



AGENDA

Rogers Planning Commission

October 7, 2024 - 7:00 PM

1. CALL TO ORDER AND PLEDGE OF ALLEGIANCE

2. OPEN FORUM

Individuals may address the Council about any item not contained on the regular agenda. A maximum of 10 minutes is allocated for the Forum. If the full 10 minutes are not needed for the Forum, the Mayor will continue with the agenda. If additional time is needed for the Forum, the Council will continue the Forum following Other Business on the agenda. The Council will take no official action on items discussed at the Forum, with the exception of referral to staff of Commission for future report.

3. APPROVE AGENDA

Council members may add items to the agenda for discussion purposes or staff direction only. The Council will not normally take official action on items added to the agenda.

4. CONSENT AGENDA

These items are considered to be routine and will be enacted by one motion. There will be no separate discussion of these items unless a Councilmember so requests, in which event the item will be removed from the Consent Agenda and placed elsewhere on the agenda.

4.1 Approve Minutes from August 5th, 2024 Planning Commission Meeting

4.2 Approve Minutes from September 9th, 2024 Planning Commission Meeting

5. PUBLIC HEARINGS

5.1 Application by Veit & Company, Inc. for Expansion of a Mining Operation for the Parcel with PID 16-120-23-32-0002

5.2 Application by Taylor Development Co LLC for Preliminary Plat Approval for Taylor Inlet, a Rural Residential Development

5.3 Application by Asguard Acquisitions, LLC for Variance and Site Plan Amendment Related to the Mixed Use Apartment at 21225 141st Avenue North (Asguard Addition Lot 2, Block 1)

6. NEW BUSINESS

- 6.1 Capital Improvement Plan Review and Recommendation to forward to City Council
- 6.2 Application by the City of Rogers for a Site Plan for the Turf Facility at 14160 James Road
- 6.3 Application by Word of Peace Lutheran Church for a Site Plan Amendment for a Proposed Addition at 21705 129th Avenue North
- 6.4 Application by Craft & Crew Hospitality for Site Improvements at 21400 John Milless Drive (Municipal Bar Property)

7. OTHER BUSINESS

- 7.1 Reschedule the November Planning Commission Meeting from Monday, November 4th to Wednesday, November 6th due to Elections.

8. ADJOURN



STAFF REPORT

ROGERS PLANNING COMMISSION

Meeting Date: October 7, 2024

Agenda Item: 4.1

Subject: Approve Minutes from August 5th, 2024 Planning Commission Meeting

Prepared By: Alec Henderson, City Planner

Overview / Background / Analysis

This item contains the minutes from the previous planning commission meeting.

Staff Recommendation

Staff recommends approval of the August 5th, Planning Commission meeting.

Financial Impact: NA

Source Fund: NA

Budgeted? N/A

Supporting Documentation

A. August 5th, 2024 Planning Commission Minutes

**MINUTES
ROGERS PLANNING COMMISSION
AUGUST 5TH, 2024**

CALL TO ORDER

The meeting of the Rogers Planning Commission was held on July 1st, 2024 at 7:00 p.m. and was called to order with Chair Carlson. Commissioners Fisher, Lohr, Plansky, Mullin, Sattersten and Stiebinger

Member(s) absent: Alternate Commissioner Kussman.

Also present were City Planner, Alec Henderson; and Council Member Enga;

OPEN FORUM

Chair Carlson closed the open forum.

SET AGENDA

A motion by Mullin and a second by Stiebinger was made to approve the agenda.

On the vote, all members present voted AYE. Motion carried 7-0-0.

CONSENT AGENDA

No items.

PUBLIC HEARINGS

5.1 WITHDRAWN - Application by Dean Johnson Homes for Preliminary Plat and Variance for the Hawkins Place Townhome Development

Henderson explained that the Hawkins development application was withdrawn and the only needed action is to close the public hearing and close discussion on the applications.

Members from the audience requested additional opportunity to be heard.

Chair Carlson invited members of the public to come forward.

The following is a summary of Public Comment.

- Mary Ann Schiebe – 13040 Oakwood Dr – reiterated statements from the previous meeting. Too much land is being developed in Rogers. Would like to see additional green space rather than houses. Children use oakwood and additional traffic would be safety concern.
- Matt Finn – 13017 Oakwood Dr– requested additional information on when the change to medium density occurred. Three years ago the plan was low density in this parcel. Also requested information on who reviews wetlands and stormwater, and has concerns with utilities, water color, and electricity brown outs and voiced similar concerns regarding school capacity.

Henderson responded that the change in zoning and land use occurred during the comprehensive plan update in 2020 where a series of public meetings and hearings occurred which review those changes prior to adoption. Henderson also explained that engineering plans are reviewed by

departments in house and that the Elm Creek Watershed has oversight of stormwater management.

- Finn asked who to talk to about rezoning, utility issues, and park issues.

Council Member Enga requested staff provide some further background.

Henderson summarized that every 10 years Cities in the metro area are required by state law to update land use and comprehensive plan policies according to Metropolitan Council Guidance.

- David Getz - 13228 Aspen Dr – Requests information on improvements to Main St and Tucker Rd. Who looks at the road ways.

Henderson described that the city looks at population growth, and transportation together during the comprehensive plan process. Additionally, road way improvements are looking at during individual development proposals as well and directed him to public works for additional information regarding immediate future road improvement projects.

A motion by Stiebinger and a second by Fisher to close the public hearing at 7:36.
On the vote, all members present voted AYE. Motion carried 7-0-0.

A motion by Plansky and a second by Mullin to close discussion on the applications for the Hawkins Drive development.
On the vote, all members presented voted AYE. Motion carried 7-0-0.

NEW BUSINESS

No items

OTHER BUSINESS

No Items

ADJOURN

Stiebinger made a motion and Plansky seconded to adjourn the meeting at approximately 7:40 P.M. On the vote, all members voted AYE (7-0-0). Motion carried.



STAFF REPORT

ROGERS PLANNING COMMISSION

Meeting Date: October 7, 2024

Agenda Item: 4.2

Subject: Approve Minutes from September 9th, 2024 Planning Commission Meeting

Prepared By: Alec Henderson, City Planner

Overview / Background / Analysis

This item contains minutes from the previous meeting.

Staff Recommendation

Staff recommends approval of the September 9th, 2024 Planning Commission Meeting.

Financial Impact: NA

Source Fund: NA

Budgeted? N/A

Supporting Documentation

A. September 9 2024 Planning Minutes

**MINUTES
ROGERS PLANNING COMMISSION
SEPTEMBER 9TH, 2024**

CALL TO ORDER

The meeting of the Rogers Planning Commission was held on September 9th, 2024 at 7:00 p.m. and was called to order with Chair Carlson. Commissioners Fisher, Lohr, Plansky, Mullin, Sattersten and Stiebinger

Member(s) absent: Alternate Commissioner Cartwright, Alternate Commissioner Kussman.

Also present were City Planner, Alec Henderson; and Council Member Enga; Public Works Director, Doran Cote.

OPEN FORUM

Chair Carlson closed the open forum.

SET AGENDA

A motion by Plansky and a second by Stiebinger was made to approve the agenda. On the vote, all members present voted AYE. Motion carried 7-0-0.

CONSENT AGENDA

4.1 Approve the Minutes from July 1st, 2024 Planning Commission Meeting

A motion by Plansky and a second by Stiebinger was made to approve the July 1st minutes with the change to correct spelling error.

On the vote, Motion carried 6-0-1. With Carlson abstaining due to absence.

PUBLIC HEARINGS

5.1 Application by William Lundeen for Variances Related to an Additional Accessory Structure at 148585 Brockton Lane

Henderson summarize the report. The application is requesting variances for accessory structure number, placement and size. The applicant has applied for a variance to construct a second detached garage that is approximately 480 square feet in size, in the side yard. The size of the parcel restricts the number of outbuildings to one and size to 800 square feet (a 792 square feet detached garage is already present at the property). Henderson requested discussion specifically on the unique circumstances that requires the variance.

Chair Carlson Opened the Public Hearing at 7:16 PM.

The applicant, William Lundeen came forward and explained that he has specific tools and hobbies that requires the additional garage including a lift. He has been a long time resident (since 1998) and is looking to stay rather than move. The additional garage will also make sure that he can adequately store items indoors. He explained that he will be using quality materials and it will appear similar to the home, and the garage will not be used for business, nor will there be any additional driveway access.

Motion by Mullin to Close the public hearing, Second by Plansky.

On the vote, Motion carried 7-0-0 at 7:24.

Plansky stated that he does not see a major issue with the request due to similarities with nearby structures having similar sizes and numbers of outbuildings.

Stiebinger echoed that on principal does not see an issue, but struggles with seeing the argument and notes that there is no real guidance in the code regarding parcels less than 1 acre.

Carlson appreciates the due diligence the applicant has provided and his conversations with neighbors, but struggles with the proximity with the adjacent structure.

After discussion,

Stiebinger made a motion to approve the variances to number, size, and placement in the side yard echoing the findings found in the staff report with clarification that the unique circumstances are that there are similar parcels with larger outbuildings, the septic needs require the side yard placement, and the existing house is too close to the corner street for an attached garage. Additionally the condition to require the 6 ft separation from the existing detached garage is maintained.

Mullin seconded.

On the vote, all members present voted AYE. Motion carried 7-0-0.

5.2 Items related to the Northdale Blvd Light Industrial Development Preliminary and Final Plat

Site Plan

Conditional Use Permit

Community Development Director, Angell, summarized the items. The item has been requested to be table due to revisions needed based on engineering review, and DNR comments. The 45.3 acre site under consideration a the north end of Northdale Blvd and south of the Crow River is zoned and guided for Mixed Use. The site is currently vacant with residential to the west, the river to the north, industrial uses to the south and Highway 101 to the east. The developer CP West LLC is requesting approvals for 3 light industrial buildings totally 557,000 square feet across three parcels. The uses are light industrial in nature and are requesting Preliminary Plat, Final Plat, Site Plan and Conditional Use permit approvals.

The construction would be phased with buildings A and B constructed first, before building C. There are no known users and the development is speculative. The lots range from 13 to 18 acres. The building fronts face outwards with truck and bay doors phasing inwards to limit noise issues.

The DNR has commented regarding grading activities on site, and concerns with stormwater facilities' proximity to the river. Mature trees are being kept adjacent to the river, however the existing wind breaks in the center of the site are proposed to be removed. Landscaping is proposed to fill in gaps where existing trees are proposed to stay to provide addition screening to the west.

Plansky asked why the CUP is coming forward now rather then when a user is known?

Angell responded that the applicant is requesting approval now to better attract users to the site.

Plansky requested information on parking and asked if manufacturing is the highest parked industrial use.

Angell responded in the affirmative and confirmed that manufacturing was used for the speculative parking count.

Lohr asked if data centers were allowed.

Angell responded that data centers are not technically in the code there therefore a code amendment would be needed to that allowance. Additionally, the typically data centers require an 800,000 square foot structure and it is unlikely this would be an adequate site. Additionally power draw may not be supported for a data center use.

Lohr wishes to confirm that there is not TIF assistance requested.

Angell confirmed no TIF assistance has been requested.

Stiebinger made a motion to table the hearing and items for a future meeting date for revised plans based on review comments, Plansky Seconded.

On the vote, all members present voted AYE. Motion carried 7-0-0.

NEW BUSINESS

No items

OTHER BUSINESS

No Items

ADJOURN

Stiebinger made a motion and Plansky seconded to adjourn the meeting at approximately 7:59 P.M. On the vote, all members voted AYE (7-0-0). Motion carried.



STAFF REPORT

ROGERS PLANNING COMMISSION

Meeting Date: October 7, 2024

Agenda Item: 5.1

Subject: Application by Veit & Company, Inc. for Expansion of a Mining Operation for the Parcel with PID 16-120-23-32-0002

Prepared By: Brett Angell, Community Development Director

Overview / Background / Analysis

At the June 27th, 2023 meeting date, the City Council approved an Interim Use Permit ("IUP") for Veit & Company, Inc. ("Applicant") for the purposes of allowing sand and gravel mining at a parcel of property with the PID 16-120-23-32-0001 ("Subject Property"). The initial IUP that was granted was for a portion of the property (approximately ten acres) and not the entirety of the site. At the time of the initial approval, the Applicant shared their intention to do additional mining throughout a majority of the property with the understanding that they would be required to obtain additional approvals from the city and complete any required environmental assessments for the operations. Following the approval for the first phase of mining, the applicant has begun their mining operations at the site for the area approved via the initial IUP request.

The Applicant has submitted an IUP request to expand the mining operations on the Subject Property. Additionally, the applicant has provided an Environmental Assessment Worksheet ("EAW") which was posted in the EQB portal and distributed to regulatory agencies for review. Said regulatory review comments were due to the City of Rogers on September 26, 2024. A decision of the EAW not triggering the need for an Environmental Impact Statement (EIS) will be on the October 22nd City Council agenda. The proposed IUP request aligns with what is shown in the EAW for the proposed project.

Interim Use Permit (IUP) Request

The Applicant is proposing to expand their current sand & gravel mining operation across a majority of the Subject Property. Mining and Extraction is an interim use in the R2 zoning district, per City Code section 125-50. As such, the process and criteria for approval are regulated by section 125-25 related to interim use permits. Mining is also required to meet regulations related to land disturbances found in City Code section 125-91. An IUP, if granted, is tied to the applicant and not the property (contrary to a Conditional Use Permit) and has a set expiration date. In order to be granted an IUP, a proposed project must fulfill the following criteria:

- The proposal must conform to zoning regulations and land use guidance as defined in the Comprehensive Plan;
- The date or event that will terminate the use must be identifiable with certainty;

- Permission of the use will not impose additional costs on the public if it is necessary for the public to take the property for public use in the future; and
- The user agrees to any conditions the city deems appropriate for permission of the use.

The proposed IUP request fulfills the above-mentioned criteria, as explained below:

- The site would be returned to standards for use for its intended future guidance of single-family residential, which is consistent with the 2040 Comprehensive Plan;
- The proposal conforms to zoning regulations except where conditions apply;
- The applicant shall be required to ensure safe access conditions continue to be maintained with Hennepin County and city staff and to ensure the berm will not have adverse effects on the right-of-way or adjacent properties. Additionally, the site will be restored at the cost of the applicant.

Site Plan

The Applicant is proposing to mine approximately 33.66 acres of the Subject Property. The Applicant is not proposing any new structures to be built on the property. The site is currently used for agricultural purposes and mining and does not currently have any structures. The access to the site related to the mining operation would continue to be from County Rd 144 to the north. The site is currently owned by the Applicant. Adjacent uses to the site include mining operations to the north and east, agricultural and single-family to the south, and agricultural/undeveloped to the west.

Proposed Mining Operation

The proposed mining operation includes an expansion of what is currently occurring on the Subject Property. The Applicant is proposing to mine approximately 33.7 acres of the 42.75 acre property. Said mining would occur over the course of seven phases as defined by total size below:

- Phase 1 (currently underway) - 5.34 acres
- Phase 2 - 3.92 acres
- Phase 3 - 4.07 acres
- Phase 4 - 5.13 acres
- Phase 5 - 4.93 acres
- Phase 6 - 5.14 acres
- Phase 7 - 5.13 acres

Upon completion of the mining per each phase, the area would be reclaimed and graded. a six-foot berm would be constructed along the edges of the property to screen the mining activities. Each phase of the mining would utilize the same access point and the internal access road would be altered/expanded for each phase of the mining. Per

the provided Resource Management (Mining) Plan, mining and processing will not take place within 50 feet of any property line/road right-of-way and will be setback a minimum of 200 feet from any single family home. The proposed hours of operation of the mining activities include 7:00 AM - 7:00 PM, Monday through Friday and 7:00 AM - 3 PM on Saturdays. No mining activities would occur on Sundays.

Per the Mining Plan, it is anticipated that approximately 1,620,700 cubic yards of material will be exported as granular product and approximately 232,400 cubic yards of topsoil and non-granular material will remain onsite or used as reclamation fill. Based upon the applicant's anticipated exporting of between 50,000-100,000 cubic yards per year, the overall lifespan of the mine would be between 16–32 years. When reclaimed for single-family development, it will be required to be graded in a manner which allows for an access connection onto Willandale Road to the east. The Applicant did provide a ghost plat to show a potential development scenario of the site in the future.

The proposed Mining Plan includes additional detail related to haul routes and traffic. The one major haul route identified includes going west along County Road 144 and going either north or south on Territorial Road. The proposed traffic volumes for the mining operations include 86 total truck trips per day. This traffic volume is consistent with what was included in the initial IUP which was granted.

Staff Recommendation

Motion to recommend approval of Resolution 2024-96 granting approval of an interim use permit allowing for the expansion of a mining operation for Veit & Company, Inc.

Specific conditions of approval are defined within the attached resolution.

Financial Impact: Not applicable.

Source Fund: Not applicable.

Budgeted? N/A

Supporting Documentation

- A. Resolution 2024-96 Veit Mining Expansion
- B. Location Map
- C. Veit Resource Management Plan_100224
- D. Veit Pollution Prevention Plan

RESOLUTION NO. 2024-96

APPROVING AN INTERIM USE PERMIT ALLOWING A MINING OPERATION EXPANSION FOR VEIT & COMPANY, INC.

WHEREAS, Veit & Company, Inc. (“Applicant”) submitted an application to the City of Rogers (“City”) requesting approval of an Interim Use Permit (“IUP”) for the purpose of expanding an existing sand and gravel mining operation within the city; and

WHEREAS, the Subject Property, which is under ownership by an entity related to the Applicant, for the mining operation is approximately 44 acres in size with the PID 16-120-23-32-0002 and is currently zoned as R2 - Single Family Residential; and

WHEREAS, the IUP for mining operation shall occur on the parcel as legally described in Exhibit A and depicted in Exhibit B; the area will be mined and restored per the mining plan shown in Exhibit C; and shall adhere to the pollution prevention plan shown in Exhibit D; and

WHEREAS, the Applicant previously received an Interim Use Permit from the City on June 27, 2023 for the establishment of a mining operation on a portion of the Subject Property; and

WHEREAS, Mineral Extraction (mining) is an interim use in the R2 zoning district, and must conform to R2 district standards and mining performance standards, as defined in City Code Sections §125-55 and §125-91; and

WHEREAS, interim use permit approvals are regulated by City Code Section §125-25; and

WHEREAS, pursuant to Minnesota Statute §462.357, the Planning Commission (“Commission”) held a Public Hearing (“Hearing”) on October 7, 2024 to consider and receive public comment on said IUP request; and

WHEREAS, Notice of the Hearing was posted and published in the City’s official newspaper and mailed to any and all owners of affected properties, as required by State Statute; and

WHEREAS, on October 7, 2024, the Commission reviewed the IUP request, provided comments, and recommended approval of said IUP for a mining operation expansion to the City Council, based on the following findings:

- The applicant has applied for an interim use permit and supplied all the required information requested, including the completion of an Environmental Assessment Worksheet (EAW); and
- The site will be returned to standards for use for its intended future guidance of sewer single-family residential, which is consistent with the 2040 Comprehensive Plan; and
- The proposal conforms to zoning regulations except where conditions apply; and
- The applicant shall conform to the approved Resource Management/Mining Plan and Pollution Prevention Plan; and

- The impacts of traffic access to the site and the berm will not have an adverse effect on right-of-way or adjacent properties. Additionally, the site will be restored at the cost of the applicant.

WHEREAS, the City Council concurred with the Planning Commission findings, and further found that the proposed mining operation satisfies City Code requirements, except where noted in the conditions, as stated herein.

NOW THEREFORE, BE IT RESOLVED, BY THE CITY COUNCIL OF THE CITY OF ROGERS, MINNESOTA, the request Interim Use Permit for Veit & Company, Inc. is hereby approved allowing for the expansion of a sand and gravel mining operation on the Subject Property, with the following conditions:

1. The Resource Management Plan (Mining Plan), Restoration Plan, and/or Pollution Prevention Plan shall be modified as recommended or required by the City's Engineering, Community Development, and/or Fire Departments.
2. The Interim Use Permit may at no time be transferred to any party of than that designated in the Mining Agreement.
3. If at any time the Applicant is found to be out of compliance with the Mining Agreement, City Code, or this Resolution, the Applicant shall be sent a Notice of Violation, at which time they shall have ten (1) days to comply. If the Applicant is not in compliance after this time, the City Council may then move to revoke the Interim Use Permit.
4. The Interim Use Permit shall expire upon termination of mining activity or after thirty-two (32) years, whichever occurs first. The City retains the right to terminate the IUP if the Applicant is found to be out of compliance with the Mining Agreement, Mining Plan, Pollution Prevention Plan, City Code, and/or this resolution. The Applicant reserves the right to terminate the IUP at any time for any reason. At the end of the 32-year period, the IUP will automatically expire. Should the applicant again wish to continue or expand the mining activity, the Applicant must re-apply for an Interim Use Permit, which will require a public hearing and approval by the City Code, subject to conditions as determined by the City.
5. The mining operation shall be restricted to the approximately 33 acres as defined in the Resource Management Plan and shall be completed via phasing defined in the approved plan. The mining operation is considered to include the excavation area, berm, stockpiling, and processing areas.
6. The applicant shall not construct any new structures or buildings on the property without the prior approvals, including building and land use approvals, from the City.
7. Materials such as organic soils and debris, demolition debris, and any other solid or hazardous waste shall not be used as fill in reclamation and restoration.
8. Restoration is to be initiated within six (6) months of IUP termination, or twelve (12) months of the completion of the abandonment of mining activities on the site, or following the completion of a phase of mining as defined in the Resource Management Plan.
9. The Applicant shall annually submit the required permit applications and pay all applicable fees as state in the City's Fee Schedule.
10. The berm used for screening shall be constructed in a manner such that all active mining and all disturbed areas are adequately screen from the public right-of-way by said berm.

Additionally, the berm must be constructed in such a way so as not to obstruct diver sightlines from the Subject Property access or any adjacent property access. Said berm shall not encroach into any adjacent right-of-way and shall not have adverse stormwater impacts for any adjacent right-of-way or adjacent properties.

11. The Applicant shall post a bond, cash deposit, or instrument of credit, as approved by the City Attorney, in such form and amount acceptable to the City sufficient to guarantee the required restoration of all acres of the site proposed to be mined (including processing, stockpiling, and berm areas), as well as road maintenance. This bond will be conditioned upon the proposed Resource Management Plan and/or Restoration Plan and will remain in effect for a period of one-year after the expiration of the IUP.
12. Any abandoned machinery or rubbish shall be removed from the site regularly (regularly defined as weekly).
13. Prior to the reclamation or restoration, the operator shall submit an engineering analysis of the proposed fill and compaction method to the City Engineer for review and approval.
14. The use and handling of explosives shall be prohibited.
15. The maximum noise level at the perimeter of the site shall be within the limits set by the Minnesota Pollution Control Agency (MPCA) and the Environmental Protection Agency (EPA) of the United States.
16. Operators shall utilize all practical means to reduce the amount of dust caused by the operation.
17. No slope descending to a water body shall exceed one foot vertical to six feet horizontal, except when steeper slopes may be permitted in accordance with the reclamation plan when human or property safety is not endangered. The applicant shall work with the city to ensure that existing significant tree areas are conserved to the extent possible during the mining operation.
18. All plans shall be approved by the Elm Creek Watershed District Management Commission.
19. Wastewater disposal shall be approved by the City and the Metropolitan Council.
20. No business uses shall be permitted on the Subject Property other than mining and agriculture.
21. Any damage to local roads caused by the mining operation (either through traffic or other means) shall be restored by the Applicant as required by the City Engineering and/or Public Works departments.
22. Hauling shall be conducted through the County Road system, as defined in the Resource Management/Mining Plan.
23. Mining operations must maintain a 200-foot setback from any non-sealed well. If this is not possible, all wells within 200 feet of the mining operation must be sealed in accordance with state and county requirements. All abandoned wells must be sealed in accordance with state and county requirements.
24. The mining operation will not take place outside the hours of 7:00 A.M and 7:00 P.M., Monday through Friday, and 7:00 A.M. and 3:00 P.M. on Saturday. No mining operation is permitted to take place on Sunday.

Moved by Councilmember

, seconded by Councilmember

The following voted in favor of said resolution:

The following voted against the same:

The following abstained:

Whereupon said resolution was declared duly passed and adopted, and was signed by the Mayor, and attested by the City Clerk dated this 22nd day of October 2024.

Rick Ihli, Mayor

ATTEST:

Stacie Brown, City Clerk

EXHIBIT A

LEGAL DESCRIPTION

Subject Property

Real property in the County of Hennepin, State of Minnesota, described as follows:

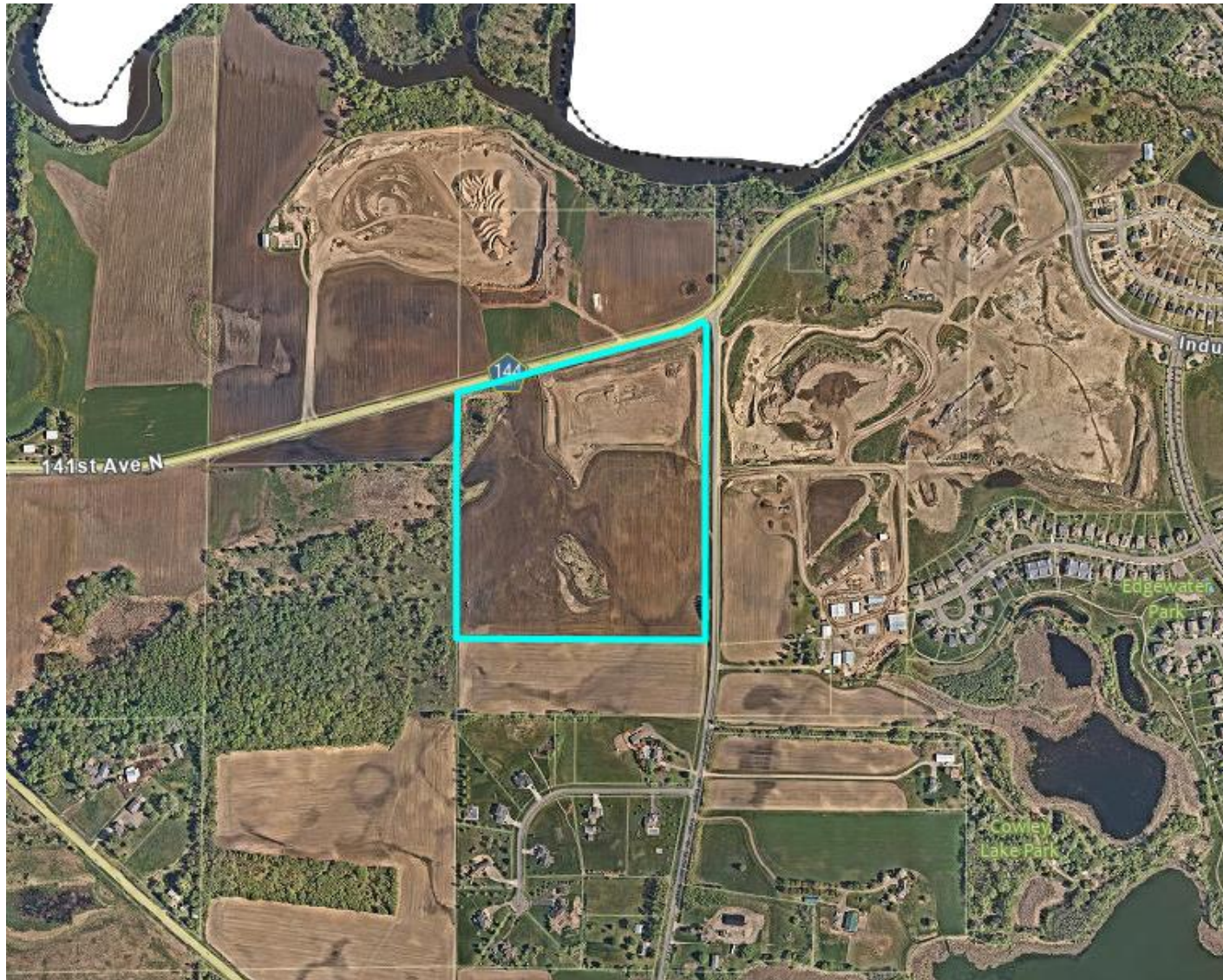
NW 1/4 of SW 1/4 And That Part of SW 1/4 of NW 1/4 Lying S of Road Ex Road all in Section 16, Township 120, Range 23, in Hennepin County, Minnesota.

Abstract Property

PID # 16-120-23-32-0002



LOCATION MAP



IUP APPLICATION RESOURCE MANAGEMENT PLAN

Sand and Gravel Mining Operation
Veit Pit
Rogers, Minnesota

Prepared for:

Veit & Company, Inc.
14000 Veit Place
Rogers, MN 55374

April 29, 2024

Revised: June 25, 2024

Revised: August 13, 2024

Revised: October 2, 2024



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FIGURES

Figure 1 Site Location Map

APPENDICES

Appendix A	Mining Plans
Appendix B	Soils Information
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Appendix D	Wetland Delineation

1.0 INTRODUCTION

1.1 Application Request

This Plan (Plan) has been prepared as a component of the Interim Use Permit (IUP) application by Veit & Company, Inc. (Veit) to operate a sand and gravel mine on a parcel located within Section 16, Township 120N, Range 23 W, Hennepin County, Minnesota. The proposed site contains sand resources which will be mined and processed for use in redi-mix concrete, asphalt pavement, and as base material for private and public construction projects in the area. The Plan includes sufficient information to evaluate the environmental characteristics of affected areas, the potential impacts of the proposed activity on water and soil resources, and the measures proposed by Veit to prevent those impacts.

The following sections of this document describe information required under the City of Rogers City Code (Ordinance) Chapter 125-91 pertaining to mining.

1.2 Applicant Information

Name: Veit & Company, Inc.
Contact Person: Jesse Roush
Address: 14000 Veit Place, Rogers, MN 55374
Telephone (office): (763) 428-6739
Email: jesse.roush@veitusa.com

1.3 Site Location and Ownership

The mining will take place on the following parcel, which are listed below according to the corresponding Hennepin County Parcel ID number:

Parcel ID 1612023320002

Owner	KJ Veit Companies, LLC
Address	ADDRESS NOT YET ASSIGNED (previous address 25715 Territorial Road, Rogers, MN 55374)
Mapped Acres	45.6169
Current Use	Residential - R2
PLSS Description	NW 1/4 of SW 1/4 And That Part Of SW 1/4 Of NW 1/4 Lying S Of Road Ex Road all in Section 16, Township 120, Range 23, in Hennepin County Minnesota.

The location of this parcel is shown on the attached Figure 1. The Applicant will operate the mine after purchasing the property from the current landowners. The property will be purchased as soon as the IUP is granted.

2.0 PROJECT DESCRIPTION

2.1 Site Plans

A set of mining plan drawings (Mining Plans) is attached and consists of the following sheets:

- Sheet 1 Existing Conditions
- Sheet 2 Mining & Phasing Plan
- Sheet 3 Mining Progression Plan
- Sheet 4 Dust Control Plan
- Sheet 5 Reclamation Plan
- Sheet 6 Blanding's Turtle Plan

The Mining Plans show existing features including: 2-foot existing Lidar contours provided by the Minnesota Department of Natural Resources (DNR); wetland boundaries provided by US Fish and Wildlife Wetlands Mapper; property boundaries provided by Hennepin County GIS; and existing vegetation shown on aerial imagery obtained from Google Earth. The Mining Plans also illustrate pertinent site development information including site access, mining limits, and site grading.

2.2 Project Narrative

The mining operation will primarily include excavation of native sand resources and classifying of the materials to produce sand products for use in area construction projects. Concrete will be brought to the site and stockpiled. The concrete will be crushed once a year for use in area construction projects. No concrete or asphalt plants will operate at the Facility at any time.

The Mining Operation will occur in seven phases over the approximately 45-acre site. Phasing is indicated on Sheets 2 and 3 of the Drawings in Appendix A. Sheets 3A – 3F provide grades for the temporary screening berms and access roads for each phase. Phase 1 (approximately 5.34 acres) has already been approved in a prior application. The total area to be mined will encompass 33.66 acres.

All soil removed that isn't aggregate or sand will be used to construct 6-foot tall screening berms. The screening berms will be constructed around the entirety of the active mining area. As mining in each phase nears completion, the screening berms will be removed from the outer edges of the active phase ("outer edge" indicates areas that are at the edge of the overall mine boundary) for reclamation soils. The remaining area will be mined and reclaimed, at which point the outer edge screening berms will be replaced. This is shown on Sheet 3 of the Drawings in Appendix A.

The Mining Operation will include a screening plant and stockpiles, which will be kept within the active mining area. Once Phase 1 is completely mined, work in the second portion of the mine will commence. The second portion of the mine includes Phases 2-7 (approximately 28.32 acres), which will be mined as indicated on Sheet 2 of the Drawings in Appendix A. Silt fence, diversion berms, temporary sediment traps/basins, establishment of vegetation, erosion control blankets, and sediment logs will be used as they are needed to reduce erosion and ensure all stormwater contacting mining

areas is contained in the excavation areas to contain sediment and control outflow. Implementation and inspection/maintenance of these measures is discussed on Sections 4 and 5 of this Plan.

Active mining and processing will generally consist of the following activities:

- **Overburden Stripping** – Topsoil and overburden will be stripped and stockpiled for use as future reclamation fill. Overburden will also be used to construct screening berms around the mining area.
- **Excavation** – Sand will be excavated at the working face and either exported directly from the pit or transported to the processing area.
- **Screening** – Material will be screened to produce different sized aggregates.
- **Crushing** – Production of recycled concrete and asphalt aggregates will also occur once per year. This will include transporting concrete and/or asphalt rubble to the site and subsequently crushing, screening, and stockpiling the materials within the processing area. These materials will be crushed once per year.
- **Stockpiling** – screened materials will be stockpiled in the active mining area prior to export.

The types of equipment used during typical mining operations are listed below. Additional, specialized mining or processing equipment may occasionally be brought to the site as needed.

- Excavators
- Front-End Loaders
- Bulldozers
- Skid-Steer Loaders
- Classifying Screens
- Conveyors
- Crushers
- Haul trucks

The granular deposits are prevalent through the entire depth of the subsurface. Mining will occur down to an elevation of 3' above the water table, as measured by the soil borings from the site. No dredging will occur. Excavation is anticipated to begin on the northeast corner of the mining area and work to the southwest.

The processing area will be set up on the floor of the mine and will be moved around the floor of the mine as needed during mining operations.

The overall volume of the excavation shown on Sheet 2 of the Mining Plans is approximately 1,853,100 cubic yards. Of this volume, it is anticipated that approximately 1,620,700 cubic yards of material will be exported as granular product, with the remaining 232,400 cubic yards assumed to be topsoil and non-granular overburden material that will remain on site for use as reclamation fill. The overall excavation volume and lifespan of the mine will ultimately be determined by market demand for aggregates. For the purposes of the IUP application, it is estimated that on average the mine will export 50,000 cubic yards per year, and during a high-demand year may export up to 100,000 cubic yards. This rate of export results in a 16- to 32-year operating life.

Upon completion of the mining, the Pit will be restored for end use as low-density residential. Reclamation conditions are shown on Sheet 5 of the Mining Plans. It is anticipated that the Pit will require approximately 868,400 cubic yards of reclamation fill to establish the grades shown on Sheet 5, resulting in an approximately 636,000 cubic yard shortage of overburden. The required soil will be imported from other job sites that have excess fill materials. Additional detail on site reclamation is presented in Section 4 of this application.

2.3 Ghost Plat

The City of Rogers has requested that a Ghost Plat be provided for the site to demonstrate a possible layout for residential zoning that is planned following closure of the mining operation. The Ghost Plat is provided in Appendix C.

3.0 OPERATIONAL STANDARDS

3.1 Hours of Operation

Hours of operation for mining and processing operations are from 7:00 a.m. to 7:00 p.m., Monday through Friday and 7:00 a.m. to 3:00p.m. on Saturdays.

3.2 Site Access

Access to the mine will be via a driveway entrance off of 141st Avenue N at the location shown on the IUP Drawings. The entrance will be 50-feet wide to accommodate mine traffic. The entrance will be paved and will include a rock construction exit immediately south of the paved area. Truck traffic exiting the mine will be directed west on 141st Avenue N, then north or south on Territorial Road, depending on the location of the project being served. Temporary internal haul roads for each phase are shown on Sheets 3A - 3F of the Drawings located in Appendix A.

3.3 Mining Limits and Setbacks

Mining and processing will not take place within 50 feet of a property line or road right-of-way. The setback from homes will be a minimum of 200 feet. The total operational mining area will not exceed 33.66 acres.

3.3.1 Floodplains

The site is not located within the Floodplain Overlay District.

3.3.2 Wetlands

Wetlands shown on the drawings were determined by a wetland delineation performed by Carlson McCain, Inc. dated June 26, 2023, which can be found in Appendix D. The mining limits are at least 30 feet from the wetlands. One wetland will be removed during the life of the Facility. Further discussion of this removal is described in Section 7.

3.4 Non-Granular Material

All non-granular overburden material will be used as reclamation fill.

3.5 Vertical Faces

Vertical faces will be kept to a minimum. Typical slopes on the active mining face are approximately 2:1 (horizontal to vertical).

3.6 Housekeeping and Site Safety

The mine site employs good housekeeping practices. Examples of these good housekeeping practices include the following:

- Equipment will be inspected daily during normal operations and kept in good working order.
- Equipment washing will occur in a designated area and no detergent or chemicals will be used to wash equipment onsite.
- Any fuel or chemical stored onsite will be stored in compliance with all applicable MPCA requirements. Secondary containment will be provided for all tanks.
- Leaks and spills will be promptly cleaned up and reported to the site manager and MPCA as appropriate. Spill cleanup material will be stored onsite in an accessible.
- Appropriate waste receptacles will be available to employees and customers to prevent litter around the site.
- Sanitary facilities will be available on site and will be serviced regularly.
- Routine employee training is conducted on good housekeeping practices and spill response.

Veit maintains a corporate safety manual which describes safety standards that will be employed at the mine site.

3.7 Environmental Controls

The project size does trigger preparation of a mandatory Environmental Assessment Worksheet (EAW). This narrative is included in the EAW as an Attachment. Operational practices used to prevent environmental impacts are presented in the EAW Narrative.

A National Heritage Review was performed for the site and it was determined to be a potential habitat for Blanding's turtles. As such, a plan for identifying, moving, and mitigating impacts to Blanding's turtles has been added as Sheet 6 of the Mining Plans located in Appendix A.

3.8 Traffic

The mine will generate additional vehicle traffic resulting from the import/export of soil and aggregate materials to and from the mine site, as well as employee commuting and vendor/supplier visits to the site. This section provides an analysis of the estimated additional traffic in terms of the average daily traffic (ADT) and the peak hourly traffic generated.

Average Daily Traffic

The ADT is related to the rate of material production and import/export at the mine. The higher the production rate, the more truck traffic will be generated to haul the product to the market area.

As noted above in Section 2.2, it is estimated that the average production would result in approximately 50,000 cubic yards of exported material per year, and high production would result in approximately 100,000 cubic yards of exported material per year. Assuming a unit weight of 1.4 tons per cubic yard, this equates to an average export of 70,000 tons per year and a high of 140,000 tons

per year. Approximately 636,000 cubic yards of reclamation fill will need to be brought to the site. Assuming a unit weight of 1.1 tons per cubic yard, this equates to approximately 699,600 tons over the life of the facility. To determine the corresponding number of truck trips, the following assumptions are used:

- A typical load of exported aggregate or imported reclamation fill is 20 tons.
- Each load includes two trips: one into the site and one out of the site.
- Hauling occurs 180 days per year.
- Reclamation fill loads are expected to closely follow mining loads. Since the amount of material imported is nearly equal to the amount of material exported, they were assumed to be the same for this analysis.

Table 1 – ADT Summary

	Loads per day - Average	Loads per day - High
Aggregate	20	39
Reclamation Fill	20	39
	Trips per day - Average	Trips per day - High
Aggregate	40	78
Reclamation Fill	40	78
Employees/Suppliers	6	8
Total trips per day (ADT)	86	164

The estimated ADT presented above is based on anticipated production rates. Actual production rates may vary from those shown depending on market conditions.

Peak Hourly Traffic

The a.m. peak hourly traffic is estimated to be 17 trips per hour, or 10% of the High ADT, and is expected to occur between 6:30 a.m. and 8:00 a.m. The p.m. peak hourly traffic is estimated to be 14 trips per hour, or 8% of the High ADT, and is expected to occur between 3:00 p.m. and 4:00 p.m.

The “worst-case” hourly traffic is estimated using an import/export rate of one load every 4 minutes, which Veit estimates is the highest feasible rate based on anticipated site equipment and operational constraints. This results in 15 loads, or 30 truck trips per hour. The worst-case traffic would occur infrequently and for limited duration throughout the life of the mine.

3.9 Erosion Control

Topsoil Management

Topsoil will be stripped to the full depth at the commencement of mining and segregated into in a dedicated stockpile or used in the construction of screening berms. The topsoil stockpile will be labeled with signage identifying the contents of the stockpile. The topsoil stockpile area will shift throughout the life of the mine. The side slopes of the topsoil stockpile will be uniformly graded and

vegetated. Silt fence will be installed on the downslope side of the topsoil stockpile and maintained until the stockpile has been vegetated (at least 70% coverage) and there is no evidence of erosion around the pile.

Topsoil will be placed to a minimum depth of 4-inches, which corresponds to a volume of approximately 4,000 cubic yards over the reclamation area. A topographic survey of the topsoil stockpile will be conducted prior to re-spreading to confirm that enough topsoil will be available for reclamation. Once the topsoil is placed it shall be tilled or disced prior to seeding to ensure that the soil meets compaction requirements. Once topsoil is placed, heavy traffic and equipment should be kept off the topsoil to the maximum extent possible to prevent any unnecessary compaction.

4.0 STORMWATER MANAGEMENT STANDARDS

4.1 General Standards

Stormwater management for the mining and reclamation operation will comply with runoff quantity, quality and rate control regulations as specified by the MPCA as well as requirements of the National Pollutant Discharge Elimination System (NPDES) including obtaining a permit and adoption of a Pollution Prevention Plan (P2 Plan). The P2 Plan addresses stormwater management and is required for coverage under the NPDES Nonmetallic Mining and Associated Activities permit (MNG490000).

4.2 Pre-Settlement Conditions

The site presently drains to the wetland located in the northwest corner of the site. There are two catchment areas that drain to a wetland in the center of the site or to a depression in the northeast corner of the site. Both of these areas ultimately drain to the wetland in the northwest corner of the site when the wetland or depression are overtopped. Please see Sheet 1 of the P2 Plan located in Attachment F of the EAW for existing surface water flow direction.

4.3 Active Mining Condition

During mining operations, stormwater runoff contacting the mining and processing areas will be completely contained within the mining area for the 2, 10, and 100-year storms and will subsequently infiltrate or evaporate. The pond that is created from mining operations will receive runoff during the active life of the mine. Areas where runoff from the access road to the active mining area cannot be directed to the mining pit, will be directed to a temporary sedimentation trap, before outletting to the northwest wetland.

Stormwater runoff chemical composition will not differ appreciably from current conditions. An increased sediment load can be expected for runoff from the active mining area, however this water will be contained on site and infiltrate into the subsurface so there will not be additional sediment transported to off-site water bodies. HydroCAD calculations for the mining phase were not performed due to the runoff from added impervious areas being contained in the mining pit, which will not outlet, and therefore will result in a runoff rate of 0 cfs. Due to the varying nature of the entrance road throughout the life of the mine this area wasn't modelled either. A sediment trap/basin shall be designed to provide a live storage for a calculated volume of runoff from a ten (10)-year 24-hour storm from each acre of road that is directed to the trap/basin. Runoff from haul roads shall be directed to the active mining area as much as possible.

4.4 Reclamation Condition

The site will be reclaimed to maintain flow to the wetland in the northwest corner of the site, please see Sheet 5 of Appendix A. The majority of the site will drain to the wetland, except for one small area that flows to the depression in the northeast corner of the site. Any overtopping from this depression will flow to the wetland in the northwest corner of the site.

Due to the no increase in impervious surface and the increase in the time of concentration between the pre-settlement and reclamation phases, water quality, discharge rate and volume control will be maintained or improved from the pre-settlement conditions.

5.0 EROSION AND SEDIMENT CONTROL MEASURES

Soil erosion and sedimentation will be minimized on the Site throughout the duration of mining and reclamation activity by the following practices in order to prevent erosion or sedimentation that results in damages to water or off-site impacts. Additional detail on stormwater controls can be found in the P2 Plan located in Attachment F of the EAW.

5.1 Mining/Processing Construction and Operations

Site soils are granular and highly erodible; however no sediment resulting from mining activities will be allowed outside of the mining limits. Mine slopes will be a maximum grade of 2H:1V, during active mining only and sediment generated from erosion of the active mining face will be contained on-site within the excavation.

Mining will begin in Phase 1 and proceed within Phase 1 down to a base grade shown on Sheet 2 of Appendix A. Mining in Phase 1 will involve excavating topsoil and overburden. This topsoil and overburden will be used to construct the screening berms. Once reclamation begins in Phase 1, overburden from within Phase 2 will be stripped and used to construct the screening berms for Phase 2 or will be used as reclamation fill in Phase 1. Mining will then proceed into Phase 2. This process will continue through Phase 7.

As mining in each phase nears completion, the screening berms will be removed from the outer edges of the active phase ("outer edge" indicates areas that are at the edge of the overall mine boundary) for reclamation soils. The remaining area will be mined and reclaimed, at which point the outer edge screening berms will be replaced. This process is described on Sheet 3 of the Drawings located in Appendix A. Sheets 3A – 3F of the Drawings located in Appendix A, show the temporary screening berms and access road as they will look prior to mining the outer edge of the respective Phase. These drawings also include reclamation grades for prior phases.

Depending on the locations of processed aggregate stockpiles, additional erosion controls such as silt fence or grading and/or berm construction may be necessary to contain or redirect sediment that may erode from the stockpiles. Sand and gravel stockpiles will typically not require barrier-type erosion controls during active mining due to being located within the active mining area; however once adjacent phases are reclaimed silt fence will be installed around un-worked areas of the stockpiles to prevent sediment transport onto reclaimed areas. Temporary silt fence may be used around other portions of the mine during start-up activities such as topsoil stripping. Temporary sediment traps may also be employed as needed to prevent any off-site discharge during start-up, particularly during development of the processing plant site. Permanent double silt fence will be utilized around nearby wetlands until reclamation is complete to protect the wetlands from any erosion or sedimentation.

5.2 Reclamation Construction and Operations

As mining progresses, reclamation will occur as permissible in those areas where mining is complete. This will include placing reclamation backfill materials as needed to establish the approximate grades shown on Sheet 5 of the Mining Plans. The final land use for the mining area will be for low-density

residential development. The final topography in the former mining area will be established such that the peaks and depressions of the area shall be reduced to a surface which will result in a gently rolling topography in substantial conformity to the land area immediately surrounding the site, and which will minimize erosion due to rainfall. Upon completion of all mining activities, gravel and pavement will be removed from the entrance road, the underlying soil will be ripped, and the area will be topsoiled and seeded. Pavement may be maintained in the ROW to continue to provide access to the property. Stormwater will flow towards the northwest wetland. Final reclamation grades will mimic the existing drainage.

Reclamation slopes will be graded to a slope of 4H:1V or flatter over the entire reclamation area. As finished reclamation grades are established, areas will be seeded with MnDOT seed mixture MI (Mesic Inslope)(formerly 25-141) at a seeding rate of 59 pounds per acre, MnDOT Type 1 Mulch (2 tons/acre) or MnDOT Type 3N Erosion Control Blanket, and commercial fertilizer (application rate will be determined from soil testing prior to reclamation) will be used. Ensure that all erosion control products are biodegradable. Any netting in erosion control products shall be rectangular shaped (not square mesh) and be made of flexible (non-welded) mesh. Upon establishment of end-use conditions, sediment carried by stormwater over reclaimed areas will be collected within surrounding surficial depressions\wetlands, in a similar manner to the current surface drainage.

The following additional reclamation standards will be implemented:

- All materials used for reclamation backfill shall be free of contaminants and shall be non-noxious, non-flammable and non-combustible.
- The graded or backfilled area shall not collect or permit stagnant water to remain therein, unless there is an approved ponding area or wetland restoration or creation.
- Graded or backfilled areas shall be surfaced with at least four inches of soil of a quality at least equal to the topsoil of the surrounding area.
- Reclamation will be completed within 9 months after completion of mining within a phase, or after the termination of mining. This includes removal of all equipment, vehicles, machinery, materials, stockpiles and other materials incidental to the mining operation.
- Reclamation will result in no increase in impervious area from existing conditions.
- Erosion and sediment control measures specified in the P2 Plan will be followed until the termination of applicable permits (e.g. NPDES)

5.3 Crushing and Screening Equipment

Equipment will be inspected daily during normal operations. Leaks and spills will be promptly cleaned up and reported to the supervisor and MPCA as appropriate. Maintenance of the equipment will be routinely conducted. Crushing will only occur onsite for one week per year.

5.4 Fuel/Chemical Storage and Fueling

Any fuel or chemical stored onsite will be stored in compliance with all applicable MPCA requirements. Secondary containment will be provided for all tanks. Fueling will be conducted on impermeable areas or with portable pans.

5.5 Spills or Leaks

Spill cleanup material will be stored onsite in a covered area. Any spill will be reported to the Site Manager. If possible, any spill will be plugged or stopped. Absorbent materials and sand will be used to contain or isolate the spill and prevent it from contacting any surface water.

5.6 Roads and Vehicles

The majority of the internal haul roads will be gravel surfaced. The haul roads will be watered as needed to control dust. The main entrance to the Site will be paved and monitored for dust and soil tracking and corrective action will be taken to reduce dust and tracking as necessary. Soil tracked onto public right of ways will be swept immediately. On especially hot and dry days, extra water will be applied to the roads to suppress blowing dust.

5.7 Vehicle and Equipment Maintenance and Washing

All used oil from any oil changes performed onsite will be collected in a leak proof metal container and recycled offsite. No detergent or chemicals will be used to wash equipment onsite. Wash water will be directed to onsite infiltration areas and will not be discharged from the Site.

5.8 Blanding's Turtle

The following measures shall be taken to ensure that the project does not affect any possible Blanding's Turtle population:

- Wetland removal shall not occur between September 15th and April 15th, which are considered the hibernation period for Blanding's Turtles. The wetland may be removed during these dates if an expert in Blanding's Turtles determines that the area is not suitable for hibernation.
- Erosion and sediment controls shall be limited to wildlife friendly erosion control to avoid the inadvertent take of Blanding's turtles.
- Hydro-mulch products shall not contain any materials with synthetic (plastic) fiber additives, as the fibers can re-suspend and flow into waterbodies.
- The Blanding's turtle flyer shall be given to all contractors working on the site.
- Bare ground within construction areas shall be thoroughly checked for turtles before the use of heavy equipment or any ground disturbance.
- Any sightings of Blanding's turtles shall be reported to Reports.NHIS@state.mn.us and shall include the date, observer, location, and photograph of the Blanding's turtle.
- Project personnel shall install silt fencing around all soil stockpiles, gravel pads, and other areas of exposed soil/sand/sediment where work will occur to prevent turtle access from May 15th to July 15th. Silt fence shall be buried a minimum of 10-inches, regularly inspected, and maintained as needed. Temporary fencing shall be removed by project closeout.

- If any turtles are found in imminent danger, they must be moved by hand out of harm's way, otherwise they are to be left undisturbed. Directions on how to safely move turtles will be provided to all workers onsite.

5.9 Erosion and Sediment Control Device Schedule

Table 5.1 on the following page summarizes anticipated erosion and sediment control devices and provides a schedule and timing of their installation, inspection and maintenance, and removal.

TABLE 5.1 Erosion and Sediment Control Device Implementation Schedule			
Item	Installation	Inspection/Maintenance	Removal
Construction Entrance	Install prior to any construction	Inspect daily. Maintain as required. Inspect for evidence of off-site sediment tracking. Remove any tracked sediment on a daily basis.	N/A
Temporary Stormwater Pond or Sedimentation Trap	Install prior to rough grading. Direct surface water runoff to the pond.	Inspect a minimum of once every 14 days or 24 hours after a rain event greater than 0.5-inches in a 24 hour period. Drain pond and remove sediment when the depth of sediment in basin reaches ½ of the storage volume. Complete sediment removal within 72 hours of discovery	Remove temporary ponds once plant site grading is established
Temporary or Permanent Soil Stabilization	Install within 14 calendar days (7 for impaired waters) of initial soil disturbance for all unworked exposed soil areas.	Inspect minimum once every 14 days or 24 hours after a rain event greater than 0.5-inches in a 24 hour period, or 24 hours after flood water recedes. Make necessary repairs within 24 hours of discovery or 24 hours after safe access conditions.	N/A
Protection of Temporary Stockpiles and Disturbed Areas	Immediately install silt fence, or other sediment controls, around stockpiles where off-site transport is possible.	Inspect a minimum of once every 14 days or 24 hours after a rain event greater than 0.5-inches in a 24 hour period. Remove sediment as required. Make necessary repairs within 24 hours of discovery	After stockpiles have been removed and disturbed areas have been stabilized.
Temporary or Permanent Drainage Ditch Stabilization	Install within 24 hours: 200 lineal feet from the point of discharge. Install within 14 calendar days (7 calendar days for impaired waters): beyond 200 lineal feet from the point of discharge.	Inspect a minimum of once every 14 days or 24 hours after a rain event greater than 0.5-inches in a 24 hour period. Make any necessary repairs within 24 hours of discovery.	N/A
Screening Berm Permanent Slope Stabilization	Install within 14 calendar days of the completion of construction of the berm	Inspect minimum once every 14 days or 24 hours after a rain event greater than 0.5-inches in a 24 hour period, or 24 hours after flood water recedes. Make necessary repairs within 24 hours of discovery or 24 hours after safe access conditions.	N/A
Silt Fence	Install prior to any construction	Inspect daily. Maintain as required. Inspect for evidence of off-site sediment tracking. Remove any tracked sediment on a daily basis.	Prior to project closeout

6.0 DUST CONTROL

This Section describes techniques that will be used to control fugitive dust emissions at the mine site. The dust control plan includes control techniques for dust emissions resulting from vehicle travel on paved and unpaved roads, processing operations (crushing, stockpiling, screening, etc.), wind erosion from disturbed ground surfaces, and general mining activities.

Selection of control techniques to be used at any given time will be based upon the dusting potential, which is primarily dependent upon moisture and wind conditions. Sheet 4 of the Drawings located in Appendix A shows the proposed mine at a mid-point of its development and illustrates conceptually how dust control measures will be implemented at the site. The information described on Sheet 4 applies to all Phases despite only showing procedures for Phase 6. The overall intention is to employ Best Management Practices (BMPs) to control fugitive dust emissions.

6.1 Techniques for Road Surfaces

Four primary techniques will be used for controlling fugitive dust emissions resulting from vehicle traffic on the access roads into and around the proposed mine. These are defined as follows:

6.1.1 Water Application

Application of water to road surfaces (paved and unpaved) will be the primary technique used for dust control. A self-contained water truck will be on-site at all times. Should the truck break down or be inoperable for any reason a working truck will be brought to the site within 24 hours. Water will be applied at the start of each working day when there is a potential for significant fugitive dust emissions based upon site and climatic conditions (generally when no rain fell overnight and there has been no chemical treatment in effect). Water will be applied at a rate of at least 0.01" over the surface area requiring treatment. Water will be reapplied during each working day as needed to maintain dust control.

6.1.2 Road Maintenance/Grading

Road maintenance and grading will be performed to minimize dust emissions. Such practices will include:

- Periodically removing gravel that has been clogged with fines and replacing with fresh gravel
- Designing/constructing roads within the site to minimize travel distances and exposure to prevailing winds
- Removing and re-vegetating roads that are no longer required
- Use temporary or permanent windbreaks or berms when applicable
- Maintaining unpaved roads in a well-graded condition
- Street sweeping of the site entrance and adjacent streets will be performed on a weekly basis, and at more frequent intervals if conditions warrant such action and as ordered by the City Engineer.

6.1.3 Rumble Strips

Coarse rock rumble strips will be maintained at the point of exit from the mine proper to minimize tracking of mined aggregate beyond the mine boundary. This technique will minimize deposition of fines onto paved and unpaved access/service roads and will minimize the potential dust emissions accordingly. Rumble strips will be washed down and/or supplemented with additional rock as needed to maintain functionality.

6.1.4 Operational Controls

Operational controls will be used to control fugitive dust emissions where feasible. Such controls may include:

- Limiting on-site vehicle speed to 20 mph. Speed limit enforcement on off-site roads will be addressed contractually with haul truck operators.
- Limiting unnecessary traffic within the site by providing direct routes from the property entrance to the active mining and processing areas.
- Limiting travel of tracked and off-road vehicles to that required for providing essential services.

In addition to these four primary techniques, chemical dust suppressants such as magnesium chloride may be applied to especially high-traffic areas such as near the scale house where frequent watering may be difficult.

6.2 Techniques for Active Mine Surfaces

In total, there will be 7 mine phases. Each active phase will be reclaimed before another active phase is begun. As the mine surface dries, a crust will form naturally. The crust is an agglomeration of finer particles, and controls potential dust emissions by reducing the amount of fine-size particles on the surface and concealing fines below the crust.

The primary techniques to be used for fugitive dust control from active mine surfaces are:

- Apply water to mined aggregate surfaces as needed to control dust emissions. A water tank truck equipped with spray nozzles will be maintained on site for this purpose.
- Minimize vehicle travel on mined aggregate surfaces. This will be done by reducing the distance aggregate will be hauled by extending the conveyor belt system near the limits of the active mine area. This will allow a crust to form and be maintained, reducing the potential for fugitive dust emissions.
- Minimize the size of the active mine area. Minimizing the size of the mined aggregate surface that is routinely disturbed will prevent more susceptible particulates from becoming airborne.

6.3 Techniques for Inactive Mine Areas

Inactive mine areas are those that have mined down to water table depth, areas that are being reclaimed, or areas that have been reclaimed but have not yet established vegetation. Inactive mine areas will be reclaimed with soil materials to reach a final grade. Reclamation phases will follow behind active mine phases and will be controlled similarly. Reclamation soils will be graded and compacted immediately after being unloaded from trucks. This control will result in mechanical disturbances of the soils being performed while it is still moist and less susceptible to becoming airborne. Water will be applied as needed to control fugitive dust emissions. Traffic on reclaimed areas will be restricted to avoid disturbing the crust and thus minimizing dust emissions associated with vehicle traffic and wind.

Vegetation will be established on all reclaimed areas shortly after it has reached final grade. Establishment of vegetation will bind fines into the root matrix and provide a shield against wind, effectively minimizing dust emissions from these surfaces.

6.4 Techniques for Processing Activities

Implementing fugitive dust controls will be a contractual obligation of the mining contractor during processing events at the facility. Processing activities include any dust-emitting activity that occurs once the mined aggregate has been placed on the conveying system. Dust control techniques will include:

- Extending conveyor belts at or near active mining areas
- Using water during screening operations
- Sequencing mining activities to minimize dust emissions

6.5 Techniques for Closed Mine Areas

Closed mine areas are those areas within the mine upon which vegetation has been permanently established. Watering of closed areas will be performed if needed to maintain vegetation. Traffic on closed areas will be limited to that required for inspection and maintenance of the final cover and associated controls.

6.6 Site Screening

All soil removed that isn't aggregate or sand will be used to construct 6-foot tall screening berms. The screening berms will be constructed around the entirety of the active mining area. As mining in each phase nears completion, the screening berms will be removed from the outer edges of the active phase ("outer edge" indicates areas that are at the edge of the overall mine boundary) for reclamation soils. The remaining area will be mined and reclaimed, at which point the outer edge screening berms will be replaced. This is shown on Sheet 3 of the Drawings in Appendix A.

7.0 WETLAND IMPACTS

One wetland will be removed as a part of the proposed mining plan. Veit has wetland credits that they plan to use to mitigate this removal. An application for the removal of the wetland will be applied for following the approval of the EAW. Removal applications can not be approved until an EAW is complete.

8.0 CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

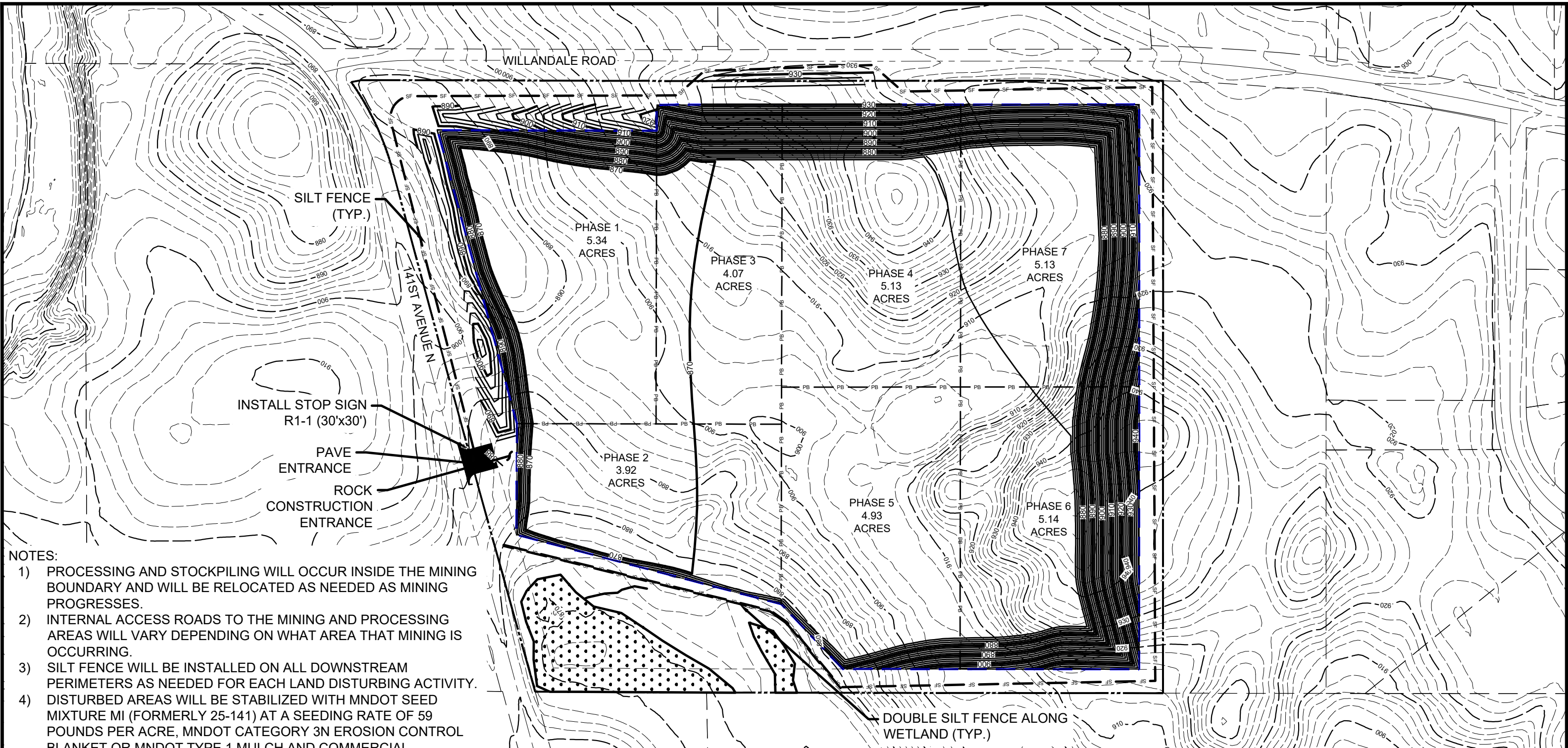


Dan Wilke, P.E.

Date: 10/2/24 License # 53182

Figures

Appendix A
Mining Plan Drawings



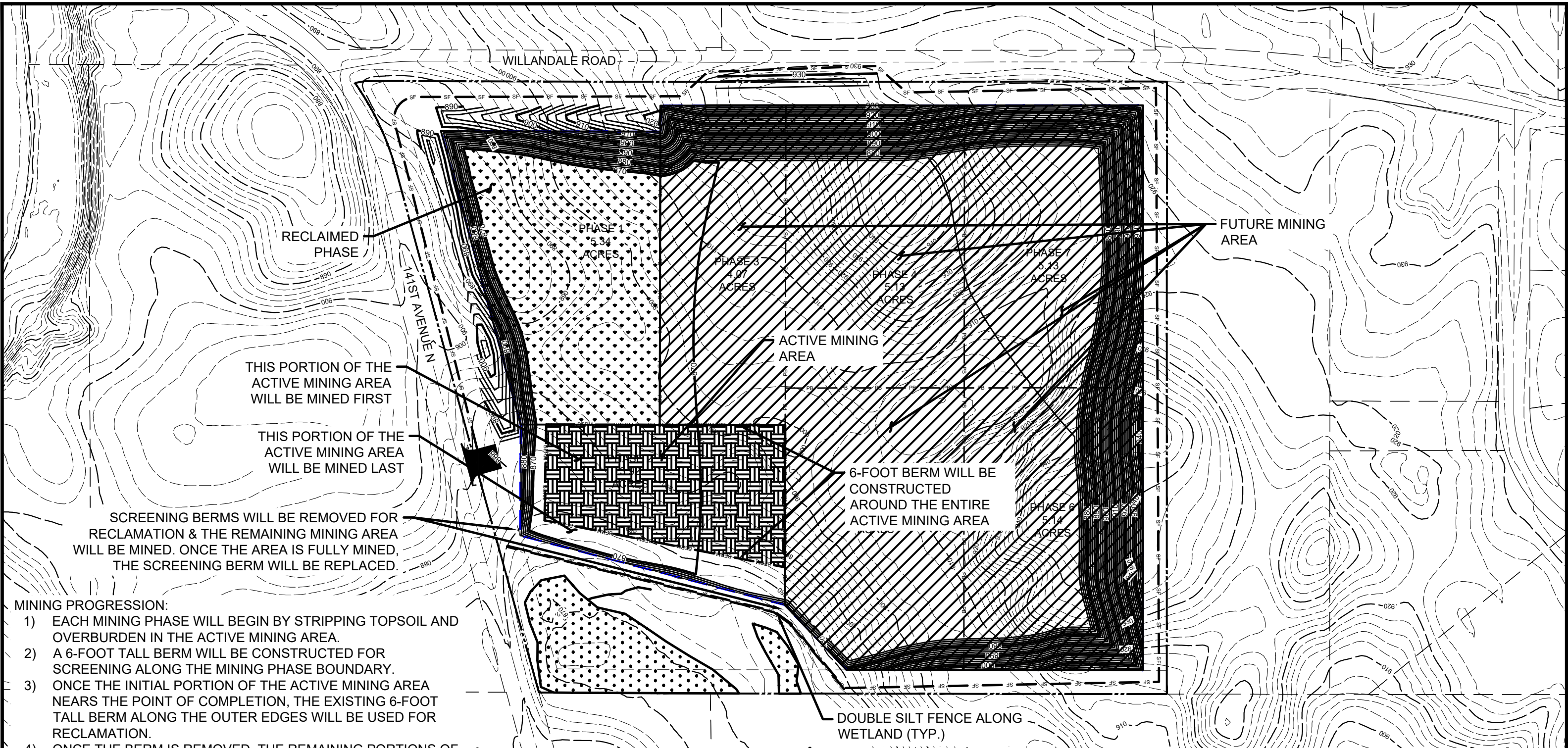
- NOTES:
- 1) PROCESSING AND STOCKPILING WILL OCCUR INSIDE THE MINING BOUNDARY AND WILL BE RELOCATED AS NEEDED AS MINING PROGRESSES.
 - 2) INTERNAL ACCESS ROADS TO THE MINING AND PROCESSING AREAS WILL VARY DEPENDING ON WHAT AREA THAT MINING IS OCCURRING.
 - 3) SILT FENCE WILL BE INSTALLED ON ALL DOWNSTREAM PERIMETERS AS NEEDED FOR EACH LAND DISTURBING ACTIVITY.
 - 4) DISTURBED AREAS WILL BE STABILIZED WITH MNDOT SEED MIXTURE MI (FORMERLY 25-141) AT A SEEDING RATE OF 59 POUNDS PER ACRE, MNDOT CATEGORY 3N EROSION CONTROL BLANKET OR MNDOT TYPE 1 MULCH AND COMMERCIAL FERTILIZER.
 - 5) ENSURE THAT ALL EROSION CONTROL PRODUCTS ARE BIODEGRADABLE. ANY NETTING IN EROSION PRODUCTS SHALL BE RECTANGULAR SHAPED (NOT SQUARE MESH) & BE MADE OF FLEXIBLE (NON-WELDED) MESH.
 - 6) THROUGHOUT THE MINING PHASE, RUNOFF FROM THE ACCESS ROADS SHALL BE COLLECTED IN THE ACTIVE MINING AREA OR IN SEDIMENTATION TRAP(S)/BASIN(S). SEDIMENTATION TRAPS/BASINS SHALL BE DESIGNED WITH A LIVE STORAGE VOLUME EQUAL TO A 10-YEAR STORM EVENT FOR THE AREA COLLECTED AND SHALL BE CONSTRUCTED PER MN STORMWATER MANUAL STANDARDS.

LEGEND			
EXISTING CONTOUR IDX	---	960	---
EXISTING CONTOUR INT	---		---
MINING CONTOUR IDX	---	960	---
MINING CONTOUR INT	---		---
PROPERTY BOUNDARY	---		---
MINING PHASE BOUNDARY	---	PB	---
MINING BOUNDARY	---		---
SETBACK	---		---
WETLANDS	---		---
SILT FENCE	---	SF	---

BACKGROUND AERIAL SOURCE: GOOGLE EARTH

TOTAL MINING AREA:
33.66 AC
1,620,700 CY SAND

SCALE IN FEET



BACKGROUND AERIAL SOURCE: GOOGLE EARTH

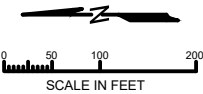
MINING PROGRESSION:

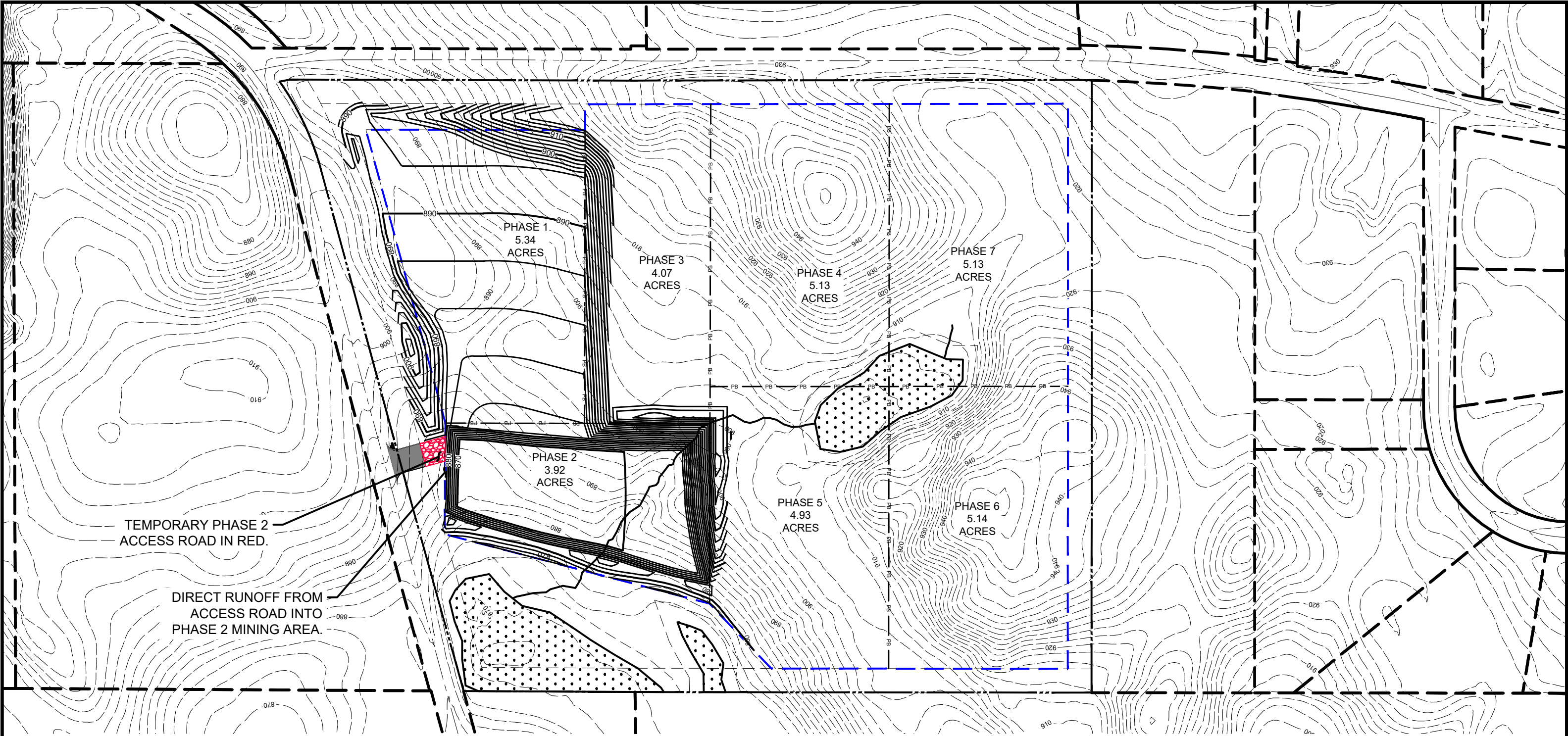
- 1) EACH MINING PHASE WILL BEGIN BY STRIPPING TOPSOIL AND OVERBURDEN IN THE ACTIVE MINING AREA.
- 2) A 6-FOOT TALL BERM WILL BE CONSTRUCTED FOR SCREENING ALONG THE MINING PHASE BOUNDARY.
- 3) ONCE THE INITIAL PORTION OF THE ACTIVE MINING AREA NEARS THE POINT OF COMPLETION, THE EXISTING 6-FOOT TALL BERM ALONG THE OUTER EDGES WILL BE USED FOR RECLAMATION.
- 4) ONCE THE BERM IS REMOVED, THE REMAINING PORTIONS OF THE ACTIVE MINING AREA WILL BE MINED TO COMPLETION.
- 5) UPON COMPLETION OF MINING, THE ACTIVE MINING AREA WILL BE RECLAIMED BY REPLACING THE OUTER BERM AND THE PROCESS DESCRIBED ABOVE WILL BE IMPLEMENTED IN THE NEXT MINING PHASE.
- 5) THROUGHOUT THE MINING PHASE, RUNOFF FROM THE ACCESS ROADS SHALL BE COLLECTED IN THE ACTIVE MINING AREA OR IN SEDIMENTATION TRAP(S)/BASIN(S). SEDIMENTATION TRAPS/BASINS SHALL BE DESIGNED WITH A LIVE STORAGE VOLUME EQUAL TO A 10-YEAR STORM EVENT FOR THE AREA COLLECTED AND SHALL BE CONSTRUCTED PER MN STORMWATER MANUAL STANDARDS.

LEGEND

EXISTING CONTOUR IDX	---	-960-	MINING BOUNDARY	---
EXISTING CONTOUR INT	---		SETBACK	---
MINING CONTOUR IDX	---	-960-	WETLANDS	---
MINING CONTOUR INT	---		SILT FENCE	SF SF
PROPERTY BOUNDARY	---		6-FOOT TALL BERM	BERM BERM
MINING PHASE BOUNDARY	---	PB PB		

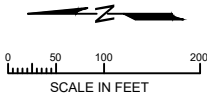
TOTAL MINING AREA:
33.66 AC
1,620,700 CY SAND





LEGEND

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EXISTING CONTOUR INT	- - - - -	SETBACK	- - - - -
CONSTRUCTED CONTOUR IDX	— 960 —	WETLANDS	[Stippled Pattern]
CONSTRUCTED CONTOUR INT	- - - - -		
PROPERTY BOUNDARY	— — — — —		



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I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: Dan J. Wilke
Signature: *Dan Wilke*
Date: 04/29/2024 License #: 53182

Drawn: DJW
Designed: DJW
Date: 04/29/24

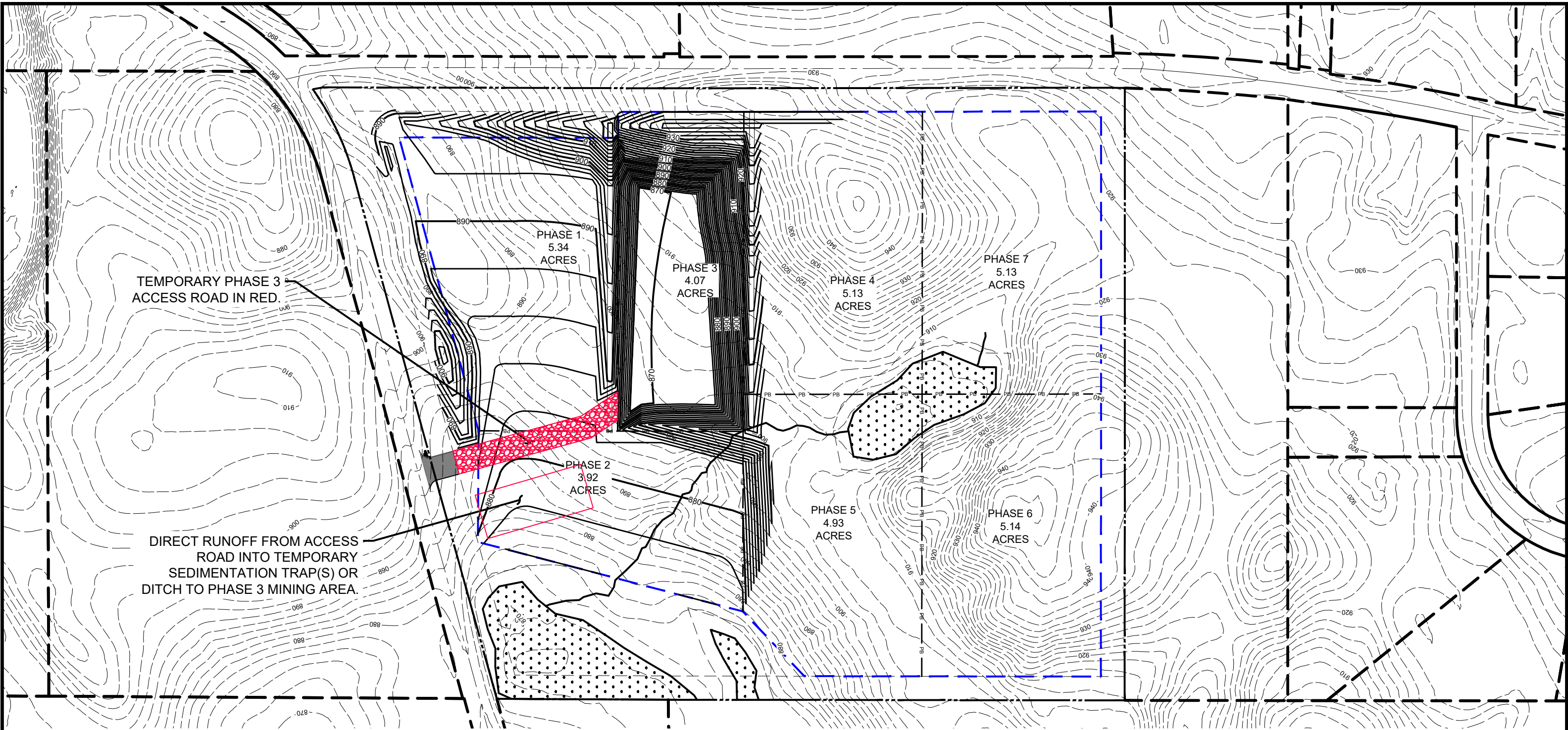
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1	08/28/2024	DJW	PER CITY COMMENTS
2	08/13/2024	DJW	UPDATED FOR IUP SUBMITTAL
3	10/02/2024	DJW	PER CITY COMMENTS

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14000 Veit Place,
Rogers, MN 55374

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ROGERS, MN

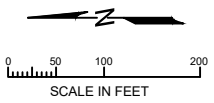
PHASE 2 INITIAL MINING PLAN
IUP DRAWINGS

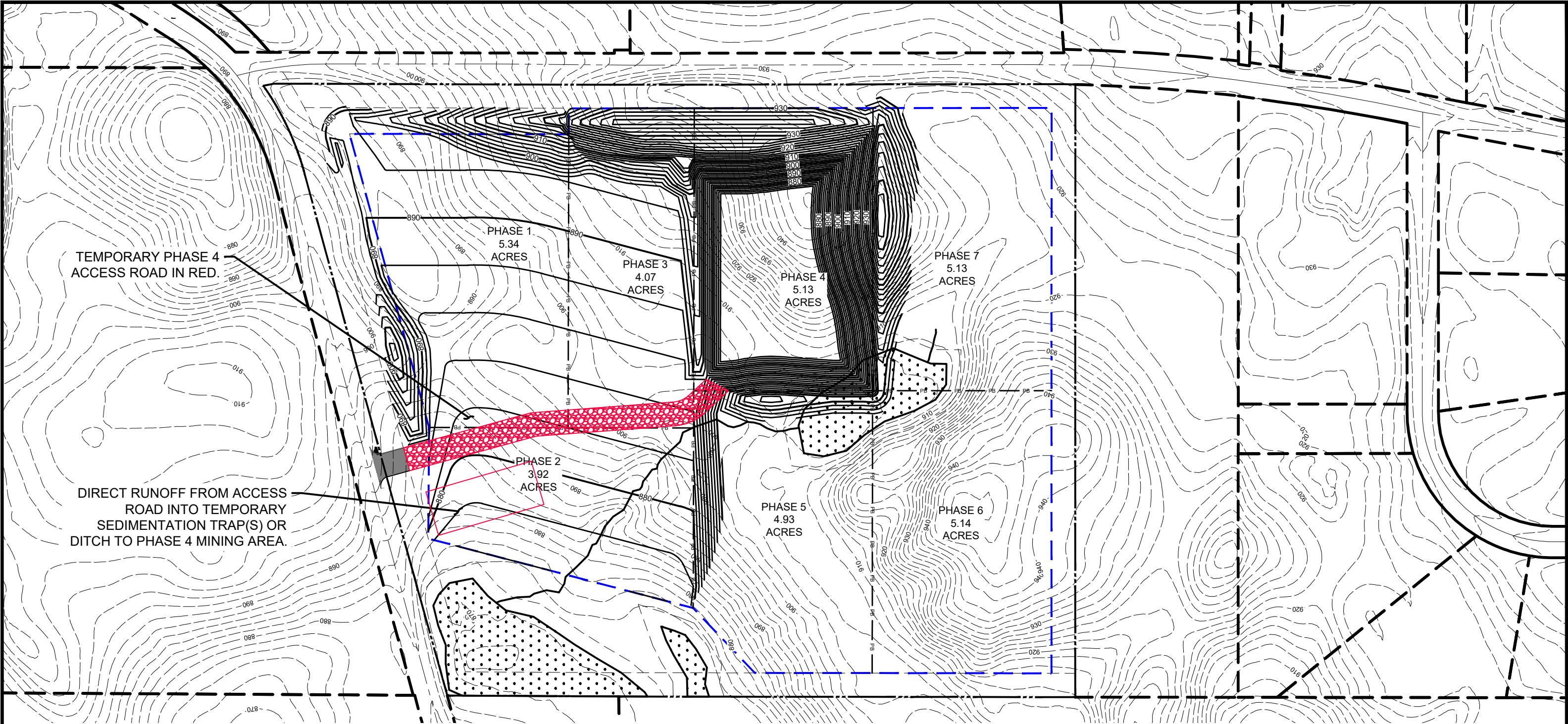
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LEGEND

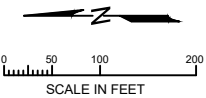
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EXISTING CONTOUR INT	---	SETBACK	---
CONSTRUCTED CONTOUR IDX	---	WETLANDS	---
CONSTRUCTED CONTOUR INT	---		
PROPERTY BOUNDARY	---		





LEGEND

EXISTING CONTOUR IDX		MINING BOUNDARY	
EXISTING CONTOUR INT		SETBACK	
CONSTRUCTED CONTOUR IDX		WETLANDS	
CONSTRUCTED CONTOUR INT			
PROPERTY BOUNDARY			



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Date: 04/29/24

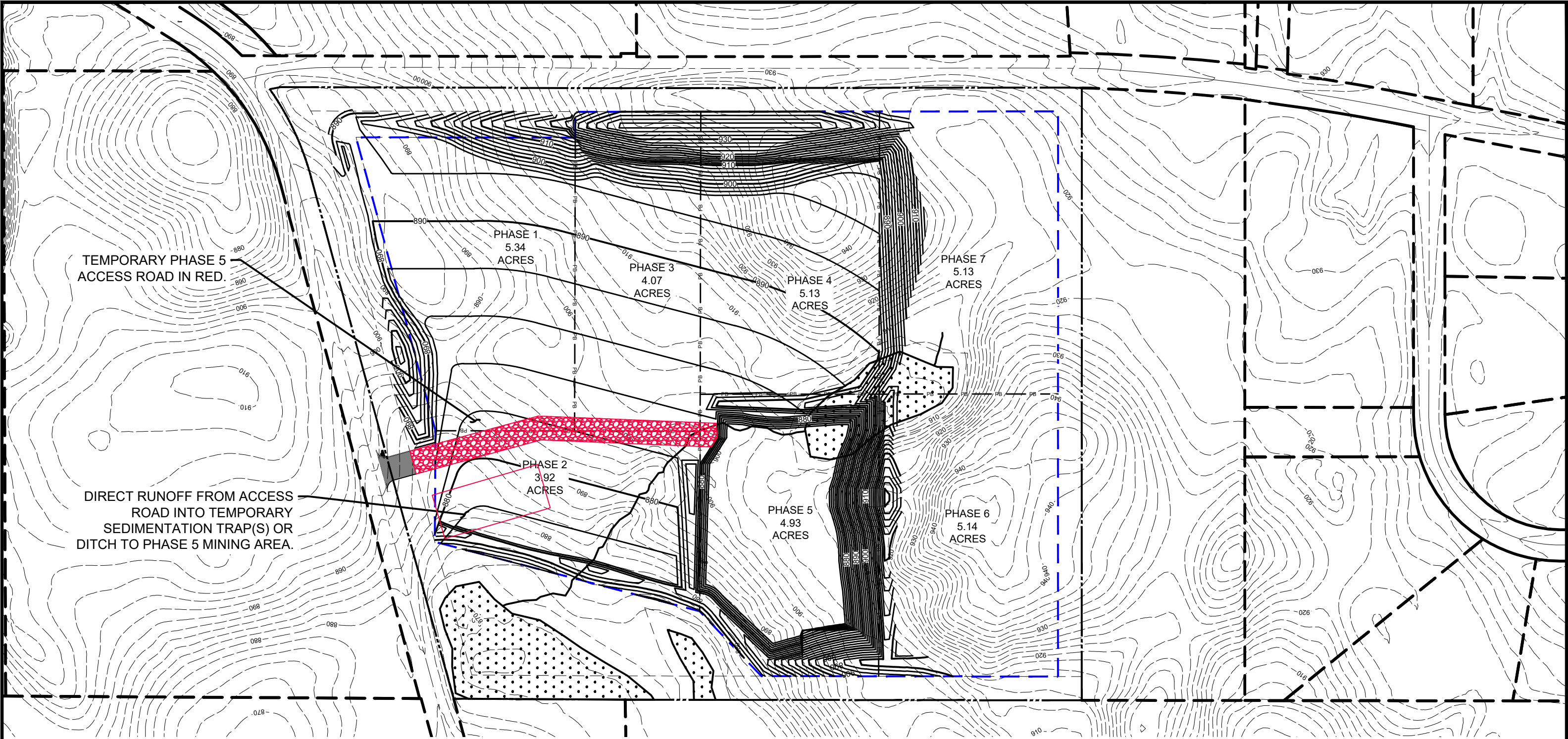
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1	06/28/2024	DJW	PER CITY COMMENTS
2	08/13/2024	DJW	UPDATED FOR IUP SUBMITTAL
3	10/02/2024	DJW	PER CITY COMMENTS

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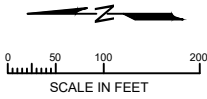
PHASE 4 INITIAL MINING PLAN
IUP DRAWINGS

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of
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LEGEND

EXISTING CONTOUR IDX	---	MINING BOUNDARY	---
EXISTING CONTOUR INT	---	SETBACK	---
CONSTRUCTED CONTOUR IDX	---	WETLANDS	---
CONSTRUCTED CONTOUR INT	---		
PROPERTY BOUNDARY	---		



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Date: 04/29/24

REV	DATE	BY	DESCRIPTION
0	04/29/2024	DJW	SUBMITTED FOR RGJ REVIEW
1	06/28/2024	DJW	PER CITY COMMENTS
2	08/13/2024	DJW	UPDATED FOR IUP SUBMITTAL
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PHASE 5 INITIAL MINING PLAN
IUP DRAWINGS

3D
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7

TEMPORARY PHASE 6
ACCESS ROAD IN RED.

DIRECT RUNOFF FROM ACCESS
ROAD INTO TEMPORARY
SEDIMENTATION TRAP(S) OR
DITCH TO PHASE 6 MINING AREA.

PHASE 1.
5.34
ACRES

PHASE 3
4.07
ACRES

PHASE 4
5.13
ACRES

PHASE 7
5.13
ACRES

PHASE 2
3.92
ACRES

PHASE 5
4.93
ACRES

PHASE 6
5.14
ACRES

LEGEND

EXISTING CONTOUR IDX

— 960 —

MINING BOUNDARY

— — — — —

EXISTING CONTOUR INT

— — — — —

SETBACK

— — — — —

CONSTRUCTED CONTOUR IDX

— 960 —

WETLANDS

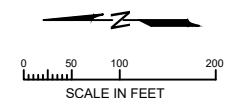
•••••

CONSTRUCTED CONTOUR INT

— — — — —

PROPERTY BOUNDARY

— — — — —



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Date: 04/29/24

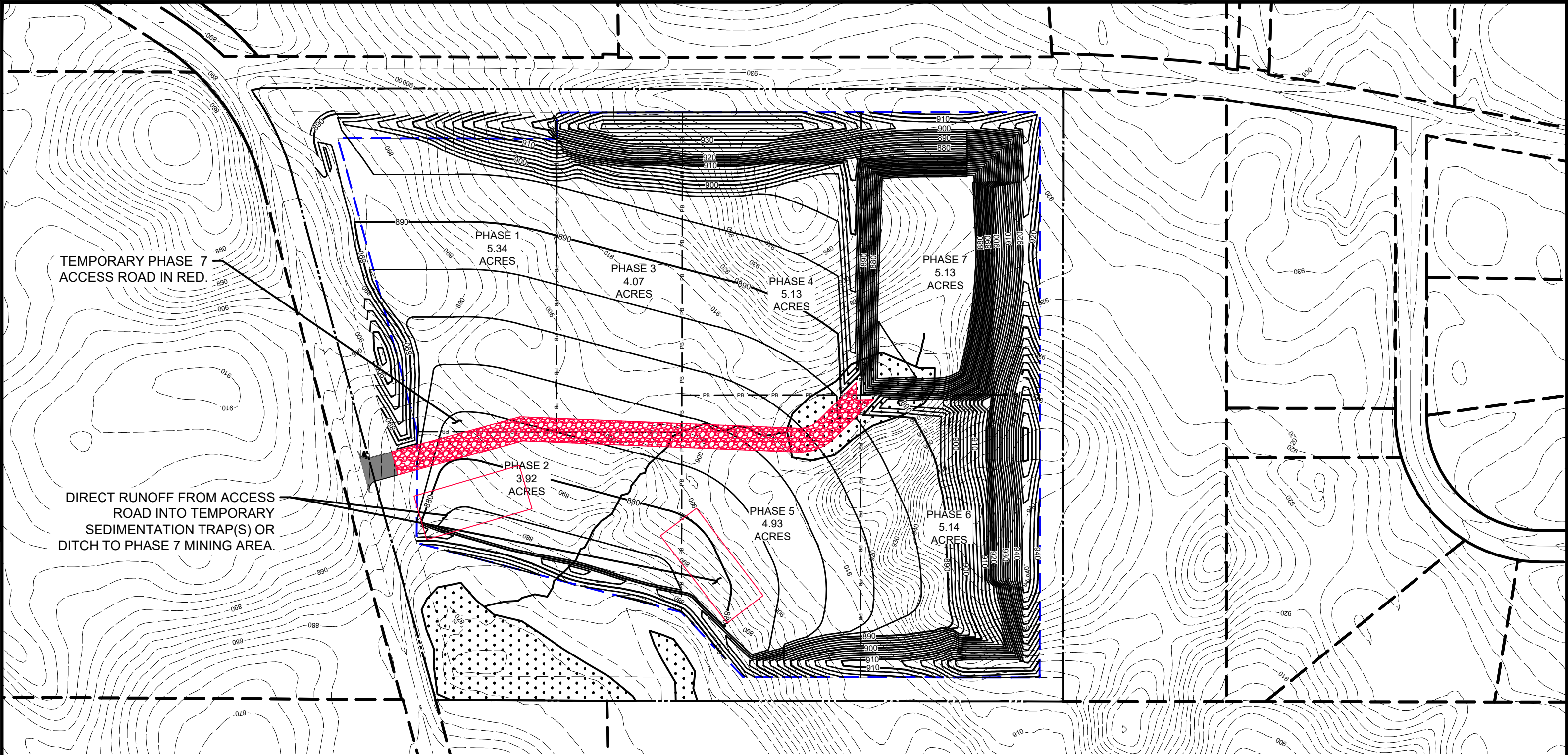
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2	08/13/2024	DJW	UPDATED FOR IUP SUBMITTAL
3	10/02/2024	DJW	PER CITY COMMENTS

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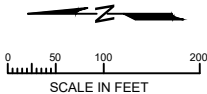
PHASE 6 INITIAL MINING PLAN
IUP DRAWINGS

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LEGEND

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EXISTING CONTOUR INT	---	SETBACK	---
CONSTRUCTED CONTOUR IDX	--- 960 ---	WETLANDS	█
CONSTRUCTED CONTOUR INT	---		
PROPERTY BOUNDARY	---		



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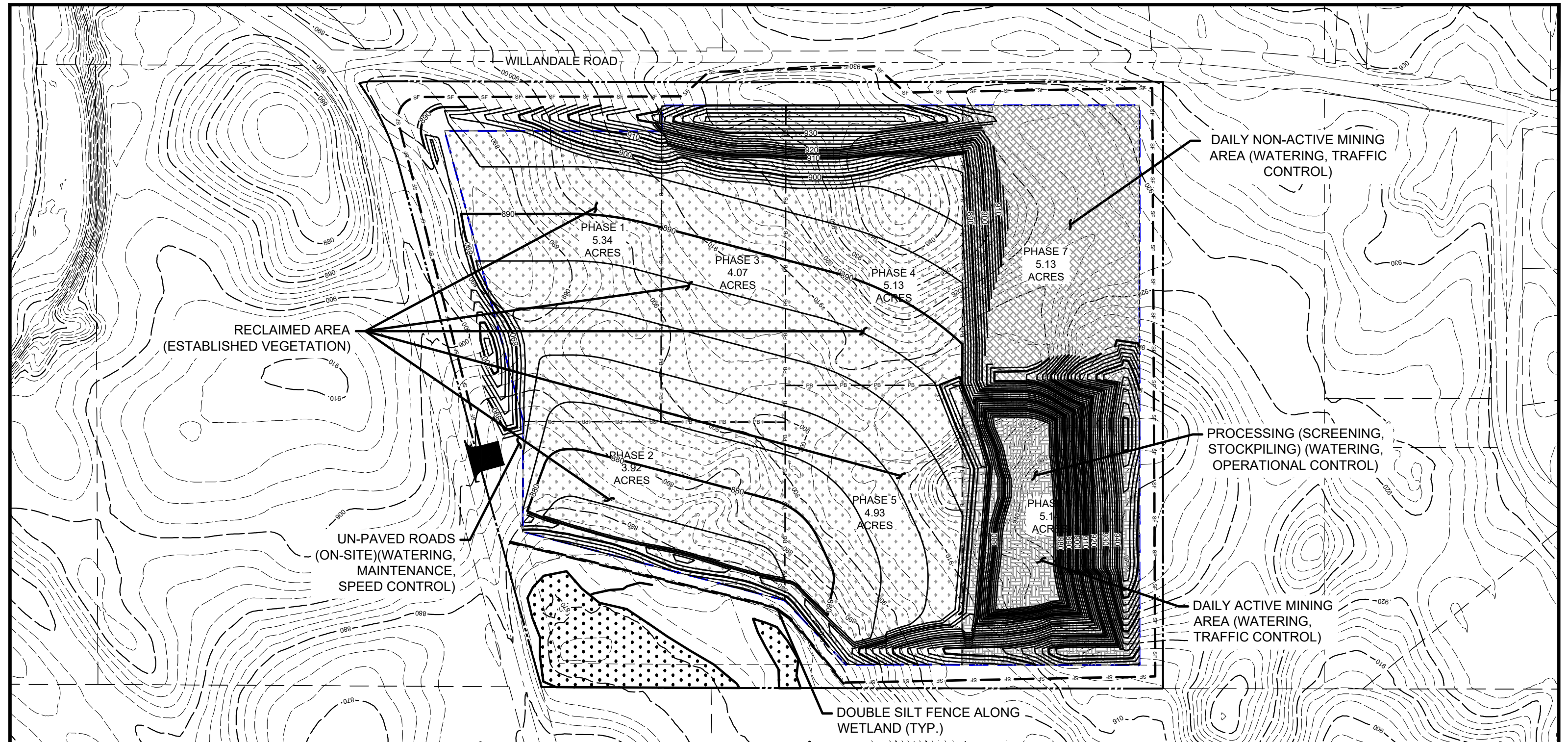
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1	06/28/2024	DJW	PER CITY COMMENTS
2	08/13/2024	DJW	UPDATED FOR IUP SUBMITTAL
3	10/02/2024	DJW	PER CITY COMMENTS

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PHASE 7 INITIAL MINING PLAN
IUP DRAWINGS

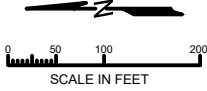
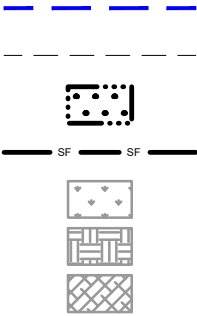
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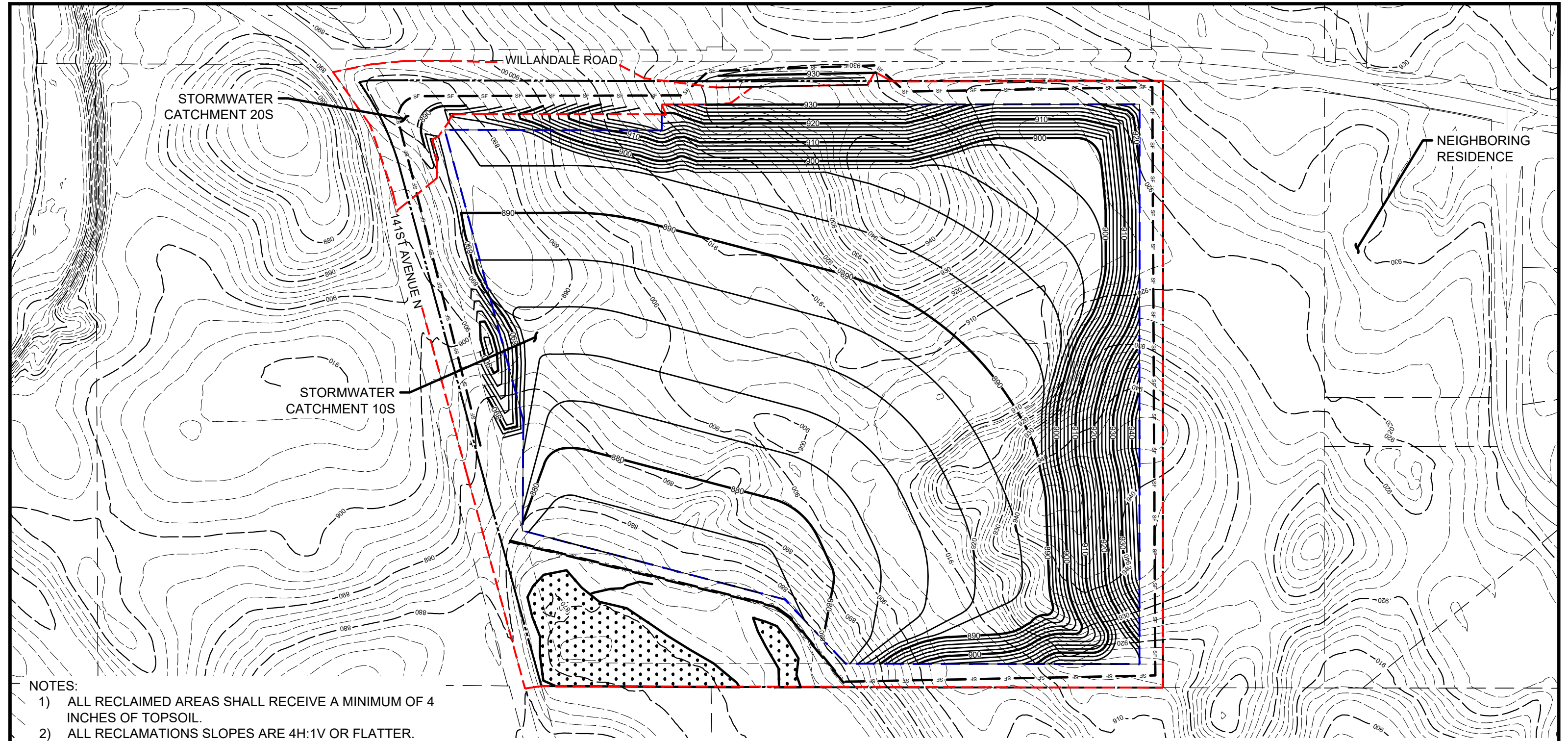


BACKGROUND AERIAL SOURCE: GOOGLE EARTH

LEGEND

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EXISTING CONTOUR INT	----	SETBACK	---
MINING CONTOUR IDX	—960—	WETLANDS	[Pattern]
MINING CONTOUR INT	=====	SILT FENCE	SF — SF
PROPERTY BOUNDARY	----	RECLAIMED AREA	[Pattern]
MINING PHASE BOUNDARY	— PB — PB —	ACTIVE MINING AREA	[Pattern]
		NON-ACTIVE MINING AREA (UNDISTURBED)	[Pattern]



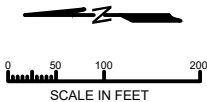


BACKGROUND AERIAL SOURCE: GOOGLE EARTH

- NOTES:
- 1) ALL RECLAIMED AREAS SHALL RECEIVE A MINIMUM OF 4 INCHES OF TOPSOIL.
 - 2) ALL RECLAMATIONS SLOPES ARE 4H:1V OR FLATTER.
 - 3) DISTURBED AREAS WILL BE STABILIZED WITH MNDOT SEED MIXTURE MI (FORMERLY 25-141) AT A SEEDING RATE OF 59 POUNDS PER ACRE, MNDOT CATEGORY 3N EROSION CONTROL BLANKET OR MNDOT TYPE 1 MULCH AND COMMERCIAL FERTILIZER.
 - 4) ENSURE THAT ALL EROSION CONTROL PRODUCTS ARE BIODEGRADABLE. ANY NETTING IN EROSION PRODUCTS SHALL BE RECTANGULAR SHAPED (NOT SQUARE MESH) & BE MADE OF FLEXIBLE (NON-WELDED) MESH.
 - 5) ENTIRE DRIVEWAY SHALL HAVE GRAVEL AND PAVEMENT REMOVED, HAVE THE UNDERLYING SOIL RIPPED, AND THEN TOPSOILED AND STABILIZED.

LEGEND

EXISTING CONTOUR IDX	---	MINING BOUNDARY	---
EXISTING CONTOUR INT	---	SETBACK	---
RECLAMATION CONTOUR IDX	---	STORMWATER CATCHMENT	---
RECLAMATION CONTOUR INT	---	WETLANDS	---
PROPERTY BOUNDARY	---	SILT FENCE	---



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Drawn: DJW
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Date: 04/29/24

REV	DATE	BY	DESCRIPTION
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1	08/29/2024	DJW	PER CITY COMMENTS
2	08/13/2024	DJW	UPDATED FOR IUP SUBMITTAL
3	10/02/2024	DJW	PER CITY COMMENTS

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RECLAMATION PLAN
IUP DRAWINGS

5
of
7

NOTES:

THE FOLLOWING MEASURES WILL BE TAKEN TO ENSURE THAT THE PROJECT DOES NOT AFFECT ANY POSSIBLE BLANDING'S TURTLE POPULATION:

- WETLAND REMOVAL SHALL NOT OCCUR BETWEEN SEPTEMBER 15TH AND APRIL 15TH, WHICH ARE CONSIDERED THE HIBERNATION PERIOD FOR BLANDING'S TURTLES. THE WETLAND MAY BE REMOVED DURING THESE DATES IF AN EXPERT IN BLANDING'S TURTLES DETERMINES THAT THE AREA IS NOT SUITABLE FOR HIBERNATION.
- EROSION AND SEDIMENT CONTROLS SHALL BE LIMITED TO WILDLIFE FRIENDLY EROSION CONTROL TO AVOID THE INADVERTENT TAKE OF BLANDING'S TURTLES.
- HYDRO-MULCH PRODUCTS SHALL NOT CONTAIN ANY MATERIALS WITH SYNTHETIC (PLASTIC) FIBER ADDITIVES, AS THE FIBERS CAN RE-SUSPEND AND FLOW INTO WATERBODIES.
- THE BLANDING'S TURTLE FLYER SHALL BE GIVEN TO ALL CONTRACTORS WORKING ON THE SITE.
- BARE GROUND WITHIN CONSTRUCTION AREAS SHALL BE THOROUGHLY CHECKED FOR TURTLES BEFORE THE USE OF HEAVY EQUIPMENT OR ANY GROUND DISTURBANCE.
- ANY SIGHTINGS OF BLANDING'S TURTLES SHALL BE REPORTED TO REPORTS.NHIS@STATE.MN.US AND SHALL INCLUDE THE DATE, OBSERVER, LOCATION, AND PHOTOGRAPH OF THE BLANDING'S TURTLE.
- PROJECT PERSONNEL SHALL INSTALL SILT FENCING AROUND ALL SOIL STOCKPILES, GRAVEL PADS, AND OTHER AREAS OF EXPOSED SOIL/SAND/SEDIMENT WHERE WORK WILL OCCUR TO PREVENT TURTLE ACCESS FROM MAY 15TH TO JULY 15TH. SILT FENCE SHALL BE BURIED A MINIMUM OF 10-INCHES, REGULARLY INSPECTED, AND MAINTAINED AS NEEDED. TEMPORARY FENCING SHALL BE REMOVED BY PROJECT CLOSEOUT.
- IF ANY TURTLES ARE FOUND IN IMMINENT DANGER, THEY MUST BE MOVED BY HAND OUT OF HARM'S WAY, OTHERWISE THEY ARE TO BE LEFT UNDISTURBED. DIRECTIONS ON HOW TO SAFELY MOVE TURTLES WILL BE PROVIDED TO ALL WORKERS ONSITE.

Helping Turtles Cross the Road

- Leave them alone if they are not in danger. Turtles crossing roads in late-May and June are often moving to familiar nesting locations. They know where they are going.
- Don't put yourself or others in danger. Simply pulling off the road and turning on your hazard lights may alert other drivers to slow down.
- If you decide to help the turtle cross the road, turn on your signal, slowly pull off the road, turn on your hazard lights, and watch for approaching traffic.
- Pick up the turtle by the back of its shell, NOT by the tail. (Picking up a turtle by the tail can damage their spinal cord.)
- Use caution when handling turtles. All turtles can bite, but Snapping Turtles and Spiny Softshells bite harder and more often.
- Snapping Turtles can be moved with a snow shovel. Other options include picking them up by their hind legs or having them bite down on a stick and carefully dragging them to safety.
- Move the turtle in the direction it is heading. Do not relocate the turtle to a new area, even if the habitat seems unsuitable.
- Wash your hands after handling a turtle.



Report turtle sightings to the DNR.

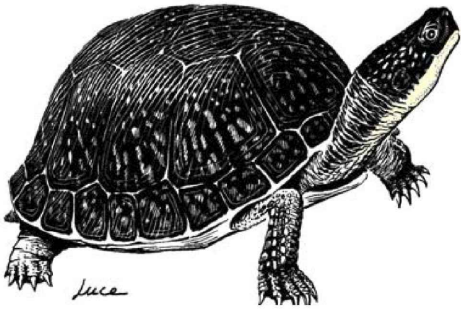
Turtles are tracked to identify movement patterns, behavior, and habitat usage.

Amphibians and reptiles are particularly vulnerable to impacts from roads. Roads can separate foraging areas from breeding or nesting grounds.

Help the DNR Keep Turtle Records

The DNR uses the location of live or road-killed turtles to document species occurrences and help identify areas of high road mortality. Road-killed specimens should be photographed top and bottom and sent to mcbs.e-report@state.mn.us. Do not handle live turtles when taking a photo, especially nesting females. Include an accurate description of the location or a map with the photo voucher.

CAUTION



BLANDING'S TURTLES
MAY BE ENCOUNTERED
IN THIS AREA

The unique and rare Blanding's turtle has been found in this area. Blanding's turtles are a State Threatened species and are protected under Minnesota Statute 84.095, Protection of Threatened and Endangered Species. Please be careful of turtles on roads and in construction sites. For additional information on turtles, or to report a Blanding's turtle sighting, contact the DNR Nongame Specialist nearest you: Bemidji (218-308-2641); Grand Rapids (218-327-4518); New Ulm (507-359-6033); Rochester (507-280-5070); or St. Paul (651-259-5764).

DESCRIPTION: The Blanding's turtle is a medium to large turtle (5 to 10 inches) with a black or dark blue, dome-shaped shell with muted yellow spots and bars. The bottom of the shell is hinged across the front third, enabling the turtle to pull the front edge of the lower shell firmly against the top shell to provide additional protection when threatened. The head, legs, and tail are dark brown or blue-gray with small dots of light brown or yellow. A distinctive field mark is the bright yellow chin and neck.

Illustration by Don Luce, from Turtles in Minnesota, Natural History Leaflet No. 9, June 1989, James Ford Bell Museum of Natural History

SUMMARY OF RECOMMENDATIONS
FOR AVOIDING AND MINIMIZING IMPACTS
TO BLANDING'S TURTLE POPULATIONS

(see Environmental Review Fact Sheet Series for full recommendations)

- A flyer with an illustration of an adult Blanding's turtle should be given to all contractors working in the area. Homeowners should also be informed of the presence of Blanding's turtles in the area.
- Turtles which are in imminent danger should be moved, by hand, out of harms way. Turtles which are not in imminent danger should be left undisturbed to continue their travel among wetlands and/or nest sites.
- If a Blanding's turtle nests in your yard, do not disturb the nest, and do not allow pets near the nest.
- Blanding's turtles do not make good pets. It is illegal to keep this threatened species in captivity.
- Silt fencing should be set up to keep turtles out of construction areas. It is critical that silt fencing be removed after the area has been revegetated.
- Small, vegetated temporary wetlands should not be dredged, deepened, or filled.
- All wetlands should be protected from pollution; use of fertilizers and pesticides should be avoided, and run-off from lawns and streets should be controlled. Erosion should be prevented to keep sediment from reaching wetlands and lakes.
- Roads should be kept to minimum standards on widths and lanes.
- Roads should be ditched, not curbed or below grade. If curbs must be used, 4" high curbs at a 3:1 slope are preferred.
- Culverts under roads crossing wetland areas, between wetland areas, or between wetland and nesting areas should be at least 36 in. diameter and flat-bottomed or elliptical.
- Culverts under roads crossing streams should be oversized (at least twice as wide as the normal width of open water) and flat-bottomed or elliptical.
- Utility access and maintenance roads should be kept to a minimum.
- Because trenches can trap turtles, trenches should be checked for turtles prior to being backfilled and the sites should be returned to original grade.
- Terrain should be left with as much natural contour as possible.
- Graded areas should be revegetated with native grasses and forbs.
- Vegetation management in infrequently mowed areas -- such as in ditches, along utility access roads, and under power lines -- should be done mechanically (chemicals should not be used). Work should occur fall through spring (after October 1st and before June 1st).

Compiled by the Minnesota Department of Natural Resources Division of Ecological Resources, Updated March 2008
Endangered Species Environmental Review Coordinator, 500 Lafayette Rd., Box 25, St. Paul, MN 55155 / 651-259-5109



15650 36TH AVE N
SUITE 110
PLYMOUTH, MN 55446
TEL (952) 346-3900
FAX (952) 346-3901
CARLSONMCCAIN.COM

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

Print Name: Dan J. Wilke
Signature: *Dan Wilke*
Date: 04/29/24 License #: 53182

Drawn: DJW
Designed: DJW
Date: 04/29/24

REV	DATE	BY	DESCRIPTION
0	04/29/2024	DJW	SUBMITTED FOR REG REVIEW
1	08/29/2024	DJW	PER CITY COMMENTS
2	08/13/2024	DJW	UPDATED FOR IUP SUBMITTAL
3	10/02/2024	DJW	PER CITY COMMENTS

VEIT & COMPANY, INC.
14000 Veit Place,
Rogers, MN 55374

VEIT MINE
ROGERS, MN

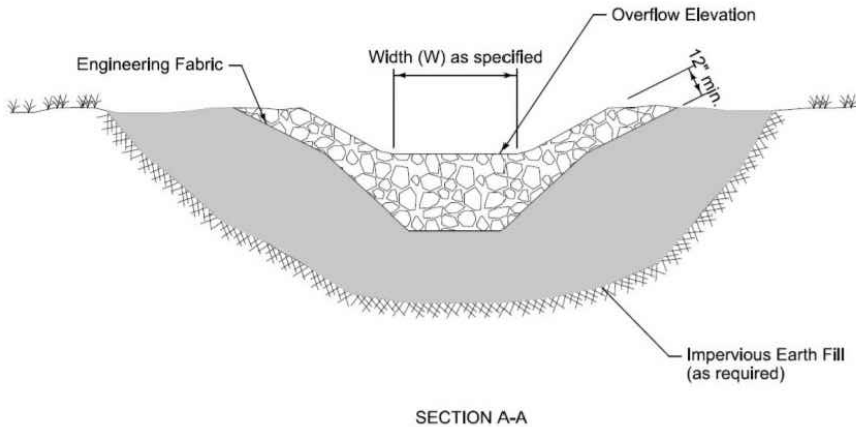
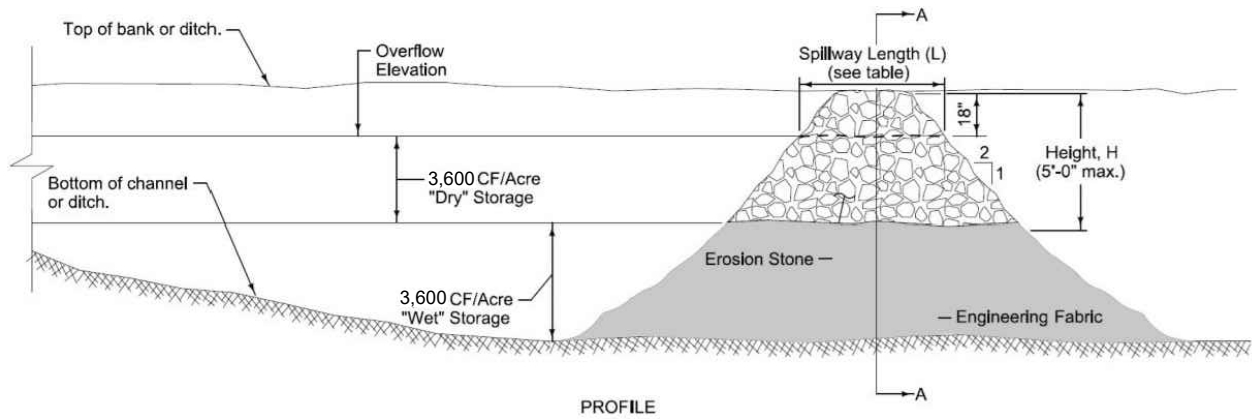
BLANDING'S TURTLE PLAN
IUP DRAWINGS

6
of
7

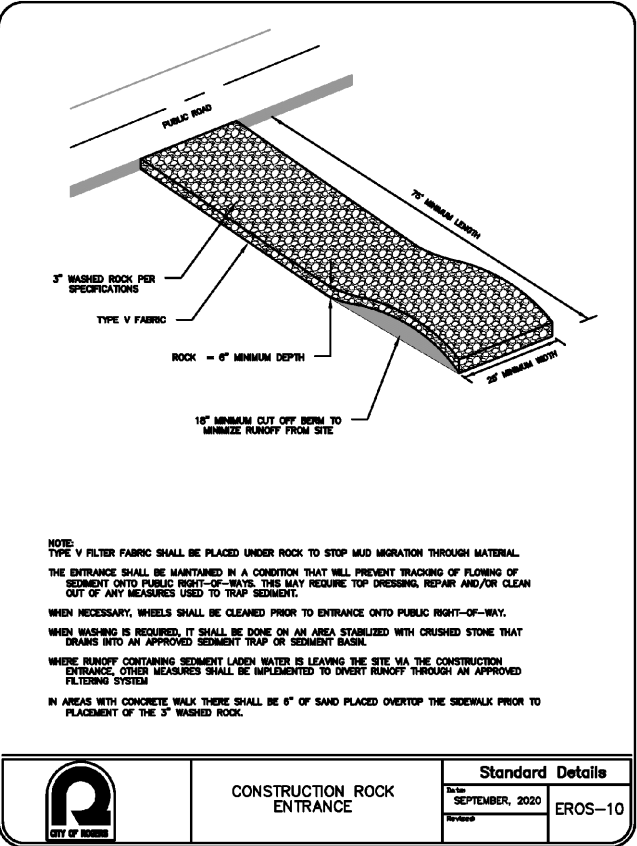
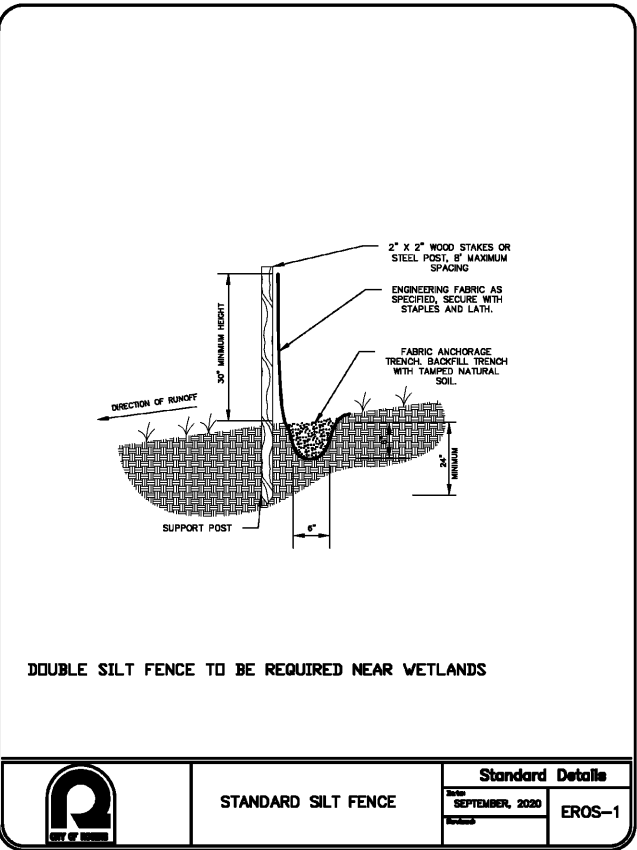
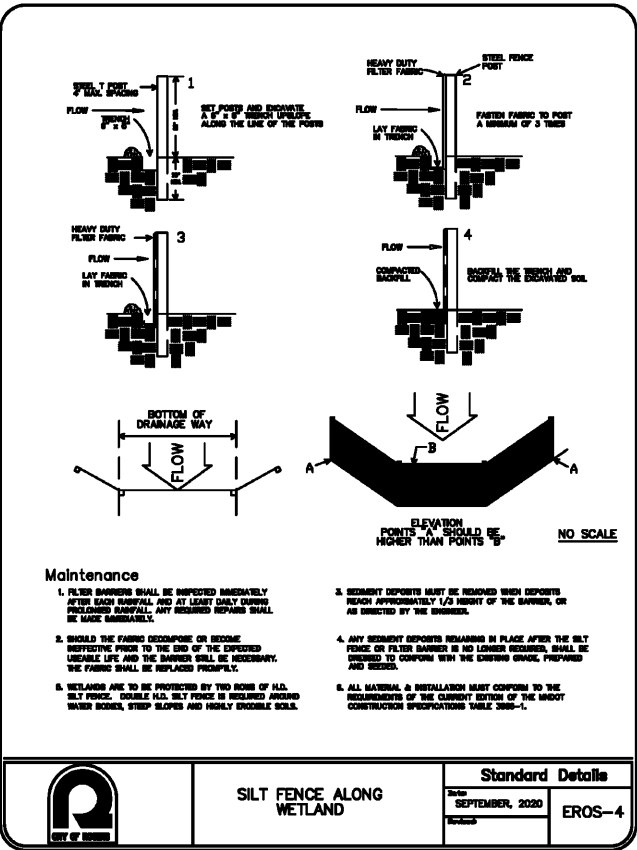
Table 7E-13.01: Embankment Widths for Sediment Traps

Contributing Drainage Area (acre)	Embankment Width (feet)
1	4
2	6
3	8
4	10
5	12

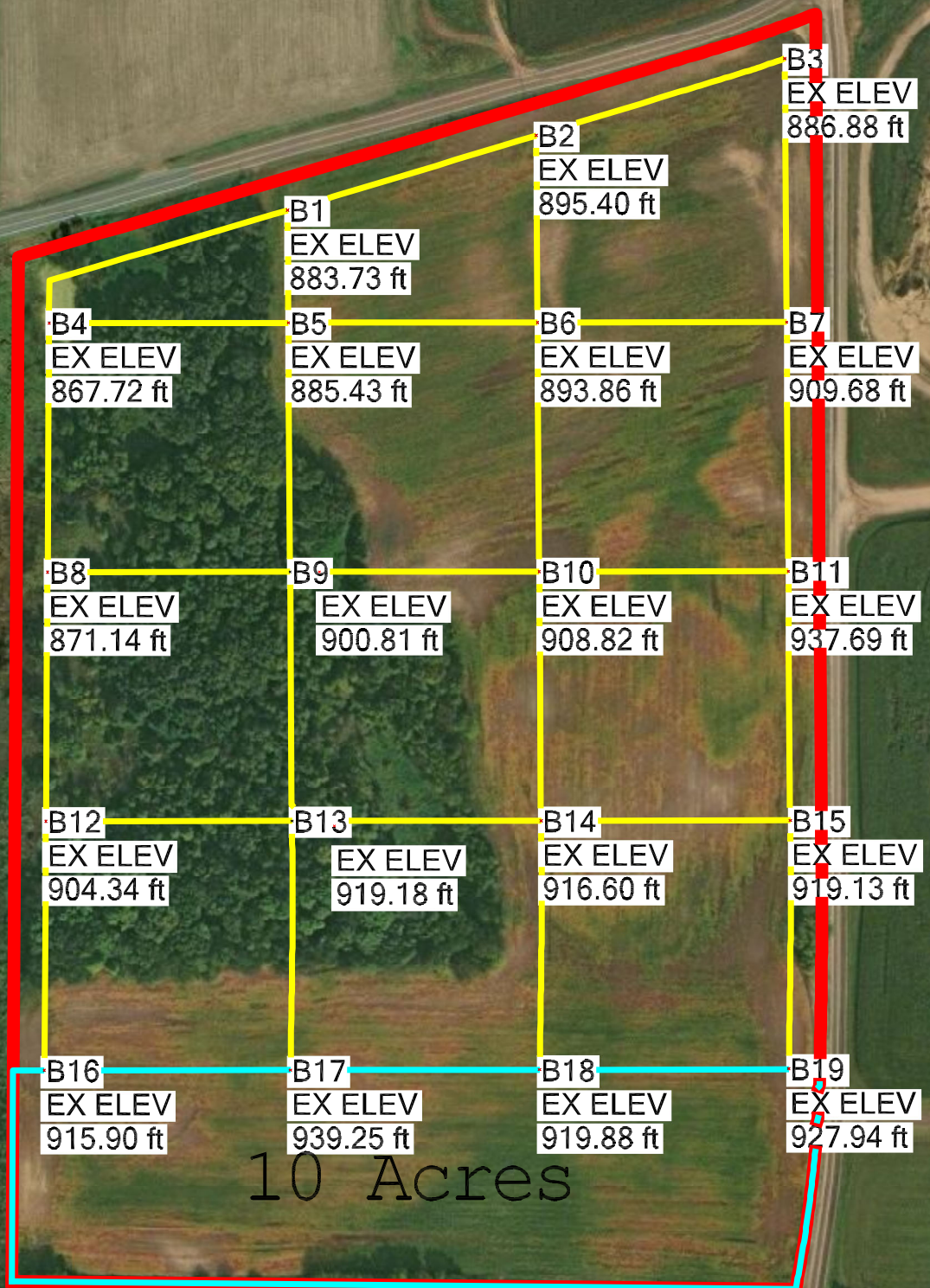
Source: Roberts, 1995 (FHWA)



TEMPORARY SEDIMENT TRAP
NO SCALE



Appendix B
Soils Information



100 ft



SUBSURFACE BORING LOG

AET No: **P-0017476** Log of Boring No. **SB- 1 (p. 1 of 1)**
 Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	Surface Elevation 883.7 MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	Topsoil	TOPSOIL									
2											
3	SAND, fine grained, brown, moist, loose (SP)	COARSE ALLUVIUM									
4											
5			5	M	SS	12	5				3
6											
7											
8	SAND WITH SILT and GRAVEL, fine to medium grained, moist, medium dense (SP-SM)										
9											
10			26	M	SS	7	3				7
11											
12											
13	SAND, fine grained, brown, moist, medium dense (SP)										
14											
15			20	M	SS	12					
16											
17											
18	SAND, a little gravel, fine to medium grained, brown, waterbearing, loose (SP)										
19											
20			10	W	SS	12					
21	END OF BORING *WD - Water level measured while drilling *AD - Water level measured at completion of drilling										

DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-19½'	3.25" HSA	12/14/22	*WD					19.0	
		12/14/22	*AD		19.0	5.0		18.0	
BORING COMPLETED: 12/14/22									
DR: BR LG: DR Rig: GRD751									

AET CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23



SUBSURFACE BORING LOG

AET No: **P-0017476** Log of Boring No. **SB- 2 (p. 1 of 2)**
 Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	Surface Elevation 895.4 MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	Topsoil	TOPSOIL									
2											
3											
4	SAND, fine grained, brown, moist, loose (SP)	COARSE ALLUVIUM									
5			7	M	SS	12					
6											
7											
8	SAND, a little gravel, fine to coarse grained, brown, moist, loose (SW)										
9											
10			10	M	SS	13	4				3
11											
12											
13											
14	SANDY LEAN CLAY, a little gravel, brown, very stiff (CL)	MIXED ALLUVIUM									
15			18	M	SS	15	16				50
16											
17											
18											
19	SAND WITH GRAVEL, fine to coarse grained, brown, moist, medium dense (SP)	COARSE ALLUVIUM									
20			13	M	SS	12	3				2
21											
22	*WD - Water level measured while drilling *AD - Water level measured at completion of drilling										

DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-29½'	3.25" HSA	12/14/22	*WD					30.0	
		12/14/22	*AD		29.0	9.0		30.0	
BORING COMPLETED: 12/14/22									
DR: BR LG: DR Rig: GRD751									

AET CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23

SUBSURFACE BORING LOG

AET No: **P-0017476** Log of Boring No. **SB- 3 (p. 1 of 2)**
 Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	Surface Elevation 886.9 MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	Topsoil	TOPSOIL									
2											
3											
4	SILTY SAND, fine to medium grained, trace roots, brown, a little dark brown, moist, loose, laminations of clayey sand (SM)	COARSE ALLUVIUM	8	M	SS	13	8				21
5											
6											
7											
8	SAND, a little gravel, fine to medium grained, brown, moist, medium dense (SP)		14	M	SS	12					
9											
10											
11											
12											
13	SAND WITH SILT, a little gravel, fine grained, brown, moist, medium dense (SP-SM)		24	M	SS	12	8				5
14											
15											
16											
17	SAND WITH GRAVEL, fine to medium grained, brown, wet, loose (SP)		22	M	SS	13					
18											
19											
20											
21											
22	*WD - Water level measured while drilling *AD - Water level measured at completion of drilling										

DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
0-19½'	3.25" HSA	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
		12/14/22	*WD					24.0	
		12/14/22	*AD		24.0	9.0		22.5	
BORING COMPLETED: 12/14/22									
DR: BR LG: DR Rig: GRD751									

AET CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23

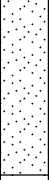


SUBSURFACE BORING LOG

AET No: **P-0017476**

Log of Boring No. **SB- 3 (p. 2 of 2)**

Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
24	SAND, a little gravel, fine to medium grained, brown, wet, loose (SP)	 COARSE ALLUVIUM (continued)	10	 W	 SS	12					
25											
26	END OF BORING										



SUBSURFACE BORING LOG

AET No: **P-0017476** Log of Boring No. **SB- 5 (p. 1 of 1)**
 Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	Surface Elevation 885.4 MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	Topsoil	TOPSOIL									
2											
3											
4											
5	SAND WITH SILT, a little gravel, fine to medium grained, brown, moist, very loose (SP-SM)	COARSE ALLUVIUM	4	M	SS	13	7				7
6											
7											
8	SAND, fine to medium grained, brown, moist, loose (SP)										
9											
10			5	M	SS	13	6				3
11											
12											
13	SAND, fine grained, brown, moist, medium dense (SP)										
14											
15			13	M	SS	12					
16											
17											
18	SAND, fine to medium grained, brown, waterbearing, loose (SP)										
19											
20			9	W	SS	12					
21	END OF BORING *WD - Water level measured while drilling *AD - Water level measured at completion of drilling										
DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG		
0-19½' 3.25" HSA		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL			
		12/16/22	*WD					20.0			
		12/16/22	*AD		19.0			19.0			
BORING COMPLETED: 12/16/22											
DR: BR LG: DR Rig: GRD751											

AET CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23

SUBSURFACE BORING LOG

AET No: **P-0017476** Log of Boring No. **SB- 6 (p. 1 of 2)**
 Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	Surface Elevation 893.9 MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	Topsoil	TOPSOIL									
2	SILTY SAND, fine to medium grained, brown, moist (SM)	COARSE ALLUVIUM									
3											
4											
5	SAND, a little gravel, fine to medium grained, brown, moist, loose to very loose (SP)		7	M	SS	10					
6											
7											
8											
9											
10			4	M	SS	12	10				3
11											
12											
13	SAND, fine grained, brown, moist, medium dense (SP)										
14											
15			13	M	SS	12					
16											
17											
18											
19											
20			18	M	SS	13	7				7
21											
22											

*WD - Water level measured while drilling
 *AD - Water level measured at completion of drilling

DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
0-19½'	3.25" HSA	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
		12/14/22	*WD					29.0	
		12/14/22	*AD		29.0	8.5		28.0	
BORING COMPLETED: 12/16/22									
DR: BR LG: DR Rig: GRD751									

AET CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23



SUBSURFACE BORING LOG

AET No: **P-0017476**

Log of Boring No. **SB- 6 (p. 2 of 2)**

Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
24	SAND, a little gravel, fine to medium grained, brown, moist, medium dense (SP)		15	M	 SS	13					
25											
26											
27											
28	SAND WITH GRAVEL, fine to coarse grained, brown, waterbearing, medium dense (SP)		19	W	 SS	13					
29											
30											
31											
	END OF BORING										

AET_CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23



SUBSURFACE BORING LOG

AET No: **P-0017476** Log of Boring No. **SB- 7 (p. 1 of 2)**
 Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	Surface Elevation 909.7	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS					
	MATERIAL DESCRIPTION						WC	DEN	LL	PL	%-#200	
1	Topsoil	TOPSOIL										
2												
3	SAND WITH SILT and GRAVEL, fine to medium grained, brown, moist, medium dense (SP-SM)	COARSE ALLUVIUM	11	M		SS	12	5				6
4												
5												
6												
7												
8												
9												
10												
11	SAND, a little gravel, fine to medium grained, brown, moist, medium dense (SP)		13	M		SS	13					
12												
13												
14												
15	SAND, fine grained, brown, moist, medium dense (SP)		14	M		SS	13					
16												
17												
18												
19	SAND, fine to medium grained, brown, moist, loose (SP)		10	M		SS	13					
20												
21												
22												
	*WD - Water level measured while drilling *AD - Water level measured at completion of drilling											

DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-44½'	3.25" HSA	12/14/22	*WD					45.0	
		12/14/22	*AD		44.0	15.0		44.0	
BORING COMPLETED: 12/14/22									
DR: BR LG: DR Rig: GRD751									

AET CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23



SUBSURFACE BORING LOG

AET No: **P-0017476**

Log of Boring No. **SB- 7 (p. 2 of 2)**

Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
24	SAND, a little gravel, fine to medium grained, brown, moist, medium dense to dense (SP)	COARSE ALLUVIUM (continued)									
25			19	M	SS	12					
26											
27											
28											
29											
30			24	M	SS	12	3				4
31											
32											
33											
34											
35			27	M	SS	12					
36											
37											
38											
39											
40			35	M	SS	13					
41											
42											
43											
44	SAND, fine to medium grained, brown waterbearing, medium dense (SP)			▼							
45			19	W	SS	13					
46	END OF BORING										

AET_CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23

SUBSURFACE BORING LOG

AET No: **P-0017476** Log of Boring No. **SB- 8 (p. 1 of 1)**
 Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	Surface Elevation <u>871.1</u> MATERIAL DESCRIPTION		GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
								WC	DEN	LL	PL	%-#200
1	LEAN CLAY WITH SAND, slightly organic, trace roots, dark brown, frozen to 0.5' (CL)		TOPSOIL		F/M			53				
2												
3	SAND WITH SILT, fine grained, gray, wet (SP-SM)		COARSE ALLUVIUM									
4												
5	SAND WITH SILT, a little gravel, fine to medium grained, brown, loose, waterbearing (SP-SM)			5	M		SS	12	21			7
6	END OF BORING											
*WD - Water level measured while drilling *AD - Water level measured at completion of drilling												

DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-4½'	3.25" HSA	1/2/23	*WD					4.0	
		1/2/23	*AD		4.0	2.0		3.5	
BORING COMPLETED: 1/2/23									
DR: BR LG: DR Rig: GRD751									

AET CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23



SUBSURFACE BORING LOG

AET No: **P-0017476** Log of Boring No. **SB- 9 (p. 1 of 2)**
 Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	Surface Elevation 900.8 MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	SILTY SAND, trace roots, fine to medium grained, brown, moist (SM)	TOPSOIL		F/M	AS						
2	SAND, fine to medium grained, brown, moist, loose (SP)	COARSE ALLUVIUM									
3											
4											
5	SAND WITH SILT, fine grained, brown, moist, loose (SP-SM)		6	M	SS	12	3				5
6											
7											
8											
9											
10			7	M	SS	12					
11											
12											
13	SAND, fine to medium grained, brown, moist, loose (SP)										
14											
15											
16			9	M	SS	12					
17											
18	SILTY SAND WITH GRAVEL, fine to medium grained, brown, moist, medium dense (SM)										
19											
20											
21			21	M	SS	10	6				12
22											

*WD - Water level measured while drilling
 *AD - Water level measured at completion of drilling

DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-34½'	3.25" HSA	12/27/22	*WD					33.5	
		12/27/22	*AD		34.0	12.0		33.5	
BORING COMPLETED: 12/27/22									
DR: BR LG: DR Rig: GRD751									

AET CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23



SUBSURFACE BORING LOG

AET No: **P-0017476**

Log of Boring No. **SB- 9 (p. 2 of 2)**

Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
24	SAND, a little gravel, fine to medium grained, brown, moist, medium dense, lens of fine grained sand (SP)	COARSE ALLUVIUM (continued)	18	M	SS	8					
25											
26											
27											
28	SAND, fine to medium grained, brown, moist to about 33.5' then waterbearing, loose (SP)		10	M	SS	12					
29											
30											
31											
32											
33											
34											
35											
36	END OF BORING										

AET_CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23

SUBSURFACE BORING LOG

AET No: **P-0017476** Log of Boring No. **SB-10 (p. 1 of 2)**
 Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	Surface Elevation 908.8 MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	SILTY SAND, trace gravel, fine grained, dark brown, moist (SM)	TOPSOIL		M	AS		19				
2											
3											
4	CLAYEY SAND, a little gravel, brown, firm (SC)	MIXED ALLUVIUM									
5			5	M	SS	14	15				
6											
7											
8	SANDY LEAN CLAY, a little gravel, brown, a little gray, firm, laminations of clayey sand (CL)										
9											
10			7	M	SS	15	21				
11											
12											
13	SAND, fine grained, brown, moist, loose, laminations of clayey sand (SP)	COARSE ALLUVIUM									
14											
15			6	M	SS	13	16				5
16											
17	GRAVELLY SAND WITH SILT, fine to coarse grained, brown, moist, loose (SP-SM)										
18											
19											
20			9	M	SS	13	8				10
21											
22											

*WD - Water level measured while drilling
 *AD - Water level measured at completion of drilling

DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
0-39½'	3.25" HSA	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
		12/27/22	*WD					40.5	
		12/27/22	*AD		39.5	20.0		40.5	
BORING COMPLETED: 12/27/22									
DR: BR LG: DR Rig: GRD751									

AET CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23

SUBSURFACE BORING LOG

AET No: **P-0017476** Log of Boring No. **SB-10 (p. 2 of 2)**
 Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
24	SAND, fine grained, brown, moist, medium dense (SP)	COARSE ALLUVIUM (continued)	15	M	SS	13					
25											
26											
27											
28	SAND, a little gravel, fine to medium grained, brown, moist to about 40.5' then waterbearing, dense to medium dense (SP)		13	M	SS	13	2				4
29											
30											
31											
32											
33											
34											
35											
36											
37											
38											
39											
40											
41	END OF BORING										

AET_CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23



SUBSURFACE BORING LOG

AET No: **P-0017476** Log of Boring No. **SB-11 (p. 1 of 3)**
 Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	Surface Elevation 937.7 MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	SANDY LEAN CLAY, trace roots, dark brown (CL)	TOPSOIL		M	AS		19				
2	SANDY LEAN CLAY, brown (CL)	MIXED ALLUVIUM									
3	SILTY SAND, fine grained, brown, moist, laminations of sandy lean clay (SM)	COARSE ALLUVIUM									
4	SAND WITH SILT, very fine grained, brown, moist, medium dense (SP-SM)										
5			11	M	SS	12					
6											
7											
8	GRAVELLY SAND WITH SILT, fine to coarse grained, brown, moist, dense (SP-SM)										
9											
10			35	M	SS	10	4				12
11											
12											
13											
14	SANDY LEAN CLAY, a little gravel, brown, stiff to very stiff (CL)	MIXED ALLUVIUM									
15			11	M	SS	14	19				53
16											
17											
18											
19											
20			17	M	SS	15	17				
21											
22	*WD - Water level measured while drilling *AD - Water level measured at completion of drilling										

DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-69½'	3.25" HSA	12/19/22	*WD					70.5	
		12/19/22	*AD			30.0			
BORING COMPLETED: 12/19/22									
DR: BR LG: DR Rig: GRD751									

AET CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23

SUBSURFACE BORING LOG

AET No: **P-0017476**

Log of Boring No. **SB-11 (p. 2 of 3)**

Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
24	SANDY LEAN CLAY, a little gravel, brown with iron oxidation staining, very stiff, laminations of silty sand (CL)		30	M	SS	15	18				
25											
26											
27											
28	SAND, a little gravel, fine to medium grained, brown, moist, medium dense (SP)	COARSE ALLUVIUM	25	M	SS	12					
29											
30											
31											
33	SILTY SAND, very fine grained, brown, moist, medium dense (SM)		24	M	SS	12	10				22
34											
35											
36											
38	CLAYEY SAND, a little gravel, brown and gray, hard, laminations of silty sand (SC)	MIXED ALLUVIUM	43	M	SS	15	15				
39											
40											
41											
43	SAND, fine grained, brown, moist, medium dense (SP)	COARSE ALLUVIUM	30	M	SS	13					
44											
45											
46											
48	GRAVELLY SAND WITH SILT, fine to coarse grained, brown, moist, very dense (SP-SM)										
49											
50											

AET_CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23



SUBSURFACE BORING LOG

AET No: **P-0017476** Log of Boring No. **SB-11 (p. 3 of 3)**
 Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
51	GRAVELLY SAND WITH SILT, fine to coarse grained, brown, moist, very dense (SP-SM) <i>(continued)</i>	COARSE ALLUVIUM <i>(continued)</i>	8	M	SS	10	4				8
52											
53											
54											
55			58	M	SS	2					
56											
57											
58											
59	SAND, a little gravel, fine to medium grained, brown, moist, dense (SP)										
60											
61											
62											
63	SAND, a little gravel, fine to medium grained, brown and grayish brown, moist, medium dense, laminations of clayey sand (SP)		36	M	SS	10					
64											
65											
66											
67			27	M	SS	12					
68											
69											
70											
71	SAND, a little gravel, fine to coarse grained, brown wet, dense (SP)		47		SS	12					
	END OF BORING										

AET_CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23



SUBSURFACE BORING LOG

AET No: **P-0017476** Log of Boring No. **SB-12 (p. 1 of 2)**
 Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	Surface Elevation 904.3 MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	CLAYEY SAND, slightly organic, trace roots, dark brown, frozen to 0.5' (SC)	TOPSOIL		F/M	AS		26				
2	SAND, fine grained, brown, moist, loose (SP)	COARSE ALLUVIUM									
3											
4											
5			6	M	SS	12	7				3
6											
7											
8											
9	SILTY SAND WITH GRAVEL, fine grained, brown, moist, medium dense to dense (SM)										
10			13	M	SS	10	13				21
11											
12											
13											
14											
15			47	M	SS	0					
16	SAND, fine grained, brown, moist, loose (SP)										
17											
18	SAND WITH SILT, fine grained, brown, moist, medium dense (SP-SM)										
19											
20			10	M	SS	12	6				7
21											
22	*WD - Water level measured while drilling *AD - Water level measured at completion of drilling										

DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-39½'	3.25" HSA	1/2/23	*WD					40.0	
		1/2/23	*AD		39.0	14.0		36.5	
BORING COMPLETED: 1/2/23									
DR: BR LG: DR Rig: GRD751									

AET CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23



SUBSURFACE BORING LOG

AET No: **P-0017476** Log of Boring No. **SB-12 (p. 2 of 2)**
 Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
24	SAND, a little gravel, fine to medium grained, brown, moist, medium dense (SP)	COARSE ALLUVIUM (continued)									
25			16	M	SS	12	3				2
26											
27											
28											
29											
30			20	M	SS	12					
31											
32											
33											
34											
35			24	M	SS	12					
36				▼							
37											
38	SAND WITH GRAVEL, fine to coarse grained, brown, waterbearing, medium dense (SP)										
39											
40			15	▽ W	SS	12					
41	END OF BORING										

AET_CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23



SUBSURFACE BORING LOG

AET No: **P-0017476** Log of Boring No. **SB-13 (p. 1 of 3)**
 Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	Surface Elevation 919.2 MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	LEAN CLAY WITH SAND, slightly organic, trace roots, dark brown, frozen to 0.5' (CL)	TOPSOIL		F/M	AS		52				
2	SANDY LEAN CLAY, a little gravel, brown, a little light gray, very stiff to stiff (CL)	MIXED ALLUVIUM									
3											
4											
5			16	D	SS	7	13		30	16	54
6											
7											
8											
9											
10			24	D	SS	10	12				
11											
12											
13											
14											
15	SAND, a little gravel, fine to medium grained, brown, moist, medium dense (SP)	COARSE ALLUVIUM	12	M	SS	10					
16											
17											
18	SANDY LEAN CLAY, a little gravel, brown, very stiff, laminations of clayey sand (CL)	MIXED ALLUVIUM									
19											
20			25	M	SS	13	14				
21											
22											

DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-69½'	3.25" HSA	12/30/22	*WD					70.0	
		12/30/22	*AD		69.0			68.0	
BORING COMPLETED: 12/30/22									
DR: BR LG: DR Rig: GRD751									

AET CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23

SUBSURFACE BORING LOG

AET No: **P-0017476** Log of Boring No. **SB-13 (p. 2 of 3)**
 Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
24	SANDY LEAN CLAY, a little gravel, brown, very stiff, laminations of clayey sand (CL) <i>(continued)</i>	MIXED ALLUVIUM <i>(continued)</i>	18	M	SS	13	16				
25											
26											
27											
28	CLAYEY SAND, a little gravel, brown, very stiff (SC)		25	M	SS	13	12				
29											
30											
31											
32	SILTY SAND, fine grained, brown, moist, medium dense, laminations of clayey sand (SM)	COARSE ALLUVIUM	18	M	SS	12	8				23
33											
34											
35											
36	SAND, a little gravel, fine to medium grained, brown, moist, medium dense (SP)		11	M	SS	12	3				4
37											
38											
39											
40	SAND WITH SILT and gravel, apparent cobbles, fine to coarse grained, brown, moist, medium dense (SM)		22	M	SS	12	5				9
41											
42											
43											
44	SAND, a little gravel, fine to medium grained, brown, moist, medium dense (SP)										
45											
46											
47											
48											
49											
50											

AET_CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23

SUBSURFACE BORING LOG

AET No: **P-0017476**

Log of Boring No. **SB-13 (p. 3 of 3)**

Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
51	SAND, a little gravel, fine to medium grained, brown, moist, medium dense (SP) <i>(continued)</i>	COARSE ALLUVIUM <i>(continued)</i>	21	M	SS	21					
52											
53											
54											
55			16	M	SS	16	3				4
56											
57											
58	SAND WITH GRAVEL, fine to medium grained, brown, moist, medium dense (SP)										
59											
60			19	M	SS	19					
61											
62											
63	SAND, fine grained, brown, moist, medium dense (SP)										
64											
65	SAND, a little gravel, fine to coarse grained, brown, moist to about 70' then waterbearing, dense to medium dense (SP)		42	M	SS	42					
66											
67											
68											
69											
70			16	W	SS	16					
71	END OF BORING										

AET_CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23

SUBSURFACE BORING LOG

AET No: **P-0017476** Log of Boring No. **SB-14 (p. 1 of 3)**
 Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	Surface Elevation 916.6 MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	SANDY LEAN CLAY, brown, frozen (CL)	TOPSOIL		F/M	AS						
	CLAYEY SAND, a little gravel, trace roots, dark brown to brown (SC)										
2	SILTY SAND, very fine grained, brown, moist, very loose (SM)	COARSE ALLUVIUM	4	M	SS	10	6				22
3											
4											
5											
6	SANDY SILT, wet, medium dense (ML)	FINE ALLUVIUM	19	W	SS	13	24				
7											
8											
9											
10	SANDY LEAN CLAY, a little gravel, gray, stiff to hard, laminations of silty and silty sand (CL)	MIXED ALLUVIUM	11	M	SS	14	18				
11											
12											
13											
14			33	M	SS	13	13				
15											
16											
17											
18											
19											
20											
21											
22	*WD - Water level measured while drilling *AD - Water level measured at completion of drilling	COARSE ALLUVIUM									

AET CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23

DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
0-49½'	3.25" HSA	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
		12/27/22	*WD					50.0	
		12/27/22	*AD		49.0	21.0		47.5	
BORING COMPLETED: 12/27/22									
DR: BR LG: DR Rig: GRD751									



SUBSURFACE BORING LOG

AET No: **P-0017476**

Log of Boring No. **SB-14 (p. 2 of 3)**

Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
24	SAND WITH GRAVEL, fine to medium grained, brown, moist, very dense (SP) <i>(continued)</i>	COARSE ALLUVIUM <i>(continued)</i>									
25			70	M	SS	2					
26											
27											
28	SAND, a little gravel, fine to medium grained, brown, moist, medium dense (SP)										
29											
30			24	M	SS	12	3				4
31											
32											
33											
34											
35			18	M	SS	12					
36											
37											
38	GRAVELLY SAND WITH SILT, fine to coarse grained, brown, moist, dense (SP-SM)										
39											
40			40	M	SS	10	3				7
41											
42	SAND, fine grained, brown, moist, dense (SP)										
43											
44											
45			34	M	SS	13					
46	SAND, a little gravel, fine to medium grained, brown, wet, medium dense (SP)										
47											
48											
49											
50											

AET_CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23



SUBSURFACE BORING LOG

AET No: **P-0017476** Log of Boring No. **SB-15 (p. 1 of 3)**
 Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	Surface Elevation 919.1 MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	SANDY LEAN CLAY, slightly organic, trace roots, dark brown, frozen to 0.5' (CL)	TOPSOIL		F/M	AS		19				
2											
3											
4	SANDY SILTY CLAY, trace roots, grayish brown, a little dark brown, firm (CL-ML)	MIXED ALLUVIUM									
5			6	M	SS	10	24		28	21	69
6											
7											
8	SANDY LEAN CLAY, grayish brown and brown with iron oxidation staining, soft (CL)										
9											
10			4	M	SS	14	23				
11											
12											
13	SANDY LEAN CLAY, grayish brown, firm (CL)	TILL									
14											
15			6	M	SS	16	21		28	16	55
16											
17											
18											
19											
20			8	M	SS	16	20				
21											
22											

*WD - Water level measured while drilling
 *AD - Water level measured at completion of drilling

DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-49½'	3.25" HSA	12/28/22	*WD					50.0	
		12/28/22	*AD		49.0	26.0		49.5	
BORING COMPLETED: 12/28/22									
DR: BR LG: DR Rig: GRD751									

AET CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23

SUBSURFACE BORING LOG

AET No: **P-0017476** Log of Boring No. **SB-15 (p. 2 of 3)**
 Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
24	SANDY LEAN CLAY, a little gravel, dark gray, very stiff (CL)	COARSE ALLUVIUM (continued)									
25			17	M	SS	16	16				
26											
27											
28											
29											
30			19	M	SS	16	16				
31											
32											
33											
34	SANDY LEAN CLAY, a little gravel, hard, lenses of clayey sand and laminations of silty sand (CL/SC)										
35			31	M	SS	15	14				
36											
37											
38											
39											
40			36	M	SS	14	13				
41											
42											
43											
44	SANDY SILT, brown, moist, very dense (ML)	FINE ALLUVIUM									
45			55	M	SS	15	20 24				65
46											
47											
48											
49											
50											
	SAND, a little gravel, fine to medium grained, brown, waterbearing, medium dense (SP)	COARSE ALLUVIUM									

AET_CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23



SUBSURFACE BORING LOG

AET No: **P-0017476** Log of Boring No. **SB-16 (p. 1 of 3)**
 Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	Surface Elevation 915.9 MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	SANDY LEAN CLAY, slightly organic, trace roots, dark brown, frozen to 12 inches (CL)	TOPSOIL		F/M	AS		16				
2	SILTY SAND, fine to medium grained, brown, moist, loose, lens of clayey sand (SM)	COARSE ALLUVIUM									
3											
4											
5			8	M	SS	13	15				26
6											
7											
8	SAND WITH SILT, a little gravel, fine to medium grained, brown, moist, medium dense (SP-SM)										
9											
10			13	M	SS	12	9				10
11											
12											
12	SANDY LEAN CLAY, a little gravel, dark gray, stiff to very stiff, laminations of clayey sand (CL)	TILL									
13											
14											
15			13	M	SS	14	18				
16											
17											
18											
19											
20			10	M	SS	14	17				
21											
22											

*WD - Water level measured while drilling
 *AD - Water level measured at completion of drilling

DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
0-49½'	3.25" HSA	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
		12/30/22	*WD					50.0	
		12/30/22	*AD		49.0	4.0		47.5	
BORING COMPLETED: 12/30/22									
DR: BR LG: DR Rig: GRD751									

AET CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23

SUBSURFACE BORING LOG

AET No: **P-0017476** Log of Boring No. **SB-16 (p. 2 of 3)**
 Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
24	SANDY LEAN CLAY, a little gravel, dark gray, stiff to very stiff, laminations of clayey sand (CL) (continued)	TILL (continued)									
25			20	M	SS	14	14				
26	SILTY SAND, fine grained, brown, moist, medium dense to dense, laminations of silt below 29' (SM)	COARSE ALLUVIUM									
27											
28											
29											
30			31	M	SS	14	7				14
31	SAND, fine grained, brown, moist, dense to medium dense (SP)										
32											
33											
34											
35			14	M	SS	11					
36											
37											
38											
39											
40			18	M	SS	13	3				2
41											
42											
43	SAND, fine to medium grained, brown, moist, medium dense (SP)										
44											
45			20	M	SS	12					
46											
47											
48	SAND, fine to medium grained, grayish brown, waterbearing, medium dense (SP)										
49											
50											

AET_CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23

SUBSURFACE BORING LOG

AET No: **P-0017476** Log of Boring No. **SB-17 (p. 1 of 3)**
 Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	Surface Elevation 939.2 MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	SANDY LEAN CLAY, a little gravel, trace roots, dark brown (CL)	TOPSOIL		M	AS		21				
2	SANDY LEAN CLAY, a little gravel, brown (CL)	MIXED ALLUVIUM									
3											
4	SANDY LEAN CLAY, a little gravel, brown and light brown, stiff, laminations of silt (CL)										
5			12	M	SS	12	19				
6											
7											
8											
9											
10			13	M	SS	14	19		28	17	53
11											
12											
13		TILL									
14	SANDY LEAN CLAY, a little gravel, gray brown and brown with iron oxidation staining, stiff, laminations of silty sand (CL)										
15			14	M	SS	15	20				
16											
17											
18											
19	SANDY LEAN CLAY, a little gravel, brown, stiff (CL)										
20											
21			15	M	SS	16	19				
22											

*WD - Water level measured while drilling
 *AD - Water level measured at completion of drilling

DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
0-69½'	3.25" HSA	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
		12/29/22	*WD					70.0	
		12/29/22	*AD			36.0			
BORING COMPLETED: 12/29/23									
DR: BR LG: DR Rig: GRD751									

AET CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23

SUBSURFACE BORING LOG

AET No: **P-0017476**

Log of Boring No. **SB-17 (p. 2 of 3)**

Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
24	SANDY LEAN CLAY, a little gravel, dark gray, very stiff (CL)	TILL (continued)									
25			20	M	SS	6	17				
26											
27											
28											
29											
30	CLAYEY SAND, a little gravel, dark gray, hard, laminations of silty sand (SC)	TILL (continued)	16	M	SS	15	17		25	16	52
31											
32											
33											
34											
35	SAND WITH SILT, fine grained, brown, moist, medium dense (SP-SM)	TILL (continued)	54	M	SS	14	13				
36											
37											
38											
39											
40	SAND, fine grained, brown, moist, medium dense (SP)	COARSE ALLUVIUM	24	M	SS	12	4				5
41											
42											
43											
44											
45	SAND, a little gravel, fine to medium grained, brown, moist to about 70' then waterbearing, medium dense to dense	COARSE ALLUVIUM	12	M	SS	12					
46											
47											
48											
49											
50											

AET_CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23

SUBSURFACE BORING LOG

AET No: **P-0017476**

Log of Boring No. **SB-17 (p. 3 of 3)**

Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
51	SAND, a little gravel, fine to medium grained, brown, moist to about 70' then waterbearing, medium dense to dense (<i>continued</i>)	COARSE ALLUVIUM (<i>continued</i>)	12	M	SS	13					
52											
53											
54											
55			21	M	SS	12	4				2
56											
57											
58											
59											
60			31	M	SS	12					
61											
62											
63											
64											
65			33	M	SS	12					
66											
67											
68											
69											
70			37	$\frac{\nabla}{W}$	SS	12					
71	END OF BORING										

AET_CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23



SUBSURFACE BORING LOG

AET No: **P-0017476** Log of Boring No. **SB-18 (p. 1 of 3)**
 Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	Surface Elevation 919.9 MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	LEAN CLAY WITH SAND, slightly organic, trace roots, dark brown, frozen to 0.5' (CL)	TOPSOIL		M	AS		23				
2	SANDY LEAN CLAY, trace roots, brown (CL)	MIXED ALLUVIUM					20				
3											
4	SILTY SAND, fine grained, brown, moist, medium dense (SM)	COARSE ALLUVIUM									
5			13	M	SS	12	13				33
6											
7											
8	CLAYEY SAND, a little gravel, grayish brown and brown with iron oxidation staining, very stiff (SC)	MIXED ALLUVIUM									
9											
10	SILTY SAND, fine grained, grayish brown, moist, medium dense (SM)	COARSE ALLUVIUM	18	M	SS	12	18				14
11							17				
12											
13	CLAYEY SAND, a little gravel, dark gray, stiff (SC)	TILL									
14											
15			16	M	SS	14	18				
16											
17											
18											
19											
20											
21											
22			13	M	SS	15	17				
	*WD - Water level measured while drilling *AD - Water level measured at completion of drilling										

DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-49½'	3.25" HSA								
		12/29/22	*WD					25.0	
		12/29/22	*AD		24.0			22.0	
BORING COMPLETED: 12/29/23		12/29/22	*AD	49.0		23.0		49.5	
DR: BR LG: DR Rig: GRD751									

AET CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23

SUBSURFACE BORING LOG

AET No: **P-0017476**

Log of Boring No. **SB-18 (p. 2 of 3)**

Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
24	SAND WITH SILT, fine to medium grained, gray, wet, medium dense (SP-SM)	COARSE ALLUVIUM	23			SS	12	22			10
25											
26											
27	CLAYEY SAND, a little gravel, hard, lense clayey silt (SC)	MIXED ALLUVIUM	42	M		SS	14	13			
28											
29											
30											
31											
32	SILTY SAND, a little gravel, fine to coarse grained, brown, moist, very dense (SM)	COARSE ALLUVIUM	65	M		SS	11	10			14
33											
34											
35											
36											
37	SAND WITH SILT, a little gravel, fine grained, brown, moist, dense (SP-SM)		44	M		SS	12				
38											
39											
40											
41											
42	SAND WITH SILT, fine to medium grained, brown, moist, dense (SP)		35	M		SS	12	4			5
43											
44											
45											
46											
47	SAND WITH GRAVEL, fine to medium grained, brown, waterbearing, medium dense (SP)										
48											
49											
50											

AET_CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23



SUBSURFACE BORING LOG

AET No: **P-0017476** Log of Boring No. **SB-19 (p. 1 of 3)**
 Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	Surface Elevation 927.9 MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
1	CLAYEY SAND, a little gravel, dark brown, frozen (SC)	TOPSOIL		F/M	AS						
2	CLAYEY SAND, brown, very stiff (SC)	MIXED ALLUVIUM					36				
3											
4	SILTY SAND, fine grained, brown, moist, medium dense (SM)	COARSE ALLUVIUM									
5	CLAYEY SAND, a little gravel, brown, stiff, lenses of silty sand (SC)	MIXED ALLUVIUM	16	M	SS	12	15				
6											
7											
8	SANDY LEAN CLAY, a little gravel, brown, stiff to very stiff, lens of silty sand (CL)	TILL									
9											
10			14	M	SS	10	19				
11											
12											
13											
14											
15			17	M	SS	14	19				
16											
17											
18											
19											
20											
21			15	M	SS	15	18				
22											

*WD - Water level measured while drilling
 *AD - Water level measured at completion of drilling

DEPTH: DRILLING METHOD		WATER LEVEL MEASUREMENTS							NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL	
0-59½'	3.25" HSA	12/28/22	*WD					60.0	
		12/28/22	*AD		59.0	31.0		58.0	
BORING COMPLETED: 12/28/22									
DR: BR LG: DR Rig: GRD751									

AET CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23

SUBSURFACE BORING LOG

AET No: **P-0017476**

Log of Boring No. **SB-19 (p. 2 of 3)**

Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
24	SANDY LEAN CLAY, brown to dark gray, very stiff, lens of clayey sand and laminations of silty sand (CL)	TILL (continued)									
25			25	M	SS	15	17				
26											
27											
28	CLAYEY SAND, a little gravel, grayish brown with a little iron oxidation staining, hard (SC)										
29											
30			32	M	SS	12	15				
31											
32	SAND, fine to medium grained, brown, moist, medium dense (SP)	COARSE ALLUVIUM									
33											
34			20	M	SS	12	5				3
35											
36	SAND, a little gravel, fine to medium grained, brown, moist, medium dense (SP)										
37											
38			24	M	SS	15					
39											
40											
41											
42											
43											
44											
45			26	M	SS	13	4				3
46											
47											
48	SAND, a little gravel, fine to coarse grained, brown and grayish brown, moist, dense (SP)										
49											
50											

AET_CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23



SUBSURFACE BORING LOG

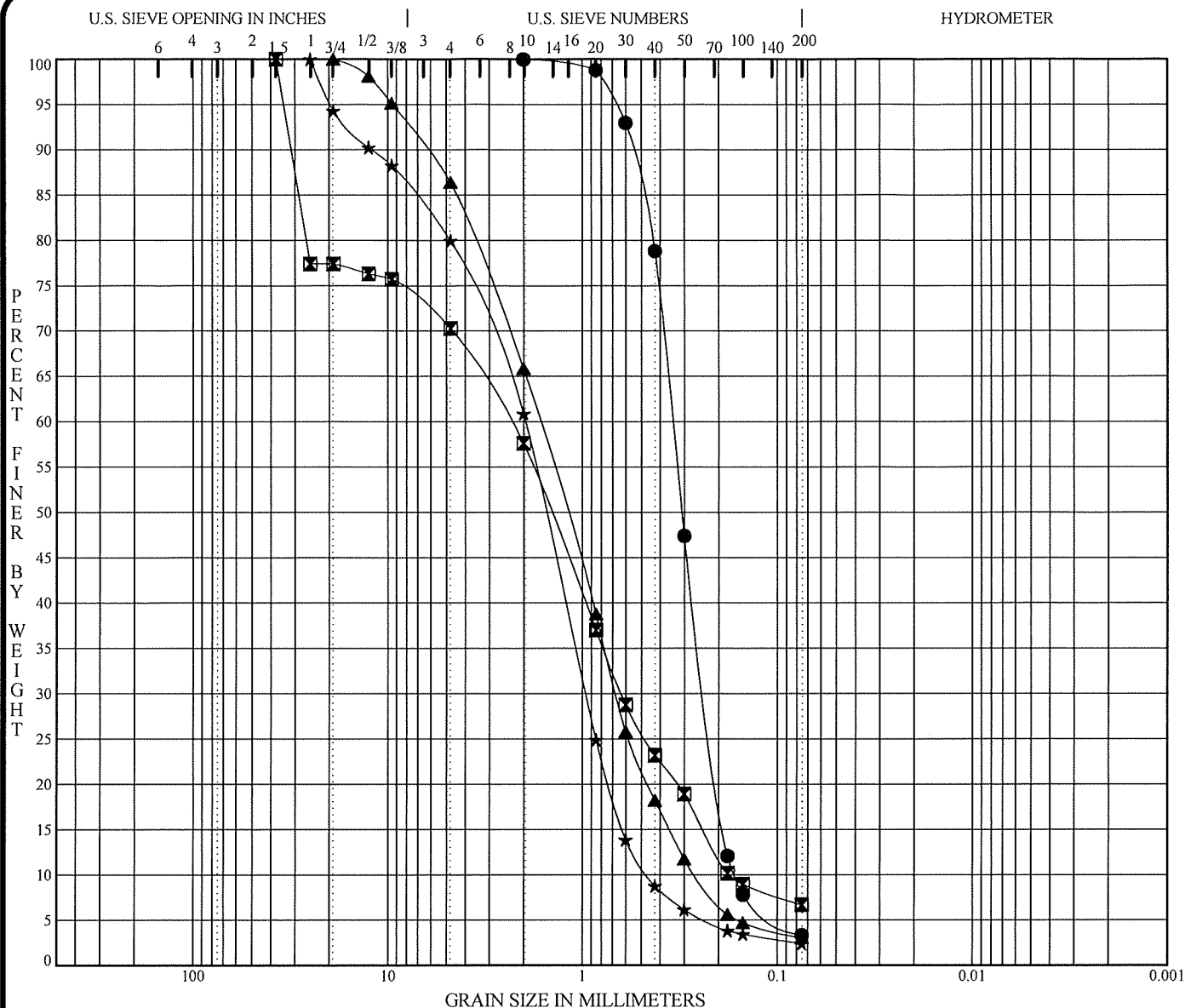
AET No: **P-0017476**

Log of Boring No. **SB-19 (p. 3 of 3)**

Project: **Kemmetmueller Property Gravel Exploration; Rogers, MN**

DEPTH IN FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS				
							WC	DEN	LL	PL	%-#200
51	SAND, a little gravel, fine to coarse grained, brown and grayish brown, moist, dense (SP) <i>(continued)</i>	COARSE ALLUVIUM <i>(continued)</i>	37	M	SS	10					
52											
53	SAND, a little gravel, fine to medium grained, brown, moist to wet, dense (SP)		38	M	SS	2					
54											
55											
56											
57											
58											
59											
60											
61	END OF BORING		31	W	SS	10					

AET_CORP P-0017476 KEMMETMUELLER.GPJ AET+CPT+WELL.GDT 1/9/23



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification				MC%	LL	PL	PI	Cc	Cu
● SB- 1 5.3'	SAND (SP)				5				0.96	2.1
☒ SB- 1 10.3'	SAND WITH SILT AND GRAVEL (SP-SM)				3				0.97	13.4
▲ SB- 2 10.3'	SAND, a little gravel (SW)				4				1.04	6.4
★ SB- 2 20.3'	SAND WITH GRAVEL (SP)				3				1.02	4.2

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● SB- 1 5.3'	2.00	0.34	0.233	0.1647	0.0	96.7	3.3	
☒ SB- 1 10.3'	37.50	2.35	0.632	0.1758	29.7	63.6	6.7	
▲ SB- 2 10.3'	19.00	1.66	0.672	0.2597	13.6	83.4	3.0	
★ SB- 2 20.3'	25.00	1.96	0.959	0.4619	20.0	77.5	2.4	

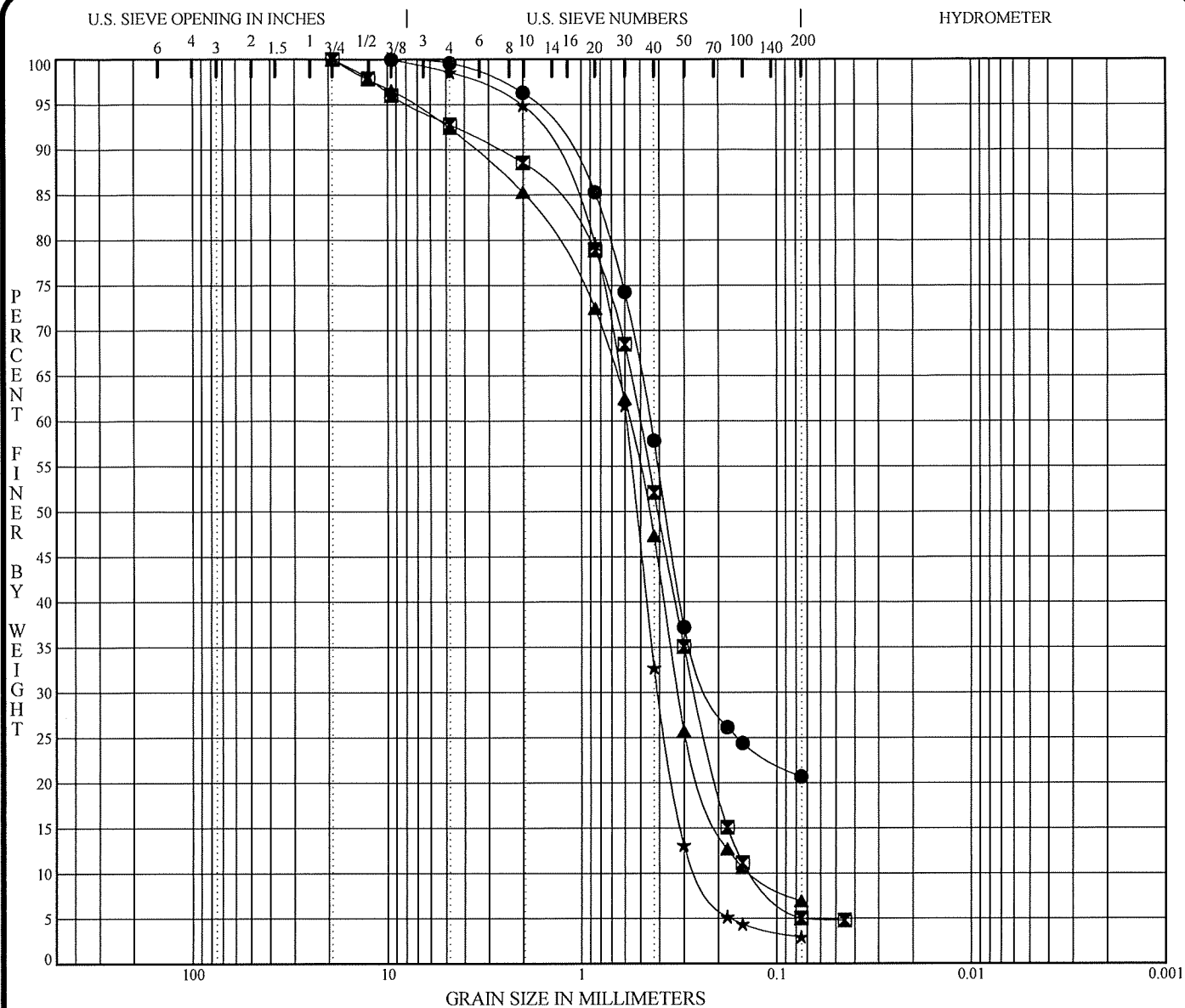
PROJECT **Kemmetmueller Property Gravel Exploration;**
Rogers, MN

AET JOB NO. **P-0017476**
DATE **12/14/22**



American Engineering Testing Inc
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GRADATION CURVES



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	MC%	LL	PL	PI	Cc	Cu
● SB- 3 5.3'	SILTY SAND (SM)	8					
☒ SB- 3 15.3'	SAND WITH SILT, a little gravel (SP-SM)	8				1.05	3.8
▲ SB- 5 5.3'	SAND WITH SILT, a little gravel (SP-SM)	7				1.36	4.2
★ SB- 5 10.3'	SAND (SP)	6				1.14	2.4

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● SB- 3 5.3'	9.50	0.44	0.215		0.4	78.9	20.7	
☒ SB- 3 15.3'	19.00	0.50	0.264	0.1317	7.2	87.8	5.0	
▲ SB- 5 5.3'	19.00	0.57	0.322	0.1338	7.6	85.5	6.9	
★ SB- 5 10.3'	9.50	0.59	0.405	0.2454	1.4	95.6	3.0	

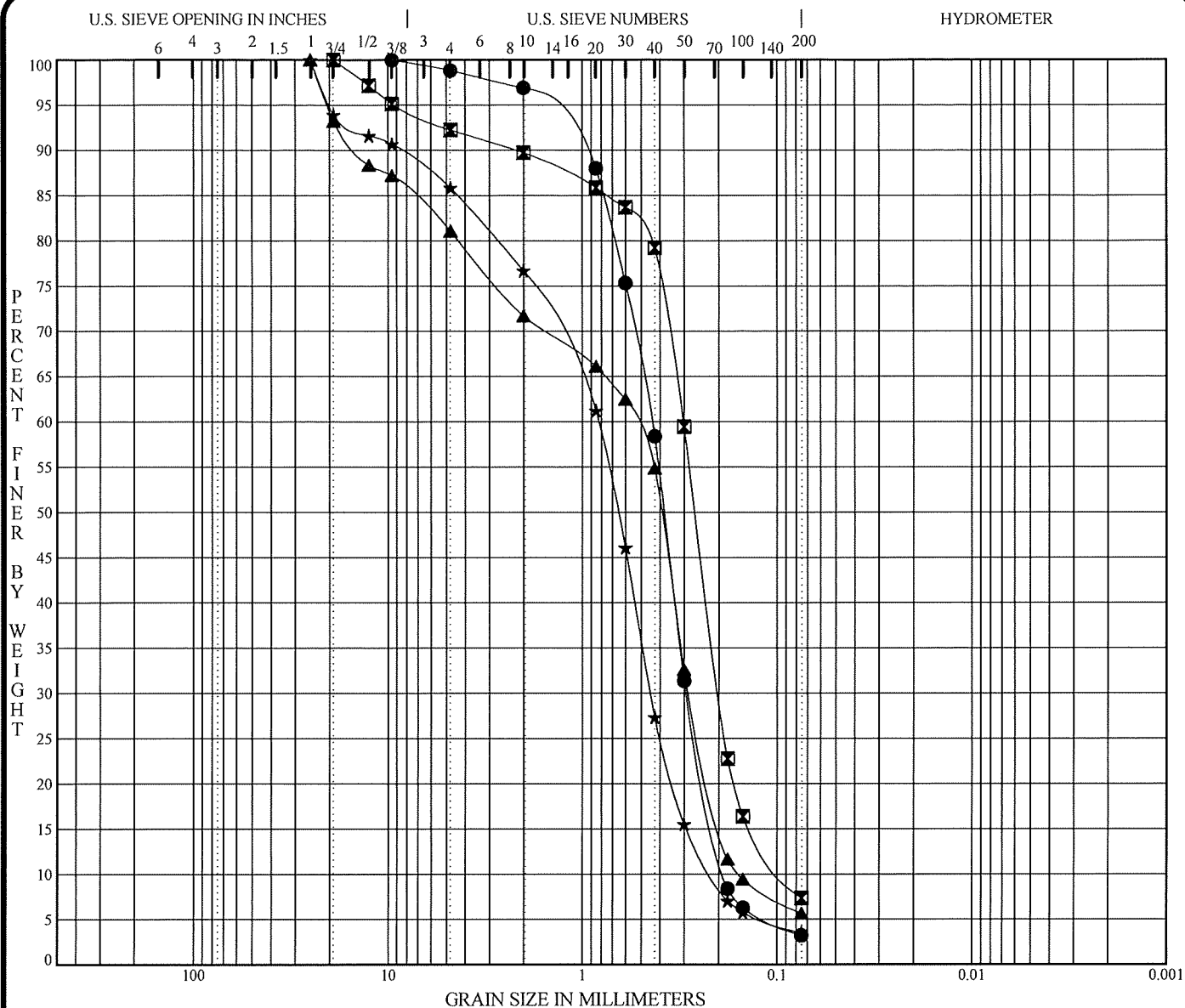
PROJECT **Kemmetmueller Property Gravel Exploration;**
Rogers, MN

AET JOB NO. **P-0017476**
 DATE **12/16/22**



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GRADATION CURVES



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	MC%	LL	PL	PI	Cc	Cu
● SB- 6 10.3'	SAND WITH SILT, a little gravel (SP-SM)	10				1.03	2.4
☒ SB- 6 20.3'	SAND (SP)	7				1.42	3.3
▲ SB- 7 5.3'	SAND WITH SILT AND GRAVEL (SP-SM)	5				0.94	3.4
★ SB- 7 30.3'	SAND, a little gravel (SP)	3				1.12	3.8

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● SB- 6 10.3'	9.50	0.44	0.291	0.1865	1.1	95.6	3.2	
☒ SB- 6 20.3'	19.00	0.30	0.199	0.0919	7.7	84.9	7.4	
▲ SB- 7 5.3'	25.00	0.54	0.281	0.1572	18.9	75.4	5.7	
★ SB- 7 30.3'	25.00	0.83	0.446	0.2150	14.1	82.3	3.5	

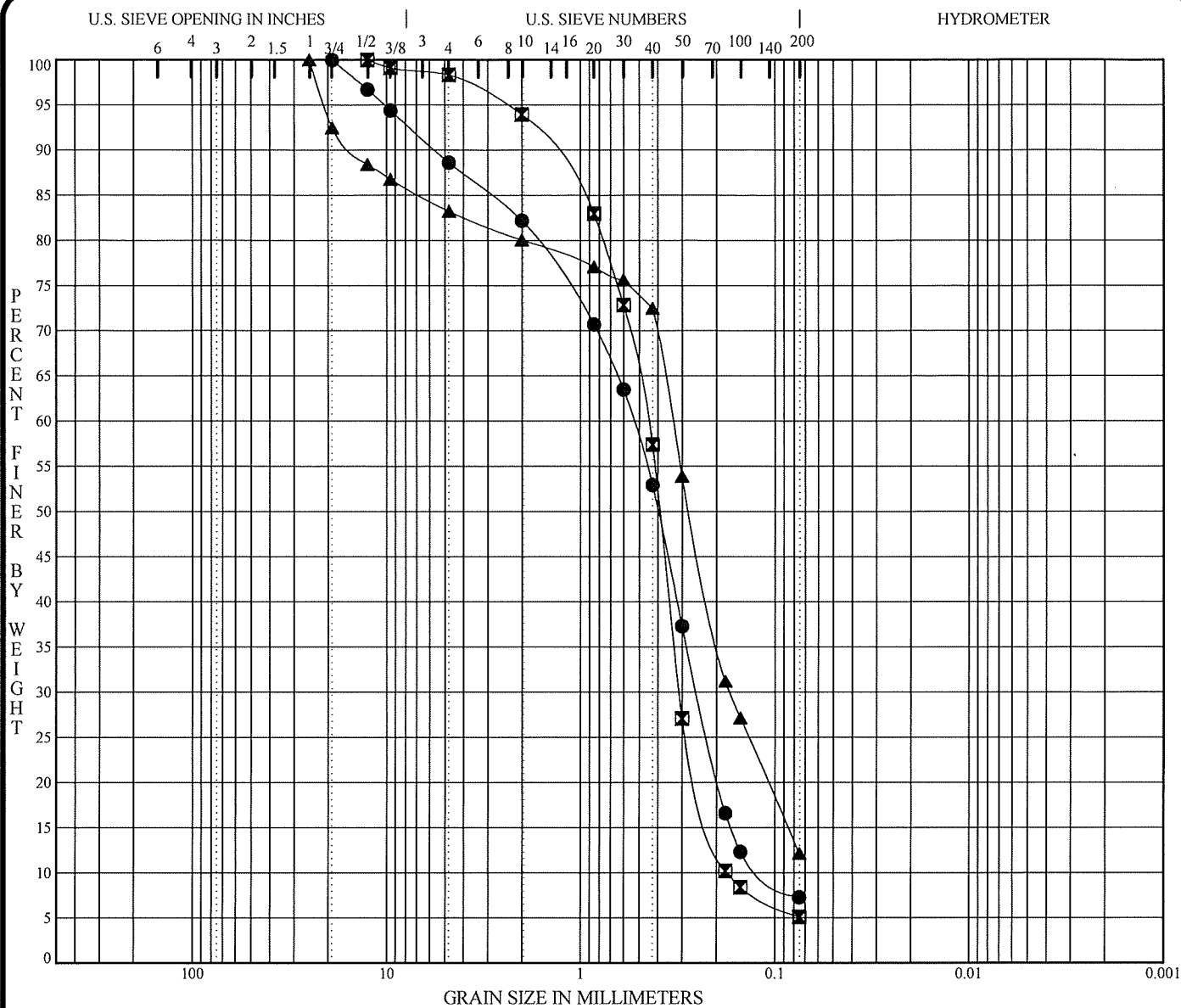
PROJECT **Kemmetmueller Property Gravel Exploration;**
Rogers, MN

