



**MINNEHAHA CREEK**  
**WATERSHED DISTRICT**  
QUALITY OF WATER, QUALITY OF LIFE

**Meeting:** Board of Managers  
**Meeting date:** 4/24/2024  
**Agenda Item #:** 11.2  
**Request for Board Action**

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<b>Title:</b>	County Road 6 Pond Retrofit Project	
<b>Resolution number:</b>	25-027: Approval of 90 Percent Design Plans for the County Road 6 Pond Retrofit Project and Authorization to Solicit Bids;  25-028: Authorizing Land Alteration and Flowage Agreement for the County Road 6 Pond Retrofit Project	
<b>Prepared by:</b>	Name: Kailey Cermak Phone: 952.641.4501 kcermak@minnehahacreek.org	
<b>Reviewed by:</b>	Name/Title: Michael Hayman, Project Planning Director; Chuck Holtman, MCWD General Counsel	
<b>Recommended action:</b>	Staff recommends Board approval of the County Road 6 Pond Retrofit Project 90% design plans and authorizes staff to solicit bids during the optimal bid window, likely late-summer 2025. Staff also recommends that the Board authorize the execution of land alteration and flowage agreement, allowing MCWD to expand the pond footprint onto a private adjacent parcel.	
<b>Schedule:</b>	May 2025: Final design completed and bid set prepared Summer 2025: Bid solicitation and construction contracting Fall 2025: Notice of award for construction and construction oversight contracting Winter 2025-2026: Construction of pond retrofit	
<b>Budget considerations:</b>	Fund name and code: CR-6 Pond Retrofit (3159) 2025 Fund budget: \$532,444 Expenditures to date: \$120,580	
<b>Past Board action:</b>	Res # 24-031	Authorizing County Road 6 Pond Retrofit Design Contract
	Res # 24-018	Ordering the County Road 6 Pond Retrofit Project and Authorizing Request for Proposals for Design and Engineering Services
	Res # 23-018	Authorization to Execute a Contract for the County Road 6 Stormwater Pond Retrofit Feasibility Study
	Res # 19-039	Authorization to Release RFP for Long Lake Creek Subwatershed Assessment
	Res # 18-084	Authorization to Apply for BWSR CWF Competitive Grant Funding for Long Lake Creek Subwatershed Assessment
	Res # 18-066	Resolution of Support for the Long Lake Creek Subwatershed Partnership

**Background:**

In 1998, as a result of a Clean Water Partnership diagnostic study, MCWD constructed the County Road 6 Stormwater Pond (CR6 pond or pond) to capture and treat 3,370 acres of runoff, reducing sediment and nutrient loading to impaired Long Lake, which sits just downstream of the pond. The 2.5-acre pond, located in the city of Orono, sits within a District-held easement to ensure that long-term maintenance, monitoring, and retrofits to the pond can occur.

As part of the Long Lake Creek Subwatershed Roadmap—a collaborative effort with Long Lake Waters Association and the cities of Long Lake, Medina, and Orono to identify and prioritize water quality improvement projects—regional stormwater facilities were identified as the highest priority for near-term implementation, given their high-impact. At the same time, monitoring of the CR6 pond indicated it was underperforming, further reinforcing it as a near-term priority and underscoring the potential benefits of a retrofit.

In 2023, MCWD contracted with Stantec to conduct a feasibility study to evaluate retrofit options focused on maximizing particulate phosphorus removal. Ultimately, a combination of a gravity sand filter bench and an earthen berm emerged as the most cost-effective solution. After obtaining a resolution of support for the project from the city of Orono, MCWD formally ordered the project in March 2024, and soon after, on May 9, 2024, awarded a contract with Stantec for engineering and design services.

Staff provided a 30% design update at the Policy and Planning Committee (PPC) on August 22, 2024. Early work focused on wetland delineations, bathymetric mapping, and topographic surveys, to refine MCWD's understanding of the site's existing condition and guide initial design layouts. A design charrette site visit further evaluated filter bench positions, viewshed impacts, preventative maintenance, and potential regulatory constraints. Key decisions made during the 30% design phase included (1) selecting a sand-only unvegetated filter media, (2) confirming the feasibility and benefits of the earthen berm, and (3) identifying the general position of the filter bench to maintain a maintenance corridor off the county road.

A 60% design update was provided to the Board at the September 26, 2024, Board Meeting. The project had advanced through initial Hydraulic and Hydrologic (H&H) modeling and water quality modeling to optimize design elements, with a continued focus on maximizing the volume of water passing through the filter while managing regulatory and site constraints. Staff communicated the need to continue refining weir modifications, the drain tile system, and the operations and maintenance plan. In addition, staff highlighted a potential opportunity to further optimize the pond by expanding it onto the adjacent property in the northwest corner. Staff committed to carrying out conversations with the property owners and evaluating the benefits of incorporating this concept into the final design. Staff also noted plans to assess accumulated sediment within the pond and evaluate the potential to stack an early maintenance dredging into the project as a cost-saving opportunity.

Following the 60% design update, staff continued discussions with the adjacent property owners at 1525 Sixth Ave. N (the Epleys). These conversations included evaluating various agreement structures to support construction access, long-term flowage rights, and negotiating terms, including financial considerations, to facilitate the proposed pond expansion. Staff and the property owners identified a mutually beneficial arrangement, which enabled the pond expansion to be included in final design.

### **Final Design Update**

The project has reached the 90% design milestone, which includes 90% plan sets, a technical design memorandum, an operations and maintenance manual, modeling results, and an updated opinion of probable cost. The pond retrofit is projected to remove an additional 26-42 pounds of total phosphorus annually, contributing measurable progress toward Long Lake's Total Maximum Daily Load reduction goals.

Permit applications have been submitted to all necessary agencies, including MCWD, and are under review. On April 4, 2025, MCWD hosted a public meeting at Orono City Hall, which was noticed to all residents within 1,000 feet of the project, to provide information on the project design and its benefits to downstream Long Lake. The meeting was well attended, including Orono Council Members, and attendees expressed positive feedback regarding the project.

### **Pond Expansion**

The pond's original construction and grading was constrained by property boundaries, particularly in the northwest corner. The proposed 0.12-acre expansion onto the adjacent Epley property at 1525 Sixth Ave. N will (1) offset flood storage lost due to the filter bench, (2) increase the settling and treatment capacity of the north cell, and (3) capture direct roadside runoff.

Final draft terms have been developed, reviewed, and agreed to by the Epleys, MCWD staff, and MCWD Legal Counsel. This agreement is critical to supporting the overall project design as it grants MCWD the ability to (1) conduct construction activity and alter the adjoining land and (2) permanently place water on the adjoining property. In-lieu of cash compensation, the Epleys requested to take advantage of the mobilized equipment already on-site to have a walking path and landing installed as part of the project, providing them access to the expanded pond. Staff will provide an overview of the terms at the April 24, 2025 Board Meeting prior to the Board's consideration.

The Epleys do not wish to have a recorded easement on their property title. Accordingly, the MCWD rights to expand the pond and maintain it are in the form of an agreement. If the Epleys were to sell the property, MCWD's right to enter the portion of the basin on the property would lapse. However, the need to do so is expected to be very limited, and there would seem little reason why a successor property owner would withhold permission. Additionally, the pond is protected from future alteration through existing natural resource regulations, further reducing the risk of future impacts to the pond's overall function. For these reasons, staff finds the risk to be very small and a matter to be addressed if and when the circumstance arises.

#### Dredging

Since the pond will be dewatered to support construction, MCWD can proactively complete a maintenance dredging at the time of the project to remove accumulated sediment and restore treatment and storage capacity. Sediment testing has confirmed that the dredged material will not be subject to special disposal requirements. Dredging will be concentrated in the north cell, where the majority of sediment has settled. Approximately 2,780 cubic yards of sediment will be removed, restoring the north cell to its original base elevation of 939.00 ft.

#### Berm

The proposed design raises the elevation of the low flow-through area between the pond's two cells to further define and separate them, promoting additional settling within the north cell. This modification will enhance the longevity of the filter media and help concentrate future maintenance dredging within the north cell. Additionally, the entire berm will be raised by one foot to accommodate anticipated water level changes. The agreement with the Epleys allows the raised berm to naturally tie into existing grades in the northwest corner.

#### Filter Bench and Drain Tile

The designed filter bench has a surface area of 11,461 square feet and is located in the southeast corner of the pond. During storm events, when the pond reaches an elevation of 951.2 ft, water will flow over the bench and filter vertically through two feet of fine-grained sand media. This filtration process provides phosphorus removal before the discharge enters the underlying drain tile network. This network consists of seven 6'-diameter PVC pipes installed beneath the maintenance road at a 0.5% slope, and discharges to the downstream wetland and channel.

#### Weir Modifications

To enable the filter bench to function as designed, modifications to the pond's existing outlet structure are required. The existing weir has five low-flow openings and an overflow elevation of 950.8 ft, preventing water from reliably reaching the filter (951.2 ft) during storm events. To address this, the proposed design includes two key modifications to the weir: (1) plugging the existing low-flow openings within the sheet pile weir and (2) installing an extension to raise the overflow elevation to 952.0 ft. The adjustments are designed to maximize the volume of water treated by the filter while maintaining existing flood risk conditions upstream and downstream.

#### **Cost Estimate**

An itemized 90% design-level opinion of probable cost has been prepared and is included in the 90% design package. Table 1 breaks down the total construction cost estimate into categories for the pond retrofit, maintenance dredging, and construction oversight. All project costs are planned to be funded by means of the District ad valorem tax levy.

Project Element	Cost Estimate
Pond Retrofit	525,000
Maintenance Dredging	153,000
Construction Oversight	45,000
Total:	723,000

At the April 24, 2025 Board of Managers meeting, staff will give a presentation outlining the 90% design plans and the terms of the construction and flowage agreement for work on the adjacent property. After any final Board input, final review and preparation of the plan set and technical specifications for bid will be underway, constituting 100% design completion. Staff will recommend that the Board approve 90% design plans and authorize execution of the agreement.

#### **Attachments**

- Attachment 1: County Road 6 Pond Retrofit 90% Design Package
- Attachment 2: Land Alteration and Flowage Agreement



## RESOLUTION

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**Resolution number:** 25-027

**Title:** Approval of 90 Percent Design Plans for the County Road 6 Pond Retrofit Project and Authorization to Solicit Bids

- WHEREAS in 1998, following a diagnostic study of the Long Lake subwatershed, the Minnehaha Creek Watershed District (MCWD) constructed the Country Road 6 pond to reduce sediment and nutrient loading to Long Lake;
- WHEREAS a regional partnership was formed in 2018 among the Cities of Medina, Long Lake and Orono, the Long Lake Waters Association, and MCWD to pursue water quality improvements in the Long Lake Creek Subwatershed;
- WHEREAS in 2018, with support from the partnership, MCWD obtained state grant funding and led a subwatershed assessment to provide a scientific understanding of the system as a whole, identify cost-effective projects and strategies, and develop an actionable roadmap for implementation;
- WHEREAS this work resulted in what is formally referred to as the Long Lake Creek Roadmap (Roadmap) that identified a suite of projects for advancement based on their cost-effectiveness and feasibility to implement. These projects were further categorized based on an implementation strategy, which includes (1) regional stormwater treatment, (2) landscape projects, and (3) internal load management;
- WHEREAS the enhancement and addition of regional treatment is recommended as the first priority due to the ability to cost-effectively treat a large drainage area while localized projects are implemented over time;
- WHEREAS the MCWD 2018-27 Watershed Management Plan (WMP), at Table 3.11, identifies for capital project implementation the construction of infiltration or filtration basins and devices within the Long Lake Creek Subwatershed to reduce nutrient loadings to Long Lake;
- WHEREAS the roadmap identified the County Road 6 (CR-6) Pond, located in the city of Orono on an easement already held by MCWD, as a regional stormwater opportunity that looks to retrofit the existing pond to enhance its performance. Such a project thereafter was included in the MCWD's Capital Improvement Plan (CIP) and budget to reduce nutrient loading to Long Lake;
- WHEREAS on April 13, 2023, the MCWD Board of Managers ("Board") approved a contract with Stantec to conduct a feasibility study to explore retrofit opportunities, which identified the combination of a gravity sand filter bench and an earthen berm (the "Project") as the most cost-effective solution;
- WHEREAS on March 11, 2024, the Orono City Council adopted a resolution of support for the Long Lake Creek Subwatershed Partnership and the Project;
- WHEREAS on March 14, 2024 the Board's Operations and Programs committee reviewed the feasibility study and staff's recommendation to pursue the two project concepts in combination for stacked water quality benefits;

WHEREAS on March 28, 2024, the Board, after public hearing, formally ordered the CR-6 Pond Retrofit Project and on May 9, 2024, following a competitive process, the Board authorized execution of a contract with Stantec for design and engineering services for the Project;

WHEREAS on August 22, 2024 the Board's Policy and Planning Committee received a 30 percent design update and provided feedback and direction to staff for continued design work;

WHEREAS on September 26, 2024, the Board reviewed 60% plans for the Project and staff committed to exploring the opportunity to enhance the project through a pond expansion in the northwest corner, and MCWD has reached terms with the affected property owners to allow an expansion;

WHEREAS on April 4, 2025, MCWD hosted a public meeting at Orono City Hall, which had been noticed to all residents within 1,000 feet of the project, to provide information on the project and its benefits to downstream Long Lake;

WHEREAS on April 24, 2025, the Board reviewed a final design memorandum, 90 percent design plans, and a final opinion of probable cost for the modifications to retrofit the CR6 Pond and improve its effectiveness;

**NOW, THEREFORE, BE IT RESOLVED** that the Minnehaha Creek Watershed District Board of Managers approves the 90 percent design for the County Road 6 Pond Retrofit Project and directs the engineer to prepare conforming final plans for the purpose of soliciting bids;

**BE IT FURTHER RESOLVED** that the MCWD Board of Managers authorizes the District Administrator, on advice of counsel, and once an agreement is in place with the owner of the property onto which the basin is to be extended, to solicit bids for construction during the appropriate bid period to allow Project construction during the winter of 2025-2026.

Resolution Number 25-027 was moved by Manager \_\_\_\_\_, seconded by Manager \_\_\_\_\_. Motion to adopt the resolution \_\_\_ ayes, \_\_\_ nays, \_\_\_ abstentions. Date: 4/24/2025

\_\_\_\_\_  
Secretary Date: \_\_\_\_\_



## RESOLUTION

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**Resolution number:** 25-028

**Title:** Authorizing Land Alteration and Flowage Agreement for the County Road 6 Pond Retrofit Project

- WHEREAS in 1998, following a diagnostic study of the Long Lake subwatershed, the Minnehaha Creek Watershed District (MCWD) constructed the Country Road 6 pond to reduce sediment and nutrient loading to Long Lake;
- WHEREAS a regional partnership was formed in 2018 among the Cities of Medina, Long Lake and Orono, the Long Lake Waters Association, and MCWD to pursue water quality improvements in the Long Lake Creek Subwatershed;
- WHEREAS in 2018, with support from the partnership, MCWD obtained state grant funding and led a subwatershed assessment to provide a scientific understanding of the system as a whole, identify cost-effective projects and strategies, and develop an actionable roadmap for implementation;
- WHEREAS this work resulted in what is formally referred to as the Long Lake Creek Roadmap (Roadmap) that identified a suite of projects for advancement based on their cost-effectiveness and feasibility to implement. These projects were further categorized based on an implementation strategy, which includes (1) regional stormwater treatment, (2) landscape projects, and (3) internal load management;
- WHEREAS the enhancement and addition of regional treatment is recommended as the first priority due to the ability to cost-effectively treat a large drainage area while localized projects are implemented over time;
- WHEREAS the MCWD 2018-27 Watershed Management Plan (WMP), at Table 3.11, identifies for capital project implementation the construction of infiltration or filtration basins and devices within the Long Lake Creek Subwatershed to reduce nutrient loadings to Long Lake;
- WHEREAS the roadmap identified the County Road 6 (CR-6) Pond, located in the city of Orono on an easement already held by MCWD, as a regional stormwater opportunity that looks to retrofit the existing pond to enhance its performance. Such a project thereafter was included in the MCWD's Capital Improvement Plan (CIP) and budget to reduce nutrient loading to Long Lake;
- WHEREAS on April 13, 2023, the MCWD Board of Managers ("Board") approved a contract with Stantec to conduct a feasibility study to explore retrofit opportunities, which identified the combination of a gravity sand filter bench and an earthen berm (the "Project") as the most cost-effective solution;
- WHEREAS on March 11, 2024, the Orono City Council adopted a resolution of support for the Long Lake Creek Subwatershed Partnership and the Project;
- WHEREAS on March 14, 2024 the Board's Operations and Programs committee reviewed the feasibility study and staff's recommendation to pursue the two project concepts in combination for stacked water quality benefits;

WHEREAS on March 28, 2024, the Board, after public hearing, formally ordered the CR-6 Pond Retrofit Project and on May 9, 2024, following a competitive process, the Board authorized execution of a contract with Stantec for design and engineering services for the Project;

WHEREAS on August 22, 2024 the Board's Policy and Planning Committee received a 30 percent design update and provided feedback and direction to staff for continued design work;

WHEREAS on September 26, 2024, the Board reviewed 60% plans for the Project and staff committed to exploring the opportunity to optimize the project even further through a pond expansion onto adjacent property in the northwest corner;

WHEREAS staff engaged the adjacent property owners to discuss their willingness to accommodate a pond expansion onto their property, and MCWD and the property owners have reached terms of an agreement to allow MCWD to construct and maintain the expansion and accommodate the flowage changes resulting from the project, in return for MCWD's performance of work-in-kind, during construction, to construct an unpaved walking path and landing;

WHEREAS on April 24, 2025, the Board reviewed a final design memorandum, 90 percent design plans, and a final opinion of probable cost for the modifications to retrofit the CR6 Pond and improve its effectiveness, and determined to proceed to solicit bids for construction, at such time as MCWD and the property owners have signed an agreement to memorialize the above-referenced terms;

**NOW, THEREFORE, BE IT RESOLVED** that the Minnehaha Creek Watershed District Board of Managers authorizes the District Administrator, on advice of counsel, to execute an agreement for land alteration and flowage with the adjacent property owners, to allow for construction of the County Road 6 Pond Retrofit Project as designed.

