AGENDA

CHARTER TOWNSHIP OF MERIDIAN

ENVIRONMENTAL COMMISSION – REGULAR MEETING

May 7, 2025 7:00 PM

1. CALL MEETING TO ORDER

2. ROLL CALL

3. PRESENTATION
   A. Food Rescue US-Lansing Communities

4. CITIZENS ADDRESS AGENDA ITEMS AND NON-AGENDA ITEMS

5. COMMUNICATIONS

6. APPROVAL OF AGENDA

7. APPROVAL OF THE MINUTES – APRIL 2, 2025 REGULAR MEETING

8. NEW BUSINESS
   A. Wetland Use Permit # 25-01

9. UNFINSHED BUSINESS
   A. 2024 Climate Sustainability Funds

10. REPORTS AND ANNOUNCEMENTS
    A. Staff (Update on Climate Sustainability Fund expenditures)
    B. Liaisons:
       - Planning Commission
       - Land Preservation Advisory Board
       - Brownfield Redevelopment Authority
       - Parks Commission
    C. Teams:
       - Energy Team
       - Green Team
       - Food & Composting Team
       - Green Burial Team
    D. Haslett/Okemos High School

11. COMMENTS FROM THE PUBLIC

12. OTHER MATTERS AND COMMISSIONER COMMENTS

13. ADJOURNMENT

CHARTER TOWNSHIP OF MERIDIAN
REGULAR MEETING ENVIRONMENTAL COMMISSION
5151 Marsh Road, Okemos MI 48864-1198
517.853.4000, Township Hall Room
WEDNESDAY, APRIL 2nd, 2025, 7:00PM

PRESENT:	Commissioners Harrison Batten, Laura Belisle, Tom Frazier, Yu Man Lee, John Sarver, Richard Miksicek, Cynthia Peterson, and Chair Bill McConnell
ABSENT:	Nickolas Lentz, Trustee
STAFF:	Dan Opsommer, Deputy Township Manager Jack Hughes, Project Engineer

1. CALL MEETING TO ORDER

   Chair McConnell called the April 2nd, 2025, Township Environmental Commission meeting to order at 7:00 pm.

2. ROLL CALL

   Deputy Manager Opsommer called the roll of the Commission.

3. PRESENTATION

   Dr. Joy Wang, director of Michigan's *My Solar for All* program, presented an overview of the program, which is funded by a $156 million award from the U.S. EPA's Solar for All program (part of the Greenhouse Gas Reduction Fund). The goal is to provide affordable, resilient, and clean solar energy to low-income families, aiming to reduce their electricity bills by an average of 20% (estimated $400-$450 monthly or $11,000-$17,000 over 25 years).

   The program will allocate 75% of funds to direct project implementation, focusing on residential rooftop and residential-serving community solar projects, including upgrades such as roof or electrical repairs and associated storage. The remaining 25% will support community and technical assistance, education, outreach, workforce training, and program management.

   Key definitions include residential rooftop solar (serving single-family, manufactured, and multifamily homes) and residential-serving community solar (facilities up to 5 MW AC, with at least 50% of benefits going to residential customers in the same utility territory).

   Due to strong interest expressed in an online form, Michigan will offer pilot funding in late May: $1 million for residential rooftop solar, $6.5 million for community solar, $1 million for enabling upgrades, and $375,000 for associated storage. Eligible applicants include governmental entities, tribes, nonprofits, utilities, schools, and property owners.

   To facilitate partnerships, virtual and in-person matchmaking sessions will be held. The program is currently in the design and input phase, seeking feedback to create a flexible program that meets federal and state needs. Despite some federal funding uncertainty, the grant agreement with the EPA is a binding contract.

Current activities include hiring support teams and conducting a solar storage study. Dr. Wang encouraged ongoing engagement through virtual listening sessions, an interest form, a listserv, and surveys, urging communities to develop projects and apply for funding. The program anticipates creating 700 jobs and significant environmental benefits, including a reduction of 272,000 metric tons of CO2 emissions over 25 years.

Refer to Environmental Commission website for presentation slides.

4. CITIZENS ADDRESS AGENDA ITEMS AND NON-AGENDA ITEMS

No public comment.

5. COMMUNICATIONS

MS4 (Municipal Separate Storm Sewer System) Report from Meridian Township.
Chair McConnell introduced the program for those unfamiliar.

Commissioner Peterson inquired as to how the Township participates in this water quality monitoring program.

Deputy Manager Opsommer outlined various components including public education requirements and sites designated for routine sampling, deferring to the Township Engineer for further questions.

Chair McConnell clarified that the testing results are not publicly available however if the 'Total Maximum Daily Loading' of *Escherichia coli* into the Red Cedar River is higher than the acceptable amount, remediation actions must take place.

Deputy Manager Opsommer offered to invite the Township Engineer to the next meeting for a more detailed discussion on the program.

Chair McConnell shared some information from MSU stating most of the *E. coli* loading takes place in rural, upstream communities as opposed to urban areas.

Deputy Manager Opsommer explained that the Red Cedar River itself is not being directly tested, instead the runoff water from parking lots, roads and other nonporous surfaces entering the river is being sampled. A potential presentation for the Commission from a member of EGLE would be beneficial in covering an overview and technical details of the program.

Project Engineer Hughes provided some additional information on the Township's sampling interval and how that is determined.

6. APPROVAL OF AGENDA

Chair McConnell proposed to approve the agenda.

Without objection, the agenda was approved unanimously.

7. APPROVAL OF MINUTES

March 5 2025, Regular Meeting Minutes were approved as Amended with a few minor notes and corrections provided by Chair McConnell and Commissioner Frazier.

Without objection, the minutes for the March 5 meeting, as amended, were approved unanimously.

8. NEW BUSINESS

A. 2025 Green Grant Award Recommendation

Chair McConnell thanked the staff and subcommittee for their quick processing of recommendations.

Deputy Manager Opsommer introduced the six received applications available for review inside this meeting's packet along with a recommendation from the Green Grant subcommittee (GGSC).

The first application discussed was the Cornell Woods Homeowners Association's request for funding to plant native species on a section of their property. Before accepting this application, the GGSC has asked if a portion of this land could be utilized for public education, including signage. The GGSC also recommended the applicant reduce the footprint from 0.25 acres to allow inclusion of a stormwater detention area. Since an answer was not received in time for this meeting, the GGSC would like to address this application at the next meeting. The GGSC is currently recommending the minimum award requested for this project.

The other grant application currently pending additional information is for MidMichigan Land Conservancy. The GGSC would like them to specify how many trees they intend to plant, as well as clear up a few other ambiguities with their application. Deputy Manager Opsommer is comparing this application to a similar one received in 2024 to ensure there is no overlap and that the cost per planted tree is acceptable. The GGSC would like to review this application at the May meeting of the Environmental Commission.

For the four applications not pending further information, the total amount sums to $13,557, averaging $2,259.50 per application.

The first to be discussed is from a Girl Scout Troop seeking funding to improve a courtyard/outdoor classroom at Haslett Middle School.

Commissioner Batten advocated for the teacher steering this project, having had classes and worked with her before. He provided some context for how the application came to be and why he is in favor of supporting it. He also shared there were surveys taken years ago which were routinely in favor of further utilizing the courtyard.

Commissioner Peterson shared another experience seeing the courtyard used by students and agrees there is a real demand for this courtyard to be improved.

The next application to be discussed was from the Montessori Radmoor School on Mt Hope for a solar powered pond pump. This grant application also includes native plant plantings, continuing a trend of recent grant awards.

Chair McConnell shared the improvements he was aware of that have already taken place. Commissioner Miksicek added that the grant would address the removal of invasive species along with planting native ones. It would also bolster educational gardens designated for

Bats and Bees with additional plantings.

Commissioner Peterson asked if the trails and gardens were publicly accessible despite the 'No Trespassing' signs. Deputy Manager Opsommer replied it was technically private property although he does not believe there would be issues with residents traversing the trails. Chair McConnell agreed.

The next applicant was the Pine Creek II Haslett Condo Association, a homeowners association (HOA). It is for the removal of invasive species on some of the open space parcels that the HOA owns, located adjacent to wetlands in an area west of downtown Haslett. Deputy Manager Opsommer pointed out this location on a digital map of the Township.

Chair McConnell noted this applicant had received a green grant last year for some invasive species removals. He purported from the provided illustration that it was not a formal wetland delineation.

Deputy Manager Opsommer doubted the applicant would have had the resources or the wherewithal to have the wetland delineated on their own and may require support.

Chair McConnell expressed concern they wouldn't be subject to regulations regarding work in a wetland buffer.

Deputy Manager Opsommer offered to talk to them about the buffer.

Chair McConnell believes if it were a designated wetland they wouldn't have any trouble getting a variance to do this work in the buffer, as planting native species is highly desired in a buffer space.

Deputy Manager Opsommer offered the Township's help for this applicant in walking them though the delineation process.

Chair McConnell noted a lot of these projects are quite similar and expressed interest in seeing connections between the funded projects during implementation so they have the opportunity to learn from each other. He posed the idea of even sharing resources in terms of contractors or materials, with a reservation about not necessarily trying to shove all the business one way. He remarked HOAs routinely hire help in pulling weeds and might be interested in a better solution.

Commissioner Lee agreed a larger strategy towards tackling invasive species would be more beneficial than isolated annual removals.

Commissioner Belisle wondered how they are currently even tracking progress considering how rapidly invasive species can spread.

Chair McConnell stated if it were a formal wetland mitigation, the Township wetland consultant would be looking at the property to make sure that the mitigation was successful. He posed a future consideration when funding this kind of remediation that the Township set aside funds for the consultant to evaluate the proposed plans.

Deputy Manager Opsommer replied it's a tough call because doing so may require as many

funds as the project being awarded.

Chair McConnell agreed not to impose any more regulation than needed if the applicant is not planning to disturb something not thought of as a wetland, instead to provide them with some expertise about what has been done in the past in terms of remediation.

Commissioner Lee suggested applicants work with Emma Campbell of the Parks Dept.

Commissioner Miksicek pointed out that their application included the statement "in-service sessions were held prior to last year's project with Vern Stevens and Emma Campbell", noting they've already consulted.

Deputy Manager Opsommer concluded that at a minimum, the Township will connect them again with Emma and have her give them a soft delineation line in the field of where not to go past.

Deputy Manager Opsommer then introduced the last application, the committee's favorite, which was from the YMCA. The applicant is looking at creating an outdoor education space. One notable aspect of the YMCA's application was the inclusion of information on contacting the press to do public relations and bring some attention to their project. For background, they have two existing outdoor nature camps and they're intending to create a nature education component at the Parkwood YMCA on Haslett Road.

This would have space to accommodate 10 to 20 children at a time, ages 3-11, for their preschool youth and summer day camps. Currently these programs are serving a little over 1,000 youths. For the proposed educational outdoor classroom the applicant plans to make use of existing trees and green space with nature as a backdrop. They would also be constructing a canopy for shade, benches and an outdoor chalkboard which they have a drawing of in their application. The educational programming would highlight environmental sustainability with specific units that would focus on outdoor education such as native plantings.

The applicant is also proposing having Channel 10 come out and do a segment spotlighting their project. They plan to make social media posts including on their Facebook page and other social media platforms along with a promotion within their YMCA membership and program participants for the camps and the preschool program. It is noted this is likely the most robust community outreach plan that the Commission has seen amongst any of the applicants. Deputy Manager Opsommer asked the commission if there were any questions.

Commissioner Lee asked if the grant would be for the materials- and then if the applicants are building it themselves- or if that is what the match part is for.

Commissioner Miksicek recalled from the application that they are sourcing some materials from other YMCA facilities. He was not sure where they're located, but they identified logs and things that they'll be using as part of the construction.

Deputy Manager Opsommer responded the applicant is looking at $2,607 for lumber and other building materials but is also estimating about 1200 in-kind volunteer hours would be required. He noted that might even be under selling if they're working with ~$2600 in material since usually it would be more of a one to one ratio in labor to material.

Chair McConnell checked if there were further questions before entertaining a motion to approve the recommendation from the committee.

Commissioner Miksicek moved to approve awards of $5,000 for the Cornell Woods Homeowners Association $1,000 for the Girl Scout Heart of Michigan troop 337. $3,950 for the Montessori Radmoor School project, $1,000 for Pine Creek 2 of Hazlett Condo Association, and $2,607 for the William C. F. Metropolitan Lansing Parkway to William C. A. Branch.

Commissioner Sarver seconded.

Commissioner Belisle asked a question looking to clarify if the Commission would approve their proposals now and then amend later if there was discussion with an applicant about items on their application.

Chair McConnell replied it is his understanding that this motion covers the recommended amounts. In some cases the amount may move back up to the requested rather than a minimum, depending on the answers to those questions. He stated that would be a new motion at a new meeting and that this motion does not cover the Mid-Michigan Land conservancy, which would also be considered at a future meeting should the committee propose it.

Deputy Manager Opsommer noted there is $20,000 budgeted so the Commission can almost approve the full amount requested for each applicant, being $757 shy. He plans to bring attention back in May to the Mid-Michigan land Conservancy and the Cornell Woods Homeowners Association applications.

Commissioner Frazier posed another question regarding the Cornell Woods application. Considering one of the ideas is to try to incorporate the Cornell Elementary School with educational signage for kids, he wonders if there would be any liability concerns for the Homeowners Association.

Deputy Manager Opsommer notes it's a relatively flat piece of land.

Chair McConnell agreed it's safe to get from the school site to that property using the sidewalk.

Deputy Manager Opsommer stated the HOA wouldn't bear any responsibility if someone were injured on a public pathway. He did take Commissioner Frazier's point and had that same thought on why the HOA may decline. He predicted a mixed bag of responses from the HOA, such as the HOA approving the excavation and constructing what would more typically be referred to as a bioswale but not grant the school groups access to the site. He considered the Township still doing the education signage so that even if classrooms don't have access to it, the general public would. The decision will be left to the committee on whether to increase the allocation or maintain it at the existing $5,000.

Chair McConnell asked for any further questions or discussions on the motion. Hearing none, he called the motion. The motion carried unanimously. He thanked staff and the committee again for their work on this motion. He appreciated the rapid turnaround with a great set of projects coming in around the budget. He enthused this is how the system is supposed to work.

Without objection, the motion to approve the recommendation, was approved unanimously.

B. 2024 Climate Sustainability Funds

Project Engineer Hughes provided an overview on the 2024 Climate Sustainability Funds.

Of the initial $30,000 allocation, $5,000 has been spent, leaving $25,000 available. The Environmental Commission was invited to propose potential uses for the remaining funds, though a recommendation from the Township was put forward to allocate the full amount toward a bioswale creation project at Marshall Park.

The Township has a plan to resurface the road in the area and identified drainage issues, particularly in the southeast corner of the park, which experience significant stormwater accumulation. Without additional funding, standard drainage ditches will be installed, but with financial support, bioswales could be implemented instead.

Bioswales are enhanced ditches designed to improve drainage and to provide environmental benefits such as integrating native plant species, creating biodiverse habitats and reducing long-term maintenance. The proposed project aims to improve both the aesthetic and functional aspects of the park while addressing resident concerns regarding flooding.

If the Commission supports the initiative, an engineering firm, Spalding DeDecker, would be invited to present design concepts, allowing for input on native species selection and broader environmental considerations. The Parks Department expressed initial interest, and further collaboration will be planned to refine details. Due diligence on the Township's part would include exploring alternative mitigation strategies, though the bioswale project remains the preferred solution.

Commissioner Lee had a couple questions. When looking through the notes from last year she found other projects that also are approved for this funding such as the recycling center signage and a composting one.

Commissioner Frazier had the same two issues. There was approval from the Environmental Commission and from the Township for funding both of those projects, one for signage at the Meridian recycling site and the other for additional food composting at the Meridian market, at a $2,500 cost and a very minimal $635. He proposed still squeezing those in before considering this Bioswale one as well. However, one other issue that is that the Green Burial Group is looking for funding and is working on a presentation to the Board before moving forward.

Commissioner Lee stated the wetland education signage was completed at a lower cost than originally approved. However, additional funding may still be needed for buffer signage and other remaining elements. Further coordination with Emma is required to determine whether these outstanding items will proceed and to confirm associated costs. While the full originally allocated amount may not be necessary, some remaining funds could be applied toward completing aspects of the initial proposal.

Deputy Manager Opsommer stated a review is needed to determine if any outstanding signage remains to be purchased. Documentation including recycling center signage was recently shared

with the Township. He recommended that the contract with the recycling center's vendor be reviewed to clarify cost responsibilities. Since signage may fall under operational expenses, it was advised that the township confirm whether this cost should be covered by the private company managing the center rather than being subsidized. Further discussions may be required to establish vendor obligations.

Chair McConnell summarized that additional fact-finding is needed to review prior discussions, proposals, grants, and expenditures before proceeding with formal approval of the recommendation. A decision is not expected at this time, as further clarification and historical review are advised. The importance of maintaining institutional knowledge and ensuring past considerations was emphasized.

When asked for clarification, Commissioner Lee confirmed that five signs were acquired at a lower cost than originally budgeted. Additional funding for buffer signage is still being reviewed, with further clarification needed on whether to proceed with remaining components. The initial budget for the buffer signage was approximately $250. Other proposed elements, including letters and a social media campaign, are still under consideration, requiring further coordination to determine the next steps.

Deputy Manager Opsommer stated the Township can handle that and the compostable bags for food waste drop off.

Commissioner Frazier clarified there is an opportunity for residents to drop off their food compost at the farmers market. The idea behind the proposal was to expand and promote the effort to reach more residents and try to get more participation in the program.

Chair McConnell elaborated on the *My Green Michigan* initiative, funded by an environmental grant, providing curbside organics composting through Hammond Farms. Waste is collected in carts similar to trash or recycling bins and transported to a composting facility in Dimondale, using windrow composting methods. Collection points are available at both the market and the recycling center.

Residents have shown preference for compostable bags to bring food waste to the market rather than using personal compost buckets. During the program's initial pilot phase, these bags were subsidized, leading to strong participation. However, when subsidies were removed and residents were expected to purchase their own bags, engagement declined. A request was made to reinstate the subsidy to encourage growth in participation and expand the program's reach.

Deputy Manager Opsommer asked about the equipment they were seeking.

Commissioner Fraizer answered there's two big carts for compost at the farmers market for deposit and then the proposal would also pay for the cost of pickup on a more regular basis with additional resident participation. He recalled Commissioner Lee felt it was important to really promote this effort to the residents of the Township so it might involve the communications department in trying to help with that effort. He cleared up her confusion on the costs for composting which had been corrected recently.

Deputy Manager Opsommer optioned to work with Commissioner Fraizer on future composting initiatives to be discussed at a later meeting. He stated that previous discussions with the Chair indicated interest in pursuing a larger-scale project that could serve as a community demonstration. The bioswale concept project was introduced as a potential candidate for this,

with funding balances available to support the other approved projects. Any additional funds required for the bioswale effort could be supplemented through the Township's road millage program. Collaboration with the Park Commission was proposed, including the possibility of joint meetings to enhance coordination.

Chair McConnell agreed this was a real issue of public concern, however asked if the proposal explicitly references which parts of the climate sustainability plan it would address. Considering the Commission is asking grant recipients to do so as we move forward he'd like to know specifically which objective this would meet.

Commissioner Lee stated there is a lot to consider and to think about as we continue to track our progress on the Climate Sustainability plan.

Chair McConnell asked for any other discussion of the agenda item 8B. Seeing none, and with no Unfinished Business, he prepared to move on to Reports and Announcements.

9. UNFINISHED BUSINESS

None

10. REPORTS AND ANNOUNCMENTS

Deputy Manager Opsommer first posed a question about moving the meeting time to earlier in the evening instead of 7PM, as most other Boards and Commissions meet at 6:00 or 6:30PM.

Chair McConnell stated they did push the Planning Commission meetings up to 6:30PM which became an occasional challenge for people who work full-time in Lansing but so far it hasn't caused too big a problem. He would personally be in favor of an earlier starting time, asking for thoughts of the other Commissioners on starting times.

Commissioner Sarver would support an earlier time.

Commissioner Peterson would need some time to make arrangements for that adjustment.

Chair McConnell decided to give it some thought and circle back at a future meeting.

A. Staff

Deputy Manager Opsommer gave a preview of the upcoming meeting agenda. A wetland use permit will be required for the Schultz Vet Clinic boardwalk project, which is currently in the design phase. The boardwalk will be constructed along Bennett Road on the north side, adjacent to the clinic's frontage, and the permit request will be presented at the May meeting. Additionally, a presentation on food rescue will be delivered by Lafferty. These items constitute the planned agenda for the May meeting.

B. Liaisons

Chair McConnell relayed a summary of the March 24 planning commission meeting, including public hearings on a second group childcare west of Okemos Road, and continued work on the schedule requirements for parking spaces. In unfinished business, Okemos Local Investments is

another cannabis retail facility. Moving from there he introduced the Land Preservation Advisory Board.

Commissioner Lee stated the Land Preservation Advisory Board met on March 12th and discussed several items of interest. Five wetland education signs, funded through climate sustainability resources, were scheduled for installation in mid-March at Hartrick Park, Hillbrook, North Meridian, Lake Park, and Nancy Moore Boardwalk.

The board began work on the acquisition prioritization and scoring process. Additionally, a partnership with Michigan Waterways for the Red Sea to River cleanup effort was highlighted, focusing primarily on removing trash from the river, including discarded items such as scooters. Future efforts may involve addressing invasive species, with collaboration from campus organizations.

The township is planning efforts to control the spread of lesser Celandine, an invasive species that negatively impacts native wildflowers. Management strategies will be implemented at Ted Black Woods and Ottawa Hills Park. A prescribed burn was conducted at the Davis Foster Preserve as part of ongoing land management efforts.

The Meridian Conservation Corps has 384 members now, and they contributed 659 hours of stewardship to the Township.

Commissioner Sarver provided an update from the Brownfield Redevelopment Authority. There were previous discussions about a new MISTA Affordable Housing Tax Increment Financing (TIF) program that initially the Township Board didn't seem very interested in. The authority didn't seem that interested either, however it's back on the table for discussion.

Commissioner Miksicek provided an update from the Park Commission meeting. The March 11th Park Commission meeting included discussions on commission liaisons, with Mike McDonald designated as the liaison to the Environmental Commission.

The primary agenda item was planning for a township cricket field. Due to the size and layout requirements of a standard cricket field, approximately three to four acres with a central paved pitch, the project presents unique challenges compared to existing park facilities. There was strong interest in moving forward, and potential locations for temporary practice fields were identified, including Nancy Moore baseball fields, Newton Road Park, and Hillbrook Park. Underutilized baseball fields were noted as possible spaces for adaptation. A practice field-sharing schedule for summer 2025 is being developed.

For a permanent cricket field, the southern section of North Meridian Park is under consideration, though parking limitations and access issues would need to be addressed, potentially requiring a new entrance off North Meridian Road. Additionally, the Park Commission is updating its memorandum of understanding with the Friends of Historic Meridian, extending the lease for another five years. The next Park Commission meeting is scheduled for Tuesday, April 8th, at 4:30 PM, where an update on the senior center is expected, likely from the senior center task force.

C. Teams

Commissioner Sarver stated that the Energy Team has it’s solarize meeting next week, April 9th, 6:30-8:00PM at Henry's. When he checked the other day, they had 24~25 pre-registered.

He's sure they'll pick up some more people between now and next week.

Commissioner Frazier stated that the Green team is focused on the Spring recycling event on April 26th, from 9AM-1PM. It is similar to previous spring events where metals, bikes, paint, document shredding and egg cartons are collected. Those that are Consumers Energy customers can also participate in a rebate program for small appliances there as well. They were still looking for volunteers.

The Food & Composting Team has a presentation at a forthcoming meeting about the food rescue operation.

Commissioner Frazier stated that the Green Burial Team was working to finalize a presentation for the Township Board.

D. Haslett/Okemos High School

Commissioner Batten relayed that March was an active month for sustainability efforts at the high school. Following the Environmental Commission meeting, a presentation was given at the Michigan Science Teachers Association conference, focusing on student advocacy for environmental and sustainability issues in education. The discussion emphasized integrating climate and sustainability topics across multiple subjects beyond science.

Shortly after, students were invited to join the newly formed Michigan Youth Climate Council, connected to the Michigan Climate Action Network (MiCAN). The council has held two meetings and is in the process of establishing a mission statement and refining objectives. The group consists of students from various regions across Michigan and aims to share and promote environmental initiatives throughout the state.

A district sustainability team meeting also took place, with efforts focused on aligning members around a common mission statement and exploring examples of successful sustainability plans in other schools. Research and outreach will be conducted to gather insights on effective strategies. The superintendent has expressed strong support for growing these efforts, though additional education in sustainability topics is needed among leadership and staff. Despite this, there is enthusiasm among educators willing to expand their knowledge and involvement.

Commissioner Peterson expressed regret on missing a Green Grant Application due to the timing coinciding with Spring Break.

Commissioner Batten stated they hope to find another source to fund their rechargeable batteries.

E. Other

No reports.

11. CITIZENS ADDRESS AGENDA ITEMS AND NON-AGENDA ITEMS

No public comment.

12. OTHER MATTERS AND COMMISSIONER COMMENTS

Trustee Lentz couldn't attend the meeting as he was attending the Michigan Township Association Annual Conference, learning skills for his job as a Township Trustee. Chair McConnell presented a couple of highlights he would have wanted to share:

Trustee Lentz encourages everyone on the Board and on the Commission who care about the environmental impact of transportation to fill out the survey for the Tri-County Regional Planning Commission for their update to the Metropolitan Transportation Plan. It is a great way to let voices be heard regarding transportation in our region, which we know has a relationship to our environmental impact as humans. The survey can be found at movingmidmichigan.org.

Chair McConnell added that the Tri-County Regional Planning Agency serves as the municipal planning organization and connection to federal funding for transportation projects. Their metropolitan transportation plan guides funding proposals, and inclusion in the plan is necessary for project consideration.

On March 26, time was spent with Tri-County Regional Planning Department staff, including an hour with environmental personnel, to understand the region's environmental efforts. Meridian Township was recognized as a model community in mid-Michigan for environmental protection and sustainability initiatives.

Meridian Township is the only Tri-County community to participate in the Green Stormwater Manual, a year-long process evaluating ordinances related to stormwater management. Ordinance updates, such as allowing native plants and reducing parking lot sizes, are reviewed to support responsible stormwater programs. The next steps in implementing these changes will be managed by the Planning Commission.

Commissioner Batten reiterated a note about the Climate Council. He is using it as a way to share some of the things he is doing in Haslett and so are the other kids on the board. If there's anything that any of the Commissioners would like to share with a wider audience he is able to do that. There are members from EGLE and all sorts of various organizations across Michigan able to be connected with.

Chair McConnell rose one final issue for the evening. A discussion was held regarding the absence of a vice chair, requiring a review of past notes to determine how this oversight occurred. In the event of an absence at future meetings, it was suggested that Commissioner Lee serve as Chair Pro Tem to ensure continuity.

It was noted that a formal officer election process may have been unintentionally skipped, prompting a recommendation to include it on the next meeting agenda. Encouragement was given for members to express interest in leadership roles, with an emphasis on the benefits of turnover in commission leadership. The topic will be revisited at a future meeting.