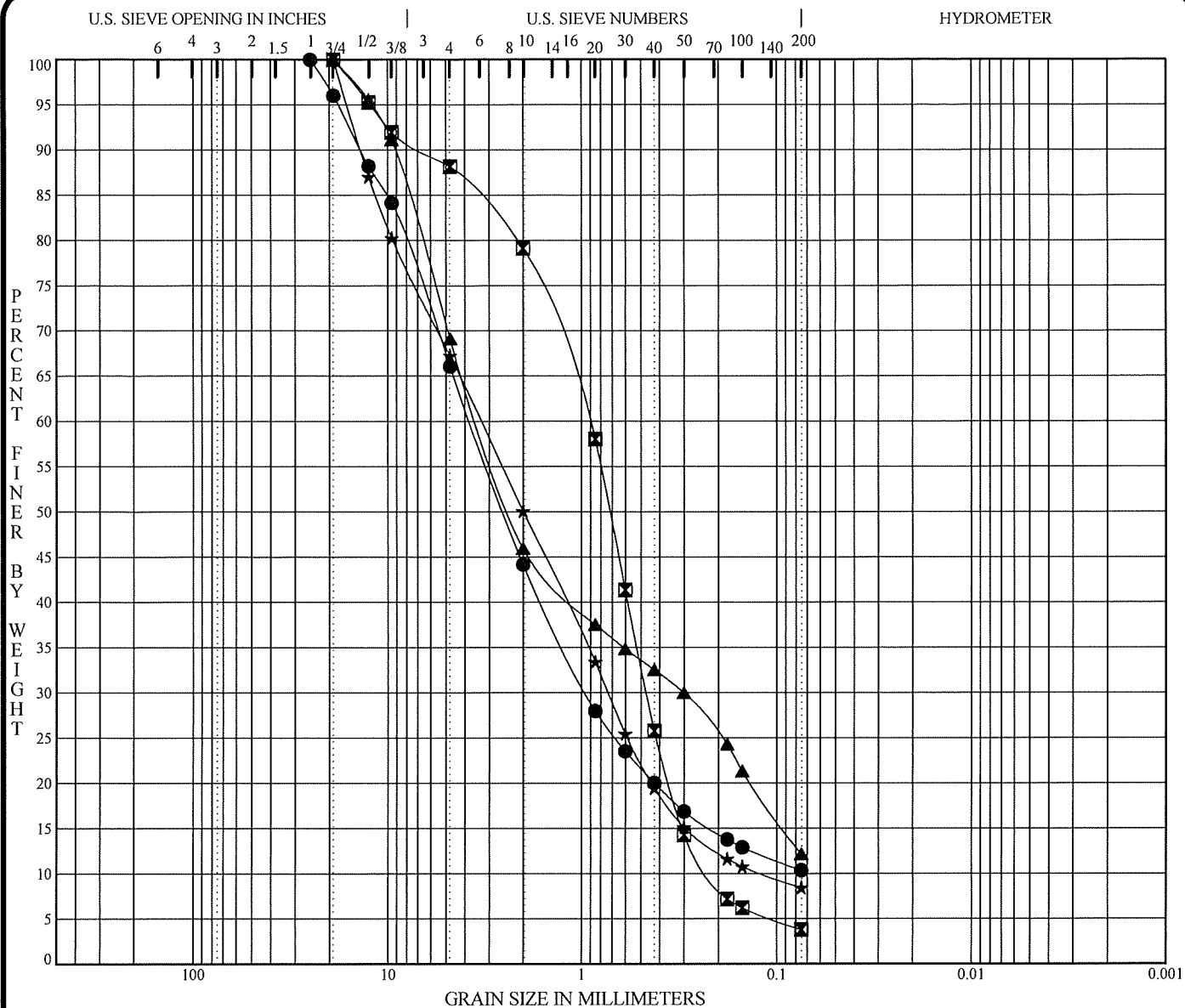
AET JOB NO. **P-0017476**
 DATE **12/14/22**



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GRADATION CURVES





COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	MC%	LL	PL	PI	Cc	Cu
● SB-10 20.3'	GRAVELLY SAND WITH SILT (SP-SM)	8				3.52	55.0
☒ SB-10 30.3'	SAND, a little gravel (SP)	2				1.07	4.2
▲ SB-11 10.3'	GRAVELLY SAND WITH SILT (SP-SM)	4				0.42	53.1
★ SB-11 50.3'	GRAVELLY SAND WITH SILT (SP-SM)	4				1.36	27.6

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● SB-10 20.3'	25.00	3.74	0.946		33.9	55.7	10.4	
☒ SB-10 30.3'	19.00	0.92	0.467	0.2204	11.8	84.4	3.8	
▲ SB-11 10.3'	19.00	3.38	0.301		30.9	57.0	12.2	
★ SB-11 50.3'	19.00	3.29	0.732	0.1192	32.7	58.8	8.4	

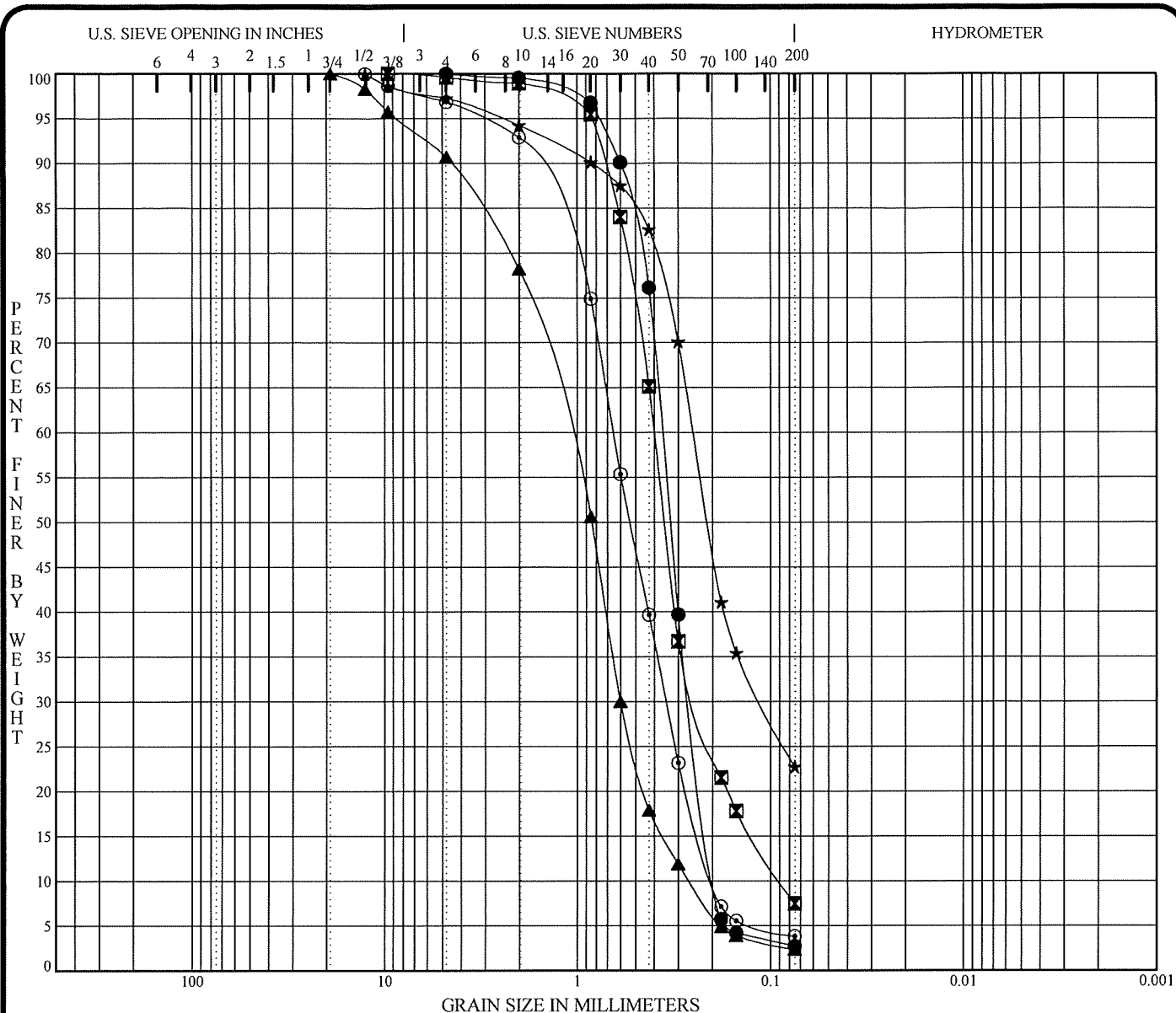
PROJECT **Kemmetmueller Property Gravel Exploration;**
Rogers, MN

AET JOB NO. **P-0017476**
 DATE **12/19/22**



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GRADATION CURVES



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			Classification				MC%	LL	PL	PI	Cc	Cu
●	SB-12	5.3'	SAND (SP)				7				0.96	1.9
☒	SB-12	20.3'	SAND WITH SILT (SP-SM)				6				1.62	4.5
▲	SB-12	25.3'	SAND, a little gravel (SP)				3				1.21	4.3
★	SB-13	35.3'	SILTY SAND (SM)				8					
⊙	SB-13	55.3'	SAND (SP)				3				0.93	3.3
Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	SB-12	5.3'	4.75	0.36	0.259	0.1919	0.0	97.3	2.7			
☒	SB-12	20.3'	9.50	0.40	0.239	0.0888	0.4	92.1	7.5			
▲	SB-12	25.3'	19.00	1.14	0.600	0.2615	9.3	88.3	2.4			
★	SB-13	35.3'	12.50	0.25	0.111		2.7	74.5	22.7			
⊙	SB-13	55.3'	12.50	0.65	0.346	0.1971	3.1	93.0	3.8			

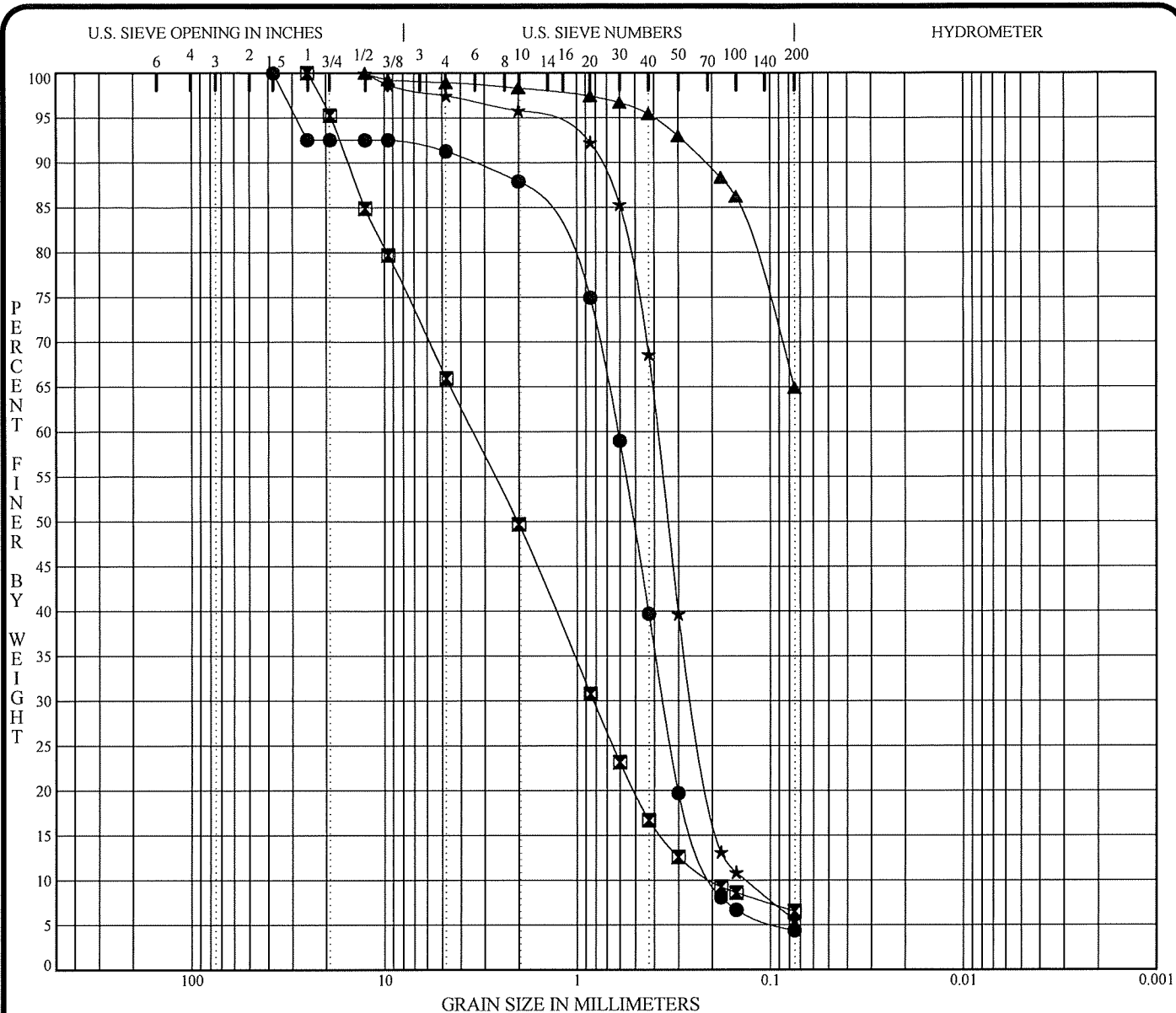
PROJECT **Kemmetmueller Property Gravel Exploration;**
Rogers, MN

AET JOB NO. **P-0017476**
DATE **12/30/22**



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GRADATION CURVES



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification	Classification	MC%	LL	PL	PI	Cc	Cu
● SB-14 30.3'	SAND, a little gravel (SP)	3				1.07	3.1
☒ SB-14 40.3'	GRAVELLY SAND WITH SILT (SP-SM)	3				0.96	17.1
▲ SB-15 45.3'	SANDY SILT (ML)	20					
★ SB-15 50.3'	SAND WITH SILT (SP-SM)	20				1.21	2.9

Specimen Identification	D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
● SB-14 30.3'	37.50	0.61	0.359	0.1957	8.7	86.9	4.4	
☒ SB-14 40.3'	25.00	3.46	0.820	0.2020	34.1	59.4	6.5	
▲ SB-15 45.3'	12.50				1.1	34.0	64.9	
★ SB-15 50.3'	12.50	0.38	0.249	0.1340	2.5	91.9	5.6	

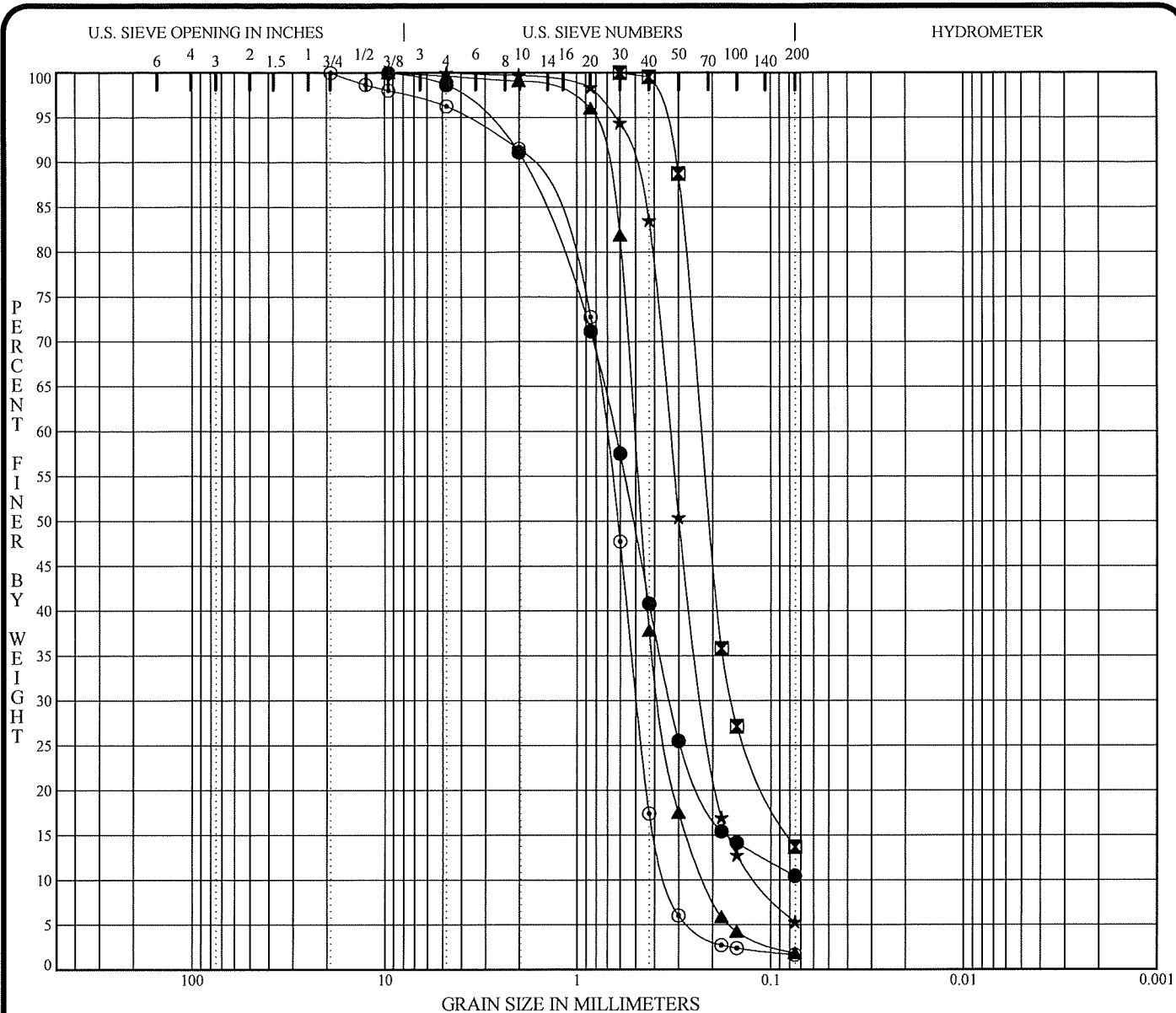
PROJECT **Kemmetmueller Property Gravel Exploration;**
Rogers, MN

AET JOB NO. **P-0017476**
 DATE **12/28/22**



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GRADATION CURVES



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification			Classification				MC%	LL	PL	PI	Cc	Cu
●	SB-16	10.3'	SAND WITH SILT (SP-SM)				9				2.52	9.3
☒	SB-16	30.0'	SILTY SAND (SM)				7					
▲	SB-16	40.3'	SAND (SP)				3				1.27	2.3
★	SB-17	40.3'	SAND WITH SILT (SP-SM)				4				1.26	2.9
⊙	SB-17	55.3'	SAND (SP)				4				1.00	2.1
Specimen Identification			D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay		
●	SB-16	10.3'	9.50	0.64	0.332		1.3	88.2	10.5			
☒	SB-16	30.0'	0.60	0.23	0.159		0.0	86.3	13.7			
▲	SB-16	40.3'	9.50	0.51	0.372	0.2156	0.4	97.8	1.9			
★	SB-17	40.3'	4.75	0.33	0.220	0.1158	0.0	94.7	5.3			
⊙	SB-17	55.3'	19.00	0.71	0.490	0.3387	3.7	94.6	1.7			

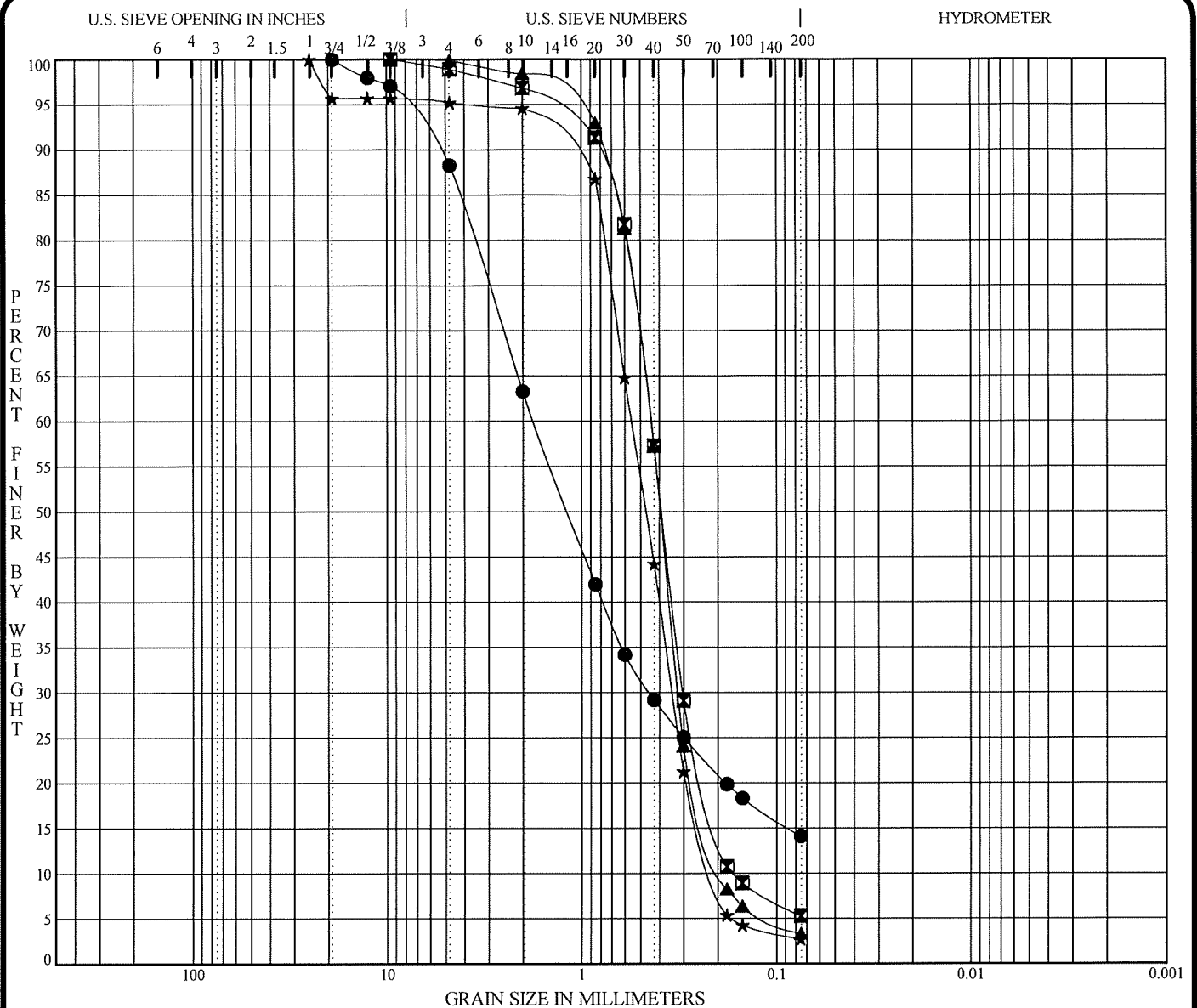
PROJECT **Kemmetmueller Property Gravel Exploration;**
Rogers, MN

AET JOB NO. **P-0017476**
DATE **12/29/23**



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GRADATION CURVES



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

Specimen Identification		Classification	MC%	LL	PL	PI	Cc	Cu
●	SB-18 35.3'	SILTY SAND, a little gravel (SM)	10					
☒	SB-18 45.3'	SAND WITH SILT (SP-SM)	4				1.25	2.6
▲	SB-19 35.3'	SAND (SP)	5				1.21	2.3
★	SB-19 45.3'	SAND, a little gravel (SP)	4				1.01	2.7

Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	SB-18 35.3'	19.00	1.75	0.450		11.7	74.2	14.1	
☒	SB-18 45.3'	9.50	0.44	0.303	0.1672	1.1	93.6	5.3	
▲	SB-19 35.3'	9.50	0.44	0.319	0.1905	0.1	96.6	3.3	
★	SB-19 45.3'	25.00	0.55	0.342	0.2087	4.8	92.5	2.7	

PROJECT Kemmetmueller Property Gravel Exploration;
Rogers, MN

AET JOB NO. P-0017476
DATE 12/28/22



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GRADATION CURVES

Attachment C
Ghost Plat

VEIT KEMMETMUELLER
GHOST PLAT

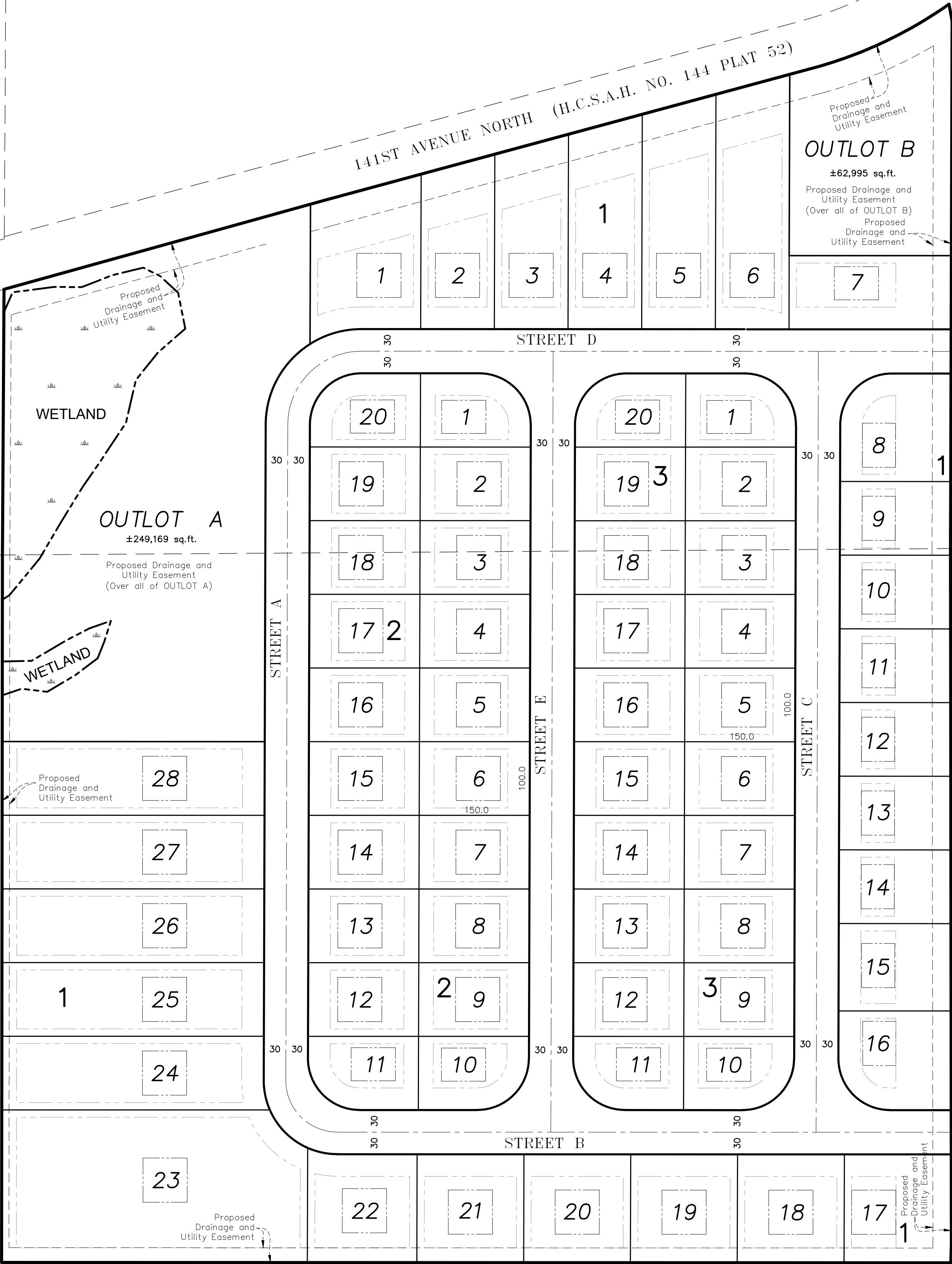
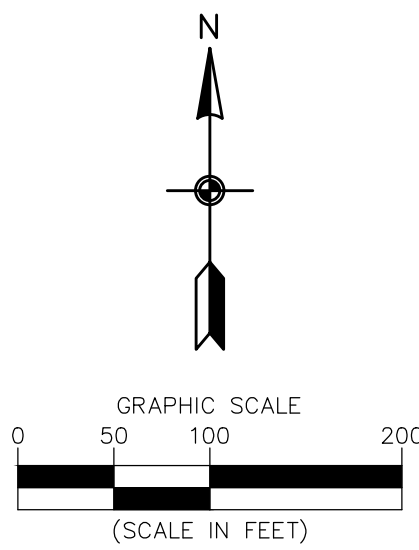
R.T. DOC. NO. _____

C.R. DOC. NO. _____

LEGEND
- - - - - Denotes Building Pad
- - - - - Denotes Buildable Area

NOTES

- 1) No field work has been completed at this time.
2) No Title Work has been furnished for this survey, property is subject to all easements of record, if any.
3) Wetlands shown hereon were delineated by Carlson McCain, Inc. in 2023.



EDGEWATER
SECOND
ADDITION

WILLANDALE ROAD

KEVIN SCHERBER
ADDITION

LOT AREA TABLE

PROP. LOTS	PROP. BLOCKS	LOT AREA	BUILDABLE AREA
1	1	±28,955 sq.ft.	±10,915 sq.ft.
2	1	±22,392 sq.ft.	±9,293 sq.ft.
3	1	±25,105 sq.ft.	±11,463 sq.ft.
4	1	±27,817 sq.ft.	±13,633 sq.ft.
5	1	±30,530 sq.ft.	±15,803 sq.ft.
6	1	±33,534 sq.ft.	±18,109 sq.ft.
7	1	±22,008 sq.ft.	±8,092 sq.ft.
8	1	±20,962 sq.ft.	±4,466 sq.ft.
9	1	±15,008 sq.ft.	±3,607 sq.ft.
10	1	±15,033 sq.ft.	±3,626 sq.ft.
11	1	±15,075 sq.ft.	±3,627 sq.ft.
12	1	±15,117 sq.ft.	±3,627 sq.ft.
13	1	±15,160 sq.ft.	±3,627 sq.ft.
14	1	±15,202 sq.ft.	±3,627 sq.ft.
15	1	±18,081 sq.ft.	±4,680 sq.ft.
16	1	±19,559 sq.ft.	±4,199 sq.ft.
17	1	±21,362 sq.ft.	±5,856 sq.ft.
18	1	±21,326 sq.ft.	±12,134 sq.ft.
19	1	±21,326 sq.ft.	±12,134 sq.ft.
20	1	±21,326 sq.ft.	±12,134 sq.ft.
21	1	±21,326 sq.ft.	±12,134 sq.ft.
22	1	±21,959 sq.ft.	±12,515 sq.ft.
23	1	±84,336 sq.ft.	±65,144 sq.ft.
24	1	±35,668 sq.ft.	±24,482 sq.ft.
25	1	±35,573 sq.ft.	±24,459 sq.ft.
26	1	±35,590 sq.ft.	±24,472 sq.ft.
27	1	±35,607 sq.ft.	±24,485 sq.ft.
28	1	±35,623 sq.ft.	±24,498 sq.ft.
1	2	±13,942 sq.ft.	±5,655 sq.ft.
2	2	±15,000 sq.ft.	±8,000 sq.ft.
3	2	±15,000 sq.ft.	±8,000 sq.ft.
4	2	±15,000 sq.ft.	±8,000 sq.ft.
5	2	±15,000 sq.ft.	±8,000 sq.ft.
6	2	±15,000 sq.ft.	±8,000 sq.ft.
7	2	±15,000 sq.ft.	±8,000 sq.ft.
8	2	±15,000 sq.ft.	±8,000 sq.ft.
9	2	±15,000 sq.ft.	±8,000 sq.ft.
10	2	±13,955 sq.ft.	±5,659 sq.ft.
11	2	±13,942 sq.ft.	±5,655 sq.ft.
12	2	±15,000 sq.ft.	±8,000 sq.ft.
13	2	±15,000 sq.ft.	±8,000 sq.ft.
14	2	±15,000 sq.ft.	±8,000 sq.ft.
15	2	±15,000 sq.ft.	±8,000 sq.ft.
16	2	±15,000 sq.ft.	±8,000 sq.ft.
17	2	±15,000 sq.ft.	±8,000 sq.ft.
18	2	±15,000 sq.ft.	±8,000 sq.ft.
19	2	±15,000 sq.ft.	±8,000 sq.ft.
20	2	±13,955 sq.ft.	±5,659 sq.ft.
1	3	±13,942 sq.ft.	±5,655 sq.ft.
2	3	±15,000 sq.ft.	±8,000 sq.ft.
3	3	±15,000 sq.ft.	±8,000 sq.ft.
4	3	±15,000 sq.ft.	±8,000 sq.ft.
5	3	±15,000 sq.ft.	±8,000 sq.ft.
6	3	±15,000 sq.ft.	±8,000 sq.ft.
7	3	±15,000 sq.ft.	±8,000 sq.ft.
8	3	±15,000 sq.ft.	±8,000 sq.ft.
9	3	±15,000 sq.ft.	±8,000 sq.ft.
10	3	±13,955 sq.ft.	±5,659 sq.ft.
11	3	±13,942 sq.ft.	±5,655 sq.ft.
12	3	±15,000 sq.ft.	±8,000 sq.ft.
13	3	±15,000 sq.ft.	±8,000 sq.ft.
14	3	±15,000 sq.ft.	±8,000 sq.ft.
15	3	±15,000 sq.ft.	±8,000 sq.ft.
16	3	±15,000 sq.ft.	±8,000 sq.ft.
17	3	±15,000 sq.ft.	±8,000 sq.ft.
18	3	±15,000 sq.ft.	±8,000 sq.ft.
19	3	±15,000 sq.ft.	±8,000 sq.ft.
20	3	±13,955 sq.ft.	±5,659 sq.ft.

Appendix D
Wetland Delineation
Report

FIELD WETLAND DELINEATION REPORT

Kemmetmueller Property
PID #1612023320001
Rogers, Minnesota
Project #10530-00

Prepared for:

Peter Williams
Veit and Company, Inc.
14000 Veit Place
Rogers, MN 55374

June 26, 2023



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ENGINEERING \ LAND SURVEYING \ ENVIRONMENTAL

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FIGURES

Figure 1 – Site Location Map

Figure 2 – Soil Survey Map

Figure 3 – Contour Elevation Map

Figure 4 – NWI Map

Figure 5 – Wetland Delineation Map

APPENDICES

Appendix A USACE Wetland Determination Data Forms

Appendix B Aerial Photo Review

Appendix C Project Photographs

I. INTRODUCTION

Carlson McCain, Inc. (Carlson McCain) was retained to identify and delineate wetland resources upon a portion of a property (Project Area) located in the western half of the western half of Section 16, Township 120 North, Range 23 West, Hennepin County, Minnesota (Property). The site location is shown on Figure 1 and the Project Area encompasses approximately 54.4 acres. The wetland field delineation for the Project Area was conducted on May 8, 2023, by Danny Margarit, Environmental Scientist (Certified Professional Wetland Delineator #5244).

II. BACKGROUND INFORMATION

2.1 Site Location and Use

The site is located southwest of the intersection of 141st Avenue and Willandale Road in Rogers, Hennepin County, Minnesota. The Project Area is located within the Crow River (0701020407) Hydrologic Unit Code (HUC). **Please refer to Figures.**

The Property currently consists of cultivated agricultural farmland and woodlands. According to the Minnesota Department of Natural Resources (MNDNR), using the “3-prior-month” method, antecedent precipitation at the time of delineation was classified as “wet,” as shown in the table below.

Prior Month		WETS Rainfall Percentile		Measured Rainfall	Condition: Dry, Wet, Normal	Condition Value (1=dry, 2=normal, 3=wet)	Month Weight	Weighted Value
		30th	70th					
		(Inches)						
1st (Most Recent)	April	1.97	3.06	5.89	Wet	3	3	9
2nd	March	1.17	1.69	1.7	Wet	3	2	6
3rd	February	.55	1.04	2.22	Wet	3	1	3
							Sum:	18
Rainfall of prior period was: Drier than normal (Sum is 6-9), Normal (sum is 10-14), wetter than normal (sum is 15-18)								Wet

2.2 Surveys and Maps

Carlson McCain reviewed historic aerial, soil survey, topographic, National Wetland Inventory (NWI), and Public Waters Inventory (PWI) maps for the Project Area prior to conducting the field delineation.

2.2.1 USGS Topographic Map

The Rogers, MN quadrangle map depicts one small pond on the northwest corner of the Property. The contour lines show two hills in the center of the property, sloping down to the north and to the south, with a small valley between them.

2.2.2 Soil Survey Map

The Hennepin County Soil Survey Geographic Database (SSURGO) was reviewed for relevant soil information. The Seelyville-Markey complex has a hydric rating of 100 and covers 2.5% of the Project Area. The remaining soil types have less than a 50% hydric rating.

Figure 2 shows the extent of the different soil types. Soil samples were collected during the field delineation and their characteristics, including hydric soil indicators, were recorded on the data forms included in Appendix A.

2.2.3 National Wetland Inventory Map

The NWI map shows a Palustrine Unconsolidated Bottom Seasonally Flooded Semipermanently Flooded Excavated (PUBFx) wetland, rimmed by a Palustrine Emergent Seasonally Flooded Partially Drained/Ditched (PEMCd) wetland located on the northwest corner of the Property. Adjacent on the south side of that wetland complex is a Palustrine Emergent Temporarily Flooded Partially Drained/Ditched (PEMAd) wetland.

The MNDNR has led an effort to update the state's NWI data. This effort has classified the more general NWI wetlands into numerous, smaller, more detailed wetlands. The updated wetlands are shown on Figure 4, along with the NWI wetlands. The updated NWI data depicts a PUBF wetland in the northwest corner, surrounded by a Palustrine Persistent Emergent Temporarily Flooded (PEM1A) wetland. In addition, a long slender Palustrine Persistent Emergent Temporarily Flooded Farmed (PEM1Af) wetland is depicted in the northeast corner of the Property.

2.2.4 Public Water Inventory Map

The Public Waters Inventory (PWI), formerly known as Protected Waters Inventory, consists of lakes, rivers, and wetlands, that are identified and protected by provisions set forth in Minnesota Statutes, Section 1036.005, subdivision 15. The database contains no features located within the Project Area.

III. METHODS

The field wetland delineation was conducted in accordance with the U.S. Army Corps of Engineers (USACE) 1987 *Wetland Delineation Manual* and the *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0)* (Manual). Prior to field work, existing resource information was used to aid in identifying and delineating wetlands and drainage features within the Property. These resources included: Hennepin County NAIP aerial photographs; U.S. Fish and Wildlife Service National Wetland Inventory (USFWS, 2023); digital web soil survey of Hennepin County (USDA-NRCS, 2023); the U.S. Geological Survey National Hydrography Dataset; the MNDNR Protected Water Inventory; and the MNDNR Updated National Wetlands Inventory.

Carlson McCain field identified and delineated three wetlands within the Project Area. The wetland areas were documented with paired upland and wetland observation points. Descriptions of wetland type and documentation of the vegetation, hydrology, and hydric soils were recorded on the associated USACE

Wetland Determination Data Forms (Appendix A) and are identified by observation point labels. The observation points are identified by wetland soils (1W, 2W, etc.) or upland soils (1U, 2U, etc.). Observation points on the same wetland were labeled using alpha characters (e.g. 1Wa, 1Wb, 1Wc). Wetlands are identified numerically (e.g. Wetland 1, Wetland 2, etc.).

Existing vegetation was classified using hydrophytic vegetation criteria outlined in the Manual and the *State of Minnesota Wetland Plant List* (Lichvar et al, 2016). Hydric soil indicators were determined using the *Field Indicators of Hydric Soils in the United States; Guide for Identifying and Delineating Hydric Soils, Version 7.0* (USDA-NRCS, 2010). Hydrology was determined on-site by observation of hydrologic indicators.

Two ephemeral streams which appear to carry water during and following precipitation events were also identified.

Prior to the field delineation, an aerial photo review was completed for the Property. This review was conducted in accordance with the USACE Guidance for Offsite Hydrology/Wetland Determinations (USACE, 2016). Aerial imagery can be useful for assessing wetland hydrology in agricultural areas due to the inability of planted row crops to tolerate poor soil drainage. Signs of crop stress, saturated soil, standing water, or altered crop rows are likely to be visible on historic aerial photography. A total of six aerial photos of the Property, taken at times of average precipitation, from the years 2010 to 2021 were reviewed for evidence of the presence of wetlands. There were eight areas identified as probable or potential wetlands as result of the aerial photo review. These eight areas were verified during the field delineation. The aerial photo review data forms and historic imagery are included in Appendix B.

Soils, vegetation, hydrology, and landscape indicators were evaluated along the wetland edge to accurately delineate the wetland boundaries. Evaluated boundaries of delineated wetlands and ephemeral streams were recorded with a Trimble TSC3 Data Collector and Trimble R10-2 GNSS GPS receiver for sub-inch accuracy.

IV. RESULTS

Wetland 1 is a 1.39-acre wetland complex consisting of a Palustrine Emergent Persistent Seasonally Flooded (PEM1C) wetland surrounding a Palustrine Unconsolidated Bottom, Semipermanently Flooded (PUBF) basin. It can be classified as a Type 2 wetland with a Type 3 center, using the Minnesota Circular 39 system of classification. Under the Eggers & Reed classification it is considered a Fresh Wet Meadow with a Shallow Marsh center. The wetland is dominated by reed canary grass (*Phalaris arundinacea* - FACW); with pockets of giant goldenrod (*Solidago gigantea* - FACW) and cattails (*Typha x.* - OBL). The wetland soil typically consisted of sandy loam, colored 10 YR 2/1 at the surface and underlain by a depleted layer (10 YR 4/1 to 10 YR 4/2) exhibiting 5-10% redox (5 YR 4/6).

The upland is vegetated with a variety of trees including box elder (*Acer negundo* - FAC), and rock elm (*Ulmus thomasi* - FAC); in addition, reed canary grass which has encroached onto the upland. The upland soil consists of a sandy loam, ranging in color from (10 YR 2/1 to 10 YR 3/2).

Wetland 2 is a 0.15-acre Palustrine Emergent Persistent Temporarily Flooded (PEM1A) wetland. It can be classified as a Type 2 wetland using the Minnesota Circular 39 system of classification. Under the Eggers & Reed classification it is considered a Fresh Wet Meadow. It consists of a small depression on the edge of a forested upland area. The vegetation consists of mainly reed canary grass. The wetland soil consisted of a sandy loam (10 YR 2/2) down to a depth of 20 inches, where a silty clay loam (10 YR 2/2/) was encountered to a depth of 38 inches, at which point a depleted sandy loam layer (10 YR 5/1) was observed to a depth of at least 42 inches.

The upland is vegetated with rock elm and reed canary grass, which has encroached onto the upland. The upland soil consists of a silty loam (10 YR 2/2) above a sandy clay loam (10 YR 3/2).

Wetland 3 is a 0.88-acre Palustrine Emergent Persistent Seasonally Flooded (PEM1C) wetland. It can be classified as a Type 2 wetland using the Minnesota Circular 39 system of classification. Under the Eggers & Reed classification it is considered a Fresh Wet Meadow. It consists of a depression inside a forested upland area, with an ephemeral stream feeding the wetland on its southeast corner. This stream is fed by buried drain tile which conveys runoff from the development south of the Property, and from the ag field itself, across the field and into this Wetland. The easement is shown on Figure 5. Water is drained out of the wetland by a separate ephemeral stream on the northeast corner. The wetland is dominated by reed canary grass & box elder along its edges. The wetland soil consisted of a sandy clay loam at the surface (10 YR 3/1 to 10 YR 3/2), underlain by a 4-inch thick sandy loam (10 YR 4/1) exhibiting 10 to 20% redox (7.5 YR 4/6 to 5 YR 3/4).

The upland is vegetated with box elder, wood's wild rose (*Rosa woodsii* – FACU), cleavers (*Galium aparine* - FACU), and reed canary grass, which has encroached onto the upland. The upland soil consists of a sandy loam ranging in color from 10 YR 2/1 to 10 YR 4/3.

Stream 1 is an ephemeral stream that receives water from what appears to be a drain tile outlet pipe from the adjacent field, and discharges into Wetland 3. It is approximately 72 feet long with a vegetated stream bottom. This stream was flowing at the time of the delineation, but based on the vegetated bottom and the apparent source, it likely does not flow constantly, but instead only after a precipitation event.

Stream 2 is an ephemeral stream that receives water from Wetland 3 and discharges into Wetland 1. It is approximately 843 feet long (including an approximately 17 foot long culvert) with an unconsolidated stream bottom. The upper reach of the stream was flowing at the time of the delineation, but the flow eventually dissipated prior to reaching Wetland 1. Based on this observation, the stream appears to be ephemeral in nature, flowing based on recent precipitation and not a constant outlet for Wetland 3.

Upland 101 is a test hole completed to investigate a reed canary grass clearing in the trees. Although wetland vegetation was observed, there were no hydric soils or indicators of hydrology encountered. Therefore, this area was not classified as wetland.

Upland 102 is a test hole completed to investigate an area identified during the aerial photo review (AOI 18) as a potential wetland. The area was dominated by reed canary grass; however, there were no hydric soils or indicators of hydrology encountered. Therefore, this area was not classified as wetland.

Upland 103 is a test hole completed to investigate an area identified during the aerial photo review (AOI 14) as a potential wetland. The area is a cultivated agricultural field bare of vegetation at the time of the delineation. A buried depleted layer was observed (10 YR 5/2 sandy loam exhibiting 5% redox (5 YR 4/6)). There were no primary indicators of hydrology, only saturation visible on aerial imagery (C9) and geomorphic position (D2). While these technically qualify for the presence of hydrology, the fact that there were no primary indicators at this point, early in the spring, after a wetter than average prior 3 months, indicates that this area is not wet enough to qualify as a wetland. Therefore, this area was not classified as wetland.

Upland 104 is a test hole completed to investigate an area identified during the aerial photo review (AOI 3) as a potential wetland. The area was dominated by winter wheat crops, reed canary grass, and burdock (*Arctium minus* – FACU) and there were no hydric soils encountered. Again, there were two secondary indicators of hydrology, C9 and D2, but no primary indicators. Due to this, and the fact that there were no hydric soils identified, this area was not classified as wetland.

Upland 105 is a test hole completed to investigate an area identified during the aerial photo review (AOI 3) as a potential wetland. The area was dominated by winter wheat crops, and there were no hydric soils encountered. There were two secondary indicators of hydrology, C9 and D2, but no primary indicators. This area was not classified as wetland.

Upland 106 is a test hole completed to investigate an area identified during the aerial photo review (AOI 3) as a potential wetland. The area was dominated by winter wheat crops, and there were no hydric soils encountered. There were two secondary indicators of hydrology, C9 and D2, but no primary indicators. This area was not classified as wetland.

V. CONCLUSION

Three areas within the Project Area met the criteria of hydrology, hydric soils, and hydrophytic vegetation to be considered a wetland. Two ephemeral streams which appear to carry water during and following precipitation events were also identified. The wetland boundaries were flagged for survey and confirmed by the City of Rogers, who serves as the Local Governmental Unit (LGU) administering the Wetland Conservation Act (WCA) in this area of Minnesota.

VI. REFERENCES

- Cowardin, L. M., V. Carter, F. C. Golet, E. T. LaRoe. 1979. Classification of wetlands and deepwater habitats of the United States. U.S. Department of the Interior, Fish and Wildlife Service, Washington, D.C. Jamestown, ND: Northern Prairie Wildlife Research Center Online. <http://www.npwrc.usgs.gov/resource/wetlands/classwet/index.htm> (Version 04DEC1998) > Accessed May 2022.
- Environmental Laboratory. 1987. *Corp of Engineers Wetlands Delineation Manual*. Wetlands Research Program. Technical Report Y-87-1. Department of the Army, Waterways Experiment Station, US Army Corp of Engineers., Vicksburg, Mississippi, USA.
- Environmental Laboratory. 2012. *Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Midwest Region (Version 2.0)*. U.S. Army Corps of Engineers, U.S. Army Engineer Research and Development Center Vicksburg, Mississippi, USA.
- Lichvar, R.W., D.L. Banks, N.C. Melvin, and W.N. Kirchner. 2016. *The State of Minnesota Wetland Plant List*. Phytoneuron 2016-30: 1-17.
- MNDNR. 2021a. Wetland Delineation Precipitation Data Retrieval tool. http://climate.umn.edu/gridded_data/precip/wetland/wetland.asp Accessed May 2023.
- MNDNR. 2018b. National Wetland Inventory Update for Minnesota. http://www.dnr.state.mn.us/eco/wetlands/nwi_proj.html Accessed May 2023.
- MNDNR. 2018c. Protected Waters Inventory. http://www.dnr.state.mn.us/waters/watermgmt_section/pwi/maps.html Accessed May 2023.
- USDA-NRCS. 2010. *Field Indicators of Hydric Soils in the United States*—Guide for Identifying and Delineating Hydric Soils, Version. 7.0 in G.W. Hurt, L.M. Vasilas, and C.V. Noble, editors. USDA-NRCS in cooperation with the National Technical Committee for Hydric Soils.
- USDA-NRCS. 2018. Soil Survey of Hennepin County, Minnesota. <http://websoilsurvey.nrcs.usda.gov/app> Accessed May 2023.
- USFWS. 2016. United States Fish and Wildlife Service. National Wetlands Inventory. <http://wetlandsfws.er.usgs.gov/NWI/> Accessed May 2023.
- USGS. Rogers Quadrangle Minnesota 7.5 Minute Series Topographic Map.

DELINEATOR'S CREDENTIALS

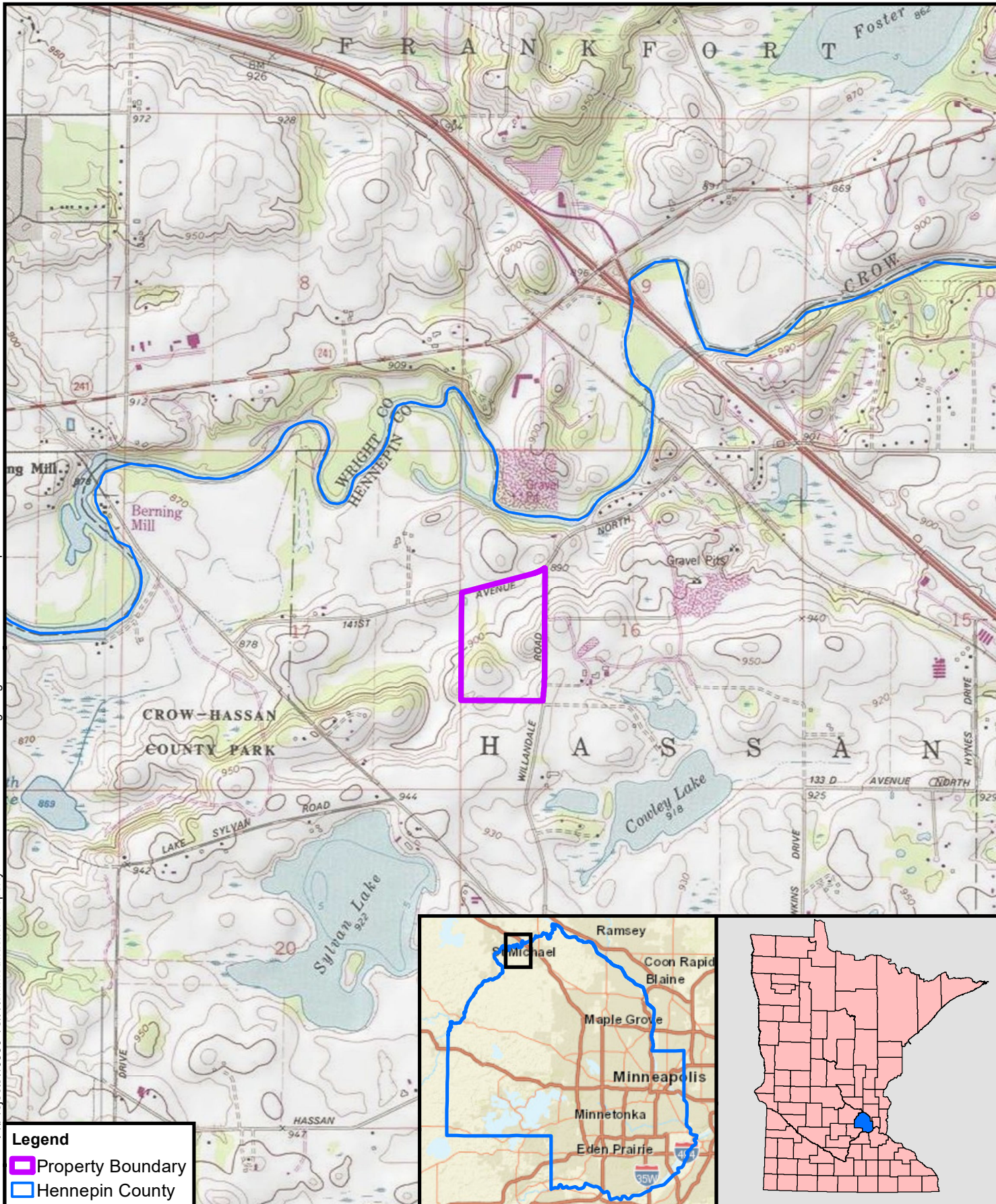
Danny Margarit, Environmental Scientist

Education: North Dakota State University – BS Natural Resources Management
North Dakota State University – Masters of Natural Resources Management
North Dakota State University – PhD Natural Resources Economics

Training: Wetland Delineator Certification Program
Wetland Plant Identification Course- WDCP

Wetland Delineation Certification: Certified Professional Wetland Delineator – MN #5244

Figures



Legend

- Property Boundary
- Hennepin County



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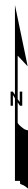
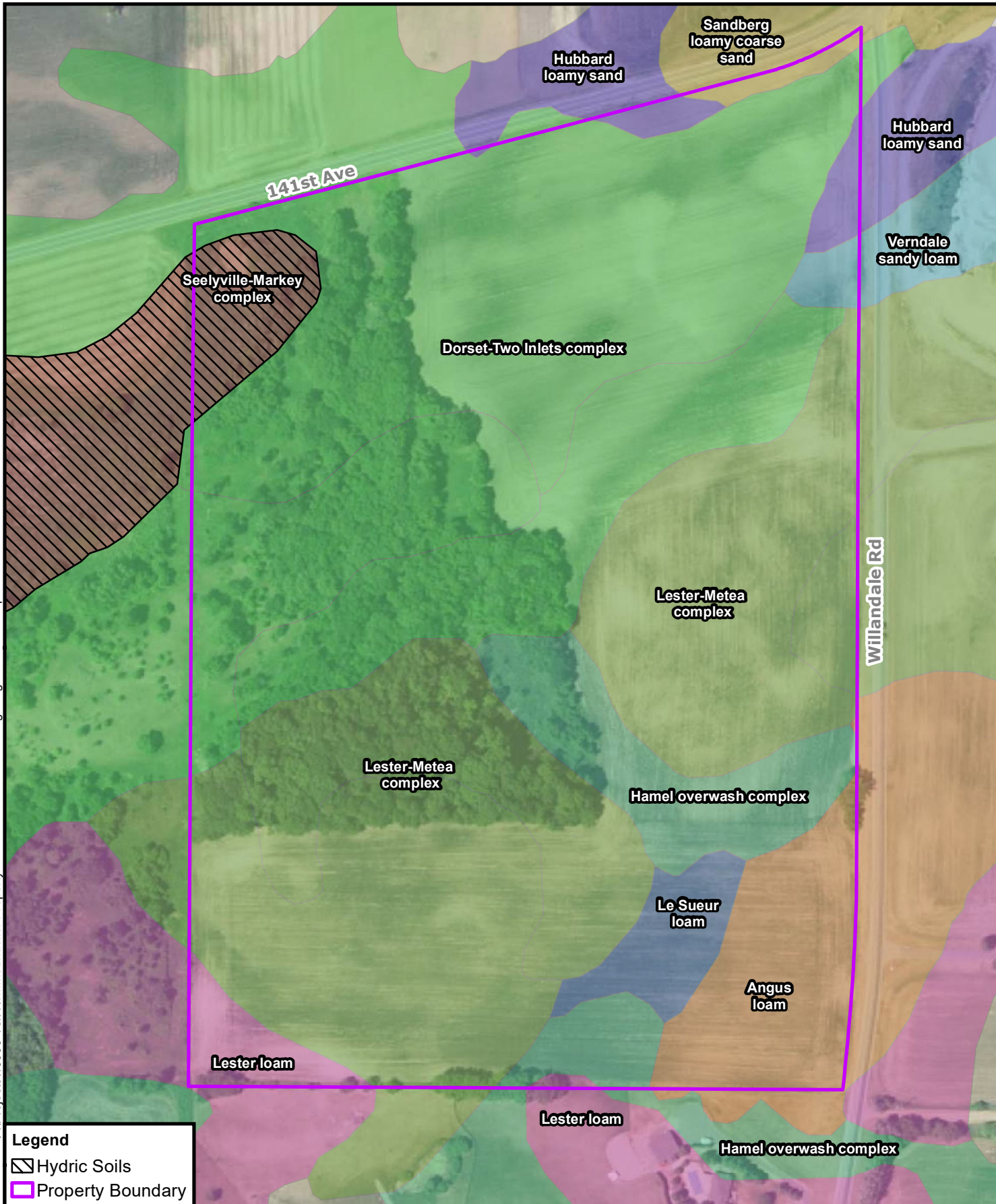
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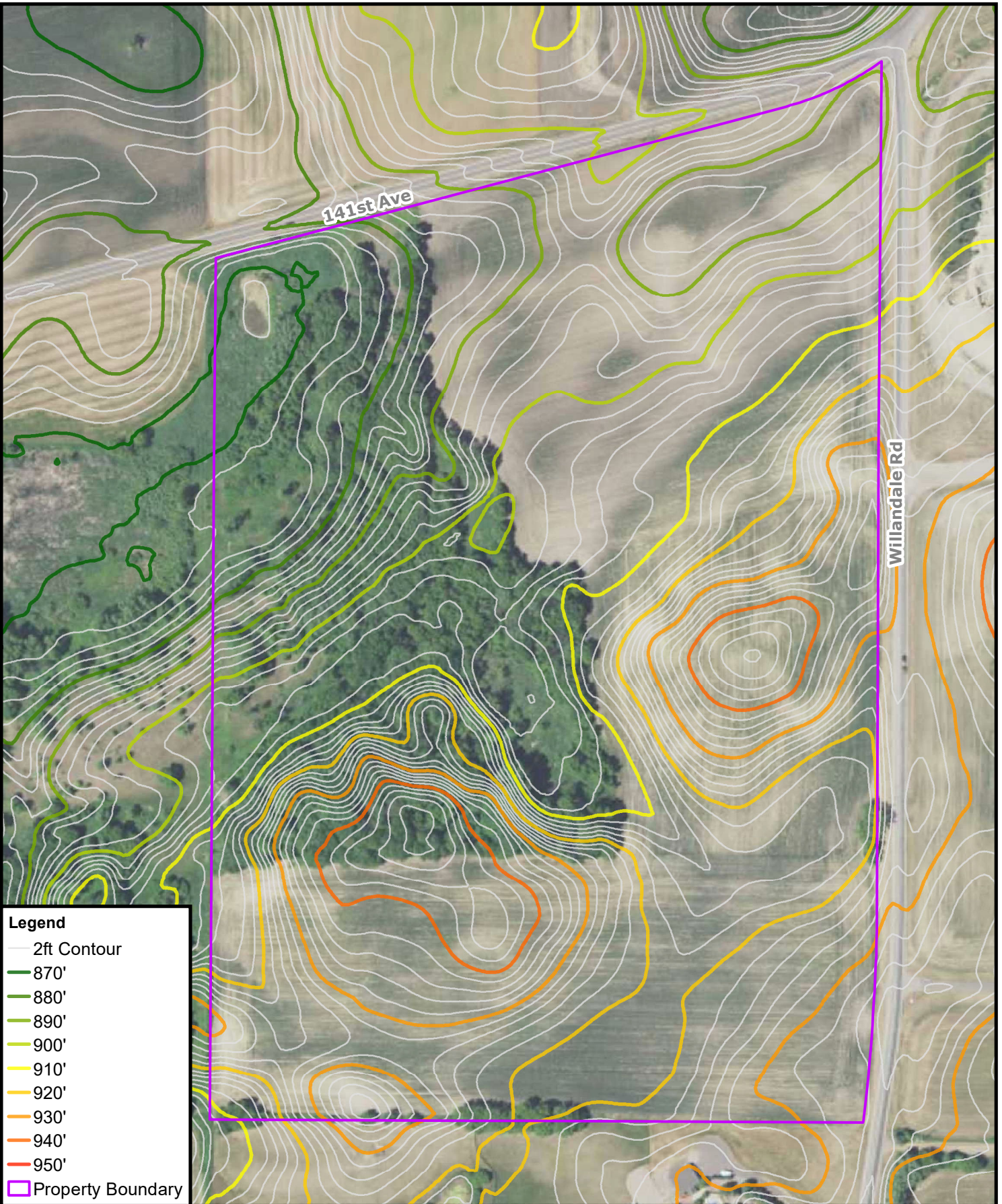
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Basemap: USGS 7.5 Min Quadrangle



Figure 1
Site Location Map
Kemmetmueller Property
Rogers, Minnesota





Legend

- 2ft Contour
- 870'
- 880'
- 890'
- 900'
- 910'
- 920'
- 930'
- 940'
- 950'
- Property Boundary

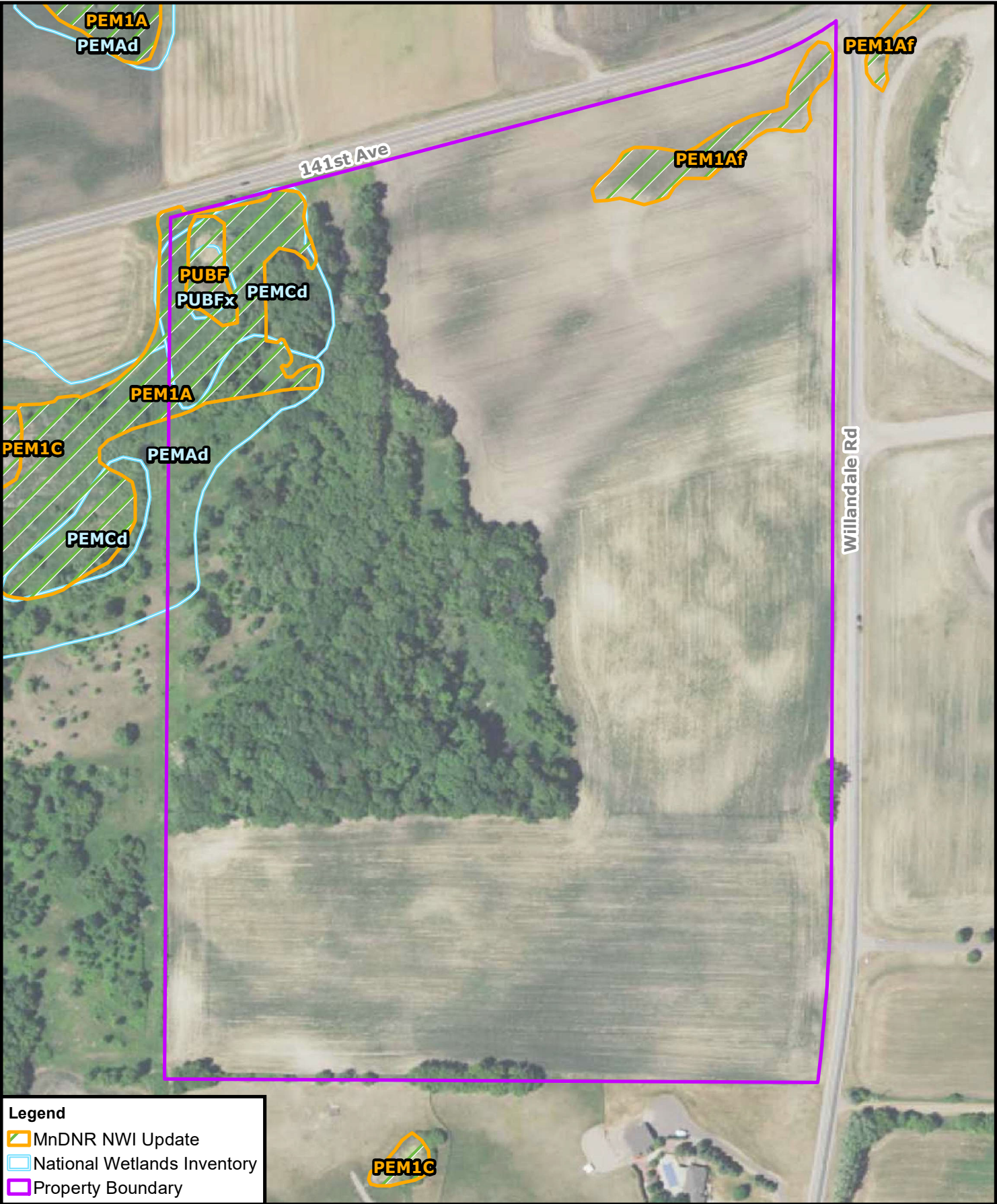
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1:3,000

0 250 Feet

Basemap: MnGeo color 7-county, 2020.

Figure 3
Contour Elevation Map
Kemmetmueller Property
Rogers, Minnesota



Legend

- MnDNR NWI Update
- National Wetlands Inventory
- Property Boundary



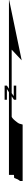
**CARLSON
McCAIN**

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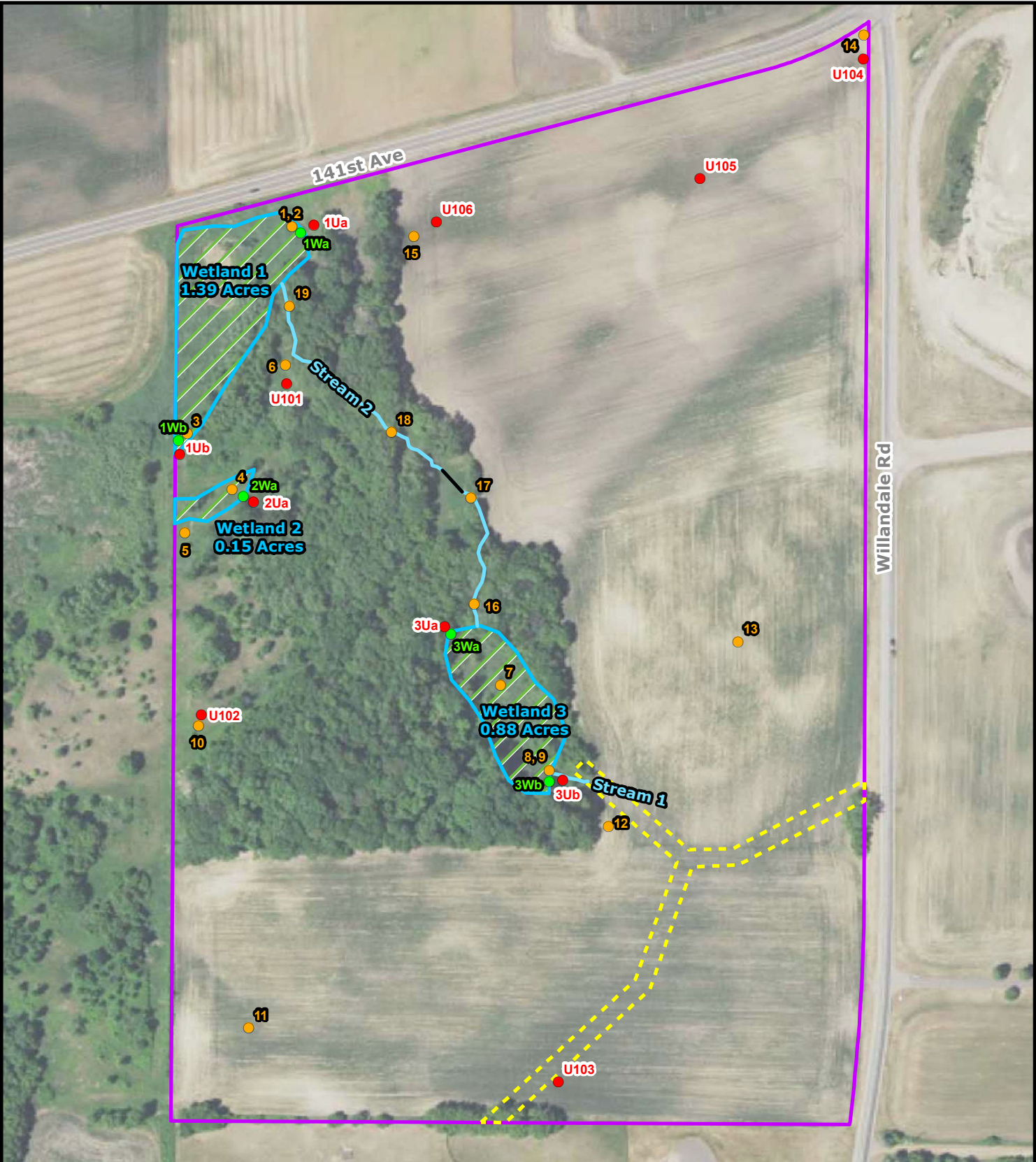
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Basemap: MnGeo color 7-county, 2020.



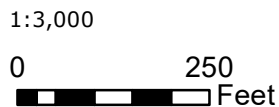
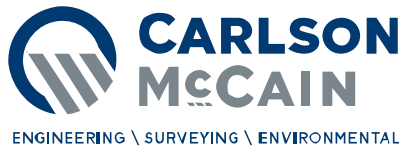
**Figure 4
NWI Map**

**Kemmetmueller Property
Rogers, Minnesota**



Legend

- Wetland Test Hole Location
- Upland Test Hole Location
- Ephemeral Stream
- ▭ Delineated Wetland
- Photograph Location
- Property Boundary
- City of Rogers Drainage Easement
- Culvert



Basemap: MnGeo color 7-county, 2020.

Figure 5
Wetland Map
Kemmetmueller Property
Rogers, Minnesota

APPENDIX A

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Kemmetmueller Property City/County: Rogers/Hennepin Sampling Date: 5/8/23
 Applicant/Owner: Veit and Co. State: MN Sampling Point: 1Wa
 Investigator(s): Danny Margarit Section, Township, Range: Section 16, T 120N, R 23W
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave
 Slope (%): 1 Lat: 45.20423 Long: -93.603 Datum: NAD 83
 Soil Map Unit Name: Dorset-Two Inlets complex, 6 to 12 percent slopes NWI or WWI classification: PEMCd

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present?	Yes <u>X</u> No _____	
Wetland Hydrology Present?	Yes <u>X</u> No _____	
Remarks: Antecedent precipitation was "wetter than average". Depression wetland with cattails and standing water in the center, rimmed with reed canarygrass and box elder trees, spilling off-site to the west.		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.00</u> (A/B)																		
1. _____	_____	_____	_____																			
2. _____	_____	_____	_____																			
3. _____	_____	_____	_____																			
4. _____	_____	_____	_____																			
5. _____	_____	_____	_____	Prevalence Index worksheet: <table border="0"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>105</u></td> <td>x 2 = <u>210</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>105</u> (A)</td> <td><u>210</u> (B)</td> </tr> <tr> <td colspan="4">Prevalence Index = B/A = <u>2.00</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>105</u>	x 2 = <u>210</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>105</u> (A)	<u>210</u> (B)	Prevalence Index = B/A = <u>2.00</u>			
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2. _____	_____	_____	_____																			
3. _____	_____	_____	_____																			
4. _____	_____	_____	_____																			
5. _____	_____	_____	_____																			
_____ = Total Cover																						
Herb Stratum (Plot size: <u>5'</u>)																						
1. <u>Phalaris arundinacea</u>	<u>95</u>	<u>Y</u>	<u>FACW</u>																			
2. <u>Urtica dioica</u>	<u>10</u>	<u>N</u>	<u>FACW</u>																			
3. <u>Cyperus eragrostis</u>	<u>5</u>	<u>N</u>	<u>NI</u>																			
4. _____	_____	_____	_____																			
5. _____	_____	_____	_____																			
6. _____	_____	_____	_____																			
7. _____	_____	_____	_____																			
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1. _____	_____	_____	_____																			
2. _____	_____	_____	_____																			
_____ = Total Cover																						
Hydrophytic Vegetation Indicators: <u>X</u> Dominance Test is >50% <u>X</u> Prevalence Index is ≤3.0 ¹ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																						
Hydrophytic Vegetation Present? Yes <u>X</u> No _____																						
Remarks: (Include photo numbers here or on a separate sheet.)																						

SOIL

Sampling Point: 1Wa

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-22	10 YR 2/1	100					sandy loam	
22-26+	10 YR 4/2	95	5 YR 4/6	5	c	m	sandy loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ 2 cm Muck (A10)
☐ Depleted Below Dark Surface (A11)
☒ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ 5 cm Mucky Peat or Peat (S3)

- ☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- ☐ Coast Prairie Redox (A16)
☐ Iron-Manganese Masses (F12)
☐ Other (Explain in Remarks)

³Indicators 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 _____

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
☒ High Water Table (A2)
☒ Saturation (A3)
☐ Water Marks (B1)
☐ Sediment Deposits (B2)
☐ Drift Deposits (B3)
☐ Algal Mat or Crust (B4)
☐ Iron Deposits (B5)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Sparsely Vegetated Concave Surface (B8)

- ☐ Water-Stained Leaves (B9)
☐ Aquatic Fauna (B13)
☐ True Aquatic Plants (B14)
☐ 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)
☐ Gauge or Well Data (D9)
☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Crayfish Burrows (C8)
☒ Saturation Visible on Aerial Imagery (C9)
☐ Stunted or Stressed Plants (D1)
☒ Geomorphic Position (D2)
☒ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ☒ Depth (inches): _____
 Water Table Present? Yes ☒ No _____ Depth (inches): 10
 Saturation Present? Yes ☒ No _____ Depth (inches): 5
 (includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No _____

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Kemmetmueller Property City/County: Rogers/Hennepin Sampling Date: 5/8/23

Applicant/Owner: Veit and Co. State: MN Sampling Point: 1Ua

Investigator(s): Danny Margarit Section, Township, Range: Section 16, T 120N, R 23W

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex

Slope (%): 5 Lat: 45.20427 Long: -93.6029 Datum: NAD 83

Soil Map Unit Name: Dorset-Two Inlets complex, 6 to 12 percent slopes NWI or WWI classification: PEMCd

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____ No <u>X</u>	
Wetland Hydrology Present?	Yes _____ No <u>X</u>	
Remarks:		
Antecedent precipitation was "wetter than average".		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u>) <table> <tr> <th></th> <th>Absolute % Cover</th> <th>Dominant Species?</th> <th>Indicator Status</th> </tr> <tr> <td>1. <u>Ulmus thomasii</u></td> <td><u>45</u></td> <td><u>Y</u></td> <td><u>FAC</u></td> </tr> <tr> <td>2. <u>Prunus serotina</u></td> <td><u>20</u></td> <td><u>Y</u></td> <td><u>FACU</u></td> </tr> <tr> <td>3. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>4. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>5. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td colspan="2"><u>65</u> = Total Cover</td> <td colspan="2"></td> </tr> </table>		Absolute % Cover	Dominant Species?	Indicator Status	1. <u>Ulmus thomasii</u>	<u>45</u>	<u>Y</u>	<u>FAC</u>	2. <u>Prunus serotina</u>	<u>20</u>	<u>Y</u>	<u>FACU</u>	3. _____	_____	_____	_____	4. _____	_____	_____	_____	5. _____	_____	_____	_____	<u>65</u> = Total Cover				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>50.00</u> (A/B)																				
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SOIL

Sampling Point: 1Ua

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-34	10 YR 2/2	100					sandy loam	
34-38	10 YR 3/2	100					sandy loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
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- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)

- ☐ Sandy Gleyed Matrix (S4)
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- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- ☐ Coast Prairie Redox (A16)
- ☐ Iron-Manganese Masses (F12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)

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- ☐ Presence of Reduced Iron (C4)
- ☐ Recent Iron Reduction in Tilled Soils (C6)
- ☐ Thin Muck Surface (C7)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes _____ No X

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Kemmetmueller Property City/County: Rogers/Hennepin Sampling Date: 5/8/23
 Applicant/Owner: Veit and Co. State: MN Sampling Point: 1Wb
 Investigator(s): Danny Margarit Section, Township, Range: Section 16, T 120N, R 23W
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): concave
 Slope (%): 0 Lat: 45.20317 Long: -93.60387 Datum: NAD 83
 Soil Map Unit Name: Dorset-Two Inlets complex, 6 to 12 percent slopes NWI or WWI classification: PEMAd

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes _____ No _____	
Remarks: Antecedent precipitation was "wetter than average".	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.00</u> (A/B)																		
1. _____	_____	_____	_____																			
2. _____	_____	_____	_____																			
3. _____	_____	_____	_____																			
4. _____	_____	_____	_____																			
5. _____	_____	_____	_____	Prevalence Index worksheet: <table border="0"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>100</u></td> <td>x 2 = <u>200</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>100</u> (A)</td> <td><u>200</u> (B)</td> </tr> <tr> <td colspan="4">Prevalence Index = B/A = <u>2.00</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>100</u>	x 2 = <u>200</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>100</u> (A)	<u>200</u> (B)	Prevalence Index = B/A = <u>2.00</u>			
Total % Cover of:	Multiply by:																					
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Column Totals: <u>100</u> (A)	<u>200</u> (B)																					
Prevalence Index = B/A = <u>2.00</u>																						
_____ = Total Cover																						
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																						
1. _____	_____	_____	_____																			
2. _____	_____	_____	_____																			
3. _____	_____	_____	_____																			
4. _____	_____	_____	_____																			
5. _____	_____	_____	_____																			
_____ = Total Cover																						
Herb Stratum (Plot size: <u>5'</u>)																						
1. <u>Phalaris arundinacea</u>	<u>90</u>	<u>Y</u>	<u>FACW</u>																			
2. <u>Solidago gigantea</u>	<u>10</u>	<u>N</u>	<u>FACW</u>																			
3. _____	_____	_____	_____																			
4. _____	_____	_____	_____																			
5. _____	_____	_____	_____																			
6. _____	_____	_____	_____																			
7. _____	_____	_____	_____																			
8. _____	_____	_____	_____																			
9. _____	_____	_____	_____																			
10. _____	_____	_____	_____																			
_____ = Total Cover																						
Woody Vine Stratum (Plot size: _____)																						
1. _____	_____	_____	_____																			
2. _____	_____	_____	_____																			
_____ = Total Cover																						
Hydrophytic Vegetation Indicators: <u>X</u> Dominance Test is >50% <u>X</u> Prevalence Index is ≤3.0 ¹ ___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																						
Hydrophytic Vegetation Present? Yes <u>X</u> No _____																						
Remarks: (Include photo numbers here or on a separate sheet.)																						

SOIL

Sampling Point: 1Wb

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-28	10 YR 2/1	100					sandy loam	
28-42+	10 YR 4/1	90	5 YR 4/6	10			loamy sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ 2 cm Muck (A10)
☐ Depleted Below Dark Surface (A11)
☒ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ 5 cm Mucky Peat or Peat (S3)

- ☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- ☐ Coast Prairie Redox (A16)
☐ Iron-Manganese Masses (F12)
☐ Other (Explain in Remarks)

³Indicators 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 ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
☒ High Water Table (A2)
☒ Saturation (A3)
☐ Water Marks (B1)
☐ Sediment Deposits (B2)
☐ Drift Deposits (B3)
☐ Algal Mat or Crust (B4)
☐ Iron Deposits (B5)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Sparsely Vegetated Concave Surface (B8)

- ☐ Water-Stained Leaves (B9)
☐ Aquatic Fauna (B13)
☐ True Aquatic Plants (B14)
☐ 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)
☐ Gauge or Well Data (D9)
☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Crayfish Burrows (C8)
☒ Saturation Visible on Aerial Imagery (C9)
☐ Stunted or Stressed Plants (D1)
☒ Geomorphic Position (D2)
☒ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____
 Water Table Present? Yes ☒ No ☐ Depth (inches): 10
 Saturation Present? Yes ☒ No ☐ Depth (inches): 8
 (includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Kemmetmueller Property City/County: Rogers/Hennepin Sampling Date: 5/8/23

Applicant/Owner: Veit and Co. State: MN Sampling Point: 1Ub

Investigator(s): Danny Margarit Section, Township, Range: Section 16, T 120N, R 23W

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex

Slope (%): 4 Lat: 45.20309 Long: -93.60386 Datum: NAD 83

Soil Map Unit Name: Dorset-Two Inlets complex, 6 to 12 percent slopes NWI or WWI classification: PEMAd

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present?	Yes <u>X</u> No _____	
Wetland Hydrology Present?	Yes _____ No <u>X</u>	

Remarks:

Antecedent precipitation was "wetter than average". Although wetland soils and vegetation are present, hydrology is not, during a time of "much wetter than normal" conditions. Therefore, this location is not considered wetland.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u>) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ _____ = Total Cover Sapling/Shrub Stratum (Plot size: <u>15'</u>) 1. _____ 2. _____ 3. _____ 4. _____ 5. _____ _____ = Total Cover Herb Stratum (Plot size: <u>5'</u>) 1. <u>Phalaris arundinacea</u> 80 Y FACW 2. <u>Poa annua</u> 20 N FACU 3. <u>Taraxacum officinale</u> 5 N FACU 4. <u>Solidago canadensis</u> 5 N FACU 5. _____ 6. _____ 7. _____ 8. _____ 9. _____ 10. _____ 110 = Total Cover Woody Vine Stratum (Plot size: _____) 1. _____ 2. _____ _____ = Total Cover	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.00</u> (A/B) Prevalence Index worksheet: <table> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>80</u></td> <td>x 2 = <u>160</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>30</u></td> <td>x 4 = <u>120</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>110</u> (A)</td> <td><u>280</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>2.55</u> Hydrophytic Vegetation Indicators: <u>X</u> Dominance Test is >50% <u>X</u> Prevalence Index is ≤3.0¹ ___ Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation¹ (Explain) ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>80</u>	x 2 = <u>160</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>30</u>	x 4 = <u>120</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>110</u> (A)	<u>280</u> (B)
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Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: 1Ub

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-27	10 YR 2/1	100					sandy loam	
27-35	10 YR 5/2	90	7.5 YR 5/6	10			sandy loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
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☐ Other (Explain in Remarks)

³Indicators 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 ☐

Remarks:

Buried depleted layer potentially due to higher water table. But not high enough to provide hydrology to the location.

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
☐ High Water Table (A2)
☐ Saturation (A3)
☐ Water Marks (B1)
☐ Sediment Deposits (B2)
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- ☐ Surface Soil Cracks (B6)
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☐ Saturation Visible on Aerial Imagery (C9)
☐ Stunted or Stressed Plants (D1)
☐ Geomorphic Position (D2)
☒ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____
 Water Table Present? Yes ☒ No ☐ Depth (inches): 16
 Saturation Present? Yes ☒ No ☐ Depth (inches): 14
 (includes capillary fringe)

Wetland Hydrology Present? Yes ☐ No ☒

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Kemmetmueller Property

City/County: Rogers/Hennepin

Sampling Date: 5/8/23

Applicant/Owner: Veit and Co.

State: MN

Sampling Point: 2Wa

Investigator(s): Danny Margarit

Section, Township, Range: Section 16, T 120N, R 23W

Landform (hillslope, terrace, etc.): depression

Local relief (concave, convex, none): concave

Slope (%): 0

Lat: 45.20288

Long: -93.6034

Datum: NAD 83

Soil Map Unit Name: Dorset-Two Inlets complex, 6 to 12 percent slopes

NWI or WWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present?	Yes <u>X</u> No _____	
Wetland Hydrology Present?	Yes <u>X</u> No _____	
Remarks: Antecedent precipitation was "wetter than average". Small depression wetland located on edge of wooded area and spilling off-site to the west.		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u>) <table> <tr> <th></th> <th>Absolute % Cover</th> <th>Dominant Species?</th> <th>Indicator Status</th> </tr> <tr><td>1. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>2. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>3. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>4. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>5. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr> <td></td> <td>_____ = Total Cover</td> <td></td> <td></td> </tr> </table>		Absolute % Cover	Dominant Species?	Indicator Status	1. _____	_____	_____	_____	2. _____	_____	_____	_____	3. _____	_____	_____	_____	4. _____	_____	_____	_____	5. _____	_____	_____	_____		_____ = Total Cover			Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.00</u> (A/B)																
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Herb Stratum (Plot size: <u>5'</u>) <table> <tr><td>1. <u>Phalaris arundinacea</u></td><td><u>60</u></td><td><u>Y</u></td><td><u>FACW</u></td></tr> <tr><td>2. <u>Poa annua</u></td><td><u>15</u></td><td><u>N</u></td><td><u>FACU</u></td></tr> <tr><td>3. <u>Urtica dioica</u></td><td><u>10</u></td><td><u>N</u></td><td><u>FACW</u></td></tr> <tr><td>4. <u>Verbascum thapsus</u></td><td><u>5</u></td><td><u>N</u></td><td><u>UPL</u></td></tr> <tr><td>5. <u>Taraxacum officinale</u></td><td><u>5</u></td><td><u>N</u></td><td><u>FACU</u></td></tr> <tr><td>6. <u>Rosa woodsii</u></td><td><u>5</u></td><td><u>N</u></td><td><u>FACU</u></td></tr> <tr><td>7. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>8. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>9. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>10. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr> <td></td> <td><u>100</u> = Total Cover</td> <td></td> <td></td> </tr> </table>	1. <u>Phalaris arundinacea</u>	<u>60</u>	<u>Y</u>	<u>FACW</u>	2. <u>Poa annua</u>	<u>15</u>	<u>N</u>	<u>FACU</u>	3. <u>Urtica dioica</u>	<u>10</u>	<u>N</u>	<u>FACW</u>	4. <u>Verbascum thapsus</u>	<u>5</u>	<u>N</u>	<u>UPL</u>	5. <u>Taraxacum officinale</u>	<u>5</u>	<u>N</u>	<u>FACU</u>	6. <u>Rosa woodsii</u>	<u>5</u>	<u>N</u>	<u>FACU</u>	7. _____	_____	_____	_____	8. _____	_____	_____	_____	9. _____	_____	_____	_____	10. _____	_____	_____	_____		<u>100</u> = Total Cover			Hydrophytic Vegetation Indicators: <u>X</u> Dominance Test is >50% <u>X</u> Prevalence Index is ≤3.0 ¹ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
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2. _____	_____	_____	_____																																										
	_____ = Total Cover																																												
Remarks: (Include photo numbers here or on a separate sheet.)																																													

SOIL

Sampling Point: 2Wa

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-20	10 YR 2/2	100					sandy loam	
20-38	10 YR 2/2	100					silty cl loam	
38-42	10 YR 5/1	100					sandy loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ 2 cm Muck (A10)
☐ Depleted Below Dark Surface (A11)
☒ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ 5 cm Mucky Peat or Peat (S3)

- ☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- ☐ Coast Prairie Redox (A16)
☐ Iron-Manganese Masses (F12)
☐ Other (Explain in Remarks)

³Indicators 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 ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
☐ High Water Table (A2)
☐ Saturation (A3)
☐ Water Marks (B1)
☐ Sediment Deposits (B2)
☐ Drift Deposits (B3)
☐ Algal Mat or Crust (B4)
☐ Iron Deposits (B5)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Sparsely Vegetated Concave Surface (B8)

- ☐ Water-Stained Leaves (B9)
☐ Aquatic Fauna (B13)
☐ True Aquatic Plants (B14)
☐ 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)
☐ Gauge or Well Data (D9)
☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Crayfish Burrows (C8)
☒ Saturation Visible on Aerial Imagery (C9)
☐ Stunted or Stressed Plants (D1)
☒ Geomorphic Position (D2)
☒ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____
 Water Table Present? Yes ☒ No ☐ Depth (inches): 14
 Saturation Present? Yes ☒ No ☐ Depth (inches): 13
 (includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Kemmetmueller Property City/County: Rogers/Hennepin Sampling Date: 5/8/23
 Applicant/Owner: Veit and Co. State: MN Sampling Point: 2Ua
 Investigator(s): Danny Margarit Section, Township, Range: Section 16, T 120N, R 23W
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex
 Slope (%): 5 Lat: 45.20285 Long: -93.60332 Datum: NAD 83
 Soil Map Unit Name: Dorset-Two Inlets complex, 6 to 12 percent slopes NWI or WWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	Is the Sampled Area within a Wetland?	Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>		
Wetland Hydrology Present?	Yes _____	No <u>X</u>		
Remarks:				
Antecedent precipitation was "wetter than average".				

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>2</u> (A) Total Number of Dominant Species Across All Strata: <u>2</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.00</u> (A/B)														
1. <u>Ulmus thomasii</u>	<u>25</u>	<u>Y</u>	<u>FAC</u>															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____	Prevalence Index worksheet: <table> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>75</u></td> <td>x 2 = <u>150</u></td> </tr> <tr> <td>FAC species <u>25</u></td> <td>x 3 = <u>75</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>10</u></td> <td>x 5 = <u>50</u></td> </tr> <tr> <td>Column Totals: <u>110</u> (A)</td> <td><u>275</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>2.50</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>75</u>	x 2 = <u>150</u>	FAC species <u>25</u>	x 3 = <u>75</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>10</u>	x 5 = <u>50</u>	Column Totals: <u>110</u> (A)	<u>275</u> (B)
Total % Cover of:	Multiply by:																	
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Column Totals: <u>110</u> (A)	<u>275</u> (B)																	
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
_____ = Total Cover																		
Herb Stratum (Plot size: <u>5'</u>)																		
1. <u>Phalaris arundinacea</u>	<u>75</u>	<u>Y</u>	<u>FACW</u>															
2. <u>Verbascum thapsus</u>	<u>10</u>	<u>N</u>	<u>UPL</u>															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
_____ = Total Cover																		
Woody Vine Stratum (Plot size: _____)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
_____ = Total Cover																		
Hydrophytic Vegetation Indicators: <u>X</u> Dominance Test is >50% <u>X</u> Prevalence Index is ≤3.0 ¹ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																		
Hydrophytic Vegetation Present? Yes <u>X</u> No _____																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: 2Ua

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-33	10 YR 3/2	100					silty loam	
33-37	10 YR 3/2	100					sa cl loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)

- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- ☐ Coast Prairie Redox (A16)
- ☐ Iron-Manganese Masses (F12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)

- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ 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)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes _____ No X

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Kemmetmueller Property City/County: Rogers/Hennepin Sampling Date: 5/8/23
 Applicant/Owner: Veit and Co. State: MN Sampling Point: 3Wa
 Investigator(s): Danny Margarit Section, Township, Range: Section 16, T 120N, R 23W
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave
 Slope (%): 0 Lat: 45.20219 Long: -93.60189 Datum: NAD 83
 Soil Map Unit Name: Dorset-Two Inlets complex, 2 to 6 percent slopes NWI or WWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present?	Yes <u>X</u> No _____	
Wetland Hydrology Present?	Yes <u>X</u> No _____	
Remarks: Antecedent precipitation was "wetter than average". Depression wetland at the base of wooded hillside. This wetland receives water from a field drainage (Stream 1) and discharges water out an ephemeral creek (Stream 2).		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>80.00</u> (A/B)																
1. <u>Acer negundo</u>	<u>60</u>	<u>Y</u>	<u>FAC</u>																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____	Prevalence Index worksheet: <table border="0"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>55</u></td> <td>x 2 = <u>110</u></td> </tr> <tr> <td>FAC species <u>80</u></td> <td>x 3 = <u>240</u></td> </tr> <tr> <td>FACU species <u>30</u></td> <td>x 4 = <u>120</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>165</u> (A)</td> <td><u>470</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>2.85</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>55</u>	x 2 = <u>110</u>	FAC species <u>80</u>	x 3 = <u>240</u>	FACU species <u>30</u>	x 4 = <u>120</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>165</u> (A)	<u>470</u> (B)	Prevalence Index = B/A = <u>2.85</u>	
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Sapling/Shrub Stratum (Plot size: <u>15'</u>)																				
1. <u>acer negundo</u>	<u>20</u>	<u>Y</u>	<u>FAC</u>																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
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Herb Stratum (Plot size: <u>5'</u>)																				
1. <u>Galium aparine</u>	<u>30</u>	<u>Y</u>	<u>FACU</u>																	
2. <u>Phalaris arundinacea</u>	<u>25</u>	<u>Y</u>	<u>FACW</u>																	
3. <u>Laportea canadensis</u>	<u>20</u>	<u>Y</u>	<u>FACW</u>																	
4. <u>Solidago gigantea</u>	<u>10</u>	<u>N</u>	<u>FACW</u>																	
5. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes <u>X</u> No _____																
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____	Woody Vine Stratum (Plot size: _____)																
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____	Remarks: (Include photo numbers here or on a separate sheet.)																
_____	_____	_____	_____																	

SOIL

Sampling Point: 3Wa

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10 YR 3/1	100					sa cl loam	
6-10	10 YR 4/1	90	7.5 YR 4/6	10	C	M	sandy loam	
10-14	10 YR 3/1	100					sandy loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- ☐ Histosol (A1)
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☐ 2 cm Muck (A10)
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☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- ☐ Coast Prairie Redox (A16)
☐ Iron-Manganese Masses (F12)
☐ Other (Explain in Remarks)

³Indicators 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 ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
☒ High Water Table (A2)
☒ Saturation (A3)
☐ Water Marks (B1)
☐ Sediment Deposits (B2)
☐ Drift Deposits (B3)
☐ Algal Mat or Crust (B4)
☐ Iron Deposits (B5)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Sparsely Vegetated Concave Surface (B8)

- ☐ Water-Stained Leaves (B9)
☐ Aquatic Fauna (B13)
☐ True Aquatic Plants (B14)
☐ 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)
☐ Gauge or Well Data (D9)
☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Crayfish Burrows (C8)
☒ Saturation Visible on Aerial Imagery (C9)
☐ Stunted or Stressed Plants (D1)
☒ Geomorphic Position (D2)
☒ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____
 Water Table Present? Yes ☒ No ☐ Depth (inches): 7
 Saturation Present? Yes ☒ No ☐ Depth (inches): 5
 (includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Kemmetmueller Property City/County: Rogers/Hennepin Sampling Date: 5/8/23

Applicant/Owner: Veit and Co. State: MN Sampling Point: 3Ua

Investigator(s): Danny Margarit Section, Township, Range: Section 16, T 120N, R 23W

Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex

Slope (%): 2 Lat: 45.20222 Long: -93.60194 Datum: NAD 83

Soil Map Unit Name: Dorset-Two Inlets complex, 2 to 6 percent slopes NWI or WWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)

Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____

Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	Is the Sampled Area within a Wetland?	Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>		
Wetland Hydrology Present?	Yes _____	No <u>X</u>		
Remarks:				
Antecedent precipitation was "wetter than average".				

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u>) <table> <tr> <th></th> <th>Absolute % Cover</th> <th>Dominant Species?</th> <th>Indicator Status</th> </tr> <tr> <td>1. <u>Acer negundo</u></td> <td><u>75</u></td> <td><u>Y</u></td> <td><u>FAC</u></td> </tr> <tr> <td>2. <u>Ulmus rubra</u></td> <td><u>15</u></td> <td><u>N</u></td> <td><u>FAC</u></td> </tr> <tr> <td>3. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>4. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td>5. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> </tr> <tr> <td colspan="2"><u>90</u> = Total Cover</td> <td colspan="2"></td> </tr> </table>		Absolute % Cover	Dominant Species?	Indicator Status	1. <u>Acer negundo</u>	<u>75</u>	<u>Y</u>	<u>FAC</u>	2. <u>Ulmus rubra</u>	<u>15</u>	<u>N</u>	<u>FAC</u>	3. _____	_____	_____	_____	4. _____	_____	_____	_____	5. _____	_____	_____	_____	<u>90</u> = Total Cover				Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>4</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>80.00</u> (A/B)																
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SOIL

Sampling Point: 3Ua

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-32	10 YR 2/1	100					sandy loam	
32-38	10 YR 4/3	100					sandy loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)

- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
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- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- ☐ Coast Prairie Redox (A16)
- ☐ Iron-Manganese Masses (F12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)

- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ 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)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
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- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes _____ No X

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Kemmetmueller Property City/County: Rogers/Hennepin Sampling Date: 5/8/23
 Applicant/Owner: Veit and Co. State: MN Sampling Point: 3Wb
 Investigator(s): Danny Margarit Section, Township, Range: Section 16, T 120N, R 23W
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave
 Slope (%): 0 Lat: 45.20144 Long: -93.60369 Datum: NAD 83
 Soil Map Unit Name: Lester-Metea complex, 18 to 25 percent slopes NWI or WWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____	Is the Sampled Area within a Wetland? Yes <u>X</u> No _____
Hydric Soil Present? Yes <u>X</u> No _____	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks: Antecedent precipitation was "wetter than average".	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.00</u> (A/B)																		
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Woody Vine Stratum (Plot size: _____) 1. _____ 2. _____ _____ = Total Cover																						
Remarks: (Include photo numbers here or on a separate sheet.)																						

SOIL

Sampling Point: 3Wb

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-5	10 YR 3/2	95	5 YR 4/6	5	C	M	sa cl loam	
5-9	10 YR 4/2	80	5 YR 3/4	20	C	M	sandy loam	
9-14	10 YR 3/2	85	5 YR 4/6	15	C	M	sa cl loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ 2 cm Muck (A10)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
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- ☐ Sandy Gleyed Matrix (S4)
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- ☐ Coast Prairie Redox (A16)
☐ Iron-Manganese Masses (F12)
☐ Other (Explain in Remarks)

³Indicators 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 ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
☒ High Water Table (A2)
☒ Saturation (A3)
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☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____
 Water Table Present? Yes ☒ No ☐ Depth (inches): 11
 Saturation Present? Yes ☒ No ☐ Depth (inches): 6
 (includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Kemmetmueller Property City/County: Rogers/Hennepin Sampling Date: 5/8/23
 Applicant/Owner: Veit and Co. State: MN Sampling Point: 3Ub
 Investigator(s): Danny Margarit Section, Township, Range: Section 16, T 120N, R 23W
 Landform (hillslope, terrace, etc.): mound Local relief (concave, convex, none): convex
 Slope (%): 0 Lat: 45.20144 Long: -93.60107 Datum: NAD 83
 Soil Map Unit Name: Hamel, overwash-Hamel complex, 0 to 3 percent slopes NWI or WWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	Is the Sampled Area within a Wetland?	Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>		
Wetland Hydrology Present?	Yes _____	No <u>X</u>		
Remarks: Antecedent precipitation was "wetter than average".				

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33.33</u> (A/B)														
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
_____ = Total Cover				Prevalence Index worksheet: <table> <tr> <th>Total % Cover of:</th> <th>Multiply by:</th> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>85</u></td> <td>x 2 = <u>170</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>25</u></td> <td>x 4 = <u>100</u></td> </tr> <tr> <td>UPL species <u>10</u></td> <td>x 5 = <u>50</u></td> </tr> <tr> <td>Column Totals: <u>120</u> (A)</td> <td><u>320</u> (B)</td> </tr> </table> Prevalence Index = B/A = <u>2.67</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>85</u>	x 2 = <u>170</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>25</u>	x 4 = <u>100</u>	UPL species <u>10</u>	x 5 = <u>50</u>	Column Totals: <u>120</u> (A)	<u>320</u> (B)
Total % Cover of:	Multiply by:																	
OBL species <u>0</u>	x 1 = <u>0</u>																	
FACW species <u>85</u>	x 2 = <u>170</u>																	
FAC species <u>0</u>	x 3 = <u>0</u>																	
FACU species <u>25</u>	x 4 = <u>100</u>																	
UPL species <u>10</u>	x 5 = <u>50</u>																	
Column Totals: <u>120</u> (A)	<u>320</u> (B)																	
Sapling/Shrub Stratum (Plot size: <u>15'</u>)				Hydrophytic Vegetation Indicators: _____ Dominance Test is >50% <u>X</u> Prevalence Index is ≤3.0 ¹ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
1. <u>Rosa woodsii</u>	<u>25</u>	<u>Y</u>	<u>FACU</u>															
2. <u>Ribes missouriense</u>	<u>15</u>	<u>Y</u>	<u>NI</u>															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
_____ = Total Cover				Hydrophytic Vegetation Present? Yes <u>X</u> No _____														
Herb Stratum (Plot size: <u>5'</u>)																		
1. <u>Phalaris arundinacea</u>	<u>70</u>	<u>Y</u>	<u>FACW</u>															
2. <u>Urtica dioica</u>	<u>15</u>	<u>N</u>	<u>FACW</u>															
3. <u>Verbascum thapsus</u>	<u>10</u>	<u>N</u>	<u>UPL</u>															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
_____ = Total Cover																		
Woody Vine Stratum (Plot size: _____)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
_____ = Total Cover																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: 3Ub

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-7	10 YR 3/2	100					sandy loam	
7-13	10 YR 4/3	100					sandy loam	
13-24	10 YR 3/1	90	5 YR 4/6	10	C	M	sandy loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.

²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)

- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- ☐ Coast Prairie Redox (A16)
- ☐ Iron-Manganese Masses (F12)
- ☐ Other (Explain in Remarks)

³Indicators 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 ☒

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)

- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ 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)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☐ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☐ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes _____ No ☒ Depth (inches): _____

Water Table Present? Yes ☒ No _____ Depth (inches): 18

Saturation Present? Yes ☒ No _____ Depth (inches): 15
(includes capillary fringe)

Wetland Hydrology Present? Yes _____ No ☒

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Kemmetmueller Property City/County: Rogers/Hennepin Sampling Date: 5/8/23
 Applicant/Owner: Veit and Co. State: MN Sampling Point: U101
 Investigator(s): Danny Margarit Section, Township, Range: Section 16, T 120N, R 23W
 Landform (hillslope, terrace, etc.): hillslope Local relief (concave, convex, none): convex
 Slope (%): 8 Lat: 45.20346 Long: -93.60309 Datum: NAD 83
 Soil Map Unit Name: Dorset-Two Inlets complex, 6 to 12 percent slopes NWI or WWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	Is the Sampled Area within a Wetland?	Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>		
Wetland Hydrology Present?	Yes _____	No <u>X</u>		
Remarks: Antecedent precipitation was "wetter than average". Test hole to check reed canarygrass clearing.				

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>100.00</u> (A/B)																		
1. _____	_____	_____	_____																			
2. _____	_____	_____	_____																			
3. _____	_____	_____	_____																			
4. _____	_____	_____	_____																			
5. _____	_____	_____	_____	Prevalence Index worksheet: <table border="0"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>100</u></td> <td>x 2 = <u>200</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>100</u> (A)</td> <td><u>200</u> (B)</td> </tr> <tr> <td colspan="4">Prevalence Index = B/A = <u>2.00</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>100</u>	x 2 = <u>200</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>100</u> (A)	<u>200</u> (B)	Prevalence Index = B/A = <u>2.00</u>			
Total % Cover of:	Multiply by:																					
OBL species <u>0</u>	x 1 = <u>0</u>																					
FACW species <u>100</u>	x 2 = <u>200</u>																					
FAC species <u>0</u>	x 3 = <u>0</u>																					
FACU species <u>0</u>	x 4 = <u>0</u>																					
UPL species <u>0</u>	x 5 = <u>0</u>																					
Column Totals: <u>100</u> (A)	<u>200</u> (B)																					
Prevalence Index = B/A = <u>2.00</u>																						
_____ = Total Cover																						
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																						
1. _____	_____	_____	_____																			
2. _____	_____	_____	_____																			
3. _____	_____	_____	_____																			
4. _____	_____	_____	_____																			
5. _____	_____	_____	_____																			
_____ = Total Cover																						
Herb Stratum (Plot size: <u>5'</u>)																						
1. <u>Phalaris arundinacea</u>	<u>100</u>	<u>Y</u>	<u>FACW</u>																			
2. _____	_____	_____	_____																			
3. _____	_____	_____	_____																			
4. _____	_____	_____	_____																			
5. _____	_____	_____	_____																			
6. _____	_____	_____	_____																			
7. _____	_____	_____	_____																			
8. _____	_____	_____	_____																			
9. _____	_____	_____	_____																			
10. _____	_____	_____	_____																			
_____ = Total Cover																						
Woody Vine Stratum (Plot size: _____)																						
1. _____	_____	_____	_____																			
2. _____	_____	_____	_____																			
_____ = Total Cover																						
Hydrophytic Vegetation Indicators: <u>X</u> Dominance Test is >50% <u>X</u> Prevalence Index is ≤3.0 ¹ _____ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) _____ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																						
Hydrophytic Vegetation Present? Yes <u>X</u> No _____																						
Remarks: (Include photo numbers here or on a separate sheet.)																						

SOIL

Sampling Point: U101

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-19	10 YR 3/3	100					loam	
19-22	10 YR 3/4	100					sandy loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ 2 cm Muck (A10)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ 5 cm Mucky Peat or Peat (S3)

- ☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- ☐ Coast Prairie Redox (A16)
☐ Iron-Manganese Masses (F12)
☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
☐ High Water Table (A2)
☐ Saturation (A3)
☐ Water Marks (B1)
☐ Sediment Deposits (B2)
☐ Drift Deposits (B3)
☐ Algal Mat or Crust (B4)
☐ Iron Deposits (B5)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Sparsely Vegetated Concave Surface (B8)

- ☐ Water-Stained Leaves (B9)
☐ Aquatic Fauna (B13)
☐ True Aquatic Plants (B14)
☐ 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)
☐ Gauge or Well Data (D9)
☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Stunted or Stressed Plants (D1)
☐ Geomorphic Position (D2)
☒ FAC-Neutral Test (D5)

Field Observations:Surface Water Present? Yes _____ No X Depth (inches): _____Water Table Present? Yes _____ No X Depth (inches): _____Saturation Present? Yes _____ No X Depth (inches): _____
(includes capillary fringe)Wetland Hydrology Present? Yes _____ No X

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Kemmetmueller Property City/County: Rogers/Hennepin Sampling Date: 5/8/23
 Applicant/Owner: Veit and Co. State: MN Sampling Point: U102
 Investigator(s): Danny Margarit Section, Township, Range: Section 16, T 120N, R 23W
 Landform (hillslope, terrace, etc.): flat Local relief (concave, convex, none): none
 Slope (%): 0 Lat: 45.20176 Long: -93.60369 Datum: NAD 83
 Soil Map Unit Name: Dorset-Two Inlets complex, 12 to 18 percent slopes NWI or WWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)
 Are Vegetation _____, Soil _____, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes X No _____
 Are Vegetation _____, Soil _____, or Hydrology _____ naturally problematic? (If needed, explain any answers in Remarks.)

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

Hydrophytic Vegetation Present?	Yes <u>X</u>	No _____	Is the Sampled Area within a Wetland?	Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>		
Wetland Hydrology Present?	Yes _____	No <u>X</u>		
Remarks: Antecedent precipitation was "wetter than average". Test hole to verify aerial photo review location #18.				

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)																
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
_____ = Total Cover				Prevalence Index worksheet: <table border="0"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>0</u> (A)</td> <td><u>0</u> (B)</td> </tr> <tr> <td colspan="2">Prevalence Index = B/A = <u>0</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>0</u> (A)	<u>0</u> (B)	Prevalence Index = B/A = <u>0</u>	
Total % Cover of:	Multiply by:																			
OBL species <u>0</u>	x 1 = <u>0</u>																			
FACW species <u>0</u>	x 2 = <u>0</u>																			
FAC species <u>0</u>	x 3 = <u>0</u>																			
FACU species <u>0</u>	x 4 = <u>0</u>																			
UPL species <u>0</u>	x 5 = <u>0</u>																			
Column Totals: <u>0</u> (A)	<u>0</u> (B)																			
Prevalence Index = B/A = <u>0</u>																				
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
_____ = Total Cover																				
Herb Stratum (Plot size: <u>5'</u>)																				
1. <i>Phalaris arundinacea</i>	<u>100</u>	<u>Y</u>	_____																	
2. _____	_____	_____	_____																	
3. _____	_____	_____	_____																	
4. _____	_____	_____	_____																	
5. _____	_____	_____	_____																	
6. _____	_____	_____	_____																	
7. _____	_____	_____	_____																	
8. _____	_____	_____	_____																	
9. _____	_____	_____	_____																	
10. _____	_____	_____	_____																	
_____ = Total Cover																				
Woody Vine Stratum (Plot size: _____)																				
1. _____	_____	_____	_____																	
2. _____	_____	_____	_____																	
_____ = Total Cover																				
Remarks: (Include photo numbers here or on a separate sheet.)																				

SOIL

Sampling Point: U102

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-13	10 YR 3/2	100					sandy loam	
13-20	10 YR 3/4	100					loamy sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ 2 cm Muck (A10)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ 5 cm Mucky Peat or Peat (S3)

- ☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- ☐ Coast Prairie Redox (A16)
☐ Iron-Manganese Masses (F12)
☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
☐ High Water Table (A2)
☐ Saturation (A3)
☐ Water Marks (B1)
☐ Sediment Deposits (B2)
☐ Drift Deposits (B3)
☐ Algal Mat or Crust (B4)
☐ Iron Deposits (B5)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Sparsely Vegetated Concave Surface (B8)

- ☐ Water-Stained Leaves (B9)
☐ Aquatic Fauna (B13)
☐ True Aquatic Plants (B14)
☐ 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)
☐ Gauge or Well Data (D9)
☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Crayfish Burrows (C8)
☐ Saturation Visible on Aerial Imagery (C9)
☐ Stunted or Stressed Plants (D1)
☐ Geomorphic Position (D2)
☒ FAC-Neutral Test (D5)

Field Observations:Surface Water Present? Yes _____ No X Depth (inches): _____Water Table Present? Yes _____ No X Depth (inches): _____Saturation Present? Yes _____ No X Depth (inches): _____
(includes capillary fringe)Wetland Hydrology Present? Yes _____ No X

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Kemmetmueller Property City/County: Rogers/Hennepin Sampling Date: 5/8/23
 Applicant/Owner: Veit and Co. State: MN Sampling Point: U103
 Investigator(s): Danny Margarit Section, Township, Range: Section 16, T 120N, R 23W
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave
 Slope (%): 0 Lat: 45.19991 Long: -93.60109 Datum: NAD 83
 Soil Map Unit Name: Hamel, overwash-Hamel complex, 0 to 3 percent slopes NWI or WWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)
 Are Vegetation X, Soil X, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X
 Are Vegetation X, Soil X, 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 <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present?	Yes <u>X</u> No _____	
Wetland Hydrology Present?	Yes <u>X</u> No _____	
Remarks: Antecedent precipitation was "wetter than average". Test hole to verify Aerial Photo Review location #14.		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>0</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)																																																																																																																							
1. _____	_____	_____	_____																																																																																																																								
2. _____	_____	_____	_____																																																																																																																								
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4. _____	_____	_____	_____																																																																																																																								
5. _____	_____	_____	_____	Prevalence Index worksheet: <table border="0"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>0</u> (A)</td> <td><u>0</u> (B)</td> </tr> <tr> <td colspan="4">_____ = Total Cover</td> <td>Prevalence Index = B/A = <u>0</u></td> </tr> <tr> <td colspan="4"> Sapling/Shrub Stratum (Plot size: <u>15'</u>) </td> <td rowspan="5"> Hydrophytic Vegetation Indicators: ___ Dominance Test is >50% ___ Prevalence Index is ≤3.0¹ ___ Morphological Adaptations¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation¹ (Explain) ¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic. </td> </tr> <tr><td>1. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>2. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>3. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>4. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr> <td>5. _____</td> <td>_____</td> <td>_____</td> <td>_____</td> <td rowspan="5"> Hydrophytic Vegetation Present? Yes _____ No <u>X</u> </td> </tr> <tr> <td colspan="4">_____ = Total Cover</td> </tr> <tr> <td colspan="4"> Herb Stratum (Plot size: <u>5'</u>) </td> </tr> <tr><td>1. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>2. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>3. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>4. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>5. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>6. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>7. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>8. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>9. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>10. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr> <td colspan="4">_____ = Total Cover</td> <td rowspan="3"> Hydrophytic Vegetation Present? Yes _____ No <u>X</u> </td> </tr> <tr> <td colspan="4"> Woody Vine Stratum (Plot size: _____) </td> </tr> <tr><td>1. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr><td>2. _____</td><td>_____</td><td>_____</td><td>_____</td></tr> <tr> <td colspan="4">_____ = Total Cover</td> </tr> <tr> <td colspan="5">Remarks: (Include photo numbers here or on a separate sheet.) 100% bare ground (tilled).</td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>0</u> (A)	<u>0</u> (B)	_____ = Total Cover				Prevalence Index = B/A = <u>0</u>	Sapling/Shrub Stratum (Plot size: <u>15'</u>)				Hydrophytic Vegetation Indicators: ___ Dominance Test is >50% ___ Prevalence Index is ≤3.0 ¹ ___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.	1. _____	_____	_____	_____	2. _____	_____	_____	_____	3. _____	_____	_____	_____	4. _____	_____	_____	_____	5. _____	_____	_____	_____	Hydrophytic Vegetation Present? Yes _____ No <u>X</u>	_____ = Total Cover				Herb Stratum (Plot size: <u>5'</u>)				1. _____	_____	_____	_____	2. _____	_____	_____	_____	3. _____	_____	_____	_____	4. _____	_____	_____	_____	5. _____	_____	_____	_____	6. _____	_____	_____	_____	7. _____	_____	_____	_____	8. _____	_____	_____	_____	9. _____	_____	_____	_____	10. _____	_____	_____	_____	_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No <u>X</u>	Woody Vine Stratum (Plot size: _____)				1. _____	_____	_____	_____	2. _____	_____	_____	_____	_____ = Total Cover				Remarks: (Include photo numbers here or on a separate sheet.) 100% bare ground (tilled).				
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Remarks: (Include photo numbers here or on a separate sheet.) 100% bare ground (tilled).																																																																																																																											

SOIL

Sampling Point: U103

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-32	10 YR 2/1	100					sa cl loam	
32-36	10 YR 5/2	95	5 YR 4/6	5	C	M	sandy loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ 2 cm Muck (A10)
☐ Depleted Below Dark Surface (A11)
☒ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ 5 cm Mucky Peat or Peat (S3)

- ☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- ☐ Coast Prairie Redox (A16)
☐ Iron-Manganese Masses (F12)
☐ Other (Explain in Remarks)

³Indicators 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 ☐

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
☐ High Water Table (A2)
☐ Saturation (A3)
☐ Water Marks (B1)
☐ Sediment Deposits (B2)
☐ Drift Deposits (B3)
☐ Algal Mat or Crust (B4)
☐ Iron Deposits (B5)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Sparsely Vegetated Concave Surface (B8)

- ☐ Water-Stained Leaves (B9)
☐ Aquatic Fauna (B13)
☐ True Aquatic Plants (B14)
☐ 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)
☐ Gauge or Well Data (D9)
☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Crayfish Burrows (C8)
☒ Saturation Visible on Aerial Imagery (C9)
☐ Stunted or Stressed Plants (D1)
☒ Geomorphic Position (D2)
☐ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present? Yes ☐ No ☒ Depth (inches): _____
 Water Table Present? Yes ☐ No ☒ Depth (inches): _____
 Saturation Present? Yes ☐ No ☒ Depth (inches): _____
 (includes capillary fringe)

Wetland Hydrology Present? Yes ☒ No ☐

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

Remarks:

No primary indicators observed during "wetter than average" antecedent precipitation conditions.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Kemmetmueller Property City/County: Rogers/Hennepin Sampling Date: 5/8/23
 Applicant/Owner: Veit and Co. State: MN Sampling Point: U104
 Investigator(s): Danny Margarit Section, Township, Range: Section 16, T 120N, R 23W
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave
 Slope (%): 0 Lat: 45.20514 Long: -93.59894 Datum: NAD 83
 Soil Map Unit Name: Dorset-Two Inlets complex, 6 to 12 percent slopes NWI or WWI classification: PEM1Af

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)
 Are Vegetation X, Soil X, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X
 Are Vegetation X, Soil X, 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 <u>X</u>	No _____	Is the Sampled Area within a Wetland?	Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____	No <u>X</u>		
Wetland Hydrology Present?	Yes <u>X</u>	No _____		
Remarks:				
Antecedent precipitation was "wetter than average". Test hole to verify Aerial Photo Review location #3				

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>1</u> (A) Total Number of Dominant Species Across All Strata: <u>3</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>33.33</u> (A/B)														
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
_____ = Total Cover				Prevalence Index worksheet: <table> <tr> <th>Total % Cover of:</th><th>Multiply by:</th></tr> <tr> <td>OBL species <u>0</u></td><td>x 1 = <u>0</u></td></tr> <tr> <td>FACW species <u>30</u></td><td>x 2 = <u>60</u></td></tr> <tr> <td>FAC species <u>0</u></td><td>x 3 = <u>0</u></td></tr> <tr> <td>FACU species <u>20</u></td><td>x 4 = <u>80</u></td></tr> <tr> <td>UPL species <u>0</u></td><td>x 5 = <u>0</u></td></tr> <tr> <td>Column Totals: <u>50</u> (A)</td><td><u>140</u> (B)</td></tr> </table> Prevalence Index = B/A = <u>2.80</u>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>30</u>	x 2 = <u>60</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>20</u>	x 4 = <u>80</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>50</u> (A)	<u>140</u> (B)
Total % Cover of:	Multiply by:																	
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Column Totals: <u>50</u> (A)	<u>140</u> (B)																	
Sapling/Shrub Stratum (Plot size: <u>15'</u>)				Hydrophytic Vegetation Indicators: ___ Dominance Test is >50% <u>X</u> Prevalence Index is ≤3.0 ¹ ___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.														
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
_____ = Total Cover				Hydrophytic Vegetation Present? Yes <u>X</u> No _____														
Herb Stratum (Plot size: <u>5'</u>)																		
1. <u>Triticum aestivum</u>	<u>50</u>	<u>Y</u>	<u>NI</u>															
2. <u>Phalaris arundinacea</u>	<u>30</u>	<u>Y</u>	<u>FACW</u>															
3. <u>Arctium minus</u>	<u>20</u>	<u>Y</u>	<u>FACU</u>															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
_____ = Total Cover																		
Woody Vine Stratum (Plot size: _____)																		
1. _____	_____	_____	_____															
2. _____	_____	_____	_____															
3. _____	_____	_____	_____															
4. _____	_____	_____	_____															
5. _____	_____	_____	_____															
6. _____	_____	_____	_____															
7. _____	_____	_____	_____															
8. _____	_____	_____	_____															
9. _____	_____	_____	_____															
10. _____	_____	_____	_____															
_____ = Total Cover																		
Remarks: (Include photo numbers here or on a separate sheet.)																		

SOIL

Sampling Point: U104

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-37	10 YR 2/2	100					sandy loam	
37-39	10 YR 5/3	100					sandy loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains.²Location: PL=Pore Lining, M=Matrix.**Hydric Soil Indicators:**

- ☐ Histosol (A1)
☐ Histic Epipedon (A2)
☐ Black Histic (A3)
☐ Hydrogen Sulfide (A4)
☐ Stratified Layers (A5)
☐ 2 cm Muck (A10)
☐ Depleted Below Dark Surface (A11)
☐ Thick Dark Surface (A12)
☐ Sandy Mucky Mineral (S1)
☐ 5 cm Mucky Peat or Peat (S3)

- ☐ Sandy Gleyed Matrix (S4)
☐ Sandy Redox (S5)
☐ Stripped Matrix (S6)
☐ Loamy Mucky Mineral (F1)
☐ Loamy Gleyed Matrix (F2)
☐ Depleted Matrix (F3)
☐ Redox Dark Surface (F6)
☐ Depleted Dark Surface (F7)
☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- ☐ Coast Prairie Redox (A16)
☐ Iron-Manganese Masses (F12)
☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
☐ High Water Table (A2)
☐ Saturation (A3)
☐ Water Marks (B1)
☐ Sediment Deposits (B2)
☐ Drift Deposits (B3)
☐ Algal Mat or Crust (B4)
☐ Iron Deposits (B5)
☐ Inundation Visible on Aerial Imagery (B7)
☐ Sparsely Vegetated Concave Surface (B8)

- ☐ Water-Stained Leaves (B9)
☐ Aquatic Fauna (B13)
☐ True Aquatic Plants (B14)
☐ 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)
☐ Gauge or Well Data (D9)
☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
☐ Drainage Patterns (B10)
☐ Dry-Season Water Table (C2)
☐ Crayfish Burrows (C8)
☒ Saturation Visible on Aerial Imagery (C9)
☐ Stunted or Stressed Plants (D1)
☒ Geomorphic Position (D2)
☐ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes X No _____

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

Remarks:

No primary indicators during "wetter than average" conditions.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Kemmetmueller Property City/County: Rogers/Hennepin Sampling Date: 5/8/23
 Applicant/Owner: Veit and Co. State: MN Sampling Point: U105
 Investigator(s): Danny Margarit Section, Township, Range: Section 16, T 120N, R 23W
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave
 Slope (%): 0 Lat: 45.20452 Long: -93.60011 Datum: NAD 83
 Soil Map Unit Name: Dorset-Two Inlets complex, 6 to 12 percent slopes NWI or WWI classification: PEM1Af

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)
 Are Vegetation X, Soil X, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X
 Are Vegetation X, Soil X, 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 <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present?	Yes _____ No <u>X</u>	
Wetland Hydrology Present?	Yes <u>X</u> No _____	
Remarks: Antecedent precipitation was "wetter than average". Test hole to verify Aerial Photo Review location #2.		

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				Prevalence Index worksheet: Total % Cover of: _____ Multiply by: _____ OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>0</u> x 3 = <u>0</u> FACU species <u>0</u> x 4 = <u>0</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>0</u> (A) <u>0</u> (B) Prevalence Index = B/A = <u>0</u>
Sapling/Shrub Stratum (Plot size: <u>15'</u>)				
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
_____ = Total Cover				
Herb Stratum (Plot size: <u>5'</u>)				
1. <u>Triticum aestivum</u>	<u>90</u>	<u>Y</u>	<u>NI</u>	
2. _____	_____	_____	_____	
3. _____	_____	_____	_____	
4. _____	_____	_____	_____	
5. _____	_____	_____	_____	
6. _____	_____	_____	_____	
7. _____	_____	_____	_____	
8. _____	_____	_____	_____	
9. _____	_____	_____	_____	
10. _____	_____	_____	_____	
_____ = Total Cover				
Woody Vine Stratum (Plot size: _____)				Hydrophytic Vegetation Indicators: ___ Dominance Test is >50% ___ Prevalence Index is ≤3.0 ¹ ___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.
1. _____	_____	_____	_____	
2. _____	_____	_____	_____	
_____ = Total Cover				Hydrophytic Vegetation Present? Yes _____ No <u>X</u>
Remarks: (Include photo numbers here or on a separate sheet.)				

SOIL

Sampling Point: U105

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-29	10 YR 2/2	100					sandy loam	
29-35	10 YR 3/2	100					sandy loam	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)

- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- ☐ Coast Prairie Redox (A16)
- ☐ Iron-Manganese Masses (F12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)

- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ 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)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☒ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☒ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes X No _____

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

Remarks:

No primary indicators during "wetter than average" conditions.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Kemmetmueller Property City/County: Rogers/Hennepin Sampling Date: 5/8/23
 Applicant/Owner: Veit and Co. State: MN Sampling Point: U106
 Investigator(s): Danny Margarit Section, Township, Range: Section 16, T 120N, R 23W
 Landform (hillslope, terrace, etc.): depression Local relief (concave, convex, none): concave
 Slope (%): 0 Lat: 45.20429 Long: -93.60201 Datum: NAD 83
 Soil Map Unit Name: Dorset-Two Inlets complex, 6 to 12 percent slopes NWI or WWI classification: N/A

Are climatic / hydrologic conditions on the site typical for this time of year? Yes _____ No X (If no, explain in Remarks.)
 Are Vegetation X, Soil X, or Hydrology _____ significantly disturbed? Are "Normal Circumstances" present? Yes _____ No X
 Are Vegetation X, Soil X, 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 <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Hydric Soil Present? Yes _____ No <u>X</u>	
Wetland Hydrology Present? Yes <u>X</u> No _____	
Remarks: Antecedent precipitation was "wetter than average". Test hole to verify Aerial Photo Review location #4.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30'</u>)	Absolute % Cover	Dominant Species?	Indicator Status	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A) Total Number of Dominant Species Across All Strata: <u>1</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>0</u> (A/B)																		
1. _____	_____	_____	_____																			
2. _____	_____	_____	_____																			
3. _____	_____	_____	_____																			
4. _____	_____	_____	_____																			
5. _____	_____	_____	_____	Prevalence Index worksheet: <table border="0"> <tr> <td>Total % Cover of:</td> <td>Multiply by:</td> </tr> <tr> <td>OBL species <u>0</u></td> <td>x 1 = <u>0</u></td> </tr> <tr> <td>FACW species <u>0</u></td> <td>x 2 = <u>0</u></td> </tr> <tr> <td>FAC species <u>0</u></td> <td>x 3 = <u>0</u></td> </tr> <tr> <td>FACU species <u>0</u></td> <td>x 4 = <u>0</u></td> </tr> <tr> <td>UPL species <u>0</u></td> <td>x 5 = <u>0</u></td> </tr> <tr> <td>Column Totals: <u>0</u> (A)</td> <td><u>0</u> (B)</td> </tr> <tr> <td colspan="4">Prevalence Index = B/A = <u>0</u></td> </tr> </table>	Total % Cover of:	Multiply by:	OBL species <u>0</u>	x 1 = <u>0</u>	FACW species <u>0</u>	x 2 = <u>0</u>	FAC species <u>0</u>	x 3 = <u>0</u>	FACU species <u>0</u>	x 4 = <u>0</u>	UPL species <u>0</u>	x 5 = <u>0</u>	Column Totals: <u>0</u> (A)	<u>0</u> (B)	Prevalence Index = B/A = <u>0</u>			
Total % Cover of:	Multiply by:																					
OBL species <u>0</u>	x 1 = <u>0</u>																					
FACW species <u>0</u>	x 2 = <u>0</u>																					
FAC species <u>0</u>	x 3 = <u>0</u>																					
FACU species <u>0</u>	x 4 = <u>0</u>																					
UPL species <u>0</u>	x 5 = <u>0</u>																					
Column Totals: <u>0</u> (A)	<u>0</u> (B)																					
Prevalence Index = B/A = <u>0</u>																						
_____ = Total Cover																						
Sapling/Shrub Stratum (Plot size: <u>15'</u>)																						
1. _____	_____	_____	_____																			
2. _____	_____	_____	_____																			
3. _____	_____	_____	_____																			
4. _____	_____	_____	_____																			
5. _____	_____	_____	_____																			
_____ = Total Cover																						
Herb Stratum (Plot size: <u>5'</u>)																						
1. <u>Triticum aestivum</u>	<u>90</u>	<u>Y</u>	<u>NI</u>																			
2. _____	_____	_____	_____																			
3. _____	_____	_____	_____																			
4. _____	_____	_____	_____																			
5. _____	_____	_____	_____																			
6. _____	_____	_____	_____																			
7. _____	_____	_____	_____																			
8. _____	_____	_____	_____																			
9. _____	_____	_____	_____																			
10. _____	_____	_____	_____																			
_____ = Total Cover																						
Woody Vine Stratum (Plot size: _____)																						
1. _____	_____	_____	_____																			
2. _____	_____	_____	_____																			
_____ = Total Cover																						
Hydrophytic Vegetation Indicators: ___ Dominance Test is >50% ___ Prevalence Index is ≤3.0 ¹ ___ Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) ___ Problematic Hydrophytic Vegetation ¹ (Explain) ¹ Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.																						
Hydrophytic Vegetation Present? Yes _____ No <u>X</u>																						
Remarks: (Include photo numbers here or on a separate sheet.)																						

SOIL

Sampling Point: U106

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

Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-25	10 YR 2/2	100					sandy loam	
25-32	10 YR 3/4	100					loamy sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, CS=Covered or Coated Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ☐ Histosol (A1)
- ☐ Histic Epipedon (A2)
- ☐ Black Histic (A3)
- ☐ Hydrogen Sulfide (A4)
- ☐ Stratified Layers (A5)
- ☐ 2 cm Muck (A10)
- ☐ Depleted Below Dark Surface (A11)
- ☐ Thick Dark Surface (A12)
- ☐ Sandy Mucky Mineral (S1)
- ☐ 5 cm Mucky Peat or Peat (S3)

- ☐ Sandy Gleyed Matrix (S4)
- ☐ Sandy Redox (S5)
- ☐ Stripped Matrix (S6)
- ☐ Loamy Mucky Mineral (F1)
- ☐ Loamy Gleyed Matrix (F2)
- ☐ Depleted Matrix (F3)
- ☐ Redox Dark Surface (F6)
- ☐ Depleted Dark Surface (F7)
- ☐ Redox Depressions (F8)

Indicators for Problematic Hydric Soils³:

- ☐ Coast Prairie Redox (A16)
- ☐ Iron-Manganese Masses (F12)
- ☐ Other (Explain in Remarks)

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

Restrictive Layer (if observed):

Type: _____
Depth (inches): _____

Hydric Soil Present? Yes _____ No X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

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

- ☐ Surface Water (A1)
- ☐ High Water Table (A2)
- ☐ Saturation (A3)
- ☐ Water Marks (B1)
- ☐ Sediment Deposits (B2)
- ☐ Drift Deposits (B3)
- ☐ Algal Mat or Crust (B4)
- ☐ Iron Deposits (B5)
- ☐ Inundation Visible on Aerial Imagery (B7)
- ☐ Sparsely Vegetated Concave Surface (B8)

- ☐ Water-Stained Leaves (B9)
- ☐ Aquatic Fauna (B13)
- ☐ True Aquatic Plants (B14)
- ☐ 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)
- ☐ Gauge or Well Data (D9)
- ☐ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ☐ Surface Soil Cracks (B6)
- ☐ Drainage Patterns (B10)
- ☐ Dry-Season Water Table (C2)
- ☐ Crayfish Burrows (C8)
- ☒ Saturation Visible on Aerial Imagery (C9)
- ☐ Stunted or Stressed Plants (D1)
- ☒ Geomorphic Position (D2)
- ☐ FAC-Neutral Test (D5)

Field Observations:

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

Wetland Hydrology Present? Yes X No _____

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

Remarks:

No primary indicators during "wetter than average" conditions.

APPENDIX B

Table 1
Aerial Photo Review Results
 Kemmetmueller Property

Date Image Taken	4/28/1991	9/13/2010	8/12/2013	9/27/2015	8/31/2017	7/30/2019	6/18/2021	Percent	Hydric Soil	NWI	Wetland
Image Source	USGS	FSA	FSA	FSA	FSA	FSA	FSA	Wet	Mapped	Signature	Status
Climate Condition	wet	normal	normal	normal	normal	normal	normal				
AOI 1	WS	WS	WS	WS	WS	WS	WS	100%	Yes	Yes	Yes
AOI 2	SS	NV	SS	DO	DO	NV	SS	67%	No	Yes	Yes
AOI 3	SS	NV	SS	NV	NV	NV	SS	33%	No	Yes	Yes
AOI 4	SS	NV	SS	NV	NV	NV	SS	33%	No	No	FV
AOI 5	WS	WS	WS	WS	WS	WS	WS	100%	No	Yes	Yes
AOI 6	NV	NV	NV	NV	SS	NV	NV	17%	No	No	No
AOI 7	SS	NV	SS	NV	NV	NV	NV	17%	No	No	No
AOI 8	SS	NV	SS	NV	NV	NV	NV	17%	No	No	No
AOI 9	DO	NV	NV	NV	NV	NV	NV	0%	No	No	No
AOI 10	SS	NV	NV	NV	NV	NV	NV	0%	No	No	No
AOI 11	SS	NV	NV	NV	NV	NV	NV	0%	No	No	No
AOI 12	SS	NV	NV	NV	NV	NV	NV	0%	No	No	No
AOI 13	SS	NV	NV	NV	NV	NV	NV	0%	No	No	No
AOI 14	SS	SS	NV	NV	CS	DO	NV	50%	No	No	FV
AOI 15	SS	SS	NV	NV	NV	NV	NV	17%	No	No	No
AOI 16	SS	NV	NV	NV	NV	NV	NV	0%	No	No	No
AOI 17	CS	NV	WS	WS	WS	WS	WS	83%	No	No	FV
AOI 18	NV	WS	WS	WS	WS	WS	WS	100%	No	No	FV
AOI 19	DO	NV	NV	NV	NV	NV	NV	0%	No	No	No



Legend

- Aerial Photo Review Area of Interest
- Property Boundary

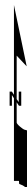


**CARLSON
McCAIN**

ENGINEERING \ SURVEYING \ ENVIRONMENTAL

1:3,000

0 250 Feet



**Figure 1 - 1991
Aerial Photo Review
Kemmetmueller Property
Rogers, Minnesota**



Legend

- Aerial Photo Review Area of Interest
- Property Boundary

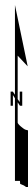


**CARLSON
McCAIN**

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1:3,000

0 250 Feet



**Figure 1 - 2010
Aerial Photo Review
Kemmetmueller Property
Rogers, Minnesota**



Legend

-  Aerial Photo Review Area of Interest
-  Property Boundary

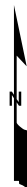


**CARLSON
McCAIN**

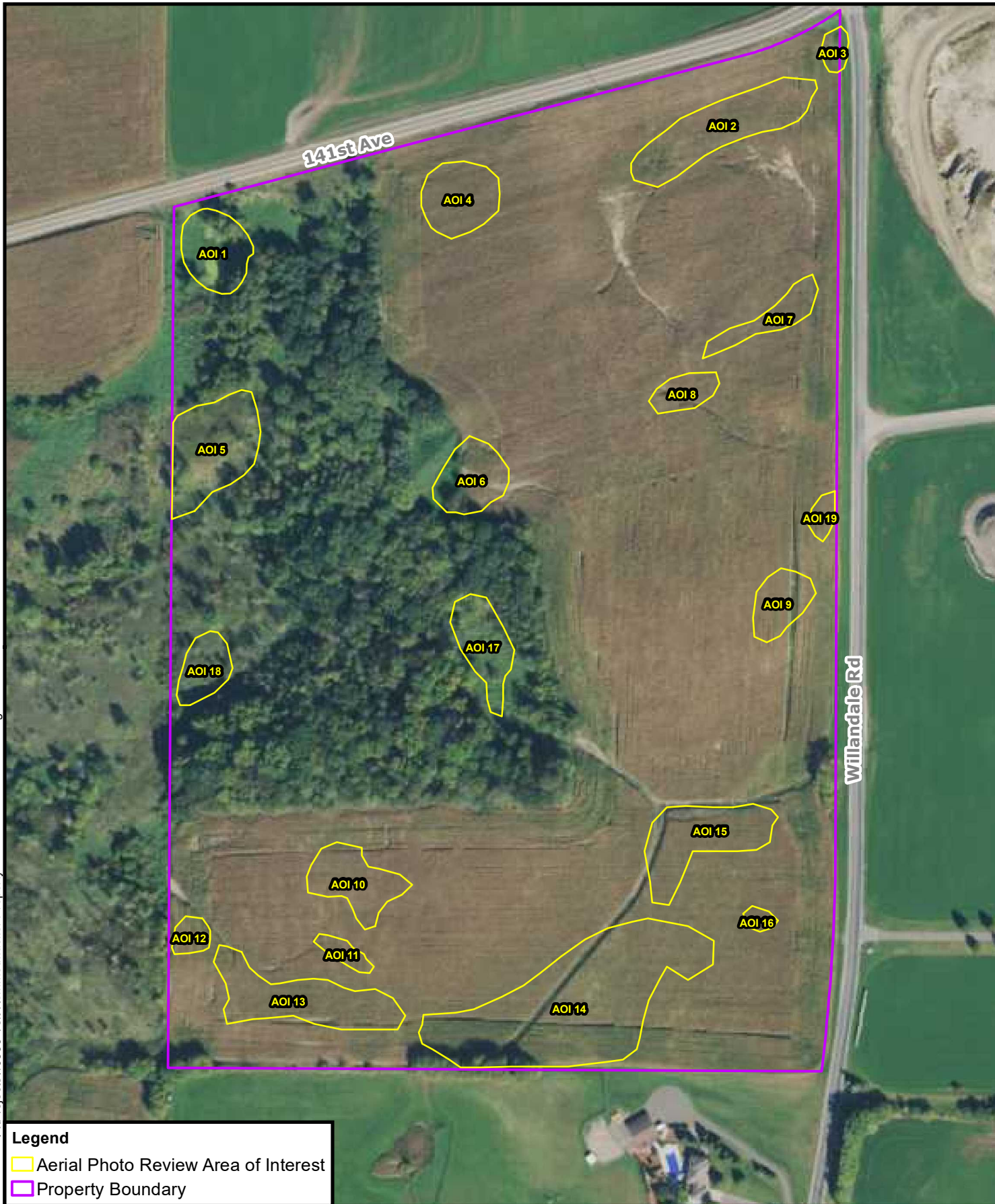
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1:3,000

0 250 Feet



**Figure 1 - 2013
Aerial Photo Review
Kemmetmueller Property
Rogers, Minnesota**



Legend

- Aerial Photo Review Area of Interest
- Property Boundary

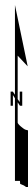


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1:3,000

0 250 Feet



**Figure 1 - 2015
Aerial Photo Review
Kemmetmueller Property
Rogers, Minnesota**



Legend

- Aerial Photo Review Area of Interest
- Property Boundary

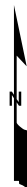


**CARLSON
McCAIN**

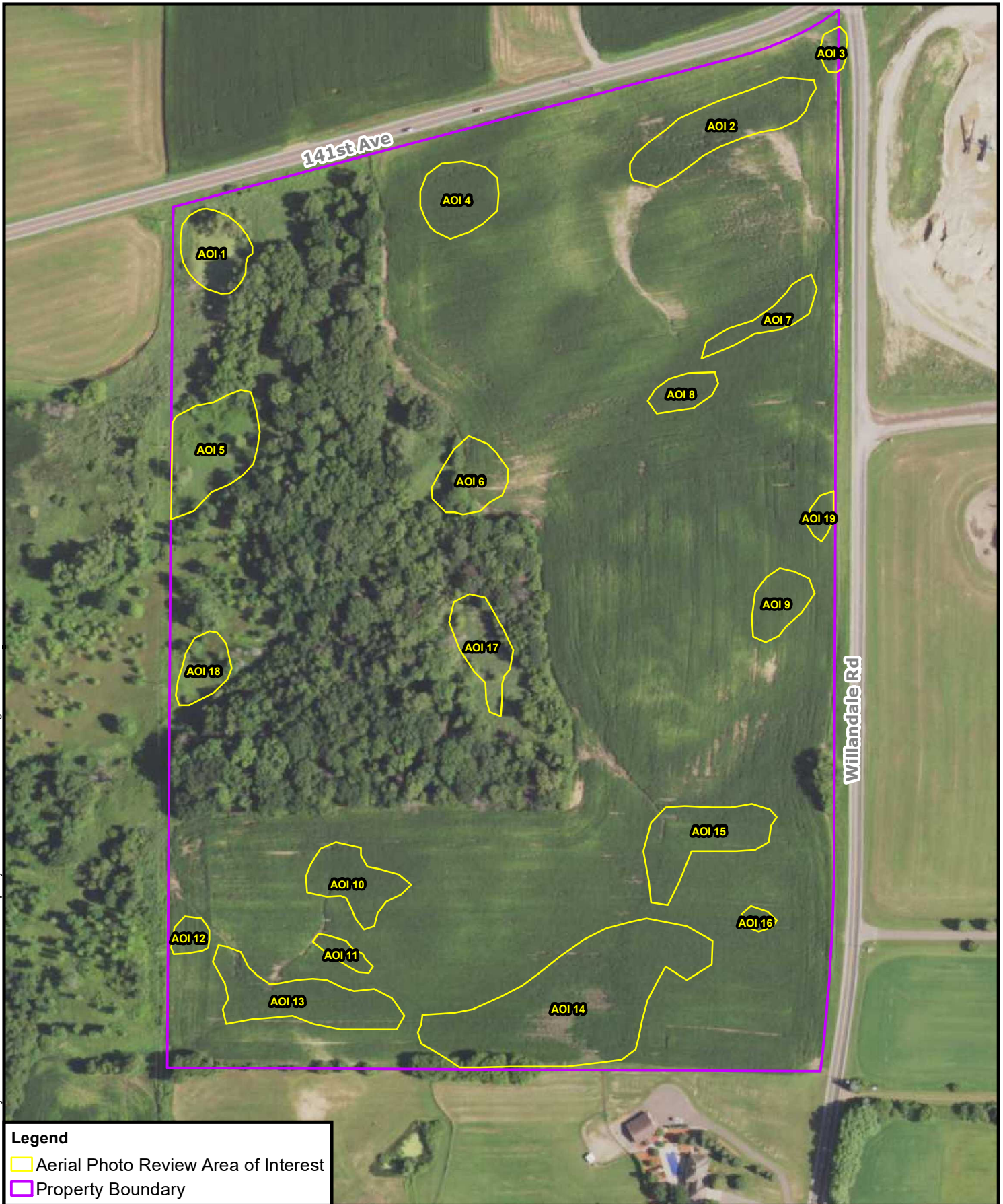
ENGINEERING \ SURVEYING \ ENVIRONMENTAL

1:3,000

0 250
Feet



**Figure 1 - 2017
Aerial Photo Review
Kemmetmueller Property
Rogers, Minnesota**



Legend

- Aerial Photo Review Area of Interest
- Property Boundary

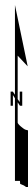


**CARLSON
McCAIN**

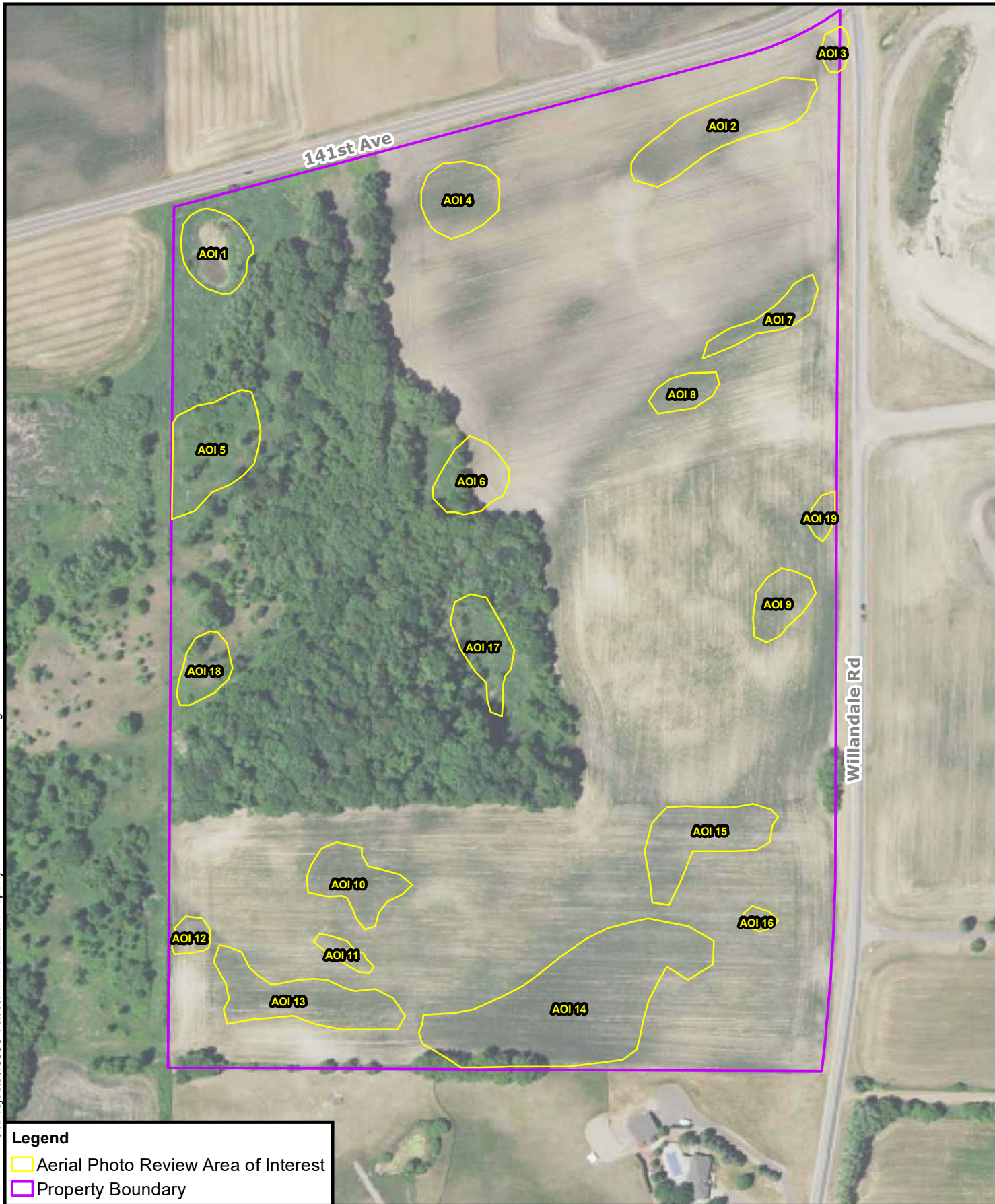
ENGINEERING \ SURVEYING \ ENVIRONMENTAL

1:3,000

0 250
Feet



**Figure 1 - 2019
Aerial Photo Review
Kemmetmueller Property
Rogers, Minnesota**



Legend

 Aerial Photo Review Area of Interest

 Property Boundary

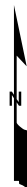


**CARLSON
McCAIN**

ENGINEERING \ SURVEYING \ ENVIRONMENTAL

1:3,000

0 250
Feet



**Figure 1 - 2021
Aerial Photo Review
Kemmetmueller Property
Rogers, Minnesota**

APPENDIX C



Photograph 1, view of Wetland 1 from test hole 1Wa, facing west.



Photograph 2, view of Wetland 1 from test hole 1Wa, facing southwest.



Photograph 3, View of Wetland 1 from the south edge, facing north.



Photograph 4, View of Wetland 2, facing west from the eastern edge.



Photograph 5, view of the western edge of Wetland 2 where it spills over the Property line, facing north.



Photograph 6, view of upland test hole U101, facing south.



Photograph 7, view of Wetland 3 from the center, facing southeast.



Photograph 8, view of Stream 1, facing southeast.



Photograph 9, view of Wetland 3 from southern end, facing northwest.



Photograph 10, view of upland test hole U102, facing north.



Photograph 11, view of southern portion of the Property, including upland test hole U103, facing east.



Photograph 12, view of center of the Property, facing northeast.



Photograph 13, view of northeast portion of the Property, facing northeast.



Photograph 14, view of upland test holes U104 and U105, facing southwest.



Photograph 15, view of upland test hole U106, facing northeast.



Photograph 16, view of the start of Stream 2, facing south.



Photograph 17, view of Stream 2 where it passes below former road through a culvert.



Photograph 18, view stream 2, facing northwest.



Photograph 19, view of Stream 2 where it empties into Wetland 1.

POLLUTION PREVENTION PLAN

Veit Pit

141st Avenue N & Willandale Road
Rogers, Minnesota

Prepared for:

Veit & Company, Inc.
14000 Veit Place
Rogers, MN 55374

April 29, 2024

Revised: June 25, 2024

Revised: August 13, 2024

Revised: October 2, 2024



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ENGINEERING \ LAND SURVEYING \ ENVIRONMENTAL

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FIGURES

Figure 1 Site Location Map
Sheets 1-5 P2 Plan Drawings

APPENDICES

Appendix A Inspections and Maintenance
Appendix B Spill Prevention and Response Plan
Appendix C HydroCAD Stormwater Analysis
Appendix D MNG49 General Permit

1.0 INTRODUCTION

This Pollution Prevention Plan (P2 Plan) has been developed on behalf of Veit & Company, Inc. (Veit) for use in controlling and minimizing impacts of stormwater and non-stormwater discharges resulting from sand and gravel mining operations. It has been designed to meet the requirements of the National Pollutant Discharge Elimination System (NPDES) and State Disposal System (SDS) General Permit MNG490000 for Nonmetallic Mining Operations and Associated Activities (MNG49), administered by the Minnesota Pollution Control Agency (MPCA), and the requirements of City of Rogers City Code (Ordinance) Chapter 125-91 pertaining to mining. A copy of the MNG49 permit is attached as Appendix D, and the requirements are herein incorporated by reference, as applicable.

1.1 Location and Activities of Site

Veit has applied for a City of Rogers Interim Use Permits (IUP) to operate a sand and gravel mine on a parcel located within Section 16, Township 120N, Range 23 W, Hennepin County, Minnesota. The parcel contains sand resources which will be mined and processed for use in redi-mix concrete, asphalt pavement, and as base material for private and public construction projects in the area. Currently the sites consist of mostly cropland, grassland and woodland.

The mining will take place on the following parcel, which are listed below according to the corresponding Hennepin County Parcel ID number:

Parcel ID 1612023320002

Owner	KJ Veit Companies, LLC
Address	ADDRESS NOT YET ASSIGNED (previous address 25715 Territorial Road, Rogers, MN 55374)
Mapped Acres	45.6169
Current Use	Residential - R2
PLSS Description	NW 1/4 of SW 1/4 And That Part Of SW 1/4 Of NW 1/4 Lying S Of Road Ex Road all in Section 16, Township 120, Range 23, in Hennepin County Minnesota.

The mining location and immediate vicinity are shown on Figure 1. A layout of the proposed mining plan can be found on the P2 Plan Drawings.

1.2 Site Area Calculations

The mining operation will occur in area designated as the Veit Pit, which will be permitted under an IUP with the City of Rogers. The Veit Pit will encompass approximately 39 acres, including approximately 33.66 acres of active mining and the remainder used for ingress/egress roads, screening, stockpiling, parking and buffer areas.

2.0 POTENTIAL POLLUTION SOURCES

2.1 Assessment of Activities

Excavation: Sand/Gravel Mining

Sand/gravel is mined from the site via the use of heavy construction equipment such as mobile excavators and loaders. The sand/gravel is stockpiled on-site for use at off-site construction sites. The sand/gravel is mined on an as-needed basis.

Crushing, Screening, Washing

Portable crushers and screeners will be brought to the site once per year to process imported material into useable aggregate. If used, aggregate wash water will be collected and discharged to a recycle basin. The recycle basin will settle fine particles and the clean water will then be reused for further washing. The basin will be lined with an impermeable barrier and excess fines will be blended with overburden from the site and used as on-site reclamation fill.

Overburden and Product Stockpiles

Stockpiles will be created for imported rubble, sand, topsoil and overburden/reclamation fill soil. The topsoil stockpile will be just outside of the southeast mining boundary and will be evenly graded and surrounded by silt fence on the downslope side. All other stockpiles will be located within the mining limits.

Waste Products

Small amounts of solid waste will be generated at the site. Solid waste will be collected in containers and removed by a licensed waste collection service.

Production of recycled concrete and asphalt aggregates will occur once per year. This will include transporting salvaged concrete and/or asphalt rubble to the site and subsequently crushing, screening, and stockpiling the materials within the processing area.

Material Loading and Unloading

Haul trucks are loaded with sand/gravel from stockpiles for transport to off-site destinations. Haul trucks also unload imported fill used for reclamation.

Site Access Road

Access to the mine will be via a driveway entrance off of 141st Avenue N at the location shown on Figure 2. The entrance will be 50-feet wide to accommodate mine traffic, will be paved, and will include a rock construction exit. Truck traffic exiting the mine will be directed west on 141st Avenue N, then north or south on Territorial Road, depending on the location of the project being served.

Vehicle and Equipment Maintenance, Washing and Fueling

All used oil from any oil changes performed onsite will be collected in a leak proof metal container and recycled offsite. No detergent or chemicals will be used to wash equipment onsite. Wash water will be directed to onsite infiltration areas and will not be discharged from the Site.

3.0 STORMWATER CONTROL MEASURES AND BEST MANAGEMENT PRACTICES

3.1 Stormwater Management

Stormwater runoff under existing, proposed, and reclamation conditions was analyzed using HydroCAD. A copy of the HydroCAD report is attached as Appendix C. Near surface soils consist mostly of sand, therefore soils were considered to be HSG "A".

A detailed analysis of the stormwater management standards can be found in Section 4.0 of the Resource Management Plan.

3.1.1 Existing Conditions

Existing drainage patterns are shown on Sheet 1 of the P2 Plan Drawings. For the purposes of this analysis, three watersheds were modelled as receiving drainage from the proposed mining area, and the watersheds encompass a total area of approximately 45.762 acres. Areas were modelled for HSG "A" for cropland areas, wooded areas, grassland areas, wetland areas, and impervious areas.

The NW Wetland Direct Watershed (labelled 1S) encompasses approximately 22.717 acres and includes drainage that flows directly to the NW Wetland in the northwest corner of the property. The wetland area was determined by a wetland delineation performed by Carlson McCain in May 2023.

The NE Depression Watershed (labelled 2S) encompasses approximately 10.844 acres and includes drainage that flows to the NE depression located in the eastern portion of the proposed mining area. This depression will overflow to the NW wetland.

The Middle Wetland Watershed (labelled 3S) encompasses approximately 12.201 acres and includes drainage that flows to the wetland in the center of the property. The wetland overflows to the NW wetland.

The NW wetland have no outlet. The Crow River is approximately 0.13 miles north of the site and is listed as an impaired water impaired water. Sylvan Lake is approximately 0.4 miles southwest of the site and is also listed as an impaired water impaired water. Cowley Lake is approximately 0.3 miles east of the site and is also listed as an impaired water impaired water.

3.1.2 Active Mining Conditions

During mining operations, stormwater runoff contacting the mining and processing areas will be completely contained within the mining area for the 2, 10, and 100-year storms and will subsequently infiltrate or evaporate. The pond that is created from mining operations will receive runoff during the active life of the mine. Areas where runoff from the access road to the active mining area cannot be directed to the mining pit, will be directed to a temporary sedimentation trap, before outletting to the northwest wetland.

Stormwater runoff chemical composition will not differ appreciably from current conditions. An increased sediment load can be expected for runoff from the active mining area, however this water will be contained on site and infiltrate into the subsurface so there will not be additional sediment transported to off-site water bodies. HydroCAD calculations for the mining phase were not performed due to the runoff from added impervious areas being contained in the mining pit, which will not outlet, and therefore will result in a runoff rate of 0 cfs. Due to the varying nature of the entrance road throughout the life of the mine this area wasn't modelled either. A sediment trap/basin shall be designed to provide a live storage for a calculated volume of runoff from a ten (10)-year 24-hour storm from each acre of road that is directed to the trap/basin.

3.1.3 Reclamation Conditions

The site will be reclaimed to maintain flow to the wetland in the northwest corner of the site, please see Sheet 5 of Appendix A. The majority of the site will drain to the wetland, except for one small area that flows to the depression in the northeast corner of the site. Any overtopping from this depression will flow to the wetland in the northwest corner of the site. All other conditions will remain as they are in existing conditions, except for cropland being changed to grassland. These areas were modelled using an HSG "B".

The NW Wetland Direct Watershed (labelled 1S) encompasses approximately 43.437 acres and includes drainage that flows directly to the NW Wetland in the northwest corner of the property.

The NE Depression Watershed (labelled 2S) encompasses approximately 2.325 acres and includes drainage that flows to the NE depression located in the eastern portion of the proposed mining area. This depression will overflow to the NW wetland.

Due to the no increase in impervious surface and the increase in the time of concentration between the pre-settlement and reclamation phases, water quality, discharge rate and volume control will be maintained or improved from the pre-settlement conditions.

3.1.4 Rate Analysis

The discharge rates corresponding to each of the analyzed watersheds are presented below for the 2-year, 10-year, and 100-year storm events. The data demonstrates that rates are maintained or reduced for all three storm events. HydroCAD calculations for the mining phase were not performed due to the runoff from added impervious areas being contained in the mining pit, which will not outlet, and therefore will result in a runoff rate of 0 cfs. Due to the varying nature of the entrance road throughout the life of the mine this area wasn't modelled either. A sediment trap/basin shall be designed to provide a live storage for a calculated volume of runoff from a ten (10)-year 24-hour storm from each acre of road that is directed to the trap/basin.

Table 1
Runoff Comparison 1
 Veit Pit

Condition	Discharge to NW Wetland		
	2y Storm (cfs)	10y Storm (cfs)	100y Storm (cfs)
Existing (X)	13.1	43.0	152.4
Reclamation (X)	7.8	32.8	109.3

3.2 Eliminating and Reducing Exposure

- Materials such as mined sand and gravel shall be stockpiled to minimize stormwater contact.
- Processing and stockpiling will occur on the mine floor to limit transport of stockpiled materials outside of mining limits
- Perimeter berms will be constructed as needed around the mining area to control run-on and runoff. Berms will be vegetated.

3.3 Sediment Tracking

- The main entrance to the site will be monitored for soil tracking and corrective action will be taken to reduce tracking as necessary. The site entrance will be swept as needed to prevent soil accumulation. If tracking becomes problematic, tracking mitigation measures can be implemented. These mitigation measures may include, but are not limited to installation of rock rumble strips and/or steel track-out grates. Soil tracked onto public right of ways will be removed promptly.
- Street sweeping of the site entrance and adjacent streets shall be performed on a weekly basis, and at more frequent intervals if conditions warrant such action and as ordered by the City Engineer.

3.4 Temporary Sedimentation Trap/Basin

- Temporary sedimentation traps/basins will be used to collect runoff from access roads that is not collected in the active mining area. Grading of the access roads shall be constructed in a manner that directs all flow from access roads to the temporary sedimentation trap/basin or the active mining area.
- The basin shall be designed to provide a live storage for a calculated volume of runoff from a ten (10)-year 24-hour storm from each acre of road that is directed to the trap/basin.
- Temporary (or permanent) sedimentation traps/basins shall be drained and the sediment removed when the depth of sediment collected in the basin reaches ½ the storage volume within 72 hours of discovery, or as soon as field conditions allow.

3.5 Stormwater Pond

- The gravel pit will perform as the stormwater pond receiving water from the Site. Water will be infiltrated through the pit bottom. Due to continuous mining, there is no danger of the mining pit becoming clogged by sediment.

3.6 Silt Fence

- Silt fence shall be used at the perimeter of stockpiles where stockpiles are located in an area outside of the mining boundary, and/or during initial phases of mining when stockpiles may be present at existing grade. If runoff from a stockpile is directed toward the temporary sedimentation basin, silt fence may not be required.
- Silt fence shall be installed on all downstream perimeters before any land disturbing activities begin.
- Two rows of silt fence shall be placed along all downstream wetlands.
- Silt fence shall be repaired or replaced when sediment reaches one-third the height of the silt fence, the silt fence is damaged and/or the silt fence becomes nonfunctional. Measures shall be taken within 24 hours of discovery.
- A silt fence between the mining area and all wetlands will be maintained until upstream areas have been stabilized with at least 70% vegetation coverage.

3.7 Erosion Prevention and Sediment Control

- Where practical, the mining area shall be excavated such that stormwater is directed to the mining pit.
- The adjacent sloping land shall remain vegetated with perennial vegetation that prevents erosion and filters stormwater.
- The topsoil stockpile shall be seeded as-needed to prevent excessive erosion.
- Stockpiles shall not be placed in surface waters, including stormwater conveyances such as curb and gutter, conduits or ditches.
- All exposed soil areas that have a continuous positive slope that pose a risk of sediment discharge to waters (excluding water inside the pit) must have temporary erosion protection cover for the exposed soil areas year-round within 7 days of completion of land disturbing activities.
- Where nuisance conditions exist, silt fence, erosion control blanket or other BMPs shall be implemented within 24 hours of discovery.
- Erosion control blanket shall be utilized on all slopes, other than the mining slope, that are 4H:1V or greater.

3.8 Facility Inspection Requirements

- The facility shall be inspected at least once per calendar month when the mine site is active and staffed. A copy of the site inspection form is included in Appendix A. A minimum of one inspection per calendar year shall be conducted during a runoff event, and one inspection shall be conducted during a snow melt event (separate from the annual runoff event). If the site is inactive and unstaffed, or undergoing final stabilization, the Permittee is waived from the requirement to conduct monthly inspections, but BMPs must be maintained.

3.9 Maintenance Requirements

- All stormwater BMPs shall be maintained to ensure proper function. If it is found that the BMPs are not functioning properly, the BMP shall be repaired or replaced within the timeframes shown in the above sections.

3.10 Spill Prevention and Response

- Spill prevention and response procedures are attached as Appendix B.

3.11 Blanding's Turtle

The following measures shall be taken to ensure that the project does not affect any possible Blanding's Turtle population:

- Wetland removal shall not occur between September 15th and April 15th, which are considered the hibernation period for Blanding's Turtles. The wetland may be removed during these dates if an expert in Blanding's Turtles determines that the area is not suitable for hibernation.
- Erosion and sediment controls shall be limited to wildlife friendly erosion control to avoid the inadvertent take of Blanding's turtles.
- Hydro-mulch products shall not contain any materials with synthetic (plastic) fiber additives, as the fibers can re-suspend and flow into waterbodies.
- The Blanding's turtle flyer shall be given to all contractors working on the site.
- Bare ground within construction areas shall be thoroughly checked for turtles before the use of heavy equipment or any ground disturbance.
- Any sightings of Blanding's turtles shall be reported to Reports.NHIS@state.mn.us and shall include the date, observer, location, and photograph of the Blanding's turtle.
- Project personnel shall install silt fencing around all soil stockpiles, gravel pads, and other areas of exposed soil/sand/sediment where work will occur to prevent turtle access from May 15th to July 15th. Silt fence shall be buried a minimum of 10-inches, regularly inspected, and maintained as needed. Temporary fencing shall be removed by project closeout.

- If any turtles are found in imminent danger, they must be moved by hand out of harm's way, otherwise they are to be left undisturbed. Directions on how to safely move turtles will be provided to all workers onsite.

4.0 FINAL STABILIZATION AND CLOSURE

In order to be released from the inspection, recording and reporting requirements of this permit for a site where the Permittee no longer conducts the activities described above, the Permittee shall ensure and certify on the Annual Report/Site Inventory Form that:

- There is no stormwater runoff and/or pit dewatering from the site; or
- The Permittee certifies that a new owner or operator has assumed responsibility for the site; or
- The site closure achieves final stabilization.

4.1 Final Stabilization

Final stabilization is achieved by the following means:

- The drainage ways that leave the Site are stabilized to prevent erosion.
- The soil disturbing activities at the Site are completed and all soils are stabilized by a uniform perennial vegetative cover with a density of 70 percent over the entire pervious surface areas, or other equivalent means necessary to prevent soil failure under erosive conditions.
- The drainage ditches constructed to drain water from the Site are stabilized to preclude erosion.
- The temporary synthetic and structural erosion prevention and sediment control BMPs (such as silt fence) are removed.
- The Permittee cleans out all sediment from conveyances and from the infiltration basins that are to be used as permanent water quality management basins; sediment must be stabilized to prevent it from being washed back into the basin, conveyances or drainage-ways discharging off-site or to surface waters. The cleanout of permanent basins must be sufficient to return the basin to design capacity.
- Site entrance road has gravel removed, the soil in the area shall then be ripped, topsoiled, seeded, and mulched.
- Other BMPs as necessary are implemented so as to prevent erosion from the Site excavation areas and stockpiles that have been used by the Permittee.

Prior to seeking certification that a site complies with this part, the Permittee shall inspect the Site to verify compliance before providing certification to the MPCA.

After the Permittee has certified on the Annual Report/Site Inventory Form that a site complies with this part, the Site can be released and the Permittee is no longer required to inspect, record and report on that Site.

5.0 ADMINISTRATION

5.1 Responsible Personnel

The following person is responsible for the management and implementation of the Pollution Prevention Plan, inspections, maintenance and annual reporting:

Primary: **Jesse Roush**

Veit & Company, Inc.
14000 Veit Place
Rogers, MN 55374
Ph: (763) 428-6739
Email: jroush@veitusa.com

5.2 Plan Availability and Review

This Plan will be kept at the site when the site is active. If there is no office located on-site, electronic access of the plan is acceptable.

This Plan will be reviewed at least annual and modified if:

- a. There is construction or a change in design, operation, or maintenance at the facility that affects stormwater and wastewater management or compliance with the MNG49 permit or the Ordinance.
- b. The Permittee has identified a monitoring location from which the discharge flows to, and is within one mile of, an impaired water.
- c. A routine inspection, compliance evaluation, or visual inspection identified deficiencies in the P2 Plan and/or BMP.
- d. Additional stormwater and/or wastewater control measures and BMPs are necessary to meet applicable water quality standards or to address exceedances of intervention limits.
- e. There is an unauthorized discharge from the facility.

5.3 Training

Employees will be trained in the contents of this Plan. Training will occur annually for existing employees, and will typically occur in March. New employees will be provided training prior to beginning work on the site.

5.4 Record Keeping

Records of all inspections conducted in accordance with MNG49 permit or the City of Rogers IUP will be maintained within this Plan.

6.0 CERTIFICATION

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.



Dan Wilke, P.E.
License No. 53182

10/2/24
Date

INSPECTIONS

One inspection shall be completed at the Site at least once per month during active operations. The inspector shall evaluate the Site to determine that the Site is in general compliance with this Plan.

The inspector shall record the date and time of the inspections on the inspection log on the following page. Additionally, the inspector shall inspect and record the findings under each location/item listed on the inspection log. If a BMP requires maintenance or replacement, it shall be noted on the inspection log. Corrective actions taken shall be noted on the inspection log with the dates, times and party completing the maintenance activities. Omissions and additions to this Plan shall be clearly noted on the modification log. The date and time of all rainfall events greater than ½ inch in 24 hours shall also be recorded.

At least once per year the Permittee shall review the current EPA approved list of impaired waters and the TMDLs to determine if, and to what extent, the site's plan must address these impairments and TMDLs.

MAINTENANCE

All stormwater BMPs are to be maintained on an as-needed basis so as to ensure proper function. If it is determined that the effectiveness of a BMP is compromised, corrective action shall be taken within the timeframes listed in Section 3. This shall include, but is not limited to: maintenance, repair or replacement of the BMP. If corrective action cannot be taken within the allotted timeframes of discovery, additional temporary or permanent BMPs shall be implemented until the original BMP is restored. The date and time of any BMP maintenance, repair or replacement shall be noted on the maintenance log.

INSPECTION LOG

Inspector	Date & Time	Rainfall Data	Gravel Construction Entrance	Stockpiles	Mining Area	Adjacent Grounds	Equipment
Record inspector's name and title.	Record date and time of site inspection.	Record all rainfalls greater than ½ inch in 24 hours.	Inspect entrance and streets for sediment tracking and/or waste.	Inspect stockpiles for excessive erosion and required silt fence.	Inspect for excessive erosion or sedimentation off-site.	Inspect for off-site erosion and sediment control practices.	Inspect for leaks and ensure proper maintenance.
			USE MPCA STANDARD	INSPECTION FORM			

INSPECTION LOG

Inspector	Date & Time	Silt Fence	Infiltration Basins	Reclaimed Ponds	Drainage Ditches	Stormwater Conveyances
Record inspector's name and title.	Record date and time of site inspection.	Inspect for sedimentation and effectiveness.	Inspect for sedimentation and erosion.	Inspect for excessive erosion and presence of energy dissipation.	Inspect for erosion and sedimentation.	Ensure materials are not stockpiled in conveyances.
			USE MPCA STANDARD	INSPECTION FORM		

MAINTENANCE AND SWPPP MODIFICATION LOG

Inspector	Date & Time	Maintenance, SWPPP Modification and Notes	Date Completed
Record inspector's name and title.	Record date and time of site inspection.	Record recommended maintenance, corrective action, plan modification and general notes.	Record date the work was completed.

SPILL PREVENTION AND RESPONSE PLAN

Potential Spill Areas

- Vehicle fueling areas
- Loading and unloading areas
- Vehicle storage areas
- Vehicle maintenance areas

Material Handling Procedures

- Label all containers to show the name and type of substance, expiration date, health hazards, handling procedures and first aid considerations.
- Use filling procedures for tanks, vehicles and other equipment that minimize the risk of spills. Examples include automatic dispenser shutoffs, overfill protections, dedicated fueling areas.
- Ensure proper security for materials and equipment.

Spill Response Procedures

- Secure the area to protect all personnel and public from immediate danger.
- If possible and if it is safe to do so, attempt to contain the spill using absorbent materials, earthen berms and/or booms; and containerize impacted materials for proper disposal.
- If necessary, call 911 to alert the fire department or other emergency services.
- Contact the Facility Manager.
- If the spill is five gallons or more, the Safety and Regulatory Compliance Department will notify the Minnesota Duty Officer, and the National Response Center if required.

The Minnesota Duty Officer

651-649-5451

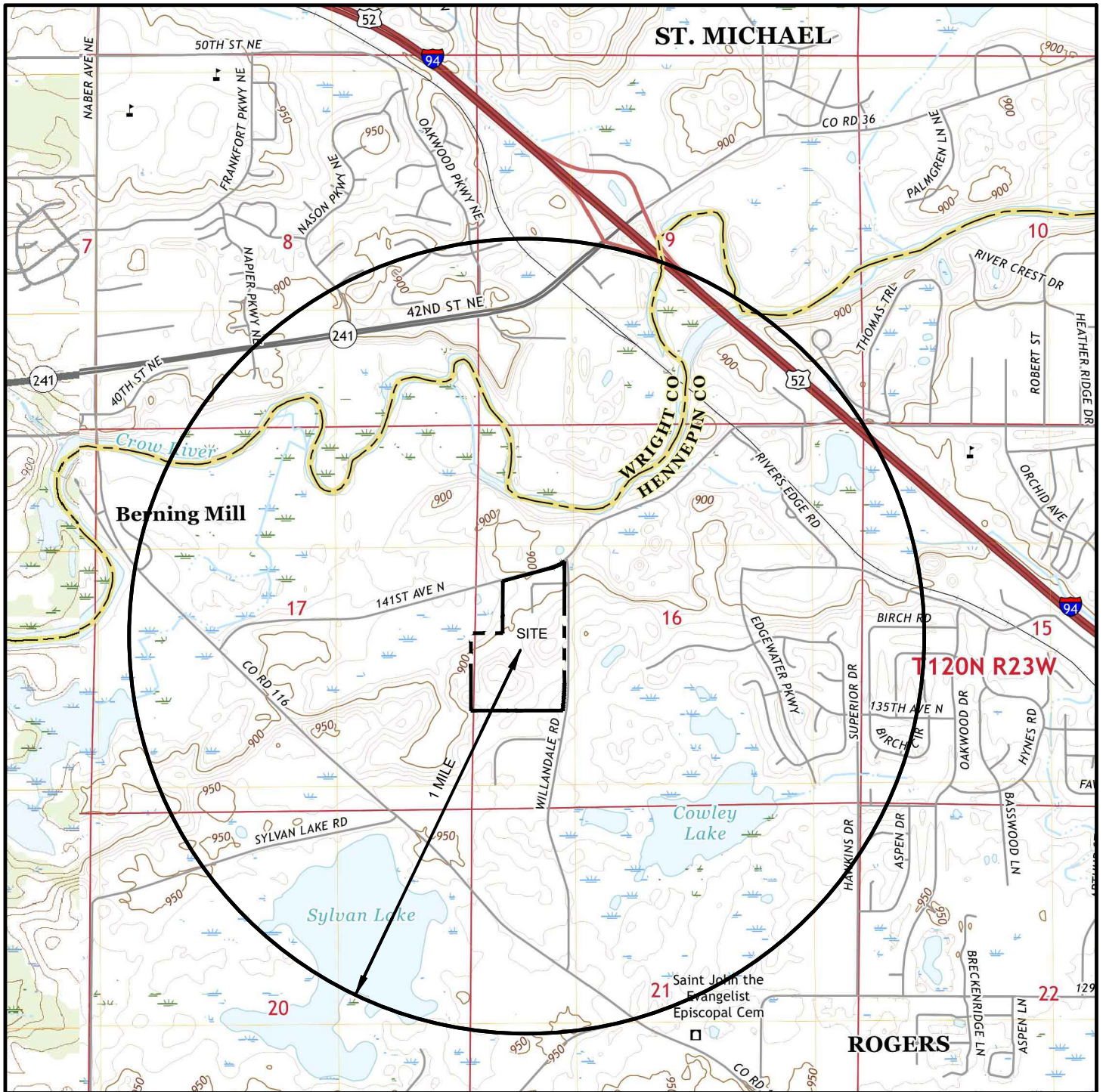
800-422-0798

The National Response Center

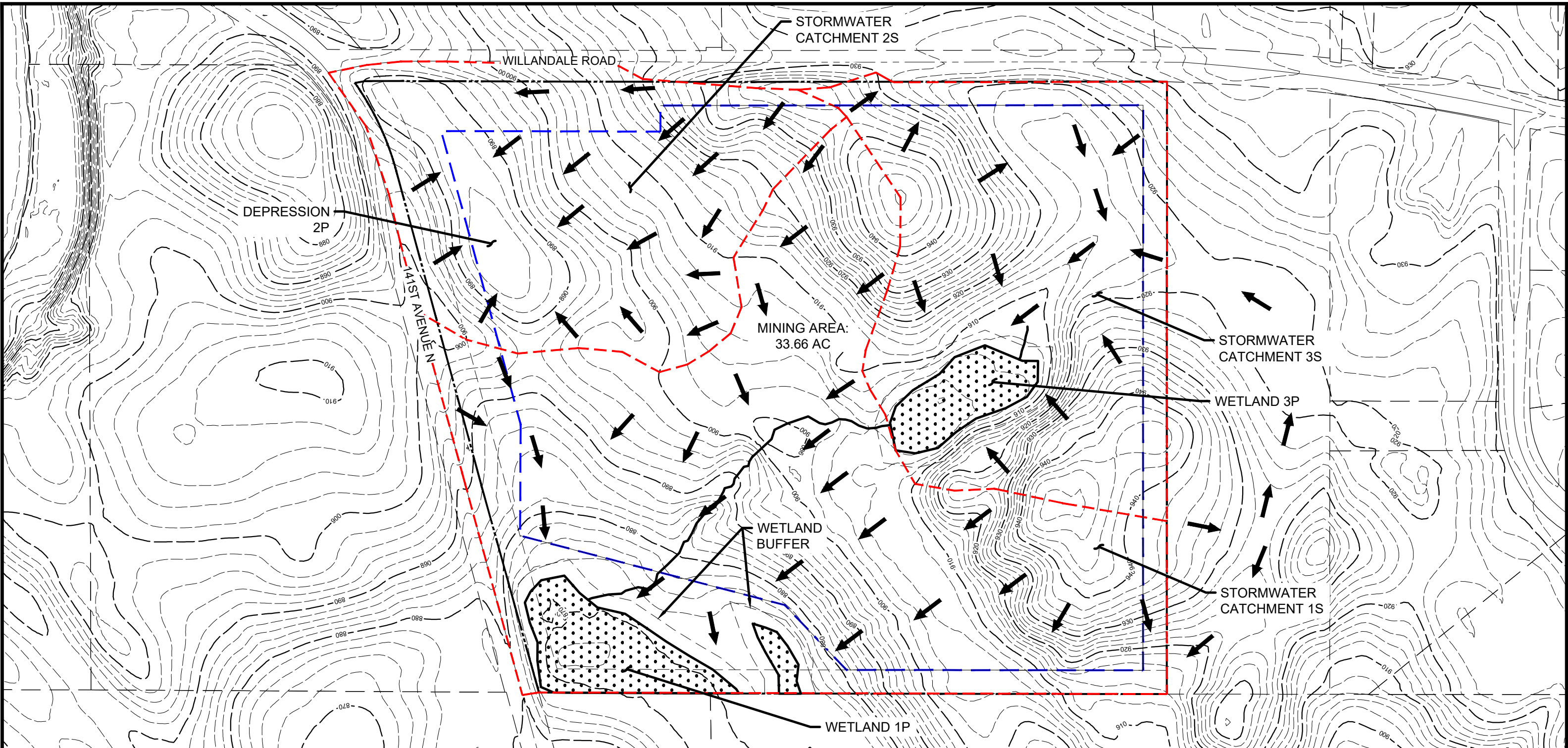
800-424-8802

- Contact environmental consultant for disposal options, investigation, sampling and closure requirements.

