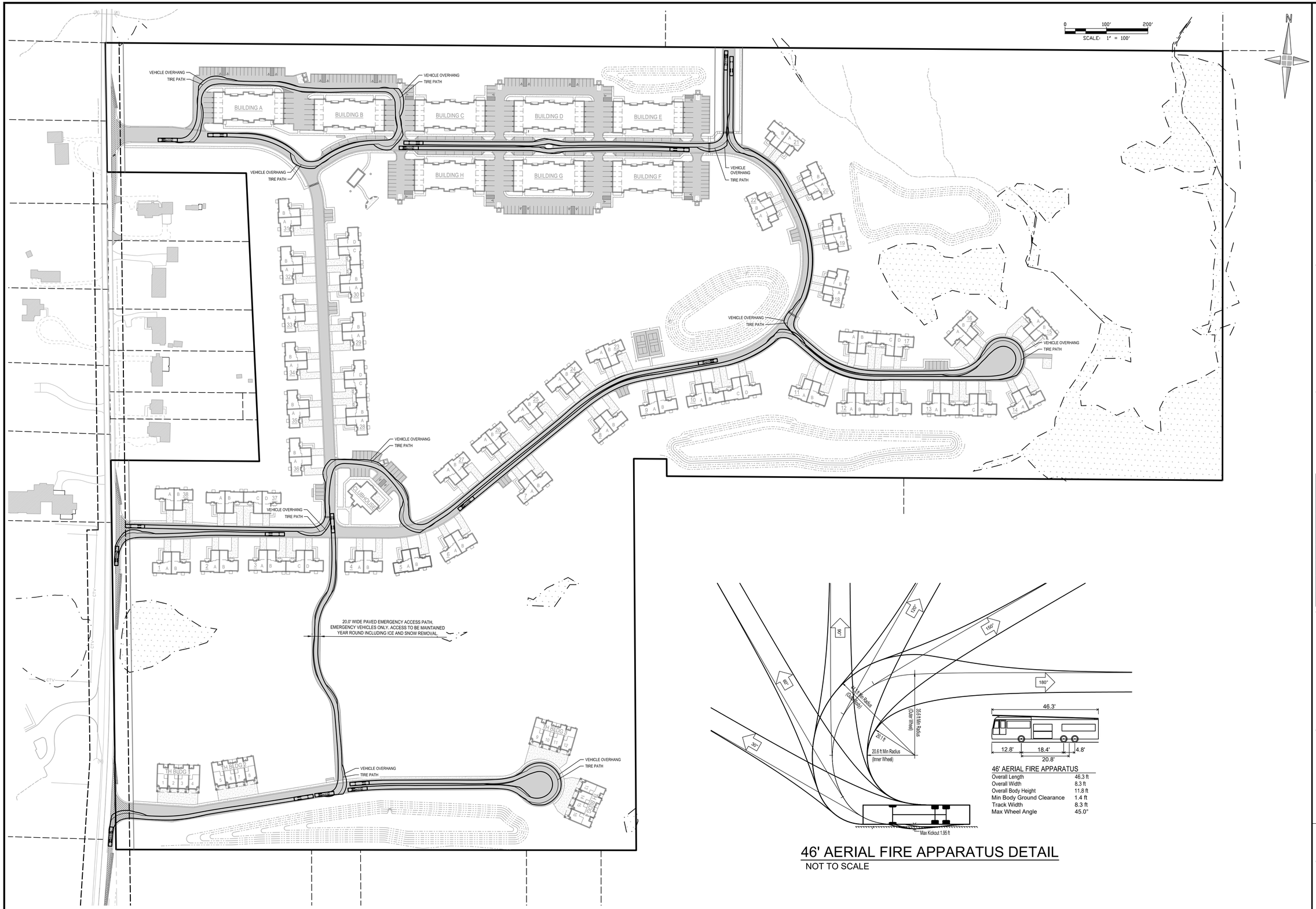

46' AERIAL FIRE APPARATUS

Overall Length	46.3 ft
Overall Width	8.3 ft
Overall Body Height	11.8 ft
Min Body Ground Clearance	1.4 ft
Track Width	8.3 ft
Max Wheel Angle	45.0°

46' AERIAL FIRE APPARATUS DETAIL

NOT TO SCALE

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05/01/2025	WCWRC RESUBMITTAL
05/05/2025	TOWNSHIP FSP RESUBMITTAL
05/06/2025	SESC SUBMITTAL
05/13/2025	FSP LANDSCAPE REVISIONS
05/20/2025	STEEP SLOPE REVISIONS

Developed For:

GARNER PROPERTY MANAGEMENT

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FIRE ACCESS PLAN

BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

Date:	07.26.2024
Scale:	1"=100'
Sheet:	71
Project:	20249.00

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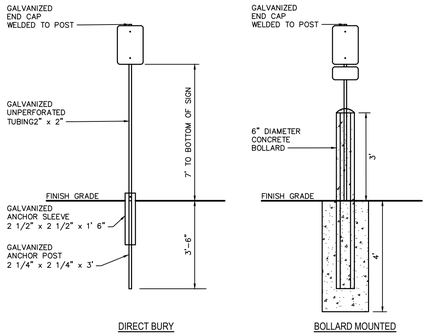
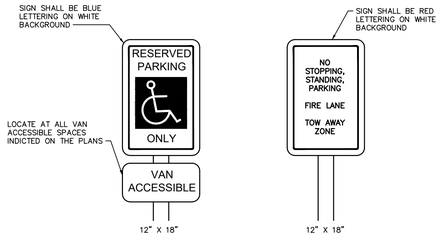


NOTE:

1. MOUNT WHERE BARRIER FREE SPACES FACE EACH OTHER SHALL BE MOUNTED IN BOTH DIRECTIONS ON ONE POST SIGNS SHALL BE MOUNTED TO POST WITH UNIVERSAL DRIVE RIVETS THROUGH PRE-DRILLED 7/16" DIAMETER HOLES IN THE SIGN FACE AND POST.
2. SECURE SIGN POST, ANCHOR POST AND ANCHOR SLEEVE WITH 3/8" DIAMETER GALVANIZED BOLTS WITH LOCK-WASHERS AND NUTS THROUGH PRE-DRILLED 7/16" HOLES.

SIGN POST DETAIL

NOT TO SCALE



NOTE:

1. ENSURE SIGNAGE CONFORMS AND COMPLIES WITH CURRENT STATE AND LOCAL CODES AND REGULATIONS AS WELL AS WITH THE MICHIGAN MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD).
2. COORDINATE SIGN LOCATIONS WITH LANDSCAPING CONTRACTOR AS REQUIRED.
3. PROVIDE REGULATORY SIGNS REFLECTORIZED.
4. PROVIDE SIGN BACKING MATERIAL AS .080" ALUMINUM, UNLESS NOTED OR OTHERWISE REGULATED.
5. PROVIDE ILLUMINATED SIGNS AS U.L. LISTED OR APPROVED EQUIVALENT.
6. REGULATORY SIGN POSTS AND SIGN BACKS TO BE PAINTED WITH A SEMI-GLOSS ALIPHATIC ACRYLIC POLYURETHANE TO MATCH PMS BLACK 6C2X. INSTALL PER MANUFACTURE'S INSTRUCTIONS.
7. DRIVE ANCHOR POST AND ANCHOR SLEEVE INTO THE GROUND TOGETHER, LEAVING A MAX. OF ONE HOLE EXPOSED FOR BOLT CONNECTION. FOR HAND INSTALLATION, USE DRIVE CAP OF PROPER SIZE TO PREVENT DAMAGE TO TUBING. POUR SIDEWALK AROUND ANCHOR SLEEVE OR CORE AND DRILL EXISTING SIDEWALK AROUND THE SLEEVE.
8. INSERT SIGN POST INTO ANCHOR ASSEMBLY APPROXIMATELY 6" TO 8" AND BOLT IN PLACE.
9. INSTALLED SIGN AND POST SHALL BE VERTICAL AND FREE OF VERTICAL AND LATERAL MOVEMENT.
10. INSTALL SIGN AND POST SUCH THAT THEY ARE VERTICAL AND UNMOVING.
11. USE #12 U.S. STD. GAGE WALL THICKNESS TUBING.

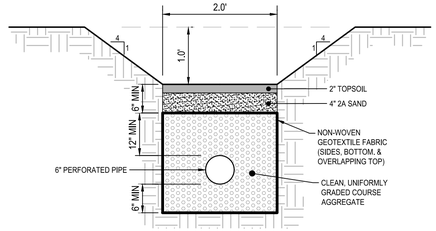
HANDICAP PARKING SIGN DETAIL

NOT TO SCALE

CONSTRUCTION NOTES:

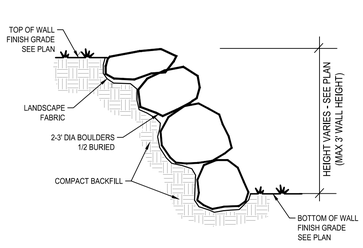
THE FOLLOWING IS A TYPICAL CONSTRUCTION SEQUENCE; HOWEVER ALTERATIONS WILL BE NECESSARY DEPENDING ON DESIGN VARIATIONS.

A. THE INFILTRATION AREA MUST BE PROTECTED FROM COMPACTION PRIOR TO INSTALLATION.
B. INSTALL INFILTRATION TRENCHES DURING LATER PHASES OF SITE CONSTRUCTION TO PREVENT SEDIMENTATION AND/OR DAMAGE FROM CONSTRUCTION ACTIVITY.
C. INSTALLATION AND MAINTENANCE OF PROPER EROSION AND SEDIMENT CONTROL MEASURES MUST BE FOLLOWED DURING CONSTRUCTION.
D. EXCAVATE INFILTRATION TRENCH BOTTOM TO A UNIFORM, LEVEL UNCOMPACTED SUBGRADE FREE FROM ROCKS AND DEBRIS. DO NOT COMPACT SUBGRADE. TO THE GREATEST EXTENT POSSIBLE, EXCAVATION SHOULD BE PERFORMED WITH THE LIGHTEST PRACTICAL EQUIPMENT. EXCAVATION EQUIPMENT SHOULD BE PLACED OUTSIDE THE LIMITS OF THE SUBSURFACE INFILTRATION BED.
E. COMPLETELY WRAP INFILTRATION TRENCH WITH NON-WOVEN GEOTEXTILE. (IF SEDIMENT AND/OR DEBRIS HAVE ACCUMULATED IN INFILTRATION TRENCH BOTTOM, REMOVE PRIOR TO GEOTEXTILE PLACEMENT.) GEOTEXTILE ROLLS MUST OVERLAP BY A MINIMUM OF 24 INCHES WITHIN THE TRENCH. FOLD BACK AND SECURE EXCESS GEOTEXTILE DURING STONE PLACEMENT.
F. INSTALL CONTINUOUSLY PERFORATED PIPE, CLEANOUTS, AND ALL OTHER INFILTRATION TRENCH STRUCTURES. CONNECT PERFORATED PIPE TO BASIN OUTLET CONTROL STRUCTURE FOR OUTLET.
G. CLEAN-WASHED, UNIFORMLY GRATED AGGREGATE IS TO BE PLACED IN 8-INCH LIFTS. EACH LAYER MUST BE LIGHTLY COMPACTED WITH THE CONSTRUCTION EQUIPMENT KEPT OFF THE BED BOTTOM.
H. BACKFILL PERFORATED PIPE WITH CLEAN-WASHED UNIFORMLY GRATED AGGREGATE IN 8-INCH LIFTS, LIGHTLY COMPACTED BETWEEN LIFTS.
I. FOLD AND SECURE NON-WOVEN GEOTEXTILE OVER TRENCH WITH A MINIMUM OVERLAP OF 16-INCHES.
J. PLACE A 6-INCH LIFT OF APPROVED TOPSOIL OVER TRENCH, AS INDICATED ON APPROVED PLANS.
K. TOPSOIL STABILIZATION AND SEED MUST BE APPLIED TO THE DISTURBED AREA.
L. DO NOT REMOVE EROSION AND SEDIMENT CONTROL MEASURES UNTIL SITE IS FULLY STABILIZED.



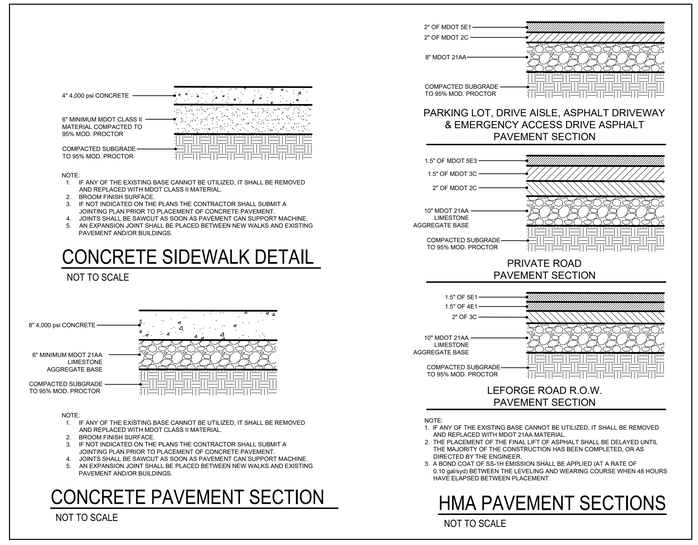
INFILTRATION TRENCH DETAIL

NOT TO SCALE



BOULDER WALL DETAIL

NOT TO SCALE



NOTE:

1. IF ANY OF THE EXISTING BASE CANNOT BE UTILIZED, IT SHALL BE REMOVED AND REPLACED WITH MDOT CLASS II MATERIAL.
2. BROOM FINISH SURFACE.
3. IF NOT INDICATED ON THE PLANS THE CONTRACTOR SHALL SUBMIT A JOINTING PLAN PRIOR TO PLACEMENT OF CONCRETE PAVEMENT.
4. JOINTS SHALL BE SAWCUT AS SOON AS PAVEMENT CAN SUPPORT MACHINE.
5. AN EXPANSION JOINT SHALL BE PLACED BETWEEN NEW WALKS AND EXISTING PAVEMENT AND/OR BUILDINGS.

CONCRETE SIDEWALK DETAIL

NOT TO SCALE

NOTE:

1. IF ANY OF THE EXISTING BASE CANNOT BE UTILIZED, IT SHALL BE REMOVED AND REPLACED WITH MDOT CLASS II MATERIAL.
2. BROOM FINISH SURFACE.
3. IF NOT INDICATED ON THE PLANS THE CONTRACTOR SHALL SUBMIT A JOINTING PLAN PRIOR TO PLACEMENT OF CONCRETE PAVEMENT.
4. JOINTS SHALL BE SAWCUT AS SOON AS PAVEMENT CAN SUPPORT MACHINE.
5. AN EXPANSION JOINT SHALL BE PLACED BETWEEN NEW WALKS AND EXISTING PAVEMENT AND/OR BUILDINGS.

CONCRETE PAVEMENT SECTION

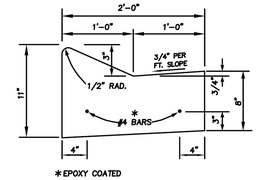
NOT TO SCALE

NOTE:

1. IF ANY OF THE EXISTING BASE CANNOT BE UTILIZED, IT SHALL BE REMOVED AND REPLACED WITH MDOT 21AA MATERIAL.
2. THE PLACEMENT OF THE FINAL LIFT OF ASPHALT SHALL BE DELAYED UNTIL THE MAJORITY OF THE CONSTRUCTION HAS BEEN COMPLETED, OR AS DIRECTED BY THE ENGINEER.
3. A BOND COAT OF SS-1H EMISSION SHALL BE APPLIED (AT A RATE OF 0.10 gal/syd) BETWEEN THE LEVELING AND WEARING COURSE WHEN 48 HOURS HAVE ELAPSED BETWEEN PLACEMENT.

HMA PAVEMENT SECTIONS

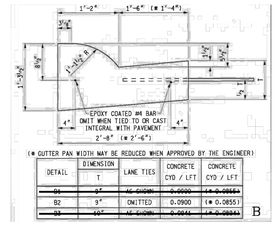
NOT TO SCALE



* EPOXY COATED

3" MOUNTABLE CURB & GUTTER DETAIL

NOT TO SCALE

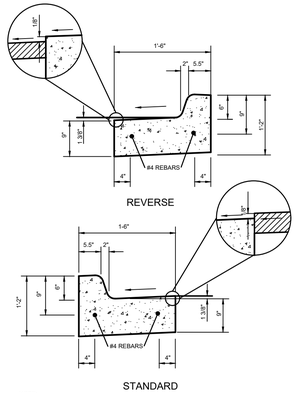


(* GUTTER PAN WIDTH MAY BE REDUCED WHEN APPROVED BY THE ENGINEER)

DETAIL	DIMENSION T	LANE TIES	CONCRETE CY/D / LFT	CONCRETE CY/D / LFT
B4	8"	AS SHOWN	0.0900	(* 0.0816)
B2	9"	OMITTED	0.0900	(* 0.0855)
B3	10"	AS SHOWN	0.0911	(* 0.0864)

MDOT B2 CURB & GUTTER DETAIL

NOT TO SCALE

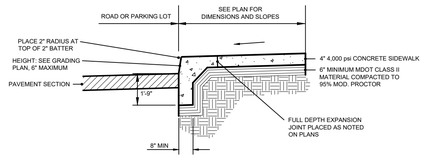


NOTE:

1. USE MDOT 35P CONCRETE UNLESS OTHERWISE NOTED.
2. REFER TO PLANS FOR LOCATIONS OF STANDARD AND REVERSE CURB.
3. CONTRACTOR SHALL SMOOTHLY TRANSITION BETWEEN STANDARD AND REVERSE CURB.

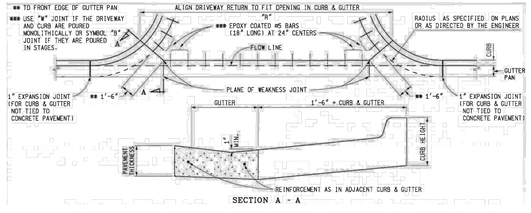
6" CONCRETE CURB & GUTTER DETAIL

NOT TO SCALE



INTEGRAL CURB & WALK DETAIL

NOT TO SCALE



MDOT CONCRETE DRIVEWAY OPENING, DETAIL M

NOT TO SCALE

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Quality Control:	-
Section:	33
	T-02-S R-07-E

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LICENSED PROFESSIONAL ENGINEER

811 Know what's below. Call before you dig.

DATE:	ISSUE:
11/18/2024	FINAL SITE PLAN SUBMITTAL
01/17/2025	WCRC RESUBMITTAL
02/28/2025	WCWRC RESUBMITTAL
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Developed For:

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DETAILS

BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

Date:	07.26.2024
Scale:	NA
Sheet:	72
Project:	20249.00

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GREENBELT PLANT LIST:

XXX / X

SHRUBS:

NO.	SYMBOL	COMMON NAME	BOTANICAL NAME	SIZE
153	BUR	BURNING BUSH	EUONYMUS ALATA 'COMPACTA'	3–4' HT. 2 GAL.
166	FOR	LYNWOOD GOLD FORSYTHIA	FORSYTHIA x.i. 'LYNWOOD GOLD'	30" SPD. B&B
116	BAY	NORTHERN BAYBERRY	MYRICA PENSYLVANIA	30" SPD. B&B
130	HYD	JESTSTREAM OAKLEAF HYDRANGEA	HYDRANGEA QUERCIFOLIA 'PIIHQ–I'	30" SPD. B&B
69	NIN	SUMMER WINE BLACK NINEBARK	PHYSOCARPUS OPULIFOLIUS 'SMNPMS'	30" SPD. B&B
102	VIB	BLUE MUFFIN ARROWWOOD VIBURNUM	VIBURNUM DENTATUM CHRISTOM	30" SPD. B&B

736 TOTAL GREENBELT SHRUBS

TREES:

NO.	SYMBOL	COMMON NAME	BOTANICAL NAME	SIZE
12	RD	RADIANT CRAB	MALUS 'RADIANT'	3" CAL. B&B
26	SM	SUGAR MAPLE	ACER SACCHARUM	3" CAL. B&B
150	NS	NORWAY SPRUCE	PICEA ABIES	8' HT. B&B
72	WP	WHITE PINE	PINUS STROBUS	8' HT. B&B

260 TOTAL GREENBELT TREES

REPLACEMENT PLANT LIST:

XXX / X

TREES:

NO.	SYMBOL	COMMON NAME	BOTANICAL NAME	SIZE
68	TU	ARNOLD TULIP TREE	LIRIODENDRON TULIPIFERA 'ARNOLD'	3" CAL. B&B
37	LP	LONDON PLANE TREE	PLATANUS X ACERIFOLIA	3" CAL. B&B
41	RM	RED MAPLE	ACER RUBRUM 'OCTOBER GLORY'	3" CAL. B&B
25	HK	SKYLINE LOCUST	GLEDITSIA TRIACANTHOS INERMIS 'SKYLINE'	3" CAL. B&B
241	SM	SUGAR MAPLE	ACER SACCHARUM	3" CAL. B&B
42	BS	BALD CYPRESS	TAXODIUM DISTICHUM	8' HT. B&B
130	HB	HACKBERRY	CELTIS OCCIDENTALIS	3" CAL. B&B
94	BO	BUR OAK	QUERCUS MACROCARPA	3" CAL. B&B
136	RO	RED OAK	QUERCUS RUBRA	3" CAL. B&B
70	BG	BLACK GUM	NYSSA SYLVATICA	3" CAL. B&B
72	DW	DAWN REDWOOD	METASEQUOIA GLYPTOSTROBOIDES	8' HT. B&B
28	RD	RADIANT CRAB	MALUS 'RADIANT'	3" CAL. B&B

984 TOTAL REPLACEMENT TREES

NOTES
1. SEE L–101 FOR TYPICAL TOWNHOME PLANT LAYOUT AND LEGEND. TYPICAL TOWNHOME LAYOUTS PLANTS ARE SEPARATE FROM OVERALL PLANT COUNTS AND DO NOT COUNT TOWARDS REPLACEMENT OR GREENBELT TOTALS.