Resolution Number 25-028 was moved by Manager \_\_\_\_\_, seconded by Manager \_\_\_\_\_. Motion to adopt the resolution \_\_\_\_ ayes, \_\_\_\_ nays, \_\_\_\_ abstentions. Date: 4/24/2025

\_\_\_\_\_  
Secretary Date: \_\_\_\_\_



**Attachment 1: County Road 6 Pond Retrofit 90% Design Package**

To: Minnehaha Creek Watershed District      From: Chris Meehan (PE),  
Nick Wyers (PE),  
Stantec

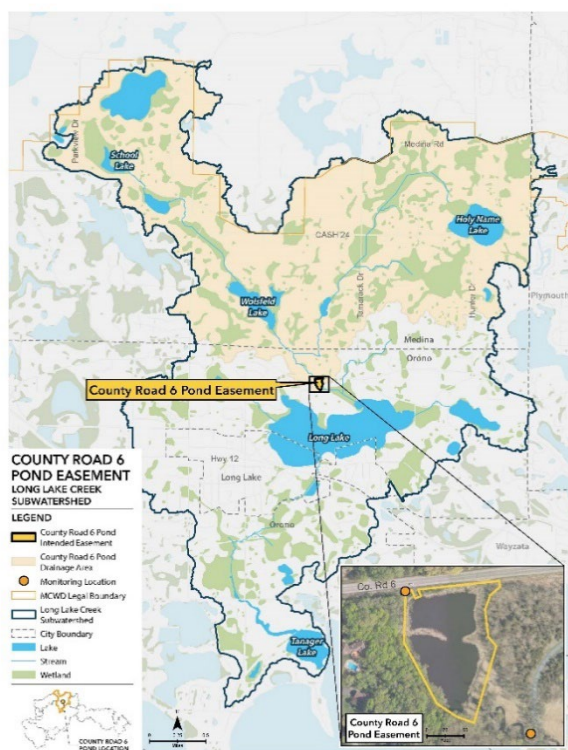
Project/File: County Road 6 Stormwater Pond Retrofit      Date: April 17, 2025

## Reference: 90% Design Summary Memo

# 1 Introduction

Minnehaha Creek Watershed District (MCWD) identified the Long Lake Creek – County Road 6 Stormwater Pond (CR6 Pond) in Orono, MN as a candidate for performance improvements based on nutrient and sedimentation monitoring. Located downstream of Holy Name Lake and Wolsfeld Lakes and just upstream of Long Lake (Figure 1), the pond presents a strategic opportunity for enhanced regional treatment. Given its location, the District's existing ownership, and the potential for increased nutrient removal for impaired Long Lake, the CR6 Pond was prioritized for near-term engineered retrofits.

Figure 1. Site Location Map



MCWD consulted with Stantec to complete a feasibility study in 2023 to evaluate retrofit practices to increase total phosphorous (TP) removals within the CR 6 Pond. A gravity filter bench with an earthen berm to better define the two pond cells was selected to advance into design. This memorandum describes (1) Stantec's design of the gravity filter bench, raised sheet pile outlet weir and raised earthen berm between the two pond cells, (2) outlines the key design constraints, and (3) provides rationale for design decisions that were made along the way. The primary focus of the CR 6 Pond project is to improve the TP removal achieved by the pond.

## **2 Existing Conditions**

The existing CR 6 Pond consists of a 2.5-acre, dual-celled system with a submerged berm separating the cells. The pond was constructed in 1997. The existing pond outlet consists of a sheet pile weir with five 1 ft by 2 ft rectangular orifices that control the normal water level. Long Lake Creek flows through the CR 6 Pond to connect Wolsfeld Lake and Holy Name Lake to Long Lake. The pond and current project area is located within a District-held conservation easement. is located in an easement that was obtained with a settlement agreement with the landowners.

MCWD's Research & Monitoring Program has monitored influent and effluent phosphorus concentrations at the CR 6 Pond. During feasibility study, Stantec worked with MCWD to review monitored phosphorus concentrations and calibrated the P8 model to the project site conditions as outline in the September 25, 2023 County Road 6 Pond Retrofit Feasibility Study memo to MCWD. MCWD monitoring indicates that particulate phosphorus dominates the effluent TP.

## **3 Proposed Conditions**

The 2023 feasibility study recommended installing a gravity filter bench, sheet pile weir adjustments and earthen berm adjustments between the two celled system as the preferred alternative to balance TP removal, cost, and complexity of the project and resulting maintenance. The berm between the north and south cell of the pond is to be raised to a 952.0 ft (all elevations referenced in the body of the text refer to North American Vertical Datum of 1988 (NAVD88) unless clearly stated otherwise.) A 35-foot overflow at a runout elevation of 951.4 ft has been provided between the north and south cell. The sand filter has been designed with an 8-foot wide pea gravel topped berm at an elevation of 951.2. The top of sand filter has been proposed at 951.0 ft with a drain tile runout elevation of 948.4 ft. To provide gravity flow to the filter, the existing outlet weir must be raised from a 950.8 ft to a 952.0 ft elevation. A riprap overflow will be provided at a 953.0 ft elevation to provide a reinforced overflow to prevent washouts. The methodology and objectives will describe the considerations used to determine this proposed condition.

## **4 Methodology and Objectives**

Throughout design, we aimed to optimize the project by maximizing water quality benefits while balancing regulatory requirements, spatial constraints, cost, and long-term operations and maintenance.

## 4.1 H&H Modeling

The H&H Model utilized the existing MCWD Upper Watershed XP-SWMM Model. The MCWD XP-SWMM model elevations utilize the NGVD29 datum. Stantec updated all elevations within the model for review in NGVD29 datum. All elevations shown in this memo refer to the NAVD88 datum.

### *Existing Conditions*

In the MCWD XP-SWMM model, two channels, one flowing from Wolsfeld Lake and one flowing from Holy Name Lake, merge together and discharge into the north cell of the County Road 6 Pond via a 72-inch culvert beneath County Road 6. The north cell of the County Road 6 Pond discharges over a berm at 947.5 ft into the south cell. The south cell of the County Road 6 Pond ultimately discharges into the downstream creek via a proposed sharp crested (sheet pile) weir with 5 rectangular low-flow orifices. The crest elevation of the weir is 950.8 ft and the orifice elevations are 949.2 ft. The downstream creek flows into a wetland which serves as a backwater of Long Lake. The backwater wetland discharges into Long Lake via a 4-foot CMP culvert.

### *Corrected Existing Conditions*

Updates were made to the MCWD XP-SWMM Model to more accurately represent the existing conditions based on best available information. These updates included:

- Modifying the weir coefficient of the pond outlet weir to accurately represent a sharp-crested weir.
- Adding 0.8 cfs combined baseflow of the two upstream channels (which was approximated by Stantec from MCWD 2020 monitoring data using USGS methods).
- Other updates based on survey data collected during the project

### *Proposed Conditions*

To model proposed conditions, changes were made to the stage areas of the north and south cells, outlet devices of the north and south cell. These elements of the pond were iteratively varied throughout the design and modeling process to reflect design iterations and work towards an optimized design that balanced water quality benefit with hydraulics and water levels. No changes were made to structures or nodes upstream or downstream of the CR 6 Pond, except for the addition of the 0.8 cfs baseflow described above.

Based on the iterative design process, the following updates were made to the existing MCWD XP-SWMM Model to reflect the final design:

- Increasing the size of the north cell (to account for removal of accumulated sediment and additional expansion of pond storage volume) and decreasing the size of the south cell (to account for volume occupied for proposed filter bench)
- Updating low outlet elevations to set the initial (water surface) depths of the pond. The water surface elevation was set to 951.2 ft, matching the inlet elevation of the sand filter
- Modeling the berm between the north and south cells as a natural channel (rather than a broad crested weir) and increasing the berm elevation from 947.5 ft to 951.4 ft.

- Removing the outlet weir orifices and raising the elevation of the sharp crested (sheet pile) weir from 950.8 ft to 952.0 ft.
- Adding an emergency overflow (EOF) at 953.0 ft.

Note, the outlet of the County Road 6 Pond was modeled in HydroCAD, instead of XP-SWMM, to better reflect the multiple outlet configuration, including the sheet pile weir and EOF. The discharge curve was then exported to the XP-SWMM Model.

The XP-SWMM Model demonstrates no increase in the water surface elevations upstream during the 100-year storm event. There is no increase in upstream water surface elevations because the upstream 72-inch culvert remains the controlling device for the system during the 100-year storm event. The peak elevations of the pond maintain a sufficient hydraulic gradient with the ponding upstream of the 72-inch culvert and the discharge from the pond matches the inflow from the 72-inch culvert. Additionally, no-rise criteria is met in the downstream wetland and Long Lake during the 100-year storm event. A summary of the model outputs is provided below in Table 1.

*Table 1. Existing and Proposed Modeled 100-year Elevations*

Location	Existing 100-yr HWL	Proposed 100-yr Elevation	100-yr Change	Target Objective
Eastern Node Upstream of Eastern Stream	970.268	970.265	-0.003	No-Rise
Western Node Upstream of Western Stream	961.552	961.552	0.000	No-Rise
Downstream Node of both streams	958.855	958.855	0.000	No-Rise
South Pond	952.073	953.651	1.578	Increase permissible within water rights and easement agreements
North Pond	952.075	953.657	1.582	Increase permissible within water rights and easement agreements
Downstream Wetland	950.148	950.148	0.000	No-Rise
Long Lake	947.129	947.128	-0.001	No-Rise

## 4.2 Water Quality Modeling

The water quality improvements are based on three project features, the expanded north cell, the raised berm between the cells and the filter bench (the function of which critically relies on the modified pond outlet). The expansion of the north cell is designed to partially offset the loss of permanent pool volume resulting from building the filter bench while also making the pond's footprint more cohesive and allowing it to work with, rather than against, natural drainage patterns from the surrounding area. The expansion increases the pond's overall capacity and treatment within the north cell. The raised berm between the north and the south cell is intended to further promote settlement of larger particles, concentrating future sediment removal maintenance efforts to the north cell of the pond. The filter bench is designed to operate

as a gravity sand filter with underlying drain tile, removing finer particulate phosphorus from the volume of water between the surface of the filter and the weir overflow elevation. As the pond level exceeds the overflow elevation, the filter will continue to treat a portion of the water.

The P8 Models developed during the feasibility study were updated and utilized to estimate the water quality benefit provided by the proposed County Road 6 Pond retrofit. The P8 Models developed during the feasibility study were informed by monitoring data collected by MCWD in 2021 and 2022. Total phosphorus (TP), orthophosphate (OP), and total suspended solids (TSS) monitoring data collected from the inlet and outlet of the pond during 2022 were utilized to understand the composition of dissolved phosphorus (DP) versus TP. Based on the 2022 monitoring data, the total phosphorus concentration is approximately 25% DP. Discharge to the ponds, or flow, was informed by monitoring data collected by MCWD in 2021.

During the feasibility study, it was assumed the P8 default parameters would reflect the 25% DP in the particle representation of the TP based on P8 model documentation and guidance. However, the DP at the inflow to the north cell of the ponds was not characterized well in the particle representation of the TP in the P8 Model. Therefore, particle size and concentration were manually adjusted in the P8 Model to better characterize the DP in the particle representation of the TP (i.e. 25% DP). Additionally, the average annual inlet concentration was adjusted to simulate 0.36 mg/L TP based on the 2022 monitoring data.

Within the P8 model, only DP and the smallest particle size of particle-bound P were routed to the filter bench. Stantec believes this routing is inaccurate for the County Road 6 Pond. In reality, inflow concentration (and corresponding particle distribution) into the southern cell should approximate the inflow concentration into the filter bench. The model was adjusted such that the daily inflow TP concentration into the filter bench matched the daily inflow TP concentration into the southern cell. Based on the adjusted TP concentrations into the filter bench, the estimated average annual TP load into the filter bench is 34 lbs./year. The TP load is assumed to be 25% DP with an even distribution of particle sizes up to the P50%. Estimated removals for sand filters from the Minnesota Stormwater Manual were applied to the estimated TP load. Based on the estimated removals, the sand filter bench will remove approximately 19 lbs./year of TP, on average. However, depending on annual precipitation conditions, the filtered TP load ranges from 6 lbs./year to 32 lbs./year.

The total expected TP removals attributed to the increased ponding areas and filter bench are estimated to be between 26 and 42 pounds on an average annual basis. These numbers are lower than the feasibility study, and that decrease is related to (1) changes in TP particle size distribution and rainfall data (described below), (2) increased topography constraints, and (3) a 22% reduction in filter bench size relative to the feasibility filter bench footprint. Table 2 below was included with the feasibility study, which suggests a 28% removal of TP loads under current conditions based on monitoring data. However, this table characterizes monitoring data from a dry year (2021) to calculate inflow and outflow TP loads for the pond, meaning the inflow TP load was low relative to other years. For example, the P8 model estimates 2021 loads are in the bottom quartile of among all years simulated (2003-2022).

*Table 2. Annual TP loads at the County Road 6 pond inlet and outlet, based on 2021 streamflow monitoring and 2021/2022 TP monitoring.*

Year	Annual TP Load (lbs)		% Removal
	Inlet	Outlet	
2021	235.5	198.7	15.6%
2022	301.1	189.1	37.2%
Average	268.4	193.9	27.8%

During design it was determined that a more accurate representation of the TP would be achieved by evaluating the annual average inflow and removals (2003-2022). This increased the average annual TP load to the north cell to 784 lbs., and for this same period the baseline model (i.e., current condition) simulates 180 lbs./year removed on average (23%) and the proposed condition simulates 222 lbs./year removed on average (28%). The proposed condition includes an additional 42 lbs./year of removal which equates to 23% of the existing 180 lbs./year. (Table 3).

*Table 3. Average Annual TP loads at the County Road 6 pond inlet and outlet based on 2003-2022 model simulation.*

Year	Annual TP Load (lbs)			% Increase in Removals
	Inlet	Outlet (Current)	Outlet (Proposed)	
Average, 2003-2022	784	604	562	23%

### 4.3 Pond and Filter Bench Design

The filter bench was designed to balance the objectives of maximizing the pond's permanent pool volume (dead storage) and maximizing the volume of water that will drain through the filter bench via gravity (water quality treatment). Designing to maximize the volume of water that will drain through the filter bench was an iterative process. Various weir modification configurations were reviewed in conjunction with maintenance access berm elevations. Raising the weir elevation and the normal water elevation of the pond caused water levels to overtop the maintenance access berm. Subsequently, the elevation of the maintenance access berm was raised contain water levels. Once the berm elevation was raised, minor modifications were made to the weir to achieve the desired water quality benefit.