Figures



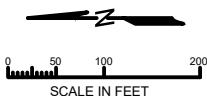
SOURCE: USGS ROGERS * ST. MICHAEL 7.5 MIN. QUADRANGLE



BACKGROUND AERIAL SOURCE: GOOGLE EARTH

LEGEND

EXISTING CONTOUR IDX	--- -960- ---	MINING BOUNDARY	---
EXISTING CONTOUR INT	---	SETBACK	---
PROPERTY BOUNDARY	---	WETLANDS	▢
STORMWATER CATCHMENT	---	SILT FENCE	— SF — SF —
		DRAINAGE ARROW	➔



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PLYMOUTH, MN 55446
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I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Print Name: Dan J. Wilke
Signature: *Dan Wilke*
Date: 04/29/24 License #: 53182

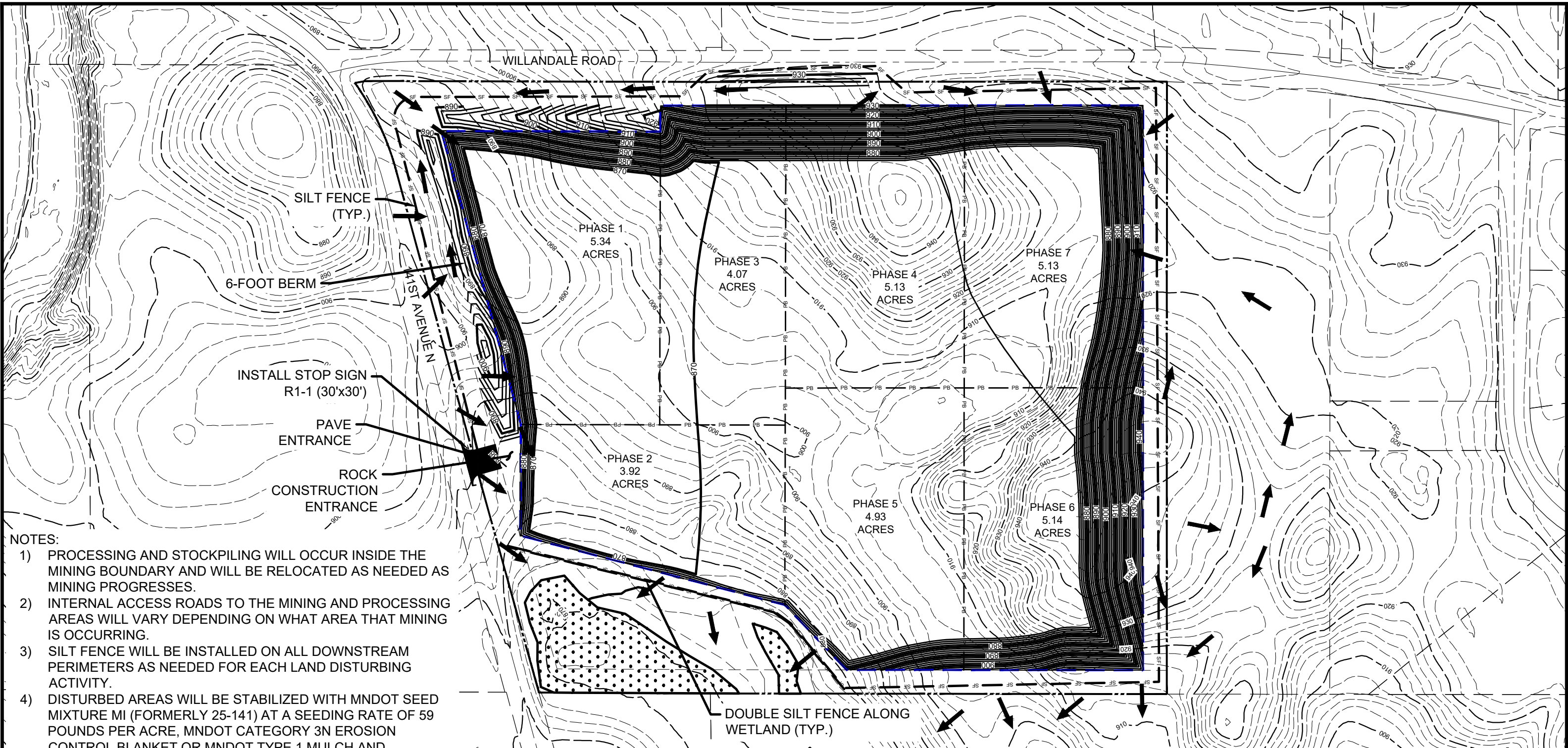
Drawn: DJW
Designed: DJW
Date: 04/29/24

REV	DATE	BY	DESCRIPTION
0	04/29/2024	DJW	SUBMITTED FOR RGU REVIEW
1	06/25/2024	DJW	PER CITY COMMENTS
2	08/13/2024	DJW	UPDATED FOR ILP SUBMITTAL
3	10/02/2024	DJW	PER CITY COMMENTS

VEIT & COMPANY, INC.
14000 Veit Place,
Rogers, MN 55374

VEIT MINE
ROGERS, MN

EXISTING CONDITIONS
P2 DRAWINGS

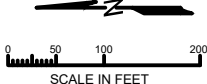


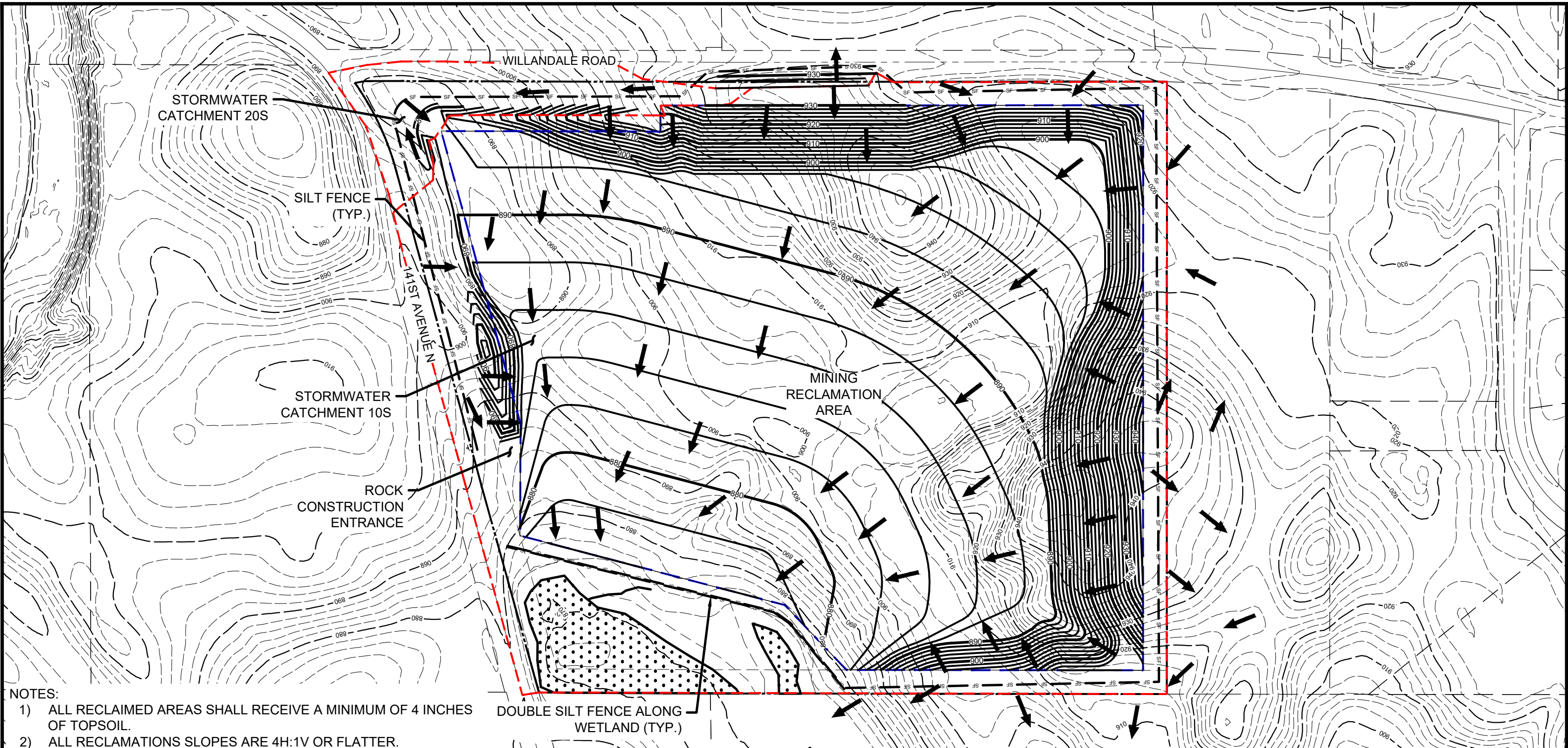
NOTES:

- 1) PROCESSING AND STOCKPIILING WILL OCCUR INSIDE THE MINING BOUNDARY AND WILL BE RELOCATED AS NEEDED AS MINING PROGRESSES.
- 2) INTERNAL ACCESS ROADS TO THE MINING AND PROCESSING AREAS WILL VARY DEPENDING ON WHAT AREA THAT MINING IS OCCURRING.
- 3) SILT FENCE WILL BE INSTALLED ON ALL DOWNSTREAM PERIMETERS AS NEEDED FOR EACH LAND DISTURBING ACTIVITY.
- 4) DISTURBED AREAS WILL BE STABILIZED WITH MNDOT SEED MIXTURE MI (FORMERLY 25-141) AT A SEEDING RATE OF 59 POUNDS PER ACRE, MNDOT CATEGORY 3N EROSION CONTROL BLANKET OR MNDOT TYPE 1 MULCH AND COMMERCIAL FERTILIZER.
- 5) ENSURE THAT ALL EROSION CONTROL PRODUCTS ARE BIODEGRADABLE. ANY NETTING IN EROSION PRODUCTS SHALL BE RECTANGULAR SHAPED (NOT SQUARE MESH) & BE MADE OF FLEXIBLE (NON-WELDED) MESH.
- 6) THROUGHOUT THE MINING PHASE, RUNOFF FROM THE ACCESS ROADS SHALL BE COLLECTED IN THE ACTIVE MINING AREA OR IN SEDIMENTATION TRAP(S)/BASIN(S). SEDIMENTATION TRAPS/BASINS SHALL BE DESIGNED WITH A LIVE STORAGE VOLUME EQUAL TO A 10-YEAR STORM EVENT FOR THE AREA COLLECTED AND SHALL BE CONSTRUCTED PER MN STORMWATER MANUAL STANDARDS.

LEGEND

EXISTING CONTOUR IDX	---	MINING BOUNDARY	---
EXISTING CONTOUR INT	---	SETBACK	---
MINING CONTOUR IDX	---	WETLANDS	---
MINING CONTOUR INT	---	SILT FENCE	SF
PROPERTY BOUNDARY	---	DRAINAGE ARROW	→





BACKGROUND AERIAL SOURCE: GOOGLE EARTH

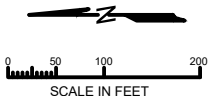
NOTES:

- 1) ALL RECLAIMED AREAS SHALL RECEIVE A MINIMUM OF 4 INCHES OF TOPSOIL.
- 2) ALL RECLAMATIONS SLOPES ARE 4H:1V OR FLATTER.
- 3) DISTURBED AREAS WILL BE STABILIZED WITH MNDOT SEED MIXTURE MI (FORMERLY 25-141) AT A SEEDING RATE OF 59 POUNDS PER ACRE, MNDOT CATEGORY 3N EROSION CONTROL BLANKET OR MNDOT TYPE 1 MULCH AND COMMERCIAL FERTILIZER.
- 4) ENSURE THAT ALL EROSION CONTROL PRODUCTS ARE BIODEGRADABLE. ANY NETTING IN EROSION PRODUCTS SHALL BE RECTANGULAR SHAPED (NOT SQUARE MESH) & BE MADE OF FLEXIBLE (NON-WELDED) MESH.
- 5) ENTRANCE ROAD SHALL HAVE GRAVEL REMOVED, HAVE THE UNDERLYING SOIL RIPPED, AND THEN TOPSOILED AND STABILIZED.

DOUBLE SILT FENCE ALONG WETLAND (TYP.)

LEGEND

EXISTING CONTOUR IDX	---	MINING BOUNDARY	---
EXISTING CONTOUR INT	---	SETBACK	---
RECLAMATION CONTOUR IDX	---	WETLANDS	---
RECLAMATION CONTOUR INT	---	SILT FENCE	SF
PROPERTY BOUNDARY	---	DRAINAGE ARROW	→
STORMWATER CATCHMENT	---		



15650 36TH AVE N
SUITE 110
PLYMOUTH, MN 55446
TEL (952) 346-3900
FAX (952) 346-3901
CARLSONMCGAIN.COM

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

Print Name: Dan J. Wilke
Signature: *Dan Wilke*
Date: 04/29/2024 License #: 53182

Drawn: DJW
Designed: DJW
Date: 04/29/24

REV	DATE	BY	DESCRIPTION
0	04/29/2024	DJW	SUBMITTED FOR REG REVIEW
1	06/25/2024	DJW	PER CITY COMMENTS
2	08/13/2024	DJW	UPDATED FOR ILP SUBMITTAL
3	10/02/2024	DJW	PER CITY COMMENTS

VEIT & COMPANY, INC.
14000 Veit Place,
Rogers, MN 55374

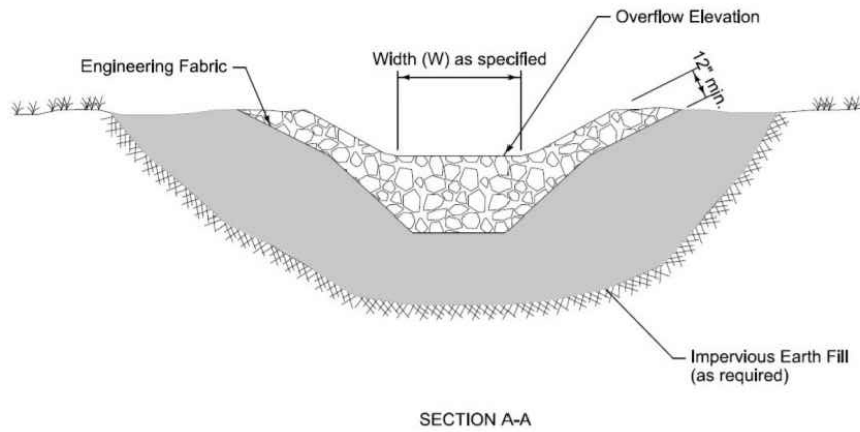
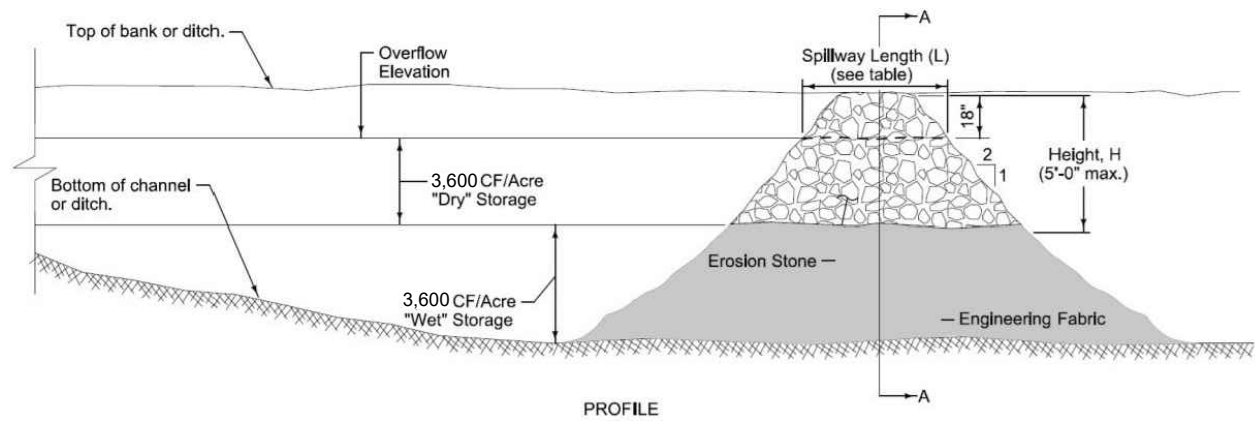
VEIT MINE
ROGERS, MN

RECLAMATION PLAN
P2 DRAWINGS

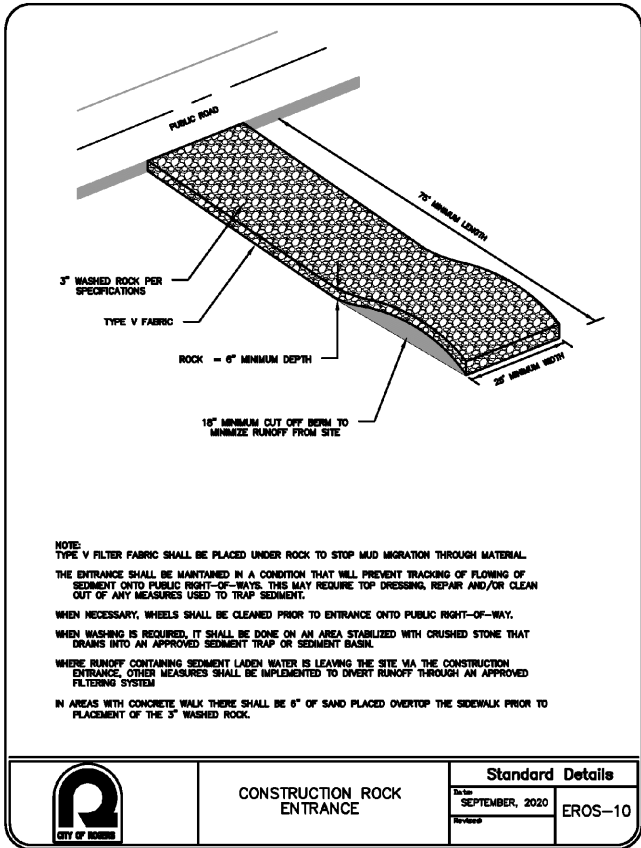
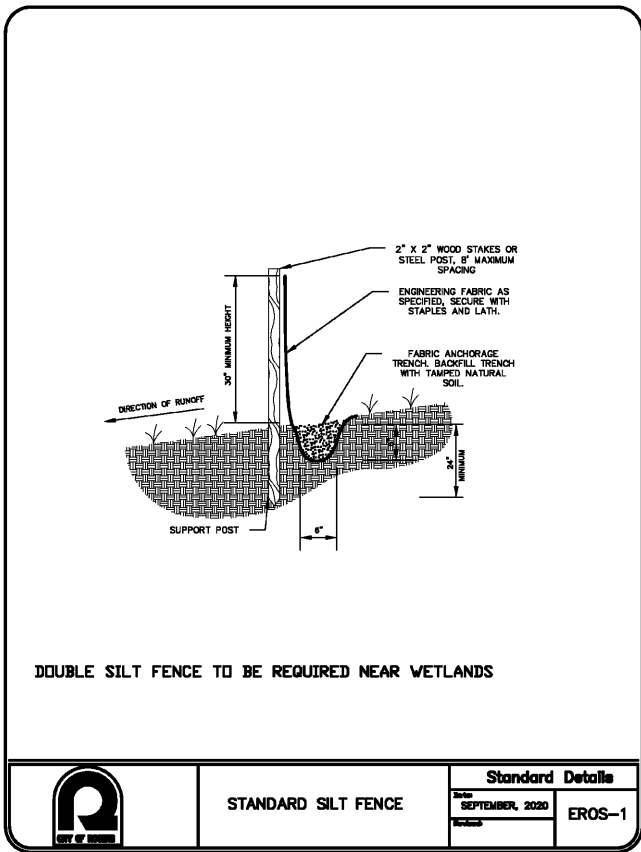
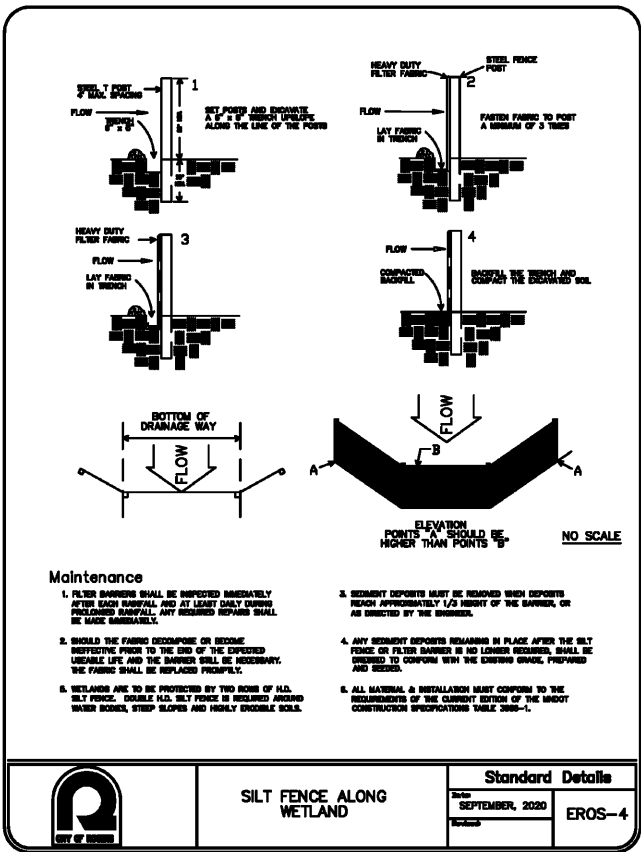
Table 7E-13.01: Embankment Widths for Sediment Traps

Contributing Drainage Area (acre)	Embankment Width (feet)
1	4
2	6
3	8
4	10
5	12

Source: Roberts, 1995 (FHWA)



TEMPORARY SEDIMENT TRAP
NO SCALE



NOTES:

THE FOLLOWING MEASURES WILL BE TAKEN TO ENSURE THAT THE PROJECT DOES NOT AFFECT ANY POSSIBLE BLANDING'S TURTLE POPULATION:

- WETLAND REMOVAL SHALL NOT OCCUR BETWEEN SEPTEMBER 15TH AND APRIL 15TH, WHICH ARE CONSIDERED THE HIBERNATION PERIOD FOR BLANDING'S TURTLES. THE WETLAND MAY BE REMOVED DURING THESE DATES IF AN EXPERT IN BLANDING'S TURTLES DETERMINES THAT THE AREA IS NOT SUITABLE FOR HIBERNATION.
- EROSION AND SEDIMENT CONTROLS SHALL BE LIMITED TO WILDLIFE FRIENDLY EROSION CONTROL TO AVOID THE INADVERTENT TAKE OF BLANDING'S TURTLES.
- HYDRO-MULCH PRODUCTS SHALL NOT CONTAIN ANY MATERIALS WITH SYNTHETIC (PLASTIC) FIBER ADDITIVES, AS THE FIBERS CAN RE-SUSPEND AND FLOW INTO WATERBODIES.
- THE BLANDING'S TURTLE FLYER SHALL BE GIVEN TO ALL CONTRACTORS WORKING ON THE SITE.
- BARE GROUND WITHIN CONSTRUCTION AREAS SHALL BE THOROUGHLY CHECKED FOR TURTLES BEFORE THE USE OF HEAVY EQUIPMENT OR ANY GROUND DISTURBANCE.
- ANY SIGHTINGS OF BLANDING'S TURTLES SHALL BE REPORTED TO REPORTS.NHIS@STATE.MN.US AND SHALL INCLUDE THE DATE, OBSERVER, LOCATION, AND PHOTOGRAPH OF THE BLANDING'S TURTLE.
- PROJECT PERSONNEL SHALL INSTALL SILT FENCING AROUND ALL SOIL STOCKPILES, GRAVEL PADS, AND OTHER AREAS OF EXPOSED SOIL/SAND/SEDIMENT WHERE WORK WILL OCCUR TO PREVENT TURTLE ACCESS FROM MAY 15TH TO JULY 15TH. SILT FENCE SHALL BE BURIED A MINIMUM OF 10-INCHES, REGULARLY INSPECTED, AND MAINTAINED AS NEEDED. TEMPORARY FENCING SHALL BE REMOVED BY PROJECT CLOSEOUT.
- IF ANY TURTLES ARE FOUND IN IMMINENT DANGER, THEY MUST BE MOVED BY HAND OUT OF HARM'S WAY, OTHERWISE THEY ARE TO BE LEFT UNDISTURBED. DIRECTIONS ON HOW TO SAFELY MOVE TURTLES WILL BE PROVIDED TO ALL WORKERS ONSITE.

Helping Turtles Cross the Road

- Leave them alone if they are not in danger. Turtles crossing roads in late-May and June are often moving to familiar nesting locations. They know where they are going.
- Don't put yourself or others in danger. Simply pulling off the road and turning on your hazard lights may alert other drivers to slow down.
- If you decide to help the turtle cross the road, turn on your signal, slowly pull off the road, turn on your hazard lights, and watch for approaching traffic.
- Pick up the turtle by the back of its shell, NOT by the tail. (Picking up a turtle by the tail can damage their spinal cord.)
- Use caution when handling turtles. All turtles can bite, but Snapping Turtles and Spiny Softshells bite harder and more often.
- Snapping Turtles can be moved with a snow shovel. Other options include picking them up by their hind legs or having them bite down on a stick and carefully dragging them to safety.
- Move the turtle in the direction it is heading. Do not relocate the turtle to a new area, even if the habitat seems unsuitable.
- Wash your hands after handling a turtle.



Report turtle sightings to the DNR.



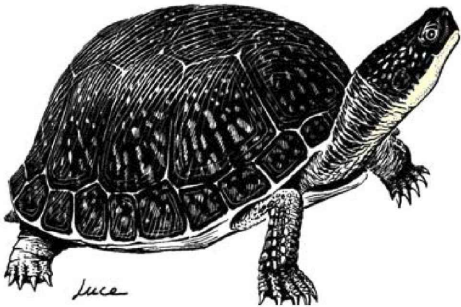
Turtles are tracked to identify movement patterns, behavior, and habitat usage.

Amphibians and reptiles are particularly vulnerable to impacts from roads. Roads can separate foraging areas from breeding or nesting grounds.

Help the DNR Keep Turtle Records

The DNR uses the location of live or road-killed turtles to document species occurrences and help identify areas of high road mortality. Road-killed specimens should be photographed top and bottom and sent to mcbs.e-report@state.mn.us. Do not handle live turtles when taking a photo, especially nesting females. Include an accurate description of the location or a map with the photo voucher.

CAUTION



BLANDING'S TURTLES
MAY BE ENCOUNTERED
IN THIS AREA

The unique and rare Blanding's turtle has been found in this area. Blanding's turtles are a State Threatened species and are protected under Minnesota Statute 84.095, Protection of Threatened and Endangered Species. Please be careful of turtles on roads and in construction sites. For additional information on turtles, or to report a Blanding's turtle sighting, contact the DNR Nongame Specialist nearest you: Bemidji (218-308-2641); Grand Rapids (218-327-4518); New Ulm (507-359-6033); Rochester (507-280-5070); or St. Paul (651-259-5764).

DESCRIPTION: The Blanding's turtle is a medium to large turtle (5 to 10 inches) with a black or dark blue, dome-shaped shell with muted yellow spots and bars. The bottom of the shell is hinged across the front third, enabling the turtle to pull the front edge of the lower shell firmly against the top shell to provide additional protection when threatened. The head, legs, and tail are dark brown or blue-gray with small dots of light brown or yellow. A distinctive field mark is the bright yellow chin and neck.

Illustration by Don Luce, from Turtles in Minnesota, Natural History Leaflet No. 9, June 1989, James Ford Bell Museum of Natural History

SUMMARY OF RECOMMENDATIONS
FOR AVOIDING AND MINIMIZING IMPACTS
TO BLANDING'S TURTLE POPULATIONS

(see Environmental Review Fact Sheet Series for full recommendations)

- A flyer with an illustration of an adult Blanding's turtle should be given to all contractors working in the area. Homeowners should also be informed of the presence of Blanding's turtles in the area.
- Turtles which are in imminent danger should be moved, by hand, out of harms way. Turtles which are not in imminent danger should be left undisturbed to continue their travel among wetlands and/or nest sites.
- If a Blanding's turtle nests in your yard, do not disturb the nest, and do not allow pets near the nest.
- Blanding's turtles do not make good pets. It is illegal to keep this threatened species in captivity.
- Silt fencing should be set up to keep turtles out of construction areas. It is critical that silt fencing be removed after the area has been revegetated.
- Small, vegetated temporary wetlands should not be dredged, deepened, or filled.
- All wetlands should be protected from pollution; use of fertilizers and pesticides should be avoided, and run-off from lawns and streets should be controlled. Erosion should be prevented to keep sediment from reaching wetlands and lakes.
- Roads should be kept to minimum standards on widths and lanes.
- Roads should be ditched, not curbed or below grade. If curbs must be used, 4" high curbs at a 3:1 slope are preferred.
- Culverts under roads crossing wetland areas, between wetland areas, or between wetland and nesting areas should be at least 36 in. diameter and flat-bottomed or elliptical.
- Culverts under roads crossing streams should be oversized (at least twice as wide as the normal width of open water) and flat-bottomed or elliptical.
- Utility access and maintenance roads should be kept to a minimum.
- Because trenches can trap turtles, trenches should be checked for turtles prior to being backfilled and the sites should be returned to original grade.
- Terrain should be left with as much natural contour as possible.
- Graded areas should be revegetated with native grasses and forbs.
- Vegetation management in infrequently moved areas -- such as in ditches, along utility access roads, and under power lines -- should be done mechanically (chemicals should not be used). Work should occur fall through spring (after October 1st and before June 1st).

Compiled by the Minnesota Department of Natural Resources Division of Ecological Resources, Updated March 2008
Endangered Species Environmental Review Coordinator, 500 Lafayette Rd., Box 25, St. Paul, MN 55155 / 651-259-5109



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SUITE 110
PLYMOUTH, MN 55446
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CARLSONMCCAIN.COM

I hereby certify that this plan, specification or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota

Print Name: Dan J. Wilke

Signature: Dan Wilke

Date: 04/29/24 License #: 53182

Drawn: DJW

Designed: DJW

Date: 04/29/24

REV	DATE	BY	DESCRIPTION
0	04/29/2024	DJW	SUBMITTED FOR REG REVIEW
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3	10/02/2024	DJW	PER CITY COMMENTS

VEIT & COMPANY, INC.

14000 Veit Place,
Rogers, MN 55374

VEIT MINE
ROGERS, MN

BLANDING'S TURTLE PLAN
P2 DRAWINGS

5
of
5

Appendix A
Inspections and Maintenance

INSPECTIONS

One inspection shall be completed at the Site at least once per month during active operations. The inspector shall evaluate the Site to determine that the Site is in general compliance with this Plan.

The inspector shall record the date and time of the inspections on the inspection log on the following page. Additionally, the inspector shall inspect and record the findings under each location/item listed on the inspection log. If a BMP requires maintenance or replacement, it shall be noted on the inspection log. Corrective actions taken shall be noted on the inspection log with the dates, times and party completing the maintenance activities. Omissions and additions to this Plan shall be clearly noted on the modification log. The date and time of all rainfall events greater than ½ inch in 24 hours shall also be recorded.

At least once per year the Permittee shall review the current EPA approved list of impaired waters and the TMDLs to determine if, and to what extent, the site's plan must address these impairments and TMDLs.

MAINTENANCE

All stormwater BMPs are to be maintained on an as-needed basis so as to ensure proper function. If it is determined that the effectiveness of a BMP is compromised, corrective action shall be taken within the timeframes listed in Section 3. This shall include, but is not limited to: maintenance, repair or replacement of the BMP. If corrective action cannot be taken within the allotted timeframes of discovery, additional temporary or permanent BMPs shall be implemented until the original BMP is restored. The date and time of any BMP maintenance, repair or replacement shall be noted on the maintenance log.

Construction stormwater inspection checklist

Construction Stormwater Program

Doc Type: Permitting Checklist

Note: This inspection checklist is an option for small construction sites. Large construction sites and linear projects require more extensive/more location specific inspection requirements. This inspection report does not address all aspects of the National Pollutant Discharge Elimination System/State Disposal System (NPDES/SDS) Construction Stormwater Permit (Permit) issued on August 1, 2018. The completion of this checklist does not guarantee that all permit requirements are in compliance; it is the responsibility of the Permittee(s) to read and understand the permit requirements.

Facility information

Site name: _____
 Site address: _____ Permit number: _____
 City: _____ State: _____ Zip code: _____

Inspection information

Inspector name: _____ Phone number: _____

Organization/Company name: _____

Date (mm/dd/yyyy): _____ Time: _____ ☐ am ☐ pm

Is the inspector trained in sediment and erosion control and is it documented in the Stormwater Pollution Prevention Plan (SWPPP)?
☐ Yes ☐ No

Is this inspection routine or in response to a storm event: ☐ 7 day ☐ Rain

Rainfall amount (if applicable): _____

Is site within one aerial mile of special or impaired water that can potentially receive discharge from the site? ☐ Yes ☐ No

If yes, follow Section 23 and other applicable permit requirements.

Note: If NA is selected at any time, specify **why** in the comment area for that section.

Erosion prevention requirements (Section 8.1)

	Yes	No	NA
1. Are soils stabilized where no construction activity has occurred for 14 days (including stockpiles)? (7 days where applicable, or 24 hours during Minnesota Department of Natural Resources [DNR] Fish Spawning restrictions)	☐	☐	☐
2. Has the need to disturb steep slopes been minimized?	☐	☐	☐
3. If steep slopes are disturbed, are stabilization practices designed for steep slopes used?	☐	☐	☐
4. All ditches/swales stabilized 200' back from point of discharge or property edge within 24 hours? (Mulch, hydromulch, tackifier, or similar best management practices [BMPs] are not acceptable in ditches/swales if the slope is greater than 2%)	☐	☐	☐
5. Do pipe outlets have energy dissipation (within 24 hours of connection)?	☐	☐	☐
6. Is construction phasing being followed in accordance with the SWPPP?	☐	☐	☐
7. Are areas not to be disturbed marked off (flags, signs, etc.)?	☐	☐	☐

Comments:

Sediment control requirements (Section 9.1))

	Yes	No	NA
1. Are perimeter sediment controls installed properly on all down gradient perimeters?	☐	☐	☐
2. Are appropriate BMPs installed protecting inlets, catch basins, and culvert inlets?	☐	☐	☐
3. Is a 50 foot natural buffer preserved around all surface waters during construction?	☐	☐	☐
If No, have redundant sediment controls been installed?	☐	☐	☐
4. Do all erodible stockpiles have perimeter control in place?	☐	☐	☐
5. Is there a temporary sediment basin on site, and is it built as required in Section 14 of the permit?	☐	☐	☐
6. Is soil compaction being minimized where not designed for compaction?	☐	☐	☐
7. Is topsoil being preserved unless infeasible?	☐	☐	☐
8. If chemical flocculants are used, is there a chemical flocculant plan in place?	☐	☐	☐

Comments:

Maintenance and inspections (Section 11)

	Yes	No	NA
1. Are all previously stabilized areas maintaining ground cover?	☐	☐	☐
2. Are perimeter controls maintained and functioning properly, sediment removed when one-half full?	☐	☐	☐
3. Are inlet protection devices maintained and adequately protecting inlets?	☐	☐	☐
4. Are the temporary sediment basins being maintained and functioning properly?	☐	☐	☐
5. Are vehicle tracking BMPs at site exists in place and maintained and functioning properly?	☐	☐	☐
6. Is all tracked sediment being removed within 24 hours?	☐	☐	☐
7. Have all surface waters, ditches, conveyances, and discharge points been inspected?	☐	☐	
8. Were any discharges seen during this inspection (i.e., sediment, turbid water, or otherwise)?	☐	☐	

If yes, record the location of all points of discharge. Photograph and describe the discharge (size, color, odor, foam, oil sheen, time, etc.). Describe how the discharge will be addressed. Was the discharge a sediment delta? If yes, will the delta be recovered within seven days and in accordance with item 11.5 of the permit?

Comments:

Pollution prevention (Section 12)

	Yes	No	NA
1. Are all construction materials that can leach pollutants under cover or protected?	☐	☐	☐
2. Are hazardous materials being properly stored?	☐	☐	☐
3. Are appropriate BMPs being used to prevent discharges associated with fueling and maintenance of equipment or vehicles?	☐	☐	☐
4. Are all solid wastes being properly contained and disposed of?	☐	☐	☐
5. Is there a concrete/other material washout area on site and is it being used?	☐	☐	☐
6. Is the concrete washout area marked with a sign?	☐	☐	☐
7. Are the concrete/other material washout areas properly maintained?	☐	☐	☐

Comments:

Other

	Yes	No	NA
1. Is a copy of the SWPPP, inspection records, and training documentation located on the construction site, or can it be made available within 72 hours?	☐	☐	☐
2. Has the SWPPP been followed and implemented on site, and amended as needed?	☐	☐	☐
3. Is any dewatering occurring on site?	☐	☐	☐
If yes, what BMPs are being used to ensure that clean water is leaving the site and the discharge is not causing erosion or scour?			
4. Will a permanent stormwater management system be created for this project if required and in accordance with Section 15 of the permit (if adding an acre or more of new impervious surface)?	☐	☐	☐
If yes, describe:			
5. If infiltration/filtration systems are being constructed, are they marked and protected from compaction and sedimentation?	☐	☐	☐

6. Description of areas of non-compliance noted during the inspection, required corrective actions, and recommended date of completion of corrective actions:

7. Proposed amendments to the SWPPP:

8. Potential areas of future concern:

9. Additional comments:

Disclosures:

- After discovery, the permit requires many of the deficiencies that may be found on site be corrected within a specified period of time. See permit for more details.
- The Permittee(s) is/are responsible for the inspection and maintenance of temporary and permanent water quality management BMPs as well as erosion prevention and sediment control BMPs until another Permittee has obtained coverage under this Permit according to Section 3, or the project has met the termination conditions of the permit and a Notice of Termination has been submitted to the Minnesota Pollution Control Agency.

Appendix B
Spill Prevention and Response Plan

SPILL PREVENTION AND RESPONSE PLAN

Potential Spill Areas

- Vehicle fueling areas
- Loading and unloading areas
- Vehicle storage areas
- Vehicle maintenance areas

Material Handling Procedures

- Label all containers to show the name and type of substance, expiration date, health hazards, handling procedures and first aid considerations.
- Use filling procedures for tanks, vehicles and other equipment that minimize the risk of spills. Examples include automatic dispenser shutoffs, overfill protections, dedicated fueling areas.
- Ensure proper security for materials and equipment.

Spill Response Procedures

- Secure the area to protect all personnel and public from immediate danger.
- If possible and if it is safe to do so, attempt to contain the spill using absorbent materials, earthen berms and/or booms; and containerize impacted materials for proper disposal.
- If necessary, call 911 to alert the fire department or other emergency services.
- Contact the Facility Manager.
- If the spill is five gallons or more, the Safety and Regulatory Compliance Department will notify the Minnesota Duty Officer, and the National Response Center if required.

The Minnesota Duty Officer

651-649-5451

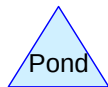
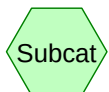
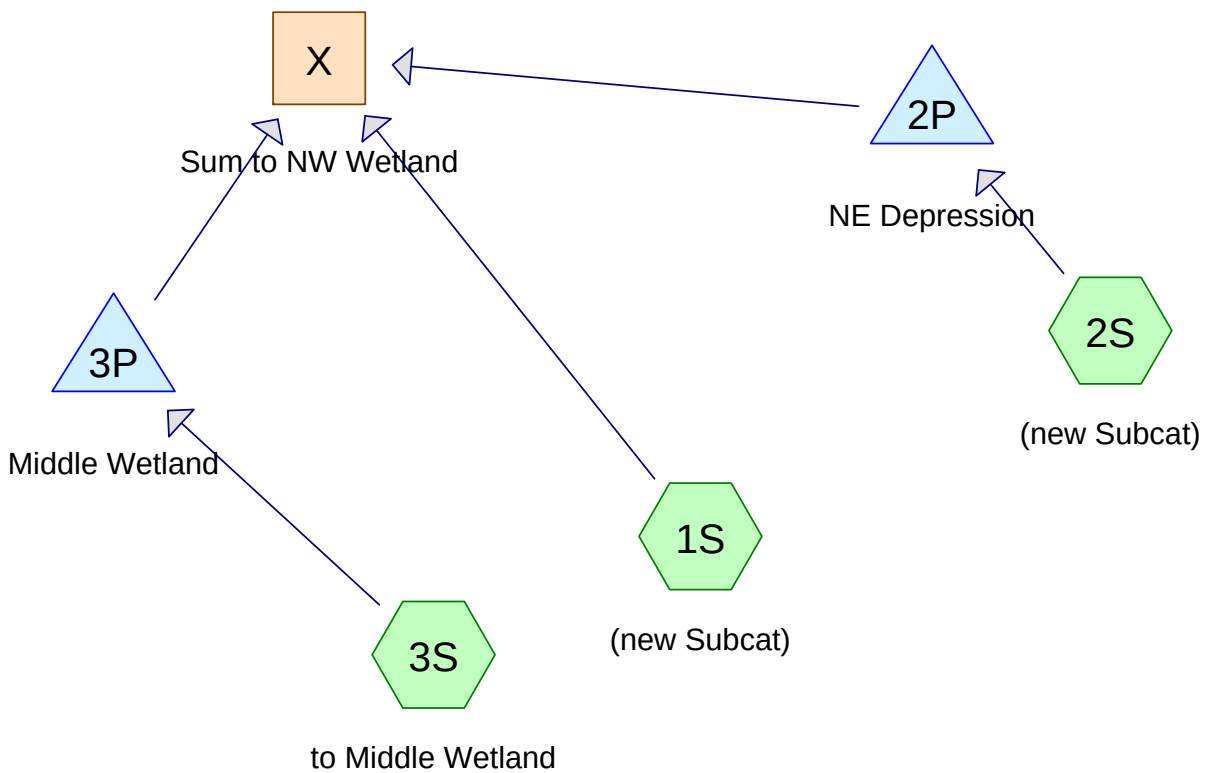
800-422-0798

The National Response Center

800-424-8802

- Contact environmental consultant for disposal options, investigation, sampling and closure requirements.

Appendix C
HydroCAD Stormwater Analysis



Routing Diagram for ExHydroCAD
 Prepared by wilk0260, Printed 1/12/2024
 HydroCAD® 10.00-26 s/n 02263 © 2020 HydroCAD Software Solutions LLC

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.755	98	Paved parking, HSG A (1S, 2S)
40.595	67	Row crops, straight row, Good, HSG A (1S, 2S, 3S)
1.986	30	Woods, Good, HSG A (1S)
2.426	80	wetland (1S, 3S)
45.762	67	TOTAL AREA

ExHydroCAD

Prepared by wilk0260

HydroCAD® 10.00-26 s/n 02263 © 2020 HydroCAD Software Solutions LLC

MSE 24-hr 3 2-yr Rainfall=2.86"

Printed 1/12/2024

Page 3

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: (new Subcat)

Runoff Area=22.717 ac 1.24% Impervious Runoff Depth>0.41"
Flow Length=734' Tc=7.9 min CN=65 Runoff=13.13 cfs 0.777 af

Subcatchment2S: (new Subcat)

Runoff Area=10.844 ac 4.37% Impervious Runoff Depth>0.52"
Flow Length=644' Tc=6.4 min CN=68 Runoff=9.51 cfs 0.468 af

Subcatchment3S: to Middle Wetland

Runoff Area=12.201 ac 0.00% Impervious Runoff Depth>0.52"
Flow Length=656' Tc=9.4 min CN=68 Runoff=9.05 cfs 0.526 af

Reach X: Sum to NW Wetland

Inflow=13.13 cfs 1.027 af
Outflow=13.13 cfs 1.027 af

Pond 2P: NE Depression

Peak Elev=886.77' Storage=0.468 af Inflow=9.51 cfs 0.468 af
Outflow=0.00 cfs 0.000 af

Pond 3P: Middle Wetland

Peak Elev=904.57' Storage=0.305 af Inflow=9.05 cfs 0.526 af
Outflow=0.97 cfs 0.251 af

Total Runoff Area = 45.762 ac Runoff Volume = 1.771 af Average Runoff Depth = 0.46"
98.35% Pervious = 45.007 ac 1.65% Impervious = 0.755 ac

Summary for Subcatchment 1S: (new Subcat)

Runoff = 13.13 cfs @ 12.17 hrs, Volume= 0.777 af, Depth> 0.41"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-yr Rainfall=2.86"

Area (ac)	CN	Description
18.909	67	Row crops, straight row, Good, HSG A
1.986	30	Woods, Good, HSG A
* 1.541	80	wetland
0.281	98	Paved parking, HSG A
22.717	65	Weighted Average
22.436		98.76% Pervious Area
0.281		1.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	100	0.0900	0.61		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.86"
2.6	432	0.0970	2.80		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
2.6	202	0.0200	1.27		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
7.9	734	Total			

Summary for Subcatchment 2S: (new Subcat)

Runoff = 9.51 cfs @ 12.15 hrs, Volume= 0.468 af, Depth> 0.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-yr Rainfall=2.86"

Area (ac)	CN	Description
10.370	67	Row crops, straight row, Good, HSG A
0.474	98	Paved parking, HSG A
10.844	68	Weighted Average
10.370		95.63% Pervious Area
0.474		4.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	100	0.1000	0.64		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.86"
3.8	544	0.0700	2.38		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
6.4	644	Total			

Summary for Subcatchment 3S: to Middle Wetland

Runoff = 9.05 cfs @ 12.19 hrs, Volume= 0.526 af, Depth> 0.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-yr Rainfall=2.86"

Area (ac)	CN	Description
11.316	67	Row crops, straight row, Good, HSG A
* 0.885	80	wetland
12.201	68	Weighted Average
12.201		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	100	0.0800	0.58		Sheet Flow,
					Cultivated: Residue<=20% n= 0.060 P2= 2.86"
6.5	556	0.0250	1.42		Shallow Concentrated Flow,
					Cultivated Straight Rows Kv= 9.0 fps
9.4	656	Total			

Summary for Reach X: Sum to NW Wetland

Inflow Area = 45.762 ac, 1.65% Impervious, Inflow Depth > 0.27" for 2-yr event
Inflow = 13.13 cfs @ 12.17 hrs, Volume= 1.027 af
Outflow = 13.13 cfs @ 12.17 hrs, Volume= 1.027 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 2P: NE Depression

Inflow Area = 10.844 ac, 4.37% Impervious, Inflow Depth > 0.52" for 2-yr event
Inflow = 9.51 cfs @ 12.15 hrs, Volume= 0.468 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 886.77' @ 20.00 hrs Surf.Area= 0.778 ac Storage= 0.468 af

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	886.00'	21.920 af	Custom Stage Data (Prismatic) Listed below (Recalc)

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MSE 24-hr 3 2-yr Rainfall=2.86"

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Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
886.00	0.436	0.000	0.000
888.00	1.323	1.759	1.759
890.00	2.048	3.371	5.130
892.00	2.718	4.766	9.896
894.00	9.306	12.024	21.920

Device	Routing	Invert	Outlet Devices
#1	Primary	892.50'	30.0' long x 30.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=886.00' (Free Discharge)↑**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 3P: Middle Wetland**

Inflow Area = 12.201 ac, 0.00% Impervious, Inflow Depth > 0.52" for 2-yr event
 Inflow = 9.05 cfs @ 12.19 hrs, Volume= 0.526 af
 Outflow = 0.97 cfs @ 13.47 hrs, Volume= 0.251 af, Atten= 89%, Lag= 76.7 min
 Primary = 0.97 cfs @ 13.47 hrs, Volume= 0.251 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 904.57' @ 13.47 hrs Surf.Area= 0.615 ac Storage= 0.305 af

Plug-Flow detention time= 190.8 min calculated for 0.250 af (47% of inflow)
 Center-of-Mass det. time= 106.7 min (928.9 - 822.2)

Volume	Invert	Avail.Storage	Storage Description
#1	904.00'	1.479 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
904.00	0.449	0.000	0.000
906.00	1.030	1.479	1.479

Device	Routing	Invert	Outlet Devices
#1	Primary	904.50'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.97 cfs @ 13.47 hrs HW=904.57' (Free Discharge)↑**1=Broad-Crested Rectangular Weir** (Weir Controls 0.97 cfs @ 0.67 fps)

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MSE 24-hr 3 10-yr Rainfall=4.25"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: (new Subcat)

Runoff Area=22.717 ac 1.24% Impervious Runoff Depth>1.11"
Flow Length=734' Tc=7.9 min CN=65 Runoff=42.63 cfs 2.097 af

Subcatchment2S: (new Subcat)

Runoff Area=10.844 ac 4.37% Impervious Runoff Depth>1.29"
Flow Length=644' Tc=6.4 min CN=68 Runoff=25.90 cfs 1.167 af

Subcatchment3S: to Middle Wetland

Runoff Area=12.201 ac 0.00% Impervious Runoff Depth>1.29"
Flow Length=656' Tc=9.4 min CN=68 Runoff=25.06 cfs 1.312 af

Reach X: Sum to NW Wetland

Inflow=43.04 cfs 3.124 af
Outflow=43.04 cfs 3.124 af

Pond 2P: NE Depression

Peak Elev=887.51' Storage=1.167 af Inflow=25.90 cfs 1.167 af
Outflow=0.00 cfs 0.000 af

Pond 3P: Middle Wetland

Peak Elev=904.83' Storage=0.475 af Inflow=25.06 cfs 1.312 af
Outflow=9.76 cfs 1.028 af

Total Runoff Area = 45.762 ac Runoff Volume = 4.576 af Average Runoff Depth = 1.20"
98.35% Pervious = 45.007 ac 1.65% Impervious = 0.755 ac

Summary for Subcatchment 1S: (new Subcat)

Runoff = 42.63 cfs @ 12.16 hrs, Volume= 2.097 af, Depth> 1.11"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-yr Rainfall=4.25"

Area (ac)	CN	Description
18.909	67	Row crops, straight row, Good, HSG A
1.986	30	Woods, Good, HSG A
* 1.541	80	wetland
0.281	98	Paved parking, HSG A
22.717	65	Weighted Average
22.436		98.76% Pervious Area
0.281		1.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	100	0.0900	0.61		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.86"
2.6	432	0.0970	2.80		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
2.6	202	0.0200	1.27		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
7.9	734	Total			

Summary for Subcatchment 2S: (new Subcat)

Runoff = 25.90 cfs @ 12.14 hrs, Volume= 1.167 af, Depth> 1.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-yr Rainfall=4.25"

Area (ac)	CN	Description
10.370	67	Row crops, straight row, Good, HSG A
0.474	98	Paved parking, HSG A
10.844	68	Weighted Average
10.370		95.63% Pervious Area
0.474		4.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	100	0.1000	0.64		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.86"
3.8	544	0.0700	2.38		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
6.4	644	Total			

Summary for Subcatchment 3S: to Middle Wetland

Runoff = 25.06 cfs @ 12.18 hrs, Volume= 1.312 af, Depth> 1.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-yr Rainfall=4.25"

Area (ac)	CN	Description
11.316	67	Row crops, straight row, Good, HSG A
* 0.885	80	wetland
12.201	68	Weighted Average
12.201		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	100	0.0800	0.58		Sheet Flow,
					Cultivated: Residue<=20% n= 0.060 P2= 2.86"
6.5	556	0.0250	1.42		Shallow Concentrated Flow,
					Cultivated Straight Rows Kv= 9.0 fps
9.4	656	Total			

Summary for Reach X: Sum to NW Wetland

Inflow Area = 45.762 ac, 1.65% Impervious, Inflow Depth > 0.82" for 10-yr event
Inflow = 43.04 cfs @ 12.17 hrs, Volume= 3.124 af
Outflow = 43.04 cfs @ 12.17 hrs, Volume= 3.124 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 2P: NE Depression

Inflow Area = 10.844 ac, 4.37% Impervious, Inflow Depth > 1.29" for 10-yr event
Inflow = 25.90 cfs @ 12.14 hrs, Volume= 1.167 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 887.51' @ 20.00 hrs Surf.Area= 1.107 ac Storage= 1.167 af

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	886.00'	21.920 af	Custom Stage Data (Prismatic) Listed below (Recalc)

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MSE 24-hr 3 10-yr Rainfall=4.25"

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Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
886.00	0.436	0.000	0.000
888.00	1.323	1.759	1.759
890.00	2.048	3.371	5.130
892.00	2.718	4.766	9.896
894.00	9.306	12.024	21.920

Device	Routing	Invert	Outlet Devices
#1	Primary	892.50'	30.0' long x 30.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=886.00' (Free Discharge)↑**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 3P: Middle Wetland**

Inflow Area = 12.201 ac, 0.00% Impervious, Inflow Depth > 1.29" for 10-yr event
 Inflow = 25.06 cfs @ 12.18 hrs, Volume= 1.312 af
 Outflow = 9.76 cfs @ 12.40 hrs, Volume= 1.028 af, Atten= 61%, Lag= 13.5 min
 Primary = 9.76 cfs @ 12.40 hrs, Volume= 1.028 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 904.83' @ 12.40 hrs Surf.Area= 0.691 ac Storage= 0.475 af

Plug-Flow detention time= 89.2 min calculated for 1.024 af (78% of inflow)
 Center-of-Mass det. time= 36.7 min (841.2 - 804.5)

Volume	Invert	Avail.Storage	Storage Description
#1	904.00'	1.479 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
904.00	0.449	0.000	0.000
906.00	1.030	1.479	1.479

Device	Routing	Invert	Outlet Devices
#1	Primary	904.50'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=9.74 cfs @ 12.40 hrs HW=904.83' (Free Discharge)↑**1=Broad-Crested Rectangular Weir** (Weir Controls 9.74 cfs @ 1.46 fps)

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MSE 24-hr 3 100-yr Rainfall=7.09"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: (new Subcat)

Runoff Area=22.717 ac 1.24% Impervious Runoff Depth>3.02"
Flow Length=734' Tc=7.9 min CN=65 Runoff=120.59 cfs 5.724 af

Subcatchment2S: (new Subcat)

Runoff Area=10.844 ac 4.37% Impervious Runoff Depth>3.33"
Flow Length=644' Tc=6.4 min CN=68 Runoff=67.06 cfs 3.008 af

Subcatchment3S: to Middle Wetland

Runoff Area=12.201 ac 0.00% Impervious Runoff Depth>3.33"
Flow Length=656' Tc=9.4 min CN=68 Runoff=66.27 cfs 3.382 af

Reach X: Sum to NW Wetland

Inflow=152.38 cfs 8.807 af
Outflow=152.38 cfs 8.807 af

Pond 2P: NE Depression

Peak Elev=888.85' Storage=3.007 af Inflow=67.06 cfs 3.008 af
Outflow=0.00 cfs 0.000 af

Pond 3P: Middle Wetland

Peak Elev=905.39' Storage=0.904 af Inflow=66.27 cfs 3.382 af
Outflow=45.05 cfs 3.083 af

Total Runoff Area = 45.762 ac Runoff Volume = 12.114 af Average Runoff Depth = 3.18"
98.35% Pervious = 45.007 ac 1.65% Impervious = 0.755 ac

Summary for Subcatchment 1S: (new Subcat)

Runoff = 120.59 cfs @ 12.15 hrs, Volume= 5.724 af, Depth> 3.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-yr Rainfall=7.09"

Area (ac)	CN	Description
18.909	67	Row crops, straight row, Good, HSG A
1.986	30	Woods, Good, HSG A
* 1.541	80	wetland
0.281	98	Paved parking, HSG A
22.717	65	Weighted Average
22.436		98.76% Pervious Area
0.281		1.24% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.7	100	0.0900	0.61		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.86"
2.6	432	0.0970	2.80		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
2.6	202	0.0200	1.27		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
7.9	734	Total			

Summary for Subcatchment 2S: (new Subcat)

Runoff = 67.06 cfs @ 12.14 hrs, Volume= 3.008 af, Depth> 3.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-yr Rainfall=7.09"

Area (ac)	CN	Description
10.370	67	Row crops, straight row, Good, HSG A
0.474	98	Paved parking, HSG A
10.844	68	Weighted Average
10.370		95.63% Pervious Area
0.474		4.37% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.6	100	0.1000	0.64		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.86"
3.8	544	0.0700	2.38		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
6.4	644	Total			

Summary for Subcatchment 3S: to Middle Wetland

Runoff = 66.27 cfs @ 12.17 hrs, Volume= 3.382 af, Depth> 3.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-yr Rainfall=7.09"

Area (ac)	CN	Description
11.316	67	Row crops, straight row, Good, HSG A
* 0.885	80	wetland
12.201	68	Weighted Average
12.201		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
2.9	100	0.0800	0.58		Sheet Flow, Cultivated: Residue<=20% n= 0.060 P2= 2.86"
6.5	556	0.0250	1.42		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
9.4	656	Total			

Summary for Reach X: Sum to NW Wetland

Inflow Area = 45.762 ac, 1.65% Impervious, Inflow Depth > 2.31" for 100-yr event
Inflow = 152.38 cfs @ 12.17 hrs, Volume= 8.807 af
Outflow = 152.38 cfs @ 12.17 hrs, Volume= 8.807 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 2P: NE Depression

Inflow Area = 10.844 ac, 4.37% Impervious, Inflow Depth > 3.33" for 100-yr event
Inflow = 67.06 cfs @ 12.14 hrs, Volume= 3.008 af
Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 888.85' @ 20.00 hrs Surf.Area= 1.629 ac Storage= 3.007 af

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	886.00'	21.920 af	Custom Stage Data (Prismatic) Listed below (Recalc)

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MSE 24-hr 3 100-yr Rainfall=7.09"

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Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
886.00	0.436	0.000	0.000
888.00	1.323	1.759	1.759
890.00	2.048	3.371	5.130
892.00	2.718	4.766	9.896
894.00	9.306	12.024	21.920

Device	Routing	Invert	Outlet Devices
#1	Primary	892.50'	30.0' long x 30.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.68 2.70 2.70 2.64 2.63 2.64 2.64 2.63

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=886.00' (Free Discharge)↑**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)**Summary for Pond 3P: Middle Wetland**

Inflow Area = 12.201 ac, 0.00% Impervious, Inflow Depth > 3.33" for 100-yr event
 Inflow = 66.27 cfs @ 12.17 hrs, Volume= 3.382 af
 Outflow = 45.05 cfs @ 12.27 hrs, Volume= 3.083 af, Atten= 32%, Lag= 5.8 min
 Primary = 45.05 cfs @ 12.27 hrs, Volume= 3.083 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 905.39' @ 12.27 hrs Surf.Area= 0.853 ac Storage= 0.904 af

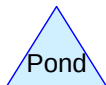
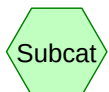
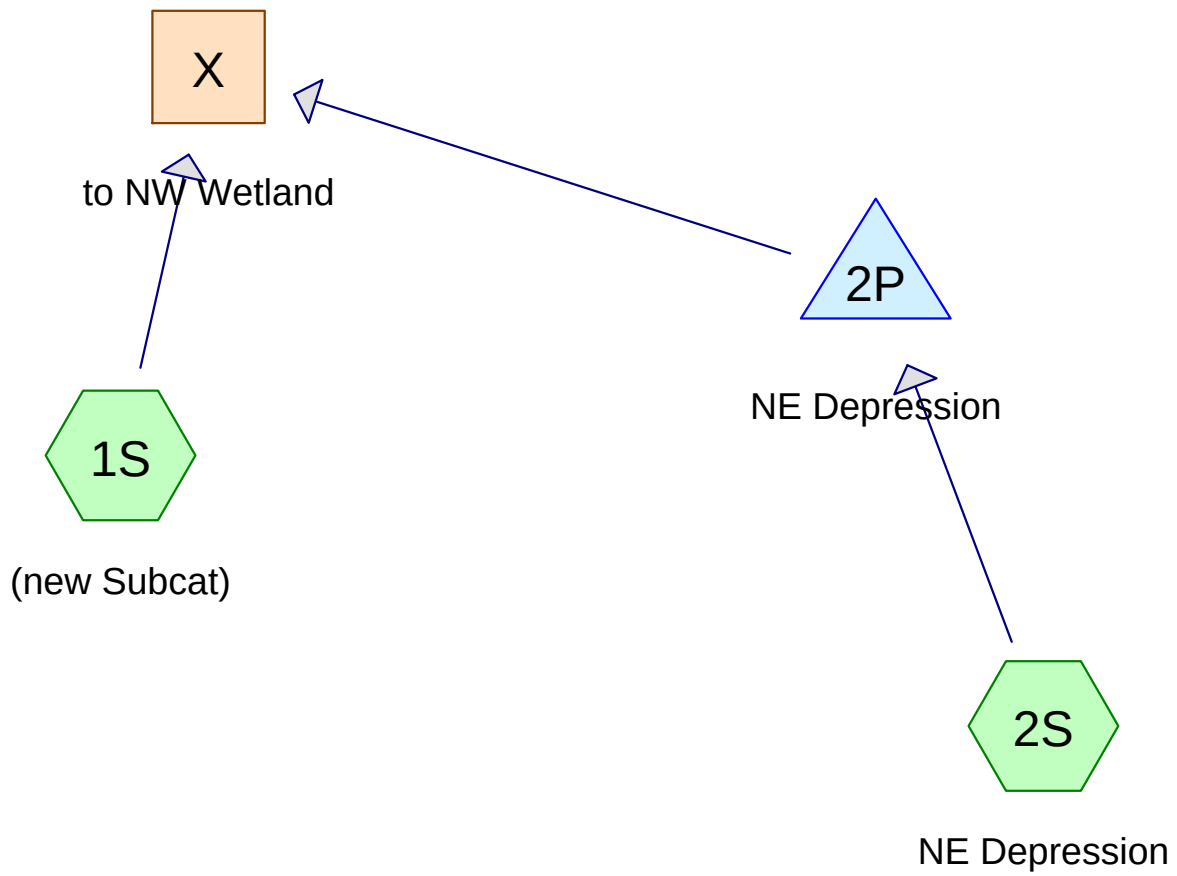
Plug-Flow detention time= 47.8 min calculated for 3.073 af (91% of inflow)
 Center-of-Mass det. time= 19.9 min (808.6 - 788.7)

Volume	Invert	Avail.Storage	Storage Description
#1	904.00'	1.479 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
904.00	0.449	0.000	0.000
906.00	1.030	1.479	1.479

Device	Routing	Invert	Outlet Devices
#1	Primary	904.50'	20.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=44.39 cfs @ 12.27 hrs HW=905.38' (Free Discharge)↑**1=Broad-Crested Rectangular Weir** (Weir Controls 44.39 cfs @ 2.52 fps)



Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
41.978	61	>75% Grass cover, Good, HSG B (1S, 2S)
0.755	98	Paved parking, HSG B (1S, 2S)
1.488	30	Woods, Good, HSG A (1S)
1.541	80	wetlands (1S)
45.762	61	TOTAL AREA

RecHydroCAD

Prepared by wilk0260

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MSE 24-hr 3 2-yr Rainfall=2.86"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: (new Subcat)

Runoff Area=43.437 ac 0.80% Impervious Runoff Depth>0.28"
Flow Length=1,553' Tc=27.9 min CN=61 Runoff=7.83 cfs 1.024 af

Subcatchment2S: NE Depression

Runoff Area=2.325 ac 17.59% Impervious Runoff Depth>0.52"
Flow Length=622' Tc=10.8 min CN=68 Runoff=1.64 cfs 0.100 af

Reach X: to NW Wetland

Inflow=7.83 cfs 1.024 af
Outflow=7.83 cfs 1.024 af

Pond 2P: NE Depression

Peak Elev=888.49' Storage=0.100 af Inflow=1.64 cfs 0.100 af
Outflow=0.00 cfs 0.000 af

Total Runoff Area = 45.762 ac Runoff Volume = 1.125 af Average Runoff Depth = 0.29"
98.35% Pervious = 45.007 ac 1.65% Impervious = 0.755 ac

Summary for Subcatchment 1S: (new Subcat)

Runoff = 7.83 cfs @ 12.54 hrs, Volume= 1.024 af, Depth> 0.28"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-yr Rainfall=2.86"

Area (ac)	CN	Description
40.062	61	>75% Grass cover, Good, HSG B
1.488	30	Woods, Good, HSG A
0.346	98	Paved parking, HSG B
* 1.541	80	wetlands
43.437	61	Weighted Average
43.091		99.20% Pervious Area
0.346		0.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	84	0.0830	0.27		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
0.6	119	0.2000	3.13		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
22.2	1,350	0.0210	1.01		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
27.9	1,553	Total			

Summary for Subcatchment 2S: NE Depression

Runoff = 1.64 cfs @ 12.21 hrs, Volume= 0.100 af, Depth> 0.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-yr Rainfall=2.86"

Area (ac)	CN	Description
1.916	61	>75% Grass cover, Good, HSG B
0.409	98	Paved parking, HSG B
2.325	68	Weighted Average
1.916		82.41% Pervious Area
0.409		17.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.0700	0.27		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
4.5	522	0.0750	1.92		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
10.8	622	Total			

Summary for Reach X: to NW Wetland

Inflow Area = 45.762 ac, 1.65% Impervious, Inflow Depth > 0.27" for 2-yr event
 Inflow = 7.83 cfs @ 12.54 hrs, Volume= 1.024 af
 Outflow = 7.83 cfs @ 12.54 hrs, Volume= 1.024 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 2P: NE Depression

Inflow Area = 2.325 ac, 17.59% Impervious, Inflow Depth > 0.52" for 2-yr event
 Inflow = 1.64 cfs @ 12.21 hrs, Volume= 0.100 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 888.49' @ 20.00 hrs Surf.Area= 0.227 ac Storage= 0.100 af

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	888.00'	1.575 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
888.00	0.181	0.000	0.000
890.00	0.368	0.549	0.549
892.00	0.658	1.026	1.575

Device	Routing	Invert	Outlet Devices
#1	Primary	891.50'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=888.00' (Free Discharge)

↑ **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

RecHydroCAD

Prepared by wilk0260

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MSE 24-hr 3 10-yr Rainfall=4.25"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN

Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: (new Subcat)Runoff Area=43.437 ac 0.80% Impervious Runoff Depth>0.87"
Flow Length=1,553' Tc=27.9 min CN=61 Runoff=32.78 cfs 3.165 af**Subcatchment2S: NE Depression**Runoff Area=2.325 ac 17.59% Impervious Runoff Depth>1.29"
Flow Length=622' Tc=10.8 min CN=68 Runoff=4.58 cfs 0.250 af**Reach X: to NW Wetland**Inflow=32.78 cfs 3.165 af
Outflow=32.78 cfs 3.165 af**Pond 2P: NE Depression**Peak Elev=889.08' Storage=0.250 af Inflow=4.58 cfs 0.250 af
Outflow=0.00 cfs 0.000 af**Total Runoff Area = 45.762 ac Runoff Volume = 3.415 af Average Runoff Depth = 0.90"**
98.35% Pervious = 45.007 ac 1.65% Impervious = 0.755 ac

Summary for Subcatchment 1S: (new Subcat)

Runoff = 32.78 cfs @ 12.46 hrs, Volume= 3.165 af, Depth> 0.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-yr Rainfall=4.25"

Area (ac)	CN	Description
40.062	61	>75% Grass cover, Good, HSG B
1.488	30	Woods, Good, HSG A
0.346	98	Paved parking, HSG B
* 1.541	80	wetlands
43.437	61	Weighted Average
43.091		99.20% Pervious Area
0.346		0.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	84	0.0830	0.27		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
0.6	119	0.2000	3.13		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
22.2	1,350	0.0210	1.01		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
27.9	1,553	Total			

Summary for Subcatchment 2S: NE Depression

Runoff = 4.58 cfs @ 12.20 hrs, Volume= 0.250 af, Depth> 1.29"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 10-yr Rainfall=4.25"

Area (ac)	CN	Description
1.916	61	>75% Grass cover, Good, HSG B
0.409	98	Paved parking, HSG B
2.325	68	Weighted Average
1.916		82.41% Pervious Area
0.409		17.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.0700	0.27		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
4.5	522	0.0750	1.92		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
10.8	622	Total			

Summary for Reach X: to NW Wetland

Inflow Area = 45.762 ac, 1.65% Impervious, Inflow Depth > 0.83" for 10-yr event
 Inflow = 32.78 cfs @ 12.46 hrs, Volume= 3.165 af
 Outflow = 32.78 cfs @ 12.46 hrs, Volume= 3.165 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 2P: NE Depression

Inflow Area = 2.325 ac, 17.59% Impervious, Inflow Depth > 1.29" for 10-yr event
 Inflow = 4.58 cfs @ 12.20 hrs, Volume= 0.250 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 889.08' @ 20.00 hrs Surf.Area= 0.282 ac Storage= 0.250 af

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	888.00'	1.575 af	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
888.00	0.181	0.000	0.000
890.00	0.368	0.549	0.549
892.00	0.658	1.026	1.575

Device	Routing	Invert	Outlet Devices
#1	Primary	891.50'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=888.00' (Free Discharge)

↑**1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

RecHydroCAD

Prepared by wilk0260

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MSE 24-hr 3 100-yr Rainfall=7.09"

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Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: (new Subcat)

Runoff Area=43.437 ac 0.80% Impervious Runoff Depth>2.61"
Flow Length=1,553' Tc=27.9 min CN=61 Runoff=109.26 cfs 9.451 af

Subcatchment2S: NE Depression

Runoff Area=2.325 ac 17.59% Impervious Runoff Depth>3.32"
Flow Length=622' Tc=10.8 min CN=68 Runoff=12.03 cfs 0.644 af

Reach X: to NW Wetland

Inflow=109.26 cfs 9.451 af
Outflow=109.26 cfs 9.451 af

Pond 2P: NE Depression

Peak Elev=890.25' Storage=0.644 af Inflow=12.03 cfs 0.644 af
Outflow=0.00 cfs 0.000 af

Total Runoff Area = 45.762 ac Runoff Volume = 10.096 af Average Runoff Depth = 2.65"
98.35% Pervious = 45.007 ac 1.65% Impervious = 0.755 ac

Summary for Subcatchment 1S: (new Subcat)

Runoff = 109.26 cfs @ 12.42 hrs, Volume= 9.451 af, Depth> 2.61"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-yr Rainfall=7.09"

Area (ac)	CN	Description
40.062	61	>75% Grass cover, Good, HSG B
1.488	30	Woods, Good, HSG A
0.346	98	Paved parking, HSG B
* 1.541	80	wetlands
43.437	61	Weighted Average
43.091		99.20% Pervious Area
0.346		0.80% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
5.1	84	0.0830	0.27		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
0.6	119	0.2000	3.13		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
22.2	1,350	0.0210	1.01		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
27.9	1,553	Total			

Summary for Subcatchment 2S: NE Depression

Runoff = 12.03 cfs @ 12.19 hrs, Volume= 0.644 af, Depth> 3.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-yr Rainfall=7.09"

Area (ac)	CN	Description
1.916	61	>75% Grass cover, Good, HSG B
0.409	98	Paved parking, HSG B
2.325	68	Weighted Average
1.916		82.41% Pervious Area
0.409		17.59% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.3	100	0.0700	0.27		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
4.5	522	0.0750	1.92		Shallow Concentrated Flow, Short Grass Pasture Kv= 7.0 fps
10.8	622	Total			

Summary for Reach X: to NW Wetland

Inflow Area = 45.762 ac, 1.65% Impervious, Inflow Depth > 2.48" for 100-yr event
 Inflow = 109.26 cfs @ 12.42 hrs, Volume= 9.451 af
 Outflow = 109.26 cfs @ 12.42 hrs, Volume= 9.451 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Summary for Pond 2P: NE Depression

Inflow Area = 2.325 ac, 17.59% Impervious, Inflow Depth > 3.32" for 100-yr event
 Inflow = 12.03 cfs @ 12.19 hrs, Volume= 0.644 af
 Outflow = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
 Peak Elev= 890.25' @ 20.00 hrs Surf.Area= 0.404 ac Storage= 0.644 af

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	888.00'	1.575 af	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (acres)	Inc.Store (acre-feet)	Cum.Store (acre-feet)
888.00	0.181	0.000	0.000
890.00	0.368	0.549	0.549
892.00	0.658	1.026	1.575

Device	Routing	Invert	Outlet Devices
#1	Primary	891.50'	10.0' long x 5.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.34 2.50 2.70 2.68 2.68 2.66 2.65 2.65 2.65 2.65 2.67 2.66 2.68 2.70 2.74 2.79 2.88

Primary OutFlow Max=0.00 cfs @ 5.00 hrs HW=888.00' (Free Discharge)

↑ **1=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Appendix D
MNG49 General Permit

National Pollutant Discharge Elimination System/State Disposal System**MNG490000**

Permittee: Multiple
Facility name: Nonmetallic Mining/Associated Activities General Permit
Issuance date: June 10, 2022
Expiration date: May 31, 2027

The Permittee is an owner or operator of facilities within the boundary of the state of Minnesota that:

- a. Discharge stormwater to waters of the state, including groundwater, from the construction sand and gravel, industrial sand, dimension stone, crushed and broken limestone, crushed and broken granite, crushed and broken stone (not elsewhere classified) mining and quarrying areas, asphalt production areas, (including portable asphalt plants), concrete block and brick, concrete products (other than block and brick), and ready-mix concrete, as well as aggregate dredging operations and uncontaminated asphalt and concrete rubble recycling at sites already listed.
- b. Discharge mine site dewatering to waters of the state, including groundwater, from construction sand and gravel, industrial sand, dimension stone, crushed and broken limestone, crushed and broken granite, and crushed and broken stone (not elsewhere classified) mining and quarrying areas.
- c. Non-stormwater discharges that meet the requirements of this permit and occur at the above-mentioned facilities.

The state of Minnesota, on behalf of its citizens through the Minnesota Pollution Control Agency (MPCA), authorizes the Permittee to construct, install and operate a disposal system at the facilities named above and to discharge to a receiving water of the state of Minnesota in accordance with the requirements of this permit.

The goal of this permit is to reduce pollutant levels in point source discharges and protect water quality in accordance with the U.S. Clean Water Act, Minnesota statutes and rules, and federal laws and regulations.

This permit is effective on the issuance date identified above. This permit expires at midnight on the expiration date identified above.

Signature: *Elise M. Doucette*

This document has been electronically signed.

Elise M. Doucette, Supervisor
Water Section
Industrial Division

for the Minnesota Pollution Control Agency

Submit eDMRs

Submit via the MPCA e-Services at
https://rsp.pca.state.mn.us/TEMPO_RSP/Orchestrate.do?initiate=true

Submit WQ reports to:

Electronically: wq.submittals.mPCA@state.mn.us
Include *Water quality submittals form*:
<https://www.pca.state.mn.us/sites/default/files/wq-wwprm7-71.docx>

Questions on this permit?

For eDMR and other permit reporting issues, use the directory listed at the bottom of the DMR page:
<https://www.pca.state.mn.us/water/discharge-monitoring-reports>

For specific permit requirements, contact your compliance staff:
<https://www.pca.state.mn.us/water/wastewater-compliance->

Or, by mail:

Attention: WQ Submittals Center
Minnesota Pollution Control Agency
520 Lafayette Road North
St. Paul, MN 55155-4194

*Whole Effluent Testing (WET) and Pretreatment Annual Reports
must be mailed to the WQ Submittals Center*

[and-enforcement-staff-contacts](#)

Wastewater Permit Program general questions, contact:
MPCA, 651-282-6143 or 1-800-657-3938.

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1. Summary of stations and station locations

Station	Type of station	Local name	PLS location
LA 001	MNG49 Wastewater	Stormwater and/or Washwater Contained on Site	T29N, R22W, S32, NW Quarter
SD 001	MNG49 Stormwater, Non-specific	Subsector J1, J2 & D1 Industrial Stormwater	T29N, R22W, S32, NW Quarter
SD 002	MNG49 Stormwater, Non-specific	Subsector E2 Industrial Stormwater	T29N, R22W, S32, NW Quarter
SD 003	MNG49 Dewatering	SIC 1442 Dewatering	T29N, R22W, S32, NW Quarter
SD 004	MNG49 Dewatering	SIC 1446 Dewatering	T29N, R22W, S32, NW Quarter
SD 005	MNG49 Dewatering	SUBSECTOR J2 Dewatering	T29N, R22W, S32, NW Quarter

2. Permit requirements

SD 001	MNG49 Stormwater, Non-specific	
		Surface Discharge: MNG49 Subsectors D1, J1, J2
	5.1.1	The Permittee shall submit an annual DMR : Due by 21 days after the end of each calendar year following permit issuance. [Minn. R. 7001.0150, Subp. 2(B)]
SD 002	MNG49 Stormwater, Non-specific	
		Surface Discharge: MNG49 Subsector E2
	5.2.1	The Permittee shall submit an annual DMR : Due by 21 days after the end of each calendar year following permit issuance. [Minn. R. 7001.0150, Subp. 2(B)]
SD 003	MNG49 Dewatering	
		Surface Discharge: MNG49 Dewatering from Construction Sand and Gravel (1442)
	5.3.1	The Permittee shall submit a quarterly DMR : Due by 21 days after the end of each calendar quarter following permit issuance. [Minn. R. 7001.0150, Subp. 2(B)]
	5.3.2	The Permittee shall submit an annual DMR : Due by 21 days after the end of each calendar year following permit issuance. [Minn. R. 7001.0150, Subp. 2(B)]
SD 004	MNG49 Dewatering	
		Surface Discharge: MNG49 Dewatering from Industrial Sand Mining (1446)
	5.4.1	The Permittee shall submit a monthly DMR : Due by 21 days after the end of each calendar month following permit issuance. [Minn. R. 7001]
	5.4.2	Parameters that have a monitoring frequency of once per quarter and an effective period of Mar, June, Sept, Dec may be collected any time during that quarter. The sample data must be reported on the March, June, September, and December DMRs. [Minn. R. 7001]
	5.4.3	Parameters that have a monitoring frequency of once per year and an effective period of Dec may be collected any time during the calendar year. The sample data must be reported on the DMRs. [Minn. R. 7001]
SD 005	MNG49 Dewatering	
		Surface Discharge: MNG49 Dewatering from Subsector J2 (1411, 1422, 1423, 1429)
	5.5.1	The Permittee shall submit a quarterly DMR : Due by 21 days after the end of each calendar quarter following permit issuance. [Minn. R. 7001.0150, Subp. 2(B)]
	5.5.2	The Permittee shall submit an annual DMR : Due by 21 days after the end of each calendar year following permit issuance. [Minn. R. 7001.0150, Subp. 2(B)]
MNG490000	Nonmetallic Mining/Associated Activities General Permit	
		Non-Metallic Mining and Associated Activities General Permit Requirements
	5.6.1	Applicability. [Minn. R. 7001]
	5.6.2	This permit authorizes stormwater discharges associated with the following industrial activities: A. Construction sand and gravel (Standard Industrial Classification [SIC] Code 1442) and industrial sand mining areas (SIC Code 1446) - hereinafter Subsector J1.

		B. Dimension stone (SIC Code 1411), crushed and broken limestone (SIC Code 1422), crushed and broken granite (SIC Code 1423), crushed and broken stone (not elsewhere classified, SIC Code 1429) mining and quarrying areas - Subsector J2. C. Asphalt production areas, also known as asphalt paving mixtures and blocks (SIC Code 2951), including portable asphalt plants - Subsector D1. D. Concrete block and brick (SIC Code 3271), concrete products other than block and brick (SIC Code 3272), and ready-mix concrete (SIC Code 3273), including portable concrete plants - Subsector E2. E. Recycling and storage of materials approved in Minn. R. 7035.2860 (Beneficial Use of Solid Waste) at sites engaged in facility activities associated with all SIC Codes listed in A. through D. above. F. Activities associated with the above facilities noted, including maintenance activities and facilities, unless otherwise prohibited in this permit. This Permit authorizes stormwater discharges associated with construction activity and small construction activity, as defined in 40 CFR parts 122.26(b)(14)(x) and (b)(15), respectively. The Permittee shall comply with the "Stormwater Discharge Design Requirements" chapter and the "Construction Activity Requirements" chapter of the MPCA Construction Stormwater (CSW) NPDES general permit (https://www.pca.state.mn.us/sites/default/files/wq-strm2-68a.pdf) when conducting construction activity and small construction activity. Earth disturbing activities conducted as a normal part of post-construction use of the permitted facility do not trigger the need for CSW permit coverage. The earth disturbing activity has to be part of a project to build, demolish, or replace a structure (e.g., building, road, pad, pipeline, transmission line) to trigger the need to comply with the CSW permit. Earth disturbance that is a normal part of the long-term use or maintenance of the property is not "active construction" and does not trigger the need for CSW permit coverage. [Minn. R. 7001]
	5.6.3	This permit authorizes non-stormwater discharges to surface waters of the state from dewatering of mine or quarry areas at J1 and J2 Subsectors that meet the effluent limits and requirements in this permit. "Mine Pit Dewatering" means any water that is impounded or that collects in the mine and is pumped from the mine through the efforts of the mine operator. Uncontaminated groundwater and stormwater collecting in a low area in which there is a stormwater outlet for stormwater/seepage/drainage by gravity overflow shall not be considered mine pit dewatering. However, if a mine is also used for treatment of process generated wastewater, discharges of commingled water from the facilities shall be deemed discharge of process generated wastewater and is not authorized under this permit. [Minn. R. 7001]
	5.6.4	This permit authorizes non-stormwater discharges that do not discharge to a surface water of the state provided these discharges are not already authorized in a separate NPDES/SDS permit. Non-stormwater that co-mingles with stormwater is considered a non-stormwater discharge (wastewater) and must be managed compliant with this Permit. To be authorized under this permit, the following discharges must be collected, contained or infiltrate into the ground and Best Management Practices must be implemented to prevent contamination of groundwater: A. Aggregate wash water from Subsector J1 and J2 facilities. B. Dredging operations from Subsector J1 and J2 facilities. C. Installation, construction, and operation of wet scrubbers at asphalt production areas, including portable asphalt plants (Subsector D1). D. Washing trucks, mixers, transport buckets, forms and/or other equipment at concrete block and brick, concrete products other than block and brick, and ready-mix concrete facilities (Subsector E2). E. Uncontaminated scale deck wash water that does not use detergents, solvents, or degreasers. F. Stormwater and deck wash water collected in holding tanks under scales. G. Wash water associated with cleaning of mobile equipment that does not use detergents,

		solvents, or degreasers. H. Waters used for sawing stone or dust control on crushers, conveyors, associated equipment, stockpiles, and site roadways. I. Boiler blowdown and reverse osmosis reject. J. Low or high pressure steam curing. K. Noncontact cooling water used for dryer, pump, and air compressor cooling. For wastewater discharges listed above, see the Technology Based Effluent Limits - Non-Stormwater Discharges section of this permit for Wastewater Basin Design and Construction Requirements for newly constructed basins as of the issuance date of this permit. [Minn. R. 7001]
	5.6.5	This permit authorizes non-stormwater discharges provided these discharges are not already authorized in a separate NPDES/SDS permit and that appropriate Best Management Practices are utilized to minimize erosion and the discharges of sediment when necessary: A. Emergency fire-fighting activities. B. Fire hydrant and fire suppression system flushing. C. Potable water line flushing. D. Uncontaminated condensate from air conditioners, coolers, and other compressors and from the outside storage of refrigerated gases or liquids. E. Landscape watering provided all pesticides, herbicides and fertilizers have been applied in accordance with manufacturer's instructions. F. Pavement wash waters where no detergents are used and no spills or leaks of potential pollutants such as fertilizers, salts, or toxic and hazardous materials have occurred unless all spilled material has been removed. G. Routine external building wash down that does not use detergents, solvents, or degreasers. H. Uncontaminated groundwater or spring water. I. Foundation or footing drains where flows are not contaminated. J. Incident windblown mist from cooling towers that collects on rooftops or adjacent portions of the facility, but not intentional discharges from the cooling tower (e.g. 'piped' cooling tower blowdown or drains). [Minn. R. 7001]
	5.6.6	Not all activities covered by this permit will be conducted at each site covered under this permit. Therefore, only those provisions of this permit that address activities occurring at a particular site are applicable to that site. [Minn. R. 7001]
	5.6.7	Activities Not Covered/Limitations on Coverage. [Minn. R. 7001]
	5.6.8	This permit does not authorize the discharge from the following activities except as authorized in the Applicability Section of this permit: A. Dewatering of mine or quarry areas other than those under Subsector J1 and J2. B. Surface water discharges of scrubber or other air emissions control wastewater, cooling or boiler wastewater, floor drains from process areas, equipment/vehicle washing, cleaning and maintenance wastewaters, and sewage. C. Contaminated groundwater discharges. D. Petroleum refinement. E. Manufacturing of asphalt or asphalt emulsions. F. Industrial sand mines (SIC 1446) that utilize HF flotation. G. Dredging or filling of wetlands or other surface waters of the state. H. Discharges of hazardous substances, lubricants, fuel leaks, or fuel spills. I. Sites for which Environmental Assessment Worksheets or Environmental Impact Statements are required by Minn. R. ch. 116D and/or 42 U.S.C. Sec 4321 - 4370f, until that environmental review is completed. [Minn. R. 7001]
	5.6.9	This permit does not authorize new or expanded discharges that the MPCA determines are or may be discharged at a level which will cause, have thereasonable potential to cause, or contribute to a violation of water quality standards consistent with the requirements of 40 CFR 122.4(i) and 122.44(d)(1)(i). This includes the discharge to groundwater where pollutants

		in the discharge reach surface waters and exceed applicable surface water quality standards. [40 CFR pt. 122, 4(i)]
	5.6.10	This permit does not authorize existing discharges that the MPCA determines are or may be discharged at a level which will cause, have the reasonable potential to cause, or contribute to a violation of water quality standards consistent with the requirements of 40 CFR 122.44. This includes the discharge to groundwater where pollutants in the discharge reach surface waters and exceed applicable surface water quality standards. [40 CFR pt. 122, 44]
	5.6.11	This permit does not authorize discharges that adversely impact or contribute to adverse impacts on a listed endangered or threatened species or adversely modify a designated critical habitat. This permit does not replace or satisfy any review requirements for endangered or threatened species, from new or expanded discharges that adversely impact or contribute to adverse impacts on a listed endangered or threatened species or adversely modify a designated critical habitat. The owner must conduct any required review and coordinate with appropriate agencies for any project with the potential of affecting endangered or threatened species, or their critical habitat. [Minn. R. 7001]
	5.6.12	This permit does not authorize discharges which adversely affect properties listed or eligible for listing in the National Register of Historic Places or affecting known or discovered archeological sites. This permit does not replace or satisfy any review requirements for historic places or archeological sites, from new or expanded discharges which adversely affect properties listed or eligible for listing in the National Register of Historic Places or affecting known or discovered archeological sites. The owner must be in compliance with the National Historic Preservation Act and conduct all required review and coordination related to historic preservation, including significant anthropological sites and any burial sites, with the Minnesota Historic Preservation Officer. [Minn. R. 7001]
	5.6.13	Facilities located within the exterior boundaries of an Indian reservation must apply to the U.S. EPA for coverage under the multi-sector general permit or for an individual permit. Note: "Indian country is defined under 18 USC Â§1151 and includes all lands within the exterior boundaries of federally recognized Indian reservations and on lands held in federal trust status. Facilities that currently do not have storm water discharge permit coverage and are located within Indian Country shall contact the United States Environmental Protection Agency (EPA) to apply for permit coverage. For existing discharges covered under a NPDES permit from EPA, discharges will continue to be covered by a NPDES permit. Dischargers that previously held permit coverage under previous versions of this permit after September 30, 2001, are no longer eligible for coverage under this permit and must contact EPA to apply for permit coverage." [Minn. R. 7001]
	5.6.14	This permit does not authorize discharges to calcareous fens listed in Minn. R. 7050.0335. [Minn. R. 7007.0335]
	5.6.15	Mine site dewatering discharges from Subsectors J1 and J2 that discharge directly to the following receiving waters are not authorized by this permit: A. Outstanding Resource Value Waters (ORVWs) as defined by Minnesota Rules 7050.0335 and as listed in Minnesota Rules 7050.0470; B. Department of Natural Resources (DNR)-designated trout waters (trout waters are designated in Minn. R. 6264.0050, subp. 2 and 4); and C. DNR-posted fish-spawning areas. [Minn. R. 6264.0125]
	5.6.16	Authorization. [Minn. R. 7001]
	5.6.17	Permit Application. Owners and operators of a site or sites with covered facility activities identified in this permit, and who provide a complete and approvable application for a permit, are eligible for coverage under this permit for those activities. [Minn. R. 7001]
	5.6.18	Notice of Coverage. [Minn. R. 7001]
	5.6.19	Permittees requesting initial coverage are covered under this permit when the MPCA notifies them in writing of this coverage. [Minn. R. 7001]
	5.6.20	Additional sites may be covered under this permit provided that the new site(s) meet all

		applicability criteria of this permit and that all information required by the Site Inventory Report Form is submitted to the MPCA at least 10 days prior to initiation of land-disturbing activities at the new site(s) or initiation of operation at a previously developed site. [Minn. R. 7001]
	5.6.21	Requiring an Individual Permit. [Minn. R. 7001]
	5.6.22	If the MPCA finds that the facility site of a permit applicant or a Permittee covered under this permit would be more appropriately covered under an individual permit, the MPCA may require an individual permit for the applicant or the Permittee, in accordance with Minn. R. 7001.0210, subp. 6. In considering whether it is appropriate to issue an individual permit for a site, the MPCA will consider whether the site is contributing, or may contribute, to a water quality standard violation. Any interested person may petition the MPCA commissioner to take action under 40 CFR Â§ 122.28(b)(3)(i) to require a facility covered by the general permit to apply for and obtain an individual permit. [Minn. R. 7001.0210, subp. 6]
	5.6.23	This general permit does not cover activities or discharges covered under a pre-existing individual permit unless the MPCA has specifically revoked or terminated that individual permit. [Minn. R. 7001]
	5.6.24	This general permit does not cover industrial sand mining activities (SIC Code 1446) that: A. Meet or exceed the thresholds for mandatory environmental review and the MPCA determines the operations, emissions, activities, discharges, or facilities of the permit applicant or permittee have characteristics creating the potential for significant environmental effects; or B. The MPCA determines the need for site-specific permit requirements including, but not limited to, groundwater monitoring, additional surface discharge monitoring, hydrogeological study, etc. which are beyond those contained in this permit in order to protect waters of the state. If the MPCA determines that A or B apply, a permit applicant or Permittee shall obtain coverage under an individual permit for the facility site. Sites that are required to obtain individual permit coverage, at the Permittee's request, may be reviewed for general permit eligibility following the first full term of individual permit coverage. [Minn. R. 7001]
	5.6.25	Notice of Temporarily Inactive Site(s). [Minn. R. 7001]
	5.6.26	The Permittee(s) must ensure that permanent stormwater Best Management Practices (BMPs) are in place if the site is temporarily inactive. [Minn. R. 7001]
	5.6.27	During the temporarily inactive period, intervention limit monitoring is not required, but the Permittee must indicate on the Comments field of the Discharge Monitoring Report the inactivity. Should the site become active, the Permittee is required to sample in accordance with the Monitoring Requirements section of the permit for the calendar year the site becomes active. [Minn. R. 7001]
	5.6.28	Notice of Inactive Site(s). [Minn. R. 7001]
	5.6.29	The Permittee(s) must ensure stabilization of the site upon cessation of mining activities. Stabilization shall be initiated immediately after the termination of the mining operation and upon completion the area shall be restored to its intended state. [Minn. R. 7001]
	5.6.30	The Permittee(s) must complete the following to achieve final stabilization: A. The drainage ways that leave the site must be stabilized to prevent erosion with riprap or other protective material. B. All soils must be stabilized by a uniform perennial vegetative cover with a density of 70 percent over the entire pervious surface area, or other equivalent means necessary to prevent soil failure under erosive conditions. C. Temporary BMPs for erosion prevention, such as synthetic liners and silt fences, must be removed. BMPs designed to decompose on site (such as some compost logs) may be left in place.

		D. All sediment must be removed from conveyances and from temporary sedimentation basins that are to be used as permanent water quality management basins in order to sufficiently return the basin to design capacity. Sediment must be stabilized to prevent it from being washed back into the basin, conveyances or drainage-ways discharging off-site or to surface waters. E. Other BMPs as necessary must be implemented so as to prevent erosion from the site excavation areas and stockpiles that have been used by the Permittee. [Minn. R. 7001]
	5.6.31	In order to have permit coverage terminated and have the Permittee released from inspection, recording and reporting requirements, the Permittee shall ensure and certify on the Site Inventory Form for site(s) where the Permittee no longer conducts the activities authorized by this permit that: A. The site closure achieves final stabilization requirements; or B. There is no longer a discharge of pollutants to waters of the state, including groundwater, from activities covered by this permit; or C. The Permittee supplies the name and contact information for the owner or operator that is responsible for the site. [Minn. R. 7001]
	5.6.32	Water Quality Based Effluent Limits. [Minn. R. 7001]
	5.6.33	A wastewater discharge shall not cause or contribute to a violation of water quality standards unless the discharge meets all requirements of 40 CFR 122.44. [40 CFR pt. 122, 44]
	5.6.34	The Permittee shall operate and maintain the facility and shall control runoff, including stormwater, from the facility to prevent the exceedance of water quality standards specified in Minnesota Rules, chs. 7050 and 7060. [Minn. R. 7050, Minn. R. 7060]
	5.6.35	The Permittee shall limit and control the use of materials at the facility that may cause exceedances of surface water and groundwater standards specified in Minnesota Rules, chs. 7050 and 7060. These materials include, but are not limited to, detergents and cleaning agents, solvents, chemical dust suppressants, lubricants, fuels, drilling fluids, oils, fertilizers, explosives and blasting agents. [Minn. R. 7050, Minn. R. 7060]
	5.6.36	The MPCA may modify this permit, require corrective actions or take other actions if it determines that a discharge authorized by this permit is causing or contributing to a violation of water quality standards. [Minn. R. 7001]
	5.6.37	Floating solids or visible foam shall not be discharged in other than trace amounts. [Minn. R. 7001]
	5.6.38	Oil or other substances shall not be discharged in amounts that create a visible color film. [Minn. R. 7001]
	5.6.39	Any outlet pipe, culvert or hose outlets for the discharge shall be located at ground level. The Permittee shall install and maintain outlet protection measures, such as properly sized riprap, splash pads or gabions at the discharge stations (outlets) to prevent erosion. [Minn. R. 7001]
	5.6.40	All water from dewatering or basin draining activities must be discharged in a manner that does not cause nuisance conditions, flooding on nearby properties, erosion in receiving channels or on downslope properties, or inundation in a wetland causing adverse impact to the wetland. [Minn. R. 7001]
	5.6.41	Special Requirements. [Minn. R. 7001]
	5.6.42	For stormwater discharges with a discharge location that flows to and is within one mile of Outstanding Resource Value Waters (ORVWs) as defined in Minn. R. 7050.0335, subp. 1, 2, 3, and 4 (not including calcareous fens listed in Minn. R. 7050.0335 & Minn. R. 7050.0470) and trout waters as listed in Minn. R. 6264.0050, subp. 2 and 4: A. The Permittee shall develop and implement stormwater control measures, including BMPs that restrict the facility industrial stormwater discharges to the extent necessary to preserve the existing high quality, or to preserve the wilderness, scientific, recreational, or other special characteristics that make the water an Outstanding Resource Value Water. In addition, a stormwater intervention limit value of 65 mg/L for Solids, Total Suspended (TSS) applies to the discharge at a stormwater monitoring location, instead of 100 mg/L as specified in the 'Stormwater Limits and Monitoring Intervention Limits' section of this Permit. If the Permittee

		has a waiver from the requirements to conduct benchmark monitoring in accordance with the Technology Based Effluent Limits - Stormwater Discharges section of this permit, the benchmark value does not apply. B. If the discharge is to a trout stream, BMPs shall also be designed and implemented to protect the water quality from excess temperature increases. C. If the discharge is to a trout lake, BMPs shall also be designed and implemented to protect the water quality from excess phosphorus increases. D. If the discharge is to a wetland, the Permittee shall also comply with the requirements of Minn. R. 7050.0186 WETLAND STANDARDS AND MITIGATION. [Minn. R. 7050]
	5.6.43	If the site has any stormwater discharges with the potential for significant adverse impacts to a wetland (e.g., conversion of a natural wetland to a stormwater pond), the Permittee must demonstrate that the wetland mitigative sequence has been followed prior to the impacts to the wetland. [Minn. R. 7001]
	5.6.44	If the potential adverse impacts to a wetland on a specific site have been addressed by permits or other approvals from an official statewide program (U.S. Army Corps of Engineers 404 program, Minnesota Department of Natural Resources, or the State of Minnesota Wetland Conservation Act) specifically for the site, the Permittee may use that permit or other determination issued by these agencies to show that the potential adverse impacts have been addressed. For the purposes of this permit, de minimis actions are determinations by the permitting MPCA that address the site impacts, whereas a non-jurisdictional determination does not address site impacts. [Minn. R. 7001]
	5.6.45	If there are impacts from the site that are not addressed in one of the permits addressed in the Special Requirements section of this permit or other determinations (e.g., permanent inundation or flooding of the wetland, significant degradation of water quality, excavation, filling, draining), the Permittee must minimize all adverse impacts to wetlands by utilizing appropriate measures. Measures used must be based on the nature of the wetland, its vegetative community types and the established hydrology. These measures include in order of preference: A. Avoid all significant adverse impacts to wetlands from site discharges. B. Minimize any unavoidable impacts to wetlands from site discharges. C. Provide compensatory mitigation when the Permittee determines that there is no reasonable and practicable alternative to having a significant adverse impact on a wetland. For compensatory mitigation, wetland restoration or creation shall be of the same type, size, and whenever reasonable and practicable in the same watershed as the impacted wetland. [Minn. R. 7001]
	5.6.46	If a site discharges to a water of the state that appears on the current U.S. Environmental Protection MPCA (USEPA) approved list of impaired waters under Section 303 (d) of the Clean Water Act (33 U.S.C. Sec 303 (d)), the Permittee must review whether changes may be warranted in the site's Pollution Prevention Plan (Plan) to reduce the impact of the discharge. If a USEPA approved Total Maximum Daily Load (TMDL) has been developed, the Permittee must review the adequacy of the Plan to meet the TMDLs Waste Load Allocation. [Minn. R. 7001]
	5.6.47	Technology Based Effluent Limits - Stormwater Discharges. [Minn. R. 7001]
	5.6.48	Stormwater Management Devices. [Minn. R. 7001]
	5.6.49	The Permittee is authorized to use industrial stormwater ponds, sedimentation basins, and/or infiltration devices for stormwater management. [Minn. R. 7001]
	5.6.50	Industrial stormwater ponds, sedimentation basins, and/or infiltration devices shall not be located in areas that receive direct discharges from permanent or stationary vehicle fueling tanks (aboveground or underground storage tanks) and maintenance activity areas (shops), except where adequate secondary containment is provided as required under the SPCC Rule, and/or the basin is designed specifically to satisfy the federal SPCC Rule. Spill prevention and response BMPs shall be implemented in areas where mobile refuelers transfer product. [Minn. R. 7001]

5.6.51	When wastewater from authorized activities is co-mingled with stormwater, it is considered wastewater, and a surface water discharge is not authorized under this permit. This does not include stormwater co-mingling with mine dewatering from Subsector J1 and J2 facilities, which is approved for a surface water discharge under this permit. [Minn. R. 7001]
5.6.52	If the Permittee provides documentation to MPCA that the stormwater management device was designed by a registered professional engineer to control a 10-year, 24-hour storm event (based on National Oceanic and Atmospheric Administration Atlas 14, Volume 8 (NOAA Atlas 14, Volume 8)), then no sampling of a discharge is required upon MPCA approval. If the stormwater management device is already in place at an existing facility, the sizing of the device shall be confirmed by a registered professional engineer before the sampling requirement is waived. This does not include unauthorized non-stormwater discharges to surface waters. This waiver is for monitoring only; effluent limits still apply to the discharge and Permittees must maintain compliance with the limits. This waiver is only effective for the term of the permit. Permittees must reapply for the waiver every permit term. [Minn. R. 7001]
5.6.53	Erosion and Sediment Control Practices. [Minn. R. 7001]
5.6.54	Sediment control practices must be established on all down-gradient perimeters and be located up-gradient of any buffer zones. The perimeter sediment control practice must be in place before any up-gradient land disturbing activities begin. Use a range of erosion controls within the broad categories of flow diversion (e.g. swales, berms) and structural controls (e.g. sediment traps, dikes, silt fences). These practices shall remain in place until the site has been stabilized. [Minn. R. 7001]
5.6.55	The Permittee shall re-install all sediment control practices that have been adjusted or removed to accommodate short-term activities such as clearing or grubbing, or passage of vehicles, immediately after the short-term activity has been completed. Short-term activities shall be completed as quickly as possible. Re-installation of sediment control practices shall be completed no later than before the next precipitation event, even if the short-term activity is not complete. [Minn. R. 7001]
5.6.56	The Permittee(s) shall plan for and implement appropriate BMPs such as construction phasing, vegetative buffer strips, horizontal slope grading, and other construction practices that minimize erosion. The location of areas not to be disturbed shall be delineated (e.g. with flags, stakes, signs, silt fence etc.) on the project site before work begins. [Minn. R. 7001]
5.6.57	Temporary stockpiles or stripping/overburden stored outside the pit shall have sediment control mechanisms in place until the material is completely removed. Materials shall not be placed in any natural buffers, surface water, or stormwater conveyances such as curb and gutter systems, or conduits and ditches. [Minn. R. 7001]
5.6.58	Vehicle Tracking. Vehicle tracking of sediment onto paved surfaces from the site or operation must be minimized by BMPs such as stone pads, concrete or steel wash racks, or equivalent systems. Street sweeping must be used if such BMPs are not adequate to prevent sediment from being tracked onto the street within 24 hours of discovery. The MPCA Vehicle Tracking factsheet may be used as guidance in BMP development: http://www.pca.state.mn.us/index.php/view-document.html?gid=7419 . [Minn. R. 7001]
5.6.59	Good Housekeeping. Permittees conducting the industrial activities described in this permit shall keep exposed areas that may contribute pollutants to stormwater sufficiently clean to reduce or eliminate contaminated stormwater runoff. [Minn. R. 7001]
5.6.60	BMP Maintenance. [Minn. R. 7001]
5.6.61	The Permittee shall maintain all BMPs identified in the Pollution Prevention Plan (Plan) and implemented at the facility, to ensure BMP effectiveness. [Minn. R. 7001]
5.6.62	The Permittee shall develop a schedule for preventive maintenance of all BMPs. The schedule shall be stored with the Plan. [Minn. R. 7001]
5.6.63	If the Permittee identifies BMPs that are not functioning properly, the Permittee shall replace, maintain, or repair the BMPs within seven (7) calendar days of discovery. If BMP replacement, maintenance, or repair cannot be completed within seven (7) calendar days, the Permittee shall implement effective backup BMPs (temporary or permanent) until the effectiveness of

		the original BMPs can be restored. The Permittee shall document the justification for an extended replacement, maintenance, or repair schedule of the failed BMPs, and maintain it with the Plan. [Minn. R. 7001]
	5.6.64	The Permittee shall record dates of all maintenance and repairs. The Permittee shall maintain these records with the Plan. [Minn. R. 7001]
	5.6.65	All silt fences must be repaired, replaced, or supplemented when they become nonfunctional or the sediment reaches 1/2 of the height of the device. These repairs must be made within 24 hours of discovery, or as soon as field conditions allow access. [Minn. R. 7001]
	5.6.66	If sediment escapes the facility, off-site accumulations of sediment must be removed in a manner and at a frequency sufficient to minimize off-site impacts (e.g., fugitive sediment in streets could be washed into storm sewers by the next rain and/or pose a safety hazard to users of public streets). For sediment releases to surface waters, the release must be reported to the MPCA/DNR. The sediment shall be removed from the surface water if approved by the DNR. [Minn. R. 7001]
	5.6.67	Temporary and permanent sedimentation basins must have the sediment removed once the depth of sediment collected in the basin reaches 1/2 the storage volume. Removal must be completed within 72 hours of discovery, or as soon as field conditions allow access. [Minn. R. 7001]
	5.6.68	Spills and Leaks. [Minn. R. 7001]
	5.6.69	The Permittee shall develop and implement a spill prevention and response procedure. If the site already has a separate plan (e.g. Prevention and Response Plan as required by Minn. Stat. 115E, or Spill Prevention Control and Countermeasure Plan as required by Federal Law), that plan can be incorporated by reference into the Pollution Prevention Plan (Plan). In either case, a minimum of the following components shall be included with the Plan, or in a separate document: A. The Permittee shall report and document spills or leaks (as defined in Minn. Stat. Section 115.061) that occur in exposed areas, or that drain to a monitoring location. B. Material handling procedures, storage requirements, and cleanup equipment/materials and procedures necessary to recover as rapidly and thoroughly as possible spills or leaks pursuant to Minn. Stat. Section 115.061. All methods and procedures must be made available to appropriate site personnel. C. Contact information for individuals and emergency and regulatory agencies that must be notified in the event of a spill. When a spill or discharge of a potentially polluting material occurs, the Permittee shall immediately notify the Minnesota Department of Public Safety Duty Officer at 1-800-422-0798 (toll free) or 651-649-5451 (metro area) per Minn. Stat. Section 115.061. [Minn. Stat. ch. 115]
	5.6.70	Subsector D1 - Asphalt Production - Additional Spills and Leaks Requirements. [Minn. R. 7001]
	5.6.71	In addition to the requirements in this Section, the Permittee shall use drip pans and splash guards where spills frequently occur at Subsector D1 facilities. [Minn. R. 7001]
	5.6.72	Subsector E2 - Ready-Mix and Other Concrete Operations - Additional Spills and Leaks Requirements. [Minn. R. 7001]
	5.6.73	In addition to the requirements in this Section, the Permittee shall prevent or minimize the discharge of spilled cement, aggregate (including sand or gravel), kiln dust, fly ash, or settled dust from paved portions of the facility that are exposed to stormwater at Subsector E2 facilities. [Minn. R. 7001]
	5.6.74	The Permittee shall determine the frequency of sweeping or equivalent by the amount of industrial activity occurring at Subsector E2 facilities and the frequency of exposure to stormwater, but it shall be performed at least once per week if cement, aggregate, kiln dust, fly ash, or settled dust are being handled or processed and materials are present on paved surfaces. [Minn. R. 7001]
	5.6.75	The Permittee shall also prevent the exposure of fine granular solids (cement, fly ash, kiln dust, etc.) to stormwater, where practicable, by storing these materials in enclosed silos,

		hoppers, buildings, and under other coverings. [Minn. R. 7001]
	5.6.76	The Permittee shall include measures in the Plan to ensure that process wastewater resulting from washing trucks, mixers, transport buckets, forms, or other equipment are discharged in accordance with applicable parts of this permit for Subsector E2 facilities. [Minn. R. 7001]
	5.6.77	Technology Based Effluent Limits - Non-Stormwater Discharges. [Minn. R. 7001]
	5.6.78	Wastewater Basin Design and Construction Requirements. [Minn. R. 7001]
	5.6.79	When constructing new (as of the issuance date of this permit) containment basins to infiltrate authorized non-stormwater discharges, not including uncontaminated scale deck wash water that does not use detergents, solvents, or degreasers, wash water associated with cleaning of mobile equipment that does not use detergents, solvents, or degreasers and/or waters used for sawing stone or dust control on crushers, conveyors, associated equipment, stockpiles, and site roadways, of this permit from Subsector J1 and J2 activities, it shall: A. Have at least sufficient capacity to contain all wastewater discharges so as to prevent overflow. B. Be constructed to contain the bounce from precipitation and stormwater runoff resulting from a 10-year, 24 hour storm event. Any overflow of the basin shall not discharge to surface water or any storm sewer system. C. Not be constructed in areas that receive direct discharges from permanent or stationary vehicle fueling tanks (underground or aboveground storage tanks) and maintenance activity areas (shops). Spill prevention and response BMPs shall be implemented in areas where mobile refuelers transfer product. [Minn. R. 7001]
	5.6.80	When constructing new (as of the issuance date of this permit) containment basins to infiltrate authorized non-stormwater discharges from Subsector E2 activities, it shall: A. Be designed consistent with accepted engineering practices. Designs shall be approved by a professional engineer or other licensed professional. B. Be constructed and maintained to allow for infiltration of wastewater. Long term soil infiltration rates for new infiltration devices shall not be greater than 1.63 inches per hour unless pretreatment practices are implemented prior to infiltration. C. Be constructed to allow for maximum separation distance from groundwater with a minimum of 3 feet between the bottom of the impoundment and the seasonal high water table. D. Have at least sufficient capacity to contain all wastewater discharges so as to prevent overflow. E. Be constructed to contain the bounce from precipitation and stormwater runoff resulting from a 10-year, 24 hour storm event. Any overflow of the basin shall not discharge to surface water or any storm sewer system. F. Not be constructed in areas with standing water or areas that receive direct discharges from permanent or stationary vehicle fueling tanks (underground or aboveground storage tanks) and maintenance activity areas (shops). Spill prevention and response BMPs shall be implemented in areas where mobile refuelers transfer product. The Permittee shall maintain design documentation to demonstrate containment basins meet the requirements of (A) through (F). [Minn. R. 7001]
	5.6.81	If a Permittee has indicated all stormwater and/or process wastewater is contained and/or infiltrates on site, the site is prohibited from discharging to surface waters and will not be required to submit Discharge Monitoring Reports (DMRs). The site will be assigned a Land Application (LA) designation in lieu of a Surface Discharge (SD) designation. [Minn. R. 7001]
	5.6.82	Karst Topography. [Minn. R. 7001]
	5.6.83	New Basins. New infiltration devices for authorized non-stormwater discharges are prohibited within 1000 feet up-gradient or 100 feet downgradient of active karst features. [Minn. R. 7001]
	5.6.84	Existing Basins. The design and construction of containment basins shall include additional or different measures as necessary (e.g. impervious liner in pond bottom) to assure compliance

		with surface and groundwater standards in Minn. R. chs. 7050 and 7060 and to ensure protection of drinking water supply management areas (see Minn. R. 4720.5100, subp. 13). These measures shall be identified in the Pollution Prevention Plan. [Minn. R. 7001]
	5.6.85	Subsector J1 and J2 - Mine Pit Dewatering to Surface Waters. [Minn. R. 7001]
	5.6.86	Permittees are authorized to discharge mine site dewatering flow to surface waters if the following conditions are met: A. Discharges only from Subsector J1 and J2 facilities. B. Discharges meet the effluent limits applied in this permit. C. The dewatering discharges do not co-mingle with other process wastewater. D. The dewatering discharges are not to ORVWs, DNR-designated trout waters, and/or DNR-posted fish-spawning areas. E. The Permittee has documented in their Pollution Prevention Plan location and initial flow estimates for surface discharge stations. [Minn. R. 7001]
	5.6.87	Dewatering or basin draining must be discharged to a control device on the project site whenever possible, such as a temporary or permanent sedimentation basin or infiltration device. Discharge from the control device must be visually checked to ensure adequate treatment is obtained and that nuisance conditions (see Minn. R. 7050.0210, subp. 2) will not result from the discharge. [Minn. R. 7001]
	5.6.88	If the water cannot be discharged to a control device prior to entering the surface water, it must be treated with the appropriate BMPs, such that the discharge does not adversely affect the receiving water or downstream landowners. [Minn. R. 7001]
	5.6.89	The Permittee(s) must ensure that discharge points are adequately protected from erosion and scour. The discharge must be dispersed over natural riprap, sand bags, plastic sheeting, or other accepted energy dissipation measures. Adequate sedimentation control measures are required for discharge water that contains suspended solids. [Minn. R. 7001]
	5.6.90	Any inlet pipe, culvert or hose for the discharge shall be raised above the ground so that the discharge flow does not draw in and transport solids from the sump area. [Minn. R. 7001]
	5.6.91	Subsector D1 -Asphalt - BMPs for Wet Scrubber Wastewater. [Minn. R. 7001]
	5.6.92	This permit authorizes stormwater discharges from asphalt production areas (SIC Code 2951) and/or stormwater discharges from the installation, construction, and/or operation of wet scrubbers at asphalt production plants. This permit does not authorize the discharge of asphalt production wet scrubber wastewater to surface waters or to groundwater. Any discharge to surface water will require an individual NPDES permit. [Minn. R. 7001]
	5.6.93	Wastewater from asphalt production wet scrubbers shall be held within pipes, aboveground tanks or lined impoundments. Pipes and tanks shall be operated and maintained to prevent leaks. Cracks or other failures in pipes or tanks shall be repaired immediately. If pipes are buried, or pipes or tanks are in contact with the land surface, they shall be inspected at least once before each operating year to locate and repair cracks or other failures. [Minn. R. 7001]
	5.6.94	An impoundment for containment of wet scrubber wastewater shall meet the design criteria specified in this section. Impoundments that do not meet the criteria in this part may be authorized if requested in writing by the Permittee, and approved in writing by the MPCA, at least 90 days before construction of the impoundment begins. [Minn. R. 7001]
	5.6.95	Construction of impoundments in close proximity to drinking water supplies and other areas subject to contamination should be avoided. A minimum separation of four feet between the top of the impoundment seal and the seasonal high water table shall be maintained. Drain tile under the impoundment shall not be used to permanently lower the water table. A minimum separation of ten feet between the top of the impoundment seal and bedrock formations shall be maintained. Impoundments shall not be constructed on locations with karst topography. [Minn. R. 7001]
	5.6.96	Impoundments shall be constructed utilizing at least a 30-mil-thick continuous Polyvinyl Chloride (PVC) or High Density Polyethylene (HDPE) liner, or a reinforced Portland cement

		concrete liner. A PVC or HDPE liner, not replaced on an annual basis, shall be covered with at least one-foot depth of finely textured soil. Liquid depths for impoundments shall be designed for a maximum of six feet. [Minn. R. 7001]
	5.6.97	PVC and HDPE liner systems shall be designed and installed in general accordance with the most recent version of MPCA guidance documents High Density Polyethylene Liner Guidance (June 2011) or Polyvinyl Chloride Liner Guidelines (May 2011). [Minn. R. 7001]
	5.6.98	No PVC or HDPE liner panels shall be used at more than one site without the prior written approval of the MPCA. The Permittee shall remove and properly dispose of used PVC and HDPE liner materials in accordance with applicable solid waste statutes and rules. [Minn. R. 7001]
	5.6.99	The subsoil bed for a PVC or HDPE liner shall be sufficiently prepared to ensure that all holes, rocks, stumps and other debris are eliminated. The subsoil shall be sieved or the area raked after grading to provide a smooth, flat surface free of stones and other sharp objects. The subsoil bed shall be sloped at least 1% upward toward the dike, so as to reduce gas and hydrostatic pressures, and to facilitate pumping of the impoundment. [Minn. R. 7001]
	5.6.100	PVC and HDPE liner panels shall be laid out to minimize seams, with an overlap of four to size inches. The PVC or HDPE liner anchor trench shall have a minimum six inch depth and be placed at least nine to twelve inches beyond the slope break at the dike. PVC and HDPE liners shall be installed under the direct supervision of a person experienced in the proper installation of such liners. This person shall inspect all seams on-site for their acceptability prior to the construction certification. [Minn. R. 7001]
	5.6.101	The design of a reinforced Portland cement concrete liner shall be in accordance with the American Concrete Institute (ACI) Manual of Concrete Practice. [Minn. R. 7001]
	5.6.102	The Permittee shall inspect each impoundment for cracks or other failures, at least once each operating year. This inspection shall be conducted after the spring thaw and before the start of the asphalt plant operating season. In addition: A. PVC and HDPE lined impoundments shall complete a water balance test annually after the spring thaw and before the start of the asphalt plant operating season. The water balance test shall be completed in accordance with the MPCA "Prefill and Water Balance Criteria" (December 2010). B. Concrete lined impoundments shall complete water tightness testing at least once per 5 years (once per permit cycle). Water tightness testing for concrete impoundments shall be completed in accordance with the most recent version of ACI 350.1 "Specification for Tightness Testing of Environmental Engineering Concrete Containment Structures." Impoundments that do not pass the water balance or tightness testing may not be placed into service until a passing result is achieved; this may require identifying and repairing problem areas of the impoundment and repeating the testing. The inspector shall prepare a written report of each water balance and inspection. Any cracks or other failures shall be repaired immediately, and certified by an engineer registered in Minnesota. [Minn. R. 7001]
	5.6.103	The Permittee shall keep signed copies of the impoundment design plans and specifications, construction certifications, water balance and inspection reports, and repair certifications with the asphalt plant at all times. [Minn. R. 7001]
	5.6.104	The Permittee shall divert surface water runoff around impoundments, prevent erosion, and protect the structural integrity of exterior embankments from failure. [Minn. R. 7001]
	5.6.105	The Permittee shall maintain impoundments during the winter so that ice layers and frost action do not damage the liner effectiveness and integrity. [Minn. R. 7001]
	5.6.106	Sediments that accumulate in asphalt production wet scrubber wastewater containment structures shall be removed in a manner so as to not damage the integrity and effectiveness of the containment structure. The Permittee may dispose of these sediments at a permitted sanitary landfill, through use as road base or subgrade, or through blending into the paving asphalt mixture. The Permittee may use one of the following options for sediment disposal if the MPCA authorizes this specific in writing: A. Leave in-place;

		B. Use as clean fill; or C. Land spread. The Permittee shall record in writing the volume of sediments removed from asphalt production scrubber disposal systems, and the method and location of the disposal of such materials. [Minn. R. 7001]
5.6.107		The Permittee may dispose of asphalt production wet scrubber wastewater for the purposes of roadbed preparation or dust control, and in accordance with the following requirements: A. Wastewater may be applied to the surface of unpaved roads or roadbeds only if the asphalt plant is in the process of relocating, has ceased operation for the remainder of the year, or if alterations to the impoundment are needed. B. Wastewater may be applied to the surface of unpaved roads or roadbeds only if that road or roadbed is dry. C. Application to haul roads shall be conducted in such a manner to prevent runoff or prolonged ponding. D. Only the amount of water needed to control or prevent a dust problem may be applied. E. Wastewater used for dust control shall not enter any road ditch, surface water, or wetland. F. Wastewater shall not be applied at a rate greater than one gallon per square yard per year. [Minn. R. 7001]
5.6.108		Asphalt Ingredients, Burner Fuels and Chemical Additives. If the Permittee proposes to use asphalt ingredients, burner fuels and/or chemical additives other than those designated below, at an asphalt production plant with a wet scrubber, the Permittee shall apply in writing to the MPCA for such approval, no later than 60 days before the planned date of utilization of the non-designated material. The Permittee may use these non-designated materials only with the written approval of the MPCA. The designated materials are: A. Clay, silt, sand, gravel and crushed stone produced from naturally occurring geologic formations, and without chemical additives. B. Recycled asphalt. C. Recycled asphalt saturated felt materials. D. Natural gas, butane, propane and methane. E. Gasoline, kerosene, diesel fuel, jet fuel and fuel oils (No. 1, No. 2, No. 3, No. 4, No. 5, No. 6). F. Petroleum derived waste oil as defined in Minn. R. 7045.0020. G. On-specification used oil fuel, as defined in Minn. R. pt. 7045.0020, except that total halogens shall not exceed 1,000 parts per million in the used oil fuel. H. Asphalt cement (AC). I. Hydrated lime. J. Anti-stripping agents approved by the MPCA under this permit. K. Aluminum chloride flocculants. L. Freemont 8201 and anionic polyacrylamide flocculants of similar chemical composition. M. Any mixture of the materials listed in subitems (A) through (L). N. Portland cement concrete. O. Recycled sediments from asphalt plant scrubber operations. P. Fines from asphalt fabric filter operations. Q. Silicone. [Minn. R. 7001]
5.6.109		Subsector E2 - Ready-Mix and Other Concrete Operations Discharges to Groundwater. [Minn. R. 7001]
5.6.110		This permit section is intended to cover process wastewater discharges from concrete product operations. Authorized discharges to groundwater specified in the Applicability Section of this permit are covered under this permit. Any discharge to surface water will require an individual NPDES permit. Wastewater discharges from facilities described by the following Standard Industrial Classification (SIC) codes are authorized: A. Concrete Block and Brick (SIC 3271) B. Concrete Products, N.E.C. (Not Elsewhere Covered) (SIC 3272) C. Ready-Mix Concrete (SIC 3273). [Minn. R. 7001]

5.6.111	Containment basins shall be constructed in compliance with this permit. [Minn. R. 7001]
5.6.112	Authorized E2 activity discharge to new containment basins (as of the issuance date of this permit) must meet the following conditions: A. be constructed to allow for maximum separation distance from groundwater with a minimum of 3 feet between the bottom of the impoundment and the seasonal high water table. B. If the wastewater pH of authorized discharges from E2 activities is outside the range of 6.0-9.0 Standard Units (SU), the wastewater must also be passed through an extra soil zone, mixed with other authorized process waters or rinse waters, or held in a lined or sealed basin to prevent infiltration in order to bring the pH within the range of 6.0-9.0 SU before the wastewater mixes with groundwater. [Minn. R. 7001]
5.6.113	Authorized E2 activity discharge to existing containment basins must meet the following conditions: A. If the wastewater pH of authorized discharges from E2 activities is outside the range of 6.0-9.0 Standard Units (SU), the wastewater must also be passed through a soil zone, mixed with other authorized process waters or rinse waters, or held in a lined or sealed basin to prevent infiltration in order to bring the pH within the range of 6.0-9.0 SU before the wastewater mixes with groundwater. [Minn. R. 7001]
5.6.114	Pollution Prevention Plan (Plan). [Minn. R. 7001]
5.6.115	The Permittee shall develop and implement a Pollution Prevention Plan (Plan) to address the specific conditions at the site. The goal of the Plan is to eliminate or minimize contact of stormwater with significant materials that may result in pollution of the runoff, as well as identify and correctly manage non-stormwater discharges. Minnesota Guide to Pollution Prevention Planning: https://www.pca.state.mn.us/quick-links/minnesota-guide-pollution-prevention-planning . [Minn. R. 7001]
5.6.116	A Plan shall be developed, implemented, and maintained for each site authorized by this permit. A Plan shall be prepared and maintained in an appropriate and functional manner in accordance with relevant manufacturer specifications and accepted engineering practices. [Minn. R. 7001]
5.6.117	A Plan shall be completed prior to submitting the permit application for authorization of activities by this permit. Permittees authorized under the previous version of this permit shall modify the Plan to comply with the requirements of this permit prior to submitting the permit application. [Minn. R. 7001]
5.6.118	A Plan shall be used by the Permittee to document all BMPs used to comply with all control measures required in the Technology Based Effluent Limits sections of this permit. BMPs shall be designed and implemented to address the potential pollutants associated with the activities and materials identified by the Permittee. The documentation shall include a list of all structural and non-structural BMPs designed and implementation at the site. [Minn. R. 7001]
5.6.119	The Plan shall include documentation of an assessment and inventory/list of materials handled and activities conducted at the site that can potentially be a source of pollutants to stormwater discharges. The assessment shall include but is not limited to the materials and activities identified below: A. Excavation. B. Crushing/Screening. C. Overburden, waste and products stockpiles. D. Raw material and final product storage. E. Waste products. F. Sediment washing. G. Material loading/unloading. H. Areas where spills and leaks may potentially contribute pollutants to stormwater. I. Vehicle and equipment maintenance, washing, and fueling. J. Chemical additives/dust suppressant use. [Minn. R. 7001]

5.6.120	The Plan for each site shall include an inventory of all chemical additives currently used to treat wastewater and/or stormwater including chemical dust suppressants. This inventory shall include: A. The name of the additive. B. The process for which the additive will be used. C. The proposed method of application, application frequency, and daily average and maximum rates of use. D. The date of MPCA approval. MPCA approval is required for any additives that are new, increasing in usage, or not previously approved. See the Total Facilities Requirements section of this permit and go to the chemical additive webpage at http://www.pca.state.mn.us/index.php/water/water-types-and-programs/wastewater/wastewater-technical-assistance/chemical-additive-approvals.html to find the documents necessary to complete the approval process. [Minn. R. 7001]
5.6.121	The Plan for each site shall include a site map, which does not need to be a surveyed map, at least to the level of detail indicated on a 7.5-minute U.S. Geological Survey quadrangle map, which identifies: A. Location of the site in relation to surface waters (including the name of the surface water; if the name is not known, indicate that on the map). B. Location of all impaired waters within one mile. The Permittee shall include the name of the impaired water and the impairment (e.g. impaired for biota fish, turbidity, nutrients, etc.). C. Location of all ORVWs, designated trout waters, and wetlands within one mile of the site (Minn. R. 7050.0335, 6264.0050, and 7050.0420). D. Directions of stormwater flow indicated by arrows (including stormwater that is contained/infiltrated on site). E. Location of all discharge points. F. Location of all overflow points from control devices. G. Topography of the area. H. Location of all activities and materials. I. Location of all structural BMPs. J. Location and description of any non-stormwater discharges. K. Dewatering points. L. Water supply wells. M. Surface water supply intakes. Portable sites can meet the requirements of (G) through (M) above by developing general plant configuration maps. [Minn. R. 7001]
5.6.122	The Permittee shall review the Plan at least annually and modify the Plan, if: A. There is construction or a change in design, operation, or maintenance at the facility that affects stormwater and wastewater management or compliance with this permit. B. The Permittee has identified a monitoring location from which the discharge flows to, and is within one mile of, an impaired water. C. A routine inspection, compliance evaluation, or visual inspection identified deficiencies in the Plan and/or BMP. D. Additional stormwater and/or wastewater control measures and BMPs are necessary to meet applicable water quality standards or to address exceedances of intervention limits. E. There is an unauthorized discharge from the facility. If the Plan modification is based on a release or unauthorized discharge, include in the modified Plan a description and date of the release, the circumstances leading to the release, actions taken in response to the release, and measures to prevent the recurrence of such releases. Unauthorized releases and discharges are subject to the reporting requirements in the Total Facilities Requirements section of this permit. [Minn. R. 7001]
5.6.123	The Plan must be kept at the site when the site is active. If there is no office located on-site,

		electronic access of the Plan is acceptable. The Plan must be available to the MPCA within 72 hours of a request for review. [Minn. R. 7001]
	5.6.124	The Plan shall identify the individual(s) responsible for managing, implementing, maintaining, modifying, and ensuring compliance with the site's Plan, as well as personnel responsible for managing and implementing the Plan. [Minn. R. 7001]
	5.6.125	The Permittee must develop and implement an employee training program to inform appropriate personnel of the components and goals of the Plan. The Plan must also identify periodic dates for such training. [Minn. R. 7001]
	5.6.126	Records of all inspections conducted in accordance with permit requirements shall be maintained within the Plan. [Minn. R. 7001]
	5.6.127	Subsector D1 - Asphalt - Additional Plan Requirements. [Minn. R. 7001]
	5.6.128	Asphalt facilities (Subsector D1) must also identify: A. Petroleum storage. B. Fuel Storage. C. Recycled Asphalt Pavement Storage. D. Aggregate Storage. E. Recycled concrete, concrete block and brick crushing and storage. F. Cold Patch Storage. G. Release agent storage and application. [Minn. R. 7001]
	5.6.129	Subsector E2 - Ready-Mix Operations - Additional Plan Requirements. [Minn. R. 7001]
	5.6.130	Ready-Mix Operations (Subsector E2) must also identify: A. Bag house or other dust control device. B. Recycle/sediment pond, clarifier, or other device used for the treatment of process wastewater. C. The areas that drain to the treatment device. D. Description of multiple locations of ready-mix and other concrete operations, if applicable. [Minn. R. 7001]
	5.6.131	Inspection Reports. [Minn. R. 7001]
	5.6.132	The Permittee shall develop and implement an inspection schedule that includes a minimum of one site inspection per calendar month that the site is an active site and staffed. A minimum of one inspection per calendar year shall be conducted during a runoff event. [Minn. R. 7001]
	5.6.133	If the site is Inactive and unstaffed, Temporarily Inactive and unstaffed as defined, or is a site undergoing final stabilization, the Permittee is waived from the requirement to conduct monthly site inspections, but BMPs must be maintained. [Minn. R. 7001]
	5.6.134	All inspections and resulting maintenance must be recorded and retained within the Plan. Records of each inspection and maintenance activity shall include: A. Date and time of inspections. B. Name of person(s) conducting inspections. C. An evaluation of the facility to determine that the Plan accurately reflects conditions as described in the Pollution Prevention Plan. At a minimum, the Permittee shall inspect storage tank areas, waste disposal areas, maintenance areas, loading/unloading areas, and raw material, intermediate product, by-product and final product storage areas. D. An evaluation of all structural and non-structural BMPs to determine effectiveness and proper function. E. An evaluation of the facility to determine whether new exposed significant materials or activities have been added to the site since completion of the Plan. F. Findings of inspections, including recommendations for corrective actions. G. Corrective actions taken (including dates, times, and party completing maintenance activities). [Minn. R. 7001]
	5.6.135	In addition to the inspection requirements of this Section, separately from the required annual runoff event inspection, the Permittee shall ensure that one of the required monthly inspections occurs during a snow melt event. The inspection shall include a visual assessment

		of the runoff to identify any visible sheens or films that indicate the presence of oil or grease in the discharge. If sheens are present in surface discharges, corrective actions to prevent sheen shall be implemented and documented in the Plan. [Minn. R. 7001]
	5.6.136	Subsector D1 - Asphalt - Additional Inspection Reports Requirements. [Minn. R. 7001]
	5.6.137	The operator of an Asphalt Facility shall also inspect the following areas: A. Material storage and handling areas; B. Liquid storage tanks; C. Hoppers and silos; D. Vehicle and equipment maintenance, cleaning, and fueling areas; and E. Material handling vehicles, equipment, and processing areas. Ensure that appropriate action is taken in response to the inspection by using follow-up procedures. Document in the Plan the inspections and follow up actions. [Minn. R. 7001]
	5.6.138	Subsector E2 - Ready-Mix and Other Concrete Operations - Additional Inspection Reports Requirements. [Minn. R. 7001]
	5.6.139	Dust collection and containment systems shall be included in the site inspections. [Minn. R. 7001]
	5.6.140	Monitoring Requirements. [Minn. R. 7001]
	5.6.141	Stormwater Monitoring. [Minn. R. 7001]
	5.6.142	The Permittee shall monitor each outfall for all parameters specified in the Limits and Monitoring Section of this permit during stormwater runoff from active site operations. The Permittee shall submit the results of intervention limit monitoring required by this permit on the Discharge Monitoring Report form provided by the MPCA. The information must be recorded in the specified areas on the form and in the unit specified. [Minn. R. 7001]
	5.6.143	Two samples shall be collected at each monitoring outfall and analyzed for each intervention limit parameter in a calendar year in order to determine an annual average concentration for each intervention limit parameter. The two samples shall be collected on two separate runoff events, one in the spring and one in the fall, if possible, each calendar year the Permittee is authorized to discharge under this permit. At the Permittee's discretion, more than two samples may be taken during separate runoff events and used to determine the annual average intervention limit(s). [Minn. R. 7001]
	5.6.144	If the Permittee is unable to obtain a minimum of two samples, less than two samples may be used to determine the annual average intervention limit(s) for the discharges during the year. However, for each sample that could not be obtained due to weather conditions and/or soil characteristics, the Permittee shall provide an explanation in the Comments section of the Discharge Monitoring Report and submit it to the MPCA. [Minn. R. 7001]
	5.6.145	Samples shall be collected during the first 30 minutes of a measurable runoff event at a monitoring outfall and sampling events shall be at least 72 hours apart, to the extent feasible. [Minn. R. 7001]
	5.6.146	The intervention limit monitoring location(s) selected by the Permittee shall be in a location that: A. Is below the most down-gradient BMP from the source of industrial activity or significant materials, but prior to discharging from the Permittee's operational control. B. Minimizes or eliminates sampling of stormwater from off-site sources (run-on). C. Yields a sample that best represents the contribution of pollutants the Permittee is required to monitor for in accordance with this permit and that receives discharge from an area of industrial activities, processes, and significant materials exposed to stormwater. [Minn. R. 7001]
	5.6.147	If the Permittee has identified multiple, but separate, stormwater discharges and each area of discharge is substantially similar in terms of exposure, BMPs, and pollutants discharged, the Permittee may choose one intervention limit monitoring location that is most representative and best allows for obtaining a sample. This is applicable to a single site only. Multiple sites may only choose a substantially similar outfall at a single site. [Minn. R. 7001]

5.6.148	An exceedance of an applicable annual average intervention limit does not constitute a violation under this permit. However, the Permittee is required to perform any necessary corrective action(s) to address stormwater control measures, including the maintenance or implementation of BMPs, when an exceedance of an applicable intervention limit occurs as described below. Failure to respond to an intervention limit exceedance is a violation of the permit. If an exceedance of an intervention limit occurs, modify the Plan and document all corrective actions, including improvements to BMPs, necessary to meet the applicable intervention limits. Modifications and upgrades of the Plan and BMPs shall be initiated immediately, but no later than 14 days beyond discovery of an intervention limit exceedance. The Permittee must install a new or modified control and make it operational as soon as possible. If it is infeasible to complete the installation of a new or modified BMP within 14 calendar days, the Permittee must document why it is infeasible to complete the installation or repair within the 14-day timeframe. The Permittee must also outline a schedule for completing the work, and documentation must be completed as soon as practicable after the 14-day timeframe but no longer than 45 days after discovery. If 45 days is infeasible, the Permittee must complete the installation or repair as soon as practicable and document the reason for delay. All documentation shall be contained within or as an attachment to the Plan. [Minn. R. 7001]
5.6.149	If the site is Temporarily Inactive during a monitoring period, intervention limit monitoring is not required, but the Permittee shall indicate on their DMR the inactivity and indicate that permanent stormwater BMPs remain in place. Should the site become active, the Permittee is required to sample in accordance with this Section of the permit for the year the site became active. [Minn. R. 7001]
5.6.150	If stormwater does not discharge to surface waters, no monitoring is required. If there is no discharge during the sampling period, the Permittee shall check the "No Flow" box and note the conditions on the Discharge Monitoring Report Form. [Minn. R. 7001]
5.6.151	If the Permittee submits documentation in compliance with this permit and receives approval from MPCA, discharges from the mine dewatering control devices are not required to be sampled. This shall include overflows caused solely by direct rainfall and groundwater seepage. [Minn. R. 7001]
5.6.152	Stormwater Limits and Monitoring Intervention Limits A. Subsectors J1, J2, D1, and E2: Total Suspended Solids, 100 mg/L. B. Subsector E2: Iron, 1.0 mg/L. [Minn. R. 7001]
5.6.153	Mine Dewatering to Surface Waters - Effluent Limit Monitoring. [Minn. R. 7001]
5.6.154	If dewatering flows do not discharge to surface waters, no monitoring will be required. If there is no discharge during the sampling period, the Permittee shall check the "No Flow" box and note the conditions on the Discharge Monitoring Report Form. [Minn. R. 7001]
5.6.155	If the Permittee submits documentation in compliance with this permit and receives approval from MPCA, overflows from the mine pit dewatering control devices are not required to be sampled. This shall include overflows caused solely by direct rainfall and groundwater seepage. [Minn. R. 7001]
5.6.156	One sample shall be collected quarterly from each monitoring outfall identified and analyzed for each required effluent limit parameters specified in the Limits and Monitoring Section of this permit. The sample(s) shall be collected each calendar quarter the Permittee is authorized to discharge under this permit. [Minn. R. 7001]
5.6.157	For active mine dewatering, samples shall be representative of the discharge and collected during any measurable event at an outfall. Flow monitoring shall be monitored using a continuous flow monitor or pump-run times. [Minn. R. 7001]
5.6.158	If the discharge event is an overflow caused by a rainfall event, the sample(s) shall be collected within the first 30 minutes of the measurable runoff event. If it is not possible to

		collect the sample(s) within the first 30 minutes, the sample(s) shall be collected as soon as practicable after the first 30 minutes and documentation must be included with the Comments field of the Discharge Monitoring Report Form that explains why it was not possible to collect the sample(s) within the first 30 minutes. [Minn. R. 7001]
	5.6.159	Mine Dewatering to Surface Waters - Monitoring for Permit Reissuance. The following parameters shall be sampled and analyzed prior to permit expiration and submitted with the application for permit re-issuance. Samples shall be representative of mine dewatering discharge activity, and must comply with the Total Facilities Requirements section of this permit: A. Total Dissolved Solids. B. Hardness. C. Oil & Grease and surfactants. D. Antimony, arsenic, beryllium, cadmium, chromium, copper, lead, nickel, selenium, silver, thallium, and zinc. E. Aluminum, barium, boron, cobalt, iron, magnesium, manganese, molybdenum, total tin, and total aluminum. [Minn. R. 7001]
	5.6.160	Total Facilities Requirements. [Minn. R. 7001]
	5.6.161	Definitions. Refer to the 'Permit Users Manual' found on the MPCA website (www.pca.state.mn.us) for standard definitions. [Minn. R. 7001]
	5.6.162	Incorporation by Reference. The following applicable federal and state laws are incorporated by reference in this permit, are applicable to the Permittee, and are enforceable parts of this permit: 40 CFR pts. 122.41, 122.42, 136, 403 and 503; Minn. R. pts. 7001, 7041, 7045, 7050, 7052, 7053, 7060, and 7080; and Minn. Stat. ch. 115 and 116. [Minn. R. 7001]
	5.6.163	Permittee Responsibility. The Permittee shall perform the actions or conduct the activity authorized by this permit in compliance with the conditions of the permit and, if required, in accordance with the plans and specifications approved by the MPCA. [Minn. R. 7001.0150, subp. 3(E)]
	5.6.164	Toxic Discharges Prohibited. Whether or not this permit includes effluent limitations for toxic pollutants, the Permittee shall not discharge a toxic pollutant except according to 40 CFR pts. 400 to 460 and Minn. R. chs. 7050, 7052, 7053 and any other applicable MPCA rules. [Minn. R. 7001.1090, subp. 1(A)]
	5.6.165	Nuisance Conditions Prohibited. The Permittee's discharge shall not cause any nuisance conditions including, but not limited to: floating solids, scum and visible oil film, excessive suspended solids, material discoloration, obnoxious odors, gas ebullition, deleterious sludge deposits, undesirable slimes or fungus growths, aquatic habitat degradation, excessive growths of aquatic plants, acutely toxic conditions to aquatic life, or other adverse impact on the receiving water. [Minn. R. 7050.0210, Subpt. 2]
	5.6.166	Property Rights. This permit does not convey a property right or an exclusive privilege. [Minn. R. 7001.0150, subp. 3(C)]
	5.6.167	Liability Exemption. In issuing this permit, the State and the MPCA assume no responsibility for damage to persons, property, or the environment caused by the activities of the Permittee in the conduct of its actions, including those activities authorized, directed, or undertaken under this permit. To the extent the State and the MPCA may be liable for the activities of its employees, that liability is explicitly limited to that provided in the Tort Claims Act. [Minn. R. 7001.0150, subp. 3(O)]
	5.6.168	The MPCA's issuance of this permit does not obligate the MPCA to enforce local laws, rules, or plans beyond what Minnesota statutes authorize. [Minn. R. 7001.0150, subp. 3(D)]
	5.6.169	Liabilities. The MPCA's issuance of this permit does not release the Permittee from any liability, penalty, or duty imposed by Minnesota or federal statutes or rules or local ordinances, except the obligation to obtain the permit. [Minn. R. 7001.0150, subp. 3(A)]
	5.6.170	The issuance of this permit does not prevent the future adoption by the MPCA of pollution control rules, standards, or orders more stringent than those now in existence and does not prevent the enforcement of these rules, standards, or orders against the Permittee. [Minn. R.

		7001.0150, subp. 3(B)]
	5.6.171	Severability. The provisions of this permit are severable and, if any provisions of this permit or the application of any provision of this permit to any circumstance are held invalid, the application of such provision to other circumstances and the remainder of this permit shall not be affected thereby. [Minn. R. 7001]
	5.6.172	Compliance with Other Rules and Statutes. The Permittee shall comply with all applicable air quality, solid waste, and hazardous waste statutes and rules in the operation and maintenance of the facility. [Minn. R. 7001]
	5.6.173	Inspection and Entry. When authorized by Minn. Stat. ch. 115.04, 115B.17, subd. 4, and 116.091, and upon presentation of proper credentials, the Permittee shall allow the MPCA, or an authorized employee or agent of the MPCA, to enter at reasonable times upon the property of the Permittee to examine and copy books, papers, records, or memoranda pertaining to the construction, modification, or operation of the facility covered by the permit or pertaining to the activity covered by the permit; and to conduct surveys and investigations, including sampling or monitoring, pertaining to the construction, modification, or operation of the facility covered by the permit or pertaining to the activity covered by the permit. [Minn. R. 7001.0150, subp. 3(I)]
	5.6.174	Control Users. The Permittee shall regulate the users of its facility to prevent the introduction of pollutants or materials that may result in the inhibition or disruption of the conveyance system, treatment facility or processes, or disposal system that would contribute to the violation of the conditions of this permit or any federal, state, or local law or regulation. [Minn. R. 7001.0150, subp. 3(F)]
	5.6.175	Sampling. [Minn. R. 7001]
	5.6.176	Representative Sampling. The Permittee shall conduct samples and measurements required by this permit as specified in this permit and shall be representative of the discharge or monitored activity. [Minn. R. 7001.0150, subp. 2(B)]
	5.6.177	Additional Sampling. If the Permittee monitors more frequently than required, they shall report the results and the frequency of monitoring on their eDMR for that reporting period. [Minn. R. 7001.1090, subp. 1(E)]
	5.6.178	Certified/Accredited Laboratory. A laboratory accredited by the Minnesota Department of Health [Minn. R. 4740.2010 through Minn. R. 4740.2120] and/or certified by the MPCA [Minn. R. 7001.4310 through Minn. R. 7001.4390] shall conduct analyses required by this permit, unless approved in writing by the MPCA. A certified/accredited laboratory does not need to complete analyses of dissolved oxygen, pH, temperature, specific conductance, and total residual oxidants (chlorine, bromine). Those analyses shall comply with 40 CFR pt. 136. Dissolved oxygen, pH, and total residual oxidants must be performed on-site. Follow the manufacturer's specifications for equipment maintenance and use. [Minn. R. 4740.2010-4740.2120, Minn. R. 7001.4310-7001.4390]
	5.6.179	Sample Preservation and Procedure. Sample preservation and test procedures for the analysis of pollutants shall conform to 40 CFR Part 136 and Minn. R. 7041.3200. [Minn. R. 7001.0150, subp. 2(B), Minn. R. 7041.3200]
	5.6.180	Equipment Calibration. The Permittee shall check and/or calibrate flow meters, pumps, flumes, lift stations, or other flow monitoring equipment used for purposes of determining compliance (within plus or minus ten percent of the true flow values) with permit requirements at least twice annually. [Minn. R. 7001.0150, subp. 2(B & C)]
	5.6.181	Maintain Records. The Permittee shall keep the records required by this permit for at least three years, including any calculations, original recordings from automatic monitoring instruments, and laboratory sheets. The Permittee shall extend these record retention periods upon request of the MPCA. The Permittee shall maintain records for each sample and measurement. The records shall include the following information: A. The exact place, date, and time of the sample or measurement; B. The date of analysis; C. The name of the person who performed the sample collection, measurement, analysis, or

		calculation; D. The analytical techniques, procedures, and methods used; and E. The results of the analysis. [Minn. R. 7001.0150, subp. 2(C)]
	5.6.182	Completing Reports. The Permittee shall submit the results of the required sampling and monitoring activities on the forms provided, specified, or approved by the MPCA. The Permittee shall record the information in the specified areas on those forms and in the units specified. Required forms may include a Sample Values Form. If required, the Permittee shall record individual values for each sample and measurement on the Sample Values Form provided by the MPCA. The Permittee shall submit Sample Values Form with the appropriate eDMRs. The Permittee may design and use their own Sample Values Form; however, the Permittee shall not use their form until the MPCA reviews and approves the form. Note: The Permittee shall also record required summary information on their eDMR. Permittee submitted summary information contained only on the Sample Values Form does not comply with reporting requirements. [Minn. R. 7001.0150, subp. 2(B), Minn. R. 7001.1090, subp. 1(D)]
	5.6.183	Submitting Reports. The Permittee shall submit eDMRs, Sample Values Forms, and other supplemental attachment forms via MPCA e-Services after the MPCA approves their authorization request. The Permittee shall electronically submit eDMRs, Sample Values Forms, and other supplemental attachment forms by the 21st day of the month following the sampling period or otherwise as specified in this permit. The Permittee shall complete eDMR submittal on or before 11:59 PM of the 21st day of the month following the sampling period or as otherwise specified in this permit. The Permittee shall submit an eDMR for each required station even if no discharge occurred during the reporting period. The Permittee shall submit other reports required by this permit electronically or by mail. The Permittee shall submit reports by the date specified in this permit. For electronic submittals, the Permittee shall submit on or before 11:59 PM on the date specified in this permit. For mailed submittals, the Permittee shall ensure that submittals via U.S. Postal Service or other hand delivery method contain postmarks by the date specified in this permit. Electronically: wq.submittals.mpca@state.mn.us Include Water quality submittals form: www.pca.state.mn.us/sites/default/files/wq-wwprm7-71.docx Or by mail: Attention: WQ Submittals Center Minnesota Pollution Control Agency 520 Lafayette Road North St. Paul, MN 55155-4191. [Minn. R. 7001.0150, subp. 2(B), Minn. R. 7001.0150, subp. 3(H)]
	5.6.184	Incomplete or Incorrect Reports. The Permittee shall immediately submit an electronically amended report or eDMR to the MPCA upon discovery by the Permittee or notification by the MPCA that it has submitted an incomplete or incorrect report or eDMR. The amended report or eDMR shall contain the missing or corrected data along with a comment on the eDMR explaining the circumstances of the incomplete or incorrect report. If it is impossible to amend the report or eDMR electronically, the Permittee shall immediately notify the MPCA and the MPCA will provide direction for the amendment submittals. [Minn. R. 7001.0150, subp. 3(G)]
	5.6.185	Required Signatures. The Permittee or the duly authorized representative of the Permittee shall sign all eDMRs, forms, reports, and other documents submitted to the MPCA per Minn.

		R. 7001.0150, subp. 2(D). The person or persons who sign the eDMRs, forms, reports, or other documents shall certify that he or she understands and complies with the certification requirements of Minn. R. chs. 7001.0070 and 7001.0540, including the penalties for submitting false information. A registered professional engineer shall certify technical documents, such as design drawings and specifications, and engineering studies submitted as part of a permit application or by permit conditions. [Minn. R. 7001.0540]
	5.6.186	Reporting Limit (RL). The Permittee shall report monitoring results below the RL of a particular instrument as "<" the value of the RL. For example, if an instrument has a RL of 0.1 mg/L and a parameter is not detected at a value of 0.1 mg/L or greater, the Permittee shall report the concentration as "< 0.1 mg/L." The Permittee shall not use "non-detected," "undetected," "below detection limit," or "zero" when reporting results. The MPCA considers these terms as permit reporting violations. Where sample values are less than the RL and the permit requires reporting of an average, the Permittee shall calculate the average as follows: A. If some values are less than (<) the RL, substitute zero for all non-detectable values to use in the average calculation; B. If all values are less than (<) the RL, calculate the average and report as < the RL average concentration; and C. To calculate a mass loading with a less than (<) the RL concentration, use the RL value in the calculation and then add the "<" to the product of the concentration and the volume. [Minn. R. 7001.0150, subp. 2(B)]
	5.6.187	Records. The Permittee shall, when requested by the MPCA, submit within a reasonable time the information and reports that are relevant to the control of pollution regarding the construction, modification, or operation of the facility covered by the permit or regarding the conduct of the activity covered by the permit. [Minn. R. 7001.0150, subp. 3(H)]
	5.6.188	Confidential Information. Except for data determined to be confidential according to Minn. Stat. ch. 116.075, subd. 2, all reports required by this permit are available for public inspection. The MPCA does not consider effluent data confidential. To request the MPCA maintain data as confidential, the Permittee shall follow Minn. R. 7000.1300. [Minn. R. 7000.1300]
	5.6.189	Noncompliance and Enforcement. [Minn. R. 7001]
	5.6.190	Subject to Enforcement Action and Penalties. Noncompliance with a term or condition of this permit subjects the Permittee to penalties provided by federal and state law set forth in section 309 of the Clean Water Act; United States Code, title 33, section 1319, as amended; and in Minn. Stat. ch. 115.071 and 116.072, including monetary penalties, imprisonment, or both. [Minn. R. 7001.1090, subp. 1(B)]
	5.6.191	Criminal Activity. The Permittee shall not knowingly make a false statement, representation, or certification in a record or other document submitted to the MPCA. A person who falsifies a report or document submitted to the MPCA, or tampers with, or knowingly renders inaccurate a monitoring device or method that requires maintenance under this permit is subject to criminal and civil penalties provided by federal and state law. [Minn. R. 7001.0150, subp. 3(G), Minn. R. 7001.1090, subp. 1(G & H), Minn. Stat. ch. 609.671, subd. 1]
	5.6.192	Noncompliance Defense. It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. [40 CFR 122.41(c)]
	5.6.193	Effluent Violations. If sampling by the Permittee indicates a violation of any discharge limitation specified in this permit, the Permittee shall immediately make every effort to verify the violation by collecting additional samples, if appropriate, investigate the cause of the violation, and take action to prevent future violations. If the Permittee discovers that noncompliance with a condition of the permit occurred and that the noncompliance could endanger human health, public drinking water supplies, or the

		environment, the Permittee shall within 24 hours of the discovery of the noncompliance orally notify the Commissioner and submit a written description of the noncompliance within five days of the discovery. If the Permittee discovers other noncompliance that does not explicitly endanger human health, public drinking water supplies, or the environment, the Permittee shall report the description of noncompliance within 30 days of the discovery. If no eDMR is required within 30 days, the Permittee shall submit a written report including the description of noncompliance within 30 days of the discovery of the noncompliance. This description shall include the following information: A. A description of the event including volume, duration, monitoring results, and receiving waters; B. The cause of the event; C. The steps taken to reduce, eliminate, and prevent reoccurrence of the event; D. The exact dates and times of the event; and E. Steps taken to reduce any adverse impact resulting from the event. [Minn. R. 7001.0150, subp. 3(K)]
	5.6.194	Upset Defense. In the event of temporary noncompliance with applicable effluent limitation(s) resulting from an upset at the Permittee's facility due to factors beyond the control of the Permittee, the Permittee has an affirmative defense to an enforcement action brought by the MPCA as a result of the noncompliance if the Permittee demonstrates by a preponderance of competent evidence: A. The specific cause of the upset; B. That the upset was unintentional; C. That the upset resulted from factors beyond the reasonable control of the Permittee and did not result from operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventative maintenance, or increases in production which are beyond the design capability of the treatment facilities; D. That at the time of the upset the facility was being properly operated; E. That the Permittee properly notified the Commissioner of the upset in accordance with Minn. R. 7001.1090, subp. 1(I); and F. That the Permittee implemented the remedial measures required by Minn. R. 7001.0150, subp. 3(J). [Minn. R. 7001.1090]
	5.6.195	Release. [Minn. R. 7001]
	5.6.196	Unauthorized Releases of Wastewater Prohibited. This permit prohibits overflows, discharges, spills, or other releases of wastewater or materials to the environment, whether intentional or not, except for discharges from outfalls specifically authorized by this permit. The MPCA will consider the Permittee's compliance with permit requirements, frequency of release, quantity, type, location, and other relevant factors when determining appropriate action. [40 CFR 122.41, Minn. Stat. ch. 115.061]
	5.6.197	Discovery of a Release. Upon discovery of a release, the Permittee shall: A. Take all reasonable steps to immediately end the release; B. Notify the Minnesota Department of Public Safety Duty Officer at 1(800)422-0798 or (651)649-5451 (metro area) immediately upon discovery of the release. The Permittee may contact the MPCA during business hours at 1(800)657-3864 or (651)296-6300 (metro area); and C. Recover as rapidly and as thoroughly as possible all substances and materials released or immediately take other action as may be reasonably possible to minimize or abate pollution to waters of the state or potential impacts to human health caused thereby. If the Permittee cannot immediately or completely recover the released materials or substances, the Permittee shall contact the MPCA. If directed by the MPCA, the Permittee shall consult with other local, state, or federal agencies (such as the Minnesota Department of Natural Resources and/or the Wetland Conservation Act authority) for implementation of additional clean up or remediation activities in wetland or other sensitive areas. [Minn. R. 7001.1090]

5.6.198	Sampling of a Release. Upon discovery of a release, the Permittee shall: A. Collect representative samples of the release. The Permittee shall sample the release for permitted effluent parameters and other parameters of concern immediately following discovery of the release. The Permittee may contact the MPCA during business hours to discuss the sampling parameters and protocol. In addition, the Permittee shall collect fecal coliform bacteria samples where the Permittee determines that the release contains or may contain sewage. If the Permittee cannot immediately stop the release, the Permittee shall consult with the MPCA regarding additional sampling requirements. The Permittee shall collect samples at least, but not limited to, two times per week for as long as the release continues; and B. Submit the sampling results on the Release Report located on the MPCA's website at https://www.pca.state.mn.us/water/discharge-monitoring-reports. The Permittee shall submit the Release Report to the MPCA with the next eDMR or within 30 days, whichever is sooner. [Minn. R. 7001.1090]
5.6.199	Bypass. [Minn. R. 7001]
5.6.200	Anticipated Bypass. The Permittee may allow any bypass to occur that does not cause effluent limitation exceedances, but only if the bypass is for essential maintenance to assure efficient operation of the facility. The Permittee shall submit prior notice to the MPCA at least ten days before the date of the bypass, if possible. The notice of the need for an anticipated bypass shall include the following information: A. The proposed date and estimated duration of the bypass; B. The alternatives to bypassing; and C. A proposal for effluent sampling during the bypass. Any bypass wastewater shall enter waters of the state from outfalls specifically authorized by this permit. Therefore, the Permittee shall collect samples at the frequency and location identified in this permit or two times per week for as long as the bypass continues, whichever is more frequent. [40 CFR 122.41(m)(2 & 3), Minn. R. 7001.1090, subp. 1(J)]
5.6.201	This permit prohibits all other bypasses. The MPCA may take enforcement action against the Permittee for a bypass, unless the specific conditions described in Minn. R. 7001.1090 subp. 1(K) and 40 CFR 122.41(m)(4)(i) are met. In the event of an unanticipated bypass, the Permittee shall: A. Take all reasonable steps to immediately end the bypass; B. Notify the Minnesota Department of Public Safety Duty Officer at 1(800)422-0798 or (651)649-5451 (metro area) immediately upon commencement of the bypass. The Permittee may contact the MPCA during business hours at 1(800)657-3864 or (651)296-6300 (metro area); C. Immediately take action as may be reasonably possible to minimize or abate pollution to waters of the state or potential impacts to human health caused thereby. If directed by the MPCA, the Permittee shall consult with other local, state, or federal agencies for implementation of abatement, clean up, or remediation activities; and D. Only allow bypass wastewater as specified in this section to enter waters of the state from outfalls specifically authorized by this permit. The Permittee shall collect samples at the frequency and location identified in this permit or two times per week for as long as the bypass continues, whichever is more frequent. The Permittee shall also follow the reporting requirements for effluent violations as specified in this permit. [40 CFR 122.41(m)(4)i, Minn. R. 7001.1090, subp. 1(K), Minn. Stat. ch. 115.061]
5.6.202	Operation and Maintenance. [Minn. R. 7001]
5.6.203	The Permittee shall at all times properly operate and maintain the facilities and systems of treatment and control, and the appurtenances related to them which are installed or used by the Permittee to achieve compliance with the conditions of the permit. Proper operation and maintenance includes effective performance, adequate funding, adequate operator staffing

		and training, and adequate laboratory and process controls, including appropriate quality assurance procedures. The Permittee shall install and maintain appropriate backup or auxiliary facilities if they are necessary to achieve compliance with the conditions of the permit and, for all permits other than hazardous waste facility permits, if these backup or auxiliary facilities are technically and economically feasible. [Minn. R. 7001.0150, subp. 3(F)]
	5.6.204	In the event of a reduction or loss of effective treatment of wastewater at the facility, the Permittee shall control production or curtail discharges to the extent necessary to maintain compliance with the terms and conditions of this permit. The Permittee shall continue this control or curtailment until they restore facility treatment processes or until the Permittee provides an alternative method of treatment. [Minn. R. 7001.1090, subp. 1(C)]
	5.6.205	Solids Management. The Permittee shall properly store, transport, and manage biosolids, septage, sediments, residual solids, filter backwash, screenings, oil, grease, and other substances so that pollutants do not enter surface waters or groundwaters of the state. The Permittee shall manage solids in accordance with local, state, and federal requirements. [40 CFR 503, Minn. R. 7041]
	5.6.206	Scheduled Maintenance. The Permittee shall schedule maintenance of the treatment works during non-critical water quality periods to prevent water quality degradation, except where the facility requires emergency maintenance to prevent a condition that would be detrimental to water quality or human health. [Minn. R. 7001.0150, subp. 2(B), Minn. R. 7001.0150, subp. 3(F)]
	5.6.207	Control Tests. The Permittee shall conduct in-plant control tests at a frequency adequate to ensure compliance with the conditions of this permit. [Minn. R. 7001.0150, subp. 2(B), Minn. R. 7001.0150, subp. 3(F)]
	5.6.208	Changes to the Facility or Permit. [Minn. R. 7001]
	5.6.209	Permit Modifications. Except as provided under Minn. Stat. ch. 115.07, subd. 1 and 3, no person required by statute or rule to obtain a permit may construct, install, modify, or operate the facility to be permitted, nor shall a person commence an activity for which a permit is required by statute or rule until the MPCA issues a written permit for the facility or activity. Permittees that propose to make changes to the facility or discharge that requires permit modification shall follow Minn. R. 7001.0190. If the Permittee cannot determine whether the proposed changes require a permit modification, the Permittee shall contact the MPCA prior to any action. The MPCA recommends that Permittees submit the application for permit modification to the MPCA at least 180 days prior to the planned change. [Minn. R. 7001.0300]
	5.6.210	This permit does not require plans, specifications, and MPCA approval when maintenance dictates the need for installation of new equipment, provided the equipment is the same design size and has the same design intent. For instance, Permittees can replace a broken pipe, lift station pump, aerator, or blower with the same design-sized equipment without MPCA approval. If this permit does not expressly authorize the Permittee proposed construction, the MPCA may require a permit modification. If the proposed construction project requires an Environmental Assessment Worksheet under Minn. R. 4410, no construction shall begin until the MPCA issues a negative declaration and the Permittee receives or implements all approvals. [Minn. R. 7001.0030]
	5.6.211	Report Changes. The Permittee shall give advance notice as soon as possible to the MPCA of any substantial changes in operational procedures, activities that may alter the nature or frequency of the discharge, and/or material factors that may affect compliance with the conditions of this permit. If a permittee who indicated on their application that their site does not have stormwater discharge but that changes, the Permittee is required to submit an application for permit modification to indicate the change in status and meet the monitoring and reporting requirements of the permit. [Minn. R. 7001.0150, subp. 3(M)]
	5.6.212	Chemical Additives. The Permittee shall receive prior written approval from the MPCA before

	increasing the use of a chemical additive authorized by this permit, or using a chemical additive not authorized by this permit, in quantities or concentrations that have the potential to change the characteristics, nature, and/or quality of the discharge. The Permittee shall request approval for an increase or new use of a chemical additive at least 60 days, or as soon as possible, before the proposed increase or new use. The Permittee shall include at least the following information for the proposed additive as instructed in the chemical additive approvals section on the MPCA website at https://www.pca.state.mn.us/water/wastewater-additional-guidance-and-information: A. The process for which the additive will be used; B. Safety Data Sheet (SDS) which shall include aquatic toxicity, human health, and environmental fate information for the proposed additive. The aquatic toxicity information shall include at minimum the results of: a) a 48-hour LC50 or EC50 acute study for a North American freshwater planktonic crustacean (either Ceriodaphnia or Daphnia sp.) and b) a 96-hour LC50 acute study for rainbow trout, bluegill, or fathead minnow or another North American freshwater aquatic species other than a planktonic crustacean; C. A complete product use and instruction label; D. The commercial and chemical names and Chemical Abstract Survey (CAS) number for all ingredients in the additive (If the SDS does not include information on chemical composition, including percentages for each ingredient totaling to 100%, the Permittee shall contact the supplier to have this information provided); and E. The proposed method of application, application frequency, concentration, and daily average and maximum rates of use. Upon review of the information submitted regarding the proposed chemical additive, the MPCA may require additional information be submitted for consideration. This permit may be modified to restrict the use or discharge of a chemical additive and include additional influent and effluent monitoring requirements. Approval for the use of an additive shall not justify the exceedance of any effluent limitation nor shall it be used as a defense against pollutant levels in the discharge causing or contributing to the violation of a water quality standard. [Minn. R. 7001.0170]
5.6.213	MPCA Initiated Permit Modification, Suspension, or Revocation. The MPCA may modify or revoke and reissue this permit pursuant to Minn. R. 7001.0170. The MPCA may revoke without reissuance of this permit pursuant to Minn. R. 7001.0180. [Minn. R. 7001.0170, Minn. R. 7001.0180]
5.6.214	Total Maximum Daily Load (TMDL) Impacts. The MPCA may require facilities that discharge to an impaired surface water, watershed, or drainage basin to comply with additional permits or permit requirements. These requirements can include additional restriction or relaxation of limits and monitoring as authorized by the CWA 303(d)(4)(A) and 40 CFR ch. 122.44(l)(2)(i), necessary to ensure consistency with the assumptions and requirements of any applicable EPA approved wasteload allocations resulting from TMDL studies. [40 CFR 122.44(l)(2)i]
5.6.215	Permit Transfer. This permit is not transferable to any person without the express written approval of the MPCA after compliance with the requirements of Minn. R. 7001.0190. A person who receives permit transference shall comply with the conditions of this permit. [Minn. R. 7001.0150, subp. 3(N)]
5.6.216	Facility Closure. The Permittee is responsible for closure and post-closure care of the facility. The Permittee shall notify the MPCA of a significant reduction or cessation of the activities described in this permit at least 180 days before the reduction or cessation. The MPCA may require the Permittee to provide a Facility Closure Plan to the MPCA for approval. The MPCA may require a permit modification or reissuance for facility closure that could result in a potential long-term water quality concern, such as the ongoing discharge of wastewater to surface or groundwater.

		The MPCA may require the Permittee to establish and maintain financial assurance to ensure performance of certain obligations under this permit, including closure, post-closure care, and remedial action at the facility. If the MPCA requires financial assurance, the MPCA shall approve the amount and type of financial assurance, and proposed modifications to previously MPCA-approved financial assurance. [Minn. Stat. ch. 116.07, subd. 4]
	5.6.217	Permit Reissuance. If the Permittee desires to continue permit coverage beyond the date of permit expiration, the Permittee shall submit an application for permit reissuance : Due by 180 days prior to permit expiration. [Minn. R. 7001.0040]
	5.6.218	If the Permittee does not intend to continue the activities authorized by this permit after the expiration date of this permit, the Permittee shall notify the MPCA in writing at least 180 days before permit expiration. If the Permittee has submitted a timely application for permit reissuance, the Permittee may continue to conduct the activities authorized by this permit, in compliance with the requirements of this permit, until the MPCA takes final action on the application, unless the MPCA determines any of the following: A. The Permittee is not in substantial compliance with the requirements of this permit, or with a stipulation agreement or compliance schedule designed to bring the Permittee into compliance with this permit; B. The MPCA, as a result of an action or failure to act by the Permittee, has been unable to take final action on the application on or before the expiration date of the permit; or C. The Permittee has submitted an application with major deficiencies or has failed to properly supplement the application in a timely manner after being informed of deficiencies. [Minn. R. 7001.0040, Minn. R. 7001.0160]
	5.6.219	Termination of General Permit Coverage. Upon reclamation and stabilization of all permitted sites, the covered applicant shall submit a request for termination of general permit coverage using the Notification of Permit Termination e-services. Guidance is available on the MPCA website at: https://www.pca.state.mn.us/sites/default/files/p-gen1-18.pdf . [Minn. Stat. ch. 116.07]
	5.6.220	All discharges shall cease before a termination request form is submitted to the MPCA. Any discharge of pollutants to surface or groundwaters or land on or after the date of submittal shall be considered a violation of the Clean Water Act unless authorized by another NPDES permit. All land disturbances or alterations that are a result of the activities covered under this permit must be stabilized prior to submittal for closure, or the closure of those areas must have coverage under another NPDES permit. [Minn. Stat. ch. 116.07]
	5.6.221	The terms and conditions of the General Permit remain in full force and effect including the payment of the annual fee, until General Permit coverage has been formally terminated by the MPCA. [Minn. R. 7002]
	5.6.222	Permit Specific Definitions. [Minn. R. 7001]
	5.6.223	"Active Facility" means a place where work or other activity related to the production of asphalt and ready-mix / concrete products and extraction, removal, or recovery of nonmetallic minerals is being conducted. For surface mines, this definition does not include any land where grading has returned the earth to desired contour and stabilization has begun. This definition is derived from the definition of 'active mining area' found at 40 CFR pt. 440.132(a). [40 CFR 440.132(a), State Definitions]
	5.6.224	"Asphalt cement" means fluxed or unfluxed asphalt specially prepared for direct use in the manufacture of asphalt pavements. [State Definitions]
	5.6.225	"Asphalt Emulsion" means a mixture of asphalt cement, chemical, and water solution. Asphalt emulsions are produced by adding an emulsifying agent to asphalt and water. [State Definitions]
	5.6.226	"Asphalt pavement" means a mixture of asphalt cement (asphalt binder), aggregate, and other additives; may also be referred to as asphalt concrete (AC), bituminous mix (BM), and sometimes asphaltic concrete (HMAC). [State Definitions]
	5.6.227	"Effluent Monitoring Location" for the purposes of this permit means the location(s) within

		the boundary of the facility where the Permittee will collect mine dewatering and/or authorized non-stormwater discharges. The effluent monitoring location(s) selected by the Permittee shall be in a location that: A. Is immediately below the most down-gradient BMP from the specific industrial activity that has a numeric effluent limit, but prior to where the discharge co-mingles with stormwater from other sources. B. Yields a sample that represents the contribution of the pollutants for which the Permittee is required to monitor. [State Definitions]
	5.6.228	"Energy Dissipation" means methods employed at pipe outlets to prevent erosion. Examples include, but are not limited to: concrete aprons, riprap, splash pads, and gabions that are designed to prevent erosion. [State Definitions]
	5.6.229	"Facility" for the purposes of this permit, means land that shares a common border and that has a stormwater discharge associated with industrial activity as defined by 40 CFR Part 122.26(b)(14) with the discharge having a common owner/operator. [40 CFR pt. 122, 26(b)(14), State Definitions]
	5.6.230	"Impaired Water" means waters identified as impaired by the MPCA, and approved by the USEPA, pursuant to section 303(d) of the Clean Water Act (33 U.S.C. Section 303(d)). [CWA Sect. 303.d, State Definitions]
	5.6.231	"Impoundments" mean topographic depressions designed to hold liquid. [State Definitions]
	5.6.232	"Inactive Facility" means a site or portion of a site where nonmetallic mineral mining and/or milling, asphalt production and ready-mix concrete production occurred in the past but is not an Active Facility. The Permittee does not anticipate mining and/or associated activities to occur in the foreseeable future and has requested the permit coverage at this inactive portion be terminated, and the inactive portion is no longer covered by an active mining permit. [State Definitions]
	5.6.233	"Infeasible" means not technologically possible or not economically practicable and achievable in light of the best industry practices. [State Definitions]
	5.6.234	"Infiltration Device" for purposes of this permit, means a device to which industrial stormwater runoff is diverted, collected, or conveyed for the purpose of infiltration. This includes all man-made and natural infiltration areas to which runoff are diverted. An infiltration device does not include the parts of the system that diverts, collects, or conveys stormwater. Incidental infiltration from conveyances such as swales or ditches, including those with erosion prevention devices such as vegetation, silt fence, or fiber bails, is not an infiltration device. However, swales, ditches, or similar devices constructed with stop logs, ditch excavation for storage or other retention devices, which are for the purpose of increased infiltration, are infiltration devices. Wetlands (including types 1 through 8) and other natural surface water bodies are not infiltration devices or parts of infiltration device systems, and cannot be used as infiltration devices, unless mitigated in accordance with applicable state rules. [State Definitions]
	5.6.235	"Karst topography" means an area underlain by fractured carbonate bedrock in which erosion has produced geological characteristics such as: sinkholes; springs, subsurface drainage; caves; sinking streams; dissolutionally enlarged joints (grikes) or bedding planes, and bedrock surface channels (karren). Counties known for karst features include parts of Dakota, Rice, Dodge, and Mower, and most of Goodhue, Olmsted, Winona, Wabasha, Houston and Fillmore. [State Definitions]
	5.6.236	"Mine Pit Dewatering" means any water that is impounded or that collects in the mine and is pumped from the mine through the efforts of the mine operator. Uncontaminated groundwater and stormwater collecting in a low area in which there is a stormwater outlet for stormwater/seepage/drainage by gravity overflow shall not be considered mine pit dewatering. However, if a mine is also used for treatment of process generated wastewater, discharges of commingled water from the facilities shall be deemed discharge of process generated wastewater and is not authorized under this permit. [State Definitions]
	5.6.237	"Non-Stormwater Discharge" means any discharge not comprised entirely of stormwater.

		[State Definitions]
	5.6.238	"Operator" is the person responsible for the overall operation of an industrial facility under Minn. R. pt. 7090.3000. [Minn. R. 7090.3000, State Definitions]
	5.6.239	"Owner" is the person who owns an industrial facility or part of an industrial facility under Minn. R. pt. 7090.3000. [Minn. R. 7090.3000, State Definitions]
	5.6.240	"Person" means any human being, any municipality or other governmental or political subdivision or public MPCA, any public or private corporation, any partnership, firm, association, or other organization, any receiver, trustee, assignee, agent, or other legal representative of any of the foregoing, or any other legal entity, but does not include the MPCA. [State Definitions]
	5.6.241	"Pipes" mean hollow cylinders or tubes constructed of non-earthen materials. [State Definitions]
	5.6.242	"Pollution Prevention Plan" (Plan) means a plan for stormwater and non-stormwater discharges that include facility-specific activities and actions to, first, identify sources of pollution or contamination at the facility, and second, select and implement BMPs to eliminate or reduce contact of stormwater with significant materials and non-stormwater discharges that may result in polluted runoff from the facility. [State Definitions]
	5.6.243	"Primary Standard Industrial Classification (SIC) Code" for the purposes of this permit, is the SIC code associated with the industrial activity that generates the greatest revenue. If revenue data is not available, the owner/operator shall base the determination on the number of employees engaged in the industrial activity. If it is not possible to determine the primary SIC code using either of these two methods, the owner/operator shall base the determination on the SIC code with the greatest production. The industrial activity that generates the greatest revenue, employs the most personnel, or has the greatest production, is the industrial activity assigned the primary SIC code. [State Definitions]
	5.6.244	"Reclamation" means activities undertaken in compliance with applicable mined land reclamation requirements following the cessation of activities associated with extraction, removal and recovery of nonmetallic minerals, intended to return the land to an appropriate post-mining land use. [State Definitions]
	5.6.245	"Seasonal High Water Table" means the highest level the water table reaches during a given year. Methods of determining the seasonal high water table are given in part 7041.3400, subpart 3. [Minn. R. 7041.0100, Subp. 48]
	5.6.246	"Sediment Control" means methods employed to prevent sediment from leaving the site. Sediment control practices include silt fences, sediment traps, earth dikes, drainage swales, check dams, subsurface drains, pipe slope drains, storm drain inlet protection, and temporary or permanent sedimentation basins. [Minn. R. 7041.0100, Subpt. 48, Minn. R. 7041.3400, Subp. 3, State Definitions]
	5.6.247	"Significant Materials" includes, but is not limited to: raw materials; fuels; materials such as solvents, detergents, and plastic pellets; finished materials such as metallic products; raw materials used in food processing or production; hazardous substances designated under Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA); any chemical the facility is required to report pursuant to Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA); fertilizers; pesticides; and waste products such as ashes, slag, and sludge that have the potential to be released with stormwater discharges. When determining whether a material is significant, the physical and chemical characteristics of the material should be considered (e.g. the material's solubility, transportability, and toxicity characteristics) to determine the material's pollution potential. [40 CFR pt. 122, 26(b)(12)]
	5.6.248	"Small Construction Activity" means small construction activity as defined in 40 CFR part 122.26(b)(15). Small construction activities include clearing, grading and excavating that result in land disturbance of equal to or greater than one acre and less than five acres. Small construction activity includes the disturbance of less than one acre of total land area that is part of a larger common plan of development or sale if the larger common plan will ultimately disturb equal to or greater than one and less than five acres. [State Definitions]

5.6.249	"Stormwater Pond" for purposes of this permit means constructed detention or retention facilities for the treatment of stormwater runoff under the requirements of this permit. This includes permanent ponds, dry ponds, flow equalization ponds (followed by other BMPs), and constructed wetlands. However, natural wetlands (including types 1-8) and other natural surface water bodies are not industrial stormwater ponds, parts of ponds or pond systems, and cannot be used as BMPs for stormwater treatment unless mitigated in accordance with applicable state rules. [State Definitions]
5.6.250	"Structural BMPs" refers to the installation of devices that will reduce or eliminate pollutants to stormwater through installation of permanent structural devices to treat or control runoff. Examples of structural BMPs include but are not limited to installation of stormwater diversion berms or channels; sedimentation basins (retention or detention basins); oil/water separators; grit chambers; roofs, awnings, or buildings to cover significant material. [State Definitions]
5.6.251	"Tanks" means a container, vessel, or enclosure designed to contain substances and is constructed of materials such as concrete, steel, plastic, or fiberglass reinforced plastic, and provides structural support. [State Definitions]
5.6.252	"Temporarily Inactive Facility" means a site or portion of a site where nonmetallic mineral mining and/or milling, asphalt production and ready-mix concrete production occurred in the past but currently are not being actively undertaken and permit coverage is being maintained for the possibility of mining and/or associated activities in the foreseeable future. [State Definitions]
5.6.253	"Treatment Works" means any plant, disposal field, lagoon, dam, pumping station, constructed drainage ditch or surface water intercepting ditch, or other works not specifically mentioned herein, installed for the purpose of treating, stabilizing or disposing of sewage, industrial waste, or other wastes. For the purposes of this permit, this includes stormwater ponds, sedimentation basins and/or infiltration devices for stormwater management. [Minn. Stat. ch. 115.01, Subpt. 21, State Definitions]
5.6.254	"Water Quality Standards" means those provisions contained in Minn. R Chapters 7050 and 7052. [Minn. R. 7050, Minn. R. 7052, State Definitions]
5.6.255	"Wetlands" means those areas that are inundated or saturated by surface water or groundwater at a frequency and duration sufficient to support, and that under normal circumstances do support, a prevalence of vegetation typically adapted for life in saturated soil conditions. Wetlands generally include swamps, marshes, bogs, and similar areas. Constructed wetlands designed for wastewater treatment are not waters of the state. Wetlands must have the following attributes: A. a predominance of hydric soils; B. inundated or saturated by surface water or groundwater at a frequency and duration to support a prevalence of hydrophytic vegetation typically adapted for life in a saturated soil condition; and, C. under normal circumstances support a prevalence of such vegetation. [Minn. R. 7050.0186, Subpt. 1(a)B, State Definitions]

3. Submittal action summary

SD 001	MNG49 Stormwater, Non-specific	
		Surface Discharge: MNG49 Subsectors D1, J1, J2
	6.1.1	The Permittee shall submit an annual DMR : Due by 21 days after the end of each calendar year following permit issuance. [Minn. R. 7001.0150, Subp. 2(B)]
SD 002	MNG49 Stormwater, Non-specific	
		Surface Discharge: MNG49 Subsector E2
	6.2.1	The Permittee shall submit an annual DMR : Due by 21 days after the end of each calendar year following permit issuance. [Minn. R. 7001.0150, Subp. 2(B)]
SD 003	MNG49 Dewatering	
		Surface Discharge: MNG49 Dewatering from Construction Sand and Gravel (1442)
	6.3.1	The Permittee shall submit a quarterly DMR : Due by 21 days after the end of each calendar quarter following permit issuance. [Minn. R. 7001.0150, Subp. 2(B)]
	6.3.2	The Permittee shall submit an annual DMR : Due by 21 days after the end of each calendar year following permit issuance. [Minn. R. 7001.0150, Subp. 2(B)]
SD 004	MNG49 Dewatering	
		Surface Discharge: MNG49 Dewatering from Industrial Sand Mining (1446)
	6.4.1	The Permittee shall submit a monthly DMR : Due by 21 days after the end of each calendar month following permit issuance. [Minn. R. 7001]
SD 005	MNG49 Dewatering	
		Surface Discharge: MNG49 Dewatering from Subsector J2 (1411, 1422, 1423, 1429)
	6.5.1	The Permittee shall submit a quarterly DMR : Due by 21 days after the end of each calendar quarter following permit issuance. [Minn. R. 7001.0150, Subp. 2(B)]
	6.5.2	The Permittee shall submit an annual DMR : Due by 21 days after the end of each calendar year following permit issuance. [Minn. R. 7001.0150, Subp. 2(B)]
MNG490000	Nonmetallic Mining/Associated Activities General Permit	
		Non-Metallic Mining and Associated Activities General Permit Requirements
	6.6.1	Permit Reissuance. If the Permittee desires to continue permit coverage beyond the date of permit expiration, the Permittee shall submit an application for permit reissuance : Due by 180 days prior to permit expiration. [Minn. R. 7001.0040]

4. Limits and monitoring

Subject item	Parameter	Discharge limitations					Monitoring requirements					Notes
		Quantity /Loading avg.	Quantity /Loading max.	Quantity /Loading units	Quality /Conc. /Conc. min.	Quality /Conc. avg.	Quality /Conc. max.	Quality/ Conc. units	Frequency	Sample type	Effective period	
SD 001 Subsector J1, J2 & D1 Industrial Stormwater	Solids, Total Suspended (TSS)					Monitor only. calendar year average intervention		milligrams per liter	twice per year	Grab	Jan-Dec	Any reported value >100 mg/L exceeds the intervention limit. If the discharge is within 1 mile of an ORVW, trout stream, or trout lake, the intervention limit is 65 mg/L.
SD 002 Subsector E2 Industrial Stormwater	Iron, Total (as Fe)					Monitor only. calendar year average intervention		milligrams per liter	twice per year	Grab	Jan-Dec	Any reported value >1.0 mg/L exceeds the intervention limit.
SD 002 Subsector E2 Industrial Stormwater	Solids, Total Suspended (TSS)					Monitor only. calendar year average intervention		milligrams per liter	twice per year	Grab	Jan-Dec	Any reported value >100 mg/L exceeds the intervention limit. If the discharge is within 1 mile of an ORVW, trout stream, or trout lake, the intervention limit is 65 mg/L.
SD 003 SIC 1442 Dewatering	Flow		Monitor only. calendar quarter total	million gallons		Monitor only. calendar quarter average		million gallons per day	once per quarter	Measurement, Continuous	Jan-Dec	
SD 003 SIC 1442 Dewatering	Nitrite Plus Nitrate, Total (as N)					Monitor only. calendar year average		milligrams per liter	once per year	Grab	Jan-Dec	
SD 003 SIC 1442 Dewatering	Nitrogen, Kjeldahl, Total					Monitor only. calendar year average		milligrams per liter	once per year	Grab	Jan-Dec	
SD 003 SIC 1442 Dewatering	pH				6.5 calendar quarter		8.5 calendar quarter	standard units	once per quarter	Grab	Jan-Dec	

Subject item	Parameter	Discharge limitations			Monitoring requirements							Notes
		Quantity /Loading avg.	Quantity /Loading max.	Quantity /Loading units	Quality /Conc. min.	Quality /Conc. avg.	Quality /Conc. max.	Quality/ Conc. units	Frequency	Sample type	Effective period	
					minimum		maximum					
SD 003 SIC 1442 Dewatering	Phosphorus, Total (as P)					Monitor only. calendar quarter average		milligrams per liter	once per quarter	Grab	Jan-Dec	
SD 003 SIC 1442 Dewatering	Solids, Total Suspended (TSS)						30 daily maximum	milligrams per liter	once per quarter	Grab	Jan-Dec	
SD 004 SIC 1446 Dewatering	Flow		Monitor only. calendar month total	million gallons		Monitor only. calendar month average		million gallons per day	once per month	Measurement, Continuous	Jan-Dec	
SD 004 SIC 1446 Dewatering	Nitrite Plus Nitrate, Total (as N)					Monitor only. calendar year average		milligrams per liter	once per year	Grab	Dec	
SD 004 SIC 1446 Dewatering	Nitrogen, Kjeldahl, Total					Monitor only. calendar year average		milligrams per liter	once per year	Grab	Dec	
SD 004 SIC 1446 Dewatering	pH				6.5 calendar quarter minimum		8.5 calendar quarter maximum	standard units	once per quarter	Grab	Mar, Jun, Sep, Dec	
SD 004 SIC 1446 Dewatering	Phosphorus, Total (as P)					Monitor only. calendar quarter average		milligrams per liter	once per quarter	Grab	Mar, Jun, Sep, Dec	
SD 004 SIC 1446 Dewatering	Solids, Total Suspended (TSS)					25 calendar month average	45 daily maximum	milligrams per liter	once per month	Grab	Jan-Dec	
SD 005 SUBSECTOR J2 Dewatering	Flow		Monitor only. calendar quarter total	million gallons		Monitor only. calendar quarter average		million gallons per day	once per quarter	Measurement, Continuous	Jan-Dec	

Subject item	Parameter	Discharge limitations					Monitoring requirements					Notes
		Quantity /Loading avg.	Quantity /Loading max.	Quantity /Loading units	Quality /Conc. min.	Quality /Conc. avg.	Quality /Conc. max.	Quality/ Conc. units	Frequency	Sample type	Effective period	
SD 005 SUBSECTOR J2 Dewatering	Nitrite Plus Nitrate, Total (as N)					Monitor only. calendar year average		milligrams per liter	once per year	Grab	Jan-Dec	
SD 005 SUBSECTOR J2 Dewatering	Nitrogen, Kjeldahl, Total					Monitor only. calendar year average		milligrams per liter	once per year	Grab	Jan-Dec	
SD 005 SUBSECTOR J2 Dewatering	pH				6.5 calendar quarter minimum		8.5 calendar quarter maximum	standard units	once per quarter	Grab	Jan-Dec	
SD 005 SUBSECTOR J2 Dewatering	Phosphorus, Total (as P)					Monitor only. calendar quarter average		milligrams per liter	once per quarter	Grab	Jan-Dec	
SD 005 SUBSECTOR J2 Dewatering	Solids, Total Suspended (TSS)						30 daily maximum	milligrams per liter	once per quarter	Grab	Jan-Dec	



STAFF REPORT

ROGERS PLANNING COMMISSION

Meeting Date: October 7, 2024

Agenda Item: 5.2

Subject: Application by Taylor Development Co LLC for Preliminary Plat Approval for Taylor Inlet, a Rural Residential Development

Prepared By: Alec Henderson, City Planner

Overview / Background / Analysis

Taylor Development Company, LLC (Developer), has requested approval of a Preliminary Plat for the subdivision titled TAYLOR INLET for the property located at 23580 109th Ave N and an approximate 8-acre portion of 23200 109th Ave N (PIDs: 3412023340002 and 3412023340004). The rural residential plat proposes nine (9) single family lots. The plans include the extension of a cu- de-sac (Taylor Lane), grading, and stormwater facilities. The area is not served by sewer or water and is proposed to use private wells and septic systems as a rural residential subdivision. The application also includes a lot split request to split off the approximate eight (8) acres from the original 20 acres owned by the Patnode family to the east. Lot Splits are reviewed and approved by the City Council. Approval of the lot split is necessary for the final plat.