13. ADJOURNMENT

The meeting adjourned at 8:44pm.

To: **Environmental Commission**

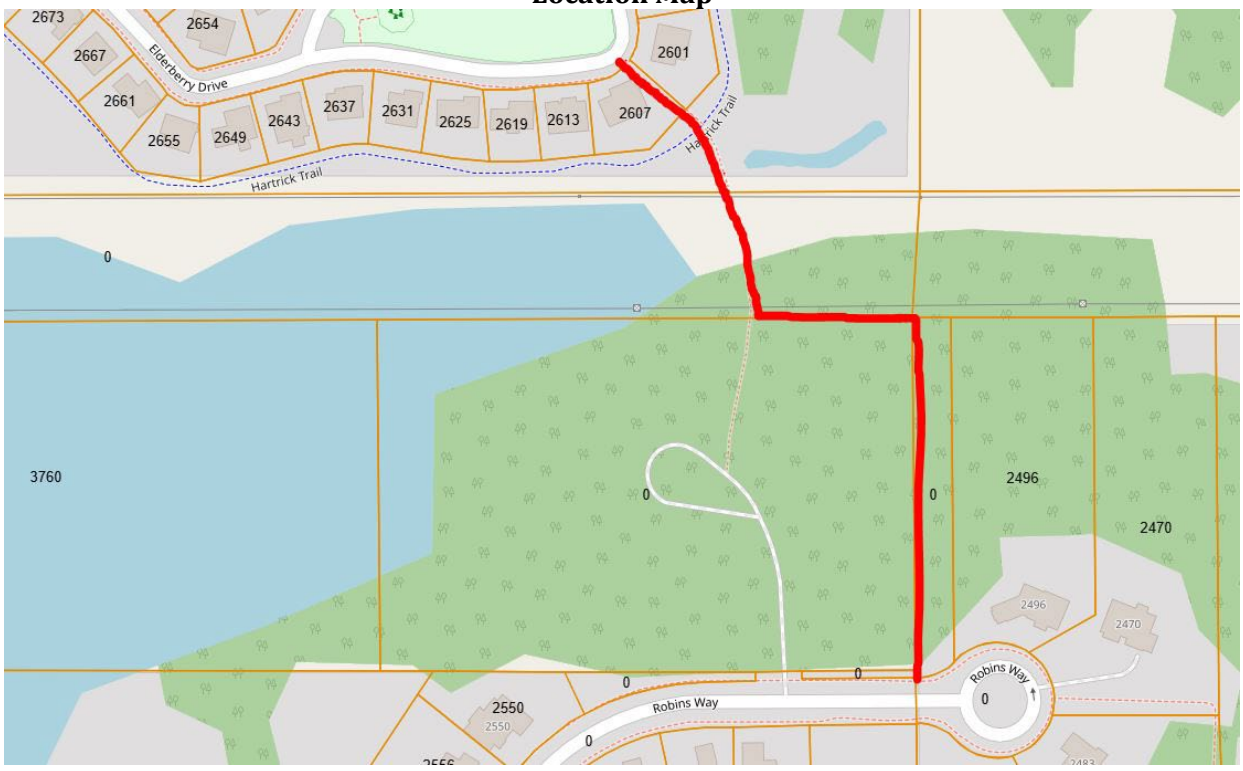
From: **Timothy R. Schmitt, *AICP*, Community Planning and Development Director**

Date: **May 1, 2025**

Re: **<u>Wetland Use Permit #25-01 – Meridian Township Public Works</u> – Fill regulated wetlands to construct pedestrian/bicycle trail between Sanctuary and Okemos Preserve subdivisions**

The Meridian Township Department of Public Works has requested a wetland use permit to fill approximately 0.03 acres and an additional 129 cubic yards of wetland area, north of Robin's Way and South of Elderberry Drive to facilitate the development of a pedestrian/bicycle pathway. The eight foot wide paved pathway is proposed to run from the Robin's Way cul de sac in the Sanctuary subdivision, north along the Sanctuary 2 subdivision under construction, across a Consumer's Energy corridor, and eventually connecting to the Hartrick Trail, to the south of Elderberry Drive.

Location Map



The project entails installation of the eight-foot-wide pathway, two culverts to maintain proper water flow, and a one-foot crushed concrete shoulder area for the pathway. This will connect the neighboring subdivisions across the Consumer's Energy corridor and is being done in conjunction with the development of the Sanctuary 2 subdivision. A wetland use permit is required for proposed wetland impacts for the pathway, which are 0.03 acres of fill, and the 129 cubic yards of fill for the

grade off the pathway, to ensure ADA accessibility. The activity is being reviewed administratively by the Community Planning and Development Director, under Section 22-155. As part of that process, the Environmental Commission is asked to review the request, prior to any approvals.

The Township's wetland consultant Fishbeck, Thompson, Carr, & Huber, Inc. (FTCH) reviewed the delineation done by the developer's consultant. Both the delineation and analysis are attached. Additionally, the Department of Environment, Great Lakes, and Energy has already reviewed an application for the fill and approved the small impacts. That permit is attached as well. Lastly, the Township Zoning Board of Appeals reviewed a request to cross the drain for the project, which was approved.

The Wetland Protection Ordinance requires wetland mitigation at a minimum ratio of 1.5 to 1 in order to satisfy the Township requirement of no net loss of wetlands. The Township has substantial additional wetlands from the construction of the Phase II MSU to Lake Lansing Trail, which will be partially used to offset the impact of this project. Public Works Staff will be able to address this question with the Environmental Commission.

Staff Analysis

There are eleven general criteria provided in the Wetland Protection Ordinance, Section 22-157(2) of the Code of Ordinances, that must be considered when deciding whether to grant a wetland use permit. These include (paraphrased):

a. The relative extent of public and private need for the proposed activity.
b. Availability of prudent and feasible alternatives.
c. Extent and permanence of beneficial or detrimental effects from the activity.
d. Probable impact of the proposal in relation to the cumulative effect by other activities in the watershed.
e. Probable impact on recognized historic, cultural, scenic, ecological, or recreational values, as well as on public health and safety or fish and wildlife.
f. Economic value of the proposed land change.
g. The size and quality of the wetland being considered.
h. The findings of necessity for the proposed activity by other agencies.
i. Amount of wetland remaining in the general area and proximity to a waterway.
j. Proximity to any water body.
k. Extent to which upland soil erosion adjacent to the wetland is controlled.

The Township's environmental consultant has reviewed the wetland use permit application and found no major issues. Staff is recommending issuance of Wetland Use Permit #25-01 subject to the following conditions:

1. Specific identification of the wetland mitigation from Phase II of the MSU to Lake Lansing project that will be used to provide a minimum mitigation ratio of 1.5 to 1 for the 0.03 acres and an additional 129 cubic yards of fill in the wetlands as proposed.

Environmental Commission Options

The Environmental Commission has the option to recommend approval, approval with conditions, or denial of Wetland Use Permit #25-01. A motion to recommend approval in accordance with the conditions proposed by Staff is provided.

- **Motion to recommend approval of Wetland Use Permit #25-01 to fill 0.03 acres and an additional 129 cubic yards of regulated wetland to construct a pedestrian/bicycle pathway between Robin's Way and Elderberry Drive, as part of the Sanctuary 2 subdivision's development.**

Attachments

1. Application materials for WUP 25-01

fishbeck
Engineers | Architects | Scientists | Constructors

5913 Executive Drive, Suite 100
Lansing, Michigan 48911

517.882.0383 | fishbeck.com

April 4, 2025
Project No. 2500631

Tim Schmitt
Charter Township of Meridian
5151 Marsh Road
Okemos, MI 48864 1198

Wetland Boundary Verification – WDV 25-01
Parcel No. 33-02-02-33-301-014
Meridian Township, Ingham County, Michigan

On March 31, 2025, Fishbeck staff conducted a field investigation and verified wetland boundaries north of the Robins Way cul-de-sac (the Site). The Site is approximately 0.4 mile east of Hulett Road and 0.4 mile north of Jolly Road. The Site encompasses Parcel Number 33-02-02-33-301-014 located in Section 33 of Meridian Township (Town 4 North, Range 1 West). The Township wetland map identifies Wetland 33-2 as crossing this parcel along a drainageway. The Ingham County Southwest-Meridian Township Drain Map identifies this drainageway as the Turtle Crossing Drain (Drain). The Township wetland map indicates Wetland 33-2 predominantly exists north and east of the Site and consists of a 52-acre wetland complex associated with the Smith Drain.

Site wetlands were delineated by Marx Wetlands (Marx), as described in its June 3, 2024, report titled *Wetland Evaluation Report: Robins Way – 50' Easement, Section 32, Meridian Township, Ingham County, Michigan* (Report). Marx flagged the wetland boundary with pink survey ribbon labeled A.1 through A.12.

Site Investigation

Fishbeck staff inspected the entire parcel. Parcel boundaries were demarcated by wooden stakes. The parcel predominantly consisted of upland forest containing red oak, sugar maple, American beech, and black cherry trees. One wetland was observed on the Site, along the Drain. The Drain had defined banks and bed, and flowing water. Therefore, it meets the State of Michigan definition of a stream.

Fishbeck staff inspected the flagged wetland boundary along the perimeter of the Drain. Site conditions were consistent as described in the Report. Flag A.1 was observed detached from vegetation and lying in water in the Drain. Flags A.2 through A.12 were tied onto woody vegetation and were properly placed at the wetland boundary. Fishbeck does not request any adjustment to the flagged wetland boundary.

Regulatory Review

According to Michigan's Natural Resources and Environmental Protection Act (NREPA), Act 451, Section 30301(d), wetlands "contiguous to the Great Lakes or Lake St. Clair, an inland lake or pond, or a river or stream" or "more than 5 acres in size" are regulated by the State of Michigan. In addition, the Township regulates wetlands greater than two acres in size which are not contiguous to a water body and wetlands between 0.25 acre and two acres in size that are determined to be essential to the preservation of the natural resources of the Township.

The flagged wetland is part of Township Wetland 33-2, which is greater than five acres in size (as indicated in the Township wetland map) and within 500 feet of the Turtle Crossing and Smith Drains. This wetland is regulated by both the State of Michigan and the Township.

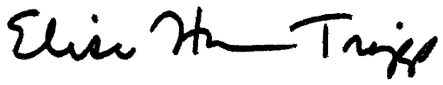
A Wetland Use Permit (WUP) is required from the Township for any of the following activities within wetlands regulated by the Township:

- Placing fill or permitting the placement of fill in regulated wetland.
- Dredging, removing, or permitting the removal of soil or minerals from regulated wetland.
- Constructing, operating, or maintaining any use or development in regulated wetland.
- Draining surface water from regulated wetland.

In addition, the Township requires that all structures and grading activities during site development shall be set back 40 feet from the delineated wetland boundary and a natural vegetation strip shall be maintained within 20 feet of the wetland boundary.

If you have any questions regarding this letter or any other wetland-related issues, please contact me at 616.464.3738 or ehtripp@fishbeck.com.

Sincerely,



Elise Hansen Tripp, PWS
Senior Wetland Scientist

By email

CHARTER TOWNSHIP OF MERIDIAN
DEPARTMENT OF COMMUNITY PLANNING AND DEVELOPMENT
5151 MARSH ROAD, OKEMOS, MI 48864
PHONE: (517) 853-4560 FAX: (517) 853-4095

APPLICATION FOR WETLAND VERIFICATION OR DELINEATION

A. Type of Request: Verification: x Delineation: ____

B. Applicant Meridian Township
Address 5151 Marsh Road, Okemos MI 48864

Telephone: Work 517-853-4468 Home _____
Email hart@meridian.mi.us

If the applicant is not the owner of the subject property, the applicant must provide written permission from the property owner indicating the property owner is aware of and in agreement with the request.

C. Property owner (if different than applicant) _____
Address _____

Telephone: Work _____ Home _____
Email _____

If there are multiple owners, list names and addresses of each and indicate ownership interest. Attach additional sheet if necessary.

D. Applicant's Representative, Environmental Consultant, or Engineer responsible for request:
Name / Contact Person Caycee Hart
Address 5151 Marsh Road, Okemos MI 48864

Telephone: Work 517-853-4468 Home _____
Email hart@meridian.mi.us

E. Site address/location _____
Parcel ID Number 33-02-02-33-301-014 Site acreage 0.53 acres

Caycee Hart 3/14/2025
Signature of Applicant Date

Caycee Hart
Type/Print Name

By the signature(s) attached hereto, I (we) certify that the information provided within this application and accompanying documentation is, to the best of my (our) knowledge, true and accurate. The receipt of the application shall constitute permission from the owner for the Township or its consultant to conduct an on-site investigation.

Administrative Fee: _____ Escrow Amount*: _____

Form of Escrow: _____ Received by/Date: _____

* The actual cost of the service covered by escrow may decrease or increase based on the Township Consultant's time spent on wetland issues. Any money remaining in the escrow account shall be returned to the applicant upon final approval by the Township. The Township will invoice the applicant and the applicant shall be responsible to pay any additional costs above the amount originally established for the escrow account.

MARX
WETLANDS
LLC

June 3, 2024

Mr. Jim Giguere
Giguere Homes
6200 Pine Hollow Drive, Suite 100
East Lansing, MI 48823
Ph: (517) 339-3600
Cell: (517) 204-0818
Fax: (517) 339-7201
jim@giguerehomes.com

RE: Wetland Evaluation Report: Robins Way- 50' Easement
Section 32, Meridian Township, Ingham County, Michigan

Dear Jim:

Pursuant to your request, Marx Wetlands LLC (MW) performed a wetland determination for the proposed project, which includes an approximately 50-foot-wide easement located directly north of the Robins Way cul-de-sac in Meridian Township, Ingham County, Michigan ("Site"). The Site is located east of Hulett Road, approximately 0.40 miles north of Jolly Road in Section 33 of Meridian Township (T4N, R1W), Ingham County, Michigan.

The purpose of this wetland determination is to provide a report of any wetland areas within the Site and provide an opinion on the possible jurisdiction of the federal government, Michigan Department of Energy, Great Lakes, and Environment (EGLE), and local agencies over wetland areas identified on-site, wherever applicable.

The wetland determination was performed in accordance with the Michigan Department of Environmental Quality Wetland Identification Manual (2001), the Northcentral-Northeast and Midwest Interim Regional Supplements to the 1987 U.S. Army Corps of Engineers Wetland Delineation Manual. The delineation follows a technical approach for identifying wetlands and depends on three (3) environmental parameters. These parameters are 1) the presence of hydrophytic vegetation, 2) hydric soils, and 3) wetland hydrology. The parameters are present in wetland systems under normal conditions. The wetland determination and on-site delineation consisted of a review of online background resource documents and one (1) site visit conducted on May 20, 2024. A discussion of the findings is presented below.

Online Research

- The National Wetlands Inventory (NWI) map indicates one (1) forested/emergent wetland (PFO1C/PEM1F) borders the Site's eastern boundary (**Enclosure 1-***Background Research*).

9861 High Meadow
Ypsilanti, Michigan 48198
Mobile: 734-478-8277
e-mail
bg.marxwetlands@gmail.com

- Meridian Township's Natural Features Map indicates that the Site contains a similar potential wetland area to the NWI mapper.

- According to the U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) *Web Soil Survey,* the eastern portion of the Site is mapped with Sebewa loam, 0 to 2 percent slopes (Sb, 95 percent hydric rating), which roughly corresponds to the delineated wetland area (**Enclosure 1-***Background Research*).

- In addition, the *Ingham County's Southwest -Meridian Township Drain Map* (**Enclosure 1-***Background Research*) indicates that the Site contains one county drain, Turtle Crossing Drain.

- MW's preliminary review of FEMA FIRM Panel No. 26065C0154D, effective 8/16/2011, showed that the Site is mapped within the minimal flood hazards (e.g., Zone X) (**Enclosure 1** *Background Research*).

Summary of Findings

The Site contains primarily undeveloped land, consisting of upland, scrub-forest, and wetland. An existing overhead electric transmission line runs along the site's northern boundary, and Robins Way, a drive associated with the existing subdivision, lines the Site's southern boundary. Most of the Site contains upland forest. The Site's southern portion contains a linear wetland (Wetland A).

Upland Habitats:

The upland areas consisted of the following herbaceous species: bluegrasses (*Poa compressa* and *P. pratensis*), penn sedge (*Carex pennsylvanica*), strawberry (*Fragaria virginiana*), wild carrot (*Daucus carota*), wild geranium (*Geranium maculatum*), and may-apple (*Podophyllum peltatum*). Upland trees observed include oaks (*Quercus alba, Q. rubra,* and *Q. velutina.),* basswood (*Tilia americana*), sugar maple (*Acer saccharum*), hickories (*Carya cordiformis* and *C. ovata*), black cherry (*Prunus serotina*), scattered with American elm (*Ulmus americana*), and ash (*Fraxinus spp.*) trees. Upland shrub species observed common buckthorn (Rhamnus cathartic), American hop-hornbeam (*Ostrya virginiana*), black raspberry (*Rubus occidentialis*), Eurasian honeysuckles (*Lonicera spp.),* multi-flora rose (*Rosa multiflora*), prickly gooseberry (*Ribes cynosbati*), and autumn-olive (*Elaeagnus umbellata*). Prevalent vines observed include riverbank grape (*Vitis riparia*), poison-ivy (*Toxicodendron radicans*), and Virginia-creeper (*Parthenocissus quinquefolia*). Refer to the *On-site Conditions* (**Enclosure 2**).

Wetland Delineation Methods & Results

MW flagged wetland boundaries with pink high-visibility ribbon tape, and approximate flag locations were collected using a handheld GNSS receiver (Trimble R1) with submeter accuracy). MW identified one (1) wetland (Wetland A, flags A.1 through A.12) within the Site, continuing northeast off-site into a wetland complex. This wetland receives stormwater inputs via an existing stormwater outfall north of the drive (Robins Way), corresponding with the Turtle Crossing Drain (potential intermittent stream). Refer to the *Wetland Delineation Map (generated in AutoCAD)* for the approximate wetland boundary. (**Enclosure 3).** See **Table 1**, *Wetland and Stream Table* (next page), which includes the on-site features' name, type, and anticipated regulatory status.

Table 1. Wetland & Stream Table

Feature Name	Type*	Regulated by the State of Michigan? †	Meridian Township Regulated?
Wetland A	PFO	Yes, Likely Regulated	Likely Regulated; >0.25 acres in size
Stream 1/Turtle Crossing Drain	INT	Yes, Likely Regulated	Potential intermittent stream channel

*PEM-Palustrine Freshwater Emergent; PSS- Palustrine Scrub-shrub; PFO-Palustrine Forested; INT- intermittent flow regime. †EGLE determines the jurisdiction of Michigan's wetlands, floodplains, streams, lakes, etc.

Vegetation

1. Wetland A

Wetland A is a primarily forested wetland, continuing beyond site boundaries. Dominant trees include green ash (*Fraxinus pennsylvanica*, FACW–facultative wetland), silver maple (*Acer saccharinum*, FACW), and American elm (FACW).

Photograph 1. Wetland A, facing northeast.

Photograph 2. Depleted matrix (F3) observed in Wetland A.

Dominant shrubs observed include American elm (FACW) and green ash (FACW) saplings. Dominant herbaceous vegetation observed includes fowl manna grass (*Glyceria striata*, OBL–obligate wetland), late goldenrod (*Solidago gigantea*, FACW), bittercress (*Cardamine pensylvanica*, FACW), bristly

buttercup (*Ranunculus hispidus*, FAC-facultative), and false nettle (*Boehmeria cylindrica*, OBL). Common woody vines include poison ivy (FAC) and riverbank grape (FAC).

Hydrology

Common wetland hydrology indicators observed include surface water (A1), high-water table (A2), saturation (A3), sparsely vegetated concave surface (B8), water-stained leaves (B9), drainage patterns (B10), crayfish burrows (C8), geomorphic position (D2), and FAC Neutral Test (D5). The wetland collects water from precipitation, groundwater, stormwater input, and runoff from adjacent developed areas and roadways. The wetland appears to vary in hydrology from seasonally saturated/inundated conditions throughout the active growing season. Refer to Page 9 of this letter report for *Key Definitions*.

Soils

Hydric soil indicators were observed within the soil sample plot in the on-site wetland (WSP.1A). A soil pit was dug within Wetland A to 15 inches below the ground surface, revealing a grayish brown (10YR 4/1) silty clay loam with strong brown (7.5YR 4/6) redox features, indicative for the hydric soil indicator, F3- depleted matrix. An adjacent upland soil sample pit (USP.1A) was also taken and confirmed upland conditions. Please refer to the *USACE Wetland Determination Data Forms* (**Enclosure 3**).

Intermittent stream

An intermittent stream was identified within the wetland's interior. This stream enters the Site via a culvert directly north of Robins Way and drains into an off-site wetland system (northeast). The stream has an intermittent flow regime; no flow was observed during the site visit; however, MW identified drainage patterns, unvegetated channel bed, standing water, and stream-like banks. This intermittent feature corresponds with the Turtle Crossing Drain (open ditch).

Discussion of Regulations & Findings

Stream, Drain, and Floodplain Laws

The State of Michigan's Part 301, Inland Lakes, and Streams, of the Natural Resources and Environmental Protection Act (NREPA), 1994 PA 451 states that a feature is a regulated stream by the EGLE if it contains a defined bed, bank, and evidence of continued flow or a continued occurrence of water. **One (1) intermittent stream (Stream 1/Turtle Crossing Drain) was identified within the limits of the linear wetland (Wetland A).**

Turtle Crossing Drain is located within the Site. No permanent structures can be built within county drain easements. The drain easement is used for any maintenance work or emergency access to the drain. Select activities can be

permitted within drain easements through the county drain commissioner. **Be sure to contact Ingham County's Drain Commission office to see if site development requires any approvals or permits through Ingham County, if applicable.**

As amended, the State of Michigan's Part 31, Water Resources Protection, NREPA, 1994 PA 451 requires an individual to acquire a permit before any modifications of the 100-year floodplain or floodway of a river, stream, or drain. The statute also regulates activities within the floodplain of any watercourse with an upstream drainage area of two square miles or larger. MW's preliminary review of FEMA FIRM Panel No. 26065C0154D (effective 8/16/2011) showed that the Site is mapped within the minimal flood hazards (e.g., Zone X). **Stream 1 is unlikely to have an upstream drainage area of 2 square miles or larger; however, be sure to contact EGLE and file a floodplain elevation request or pre-application meeting to assist with the project development process and floodplain permitting, if applicable.**

Wetland Laws

The State of Michigan's Part 303, Wetlands Protection, of the NREPA, as amended in 1994, indicates that wetlands are regulated if they are any of the following:

- Connected to one of the Great Lakes or Lake St. Clair.
- Located within 1,000 feet of one of the Great Lakes or Lake St. Clair.
- Connected to an inland lake, pond, river, or stream.
- Located within 500 feet of an inland lake, pond, river, or stream.
- Not connected to one of the Great Lakes or Lake St. Clair, or an inland lake, pond, stream, or river, but are more than 5 acres in size.
- Not connected to one of the Great Lakes or Lake St. Clair, or an inland lake, pond, stream, or river, and less than 5 acres in size, but EGLE has determined that these wetlands are essential to the preservation of the state's natural resources and has notified the property owner.

Based on a memorandum of agreement between the U.S. Environmental Protection Agency (USEPA) and the EGLE, the EGLE administers Section 404 of the Federal Water Pollution Control Act of 1972 (Clean Water Act), Title 33 of the United States Code, Section 1251 for interior waters in Michigan. However, under the authority of the Rivers and Harbors Act of 1899, the USACE exercises jurisdiction over the Great Lakes and their connecting traditionally navigable waterways (navigable waters of the U.S.), as well as tributaries and wetlands adjacent to traditionally navigable waters of the U.S. (WOTUS), pursuant to Section 404 of the CWA.

Marx Wetlands, LLC's professional opinion is that Wetland A is likely regulated by EGLE under Part 303 because it continues off-site, is larger than

5 acres (including off-site wetland acreages) and is contiguous to an intermittent stream (Turtle Crossing Drain/Stream 1).
MW's professional opinion is based on the site investigation and a review of available desktop resources (e.g., aerial photography, topographic maps, county soil data, national wetlands inventory, etc.). A pre-application meeting through the EGLE can assist with the project development process and permitting if project activities anticipate impacts.

Local Wetland Laws (Meridian Township)

Meridian Township (Township) has a wetland protection ordinance. The township's Wetland Protection ordinance (Chapter 22, Article IV) states that wetlands are protected if they are:

- contiguous to any inland lake stream, river, or pond.
- Partially or entirely within 500 feet of the ordinary high-water mark of any inland lake, stream, river, or pond.
- Two or more areas of wetland separated only by barriers, such as dikes, roads, berms, or other similar features, if any of those wetlands are contiguous to an inland lake, stream, river, or pond.
- larger than two acres, even if not contiguous to an inland lake, stream, river, or pond.
- not contiguous to any inland lake, stream, river, or pond, if the state department of environmental quality determines the protection of the wetland is essential to the preservation of the natural resources of the state from pollution, impairment, or destruction.
- wetlands, equal to or greater than one-quarter acre and equal to or less than two acres in size, which are not contiguous to any inland lake, stream, river, or pond and are determined to be essential to the preservation of the natural resources of the Township as provided in township code § 22-156. Code § 22-156 provides that a wetland is essential to the preservation of the township's natural resources if it fulfills any of ten criteria.

Marx Wetlands LLC's professional opinion is that the on-site wetland (Wetland A) is likely regulated by Meridian Township because it is larger than 0.25 acres (including off-site wetland acreage) and is contiguous to an on-site stream. Meridian Township's wetland consultant will make the final decision regarding the regulatory status and shape of the on-site wetland during a wetland verification visit.

It is important to note that a wetland verification application is required following a wetland delineation conducted within Meridian Township, Ingham County, Michigan. The Meridian Township's wetland consultant will make the final decisions during an on-site wetland verification visit. Applications should include the following information:

- A completed application form.
- The required administrative fee and escrow amount addressed to Meridian Charter Township.
- Written permission from the property owner if the owner is not the applicant.
- For verifications only: written confirmation that the wetland flags are located on the site and remain observable.
- For verifications only: three (3) copies of an existing wetland delineation report and accompanying maps and materials prepared by a wetland or environmental consultant.
- Copies of any correspondence from the Michigan Department of Environment, Great Lakes, and Energy (EGLE).
- Copies of any permits issued by the Ingham County Drain Commissioner's office for the subject site.

The Meridian Township Wetland Verification & Escrow form can be found here: http://www.meridian.mi.us/Home/ShowDocument?id=12235.

Please note that the Meridian Township Board has a policy of no net loss of wetlands and impacts to wetlands may require wetland mitigation. A mitigation plan, if required, shall be approved as part of the wetland use permit decision.

