MARION TOWNSHIP PLANNING COMMISSION
AGENDA

REGULAR MEETING
Tuesday – June 23, 2026
7:30 pm

Virtual access instructions for participating in the meeting are posted on www.mariontownship.com
MEETING WILL BE HELD IN MAIN HALL

CALL TO ORDER

PLEDGE OF ALLEGIANCE

MEMBERS' PRESENT

PUBLIC COMMENT

APPROVAL OF AGENDA ***June 23, 2026, Regular Meeting***

APPROVAL OF MINUTES FOR ***May 26, 2026, Regular Meeting***

PUBLIC HEARING

OLD BUSINESS

1. **Discussion of Hyper Scale Data Center Ordinance Updates**

NEW BUSINESS

1. **Consideration for Approval PR#01-26 Mayberry Farm Way**

CORRESPONDENCE AND UPDATES

PUBLIC COMMENT

ADJOURNMENT

Next Meeting is scheduled for July 28, 2026, at 7:30 PM

Marion Township Public Participation Policy
at Township Planning Commission Meetings

The Public shall be given an opportunity to be heard at every Township Planning Commission Meeting following the adoption of this Policy.

The Planning Commission Chairperson is the moderator of the meeting. In the absence of the Chairperson, the Planning Commission VICE-Chairperson shall be the moderator of the meeting.

The Public attending the meeting either in-person or on-line may speak during the "Public Comment" part of the meeting agenda. To preserve order, those attending in-person will speak first. When all in-person attendees have been heard, the moderator will ask if any on-line attendee wishes to speak.

When recognized by the moderator, in-person attendees shall come to the podium. The moderator will request that they give their name and address before they begin their comments.
When all in-person attendees have finished speaking, the moderator will ask if anyone attending the meeting on-line wishes to speak. Online attendees may unmute themselves and when recognized by the moderator may speak. Online attendees will also be asked for their name and address.

All comments shall be addressed to the Township Planning Commission members. The "Public Comment" is for attendees to provide information or opinions to the Township Planning Commission and is not intended to be a dialogue. Anyone needing a response should contact officials or staff during normal office hours.

The Public attending the meeting either in-person or on-line will be allowed to ask questions and make comments about NEW and UNFINISHED agenda items. These questions and comments must be made during the discussion of that agenda item. Anyone that would like to speak will raise their hand indicating their desire to speak.

When recognized by the moderator, in-person attendees shall come to the podium. The moderator will request that they give their name and address before they begin their comments.
When all in-person attendees have finished speaking, the moderator will ask if anyone attending the meeting on-line wishes to speak about the NEW or UNFINISHED agenda item. Online attendees may unmute themselves and when recognized by the moderator may speak. Online attendees will also be asked for their name and address.

The moderator can close the questions and comments session about a NEW and UNFINISHED agenda item at his/her discretion.

To preserve efficiency, at any time during the meeting, each speaker, whether in-person or online will be limited to THREE MINUTES.

Next Meeting is scheduled for July 28, 2026, at 7:30 PM

DRAFT

*Approved by: _____
Planning Commissioner

Date: _____

MARION TOWNSHIP
PLANNING COMMISSION
REGULAR MEETING MINUTES
MAY 26, 2026 / 7:30PM

PC MEMBERS PRESENT:	**JIM ANDERSON** – *CHAIRPERSON* **LARRY FILLINGER** – *VICE CHAIRPERSON* **CHERYL RANGE** – *SECRETARY* **SCOTT LLOYD** **BRUCE POWELSON**
PC MEMBERS ABSENT:	**NONE**
OTHERS PRESENT:	**SCOTT RICHARDSON** – *ZONING ADMINISTRATOR* **ZACH MICHELS** – *TOWNSHIP PLANNER*

CALL TO ORDER:
Jim Anderson called the meeting to order at 7:30 pm.

MEMBERS PRESENT:
All Planning Commissioners are present.

PUBLIC COMMENT:
Cindy Alesso is a Marion Township resident and made a comment on the proposed chicken ordinance.

Joe Mazur is a Marion Township resident and made a comment on the proposed chicken ordinance and the proposed data center language.

Jennifer Provencal is a Marion Township resident and made a comment on the proposed chicken ordinance, the Planning Commission's agenda process and the Township selling land to builders.

Les Andersen is a Marion Township resident and made a comment on the ticketing process from local police for chickens being in the road.

APPROVAL OF MAY 26, 2026 AGENDA:
Jim Anderson requested to amend the May 26, 2026 agenda under Old Business as follows: #1 Storage Containers ordinance language; #2 Chicken ordinance language; #3 Hyper Scale Data Center language and Letter from Sean Webber. Jim Anderson made a motion to approve the May 26, 2026 agenda as amended. Larry Fillinger seconded. **5-0 MOTION CARRIED**

APPROVAL OF APRIL 28, 2026 MINUTES:
Larry Fillinger made a motion to approve the April 28, 2026 Planning Commission minutes as presented. Jim Anderson seconded. **5-0 MOTION CARRIED**

DRAFT

PUBLIC COMMENT:

1) TXT# 01-26 STORAGE CONTAINERS

No comments were made during public hearing.

OLD BUSINESS:

1) DISCUSSION ON TXT# 01-26 STORAGE CONTAINER ORDINANCE CHANGES

The Planning Commission discussed changes to the following sections of the ordinance:

PAGE 3 A #1
PAGE 4 #4
PAGE 5 #10
PAGE 3 SECTION B #5
PAGE 3 SECTION A #2
PAGE 4 SECTION C #2
PAGE 4 SECTION C #9

Larry Fillinger, Scott Richardson and Zach Michels will make the discussed changes and then send to the Livingston County Planning Department for review. Once the LCPD has finished reviewing and providing comment, it will come back to the Planning Commission for review and discussion.

Larry Fillinger made a motion to send the TXT #01-26 Storage Containers ordinance to the Livingston County Planning Department for review and comment and then back to the Planning Commission for review and public comment. Cheryl Range seconded. **Roll Call:** Powelson: NO; Range: YES; Fillinger: YES; Anderson: YES; Lloyd: YES **4-1 MOTION CARRIED**

2) DISCUSSION ON CHICKEN ORDINANCE

Zach Michels addressed some of the concerns expressed by the public about the proposed chicken ordinance. Zach explained that currently our chicken ordinance does not allow parcels that are 2 acres or less to keep livestock (including chickens) on their property. This newly proposed language allows chickens on parcels that are 2 acres or less, with certain restrictions. Zach and the Planning Commission discussed further changes made to the ordinance.

Larry Fillinger made a motion to have Scott Richardson and Zach Michels make the discussed changes to the proposed Chicken ordinance and bring back to the next Planning Commission meeting for review and public comment. Cheryl Range seconded. **5-0 MOTION CARRIED**

3) DISCUSSION OF HYPER SCALE DATA CENTER ORDINANCE UPDATES AND SEAN WEBBER LETTER

Jim Anderson said that Scott Richarson received a letter from Sean Webber and it contained a lot of good information. Jim Anderson suggested that he, Scott Richardson and Zach Michels get together and work on incorporating some of Mr. Webber's suggestions into our Data Center ordinance and then bring the changes back to the Planning Commission for review.

Cheryl Range made a motion to have Jim Anderson, Scott Richardson and Zach Michels incorporate some of the suggestions in Mr. Sean Webber's letter into our Data Center ordinance and then bring the changes back to the Planning Commission for review. Jim Anderson seconded. **5-0 MOTION CARRIED**

NEW BUSINESS:

No new business was discussed.

CORRESPONDENCE AND UPDATES:

Jessica Timberlake explained to the Public that before every public township meeting the meeting agenda and packet is posted on the website, one week prior to scheduled meeting.

PUBLIC COMMENT:
Cindy Alesso is a Marion Township resident and thanked the Planning Commission for engaging with the public throughout the meeting tonight.

ADJOURNMENT:
Jim Anderson made a motion to adjourn the Planning Commission meeting at 9:45pm. Cheryl Range seconded.
5-0 MOTION CARRIED

MINUTES TAKEN BY: Jessica S. Timberlake

DATA CENTERS

Marion Township Zoning Ordinance
Livingston County, Michigan

Draft for Planning Commission review

MARION TOWNSHIP

ZONING ORDINANCE TEXT AMENDMENT

DATA CENTERS

An amendment to the Marion Township Zoning Ordinance to amend definitions related to data centers; amend uses permitted by special use permit; amend standards for data centers; and amend the table of contents accordingly.

1. AMENDMENT OF ARTICLE III: DEFINITIONS

SECTION 3.02 DEFINITIONS OF THE ZONING ORDINANCE IS HEREBY AMENDED TO ADD THE FOLLOWING DATA CENTER DEFINITION, WHICH SHALL READ AS FOLLOWS:

~~SECTION 3.02 DEFINITIONS OF THE ZONING ORDINANCE IS HEREBY AMENDED THE FOLLOWING DATA CENTER DEFINITION, WHICH SHALL READ AS FOLLOWS:~~

[Red, underlined text to be added. ~~Red, strikethrough~~ text to be deleted.]

~~[Red, underlined text to be added. Red, strikenthrough text to be deleted.]~~

Data Center: A facility used primarily for the storage, management, process, or transmission of digital data that may include computer or network equipment, systems, servers, appliances, or other components related to digital data operations. The use may also include air handlers, power generators, water cooling and storage facilities, utility substations, and other ~~associated utility~~ related infrastructure to support operations.

2. AMENDMENT OF ARTICLE VIII: RESIDENTIAL DISTRICTS

SECTION 8.01(E)(22) OF THE ZONING ORDINANCE IS HEREBY ADDED TO READ AS FOLLOWS:

[Red, underlined text to be added. ~~Red, strikethrough~~ text to be deleted.]

~~[Red, underlined text to be added. Red, strikenthrough text to be deleted.]~~

Data centers

3. AMENDMENT OF ARTICLE X: INDUSTRIAL DISTRICTS

SECTION 10.01(D)(5) OF THE ZONING ORDINANCE IS HEREBY AMENDED TO READ AS FOLLOWS:

[Red, underlined text to be added. ~~Red, strikethrough~~ text to be deleted.]

[Red, underlined ~~text to be added. Red, strikenthrough text to be deleted.~~]

Data centers

4. AMENDMENT OF ARTICLE XVII: STANDARDS FOR SPECIFIC SPECIAL LAND USES

SECTION 17.36 DATA CENTER OF THE ZONING ORDINANCE IS HEREBY AMENDED TO READ AS FOLLOWS:

[Red, underlined text to be added. ~~Red, strikethrough~~ text to be deleted.]

[Red, underlined ~~text to be added. Red, strikenthrough text to be deleted.~~]

Section 17.36 Data Centers

A. Intent and Purpose: The intent and purpose of this section is to establish standards for the siting, installation, operation, decommissioning, and removal of Data Centers and related accessory uses; establish the process for the reviewing and permitting of such facilities; protect the health, welfare, safety, and quality of life of the general public; ensure compatibility with land uses in the surrounding area; ensure adequate capacity for public services and infrastructure for Data Centers and the community; and protect and preserve the existing and desired rural character of the community.

B. Locational Requirements: Data Centers are subject to the locational requirements below.

1. Wellhead Protection: Data Centers shall not be located within a wellhead protection area.
2. Spacing: Data Centers shall be at least two thousand five hundred (2,500) feet from any existing or approved Data Center, including ones in adjacent communities.
3. Electrical: The site shall be located within one (1) mile of an existing high-voltage electrical transmission corridor.

C. Site Requirements: Data Center sites shall meet the site standards below.

1. Site Composition: The site shall consist of ~~-~~a single parcel. When a site crosses a road or is otherwise unable to be combined into a single parcel, all parcels shall be owned and controlled by a single entity.

2. Lot Area: The site shall have a total net lot area of at least ten (10) acres and a maximum total net lot area of six hundred forty (640) acres.

3. Access: The site shall have direct access from a paved county road.

D. Buffering Requirements: Data Centers shall have a landscape buffer outlined below in addition to what is required in Section 6.13 Landscaping, Fencing, Walls and Screening. In case of a conflict, these standards below shall control.

1. Width: The buffer shall be at least one hundred (100) feet wide.

2. Berm: A berm at least fifteen (15) feet high shall be located within the landscape buffer. The berm shall be setback and designed to not increase stormwater flow to adjacent properties.

3. Vegetation: The landscape buffer shall be vegetated as described below.

   a. Shade Trees: There shall be a shade tree for every seventy-five (75) feet of exterior frontage or fraction thereof. Trees shall have a caliper of at least two point five (2.5) inches at the time of planting. A maximum of ten (10) percent of shade trees can be from a single species.

   b. Evergreen Trees: Evergreens shall be planted fifteen (15) feet apart in two (2) staggered rows spaced fifteen (15) feet apart. Trees shall have a height of at least six (6) feet at the time of planting. A maximum of fifteen (15) percent of evergreen trees can be from a single species.

4. Modification: The Planning Commission can recommend and the Township Board can approve a modification of these buffering standards provided the proposed modification would provide equal or better screening to adjacent properties and consideration of the following:

   a. The proposed modification is necessary to protect or preserve existing vegetation;

   b. The proposed modification preserves important vegetation or wildlife habitat;

   c. The proposed modification is necessary for environmental reasons;

   d. The proposed modification is the minimum necessary.

5. Maintenance: Good arboricultural techniques shall be followed with respect to vegetation, including, but not limited to, proper pruning, proper fertilizing, and proper mulching, so that the vegetation will reach maturity as soon as practical and will have maximum foliage density. Dead or diseased vegetation shall be removed and must be replaced in a manner consistent with these standards at the next appropriate planting season.

   a. Annual Inspection: Data Centers will be inspected on at least an annual basis to ensure continued compliance with these buffering requirements.

   b. Violation: A confirmed violation of the buffering requirements must be corrected within thirty (30) days of receiving notice or the next planting season. If a violation is not corrected, the Township may enter the property

and use the performance guarantee to take corrective action. This does not preclude any other legal remedy or penalty.

E. Performance Standards In addition to the general standards of this Ordinance, Data Centers shall meet the performance standards below.

1. Setbacks: Buildings shall be setback at least one hundred fifty (150) feet from lot lines and at least five hundred (500) feet from adjacent residential dwellings, schools, and religious institutions.
2. Building Height: Buildings shall have a maximum height of twenty-nine (29) feet.
3. Building Area: Individual buildings shall have a maximum area of one hundred fifty thousand (150,000) square feet.
4. Building Coverage: Maximum building coverage is forty (40) percent of the net lot area.
5. Municipal Utilities: Data Centers must be connected to and served by municipal water and sanitary sewer systems. On-site wells or septic field are not permitted. Applicant shall provide estimated annual water demand as part of the application.
6. Cooling: Cooling systems serving Data Centers shall be closed loop.
7. Power Generation: Routine or primary power generation is prohibited, except where expressly permitted. Emergency backup generators are permitted subject to the standards below.
   a. Use: Except for testing, exercise, or commissioning activities, generator use is limited to emergency backup use only.
   b. Hours: Generator testing, exercise, and commissioning is limited to the hours between 11:00 am and 5:00 pm.
   ~~b.~~c. Fuel storage must comply with applicable state and federal regulations.
8. Buildings: Buildings associated with Data Centers shall meet the design standards below.
   a. Façade Materials: Façades visible from off-site shall have at least fifty (50) percent of their surface area clad in face brick and at least ten (10) percent of their surface clad in glass. Spandrel glass does not qualify.
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   b. Roof: Buildings with a lot coverage of more than fifty thousand (50,000) square feet shall have a roof with white or light colors, a planted green roof, or solar panels.
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c. Mechanical Equipment: Roof-mounted mechanical equipment shall be fully screened to the height of the equipment.

d. Loading Bays: Loading bays shall only be located along one façade per building and shall not be on the front façade.

9. Lighting: In addition to the lighting standards in §14.04(E) Lighting, Data Centers shall meet the specific lighting standards below.

a. Intensity: The maximum illumination level anywhere within the site shall be ten (10) footcandles.

b. Height: Building and pole-mounted light fixtures shall have a maximum height of eighteen (18) feet.

c. Hours: Exterior lighting shall be turned off from one (1) hour after sunset to one (1) hour before sunrise. This shall not apply to the minimum lighting needed for construction or emergency service, required by building code, required for staff parking lots, or motion-activated lighting required for safety or security.

~~c. Hours: Exterior lighting shall be turned off from one (1) hour after sunset to one (1) hour before sunrise. This shall not apply to the minimum lighting: needed for construction or emergency service; required for building code; the required for staff parking lots; or motion activated lighting required for safety or security~~

d. Color Temperature: Lighting shall have a maximum color temperature of 2800K.

10. Security: Data Centers shall provide the security below.

a. Perimeter Fencing: The Data Center site shall have fencing around the facility to prevent unauthorized access and to screen the facility.

1) Height: The fence shall be between seven (7) feet and eight (8) feet tall.

2) Fence Posts: Fence posts shall extend at least thirty-six (36) inches into the ground, and gate posts and corner posts shall have a concrete foundation.

3) Fence Type: Fences visible outside the vegetative buffer shall be a woven agricultural-style fence. The Township may require or allow durable green opaque material to be integrated into the fence if necessary for buffering or screening. Fences not visible outside the vegetative buffer may be opaque wood, metal, or masonry or chain-link.

4) Alternative Fencing: Alternate fencing may be approved by the Township upon a finding that the alternative provides adequate access control and visual screening.

5) Wildlife Considerations: The Township may require or allow a fence design to allow for the passage of wildlife upon a finding that adequate access control and visual screening will be preserved.

b. Gate Access: Gates shall be provided at all access points, unless otherwise permitted or approved. Gates for vehicular access shall be approved by the Fire Authority.

1) Gate Type: Gates shall be the same height and constructed of the same material as the fencing, unless otherwise approved.

2) Emergency Access: Access, such as Knox box, access codes, or emergency siren activation, shall be provided for emergency responders.

3) Gate House: Gate houses with around the clock staffing may be required if determined necessary to provide appropriate safety for and access to the Data Center site.

11. Sound: The sound generated by a Data Center must meet the sound standards of this Ordinance and the additional standards below.

a. Day Sound Level: The maximum sound level shall be forty (40) dB(A) Leq~~max and dB(C) Lmax~~, as measured at the project boundary and road rights-of-way between the hours of 7:00 am and 9:00 pm.

b. Night Sound Level: The maximum sound level shall be thirty-five (35) Lec~~Max~~ dB(A) ~~and dB(C) Lmax~~, as measured at the project boundary and road rights-of-way between the hours of 9:00 pm and 7:00 am.

c. Pure Tone: If pure tones are produced, the maximum sound level shall be reduced by five (5) dB(A) and dB(C).

d. Difference: The maximum difference between dB(A) and dB(C) shall be ten (10) decibels.

e. Ambient Sound: If the ambient sound levels exceed these standards, the maximum sound level shall be the ambient sound level plus five (5) dB(A).

f. Continued Compliance: The sound level generated by a Data Center must be inspected every year, at the operator's expense, by an auditory expert to ensure compliance with applicable sound standards.

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12. Utility Substations: Utility substations shall be located within the landscape buffer and shall be at least five hundred (500) feet from any adjacent residential dwelling, school, or religious institution.

13. Wildlife: Data Centers shall be designed, sited, and operated in a manner to minimize impact on wildlife.

    a. Wildlife Impact Analysis: An analysis to identify and assess any potential impacts on wildlife and endangered species shall be prepared by a qualified third-party professional acceptable to the Township. At a minimum, the analysis shall include a thorough review of existing information regarding species and potential habitats in the vicinity of the project area. Where appropriate, surveys for bats, raptors, or general avian use should be conducted. The analysis shall include the potential effects on species listed under the federal Endangered Species Act and Michigan's Endangered Species Protection Law.

    b. Adverse Impacts: Appropriate measures shall be taken to minimize, eliminate, or mitigate adverse impacts identified in the analysis. The applicant shall identify and evaluate the significance of any net effects or concerns that will remain after mitigation efforts.

    c. Special Scrutiny: Sites requiring special scrutiny include wildlife refuges, other areas where birds are highly concentrated, bat hibernacula, wooded ridge tops that attract wildlife, sites that are frequented by federally- or state-listed endangered species of birds and bats, significant bird migration pathways, and areas that have landscape features known to attract large numbers of raptors.

    d. US Fish and Wildlife Service: The applicant shall follow all pre-construction and post-construction recommendations of the United States Fish and Wildlife Service.

14. Environment: Data Centers shall be designed, sited, and operated to minimize impact on the environment.

    a. Environmental Impact Analysis: An analysis to identify and assess any potential impacts on the natural environment including, but not limited to, trees, wetlands, and other fragile ecosystems, shall be prepared by a qualified third-party professional acceptable to the Township zoning administrator, engineer, and planner.

    b. Adverse Impacts: Appropriate measures shall be taken to minimize, eliminate, or mitigate adverse impacts identified in the analysis. The applicant shall identify and evaluate the significance of any net effects or concerns that will remain after mitigation efforts.

    c. Tree Mitigation: Trees with a DBH~~dbh~~ of twenty (20) or more inches with good or excellent health, shall be replaced with three (3) shaded trees with a caliper of two point five (2.5) inches. To the extent feasible, the trees shall be located within the site. The Planning Commission may recommend and the Township Board may approve planting of replacement trees on other properties.

d. Site Preservation: Areas of the site not required for development shall be preserved in their natural condition or used for agriculture. Areas to be developed for future phases shall remain in their natural condition or used for agriculture until that phase is developed.

e. Environmental Laws: Data Centers shall comply with applicable parts of the Michigan Natural Resources and Environmental Protection Act (Act 451 of 1994, MCL 324.101 et seq.), Part 91 Soil Erosion and Sedimentation Control (MCL 324.9101 et seq.), Part 301 Inland Lakes and Streams (MCL 324.30101 et seq.), Part 303 Wetlands (MCL 324.30301 et seq.), Part 323 Shoreland Protection and Management (MCL 324.32301 et seq.), Part 325 Great Lakes Submerged Lands (MCL 324.32501 et seq.), and Part 353 Sand Dunes Protection and Management (MCL 324.35301 et seq.).

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f. Containment System: A containment system shall surround any transformers in case of hazardous waste or oil spills.

g. Removal: All solid and hazardous waste materials shall be promptly removed from the site and disposed of properly.

h. Responsibility: The Data Center owner, operator, and property owner shall be responsible, jointly and severally, for mitigating erosion, flooding, and all other environmental impacts resulting from the facility.

15. Emergency Action Plan: Data Centers shall have an emergency action plan to identify actions to be taken in event of an emergency.

a. Fire Suppression: The Emergency Action Plan must include a fire suppression plan, including the technology to be used.

b. Special Equipment and Training: The Emergency Action Plan shall identify special equipment and training that are required for emergency response to a Data Center.

~~b. Special Equipment and Training: The Emergency Action Plan shall identify special equipment and training that is required for emergency response to Data Center.~~

c. Clean-up: The Emergency Action Plan must include plans for immediate cleanup and long-term remediation efforts following an emergency.

d. Emergency Training: Before the Data Center is operational, it must provide the necessary training, equipment, or agreements specified in the emergency action plan to the Township or other emergency personnel. All training must be consistent with current industry standards.

e. Public Record: The Emergency Action Plan will be a public record. Copies shall be shared with all relevant first responding agencies.

F. General Provisions: Data Centers are subject to the general provisions below.

1. **Violations of this section may be subject to civil infraction penalties as follows:**
   a) **Administrative Violations (5-day Cure)**
      1) **Late Filings, minor reporting errors, and bond adjustments**
      2) **Fine $1,000/day (after 5-day cure period)**
   b) **Operational Violations (Immediate Fine)**
      1) **Noise/Light exceedance: $5,000/violation**
      2) **Generator Abuse (outside limits): $5,000/violation**
      3) **Wet cooling operation: $5,000/day**
      4) **On-site Renewable failure: $10,000/day**
      5) **Supply Chain/APGA non-compliance: $5,000/day**
      6) **Unauthorized Phase Advance: Commencing construction of a subsequent phase without a Certificate of Completion for the prior phase: $5,000/day of unauthorized work**
   c) **Environmental Emergencies (Immediate Fine + Bond**
      1) **Groundwater impact: 150% of remediation cost per well/day (min $10,000, max $500,000 total)**
      2) **PFAS exceedance: $25,000/day per exceedance**
      3) **Hazardous material storage: $10,000/day**
      4) **E-Waste violation: $15,000/day per violation**
      5) **GHG reporting failure: $10,000/day per scope**
      6) **Chemical Discharge violation: Discharge of prohibited chemicals or failure to meet discharge limits: $25,000/day per violation**
   d) **Financial Defaults**
      1) **Carbon Fee non-payment $5,000/day + interest**
      2) **Bond Forfeiture: Full Bond Amount**
   e) **Cumulative Fine and Daily Cap**
      1) **Total fines for all violations shall not exceed $500,000 per day**

2) **Fines for multiple violations are cumulative up to the cap**

f) **Repeat Offender**

1) **2 violations in one year elevates to a Class C misdemeanor (up to $5,000 + 90 days in jail)**

~~1.~~

2. Damage Repair: The owner, operator, and property owner shall be responsible, jointly and severally, for making repairs to any public roads, drains, or infrastructure damaged by the construction, use, or maintenance of, or damage to the Data Center.
3. Renewable Energy: Data Centers may be co-located with renewable energy facilities, provided the renewable energy facility is intended primarily to serve the Data Center. Review and approval are required for each use.
4. Mixed Facilities: Data Centers may be co-located with other uses that use the waste heat, such as a greenhouse operation.
5. Modifications: Any modifications of an approved site plan or special use permit that are made after the initial date of approval shall require new site plan and special use permit applications. Any changes of the approved site plan or special use permit will be subject to this Ordinance as it exists at time of this new application.
6. Transfer or Sale: In the event of a transfer or sale of a Data Center, the new owner or operator must do the following.
   a. Notify: The new owner or operator must notify the Township within thirty (30) days of the transfer or sale. The zoning administrator shall administratively amend the permit to name the new owner or operator;
   b. Site Improvements: The Zoning Administrator will inspect the site and provide notification of any deviations or violations of the approved site plan, special use permit, or this Ordinance. Corrections shall be made within forty-five (45) days or the next planting season for landscape corrections; and
   c. Decommissioning Performance Guarantee: Estimated costs of decommissioning and restoration shall be recalculated, and the performance guarantee shall be adjusted accordingly. The performance guarantee shall be transferred to the new owner or operator.
7. Phasing: Data Centers may be constructed in phases as described below.
   a. Description: The site plan and narrative must provide a description of the proposed phasing, including phasing lines.
   b. Period: All phases must be completed within six (6) years of final site plan approval or a new site plan must be approved, subject to the standards in place at the time of application.
   c. Completion: All buffering, security, and infrastructure improvements must be completed as part of the first phase.

G. Decommissioning, Abandonment, and Restoration: The site shall be decommissioned and restored following the operational life or abandonment of the Data Center**.**

1. Decommissioning Plan: A Decommissioning Plan shall be prepared by a qualified third-party professional acceptable to the Township zoning administrator, engineer, and planner.

    a. Anticipated Life: The Decommissioning Plan shall describe the anticipated life span of the Data Center.

    b. Decommissioning Costs: The Decommissioning Plan shall provide a probable cost estimate for decommissioning, including current cost and cost at the time of decommissioning.

    c. How Paid: The Decommissioning Plan shall provide a description of how decommissioning costs will be paid.

    d. Regular Updating: The Decommissioning Plan shall be updated on a regular basis, at least once every three (3) years. Additional security may be required to account for increased anticipated decommissioning costs during the preceding three (3) years.

    ~~d. Regular Updating: The Decommissioning Plan shall be updated on a regular, period of at least once every three (3) years. Additional security may be required to account for increased anticipated decommissioning costs during the preceding three (3) years.~~

2. Decommissioning Performance Guarantee: A performance guarantee for decommissioning and restoration of the Data Center shall be provided before construction commences and shall be held until confirmation that the site has been fully restored.

    a. Value: The performance guarantee shall be equal to one hundred twenty-five (125) percent of the cost to remove and restore the Data Center as determined in the Decommissioning Plan. Cost estimate must be from an independent source.

    b. Form: The performance guarantee shall be in the form of cash deposited with the Township or an irrevocable letter of credit naming the Township as the beneficiary. A surety bond is not acceptable.

3. Abandonment: Data Centers that are not operated for a continuous period of six (6) months shall be considered abandoned, whether or not there is an intent to continue the use, and shall be removed and restored or restored to operation. An extension may be granted by the Township upon finding that the delay does not create a hazardous condition and the applicant has demonstrated a good-faith effort to continue operation.

4. Compaction Prevention: All abandonment and decommissioning work must be done when soil is dry or frozen to prevent compaction.

5. Chemical Analysis and Boring: A chemical analysis and boring of the soil, as recommended by the Township engineer shall be performed before any decommissioning work begins with the results compared to the baseline soil chemical analysis baseline test results obtained before construction of the Data Center.

   a. Chemical Levels: All levels of any chemical entity found in the soil chemical analysis must be equal to or are lower than the levels of all chemical entities determined in the baseline testing performed prior to construction. If a new chemical entity, either organic or inorganic compounds, are identified in the soil chemical analysis, its level must be below established federal and state government levels for hazardous materials in soils for that chemical entity.

   b. Report: A report of the soil chemical analysis must be provided to the Township within seven (7) days. If any chemical entity, organic or inorganic compounds, are above established federal and state government levels for hazardous materials in soils, the report must be submitted to the appropriate Federal and State regulatory agencies within seven (7) days of receiving the testing report showing a violation.

   c. Violation Resolution: Once a violation has been determined and finalized, a reclamation plan for the contaminated soil must be developed and implemented to remove the contaminated soil from the Data Center. The reclamation plan must meet all Federal and State regulations for the reclamation of a contaminated site. The plan must be approved by the Township Board and the Township engineer. Once the contaminated soil has been removed and replaced with uncontaminated soil, a final soil chemical analysis shall be performed to confirm the Data Center site soils have been returned to their original state for levels of organic and inorganic compounds that existed before construction.