Preliminary plats are required when land is proposed to be divided into more than 5 lots and generally when public improvements are proposed (roads, utilities, etc.).

Preliminary plats grant general approvals of a development plan, proposed road and utility locations, lot counts and sizes, etc and is a key step in the entitlement process for subdivisions. Final Plats are the final step in the entitlement process and give the final construction approval and authorize recording of the plat with the county and provide approval of any agreements necessary for the development. Preliminary plats require a public hearing and review by both the Planning Commission and City Council. Final plats are reviewed and approved only by the City Council and provided the final plat is substantially similar to the preliminary plat, there is an obligation for approval.

A complete application was received on 8/29/2024. Preliminary plat 120-day timeline will expire on 12/27/2024.

Primary Issues to Consider

- Land Use & Zoning
- Lot Standards
- Site Information

Analysis of Primary Issues

Land Use & Zoning

The 2040 Comprehensive Plan (2040 Plan) guides the property as **Rural Residential** and zoned as **Rural Residential (R1)**. R1 subdivisions require a minimum of 1 acre per lot with enough room for a primary and alternate septic system. No sewer is present, nor is the area guided for future sewer in the 2040 Plan. The developer does provide the minimum lot sizes for the district and has provided locations for septic for each lot. Plating is consistent with Land Use and Zoning.

Land Use and Zoning requirements are satisfied.

Lot Standards

The proposed lots range from 1.3 to 6 acres. The lots all have primary and secondary septic locations. The lots are well under the impervious surface maximum of 75%. The plan does provide possible building pads which meet the minimum yard setbacks: 10 ft side setbacks, 30 ft front setbacks, and 20 feet rear setbacks. Performance standards for the R1 district are met. The proposed lot sizes are consistent with City Code.

Lot standards are satisfied.

Site Information

The project proposes to construct Taylor Lane (a cul-de-sac) to provide access to all nine lots. The street will have access to 109th Ave N, or CSAH 117. Since 117 is a County facility, access will need review and approval from Hennepin County and include improvements as required by the County Transportation and Plat department. Both Fire and Engineering have reviewed the access plan and are comfortable with the cul-de-sac length.

Grading

The proposed grading plan has been designed to preserve onsite wetlands. Additionally, the grading plan preserves existing trees to the extent possible except for the trees needing removal for the building pads, driveways, and stormwater facilities.

Stormwater Management

The development is located within the watershed of Elm Creek and is required to implement a stormwater management plan that meets the requirements of the Elm Creek Watershed Management Commission along with the City of Roger's design standards. The proposed development is required to meet stormwater management requirements for volume control, water quality, and rate control of discharge. To meet treatment requirements, the proposed stormwater management plan includes a new pond and outlets into existing wetlands and wetland buffers.

Tree Preservation and Landscaping

The majority of trees on site are being preserved, except in the area where existing buildings will be demoed, and the new home sites are to be prepped. Some existing stands of trees are proposed to be removed for the removal of the existing driveway or to make room for infiltration and septic systems. Stands of trees are to be preserved along the perimeter of the site and where removal is not necessary for grading activities. A landscape plan has not been submitted and should be submitted with the

final plat application.

Staff Recommendation

City staff recommends approval of the Preliminary Plat for Taylor Inlet.

Motion to recommend approval of the Preliminary Plat for Taylor Inlet.

The Draft Resolution proposes the following conditions:

1. The City shall comply with the plat opinion and complete revisions to the Plat as may be required by the City Attorney prior to the recording of the future final plat.
2. Subject to the review and comments by Hennepin County.
3. The Developer shall adequately address comments from the City Engineer and make plans changes as deemed necessary by the City Engineer and Public Works department.
4. The Developer shall satisfy comments from the Fire Chief and/or Fire Marshal.
5. The Stormwater and Grading Plans shall be subject to review and approval by the Elm Creek Watershed Commission and City Engineer.
6. The Developer and City of Rogers shall execute a Subdivision Agreement for the development, identifying the terms and conditions of the development and fees, escrows, and financial security obligations required of the Developer at time of Final Plat.
7. A stormwater maintenance agreement may be required by the Public Works Department and/or Elm Creek Watershed Commission to determine the disposition and maintenance of the stormwater ponds.

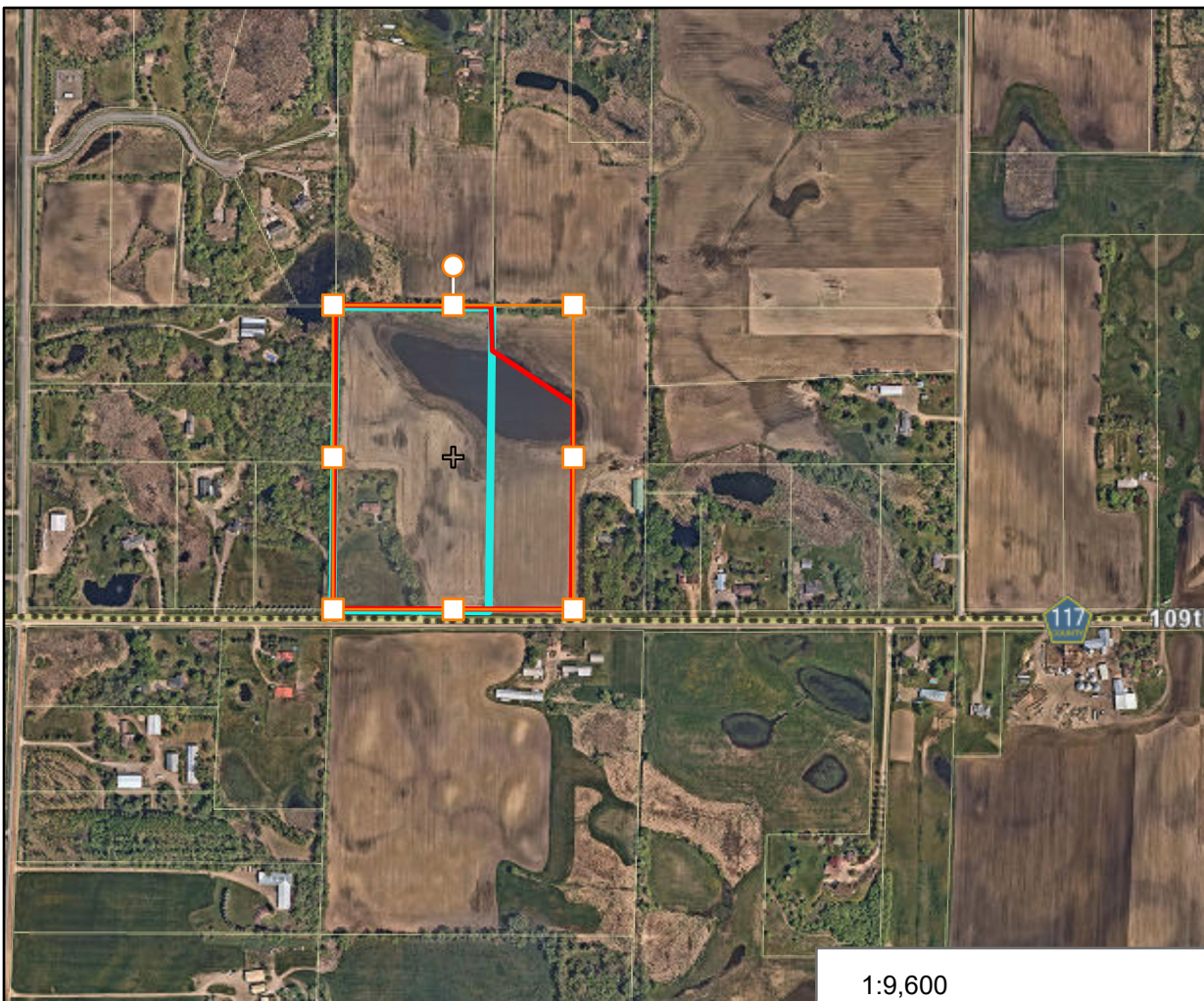
Financial Impact: NA

Source Fund: NA

Budgeted? N/A

Supporting Documentation

- A. Location Map
- B. Resolution No. 2024-99 Preliminary Plat Approval TAYLOR INLET
- C. TAYLOR INLET Preliminary Plat Plans
- D. Stormwater Management Plan
- E. Patnode Lot Split Figure (East Property)
- F. 23-0189 TAYLOR INLET PRELIM PLAT 8-27-24_PW Comments



PARCEL ID: 3412023340002

OWNER NAME: Taylor Inlet Llc

PARCEL ADDRESS: 23580 109th Ave N, Rogers MN 55374

PARCEL AREA: 19.71 acres, 858,407 sq ft

A-T-B: Abstract

SALE PRICE: \$831,355

SALE DATE: 10/2023

SALE CODE: Excluded From Ratio Studies

ASSESSED 2023, PAYABLE 2024

PROPERTY TYPE: Farm

HOMESTEAD: Homestead

MARKET VALUE: \$519,000

TAX TOTAL: \$3,836.84

ASSESSED 2024, PAYABLE 2025

PROPERTY TYPE: Residential

HOMESTEAD: Non-Homestead

MARKET VALUE: \$556,100

Comments:

This data (i) is furnished 'AS IS' with no representation as to completeness or accuracy; (ii) is furnished with no warranty of any kind; and (iii) is not suitable for legal, engineering or surveying purposes. Hennepin County shall not be liable for any damage, injury or loss resulting from this data.

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COUNTY 2024

RESOLUTION NO. 2024 - 99

**A RESOLUTION GRANTING APPROVAL OF THE
PRELIMINARY PLAT FOR
TAYLOR INLET**

WHEREAS, the Taylor Inlet LLC (“Fee Owner/Applicant”) submitted an application requesting approval of a Preliminary Plat for Taylor Inlet (“Plat”) for the approximate 20 parcel at 23580 109th Ave N and interest in approximately western 8 acres of the property at 23200 109th Ave N with the PIDs 3412023340002 and 3412023340004 and legally described on Exhibit A (the “Subject Property/Property”); and,

WHEREAS, the Applicant is proposing to plat the property into nine (9) lots to accommodate a rural residential development of the area as shown in Exhibit B; and,

WHEREAS, the Subject Property contains approximately 28.72 acres is guided as Rural Residential in the 2040 Comprehensive Plan and within the Rural Residential (R1) zoning district; and

WHEREAS, the proposed Preliminary Plat are consistent with 2040 Comprehensive Plan and current zoning regulations for the City; and

WHEREAS, pursuant to Minnesota Statute §462.357 the Planning Commission (“Commission”) conducted a public hearing to receive public comment on the proposed Plat on October 7th, 2024; and

WHEREAS, notice of the Hearing was posted, published in the City’s official newspaper, and mailed to nearby properties, as required by State Statute; and,

WHEREAS, written and verbal comment were received and considered by the Commission; and,

WHEREAS, following the Hearing, the Commission recommended approval of the Taylor Inlet preliminary plat.

NOW THEREFORE, BE IT RESOLVED, BY THE CITY COUNCIL OF THE CITY OF ROGERS, MINNESOTA, that the Preliminary Plat Taylor Inlet is hereby approved subject to the following conditions:

1. The City shall comply with the plat opinion and complete revisions to the Plat as may be required by the City Attorney prior to the recording of the future final plat.
2. Subject to the review and comments by Hennepin County.
3. The Developer shall adequately address comments from the City Engineer and make plans changes as deemed necessary by the City Engineer and Public Works department.
4. The Developer shall satisfy comments from the Fire Chief and/or Fire Marshal.
5. The Stormwater and Grading Plans shall be subject to review and approval by the Elm Creek Watershed Commission and City Engineer.

6. The Developer and City of Rogers shall execute a Subdivision Agreement for the development, identifying the terms and conditions of the development and fees, escrows, and financial security obligations required of the Developer at time of Final Plat.
7. A stormwater maintenance agreement may be required by the Public Works Department and/or Elm Creek Watershed Commission to determine the disposition and maintenance of the stormwater ponds.

Moved by Councilmember _____, seconded by Councilmember _____

The following voted in favor of said resolution:

The following voted against the same:

The following abstained:

Whereupon said resolution was declared duly passed and adopted, and was signed by the Mayor, and attested by the Clerk dated this 22nd day of October, 2024.

Rick Ihli, Mayor

ATTEST:

Stacie Brown, City Clerk

EXHIBIT A

LEGAL DESCRIPTION

Existing Legal Description

Lot 1, Block 1, Uptown Rogers Addition, Hennepin County, Minnesota

AND

Outlot A, Uptown Rogers 2nd Addition, Hennepin County, Minnesota

AND

Lot 1, Block 1, Uptown Rogers 2nd Addition, Hennepin County, Minnesota

AND

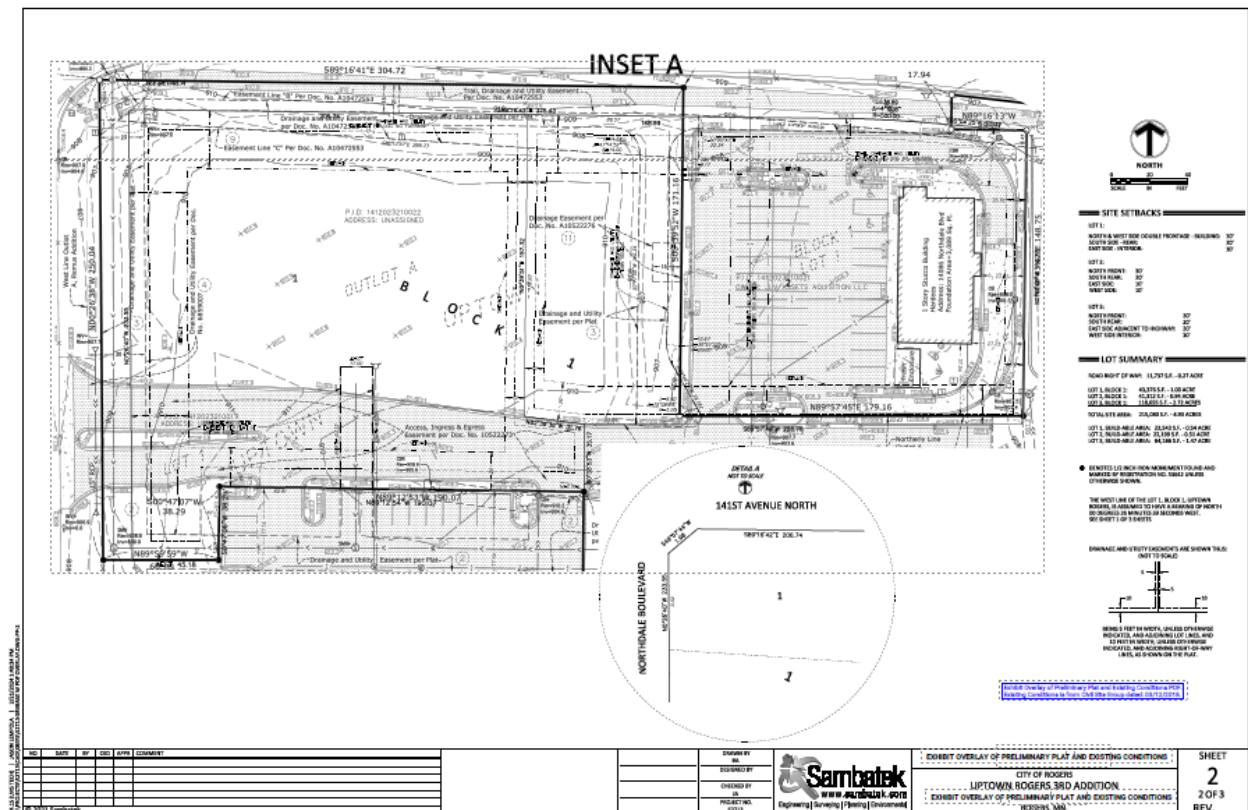
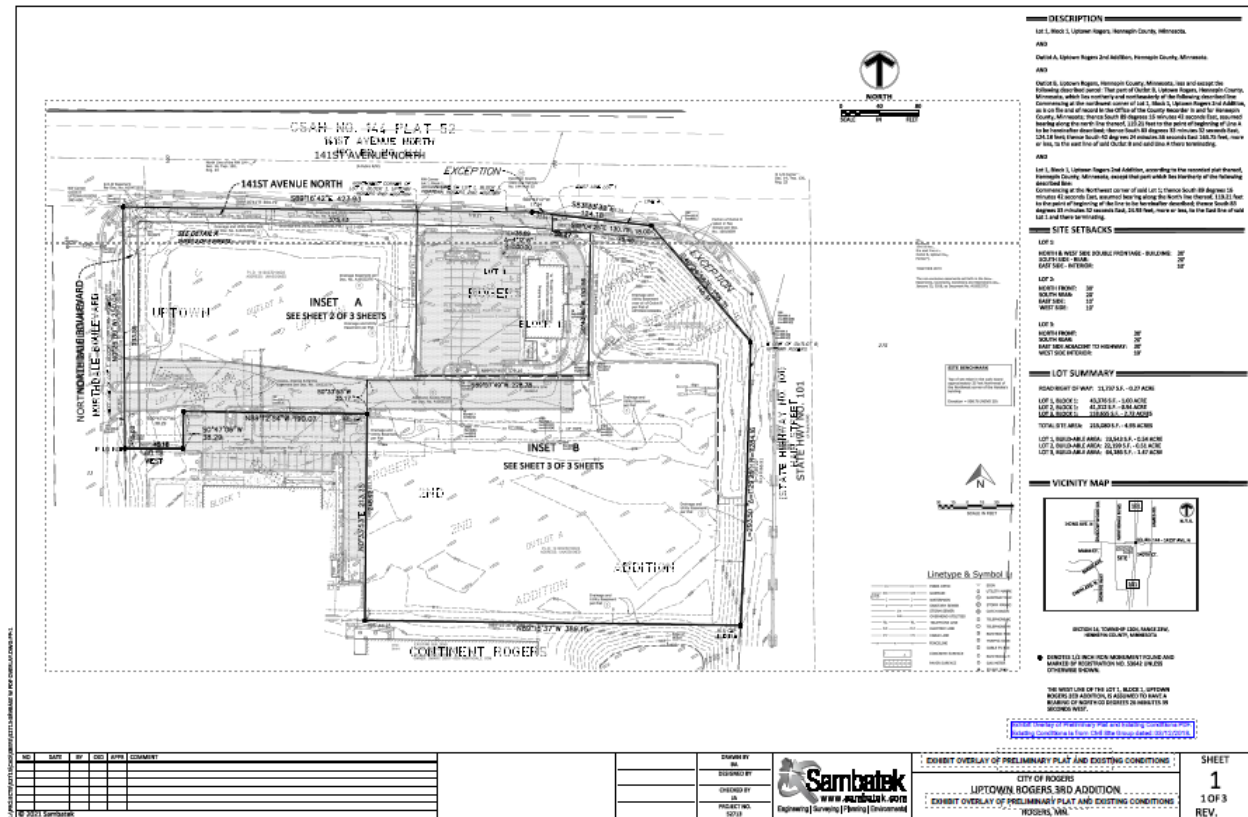
Outlot B, Uptown Rogers Addition, Hennepin County, Minnesota

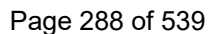
Proposed Legal Description

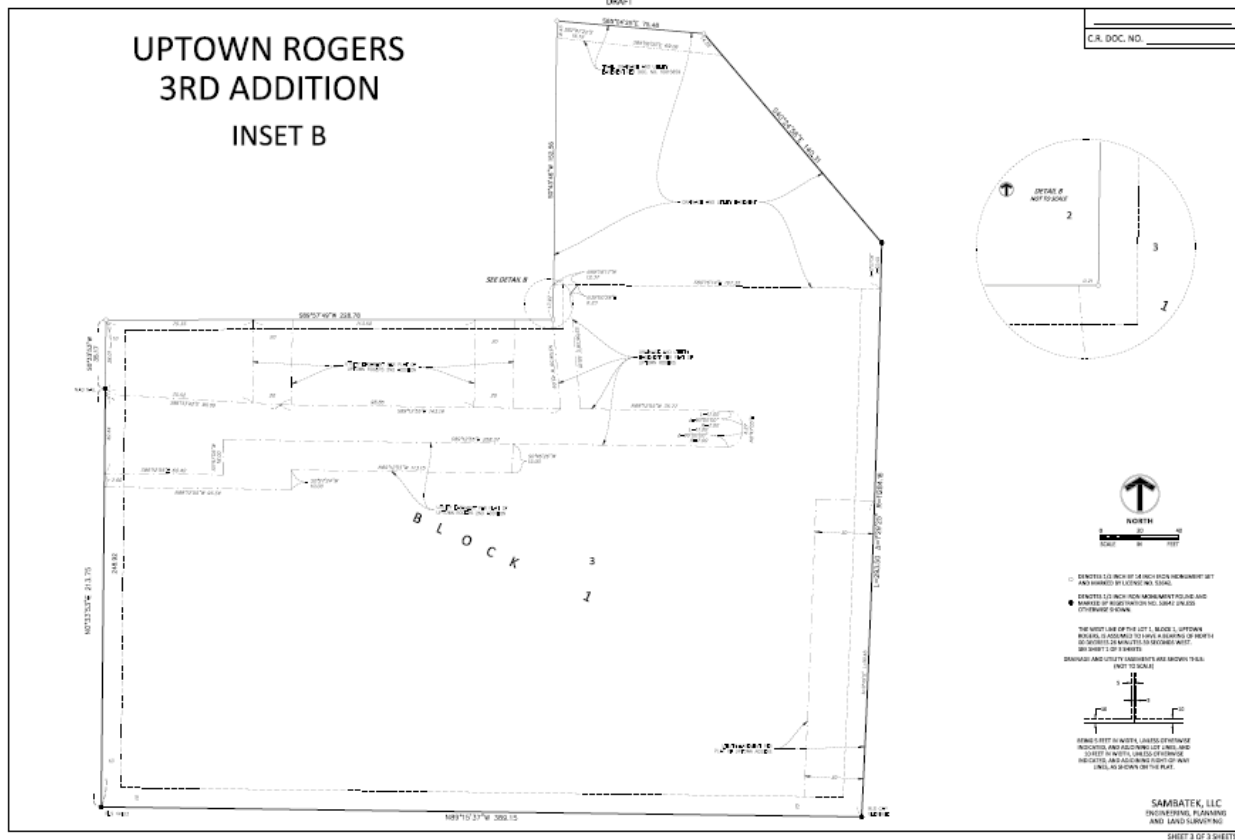
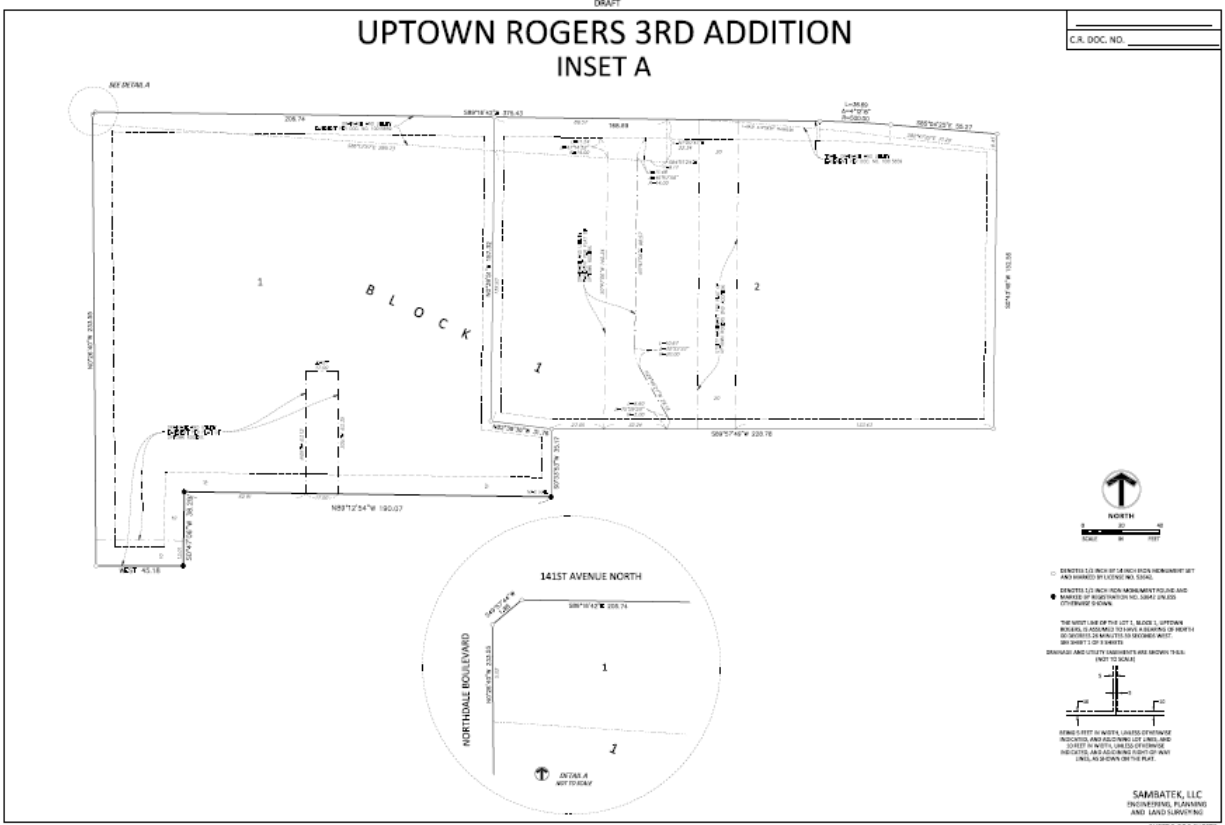
UPTOWN ROGERS 3rd ADDITION, Hennepin County, Minnesota, according to the plat thereof.

EXHIBIT B

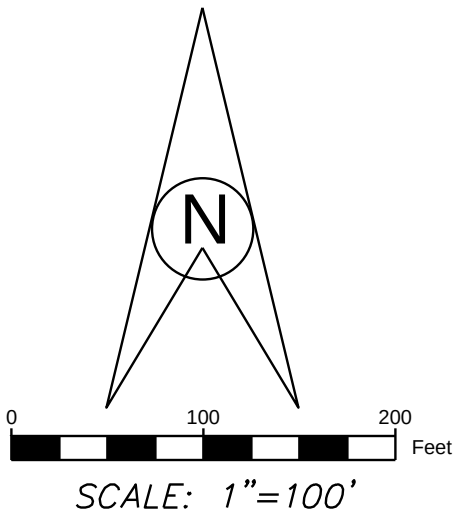
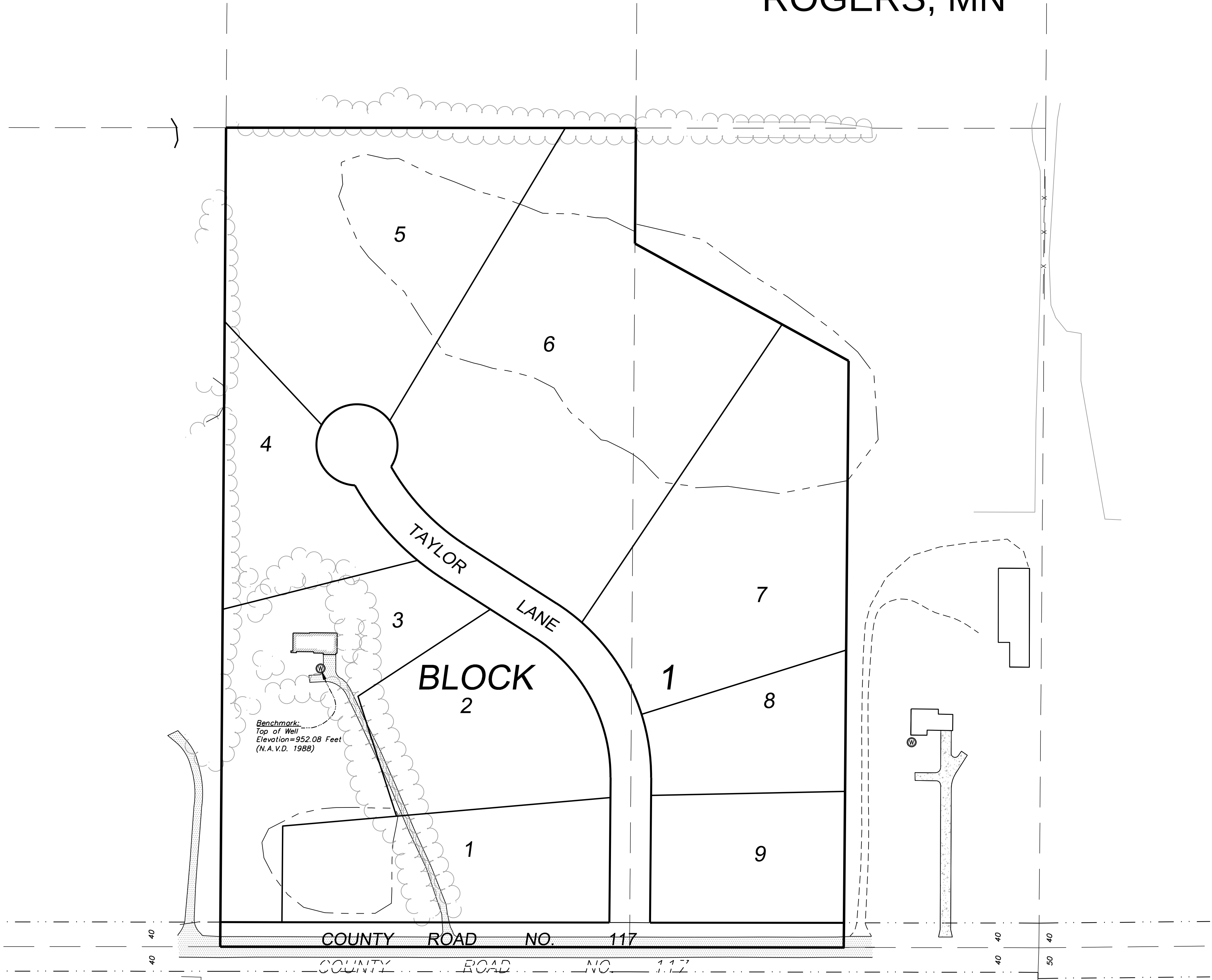
PRELIMINARY PLAT



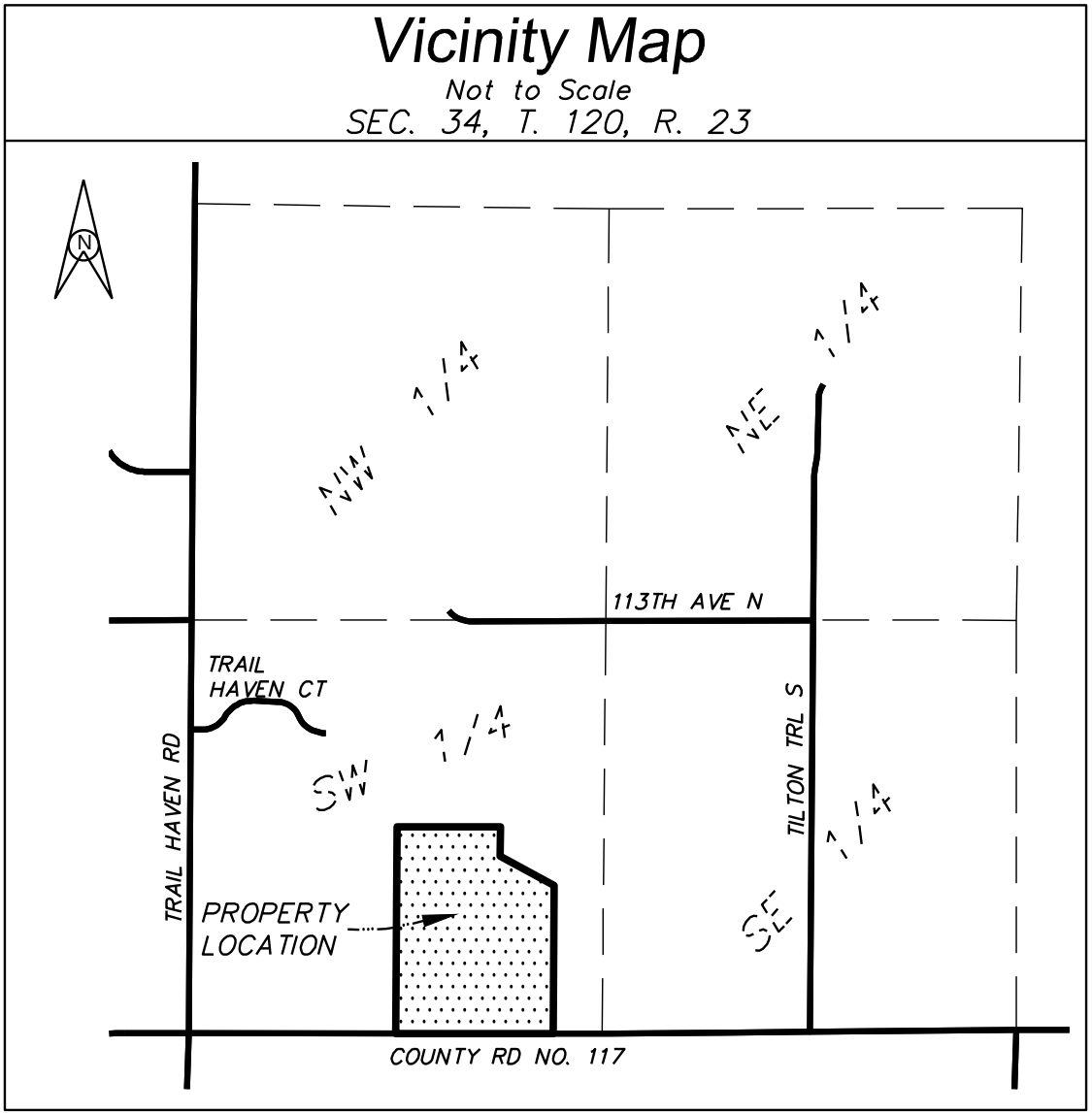




TAYLOR INLET
ROGERS, MN



DEVELOPER:
MIKE MOONEY
15565A 26TH AVE N
PLYMOUTH, MN 55447
612-750-2757



SHEET INDEX

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	PRELIMINARY REMOVALS PLAN
3	PRELIMINARY PLAT - OVERVIEW
4	PRELIMINARY PLAT (NORTH)
5	PRELIMINARY PLAT (SOUTH)
6	PRELIMINARY STREET & STORM SEWER PLAN - TAYLOR LANE
7	PRELIMINARY PRIMARY GRADING & EROSION CONTROL PLAN
8	PRELIMINARY SECONDARY GRADING & EROSION CONTROL PLAN
9	PRELIMINARY WETLAND BUFFER & TREE PRESERVATION PLAN (NORTH)
10	PRELIMINARY WETLAND BUFFER & TREE PRESERVATION PLAN (SOUTH)

REV. NO.	DATE	BY	DESCRIPTION

DESIGNED	DRAWN
P.E.O.	T.J.B.
CHECKED	
P.E.O.	

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Paul E. Otto
Paul E. Otto
License # 40062 Date: 8-27-24



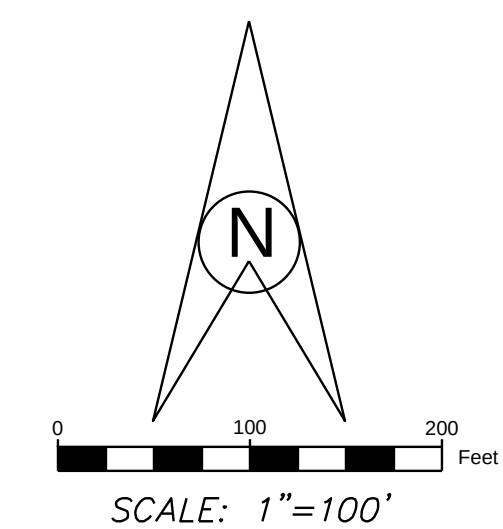
OTTO ASSOCIATES
Engineers & Land Surveyors, Inc.

www.ottoassociates.com

9 West Division Street
Buffalo, MN 55313
(763)682-4727
Fax: (763)682-3522

TAYLOR INLET
MIKE MOONEY
ROGERS, MN

COVER SHEET	PROJECT NO: 23-0189
SHEET NO. 1 OF 10 SHEETS	DATE: 5-24-24



- NOTES:
1. WETLANDS DELINEATED BY JACOBSON ENVIRONMENTAL, PLLC.
2. DISPOSAL OF MATERIALS SHALL BE IN ACCORDANCE WITH
ALL STATE AND LOCAL REGULATIONS.

REV. NO.	DATE	BY	DESCRIPTION

DESIGNED DRAWN
P.E.O. T.J.B.
CHECKED
P.E.O.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.



Paul E. Otto
License # 40062 Date: 8-27-24



*9 West Division Street
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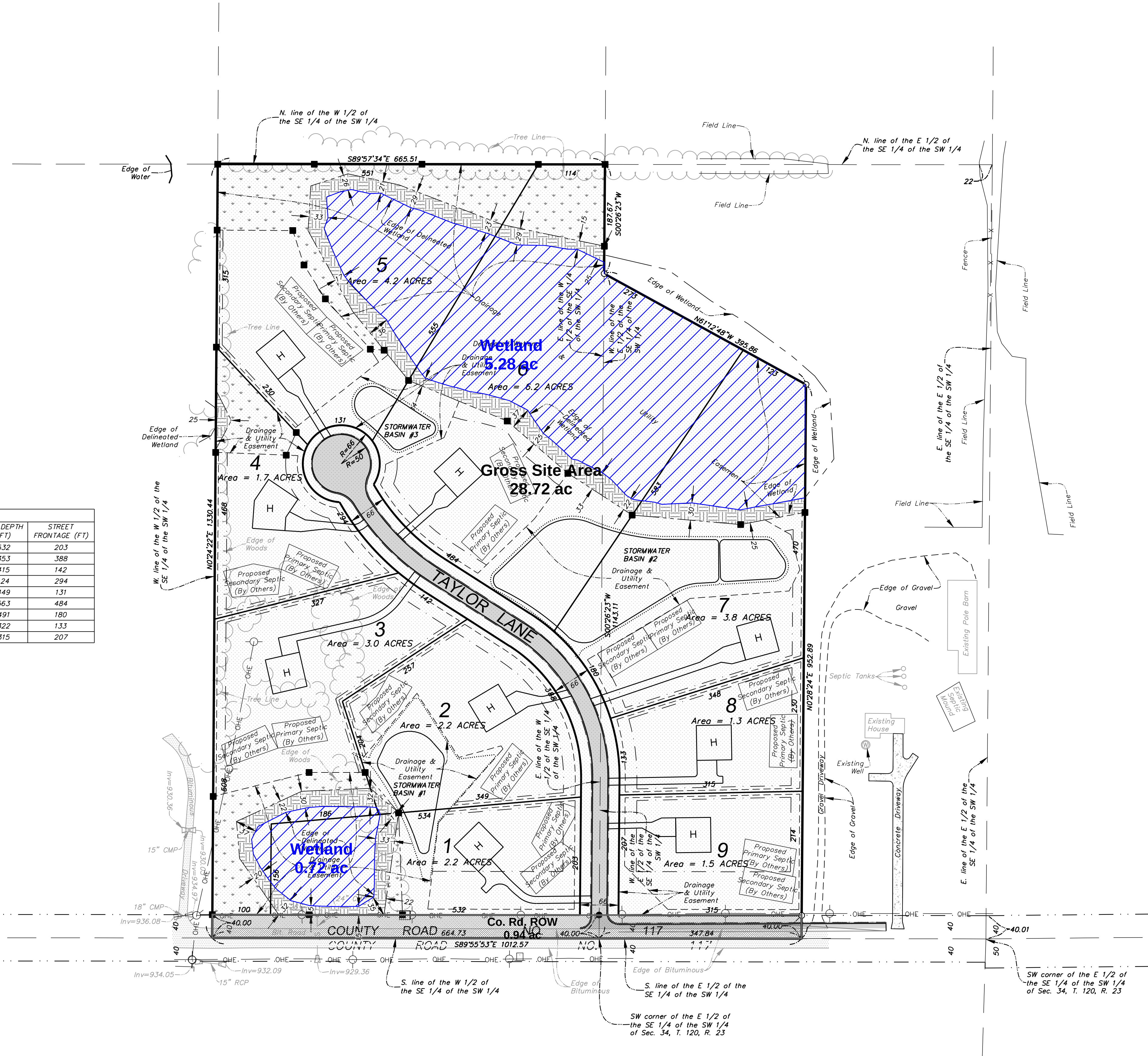
TAYLOR INLET
MIKE MOONEY
ROGERS, MN

PRELIMINARY REMOVALS PLAN

SHEET NO. 2 OF 10 SHEETS

PROJECT NO:	23-0189
DATE:	5-24-24

LOT TABLE					
LOT/BLOCK #	LOT AREA (SF)	BUILDABLE LOT AREA (SF)	LOT WIDTH AT SETBACK (FT)	LOT DEPTH (FT)	STREET FRONTAGE (FT)
LOT 1, BLOCK 1	95,552	58,551	200	532	203
LOT 2, BLOCK 1	95,783	94,512	363	353	388
LOT 3, BLOCK 1	131,313	96,249	160	415	142
LOT 4, BLOCK 1	73,165	58,241	338	124	294
LOT 5, BLOCK 1	180,872	71,192	201	449	131
LOT 6, BLOCK 1	269,817	101,471	453	563	484
LOT 7, BLOCK 1	165,118	108,662	208	491	180
LOT 8, BLOCK 1	58,301	58,301	143	322	133
LOT 9, BLOCK 1	66,170	66,170	207	315	207



N

0100200

Feet

SCALE: 1"=100'

TOTAL PARCEL AREA = 26.50 ACRES
PARCEL ID: 3412023340002
3412023340004

LEGEND

denotes Existing Telephone Pedestal

denotes Existing Sign

denotes Existing Power Pole

denotes Existing Sanitary Cleanout

denotes Existing Well

denotes Overhead Electric Line

denotes Fence Line

denotes Existing Culvert

denotes Delineated Wetland (By Others)

denotes Building Setback Line

Front = 30' (75' Co. Rd. No. 117)

Side = 10'

Rear = 20'

Wetland Buffer = 25'

denotes Wetland Buffer

denotes Additional Wetland Buffer

denotes Proposed Wetland Buffer Sign, Typ.

denotes Possible 60'x60' House Pad Location

DRAINAGE AND UTILITY EASEMENTS ARE SHOWN THUS:

5

5

10

10

BEING 10 FEET IN WIDTH, UNLESS OTHERWISE INDICATED, AND ADJOINING RIGHT-OF-WAY LINES, AND BEING 5 FEET IN WIDTH, UNLESS OTHERWISE INDICATED, AND ADJOINING LOT LINES, AS SHOWN ON THE PLAT.

Notes:

1. Wetlands delineated by Jacobson Environmental, PLLC.

2. Septic design by Homestead Septic.

PROPERTY DESCRIPTION:

That part of the East Half of the Southeast Quarter of the Southwest Quarter of Section 34, Township 120, Range 23, Hennepin County, Minnesota, described as follows:

Beginning at the Southwest corner of said East Half of the Southeast Quarter of the Southwest Quarter; thence on an assumed bearing of South 89 degrees 55 minutes 53 seconds East, along the South line of said East Half of the Southeast Quarter of the Southwest Quarter, a distance of 347.84 feet; thence North 00 degrees 28 minutes 24 seconds East, a distance of 952.89 feet; thence North 61 degrees 12 minutes 48 seconds West, a distance of 395.86 feet to the West line of said East Half of the Southeast Quarter of the Southwest Quarter; thence South 00 degrees 26 minutes 23 seconds West, along said West line, a distance of 1143.11 feet to the point of beginning.

AND

The West Half of the Southeast Quarter of the Southwest Quarter of Section 34, Township 120, Range 23, Hennepin County, Minnesota.

REV. NO.	DATE	BY	DESCRIPTION

DESIGNED
P.E.O.

DRAWN
T.J.B.

CHECKED
P.E.O.

Paul E. Otto

License # 40062

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Date: 8-27-24

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TAYLOR INLET

MIKE MOONEY

ROGERS, MN

PRELIMINARY PLAT

OVERVIEW

SHEET NO. 3 OF 10 SHEETS

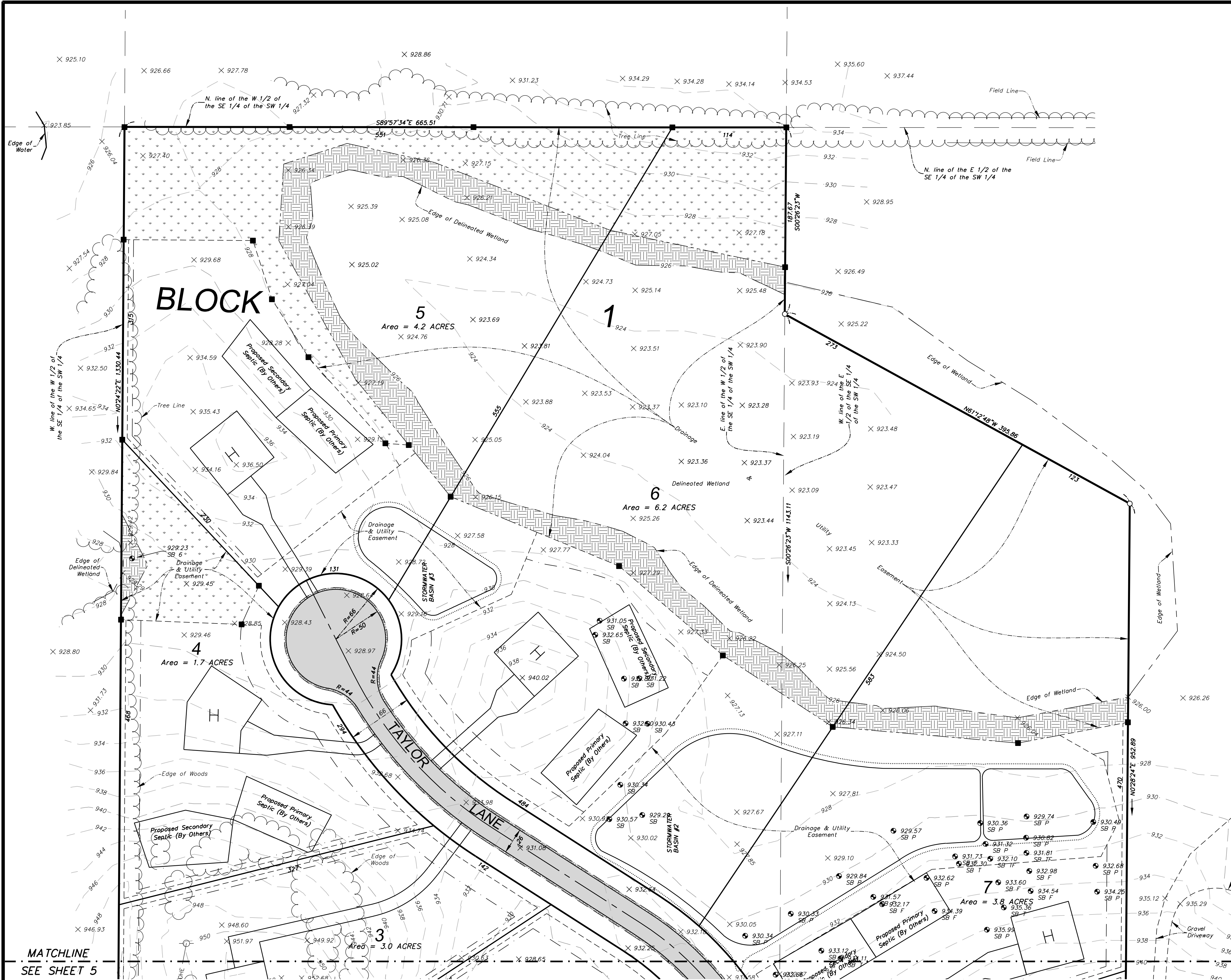
PROJECT NO:

23-0189

DATE:

5-24-24

Page 292 of 539



N

0

50

100

Feet

SCALE: 1"=50'

TOTAL PARCEL AREA = 26.50 ACRES
PARCEL ID: 3412023340002
3412023340004

LEGEND

932

denotes Existing Contour

932.00 X

denotes Existing Spot Elevation

denotes Existing Telephone Pedestal

denotes Existing Soil Boring

denotes Existing Sign

denotes Existing Power Pole

denotes Existing Sanitary Cleanout

denotes Existing Well

OHE

denotes Overhead Electric Line

X

denotes Fence Line

denotes Existing Culvert

denotes Delineated Wetland (By Others)

denotes Building Setback Line

Front = 30' (75' Co. Rd. No. 117)

Side = 10'

Rear = 20'

Wetland Buffer = 25'

denotes Wetland Buffer

denotes Additional Wetland Buffer

denotes Proposed Wetland Buffer Sign, Typ.

H

denotes Possible 60'x60' House Pad Location

DRAINAGE AND UTILITY EASEMENTS ARE SHOWN THUS:

5

10

5

10

BEING 10 FEET IN WIDTH, UNLESS OTHERWISE INDICATED, AND ADJOINING RIGHT-OF-WAY LINES, AND BEING 5 FEET IN WIDTH, UNLESS OTHERWISE INDICATED, AND ADJOINING LOT LINES, AS SHOWN ON THE PLAT.

Notes:
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AND
The West Half of the Southeast Quarter of the Southwest Quarter of Section 34, Township 120, Range 23, Hennepin County, Minnesota.

REV. NO.	DATE	BY	DESCRIPTION	DESIGNED	DRAWN	I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.	www.ottoassociates.com	TAYLOR INLET MIKE MOONEY ROGERS, MN	PROJECT NO: 23-0189
1	6-25-24	T.J.B.	REVISE PROPOSED ROAD NAME	P.E.O.	T.J.B.		9 West Division Street Buffalo, MN 55313 (763)682-4727 Fax: (763)682-3522		
2	8-27-24	T.J.B.	REVISE PER CITY REVIEW	CHECKED		Paul E. Otto License # 40062 Date: 8-27-24			
				P.E.O.					DATE: 5-24-24
SHEET NO. 4 OF 10 SHEETS									

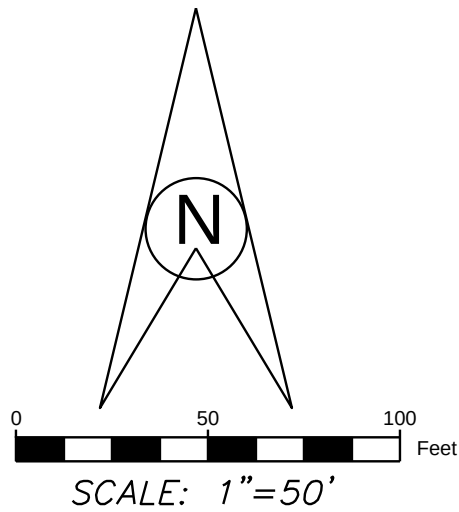
PROPERTY DESCRIPTION:

That part of the East Half of the Southeast Quarter of the Southwest Quarter of Section 34, Township 120, Range 23, Hennepin County, Minnesota, described as follows:

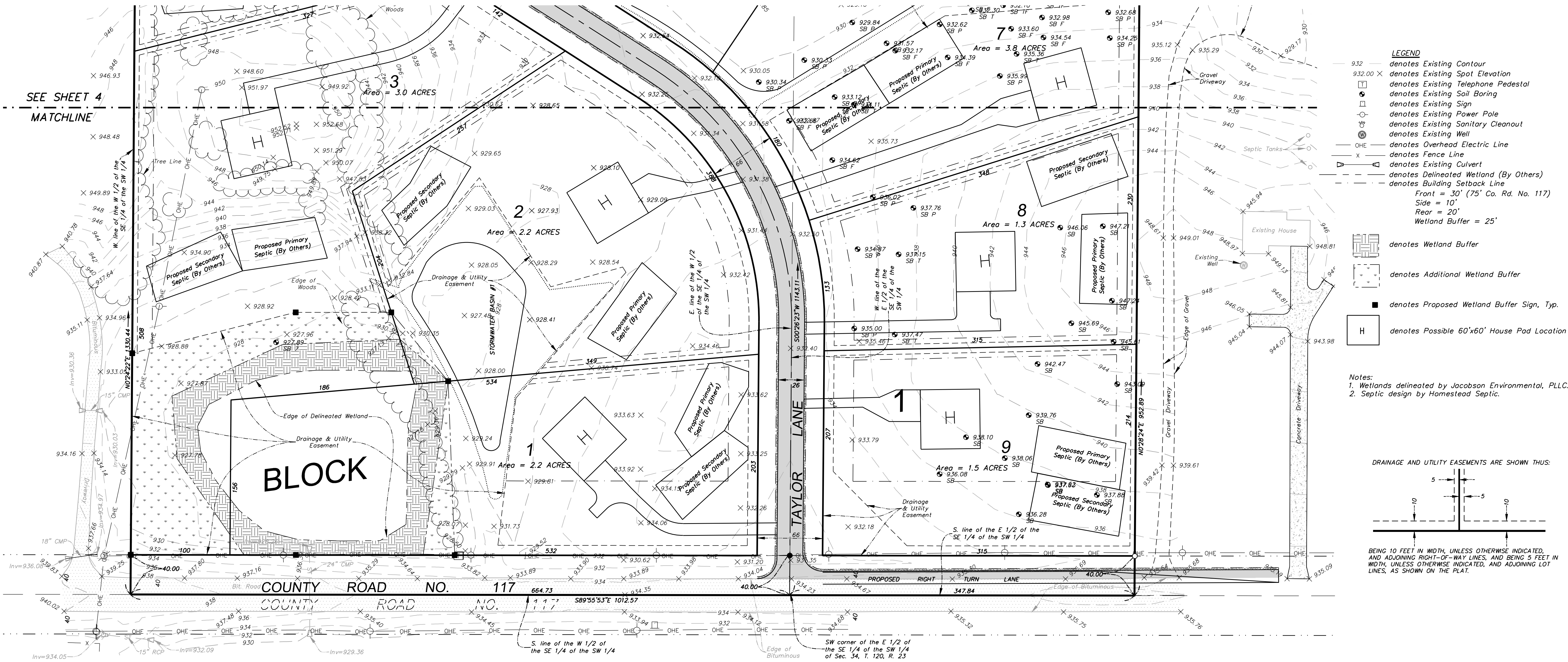
Beginning at the Southwest corner of said East Half of the Southeast Quarter of the Southwest Quarter; thence on an assumed bearing of South 89 degrees 55 minutes 53 seconds East, along the South line of said East Half of the Southeast Quarter of the Southwest Quarter, a distance of 347.84 feet; thence North 00 degrees 28 minutes 24 seconds East, a distance of 952.89 feet; thence North 61 degrees 12 minutes 48 seconds West, a distance of 395.86 feet to the West line of said East Half of the Southeast Quarter of the Southwest Quarter; thence South 00 degrees 26 minutes 23 seconds West, along said West line, a distance of 1143.11 feet to the point of beginning.

AND

The West Half of the Southeast Quarter of the Southwest Quarter of Section 34, Township 120, Range 23, Hennepin County, Minnesota.



TOTAL PARCEL AREA = 26.50 ACRES
PARCEL ID: 3412023340002
3412023340004



REV. NO.	DATE	BY	DESCRIPTION
1	6-25-24	T.J.B.	REVISE PROPOSED ROAD NAME
2	8-27-24	T.J.B.	REVISE PER CITY REVIEW

DESIGNED	DRAWN	I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota. <i>Paul E. Otto</i> Paul E. Otto License # 40062 Date: 8-27-24
P.E.O.	T.J.B.	
CHECKED		
P.E.O.		



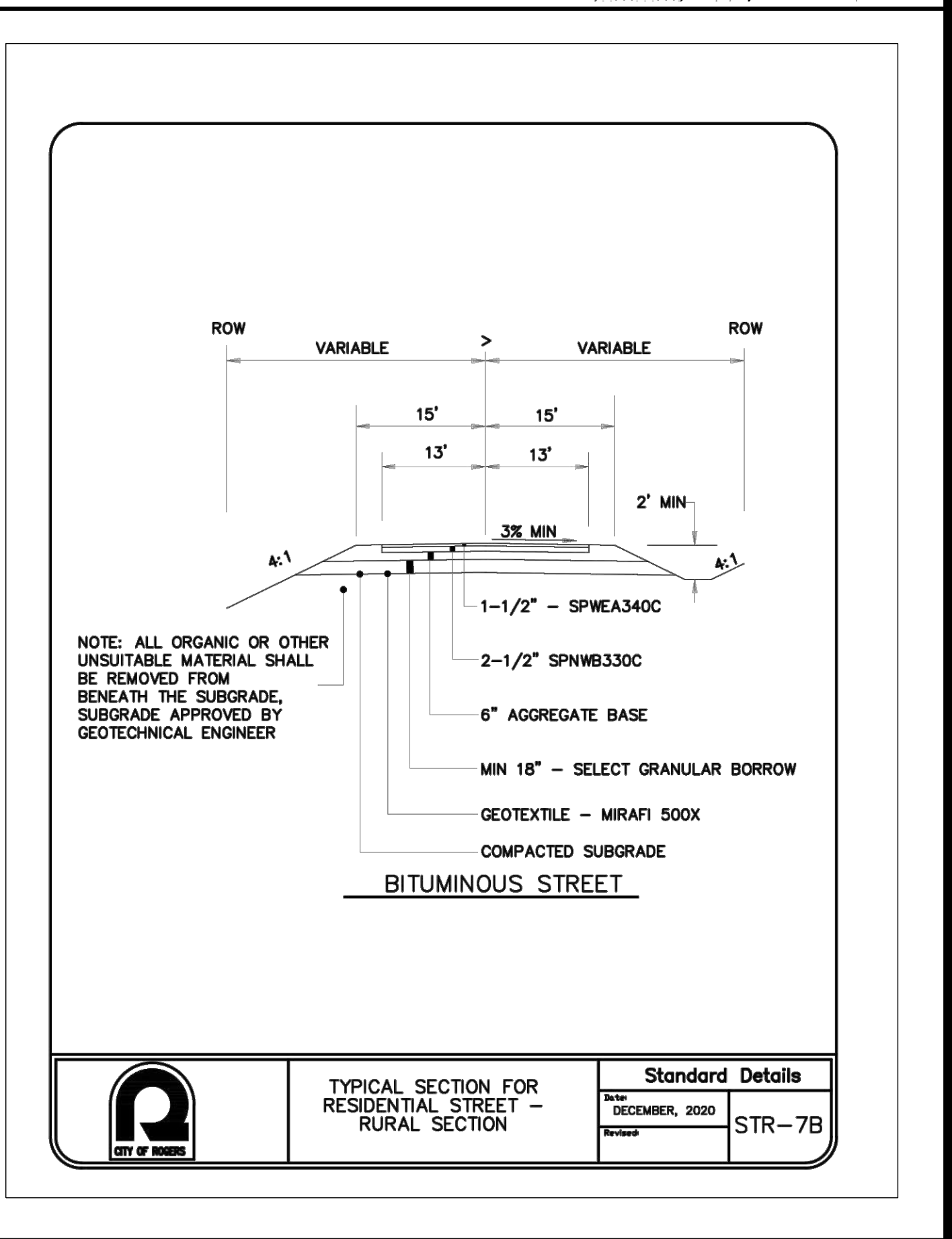
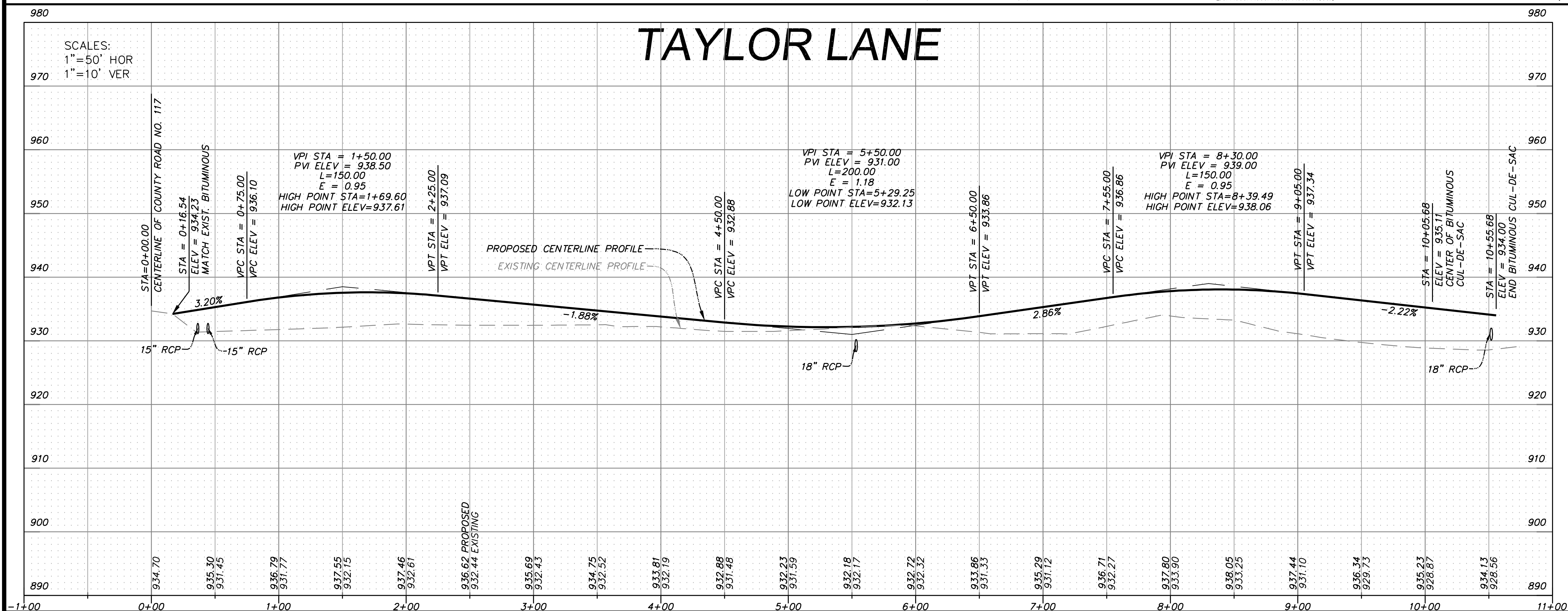
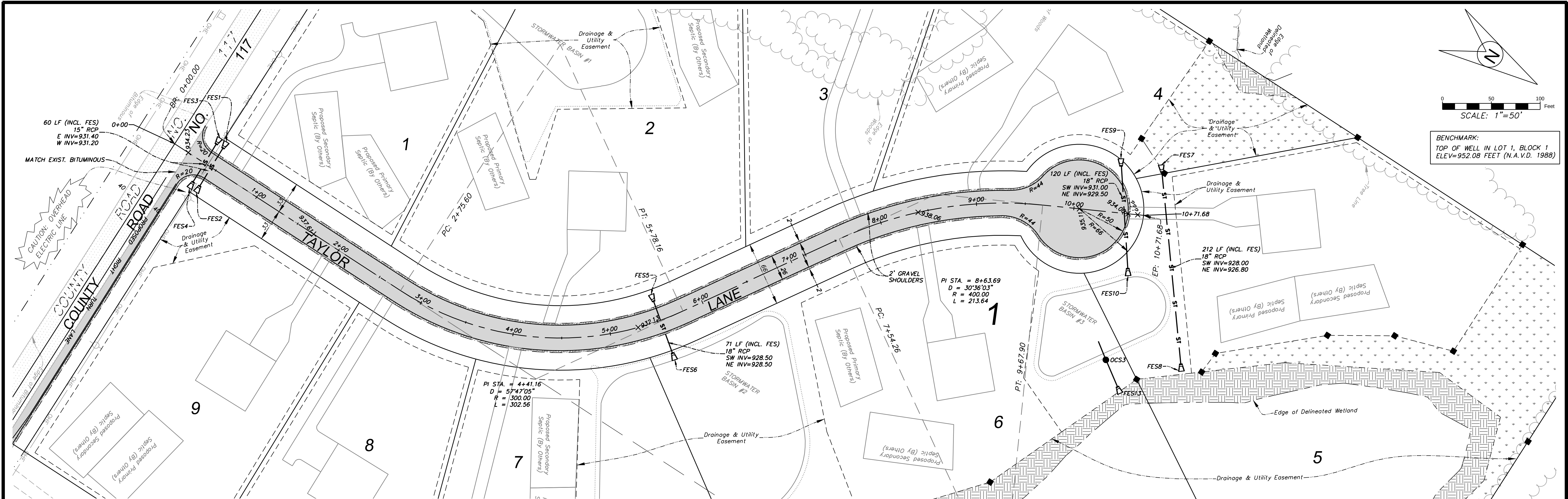
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TAYLOR INLET
MIKE MOONEY
ROGERS, MN

PROJECT NO:	23-0189
PRELIMINARY PLAT (SOUTH)	
SHEET NO. 5 OF 10 SHEETS	DATE: 5-24-24



REV. NO.	DATE	BY	DESCRIPTION
1	6-25-24	T.J.B.	REVISE PROPOSED ROAD NAME
2	8-27-24	T.J.B.	REVISE PER CITY REVIEW

DESIGNED
P.E.O.

DRAWN
T.J.B.

CHECKED
P.E.O.

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Paul E. Otto
License # 40062

Date: 8-27-24

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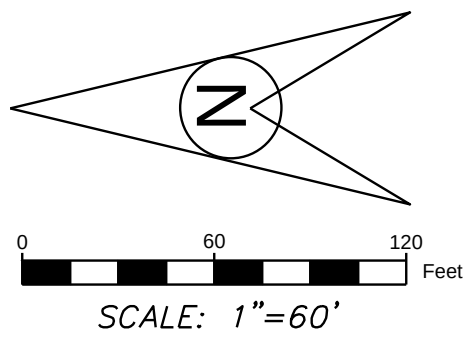
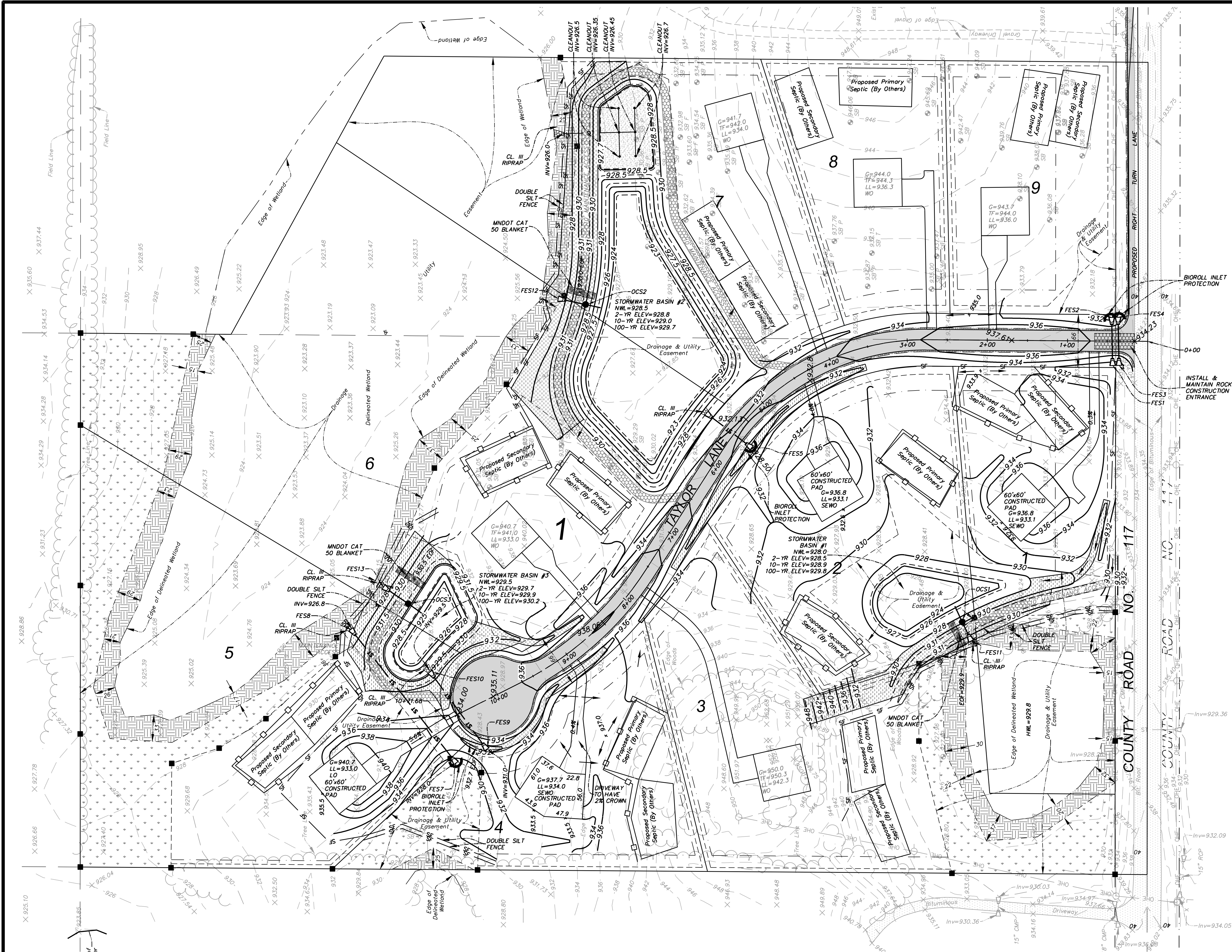
TAYLOR INLET
MIKE MOONEY
ROGERS, MN

PRELIMINARY STREET & STORM
SEWER PLAN - TAYLOR LANE

SHEET NO. 6 OF 10 SHEETS

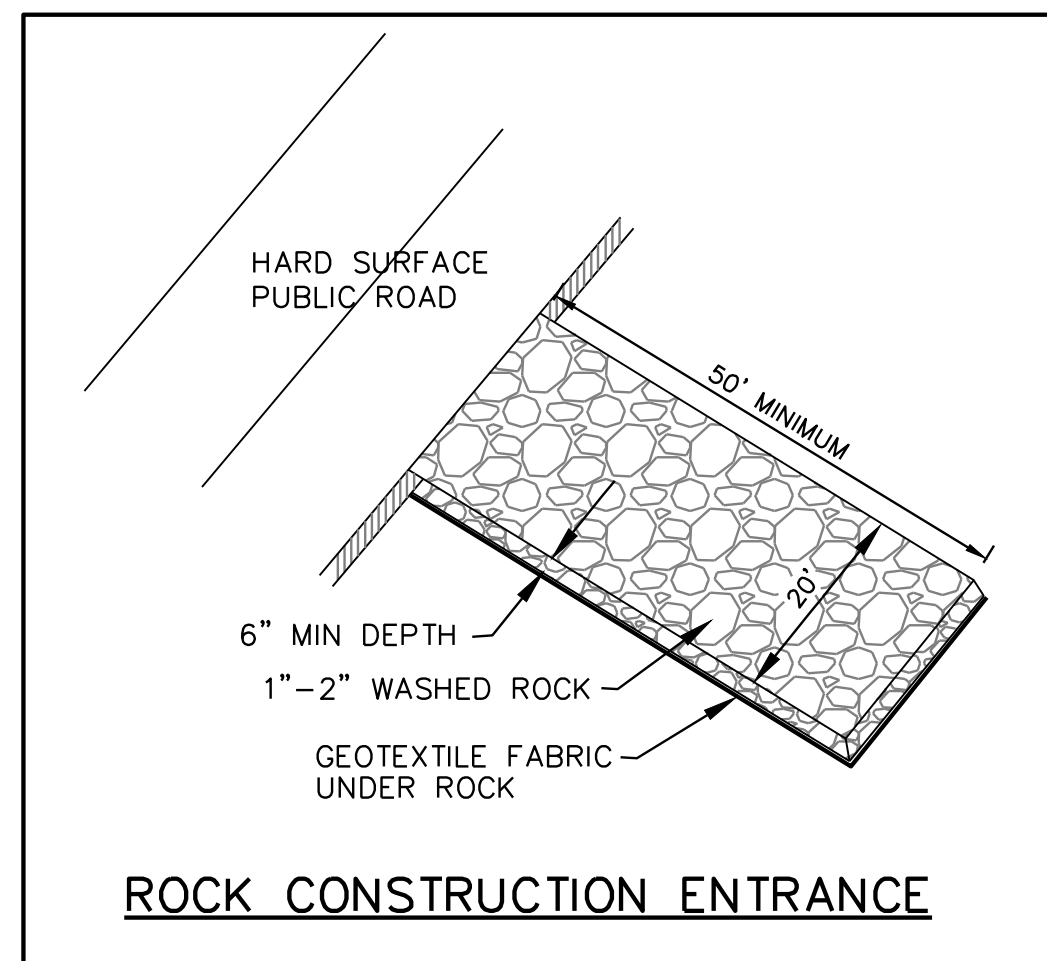
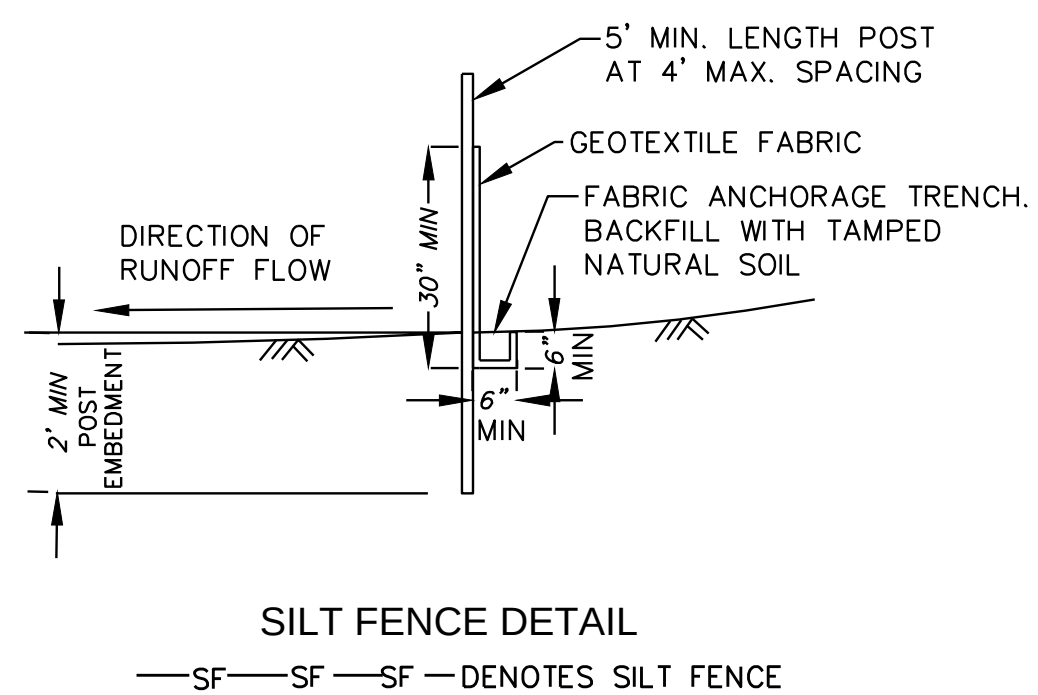
PROJECT NO:
23-0189

DATE:
5-24-24



- LEGEND**
- 938 — denotes Existing Contour
 - 938.00 X denotes Existing Spot Elevation
 - 936 — denotes Primary Grading Contour
 - 936.0 X denotes Primary Grading Spot Elevation
 - denotes Proposed Drainage
 - denotes Telephone Pedestal
 - denotes Soil Boring
 - denotes Sign
 - denotes Power Pole
 - denotes Sanitary Cleanout
 - denotes Overhead Electric Line
 - X denotes Fence Line
 - denotes Existing Culvert
 - denotes Delineated Wetland (By Others)
 - SF denotes Pre-construction Silt Fence
 - denotes Construction Fence
 - denotes Cat. 25 Erosion Control Blanket
 - denotes Proposed Wetland Buffer Sign, Typ.
 - denotes Wetland Buffer
 - denotes Additional Wetland Buffer

Note: Wetlands delineated by Jacobson Environmental, PLLC



REV. NO.	DATE	BY	DESCRIPTION
1	6-25-24	T.J.B.	REVISE PROPOSED ROAD NAME
2	8-27-24	T.J.B.	REVISE PER CITY REVIEW

DESIGNED	DRAWN
P.E.O.	T.J.B.
CHECKED	
P.E.O.	

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Paul E. Otto
License # 40062
Date: 8-27-24

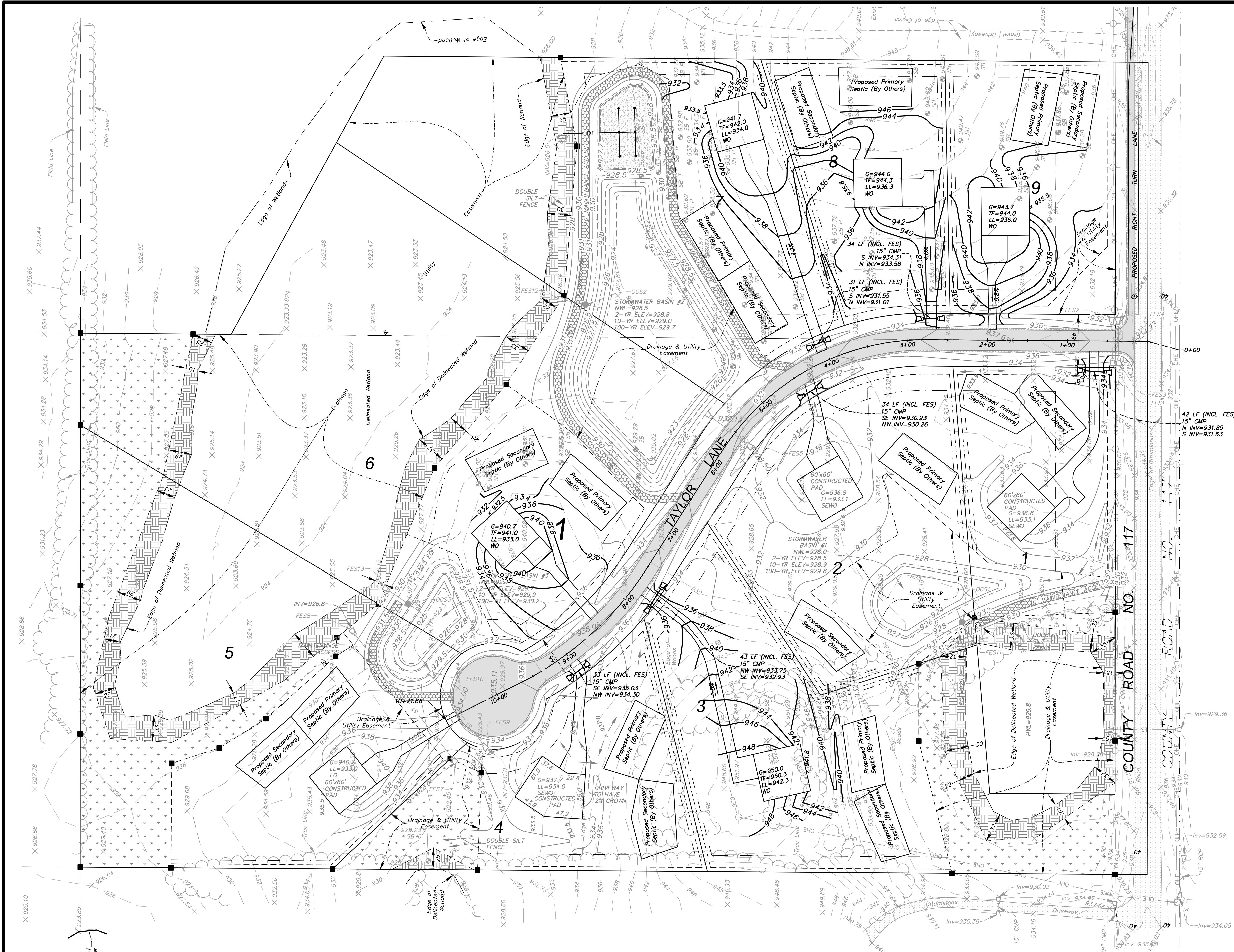


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MIKE MOONEY
ROGERS, MN

PRELIMINARY PRIMARY GRADING
& EROSION CONTROL PLAN
SHEET NO. 7 OF 10 SHEETS

PROJECT NO:
23-0189
DATE: 5-24-24



SCALE: 1"=60'

LEGEND

- 938 — denotes Existing Contour
- 938.00 X denotes Existing Spot Elevation
- 936 — denotes Secondary Grading Contour
- 936.0 X denotes Secondary Grading Spot Elevation
- 936 — denotes Primary Grading Contour
- 936.0 X denotes Primary Grading Spot Elevation
- denotes Proposed Drainage
- denotes Telephone Pedestal
- denotes Soil Boring
- denotes Sign
- denotes Power Pole
- denotes Sanitary Cleanout
- OHE — denotes Overhead Electric Line
- X — denotes Fence Line
- A — denotes Existing Culvert
- — denotes Delineated Wetland (By Others)
- denotes Proposed Wetland Buffer Sign, Typ.
- denotes Wetland Buffer
- denotes Additional Wetland Buffer

Note: Wetlands delineated by Jacobson Environmental, PLLC

NOTE: THIS PLAN IS SHOWN FOR REFERENCE ONLY. ACTUAL HOME/DRIVEWAY PLACEMENT AND PROPOSED GRADES SHALL BE DESIGNED WITH EACH PROPERTY AS PART OF THE BUILDING PERMIT PROCESS.

REV. NO.	DATE	BY	DESCRIPTION
1	6-25-24	T.J.B.	REVISE PROPOSED ROAD NAME
2	8-27-24	T.J.B.	REVISE PER CITY REVIEW

DESIGNED P.E.O.	DRAWN T.J.B.	I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota. Paul E. Otto License # 40062 Date: 8-27-24
CHECKED P.E.O.		

Engineers & Land Surveyors, Inc.

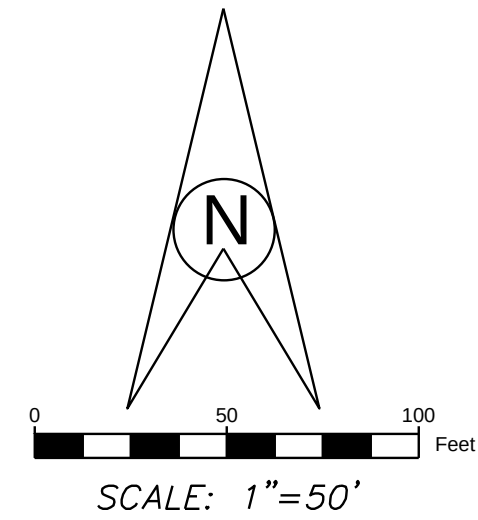
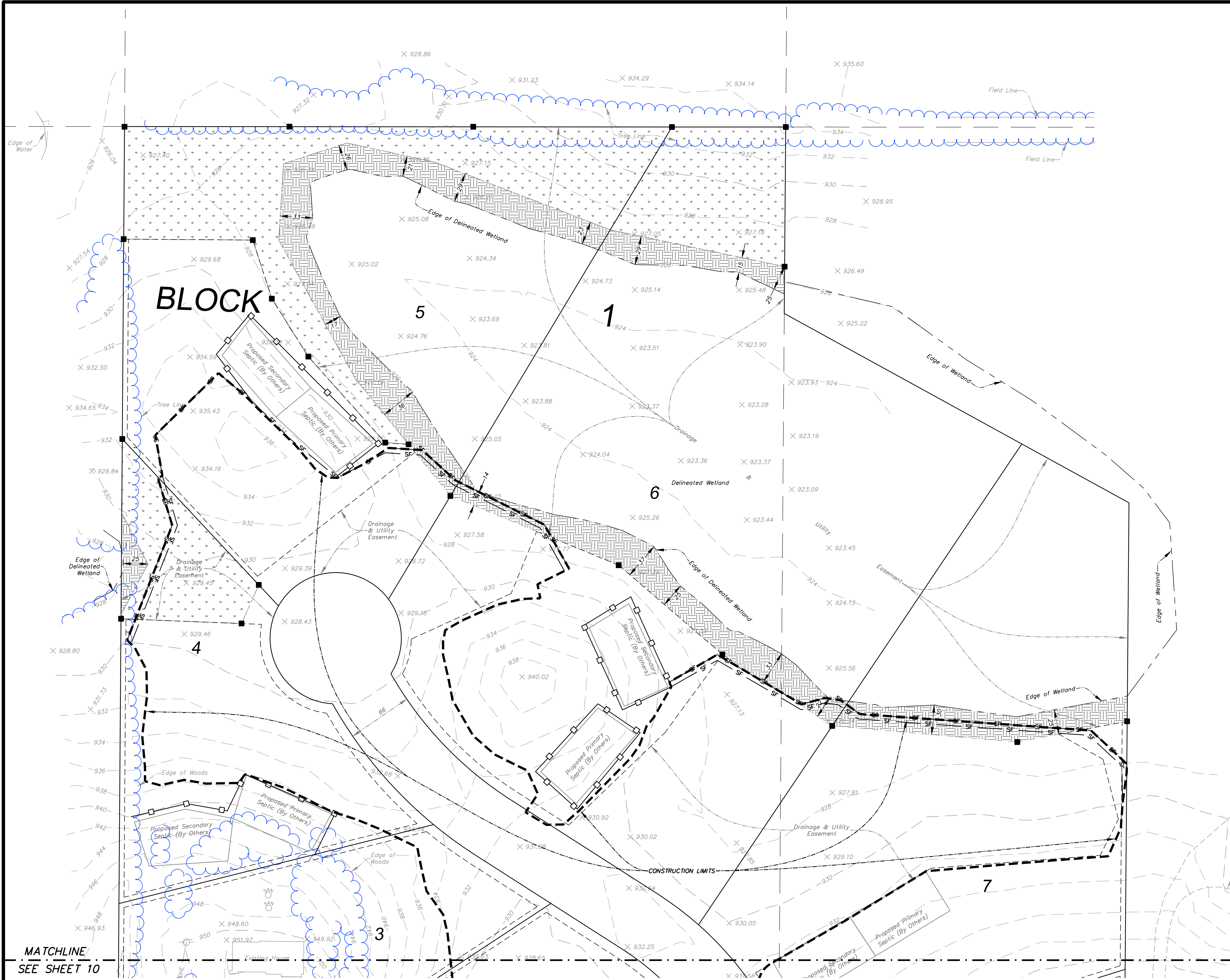
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TAYLOR INLET
MIKE MOONEY
ROGERS, MN

PRELIMINARY SECONDARY
GRADING PLAN
SHEET NO. 8 OF 10 SHEETS

PROJECT NO:
23-0189
DATE:
5-24-24



WETLAND BUFFER AREAS:
WETLAND BUFFER REQUIRED (25' AVERAGE) = 61,637 S.F.
WETLAND BUFFER PROPOSED = 61,638 S.F.
ADDITIONAL WETLAND BUFFER = 99,575 S.F.

NOTE: WETLANDS DELINEATED BY JACOBSON ENVIRONMENTAL, PLLC.

- LEGEND**
- 932 — denotes Existing Contour
 - 932.00 X denotes Existing Spot Elevation
 - T denotes Existing Telephone Pedestal
 - denotes Existing Sign
 - denotes Existing Power Pole
 - ⊕ denotes Existing Sanitary Cleanout
 - ⊕ denotes Existing Well
 - OHE — denotes Overhead Electric Line
 - X — denotes Fence Line
 - ▽ denotes Existing Culvert
 - denotes Delineated Wetland (By Others)
 - ~ denotes Existing Edge of Woods to be Preserved
 - ~ denotes Existing Edge of Woods to be Removed
 - ⊙ denotes Deciduous Tree Saved
 - ⊙ denotes Coniferous Tree Saved
 - ⊙ denotes Deciduous Tree Removed
 - ⊙ denotes Coniferous Tree Removed
 - ⊙ denotes Existing Tree Tag #
 - ⊙ denotes Existing Tree
 - SF — denotes Pre-construction Silt Fence
 - denotes Post-grading Silt Fence
 - denotes Construction Limits
 - denotes Drainage and Utility Easement
 - denotes Proposed Wetland Buffer Sign, Typ.
 - ▨ denotes Wetland Buffer
 - ▨ denotes Additional Wetland Buffer

MATCHLINE
SEE SHEET 10

REV. NO.	DATE	BY	DESCRIPTION

DESIGNED P.E.O.	DRAWN T.J.B.
CHECKED P.E.O.	

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Paul E. Otto
Paul E. Otto
License # 40062 Date: 8-27-24



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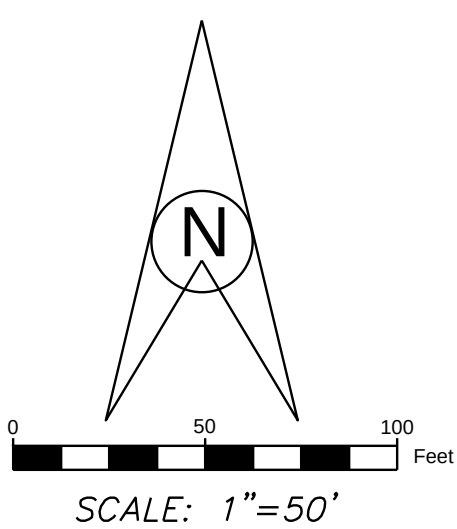
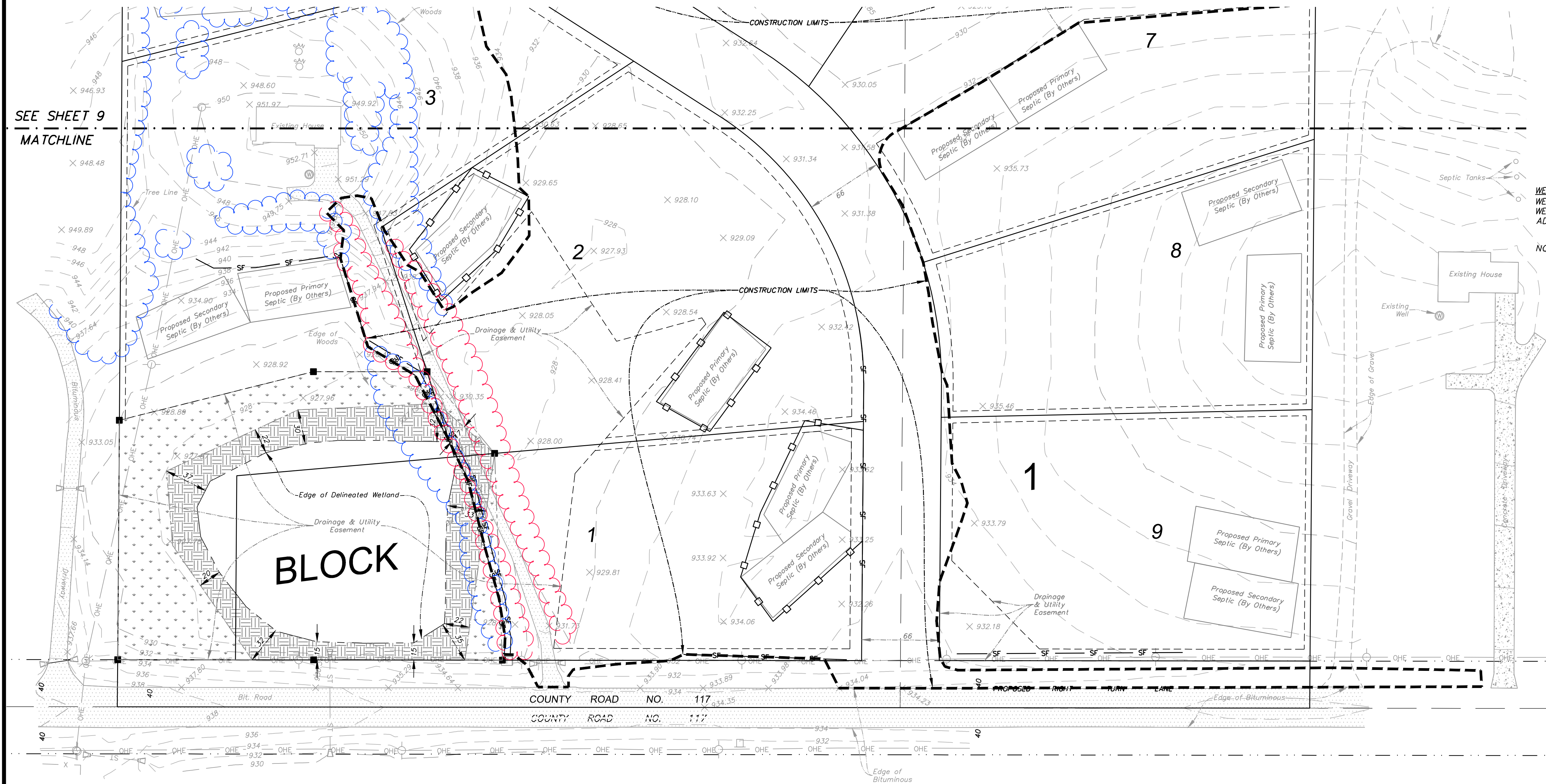
TAYLOR INLET
MIKE MOONEY
ROGERS, MN

PRELIMINARY WETLAND BUFFER &
TREE PRESERVATION PLAN (NORTH)

SHEET NO. 9 OF 10 SHEETS

PROJECT NO:
23-0189

DATE:
5-24-24



WETLAND BUFFER AREAS:
WETLAND BUFFER REQUIRED (25' AVERAGE) = 61,637 S.F.
WETLAND BUFFER PROPOSED = 61,638 S.F.
ADDITIONAL WETLAND BUFFER = 99,575 S.F.

NOTE: WETLANDS DELINEATED BY JACOBSON ENVIRONMENTAL, PLLC.

- LEGEND**
- 932 — denotes Existing Contour
 - 932.00 X denotes Existing Spot Elevation
 - denotes Existing Telephone Pedestal
 - denotes Existing Sign
 - denotes Existing Power Pole
 - denotes Existing Sanitary Cleanout
 - ⊙ denotes Existing Well
 - OHE — denotes Overhead Electric Line
 - X — denotes Fence Line
 - ▽ — denotes Existing Culvert
 - ▽ — denotes Delineated Wetland (By Others)
 - (blue wavy) — denotes Existing Edge of Woods to be Preserved
 - (red wavy) — denotes Existing Edge of Woods to be Removed
 - (blue star) — denotes Deciduous Tree Saved
 - (red star) — denotes Coniferous Tree Saved
 - (blue star) — denotes Deciduous Tree Removed
 - (red star) — denotes Coniferous Tree Removed
 - ① denotes Existing Tree Tag #
 - denotes Existing Tree
 - SF — denotes Pre-construction Silt Fence
 - □ — denotes Post-grading Silt Fence
 - — denotes Construction Limits
 - — — denotes Drainage and Utility Easement
 - denotes Proposed Wetland Buffer Sign, Typ.
 - ▨ denotes Wetland Buffer
 - ▨ denotes Additional Wetland Buffer

REV. NO.	DATE	BY	DESCRIPTION

DESIGNED DRAWN
P.E.O. T.J.B.

CHECKED
P.E.O.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Paul E. Otto
Paul E. Otto
License # 40062 Date: 8-27-24



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TAYLOR INLET
MIKE MOONEY
ROGERS, MN

PRELIMINARY WETLAND BUFFER & TREE PRESERVATION PLAN (SOUTH)	PROJECT NO: 23-0189
SHEET NO. 10 OF 10 SHEETS	DATE: 5-24-24

STORMWATER MANAGEMENT PLAN

FOR

TAYLOR INLET

*Rogers, Minnesota
August 27, 2024
Otto Project No. 23-0189*

Prepared for:
Mike Mooney

Engineer Certification:

I hereby certify that this report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.

Cara Schwahn Otto 
Reg. No. 40433 Date August 27, 2024



Engineers & Land Surveyors, Inc.

9 West Division Street, Buffalo, MN 55313 • 763-682-4727 • Fax 763-682-3522 • www.ottoassociates.com

TABLE OF CONTENTS

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1.2	Applicable Stormwater Design Standards.....	1
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FIGURES

Figure 1	Site Location Map
Figure 2	Existing Drainage Map
Figure 3	Proposed Drainage Map

APPENDICES

Appendix A	Existing HydroCAD Model
Appendix B	Proposed HydroCAD Model
Appendix C	Soil Information
Appendix D	Stage-Storage Tables
Appendix E	Outlet Control Structures
Appendix F	MIDS Data

1.0 SUMMARY

This report provides information regarding the proposed surface water management for a 9-lot residential subdivision on the 29-acre property located at 23580 109th Avenue North in Rogers, Minnesota. See Figure 1 for a site location map.

1.1 Stormwater Management Regulatory Agencies

Governmental agencies with jurisdiction over drainage and stormwater for this project include:

- City of Rogers
- Elm Creek Watershed District
- MPCA (NPDES permit)

1.2 Applicable Stormwater Design Standards

Applicable design standards identified by the above-listed agencies include:

- **Rate Control:** no increase in peak runoff rates for the 2-, 10-, and 100-year design storms.
- **Volume Control:** Elm Creek Watershed requires abstraction of the first 1.1" of rainfall from the site impervious surface.
- **Phosphorus/TSS Control:** no net increase in phosphorus or TSS loading from existing conditions.
- **Freeboard:** Elm Creek Watershed requires 2 feet of freeboard between the low floor of structures and the 100-year HWL. Low openings of structures shall be 1 foot above EOFs.

1.3 Existing Conditions

The approximately 29-acre property currently includes a single-family home, wetlands and cropland. There is 0.8 acres of impervious onsite.

Approximately half of the site flows to a wetland on the northeast portion of the site. A small portion of the site drains west and northwest. The remainder of the site drains to an onsite wetland in the southwest portion of the property. See Figure 2 for an existing conditions drainage map and Appendix A for existing HydroCAD modeling reports.

1.4 Soil Information

The onsite soils are low-permeability clays and clay-loams with hydrologic soil group C or C/D. The USDA-NRCS soil report is provided in Appendix C.

Based on the soil data, including the septic soil tests that show high seasonally saturated soils, the soils preclude the use of infiltration for stormwater management.

1.5 Proposed Conditions

Nine single-family lots are proposed for the site. The proposed impervious is 2.3 acres. Three stormwater ponds are proposed. See Figure 3 for a proposed conditions drainage map and Appendix B for proposed HydroCAD modeling reports.

2.0 STORMWATER ANALYSIS

2.1 Freeboard Compliance

The Watershed requires 2 feet of freeboard between the low floor of structures and the 100-year HWL. Low openings of structures shall be 1 foot above EOFs. All proposed home elevations meet these requirements.

2.2 Rate Control Analysis

Existing and proposed total discharge rates are shown in Table 2.

Table 2
Rate Control (cfs)

Condition	2-Year, 24-hr	10-Year, 24-hr	100-Year, 24-hr
Exist. Discharge from SW Wetland	0.00	0.00	1.62
Proposed Discharge from SW Wetland	0.00	0.00	1.02
Existing to West (E3)	1.71	3.31	7.02
Proposed to West (P9)	0.92	2.08	4.96
Existing to NE Wetland	16.30	30.69	63.56
Proposed to NE Wetland	6.43	15.16	35.24
Existing to NW (E4)	0.91	1.77	3.76
Proposed to NW (P10)	0.60	1.36	3.27

The peak flow for proposed conditions is reduced relative to existing conditions for all modeled events.

2.3 Volume Control Analysis

This site is considered restricted for infiltration due to low-permeability soils and high seasonally saturated soils. Abstraction must be provided to the greatest extent feasible. A filtration bench is being proposed within stormwater pond #2.

Minimum Abstraction Required = 2.3 acres x 1.1 inches = **9,184 cf**

Volume Abstraction Proposed (Grassland/Tree Conservation) = 99,575 sf x 0.5" = **4,149 cf**

Pond 2 Filtered Volume:

	Surface Area (SF)	Vol (CF)
NWL 928.5	6,840	
		3,260
928.0	6,200	
		1,808
927.7	5,850	
		5,068 cf

Draw-down:

5,068 cf / 5,850 sf = 0.87' = 10.4"

10.4" / 0.45 in/hr = **23.1 hours**

Total Proposed Abstraction = 4,149 + 5,068 = 9,217 cf

Stage-Storage Tables are included in Appendix D.

2.4 Phosphorus and TSS Analysis

MIDS was run using composite concentrations for the existing land uses. Concentration tables from the MN Stormwater Manual and Elm Creek Watershed's consultant are included in this report. MIDS default concentrations were used for the proposed land uses.

Pre-Development Concentrations:

TP: (15.98 cropland x 0.533) + (5.49 open space x 0.19) + (4.93 residential x 0.27) / 26.4 = 0.41 mg/L

TSS: (15.98 cropland x 145) + (5.49 open space x 54.5) + (4.93 residential x 73) / 26.4 = 112.7 mg/L

MIDS data is included in Appendix E. Below is a summary.

Table 3
TP/TSS Comparisons

Condition	TP	TSS
Existing (lb/yr)	13.33	3665
Proposed (lb/yr)	8.97	1148

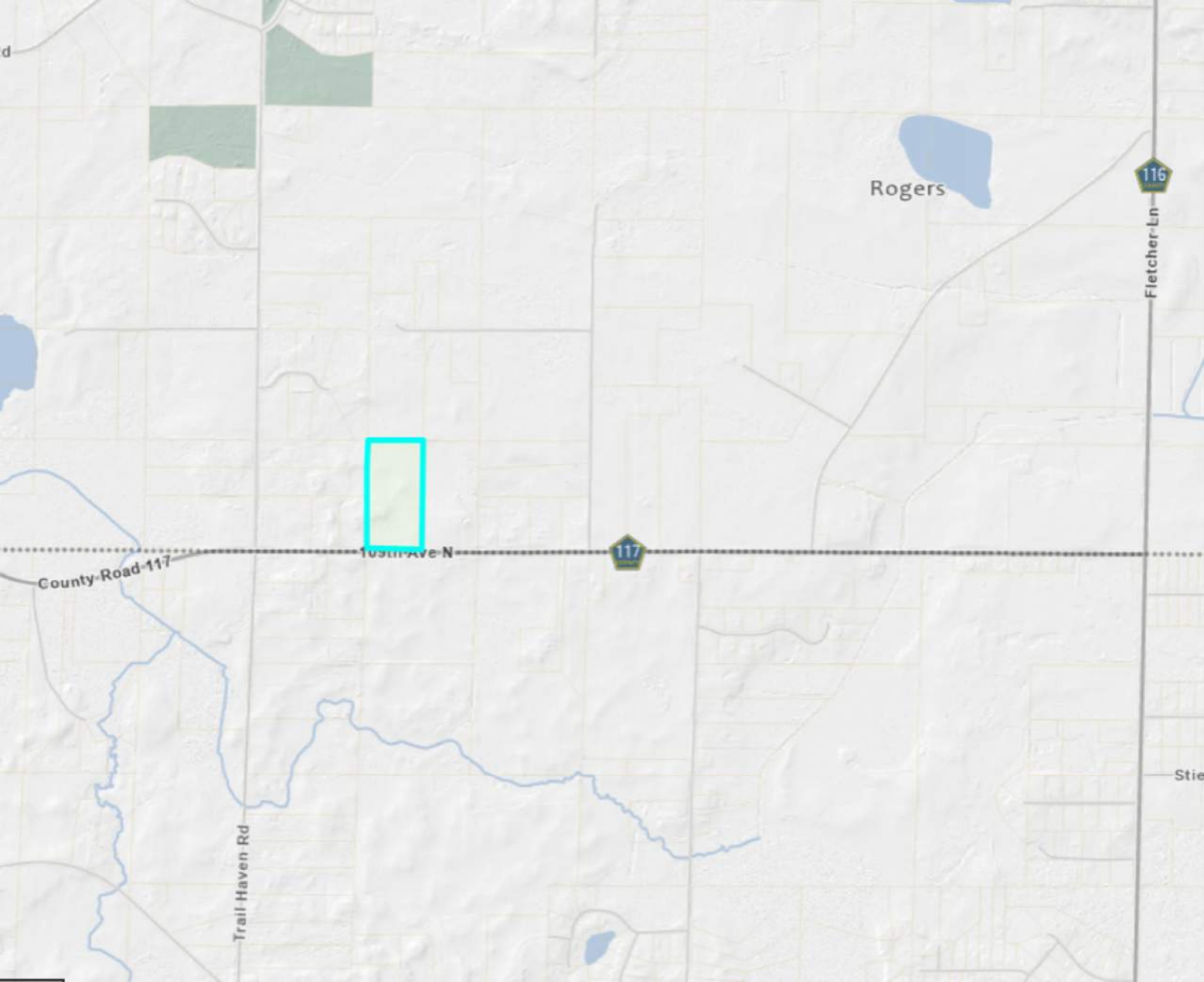
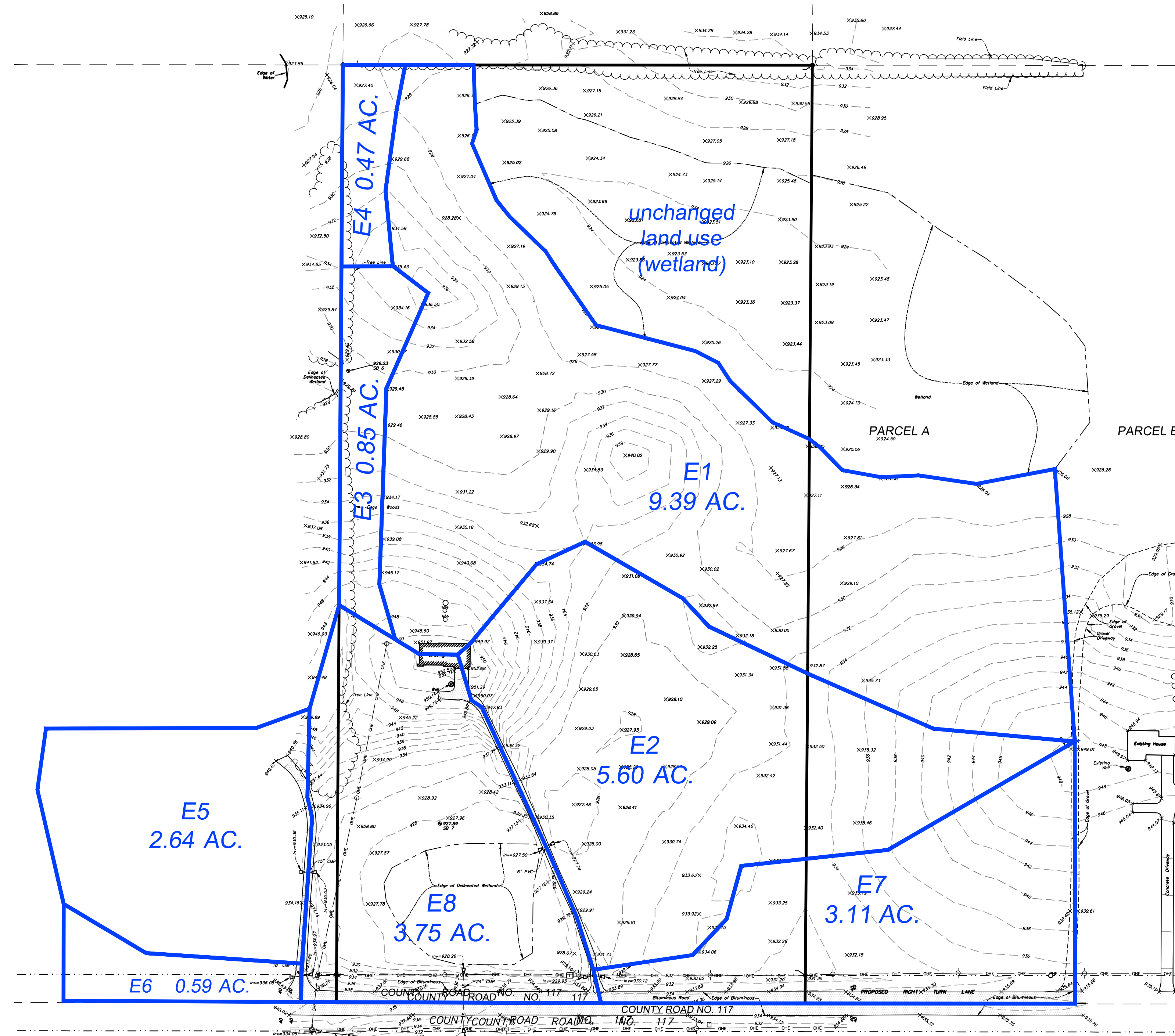
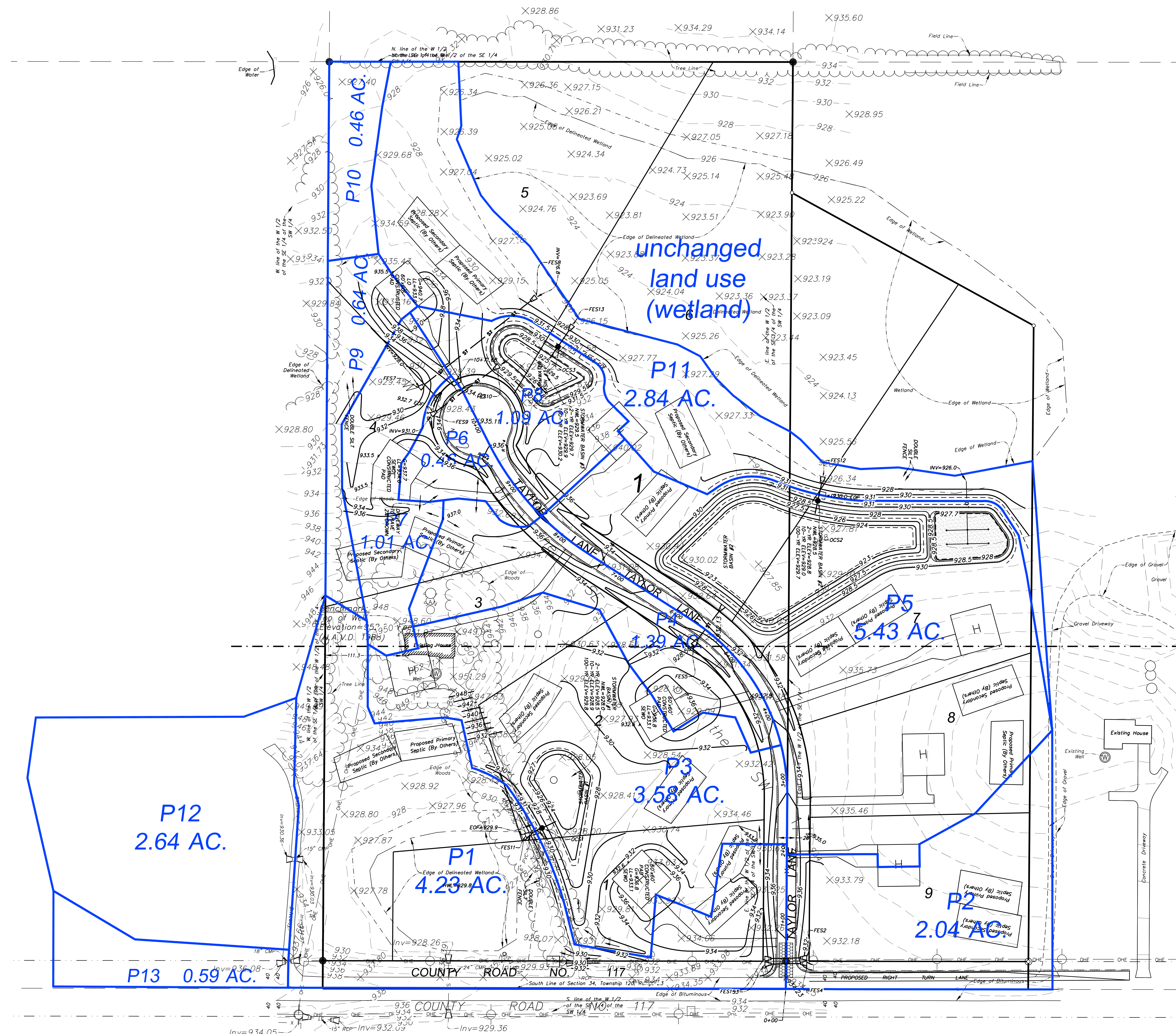


FIG 1: LOCATION MAP

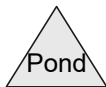
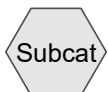
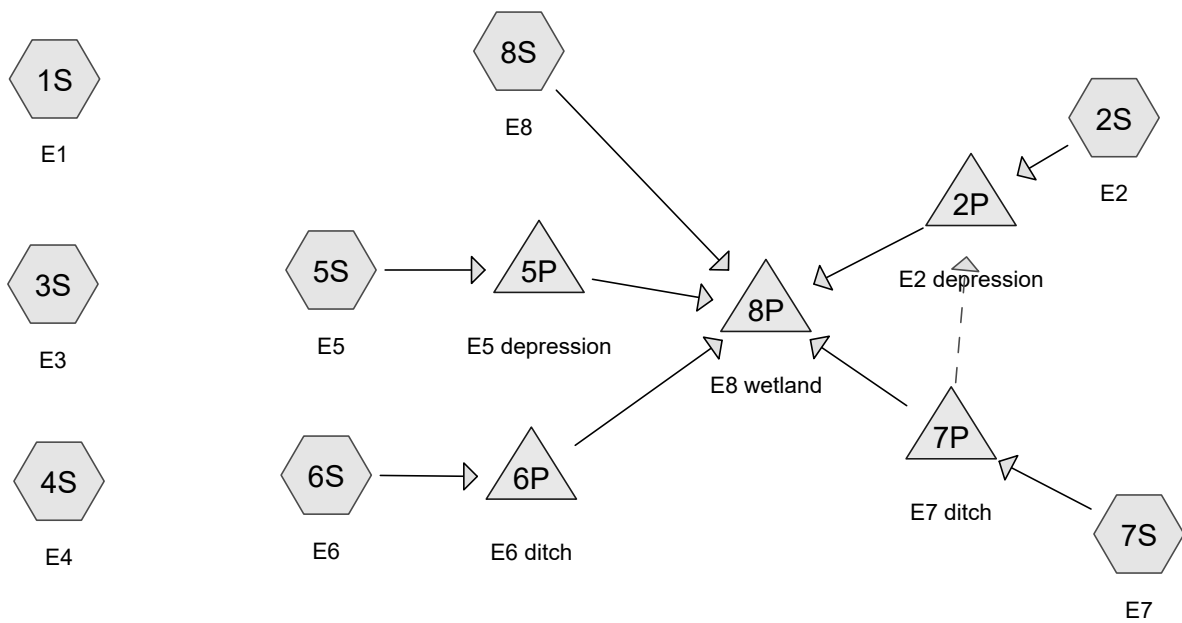


EXISTING DRAINAGE MAP
FIGURE 2



PROPOSED DRAINAGE MAP
FIGURE 3

APPENDIX A



Routing Diagram for 23-0189 EXISTING
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
4.130	74	>75% Grass cover, Good, HSG C (1S, 2S, 3S, 5S, 6S, 7S, 8S)
0.800	98	Impervious (1S, 2S, 5S, 6S, 7S, 8S)
2.990	71	Meadow, non-grazed, HSG C (1S, 2S, 4S, 6S, 7S, 8S)
15.980	85	Row crops, straight row, Good, HSG C (1S, 2S, 3S, 4S, 7S)
0.720	98	Wetland (8S)
1.780	72	Woods/grass comb., Good, HSG C (2S, 3S, 4S, 7S, 8S)
26.400	82	TOTAL AREA

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MSE 24-hr 3 2-Year Rainfall=2.86"

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Summary for Subcatchment 1S: E1

Runoff = 16.30 cfs @ 12.24 hrs, Volume= 1.044 af, Depth= 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

Area (ac)	CN	Description
0.560	74	>75% Grass cover, Good, HSG C
* 0.020	98	Impervious
7.800	85	Row crops, straight row, Good, HSG C
1.010	71	Meadow, non-grazed, HSG C
9.390	83	Weighted Average
9.370		99.79% Pervious Area
0.020		0.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0300	0.17		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.86"
4.8	300	0.0133	1.04		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
0.2	30	0.0310	2.64		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
14.7	430	Total			

Summary for Subcatchment 2S: E2

Runoff = 9.11 cfs @ 12.28 hrs, Volume= 0.654 af, Depth= 1.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

Area (ac)	CN	Description
* 0.060	98	Impervious
5.000	85	Row crops, straight row, Good, HSG C
0.290	72	Woods/grass comb., Good, HSG C
0.160	74	>75% Grass cover, Good, HSG C
0.090	71	Meadow, non-grazed, HSG C
5.600	84	Weighted Average
5.540		98.93% Pervious Area
0.060		1.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.5	100	0.0200	0.15		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.86"
7.1	655	0.0290	1.53		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
18.6	755	Total			

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MSE 24-hr 3 2-Year Rainfall=2.86"

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Summary for Subcatchment 3S: E3

Runoff = 1.71 cfs @ 12.16 hrs, Volume= 0.085 af, Depth= 1.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

Area (ac)	CN	Description
0.600	85	Row crops, straight row, Good, HSG C
0.130	72	Woods/grass comb., Good, HSG C
0.120	74	>75% Grass cover, Good, HSG C
0.850	81	Weighted Average
0.850		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	100	0.0730	0.27		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
2.2	238	0.0420	1.84		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
8.4	338	Total			

Summary for Subcatchment 4S: E4

Runoff = 0.91 cfs @ 12.17 hrs, Volume= 0.047 af, Depth= 1.21"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

Area (ac)	CN	Description
0.320	85	Row crops, straight row, Good, HSG C
0.030	72	Woods/grass comb., Good, HSG C
0.120	71	Meadow, non-grazed, HSG C
0.470	81	Weighted Average
0.470		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0400	0.19		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.86"
0.5	60	0.0167	1.94		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
9.2	160	Total			

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MSE 24-hr 3 2-Year Rainfall=2.86"

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Summary for Subcatchment 5S: E5

Runoff = 3.07 cfs @ 12.22 hrs, Volume= 0.191 af, Depth= 0.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

Area (ac)	CN	Description
* 0.080	98	Impervious
2.560	74	>75% Grass cover, Good, HSG C
2.640	75	Weighted Average
2.560		96.97% Pervious Area
0.080		3.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0300	0.19		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
3.9	250	0.0050	1.06		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
12.7	350	Total			

Summary for Subcatchment 6S: E6

Runoff = 0.80 cfs @ 12.25 hrs, Volume= 0.053 af, Depth= 1.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

Area (ac)	CN	Description
* 0.140	98	Impervious
0.220	74	>75% Grass cover, Good, HSG C
0.230	71	Meadow, non-grazed, HSG C
0.590	79	Weighted Average
0.450		76.27% Pervious Area
0.140		23.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	100	0.0100	0.12		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
1.7	220	0.0200	2.12		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
15.4	320	Total			

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Summary for Subcatchment 7S: E7

Runoff = 6.11 cfs @ 12.21 hrs, Volume= 0.363 af, Depth= 1.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

Area (ac)	CN	Description
* 0.260	98	Impervious
2.260	85	Row crops, straight row, Good, HSG C
0.290	72	Woods/grass comb., Good, HSG C
0.150	74	>75% Grass cover, Good, HSG C
0.150	71	Meadow, non-grazed, HSG C
3.110	84	Weighted Average
2.850		91.64% Pervious Area
0.260		8.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0400	0.19		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.86"
2.1	240	0.0440	1.89		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
1.9	245	0.0200	2.12		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
12.7	585	Total			

Summary for Subcatchment 8S: E8

Runoff = 4.92 cfs @ 12.24 hrs, Volume= 0.322 af, Depth= 1.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

Area (ac)	CN	Description
* 0.240	98	Impervious
1.040	72	Woods/grass comb., Good, HSG C
0.360	74	>75% Grass cover, Good, HSG C
1.390	71	Meadow, non-grazed, HSG C
* 0.720	98	Wetland
3.750	78	Weighted Average
2.790		74.40% Pervious Area
0.960		25.60% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	100	0.0100	0.12		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
1.1	260	0.0720	4.02		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
14.8	360	Total			

Summary for Pond 2P: E2 depression

Inflow Area = 5.600 ac, 1.07% Impervious, Inflow Depth = 1.76" for 2-Year event
 Inflow = 13.64 cfs @ 12.26 hrs, Volume= 0.821 af
 Outflow = 0.53 cfs @ 13.90 hrs, Volume= 0.698 af, Atten= 96%, Lag= 98.4 min
 Primary = 0.53 cfs @ 13.90 hrs, Volume= 0.698 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
 Peak Elev= 929.01' @ 13.90 hrs Surf.Area= 40,648 sf Storage= 25,431 cf

Plug-Flow detention time= 509.3 min calculated for 0.698 af (85% of inflow)
 Center-of-Mass det. time= 457.5 min (1,261.7 - 804.2)

Volume	Invert	Avail.Storage	Storage Description
#1	927.74'	78,786 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
927.74	7,400	0	0
928.00	6,300	1,781	1,781
929.00	40,480	23,390	25,171
930.00	66,750	53,615	78,786

Device	Routing	Invert	Outlet Devices
#1	Primary	927.74'	6.0" Round Culvert L= 24.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 927.74' / 927.50' S= 0.0100 ' S= 0.0100 ' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.20 sf
#2	Primary	929.36'	40.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.53 cfs @ 13.90 hrs HW=929.01' TW=927.56' (Dynamic Tailwater)

1=Culvert (Barrel Controls 0.53 cfs @ 2.70 fps)
 2=Broad-Crested Rectangular Weir (Controls 0.00 cfs)

Summary for Pond 5P: E5 depression

Inflow Area = 2.640 ac, 3.03% Impervious, Inflow Depth = 0.87" for 2-Year event
 Inflow = 3.07 cfs @ 12.22 hrs, Volume= 0.191 af
 Outflow = 1.35 cfs @ 12.46 hrs, Volume= 0.192 af, Atten= 56%, Lag= 14.3 min
 Primary = 1.35 cfs @ 12.46 hrs, Volume= 0.192 af

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MSE 24-hr 3 2-Year Rainfall=2.86"

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Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
 Peak Elev= 931.04' @ 12.46 hrs Surf.Area= 6,242 sf Storage= 2,120 cf

Plug-Flow detention time= 25.4 min calculated for 0.191 af (100% of inflow)
 Center-of-Mass det. time= 25.4 min (862.8 - 837.5)

Volume	Invert	Avail.Storage	Storage Description
#1	930.36'	33,264 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
930.36	0	0	0
932.00	15,075	12,361	12,361
933.00	26,730	20,903	33,264

Device	Routing	Invert	Outlet Devices
#1	Primary	930.36'	15.0" Round Culvert L= 23.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 930.36' / 930.03' S= 0.0143 ' / Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=1.35 cfs @ 12.46 hrs HW=931.04' TW=927.16' (Dynamic Tailwater)
 ↑**1=Culvert** (Barrel Controls 1.35 cfs @ 2.88 fps)

Summary for Pond 6P: E6 ditch

Inflow Area = 0.590 ac, 23.73% Impervious, Inflow Depth = 1.09" for 2-Year event
 Inflow = 0.80 cfs @ 12.25 hrs, Volume= 0.053 af
 Outflow = 0.79 cfs @ 12.27 hrs, Volume= 0.053 af, Atten= 1%, Lag= 1.2 min
 Primary = 0.79 cfs @ 12.27 hrs, Volume= 0.053 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
 Peak Elev= 936.47' @ 12.27 hrs Surf.Area= 255 sf Storage= 50 cf

Plug-Flow detention time= 1.1 min calculated for 0.053 af (100% of inflow)
 Center-of-Mass det. time= 1.1 min (830.9 - 829.8)

Volume	Invert	Avail.Storage	Storage Description
#1	936.08'	1,190 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
936.08	0	0	0
938.00	1,240	1,190	1,190

Device	Routing	Invert	Outlet Devices
#1	Primary	936.08'	18.0" Round Culvert L= 32.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 936.08' / 934.97' S= 0.0347 ' / Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf

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Primary OutFlow Max=0.79 cfs @ 12.27 hrs HW=936.47' TW=926.97' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.79 cfs @ 2.14 fps)**Summary for Pond 7P: E7 ditch**

Inflow Area = 3.110 ac, 8.36% Impervious, Inflow Depth = 1.40" for 2-Year event
 Inflow = 6.11 cfs @ 12.21 hrs, Volume= 0.363 af
 Outflow = 6.06 cfs @ 12.22 hrs, Volume= 0.363 af, Atten= 1%, Lag= 0.8 min
 Primary = 1.16 cfs @ 12.22 hrs, Volume= 0.196 af
 Secondary = 4.91 cfs @ 12.22 hrs, Volume= 0.167 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs

Peak Elev= 930.83' @ 12.22 hrs Surf.Area= 1,161 sf Storage= 415 cf

Plug-Flow detention time= 3.2 min calculated for 0.363 af (100% of inflow)

Center-of-Mass det. time= 3.2 min (818.1 - 814.9)

Volume	Invert	Avail.Storage	Storage Description
#1	930.12'	1,782 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
930.12	0	0	0
931.00	1,430	629	629
931.50	3,180	1,153	1,782

Device	Routing	Invert	Outlet Devices
#1	Primary	930.12'	15.0" Round Culvert L= 30.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 930.12' / 929.93' S= 0.0063 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf
#2	Secondary	930.50'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=1.16 cfs @ 12.22 hrs HW=930.83' TW=926.90' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 1.16 cfs @ 2.30 fps)**Secondary OutFlow** Max=4.89 cfs @ 12.22 hrs HW=930.83' TW=928.46' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir**(Weir Controls 4.89 cfs @ 1.47 fps)**Summary for Pond 8P: E8 wetland**

Inflow Area = 15.690 ac, 9.56% Impervious, Inflow Depth = 1.12" for 2-Year event
 Inflow = 8.21 cfs @ 12.25 hrs, Volume= 1.461 af
 Outflow = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs

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Peak Elev= 928.31' @ 80.00 hrs Surf.Area= 58,911 sf Storage= 63,632 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	926.50'	182,763 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
926.50	7,400	0	0
928.00	54,050	46,088	46,088
929.00	69,700	61,875	107,963
930.00	79,900	74,800	182,763

Device	Routing	Invert	Outlet Devices
#1	Primary	929.36'	24.0" Round Culvert L= 91.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 928.26' / 929.36' S= -0.0121 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf

Primary OutFlow Max=0.00 cfs @ 0.50 hrs HW=926.50' (Free Discharge)

↑1=Culvert (Controls 0.00 cfs)

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MSE 24-hr 3 10-Year Rainfall=4.26"

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Summary for Subcatchment 1S: E1

Runoff = 30.69 cfs @ 12.23 hrs, Volume= 1.967 af, Depth= 2.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

Area (ac)	CN	Description
0.560	74	>75% Grass cover, Good, HSG C
* 0.020	98	Impervious
7.800	85	Row crops, straight row, Good, HSG C
1.010	71	Meadow, non-grazed, HSG C
9.390	83	Weighted Average
9.370		99.79% Pervious Area
0.020		0.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0300	0.17		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.86"
4.8	300	0.0133	1.04		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
0.2	30	0.0310	2.64		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
14.7	430	Total			

Summary for Subcatchment 2S: E2

Runoff = 16.89 cfs @ 12.28 hrs, Volume= 1.214 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

Area (ac)	CN	Description
* 0.060	98	Impervious
5.000	85	Row crops, straight row, Good, HSG C
0.290	72	Woods/grass comb., Good, HSG C
0.160	74	>75% Grass cover, Good, HSG C
0.090	71	Meadow, non-grazed, HSG C
5.600	84	Weighted Average
5.540		98.93% Pervious Area
0.060		1.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.5	100	0.0200	0.15		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.86"
7.1	655	0.0290	1.53		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
18.6	755	Total			

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MSE 24-hr 3 10-Year Rainfall=4.26"

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Summary for Subcatchment 3S: E3

Runoff = 3.31 cfs @ 12.16 hrs, Volume= 0.166 af, Depth= 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

Area (ac)	CN	Description
0.600	85	Row crops, straight row, Good, HSG C
0.130	72	Woods/grass comb., Good, HSG C
0.120	74	>75% Grass cover, Good, HSG C
0.850	81	Weighted Average
0.850		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	100	0.0730	0.27		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
2.2	238	0.0420	1.84		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
8.4	338	Total			

Summary for Subcatchment 4S: E4

Runoff = 1.77 cfs @ 12.17 hrs, Volume= 0.092 af, Depth= 2.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

Area (ac)	CN	Description
0.320	85	Row crops, straight row, Good, HSG C
0.030	72	Woods/grass comb., Good, HSG C
0.120	71	Meadow, non-grazed, HSG C
0.470	81	Weighted Average
0.470		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0400	0.19		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.86"
0.5	60	0.0167	1.94		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
9.2	160	Total			

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MSE 24-hr 3 10-Year Rainfall=4.26"

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Summary for Subcatchment 5S: E5

Runoff = 6.86 cfs @ 12.21 hrs, Volume= 0.410 af, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

Area (ac)	CN	Description
* 0.080	98	Impervious
2.560	74	>75% Grass cover, Good, HSG C
2.640	75	Weighted Average
2.560		96.97% Pervious Area
0.080		3.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0300	0.19		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
3.9	250	0.0050	1.06		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
12.7	350	Total			

Summary for Subcatchment 6S: E6

Runoff = 1.64 cfs @ 12.24 hrs, Volume= 0.107 af, Depth= 2.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

Area (ac)	CN	Description
* 0.140	98	Impervious
0.220	74	>75% Grass cover, Good, HSG C
0.230	71	Meadow, non-grazed, HSG C
0.590	79	Weighted Average
0.450		76.27% Pervious Area
0.140		23.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	100	0.0100	0.12		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
1.7	220	0.0200	2.12		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
15.4	320	Total			

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MSE 24-hr 3 10-Year Rainfall=4.26"

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Summary for Subcatchment 7S: E7

Runoff = 11.27 cfs @ 12.21 hrs, Volume= 0.674 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

Area (ac)	CN	Description
* 0.260	98	Impervious
2.260	85	Row crops, straight row, Good, HSG C
0.290	72	Woods/grass comb., Good, HSG C
0.150	74	>75% Grass cover, Good, HSG C
0.150	71	Meadow, non-grazed, HSG C
3.110	84	Weighted Average
2.850		91.64% Pervious Area
0.260		8.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0400	0.19		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.86"
2.1	240	0.0440	1.89		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
1.9	245	0.0200	2.12		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
12.7	585	Total			

Summary for Subcatchment 8S: E8

Runoff = 10.26 cfs @ 12.23 hrs, Volume= 0.655 af, Depth= 2.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

Area (ac)	CN	Description
* 0.240	98	Impervious
1.040	72	Woods/grass comb., Good, HSG C
0.360	74	>75% Grass cover, Good, HSG C
1.390	71	Meadow, non-grazed, HSG C
* 0.720	98	Wetland
3.750	78	Weighted Average
2.790		74.40% Pervious Area
0.960		25.60% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	100	0.0100	0.12		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
1.1	260	0.0720	4.02		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
14.8	360	Total			

Summary for Pond 2P: E2 depression

Inflow Area = 5.600 ac, 1.07% Impervious, Inflow Depth = 3.39" for 10-Year event
 Inflow = 25.71 cfs @ 12.25 hrs, Volume= 1.584 af
 Outflow = 3.03 cfs @ 13.05 hrs, Volume= 1.005 af, Atten= 88%, Lag= 47.8 min
 Primary = 3.03 cfs @ 13.05 hrs, Volume= 1.005 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
 Peak Elev= 929.44' @ 13.05 hrs Surf.Area= 52,129 sf Storage= 45,704 cf

Plug-Flow detention time= 444.8 min calculated for 1.004 af (63% of inflow)
 Center-of-Mass det. time= 382.2 min (1,174.8 - 792.6)

Volume	Invert	Avail.Storage	Storage Description
#1	927.74'	78,786 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
927.74	7,400	0	0
928.00	6,300	1,781	1,781
929.00	40,480	23,390	25,171
930.00	66,750	53,615	78,786

Device	Routing	Invert	Outlet Devices
#1	Primary	927.74'	6.0" Round Culvert L= 24.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 927.74' / 927.50' S= 0.0100 ' S= 0.0100 ' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.20 sf
#2	Primary	929.36'	40.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=3.03 cfs @ 13.05 hrs HW=929.44' TW=927.92' (Dynamic Tailwater)

1=Culvert (Barrel Controls 0.63 cfs @ 3.23 fps)

2=Broad-Crested Rectangular Weir (Weir Controls 2.40 cfs @ 0.72 fps)

Summary for Pond 5P: E5 depression

Inflow Area = 2.640 ac, 3.03% Impervious, Inflow Depth = 1.86" for 10-Year event
 Inflow = 6.86 cfs @ 12.21 hrs, Volume= 0.410 af
 Outflow = 2.84 cfs @ 12.45 hrs, Volume= 0.410 af, Atten= 59%, Lag= 14.2 min
 Primary = 2.84 cfs @ 12.45 hrs, Volume= 0.410 af

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Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
 Peak Elev= 931.41' @ 12.45 hrs Surf.Area= 9,694 sf Storage= 5,112 cf

Plug-Flow detention time= 26.8 min calculated for 0.410 af (100% of inflow)
 Center-of-Mass det. time= 26.8 min (847.4 - 820.6)

Volume	Invert	Avail.Storage	Storage Description
#1	930.36'	33,264 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
930.36	0	0	0
932.00	15,075	12,361	12,361
933.00	26,730	20,903	33,264

Device	Routing	Invert	Outlet Devices
#1	Primary	930.36'	15.0" Round Culvert L= 23.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 930.36' / 930.03' S= 0.0143 '/ Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=2.84 cfs @ 12.45 hrs HW=931.41' TW=927.56' (Dynamic Tailwater)
 ↑**1=Culvert** (Barrel Controls 2.84 cfs @ 3.47 fps)

Summary for Pond 6P: E6 ditch

Inflow Area = 0.590 ac, 23.73% Impervious, Inflow Depth = 2.18" for 10-Year event
 Inflow = 1.64 cfs @ 12.24 hrs, Volume= 0.107 af
 Outflow = 1.62 cfs @ 12.26 hrs, Volume= 0.107 af, Atten= 1%, Lag= 1.2 min
 Primary = 1.62 cfs @ 12.26 hrs, Volume= 0.107 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
 Peak Elev= 936.66' @ 12.26 hrs Surf.Area= 372 sf Storage= 107 cf

Plug-Flow detention time= 1.1 min calculated for 0.107 af (100% of inflow)
 Center-of-Mass det. time= 1.1 min (816.3 - 815.2)

Volume	Invert	Avail.Storage	Storage Description
#1	936.08'	1,190 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
936.08	0	0	0
938.00	1,240	1,190	1,190

Device	Routing	Invert	Outlet Devices
#1	Primary	936.08'	18.0" Round Culvert L= 32.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 936.08' / 934.97' S= 0.0347 '/ Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf

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Primary OutFlow Max=1.62 cfs @ 12.26 hrs HW=936.66' TW=927.32' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 1.62 cfs @ 2.58 fps)**Summary for Pond 7P: E7 ditch**

Inflow Area = 3.110 ac, 8.36% Impervious, Inflow Depth = 2.60" for 10-Year event
 Inflow = 11.27 cfs @ 12.21 hrs, Volume= 0.674 af
 Outflow = 11.19 cfs @ 12.22 hrs, Volume= 0.674 af, Atten= 1%, Lag= 0.7 min
 Primary = 1.71 cfs @ 12.22 hrs, Volume= 0.304 af
 Secondary = 9.48 cfs @ 12.22 hrs, Volume= 0.370 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs

Peak Elev= 931.01' @ 12.22 hrs Surf.Area= 1,451 sf Storage= 638 cf

Plug-Flow detention time= 2.7 min calculated for 0.674 af (100% of inflow)

Center-of-Mass det. time= 2.7 min (805.1 - 802.4)

Volume	Invert	Avail.Storage	Storage Description
#1	930.12'	1,782 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
930.12	0	0	0
931.00	1,430	629	629
931.50	3,180	1,153	1,782

Device	Routing	Invert	Outlet Devices
#1	Primary	930.12'	15.0" Round Culvert L= 30.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 930.12' / 929.93' S= 0.0063 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf
#2	Secondary	930.50'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=1.71 cfs @ 12.22 hrs HW=931.01' TW=927.24' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 1.71 cfs @ 2.59 fps)**Secondary OutFlow** Max=9.47 cfs @ 12.22 hrs HW=931.01' TW=928.83' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir**(Weir Controls 9.47 cfs @ 1.87 fps)**Summary for Pond 8P: E8 wetland**

Inflow Area = 15.690 ac, 9.56% Impervious, Inflow Depth = 1.90" for 10-Year event
 Inflow = 16.26 cfs @ 12.25 hrs, Volume= 2.481 af
 Outflow = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs

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Peak Elev= 929.00' @ 80.00 hrs Surf.Area= 69,718 sf Storage= 108,088 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	926.50'	182,763 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
926.50	7,400	0	0
928.00	54,050	46,088	46,088
929.00	69,700	61,875	107,963
930.00	79,900	74,800	182,763

Device	Routing	Invert	Outlet Devices
#1	Primary	929.36'	24.0" Round Culvert L= 91.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 928.26' / 929.36' S= -0.0121 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf

Primary OutFlow Max=0.00 cfs @ 0.50 hrs HW=926.50' (Free Discharge)

↑1=Culvert (Controls 0.00 cfs)

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MSE 24-hr 3 100-Year Rainfall=7.32"

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Summary for Subcatchment 1S: E1

Runoff = 63.56 cfs @ 12.23 hrs, Volume= 4.171 af, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

Area (ac)	CN	Description
0.560	74	>75% Grass cover, Good, HSG C
* 0.020	98	Impervious
7.800	85	Row crops, straight row, Good, HSG C
1.010	71	Meadow, non-grazed, HSG C
9.390	83	Weighted Average
9.370		99.79% Pervious Area
0.020		0.21% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
9.7	100	0.0300	0.17		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.86"
4.8	300	0.0133	1.04		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
0.2	30	0.0310	2.64		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
14.7	430	Total			

Summary for Subcatchment 2S: E2

Runoff = 34.58 cfs @ 12.27 hrs, Volume= 2.541 af, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

Area (ac)	CN	Description
* 0.060	98	Impervious
5.000	85	Row crops, straight row, Good, HSG C
0.290	72	Woods/grass comb., Good, HSG C
0.160	74	>75% Grass cover, Good, HSG C
0.090	71	Meadow, non-grazed, HSG C
5.600	84	Weighted Average
5.540		98.93% Pervious Area
0.060		1.07% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.5	100	0.0200	0.15		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.86"
7.1	655	0.0290	1.53		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
18.6	755	Total			

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Summary for Subcatchment 3S: E3

Runoff = 7.02 cfs @ 12.16 hrs, Volume= 0.361 af, Depth= 5.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

Area (ac)	CN	Description
0.600	85	Row crops, straight row, Good, HSG C
0.130	72	Woods/grass comb., Good, HSG C
0.120	74	>75% Grass cover, Good, HSG C
0.850	81	Weighted Average
0.850		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.2	100	0.0730	0.27		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
2.2	238	0.0420	1.84		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
8.4	338	Total			

Summary for Subcatchment 4S: E4

Runoff = 3.76 cfs @ 12.16 hrs, Volume= 0.200 af, Depth= 5.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

Area (ac)	CN	Description
0.320	85	Row crops, straight row, Good, HSG C
0.030	72	Woods/grass comb., Good, HSG C
0.120	71	Meadow, non-grazed, HSG C
0.470	81	Weighted Average
0.470		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0400	0.19		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.86"
0.5	60	0.0167	1.94		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
9.2	160	Total			

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MSE 24-hr 3 100-Year Rainfall=7.32"

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Summary for Subcatchment 5S: E5

Runoff = 16.31 cfs @ 12.21 hrs, Volume= 0.975 af, Depth= 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

Area (ac)	CN	Description
* 0.080	98	Impervious
2.560	74	>75% Grass cover, Good, HSG C
2.640	75	Weighted Average
2.560		96.97% Pervious Area
0.080		3.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0300	0.19		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
3.9	250	0.0050	1.06		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
12.7	350	Total			

Summary for Subcatchment 6S: E6

Runoff = 3.63 cfs @ 12.24 hrs, Volume= 0.240 af, Depth= 4.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

Area (ac)	CN	Description
* 0.140	98	Impervious
0.220	74	>75% Grass cover, Good, HSG C
0.230	71	Meadow, non-grazed, HSG C
0.590	79	Weighted Average
0.450		76.27% Pervious Area
0.140		23.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	100	0.0100	0.12		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
1.7	220	0.0200	2.12		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
15.4	320	Total			

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MSE 24-hr 3 100-Year Rainfall=7.32"

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Summary for Subcatchment 7S: E7

Runoff = 22.93 cfs @ 12.20 hrs, Volume= 1.411 af, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

Area (ac)	CN	Description
* 0.260	98	Impervious
2.260	85	Row crops, straight row, Good, HSG C
0.290	72	Woods/grass comb., Good, HSG C
0.150	74	>75% Grass cover, Good, HSG C
0.150	71	Meadow, non-grazed, HSG C
3.110	84	Weighted Average
2.850		91.64% Pervious Area
0.260		8.36% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.7	100	0.0400	0.19		Sheet Flow, Cultivated: Residue>20% n= 0.170 P2= 2.86"
2.1	240	0.0440	1.89		Shallow Concentrated Flow, Cultivated Straight Rows Kv= 9.0 fps
1.9	245	0.0200	2.12		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
12.7	585	Total			

Summary for Subcatchment 8S: E8

Runoff = 23.15 cfs @ 12.23 hrs, Volume= 1.489 af, Depth= 4.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

Area (ac)	CN	Description
* 0.240	98	Impervious
1.040	72	Woods/grass comb., Good, HSG C
0.360	74	>75% Grass cover, Good, HSG C
1.390	71	Meadow, non-grazed, HSG C
* 0.720	98	Wetland
3.750	78	Weighted Average
2.790		74.40% Pervious Area
0.960		25.60% Impervious Area

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Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	100	0.0100	0.12		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
1.1	260	0.0720	4.02		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
14.8	360	Total			

Summary for Pond 2P: E2 depression

Inflow Area = 5.600 ac, 1.07% Impervious, Inflow Depth = 7.38" for 100-Year event
 Inflow = 53.33 cfs @ 12.25 hrs, Volume= 3.442 af
 Outflow = 30.43 cfs @ 12.44 hrs, Volume= 2.393 af, Atten= 43%, Lag= 11.4 min
 Primary = 30.43 cfs @ 12.44 hrs, Volume= 2.393 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
 Peak Elev= 929.88' @ 17.98 hrs Surf.Area= 63,709 sf Storage= 71,235 cf

Plug-Flow detention time= 405.7 min calculated for 2.393 af (70% of inflow)
 Center-of-Mass det. time= 348.7 min (1,129.1 - 780.4)

Volume	Invert	Avail.Storage	Storage Description
#1	927.74'	78,786 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
927.74	7,400	0	0
928.00	6,300	1,781	1,781
929.00	40,480	23,390	25,171
930.00	66,750	53,615	78,786

Device	Routing	Invert	Outlet Devices
#1	Primary	927.74'	6.0" Round Culvert L= 24.0' CPP, projecting, no headwall, Ke= 0.900 Inlet / Outlet Invert= 927.74' / 927.50' S= 0.0100 ' S= 0.0100 ' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 0.20 sf
#2	Primary	929.36'	40.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=30.40 cfs @ 12.44 hrs HW=929.80' TW=928.55' (Dynamic Tailwater)

1=Culvert (Outlet Controls 0.59 cfs @ 3.00 fps)

2=Broad-Crested Rectangular Weir (Weir Controls 29.81 cfs @ 1.71 fps)

Summary for Pond 5P: E5 depression

Inflow Area = 2.640 ac, 3.03% Impervious, Inflow Depth = 4.43" for 100-Year event
 Inflow = 16.31 cfs @ 12.21 hrs, Volume= 0.975 af
 Outflow = 4.88 cfs @ 12.51 hrs, Volume= 0.975 af, Atten= 70%, Lag= 18.5 min
 Primary = 4.88 cfs @ 12.51 hrs, Volume= 0.975 af

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Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
 Peak Elev= 932.14' @ 12.51 hrs Surf.Area= 16,673 sf Storage= 14,537 cf

Plug-Flow detention time= 34.3 min calculated for 0.975 af (100% of inflow)
 Center-of-Mass det. time= 34.3 min (837.2 - 802.9)

Volume	Invert	Avail.Storage	Storage Description
#1	930.36'	33,264 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
930.36	0	0	0
932.00	15,075	12,361	12,361
933.00	26,730	20,903	33,264

Device	Routing	Invert	Outlet Devices
#1	Primary	930.36'	15.0" Round Culvert L= 23.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 930.36' / 930.03' S= 0.0143 ' / Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=4.88 cfs @ 12.51 hrs HW=932.14' TW=928.76' (Dynamic Tailwater)
 ↑**1=Culvert** (Barrel Controls 4.88 cfs @ 3.98 fps)

Summary for Pond 6P: E6 ditch

Inflow Area = 0.590 ac, 23.73% Impervious, Inflow Depth = 4.88" for 100-Year event
 Inflow = 3.63 cfs @ 12.24 hrs, Volume= 0.240 af
 Outflow = 3.57 cfs @ 12.26 hrs, Volume= 0.240 af, Atten= 2%, Lag= 1.4 min
 Primary = 3.57 cfs @ 12.26 hrs, Volume= 0.240 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
 Peak Elev= 936.98' @ 12.26 hrs Surf.Area= 580 sf Storage= 261 cf

Plug-Flow detention time= 1.1 min calculated for 0.240 af (100% of inflow)
 Center-of-Mass det. time= 1.1 min (800.1 - 799.0)

Volume	Invert	Avail.Storage	Storage Description
#1	936.08'	1,190 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
936.08	0	0	0
938.00	1,240	1,190	1,190

Device	Routing	Invert	Outlet Devices
#1	Primary	936.08'	18.0" Round Culvert L= 32.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 936.08' / 934.97' S= 0.0347 ' / Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf

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Primary OutFlow Max=3.57 cfs @ 12.26 hrs HW=936.98' TW=928.00' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 3.57 cfs @ 3.23 fps)**Summary for Pond 7P: E7 ditch**

Inflow Area = 3.110 ac, 8.36% Impervious, Inflow Depth = 5.44" for 100-Year event
 Inflow = 22.93 cfs @ 12.20 hrs, Volume= 1.411 af
 Outflow = 22.62 cfs @ 12.22 hrs, Volume= 1.411 af, Atten= 1%, Lag= 1.0 min
 Primary = 2.81 cfs @ 12.22 hrs, Volume= 0.509 af
 Secondary = 19.81 cfs @ 12.22 hrs, Volume= 0.902 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs

Peak Elev= 931.32' @ 12.22 hrs Surf.Area= 2,535 sf Storage= 1,255 cf

Plug-Flow detention time= 2.2 min calculated for 1.411 af (100% of inflow)

Center-of-Mass det. time= 2.2 min (789.9 - 787.7)

Volume	Invert	Avail.Storage	Storage Description
#1	930.12'	1,782 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
930.12	0	0	0
931.00	1,430	629	629
931.50	3,180	1,153	1,782

Device	Routing	Invert	Outlet Devices
#1	Primary	930.12'	15.0" Round Culvert L= 30.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 930.12' / 929.93' S= 0.0063 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf
#2	Secondary	930.50'	10.0' long x 10.0' breadth Broad-Crested Rectangular Weir Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=2.81 cfs @ 12.22 hrs HW=931.32' TW=927.88' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 2.81 cfs @ 2.98 fps)**Secondary OutFlow** Max=19.81 cfs @ 12.22 hrs HW=931.32' TW=929.49' (Dynamic Tailwater)↑**2=Broad-Crested Rectangular Weir**(Weir Controls 19.81 cfs @ 2.43 fps)**Summary for Pond 8P: E8 wetland**

Inflow Area = 15.690 ac, 9.56% Impervious, Inflow Depth > 4.29" for 100-Year event
 Inflow = 52.41 cfs @ 12.36 hrs, Volume= 5.606 af
 Outflow = 1.62 cfs @ 17.96 hrs, Volume= 2.395 af, Atten= 97%, Lag= 336.3 min
 Primary = 1.62 cfs @ 17.96 hrs, Volume= 2.395 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs

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Peak Elev= 929.88' @ 17.96 hrs Surf.Area= 78,719 sf Storage= 173,581 cf

Plug-Flow detention time= 935.6 min calculated for 2.394 af (43% of inflow)

Center-of-Mass det. time= 709.0 min (1,662.3 - 953.3)

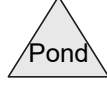
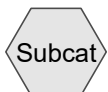
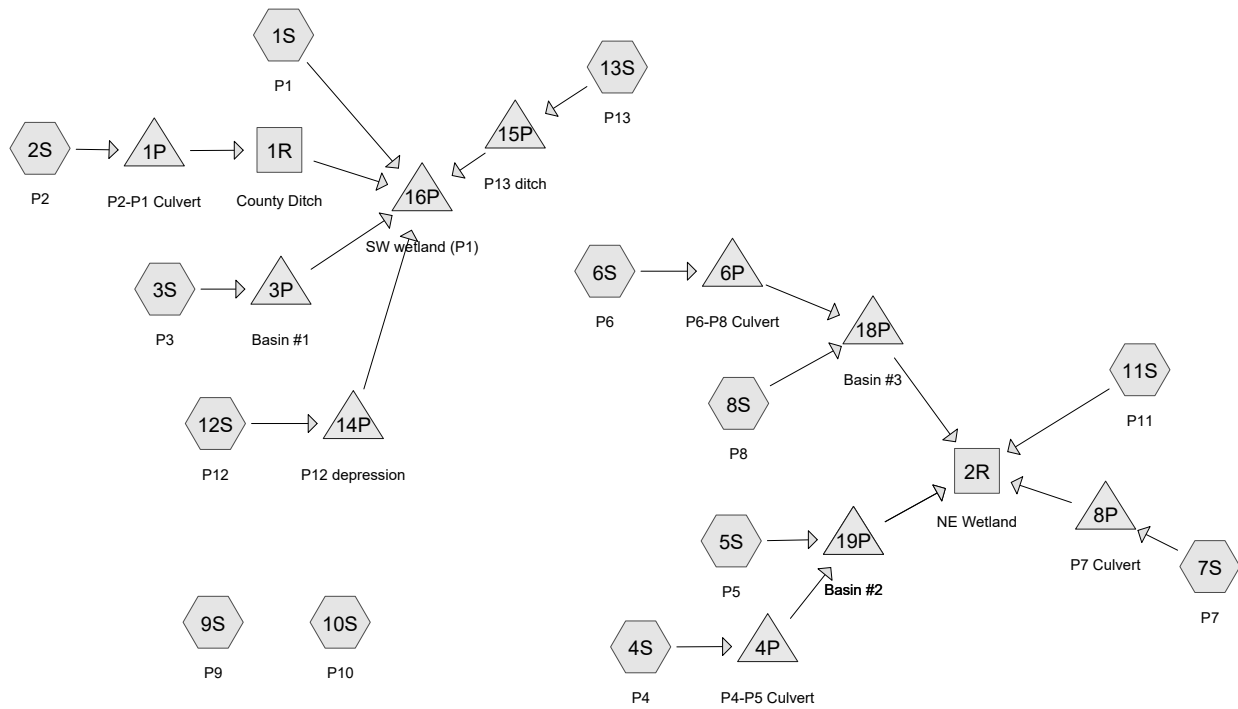
Volume	Invert	Avail.Storage	Storage Description
#1	926.50'	182,763 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
926.50	7,400	0	0
928.00	54,050	46,088	46,088
929.00	69,700	61,875	107,963
930.00	79,900	74,800	182,763

Device	Routing	Invert	Outlet Devices
#1	Primary	929.36'	24.0" Round Culvert L= 91.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 928.26' / 929.36' S= -0.0121 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf

Primary OutFlow Max=1.62 cfs @ 17.96 hrs HW=929.88' (Free Discharge)↑**1=Culvert** (Inlet Controls 1.62 cfs @ 2.47 fps)

APPENDIX B



Routing Diagram for 23-0189 PROPOSED
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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
15.930	74	>75% Grass cover, Good, HSG C (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 10S, 11S, 12S, 13S)
0.660	98	Existing Impervious (1S, 2S, 12S, 13S)
2.300	98	Impervious (1S, 2S, 3S, 4S, 5S, 6S, 7S, 8S, 9S, 11S)
4.580	71	Meadow, non-grazed, HSG C (1S, 3S, 5S, 7S, 9S, 11S, 13S)
1.750	98	Water Surface, 0% imp, HSG C (3S, 5S, 8S)
0.720	98	Wetland (1S)
0.460	72	Woods/grass comb., Good, HSG C (1S, 9S, 10S)
26.400	78	TOTAL AREA

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MSE 24-hr 3 2-Year Rainfall=2.86"

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Summary for Subcatchment 1S: P1

Runoff = 5.90 cfs @ 12.24 hrs, Volume= 0.383 af, Depth= 1.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

Area (ac)	CN	Description
* 0.720	98	Wetland
* 0.300	98	Existing Impervious
0.300	72	Woods/grass comb., Good, HSG C
0.780	74	>75% Grass cover, Good, HSG C
2.000	71	Meadow, non-grazed, HSG C
* 0.130	98	Impervious
4.230	79	Weighted Average
3.080		72.81% Pervious Area
1.150		27.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	100	0.0100	0.12		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
1.1	260	0.0720	4.02		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
14.8	360	Total			

Summary for Subcatchment 2S: P2

Runoff = 2.69 cfs @ 12.22 hrs, Volume= 0.166 af, Depth= 0.98"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

Area (ac)	CN	Description
* 0.140	98	Existing Impervious
* 0.140	98	Impervious
1.760	74	>75% Grass cover, Good, HSG C
2.040	77	Weighted Average
1.760		86.27% Pervious Area
0.280		13.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	100	0.0400	0.21		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
1.3	240	0.0440	3.15		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
3.7	330	0.0100	1.50		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
12.9	670	Total			

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MSE 24-hr 3 2-Year Rainfall=2.86"

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Summary for Subcatchment 3S: P3

Runoff = 4.66 cfs @ 12.24 hrs, Volume= 0.307 af, Depth= 1.03"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

Area (ac)	CN	Description
2.650	74	>75% Grass cover, Good, HSG C
* 0.330	98	Impervious
0.300	98	Water Surface, 0% imp, HSG C
0.300	71	Meadow, non-grazed, HSG C
3.580	78	Weighted Average
3.250		90.78% Pervious Area
0.330		9.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	100	0.0120	0.13		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
2.2	254	0.0170	1.96		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
14.9	354	Total			

Summary for Subcatchment 4S: P4

Runoff = 2.45 cfs @ 12.17 hrs, Volume= 0.126 af, Depth= 1.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

Area (ac)	CN	Description
1.120	74	>75% Grass cover, Good, HSG C
* 0.270	98	Impervious
1.390	79	Weighted Average
1.120		80.58% Pervious Area
0.270		19.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0750	0.27		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
2.9	452	0.0290	2.55		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
9.0	552	Total			

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MSE 24-hr 3 2-Year Rainfall=2.86"

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Summary for Subcatchment 5S: P5

Runoff = 11.12 cfs @ 12.18 hrs, Volume= 0.604 af, Depth= 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

Area (ac)	CN	Description
2.940	74	>75% Grass cover, Good, HSG C
* 0.750	98	Impervious
1.240	98	Water Surface, 0% imp, HSG C
0.500	71	Meadow, non-grazed, HSG C
5.430	83	Weighted Average
4.680		86.19% Pervious Area
0.750		13.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	100	0.0550	0.24		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
3.4	500	0.0270	2.46		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
10.3	600	Total			

Summary for Subcatchment 6S: P6

Runoff = 0.91 cfs @ 12.19 hrs, Volume= 0.051 af, Depth= 1.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

Area (ac)	CN	Description
0.280	74	>75% Grass cover, Good, HSG C
* 0.180	98	Impervious
0.460	83	Weighted Average
0.280		60.87% Pervious Area
0.180		39.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	100	0.0200	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
0.9	126	0.0230	2.27		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
11.3	226	Total			

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MSE 24-hr 3 2-Year Rainfall=2.86"

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Summary for Subcatchment 7S: P7

Runoff = 1.37 cfs @ 12.19 hrs, Volume= 0.078 af, Depth= 0.92"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

Area (ac)	CN	Description
0.740	74	>75% Grass cover, Good, HSG C
* 0.100	98	Impervious
0.170	71	Meadow, non-grazed, HSG C
1.010	76	Weighted Average
0.910		90.10% Pervious Area
0.100		9.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0300	0.19		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
1.7	356	0.0530	3.45		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
10.5	456	Total			

Summary for Subcatchment 8S: P8

Runoff = 2.33 cfs @ 12.18 hrs, Volume= 0.127 af, Depth= 1.40"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

Area (ac)	CN	Description
0.640	74	>75% Grass cover, Good, HSG C
* 0.240	98	Impervious
0.210	98	Water Surface, 0% imp, HSG C
1.090	84	Weighted Average
0.850		77.98% Pervious Area
0.240		22.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.0210	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
0.3	50	0.0480	3.29		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
10.5	150	Total			

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MSE 24-hr 3 2-Year Rainfall=2.86"

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Summary for Subcatchment 9S: P9

Runoff = 0.92 cfs @ 12.14 hrs, Volume= 0.044 af, Depth= 0.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

Area (ac)	CN	Description
0.270	74	>75% Grass cover, Good, HSG C
* 0.040	98	Impervious
0.200	71	Meadow, non-grazed, HSG C
0.130	72	Woods/grass comb., Good, HSG C
0.640	74	Weighted Average
0.600		93.75% Pervious Area
0.040		6.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	100	0.0800	0.28		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
0.5	133	0.0750	4.11		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
6.5	233	Total			

Summary for Subcatchment 10S: P10

Runoff = 0.60 cfs @ 12.17 hrs, Volume= 0.031 af, Depth= 0.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

Area (ac)	CN	Description
0.430	74	>75% Grass cover, Good, HSG C
0.030	72	Woods/grass comb., Good, HSG C
0.460	74	Weighted Average
0.460		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	100	0.0400	0.21		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
0.6	75	0.0200	2.12		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
8.5	175	Total			

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MSE 24-hr 3 2-Year Rainfall=2.86"

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Summary for Subcatchment 11S: P11

Runoff = 3.76 cfs @ 12.16 hrs, Volume= 0.194 af, Depth= 0.82"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

Area (ac)	CN	Description
1.540	74	>75% Grass cover, Good, HSG C
* 0.120	98	Impervious
1.180	71	Meadow, non-grazed, HSG C
2.840	74	Weighted Average
2.720		95.77% Pervious Area
0.120		4.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	100	0.0400	0.21		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
0.4	68	0.0440	3.15		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
8.3	168	Total			

Summary for Subcatchment 12S: P12

Runoff = 3.07 cfs @ 12.22 hrs, Volume= 0.191 af, Depth= 0.87"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

Area (ac)	CN	Description
* 0.080	98	Existing Impervious
2.560	74	>75% Grass cover, Good, HSG C
2.640	75	Weighted Average
2.560		96.97% Pervious Area
0.080		3.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0300	0.19		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
3.9	250	0.0050	1.06		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
12.7	350	Total			

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MSE 24-hr 3 2-Year Rainfall=2.86"

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Summary for Subcatchment 13S: P13

Runoff = 0.80 cfs @ 12.25 hrs, Volume= 0.053 af, Depth= 1.09"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 2-Year Rainfall=2.86"

Area (ac)	CN	Description
* 0.140	98	Existing Impervious
0.220	74	>75% Grass cover, Good, HSG C
0.230	71	Meadow, non-grazed, HSG C
0.590	79	Weighted Average
0.450		76.27% Pervious Area
0.140		23.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	100	0.0100	0.12		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
1.7	220	0.0200	2.12		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
15.4	320	Total			

Summary for Reach 1R: County Ditch

Inflow Area = 2.040 ac, 13.73% Impervious, Inflow Depth = 0.98" for 2-Year event
 Inflow = 2.46 cfs @ 12.27 hrs, Volume= 0.166 af
 Outflow = 2.19 cfs @ 12.32 hrs, Volume= 0.166 af, Atten= 11%, Lag= 3.4 min

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
 Max. Velocity= 1.06 fps, Min. Travel Time= 5.3 min
 Avg. Velocity = 0.30 fps, Avg. Travel Time= 18.5 min

Peak Storage= 694 cf @ 12.33 hrs
 Average Depth at Peak Storage= 0.51' , Surface Width= 6.10'
 Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 9.24 cfs

2.00' x 1.00' deep channel, n= 0.080 Earth, long dense weeds
 Side Slope Z-value= 4.0 '/' Top Width= 10.00'
 Length= 335.0' Slope= 0.0140 '/'
 Inlet Invert= 931.20', Outlet Invert= 926.50'



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Summary for Reach 2R: NE Wetland

Inflow Area = 12.220 ac, 13.58% Impervious, Inflow Depth = 1.16" for 2-Year event
 Inflow = 6.43 cfs @ 12.20 hrs, Volume= 1.179 af
 Outflow = 6.43 cfs @ 12.20 hrs, Volume= 1.179 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs

Summary for Pond 1P: P2-P1 Culvert

Inflow Area = 2.040 ac, 13.73% Impervious, Inflow Depth = 0.98" for 2-Year event
 Inflow = 2.69 cfs @ 12.22 hrs, Volume= 0.166 af
 Outflow = 2.46 cfs @ 12.27 hrs, Volume= 0.166 af, Atten= 9%, Lag= 3.0 min
 Primary = 2.46 cfs @ 12.27 hrs, Volume= 0.166 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs

Peak Elev= 932.05' @ 12.27 hrs Surf.Area= 1,527 sf Storage= 423 cf

Plug-Flow detention time= 2.9 min calculated for 0.166 af (100% of inflow)

Center-of-Mass det. time= 2.9 min (835.4 - 832.5)

Volume	Invert	Avail.Storage	Storage Description
#1	931.40'	16,707 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
931.40	0	0	0
932.00	1,190	357	357
934.00	15,160	16,350	16,707

Device	Routing	Invert	Outlet Devices
#1	Primary	931.40'	15.0" Round Culvert X 2.00 L= 60.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 931.40' / 931.20' S= 0.0033 ' / Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.23 sf

Primary OutFlow Max=2.44 cfs @ 12.27 hrs HW=932.05' TW=931.69' (Dynamic Tailwater)↑ **1=Culvert** (Outlet Controls 2.44 cfs @ 2.77 fps)**Summary for Pond 3P: Basin #1**

Inflow Area = 3.580 ac, 9.22% Impervious, Inflow Depth = 1.03" for 2-Year event
 Inflow = 4.66 cfs @ 12.24 hrs, Volume= 0.307 af
 Outflow = 0.91 cfs @ 12.78 hrs, Volume= 0.297 af, Atten= 80%, Lag= 32.4 min
 Primary = 0.91 cfs @ 12.78 hrs, Volume= 0.297 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs

Peak Elev= 928.45' @ 12.78 hrs Surf.Area= 14,004 sf Storage= 6,063 cf

Plug-Flow detention time= 230.4 min calculated for 0.297 af (97% of inflow)

Center-of-Mass det. time= 212.8 min (1,044.6 - 831.8)

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Volume	Invert	Avail.Storage	Storage Description
#1	928.00'	38,895 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
928.00	12,900	0	0
929.00	15,350	14,125	14,125
930.00	34,190	24,770	38,895

Device	Routing	Invert	Outlet Devices
#1	Primary	928.00'	15.0" Round Culvert L= 26.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 928.00' / 927.60' S= 0.0154 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.23 sf
#2	Device 1	925.75'	15.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.91 cfs @ 12.78 hrs HW=928.45' TW=927.39' (Dynamic Tailwater)↑ **1=Culvert** (Inlet Controls 0.91 cfs @ 2.29 fps)↑ **2=Orifice/Grate** (Passes 0.91 cfs of 3.97 cfs potential flow)**Summary for Pond 4P: P4-P5 Culvert**

Inflow Area = 1.390 ac, 19.42% Impervious, Inflow Depth = 1.09" for 2-Year event
 Inflow = 2.45 cfs @ 12.17 hrs, Volume= 0.126 af
 Outflow = 2.32 cfs @ 12.19 hrs, Volume= 0.126 af, Atten= 5%, Lag= 1.5 min
 Primary = 2.32 cfs @ 12.19 hrs, Volume= 0.126 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs

Peak Elev= 929.63' @ 12.19 hrs Surf.Area= 386 sf Storage= 150 cf

Plug-Flow detention time= 0.4 min calculated for 0.126 af (100% of inflow)

Center-of-Mass det. time= 0.4 min (824.2 - 823.8)

Volume	Invert	Avail.Storage	Storage Description
#1	928.85'	6,328 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
928.85	0	0	0
930.00	570	328	328
931.00	2,485	1,528	1,855
932.00	6,460	4,473	6,328

Device	Routing	Invert	Outlet Devices
#1	Primary	928.50'	15.0" Round Culvert L= 71.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 928.50' / 928.50' S= 0.0000 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.23 sf

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Primary OutFlow Max=2.31 cfs @ 12.19 hrs HW=929.63' TW=928.66' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 2.31 cfs @ 2.62 fps)**Summary for Pond 5P: Basin #2**

Inflow Area = 6.820 ac, 14.96% Impervious, Inflow Depth = 1.28" for 2-Year event
 Inflow = 13.43 cfs @ 12.18 hrs, Volume= 0.730 af
 Outflow = 1.91 cfs @ 12.70 hrs, Volume= 0.728 af, Atten= 86%, Lag= 31.1 min
 Primary = 1.91 cfs @ 12.70 hrs, Volume= 0.728 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
 Peak Elev= 928.78' @ 12.70 hrs Surf.Area= 57,676 sf Storage= 15,756 cf

Plug-Flow detention time= 207.5 min calculated for 0.728 af (100% of inflow)
 Center-of-Mass det. time= 206.8 min (1,023.5 - 816.7)

Volume	Invert	Avail.Storage	Storage Description
#1	928.50'	90,300 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
928.50	56,200	0	0
930.00	64,200	90,300	90,300

Device	Routing	Invert	Outlet Devices
#1	Primary	926.50'	12.0" Round Culvert L= 32.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 926.50' / 926.30' S= 0.0062 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Device 1	928.50'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28) Head (feet) 0.00 1.50 Width (feet) 4.00 4.00
#3	Device 1	929.75'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.91 cfs @ 12.70 hrs HW=928.78' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Passes 1.91 cfs of 4.99 cfs potential flow)↑**2=Custom Weir/Orifice** (Weir Controls 1.91 cfs @ 1.72 fps)↑**3=Orifice/Grate** (Controls 0.00 cfs)**Summary for Pond 6P: P6-P8 Culvert**

Inflow Area = 0.460 ac, 39.13% Impervious, Inflow Depth = 1.33" for 2-Year event
 Inflow = 0.91 cfs @ 12.19 hrs, Volume= 0.051 af
 Outflow = 0.90 cfs @ 12.21 hrs, Volume= 0.051 af, Atten= 1%, Lag= 0.7 min
 Primary = 0.90 cfs @ 12.21 hrs, Volume= 0.051 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs

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Peak Elev= 931.45' @ 12.21 hrs Surf.Area= 150 sf Storage= 34 cf

Plug-Flow detention time= 0.6 min calculated for 0.051 af (100% of inflow)

Center-of-Mass det. time= 0.6 min (816.7 - 816.1)

Volume	Invert	Avail.Storage	Storage Description
#1	931.00'	579 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
931.00	0	0	0
932.00	335	168	168
932.70	840	411	579

Device	Routing	Invert	Outlet Devices
#1	Primary	931.00'	15.0" Round Culvert L= 120.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 931.00' / 929.50' S= 0.0125 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.23 sf

Primary OutFlow Max=0.90 cfs @ 12.21 hrs HW=931.45' TW=929.69' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.90 cfs @ 2.28 fps)**Summary for Pond 8P: P7 Culvert**

Inflow Area = 1.010 ac, 9.90% Impervious, Inflow Depth = 0.92" for 2-Year event
 Inflow = 1.37 cfs @ 12.19 hrs, Volume= 0.078 af
 Outflow = 1.21 cfs @ 12.24 hrs, Volume= 0.078 af, Atten= 12%, Lag= 3.0 min
 Primary = 1.21 cfs @ 12.24 hrs, Volume= 0.078 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs

Peak Elev= 928.76' @ 12.24 hrs Surf.Area= 647 sf Storage= 246 cf

Plug-Flow detention time= 3.5 min calculated for 0.078 af (100% of inflow)

Center-of-Mass det. time= 3.5 min (836.3 - 832.8)

Volume	Invert	Avail.Storage	Storage Description
#1	928.00'	3,550 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
928.00	0	0	0
929.00	850	425	425
930.00	5,400	3,125	3,550

Device	Routing	Invert	Outlet Devices
#1	Primary	928.00'	18.0" Round Culvert L= 154.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 928.00' / 927.30' S= 0.0045 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf

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Primary OutFlow Max=1.21 cfs @ 12.24 hrs HW=928.76' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 1.21 cfs @ 1.96 fps)**Summary for Pond 14P: P12 depression**

Inflow Area = 2.640 ac, 3.03% Impervious, Inflow Depth = 0.87" for 2-Year event
 Inflow = 3.07 cfs @ 12.22 hrs, Volume= 0.191 af
 Outflow = 1.35 cfs @ 12.46 hrs, Volume= 0.192 af, Atten= 56%, Lag= 14.3 min
 Primary = 1.35 cfs @ 12.46 hrs, Volume= 0.192 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
 Peak Elev= 931.04' @ 12.46 hrs Surf.Area= 6,242 sf Storage= 2,120 cf

Plug-Flow detention time= 25.4 min calculated for 0.191 af (100% of inflow)
 Center-of-Mass det. time= 25.4 min (862.8 - 837.5)

Volume	Invert	Avail.Storage	Storage Description
#1	930.36'	33,264 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
930.36	0	0	0
932.00	15,075	12,361	12,361
933.00	26,730	20,903	33,264

Device	Routing	Invert	Outlet Devices
#1	Primary	930.36'	15.0" Round Culvert L= 23.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 930.36' / 930.03' S= 0.0143 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=1.35 cfs @ 12.46 hrs HW=931.04' TW=927.19' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 1.35 cfs @ 2.88 fps)**Summary for Pond 15P: P13 ditch**

Inflow Area = 0.590 ac, 23.73% Impervious, Inflow Depth = 1.09" for 2-Year event
 Inflow = 0.80 cfs @ 12.25 hrs, Volume= 0.053 af
 Outflow = 0.79 cfs @ 12.27 hrs, Volume= 0.053 af, Atten= 1%, Lag= 1.2 min
 Primary = 0.79 cfs @ 12.27 hrs, Volume= 0.053 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
 Peak Elev= 936.47' @ 12.27 hrs Surf.Area= 255 sf Storage= 50 cf

Plug-Flow detention time= 1.1 min calculated for 0.053 af (100% of inflow)
 Center-of-Mass det. time= 1.1 min (830.9 - 829.8)

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Volume	Invert	Avail.Storage	Storage Description
#1	936.08'	1,190 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
936.08	0	0	0
938.00	1,240	1,190	1,190

Device	Routing	Invert	Outlet Devices
#1	Primary	936.08'	18.0" Round Culvert L= 32.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 936.08' / 934.97' S= 0.0347 ' / Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf

Primary OutFlow Max=0.79 cfs @ 12.27 hrs HW=936.47' TW=926.95' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 0.79 cfs @ 2.14 fps)**Summary for Pond 16P: SW wetland (P1)**

Inflow Area = 13.080 ac, 15.14% Impervious, Inflow Depth = 1.00" for 2-Year event
 Inflow = 9.93 cfs @ 12.28 hrs, Volume= 1.091 af
 Outflow = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
 Peak Elev= 928.03' @ 80.00 hrs Surf.Area= 54,466 sf Storage= 47,530 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)
 Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	926.50'	182,763 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
926.50	7,400	0	0
928.00	54,050	46,088	46,088
929.00	69,700	61,875	107,963
930.00	79,900	74,800	182,763

Device	Routing	Invert	Outlet Devices
#1	Primary	929.36'	24.0" Round Culvert L= 91.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 928.26' / 929.36' S= -0.0121 ' / Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf

Primary OutFlow Max=0.00 cfs @ 0.50 hrs HW=926.50' (Free Discharge)↑**1=Culvert** (Controls 0.00 cfs)

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Summary for Pond 18P: Basin #3

Inflow Area = 1.550 ac, 27.10% Impervious, Inflow Depth = 1.38" for 2-Year event
 Inflow = 3.21 cfs @ 12.19 hrs, Volume= 0.179 af
 Outflow = 1.58 cfs @ 12.35 hrs, Volume= 0.178 af, Atten= 51%, Lag= 9.8 min
 Primary = 1.58 cfs @ 12.35 hrs, Volume= 0.178 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
 Peak Elev= 929.74' @ 12.35 hrs Surf.Area= 9,556 sf Storage= 2,286 cf

Plug-Flow detention time= 43.6 min calculated for 0.178 af (100% of inflow)
 Center-of-Mass det. time= 44.0 min (858.0 - 813.9)

Volume	Invert	Avail.Storage	Storage Description
#1	929.50'	15,523 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
929.50	9,200	0	0
930.00	9,930	4,783	4,783
931.00	11,550	10,740	15,523

Device	Routing	Invert	Outlet Devices
#1	Primary	926.40'	12.0" Round Culvert L= 37.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 926.40' / 926.20' S= 0.0054 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Device 1	929.50'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28) Head (feet) 0.00 1.50 Width (feet) 4.00 4.00

Primary OutFlow Max=1.58 cfs @ 12.35 hrs HW=929.74' TW=0.00' (Dynamic Tailwater)

1=Culvert (Passes 1.58 cfs of 6.37 cfs potential flow)

2=Custom Weir/Orifice (Weir Controls 1.58 cfs @ 1.62 fps)

Summary for Pond 19P: Basin #2

Volume	Invert	Avail.Storage	Storage Description
#1	928.50'	90,300 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
928.50	56,200	0	0
930.00	64,200	90,300	90,300

Device	Routing	Invert	Outlet Devices
#1	Primary	926.50'	12.0" Round Culvert L= 32.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 926.50' / 926.30' S= 0.0063 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

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#2 Device 1 928.50' **Custom Weir/Orifice, Cv= 2.62 (C= 3.28)**
Head (feet) 0.00 1.50
Width (feet) 4.00 4.00

Primary OutFlow Max=0.00 cfs @ 0.50 hrs HW=0.00' TW=0.00' (Dynamic Tailwater)

↑1=Culvert (Controls 0.00 cfs)

↑2=Custom Weir/Orifice (Controls 0.00 cfs)

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MSE 24-hr 3 10-Year Rainfall=4.26"

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Summary for Subcatchment 1S: P1

Runoff = 12.03 cfs @ 12.23 hrs, Volume= 0.767 af, Depth= 2.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

Area (ac)	CN	Description
* 0.720	98	Wetland
* 0.300	98	Existing Impervious
0.300	72	Woods/grass comb., Good, HSG C
0.780	74	>75% Grass cover, Good, HSG C
2.000	71	Meadow, non-grazed, HSG C
* 0.130	98	Impervious
4.230	79	Weighted Average
3.080		72.81% Pervious Area
1.150		27.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	100	0.0100	0.12		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
1.1	260	0.0720	4.02		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
14.8	360	Total			

Summary for Subcatchment 2S: P2

Runoff = 5.72 cfs @ 12.21 hrs, Volume= 0.343 af, Depth= 2.02"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

Area (ac)	CN	Description
* 0.140	98	Existing Impervious
* 0.140	98	Impervious
1.760	74	>75% Grass cover, Good, HSG C
2.040	77	Weighted Average
1.760		86.27% Pervious Area
0.280		13.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	100	0.0400	0.21		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
1.3	240	0.0440	3.15		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
3.7	330	0.0100	1.50		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
12.9	670	Total			

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Summary for Subcatchment 3S: P3

Runoff = 9.72 cfs @ 12.24 hrs, Volume= 0.625 af, Depth= 2.10"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