A permit or approval is likely required by the Meridian Township for any proposed work within the boundaries of a regulated wetland. Most construction activities in upland (outside wetland boundaries) do not require a wetland permit. **Please note that the EGLE and Township determine the extent of regulated wetlands, lakes, floodplains, and streams in the State of Michigan and Meridian Township, respectively.**

Please be advised that the information provided in this report is a professional opinion. The ultimate decision on wetland boundary locations and jurisdiction rests with the EGLE, Township, and, in some cases, the Federal government. Wetland evaluations performed outside the growing season from late October until late April may not be consistent with the official EGLE wetland assessment program and, therefore, are subject to the increased potential for change than those performed during the growing season. Therefore, boundary adjustments may be based on a regulatory agency's review. An agency's determination can vary, depending on various factors

including, but not limited to, the experience of the agency representative making the determination and the season of the year. In addition, the site's physical characteristics can change with time, depending on the weather, vegetation patterns, drainage, activities on adjacent parcels, or other events. These factors can change the nature and extent of wetlands within the site.

Thank you for the opportunity to provide this wetland determination. If you have any questions, please contact me at your convenience.

Sincerely,

Marx Wetlands LLC

Bryana J. Guevara, Principal Member
Professional Wetland Scientist #2949
ISA Certified Arborist #MI-4240A
Certified Ecologist, Society of Ecological Society

Enclosures:
1) Background Research: Soil Map, National Wetlands Inventory (NWI), Drain Map (Ingham Co.), & FEMA Floodplain Map
2) On-site Conditions Photographs
3) Wetland Delineation Map & USACE Wetland Determination Data forms

Key Definitions:

Hydric soil: A soil that formed under conditions of saturation, flooding, or ponding during the growing season to develop anaerobic conditions (USDA-NRCS).

Hydrophytic vegetation: A predominance of vegetation typically adapted to saturated soil conditions and inundation (USACE Wetland Delineation Manual 1987).

Hydrology: Periodically inundated or have soils saturated to the surface during the growing season (USACE Wetland Delineation Manual 1987).

Hydrologic Zones- Non-tidal areas:

- **Zone I: Permanently inundated**- Duration of 100 percent; >6.6 feet mean water depth.
- **Zone II: Semi-permanently to nearly permanently inundated or saturated**- duration of >75 percent to <100 percent; <6.6 feet mean water depth.
- **Zone III: Regularly inundated or saturated-** duration of >25 - 75 percent
- **Zone IV: Seasonally inundated or saturated**- duration >12.5 - 25 percent
- **Zone V Irregularly inundated or saturated**- duration >5 - 12.5 percent; most areas with this hydrologic condition are not wetlands.
- **Zone VI Intermittently or never inundated or saturated**- duration <5 percent; These areas are not likely wetlands.

Plant indicator Category Indicator Status Categories*

- **Obligate Wetland Plants (OBL)**: Plants that occur almost always (estimated likelihood >99 percent) in wetlands under natural conditions but which may also occur extremely rarely (estimated <1 percent) in non-wetland habitats (e.g., upland).

- **Facultative Wetland Plants (FACW)**: Plants that usually occur (estimated likelihood 67 percent to 99 percent) in wetlands but also occur (~1 percent to 33 percent) in non-wetlands habitat (e.g., upland).

- **Facultative Plants (FAC)**: Plants with a similar likelihood (estimated ~33 percent to 67 percent) of occurring in wetlands and non-wetland habitats.

- **Facultative Upland Plants (FACU)**: Plants that occur sometimes (estimated likelihood 1 percent to <33 percent) in wetlands but occur more often (~33 to 67 percent) of occurring in both wetland and non-wetland habitats.

- **Obligate Upland Plants (UPL)**: Plants that occur rarely (estimated likelihood 1 percent) in wetlands but occur almost always (>99 percent) in non-wetland habitats under natural conditions.

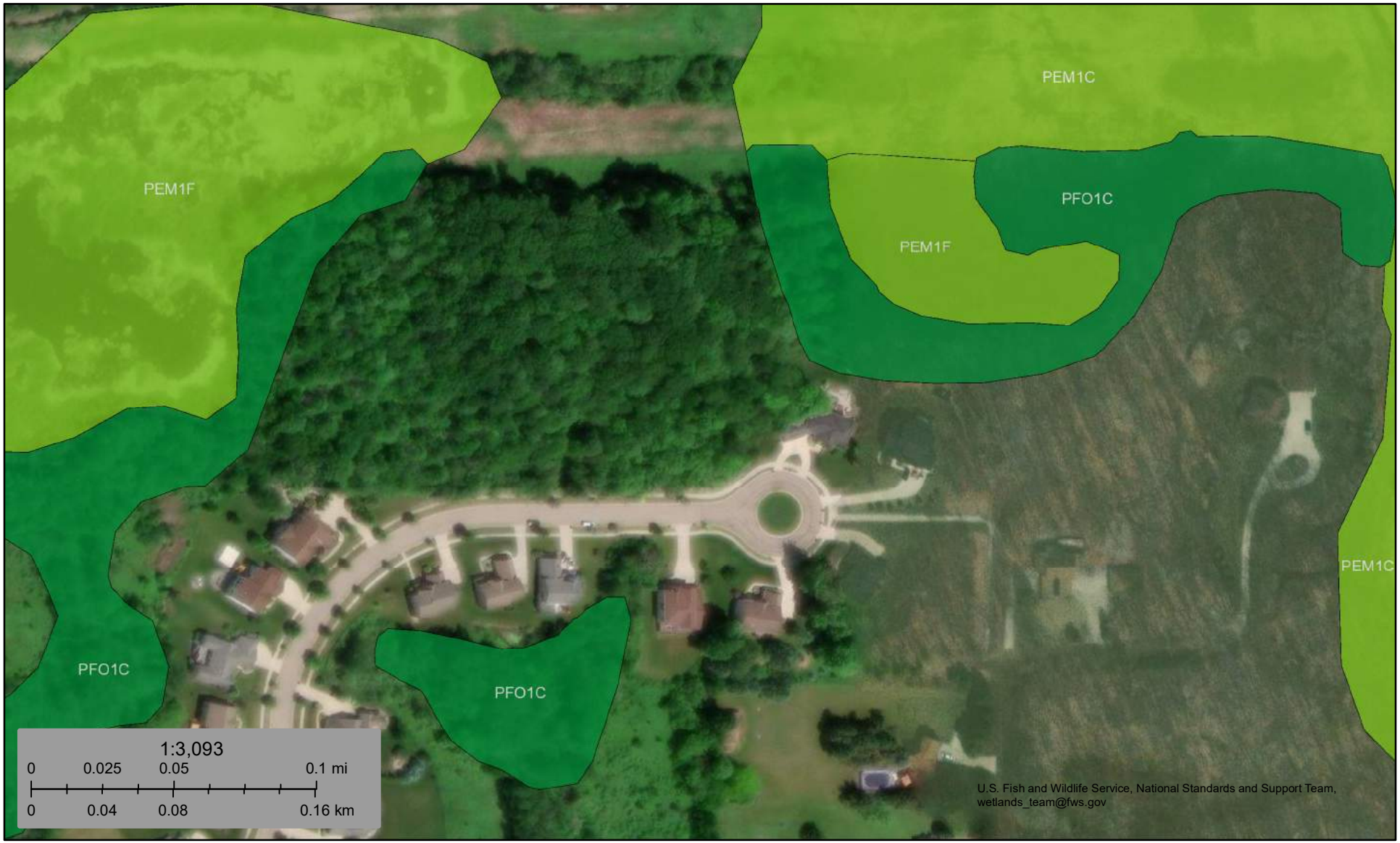
**Definitions were initially defined by USFWS but modified by the National Plant List Panel (USACE Wetland Delineation Manual).*

ENCLOSURE I


N
turtle Creek
Robins Way
Robins Way
Robins Way
Google Earth
1985
Imagery Date: 5/23/2022 42°41'21.91" N 84°26'30.88" W elev 0 ft eye alt 762 ft

U.S. Fish and Wildlife Service
National Wetlands Inventory

Wetlands



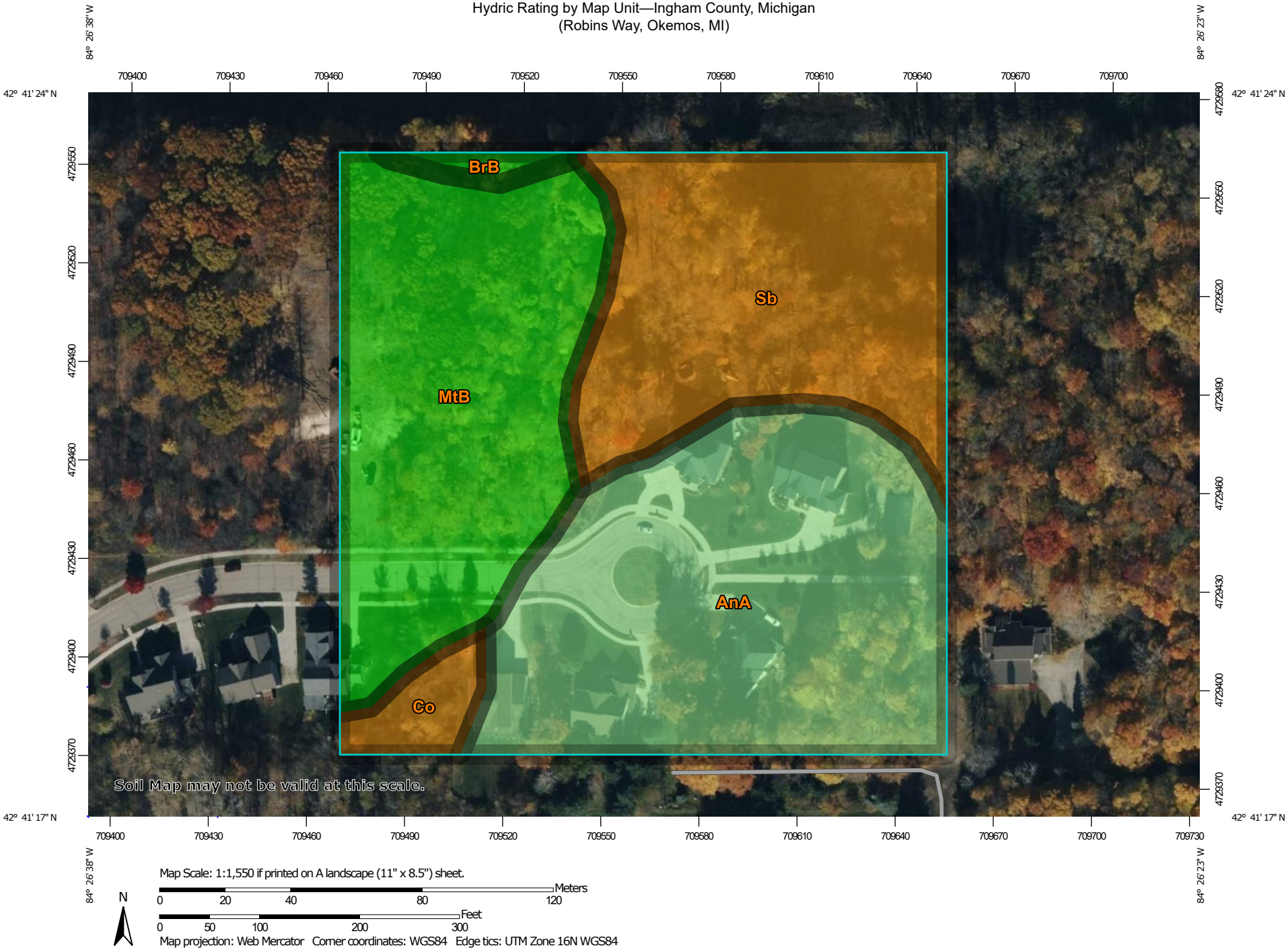
June 3, 2024

Wetlands

- Estuarine and Marine Deepwater
- Estuarine and Marine Wetland
- Freshwater Emergent Wetland
- Freshwater Forested/Shrub Wetland
- Freshwater Pond
- Lake
- Other
- Riverine

This map is for general reference only. The US Fish and Wildlife Service is not responsible for the accuracy or currentness of the base data shown on this map. All wetlands related data should be used in accordance with the layer metadata found on the Wetlands Mapper web site.

Hydric Rating by Map Unit—Ingham County, Michigan
(Robins Way, Okemos, MI)



Map Scale: 1:1,550 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 20 40 80 120

Feet
0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils

Soil Rating Polygons
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Lines
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Soil Rating Points
- Hydric (100%)
- Hydric (66 to 99%)
- Hydric (33 to 65%)
- Hydric (1 to 32%)
- Not Hydric (0%)
- Not rated or not available

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: Ingham County, Michigan
Survey Area Data: Version 21, Aug 25, 2023

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Oct 9, 2022—Oct 28, 2022

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Hydric Rating by Map Unit

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
AnA	Aubbeenaubbee-Capac sandy loams, 0 to 3 percent slopes	8	3.2	37.4%
BrB	Boyer sandy loam, 0 to 6 percent slopes	0	0.1	1.0%
Co	Colwood-Brookston loams	80	0.3	3.1%
MtB	Metea loamy sand, 2 to 6 percent slopes	0	2.6	31.2%
Sb	Sebewa loam, 0 to 2 percent slopes	95	2.3	27.3%
Totals for Area of Interest			**8.4**	**100.0%**

Description

This rating indicates the percentage of map units that meets the criteria for hydric soils. Map units are composed of one or more map unit components or soil types, each of which is rated as hydric soil or not hydric. Map units that are made up dominantly of hydric soils may have small areas of minor nonhydric components in the higher positions on the landform, and map units that are made up dominantly of nonhydric soils may have small areas of minor hydric components in the lower positions on the landform. Each map unit is rated based on its respective components and the percentage of each component within the map unit.

The thematic map is color coded based on the composition of hydric components. The five color classes are separated as 100 percent hydric components, 66 to 99 percent hydric components, 33 to 65 percent hydric components, 1 to 32 percent hydric components, and less than one percent hydric components.

In Web Soil Survey, the Summary by Map Unit table that is displayed below the map pane contains a column named 'Rating'. In this column the percentage of each map unit that is classified as hydric is displayed.

Hydric soils are defined by the National Technical Committee for Hydric Soils (NTCHS) as soils that formed under conditions of saturation, flooding, or ponding long enough during the growing season to develop anaerobic conditions in the upper part (Federal Register, 1994). Under natural conditions, these soils are either saturated or inundated long enough during the growing season to support the growth and reproduction of hydrophytic vegetation.

The NTCHS definition identifies general soil properties that are associated with wetness. In order to determine whether a specific soil is a hydric soil or nonhydric soil, however, more specific information, such as information about the depth and duration of the water table, is needed. Thus, criteria that identify those estimated soil properties unique to hydric soils have been established (Federal Register, 2002). These criteria are used to identify map unit components that normally are associated with wetlands. The criteria used are selected estimated soil properties that are described in "Soil Taxonomy" (Soil Survey Staff, 1999) and "Keys to Soil Taxonomy" (Soil Survey Staff, 2006) and in the "Soil Survey Manual" (Soil Survey Division Staff, 1993).

If soils are wet enough for a long enough period of time to be considered hydric, they should exhibit certain properties that can be easily observed in the field. These visible properties are indicators of hydric soils. The indicators used to make onsite determinations of hydric soils are specified in "Field Indicators of Hydric Soils in the United States" (Hurt and Vasilas, 2006).

References:

Federal Register. July 13, 1994. Changes in hydric soils of the United States.

Federal Register. September 18, 2002. Hydric soils of the United States.

Hurt, G.W., and L.M. Vasilas, editors. Version 6.0, 2006. Field indicators of hydric soils in the United States.

Soil Survey Division Staff. 1993. Soil survey manual. Soil Conservation Service. U.S. Department of Agriculture Handbook 18.

Soil Survey Staff. 1999. Soil taxonomy: A basic system of soil classification for making and interpreting soil surveys. 2nd edition. Natural Resources Conservation Service. U.S. Department of Agriculture Handbook 436.

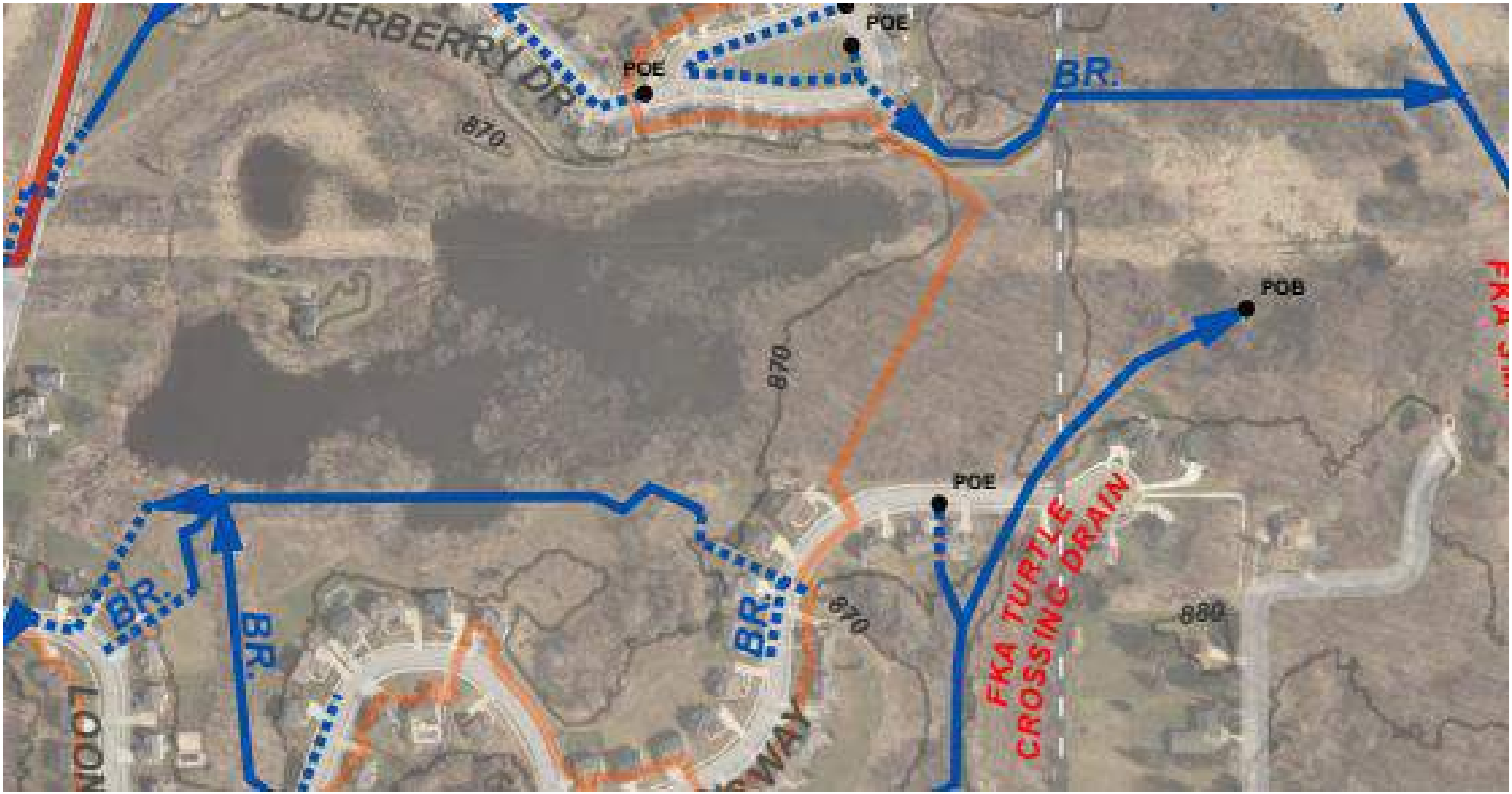
Soil Survey Staff. 2006. Keys to soil taxonomy. 10th edition. U.S. Department of Agriculture, Natural Resources Conservation Service.

Rating Options

Aggregation Method: Percent Present

Component Percent Cutoff: None Specified

Tie-break Rule: Lower


ELDERBERRY DR
POE
POE
BR.
870
POB
870
POE
FKA TURTLE CROSSING DRAIN
BR.
BR.
BR.
870
880

National Flood Hazard Layer FIRMette

84°26'51"W 42°41'34"N

84°26'13"W 42°41'8"N

0 250 500 1,000 1,500 2,000 Feet

1:6,000

Basemap Imagery Source: USGS National Map 2023

Legend

SEE FIS REPORT FOR DETAILED LEGEND AND INDEX MAP FOR FIRM PANEL LAYOUT

SPECIAL FLOOD HAZARD AREAS
- Without Base Flood Elevation (BFE) *Zone A, V, A99*
- With BFE or Depth *Zone AE, AO, AH, VE, AR*
- Regulatory Floodway

OTHER AREAS OF FLOOD HAZARD
- 0.2% Annual Chance Flood Hazard, Areas of 1% annual chance flood with average depth less than one foot or with drainage areas of less than one square mile *Zone X*
- Future Conditions 1% Annual Chance Flood Hazard *Zone X*
- Area with Reduced Flood Risk due to Levee. See Notes. *Zone X*
- Area with Flood Risk due to Levee *Zone D*

OTHER AREAS
- NO SCREEN Area of Minimal Flood Hazard *Zone X*
- Effective LOMRs
- Area of Undetermined Flood Hazard *Zone D*

GENERAL STRUCTURES
- Channel, Culvert, or Storm Sewer
- Levee, Dike, or Floodwall

OTHER FEATURES
- 20.2 Cross Sections with 1% Annual Chance
- 17.5 Water Surface Elevation
- Coastal Transect
- Base Flood Elevation Line (BFE)
- Limit of Study
- Jurisdiction Boundary
- Coastal Transect Baseline
- Profile Baseline
- Hydrographic Feature

MAP PANELS
- Digital Data Available
- No Digital Data Available
- Unmapped

N

The pin displayed on the map is an approximate point selected by the user and does not represent an authoritative property location.

This map complies with FEMA's standards for the use of digital flood maps if it is not void as described below. The basemap shown complies with FEMA's basemap accuracy standards

The flood hazard information is derived directly from the authoritative NFHL web services provided by FEMA. This map was exported on 6/3/2024 at 8:18 AM and does not reflect changes or amendments subsequent to this date and time. The NFHL and effective information may change or become superseded by new data over time.

This map image is void if the one or more of the following map elements do not appear: basemap imagery, flood zone labels, legend, scale bar, map creation date, community identifiers, FIRM panel number, and FIRM effective date. Map images for unmapped and unmodernized areas cannot be used for regulatory purposes.

ENCLOSURE II

ON-SITE CONDITIONS LOG

1) A west-facing view of Robins Way.

2) Upland Forest.

3) Wetland/Intermittent stream. Two (2) newly installed outlet pipes (with riprap) were identified during the site visit on 5/20/2024.

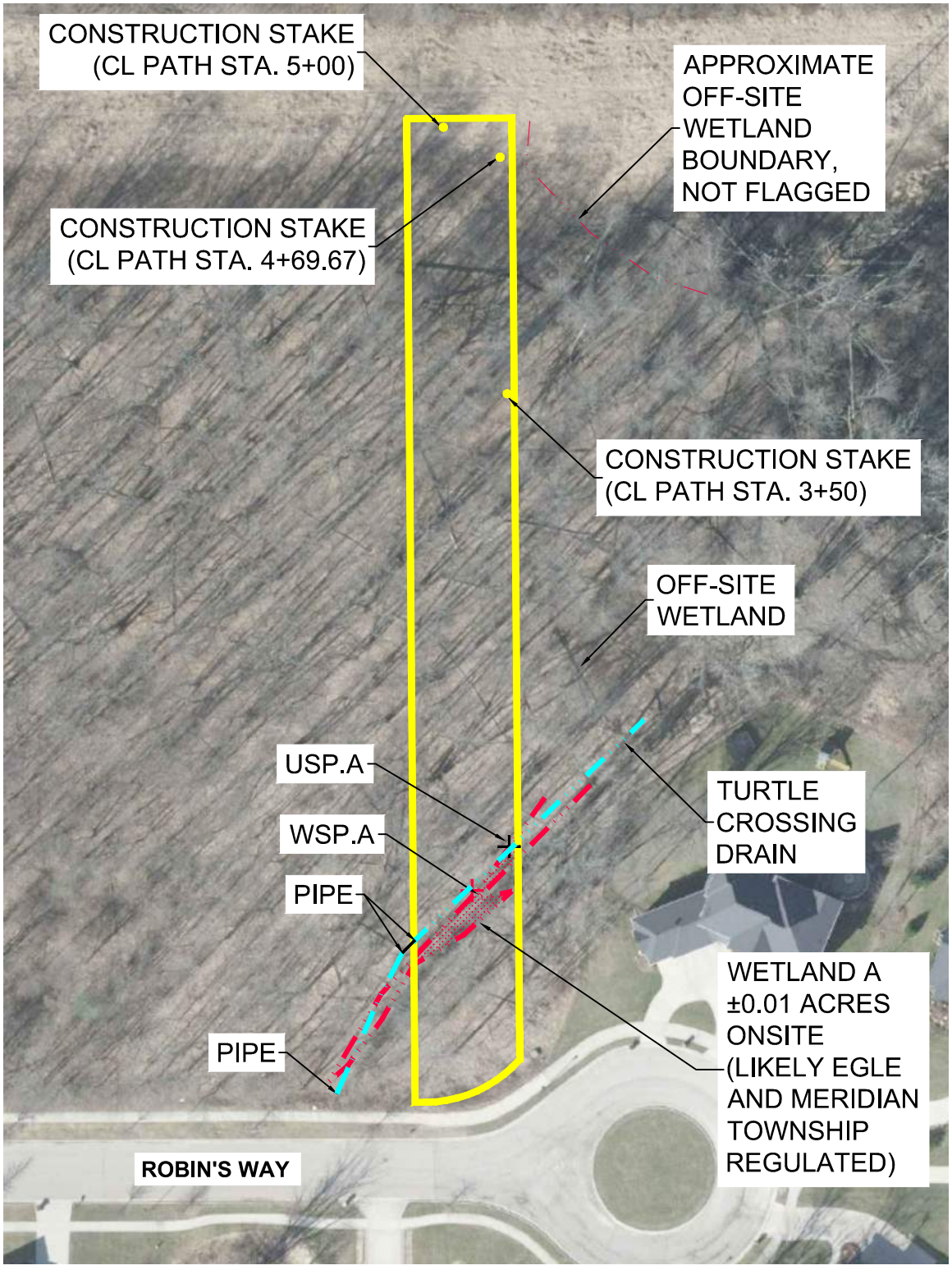
4) Overhead electric utility corridor along the Site's northern edge.

ON-SITE CONDITIONS LOG

5) Wetland Sampling Point in Wetland A (WSP.A).

6) Stream 1/Wetland A.

ENCLOSURE III



LEGEND

- EXISTING WETLAND
- ASSESSMENT BOUNDARY
- EXISTING WATER EDGE
- WETLAND BUFFER LINE
- UPLAND SAMPLE POINT
- WETLAND SAMPLE POINT

NOTE: THIS MAP DEPICTS THE APPROXIMATE WETLAND BOUNDARIES WITHIN THE PROPERTY AS DELINEATED BY MARX WETLANDS LLC ON MAY 20, 2024. PLEASE NOTE THAT MICHIGAN'S DEPARTMENT OF ENVIRONMENT, GREAT LAKES, AND ENERGY (EGLE) MAKES THE FINAL DETERMINATIONS OF JURISDICTION OVER REGULATED WETLANDS, STREAMS, LAKES, AND FLOODPLAINS IN THE STATE OF MICHIGAN. IN SOME CASES, WETLANDS MAY BE SUBJECT TO LOCAL ORDINANCES AND/OR FEDERAL REVIEW. ALSO NOTE: THIS PROPERTY HAS NOT BEEN SURVEYED. THE BOUNDARY LINES SHOWN ARE APPROXIMATE GRAPHICAL REPRESENTATIONS ONLY.