      ~~c. Violation Resolution: Once a violation has been determined and finalized, a reclamation plan for the contaminated soil must be developed and implemented to remove the contaminated soil from the Data Center. The reclamation plan must meet all Federal and State regulations for the reclamation of a contaminated site. The plan must be approved by the Township Board and the Township engineer. Once the contaminated soil has been removed and replaced with uncontaminated soil, a final soil chemical analysis shall be performed to confirm the Data Cener site soils have been returned to its original state for levels of organic and inorganic compounds that existed before construction.~~

   d. Cation Exchange Capacity: A Cation Exchange Capacity soil test shall also be required at the completion of the decommission process.

e. Violation Remediation: Any negative variations from the preconstruction soil testing must be remedied and the final results of the testing approved by the township engineer and the Township Board.

6. Ground Restoration: The ground must be restored to its original topography and land must be restored to a depth of three (3) feet below grade within three hundred sixty-five (365) days of abandonment or decommissioning. An extension may be granted by the Township if a good-faith effort has been demonstrated and any delay is not the result of actions or inaction of the operator. An alternative topography can be approved by the Township as part of the original site plan review or later as part of decommissioning.

7. Land Balancing: If land balancing is required, all topsoil will be saved and spread evenly over the balanced area.

8. Township Action: The Township may remove any abandoned or unsafe Data Center structures or components that are not removed or restored within the allowed time. The owner, operator, and property owner shall be jointly and severally responsible for any costs.

9. Attorney Costs: The owner, operator, and property owner shall be jointly and severally responsible for the payment of all attorney fees and other costs incurred by the Township in the event that the Township has to enforce removal or restoration.

10. Vegetation: Disturbed land shall be revegetated at the next appropriate planting season.

11. Disposal: All structures, equipment, and waste shall be removed from the site and disposed of properly.

12. Modification: The Planning Commission can recommend and the Township Board can approve modifications to a previously approved Decommissioning Plan upon finding that the modification better preserves the public health, safety, and welfare of the community.

H. Application Materials: In addition to information required for site plan and special use permit applications, applications for Data Centers must submit the following additional information with the special use permit application.

1. Identification: The name and address in full of the applicant, developer, owner, operator, and property owners and any additional contact information shall be submitted.

2. Proof of Ownership or Control: Copies of recorded deeds, purchase agreements, leases, or similar documents for properties within the Data Center that confirm the applicant has control of the property or the permission of the participating property owners to apply for the necessary approvals and permits for construction and operation of a Data Center.

3. Project Description: A general description of the proposed project and an anticipated construction schedule shall be submitted.

4. Conceptual Plan: A graphical computer-generated depiction of how the Data Center will appear from all directions shall be submitted.

5. Documentation: A complete set of photos and video of the entire development area, including construction access roads, as it exists before the application date shall be submitted.

6. Power Purchase Agreement: A copy of the power purchase agreement or other written agreement with an electric utility showing approval of an interconnection with the proposed Data Center Facility shall be submitted.

7. Road Agencies: Proof of approval or conditional approval by any road agency from which the Data Center will have access or whose roads will be used as a construction or maintenance route shall be submitted.

8. Drain Commission: Proof of approval or conditional approval by and the Livingston County Drain Commission for any Data Center that has participating properties with a county drain or proposes improvements within a county drain easement.

9. Traffic Impact Study: A copy of the traffic impact study including construction and operational impacts

~~8.~~10. Operations Plan: A copy of the Operations plan including staffing and maintenance schedules.

~~9.~~11. Wildlife Impact: A copy of the wildlife impact analysis shall be submitted.

~~10.~~12. Environmental Impact: A copy of the environmental impact analysis shall be submitted.

~~11.~~13. Complaint Resolution Protocol: A copy of complaint resolution protocol shall be submitted.

~~12.~~14. Decommissioning Plan: A copy of the decommissioning plan shall be submitted.

~~13.~~15. Emergency Action Plan: A copy of the Emergency Action plan shall be submitted.

~~14.~~16. Right-to-Enter: Submission of an application for a Data Center grants the Township and its agents the right to enter the facility and any participating property for inspection of the Data Center at any reasonable time. The Township may hire a consultant to assist with any such inspections at a reasonable cost to be charged to the applicant, owner, or operator.

~~15.~~17. Additional Information: Any additional information, studies, or documentation requested by the Township or its agents that are deemed

necessary to determine compliance with this Ordinance and other applicable laws and regulations.

5. AMENDMENT OF ARTICLE XIIA: WELLHEAD PROTECTION OVERLAY DISTRICT

SECTION 12A.08(N) OF THE ZONING ORDINANCE IS HEREBY ADDED TO READ AS FOLLOWS:

[Red, underlined text to be added. ~~Red, strikethrough~~ text to be deleted.]

~~[Red, underlined text to be added. Red, strikenthrough text to be deleted.]~~

N. Data centers.

6. AMENDMENT OF TABLE OF CONTENTS

The Table of Contents of the Zoning Ordinance is hereby amended for consistency with the above revisions and to accommodate repagination.

Tax Code No. 4710-24-100-002
Application No. APR01-26

APPLICATION FOR PRIVATE ROAD CONSTRUCTION

1. Application is hereby made by: Joe Mazur

   Address: 3447 Mayberry Lane, Howell, Michigan 48843

   Phone: 734-637-1816

2. Fee title owners of property: JCM Family Trust, Joe Mazur Trustee

3. Common address of property: 3447 Mayberry Lane

4. Legal description of property: (attached)

5. The above property is presently zoned: Rural

6. State all proposed covenants and restrictions, including roads and maintenance covenants, pertaining to the use of the road:

   Proposed Road Maintenance agreement

7. Petitioner has read and reviewed all requirements of Section 6.20 of the Marion Township zoning ordinance and petitioner hereby covenants that the PRIVATE ROAD DEVELOPMENT will be constructed in strict compliance with the terms of this ordinance.

Applicant(s): _____ Date: 3/24/26
Signature

_____ Date: _____
Signature

Fee Received: $ 3500.00

Township Clerk: Tammy L. Beal Date: 3-30-2026
Signature

****

$500 fee and $3,000 initial deposit plus all township costs. These costs include, but are not limited to, township engineering, completion deposit, amount determined by township legal fees, and any additional costs incurred by township.

****

PLANNING COMMISSION APPROVAL of preliminary plan was granted on _____
Date

PLANNING COMMISSION APPROVAL AND RECOMMENDATION of final site plan to the Marion Township Board of Trustees was granted on _____
Date

Marion Township Board of Trustees granted final approval on _____
Date

LAND USE PERMIT ISSUED BY: _____ on _____
Zoning Administrator Date

****

WOLVERINE ENGINEERS & SURVEYORS, INC.
312 NORTH STREET - MASON, MICHIGAN 48854 - PHONE 517.676.9200 - FAX 517.676.9396

May 29, 2026

Mr. Scott Richardson, - Zoning Administrator
Marion Township
2877 W. Coon Lake Road
Howell, MI 48843

RE: Private Drive -Mayberry Farm Way - 3447 Mayberry Drive

Dear Mr. Richardson:

At your request we reviewed the site plan for the Private Drive, Mayberry Farm Way, located at 3447 Mayberry Road as prepared by Desine, Inc., dated March 17, 2026, consisting of twelve (12) plan sheets.

In general, the site plan proposes the construction of an approximately 1,835-foot-long private road that terminates in a cul-de-sac to provide access to two parcels (Parcel A being 161.54 acres and Parcel B containing 7.38 acres).

Given that the plans indicate this private road will be serving a total of two (2) parcels, the review comments are based in accordance with Section 6.20 Paragraph C. New Minor Private Roads of the Marion Township Code of Ordinances and other sections of Ordinance as may be applicable.

The private road is proposed to have a total length of 1,835 feet. This length is less than the maximum allowable length of 2,000 feet.

The road terminates in a cul-de-sac with a fifty (50) foot radius. This meets the requirements set forth in the *PROCEDURES AND REGULATIONS FOR DEVELOPING PUBLIC ROADS*, 2024 edition, as published by the Livingston County Road Commission.

The private road is proposed to have a 66-foot-wide easement. This easement dimension meets (or exceeds) the requirements of the Ordinance.

The road is proposed at 16 feet wide (see Note on Sheets RD1, RD2, AP, and DT). Section 6.02, Paragraph C2 states *"Roadway width should be at least twenty (20) feet whether paved or gravel."* Given the size of this property and the potential for future splits, it is recommended the proposed road width meet that stated minimum requirement.

The road cross section is proposed as six (6) inches of 21AA gravel placed over suitable subgrade material. This cross section meets (or exceeds) the requirements of the Ordinance.

In accordance with the Ordinance, the road has a proposed crown of two (2) percent. This is appropriate for drainage.

It is our opinion that the vertical alignment conforms to the Livingston County Road Commission's applicable standards.

A well-designed storm water management system has been included as a part of the plans. Further, it is our understanding the Livingston County Drian Commissioner's Office has reviewed the plans for storm water management.

It is anticipated that an SESC permit will be required by the Livingston County Drain Commissioner's Office and a permit to work within Mayberry Road right-of-way will be required from the Livingston County Road Commission.

Additionally, any approvals or permits as issued by Marion Township do not obviate the need for permits from other governmental agencies having jurisdiction.

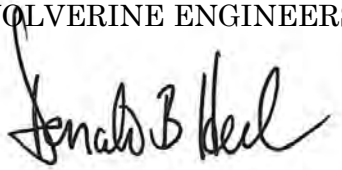
From an engineering perspective, we take no exception to the private road concept as presented; however, given the proposed roadway width does not satisfy the minimum width required for a new minor road in the ordinance, we recommend any approvals being granted contingent upon the plans being revised to reflect the require twenty (20) foot road width and resubmitted.

We appreciate the opportunity to assist Marion Township in this site plan review.

If you have any questions or would like to discuss any items mentioned herein, please do not hesitate to contact our office.

Sincerely,

WOLVERINE ENGINEERS & SURVEYORS, INC.



Donald B. Heck, P.E.

DBH:ood

MAYBERRY FARM WAY STORMWATER MANAGEMENT AGREEMENT

Joe Mazur, whose address is 3447 Mayberry Lane, Howell, Michigan 48843 as "Owner" of the property described below, pursuant to Marion Township ("Township") regulations, agrees to install and maintain stormwater management facilities on the subject property in accordance with approved plans and conditions. The Owner further agrees to the terms stated in this document to ensure that the stormwater management practice(s) continue serving the intended function in perpetuity. This Agreement includes the following exhibits:

Exhibit A: Legal description of the land for which this Agreement applies ("Property").

Exhibit B: Site Plan showing location of the Property and an accurate location of the on-site stormwater management system, including but not limited to, storm sewers, swales, manholes, catch basins, storm water inlets, detention system, outlet structure, and discharge pipe.

Exhibit C: Long-term Maintenance Plan that prescribes those activities that must be carried out to maintain compliance with this Agreement.

After construction has been verified and accepted by the Township for the stormwater management facilities, an addendum(s) to this agreement shall be recorded by the Owner showing as-built design and construction details and copies provided to the Township. The addendum may therefore contain several additional exhibits.

Through this Agreement, the Owner hereby subjects the Property to the following covenants, conditions, and restrictions:

(1) The Owner shall be solely responsible for the installation, maintenance and repair of the stormwater management system, including associated landscaping, identified in **Exhibit B** in accordance with the Maintenance Plan **Exhibit C**. The Owner shall be solely responsible for the installation of the elements identified in **Exhibit B**.

(2) No alterations or changes to the stormwater management facilities identified in **Exhibit B** shall be permitted unless they are deemed to comply with this Agreement and are approved in writing by the Township.

(3) The Owner shall have the stormwater management facilities inspected to ensure maintenance of the stormwater management facilities identified in **Exhibit B**.

(4) The Owner shall maintain records (logs, invoices, reports, data, etc.) of inspections, maintenance, and repair of the stormwater management facilities identified in **Exhibit B** in accordance with the Maintenance Plan **Exhibit C.**

(5) Inspections shall be conducted at least annually and after any rain event of 3" or more.

The Township, or its designee is authorized to access the Property as necessary to conduct inspections of the stormwater management facilities or drainage easements to ascertain compliance with the intent of this Agreement and activities prescribed in **Exhibit C**. Upon written notification by the Township or its designee of required maintenance or repairs, the Owner shall complete the specified maintenance or repairs within a reasonable time frame determined by the Township. The Owner shall be liable for the failure to undertake any maintenance or repairs.

If the Owner does not keep the stormwater management facilities in reasonable order and condition, or complete maintenance activities in accordance with the Maintenance Plan contained in **Exhibit C**, or the required maintenance or repairs within the specified time frames, the Township is authorized, but not required, to perform the specified inspections, maintenance or repairs in order to preserve the intended functions of the facilities and prevent the facilities from becoming a threat to public health, safety, general welfare or the environment. Further, in the case of an emergency, as determined by the Township, no notice shall be required prior to the Township performing emergency maintenance or repairs. In either event, the Township shall levy the costs and expenses of such inspections, maintenance or repairs against the Owner, plus and administrative fee in the amount of ten percent (10%) of the cost and expenses. The Township at the time of entering upon said stormwater management facility for the purpose of maintenance or repair may file a notice of lien in the office of the Register of Deeds for Livingston County upon the Property.

The Owner hereby conveys to the Township an easement over, on and in the property described in **Exhibit A** for the purpose of access to the stormwater management facilities for the inspection, maintenance and repair thereof, should the Owner fail to do so.

The Owner agrees that this Agreement shall be recorded in the office of the Register of Deed for Livingston County, at the cost of the Owner, and that the land described in **Exhibit A** shall be subject to the covenants and obligations contained herein, and this Agreement shall bind all current and future owners of the property.

In the event that the Property is sold, transferred, or leased, the Owner agrees that it shall provide information to the new owner, operator, or lessee regarding proper inspection, maintenance and repair of the stormwater management facilities. The information shall accompany the first deed transfer and include **Exhibits A, B and C** and this Agreement. The transfer of this information shall also be required with any subsequent sale, transfer or lease of the Property.

The Owner agree that the rights, obligations and responsibilities hereunder shall commence upon execution of the Agreement.

[THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK]

[Signature and Acknowledgement Pages Follow]

The parties whose signatures appear below hereby represent and warrant that they have the authority and capacity to sign this agreement and bind the respective parties hereto.

Dated this ___ day of _____, 2026.

By: _____
Joe Mazur

STATE OF MICHIGAN)
)ss
COUNTY OF LIVINGSTON)

On this _____ day of _____, 2026, before me, a Notary Public in and for said County, personally appeared Joe Mazur to me known to be the person who executed the foregoing instrument and acknowledged the same.

_____
, Notary Public
State of Michigan
County of _____
My Commission Expires:
Acting in the County of Livingston

Drafted by: Wayne M. Perry
Desine, Inc. 2183 Pless Drive
Brighton, MI 48114

When recorded return to:
Joe Mazur
3447 Mayberry Lane
Howell, MI 48843

EXHIBIT A

LOCATION SKETCH

A PART OF SECTION 28, T.2N.-R.4E.
MARION TOWNSHIP, LIVINGSTON COUNTY, MICHIGAN

LOCATION SKETCH

SCALE: 1"=2000'

PARCEL No. 4710-28-100-002 168.92± Acres

BEGINNING at the North 1/4 Corner of Section 28, Town 2 North, Range 4 East, Marion Township, Livingston County, Michigan; thence N89°48'54"E *(recorded as N89°48'39"E)* 415.00 feet along the North line of said Section 28 and the nominal centerline of Mayberry Road (33-foot wide 1/2 Right-of-Way), to a point distant 2219.21 feet N89°48'54"E *(recorded as N89°48'39"E)* to the Northeast Corner of said Section 28; thence along the centerline of Marion No. 2 Drain (100-foot wide) as depicted in Certified Land Survey No. 2006S-0069, Livingston County Records the following three courses:

1) S04°44'28"W 778.73 feet *(recorded as S04°43'08"W 778.33 feet)*,
2) S28°38'10"W *(recorded as S28°36'50"W)* 123.55 feet and
3) S10°40'07"W *(recorded as S10°38'47"W)* 452.41 feet;

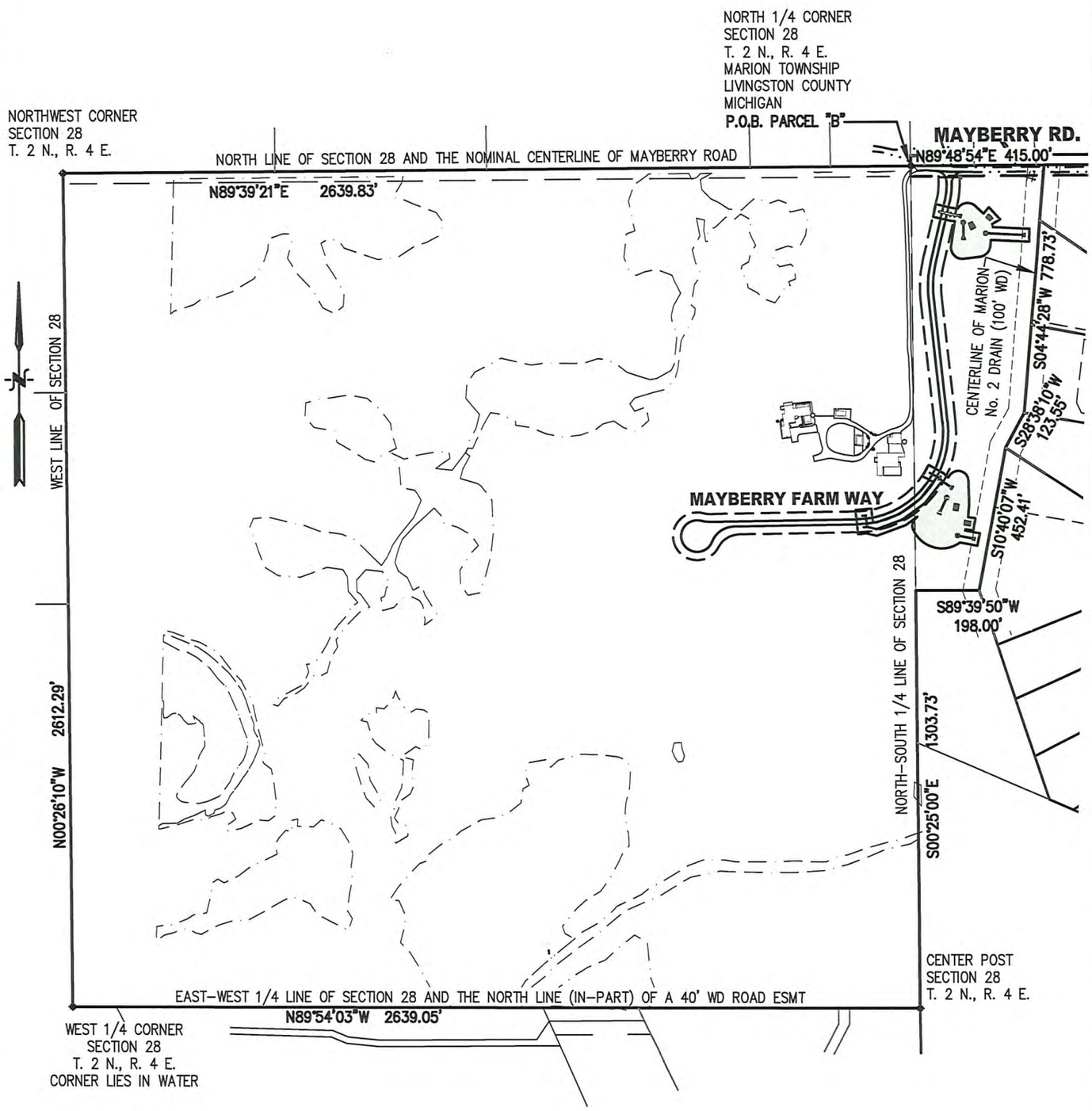
thence S89°39'50"W *(recorded as S89°33'33"W)* 198.00 feet to the North-South 1/4 line of said Section 28, also to a point distant 1328.97 feet N00°25'00"W *(recorded as N00°26'27"W)* to said North 1/4 Corner; thence S00°25'00"E *(recorded as S03°05'E)* 1303.73 feet to the Center Post of said Section 28; thence N89°54'03"W 2639.05 feet *(recorded as S87°18"W 1172.3 feet, S87°09'W 485.9 feet and S86°08'W 977.89 feet)* along the East-West 1/4 line of said Section 28 and the North line (in-part) of "Cedar Point," a Subdivision of part of said Section 28, according to the plat thereof, as recorded in Liber 2 of Plats, Page 86 and "Supervisor's Plat of Cedar Point Annex," a Subdivision of part of said Section 28, according to the plat thereof, as recorded in Liber 12 of Plats, Page 2, Livingston County Records to the West 1/4 Corner of said Section 28, said Corner lies within the water's of Cedar Lake; thence N00°26'10"W 2612.29 feet *(recorded as N03°09'W 2634.68 feet)* along the West line of said Section 28 to the Northwest Corner of said Section 28; thence N89°39'21"E 2639.83 feet *(recorded as N86°57'E 2639.18 feet)* along said North line of Section 28 and along said nominal centerline of Mayberry Road to the Point of Beginning. Being the Northwest 1/4 and part of the Northeast 1/4 of Section 28, Town 2 North, Range 4 East, Marion Township, Livingston County, Michigan. Containing 168.92 acres of land, more or less. Subject to the rights of the public over the North 33 feet as occupied by Mayberry Road (33-foot wide 1/2 Right-of-Way), also subject to the public trust and rights of the other riparian owners in the waters of Cedar Lake, also subject to the public trust and rights of the other riparian owners in the waters of Marion No. 2 Drain (100-foot wide) as depicted in Certified Land Survey No. 2006S-0069, Livingston County Records, also subject to and together with all easements and restrictions affecting title to the above described premises.

PROJECT:	CLIENT:	SCALE: N/A
MAYBERRY FARM WAY MAYBERRY ROAD SECTION 28 MARION TOWNSHIP LIVINGSTON COUNTY	JOE MAZUR 3447 MAYBERRY ROAD HOWELL, MICHIGAN 48843	PROJECT No.: 9254943 DWG NAME: STMMGNT MAR. 20, 2026

DESINE INC
(810) 227-9533
CIVIL ENGINEERS
LAND SURVEYORS
2183 PLESS DRIVE
BRIGHTON, MICHIGAN 48114

EXHIBIT B

PHYSICAL LIMITS OF STORM WATER MANAGEMENT SYSTEM



KEY:
SHADED AREA INDICATES
STORMWATER FACILITIES

PROJECT:	CLIENT:	SCALE: N/A
MAYBERRY FARM WAY MAYBERRY ROAD SECTION 28 MARION TOWNSHIP LIVINGSTON COUNTY	JOE MAZUR 3447 MAYBERRY ROAD HOWELL, MICHIGAN 48843	PROJECT No.: 9254943 DWG NAME: STMMGNT MAR. 20, 2026

DESINE INC
(810) 227-9533
CIVIL ENGINEERS
LAND SURVEYORS
2183 PLESS DRIVE
BRIGHTON, MICHIGAN 48114

EXHIBIT C

STORM WATER MANAGEMENT SYSTEM MAINTENANCE PLAN

PROPERTY INFORMATION:
MAYBERRY FARM WAY (PRIVATE ROAD)
3447 MAYBERRY ROAD
MARION TOWNSHIP, LIVINGSTON COUNTY, MICHIGAN
PARCEL I.D. NO. 4710-28-100-002

PROPERTY OWNER:
JOE MAZUR
3447 MAYBERRY ROAD
HOWELL, MICHIGAN 48843

A. Physical Limits of the Storm Water Management System

The Storm Water Management System (SWMS) subject to this Long-Term Maintenance Plan is depicted on Exhibit B to the Maintenance Agreement and includes, without limitations, the storm sewers, manholes, catch basins, storm water inlets, detention system, outlet structures, and discharge pipe . For purposes of this Plan, this Storm Water Management System and all of its components as shown on Exhibit B is referred to as the "MAYBERRY FARM WAY SWMS".

B. Time Frame for Long-Term Maintenance Responsibility

Property Owner is responsible for maintaining the MAYBERRY FARM WAY SWMS, which includes complying with applicable requirements of the Soil Erosion and Sedimentation Control program, until the Livingston County Drain Commissioner releases the SESC permit. Long-Term Maintenance responsibility for the MAYBERRY FARM WAY SWMS commences upon closure of the SESC Permit. Long-Term Maintenance continues in perpetuity.

C. Manner of Ensuring Maintenance Responsibility

Marion Township has assumed responsibility for the Long-Term Maintenance of the MAYBERRY FARM WAY SWMS. The Property Owner, through a Maintenance Agreement with Marion Township to reimburse for maintenance, repairs, restoration, and any necessary construction of the MAYBERRY FARM WAY SWMS, has agreed to perform the necessary maintenance activities required by this Plan. Marion Township retains the right to enter the property and perform the necessary maintenance of the MAYBERRY FARM WAY SWMS if The Property Owner fails to perform the required maintenance activities.

To ensure that the MAYBERRY FARM WAY SWMS is maintained in perpetuity, the property description (Exhibit A), a map of the physical limits of the Storm Water Management System (Exhibit B), this Plan (Exhibit C), and the Maintenance Agreement between Marion Township and The Property Owner shall be recorded with the Livingston County Register of Deeds. Upon recording, a copy of the recorded document will be provided to the Township.

D. Long-Term Maintenance Plan and Schedule

Table 1 identifies the maintenance activities to be performed, organized by category (monitoring/inspections, preventative maintenance and remedial actions). Table 1 also identifies site-specific work needed to ensure that the Storm Water Management System functions properly as designed.

TABLE 1

STORM WATER MANAGEMENT SYSTEM LONG-TERM MAINTENANCE SCHEDULE	SYSTEM COMPONENT										
MAINTENANCE ACTIVITIES	Catch Basins, Inlets & Storm Sewers	Channels & Swales	Basin Inlets, Outlets & Gratings	Forebay	Detention Basin	Outlet Control Structures	Spillway	Buffer Zone	Rip Rap	Pavement	FREQUENCY
MONITORING / INSPECTION											
Inspect for sediment accumulation** and/or clogging of stone filter	X	X	X	X	X	X	X		X		Annually
Inspect for floatables, dead vegetation, and debris	X	X	X	X	X	X	X				Annually & after major storm events
berms		X	X	X	X		X	X	X		Annually & after major storm events
Inspect all components during wet weather & compare to As-Built Plans	X	X	X	X	X	X	X	X	X	X	Annually
Monitor plantings and vegetation		X		X	X			X			2 Times per year
Ensure means of access for maintenance remain clear and open	X	X	X	X	X	X	X	X	X	X	Annually
PREVENTATIVE MAINTENANCE											
Mowing		X		X	X			X			As needed*
Remove accumulated sediment	X	X	X	X	X	X	X		X		As needed**
Remove floatables, dead vegetation, and debris	X	X	X	X	X	X	X				As needed
Replace or wash and reuse stone riser filters						X					Every 3 years, or as needed***
etc.)				X						X	Every 5 years, or as needed
Remove invasive plant species		X		X	X			X			Annually
Sweeping of paved surfaces (streets / parking lots)										X	2 Times per year
REMEDIAL ACTIONS											
Repair / Stabilize areas of erosion		X	X	X	X		X	X	X		As Needed
Replace dead plantings, bushes, trees		X		X	X			X			As Needed
Reseed bare areas		X		X	X			X			As Needed
Structural repairs	X		X			X				X	As Needed
Adjustments / repairs to ensure proper functioning	X	X	X	X	X	X	X	X	X	X	As Needed
Clean out oil and gas spills	X	X	X	X	X	X	X	X	X	X	Immediately

* Not to exceed the length allowed by the local community ordinance.

** Forebays & Detention Basins to be cleared when sediment depth reaches 6-12 inches or if sediment re-suspension is observed.

*** Replace stone if it cannot be adequately cleaned.

PROJECT:	CLIENT:	SCALE: N/A	DESINE INC
MAYBERRY FARM WAY MAYBERRY ROAD SECTION 28 MARION TOWNSHIP LIVINGSTON COUNTY	JOE MAZUR 3447 MAYBERRY ROAD HOWELL, MICHIGAN 48843	PROJECT No.: 9254943 DWG NAME: STMMGNT MAR. 20, 2026	(810) 227-9533 CIVIL ENGINEERS LAND SURVEYORS 2183 PLESS DRIVE BRIGHTON, MICHIGAN 48114

SPACE ABOVE FOR RECORDER'S USE ONLY

DECLARATION OF EASEMENT FOR INGRESS AND EGRESS, PUBLIC AND PRIVATE UTILITIES, STORM WATER DRAINAGE AND RETENTION AND EASEMENT MAINTENANCE AGREEMENT

This Declaration of Easement and Maintenance Agreement (the ***"Declaration"***) is made this _____day of _____, 2026, by Joe Mazur whose address is 3447 Mayberry Lane, Howell, Michigan 48843 (the ***"Owner"***).

RECITALS

WHEREAS, the Owner is the title holder of certain real property which is located in Marion Township, Livingston County, Michigan, and more particularly described in ***Exhibit A*** attached hereto and made a part hereof and as set forth in a certain survey prepared by DESINE INC., dated _____, as recorded in document number _____, Livingston County Register of Deeds; and

WHEREAS, the Owner is dividing the property into Parcels, as depicted on the survey, and as approved by Marion Township; and

WHEREAS, the Owner is recording this Declaration to establish a private, non-exclusive, perpetual easement and maintenance agreement for ingress and egress, public and private utilities, and storm water drainage for the benefit of and burdening certain Parcels of the property; and

WHEREAS, the Owner is also recording this Declaration to establish a private storm water drainage and detention easement and maintenance agreement for the management of storm water generated from the property for the benefit of and burdening certain Parcels of property.

NOW THEREFORE, the Owner states as follows:

EASEMENT DECLARATION

1. Interest in Property: This Declaration is made to establish certain easements within the Property and are intended to run with the land, be an interest in realty, and be binding on, and inure to the benefit of, and burden, the owners and occupiers of the Parcels and their respective heirs, executors, administrators, personal representatives, successors and assigns. When used in this Declaration, the word "Owner" or "Owners" shall mean and encompass the owner(s) in fee title of Parcels described in the attached ***Exhibit A*** as of the date of this Declaration and as may be split or divided in the future. This Declaration shall bind any parties who occupy or hold interest in the Parcels described in the attached ***Exhibit A*** through them, their agents, employees, and invitees, and all other parties acting through or under the Owner(s). The Owner or Owners may hereinafter be referred to together as the ***"Parties"*** or individually as a ***"Party"***.