TREE INSTALLATION AND MAINTENANCE:
1. REPLACEMENT AND TRANSPLANTED TREES SHALL BE STAKED, FERTILIZED, WATERED, AND MULCHED TO ENSURE THEIR SURVIVAL IN A HEALTHY, GROWING CONDITION AND REPLACED AT THE DEVELOPER'S EXPENSE IF THEY DIE WITHIN THREE (3) YEARS.
2. ZONING INSPECTOR OR DESIGNATED TOWNSHIP REPRESENTATIVE TO BE DISEASED, DEAD OR DYING WITHIN THREE (3) YEARS AFTER INSTALLATION.
3. THREE (3) YEARS AFTER ALL TREES HAVE BEEN PLANTED WITHIN THE DEVELOPMENT, THE TOWNSHIP SHALL RELEASE THE GUARANTEE, LESS ANY FUNDS NEEDED TO COMPLETE REQUIRED TREE REPLACEMENT.
4. BASIN, FLUSH AREAS & DISTURBED WETLAND AREA MAINTENANCE PLAN ON SHEET 61.

EXISTING TREE PRESERVATION:
1. ROAD RIGHTS–OF–WAY, UTILITY EASEMENTS, AND LARGE LAND AREAS SEPARATE FROM THE CONSTRUCTION OR LAND–CLEARING AREA MAY BE CORDONED BY PLACING STAKES A MINIMUM OF 50 FEET APART AND TYING RIBBON, PLASTIC TAPE, OR OTHER BRIGHTLY VISIBLE MATERIALS AT LEAST 30 INCHES ABOVE THE GROUND FROM STAKE TO STAKE ALONG THE OUTER PERIMETER OF AREAS TO BE CLEARED.
2. PROTECTED AREAS AROUND PRESERVED TREES SHALL BE DEFINED BY THE DRIP LINES OF ALL WOODLANDS AND INDIVIDUAL TREES DESIGNATED TO REMAIN, PLUS AN AREA OUTSIDE OF THE DRIP LINE DEFINED BY A PARALLEL BOUNDARY LINE PLACED A MINIMUM OF FIVE (5) FEET OUTWARD FROM THE DRIP LINE. SUCH AREAS AROUND PRESERVED TREES SHALL BE PROTECTED BEFORE AND DURING DEVELOPMENT, FILLING, LAND CLEARING, OR ANY PROPERTY ALTERATION OR CONSTRUCTION ACTIVITY.
3. PROTECTIVE BARRIERS OF WOOD, METAL, OR OTHER SUITABLE MATERIALS (SUCH AS SNOW FENCING, CYCLONE FENCING, ETC.) ACCEPTABLE TO THE TOWNSHIP ENGINEER SHALL BE PLACED PARALLEL TO THE OUTER PERIMETER OF EACH PROTECTED AREA. (SEE DETAIL)
4. NO PERSON SHALL CONDUCT ANY CONSTRUCTION ACTIVITY, PLACE, PARK OR STORE SOLVENTS, BUILDING MATERIALS, EQUIPMENT, SOIL, GRAVEL, DEBRIS, VEHICLES, TRAILERS, TEMPORARY STRUCTURES OR SIMILAR ITEMS; OR ATTACH A DEVICE OR WIRE TO ANY REMAINING TREE WITHIN SUCH PROTECTED AREAS EXCEPT TO CORDON OFF SUCH AREAS AS REQUIRED.
5. PROTECTIVE BARRIERS SHALL REMAIN IN PLACE AND BE MAINTAINED IN PROPER CONDITION UNTIL THE TOWNSHIP AUTHORIZES THEIR REMOVAL OR ISSUES A FINAL CERTIFICATE OF OCCUPANCY, WHICHEVER OCCURS FIRST

INVASIVE SPECIES REMOVAL:
REMOVAL OF BRUSH, INVASIVE SPECIES, AND OTHER LAND GRUBBING ACTIVITIES WITHIN THE PROTECTED AREA OF A LANDMARK TREE OR SOVEREIGN TREE SHALL BE DONE BY HAND. NO TRACKED OR MOTORIZED VEHICLES OR MACHINERY SHALL BE PERMITTED WITHIN THIS AREA.

GREENBELT LANDSCAPING CALCULATIONS:
1 CONIFEROUS OR DECIDUOUS TREE PER 15 L.F. OF GREENBELT
3,566.3 L.F. OF GREENBELT /15 = 238 TREES REQUIRED, 260 PROVIDED
5 SHRUBS PER 35 L.F. OF GREENBELT
3,566.3 L.F. OF GREENBELT X 3/15 = 714 SHRUBS REQUIRED, 736 PROVIDED

REGULATED TREES REPLACEMENT CALCULATIONS:
CONIFEROUS (HEIGHT) 10.0 TO 15.0 FEET ONE TO ONE (1:1)
2 TREES X 1 = 2 TREES REQUIRED
DECIDUOUS (D.B.H.) 8.0 TO 12.0 INCHES ONE TO ONE (1:1)
835 TREES X 1 = 835 TREES REQUIRED
DECIDUOUS (D.B.H.) 12.01 TO 16.0 INCHES THREE TO ONE (3:1)
13 TREES X 3 = 39 TREES REQUIRED
DECIDUOUS (D.B.H.) LANDMARK DECIDUOUS TREE ONE (1) TREE PER INCH OF REMOVED
68 TREES REPLACE INCH 1,102 INCHES = 1,102 INCHES REQUIRED
368 (3" CALIPER TREES REQUIRED)
NO SOVEREIGN ARE IDENTIFIED ON SITE.

TOTAL REPLACEMENT TREES REQUIRED = 1,244 (3" CALIPER OR 8' HT. CONIFER TREES REQUIRED)
TOTAL REPLACEMENT TREES PROPOSED = 1,244 (3" CALIPER OR 8' HT. CONIFER TREES REQUIRED, GREENBELT TREES INCLUDED)

N

0 100' 200'
SCALE: 1" = 100'

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Professional Seal:

STATE OF MICHIGAN
MARK JON HANSEN
LANDSCAPE ARCHITECT
No. 1301012278
REGISTERED LANDSCAPE ARCHITECT

Know what's below. Call before you dig.

DATE:	ISSUE:
08-29-2023	TOWNSHIP SUBMITTAL
03-25-2024	TOWNSHIP SUBMITTAL
04-30-2024	REV PER TWP REVIEW
05-09-2024	REV PER OHM'S DRAFT REVIEW

Developed For:

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OVERALL LANDSCAPE PLAN

BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

Date:	04.14.2023
Scale:	1"=100'
Sheet:	L-100
Project:	20249.00

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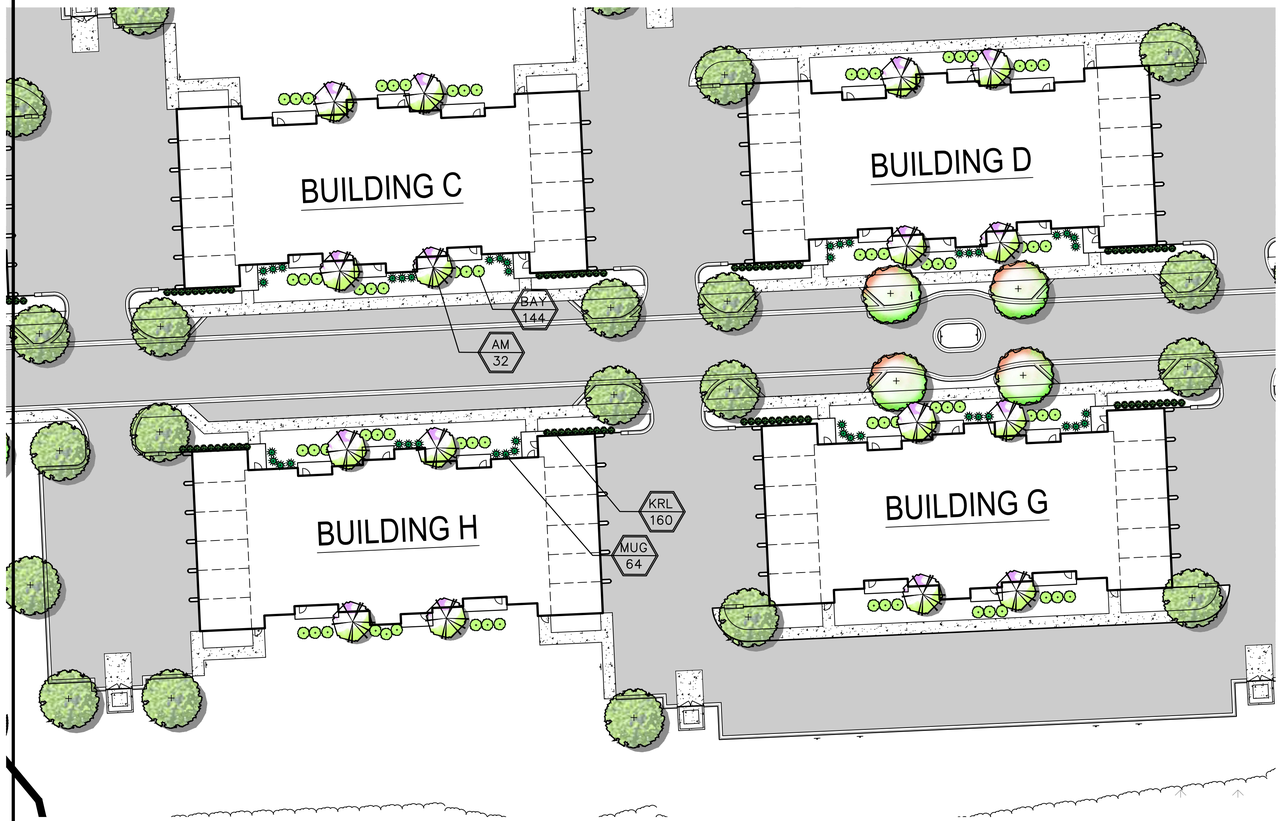




CLUBHOUSE AREA LAYOUT

PLANT LIST: XXX / X

PERENNIALS:

NO.	COMMON NAME	BOTANICAL NAME	SIZE	SYMBOL
160	KARL FOERSTER'S REED GRASS	CALAMAGROSTIS x ACUTIFOLIA 'KARL FOERSTER'	1 GAL. POT	KRL
96	NEON SEDUM	SEDUM SPECTABILE NEON	1 GAL. POT	SED
52	KARLEY ROSE FOUNTAIN GRASS	PENNISETUM ORIENTALE KARLEY ROSE PP12909	1 GAL. POT	FOU

SHRUBS:

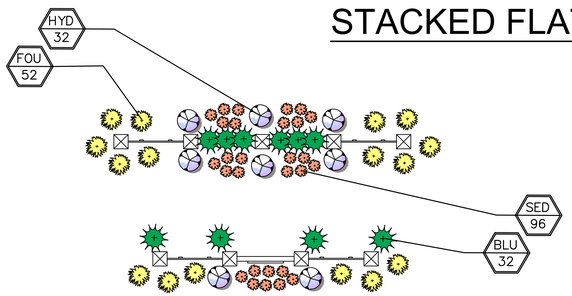
NO.	COMMON NAME	BOTANICAL NAME	SIZE	SYMBOL
7	TINY WINE NINEBARK	PHYSOCARPUS OPULIFOLIUS SMPOWTW PPAF	3 GAL. POT	NIN
96	FRANKY BOY ARBORVITAE	THUJA ORIENTALIS 'FRANKY BOY'	4' HT. B&B	FRK
24	SPRINTER BOXWOOD	BUXUS MICROPHYLLA 'BULTHOUSE' PP25896	30" DIA. B&B	BOX
475	EMERALD GAIETY EUONYMUS	EUONYMUS FORTUNEI EMERALD GAIETY	3 GAL. POT	EME
11	ROSY ROCKET BARBERRY	BERBERIS THUNBERGII ROSY ROCKET PP18413	3 GAL. POT	BAR
8	SKYROCKET JUNIPERS	JUNIPERUS SCOPULORUM 'SKYROCKET'	4–5' HT. B&B	SKY
144	NORTHERN BAYBERRY	MYRICA PENSYLVANICA	24" HT. B&B	BAY
6	SWEET EMOTION ABELIA	ABELIA MOSANENSIS 'SMNAMDS' PP27370	24" HT. B&B	VIB
31	CENTRAL PARK ROSE	ROSA CENTRAL PARK	3 GAL. POT	LIL
64	SLOWMOUND MUGO PINE	PINUS MUGO 'SLOWMOUND'	3 GAL. POT	MUG
14	SPARTAN JUNIPERS	JUNIPERUS CHINENSIS 'SPARTAN'	5' HT B&B	SPA
33	GREEN GIANT ARBORVITAE	THUJA PLICATA 'GREEN GIANT'	5' HT B&B	GGA
32	ANNABELLE HYDRANGEA	HYDRANGEA ARBORESCENS 'ANNABELLE'	3 GAL. POT	HYD
32	BLUE POINT JUNIPER	JUNIPERUS CHINENSIS 'BLUE POINT'	5' HT B&B	BLU

TREES:

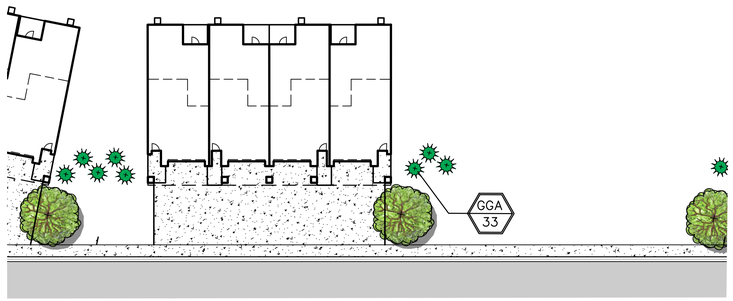
NO.	COMMON NAME	BOTANICAL NAME	SIZE	SYMBOL
24	REDBUD	CERCIS CANADENSIS	3" CAL. B&B	RB
32	SERVICEBERRY	AMELANCHIER C. x GRANDIFLORA	3" CAL. B&B	AM
64	JAPANESE, IVORY SILK	SYRINGA RETICULATA IVORY SILK	3" CAL. B&B	LI

NOTES
1. SEE L–100 FOR OVERALL COMMUNITY PLANT LAYOUT AND LEGEND. TYPICAL TOWNHOME LAYOUTS PLANTS ARE SEPARATE FROM OVERALL PLANT COUNTS AND DO NOT COUNT TOWARDS REPLACEMENT OR GREENBELT TOTALS.

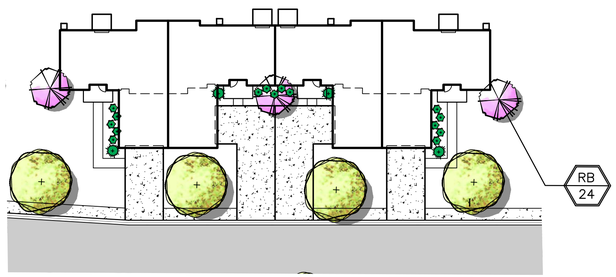
STACKED FLATS TYPICAL LAYOUT



TYPICAL SIGN & PILLAR LAYOUT



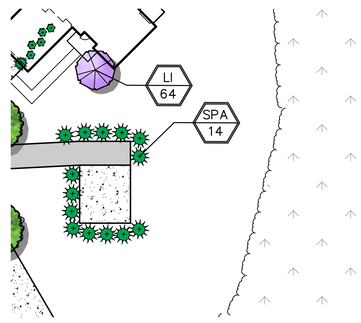
TOWNHOME TYPICAL LAYOUT



QUADPLEX TYPICAL LAYOUT



DUPLEX TYPICAL LAYOUT



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05/20/2025	STEEP SLOPE REVISIONS

Developed For:

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TAYLOR, MI 48180

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TYPICAL LANDSCAPE PLAN

BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

Date:	07.26.2024
Scale:	1"=30'
Sheet:	L-101
Project:	20249.00

H:\20\2020\20249.00 Brookwood Superior Twp\Design\CAD\Engineering Plans\L-101 Typical Landscape Plan.dwg

PLANT NOTES:

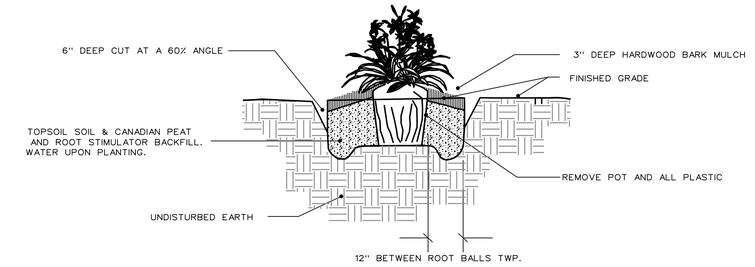
1. PLANT MATERIALS SHALL BE SOUND, HEALTHY, VIGOROUS, FREE FROM PLANT DISEASES AND INSECTS OR THEIR EGGS, AND SHALL HAVE NORMAL, HEALTHY ROOT SYSTEMS. CALIPER MEASUREMENTS SHALL BE TAKEN 6" ABOVE THE GROUND LEVEL. ALL OTHER MEASUREMENTS SHALL BE IN ACCORDANCE WITH THE LATEST EDITION OF "AMERICAN STANDARD FOR NURSERY STOCK" (ANSI Z-60.1 • A3002004.)
2. PLANTING BED SOIL FOR ANNUALS SHALL BE SCREENED TOPSOIL. TO DETER WEED GROWTH DURING THE ESTABLISHMENT OF ANNUAL & PERENNIAL BED, APPLY A PRE-EMERGENT ('PREEN' OR EQUAL) AFTER PLANTING ANNUALS, 2-3 TIMES PER GROWING SEASON, AT A RATE AS PER RECOMMENDATION OF PRODUCT MANUFACTURER.
3. PLANTING POCKETS SHALL BE NO DEEPER THAN THE HEIGHT OF THE ROOT BALL, SAUCER SHALL BE MADE ON THE EDGES OF PLANTING POCKET.
4. ALL TREE WRAP SHALL BE REMOVED UPON PLANTING.
5. MULCH SHALL BE SHREDDED HARDWOOD BARK, FREE FROM DELETERIOUS MATERIALS AND SUITABLE AS A TOP DRESSING OF PLANTING BEDS AND INDIVIDUAL TREE PLANTINGS.
6. TREES SHALL BE MULCHED WITH MIN. 3" DEEP HARDWOOD BARK MULCH AROUND PLANTS.
7. GRASS SEED SHALL BE CERTIFIED TURF GRASS SEED COMPLYING WITH A.S.P.A. SPECIFICATIONS, AND FREE OF WEED SEEDS AND UNDESIRABLE NATIVE GRASSES. SEEDED AREAS SHALL NO BE PERMITTED TO DRY OUT. ALL LAWN AREAS SHALL BE FERTILIZED AND WATERED AS REQUIRED DURING THE FIRST GROWING SEASON TO MAINTAIN A DENSE AND VIGOROUS GROWING LAWN.
8. PLANTS SHALL BE GUARANTEED FOR TWO COMPLETE GROWING SEASON (24 MONTHS). DEAD MATERIALS SHALL BE REPLACED AS NEEDED PRIOR TO THE EXPIRATION OF THE GUARANTEE PERIOD, IN ACCORDANCE WITH THE LOCAL ORDINANCE REQUIREMENTS.
9. CONTRACTOR SHALL PROVIDE IN WRITING A LIST OF RECOMMENDED MAINTENANCE PROCEDURES FOR THE FIRST TWO GROWING SEADON.
10. REMOVE TOP 1/3 OF BURLAP ON ROOT BALL OR ALL IF WRAPPED IN PLASTIC COVERING AND/OR ALL NYLON CORD.
11. PLANT MATERIALS SHALL BE USED IN COMPLIANCE WITH THE PROVISIONS OF THE LOCAL ORDINANCE AND SHALL BE NURSERY GROWN, FREE OF PESTS AND DISEASES, HARDY IN THIS COUNTY, IN CONFORMANCE WITH THE STANDARDS OF THE AMERICAN ASSOCIATION OF NURSERYMEN, AND SHALL HAVE PASSED INSPECTIONS REQUIRED UNDER STATE REGULATIONS. IN ADDITION, PLANT MATERIALS SHALL CONFORM TO THE STANDARDS OF COUNTY COOPERATIVE EXTENSION SERVICE.

GENERAL NOTES:

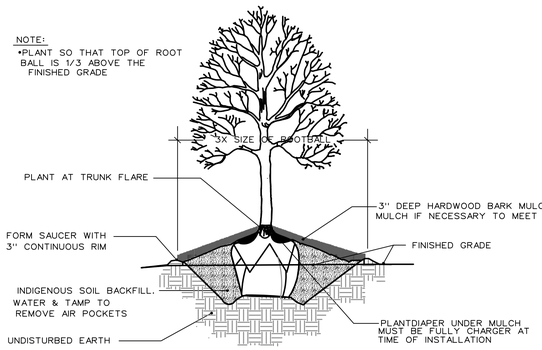
1. ALL CONSTRUCTION SHALL CONFORM TO THE CURRENT STANDARDS AND SPECIFICATIONS OF LOCAL ORDINANCES.
2. ALL AREAS NOT BUILT, LANDSCAPED, OR PAVED UPON SHALL BE SEEDED OR SODDED. TERRA SEED SYSTEM OR APPROVED EQUAL IS ENCOURAGED.
3. TWO YEAR GUARANTEE PERIOD BEGINS AT FINAL INSPECTION OF LANDSCAPE MATERIAL BY THE TOWNSHIP'S REPRESENTATIVE A LANDSCAPE ARCHITECT OR NURSERYMAN.
4. BUILDING DEPARTMENT WILL NOT RELEASE CONSTRUCTION BONDS UNTIL TOWNSHIP APPROVED LANDSCAPE ARCHITECT OR NURSERYMAN HAS INSPECTED THE SITE AND APPROVED THE INSTALLATION OF LANDSCAPE PLANS. FINAL BOND WILL NOT BE RELEASED UNTIL THE TWO YEAR GUARANTEE EXPIRES AND FINAL INSPECTION IS MADE.
5. OWNER IS THEN RESPONSIBLE FOR CARE AND MAINTAINCE OF ALL PLANTS UPON RETURN OF BONDS. ALL PLANT MATERIAL IS TO BE MAINTAINED FOR THE NATURAL LIFE OF THE PLANT. NO REMOVAL OF ANY PLANT MATERIAL IS PERMITTED WITHOUT REPLACEMENT.
6. ALL LAWN AREAS SHALL BE IRRIGATED WITH AN UNDERGROUND, AUTOMATIC IRRIGATION SYSTEM. IRRIGATION HEADS SHALL BE PLACED SUCH THAT WATER WILL NOT HIT ANY HARD STRUCTURES OR SURFACES.