Area (ac)	CN	Description
2.650	74	>75% Grass cover, Good, HSG C
* 0.330	98	Impervious
0.300	98	Water Surface, 0% imp, HSG C
0.300	71	Meadow, non-grazed, HSG C
3.580	78	Weighted Average
3.250		90.78% Pervious Area
0.330		9.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	100	0.0120	0.13		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
2.2	254	0.0170	1.96		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
14.9	354	Total			

Summary for Subcatchment 4S: P4

Runoff = 4.94 cfs @ 12.17 hrs, Volume= 0.252 af, Depth= 2.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

Area (ac)	CN	Description
1.120	74	>75% Grass cover, Good, HSG C
* 0.270	98	Impervious
1.390	79	Weighted Average
1.120		80.58% Pervious Area
0.270		19.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0750	0.27		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
2.9	452	0.0290	2.55		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
9.0	552	Total			

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Summary for Subcatchment 5S: P5

Runoff = 20.83 cfs @ 12.18 hrs, Volume= 1.137 af, Depth= 2.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

Area (ac)	CN	Description
2.940	74	>75% Grass cover, Good, HSG C
* 0.750	98	Impervious
1.240	98	Water Surface, 0% imp, HSG C
0.500	71	Meadow, non-grazed, HSG C
5.430	83	Weighted Average
4.680		86.19% Pervious Area
0.750		13.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	100	0.0550	0.24		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
3.4	500	0.0270	2.46		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
10.3	600	Total			

Summary for Subcatchment 6S: P6

Runoff = 1.70 cfs @ 12.19 hrs, Volume= 0.096 af, Depth= 2.51"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

Area (ac)	CN	Description
0.280	74	>75% Grass cover, Good, HSG C
* 0.180	98	Impervious
0.460	83	Weighted Average
0.280		60.87% Pervious Area
0.180		39.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	100	0.0200	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
0.9	126	0.0230	2.27		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
11.3	226	Total			

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Summary for Subcatchment 7S: P7

Runoff = 2.98 cfs @ 12.18 hrs, Volume= 0.163 af, Depth= 1.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

Area (ac)	CN	Description
0.740	74	>75% Grass cover, Good, HSG C
* 0.100	98	Impervious
0.170	71	Meadow, non-grazed, HSG C
1.010	76	Weighted Average
0.910		90.10% Pervious Area
0.100		9.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0300	0.19		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
1.7	356	0.0530	3.45		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
10.5	456	Total			

Summary for Subcatchment 8S: P8

Runoff = 4.28 cfs @ 12.18 hrs, Volume= 0.236 af, Depth= 2.60"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

Area (ac)	CN	Description
0.640	74	>75% Grass cover, Good, HSG C
* 0.240	98	Impervious
0.210	98	Water Surface, 0% imp, HSG C
1.090	84	Weighted Average
0.850		77.98% Pervious Area
0.240		22.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.0210	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
0.3	50	0.0480	3.29		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
10.5	150	Total			

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Summary for Subcatchment 9S: P9

Runoff = 2.08 cfs @ 12.14 hrs, Volume= 0.095 af, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

Area (ac)	CN	Description
0.270	74	>75% Grass cover, Good, HSG C
* 0.040	98	Impervious
0.200	71	Meadow, non-grazed, HSG C
0.130	72	Woods/grass comb., Good, HSG C
0.640	74	Weighted Average
0.600		93.75% Pervious Area
0.040		6.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	100	0.0800	0.28		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
0.5	133	0.0750	4.11		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
6.5	233	Total			

Summary for Subcatchment 10S: P10

Runoff = 1.36 cfs @ 12.16 hrs, Volume= 0.069 af, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

Area (ac)	CN	Description
0.430	74	>75% Grass cover, Good, HSG C
0.030	72	Woods/grass comb., Good, HSG C
0.460	74	Weighted Average
0.460		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	100	0.0400	0.21		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
0.6	75	0.0200	2.12		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
8.5	175	Total			

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Summary for Subcatchment 11S: P11

Runoff = 8.53 cfs @ 12.16 hrs, Volume= 0.424 af, Depth= 1.79"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

Area (ac)	CN	Description
1.540	74	>75% Grass cover, Good, HSG C
* 0.120	98	Impervious
1.180	71	Meadow, non-grazed, HSG C
2.840	74	Weighted Average
2.720		95.77% Pervious Area
0.120		4.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	100	0.0400	0.21		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
0.4	68	0.0440	3.15		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
8.3	168	Total			

Summary for Subcatchment 12S: P12

Runoff = 6.86 cfs @ 12.21 hrs, Volume= 0.410 af, Depth= 1.86"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

Area (ac)	CN	Description
* 0.080	98	Existing Impervious
2.560	74	>75% Grass cover, Good, HSG C
2.640	75	Weighted Average
2.560		96.97% Pervious Area
0.080		3.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0300	0.19		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
3.9	250	0.0050	1.06		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
12.7	350	Total			

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Summary for Subcatchment 13S: P13

Runoff = 1.64 cfs @ 12.24 hrs, Volume= 0.107 af, Depth= 2.18"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 10-Year Rainfall=4.26"

Area (ac)	CN	Description
* 0.140	98	Existing Impervious
0.220	74	>75% Grass cover, Good, HSG C
0.230	71	Meadow, non-grazed, HSG C
0.590	79	Weighted Average
0.450		76.27% Pervious Area
0.140		23.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	100	0.0100	0.12		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
1.7	220	0.0200	2.12		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
15.4	320	Total			

Summary for Reach 1R: County Ditch

Inflow Area = 2.040 ac, 13.73% Impervious, Inflow Depth = 2.02" for 10-Year event
 Inflow = 4.75 cfs @ 12.29 hrs, Volume= 0.343 af
 Outflow = 4.49 cfs @ 12.33 hrs, Volume= 0.343 af, Atten= 6%, Lag= 2.8 min

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
 Max. Velocity= 1.28 fps, Min. Travel Time= 4.4 min
 Avg. Velocity = 0.36 fps, Avg. Travel Time= 15.5 min

Peak Storage= 1,177 cf @ 12.33 hrs
 Average Depth at Peak Storage= 0.72' , Surface Width= 7.76'
 Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 9.24 cfs

2.00' x 1.00' deep channel, n= 0.080 Earth, long dense weeds
 Side Slope Z-value= 4.0 ' ' Top Width= 10.00'
 Length= 335.0' Slope= 0.0140 ' '
 Inlet Invert= 931.20', Outlet Invert= 926.50'



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Summary for Reach 2R: NE Wetland

Inflow Area = 12.220 ac, 13.58% Impervious, Inflow Depth = 2.27" for 10-Year event
 Inflow = 15.16 cfs @ 12.19 hrs, Volume= 2.307 af
 Outflow = 15.16 cfs @ 12.19 hrs, Volume= 2.307 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs

Summary for Pond 1P: P2-P1 Culvert

Inflow Area = 2.040 ac, 13.73% Impervious, Inflow Depth = 2.02" for 10-Year event
 Inflow = 5.72 cfs @ 12.21 hrs, Volume= 0.343 af
 Outflow = 4.75 cfs @ 12.29 hrs, Volume= 0.343 af, Atten= 17%, Lag= 4.4 min
 Primary = 4.75 cfs @ 12.29 hrs, Volume= 0.343 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs

Peak Elev= 932.35' @ 12.29 hrs Surf.Area= 3,612 sf Storage= 1,189 cf

Plug-Flow detention time= 3.3 min calculated for 0.343 af (100% of inflow)

Center-of-Mass det. time= 3.3 min (820.1 - 816.8)

Volume	Invert	Avail.Storage	Storage Description
#1	931.40'	16,707 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
931.40	0	0	0
932.00	1,190	357	357
934.00	15,160	16,350	16,707

Device	Routing	Invert	Outlet Devices
#1	Primary	931.40'	15.0" Round Culvert X 2.00 L= 60.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 931.40' / 931.20' S= 0.0033 ' / Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.23 sf

Primary OutFlow Max=4.75 cfs @ 12.29 hrs HW=932.35' TW=931.90' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 4.75 cfs @ 3.30 fps)**Summary for Pond 3P: Basin #1**

Inflow Area = 3.580 ac, 9.22% Impervious, Inflow Depth = 2.10" for 10-Year event
 Inflow = 9.72 cfs @ 12.24 hrs, Volume= 0.625 af
 Outflow = 2.77 cfs @ 12.61 hrs, Volume= 0.402 af, Atten= 72%, Lag= 22.5 min
 Primary = 2.77 cfs @ 12.61 hrs, Volume= 0.402 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs

Peak Elev= 928.85' @ 12.61 hrs Surf.Area= 14,972 sf Storage= 11,789 cf

Plug-Flow detention time= 88.2 min calculated for 0.402 af (64% of inflow)

Center-of-Mass det. time= 7.0 min (823.7 - 816.7)

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Volume	Invert	Avail.Storage	Storage Description
#1	928.00'	38,895 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
928.00	12,900	0	0
929.00	15,350	14,125	14,125
930.00	34,190	24,770	38,895

Device	Routing	Invert	Outlet Devices
#1	Primary	928.00'	15.0" Round Culvert L= 26.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 928.00' / 927.60' S= 0.0154 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.23 sf
#2	Device 1	925.75'	15.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=2.77 cfs @ 12.61 hrs HW=928.85' TW=927.85' (Dynamic Tailwater)

1=Culvert (Inlet Controls 2.77 cfs @ 3.13 fps)

2=Orifice/Grate (Passes 2.77 cfs of 5.43 cfs potential flow)

Summary for Pond 4P: P4-P5 Culvert

Inflow Area = 1.390 ac, 19.42% Impervious, Inflow Depth = 2.18" for 10-Year event
 Inflow = 4.94 cfs @ 12.17 hrs, Volume= 0.252 af
 Outflow = 4.17 cfs @ 12.21 hrs, Volume= 0.252 af, Atten= 16%, Lag= 2.9 min
 Primary = 4.17 cfs @ 12.21 hrs, Volume= 0.252 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs

Peak Elev= 930.27' @ 12.21 hrs Surf.Area= 1,092 sf Storage= 554 cf

Plug-Flow detention time= 0.8 min calculated for 0.252 af (100% of inflow)

Center-of-Mass det. time= 0.8 min (810.1 - 809.3)

Volume	Invert	Avail.Storage	Storage Description
#1	928.85'	6,328 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
928.85	0	0	0
930.00	570	328	328
931.00	2,485	1,528	1,855
932.00	6,460	4,473	6,328

Device	Routing	Invert	Outlet Devices
#1	Primary	928.50'	15.0" Round Culvert L= 71.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 928.50' / 928.50' S= 0.0000 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.23 sf

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Primary OutFlow Max=4.16 cfs @ 12.21 hrs HW=930.27' TW=928.86' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 4.16 cfs @ 3.39 fps)**Summary for Pond 5P: Basin #2**

Inflow Area = 6.820 ac, 14.96% Impervious, Inflow Depth = 2.44" for 10-Year event
 Inflow = 24.80 cfs @ 12.18 hrs, Volume= 1.389 af
 Outflow = 4.84 cfs @ 12.58 hrs, Volume= 1.388 af, Atten= 80%, Lag= 23.9 min
 Primary = 4.84 cfs @ 12.58 hrs, Volume= 1.388 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
 Peak Elev= 929.01' @ 12.58 hrs Surf.Area= 58,945 sf Storage= 29,630 cf

Plug-Flow detention time= 161.6 min calculated for 1.388 af (100% of inflow)
 Center-of-Mass det. time= 160.8 min (964.5 - 803.7)

Volume	Invert	Avail.Storage	Storage Description
#1	928.50'	90,300 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
928.50	56,200	0	0
930.00	64,200	90,300	90,300

Device	Routing	Invert	Outlet Devices
#1	Primary	926.50'	12.0" Round Culvert L= 32.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 926.50' / 926.30' S= 0.0062 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Device 1	928.50'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28) Head (feet) 0.00 1.50 Width (feet) 4.00 4.00
#3	Device 1	929.75'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.84 cfs @ 12.58 hrs HW=929.01' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Passes 4.84 cfs of 5.37 cfs potential flow)↑**2=Custom Weir/Orifice** (Weir Controls 4.84 cfs @ 2.35 fps)↑**3=Orifice/Grate** (Controls 0.00 cfs)**Summary for Pond 6P: P6-P8 Culvert**

Inflow Area = 0.460 ac, 39.13% Impervious, Inflow Depth = 2.51" for 10-Year event
 Inflow = 1.70 cfs @ 12.19 hrs, Volume= 0.096 af
 Outflow = 1.69 cfs @ 12.20 hrs, Volume= 0.096 af, Atten= 1%, Lag= 0.7 min
 Primary = 1.69 cfs @ 12.20 hrs, Volume= 0.096 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs

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Peak Elev= 931.63' @ 12.20 hrs Surf.Area= 212 sf Storage= 67 cf

Plug-Flow detention time= 0.6 min calculated for 0.096 af (100% of inflow)

Center-of-Mass det. time= 0.6 min (803.8 - 803.2)

Volume	Invert	Avail.Storage	Storage Description
#1	931.00'	579 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
931.00	0	0	0
932.00	335	168	168
932.70	840	411	579

Device	Routing	Invert	Outlet Devices
#1	Primary	931.00'	15.0" Round Culvert L= 120.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 931.00' / 929.50' S= 0.0125 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.23 sf

Primary OutFlow Max=1.68 cfs @ 12.20 hrs HW=931.63' TW=929.85' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 1.68 cfs @ 2.71 fps)**Summary for Pond 8P: P7 Culvert**

Inflow Area = 1.010 ac, 9.90% Impervious, Inflow Depth = 1.94" for 10-Year event
 Inflow = 2.98 cfs @ 12.18 hrs, Volume= 0.163 af
 Outflow = 2.50 cfs @ 12.24 hrs, Volume= 0.163 af, Atten= 16%, Lag= 3.5 min
 Primary = 2.50 cfs @ 12.24 hrs, Volume= 0.163 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs

Peak Elev= 929.14' @ 12.24 hrs Surf.Area= 1,470 sf Storage= 583 cf

Plug-Flow detention time= 3.6 min calculated for 0.163 af (100% of inflow)

Center-of-Mass det. time= 3.6 min (820.1 - 816.6)

Volume	Invert	Avail.Storage	Storage Description
#1	928.00'	3,550 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
928.00	0	0	0
929.00	850	425	425
930.00	5,400	3,125	3,550

Device	Routing	Invert	Outlet Devices
#1	Primary	928.00'	18.0" Round Culvert L= 154.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 928.00' / 927.30' S= 0.0045 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf

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Primary OutFlow Max=2.49 cfs @ 12.24 hrs HW=929.14' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 2.49 cfs @ 2.41 fps)**Summary for Pond 14P: P12 depression**

Inflow Area = 2.640 ac, 3.03% Impervious, Inflow Depth = 1.86" for 10-Year event
 Inflow = 6.86 cfs @ 12.21 hrs, Volume= 0.410 af
 Outflow = 2.84 cfs @ 12.45 hrs, Volume= 0.410 af, Atten= 59%, Lag= 14.2 min
 Primary = 2.84 cfs @ 12.45 hrs, Volume= 0.410 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
 Peak Elev= 931.41' @ 12.45 hrs Surf.Area= 9,694 sf Storage= 5,112 cf

Plug-Flow detention time= 26.8 min calculated for 0.410 af (100% of inflow)
 Center-of-Mass det. time= 26.8 min (847.4 - 820.6)

Volume	Invert	Avail.Storage	Storage Description
#1	930.36'	33,264 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
930.36	0	0	0
932.00	15,075	12,361	12,361
933.00	26,730	20,903	33,264

Device	Routing	Invert	Outlet Devices
#1	Primary	930.36'	15.0" Round Culvert L= 23.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 930.36' / 930.03' S= 0.0143 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=2.84 cfs @ 12.45 hrs HW=931.41' TW=927.67' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 2.84 cfs @ 3.47 fps)**Summary for Pond 15P: P13 ditch**

Inflow Area = 0.590 ac, 23.73% Impervious, Inflow Depth = 2.18" for 10-Year event
 Inflow = 1.64 cfs @ 12.24 hrs, Volume= 0.107 af
 Outflow = 1.62 cfs @ 12.26 hrs, Volume= 0.107 af, Atten= 1%, Lag= 1.2 min
 Primary = 1.62 cfs @ 12.26 hrs, Volume= 0.107 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
 Peak Elev= 936.66' @ 12.26 hrs Surf.Area= 372 sf Storage= 107 cf

Plug-Flow detention time= 1.1 min calculated for 0.107 af (100% of inflow)
 Center-of-Mass det. time= 1.1 min (816.3 - 815.2)

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Volume	Invert	Avail.Storage	Storage Description
#1	936.08'	1,190 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
936.08	0	0	0
938.00	1,240	1,190	1,190

Device	Routing	Invert	Outlet Devices
#1	Primary	936.08'	18.0" Round Culvert L= 32.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 936.08' / 934.97' S= 0.0347 ' S= 0.0347 ' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf

Primary OutFlow Max=1.62 cfs @ 12.26 hrs HW=936.66' TW=927.35' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 1.62 cfs @ 2.58 fps)**Summary for Pond 16P: SW wetland (P1)**

Inflow Area = 13.080 ac, 15.14% Impervious, Inflow Depth = 1.86" for 10-Year event
 Inflow = 21.22 cfs @ 12.27 hrs, Volume= 2.029 af
 Outflow = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af, Atten= 100%, Lag= 0.0 min
 Primary = 0.00 cfs @ 0.50 hrs, Volume= 0.000 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
 Peak Elev= 928.71' @ 80.00 hrs Surf.Area= 65,154 sf Storage= 88,377 cf

Plug-Flow detention time= (not calculated: initial storage exceeds outflow)

Center-of-Mass det. time= (not calculated: no outflow)

Volume	Invert	Avail.Storage	Storage Description
#1	926.50'	182,763 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
926.50	7,400	0	0
928.00	54,050	46,088	46,088
929.00	69,700	61,875	107,963
930.00	79,900	74,800	182,763

Device	Routing	Invert	Outlet Devices
#1	Primary	929.36'	24.0" Round Culvert L= 91.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 928.26' / 929.36' S= -0.0121 ' S= -0.0121 ' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf

Primary OutFlow Max=0.00 cfs @ 0.50 hrs HW=926.50' (Free Discharge)↑**1=Culvert** (Controls 0.00 cfs)

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Summary for Pond 18P: Basin #3

Inflow Area = 1.550 ac, 27.10% Impervious, Inflow Depth = 2.58" for 10-Year event
 Inflow = 5.93 cfs @ 12.19 hrs, Volume= 0.333 af
 Outflow = 3.41 cfs @ 12.31 hrs, Volume= 0.333 af, Atten= 43%, Lag= 7.7 min
 Primary = 3.41 cfs @ 12.31 hrs, Volume= 0.333 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
 Peak Elev= 929.91' @ 12.31 hrs Surf.Area= 9,795 sf Storage= 3,871 cf

Plug-Flow detention time= 35.7 min calculated for 0.333 af (100% of inflow)
 Center-of-Mass det. time= 35.5 min (836.9 - 801.4)

Volume	Invert	Avail.Storage	Storage Description
#1	929.50'	15,523 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
929.50	9,200	0	0
930.00	9,930	4,783	4,783
931.00	11,550	10,740	15,523

Device	Routing	Invert	Outlet Devices
#1	Primary	926.40'	12.0" Round Culvert L= 37.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 926.40' / 926.20' S= 0.0054 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Device 1	929.50'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28) Head (feet) 0.00 1.50 Width (feet) 4.00 4.00

Primary OutFlow Max=3.41 cfs @ 12.31 hrs HW=929.91' TW=0.00' (Dynamic Tailwater)

1=Culvert (Passes 3.41 cfs of 6.56 cfs potential flow)

2=Custom Weir/Orifice (Weir Controls 3.41 cfs @ 2.09 fps)

Summary for Pond 19P: Basin #2

Volume	Invert	Avail.Storage	Storage Description
#1	928.50'	90,300 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
928.50	56,200	0	0
930.00	64,200	90,300	90,300

Device	Routing	Invert	Outlet Devices
#1	Primary	926.50'	12.0" Round Culvert L= 32.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 926.50' / 926.30' S= 0.0063 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

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#2 Device 1 928.50' **Custom Weir/Orifice, Cv= 2.62 (C= 3.28)**
Head (feet) 0.00 1.50
Width (feet) 4.00 4.00

Primary OutFlow Max=0.00 cfs @ 0.50 hrs HW=0.00' TW=0.00' (Dynamic Tailwater)

↑1=Culvert (Controls 0.00 cfs)

↑2=Custom Weir/Orifice (Controls 0.00 cfs)

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MSE 24-hr 3 100-Year Rainfall=7.32"

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Summary for Subcatchment 1S: P1

Runoff = 26.66 cfs @ 12.23 hrs, Volume= 1.720 af, Depth= 4.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

Area (ac)	CN	Description
* 0.720	98	Wetland
* 0.300	98	Existing Impervious
0.300	72	Woods/grass comb., Good, HSG C
0.780	74	>75% Grass cover, Good, HSG C
2.000	71	Meadow, non-grazed, HSG C
* 0.130	98	Impervious
4.230	79	Weighted Average
3.080		72.81% Pervious Area
1.150		27.19% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	100	0.0100	0.12		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
1.1	260	0.0720	4.02		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
14.8	360	Total			

Summary for Subcatchment 2S: P2

Runoff = 13.11 cfs @ 12.21 hrs, Volume= 0.791 af, Depth= 4.65"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

Area (ac)	CN	Description
* 0.140	98	Existing Impervious
* 0.140	98	Impervious
1.760	74	>75% Grass cover, Good, HSG C
2.040	77	Weighted Average
1.760		86.27% Pervious Area
0.280		13.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	100	0.0400	0.21		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
1.3	240	0.0440	3.15		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
3.7	330	0.0100	1.50		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
12.9	670	Total			

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Summary for Subcatchment 3S: P3

Runoff = 21.88 cfs @ 12.23 hrs, Volume= 1.422 af, Depth= 4.77"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

Area (ac)	CN	Description
2.650	74	>75% Grass cover, Good, HSG C
* 0.330	98	Impervious
0.300	98	Water Surface, 0% imp, HSG C
0.300	71	Meadow, non-grazed, HSG C
3.580	78	Weighted Average
3.250		90.78% Pervious Area
0.330		9.22% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
12.7	100	0.0120	0.13		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
2.2	254	0.0170	1.96		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
14.9	354	Total			

Summary for Subcatchment 4S: P4

Runoff = 10.84 cfs @ 12.16 hrs, Volume= 0.565 af, Depth= 4.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

Area (ac)	CN	Description
1.120	74	>75% Grass cover, Good, HSG C
* 0.270	98	Impervious
1.390	79	Weighted Average
1.120		80.58% Pervious Area
0.270		19.42% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.1	100	0.0750	0.27		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
2.9	452	0.0290	2.55		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
9.0	552	Total			

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MSE 24-hr 3 100-Year Rainfall=7.32"

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Summary for Subcatchment 5S: P5

Runoff = 42.91 cfs @ 12.18 hrs, Volume= 2.412 af, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

Area (ac)	CN	Description
2.940	74	>75% Grass cover, Good, HSG C
* 0.750	98	Impervious
1.240	98	Water Surface, 0% imp, HSG C
0.500	71	Meadow, non-grazed, HSG C
5.430	83	Weighted Average
4.680		86.19% Pervious Area
0.750		13.81% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.9	100	0.0550	0.24		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
3.4	500	0.0270	2.46		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
10.3	600	Total			

Summary for Subcatchment 6S: P6

Runoff = 3.51 cfs @ 12.19 hrs, Volume= 0.204 af, Depth= 5.33"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

Area (ac)	CN	Description
0.280	74	>75% Grass cover, Good, HSG C
* 0.180	98	Impervious
0.460	83	Weighted Average
0.280		60.87% Pervious Area
0.180		39.13% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.4	100	0.0200	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
0.9	126	0.0230	2.27		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
11.3	226	Total			

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Summary for Subcatchment 7S: P7

Runoff = 6.91 cfs @ 12.18 hrs, Volume= 0.382 af, Depth= 4.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

Area (ac)	CN	Description
0.740	74	>75% Grass cover, Good, HSG C
* 0.100	98	Impervious
0.170	71	Meadow, non-grazed, HSG C
1.010	76	Weighted Average
0.910		90.10% Pervious Area
0.100		9.90% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0300	0.19		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
1.7	356	0.0530	3.45		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
10.5	456	Total			

Summary for Subcatchment 8S: P8

Runoff = 8.68 cfs @ 12.18 hrs, Volume= 0.495 af, Depth= 5.44"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

Area (ac)	CN	Description
0.640	74	>75% Grass cover, Good, HSG C
* 0.240	98	Impervious
0.210	98	Water Surface, 0% imp, HSG C
1.090	84	Weighted Average
0.850		77.98% Pervious Area
0.240		22.02% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.2	100	0.0210	0.16		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
0.3	50	0.0480	3.29		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
10.5	150	Total			

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Summary for Subcatchment 9S: P9

Runoff = 4.96 cfs @ 12.14 hrs, Volume= 0.231 af, Depth= 4.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

Area (ac)	CN	Description
0.270	74	>75% Grass cover, Good, HSG C
* 0.040	98	Impervious
0.200	71	Meadow, non-grazed, HSG C
0.130	72	Woods/grass comb., Good, HSG C
0.640	74	Weighted Average
0.600		93.75% Pervious Area
0.040		6.25% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
6.0	100	0.0800	0.28		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
0.5	133	0.0750	4.11		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
6.5	233	Total			

Summary for Subcatchment 10S: P10

Runoff = 3.27 cfs @ 12.16 hrs, Volume= 0.166 af, Depth= 4.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

Area (ac)	CN	Description
0.430	74	>75% Grass cover, Good, HSG C
0.030	72	Woods/grass comb., Good, HSG C
0.460	74	Weighted Average
0.460		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	100	0.0400	0.21		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
0.6	75	0.0200	2.12		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
8.5	175	Total			

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Summary for Subcatchment 11S: P11

Runoff = 20.46 cfs @ 12.16 hrs, Volume= 1.023 af, Depth= 4.32"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

Area (ac)	CN	Description
1.540	74	>75% Grass cover, Good, HSG C
* 0.120	98	Impervious
1.180	71	Meadow, non-grazed, HSG C
2.840	74	Weighted Average
2.720		95.77% Pervious Area
0.120		4.23% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.9	100	0.0400	0.21		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
0.4	68	0.0440	3.15		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
8.3	168	Total			

Summary for Subcatchment 12S: P12

Runoff = 16.31 cfs @ 12.21 hrs, Volume= 0.975 af, Depth= 4.43"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

Area (ac)	CN	Description
* 0.080	98	Existing Impervious
2.560	74	>75% Grass cover, Good, HSG C
2.640	75	Weighted Average
2.560		96.97% Pervious Area
0.080		3.03% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
8.8	100	0.0300	0.19		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
3.9	250	0.0050	1.06		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
12.7	350	Total			

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Summary for Subcatchment 13S: P13

Runoff = 3.63 cfs @ 12.24 hrs, Volume= 0.240 af, Depth= 4.88"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
MSE 24-hr 3 100-Year Rainfall=7.32"

Area (ac)	CN	Description
* 0.140	98	Existing Impervious
0.220	74	>75% Grass cover, Good, HSG C
0.230	71	Meadow, non-grazed, HSG C
0.590	79	Weighted Average
0.450		76.27% Pervious Area
0.140		23.73% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
13.7	100	0.0100	0.12		Sheet Flow, Grass: Short n= 0.150 P2= 2.86"
1.7	220	0.0200	2.12		Shallow Concentrated Flow, Grassed Waterway Kv= 15.0 fps
15.4	320	Total			

Summary for Reach 1R: County Ditch

Inflow Area = 2.040 ac, 13.73% Impervious, Inflow Depth = 4.65" for 100-Year event
 Inflow = 9.03 cfs @ 12.32 hrs, Volume= 0.791 af
 Outflow = 8.87 cfs @ 12.37 hrs, Volume= 0.791 af, Atten= 2%, Lag= 3.2 min

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
 Max. Velocity= 1.52 fps, Min. Travel Time= 3.7 min
 Avg. Velocity = 0.44 fps, Avg. Travel Time= 12.7 min

Peak Storage= 1,950 cf @ 12.37 hrs
 Average Depth at Peak Storage= 0.98' , Surface Width= 9.85'
 Bank-Full Depth= 1.00' Flow Area= 6.0 sf, Capacity= 9.24 cfs

2.00' x 1.00' deep channel, n= 0.080 Earth, long dense weeds
 Side Slope Z-value= 4.0 '/' Top Width= 10.00'
 Length= 335.0' Slope= 0.0140 '/'
 Inlet Invert= 931.20', Outlet Invert= 926.50'



‡

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Summary for Reach 2R: NE Wetland

Inflow Area = 12.220 ac, 13.58% Impervious, Inflow Depth = 4.99" for 100-Year event
 Inflow = 35.24 cfs @ 12.17 hrs, Volume= 5.079 af
 Outflow = 35.24 cfs @ 12.17 hrs, Volume= 5.079 af, Atten= 0%, Lag= 0.0 min

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs

Summary for Pond 1P: P2-P1 Culvert

Inflow Area = 2.040 ac, 13.73% Impervious, Inflow Depth = 4.65" for 100-Year event
 Inflow = 13.11 cfs @ 12.21 hrs, Volume= 0.791 af
 Outflow = 9.03 cfs @ 12.32 hrs, Volume= 0.791 af, Atten= 31%, Lag= 6.7 min
 Primary = 9.03 cfs @ 12.32 hrs, Volume= 0.791 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs

Peak Elev= 932.90' @ 12.32 hrs Surf.Area= 7,443 sf Storage= 4,221 cf

Plug-Flow detention time= 4.5 min calculated for 0.791 af (100% of inflow)

Center-of-Mass det. time= 4.5 min (804.5 - 799.9)

Volume	Invert	Avail.Storage	Storage Description
#1	931.40'	16,707 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
931.40	0	0	0
932.00	1,190	357	357
934.00	15,160	16,350	16,707

Device	Routing	Invert	Outlet Devices
#1	Primary	931.40'	15.0" Round Culvert X 2.00 L= 60.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 931.40' / 931.20' S= 0.0033 ' S= 0.0033 ' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.23 sf

Primary OutFlow Max=9.03 cfs @ 12.32 hrs HW=932.89' TW=932.17' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 9.03 cfs @ 3.89 fps)**Summary for Pond 3P: Basin #1**

Inflow Area = 3.580 ac, 9.22% Impervious, Inflow Depth = 4.77" for 100-Year event
 Inflow = 21.88 cfs @ 12.23 hrs, Volume= 1.422 af
 Outflow = 5.83 cfs @ 12.50 hrs, Volume= 0.909 af, Atten= 73%, Lag= 15.9 min
 Primary = 5.83 cfs @ 12.50 hrs, Volume= 0.909 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs

Peak Elev= 929.77' @ 19.72 hrs Surf.Area= 29,942 sf Storage= 31,665 cf

Plug-Flow detention time= 414.7 min calculated for 0.909 af (64% of inflow)

Center-of-Mass det. time= 340.5 min (1,140.7 - 800.2)

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Volume	Invert	Avail.Storage	Storage Description
#1	928.00'	38,895 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
928.00	12,900	0	0
929.00	15,350	14,125	14,125
930.00	34,190	24,770	38,895

Device	Routing	Invert	Outlet Devices
#1	Primary	928.00'	15.0" Round Culvert L= 26.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 928.00' / 927.60' S= 0.0154 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.23 sf
#2	Device 1	925.75'	15.0" Vert. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.77 cfs @ 12.50 hrs HW=929.60' TW=928.64' (Dynamic Tailwater)

↑ **1=Culvert** (Controls 5.77 cfs)

↑ **2=Orifice/Grate** (Orifice Controls 5.77 cfs @ 4.71 fps)

Summary for Pond 4P: P4-P5 Culvert

Inflow Area = 1.390 ac, 19.42% Impervious, Inflow Depth = 4.88" for 100-Year event
 Inflow = 10.84 cfs @ 12.16 hrs, Volume= 0.565 af
 Outflow = 7.06 cfs @ 12.25 hrs, Volume= 0.565 af, Atten= 35%, Lag= 5.2 min
 Primary = 7.06 cfs @ 12.25 hrs, Volume= 0.565 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs

Peak Elev= 931.25' @ 12.25 hrs Surf.Area= 3,461 sf Storage= 2,585 cf

Plug-Flow detention time= 2.8 min calculated for 0.565 af (100% of inflow)

Center-of-Mass det. time= 2.8 min (795.9 - 793.1)

Volume	Invert	Avail.Storage	Storage Description
#1	928.85'	6,328 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
928.85	0	0	0
930.00	570	328	328
931.00	2,485	1,528	1,855
932.00	6,460	4,473	6,328

Device	Routing	Invert	Outlet Devices
#1	Primary	928.50'	15.0" Round Culvert L= 71.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 928.50' / 928.50' S= 0.0000 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.23 sf

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Primary OutFlow Max=7.05 cfs @ 12.25 hrs HW=931.24' TW=929.37' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 7.05 cfs @ 5.75 fps)**Summary for Pond 5P: Basin #2**

Inflow Area = 6.820 ac, 14.96% Impervious, Inflow Depth = 5.24" for 100-Year event
 Inflow = 49.56 cfs @ 12.18 hrs, Volume= 2.977 af
 Outflow = 6.18 cfs @ 12.72 hrs, Volume= 2.975 af, Atten= 88%, Lag= 32.8 min
 Primary = 6.18 cfs @ 12.72 hrs, Volume= 2.975 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
 Peak Elev= 929.67' @ 12.72 hrs Surf.Area= 62,446 sf Storage= 69,480 cf

Plug-Flow detention time= 160.8 min calculated for 2.975 af (100% of inflow)
 Center-of-Mass det. time= 160.4 min (949.4 - 788.9)

Volume	Invert	Avail.Storage	Storage Description
#1	928.50'	90,300 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
928.50	56,200	0	0
930.00	64,200	90,300	90,300

Device	Routing	Invert	Outlet Devices
#1	Primary	926.50'	12.0" Round Culvert L= 32.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 926.50' / 926.30' S= 0.0062 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Device 1	928.50'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28) Head (feet) 0.00 1.50 Width (feet) 4.00 4.00
#3	Device 1	929.75'	48.0" Horiz. Orifice/Grate C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=6.18 cfs @ 12.72 hrs HW=929.67' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 6.18 cfs @ 7.87 fps)↑**2=Custom Weir/Orifice** (Passes 6.18 cfs of 16.60 cfs potential flow)↑**3=Orifice/Grate** (Controls 0.00 cfs)**Summary for Pond 6P: P6-P8 Culvert**

Inflow Area = 0.460 ac, 39.13% Impervious, Inflow Depth = 5.33" for 100-Year event
 Inflow = 3.51 cfs @ 12.19 hrs, Volume= 0.204 af
 Outflow = 3.46 cfs @ 12.20 hrs, Volume= 0.204 af, Atten= 1%, Lag= 1.0 min
 Primary = 3.46 cfs @ 12.20 hrs, Volume= 0.204 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs

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Peak Elev= 931.98' @ 12.20 hrs Surf.Area= 327 sf Storage= 160 cf

Plug-Flow detention time= 0.6 min calculated for 0.204 af (100% of inflow)

Center-of-Mass det. time= 0.6 min (788.9 - 788.3)

Volume	Invert	Avail.Storage	Storage Description
#1	931.00'	579 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
931.00	0	0	0
932.00	335	168	168
932.70	840	411	579

Device	Routing	Invert	Outlet Devices
#1	Primary	931.00'	15.0" Round Culvert L= 120.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 931.00' / 929.50' S= 0.0125 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 1.23 sf

Primary OutFlow Max=3.45 cfs @ 12.20 hrs HW=931.97' TW=930.14' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 3.45 cfs @ 3.36 fps)**Summary for Pond 8P: P7 Culvert**

Inflow Area = 1.010 ac, 9.90% Impervious, Inflow Depth = 4.54" for 100-Year event
 Inflow = 6.91 cfs @ 12.18 hrs, Volume= 0.382 af
 Outflow = 4.42 cfs @ 12.29 hrs, Volume= 0.382 af, Atten= 36%, Lag= 6.3 min
 Primary = 4.42 cfs @ 12.29 hrs, Volume= 0.382 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs

Peak Elev= 929.71' @ 12.29 hrs Surf.Area= 4,059 sf Storage= 2,156 cf

Plug-Flow detention time= 4.8 min calculated for 0.382 af (100% of inflow)

Center-of-Mass det. time= 4.8 min (804.1 - 799.3)

Volume	Invert	Avail.Storage	Storage Description
#1	928.00'	3,550 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
928.00	0	0	0
929.00	850	425	425
930.00	5,400	3,125	3,550

Device	Routing	Invert	Outlet Devices
#1	Primary	928.00'	18.0" Round Culvert L= 154.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 928.00' / 927.30' S= 0.0045 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf

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Primary OutFlow Max=4.42 cfs @ 12.29 hrs HW=929.70' TW=0.00' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 4.42 cfs @ 2.75 fps)**Summary for Pond 14P: P12 depression**

Inflow Area = 2.640 ac, 3.03% Impervious, Inflow Depth = 4.43" for 100-Year event
 Inflow = 16.31 cfs @ 12.21 hrs, Volume= 0.975 af
 Outflow = 4.88 cfs @ 12.51 hrs, Volume= 0.975 af, Atten= 70%, Lag= 18.5 min
 Primary = 4.88 cfs @ 12.51 hrs, Volume= 0.975 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
 Peak Elev= 932.14' @ 12.51 hrs Surf.Area= 16,673 sf Storage= 14,537 cf

Plug-Flow detention time= 34.3 min calculated for 0.975 af (100% of inflow)
 Center-of-Mass det. time= 34.3 min (837.2 - 802.9)

Volume	Invert	Avail.Storage	Storage Description
#1	930.36'	33,264 cf	Custom Stage Data (Prismatic) Listed below (Recalc)
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
930.36	0	0	0
932.00	15,075	12,361	12,361
933.00	26,730	20,903	33,264

Device	Routing	Invert	Outlet Devices
#1	Primary	930.36'	15.0" Round Culvert L= 23.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 930.36' / 930.03' S= 0.0143 '/' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.23 sf

Primary OutFlow Max=4.88 cfs @ 12.51 hrs HW=932.14' TW=928.67' (Dynamic Tailwater)↑**1=Culvert** (Barrel Controls 4.88 cfs @ 3.98 fps)**Summary for Pond 15P: P13 ditch**

Inflow Area = 0.590 ac, 23.73% Impervious, Inflow Depth = 4.88" for 100-Year event
 Inflow = 3.63 cfs @ 12.24 hrs, Volume= 0.240 af
 Outflow = 3.57 cfs @ 12.26 hrs, Volume= 0.240 af, Atten= 2%, Lag= 1.4 min
 Primary = 3.57 cfs @ 12.26 hrs, Volume= 0.240 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
 Peak Elev= 936.98' @ 12.26 hrs Surf.Area= 580 sf Storage= 261 cf

Plug-Flow detention time= 1.1 min calculated for 0.240 af (100% of inflow)
 Center-of-Mass det. time= 1.1 min (800.1 - 799.0)

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Volume	Invert	Avail.Storage	Storage Description
#1	936.08'	1,190 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
936.08	0	0	0
938.00	1,240	1,190	1,190

Device	Routing	Invert	Outlet Devices
#1	Primary	936.08'	18.0" Round Culvert L= 32.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 936.08' / 934.97' S= 0.0347 ' S= 0.0347 ' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 1.77 sf

Primary OutFlow Max=3.57 cfs @ 12.26 hrs HW=936.98' TW=928.09' (Dynamic Tailwater)↑**1=Culvert** (Inlet Controls 3.57 cfs @ 3.23 fps)**Summary for Pond 16P: SW wetland (P1)**

Inflow Area = 13.080 ac, 15.14% Impervious, Inflow Depth > 4.25" for 100-Year event
 Inflow = 46.65 cfs @ 12.25 hrs, Volume= 4.635 af
 Outflow = 1.02 cfs @ 19.70 hrs, Volume= 1.455 af, Atten= 98%, Lag= 446.8 min
 Primary = 1.02 cfs @ 19.70 hrs, Volume= 1.455 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
 Peak Elev= 929.77' @ 19.70 hrs Surf.Area= 77,578 sf Storage= 164,839 cf

Plug-Flow detention time= 977.1 min calculated for 1.455 af (31% of inflow)
 Center-of-Mass det. time= 817.4 min (1,693.3 - 875.9)

Volume	Invert	Avail.Storage	Storage Description
#1	926.50'	182,763 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
926.50	7,400	0	0
928.00	54,050	46,088	46,088
929.00	69,700	61,875	107,963
930.00	79,900	74,800	182,763

Device	Routing	Invert	Outlet Devices
#1	Primary	929.36'	24.0" Round Culvert L= 91.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 928.26' / 929.36' S= -0.0121 ' S= -0.0121 ' Cc= 0.900 n= 0.025 Corrugated metal, Flow Area= 3.14 sf

Primary OutFlow Max=1.02 cfs @ 19.70 hrs HW=929.77' (Free Discharge)↑**1=Culvert** (Inlet Controls 1.02 cfs @ 2.19 fps)

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Summary for Pond 18P: Basin #3

Inflow Area = 1.550 ac, 27.10% Impervious, Inflow Depth = 5.41" for 100-Year event
 Inflow = 12.06 cfs @ 12.18 hrs, Volume= 0.699 af
 Outflow = 6.91 cfs @ 12.31 hrs, Volume= 0.699 af, Atten= 43%, Lag= 7.6 min
 Primary = 6.91 cfs @ 12.31 hrs, Volume= 0.699 af

Routing by Dyn-Stor-Ind method, Time Span= 0.50-80.00 hrs, dt= 0.02 hrs
 Peak Elev= 930.24' @ 12.31 hrs Surf.Area= 10,317 sf Storage= 7,203 cf

Plug-Flow detention time= 28.7 min calculated for 0.699 af (100% of inflow)
 Center-of-Mass det. time= 28.4 min (815.0 - 786.6)

Volume	Invert	Avail.Storage	Storage Description
#1	929.50'	15,523 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
929.50	9,200	0	0
930.00	9,930	4,783	4,783
931.00	11,550	10,740	15,523

Device	Routing	Invert	Outlet Devices
#1	Primary	926.40'	12.0" Round Culvert L= 37.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 926.40' / 926.20' S= 0.0054 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf
#2	Device 1	929.50'	Custom Weir/Orifice, Cv= 2.62 (C= 3.28) Head (feet) 0.00 1.50 Width (feet) 4.00 4.00

Primary OutFlow Max=6.91 cfs @ 12.31 hrs HW=930.24' TW=0.00' (Dynamic Tailwater)

1=Culvert (Inlet Controls 6.91 cfs @ 8.80 fps)

2=Custom Weir/Orifice (Passes 6.91 cfs of 8.31 cfs potential flow)

Summary for Pond 19P: Basin #2

Volume	Invert	Avail.Storage	Storage Description
#1	928.50'	90,300 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
928.50	56,200	0	0
930.00	64,200	90,300	90,300

Device	Routing	Invert	Outlet Devices
#1	Primary	926.50'	12.0" Round Culvert L= 32.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 926.50' / 926.30' S= 0.0063 '/' Cc= 0.900 n= 0.012 Concrete pipe, finished, Flow Area= 0.79 sf

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#2 Device 1 928.50' **Custom Weir/Orifice, Cv= 2.62 (C= 3.28)**
Head (feet) 0.00 1.50
Width (feet) 4.00 4.00

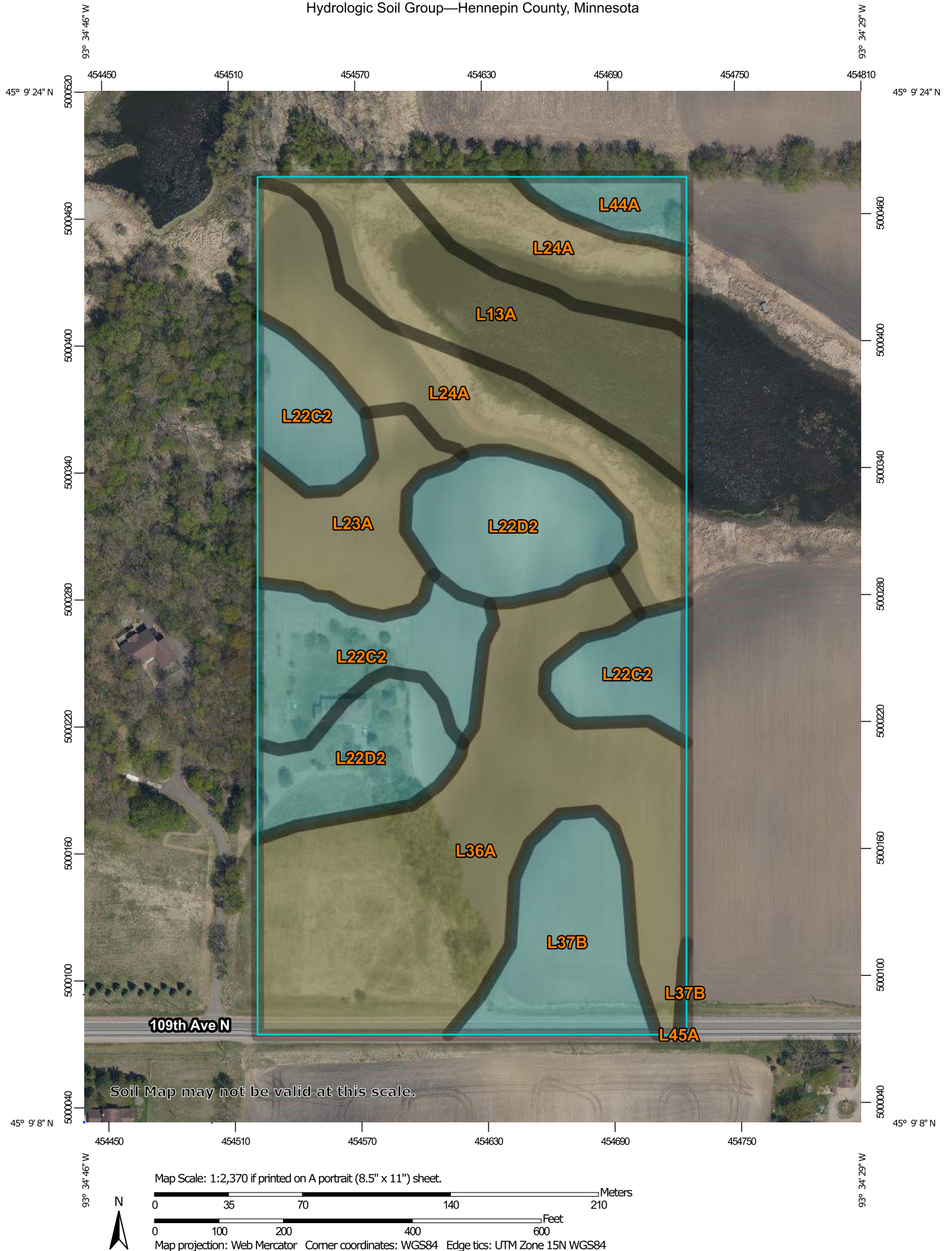
Primary OutFlow Max=0.00 cfs @ 0.50 hrs HW=0.00' TW=0.00' (Dynamic Tailwater)

↑1=Culvert (Controls 0.00 cfs)

↑2=Custom Weir/Orifice (Controls 0.00 cfs)

APPENDIX C

Hydrologic Soil Group—Hennepin County, Minnesota



Natural Resources
Conservation Service

Web Soil Survey
National Cooperative Soil Survey

11/29/2023
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MAP LEGEND**Area of Interest (AOI)**
 Area of Interest (AOI)
Soils**Soil Rating Polygons**

-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available

Soil Rating Lines

-  A
-  A/D
-  B
-  B/D
-  C
-  C/D
-  D
-  Not rated or not available

Soil Rating Points

-  A
-  A/D
-  B
-  B/D

-  C
-  C/D
-  D
-  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 1:12,000.

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: Hennepin County, Minnesota
Survey Area Data: Version 19, Sep 10, 2023

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

Date(s) aerial images were photographed: May 11, 2020—May 19, 2020

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.

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
L13A	Klossner muck, 0 to 1 percent slopes	C/D	2.4	11.7%
L22C2	Lester loam, 6 to 10 percent slopes, moderately eroded	C	2.9	14.3%
L22D2	Lester loam, 10 to 16 percent slopes, moderately eroded	C	2.6	12.6%
L23A	Cordova loam, 0 to 2 percent slopes	C/D	1.3	6.4%
L24A	Glencoe clay loam, 0 to 1 percent slopes	C/D	3.7	17.9%
L36A	Hamel, overwash-Hamel complex, 0 to 3 percent slopes	C/D	5.6	27.2%
L37B	Angus loam, 2 to 6 percent slopes	C	1.6	7.6%
L44A	Nessel loam, 1 to 3 percent slopes	C	0.5	2.2%
L45A	Dundas-Cordova complex, 0 to 3 percent slopes	C/D	0.0	0.0%
Totals for Area of Interest			20.5	100.0%

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

APPENDIX D

23-0189 PROPOSED

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Stage-Area-Storage for Pond 3P: Basin #1

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
928.00	12,900	0	928.52	14,174	7,039
928.01	12,924	129	928.53	14,198	7,181
928.02	12,949	258	928.54	14,223	7,323
928.03	12,973	388	928.55	14,247	7,466
928.04	12,998	518	928.56	14,272	7,608
928.05	13,022	648	928.57	14,297	7,751
928.06	13,047	778	928.58	14,321	7,894
928.07	13,072	909	928.59	14,346	8,037
928.08	13,096	1,040	928.60	14,370	8,181
928.09	13,121	1,171	928.61	14,395	8,325
928.10	13,145	1,302	928.62	14,419	8,469
928.11	13,170	1,434	928.63	14,443	8,613
928.12	13,194	1,566	928.64	14,468	8,758
928.13	13,218	1,698	928.65	14,492	8,903
928.14	13,243	1,830	928.66	14,517	9,048
928.15	13,267	1,963	928.67	14,541	9,193
928.16	13,292	2,095	928.68	14,566	9,338
928.17	13,316	2,228	928.69	14,591	9,484
928.18	13,341	2,362	928.70	14,615	9,630
928.19	13,366	2,495	928.71	14,640	9,777
928.20	13,390	2,629	928.72	14,664	9,923
928.21	13,415	2,763	928.73	14,689	10,070
928.22	13,439	2,897	928.74	14,713	10,217
928.23	13,464	3,032	928.75	14,738	10,364
928.24	13,488	3,167	928.76	14,762	10,512
928.25	13,513	3,302	928.77	14,786	10,659
928.26	13,537	3,437	928.78	14,811	10,807
928.27	13,561	3,572	928.79	14,835	10,956
928.28	13,586	3,708	928.80	14,860	11,104
928.29	13,610	3,844	928.81	14,884	11,253
928.30	13,635	3,980	928.82	14,909	11,402
928.31	13,659	4,117	928.83	14,934	11,551
928.32	13,684	4,253	928.84	14,958	11,700
928.33	13,709	4,390	928.85	14,983	11,850
928.34	13,733	4,528	928.86	15,007	12,000
928.35	13,758	4,665	928.87	15,032	12,150
928.36	13,782	4,803	928.88	15,056	12,301
928.37	13,807	4,941	928.89	15,080	12,451
928.38	13,831	5,079	928.90	15,105	12,602
928.39	13,855	5,217	928.91	15,129	12,753
928.40	13,880	5,356	928.92	15,154	12,905
928.41	13,904	5,495	928.93	15,178	13,057
928.42	13,929	5,634	928.94	15,203	13,208
928.43	13,953	5,774	928.95	15,228	13,361
928.44	13,978	5,913	928.96	15,252	13,513
928.45	14,003	6,053	928.97	15,277	13,666
928.46	14,027	6,193	928.98	15,301	13,818
928.47	14,052	6,334	928.99	15,326	13,972
928.48	14,076	6,474	929.00	15,350	14,125
928.49	14,101	6,615	929.01	15,375	14,279
928.50	14,125	6,756	929.02	15,399	14,433
928.51	14,149	6,898	929.03	15,423	14,587

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Stage-Area-Storage for Pond 3P: Basin #1 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
929.04	16,104	14,754	929.56	25,900	25,675
929.05	16,292	14,916	929.57	26,089	25,935
929.06	16,480	15,080	929.58	26,277	26,197
929.07	16,669	15,246	929.59	26,466	26,461
929.08	16,857	15,413	929.60	26,654	26,726
929.09	17,046	15,583	929.61	26,842	26,994
929.10	17,234	15,754	929.62	27,031	27,263
929.11	17,422	15,927	929.63	27,219	27,534
929.12	17,611	16,103	929.64	27,408	27,807
929.13	17,799	16,280	929.65	27,596	28,082
929.14	17,988	16,459	929.66	27,784	28,359
929.15	18,176	16,639	929.67	27,973	28,638
929.16	18,364	16,822	929.68	28,161	28,919
929.17	18,553	17,007	929.69	28,350	29,201
929.18	18,741	17,193	929.70	28,538	29,486
929.19	18,930	17,382	929.71	28,726	29,772
929.20	19,118	17,572	929.72	28,915	30,060
929.21	19,306	17,764	929.73	29,103	30,350
929.22	19,495	17,958	929.74	29,292	30,642
929.23	19,683	18,154	929.75	29,480	30,936
929.24	19,872	18,352	929.76	29,668	31,232
929.25	20,060	18,551	929.77	29,857	31,530
929.26	20,248	18,753	929.78	30,045	31,829
929.27	20,437	18,956	929.79	30,234	32,131
929.28	20,625	19,162	929.80	30,422	32,434
929.29	20,814	19,369	929.81	30,610	32,739
929.30	21,002	19,578	929.82	30,799	33,046
929.31	21,190	19,789	929.83	30,987	33,355
929.32	21,379	20,002	929.84	31,176	33,666
929.33	21,567	20,216	929.85	31,364	33,978
929.34	21,756	20,433	929.86	31,552	34,293
929.35	21,944	20,651	929.87	31,741	34,609
929.36	22,132	20,872	929.88	31,929	34,928
929.37	22,321	21,094	929.89	32,118	35,248
929.38	22,509	21,318	929.90	32,306	35,570
929.39	22,698	21,544	929.91	32,494	35,894
929.40	22,886	21,772	929.92	32,683	36,220
929.41	23,074	22,002	929.93	32,871	36,548
929.42	23,263	22,234	929.94	33,060	36,878
929.43	23,451	22,467	929.95	33,248	37,209
929.44	23,640	22,703	929.96	33,436	37,542
929.45	23,828	22,940	929.97	33,625	37,878
929.46	24,016	23,179	929.98	33,813	38,215
929.47	24,205	23,420	929.99	34,002	38,554
929.48	24,393	23,663	930.00	34,190	38,895
929.49	24,582	23,908			
929.50	24,770	24,155			
929.51	24,958	24,404			
929.52	25,147	24,654			
929.53	25,335	24,907			
929.54	25,524	25,161			
929.55	25,712	25,417			

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Stage-Area-Storage for Pond 5P: Basin #2

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
928.50	56,200	0	929.02	58,973	29,945
928.51	56,253	562	929.03	59,027	30,535
928.52	56,307	1,125	929.04	59,080	31,126
928.53	56,360	1,688	929.05	59,133	31,717
928.54	56,413	2,252	929.06	59,187	32,308
928.55	56,467	2,817	929.07	59,240	32,900
928.56	56,520	3,382	929.08	59,293	33,493
928.57	56,573	3,947	929.09	59,347	34,086
928.58	56,627	4,513	929.10	59,400	34,680
928.59	56,680	5,080	929.11	59,453	35,274
928.60	56,733	5,647	929.12	59,507	35,869
928.61	56,787	6,214	929.13	59,560	36,464
928.62	56,840	6,782	929.14	59,613	37,060
928.63	56,893	7,351	929.15	59,667	37,657
928.64	56,947	7,920	929.16	59,720	38,254
928.65	57,000	8,490	929.17	59,773	38,851
928.66	57,053	9,060	929.18	59,827	39,449
928.67	57,107	9,631	929.19	59,880	40,048
928.68	57,160	10,202	929.20	59,933	40,647
928.69	57,213	10,774	929.21	59,987	41,246
928.70	57,267	11,347	929.22	60,040	41,846
928.71	57,320	11,920	929.23	60,093	42,447
928.72	57,373	12,493	929.24	60,147	43,048
928.73	57,427	13,067	929.25	60,200	43,650
928.74	57,480	13,642	929.26	60,253	44,252
928.75	57,533	14,217	929.27	60,307	44,855
928.76	57,587	14,792	929.28	60,360	45,458
928.77	57,640	15,368	929.29	60,413	46,062
928.78	57,693	15,945	929.30	60,467	46,667
928.79	57,747	16,522	929.31	60,520	47,272
928.80	57,800	17,100	929.32	60,573	47,877
928.81	57,853	17,678	929.33	60,627	48,483
928.82	57,907	18,257	929.34	60,680	49,090
928.83	57,960	18,836	929.35	60,733	49,697
928.84	58,013	19,416	929.36	60,787	50,304
928.85	58,067	19,997	929.37	60,840	50,912
928.86	58,120	20,578	929.38	60,893	51,521
928.87	58,173	21,159	929.39	60,947	52,130
928.88	58,227	21,741	929.40	61,000	52,740
928.89	58,280	22,324	929.41	61,053	53,350
928.90	58,333	22,907	929.42	61,107	53,961
928.91	58,387	23,490	929.43	61,160	54,572
928.92	58,440	24,074	929.44	61,213	55,184
928.93	58,493	24,659	929.45	61,267	55,797
928.94	58,547	25,244	929.46	61,320	56,410
928.95	58,600	25,830	929.47	61,373	57,023
928.96	58,653	26,416	929.48	61,427	57,637
928.97	58,707	27,003	929.49	61,480	58,252
928.98	58,760	27,590	929.50	61,533	58,867
928.99	58,813	28,178	929.51	61,587	59,482
929.00	58,867	28,767	929.52	61,640	60,098
929.01	58,920	29,356	929.53	61,693	60,715

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Stage-Area-Storage for Pond 5P: Basin #2 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
929.54	61,747	61,332
929.55	61,800	61,950
929.56	61,853	62,568
929.57	61,907	63,187
929.58	61,960	63,806
929.59	62,013	64,426
929.60	62,067	65,047
929.61	62,120	65,668
929.62	62,173	66,289
929.63	62,227	66,911
929.64	62,280	67,534
929.65	62,333	68,157
929.66	62,387	68,780
929.67	62,440	69,404
929.68	62,493	70,029
929.69	62,547	70,654
929.70	62,600	71,280
929.71	62,653	71,906
929.72	62,707	72,533
929.73	62,760	73,160
929.74	62,813	73,788
929.75	62,867	74,417
929.76	62,920	75,046
929.77	62,973	75,675
929.78	63,027	76,305
929.79	63,080	76,936
929.80	63,133	77,567
929.81	63,187	78,198
929.82	63,240	78,830
929.83	63,293	79,463
929.84	63,347	80,096
929.85	63,400	80,730
929.86	63,453	81,364
929.87	63,507	81,999
929.88	63,560	82,634
929.89	63,613	83,270
929.90	63,667	83,907
929.91	63,720	84,544
929.92	63,773	85,181
929.93	63,827	85,819
929.94	63,880	86,458
929.95	63,933	87,097
929.96	63,987	87,736
929.97	64,040	88,376
929.98	64,093	89,017
929.99	64,147	89,658
930.00	64,200	90,300

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Stage-Area-Storage for Pond 18P: Basin #3

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)	Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
929.50	9,200	0	930.02	9,962	4,981
929.51	9,215	92	930.03	9,979	5,081
929.52	9,229	184	930.04	9,995	5,181
929.53	9,244	277	930.05	10,011	5,281
929.54	9,258	369	930.06	10,027	5,381
929.55	9,273	462	930.07	10,043	5,482
929.56	9,288	555	930.08	10,060	5,582
929.57	9,302	648	930.09	10,076	5,683
929.58	9,317	741	930.10	10,092	5,784
929.59	9,331	834	930.11	10,108	5,885
929.60	9,346	927	930.12	10,124	5,986
929.61	9,361	1,021	930.13	10,141	6,087
929.62	9,375	1,115	930.14	10,157	6,189
929.63	9,390	1,208	930.15	10,173	6,290
929.64	9,404	1,302	930.16	10,189	6,392
929.65	9,419	1,396	930.17	10,205	6,494
929.66	9,434	1,491	930.18	10,222	6,596
929.67	9,448	1,585	930.19	10,238	6,698
929.68	9,463	1,680	930.20	10,254	6,801
929.69	9,477	1,774	930.21	10,270	6,904
929.70	9,492	1,869	930.22	10,286	7,006
929.71	9,507	1,964	930.23	10,303	7,109
929.72	9,521	2,059	930.24	10,319	7,212
929.73	9,536	2,155	930.25	10,335	7,316
929.74	9,550	2,250	930.26	10,351	7,419
929.75	9,565	2,346	930.27	10,367	7,523
929.76	9,580	2,441	930.28	10,384	7,626
929.77	9,594	2,537	930.29	10,400	7,730
929.78	9,609	2,633	930.30	10,416	7,834
929.79	9,623	2,729	930.31	10,432	7,939
929.80	9,638	2,826	930.32	10,448	8,043
929.81	9,653	2,922	930.33	10,465	8,148
929.82	9,667	3,019	930.34	10,481	8,252
929.83	9,682	3,115	930.35	10,497	8,357
929.84	9,696	3,212	930.36	10,513	8,462
929.85	9,711	3,309	930.37	10,529	8,567
929.86	9,726	3,407	930.38	10,546	8,673
929.87	9,740	3,504	930.39	10,562	8,778
929.88	9,755	3,601	930.40	10,578	8,884
929.89	9,769	3,699	930.41	10,594	8,990
929.90	9,784	3,797	930.42	10,610	9,096
929.91	9,799	3,895	930.43	10,627	9,202
929.92	9,813	3,993	930.44	10,643	9,309
929.93	9,828	4,091	930.45	10,659	9,415
929.94	9,842	4,189	930.46	10,675	9,522
929.95	9,857	4,288	930.47	10,691	9,629
929.96	9,872	4,386	930.48	10,708	9,736
929.97	9,886	4,485	930.49	10,724	9,843
929.98	9,901	4,584	930.50	10,740	9,950
929.99	9,915	4,683	930.51	10,756	10,057
930.00	9,930	4,783	930.52	10,772	10,165
930.01	9,946	4,882	930.53	10,789	10,273

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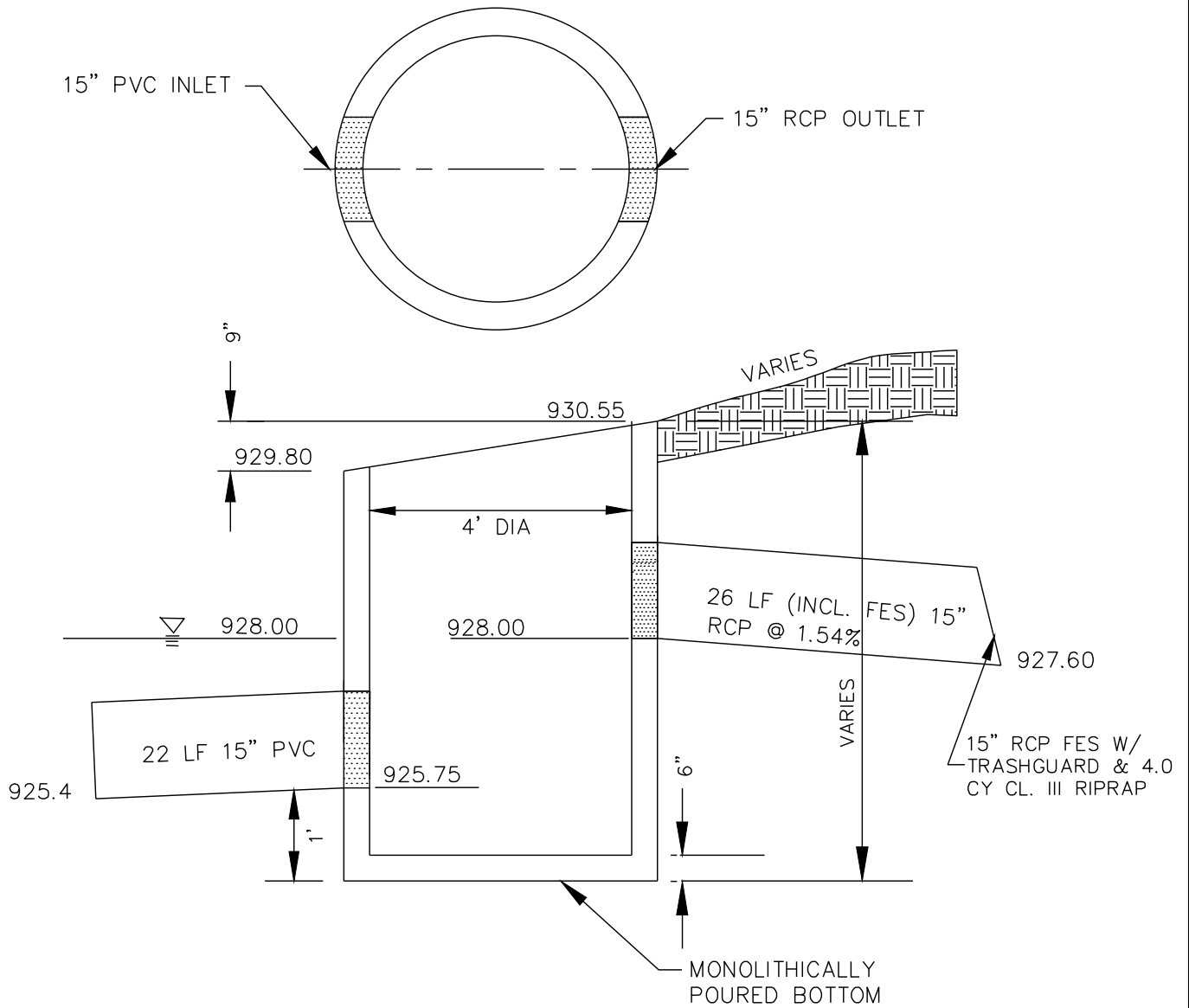
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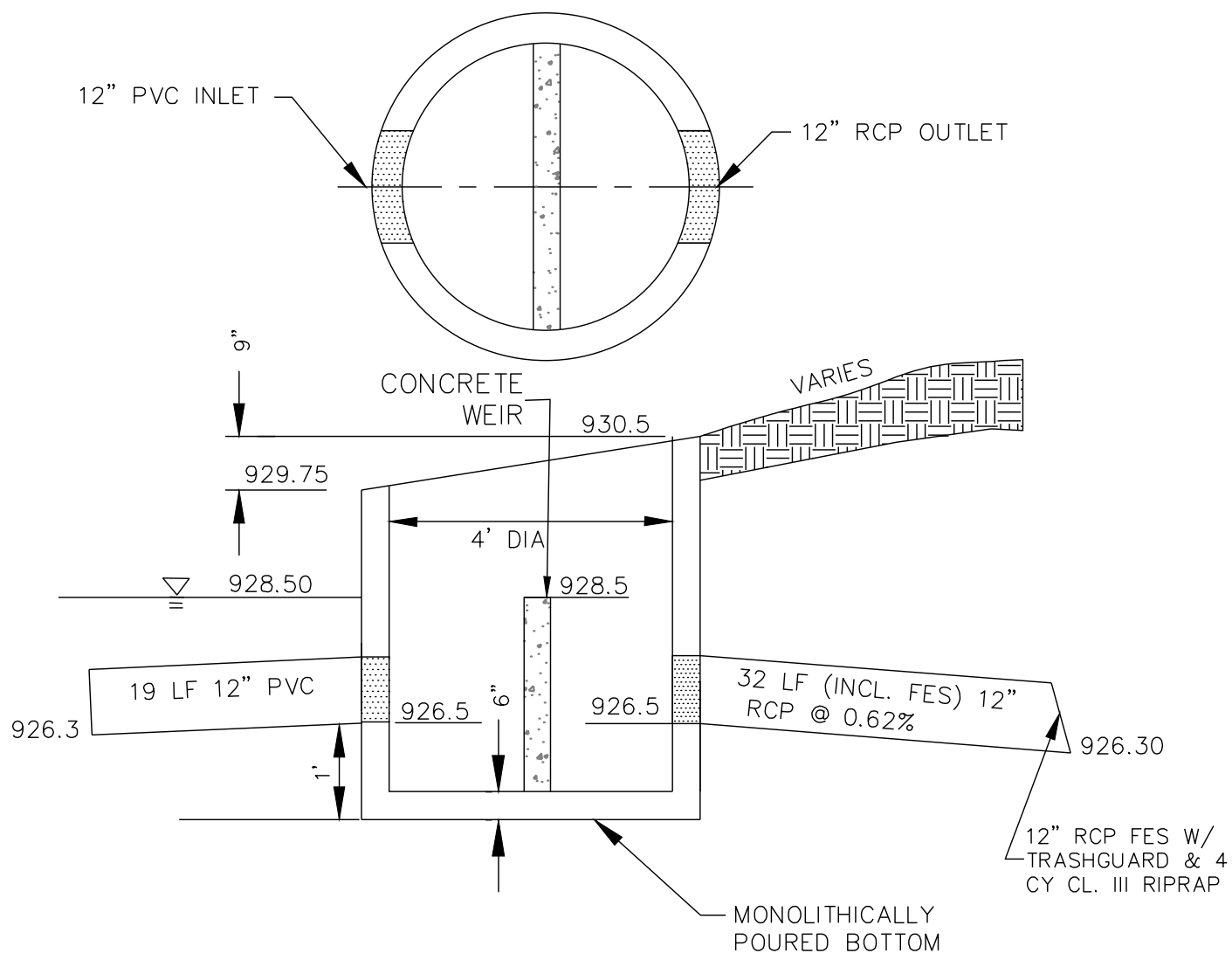
Stage-Area-Storage for Pond 18P: Basin #3 (continued)

Elevation (feet)	Surface (sq-ft)	Storage (cubic-feet)
930.54	10,805	10,381
930.55	10,821	10,489
930.56	10,837	10,597
930.57	10,853	10,706
930.58	10,870	10,814
930.59	10,886	10,923
930.60	10,902	11,032
930.61	10,918	11,141
930.62	10,934	11,250
930.63	10,951	11,360
930.64	10,967	11,469
930.65	10,983	11,579
930.66	10,999	11,689
930.67	11,015	11,799
930.68	11,032	11,909
930.69	11,048	12,020
930.70	11,064	12,130
930.71	11,080	12,241
930.72	11,096	12,352
930.73	11,113	12,463
930.74	11,129	12,574
930.75	11,145	12,686
930.76	11,161	12,797
930.77	11,177	12,909
930.78	11,194	13,021
930.79	11,210	13,133
930.80	11,226	13,245
930.81	11,242	13,357
930.82	11,258	13,470
930.83	11,275	13,582
930.84	11,291	13,695
930.85	11,307	13,808
930.86	11,323	13,921
930.87	11,339	14,035
930.88	11,356	14,148
930.89	11,372	14,262
930.90	11,388	14,376
930.91	11,404	14,490
930.92	11,420	14,604
930.93	11,437	14,718
930.94	11,453	14,832
930.95	11,469	14,947
930.96	11,485	15,062
930.97	11,501	15,177
930.98	11,518	15,292
930.99	11,534	15,407
931.00	11,550	15,523

APPENDIX E



OUTLET CONTROL
STRUCTURE
(POND #1)



OUTLET CONTROL STRUCTURE (POND #2)

NOTES:

1. WEIR SHALL BE POURED IN PLACE, ON SITE AND A WATER STOP PLACED PRIOR TO POURING.
2. TWO PIECE GRATE SHALL BE INSTALLED.

APPENDIX F

Project Information

Calculator Version:	Version 4: July 2020
Project Name:	Taylor Inlet
User Name / Company Name:	Otto Associates, Inc.
Date:	5-21-24
Project Description:	Pre-development. Composite concentrations per calcs included in the Stormwater Summary.
Construction Permit?:	Yes

Site Information

Retention Requirement (inches):	1.1
Site's Zip Code:	55374
Annual Rainfall (inches):	29.5
Phosphorus EMC (mg/l):	0.41
TSS EMC (mg/l):	112.7

Total Site Area

Land Cover	A Soils (acres)	B Soils (acres)	C Soils (acres)	D Soils (acres)	Total (acres)
Forest/Open Space - Undisturbed, protected forest/open space or reforested land			5.49		5.49
Managed Turf - disturbed, graded for yards or other turf to be mowed/managed			20.11		20.11
			Impervious Area (acres)		.80
			Total Area (acres)		26.4

Site Areas Routed to BMPs

Land Cover	A Soils (acres)	B Soils (acres)	C Soils (acres)	D Soils (acres)	Total (acres)
Forest/Open Space - Undisturbed, protected forest/open space or reforested land					0
Managed Turf - disturbed, graded for yards or other turf to be mowed/managed					0
			Impervious Area (acres)		
			Total Area (acres)		0

Summary Information

Performance Goal Requirement

Performance goal volume retention requirement: 3194 ft³
Volume removed by BMPs towards performance goal: ft³
Percent volume removed towards performance goal %

Annual Volume and Pollutant Load Reductions

Post development annual runoff volume 11.9559 acre-ft
Annual runoff volume removed by BMPs: acre-ft
Percent annual runoff volume removed: %

Post development annual particulate P load: 7.3333 lbs
Annual particulate P removed by BMPs: lbs
Post development annual dissolved P load: 6 lbs
Annual dissolved P removed by BMPs: 0 lbs
Total P removed by BMPs 0 lbs
Percent annual total phosphorus removed: %

TP = 13.33

Post development annual TSS load: 3665 lbs
Annual TSS removed by BMPs: lbs
Percent annual TSS removed: %

BMP Summary

Performance Goal Summary

BMP Name	BMP Volume Capacity (ft ³)	Volume Recieved (ft ³)	Volume Retained (ft ³)	Volume Outflow (ft ³)	Percent Retained (%)
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Annual Volume Summary

BMP Name	Volume From Direct Watershed (acre-ft)	Volume From Upstream BMPs (acre-ft)	Volume Retained (acre-ft)	Volume outflow (acre-ft)	Percent Retained (%)
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Particulate Phosphorus Summary

BMP Name	Load From Direct Watershed (lbs)	Load From Upstream BMPs (lbs)	Load Retained (lbs)	Outflow Load (lbs)	Percent Retained (%)
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Dissolved Phosphorus Summary

Proposed MIDS input data:

BMP Properties: Constructed stormwater pond #1

Watershed | **BMP Parameters** | BMP Summary

BMP Name:

Routing/downstream BMP:

[Minnesota Stormwater Manual Wiki](#)

BMP Watershed Area

Land Cover	A Soils (acres)	B Soils (acres)	C Soils (acres)	D Soils (acres)	Total (acres)
Forest/Open Space - Undisturbed, protected forest/open space or reforested land			0.3		0.3
Managed Turf - disturbed, graded for yards or other turf to be mowed/managed			2.95		2.95
Impervious Cover (acres)					0.33
Total Area (acres)					3.58

OK HELP

BMP Properties: Constructed stormwater pond #1

Watershed | **BMP Parameters** | BMP Summary

Constructed Stormwater Pond



Bypass %: %

Have amendments to attenuate phosphorus be incorporated?:

Pond Design Level:

Percent annual particulate P removal rate: %

Percent annual dissolved P removal rate: %

Percent annual TSS removal rate: %

This BMP does not provide volume reduction towards the performance goal or on an annual basis. Please select a Design Level to determine pollutant removal rates.

Requirements for each Design Level are explained in the Requirements, recommendations, and information for using sand filter as a BMP in the MIDS Calculator page in the Minnesota Stormwater Manual wiki. To access hit the Help button below.

OK HELP

Stormwater Management Plan
Taylor Inlet

BMP Properties

BMP Properties: Constructed stormwater pond #2



Watershed

BMP Parameters

BMP Summary

BMP Name

Constructed stormwater pond #2

Routing/downstream BMP

1 - Sand filter

[Minnesota Stormwater Manual Wiki](#)

BMP Watershed Area

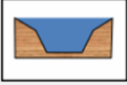
Land Cover	A Soils (acres)	B Soils (acres)	C Soils (acres)	D Soils (acres)	Total (acres)
Forest/Open Space - Undisturbed, protected forest/open space or reforested land			0.5		0.5
Managed Turf - disturbed, graded for yards or other turf to be mowed/managed			5.3		5.3
Impervious Cover (acres)					1.02
Total Area (acres)					6.82

OK

HELP

BMP Properties

BMP Properties: Constructed stormwater pond #2



Watershed

BMP Parameters

BMP Summary

Constructed Stormwater Pond



Bypass %

0

%

Have amendments to attenuate phosphorus be incorporated?

No

Pond Design Level

Design Level 2

Percent annual particulate P removal rate

84

%

Percent annual dissolved P removal rate

8

%

Percent annual TSS removal rate

84

%

This BMP does not provide volume reduction towards the performance goal or on an annual basis. Please select a Design Level to determine pollutant removal rates.

Requirements for each Design Level are explained in the Requirements, recommendations, and information for using sand filter as a BMP in the MIDS Calculator page in the Minnesota Stormwater Manual wiki. To access hit the Help button below.

OK

HELP

Stormwater Management Plan
Taylor Inlet

BMP Properties: 1 - Sand filter

Watershed | **BMP Parameters** | BMP Summary

BMP Name: 1 - Sand filter

Routing/downstream BMP:

[Minnesota Stormwater Manual Wiki](#)

BMP Watershed Area

Land Cover	A Soils (acres)	B Soils (acres)	C Soils (acres)	D Soils (acres)	Total (acres)
Forest/Open Space - Undisturbed, protected forest/open space or reforested land					0
Managed Turf - disturbed, graded for yards or other turf to be mowed/managed					0
Impervious Cover (acres)					
Total Area (acres)					0

The calculator does not require sizing inputs for non-volume reducing BMPs. This BMP should be sized according to the guidelines in the MN stormwater manual.

OK HELP

BMP Properties: 1 - Sand filter

Watershed | **BMP Parameters** | BMP Summary

Sand Filter



Bypass %: %

Amendment added?:

Sand Filter Design Level:

Percent annual particulate P removal rate: %

Percent annual dissolved P removal rate: %

Percent annual TSS removal rate: %

This BMP does not provide volume reduction towards the performance goal or on an annual basis. Please select if the Sand filter has phosphorus reducing amendments (Enhanced Sand Filter).

Recommendations for each Design Level and amendment option are explained in the Requirements, recommendations, and information for using sand filter as a BMP in the MIDS Calculator page in the Minnesota Stormwater Manual wiki. To access hit the Help button below.

OK HELP

Stormwater Management Plan
Taylor Inlet

BMP Properties: 3 - Constructed stormwater pond #3

Watershed | **BMP Parameters** | BMP Summary

BMP Name: 3 - Constructed stormwater pond #3

Routing/downstream BMP:

[Minnesota Stormwater Manual Wiki](#)

BMP Watershed Area

Land Cover	A Soils (acres)	B Soils (acres)	C Soils (acres)	D Soils (acres)	Total (acres)
Forest/Open Space - Undisturbed, protected forest/open space or reforested land					0
Managed Turf - disturbed, graded for yards or other turf to be mowed/managed			1.13		1.13
Impervious Cover (acres)					0.42
Total Area (acres)					1.55

OK HELP

BMP Properties: 3 - Constructed stormwater pond #3

Watershed | **BMP Parameters** | BMP Summary

Constructed Stormwater Pond



Bypass %: %

Have amendments to attenuate phosphorus be incorporated?:

Pond Design Level:

Percent annual particulate P removal rate: %

Percent annual dissolved P removal rate: %

Percent annual TSS removal rate: %

This BMP does not provide volume reduction towards the performance goal or on an annual basis. Please select a Design Level to determine pollutant removal rates.

Requirements for each Design Level are explained in the Requirements, recommendations, and information for using sand filter as a BMP in the MIDS Calculator page in the Minnesota Stormwater Manual wiki. To access hit the Help button below.

OK HELP

Project Information

Calculator Version:	Version 4: July 2020
Project Name:	Taylor Inlet
User Name / Company Name:	Otto Associates, Inc.
Date:	8-27-24
Project Description:	Post-construction
Construction Permit?:	Yes

Site Information

Retention Requirement (inches):	1.1
Site's Zip Code:	55374
Annual Rainfall (inches):	29.5
Phosphorus EMC (mg/l):	0.3
TSS EMC (mg/l):	54.5

Total Site Area

Land Cover	A Soils (acres)	B Soils (acres)	C Soils (acres)	D Soils (acres)	Total (acres)
Forest/Open Space - Undisturbed, protected forest/open space or reforested land			5.76		5.76
Managed Turf - disturbed, graded for yards or other turf to be mowed/managed			17.68		17.68
			Impervious Area (acres)		2.96
			Total Area (acres)		26.4

Site Areas Routed to BMPs

Land Cover	A Soils (acres)	B Soils (acres)	C Soils (acres)	D Soils (acres)	Total (acres)
Forest/Open Space - Undisturbed, protected forest/open space or reforested land			0.8		0.8
Managed Turf - disturbed, graded for yards or other turf to be mowed/managed			9.38		9.38
			Impervious Area (acres)		1.77
			Total Area (acres)		11.95

Summary Information

Performance Goal Requirement

Performance goal volume retention requirement:	11819	ft ³
Volume removed by BMPs towards performance goal:		ft ³
Percent volume removed towards performance goal		%

Annual Volume and Pollutant Load Reductions

Post development annual runoff volume	15.337	acre-ft
Annual runoff volume removed by BMPs:	0	acre-ft
Percent annual runoff volume removed:	0	%

Post development annual particulate P load:	6.8833	lbs
Annual particulate P removed by BMPs:	3.291	lbs
Post development annual dissolved P load:	5.632	lbs
Annual dissolved P removed by BMPs:	0.246	lbs
Total P removed by BMPs	3.537	lbs
Percent annual total phosphorus removed:	28	%

$$TP = (6.88 + 5.63) - (3.29 + 0.25) = 8.97 \text{ LBS}$$

Post development annual TSS load:	2273.6	lbs
Annual TSS removed by BMPs:	1125.4	lbs
Percent annual TSS removed:	50	%

$$TSS = 2273.6 - 1125.4 = 1,148.2 \text{ LBS}$$

BMP Summary

Performance Goal Summary

BMP Name	BMP Volume Capacity (ft ³)	Volume Recieved (ft ³)	Volume Retained (ft ³)	Volume Outflow (ft ³)	Percent Retained (%)
1 - Sand filter	0	4073	0	4073	0
Constructed stormwater pond #1	0	1318	0	1318	0
Constructed stormwater pond #2	0	4073	0	4073	0
3 - Constructed stormwater pond #3	0	1677	0	1677	0

Annual Volume Summary

BMP Name	Volume From Direct Watershed (acre-ft)	Volume From Upstream BMPs (acre-ft)	Volume Retained (acre-ft)	Volume outflow (acre-ft)	Percent Retained (%)
1 - Sand filter	0	4.7679	0	4.7679	0
Constructed stormwater pond #1	2.1561	0	0	2.1561	0
Constructed stormwater pond #2	4.7679	0	0	4.7679	0
3 - Constructed stormwater pond #3	1.4328	0	0	1.4328	0

Particulate Phosphorus Summary

BMP Name	Load From Direct Watershed (lbs)	Load From Upstream BMPs (lbs)	Load Retained (lbs)	Outflow Load (lbs)	Percent Retained (%)
1 - Sand filter	0	0.3424	0.1404	0.202	41
Constructed stormwater pond #1	0.9676	0	0.8128	0.1548	84
Constructed stormwater pond #2	2.1399	0	1.7975	0.3424	84
3 - Constructed stormwater pond #3	0.643	0	0.5401	0.1029	84

Dissolved Phosphorus Summary

BMP Name	Load From Direct Watershed (lbs)	Load From Upstream BMPs (lbs)	Load Retained (lbs)	Outflow Load (lbs)	Percent Retained (%)
1 - Sand filter	0	1.6107	0	1.6107	0
Constructed stormwater pond #1	0.7917	0	0.0633	0.7284	8
Constructed stormwater pond #2	1.7508	0	0.1401	1.6107	8
3 - Constructed stormwater pond #3	0.5261	0	0.0421	0.484	8

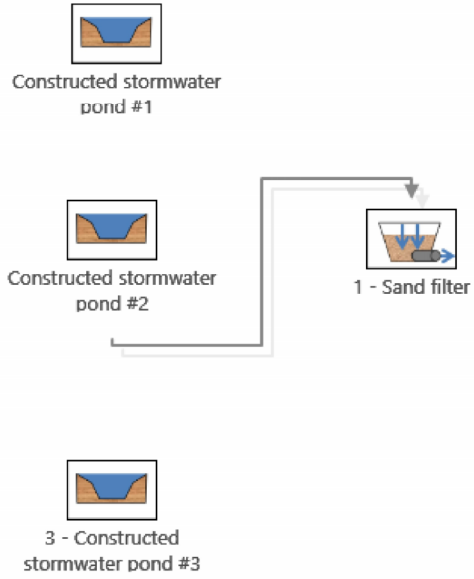
Total Phosphorus Summary

BMP Name	Load From Direct Watershed (lbs)	Load From Upstream BMPs (lbs)	Load Retained (lbs)	Outflow Load (lbs)	Percent Retained (%)
1 - Sand filter	0	1.9531	0.1404	1.8127	20
Constructed stormwater pond #1	1.7593	0	0.8761	0.8832	46
Constructed stormwater pond #2	3.8907	0	1.9376	1.9531	46
3 - Constructed stormwater pond #3	1.1691	0	0.5822	0.5869	46

TSS Summary

BMP Name	Load From Direct Watershed (lbs)	Load From Upstream BMPs (lbs)	Load Retained (lbs)	Outflow Load (lbs)	Percent Retained (%)
1 - Sand filter	0	113.09	84.82	28.269999999	75
Constructed stormwater pond #1	319.62	0	268.48	51.14	84
Constructed stormwater pond #2	706.8	0	593.71	113.09	84
3 - Constructed stormwater pond #3	212.4	0	178.42	33.98	84

BMP Schematic



Event mean concentrations for total phosphorus.

Link to this [table](#)

Land cover/land use	Range (mg/L)	Recommended value (mg/L)	Notes
Commercial	0.20 - 0.34	0.200	If applicable to models being used, adjust curve numbers/runoff coefficients when calculating loads
Industrial	0.23 - 0.55	0.235	- If applicable to models being used, adjust curve numbers/runoff coefficients when calculating loads - Adjust upward if specific phosphorus sources exist
Residential	0.26 - 0.38	0.325	Concentrations vary widely depending on local conditions
High-density/Multi-family residential	0.28 - 0.40	Calculate ¹	- Insufficient information to recommend a specific emc - Concentrations vary widely depending on local conditions
Medium density residential	0.18 - 0.40	Calculate ¹	- Insufficient information to recommend a specific emc - Concentrations vary widely depending on local conditions
Low density residential	0.24 - 0.40	Calculate ¹	- Insufficient information to recommend a specific emc - Concentrations vary widely depending on local conditions
Freeways/transportation	0.25 - 0.45	0.280	- Concentrations vary widely depending on inputs - Adjust upward for areas receiving large inputs of road salt or sediment or having very heavy traffic loads

Land cover/land use	Range (mg/L)	Recommended value (mg/L)	Notes
			Adjust downward for low traffic areas or areas with reduced inputs (e.g. little road salt application, limited truck traffic)
Mixed	0.16 - 0.84	0.290	- Residential land use was the primary land use in most studies that cited values for mixed land use - If the study area can be delineated into specific land uses and impervious area for each land use is know, we recommend calculating the emc
Parks and recreation		Use value for open space or calculate	- emc will be a function of vegetative cover - Adjust upward if street tree canopy cover is high or pervious areas are primarily grass on compacted soils
Open space	0.12 - 0.31	0.190	
Conventional roof	0.01 - 0.20	0.030	
Institutional	0.14 - 0.422	See note	- Use low values in range (0.200 mg/L or less) for facilities such as campuses, where there is considerable pervious area - Use high values in range (0.30 mg/L or greater) for areas with considerable impervious surface, such as sports facilities or facilities with large parking areas

Land cover/land use	Range (mg/L)	Recommended value (mg/L)	Notes
Forest/shrub/grassland	0.03 - 0.45	0.090	Concentrations are likely to vary with season in areas with fall leaf drop
Open water and wetlands		see Notes (next column)	- If data exist, use the phosphorus concentration for the water body of interest - If data for a specific lake do not exist, use data from similar lakes in the area - emcs for wetlands will typically be higher than for lakes in an area. Consider using a value equal to 2 times the value for lakes in an area.
Cropland (row crops)	0.126-1.348	TP use 0.533 TSS use 145	Median from our review = 0.533 TSS from R.Brashc-145
Pasture	0.35-0.45	²	

¹The link takes you to information on calculating event mean concentrations for areas with multiple land uses.

²Our literature review was not extensive enough to warrant a specific recommend emc for this land

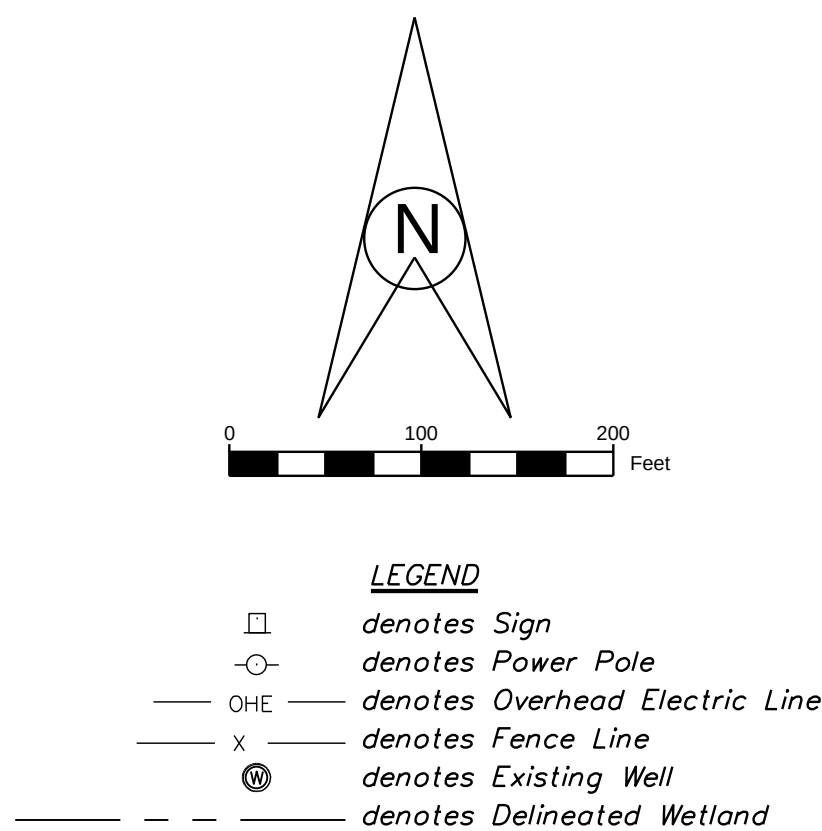
Event Mean Concentrations of pollutants in stormwater runoff by land use. Source: National Stormwater Quality Database.

[Link to this table](#)

Updated Table

Land use	Phosphorus EMC (mg/L)			TSS EMC (mg/L)		
	Median	Count	Std dev	Median	Count	Std dev
Commercial	0.011	165	0.144	97	164	168
Industrial	0.22	165	0.287	70	84	108
Open space	0.19	6	0.063	38	6	17.2
Residential	0.27	249	0.380	92	250	166

Certificate of Survey



PROPOSED PROPERTY DESCRIPTIONS

PARCEL A:

That part of the East Half of the Southeast Quarter of the Southwest Quarter of Section 34, Township 120, Range 23, Hennepin County, Minnesota, described as follows:

Beginning at the Southwest corner of said East Half of the Southeast Quarter of the Southwest Quarter; thence on an assumed bearing of South 89 degrees 55 minutes 53 seconds East, a distance of 347.84 feet; thence North 00 degrees 28 minutes 24 seconds East, a distance of 952.89 feet; thence North 61 degrees 12 minutes 48 seconds West, a distance of 395.86 feet to the West line of said East Half of the Southeast Quarter of the Southwest Quarter; thence South 00 degrees 26 minutes 23 seconds West, along said West line, a distance of 1143.11 feet to the point of beginning.

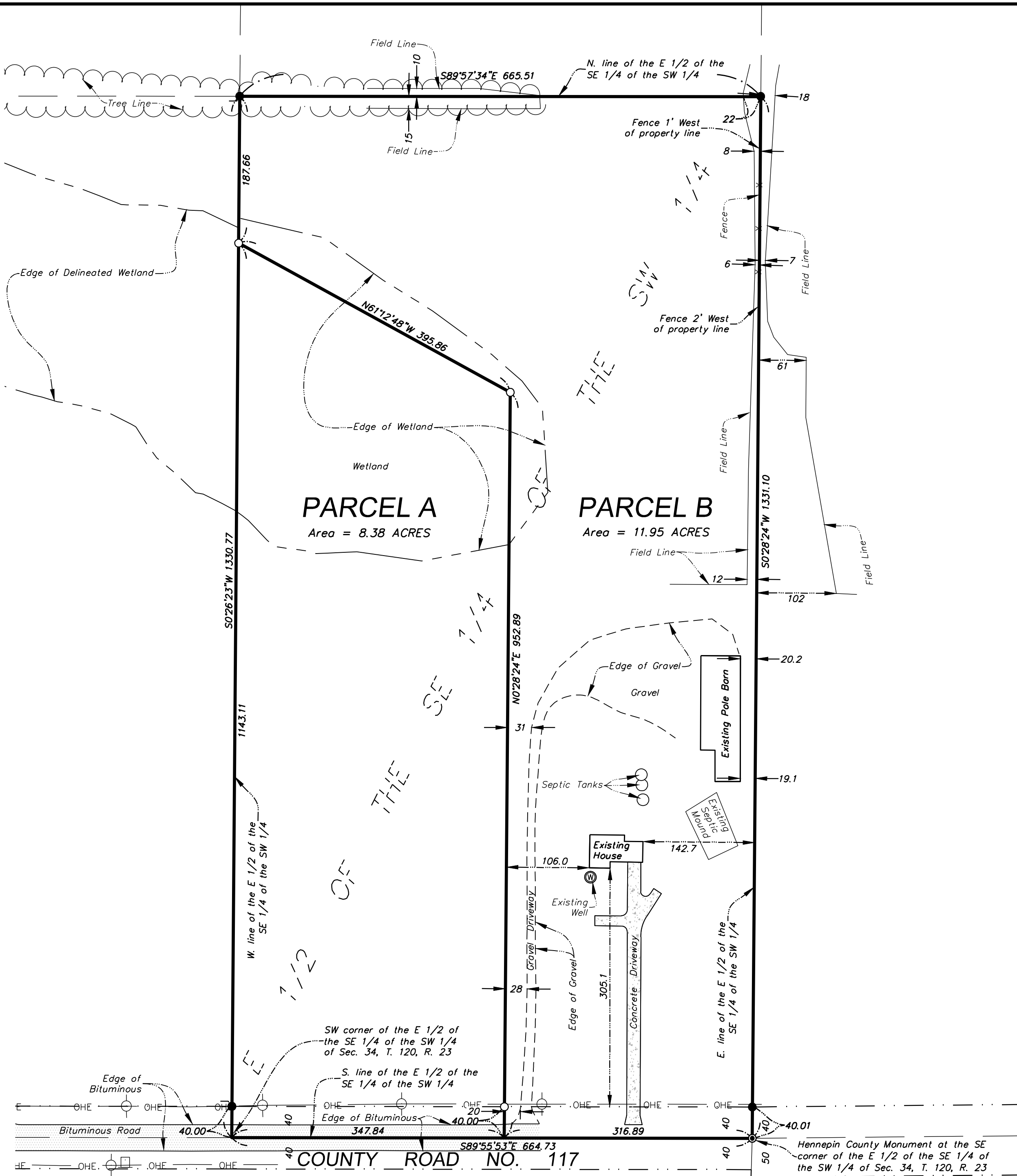
PARCEL B:

The East Half of the Southeast Quarter of the Southwest Quarter of Section 34, Township 120, Range 23, Hennepin County, Minnesota.

EXCEPT:

That part of the East Half of the Southeast Quarter of the Southwest Quarter of Section 34, Township 120, Range 23, Hennepin County, Minnesota, described as follows:

Beginning at the Southwest corner of said East Half of the Southeast Quarter of the Southwest Quarter; thence on an assumed bearing of South 89 degrees 55 minutes 53 seconds East, a distance of 347.84 feet; thence North 00 degrees 28 minutes 24 seconds East, a distance of 952.89 feet; thence North 61 degrees 12 minutes 48 seconds West, a distance of 395.86 feet to the West line of said East Half of the Southeast Quarter of the Southwest Quarter; thence South 00 degrees 26 minutes 23 seconds West, along said West line, a distance of 1143.11 feet to the point of beginning.



Certificate of Survey on the E 1/2 of the SE 1/4 of the SW 1/4 of Section 34, Township 120, Range 23, Hennepin County, Minnesota

Revised:

I hereby certify that this survey, plan, or report was prepared by me or under my direct supervision and that I am a duly Licensed Land Surveyor under the laws of the State of Minnesota.

Paul E. Otto
Paul E. Otto
License #40062 Date: 4-30-24

Requested By:

Mike Mooney

Date:

4-18-24

Drawn By:

T.J.B.

Scale:

1"=100'

Checked By:

P.E.O.



www.ottoassociates.com

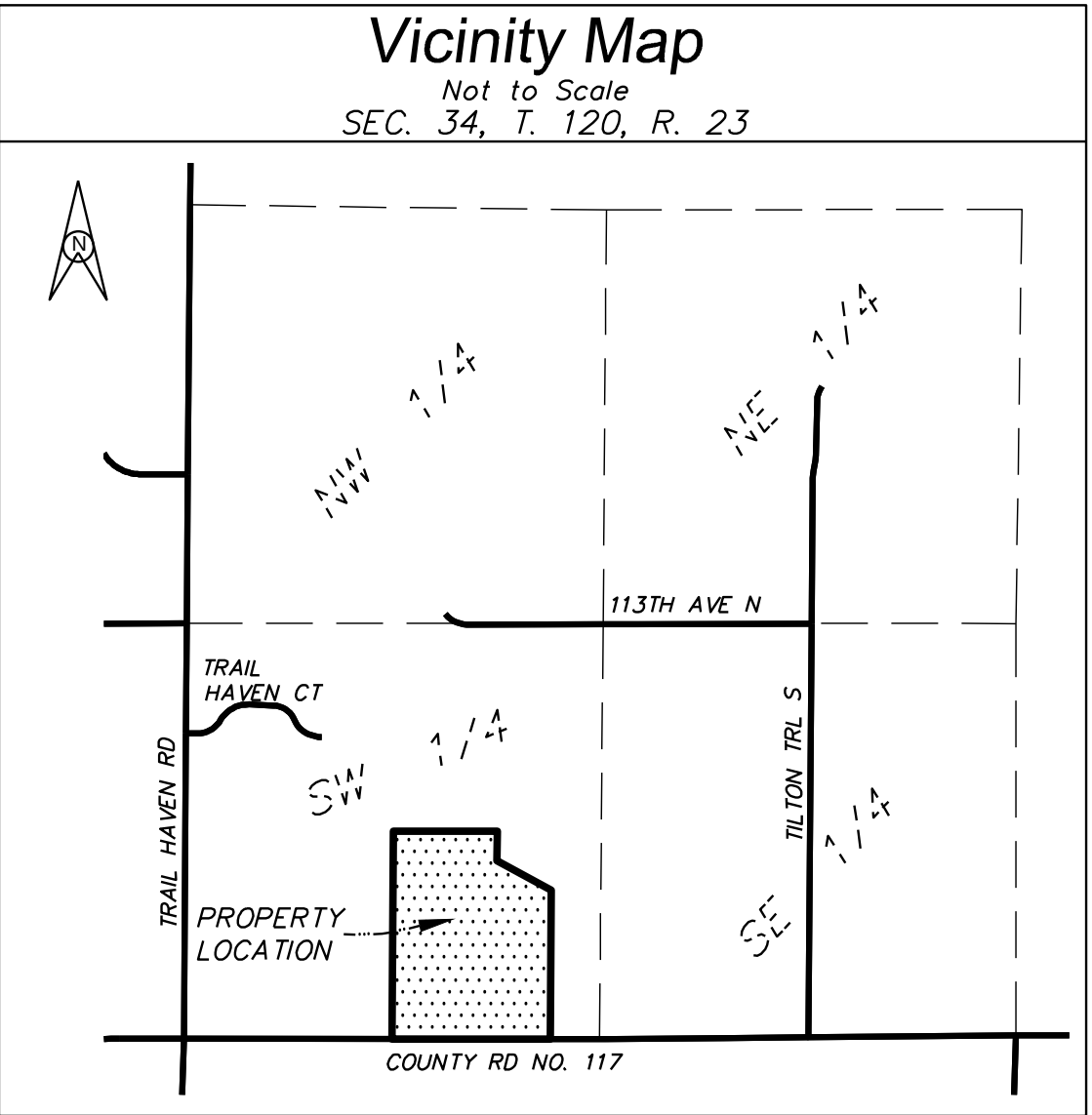
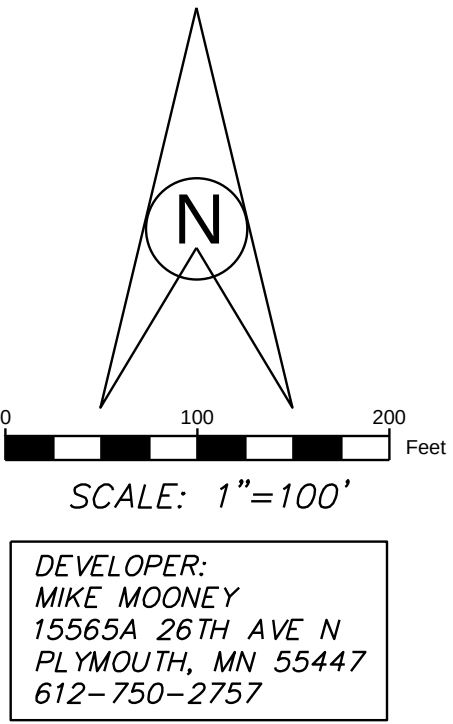
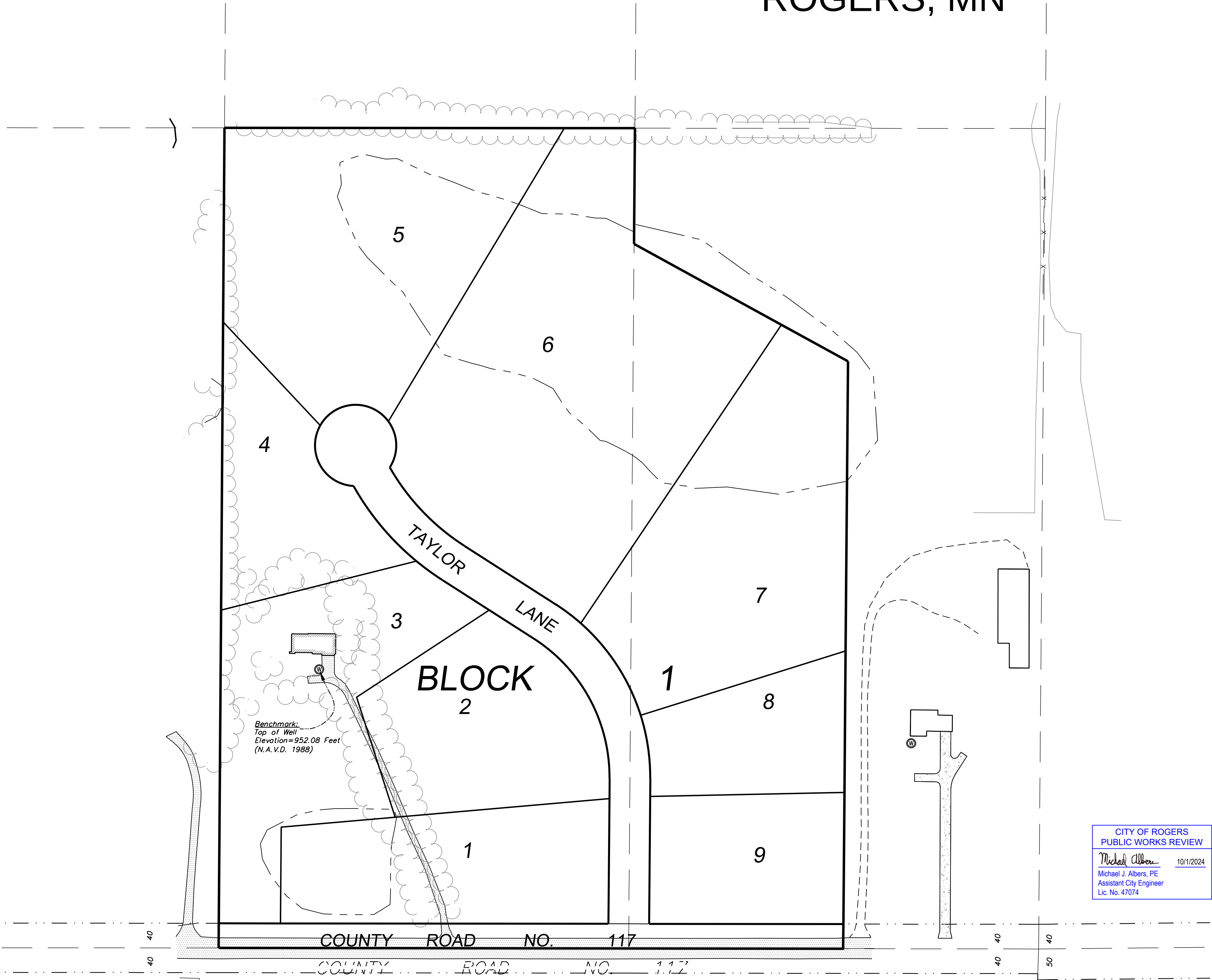
9 West Division Street
Buffalo, MN 55313
(763)682-4727
Fax: (763)682-3522

- denotes iron monument found
- denotes 1/2 inch by 14 inch iron pipe set and marked by License #40062

Project No.

23-0189

TAYLOR INLET
ROGERS, MN



CITY OF ROGERS PUBLIC WORKS REVIEW	
<i>Michael J. Albers</i> Michael J. Albers, PE Assistant City Engineer Lic. No. 47074	10/1/2024
☐ APPROVED	☐ APPROVED AS NOTED
☒ REVISE AND RESUBMIT	☐ REJECTED

SHEET INDEX

SHEET NO.	DESCRIPTION
1	COVER SHEET
2	PRELIMINARY REMOVALS PLAN
3	PRELIMINARY PLAT - OVERVIEW
4	PRELIMINARY PLAT (NORTH)
5	PRELIMINARY PLAT (SOUTH)
6	PRELIMINARY STREET & STORM SEWER PLAN - TAYLOR LANE
7	PRELIMINARY PRIMARY GRADING & EROSION CONTROL PLAN
8	PRELIMINARY SECONDARY GRADING & EROSION CONTROL PLAN
9	PRELIMINARY WETLAND BUFFER & TREE PRESERVATION PLAN (NORTH)
10	PRELIMINARY WETLAND BUFFER & TREE PRESERVATION PLAN (SOUTH)

Provide an Overall Utility Plan
Provide Details Sheet
Provide SWPPP plan
Provide Signage Plan

REV. NO.	DATE	BY	DESCRIPTION

DESIGNED P.E.O.	DRAWN T.J.B.
CHECKED P.E.O.	

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Paul E. Otto
Paul E. Otto
License # 40062
Date: 8-27-24

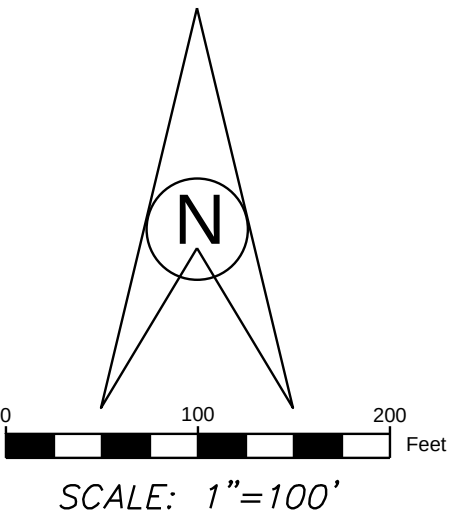
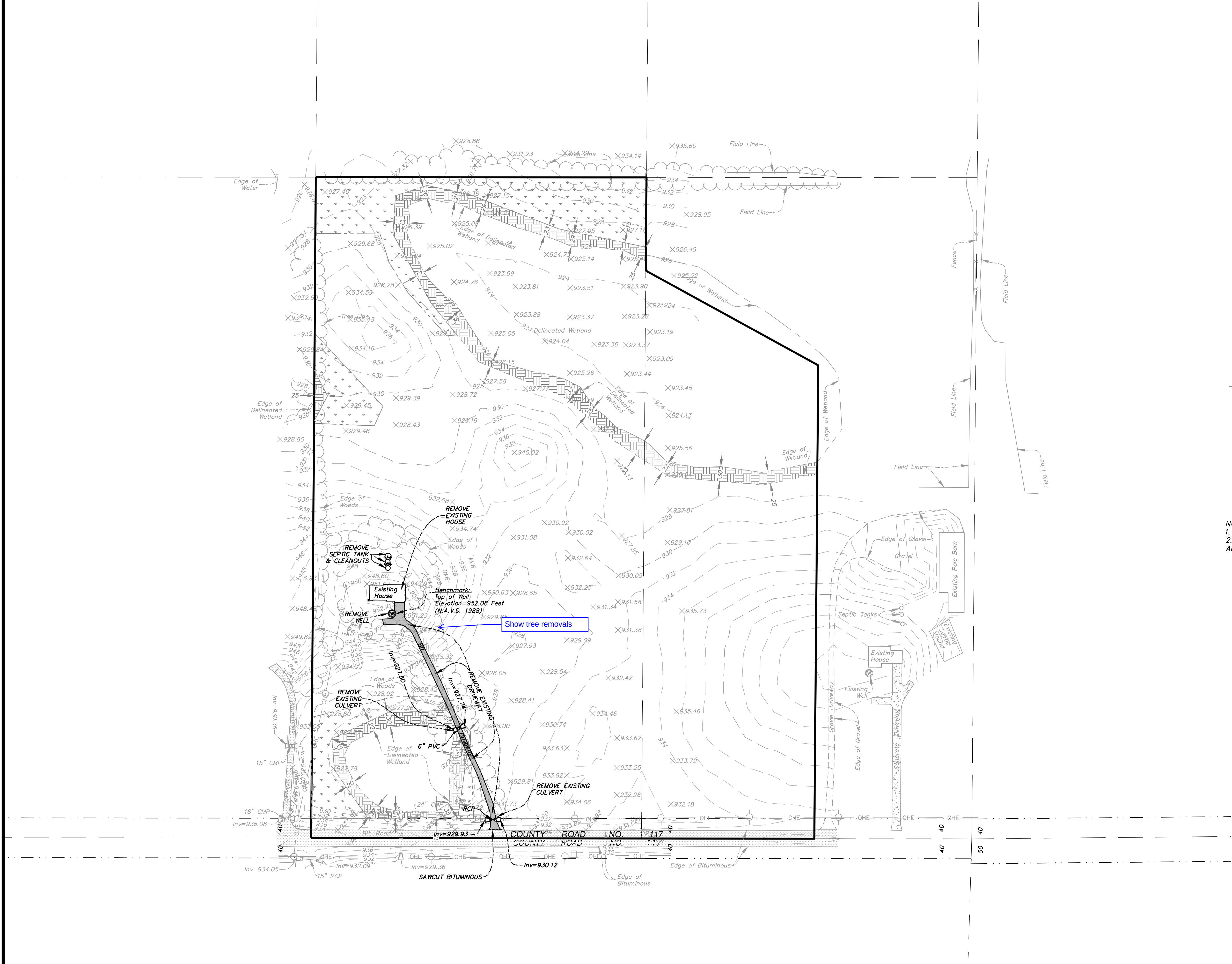
OTTO ASSOCIATES
Engineers & Land Surveyors, Inc.

www.ottoassociates.com

9 West Division Street
Buffalo, MN 55313
(763)682-4727
Fax: (763)682-3522

TAYLOR INLET
MIKE MOONEY
ROGERS, MN

COVER SHEET	PROJECT NO: 23-0189
SHEET NO. 1 OF 10 SHEETS	DATE: 5-24-24



- LEGEND**
- 932 — denotes Existing Contour
 - 932.00 X denotes Existing Spot Elevation
 - denotes Existing Telephone Pedestal
 - denotes Existing Sign
 - denotes Existing Power Pole
 - denotes Existing Sanitary Cleanout
 - denotes Existing Well
 - OHE — denotes Overhead Electric Line
 - X — denotes Fence Line
 - denotes Existing Culvert
 - denotes Delineated Wetland (By Others)
 - denotes Wetland Buffer
 - denotes Additional Wetland Buffer
 - denotes Remove Existing Bituminous

NOTES:
1. WETLANDS DELINEATED BY JACOBSON ENVIRONMENTAL, PLLC.
2. DISPOSAL OF MATERIALS SHALL BE IN ACCORDANCE WITH ALL STATE AND LOCAL REGULATIONS.

REV. NO.	DATE	BY	DESCRIPTION

DESIGNED	DRAWN
P.E.O.	T.J.B.
CHECKED	
P.E.O.	

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Paul E. Otto
Paul E. Otto
License # 40062 Date: 8-27-24



OTTO ASSOCIATES
Engineers & Land Surveyors, Inc.

www.ottoassociates.com

9 West Division Street
Buffalo, MN 55313
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Fax: (763)682-3522

TAYLOR INLET
MIKE MOONEY
ROGERS, MN

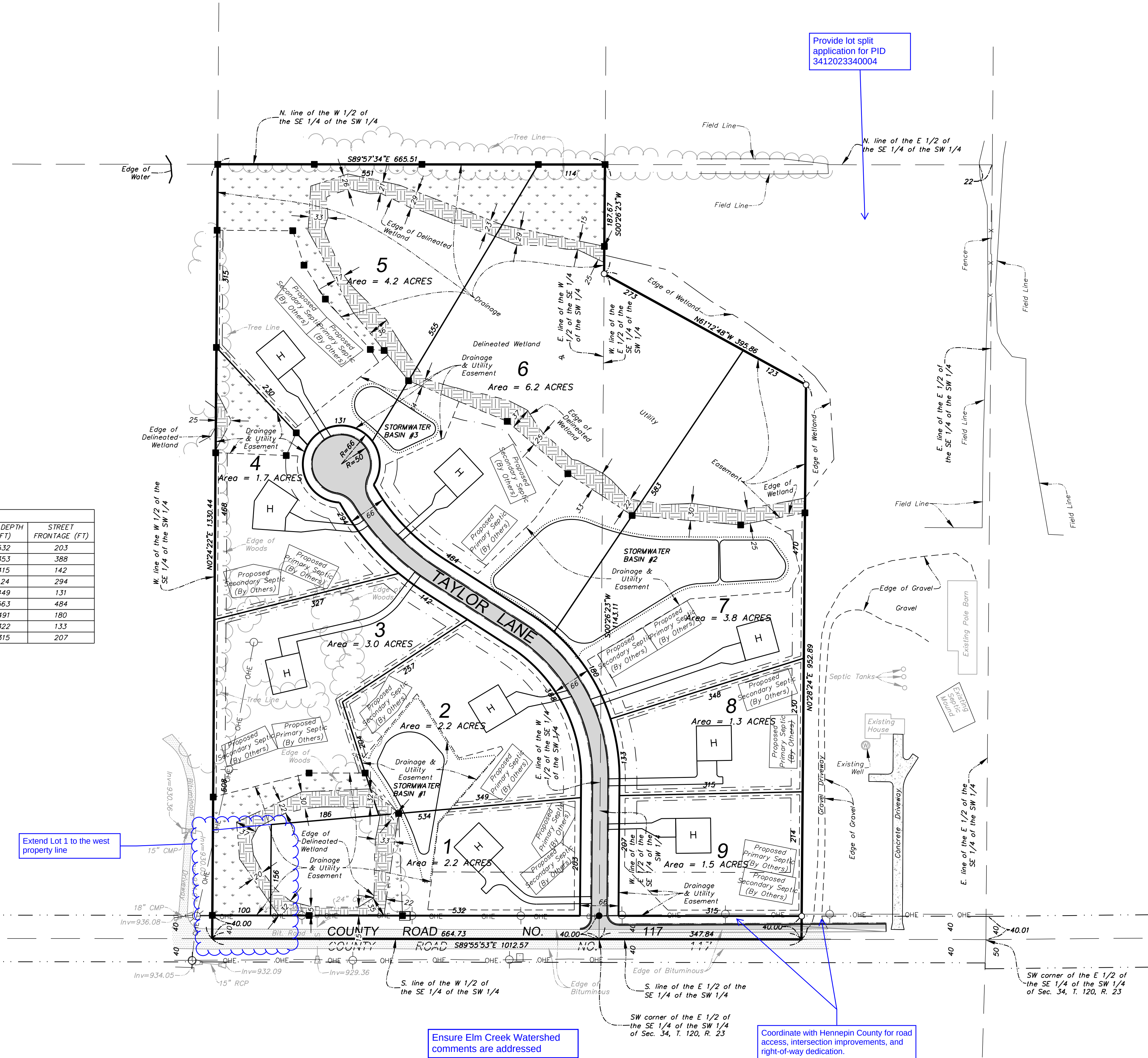
PRELIMINARY REMOVALS PLAN

SHEET NO. 2 OF 10 SHEETS

PROJECT NO: 23-0189

DATE: 5-24-24

LOT TABLE					
LOT/BLOCK #	LOT AREA (SF)	BUILDABLE LOT AREA (SF)	LOT WIDTH AT SETBACK (FT)	LOT DEPTH (FT)	STREET FRONTAGE (FT)
LOT 1, BLOCK 1	95,552	58,551	200	532	203
LOT 2, BLOCK 1	95,783	94,512	363	353	388
LOT 3, BLOCK 1	131,313	96,249	160	415	142
LOT 4, BLOCK 1	73,165	58,241	338	124	294
LOT 5, BLOCK 1	180,872	71,192	201	449	131
LOT 6, BLOCK 1	269,817	101,471	453	563	484
LOT 7, BLOCK 1	165,118	108,662	208	491	180
LOT 8, BLOCK 1	58,301	58,301	143	322	133
LOT 9, BLOCK 1	66,170	66,170	207	315	207



N

0100200

Feet

SCALE: 1"=100'

TOTAL PARCEL AREA = 26.50 ACRES
PARCEL ID: 3412023340002
3412023340004

LEGEND

denotes Existing Telephone Pedestal

denotes Existing Sign

denotes Existing Power Pole

denotes Existing Sanitary Cleanout

denotes Existing Well

denotes Overhead Electric Line

denotes Fence Line

denotes Existing Culvert

denotes Delineated Wetland (By Others)

denotes Building Setback Line

Front = 30' (75' Co. Rd. No. 117)

Side = 10'

Rear = 20'

Wetland Buffer = 25'

denotes Wetland Buffer

denotes Additional Wetland Buffer

denotes Proposed Wetland Buffer Sign, Typ.

denotes Possible 60'x60' House Pad Location

DRAINAGE AND UTILITY EASEMENTS ARE SHOWN THUS:

5

5

10

10

BEING 10 FEET IN WIDTH, UNLESS OTHERWISE INDICATED, AND ADJOINING RIGHT-OF-WAY LINES, AND BEING 5 FEET IN WIDTH, UNLESS OTHERWISE INDICATED, AND ADJOINING LOT LINES, AS SHOWN ON THE PLAT.

Notes:

1. Wetlands delineated by Jacobson Environmental, PLLC.

2. Septic design by Homestead Septic.

PROPERTY DESCRIPTION:

That part of the East Half of the Southeast Quarter of the Southwest Quarter of Section 34, Township 120, Range 23, Hennepin County, Minnesota, described as follows:

Beginning at the Southwest corner of said East Half of the Southeast Quarter of the Southwest Quarter; thence on an assumed bearing of South 89 degrees 55 minutes 53 seconds East, along the South line of said East Half of the Southeast Quarter of the Southwest Quarter, a distance of 347.84 feet; thence North 00 degrees 28 minutes 24 seconds East, a distance of 952.89 feet; thence North 61 degrees 12 minutes 48 seconds West, a distance of 395.86 feet to the West line of said East Half of the Southeast Quarter of the Southwest Quarter; thence South 00 degrees 26 minutes 23 seconds West, along said West line, a distance of 1143.11 feet to the point of beginning.

AND

The West Half of the Southeast Quarter of the Southwest Quarter of Section 34, Township 120, Range 23, Hennepin County, Minnesota.

REV. NO.	DATE	BY	DESCRIPTION

DESIGNED
P.E.O.

DRAWN
T.J.B.

CHECKED
P.E.O.

Paul E. Otto

Paul E. Otto

License # 40062

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Date: 8-27-24

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Buffalo, MN 55313
(763)682-4727
Fax: (763)682-3522

TAYLOR INLET

MIKE MOONEY

ROGERS, MN

PRELIMINARY PLAT

OVERVIEW

SHEET NO. 3 OF 10 SHEETS

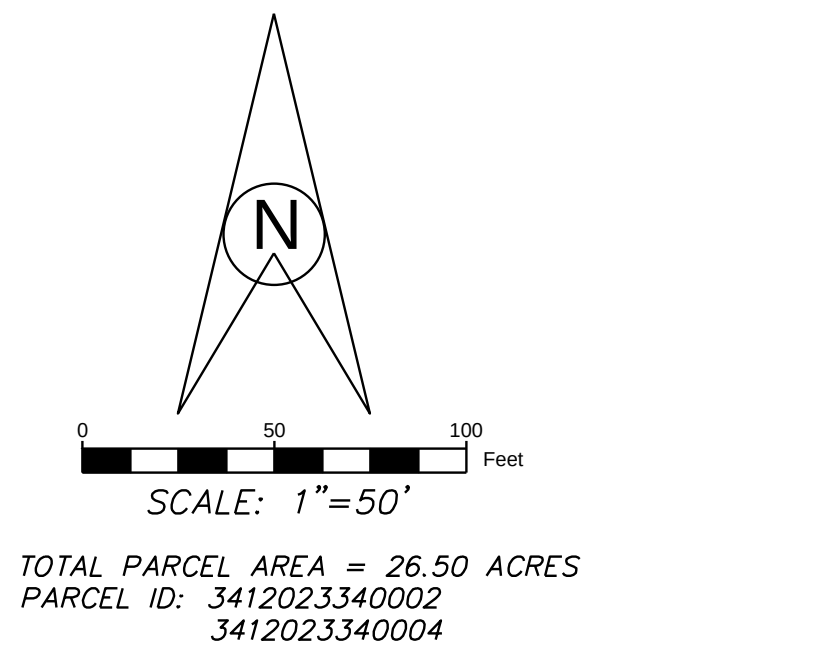
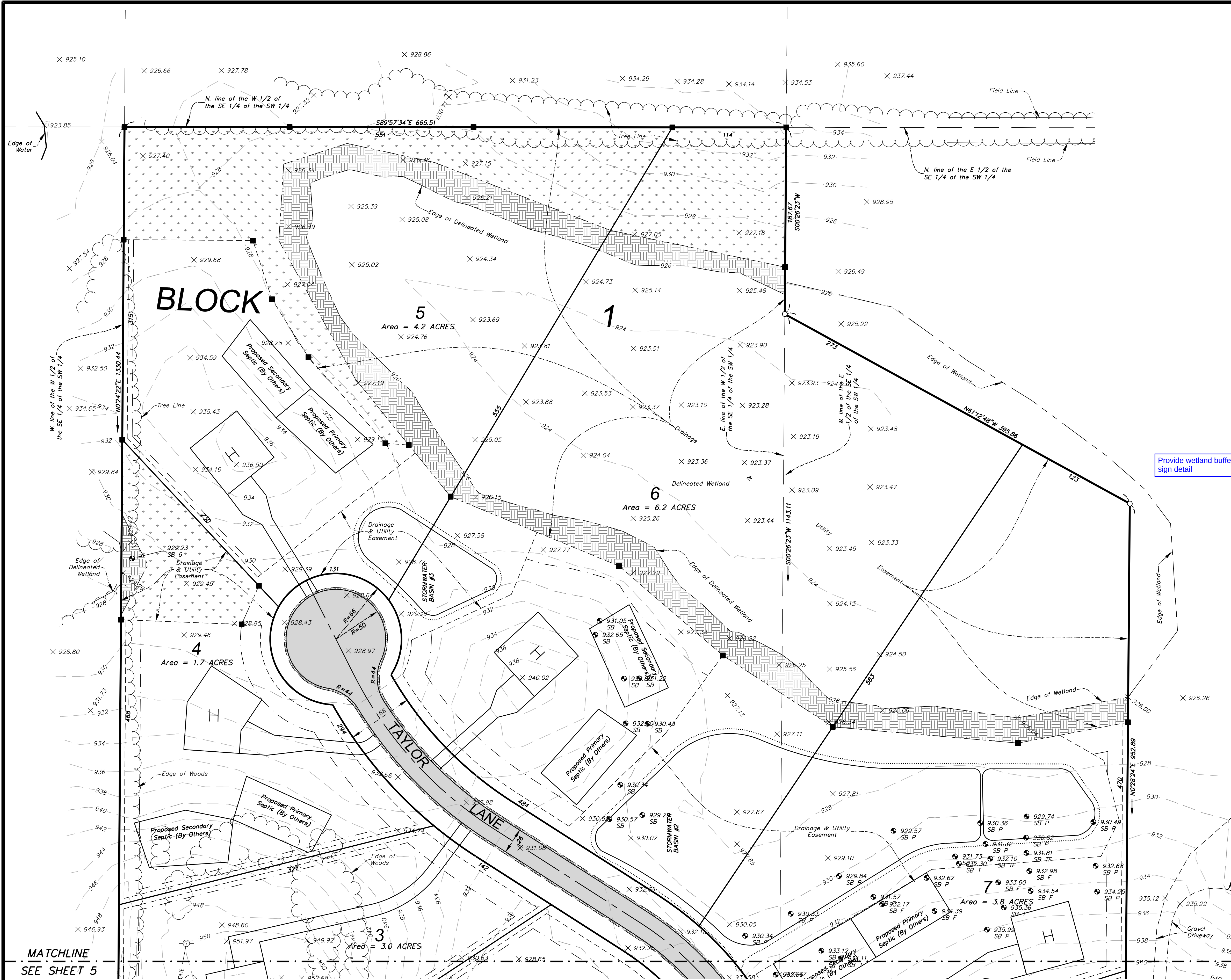
PROJECT NO:

23-0189

DATE:

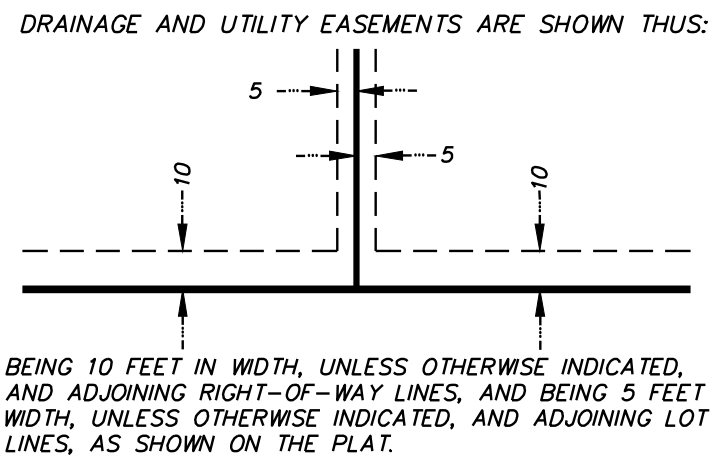
5-24-24

Page 412 of 539



- LEGEND**
- 932 — denotes Existing Contour
 - 932.00 X denotes Existing Spot Elevation
 - [T] denotes Existing Telephone Pedestal
 - [S] denotes Existing Soil Boring
 - [P] denotes Existing Sign
 - [O] denotes Existing Power Pole
 - [W] denotes Existing Sanitary Cleanout
 - [W] denotes Existing Well
 - OHE — denotes Overhead Electric Line
 - X — denotes Fence Line
 - [D] denotes Existing Culvert
 - - - denotes Delineated Wetland (By Others)
 - - - denotes Building Setback Line
Front = 30' (75' Co. Rd. No. 117)
Side = 10'
Rear = 20'
Wetland Buffer = 25'
 - [Hatched] denotes Wetland Buffer
 - [Dashed] denotes Additional Wetland Buffer
 - [Square] denotes Proposed Wetland Buffer Sign, Typ.
 - [H] denotes Possible 60'x60' House Pad Location

Provide wetland buffer sign detail



Notes:
1. Wetlands delineated by Jacobson Environmental, PLLC.
2. Septic design by Homestead Septic.

PROPERTY DESCRIPTION:

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AND

The West Half of the Southeast Quarter of the Southwest Quarter of Section 34, Township 120, Range 23, Hennepin County, Minnesota.

REV. NO.	DATE	BY	DESCRIPTION
1	6-25-24	T.J.B.	REVISE PROPOSED ROAD NAME
2	8-27-24	T.J.B.	REVISE PER CITY REVIEW

DESIGNED	DRAWN	I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota. Paul E. Otto License # 40062 Date: 8-27-24
P.E.O.	T.J.B.	
CHECKED	P.E.O.	

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(763)682-4727
Fax: (763)682-3522

TAYLOR INLET
MIKE MOONEY
ROGERS, MN

PROJECT NO:
23-0189

DATE:
5-24-24

PRELIMINARY PLAT (NORTH)

SHEET NO. 4 OF 10 SHEETS

PROJECT NO:
23-0189

DATE:
5-24-24

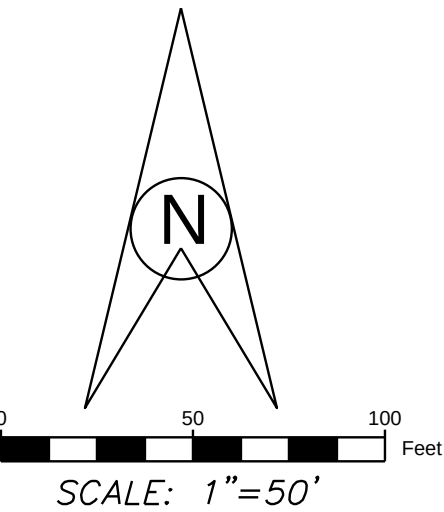
PROPERTY DESCRIPTION:

That part of the East Half of the Southeast Quarter of the Southwest Quarter of Section 34, Township 120, Range 23, Hennepin County, Minnesota, described as follows:

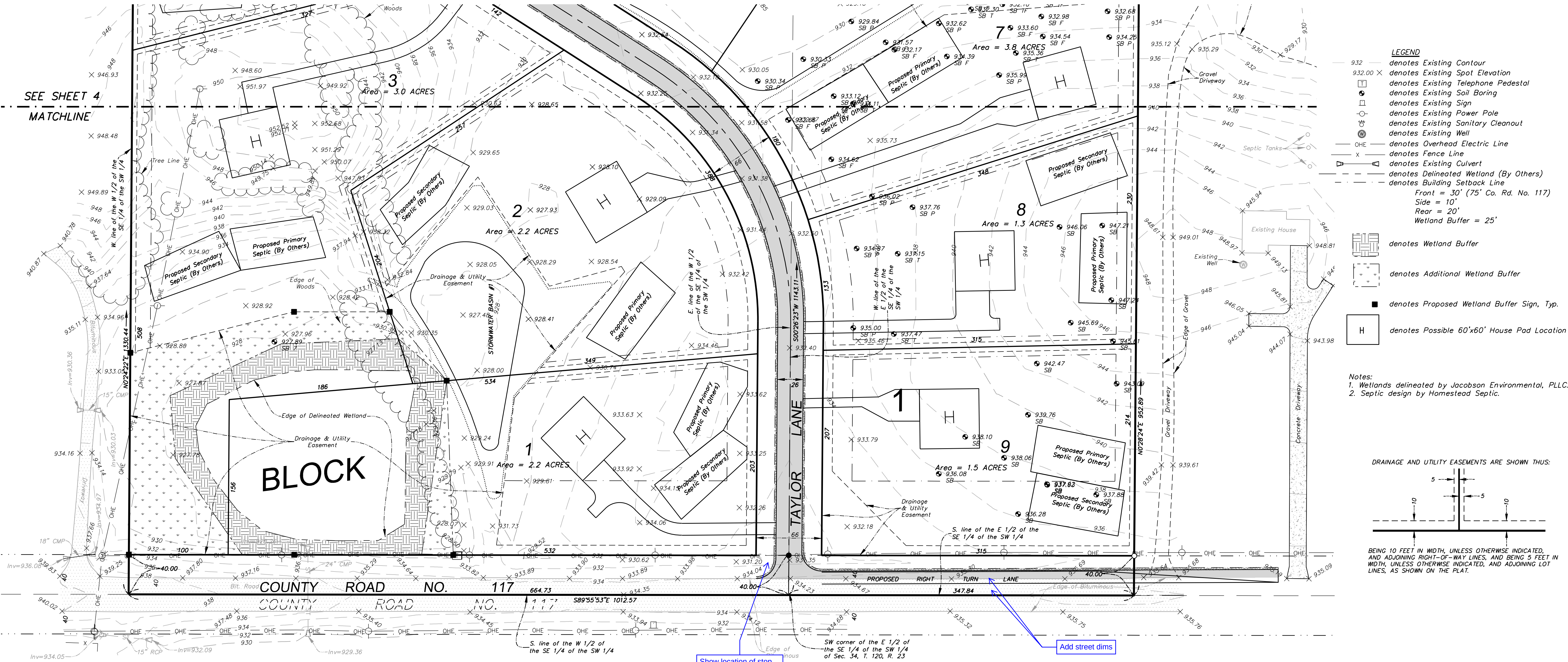
Beginning at the Southwest corner of said East Half of the Southeast Quarter of the Southwest Quarter; thence on an assumed bearing of South 89 degrees 55 minutes 53 seconds East, along the South line of said East Half of the Southeast Quarter of the Southwest Quarter, a distance of 347.84 feet; thence North 00 degrees 28 minutes 24 seconds East, a distance of 952.89 feet; thence North 61 degrees 12 minutes 48 seconds West, a distance of 395.86 feet to the West line of said East Half of the Southeast Quarter of the Southwest Quarter; thence South 00 degrees 26 minutes 23 seconds West, along said West line, a distance of 1143.11 feet to the point of beginning.

AND

The West Half of the Southeast Quarter of the Southwest Quarter of Section 34, Township 120, Range 23, Hennepin County, Minnesota.



TOTAL PARCEL AREA = 26.50 ACRES
PARCEL ID: 3412023340002
3412023340004



REV. NO.	DATE	BY	DESCRIPTION
1	6-25-24	T.J.B.	REVISE PROPOSED ROAD NAME
2	8-27-24	T.J.B.	REVISE PER CITY REVIEW

DESIGNED	DRAWN	I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota. <i>Paul E. Otto</i> Paul E. Otto License # 40062 Date: 8-27-24
P.E.O.	T.J.B.	
CHECKED		
P.E.O.		



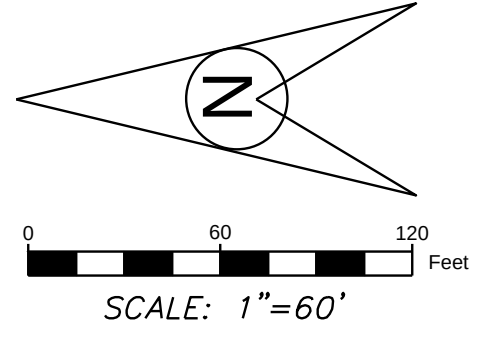
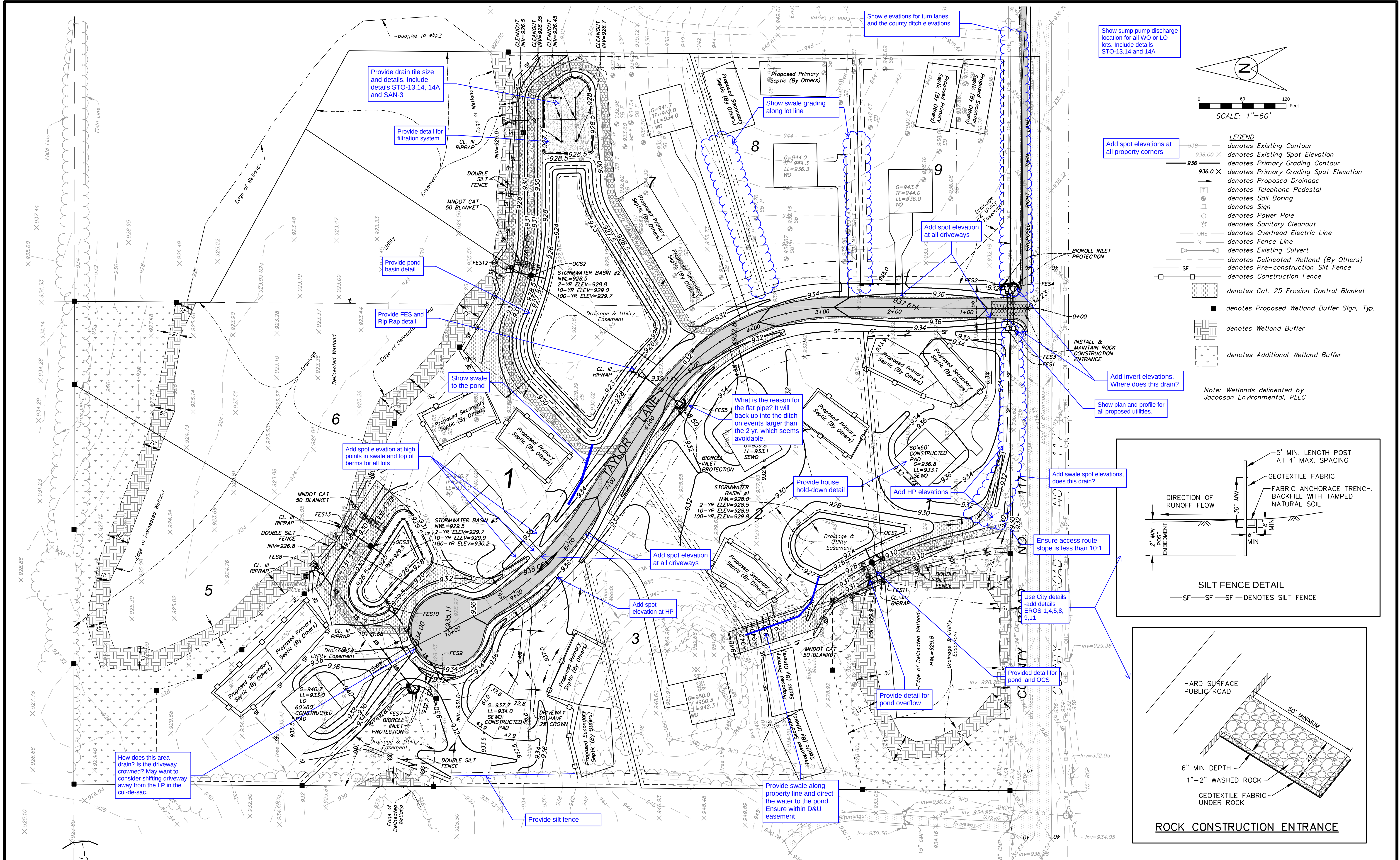
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ROGERS, MN

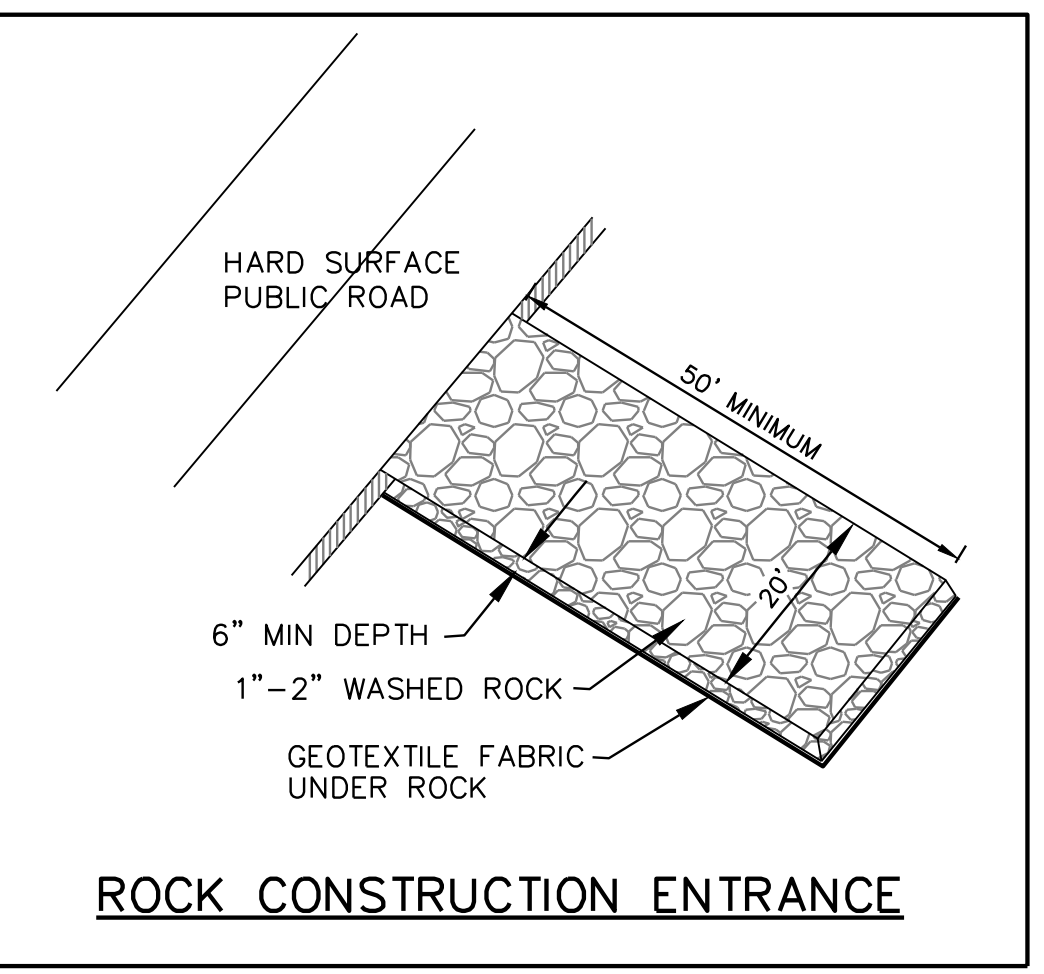
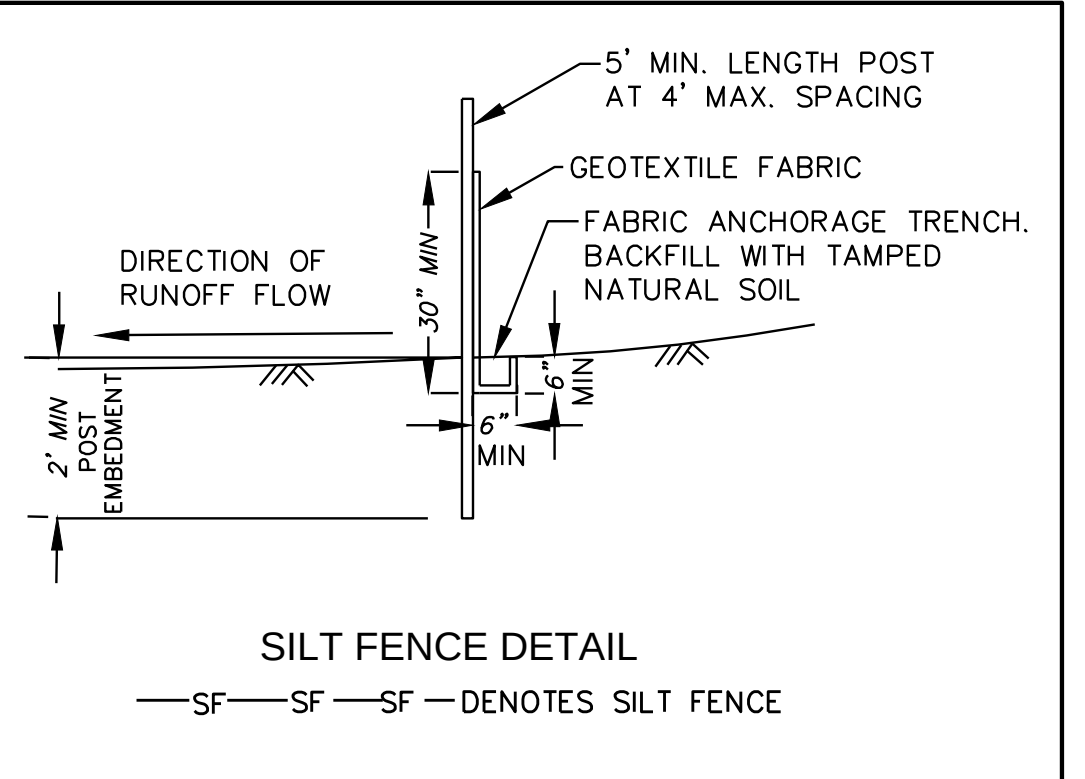
PRELIMINARY PLAT (SOUTH)
SHEET NO. 5 OF 10 SHEETS

PROJECT NO: 23-0189
DATE: 5-24-24



- LEGEND**
- denotes Existing Contour
 - denotes Existing Spot Elevation
 - denotes Primary Grading Contour
 - denotes Primary Grading Spot Elevation
 - denotes Proposed Drainage
 - denotes Telephone Pedestal
 - denotes Soil Boring
 - denotes Sign
 - denotes Power Pole
 - denotes Sanitary Cleanout
 - denotes Overhead Electric Line
 - denotes Fence Line
 - denotes Existing Culvert
 - denotes Delineated Wetland (By Others)
 - denotes Pre-construction Silt Fence
 - denotes Construction Fence
 - denotes Cat. 25 Erosion Control Blanket
 - denotes Proposed Wetland Buffer Sign, Typ.
 - denotes Wetland Buffer
 - denotes Additional Wetland Buffer

Note: Wetlands delineated by Jacobson Environmental, PLLC



REV. NO.	DATE	BY	DESCRIPTION	DESIGNED	DRAWN	NOTES
1	6-25-24	T.J.B.	REVISE PROPOSED ROAD NAME	P.E.O.	T.J.B.	
2	8-27-24	T.J.B.	REVISE PER CITY REVIEW	CHECKED		
				P.E.O.		

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Paul E. Otto
License # 40062
Date: 8-27-24

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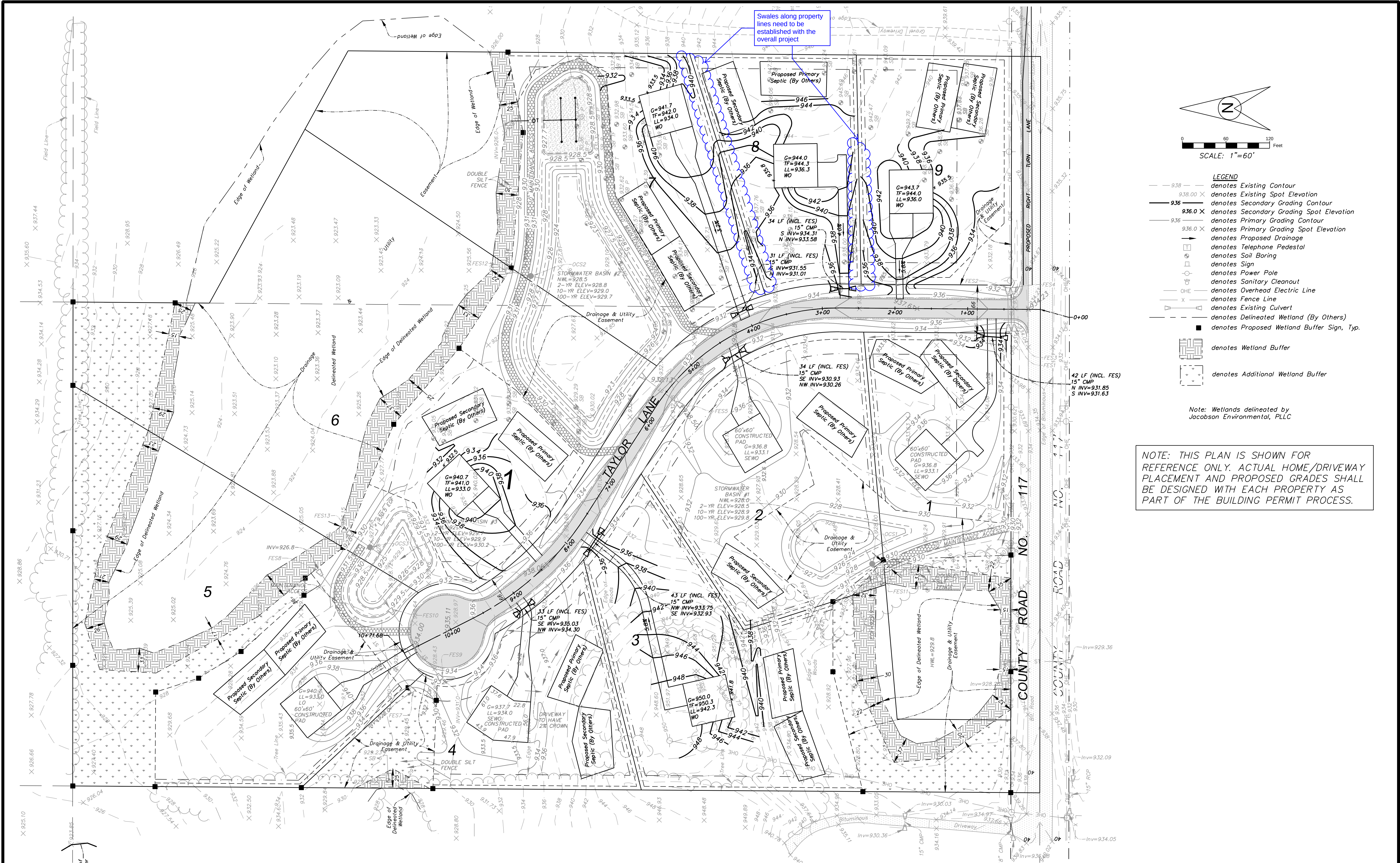
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MIKE MOONEY
ROGERS, MN

PRELIMINARY PRIMARY GRADING
& EROSION CONTROL PLAN

SHEET NO. 7 OF 10 SHEETS

PROJECT NO:
23-0189

DATE:
5-24-24



NOTE: THIS PLAN IS SHOWN FOR REFERENCE ONLY. ACTUAL HOME/DRIVEWAY PLACEMENT AND PROPOSED GRADES SHALL BE DESIGNED WITH EACH PROPERTY AS PART OF THE BUILDING PERMIT PROCESS.

REV. NO.	DATE	BY	DESCRIPTION
1	6-25-24	T.J.B.	REVISE PROPOSED ROAD NAME
2	8-27-24	T.J.B.	REVISE PER CITY REVIEW

DESIGNED	DRAWN	I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota. Paul E. Otto License # 40062 Date: 8-27-24
P.E.O.	T.J.B.	
CHECKED		
P.E.O.		

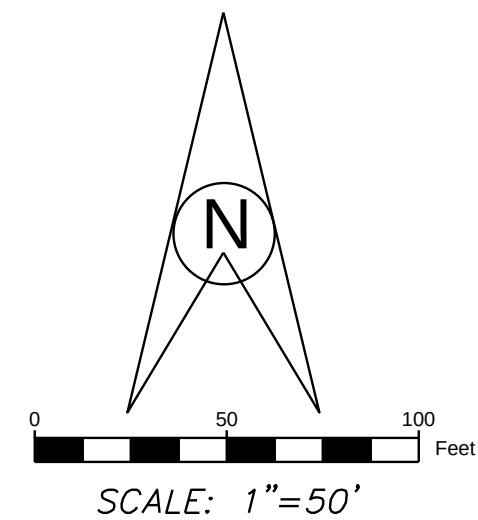
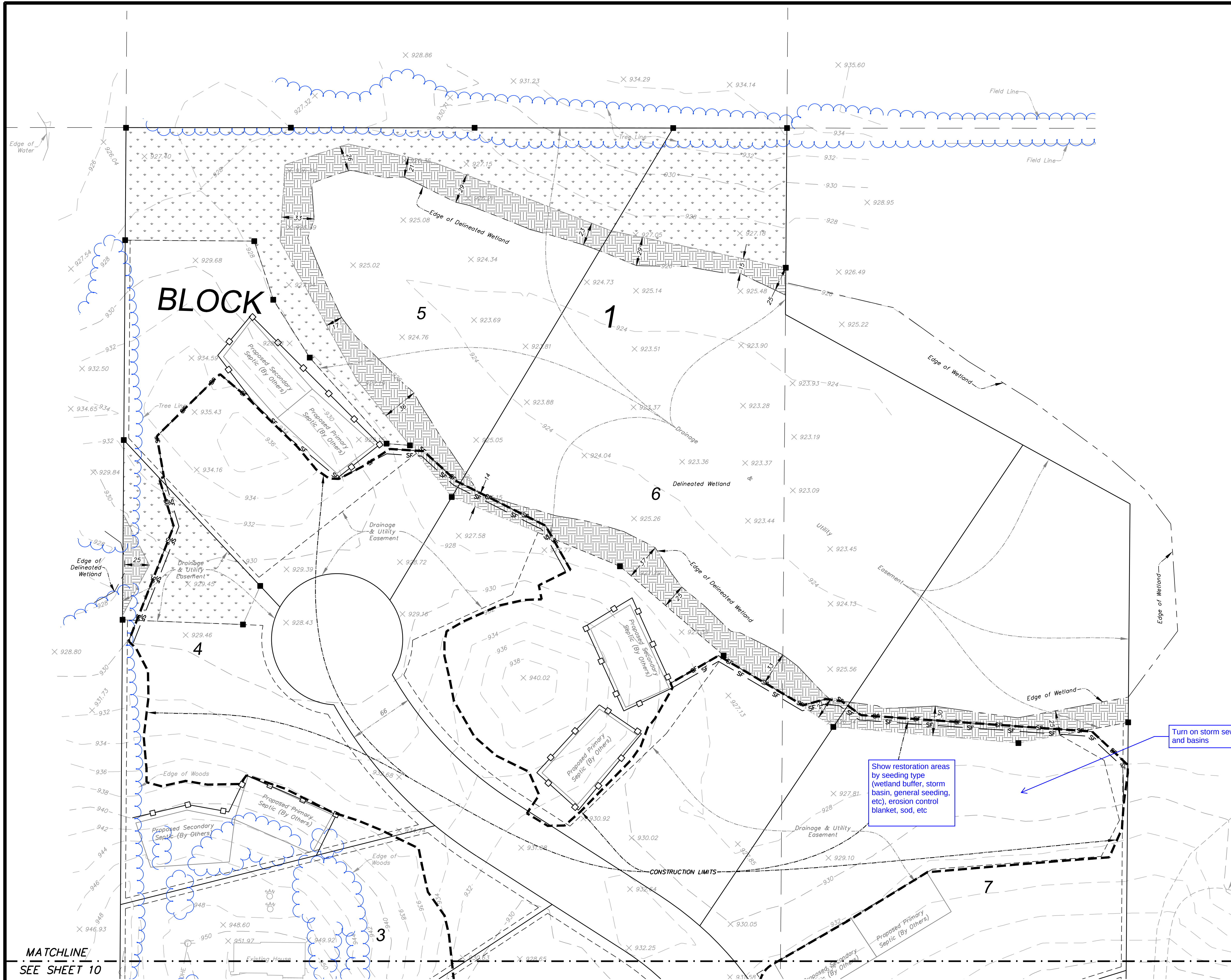


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MIKE MOONEY
ROGERS, MN

PRELIMINARY SECONDARY GRADING PLAN	PROJECT NO: 23-0189
SHEET NO. 8 OF 10 SHEETS	DATE: 5-24-24



WETLAND BUFFER AREAS:
WETLAND BUFFER REQUIRED (25' AVERAGE) = 61,637 S.F.
WETLAND BUFFER PROPOSED = 61,638 S.F.
ADDITIONAL WETLAND BUFFER = 99,575 S.F.

NOTE: WETLANDS DELINEATED BY JACOBSON ENVIRONMENTAL, PLLC.

- LEGEND**
- 932 — denotes Existing Contour
 - 932.00 X denotes Existing Spot Elevation
 - T denotes Existing Telephone Pedestal
 - denotes Existing Sign
 - denotes Existing Power Pole
 - denotes Existing Sanitary Cleanout
 - ⊕ denotes Existing Well
 - OHE— denotes Overhead Electric Line
 - X— denotes Fence Line
 - denotes Existing Culvert
 - denotes Delineated Wetland (By Others)
 - denotes Existing Edge of Woods to be Preserved
 - denotes Existing Edge of Woods to be Removed
 - denotes Deciduous Tree Saved
 - denotes Coniferous Tree Saved
 - denotes Deciduous Tree Removed
 - denotes Coniferous Tree Removed
 - denotes Existing Tree Tag #
 - denotes Existing Tree
 - SF — denotes Pre-construction Silt Fence
 - — denotes Post-grading Silt Fence
 - denotes Construction Limits
 - denotes Drainage and Utility Easement
 - denotes Proposed Wetland Buffer Sign, Typ.
 - denotes Wetland Buffer
 - denotes Additional Wetland Buffer

Show restoration areas
by seeding type
(wetland buffer, storm
basin, general seeding,
etc), erosion control
blanket, sod, etc

Turn on storm sewer
and basins

Coordinate with
Planning Department
regarding replacement
trees per sec 125-90

MATCHLINE
SEE SHEET 10

REV. NO.	DATE	BY	DESCRIPTION

DESIGNED P.E.O.	DRAWN T.J.B.
CHECKED P.E.O.	

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Paul E. Otto
P.E. License # 40062
Date: 8-27-24



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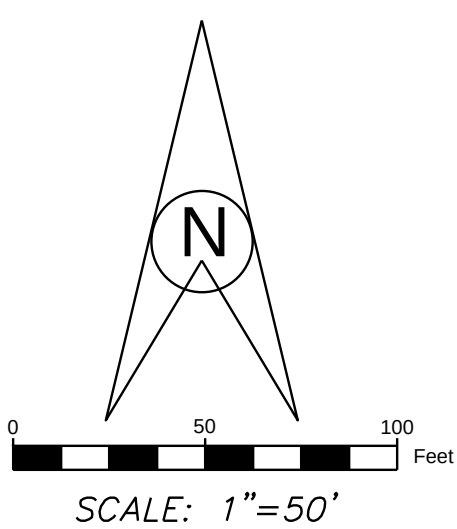
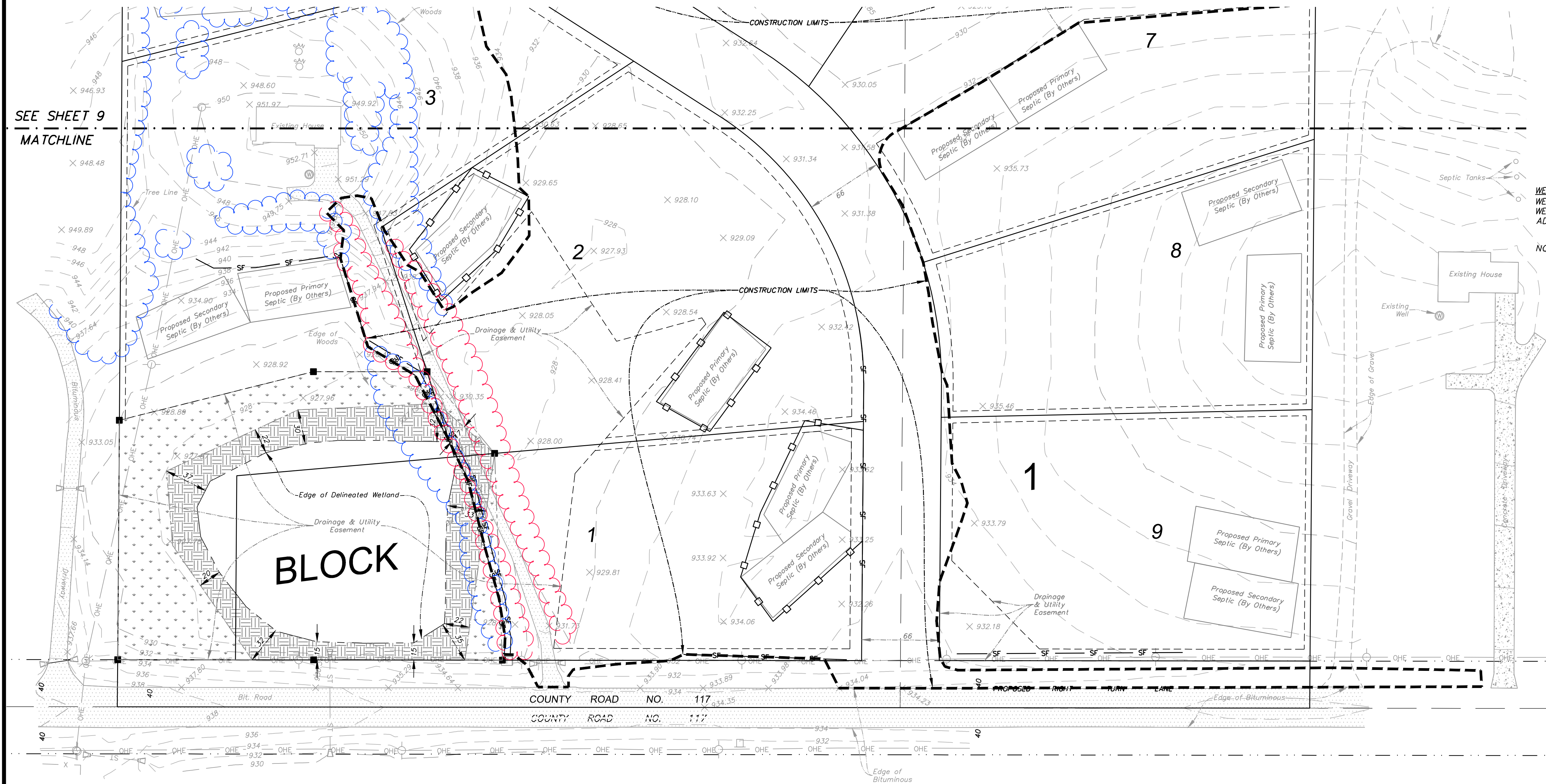
TAYLOR INLET
MIKE MOONEY
ROGERS, MN

PRELIMINARY WETLAND BUFFER &
TREE PRESERVATION PLAN (NORTH)

SHEET NO. 9 OF 10 SHEETS

PROJECT NO:
23-0189

DATE:
5-24-24



WETLAND BUFFER AREAS:
WETLAND BUFFER REQUIRED (25' AVERAGE) = 61,637 S.F.
WETLAND BUFFER PROPOSED = 61,638 S.F.
ADDITIONAL WETLAND BUFFER = 99,575 S.F.

NOTE: WETLANDS DELINEATED BY JACOBSON ENVIRONMENTAL, PLLC.

- LEGEND**
- 932 — denotes Existing Contour
 - 932.00 X denotes Existing Spot Elevation
 - denotes Existing Telephone Pedestal
 - denotes Existing Sign
 - denotes Existing Power Pole
 - denotes Existing Sanitary Cleanout
 - ⊙ denotes Existing Well
 - OHE — denotes Overhead Electric Line
 - X — denotes Fence Line
 - ▽ — denotes Existing Culvert
 - ▽ — denotes Delineated Wetland (By Others)
 - denotes Existing Edge of Woods to be Preserved
 - denotes Existing Edge of Woods to be Removed
 - denotes Deciduous Tree Saved
 - denotes Coniferous Tree Saved
 - denotes Deciduous Tree Removed
 - denotes Coniferous Tree Removed
 - 1 — denotes Existing Tree Tag #
 - denotes Existing Tree
 - SF — denotes Pre-construction Silt Fence
 - □ — denotes Post-grading Silt Fence
 - — denotes Construction Limits
 - — denotes Drainage and Utility Easement
 - denotes Proposed Wetland Buffer Sign, Typ.
 - denotes Wetland Buffer
 - denotes Additional Wetland Buffer

REV. NO.	DATE	BY	DESCRIPTION

DESIGNED DRAWN
P.E.O. T.J.B.

CHECKED
P.E.O.

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.

Paul E. Otto

Paul E. Otto
License # 40062 Date: 8-27-24



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MIKE MOONEY
ROGERS, MN

PRELIMINARY WETLAND BUFFER & TREE PRESERVATION PLAN (SOUTH)	PROJECT NO: 23-0189
SHEET NO. 10 OF 10 SHEETS	DATE: 5-24-24



STAFF REPORT

ROGERS PLANNING COMMISSION

Meeting Date: October 7, 2024

Agenda Item: 5.3

Subject: Application by Asguard Acquisitions, LLC for Variance and Site Plan Amendment Related to the Mixed Use Apartment at 21225 141st Avenue North (Asguard Addition Lot 2, Block 1)

Prepared By: Brett Angell, Community Development Director

Overview / Background / Analysis

In April 2022, the City of Rogers approved a three-phase redevelopment project by Asguard Acquisitions, LLC ("Applicant") related to the construction of a commercial restaurant as phase 1, a gas station/convenience store as phase 2, and a 71-unit mixed-use apartment building as phase 3. Said approvals for the development included the preliminary and final plats, site plans, and variances pertaining to front yard setbacks and lot coverage requirements. Since the time of initial approval, the final plat has been recorded and the construction of phase 1 has been completed with the newly constructed Broadway Pizza Bar and Restaurant now open to the public.

The Applicant is requesting an amendment to the plans for the mixed-use apartment building and a variance to City Code section 125-86 pertaining to the required number of enclosed parking spaces for the development. Per City Code requirements, a minimum of one space per dwelling unit is required to be enclosed.

Site Plan Amendment Request Overview

The Applicant has requested an amendment to the site plan which includes the reduction in the total amount of commercial space incorporated into the development, the inclusion of additional housing units, and some minor amendments related to stormwater ponding. Pertaining to the reduction in commercial space, the approved plans included a fitness center on the north side (front) of the building of approximately 20,000 square feet in total size. The Applicant has requested to alter the plans to no longer include the fitness center as a component of the development. The Applicant, or a related entity, had originally intended to own and operate the fitness center. Due to market conditions, they no longer wish to operate this business. The proposed building would still include approximately 6,670 square feet of commercial space divided into three spaces for a coffee user, a retail user, and an office user.

The proposed changes also include an alteration to what is above the retained commercial spaces to add additional dwelling units. The approved development plans included a total of 71 units. The proposed amendment would increase the total number of dwelling units to a total of 89 units (i.e. an increase of 18 units).

The proposed changes to the stormwater include the creation of a new bio-filtration

basin at the north end of the site. Per the approved plans, an underground retention system was planned under the parking lot on the north side of the property. The proposed plan to not have an underground system is based on the removal of the fitness component from the building allowing for the additional space to include a basin on the north side of the parking lot.

Other components of the development would remain consistent with the original approved plans. Additionally, with the potential removal of the fitness component from the building, staff anticipated that there would be a lower traffic impact at this location. The Applicant is anticipating a change to the proposed phasing of the development for the mixed-use building to begin construction before the convenience store. The Applicant will have to amend the development agreement based upon that change and this proposed change, if approved.

Variance Overview

The applicant is proposing to include 208 total stalls as part of the development, which includes the 72 enclosed stalls on the basement level of the building. This number is consistent with what was included in the initial approved plans. The original approvals included a parking plan due to original deficiency from code requirements for this phase of the development. Based upon the proposed amendments, the building would meet code requirements for the total number of stalls. The requested variance pertains to the number of enclosed stalls. Per code requirements, one (1) enclosed stall must be provided for each dwelling unit. The total number of enclosed stalls proposed is 72. The Applicant is requesting a variance from the enclosed stall requirement due to having 17 spaces fewer than required.

Criteria for Granting Variances

The Planning Commission must make findings of fact that the proposed variance is pursuant, but not limited to the following considerations:

1. Variances shall only be permitted when they are in harmony with the general purpose and intent of the city code and consistent with the Comprehensive Plan;
2. Variances may only be permitted when the application establishes that there are non-economic practical difficulties in complying with the zoning ordinance, meaning the property owner proposes to use the lot or parcel reasonably permitted by the zoning code;
3. The plight of the property owner must be due to circumstances that are unique to the lot or parcel and that are not created by the property owner;
4. The variance must not alter the essential character of the locality, including all zoning district and overlay district provisions.

Rogers code also includes the following variance standards (beyond state statute):

5. Under the circumstances, the public interest underlying the proposed variance outweighs the public interest underlying the particular regulation for which the variance is granted; and
6. The grant of the variance will not be injurious to other properties and will not prevent the orderly subdivision of other property in the area, in accordance with these

regulations.

Each variance request is processed and evaluated on its own merits. The Planning Commission should consider if the request meets the variance criteria as listed above. The following should be considered with determining the request: Does the proposal put property to use reasonably? Are there unique circumstances to the property not created by the landowner? Will the variance, if granted, alter the essential character of the area? State statute specifically notes that economic considerations alone cannot create practical difficulties.

Applicants Reasoning

The Applicant provided details related to their reasoning for the need of a variance in the attached narrative. The below points will summarize the reasoning related to the above-mentioned review criteria:

1. The request is consistent with City Code and the Comprehensive Plan because the proposed plan still meets the total required number of spaces related to the use of the property.
2. The request is reasonable as it will not create an undue or spillover effect on parking on any adjacent properties as code requirements for total spaces are met.
3. Due to the water table at this location, it is not possible to add another level of parking underground. Additionally, it would be challenging to place any accessory garage buildings due to the adjacent wetland and in a manner that does not impact access around the building.
4. The proposed variance would not alter the character of the proposed development nor the surrounding areas since the adjacent uses are institutional or commercial.

Staff Recommendation

Staff recommend the Planning Commission open the public hearing for comments related to the variance request.

Motion to recommend approval of Resolution 2024-97 for a variance and site plan amendments related to the mixed use apartment at 21225 141st Avenue North (Asguard Addition), subject to conditions defined in the resolution.

Financial Impact: Not Applicable.

Source Fund: Not Applicable.

Budgeted? N/A

Supporting Documentation

- A. Draft Resolution No. 2024-97
- B. Location Map
- C. Updated Plans and Maps

- D. Updated Architectural Renderings
- E. Applicant Variance Worksheet

RESOLUTION NO. 2024-97

APPROVING A VARIANCE AND AMENDMENTS TO THE SITE PLAN RELATED TO THE MIXED-USE APARTMENT AT 21225 141ST AVENUE NORTH (ASGUARD ADDITION)

WHEREAS, Asguard Acquisitions, LLC (“Applicant”) have submitted applications to the City of Rogers (“City”), requesting approval of a Site Plan Amendment and a Variance for alterations to the development plans at 21225 141st Avenue North – Asguard apartments. Site plan amendments include the eliminate of approximately 20,000 square feet of commercial space and the addition of 18 dwelling units (for a total of 89 units). The proposed variance is related to enclosed parking stall counts; and

WHEREAS, the property is 5.31 acres and zoned Regional Employment Center (RC), located at 21225 141st Avenue N and legally described in Exhibit A (“Subject Property”) (PID: 14-120-23-11-0006); and

WHEREAS, on April 26th, 2022, the Rogers City Council approved development plans for the Asguard mixed-use development and have entered into a Development Agreement for said development which the Applicant is seeking to amend; and

WHEREAS, the Asguard mixed-use development is part of a larger three phase development project which also included a restaurant and a gas station/convenience store; and

WHEREAS, section 125-27 – Site Plan governs the procedures around site plan review processes, and subsection (b) states: “the Planning Commission shall evaluate the effects of the proposed site plans. This review shall be based upon, but not be limited to, compliance with the City’s Comprehensive Plan and provisions of this Ordinance”; and

WHEREAS, the proposed use at the Subject Property for a mixed-use apartment building is a permitted uses in the RC zoning district (§125-50 Table 4E); and

WHEREAS, pursuant to Minnesota Statute §462.357, the Planning Commission (“Commission”) held a Public Hearing (“Hearing”) on October 7, 2024 to consider and receive public comment on the variance request; and

WHEREAS, notice of the Hearing was posted, published in the City’s official newspaper, mailed to any and all owners of affected properties, as required by State Statute; and,

WHEREAS, on October 7, 2024, the Commission reviewed the request and voted unanimously to recommend approval to the City Council of the Site Plan Review, with the following conditions:

- a. All engineering comments shall be satisfied prior to construction.
- b. Any necessary Elm Creek Watershed Permitting and Requirements shall be met prior to construction.

- c. SAC Determination shall be submitted to the Metropolitan Council and all building and connection fees paid prior to issuance of the building permit.
- d. The applicant must enter into amendments to the previously approved Development Agreement related to these changes prior to the issuance of a building permit.

WHEREAS, following the Hearing, the Commission recommended approval of the variance request for the number of enclosed parking stalls provided based on the following findings of fact:

1. Asguard Acquisitions, LLC is the owner of a parcel of land located at 21225 141st Avenue North, Rogers, MN 55374; and
2. The subject property is legally described as found in Exhibit A; and
3. The Applicant has applied to the City for a variance to City Code 125-86 related to the requirement for one (1) enclosed parking space per dwelling unit; and
4. The proposal would vary from the Code requirement via providing 72 enclosed stalls rather than the required 89 spaces; and
5. Following a public hearing on the application, the Rogers Planning Commission has recommended approval of the variance on October 7, 2024; and
6. The City Council of the City of Rogers reviewed the requested variance at its October 22nd, 2024 meeting; and
7. Variances are guided by applicable State Statute Section 462.357 Subd. 6 and City Ordinance Section 125-42(c); and
8. The Applicant is satisfying minimum parking standards, as required by City Code 125-86, within the Development Site pertaining to total number of stalls provided; and
9. The Applicant is not able to provide additional enclosed stalls below the building due to the water table at the property;
10. The Variance is in harmony with the general purpose and intent of City Code, and is consistent with the character of other uses in the zoning district.
11. There are non-economic practical difficulties in complying with the zoning ordinance, and the Variance is the result of circumstances caused by the City Code requirements related to the development.

NOW THEREFORE, BE IT RESOLVED, BY THE CITY COUNCIL OF THE CITY OF ROGERS, MINNESOTA, the Site Plan Review and Variance requests from Asguard Acquisitions, LLC are hereby approved for the amendments to the approved site plan related to the reduction of commercial space provided and additional residential units included in the development, and a variance from City Code 125-86 Parking requirements related to the development included 72 of the required 89 enclosed parking spaces based on the conditions found in this resolution.

Moved by Councilmember _____, seconded by Councilmember _____

The following voted in favor of said resolution:

The following voted against the same:

The following abstained:

Whereupon said resolution was declared duly passed and adopted, and was signed by the Mayor, and attested by the City Clerk dated this 22nd day of October 2024.