2. Private Road Easement. The parties hereto establish and declare a private, non-exclusive, perpetual easement for ingress and egress, improved or unimproved, and for location of public and private utilities and storm water drainage, over and across and for the benefit of the parcels described in the attached ***Exhibit A***, said easement being more particularly described in ***Exhibit B*** attached and made a part hereof and is labeled as "66 Foot Wide Private Easement for Ingress and Egress and Public Utilities" (***"Private Road Easement"***).

3. Drainage Easement. The parties hereto also establish and declare a private, non-exclusive, perpetual easement for storm water drainage and detention for the management of storm water generated from the Access Easement, over the parcels described in ***Exhibit A***, said easement being more particularly described and depicted in ***Exhibit C*** attached and made a part hereof and is labeled as "Storm Water Drainage and Detention Easement" (***"Drainage Easement"***).

4. Utility Easement. The parties hereto also establish and declare a private, non-exclusive, perpetual easement for public utilities over the parcels described in ***Exhibit A***, said easement being more particularly described and depicted in ***Exhibit D*** attached and made a part hereof and is labeled as "Easement for Public Utilities" (***"Utility Easement"***).

5. Reservation of Rights. The parties specifically reserve unto themselves, their respective heirs, executors, administrators, personal representatives, successors and assigns, the easements and the easement rights set forth herein in the described easements, for the benefit of the properties more particularly described in attached ***Exhibit A***, and for any further divisions thereof, including the rights to use said easements and to subsequently convey said easements and easement rights with said properties and any divisions thereof.

6. Permitted Users. The private road easement described in paragraph 2 above may be used by the Owners, its occupants, agents, employees, guests, licensees, and invitees, in common, for vehicular and pedestrian access. Such parties may be referred to herein as ***"Permitted Users"***. Use of the Private Road Easement is provided for emergency access by the local fire department or any other emergency services, and for ingress and egress for garbage trucks and any other service vehicles for the purpose of granting the providers of such services vehicular and emergency access across the Private Road Easement.

7. No Parking or Other Obstruction of the Private Road Easement. No parking on or other obstruction of the Private Road Easement shall be allowed at any time. The Owners of parcels described in ***Exhibit A*** shall have joint responsibility to insure that the Private Road Easement shall remain open at all times to permit free and unencumbered access for all persons who are entitled to use of the Private Road Easement for ingress and egress. No Owner or party hereto shall take any actions which interfere in any way with the use of the Private Road Easement by the other Parties, as described in this Declaration.

8. Private Road Construction. The Cost for Construction of the Private Road providing access to parcels described in ***Exhibit A***, shall be paid by the Developer. Construction costs shall include the cost of construction of the storm water retention basin system required to be constructed by Marion Township as a part of the Private Road construction.

EASEMENT MAINTENANCE

9. Private Easement. The Private Road Easement described in attached ***Exhibit B*** is a private easement and construction, improvement and maintenance of the easement is not the responsibility of Marion Township, the Livingston County Road Commission or any other public or governmental agency. The Private Road Easement and the Drainage Easement shall be maintained in good condition, and in compliance with all applicable laws, statutes, ordinances, and regulations, and in compliance with any agreements with Marion Township. If the Private Road Easement and the Drainage Easement are not so maintained, Marion Township may provide written notice to the parcel Owners, and if the Owners and their successors and assigns do not bring the Private Road Easement and the Drainage Easement into good condition (as determined by Marion Township) within ninety (90) days after the written notice is sent, Marion Township may, but has no obligation to, repair and maintain the easements to the required standards and assess each of the parcels an equal share of the costs incurred by Marion Township. This Declaration shall be considered a petition under Public Act 188 of 1954, as amended, by the Owners of the parcels to establish a special assessment district to repair and maintain the Private Road Easement and the Drainage Easement and to pay the costs incurred by Marion Township for such repair and maintenance.

10. Share of Maintenance Costs. The owner or owners of each parcel, from and after the commencement of any construction of any house, building or other improvement on such parcel, shall share equally with and in the cost of maintaining or improving the Private Road Easement and/or Drainage Easement. Such share of the cost shall be based upon the total number of parcels of improved property, each such parcel being one unit or share, and subject to the conditions and definitions hereinafter set forth. Maintenance and repair costs shall include surface grading and surfacing at regular intervals, snow and ice removal, repair of potholes, maintenance of road drainage systems, unobstructed vision at any intersection, annual dust control and regular cutting of grass and weeds in the easements.

11. Normal Maintenance. Prior to any costs being incurred for normal maintenance of said Private Road Easement and/or Drainage Easement, a simple majority of the improved parcels shall agree to such normal maintenance being performed and the cost thereof. "Normal maintenance" shall include, but not be limited to snow removal, grading, regrading, graveling, regaveling, paving, repaving and repair as necessary, the cost of which shall not exceed ONE

THOUSAND FIVE HUNDRED ($1,500.00) DOLLARS per occurrence. "Simple majority" shall be determined by the total number of parcels of improved property, each such parcel having one (1) vote. Multiple improved parcels with single ownership shall have one (1) vote for each parcel, provided, however, that each such vote shall constitute a separate share or unit for purposes of the cost of maintenance, unless such improved parcels shall have more than one (1) residential structure on a single parcel. "Improved parcel" or "improved property" shall include any parcel on which construction of any building, house or other improvement has commenced, and access to such "improved parcel" or "improved property" is gained from said Private Road Easement. In the event that a single parcel shall have more than one (1) residential structure thereon, each such structure shall be deemed to be a separate share or unit for purposes of the cost of maintenance and shall have a separate vote for each such structure.

12. Capital Improvements. Prior to any costs being incurred for major capital improvements to said Private Road Easement and/or Drainage Easement, or any extension of them, all of the parcels, improved or unimproved, shall agree to such capital improvement and the cost thereof. "Major capital improvement" shall include, but not be limited to, grading, regrading, graveling, regraveling, paving repaving and repair the cost of which is in excess of ONE THOUSAND FIVE HUNDRED ($1,500.00) DOLLARS per occurrence. Each parcel shall be liable for one (1) equal share of the total cost of such improvement, such share being based on the total number of parcels having rights in said easement, each such parcel being one (1) unit or share. "Major capital improvement" does not include the cost of the initial installation of the Private Road or Storm Water Drainage and Detention System.

13. Lien for Non-Payment. Any costs incurred for normal maintenance or major capital improvement of said Private Road Easement and/or Drainage Easement as described herein shall be a burden upon the land with a lien therefore against any parcel for which such costs have to be paid by the owner or owners of any such parcel. Any such lien shall attach upon the filing and recording of an affidavit by the owners of any two or more of the remaining parcels which are subject to and liable for such cost. Such affidavit shall set forth the description of the parcel or property against which the lien is claimed, whether the expenditure is for normal maintenance or for major capital improvement, the total amount of the expenditure, the portion attributable to such parcel or property, and the date or dates of such expenditures. A copy of such affidavit shall be sent to the owner or owners of such parcel against which the lien is claimed by regular mail, with postage prepaid, at the last known address of such owner or owners.

14. Extraordinary Use. The owner or owners of each parcel shall be separately responsible to repair and for the costs thereof, of any damage caused to the Private Road Easement and the Drainage Easement due to extraordinary use. "Extraordinary use" shall include, but not be limited to, movement of construction equipment, moving vans, commercial trucks, or other heavy loads, movement of recreational vehicles or increased usage not ordinarily consistent with normal traffic. The owner or owners of such parcel or parcels, whether improved or unimproved, shall not be responsible for such repair or costs until such time as said easement is used by them or construction is commenced on such parcel. In the event that any owner or owners or their agents, employees or invitees cause the type of damage described herein shall fail to make the necessary repairs, the remaining parcel owners may do so after notice to such owner or owners, and any costs so expended shall be a burden upon the land of such owner or owners with a lien enforceable as set forth above.

15. Arbitration. In the event that the parties, their successors, and assigns, hereto are unable to agree as to the type of maintenance work to be performed, the regularity of the work to be performed, the costs thereof or the participation in the payment of costs thereof by the parties, their successors, or assigns, the parties shall submit their differences, claims, or objections to binding arbitration. Arbitration fees for resolution of differences, claims, or objections shall be divided equally, between all parties and paid directly by each party involved in the claim or dispute. Such arbitration shall be conducted and concluded promptly and no later than three (3) months after the demand for arbitration is made.

ADDITIONAL CONDITIONS

16. Equal Rights of Use. The Owner(s) of parcels described in ***Exhibit A***, including the Owner of any future divisions thereof, shall have equal rights of ingress and egress over the Private Road Easement and use of the Drainage Easement, subject to the rights granted herein, and shall take no action to prevent any other Party's enjoyment of such rights.

17. Covenants Run With the Land. All of the terms and conditions in this Declaration, including the benefits and burdens, shall run with the land and shall be binding upon, inure to the benefit of, and be enforceable by the Owners and their respective successors and assigns. The easements granted in this Declaration are easements appurtenant to each of the parcels and may not be transferred separately from, or severed from, title to the parcels.

18. Limited Use and Termination. Limited use or infrequent use of the easement rights granted in this Declaration by the Owner and its Permitted Users shall not prevent the Owner from later use of the easement rights to the fullest extent authorized in this Declaration.

19. Governing Law. This Declaration shall be construed and enforced in accordance with the laws of the State of Michigan. For all litigation, disputes and controversies which may arise out of or in connection with this Declaration, the undersigned hereby waive the right to trial by jury and consent to the jurisdiction of the courts in the State of Michigan. In the event any Party hereto brings or commences legal proceedings to enforce any of the terms of this Declaration, the successful Party shall then be entitled to receive from the other Party, in every such action commenced, a reasonable sum as attorneys' fees and costs, including all fees and costs incurred upon any appeals, to be fixed by the court in the same action.

20. Entire Declaration. This Declaration sets forth the entire understanding of the Parties and may not be changed except by a written document executed and acknowledged by all Parties to this Declaration and duly recorded in the office of the Register of Deeds of Livingston County, Michigan.

21. Notices. All notices to any Party to this Declaration shall be delivered in person or sent by first class mail, postage prepaid, to the other Party at that Party's last known address. If the other Party's address is not known to the Party desiring to send a notice, the Party sending the notice may use the address to which the other Party's real estate tax bills are sent. Either Party may change its address for notice by providing written notice to the other Party.

22. Invalidity. If any term or condition of this Declaration, or the application of this Declaration

to any person or circumstance, shall be deemed invalid or unenforceable, the remainder of this Declaration, or the application of the term or condition to persons or circumstances other than those to which it is held invalid or unenforceable, shall not be affected thereby, and each term and condition shall be valid and enforceable to the fullest extent permitted by law.

23. Waiver. No delay or omission by any Party in exercising any right or power arising out of any default under any of the terms or conditions of this Declaration shall be construed to be a waiver of the right or power. A waiver by a Party of any of the obligations of the other Party shall not be construed to be a waiver of any breach of any other terms or conditions of this Declaration.

24. Enforcement. Enforcement of this Declaration may be by proceedings at law or in equity against any person or persons violating or attempting or threatening to violate any term or condition in this Declaration, either to restrain or prevent the violation or to obtain any other relief. If a suit is brought to enforce this Declaration, the prevailing Party shall be entitled to recover its costs, including reasonable attorney fees, from the non-prevailing Party.

25. No Public Dedication. Nothing in this Declaration shall be deemed to be a gift or dedication of any portion of the easement granted under this Declaration to the general public or for any public purpose whatsoever.

26. Successors and Assigns. This Declaration shall inure to the benefit of and be binding upon the respective successors and assigns (including successive, as well as immediate, successors and assigns) of the Parties.

27. Counterpart Originals. This Declaration may be executed in one or more counterparts, each of which shall be deemed to be a duplicate original, but all of which, taken together, shall constitute a single instrument. Signature pages may be detached from multiple separate counterparts and attached to a single counterpart so that all signature pages are physically attached to the same document.

28. Article and Section Captions. The Article and Section captions contained in this Declaration are included only for convenience of reference and do not define, limit, explain or modify this Declaration or its interpretation, construction or meaning and are in no way to be construed as a part of this Declaration.

29. No Partnership, Joint Venture or Principal-Agency Relationship. Neither anything contained in this Declaration nor any acts of the Parties shall be deemed or construed by the Parties, or either of them, or by any third person or entity, to create the relationship of principal and agent, or of partnership, or of joint venture, or of any association between the Parties to this Declaration.

[THE REMAINDER OF THIS PAGE IS INTENTIONALLY LEFT BLANK]
[Signature and Acknowledgement Pages Follow]

IN WITNESS WHEREOF, the undersigned has caused this Declaration to be effective as of the date first written above.

By: _____
Joe Mazur

ACKNOWLEDGMENT

STATE OF MICHIGAN)
)
COUNTY OF LIVINGSTON)

The foregoing instrument was acknowledged before me this ____ day of _____, 2026, by Joe Mazur to me known to be the person who executed the foregoing instrument and acknowledged the same.

_____
Notary Public for _____
Acting in: _____ County

My Commission expires:_____

Prepared By:
Wayne M. Perry
Desine Inc.
2183 Pless Drive
Brighton, Michigan 48114

When Recorded Mail To:
Joe Mazur
3447 Mayberry Lane
Howell, Michigan 48843

EXHIBIT A

Legal Description of the Property

PARCEL

EXHIBIT B

Legal Description of Access Easement

"MAYBERRY FARM WAY"
A 66-FOOT WIDE PRIVATE EASEMENT FOR INGRESS, EGRESS AND PUBLIC UTILITIES

EXHIBIT C

Legal Description of Drainage Easement

EASEMENT FOR STORM WATER DRAINAGE AND DETENTION

EXHIBIT D

Legal Description of Easement for Public Utilities

10-FOOT WIDE EASEMENT FOR PUBLIC UTILITIES

LIVINGSTON COUNTY ROAD COMMISSION
3535 Grand Oaks Drive • Howell, MI 48843-8575
(517) 546-4250 • Fax (517) 546-9628
www.LivingstonRoads.org

March 20, 2026

Wayne Perry, P.E.
Desine, Inc.
2183 Pless Drive
Brighton, MI 48114

Re: Mayberry Farm Way private road approach, Marion Township, Section 28
LCRC# P-26-04

Dear Mr. Perry,

I completed the review of the revised construction plans, dated March 17, 2026, for the above-referenced project and have determined the plans to be in substantial compliance with our specifications.

Before a private road approach permit can be issued, a contractor needs to be selected and the selected contractor will need to submit a certificate of insurance containing the following language: "The Board of Livingston County Road Commissioners, the Livingston County Road Commission, and their officers, agents, and employees are listed additional insured parties with respects to General Liability."

Private road approach permits are valid for a six (6) month period. Please contact me when you are ready for the permit to be issued and allow for a minimum of two (2) business days for preparation of the permit.

If you have any questions, please do not hesitate to contact me.

Sincerely,

Kim Hiller

Kim Hiller, P.E.
Utilities and Permits Engineer

Cc: File
Scott Richardson, Marion Township (via email)
Ken Recker, LCDC (via email)

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F: (517) 546-1478
Robert@HastingsTesting.com

May 01, 2026

Desine Engineers
2183 Pless Drive
Brighton, MI 48114

Attention: Wayne Perry

Reference: Mayberry Lane – Sub-Surface Exploration

Dear Mr. Perry,

Eight (08) soil test boring designated as soil boring locations #1 through #8 were drilled in the influence of the planned Mayberry Lane development located in Marion Township, Michigan. Soil test boring #1 through #4 were performed in the influence of proposed detention basins to determine the soil profile and infiltration rates of the sub-surface sub-grade materials and were advanced to a depth of twenty-five feet (25'-0") below the existing site grade. Test boring locations #5 through #8 were performed in the influence of the proposed roadway to determine the structural integrity of the sub-surface sub-grade materials and were advanced to a depth of twenty feet (20'-0") below the existing site grade. The soil boring locations can be identified on the enclosed diagram.

Soil descriptions, ground water observations and the results of field tests are to be found on the accompanying soil boring logs.

Soil descriptions and depths shown on the soil boring logs are approximate indications of change from one soil to another and are not intended to represent an exact geological change or stratification.

Ground water was encountered in each of the test boring locations at the following depths:

Test boring location #1 – 7'-0" below the existing site grade.
Test boring location #2 – 7'-0" below the existing site grade.
Test boring location #3 – 6'-6" below the existing site grade.
Test boring location #4 – 7'-6" below the existing site grade.
Test boring location #5 – None.
Test boring location #6 – 13'-0" below the existing site grade.
Test boring location #7 – 6'-0" below the existing site grade.
Test boring location #8 – 7'-0" below the existing site grade.

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It should be noted that short-term ground water observations may not provide a reliable indication of the depth of the water table. In cohesive soils this is due to the slow rate of water infiltration into the bore hole as well as the potential for water to be trapped in overlying layers of granular soil in periods of heavy rain fall.

Information obtained from soil blow counts (standard penetration) indicate that the soils are variably compacted. The granular soils encountered were generally in a medium dense to dense state, and the cohesive soils encountered generally had medium stiff consistencies.

Soil blow counts, profiles of the encountered sub-grade soils and the unconfined compressive strength of cohesive soils can be reviewed on the test boring logs.

Roadway Recommendations

The sub-grade soils will generally consist of silty granular materials. The specified soils are moisture sensitive and may become unstable if too much moisture is allowed to accumulate on sub-grade surfaces. Prior to the addition of any fill materials or base course materials, it is recommended that the sub-grade elevation be proof rolled with a fully loaded tandem axle dump truck or other approved equipment to determine if there is any sub-grade instability. Any unstable sub-grade materials should be removed and replaced with engineered fill material placed in horizontal lifts not exceeding one foot in depth with each lift compacted uniformly to a minimum density of ninety-five percent of the materials maximum unit weight as determined by AASHTO T-180 or ASTM D1557.

It is anticipated that the planned roadway will generally accommodate light vehicle traffic. It is recommended that the sub-grade soils be fine graded to pitch toward storm sewer structures. It is also recommended that underdrains be installed in low areas and around structures to facilitate the removal of any excess water accumulations.

It is recommended that the profile of the pavement consist of seven inches of granular materials (MDOT class II granular material – compacted to 95%) as a subbase material, eight inches of limestone (MDOT 21AA dense graded aggregate – compacted to 98%) as a base course material and four inches of asphalt (2" leveling course and 2" wearing course) MDOT 3E3 (leveling course) and 5E3 (wearing course).

Infiltration Testing

Hastings Testing Engineers and Environmental Inc. was requested to perform infiltration tests from soil sampled during drilling operations. The infiltration tests were performed to determine the hydraulic conductivity of existing soils in the influence of the proposed detention systems. Hastings Testing Engineers and Environmental Inc. performed the constant head permeability tests on eight samples (ASTM D2434). The results of the tests are as follows:

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Test #1
Sample: Soil boring location #1.
Depth: Approximately four feet six inches below the existing site grade.
Sub-Grade Material: Fine Brown Sand with some Silt

$$K_{sat} = 3.3 \ \frac{in}{hr}$$

Test #2
Sample: Soil boring location #1.
Depth: Approximately ten feet below the existing site grade.
Sub-Grade Material: Medium Brown Sand with some Silt

$$K_{sat} = 6.4 \ \frac{in}{hr}$$

Test #3
Sample: Soil boring location #2.
Depth: Approximately three feet below the existing site grade.
Sub-Grade Material: Medium Brown Sand with some Silt

$$K_{sat} = 8.1 \ \frac{in}{hr}$$

Test #4
Sample: Soil boring location #2.
Depth: Approximately six feet below the existing site grade.
Sub-Grade Material: Fine Brown Sand with some Silt

$$K_{sat} = 4.9 \ \frac{in}{hr}$$

Test #5
Sample: Soil boring location #3.
Depth: Approximately five feet below the existing site grade.
Sub-Grade Material: Fine Brown Sand with some Silt

$$K_{sat} = 6.7 \ \frac{in}{hr}$$

Test #6
Sample: Soil boring location #3.
Depth: Approximately ten feet below the existing site grade.
Sub-Grade Material: Medium Brown Sand with some Silt

$$K_{sat} = 9.8 \ \frac{in}{hr}$$

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Test #7
Sample: Soil boring location #4.
Depth: Approximately five feet below the existing site grade.
Sub-Grade Material: Fine Brown Sand with some Silt

$$K_{sat} = 7.0 \ \frac{in}{hr}$$

Test #8
Sample: Soil boring location #4.
Depth: Approximately ten feet below the existing site grade.
Sub-Grade Material: Medium Brown Sand with some Silt

$$K_{sat} = 10.4 \ \frac{in}{hr}$$

Conclusions
Experience indicates that the actual subsoil conditions at the site could vary from those generalized on the basis of test borings made at specific locations. It is therefore essential that Hastings Testing Engineers and Environmental Inc. be notified of any variation of the soil conditions to determine the effects on the recommendations in this report. The evaluations and recommendations contained in this report have been formulated on assumed data relating to the proposed project. Any significant change in this data in the final design plans should be brought to our attention for review and evaluation.

If you should have further questions, please contact our office.

Sincerely,

Marc A. W. Smith PE

STATE OF MICHIGAN
MARC ANDREW WAYNE SMITH
ENGINEER
No. 6201068928
LICENSED PROFESSIONAL ENGINEER

HASTINGS TESTING ENGINEERS AND ENVIRONMENTAL, INC.
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Mayberry Lane

Soil Boring Testing Diagram

Date : 04/14/2026 through 04/20/2026

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REPORT OF SOIL BORING

TESTED FOR: Desine Engineers
2183 Pless Drive
Brighton, MI 48114

REPORT # : 7791
CLIENT # : 5135
DATE: 04/14/2026
PAGE: 1

LOCATION: Soil Boring Location #1 - See Enclosed Diagram

Soil Description	Depth in Feet	Sample & Type	Blow Count*	N Val	% Water	Natural Weight P C F	Unconfined Strength	
							Str. PSF	Fail Strain
Organic Soil and Material	0.5							
	1							
Medium Brown Sand with	1.5		3					
some Silt	2		3					
	2.5	SS1	3	6	6.1			
	3							
Fine Brown Sand with	3.5		3					
some Silt	4		6					
	4.5	SS2	6	12	6.7			
	5							
	5.5							
	6		4					
	6.5		3					
	7	SS3	4	7	10.4			
	7.5							
	8							
Medium Brown Sand with	8.5		8					
some Silt	9		7					
	9.5	SS4	8	15	11.2			
	10							
	10.5							
	11							
	11.5							
	12							
	12.5							
	13							

Type of Sample: SS - Split Spoon
SL - Split Spoon With Liner
ST - Shelby Tube

* Standard Penetration Test - Driving 2" OD Sampler 18" with 140 # Hammer, Falling 30" Count made at 6" intervals.

DRILLING METHOD: Track Mounted Auger
DRILLING FOREMAN: A. Gibbs
BACKFILL MATERIAL: Existing Material

GROUND WATER ENCOUNTERED AT: 7'-0" BEG
GROUND WATER AFTER COMPLEATION: 7'-0" BEG
GROUND WATER AFTER: 1 Hour

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REPORT OF SOIL BORING

TESTED FOR: Desine Engineers
2183 Pless Drive
Brighton, MI 48114

REPORT # : 7791
CLIENT # : 5135
DATE: 04/14/2026
PAGE: 2

LOCATION: Soil Boring Location #1 - See Enclosed Diagram

Soil Description	Depth in Feet	Sample & Type	Blow Count*	N Val	% Water	Natural Weight P C F	Unconfined Strength	
							Str. PSF	Fail Strain
Medium Brown Sand with	13.5		9					
some Silt	14		11					
	14.5	SS5	10	21	9.9			
	15							
	15.5							
	16							
	16.5							
	17							
	17.5							
	18							
Fine Brown Sand with	18.5		8					
some Silt	19		12					
	19.5	SS6	14	26	11.9			
	20							
	20.5							
	21							
	21.5							
	22							
	22.5							
	23							
	23.5		9					
	24		11					
	24.5	SS7	18	29	13.4			
End Of Soil Boring #1	25							
	25.5							
	26							

Type of Sample: SS - Split Spoon
SL - Split Spoon With Liner
ST - Shelby Tube

* Standard Penetration Test - Driving 2" OD Sampler 18" with 140 # Hammer, Falling 30" Count made at 6" intervals.

DRILLING METHOD: Track Mounted Auger
DRILLING FOREMAN: A. Gibbs
BACKFILL MATERIAL: Existing Material

GROUND WATER ENCOUNTERED AT: 7'-0" BEG
GROUND WATER AFTER COMPLEATION: 7'-0" BEG
GROUND WATER AFTER: 1 Hour

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REPORT OF SOIL BORING

TESTED FOR: Desine Engineers
2183 Pless Drive
Brighton, MI 48114

REPORT # : 7792
CLIENT # : 5135
DATE: 04/14/2026
PAGE: 1

LOCATION: Soil Boring Location #2 - See Enclosed Diagram

Soil Description	Depth in Feet	Sample & Type	Blow Count*	N Val	% Water	Natural Weight P C F	Unconfined Strength	
							Str. PSF	Fail Strain
Organic Soil and Material	0.5							
	1							
Medium Brown Sand with	1.5		3					
some Silt	2		3					
	2.5	SS1	3	6	5.4			
	3							
	3.5		3					
	4		4					
	4.5	SS2	3	7	5.7			
	5							
	5.5							
Fine Brown Sand with	6		15					
some Silt	6.5		12					
	7	SS3	11	23	11.8			
	7.5							
	8							
	8.5		7					
	9		8					
	9.5	SS4	14	22	13.4			
	10							
	10.5							
	11							
	11.5							
	12							
	12.5							
	13							

Type of Sample: SS - Split Spoon
SL - Split Spoon With Liner
ST - Shelby Tube

* Standard Penetration Test - Driving 2" OD Sampler 18" with 140 # Hammer, Falling 30" Count made at 6" intervals.

DRILLING METHOD: Track Mounted Auger
DRILLING FOREMAN: A. Gibbs
BACKFILL MATERIAL: Existing Material

GROUND WATER ENCOUNTERED AT: 7'-0" BEG
GROUND WATER AFTER COMPLEATION: 7'-0" BEG
GROUND WATER AFTER: 1 Hour

HASTINGS TESTING ENGINEERS AND ENVIRONMENTAL, INC.
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Robert@HastingsTesting.com

REPORT OF SOIL BORING

TESTED FOR: Desine Engineers
2183 Pless Drive
Brighton, MI 48114

REPORT # : 7792
CLIENT # : 5135
DATE: 04/14/2026
PAGE: 2

LOCATION: Soil Boring Location #2 - See Enclosed Diagram

Soil Description	Depth in Feet	Sample & Type	Blow Count*	N Val	% Water	Natural Weight P C F	Unconfined Strength	
							Str. PSF	Fail Strain
Fine Brown Sand with	13.5		6					
some Silt	14		9					
	14.5	SS5	12	21	14.5			
	15							
	15.5							
	16							
	16.5							
	17							
	17.5							
	18							
	18.5		9					
	19		10					
	19.5	SS6	17	27	12.7			
	20							
	20.5							
	21							
	21.5							
	22							
	22.5							
	23							
	23.5		13					
	24		18					
	24.5	SS7	17	35	11.8			
End Of Soil Boring #2	25							
	25.5							
	26							

Type of Sample: SS - Split Spoon
SL - Split Spoon With Liner
ST - Shelby Tube

* Standard Penetration Test - Driving 2" OD Sampler 18" with 140 # Hammer, Falling 30" Count made at 6" intervals.

DRILLING METHOD: Track Mounted Auger
DRILLING FOREMAN: A. Gibbs
BACKFILL MATERIAL: Existing Material

GROUND WATER ENCOUNTERED AT: 7'-0" BEG
GROUND WATER AFTER COMPLEATION: 7'-0" BEG
GROUND WATER AFTER: 1 Hour

HASTINGS TESTING ENGINEERS AND ENVIRONMENTAL, INC.
"Testing to keep America on a firm foundation"
4841 GOLF CLUB ROAD • HOWELL, MI 48843

(517) 546-6121
F: (517) 546-1478
Robert@HastingsTesting.com

REPORT OF SOIL BORING

TESTED FOR: Desine Engineers
2183 Pless Drive
Brighton, MI 48114

REPORT # : 7793
CLIENT # : 5135
DATE: 04/20/2026
PAGE: 1

LOCATION: Soil Boring Location #3 - See Enclosed Diagram

Soil Description	Depth in Feet	Sample & Type	Blow Count*	N Val	% Water	Natural Weight P C F	Unconfined Strength	
							Str. PSF	Fail Strain
Organic Soil and Material	0.5							
	1							
Fine Brown Sand with	1.5		3					
some Silt	2		5					
	2.5	SS1	8	13	7.1			
	3							
	3.5		4					
	4		10					
	4.5	SS2	10	20	6.4			
	5							
	5.5							
	6		11					
	6.5		15					
	7	SS3	16	31	10.1			
	7.5							
	8							
Medium Brown Sand with	8.5		7					
some Silt	9		5					
	9.5	SS4	12	17	13.3			
	10							
	10.5							
	11							
	11.5							
	12							
	12.5							
	13							

Type of Sample: SS - Split Spoon
SL - Split Spoon With Liner
ST - Shelby Tube

* Standard Penetration Test - Driving 2" OD Sampler 18" with 140 # Hammer, Falling 30" Count made at 6" intervals.

DRILLING METHOD: Track Mounted Auger
DRILLING FOREMAN: A. Gibbs
BACKFILL MATERIAL: Existing Material

GROUND WATER ENCOUNTERED AT: 6'-6" BEG
GROUND WATER AFTER COMPLEATION: 6'-6" BEG
GROUND WATER AFTER: 1 Hour

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TESTED FOR: Desine Engineers
2183 Pless Drive
Brighton, MI 48114

REPORT # : 7793
CLIENT # : 5135
DATE: 04/20/2026
PAGE: 2

LOCATION: Soil Boring Location #3 - See Enclosed Diagram

Soil Description	Depth in Feet	Sample & Type	Blow Count*	N Val	% Water	Natural Weight P C F	Unconfined Strength	
							Str. PSF	Fail Strain
Fine Brown Sand with	13.5		9					
some Silt	14		16					
	14.5	SS5	13	29	14.2			
	15							
	15.5							
	16							
	16.5							
	17							
	17.5							
	18							
Medium Brown Sand with	18.5		8					
some Silt	19		12					
	19.5	SS6	12	24	11.5			
	20							
	20.5							
	21							
	21.5							
	22							
	22.5							
	23							
	23.5		9					
	24		9					
	24.5	SS7	15	24	12.7			
End Of Soil Boring #3	25							
	25.5							
	26							

Type of Sample: SS - Split Spoon
SL - Split Spoon With Liner
ST - Shelby Tube

* Standard Penetration Test - Driving 2" OD Sampler 18" with 140 # Hammer, Falling 30" Count made at 6" intervals.