LANDSCAPE CONTRACTOR'S "TWO-YEAR IRRIGATION REQUIREMENT PERIOD"

IT SHALL BE THE RESPONSIBILITY OF THE LANDSCAPE CONTRACTOR TO PROGRAM AND PERIODICALLY ADJUST THE IRRIGATION SYSTEM (PROVIDED BY OTHERS) AS REQUIRED TO INSURE DELIVERY OF PROPER AND ADEQUATE WATER SUPPLY TO ALL PLANT MATERIAL, AND SEEDED LAWN AREAS (SERVICED BY THE IRRIGATION SYSTEM) TO INSURE THE ESTABLISHMENT OF HEALTHY PLANT MATERIALS AND LAWNS FOR THEIR FIRST YEAR OF GROWTH. FOLLOWING THE LANDSCAPE CONTRACTOR'S "TWO-YEAR IRRIGATION REQUIREMENT PERIOD". THE LANDSCAPE CONTRACTOR SHALL PROVIDE THE OWNER WITH A SUGGESTED "IRRIGATION MAINTENANCE SCHEDULE" FOR THEIR USE.



PERENNIAL PLANTING DETAIL
NO SCALE



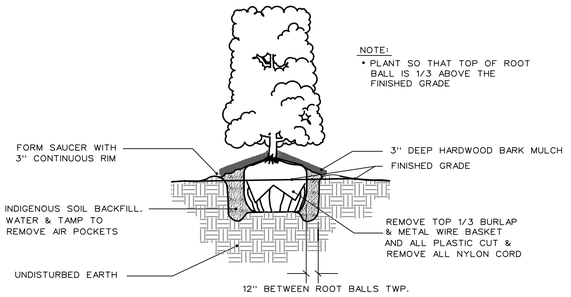
TREE / SHRUB PLANT DIAPER DETAIL
NO SCALE

TWO OPTIONS FOR NO DRIP IRRIGATION:
IRRIGATION IS NECESSARY WHEN NATURAL RAIN FALL IS LESS THAN 1" OF RAINFALL PER MONTH.
A) PLANTDIAPERS CAN BE RECHARGED WITH WATER BY DIGGING THEM UP AND RECHARGING THEM IN A BUCKET OF WATER AT NIGHT. THEN REINSTALLED UNDER THE RING OF MULCH. THIS RECHARGED PLANTDIAPER SHOULD LAST UP TO A MONTH.

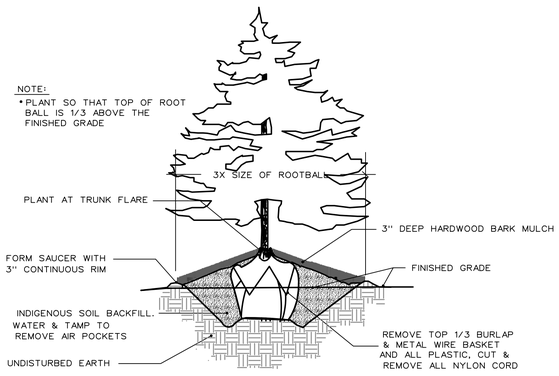
B) SECOND OPTION IS TO WATER EACH TREE FOR 2 MINUTES PER DAY FOR A WEEK DURING A DROUGHT. MAINTENANCE OF THE PLANTDIAPER VERSUS A TRADITIONAL TREE WATERING BAG INVOLVES CHECKING SOIL MOISTURE RATHER JUST USING LOTS OF WATER TO REFILL. NORMAL WATERING OR TRADITIONAL TREE BAGS HAVE A LOT OF WATER THAT ENDS UP BEING EVAPORATED OR NOT USED EFFICIENTLY TO WATER THE TREE.

FERTILIZATION:
FERTILIZERS IN SOIL UNDER PLANTDIAPER IS HIGHLY RECOMMENDED AND IT WILL CAUSE LESS POLLUTION AND RUNOFF. KNOW WHAT INGREDIENTS IN THE FERTILIZER YOU ARE USING. ALL ORGANIC FERTILIZERS ARE ACCEPTABLE.

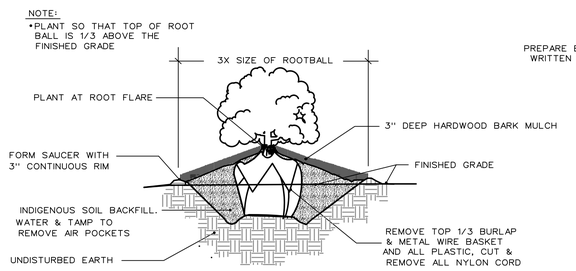
FERTILIZERS TO CONSIDER:
- •N: UREA (THE LARGEST AGRICULTURAL NITROGEN FERTILIZER) SUCH AS AMMONIUM AND AMMONIUM NITRATE ARE FINE.
- •P: MONO-AMMONIUM PHOSPHATE, DI-AMMONIUM PHOSPHATE AND AMMONIUM PHOSPHATE. AT HIGH CONCENTRATION, IT MAY TEMPORARILY REDUCE WATER HOLDING CAPACITY. BUT IT CAN BE RECOVERED RATHER QUICKLY.
- •K: POTASSIUM CHLORIDE, POTASSIUM SULFATE, AND POTASSIUM NITRATE. AT HIGH CONCENTRATION, IT MAY TEMPORARILY REDUCE WATER HOLDING CAPACITY. BUT IT CAN BE RECOVERED RATHER QUICKLY.
- AVOID FERTILIZERS OR ADDITIVES CONTAINING METAL IRONS OTHER THAN GROUP I (ALKALI METALS) SUCH AS ALUMINUM, IRON, CALCIUM, MAGNESIUM, WHICH ARE COMMON IN MANY MIXED TYPE FERTILIZERS.



SHRUB HEDGE PLANTING DETAIL
NO SCALE



EVERGREEN TREE PLANTING DETAIL
NO SCALE



SHRUB PLANTING DETAIL
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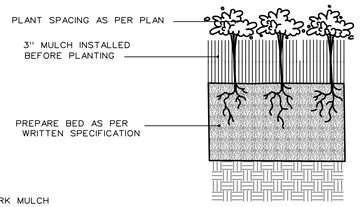

GROUNDCOVER PLANTING DETAIL
NO SCALE

LAWN SEED MIX:

30% PERENNIAL RYGRASS
20% PARK KENTUCKY BLUEGRASS
45% CREEPING RED FESCUE
5% ANNUAL RYEGRASS
4#/1000 S.F. SEEDING RATE

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Developed For:

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chris@livegpm.com
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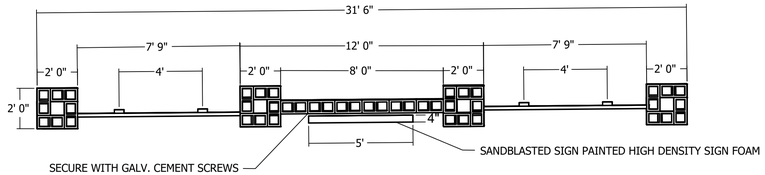
LANDSCAPE DETAILS

BROOKWOOD SUPERIOR TOWNSHIP
SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

Date:	07.26.2024
Scale:	NTS
Sheet:	L-102
Project:	20249.00

H:\20\20200\20249.00 Brookwood Superior Twp\Design\CAD\Engineering Plans\L-101 Typical Landscape Plan.dwg



SIGN WALL DETAIL
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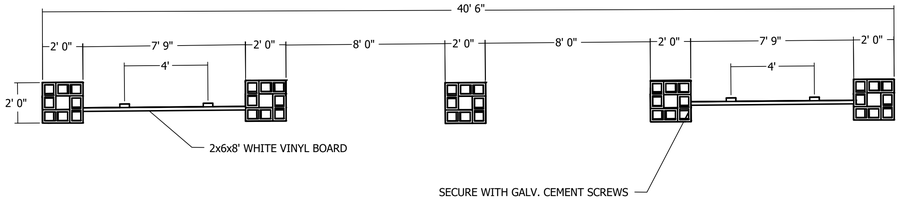

BLOCK PILLARS DETAIL
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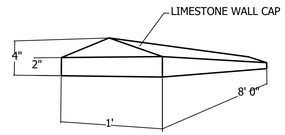

WALL CAP DETAIL
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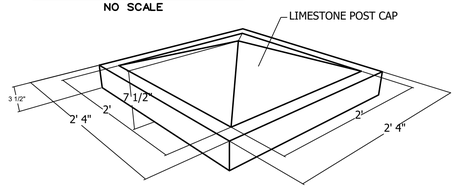

PILLAR CAP DETAIL
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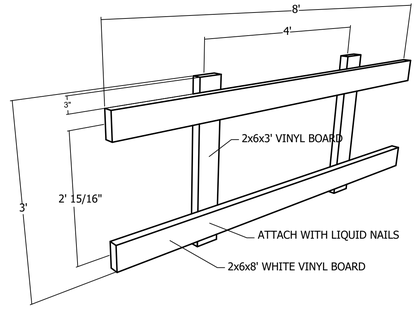

FENCE SECTION DETAIL
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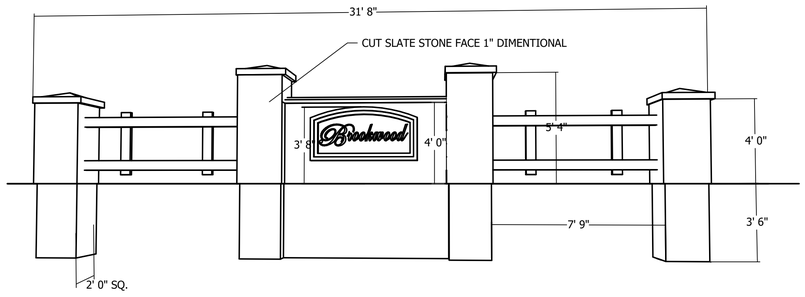
SIGN DETAIL
A NO SCALE



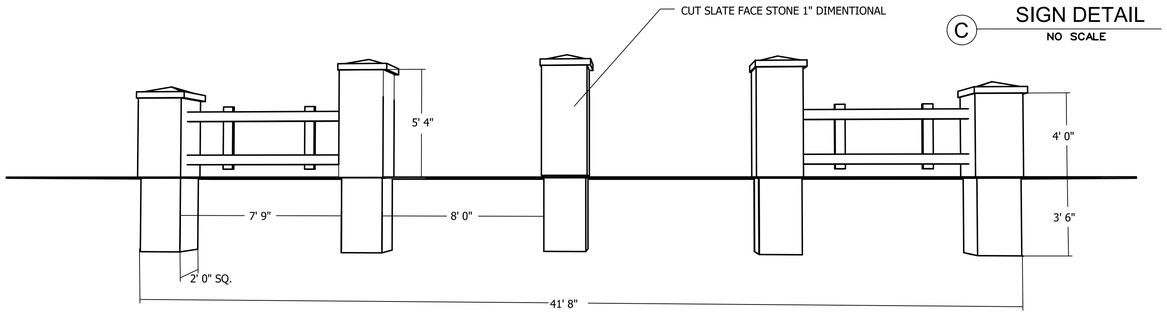
SIGN DETAIL
B NO SCALE



SIGN DETAIL
C NO SCALE



SIGN WALL & PILLAR ELEVATION
NO SCALE



STONE PILLARS ELEVATION
NO SCALE

SIGN NOTES:

EXTERNAL SIGN ILLUMINATION SHALL BE PERMITTED, SUBJECT TO SECTION 9.02.G.1 STANDARDS.

A. THE LIGHT SOURCE(S) SHALL BE FULLY SHIELDED TO PREVENT UPWARD ILLUMINATION OR GLARE, DIRECTED TOWARDS THE SIGN FACE, AND DESIGNED TO CONCENTRATE ALL LIGHT ON THE SIGN COPY AREA.

B. THE LIGHT SOURCE(S) SHALL BE ARRANGED AND SHADED SO AS NOT TO PROJECT ONTO THE PUBLIC RIGHT-OF-WAY AND INTERFERE WITH TRAFFIC OR PROJECT ONTO ADJACENT PROPERTY.



SIGN WALL & PILLAR CONCEPT
NO SCALE



STONE PILLARS CONCEPT
NO SCALE

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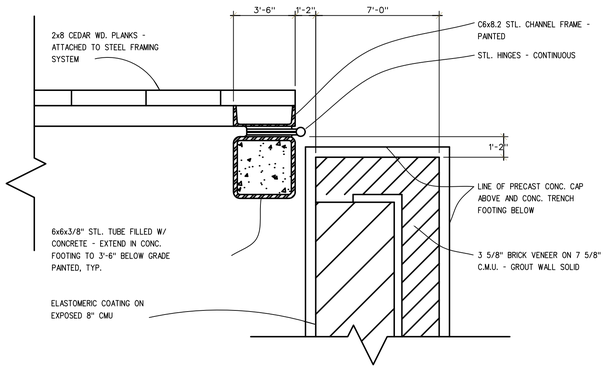
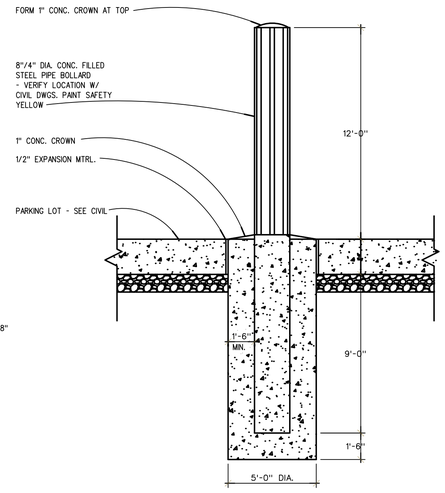


DUMPSTER ENCLOSURE - PLAN DETAIL

SCALE: 1 1/2" = 1'-0"



GUARD POST DETAIL

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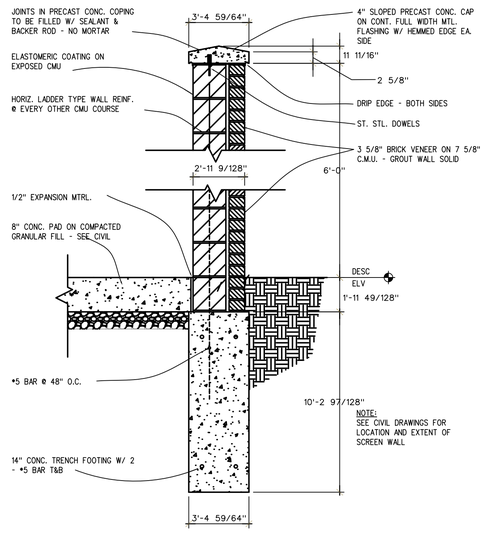

DUMPSTER ENCLOSURE - WALL SECTION

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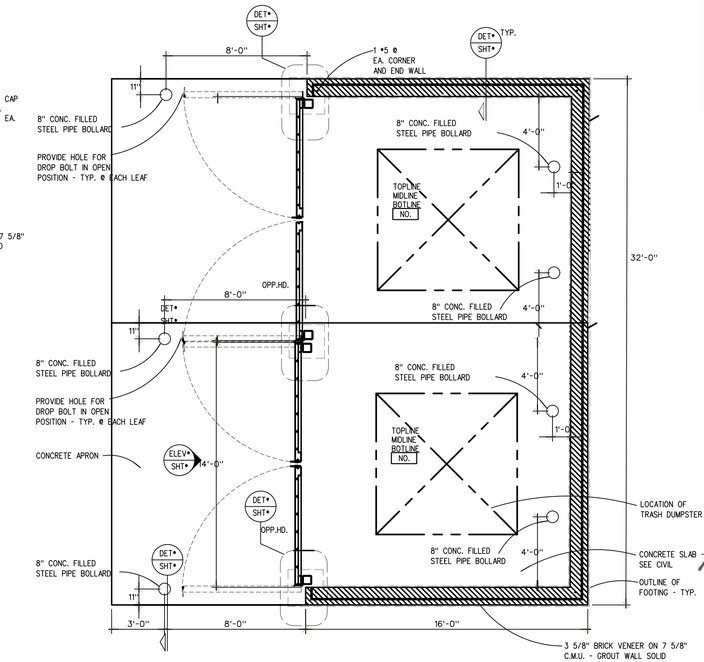

DOUBLE DUMPSTER ENCLOSURE DETAIL

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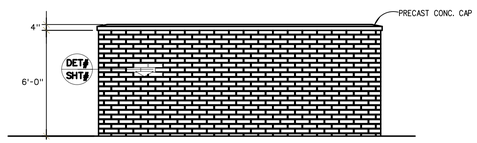
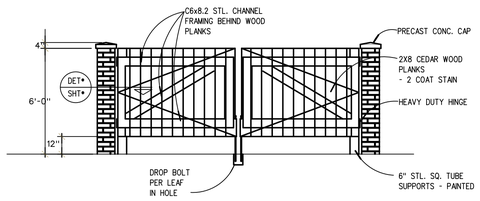


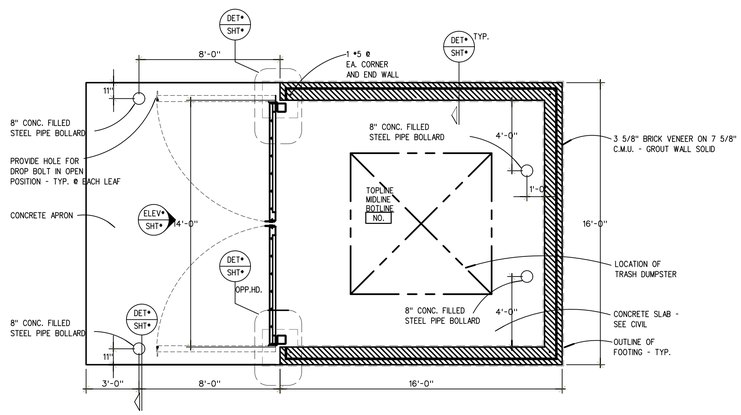
DUMPSTER ENCLOSURE - SIDE ELEVATION

SCALE: 1/4" = 1'-0"



DUMPSTER ENCLOSURE - FRONT ELEVATION

SCALE: 1/4" = 1'-0"



DUMPSTER ENCLOSURE DETAIL

SCALE: 1/4" = 1'-0"

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05/06/2025	SESC SUBMITTAL
05/13/2025	FSP LANDSCAPE REVISIONS
05/20/2025	STEEP SLOPE REVISIONS

Developed For:

GARNER PROPERTY MANAGEMENT

23944 EUREKA ROAD, SUITE 105
TAYLOR, MI 48180

chris@livegpm.com
(734) 287-6619

DUMPSTER DETAILS

BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

Date:	07.26.2024
Scale:	NTS
Sheet:	L-104
Project:	20249.00

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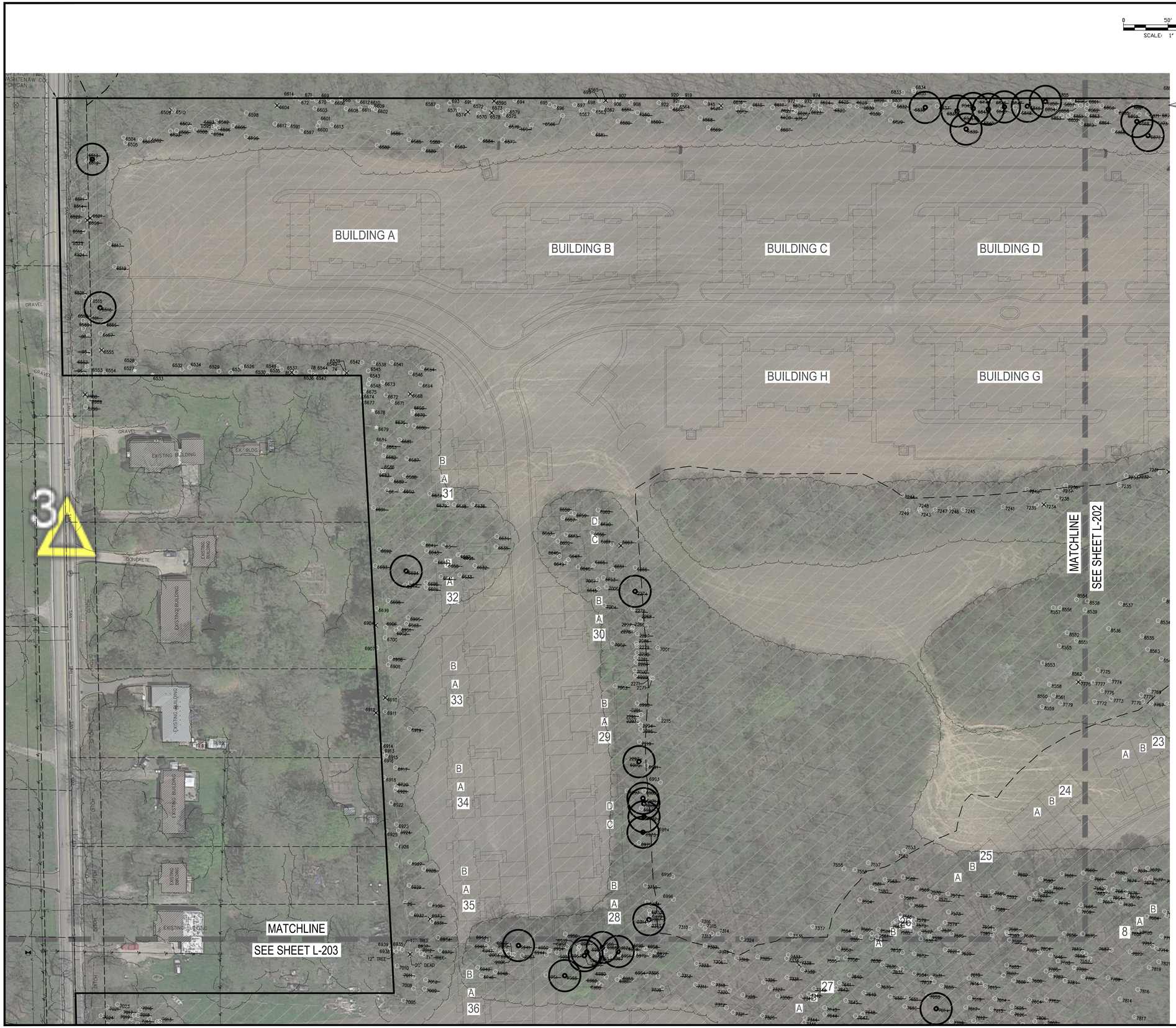

KEY MAP
NOT TO SCALE

LEGEND

- 6000 — EX TREE & TAG #
- 6000 — EX DEAD TREE & TAG #
- 6000 — EX TREE TO BE REMOVED
- EX WETLAND BOUNDARY
- EXISTING TREE LINE
- PR GRADING LIMITS
- PR GRADING AREA
- INVASIVE UNDERSTORY REMOVAL AREAS (REMOVE PER ORDINANCE REQUIREMENTS)
- LANDMARK TREES TO BE REMOVED
- NO SOVEREIGN TREES TO BE REMOVED