PRELIMINARY

DATE: JUNE 1, 2024	REVISIONS:	CLIENT: MR. JIM GIGUERE	SECTION: 33
SHEET NO. 01		ROBIN'S WAY 50' EASEMENT	TOWN 04 NORTH, RANGE 01 WEST
		WETLAND DELINEATION MAP	MERIDIAN TOWNSHIP
			INGHAM COUNTY, MICHIGAN

MARX WETLANDS LLC
9861 HIGHMEADOW DR
YPSILANTI, MICHIGAN 48198
(734)478-8277

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Robins Way 50' Easement City/County: Meridian Township / Ingham Co Sampling Date: 05/20/2024
Applicant/Owner: Giguere Homes State: Michigan Sampling Point: USP.1A
Investigator(s): B.Guevara; Marx Wetlands LLC Section, Township, Range: S33, T4N, R1W
Landform (hillslope, terrace, etc): Hillslope Local relief (concave, convex, none): convex Slope (%): 5-10
Subregion (LRR or MLRA): Lat: 42.68918133379288 Long: -84.44218163183479 Datum: WGS 1984
Soil Map Unit Name: Metea loamy sand, 2 to 6 percent slopes (MtB) NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes ____	No X	**Is the Sampled Area**		
Hydric Soil Present?	Yes ____	No X	**within a Wetland?**	Yes ____	No X
Wetland Hydrology Present?	Yes ____	No X	If yes, optional Wetland Site ID:		

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ____ No X	Depth (inches):	
Water Table Present?	Yes ____ No X	Depth (inches):	
Saturation Present? (includes capillary fringe)	Yes ____ No X	Depth (inches):	

Wetland Hydrology Present? Yes ____ No X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants. Sampling Point: USP.1A

Tree Stratum (Plot size: 30-ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer saccharum* / Sugar maple	20	Yes	FACU
2. *Prunus serotina* / Black cherry	15	Yes	FACU
3. *Tilia americana* / American basswood	15	Yes	FACU
4. *Quercus rubra* / Northern red oak	10	No	FACU
5.			
6.			
7.			
	60	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15-ft)			
1. *Rubus occidentalis* / Black raspberry	10	Yes	UPL
2. *Ribes cynosbati* / Eastern prickly gooseberry	5	Yes	FACU
3.			
4.			
5.			
6.			
7.			
	15	= Total Cover	
Herb Stratum (Plot size: 5-ft)			
1. *Podophyllum peltatum* / May-apple	45	Yes	FACU
2. *Carex pensylvanica* / Pennsylvania sedge	20	Yes	UPL
3. *Rosa multiflora* / Multiflora rose, Multiflora rosa	15	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	80	= Total Cover	
Woody Vine Stratum (Plot size: 30-ft)			
1. *Parthenocissus quinquefolia* / Virginia creeper	20	Yes	FACU
2.			
3.			
4.			
	20	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	145	x 4 =	580
UPL species	30	x 5 =	150
Column Totals:	175 (A)		730 (B)

Prevalence Index = B/A = 4.17

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation
___ 2 - Dominance Test is >50%
___ 3 - Prevalence Index ≤3.0[1]
___ 4 - Morphological Adaptations[1] (Provide supporting
___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes ___ No X

Remarks: (Explain alternative procedures here or in a separate report.)

SOIL

Sampling Point: USP.1A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-18	10YR 4/4	100					Slty Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R,MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

WETLAND DETERMINATION DATA FORM - Northcentral and Northeast Region

Project/Site: Robins Way 50' Easement City/County: Meridian Township / Ingham Co Sampling Date: 05/20/2024
Applicant/Owner: Giguere Homes State: Michigan Sampling Point: WSP.1A
Investigator(s): B.Guevara; Marx Wetlands LLC Section, Township, Range: S33, T4N, R1W
Landform (hillslope, terrace, etc): Depression Local relief (concave, convex, none): concave Slope (%): 0-1
Subregion (LRR or MLRA): LRR L Lat: 42.68912539159319 Long: -84.44220782508414 Datum: WGS 1984
Soil Map Unit Name: Sebewa loam, 0 to 2 percent slopes (Sb) NWI classification: None
Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No ____ (If no, explain in Remarks.)
Are Vegetation ____, Soil ____, or Hydrology ____ significantly disturbed? Are "Normal Circumstances" present? Yes X No ____
Are Vegetation ____, Soil ____, or Hydrology ____ naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS - Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present? Yes X No ____
Hydric Soil Present? Yes X No ____
Wetland Hydrology Present? Yes X No ____

Is the Sampled Area within a Wetland? Yes X No ____
If yes, optional Wetland Site ID: Wetland A

Remarks: (Explain alternative procedures here or in a separate report.)

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- X Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ Marl Deposits (B15)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Moss Trim Lines (B16)
- ___ Dry-Season Water Table (C2)
- X Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- ___ Shallow Aquitard (D3)
- ___ Microtopographic Relief (D4)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes X No ____ Depth (inches): 0.5
Water Table Present? Yes X No ____ Depth (inches): 10
Saturation Present? (includes capillary fringe) Yes X No ____ Depth (inches): 10

Wetland Hydrology Present? Yes X No ____

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

VEGETATION - Use scientific names of plants. Sampling Point: WSP.1A

Tree Stratum (Plot size: 30-ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Ulmus americana* / American elm	10	Yes	FACW
2. *Fraxinus pennsylvanica* / Green ash	10	Yes	FACW
3. *Acer saccharinum* / Silver maple	10	Yes	FACW
4.			
5.			
6.			
7.			
	30	= Total Cover	
Sapling/Shrub Stratum (Plot size: 15-ft)			
1. *Ulmus americana* / American elm	15	Yes	FACW
2. *Rubus occidentalis* / Black raspberry	5	Yes	UPL
3.			
4.			
5.			
6.			
7.			
	20	= Total Cover	
Herb Stratum (Plot size: 5-ft)			
1. *Glyceria striata* / Fowl mannagrass, Ridged manna grass	30	Yes	OBL
2. *Ranunculus hispidus* / Bristly buttercup	20	Yes	FAC
3. *Cardamine pensylvanica* / Pennsylvania bittercress	15	No	FACW
4. *Solidago gigantea* / Smooth goldenrod	10	No	FACW
5. *Boehmeria cylindrica* / Smallspike false nettle	5	No	OBL
6.			
7.			
8.			
9.			
10.			
11.			
12.			
	80	= Total Cover	
Woody Vine Stratum (Plot size: 30-ft)			
1. *Toxicodendron radicans* / Eastern poison ivy	30	Yes	FAC
2. *Vitis riparia* / River-bank grape	20	Yes	FAC
3.			
4.			
	50	= Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 8 (A)

Total Number of Dominant Species Across All Strata: 9 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 88.9 (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	35	x 1 =	35
FACW species	70	x 2 =	140
FAC species	70	x 3 =	210
FACU species	0	x 4 =	0
UPL species	5	x 5 =	25
Column Totals:	180 (A)		410 (B)

Prevalence Index = B/A = 2.28

Hydrophytic Vegetation Indicators:

- ___ 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index ≤3.0[1]
- ___ 4 - Morphological Adaptations[1] (Provide supporting
- ___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Definitions of Vegetation Strata

Tree - Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/shrub - Woody plants less than 3 in. DBH and greater than or equal to 3.28 ft (1 m) tall.

Herb - All herbaceous (non-woody) plants, regardless of size, and woody plants less than 3.28 ft tall.

Woody vines - All woody vines greater than 3.28 ft in height.

Hydrophytic Vegetation Present? Yes X No ___

Remarks: (Explain alternative procedures here or in a separate report.)

SOIL

Sampling Point: WSP.1A

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-15	10YR 4/1	80	7.5YR 4/6	20	C	M,PL	Slty Clay Loam	

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7) **(LRR R, MLRA 149B)**
- ___ Polyvalue Below Surface (S8) **(LRR R,MLRA 149B)**
- ___ Thin Dark Surface (S9) **(LRR R, MLRA 149B)**
- ___ Loamy Mucky Mineral (F1) **(LRR K, L)**
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ 2 cm Muck (A10) **(LRR K, L, MLRA 149B)**
- ___ Coast Prairie Redox (A16) **(LRR K, L, R)**
- ___ 5 cm Mucky Peat or Peat (S3) **(LRR K, L, R)**
- ___ Dark Surface (S7) **(LRR K, L)**
- ___ Polyvalue Below Surface (S8) **(LRR K, L)**
- ___ Thin Dark Surface (S9) **(LRR K, L)**
- ___ Iron-Manganese Masses (F12) **(LRR K, L, R)**
- ___ Piedmont Floodplain Soils (F19) **(MLRA 149B)**
- ___ Mesic Spodic (TA6) **(MLRA 144A, 145, 149B)**
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (TF12)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes X No ___

Remarks:

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NOTICE OF AUTHORIZATION

Permit Number: WRP044119 v. 1 **Date Issued: February 6, 2005**
Site Name: 33-Sanctuary III Pathway Robins Way-Okemos **Expiration Date: February 6, 2030**

The Michigan Department of Environment, Great Lakes, and Energy (EGLE), Water Resources Division, P.O. Box 30458, Lansing, Michigan 48909-7958, under provisions of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended; specifically:

☒ Part 301, Inland Lakes and Streams.

☒ Part 303, Wetlands Protection.

Authorized activity:

Excavate 11 cubic yards of native material from Turtle Crossing Drain, and install a 50-foot-long, 3-foot diameter, concrete culvert and end sections, buried 6 inches below the stream bed. Place 29 cubic yards of clean backfill and 4 cubic yards of riprap at one end of culvert for stabilization.

Construct a 28-foot-long by 8-foot-wide ADA compliant pathway within 0.03 acre of wetland.

Place 129 cubic yards of fill material in wetland to create ADA compliant grade for pathway.

Install 18-foot-long by 1-foot-wide reinforced concrete pipe equalization culvert in upland to maintain surface water flow to wetland.

To be conducted at property located in: Ingham County, Waterbody: Turtle Crossing Drain
Section 32, Town 04N, Range 01W, Meridian Township

Permittee:
Meridian Township
Attention: Caycee Hart
5151 Marsh Road
Okemos, Michigan 48864

Claire Watts
Lansing District Office
Water Resources Division
517-388-6686

This notice must be displayed at the site of work.
Laminating this notice or utilizing sheet protectors is recommended.
Please refer to the above permit number with any questions or concerns.

SANCTUARY II PATHWAY
CONSTRUCTION PLANS
FOR
MERIDIAN TOWNSHIP
INGHAM COUNTY, MICHIGAN

UTILITY COMPANY	UTILITIES
AT&T 337 N. ABBOTT, RM. 201 EAST LANSING, MI 48823 517.337.3660	TELEPHONE
CONSUMERS ENERGY 530 W. WILLOW ST. P.O. BOX 30162 LANSING, MI 48909 517.373.6100	GAS ELECTRIC
COMCAST 1070 TROWBRIDGE ROAD EAST LANSING, MI 48823 517.332.1012	CABLE TV
MERIDIAN TOWNSHIP 5151 MARSH RD. OKEMOS, MI 48864 517.853.4440	WATER MAINS SANITARY SEWER PATHWAYS
WOLVERINE PIPE LINE 8105 VALLEYWOOD LANE PORTAGE, MI 49024-5251 231.323.2491	PETROLEUM PIPELINE
INGHAM COUNTY DRAIN COMMISIONER 707 BUHL ST. MASON, MI 48854 517.676.8395	DRAINS STORM SEWER
INGHAM COUNTY ROAD DEPT 301 BUSH ST. MASON, MI 48854 517.676.9722	PUBLIC ROADS AND RIGHTS OF WAY

SOIL EROSION & SEDIMENTATION CONTROL NOTES

1. All soil erosion and sediment control (SESC) work shall conform to the standards and specifications of the Ingham County Drain Commissioner's Office and Meridian Township.
2. Daily inspections shall be made by the contractor for effectiveness of SESC measures. Any necessary repairs shall be performed without delay.
3. Erosion of any sediment from work on the site shall be contained on-site and not allowed to collect on any off-site areas or in waterways. Waterways include both natural and man-made open ditches, streams, storm drains, lakes, ponds, and wetlands.
4. The Contractor shall apply temporary SESC measures when required and as directed on these plans. The Contractor shall remove temporary measures as soon as permanent stabilization of slopes, ditches, and other changes have been established.
5. Staging the work shall be done by the Contractor as directed in these plans and as required to ensure progressive stabilization of disturbed earth.
6. Soil erosion control practice shall be established in the early stages of construction by the Contractor. Sedimentation control practices shall be applied as a perimeter defense against any transporting of soil off the site.
7. The Contractor shall preserve natural vegetation as much as possible.
8. Vegetative stabilization of all disturbed areas shall be established within 15 days of completion of the final grading.

Sheet List Table	
Sheet Number	Sheet Title
1	COVER SHEET
2	OVERALL PATHWAY SITE PLAN
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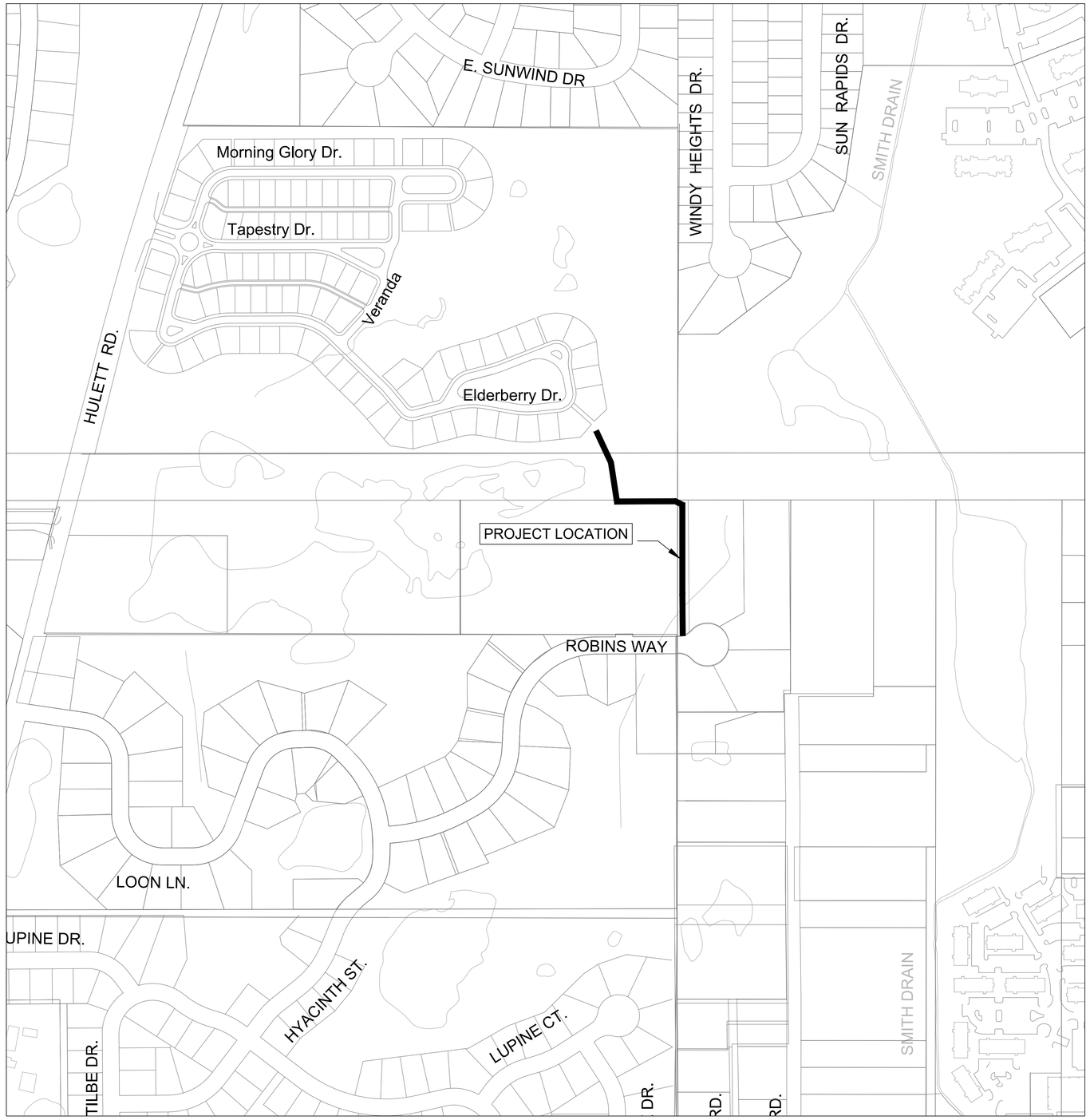
4	PATHWAY SITE PLAN
5	PATHWAY SITE PLAN
6	SESC PLAN
7	SESC PLAN
8	SESC DETAILS
9	CULVERT PROFILE AND CROSS SECTION
10	CULVERT PROFILE AND CROSS SECTION
11	CULVERT DETAILS
12	PATHWAY STANDARD DETAILS
13	TYPICAL SECTION
14	LANDSCAPE PLAN



N

Call 811 before you dig.

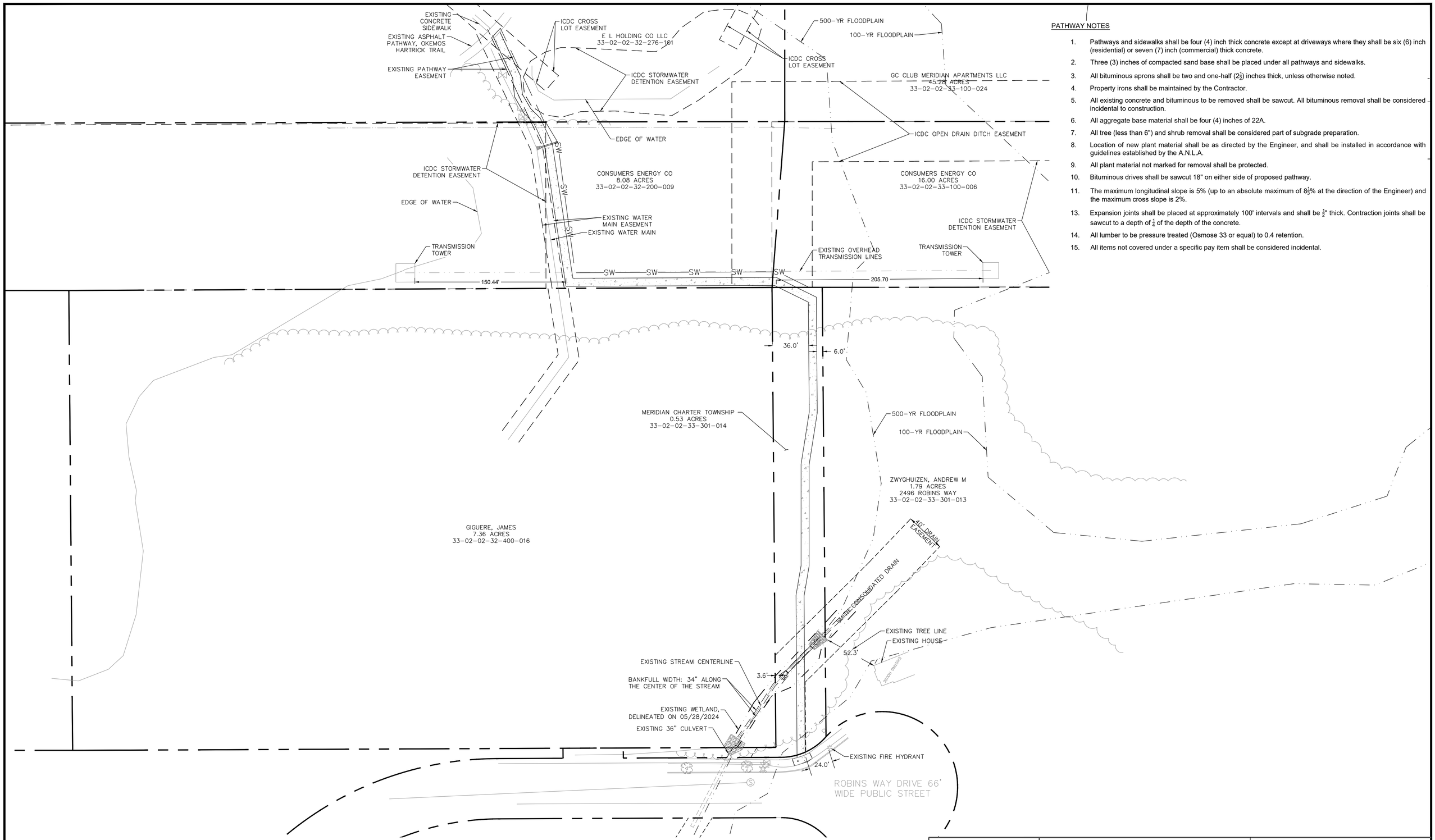
STANDARD CONSTRUCTION NOTES

1. The Contractor shall notify the Charter Township of Meridian, Department of Public Works, Office of Engineering 517-853-4440 a minimum of 72 hours prior to the start of construction of public utilities or of construction within the public right-of-way.
2. All construction shall conform to the current standards and specifications of the Charter Township of Meridian which are included as part of these plans in effect at the time of construction.
3. After the completion of construction of public utilities or construction within public right-of-way, the contractor must request a final inspection. Any punchlist items resulting from the final inspection must be resolved prior to final release and acceptance.
4. The existing utilities indicated on the plans are in accordance with available information. It shall be the contractor's obligation to verify the exact location of all existing utilities, which might affect this job.
5. The contractor shall notify "MISS DIG" 1-800-482-7171 at least 72 hours prior to the start of construction.
6. The contractor shall at all times be aware of inconvenience caused to the abutting property owners and the general public. Where the contractor does not remedy undue inconveniences, the Charter Township of Meridian, upon four hours notice, reserves the right to perform the work and deduct the cost therefore from the money due the contractor.
7. A Registered Land Surveyor provided by the contractor at the contractor's expense shall replace all property irons and monuments disturbed or destroyed by the contractor's operations.
8. Contractor shall provide Owner and Township Engineer a copy of written permission to use private property for storage of equipment and materials or for his construction operations.
9. Trench backfill under existing or proposed roadways, driveways, and parking areas, shall be sand or gravel, placed in 12" layers (maximum) and consolidated to 95% of maximum density as measured by modified proctor unless otherwise noted.
10. Trees and shrubs are to be protected during construction and bored where necessary.
11. Existing fences shall be removed and restored to their original condition or better where in conflict with construction.
12. Driveways, culverts, ditches, drain tile, tile fields, drainage structures, etc., that are disturbed by the contractor's operations shall be immediately restored.
13. All established lawn areas disturbed by the contractor's operations shall be resodded with matching sod. All other areas shall be seeded and mulched. Seeding and mulching shall be done in accordance with the General Specifications.
14. All ditch slopes shall have established vegetation and be protected from erosion.
15. All utility poles in close proximity to construction shall be supported in a manner satisfactory to the utility owner.
16. Onsite parking and sanitary facilities shall be provided for construction workers. The facilities shall be constructed and operated (with minimal impact to the surrounding area) to the satisfaction of the Township.

PATHWAY NOTES

1. Pathways and sidewalks shall be four (4) inch thick concrete except at driveways where they shall be six (6) inch (residential) or seven (7) inch (commercial) thick concrete.
2. Three (3) inches of compacted sand base shall be placed under all pathways and sidewalks.
3. All bituminous aprons shall be two and one-half ($2\frac{1}{2}$) inches thick, unless otherwise noted.
4. Property irons shall be maintained by the Contractor.
5. All existing concrete and bituminous to be removed shall be sawcut. All bituminous removal shall be considered incidental to construction.
6. All aggregate base material shall be four (4) inches of 22A.
7. All tree (less than 6") and shrub removal shall be considered part of subgrade preparation.
8. Location of new plant material shall be as directed by the Engineer, and shall be installed in accordance with guidelines established by the A.N.L.A.
9. All plant material not marked for removal shall be protected.
10. Bituminous drives shall be sawcut 18" on either side of proposed pathway.
11. The maximum longitudinal slope is 5% (up to an absolute maximum of $8\frac{1}{2}$% at the direction of the Engineer) and the maximum cross slope is 2%.
13. Expansion joints shall be placed at approximately 100' intervals and shall be $\frac{1}{2}$" thick. Contraction joints shall be sawcut to a depth of $\frac{1}{4}$ of the depth of the concrete.
14. All lumber to be pressure treated (Osmose 33 or equal) to 0.4 retention.
15. All items not covered under a specific pay item shall be considered incidental.

STATE OF MICHIGAN
Caycee Hart
License No. 6201313135
LICENSED PROFESSIONAL ENGINEER
Caycee Hart
03/07/2025



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14. All lumber to be pressure treated (Osmose 33 or equal) to 0.4 retention.
15. All items not covered under a specific pay item shall be considered incidental.

Call 811 before you dig.

WOLVERINE PIPE LINE COMPANY 219-844-9510

STATE OF MICHIGAN
Caycee Hart
License No. 6201313135
LICENSED PROFESSIONAL ENGINEER
Caycee Hart 03/07/2025

Meridian Charter Township
Ingham County, Michigan
PATHWAY

SANCTUARY II PATHWAY
NE 1/4 SECTION 32 AND NW 1/4 SECTION 33, T4N, R1W, MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN

DRAWN BY: CH | CHECKED BY: YI

REVISIONS:		
DATE	BY:	COMMENTS:
09.11.24	CH	EGLE SUBMITTAL #2
01.02.25	CH	ICDC SUBMITTAL #2
01.21.25	CH	ICDC SUBMITTAL #3
01.27.25	CH	ICDC SUBMITTAL #4
01.30.25	CH	ICDC SUBMITTAL #5
3.07.25	CH	PATHWAY ALIGNMENT SHIFT

SHEET:
2 - OVERALL PATHWAY SITE PLAN

MATCH LINE SEE SHEET 4

ZWYGHUIZEN, ANDREW M
1.79 ACRES
2496 ROBINS WAY
33-02-02-33-301-013

GIGUERE, JAMES
7.36 ACRES
33-02-02-32-400-016

MERIDIAN CHARTER TOWNSHIP
0.53 ACRES
33-02-02-33-301-014

40' DRAIN EASEMENT

3+00

2+00

1+00

0+00

LIMITS OF DISTURBANCE

SMITH CONSOLIDATED DRAIN

RIP RAP (TYP.)

EXISTING TREE LINE

EXISTING HOUSE

EXISTING HOUSE

36" CONCRETE CULVERT

EXISTING CENTERLINE OF STREAM

BANKFULL WIDTH: 34" ALONG THE CENTER OF THE STREAM

EXISTING WETLAND, DELINEATED ON 5/28/2024

EXISTING 30" CULVERT

8' CONCRETE PATHWAY WITH 1' GRAVEL SHOULDERS (TYP.)