DRILLING METHOD: Track Mounted Auger
DRILLING FOREMAN: A. Gibbs
BACKFILL MATERIAL: Existing Material

GROUND WATER ENCOUNTERED AT: 6'-6" BEG
GROUND WATER AFTER COMPLEATION: 6'-6" BEG
GROUND WATER AFTER: 1 Hour

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Brighton, MI 48114

REPORT # : 7794
CLIENT # : 5135
DATE: 04/20/2026
PAGE: 1

LOCATION: Soil Boring Location #4 - See Enclosed Diagram

Soil Description	Depth in Feet	Sample & Type	Blow Count*	N Val	% Water	Natural Weight P C F	Unconfined Strength	
							Str. PSF	Fail Strain
Organic Soil and Material	0.5							
	1							
Medium Brown Sand with	1.5		3					
some Silt	2		5					
	2.5	SS1	4	9	6.5			
	3							
Fine Brown Sand with	3.5		5					
some Silt	4		7					
	4.5	SS2	4	11	6.4			
	5							
	5.5							
	6		10					
	6.5		14					
	7	SS3	12	26	9.4			
	7.5							
	8							
Medium Brown Sand with	8.5		7					
some Silt	9		13					
	9.5	SS4	12	25	14.2			
	10							
	10.5							
	11							
	11.5							
	12							
	12.5							
	13							

Type of Sample: SS - Split Spoon
SL - Split Spoon With Liner
ST - Shelby Tube

* Standard Penetration Test - Driving 2" OD Sampler 18" with 140 # Hammer, Falling 30" Count made at 6" intervals.

DRILLING METHOD: Track Mounted Auger
DRILLING FOREMAN: A. Gibbs
BACKFILL MATERIAL: Existing Material

GROUND WATER ENCOUNTERED AT: 7'-6" BEG
GROUND WATER AFTER COMPLEATION: 7'-6" BEG
GROUND WATER AFTER: 1 Hour

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REPORT OF SOIL BORING

TESTED FOR: Desine Engineers
2183 Pless Drive
Brighton, MI 48114

REPORT # : 7794
CLIENT # : 5135
DATE: 04/20/2026
PAGE: 2

LOCATION: Soil Boring Location #4 - See Enclosed Diagram

Soil Description	Depth in Feet	Sample & Type	Blow Count*	N Val	% Water	Natural Weight P C F	Unconfined Strength	
							Str. PSF	Fail Strain
Medium Brown Sand with	13.5		9					
some Silt	14		10					
	14.5	SS5	10	20	13.6			
	15							
	15.5							
	16							
	16.5							
	17							
	17.5							
	18							
	18.5		11					
	19		10					
	19.5	SS6	11	21	12.5			
	20							
	20.5							
	21							
	21.5							
	22							
	22.5							
	23							
	23.5		10					
	24		9					
	24.5	SS7	10	19	15.1			
End Of Soil Boring #4	25							
	25.5							
	26							

Type of Sample: SS - Split Spoon
SL - Split Spoon With Liner
ST - Shelby Tube

* Standard Penetration Test - Driving 2" OD Sampler 18" with 140 # Hammer, Falling 30" Count made at 6" intervals.

DRILLING METHOD: Track Mounted Auger
DRILLING FOREMAN: A. Gibbs
BACKFILL MATERIAL: Existing Material

GROUND WATER ENCOUNTERED AT: 7'-6" BEG
GROUND WATER AFTER COMPLEATION: 7'-6" BEG
GROUND WATER AFTER: 1 Hour

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REPORT OF SOIL BORING

TESTED FOR: Desine Engineers
2183 Pless Drive
Brighton, MI 48114

REPORT # : 7795
CLIENT # : 5135
DATE: 04/20/2026
PAGE: 1

LOCATION: Soil Boring Location #5 - See Enclosed Diagram

Soil Description	Depth in Feet	Sample & Type	Blow Count*	N Val	% Water	Natural Weight P C F	Unconfined Strength	
							Str. PSF	Fail Strain
Organic Soil and Material	0.5							
Silty Brown Clay	1							
	1.5		3					
	2		4					
	2.5	SS1	5	9	16.2		3500	
	3							
	3.5		3					
	4		5					
	4.5	SS2	3	8	17		2000	
	5							
	5.5							
Fine Brown Sand with	6		5					
some Silt	6.5		7					
	7	SS3	8	15	5.4			
	7.5							
	8							
	8.5		8					
	9		9					
	9.5	SS4	6	15	6.1			
	10							
	10.5							
	11							
	11.5							
	12							
	12.5							
	13							

Type of Sample: SS - Split Spoon
SL - Split Spoon With Liner
ST - Shelby Tube

* Standard Penetration Test - Driving 2" OD Sampler 18" with 140 # Hammer, Falling 30" Count made at 6" intervals.

DRILLING METHOD: Track Mounted Auger
DRILLING FOREMAN: A. Gibbs
BACKFILL MATERIAL: Existing Material

GROUND WATER ENCOUNTERED AT: None
GROUND WATER AFTER COMPLEATION: None
GROUND WATER AFTER: ---

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REPORT OF SOIL BORING

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Brighton, MI 48114

REPORT # : 7795
CLIENT # : 5135
DATE: 04/20/2026
PAGE: 2

LOCATION: Soil Boring Location #5 - See Enclosed Diagram

Soil Description	Depth in Feet	Sample & Type	Blow Count*	N Val	% Water	Natural Weight P C F	Unconfined Strength	
							Str. PSF	Fail Strain
Medium Brown Sand with	13.5		8					
some Sand	14		11					
	14.5	SS5	16	27	7			
	15							
	15.5							
	16							
	16.5							
	17							
	17.5							
	18							
	18.5		4					
	19		5					
	19.5	SS6	6	11	7.3			
End Of Soil Boring #5	20							

Type of Sample: SS - Split Spoon
SL - Split Spoon With Liner
ST - Shelby Tube

* Standard Penetration Test - Driving 2" OD Sampler 18" with 140 # Hammer, Falling 30" Count made at 6" intervals.

DRILLING METHOD: Track Mounted Auger
DRILLING FOREMAN: A. Gibbs
BACKFILL MATERIAL: Existing Material

GROUND WATER ENCOUNTERED AT: None
GROUND WATER AFTER COMPLEATION: None
GROUND WATER AFTER: ---

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REPORT OF SOIL BORING

TESTED FOR: Desine Engineers
2183 Pless Drive
Brighton, MI 48114

REPORT # : 7796
CLIENT # : 5135
DATE: 04/20/2026
PAGE: 1

LOCATION: Soil Boring Location #6 - See Enclosed Diagram

Soil Description	Depth in Feet	Sample & Type	Blow Count*	N Val	% Water	Natural Weight P C F	Unconfined Strength	
							Str. PSF	Fail Strain
Organic Soil and Material	0.5							
Medium Brown Sand with	1							
some Silt	1.5		7					
	2		4					
	2.5	SS1	6	10	9.1			
	3							
	3.5		4					
	4		5					
	4.5	SS2	4	9	6.3			
	5							
	5.5							
Fine Brown Sand with	6		3					
some Sand	6.5		3					
	7	SS3	3	6	5.5			
	7.5							
	8							
	8.5		3					
	9		3					
	9.5	SS4	3	6	5.8			
	10							
	10.5							
	11							
	11.5							
	12							
	12.5							
	13							

Type of Sample: SS - Split Spoon
SL - Split Spoon With Liner
ST - Shelby Tube

* Standard Penetration Test - Driving 2" OD Sampler 18" with 140 # Hammer, Falling 30" Count made at 6" intervals.

DRILLING METHOD: Track Mounted Auger
DRILLING FOREMAN: A. Gibbs
BACKFILL MATERIAL: Existing Material

GROUND WATER ENCOUNTERED AT: 13'-0" BEG
GROUND WATER AFTER COMPLEATION: 13'-0" BEG
GROUND WATER AFTER: 1 Hour

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REPORT OF SOIL BORING

TESTED FOR: Desine Engineers
2183 Pless Drive
Brighton, MI 48114

REPORT # : 7796
CLIENT # : 5135
DATE: 04/20/2026
PAGE: 2

LOCATION: Soil Boring Location #6 - See Enclosed Diagram

	Soil Description	Depth in Feet	Sample & Type	Blow Count*	N Val	% Water	Natural Weight P C F	Unconfined Strength	
								Str. PSF	Fail Strain
	Fine Brown Sand with	13.5		4					
	some Silt	14		4					
		14.5	SS5	5	9	13.6			
		15							
		15.5							
		16							
		16.5							
		17							
		17.5							
		18							
		18.5		11					
		19		14					
		19.5	SS6	14	28	13.1			
	End Of Soil Boring #6	20							

Type of Sample: SS - Split Spoon
SL - Split Spoon With Liner
ST - Shelby Tube

* Standard Penetration Test - Driving 2" OD Sampler 18" with 140 # Hammer, Falling 30" Count made at 6" intervals.

DRILLING METHOD: Track Mounted Auger
DRILLING FOREMAN: A. Gibbs
BACKFILL MATERIAL: Existing Material

GROUND WATER ENCOUNTERED AT: 13'-0" BEG
GROUND WATER AFTER COMPLEATION: 13'-0" BEG
GROUND WATER AFTER: 1 Hour

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DATE: 04/14/2026
PAGE: 1

LOCATION: Soil Boring Location #7 - See Enclosed Diagram

Soil Description	Depth in Feet	Sample & Type	Blow Count*	N Val	% Water	Natural Weight P C F	Unconfined Strength	
							Str. PSF	Fail Strain
Organic Soil and Material	0.5							
	1							
Fine Brown Sand with	1.5		5					
some Silt	2		5					
	2.5	SS1	5	10	7.6			
	3							
Medium Brown Sand with	3.5		4					
some Silt	4		4					
	4.5	SS2	3	7	7.4			
	5							
	5.5							
	6		4					
	6.5		5					
	7	SS3	4	9	10.8			
	7.5							
	8							
Fine Brown Sand with	8.5		6					
some Silt	9		5					
	9.5	SS4	4	9	11.6			
	10							
	10.5							
	11							
	11.5							
	12							
	12.5							
	13							

Type of Sample: SS - Split Spoon
SL - Split Spoon With Liner
ST - Shelby Tube

* Standard Penetration Test - Driving 2" OD Sampler 18" with 140 # Hammer, Falling 30" Count made at 6" intervals.

DRILLING METHOD: Track Mounted Auger
DRILLING FOREMAN: A. Gibbs
BACKFILL MATERIAL: Existing Material

GROUND WATER ENCOUNTERED AT: 6'-0" BEG
GROUND WATER AFTER COMPLEATION: 6'-0" BEG
GROUND WATER AFTER: 1 Hour

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Brighton, MI 48114

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DATE: 04/14/2026
PAGE: 2

LOCATION: Soil Boring Location #7 - See Enclosed Diagram

Soil Description	Depth in Feet	Sample & Type	Blow Count*	N Val	% Water	Natural Weight P C F	Unconfined Strength	
							Str. PSF	Fail Strain
Fine Brown Sand with	13.5		5					
some Silt	14		7					
	14.5	SS5	14	21	13			
	15							
	15.5							
	16							
	16.5							
	17							
	17.5							
	18							
	18.5		9					
	19		11					
	19.5	SS6	10	21	12.2			
End Of Soil Boring #7	20							

Type of Sample: SS - Split Spoon
SL - Split Spoon With Liner
ST - Shelby Tube

* Standard Penetration Test - Driving 2" OD Sampler 18" with 140 # Hammer, Falling 30" Count made at 6" intervals.

DRILLING METHOD: Track Mounted Auger
DRILLING FOREMAN: A. Gibbs
BACKFILL MATERIAL: Existing Material

GROUND WATER ENCOUNTERED AT: 6'-0" BEG
GROUND WATER AFTER COMPLEATION: 6'-0" BEG
GROUND WATER AFTER: 1 Hour

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DATE: 04/14/2026
PAGE: 1

LOCATION: Soil Boring Location #8 - See Enclosed Diagram

Soil Description	Depth in Feet	Sample & Type	Blow Count*	N Val	% Water	Natural Weight P C F	Unconfined Strength	
							Str. PSF	Fail Strain
Organic Soil and Material	0.5							
Fine Brown Sand with	1							
some Silt	1.5		4					
	2		5					
	2.5	SS1	5	10	4.8			
	3							
	3.5		4					
	4		5					
	4.5	SS2	5	10	5.9			
	5							
	5.5							
	6		4					
	6.5		4					
	7	SS3	4	8	8.1			
	7.5							
	8							
Medium Brown Sand with	8.5		10					
some Silt	9		7					
	9.5	SS4	4	11	10.7			
	10							
	10.5							
	11							
	11.5							
	12							
	12.5							
	13							

Type of Sample: SS - Split Spoon
SL - Split Spoon With Liner
ST - Shelby Tube

* Standard Penetration Test - Driving 2" OD Sampler 18" with 140 # Hammer, Falling 30" Count made at 6" intervals.

DRILLING METHOD: Track Mounted Auger
DRILLING FOREMAN: A. Gibbs
BACKFILL MATERIAL: Existing Material

GROUND WATER ENCOUNTERED AT: 7'-0" BEG
GROUND WATER AFTER COMPLEATION: 7'-0" BEG
GROUND WATER AFTER: 1 Hour

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LOCATION: Soil Boring Location #8 - See Enclosed Diagram

	Soil Description	Depth in Feet	Sample & Type	Blow Count*	N Val	% Water	Natural Weight P C F	Unconfined Strength	
								Str. PSF	Fail Strain
	Medium Brown Sand with	13.5		5					
	some Silt	14		4					
		14.5	SS5	10	14	11.3			
		15							
		15.5							
		16							
		16.5							
		17							
		17.5							
		18							
		18.5		8					
		19		10					
		19.5	SS6	11	21	13.4			
	End Of Soil Boring #8	20							

Type of Sample: SS - Split Spoon
SL - Split Spoon With Liner
ST - Shelby Tube

* Standard Penetration Test - Driving 2" OD Sampler 18" with 140 # Hammer, Falling 30" Count made at 6" intervals.

DRILLING METHOD: Track Mounted Auger
DRILLING FOREMAN: A. Gibbs
BACKFILL MATERIAL: Existing Material

GROUND WATER ENCOUNTERED AT: 7'-0" BEG
GROUND WATER AFTER COMPLEATION: 7'-0" BEG
GROUND WATER AFTER: 1 Hour

SITE PLAN FOR

PRIVATE DRIVE-LAND DIVISION

3447 MAYBERRY DRIVE

NW 1/4 OF SECTION 28, T.2N.-R.4E.
MARION TOWNSHIP, LIVINGSTON COUNTY, MICHIGAN

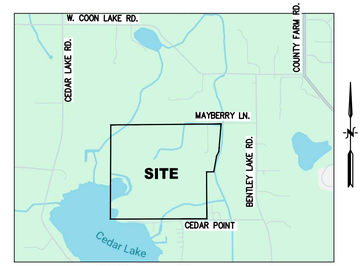
LEGAL DESCRIPTION

PARCEL No. 4710-28-100-002 168.92± Acres

BEGINNING at the North 1/4 Corner of Section 28, Town 2 North, Range 4 East, Marion Township, Livingston County, Michigan; thence N89°48'54"E *(recorded as N89°48'39"E)* 415.00 feet along the North line of said Section 28 and the nominal centerline of Mayberry Road (33-foot wide 1/2 Right-of-Way), to a point distant 2219.21 feet N89°48'54"E *(recorded as N89°48'39"E)* to the Northeast Corner of said Section 28; thence along the centerline of Marion No. 2 Drain (100-foot wide) as depicted in Certified Land Survey No. 2006S-0069, Livingston County Records the following three courses:

1) S04°44'28"W 778.73 feet *(recorded as S04°43'08"W 778.33 feet)*,
2) S28°38'10"W *(recorded as S28°36'50"W)* 123.55 feet and
3) S10°40'07"W *(recorded as S10°38'47"W)* 452.41 feet;

thence S89°39'50"W *(recorded as S89°33'33"W)* 198.00 feet to the North-South 1/4 line of said Section 28, also to a point distant 1328.97 feet N00°25'00"W *(recorded as N00°26'27"W)* to said North 1/4 Corner; thence S00°25'00"E *(recorded as S03°05'E)* 1303.73 feet to the Center Post of said Section 28; thence N89°54'03"W 2639.05 feet *(recorded as S87°18'W 1172.3 feet, S87°09'W 485.9 feet and S86°08'W 977.89 feet)* along the East-West 1/4 line of said Section 28 and the North line (in-part) of "Cedar Point," a Subdivision of part of said Section 28, according to the plat thereof, as recorded in Liber 2 of Plats, Page 86 and "Supervisor's Plat of Cedar Point Annex," a Subdivision of part of said Section 28, according to the plat thereof, as recorded in Liber 12 of Plats, Page 2, Livingston County Records to the West 1/4 Corner of said Section 28, said Corner lies within the water's of Cedar Lake; thence N00°26'10"W 2612.29 feet *(recorded as N03°09'W 2634.68 feet)* along the West line of said Section 28 to the Northwest Corner of said Section 28; thence N89°39'21"E 2639.83 feet *(recorded as N86°57'E 2639.18 feet)* along said North line of Section 28 and along said nominal centerline of Mayberry Road to the Point of Beginning. Being the Northwest 1/4 and part of the Northeast 1/4 of Section 28, Town 2 North, Range 4 East, Marion Township, Livingston County, Michigan. Containing 168.92 acres of land, more or less. Subject to the rights of the public over the North 33 feet as occupied by Mayberry Road (33-foot wide 1/2 Right-of-Way), also subject to the public trust and rights of the other riparian owners in the waters of Cedar Lake, also subject to the public trust and rights of the other riparian owners in the waters of Marion No. 2 Drain (100-foot wide) as depicted in Certified Land Survey No. 2006S-0069, Livingston County Records, also subject to and together with all easements and restrictions affecting title to the above described premises.



LOCATION MAP
SCALE: 1"=2000'

SHEET INDEX

Land Use Summary

must be included on the Cover Sheet for all site plans

	Characteristic	Existing Conditions	Proposed Condition
Land Use Data	Total Development Area (ac)	168.92 Acres	168.92 Acres
	Impervious Area (ac)	1.00 Acres	1.73 Acres
	Total Pervious Area (ac)	167.92 Acres	167.19 Acres
Perviousness	Change in Perviousness by Cover Type		
	Meadow/fallow/natural areas (non-cultivated)	14.0 Acres	14.0 Acres
	Improved areas (turf grass, landscape, row crops)	59.0 Acres	58.27 Acres
	Wooded Areas	94.92 Acres	94.92 Acres
Calculations	CPVC Volume ***Required*** (cubic feet)		12,518
	CPVC Volume ***Provided*** (cubic feet)		12,518
	CPRC Volume ***Required*** cubic feet)		18,295
	CPRC Volume ***Provided*** (cubic feet)		18,295
Soil Group	Percent of site in each Hydrologic Soil Group		
	A	B	C	D
	3.0%	25.0%	41.7%	30.3%

The Professional Engineer who signs and seals this site plan certifies that the values in this table reflect the WRC stormwater calculations required for this development and that geotechnical investigations were performed that provide conclusive documentation that demonstrates whether infiltration (i.e., CPVC Volume Control) is practicable.

BENCHMARKS

DATUM BASED ON RTK-GPS OBSERVATIONS, DATE NOVEMBER 14, 2025

BENCHMARK #200
TOP OF TRAV. CAP ON IRON ROD, LOCATED 794± FEET SOUTH OF MAYBERRY ROAD AND 320± FEET E'LY OF #3447 HOUSE.
ELEVATION = 952.32 (NAVD 88)
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TOP OF TRAV. CAP ON IRON ROD, LOCATED 68± FEET SW'LY OF MAYBERRY ROAD ON THE WEST SIDE OF DRIVEWAY CURVE.
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SE'LY CORNER OF CONCRETE, LOCATED ON THE NORTH SIDE OF THE SOUTHERLY PART OF CIRCLE DRIVEWAY AT #3447 HOUSE.
ELEVATION = 958.05 (NAVD 88)
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FINISH FLOOR ELEVATION OF GARAGE EAST ENTRANCE OF #3447 HOUSE.
ELEVATION = 966.27 (NAVD 88)
N=377976.64, E=1322249.30

Storm Sewer Quantities		
18" SLCPP including bedding & backfill	190	LF
12" SLCPP including bedding & backfill	435	LF
12" CL.IV RCP including bedding & backfill	104	LF
15" CMP including bedding & backfill	60	LF
18" SLCPP FES installed	3	Each
12" SLCPP FES installed	7	Each
12" RCP FES installed	4	Each
15" CMP FES installed	2	Each
4' Diam. Conc. Manhole installed w/ cover	6	Each
4' Diam. Control Structure installed	4	Each

PLAN DATE	AGENCY	DESCRIPTION	CONTACT NAME	STATUS
3/17/2026	Marion Township	Construction Plan Approval / Land Use Permit		
3/17/2026	Livingston County Drain Commissioner	Stormwater Drainage Review	Kenneth Recker	
3/17/2026	Livingston County Road Commission	Private Road Entrance Permit	Kim Hiller	
	Livingston County Drain Commissioner	SESC Permit		
	EGLE	NPDES Permit		

OWNER
JOE MAZUR
3447 MAYBERRY LANE
HOWELL, MI. 48843
(734) 637-1816

CIVIL ENGINEER/LAND SURVEYOR
DESINE INC.
2183 PLESS DRIVE
BRIGHTON, MI. 48114
(810) 227-9533

NOTE:
THE PROPOSED DRAINAGE SYSTEM IS PRIVATELY OWNED AND SHALL BE PROPERLY MAINTAINED BY THE PROPERTY OWNER.

STATE OF MICHIGAN
WAYNE M. PERRY
License No. 6201054036
LICENSED PROFESSIONAL ENGINEER

DESINE INC
(810) 227-9533
CIVIL ENGINEERS
LAND SURVEYORS
2183 PLESS DRIVE
BRIGHTON, MICHIGAN 48114

REVISION DATE	SCALE: N/A
	PROJECT No.: 9254943
	DWG NAME: 4943 COV
	PRINT: MAY 21, 2026

GRAPHIC SCALE

200 0 100 200 400

(IN FEET)

1 INCH = 200 FEET

LEGEND

- = SIGN
- = UTILITY METERS & BOXES (ELECTRIC METER, GAS METER, WATER METER, PHONE BOX, CATV BOX, MAIL BOX)
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- = STORM WATER DRAINAGE PIPE
- = GAS SHUT OFF
- = U/G GAS
- = SPOT ELEVATION
- = EXISTING 1' CONTOUR
- = EXISTING 5' CONTOUR
- = EXISTING WETLAND

WETLAND DELINIATION PERFORMED BY BARR ENGINEERING, OCTOBER 2025.

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BRIGHTON, MICHIGAN 48114

DESIGN: WMP
DRAFT: LF
CHECK: WMP

REVISION #	DATE	REVISION-DESCRIPTION
	05-21-26	REVISED PER LCDC REVIEW COMMENTS

REVISION #	DATE	REVISION-DESCRIPTION

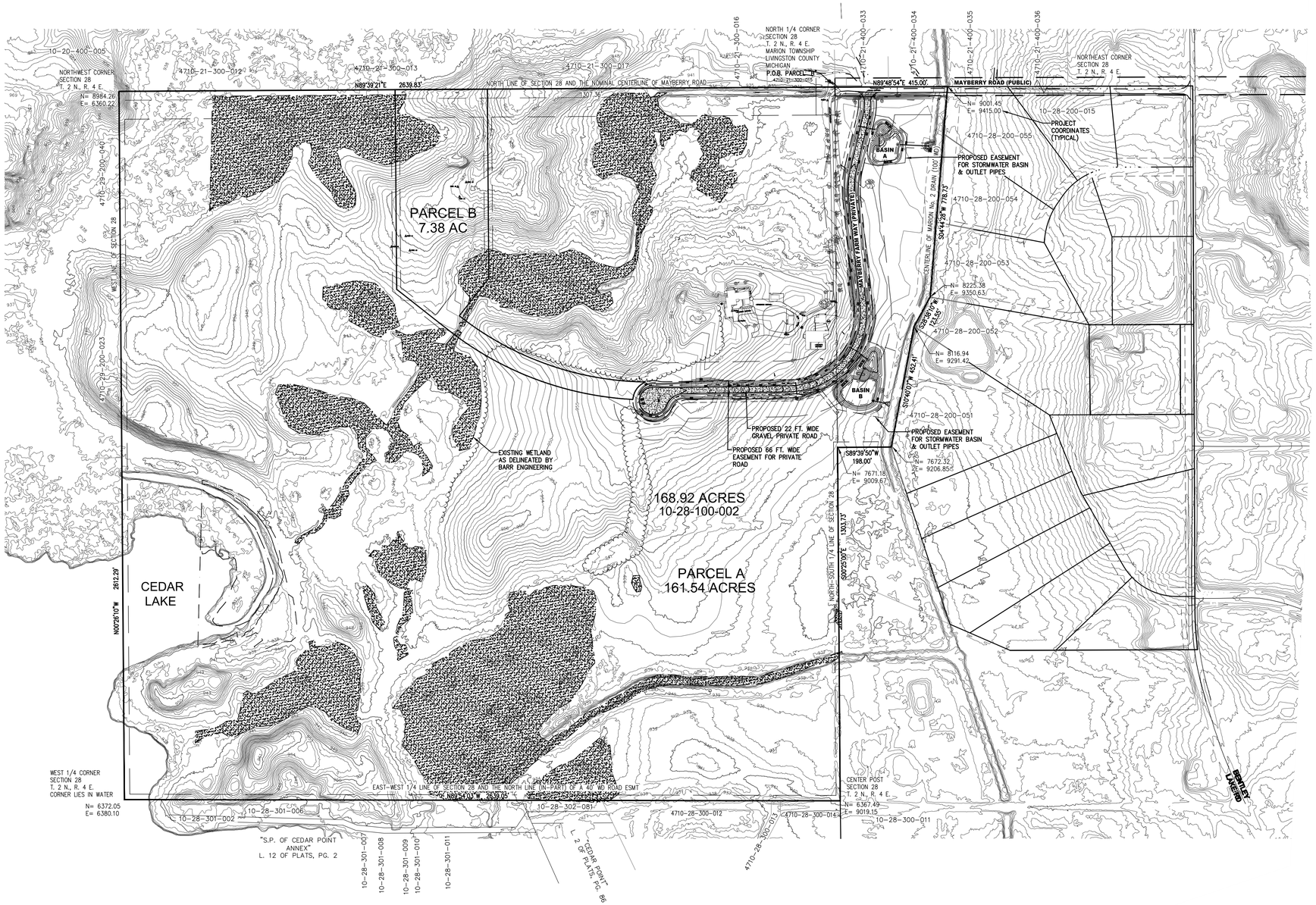
3447 Mayberry Lane
Marion Township, Mi.

EXISTING CONDITIONS PLAN

CLIENT:
JOE MAZUR
3447 MAYBERRY LANE
HOWELL, MICHIGAN 48843
734-637-1816

SCALE: 1"=200'
PROJECT No.: 9254943
DWG NAME: 4943 EX
ISSUED: MAY 21, 2026

EX



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- = PROPOSED 5' CONTOUR
- = PROPOSED STORM SEWER
- = PROPOSED STORM STRUCTURES
- = PROPOSED GRAVEL DRIVE
- = EXISTING WETLAND

SITE CHARACTERISTICS:

PARCEL #: 10-28-100-002
ZONED: RURAL
PARCEL AREA: ± 168.92 AC.

	PROPOSED	ORDINANCE
MINIMUM AREA:	7.38 AC.	2.0 AC.
MINIMUM WIDTH:	340.0 FT.	150 FT.
SETBACKS:		
FRONT:	70 FT.	70 FT.
SIDE:	15 FT.	15 FT.
REAR:	25 FT.	25 FT.