During design, MCWD's overall pond maintenance plan was evaluated. Stantec completed a bathymetric survey of the accumulated sediment in the pond and determined the pond has accumulated 20% of it's overall storage volume. Although MCWD policy is to remove sediment when accumulation has reached 50% of the storage volume, it was determined removing the sediment from the north cell with this project will create cost efficiencies by removing the sediment during this project as opposed to waiting and getting a contractor to come back when full pond maintenance is necessary.

When evaluating the bathymetric survey in comparison to the original pond design, it was found that the existing pond was not constructed per the plans. When the pond was originally constructed, a berm was created along the west edge of the northern cell along the property line, to limit the pond's encroachment onto the private property to the west. The design process for the current project identified the opportunity to remove the previously constructed berm and expand the permanent pool of the pond. Regrading in the area of the previously constructed berm was added to the scope of the project to both increase the permanent pool of the pond and to better connect the pond hydrologically to the contributing drainage area. In the existing condition, the berm creates a hydrologic barrier between runoff from the County Road 6 roadside ditch to the west of the pond and the pond itself, which results in a wet area on the west side of the berm. The berm between the north and south cells of the pond was raised to provide additional dead storage in the north cell. The berm will have a 35 ft wide overflow channel which will control water levels in the north cell. Raising the berm and the overflow elevation into the south cell will facilitate capture of coarse sediments in the north cell, ultimately improving the north cell's function as a pretreatment area upstream of the south cell and filter bench. The berm is to be raised to 952.0 ft and the overflow channel is to be raised from 947.56 ft to 951.4 ft. The normal water level in the north cell (which will be controlled by the overflow in

the berm between cells) will be approximately 0.4 ft higher than the normal water level in the south cell (which will be controlled by the top of the filter media).

The proposed filter bench was shaped by multiple constraints, with the limited topography and grade change being one of the most significant factors. The downstream creek elevation was assessed to determine the elevation and grade the drain tile could be constructed at to ensure the tile would not be submerged. This established the appropriate invert elevation of the drain tile, which then guided additional design elements. The design includes a swale to be graded from the northernmost drain tile outlet to the existing creek bank. The swale's elevation was intentionally set to avoid any impacts within the creek's ordinary high-water elevation. This swale allows for the drain tile to outlet at elevation 948.4 ft.

Using the set invert elevation, the drain tile was designed at a 0.5% grade with the highest invert elevation to be at 949.0 ft. The top of the filter material is designed at 951.0 ft. This provides the recommended 2 ft thick filter media (sand) section and will allow gravity flow from one end of the filter to the outlet. Multiple independent drain tile networks are proposed to limit the total length of pipe from the upstream end to downstream end of each, to ensure that 0.5% slope is achieved within the entirety of each system. If the systems were tied together into one, the total length of pipe would be such that the slope would need to be flatter than 0.5% and would present a risk of drainage problems. In addition, the project design aimed to minimize the number of cleanouts and keep as many outside of the filter media itself, posing less risk for damage during maintenance activities.

The filter media type and thickness were first determined based on site conditions and operations & maintenance considerations. A clean sand filter media was selected with 18-inches of filter media depth or more, with 5-inches of filter aggregate around the underlying drain tile. Therefore, the design provides 24-inches (2 ft) of filter media where there is no drain tile (i.e. there is no filter aggregate in areas where there is no drain tile).

The filter bench was sized to accommodate the drain tile grade, the maintenance access berm between the filter and the wetland, and to layout the filter within the existing ponds contours. The maintenance access berm was raised to elevation 954.0 ft to contain high water elevations within the pond footprint. The existing berm in this area was only 4 ft wide. To provide an accessible berm for the expected maintenance equipment (skid steers, mowers, etc.), the top of the berm will be widened to a 10 ft top width. The filter was designed to fit in the corner of the existing pond where it would not impact the existing sheet pile overflow as well as the existing and proposed location of the overflow from the north to the south cell. The design considerations led to a filter size of approximately 11,461 sq ft.

It was determined, through design discussions, that the proposed filter bench will not be vegetated because of the unlikely success of vegetation growth within the filter and potential for conflict with project goals. For vegetation growth within the filter bench to be successful, the filter must draw down within 48 hours. However, it is uncertain whether the filter will have the opportunity to completely draw down and dry out because of the pond's variable baseflow. The proposed filter media, clean sand, is also not conducive to vegetation growth. Compost would need to be incorporated into the filter media to support vegetation growth. However, filter media containing compost have the potential to leach phosphorus and compromise the primary project goal, phosphorus reduction.

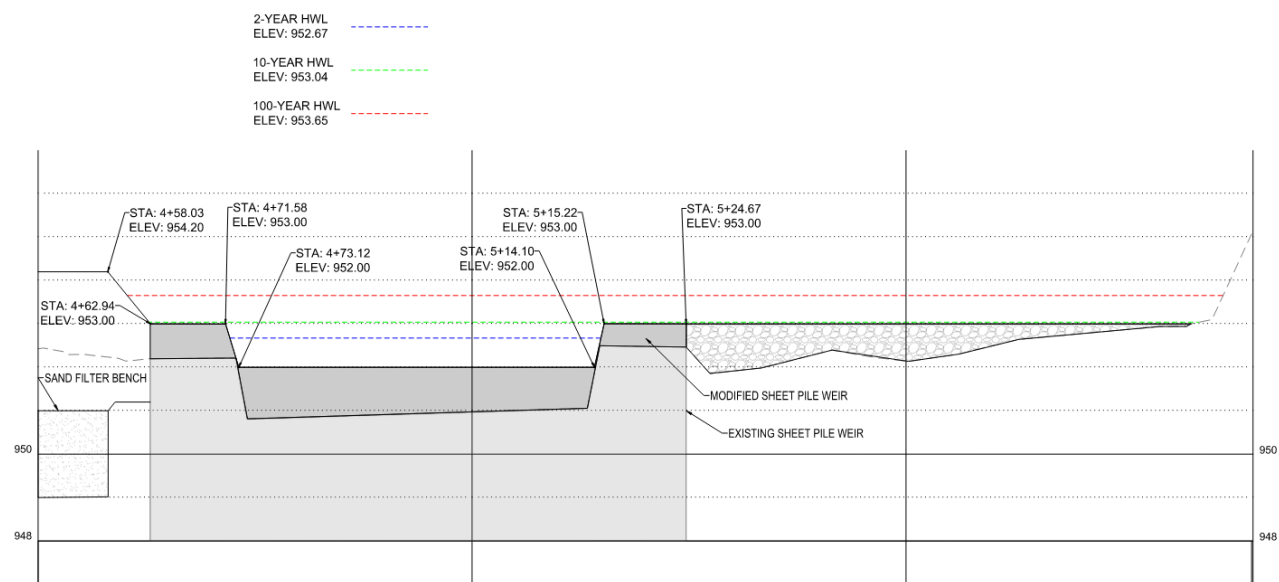
The two components of the overflow weir (sheet pile weir at outlet of south cell) that need to be modified to achieve the desired filtration volume are the height of the weir's overflow and the low-flow orifices, which currently include fish passage screens. The fish passage screens are to be plugged. Project designers evaluated whether the fish screens could be welded over with steel plates or if a concrete plug would be required. During a spring inspection in April 2025, the existing screens appeared to be able to be removed and replaced with a solid metal alternative. The selected design specifies that a solid piece of metal be used to plug and seal the five (1 ft by 2 ft) openings which currently serve as the controlling outlet of the



pond. The plugs will be designed with the option to lift them out if needed for pond drawdown in the future to support maintenance. The other consideration for outlet retrofit is the height of the weir's overflow. The evaluated methods for adjusting the height of the overflow weir included full replacement, H-pile steel beams, and a steel plate with stiffener reinforcements. The costs of the full replacement and the weights and cost of the H-pile steel beam made those options less feasible than the option to weld a steel plate to the existing weir. The weir modifications were reviewed with structural engineers and determined that a ½" thick steel plate with stiffeners welded every 2 ft would provide the height and strength necessary to maintain a higher water elevation. To avoid a sharp point on top of the welded plate, a slotted steel pipe will be welded to the top. The steel pipe will also provide a uniform top elevation for overflow. The existing weir cap is not level from south to north and the pipe can be adjusted on the steel plate to meet the new design overflow elevation of 952.0 ft.

The maintenance access berm will be raised to elevation 954.0 ft and the overflow weir will be raised to 952.0 ft. The berm south of the sheet pile weir will have a riprap armored overflow at elevation 953.0 ft.

*Figure 2. Sheet Pile Weir Profile*



## 4.4 Permitting and Regulatory

Permitting and regulatory compliance was led by the MCWD staff with support from the Stantec team. Permitting documents from the pond's original 1997 construction were reviewed to determine the appropriate regulatory framework and support current permit applications. The permitting pathways determined the pond expansion portion of the project must meet WCA and USACE no loss permits, which included defining incidental wetland that was created from the 1997 pond construction. Wetland delineations were utilized from 1997, 2020, and 2024 to determine the wetland boundaries to be permitted.

with this project. The project was also required to obtain a public water works permit from the MnDNR, as well as a Minnehaha Creek Watershed District permit to ensure compliance with its own rules.

## **4.5 Spatial Considerations**

The spatial considerations were related to the permanent pool of the pond, its existing easement, and the impact the 100-yr HWL has on the site and adjacent properties. The existing pond already interacts with the northwest adjacent parcel (PID 2611823330033) and the proposed changes would permanently place/pool water on their property. MCWD approached the property owner to discuss the preferred design alternative of expanding the pond onto their property to formalize and control where the water pools. This area has been historically wet with fallen trees and other trees that are frequently inundated with backwater flood conditions. The improvements to this area will remove trees as well as provide a more defined permanent pool boundary. As noted previously, the expanded pond footprint will assist in improving the primary goal of this project, to optimize TP removal, by offsetting the loss of permanent pool volume associated with construction of the filter bench. MCWD staff worked with the homeowner to negotiate an agreement structure, which gives MCWD the ability to permanently push and pond water onto their property within the agreed upon project area.

Other site impacts reviewed were access concerns for maintenance. The site grading was reviewed and modified to allow for access to the site improvements that will require maintenance (filter bench and outlet weir). The access path was graded to provide consistent 10 ft wide access. During the iterative modeling optimization process, the berm between the filter and downstream wetland was raised to maintain flood elevations. To avoid wetland and floodplain fills in the downstream wetland, the raised access berm grading reduced the filter size by approximately 2,000 square feet.

## **4.6 Operations and Maintenance**

Operation and maintenance efforts and costs are key factors in determining key design criteria. Operation and maintenance requirements for the system include removal of accumulated sediment in the pond and filter bench maintenance. A detailed operations and maintenance manual has been developed to support MCWD staff (Attachment 3).

The raised and defined earthen berm between the north and south cell promotes more sedimentation within the north cell. The focused sedimentation in the north cell has potential to reduce the level of effort associated with sedimentation inspection efforts and streamline future sediment maintenance efforts. In addition, this increased sedimentation in the north cell is expected to increase longevity of the filter media.

The filter bench material was selected to ensure the longevity of the sand filter media. A clean filter sand was selected as the filter material after evaluation of multiple media including media which incorporated compost, iron enhanced sand, and/or biochar. The clean filter sand has the least likelihood of clogging and has the lowest frequency of anticipated maintenance, such as mixing the filter media. Biochar and iron enhanced sand were evaluated for their respective maintenance needs. The iron enhanced sand is more expensive to replace and with constant base flow into the pond, there were concerns of the filter not drying out and the filter plugging more frequently.

Vegetated filters require additional maintenance and the vegetation creates obstacles for maintaining the filter media. Vegetation maintenance needs include mowing vegetation, controlled burning of vegetation, and removal of organic material from the media surface to avoid decomposition and additional phosphorus loading into the receiving waterbody. When vegetated filters are implemented, it is difficult to till the underlying media and remove accumulated sediment, undesired aquatic vegetation, and other unwanted materials from the filter bench without negatively impacting the desired vegetation.

The berm between the filter and pond and the areas outside of the pond were evaluated for vegetation and planting improvements. In collaboration with MCWD staff, it was determined that the areas are to be vegetated with a stormwater pond seed mix and no plantings of trees or shrubs would be included. Plantings could create additional maintenance concerns in the future via fallen leaves and other detritus, and would require additional maintenance. The site can be evaluated by MCWD staff through site inspections to determine if any plantings would be aesthetically beneficial to the filter basin.

## **5 Conclusion**

In conclusion, the County Road 6 Stormwater Pond Retrofit project aims to enhance the performance of the existing CR 6 Stormwater Pond by implementing a gravity filter bench, raising the sheet pile outlet weir, and adjusting the earthen berm between the two pond cells. These modifications are designed to improve total phosphorus (TP) removal, optimize water quality, and ensure effective stormwater management. The proposed changes, including the increased ponding depths and filter bench, are expected to result in significant TP removals, contributing to the overall goal of reducing watershed load to Long Lake. By carefully balancing these factors, the project aims to achieve long-term functionality and effectiveness in improving water quality and managing stormwater.

## **Attachments**

- Attachment 1: 90% design Plans
- Attachment 2: 90% Cost Estimate
- Attachment 3: 90% Operations & Maintenance Manual

# CONSTRUCTION PLANS

## FOR

# COUNTY ROAD 6 STORMWATER POND RETROFIT PROJECT

OWNER:  
MINNEHAHA CREEK WATERSHED DISTRICT



15320 MINNETONKA BLVD  
MINNETONKA, MN 553405  
CONTACT: KAILEY CERMAK  
PH: (952) 641-4501

ENGINEER:  
STANTEC CONSULTING SERVICES INC.



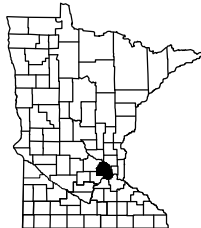
ONE CARLSON PARKWAY, SUITE 100  
PLYMOUTH, MN 55447  
CONTACT: CHRIS MEEHAN, P.E.  
PH: (763) 252-6844

CITY OF ORONO  
HENNEPIN COUNTY, MN



### VICINITY MAP

SCALE: 1" = 500'



### PROJECT LOCATION

CITY: ORONO  
COUNTY: HENNEPIN

THIS PLANSET CONTAINS 16 SHEETS

SHEET INDEX	
Sheet Number	Sheet Title
G-001	COVER SHEET
G-002	LEGENDS
G-003	NOTES
C-001	EXISTING CONDITIONS AND REMOVAL PLAN
C-002	EXISTING CONDITIONS AND REMOVAL PLAN
C-101	TYPICAL SECTIONS PLAN
C-201	SWPPP
C-202	RESTORATION AND EROSION CONTROL PLAN
C-301	GRADING PLAN
C-302	GRADING PLAN
C-303	CROSS SECTIONS
C-304	CROSS SECTIONS
C-305	FOOTPATH PLAN
C-501	STORM SEWER PLAN
C-801	DETAILS
C-802	DETAILS

**WARNING:**  
THE CONTRACTOR SHALL BE RESPONSIBLE FOR CALLING FOR LOCATIONS OF ALL EXISTING UTILITIES. THEY SHALL COOPERATE WITH ALL UTILITY COMPANIES IN MAINTAINING THEIR SERVICE AND/OR RELOCATION OF LINES.

THE CONTRACTOR SHALL CONTACT GOPHER STATE ONE CALL AT 651-454-0002 AT LEAST 48 HOURS IN ADVANCE FOR THE LOCATIONS OF ALL UNDERGROUND WIRES, CABLES, CONDUITS, PIPES, MANHOLES, VALVES OR OTHER BURIED STRUCTURES BEFORE DIGGING. THE CONTRACTOR SHALL REPAIR OR REPLACE THE ABOVE WHEN DAMAGED DURING CONSTRUCTION AT NO COST TO THE OWNER.

CALL BEFORE YOU DIG  
**GOPHER STATE ONE CALL**  
TWIN CITY AREA: 651-454-0002  
TOLL FREE: 1-800-252-1166



ONE CARLSON PARKWAY, SUITE 100  
PLYMOUTH MN, 55447  
PHONE: 763-479-4200  
FAX: 763-479-4242  
WWW.STANTEC.COM

CLIENT:  
**MINNEHAHA CREEK WATERSHED DISTRICT**  
15320 MINNETONKA BLVD  
MINNETONKA, MN 55345



**COUNTY ROAD 6  
STORMWATER POND RETROFIT**  
COUNTY ROAD 6 STORMWATER POND  
ORONO, MINNESOTA

PROJECT TITLE:

DATE:	DESCRIPTION:	ISSUE NO.:							
03/21/2025	ISSUED FOR 90% REVIEW	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.