8.0'

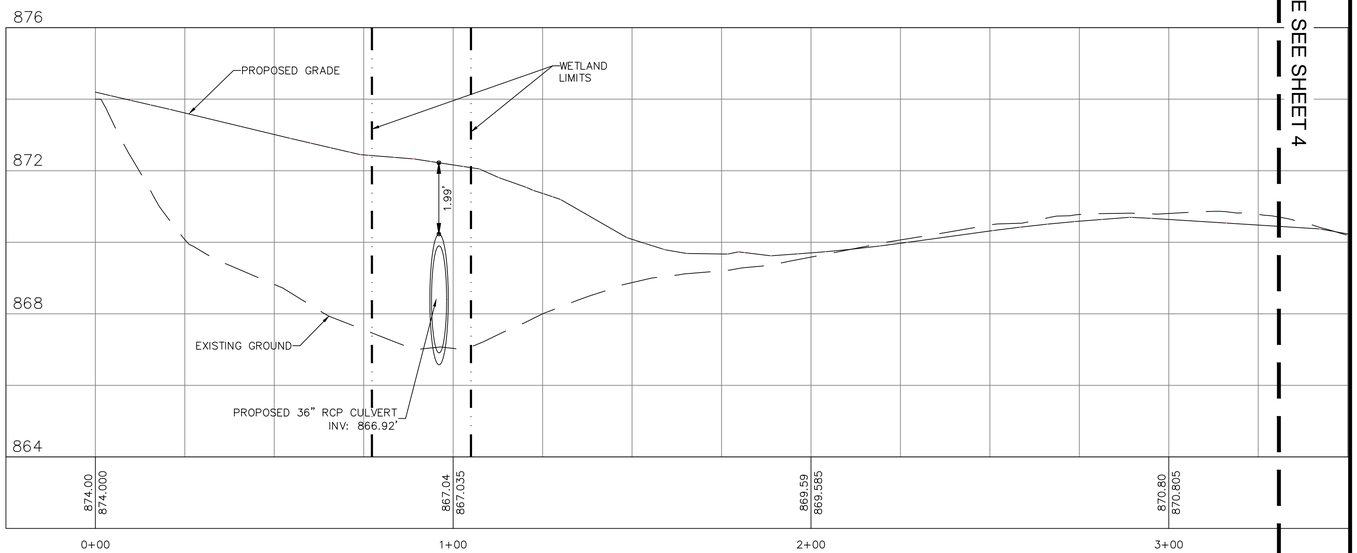
TIE INTO EXISTING 7' SIDEWALK

ROBINS WAY DRIVE 66' WIDE PUBLIC STREET

SCALE: 1" = 40'

0' 20' 40' 80'

NORTH



MATCH LINE SEE SHEET 4

SCALE
HORZ: 1" = 20'
VERT: 1" =2'

Call 811 before you dig.

WOLVERINE PIPE LINE COMPANY 219-844-9510

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Meridian Charter Township
Ingham County, Michigan
PATHWAY

SANCTUARY II PATHWAY
NE 1/4 SECTION 32 AND NW 1/4 SECTION 33, T4N, R1W, MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN

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SHEET:
3 - PATHWAY SITE PLAN

E L HOLDING CO LLC
33-02-02-32-276-101

GC CLUB MERIDIAN APARTMENTS LLC
45.28 ACRES
33-02-02-33-100-024

EDGE OF WATER

CONSUMERS ENERGY CO
8.08 ACRES
33-02-02-32-200-009

CONSUMERS ENERGY CO
16.00 ACRES
33-02-02-33-100-006

CENTERLINE OF SWALE WITH CHECK DAMS (SEE DETAIL ON SHEET 13) (TYP.)

LIMITS OF DISTURBANCE

EXISTING OVERHEAD TRANSMISSION LINES

SW SW SW SW SW SW SW SW SW SW

5.5'

SWALE (TYP.)

6+00 5+00

8' CONCRETE PATHWAY WITH 1' GRAVEL SHOULDERS (TYP.)

STATION=4+25.95
OFFSET=6.37L

MATCH LINE SEE SHEET 5

GIGUERE, JAMES
7.36 ACRES
33-02-02-32-400-016

4+00

ZWYGHUIZEN, ANDREW M
1.79 ACRES
2496 ROBINS WAY
33-02-02-33-301-013

MERIDIAN CHARTER TOWNSHIP
0.53 ACRES
33-02-02-33-301-014

MATCH LINE SEE SHEET 3

SCALE: 1" = 40'
0' 20' 40' 80'

NORTH

MATCH LINE SEE SHEET 3

MATCH LINE SEE SHEET 5

PROPOSED GRADE

EXISTING GROUND

869.01
869.007

870.02
870.021

871.12
871.124

4+00 5+00 6+00

SCALE
HORZ: 1" = 20'
VERT: 1" =2'

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PATHWAY

SANCTUARY II PATHWAY

NE 1/4 SECTION 32 AND NW 1/4 SECTION 33, T4N, R1W, MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN

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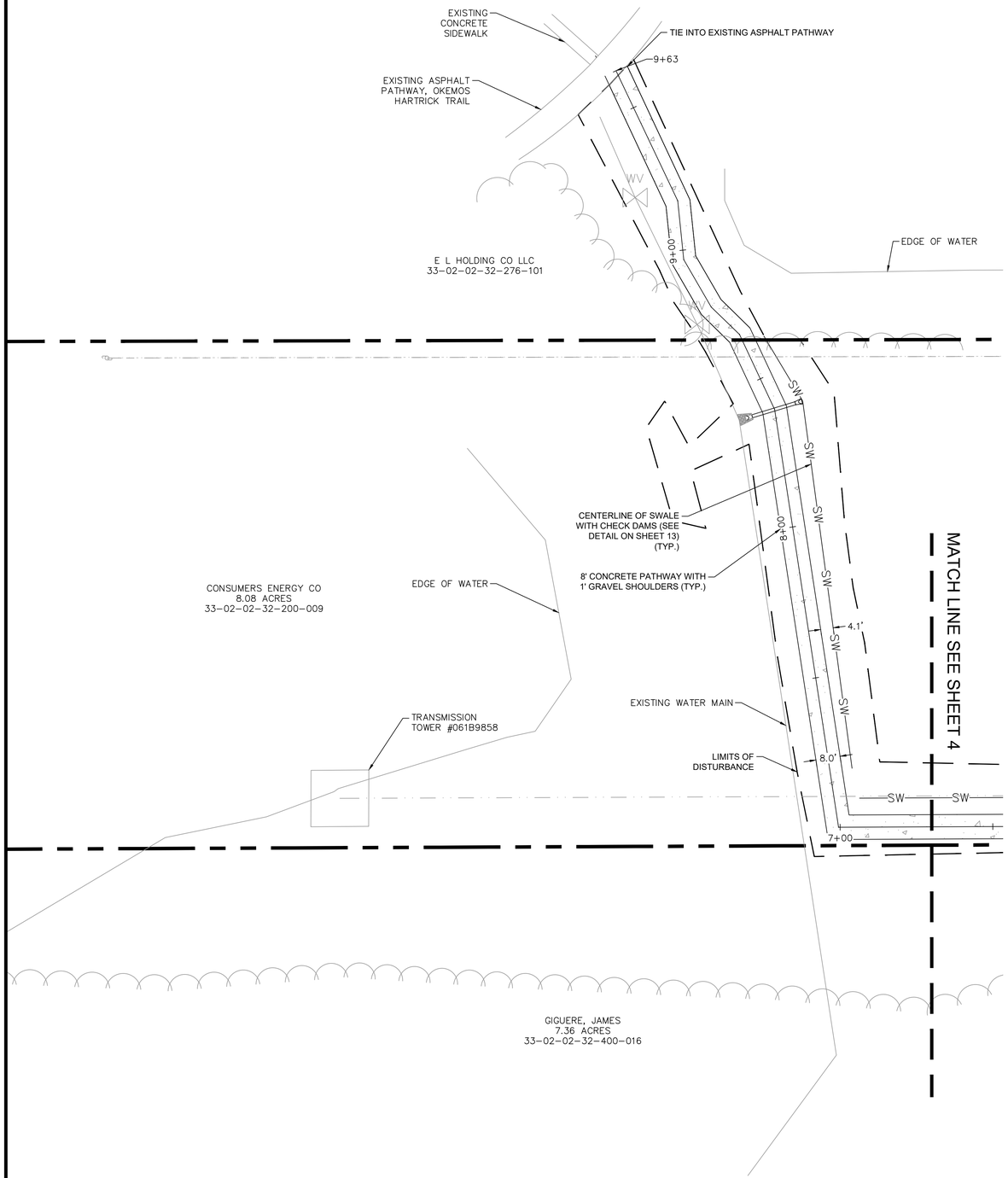
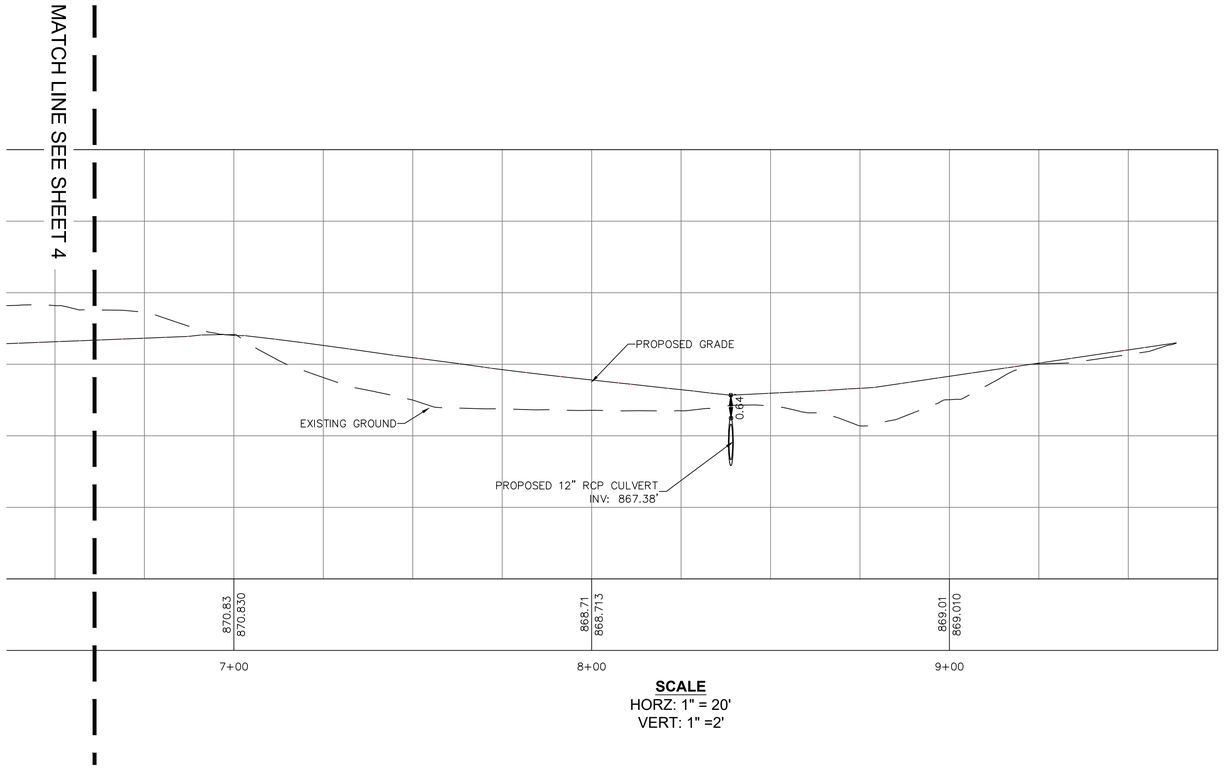
SHEET:
4 - PATHWAY SITE PLAN





SCALE
HORZ: 1" = 20'
VERT: 1" =2'

SCALE: 1" = 40'
0' 20' 40' 80'
NORTH

Call 811 before you dig.

WOLVERINE PIPE LINE COMPANY 219-844-9510

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Ingham County, Michigan
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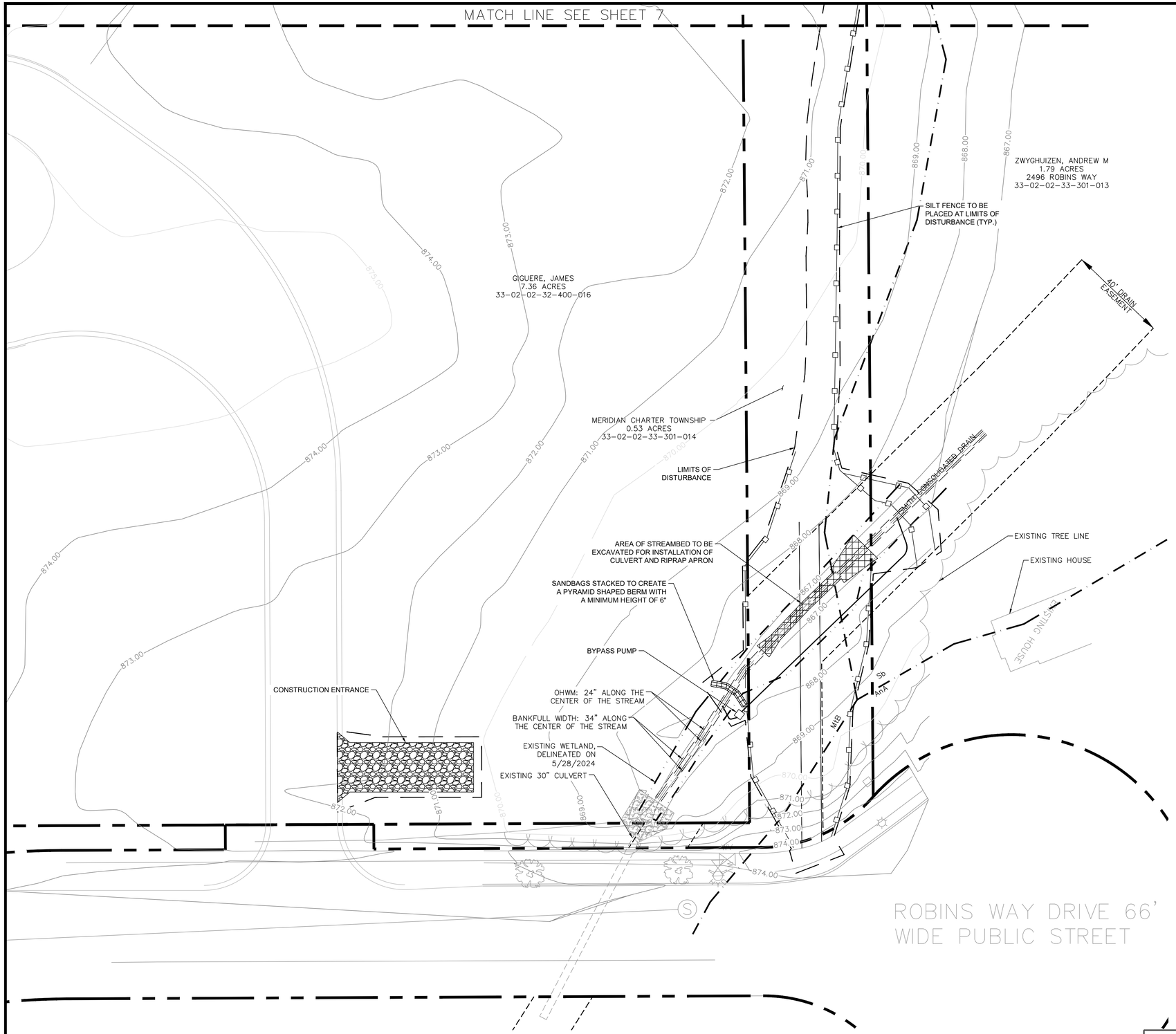
SHEET:
5 - PATHWAY SITE PLAN



LEGEND

- PROPERTY LINE
- EXISTING EASEMENT
- XXX EXISTING CONTOUR
- STREAM CENTER LINE
- BANKFULL WIDTH
- ORDINARY HIGH WATER MARK (OHWM)
- LIMIT OF DELINEATED WETLAND
- SOIL BOUNDARY
- AREA OF EXCAVATION WITHIN THE STREAMBED (360 SF)
- SILT FENCE
- SANDBAGS

SEQUENCE OF CONSTRUCTION

1. INSTALL CONSTRUCTION ENTRANCE.
2. INSTALL PERIMETER EROSION CONTROLS; SILT FENCE.
3. PERFORM CLEARING AND GRUBBING OF THE SITE WITHIN THE LIMITS OF DISTURBANCE.
4. CONSTRUCT PYRAMID SHAPED BERM (6' MINIMUM HEIGHT) OUT OF SANDBAGS TO PROVIDE A TEMPORARY DAM IN THE STREAM. INSTALL BYPASS PUMP.
5. EXCAVATE THE AREA OF THE STREAMBED AND RIPRAP APRON.
6. INSTALL THE CULVERT/END SECTIONS AND RIPRAP APRON.
7. CONSTRUCT THE EMBANKMENT AROUND THE CULVERT AND STABILIZE WITH SEED AND STRAW MATTING.
8. REMOVE THE SANDBAG BERM ONCE THE SEED AND STRAW MATTING HAS BEEN INSTALLED ON THE CULVERT EMBANKMENT.
9. GRADE THE REST OF THE SITE TO ACHIEVE THE ELEVATION OF THE PATHWAY. GRADE IN THE SWALE ADJACENT TO THE PATHWAY.
10. ONCE THE FINAL ELEVATIONS ARE ACHIEVED STABILIZE WITH SEED, MULCH, AND/OR STRAW MATTING.
11. PERFORM THE PAVING OF THE PATHWAY.
12. ONCE VEGETATION HAS ESTABLISHED REMOVE THE SILT FENCE.

RECOMMENDED CONSTRUCTION SCHEDULING & SEQUENCING	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	SEPTEMBER	OCTOBER	NOVEMBER	DECEMBER	JANUARY	FEBRUARY
INSTALL SESC MEASURES												
CLEAR AND GRUB SITE												
INSTALL CULVERT AND EMBANKMENT												
GRADE SITE												
PAVE PATHWAY												
CLEANUP AND RESTORATION												
REMOVE SESC MEASURES												

SOILS:
AnA - Aubbeenaubbee-Capac Sandy Loams, 0 to 3 percent slopes
BrB - Boyer sandy loam, 0 to 6 percent slopes
Co - Colwood-Brookston loams
HgtahA - Houghton Muck, 0 to 1 percent slopes
MaC - Filer Fine Sandy Loam, Saginaw Lobe, 6 to 12 percent slopes
MtB - Metea Loamy Sand, 2 to 6 percent slopes
Sb - Sebewa Loam, 0 to 2 percent slopes

SCALE: 1" = 40'
0' 20' 40' 80'
NORTH

Call 811 before you dig.

WOLVERINE PIPE LINE COMPANY 219-844-9510

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Caycee Hart 03/07/2025

Meridian Charter Township
Ingham County, Michigan
PATHWAY

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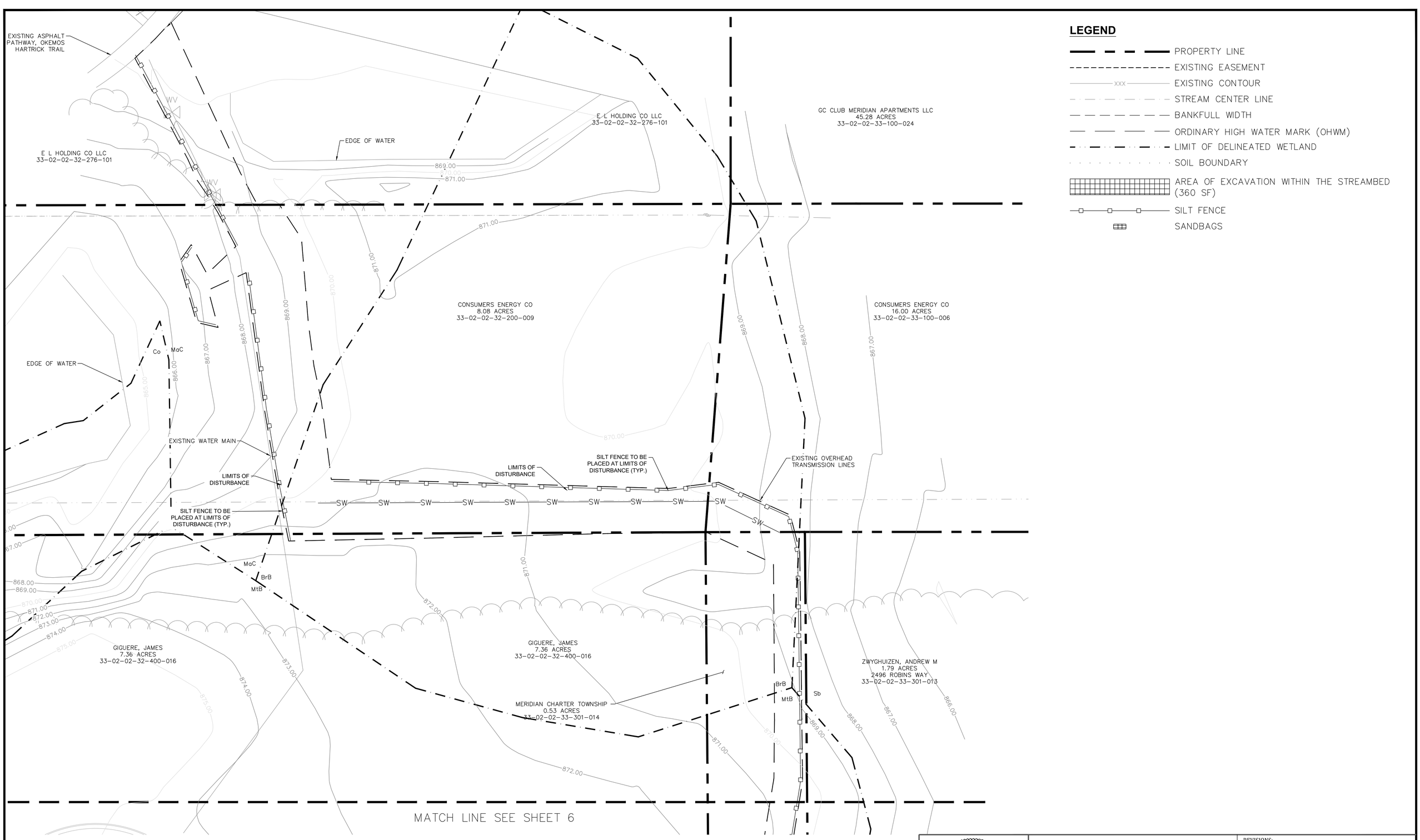
SHEET:
6 – SESC PLAN



LEGEND

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- STREAM CENTER LINE
- BANKFULL WIDTH
- ORDINARY HIGH WATER MARK (OHWM)
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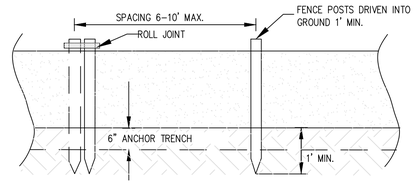
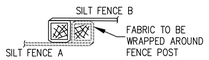
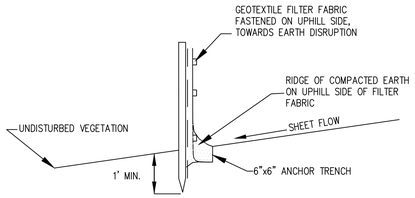
SHEET:
7 – SESC PLAN

SILT FENCE





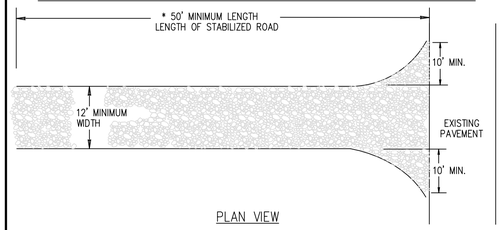
ROLL JOINTS



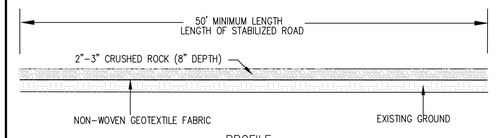
SILT FENCE MAINTENANCE & INSPECTIONS

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THE SILT FENCE IS MAINTAINED AND FUNCTIONING.
2. THE SILT FENCE SHOULD BE INSPECTED AT LEAST WEEKLY. SILT FENCE SHOULD BE INSPECTED BEFORE FORECASTED RAIN EVENTS AND AFTER EACH RAIN EVENT.
3. FABRIC TEARS, POST FAILURES, VEHICLE DAMAGE, AND/OR UNDERMINING SHOULD BE REPAIRED IMMEDIATELY.
4. SEDIMENT BUILD UP SHOULD BE REMOVED WHEN IT REACHES 1/3 TO 1/2 THE HEIGHT OF THE SILT FENCE ABOVE THE GROUND ELEVATION.
5. REMOVE THE SILT FENCE ONCE THE SITE IS STABILIZED WITH PERMANENT SESC MEASURES.

CONSTRUCTION ENTRANCE



PLAN VIEW



PROFILE

NOTES:

1. Establish stabilized construction entrance prior to the initiation of site construction activities.
2. Care should be taken to prevent material movement into adjacent wetlands/waterbodies.
3. Care should be taken to maintain existing roadside drainage via culvert installation, with sediment sump placed downflow of culvert.

CONSTRUCTION ENTRANCE MAINTENANCE & INSPECTIONS

1. IT IS THE CONTRACTOR'S RESPONSIBILITY TO ENSURE THE CONSTRUCTION ENTRANCE IS MAINTAINED AND FUNCTIONING.
2. THE CONSTRUCTION ENTRANCE SHOULD BE INSPECTED DAILY DURING USE. THE ADJACENT ROADWAYS SHOULD ALSO BE INSPECTED FOR SOIL TRAC-KOUT.
3. CLEAN, REPLENISH (ADDING ADDITIONAL AGGREGATE LAYERS), OR REPLACE THE AGGREGATE SURFACE BEFORE SOIL BUILD UP CAUSES TRACK-OUT.
4. INCREASE THE LENGTH OF THE CONSTRUCTION ENTRANCE OR INSTALL A TIRE WASH IF THE ENTRANCE IS NOT EFFECTIVELY REMOVING SEDIMENT FROM THE TIRES DURING EGRESS.
5. IMMEDIATELY REMOVE ALL SEDIMENT DROPPED OR ERODED ONTO PUBLIC RIGHT-OF-WAYS BY SWEEPING OR SHOVELING. DO NOT WASH SEDIMENT INTO WATERWAYS OR STORM SEWERS.
6. IMMEDIATELY REMOVE ANY AGGREGATE THAT HAS LOOSENED FROM THE PAD AND ENDED UP ON THE ROADWAY.
7. REMOVE THE CONSTRUCTION ENTRANCE ONCE THE SITE IS STABILIZED WITH PERMANENT SESC MEASURES.

PERMANENT SEEDING SPECIFICATIONS

When

- To finalize stabilization of temporary seeding areas or when an area needs permanent stabilization following completion of construction. Also used when vegetative establishment can correct existing soil erosion or sedimentation problem.
- Within 5 days of final grade.

Why

- To stabilize soil and prevent or reduce soil erosion/sedimentation problems from developing.

Where

- Used on construction and earth change sites which require permanent vegetative stabilization.