Rick Ihli, Mayor

ATTEST:

Stacie Brown, City Clerk

EXHIBIT A
LEGAL DESCRIPTION

Subject Property

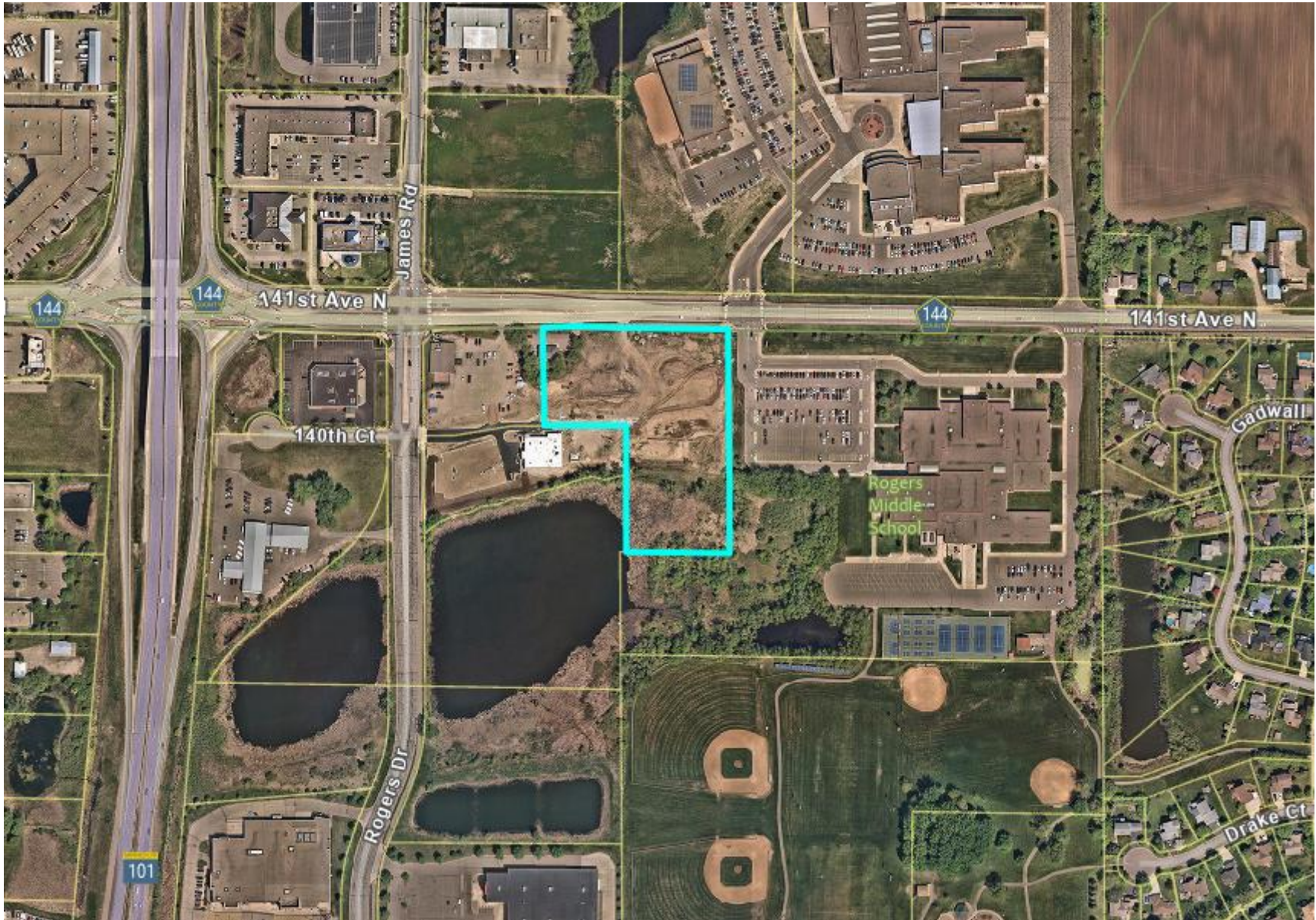
LOT 2, BLOCK 1, ASGUARD ADDITION, HENNEPIN COUNTY, MINNESOTA

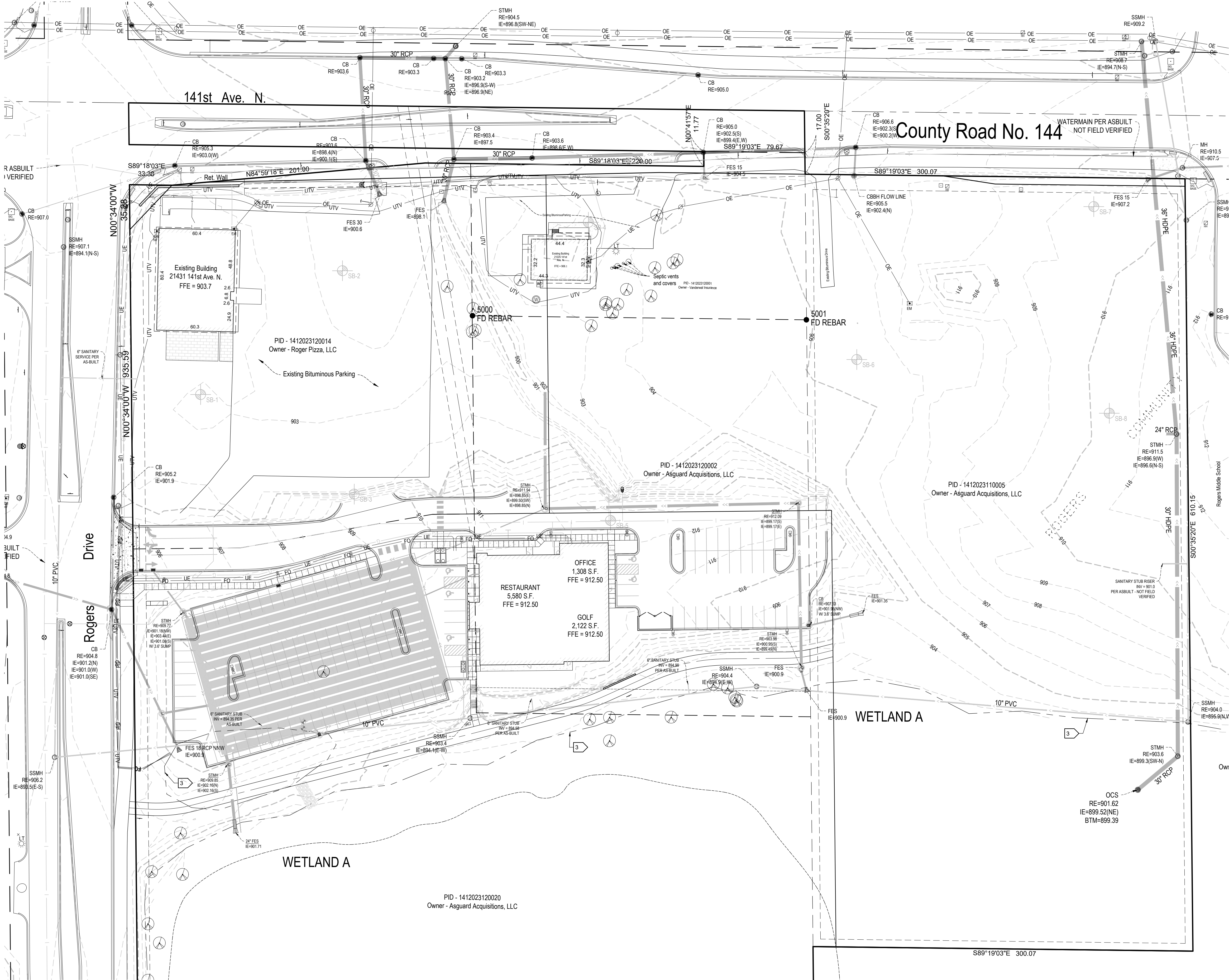
Torrens Property

PID #14-120-23-11-0006



LOCATION MAP





- EXISTING CONDITIONS**
- Background information shown is from survey by Landform, Minneapolis, MN, on August 19, 2020, expressly for this project. City of Rogers, MN record drawings; and utility service providers. Landform offers no warranty, expressed or written, for information provided by others. Existing project conditions shall be verified prior to beginning construction. Errors, inconsistencies, or omissions discovered shall be reported to the Engineer IMMEDIATELY.
 - Geotechnical boring locations are approximate and are based on information provided in the Geotechnical Report prepared by Independent Testing Technologies, INC., Waite Park, MN, on July, 26, 2019.
 - Wetland delineation prepared by Bopray Environmental dated October 16, 2019, and accepted October 31, 2019.

DEVELOPER

ASGUARD ACQUISITIONS, LLC.
7535 River Road Northeast
Olsego, MN 55330
TEL 612-598-3920

MUNICIPALITY

ROGERS MN

PROJECT

ASGUARD PHASE 2
ROGERS, MN

ISSUE / REVISION HISTORY

CONTACT ENGINEER FOR ANY PRIOR HISTORY		
DATE	ISSUE / REVISION	REVIEW
AUG 28 2024	CLIENT REVIEW SET	SES

CERTIFICATION

I hereby certify that this survey, plan, or report was prepared by me or under my direct supervision and that I am a duly Licensed Land Surveyor under the laws of the state of Minnesota.

Larry Hulby
Larry Hulby
License No. 24332 Date: 03/29/2022

Signature shown is a digital reproduction of original. Wet signed copy of this plan on file at Landform Professional Services, LLC office and is available upon request.

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CLIENT REVIEW SET
08.28.2024

LANDFORM
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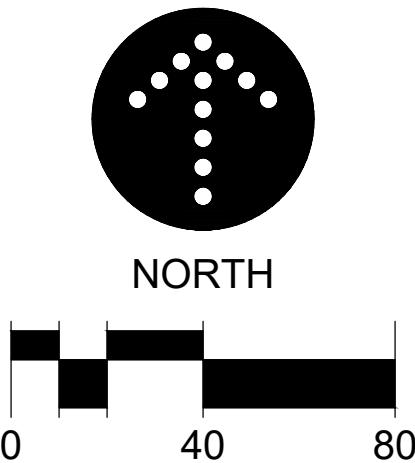
105 South Fifth Avenue
Suite 513
Minneapolis, MN 55401

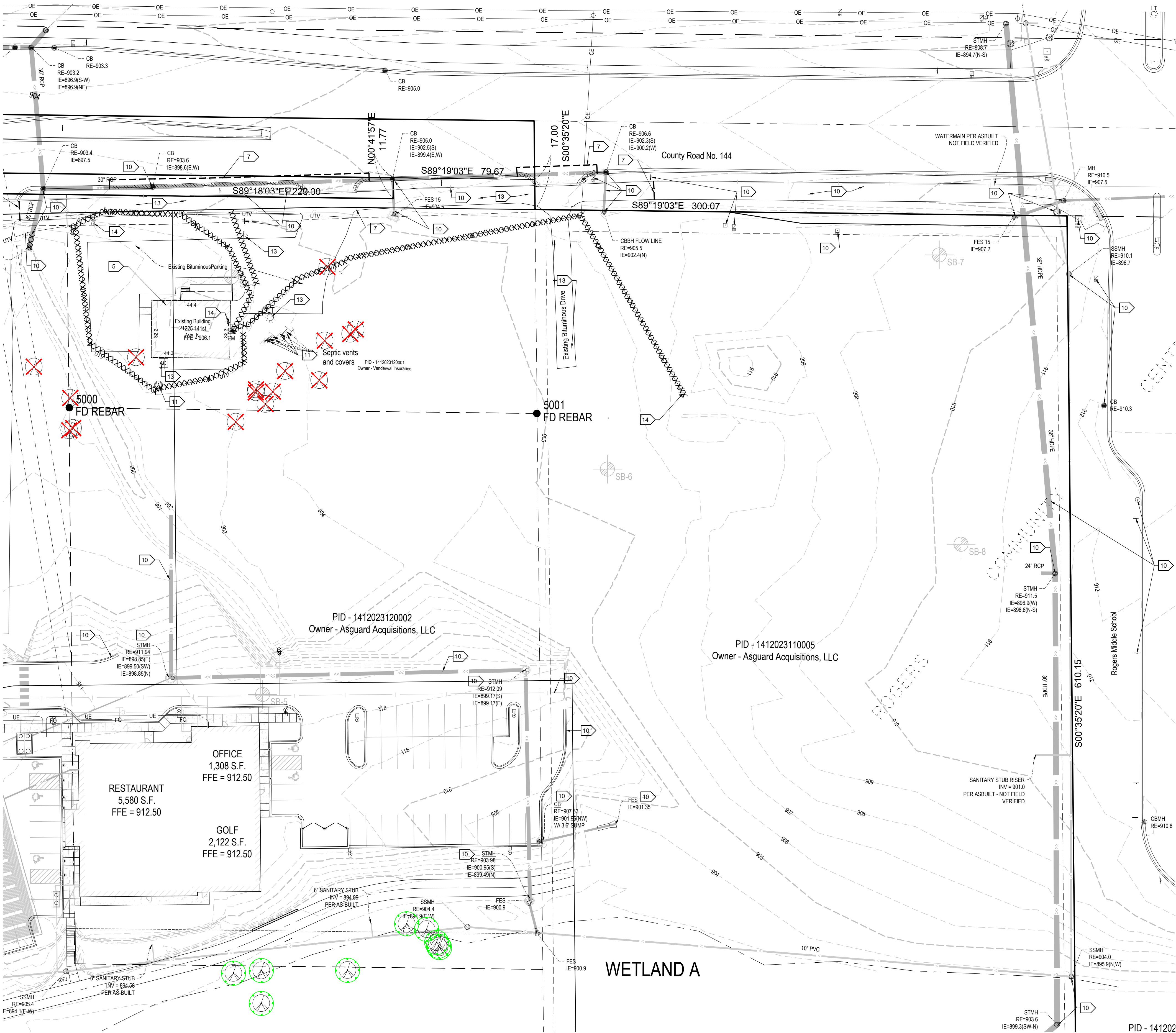
Tel: 612-252-9070
Fax: 612-252-9077
Web: landform.net

FILE NAME C101ASG001-001.DWG
PROJECT NO. ASG20001-001

EXISTING CONDITIONS

C1.1





GENERAL NOTES

- For construction staking and surveying services contact Landform at 612.252.9070.
- Obtain permits for demolition, clearing, and disposal prior to beginning.
- Contact utility service providers for field location of services 72 hours prior to beginning demolition and clearing.
- See Sheet C3.1 for erosion prevention and sediment control measures that must be in place prior to disturbances to site.
- Building demolition: verify with owner that building has been cleared of regulated materials requiring special handling or disposal. Remove structure, columns, canopies, footings, foundations, and any associated construction in its entirety. Refer to Architectural and Structural for removal limits.
- Dimensions shown for removal are approximate. Coordinate with new construction to ensure appropriate removal of existing facilities.
- Pavement sawcut. Remove concrete walks and curbing to the nearest existing joint beyond construction limits.
- Complete demolition with minimal disruption of traffic. Coordinate lane closures with the regulatory authority and provide advance notification to affected emergency response providers.
- Provide barricades, lights, signs, traffic control, and other measures necessary for protection and safety of the public and maintain throughout construction.
- Protect structures, utilities, trees, plant material, sod, and adjacent property from damage during construction unless noted for removal. Damage shall be repaired to equal or better condition at no additional cost.
- Abandon wells and remove on site sewage facilities prior to any other demolition in accordance with requirements of regulatory authorities.
- Remove trees noted, including root structures, from the site. Coordinate with owner to mark trees to be saved or transplanted prior to clearing.
- Remove existing site features including, but not limited to, underground utilities, paving, curbing, walkways, fencing, retaining walls, screen walls, aprons, lighting, related foundations, signage, bollards, landscaping, and stairways within the construction limits unless noted otherwise.
- Coordinate removal, relocation, termination, and re-use of existing private utility services and appurtenances with the utility companies. Restore electric handholes, pullboxes, powerpoles, guylines, and structures disturbed by construction in accordance with utility owner requirements.
- Existing piping and conduits may be abandoned in-place if filled with sand and if not in location of proposed building or in conflict with proposed utilities or structures. Terminate existing services at the supply side in conformance with provider's standards.
- Haul demolition debris off-site to a facility approved by regulatory authorities for the handling of demolition debris, unless noted otherwise.

LEGEND

- Tree Removal
- Tree Protection
- Tree To Be Protected and Transplanted
See Landscape Plan (L2.1) for Relocation
- Structure and / or Pavement Removal
- Soil Boring
- Curb Removal
- Utility Line Removal
- Construction Limits

DEVELOPER

ASGUARD ACQUISITIONS, LLC.
7535 River Road Northeast
Olsego, MN 55330
TEL 612-598-3920

MUNICIPALITY



PROJECT

ASGUARD
PHASE 2
ROGERS, MN

ISSUE / REVISION HISTORY

DATE	ISSUE / REVISION	REVIEW
AUG 28 2024	CLIENT REVIEW SET	SES

CERTIFICATION

I hereby certify that this plan was prepared by me, or under my direct supervision, and that I am a duly Licensed Professional Engineer under the laws of the state of MINNESOTA.

Steven E. Sabrowski
License No. 47185

Signature shown is a digital reproduction of original. Web signed copy of this plan on file at Landform Professional Services, LLC office and is available upon request.

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CLIENT REVIEW SET

08.28.2024



105 South Fifth Avenue
Suite 513
Minneapolis, MN 55401

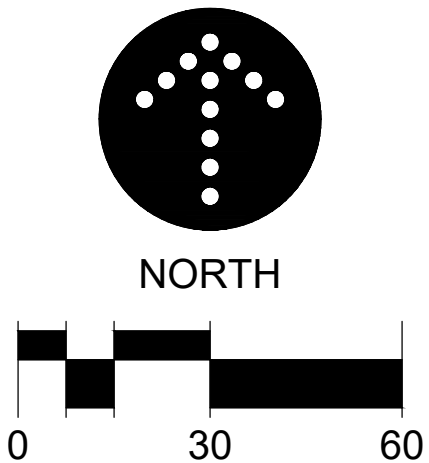
Tel: 612-252-9070
Fax: 612-252-9077
Web: landform.net

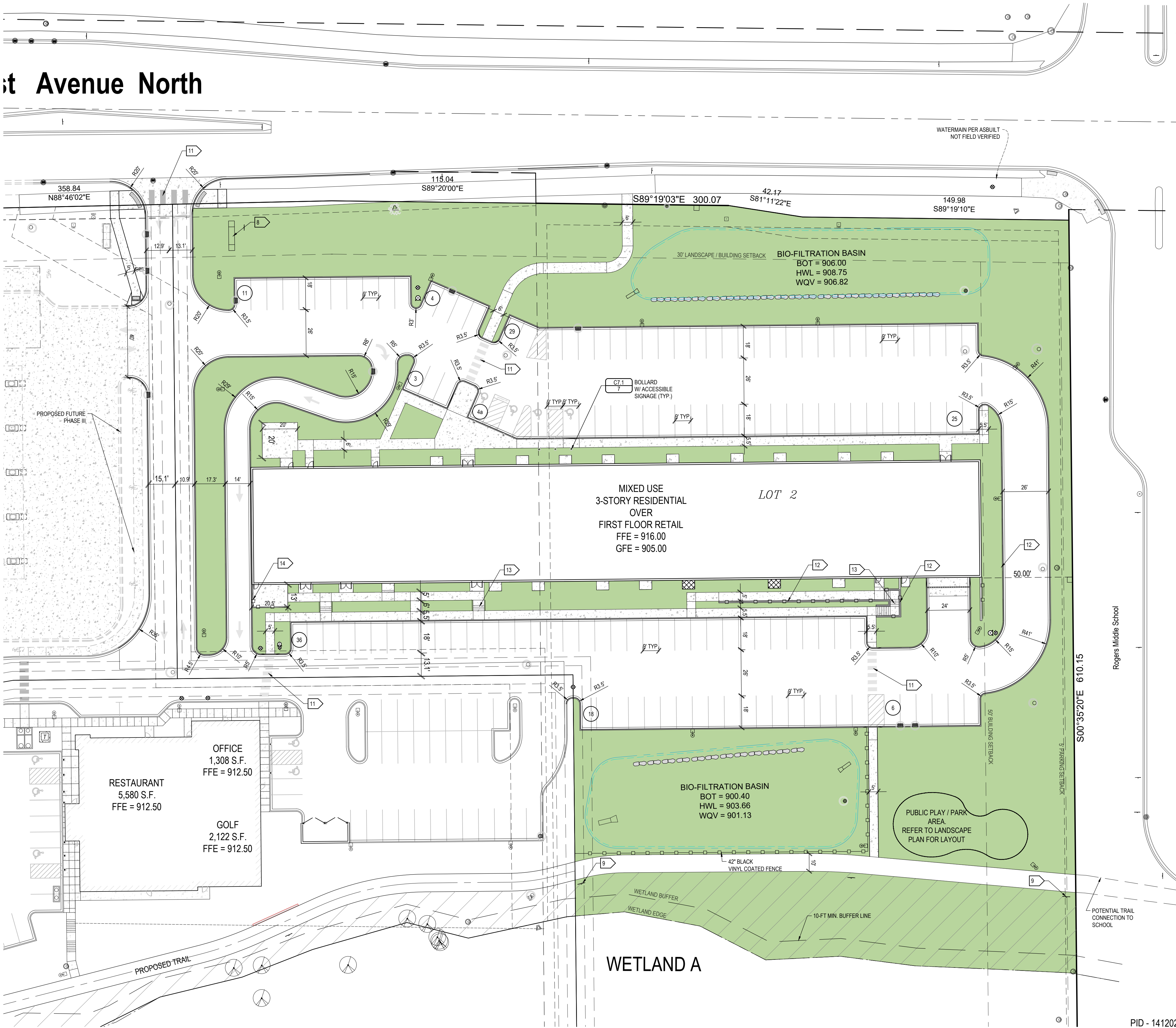
FILE NAME C102ASG001-001.DWG

PROJECT NO. ASG20001-001

DEMOLITION PLAN

C1.2





- GENERAL NOTES
1. For construction staking and surveying services contact Landform at 612.252.9070.
- SITE PLAN NOTES
2. Obtain all necessary permits for construction within, or use of, public right-of-way.
3. The digital file, which can be obtained from the Engineer, shall be used for staking. Discrepancies between the drawings and the digital file shall be reported to the Engineer. The building footprint, as shown on these drawings, and the digital file, shall be compared to the structural drawings prior to staking.
4. Building layout angles are parallel with or perpendicular to the property line at the location indicated.
5. Dimensions shown are to face of curb and exterior face of building unless noted otherwise.
6. Delineate parking stalls with a 4-inch wide white painted stripe. Delineate access aisles with 4-inch wide white painted stripes 18 inches on center and at 45 degree angle to direction of travel.
7. Trash / Recycling areas: See Architectural drawings.
8. Monument Sign
9. Furnish and install wetland buffer monument signage in accordance with Elm Creek Watershed Management Commission. Signs shall include warnings that restrict mowing, disturbing, or development with buffer. Signs to be placed at each parcel line with a maximum spacing of 200 feet between signs.
10. Furnish and install 42" (min.) high black aluminum ornamental fence.
11. 2' X 5' painted white crosswalk bars per MnDOT specifications.
12. Retaining wall with hand rail and/or safety fence. Refer to Architectural plans.
13. Concrete stairs with hand rail. Refer to Architectural plans.
14. Hand rail. Refer to Architectural Plans.

LAND USE AND ZONING SUMMARY

2040 Comprehensive Plan: Mixed Use Regional
Zoning: Regional Employment Center

Proposed Variances:

Building Setback Information is as follows:
Maximum Front Yard = 30 ft.
Rear = 20 ft.
Maximum Side (street) = 25 ft.
Maximum Side (street) = 30 ft.
Side (interior) = 20 ft.
Side (interior-multi-family residential) = 15 ft.

Parking Setback Information is as follows:
Maximum Front Yard = 30 ft.
Rear = 10 ft.
Maximum Side (street) = 30 ft.
Side (interior) = 5 ft.

Unit Density Requirements: 8.0 - 60.0 units per net acre
Proposed Unit Density:
Lot 1: n/a
Lot 2: 71 Units / 4.05 net acres = 17.5 units per acre
Lot 3: n/a

1. Variance Requested for Building & Parking Maximum Front
Yard Setback = 30 ft.
- Lot 1 Building Setback = 41.84'
- Lot 2 Building Setback = 103.12'
- Lot 3 Building Setback = 265.31'
- Lot 2 Parking Setback = 22.74'

2. Variance Requested for Maximum Impervious Coverage
Maximum Impervious Required = 65%
Proposed Impervious = 70%

AREA SUMMARY

Total Existing:				
Pervious	170,023 s.f.	3.90 ac.	73.8%	
Impervious	6,469 s.f.	0.15 ac.	2.8%	
Wetland	53,973 s.f.	1.24 ac.	23.4%	
Total	230,465 s.f.	5.29 ac.	100.0%	
Total Proposed:				
Pervious	80,053 s.f.	1.84 ac.	34.7%	
Impervious	96,439 s.f.	2.21 ac.	41.9%	
Wetland	53,973 s.f.	1.24 ac.	23.4%	
Total	230,465 s.f.	5.29 ac.	100.0%	

PARKING SUMMARY

Required Parking: Mixed Use: Residential, Retail, & Fitness

Apartment - two spaces per dwelling unit.
71 Units
71 units x 2 spaces = 142 Stalls

Retail / Office - 5 spaces per 1,000 sq. ft. of gross floor area
4,421 S.F.
4,421 S.F. / 1,000 S.F. x 5 spaces = 22 stalls

Restaurant (Dining) - One space per 40 sq. ft. of dining room area
1,000 S.F.
1,000 S.F. / 40 spaces = 25 stalls

Restaurant (Kitchen) - One space per 80 sq. ft. of kitchen and food prep area
1,500 S.F.
1,500 S.F. / 80 spaces = 19 stalls

Fitness Center - One space per 200 sq. ft. of gross floor area
20,525 S.F.
20,525 S.F. / 200 S.F. = 103 Stalls

Total Parking Stalls Required 311 ea.

Provided Parking: Mixed Use: Residential, Retail, & Fitness

Standard Stalls (9x18) 132 ea.

Underground Garage Standard Stalls (9x18) 71 ea.

Accessible Stalls (9x18) 4 ea.

Total Parking Stalls Provided 207 ea.

LEGEND

	Green Space (Landscape Area)
	Wetland Buffer Area (22,740 +/- SF)
	Raised Balcony

DEVELOPER

ASGUARD ACQUISITIONS, LLC.
7535 River Road Northeast
Olsego, MN 55330
TEL 612-598-3920

MUNICIPALITY

ROGERS
MN

PROJECT

ASGUARD
PHASE 2
ROGERS, MN

ISSUE / REVISION HISTORY

DATE	ISSUE / REVISION	REVIEW
AUG 28 2024	CLIENT REVIEW SET	SES

CERTIFICATION

I hereby certify that this plan was prepared by me, or under my direct supervision, and that I am a duly Licensed Professional Engineer under the laws of the state of MINNESOTA.

Steven E. Szewski
License No. 47185

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CLIENT REVIEW SET
08.28.2024

LANDFORM
From Site to Finish

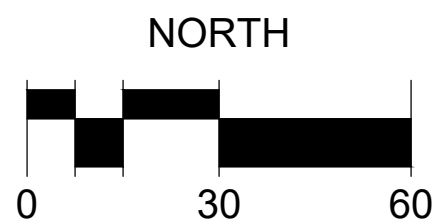
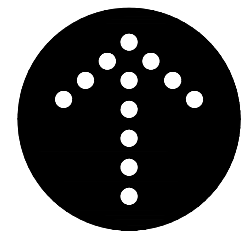
105 South Fifth Avenue
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Minneapolis, MN 55401
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PROJECT NO. ASG20001-001

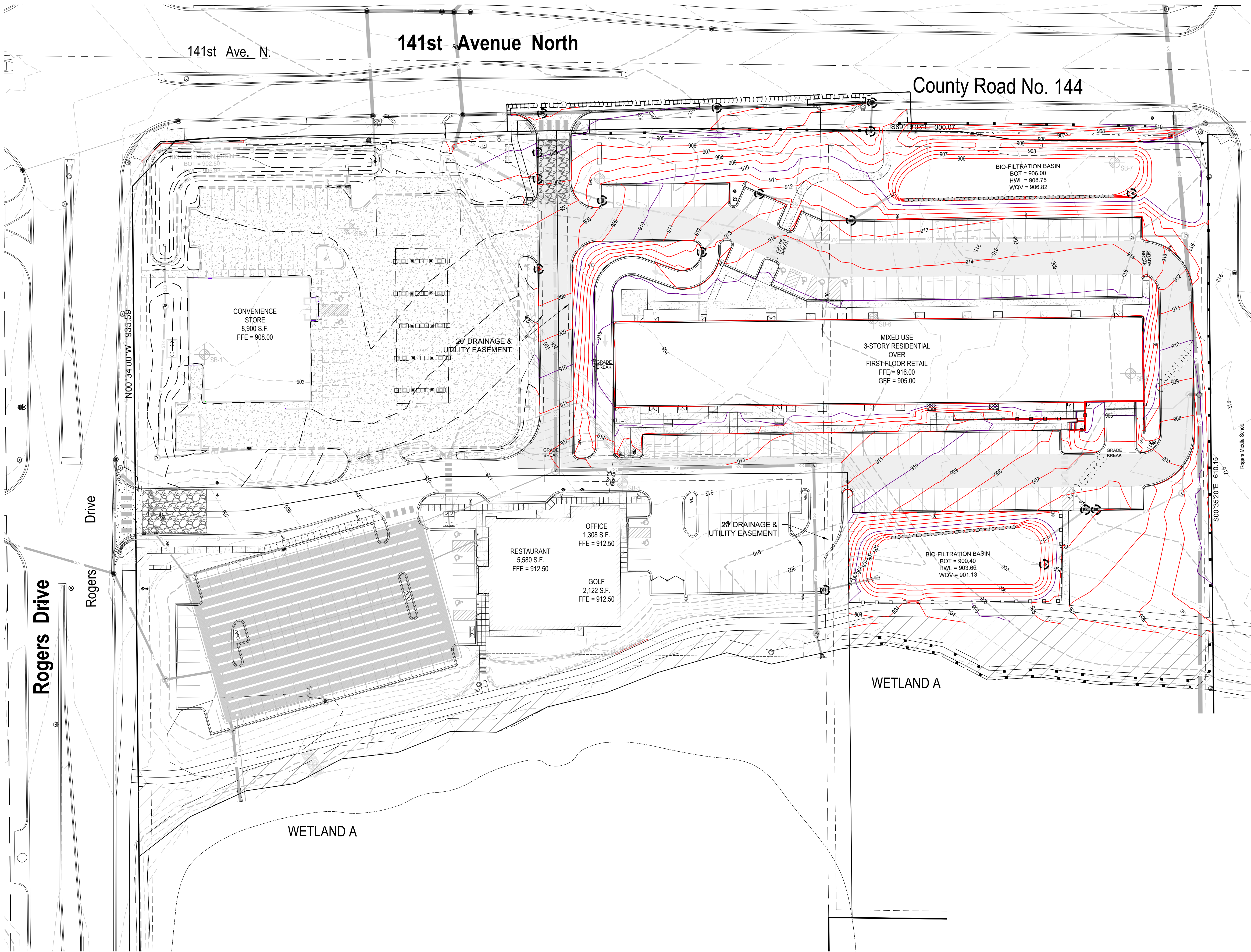
Tel: 612-252-9070
Fax: 612-252-9077
Web: landform.net

SITE PLAN
C2.1



Know what's Below.
Call before you dig.





- GENERAL NOTES

1.

For construction staking and surveying services contact Landform at 612.252.9070.

2.

Install perimeter sediment controls prior to beginning work and maintain for duration of construction. Remove controls after areas contributing runoff are permanently stabilized and dispose of off site.

3.

Install inlet protection: Winco RD or CG models as appropriate, or approved equal. Maintain protection until project is stabilized.

4.

Limit soil disturbance to the grading limits shown. Schedule operations to minimize length of exposure of disturbed areas.

5.

Management practices shown are the minimum requirement. Install and maintain additional controls as work proceeds to prevent erosion and control sediment carried by wind or water.

6.

Refer to SWPPP Notes on Sheet C3.4 for additional requirements.

7.

Contractor shall prevent sediment laden water from entering the filtration system until the site is completely stabilized.

8.

All exposed soil areas must be stabilized within 72 hours of completion of work in each area.

9.

Seed, Sod, Mulch, Erosion Control Blanket, and Fertilizer shall meet the following Specifications, as modified.

Item

Specification Number

Seed

MNDOT 3878

MN Type 21-111 @ 100 lb./ac. - Temporary Erosion Control - Temporary Erosion Control, May 1 - Jul 31

MN Type 21-112 @ 100 lb./ac. - Temporary Erosion Control - Temporary Erosion Control, Aug 1 - Oct 31

MN Type 25-141 @ 59 lbs./ac. for General Roadside, 25-151 @ 120 lb./ac. for Residential Turf - Permanent Turf

Mulch

MNDOT 3876

(MNDOT Type 1 @ 2 ton/ac.

Erosion Control Blanket

MNDOT 3885

(MNDOT Type 3N (12 mo.) 4N (24 mo.))

Fertilizer

MNDOT 3881

General Placement

MNDOT 2575

10.

See Landscape Sheets for permanent turf and landscape establishment.

11.

Scrape adjacent streets clean daily and sweep clean weekly.
- GRADING NOTES

12.

Contact utility service providers for field location of services 72 hours prior to beginning grading.

13.

Refer to the Geotechnical Report prepared by Independent Testing Technologies, INC., Dated 07/26/19, for additional information on backfill material and groundwater conditions.

14.

Remove topsoil from grading areas and stockpile sufficient quantity for reuse. Materials may be mined from landscape areas for use on site and replaced with excess organic material with prior Owner approval.

15.

Remove surface and ground water from excavations. Provide initial lifts of stable foundation material if exposed soils are wet and unstable.

16.

Rough grade Building Pad to 12 Inches below Finished Floor Elevation (FFE).

17.

Refer to Structural Specifications for earthwork requirements for building pads.

18.

An Independent Testing Firm shall verify the removal of organic and unsuitable soils, soil correction, and compaction and provide periodic reports to the Owner.

19.

Place and compact fill using lift thicknesses matched to soil type and compaction equipment to obtain specified compaction throughout the lift.

20.

Compact cohesive soils in paved areas to 95% of maximum dry density, Standard Proctor (ASTM D698) except the top 3 feet which shall be compacted to 100%. Compact to 98% density where fill depth exceeds 10 feet. The soils shall be within 3% of optimum moisture content. In granular soils all portions of the embankment shall be compacted to not less than 95% of Modified Proctor Density (ASTM D1557).

21.

Coordinate with Architectural for building stoop locations. Slopes shown on adjacent walks and pavements should continue over stoops.
- WET CAST/DRY CAST RETAINING WALL NOTES

22.

Dry Cast Concrete Segmental Retaining Wall. Color to be determined by Owner or Architect.

23.

Provide structural design of retaining walls, following MNDOT Retaining Wall specifications for minimum design and performance. Provide construction of walls in accordance with approved design.

24.

Confirm architectural requirements for wall units with owner.

25.

Submit design to City for approval prior to Building Permit issuance.

26.

Provide coordination and assurance that related work constructed within the reinforced earth zone, including fences, underground utilities, guard rails, etc., is in accordance with approved design and does no damage to reinforcing elements of the retaining wall.
- PAVING NOTES

27.

Spot Elevations at curblines indicate flowlines unless noted otherwise. See Sheet C4.1 for rim elevations of catch basins.

28.

Grades between proposed spot elevations shall be continuous and nonvariable. Spot Elevations shall govern over contour lines.

29.

Meet and Match existing curb. Transition as needed.

30.

Paving Sections (Refer to Geotechnical Report by Independent Testing Technologies, Inc., Dated 09-13-19)

a.

Bituminous Paving (Light Duty)

b.

Bituminous Paving (Heavy Duty)

c.

Concrete Walkways

4-inch Concrete Walk, 4000 PSI, 5%-8% Air Entrained, Max. 4" Slump (MNDOT 2301)

4-inch Aggregate Base (MNDOT 3138)

Compacted Subsoil

d.

Concrete Drives, Aprons, and Exterior Slabs

31.

Concrete Joints

Install joints as shown and align across sidewalks, curbs, and pavement, paying attention to spacing of expansion joints. Joint spacing shall be as follows:

a.

Tooled joints: Divide panels into nominally equal areas unless shown otherwise.

b.

Expansion Joints: Sidewalks - 40 feet max.; Curbs - 60 feet max.; Pavement: 80 feet max.; Adjacent to building foundations and stoops.

c.

Contraction Joints: Sidewalks - 8 to 10 feet; Curbs and Aprons - 12 to 15 feet.

32.

Accessible Parking Stalls and adjacent access aisles shall not exceed a 2.00% slope in any direction.

33.

Accessible Routes shall have a maximum cross slope of 2.00% and a maximum running slope of 5.00%.

34.

Adjust all structure rims to match pavement elevations.

35.

Transition from B612 Concrete Curb & Gutter to Ribbon Curb.

LEGEND

SYMBOL

DESCRIPTION

ESTIMATED QUANTITY

Inlet Protection

18 ea.

Silt Fence

1,421 ft.

Compost or Bio Log

229 ft.

Vehicle Tracking Pad

2,900 s.f.

Tip Out Curb

Pavement Sawcut

Construction Limits

Top of Wall

Bottom of Wall

Wetland Buffer Area

22,622 s.f.

PEDESTRIAN CURB RAMP

DEVELOPER

ASGUARD ACQUISITIONS, LLC.

7535 River Road Northeast
Olsego, MN 55330
TEL 612-598-3920

MUNICIPALITY

PROJECT

ASGUARD
PHASE 2
ROGERS, MN

ISSUE / REVISION HISTORY

CONTACT ENGINEER FOR ANY PRIOR HISTORY

DATE

ISSUE / REVISION

REVIEW

AUG 28 2024

CLIENT REVIEW SET

SES

CERTIFICATION

I hereby certify that this plan was prepared by me, or under my direct supervision, and that I am a duly Licensed Professional Engineer under the laws of the state of MINNESOTA.

Steven E. Szarewski

License No. 47185

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CLIENT REVIEW SET

08.28.2024

LANDFORM

From Site to Finish

105 South Fifth Avenue
Suite 513
Minneapolis, MN 55401

Tel: 612-252-9070
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FILE NAME C301ASG001-001.DWG

PROJECT NO. ASG20001-001

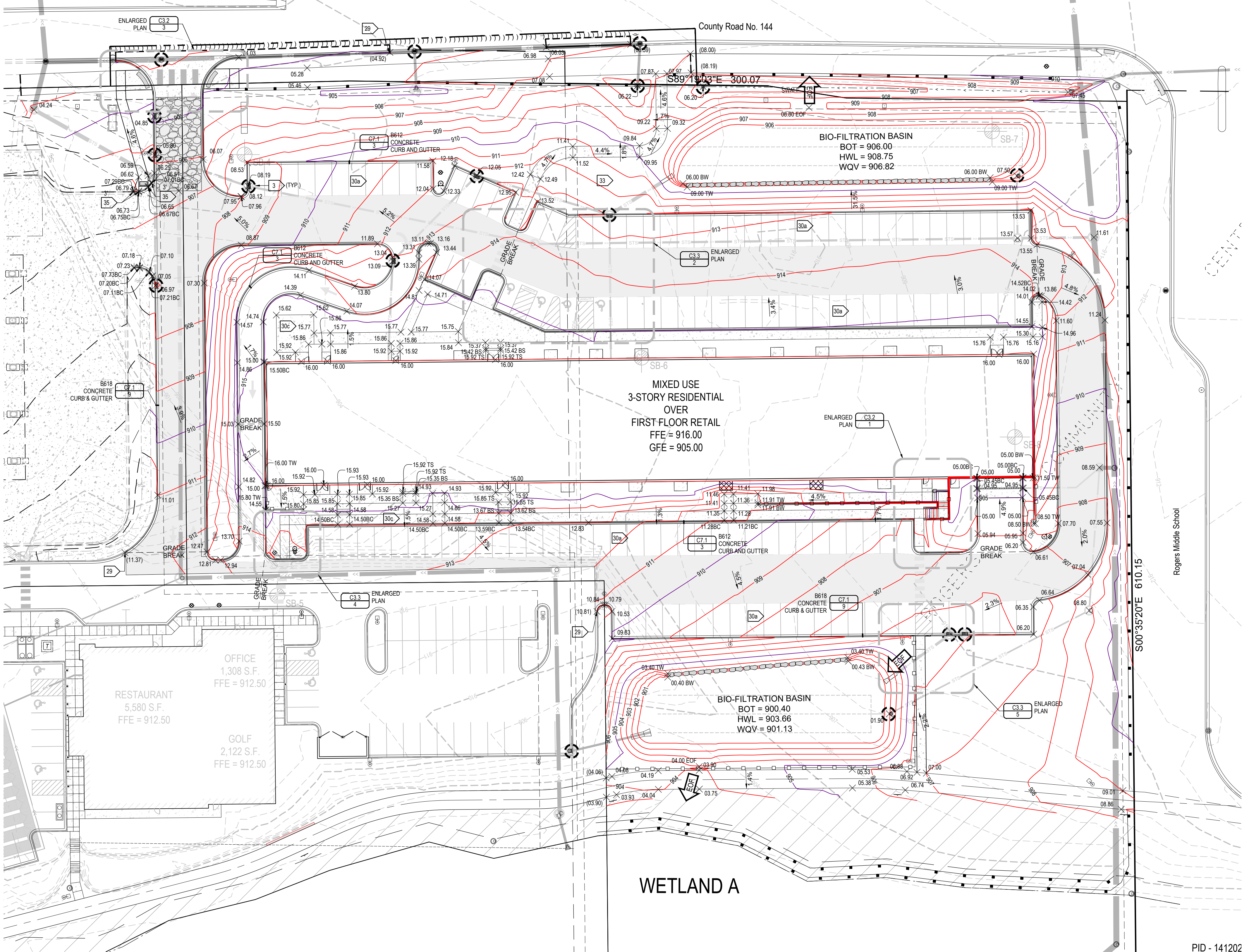
OVERALL GRADING, DRAINAGE, PAVING AND EROSION CONTROL - OVERALL

C3.1

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at Avenue North



PID - 141202

- GENERAL NOTES
- EROSION PREVENTION AND SEDIMENT CONTROL NOTES
1. For construction staking and surveying services contact Landform at 612.252.9070.
2. Install perimeter sediment controls prior to beginning work and maintain for duration of construction. Remove controls after areas contributing runoff are permanently stabilized and dispose of off site.
3. Install inlet protection: Winco RD or CG models as appropriate, or approved equal. Maintain protection until project is stabilized.
4. Limit soil disturbance to the grading limits shown. Schedule operations to minimize length of exposure of disturbed areas.
5. Management practices shown are the minimum requirement. Install and maintain additional controls as work proceeds to prevent erosion and control sediment carried by wind or water.
6. Refer to SWPPP Notes on Sheet C3.4 for additional requirements.
7. Contractor shall prevent sediment laden water from entering the filtration system until the site is completely stabilized.
8. All exposed soil areas must be stabilized within 72 hours of completion of work in each area.
9. Seed, Sod, Mulch, Erosion Control Blanket, and Fertilizer shall meet the following Specifications, as modified.

Item	Specification Number
Sod	MNDOT 3878
Seed	MNDOT 3876
MN Type 21-111 @ 100 lb./ac. - Temporary Erosion Control - Temporary Erosion Control, May 1 - Jul 31	
MN Type 21-112 @ 100 lb./ac. - Temporary Erosion Control - Temporary Erosion Control, Aug 1 - Oct 31	
MN Type (25-141 @ 59 lbs./ac. for General Roadside, 25-151 @ 120 lb./ac. for Residential Turf) - Permanent Turf	

Mulch	MNDOT 3882
Erosion Control Blanket	MNDOT 3885
Fertilizer	MNDOT 3881
General Placement	MNDOT 2575
10. See Landscape Sheets for permanent turf and landscape establishment.
11. Scrape adjacent streets clean daily and sweep clean weekly.

- GRADING NOTES
12. Contact utility service providers for field location of services 72 hours prior to beginning grading.
13. Refer to the Geotechnical Report prepared by Independent Testing Technologies, INC., Dated 07/26/19, for additional information on backfill material and groundwater conditions.
14. Remove topsoil from grading areas and stockpile sufficient quantity for reuse. Materials may be mined from landscape areas for use on site and replaced with excess organic material with prior Owner approval.
15. Remove surface and ground water from excavations. Provide initial lifts of stable foundation material if exposed soils are wet and unstable.
16. Rough grade Building Pad to 12 Inches below Finished Floor Elevation (FFE).
17. Refer to Structural Specifications for earthwork requirements for building pads.
18. An Independent Testing Firm shall verify the removal of organic and unsuitable soils, soil correction, and compaction and provide periodic reports to the Owner.
19. Place and compact fill using lift thicknesses matched to soil type and compaction equipment to obtain specified compaction throughout the lift.
20. Compact cohesive soils in paved areas to 95% of maximum dry density, Standard Proctor (ASTM D698) except the top 3 feet which shall be compacted to 100%. Compact to 98% density where fill depth exceeds 10 feet. The soils shall be within 3% of optimum moisture content. In granular soils all portions of the embankment shall be compacted to not less than 95% of Modified Proctor Density (ASTM D1557).
21. Coordinate with Architectural for building stoop locations. Slopes shown on adjacent walks and pavements should continue over stoops.

- WET CAST/DRY CAST RETAINING WALL NOTES
22. Dry Cast Concrete Segmental Retaining Wall. Color to be determined by Owner or Architect.
23. Provide structural design of retaining walls, following MNDOT Retaining Wall specifications for minimum design and performance. Provide construction of walls in accordance with approved design.
24. Confirm architectural requirements for wall units with owner.
25. Submit design to City for approval prior to Building Permit issuance.
26. Provide coordination and assurance that related work constructed within the reinforced earth zone, including fences, underground utilities, guard rails, etc., is in accordance with approved design and does no damage to reinforcing elements of the retaining wall.

- PAVING NOTES
27. Spot Elevations at curbs indicate flowlines unless noted otherwise. See Sheet C4.1 for rim elevations of catch basins.
28. Grades between proposed spot elevations shall be continuous and nonvariable. Spot Elevations shall govern over contour lines.
29. Meet and Match existing curb. Transition as needed.
30. Paving Sections (Refer to Geotechnical Report by Independent Testing Technologies, Inc., Dated 09-13-19)

a. Bituminous Paving (Light Duty)
b. Bituminous Paving (Heavy Duty)
c. Concrete Walkways
4-inch Concrete Walk, 4000 PSI, 5%-8% Air Entrained, Max. 4" Slump (MNDOT 2301)
4-inch Aggregate Base (MNDOT 3138)
Compacted Subsoil
d. Concrete Drives, Aprons, and Exterior Slabs
31. Concrete Joints
- Install joints as shown and align along sidewalks, curbs, and pavement, paying attention to spacing of expansion joints. Joint spacing shall be as follows:

a. Tied joints: Divide panels into nominally equal areas unless shown otherwise.
b. Expansion Joints: Sidewalks - 40 feet max.; Curbs - 60 feet max.; Pavement: 80 feet max.; Adjacent to building foundations and stoops.
c. Contraction Joints: Sidewalks - 8 to 10 feet; Curbs and Aprons - 12 to 15 feet.
32. Accessible Parking Stalls and adjacent access aisles shall not exceed a 2.00% slope in any direction.
33. Accessible Routes shall have a maximum cross slope of 2.00% and a maximum running slope of 5.00%.
34. Adjust all structure rims to match pavement elevations.
35. Transition from B612 Concrete Curb & Gutter to Ribbon Curb.

LEGEND		
SYMBOL	DESCRIPTION	ESTIMATED QUANTITY
	Inlet Protection	18 ea.
	Silt Fence	1,421 ft.
	Compost or Bio Log	229 ft.
	Vehicle Tracking Pad	2,900 s.f.
	Tip Out Curb	
	Pavement Sawcut	
	Construction Limits	
	Top of Wall	
	Bottom of Wall	
	Wetland Buffer Area	22,622 s.f.
	PEDESTRIAN CURB RAMP	

DEVELOPER

ASGUARD ACQUISITIONS, LLC.
7535 River Road Northeast
Olsego, MN 55330
TEL 612-598-3920

MUNICIPALITY

PROJECT

ASGUARD
PHASE 2
ROGERS, MN

ISSUE / REVISION HISTORY

DATE	ISSUE / REVISION	REVIEW
AUG 28 2024	CLIENT REVIEW SET	SES

CERTIFICATION

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Steven E. Szabo
License No. 41185

Signature shown is a digital reproduction of original. Wet signed copy of this plan on file at Landform Professional Services, LLC office and is available upon request.

CLIENT REVIEW SET

08.28.2024

LANDFORM

From Site to Finish

105 South Fifth Avenue
Suite 513
Minneapolis, MN 55401

Tel: 612-252-9070
Fax: 612-252-9077
Web: landform.net

FILE NAME C302ASG001-001.DWG

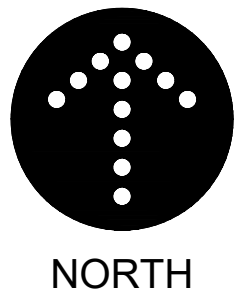
PROJECT NO. ASG20001-001

GRADING, DRAINAGE, PAVING
AND EROSION CONTROL

C3.2



Know what's Below.
Call before you dig.



2 ENLARGED PLANS 10 SCALE

4 ENLARGED PLANS

1 ENLARGED PLANS 10 SCALE

3 ENLARGED PLANS 10 SCALE

5 ENLARGED PLANS 10 SCALE

GENERAL NOTES	
1. For construction staking and surveying services contact Landform at 612.252.9070.	
EROSION PREVENTION AND SEDIMENT CONTROL NOTES	
2. Install perimeter sediment controls prior to beginning work and maintain for duration of construction. Remove controls after areas contributing runoff are permanently stabilized and disposed of off site.	
3. Install inlet protection: WMD or CG models as appropriate, or approved equal. Maintain protection until project is stabilized.	
4. Limit soil disturbance to the grading limits shown. Schedule operations to minimize length of exposure of disturbed areas.	
5. Management practices shown are the minimum requirement. Install and maintain additional controls as work proceeds to prevent erosion and control sediment carried by wind or water.	
6. Refer to SWPPP Notes on Sheet C3.4 for additional requirements.	
7. Contractor shall prevent sediment laden water from entering the filtration system until the site is completely stabilized.	
8. All exposed soil areas must be stabilized within 72 hours of completion of work in each area.	
9. Seed, Sod, Mulch, Erosion Control Blanket, and Fertilizer shall meet the following Specifications, as modified.	
Item	Specification Number
Seed	MMDOT 3678
Seed	MMDOT 3676
MN Type 21-111 @ 100 lbs./ac. – Temporary Erosion Control – Temporary Erosion Control, May 1 - Jul 31	
MN Type 21-112 @ 100 lbs./ac. – Temporary Erosion Control – Temporary Erosion Control, Aug 1 - Oct 31	
	X lbs.
MN Type (25-141 @ 59 lbs./ac. for General Roadside, 25-151 @ 120 lbs./ac. for Residential Turf) - Permanent Turf	
Mulch	MMDOT 3882
(MMDOT Type 1 @ 2 ton/ac.	
Erosion Control Blanket	MMDOT 3885
(MMDOT Type 3N (12 mc.) 4N (24 mc.)	
Fertilizer	MMDOT 3881
General Placement	MMDOT 2575
10. See Landscape Sheets for permanent turf and landscape establishment.	
11. Scarpe adjacent streets clean daily and sweep clean weekly.	

GRADING NOTES

12. Contact utility service providers for field location of services 72 hours prior to beginning grading.
13. Refer to the Geotechnical Report prepared by Independent Testing Technologies, INC., Dated 07/26/19, for additional information on basfill material and groundwater conditions.
14. Remove topsoil from grading areas and stockpile sufficient quantity for reuse. Materials may be mined from landscape areas for use on site and replaced with excess organic material per Owner approval.
15. Remove surface and ground water from excavations. Provide initial lifts of stable foundation material if exposed soils are wet and unstable.
16. Rough grade Building Pad to 12 inches below Finished Floor Elevation (FFE).
17. Refer to Structural Specifications for earthwork requirements for building pads.
18. An Independent Testing Firm shall verify the removal of organic and unsuitable soils, soil correction, and compaction and provide periodic reports to the Owner.
19. Place and compact fill using lift thicknesses matched to soil type and compaction equipment to obtain specified compaction throughout the lift.
20. Compact cohesive soils in paved areas to 95% of maximum dry density. Standard Proctor (ASTM D698) except the top 3 feet which shall be compacted to 100%. Compact to 98% density where fill depth exceeds 10 feet. The soils shall be within 3% of optimum moisture. In granular soils all portions of the embankment shall be compacted to not less than 95% of Modified Proctor Density (ASTM D1557).
21. Coordinate with Architectural for building stoop locations. Slopes shown on adjacent walks and pavements should continue over stoops.

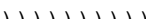
WET CAST/DRY CAST RETAINING WALL NOTES

22. Dry Cast Concrete Segmental Retaining Wall. Color to be determined by Owner or Architect.
23. Provide structural design of retaining walls, following MNDOT Retaining Wall specifications for minimum design and performance. Provide construction of walls in accordance with approved design.
24. Confirm architectural requirements for wall units with owner.
25. Submit design to City for approval prior to Building Permit issuance.
26. Provide coordination and assurance that related work constructed within the reinforced earth zone, including fences, underground utilities, guard rails, etc., is in accordance with approved design and does not demand to reinforce elements of the retaining wall.

PAVING NOTES

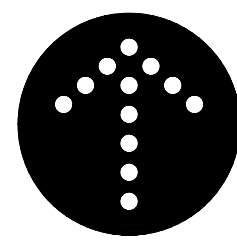
27. Spot Elevations at curbs indicate flowlines unless noted otherwise. See Sheet C4.1 for rim elevations of catch basins.
28. Grades between proposed spot elevations shall be continuous and nonvariable. Spot Elevations shall govern over contour lines.
29. Meet and Match existing curb. Transition as needed.
30. Paving Sections (Refer to Geotechnical Report by Independent Testing Technologies, Inc., Dated 09-13-19)
- a. Bituminous Paving (Light Duty)
 -  b. Bituminous Paving (Heavy Duty)
 - c. Concrete Walkways
 - 4-inch Concrete Walk, 4000 PSI, 5%–6% Air Entrained, Max. 4" Slump (MNDOT 2301)
 - 4-inch Aggregate Base (MNDOT 3138)
 - Compacted Subsoil
 - d. Concrete Drives, Aprons, and Exterior Slabs
31. Concrete Joints
- Install joints as shown and align across sidewalks, curbs, and pavement, paying attention to spacing of expansion joints. Joint spacing shall be as follows:
- a. Tooled joints: Divide panels into nominally equal areas unless shown otherwise.
 - b. Expansion Joints: Sidewalks - 40 feet max.; Curbs - 60 feet max.; Pavement: 80 feet max.; Adjacent to building foundations and stops
 - c. Contraction Joints: Sidewalks - 8 to 10 feet; Curbs and Aprons - 12 to 15 feet.

LEGEND

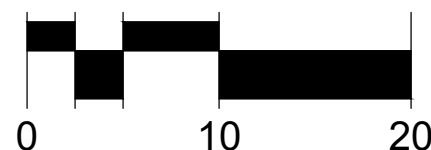
SYMBOL	DESCRIPTION	ESTIMATED QUANTITY
	:Inlet Protection	18 ea.
	:Silt Fence	1,421 ft.
	:Compost or Bio Log	229 ft.
	:Vehicle Tracking Pad	2,900 s.f.
	:Tip Out Curb	
	:Pavement Sawcut	
	:Construction Limits	
T/W XXXXX	:Top of Wall	
B/W XXXXX	:Bottom of Wall	
	:Wetland Buffer Area	22,622 s.f.
	:PEDESTRIAN CURB RAMP	



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NORTH



DEVELOPER

ASGUARD ACQUISITIONS, LLC.

7535 River Road Northeast
Otsego, MN 55330
TEL 612-598-3920

MUNICIPALITY



PROJECT

ASGUARD PHASE 2 ROGERS, MN

ISSUE / REVISION HISTORY

CONTACT ENGINEER FOR ANY PRIOR HISTORY		
DATE	ISSUE / REVISION	REVIEW
AUG 28 2024	CLIENT REVIEW SET	SES

NPDES PERMIT AND SWPPP COMPONENTS

1. The current Minnesota Construction Stormwater General Permit (Permit) dated August 1, 2018 is referenced in this document as the Permit.

The SWPPP includes the following components:

- Construction Documents prepared by Landform
- Stormwater Management Plan prepared by Landform
- Maintenance Plan for permanent stormwater BMPs
- Geotechnical Report prepared by Independent Testing Technologies, Inc., Dated 07-26-19
- Chemical Treatment Plan

All components must be kept onsite by the Operator. The Operator shall contact Civil Engineer if they do not have all of the above documents.

SITE INFORMATION

Site location: Latitude: 45.209996, Longitude: -93.5485

Disturbed area = 4.06 ac.
Pre-construction impervious area within disturbed area = 0.24 ac.
Post-construction impervious area within disturbed area = 2.35 ac.
Net change in impervious area within disturbed area = 2.11 ac.

Type of stormwater management:

- Filtration
- Bio-filtration

Erosion prevention and sediment control quantities are on sheets C3.1 - C3.3.

SITE EVALUATION / ASSESSMENT / PLANNING

1. The Operator shall have primary responsibility and significant authority for the development, implementation, maintenance, inspection and amendments to the approved SWPPP. Duties include but are not limited to:
- Ensuring full compliance with the SWPPP and the Permit.
 - Implementing all elements of the SWPPP, including but not limited to:
 - Implementing prompt and effective erosion and sediment control measures
 - Implementing all non-storm water management, and good housekeeping BMPs ensuring that no materials other than Storm water are discharged in quantities, which will have an adverse effect on receiving waters or storm drain systems, etc.
 - Conducting routine inspections and maintenance
 - Ensuring elimination of all unauthorized discharges
 - Coordinating to ensure all of the necessary corrections / repairs are made immediately, and that the project complies with the SWPPP, the Permit, and approved plans at all times.

STORMWATER POLLUTION PREVENTION MANAGEMENT MEASURES

1. Operator must develop pollution prevention management measures, implement good housekeeping BMPs, must follow all applicable federal, state, and local building codes, Occupational Safety and Health Act (OSHA), and the general conditions and general requirements of the construction contract.
2. The Operator shall minimize the exposure to stormwater of any of the products, material, or wastes stored on site that may wash downstream or contaminate stormwater.
3. Building products that have the potential to leach pollutants must be under cover.
4. Chemicals and landscape materials shall be under cover to prevent the discharge of pollutants.
5. Operator to track progress of the following items on site maps: portable toilets, material storage areas, vehicle and equipment fueling and maintenance areas, concrete washouts, paint and stucco washouts, dumpsters or other trash and debris containers, spill kits, stockpiles, any other non-structural non-storm water management BMPs, any temporarily removed structural BMPs, any changes to the structural BMPs.
6. Solid waste: collected sediment, asphalt and concrete millings, floating debris, paper, plastic, fabric, construction and demolition debris and other wastes must be disposed of properly and must comply with MPCA disposal requirements.
7. Hazardous waste: oil, gasoline, paint and any hazardous substances must be properly stored in sealed containers to prevent spills, leaks or other discharge. Restricted access to storage areas must be provided to prevent vandalism. Storage and disposal of hazardous waste or materials must be in compliance with Minn. R. Ch. 7045 including secondary containment as applicable.
8. Portable toilets must be positioned so that they are secure and will not be tipped or knocked over.
9. Concrete and other washout waste: operator must provide effective containment for all liquid and solid wastes generated by washout operations. The liquid and solid wastes must not contact the ground, and the containment must be designed so that it does not result in runoff from the washout operations or areas. Liquid and solid wastes must be disposed of properly and in compliance with MPCA rules. A sign must be installed adjacent to each washout facility that requires site personnel to utilize the proper facilities for disposal of concrete and other washout wastes.
10. External vehicle washing: external washing of trucks and other construction vehicles must be limited to a defined area of the site. Runoff must be contained and waste properly disposed of. No engine degreasing is allowed on site.
11. Operator shall take reasonable steps to prevent the discharge of spilled or leaked chemicals, including fuel, from any area where they will be loaded or unloaded as detailed in the Permit.

SWPPP CONTACT AND TRAINING INFORMATION

1. Owner:
Company Name: Asguard Acquisitions, LLC
attn: Casey Darkenwald
7535 River Road NE
Otsego, MN 55330
612-598-3920
Operator:
To Be Determined. Contact Owner until Contractor is Selected.
2. Long Term Maintenance And Operation:
To Be Determined. Contact Owner until Contractor is Selected.
3. SWPPP Designer:
Steve Sabraski, P.E.
Landform Professional Services
105 South Fifth Avenue, Suite 513
Minneapolis, Mn 55401
612-252-9070
ssabraski@landform.net
Certification: U Of MN, Design Of Construction SWPPP, Exp. May 31, 2025
- SWPPP Inspector / Manager:
To Be Determined. Contact Owner until Contractor And SWPPP Inspector / Manager is selected.
Certification: , Exp.
- BMP Installation And Repair:
To Be Determined. Contact Owner until BMP Installer And Maintainer is selected.
Certification: , Exp.
- 6.

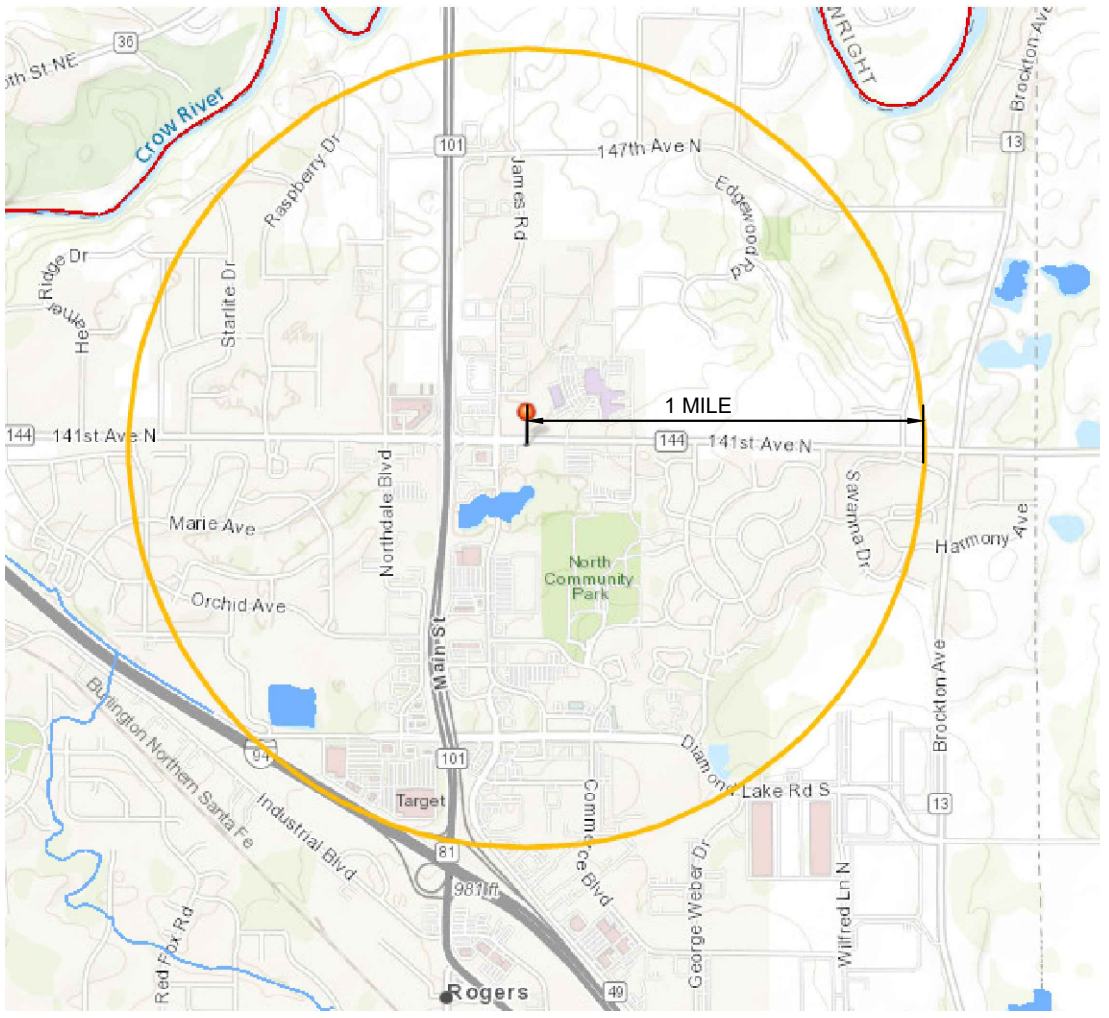
DESCRIPTION OF CONSTRUCTION ACTIVITY

1. Construction activity includes erosion and sediment control BMPs installation, clearing and grubbing, site grading, utility installation, building construction, paving, and landscaping.

SCHEDULE OF BMP INSTALLATION AND CONSTRUCTION ACTIVITY

1. Install perimeter sediment control BMPs prior to start of other site work. Refer to Grading, Drainage, Paving and Erosion Control sheet(s) for initial locations of BMPs.
2. Protect bio-filtration areas with construction fencing. Install fencing prior to site grading or within 24-hours of excavating an infiltration basin.
3. Construct temporary / permanent sedimentation basins prior to upland disturbance. Install perimeter sediment control BMPs around normal water levels within 48-hours of completion of basin grading.
4. Stabilize outlets from temporary / permanent sedimentation basins within 24-hours of outlet construction.
5. Perform work in phases to minimize disturbed area at any one time. Operator to develop phasing plan prior to start of work.
6. Strip topsoil from areas to be disturbed and stockpile with perimeter sediment control BMPs. Provide stabilization if stockpile is left longer than 14 days.
7. Rough grade site.
8. Install utilities.
9. Install small utilities (gas, electric, communications).
10. Final grade pavement areas and compact subgrade.
11. Lay down pavement aggregate and compact.
12. Install curb and gutter. Backfill after a minimum of three days and provide a minimum of two rolls of sod at the back of curb.
13. Construct building and site features.
14. Construct site walks and patios.
15. Provide final stabilization.
16. Connect filtration practices to storm sewer inlets.
17. Remove temporary BMPs and dispose of properly.

WATERS WITHIN ONE MILE OF SITE



MN SPECIAL (PROHIBITED, RESTRICTED, OTHER) & IMPAIRED WATERS

1. The site does not discharge to a special or impaired water within 1 mile of the site.

EROSION PREVENTION AND SEDIMENT CONTROL

1. See Grading, Drainage, Paving and Erosion Control sheets for the location and type of temporary erosion prevention and sediment control BMPs. See Grading and Drainage, Utility, and Landscape sheets for the location and type of permanent erosion prevention and sediment control BMPs.
2. Minimize Disturbed Areas and Protect Natural Features and Soil
- Appropriate construction practices (e.g. construction phasing, vegetative buffer strips, horizontal slope grading) shall be used to minimize erosion.
- Areas not to be disturbed (buffers, infiltration basins, etc.) shall be protected with construction or silt fence before work begins.
- Operator shall develop methods to minimize soil compaction outside of building pads, pavement areas and utility trenches and shall use tracked equipment wherever practicable.
- Topsoil shall be salvaged and reused to the extent practicable.
3. Phase Construction Activity
- Operator must not disturb more land than can be effectively inspected and maintained.
- Sediment control practices shall be established on all down gradient perimeters before any upgradient land disturbing activities begin. These practices shall remain in place until final stabilization has been established in accordance with the Permit.
- The timing of the installation of sediment control practices may be adjusted to accommodate short-term activities such as clearing or grubbing, or passage of vehicles. Any short-term activity must be completed as quickly as possible and the sediment control practices shall be installed immediately after the activity is completed. However, sediment control practices shall be installed before the next precipitation event even if the activity is not complete.
4. Control Stormwater Flowing onto and Through the Project
- The normal vetted perimeter of any temporary or permanent drainage ditch or swale that drains water from any portion of the construction site, or diverts water around the site, shall be stabilized within 200 lineal feet from the property edge, or from the point of discharge into any surface water.
- Stabilization of the last 200 lineal feet shall be completed within 24 hours after connecting to a surface water.
- Stabilization of the remaining portions of any temporary or permanent ditches or swales shall be complete within 14 days after connecting to a surface water and construction in that portion of the ditch has temporarily or permanently ceased.
- Temporary or permanent ditches or swales that are being used as a sediment containment system (with properly designed rock ditch checks, bio rolls, silt dikes etc.) do not need to be stabilized. These areas shall be stabilized within 24 hours after no longer being used as a sediment containment system.

5. Stabilize Soils
- All exposed soil areas, including stockpiles, must be stabilized.
- Stabilization must be started immediately to limit soil erosion when the construction activity in that portion of the site has temporarily or permanently ceased and will not resume for 14 calendar days. Stabilization must be complete within 14 days of cessation of construction activity.
- Temporary soil stockpiles shall have silt fence or other effective sediment controls, and cannot be placed in surface waters, including storm water conveyances such as curb and gutter systems, or conduits and ditches unless there is a bypass in place for the storm water.
- Temporary stockpiles without significant silt, clay or organic components (e.g. clean aggregate stockpiles, demolition concrete stockpiles, sand stockpiles) and the constructed base components of roads, parking lots and similar surfaces, are exempt from this requirement.
6. Protect Slopes
- Operator shall avoid work on slopes with a grade of 3:1 or greater when practicable. Grading on slopes with a grade of 3:1 or steeper will require techniques such as phasing and stabilization practices designed for steep slopes(e.g. slope draining and terracing).
7. Protect Storm Drain Inlets
- All storm drain inlets shall be protected by appropriate BMPs during construction until all sources with potential for discharging to the inlet have been stabilized. Inlet protection may be temporarily removed if a specific safety concern has been identified.
8. Provide Energy Dissipation at all Pipe Outlets within 24 Hours
- After connection to a surface water or permanent stormwater treatment system.
9. Establish Perimeter Controls and Sediment Barriers
- Prior to disturbing soils on a project site, establish sediment control BMPs on all down-gradient perimeters and where site discharges to public waters.
10. Retain Sediment On-site and Control Dewatering Practices
- Discharge shall not cause nuisance conditions, erosion in receiving channels, adversely affect receiving water or impact wetlands, or downstream properties. Discharge points shall be adequately protected from erosion and scour by accepted energy dissipation measures.
- Discharge water containing oil or grease shall be treated to remove oil or grease prior to discharge to surface waters.
- Refer to Permit requirements for temporary or permanent sediment basins.

11. Establish Stabilized Construction Exits
- Vehicle tracking pads shall be established as shown on the Grading, Drainage, Paving and Erosion Control sheet(s) to minimize tracking of sediment from the construction site onto adjacent streets.
12. Infiltration Basin Protection
- Operator must not excavate infiltration systems to final grade or within three (3) feet of final grade until the contributing drainage area has been constructed and fully stabilized unless rigorous erosion prevention and sediment controls have been installed.
13. Dewatering and Basin Drainage
- Permittees must discharge turbid or sediment-laden waters related to dewatering or basin draining to a temporary or permanent sediment basin. Discharges must not cause erosion or scour near the discharge points.
14. Remove Sediment from Surface Waters
- All sediment deposits and deltas must be removed from surface waters, including drainage ways, catch basins, and other drainage systems, and the removal areas restabilized within seven (7) days.

SURFACE WATER BUFFERS

1. 50 foot buffers from Surface Waters have not been maintained. - OR ADD REASONING AS TO WHY THIS WAS IMPOSSIBLE AND PROVIDE DOUBLE SEDIMENT PROTECTION AT EDGE OF GRADING.

TEMPORARY SEDIMENTATION BASIN(S)

1. This project does -OR- does not have more than ten -OR- five (10 -OR- 5) disturbed acres draining to a common location and the site drains to an impaired or special water, therefore a temporary sediment basin is -OR- is not required. Refer to sheet(s) C3.X for further information.
2. Temporary sediment basins shall provide treatment to runoff before it leaves the construction site or enters surface waters. The contractor shall comply with the following requirements:
- A. Sedimentation basins must provide live storage of runoff resulting from the 2-year 24-hour rainfall event from each acre drained to the basin, with a minimum of 1,800 c.f./acre live storage volume. (Where no calculation has been performed, each basin shall provide at least 3,600 c.f./acre live storage.) Sedimentation basins must include a stabilized emergency overflow to prevent basin integrity failure.
- B. Discharge from temporary sedimentation basins will be withdrawn from the surface in order to minimize the discharge of pollutants.
3. Discharge from basin draining shall not adversely affect the receiving water or downstream properties. Contractor will visually check to ensure adequate treatment has been obtained and that nuisance conditions will not result from the discharge.
4. Any discharge observed to be occurring during the inspection shall be recorded, described, and photographed.

If any proposed temporary BMPs are not working as intended refer to the "Stormwater Compliance Assistance Toolkit for Small Construction Operators", MPCA, 2017 for additional information. Operator shall contact the SWPPP Designer for additional requirements and information.

POST CONSTRUCTION / PERMANENT BMPs

1. See Grading and Drainage, Utility, and Landscape sheets for post construction and permanent stormwater BMPs.

INSPECTIONS AND MAINTENANCE

1. Permittees must ensure that a trained person will inspect the entire construction site at least once every seven -OR- three (7 -OR- 3) days during active construction and within 24 hours after a rainfall event greater than 0.5-inches in 24 hours. (NOTE THAT THREE DAYS ARE REQUIRED FOR DRAINAGE TO PROHIBITED WATERS)
2. Inspections shall include stabilized areas, erosion prevention and sediment control BMPs, and infiltration areas.
3. Inspections shall include stabilized areas, erosion prevention and sediment control BMPs, and infiltration areas.
4. Surface waters on or adjacent to the site must be inspected for evidence of erosion or sediment deposition.
5. Permittees must record all inspection and maintenance activities within 24 hours of being conducted as detailed in the Permit.
- Inspection Records contain shall include:
- A. Date and time of inspections;
- B. Name of persons conducting inspections;
- C. Findings of inspections, including specific locations where corrective actions are needed;
- D. Corrective actions taken including dates, times, and the party taking the corrective action;
- E. Dates of all rainfall events greater than 1/2 inch in 24 hours (refer to Permit for measurement requirements);
- F. Any discovered discharge must be recorded, including photographs, descriptions of discharge (color, odor, settled or suspended solids, oil sheen, or other obvious indicators of pollution), and specific location of discharge location;
- G. Any amendments to the Permit as a result of inspections must be documented within seven calendar days as described in the Permit.

- BMP Maintenance:
- A. Nonfunctional BMPs must be repaired or replaced by the end of the next business day after discovery unless a different time frame is indicated.
- B. Follow the designer's or manufacturer's recommended maintenance procedures for all BMPs.
- C. Remove sediment from BMPs when the depth of sediment has reached 1/2 the height of the BMP and properly dispose of sediment into controlled areas to prevent soil from returning to the BMP during subsequent rain events.
- D. Remove sediment from paved roadways within one calendar day of discovery.
- E. Remove sediment from around BMPs protecting storm drain inlets.
- F. Surface waters with evidence of sediment deposition must be stabilized and sediment removed within seven calendar days of discovery, or as stated by the Permit.
- G. Ensure that construction support activities, including borrow areas, waste areas, contractor work areas,

RECORD KEEPING / RECORD RETENTION

- H. Replace damaged BMPs that no longer operate effectively.
1. The SWPPP (original or copies), including all changes to it, and inspections and maintenance records, shall be kept at the site during construction by the Owner / Operator who has operational control of that portion of the site. The SWPPP can be kept in either the field office or in an office vehicle during construction.
2. All Owners(s) must keep the SWPPP, along with the following additional records, on file for three (3) years after submittal of the Notice of Termination (NOT). This does not include any records after submittal of the NOT.
3. The following is a list of records that shall be kept at the project site available for inspectors to review:

- Copy of the SWPPP, with any modifications;
- Inspection and maintenance records;
- Permanent operation and maintenance agreements;
- Calculations for the design of temporary and permanent stormwater management systems;
- Any other permits required for the project;
- Records of all inspection and maintenance conducted during construction; and
- All permanent operation and maintenance agreements that have been implemented, including all right-of-way, contracts, covenants and other binding requirements regarding perpetual maintenance

LOG OF CHANGES TO THE SWPPP / AMENDMENTS

1. The Owner / Operator(s) must amend the SWPPP as necessary to include additional requirements, such as additional or modified BMPs, designed to correct problems identified or address situations as detailed in the Permit.

FINAL STABILIZATION

1. The Owner / Operator(s) must ensure final stabilization of the site. Final stabilization includes:
- A. Ensuring all areas have permanent cover.
- B. Vegetative areas must have perennial cover with a density of 70% of expected final growth.

TERMINATION OF COVERAGE

1. Owner / Operator(s) wishing to terminate coverage under the Permit must submit a Notice of Termination (NOT) to the MPCA. Compliance with the Permit is required until a NOT is submitted. Refer to the Permit for details. Conditions for submitting a NOT include:
- A. Site must have achieved final stabilization (refer to section above).
- B. The permanent stormwater treatment and conveyance systems must be clean and all accumulated sediment removed.
- C. All temporary synthetic erosion prevention and sediment control BMPs must be removed from the site and disposed of properly.
- D. Single Family Residential only - Permit termination on individual lots occurs once building construction is complete, temporary erosion prevention and downgradient perimeter control is complete, the residence sells to the homeowner, and the permittee distributes the MPCA's "Homeowner Fact Sheet" to the homeowner.
- E. Agricultural Land only - Return the disturbed land to its preconstruction agricultural use.

DEVELOPER

ASGUARD ACQUISITIONS, LLC.
7535 River Road Northeast
Otsego, MN 55330
TEL 612-598-3920

MUNICIPALITY



PROJECT

ASGUARD
PHASE 2
ROGERS, MN

ISSUE / REVISION HISTORY

DATE	ISSUE / REVISION	REVIEW
AUG 28 2024	CLIENT REVIEW SET	SES

CERTIFICATION

I hereby certify that this plan was prepared by me, or under my direct supervision, and that I am a duly Licensed Professional Engineer under the laws of the state of MINNESOTA.

Steven E. Sabraski
License No. 47185

Signature shown is a digital reproduction of original. Wet signed copy of this plan on file at Landform Professional Services, LLC office and is available upon request.

IF THE SIGNATURE SEAL OR FOUR LINES DIRECTLY ABOVE ARE NOT VISIBLE, THIS SHEET HAS BEEN REPRODUCED BEYOND INTENDED READABILITY AND IS NO LONGER A VALID DOCUMENT. PLEASE CONTACT THE ENGINEER TO REQUEST ADDITIONAL DOCUMENTS.

CLIENT REVIEW SET

08.28.2024

LANDFORM
From Site to Finish

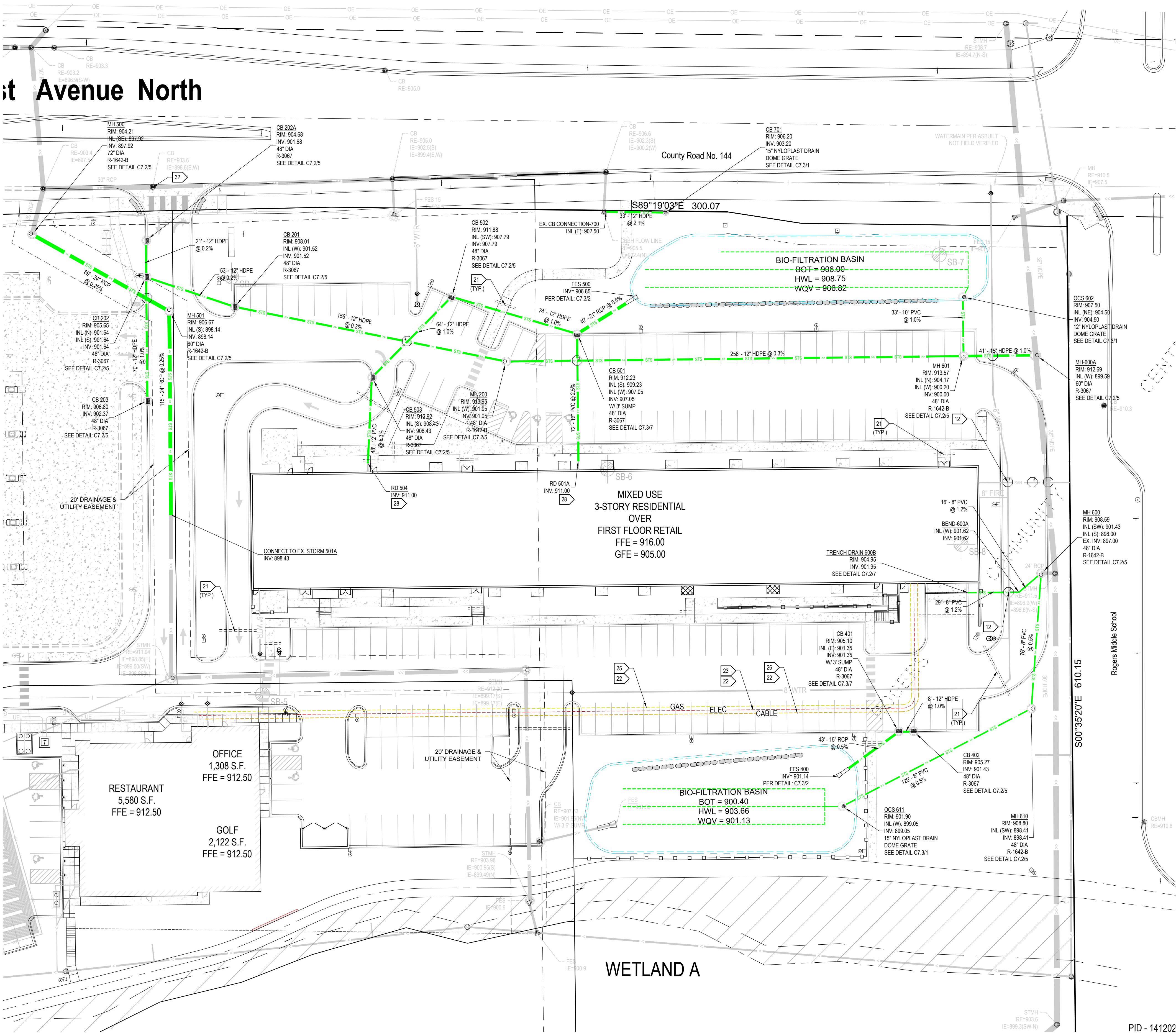
105 South Fifth Avenue Tel: 612-252-9070
Suite 513 Fax: 612-252-9077
Minneapolis, MN 55401 Web: landform.net

FILE NAME C304ASG001-001.DWG

PROJECT NO. ASG20001-001

SWPPP NOTES

C3.4



- GENERAL NOTES
1. For construction staking and surveying services contact Landform at 612.252.9070.
- UTILITY NOTES
2. Pipe Materials
Watermain C900 PVC
Water Service Copper Type K (ASTM B88)
Private Sanitary Sewer PVC Schedule 40 (ASTM: D1785, D2665, & F1866)
Grease Trap Service PVC Schedule 40 (ASTM: D1785, D2665, & F1866)
Storm Sewer RCP 12"-18" Class 5 (ASTM C70)
RCP 21" Class 4 (ASTM C76)
RCP 24"-48" Class 3 (ASTM C76)
HDPE - Corrugated & Perforated (ASTM F667),
Drain Tile
3. Contact utility service providers for field location of services 72 hours prior to beginning.
4. Contractor to field verify location and elevation of all utility points of connection prior to construction of any proposed utilities. Contractor to notify Engineer immediately if there is any discrepancy.
5. Contractor to pothole all utility crossings prior to construction of new utilities to verify depths of existing lines. Contact Engineer immediately if any conflicts are discovered.
6. Provide means and measures to protect adjacent property from damage during utility installation.
7. Pipe lengths shown are from center of structure to center of structure or end of end section.
8. Install tracer wire with all non-conductive utilities in accordance with City of Rogers Standards.
9. Connect to City utilities in accordance with City of Rogers Standards.
10. Contact City of Rogers Public Works Department at 763-428-8580 for wet tap inspection.
11. Maintain 7.5 feet of cover on water.
12. Deflect water to maintain 18-inch minimum outside separation at sewer crossings. Center pipe lengths to provide greatest separation between joints.
13. Contact City of Rogers Public Works Department, at 763-428-8580 for flushing and pressure test inspections.
14. The water distribution system shall be disinfected per Minnesota Rules, Part 4714.
15. Provide 4-inch rigid foam (ASTM D1621) insulation on sanitary sewer less than 8 feet deep.
16. Refer to Plumbing plans for grease interceptor detail. The tank and top slab must be designed to handle traffic and soil loads. The tank must be protected from freezing and must comply with all local and state codes.
17. All portions of the storm sewer system, located within 10 feet of the building or water service line must be tested in accordance with Minnesota Rules, Part 4714.
18. All joints and connections in the storm sewer system shall be gastight or water tight. Approved resilient rubber joints must be used to make watertight connections to manholes, catch basins, and other structures.
19. Catch basins in curb and gutter are sumped 2 inches below the gutter grade. Refer to Detail 3 on Sheet C7.2.
20. Rock media in filtration systems shall be angular, non-calcareous rock.
21. Irrigation sleeves to be 4 inch Schedule 80 PVC buried 24" below grade. Extend sleeves 3-feet beyond the edge of pavement. Mark each end of sleeve with 3/4-inch rebar 12 inches below finish grade. (Coordinate with irrigation contractor.)
22. General Contractor Coordinate with Private Utilities to provide electric, natural gas, and communications services to building.
23. The primary electric feed, transformer, and meter are provided and installed by Xcel Energy. The transformer pad design is provided by the Utility and construction is by the Contractor. Contact Utility for pad detail. The secondary electric and conduits shall be installed by the Electrical Contractor.
24. See site lighting plan for additional information.
25. Centerpoint Energy will furnish and install gas service piping from the mainline to the meter. Gas service from the meter shall be installed by the Mechanical Contractor.
26. Provide one 2-inch PVC conduit with pull-string from existing telephone service to building.
27. Provide conduits for cable television and other electronic communication.
28. Coordinate with Mechanical, Plumbing, and Electrical Drawings for locations of service connections and continuation of services within building.
29. Compact cohesive soils in paved areas to 95% of maximum dry density, Standard Proctor (ASTM D698) except the top 3 feet which shall be compacted to 100%. compact to 98% density where fill depth exceeds 10 feet. The soils shall be within 3% of optimum moisture content. In granular soils all portions of the embankment shall be compacted to not less than 95% of Modified Proctor Density (ASTM D1557).
30. Adjust structures to final grade where disturbed. Comply with requirements of Utility. Meet requirements for traffic loading in paved areas.
31. Core drill existing manhole and connect with new rubber boot.
32. Furnish and install new R-3360-A (or approved equal) casting on existing catch basin.
- INFILTRATION / FILTRATION BASIN REQUIREMENTS
33. Refer to the C3.1 sheet notes for requirements.

- LEGEND
- Wetland Buffer Area
- UTILITY CROSSINGS
1. Crossing 1
Storm Sewer Bottom Elevation = 901.77
Storm Sewer Top Elevation = 900.35
Clearance = 1.32'
2. Crossing 2
Storm Sewer Bottom Elevation = 908.16
Storm Sewer Top Elevation = 902.32
Clearance = 5.83'
3. Crossing 3
Storm Sewer Bottom Elevation = 909.57
Storm Sewer Top Elevation = 902.03
Clearance = 7.54'
4. Crossing 4
Storm Sewer Top Elevation = 901.35
Watermain Bottom Elevation = 905.16
Clearance = 3.80'
5. Crossing 5
Watermain Bottom Elevation = 902.32
Sanitary Sewer Top Elevation = 901.92
CONFLICT - REFER TO NOTE 12
6. Crossing 6
Sanitary Sewer Bottom Elevation = 900.89
Storm Sewer Top Elevation = 900.21
Clearance = 0.68'
7. Crossing 7
Sanitary Sewer Bottom Elevation = 900.71
Storm Sewer Top Elevation = 899.50
Clearance = 1.21'
8. Crossing 8
Storm Sewer Bottom Elevation = 901.65
Watermain Top Elevation = 900.84
CONFLICT - REFER TO NOTE 12

DEVELOPER

ASGUARD ACQUISITIONS, LLC.
7535 River Road Northeast
Osseo, MN 55330
TEL 612-598-3920

MUNICIPALITY

ROGERS
MN

PROJECT

ASGUARD
PHASE 2
ROGERS, MN

ISSUE / REVISION HISTORY

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DATE ISSUE / REVISION REVIEW

AUG 28 2024 CLIENT REVIEW SET SES

CERTIFICATION

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Steven E. Sabrowski
License No. 47185

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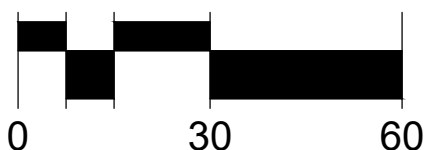
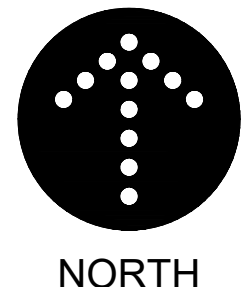
PROJECT NO. ASG20001-001

STORM SEWER PLAN

C4.1



Know what's Below.
Call before you dig.



[illegible]

GENERAL NOTES

2.	Pipe Materials	C900 PVC Copper Type K (ASTM B88) Private Sanitary Sewer Grease Trap Service Storm Sewer	PVC Schedule 40 (ASTM: D1785, D2665, & F1866) PVC Schedule 40 (ASTM: D1785, D2665, & F1866) PVC Schedule 40 (ASTM: D1785, D2665, & F1866) RCP 12"-18" Class 5 (ASTM C76) RCP 21" Class 4 (ASTM C76) RCP 24"-48" Class 3 (ASTM C76) HDPE - Corrugated & Perforated (ASTM F667).
3.	Drain Tile		
3.	Contact utility service providers for field location of services 72 hours prior to beginning.		
4.	Contractor to field verify location and elevation of all utility points of connection prior to construction of any proposed utilities. Contractor to notify Engineer immediately if there is any discrepancy.		
5.	Contractor to pot-hole all utility crossings prior to construction of new utilities to verify depths of existing lines. Contact Engineer immediately if any conflicts are discovered.		
6.	Provide means and measures to protect adjacent property from damage during utility installation.		
7.	Pipe lengths shown are from center of structure to center of structure or end of end section.		
8.	Install tracer wire with all non-conductive utilities in accordance with City of Rogers Standards.		
9.	Connect to City utilities in accordance with City of Rogers Standards.		
10.	Contact City of Rogers Public Works Department at 763-428-8580 for wet tap inspection.		
11.	Maintain 7.5 feet of cover on water.		
12.	Deflect water to maintain 18-inch minimum outside separation at sewer crossings. Center pipe lengths to provide greatest separation between joints.		
13.	Contact City of Rogers Public Works Department, at 763-428-8580 for flushing and pressure test inspections.		

LEGEND

UTILITY CROSSINGS

1.	Crossing 1 Storm Sewer Bottom Elevation = 901.77 Storm Sewer Top Elevation = 900.35 Clearance = 1.32'	5.	Crossing 5 Watermain Bottom Elevation = 902.32 Sanitary Sewer Top Elevation = 901.92 CONFLICT - REFER TO NOTE 12
2.	Crossing 2 Storm Sewer Bottom Elevation = 908.16 Storm Sewer Top Elevation = 902.32 Clearance = 5.83'	6.	Crossing 6 Sanitary Sewer Bottom Elevation = 900.89 Storm Sewer Top Elevation = 900.21 Clearance = 0.69'
3.	Crossing 3 Storm Sewer Bottom Elevation = 909.57 Storm Sewer Top Elevation = 902.03 Clearance = 7.54'	7.	Crossing 7 Sanitary Sewer Bottom Elevation = 900.71 Storm Sewer Top Elevation = 899.50 Clearance = 1.21'
4.	Crossing 4 Storm Sewer Top Elevation = 901.35 Watermain Bottom Elevation = 905.16 Clearance = 3.80'	8.	Crossing 8 Storm Sewer Bottom Elevation = 901.65 Watermain Top Elevation = 900.84 CONFLICT - REFER TO NOTE 12

ISSUE / REVISION HISTORY

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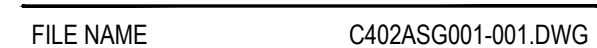
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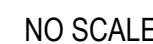
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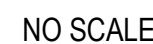
C4.2

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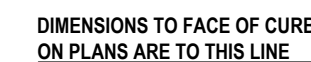


1. DIG A 6" TRENCH ALONG THE INTENDED FENCE LINE OR USE MACHINE SLICED ANCHOR.
2. INSTALL ON CONTOUR AT CONSTANT ELEVATION.
3. DRIVE ALL POSTS INTO THE GROUND AT THE BACK SIDE OF THE TRENCH.
4. LAYOUT WIRE MESH AND SILT FENCE ON THE UPHILL SIDE ALONG THE FENCE LINE, AND BACK FILL

NO SCALE



NO SCALE



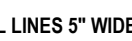
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NO SCALE



NO SCALE



PROVIDE PAINTED SYMBOL AT EACH DESIGNATED ACCESSIBLE PARKING STALL. CENTER SYMBOL IN STALL NEAR DRIVE AISLE.

NO SCALE

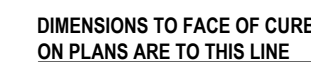


NOTE:
RISER PIPE SHALL BE EXTENDED ABOVE GROUND LEVEL
INITIALLY & THEN CUT BACK TO MATCH FINAL GRADE

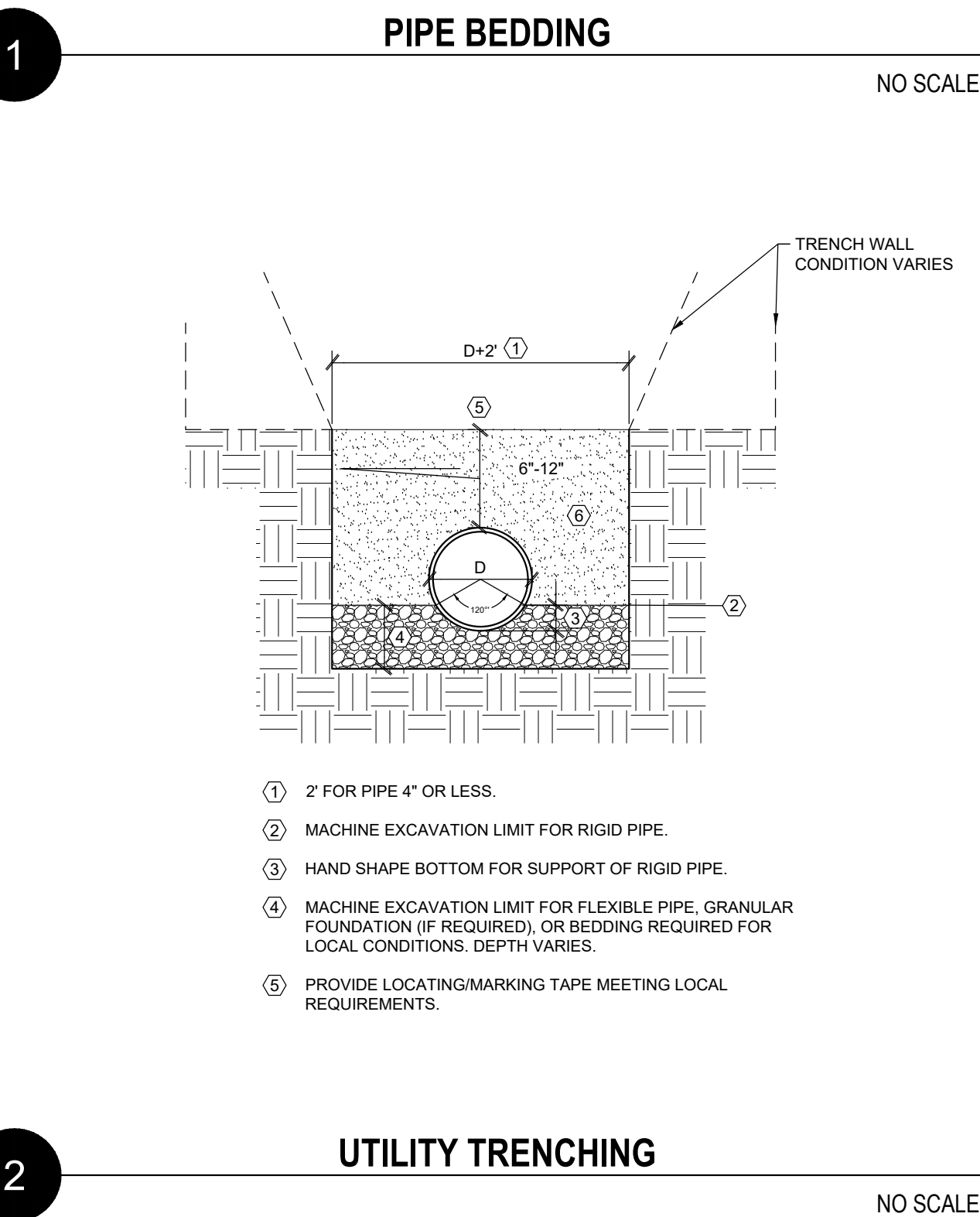
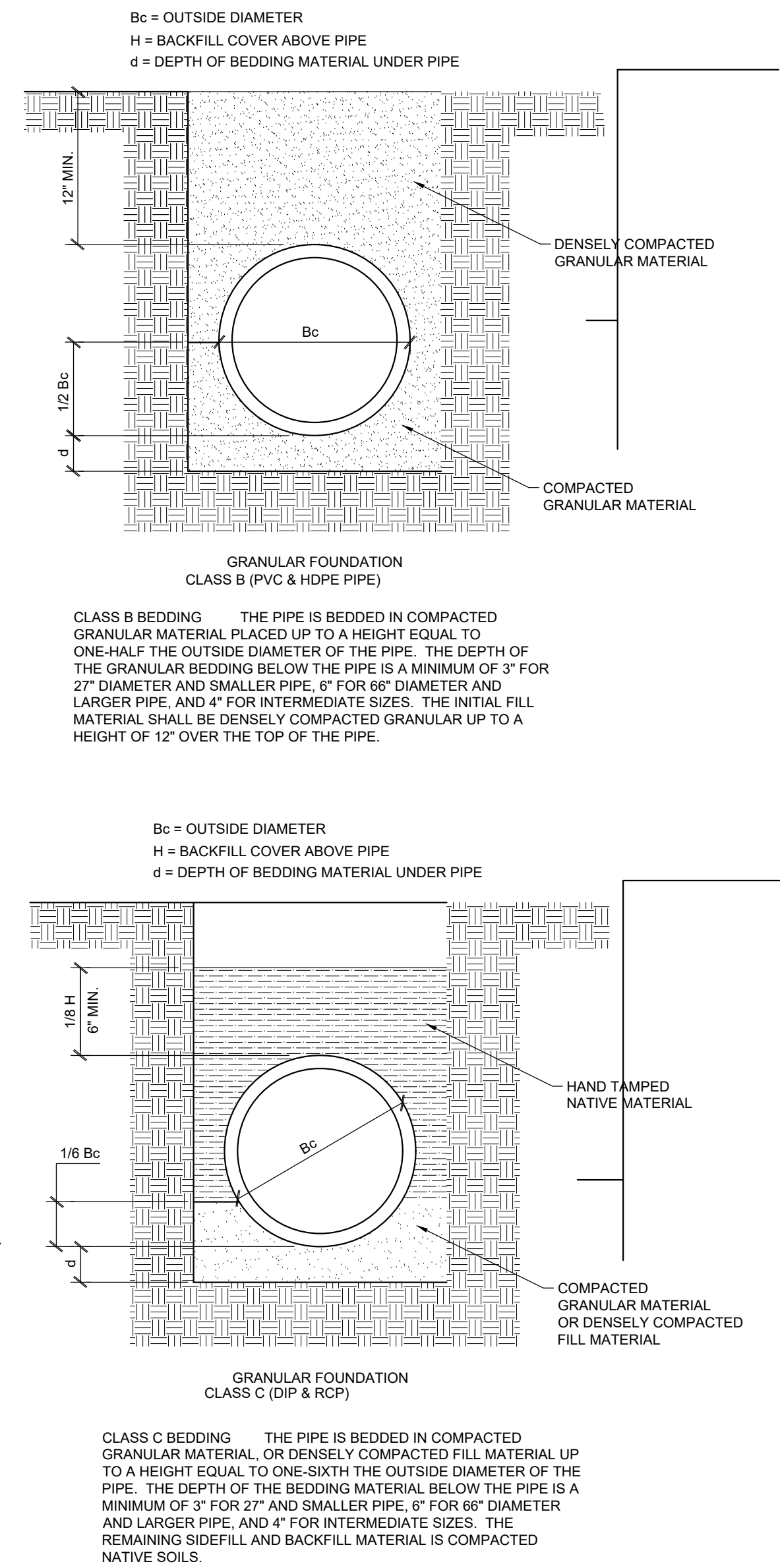
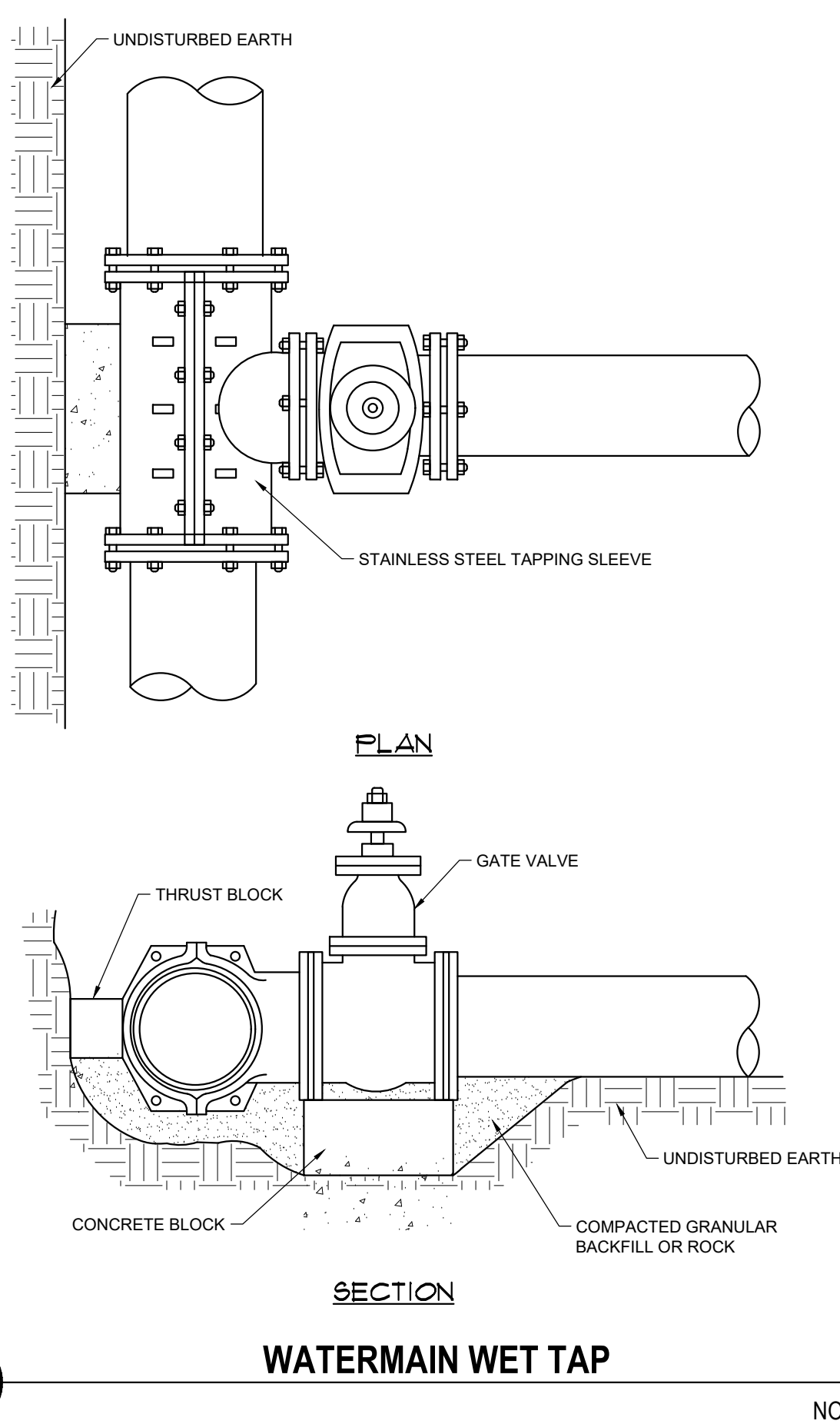
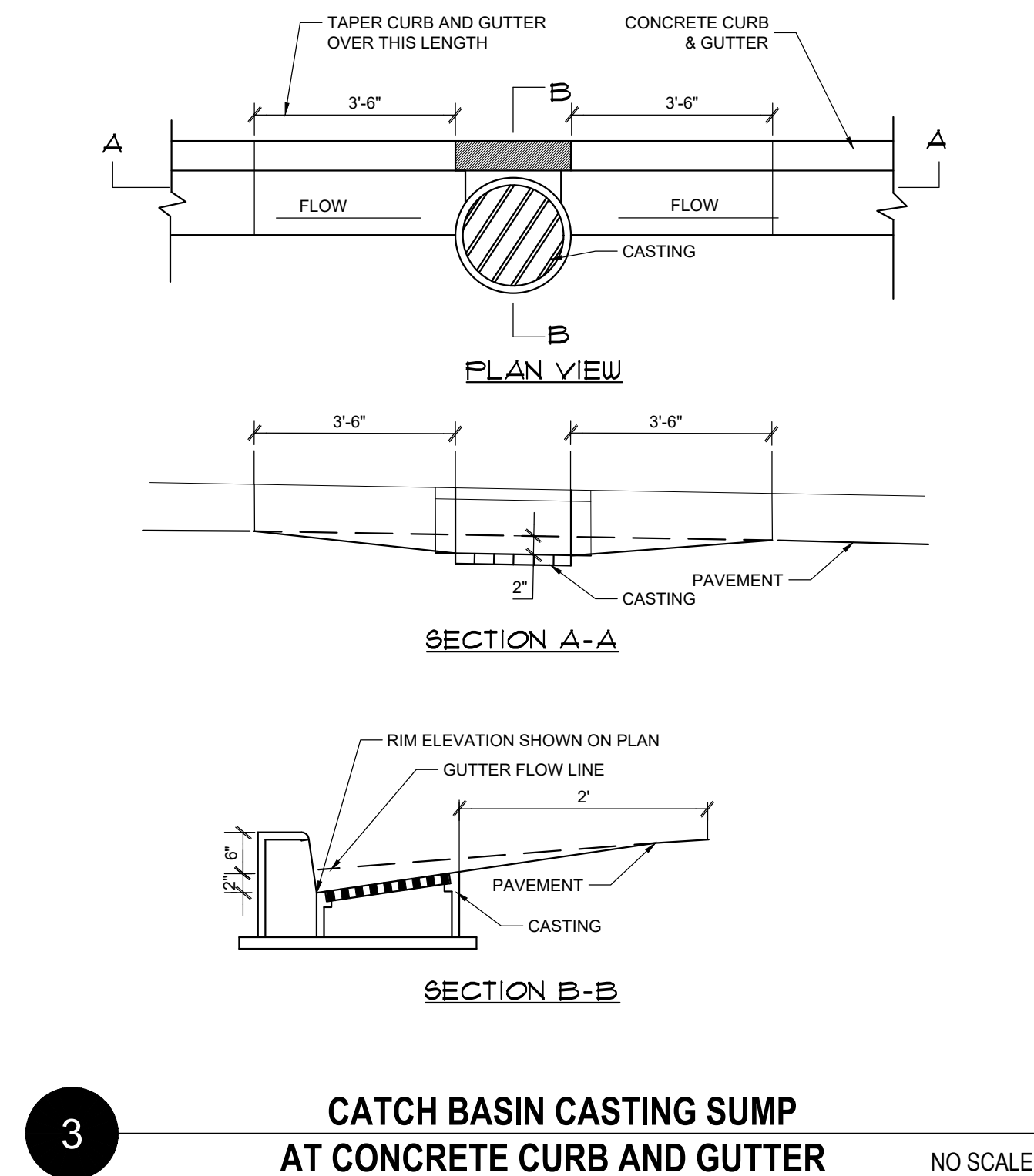
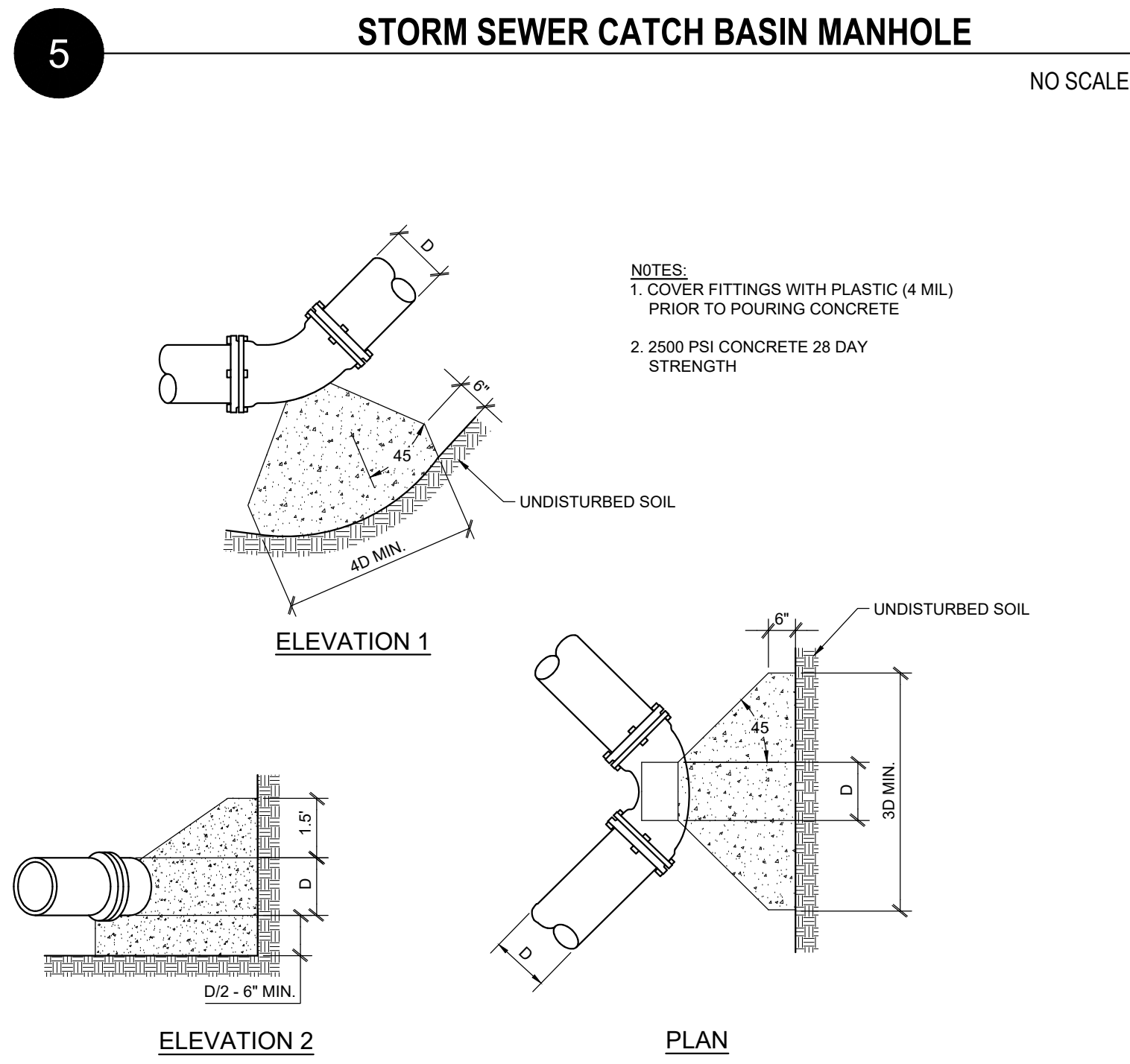
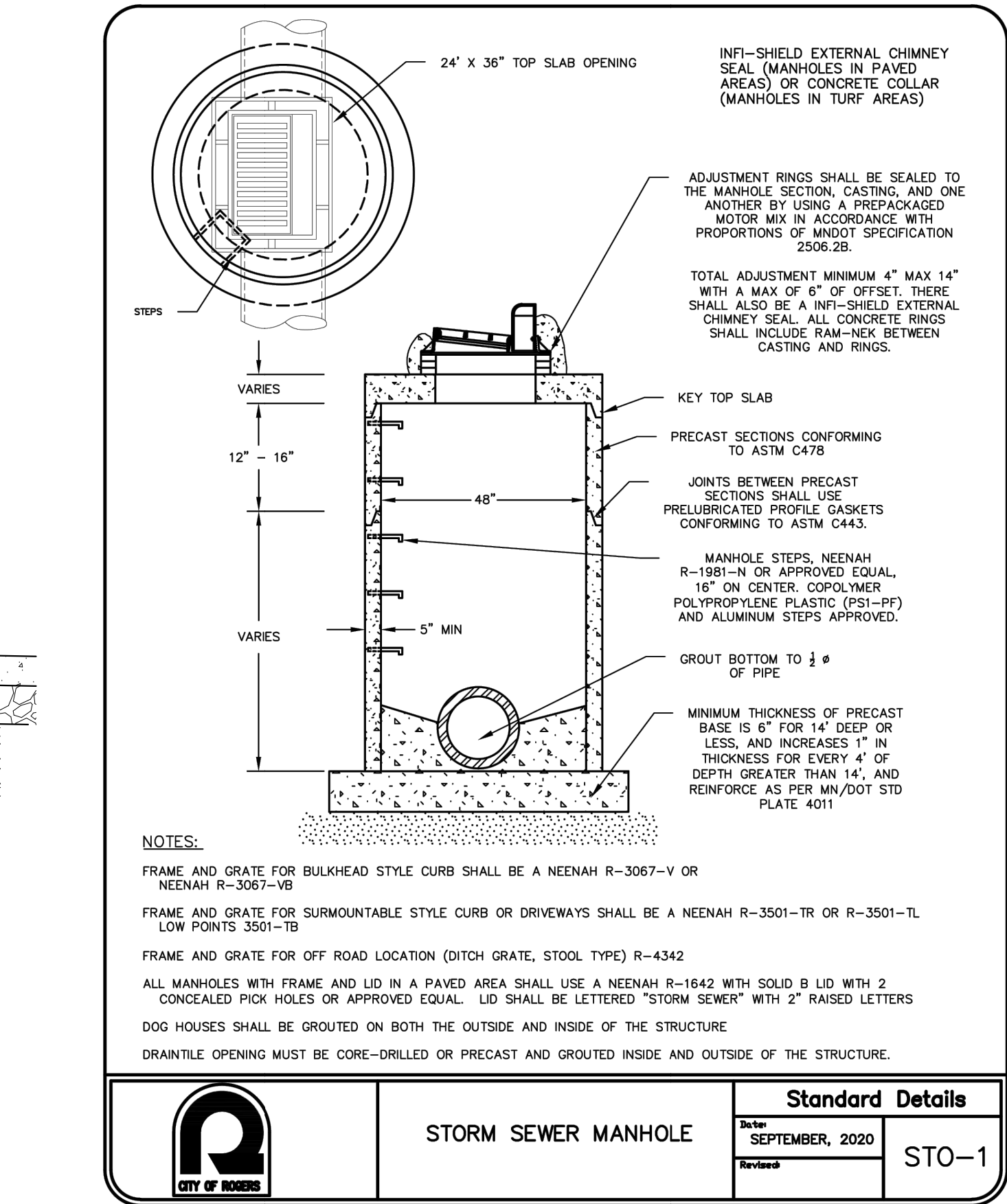
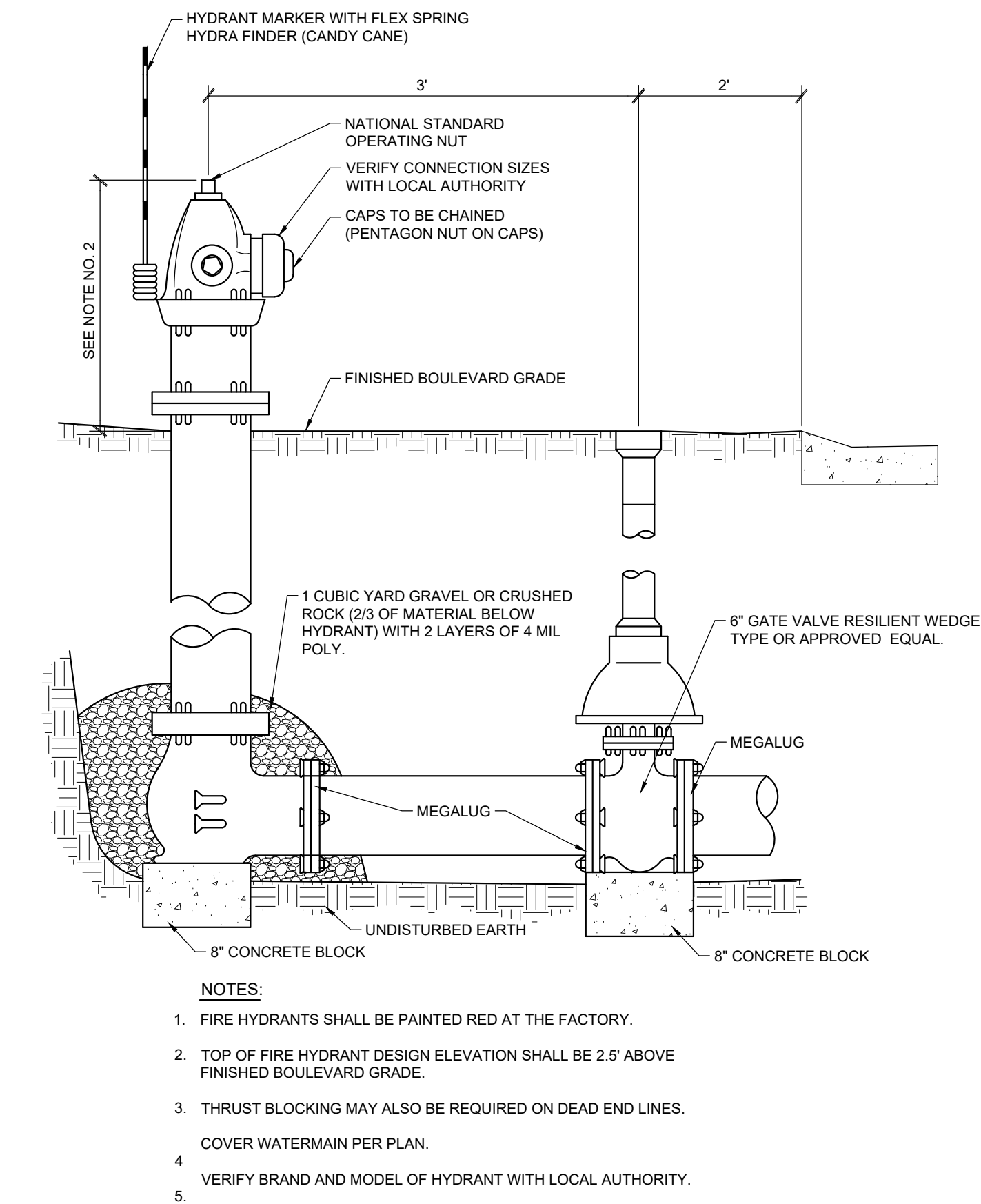
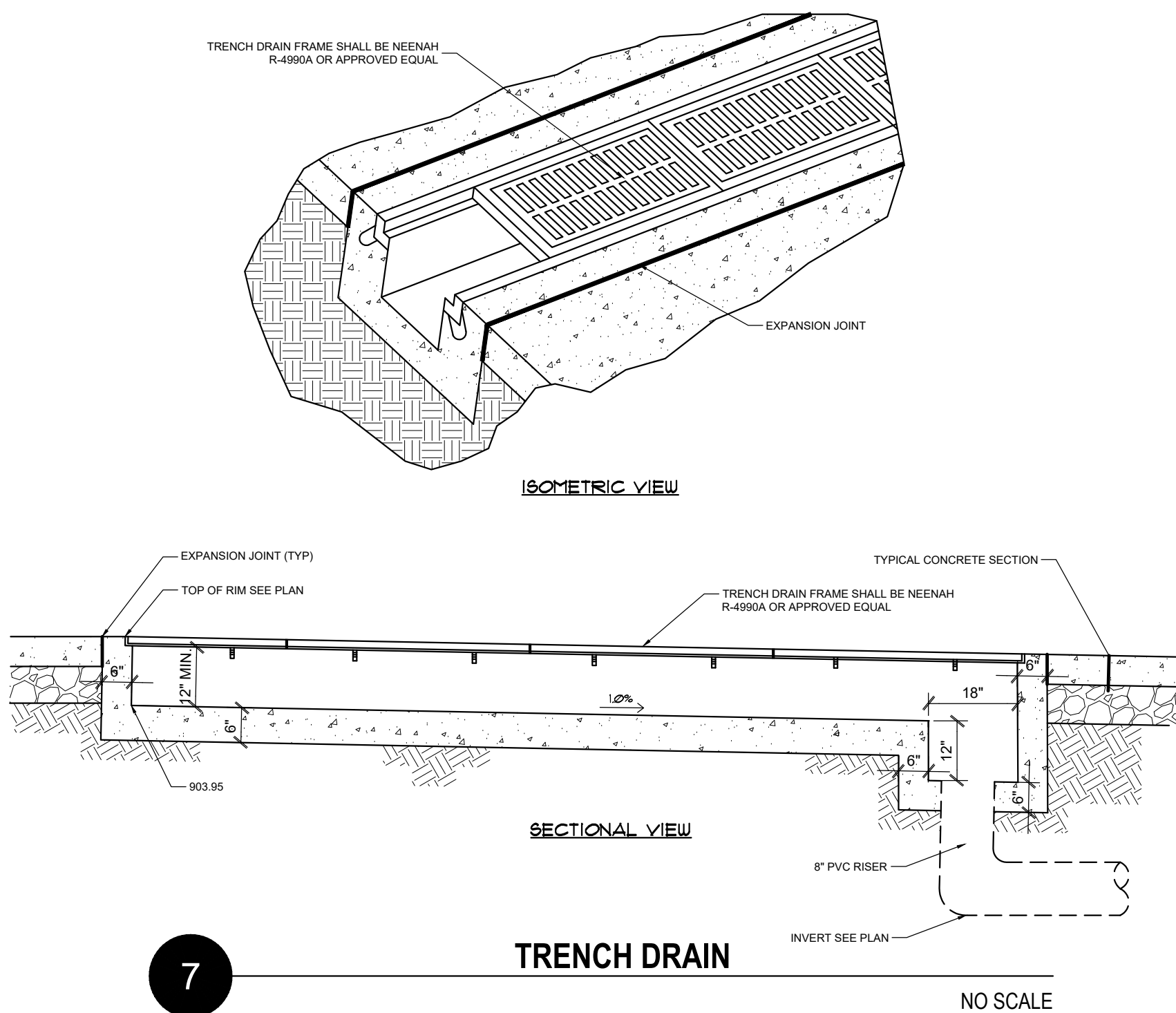
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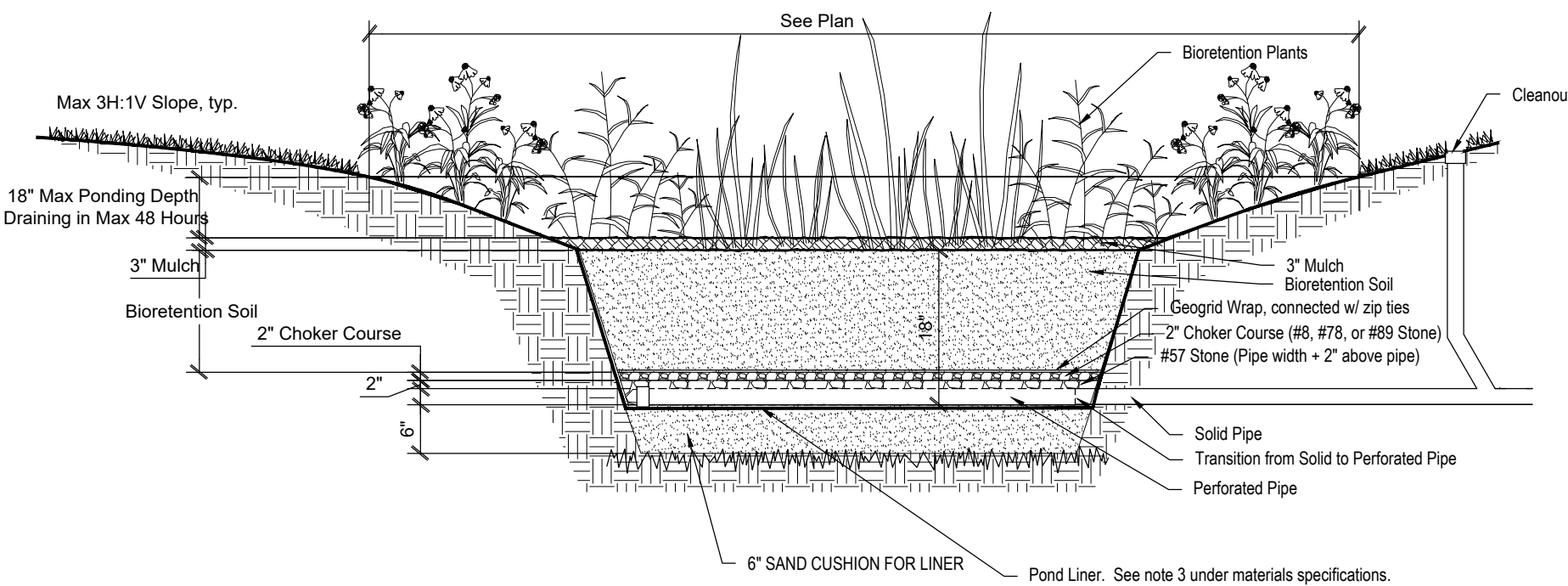


1. Install appropriate temporary erosion control devices to prevent sediment from leaving or entering the practice during construction.
2. All down-gradient perimeter sediment control bmp's must be in place before any up gradient land disturbing activity begins.
3. Perform continuous inspections of erosion control practices, especially after each rainfall event.
4. Water quality facilities (water treatment systems, electrical equipment, etc.) shall be installed prior to setting final grade of bio-retention device.
5. Route graded site. If bio retention areas are being used as temporary sediment basins during construction, leave a minimum of 1 foot of cover over the practice area to protect the underlying soils from clogging.
6. Complete, stabilize, and vegetate all other site improvements.
7. Construct and vegetate bio-retention device following best management practices of contributing drainage area. Ensure that critical elevations, such as underdrain invert, top of media, top of mulch, and invert of overflow structure (if present) are correct.
8. Remove temporary erosion control devices after the contributing drainage area is adequately vegetated.

1. In the event that sediment is introduced into the bmp during or immediately following excavation, this material shall be removed from the practice prior to continuing construction.
2. See Minnesota Stormwater Manual for subgrade preparation.

1. Bioretention soil shall be Soil Mix D per the Minnesota Stormwater Manual consisting of:
 - A. 50 - 65% Coarse Sand
 - B. 25 - 35% Topsoil
 - C. 10 - 15% Compost (MnDOT Grade 2)
2. See Minnesota Stormwater Manual for material specifications recommendations for mulch, underdrains, etc.

- a) 24 inches of clay soil
 - i. 50% fines (200 sieve) or more
 - ii. In-place hydraulic conductivity of 1×10^{-4} -7 cm/sec or less
 - iii. Average liquid limit of 25 or greater, with no value less than 20
 - iv. Average PI of 12 or more, with no values less than 10
- b) 60 mil HDPE (min)
- c) 30 mil PVC (min)

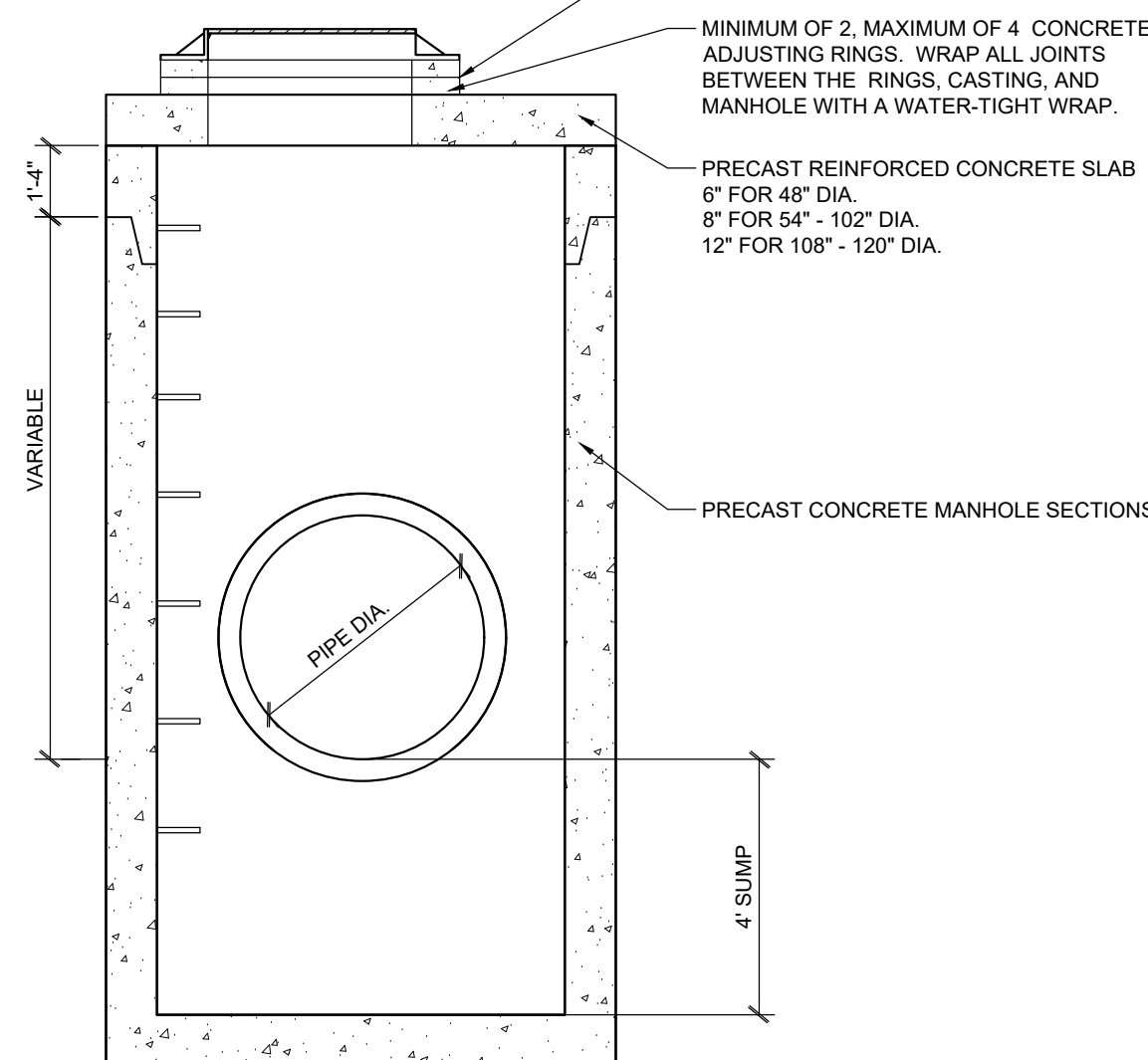


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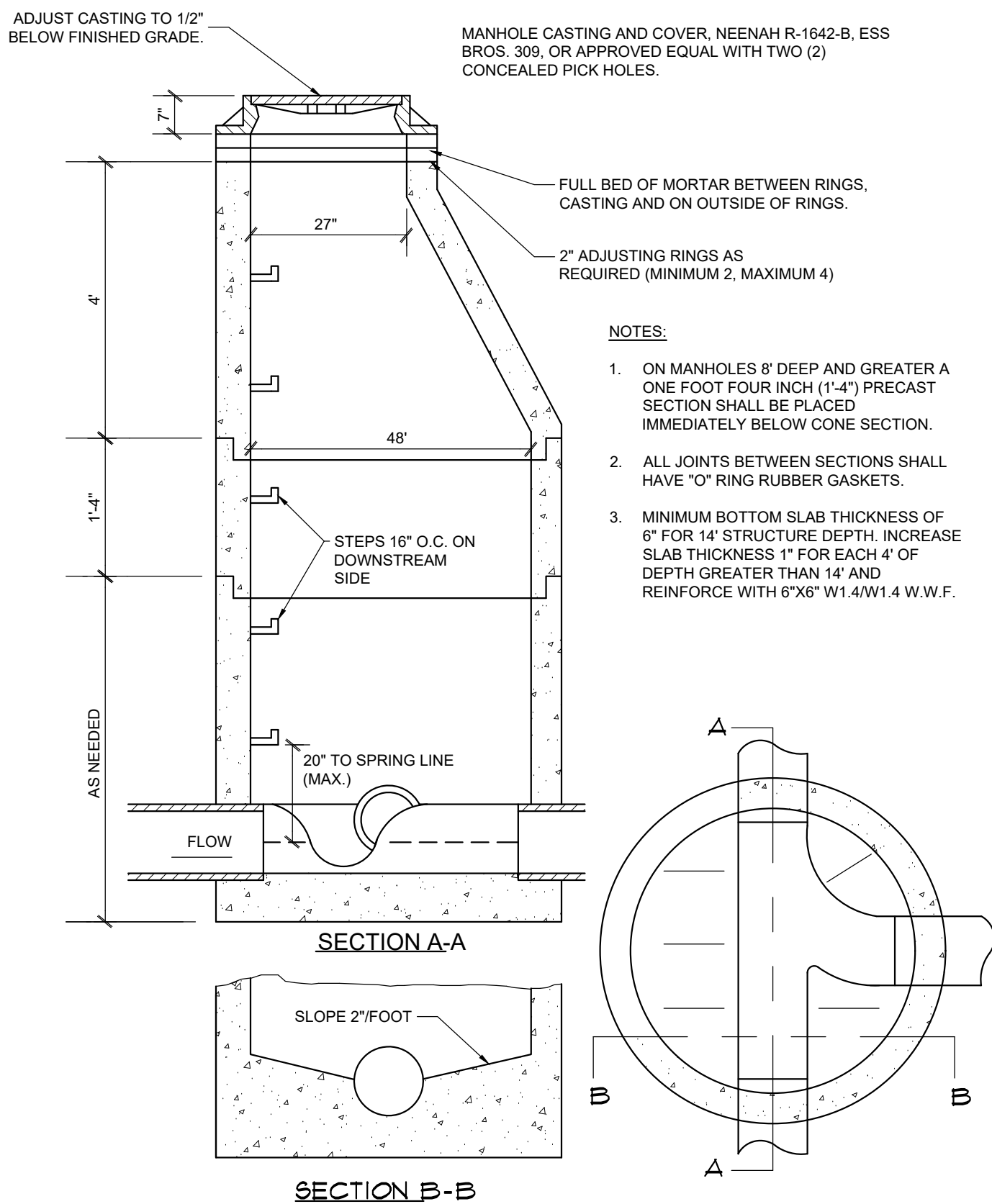
PLAN



SECTION A-A

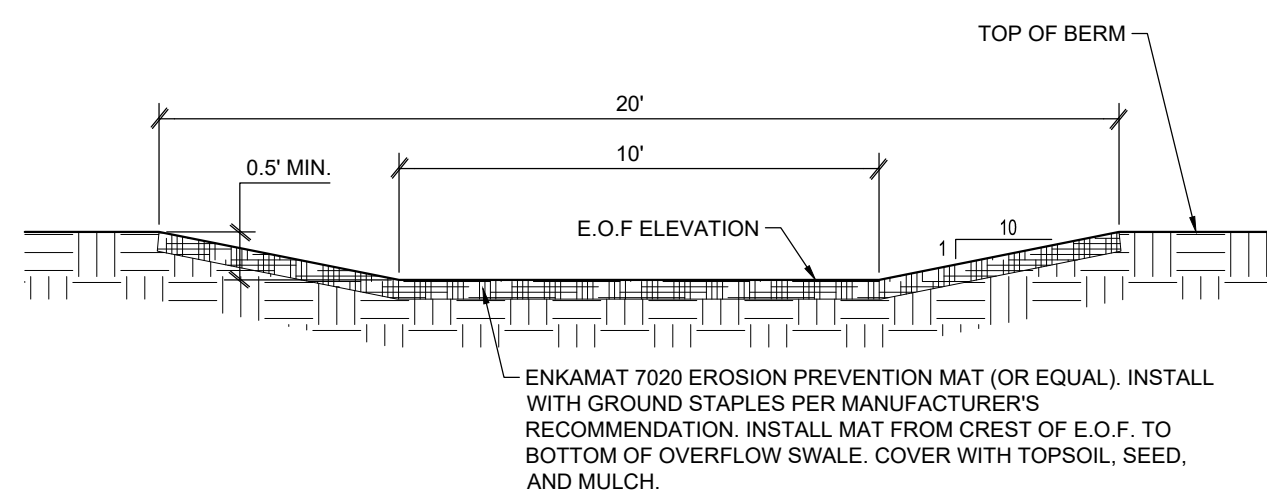
SUMP STORM SEWER MANHOLE

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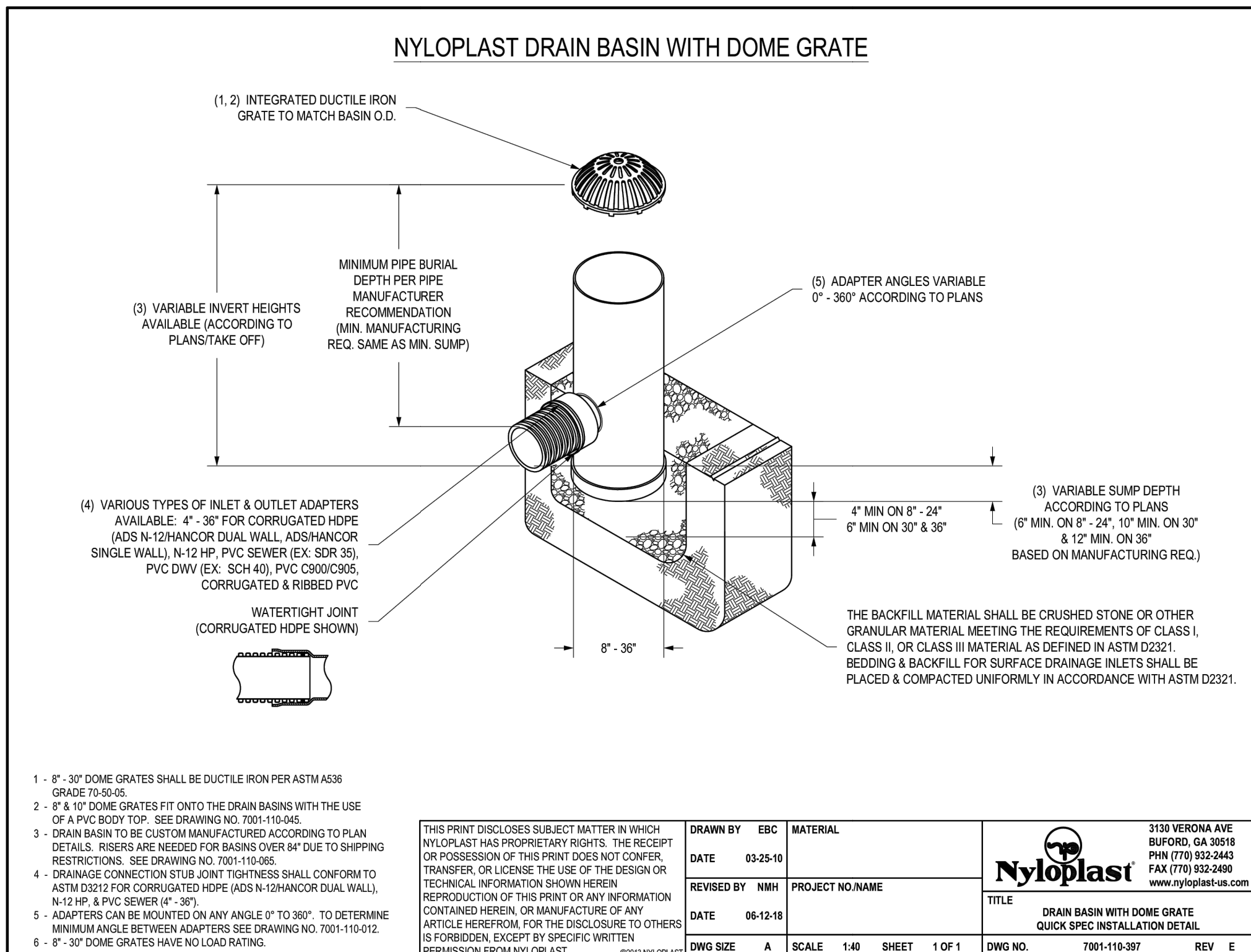
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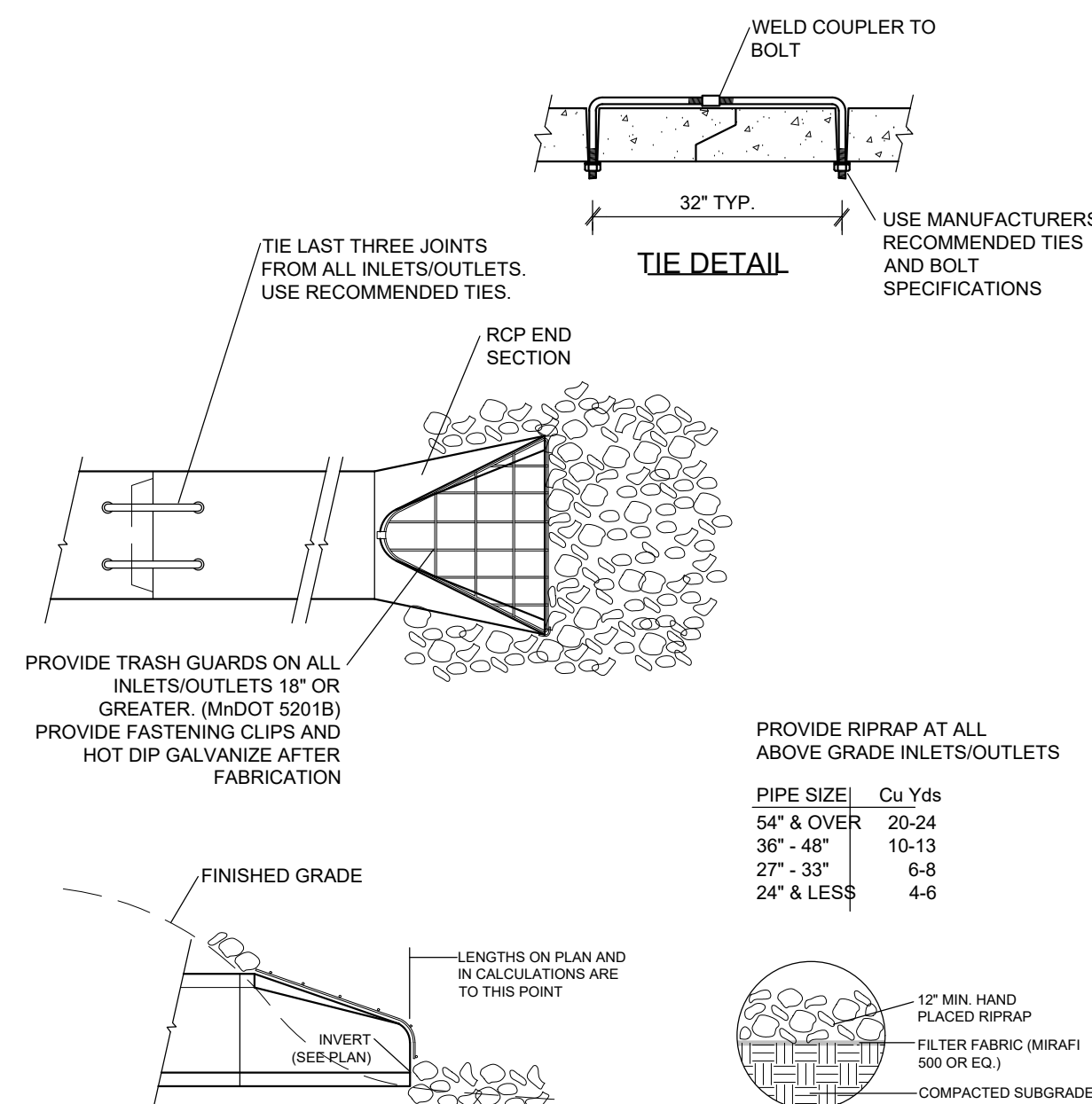
POND EMERGENCY OVERFLOW

NO SCALE



NYLOPLAST DRAIN BASIN

NO SCALE



FLARED END SECTION WITH RIP RAP

NO SCALE

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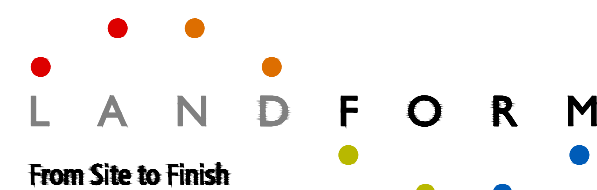
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Minneapolis, MN 55401

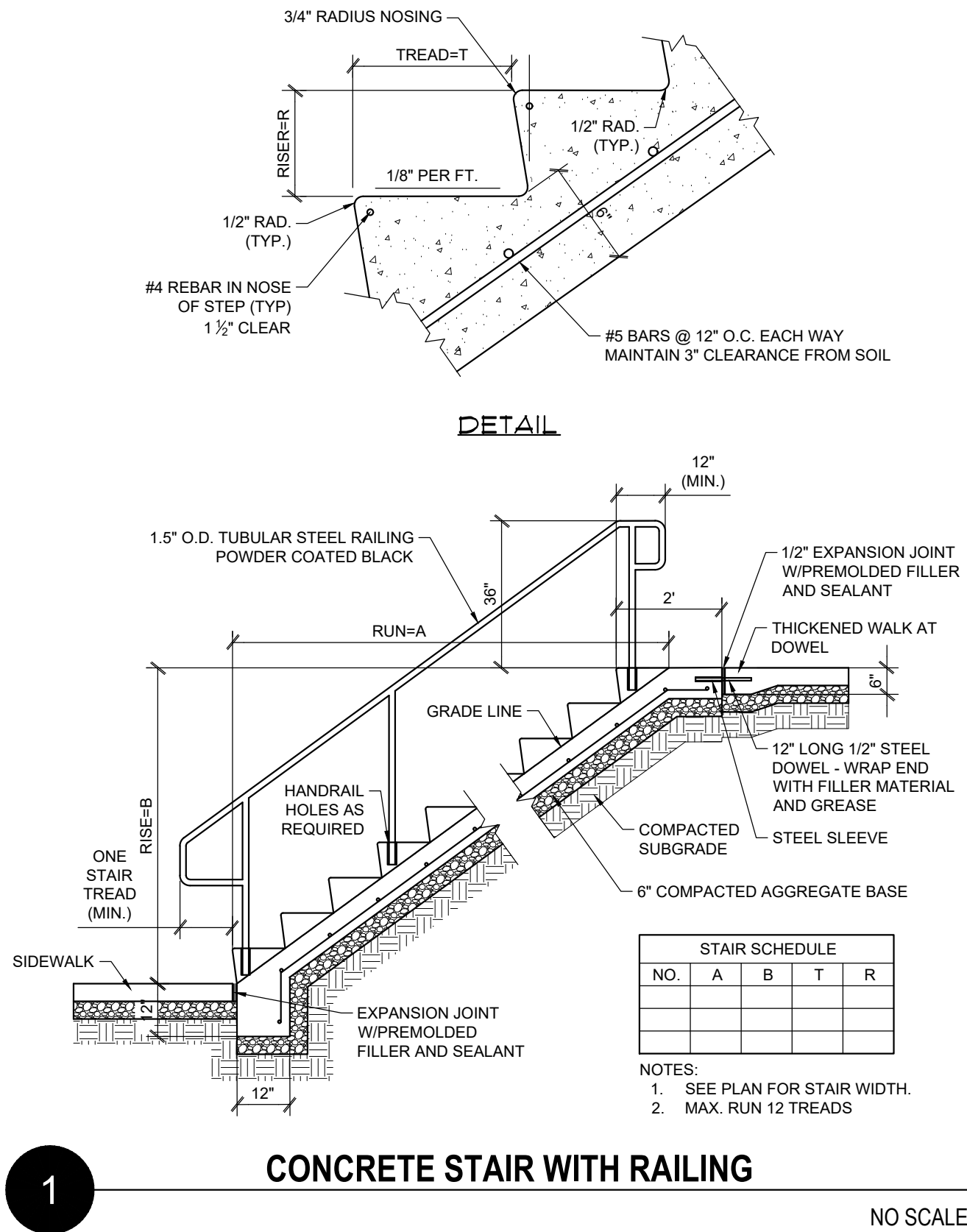
Tel: 612-252-9070
Fax: 612-252-9077
Web: landform.net

FILE NAME C703ASG001-001.DWG

PROJECT NO. ASG20001-001

CIVIL CONSTRUCTION DETAILS

C7.3



DEVELOPER

ASGUARD ACQUISITIONS, LLC.
7535 River Road Northeast
Olsego, MN 55330
TEL 612-598-3920

MUNICIPALITY


ROGERS, MN

PROJECT

ASGUARD
PHASE 2
ROGERS, MN

ISSUE / REVISION HISTORY

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DATE	ISSUE / REVISION	REVIEW
AUG 28 2024	CLIENT REVIEW SET	SES

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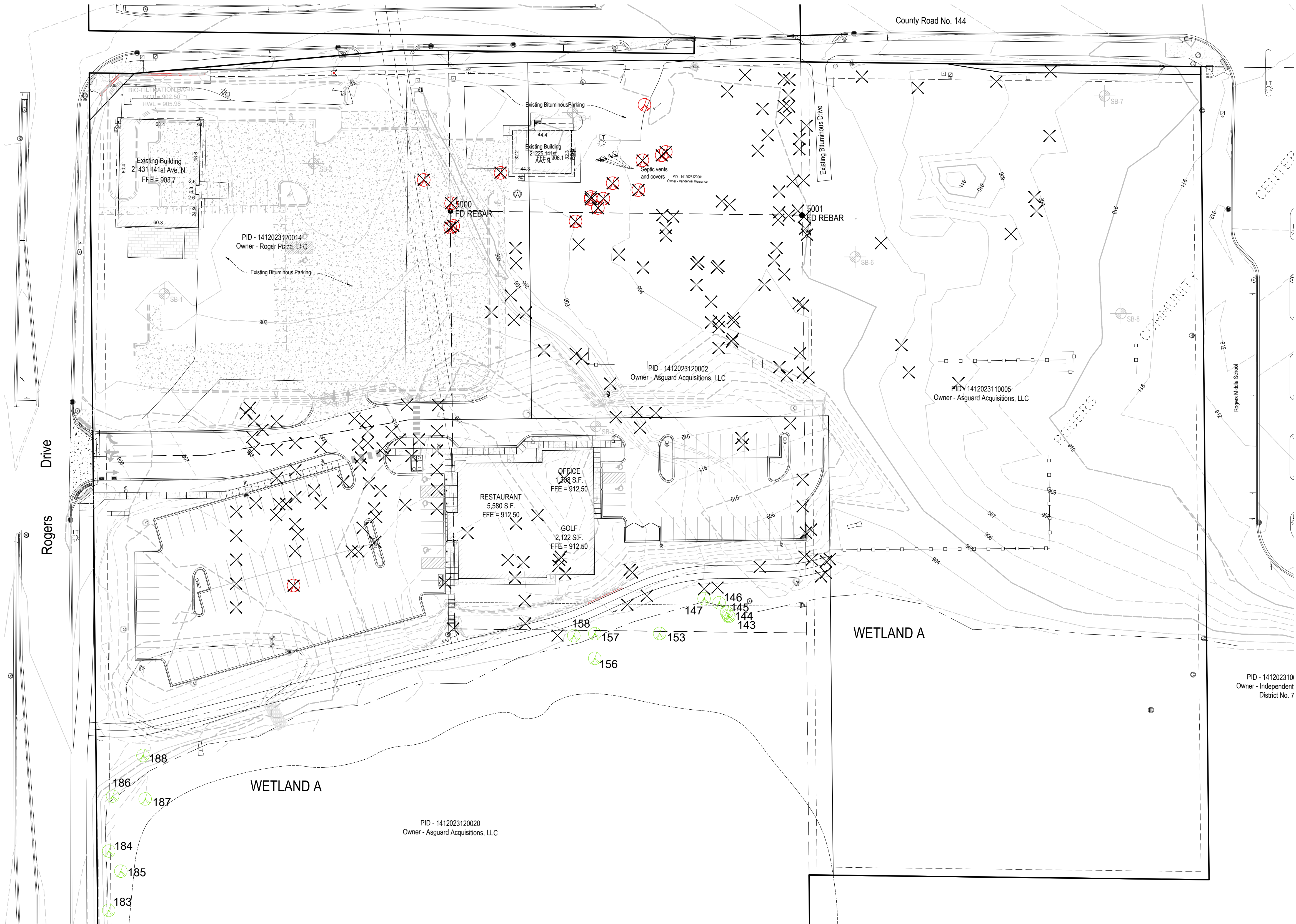
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PROJECT NO. ASG20001-001

CIVIL CONSTRUCTION DETAILS

C7.4

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SUMMARY	
Total significant trees on site	210
Total removals	195
Total preserved	15

LEGEND	
	:Denotes tree to be removed
	:Denotes tree to be preserved

DEVELOPER

ASGUARD ACQUISITIONS, LLC.
7535 River Road Northeast
Olsego, MN 55330
TEL 612-598-3920

MUNICIPALITY

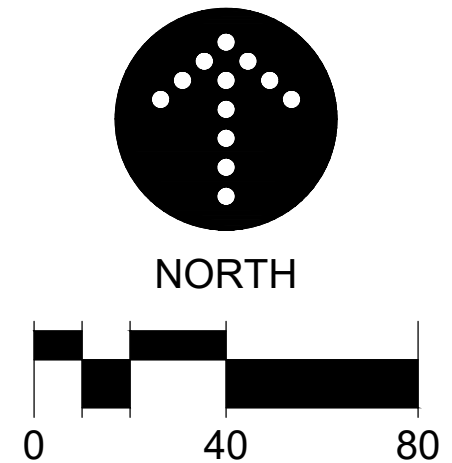
PROJECT

ASGUARD
PHASE 2
ROGERS, MN

ISSUE / REVISION HISTORY

DATE	ISSUE / REVISION	REVIEW
AUG 28 2024	CLIENT REVIEW SET	SES

LEGEND							
1 x 50' Norway Spruce	26 x 12" Boxelder	51 x 8" Boxelder	76 x 6" Boxelder	101 x 8" Boxelder	126 x 18" Boxelder	151 x 7" Boxelder	176 x 15' Juniper
2 x 30" Silver Maple	27 x 2-stem Boxelder (14",10")	52 x 16" Poplar	77 x 10" Boxelder	102 x 7" Boxelder	127 x 10" Boxelder	152 x 15" Poplar	177 x 12' Juniper
3 x 12" Boxelder	28 x 20" Boxelder	53 x 22" Poplar	78 x 16" Boxelder	103 x 8" Boxelder	128 x 3-stem Boxelder (24",20",14")	153 12" Boxelder	178 x 22' Juniper
4 x 2-stem Hackberry (20", 14")	29 x 2-stem Boxelder (16",16")	54 x 3-stem Boxelder (14",12",8")	79 x 7" Boxelder	104 x 6" Boxelder	129 x 15" Boxelder	154 x 8" Boxelder	179 x 18' Juniper
5 x 6" Boxelder	30 x 2-stem Crabapple (14",12")	55 x 30" Poplar	80 x 2-stem Boxelder (20",8")	105 x 14" Boxelder	130 x 15" Boxelder	155 x 8" Boxelder	180 x 24" Poplar
6 x 3-stem Boxelder (12" stems)	31 x 2-stem Boxelder (12",8")	56 x 6" Boxelder	81 x 22" Hackberry	106 x 8" Boxelder	131 x 15" Boxelder	156 15" Boxelder	181 x 4-stem Poplar (14",14",14",10")
7 x 14" Boxelder	32 x 3-stem Boxelder (30",18",14")	57 x 50' Norway Spruce	82 x 8" Boxelder	107 x 8" Boxelder	132 x 2-stem Boxelder (18",18")	157 12" Boxelder	182 x 16' Juniper
8 x 20" Boxelder	33 x 12" Boxelder	58 x 22" Ash	83 x 14" Boxelder	108 x 14" Boxelder	133 x 2-stem Boxelder (20",20")	158 12" Boxelder	183 7" Boxelder
9 x 20' Juniper	34 x 12" Boxelder	59 x 24" Ash	84 x 8" Boxelder	109 x 2-stem Boxelder (12",10")	134 x 16" Boxelder	159 x 14" Boxelder	184 2-stem Boxelder (8",6")
10 x 15" Boxelder	35 x 15" Boxelder	60 x 50' Norway Spruce	85 x 4-stem Boxelder (24",24",16",14")	110 x 12" Boxelder	135 x 14" Boxelder	160 x 50' Red Pine	185 2-stem Boxelder (8",8")
11 x 8" Boxelder	36 x 2-stem Boxelder (20",14")	61 x 50' Norway Spruce	86 x 12" Boxelder	111 x 16" Boxelder	136 x 20" Boxelder	161 x 11' Juniper	186 20" Boxelder
12 x 20" Boxelder	37 x 3-stem Boxelder (32",32",32")	62 x 50' Norway Spruce	87 x 10" Boxelder	112 x 14" Boxelder	137 x 12" Boxelder	162 x 30" Poplar	187 2-stem Boxelder (8",8")
13 x 15" Poplar	38 x 20" Boxelder	63 x 50' Norway Spruce	88 x 22" Boxelder	113 x 2-stem Boxelder (9",6")	138 x 12" Boxelder	163 x 20" Poplar	188 20" Boxelder
14 x 22' Juniper	39 x 9" Poplar	64 x 24" Silver Maple	89 x 2-stem Boxelder (18",16")	114 x 2-stem Boxelder (8",8")	139 x 14" Boxelder	164 x 20" Poplar	189 x 6" Poplar
15 x 7" Poplar	40 x 12" Poplar	65 x 2-stem Maple (9",9")	90 x 2-stem Boxelder (15",13")	115 x 12" Boxelder	140 x 14" Boxelder	165 x 10" Poplar	190 x 9" Poplar
16 x 6" Poplar	41 x 6" Boxelder	66 x 8" Poplar	91 x 8" Boxelder	116 x 14" Boxelder	141 x 15" Poplar	166 x 10' Juniper	191 x 3-stem Poplar (30",30",15")
17 x 2-stem Poplar (30", 20")	42 x 24" Poplar	67 x 14" Poplar	92 x 6" Boxelder	117 x 14" Boxelder	142 x 10" Boxelder	167 x 20" Poplar	192 x 20" Poplar
18 x 5-stem Poplar (22", 20",20",18",15")	43 x 48" Poplar	68 x 24" Poplar	93 x 6" Boxelder	118 x 18" Boxelder	143 6" Poplar	168 x 8" Boxelder	193 x 8' Juniper
19 x 2-stem Poplar (24",24")	44 x 12" Poplar	69 x 8" Boxelder	94 x 9" Boxelder	119 x 9" Boxelder	144 8" Poplar	169 x 8" Boxelder	194 x 20" Poplar
20 x 2-stem Poplar (7",8")	45 x 30" Boxelder	70 x 8" Boxelder	95 x 2-stem Boxelder (18",16")	120 x 2-stem Boxelder (20",15")	145 10" Poplar	170 x 48" Boxelder	195 x 11' Juniper
21 x 2-stem Poplar (26",16")	46 x 3-stem Poplar (30",10",8")	71 x 24" Boxelder	96 x 14" Boxelder	121 x 12" Boxelder	146 10" Poplar	171 x 13' Juniper	196 x 9' Juniper
22 x 15" Poplar	47 x 24" Poplar	72 x 30" Honeylocust	97 x 10" Boxelder	122 x 14" Boxelder	147 12" Poplar	172 x 10" Poplar	197 x 14" Poplar
23 x 22" Poplar	48 x 2-stem Poplar (18",10")	73 x 30" Boxelder	98 x 8" Hackberry	123 x 12" Boxelder	148 x 12" Poplar	173 x 2-stem Poplar (14",14")	198 x 20" Poplar
24 x 20" Boxelder	49 x 16" Boxelder	74 x 6" Boxelder	99 x 2-stem Boxelder (7",6")	124 x 24" Boxelder	149 x 12" Boxelder	174 x 20" Poplar	199 x 2-stem Poplar (20",20")
25 x 10" Boxelder	50 x 6" Boxelder	75 x 10" Boxelder	100 x 2-stem Boxelder (10", 8")	125 x 12" Boxelder	150 x 12" Boxelder	175 x 20" Poplar	200 x 16" Poplar
							201 x 3-stem Poplar (20",20",18")
							202 x 8" Poplar
							203 x 10" Poplar
							204 x 2-stem Poplar (20",18")
							205 x 2-stem Poplar (8",8")
							206 x 4-stem Poplar (20",15",15",8")
							207 x 16" Poplar
							208 x 3-stem Poplar (30",28",22")
							209 x 3-stem Poplar (12",12",12")
							210 x 6" Oak



CERTIFICATION

I hereby certify that this plan was prepared by me, or under my direct supervision, and that I am a duly Licensed Landscape Architect under the laws of the state of MINNESOTA.

Joshua K. Poppen
License No. 44803

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CLIENT REVIEW SET

08.28.2024

LANDFORM

From Site to Finish

105 South Fifth Avenue
Suite 513
Minneapolis, MN 55401

Tel: 612-252-9070
Fax: 612-252-9077
Web: landform.net

FILE NAME L101ASG001-001.DWG

PROJECT NO. ASG20001-001

TREE PRESERVATION PLAN

L1.1

Landform/Pand Site to Finish/Pave registered service marks of Landform PPage 443 of 539

Overall Plant Schedule													
Symbol	Code	Qty	Botanical / Common Name	Mature Size	Planting Size	Root Condition	Shrubs						
Deciduous Trees								CORC	8	Comus racemosa / Gray Dogwood	12'H x 15'W	5 GAL.	POT
	ACRU	4	Acer rubrum 'Autumn Spire' / Autumn Spire Maple	50'H x 25'W	2.5' Cal.	B & B		DILO	19	Diervilla lonicera / Dwarf Bush Honeysuckle	4'H x 3'W	#3 Cont.	POT
	ACNO	2	Acer rubrum 'Northwood' / Northwood Maple	50'H x 40'W	2.5' Cal.	B & B		JUWI	20	Juniperus horizontalis 'Wiltoni' / Blue Rug Juniper	0.5'H x 7'W	3 GAL.	POT
	BEND	14	Betula nigra 'Dura Heat' / Dura Heat River Birch	35'H x 18'W	2.5' Cal.	B & B		RAGL	38	Rhus aromatica 'Gro-Low' / Gro-Low Fragrant Sumac	2'H x 7'W	2 GAL.	POT
	CEOC	4	Celtis occidentalis / Common Hackberry	50'H x 50'W	2.5' Cal.	B & B		SYME	42	Syringa meyeri 'Palibin' / Dwarf Korean Lilac	5'H x 6'W	3' HEIGHT	POT
	QUBI	5	Quercus bicolor / Swamp White Oak	55'H x 55'W	2.5' Cal.	B & B		SYMK	17	Syringa pubescens 'Miss Kim' / Miss Kim Korean Lilac	6'H x 6'W	3 GAL.	POT
	SYRI	1	Syringa reticulata 'Ivory Silk' / Ivory Silk Japanese Tree Lilac	25'H x 20'W	2.5' Cal.	B & B	Grasses						
Evergreen Trees								CALB	9	Calamagrostis brachytricha / Korean Feather Reed Grass	3'H x 2'W	#1 Cont.	POT
	JUVI	6	Juniperus virginiana / Eastern Red Cedar	45'H x 20'W	6' Ht.	B & B		CAKF	109	Calamagrostis x acutiflora 'Karl Foerster' / Feather Reed Grass	4'H x 2'W	2 GAL.	POT
	PIAB	6	Picea abies / Norway Spruce	50'H x 30'W	6' Ht.	B & B		PANI	12	Panicum virgatum 'Northwind' / Northwind Switch Grass	4'H x 2'W	#1 Cont.	POT
	PIGL	3	Picea glauca / White Spruce	50'H x 20'W	6'	B & B	Perennials						
Ornamental Trees								HOBA	11	Hosta x 'Blue Angel' / Plantain Lily	2.5'H x 4'W	1 GAL.	POT
	JUVI	6	Juniperus virginiana / Eastern Red Cedar	45'H x 20'W	6' Ht.	B & B		NEPW	19	Nepeta racemosa 'Snowflake' / Snowflake White Catmint	2'H x 2'W	#2 Cont.	POT
	PIAB	6	Picea abies / Norway Spruce	50'H x 30'W	6' Ht.	B & B		NEPP	23	Nepeta racemosa 'Walker's Low' / Walker's Low Catmint	2'H x 2'W	#2 Cont.	POT
	PIGL	3	Picea glauca / White Spruce	50'H x 20'W	6'	B & B		RUOP	45	Rutbeckia purpurea / Purple Coneflower	2'H x 2'W	#1	POT
								SEDU	71	Sedum x 'Autumn Joy' / Autumn Joy Sedum	2'H x 2'W	#2	POT
							Ground Covers						
								ANDO	224	Andropogon gerardi / Big Bluestem	6'H x 3'W	1 GAL.	POT
	MAPR	2	Malus x 'Prairifire' / Prairifire Crabapple	20'H x 20'W	1.5' Cal.	POT							
	MASP	7	Malus x 'Spring Snow' / Spring Snow Crab Apple	25'H x 20'W	1.5' Cal.	POT							

1. For construction Staking and Surveying services contact Landform at 612.252.9070.

- ## LANDSCAPE NOTES
2. Contact Utility Service providers for field location of services 72 hours prior to beginning.
 3. Coordinate installation with Contractors performing related work.
 4. Seed mixtures (BWRSR Shallow Rooted BMP mix) as defined in current BWRSR Seed Mix manual and (MNDOT Native Constitution 32-241 mix) as defined in current MNDOT Seeding Manual. Native Seeds shall be of Minnesota origin and certified by the Minnesota Crop Improvement Association (MCIA). Provide verifying documentation to the Owner 30 days minimum prior to installation.
 5. Plant material shall conform to the American Association of Nurserymen Standards and be of hardy stock, free from disease, infestation, damage, and disfigurement.
 6. All existing deciduous/coniferous trees are to be trimmed of dead wood and pruned to a natural uniform shape.
 7. Planting soil shall consist of 4 parts topsoil to 1 part peat humus, with 3 pounds of commercial fertilizer added per cubic yard.
 8. Spread a minimum of (4) inches of topsoil and soil all turf areas disturbed by Construction.
 9. Follow current MNDOT Seeding Manual for planting instructions for establishment of native seed and provide coordination for required erosion prevention and sediment control.
 10. Edge planting beds with 6-inch Black Vinyl Edging (Black Diamond or approved equal) except where adjacent to curbs, walkways or buildings.
 11. Place plants according to layout with proper nominal spacing. For discrepancy between the number of plants on the Schedule and the number shown on the Drawing, the Drawing shall govern. Quantities listed in plant schedule are total quantities for design.
 12. See Details for depth of planting soil.
 13. Install 4 inch depth of triple-shredded hardwood mulch in Shrub Bed Areas.
 14. Install 2 to 3 inch depth of triple-shredded hardwood mulch in Perennial Bed Areas.
 15. Install a 4-foot diameter triple-shredded hardwood mulch dish around trees not placed within a Shrub or Perennial Planting Bed. Edging is not required, unless noted otherwise.
 16. Install 2 to 3 inch (nominal size) grey trap rock to a depth of 4 inches. Landscape fabric shall be installed under all areas of rock mulch. Secure all edges and seams of fabric with 6-inch landscape staples.
 17. Irrigation is required. Irrigation shall be designed by irrigation contractor. Contractor shall submit design plan and all shop drawings and system components to Landscape Architect for review, prior to purchase and installation. Contractor shall follow all applicable codes and obtain all necessary permits from local jurisdiction.
 18. A plant material shall have a 2-year warranty. The warranty shall begin after the last plant has been installed and the Landscape Architect has approved the installation. Landscape contractor is responsible for replacing any and all plant material that dies during the warranty period. Landscape contractor shall assume all costs to any replacements. All replacements shall be same species and sizes and equal or better variety than original installation.

Tree replacement not required to exceed (10) trees per acre

Total site area (excluding wetland)	8.50 acres
Maximum trees required	87
Proposed trees	92
Convenience store lot	2.08 acres
Existing trees removed	21
Replacement trees required	21
Maximum new trees required (2.08 x 10 trees/acre)	21
Proposed trees	21 (to be installed in future phase)
Broadway Pizza lot	2.37 acres
Existing trees removed	85
Replacement trees required	86
Maximum new trees required (2.37 x 10 trees/acre)	24
Proposed trees	34 (installed)
Asguard lot	4.05 acres
Existing trees removed	89
Replacement trees required	89
Maximum new trees required (4.05 x 10 trees/acre)	41
Proposed trees	42

Note: See sheet L1.1 for tree preservation summary

	Sod
	Seed mix: MNDOT Native Construction (32-241) seed at rate of 38 lbs/acre
	Seed mix: BWSR Shallow Rooted BMP seed at rate of 41.31 lbs/acre
	Rock mulch

DEVELOPER

ASGUARD ACQUISITIONS, LLC.
7535 River Road Northeast
Otsego, MN 55330
TEL 612-598-3920

MUNICIPALITY



PROJECT

ASGUARD PHASE 2 ROGERS, MN

ISSUE / REVISION HISTORY

DATE	ISSUE / REVISION	REVIEW
AUG 28 2024	CLIENT REVIEW SET	SES

CERTIFICATION

I hereby certify that this plan was prepared by me, or under my direct supervision, and that I am a duly Licensed Landscape Architect under the laws of the state of MINNESOTA.

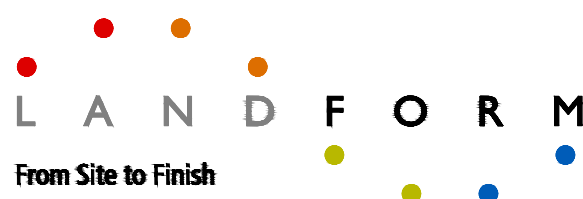
Joshua K. Popelton
License No: 44803

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CLIENT REVIEW SET

08.28.2024



105 South Fifth Avenue
Suite 513
Minneapolis, MN 55401

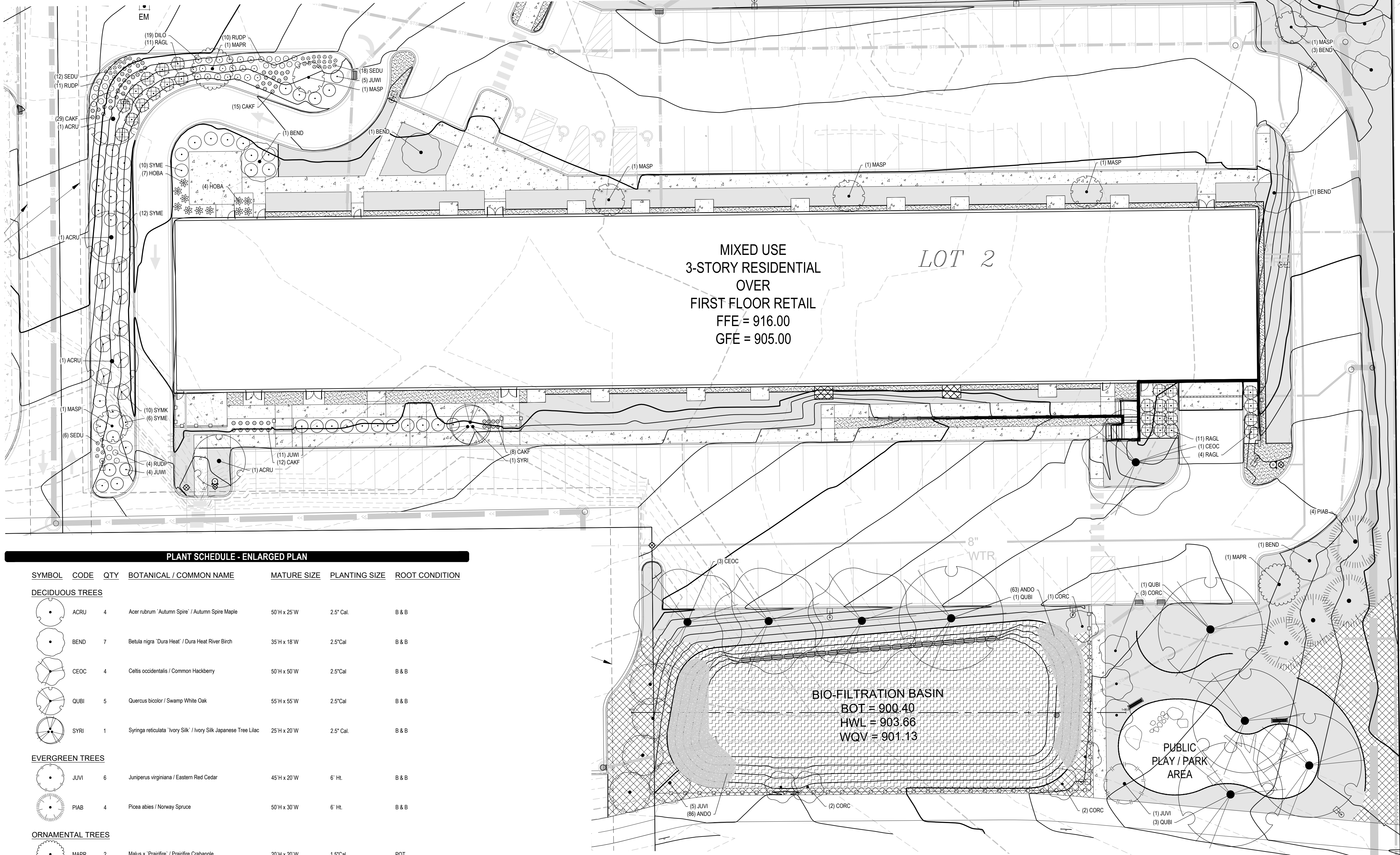
Tel: 612-252-9070
Fax: 612-252-9077
Web: landform.net

FILE NAME L201ASG001-001.DWG

PROJECT NO. ASG20001-001

LANDSCAPE PLAN - OVERALL

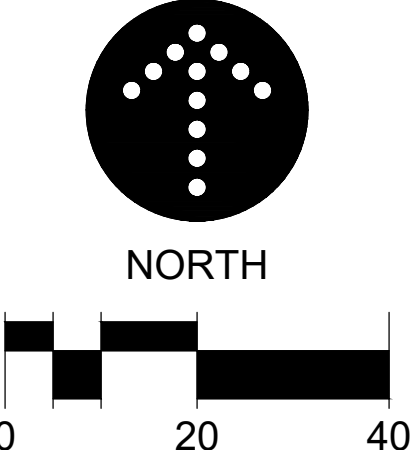
L2.1



PLANT SCHEDULE - ENLARGED PLAN						
SYMBOL	CODE	QTY	BOTANICAL / COMMON NAME	MATURE SIZE	PLANTING SIZE	ROOT CONDITION
DECIDUOUS TREES						
	ACRU	4	Acer rubrum 'Autumn Spire' / Autumn Spire Maple	50' H x 25' W	2.5' Cal.	B & B
	BEND	7	Betula nigra 'Dura Heat' / Dura Heat River Birch	35' H x 18' W	2.5' Cal	B & B
	CEOC	4	Celtis occidentalis / Common Hackberry	50' H x 50' W	2.5' Cal	B & B
	QUBI	5	Quercus bicolor / Swamp White Oak	55' H x 55' W	2.5' Cal	B & B
	SYRI	1	Syringa reticulata 'Ivory Silk' / Ivory Silk Japanese Tree Lilac	25' H x 20' W	2.5' Cal.	B & B
EVERGREEN TREES						
	JUVI	6	Juniperus virginiana / Eastern Red Cedar	45' H x 20' W	6' Ht.	B & B
	PIAB	4	Picea abies / Norway Spruce	50' H x 30' W	6' Ht.	B & B
ORNAMENTAL TREES						
	MAPR	2	Malus x 'Prairifire' / Prairifire Crabapple	20' H x 20' W	1.5' Cal	POT
	MASP	6	Malus x 'Spring Snow' / Spring Snow Crab Apple	25' H x 20' W	1.5' Cal	POT
SHRUBS						
	CORC	8	Cornus racemosa / Gray Dogwood	12' H x 15' W	5 GAL.	POT
	DILO	19	Diervilla lonicera / Dwarf Bush Honeysuckle	4' H x 3' W	#3 Cont.	POT
	JUVI	20	Juniperus horizontalis 'Wiltonii' / Blue Rug Juniper	0.5' H x 7' W	3 GAL.	POT
	RAGL	26	Rhus aromatica 'Gro-Low' / Gro-Low Fragrant Sumac	2' H x 7' W	2 GAL.	POT
	SYME	28	Syringa meyeri 'Palibin' / Dwarf Korean Lilac	5' H x 6' W	3' HEIGHT	POT
	SYMK	10	Syringa pubescens 'Miss Kim' / Miss Kim Korean Lilac	6' H x 6' W	3 GAL.	POT
GRASSES						
	CAKF	64	Calamagrostis x acutiflora 'Karl Foerster' / Feather Reed Grass	4' H x 2' W	2 GAL.	POT
PERENNIALS						
	HOB A	11	Hosta x 'Blue Angel' / Plantain Lily	2.5' H x 4' W	1 GAL.	POT
	RUDP	25	Rudbeckia purpurea / Purple Coneflower	2' H x 2' W	#1	POT
	SEDU	36	Sedum x 'Autumn Joy' / Autumn Joy Sedum	2' H x 2' W	#2	POT
GROUND COVERS						
	ANDO	149	Andropogon gerardi / Big Bluestem	6' H x 3' W	1 GAL.	POT

- GENERAL NOTES
- For construction Staking and Surveying services contact Landform at 612.252.9070.
- LANDSCAPE NOTES
- Contact Utility Service providers for field location of services 72 hours prior to beginning.
 - Coordinate installation with Contractors performing related work.
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 - Plant material shall conform to the American Association of Nurserymen Standards and be of hardy stock, free from disease, infestation, damage, and disfigurement.
 - All existing deciduous/coniferous trees are to be trimmed of dead wood and pruned to a natural uniform shape.
 - Planting soil shall consist of 4 parts topsoil to 1 part peat humus, with 3 pounds of commercial fertilizer added per cubic yard.
 - Spread a minimum of (4) inches of topsoil and sod all turf areas disturbed by Construction.
 - Follow current MNDOT Seeding Manual for planting instructions for establishment of native seed and provide coordination for required erosion prevention and sediment control.
 - Edge planting beds with 6-inch Black Vinyl Edging (Black Diamond or approved equal) except where adjacent to curbing, walks or buildings.
 - Place plants according to layout with proper nominal spacing. For discrepancy between the number of plants on the Schedule and the number shown on the Drawing, the Drawing shall govern. Quantities listed in plant schedule are for this sheet only. See sheet L2.1 for total quantities for design.

LEGEND	
	Sod
	Seed mix: MNDOT Native Construction (32-241) seed at rate of 38 lbs/acre
	Seed mix: BWSR Shallow Rooted BMP seed at rate of 41.31 lbs/acre
	Rock mulch



CERTIFICATION

I hereby certify that this plan was prepared by me, or under my direct supervision, and that I am a duly Licensed Landscape Architect under the laws of the state of MINNESOTA.