CHRIS J. MEEHAN

LICENSE NO.: 43066

DATE: XX/XX/2024

PROJECT NO.: 227707038

DWN BY: SMD	CHKD BY: NPW	APP'D BY: CJM
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ISSUE DATE: XX/XX/2024

ISSUE NO.: 0








































SHEET TITLE:

COVER SHEET














SHEET NO.:

G-001




EXISTING TOPOGRAPHIC SYMBOLS

	STORM SEWER APRON		POLE-COMMUNICATIONS
	BUSH DECIDUOUS		POLE-GUY
	CATCH BASIN BEEHIVE		POLE-LIGHT
	CLEAN OUT (SEWER)		POLE-POWER
	CULVERT END		POLE-UTILITY
	GUY WIRE		POLE-UTILITY SERVICE
	HYDRANT VALVE		POST
	INLET (SMALL DIA.)		SATELLITE DISH
	LIFT STATION CONTROL PANEL		SEPTIC TANK
	LIFT STATION DRY WELL		SEPTIC VENT
	LIFT STATION WET WELL		SEPTIC DRAIN FIELD
	MAIL BOX		SIGN
	MANHOLE-GAS		SOIL BORING
	MANHOLE-POWER		STUMP
	MANHOLE-SANITARY SEWER		TREE DEAD
	MANHOLE-STORM SEWER		TREE-CONIFEROUS
	MANHOLE-COMMUNICATIONS		TREE-DECIDUOUS
	PEDESTAL CATV		TREE-FRUIT
	PEDESTAL COMMUNICATIONS		WETLAND
	POST INDICATOR VALVE		

SURVEY SYMBOLS

	AERIAL CONTROL POINT
	BACKSIGHT CONTROL POINT
	GPS CONTROL POINT
	JUDICIAL LAND MONUMENT
	MONUMENT COMPUTED
	MONUMENT IRON FOUND
	MONUMENT IRON SET
	RESECTED POINT
	ROW MONUMENT
	ROW MARKER POST
	SECTION CORNER
	TRAVERSE CONTROL POINT
	BENCH MARK LOCATION




PROPOSED TOPOGRAPHIC SYMBOLS

	DRAINTILE CLEANOUT
	RIP RAP
	DRAINAGE FLOW










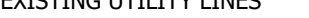



EXISTING PRIVATE UTILITY LINES

— CTV-D —	— CTV-D —	— CTV-D —	CABLE TV QUALITY LEVEL D
— CTV-C —	— CTV-C —	— CTV-C —	CABLE TV QUALITY LEVEL C
— CTV-B —	— CTV-B —	— CTV-B —	CABLE TV QUALITY LEVEL B
— CTV-A —	— CTV-A —	— CTV-A —	CABLE TV QUALITY LEVEL A
— FO-D —	— FO-D —	— FO-D —	FIBER OPTIC QUALITY LEVEL D FIBER
— FO-C —	— FO-C —	— FO-C —	OPTIC QUALITY LEVEL C FIBER OPTIC
— FO-B —	— FO-B —	— FO-B —	QUALITY LEVEL B FIBER OPTIC QUALITY
— FO-A —	— FO-A —	— FO-A —	LEVEL A
— E-D —	— E-D —	— E-D —	POWER QUALITY LEVEL D
— E-C —	— E-C —	— E-C —	POWER QUALITY LEVEL C
— E-B —	— E-B —	— E-B —	POWER QUALITY LEVEL B
— E-A —	— E-A —	— E-A —	POWER QUALITY LEVEL A
— G-D —	— G-D —	— G-D —	GAS QUALITY LEVEL D
— G-C —	— G-C —	— G-C —	GAS QUALITY LEVEL C
— G-B —	— G-B —	— G-B —	GAS QUALITY LEVEL B
— G-A —	— G-A —	— G-A —	GAS QUALITY LEVEL A
— C-D —	— C-D —	— C-D —	COMMUNICATION QUALITY LEVEL D
— C-C —	— C-C —	— C-C —	COMMUNICATION QUALITY LEVEL C
— C-B —	— C-B —	— C-B —	COMMUNICATION QUALITY LEVEL B
— C-A —	— C-A —	— C-A —	COMMUNICATION QUALITY LEVEL A
— OHP —	— OHP —	— OHP —	OVERHEAD POWER
— OHC —	— OHC —	— OHC —	OVERHEAD COMMUNICATION
— OHU —	— OHU —	— OHU —	OVERHEAD UTILITIES

EXISTING TOPOGRAPHIC LINES

	GUARD RAIL
	TREE LINE
	WETLAND


SURVEY LINES

	BOUNDARY
	CENTERLINE
	EXISTING EASEMENT LINE
	PROPOSED EASEMENT LINE
	FLOOD PLAIN BOUNDARY
	EXISTING LOT LINE
	PROPOSED LOT LINE
	EXISTING RIGHT-OF-WAY
	PROPOSED RIGHT-OF-WAY
	SETBACK LINE
	SECTION LINE
	QUARTER SECTION LINE
	SIXTEENTH SECTION LINE

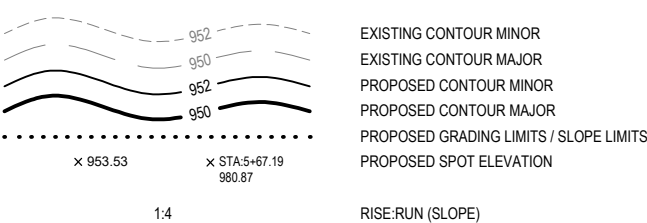
EXISTING UTILITY LINES

	STORM SEWER
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PROPOSED UTILITY LINES

	STORM SEWER
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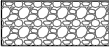
GRADING INFORMATION



ABBREVIATIONS

AD	ALGEBRAIC DIFFERENCE
BV	BUTTERFLY VALVE
BVCE	BEGIN VERTICAL CURVE ELEVATION
BVCS	BEGIN VERTICAL CURVE STATION
CL	CENTER LINE
CL	CLASS
CMP	CORRUGATED METAL PIPE
C.O.	CHANGE ORDER
DIP	DUCTILE IRON PIPE
EL/ELEV	ELEVATION
EVCE	END VERTICAL CURVE ELEVATION
EVCS	END VERTICAL CURVE STATION
EX	EXISTING
FES	FLARED END SECTION
F/F	FACE TO FACE
FM	FORCE MAIN
F.O.	FIELD ORDER
GV	GATE VALVE
HP	HIGH POINT
HWL	HIGH WATER LEVEL
INV	INVERT
K	CURVE COEFFICIENT
LP	LOW POINT
MH	MANHOLE (SANITARY)
NTS	NOT TO SCALE
NWL	NORMAL WATER LEVEL
PC	POINT OF CURVE
PCC	COMPOUND CURVE
PI	POINT OF INTERSECTION
PL	PROPERTY LINE
PPVC	PERFORATED POLYVINYL CHLORIDE PIPE
PRC	POINT OF REVERSE CURVE
PT	POINT OF TANGENT
PVC	POLYVINYL CHLORIDE PIPE
PVI	POINT OF VERTICAL INTERSECTION
R	RADIUS
RCP	REINFORCED CONCRETE PIPE
R/W	RIGHT-OF-WAY
SS	STORM SEWER STRUCTURE
STA	STATION
TCE	TEMPORARY CONSTRUCTION EASEMENT
TNH	TOP NUT HYDRANT
TYP	TYPICAL
VC	VERTICAL CURVE
WM	WATER MAIN

HATCH PATTERNS

	SAND
	GRAVEL



ONE CARLSON PARKWAY, SUITE 100  
PLYMOUTH MN, 55447  
PHONE: 763-479-4200  
FAX: 763-479-4242  
WWW.STANTEC.COM

CLIENT:

MINNEHAHA CREEK  
WATERSHED  
DISTRICT

15320 MINNETONKA BLVD  
MINNETONKA , MN 55345



COUNTY ROAD 6  
STORMWATER POND RETROFIT  
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APP'D BY: CJM

ISSUE DATE: XX/XX/2024

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SHEET TITLE:

LEGENDS

SHEET NO.:

G-002



GOVERNING SPECIFICATIONS

- 1. CITY OF ORONO (CITY) STANDARD SPECIFICATIONS AND REQUIREMENTS.
- 2. MINNESOTA DEPARTMENT OF TRANSPORTATION (MN/DOT) "STANDARD SPECIFICATIONS FOR CONSTRUCTION" LATEST EDITION AND SUPPLEMENTS.
- 3. CITY ENGINEERS ASSOCIATION OF MINNESOTA (CEAM) STANDARD SPECIFICATIONS FOR UTILITIES LATEST EDITION.
- 4. APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND ORDINANCES

GENERAL NOTES

- 1. UNTIL REVISION BLOCK STATES "ISSUED FOR BID", THE PLAN SET IS NOT CERTIFIED FOR CONSTRUCTION AND CONTRACTOR IS BUILDING AT THEIR OWN RISK.
- 2. EXISTING CONDITIONS SHOWN ARE FROM A TOPOGRAPHIC SURVEY COMPLETED BY STANTEC, DATED JUNE 2024. EXISTING FEATURES MAY NOT BE EXACT TO THEIR LOCATION. CONTRACTOR RESPONSIBLE FOR VERIFYING THE CONDITIONS OF THE SITE AND MUST IMMEDIATELY NOTIFY THE ENGINEER IN WRITING OF DISCREPANCIES OR VARIATIONS FROM THE DRAWINGS
- 3. SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF C/ASCE 38-2 ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA". EXACT LOCATION/DEPTH OF SUBSURFACE UTILITIES SUCH AS GAS, TELEPHONE, FIBER OPTIC, SEWER, WATER, PIPELINES, ELECTRICAL, AND CABLE TV ARE UNKNOWN AND THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE.
- 4. CONTRACTOR RESPONSIBLE FOR CONTACTING GOPHER STATE ONE CALL (1-800-252-1166) A MINIMUM OF 48 HOURS IN ADVANCE (EXCLUDING HOLIDAYS AND WEEKENDS) BEFORE STARTING WORK FOR LOCATIONS OF UNDERGROUND UTILITIES.
- 5. CONTRACTOR SHALL ANTICIPATE PRIVATE UTILITY CONFLICTS THROUGHOUT THE PROJECT SUB CUT AND TRENCH AREAS AND MUST COORDINATE THE RELOCATION OR PROTECTION OF EXISTING UTILITIES, OR INSTALLATION OF NEW UTILITIES WITH UTILITY OWNERS THAT MAY HAVE BURIED OR AERIAL UTILITIES WITHIN OR NEAR THE CONSTRUCTION AREA BEFORE STARTING WORK. COSTS FOR SUCH WORK, INCLUDING EXTRA TIME AND EFFORT FOR PROVISIONS NECESSARY TO WORK AROUND OR UNDER UTILITIES, IS THE RESPONSIBILITY OF THE CONTRACTOR WITH NO ADDITIONAL COST TO THE OWNER. FEES OR CHARGES WHICH ARE TO BE PAID TO THE UTILITY COMPANY, INCLUDING WORK THAT MUST BE PERFORMED BY THE UTILITY COMPANY, ARE AT NO ADDITIONAL COST TO THE OWNER.
- 6. QUANTITIES ARE APPROXIMATE, AND MAY VARY TO ALLOW COMPLETION OF WORK.
- 7. WORK AND MATERIALS MUST COMPLY WITH CITY, COUNTY, STATE, AND FEDERAL (INCLUDING OSHA) REGULATIONS AND CODES.
- 8. CONTRACTOR SHALL COORDINATE WORK WITH OTHER CONTRACTORS PERFORMING WORK AT OR NEAR THE SITE.
- 9. CONTRACTOR SHALL COORDINATE AND MAINTAIN ACCESS TO ADJACENT PROPERTIES THROUGHOUT CONSTRUCTION.
- 10.CONTRACTOR SHALL COORDINATE AND MAINTAIN MAIL, GARBAGE, AND RECYCLING SERVICES TO PROPERTIES THROUGHOUT CONSTRUCTION.
- 11.CONTRACTOR SHALL COORDINATE AND MAINTAIN STORMWATER DRAINAGE CONVEYANCE THROUGHOUT CONSTRUCTION (BOTH PIPED AND OVERLAND FLOW).
- 12.CONTRACTOR SHALL COORDINATE AND MAINTAIN WATER AND SANITARY FLOW TO AND FROM PROPERTIES. PROVIDE BYPASS AND TEMPORARY SYSTEMS, AS NECESSARY.
- 13.CONTRACTOR SHALL COORDINATE AND MAINTAIN UTILITY SERVICES TO ADJACENT PROPERTIES AT ALL TIMES. UTILITY SERVICE MUST NOT BE INTERRUPTED WITHOUT APPROVAL FROM OWNER, CITY, AND ADJACENT PROPERTIES.
- 14.CONSTRUCTION LIMITS ARE TO PROPERTY LINE UNLESS SHOWN OR NOTED OTHERWISE. CONTRACTOR SHALL RESTRICT CONSTRUCTION ACTIVITIES TO AREAS DESIGNATED ON PLANS WITHIN THE CONSTRUCTION LIMITS.
- 15.CONTRACTOR SHALL PRESERVE AND PROTECT EXISTING PAVEMENT, SITE FEATURES, UTILITIES, TREES, ETC., UNLESS NOTED OR SHOWN OTHERWISE.
- 16.EXISTING PAVEMENT AND SITE CONDITIONS HAVE BEEN DOCUMENTED, AND ANY DAMAGE TO THE EXISTING PAVEMENT, CURBING, STRIPING, OR OTHER SITE FEATURE TO REMAIN MUST BE REPLACED BY THE CONTRACTOR, TO OWNER'S SATISFACTION, AT NO ADDITIONAL COST TO THE OWNER.
- 17.CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO AVOID PROPERTY DAMAGE TO ADJACENT PROPERTIES DURING CONSTRUCTION AND WILL BE HELD SOLELY RESPONSIBLE FOR ANY DAMAGES.
- 18.CONTRACTOR MUST IMMEDIATELY NOTIFY THE OWNER AND ENGINEER IN WRITING OF DISCREPANCIES OR CONFLICTS IN THE CONTRACT DOCUMENTS BEFORE COMMENCING WORK. NO FIELD CHANGES OR DEVIATIONS ARE TO BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER. FAILURE TO NOTIFY OWNER AND ENGINEER OF AN IDENTIFIABLE CONFLICT BEFORE PROCEEDING WITH INSTALLATION RELIEVES OWNER AND ENGINEER OF ANY OBLIGATION TO PAY FOR A RELATED CHANGE ORDER.
- 19.CONTRACTOR SHALL HAVE ONE COPY OF EACH REQUIRED CONSTRUCTION PERMIT AND ONE COPY OF THE MOST CURRENT AND COMPLETE SET OF CONSTRUCTION DOCUMENTS (INCLUDING PLANS, SPECIFICATIONS, GEOTECHNICAL REPORT, SPECIAL CONDITIONS AND PROVISIONS, ETC.) AVAILABLE AT THE PROJECT SITE AT ALL TIMES.
- 20. CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR IMPLEMENTATION AND ENFORCEMENT OF SAFE WORK PRACTICES, INCLUDING BUT NOT LIMITED TO PERSONNEL MONITORING, USE OF TRENCHING, SHEETING, AND SHORING, SCAFFOLDING; MATERIALS HANDLING AND DRILLING; OPERATION OF EQUIPMENT; AND SAFETY OF PUBLIC DURING PROGRESS OF WORK.
- 21. CONTRACTOR SHALL PLAN FOR AND ENSURE PERSONNEL COMPLY WITH PROVISIONS OF OSHA SAFETY AND HEALTH STANDARDS (29 CFR 1910) AND GENERAL CONSTRUCTION STANDARDS (29 CFR 1926) AS APPROPRIATE.
- 22. CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH WORK. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS FOR SAFETY OF EMPLOYEES ON PROJECT SITE AND OTHER PERSONS AND ORGANIZATIONS WHO MAY BE AFFECTED BY THE PROJECT. CONTRACTOR'S DUTIES AND RESPONSIBILITIES FOR SAFETY IN CONNECTION WITH WORK SHALL CONTINUE UNTIL SUCH TIME AS ALL WORK IS COMPLETED, AND ENGINEER HAS ISSUED NOTICE TO CONTRACTOR THAT WORK IS COMPLETE.
- 23. HAZARDOUS MATERIALS, INCLUDING BUT NOT LIMITED TO OIL, GASOLINE, PAINT AND OTHER HAZARDOUS SUBSTANCES MUST BE PROPERLY STORED, BY THE CONTRACTOR, INCLUDING SECONDARY CONTAINMENTS, TO PREVENT SPILLS, LEAKS OR OTHER DISCHARGE. RESTRICTED ACCESS TO STORAGE AREAS MUST BE PROVIDED TO PREVENT VANDALISM. STORAGE AND DISPOSAL OF HAZARDOUS WASTE MUST BE IN COMPLIANCE WITH MCPA REGULATIONS. CONTRACTOR SHALL REMOVE SPILL OF FUELS, OILS, OR OTHER CHEMICALS IMMEDIATELY UPON DETECTION.
- 24. IF CONSTRUCTION IS ANTICIPATED TO OCCUR DURING COLD WEATHER, IN THE EVENT THAT SNOW REMOVAL IS REQUIRED FOR SITE ACCESS AND CONSTRUCTION ACTIVITIES, CONTRACTOR SHALL COORDINATE WITH OWNER FOR ACCEPTABLE SNOW STORAGE AREAS ONSITE. SNOW REMOVAL AND STORAGE IS INCIDENTAL TO THE CONTRACT.