NOTES

1. TREE SURVEY PERFORMED BY GIFFELS WEBSTER IN SUMMER OF 2024
2. SEE SHEETS L-204 & L-205 FOR TREE LIST AND REPLACEMENT CALCULATIONS
3. NO TREES SHALL BE REMOVED FOR AMENITY PATH
4. SITE HAS LESS THAN LESS THAN 5% OF THE SITE GROWING WITH TOWNSHIP RECOGNIZED INVASIVE SPECIES. A SMALL AMOUNT OF GLOSSY BUCKTHORN, AND HONEYSUCKLE ARE GROWING ALONG THE EDGES OF THE INFECTED AREAS INDICATED ON THE LANDSCAPE PLANS.
5. REMOVAL SHALL BE DONE BY HAND. NO TRACKED OR MOTORIZED VEHICLES OR MACHINERY SHALL BE PERMITTED WITHIN THIS AREA. PLAN FOR ERADICATING AND CONTROLLING THE INVASIVES.

giffels webster

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Surveyors
Planners
Landscape Architects

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Executive:	AW
Manager:	JR
Designer:	JR / AR
Quality Control:	-
Section:	33
	T-02-S R-07-E

Professional Seal:

STATE OF MICHIGAN
MARK JON HANSEN
LANDSCAPE ARCHITECT
1276
LANDSCAPE ARCHITECT

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DATE:	ISSUE:
11/18/2024	FINAL SITE PLAN SUBMITTAL
01/17/2025	WCRC RESUBMITTAL
02/28/2025	WCWRC RESUBMITTAL
05/01/2025	WCWRC RESUBMITTAL
05/05/2025	TOWNSHIP FSP RESUBMITTAL
05/06/2025	SESC SUBMITTAL
05/13/2025	FSP LANDSCAPE REVISIONS
05/20/2025	STEEP SLOPE REVISIONS

Developed For:

GARNER PROPERTY MANAGEMENT

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TREE REMOVAL PLAN

BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

Date:	07.26.2024
Scale:	1"=50'
Sheet:	L-201
Project:	20249.00

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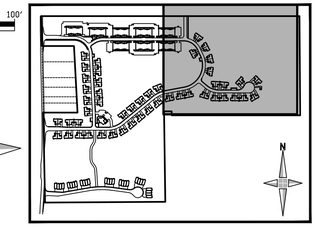
0 50' 100'
SCALE: 1" = 50'



KEY MAP
NOT TO SCALE

LEGEND

- 6000 — EX TREE & TAG #
- 6000 — EX DEAD TREE & TAG #
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- EX WETLAND BOUNDARY
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Quality Control:	-
Section:	33
	T-02-S R-07-E

Professional Seal:

STATE OF MICHIGAN
MARK JON HANSEN
LANDSCAPE ARCHITECT
1278
REGISTERED LANDSCAPE ARCHITECT

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Developed For:

GARNER PROPERTY MANAGEMENT

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TREE REMOVAL PLAN

BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
MICHIGAN

Date:	07.26.2024
Scale:	1"=50'
Sheet:	L-202
Project:	20249.00

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KEY MAP

NOT TO SCALE

LEGEND

- EX TREE & TAG #
- EX DEAD TREE & TAG #
- EX TREE TO BE REMOVED
- EX WETLAND BOUNDARY
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TREE REMOVAL PLAN

BROOKWOOD SUPERIOR TOWNSHIP

SUPERIOR TWP.
WASHTENAW COUNTY
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Date:	07.26.2024
Scale:	1"=50'
Sheet:	L-203
Project:	20249.00

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POINT NO.	ELEVATION	TAG NO.	COMMON NAME	BOTANICAL NAME	DBH	CONDITION	REGULATED TREE REPLACEMENTS	LANDMARK TREE REPLACEMENTS	SOVEREIGN TREE	INTENTION
200	801.32	6506	Black Locust	Robinia pseudoacacia	8"ms	4				Removed
201	801.04	6503	Black Locust	Robinia pseudoacacia	7"	4				Removed
202	801.42	6507	Black Locust	Robinia pseudoacacia	9"	4				Removed
203	801.56	6508	Black Locust	Robinia pseudoacacia	9"	4				Removed
204	799.95	6509	Silver Maple	Acer saccharinum	01⊞"	4				Removed
205	802.41	6510	Dead	Dead	14"	0				Removed
206	800.74	6602	Black Locust	Robinia pseudoacacia	8"ms	4				Removed
207	800.79	6501	Dead	Dead	12"	0				Removed
208	800.35	6505	Shagbark Hickory	Carya ovata	9"	5	1			Removed
209	799.91	6504	Black Locust	Robinia pseudoacacia	8"	4				Removed
210	800.05	6512	Black Walnut	Juglans nigra	17"	5		1		Removed
211	800.60	6513	Black Walnut	Juglans nigra	30"	3		30		Removed
212	803.43	6514	Black Cherry	Juglans nigra	21"	5		21		Removed
213	804.44	6514	Black Cherry	Prunus serotina	12"	5	1			Removed
214	804.56	6522	Dead	Dead	10"	0				Removed
215	805.94	6520	Black Locust	Robinia pseudoacacia	9"	5				Removed
216	806.46	6521	Dead	Dead	12"	0				Removed
217	806.92	6518	Hackberry	Celtis occidentalis	14"	4	1			Removed
218	807.63	6517	Hackberry	Celtis occidentalis	7"	4	1			Removed
219	808.97	6524	Hackberry	Celtis occidentalis	7"	4	1			Removed
220	807.52	6523	Shagbark Hickory	Carya ovata	9"	5	1			Removed
221	811.76	6519	Ash	Fraxinus americana	32"	3		12		Removed
222	814.56	6516	Red Oak	Quercus rubra	28"	5		28		Removed
223	815.36	6515	Ash	Fraxinus americana	8"	3				Removed
224	812.24	6525	Black Walnut	Juglans Nigra	8"	4	1			Removed
225	810.12	6528	Red Pine	Pinus resinosa	8"	4	1			Removed
226	809.74	6527	Elm	Ulmus americana	6"	4	1			Removed
227	809.57	6533	Black Walnut	Juglans nigra	8"	4	1			Removed
228	809.46	6532	Black Walnut	Juglans nigra	7"	4	1			Removed
229	809.74	6534	Red Pine	Pinus resinosa	7"	4	1			Removed
230	808.97	6529	Black Walnut	Juglans nigra	8"	3	1			Removed
231	808.93	6531	Scotch Pine	Pinus sylvestris	13"	2				Removed
232	809.06	6535	Dead	Dead	07⊞"	0				Removed
233	809.05	6530	Black Walnut	Juglans nigra	8"	3	1			Removed
234	809.08	6549	Silver Maple	Acer saccharinum	14"	4				Removed
235	808.66	6535	Elm	Ulmus americana	7"	4	1			Removed
236	808.84	6536	Dead	Dead	12"	0				Removed
237	808.64	6537	Elm	Ulmus americana	8"	2				Removed
238	808.53	78	Elm	Ulmus americana	12"	3	1			Removed
239	808.45	6536	Elm	Ulmus americana	7"	3	1			Removed
240	808.47	6547	Black Walnut	Juglans nigra	7"	4	1			Removed
241	808.30	6544	Elm	Ulmus americana	7"	4	1			Removed
242	808.31	74	Black Walnut	Juglans nigra	9"	4	1			Removed
243	808.22	6540	Dead	Dead	13"	0				Removed
244	808.20	6539	Black Locust	Robinia pseudoacacia	7"	5				Removed
245	808.25	6542	Black Locust	Robinia pseudoacacia	7"	4				Removed
246	808.29	6545	Silver Maple	Acer saccharinum	14"	4				Removed
247	808.29	6543	Dead	Dead	12"	0				Removed
248	808.29	6543	Black Walnut	Juglans nigra	8"	4	1			Removed
249	808.23	6548	Boxelder	Acer negundo	25"	3				Removed
250	807.95	6541	Dead	Dead	13"	0				Removed
251	808.15	6546	Dead	Dead	13"	0				Removed
252	810.16	6554	Hackberry	Celtis occidentalis	6"	5	1			Removed
253	809.99	6553	Hackberry	Celtis occidentalis	6"	5	1			Removed
254	810.04	6552	Black Locust	Robinia pseudoacacia	13"	5				Removed
255	809.90	96	Black Walnut	Juglans nigra	10"	4	1			Removed
256	810.71	98	Basswood	Tilia americana	14"	5				Removed
257	811.44	6555	Hackberry	Celtis occidentalis	12"	5	1			Removed
258	811.42	6557	Elm	Ulmus americana	8"	4	1			Removed
259	812.20	99	Black Walnut	Juglans nigra	21"	5		21		Removed
260	812.36	101	Black Locust	Robinia pseudoacacia	8"	3	1			Removed
261	811.52	6559	Basswood	Tilia americana	17⊞"	4				Removed
262	810.54	6558	Elm	Ulmus americana	7"	4	1			Removed
263	813.71	6556	Dead	Dead	8"	0				Removed
264	813.94	697	Hackberry	Celtis occidentalis	11"	4	1			Removed
265	811.59	696	Black Walnut	Juglans nigra	21"	4		21		Removed
266	810.81	695	Black Walnut	Juglans nigra	15"	4	1			Removed
267	811.78	6567	Elm	Ulmus americana	12"	5				Removed
268	810.75	698	Black Walnut	Juglans nigra	8"	4	1			Removed
269	811.78	6563	Dead	Dead	10"	0				Removed
270	811.02	699	Ash	Fraxinus americana	4"	4				Removed
271	812.33	6562	Red Oak	Quercus rubra	15"	3				Removed
272	811.04	6565	Elm	Ulmus americana	6"	3	1			Removed
273	811.13	906	Black Walnut	Juglans nigra	7"	4	1			Removed
274	811.13	907	Black Walnut	Juglans nigra	6"	4	1			Removed
275	811.57	6580	Black Walnut	Juglans nigra	12"	4	1			Removed
276	811.57	908	Hackberry	Celtis occidentalis	6"	4	1			Removed
277	811.57	6551	Elm	Ulmus americana	7"	3	1			Removed
278	812.93	6550	Black Walnut	Juglans nigra	13"	5	1			Removed
279	813.00	6560	Elm	Ulmus americana	12"	5	1			Removed
280	811.33	922	Ash	Fraxinus americana	8"	4				Removed
281	812.84	6564	Dead	Dead	12"	0				Removed
282	812.24	6564	Black Walnut	Juglans nigra	8"	4	1			Removed
283	812.32	921	Red Oak	Quercus rubra	10"	5	1			Removed
284	813.20	920	Red Oak	Quercus rubra	10"	5	1			Removed
285	812.27	919	Red Oak	Quercus rubra	10"	4	1			Removed
286	813.07	945	Silver Maple	Acer saccharinum	9"	5				Removed
287	813.74	6568	Black Walnut	Juglans nigra	7"	4	1			Removed
288	813.36	6569	Black Walnut	Juglans nigra	8"	4	1			Removed
289	813.25	6581	Hackberry	Celtis occidentalis	7"	4	1			Removed
290	811.44	169	Black Walnut	Juglans nigra	8"	4	1			Removed
291	809.91	6579	Dead	Dead	14"	0				Removed
292	810.13	6575	Dead	Dead	12"	0				Removed
293	810.00	6573	Black Walnut	Juglans Nigra	7"	4	1			Removed
294	810.62	6576	Black Walnut	Juglans Nigra	8"	4	1			Removed
295	810.57	6574	Black Walnut	Juglans Nigra	7"	4	1			Removed
296	810.51	6572	Black Walnut	Juglans Nigra	8"	4	1			Removed
297	810.97	6584	Black Walnut	Juglans nigra	7"	5	1			Removed
298	809.59	6577	Dead	Dead	10"	0				Removed
299	809.62	6570	Black Walnut	Juglans nigra	6"	0				Removed
300	809.72	6574	Black Walnut	Juglans nigra	6"	4	1			Removed
301	809.23	6571	Black Walnut	Juglans nigra	7"	3	1			Removed
302	808.73	693	Black Cherry	Prunus serotina	24"	4		24		Removed
303	808.32	6587	Black Walnut	Juglans nigra	11"	4	1			Removed
304	810.99	6583	Hackberry	Celtis occidentalis	9"	4	1			Removed
305	810.67	6588	Elm	Ulmus americana	8"	4	1			Removed
306	808.56	694	Black Walnut	Juglans nigra	21"	4		21		Removed
307	808.56	6590	Black Walnut	Juglans nigra	7"	3	1			Removed
308	808.30	691	Dead	Dead	10"	0				Removed
309	811.69	6566	Dead	Dead	12"	0				Removed
310	810.69	6589	Black Walnut	Juglans nigra	6"	4	1			Removed
311	809.70	6585	Black Walnut	Juglans nigra	13"	4	1			Removed
312	808.81	9586	Black Walnut	Juglans nigra	7"	3	1			Removed
313	808.46	6582	Black Walnut	Juglans nigra	7"	4	1			Removed
314	807.05	6602	Black Locust	Robinia pseudoacacia	8"	4				Removed
315	806.96	6603	Dead	Dead	12"	0				Removed
316	806.78	6610	Dead	Dead	8"	0				Removed
317	806.95	6611	Elm	Ulmus americana	6"	3	1			Removed
318	806.28	6612	Hackberry	Celtis occidentalis	7"	4	1			Removed
319	806.40	6608	Dead	Dead	10"	0				Removed
320	804.97	668	Black Locust	Robinia pseudoacacia	10"	4	1			Removed
321	804.95	669	Black Locust	Robinia pseudoacacia	12"	3				Removed
322	805.20	6600	Boxelder	Acer negundo	12"	3				Removed
323	806.20	6601	Black Locust	Robinia pseudoacacia	9"	4				Removed
324	806.32	6600	Elm	Ulmus americana	8"	4	1			Removed
325	806.70	6613	Elm	Ulmus americana	6"	4	1			Removed
326	805.68	6603	Dead	Dead	12"	0				Removed
327	804.62	670	Dead	Dead	13"	0				Removed
328	803.54	671	Dead	Dead	12"	0				Removed
329	803.24	672	Elm	Ulmus americana	6"	4	1			Removed
330	803.15	6614	Black Locust	Robinia pseudoacacia	6"	4	1			Removed
331	805.18	6591	Dead	Dead	14"	0				Removed
332	805.21	6597	Boxelder	Acer negundo	6"	3				Removed
333	804.46	6592	Dead	Dead	12"	0				Removed
334	803.01	6604	Elm	Ulmus americana	6"	4	1			Removed
335	802.92	6598	Elm	Ulmus americana	6"	4	1			Removed
336	803.58	6599	Black Walnut	Juglans nigra	12"	4	1			Removed
337	803.04	6605	Dead	Dead	12"	0				Removed
338	802.10	6596	Black Cherry	Prunus serotina	8"	4	1			Removed
339	802.10	6593	Black Walnut	Juglans nigra	8"	4	1			Removed
340	802.14	6593	Boxelder	Acer negundo	6"	3				Removed
341	802.26	6595	Black Locust	Robinia pseudoacacia	6"	4	1			Removed
342	802.16	6594	Black Walnut	Juglans nigra	9"	4	1			Removed
343	814.45	6624	Dead	Dead	12"	0				Removed
344	814.24	6623	Shagbark Hickory	Carya ovata	12"	4	1			Removed
345	814.40	975	Red Oak	Quercus rubra	9"	4	1			Removed
346	814.40	974	Red Oak	Quercus rubra	9"	4	1			Removed
347	814.32	973	Red Oak	Quercus rubra	12"	4	1			Removed
348	814.25	972	Dead	Dead	12"	0				Removed
349	814.55	6626	Black Walnut	Juglans nigra	14"	4	1			Removed
350	814.99	6627	Red Oak	Quercus rubra	12"	4	1			Removed
351	814.53	6629	Black Walnut	Juglans nigra	10"	4	1			Removed
352	814.47	6619	Black Walnut	Juglans nigra	8"	4	1			Removed
353	813.93	6607	Dead	Dead	6"	0				Removed
354	814.14	6618	Black Locust	Robinia pseudoacacia	13"	4				Removed
355	814.01	6616	Black Walnut	Juglans nigra	17"	2				Removed
356	813.61	6615	Dead	Dead	10"	0				Removed
357	813.55	6621	Elm	Ulmus americana	8"	4	1			Removed
358	814.45	6620	Black Walnut	Juglans nigra	13"	4	1			Removed
359	813.89	6617	Dead	Dead	10"	0				Removed
360	813.82	6625	Black Walnut	Juglans nigra	15"	4	1			Removed
361	813.82	6628	Red Oak	Quercus rubra	10"	4	1			Removed
362	813.38	6630	Red Oak	Quercus rubra	8"	4	1			Removed
363	809.57	6631	Black Walnut	Juglans nigra	6"ms	4	1			Removed
364	810.28	6639	Black Walnut	Juglans nigra	7"	4	1			Removed
365	810.40	6638	Black Walnut	Juglans nigra	7"	4	1			Removed
367	810.45	6636	Elm	Ulmus americana	9"	3	1			Removed
368	808.71	6634	Black Walnut	Juglans nigra	7"	4	1			Removed
369	809.16	6635	Black Walnut	Juglans nigra	9"	2				Removed
370	808.58	6640	Black Walnut	Juglans nigra	8"	4	1			Removed
371	808.20	6632	Boxelder	Acer negundo	7"	3				Removed
372	808.68	6631	Dead	Dead	18"	0				Removed
373	808.97	6641	Black Walnut	Juglans nigra	8"	4	1			Removed
374	809.40	63	Apple	Malus	6"ms	3				Removed
375	808.84	6650	Black Walnut	Juglans nigra	6"	4	1			Removed
376	808.53	6643	Black Walnut	Juglans nigra	8"	4	1			Removed
377	808.96	6640	Black Walnut	Juglans nigra	8"	4	1			Removed
378	809.16	6643	Boxelder	Acer negundo	9"	2				Removed
379	809.17	6644	Black Walnut	Juglans nigra	8"	4	1			Removed
380	804.46	6646	Black Walnut	Juglans nigra	12"	3	1			Removed
381	805.05	6645	Black Walnut	Juglans nigra	12"	4	1			Removed
382	805.15	6647	Elm	Ulmus americana	6"	4	1			Removed
383	805.31	6649	Hackberry	Celtis occidentalis	6"	5	1			Removed
384	803.85	6645	Boxelder	Acer negundo	9"	3				Removed
385	802.03	6663	Black Walnut	Juglans nigra	7"	4	1			Removed
386	802.06	6662	Black Walnut	Juglans nigra	7"	4	1			Removed
387	802.03	6651	Black Walnut	Juglans nigra	9"	5	1			Removed
388	800.78	6666	Elm	Ulmus americana	7"	3	1			Removed
389	803.65	6661	Hackberry	Celtis occidentalis	14"	4	1			Removed
390	802.95	6667	Black Walnut	Juglans nigra	7"	4	1			Removed
391	804.54	6656	Black Walnut	Juglans nigra	7"	5	1			Removed
392	804.47	6660	Black Walnut	Juglans nigra	7"	4	1			Removed
393	804.85	6662	Black Walnut	Juglans nigra	16"	4	1			Removed
394	803.16	6659	Hackberry	Celtis occidentalis	7"	4	1			Removed
395	806.30	6658	Black Walnut	Juglans nigra	8"	4	1			Removed
396	806.43	6653	Black Walnut	Juglans nigra	7"	4	1			Removed
397	805.67	6655	Black Walnut	Juglans nigra	8"	4	1			Removed
398	806.23	6653	Black Walnut	Juglans nigra	12"	4	1			Removed