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CIVIL ENGINEERS
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BRIGHTON, MICHIGAN 48114

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DRAFT: LF
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REVISION #	DATE	REVISION-DESCRIPTION
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REVISION #	DATE	REVISION-DESCRIPTION

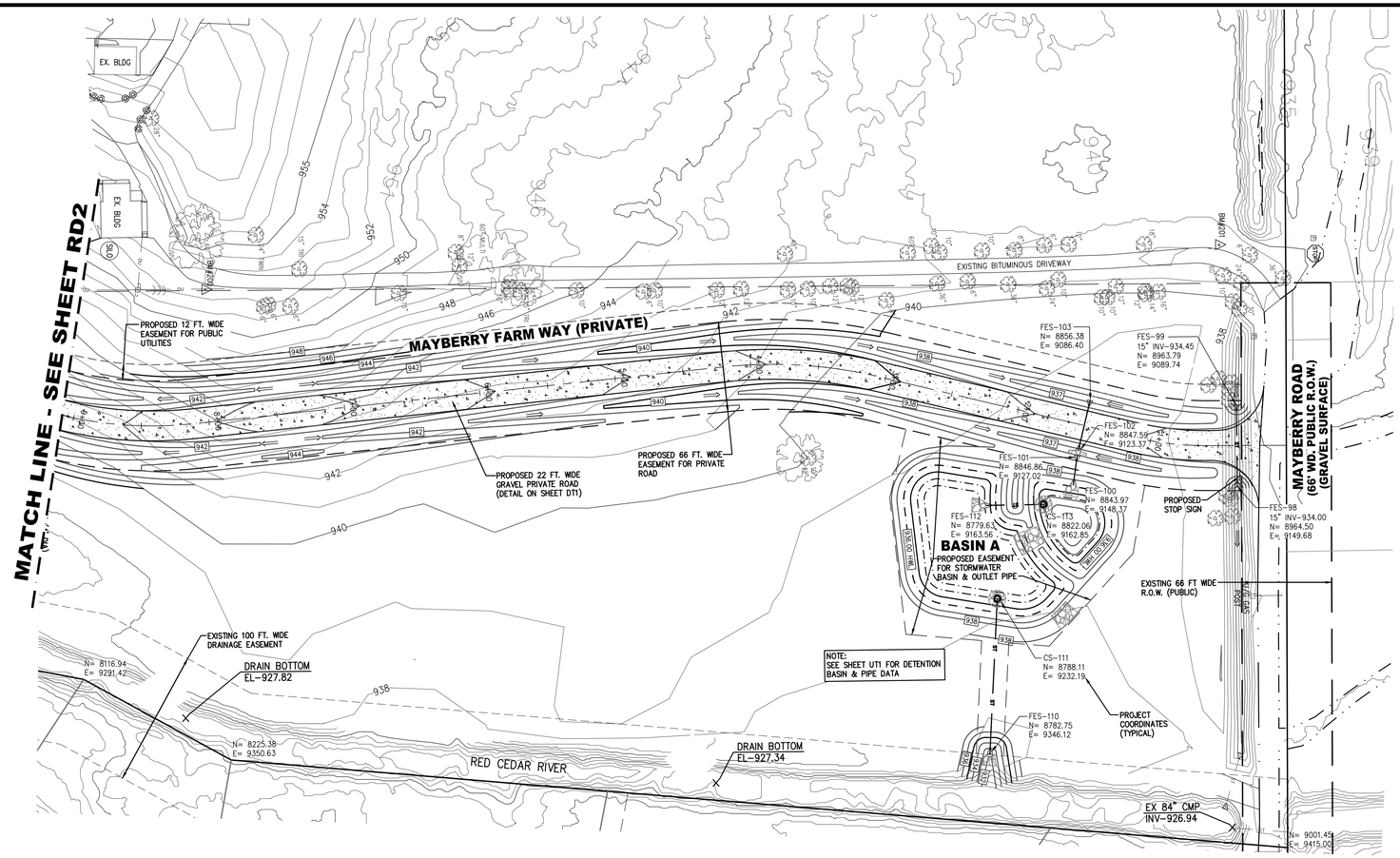
3447 Mayberry Road
Marion Township, Mi.

SITE PLAN
PRIVATE ROAD

CLIENT:
JOE MAZUR
3447 MAYBERRY ROAD
HOWELL, MICHIGAN 48843
734-637-1816

SCALE: 1"=200'
PROJECT No.: 9254943
DWG NAME: 4943 SP
ISSUED: MAY 21, 2026

SP



GRAPHIC SCALE

50 0 25 50 100

(IN FEET)

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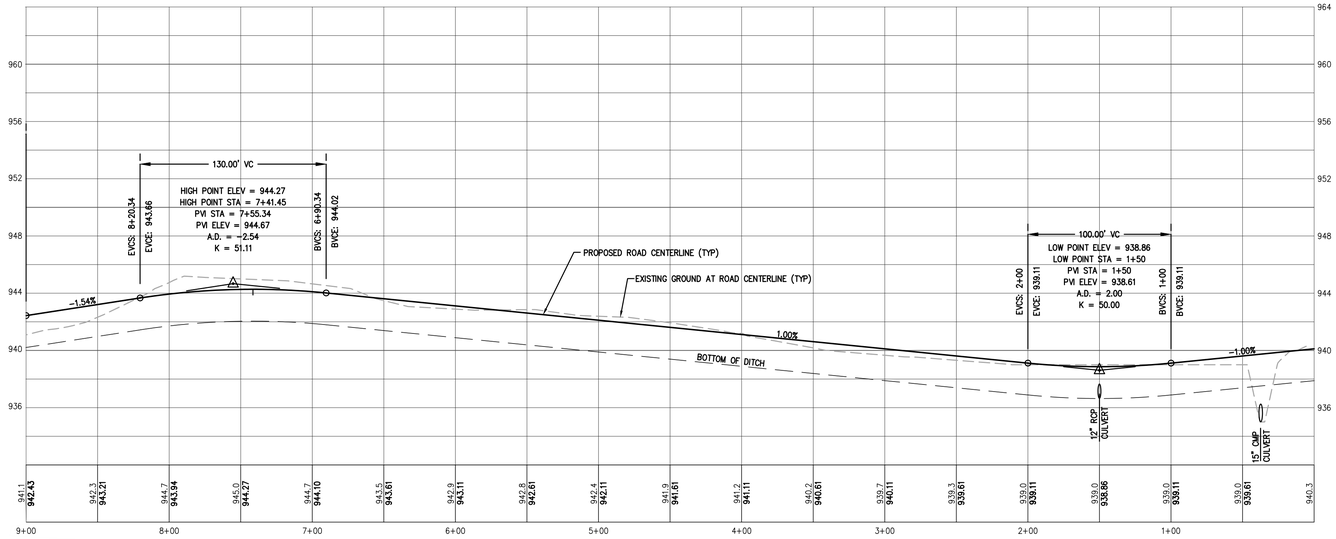
- = PROPOSED STORM SEWER
- = PROPOSED STORM STRUCTURES
- = PROPOSED GRAVEL DRIVE
- = EXISTING WETLAND



ROAD PROFILE

SCALE: HOR. 1"=50' / VERT. 1"=5'

BENCHMARKS

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DRAFT: LF
CHECK: WMP

REVISION #	DATE	REVISION-DESCRIPTION
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REVISION #	DATE	REVISION-DESCRIPTION

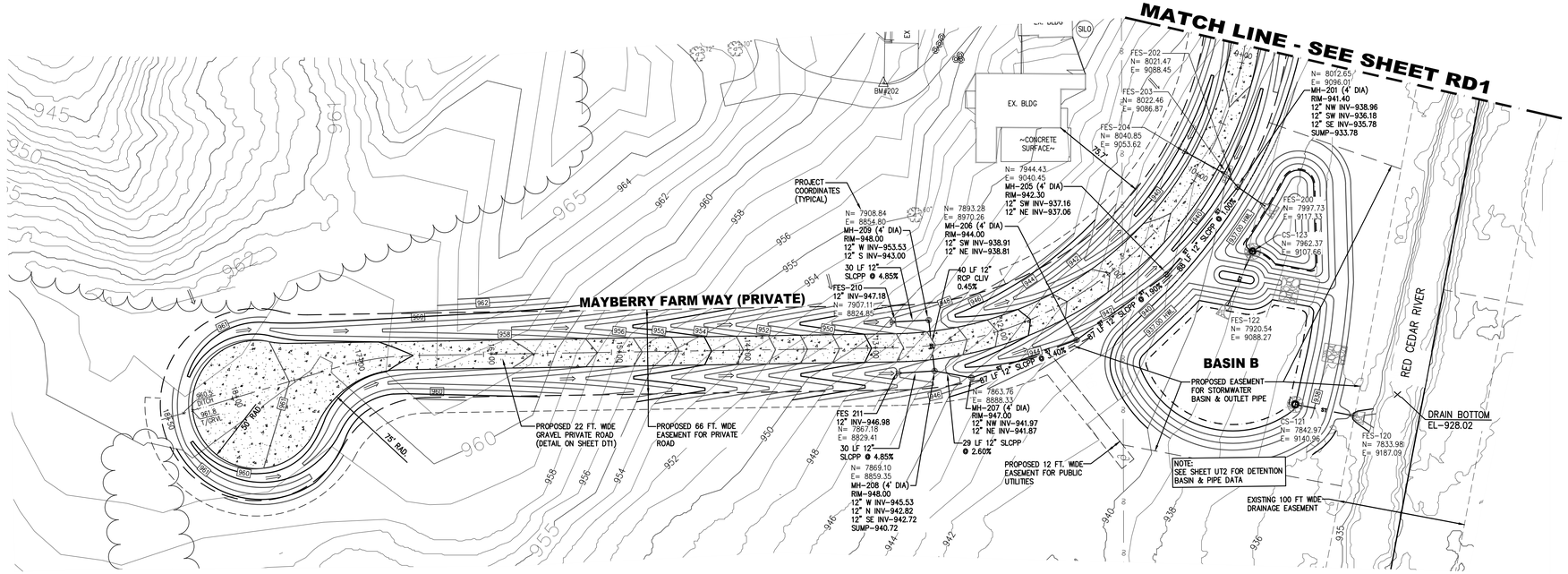
3447 Mayberry Road
Marion Township, Mi.

PRIVATE ROAD
PLAN & PROFILE
STA. 0+00 TO 9+00

CLIENT:
JOE MAZUR
3447 MAYBERRY ROAD
HOWELL, MICHIGAN 48843
734-637-1816

SCALE: 1"=50'
PROJECT No.: 9254943
DWG NAME: 4943 RD
ISSUED: MAY 21, 2026

RD1



GRAPHIC SCALE

50 0 25 50 100

(IN FEET)

1 INCH = 50 FEET

LEGEND

- STOP = SIGN
- = UTILITY METERS & BOXES (ELECTRIC METER, GAS METER, WATER METER, PHONE BOX, CATV BOX, MAIL BOX)
- AC = AIR CONDITIONER UNIT
- UT = UTILITY MANHOLE (AS LABELED)
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- PH CTV ELE UT = U/G UTILITY LINES (ELECTRIC/PHONE/CABLE)
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- GV = GAS SHUT OFF
- GAS = U/G GAS
- 000.00 x = SPOT ELEVATION
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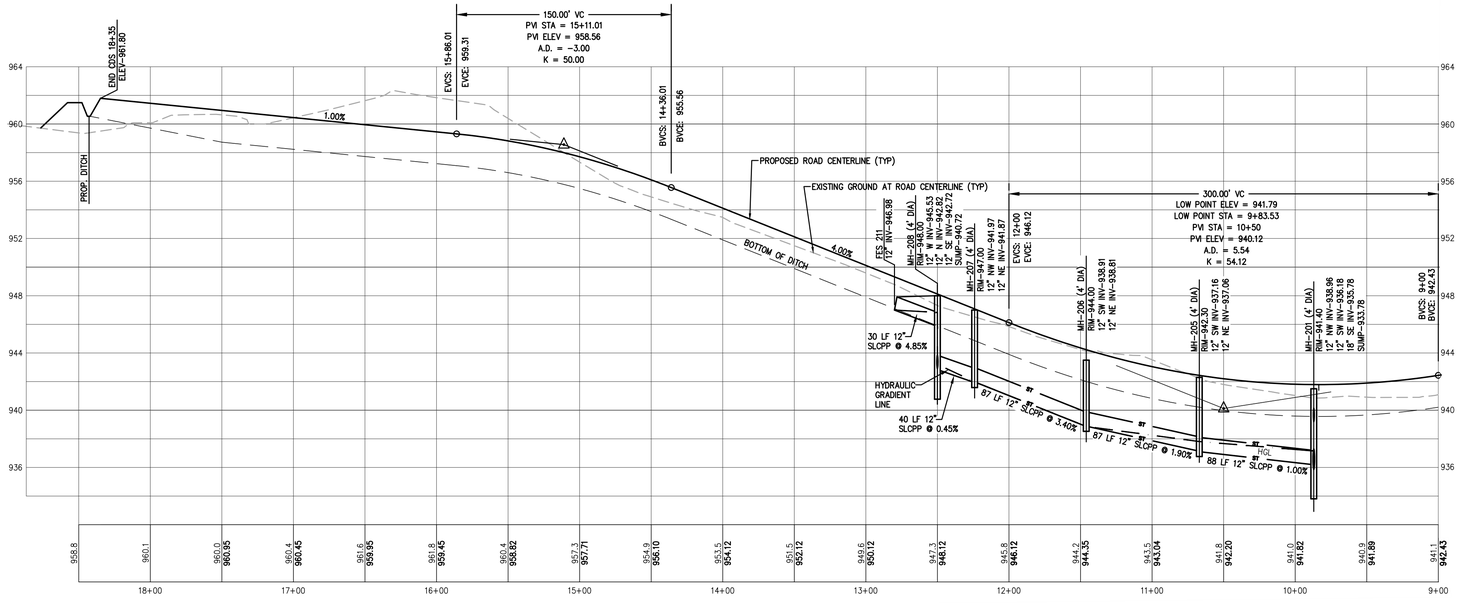

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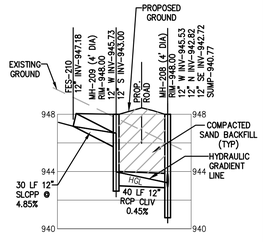

STORM SEWER PROFILE

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DESIGN: WMP
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3447 Mayberry Road
Marion Township, Mi.

PRIVATE ROAD
PLAN & PROFILE
STA. 918.50 TO 18+50

CLIENT:
JOE MAZUR
3447 MAYBERRY ROAD
HOWELL, MICHIGAN 48843
734-637-1816

SCALE: 1"=50'
PROJECT No.: 9254943
DWG NAME: 4943 RD
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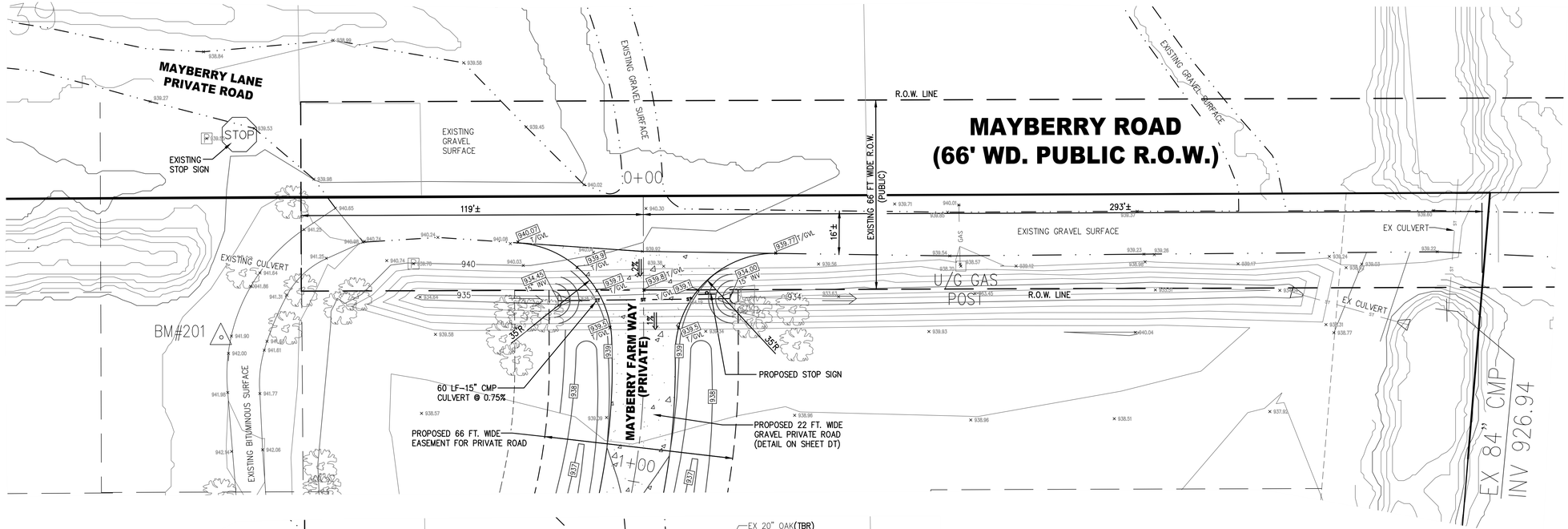
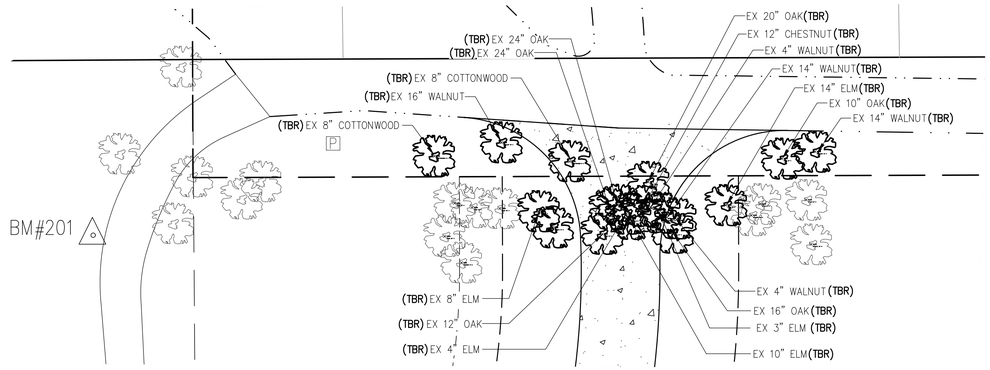
RD2





TREE REMOVAL PLAN

GRAPHIC SCALE

20 0 10 20 40

(IN FEET)

1 INCH = 20 FEET

LEGEND

- = SIGN
- = UTILITY METERS & BOXES (ELECTRIC METER, GAS METER, WATER METER, PHONE BOX, CATV BOX, MAIL BOX)
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- = PROPOSED STORM SEWER
- = PROPOSED STORM STRUCTURES
- = PROPOSED GRAVEL DRIVE
- = PROPOSED SPOT ELEVATIONS
- = PROPOSED FLOW ARROW

LIVINGSTON COUNTY PUBLIC ROAD CONSTRUCTION NOTES:

1. The grading, roadway and ditch specifications as found in the Livingston County Road Commission (LCRC) Procedures and Regulations for Permitted Activities are a part of this work. Refer to the General Notes on the project plans for additional requirements.
2. Road work shall include site clearing of vegetation and tree stumps; stripping and stockpiling of topsoil for reuse; mass grading cuts and fills; removal of unsuitable soils from the roadway influence area; culvert placement; subgrade preparation; subgrade undercuts and/or placement of geotextile fabric if needed; placement and preparation of granular subbase and aggregate base courses including fine grading and compaction, gravel drive placement, finish work and restoration as needed to connect to existing roadway, ditches, driveways, etc.; adjustment of storm and utility structure castings to match finish grade; placement of shoulders and finish grading of ditches; topsoil placement; seed & mulch; site cleanup; restoration; sign placement and other work as shown on the project plans and specifications.
3. Existing and proposed grades shown in the profile(s) are along the centerline of each road. Refer to the plan view and curve tables on the project plans for horizontal alignment and curve data. Proposed contours for ditches, curbs and road crown may not be shown in the plan view and/or grading plan.
4. Contractor shall coordinate construction staking, testing, documentation submittal and observation with the appropriate Agency, Surveyor and/or Engineer. All materials used and work done shall meet or exceed the LCRC requirements and the material specifications noted on the project plans. Any materials used or work done that does not meet said requirements and/or specifications shall be replaced and/or redone at Contractor's expense. The Owner/Developer may wait for test results, certifications and/or Agency reviews prior to accepting work.
5. Contractor shall take all appropriate job site safety precautions. Traffic shall be maintained per MMUTCD.
6. Contractor shall take precautions to prevent contamination of road materials during handling, installation and construction procedures. Contaminated materials shall be removed and replaced at Contractor's expense.
7. Clear vision areas shall be created per the LCRC regulations. Relocate existing signs/utilities as acceptable to the appropriate Agency. Owner/Developer shall coordinate removal and installation of permanent traffic control signs with the LCRC.
8. When side slopes within utility easements exceed 1 on 10 (10%), Contractor shall rough grade a flat shelf within the easement area as acceptable to Engineer and restore following underground utility installation.

A clear vision area, as shown in Figure 4, shall be provided at all public and private road approaches entering onto a roadway under the jurisdiction of the Livingston County Road Commission.

To provide for adequate vision, all obstructions must be removed within the clear vision area. Sight distance, looking each way from the centerline of the public or private road approach, shall be measured from an eye height of 3.5 feet to an object 4.25 feet above the existing roadway centerline. The eye height at the public or private road approach centerline should be positioned 15 feet from the edge of the traveled roadway.

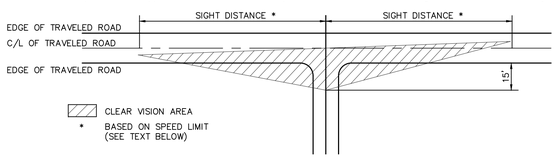


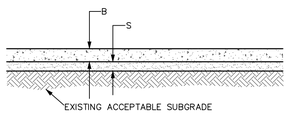
Figure 4. Clear vision requirement for public and private road approaches.

The following sight distances, according to the posted regulatory speed limit, are required for the clear vision area. Those values listed as standard represent the minimum requirements for sight distance where existing roadway and site characteristics allow.

Speed Limit (mph)	Required Sight Distance (feet) Standard	Minimum Allowable
30 or below	500	350
35	575	400
40	650	450
45	**725**	**500**
50	800	550
55	875	600

ON GRAVEL ROADS THAT DO NOT HAVE A POSTED SPEED LIMIT, PUBLIC AND PRIVATE ROAD APPROACHES SHALL MEET THE 45 MPH REQUIREMENTS FOR SIGHT DISTANCE.

CLEAR VISION AREA



PRIVATE ROAD GRAVEL SECTION WITHIN MAYBERRY ROAD RIGHT-OF-WAY

NOT TO SCALE

AGGREGATE CROSS SECTION NOTES:

1. Refer to the General Notes, Road Construction Notes and Typical Road Cross Section detail on the project plans for additional requirements.
2. Unsuitable soils found within the 1 on 1 influence zone of the roadway, such as muck, peat, topsoil, marl, silt or other unstable materials shall be excavated and replaced up to the proposed subgrade elevation with MDOT Class III granular material compacted to 95% maximum unit weight, modified proctor.
3. Contractor shall proof roll prepared subgrade as directed by Engineer. Unacceptable areas of subgrade shall be undercut and replaced as directed by Engineer. See Subgrade Undercut & Replacement Cross Section detail for additional requirements.

KEY	DESCRIPTION	MATERIAL SPECIFICATION	MINIMUM COMPACTED THICKNESS
B	AGGREGATE SURFACE	MDOT 23A	7"
S	GRANULAR SUBBASE	MDOT CLASS II	6"

BENCHMARKS

DATUM BASED ON RTK-GPS OBSERVATIONS, DATE NOVEMBER 14, 2025

BENCHMARK #200
TOP OF TRAV. CAP ON IRON ROD, LOCATED 794± FEET SOUTH OF MAYBERRY ROAD AND 320± FEET E'LY OF #3447 HOUSE.
ELEVATION = 952.32 (NAVD 88)
N=378007.86, E=1322763.60

BENCHMARK #201
TOP OF TRAV. CAP ON IRON ROD, LOCATED 68± FEET SW'LY OF MAYBERRY ROAD ON THE WEST SIDE OF DRIVEWAY CURVE.
ELEVATION = 941.75 (NAVD 88)
N=378752.59, E=1322601.44

BENCHMARK #202
SE'LY CORNER OF CONCRETE, LOCATED ON THE NORTH SIDE OF THE SOUTHERLY PART OF CIRCLE DRIVEWAY AT #3447 HOUSE.
ELEVATION = 958.05 (NAVD 88)
N=377895.54, E=1322744.86

BENCHMARK #203
SE CORNER OF CONCRETE, LOCATED 26± FEET SE'LY OF THE SE CORNER OF GARAGE OF #3447 HOUSE.
ELEVATION = 964.87 (NAVD 88)
N=377939.39, E=1322724.66

BENCHMARK #204
FINISH FLOOR ELEVATION OF GARAGE EAST ENTRANCE OF #3447 HOUSE.
ELEVATION = 966.27 (NAVD 88)
N=377976.64, E=1322749.30

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BRIGHTON, MICHIGAN 48114

REVISION #	DATE	REVISION-DESCRIPTION
	05-21-26	REVISED PER LCDC REVIEW COMMENTS

DESIGN: WMP
DRAFT: LF
CHECK: WMP

3447 Mayberry Road
Marion Township, Mi.

PRIVATE ROAD
APPROACH PLAN

CLIENT:
JOE MAZUR
3447 MAYBERRY ROAD
HOWELL, MICHIGAN 48843
734-637-1816

SCALE: 1"=20'
PROJECT No.: 9254943
DWG NAME: 4943 AP
ISSUED: MAY 21, 2026

AP

MAYBERRY LANE
DETENTION VOLUME CALCULATION

Tributary Area (A) = 2.97 Acres
Compound Runoff Coefficient (C) = 0.31

Water Quality Control Volume: (3,630)(A)(C) = **3,295 cf**

Channel Protection Volume: (4,719)(A)(C) = **4,283 cf**

Extended Detention Volume: (6,897)(A)(C) = **6,260 cf**

Forebay Volume:
Downstream Infiltration Provided = V_{inf} = **3,295 cf**

100 Year Storm Inlet Rate calculation:

T_c = 15.5 (from storm sewer calculations)

Q_{100in} = **5.69 cfs**

100 Year Storm Outlet Rate calculation:
Allowed Outlet Rate is lesser of Q_{rrr} or restricted release rate for the drain

County Drain Restricted Rate (0.02 cfs/acre) = 0.06 cfs

Variable Release Rate = Q_{vrr} = 2.61 cfs

ALLOWABLE 100 YEAR OUTLET RATE = Q_{allt} = 0.06 **cfs**

100 Year Required Storm Detention Volume calculation:

Storage Curve Factor = R = 0.89

100 Year Storage Volume In = V_{100in} = 17,230.98 cf

Calculated 100 Year Storage Volume = V_{100det} = 15,345 cf

REQUIRED VOLUME: $V_{100det} > V_{ed}$ = 15,345 cf

Extended Detention Discharge Rate: V_{ed}/172,800 = **0.036 cfs**

MAYBERRY LANE
CONTROL STRUCTURE CALCULATIONS

Tributary Area :	A =	2.97 Acres
Compound Runoff Coefficient :	C =	0.31
Orifice Flow Coefficient :	c =	0.60
Allowable Outflow Rate :	Qa =	0.06 CFS
100 Year Detention Volume =	V100 =	15,345 CF
Extended Detention Volume =	Ved =	6,260 CF
Channel Protection Volume =	Vcp =	4,283 CF
Outlet orifice invert:	X =	934.90
Extended Detention Elevation :	Xed =	934.87
100 Year Storage Elevation :	X100 =	935.81

Extended Detention:

Qed =	Ved * (1 / 48 hrs) * (1 / 3600 sec) =	0.0362 CFS
Hed =	Xed - Xcp =	0.87 FT
Aed =	Qed / (c * SQRT(2 * 32.2 * Hed)) =	0.0081 SF
D =	Orifice Diameter	1.250 inch dia.
Ned =	Aed / D	0.9 Orifices

Use Ned = 1 Orifices at Centerline Elevation = 934.05

Approx. Extended Detention Discharge Duration = **45.51** hours

100-Year Detention Storage:

Qed =	[c * Ned * PI()D(24)^2 * SQRT(2 * 32.2 * (X100 - Xcd))] =	0.0399 CFS
Q100 =	Qa - Qed =	0.0194 CFS
H100 =	X100 - Xed =	0.95 FT
A100 =	Q100 / (c * SQRT(2 * 32.2 * H100)	0.0041 SF
D =	Orifice Diameter	1.000 inch dia.
N100 =	A100 / D	0.8 Orifices

Use N100 = 1 Orifices at Centerline Elevation = 934.91

A_{actual} = N_{100} * A_{100} = 0.0055 SF

Q_{actual} = Qed+(c*A_{actual}*SQRT(2*32.2*H_{100})) = **0.07 CFS**

MAYBERRY LANE
PROPOSED FOREBAY VOLUME

POND DEPTH (FT)	ELEV.	CONTOUR AREA	BASIN VOLUME
	931.00	36	0
1.0	932.00	223	0
2.0	933.00	605	0
3.0	934.00	1,141	0
3.3	934.25	1,291	0
4.0	935.00	1,827	1,163
5.0	936.00	2,658	3,393

Forebay Storage Elevation Calculation:

	ELEV.	VOLUME	VOLUME REQ.	ELEVATION
Lower	935.00	1,163	3,295	***935.96***
Higher	936.00	3,393		

PROPOSED CHANNEL PROTECTION VOLUME

POND DEPTH (FT)	ELEV.	DETENTION CONTOUR AREA (SF)	DETENTION BASIN VOLUME (CF)
	933.00	4,027	0
1.0	934.00	5,393	4,693

Channel Protection Storage Elevation Calculation:

	ELEV.	VOLUME	VOLUME REQ.	ELEVATION
Lower	933.00	0	4,283	***933.91***
Higher	934.00	4,693		

PROPOSED DETENTION BASIN VOLUME

POND DEPTH (FT)	ELEV.	DETENTION CONTOUR AREA (SF)	DETENTION BASIN VOLUME (CF)	FOREBAY CONTOUR AREA (SF)	FOREBAY BASIN VOLUME (CF)	TOTAL STORAGE VOLUME (CF)
	931.00	0	0	0	0	0
1.0	932.00	0	0	0	0	0
2.0	933.00	0	0	0	0	0
3.0	934.00	5,383	0			
3.3	934.30			1,291	0	0
4.0	935.00	6,918	6,134	1,827	1,086	7,220
5.0	936.00	8,625	7,756	2,658	2,230	17,206

100 Yr. Detention Storage Elevation Calculation:

	ELEV.	VOLUME	VOLUME REQ.	ELEVATION
Lower	935.00	7,220	15,345	***935.81***
Higher	936.00	17,206		

Extended Detention Storage Elevation Calculation:

	ELEV.	VOLUME	VOLUME REQ.	ELEVATION
Lower	934.00	0	6,260	***934.87***
Higher	935.00	7,220		

MAYBERRY LANE
FOREBAY CONTROL STRUCTURE CALCULATIONS

Tributary Area :	A =	2.97 Acres
Compound Runoff Coefficient :	C =	0.31
Orifice Flow Coefficient :	c =	0.60
Allowable Outflow Rate :	Qa =	0.04 CFS
Forebay Storage Volume =	Vf =	3,295 CF
Low Water Level :	LWL =	934.23
Forebay/Channel Protection Storage Elevation :	Xf =	935.96

Forebay Outlet Control:

Qf =	Vf * (1 / 24 hrs) * (1 / 3600 sec) =	0.0381 CFS
Hf =	Xf - LWL =	1.67 FT
Af =	Qf / (c * SQRT(2 * 32.2 * Hf)) =	0.0061 SF
D =	Orifice Diameter	1.250 inch dia.
Nf =	Af / D	0.7 Orifices

Use Nf = 1 Orifices at Centerline Elevation = 934.29

BASIN A

Design Criteria: 10 year event (i = 175/t + 25) RCP n= 0.013 SLCPP n= 0.011 Date: 5/19/2026

From MH# CB# FES#	To MH# CB# FES#	Pipe Material	Inc. Acres "A"	"C"	Eqv. Area 100% CA	Total Area 100% CA	T Time Min.	I Inch Per Hour	Qt (CIA) c.f.s.	Dia. of pipe inch	Slope pipe %	Slope H.G. %	Length of line ft.	Vel. Flow full ft./sec.	Time of flow min.	Cap of pipe c.f.s.	H.G. Elev. upper end	Ground Elev. Upper end	Ground Elev. Lower end	Invert Elev. Upper end	Invert Elev. Lower end	Upper COVER	Lower COVER
103	102	RCP	1.80	0.31	0.57	0.57	15	4.38	2.48	12	0.50	0.48	38	3.21	0.2	2.52	937.63	936.64	936.45	936.64	936.45	0.00	0.00
101	100	SLCPP	0.48	0.42	0.20	0.77	15.2	4.35	3.36	12	1.00	0.64	22	5.36	0.1	4.21	937.27	936.35	936.13	936.35	936.13	0.00	0.00
113	112	SLCPP	N/A	N/A	N/A	N/A	15.3	4.35	0.04	12	0.32	0.00	42	3.03	0.2	2.38	935.10	936.00	934.10	934.23	934.10	0.77	0.00
111	110	SLCPP	N/A	N/A	N/A	N/A	15.5	4.32	0.06	18	0.25	0.00	114	3.51	0.5	6.21	934.00	936.00	932.50	932.79	932.50	1.72	0.00

DETENTION BASIN EMERGENCY SPILLWAY CALCULATION

Dimensions for the proposed Spillway have been calculated using the following equation:

Where:
C= 0.31
A= 2.97 Ac.
I= 18.33 in. *(100 Yr. Intensity per proposed detention calculations)*
Q= 16.64 cfs *(Computed flow per rational method)*
H= 0.5 ft. *(Depth of flow)*
L= 15 ft. *(Proposed Spillway's cross section width)*

Therefore:
L= 14 ft.