Justina K. Poppen
License No. 448033
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CLIENT REVIEW SET
08.28.2024

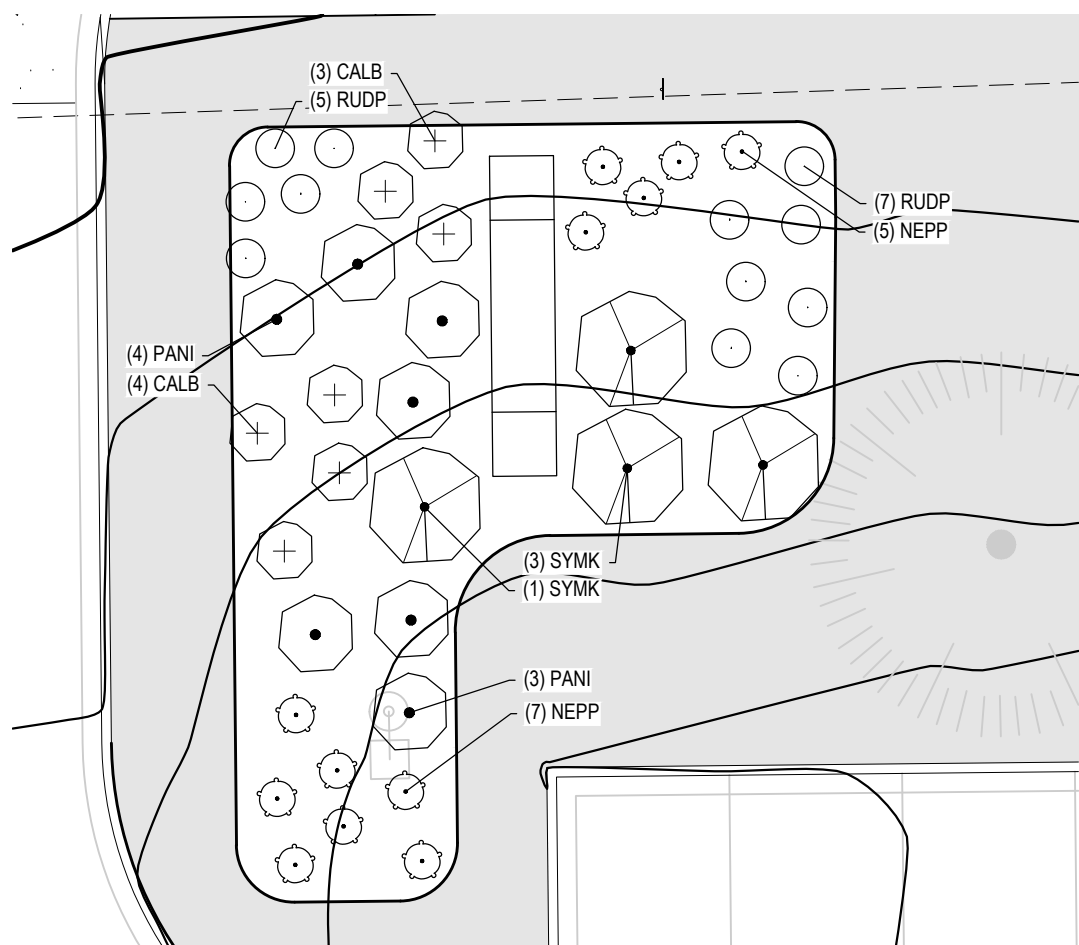
LANDFORM
From Site to Finish
105 South Fifth Avenue Suite 513 Minneapolis, MN 55401
Tel: 612-252-9070 Fax: 612-252-9077 Web: landform.net
FILE NAME L202ASG001-001.DWG
PROJECT NO. ASG20001-001

ENLARGED PLAN - MIXED USE
L2.2



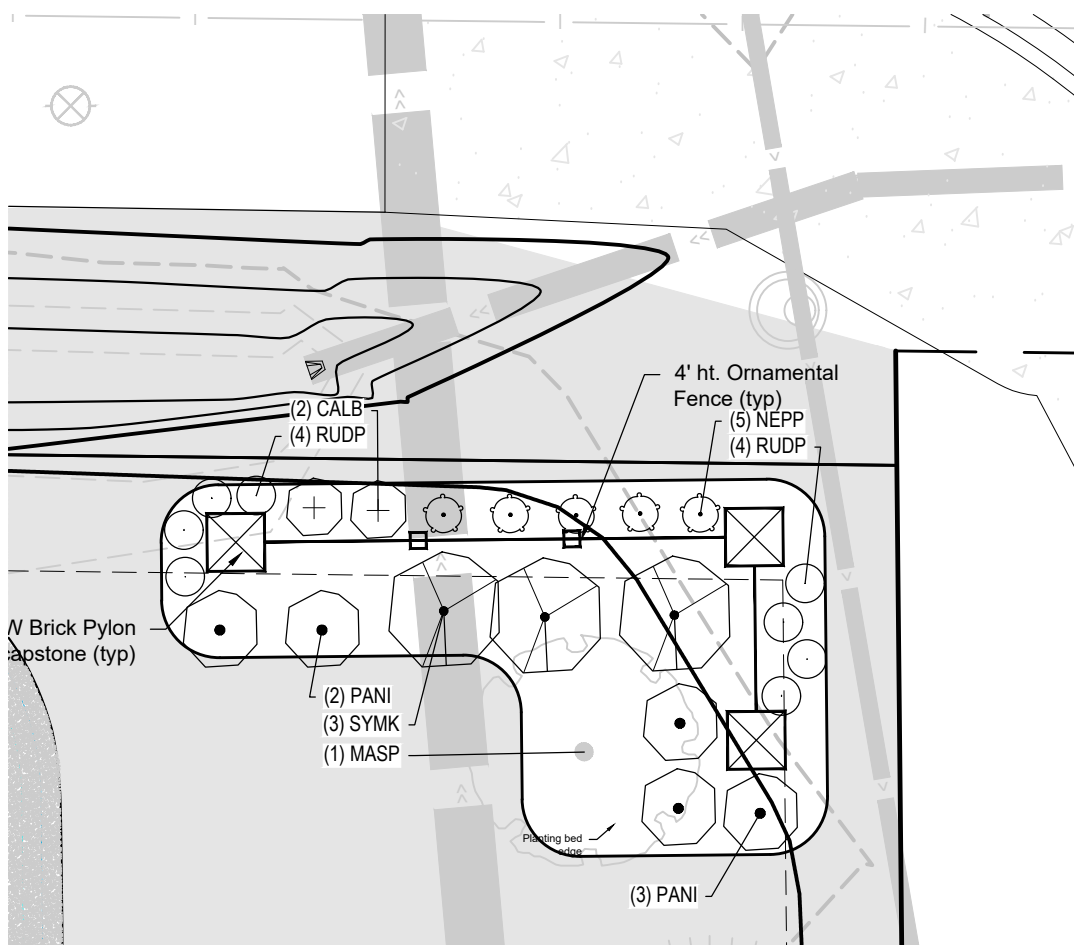
FEATURE AREA

Scale : 1" = 10'



ENTRY MONUMENT

Scale : 1" = 10'



ORNAMENTAL PYLON FEATURE

Scale : 1" = 10'

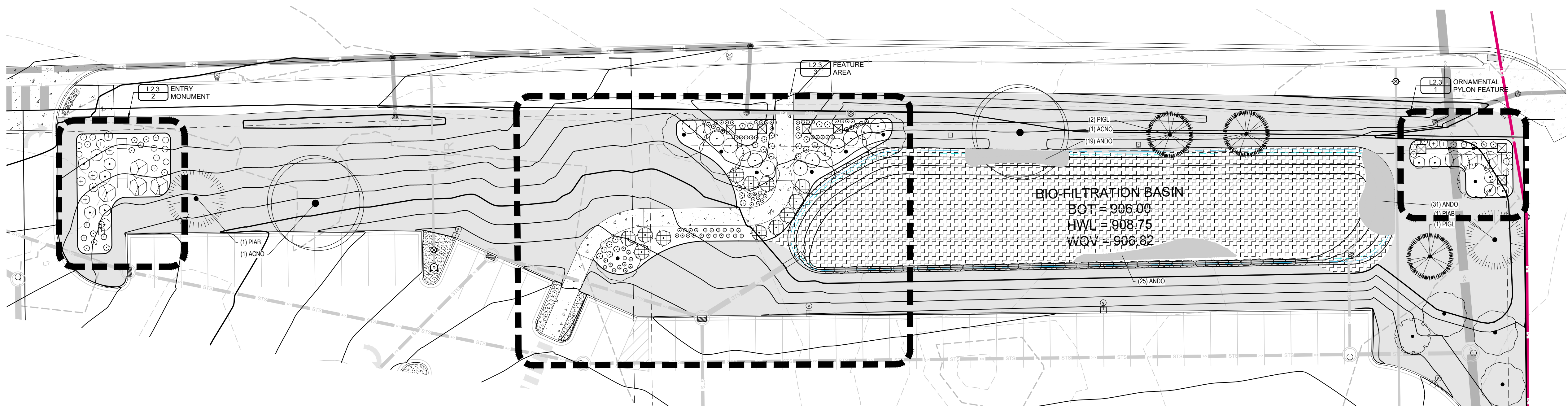
GENERAL NOTES

LANDSCAPE NOTES

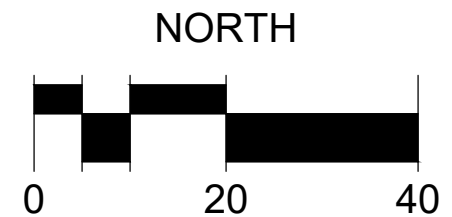
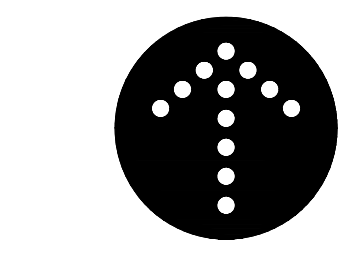
LEGEND

PLANT SCHEDULE - ENLARGED PLAN

SYMBOL	CODE	QTY	BOTANICAL / COMMON NAME	MATURE SIZE	PLANTING SIZE	ROOT CONDITION
DECIDUOUS TREES						
	ACNO	2	Acer rubrum 'Northwood' / Northwood Maple	50'H x 40'W	2.5'Cal	B & B
	BEND	7	Betula nigra 'Dura Heat' / Dura Heat River Birch	35'H x 18'W	2.5'Cal	B & B
EVERGREEN TREES						
	PIAB	2	Picea abies / Norway Spruce	50'H x 30'W	6' Ht.	B & B
	PIGL	3	Picea glauca / White Spruce	50'H x 20'W	6'	B & B
ORNAMENTAL TREES						
	MASP	1	Malus x 'Spring Snow' / Spring Snow Crab Apple	25'H x 20'W	1.5'Cal	POT
SHRUBS						
	RAGL	12	Rhus aromatica 'Gro-Low' / Gro-Low Fragrant Sumac	2'H x 7'W	2 GAL.	POT
	SYME	14	Syringa meyeri 'Palibin' / Dwarf Korean Lilac	5'H x 6'W	3' HEIGHT	POT
	SYMK	7	Syringa pubescens 'Miss Kim' / Miss Kim Korean Lilac	6'H x 6'W	3 GAL.	POT
GRASSES						
	CALB	9	Calamagrostis brachytricha / Korean Feather Reed Grass	3'H x 2'W	#1 Cont.	POT
	CAKF	45	Calamagrostis x acutiflora 'Karl Foerster' / Feather Reed Grass	4'H x 2'W	2 GAL.	POT
	PANI	12	Panicum virgatum 'Northwind' / Northwind Switch Grass	4'H x 2'W	#1 Cont.	POT
PERENNIALS						
	NEPW	19	Nepeta racemosa 'Snowflake' / Snowflake White Catmint	2'H x 2'W	#2 Cont.	POT
	NEPP	23	Nepeta racemosa 'Walker's Low' / Walker's Low Catmint	2'H x 2'W	#2 Cont.	POT
	RUDP	20	Rudbeckia purpurea / Purple Coneflower	2'H x 2'W	#1	POT
	SEDU	35	Sedum x 'Autumn Joy' / Autumn Joy Sedum	2'H x 2'W	#2	POT
GROUND COVERS						
	ANDO	75	Andropogon gerardii / Big Bluestem	6'H x 3'W	1 GAL.	POT



Know what's Below.
Call before you dig.



DEVELOPER

ASGUARD ACQUISITIONS, LLC.

MUNICIPALITY

PROJECT

ASGUARD PHASE 2

ROGERS, MN

ISSUE / REVISION HISTORY

CERTIFICATION

I hereby certify that this plan was prepared by me, or under my direct supervision, and that I am a duly Licensed Landscape Architect under the laws of the state of MINNESOTA.

Joshua K. Poppen
License No. 44803

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CLIENT REVIEW SET

LANDFORM

From Site to Finish

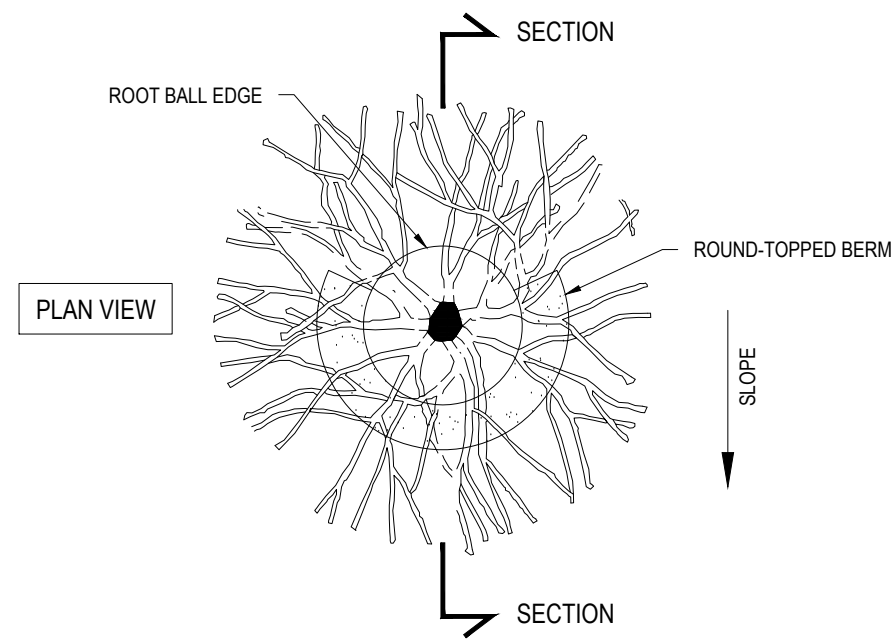
105 South Fifth Avenue
Suite 513
Minneapolis, MN 55401

Tel: 612-252-9070
Fax: 612-252-9077
Web: landform.net

FILE NAME L203ASG001-001.DWG

PROJECT NO. ASG20001-001

ENLARGED PLAN -
141ST AVE NORTH
L2.3



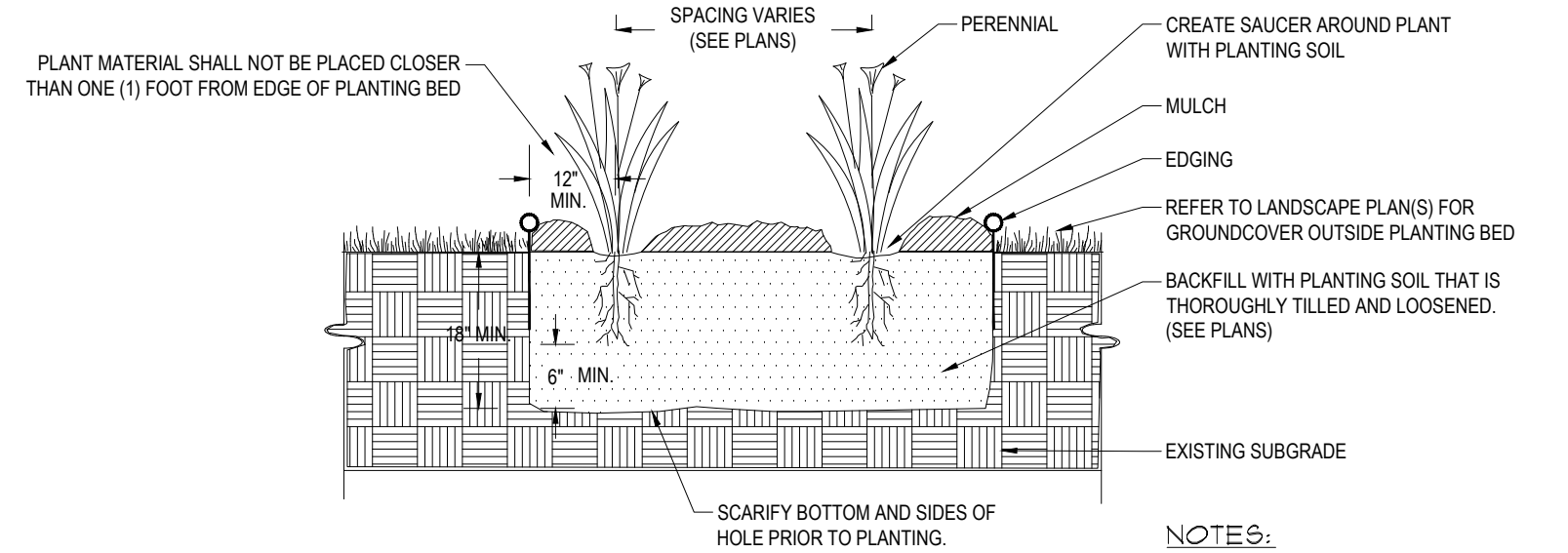
STEEP SLOPE PLANTING

NO SCALE

3

SHRUB PLANTING

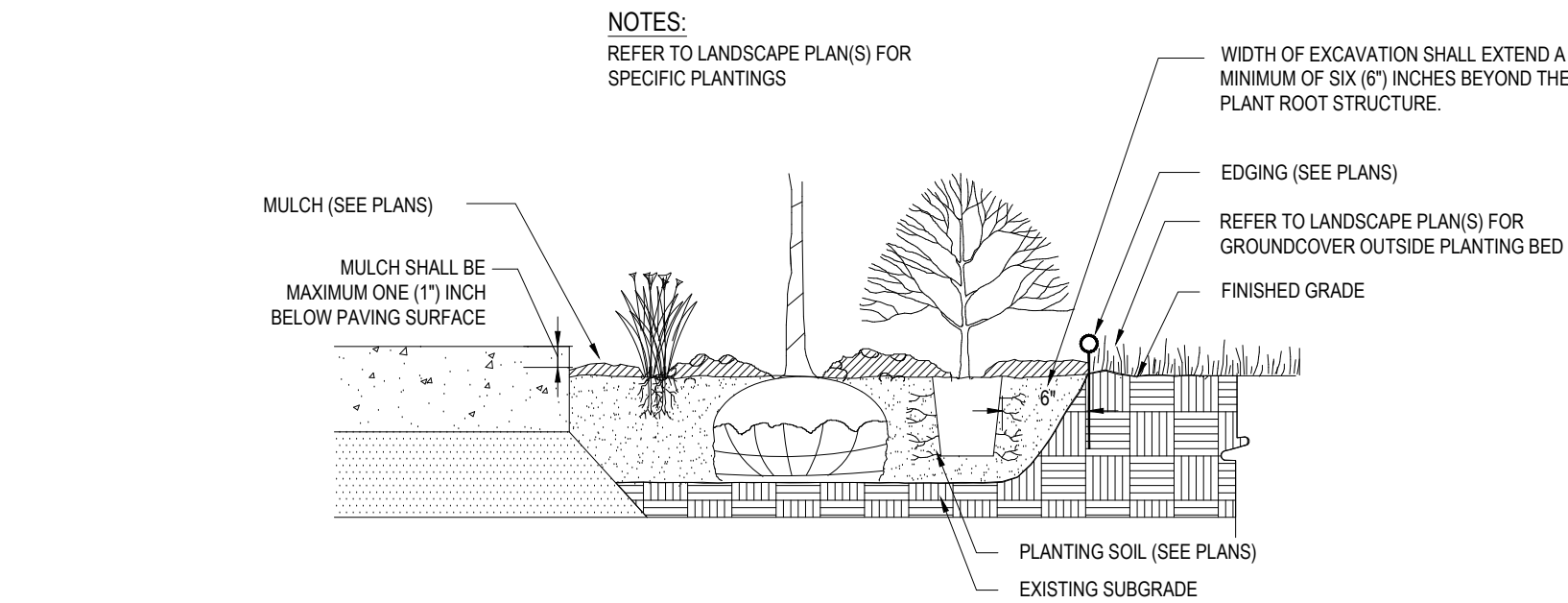
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PERENNIAL PLANTING

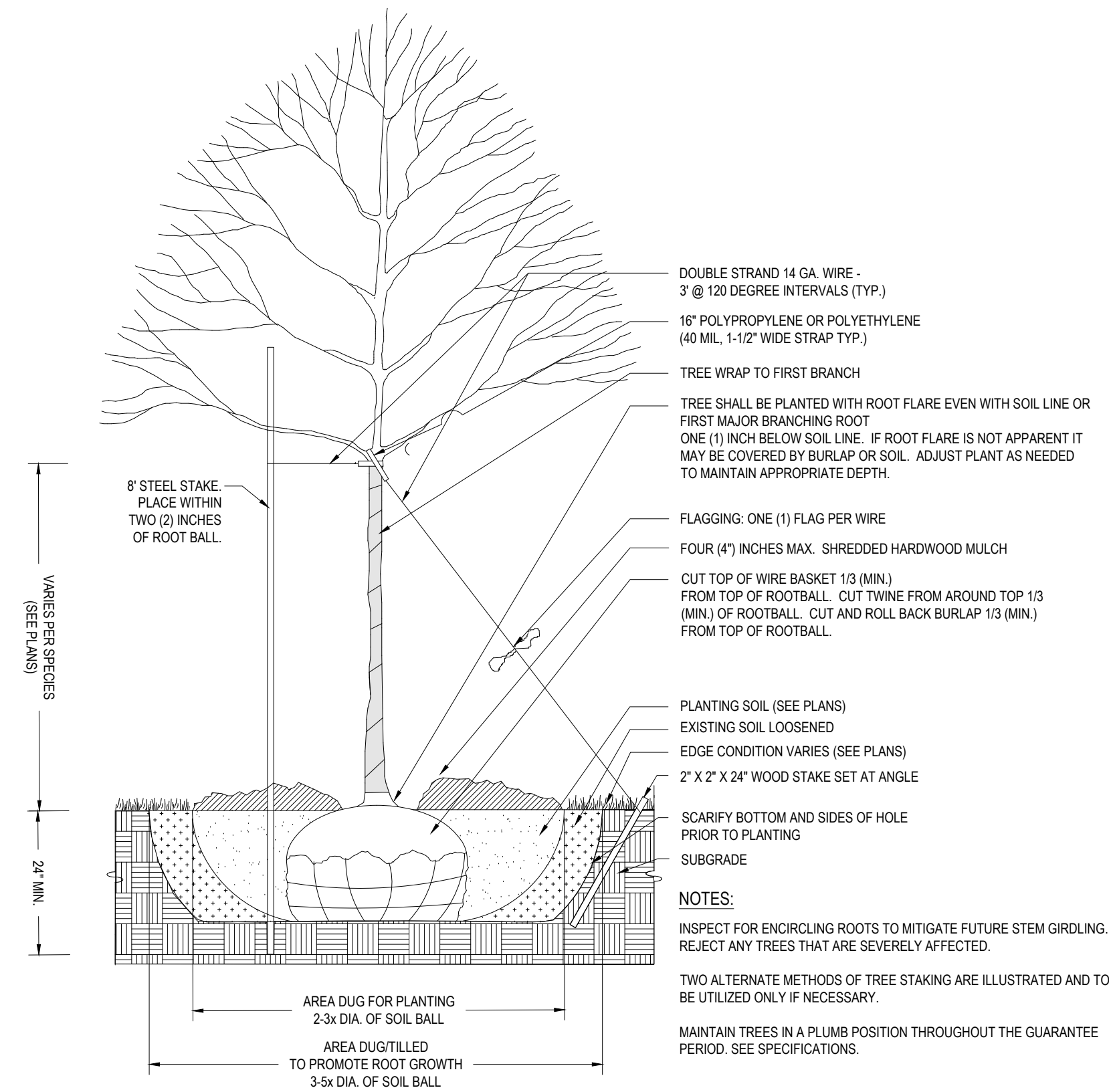
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EDGING AT PLANTING BED

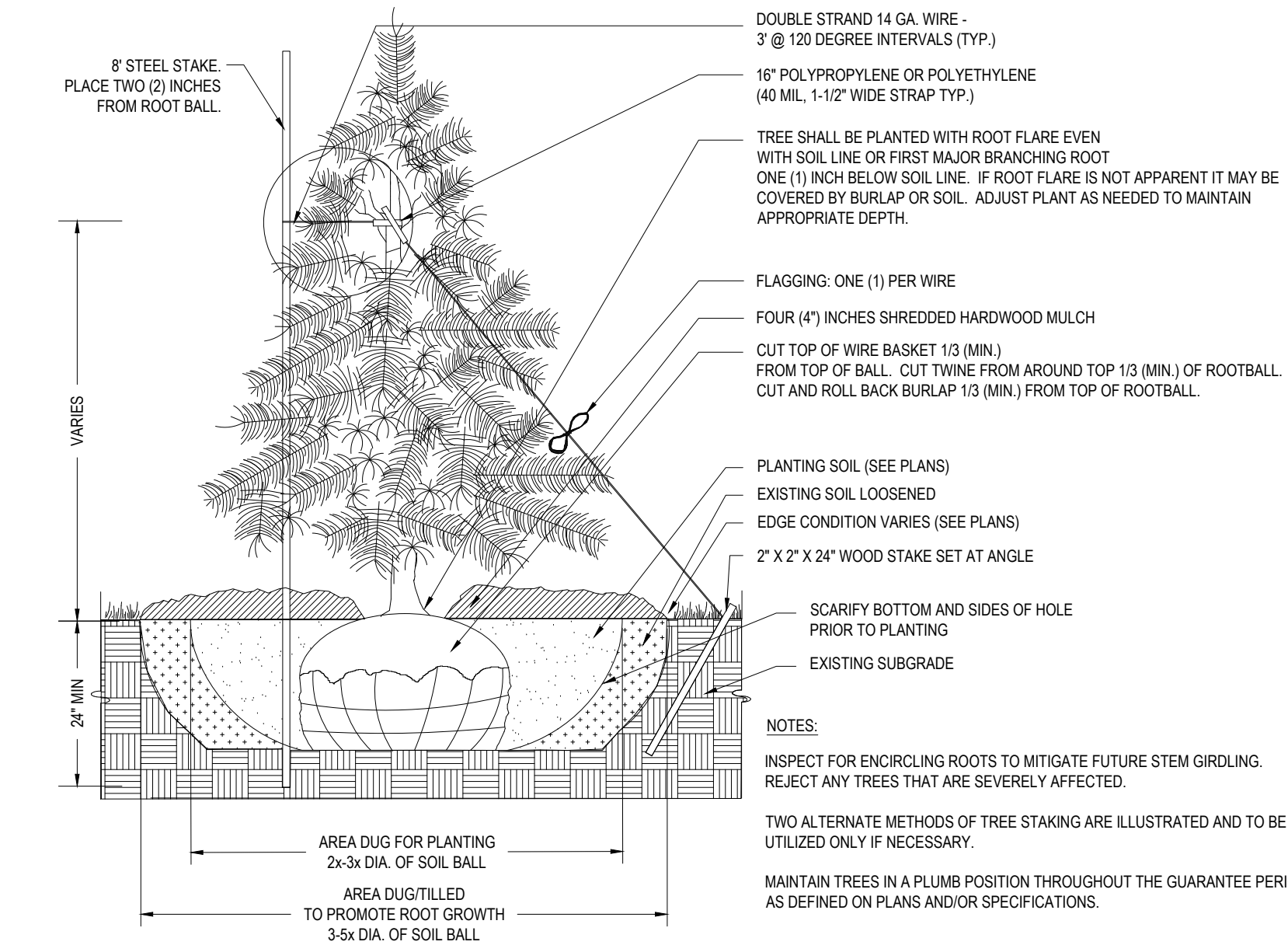
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1

DECIDUOUS TREE PLANTING

NO SCALE



2

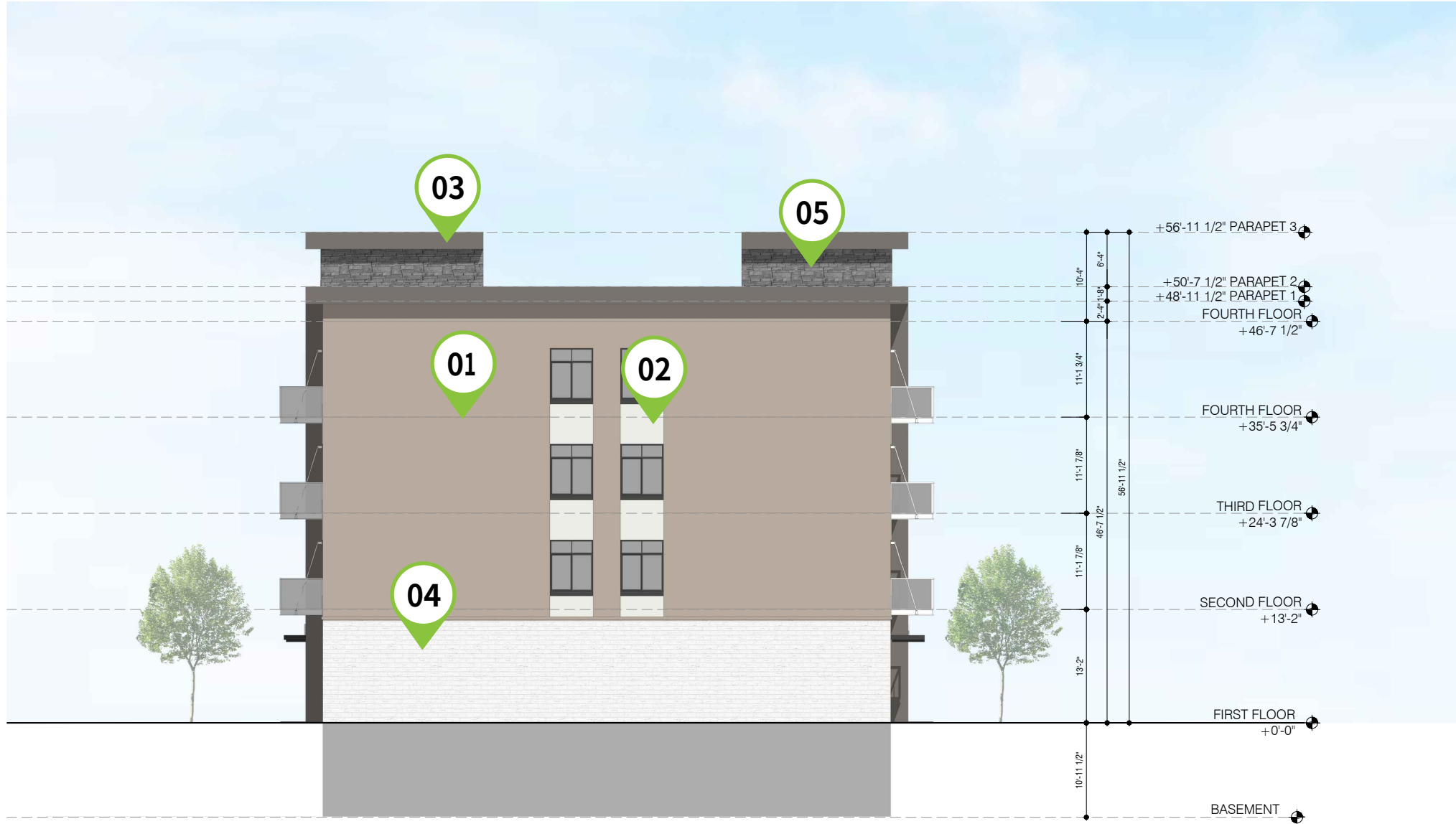
CONIFEROUS TREE PLANTING

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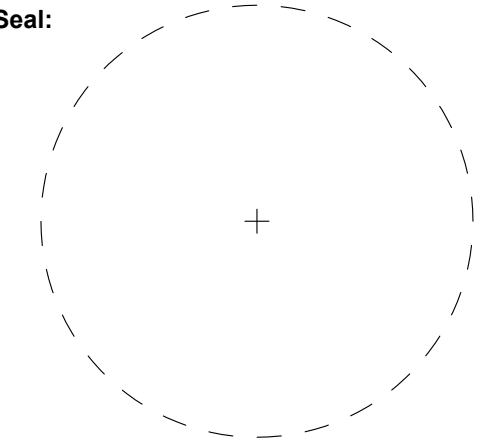
Know what's Below.
Call before you dig.

2 RIGHT SIDE ELEVATION
1/16" = 1'-0"



LEGEND-EXTERIOR FINISHES			
MARK	MTL-BRAND	FINISH-COLOR	IMAGE
01	EIFS	SW 6073 PERFECT GREIGE	
02	EIFS	SW 7005 PURE WHITE	
03	EIFS	SW 7019 GAUNTLET GRAY	
04	TBD	WHITE BRICK	
05	TBD	GRAY LEDGE STONE	

1 FRONT ELEVATION
1/16" = 1'-0"



Owner:


DARKENWALD
CORPORATION
CASEY DARKENWALD
Casey@DarkenwaldCorp.com

PROJECT INFORMATION:

ASGUARD

ROGERS, MN

ISSUE NO.	DELTA	ISSUE DATE	DESCRIPTION

CURRENT ISSUE:

PROGRESS SET

CURRENT ISSUE DATE:

2024.07.30

DRAWN BY:

HA

CHECKED BY:

MK/SD

PROJECT #:

B4-255-2401

SHEET NAME:

ELEVATION

SHEET NUMBER:

A-4.1

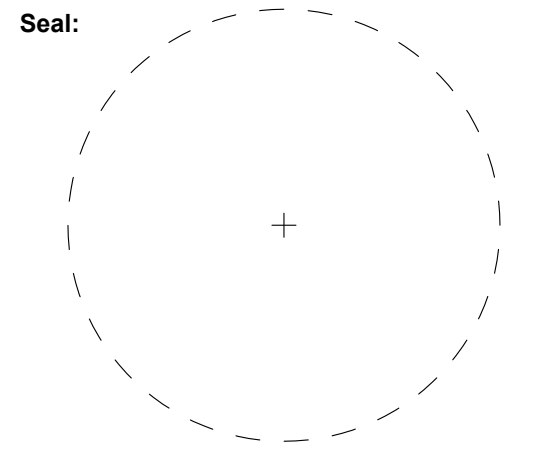


2 LEFT SIDE ELEVATION
1/16" = 1'-0"

LEGEND-EXTERIOR FINISHES			
MARK	MTL-BRAND	FINISH-COLOR	IMAGE
01	EIFS	SW 6073 PERFECT GREIGE	
02	EIFS	SW 7005 PURE WHITE	
03	EIFS	SW 7019 GAUNTLET GRAY	
04	TBD	WHITE BRICK	
05	TBD	GRAY LEDGE STONE	



BASE⁴
Architects | Engineers | Designers
Base 4 2901 Clint Moore Rd, #114
BOCA RATON, FL 33496
888.901.8008 www.base-4.com



Owner:



DARKENWALD
CORPORATION
CASEY DARKENWALD
Casey@DarkenwaldCorp.com

PROJECT INFORMATION:

ASGUARD

ROGERS, MN

ISSUE NO.	DELTA	ISSUE DATE	DESCRIPTION



1 REAR SIDE ELEVATION
1/16" = 1'-0"

CURRENT ISSUE:

PROGRESS SET

CURRENT ISSUE DATE: 2024.07.30

DRAWN BY: HA

CHECKED BY: MK/SD

PROJECT #: B4-255-2401

SHEET NAME:

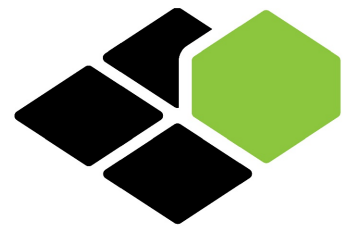
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SHEET NUMBER:

A-4.2



1 3D VIEW
N.T.S

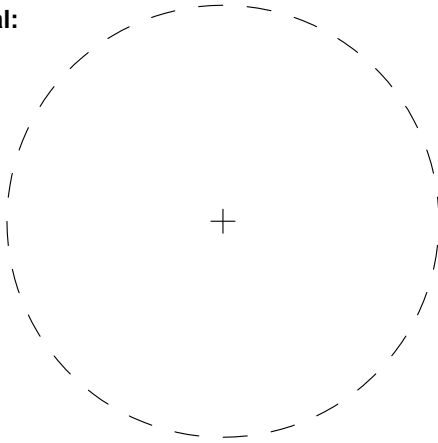


BASE⁴

Architects | Engineers | Designers

Base 4 2901 Clint Moore Rd, #114
BOCA RATON, FL 33496
888.901.8008 www.base-4.com

Seal:



Owner:



DARKENWALD
CORPORATION

CASEY DARKENWALD
Casey@DarkenwaldCorp.com

PROJECT INFORMATION:

ASGUARD

ROGERS, MN

ISSUE NO.	DELTA	ISSUE DATE	DESCRIPTION

CURRENT ISSUE:

PROGRESS SET

CURRENT ISSUE DATE:

2024.07.30

DRAWN BY:

HA

CHECKED BY:

MK/SD

PROJECT #:

B4-255-2401

SHEET NAME:

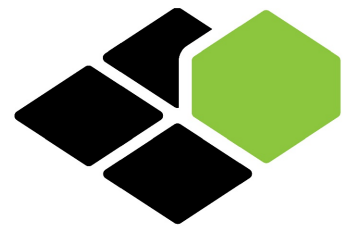
ELEVATION

SHEET NUMBER:

A-4.3



1 3D VIEW
N.T.S

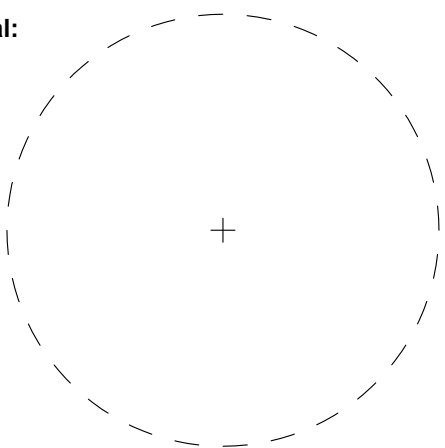


BASE⁴

Architects | Engineers | Designers

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VARIANCE WORKSHEET

1. Detail specifically the deviation(s) from code proposed (e.g. code requires X ft setback, requesting X ft setback).

Code requires one covered parking stall per apartment unit. We are requesting to reduce the number to 71 parking stalls

2. Describe how the request is in harmony with the general purpose and intent of zoning for the property.

The property will continue to be developed as a mixed use building as previously approved. The request stems from changing market demands that calls for a smaller commercial/fitness space and increased housing.

3. Describe how the request is consistent with the Comprehensive Plan.

The property is already approved for a mixed use development that is consistent with the Comp Plan. The applicant is requesting to reduce the amount of commercial/fitness space in order to better match the current market demand in the area while maintaining the mixed use nature of the development. The Comprehensive Plan encourages development in the mixed use regional land use areas to provide a mix of commercial, residential, office and light industrial uses, with a focus on job creation. The proposed development accomplishes the envisioned use of the land and creates additional jobs.

4. Describe why the proposed use is reasonable.

The development meets the total parking requirements it is only a question of the 1:1 ratio of covered parking in order to adjust the design of the building to better reflect the current market needs. Because we have found that studio/alcove renters do not generally pay extra for underground parking and it is less than 100% of the remaining units that want to pay for covered parking, we believe 71 parking stalls is sufficient for 89 units.

5. Describe the following: *circumstances unique to the property, why the need for the variance was not created by the property owner, and why the need is not solely based on economic considerations.*

As we have confirmed during the construction of the Broadway building, the property has a particularly high water table given its proximity to the large City holding pond. Because of this water table, we are constrained on the ability to add more underground parking.

6. Describe why the variance would not alter the essential character of the neighborhood.

Because the development has adequate surface parking with the parking already approved, the variance will not result in any additional impervious surface. As such it will not alter the character of the neighborhood.



STAFF REPORT

ROGERS PLANNING COMMISSION

Meeting Date: October 7, 2024

Agenda Item: 6.1

Subject: Capital Improvement Plan Review and Recommendation to forward to City Council

Prepared By: Doran Cote, Public Works Director/City Engineer

Overview / Background / Analysis

This item contains the draft Capital Improvement Plan (CIP) for the City. CIPs are financial guiding documents that outline projected projects, estimates, funding sources and preliminary timelines. The CIP is intended to be a framework for projects over a given timeline and is not a blanket approval for all projects. CIPs are used to plan for future expenditures during yearly budgeting discussions. Each individual project in the CIP is reviewed by the Council by itself and approved based on construction plans, and actual costs based on real bids. Staff is seeking a recommendation from the planning commission that the CIP is consistent with the comprehensive plan and to forward it to the City Council for adoption.

MN Statute 462.356 requires that planning commissions review and forward recommendations on whether or not the Capital Improvement Plan is consistent with the Comprehensive plan. Staff has attached 2040 Plans Implementation Chapter to this report, as well as the draft CIP.

Staff Recommendation

Staff recommends that Planning Commission make the following motion.

A motion to affirm to the City Council that the proposed Capital Improvement Plan is consistent with the 2040 Comprehensive Plan.

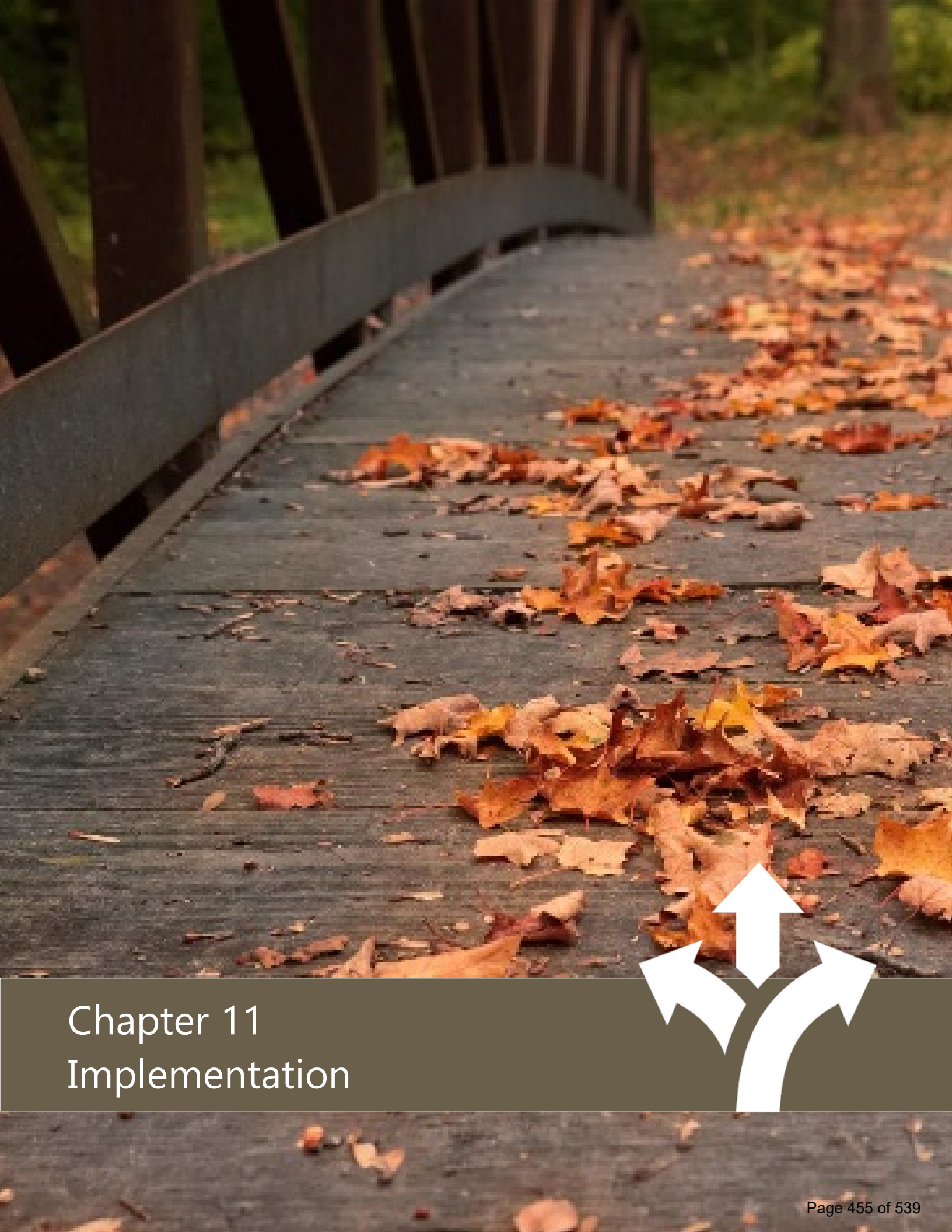
Financial Impact: NA

Source Fund: NA

Budgeted? N/A

Supporting Documentation

- A. Chapter 11_Implementation
- B. Draft CIP



Chapter 11 Implementation





Introduction

A Comprehensive Plan must be a living document. It must be the basis for all policy, development and financial decisions made daily by City leaders and staff as it relates to how the City will grow and evolve, and where public investments are necessary to support that growth.

Throughout this process we **Imagined Rogers 2040**. The vision, guiding principles and strategies, along with each of the supporting chapters, identify our strengths and challenges facing our community, and provide a foundation for solving problems and seizing opportunities for sustained growth and change. Achieving what we aspire for Rogers depends clear, attainable goals and action items, and ultimately tangible outcomes that we can visualize happening, and continued diligence, understanding success is journey, not a destination.

Success: *The accomplishment of an aim or purpose.*

Implementation of this Comprehensive Plan involves the conversion of the guiding principles and strategies into official municipal controls, tools and programs. The Implementation chapter, like the Plan itself, should be a flexible guide and should be amended as conditions change or are better understood.

The Comprehensive Plan will be implemented in a number of ways. Actual implementation is accomplished daily by City staff and on a regular basis by the decisions made by the City Council and advisory commissions. Implementation will involve the application of and updates to the City's official controls and continued financial management practices, as well as the specific action items identified in this chapter.

Official Controls

The City's official controls are central in the implementation of this Plan. State Statute requires the City to ensure there is consistency between its official controls and the Comprehensive Plan. In the case of land use and development, the City's **Zoning and Subdivision Ordinances** are important to successful implementation of the Plan as they guide the type, location, intensity and aesthetics of development that occurs in the community. Thus, upon adoption of the Comprehensive Plan the City shall evaluate its zoning ordinances and other land use controls and consider amendments necessary to eliminate inconsistencies and ensure successful implementation of this Plan. Those updates must be completed nine months after formal adoption of the 2040 Comprehensive Plan. A description of the city's existing zoning districts and a zoning map are provided in the Appendix. The City's website also provides a description of districts and the current map and should be referenced for the most current information.

The City of Rogers has established plans, ordinances, policies, fiscal devices, and other tools that guide decision-making and are used to implement the Comprehensive Plan's goals and policies. Similar to the Comprehensive Plan, these documents should be monitored and updated to ensure that they continue to meet the needs of the community and help support its overall vision. These official controls consist primarily of ordinances and fiscal devices.

Fiscal Programs & Tools

The City has established and uses various fiscal devices to support implementation of the Comprehensive Plan's guiding principles and strategies. Financial planning ensures City spending responds to the City's overall vision and is done in a fiscally responsible manner. Of particular importance is the Capital Improvement Program (CIP). The





CIP contains the multi-year scheduling and funding of public infrastructure improvements in areas such as transportation, water resources, and public buildings and parks. The City has established a 10-year CIP that identifies the priority, timing and funding of public investments by department, specifically Public Works, Utilities, Public Safety, Parks, Planning and Administration. The Rogers CIP is attached in **Appendix G**.

Implementation Plan

The success of long-range planning can be measured by its ability to be implemented. Without action on the guiding principles and strategies defined within the plan, there may be no movement toward the City's overall vision by 2040. The previous chapters of the Comprehensive Plan identify issues and opportunities in each of the City's systems that can be addressed over the next 25 years. The following pages provide a list of actions that may be implemented to respond to these issues and opportunities, as the City strives to meet its 2040 Vision.



Build Neighborhoods and Livability



Housing

Allocate funding from an established Housing & Redevelopment Authority (HRA) levy toward development of a home investment program to preserve the existing housing stock and support the need for home affordability.		×			×		
Create housing incentive programs to entice development of housing options priced and marketed at first-time home buyers, and encourage reinvestment in existing of homes constructed pre-1990s to preserve home prices and values within established affordability ranges.		×			×		
Establish infill development program to acquire and remove or renovate blighted homes for redevelopment.	×	×					
Identify funding programs to support construction of attainable housing for persons and families with household incomes less than the Area Median Income for the Twin Cities Metropolitan Area.		×					
Emphasize development of a full complement of lifecycle housing options with an emphasis on both owner-occupied and rental higher density residential products that satisfy the demand for market rate, affordable and senior living products.		×			×		
Provide sufficient housing types, services and aging-in-place programs necessary to assist the needs of an aging population.	×	×					
Support development of multi-family projects within existing commercial areas to capitalize on access to services and roadways.	×	×			×	×	
Approve flexible development standards for land outside of the Rogers municipal utility services area to enable interim, larger lot residential development with end goal of average density of 3.0 units per acre.	×	×					×



Assist with land assembly necessary to support medium density development adjacent to Triangle Park and along Main Street and Rouillard Avenue.



Parks, Recreation & Healthy Living



Build parks and recreation areas, and preserve open spaces, that create accessible quality experiences and promote healthy living and are adaptable to changing demographics and community needs.



Ensure access to parks and recreational facilities and open spaces at no or low cost by maintaining and upgrading play structures, courts and fields that enable physical activity and social interaction for youth and their families.



Implement Triangle Park plan to construct new park shelter, farmer's market area, splash pad and other park improvements to establish park as central park for the community.



Partner with Three Rivers Park District on developing local 'sister park' to the 2,600-acre Crow-Hassan Park Reserve.



Partner with Community Education and other local recreational program providers to provide residents with access to recreation activities and programs.



Pursue partnerships to build regional systems and fund initiatives and projects that support the mission of the Rogers Parks, Open Space and Trails System Plan.



Foster Economic Opportunity and Prosperity





Downtown

							
Fund a streetscape plan and small area plan design to establish vision and provide visual demonstrations of the urban environment and street-level pedestrian orientations for Downtown Rogers. Establish priority projects and timelines of work to be completed.			✗			✗	✗
Redefine Downtown Rogers as a multi-purpose district for small business commerce, residential living and community gathering.	✗	✗			✗		
Pursue the types of businesses that fit the Downtown Rogers image. Partner with landowners and developers to protect land prices or rental rates necessary to support those businesses.	✗	✗			✗		
Locate civic facilities, including city hall, senior center and community center, central to Downtown Rogers to create and support public and commerce activities.	✗						✗
Complete exterior design standards for downtown buildings, store fronts and public spaces to create continuity and scale between the old and new built environments.	✗				✗		
Perform assessment of existing buildings in Downtown Rogers to determine condition and cost to renovate and retain historic buildings of local significance. Identify funding sources to support entrance and façade restoration of buildings.					✗		
Retain affordable rental rates for downtown properties by partnering with existing landowners and developers to acquire properties, remove blight, renovate buildings and update exteriors, and complete infill development projects.	✗	✗			✗		
Establish transition zone and development standards for residential and commercial development adjacent to downtown to support the vision and targeted outcomes for Downtown Rogers.	✗	✗			✗		



Business Development

							
Activate the Economic Development Authority (EDA) and implement an EDA levy necessary to support identified economic development goals and outcomes for Rogers.					✗		
Develop a five (5) year economic development strategic plan that creates funding opportunities and entices new development, redevelopment and/or reinvestment of existing properties that grow and stabilize the existing property values and creates opportunities to redevelop commercial properties to make better use of the commercial land.	✗				✗		
Support a Housing & Redevelopment Authority (HRA) levy for the purpose of development housing programs to support development activities that create workforce housing options for employees.		✗			✗		
Adopt a Business Recruitment, Retention and Expansion program to understand local business needs and develop a strategy for new business attraction.					✗		
Partner with waste and recycling companies to conduct volunteer assessments for local businesses and multi-family properties to aid in identifying opportunities for waste and cost reductions and increases recycling efforts.					✗		
Collaborate with Minnesota Department of Employment and Economic Development, Greater MSP and Hennepin County to create awareness and promote the City as destination for business and capitalize on its location within the Twin Cities metropolitan area.					✗		
Partner with educational institutions, non-profit organizations and utility companies to identify access to technology and human capital and workforce training for existing businesses and employees to support worker attraction and retention.					✗		



Development Support

							
Facilitate preparation of development-ready sites.	✗				✗		
Update City development policies to encourage compact development and flexible land uses that support community sustainability strategies and use natural landscapes to create amenity-rich developments.	✗	✗	✗	✗	✗	✗	✗
Explore opportunities through University of Minnesota Resilient Communities Partnership or similar student-led research programs to identify business and development support mechanisms.						✗	✗
Complete market study of community.						✗	



Broaden Community Connections



Transportation

Achieve a coordinated pattern of land use development with the local and regional transportation system that ensures safe, convenient, and efficient mobility.	✗					✗	✗
Support smart growth strategies that creates community mobility alternatives and reduces carbon emissions by promoting coordinated, compact development patterns that prioritize infill and redevelopment of previously developed areas and provide transit options.	✗	✗	✗			✗	✗
Encourage master planning designs of existing commercial and industrial areas to promote compact development projects that feature a mix of uses to capitalize on access to Interstate 94 and Highway 101 and future Dayton Parkway interchange.	✗				✗	✗	
Integrate smart car technologies within the community, including installation of charging stations for electric vehicles and support for the development of other new transportation technologies that enables Rogers to benefit from those advancements.					✗	✗	✗
Develop wayfinding and directional signage plan, including community monument and district entrance signs, for community navigation for pedestrians, bicyclists and motorists, and to help enhance the sense of place vision community-wide.						✗	
Partner with the Minnesota Department of Transportation and Hennepin County to identify and fund long-term traffic impacts and opportunities to improve community access and commute times in and through the City.	✗					✗	



Trails

Identify critical trail and sidewalk connections for pedestrians and bicyclists between neighborhoods, commercial and employment areas, and recreational destinations for the purpose of creating loop systems, local connectors, and safe routes to schools.	✖	✖	✖		✖	✖	
Repair and fill gaps within the existing sidewalk and trails system.			✖			✖	
Expand local connections to regional assets that provide and improve non-motorized commuting opportunities and access to transit for non-motorized commuters.			✖			✖	
Develop an interlinking system of high value trails, sidewalks, and on-street bikeways throughout the City that connect with regional trails and trails in adjoining communities.			✖			✖	
Provide reasonable trail access to the natural resource amenities within the community without unduly compromising their integrity and natural qualities.	✖	✖	✖		✖	✖	
Provide an appropriate level of universal accessibility to trails throughout the system.			✖			✖	✖

Transit

Support opportunities to provide transit service options to the community.	✖					✖	
Identify transit station site options. Advocate for extension of commuter service improvements and transit needs, whether new or extension of existing bus services and/or light rail.	✖				✖	✖	



Create Lasting Value



Stewardship

Approve Natural Resources Stewardship Plan that enhances the health of the City's ecosystems, protects and enhances biological diversity of native habitats, and balances natural resources preservation with recreational use and community growth pressures caused by development.			✗	✗			✗
Enrich the aesthetic environment and community benefits by establishing landscaping requirements and expanding the existing Tree and Woodland Preservation ordinance to address tree removal, preservation and tree types.	✗		✗				
Increase the urban tree canopy coverage to provide shade, dissipate heat, mitigate the health effects of airborne particulates, and reduce the City's overall carbon footprint.			✗				✗
Adopt a Living Streets plan to implement consistent, cohesive local street design throughout the community that provide environmental and health benefits, and reduce future public improvement costs, with narrowed streets and enhanced boulevard design and landscaping and improved pedestrian and bicycle access.	✗		✗			✗	✗
Provide a reliable and sustainable drinking water supply by promoting water conservation methods through public outreach and City code modifications. The City also plans to implement a rebate program to identify high efficiency appliances and smart irrigation systems.				✗			✗
Approve the 2040 Comprehensive Sanitary Sewer Plan that establishes goals and polices that promote the efficient maintenance and operation of the Rogers Wastewater Treatment Plant and collection system. Adoption of the plan will also promote continued sanitary sewer capacity for current residents and business and future capacity, along with a system that is cost-effective and equitably financed.				✗			



Approve the 2040 Stormwater Management Plan that will promote improved water quality through the adoption and implementation of best management practices.				✖			
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Energy Dependency

Integrate electric, hybrid and/or other alternative energy powered and fuel efficient vehicles into the City's fleet.						✖	✖
Partner with private utility companies to provide information and access to energy and other conservation programs.	✖						✖
Establish an incentive program for property owners to construct raingardens, use rain barrels, or implement other water control strategies to capture water for re-use to reduce water consumption and reduce storm water runoff.	✖	✖			✖		✖

Engagement

Expand the use of social networking and other technologies and traditional mediums to improve delivery of and access to and delivery of information and enhance interaction with all persons.	✖	✖	✖	✖	✖	✖	✖
Refine the City logo and establish a brand identity and marketing strategy to define the identity of the community and aid as a recruitment tool for business growth.					✖		✖
Expand E-commerce solutions to enable online customer transactions.					✖		✖



City of Rogers
2025-2029 Capital Improvement Plan

10/1/2024



Project	Year	Total Cost Estimate	Federal / State	County	Subgrade Correction	MSA	Assessments	Franchise Fees*	Other City Funds	Fund 400 -	Fund 402 -	Fund 403 -	Fund 404 -	Fund 404 -	Fund 405 -	Fund 406 -	Fund 407 -	Fund 408 -	Fund 410 -	Fund 438 -	Total Funding Sources
										Facilities Fund	Revolving Capital Fund	Fire Capital Fund	Park Dedication	Park Capital Reserve Replacement	Water Trunk	Sewer Trunk	WAC	RSAC	Lost	Storm Sewer Trunk	
2025																					
Fire Station No. 1 Garage Floor Refinishing	2025	150,000										150,000									150,000
Fire Station No. 1 Garage Door Replacement	2025	250,000										250,000									250,000
Public Works Repairs and Replacements (shop light LED conversion, HVAC, floor drains)	2025	200,000							200,000												200,000
I-94 Pedestrian Bridge and Trails	2025	5,550,000	2,000,000																3,550,000		5,550,000
Fletcher By-Pass 3-Lane with RR Xing (CSAH 116 to CR 81)	2025	10,050,000	3,500,000	3,500,000		1,360,000					1,150,000				190,000					350,000	10,050,000
Heather Ridge, Shadow Wood, Hampsted - PMP	2025	1,800,000			50,000			1,750,000													1,800,000
Multipurpose Indoor Turf Facility	2025	12,000,000																	12,000,000		12,000,000
Rogers Activity Center Expansion	2025	11,550,000		300,000			8,650,000		2,600,000												11,550,000
Territorial Park Neighborhood Park	2025	1,100,000											1,100,000								1,100,000
Dog Park Drinking Fountains	2025	50,000											50,000								50,000
North Community Park Improvements	2025	1,000,000											800,000	200,000							1,000,000
Well Nos. 10 & 11, Transmission Lines and Pumphouses	2025	8,000,000															8,000,000				8,000,000
Replace Generator at Well No. 5	2025	150,000													150,000						150,000
Neighborhood Park Trail Replacement	2025	50,000							0					50,000							50,000
Day Spring Estates Park Improvements and Pond Outlet Repair	2025	150,000											0	100,000					50,000		150,000
Fox Creek Streambank Repairs	2025	120,000																	120,000		120,000
Trunk Storm Sewer Weber Farm	2025	200,000																	200,000		200,000
Lift Station No. 3 Rehabilitation	2025	560,000																560,000			560,000
Subtotal		52,930,000	5,500,000	3,800,000	50,000	1,360,000	8,650,000	1,750,000	2,800,000	-	1,150,000	400,000	1,950,000	350,000	340,000	-	8,000,000	560,000	15,550,000	720,000	52,930,000
2026																					
Fire Station No. 1 Administration and Training Room Upgrades and Alerting System	2026	1,500,000								1,500,000											1,500,000
Main Street Reconstruction with Trail - CR 81 to CR 116 (Includes 129th Avenue and Territorial Road Intersections)	2026	8,950,000		4,000,000	300,000	2,000,000		250,000	1,300,000		400,000				350,000	350,000					8,950,000
I-94/TH 101 Interchange Conversion to Diverging Diamond	2026	9,300,000	6,800,000	1,500,000		1,000,000															9,300,000
Nordens, Oak Ridge, Roys Rivers Edge, Thomas Hills - PMP	2026	1,800,000			50,000			1,750,000													1,800,000
Pauls Drive Gravel to Paved	2026	220,000			80,000		20,000	120,000													220,000
Industrial Court Mill and Overlay - PMP	2026	250,000						250,000													250,000
Fox Creek West Mill and Overlay - PMP	2026	600,000						600,000													600,000
Rogers Drive Full Depth Mill and Overlay - PMP	2026	700,000						700,000													700,000
North Side Skating Rink (Replace RAC Rink)	2026	140,000											140,000								140,000
Skye Meadows Neighborhood Park South	2026	300,000											300,000								300,000
Neighborhood Park Hard Court	2026	140,000											70,000	70,000							140,000
Neighborhood Park Picnic Pavillion	2026	100,000											100,000								100,000
Neighborhood Park Trail Replacement	2026	50,000							0					50,000							50,000
Stormwater Pond Cleaning and Repairs	2026	115,000																	115,000		115,000
CSAH 144 (CSAH 13 to RHS) Trail (SRTS)	2026	1,200,000	600,000										600,000								1,200,000
Water Treatment Plant 1	2026	10,000,000															10,000,000				10,000,000
Lift Station No. 11 Rehabilitation	2026	415,000																415,000			415,000
Subtotal		35,780,000	7,400,000	5,500,000	430,000	3,000,000	20,000	3,670,000	1,300,000	1,500,000	400,000	-	1,210,000	120,000	350,000	350,000	10,000,000	415,000	-	115,000	35,780,000





Project	Year	Total Cost Estimate	Federal / State	County	Subgrade Correction	MSA	Assessments	Franchise Fees*	Other City Funds	Fund 400 - Facilities Fund	Fund 402 - Revolving Capital Fund	Fund 403 - Fire Capital Fund	Fund 404 - Park Dedication	Fund 405 - Water Trunk	Fund 406 - Sewer Trunk	Fund 407 - WAC	Fund 408 - RSAC	Fund 410 - Lost	Storm Sewer Trunk	Fund 438 - Total Funding Sources	
2027																					
Civic Campus Phase 1: New Police Department Building with EOC and Training Facility	2027	20,000,000								20,000,000										20,000,000	
Civic Campus Phase 2 - New City Hall	2027	18,000,000								18,000,000										18,000,000	
Fire Station No. 3 Land Purchase	2027	500,000								500,000										500,000	
Brockton Lane/Clam/Alro Intersection	2027	5,000,000				1,000,000	1,000,000		1,000,000		2,000,000									5,000,000	
129th Avenue Reconstruction Phase 3 (Oakwood Drive to Edgewater Parkway) with Trail	2027	2,000,000		250,000		1,400,000		100,000			250,000									2,000,000	
Edgewater Parkway from Edgewater to CSAH 116 with Trail - Developer Driven	2027	2,800,000				1,700,000					300,000		200,000	300,000	300,000					2,800,000	
East Industrial Park Mill and Overlay - PMP	2027	600,000						600,000												600,000	
Willandale Lane Overlay - PMP	2027	300,000						300,000												300,000	
Tilton Trail North Gravel to Paved (Wood to CDS)	2027	880,000			170,000		28,000	682,000												880,000	
Replace Existing Trails	2027	300,000											-	300,000						300,000	
Lions Park Land Purchase	2027	300,000											300,000							300,000	
Cowley Lake Park Improvements Phase 1 with Trail to CSAH 116	2027	900,000											900,000							900,000	
Future Neighborhood Park	2027	450,000											450,000							450,000	
Neighborhood Park Hard Court	2027	150,000											75,000	75,000						150,000	
Neighborhood Park Picnic Pavillion	2027	110,000											110,000							110,000	
Stormwater Pond Cleaning and Repairs	2027	135,000																	135,000	135,000	
Lift Station 14 Rehabilitation	2027	372,000																		372,000	
Subtotal		52,797,000	-	250,000	170,000	4,100,000	1,028,000	1,682,000	1,000,000	38,500,000	2,550,000	-	2,035,000	375,000	300,000	300,000	-	372,000	-	135,000	52,797,000
2028																					
Provent Exhaust System for Fire Station No. 1	2028	480,000										480,000								480,000	
CSAH 144 Realignment - North Section (CR 116 to Industrial)	2028	4,020,000		3,520,000		500,000					-									4,020,000	
Fox Creek 5th-8th, Mystic Ridge, Lyndhaven Meadows - PMP	2028	2,100,000					2,100,000													2,100,000	
East 113th Gravel to Paved	2028	550,000			140,000		16,000	394,000												550,000	
West 113th Gravel to Paved	2028	550,000			180,000		10,000	360,000												550,000	
Park Drive Gravel to Paved	2028	1,300,000			160,000		40,000	1,100,000												1,300,000	
Tilton Trail South Gravel to Paved	2028	1,050,000			200,000		22,000	828,000												1,050,000	
Replace Existing Trails	2028	300,000											300,000							300,000	
Trail Connection Cambria Farms to Hassan Hills	2028	200,000											200,000							200,000	
Trail Connection Dayspring to Skye Meadows	2028	200,000											200,000							200,000	
Future Neighborhood Park	2028	450,000											450,000							450,000	
Henry's Woods Improvements	2028	350,000											350,000							350,000	
Neighborhood Park Hard Court	2028	150,000											150,000							150,000	
Neighborhood Park Picnic Pavillion	2028	110,000											110,000							110,000	
Stormwater Pond Cleaning and Repairs	2028	155,000																	155,000	155,000	
Lift Station 9 Rehabilitation	2028	379,000																		379,000	
Subtotal		11,864,000	-	3,520,000	680,000	500,000	2,188,000	2,682,000	-	-	-	-	1,760,000	-	-	-	-	379,000	-	155,000	11,864,000
2029																					
Fire Station 1 Expansion - Bunk Rooms	2029	2,000,000								2,000,000										2,000,000	
Edgewater, Brockton Meadows - PMP	2029	2,140,000						2,140,000												2,140,000	
3 Rivers Estates, Country Meadows, Hartwood, Saddle Ridge, Serenity - PMP	2029	1,600,000						1,600,000												1,600,000	
Valley Drive Gravel to Paved	2029	1,100,000					20,000	1,080,000												1,100,000	
Fletcher Lane Improvements with Utilities	2029	500,000					150,000	30,000			120,000			100,000	100,000					500,000	
Traill Connection Aster Mill to South Community Park	2029	1,500,000											1,500,000							1,500,000	
Future Neighborhood Park	2029	450,000											450,000							450,000	
Neighborhood Park Hard Court	2029	135,000											135,000							135,000	
Neighborhood Park Picnic Pavillion	2029	100,000											100,000							100,000	
Stormwater Pond Cleaning and Repairs	2029	170,000																	170,000	170,000	
Lift Station 4 Rehabilitation	2029	526,000																		526,000	
Subtotal		10,221,000	-	-	-	-	170,000	4,850,000	-	2,000,000	120,000	-	2,185,000	-	100,000	100,000	-	526,000	-	170,000	10,221,000
Total		163,592,000	12,900,000	13,070,000	1,330,000	8,960,000	12,056,000	14,634,000	5,100,000	42,000,000	4,220,000	400,000	9,140,000	845,000	1,090,000	750,000	18,000,000	2,252,000	15,550,000	1,295,000	163,592,000
																				-	
	2025	52,930,000	5,500,000	3,800,000	50,000	1,360,000	8,650,000	1,750,000	2,800,000	-	1,150,000	400,000	1,950,000	350,000	340,000	-	8,000,000	560,000	15,550,000	720,000	52,930,000
	2026	35,780,000	7,400,000	5,500,000	430,000	3,000,000	20,000	3,670,000	1,300,000	1,500,000	400,000	-	1,210,000	120,000	350,000	350,000	10,000,000	415,000	-	115,000	35,780,000
	2027	52,797,000	-	250,000	170,000	4,100,000	1,028,000	1,682,000	1,000,000	38,500,000	2,550,000	-	2,035,000	375,000	300,000	300,000	-	372,000	-	135,000	52,797,000
	2028	12,344,000	-	3,520,000	680,000	500,000	2,188,000	2,682,000	-	-	-	480,000	1,760,000	-	-	-	-	379,000	-	155,000	12,344,000
	2029	10,221,000	-	-	-	-	170,000	4,850,000	-	2,000,000	120,000	-	2,185,000	-	100,000	100,000	-	526,000	-	170,000	10,221,000
Total		164,072,000	12,900,000	13,070,000	1,330,000	8,960,000	12,056,000	14,634,000	5,100,000	42,000,000	4,220,000	880,000	9,140,000	845,000	1,090,000	750,000	18,000,000	2,252,000	15,550,000	1,295,000	164,072,000



STAFF REPORT

ROGERS PLANNING COMMISSION

Meeting Date: October 7, 2024

Agenda Item: 6.2

Subject: Application by the City of Rogers for a Site Plan for the Turf Facility at 14160 James Road

Prepared By: Doran Cote, Public Works Director/City Engineer, Alec Henderson, City Planner

Overview / Background / Analysis

On August 27th, 2024, the City Council accepted bids and awarded the contract for the City's Indoor Multipurpose Turf Facility Construction (City Project No. 2201) to Terra Construction. The City is requesting Site Plan approval to construct a multipurpose year around synthetic turf athletic facility that will be used for soccer, baseball, lacrosse, football, hockey dry-land training, walking and exercise. The anchor of the project is a National Federation of State High School Associations (NFHS) full-sized soccer field under a pre-engineered stretched fabric structure (PEFS). The relationship with the PEFS suppliers was established through an RFP process in order to see competitive pricing. Other building types including pre-engineered metal building (PEMB) and inflated domes were evaluated but the PEFS structure was estimated to be half to a quarter of the cost of those other structure types. The site improvements do allow for future expansion of the indoor hockey arena (Rogers Activity Center) next door.

The turf facility itself will be located on the parcels addressed at 14160 James Road, with parking on the south side of the building and extending into the adjacent Rogers Activity Center (RAC) parking lot at 21080 141st Ave N. The turf facility will have access to James Road and drive lanes will connect to the RAC facility lot and drive lanes and also utilize the existing access to 141st Ave N.

Staff Recommends approval of the Site Plan.

Primary Issues to Consider

- Land Use & Zoning
- Site Plan
- Building Materials

Land Use & Zoning

The Subject Property is under two guidances, **Mixed Use Regional** (14160 James Rd) and **Institutional** (21080 141st Ave N) in the Rogers 2040 Comprehensive Plan, and is defined as follows: Institutional guidance allows: *government facilities, schools, churches, cemeteries and other public/semi-public uses. These uses may be*

neighborhood focal points and help provide neighborhood definition. Many provide places for community activities. Mixed Use Regional guidance also allows institutional and park/recreation uses.

The corresponding zoning for the Subject Property is **RC, Regional Employment Center District** (14160 James Rd) and **R3 Mid-Density Residential** (21080 141st Ave N). Institutional and park uses are *Permitted Uses* within this zoning district [City Code Section §125-50]. Staff recommends that the properties be re-guided and rezoned to an institutional or similar district as a condition of approval. Since these properties are solely for public use, an institutional designation for all parts of the property and creating an Institutional zoning district best fits the future use of the property. The City of Rogers currently only has institutional guidance and not a district for institutional or public properties.

Zoning and land use requirements are satisfied with conditions to rezone and re-guide.

Site Plan

The James Road parcels are currently vacant and the 141st property is currently the site of the RAC facility and sees joint usage with the High School recreation facilities and fields. Proposed changes to the site would include constructing the proposed 83,600 square feet turf facility, two accesses to James Road, parking lot and drive lanes improvements that would connect to the RAC facility parking. A sidewalk is also proposed to connect into the cul-de-sac that wraps around the north side of the RAC facility.

Landscaping

Landscaping is shown on the site plan and includes plantings south of the turf facility and in parking lot islands. Planting sizes will need to meet the minimum requirement of City Code Section 125-90 Landscaping.

Materials

Pre-engineered stretched fabric structure (PEFS) is the predominant material of the structure. This fabric is inflated and rigid and provides the ceiling height necessary for the turf facility use as an indoor field use. This type of material use is more common with large indoor recreation facilities requiring an abundance of space (both horizontal and vertical clearance).

Parking

The occupancy for the turf facility is approximately 570 occupants. The use is relatively similar to assembly uses and 1 space per 3 occupants can be required. 250 parking spaces would be required in this case. Based on a review of similar indoor and outdoor recreational turf/field facilities in the area, plus the parking code, a total of 304 stalls are proposed. The parking plan is believed to be sufficient for the use.

Staff Recommendation

Staff recommends approval of the site plan for the turf facility improvements. The City Council has already approved the bids and contract for the turf facility work.

Motion to recommend approval of Resolution 2024-101. The resolution contains the following conditions already:

1. The property shall be required to be re-zoned prior to the issuance of a Certificate of Occupancy following a review of zoning districts by the City Planner and Community Development Director to determine if an existing zoning classification shall be used or a new zoning district created.
2. The property shall be re-platted or combined into one parcel following a decision related to a potential expansion of the current Rogers Activity Center (RAC) connecting to this building. Should the buildings be connected, they shall be combined into one lot. Shall the buildings not be connected, the two parcels which currently constitute the Turf facility lot shall be combined.
3. Civil plans shall be subject to review and approval of the public works department.
4. Stormwater Management Plans shall be subject to review and approval by Elm Creek Watershed Commission prior to construction starting.

Financial Impact: Not applicable.

Source Fund: Not applicable.

Budgeted? Yes

Supporting Documentation

- A. Location Map
- B. Resolution No. 2024-101_Site Plan_Turf Facility
- C. Site Plan and Renderings



Hennepin County Property Map

Date: 10/2/2024



PARCEL ID: 1112023430006

OWNER NAME: City Of Rogers

PARCEL ADDRESS: 14160 James Rd,Rogers MN 55374

PARCEL AREA: 3.28 acres, 142,706 sq ft

A-T-B: Abstract

SALE PRICE: \$1,250,000

SALE DATE: 04/2014

SALE CODE: Vacant Land

ASSESSED 2023, PAYABLE 2024

PROPERTY TYPE: Commercial-Preferred

HOMESTEAD: Non-Homestead

MARKET VALUE: \$0

TAX TOTAL: \$0.00

ASSESSED 2024, PAYABLE 2025

PROPERTY TYPE: Commercial

HOMESTEAD: Non-Homestead

MARKET VALUE: \$0

Comments:

This data (i) is furnished 'AS IS' with no representation as to completeness or accuracy; (ii) is furnished with no warranty of any kind; and (iii) is not suitable for legal, engineering or surveying purposes. Hennepin County shall not be liable for any damage, injury or loss resulting from this data.

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COUNTY 2024

RESOLUTION NO. 2024-101

A RESOLUTION APPROVING A SITE PLAN FOR THE CONSTRUCTION OF THE CITY OF ROGERS TURF FACILITY AND PARKING AT 14160 JAMES RD AND 21080 141ST AVE N ROGERS, MINNESOTA.

WHEREAS, the City of Rogers (“Fee Owner”) has submitted an application to the City of Rogers (“City”), requesting approval of a Site Plan for the construction of indoor turf facility and site improvements at 14160 James Road and 21080 141st Ave N (“The Subject Property”; and

WHEREAS, the Subject Property includes two existing parcels addressed 14160 James Road (“James Road Parcels”) and crosses into the city owned property at 21080 141st Ave N (“141st Parcel”). The project area of the new turf facility and parking is approximately is 9 acres. The James Road Parcels are guided for Mixed Use Regional and zoned Regional Employment Center (RC) and the 141st Parcel guided Institutional and zoned Mid-Density Residential (R3); and

WHEREAS, Section 125-27 states that “the Planning Commission shall evaluate the effects of the proposed site plans. This review shall be based upon, but not be limited to, compliance with the City’s Comprehensive Plan and provisions of this Ordinance”; and

WHEREAS, the proposed of the Subject Property is for an indoor recreation facility, which are permitted uses in the RC, and parks and recreation uses are permitted in the R3 zoning district [§125-50 Table 4E], and the use is consistent with the guided land uses; and

WHEREAS, the proposed development does not create a new or expand an existing nonconformity and satisfies zoning and site plan review standards and further confirms the improves are consistent with the Comprehensive Plan and Capital Improvements Program; and

WHEREAS, on October 7, 2024, the Planning Commission reviewed the request and voted unanimously to recommend approval to the City Council of the Site Plan Review, with the conditions.

NOW THEREFORE, BE IT RESOLVED, BY THE CITY COUNCIL OF THE CITY OF ROGERS, MINNESOTA, the Site Plan request from Word of Peace Lutheran church is hereby approved for the construction of an addition and lot improvements on the Subject Property with the following conditions:

1. The property shall be required to be re-zoned prior to the issuance of a Certificate of Occupancy following a review of zoning districts by the City Planner and Community Development Director to determine if an existing zoning classification shall be used or a new zoning district created.
2. The property shall be re-platted or combined into one parcel following a decision related to a potential expansion of the current Rogers Activity Center (RAC) connecting to this buildings. Should the buildings be connected, they shall be combined to one lot. Shall the buildings not be connected, the two parcels which currently constitute the Turf facility lot shall be combined.
3. Civil plans shall be subject to review and approval of the public works department.

4. Stormwater Management Plans shall be subject to review and approval by Elm Creek Watershed Commission prior to construction start.

Moved by Councilmember _____, seconded by Councilmember _____

The following voted in favor of said resolution:

The following voted against the same:

The following abstained:

Whereupon said resolution was declared duly passed and adopted, and was signed by the Mayor, and attested by the City Clerk dated this 22th day of October 2024.

Rick Ihli, Mayor

ATTEST:

Stacie Brown, City Clerk

EXHIBIT A

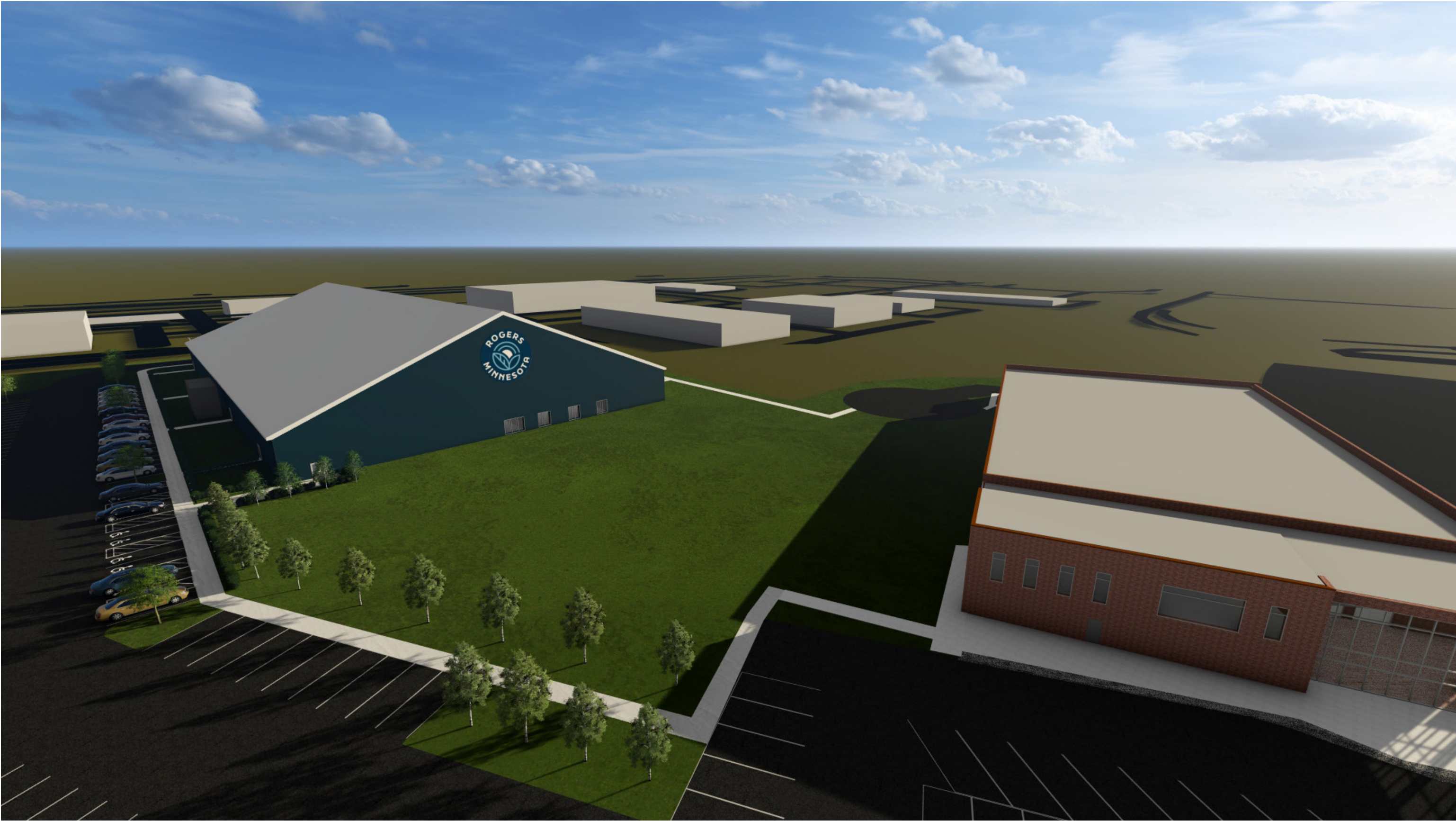
LEGAL DESCRIPTION

Subject Property

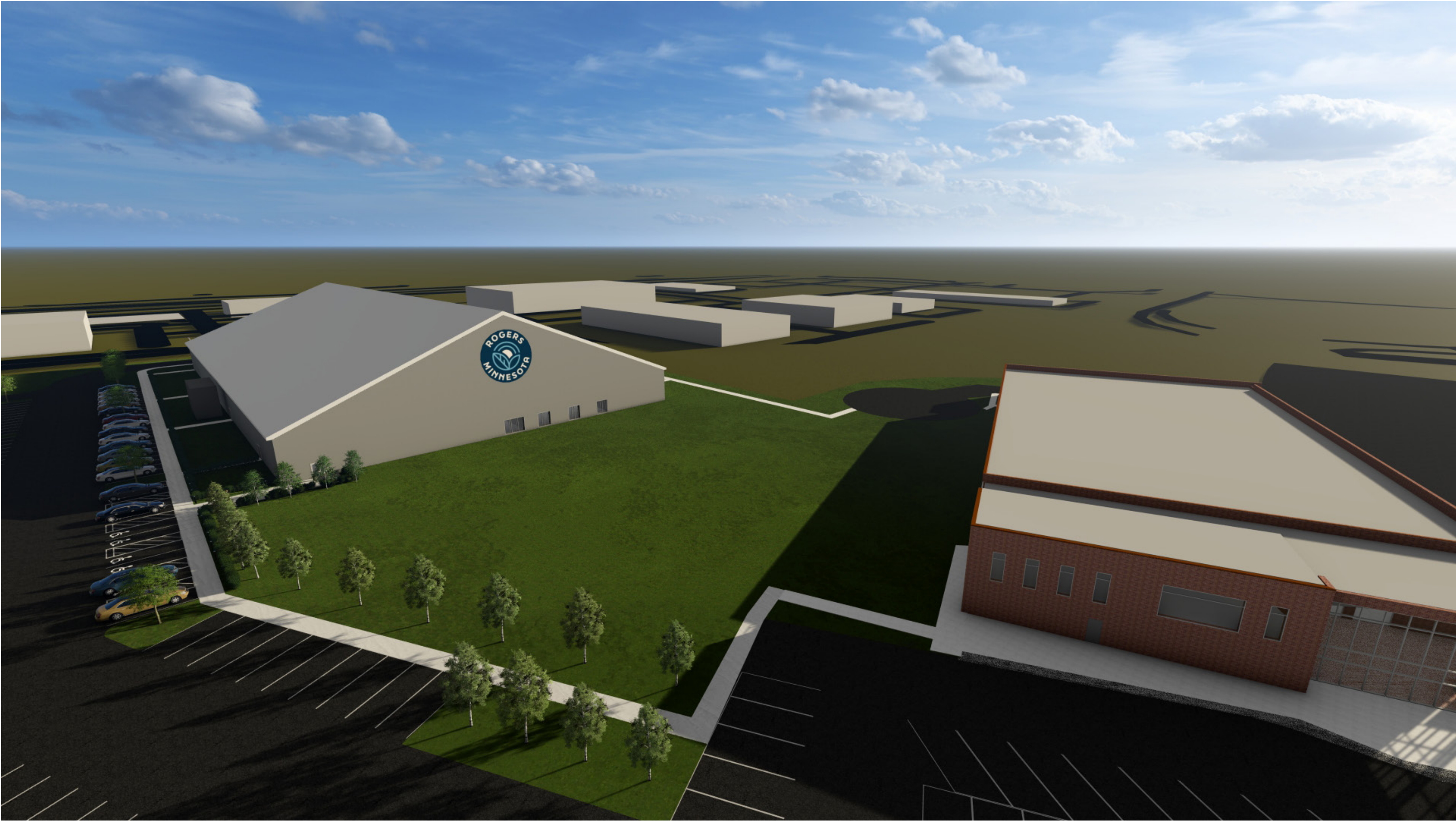
Lot 3, Block 1, DOWNTOWN REDEVELOPMENT, Hennepin County, Minnesota

PID # 23-120-23-31-0002

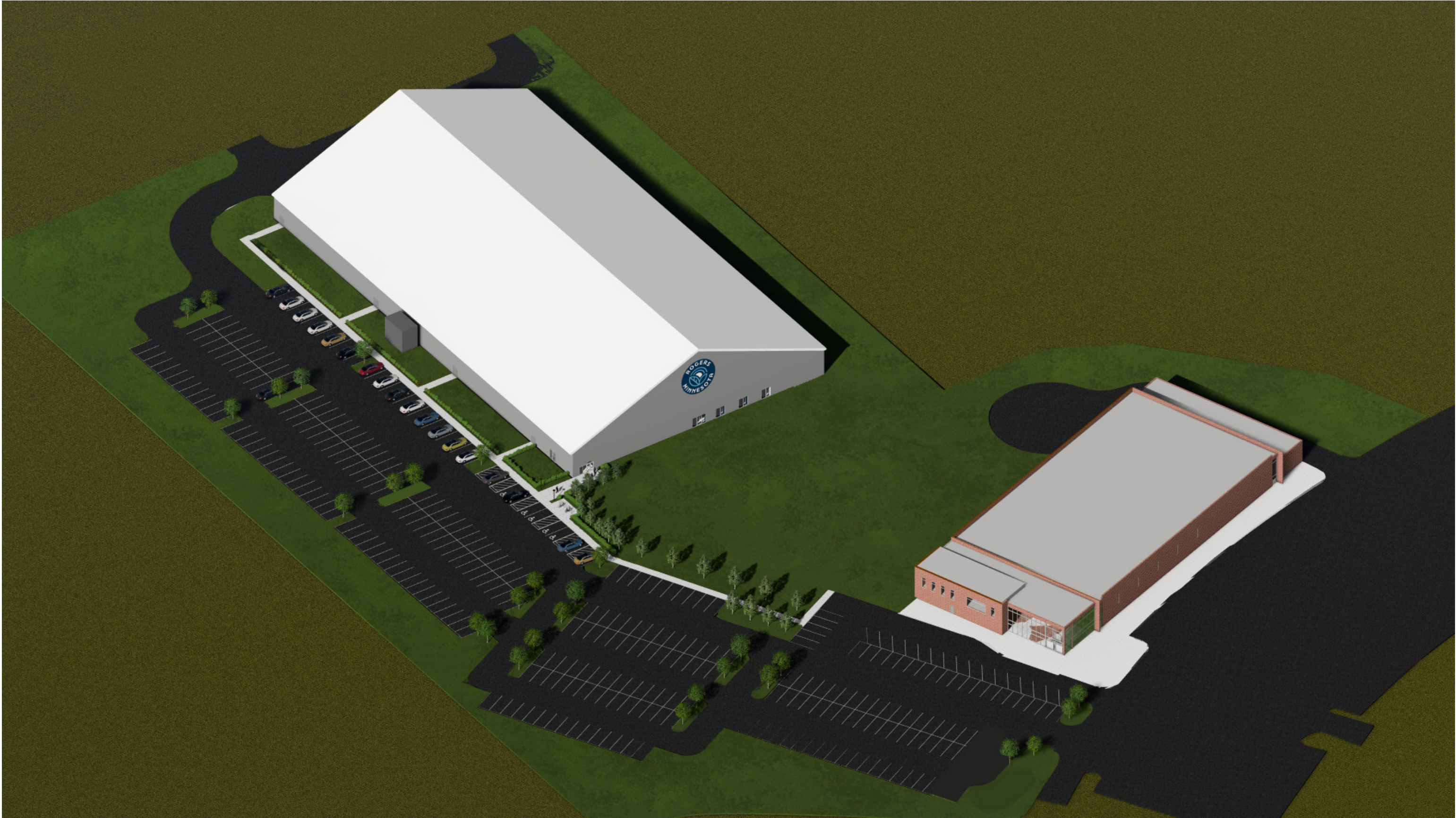
NAVY BLUE FABRIC



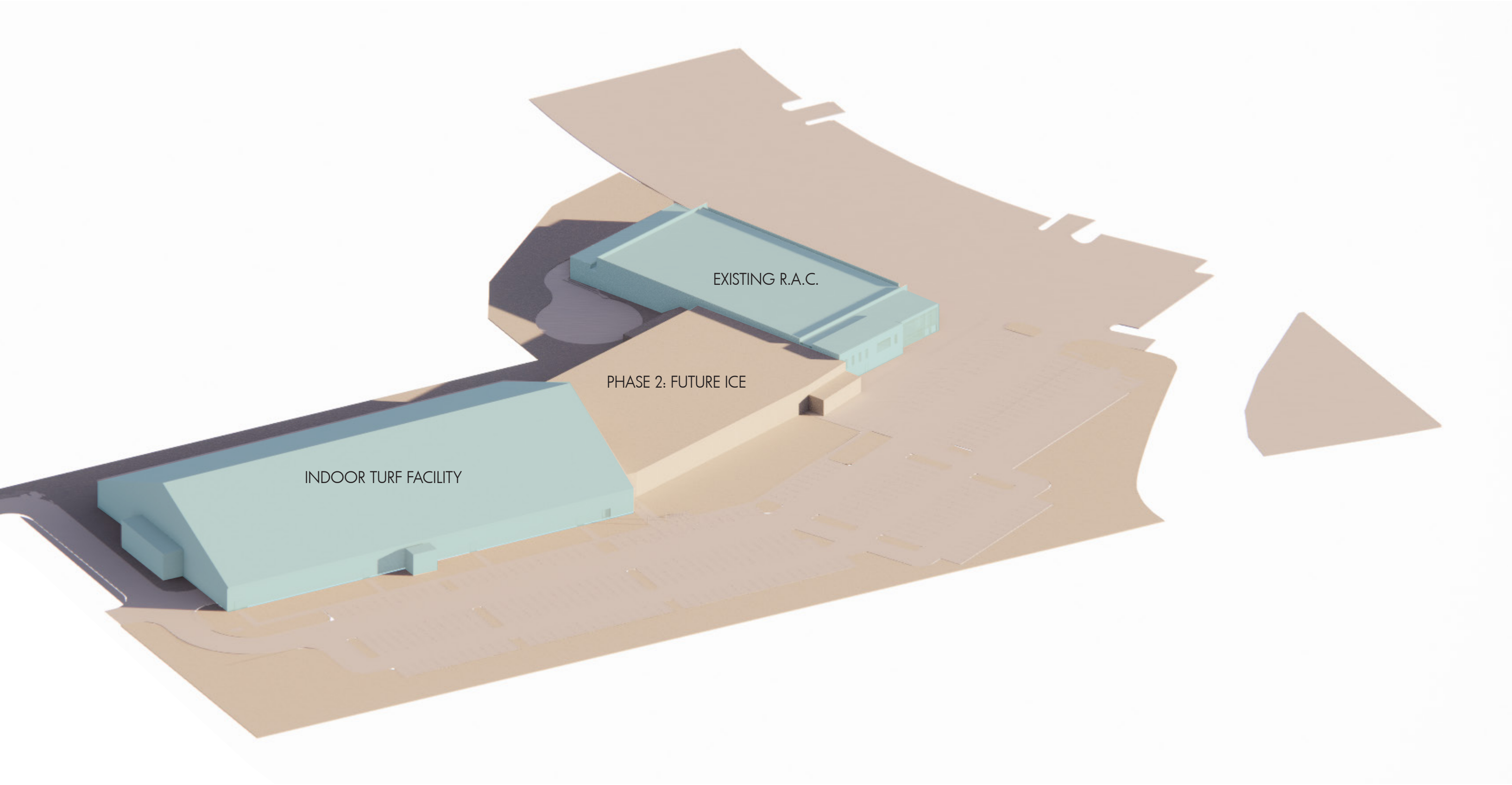
GRAY FABRIC



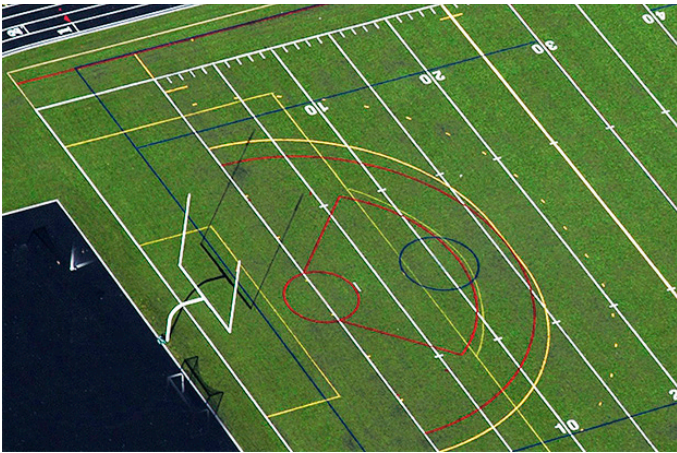
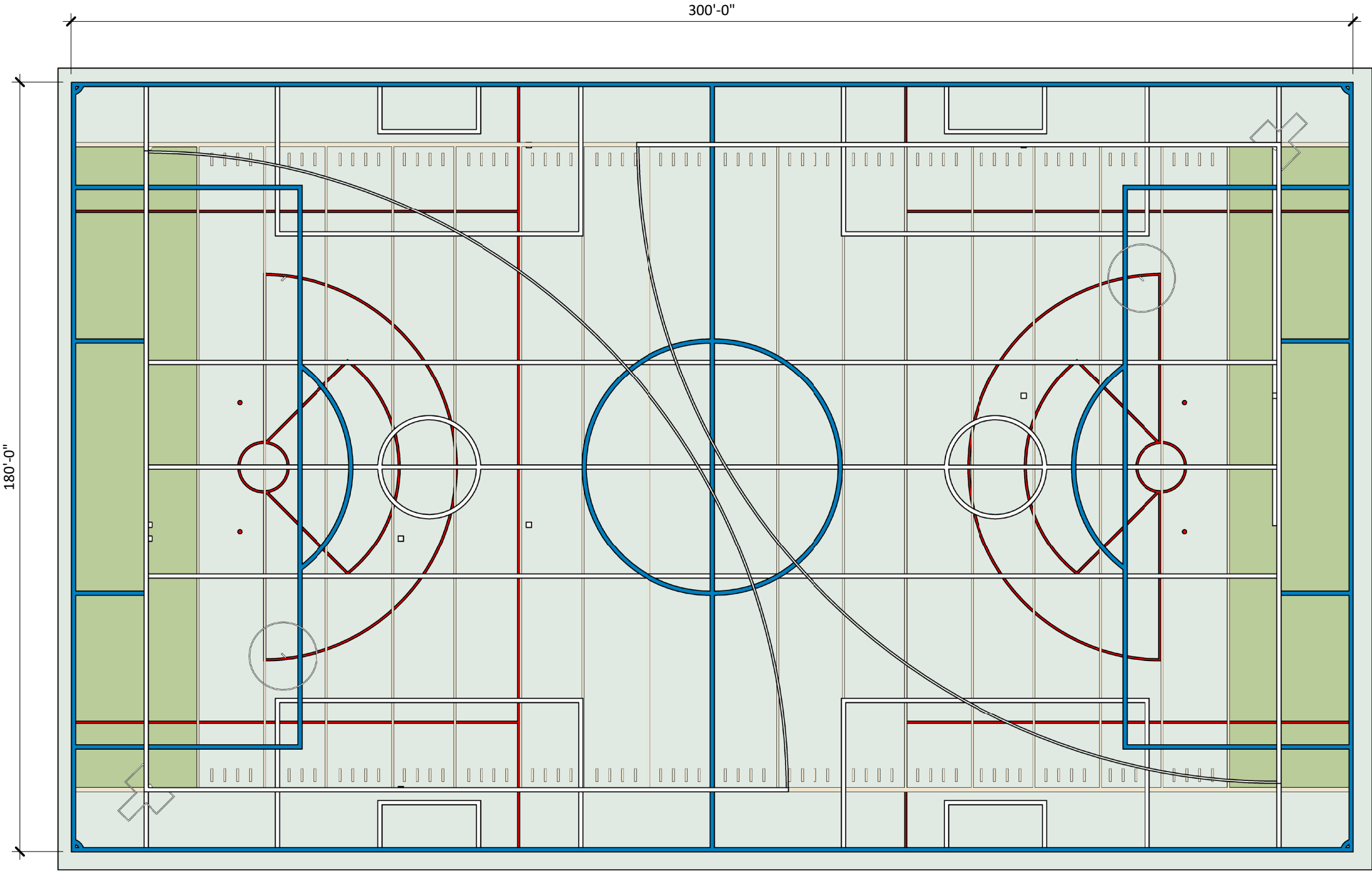
OVERALL SITE



BUILDING MASSING



FIELD STRIPING (OPTION 1B)



BASE BID



FLOORPLAN

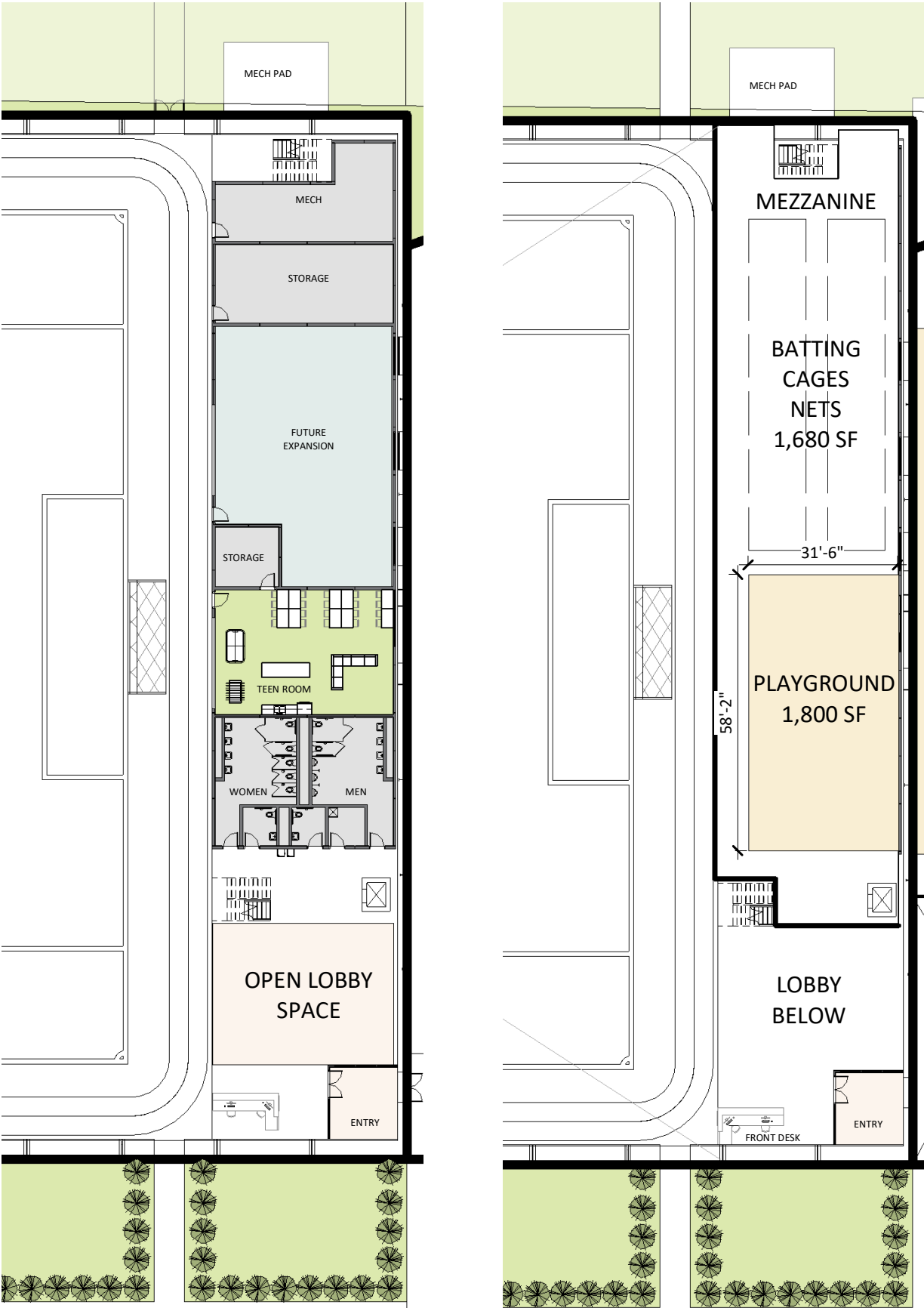


© 2024 JLG ARCHITECTS
SUPPORT SPACE



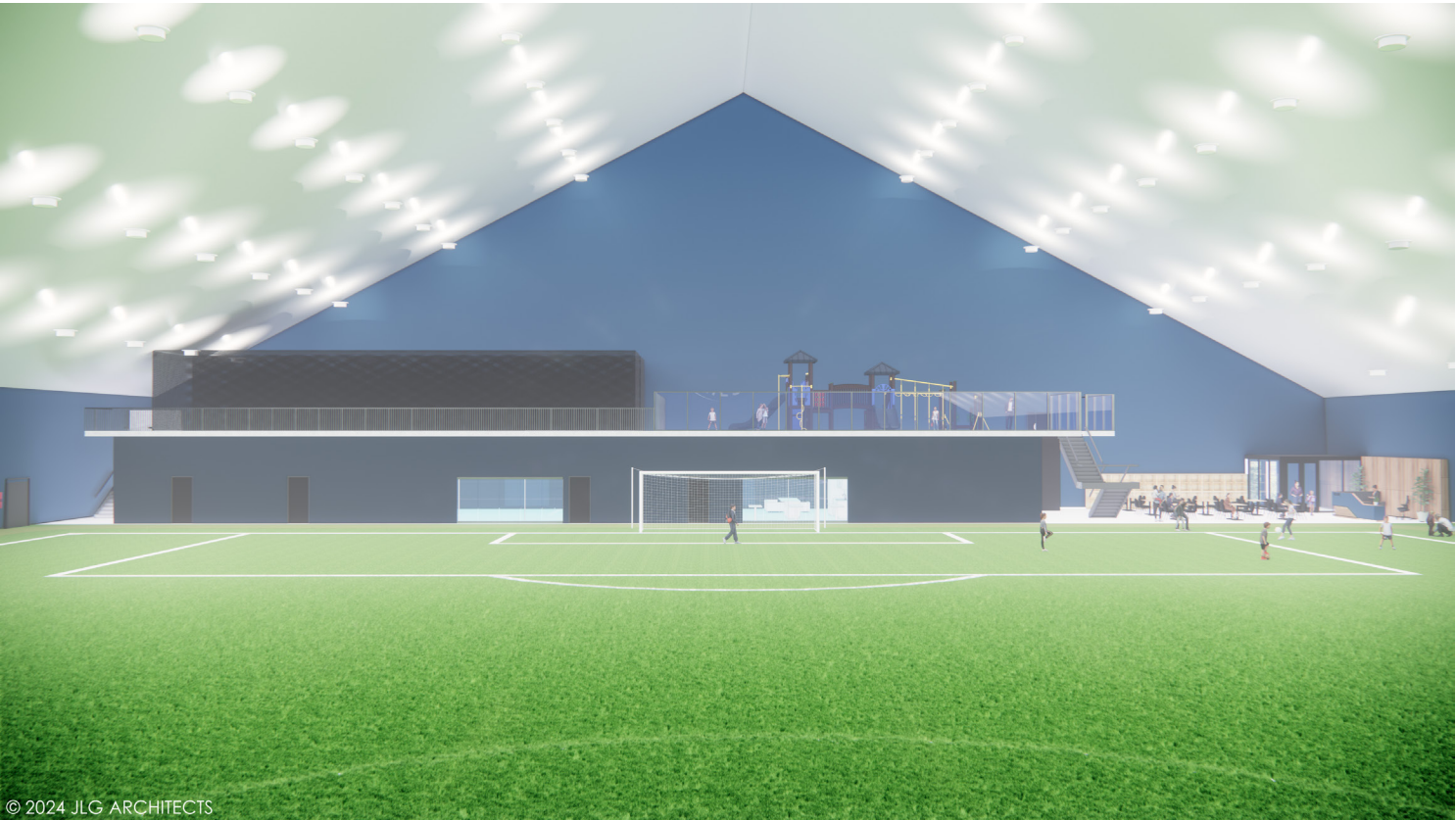
© 2024 JLG ARCHITECTS
ENTRY/INDOOR PLAYGROUND

ADD ALTERNATE - MEZZANINE



LEVEL 1

MEZZANINE



SUPPORT SPACE



ENTRY/INDOOR PLAYGROUND

ADD ALTERNATE



FRONT ENTRY 2A



FRONT ENTRY 2B



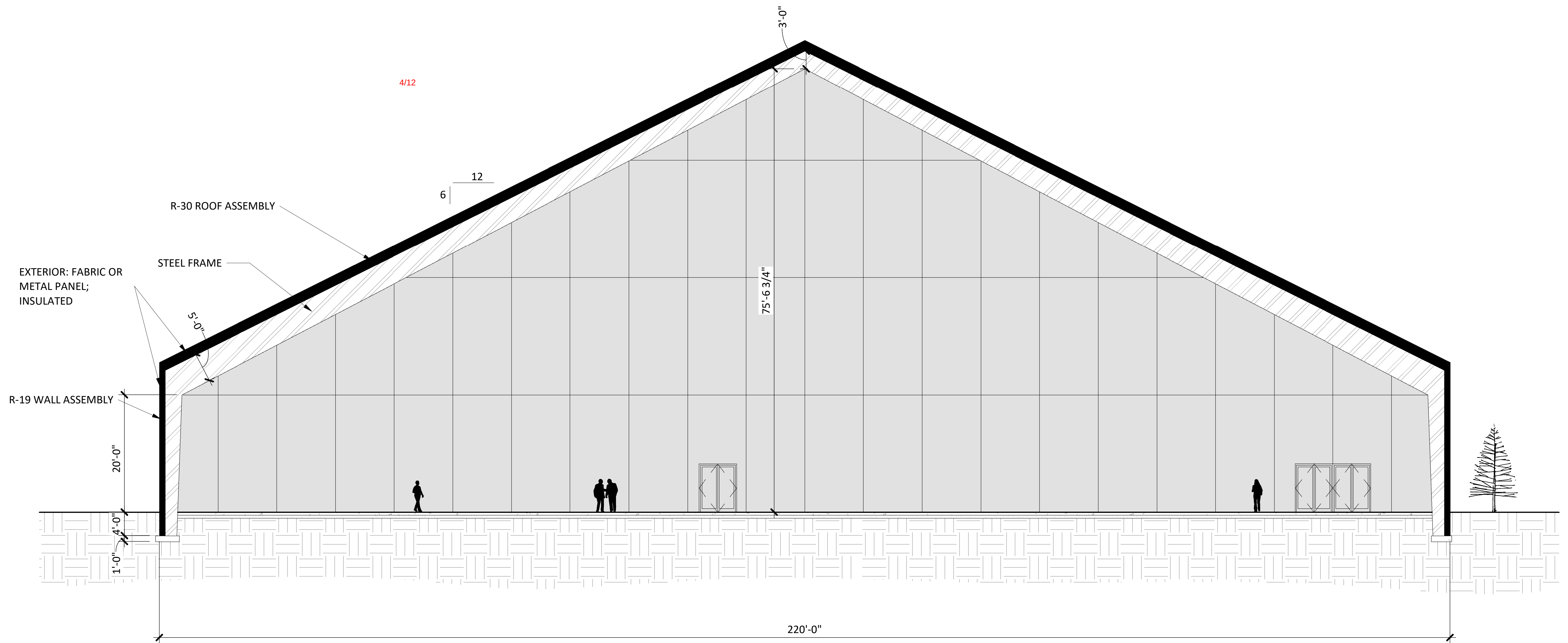
TEEN ROOM



TEEN ROOM FLOOR PLAN



RENDERINGS DO NOT REFLECT CURRENT PLAN*





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INDEX OF DRAWINGS

NUMBER	NAME
GENERAL	
G100	COVER PAGE
G101	TITLE SHEET
G102	TYPICAL ASSEMBLIES
G111	LIFE SAFETY PLANS
G120	MOUNTING HEIGHTS
G130	CODE REVIEW
G131	CODE REVIEW
ARCHITECTURAL	
A000	ARCHITECTURAL SITE PLAN
A201	EVENT LEVEL FLOOR PLAN
A210	ROOF PLAN
A211	ENLARGED PLANS AND ELEVATIONS
A212	ENLARGED PLANS AND ELEVATIONS
A220	DOOR SCHEDULE
A221	DOOR DETAILS
A301	EXTERIOR ELEVATIONS
A310	GLAZING ELEVATIONS AND DETAILS
A401	BUILDING SECTIONS
A501	EXTERIOR WALL SECTIONS
A510	EXTERIOR DETAILS
A520	ROOF DETAILS
A530	INTERIOR DETAILS
A600	FINISH / SPEC INFORMATION
A601	FIRST FLOOR FINISH PLAN
A602	STRIPING PLAN
A620	CASEWORK SCHEDULE
A701	FIRST FLOOR RCP
A702	FIELD LIGHTING RCP
A900	MEZZANINE ALT. PLANS AND ELEVATIONS
A901	MEZZANINE ALT. VERTICAL CIRCULATION

FINISH SPEC ID LIST

ID	DESCRIPTION
ALSTOR-1	08 4313 - ALUMINUM STORE FRONT
BCS-1	10 2800 - BABY CHANGING STATION; POLYETHYLENE
CAD UNID-2	03 5400 - CAST UNDERLAYMENT; WITH SOUND CONTROL MEMBRANE
CMU-1	04 2000 - STANDARD GREY CMU
FR PRF-10	07 8100 - SPRAY APPLIED FIREPROOFING
FR STOP	07 8400 - THROUGH PENETRATION FIRESTOPPING
FUR-4	09 2116 - RESILIENT FURRING CHANNELS
GB-18	10 2800 - GRAB BAR; 18 INCHES
GB-36	10 2800 - GRAB BAR; 36 INCHES
GB-42	10 2800 - GRAB BAR; 42 INCHES
GYP BD-1	09 2116 - 5/8" TYPE X GYPSUM BOARD
GYP BD-4	09 2110 - 5/8" TYPE C GYPSUM BOARD
INSUL-1	07 2100 - XPS EXTRUDED POLYSTYRENE INSULATION
INSUL-5	07 2100 - HIGH DENSITY XPS EXTRUDED POLYSTYRENE INSULATION
INSUL-33	07 2126 - BULK CELLULOSE FIBER INSULATION FOR PNEUMATIC PLACEMENT
INSUL-80	09 2116 - ACOUSTIC INSULATION, MINERAL FIBER
MET STUD-2	09 2116 - NON-LOADBEARING METAL STUDS, 20 GA.
MIR-50	10 2800 - MIRROR; FRAMELESS
NPRN DISP-1	
PC PRF-2	03 4520 - ARCHITECTURAL PRECAST WALL PANELS WITHOUT INSULATION
SEALANT-1	07 9200 - JOINT SEALANT OR CAULKING WITH OR WITHOUT BACKER ROD
SMF-2	07 6200 - PREFINISHED ALUMINUM
SP-1	10 2800 - SOAP DISPENSER, WALL MOUNT
SSM-1	
TEMP GL-3	08 8000 - 1/2" TEMPERED GLASS
TP-1	10 2800 - TOILET PAPER DISPENSER, SINGLE ROLL
TP-2	10 2800 - TOILET PAPER DISPENSER, DOUBLE ROLL
VPR MET-4	03 3000 - 15 MIL UNDERLAYS VAPOR RETARDER
WD BLKG	06 1000 - WOOD BLOCKING
WD SHTG-1	06 1000 - 3/4" SUBFLOOR/UNDERLAYMENT COMBINATION
WD SHTG-32	06 1000 - 3/4" SHEATHING

LIST OF ABBREVIATIONS

CODE	LIST OF ABBREVIATIONS DESCRIPTION
A/E	ARCHITECT/ENGINEER
AC	ALTERNATING CURRENT
ACI	AMERICAN CONCRETE INSTITUTE
ACM	ASBESTOS CONTAINING MATERIAL
ACT	ACOUSTICAL CEILING TILE
ADA	AMERICAN DISABILITIES ACT
AFF	ABOVE FINISH FLOOR
AHU	AIR HANDLING UNIT
AISC	AMERICAN INSTITUTE OF STEEL CONSTRUCTION
ALT	ALTERNATE
ALUM	ALUMINUM
ANSI	AMERICAN NATIONAL STANDARDS INSTITUTE
ARCH	ARCHITECT
ASI	ARCHITECTURAL SUPPLEMENTAL INSTRUCTION
AWI	AMERICAN WOODWORKING INSTITUTE
BD	BOARD
BLDG	BUILDING
BM	BEAM
BOT	BOTTOM
BRG	BEARING
BTU	BRITISH THERMAL UNITS
BUR	BUILT UP ROOFING
CAB	CABINET
CB	CATCH BASIN
CG	CORNER GUARD
CI	CAST IRON
CIP	CAST IN PLACE
CJ	CONTROL JOINT
CLG	CEILING
CLR	CLEAR
CMU	CONCRETE MASONRY UNIT
CN	CLEAN OUT
CONC	CONCRETE
CPT	CARPET
CSMT	CASEMENT
CSWK	CASEWORK
CT	CERAMIC TILE
CUM	CABINET UNIT HEATER
CWT	CERAMIC WALL TILE
DEMO	DEMOLITION
DEPT	DEPARTMENT
DF	DRINKING FOUNTAIN
DIA	DIAMETER
DIAG	DIAGONAL
DIM	DIMENSION
DIST	DISTANCE
DOC	DOCUMENT
DR	DOOR
DTL	DETAIL
DW	DISHWASHER
DWG	DRAWING
EA	EACH
EFS	EXTERIOR INSULATION FINISH SYSTEM
EJ	EXPANSION JOINT
ELEC	ELECTRIC
ELEV	ELEVATOR/ELEVATION
EP	EPOXY PAINT
EQ	EQUAL
EQUIP	EQUIPMENT
EW	ELECTRIC WATER COOLER
EXIST	EXISTING
FD	FLOOR DRAIN
FEC	FIRE EXTINGUISHER CABINET
FF	FINISH FLOOR
FFE	FURNITURE, FIXTURE, AND EQUIPMENT
FHC	FIRE HOSE CABINET
FIN	FINISH
FLR	FLOOR
FND	FOUNDATION
FTG	FOOTING
FWC	FABRIC WALL COVERING

PROJECT SPEC ID LIST

SPEC ID	SPEC. SECTION & DESCRIPTION
ALSTOR-1	08 4313 - ALUMINUM STORE FRONT
BCS-1	10 2800 - BABY CHANGING STATION; POLYETHYLENE
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WD SHTG-32	06 1000 - 3/4" SHEATHING

LIST OF ABBREVIATIONS

CODE	LIST OF ABBREVIATIONS DESCRIPTION
GALV	GALVANIZED
GC	GENERAL CONTRACTOR
GEN	GENERAL
GL	GLASS OR GLAZING
GWB	GYPSUM WALL BOARD
HB	HOSE BIB
HCP	HANDICAP
HDW	HARDWARE
HDWD	HARDWOOD
HM	HOLLOW METAL
HORIZ	HORIZONTAL
HT	HEIGHT
IBC	INTERNATIONAL BUILDING CODE
INSUL	INSULATION
JAN	JANITOR
LAM	LAMINATE
LAV	LAVATORY
MAS	MASONRY
MAB	MARKERBOARD
MDF	MEDIUM DENSITY FIBERBOARD
MECH	MECHANICAL
MH	MANHOLE
ML	MATCHLINE
MTL	METAL
MTL STD	METAL STUD
NC	NON COMBUSTIBLE
NIC	NOT IN CONTRACT
NOM	NOMINAL
NIS	NOT TO SCALE
OC	ON CENTER
OFI	OWNER FURNISHED CONTRACTOR INSTALLED
OFI	OWNER FURNISHED OWNER INSTALLED
OH	OVERHEAD
OSB	ORIENTED STRAND BOARD
PB	PARTICLE BOARD
PC	PRECAST
PLAM	PLASTIC LAMINATE
PLAST	PLASTER
PLYWD	PLYWOOD
PREV	PREVIOUS
PT	PAINT
PTD	PAPER TOWEL DISPENSER
RAD	RADIUS
REINF	REINFORCEMENT
REQD	REQUIRED
REV	REVERSE
RM	ROOM
RO	ROUGH OPENING
RTU	ROOF TOP UNIT
SD	SMOKE DETECTOR
SECT	SECTION
SHT	SHEET
SIM	SIMILAR
SPD	SOAP DISPENSER
SPEC	SPECIFICATIONS
SQ	SQUARE
SUSP	SUSPEND
TC	THIN COAT
TEMP	TEMPORARY/TEMPERATURE
TO	TOP OF
TP	TOILET PARTITIONS
TPD	TOILET PAPER DISPENSER
TRTD	TREATED
TS	TRANSITION STRIP
TYP	TYPICAL
UL	UNDERWRITERS LABORATORIES
UNO	UNLESS NOTED OTHERWISE
VCT	VINYL COMPOSITION TILE
W/	WITH
WD	WOOD
WOW	WINDOW

MATERIAL MATRIX

	- CONCRETE; CUT/SURFACE PATTERN
	- FILL; SEE STRUCTURAL
	- BRICK; CUT PATTERN
	- BRICK; SURFACE PATTERN
	- CMU; CUT PATTERN
	- CMU; SURFACE PATTERN
	- BURNISHED CMU; SURFACE PATTERN
	- GROUT; CUT PATTERN
	- STONE; CUT PATTERN
	- ALUMINUM; CUT PATTERN
	- STEEL; CUT PATTERN
	- MDF; CUT PATTERN
	- PLYWOOD; CUT PATTERN
	- SOLID SURFACE; CUT PATTERN
	- WOOD; CUT PATTERN
	- WOOD; SURFACE PATTERN
	- METAL PANEL; SURFACE
	- CORRUGATED METAL PANEL; SURFACE
	- FLUSH METAL PANEL; SURFACE
	- RIGID INSULATION; CUT PATTERN
	- TAPERED INSULATION; SURFACE PATTERN
	- SPANDREL GLAZING; SURFACE PATTERN
	- GLAZING; SURFACE PATTERN
	- A.C.T. (1); SURFACE PATTERN
	- A.C.T. (2); SURFACE PATTERN
	- A.C.T. (3); SURFACE PATTERN
	- A.C.T.; CUT PATTERN
	- CARPET TILE; SURFACE PATTERN
	- ACCENT CARPET TILE; SURFACE PATTERN
	- INTERIOR GYPSUM; CUT PATTERN
	- EXTERIOR GYPSUM SHEATHING; CUT PATTERN
	- TILE; CUT PATTERN
	- EARTH; CUT PATTERN
	- PEA ROCK; CUT PATTERN
	- SAND; CUT PATTERN

PROJECT GENERAL NOTES

- FIRST LEVEL ELEVATION OF 100' 0" NOTED ON ARCHITECTURAL AND STRUCTURAL DRAWINGS EQUALS ELEVATION OF 000.00' NOTED ON CIVIL DRAWINGS.
- THE OWNER'S NORMAL OPERATIONS WILL BE CONTINUED DURING CONSTRUCTION. THE CONSTRUCTION SHALL NOT INTERFERE WITH THESE OPERATIONS IN ANY WAY WITHOUT THE OWNER'S EXPRESSED CONSENT.
- IT SHALL BE EACH TRADE CONTRACTORS RESPONSIBILITY TO VISIT THE SITE AND FAMILIARIZE HIMSELF WITH ALL EXISTING CONDITIONS. EACH CONTRACTOR SHALL TAKE ALL NECESSARY FIELD MEASUREMENTS AND OTHERWISE VERIFY ALL DIMENSIONS AND EXISTING CONSTRUCTION CONDITIONS INDICATED AND/OR SHOWN ON THE DRAWINGS. SHOULD ANY ERROR OR INCONSISTENCY EXIST, THE CONTRACTOR SHALL NOT PROCEED WITH THE WORK AFFECTED THEREBY UNTIL REPORTING THE SAME TO THE ARCHITECT AND THE OWNERS REPRESENTATIVE FOR CLARIFICATION AND/OR CORRECTION.
- DIMENSIONS FOLLOWED BY +/- SHALL BE REVIEWED AND ALL NECESSARY ADJUSTMENTS MADE PRIOR TO FABRICATION AND/OR INSTALLATION OF WORK. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES BEFORE PROCEEDING WITH THE WORK.
- ALL EXISTING CONSTRUCTION AND SURFACES WHICH ARE TO REMAIN BUT ARE AFFECTED BY THE WORK UNDER THIS CONTRACT SHALL BE RESTORED AND REFINISHED TO MATCH THE CONSTRUCTION, FINISH AND ALIGNMENT OF THE EXISTING ADJACENT CONSTRUCTION AND FINISHES.
- VERIFY QUANTITY, SIZE AND LOCATION OF ALL FLOOR, ROOF AND WALL OPENINGS FOR MECHANICAL AND ELECTRICAL WORK WITH THE APPROPRIATE TRADE. PROVIDE ALL OPENINGS SHOWN OR REQUIRED FOR COMPLETION OF WORK.
- COORDINATE SIZE AND LOCATION OF ALL ACCESS PANELS WITH APPROPRIATE TRADES. COORDINATE SIZE & LOCATION OF ALL HOUSE-KEEPING PADS AND/OR EQUIPMENT SUPPORTS WITH APPROPRIATE EQUIPMENT MANUFACTURER.
- PROVIDE POSITIVE SLOPE TO ALL FLOOR DRAINS WHILE KEEPING FLOOR LEVEL AT WALL BASE CONDITION. PROVIDE FIRE WATCH DURING FIELD CUTTING AND WELDING OPERATIONS, MEETING OWNERS REQUIREMENTS.
- PROVIDE FIRE RETARDANT WOOD BLOCKING AND/OR 18 GA METAL PLATES BETWEEN STUDS AT ALL LOCATIONS REQUIRING BLOCKING IN WALL. THESE LOCATIONS INCLUDE BUT ARE NOT LIMITED TO GRAB BARS, CRASH RAILS, CABINETS, WALL HUNG SHELVES, ARTWORK, ETC.
- THE EXTENT OF HATCHING ON DRAWINGS IS ONLY SUFFICIENT TO INDICATE THE NATURE OF THE CONSTRUCTION OR MATERIALS. TERMINATION OF THE HATCHING SHALL NOT BE CONSTRUED TO REPRESENT A CHANGE OR TERMINATION OF MATERIAL.
- THE CONTRACTOR SHALL VERIFY THE EXISTENCE, LOCATION AND ELEVATION OF ALL UNDERGROUND UTILITIES IN WORK AREAS PRIOR TO PROCEEDING WITH CONSTRUCTION. ALL DISCREPANCIES SHALL BE DOCUMENTED AND FORWARDED TO ARCHITECT AND OWNERS REPRESENTATIVE FOR ACTION.
- IT IS THE CONTRACTORS RESPONSIBILITY TO INVESTIGATE FIELD CONDITIONS AND PROVIDE AS NEEDED TEMPORARY SUPPORTS, SHORING AND/OR PROTECTION OF EXISTING STRUCTURES AND UNDERGROUND UTILITIES DURING EXECUTION OF WORK.
- ALL WORK TO CONFORM TO THE REQUIREMENTS OF THE LOCAL AND STATE CODES.
- RELEVANT DIMENSIONS AND ELEVATIONS FOR EQUIPMENT INSTALLATIONS SHALL BE VERIFIED AGAINST MANUFACTURERS CERTIFIED EQUIPMENT DRAWINGS.
- CONTRACTOR SHALL PROVIDE TEMPORARY DUST PROOF PARTITIONS AS REQUIRED, OR WHERE REQUESTED BY OWNERS' REPRESENTATIVE. PARTITIONS SHALL BE FIRE RATED WHERE REQUIRED BY CODE HAVING JURISDICTION. ALL TEMPORARY PARTITIONS SHALL BE CONSTRUCTED IN A MANNER AND OF MATERIALS OFFERING ADEQUATE PROTECTION TO OWNER'S EQUIPMENT AND PERSONNEL.
- DO NOT SCALE DRAWINGS TO DETERMINE SIZES AND DIMENSIONS. USE FIGURED DIMENSIONS ONLY. DIMENSIONS ARE TO FINISHED FACE OF WALLS UNLESS OTHERWISE NOTED. ALL PERIMETER DIMENSIONS ARE FROM FACE OF PERIMETER WALLS.
- ALL PENETRATIONS TO FLOORS, CEILINGS AND WALLS SHALL BE SEALED AND FIRE STOPPED TO A FIRE RATING EQUAL TO THE CONSTRUCTION BEING PENETRATED.
- NEW WORK SHALL ALIGN WITH AND MATCH EXISTING WORK UNLESS NOTED OTHERWISE.

SYMBOLS LEGEND

ROOM IDENTIFICATION TAG	
SAMPLE ROOM NAME	ROOM NAME
101	ROOM NUMBER
150 SF	ROOM AREA
OPENING IDENTIFICATION TAGS	
DOOR	DOOR NUMBER
WINDOW	WINDOW IDENTIFICATION
CURTAINWALL / STOREFRONT	IDENTIFICATION
COLUMN/GRID/LEVEL IDENTIFICATION	
XX-X	NEW COLUMN / STRUCTURAL GRID
XX-X	EXISTING COLUMN / STRUCTURAL GRID
NAME EL = ELEVATION	ELEVATION DATUM
ASSEMBLY IDENTIFICATION	
A4.25	WALL / FLOOR / ROOF TAG
MATERIAL/OBJECT IDENTIFICATION	
(7)	MATERIAL ID TAG
REVISION DELTA AND CLOUD	
REVISION TAG	REVISION
REVISION CLOUD	REVISION CLOUD
DRAWING IDENTIFICATION	
4A	DRAWING NUMBER
X.XX	SCALE: 1/8" = 1' 0"
View Name	DRAWING NAME
1	SHEET NUMBER
SECTION IDENTIFICATION	
1	DIRECTION OF CUT
A101	DRAWING NUMBER
DETAIL SECTION IDENTIFICATION	
1	DRAWING NUMBER
A101	SHEET NUMBER
ELEVATION IDENTIFICATION	
1	ELEVATION NUMBER
A101	SHEET NUMBER
NORTH ARROW	
SHEET KEYNOTES	
XX	KEYNOTE

DESIGN TEAM

Architect

JLG Architects
124 North 3rd Street
Fond du Lac, WI 54601

P: 701.746.1727

Contact: Ryan Rademacher

Civil Engineer

Design Tree Engineering
120 17th Ave. W.
Alexandria, MN 56308

P: 320.460.7104

Contact: Jeremy Anderson

Structural Engineer

XXXXX XXX
XXXX XXXXX XXXXX
XXXXXXX XXXXXXX

P: 701.746.1727

Contact:

Mechanical Engineer

XXXXX XXX
XXXX XXXXX XXXXX
XXXXXXX XXXXXXX

P: 701.746.1727

Contact:

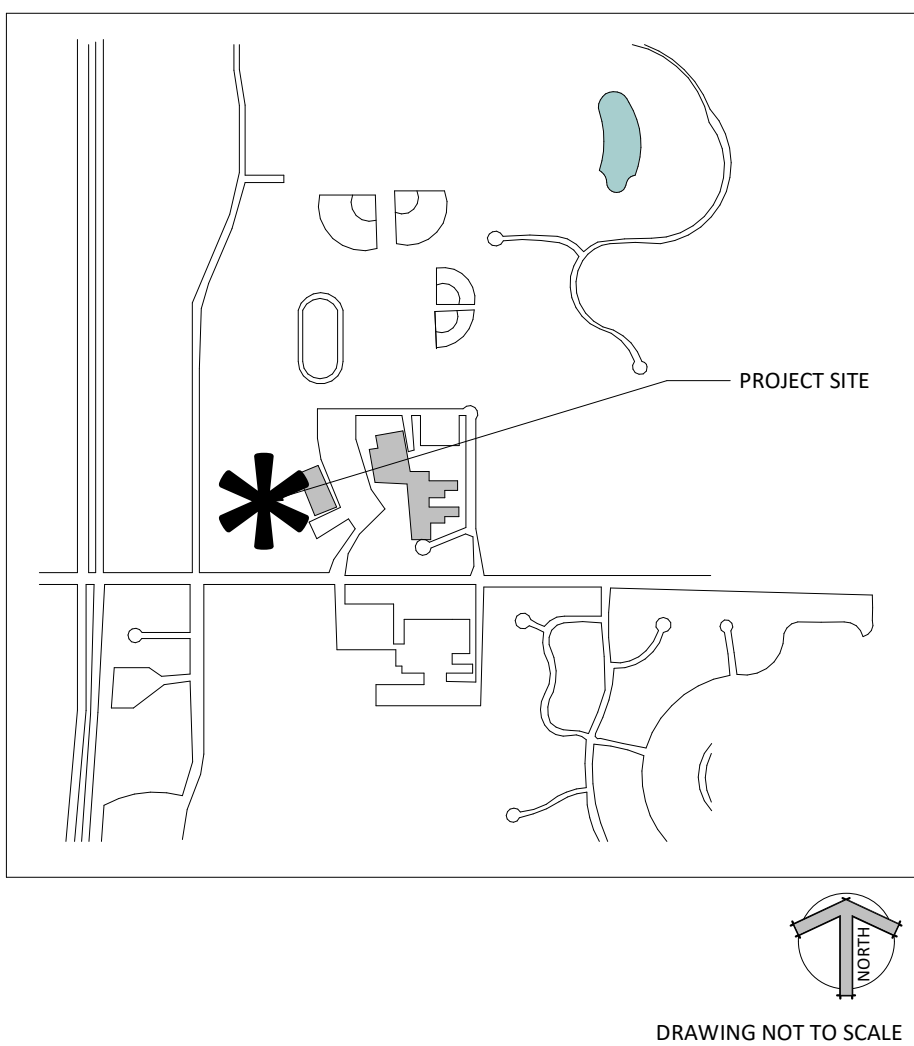
Electrical Engineer

XXXXX XXX
XXXX XXXXX XXXXX
XXXXXXX XXXXXXX

P: 701.746.1727

Contact:

PROJECT VICINITY MAP - ROGERS, MN



710 South 2nd Street, 8th Floor
Minneapolis, MN 55401
phone: (612) 746-4260

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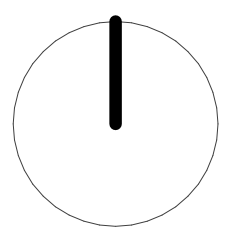
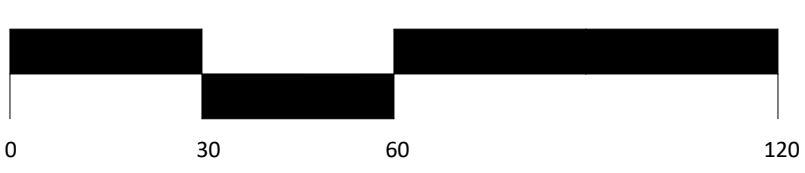
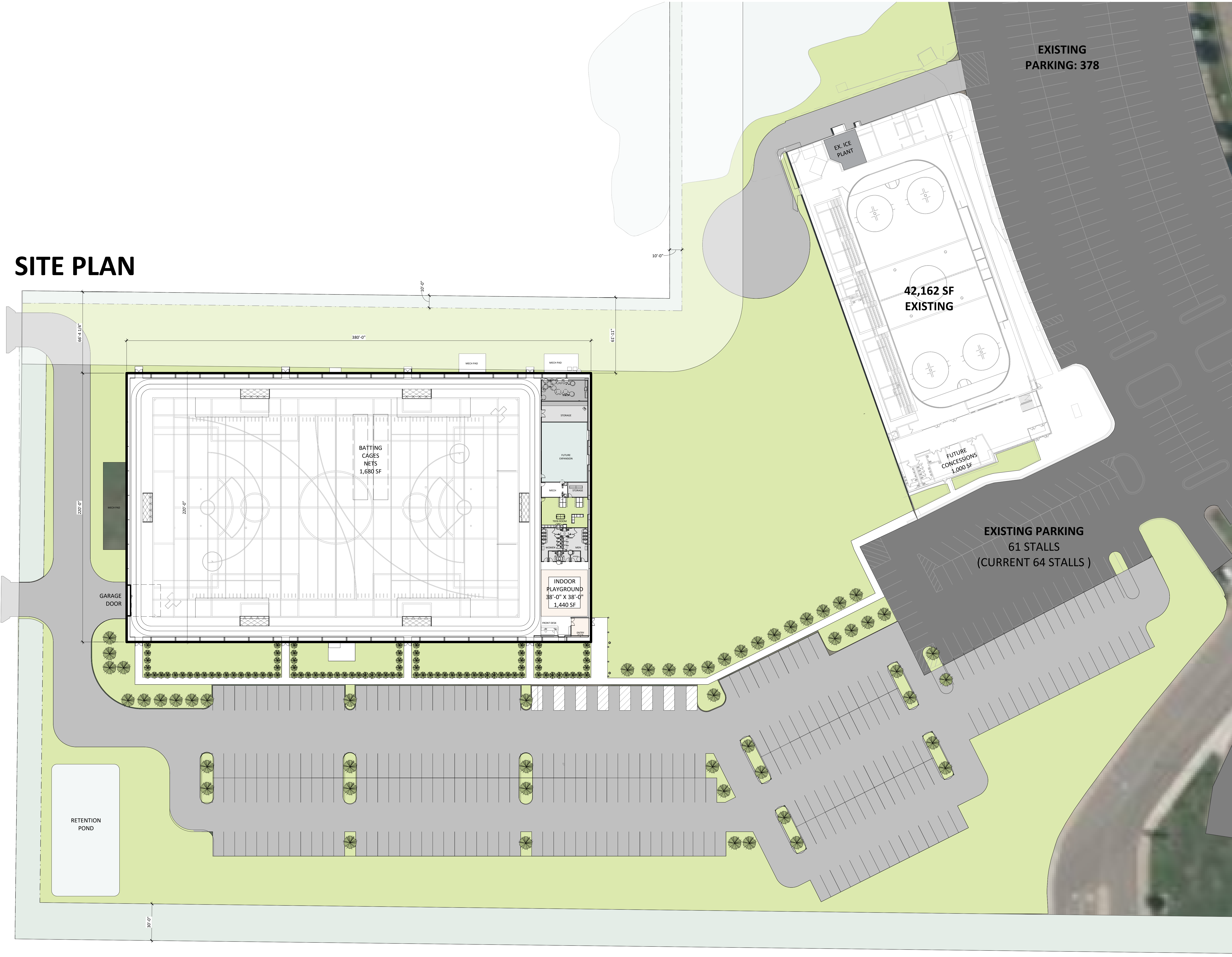
PRELIMINARY
NOT FOR CONSTRUCTION

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

CITY OF ROGERS
ROGERS INDOOR TURF
ROGERS, MN

DATE
08/02/24
PHASE
BID PACK 1
PROJECT
20166
SHEET
G101
TITLE SHEET

SITE PLAN



OPTION 2

**42,162 SF
EXISTING**

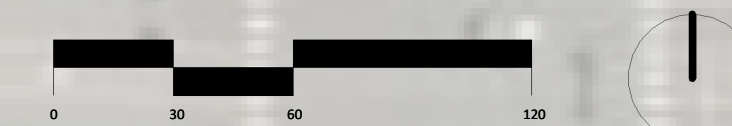
750 OCCUPANTS
FIELD & TRACK ONLY

EXISTING PARKING
61 STALLS
(CURRENT 64 STALLS)

8,000 SF
PHASE 2 WOULD BE 49,928 GSF
INCLUDING THIS SPACE

JAMES ROAD

141ST AVENUE NORTH



NOTES:

- ALL DIMENSIONS SHOWN ARE TO FLOW LINE, CENTERLINE OF FENCE, EDGE OF PAVEMENT, OR EXTERIOR FACE OF BUILDING, UNLESS OTHERWISE NOTED.
- CONTRACTOR SHALL VERIFY ALL PLAN AND DETAIL DIMENSIONS PRIOR TO CONSTRUCTION.
- ALL CROSSWALK STRIPING SHALL BE WHITE IN COLOR.
- ALL INTERIOR PARKING STALL STRIPING SHALL BE 4" AND YELLOW IN COLOR.
- ACCESSIBLE PARKING STALL STRIPING, ACCESS AISLE, SYMBOL, AND SIGNAGE SHALL BE IN ACCORDANCE WITH LOCAL AUTHORITY REQUIREMENTS.
- CONTRACTOR SHALL MAINTAIN FULL ACCESS TO ADJACENT PROPERTIES DURING CONSTRUCTION AND TAKE ALL PRECAUTIONS NECESSARY TO AVOID PROPERTY DAMAGE TO ADJACENT PROPERTIES.
- ALL SITE WORK SHALL BE PERFORMED IN ACCORDANCE WITH THE RECOMMENDATIONS OF THE GEOTECHNICAL ENGINEER.
- CONTRACTOR SHALL PROVIDE A TEMPORARY PEDESTRIAN ACCESS ROUTE PLAN FOR ANY WORK PERFORMED WITHIN THE PUBLIC RIGHT-OF-WAY.
- CONTRACTOR SHALL PROVIDE A TEMPORARY TRAFFIC CONTROL PLAN FOR ANY WORK PERFORMED WITHIN THE PUBLIC RIGHT-OF-WAY.
- GOPHER STATE ONE CALL DAMAGE PREVENTION SYSTEM FOR BURIED UTILITIES. 1-800-252-1166. CONTRACTOR SHALL HIRE A PRIVATE UTILITY LOCATOR TO ASSIST WITH PRIVATE UTILITY LOCATES.

SITE LEGEND

- LIGHT DUTY BITUMINOUS PAVEMENT
- HEAVY DUTY BITUMINOUS PAVEMENT
- CONCRETE PAVEMENT
- CONCRETE SIDEWALK
- CURB AND GUTTER
- TIPPED CURB AND GUTTER
- RETAINING WALL
- TRAFFIC CONTROL SIGNAGE
- PAINTED DIRECTIONAL ARROW
- PAINTED ACCESSIBLE PARKING SYMBOL

PROPERTY INFORMATION

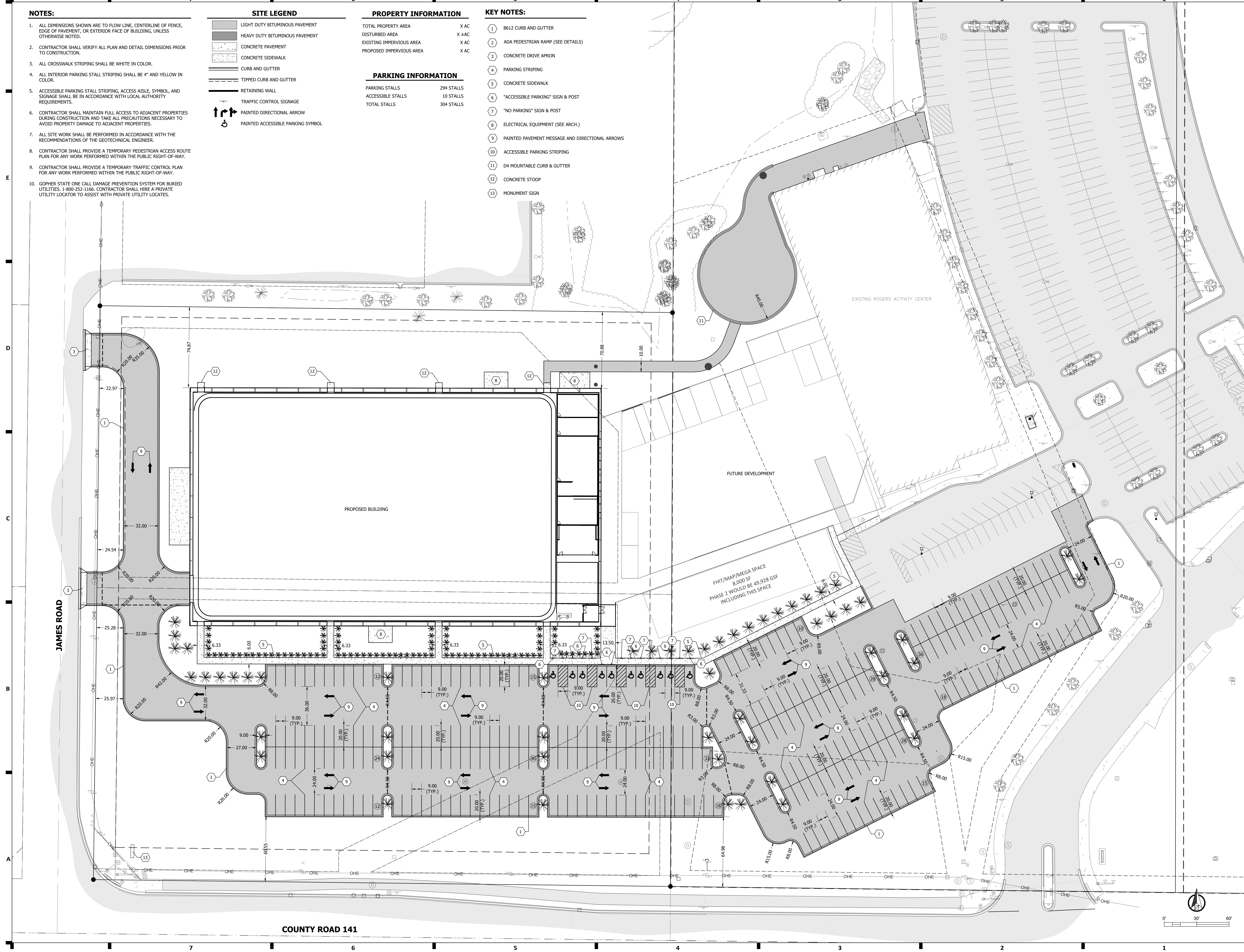
TOTAL PROPERTY AREA	X AC
DISTURBED AREA	X ±AC
EXISTING IMPERVIOUS AREA	X AC
PROPOSED IMPERVIOUS AREA	X AC

PARKING INFORMATION

PARKING STALLS	294 STALLS
ACCESSIBLE STALLS	10 STALLS
TOTAL STALLS	304 STALLS

KEY NOTES:

- B612 CURB AND GUTTER
- ADA PEDESTRIAN RAMP (SEE DETAILS)
- CONCRETE DRIVE APRON
- PARKING STRIPING
- CONCRETE SIDEWALK
- "ACCESSIBLE PARKING" SIGN & POST
- "NO PARKING" SIGN & POST
- ELECTRICAL EQUIPMENT (SEE ARCH.)
- PAINTED PAVEMENT MESSAGE AND DIRECTIONAL ARROWS
- ACCESSIBLE PARKING STRIPING
- D4 MOUNTABLE CURB & GUTTER
- CONCRETE STOOP
- MONUMENT SIGN



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facsimile: 320.759.9032
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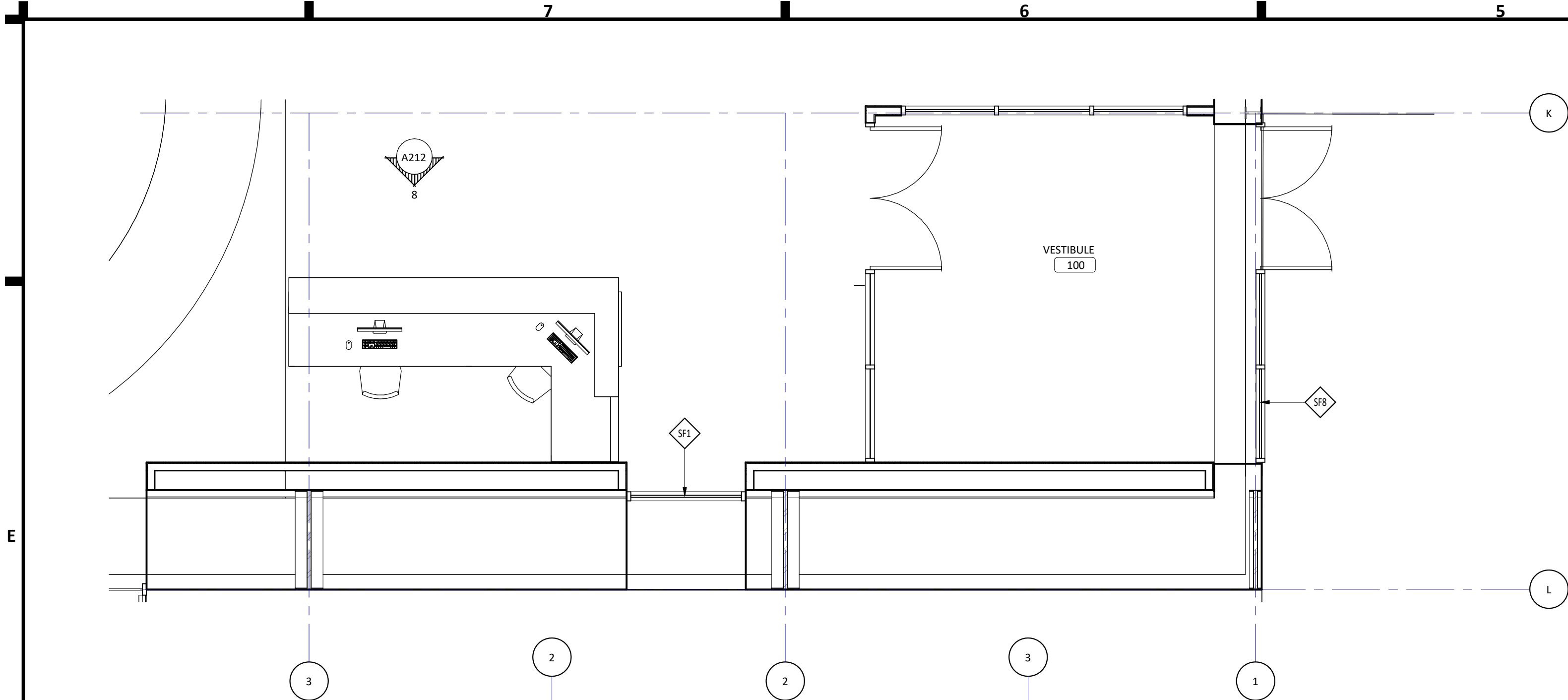
DESIGN TREE
engineering & land surveying
100 17th Ave NE, Suite 100
Minneapolis, MN 55412
612.291.1919

I HEREBY CERTIFY THAT THIS PLAN
SPECIFICATION, OR ANY OTHER
DOCUMENT PREPARED BY
ME OR UNDER MY CLOSE
SUPERVISION AND IN ACCORDANCE
WITH THE PROFESSIONAL ETHICS AND
THE LAWS OF THE STATE OF MINNESOTA.

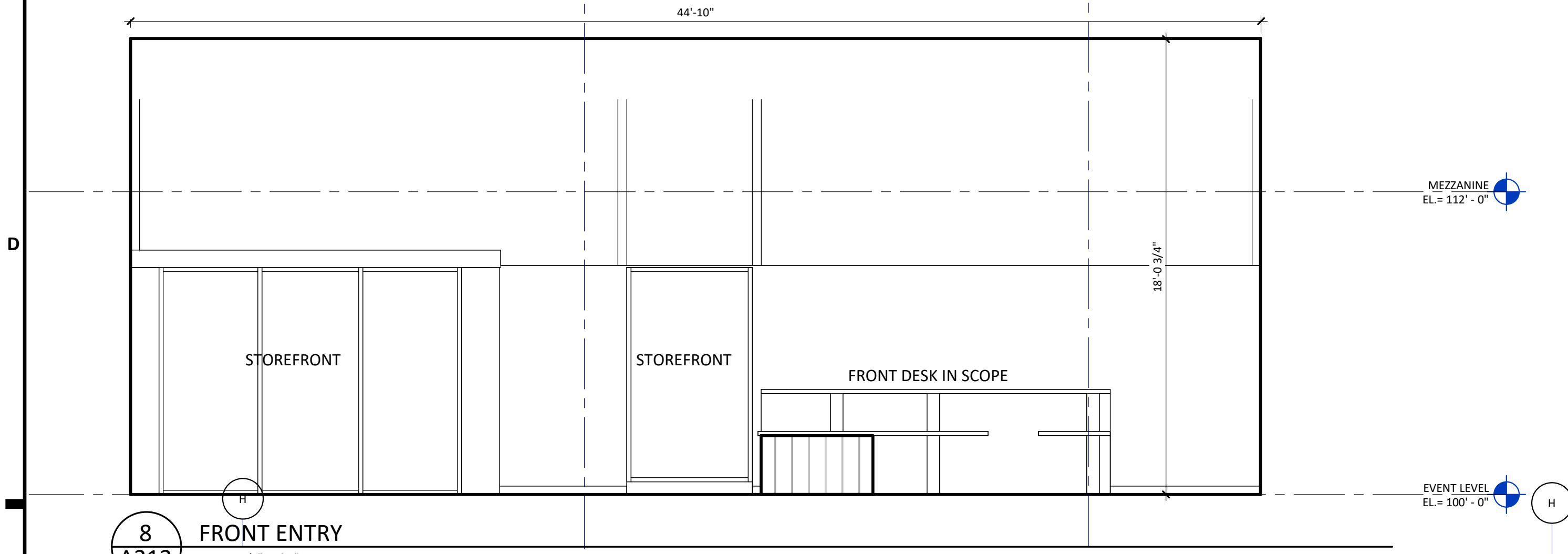
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NO.	DESCRIPTION	DATE

CITY OF ROGERS
ROGERS INDOOR TURF
ROGERS, MN

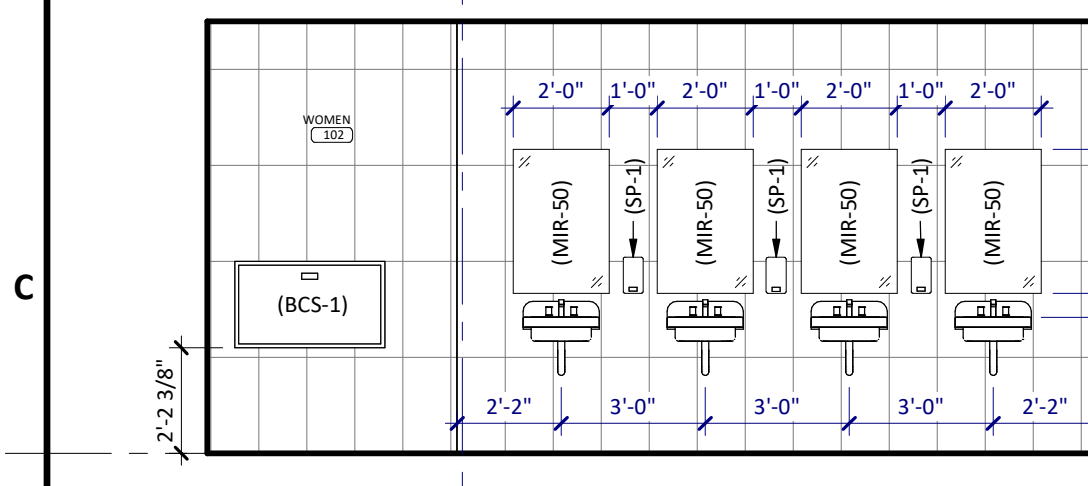
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PHASE	100% DD
PROJECT	02224002
SHEET	C201
SITE PLAN	



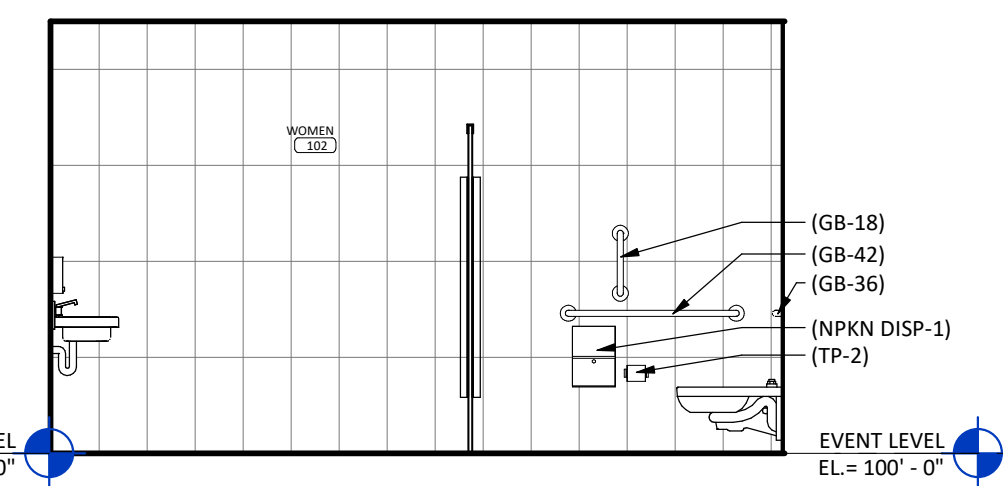
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ENLARGED ENTRY VESTIBULE
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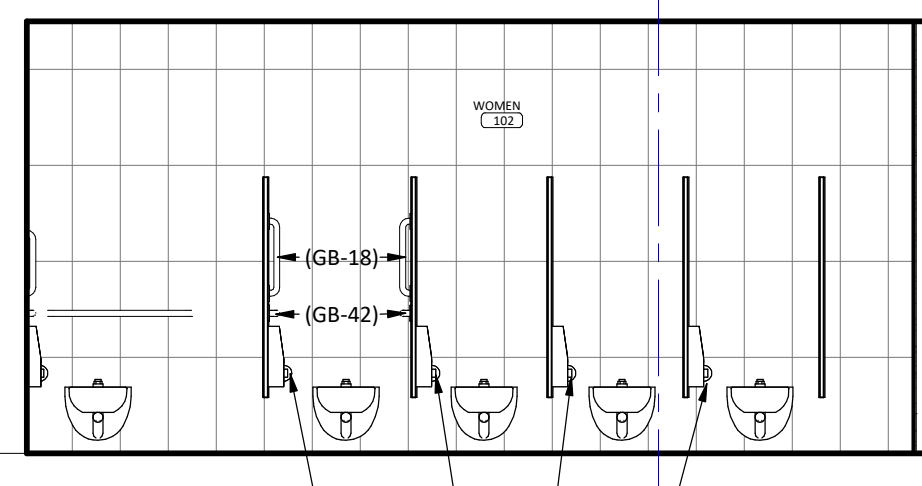
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FRONT ENTRY
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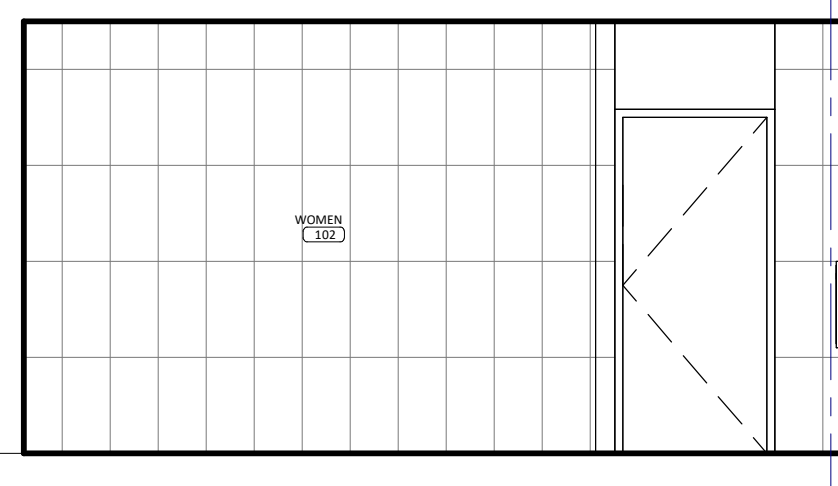
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WOMEN'S RESTROOM WEST
SCALE: 1/4" = 1'-0"



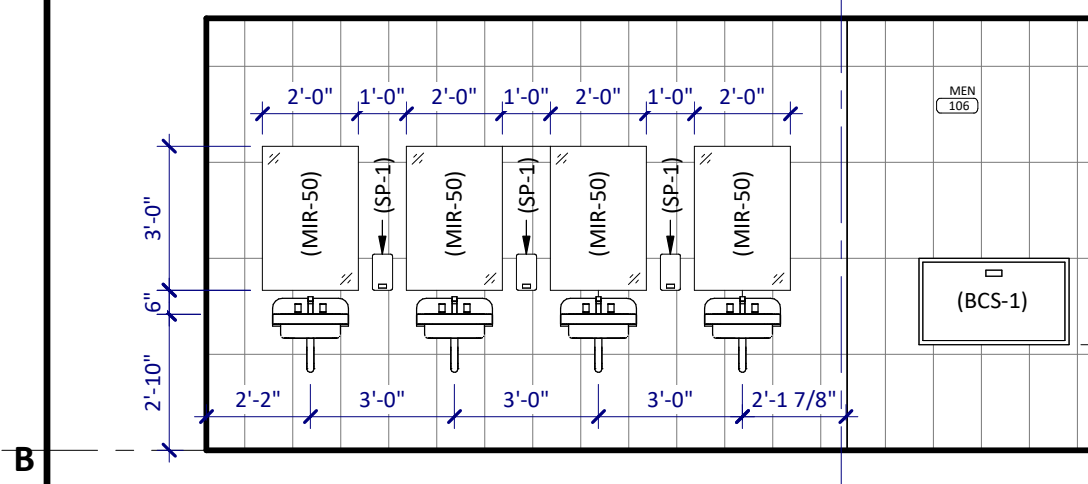
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WOMEN'S RESTROOM NORTH
SCALE: 1/4" = 1'-0"



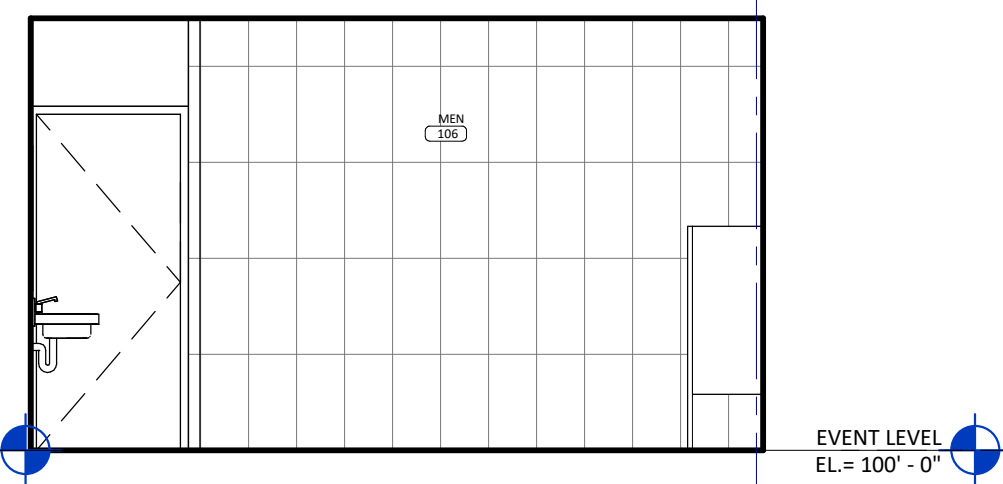
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WOMEN'S RESTROOM EAST
SCALE: 1/4" = 1'-0"



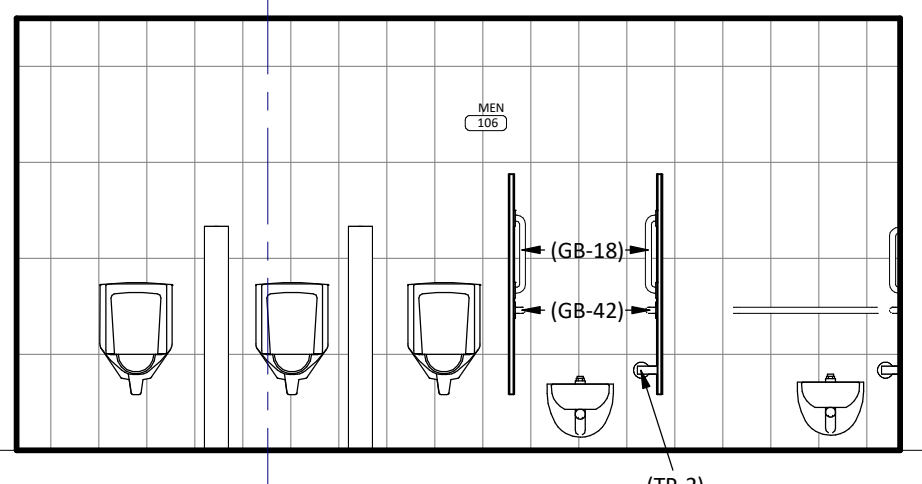
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WOMEN'S RESTROOM SOUTH
SCALE: 1/4" = 1'-0"



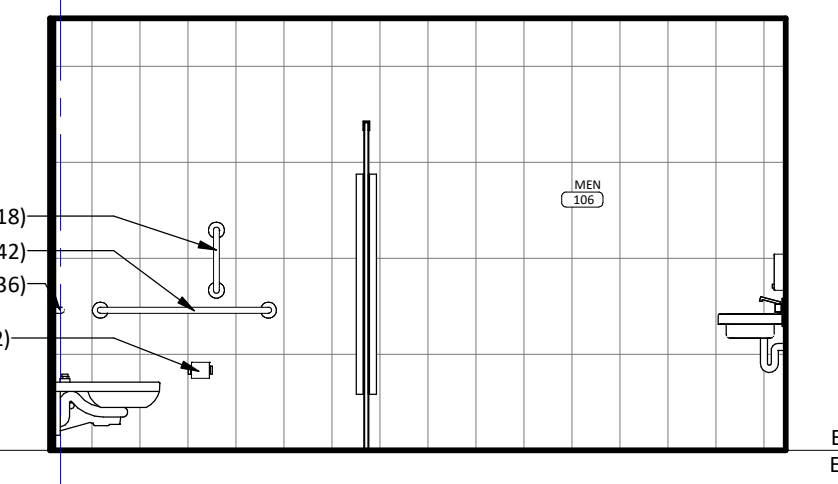
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MEN'S RESTROOM EAST
SCALE: 1/4" = 1'-0"



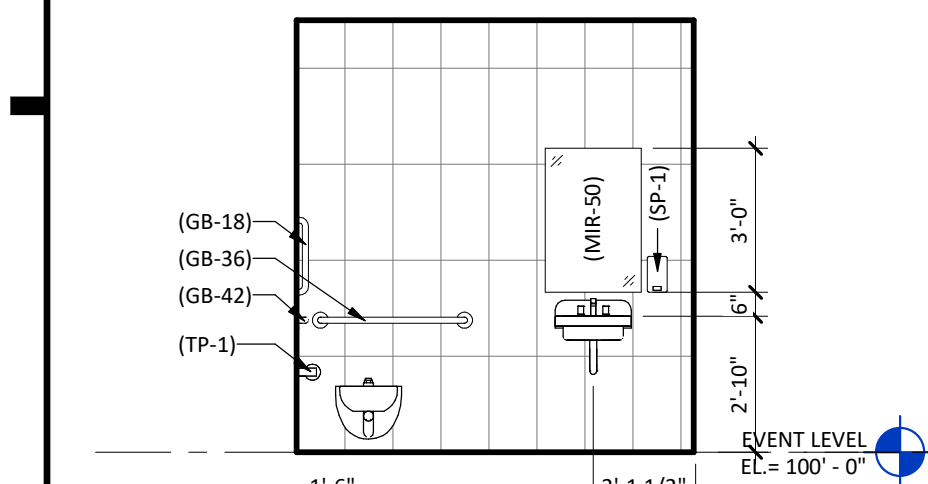
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MEN'S RESTROOM SOUTH
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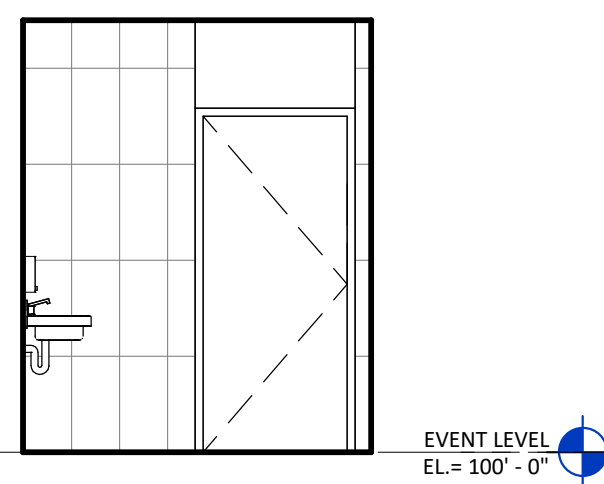
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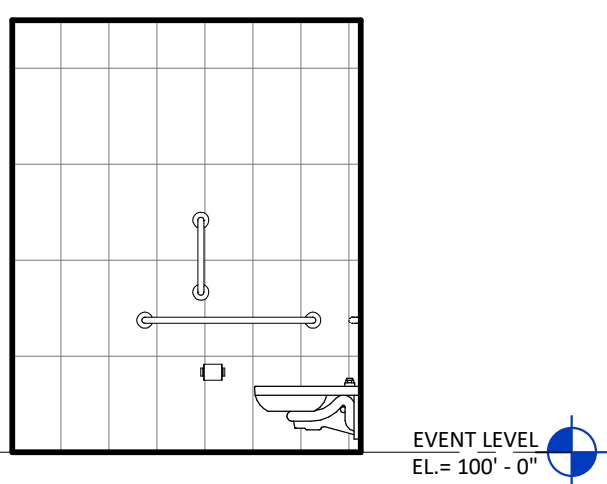
2D
A212
MEN'S RESTROOM NORTH
SCALE: 1/4" = 1'-0"



1
A212
RESTROOM A EAST
SCALE: 1/4" = 1'-0"



2
A212
RESTROOM A SOUTH
SCALE: 1/4" = 1'-0"



3
A212
RESTROOM A NORTH
SCALE: 1/4" = 1'-0"



ENTRY VESTIBULE

KEYNOTES - INTERIOR ELEV.		
NO	NOTE	REV

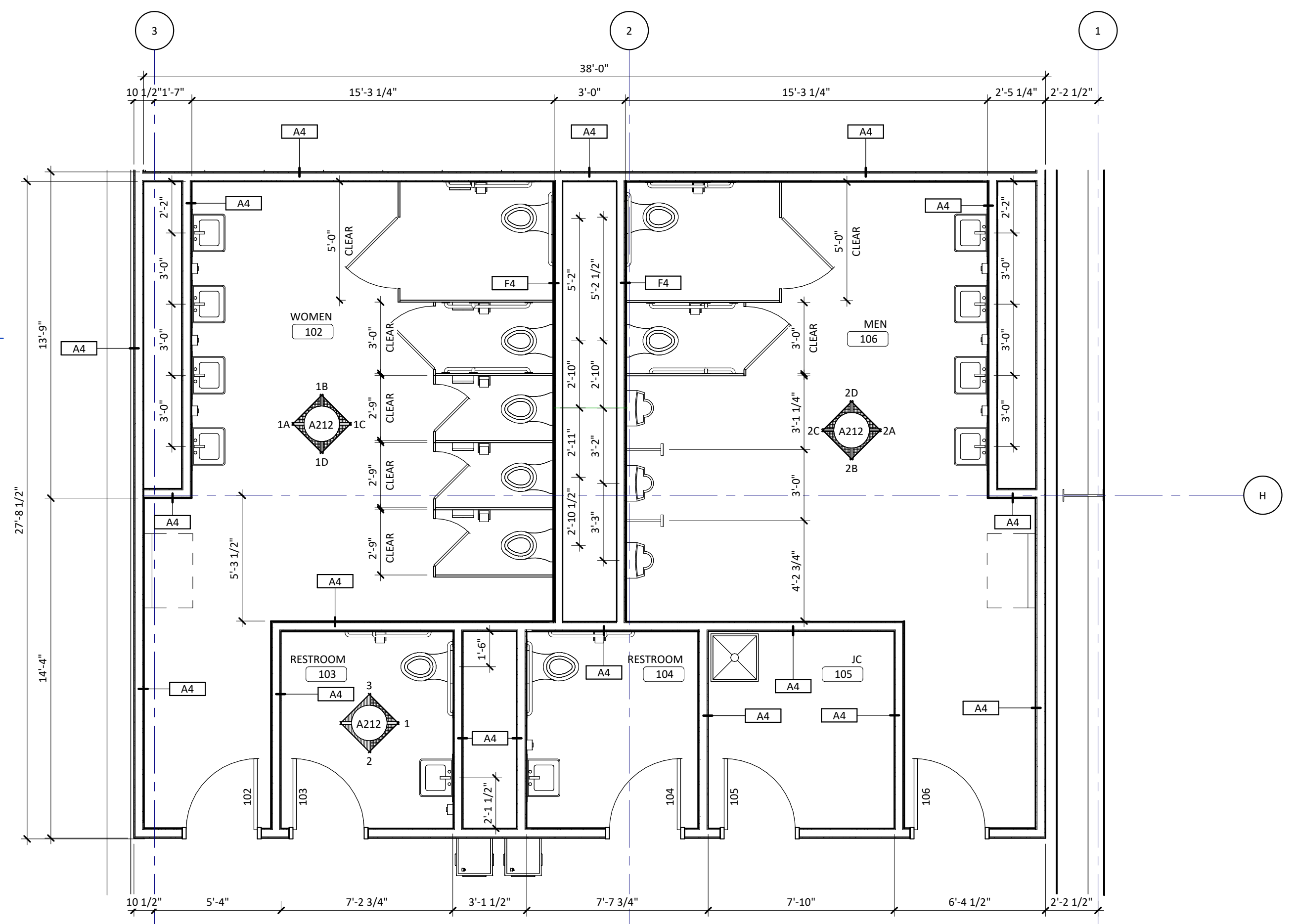
SHEET SPEC ID LIST		
SPEC ID	SPEC SECTION & DESCRIPTION	
BGS-1	10 2800 - BABY CHANGING STATION; POLYETHYLENE	
GB-18	10 2800 - GRAB BAR; 18 INCHES	
GB-36	10 2800 - GRAB BAR; 36 INCHES	
GB-42	10 2800 - GRAB BAR; 42 INCHES	
MR-50	10 2800 - MIRROR; FRAMELESS	
NPKN DISP-1	10 2800 - SOAP DISPENSER; WALL MOUNT	
SP-1	10 2800 - TOILET PAPER DISPENSER; SINGLE ROLL	
TP-1	10 2800 - TOILET PAPER DISPENSER; DOUBLE ROLL	
TP-2	10 2800 - TOILET PAPER DISPENSER; DOUBLE ROLL	

GENERAL NOTES - INTERIOR ELEVATIONS

- A. REFER TO A620 & A621 FOR STANDARD CASEWORK ELEVATIONS AND CONSTRUCTION.
- B. ALL WALL SURFACES TO BE (PT-1) UNLESS NOTED OTHERWISE.
- C. PROVIDE LEVEL '5' DRYWALL FINISH AT ALL APPLIED GRAPHICS AND WRITABLE WALL SURFACE LOCATIONS.
- D. PROVIDE WALL REINFORCEMENT AT ALL WALL MOUNTED ITEMS.
- E. ANY EXPOSED CABINET EDGE SHALL BE FINISHED EDGE TO MATCH ADJACENT CABINET FINISH.
- F. PAINT ALL EXPOSED (VISIBLE) DUCTWORK ABOVE THE CEILING LINE OF CLOUDS (PT-#).
- G. SEE SHEET G103 FOR ALL TOILET RIM HEIGHTS AND ACCESSORY MOUNTING HEIGHTS.

GENERAL NOTES - FLOOR PLAN

- A. FOR TYPICAL BARRIER FREE TOILET ROOM TYPES AND ACCESSORIES REQUIREMENTS AND LOCATIONS SEE DWG G120.
- B. FOR TYPICAL HOUSEKEEPING CLOSETS ACCESSORIES REQUIREMENTS AND MOUNTING LOCATIONS SEE DWG GXXX.
- C. ALL PARTITION TYPES ARE "A4" TYPICALLY UNLESS OTHERWISE NOTED.
- D. COORDINATE PARTITION FIRE RATED REQUIREMENTS AS INDICATED ON REFLECTED CEILING PLANS - DRAWING SERIES A700.
- E. TYPICALLY INSTALL SOAP DISPENSERS AND PAPER TOWEL DISPENSER AT ALL SINKS UNLESS NOTED OTHERWISE.
- F. PROVIDE WALL REINFORCEMENT PER DETAIL W/A-XXX AT WALL MOUNTED SHELVES AND STORAGE UNITS, MARKER BOARDS, BULLETIN BOARDS, TACK BOARDS, TELEVISIONS AND OTHER CONTRACTOR OR OWNER FURNISHED WALL-MOUNTED ITEMS (REFER TO ACCESSORIES AND EQUIPMENT SCHEDULES SEE DWG AX-XXX).
- G. FOR ALL CARPET TYPE CHANGES BETWEEN ROOMS, TRANSITION SHALL OCCUR AT CENTERLINE OF DOOR PANEL TYPICALLY - U.N.O. SEE DWG AX-XXX.
- H. COORDINATE DIMENSIONS W/ ASTERISK (E - "X-X") W/ EQUIPMENT VENDOR.
- I. PROVIDE BULLNOSE ON ALL CMU OUTSIDE CORNERS - TYPICAL.
- J. FOR INTERIOR METAL STUD CONSTRUCTION ALL DIMENSIONS ARE TO FACE OF METAL STUDS UNLESS NOTED OTHERWISE.
- K. FOR WOOD CONSTRUCTION ALL DIMENSIONS ARE TO EXTERIOR FACE OF SHEATHING AND CENTERLINE OF STUDS UNLESS NOTED OTHERWISE.
- L. ALL DIMENSIONS INDICATED AS 'CLEAR' ARE TO FACE OF FINISH (GYPSUM, TILE, ETC.).
- M. ALL MASONRY DIMENSIONS ARE TO FACE OF MASONRY UNLESS NOTED OTHERWISE.
- N. ALL EXTERIOR OPENING DIMENSIONS ARE ROUGH OPENINGS.
- O. COORDINATE ALL FLOOR OPENING DIMENSIONS AND CLEARANCES FOR DUCTWORK W/ MECHANICAL CONTRACTOR - TYPICAL.
- P. COORDINATE AND/OR CORRECT ANY DIMENSIONAL DISCREPANCIES WITH ARCHITECT PRIOR TO INSTALLATION.