POINT NO.	ELEVATION	TAG NO.	COMMON NAME	BOTANICAL NAME	DBH	CONDITION	REGULATED TREE REPLACEMENTS	LANDMARK TREE REPLACEMENTS	SOVEREIGN TREE	INTENTION
399	806.24	6652	Black Walnut	Juglans nigra	7"	4	1			Removed
400	807.87	6654	Black Walnut	Juglans nigra	9"	4	1			Removed
401	807.47	6664	Black Walnut	Juglans nigra	6"	5	1			Removed
402	807.55	6668	Dead	Dead	13"	0				Removed
403	807.63	6669	Dead	Dead	13"	0				Removed
404	807.62	6670	Boxelder	Acer negundo	12"	2				Removed
405	808.40	6671	Boxelder	Acer negundo	9"	4				Removed
406	807.93	6672	Black Walnut	Juglans nigra	12"	4	1			Removed
407	807.96	6673	Black Walnut	Juglans nigra	8"	4	1			Removed
408	808.34	6675	Red Pine	Pinus resinosa	9"	4	1			Removed
409	807.46	6674	Black Walnut	Juglans nigra	8"	4	1			Removed
410	808.15	6678	Red Pine	Pinus resinosa	9"	5	1			Removed
411	808.01	6676	Black Walnut	Juglans nigra	8"	4	1			Removed
412	808.11	6677	Boxelder	Acer negundo	12"	3				Removed
413	807.50	6680	Black Walnut	Juglans nigra	8"	4	1			Removed
414	807.04	6676	Black Walnut	Juglans nigra	8"	4	1			Removed
415	807.82	6681	Black Walnut	Juglans nigra	13"	4	1			Removed
416	807.77	6684	Black Walnut	Juglans nigra	7"	4	1			Removed
417	808.36	6685	Black Walnut	Juglans nigra	12"	5	1			Removed
418	808.79	6682	Black Walnut	Juglans nigra	12"	0				Removed
419	808.78	6683	Black Walnut	Juglans nigra	12"	0				Removed
420	809.32	6686	Black Cherry	Juglans nigra	7"	4	1			Removed
421	810.02	6683	Black Walnut	Juglans nigra	7"	4	1			Removed
422	808.50	6687	Black Walnut	Juglans nigra	8"	4	1			Removed
423	809.05	6688	Black Walnut	Juglans nigra	11"ms	5	1			Removed
424	809.51	6689	Boxelder	Acer negundo	10"	4				Removed
425	810.04	66	Elm	Ulmus americana	11"	2				Removed
426	810.83	6690	Black Walnut	Juglans nigra	8"	4	1			Removed
427	810.83	6691	Black Walnut	Juglans nigra	12"	4	1			Removed
428	809.68	6692	Black Walnut	Juglans nigra	6"	4	1			Removed
429	809.02	6693	Black Walnut	Juglans nigra	9"	4	1			Removed
430	807.99	6698	Black Walnut	Juglans nigra	8"	5	1			Removed
431	807.82	6699	Black Walnut	Juglans nigra	17"ms	3				Removed
433	808.01	6694	Black Cherry	Prunus serotina	13"	3	1	13		Removed
434	808.51	6695	Dead	Dead	10"	0				Removed
435	809.07	59	Black Walnut	Juglans nigra	13"	5	1			Removed
436	808.42	6695	Black Walnut	Juglans nigra	8"	5	1			Removed
437	808.31	6696	Black Walnut	Juglans nigra	8"	5	1			Removed
438	807.26	6697	Black Walnut	Juglans nigra	8"	4	1			Removed
439	806.92	6906	Elm	Ulmus americana	7"	3	1			Removed
440	806.71	6902	Black Walnut	Juglans nigra	7"	4	1			Removed
441	806.57	6901	Black Walnut	Juglans nigra	9"	4	1			Removed
442	807.07	6903	Black Walnut	Juglans nigra	10"	4	1			Removed
443	807.10	6905	Dead	Dead	12"	0				Removed
444	806.52	6700	Silver Maple	Acer saccharinum	10"	5				Removed
445	806.57	6907	Black Walnut	Juglans nigra	7"	5	1			Removed
446	806.44	6908	Black Cherry	Prunus serotina	10"	5	1			Removed
447	806.19	6909	Black Walnut	Juglans nigra	8"	4	1			Removed
449	805.49	6910	Black Walnut	Juglans nigra	10"	4	1			Removed
450	806.05	6911	Elm	Ulmus americana	12"	3	1			Removed
451	805.12	6911	Dead	Dead	13"	0				Removed
452	804.71	6912	Norway Maple	Acer Platanoides	9"	3				Removed
453	804.45	6914	Elm	Ulmus americana	13"	5	1			Removed
454	804.49	6913	Dead	Dead	12"	0				Removed
455	804.25	6915	Black Cherry	Prunus serotina	10"ms	3	1			Removed
456	803.77	6916	Black Walnut	Juglans nigra	13"	2				Removed
457	803.89	6917	Black Cherry	Prunus serotina	9"	4	1			Removed
458	804.31	6918	Black Walnut	Juglans nigra	10"	4	1			Removed
459	804.10	6920	Elm	Ulmus americana	14"	5	1			Removed
460	803.87	6921	Black Walnut	Juglans nigra	13"	5	1			Removed
461	803.79	6922	Black Walnut	Juglans nigra	9"	4	1			Removed
462	803.05	6923	Norway Maple	Acer Platanoides	9"	4	1			Removed
463	802.84	6924	Norway Maple	Acer Platanoides	9"	4	1			Removed
464	802.52	6926	Dead	Dead	6"	0				Removed
465	802.45	6925	Norway Maple	Acer Platanoides	17"ms	5				Removed
466	801.45	6927	Norway Maple	Acer Platanoides	14"	5				Removed
467	801.06	6928	Norway Maple	Acer Platanoides	14"	5				Removed
468	800.88	6929	Dead	Dead	6"	0				Removed
469	800.98	26	Black Locust	Robinia pseudoacacia	14"	4				Removed
470	800.10	6932	Hackberry	Celtis occidentalis	17"ms	2				Removed
471	800.15	6930	Black Walnut	Juglans nigra	8"	4	1			Removed
472	799.44	6933	Norway Maple	Acer Platanoides	7"	3				Removed
473	799.11	6934	Cottonwood	Populus Deltoides	8"	4	1			Removed
474	799.35	6934	Dead	Dead	18"	0				Removed
475	799.11	6935	Elm	Ulmus americana	6"	3				Removed
476	799.00	21	Black Cherry	Prunus serotina	23"	5	1	23		Removed
477	799.72	6937	Black Cherry	Prunus serotina	6"ms	5	1			Removed
478	799.35	6936	Black Cherry	Prunus serotina	7"	4	1			Removed
479	799.93	17	Black Walnut	Juglans nigra	13"	4	1			Removed
480	799.84	6939	Black Cherry	Prunus serotina	10"	4	1			Removed
481	800.05	12	Black Walnut	Juglans nigra	14"	2				Removed
482	800.05	6938	Black Cherry	Prunus serotina	12"	4	1			Removed
483	800.06	6939	Dead	Dead	13"	0				Removed
484	800.27	6940	Black Locust	Robinia pseudoacacia	9"	4				Removed
485	797.07	6946	Ash	Fraxinus americana	7"	5				Removed
486	797.59	6948	Hackberry	Celtis occidentalis	9"	4	1			Removed
487	798.73	6947	Black Locust	Robinia pseudoacacia	6"	4	1			Removed
488	798.68	6945	Black Walnut	Juglans nigra	7"	4	1			Removed
489	798.87	6943	Black Cherry	Prunus serotina	11"	5	1			Removed
490	799.15	6941	Cottonwood	Populus Deltoides	15"	4				Removed
492	798.66	6943	Ash	Fraxinus americana	8"	4				Removed
493	798.72	6940	Black Cherry	Prunus serotina	10"	5	1			Removed
494	798.07	2001	Hackberry	Celtis occidentalis	13"	3	1			Removed
495	799.62	2002	Cottonwood	Populus Deltoides	35"	5				Removed
496	797.82	2003	Black Walnut	Juglans nigra	12"	4	1			Removed
497	797.51	6941	Black Cherry	Prunus serotina	15"	5		15		Removed
498	797.37	6944	Bur Oak	Quercus macrocarpa	6"	5	1			Removed
499	796.63	6943	Ash	Fraxinus americana	8"	4				Removed
500	797.77	6954	Black Cherry	Prunus serotina	6"	5	1			Removed
501	797.59	6947	Black Locust	Robinia pseudoacacia	6"	4	1			Removed
502	797.01	6956	Black Locust	Robinia pseudoacacia	13"	5				Removed
503	796.77	6951	Black Locust	Robinia pseudoacacia	8"	3	1			Removed
504	796.29	6955	Black Cherry	Prunus serotina	15"	5	1	15		Removed
505	796.34	6952	Black Cherry	Prunus serotina	9"	4	1			Removed
506	796.38	6964	Black Cherry	Prunus serotina	9"	4	1			Removed
507	796.32	6965	Black Cherry	Prunus serotina	9"	4	1			Removed
508	797.14	6966	Black Cherry	Prunus serotina	14"	5	1	14		Removed
509	795.89	6967	Elm	Ulmus americana	8"	4	1			Removed
510	795.63	6962	Black Cherry	Prunus serotina	13"	3	1	13		Removed
511	795.98	6961	Black Cherry	Prunus serotina	10"	5	1			Removed
512	795.98	6963	Black Cherry	Prunus serotina	10"	5	1			Removed
513	794.52	6968	Black Cherry	Prunus serotina	12"	2				Removed
514	795.96	6957	Cottonwood	Populus Deltoides	35"	5				Removed
515	797.41	6952	Black Locust	Robinia pseudoacacia	6"	5				Removed
516	797.29	6969	Black Cherry	Prunus serotina	10"	0				Removed
517	796.66	6960	Black Walnut	Juglans nigra	12"	4	1			Removed
518	796.70	6959	Black Walnut	Juglans nigra	14"	4	1			Removed
519	797.28	6958	Dead	Dead	15"	0				Removed
520	796.70	6980	Black Cherry	Prunus serotina	10"	5	1			Removed
521	794.41	6981	Black Walnut	Juglans nigra	7"	5	1			Removed
522	794.95	6983	Black Walnut	Juglans nigra	8"	4	1			Removed
523	794.36	6984	Black Cherry	Prunus serotina	9"	5	1			Removed
524	795.40	6985	Black Walnut	Juglans nigra	8"	4	1			Removed
525	796.19	6985	Black Cherry	Prunus serotina	10"	4	1			Removed
526	796.17	6988	Dead	Dead	19"	0				Removed
527	795.87	6989	Black Walnut	Juglans nigra	6"	5	1			Removed
528	796.13	6978	Black Cherry	Prunus serotina	8"	5	1			Removed
529	796.67	6977	Black Cherry	Prunus serotina	17"ms	3				Removed
530	796.87	2313	Dead	Dead	14"	0				Removed
531	797.01	2314	Dead	Dead	15"	0				Removed
532	796.79	6987	Black Cherry	Prunus serotina	14

POINT NO.	ELEVATION	TAG NO.	COMMON NAME	BOTANICAL NAME	DBH	CONDITION	REGULATED TREE REPLACEMENTS	LANDMARK TREE REPLACEMENT	SOVEREIGN TREE	INTENTION
1583	776.99	7766	Dead	Dead	9"	0				Removed
1584	775.93	7765	Black Cherry	Prunus serotina	9"	3	1			Removed
1585	771.32	7756	Black Cherry	Prunus serotina	11"	4	1			Removed
1586	771.98	7755	Silver Maple	Acer saccharinum	9"	4				Removed
1587	767.23	7760	Silver Maple	Acer saccharinum	9"	4				Removed
1588	769.92	7768	Ash	Fraxinus americana	8"	4				Removed
1589	769.55	7767	Dead	Dead	8"	0				Removed
1590	771.36	7769	Black Cherry	Prunus serotina	9"	4				Removed
1591	773.11	7747	Elm	Ulmus americana	9"	5	1			Removed
1592	769.72	7770	Elm	Ulmus americana	9"	4	1			Removed
1593	769.94	7771	Black Cherry	Prunus serotina	7"	4	1			Removed
1594	770.52	7772	Black Cherry	Prunus serotina	8"	3				Removed
1595	770.74	7773	Black Cherry	Prunus serotina	6"	4	1			Removed
1596	770.62	7776	Black Cherry	Prunus serotina	6"	4	1			Removed
1597	773.99	7774	Ash	Fraxinus americana	8"	4				Removed
1598	774.90	7775	Black Cherry	Prunus serotina	6"	4	1			Removed
1599	773.89	7777	Ash	Fraxinus americana	7"	4				Removed
1600	773.38	7778	Black Cherry	Prunus serotina	11"	4	1			Removed
1601	772.48	7779	Dead	Dead	14"	0				Removed
1602	766.03	7780	Ash	Fraxinus americana	9"	3				Removed
1603	768.80	7781	Black Cherry	Prunus serotina	8"	4				Removed
1604	771.58	7789	Elm	Ulmus americana	8"	5	1			Removed
1605	768.29	7784	Dead	Dead	9"	0				Removed
1606	766.16	7787	Black Cherry	Prunus serotina	9"	3	1			Removed
1607	766.59	7788	Black Cherry	Prunus serotina	7"	4	1			Removed
1608	764.50	7783	Red Oak	Quercus rubra	8"	5	1			Removed
1609	769.42	7785	Shagbark Hickory	Carya ovata	8"	4	1			Removed
1610	771.16	7786	Black Cherry	Prunus serotina	7"	4	1			Removed
1611	771.16	7782	Shagbark Hickory	Carya ovata	9"	5	1			Removed
1612	771.53	7790	Black Cherry	Prunus serotina	8"	4	1			Removed
1613	770.43	7791	Red Oak	Quercus rubra	9"	5	1			Removed
1614	770.58	7792	Black Walnut	Juglans nigra	9"	4	1			Removed
1615	770.26	7793	Elm	Ulmus americana	6"	5	1			Removed
1616	768.15	7795	Bowsitter	Acer negundo	9"mx	3				Removed
1617	768.12	7794	Shagbark Hickory	Carya ovata	6"	5	1			Removed
1618	766.44	7800	Dead	Dead	12"	0				Removed
1619	766.94	7796	Black Cherry	Prunus serotina	7"	5	1			Removed
1620	765.69	7798	Black Cherry	Prunus serotina	8"	4	1			Removed
1621	765.17	7799	Black Cherry	Prunus serotina	8"	4	1			Removed
1622	766.40	7797	Elm	Ulmus americana	6"	5	1			Removed
1623	771.34	7806	Shagbark Hickory	Carya ovata	8"	5	1			Removed
1624	772.18	7807	Red Oak	Quercus rubra	12"	3	1			Removed
1625	773.07	7809	Red Oak	Quercus rubra	11"	4	1			Removed
1626	772.75	7804	Red Oak	Quercus rubra	9"	4	1			Removed
1627	772.51	7808	Shagbark Hickory	Carya ovata	6"	5	1			Removed
1628	774.84	7803	Shagbark Hickory	Carya ovata	8"	4	1			Removed
1629	774.74	7802	Black Cherry	Prunus serotina	13"	4		13		Removed
1630	771.93	7810	Black Walnut	Juglans nigra	10"	4	1			Removed
1631	771.10	7811	Red Oak	Quercus rubra	9"	4	1			Removed
1632	773.30	7812	Black Cherry	Prunus serotina	10"	4	1			Removed
1633	773.55	7813	Red Oak	Quercus rubra	11"	4	1			Removed
1634	776.63	7805	Shagbark Hickory	Carya ovata	8"	5	1			Removed
1635	777.68	7801	Elm	Ulmus americana	9"	5	1			Removed
1636	777.79	7815	Red Oak	Quercus rubra	10"	4	1			Removed
1637	775.37	7814	Shagbark Hickory	Carya ovata	8"	4	1			Removed
1638	775.18	7816	Black Cherry	Prunus serotina	6"	4	1			Removed
1639	776.74	7817	Shagbark Hickory	Carya ovata	7"	4	1			Removed
1640	777.53	7818	Red Oak	Quercus rubra	12"	4	1			Removed
1644	765.16	7820	Red Oak	Quercus rubra	6"	4	1			Removed
1645	769.26	7821	Black Cherry	Prunus serotina	7"	4	1			Removed
1646	770.42	7819	Hackberry	Celtis occidentalis	7"	4	1			Removed
1648	763.86	7824	Black Cherry	Prunus serotina	7"	5	1			Removed
1649	763.10	7825	Bowsitter	Acer negundo	6"	5				Removed
1650	763.14	7827	Bowsitter	Acer negundo	9"	3				Removed
1651	763.47	7826	Bowsitter	Acer negundo	9"	3				Removed
1652	764.15	7828	Bowsitter	Acer negundo	9"	3				Removed
1653	766.62	7829	Bowsitter	Acer negundo	8"	3				Removed
1654	765.74	7831	Bowsitter	Acer negundo	8"	4				Removed
1655	768.43	7830	Bowsitter	Acer negundo	7"	5				Removed
1656	768.25	7832	Bowsitter	Acer negundo	9"mx	5				Removed
1657	774.38	7835	Shagbark Hickory	Carya ovata	6"	5	1			Removed
1658	773.46	7823	Black Cherry	Prunus serotina	10"	3	1			Removed
1659	775.61	7822	Shagbark Hickory	Carya ovata	7"	5	1			Removed
1660	776.76	7834	Shagbark Hickory	Carya ovata	9"	5	1			Removed
1661	777.69	7833	Bowsitter	Acer negundo	9"	4				Removed
1662	772.66	7840	Red Oak	Quercus rubra	8"	4	1			Removed
1663	773.96	7841	Elm	Ulmus americana	6"	5	1			Removed
1664	771.67	7842	Dead	Dead	13"	0				Removed
1665	774.91	7837	Black Cherry	Prunus serotina	10"	3	1			Removed
1666	773.04	7836	Elm	Ulmus americana	8"	4	1			Removed
1667	776.34	7839	Red Oak	Quercus rubra	8"	5	1			Removed
1668	778.01	7838	Black Cherry	Prunus serotina	9"	3	1			Removed
1670	754.37	7850	Silver Maple	Acer saccharinum	10"	4				Removed
1671	753.74	7846	Bowsitter	Acer negundo	9"	4				Removed
1672	753.86	7844	Silver Maple	Acer saccharinum	9"	5				Removed
1673	753.73	7870	Black Cherry	Prunus serotina	9"	3	1			Removed
1674	753.61	7849	Silver Maple	Acer saccharinum	8"	5				Removed
1675	753.67	7848	Bowsitter	Acer negundo	9"mx	3				Removed
1676	753.47	7843	Dead	Dead	12"	0				Removed
1677	753.41	7845	Silver Maple	Acer saccharinum	8"	4				Removed
1678	752.51	7847	Silver Maple	Acer saccharinum	8"	4				Removed
1679	752.83	7873	Silver Maple	Acer saccharinum	8"	4				Removed
1680	753.00	7872	Silver Maple	Acer saccharinum	10"mx	4				Removed
1681	753.09	7868	Silver Maple	Acer saccharinum	9"	4				Removed
1682	753.21	7869	Silver Maple	Acer saccharinum	9"	4				Removed
1683	753.55	7867	Elm	Ulmus americana	7"	4	1			Removed
1684	753.56	7871	Silver Maple	Acer saccharinum	8"	4				Removed
1685	753.51	7853	Silver Maple	Acer saccharinum	7"	4				Removed
1686	753.37	7851	Silver Maple	Acer saccharinum	8"	4				Removed
1687	752.78	7874	Silver Maple	Acer saccharinum	8"	4				Removed
1688	752.88	7864	Silver Maple	Acer saccharinum	8"	4				Removed
1689	753.15	7866	Silver Maple	Acer saccharinum	9"	5				Removed
1690	753.30	7875	Silver Maple	Acer saccharinum	13"ms	5				Removed
1691	753.43	7876	Silver Maple	Acer saccharinum	7"	4				Removed
1692	752.40	7863	Silver Maple	Acer saccharinum	9"	5				Removed
1693	752.40	7861	Silver Maple	Acer saccharinum	9"	5				Removed
1694	752.31	7862	Silver Maple	Acer saccharinum	9"	5				Removed
1695	752.43	7878	Dead	Dead	15"	0				Removed
1696	752.19	7877	Silver Maple	Acer saccharinum	13"ms	4				Removed
1697	773.99	7774	Ash	Fraxinus americana	8"ms	4				Removed
1698	753.50	7852	Silver Maple	Acer saccharinum	13"ms	4				Removed
1699	752.44	7879	Ash	Fraxinus americana	7"	3				Removed
1700	752.63	7880	Silver Maple	Acer saccharinum	9"	4				Removed
1701	752.59	7881	Silver Maple	Acer saccharinum	9"	4				Removed
1702	752.60	7883	Silver Maple	Acer saccharinum	9"ms	4				Removed
1703	752.07	7882	Silver Maple	Acer saccharinum	13"	5				Removed
1704	752.10	7854	Silver Maple	Acer saccharinum	11"	5				Removed
1705	752.15	7855	Silver Maple	Acer saccharinum	13"	5				Removed
1706	752.19	7884	Black Cherry	Prunus serotina	7"	4	1			Removed
1707	750.92	7885	Silver Maple	Acer saccharinum	9"	4				Removed
1708	750.82	7886	Silver Maple	Acer saccharinum	9"	4				Removed
1709	750.98	7889	Silver Maple	Acer saccharinum	12"	5				Removed
1710	751.78	7887	Dead	Dead	12"	0				Removed
1711	751.95	7888	Silver Maple	Acer saccharinum	12"	4				Removed
1712	751.76	7857	Silver Maple	Acer saccharinum	12"	4				Removed
1713	751.53	7856	Silver Maple	Acer saccharinum	12"	4				Removed
1714	751.72	7860	Silver Maple	Acer saccharinum	13"ms	5				Removed
1715	751.30	7859	Silver Maple	Acer saccharinum	14"	4				Removed
1716	751.15	7858	Silver Maple	Acer saccharinum	13"	4				Removed
1718	751.27	7893	Oak	Quercus macrocarpa	12"	4	1			Removed
1719	750.75	7894	Mulberry	Morus	7"	3				Removed
1720	749.86	7904	Elm	Ulmus americana	7"	4	1			Removed
1721	749.85	7905	Black Walnut	Juglans nigra	10"	4	1			Removed
1722	749.88	7892	Black Cherry	Prunus serotina	6"	4	1			Removed
1723	750.54	7891	Dead	Dead	11"	0				Removed
1724	751.20	7899	Bur Oak	Quercus macrocarpa	8"	4	1			Removed
1725	751.38	7890	Dead	Dead	12"	0				Removed
1726	753.10	7895	Red Oak	Quercus rubra	11"	4	1			Removed
1727	753.18	7900	Bur Oak	Quercus macrocarpa	8"	4	1			Removed
1728	754.53	7896	Elm	Ulmus americana	6"	4	1			Removed
1729	754.74	7897	Black Cherry	Prunus serotina	8"	3	1			Removed
1730	752.58	7898	Black Cherry	Prunus serotina	8"	3	1			Removed
1732	766.15	7915	Silver Maple	Acer saccharinum	9"mx	4				Removed
1733	765.52	7914	Silver Maple	Acer saccharinum	11"	4				Removed
1734	764.40	7910	Cottonwood	Populus Deltoides	10"	4				Removed
1735	764.06	7911	Silver Maple	Acer saccharinum	9"	4				Removed
1736	764.16	7912	Silver Maple	Acer saccharinum	8"	4				Removed
1737	762.39	7918	Black Cherry	Prunus serotina	8"	4	1			Removed
1738	763.24	7909	Cottonwood	Populus Deltoides	7"	5				Removed
1739	761.25	7919	Silver Maple	Acer saccharinum	9"ms	4				Removed
1740	759.45	7920	Silver Maple	Acer saccharinum	8"	4	1			Removed
1741	759.89	7913	Silver Maple	Acer saccharinum	9"	4				Removed
1742	762.56	7921	Silver Maple	Acer saccharinum	13"	4				Removed
1743	761.25	7923	Silver Maple	Acer saccharinum	8"ms	4				Removed
1744	765.20	7930	Silver Maple	Acer saccharinum	11"	3				Removed
1745	766.44	7931	Silver Maple	Acer saccharinum	8"	4				Removed
1746	767.86	7917	Elm	Ulmus americana	8"	3	1			Removed
1747	766.64	7916	Silver Maple	Acer saccharinum	12"	3				Removed
1752	748.86	7907	Cottonwood	Populus Deltoides	8"	4				Removed
1753	748.53	7903	Cottonwood	Populus Deltoides	8"	4				Removed
1754	749.18	7901	Black Cherry	Prunus serotina	13"	4		13		Removed
1755	749.45	7928	Silver Maple	Acer saccharinum	9"	4				Removed
1756	746.36	7933	Cottonwood	Populus Deltoides	7"	4				Removed
1757	746.59	7934	Cottonwood	Populus Deltoides	6"	4				Removed
1758	745.77	7935	Cottonwood	Populus Deltoides	7"	4				Removed
1759	745.62	7939	Cottonwood	Populus Deltoides	11"	4				Removed
1760	746.25	7937	Cottonwood	Populus Deltoides	11"	4				Removed
1761	746.33	7932	Silver Maple	Acer saccharinum	7"	4				Removed
1762	746.51	7936	Cottonwood	Populus Deltoides	7"	5				Removed
1763	746.80	7938	Cottonwood	Populus Deltoides	8"	5				Removed
1764	746.22	7908	Bur Oak	Quercus macrocarpa	19"	4			19	Removed
1765	746.36	7909	Cottonwood	Populus Deltoides	8"	4				Removed
1766	745.09	7903	Cottonwood	Populus Deltoides	8"	4				Removed
1767	744.77	7906	Black Cherry	Prunus serotina	6"	4	1			Removed
1768	744.72	7940	Cottonwood	Populus Deltoides	7"	5				Removed
1769	744.73	7941	Black Cherry	Prunus serotina	8"	3	1			Removed
1770	744.77	7943	Cottonwood	Populus Deltoides	9"	3				Removed
1771	744.71	7942	Cottonwood	Populus Deltoides	6"	4				Removed
1772	744.70	7945	Cottonwood	Populus Deltoides	7"	5				Removed
1773	744.96	7944	Elm	Ulmus americana	7"	3	1			Removed
1774	744.10	7948	Silver Maple	Acer saccharinum	13"ms	4				Removed
1775	744.33	7947	Silver Maple	Acer saccharinum	8"	4				Removed
1776	744.17	7949	Silver Maple	Acer saccharinum	9"ms	3				Removed
1777	743.67	7950	Red Maple	Acer Rubrum	7"ms	4				Removed
1778	743.79	7951	Elm	Ulmus americana	6"	5	1			Removed
1779	743.60	7952	Silver Maple	Acer saccharinum	8"	4				Removed
1780	743.69	7960	Silver Maple	Acer saccharinum	10"	4				Removed
1781	743.56	7953	Silver Maple	Acer saccharinum	9"	4				Removed
1782	743.38	7954	Dead	Dead	8"	0				Removed
1783	743.30	7956	Silver Maple	Acer saccharinum	26"ms	5				Removed
1784	742.98	7955	Silver Maple	Acer saccharinum	7"	4				Removed
1785	743.01	7958	Silver Maple	Acer saccharinum	12"ms	5				Removed
1786	743.38	7959	Silver Maple	Acer saccharinum	7"	4				Removed
1787	743.39	7957	Silver Maple	Acer saccharinum	10"	3				Removed
1788	744.44	7961	Silver Maple	Acer saccharinum	12"	4				Removed
1789	745.06	7967	Black Cherry	Prunus serotina	8"	4	1			Removed
1790	745.09	7966	Silver Maple	Acer saccharinum	10"	5				Removed
1791	745.30	7964	Red Oak	Quercus rubra	6"	4	1			Removed
1792	746.53	7962	Elm	Ulmus americana	6"	5	1			Removed
1793	746.38	7963	Red Oak	Quercus rubra	9"	3	1			Removed