A spillway cross section width of 15 ft. is being proposed for construction.

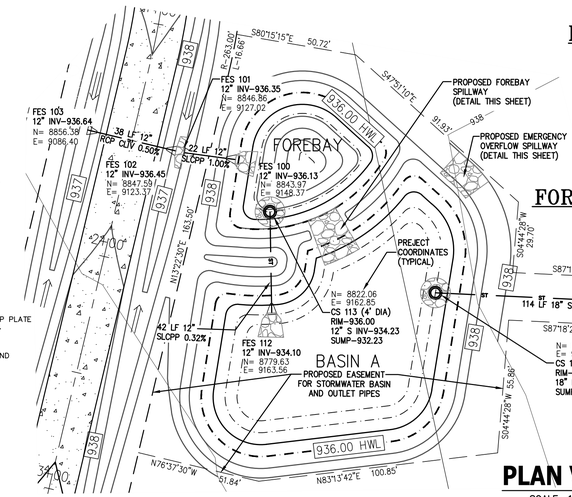
FOREBAY SPILLWAY CALCULATION

Dimensions for the proposed Spillway have been calculated using the following equation:

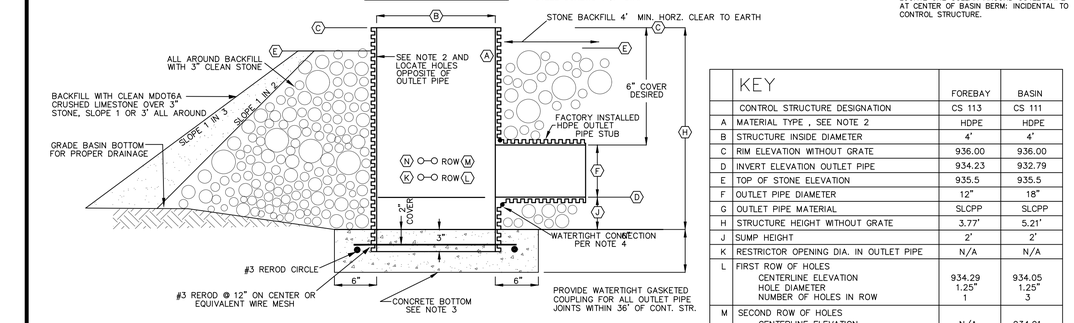
Where:
C= 0.31
A= 2.97 Ac.
I= 18.33 in. *(100 Yr. Intensity per proposed detention calculations)*
Q= 16.64 cfs *(Computed flow per rational method)*
H= 0.50 ft. *(Depth of flow)*
L= 15 ft. *(Proposed Spillway's cross section width)*

Therefore:
L= 14 ft.

A spillway cross section width of 15 ft. is being proposed for construction.



PLAN VIEW
SCALE: 1"=30'

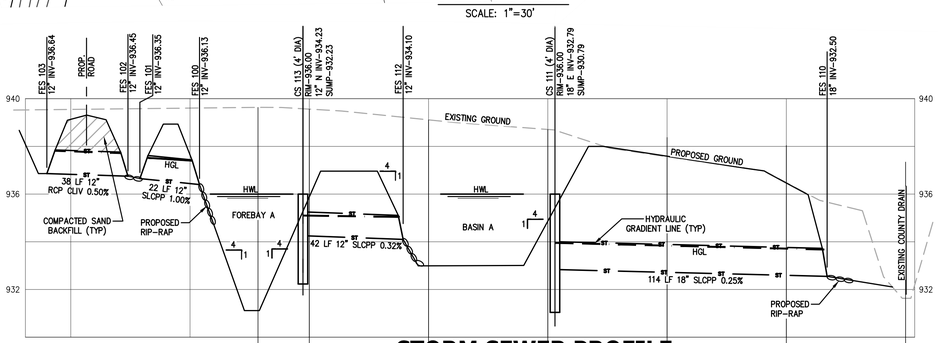


ANTI SEEP COLLAR
NOT TO SCALE

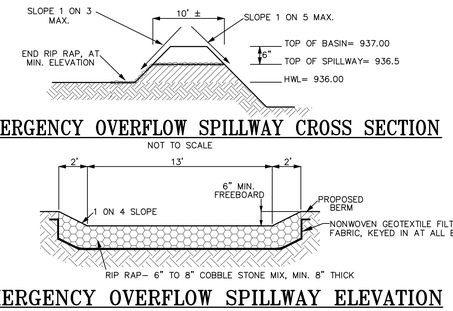
NOTE:
LOCATE ONE COLLAR AROUND OUTLET PIPE AT CENTER OF BASIN BERM: INCIDENTAL TO CONTROL STRUCTURE.

CONTROL STRUCTURE DETAIL
NOT TO SCALE

	KEY	FOREBAY	BASIN
	CONTROL STRUCTURE DESIGNATION	CS 113	CS 111
A	MATERIAL TYPE , SEE NOTE 2	HDPE	HDPE
B	STRUCTURE INSIDE DIAMETER	4'	4'
C	RIM ELEVATION WITHOUT GRATE	936.00	936.00
D	INVERT ELEVATION OUTLET PIPE	934.23	932.79
E	TOP OF STONE ELEVATION	935.5	935.5
F	OUTLET PIPE DIAMETER	12"	18"
G	OUTLET PIPE MATERIAL	SLCPP	SLCPP
H	STRUCTURE HEIGHT WITHOUT GRATE	3.77'	5.21'
J	SUMP HEIGHT	2'	2'
K	RESTRICTOR OPENING DIA. IN OUTLET PIPE	N/A	N/A
L	FIRST ROW OF HOLES CENTERLINE ELEVATION HOLE DIAMETER NUMBER OF HOLES IN ROW	934.29 1.25" 1	934.05 1.25" 3
M	SECOND ROW OF HOLES CENTERLINE ELEVATION HOLE DIAMETER NUMBER OF HOLES IN ROW	N/A	934.91 1.0" 1

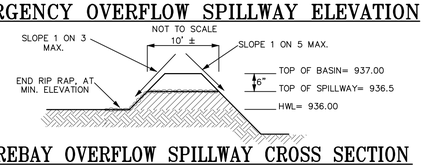


STORM SEWER PROFILE
SCALE: HOR. 1"=30' / VERT. 1"=3'

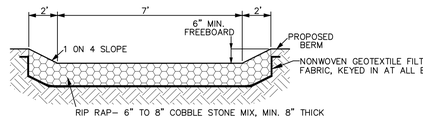


EMERGENCY OVERFLOW SPILLWAY CROSS SECTION
NOT TO SCALE

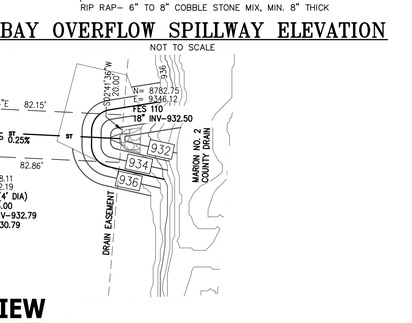
EMERGENCY OVERFLOW SPILLWAY ELEVATION



FOREBAY OVERFLOW SPILLWAY CROSS SECTION
NOT TO SCALE



FOREBAY OVERFLOW SPILLWAY ELEVATION
NOT TO SCALE



CONTROL STRUCTURE NOTES:

1. Control Structure and Grate shall be factory built. Contractor shall provide Engineer with Shop Drawings for Control Structure and Grate. Contractor shall obtain Engineer's Approval of Shop Drawings prior to Control Structure installation.
2. Control Structure shall be constructed of material noted in Item A of KEY.
   A. **CMP** shall be corrugated metal pipe with corrosion resistant coating and shall conform to the specifications for corrugated metal pipe per AASHTO Designation M36.
   B. **HDPE** shall be high density polyethylene pipe with a smooth interior and shall conform to the specifications for high density polyethylene pipe per AASHTO Designation M294 Type S.
   C. **CONC** shall be pre-cast reinforced concrete and shall conform to the specification of pre-cast concrete structures per ASTM C478. Joints of concrete storm structure sections shall be bell-and-spigot with rubber gaskets conforming to ASTM C433.
3. Control Structure Base shall be a reinforced 3000 PSI air entrained concrete base. Control Structure shall be embedded into the concrete base providing a full strength water tight connection as illustrated in the Basin Control Structure Detail.
4. Provide a watertight connection between the Control Structure and Outlet Pipe as follows:
   A. For a CMP Outlet Pipe from a CMP Control Structure: Factory weld a CMP Pipe Stub to the Control Structure with full strength continuous weld all around Pipe Stub. Coat welded area with corrosion resistant paint. OR Provide a bolted CMP saddle with watertight gasket.
   B. For an HDPE Outlet Pipe from an HDPE Control Structure: Factory weld an HDPE pipe stub to the Control Structure with full strength PE weld all around pipe both inside and outside of Control Structure. OR Provide a bolted HDPE saddle with watertight gasket.
   C. For an RCP Outlet Pipe from a CMP or HDPE Control Structure: Seal Outlet Pipe to outside of Control Structure with an 18" minimum thickness 2500 PSI cast in place concrete donut all around Outlet Pipe. AND Seal Outlet Pipe to inside of Control Structure with a 2" minimum thickness bead of bitumastic tar all around Outlet Pipe.
   D. For a CMP, HDPE or RCP Outlet Pipe from a Reinforced Concrete Control Structure: Provide a factory installed rubber boot resilient pipe to manhole connector conforming to ASTM C1478-07. All clamps, bands and hardware shall be stainless steel or other non-corrosive material. Provide the appropriate adapter(s) as necessary for corrugated pipe.
5. Construct berm over Outlet Pipe as necessary to provide 12" minimum cover.
6. Grate shall be built to fit over the outside edge of the Control Structure and to be secured to the Control Structure with six (6) 1/4" minimum diameter removable galvanized screws. All joints shall be welded full strength per current AWS code. Grate shall be factory coated with bitumastic or corrosion resistant paint. Grate shall be constructed of 1/2" minimum diameter round or square steel bar creating a square grid pattern with a maximum 3"x 3" opening size. Outside of Grate shall be wrapped with a 1/4" minimum x 3" minimum flat stock steel.
7. Provide a Restrictor in the Outlet Pipe when required on the Project Plans. See Item K of KEY for restrictor diameter.
   For Restrictor in RCP or CMP Outlet Pipe: Provide a PVC SCH. 40 restrictor pipe of diameter K and 6" minimum length. Install Restrictor Pipe at the bottom of the Outlet Pipe to match the Outlet Pipe invert. Bulkhead the remainder of the Outlet Pipe opening around the outside of the Restrictor Pipe with brick and mortar, creating a watertight seal.
   For Restrictor in HDPE Outlet Pipe: Factory weld a 1/2" minimum thickness HDPE Plate inside of the Outlet Pipe Stub with full strength PE weld all around the plate. Drill an opening of diameter K at the bottom of the plate to match the invert of the Outlet Pipe Stub.
8. Refer to the Storm Sewer Notes on the project plans for additional requirements.

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DATUM BASED ON RTK-GPS OBSERVATIONS, DATE NOVEMBER 14, 2025

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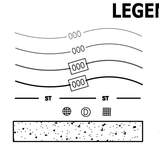
N=377939.39, E=1322724.66

BENCHMARK #204
FINISH FLOOR ELEVATION OF GARAGE EAST ENTRANCE OF #3447 HOUSE.
ELEVATION = 966.27 (NAVD 88)
N=377976.64, E=1322724.66

LEGEND



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REVISION #	DATE	REVISION-DESCRIPTION
	05-21-26	REVISED PER LCDC REVIEW COMMENTS

DESIGN: WMP
DRAFT: LF
CHECK: WMP

3447 Mayberry Lane
Marion Township, Mi.

BASIN A
CONTROL STRUCTURE
NOTES & DETAILS

CLIENT:
JOE MAZUR
3447 MAYBERRY LANE
HOWELL, MICHIGAN 48843
734-637-1816

SCALE: 1"=30'
PROJECT No.: 9254943
DWG NAME: 4943 UT
ISSUED: MAY 21, 2026

UT1

MAYBERRY LANE
DETENTION VOLUME CALCULATION

Tributary Area (A) = 6.18 Acres
Compound Runoff Coefficient (C) = 0.30

Water Quality Control Volume: (3,630)(A)(C) = **6,748 cf**

Channel Protection Volume: (4,719)(A)(C) = **8,772 cf**

Extended Detention Volume: (6,897)(A)(C) = **12,820 cf**

Forebay Volume:
Downstream Infiltration Provided = V_{inf} = **6,748 cf**

100 Year Storm Inlet Rate calculation:

T_C = 16.2 (from storm sewer calculations)

Q_{100in} = **11.41 cfs**

100 Year Storm Outlet Rate calculation:
Allowed Outlet Rate is lesser of Q_{crr} or restricted release rate for the drain

County Drain Restricted Rate (0.02 cfs/acre) = 0.12 cfs

Variable Release Rate = Q_{vrr} = 4.52 cfs

ALLOWABLE 100 YEAR OUTLET RATE = Q_{all} = 0.12 **cfs**

100 Year Required Storm Detention Volume calculation:

Storage Curve Factor = R = 0.88

100 Year Storage Volume In = V_{100IN} = 35,290.05 cf

Calculated 100 Year Storage Volume = V_{100det} = 31,220 cf

REQUIRED VOLUME: $V_{100det} > V_{ed}$ = 31,220 cf

Extended Detention Discharge Rate: V_{ed}/172,800 = **0.074 cfs**

MAYBERRY LANE
CONTROL STRUCTURE CALCULATIONS

Tributary Area :	A =	6.18 Acres
Compound Runoff Coefficient :	C =	0.30
Orifice Flow Coefficient :	c =	0.60
Allowable Outflow Rate :	Qa =	0.12 CFS
100 Year Detention Volume =	V100 =	31,220 CF
Extended Detention Volume =	Ved =	12,820 CF
Channel Protection Volume =	Vcp =	8,772 CF
Outlet orifice invert:	X=	935.00
Extended Detention Elevation :	Xed =	935.92
100 Year Storage Elevation :	X100 =	936.96

Extended Detention:

Qed =	Ved * (1 / 48 hrs) * (1 / 3600 sec) =	0.0742 CFS
Hed =	Xed - Xcp =	0.92 FT
Aed =	Qed / (c * SQRT(2 * 32.2 * Hed)) =	0.0161 SF
D =	Orifice Diameter	1.000 inch dia.
Ned =	Aed / D	3.0 Orifices

Use Ned = 3 Orifices at Centerline Elevation = 935.04

Approx. Extended Detention Discharge Duration = **47.21** hours

100-Year Detention Storage:

Qed =	[c * Ned * Pi(D/24)^2 * SQRT(2 * 32.2 * (X100 - Xcd))] =	0.0805 CFS
Q100 =	Qa - Qed =	0.0432 CFS
H100 =	X100 - Xed =	1.04 FT
A100 =	Q100 / (c * SQRT(2 * 32.2 * H100)	0.0088 SF
D =	Orifice Diameter	1.250 inch dia.
N100 =	A100 / D	1.0 Orifices

Use N100 = 1 Orifices at Centerline Elevation = 935.97

A_{actual} = N_{100}*A_{100} = 0.0085 SF

Q_{actual} = $Qed+(c*A_{actual}*SQRT(2*32.2*H_{100}))$ = **0.12 CFS**

MAYBERRY LANE
PROPOSED FOREBAY VOLUME

POND DEPTH (FT)	ELEV.	FOREBAY CONTOUR AREA (SF)	FOREBAY BASIN VOLUME (CF)
	932.00	382	0
1.0	933.00	957	0
2.0	934.00	1,804	0
3.3	935.25	2,995	0
4.0	936.00	3,928	2,586
5.0	937.00	5,257	7,166

Forebay Storage Elevation Calculation:

	ELEV.	VOLUME	VOLUME REQ.	ELEVATION
Lower	936.00	2,586	6,748	***936.91***
Higher	937.00	7,166		

PROPOSED CHANNEL PROTECTION VOLUME

POND DEPTH (FT)	ELEV.	DETENTION CONTOUR AREA (SF)	DETENTION BASIN VOLUME (CF)
	934.00	8,659	0
1.0	935.00	10,443	9,537

Channel Protection Storage Elevation Calculation:

	ELEV.	VOLUME	VOLUME REQ.	ELEVATION
Lower	934.00	0	8,772	***934.92***
Higher	935.00	9,537		

PROPOSED DETENTION BASIN VOLUME

POND DEPTH (FT)	ELEV.	DETENTION CONTOUR AREA (SF)	DETENTION BASIN VOLUME (CF)	FOREBAY CONTOUR AREA (SF)	FOREBAY BASIN VOLUME (CF)	TOTAL STORAGE VOLUME (CF)
	932.00	0	0	382	0	0
1.0	933.00	0	0	957	0	0
2.0	934.00	0	0	1,804	0	0
3.0	935.00	10,443	0			
3.3	935.25			2,995	0	0
4.0	936.00	12,381	11,398	3,928	2,586	13,986
5.0	937.00	14,368	13,362	5,257	4,576	31,925

100 Yr. Detention Storage Elevation Calculation:

	ELEV.	VOLUME	VOLUME REQ.	ELEVATION
Lower	936.00	13,986	31,220	***936.96***
Higher	937.00	31,925		

Extended Detention Storage Elevation Calculation:

	ELEV.	VOLUME	VOLUME REQ.	ELEVATION
Lower	935.00	0	12,820	***935.92***
Higher	936.00	13,986		

MAYBERRY LANE
FOREBAY CONTROL STRUCTURE CALCULATIONS

Tributary Area :	A =	6.18 Acres
Compound Runoff Coefficient :	C =	0.30
Orifice Flow Coefficient :	c =	0.60
Allowable Outflow Rate :	Qa =	0.07 CFS
Forebay Storage Volume =	Vf =	6,748 CF
Low Water Level :	LWL =	935.24
Forebay Storage Elevation :	Xf =	936.91

Forebay Outlet Control:

Qf =	Vf * (1 / 24 hrs) * (1 / 3600 sec) =	0.0781 CFS
Hf =	Xf - LWL =	1.61 FT
Af =	Qf / (c * SQRT(2 * 32.2 * Hf)) =	0.0128 SF
D =	Orifice Diameter	1.500 inch dia.
Nf =	Af / D	1.0 Orifices

Use Nf = 1 Orifices at Centerline Elevation = 935.30

DETENTION BASIN EMERGENCY SPILLWAY CALCULATION

Dimensions for the proposed Spillway have been calculated using the following equation:

Where:
C= 0.30
A= 6.18 Ac.
I= 6.68 in. *(100 Yr. Intensity per proposed detention calculations)*
Q= 12.42 cfs *(Computed flow per rational method)*
H= 0.5 ft. *(Depth of flow)*
L= 12 ft. *(Proposed Spillway's cross section width)*

Therefore:
L= 11 ft.

A spillway cross section width of 12 ft. is being proposed for construction.

FOREBAY SPILLWAY CALCULATION

Dimensions for the proposed Spillway have been calculated using the following equation:

Where:
C= 0.30
A= 6.18 Ac.
I= 6.68 in. *(100 Yr. Intensity per proposed detention calculations)*
Q= 12.42 cfs *(Computed flow per rational method)*
H= 0.5 ft. *(Depth of flow)*
L= 12 ft. *(Proposed Spillway's cross section width)*

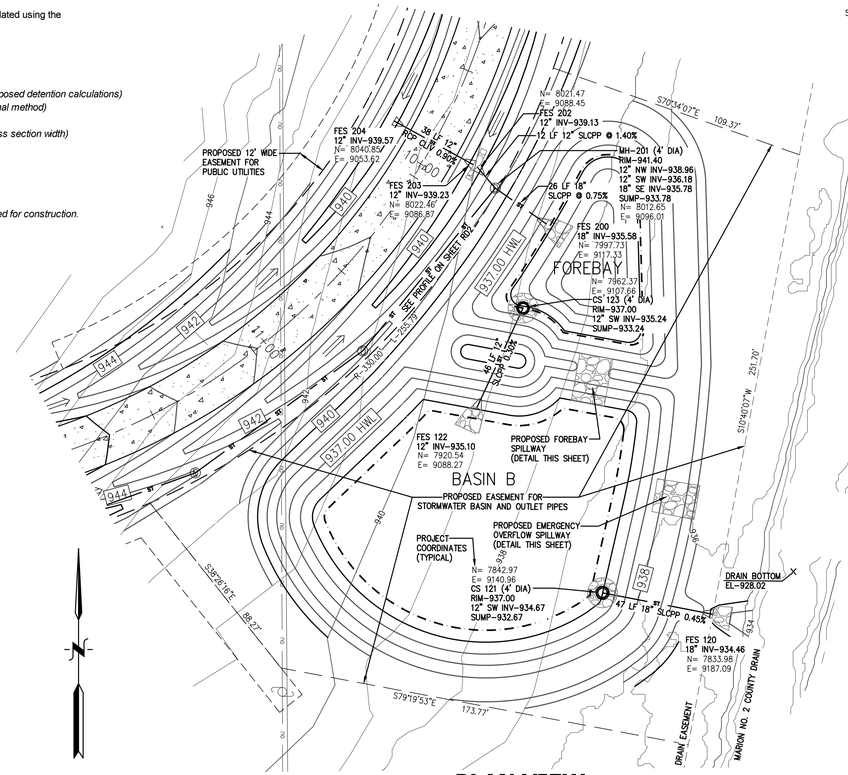
Therefore:
L= 11 ft.

A spillway cross section width of 12 ft. is being proposed for construction.

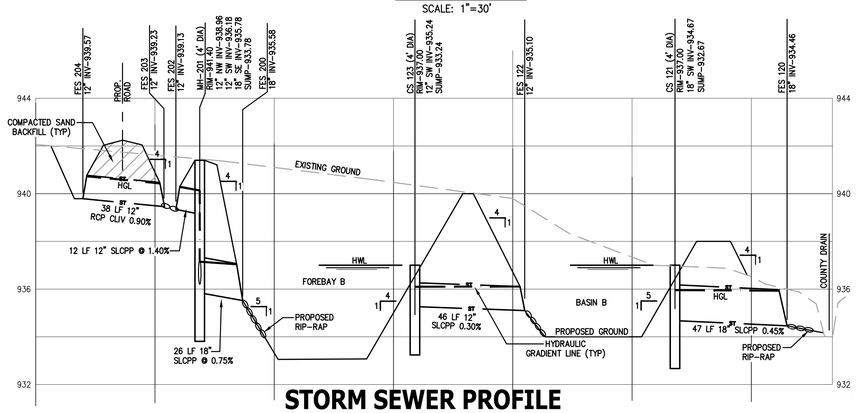
BASIN B

Design Criteria: 10 year event (I = 175/t + 25) RCP n= 0.013 SLCPP n= 0.011 Date: 5/19/2026

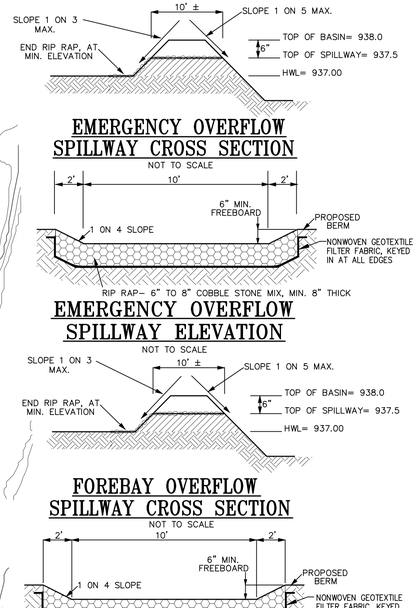
From MH# CB# FES#	To MH# CB# FES#	Pipe Material	Inc. Acres "A"	"C"	Eqv. Area 100% CA	Total Area 100% CA	T Time Min.	I Inch Per Hour	Qt (CIA) c.f.s.	Dia. of pipe inch	Slope pipe %	Slope H.G. %	Length of line ft.	Vel. Flow full ft/sec.	Time of flow min.	Cap of pipe c.f.s.	H.G. Elev. upper end	Ground Elev. Upper end	Ground Elev. Lower end	Invert Elev. Upper end	Invert Elev. Lower end	Upper COVER	Lower COVER
211	208	SLCPP	0.52	0.47	0.25	0.25	15.0	4.38	1.07	12	4.85	0.09	30	9.99	0.1	7.85	946.98	946.98	948.00	946.98	945.53	0.00	1.48
210	209	SLCPP	2.14	0.24	0.52	0.52	15.0	4.38	2.27	12	4.85	0.41	30	9.99	0.1	7.85	946.98	946.98	948.00	946.98	945.53	0.00	1.48
209	208	RCP	N/A	N/A	N/A	0.52	15.1	4.37	2.27	12	0.45	0.41	40	3.04	0.2	2.39	943.98	948.00	948.00	943.00	942.82	4.00	4.18
208	207	SLCPP	N/A	N/A	N/A	0.77	15.3	4.35	3.32	12	2.6	0.87	29	7.31	0.1	5.74	943.22	948.00	947.00	942.72	941.97	4.28	4.03
207	206	SLCPP	N/A	N/A	N/A	0.77	15.3	4.34	3.32	12	3.4	0.87	87	8.36	0.2	6.57	941.87	947.00	944.00	941.87	938.91	4.13	4.09
206	205	SLCPP	N/A	N/A	N/A	0.77	15.5	4.32	3.31	12	1.9	0.86	87	6.25	0.2	4.91	938.90	944.00	942.30	938.81	937.16	4.19	4.14
205	201	SLCPP	N/A	N/A	N/A	0.77	15.7	4.30	3.29	12	1	0.85	88	4.54	0.3	3.56	937.92	942.30	941.40	937.06	936.18	4.25	4.23
204	203	RCP	2.27	0.33	0.76	0.76	15.0	4.38	3.32	12	0.9	0.87	38	4.30	0.1	3.38	940.56	939.57	939.23	939.57	939.23	0.00	0.00
202	201	SLCPP	0.39	0.41	0.16	0.92	15.1	4.36	4.01	12	1.4	1.27	12	5.37	0.0	4.22	940.11	939.13	941.40	939.13	938.96	0.00	1.44
201	200	SLCPP	N/A	N/A	N/A	1.69	16.1	4.26	7.18	18	0.75	0.47	26	5.15	0.1	9.10	937.20	941.40	935.58	935.78	935.58	4.13	0.00
123	122	SLCPP	0.87	0.20	0.17	1.86	15.0	4.38	0.12	12	0.3	0.00	46	2.48	0.3	1.95	936.10	937.00	935.10	935.24	935.10	0.76	0.00
121	120	SLCPP	N/A	N/A	N/A	1.86	15.3	4.34	0.12	18	0.45	0.00	47	3.99	0.2	7.05	935.96	937.00	934.46	934.67	934.46	0.83	0.00



PLAN VIEW
SCALE: 1"=30'



STORM SEWER PROFILE
SCALE: HOR. 1"=30' / VERT. 1"=3'



EMERGENCY OVERFLOW SPILLWAY CROSS SECTION
NOT TO SCALE

EMERGENCY OVERFLOW SPILLWAY ELEVATION
NOT TO SCALE

FOREBAY OVERFLOW SPILLWAY CROSS SECTION
NOT TO SCALE

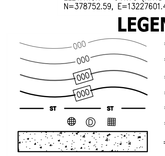
FOREBAY OVERFLOW SPILLWAY ELEVATION
NOT TO SCALE

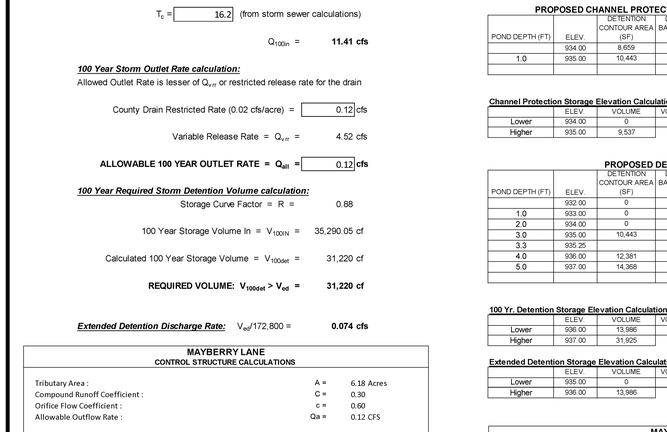
BENCHMARKS
DATUM BASED ON RTK-GPS OBSERVATIONS, DATE NOVEMBER 14, 2025

BENCHMARK #200
TOP OF TRAV. CAP ON IRON ROD, LOCATED 794± FEET SOUTH OF MAYBERRY ROAD AND 320± FEET E'LY OF #3447 HOUSE.
ELEVATION = 952.32 (NAVD 88)
N=378007.96, E=1322763.60

BENCHMARK #201
TOP OF TRAV. CAP ON IRON ROD, LOCATED 68± FEET SW'LY OF MAYBERRY ROAD ON THE WEST SIDE OF DRIVEWAY CURVE.
ELEVATION = 941.75 (NAVD 88)
N=378752.59, E=1322760.44

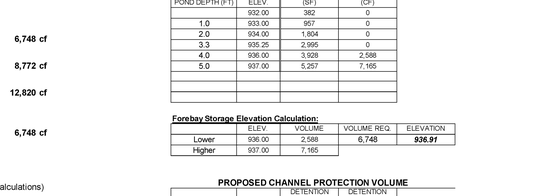
LEGEND





CONTROL STRUCTURE DETAIL
NOT TO SCALE

	KEY	FOREBAY	BASIN
	CONTROL STRUCTURE DESIGNATION	CS 123	CS 121
A	MATERIAL TYPE , SEE NOTE 2	HDPE	HDPE
B	STRUCTURE INSIDE DIAMETER	4'	4'
C	RIM ELEVATION WITHOUT GRATE	937.00	937.00
D	INVERT ELEVATION OUTLET PIPE	935.24	934.67
E	TOP OF STONE ELEVATION	936.50	936.50
F	OUTLET PIPE DIAMETER	12"	18"
G	OUTLET PIPE MATERIAL	SLCPP	SLCPP
H	STRUCTURE HEIGHT WITHOUT GRATE	3.76'	4.33'
J	SUMP HEIGHT	2'	2'
K	RESTRICTOR OPENING DIA. IN OUTLET PIPE	N/A	N/A
L	FIRST ROW OF HOLES CENTERLINE ELEVATION HOLE DIAMETER NUMBER OF HOLES IN ROW	935.30 1.5" 1	935.04 1.0" 3
M	SECOND ROW OF HOLES CENTERLINE ELEVATION HOLE DIAMETER NUMBER OF HOLES IN ROW	N/A	935.97 1.25" 1



ANTI SEEP COLLAR
NOT TO SCALE

NOTE:
LOCATE ONE COLLAR AROUND OUTLET PIPE AT CENTER OF BASIN BERM: INCIDENTAL TO CONTROL STRUCTURE.