4D
A212
RESTROOMS
SCALE: 1/4" = 1'-0"

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REVISION SCHEDULE

NO.	DESCRIPTION	DATE

CITY OF ROGERS

ROGERS INDOOR TURF

ROGERS, MN

DATE

08/01/24

PHASE

BID PACK 1

PROJECT

20166

SHEET

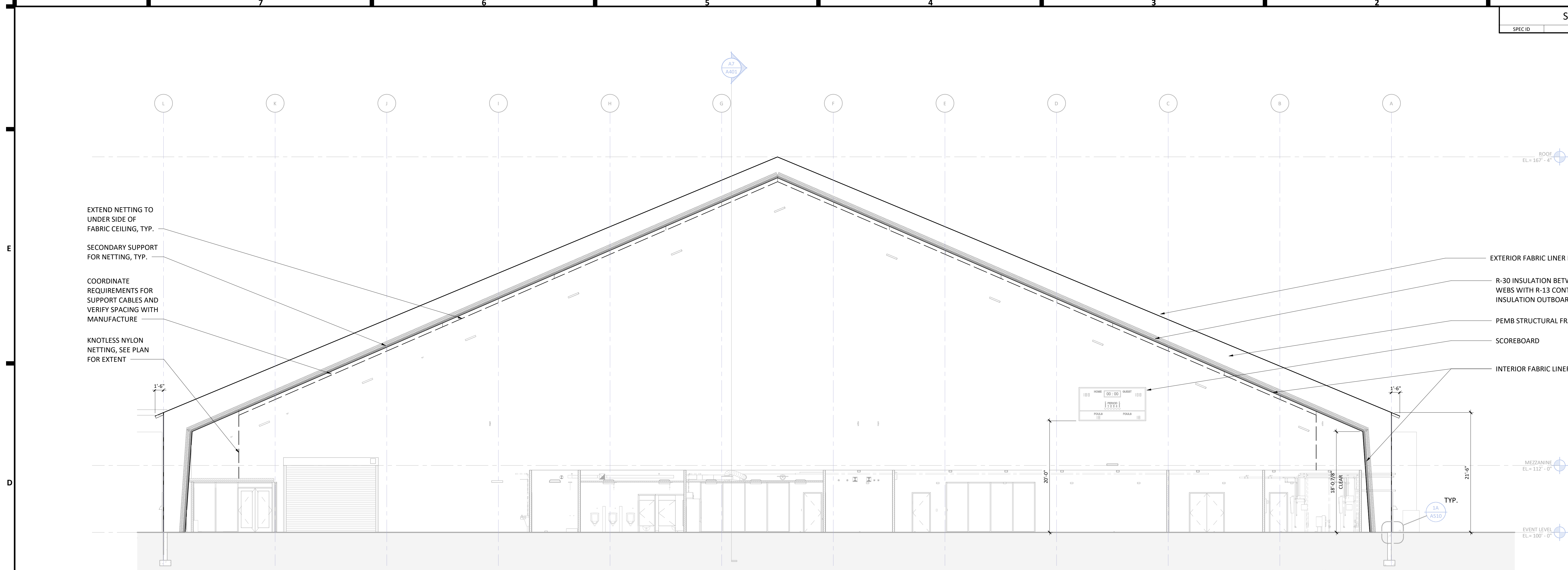
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ENLARGED PLANS

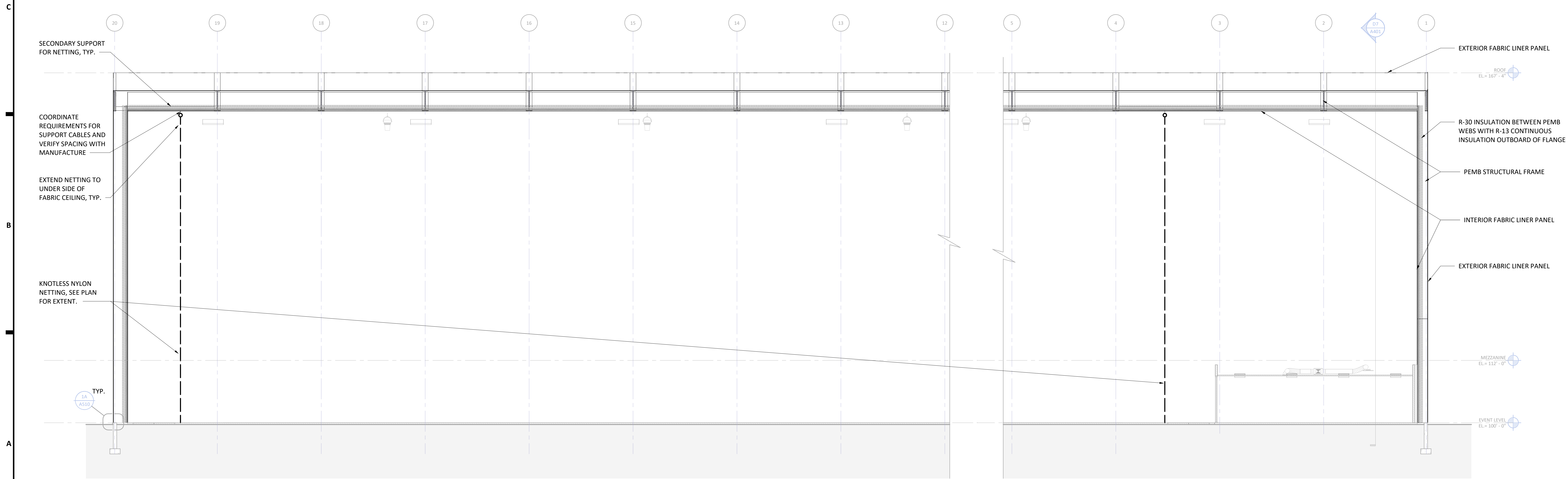
AND ELEVATIONS

3/21/2024 1:20:08 PM

Page 492 of 539



D7 A401 NORTH/SOUTH BUILDING SECTION
SCALE: 1/8" = 1'-0"



A7 A401 EAST/WEST BUILDING SECTION
SCALE: 1/8" = 1'-0"

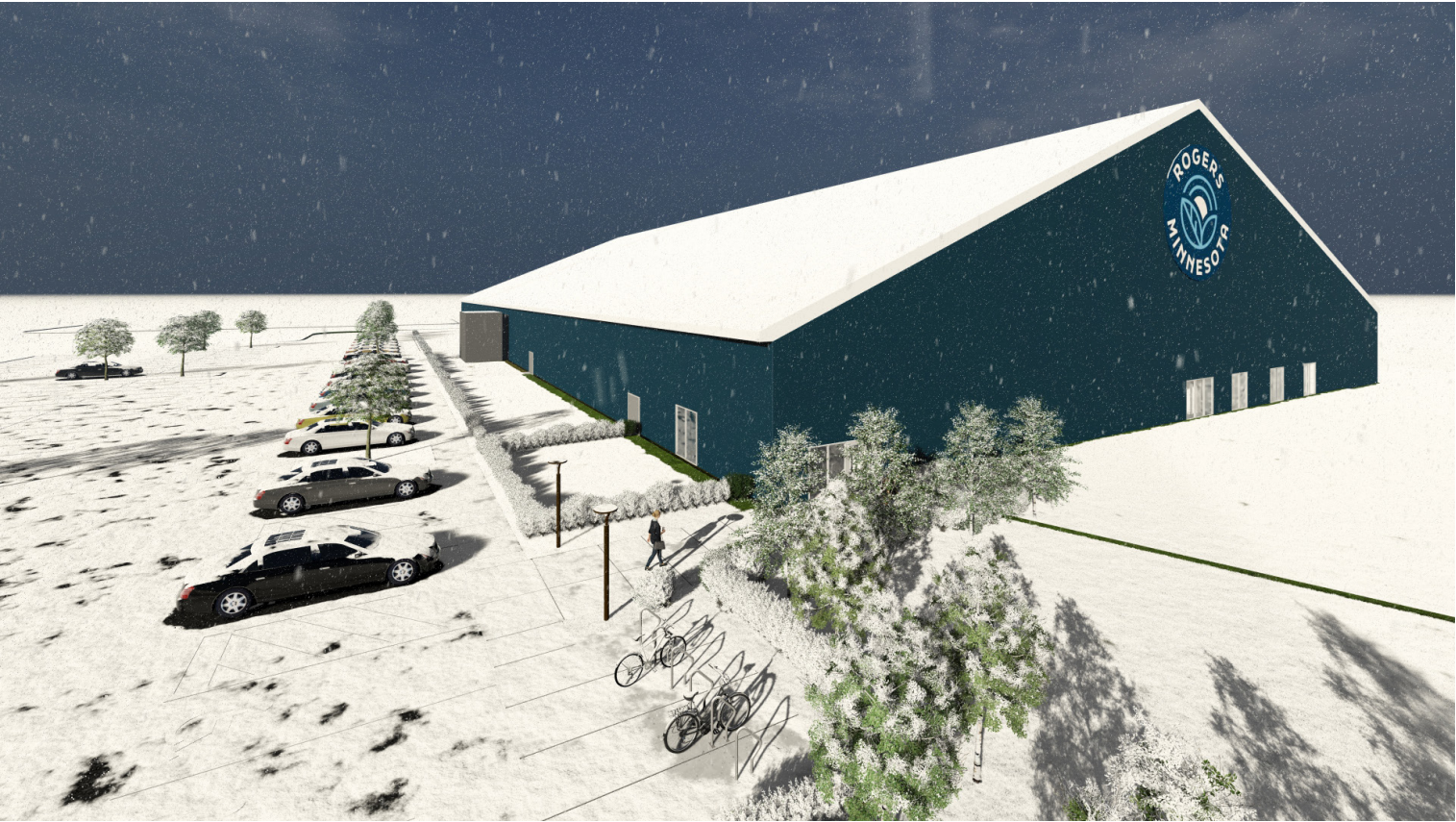
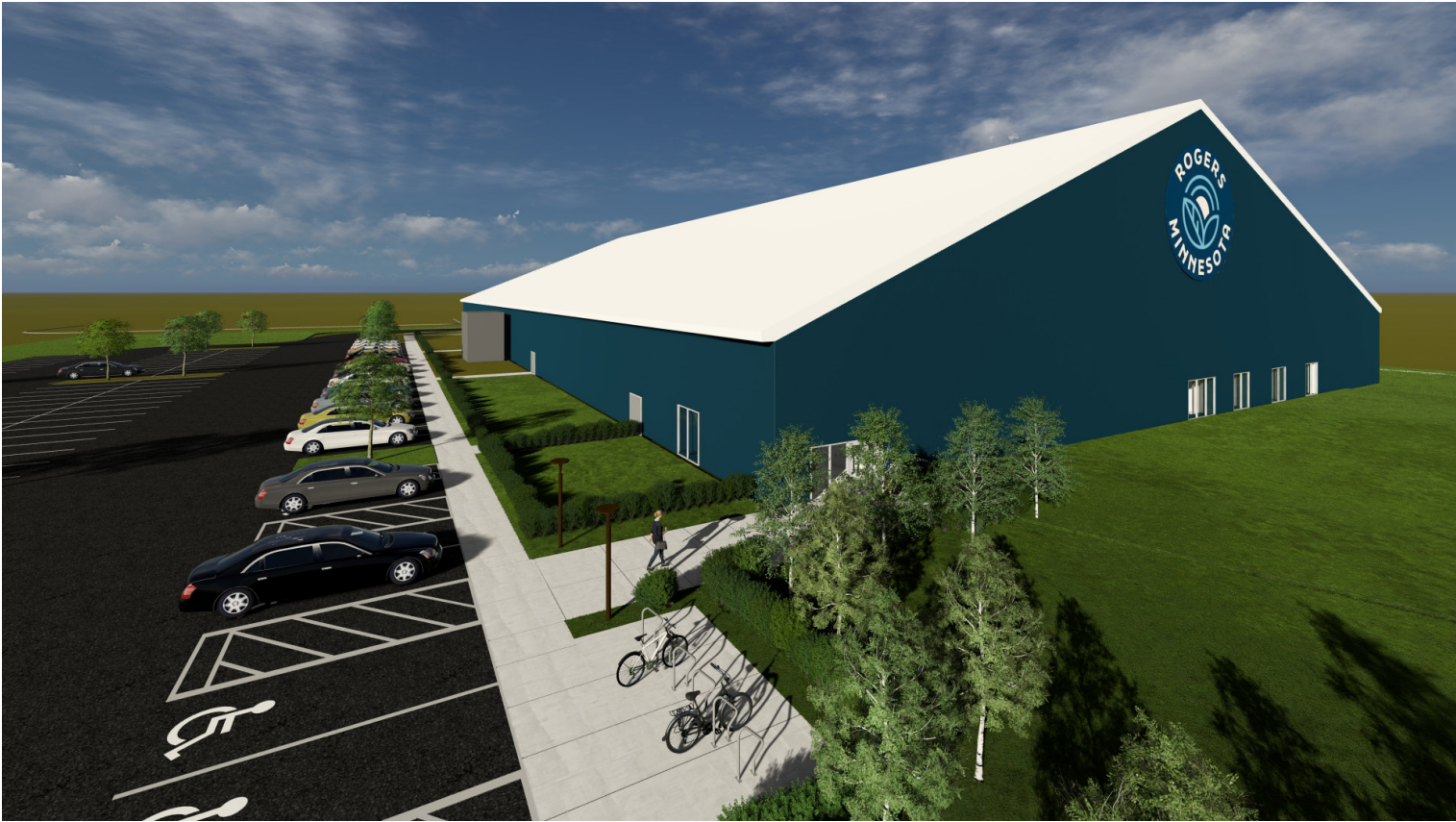
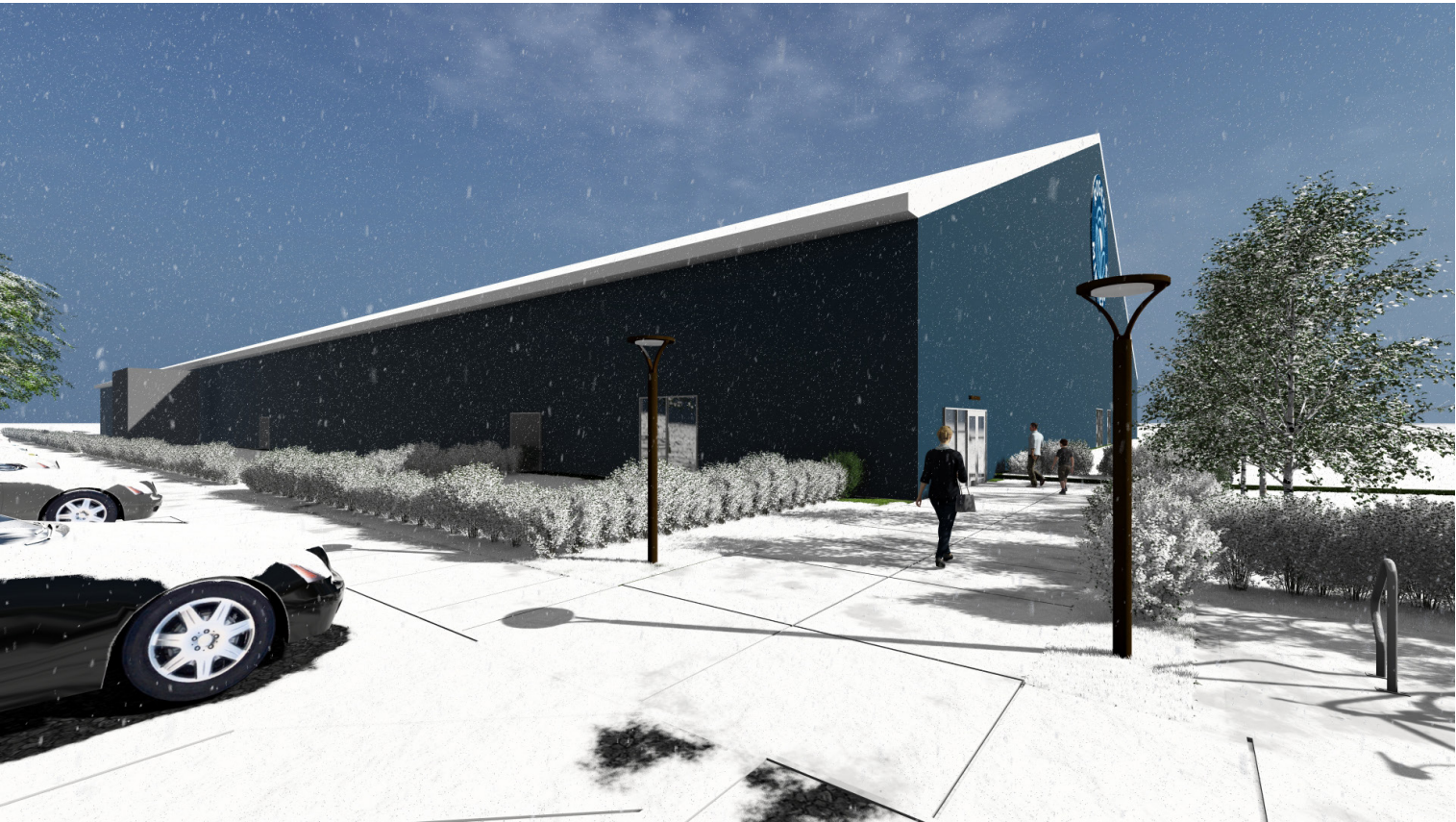
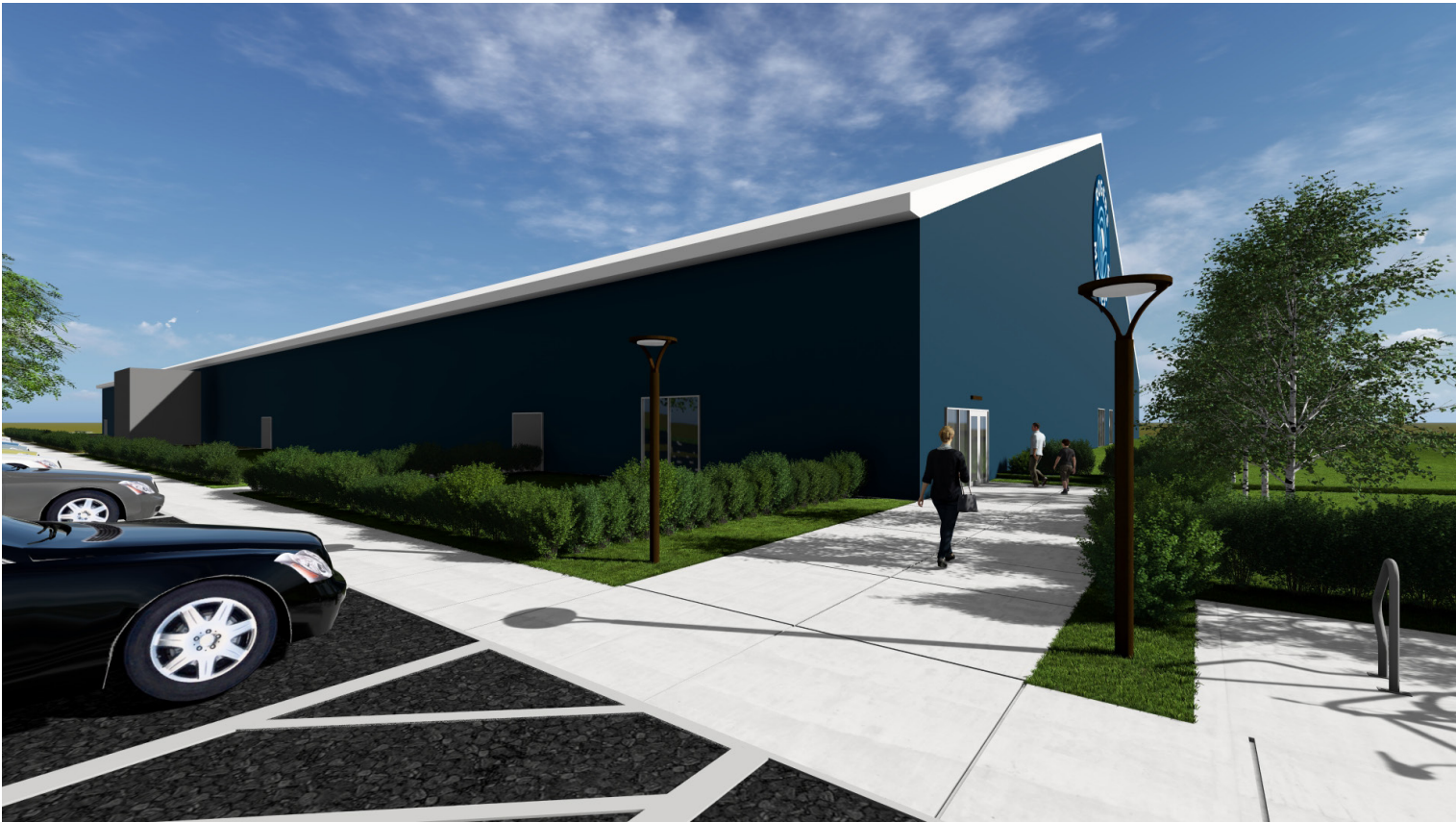
NAVY BLUE FABRIC



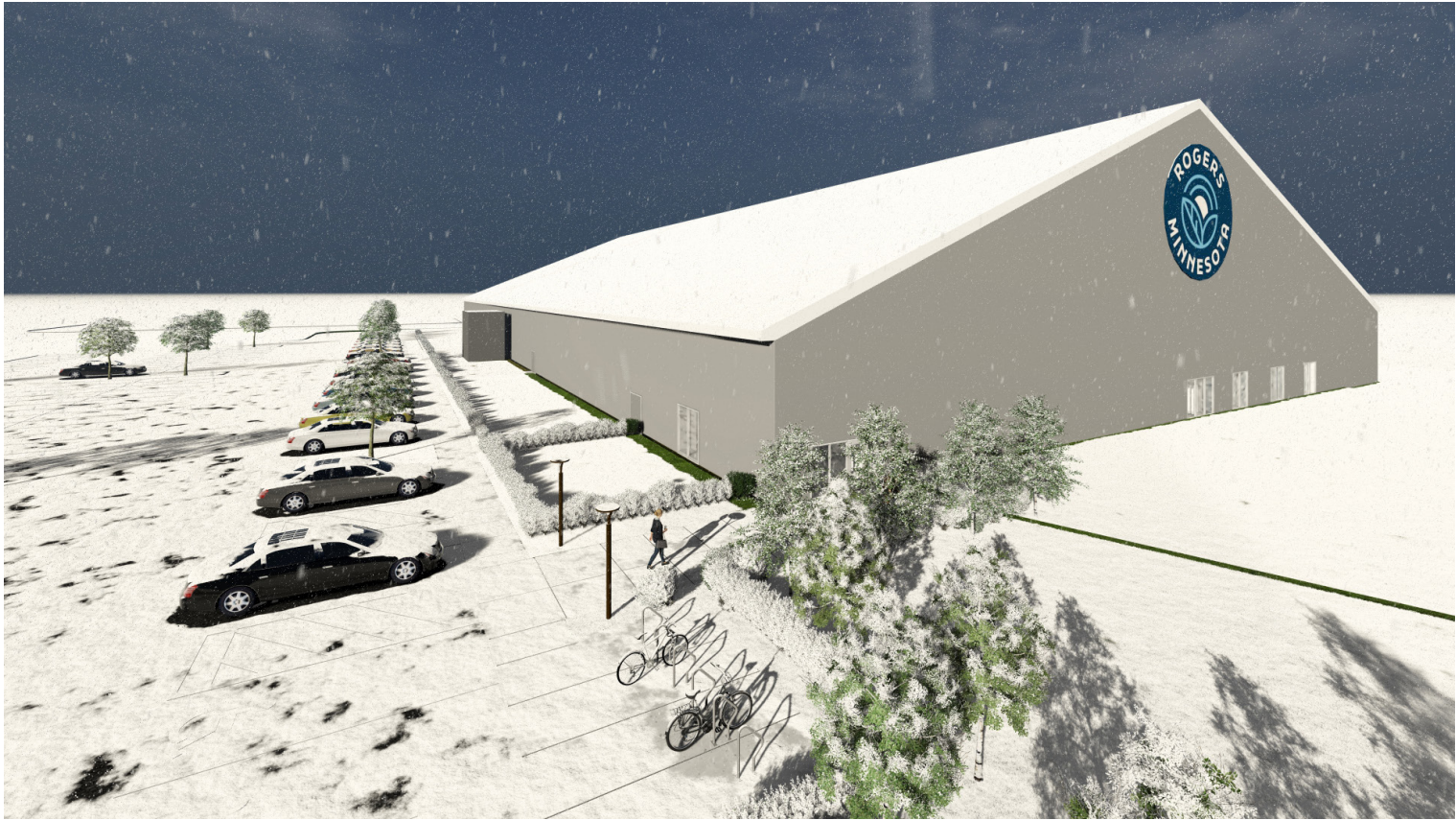
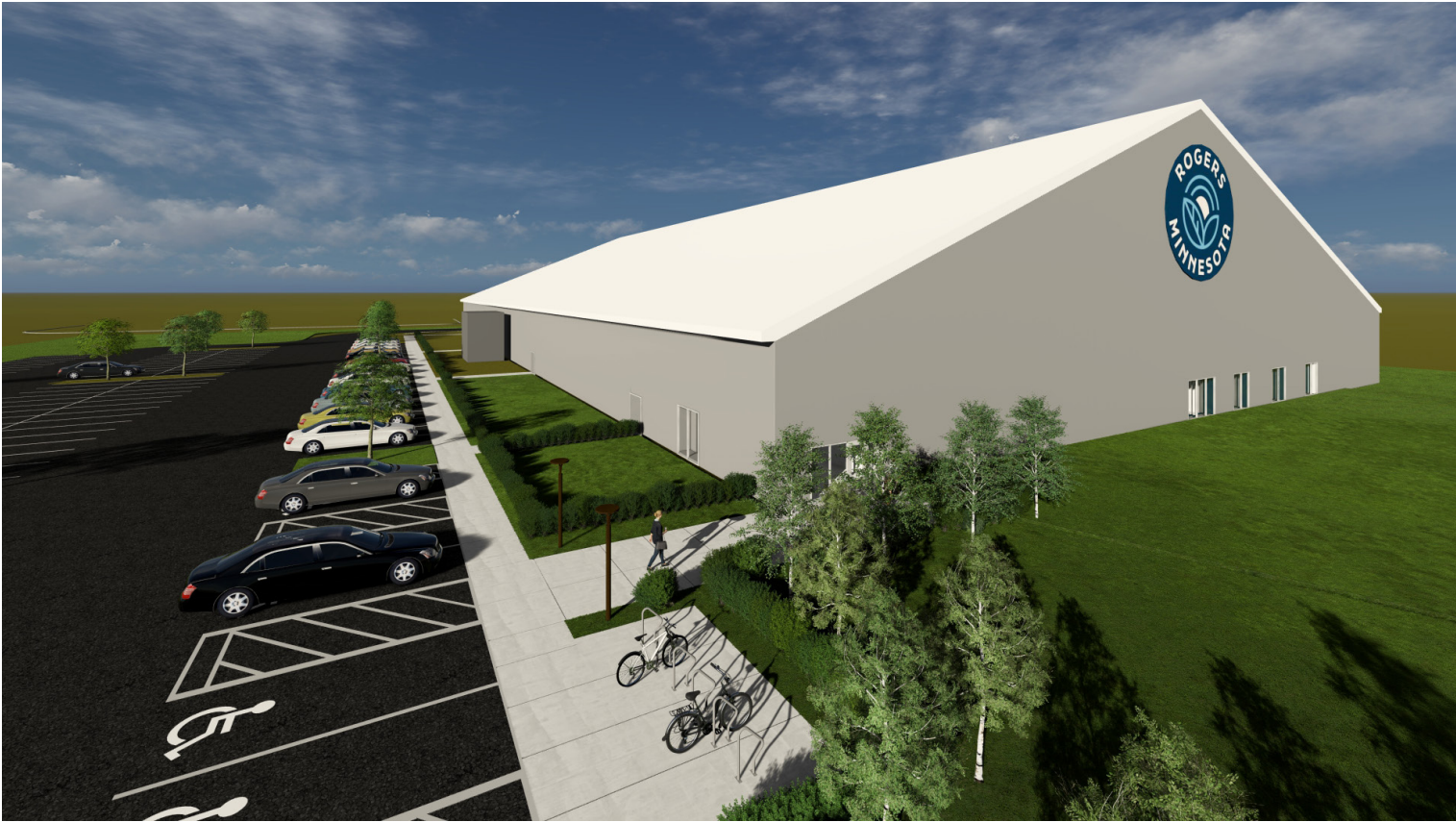
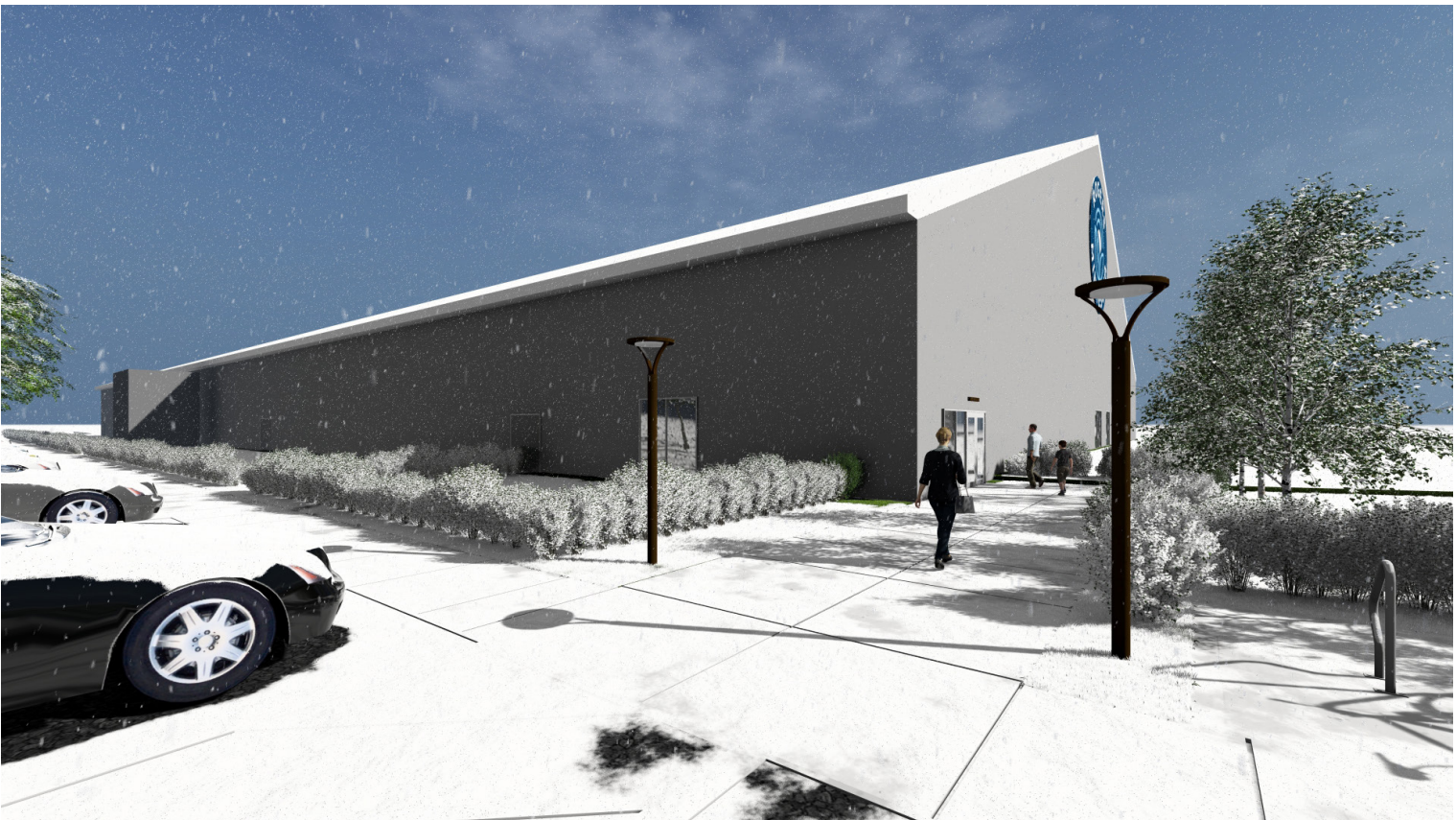
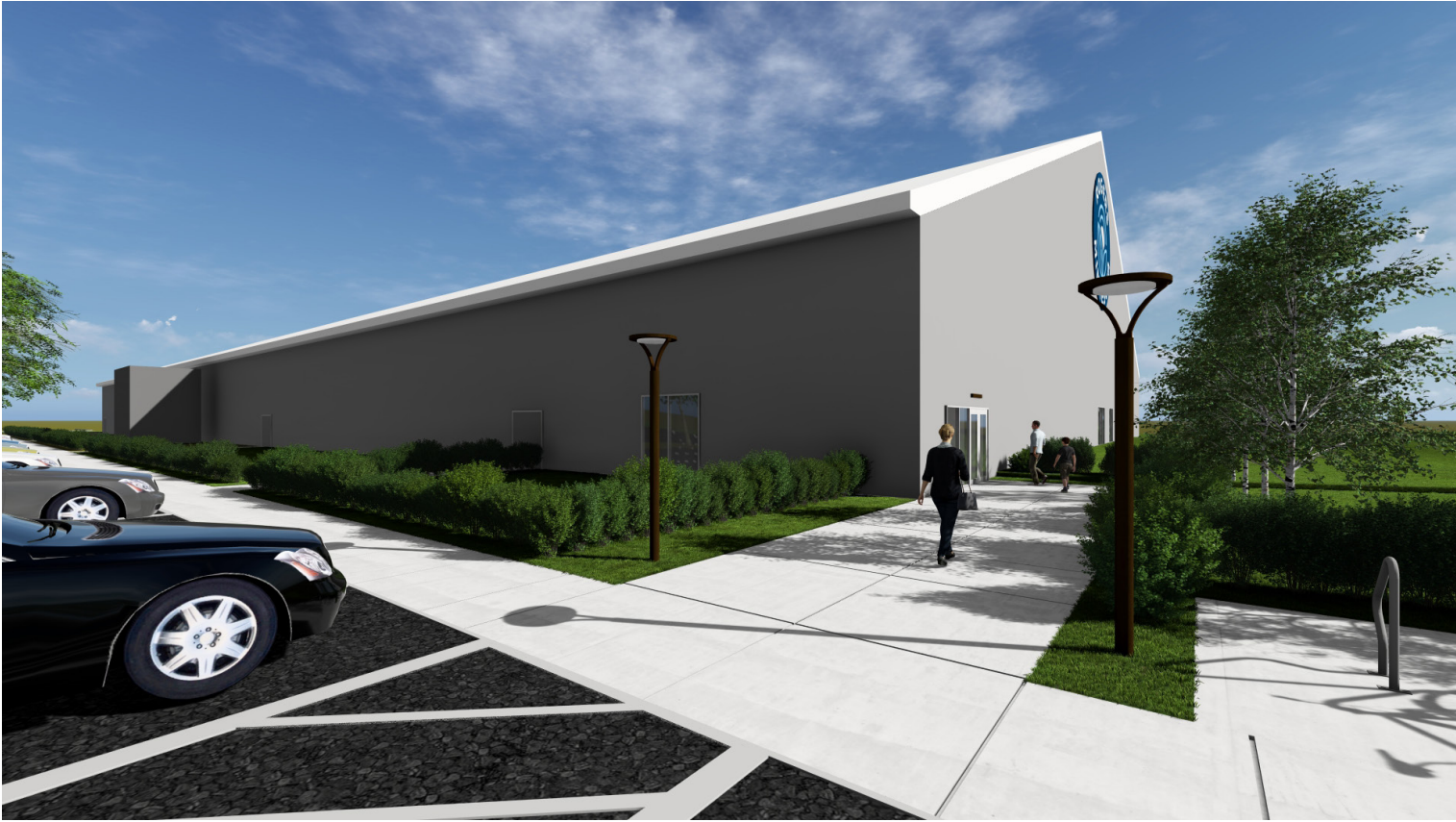
GRAY FABRIC



NAVY BLUE FABRIC



GRAY FABRIC



Owner: City of Rogers
 Project: Rogers Indoor Turf Facility
 Location: Rogers, MN
 Architect: JLG
 Date: 8/22/2024
 Area (SF): 83,642
 Plans Dated: 8/1/2024

ROGERS INDOOR TURF - 100% DD ESTIMATE					
SUMMARY ITEM DESCRIPTION		QTY	UOM	TURF COST / BLDG. AREA	TURF BUILDING TOTAL COST
DIV. 01	General Requirements	1	LS	\$ 7.05	\$ 589,680
DIV. 02	Existing Conditions	1	LS	\$ -	\$ -
DIV. 03	Concrete	1	LS	\$ 7.66	\$ 640,981
DIV. 04	Masonry	1	LS	\$ -	\$ -
DIV. 05	Metals	1	LS	\$ -	\$ -
DIV. 06	Woods, Plastics & Composites	1	LS	\$ 0.01	\$ 1,000
DIV. 07	Thermal & Moisture Protection	1	LS	\$ 0.03	\$ 2,500
DIV. 08	Openings	1	LS	\$ 2.34	\$ 195,750
DIV. 09	Finishes (Includes Pivot Turf)	1	LS	\$ 11.15	\$ 932,601
DIV. 10	Specialties	1	LS	\$ 0.26	\$ 21,740
DIV. 11	Equipment	1	LS	\$ -	\$ -
DIV. 12	Furnishings	1	LS	\$ 0.62	\$ 52,100
DIV. 13	Special Construction (PEFS)	1	LS	\$ 51.21	\$ 4,282,986
DIV. 14	Conveying Equipment	1	LS	\$ -	\$ -
DIV. 21	Fire Suppression	1	LS	\$ 4.50	\$ 376,425
DIV. 22	Plumbing	1	LS	\$ 1.58	\$ 132,062
DIV. 23	HVAC	1	LS	\$ 8.22	\$ 687,814
DIV. 26	Electrical	1	LS	\$ 10.62	\$ 888,350
DIV. 27	Communications	1	LS	\$ 0.65	\$ 54,275
DIV. 28	Safety and Security	1	LS	\$ 0.39	\$ 33,000
DIV. 31	Earthwork	1	LS	\$ 8.05	\$ 673,406
DIV. 32	Exterior Improvements	1	LS	\$ 12.58	\$ 1,051,931
DIV. 33	Utilities	1	LS	\$ 6.96	\$ 582,000
TOTAL DIRECT COSTS				\$ 133.89	\$ 11,198,602
0.85%	Building Permit			\$ 1.14	\$ 95,188
1.58%	Bonds and Insurance			\$ 2.13	\$ 178,442
5.00%	CM Fee			\$ 6.86	\$ 573,612
7.50%	Contingency			\$ 10.04	\$ 839,895
0.00%	Escalation			\$ -	\$ -
	Design Fees			\$ 5.74	\$ 479,750
2.00%	Owners FFE Allowance			\$ 2.68	\$ 223,972
ESTIMATE TOTAL				\$ 162.47	\$ 13,589,461



STAFF REPORT

ROGERS PLANNING COMMISSION

Meeting Date: October 7, 2024

Agenda Item: 6.3

Subject: Application by Word of Peace Lutheran Church for a Site Plan Amendment for a Proposed Addition at 21705 129th Avenue North

Prepared By: Alec Henderson, City Planner

Overview / Background / Analysis

Word of Peace Lutheran Church (Applicant) has submitted a Zoning & Land Use application, requesting City approval of a Site Plan for an addition to the building at 21705 129th Ave N; (PID: 23-120-23-31-0079) ("Subject Property"). The proposal would add approximately 8,660 square feet of new building footprint to the north side of the principal building. The existing church is 30,780 square feet. The addition plans also include some remodeling of the existing building and the addition would provide additional office space, flex space, a kitchen, and an area that could be finished into offices if needed. The site has little change other than ten (10) added parking spaces (including 2 ADA stalls) on the west side of the building.

The proposed addition is simple and meets the required setbacks and impervious surface requirements. Additionally, the existing pond on site is sized for the addition and no additional ponding shall be required. Staff recommends approval of the addition.

The Site Plan application was received on July 17, 2020, and was considered to be complete on July 31, 2020. The 60-day statutory review period expires on September 29, 2020.

Primary Issues to Consider

- Land Use & Zoning
- Site Plan

Analysis of Primary Issues

Land Use & Zoning

The Subject Property is guided **Institutional** in the Rogers 2040 Comprehensive Plan, and is defined as follows: *Institutional includes government facilities, schools, churches, cemeteries and other public/semi-public uses. These uses may be neighborhood focal points and help provide neighborhood definition. Many provide places for community activities.*

The corresponding zoning for the Subject Property is **R2 Single Family Residential**. Religious assembly uses are *Permitted Uses* within this zoning district [City Code

Section §125-50]. The proposal meets all setbacks and zoning requirements listed in City Code Section §125-55C(b)

Zoning and Land use requirements satisfied.

Site Plan

The existing use on the site – Word of Peace Lutheran Church – will not be changed. Proposed changes to the site would include adding approximately 8,660 square feet of building footprint to the north side of the principal building.

Demolition

Demolition would consist of removal of obstructions on the north side of the building, including a tree and an outdoor fire pit. Little is needed to be demoed or removed in the addition area.

Landscaping

Landscaping is not proposed for the site. Turf will need to be reestablished in the disturbed areas.

Materials

Stamped pre-cast concrete panels will be used as primary siding material for the addition, along with metal coping and fascia to match the existing building.

The proposed addition meets material requirements.

Parking

Assembly or worship spaces require 1 parking stall per three seats. The modified worship space includes 560 chairs, which would require a total of 187 parking spaces. The site provides 312 parking spaces for the use of the church during worship as well as other activities conducted in the building during other times. City staff have no issues with the parking provided and notes that there is additional room for parking should it ever be needed.

Staff Recommendation

Note: the applicant's architecture team was recently furloughed, and the plans may see some slight modifications depending on what plans may be used should a new architect/builder take over the project for the church. Staff would recommend building in some flexibility to the approvals in regard to square footage should plans need to be altered.

Staff recommends approval of the Site Plan for the addition to Word of Peace Lutheran Church at 21705 1129th Avenue North, subject to the following conditions:

1. The site plan approval authorizes the applicant/owner to submit an addition permit that adds up to 9,526 square feet to the principal structure as well as any

remodel permits as may be needed by the applicant.

2. The permit for the full addition may be issued upon revised civil plans being approved by Public Works and the City Engineer. Footing and Foundation permits may be submitted and issued after the City executes this site plan approval resolution.
3. The civil plans shall be revised as required by the Public Works department and City Engineer.

Financial Impact: NA

Source Fund: NA

Budgeted? N/A

Supporting Documentation

- A. Location Map
- B. Resolution No. 2024-100_Site Plan_21705 129th Ave N Word of Peace Addition
- C. Word of Peace - Site Plan
- D. Existing Conditions Survey
- E. Word of Peace Narrative



Hennepin County Property Map

Date: 10/1/2024



PARCEL ID: 2312023310079

OWNER NAME: Word Peace Lutheran Church

PARCEL ADDRESS: 21705 129th Ave N, Rogers MN 55374

PARCEL AREA: 8.69 acres, 378,324 sq ft

A-T-B: Both

SALE PRICE: \$69,480

SALE DATE: 09/2002

SALE CODE: Vacant Land

ASSESSED 2023, PAYABLE 2024

PROPERTY TYPE: Commercial-Preferred

HOMESTEAD: Non-Homestead

MARKET VALUE: \$0

TAX TOTAL: \$0.00

ASSESSED 2024, PAYABLE 2025

PROPERTY TYPE: Commercial

HOMESTEAD: Non-Homestead

MARKET VALUE: \$0

Comments:

This data (i) is furnished 'AS IS' with no representation as to completeness or accuracy; (ii) is furnished with no warranty of any kind; and (iii) is not suitable for legal, engineering or surveying purposes. Hennepin County shall not be liable for any damage, injury or loss resulting from this data.

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COUNTY 2024

RESOLUTION NO. 2024-100

A RESOLUTION APPROVING A SITE PLAN FOR THE CONSTRUCTION OF A BUILDING ADDITION TO WORD OF PEACE LUTHERAN CHURCH AT 21705 129TH AVE N., ROGERS, MINNESOTA.

WHEREAS, Word of Peace Lutheran Church (“Fee Owner”) submitted an application to the City of Rogers (“City”), requesting approval of a Site Plan for the construction of an approximately 8,660 square addition and site improvements at 21705 129th Ave N; and

WHEREAS, the property is 8.69 acres and guided Institutional and zoned Single Family Residential (R2) and legally described in Exhibit A (“Subject Property”) (PID: 23-120-23-31-0079); and

WHEREAS, section 125-28 – Site Plan Amendment governs the procedures around site plan review processes for alterations to existing non-residential structures, and requires that alterations beyond 10% of the existing improvements requires Site Plan review and Section 125-27 states that “the Planning Commission shall evaluate the effects of the proposed site plans. This review shall be based upon, but not be limited to, compliance with the City’s Comprehensive Plan and provisions of this Ordinance”; and

WHEREAS, the existing use of the Subject Property is for a Religious Assembly use, which are permitted uses in the R2 zoning district [§125-50 Table 4E], and the use is consistent with the Institutional land use guidance; and

WHEREAS, the proposed development does not create a new or expand an existing nonconformity and satisfies zoning and site plan review standards; and

WHEREAS, on October 7, 2024, the Planning Commission reviewed the request and voted unanimously to recommend approval to the City Council of the Site Plan Review, with the conditions.

NOW THEREFORE, BE IT RESOLVED, BY THE CITY COUNCIL OF THE CITY OF ROGERS, MINNESOTA, the Site Plan request from Word of Peace Lutheran church is hereby approved for the construction of an addition and lot improvements on the Subject Property with the following conditions:

1. The site plan approval authorizes the applicant/owner to submit an addition permit that adds up to 9,526 square feet to the principal structure as well as any remodel permits as may be needed by the applicant.
2. The permit for the full addition may be issued upon revised civil plans being approved by Public Works and the City Engineer. Footing and Foundation permits may be submitted and issued after the City executes this site plan approval resolution.
3. The Civil plans shall be revised as required by the Public Works department and City Engineer.

Moved by Councilmember _____, seconded by Councilmember _____

The following voted in favor of said resolution:

The following voted against the same:

The following abstained:

Whereupon said resolution was declared duly passed and adopted, and was signed by the Mayor, and attested by the City Clerk dated this 22th day of October 2024.

Rick Ihli, Mayor

ATTEST:

Stacie Brown, City Clerk

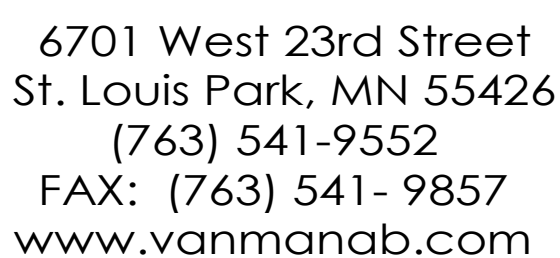
EXHIBIT A

LEGAL DESCRIPTION

Subject Property

Lot 3, Block 1, DOWNTOWN REDEVELOPMENT, Hennepin County, Minnesota

PID # 23-120-23-31-0002



NOT FOR CONSTRUCTION

WORD OF PEACE

**21705 129th Avenue North
Rogers, MN 55374**

[illegible]

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SITE PLAN

A-100

A2331

OVERSTORY TREES

CONIFEROUS TREES

ORNAMENTAL TREES

SHRUBS

PERENNIAL PLANTINGS

DEMOLISHED TREES

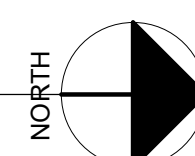
EXISTING TREES

ACCESSIBLE PARKING STALL

A. SOD ALL DISRUPTED LAND IN WORK AREA. SEE PLAN FOR UNDISTURBED AREA

B. SEE CIVIL DRAWINGS FOR ADDITIONAL INFORMATION

C. PROTECT EXISTING IRRIGATION AND MODIFY AS REQUIRED FOR NEW AND DISTURBED AREA



1

A-100

SITE PLAN

SCALE: 1" = 40'-0"

2020 MINNESOTA STATE BUILDING CODE AND 2020 MINNESOTA ACCESSIBILITY CODE

Table 504.3 and 504.4 Allowable Height and Stories = 60' (2 stories)
Table 506.2 Allowable Area = 24,000 sf

Total Building Footprint		38,460 SF
--------------------------	--	-----------

Class C = Flame spread index 76-200
= Smoke developed index 0-450

Class B = Flame spread index 26-75
= smoke developed index 0-450

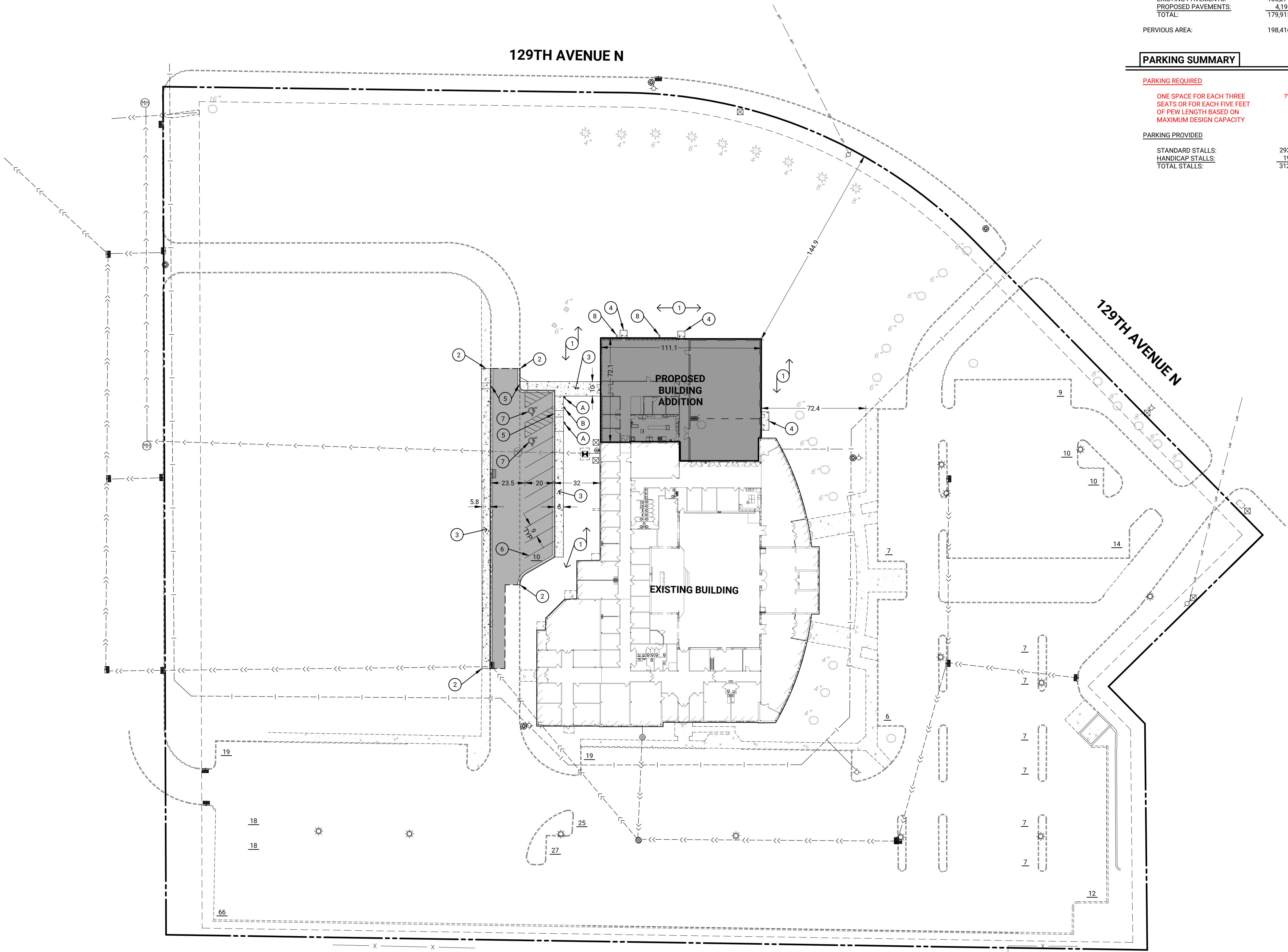
Concentrated (chairs only - not fixed)	= 7 net
Unconcentrated (tables & chairs, meeting & stage)	= 15 net
Business Areas, Kitchenette	= 150 gross
Educational - Classroom Areas/Sound Booth	= 20 net
Accessory storage/mechanical areas	= 300 gross

1006.2 Exit or exit access doorways required:
 2 exits required when occupant load exceeds 49
 3 or more exits shall be required if occupant load exceeds 501
 4 or more exits shall be required if occupant load exceeds 1,000

A minimum height of 26" shall be provided where the floor elevation is more than 30" above the floor below.

8.69 acres = 378,324 sq ft
allowable impervious = 75%
170,030 sq ft existing impervious = 44.9%
10,890 sq ft proposed additional impervious = total 47.8%

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SITE DATA

EXISTING ZONING:	R2
PROPOSED ZONING:	R2
PARCEL AREA:	378,331 SF
IMPERVIOUS AREA:	
EXISTING BUILDING:	30,780 SF 8%
PROPOSED BUILDING:	8,660 SF 2%
EXISTING PAVEMENTS:	136,277 SF 36%
PROPOSED PAVEMENTS:	4,198 SF 1%
TOTAL:	179,915 SF 48%
PERVIOUS AREA:	198,416 SF 52%

PARKING SUMMARY

ONE SPACE FOR EACH THREE SEATS OR FOR EACH FIVE FEET OF PEW LENGTH BASED ON MAXIMUM DESIGN CAPACITY	??
PARKING PROVIDED	
STANDARD STALLS:	293
HANDICAP STALLS:	19
TOTAL STALLS:	312

LEGEND

EXISTING	PROPOSED	
		PROPERTY LINE
		EASEMENT LINE
		BITUMINOUS PAVEMENT
		CONCRETE WALK
		CURB LINE
		STORM SEWER
		SANITARY SEWER
		WATER MAIN
		UNDERGROUND ELECTRIC
		STORM CATCH BASIN
		STORM FLARED END SECTION
		HYDRANT
		GATE VALVE
		OTHER SYMBOLS

BENCHMARK

TOP OF ROUND CASTING OF CATCH BASIN LOCATED IN PARKING LOT SOUTH OF CHURCH
ELEVATION: 952.4 (SEE SURVEY)

SITE PLAN NOTES

- ALL DIMENSIONS ARE TO FACE OF CURB AND OUTSIDE FACE OF BUILDING UNLESS OTHERWISE NOTED.
- ALL CURB AND GUTTER SHALL BE B612 UNLESS OTHERWISE NOTED.
- ALL PEDESTRIAN RAMPS SHALL MEET CURRENT ADA STANDARDS.
- UNLESS OTHERWISE SHOWN IN THE PLANS, CONTRACTOR SHALL PROVIDE CONTROL JOINTS AND EXPANSION JOINTS IN SLAB ON GRADE, SIDEWALKS, AND DRIVES PER THE FOLLOWING REQUIREMENTS:

CONTROL JOINTS:	WALKS @ 8' SPACING OTHERS @ 10' SPACING
SAWCUT CONTROL JOINTS MINIMUM 1/4" CONCRETE THICKNESS.	
EXPANSION JOINTS:	WALKS @ 24' SPACING OTHERS @ 40' SPACING

PROVIDE EXPANSION JOINT AT ALL POINTS WHERE A CHANGE IN PAVEMENT THICKNESS OCCURS AND WHERE NEW PAVEMENT WILL MATCH EXISTING PAVEMENT.

DOWEL ALL EXPANSION JOINTS AT 24' SPACING MAX.

KEYNOTES

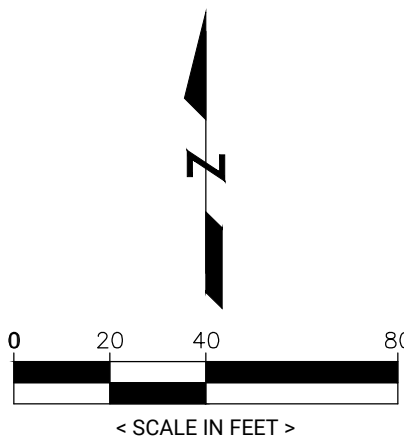
- LANDSCAPE AREA. SEE LANDSCAPE PLAN.
- MATCH EXISTING CURB/SIDEWALK/PAVEMENT.
- CONCRETE WALK/PATIO.
- STOOP.
- PEDESTRIAN CURB RAMP.
- 4" SOLID WHITE LINE.
- SOLID WHITE PAVEMENT PARKING.
- SPLASH BLOCK FOR ROOF DOWNSPOUT.

SIGNAGE AND PAVEMENT MARKING NOTES

- ALL SIGNS SHALL BE PLACED 18" MINIMUM BEHIND BACK OF CURB UNLESS OTHERWISE NOTED.
- SIGNS SHALL INCLUDE HARDWARE, POST, FOOTING, CASING, AND ALL APPURTENANCES REQUIRED FOR TYPICAL INSTALLATION.
- PARKING LOT STRIPING AND PAVEMENT MARKINGS SHALL BE 4" SOLID WHITE PAINT. ALL PAVEMENT LETTERING SHALL BE 12" HEIGHT.
- ALL SIGNS AND PAVEMENT MARKINGS SHALL BE PER THE LATEST EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD).

SIGN SCHEDULE

- | | |
|----------------------|---------------------------|
| A. HANDICAP PARKING: | R7-8m W/R7-8b (12" X 18") |
| B. NO PARKING SIGN: | R8-3a (12" X 18") |



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STORM SEWER SCHEDULE

STRUCTURE NO.	SIZE	NEENAH CASTING OR EQUAL
CBMH 101	24" X 36"	R-3067-VB

LEGEND

EXISTING	PROPOSED	
		PROPERTY LINE
		EASEMENT LINE
		BITUMINOUS PAVEMENT
		CONCRETE WALK
		CURB LINE
		STORM SEWER
		SANITARY SEWER
		WATER MAIN
		UNDERGROUND ELECTRIC
		STORM CATCH BASIN
		STORM MANHOLE
		STORM FLARED END SECTION
		HYDRANT
		GATE VALVE
		OTHER SYMBOLS
		5' CONTOUR
		1' CONTOUR
		SPOT ELEVATION (CURB ELEVATIONS ARE TO GUTTER LINE)
		SILT FENCE

BENCHMARK

TOP OF ROUND CASTING OF CATCH BASIN LOCATED IN PARKING LOT SOUTH OF CHURCH
ELEVATION: 952.4 (SEE SURVEY)

GOVERNING SPECIFICATIONS

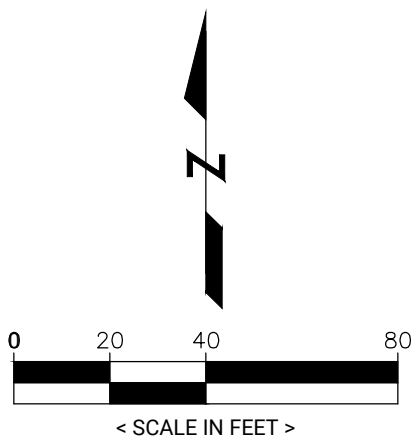
- THE LATEST EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION 'STANDARD SPECIFICATIONS FOR CONSTRUCTION' AND THE CITY OF ROGERS SPECIFICATIONS.
- THE LATEST EDITION OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD).
- THE LATEST EDITION OF THE CITY ENGINEERS ASSOCIATION OF MINNESOTA (CEAM) STANDARD SPECIFICATIONS.

GRADING NOTES

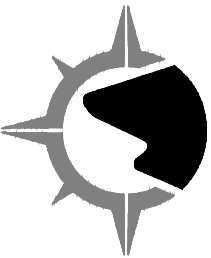
- VEHICLE TRACKING REDUCTION DEVICE, SILT FENCE, AND EXISTING CATCH BASIN INLET PROTECTION SHALL BE INSTALLED PRIOR TO GRADING CONSTRUCTION, AND SHALL BE MAINTAINED UNTIL THE SITE HAS BEEN STABILIZED.
- CONTRACTOR SHALL FIELD VERIFY THE LOCATIONS AND ELEVATIONS OF EXISTING UTILITIES PRIOR TO THE START OF GRADING CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY THE ENGINEER IMMEDIATELY OF DISCREPANCIES OR VARIATIONS FROM THE PLAN.
- CONTRACTOR SHALL STRIP, STOCKPILE AND RESPREAD SUFFICIENT TOPSOIL TO PROVIDE A MINIMUM OF 6" OF TOPSOIL OVER ALL DISTURBED AREAS THAT WILL BE SODDED, SEEDED OR LANDSCAPED.
- ALL DISTURBED AREAS MUST BE STABILIZED WITHIN 7 CALENDARS DAYS AFTER LAND-DISTURBING WORK HAS TEMPORARILY OR PERMANENTLY CEASED.
- ALL SLOPES STEEPER THAN 3:1 SHALL HAVE MNDOT CAT.1 EROSION CONTROL BLANKET AND SEED, OR APPROVED EQUAL.
- STOCKPILES SHALL BE STABILIZED WITHIN 7 DAYS OF ROUGH GRADING OR INACTIVITY.

UTILITY NOTES

- STORM SEWER CONSTRUCTION SHALL BE IN ACCORDANCE WITH THE LATEST EDITIONS OF THE CITY'S STANDARD DETAIL SPECIFICATIONS AND THE MINNESOTA PLUMBING CODE.
- POLYETHYLENE PIPE SHALL MEET THE REQUIREMENTS OF ASTM F714 OR ASTM F894.
- FINAL BUILDING UTILITY SERVICES AND DOWNSPOUT LOCATIONS SHALL BE VERIFIED WITH ARCHITECTURAL AND PLUMBING PLANS.
- LOCATING WIRES SHALL BE INSTALLED ON ALL NON-CONDUCTIVE STORM SEWER, SANITARY SEWER, AND WATER LINES IN ACCORDANCE WITH THE MINNESOTA RURAL WATER ASSOCIATION (MRWA) TRACE WIRE SPECIFICATION GUIDE AND DETAILS.



CONTOUR
CIVIL DESIGN



I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

NAME: JOSEPH T. RABALA

SIGNATURE: [Signature]

08/17/24 LIC #: 45889

PRELIMINARY

BY: JTR

ISSUE DATE: 08/17/24

REVISIONS

1. 2. 3. 4. 5. 6. 7.

WORD OF PEACE
21705 129TH AVENUE NORTH
ROGERS, MN 55374

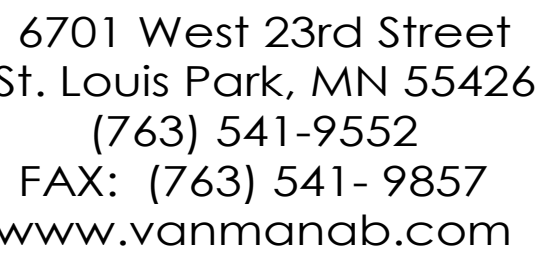
OWNER

**GRADING, UTILITY, DRAINAGE,
& EROSION CONTROL PLAN**

**REMODEL AND ADDITION FOR
WORD OF PEACE**
ROGERS, MINNESOTA

SHEET NUMBER

C3.1



Remodel and Addition For:

WORD OF PEACE

**21705 129th Avenue North
Rogers, MN 55374**

[illegible]

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT
WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND
THAT I AM A DULY REGISTERED ARCHITECT UNDER THE LAWS OF
THE STATE OF MINNESOTA

PRINT NAME: Holly Burley
SIGNATURE:
DATE: REGISTRATION #55239

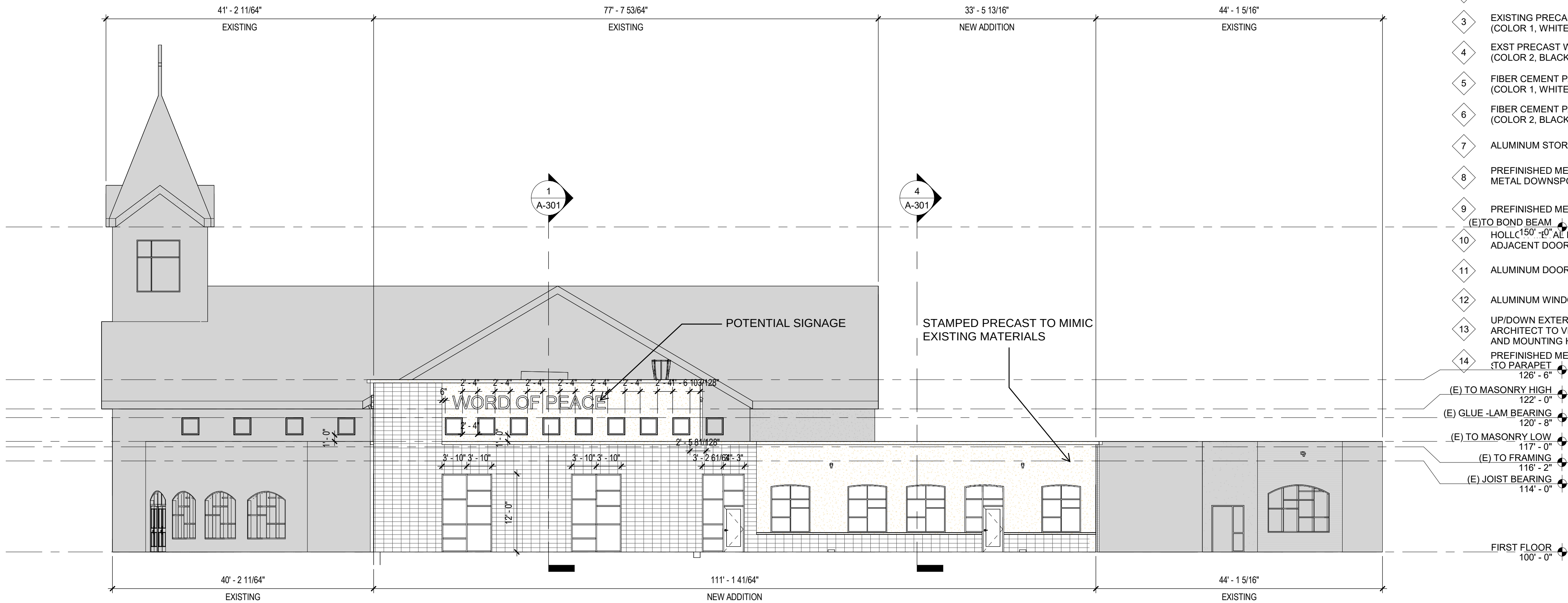
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EXTERIOR ELEVATIONS

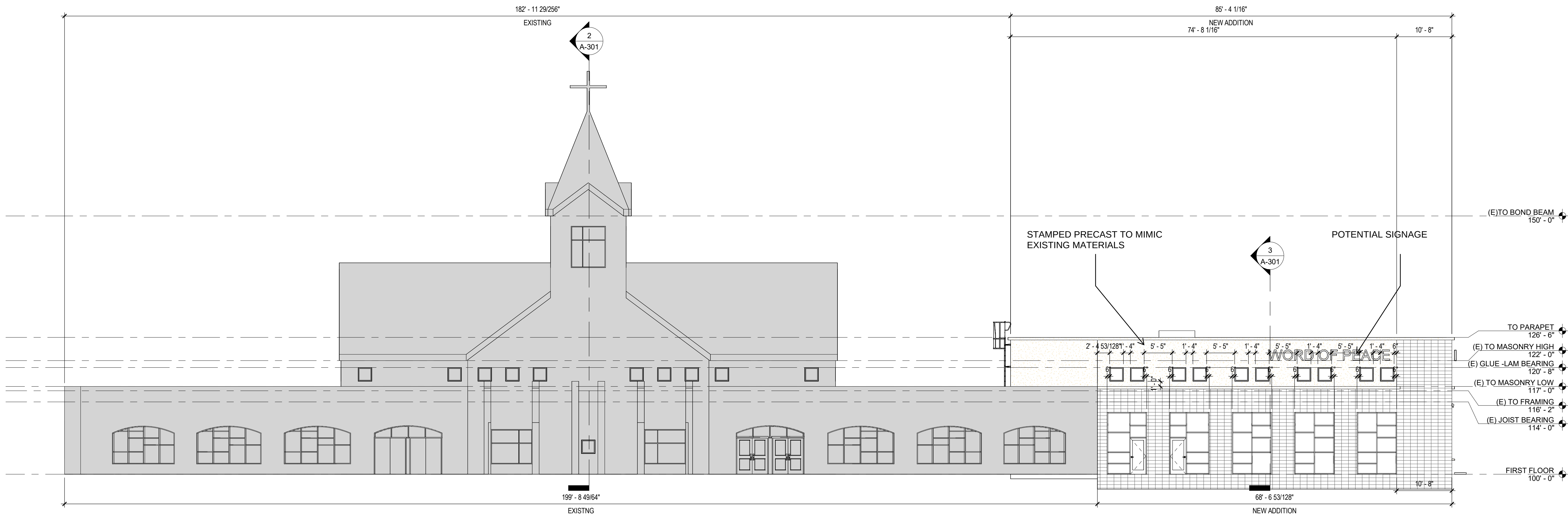
A-201

A2331

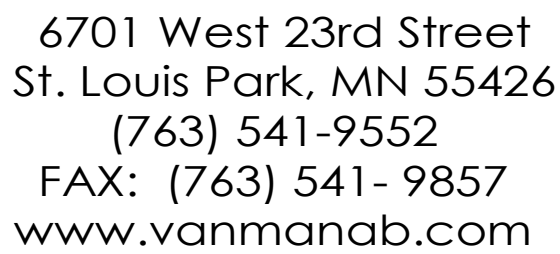
1	PREFINISHED METAL COPING	15	NEW SECTIONAL GARAGE DOOR
2	PREFINISHED METAL FASCIA	16	12x6 STEEL CROSS ATTACHED TO TOWER SEE STRUCTURAL FOR CONNECTION DETAILS
3	EXISTING PRECAST WALL PANELS, PAINT (COLOR 1, WHITE)	17	EXST GUARDRAIL
4	EXST PRECAST WALL PANELS, PAINT (COLOR 2, BLACK)	18	1x6 TONGUE AND GROOVE CEDAR
5	FIBER CEMENT PANEL SYSTEM (COLOR 1, WHITE)	19	EXST WINDOW, TO REMAIN
6	FIBER CEMENT PANEL SYSTEM (COLOR 2, BLACK)	20	EXST ALUMINUM STOREFRONT, TO REMAIN
7	ALUMINUM STOREFRONT ENTRANCE SYSTEM	21	EXST METAL PANEL, TO REMAIN
8	PREFINISHED METAL SCUPPER W/ PREFINISHED METAL DOWNSPOUT	22	EXST DOOR & FRAME, PAINT ADJACENT COLOR
9	PREFINISHED METAL OVERFLOW SCUPPER	23	ROOF LADDER, SEE 11/A-104
10	(E) TO BOND BEAM HOLLOW CORE AL DOOR AND FRAME, PT ADJACENT DOOR	24	EIFS FINISH (COLOR 1, WHITE)
11	ALUMINUM DOOR AND FRAME	25	EIFS FINISH (COLOR 2, BLACK)
12	ALUMINUM WINDOW	26	NEW STUCCO FINISH ON EXST PRECAST PANEL SYSTEM
13	UP/DOWN EXTERIOR LED LIGHT FIXTURE. ARCHITECT TO VERIFY EXACT LOCATION AND MOUNTING HEIGHT	27	WINDOW TO BE REMOVED & INFILLED, SHOWN FOR CLARITY. MATCH ADJACENT WALL TEXTURE & FINISH COLOR.
14	PREFINISHED METAL LOUVERED EQUIPMENT STO PARAPET	28	EXTERIOR EXIT LIGHT FIXTURE



1 NORTH ELEVATION
A-201 SCALE: 3/32" = 1'-0"



2 EAST ELEVATION
A-201 SCALE: 3/32" = 1'-0"



Remodel and Addition For:

WORD OF PEACE

**21705 129th Avenue North
Rogers, MN 55374**

[illegible]

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT
WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND
THAT I AM A DULY REGISTERED ARCHITECT UNDER THE LAWS OF
THE STATE OF MINNESOTA

PRINT NAME: Holly Burley

SIGNATURE:

DATE: REGISTRATION #55239

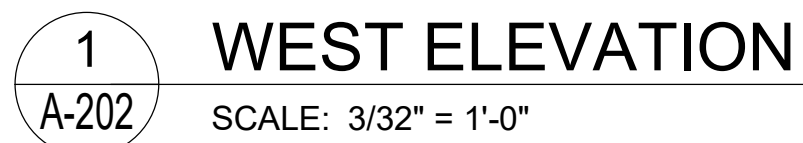
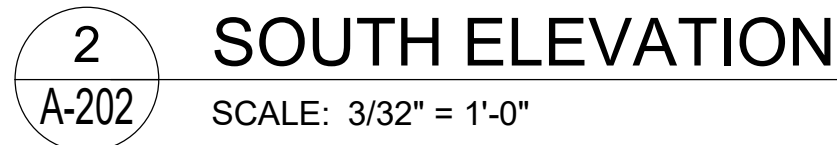
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EXTERIOR ELEVATIONS

A-202

A2331

1	PREFINISHED METAL COPING	15	NEW SECTIONAL GARAGE DOOR
2	PREFINISHED METAL FASCIA	16	12x6 STEEL CROSS ATTACHED TO TOWER SEE STRUCTURAL FOR CONNECTION DETAILS
3	EXISTING PRECAST WALL PANELS, PAINT (COLOR 1, WHITE)	17	EXST GUARDRAIL
4	EXST PRECAST WALL PANELS, PAINT (COLOR 2, BLACK)	18	1x6 TONGUE AND GROOVE CEDAR
5	FIBER CEMENT PANEL SYSTEM (COLOR 1, WHITE)	19	EXST WINDOW, TO REMAIN
6	FIBER CEMENT PANEL SYSTEM (COLOR 2, BLACK)	20	EXST ALUMINUM STOREFRONT, TO REMAIN
7	ALUMINUM STOREFRONT ENTRANCE SYSTEM	21	EXST METAL PANEL, TO REMAIN
8	PREFINISHED METAL SCUPPER W/ PREFINISHED METAL DOWNSPOUT	22	EXST DOOR & FRAME, PAINT ADJACENT COLOR
9	PREFINISHED METAL OVERFLOW SCUPPER (E) TO BOND BEAM	23	ROOF LADDER, SEE 11/A-104
10	HOLLOW METAL DOOR AND FRAME, PT ADJACENT DOOR	24	EIFS FINISH (COLOR 1, WHITE)
11	ALUMINUM DOOR AND FRAME	25	EIFS FINISH (COLOR 2, BLACK)
12	ALUMINUM WINDOW	26	NEW STUCCO FINISH ON EXST PRECAST PANEL SYSTEM
13	UP/DOWN EXTERIOR LED LIGHT FIXTURE. ARCHITECT TO VERIFY EXACT LOCATION AND MOUNTING HEIGHT	27	WINDOW TO BE REMOVED & INFILLED, SHOWN FOR CLARITY. MATCH ADJACENT WALL TEXTURE & FINISH COLOR.
14	PREFINISHED METAL LOUVERED EQUIPMENT SCREEN 12'-8"	28	EXTERIOR EXIT LIGHT FIXTURE



129th Avenue North

LEGAL DESCRIPTION:

Lot 3, Block 1, DOWNTOWN REDEVELOPMENT, Hennepin County, Minnesota.

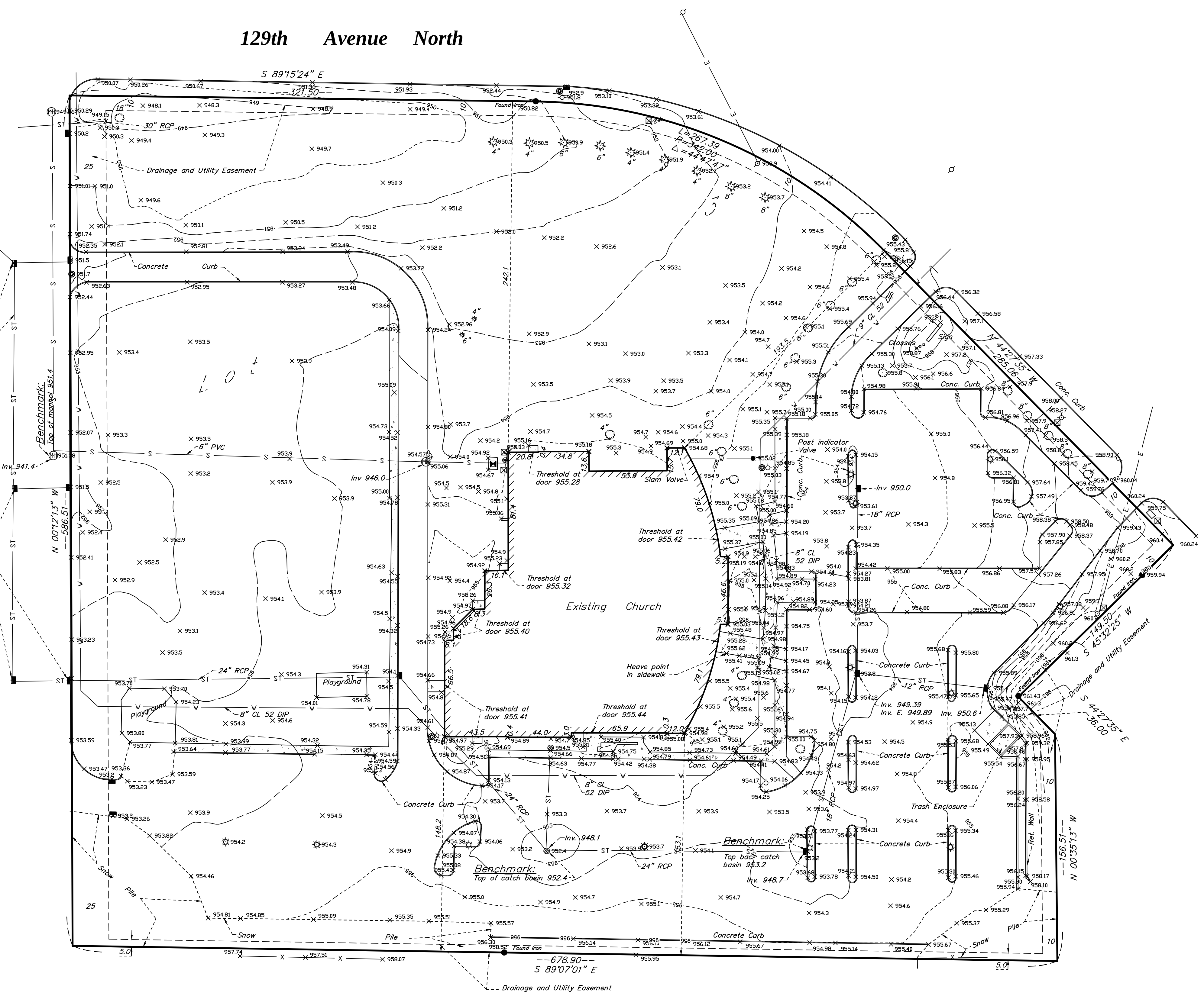
SCOPE OF WORK & LIMITATIONS:

- Showing the length and direction of boundary lines of the legal description listed above. The scope of our services does not include determining what you own, which is a legal matter. Please check the legal description with your records or consult with competent legal counsel, if necessary, to make sure that it is correct and that any matters of record, such as easements, that you wish to be included on the survey have been shown.
- It should be noted that this survey was done under snow and ice conditions and that all improvements may or may not have been shown correctly. While we did our best to locate all improvements under the snow and ice, we can't be sure that all improvements were shown. Please look over the survey to be sure everything you need shown is shown correctly.
- Showing the location of observed existing improvements we deem necessary for the survey.
- Setting survey markers or verifying existing survey markers to establish the corners of the property.
- Showing elevations on the site at selected locations to give some indication of the topography of the site. We have also provided a few benchmarks for your use in determining elevations for construction on this site. The elevations shown relate only to the benchmarks provided on this survey. Use those benchmarks and check at least one other feature shown on the survey when determining other elevations for use on this site or before beginning construction.
- This survey has been completed without the benefit of a current title commitment. There may be existing easements or other encumbrances that would be revealed by a current title commitment. Therefore, this survey does not purport to show any easements or encumbrances other than the ones shown hereon.
- All underground utility locations and invert elevations are derived from plans supplied to us from the City of Rogers. The location and depths of those underground utilities NEED to be verified before using this survey to design anything on this site. Per the site locations it appears as though the aforementioned plans were completed prior to recent updates on the site. It appears that the underground utilities may have been altered during the building of those improvements. We are relying on the aforementioned plans supplied to us and wanted to point out that those plans may not accurately reflect the utilities on site.
- Note that all building dimensions and building tie dimensions to the property lines, are taken from the siding and or stucco of the building.

STANDARD SYMBOLS & CONVENTIONS:

"●" Denotes iron survey marker, set, unless otherwise noted.

This information was not field located or verified. This information was derived from plans supplied to us.



DATE	REVISION DESCRIPTION	DRAWING ORIENTATION & SCALE	CLIENT NAME / JOB ADDRESS	Advance Surveying & Engineering, Co. 17917 Highway 7 Minnetonka, Minnesota 55345 Phone (952) 474-7964 Web: www.advsur.com	I HEREBY CERTIFY THAT THIS PLAN, SURVEY OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY REGISTERED LAND SURVEYOR UNDER THE LAWS OF THE STATE OF MINNESOTA. Thomas M. Bloom # 42379 MARCH 29, 2019 DATE	SHEET TITLE EXISTING CONDITIONS SURVEY	SHEET SIZE 22 X 34
		SCALE - 1" = 20' 0 20 40	WORD OF PEACE 21705 129TH AVE ROGERS, MN			DRAWING NUMBER 190190 TB	SHEET NO.
							S1
							SHEET 1 OF 1



**Word of Peace
21705 129th Avenue North
Rogers, Minnesota 55374**

Word of Peace will celebrate its 50th anniversary of serving the Rogers community in 2025. The requested site plan review for a multipurpose and admin addition will allow Word of Peace to continue to do so for many more years. The large multipurpose room will better support the ministry by allowing the sanctuary to remain set up as such while still having a large space for the kids and youth to play and gather, adult education classes, and larger outside groups to meet. The relocation of the warming kitchen to be adjacent to the multipurpose room will allow for easier service for funeral lunches and other events. The admin offices added will replace the offices lost to widen the hall in front of the multipurpose room and the shell space will allow for easier addition of offices in the future with less overall disruption. Providing the weekday entrance with additional handicap parking at the new admin location will allow for a more secure building and additional direct access to that portion of the building.

The proposed project is consistent with current allowable use on the site and the new square footage is integral to better flow and efficiency of the current ministry functions and will allow for the room to expand those functions in ways that continue to serve and benefit the community. The proposed addition is at a lower height than the current building, is proposed to be constructed of stamped precast to match the existing buildings finishes, and is proposed to meet all building codes and standards. The Church is involved in many different community events and outreach efforts and the City's support in this site plan review will allow that to continue and grow.



STAFF REPORT

ROGERS PLANNING COMMISSION

Meeting Date: October 7, 2024

Agenda Item: 6.4

Subject: Application by Craft & Crew Hospitality for Site Improvements at 21400 John Milless Drive (Municipal Bar Property)

Prepared By: Brett Angell, Community Development Director

Overview / Background / Analysis

On June 11, 2024, the City of Rogers entered into a Purchase Agreement for the sale of the existing on-sale municipal bar located at 21400 John Milless Drive ("Property") to Craft & Crew Hospitality, Inc. ("Applicant") for the purposes of the property being refurbished and altered into a new bar and restaurant. The city has owned and operated this location as a on-sale bar since the late 1970s and numerous factors went into the decision to sell the property. The Applicant has submitted a site plan amendment application seeking approval of their alterations and plans for the property. The proposed changes to the site include restructuring of the parking lot, significant rehab to the interior and exterior of the building, expansion of the patio space, and the addition of outdoor entertainment space.

Property Details

The Property is 2.03 acres in size and is currently zoned LC – Local Employment Center and is guided as Commercial in the 2040 Comprehensive Plan. The proposed use is consistent with the zoning and guidance for the property. Adjacent uses to the property include a gas station to the west, bar/restaurant to the east (Clive's), I-94 to the north, and CVS/medical offices to the south. Additionally, the property is currently interconnected with the adjacent Clive's and Holiday properties via access aisles.

Building Changes

The proposed changes to the building include significant interior renovations with the inclusion of adding a full commercial kitchen. The coolers will be relocated to the exterior at the rear of the property to allow for additional space to be dedicated towards adding the kitchen. Additionally, a shed and grease tanks are proposed to be added to the north and west side of the property for storage. Said tanks are proposed to be screened via 6' fencing.

On the south and west sides of the building, the Applicant is proposing to slightly expand and alter the patio seating area. The proposed patio seating includes covering a portion of the exterior seating area and adding an uncovered area to the east of the main entrance.

Architecturally, the Applicant proposals is to update the current look of the facility with a new façade, creation of a more prominent main entrance point, an additional window on

the south side (front) of the building, and an additional door on the west side (patio) of the building.

Parking & Access

The Applicant is proposing to alter and adjust the current parking field by pushing the current parking further towards John Milless Drive (which would align with the adjacent property). This new alignment would make it so that the parking stall islands would align with what is seen at Clive's. Currently, the islands do not align. This change also allow for additional stalls to be created on the south side of the property and for an additional row of stalls to be created near the front of the building. In total, there are 103 parking stalls proposed. There are currently 87 marked spaces at the property. The proposed plan sees a net increase of 16 spaces. The proposed parking plan also creates two (2) additional ADA spaces for a total of six spaces at the property.

No changes are proposed to the two access points on John Milles Drive. They are proposed to continue to be shared by the three properties.

Other Property Changes

The largest change to existing property is proposed for the north side of the property. The area is currently vacant except for the freestanding Holiday sign. The Applicant is proposing to alter this area to create an entertainment/amenity space. This includes the addition of sand volleyball courts and pickleball court, an outdoor bar (which includes an additional restroom), and an additional space which may be built in the future which may include outdoor pickleball courts, a playground, or a different type of amenity. In order to accommodate the inclusion of the entertainment space, the existing freestanding Holiday sign is proposed to be moved closer to the property line. The Applicant is working directly with Circle K (ownership of Holiday) on this relocation.

The current trash enclosure is located on the north side of the building. The Applicant is proposing to shift the location of the trash enclosure slightly to the west within the broader parking area.

Staff Recommendation

Motion to recommend approval of Resolution 2024-95 for the proposed site plan amendment by Craft & Crew Hospitality, Inc. for the property at 21400 John Milless Drive.

Financial Impact: None.

Source Fund: Not Applicable.

Budgeted? N/A

Supporting Documentation

- A. Location Map
- B. Draft Resolution No. 2024-95

C. Maps and Plans



LOCATION MAP



RESOLUTION NO. 2024-95

**APPROVING AMENDMENTS TO THE SITE PLAN AT 21400 JOHN MILLES DRIVE,
ROGERS, MINNESOTA FOR CRAFT & CREW HOSPITALITY, INC.**

WHEREAS, Craft & Crew Hospitality (“Applicant”) and Theilen and Green (“Architect”) have submitted an application to the City of Rogers (“City”), requesting approval of a Site Plan Amendment for alterations to the property located at 21400 John Milless Drive. Said alterations include the conversion of the building to bar/restaurant, alterations to the parking lot area, and the addition of outdoor amenity spaces; and

WHEREAS, the property is 2 (three) acres and zoned Local Employment Center (LC), located at 21400 John Milles Drive and legally described in Exhibit A (“Subject Property”) (PID: 23-120-23-12-0014); and

WHEREAS, section 125-27 – Site Plan governs the procedures around site plan review processes, and subsection (b) states: “site plan review and approval is required for a new developments” excepting single-family detached or two-family attached dwellings; and subsection (e) states “the Planning Commission shall evaluate the effects of the proposed site plans. This review shall be based upon, but not be limited to, compliance with the City’s Comprehensive Plan and provisions of this Ordinance”; and

WHEREAS, the existing use of the Subject Property is for an on-sale bar and the proposed use if for a bar and restaurant which are permitted uses in the LC zoning district [§125-50 Table 4E]; and

WHEREAS, the proposed development does not create a new or expansion of an existing nonconformity and satisfies zoning and site plan review standards; and

WHEREAS, on October 7, 2024, the Planning Commission reviewed the request and voted unanimously to recommend approval to the City Council of the Site Plan Review, with the following conditions:

- a. All engineering comments shall be satisfied prior to construction.
- b. Any necessary Elm Creek Watershed Permitting and Requirements shall be met prior to construction.
- c. SAC Determination shall be submitted to the Metropolitan Council and all building and connection fees paid prior to issuance of the building permit.

NOW THEREFORE, BE IT RESOLVED, BY THE CITY COUNCIL OF THE CITY OF ROGERS, MINNESOTA, the Site Plan Review request from Craft & Crew Hospitality, Inc. is hereby approved for the Alterations on the Subject Property based on the conditions found in this resolution.

Moved by Councilmember _____, seconded by Councilmember _____

The following voted in favor of said resolution:

The following voted against the same:

The following abstained:

Whereupon said resolution was declared duly passed and adopted, and was signed by the Mayor, and attested by the City Clerk dated this 22nd day of October 2024.

Rick Ihli, Mayor

ATTEST:

Stacie Brown, City Clerk

EXHIBIT A

LEGAL DESCRIPTION

Subject Property

Real property in the County of Hennepin, State of Minnesota, described as follows:

Those parts of Lots 1 and 2, Block 1, Rogers Plaza lying West of a line drawn from a point on the North line of said Lot 1 distant 69.94 feet Northwesterly of the Northeast corner of said Lot 1 to a point on the South line of said Lot 2 distant 14.96 feet East of the Southwest corner of said Lot 2.

Torrens Property

PID # 23-120-23-12-0014

ISSUED FOR: BID SET/PERMIT SET/CITY SUBMITTAL



PROJECT CONTACTS		
	NAME & ADDRESS	CONTACT
CIVIL ENGINEER	CIVIL SITE GROUP 5000 GLENWOOD AVE GOLDEN VALLEY, MN 55422	WILL BRUESTLE 612-615-0060 WBRUESTLE@CIVILSITEGROUP.COM
LANDSCAPE ARCHITECT	CIVIL SITE GROUP 5000 GLENWOOD AVE GOLDEN VALLEY, MN 55422	ROB BINDER 612-615-0060 RBINDER@CIVILSITEGROUP.COM
PROPERTY OWNER	CRAFT & CREW HOSPITALITY 819 MAIN STREET HOPKINS, MN 55343	CONTACT NAME PHONE NUMBER EMAIL
ARCHITECT	THIELEN & GREEN 7455 VILLAGE DRIVE, SUITE #110 LINO LAKES, MN 55014	JORDAN BROOKENS 203-275-0247 JORDAN@TANDGARCH.COM
SURVEYOR	CIVIL SITE GROUP 5000 GLENWOOD AVE GOLDEN VALLEY, MN 55422	RORY SYNSTELIEN 612-615-0060 x 712 RORY@CIVILSITEGROUP.COM
GEOTECHNICAL ENGINEER	COMPANY NAME ADDRESS LINE 1 ADDRESS LINE 2	CONTACT NAME PHONE NUMBER EMAIL

ALL EXISTING UTILITY LOCATIONS SHOWN ARE APPROXIMATE. CONTACT "GOPHER STATE ONE CALL" (651-454-0002 OR 800-252-1166) FOR UTILITY LOCATIONS, 48 HOURS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL REPAIR OR REPLACE ANY UTILITIES THAT ARE DAMAGED DURING CONSTRUCTION AT NO COST TO THE OWNER.



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

SHEET INDEX		REVISION SUMMARY	
SHEET NUMBER	SHEET TITLE	DATE	DESCRIPTION
C0.0	TITLE SHEET		
C1.0	REMOVALS PLAN		
C2.0	SITE PLAN		
C2.1	TURNING MOVEMENT		
C3.0	GRADING PLAN		
C4.0	UTILITY PLAN		
C5.0	CIVIL DETAILS		
L1.0	LANDSCAPE PLAN		
L1.1	LANDSCAPE PLAN ENLARGEMENTS		
L1.2	LANDSCAPE PLAN ENLARGEMENTS & DETAILS		
SW1.0	SWPPP - EXISTING CONDITIONS		
SW1.1	SWPPP - PROPOSED CONDITIONS		
SW1.2	SWPPP - DETAILS		
SW1.3	SWPPP - NARRATIVE		

**PRELIMINARY:
NOT FOR
CONSTRUCTION**

PROJECT

THE BLOCK

21400 JOHN MILLESS DRIVE, ROGERS, MN 55374

OWNER

CRAFT & CREW HOSPITALITY

819 MAIN STREET, HOPKINS, MN 55343

I HEREBY CERTIFY THAT THIS PLAN,
SPECIFICATION, OR REPORT WAS
PREPARED BY ME OR UNDER MY DIRECT
SUPERVISION AND THAT I AM A DULY
LICENSED PROFESSIONAL ENGINEER
UNDER THE LAWS OF THE STATE OF
MINNESOTA.



Matthew R. Pavsek

DATE 09/20/24 LICENSE NO. 44263

[illegible][illegible]

TITLE SHEET

C0.0

OWNER ACKNOWLEDGEMENT

THIELEN & GREEN REQUIRES APPROVAL OF THE FOLLOWING PERMIT DOCUMENTS PRIOR TO SUBMITTING FOR CITY PLAN REVIEW. PLEASE REVIEW THE PERMIT DOCUMENTS IN FULL AND MAKE NOTE OF ANY ADDITIONAL CHANGES THAT SHOULD BE ADDRESSED. AN AUTHORIZED SIGNATURE BELOW INDICATES THE APPROVAL OF THIS DESIGN AND AUTHORIZES THIELEN & GREEN TO PROCEED WITH THE PERMITTING PROCESS AS OUTLINE IN THE CONTRACT AGREEMENT.

X

CLIENT NAME DATE

ABBREVIATIONS

ACT	ACOUSTIC CEILING TILE	HT	HEIGHT
ADJ	ADJACENT	INSUL	INSULATION
BD	BOARD	MAX	MAXIMUM
BO	BOTTOM OF	MIN	MINIMUM
BM	BEAM	NIC	NOT IN CONTRACT
CL	CENTER LENE	NTS	NOT TO SCALE
CLG	CEILING	OC	ON CENTER
CMU	CONCRETE MASONRY UNIT	PLY WD	PLYWOOD
COL	COLUMN	PT	PRESSURE TREATED
CONC	CONCRETE	PTD	PAINTED
DIM	DIMENSION	RO	ROUGH OPENING
EQ	EXISTING	TBD	TO BE DETERMINED
FLR	FLOOR	TYP	TYPICAL
FO	FACE OF	UNO	UNLESS NOTED OTHERWISE
FP	FILLER PANEL	VIF	VERIFY IN FIELD
GYP BD	GYPSUM BOARD	WI	WITH
		WD	WOOD

SYMBOLS

EXTERIOR ELEVATION

GRID LINE

BUILDING SECTION

WALL SECTION

DETAIL SECTION

ENLARGED PLAN

REVISION

REVISION DELTA

EXISTING DOOR

NEW DOOR

DOOR TAG

INTERIOR ELEVATION

Level

WINDOW / STOREFRONT / CURTAINWALL TYPE

WALL TYPE

KEY NOTE

Room name

ROOM

GENERAL NOTES

- IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR AND THEIR SUB-CONTRACTORS, MATERIAL SUPPLIERS, AND/OR THEIR CONSULTANTS TO REVIEW THE CONTRACT DOCUMENTS IN ITS ENTIRETY.
- ITEMS SHOWN IN ONE LOCATION IN THE DRAWINGS AND/OR INCLUDED IN THE SPECIFICATIONS SHALL BE CONSIDERED PART OF THE WORK AND SHALL APPLY AT SIMILAR LOCATIONS THROUGHOUT THE PROJECT. IN THE EVENT OF INCONSISTENCIES BETWEEN THE DRAWINGS PROVIDED THE GENERAL CONTRACTOR SHALL SEEK CLARIFICATION FROM THE ARCHITECT OF RECORD.
- NO DEVIATIONS FROM THE CONTRACT DOCUMENTS, INCLUDING SPECIFICATIONS, SHALL BE MADE WITHOUT WRITTEN APPROVAL FROM THE OWNER AND/OR ARCHITECT.
- DO NOT SCALE DRAWINGS.
- GENERAL CONTRACTOR AND/OR SUB-CONTRACTORS ARE REQUIRED TO VERIFY ALL CONDITIONS PRIOR TO COMMENCING WORK.
- IT IS THE RESPONSIBILITY OF THE GENERAL CONTRACTOR TO CONFIRM WITH THE OWNER AND/OR LANDLORD ANY PROJECT REQUIREMENTS PRIOR TO BIDDING WORK INCLUDING: PRE-APPROVED SUBCONTRACTORS, MATERIALS, CONSTRUCTION REQUIREMENTS, ETC.
- THE GENERAL CONTRACTOR SHALL NOTIFY ARCHITECT IN WRITING ANY DISCREPANCIES, ERRORS AND/OR OMISSIONS PRIOR TO STARTING THAT PORTION OF WORK IN A TIMELY MANNER TO ALLOW REVIEW BY AOR AND OWNER FOR RESPONSE. NO WORK IS TO OCCUR IN AREA OF CONFLICT UNTIL WRITTEN RESPONSE AND APPROVAL IS ACHIEVED BY ALL PARTIES (OWNER, ARCHITECT, GENERAL CONTRACTOR).
- THE GENERAL CONTRACTOR IS TO NOTIFY ARCHITECT AND OWNER IMMEDIATELY ANY HAZARDOUS SUBSTANCES ENCOUNTERED IN THE FIELD. ALL WORK SHALL BE PERFORMED BY APPROPRIATE SKILLED PERSONALE AND MATERIALS USED SHALL BE OF FIRST QUALITY.
- THE GENERAL CONTRACTOR IS RESPONSIBLE TO PROTECT THE EXISTING STRUCTURE, FINISHES, LANDSCAPING, MEP SYSTEMS UNLESS REQUIRED TO REMOVE OR REPLACE AS SPECIFIED IN THE CONSTRUCTION DOCUMENTS
- WATER RESISTANT GYP. BD. SHALL BE USED AT ALL WET LOCATIONS
- ALL EXISTING WALLS AND/OR FENESTRATION ARE TO REMAIN U.N.O.
- IF REQUIRED, THE GENERAL CONTRACTOR SHALL PREPARE FIRE SPRINKLER DESIGN DRAWINGS, SUBMIT AND RECEIVE APPROVAL PRIOR TO INSTALLATION AS REQUIRED WITH THE LOCAL AGENCIES HAVING JURISDICTION ON THIS PROJECT. THE AUTOMATIC SPRINKLER SYSTEM MUST BE INSTALLED IN ACCORDANCE WITH THE CODES LISTED BELOW AND LOCAL AMENDMENTS. A SEPARATE PERMIT BY DESIGN BUILD ENGINEERING COORDINATED BY THE GENERAL CONTRACTOR IS REQUIRED TO BE SUBMITTED TO THE AUTHORITY HAVING JURISDICTION FOR APPROVAL.
- THE GENERAL CONTRACTOR SHALL PROVIDE ADEQUATE BLOCKING AS DIRECTED BY THE MANUFACTURER FOR ALL WALL MOUNTED EQUIPMENT OR DEVICES, AND SHALL COORDINATE WITH THE OWNER'S REPRESENTATIVE FOR ALL ITEMS NOTED AS "BY OWNER" OR "BY OTHERS".
- DRAWINGS WERE PREPARED USING PRODUCT SPECIFIC CONFIGURATION INFORMATION, ACTUAL DIMENSIONS AND DETAILS OF SELECTED MATERIALS MAY CHANGE BEFORE INCORPORATION INTO THE WORK. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR ACCOMMODATING ANY CHANGES TO OTHER MATERIALS THAT ARE NECESSARY BECAUSE OF THESE DIFFERENCES.
- TYPICAL AND PROJECT SPECIFIC DETAILS ARE INCLUDED IN THE DRAWINGS, WHERE DETAILS OR DESIGN INTENT CANNOT BE DETERMINED SEEK CLARIFICATION PRIOR TO COMMENCING WORK
- ALL WORK SHALL CONFORM TO LAWS, REGULATIONS, CODES AND ORDINANCES OF FEDERAL, STATE, COUNTY, CITY OR ANY OTHER JURISDICTION AS EACH MAY APPLY. IN THE EVENT OF ANY CONFLICT BETWEEN ANY OF THE PROJECT REQUIREMENTS, THE MOST STRINGENT REQUIREMENT SHALL GOVERN
- EXITS, EXIT SIGNS, FIRE ALARM PANELS, HOSE CABINETS, FIRE EXTINGUISHERS LOCATIONS AND STANDPIPE CONNECTIONS, AS APPLICABLE, SHALL NOT BE CONCEALED BY CURTAINS, MIRRORS, OR OTHER DECORATIVE MATERIAL
- ALL EXIT DOORS SHALL BE READILY OPENABLE FROM THE EGRESS SIDE WITHOUT THE USE OF A KEY OR SPECIAL KNOWLEDGE OR EFFORT REFER TO INDIVIDUAL SHEETS FOR OTHER GENERAL NOTES SPECIFIC TO THAT SECTION

VICINITY MAP

PROJECT LOCATION

KEY PLAN

PROJECT LOCATION

GENERAL FIRE DEPT NOTES

- ALL LIFE SAFETY SYSTEMS SHALL BE DESIGNED PER APPLICABLE FIRE PREVENTION CODE - SEE LIFE SAFETY PLAN
- FIE EXTINGUISHER REQUIREMENTS SHELL BE AS DETERMINED BY FIELD INSPECTION AND NFPA 10. THE CONTRACTOR SHALL SUPPLY ALL FIRE EXTINGUISHERS AND CABINETS AS REQUIRED - SEE LIFE SAFETY PLAN FOR SUGGESTED LOCATION(S)
- BUILDING ADDRESS NUMBERS SHALL BE PROVIDED ON THE FRONT OF THE BUILDING AND SHALL BE VISIBLE / LEGIBLE FROM THE PUBLIC RIGHT-OF-WAY, SAID NUMBERS SHALL CONTRAST VISUALLY WITH THEIR BACKGROUND. ADDRESS NUMBERS SHALL BE PROVIDED BY THE GENERAL CONTRACTOR
- COMMERCIAL DUMPSTERS OR CONTAINERS WITH A CAPACITY OF ONE-AND-ONE-HALF CUBIC YARDS OR GREATER SHALL NOT BE STORED OR PLACED WITHIN FIVE FEET OF COMBUSTIBLE WALLS, OPENINGS, OR ROOF EAVE LINES UNLESS THESE AREAS ARE PROTECTED BY AN APPROVED AUTOMATIC FIRE SPRINKLER SYSTEM
- POST "NO PARKING - FIRE LANE" SIGNS ALONG VEHICULAR ACCESS ROADS

NOTES TO BIDDERS

AS REQUIRED BY CHAPTER 1341.0030 IBCB SECTION 305, ACCESSIBILITY FOR EXISTING BUILDINGS, SECTION 305.7 ALTERATIONS AFFECTING AN AREA CONTAINING A PRIMARY FUNCTION, PROVIDE SEPARATE LINE ITEMS FOR THE SCOPE OF WORK PERTAINING TO THE FOLLOWING IMPROVEMENTS TO THE ACCESSIBLE ROUTE:

- PARKING FACILITIES
 - ACCESSIBLE ENTRANCES
 - ACCESSIBLE ROUTE TO THE PRIMARY FUNCTION AREA
 - TOILET FACILITIES
 - DRINKING FOUNTAINS
- THE FOLLOWING ITEMS ARE TO BE LISTED IN THE BID AS SEPARATE LINE ITEM, ADD OR DEDUCT ALTERNATES. REFER TO THE FOLLOWING PLANS FOR ADDITIONAL AND/OR COMPLETE INFORMATION
- PROVIDE 50'-0" RETAINING WALL ALONG NORTH OF SITE, 3'-0" TALL
 - PROVIDE PROTECT-ALL FLOORING IN LIEU OF QUARRY TILE IN KITCHEN, BAR, AND COOLERS

DEFERRED SUBMITTALS

THE FOLLOWING ITEMS WILL BE SUBMITTED AS DEFERRED SUBMITTALS BY THE APPROPRIATE INSTALLING SUBCONTRACTOR OR VENDOR. FOR EACH DEFERRED SUBMITTAL ITEM, THE SUBCONTRACTOR OR VENDOR SHALL FIRST SUBMIT SIGNED AND SEALED ENGINEERED DRAWINGS AND CALCULATIONS TO THE ARCHITECT FOR REVIEW AND APPROVAL PRIOR TO SUBMITTAL TO THE BUILDING OFFICIAL OR FIRE MARSHAL. ARCHITECT'S REVIEW WILL BE FOR GENERAL CONFORMANCE WITH THE BUILDING DESIGN ONLY. SUBCONTRACTOR OR VENDOR SHALL BE RESPONSIBLE FOR DETERMINING SUBMITTAL REQUIREMENTS AND PAYMENT OF ALL FEES FOR SUBMITTALS. THE GENERAL CONTRACTOR IS RESPONSIBLE FOR COORDINATING THE TIMING OF SUBMITTALS SO AS TO NOT INTERFERE WITH OVERALL CONSTRUCTION SCHEDULE, ALLOWING TIME FOR APPROPRIATE REVIEWS FOR ARCHITECT AND BUILDING OFFICIAL OR FIRE MARSHAL. NO DELAYS OR TIME EXTENSIONS WILL BE ALLOWED FOR FAILURE TO ALLOW APPROPRIATE TIME FOR REVIEW.

- FIRE SPRINKLER SYSTEMS
- FIRE ALARM SYSTEMS (IF REQUIRED)
- MECHANICAL, ELECTRICAL, AND PLUMBING ENGINEERING
- IT, LOW-VOLTAGE, AV, DATA, SECURITY
- SIGNAGE (INTERIOR AND/OR EXTERIOR)

SHEET INDEX

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A030	MATERIAL SPECIFICATIONS	
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STRUCTURAL		
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S004	TYPICAL DETAILS - FOUNDATION	
S005	TYPICAL DETAILS - STRUCTURAL CMU	
S006	TYPICAL DETAILS - ROOF	
S100	FOUNDATION PLAN	
S200	ROOF FRAMING PLAN	



PROJECT DESCRIPTION

*REFER TO SHEET A001 FOR MORE EXTENSIVE CODE REVIEW

PROJECT NAME:	THE BLOCK	CURRENT USE:	"A2" (BAR)
ADDRESS:	21400 JOHN MILLESS DR. ROGERS, MN 55374	PROPOSED USE:	"A2" (RESTAURANT); NO CHANGE OF USE
PID:	2312023120014	BUILDING HEIGHT:	1 STORIES; NO CHANGE IN HEIGHT
PROJECT DESCRIPTION:	RENOVATION OF EXISTING BAR TO FULL-SERVICE RESTAURANT. RESTROOMS TO BE REMODELED TO MEET CURRENT ADA CODE. EXTERIOR (UNATTACHED) PERGOLA ADDED TO COVER EXISTING PATIO. ADD VOLLEYBALL COURTS AND OUTDOOR BAR IN NORTH PART OF PROPERTY. ADD 10 PARKING STALLS, RESTRIPE CURRENT PARKING STALLS TO ALIGN WITH ADJACENT PROPERTY.		
BUILDING AREA:	4,176 SF (EXISTING) 4,607 SF (INCLUDING NEW ENTRY ADDITION)	PROJECT AREA:	66,745 SF (WORK INSIDE BUILDING AND SITE)
FIRE PROTECTION:	NOT SPRINKLED		

PROJECT TEAM

CLIENT	GENERAL CONTRACTOR
CRAFT N CREW HOSPITALITY 819 MAIN STREET HOPKINS, MN 55343	DERING PIERSON GROUP 22401 INDUSTRIAL BLVD ROGERS, MN 55374
CONTACT: LUKE DERHEIM EMAIL: LUKE@CRAFTNCREW.COM PHONE: 612-205-3286	CONTACT: MIKE PIERSON EMAIL: MPIERSON@DERINGPIERSON.COM PHONE: 612-325-9450
ARCHITECT	MECHANICAL/ELECTRICAL/PLUMBING
THIELEN & GREEN 7455 VILLAGE DRIVE, SUITE #110 LINO LAKES, MINNESOTA 55014	THIS PROJECT IS BEING DELIVERED AS DESIGN BUILD MECHANICAL, ELECTRICAL, PLUMBING, AND FIRE SUPPRESSION BY THE GENERAL CONTRACTOR UNDER A SEPARATE SUBMITTAL(S)
CONTACT: KRIS THIELEN - ARCHITECT (MN #59237) EMAIL: KMT@TANDGARCH.COM PHONE: 763-553-7927	
CONTACT: JORDAN BROOKENS - PROJECT MANAGER EMAIL: JORDAN@TANDGARCH.COM PHONE: 763-553-7927	
KITCHEN EQUIPMENT CONSULTANT	
BOELTER PREMIER 7120 NORTHLAND TERRACE N MINNEAPOLIS, MN 55428	
CONTACT: ROBERT MACHACEK EMAIL: RMACHACEK@BOELTER.COM PHONE: 763-450-2901	
STRUCTURAL ENGINEER	
ERA STRUCTURAL ENGINEERING 2550 UNIVERSITY AVE. W, SUITE 423S ST. PAUL, MN 55114	
CONTACT: MICHAEL STEENSON, PE EMAIL: MSTEEENSON@ERAENG.COM PHONE: 651-251-7570	
CIVIL ENGINEER	
CIVIL SITE GROUP 5000 GLENWOOD AVENUE GOLDEN VALLEY, MN 55422	
CONTACT: PATRICK SARVER EMAIL: PSARVER@CIVILSITEGROUP.COM PHONE: 612-615-0060 X 702	

CITY STAMP AREA

THIELEN & GREEN

7455 VILLAGE DRIVE, SUITE #110
LINO LAKES, MN 55014
763-553-7927
WWW.TANDGARCH.COM

CRAFT
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HOSPITALITY

819 MAINSTREET
HOPKINS, MN 55343
https://craftncrew.com/

THE BLOCK
- ROGERS
21400 JOHN MILLESS DR.
ROGERS, MN 55374

ISSUE	DATE
CONCEPTUAL DESIGN	06-24-2024
SCHEMATIC DESIGN	08-02-2024
SITE PLAN AMENDMENT	09-06-2024
PERMIT & BID SET	09-20-2024
FOR CONSTRUCTION	TBD

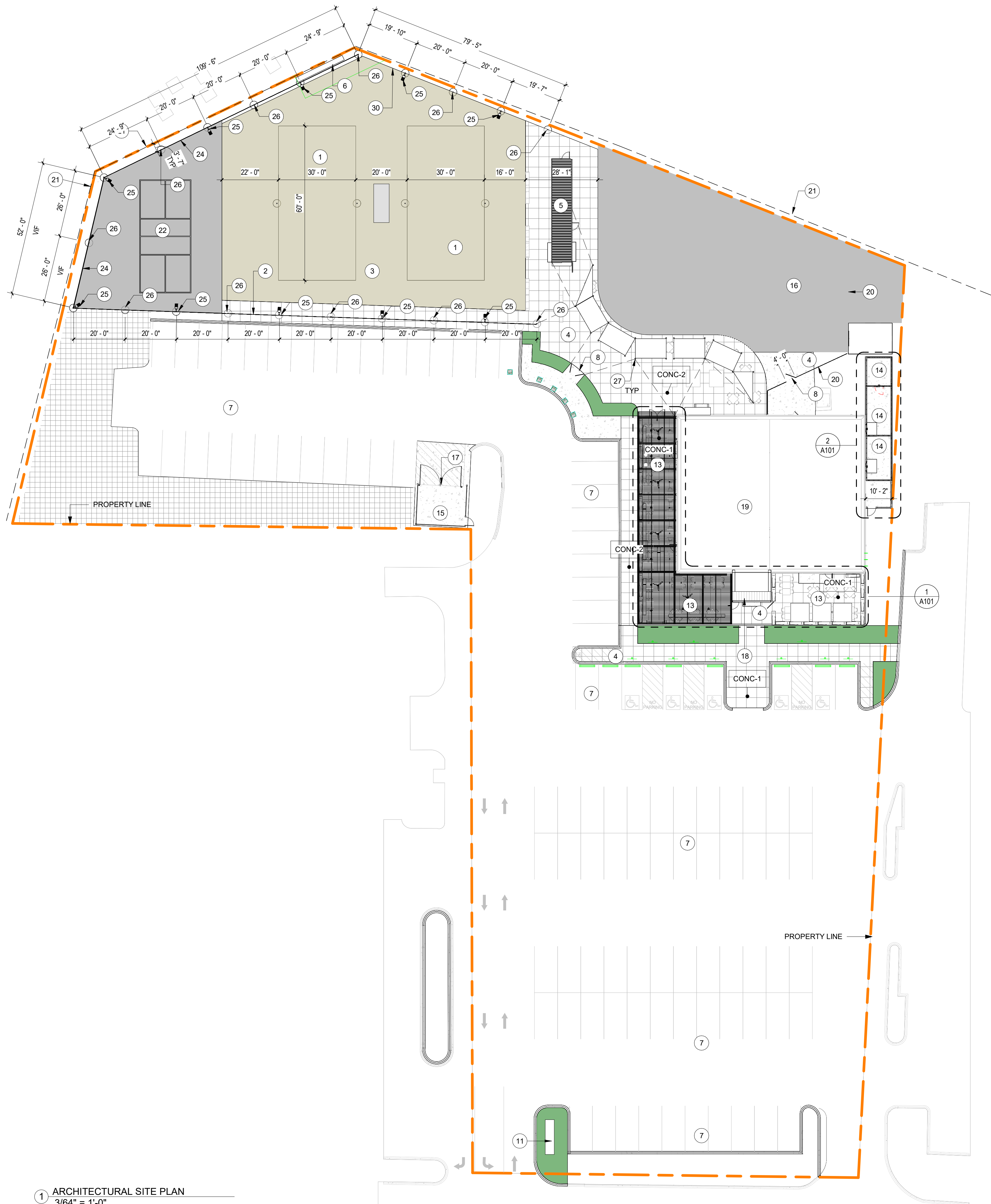
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENCED ARCHITECT UNDER THE STATE LAWS OF MINNESOTA

KRIS THIELEN

REGISTRATION NO: 59237 DATE: 09-20-2024

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

COVER SHEET	
Project Number	364_2024
Date	09-20-2024
Drawn By	JLB
Checked By	KMT
A000	
Scale	As indicated

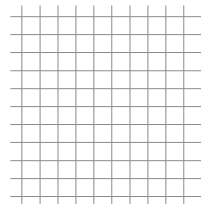


1 ARCHITECTURAL SITE PLAN
3/64" = 1'-0"

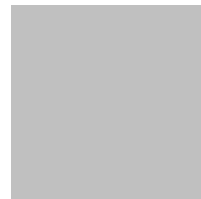
GENERAL SITE PLAN NOTES

1. ARCHITECTURAL SITE PLAN IS FOR REFERENCE ONLY - CIVIL ENGINEERING IS A DEFERRED SUBMITTAL PROVIDED BY THE OWNER AS NEEDED; NOT IN CONTRACT
2. ALL GROUND MOUNTED EQUIPMENT SHALL BE SCREENED FROM PUBLIC VIEW - TYPICAL
3. ALL SIGNAGE SHOWN FOR REFERENCE ONLY - PROVIDED BY OTHERS UNDER A DEFERRED SUBMITTAL
4. ALL EXTERIOR LIGHTING SHOWN FOR REFERENCE ONLY - REFER TO DESIGN-BUILD ELECTRICAL DRAWINGS FOR ADD. INFO. - REFER TO EXTERIOR ELEVATIONS FOR BUILDING MOUNTED FIXTURES - COORDINATE FINAL LOCATIONS WITH OWNER IN FIELD PRIOR TO INSTALLATION
5. GC TO VERIFY THAT ALL ENTRANCE LANDINGS ARE FLUSH WITH FINISHED FLOOR AND PATCH/ REPAIR AS REQUIRED
6. GC TO VERIFY THAT ALL PAVED SURFACES ADJACENT TO THE BUILDING SLOPE AWAY TO PROVIDE POSITIVE DRAINAGE

SITE PLAN LEGEND



EXISTING TO REMAIN



FUTURE DEVELOPMENT

SITE PLAN KEYNOTES

1. VOLLEYBALL SAND COURT, VERIFY SAND REQUIREMENTS
2. 54" TALL WOOD FENCE WITH NET PROTECTION ABOVE UP TO 20'-0", PROVIDE POSTS TO COMPLY WITH CLIMATE WIND LOADS AND LATERAL FORCE
3. VOLLEYBALL SAND COURT PERIMETER CLEARANCE, VERIFY SAND REQUIREMENTS AND COORDINATE WITH CIVIL
4. CONCRETE SLAB ON GRADE, COORDINATE SCORE PATTERN WITH ARCHITECT AND CIVIL ENGINEER, SEE CIVIL FOR DIMENSIONS
5. 8'-0" x 40'-0" RETROFITTED SHIPPING CONTAINER WITH (1) UNISEX RESTROOM AND BAR, COORDINATE WITH OWNER, SEE FUTURE PLAN FOR FULL SCOPE
6. RELOCATED EXISTING LARGE PYLON SIGN, VERIFY WITH OWNER AND CITY FOR SCOPE OF RELOCATION AND SIGN ADDITION
7. COORDINATE WITH CIVIL PLANS FOR ALL RESTRIPIING
8. OPENING IN GATE FOR ACCESS AND EGRESS, PROVIDE SECURE AND EGRESS HARDWARE WITH "EXIT" SIGN ON SIDE OF EGRESS PATH
11. NEW LIT MONUMENT SIGN, APPROXIMATE PAD SIZE: 48" X 96", PROVIDE POWER AS REQUIRED, COORDINATE WITH CIVIL DRAWINGS, COORDINATE WITH OWNER AND FUTURE SIGN VENDOR
13. REINFORCED CONCRETE SLAB ON GRADE FOR PERGOLA, COORDINATE WITH STRUCTURAL DRAWINGS
14. THICKENED CONCRETE SLAB ON GRADE FOR OUTDOOR COOLERS, PROVIDE FOOTINGS FOR COOLERS WITH DOORS CONNECTED TO BUILDING, COORDINATE WITH FUTURE KEC DRAWINGS
15. THICKENED CONCRETE SLAB ON GRADE FOR TRASH ENCLOSURE
16. APPROXIMATE AREA FOR FUTURE PLAYGROUND (31X30)
17. TRASH ENCLOSURE, BASIS OF DESIGN: CITY SCAPES, WALL AND GATE MODEL, VERTICAL PLANK WITH STANDARD STIFFENER INFILL, ENGINEERED WOOD PLANKS (COLOR TBD FROM STANDARD SELECTIONS)
18. BUILDING ENTRY/ EXIT STOOP LOCATION - COORDINATE WITH FLOOR PLAN AND REFER TO STRUCT TYPICAL STOOP DETAIL FOR ADD. INFO. - SLOPE AWAY FROM BUILDING AT MAX 2% - MAINTAIN ADA REQUIREMENTS PER 2020 MAC
19. PATCH & REPAIR EXISTING ROOF AS REQUIRED FOR NEW PENETRATIONS AND ROOFTOP EQUIPMENT, COORDINATE WITH DESIGN/BUILD MECHANICAL ENGINEER
20. 6'-0" TALL FENCE PROTECTION, PROVIDE POST @ 6'-0" OC
21. EXISTING MNDOT CHAINLINK FENCE, PROTECT AND MAINTAIN
22. FUTURE PICKLEBALL COURT AREA, SHOWN FOR REFERENCE ONLY
24. 96" TALL WOOD FENCE WITH NET PROTECTION ABOVE UP TO 20'-0", PROVIDE POSTS TO COMPLY WITH CLIMATE WIND LOADS AND LATERAL FORCE
25. LIGHT POLE IN CONCRETE FOOTING (20'0" MIN HT TO ATTACHED NET TO), COORDINATE FOOTING WITH STRUCTURAL DRAWINGS AND DESIGN/BUILDING ELECTRICAL CONTRACTOR
26. 20'-0" NET POLE IN CONCRETE FOOTING, COORDINATE FOOTING WITH STRUCTURAL DRAWINGS
27. CANVAS SAIL POST (4" DIA.) @ 10'-0" TALL, PROVIDE FOOTING AND POWER FOR STRING LIGHTS, SEE IMAGE ON THIS PAGE
30. 20'-0" TALL NET ONLY WITH TYPICAL POLE AND/OR LIGHT POLE EVERY 20'-0"



EXAMPLE IMAGE OF CANVAS SAIL AND POST

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THE BLOCK - ROGERS

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KRIS THIELEN

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ARCHITECTURAL SITE PLAN

Project Number	364_2024
Date	09-20-2024
Drawn By	JLB
Checked By	KMT

A050

Scale **As indicated**

GENERAL FLOOR PLAN NOTES

- DIMENSIONS ARE TO THE FACE OF SHEATHING OR MASONRY UNLESS NOTED OTHERWISE
- WALL TYPES WITH FIRE RATINGS SHALL CONTINUE FROM FLOOR TO FLOOR OR ROOF ABOVE, UNLESS NOTED OTHERWISE
- THE HINGE SIDE OF ALL INTERIOR DOOR FRAMES SHALL BE PLACED 4" FROM THE ADJACENT INTERIOR WALL AS MEASURED TO THE JAMB, UNLESS NOTED OTHERWISE, INTERIOR DOORS PLACED IN MASONRY WALLS SHALL BE PLACED A MINIMUM OF 4" AND MAXIMUM OF 8" AWAY FROM WALLS TO COORDINATE WITH MASONRY COURSING, UNLESS NOTED OTHERWISE
- FIRE DAMPERS SHALL BE PROVIDED WHERE DUCTS PENETRATE FIRE-RATED WALLS, FLOORS, OR CEILING ASSEMBLIES
- ALL INTERIOR PARTITIONS IN EXCESS OF 30'-0" OF LENGTH SHALL HAVE FULL HEIGHT CONTROL JOINTS INSTALLED WITH 30'-0" MAXIMUM SPACING, UNLESS NOTED OTHERWISE, WHERE POSSIBLE, ALIGN CONTROL JOINTS TO DOORS AND WINDOWS
- FIXTURES, FURNITURE, VENDING, AND EQUIPMENT SUPPLIED BY OWNER, SHOWN FOR REFERENCE ONLY. REFER TO EQUIPMENT PLANS
- FLOOR FINISH TRANSITIONS OCCUR AT CENTERLINE OF DOOR FRAME UNLESS NOTED OTHERWISE
- USE VINYL REDUCER STRIPS IN THICKNESS TO MATCH ADJACENT FLOOR MATERIALS - PROVIDE AT EDGES OF RESILIENT FLOOR WHEREVER EDGE IS EXPOSED - SUBMIT SAMPLES FOR PROFILE AND COLOR SELECTION
- ALL MISC PANELS, FIRE EXTINGUISHER CABINETS, EXPOSED DUCTING PARTS, LOUVERS, VENTILATION COVERS AND ANY EQUIPMENT NOT FACTORY FINISHED SHALL BE PAINTED TO MATCH THE ADJACENT SURFACE ON WHICH IT OCCURS
- REFER TO FINISH SCHEDULES, CEILING PLANS, AND ELEVATIONS FOR FURTHER FINISH INFORMATION
- ANY EXPOSED SINK PIPES TO BE WRAPPED TO MEET ADA REQUIREMENTS

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FLOOR PLAN KEYNOTES

- GAS FIREPLACE WITH SURROUND, SEE DETAILS FOR ADDITIONAL INFORMATION, COORDINATE FINAL SPEC WITH OWNER
- PATIO COVERED BY ALUMINUM PERGOLA, PROVIDE FANS, HEATERS, AND LIGHTS (LAYOUT TBD)
- SEASONAL ROLL-DOWN VINYL PANEL BY PERGOLA VENDOR, COORDINATE INSTALL WITH OWNER AND VENDOR
- CUSTOM MILLWORK HOST STAND WITH SOLID SURFACE TOP, DETAILS TBD, PROVIDE POWER AND DATA AS REQUIRED
- BOOTHES ON RAISED 6" PLATFORM
- CUSTOM PULL TAB CABINETS, COORDINATE WITH OWNER AND PULL TAB VENDOR, PROVIDE POWER FOR LIT BOXES AND E-TAB STATION
- BUILDING ENTRY/ EXIT STOOP LOCATION - COORDINATE WITH FLOOR PLAN AND REFER TO STRUCT TYPICAL STOOP DETAIL FOR ADD. INFO.
- COOLER/FREEZER WALL, COORDINATE WITH KITCHEN EQUIPMETN CONSULTANT AND KEC DRAWINGS
- EXISTING GUTTER AND DOWNSPOUT, REROUTE OVER AND DOWN COOLER ENCLOSURE, BASIS OF DESIGN: CITY SCAPES, WALL AND GATE MODEL, VERTICAL PLANK WITH STANDARD STIFFENER INFILL, ENGINEERED WOOD PLANKS (COLOR TBD FROM STANDARD SELECTIONS)
- ALUMINUM EGRESS GATE, NO LATCH, PROVIDE "EXIT" SIGN ON SIDE OF EGRESS PATH
- VERIFY CONDITINO OF EXISTING FURRING, ADD "CERTAINTED MEMBRAINI" POLY VAPOR BARRIER BEFORE INSTALLING NEW WALL SUBSTRATE

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KRIS THIELEN
REGISTRATION NO: 59237 DATE: 09-20-2024

REVISION SCHEDULE

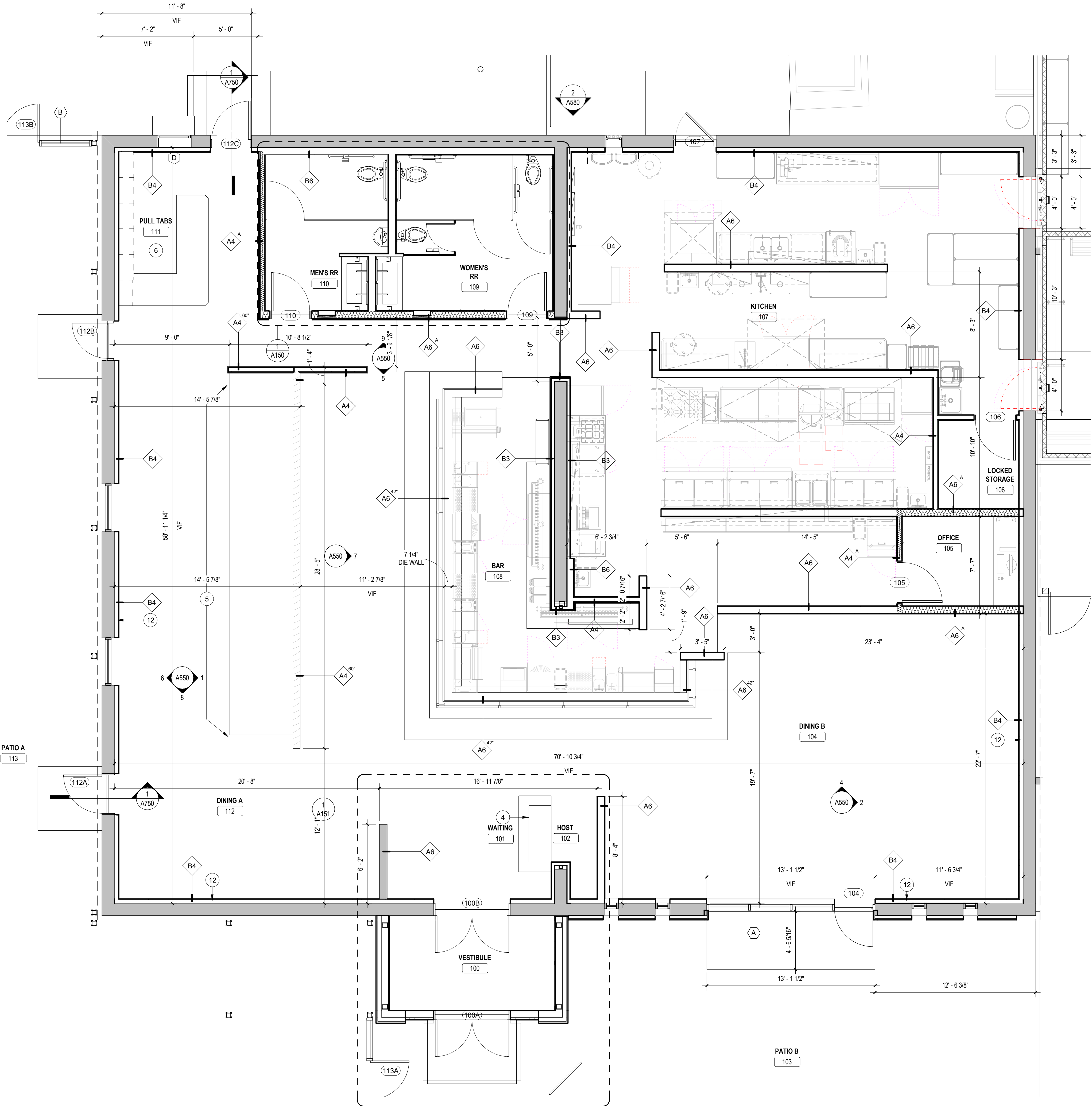
NO.	DESCRIPTION	DATE

ARCHITECTURAL
FLOOR PLAN

Project Number	364_2024
Date	09-20-2024
Drawn By	JLB
Checked By	KMT

A100

Scale As indicated



1 ARCHITECTURAL FLOOR PLAN
1/4" = 1'-0"



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KRIS THIELEN

REGISTRATION NO: 59237 DATE: 09-20-2024

REVISION SCHEDULE		
NO.	DESCRIPTION	DATE

EXTERIOR ELEVATIONS

Project Number	364_2024
Date	09-20-2024
Drawn By	JLB
Checked By	KMT

A580

Scale As indicated

**PRELIMINARY:
NOT FOR
CONSTRUCTION**

PROJECT

THE BLOCK

21400 JOHN MILLESS DRIVE, ROGERS, MN 55374

OWNER

CRAFT & CREW HOSPITALITY

819 MAIN STREET, HOPKINS, MN 55443

I HEREBY CERTIFY THAT THIS PLAN,
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LICENSED PROFESSIONAL ENGINEER
UNDER THE LAWS OF THE STATE OF
MINNESOTA.


Matthew R. Pavek
DATE 09/20/24 LICENSE NO. 44263

ISSUE/SUBMITTAL SUMMARY	
DATE	DESCRIPTION
09/20/24	RIT SET/PERMIT SET & CITY SUBMITTAL

[illegible]

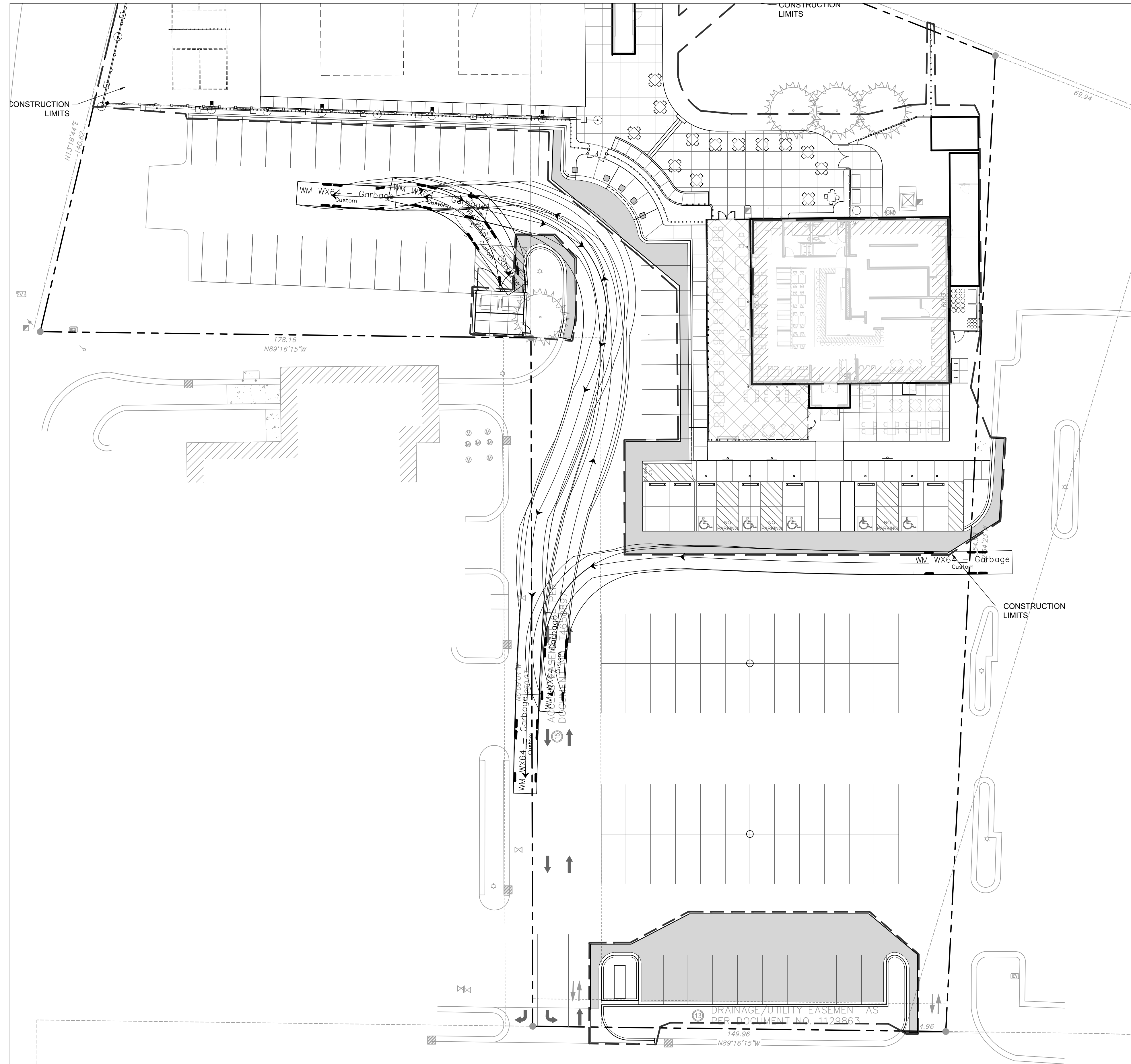
PROJECT MANAGER	WILL BRUESTLE
CONTACT NUMBER	612-615-0060 X 711
DRAWN BY	WB, RB
REVIEWED BY	
PROJECT NUMBER	24412

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TURNING MOVEMENT

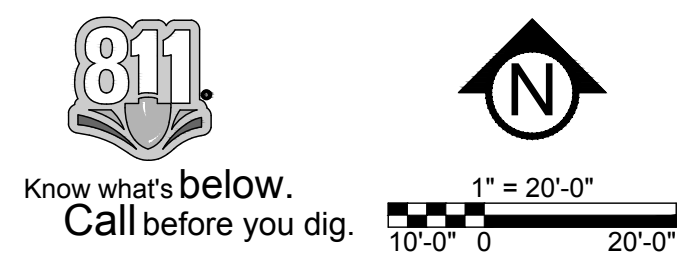
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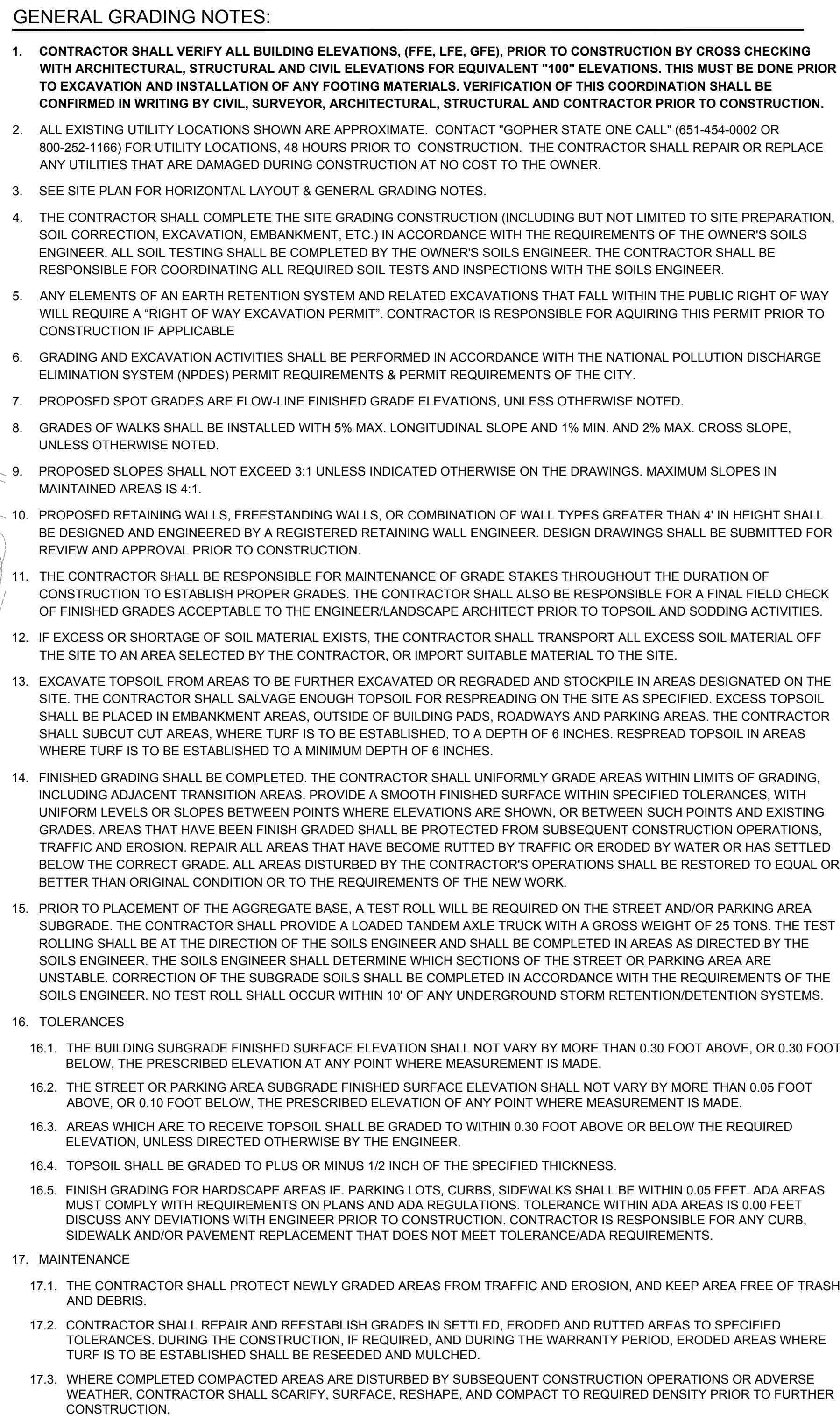
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SEE SHEET C0.1 FOR GENERAL
SITE NOTES

SEE SHEET C2.0 FOR GENERAL
SITE NOTES & LEGEND





1125 -----

1137.0 -----

41.26

891.00 G

891.00 TC

891.00 BS/TS

891.00 ME

GB

TO

EOF=1135.52

CONSTRUCTION LIMITS

EX. 1' CONTOUR ELEVATION INTERVAL

0.5' CONTOUR ELEVATION INTERVAL

SPOT GRADE ELEVATION (GUTTER/FLOW LINE UNLESS OTHERWISE NOTED)

SPOT GRADE ELEVATION GUTTER

SPOT GRADE ELEVATION TOP OF CURB

SPOT GRADE ELEVATION BOTTOM OF STAIRS/TOP OF STAIRS

SPOT GRADE ELEVATION MATCH EXISTING

GRADE BREAK - HIGH POINTS

CURB AND GUTTER (T.O = TIP OUT)

EMERGENCY OVERTFLOW



1" = 20'-0"

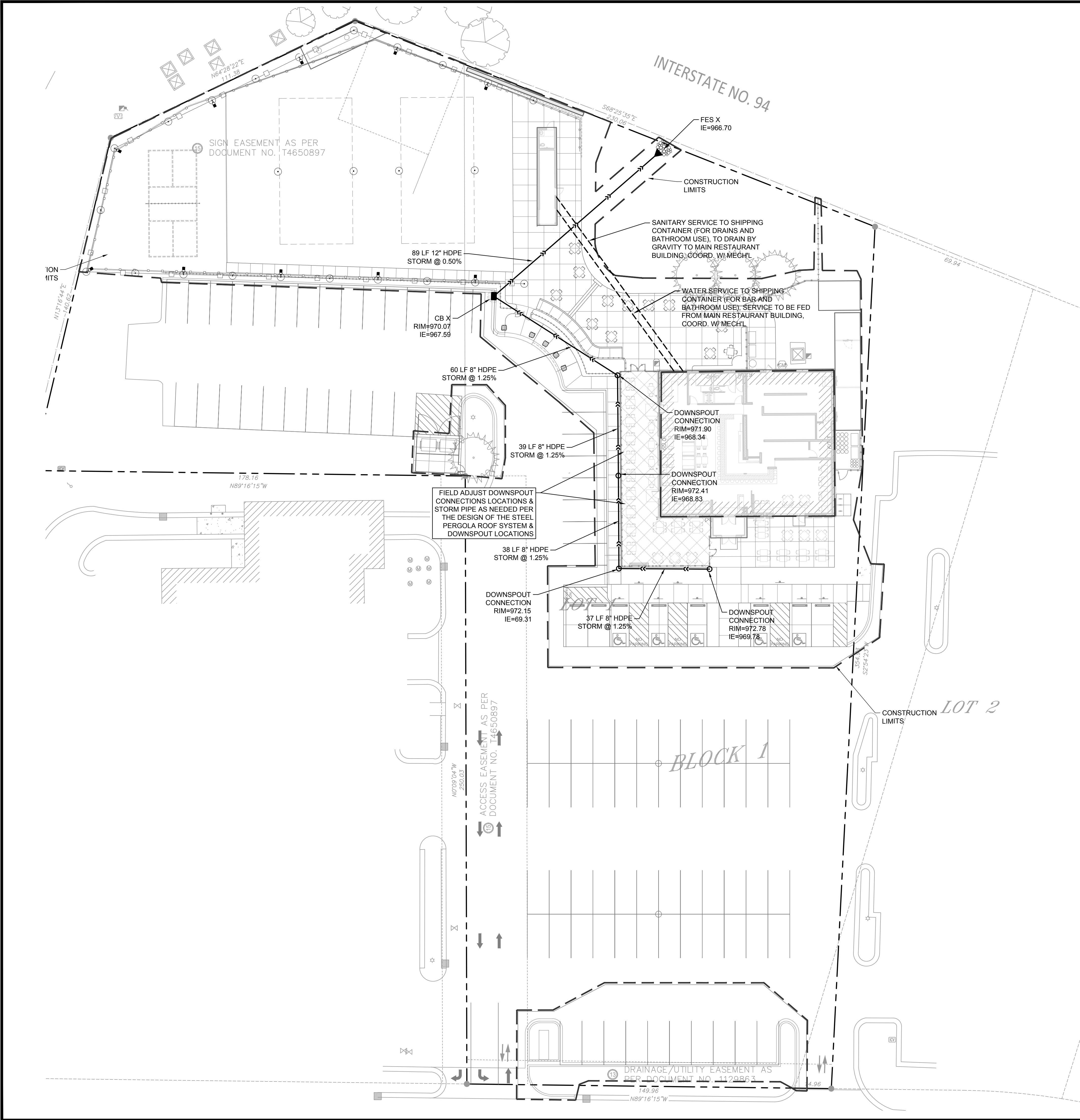


10'-0" 0 20'-0"

civilsitegroup.com 612-615-0060

CRAFT & CREW HOSPITALITY

OWNER



GENERAL UTILITY NOTES:

- ALL EXISTING UTILITY LOCATIONS SHOWN ARE APPROXIMATE. CONTACT "GOPHER STATE ONE CALL" (651-454-0002 OR 800-252-1166) FOR UTILITY LOCATIONS, 48 HOURS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL REPAIR OR REPLACE ANY UTILITIES THAT ARE DAMAGED DURING CONSTRUCTION AT NO COST TO THE OWNER.
- SEE SITE PLAN FOR HORIZONTAL DIMENSIONS AND LAYOUT.
- CONTRACTOR SHALL FIELD VERIFY LOCATION AND ELEVATION OF EXISTING UTILITIES AND TOPOGRAPHIC FEATURES PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY THE ENGINEER OF DISCREPANCIES OR VARIATIONS FROM THE PLANS.
- UTILITY INSTALLATION SHALL CONFORM TO THE CURRENT EDITION OF "STANDARD SPECIFICATIONS FOR WATER MAIN AND SERVICE LINE INSTALLATION" AND "SANITARY SEWER AND STORM SEWER INSTALLATION" AS PREPARED BY THE CITY ENGINEERS ASSOCIATION OF MINNESOTA (CEAM), AND SHALL CONFORM WITH THE REQUIREMENTS OF THE CITY AND THE PROJECT SPECIFICATIONS.
- CASTINGS SHALL BE SALVAGED FROM STRUCTURE REMOVALS AND RE-USED OR PLACED AT THE DIRECTION OF THE OWNER.
- ALL WATER PIPE SHALL BE CLASS 52 DUCTILE IRON PIPE (DIP) AWWA C151, ASME B16.4, AWWA C110, AWWA C153 UNLESS OTHERWISE NOTED.
- ALL SANITARY SEWER SHALL BE SDR 26 POLYVINYL CHLORIDE (PVC) ASTM D3034 & F679, OR SCH 40 ASTM D1785, 2665, ASTM F794, 1866) UNLESS OTHERWISE NOTED.
- ALL STORM SEWER PIPE SHALL BE HDPE ASTM F714 OR F2306 WITH ASTM D3212 SPEC FITTINGS UNLESS OTHERWISE NOTED.
- PIPE LENGTHS SHOWN ARE FROM CENTER TO CENTER OF STRUCTURE OR TO END OF FLARED END SECTION.
- UTILITIES ON THE PLAN ARE SHOWN TO WITHIN 5' OF THE BUILDING FOOTPRINT. THE CONTRACTOR IS ULTIMATELY RESPONSIBLE FOR THE FINAL CONNECTION TO BUILDING LINES. COORDINATE WITH ARCHITECTURAL AND MECHANICAL PLANS.
- CATCH BASINS AND MANHOLES IN PAVED AREAS SHALL BE SUMPED 0.04 FEET. ALL CATCH BASINS IN GUTTERS SHALL BE SUMPED 0.15 FEET PER DETAILS. RIM ELEVATIONS SHOWN ON THIS PLAN DO NOT REFLECT SUMPED ELEVATIONS.
- ALL FIRE HYDRANTS SHALL BE LOCATED 5 FEET BEHIND BACK OF CURB UNLESS OTHERWISE NOTED.
- HYDRANT TYPE, VALVE, AND CONNECTION SHALL BE IN ACCORDANCE WITH CITY REQUIREMENTS. HYDRANT EXTENSIONS ARE INCIDENTAL.
- A MINIMUM OF 8 FEET OF COVER IS REQUIRED OVER ALL WATERMAIN, UNLESS OTHERWISE NOTED. EXTRA DEPTH MAY BE REQUIRED TO MAINTAIN A MINIMUM OF 18" VERTICAL SEPARATION TO SANITARY OR STORM SEWER LINES. EXTRA DEPTH WATERMAIN IS INCIDENTAL.
- A MINIMUM OF 18 INCHES OF VERTICAL SEPARATION AND 10 FEET OF HORIZONTAL SEPARATION IS REQUIRED FOR ALL UTILITIES, UNLESS OTHERWISE NOTED.
- ALL CONNECTIONS TO EXISTING UTILITIES SHALL BE IN ACCORDANCE WITH CITY STANDARDS AND COORDINATED WITH THE CITY PRIOR TO CONSTRUCTION.
- CONNECTIONS TO EXISTING STRUCTURES SHALL BE CORE-DRILLED.
- COORDINATE LOCATIONS AND SIZES OF SERVICE CONNECTIONS WITH THE MECHANICAL DRAWINGS.
- COORDINATE INSTALLATION AND SCHEDULING OF THE INSTALLATION OF UTILITIES WITH ADJACENT CONTRACTORS AND CITY STAFF.
- ALL STREET REPAIRS AND PATCHING SHALL BE PERFORMED PER THE REQUIREMENTS OF THE CITY. ALL PAVEMENT CONNECTIONS SHALL BE SAWCUT. ALL TRAFFIC CONTROLS SHALL BE PROVIDED BY THE CONTRACTOR AND SHALL BE ESTABLISHED PER THE REQUIREMENTS OF THE MINNESOTA MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MMUTCD) AND THE CITY. THIS SHALL INCLUDE BUT NOT BE LIMITED TO SIGNAGE, BARRICADES, FLASHERS, AND FLAGGERS AS NEEDED. ALL PUBLIC STREETS SHALL BE OPEN TO TRAFFIC AT ALL TIMES. NO ROAD CLOSURES SHALL BE PERMITTED WITHOUT APPROVAL BY THE CITY.
- ALL STRUCTURES, PUBLIC AND PRIVATE, SHALL BE ADJUSTED TO PROPOSED GRADES WHERE REQUIRED. THE REQUIREMENTS OF ALL OWNERS MUST BE COMPLIED WITH. STRUCTURES BEING RESET TO PAVED AREAS MUST MEET OWNERS REQUIREMENTS FOR TRAFFIC LOADING.
- CONTRACTOR SHALL COORDINATE ALL WORK WITH PRIVATE UTILITY COMPANIES.
- CONTRACTOR SHALL COORDINATE CONNECTION OF IRRIGATION SERVICE TO UTILITIES. COORDINATE THE INSTALLATION OF IRRIGATION SLEEVES NECESSARY AS TO NOT IMPACT INSTALLATION OF UTILITIES.
- CONTRACTOR SHALL MAINTAIN AS-BUILT PLANS THROUGHOUT CONSTRUCTION AND SUBMIT THESE PLANS TO ENGINEER UPON COMPLETION OF WORK.
- ALL JOINTS AND CONNECTIONS IN STORM SEWER SYSTEM SHALL BE GASTIGHT OR WATERTIGHT. APPROVED RESILIENT RUBBER JOINTS MUST BE USED TO MAKE WATERTIGHT CONNECTIONS TO MANHOLES, CATCHBASINS, OR OTHER STRUCTURES.
- ALL PORTIONS OF THE STORM SEWER SYSTEM LOCATED WITHIN 10 FEET OF THE BUILDING OR WATER SERVICE LINE MUST BE TESTED IN ACCORDANCE WITH MN RULES, CHAPTER 4714, SECTION 1109.0.
- FOR ALL SITES LOCATED IN CLAY SOIL AREAS, DRAIN TILE MUST BE INSTALLED AT ALL LOW POINT CATCH BASINS 25' IN EACH DIRECTION. SEE PLAN AND DETAIL. INSTALL LOW POINT DRAIN TILE PER PLANS AND GEOTECHNICAL REPORT RECOMMENDATIONS AND REQUIREMENTS.

CITY OF ROGERS UTILITY NOTES:

- RESERVED FOR CITY SPECIFIC UTILITY NOTES.

UTILITY PLAN LEGEND:

- | | |
|--|--------------------------|
| | CATCH BASIN |
| | MANHOLE |
| | GATE VALVE AND VALVE BOX |
| | PROPOSED FIRE HYDRANT |
| | DT DRAINTILE |
| | WATER MAIN |
| | SANITARY SEWER |
| | STORM SEWER |
| | FES AND RIP RAP |
| | TRENCH DRAIN |
| | CONSTRUCTION LIMITS |



PRELIMINARY:
NOT FOR
CONSTRUCTION

PROJECT

OWNER

THE BLOCK

21400 JOHN MILLESS DRIVE, ROGERS, MN 55374

CRAFT & CREW HOSPITALITY

819 MAIN STREET, JOPKINS, MN 55343

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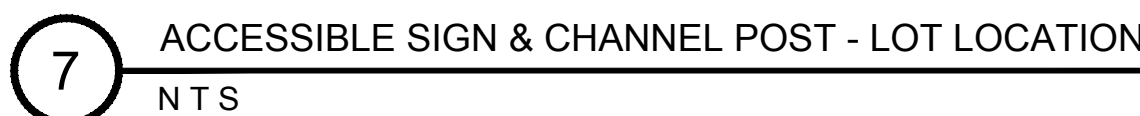
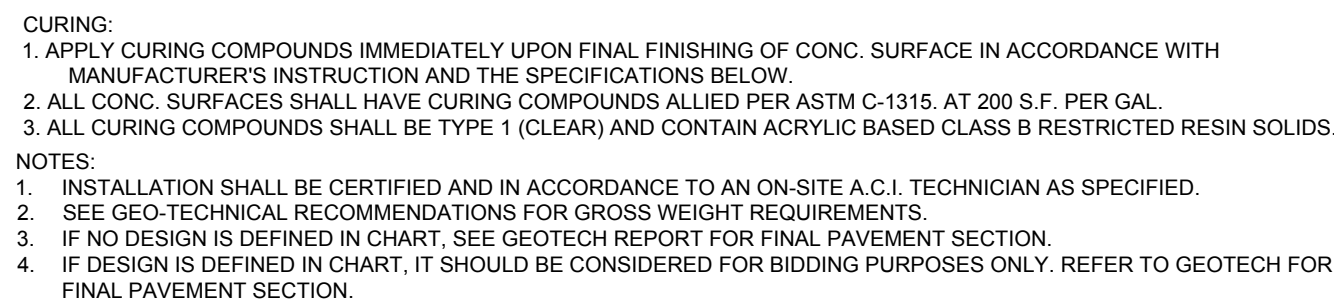
Matthew R. Pavak
DATE 09/20/24 LICENSE NO. 44263

ISSUE/SUBMITTAL SUMMARY	
DATE	DESCRIPTION

09/20/24	BIT SET/PERMIT SET & CITY SUBMITAL
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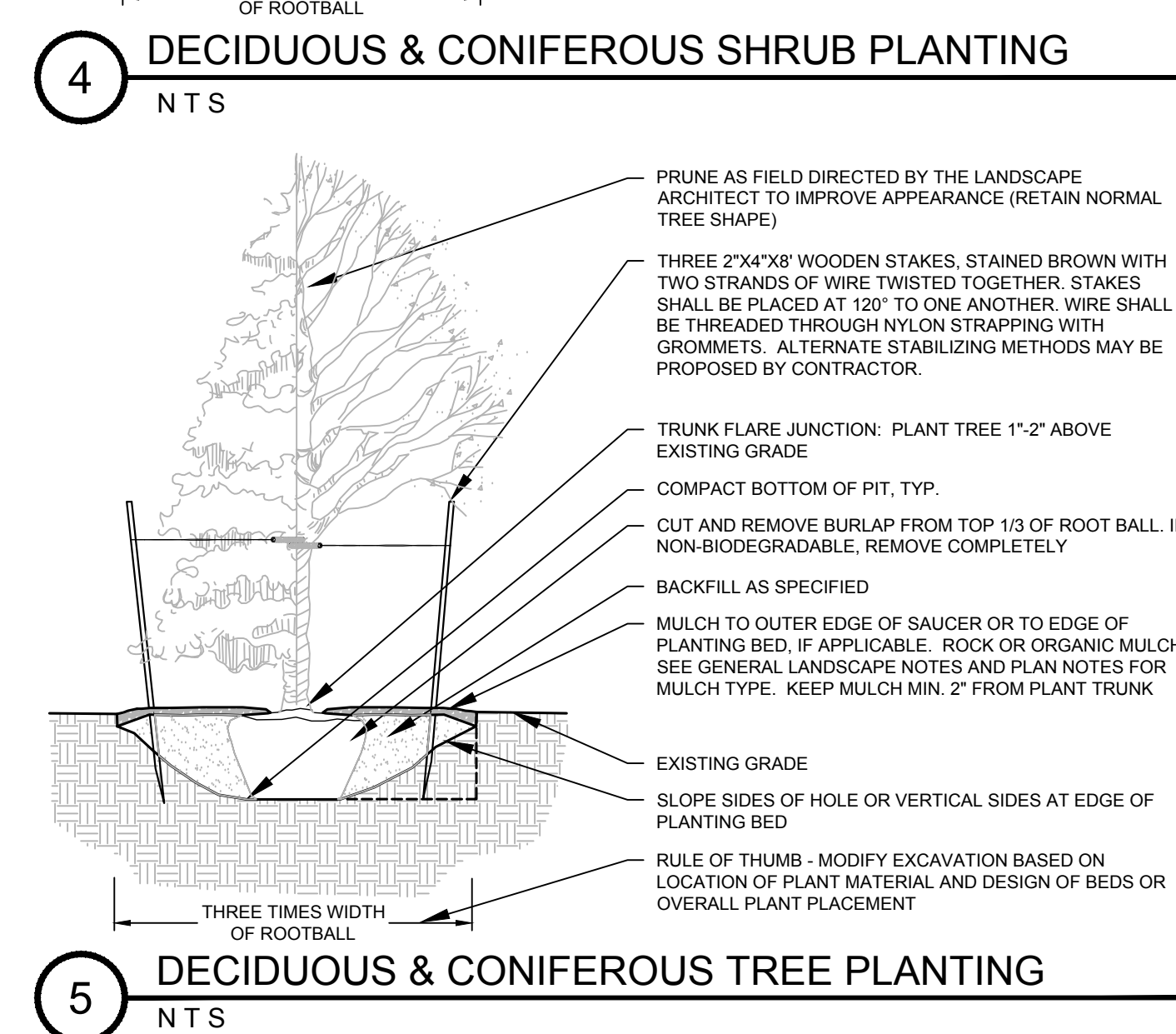
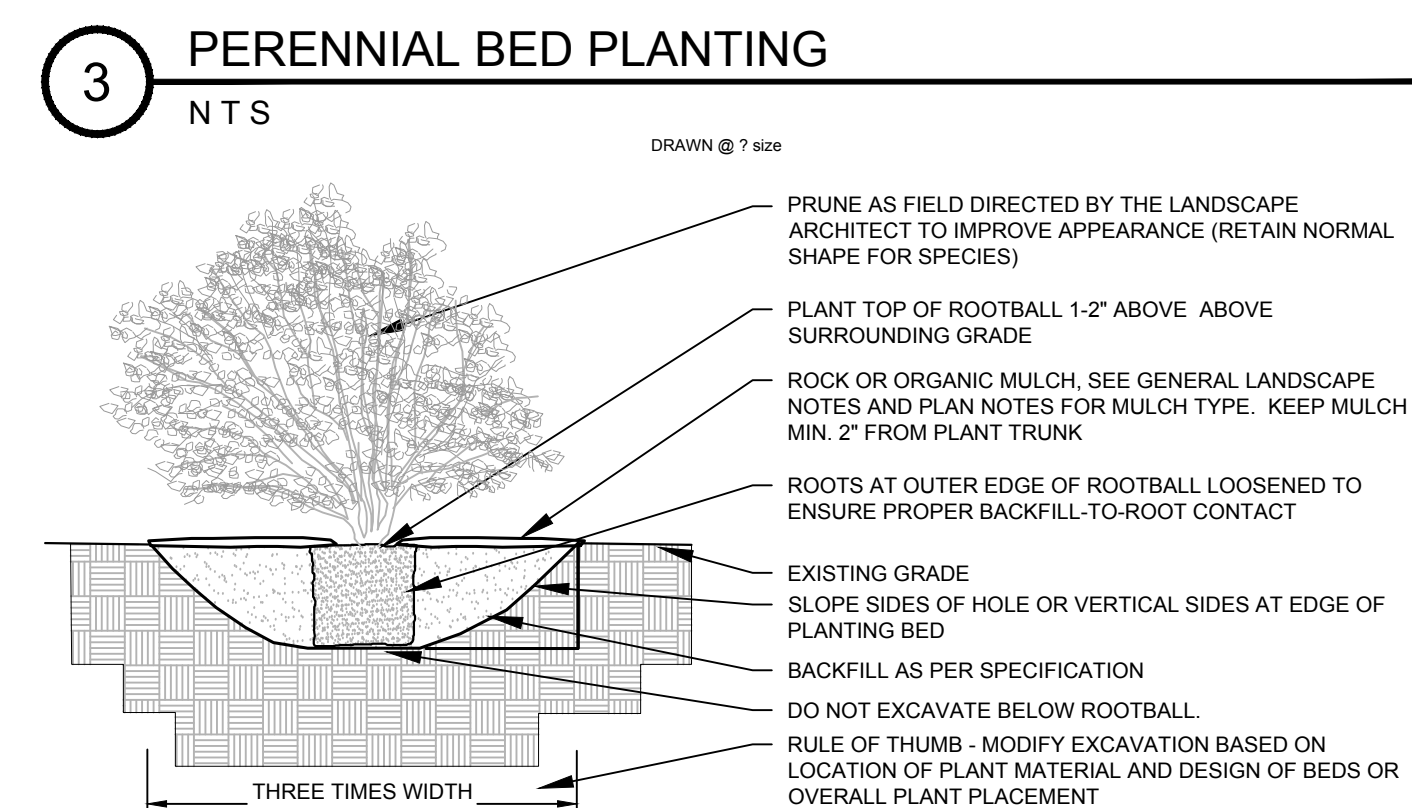
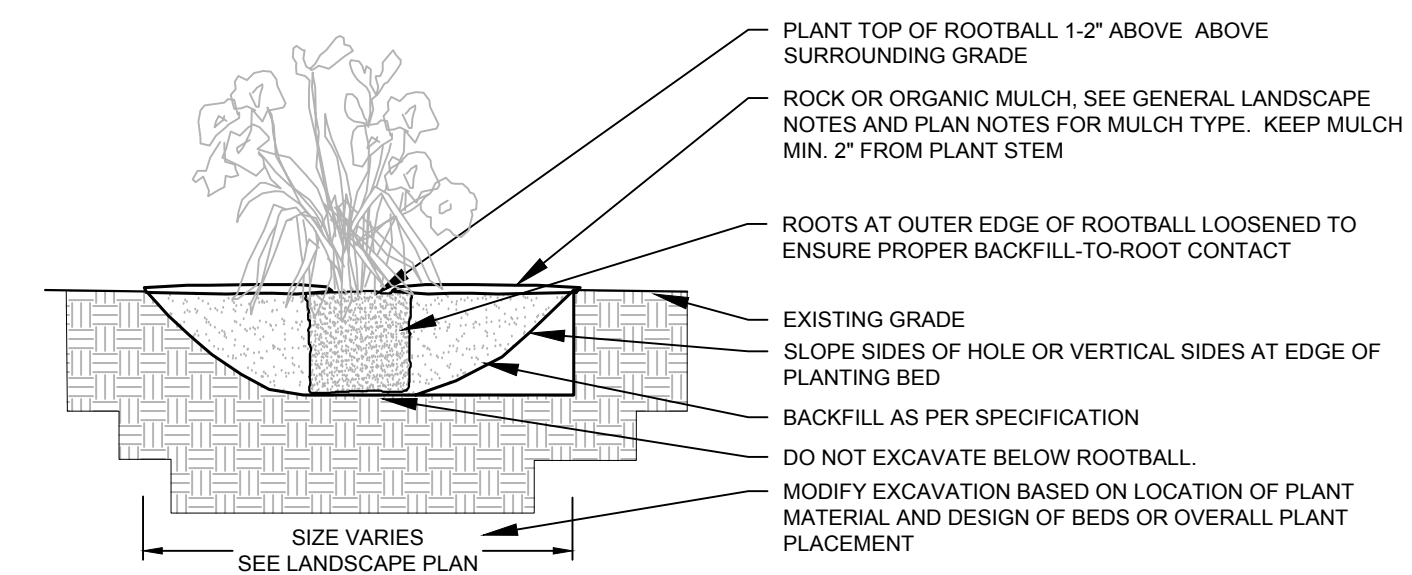
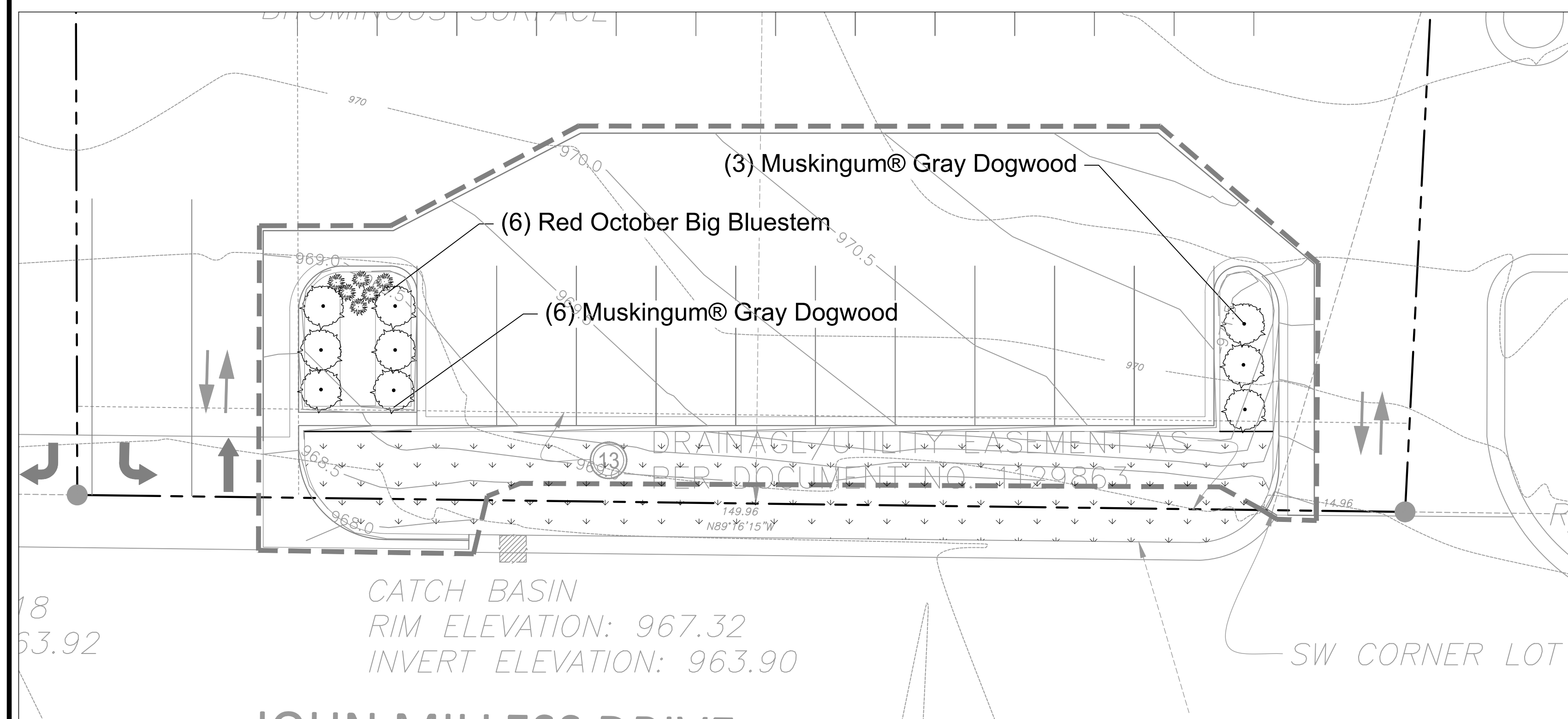
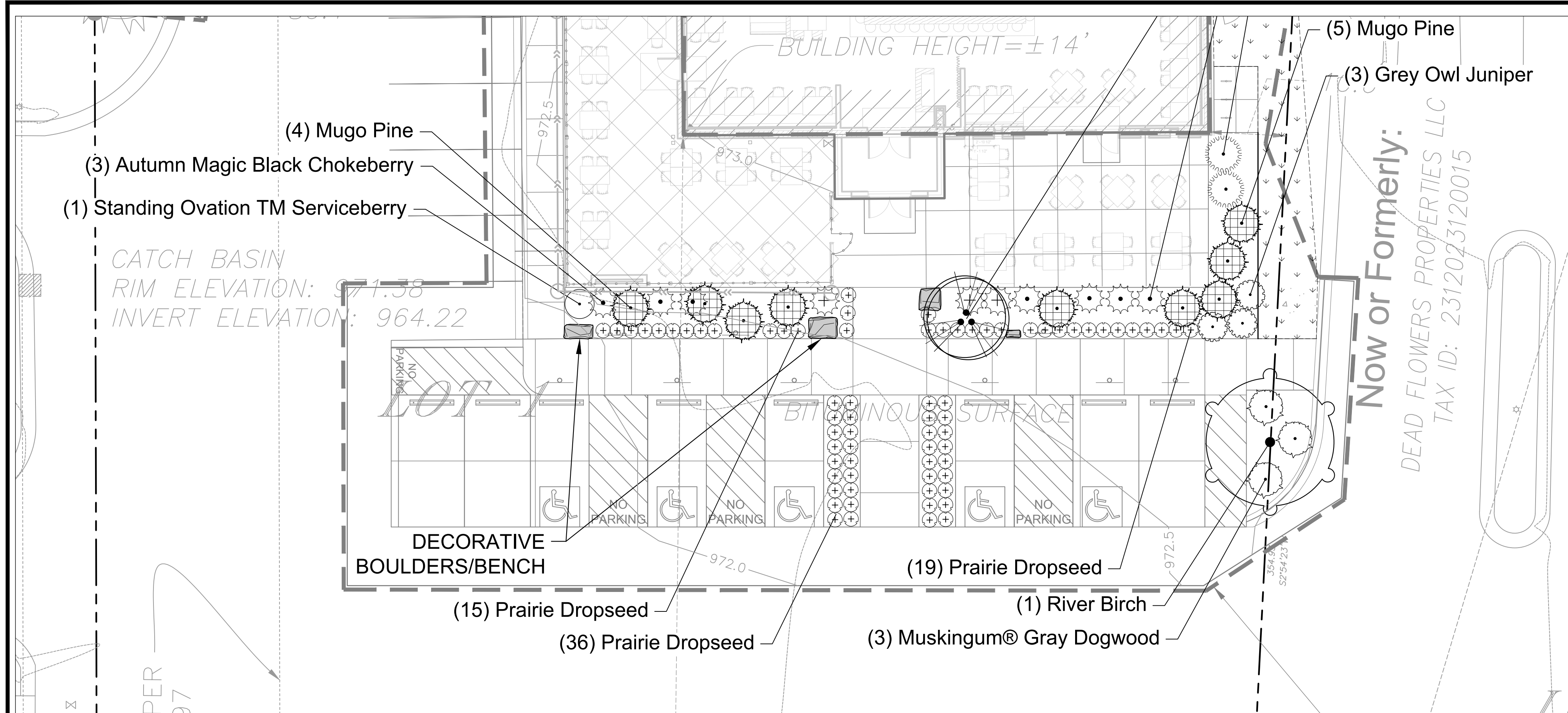
PROJECT MANAGER	WILL BRUSTLE
CONTACT NUMBER	612-615-0060 X 711
DRAWN BY	WILL FIB
REVIEWED BY	
PROJECT NUMBER	56412

REVISION SUMMARY	
DATE	DESCRIPTION



NOTES:		PLAN
	PIPE SIZES LARGER THAN THOSE SHOWN REQUIRE A SPECIAL DESIGN.	
	REQUIREMENTS FOR RIPRAP SIZE AND THICKNESS AND FILLER BLANKET WILL BE DESIGNATED IN THE PLANS.	
①	FOR PIPES GREATER THAN OR EQUAL TO 30" USE 1.5	
②	THE CONTRACTOR, AT HIS OPTION, MAY SUBSTITUTE A GEOTEXTILE FABRIC, MNDOT SPEC. 3733, FOR THE GRANULAR FILLER BLANKET UNLESS OTHERWISE SPECIFIED IN THE PLANS. THE FABRIC SHOULD COVER THE AREA OF THE RIPRAP AND EXTEND UNDER THE CURB AND UNDER THE DRIVE APPROX. 3 FT.	
	DIMENSION E IS GIVEN ON MNDOT STANDARD PLATES 3100 AND 3110.	





SEE SHEET L1.0 FOR GENERAL
LANDSCAPE NOTES & LEGEND



Know what's below.
Call before you dig.

1. ALL EXISTING UTILITY LOCATIONS SHOWN ARE APPROXIMATE. CONTACT "GOPHER STATE ONE CALL" (651-454-0002 OR 800-252-1166) FOR UTILITY LOCATIONS, 48 HOURS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL REPAIR OR REPLACE ANY UTILITIES THAT ARE DAMAGED DURING CONSTRUCTION AT NO COST TO THE OWNER.
2. THIS PROJECT IS LESS THAN ONE ACRE AND WILL NOT REQUIRE AN MPCA NPDES PERMIT. CONTRACTOR IS RESPONSIBLE FOR OBTAINING ANY EROSION CONTROL PERMITS REQUIRED BY THE CITY.
3. SEE SHEETS SW1.0 - SW1.3 FOR ALL EROSION CONTROL NOTES, DESCRIPTIONS, AND PRACTICES.
4. SEE GRADING PLAN FOR ADDITIONAL GRADING AND EROSION CONTROL NOTES.
5. CONTRACTOR IS RESPONSIBLE FOR SWPPP IMPLEMENTATION, INSPECTIONS, AND COMPLIANCE WITH NPDES PERMIT.

1. RESERVED FOR CITY SPECIFIC EROSION CONTROL NOTES.

**PRELIMINARY:
NOT FOR
CONSTRUCTION**

PROJECT

THE BLOCK

21400 JOHN MILLESS DRIVE, ROGERS, MN 55374

OWNER

CRAFT & CREW HOSPITALITY

818 MAIN STREET • HOPKINS, MN 55403

I HEREBY CERTIFY THAT THIS PLAN,
SPECIFICATION, OR REPORT WAS
PREPARED BY ME OR UNDER MY DIRECT
SUPERVISION AND THAT I AM A DULY
LICENSED PROFESSIONAL ENGINEER
UNDER THE LAWS OF THE STATE OF
MINNESOTA.


Matthew R. Pavak
DATE 09/20/24 LICENSE NO. 44263

ISSUE/SUBMITTAL SUMMARY	
DATE	DESCRIPTION
09/20/24	RIT SET/PERMIT SET & CITY SUBMITTAL

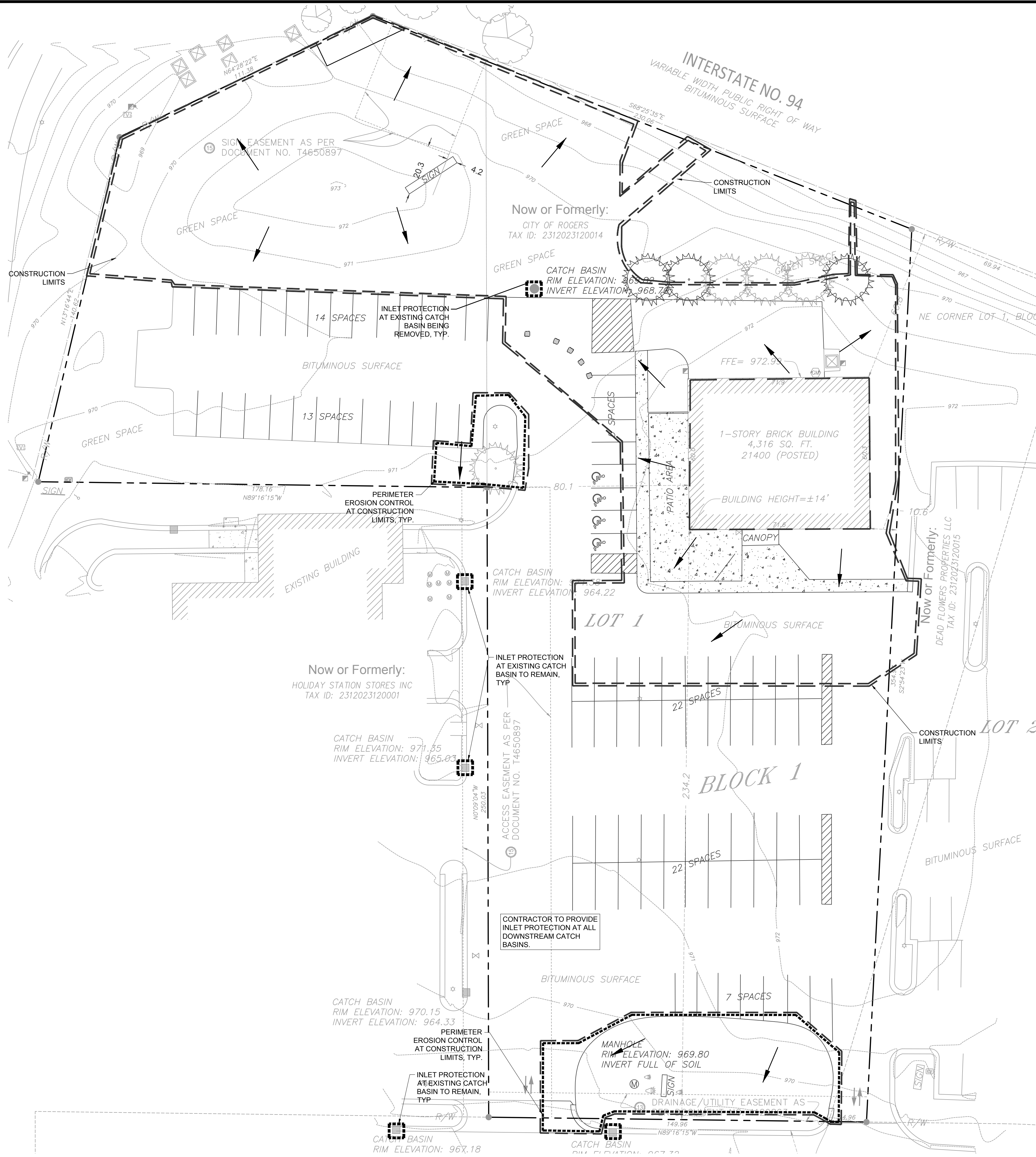
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PROJECT MANAGER	WILL BRUESTLE
CONTACT NUMBER	612-615-0960 X 711
DRAWN BY	WB, RB
REVIEWED BY	
PROJECT NUMBER	24412

[illegible]SWPPP - EXISTING
CONDITIONS

SW1.0

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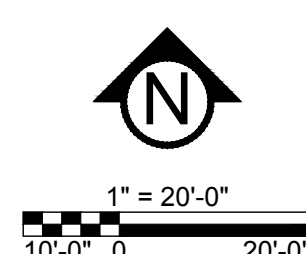


ALL SPECIFIED EROSION AND SEDIMENT CONTROL PRACTICES, AND MEASURES CONTAINED IN THIS SWPPP ARE THE MINIMUM REQUIREMENTS. ADDITIONAL PRACTICES MAY BE REQUIRED DURING THE COURSE OF CONSTRUCTION.

	EX. 1" CONTOUR ELEVATION INTERVAL DRAINAGE ARROW SILT FENCE / BIOROLL - GRADING LIMIT INLET PROTECTION STABILIZED CONSTRUCTION ENTRANCE
---	--



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PRELIMINARY:
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CONSTRUCTION

PROJECT

THE BLOCK

21400 JOHN MILLESS DRIVE, ROGERS, MN 55374

OWNER

CRAFT & CREW HOSPITALITY

819 MAIN STREET, HOPKINS, MN 55343

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Matthew R. Pavek
DATE 09/20/24 LICENSE NO. 44263

ISSUE/SUBMITTAL SUMMARY	
DATE	DESCRIPTION
09/20/24	BIT SET/PERMIT SET & CITY SUBMITTAL

[illegible][illegible]SWPPP - PROPOSED
CONDITIONS

SW1.1

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SWPPP NOTES:

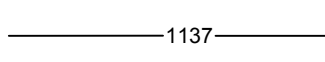
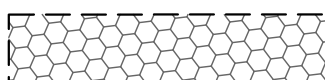
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5. CONTRACTOR IS RESPONSIBLE FOR SWPPP IMPLEMENTATION, INSPECTIONS, AND COMPLIANCE WITH NPDES PERMIT.

CITY OF ROGERS EROSION CONTROL NOTES:

1. RESERVED FOR CITY SPECIFIC EROSION CONTROL NOTES.

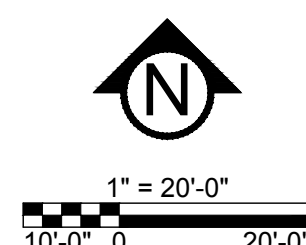
ALL SPECIFIED EROSION AND SEDIMENT CONTROL PRACTICES, AND MEASURES CONTAINED IN THIS SWPPP ARE THE MINIMUM REQUIREMENTS. ADDITIONAL PRACTICES MAY BE REQUIRED DURING THE COURSE OF CONSTRUCTION.

SWPPP LEGEND:

	EX. 1' CONTOUR ELEVATION INTERVAL 1.0' CONTOUR ELEVATION INTERVAL
	DRAINAGE ARROW
	SILT FENCE / BIOROLL - GRADING LIMIT
	INLET PROTECTION
	STABILIZED CONSTRUCTION ENTRANCE
	EROSION CONTROL BLANKET



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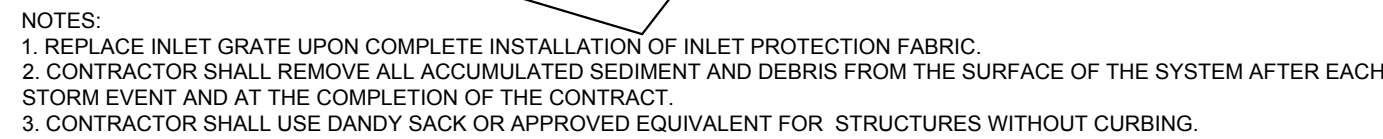
[illegible][illegible]

SWPPP - DETAILS

SW1.2

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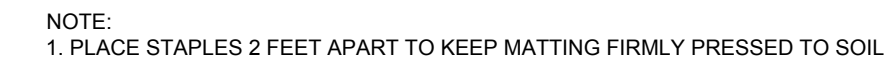


1 CURB INLET SACK

NTS

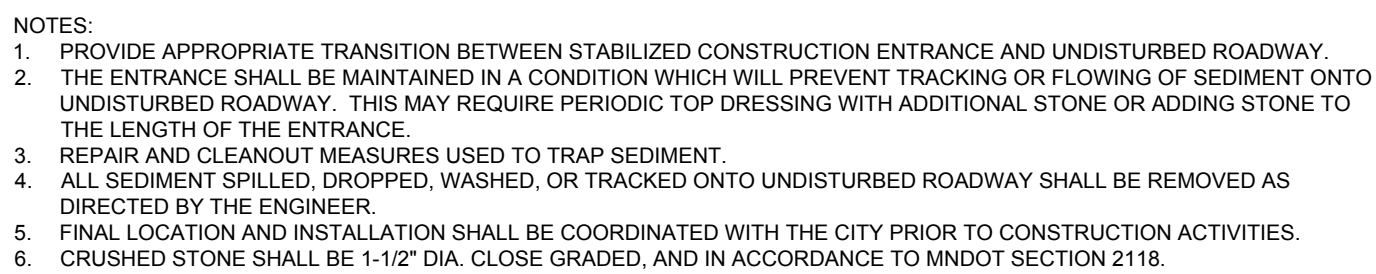
 SEDIMENT FENCE

2 NTS



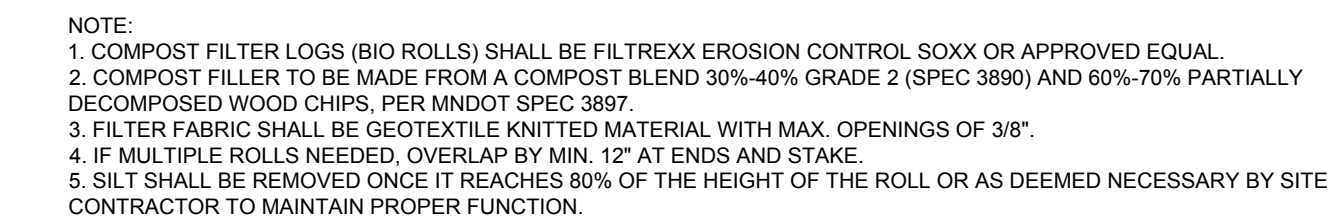
② EROSION BLANKET

3 NTS



STABILIZED CONSTRUCTION ACCESS

4 NTS



SEDIMENT BIO-ROLL / COMPOST FILTER LOG

5 NTS



INLET PROTECTION ROCK FILTER

6 — NTS