POINT NO.	ELEVATION	TAG NO.	COMMON NAME	BOTANICAL NAME	DBH	CONDITION	REGULATED TREE REPLACEMENTS	LANDMARK TREE REPLACEMENT	SOVEREIGN TREE	INTENTION
1794	745.33	7965	Silver Maple	Acer saccharinum	8"	4				Removed
1795	744.95	7968	Black Cherry	Prunus serotina	8"	4	1			Removed
1796	744.15	7969	Black Locust	Robinia pseudoacacia	8"	5				Removed
1797	743.23	7971	Dead	Dead	13"	0				Removed
1798	745.78	7970	Dead	Dead	13"	0				Removed
1799	746.09	7972	Elm	Ulmus americana	11"	4	1			Removed
1800	747.15	7973	Black Cherry	Prunus serotina	10"	4	1			Removed
1801	747.48	7974	Black Cherry	Prunus serotina	8"	5	1			Removed
1802	750.45	7975	Black Cherry	Prunus serotina	8"	5	1			Removed
1803	750.61	7980	Black Cherry	Prunus serotina	8"	5	1			Removed
1804	750.63	7979	Red Oak	Quercus rubra	7"	5	1			Removed
1805	750.80	7976	Dead	Dead	10"	0				Removed
1806	751.61	7978	Black Cherry	Prunus serotina	8"	3	1			Removed
1807	750.51	7981	Black Cherry	Prunus serotina	9"	3	1			Removed
1808	752.17	7982	Red Oak	Quercus rubra	13"	4	1			Removed
1809	751.96	7983	Black Cherry	Prunus serotina	12"	5		12		Removed
1810	751.76	7984	Dead	Dead	10"	0				Removed
1811	751.92	7985	Black Locust	Robinia pseudoacacia	13"	5				Save
1812	750.66	7986	Black Cherry	Prunus serotina	8"	5				Save
1813	749.36	7987	Black Cherry	Prunus serotina	8"	5				Save
1814	749.61	7988	Elm	Ulmus americana	9"	5				Save
1815	751.37	7990	Black Cherry	Prunus serotina	9"	5				Save
1816	751.47	7989	Black Cherry	Prunus serotina	8"	5				Save
1817	750.21	7991	Black Locust	Robinia pseudoacacia	7"	3				Save
1818	747.07	7992	Elm	Ulmus americana	6"	5				Save
1819	746.99	7993	Elm	Ulmus americana	8"	5				Save
1821	747.75	7994	Elm	Ulmus americana	6"	4				Save
1822	749.77	7996	Black Cherry	Prunus serotina	9"	4				Save
1823	750.43	7997	Elm	Ulmus americana	7"	3				Save
1824	765.92	7998	Dead	Dead	13"	0				Removed
1825	761.64	8000	Elm	Ulmus americana	7"	3				Save
1826	761.73	7999	Elm	Ulmus americana	7"	3				Save
1827	760.39	7975	Elm	Ulmus americana	7"	4	1			Removed
1828	762.42	7974	Black Cherry	Prunus serotina	8"	4	1			Removed
1829	760.42	7978	Elm	Ulmus Americana	8"	5	1			Removed
1830	760.18	6000	Shagbark Hickory	Carya ovata	7"	4	1			Removed
1832	774.75	8516	Cottonwood	Populus Deltoides	7"	4				Save
1833	773.66	8518	Cottonwood	Populus Deltoides	7"	4				Save
1834	773.95	8519	Cottonwood	Populus Deltoides	7"	4				Save
1835	775.49	8520	Cottonwood	Populus Deltoides	7"	4				Save
1836	769.33	8523	Cottonwood	Populus Deltoides	7"	4				Save
1837	771.16	8522	Silver Maple	Acer saccharinum	17"ms	4				Save
1838	767.77	8526	Cottonwood	Populus Deltoides	7"	4				Save
1839	767.45	8525	Silver Maple	Acer saccharinum	6"	4				Save
1840	764.38	7925	Dead	Dead	11"	0				Removed
1841	770.59	8521	Cottonwood	Populus Deltoides	8"	5				Save
1842	770.81	8501	Cottonwood	Populus Deltoides	11"	4				Save
1843	770.95	8502	Silver Maple	Acer saccharinum	9"	4				Save
1844	770.92	8503	Silver Maple	Acer saccharinum	9"	4				Save
1845	776.50	8504	Silver Maple	Acer saccharinum	9"ms	3				Save
1846	774.96	8506	Elm	Ulmus americana	9"	4				Save
1847	776.04	8527	Cottonwood	Populus Deltoides	7"	5				Save
1848	780.66	8505	Elm	Ulmus americana	9"	4				Save
1849	780.23	8506	Cottonwood	Populus Deltoides	7"	4				Save
1850	779.34	8507	Cottonwood	Populus Deltoides	7"	4				Save
1851	779.44	8509	Cottonwood	Populus Deltoides	7"	4				Save
1852	778.98	8508	Cottonwood	Populus Deltoides	8"	4				Save
1853	778.45	8510	Cottonwood	Populus Deltoides	7"	4				Save
1854	781.44	8512	Cottonwood	Populus Deltoides	14"	5				Save
1855	781.64	8511	Cottonwood	Populus Deltoides	7"	4				Save
1856	778.32	8513	Cottonwood	Populus Deltoides	8"	5				Save
1857	777.17	8514	Cottonwood	Populus Deltoides	7"	4				Save
1858	776.76	8515	Cottonwood	Populus Deltoides	7"	4				Save
1859	782.82	8528	Cottonwood	Populus Deltoides	7"	4				Save
1860	786.59	8529	Cottonwood	Populus Deltoides	14"	4				Save
1861	787.19	8530	Cottonwood	Populus Deltoides	8"	4				Save
1862	786.45	8531	Cottonwood	Populus Deltoides	8"	5				Save
1863	786.29	8532	Cottonwood	Populus Deltoides	7"	4				Save
1864	786.85	8533	Cottonwood	Populus Deltoides	7"	4				Save
1865	783.06	8534	Cottonwood	Populus Deltoides	7"	4				Save
1866	780.53	8535	Cottonwood	Populus Deltoides	7"	4				Save
1867	780.78	8536	Cottonwood	Populus Deltoides	10"	4				Save
1868	784.98	8537	Cottonwood	Populus Deltoides	7"	3				Save
1869	782.95	8542	Cottonwood	Populus Deltoides	7"	4				Save
1870	782.13	8541	Cottonwood	Populus Deltoides	14"	4				Save
1871	781.43	8543	Cottonwood	Populus Deltoides	7"	4				Save
1872	782.48	8540	Cottonwood	Populus Deltoides	7"	4				Save
1873	780.04	8545	Cottonwood	Populus Deltoides	7"	4				Save
1874	780.13	8544	Cottonwood	Populus Deltoides	7"	4				Save
1875	779.50	8546	Cottonwood	Populus Deltoides	7"	4				Save
1876	779.17	8547	Cottonwood	Populus Deltoides	7"	4				Save
1877	776.95	8549	Cottonwood	Populus Deltoides	7"	4				Save
1878	775.48	8548	Cottonwood	Populus Deltoides	7"	4				Save
1879	775.77	8550	Cottonwood	Populus Deltoides	6"	4				Save
1881	763.85	7924	Silver Maple	Acer saccharinum	8"	4				Removed
1882	763.07	7926	Elm	Ulmus americana	6"	3	1			Removed
1883	764.66	7923	Elm	Ulmus americana	9"	4	1			Removed
1884	761.39	8551	Cottonwood	Populus Deltoides	7"	4				Save
1885	782.86	8552	Black Cherry	Prunus serotina	10"	5				Save
1886	786.42	8539	Black Cherry	Prunus serotina	9"	5				Save
1887	787.07	8538	Black Walnut	Juglans nigra	9"	4				Save
1888	788.34	8554	Black Walnut	Juglans nigra	9"	4				Save
1889	787.95	8555	Black Walnut	Juglans nigra	11"	4				Save
1890	788.17	8557	Black Walnut	Juglans nigra	9"	5				Save
1891	780.70	8555	Hackberry	Celtis Occidentalis	7"	4				Save
1892	779.64	8553	Black Cherry	Prunus serotina	9"	4				Save
1893	776.63	8558	Black Walnut	Juglans nigra	10"	4				Save
1894	773.46	8559	Black Cherry	Prunus serotina	6"	4				Save
1895	774.15	8560	Black Cherry	Prunus serotina	8"	4				Save
1896	774.85	8561	Black Walnut	Juglans nigra	8"	4				Save
1897	774.49	8562	Black Walnut	Juglans nigra	8"	4				Save
1898	778.29	8563	Elm	Ulmus americana	5"	4				Save
1899	778.40	8779	Red Oak	Quercus rubra	6"	4				Save
1900	778.07	8564	Black Walnut	Juglans nigra	9"	4				Save
1901	779.20	8565	Black Walnut	Juglans nigra	9"	4				Save
1902	779.77	8566	Black Walnut	Juglans nigra	9"	4				Save
1903	778.24	8567	Black Walnut	Juglans nigra	9"	4				Save
1904	777.46	8569	Black Walnut	Juglans nigra	9"	4				Save
1905	776.50	8568	Black Walnut	Juglans nigra	9"	4				Save
1906	776.27	8570	Black Walnut	Juglans nigra	9"	4				Save
1907	776.03	8571	Black Walnut	Juglans nigra	9"	4				Save
1908	775.80	8572	Black Walnut	Juglans nigra	9"	4				Save
1909	775.57	8573	Black Walnut	Juglans nigra	9"	4				Save
1910	775.34	8574	Black Walnut	Juglans nigra	9"	4				Save
1911	775.11	8575	Black Walnut	Juglans nigra	9"	4				Save
1912	774.88	8576	Black Walnut	Juglans nigra	9"	4				Save
1913	774.65	8577	Black Walnut	Juglans nigra	9"	4				Save
1914	774.42	8578	Black Walnut	Juglans nigra	9"	4				Save
1915	774.19	8579	Black Walnut	Juglans nigra	9"	4				Save
1916	773.96	8580	Black Walnut	Juglans nigra	9"	4				Save
1917	773.73	8581	Black Walnut	Juglans nigra	9"	4				Save
1918	773.50	8582	Black Walnut	Juglans nigra	9"	4				Save
1919	773.27	8583	Black Walnut	Juglans nigra	9"	4				Save
1920	773.04	8584	Black Walnut	Juglans nigra	9"	4				Save
1921	772.81	8585	Black Walnut	Juglans nig

Carlisle | Wortman
ASSOCIATES, INC.

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TO: Superior Township Zoning Ordinance Rewrite Steering Committee

FROM: Benjamin Carlisle and Michelle Marin, Planning Consultants

DATE: May 19, 2025

RE: Fourth Zoning Ordinance Rewrite Committee Meeting – Articles 15 & 17

BACKGROUND

To date, the Zoning Ordinance Rewrite Steering Committee and CWA staff have convened to review the following draft Articles:

ARTICLE 1: TITLE, PURPOSE AND LEGAL CLAUSES
ARTICLE 2: DEFINITIONS
ARTICLE 3: ADMINISTRATION AND ENFORCEMENT
ARTICLE 4: ZONING DISTRICT REGULATIONS
ARTICLE 6: DEVELOPMENT OPTIONS
ARTICLE 7: GENERAL PROVISIONS
ARTICLE 8: SITE PLAN REVIE
ARTICLE 9: CONDITIONAL USE REVIEW

Article 15 (currently Article 16) detailing the regulations for nonconformities and Article 17 (currently Article 18) describing the zoning ordinance amendment process have been revised to improve clarity, remove redundancies, and incorporate small substantive procedural changes. Articles 15 and 17 be presented to the full Planning Commission for discussion at the regular May meeting.

During the previous Steering Committee meetings, we discussed how much of the current language in the Zoning Ordinance was appropriate and that only minor changes to wording were required to improve clarity and logic and to modernize it to current day standards were necessary. The most significant change would involve reorganizing the chapters, sections, and subsections to assist the general public and applicants as well as Township staff and the Planning Commission who administer these regulations and standards.

The revised table of table of contents is as follows:

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

ARTICLE 1: TITLE, PURPOSE AND LEGAL CLAUSES
ARTICLE 2: DEFINITIONS
ARTICLE 3: ADMINISTRATION AND ENFORCEMENT
ARTICLE 4: ZONING DISTRICT REGULATIONS
ARTICLE 5: SPECIAL DISTRICT REGULATIONS
ARTICLE 6: DEVELOPMENT OPTIONS
ARTICLE 7: GENERAL PROVISIONS
ARTICLE 8: SITE PLAN REVIEW
ARTICLE 9: CONDITIONAL USE REVIEW
ARTICLE 10: SPECIFIC USE STANDARDS
ARTICLE 11: ACCESS, PARKING, AND LOADING REQUIREMENTS
ARTICLE 12: SITE DESIGN STANDARDS
ARTICLE 13: ENVIRONMENTAL STANDARDS
ARTICLE 14: SIGN REGULATIONS
ARTICLE 15: NONCONFORMITIES
ARTICLE 16: ZONING BOARD OF APPEALS
ARTICLE 17: AMENDMENT PROCEDURE

ZONING TEXT AMENDMENTS

Listed below are details of Articles 15 and 17 including the purpose, outline, and substantive changes from the existing Zoning Ordinance:

Article 15: Nonconforming Lots, Uses, and Structures

Purpose: The purpose has been expanded to clarify the applicability of the legally nonconforming status and detail the purpose of the standards that govern nonconformities in order to improve defensibility.

Section 15.01: Purpose
Section 15.02: Scope
Section 15.03: Nonconforming Single-Family Detached Dwellings
Section 15.04: Nonconforming Lots of Record
Section 15.05: Nonconforming Uses
Section 15.06: Nonconforming Structures
Section 15.07: Change of Tenancy or Ownership
Section 15.08: Cessation of Nonconformities by Township Action
Section 15.09: Repairs and Maintenance

Substantive Changes:

1) “Purpose” expanded, as described above.
2) “Scope” amended to remove redundancies that appear in later sections.
3) “Nonconforming Use Determinations” section removed to remove redundancies in the “Purpose” section and later sections of this article.
4) “Unlawful Uses” section removed to remove redundancies.

5) Authority to determine if expansion or substitution of a nonconforming use is possible is given to the Zoning Board of Appeals, not the Planning Commission, in accordance with the Michigan Zoning Enabling Act.
6) "Nonconforming Sites" section removed due to ambiguity, conflicting information, and some redundancies.
7) "Nonconforming Extractive Operations" removed, as no unique provisions should be afforded to these operations, if any exist in the Township.
8) "Repairs and Maintenance" section added to prevent a property's nonconforming status from being used as an excuse for blight or property maintenance code violations.

Article 17: Amendments

Section 17.01: Initiating Amendments
Section 17.02: Required Fees and Escrow Deposits
Section 17.03: Pre-application Meeting
Section 17.04: Amendment Procedure
Section 17.05: Conditional Rezoning Procedures (new section)
Section 17.06: Information Required
Section 17.07: Findings of Fact Required
Section 17.08: Notice of Adoption
Section 17.09: Referendum
Section 17.10: Conformance to Court Decree

Substantive Changes:

1) Filing of amendment petition with Zoning Administrator rather than Clerk, reflecting existing practice.
2) Optional County Review removed from procedure, reflecting existing practice.
3) "Conditional Rezoning Procedures" section added. Process mostly identical but with the indication that conditions may be voluntarily offered by the applicant. This process is available to any rezoning applicant per the MZEA.
4) "Conditional Rezoning Prohibited" section removed.

SUMMARY

Attached are Articles 15 and 17 with proposed changes in an underline/strikethrough format as follows:

- Deleted text shown in strikethrough
- Inserted text shown in underline

Section references throughout the Ordinance as well as a careful review of numbering and organizational hierarchy will be undertaken once a complete draft of all Articles are complete. Text shown in [brackets] is optional text including additional limitations recommended by staff that needs further consideration.

We look forward to meeting with you.

Sincerely,

CARLISLE/WORTMAN ASSOC.,INC
Benjamin R. Carlisle, AICP, LEED AP
President

CARLISLE/WORTMAN ASSOC., INC.
Michelle Marin, AICP
Community Planner

Attachment: Articles 15 & 17

ARTICLE 15

~~NONCONFORMITIES~~ NONCOMFORMING LOTS, USES, AND STRUCTURES

Section 15.01 Purpose.

~~The regulations of this Ordinance are designed to protect the public health, safety, and general welfare by regulating the future use of land through appropriate groupings of compatible and related uses. Certain~~

A. Within the districts established by this Ordinance, there are existing structures, lots of record, sites, and uses that were lawful before this Ordinance was adopted, but have become nonconformities under the terms of this Ordinance and its amendments. It is the intent of this Ordinance to permit such nonconformities to remain until they are discontinued or removed, but not to encourage their survival. Where discontinuance or removal is not feasible, it is the intent of this Article to provide for the gradual upgrading of such nonconformities to conforming status.

The regulations of this Article are intended to permit such nonconformities to continue without specific limitation of time, while restricting extensive further investments that may make them more permanent. ~~This Article is further established to:~~

1. Regulate the use and development of nonconforming lots, the completion, alteration and reconstruction of nonconforming structures, the redevelopment and improvement of nonconforming sites, and the maintenance, extension and substitution of nonconforming uses.

2. Specify the limited conditions and circumstances under which nonconformities shall be permitted to continue.

3. Establish standards for determining whether a use is nonconforming, and whether a nonconforming use has ceased to occupy a particular lot or parcel.

B. It is recognized that there exists within the districts established by this Article and subsequent amendments, lots, structures, and uses of land and structures which were lawful before this Article was passed or amended which would be prohibited, regulated, or restricted under the terms of this chapter or future amendments. Such uses are declared by this Article to be incompatible with permitted uses in the districts involved. It is further the intent of this Article that nonconformities shall not be enlarged upon, expanded or extended, nor be used as grounds for adding other structures or uses prohibited elsewhere in the same District.

C. The standards of this Article are intended to accomplish the following:
   1. Eliminate nonconforming uses which are considered to be incompatible with permitted uses and encourage redevelopment into more conforming uses.
   2. Permit legal nonconforming buildings, structures or uses to remain until they are discontinued or removed.
   3. Encourage investment in surrounding neighborhoods by bringing nonconforming structures into compliance with this Ordinance.
   4. Encourage upgrading of site elements such as site landscaping, parking, paving, signage, access, pedestrian circulation or other features of a site which was developed in compliance with the standards at the time of construction, but which do not meet current site standards.
   5. Encourage combination of contiguous nonconforming lots of record to create lots which conform to current standards, are compatible with other lots in the appropriate zoning district, to promote public health, safety and welfare and to eliminate problems associated with over-crowding.

D. Nothing in this Article shall be deemed to require a change in the plans, construction, or designated use of any building on which actual construction was lawfully begun prior to the effective date of adoption or amendment of this Article provided progress has been diligently pursued and substantial construction has occurred.

E. The authorization of nonconformities that were legally established prior to enactment or amendment of this Ordinance to continue shall not apply to buildings, structures or uses which were not legally established prior to the enactment or amendment of this Ordinance. Those nonconforming uses or nonconforming structures which have not been legally established shall be declared illegal and shall be discontinued at the effective date of this Ordinance.

Section 15.02 Scope.