DESINE INC
(810) 227-9533
CIVIL ENGINEERS
LAND SURVEYORS
2183 PLESS DRIVE
BRIGHTON, MICHIGAN 48114

DESIGN: WMP
DRAFT: LF
CHECK: WMP

REVISION #	DATE	REVISION-DESCRIPTION
	05-21-26	REVISED PER LCDC REVIEW COMMENTS

REVISION #	DATE	REVISION-DESCRIPTION

3447 Mayberry Lane
Marion Township, Mi.

BASIN B
CONTROL STRUCTURE
NOTES & DETAILS

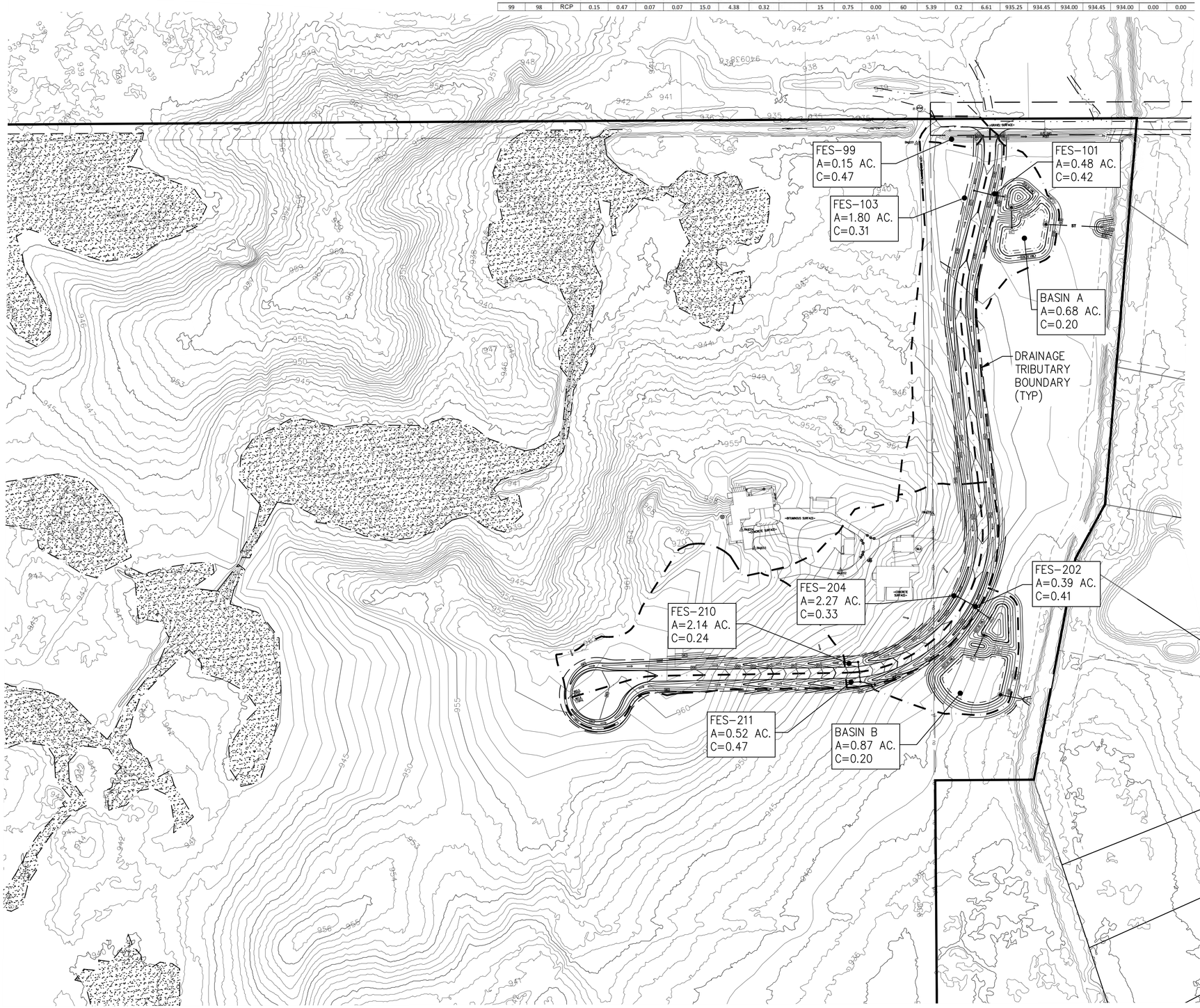
CLIENT:
JOE MAZUR
3447 MAYBERRY LANE
HOWELL, MICHIGAN 48843
734-637-1816

SCALE: 1"=30'
PROJECT No.: 9254943
DWG NAME: 4943 UT
ISSUED: MAY 21, 2026

UT2

BASIN A

Design Criteria:		10 year event (I = 175/t + 25)		RCP n= 0.013		SLCPP n= 0.011											Date: 5/19/2026					
99	98	RCP	0.15	0.47	0.07	0.07	15.0	4.38	0.32		15	0.75	0.00	60	5.39	0.2	6.61	935.25	934.45	934.00	934.45	934.00	0.00	0.00



GRAPHIC SCALE

100 0 50 100 200

(IN FEET)

1 INCH = 100 FEET

BASIN A
PROPOSED DRAINAGE AREAS

"Area"	0.80 Gravel	0.90 Pavement	0.90 Building	0.25 Wetland	0.20 Lawn	0.18 Open Fields	0.15 Woods	1.00 Water	(ACRES) Area	"C" Factor
103	0.18	0.14	0.00	0.00	1.48	0.00	0.00	0.00	1.80	**0.31**
101	0.18	0.00	0.00	0.00	0.30	0.00	0.00	0.00	0.48	**0.42**
BASIN A	0.00	0.00	0.00	0.00	0.68	0.00	0.00	0.00	0.68	**0.20**
TOTAL	0.36	0.14	0.00	0.00	2.47	0.00	0.00	0.00	2.97	**0.31**
99	0.05	0.01	0.00	0.00	0.09	0.00	0.00	0.00	0.15	**0.47**

BASIN B
PROPOSED DRAINAGE AREAS

"Area"	0.80 Gravel	0.90 Pavement	0.90 Building	0.25 Wetland	0.20 Lawn	0.18 Open Fields	0.15 Woods	1.00 Water	(ACRES) Area	"C" Factor
211	0.20	0.00	0.00	0.00	1.43	0.00	0.51	0.00	0.52	0.47
210	0.24	0.00	0.00	0.00	0.28	0.00	0.00	0.00	2.14	0.24
204	0.13	0.20	0.12	0.00	1.82	0.00	0.00	0.00	2.27	0.33
202	0.14	0.00	0.00	0.00	0.25	0.00	0.00	0.00	0.39	0.41
BASIN B	0.00	0.00	0.00	0.00	0.87	0.00	0.00	0.00	0.87	0.20
TOTAL	0.70	0.20	0.12	0.00	4.64	0.00	0.51	0.00	6.18	0.30

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BRIGHTON, MICHIGAN 48114

DESIGN: WMP
DRAFT: LF
CHECK: WMP

REVISION #	DATE	REVISION-DESCRIPTION
	05-21-26	REVISED PER LCDC REVIEW COMMENTS

REVISION #	DATE	REVISION-DESCRIPTION

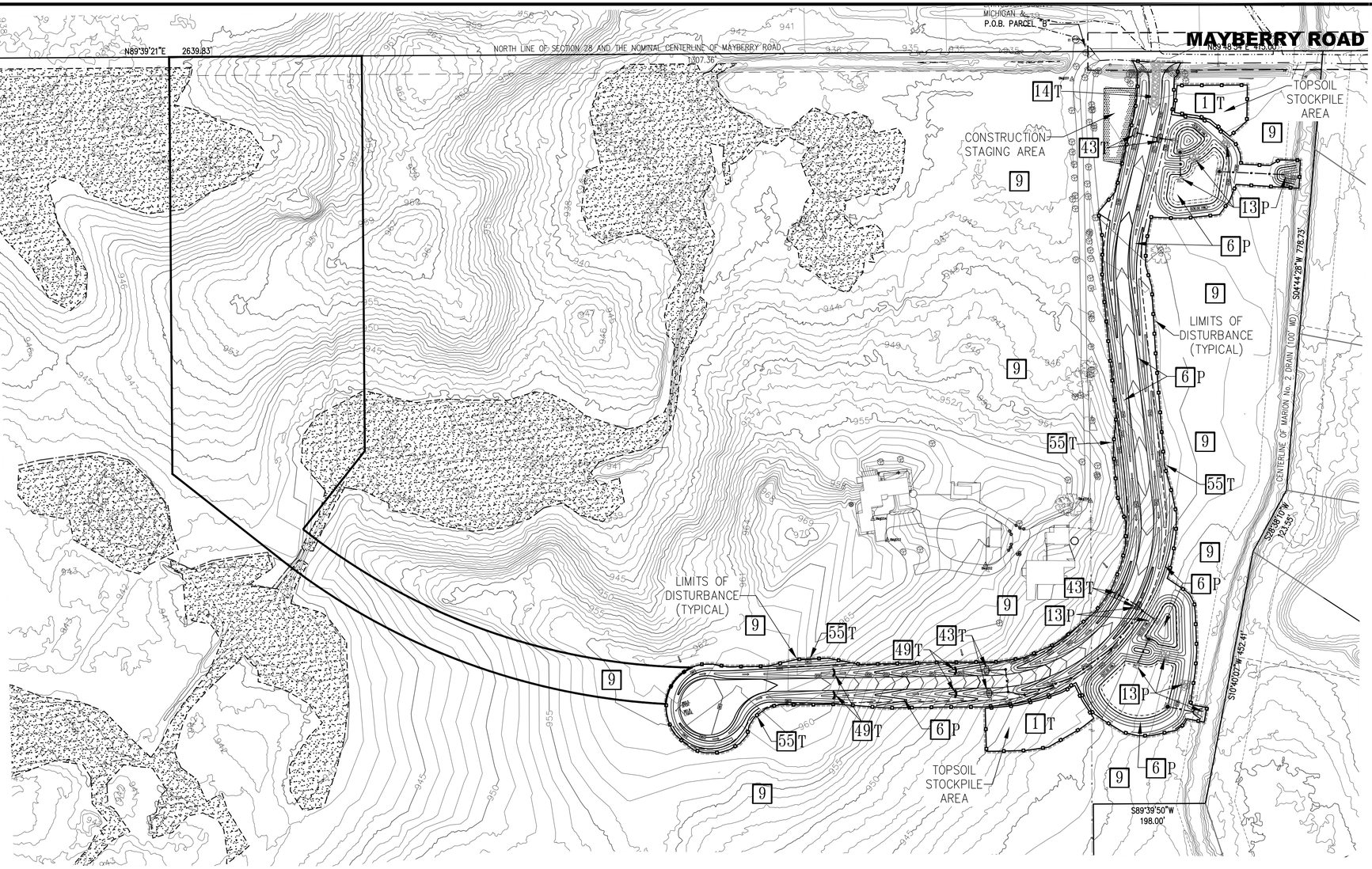
3447 Mayberry Lane
Marion Township, Mi.

WATERSHED PLAN & CALCULATIONS

CLIENT:
JOE MAZUR
3447 MAYBERRY ROAD
HOWELL, MICHIGAN 48843
734-637-1816

SCALE: 1"=100'
PROJECT No.: 9254943
DWG NAME: 4943 WS
ISSUED: MAY 21, 2026

WS

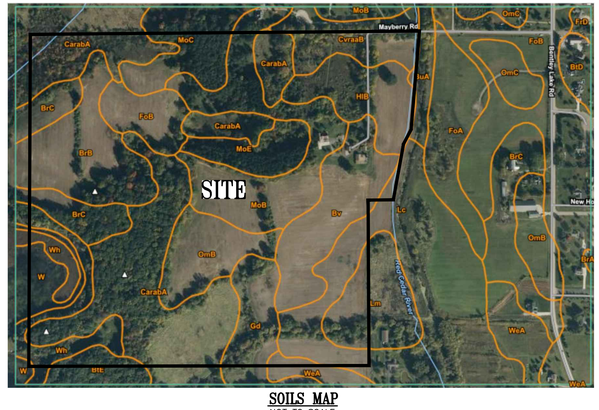


SOILS CHARACTERISTICS

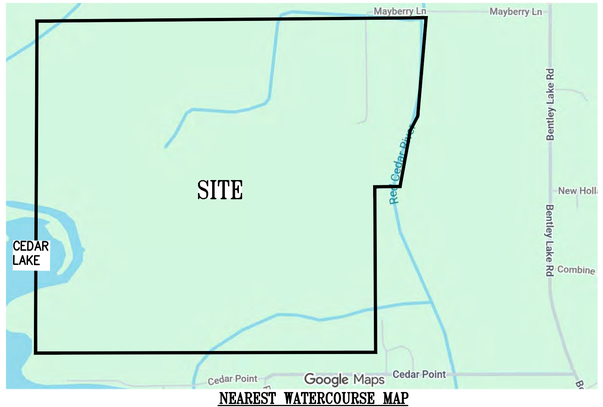
Livingston County, Michigan (MI093)

Livingston County, Michigan (MI093)

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
BrA	Boyer loamy sand, 0 to 2 percent slopes	0.1	0.1%
BrB	Boyer loamy sand, 2 to 6 percent slopes	13.0	5.0%
BrC	Boyer loamy sand, 6 to 12 percent slopes	15.2	5.8%
BtD	Boyer-Oshtemo loamy sands, 12 to 18 percent slopes	2.2	0.9%
BtE	Boyer-Oshtemo loamy sands, 18 to 25 percent slopes	3.5	1.4%
BuA	Brady loamy sand, 0 to 2 percent slopes	2.8	1.1%
Bv	Breckenridge loamy sand	11.8	4.5%
CarabA	Carlisle muck, 0 to 2 percent slopes	40.3	15.4%
CvraaB	Conover loam, 0 to 4 percent slopes	7.8	3.0%
FoA	Fox sandy loam, 0 to 2 percent slopes	9.4	3.6%
FoB	Fox sandy loam, 2 to 6 percent slopes	31.1	11.9%
FrD	Fox-Boyer complex, 12 to 18 percent slopes	0.7	0.3%
Gd	Gilford sandy loam, 0 to 2 percent slopes, gravelly subsoil	7.1	2.7%
HlB	Hillsdale sandy loam, 0 to 6 percent slopes	8.5	3.3%
Lc	Lamson fine sandy loam	29.6	11.3%
Lm	Linwood muck	9.1	3.5%
MoB	Wawasee loam, 2 to 6 percent slopes	19.2	7.3%
MoC	Wawasee loam, 6 to 12 percent slopes	8.4	3.2%
MoE	Miami loam, 18 to 25 percent slopes	5.2	2.0%
OmB	Owosso-Miami sandy loams, 2 to 6 percent slopes	12.4	4.7%
OmC	Owosso-Miami sandy loams, 6 to 12 percent slopes	4.4	1.7%
W	Water	4.9	1.9%
WeA	Wasepi sandy loam, 0 to 2 percent slopes	6.8	2.6%
Wh	Washtenaw silt loam	7.9	3.0%
Totals for Area of Interest		**261.5**	**100.0%**



SOILS MAP
NOT TO SCALE



NEAREST WATERCOURSE MAP
NOT TO SCALE

LOCATION MAP
SCALE: 1"=2000'

DISTANCE TO NEAREST WATER BODY = ONSITE

AREA OF DISTURBANCE = 5.7 ACRES

GRAPHIC SCALE

100 0 50 100 200

(IN FEET)
1 inch = 100 ft.

LEGAL DESCRIPTION

PARCEL No. 4710-28-100-002 168.92± Acres

BEGINNING at the North 1/4 Corner of Section 28, Town 2 North, Range 4 East, Marion Township, Livingston County, Michigan; thence N89°48'54"E *(recorded as N89°48'39"E)* 415.00 feet along the North line of said Section 28 and the nominal centerline of Mayberry Road (33-foot wide 1/2 Right-of-Way), to a point distant 2219.21 feet N89°48'54"E *(recorded as N89°48'39"E)* to the Northeast Corner of said Section 28; thence along the centerline of Marion No. 2 Drain (100-foot wide) as depicted in Certified Land Survey No. 2006S-0069, Livingston County Records the following three courses:

1) S04°44'28"W 778.73 feet *(recorded as S04°43'08"W 778.33 feet)*,
2) S26°36'10"W *(recorded as S26°36'50"W)* 123.55 feet and
3) S10°40'07"W *(recorded as S10°38'47"W)* 452.41 feet;

thence S89°39'50"W *(recorded as S89°33'33"W)* 198.00 feet to the North-South 1/4 line of said Section 28, also to a point distant 1328.97 feet N00°25'00"W *(recorded as N00°26'27"W)* to said North 1/4 Corner; thence S00°25'00"E *(recorded as S03°05'E)* 1303.73 feet to the Center Post of said Section 28; thence N89°54'03"W 2639.05 feet *(recorded as S87°18'W 1172.3 feet, S87°09'W 485.9 feet and S86°08'W 977.89 feet)* along the East-West 1/4 line of said Section 28 and the North line (in-part) of "Cedar Point," a Subdivision of part of said Section 28, according to the plat thereof, as recorded in Liber 2 of Plats, Page 86 and "Supervisor's Plat of Cedar Point Annex," a Subdivision of part of said Section 28, according to the plat thereof, as recorded in Liber 12 of Plats, Page 2, Livingston County Records to the West 1/4 Corner of said Section 28, said Corner lies within the water's of Cedar Lake; thence N00°26'10"W 2612.29 feet *(recorded as N03°09'W 2634.68 feet)* along the West line of said Section 28 to the Northwest Corner of said Section 28; thence N89°39'21"E 2639.83 feet *(recorded as N86°57'E 2639.18 feet)* along said North line of Section 28 and along said nominal centerline of Mayberry Road to the Point of Beginning. Being the Northwest 1/4 and part of the Northeast 1/4 of Section 28, Town 2 North, Range 4 East, Marion Township, Livingston County, Michigan. Containing 168.92 acres of land, more or less. Subject to the rights of the public over the North 33 feet as occupied by Mayberry Road (33-foot wide 1/2 Right-of-Way), also subject to the public trust and rights of the other riparian owners in the waters of Cedar Lake, also subject to the public trust and rights of the other riparian owners in the waters of Marion No. 2 Drain (100-foot wide) as depicted in Certified Land Survey No. 2006S-0069, Livingston County Records, also subject to and together with all easements and restrictions affecting title to the above described premises.

SOIL EROSION MEASURES

1	STRIPPING & STOCKPILING TOPSOIL	TOPSOIL MAY BE STOCKPILED ABOVE BORROW AREAS TO ACT AS A DIVERSION STOCKPILE SHOULD BE TEMPORARILY SEEDED
6	SEEDING WITH MULCH AND/OR MATTING	FACILITATES ESTABLISHMENT OF VEGETATIVE COVER EFFECTIVE FOR DRAINAGEWAYS WITH LOW VELOCITY EASILY PLACED IN SMALL QUANTITIES BY INEXPERIENCED PERSONNEL SHOULD INCLUDE PREPARED TOPSOIL BED
9	VEGETATIVE BUFFER STRIP	SLOWS RUNOFF VELOCITY FILTERS SEDIMENT FROM RUNOFF REDUCES VOLUME OF RUNOFF ON SLOPES
14	AGGREGATE COVER	STABILIZES SOIL SURFACE, THUS MINIMIZING EROSION PREVENTS CONSTRUCTION TRAFFIC IN ADVERSE WEATHER MAY BE USED AS PART OF PERMANENT BASE CONSTRUCTION OF PAVED AREAS
43	CULVERT SEDIMENT TRAP	EASY TO INSTALL AT INLET KEEPS CULVERT CLEAN AND FREE FLOWING MAY BE CONSTRUCTED OF LUMBER OR LOGS
49	CHECK DAMS	REDUCES FLOW VELOCITY CATCHES SEDIMENT CAN BE CONSTRUCTED OF LOGS, STRAW, HAY, ROCK, LUMBER, MASONRY, OF SANDBAGS
55	GEOTEXTILE SILT FENCE	USES GEOTEXTILE AND POSTS OR POLES MAY BE CONSTRUCTED OR PREFABRICATED EASY TO CONSTRUCT AND LOCATE AS NECESSARY
58	INLET SEDIMENT FILTER	USES PREFABRICATED GEOTEXTILE SACKS FILTERS SEDIMENT FROM RUNOFF AT CATCH BASIN INLET EASY TO INSTALL AND MAINTAIN
59	INLET FABRIC DROP	PREVENTS SEDIMENT FROM ENTERING STORM SYSTEM AT STRUCTURES USES GEOTEXTILE FABRIC AND POSTS OR POLES SILT FENCE CAN BE USED

T = TEMPORARY P = PERMANENT

= SILT FENCE

= LIMITS OF DISTURBANCE

NOTES:

1. The permit is not for individual building units, It is required that temoprary stabilization of the entire site be completed and approval from the Livingston County Drain Commissioner's office be obtained prior to the issuance of permits for individual building units.
2. Any dewatering required shall have a dewatering plan submitted prior to starting any activity that may require EGLE approval.
3. Construct Retention/Detention and Sedimentation Basins, including associated spillways, in accordance with the project plans. Finish grade, top soil, seed and mulch in Retention/Detention and Sedimentation Basins, tacked and ringed with silt fence prior to massive earth disruption. Install temporary Soil Erosion Control Measures as necessary to stabilize Retention/Detention and Sedimentation Basins.

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BRIGHTON, MICHIGAN 48114

REVISION #	DATE	REVISION-DESCRIPTION
	05-21-24	REVISED PER LCDC REVIEW COMMENTS

REVISION #	DATE	REVISION-DESCRIPTION

DESIGN: SS
DRAFT: L.F.
CHECK: WMP

3447 Mayberry Lane
Marion Township, Mi

SOIL EROSION & SEDIMENTATION CONTROL PLAN

CLIENT:
JOE MAZUR
3447 MAYBERRY ROAD
HOWELL, MICHIGAN 48843
734-637-1816

SCALE: 1in. = 100 ft.
PROJECT No.: 9254943
DWG NAME: 4943 SE
ISSUED: MAY 21, 2026

SE1

TIME LINE OF SOIL EROSION CONTROL AND CONSTRUCTION SEQUENCE

CONSTRUCTION & WORK CATEGORIES*	CONSTRUCTION PERIOD																															
Month	1				2				3				4				5				6				7				8			
Week	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
1. OBTAIN PERMITS																																
2. INSTALL INITIAL SESC MEASURES																																
3. INSPECT & MAINTAIN SESC MEASURES																																
4. DEMOLITION WORK																																
5. EARTH WORK																																
6. UNDERGROUND UTILITY WORK																																
7. PRIVATE DRIVE CONSTRUCTION																																
8. FINISH GRADE WORK																																
9. TOPSOIL, SEED & MULCH																																
10. REMOVE TEMPORARY SESC MEASURES																																

*REFER TO THE MAJOR WORK ITEMS OUTLINED IN THE SOIL EROSION CONTROL AND CONSTRUCTION SEQUENCE NOTES.

SOIL EROSION CONTROL AND CONSTRUCTION SEQUENCE:

1. Obtain all necessary Soil Erosion and Sedimentation Control related permits from the appropriate Local, County and/or State Agencies. Refer to the General Notes on the project plans for additional requirements.

2. Prior to commencement of any earth disruption install Silt Fence and Mud Tracking Control Device(s) in accordance with the Soil Erosion and Sedimentation Control Plan.

3. Construct Retention/Detention and Sedimentation Basins, including associated spillways, in accordance with the project plans. Finish grade and establish vegetative growth in Retention/Detention and Sedimentation Basins prior to massive earth disruption. Install temporary Soil Erosion Control Measures as necessary to stabilize Retention/Detention and Sedimentation Basins.

4. Strip and stockpile topsoil. Perform mass grading and land balancing. Install appropriate Soil Erosion Control Measures in accordance with the Soil Erosion and Sedimentation Control Plan.

5. Install proposed underground utilities. (i.e.; storm and sanitary sewer, water main, etc.) Install appropriate Soil Erosion Control Measures in accordance with the Soil Erosion and Sedimentation Control Plan.

6. Construct building(s) if required on the project plans. Install appropriate Soil Erosion Control Measures in accordance with the Soil Erosion and Sedimentation Control Plan.

7. Construct roadways and/or parking areas. Install appropriate Soil Erosion Control Measures in accordance with the Soil Erosion and Sedimentation Control Plan.

8. Finish grade all disturbed areas outside of pavement. Perform final restoration, including placement of topsoil and establishment of vegetative growth outside of pavement.

9. Following establishment of sufficient vegetative ground cover and receipt of approval from the Permitting Agency, remove all *temporary* Soil Erosion Control Measures, clean all storm sewer structures and repair all permanent Soil Erosion Control Measures.

MAINTENANCE NOTES FOR SOIL EROSION CONTROL MEASURES:

The Construction Site and all Soil Erosion Control Measures shall be inspected periodically in accordance with the appropriate local municipality/authority and the Michigan EGLE NPDES rules and regulations. At a MINIMUM, inspections shall be performed once a week and within 24 hours following a storm event resulting in 1" of rainfall or greater. Inspections shall be performed throughout the duration of the construction process and until the site is completely stabilized. Following construction, the owner (or its assignee) shall periodically inspect all permanent soil erosion control measures to ensure proper operation.

BASIN PERFORATED STANDPIPES / CONTROL STRUCTURES: Standpipes shall be inspected for soil accumulation, soil caking and mechanical failure/damage. The filter stone around the standpipe shall be removed and replaced each time it becomes clogged with sediment. All mechanical failure/damage shall be repaired immediately.

CATCH BASINS: Catch basins shall be inspected for accumulation of solids and sediment. Solids and sediment shall be removed from the catch basins by vacuum or adductor cleaning. Cleaning should be performed before the catch basin sumps are half full.

MUD TRACKING CONTROL DEVICE / CONSTRUCTION ACCESS: Mud tracking control devices shall be inspected for significant mud accumulation and to ensure the access is not eroding into public rights of way or drainage features. Add additional layers of stone or remove and replace stone each time the stone becomes covered with mud. All sediment dropped or eroded onto public rights of way shall be removed immediately. Sweeping of the public rights or way and/or paved access route shall be performed as necessary to maintain the access route free of sediment and debris.

DETENTION BASIN (DRY BOTTOM): Dry bottom detention basins shall be inspected to ensure erosion is not occurring along the inlet locations, banks and/or bottom of the basin and for sediment accumulation. Regular maintenance of the basin includes routine mowing of the buffer/filter strip, side slopes and basin floor and removal of litter and debris accumulation. Address vegetation and/or erosion concerns as soon as weather permits. Remove sediment from basin every 5 to 10 years or sooner if sediment accumulation adversely affects the operation of the basin. Sediment that is removed shall be disposed of offsite or at an upland area and stabilized so that it does not re-enter the drainage course.

RIPRAP: Inspect riprap immediately following the first rainfall event following installation of the riprap. Continue to perform inspections of the riprap at each periodic site inspection. Riprap shall be inspected to ensure erosion is not occurring within and/or around the riprap. The discharge point shall be inspected to ensure that concentrated flows are not causing erosion downstream. Displaced riprap shall be removed from downstream locations and the riprap beds shall be repaired or replaced. Significant sediment buildup shall be removed from riprap beds. Repair or replace failing or displaced riprap immediately. Address vegetation and/or erosion concerns as soon as weather permits.