REMOVAL/DEMOLITION NOTES

- 1. SEE GENERAL NOTES FOR ADDITIONAL PROJECT AND SITE INFORMATION.
- 2. CONTRACTOR SHALL OBTAIN PERMITS REQUIRED FOR DEMOLITION, REMOVAL AND DISPOSAL.
- 3. CONTRACTOR SHALL REVIEW FEATURES NOT SPECIFICALLY IDENTIFIED ON PLAN FOR SALVAGE OR REMOVAL THAT CONFLICT WITH CONSTRUCTION WITH THE ENGINEER.
- 4. MATERIALS REMOVED/DEMOLISHED BY CONTRACTOR BECOME PROPERTY OF THE CONTRACTOR, UNLESS OTHERWISE NOTED. CONTRACTOR SHALL LOAD AND HAUL MATERIAL OFF-SITE AND PROPERLY DISPOSE OF MATERIALS IN ACCORDANCE WITH APPLICABLE REGULATIONS. CONTRACTOR MUST LEAVE THE SITE IN A CONDITION TO THE SATISFACTION OF THE OWNER AND ENGINEER.

- 5. CONTRACTOR SHALL COORDINATE UTILITY REMOVAL WORK WITH APPROPRIATE UTILITY OWNER.
- 6. CONTRACTOR SHALL SALVAGE AND REINSTALL STREET AND TRAFFIC SIGNS IN CONFLICT WITH CONSTRUCTION ACTIVITIES AS NOTED OR AS DIRECTED BY ENGINEER. IF SIGNS ARE DAMAGED DURING CONSTRUCTION, CONTRACTOR REQUIRED TO PROVIDE NEW SIGNS AT NO ADDITIONAL COST TO THE OWNER.
- 7. IN THE EVENT THAT UNKNOWN CONTAINERS OR TANKS ARE ENCOUNTERED, THE CONTRACTOR MUST CONTACT THE ENGINEER IMMEDIATELY. ALL CONTAINERS OR TANKS MUST BE DISPOSED OF PROPERLY AT A REGULATED/PERMITTED FACILITY.
- 8. CONTRACTOR SHALL REVIEW ALL TREE REMOVALS WITH THE OWNER AND ENGINEER PRIOR TO REMOVAL OPERATIONS.
- 9. CLEARING AND GRUBBING OPERATIONS MUST COMPLY WITH THE FOLLOWING:
  - A. PROTECT ALL TREES AND PLANTS NOT DESIGNATED FOR REMOVAL.
  - B. CONDUCT OPERATIONS IN SUCH A MANNER THAT DOES NOT DAMAGE PROTECTED TREES AND VEGETATION.
  - C. CUT, REMOVE, AND DISPOSE OF TREES, BRUSH, SHRUBS, WINDFALLS, LOGS, STUMPS, ROOTS, FALLEN TIMBER, AND OTHER VEGETATION.
  - D. BACKFILL DEPRESSIONS WITH NATIVE SOILS OR SUITABLE FILL MATERIAL AS REQUIRED BY DESIGN OR AS DIRECTED BY THE GEOTECHNICAL ENGINEER AND COMPACT BACKFILL AS DIRECTED.
  - E. DISPOSE OF DEBRIS IN ACCORDANCE WITH APPLICABLE REGULATIONS.
  - F. CONSIDER BENEFICIAL USE DESIGNATIONS FOR UNADULTERATED WOOD, WOOD CHIPS, BARK AND SAWDUST.
  - G. NO BURYING OF CLEARED AND GRUBBED WASTE WITHIN THE CONSTRUCTION LIMITS.

TRAFFIC CONTROL NOTES

- 1. SEE GENERAL NOTES FOR ADDITIONAL PROJECT AND SITE INFORMATION.
- 2. CONTRACTOR SHALL COORDINATE CONSTRUCTION STAGING, ON OR OFFSITE, AS NECESSARY TO COMPLETE THE WORK. IF OFFSITE STAGING AREA IS REQUIRED, CONTRACTOR IS RESPONSIBLE TO FIND, OBTAIN, AND PAY FOR NECESSARY STAGING AREA AT NO ADDITIONAL COST TO THE OWNER. SUBMIT A STAGING PLAN TO THE ENGINEER FOR REVIEW BEFORE STARTING WORK.
- 3. CONTRACTOR RESPONSIBLE FOR ALL TRAFFIC CONTROL AND PEDESTRIAN DETOURS. TRAFFIC CONTROL AND PEDESTRIAN DETOURS MUST BE IN ACCORDANCE WITH THE LATEST EDITION OF THE MN MUTCD, INCLUDING LATEST FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS. SUBMIT TRAFFIC CONTROL PLAN AND PEDESTRIAN DETOUR PLAN TO CITY AND ENGINEER FOR REVIEW BEFORE CONSTRUCTION RELATED ACTIVITIES. PLANS MUST COMPLY WITH APPLICABLE PERMIT REQUIREMENTS. TRAFFIC CONTROL INCLUDES NECESSARY SIGNAGE AND MARKINGS FOR SIDEWALKS, TRAILS, BOARDWALKS, ETC. CLOSURE. THIS MUST INCLUDE ADVANCED WARNING SIGNS AND NECESSARY FENCING AND SIGNAGE TO PREVENT PEDESTRIANS FROM ACCESSING THE PROPOSED AREA.
- 4. CONTRACTOR MUST SCHEDULE WORK IMPACTING COUNTY ROAD 6 WITH THE CITY AND ENGINEER.
- 5. CONTRACTOR SHALL MAINTAIN TWO-WAY TRAFFIC ON COUNTY ROAD 6 AT ALL TIMES.

PAVING, PAVEMENT MARKING, AND SIGNAGE NOTES

- 1. SEE GENERAL NOTES FOR ADDITIONAL PROJECT AND SITE INFORMATION.
- 2. CONTRACTOR SHALL MAINTAIN STREET AND TRAFFIC SIGNS AT ALL TIMES DURING CONSTRUCTION.
- 3. SIGNS, PAVEMENT MARKINGS, AND OTHER TRAFFIC CONTROL DEVICES MUST BE IN ACCORDANCE WITH THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD) AND CITY STANDARDS.

EROSION CONTROL NOTES

- 1. SEE GENERAL NOTES FOR ADDITIONAL PROJECT AND SITE INFORMATION.
- 2. CONTRACTOR SHALL CONFORM TO AND CONDUCT INSPECTIONS IN ACCORDANCE WITH THE NPDES PERMIT AND SWPPP REQUIREMENTS.
- 3. BEFORE SITE DISTURBANCE AND AS REQUIRED AS CONSTRUCTION PROGRESSES, CONTRACTOR SHALL INSTALL, MAINTAIN, REPAIR, AND REPLACE EROSION PREVENTION MEASURES AND SEDIMENT CONTROL DEVICES (INLET PROTECTION, CONSTRUCTION ENTRANCE, SILT FENCE, EROSION CONTROL BLANKET, ETC.) IN ACCORDANCE WITH THE SWPPP, NPDES PERMIT, CITY, AND STATE REQUIREMENTS.
- 4. ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED DEPENDING ON SITE CONDITIONS DURING CONSTRUCTION. COORDINATE WITH ENGINEER.
- 5. CONTRACTOR SHALL STABILIZE ALL EXPOSED SOIL AREAS WITHIN THE CONSTRUCTION LIMITS WITHIN 7 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE THAT HAS TEMPORARILY (WILL NOT RESUME FOR A PERIOD EXCEEDING 14 CALENDAR DAYS) OR PERMANENTLY CEASED. STABILIZATION MUST BE INITIATED PROMPTLY.
- 6. CONTRACTOR SHALL REMOVE ANY SEDIMENT THAT HAS TRACKED ONTO PAVED SURFACES BOTH ON AND OFFSITE WITHIN 24 HOURS AND AS DIRECTED BY CITY OR ENGINEER. SWEEP STREET IN ACCORDANCE WITH CITY AND NPDES PERMIT REQUIREMENTS.
- 7. CONTRACTOR SHALL COMPLETE CONCRETE WASH-OUT OFF-SITE OR PROVIDE SELF-CONTAINED CONCRETE READY MIX TRUCKS.
- 8. CONTRACTOR SHALL MINIMIZE DUST FROM CONSTRUCTION OPERATIONS BY PROVIDING WATER OR OTHER APPROVED METHOD ON A DAILY BASIS.
- 9. CONTRACTOR SHALL PHASE GRADING WORK TO MINIMIZE THE DURATION THAT DISTURBED SOIL IS EXPOSED.
- 10.CONTRACTOR SHALL PROVIDE/INSTALL DIVERSION DITCHES, SEDIMENT BASINS, AND OTHER EROSION PROTECTION/SEDIMENT CONTROL MEASURES AS NECESSARY DURING INTERIM PROJECT CONDITIONS (NOT SHOWN ON PLANS) TO MANAGE/DIVERT STORM WATER AWAY FROM SITE FEATURES AND CONTROL EROSION/SEDIMENT. CONTRACTOR SHALL ADJUST MEASURES AS NECESSARY THROUGHOUT PROJECT PHASING.
- 11.CONTRACTOR SHALL LOCATE SOIL STOCKPILES NO LESS THAN 50 FEET FROM ROADWAYS, STORMWATER INLETS, PONDS, WETLANDS, DRAINAGE CHANNELS, AND OTHER SURFACE WATERS. IF REMAINING FOR MORE THAN 7 DAYS, STABILIZE THE STOCKPILES BY MULCHING, VEGETATED COVER, TARPS, OR OTHER MEANS IN ACCORDANCE WITH THE NPDES PERMIT. PLACE PERIMETER SEDIMENT CONTROLS AROUND STOCKPILES TO CONTROL EROSION. COVER TEMPORARY STOCKPILES LOCATED ON PAVED SURFACES IF LEFT FROM MORE THAN 24 HOURS.
- 12.CONTRACTOR SHALL REMOVE ALL EROSION CONTROL MEASURES AFTER SITE HAS BEEN STABILIZED AND VEGETATION IS ESTABLISHED AS DIRECTED BY ENGINEER. EROSION CONTROL MEASURES USED FOR CONSTRUCTION MUST NOT BE REMOVED UNTIL AUTHORIZED BY OWNER OR ENGINEER.
- 13.CONTRACTOR SHALL SUBMIT THE NOTICE OF TERMINATION AT THE COMPLETION OF THE PROJECT IN ACCORDANCE WITH THE NPDES PERMIT AND SWPPP REQUIREMENTS.

GRADING NOTES

- 1. SEE GENERAL NOTES FOR ADDITIONAL PROJECT AND SITE INFORMATION.
- 2. PROPOSED CONTOURS ARE TO FINISHED SURFACE GRADE, UNLESS NOTED OTHERWISE.
- 3. THE SITE HAS NOT NECESSARILY BEEN DESIGNED TO BALANCE THE ON-SITE MATERIALS. EXCESS MATERIAL, UNLESS NOTED OTHERWISE, IS THE PROPERTY OF THE CONTRACTOR AND IS TO BE MOVED AND DISPOSED OF OFFSITE IN ACCORDANCE WITH APPLICABLE LAWS.
- 4. CONTRACTOR SHALL BACKFILL SUBGRADE AND TRENCH EXCAVATIONS PROMPTLY AFTER EXCAVATION FOR PUBLIC SAFETY.
- 5. CONTRACTOR SHALL PROVIDE TOPSOIL, SEED/SOD AND MULCH IN ACCORDANCE WITH THE EROSION CONTROL PLAN.
- 6. ALL DISTURBED PERVIOUS AREAS ARE TO RECEIVE 6 INCHES OF IMPORTED OR SALVAGED TOPSOIL, UNLESS NOTED OTHERWISE. CONTRACTOR SHALL SALVAGE TOPSOIL BEFORE GRADING, AND STOCKPILE FOR

- RESPREADING.
- 7. EXISTING TOPSOIL ON SITE VARIES IN DEPTH. CONTRACTOR SHALL REMOVE SURFACE VEGETATION AND TOPSOIL AND OTHER LOOSE, SOFT OR OTHERWISE UNSUITABLE MATERIAL FROM THE IMPERVIOUS AREAS BEFORE PLACEMENT OF SUITABLE FILL MATERIAL.
- 8. CONTRACTOR SHALL EXCAVATE AND DISPOSE OF UNSUITABLE OR CONTAMINATED SOILS DISCOVERED ONSITE IN ACCORDANCE WITH APPLICABLE REGULATIONS AND AS DIRECTED BY ENGINEER.
- 9. CONTRACTOR IS RESPONSIBLE FOR MEETING GRADING/COMPACTION REQUIREMENTS OUTLINED IN THE SPECIFICATIONS FOR THE PROJECT.
- 10.EXISTING SPOT ELEVATIONS AT MATCH POINTS ARE BASED ON INTERPOLATED POINT TO POINT SURVEY DATA. CONTRACTOR IS RESPONSIBLE FOR VERIFYING CONNECTION POINTS PRIOR TO INSTALLATION OF IMPROVEMENTS. CONTRACTOR SHALL NOTIFY ENGINEER IN WRITING IMMEDIATELY OF ANY FIELD DISCREPANCIES. CONTRACTOR IS RESPONSIBLE FOR MAKING NECESSARY ADJUSTMENTS IN THE FIELD FOR CONSTRUCTABILITY, REGULATORY COMPLIANCE (ADA), POSITIVE DRAINAGE, AND TO ENSURE SMOOTH TRANSITIONS TO FIELD CONDITIONS. CONTRACTOR IS RESPONSIBLE FOR REWORK OF A DISCREPANCY THAT IS NOT COMMUNICATED TO THE ENGINEER IN WRITING.

STORM SEWER NOTES

- 1. CONTRACTOR SHALL COMPLY WITH THE SPECIFICATIONS OF THE CITY AND CEAM FOR MATERIALS, INSTALLATION, AND TESTING OF STORM UTILITIES
- 2. CONTRACTOR SHALL VERIFY PIPE SIZE, MATERIAL, AND ELEVATION FOR CONNECTIONS. PROVIDE APPROPRIATE PIPES AND FITTINGS REQUIRED TO MAKE CONNECTIONS TO EXISTING INFRASTRUCTURE AS VERIFIED IN THE FIELD.
- 3. CONTRACTOR SHALL PLACE AND COMPACT SUITABLE FILL MATERIAL BEFORE INSTALLATION OF PROPOSED UTILITIES.
- 4. LINES UNDERGROUND SHALL BE INSTALLED, INSPECTED, AND APPROVED PRIOR TO BACKFILLING IN ACCORDANCE WITH CITY HAVING JURISDICTION REQUIREMENTS.
- 5. PIPE LENGTH INDICATED BETWEEN STRUCTURES IS FROM CENTER OF STRUCTURE TO CENTER OF STRUCTURE UNLESS NOTED OTHERWISE. PIPE LENGTH INDICATED BETWEEN STRUCTURE AND FLARED END SECTION IS FROM CENTER OF STRUCTURE TO END OF FLARED END SECTION.