Nonconformities are declared by this Ordinance to be incompatible with the structures and uses permitted in the various zoning districts. Except as otherwise provided in this Article, any nonconforming lot, use, site or structure lawfully existing on the effective date of this Ordinance or subsequent amendment thereto may be continued so long as it remains otherwise lawful. Nonconformities shall not be enlarged, expanded, or extended, except in accordance with this Article, and shall not be used as grounds for adding structures and uses prohibited elsewhere in the same district. All nonconformities shall be encouraged to convert to conformity wherever possible and shall be required to convert to conforming

status as required by this Article. ~~Nonconformities shall not be enlarged, expanded, or extended, except in accordance with this Article, and shall not be used as grounds for adding structures and uses prohibited elsewhere in the same district.~~

~~A. Classification of Nonconformities.~~

~~Nonconformities shall be classified in one of the following categories:~~

~~1. Nonconforming single-family detached dwellings (Section 16.05);~~

~~2. Nonconforming lots of record; (Section 16.06);~~

~~3. Nonconforming uses; (Section 16.07);~~

~~4. Nonconforming structures: (Section 16.08) [amended 8/16/2010, Ord. 174-04];~~

~~5. Nonconforming sites; (Section 16.09); and~~

~~6. Nonconforming extractive operations (Section 16.10).~~

~~B. Establishment of Nonconformities.~~

~~To be considered a nonconformity under this Ordinance, the lot, use, site or structure must have been in compliance with the zoning requirements which were lawful when it was established, but must be, except for the provisions of this Article, prohibited, regulated, or restricted by the enactment of this Ordinance or subsequent amendments thereto. Nonconformities shall be established by one (1) of the following methods:~~

~~1. The nonconformity must have been a legal nonconformity under the former zoning ordinance and continue to be designated as nonconforming under the provisions of this Ordinance or subsequent amendments thereto;~~

~~2. The nonconformity must have been a legal conformity under the former zoning ordinance and made nonconforming by the provisions of this Ordinance or subsequent amendments thereto; or~~

~~3. The nonconformity must have been created by a lawful public taking or actions pursuant to a court order having the same effect as a violation of this Ordinance.~~

~~Lots, structures, or uses which do not meet one of the above criteria and which are prohibited, regulated, or restricted by this Ordinance are unlawful, shall not be permitted to continue, and shall not be entitled to any of the relief provided in this Article.~~

Section 15.03 Nonconforming Use Determinations.

This Section is intended to provide reasonable standards for determining whether a use is nonconforming, and whether a nonconforming use has been removed, discontinued or otherwise ceased to occupy the land or structure in question. The Zoning Inspector shall be responsible for determining whether a use is conforming, nonconforming or unlawful in the zoning district where it is located. When there is a question or dispute about the status of a particular use, such determinations shall be made by the Zoning Board of Appeals, subject to the following:

A. Standards for Determining that a Use is Nonconforming.

When there is a question or dispute about the status of a particular use, the Zoning Board of Appeals shall determine that a use is nonconforming upon finding that the following three (3) statements are true:

1. **The use does not conform to the purpose and use regulations of the district where it is located**.

2. **The use is in compliance with all other applicable federal, state, and local laws, ordinances, regulations and codes**.

3. **Evidence from a minimum of three (3) of the following sources demonstrates that the use was lawfully established prior to the effective date of adoption or amendment of this Ordinance**:

a. Local, county or state government files or records, including but not limited to permits, inspection reports, dated photographs or notarized statements of government officials, agents, representatives or employees.

b. Dated telephone directories, or similar dated records that provide information about the occupants or uses located on a street by address or lot number.

c. Utility records, including but not limited to providers of water, sewer, electric, natural gas or telecommunications service.

d. Dated advertising or other information published in a newspaper or magazine including but not limited to advertisements, articles, features or photographs that address the use of the land in question.

e. Dated aerial photos from the State of Michigan, Washtenaw County or other sources accepted by the Zoning Board of Appeals.

f. Other relevant information, including but not limited to date-stamped photographs, diary or log entries, affidavits or notarized statements.

B. Standards for Determining that a Nonconforming Use has Ceased.

When there is a question or dispute about the status of a particular use, the Zoning Board of Appeals shall determine that a nonconforming use has been removed, discontinued or otherwise ceased to occupy the land or structure in question upon finding that a minimum of three (3) of the following six (6) statements are true:

1. **Local, county or state government files or records show that the nonconforming use has ceased.** Such evidence may include, but shall not be limited to permits, inspection reports, dated photographs or notarized statements of government officials, agents, representatives or employees.

2. **Dated telephone directories, or similar dated records that provide information about the occupants or uses located on a street by address or lot number, show that the nonconforming use has ceased.** Such evidence may include but shall not be limited to entries that show the address associated with the use as vacant or occupied by another use, or show the telephone number associated with the use as disconnected or in use at another location.

3. **Utility records, including, but not limited to providers of water, sewer, electric, natural gas or telecommunications service, show that the nonconforming use has ceased.** Such evidence may include but shall not be limited to records indicating that the address of the use is vacant or occupied by another use, the utility service associated with the use has been disconnected or the business, organization or individual associated with the use has moved to another location.

4. **Dated advertising or other information published in a newspaper or magazine show that the nonconforming use has ceased.** Such evidence may include, but shall not be limited to advertisements, articles, features or photographs that address the use of the land in question.

5. **Dated aerial photos from State of Michigan, Washtenaw County or other sources as accepted by the Zoning Board of Appeals show that the nonconforming use has ceased.**

6. **Other relevant information shows that the nonconforming use has ceased.** Such evidence may include but shall not be limited to date-stamped photographs, diary or log entries, affidavits or notarized statements.

Section 15.04 Unlawful Uses.

Any use that is not a conforming use in the district where it is located, or determined to be a nonconforming use, shall be considered an unlawful use established in violation of this Ordinance.

Section 15.0~~5~~23 Nonconforming Single-Family Detached Dwellings.

Nonconforming single-family detached dwellings and customary accessory structures shall be exempt from the provisions of this Article that would otherwise apply to existing, lawfully established single-family detached residential uses located in non-residential zoning districts; or to existing, lawfully established single-family detached dwellings or customary accessory structures that do not conform to the applicable dimensional standards of this Ordinance. Such dwellings and accessory structures may be used, repaired, expanded, altered, or replaced if destroyed, subject to the following:

1. **Dwelling as a nonconforming use.** An existing, lawfully established single-family dwelling and customary accessory structures located in a non-residential zoning district may be repaired, altered, or replaced if destroyed, provided that:

    a. Such work shall conform to all applicable standards of this Ordinance as if the property and use were located in the single-family residential zoning district (R-1, R-2, R-3, or R-4) most similar in terms of the minimum lot width and area requirements to the size of the subject lot.

    b. The use, dwelling, and accessory structures shall be maintained in conformance with all other applicable federal, state, and local laws, ordinances, regulations and rules.

2. **Dwelling as a nonconforming structure.** Where an existing, lawfully established single-family dwelling or customary accessory structure is nonconforming structure with respect to the dimensional requirements of this Ordinance, the following standards shall apply:

    a. Structural changes and alterations to a nonconforming single-family dwelling or customary accessory structure that decrease or do not affect the degree of nonconformity shall be permitted. Such structures may be expanded, provided that:

        (1) The addition shall conform to the dimensional standards and other requirements of the zoning district in which it is located.

        (2) The expanded structure shall not exceed the ground floor coverage and floor area ratio limits of the district in which it are located.

    b. All repairs and maintenance shall conform to the State Construction Code and all other applicable code requirements. A damaged structure shall be adequately secured and shall be protected against further damage from the elements.

c. A nonconforming single-family dwelling and customary accessory structures may be reconstructed or replaced if destroyed, provided that:

(1) Any replacement structure shall conform to the dimensional standards of the zoning district where it is located, except where, in the determination of the Zoning Inspector, existing site conditions would prevent reasonable conformance. In such cases, the dwelling or customary accessory structure may be reconstructed on the existing location.

(2) Application for a building permit for reconstruction or replacement of a destroyed structure shall be made within three hundred sixty-five (365) calendar days of the date of such damage, and all work shall be completed within the building permit approval period. Where pending insurance claims require an extension of time, the Zoning Inspector may grant one (1) extension of up to three hundred sixty-five (365) calendar days, provided that the property owner submits a certification from the insurance company attesting to the delay.

(3) A nonconforming structure that is moved within a lot or to another lot shall thereafter conform to the regulations of the district in which it is located.

d. If a nonconforming dwelling or customary accessory structure becomes physically unsafe or unlawful due to a lack of repairs or unsecured exposure to the elements, or is declared to be unsafe or unlawful by reason of physical condition under the State Construction Code or applicable fire or property maintenance codes, it shall not thereafter be restored, repaired or rebuilt except in conformity with all Ordinance requirements [amended 8/16/2010, Ord. 174-04].

Section 15.0634 Nonconforming Lots of Record.

Existing lots of record that are not in compliance with the dimensional requirements of this Ordinance shall only be used, developed, or improved in accordance with the following:

A. Use of a Single Nonconforming Lot of Record.

A principal building or single-family detached dwelling and customary accessory structure(s) may be erected, occupied, and used on a single, nonconforming lot of record, provided that the lot is not in continuous frontage with other lots in the same ownership and is in accordance with other requirements applying in the zoning district.

This provision shall apply even though such lot fails to meet the requirements for area or width, or both, that are generally applicable in the district, provided that yard dimensions and all requirements other than those applying to area, or width, or both, of the lot shall conform to the regulations for the district in which such lot is located.

B. Combination of Nonconforming Lots.

If two (2) or more lots or combinations of lots and portions of lots are in single ownership as of the date of this Ordinance or at any time thereafter and are in continuous frontage, and if all or part of the lots do not meet the requirements established under this Ordinance for lot width and area, the lands involved shall be combined and considered a single, undivided parcel for purposes of this Ordinance.

1. No portion of the resulting parcel shall be used, sold, or divided in such a manner as to diminish compliance with lot width and area requirements established by this Ordinance.

2. Where the nonconforming lot(s) were created by public taking action or as a result of a court order, combination of the lots shall not be required.

3. Where possible, nonconforming lots of record shall be combined to create lots that comply with the requirements of this Ordinance.

C. Division of Nonconforming Lots.

A lot of record shall not be divided in a manner that would increase its nonconformity, cause an existing structure or site improvement to become nonconforming, or create one or more nonconforming lots.

Section 15.0~~7~~45 Nonconforming Uses.

~~Single-family detached dwellings that are a nonconforming use in the zoning district shall be subject to the standards of Section _____ (Nonconforming Single-Family Detached Dwellings).~~ All ~~other~~ nonconforming uses, other than non-conforming single family detached dwellings, shall be allowed to continue after the effective date of this Ordinance or amendments thereto, subject to the following:

A. Compliance with Other Applicable Standards.

Nonconforming uses shall be maintained in compliance with all applicable federal, state, and local laws, ordinances, regulations and codes, other than the specific use regulations for the zoning district where the use is located.

1. The owner, operator or person having beneficial use of land or structures occupied by a nonconforming use shall be responsible for demonstrating compliance with this requirement.

2. Failure to do so, or failure to bring the use into compliance with current laws, ordinances, regulations and codes within one hundred-eighty (180) days of their effective date, shall constitute grounds for the Township to seek court approval to terminate or remove the use at the owner's expense.

B. Alteration.

Nonconforming uses shall not be enlarged, increased in intensity, extended to occupy a greater area of land or floor area, or moved in whole or in part to any other portion of the lot or structure; other than that occupied at the time the nonconforming status was established.

1. No such land occupied by a nonconforming use shall be subdivided nor any structure added, except for purposes and in a manner conforming to zoning district regulations. Subdivision that does not increase the degree of nonconformity shall be permitted.

2. Expansions, additions, or alterations that would have the effect of intensifying the impact, appearance, or character of a nonconforming use shall be subject to Section 15.04 D (Expansion or Substitution).

3. Substitution of a nonconforming use for another nonconforming use on the same site shall be subject to Section 15.04 D (Expansion or Substitution).

C. Cessation.

Cessation of use includes, but is not limited to, vacancy of the building or structure in which the nonconforming use was conducted, or discontinuance of the activities consistent with or required for the operation of such nonconforming use, irrespective of whether an intention to cease or abandon the nonconforming use may exist.

1. A nonconforming use that ceases for a period of more than three hundred sixty-five (365) calendar days or is superseded by a conforming use shall not be resumed.

2. Where nonconforming use status applies to a structure and premises in combination, removal or destruction of the structure shall eliminate the legal nonconforming status of the land.

3. If a structure associated with a nonconforming use becomes physically unsafe or unlawful due to a lack of repairs or unsecured exposure to the elements or is declared to be unsafe or unlawful by reason of physical condition under the State Construction Code or applicable fire or property maintenance codes, it shall not thereafter be restored, repaired or rebuilt except in conformity with all Ordinance requirements. All subsequent uses shall conform to all Ordinance requirements.

4. If a structure associated with a nonconforming use is removed, or damaged by any means to an extent that the repair cost exceeds the state equalized value of the property, the nonconformity shall be deemed removed. All subsequent uses shall conform to all Ordinance requirements.

5. If a structure associated with a nonconforming use is damaged by any means to an extent that the repair cost is less than or equal to the state equalized value of the property, such structure may be replaced at its location existing prior to such damage.

   a. Structural reconstruction or replacement shall begin on the site within 365 calendar days of the date of damage and shall be completed within the building permit approval period.

   b. Failure to complete such work within the stated time period shall eliminate the legal nonconforming status of the land. All subsequent uses shall conform to all Ordinance requirements.

   c. Where pending insurance claims require an extension of time, the Zoning Inspector may grant one (1) extension of up to three hundred sixty-five (365) calendar days, provided that the property owner submits a certification from the insurance company attesting to the delay.

D. Expansion or Substitution.

A nonconforming use may be may expanded, or a nonconforming use may be substituted for another nonconforming use, subject to Zoning Board of Appeals ~~Planning Commission~~ approval in accordance with the following: **[Note: This type of determination is within the authority of the ZBA, not PC.]**

1. **Filing of application.** Application for approval of a nonconforming use substitution or expansion shall be made by filing a complete and accurate application form, required information, and required review fee and escrow deposit with the Township Clerk. The Clerk shall transmit a copy of the application materials to designated Township officials and consultants and the Planning Commission.

2. **Eligibility.** The application shall be submitted by the operator of the use or owner of an interest in the land or structure(s) for which nonconforming use substitution or expansion approval is sought, or by the owner's designated agent. Applications that are found by the Township Planner or Planning Commission to be incomplete or inaccurate shall be returned to the applicant without further consideration.

3. **Information required.** An application for approval of a nonconforming use substitution or expansion shall contain the following information:

   a. The applicant's name, address, and telephone number.

b. The names, addresses, and telephone numbers of all record owners and proof of ownership.

c. The applicant's interest in the property, and if the applicant is not the fee simple owner, the signed authorization of the owner(s) for the application.

d. Legal description, address, and tax parcel number of the property.

e. A scaled and accurate survey drawing, correlated with the legal description and showing all existing structures, drives, and other improvements.

f. A detailed description of the existing use and proposed expansion or substitution. The Planning Commission may require documentation that the existing use is legally nonconforming. ~~per the standards of Section ____ (Nonconforming Use Determinations).~~

g. Where required by the Planning Commission or by Section ~~____~~8 (Site Plan Approval Required), detailed site plans shall be submitted for review per Article ~~____~~8 (Site Plan Review).

4. **Required fees and escrow deposits.** The Township Board shall establish, by resolution or ordinance, fees and escrow deposits for review of nonconforming use substitution or expansion applications. Required fees and escrow deposits shall be paid to the Township Treasurer at the time of the filing of the application and no part of a required fee shall be returnable to the applicant. No action shall be taken on any application for which required fees have not been paid in full.

5. **Technical review.** Prior to Planning Commission consideration, the application materials shall be distributed to designated Township officials and consultants for review and comment.

6. **Planning Commission review and public hearing.** Upon receipt of a complete and accurate application for approval of a nonconforming use substitution or expansion from the Clerk, the Planning Commission shall undertake a study of the application. A public hearing shall be held on the application and notice shall be given in accordance with Section ____ (Public Hearing Procedures).

7. **Criteria for approval.** Subsequent to the public hearing, the Planning Commission shall review the application to the standards and findings required herein and the information provided at the public hearing. The Planning Commission may approve a nonconforming use substitution or expansion upon finding that the existing use and proposed expansion or substitution satisfy all of the following criteria for approval:

a. **Use standards.** The existing use and proposed expansion or substitution conform to the following:

(1) The nonconformity does not significantly depress the value of nearby properties.

(2) The use does not adversely impact the public health, safety, and welfare.

(3) The use does not adversely impact the purpose of the district where it is located.

(4) No useful purpose would be served by the strict application of Ordinance requirements that apply to the nonconformity.

(5) In the case of a use substitution, the proposed nonconforming use is more appropriate than the existing nonconforming use in the zoning district in which it is located.

b. **Signage.** The Planning Commission may require that signage associated with the use be brought into compliance with Article 14 (Signs).

c. **Building improvements.** The Planning Commission may approve an expansion of a nonconforming use that includes new construction, or expansion or structural alteration of the existing building(s) occupied by the use where such work conforms to applicable Ordinance requirements.

d. **Site improvements.** If the site is nonconforming with respect to applicable site design standards of this Ordinance, the proposed expansion and associated site improvements shall also conform to the requirements of ~~Section _____ (Nonconforming Sites)~~ this Ordinance.

e. **Other conditions.** The Commission may attach conditions of approval to assure that the use does not become contrary to the purposes of this Article or Ordinance, or the public health, safety or welfare.

Section 15.~~08~~06 Nonconforming Structures.

~~Single-family detached dwellings that are a nonconforming structure in the zoning district shall be subject to the standards of Section _____ (Nonconforming Single-Family Detached Dwellings).~~ All other nonconforming structures, other than single family detached structures, shall be allowed to continue after the effective date of this Ordinance or amendments thereto, subject to the following conditions [amended 8/16/2010, Ord. 174-04]:

A. Alterations.

Structural changes and alterations to a nonconforming structure that decrease or do not affect the degree of nonconformity shall be permitted. Expansions or additions to a nonconforming structure, or alterations to a nonconforming structure that would increase or intensify a nonconformity, shall be subject to Section 15.08 F (Expansion).

B. Relocation.

A nonconforming structure that is moved within a site or to another site shall thereafter conform to the regulations of the district in which it is located.

C. Normal Repairs and Maintenance.

Normal repair, maintenance or replacement of interior non-bearing walls, fixtures, wiring, plumbing, heating, or cooling systems in nonconforming structures may be permitted in accordance with applicable code requirements. Such improvements shall not result in any enlargement of a nonconforming structure, including any increase in floor area, volume, number of dwelling units, dimensions, height, or number of stories. If a nonconforming structure becomes physically unsafe or unlawful due to a lack of repairs and maintenance or is declared by the Building Inspector to be unsafe or unlawful by reason of physical condition, it shall not thereafter be restored, repaired, or rebuilt except in conformity with the regulations of the district in which it is located.

D. Buildings under Construction.

Nothing in this Article shall require a change in the plans, construction or designated use of any structure for which construction was lawfully begun prior to the effective date of adoption or amendment of this Ordinance, provided that such work shall be completed within three hundred sixty-five (365) calendar days of the effective date.

E. Damaged or Unsafe Structures.

A nonconforming structure or a portion thereof, if destroyed or damaged by any means to the extent such that the expense of such reconstruction would exceed the state equalized value of the property, shall not be reconstructed except in conformity with the regulations of the zoning district in which it is located.

1. Nothing in this Ordinance shall prevent the reconstruction, repair, or restoration and the continued use of any nonconforming structure damaged by any means, provided that the expense of such reconstruction shall not exceed the state equalized value of the property.

    a. Application for a building permit for such reconstruction shall be made within three hundred sixty-five (365) calendar days of the date of such damage, and all work shall be completed within the building permit approval period.

b. The lot and damaged structure shall be adequately secured from unauthorized access to the Zoning Inspector's satisfaction. The damaged structure shall be protected against further damage from the elements.

c. Where pending insurance claims require an extension of time, the Zoning Inspector may grant one (1) extension of up to three hundred sixty-five (365) calendar days, provided that the property owner submits a certification from the insurance company attesting to the delay.

2. If a nonconforming structure becomes physically unsafe or unlawful due to a lack of repairs or unsecured exposure to the elements or is declared to be unsafe or unlawful by reason of physical condition under the State Construction Code or applicable fire or property maintenance codes, it shall not thereafter be restored, repaired or rebuilt except in conformity with all Ordinance requirements.

F. Expansion.

A nonconforming structure may be enlarged or expanded, subject to the following:

1. **Expansion of nonconforming farm buildings.** Nonconforming buildings used in farming or active agricultural operations may be expanded if approved by the Zoning Inspector, subject to the following requirements:

   a. Farming shall be a permitted use in the district in which the use is located and the intended use of the structure shall be a permitted use in the district in which the structure is located; and

   b. The expansion shall meet all requirements of the zoning district in which it is located. The existing structure(s) and the expansion shall not exceed the ground floor coverage or floor area ratio limits of the district in which they are located.

2. **Expansion of other nonconforming structures.** Other nonconforming structures may be enlarged or expanded, subject to Zoning Board of Appeals ~~Planning Commission~~ approval in accordance with the following: **[Note: Same principal – this is an authority of the ZBA.]**

   a. **Filing of application.** Application for approval to enlarge or expand a nonconforming structure shall be made by filing a complete and accurate application form, required information, and required review fee and escrow deposit with the Township Clerk. The Clerk shall transmit a copy of the application materials to designated Township officials and consultants and the Planning Commission.

   b. **Eligibility.** The application shall be submitted by the operator of the use or owner of an interest in the land or structure(s) for which

approval to enlarge or expand a nonconforming structure is sought, or by the owner's designated agent. Applications that are found by the Township Planner or Planning Commission to be incomplete or inaccurate shall be returned to the applicant without further consideration.

c. **Information required.** Applications for approval to enlarge or expand a nonconforming structure shall contain the following information:

(1) The applicant's name, address, and telephone number.

(2) The names, addresses, and telephone numbers of all record owners and proof of ownership.

(3) The applicant's interest in the property, and if the applicant is not the fee simple owner, the signed authorization of the owner(s) for the application.

(4) Legal description, address, and tax parcel number of the property.

(5) A scaled and accurate survey drawing, correlated with the legal description and showing all existing structures, drives, and other improvements.

(6) Where required by the Planning Commission or by Section ~~_____~~8 (Site Plan Approval Required), detailed site plans and building elevations shall be submitted for review per Article ~~_____~~8 (Site Plan Review).

d. **Required fees and escrow deposits.** The Township Board shall establish, by resolution or ordinance, fees and escrow deposits for review of applications for approval to enlarge or expand a nonconforming structure. Required fees and escrow deposits shall be paid to the Township Treasurer at the time of the filing of the application and no part of a required fee shall be returnable to the applicant. No action shall be taken on any application for which required fees have not been paid in full.

3. **Technical review.** Prior to Planning Commission consideration, the application materials shall be distributed to designated Township officials and consultants for review and comment.