How

1. Review SESC plan and construction phasing to identify areas in need of permanent vegetative stabilization.
2. Select perennial grass and ground cover for permanent cover.
3. Seed mixes vary. However, they should contain native species.
4. Seed mixes should be selected through consultation with a certified seed provider and with consideration of soil type, light, moisture, use applications, and native species content.
5. Soil tests should be performed to determine the nutrient and pH levels in the soil. The pH may need to be adjusted to between 6.5 and 7.0.
6. Prepare a 3-5" deep seedbed, with the top 3-4" consisting of topsoil.
7. Slopes steeper than 1:3 should be roughened.
8. Apply seed as soon as possible after seedbed preparation. Seed may be broadcast by hand, hydroseeding, or by using mechanical drills.
9. Mulch immediately after seeding.
10. Dormant seed mixes are for use after the growing season, using seed which lies dormant in the winter and begins growing as soon as site conditions become favorable.

PERMANENT SEEDING SPECIFICATIONS

How (cont.)

11. Protect seeded areas from pedestrian or vehicular traffic.
12. Divert concentrated flows away from the seeded area until vegetation is established.

Maintenance

- Inspect weekly and within 24 hours following each rain event in the first few months following installation to be sure seed has germinated and permanent vegetative cover is being established.
- Add supplemental seed as necessary.

Limitations

- Seeds need adequate time to establish.
- May not be appropriate in areas with frequent traffic.
- Seeded areas may require irrigation during dry periods.
- Seeding success is site specific, consider mulching or sodding when necessary.

PERMANENT SEEDING

Planting Zones:	Lower Peninsula (South of T20N) Zone 1	Lower Peninsula (North of T20N) Zone 2	Upper Peninsula Zone 3
Seeding Window Permanent Seeding	4/15 - 10/10	5/1 - 10/1	5/1 - 9/20
Seeding Window Dormant Seeding*	11/15 - Freeze	11/01 - Freeze	11/01 - Freeze

Source: Adapted from MDOT Interim 2003 Standard Specifications for Construction

	Zone 1 Lower Peninsula (South of U.S. 10)	Zone 2 Lower Peninsula (North of U.S. 10)	Zone 3 Upper Peninsula
Seeding Dates (with Irrigation or Mulch)	4/1 - 8/1	5/1 - 9/20	5/1 - 9/10
Seeding Dates (w/o Irrigation or Mulch)	4/1 - 5/20 or 8/10 - 10/1	5/1 - 6/10 or 8/1 - 9/20	5/1 - 6/15 or 8/1 - 9/20
Dormant Seeding Dates*	11/1 - Freeze	10/25 - Freeze	10/25 - Freeze

Source: Adapted from USDA NRCS Technical Guide #342 (1999)

* Dormant seeding is for use in the late fall after the soil temperature remains consistently below 50°F, prior to the ground freezing. This practice is appropriate if construction on a site is completed in the fall but the seed was not planted prior to recommended seeding dates. No seed germination will take place until spring. A cool season annual grass may be added in an attempt to have some fall growth.

- Mulch must be used with dormant seed.
- Do not seed when the ground is frozen or snow covered.
- Do not use a dormant seed mix on grassed waterways.

RIPRAP SPECIFICATIONS

When

- When concentrated water flows have the potential to create scour, down-cutting, or lateral cutting.

Why

- To prevent loss of land or damage to utilities or structures. In aquatic applications, riprap is used to control channel meander and maintain capacity, protect against wave attack, and reduce sediment load.

Where

- In natural or constructed channels with areas susceptible to erosion from the action of water, ice, or debris, or to damage by livestock or vehicular traffic.
- In shoreline areas where the erosion problem may be solved through simple structural measures.
- On slopes with profiles measuring 1:1.5 or less.

How

1. Review subject site to identify areas subject to concentrated flows or wave/current attack.
2. The appropriateness and extent of riprap placement is site specific and should be determined in the field.
3. The area under review for riprap placement must be shaped and contoured appropriately by grading prior to material placement.
4. Non-woven geotextile fabric should be installed prior to riprap placement, with upper end and toe end of fabric buried or anchored to prevent movement.
5. Riprap placement should be started at a stabilized location and ended at a stabilized or contoured point.
6. Material selected for riprap should be hard, angular, and resistant to weathering. Appropriate material size depends on expected water energy and intended function of the material.

RIPRAP SPECIFICATIONS

How (cont.)

7. Riprap mixture should be an even mixture of stone sizes based on the average, or D_{50}. This means 50% of the stone, by size, will be larger than the diameter specified, and 50% will be smaller than the size specified. The diameter of the largest stone should not be more than 1.5 times the D_{50} stone size.
8. See table on the following page for typical riprap stone sizes.
9. Rock shall be placed so that larger rocks are uniformly distributed and in contact with one another. Smaller rocks should fill the voids.
10. When in contact with moving water, riprap will tie into a stable bank at the downstream end and will be keyed into the bank at the upstream end. Riprap should extend 3 ft. above the ordinary high water mark or to the top of the bank on short slopes. Extend riprap a minimum 10 ft. beyond active erosion area.

Maintenance

- All installations should be inspected immediately after the first rainfall to confirm the stability of the placed material. Follow-up inspections should occur regularly and provisions made for prompt repair if needed.

Limitations

- Area is cleared prior to the addition of riprap, therefore no areas are preserved with native vegetation.

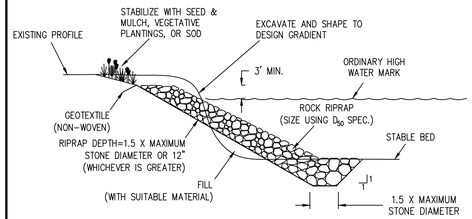
SIZE OF TYPICAL RIPRAP STONES

Weight (lbs.)	Average Spherical Diameter (in.) D_{50}	Typical Rectangular Shape Length (in.)	Width/Height (in.)
50	10	18	6
100	13	21	7
150	14	24	8
300	18	30	10
500	22	36	12
1000	27	45	15
1500	31	52	17
2000	34	57	19
4000	43	72	24
6000	49	83	28
8000	54	90	30

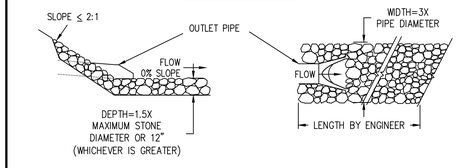
Source: Adapted from USDA NRCS

RIPRAP

STREAM BANK APPLICATION



OUTLET POINT APPLICATION



Call 811 before you dig.

WOLVERINE PIPE LINE COMPANY 219-844-9510

STATE OF MICHIGAN
Caycee Hart
License No. 6201131135
LICENSED PROFESSIONAL ENGINEER
Caycee Hart 03/07/2025

Meridian Charter Township
Ingham County, Michigan

PATHWAY

SANCTUARY II PATHWAY

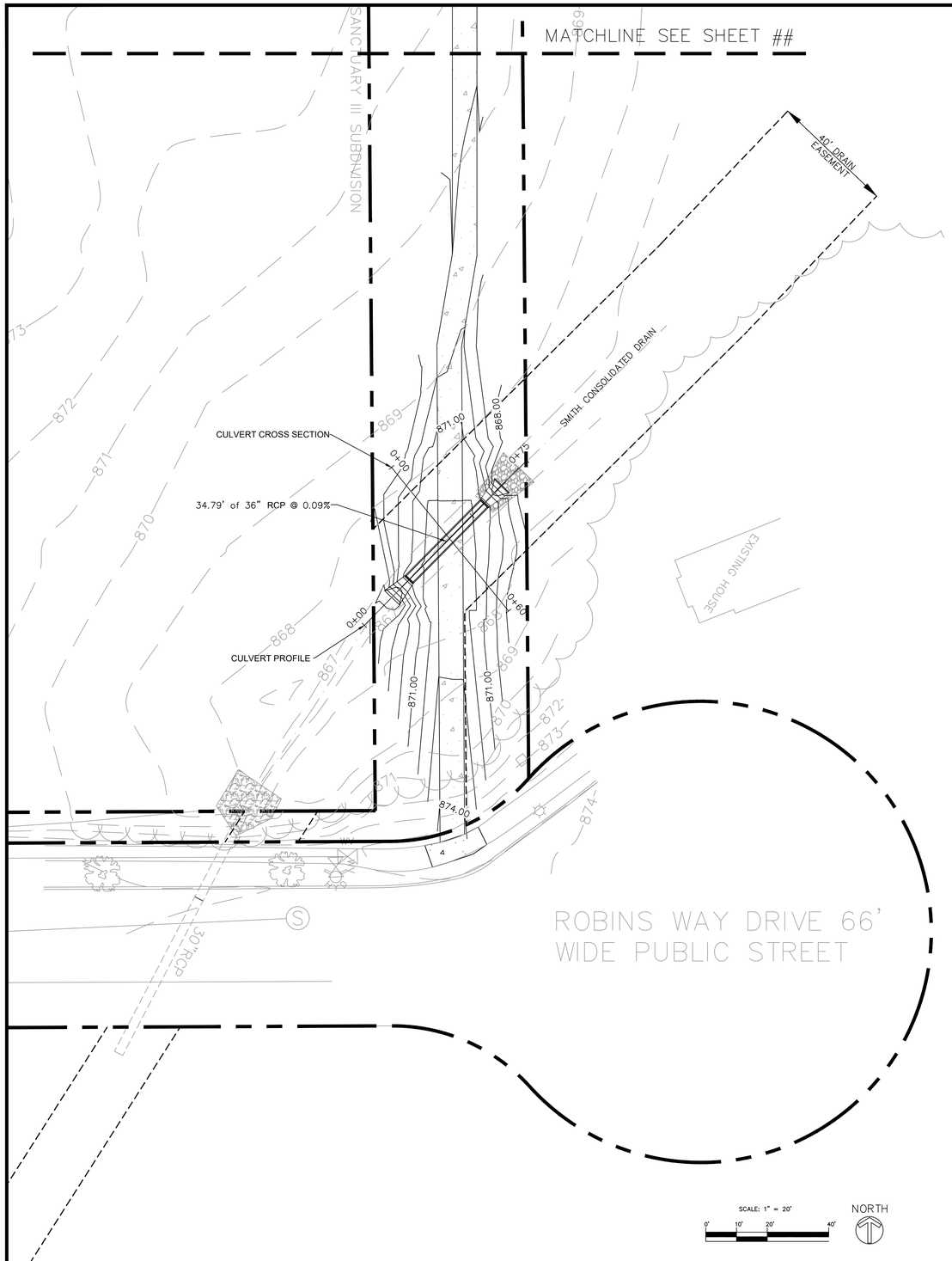
NE 1/4 SECTION 32 AND NW 1/4 SECTION 33, T4N, R1W, MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN

DRAWN BY: CH | CHECKED BY: YI

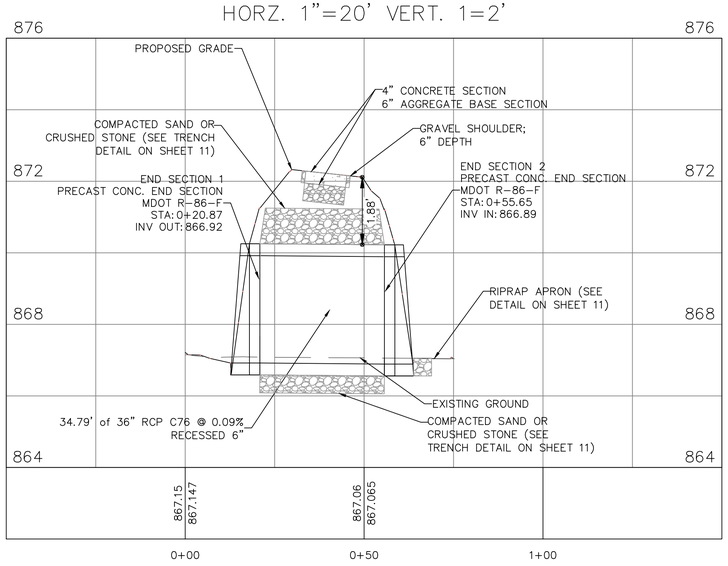
REVISIONS:

DATE	BY:	COMMENTS:
09.11.24	CH	EGLE SUBMITTAL #2
01.02.25	CH	ICDC SUBMITTAL #2
01.21.25	CH	ICDC SUBMITTAL #3
01.27.25	CH	ICDC SUBMITTAL #4
01.30.25	CH	ICDC SUBMITTAL #5
3.07.25	CH	PATHWAY ALIGNMENT SHIFT

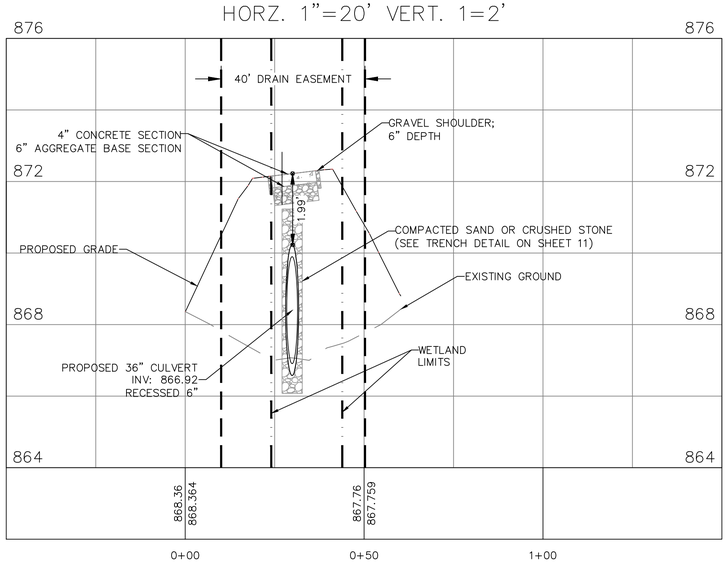
SHEET:
8 - SESC DETAILS



CULVERT PROFILE
HORZ. 1"=20' VERT. 1=2'



CULVERT CROSS SECTION
HORZ. 1"=20' VERT. 1=2'



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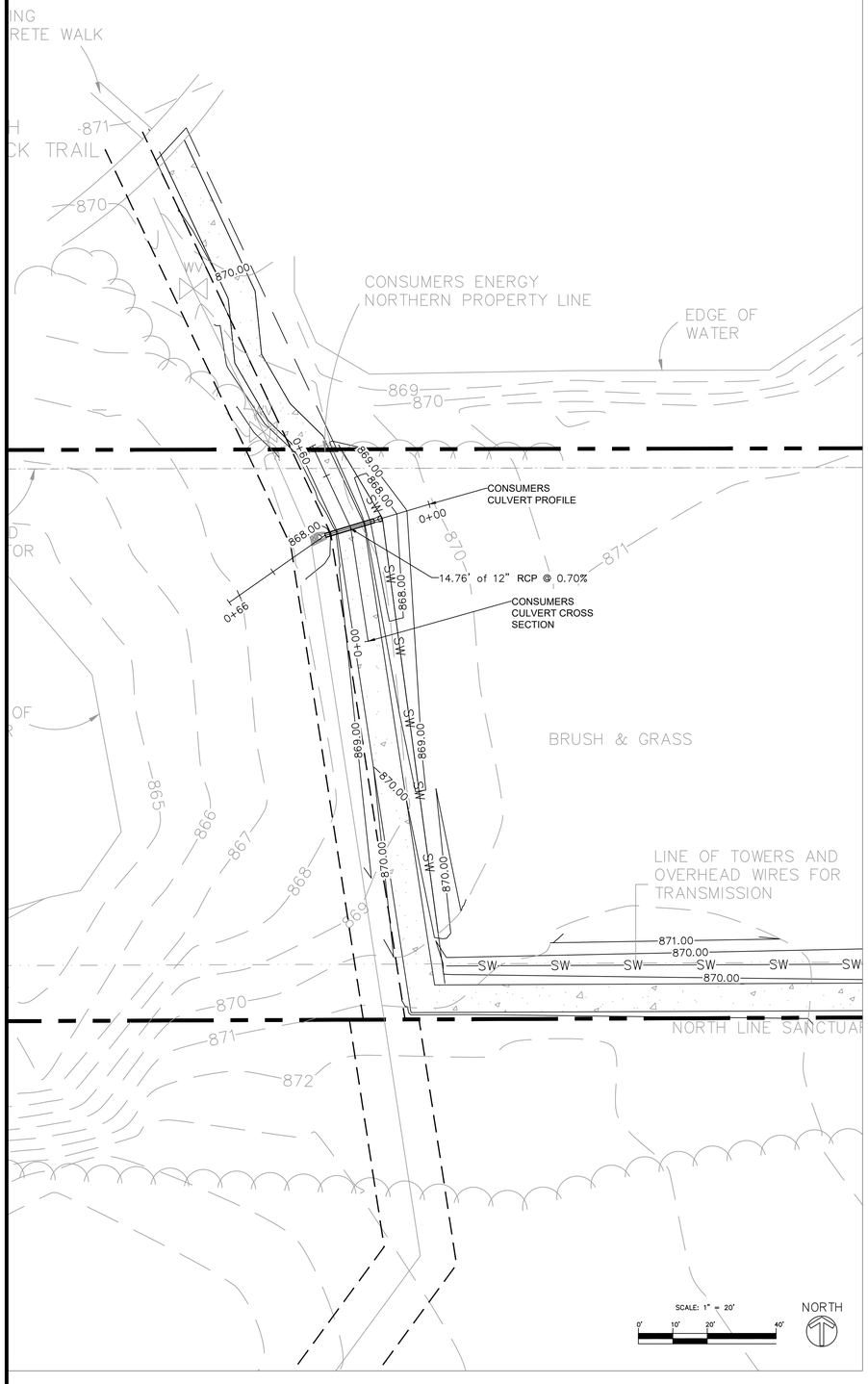
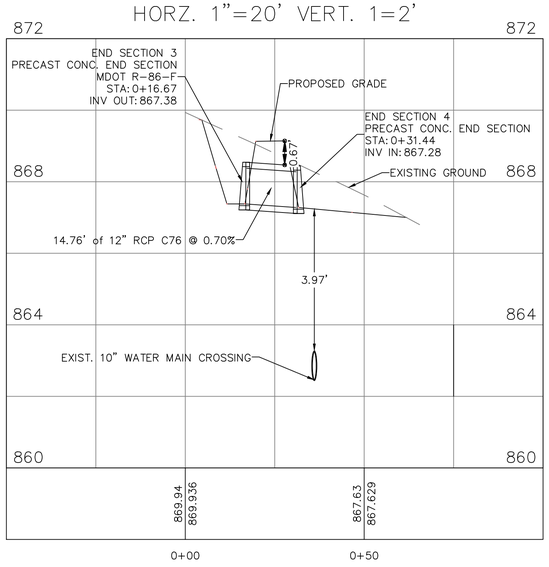
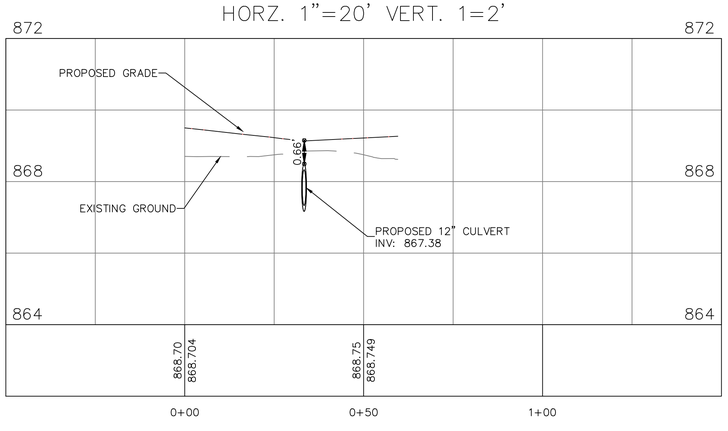
SHEET:
9 - CULVERT PROFILE AND CROSS SECTION



CONSUMERS CULVERT PROFILE
HORZ. 1"=20' VERT. 1=2'



CONSUMERS CULVERT CROSS SECTION
HORZ. 1"=20' VERT. 1=2'



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PATHWAY

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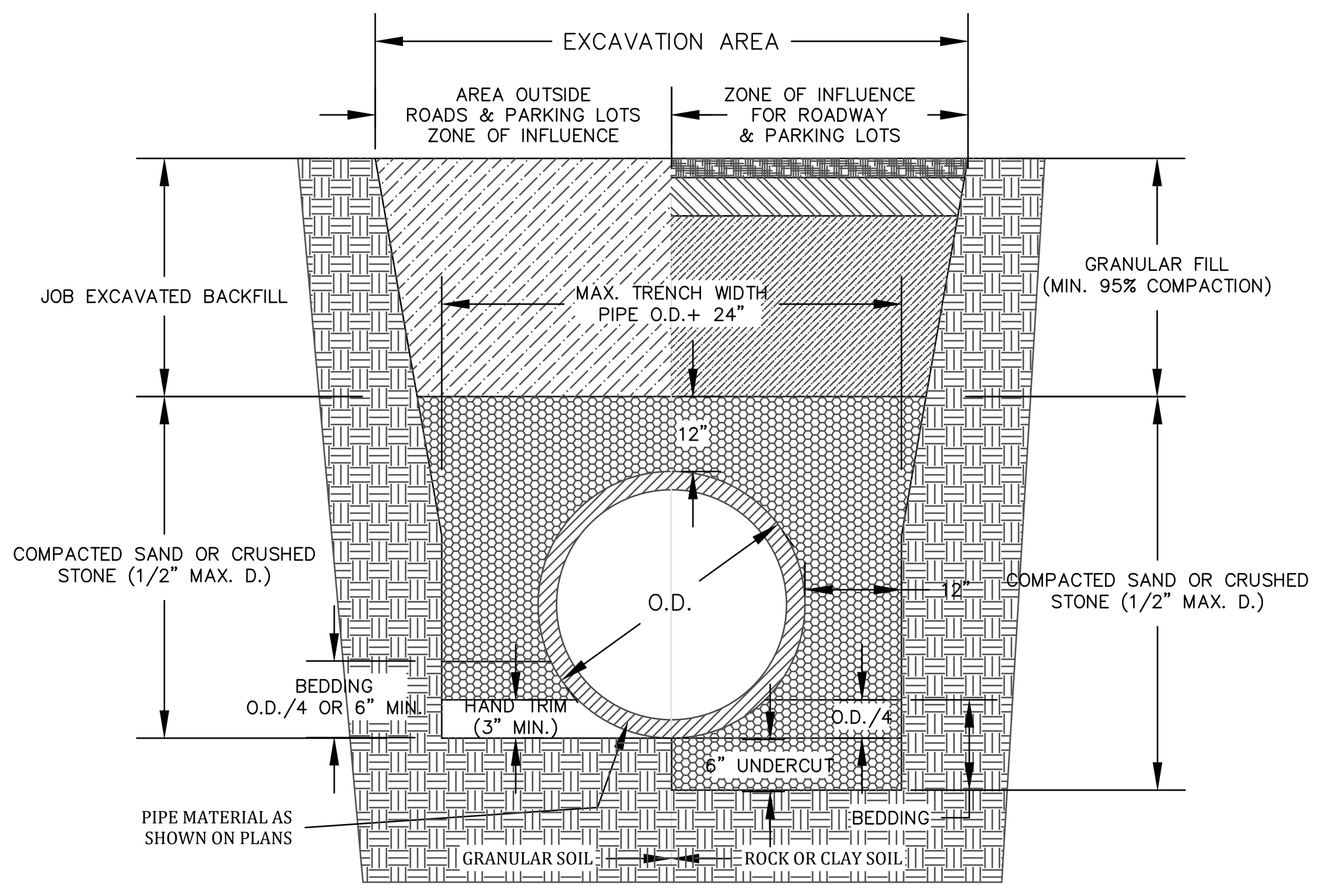
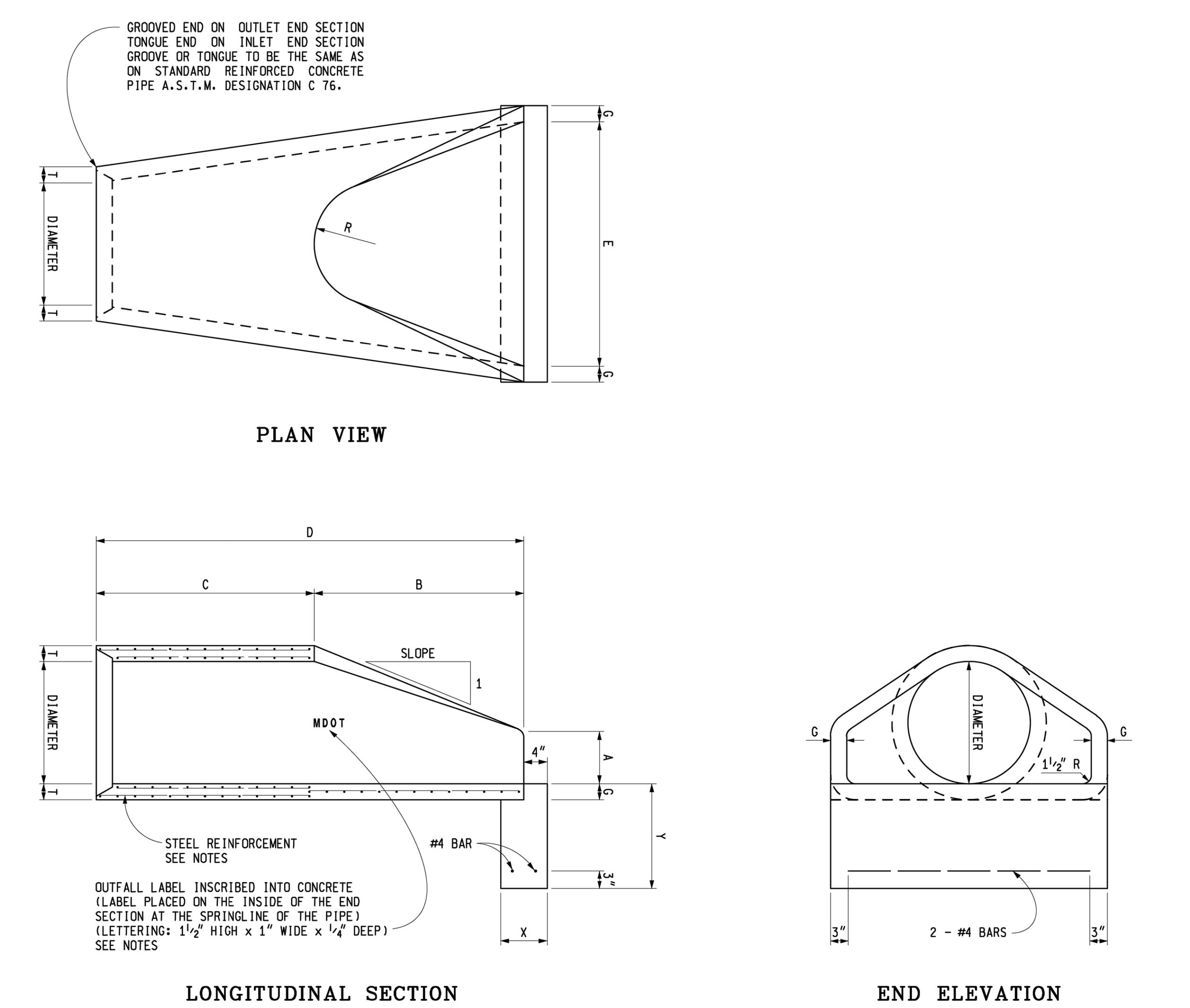
3.07.25	CH	PATHWAY ALIGNMENT SHIFT