FILTRATION BENCH NOTES

- 1. CONTRACTOR SHALL STAGE CONSTRUCTION APPROPRIATELY AND INSTALL NECESSARY EROSION CONTROL TO PREVENT SEDIMENT WASHING INTO THE FILTRATION BENCH.
- 2. CONTRACTOR SHALL STAGE CONSTRUCTION APPROPRIATELY TO MINIMIZE COMPACTION OF THE SOILS IN THE FILTRATION AREA. CONTRACTOR SHALL ACCOMPLISH FINAL GRADING OF THE BENCH SYSTEM WITH LOW-IMPACT (WIDE TRACKED) EARTH MOVING EQUIPMENT TO PREVENT COMPACTION.
- 3. CONTRACTOR SHALL STAKE OFF AND MARK THE PROJECT AREA TO KEEP CONSTRUCTION TRAFFIC, EQUIPMENT AND MATERIAL STOCKPILES OUT OF THE PROPOSED FILTRATION AREAS.
- 4. CONTRACTOR SHALL STAGE CONSTRUCTION APPROPRIATELY AND INSTALL NECESSARY EROSION CONTROL TO PREVENT SEDIMENT AND TOPSOIL FROM WASHING INTO THE FILTRATION AREA. IN THE EVENT THAT SEDIMENT IS INTRODUCED INTO THE FILTRATION AREA, THE CONTRACTOR SHALL REMOVE THE MATERIAL BEFORE PROCEEDING WITH CONSTRUCTION
- 5. CONTRACTOR SHALL NOT EXCAVATE THE FILTRATION BENCH UNTIL THE CONTRIBUTING DRAINAGE AREAS WITH EXPOSED SOIL HAVE BEEN STABILIZED AND BITUMINOUS BASE COURSE INSTALLED ON CONTRIBUTING PAVEMENT AREAS. DIVERT UPLAND DRAINAGE AREAS TO PREVENT RUNOFF FROM ENTERING THE EXCAVATED CELL OR INTO THE WORK AREA. DO NOT ALLOW CONSTRUCTION RUNOFF INTO THE CELL(S), WHEN ALTERNATE DRAINAGE ROUTES ARE FEASIBLE.
- 6. CONTRACTOR SHALL ACCOMPLISH FINAL GRADING OF THE BASIN TO PREVENT COMPACTION. EXCAVATION SHOULD BE PERFORMED WITH A BACKHOE FROM THE SIDES AND OUTSIDE THE FOOTPRINT OF THE FILTRATION AREA. IF REQUIRED TO WORK WITHIN THE FILTRATION FOOTPRINT, ONLY LOW GROUND PRESSURE TRACKED EQUIPMENT SHALL BE ALLOWED. RUBBER TIRE EQUIPMENT IS PROHIBITED WITHIN THE FILTRATION AREA.
- 7. CONTRACTOR SHALL AVOID CONTAMINATION OF FILTRATION BASIN SOILS WITH SEDIMENT, IN-SITU OR TOPSOIL DURING AND AFTER INSTALLATION. MATERIALS MUST BE SEGREGATED. INSTALLATION WITH DRY SOIL CONDITIONS IS CRITICAL TO PREVENT SMEARING AND COMPACTION.
- 8. IN THE EVENT THAT SEDIMENT IS INTRODUCED INTO THE FILTRATION BASIN, THE CONTRACTOR SHALL REMOVE THE MATERIAL BEFORE PROCEEDING WITH CONSTRUCTION.
- 9. CONTRACTOR SHALL ENSURE FILTRATION BASIN IS FREE AND CLEAR OF SEDIMENT UPON FINAL COMPLETION OF CONSTRUCTION.

DEWATERING NOTES

- 1. CONTRACTOR SHALL ANTICIPATE GROUND WATER. A BID ITEM HAS BEEN PROVIDED FOR ALL DEWATERING AND TEMPORARY STORMWATER MANAGEMENT WORK NECESSARY FOR CONSTRUCTION.
- 2. CONTRACTOR SHALL OBTAIN APPLICABLE REQUIRED PERMITS (INCLUDING MN DNR WATER APPROPRIATION PERMIT) AND SUBMIT DEWATERING PLAN TO ENGINEER FOR REVIEW. DEWATERING MUST MEET PERMIT REQUIREMENTS AND BE ACCEPTED BEFORE STARTING CONSTRUCTION ACTIVITIES.
- 3. CONTRACTOR MUST DEWATER IN ACCORDANCE WITH THE PROJECT SWPPP AND NPDES PERMIT.
- 4. CONTRACTOR MUST DISCHARGE TURBID OR SEDIMENT-LADEN WATER RELATED TO DEWATERING OR BASIN DRAINING (E.G. PUMPED DISCHARGES, TRENCH/DITCH CUTS FOR DRAINAGE) TO A TEMPORARY OR PERMANENT SEDIMENTATION BASIN ON THE PROJECT SITE UNLESS INFEASIBLE. CONTRACTOR MAY DISCHARGE FROM THE TEMPORARY OR PERMANENT SEDIMENTATION BASINS TO THE SURFACE WATERS IF THE BASIN WATER HAS BEEN VISUALLY CHECKED TO ENSURE ADEQUATE TREATMENT HAS BEEN OBTAINED IN THE BASIN AND THAT NUISANCE CONDITIONS (SEE MINNESOTA RULES CHAPTER 7050.0210, SUBPART 2) WILL NOT RESULT FROM THE DISCHARGE. IF THE WATER CANNOT BE DISCHARGED TO A SEDIMENTATION BASIN PRIOR TO ENTERING THE SURFACE WATER, IT MUST BE TREATED WITH THE APPROPRIATE BMPs (E.G. SILT BAGS), SUCH THAT THE DISCHARGE DOES NOT ADVERSELY AFFECT THE RECEIVING WATER OR DOWNSTREAM PROPERTIES. IF THE CONTRACTOR MUST DISCHARGE WATER THAT CONTAINS OIL OR GREASE, THE CONTRACTOR MUST USE AN OIL-WATER SEPARATOR OR SUITABLE FILTRATION DEVICE (E.G. CARTRIDGE FILTERS, ABSORBENTS PADS) PRIOR TO DISCHARGING THE WATER. THE CONTRACTOR MUST ENSURE THAT DISCHARGE POINTS ARE ADEQUATELY PROTECTED FROM EROSION AND SCOUR. THE DISCHARGE MUST BE DISPERSED OVER NATURAL ROCK RIPRAP, SANDBAGS, PLASTIC SHEETING, OR OTHER ACCEPTED ENERGY DISSIPATION MEASURES.
- 5. CONTRACTOR MUST DISCHARGE WATER FROM DEWATERING OR BASIN-DRAINING ACTIVITIES IN A MANNER THAT DOES NOT CAUSE NUISANCE CONDITIONS, EROSION IN RECEIVING CHANNELS OR ON DOWN SLOPE PROPERTIES, OR INUNDATION IN WETLANDS CAUSING SIGNIFICANT ADVERSE IMPACT TO THE WETLAND.
- 6. IF THE CONTRACTOR IS USING FILTERS WITH BACKWASH WATER, THE CONTRACTOR MUST HAUL THE BACKWASH WATER AWAY FOR DISPOSAL. RETURN THE BACKWASH WATER TO THE BEGINNING OF THE TREATMENT PROCESS, OR INCORPORATE THE BACKWASH WATER INTO THE SITE IN A MANNER THAT DOES NOT CAUSE EROSION. THE CONTRACTOR MAY DISCHARGE BACKWASH WATER TO THE SANITARY SEWER IF PERMISSION IS GRANTED BY THE SANITARY SEWER AUTHORITY. THE CONTRACTOR MUST REPLACE AND CLEAN THE FILTER MEDIA USED IN DEWATERING DEVICES WHEN REQUIRED TO RETAIN ADEQUATE FUNCTION.

TREE PRESERVATION NOTES

- 1. CONTRACTOR SHALL PROTECT EXISTING TREES THAT ARE NOT TO BE REMOVED. INSTALL ORANGE MESH FENCING, 4 FEET HIGH, WITH STAKES EVERY 10 FEET, 5 FEET OUTSIDE OF THE DRIP LINE OF PRESERVED TREES, OR AT THE CONSTRUCTION LIMITS. DO NOT PERFORM ACTIONS WITHIN THE PROTECTED AREA THAT MAY HARM THE TREE AND COMPACT THE SOIL, INCLUDING EXCAVATION, STORING MATERIALS, PARKING AND TRAFFIC DURING CONSTRUCTION. WHERE CONSTRUCTION REQUIRES DISTURBANCE WITHIN THE PROTECTED AREAS, DISTURB THE ROOT ZONE AS LITTLE AS POSSIBLE.

- 2. TREE PROTECTION MEASURES/FENCING MUST BE IN PLACE PRIOR TO BEGINNING CONSTRUCTION AND MUST BE REVIEWED BY OWNER AND ENGINEER BEFORE STARTING CONSTRUCTION.
- 3. WHEN TREE ROOTS ARE ENCOUNTERED THAT MUST BE REMOVED, CONTRACTOR SHALL CUT ROOTS CLEANLY AS FAR FROM THE TREE AS POSSIBLE AND IMMEDIATELY WATER AND BACKFILL OVER THE ROOTS TO PREVENT DRYING.

HORIZONTAL AND VERTICAL CONTROL NOTES

- 1. THE HORIZONTAL CONTROL FOR THIS PLAN IS NAD83 HENNEPIN COUNTY COORDINATES SYSTEM US FOOT.
- 2. THE VERTICAL CONTROL FOR THIS PLAN IS NAVD88.

TEMPORARY STORMWATER MANAGEMENT NOTES

- 1. CONTRACTOR SHALL ANTICIPATE STORMWATER INFLOW THROUGHOUT THE DURATION OF THE PROJECT. A BID ITEM HAS BEEN PROVIDED FOR ALL DEWATERING AND TEMPORARY STORMWATER MANAGEMENT WORK NECESSARY FOR CONSTRUCTION.
- 2. BID ITEM "DEWATERING AND TEMPORARY STORMWATER MANAGEMENT" INCLUDES ANY AND ALL EFFORTS REQUIRED TO DRAWDOWN POND WATER LEVELS AND ISOLATE THE WORK AREA FROM STORMWATER FLOW, PUMP OR OTHERWISE REMOVE WATER FROM THE WORK AREA, MANAGE ANY STORMWATER INFLOW, GROUNDWATER INFLOW OR SEEPAGE THAT MAKES ITS WAY INTO THE WORK AREA.
- 3. CONTRACTOR SHALL SUBMIT A TEMPORARY STORMWATER MANAGEMENT PLAN FOR CITY, WATERSHED, AND ENGINEER REVIEW AND APPROVAL PRIOR TO BEGINNING CONSTRUCTION. CONTRACTOR SHALL INCLUDE PROVISIONS IN THE PLAN THAT ADDRESS HOW THE WORK AREA WILL BE PROTECTED AND HOW THE POND WILL BE DRAWDOWN IN THE EVENT OF LARGE RAIN EVENTS.
- 4. TEMPORARY STORMWATER MANAGEMENT PLAN SHALL MINIMALLY CONSIST OF THE FOLLOWING:
  - A. DETAILED SCHEDULE THAT INCLUDES INSTALLATION OF TEMPORARY EROSION CONTROL AND PUMPING.
  - B. LIST OF EQUIPMENT AND MATERIALS THAT WILL BE UTILIZED FOR TEMPORARY STORMWATER MANAGEMENT DURING CONSTRUCTION.
- 5. CONTRACTOR SHALL FOLLOW ALL ADDITIONAL REQUIREMENTS NOTED IN CITY, DNR, NPDES, AND OTHER RELEVANT PERMITS.
- 6. CONTRACTOR SHALL NOT OBSTRUCT STREET TRAFFIC FOR TEMPORARY STORMWATER MANAGEMENT PURPOSES.



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MINNETONKA, MN 55345

**MINNEHAHA CREEK  
WATERSHED DISTRICT**

COUNTY ROAD 6  
STORMWATER POND RETROFIT

COUNTY ROAD 6 STORMWATER POND  
ORONO, MINNESOTA

PROJECT TITLE:

ISSUE NO.:	0								
DESCRIPTION:	ISSUED FOR 90% REVIEW								
DATE:	03/12/2025								

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.

CHRIS J. MEEHAN

LICENSE NO.: 43066

DATE: XX/XX/2024

PROJECT NO.: 227707038

DWN BY: SMD    CHKD BY: NPW    APP'D BY: CJM

ISSUE DATE: XX/XX/2024

ISSUE NO.: 0

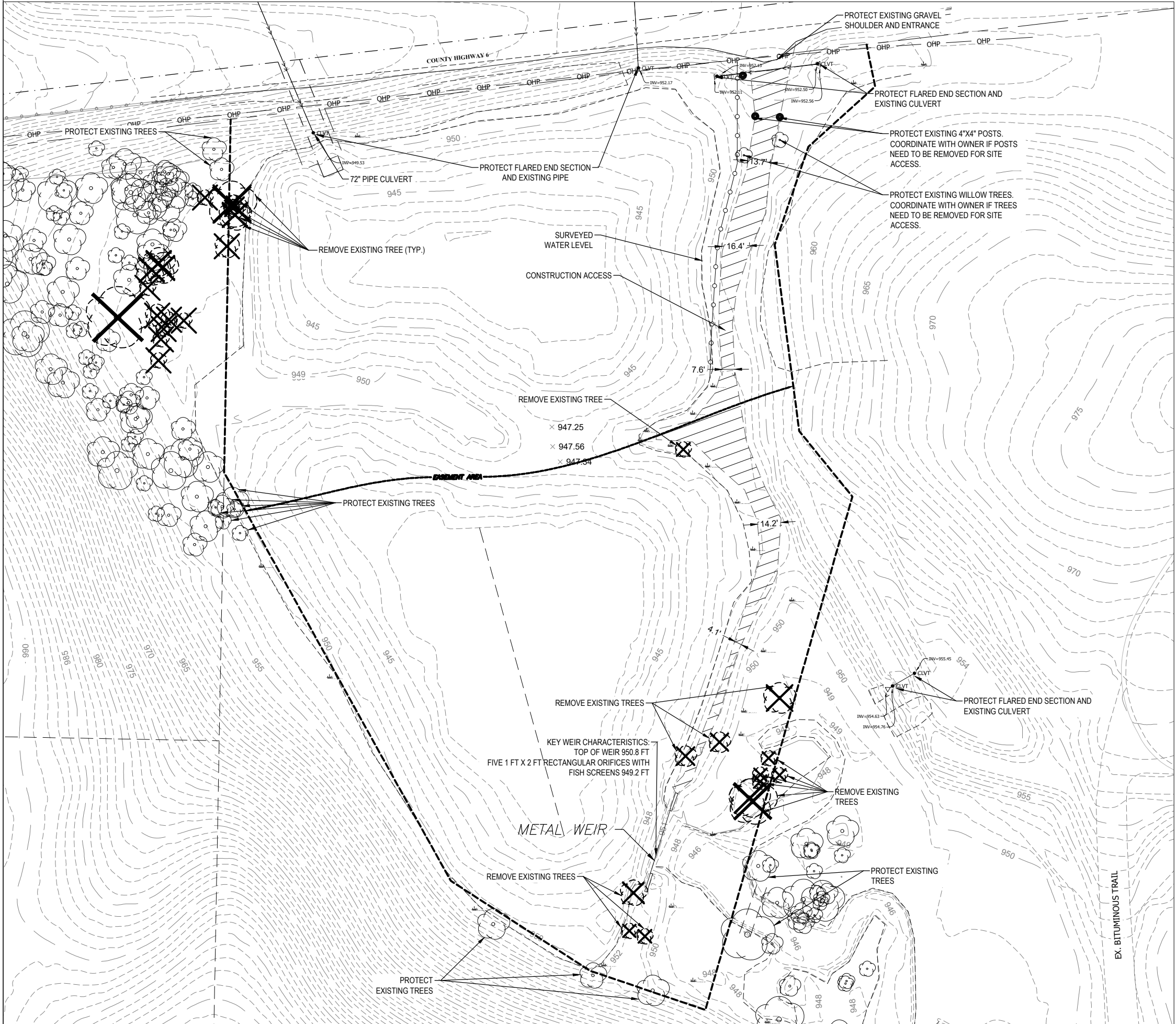
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G-003

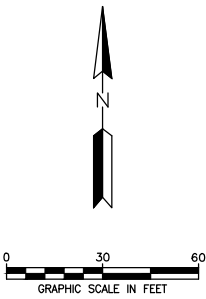
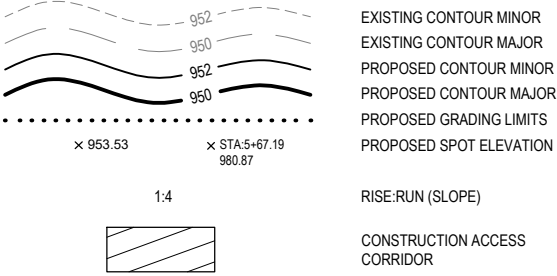


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LEGEND



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**COUNTY ROAD 6  
STORMWATER POND RETROFIT**  
COUNTY ROAD 6 STORMWATER POND  
ORONO, MINNESOTA

PROJECT TITLE:	ISSUE NO.:	DESCRIPTION:	DATE:
	0	ISSUED FOR 90% REVIEW	03/21/2025

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.