4. **Planning Commission review and public hearing.** Upon receipt of a complete and accurate application for approval to enlarge or expand a nonconforming structure from the Clerk, the Planning Commission shall undertake a study of the application. A public hearing shall be held on the

application and notice shall be given in accordance with Section 3.11 (Public Hearing Procedures).

5. **Criteria for approval.** Subsequent to the public hearing, the Planning Commission shall review the application to the standards and findings required herein and the information provided at the public hearing. The Planning Commission may approve an enlargement or expansion of a nonconforming structure upon finding that the existing structure and proposed enlargement or expansion satisfy all of the following criteria for approval:

   a. The nonconformity results from noncompliance with zoning district regulations for minimum lot area, minimum lot width, required yards, off-street parking and loading requirements, or transition or landscape strip requirements. In no case shall a structure that is nonconforming because of lot coverage, floor area ratio, lot area per dwelling unit, or height requirements be permitted to expand without removing the nonconformity.

   b. The existing and proposed uses of such buildings and structures shall be permitted in the district in which they are located.

   c. The proposed enlargement or expansion shall conform to all requirements of the zoning district in which it is located.

   d. The Planning Commission shall make the following findings of fact before approving such a request:

      (1) Retention of the nonconforming structure is reasonably necessary for the proposed improvement or that requiring removal of such structure would cause undue hardship;

      (2) The proposed enlarged or otherwise improved nonconforming structure would not adversely affect the public health, safety, and welfare; and

      (3) The proposed improvement is reasonably necessary for continuation of the use on the lot.

6. **Other conditions.** The Planning Commission may attach conditions to the approval to assure that the proposed enlargement or expansion of the nonconforming structure does not become contrary to the purpose of this Article and Ordinance, or to the public health, safety, and welfare.

~~Section 15.09 Nonconforming Sites.~~ [Note: This section is vague and conflicts with other provisions of

Article 15. It is unclear what exactly triggers these provisions.]

~~The purpose of this Section is to encourage improvements to existing sites in the Township that were developed before the site design standards of this Ordinance were established or amended. This Section establishes standards for prioritizing improvements to existing sites that are intended to gradually bring the site into compliance with current Ordinance standards. Nonconforming sites may be improved or modified without a complete upgrade of all site elements, subject to the following conditions:~~

1. ~~A nonconforming site shall not be improved or modified in a manner that increases its nonconformity.~~

2. ~~The proposed site improvements shall resolve public safety deficiencies and pedestrian/vehicle conflicts and improve emergency access.~~

3. ~~The proposed site improvements shall include at least three (3) of the following, in accordance with applicable Ordinance standards and as accepted by the Planning Commission:~~

   a. ~~Preservation of natural resources or historical site features.~~

   b. ~~Pedestrian access improvements.~~

   c. ~~Vehicular access and circulation improvements.~~

   d. ~~Building design or exterior facade improvements.~~

   e. ~~Off-street parking or loading improvements.~~

   f. ~~Landscaping improvements.~~

   g. ~~Screening and buffering improvements.~~

   h. ~~Exterior lighting improvements.~~

   i. ~~Drainage and stormwater management improvements.~~

   j. ~~Clean up or restoration of a blighted site, removal of contaminated soil, or similar environmental improvements.~~

4. ~~The scope of any additional site improvements requested by the Planning Commission shall be in reasonable proportion to the scale and construction cost of proposed building improvements, expansions, or other improvements.~~

5. ~~A reasonable timeline for completion of site improvements to an existing nonconforming site may be approved as part of any plan approval. Failure to complete improvements in accordance with an approved timeline shall be deemed a violation of this Ordinance.~~

~~Section 15.10 Nonconforming Extractive Operations.~~ [Note: Are there any existing operations? Even if so, don't recommend due to existing provisions of Enabling Act.]

~~An extractive operation legally existing at the effective date of adoption or amendment of this Ordinance shall be a nonconforming use, and may continue subject to the following:~~

~~A. Standards for Extension of Nonconforming Extractive Operations.~~

~~Extraction may be extended within the lot based upon the lot boundaries of record at the time this Ordinance was adopted or amended, subject to the following:~~

~~1. Such extensions shall not cross a public road.~~

~~2. All extensions to be commenced following the effective date of adoption or amendment of this Ordinance shall first comply with all provisions of this Section and Section ____ (Extractive and Earth Removal Operations).~~

~~3. Any extensions of operations shall not exceed the depth of extraction of the portion existing at the effective date of adoption or amendment of this Ordinance, unless extraction to a greater depth is approved by the Township as part of site plan approval.~~

~~4. Plans for the future extension of operations and restoration of the site shall be filed with the Township Planning Commission within one (1) calendar year of the effective date of adoption or amendment of this Ordinance. Failure to file such plans within the one (1) calendar year period shall be grounds for the Township Board to refuse any extensions for the site following the one (1) calendar year period. Failure to file may also be grounds for determining intent to abandon extractive operations for the remainder of the site.~~

~~B. Cessation of a Nonconforming Extractive Operation.~~

~~If a nonconforming extractive operation ceases for any reason for a period of three hundred sixty five (365) calendar days, the extractive operation shall thereafter conform to all regulations of this Ordinance and the zoning district where it is located.~~

~~C. Standards for Equipment Upgrades.~~

~~The equipment and processes of a nonconforming extractive operation may be upgraded periodically to maintain the operation in a modern condition, and to meet contemporary pollution control standards. Such changes shall be permitted, even if they will result in an increase of production, subject to the following:~~

~~1. The changes in equipment and processes shall not have the effect of changing the nature or character of the operation into a use prohibited in the zoning district where it is located.~~

~~2. The noise, dust, odors, and other objectionable attributes of the operation shall not be increased beyond the levels existing at the effective date of adoption or amendment of this Ordinance.~~

~~3. The owner of the extractive operation shall notify the Township Zoning Inspector in writing prior to the installation of each change, and building permits for any structure shall be obtained prior to construction.~~

Section 15. ~~11~~0~~9~~7 Change of Tenancy or Ownership.

There may be a change of tenancy, ownership, or management of any existing nonconformity, provided there is no change in the nature or character of such nonconformity except in accordance with this Article.

Section 15. ~~12~~1~~0~~08 Cessation of Nonconformities by Township Action.

The elimination of nonconforming structures and uses shall be considered to be for a public purpose and for a public use. The Township may acquire private property by purchase, condemnation, or other means for the removal of nonconforming uses. The cost of acquiring the private property may be paid from general funds or assessed to a special district, as provided in the Michigan Zoning Enabling Zoning Act. The Township Board may institute proceedings for condemnation of nonconforming uses and structures under the power of eminent domain in accordance with applicable Michigan statutes.

Section 15.~~11~~09 Repairs and ~~m~~Maintenance

A. On any building devoted in whole or in part to any nonconforming use, work may be done in any period of twelve (l2) consecutive months on ordinary repairs, or on repair or replacement of non-bearing walls, fixtures, wiring or plumbing to an extent not exceeding fifty (50) percent of the assessed value of the building, provided that the cubic content of the building as it existed at the time of passage or amendment of this chapter shall not be increased.

B. Nothing in this chapter shall be deemed to prevent the strengthening or restoring to a safe condition of any building or part thereof declared to be unsafe by any official charged with protecting the public safety, upon order to such official.

ARTICLE 17

AMENDMENTS

Section 17.01 Initiating Amendments.

The Township Board may from time to time, on recommendation from the Planning Commission, amend, revise, or supplement district boundaries or the provisions and regulations of this Ordinance to provide for resource guardianship, public necessity, convenience, or safety, and the general welfare. Amendments may be initiated by the Township Board or Planning Commission. Amendments may also be initiated by petition of one (1) or more property owners or residents of the Township, or by one (1) or more persons acting on behalf of such property owners or residents. All proposed amendments shall be referred to the Planning Commission for review, public hearing, and recommendation before final action by the Township Board.

Section 17.02 Required Fees and Escrow Deposits.

The Township Board shall establish, by resolution or ordinance, fees and escrow deposits for review of zoning amendment petitions. Required fees and escrow deposits shall be paid to the Township Treasurer at the time of the filing of the application and no part of the required fee shall be returnable to the applicant. No fee or escrow deposit shall be required for amendments proposed or requested by the Township. No action shall be taken on any petition or appeal for which the required fees have not been paid in full.

Section 17.03 Pre-Application Meeting.

A property owner or their agent or designee shall meet with the Township staff ~~Planner and designated Township consultants~~ prior to submitting a formal application for an amendment under this Article. The purpose of the meeting is to discuss the amendment review process, information requirements, ~~Growth Management~~Master Plan policies, and standards for approval.

1. The Township may require payment of a fee or escrow deposit to cover the costs of a pre-application meeting.

2. Comments or suggestions regarding a proposed amendment shall constitute neither approval nor a disapproval of the amendment, nor shall the Township be bound by such comments or suggestions during any subsequent review of an amendment application.

Section 17.04 Amendment Procedure.

The procedure for amending this Ordinance shall be in accordance with the Michigan Zoning Enabling Act, as amended (MCL 125.3101 et seq.). and the following:

A. Filing of Petition.

A petition shall be filed with the Township~~ Clerk~~ Zoning Administrator ~~Clerk~~. The ~~Clerk~~ Administrator shall transmit the petition to the Planning Commission for review and ~~report~~ recommendation to the Township Board.

B. Technical Review.

Prior to Planning Commission consideration, the proposed ~~conditional~~ rezoning amendment and application materials shall be distributed to designated Township officials and consultants for review and comment.

C. Public Hearing.

A public hearing shall be held for all proposed amendments in accordance with Section ~~—~~3.11 (Public Hearing Procedures).

D. Planning Commission Recommendation.

Subsequent to the hearing, the Planning Commission shall review the proposed amendment, together with any reports and recommendations from officials, consultants, other reviewing agencies, and any public comments. The Planning Commission shall identify and evaluate all relevant factors, and shall report its findings of fact, conclusions, and recommendation to the Township Board. ~~within one hundred eighty (180) calendar days after receipt of a complete and accurate application.~~ The report shall include a summary of comments received at the public hearing. ~~This time limit may be extended by agreement between the petitioner and the Planning Commission.~~

~~E. Optional County Review.~~

~~Upon completion of the Planning Commission public hearing, the proposed amendment or supplement may be submitted to the Washtenaw County Planning Advisory Board for review and recommendation to the Township Board.~~

~~F.~~E. Township Board Action.

Following receipt of the report and recommendation from the Planning Commission, the Township Board shall consider and vote upon the adoption of the proposed amendment.

1. The Township Board may, at its discretion, refer the amendment back to the Planning Commission for further consideration or revision within a specified time limit.

2. The Township Board may hold additional public hearings on the proposed amendment in accordance with Section ~~—~~3.11 (Public Hearing Procedures). The Township Board shall hold a public hearing on a proposed Ordinance amendment upon written request by a property owner sent by certified mail to the Township Clerk.

3. If the Township Board shall deem advisable any changes, additions, or departures as to the proposed amendment, it shall refer same to the Planning Commission for a report thereon within a time specified by the Board. Thereafter, the Board may act upon the petition.

G. Re-Application.

Whenever an application for an amendment to this Ordinance has been rejected by the Township Board, a new application for the same amendment shall not be accepted by the Township for a period of three hundred sixty-five (365) calendar days unless the Township Board or Planning Commission determines that one or more of the following conditions has been met:

1. There is a substantial change in circumstances relevant to the issues or facts considered during review of the application.

2. New or additional information is available that was not available at the time of the review.

3. The new application is materially different from the prior application.

Section 17.05 Conditional Rezoning Procedures. [Note: The Township cannot prohibit conditional rezoning application.]

A. Authorization and Limitations. The Township Board shall have the authority to place conditions on a rezoning, provided the conditions have been voluntarily offered in writing by the applicant and are acceptable to the Township Board. In exercising its authority to consider a conditional rezoning, the Township is also authorized to impose the following limitations:

1. An owner of land may voluntarily offer written conditions relating to the use and/or development of land for which a conditional rezoning is requested. This offer may be made either at the time the application for conditional rezoning is filed, or additional conditions may be offered at a later time during the conditional rezoning process as set forth below.

2. The owner's offer of conditions may not authorize uses or developments not permitted in the requested new zoning district. The owner's offer of conditions shall bear a reasonable and rational relationship to the property for which the conditional rezoning is requested.

4. Any use or development proposed as part of an offer of conditions that would require special use approval under the terms of this ordinance may only be commenced if special use approval for such use or development is ultimately granted in accordance with the provisions of this Ordinance.

5. Any use or development proposed as part of an offer of conditions that would require a variance under the terms of this ordinance may only be commenced if a variance for such use or development is ultimately granted by the Zoning Board of Appeals in accordance with the provisions of this Ordinance.
6. Any use or development proposed as part of an offer of conditions that would require site plan approval under the terms of this ordinance may only be commenced if site plan approval for such use or development is ultimately granted in accordance with the terms of this Ordinance.

B. Amendment of Conditions. The offer of conditions may be amended during the process of conditional rezoning consideration, provided that any amended or additional conditions are entered voluntarily by the owner and confirmed in writing. An owner may withdraw in writing all or part of its offer of conditions any time prior to final rezoning action of the Township Board, provided that, if such withdrawal occurs subsequent to the Planning Commission's public hearing on the original rezoning request, then the rezoning application shall be referred back to the Planning Commission for a new public hearing with appropriate notice and a new recommendation.

C. Procedure. The procedure for consideration of Conditional Rezoning request shall be the same as provided in Section 17.04 for other rezoning requests and the requirements of said Sections shall be applicable to Conditional Rezoning in addition to the following:

1. A Conditional Rezoning request shall be initiated by the applicant submitting a proposed Conditional Rezoning Agreement. A Conditional Rezoning Agreement shall include the following:

   a. A written statement that confirms the Conditional Rezoning Agreement was proposed by the applicant and entered into voluntarily.

   b. A written statement that confirms that the property will not be used or developed in a manner that is inconsistent with conditions placed on the rezoning.

   c. A list of conditions proposed by the applicant.

   d. A time frame for completing the proposed improvements.

   e. A legal description of the land.

   f. A Sketch Plan in sufficient detail to illustrate any specific conditions proposed by the applicant.

2. The Notice of Public Hearing on a Conditional Rezoning request shall include a general description of the proposed agreement being considered. A review of the proposed agreement shall be conducted at the public hearing.

3. A Conditional Rezoning may only be approved upon a finding and determination that all of the following are satisfied:

a. The conditions, proposed development, and/or proposed use of the land are designed or proposed for public health, safety, and welfare purposes.

~~a.~~b. The conditions, proposed development and/or proposed use are not in material conflict with the Master Plan, or, if there is material conflict with the Master Plan, such conflict is due to one of the following:

i. A change in Township policy since the Master Plan was adopted.

ii. A change in conditions since the Master Plan was adopted.

iii. An error in the Master Plan.

c. The conditions, proposed development and/or proposed use are in accordance with all terms and provisions of the zoning district to which the land is to be rezoned, except as otherwise allowed in the Conditional Rezoning Agreement.

d. Public services and facilities affected by a proposed development will be capable of accommodating service and facility loads caused by use of the development.

e. The conditions, proposed development and/or proposed use shall insure compatibility with adjacent uses of land.

D. Amendment to Zoning Map. Upon approval by the Township Board of a Conditional Rezoning request and a Conditional Rezoning Agreement, as provided by this Section, the Zoning Map shall be amended to reflect a new zoning classification along with a relevant designation that will provide reasonable notice of the Conditional Rezoning Agreement.

E. Expiration. A Conditional Rezoning Approval shall expire two (2) years from the effective date of the rezoning unless progress has been diligently pursued and substantial completion has occurred in accordance with permits issued by the Township.

1. In the event the conditional rezoning expires, the rezoning and the Conditional Rezoning Agreement shall be void and of no effect.

2. If the Conditional Rezoning becomes void, no development shall be undertaken and no permits for development shall be issued until such time as a new zoning district classification of the property has become effective as a result of one or both of the following actions that may be taken:

   a. The property owner seeks a new rezoning classification for the property; and/or

b. The Township initiates a new rezoning request for the property to a reasonable district classification, in accordance with the conventional rezoning procedure.

F. **Recording**. A Conditional Rezoning Approval shall not become effective until the Conditional Rezoning Agreement is recorded with the Washtenaw County Register of Deeds and a certified copy of the Agreement is filed with the Township Clerk.

G. **Violation of Conditional Rezoning Agreement**. If development and/or actions are undertaken in violation of the Conditional Rezoning Agreement, such development and/or actions shall constitute a violation of this Ordinance and deemed a nuisance per se. In such case, the Township may issue a stop work order relative to the property and seek any other lawful remedies. Until action is taken to bring the property into compliance with the Conditional Rezoning Agreement, the Township may withhold, or, following notice and an opportunity to be heard, revoke permits and certificates, in addition to or in lieu of such other lawful action to achieve compliance.

Section 17.0~~5~~6 Information Required.

The following information shall be required with any petition for amendment to this Ordinance or Official Zoning Map submitted by one (1) or more property owners or residents of the Township, or by one (1) or more persons acting on behalf of such property owners or residents:

A. Zoning Map Amendment.

When the petition involves an amendment to the Official Zoning Map, the petitioner shall submit the following information:

1. A legal description of the property, including street address(es) and tax code number(s).

2. A scaled map of the property, correlated with the legal description, and clearly showing the property's location.

3. The name~~,~~ ~~and~~ address, and email address of the petitioner.

4. The petitioner's interest in the property. If the petitioner is not the owner, the name and address of the owner(s), and the signed consent of the owner(s) to the petition. In the event a petition for zoning amendment is initiated by the Township Board or Planning Commission, the signed consent of the owner(s) to the petition shall not be required.

5. Signature(s) of the petitioner(s) and owner(s), certifying the accuracy of the information. In the event a petition for zoning amendment is initiated by the Township Board or Planning Commission, the certification by the owner(s) shall not be required.

6. Identification of zoning district requested and the existing zoning classification of subject property.

7. Vicinity map showing location of property, and adjacent land uses and zoning classifications.

8. General description of natural resources and features, including, but not limited to, wetlands, streams, and other water bodies, steep slopes, woodlands, and floodplains, to be depicted on scaled drawings. In the event a petition for zoning amendment is initiated by the Township Board or Planning Commission, this general description shall not be required.

9. Reasons for the proposed amendment or zoning classification.

B. Zoning Ordinance Text Amendment.

When a petition involves a change in the text of the Zoning Ordinance, the petitioner shall submit the following information:

1. A detailed statement of the petition, clearly and completely setting forth all proposed provisions and regulations, including all changes in the Zoning Ordinance necessary to accommodate the proposed amendment.

2. Name and address of the petitioner.

3. Reasons for the proposed amendment.

Section 17.0~~6~~7 Findings of Fact Required.

In reviewing any petition for a zoning amendment, the Planning Commission shall identify and evaluate all factors relevant to the petition. All findings of fact and conclusions shall be made as part of the public records of the meetings of the Planning Commission. The facts to be considered by the Planning Commission shall include, but shall not be limited to, the following:

1. Whether or not the requested zoning change is justified by a change in conditions since the original Ordinance was adopted, or by an error in the original Ordinance.

2. The precedents, and the possible effects of such precedents, that might result from approval or denial of the petition.

3. The capacity of Superior Township or other government agencies to provide any services, facilities, and/or programs that might be required if the petition were approved.

4. Effect of approval of the petition on the condition and/or value of property in Superior Township or in adjacent municipalities.

5. Relation of the petition to the Township's adopted ~~Growth Management~~Master Plan, and of other government units where applicable.

A petition shall not be approved unless these and other facts are affirmatively resolved in terms of resource guardianship, public necessity, convenience, and safety, and the general welfare of Superior Township and of other civil divisions, where applicable.

Section 17.0~~7~~8 Notice of Adoption.

Following Township Board approval of a petition to amend the Zoning Ordinance, notice of the amendment shall be published within fifteen (15) calendar days of such approval in a newspaper of general circulation within Superior Township. The notice of adoption shall include the following information:

1. The Article and Section of the Ordinance amendment, in the case of a text amendment;

2. Either a summary of the regulatory effect of the amendment, including the geographic area affected, or the text of the amendment;

3. The effective date of the amendment; and

4. The place and time where a copy of the Ordinance may be inspected or purchased.

Section 17.0~~8~~9 Referendum.

Within seven (7) calendar days after publication of the notice of adoption for an amendment to the Zoning Ordinance or Official Zoning Map, a registered elector residing in the unincorporated portion of the Township may file with the Township Clerk a notice of intent to file a petition for referendum under this Section.

1. If a notice of intent is filed, then within thirty (30) calendar days after publication of the notice of adoption for an amendment to the Zoning Ordinance or Official Zoning Map, a petition may be filed with the Township Clerk requesting therein for the submission of the amendment to the electors residing in the unincorporated portion of the Township for their approval. To qualify, the petition shall be signed by a number of qualified and registered voters residing in the unincorporated portion of the Township equal to not less than fifteen percent (15%) of the total votes cast in the Township for all candidates for Governor of the State of Michigan at the last preceding general election at which the Governor was elected.

2. Upon the filing of a notice of intent, the approved amendment shall not take effect until one (1) of the following occurs:

    a. The expiration of thirty (30) calendar days after publication of the notice of adoption for the amendment to the Zoning Ordinance or official zoning map, if the petition is not filed within that time period.

b. The Township Clerk finds that the petition, if filed within thirty (30) calendar days after publication of the notice of adoption for the amendment to the Zoning Ordinance or Official Zoning Map, is inadequate.

c. If a petition is filed within thirty (30) calendar days after publication of the notice of adoption for the amendment to the Zoning Ordinance or Official Zoning Map, the Township Clerk finds that the petition is adequate, and the amendment is approved by a majority of the registered electors residing in the unincorporated portion of the Township. The referendum shall be held at the next regular election date that provides sufficient time for proper notices and printing of ballots, as determined by the Township Clerk. The Township Board shall provide the manner of submitting the amendment to the electors for their approval or rejection and determining the result of the election.

Section 17. ~~09~~10 Conformance to Court Decree.

Any amendment for the purpose of conforming to a provision of a decree of a court of competent jurisdiction as to specific Township lands may be adopted by the Township Board and the amendment published without referring same to any other commission or agency.

~~Section 17.10 Conditional Rezoning Prohibited.~~ [Note: The Township cannot prohibit ~~condtion~~conditional rezonings.]

~~Conditional rezoning, as authorized by Section 405 of the Michigan Zoning Enabling Act, shall be prohibited in Superior Charter Township. Any application for a rezoning amendment to the Official Zoning Map that includes proposed conditions or voluntary use, or development limitations shall be returned to the applicant without Township review or consideration.~~