SHEET:
10 - CULVERT PROFILE AND CROSS SECTION



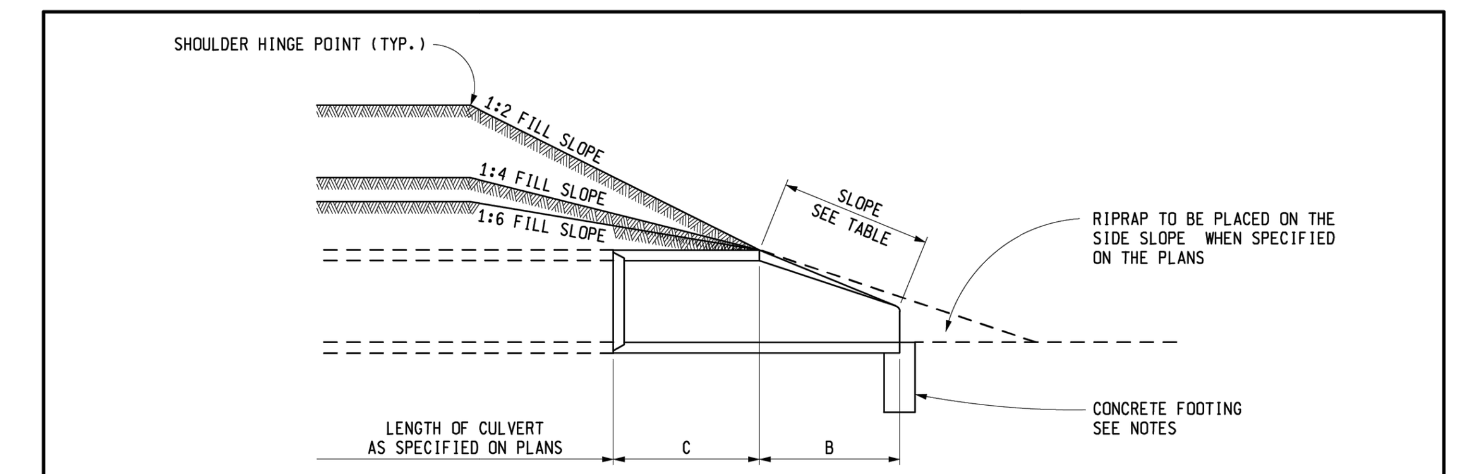
TYPICAL TRENCH DETAIL



MDOT Michigan Department of Transportation
PREPARED BY DESIGN DIVISION
DRAWN BY: B.L.T.
CHECKED BY: W.K.P.
DEPARTMENT DIRECTOR Paul C. Ajegba
APPROVED BY: Gregg Brunner, P.E. Gregg Brunner Jul 24 2019 11:25 AM
DIRECTOR, BUREAU OF FIELD SERVICES
APPROVED BY: Bradley C. Wieferich Bradley C. Wieferich Jul 3 2019 9:08 AM
DIRECTOR, BUREAU OF DEVELOPMENT

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR
PRECAST CONCRETE END SECTION FOR PIPE CULVERT

5-18-2020 F.H.W.A. APPROVAL	9-13-2018 PLAN DATE	R-86-F	SHEET 1 OF 2



SLOPE DETAIL

TABLE OF DIMENSIONS

PIPE DIAMETER (INCHES)	APPROX. SLOPE	T (INCHES)	A (INCHES)	B (INCHES)	C (INCHES)	D (INCHES)	E (INCHES)	G (INCHES)	R (INCHES)	X (INCHES)	Y (INCHES)
12	2.4 to 1	2	4	24	49	73	24	2	9	8	18
15	2.4 to 1	2¼	6	27	46	73	30	2¼	11	8	18
18	2.3 to 1	2½	9	27	46	73	36	2½	12	8	18
21	2.4 to 1	2¾	9	36	37½	73½	42	2¾	13	8	18
24	2.5 to 1	3	9½	43¼	30½	73¾	48	3	14	8	18
27	2.5 to 1	3¼	10½	49¼	24½	73¾	54	3¼	14½	8	18
30	2.5 to 1	3½	12	54	19¾	73¾	60	3½	15	8	18
36	2.5 to 1	4	15	63	34¾	97¾	72	4	20	8	18
42	2.5 to 1	4½	21	63	35	98	78	4½	22	10	24
48	2.5 to 1	5	24	72	26	98	84	5	22	10	24
54	2.0 to 1	5½	27	65	33¼	98¼	90	5½	24	10	24
60	1.9 to 1	6	35	60	39	99	96	5	*	12	24
66	1.7 to 1	6½	30	72	27	99	102	5½	*	12	24
72	1.8 to 1	7	36	78	21	99	108	6	*	12	24
78	1.8 to 1	7½	36	90	21	111	114	6½	*	12	24
84	1.6 to 1	8	36	90½	21	111½	120	6½	*	12	24

* AS FURNISHED BY THE MANUFACTURER

NOTES:

CONCRETE IN THESE END SECTIONS SHALL BE THE SAME GRADE AND STRENGTH AS SPECIFIED FOR REINFORCED CONCRETE PIPE, A.S.T.M. DESIGNATION C 76 CLASS II, EXCEPT AS MODIFIED BY THE STANDARD SPECIFICATION.

REINFORCEMENT IN THE "C" PORTION SHALL BE THE SAME AS SPECIFIED FOR REINFORCED CONCRETE, A.S.T.M. DESIGNATION C 76 CLASS II FOR THE SIZE OF CONNECTING PIPE.

REINFORCEMENT IN THE "B" PORTION SHALL HAVE A CROSS-SECTIONAL AREA EQUAL TO THAT OF ONE LAYER OF STEEL IN THE "C" PORTION.

THE END OF THE PIPE CULVERT SHALL BE PLACED IN THE CONCRETE END SECTION SO THAT THE FLOW LINES ARE FLUSH. THE JOINT MUST BE COMPLETELY FILLED WITH MORTAR ON THE INSIDE AND OUTSIDE AND STRUCK FLUSH. THE JOINT MUST BE WRAPPED WITH GEOTEXTILE BLANKET 36" WIDE WITH A 12" OVERLAP.

TO CHANGE THE FILL SLOPE TO THE SLOPE OF THE END SECTION USE A TRANSITION SLOPE OF APPROXIMATELY 10' IN LENGTH TO PROVIDE A PLEASING APPEARANCE.

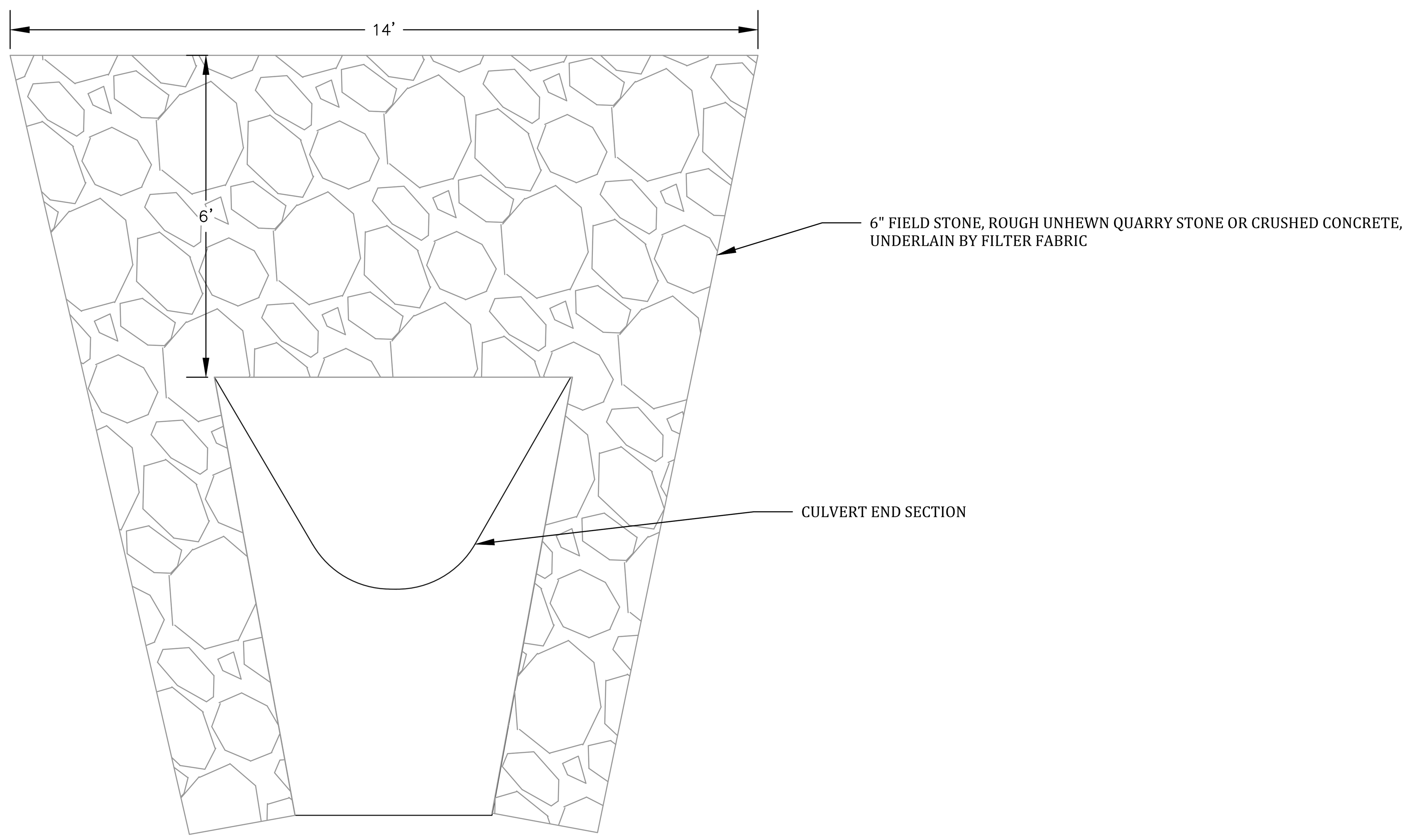
VARIATIONS IN DIMENSIONS - THE THICKNESS OF CONCRETE, THE POSITION OF STEEL, AND THE INTERNAL DIAMETER OF THE PIPE SHALL CONFORM WITH THE VARIATIONS IN DIMENSIONS AS PROVIDED IN THE SPECIFICATIONS FOR REINFORCED CONCRETE CULVERT, STORM DRAINS, AND SEWER PIPE, A.S.T.M. DESIGNATION C 76.

PLACE CONCRETE FOOTING AS SHOWN.

OUTFALL LABEL TO BE USED ONLY WHERE STORMWATER WILL DISCHARGE DIRECTLY TO THE WATERS OF THE STATE.

MICHIGAN DEPARTMENT OF TRANSPORTATION
BUREAU OF DEVELOPMENT STANDARD PLAN FOR
PRECAST CONCRETE END SECTION FOR PIPE CULVERT

5-18-2020 F.H.W.A. APPROVAL	9-13-2018 PLAN DATE	R-86-F	SHEET 2 OF 2



RIPRAP APRON DETAIL

Call 811 before you dig.

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LICENSED PROFESSIONAL ENGINEER
Caycee Hart 03/07/2025

Meridian Charter Township
Ingham County, Michigan
PATHWAY

SANCTUARY II PATHWAY
NE 1/4 SECTION 32 AND NW 1/4 SECTION 33, T4N, R1W, MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN

DRAWN BY: CH
CHECKED BY: YI

REVISIONS:

DATE	BY:	COMMENTS:
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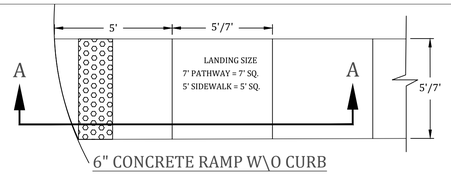
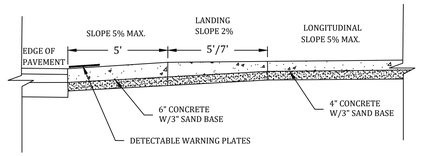
01.27.25	CH	ICDC SUBMITTAL #4
01.30.25	CH	ICDC SUBMITTAL #5
3.07.25	CH	PATHWAY ALIGNMENT SHIFT

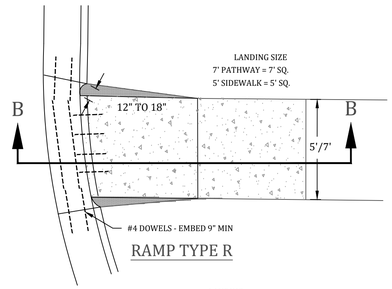
SHEET:



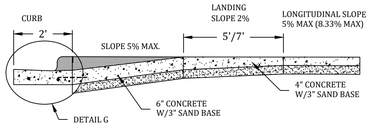
6" CONCRETE RAMP W\O CURB



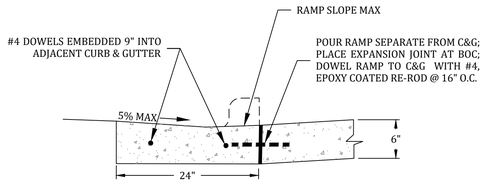
CROSS SECTION A-A



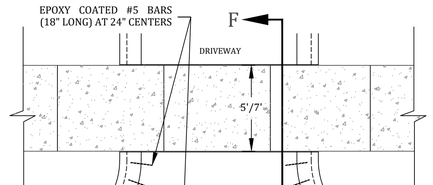
RAMP TYPE R



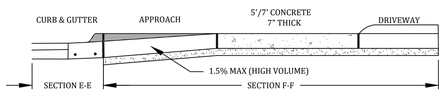
CROSS SECTION B-B



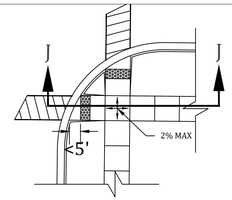
DETAIL G



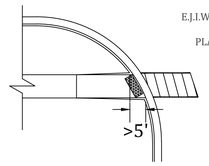
TYP. COMMERCIAL DRIVEWAY PLAN



CROSS SECTIONS E-E; F-F



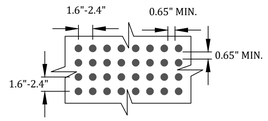
RAMPS LOCATED IN RADIUS



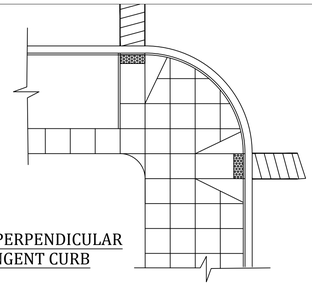
RAMP LOCATED IN RADIUS

DETECTABLE WARNING DETAILS

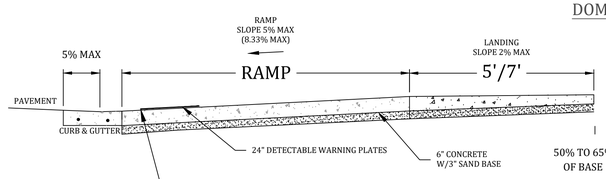
E.J.I.W. 7005 DETECTABLE WARNING PLATE
SIZES AVAILABLE 12", 18" & 24"
PLATES MUST BE ASPHALTIC COATED



DOME SPACING

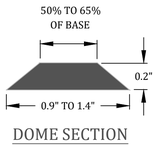


RAMP PERPENDICULAR
TO TANGENT CURB

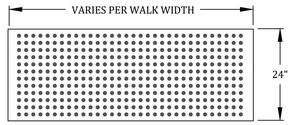


SECTION J-J

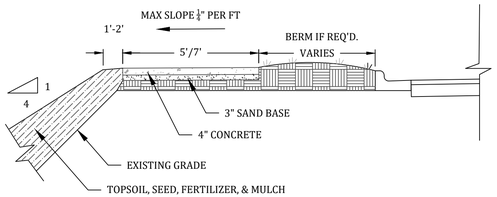
GRADE BREAKS AT THE TOP AND BOTTOM OF PERPENDICULAR CURB RAMPS SHALL BE PERPENDICULAR TO THE DIRECTION OF TRAVEL. AT LEAST ONE END OF THE BOTTOM GRADE BREAK SHALL BE AT THE BACK OF CURB.



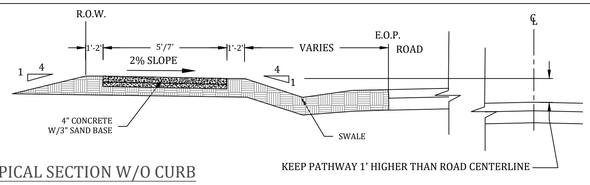
DOME SECTION



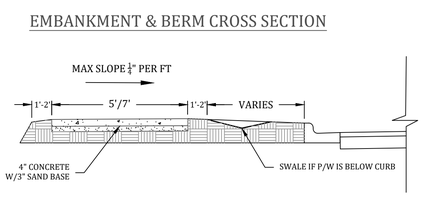
DOME ALIGNMENT



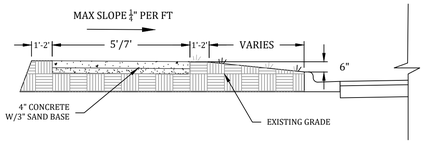
EMBANKMENT & BERM CROSS SECTION



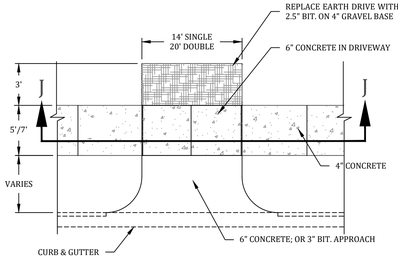
TYPICAL SECTION W/O CURB



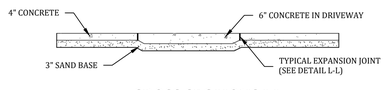
SWALE CROSS SECTION



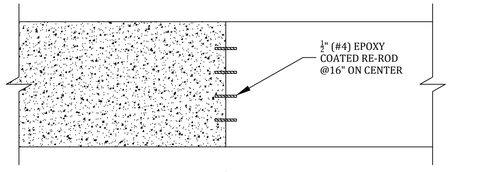
TYPICAL CROSS SECTION

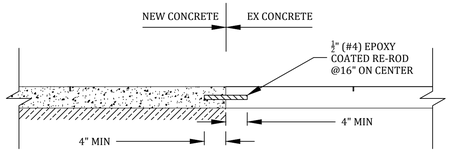


TYP. RESIDENTIAL DRIVEWAY PLAN



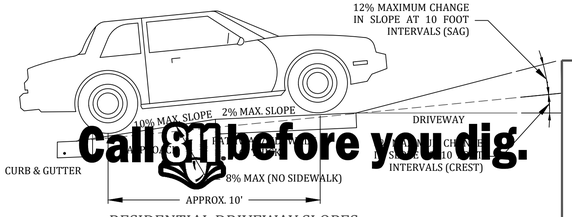
CROSS SECTIONS J-J





CONCRETE PINNING DETAIL

CROSS SECTION- (NO SCALE)

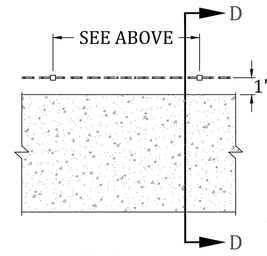


RESIDENTIAL DRIVEWAY SLOPES

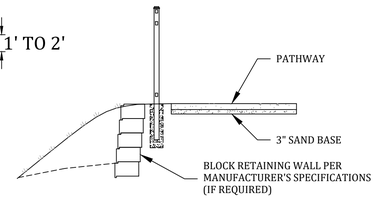
WOLVERINE PIPE LINE COMPANY 219-844-9510

GENERAL NOTES

1. SIDEWALKS/PATHWAYS SHALL BE 4" THICK CONCRETE EXCEPT AT DRIVEWAYS.
2. SIDEWALKS/PATHWAYS THRU DRIVES SHALL BE: 6" (RESIDENTIAL); 7" (MULTI-RESIDENTIAL & COMMERCIAL)
3. 3" OF COMPACTED SAND BASE SHALL BE PLACED UNDER ALL SIDEWALKS/PATHWAYS.
4. ALL BITUMINOUS APRONS SHALL BE 2 1/2" THICK, UNLESS NOTED OTHERWISE
5. PROPERTY IRONS SHALL BE MAINTAINED BY THE CONTRACTOR.
6. ALL EXISTING CONCRETE AND BITUMINOUS TO BE REMOVED SHALL BE SAWCUT.ALL CONCRETE AND BITUMINOUS REMOVAL SHALL BE CONSIDERED INCIDENTAL TO CONSTRUCTION.
7. ALL AGGREGATE BASE SHALL BE 22A, 4" THICK.
8. ALL TREE AND BUSH REMOVAL SHALL BE CONSIDERED PART OF SUB-GRADE PREPARATION.
9. LOCATION OF NEW PLANT MATERIAL SHALL BE AS DIRECTED BY THE ENGINEER, AND SHALL BE INSTALLED IN ACCORDANCE WITH GUIDELINES ESTABLISHED BY THE A.A.O.N.
10. ALL PLANT MATERIAL NOT MARKED FOR REMOVAL SHALL BE PROTECTED.
11. BITUMINOUS DRIVES SHALL BE SAWCUT 18" ON EITHER SIDE OF PROPOSED PATHWAY.

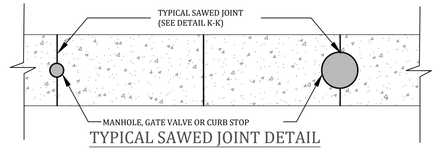


FENCE PLAN

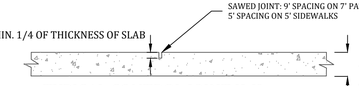


FENCE CROSS SECTION D-D

NOTE: FENCE POSTS CAN BE ANCHORED TO THE PATHWAY; THEN PATHWAY MUST BE WIDENED TO EIGHT FEET

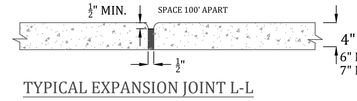


TYPICAL SAWED JOINT DETAIL



TYPICAL CONTROL JOINT K-K

4" MIN. TYPICAL EXCEPT
6" MIN. @ RESIDENTIAL DRIVE APPROACHES
7" MIN. @ COMMERCIAL APPROACHES



TYPICAL EXPANSION JOINT L-L

4" MIN. TYPICAL EXCEPT
6" MIN. @ RESIDENTIAL DRIVE APPROACHES
7" MIN. @ COMMERCIAL APPROACHES

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STATE OF MICHIGAN
Caycee Hart
License No. 6201313135
LICENSED PROFESSIONAL ENGINEER

Caycee Hart 03/07/2025

Meridian Charter Township
Ingham County, Michigan

PATHWAY

SANCTUARY II PATHWAY

NE 1/4 SECTION 32 AND NW 1/4 SECTION 33, T4N, R1W, MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN

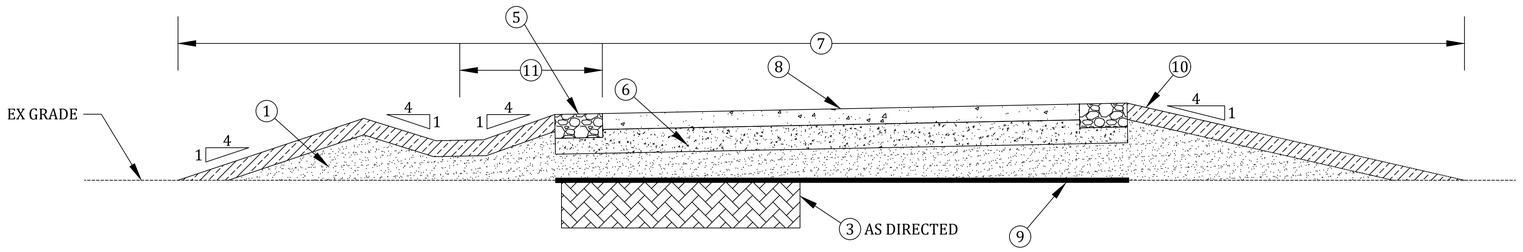
DRAWN BY: CH | CHECKED BY: YI

REVISIONS:

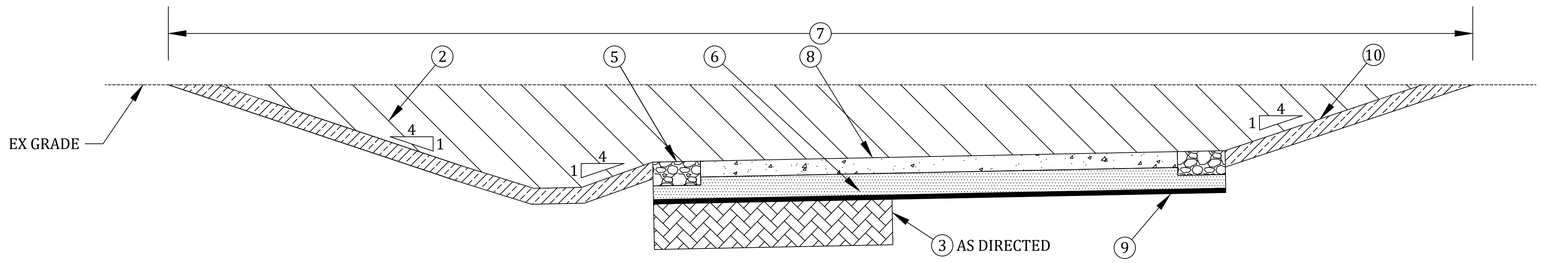
DATE	BY:	COMMENTS:
09.11.24	CH	EGLE SUBMITTAL #2
01.02.25	CH	ICDC SUBMITTAL #2
01.21.25	CH	ICDC SUBMITTAL #3
01.27.25	CH	ICDC SUBMITTAL #4
01.30.25	CH	ICDC SUBMITTAL #5
3.07.25	CH	PATHWAY ALIGNMENT SHIFT

SHEET:

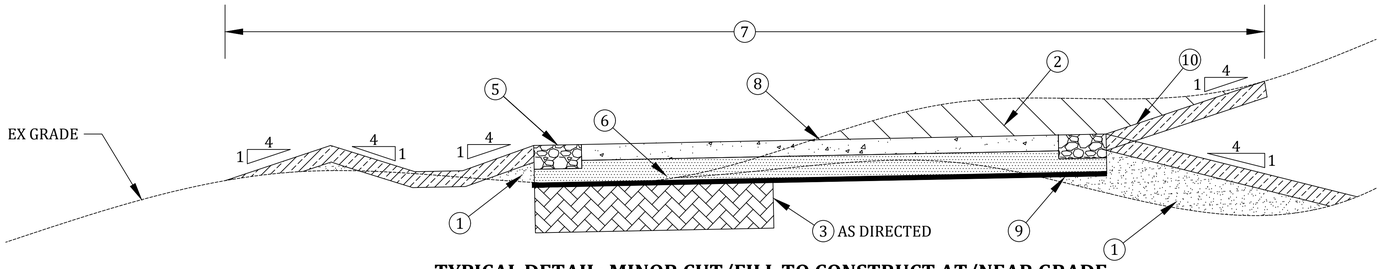
STATION 0+00 TO STATION 4+62 AND STATION 8+62 TO 9+64 DO NOT INCLUDE THE SWALE. AT THESE LOCATIONS THE CONTRACTOR SHALL TIE BACK INTO EXISTING GRADE USING A 4:1 SLOPE



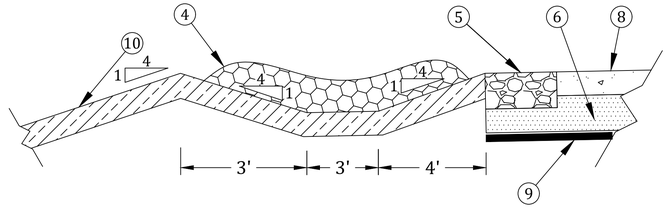
TYPICAL DETAIL: FILL
STA. 0+00 - 2+11, 6+97 - 9+18



TYPICAL DETAIL: CUT
STA. 5+52 - 6+97



TYPICAL DETAIL: MINOR CUT/FILL TO CONSTRUCT AT/NEAR GRADE
STA. 2+11 - 5+52, 9+18 - 9+64



TYPICAL DETAIL: SWALE *(POST CONSTRUCTION RUNOFF MITIGATION)*
STA. 4+62 - 8+62

CHECK DAMS:

-USE CHECK DAMS FOR SWALE GRADES 3-5%.