SEDIMENTATION BASINS: Sedimentation basins shall be inspected to ensure erosion is not occurring along the inlet locations, banks and/or bottom of the basin and for piping, seepage, sediment accumulation and/or other mechanical damage. Regular maintenance of the basin includes routine mowing of the buffer/filter strip, side slopes and basin floor and removal of litter and debris accumulation. Address vegetation and/or erosion concerns as soon as weather permits. Sediment shall be removed before it accumulates to 50% of the design depth of the basin. Sediment that is removed shall be disposed of offsite or at an upland area and stabilized so that it does not re-enter the drainage course.

SEEDING: Newly seeded areas shall be inspected until substantial vegetative growth is obtained. Seeded areas shall be inspected to ensure erosion is not occurring in the seeded area and vegetative growth is promoted. Eroded areas shall be finish graded as necessary to removal erosion channels or gulleys and new seed placed as soon as weather permits.

SILT FENCE: Silt fencing shall be inspected for soil accumulation/clogging, undercutting, overtopping and sagging. Soil accumulation shall be removed from the face of the silt fence each time it reaches half the height of the fence. Removed sediment shall be disposed of in a stable upland site or added to a spoils stockpile. When undercutting occurs, grade out areas of concentrated flow upstream of the silt fence to remove channels and/or gulleys and repair or replace silt fence ensuring proper trenching techniques are utilized. Silt fencing, which sags, falls over or is not staked in shall be repaired or replaced immediately. Silt fencing fabric, which decomposes or becomes ineffective, shall be removed and replaced with new fabric immediately. Silt fencing shall be removed once vegetation is well established and the up-slope area is fully stabilized.

SOD: Newly sodded areas shall be inspected to ensure sod is maturing. Sod shall be inspected for failure, erosion or damage. Slipping or eroding sod on steep slopes shall be immediately repaired or replaced and staked in place. Damaged or failed sod shall be immediately replaced.

SPILLWAYS: Spillways shall be inspected to ensure that erosion is not occurring within and/or around the spillway. The discharge point shall be inspected to ensure that concentrated flows are not causing erosion downstream. Inspect the spillway for cracked concrete, uneven and/or excessive settling and proper function. Repair or replace failing spillways immediately. Address vegetation and/or erosion concerns as soon as weather permits.

STOCKPILES: Temporary and permanent topsoil and spoils stockpiles shall be seeded to promote vegetative growth. Stockpiles shall be inspected to ensure excessive erosion has not occurred. When runoff or wind erosion is evident, reduce the side slopes of the stockpile or stabilize the stockpile with pieces of staked sod laid perpendicular to the slope. When filter fencing is used around a stockpile, the fencing shall be inspected to ensure piping has not occurred under the fencing and to ensure the fencing has not collapsed due to soil slippage or access by construction equipment. Repair or replace damaged fencing immediately. Berms at the base of stockpiles, which become damaged, shall be replaced.

STORM STRUCTURE INLET FILTER: Inlet filters shall be inspected for sediment accumulation, clogging and damage. When stone is used in conjunction with inlet filter fabric, replace the stone each time it becomes clogged with sediment. Clean or replace the inlet filter fabric each time it becomes clogged with sediment. Reinstall or replace fallen filter fabrics immediately. Replace damaged filter fabrics immediately.

SOIL EROSION AND SEDIMENTATION CONTROL NOTES:

1. The Soil Erosion and Sedimentation Control Specifications of the appropriate Local, County and/or State Agencies are a part of this work. Refer to the General Notes on the Project Plans for additional requirements.

2. The Soil Erosion and Sedimentation Control (SESC) Permit Holder shall be responsible for compliance with the SESC Permit requirements for the duration of the project and until receipt of final approval from the Permitting Agency. For any site with an earth disturbance area of 1 acre or greater, the SESC Permit Holder shall retain a Certified Storm Water Operator in accordance with the SESC Permit requirements. The Certified Storm Water Operator shall perform routine inspections of the site and the SESC measures and file inspection reports in accordance with the SESC permit requirements. For any site with an earth disturbance area of 5 acres or greater, the SESC Permit Holder shall file a National Pollutant Discharge Elimination System (NPDES) Notice of Coverage Form with the State DEQ prior to any earth disruption.

3. The Contractor shall install the appropriate Soil Erosion Control Measures in accordance with the Project Plans prior to massive earth disruption, including but not limited to; silt fence, mud tracking control mats and sediment filters on existing storm sewer structures. Demolition work may be necessary prior to installation of some soil erosion control measures. In such cases, postpone installation of affected soil erosion control measures until immediately following demolition work. Refer to the Project Plans and the Soil Erosion Control and Construction Sequence for additional requirements.

4. The Contractor shall schedule work so as to minimize the period of time that an area is exposed and disturbed. The Contractor shall observe the grading limits and limits of disturbance in accordance with the Project Plans. The Contractor shall maintain an undisturbed vegetative buffer around the work when shown on the Project Plans.

5. The Contractor shall install and maintain Soil Erosion Control Measures in accordance with the Project Plans during the appropriate phases of construction. The Project Plans show the minimum requirements for Soil Erosion Control Measures. The Contractor shall install additional Soil Erosion Control Measures as necessary due to site conditions and as directed by the Permitting Agency and/or Engineer. The Contractor shall perform routine inspection and maintenance of all Soil Erosion Control Measures to ensure compliance with the permit requirements and proper operation of the Soil Erosion Control Measures.

6. The Contractor shall strip and stockpile topsoil from all areas of proposed disturbance. Topsoil stockpiles shall be located in accordance with the Project Plans. Topsoil stockpiles shall be stabilized with vegetative growth (or matted with straw during the non-growing season) to prevent wind and water erosion. A temporary diversion berm and/or silt fence shall encompass all earthen material stockpiles, including but not limited to topsoil, sand and gravel.

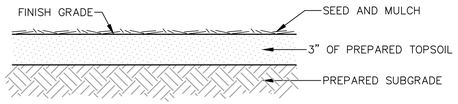
7. The Contractor shall install Soil Erosion Control Measures associated with the proposed storm sewer system during storm sewer construction. Inlet structure filters shall be installed immediately following completion of each storm inlet structure. Riprap shall be installed immediately following the installation of each flared end section with the following exception: Storm drain outlets that do NOT empty into a Retention, Detention or Sedimentation Basin shall have a temporary 5' wide x 10' long x 3' deep sump installed at the termination of the storm sewer. Upon completion of the stabilization work, the sump area shall be filled and riprap shall be installed in accordance with the Project Plans.

8. The Contractor shall install filter stone around the storm basin control structure(s) in accordance with the Project Plans immediately following installation of the control structure(s). The filter stone shall be monitored for sediment build up. The filter stone may need to be cleaned and/or replaced as site conditions require and as directed by the Permitting Agency and/or the Engineer.

9. All disturbed areas outside of paved areas shall be restored within 15 days of finish grading. Proposed vegetative areas shall be restored with a minimum of 3-inches of topsoil, then seeded and mulched, unless noted otherwise on the Project Plans. During the non-growing season, temporary stabilization shall be provided using straw matting or as directed by the Permitting Agency and/or the Engineer.

Seeding, Fertilizer and Mulch Bare Ground Ratio:
This information is provided as minimum guidance for acceptable application rates. Actual amounts depending on soil conditions and site topography shall be detailed on the construction plans.
Top-Soil 3 inches in depth.
Grass Seed 210 lbs. per acre.
Fertilizer 150 lbs. per acre.
Straw Mulch 3" in depth 1.5 to 2 tons per acre
(All mulch must have a tie down, such as tackifier, net binding, etc.)
Hydro-Seeding: Hydro-seeding is not acceptable for slopes exceeding 1%, in such cases; stabilization shall be done with seed and straw mulch with a tackifier.

10. Following complete site restoration and stabilization; sediment shall be removed from all storm sewer structures, paved areas and storm basins. The SESC Permit Holder shall contact the Permitting Agency to request closure of the SESC Permit. For any site with an earth disturbance area of 5 acres or greater, the SESC Permit Holder shall file a NPDES Notice of Termination Form with the State DEQ.



SEEDING DETAIL
NOT TO SCALE

1. Seed mixture shall consist of 10% - Kentucky Blue Grass
20% - Perennial Ryegrass
30% - Hard Fescue
40% - Creeping Red Fescue
Seed shall be uniformly applied at a rate of 210 pounds per acre.

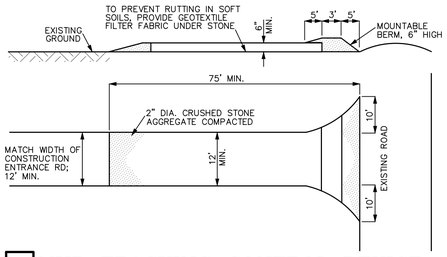
2. Topsoil shall be a dark, organic, natural surface soil free of clay lumps, peat or muck, subsoil, noxious weeds or other foreign matter such as roots, sticks, rocks over 1/2" in diameter and not frozen or muddy. Material shall meet with approval of the Engineer.

3. Straw mulching shall be a minimum depth of 3" applied at a rate of 1.5 to 2 tons per acre. All mulching must have a tie down, such as tackifier, net binding, etc.

4. Fertilizer shall be evenly applied at a rate which will provide 150 pounds per acre of chemical fertilizer nutrients, in equal portions, (10-10-10), of Nitrogen, Phosphoric Acid and Potash.

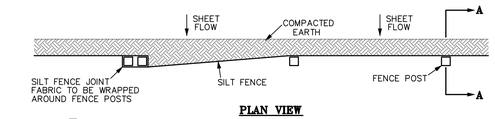
5. Hydroseeding is not acceptable for slopes exceeding 1%. In such cases, stabilization shall be done with seed and straw mulch with a tackifier.

6. The earthen areas to receive topsoil shall be at the required grade and properly trimmed. Topsoil shall be spread on the prepared areas to a depth of 3 inches. After spreading, any large clods and lumps of topsoil shall be broken up and pulverized. Stones and rocks over 1/2" in diameter, roots, litter, and all foreign matter shall be raked up and disposed of by the the contractor. Place topsoil only when it can be followed within a reasonable time by seeding operations.

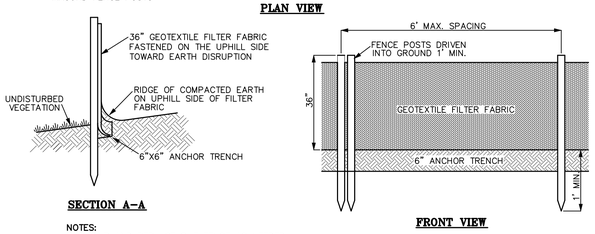


14 MUD TRACKING CONTROL DEVICE
NOT TO SCALE

NOTE:
WHEN ACCEPTABLE TO ENGINEER, CONTRACTOR MAY INSTALL STONE BELOW THE SUBGRADE ELEVATION; THUS STONE MAY BE LEFT IN PLACE BELOW PAVEMENT.



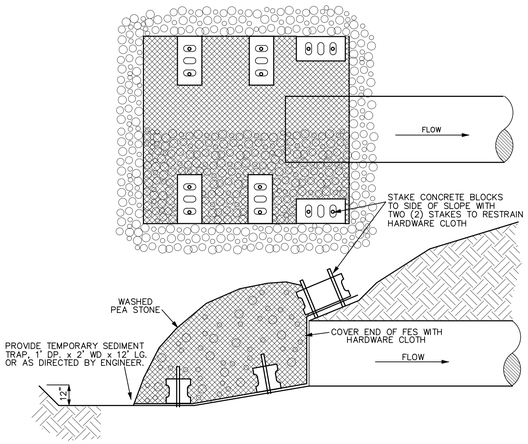
PLAN VIEW



SECTION A–A **FRONT VIEW**

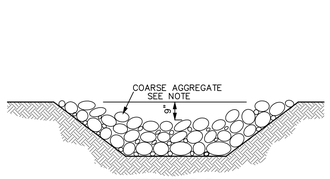
NOTES:
1. REPAIR AND REPLACE SILT FENCE AS NEEDED, INCIDENTAL.
2. FIELD LOCATE SILT FENCE TO FOLLOW CONSTANT CONTOUR ELEVATIONS.
3. OVERLAP FENCES AT JOINTS.
4. INSTALL FILTER BERM AT LOW POINTS WHERE INDICATED ON PLANS.

55 SILT FENCE
NOT TO SCALE

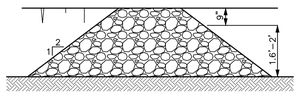


43 TEMPORARY GRAVEL FILTER DETAIL
NOT TO SCALE

NOTE:
UPON STABILIZATION OF ALL CONTRIBUTING AREA REMOVE TEMPORARY GRAVEL FILTER.



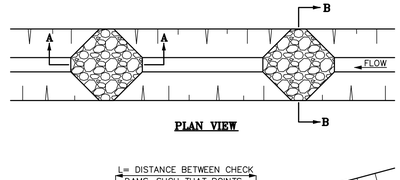
SECTION B–B



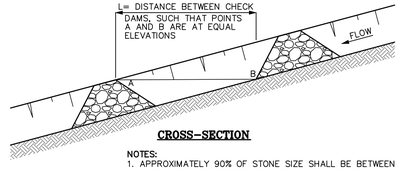
SECTION A–A

CHECK DAM STONE:
2" TO 4 1/3" SIZE FOR DITCH GRADE LESS THAN 2%
3" TO 8 2/3" SIZE FOR DITCH GRADES 2% OR GREATER.

49 STONE CHECK DAM DETAIL
NOT TO SCALE



PLAN VIEW



CROSS-SECTION

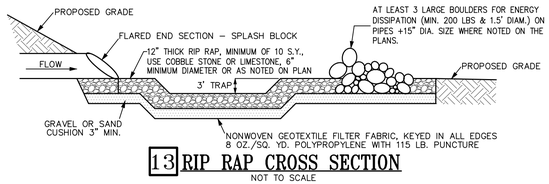
NOTES:
1. APPROXIMATELY 90% OF STONE SIZE SHALL BE BETWEEN THE RANGES SPECIFIED. NO STONES GREATER THAN 8 2/3" SHALL BE ALLOWED.
2. CHECK DAMS SHALL BE REMOVED IN THEIR ENTIRETY WHEN THE DITCH IS ADEQUATELY STABILIZED. IF DIRECTED BY THE ENGINEER, CHECK DAMS MAY BE SPREAD OUT ON THE DITCH BOTTOM PROVIDING THAT THE DITCH BOTTOM ELEVATION IS NOT INCREASED BY MORE THAN 150MM.

NOTES:

1. GROUT RIP–RAP WITH A 6" THICK CEMENT SLURRY FOR SLOPES STEEPER THAN 20%, 5 ON 1.

2. PROVIDE ANIMAL GUARDS ON ALL STORM SEWER 15" DIA. OR GREATER, INCIDENTAL TO FES PIPE.

3. STORM DRAIN OUTLETS THAT DO NOT EMPTY INTO THE DETENTION BASIN SHALL HAVE INSTALLED A TEMPORARY SEDIMENT TRAP AT THE TERMINATION OF THE STORM SEWER (5'x10'x3' TYP.). UPON COMPLETION OF THE STABILIZATION WORK, THE SUMP AREA SHALL BE FILLED AND RIP–RAPPED.



13 RIP RAP CROSS SECTION
NOT TO SCALE

DRIVE!
(810) 227-9533
CIVIL ENGINEERS
LAND SURVEYORS
2183 PLESS DRIVE
BRIGHTON, MICHIGAN 48114

DESIGN: SS
DRAFT: L.F.
CHECK: WMP

REVISION #	DATE	REVISION-DESCRIPTION

REVISION #	DATE	REVISION-DESCRIPTION

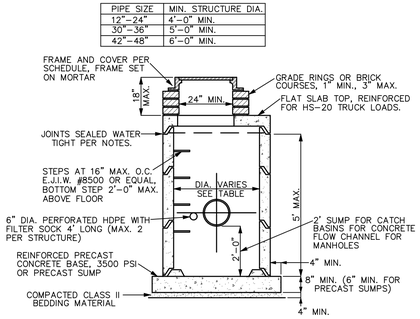
3447 Mayberry Lane
Marion Township, Mi

SOIL EROSION & SEDIMENTATION CONTROL NOTES & DETAILS

CLIENT:
JOE MAZUR
3447 MAYBERRY ROAD
HOWELL, MICHIGAN 48843
734-637-1816

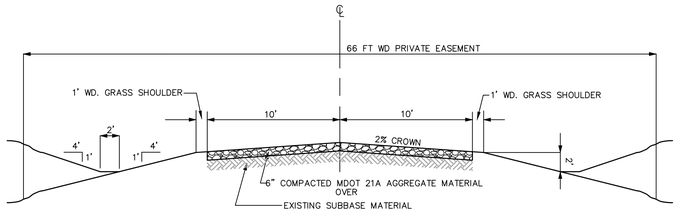
SCALE: N/A
PROJECT No.: 9254943
DWG NAME: 4943 SE
ISSUED: MAY 21, 2026

SE2



LOW PROFILE STORM STRUCTURE

NOT TO SCALE



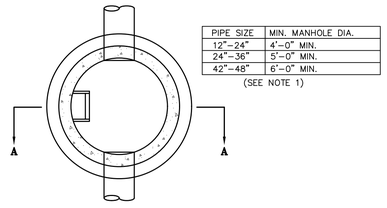
TYPICAL PRIVATE DRIVE CROSS SECTION

NOT TO SCALE

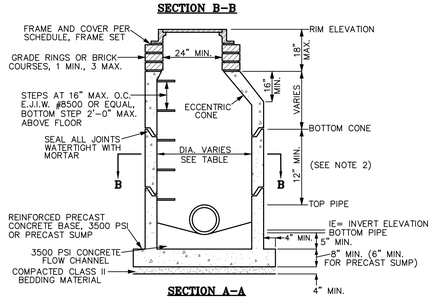
AGGREGATE CROSS SECTION NOTES:

1. Unsuitable soils found within the 1 on 1 influence zone of the roadway, such as muck, peat, topsoil, marl, silt or other unstable materials shall be excavated and replaced up to the proposed subgrade elevation with MDOT Class III granular material compacted to 95% maximum unit weight, modified proctor.

2. Contractor shall proof roll prepared subgrade as directed by Engineer. Unacceptable areas of subgrade shall be undercut and replaced as directed by Engineer. See Subgrade Undercut & Replacement Cross Section detail for additional requirements.



SECTION B–B

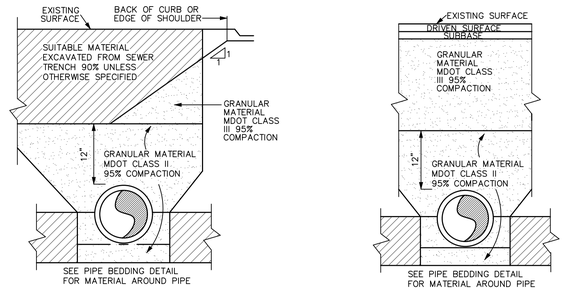


SECTION A–A

STANDARD MANHOLE

NOT TO SCALE

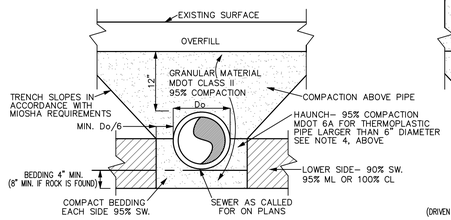
NOTES:
1. FURNISH LARGER STRUCTURE DIAMETER AS NEEDED TO MAINTAIN 6" MIN CLEAR BETWEEN PIPE OPENINGS.
2. FURNISH LOW PROFILE STRUCTURE ONLY WHEN NECESSARY TO MAINTAIN PROPER CLEARANCE ABOVE PIPES.



TRENCH A – PIPE UNDER OR WITHIN INFLUENCE OF DRIVEN SURFACE

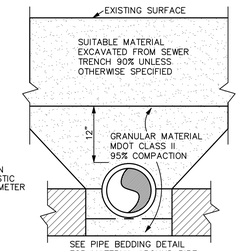
NOT TO SCALE

NOTES:
1. COMPACTION PRESENTED AS STANDARD PROCTOR VALUES.
2. SOIL TYPES — AASHTO DESIG.
   GRAVEL SANDY (SW) — A1, A3
   SANDY SILTY (ML) — A2, A4
   SILTY CLAY (CL) — A5, A6, A7
3. SOIL IN HAUNCH AND LOWER SIDE ZONES OUTSIDE OF Do/6 FROM SPRING LINE SHALL BE COMPACTED TO AT LEAST THE SAME COMPACTION AS THE SOIL IN THE OVERFILL ZONE.
4. MATERIALS AROUND THERMO. PLASTIC PIPE WITH DIAMETER 6 INCHES SHALL PASS 0.5 INCH SIEVE. MATERIALS AROUND OTHER PIPES SHALL PASS 1.5 INCH SIEVE.



PIPE BEDDING DETAIL

NOT TO SCALE

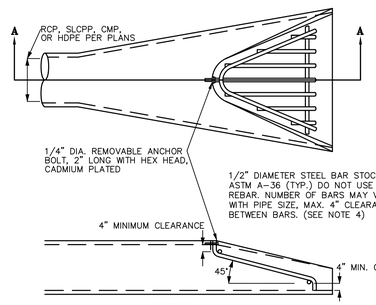


TRENCH B – PIPE NOT UNDER DRIVEN SURFACES

NOT TO SCALE

TRENCH DETAILS

NOT TO SCALE



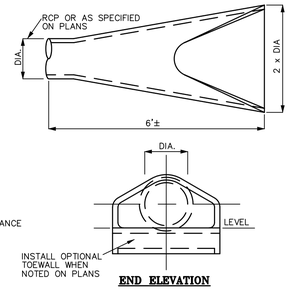
SECTION A–A

NOT TO SCALE

ANIMAL GUARD

NOT TO SCALE

NOTES:
1. ANIMAL GUARD REQUIRED ON ALL FLARED END SECTIONS OF 15" DIAMETER PIPE OR GREATER.
2. CONTRACTOR MAY SUBSTITUTE ALTERNATE GRATING LAYOUT AS APPROVED BY OWNER/ENGINEER/AGENCY PRIOR TO INSTALLATION.
3. DETAIL SHOWN FOR RCP FLARED END SECTION. PROVIDE SIMILIAR ANIMAL GUARD FOR FLARED END SECTIONS ON CMP, HDPE, AND SLCPP.
4. WELD ALL CONNECTIONS FULL STRENGTH PER AMERICAN WELDING SOCIETY STANDARDS.



FLARED END SECTION

NOT TO SCALE

NOTES:
1. RCP FLARED END SECTION SHOWN, PROVIDE SIMILAR FLARED END SECTION FOR CMP, SLCPP OR HDPE PIPE.
2. PROVIDE RIP–RAP PER RIP–RAP DETAILS FOR ALL OUTLET FLARED END SECTIONS.
3. INSTALL FLARED END SECTION WTIH INVERT ELEVATION ELEVATION LEVEL AS VIEWED FROM END.

STORM SEWER NOTES:

1. The storm sewer and stormwater management specifications of the Local Municipality are a part of this work. Refer to the General Notes on the project plans for additional information and requirements.

2. Storm sewer work shall include clearing of vegetation and tree stumps, stripping and stockpiling of topsoil for reuse, excavation of pipe trench, placement of pipe bedding, placement of pipe and structures including castings, connection to existing structures, tuck pointing of structures, backfill of pipe trench, compaction of backfill, finish grading to provide positive drainage to structures, adjustment of castings to match finish grade, topsoil placement, seed & mulch, site cleanup and restoration, and other storm sewer related work as shown on the project plans and specifications.

3. Existing and proposed grades shown in profile view, when provided on the project plans, may be in relation to the centerline of road or item other than the centerline of pipe. The pipe lengths and grades shown in profile view on the project plans may not be to scale.

4. RCP when shown on the project plans shall be reinforced concrete pipe and shall conform to the specifications for reinforced concrete pipe per ASTM C76. RCP pipe joints shall be bell-and-spigot with rubber gaskets conforming to ASTM C433. Non-gasketed joints shall only be utilized when authorized by the Owner, Engineer AND Municipality. Non-gasketed joints of pipe having a diameter of 30 inches or greater shall be tuck-pointed on the inside with cement mortar after the backfill process is complete. Install reinforced concrete end sections incidental to work. Saw cut pipes to length as needed. When pipe class is not shown on the project plans, provide the following:

Pipe cover to proposed grade:	
0 to 4 feet	Class V
4.1 to 10 feet	Class III*
10.1 to 18 feet	Class IV
18.1 feet and greater	Class V

* Use Class IV under paved surfaces

5. CMP when shown on the project plans shall be corrugated metal pipe and shall conform to the specifications for corrugated metal pipe per AASHTO Designation M36. CMP shall be 16-guage steel minimum for 24 inch diameter or smaller and 14-guage steel minimum for 30 inch diameter or greater. Install galvanized steel end sections and connection bands, incidental to work. Connection bands for CMP pipe joints located under paved surfaces shall be gasketed couplers. Saw cut pipes to length as needed.

6. HDPE - Type S when shown on the project plans shall be high density polyethylene pipe with a smooth interior and shall conform to the specifications for high density polyethylene pipe per AASHTO Designation M252 Type S for pipes of 3" to 10" diameter and per AASHTO Designation M294 Type S for pipes of 12" to 60" diameter. HDPE - Type S pipe joints shall be bell-and-spigot type conforming to ASTM D3212 with rubber gaskets conforming to ASTM F477. Tamp backfill at spring line of HDPE - Type S pipe. Install high density polyethylene end sections incidental to work. Saw cut pipes to length as needed.

7. HDPE - Type C when shown on the project plans shall be high density polyethylene pipe with a corrugated interior and shall conform to the specifications for high density polyethylene pipe per AASHTO Designation M252 for pipes of 3" to 10" diameter and per AASHTO Designation M294 for pipes of 12" to 60" diameter. HDPE - Type C pipe joints shall be bell-and-spigot type conforming to ASTM D3212 with rubber gaskets conforming to ASTM F477. Tamp backfill at spring line of HDPE - Type C pipe. Install high density polyethylene end sections incidental to work. Saw cut pipes to length as needed.

8. CPVC when shown on the project plans shall be corrugated polyvinyl chloride pipe and shall conform to the specifications for corrugated polyvinyl chloride pipe per ASTM F794 and F949. CPVC pipe joints shall be bell-and-spigot type conforming to ASTM D3212 with rubber gaskets conforming to ASTM F477. Tamp backfill at spring line of CPVC pipe. Install high density polyethylene end sections incidental to work. Saw cut pipes to length as needed.

9. PVC when shown on the project plans shall be polyvinyl chloride pipe and shall conform to the specifications for polyvinyl chloride pipe per ASTM D2751, maximum SDR of 26. PVC pipe joints shall be bell-and-spigot type conforming to ASTM D3212 with rubber gaskets conforming to ASTM F477 or solvent welded type conforming to ASTM D2564. Tamp backfill at spring line of PVC pipe. Saw cut pipes to length as needed.

10. Concrete storm structures shall be pre-cast and shall conform to the specification of pre-cast concrete structures per ASTM C478. Joints of concrete storm structure sections shall be bell-and-spigot with rubber gaskets conforming to ASTM C433. Brick, concrete block or cast in place storm structures may be substituted for pre-cast storm structures ONLY when authorized by the Owner, Engineer AND Municipality; refer to MDOT standard plan R-1, latest revision. **All pipe openings in pre-cast structures shall be factory installed and shall include a rubber boot resilient pipe to manhole connector conforming to ASTM C1478-07. All clamps, bands and hardware shall be stainless steel or other non-corrosive material. Provide the appropriate adapter(s) as necessary for corrugated pipe.** Pipe to storm structure connections shall be performed in accordance with the rubber boot connector manufacturer's recommendations. All temporary openings and seams in storm structures shall be tuck-pointed watertight with cement mortar. Refer to MDOT standard plan R-2, latest revision, for alternate on-line storm structure details when pipe exceeds 42 inch diameter.

11. Tap existing structures as acceptable to the Engineer and Municipality, incidental to work. All temporary openings in storm structures shall be tuck-pointed watertight with cement mortar.

12. Backfill all storm sewer in accordance with the Pipe Trench details provided on the project plans. Provide pipe bedding that meets or exceeds both the specifications of the Pipe Trench details on the project plans and the recommendation of the pipe manufacturer, incidental to work.

13. When edge drains and/or under drains are shown on the project plans, connection to storm structures is incidental to work. During storm sewer construction, install first 10 linear feet of edge drain and/or under drain from the storm structures in each specified direction and install temporary cap at end. Complete installation of edge drain following preparation of the subgrade when under paved surface or following finish grade when not under paved surface.

14. Install removable plugs in storm sewer stubs as acceptable to Engineer and Municipality, incidental to work. Mark the end of all storm sewer stubs with a 2" x 4" wooden stake extending a minimum of 12" above finish grade, incidental to work.

15. Storm structure castings shall be coated with water based asphaltic paint by the manufacturer. Seams and temporary openings between storm structures and castings shall be tuck-pointed water tight with cement mortar. Coordinate correct curb box / hood / "T" back as needed to match curb profile. See casting schedule on project plans for additional requirements.

16. Provide 3.5' minimum cover from the top of pipe of all roof drain pipes to the proposed finish grade when site conditions allow. When pipe cover is less than 3.5', install 2" thick by 24" wide Styrofoam insulation centered over the top of pipe at 12" above top of pipe or as required by the Local Municipality.

DESINE INC
(810) 227-9533
CIVIL ENGINEERS
LAND SURVEYORS
2183 PLESS DRIVE
BRIGHTON, MICHIGAN 48114

DESIGN: WMP
DRAFT: LF
CHECK: WMP

REVISION #	DATE	REVISION-DESCRIPTION
	05–21–26	REVISED PER LCDC REVIEW COMMENTS

REVISION #	DATE	REVISION-DESCRIPTION

3447 Mayberry Lane
Marion Township, Mi.

SITE IMPROVEMENT NOTES & DETAILS

CLIENT:
JOE MAZUR
3447 MAYBERRY ROAD
HOWELL, MICHIGAN 48843
734-637-1816

SCALE: N/A
PROJECT No.: 9254943
DWG NAME: 4943 DT
ISSUED: MAY 21, 2026

DT