-SPACE OUT CHECK DAMS AT 20' O.C.

-USE 1-3" CRUSHED, WASHED STONE OR CONCRETE.

Call 811 before you dig.

WOLVERINE PIPE LINE COMPANY 219-844-9510

PAY ITEM LEGEND:

1. EMBANKMENT, LM
2. EXCAVATION, EARTH
3. SUBGRADE UNDERCUTTING, TYPE II
4. EROSION CONTROL, CHECK DAM, STONE
5. SHLD, CL II, 6 INCH (1 FOOT WIDE)
6. SHARED USE PATH, AGGREGATE (6 INCH DEEP)
7. SHARED USE PATH, GRADING
8. SHARED USE PATH, CONCRETE
9. CHEMICAL ROOT INHIBITOR
10. SITE RESTORATION (3" SCREENED TOPSOIL)
11. DISTANCE FROM EDGE OF PATHWAY TO CENTERLINE OF THE SWALE VARIES, SEE PLAN

GENERAL NOTES:

- CROSS-SECTIONS ARE NOT TO SCALE.
- CROSS-SECTIONS ARE LOOKING DOWN-STATION.
- SALVAGE OR REMOVE EXISTING TOPSOIL WITHIN THE GRADING LIMITS, OR AS DIRECTED BY THE ENGINEER. REMOVAL AND DISPOSAL WILL BE PAID FOR AS EXCAVATION, EARTH.
- TOPSOIL FOR SITE RESTORATION MAY BE SALVAGED FROM SITE, BUT MUST BE SCREENED OR RAKED TO REMOVE 1" OR GREATER DEBRIS.
- FOR SITE RESTORATION, USE SEED MEETING MDOT THM MIXTURE.
- EMBANKMENT, LM SHALL BE CLASS II GRANULAR MATERIAL OR ASPHALT MILLINGS.
- SHARED USE PATH, AGGREGATE SHALL BE SAND OR ASPHALT MILLINGS.
- FOR EMBANKMENT, LM, SHLD, CL II, AND SHARED USE PATH, AGGREGATE THE CONTRACTOR MAY USE MILLINGS FROM THE STOCKPILE AT MERIDIAN TOWNSHIP'S SERVICE CENTER. IF THE CONTRACTOR IS INTERESTED IN USING MILLINGS THEY SHALL CONTACT THE ENGINEERING DEPARTMENT TO DISCUSS THE UNIT PRICE FOR THE MILLINGS. THE CONTRACTOR WILL BE RESPONSIBLE TO PROVIDE THE LABOR AND EQUIPMENT TO LOAD AND TRANSPORT THE MILLINGS FROM THE STOCKPILE LOCATION TO THE CONSTRUCTION SITE.

ESTIMATED CUT/FILL QUANTITIES:
TOTAL CUT- 175 CY
TOTAL FILL- 455 CY
NET FILL - 280 CY

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Meridian Charter Township
Ingham County, Michigan
PATHWAY

SANCTUARY II PATHWAY
NE 1/4 SECTION 32 AND NW 1/4 SECTION 33, T4N, R1W, MERIDIAN TOWNSHIP, INGHAM COUNTY, MICHIGAN

DRAWN BY: CH | CHECKED BY: YI

REVISIONS:

DATE	BY:	COMMENTS:
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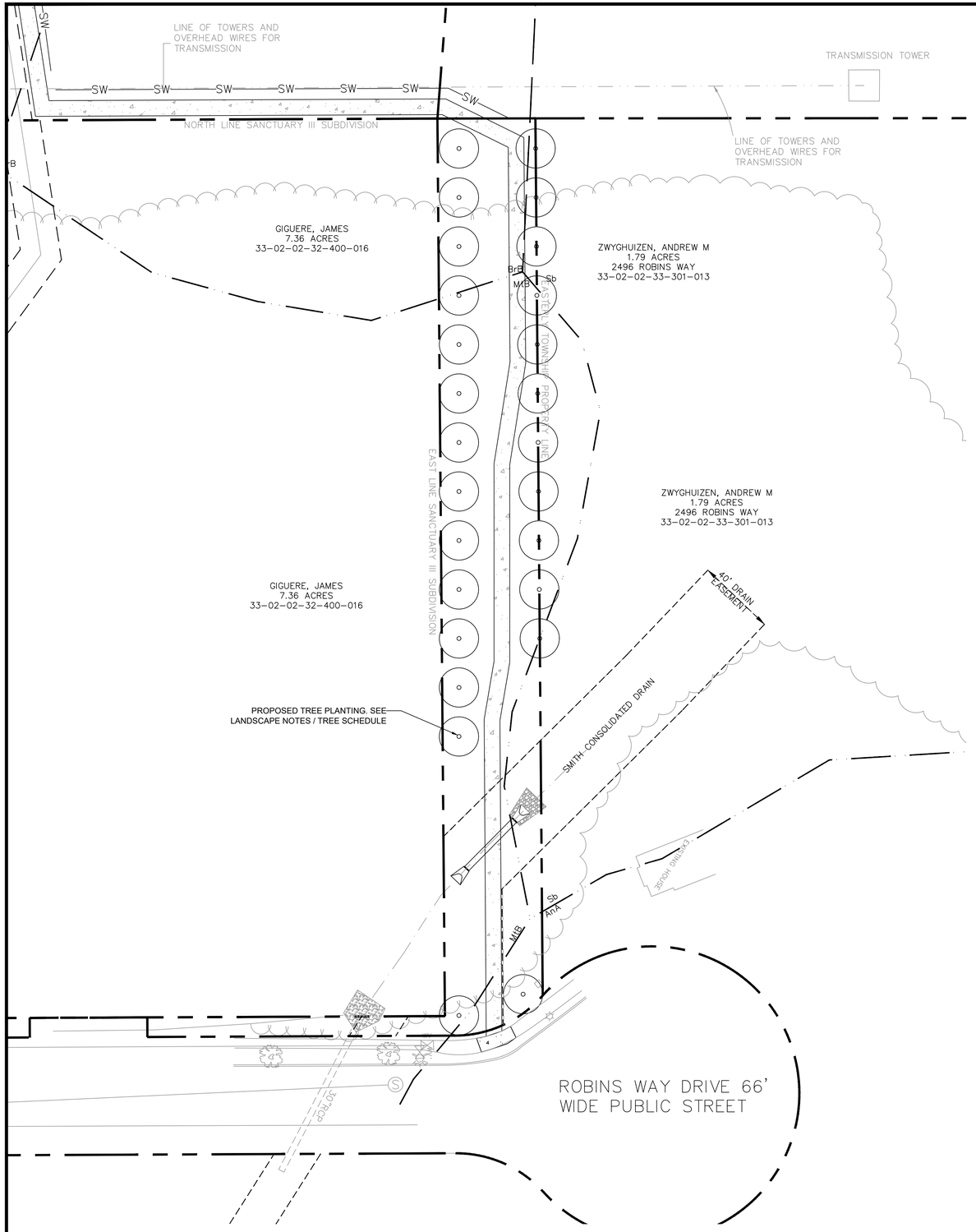
SHEET:



LEGEND

- PROPERTY LINE
- EXISTING EASEMENT
- STREAM CENTER LINE
- SOIL BOUNDARY

TREE SCHEDULE			
BOTANICAL / COMMON NAME	SIZE	CONTAINER	QUANTITY
PINUS STROBUS / EASTERN WHITE PINE	6-12" MINIMUM	BALL AND BURLAP	26*
PICEA GLACOA / WHITE SPRUCE	6-12" MINIMUM	BALL AND BURLAP	26*

LANDSCAPE NOTES:

1. *A TOTAL OF 26 TREES SHALL BE PLANTED ON MERIDIAN TOWNSHIP'S PROPERTY.
2. TWO OPTIONS FOR TREE SPECIES ARE INCLUDED IN THE TREE SCHEDULE. THE CONTRACTOR MAY SELECT ONE OF THE SPECIES TO BE PLANTED BASED BEST AVAILABILITY / PRICE.
3. THE LOCATION OF THE PLANTINGS ARE SHOWN CONCEPTUALLY ON THIS PLAN. THE CONTRACTOR SHOULD MAKE REASONABLE EFFORTS TO PLANT THE TREES A MINIMUM OF 10' FROM OTHER PLANTINGS, EXISTING TREES, AND THE EDGE OF THE PATHWAY.

SOILS:
AnA - Aubbeenaubbee-Capac Sandy Loams, 0 to 3 percent slopes,
BrB - Boyer sandy loam, 0 to 6 percent slopes
Co - Colwood-Brookston loams
HgtahA - Houghton Muck, 0 to 1 percent slopes
MaC - Filer Fine Sandy Loam, Saginaw Lobe, 6 to 12 percent slopes
MtB - Metea Loamy Sand, 2 to 6 percent slopes
Sb - Sebewa Loam, 0 to 2 percent slopes

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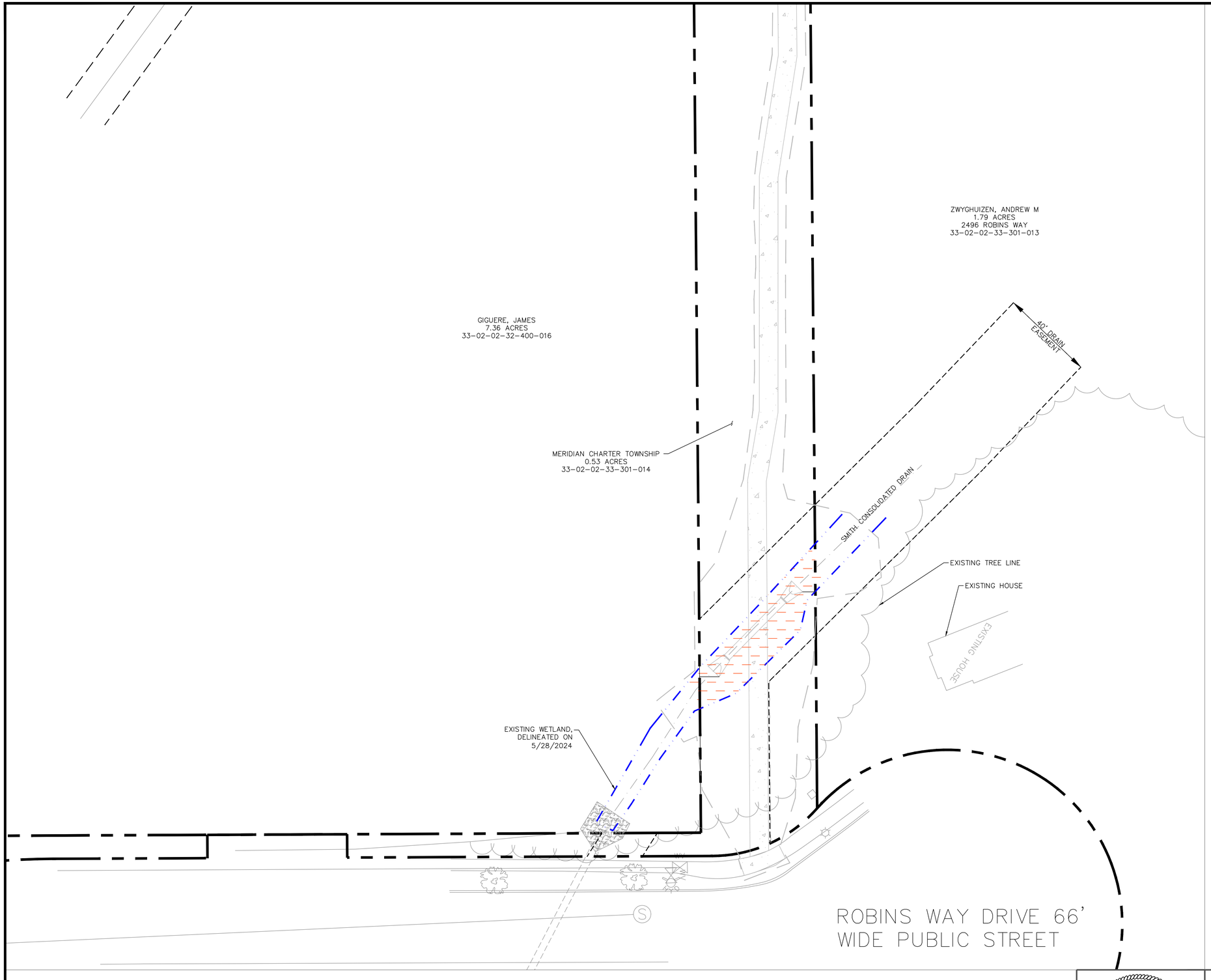

LEGEND

- PROPERTY LINE
- EXISTING EASEMENT
- LIMITS OF DISTURBANCE
- WETLAND BOUNDARY
- AREA OF WETLAND IMPACTS (0.03 ACRES)

SCALE: 1" = 40'

0' 20' 40' 80'

NORTH

Call 811 before you dig.

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Meridian Charter Township
Ingham County, Michigan

PATHWAY

SANCTUARY II PATHWAY

NE 1/4 SECTION 32 AND NW 1/4 SECTION 33, T4N, R1W, MERIDIAN CHARTER TOWNSHIP, INGHAM COUNTY, MICHIGAN

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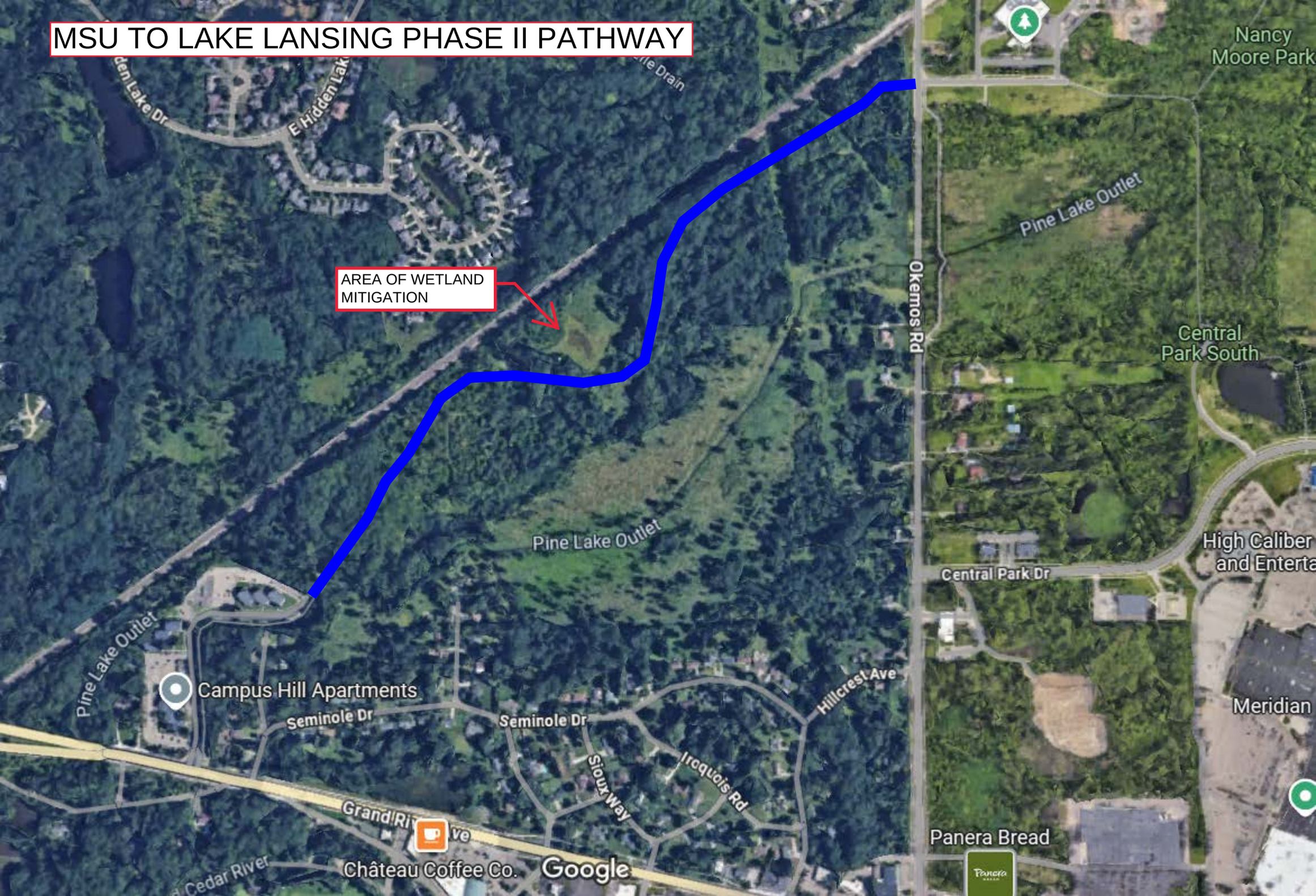
SHEET:
WETLAND IMPACT EXHIBIT


MSU TO LAKE LANSING PHASE II PATHWAY
AREA OF WETLAND MITIGATION
Nancy Moore Park
Pine Lake Outlet
Okemos Rd
Central Park South
Central Park Dr
High Caliber and Enterta
Meridian
Pine Lake Outlet
Campus Hill Apartments
Seminole Dr
Seminole Dr
Hillcrest Ave
Sioux Way
Iroquois Rd
Grand Ri ve
Château Coffee Co.
Google
Panera Bread
Cedar River
E Hidden Lake Dr

REVISED
1%-CHANCE BFE

WETLANDS

WETLAND DELINEATED
BY FTC&H 8/2/22

10' HMA TRAIL

WETLAND MITIGATION: 0.14 AC
0.04 AC APPLIED TO ELMSWA PROJECT
0.045 AC APPLIED TO SANCTUARY PATHWAY PROJECT

***Revision Date: 5/1/25**

To: **Environmental Commission**

From: **Dan Opsommer, Deputy Township Manager**
Director of Public Works and Engineering

Date: **May 2, 2025**

Re: **2024 Climate Sustainability Funds**

When considering the use of the 2024 Climate Sustainability Funds in support of the Township's proposed Bioswale project, the Commission requested details on how the project directly relates to components of the Township's 2022-2027 Climate Sustainability Plan. The primary goal being met with this proposal is under the *'Water and Green Infrastructure Management'* portion of the Climate Sustainability Plan.

The first objective of this section is to 'Increase resiliency toward extremes of weather by continuing to upgrade green infrastructure and other best management practices to minimize stormwater runoff and flood vulnerability while retaining enough surface water to mitigate drought damage'. One strategy to promote and incentivize green stormwater infrastructure specifically mentions bioswales as an example of this initiative.

Another connection is to the Climate Sustainability Plan's fourth goal of promoting the importance of water conservation. As bioswales require less maintenance and watering than typical roadside ditch turf, they are a greener alternative which help to conserve the use of treated drinking water.

As this proposal aligns with the goals of the Climate Sustainability Plan, the Township feels it is an appropriate and highly effective use of Climate Sustainability Funding as the flooding in this area is very severe. The flooding negatively impacts the park, local roads, and property owners in this area.

In the 2024 Township Budget, the Township Board allocated $30,000 in funding for climate sustainability purposes. This was the first such appropriation in a Township Budget. There was no specific project that this funding was appropriated for. Rather, it was essentially the Township Board expressing a desire for Township staff and the Environmental Commission to brainstorm projects that are focused on climate sustainability.

In 2024, the Township invested $2,204.58 of the Climate Sustainability Funds to help support the Gleaning Project at the Farmer's Market. This was to acquire a table, canopy and other resources for the Gleaning Project. The Township also invested $2,873 for wetland education signage.

Based on input at the April 2 meeting, Township staff have purchased two compost bag dispensers. There were already compostable bags available at the recycling center and the Marketplace on the Green, but we are going to install the bag dispensers to make the bags more visible. The ongoing cost of the composting is coming out of the Park Millage Fund, so there will be no additional costs to the Climate Sustainability Funds.

Memo to Environmental Commission
May 2, 2025
Re: 2024 Climate Sustainability Funds

We will verify the costs of the final signage that needs to be purchased prior to the May 7 meeting.

Having expended $5,362.58 of the available $30,000, we currently have $24,637.42 remaining in Climate Sustainability funds, minus the cost of the final signs that need to be purchased.

The purpose of this agenda item is to continue discussions on how to invest the remaining 2024 Climate Sustainability funds. Commissioners should feel free to bring forward ideas that they may have in mind. We can also begin discussion on what process we would like to establish for selecting project/s.

Township staff have a project that we would like to offer up for your consideration. Even if this project is not something that the Environmental Commission wishes to pursue, we thought this would help get the Commissioners thinking about prospective projects:

Conceptual Marshall Park East Bioswale Project: I want to preface this conceptual project by stating that we have not formally approached the Township Park Commission to solicit their input yet. If the Environmental Commission has an interest in pursuing this project, we will make that our first step in the process. Deputy Manager Opsommer has had an initial preliminary discussion re: this conceptual project with Parks Director Courtney Wisinski.

The east end of Marshall Park and the surrounding area suffers from significant flooding during the spring thaw and major storm events. This stormwater floods Columbia St, Marshall Park, surrounding private property, etc.

The Township would like to help address these flooding issues as we have land (i.e. Marshall Park) that make it possible for us to contribute toward the solution. I want to be clear that the flooding extends beyond the park property, so we cannot address all of the flooding issues on the park property. However, we likely can help alleviate some of the flooding.

Conceptually, Township staff believe it could possibly be viable to construct bioswales (or a similar alternative) along the east property line of Marshall Park and in the southeast corner of Marshall Park to properly manage stormwater, treat it, and outlet it through the existing storm drains at the Columbia St/Lake St intersection.

The bioswale would also serve to help beautify the east end and/or southeast corner of the park. There is high ground water in this area, so it is possible that a bioswale may not be viable. This will require additional investigation, which we would have our engineering firm assist us with.

This project would likely exceed the Climate Sustainability funding we have available. However, the Township could cover the remaining cost with the Local Road Program as we are looking to resurface the streets in this neighborhood in the future, but we would like to improve the existing drainage issues in this area before doing so. The Township would ordinarily simply perform ditch cleanout to create detention areas for a Local Road Program project. However, if the climate

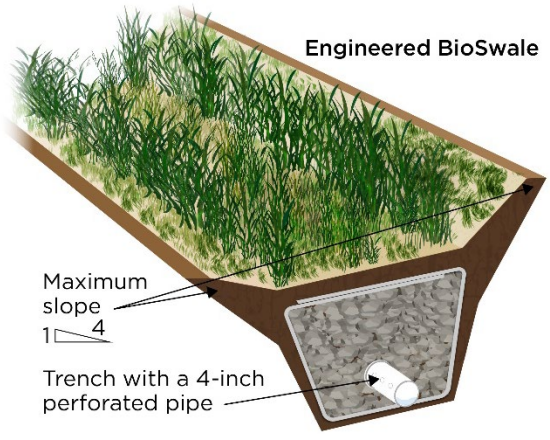
sustainability funds were also put forth to help support this project, we could pursue bioswales or a similar alternative to naturally filter/treat the stormwater.

Conceptually, the project area could be:

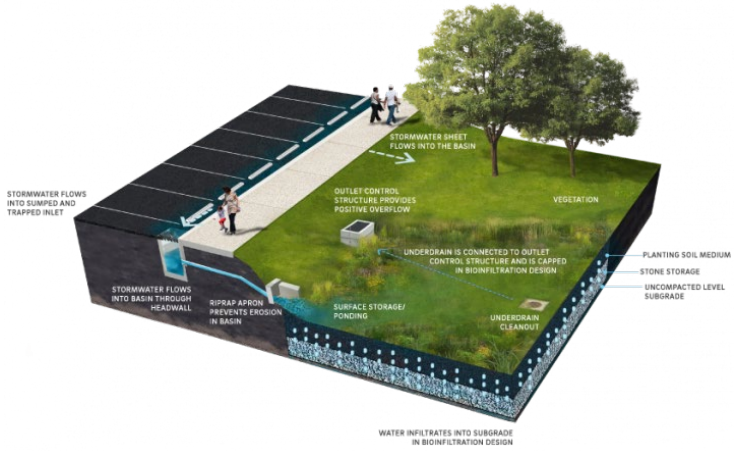
We would not necessarily use this entire area. That would be dependent upon Park Commission and Park Department input, community input, stormwater runoff calculations, and other factors.

The Township has an existing perforated drain tile in the southeast corner of Marshall Park, but it is not sufficient to handle the spring thaw or severe storm events.

For those who may be unfamiliar with bioswales, here are two conceptual designs:



Memo to Environmental Commission
May 2, 2025
Re: 2024 Climate Sustainability Funds



The benefits of a bioswale on water quality include:

- Protects local waterways from stormwater pollutants
- Creates habitat for wildlife, including birds and butterflies,
- Reduces non-point pollution by filtering stormwater
- Reduces standing water (puddles) that can attract mosquitoes
- Creates colorful gardens with a variety of flowers and plants year round
- Requires low maintenance after establishment

Please click here for additional information regarding the benefits of bioswales from MSU Extension.

We offer this up as a prospective project that the Environmental Commission might wish to pursue. If the Commission wishes to explore this project further, we would recommend the following next steps:

1. Obtaining initial input from the Township Park Commission and Park Department staff
2. An alternative analysis and rough cost estimates for how to help alleviate the flooding

Again, the purpose of this agenda item is to begin discussions on how to invest the remaining 2024 Climate Sustainability funds. Commissioners should feel free to bring forward ideas that they may have in mind. We can also begin discussion on what process we would like to establish for selecting project/s.

To provide greater context regarding the flooding in this low lying area near the Columbia St and Lake St intersection, here are some photos that were recently taken this spring:

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May 2, 2025
Re: 2024 Climate Sustainability Funds

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