CHRIS J. MEEHAN  
LICENSE NO.: 43066  
DATE: XX/XX/2024

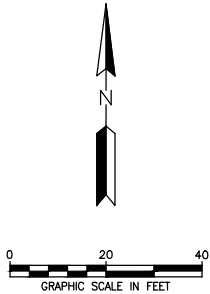
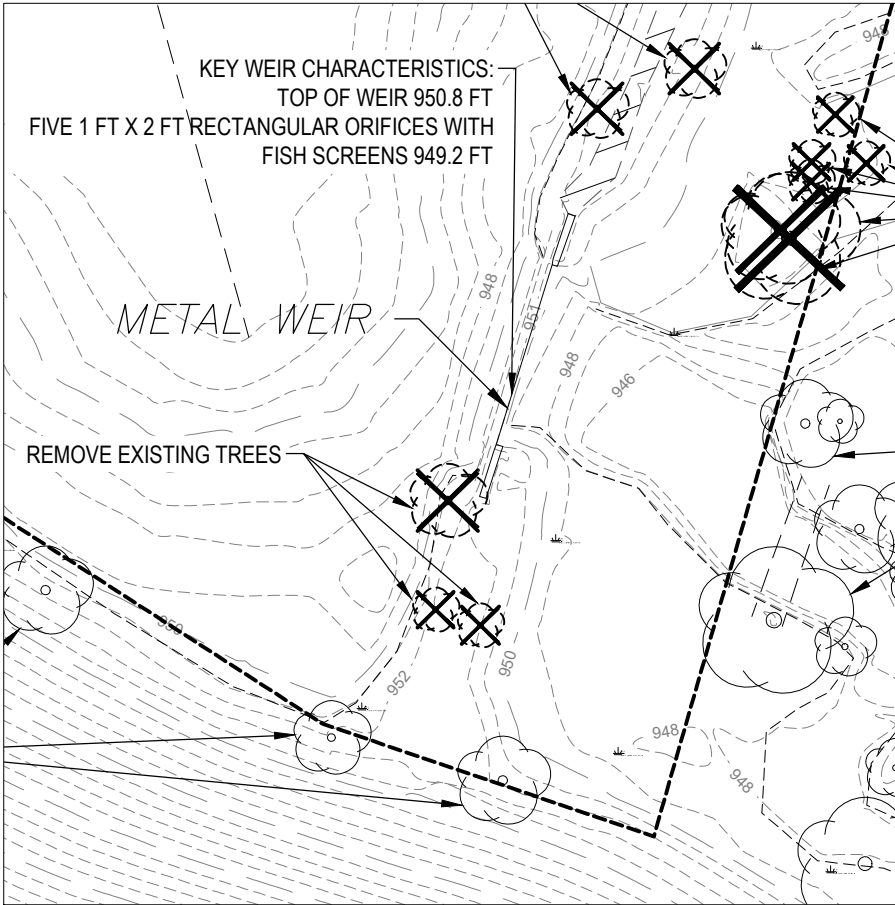
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CHKD BY: NPW  
APP'D BY: CJM  
ISSUE DATE: XX/XX/2024

ISSUE NO.: 0

SHEET TITLE:  
EXISTING CONDITIONS AND  
REMOVAL PLAN

SHEET NO.:  
**C-001**



NOTES

1. SEE SHEET G-002 FOR ADDITIONAL PROJECT NOTES
2. CONTRACTOR TO PROVIDE STORMWATER BYPASS FROM POND INLET TO POND OUTLET AS NECESSARY, AS WEATHER CONDITIONS DICTATE.
3. CONTRACTOR TO PROVIDE EROSION CONTROL BLANKET ON ALL SLOPES ABOVE NWL GREATER THAN 4:1 SLOPE UPON FINAL EXCAVATION FOR POND SIDE SLOPE RESTORATION.
4. ALL STOCKPILING MUST TAKE PLACE WITHIN EXCAVATED POND FOOTPRINT.



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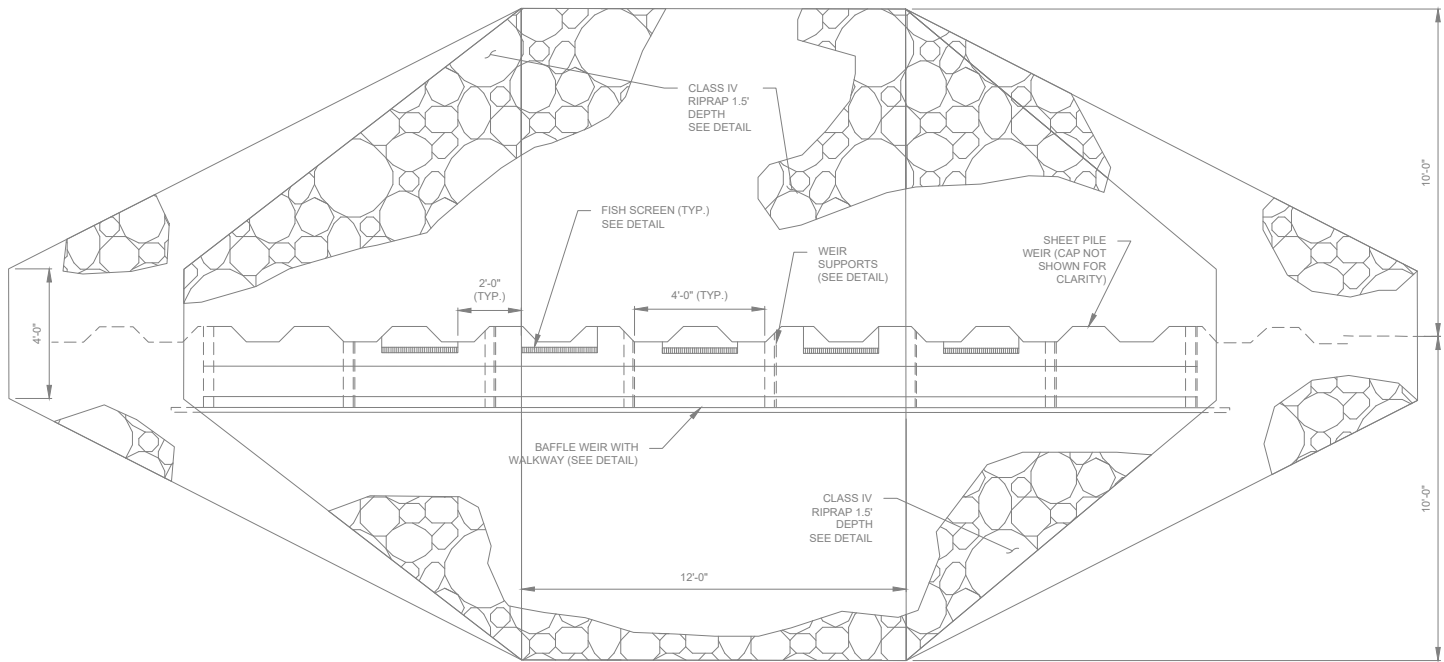
MINNEHAHA CREEK  
WATERSHED  
DISTRICT

15320 MINNETONKA BLVD  
MINNETONKA, MN 55345



COUNTY ROAD 6  
STORMWATER POND RETROFIT  
COUNTY ROAD 6 STORMWATER POND  
ORONO, MINNESOTA

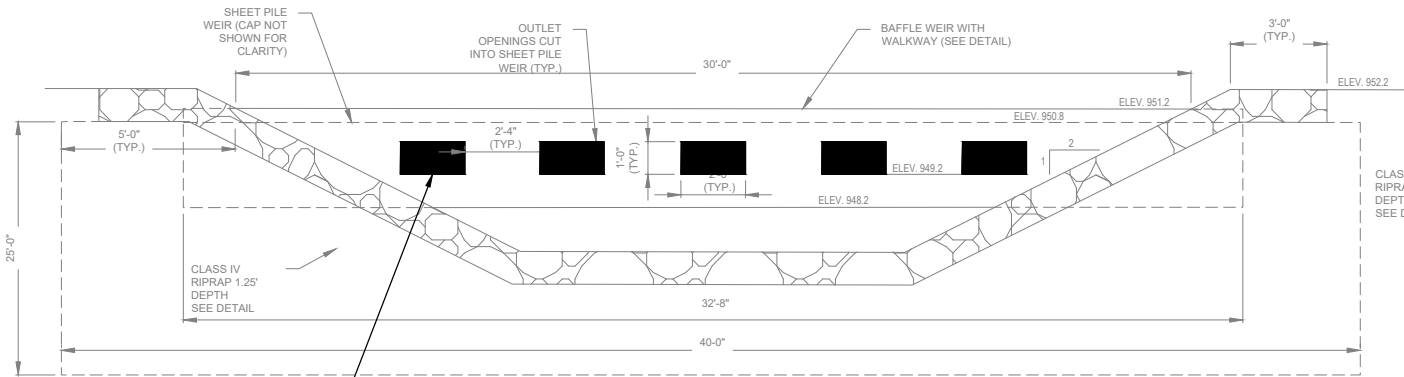
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SHEET PILE WEIR - PLAN VIEW

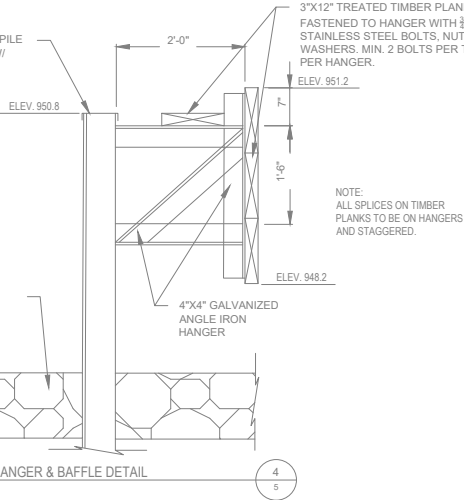
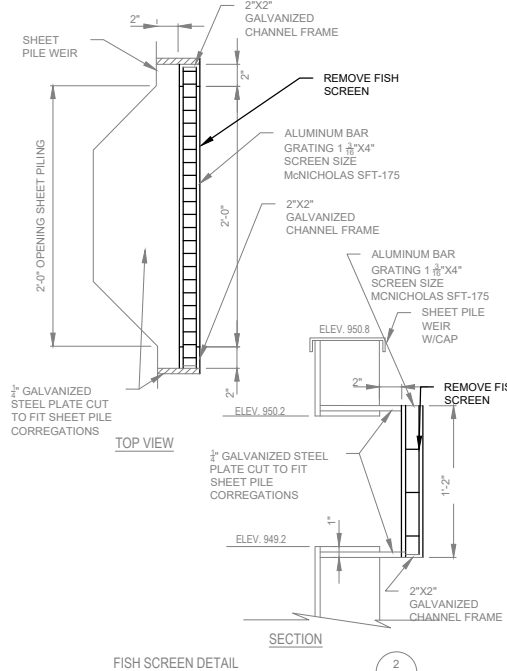
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NOTE:  
SHEET PILING SHALL BE GALVANIZED  
PZZZ GRADE A328.  
  
PILE CAP SHALL BE GALVANIZED C12X20.7 A38.  
PROVIDE 3" EXPANSION JOINT EVERY 10'-0"  
MAXIMUM.  
  
CONTRACTOR TO PLACE CONTINUOUS WELD BEAD  
BETWEEN CAP AND SHEET PILE.



SHEET PILE WEIR - FRONT VIEW

3  
15



PROJECT TITLE:

ISSUE NO.:

0

DESCRIPTION:  
ISSUED FOR 90% REVIEW

DATE:  
03/21/2025

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.

CHRIS J. MEEHAN

LICENSE NO.: 43066

DATE: XX/XX/2024

PROJECT NO.: 227707038

DWN BY: SMD

CHKD BY: NPW

APP'D BY: CJM

ISSUE DATE: XX/XX/2024

ISSUE NO.: 0

SHEET TITLE:

EXISTING CONDITIONS AND REMOVAL PLAN

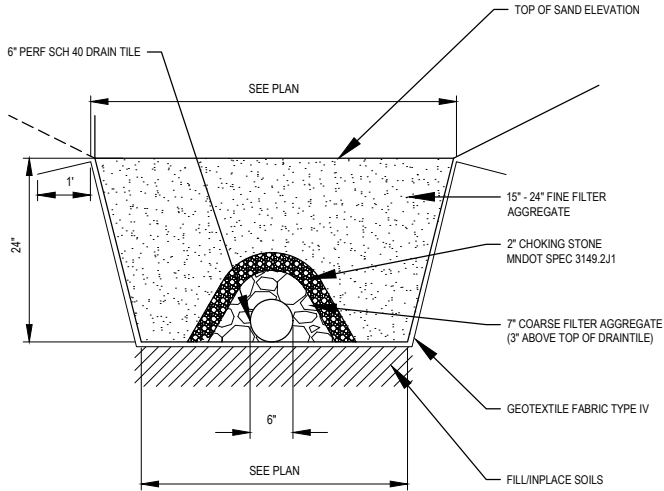
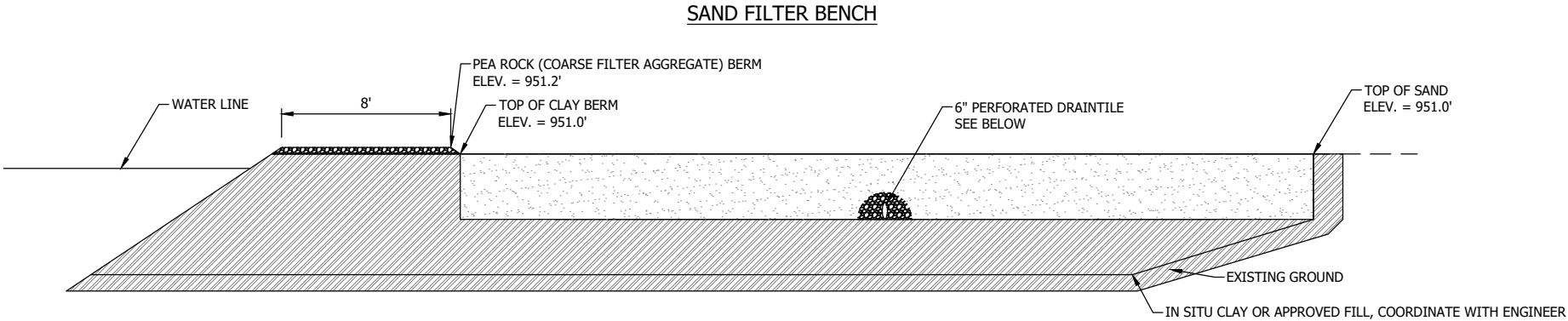
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CLIENT:  
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WATERSHED  
DISTRICT**  
15320 MINNETONKA BLVD  
MINNETONKA, MN 55345



**COUNTY ROAD 6  
STORMWATER POND RETROFIT**  
COUNTY ROAD 6 STORMWATER POND  
ORONO, MINNESOTA

PROJECT TITLE:

DATE:	DESCRIPTION:	ISSUE NO.:
03/21/2025	ISSUED FOR 90% REVIEW	0

CERTIFICATION:  
I HEREBY CERTIFY THAT THIS PLAN,  
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LICENSE NO.: 43066  
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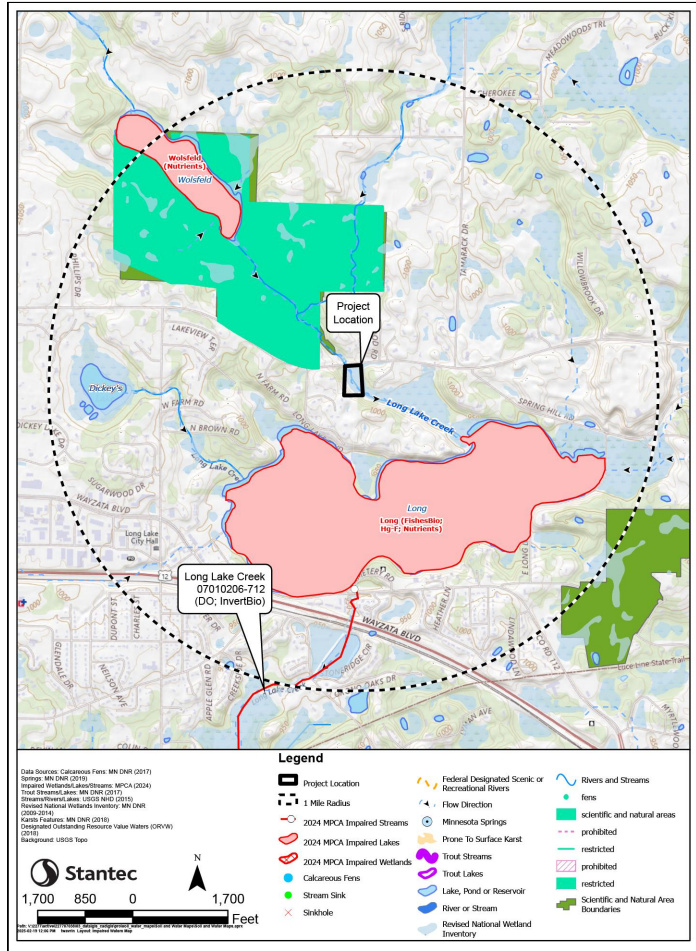
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SHEET TITLE:  
**TYPICAL SECTIONS PLAN**

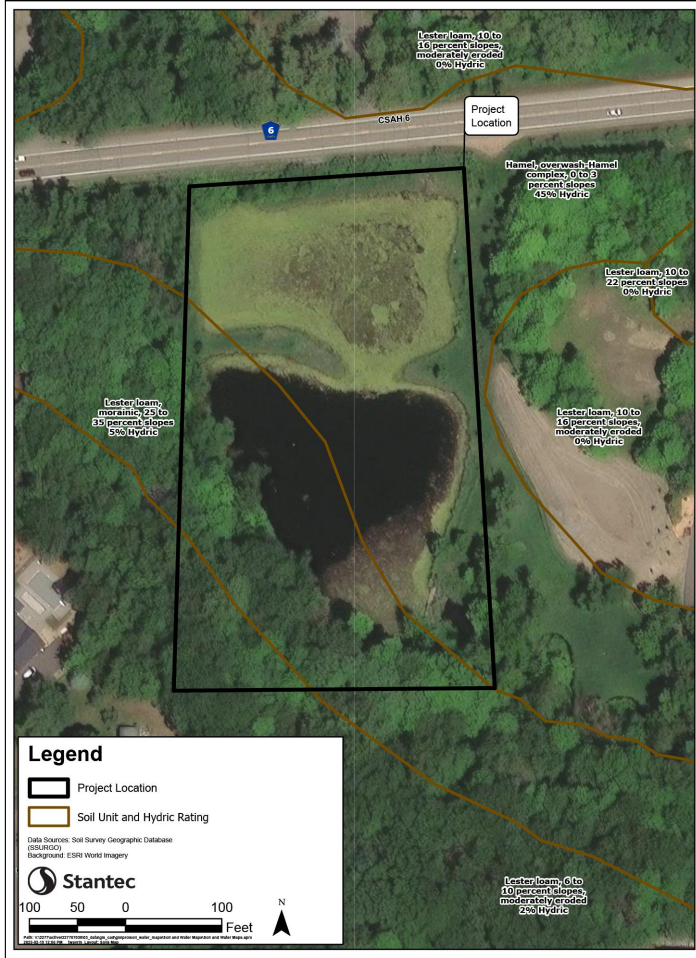
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IMPAIRED WATERS MAP



SOIL MAP



PROJECT INFORMATION

PROJECT NAME: COUNTY ROAD 6 STORMWATER RETROFIT  
PROJECT LOCATION: COUNTY ROAD 6 ORONO, MINNESOTA  
PROJECT TYPE: RETROFIT OF EXISTING STORMWATER BMP  
TOTAL AREA DISTURBED BY CONSTRUCTION: APPROXIMATELY 1.73 ACRES. THE TOTAL SITE AREA IS APPROXIMATELY 3.60 ACRES.

ESTIMATED CONSTRUCTION DATES: PROJECTED CONSTRUCTION DATES FALL AND WINTER OF 2025  
CUMULATIVE IMPERVIOUS SURFACE/PERMANENT STORMWATER MANAGEMENT REQUIREMENTS:  
THE PROPOSED PROJECT RESULTS IN A ±0.0 ACRE NET INCREASE/DECREASE IN IMPERVIOUS SURFACE WITHIN THE LIMITS OF DISTURBANCE. INCLUDE ANY INFORMATION ABOUT FUTURE EXPANSION IMPERVIOUS HERE.

THE SITE ULTIMATELY DRAINS TO LONG LAKE CREEK WHICH IS LISTED AS AN IMPAIRED WATER FOR FISH BIOASSESSMENTS MERCURY IN FISH, NUTRIETS.

THE PERMANENT STORMWATER SYSTEM WILL CONSIST OF MODIFICATION TO THE EXISTING POND TO ADD A FILTRATION BENCH.

PARTY RESPONSIBLE FOR LONG TERM OPERATION AND MAINTENANCE OF THE SITE (OWNER): MINNEHAHA CREEK WATERSHED DISTRICT  
CONTACT: KALEY CERMAK  
CONTACT PHONE: 362-641-4501  
CONTACT EMAIL: KCERMAK@MINNEHAHACREEK.ORG  
PARTY RESPONSIBLE FOR IMPLEMENTATION OF THE SWPPP (CONTRACTOR): TBD  
CONTRACTOR: TBD  
CONTRACTOR PHONE: TBD  
CONTRACTOR EMAIL: TBD

CONTRACTOR SHALL PROVIDE A CHAIN OF RESPONSIBILITY WITH ALL OPERATORS ON THE SITE FOR INCORPORATION INTO THIS SWPPP DOCUMENT TO ENSURE THAT THE SWPPP WILL BE IMPLEMENTED AND STAY IN EFFECT UNTIL THE CONSTRUCTION PROJECT IS COMPLETE (THROUGH FINAL STABILIZATION AND NOT SUBMITTAL). CONTRACTOR SHALL ALSO PROVIDE DOCUMENTATION OF PERSONNEL TRAINING IN ACCORDANCE WITH THE PERMIT FOR INCORPORATION INTO THIS SWPPP DOCUMENT AS SOON AS THE PERSONNEL FOR THE PROJECT HAVE BEEN DETERMINED. CONTRACTOR IS RESPONSIBLE FOR KEEPING A FINAL SWPPP DOCUMENT, CONTAINING THE INFORMATION REQUIRED ABOVE, AT THE CONSTRUCTION SITE FOR THE DURATION OF THE PROJECT.

SWPPP DOCUMENTS

THE SWPPP IS COMPOSED OF, BUT NOT LIMITED TO, THE BELOW PROJECT DOCUMENTS. THESE DOCUMENTS SHALL BE KEPT ON THE PROJECT SITE AT ALL TIMES THROUGHOUT CONSTRUCTION. THE SWPPP SHALL BE AMENDED BY THE PERSON RESPONSIBLE TO INCLUDE ANY DOCUMENTS NECESSARY TO ENSURE ADHERENCE TO THE GENERAL PERMIT.

COUNTY ROAD 6 STORMWATER POND RETROFIT CIVIL CONSTRUCTION DRAWINGS BY STANTEC DATED FEBRUARY, 2025

RECORD RETENTION - THE SWPPP, ALL CHANGES TO IT, AND INSPECTION AND MAINTENANCE RECORDS MUST BE KEPT ON-SITE DURING CONSTRUCTION; THE CONSTRUCTION DRAWINGS ARE INCORPORATED HEREIN BY REFERENCE, AND A COPY OF THE PLAN SET SHOULD BE KEPT ON-SITE WITH THE SWPPP RECORDS. THE OWNER MUST RETAIN A COPY OF THE SWPPP ALONG WITH THE FOLLOWING RECORDS FOR THREE (3) YEARS AFTER SUBMITTAL OF THE NOTICE OF TERMINATION:  
1. ANY OTHER PERMITS REQUIRED FOR THE PROJECT;  
2. RECORDS OF ALL INSPECTION AND MAINTENANCE CONDUCTED DURING CONSTRUCTION;  
3. ALL PERMANENT OPERATIONS AND MAINTENANCE AGREEMENTS THAT HAVE BEEN IMPLEMENTED, INCLUDING ALL RIGHT OF WAY, CONTRACT, COVENANTS AND OTHER BINDING REQUIREMENTS REGARDING PERPETUAL MAINTENANCE; AND  
4. ALL REQUIRED CALCULATIONS FOR DESIGN OF THE TEMPORARY AND PERMANENT STORMWATER MANAGEMENT SYSTEMS.

INSPECTIONS

THE INSPECTION LOG WILL BE COMPLETED BY THE CONTRACTOR FOR THE CONSTRUCTION SITE. INSPECTOR(S): TBD - TRAINING DOCUMENTATION (PER SECTION 21.2 OF THE PERMIT) WILL BE INCORPORATED INTO THIS SWPPP AS SOON AS THE PERSONNEL FOR THE PROJECT HAVE BEEN DETERMINED. THE CONTRACTOR WILL MAKE CORRECTIONS OR REPAIRS REQUIRED TO COMPLY WITH THE PERMIT.

INSPECTIONS AT THE SITE WILL BE COMPLETED IN ACCORDANCE WITH THE PERMIT AS FOLLOWS: ONCE EVERY SEVEN (7) DAYS DURING ACTIVE CONSTRUCTION AND, WITHIN 24 HOURS AFTER A RAINFALL EVENT GREATER THAN 0.5 INCHES IN 24 HOURS.

1. THE INDIVIDUAL PERFORMING INSPECTIONS MUST BE TRAINED AS REQUIRED BY SECTION 21.3 OF THE PERMIT. TRAINING DOCUMENTATION SHALL BE PROVIDED BY THE CONTRACTOR FOR INCORPORATION INTO THE SWPPP. INSPECTIONS MUST INCLUDE STABILIZED AREAS, EROSION PREVENTION AND SEDIMENT CONTROL BMPs, AND INFILTRATION AREAS. CORRECTIVE ACTIONS MUST BE IDENTIFIED AND DATE OF CORRECTION MUST BE NOTED AS IDENTIFIED IN SECTION 11.11 OF THE PERMIT. ANY OFFSITE DISCHARGE MUST BE DOCUMENTED AS IDENTIFIED IN SECTION 11.11 OF THE PERMIT. ANY AMENDMENTS TO THE SWPPP PROPOSED AS A RESULT OF THE INSPECTION MUST BE DOCUMENTED WITHIN SEVEN (7) CALENDAR DAYS. AN INSPECTION LOG IS ALSO ATTACHED; THE INSPECTION LOG AND SWPPP MUST BE KEPT ON-SITE FOR THE DURATION OF THE CONSTRUCTION PROJECT.

AT A MINIMUM, THE FOLLOWING SHALL BE COMPLETED DURING EACH INSPECTION:  
-RECORD DATE AND TIME OF INSPECTION.  
-RECORD RAINFALL RECORDS SINCE THE MOST RECENT INSPECTION.  
-INSPECT THE SITE FOR EXCESS EROSION AND SEDIMENTATION.  
-INSPECT THE SITE FOR DEBRIS, TRASH, AND SPILLS.  
-INSPECT TEMPORARY EROSION AND SEDIMENTATION CONTROL DEVICES.  
-INSPECT CONSTRUCTION ENTRANCES FOR SEDIMENT TRACKING ONTO PUBLIC STREETS.  
-RECORD RECOMMENDED REPAIRS AND MODIFICATIONS TO EROSION AND SEDIMENT CONTROLS.  
-RECOMMEND ANY NECESSARY CHANGES TO THIS SWPPP.  
-RECORD REPAIRS AND MODIFICATIONS IMPLEMENTED SINCE PREVIOUS INSPECTIONS.  
-INSPECT THE ADJACENT STREETS AND CURB AND GUTTER FOR SEDIMENT, LITTER, AND CONSTRUCTION DEBRIS.

THE GENERAL CONTRACTOR MUST UPDATE THE SWPPP, INCLUDING THE JOBSITE BINDER AND SITE MAPS, TO REFLECT THE PROGRESS OF CONSTRUCTION ACTIVITIES AND GENERAL CHANGES TO THE PROJECT SITE. UPDATES SHALL BE MADE DAILY TO TRACK PROGRESS WHEN ANY OF THE FOLLOWING ACTIVITIES OCCUR: BMP INSTALLATION, MODIFICATION OR REMOVAL, CONSTRUCTION ACTIVITIES (E.G. PAVING, SEWER INSTALLATION, ETC), CLEARING, GRUBBING, GRADING, OR TEMPORARY AND PERMANENT STABILIZATION.

THE CONTRACTOR MAY UPDATE OR MODIFY THE SWPPP WITHOUT ENGINEER APPROVAL IN AN EMERGENCY SITUATION TO PREVENT SEDIMENT DISCHARGE OR PROTECT WATER QUALITY. THE CONTRACTOR IS ULTIMATELY RESPONSIBLE TO ENSURE COMPLIANCE WITH THE PERMIT AND PROTECTION OF DOWNSTREAM WATER QUALITY.

EROSION AND SEDIMENT CONTROL

PRIOR TO ANY SITE DISTURBANCE, AND AS REQUIRED AS CONSTRUCTION PROGRESSES, ANY PERMIT REQUIRED EROSION PREVENTION MEASURES AND THE SEDIMENT CONTROL DEVICES INLET PROTECTION, CONSTRUCTION ENTRANCE, SILT FENCE, EROSION CONTROL BLANKET SHOWN ON THE CONSTRUCTION DRAWINGS WILL BE INSTALLED AT THE SITE.

ALL EXPOSED SOIL AREAS WITHIN THE CONSTRUCTION LIMITS WILL BE STABILIZED WITHIN 7 DAYS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS TEMPORARILY (WILL NOT RESUME FOR A PERIOD EXCEEDING 7 CALENDAR DAYS) OR PERMANENTLY CEASED. STABILIZATION WILL BE INITIATED IMMEDIATELY. EXPOSED SOIL AREAS MUST HAVE TEMPORARY EROSION PROTECTION (SLASH MULCH, EROSION CONTROL BLANKET, SEED) OR PERMANENT COVER YEAR ROUND.

CONTRACTOR SHALL IMPLEMENT APPROPRIATE CONSTRUCTION PHASING, VEGETATIVE BUFFER STRIPS, HORIZONTAL SLOPE GRADING, AND OTHER CONSTRUCTION PRACTICES THAT MINIMIZE EROSION WHEN PRACTICAL. THE NORMAL WETTED PERIMETER OF ANY TEMPORARY OR PERMANENT DRAINAGE DITCH THAT DRAINS WATER FROM A CONSTRUCTION SITE, OR DIVERTS WATER AROUND A SITE, MUST BE STABILIZED WITHIN 200 LINEAL FEET FROM THE PROPERTY EDGE, OR FROM THE POINT OF DISCHARGE TO ANY SURFACE WATER. STABILIZATION MUST BE COMPLETED WITHIN 24 HOURS OF CONNECTING TO A SURFACE WATER. PIPE OUTLETS MUST BE PROVIDED WITH TEMPORARY OR PERMANENT ENERGY DISSIPATION WITHIN 24 HOURS OF CONNECTION TO A SURFACE WATER.

SWPPP IMPLEMENTATION, PHASING, AND SEQUENCE OF CONSTRUCTION:  
BMP AND EROSION CONTROL INSTALLATION SEQUENCE SHALL BE AS FOLLOWS:  
1. CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE, CONCRETE WASHOUT PIT, AND INSTALL SILT FENCE.  
2. INSTALL INLET PROTECTION AT EXISTING STORMWATER CULVERTS AND INLETS.  
3. PREPARE TEMPORARY STORAGE, PARKING, AND PHASING AREAS.  
4. CONSTRUCT AND STABILIZE DIVERSIONS AND TEMPORARY SEDIMENT TRAPS/BASINS.  
5. PERFORM CLEARING AND GRUBBING OF THE SITE, IF APPLICABLE.  
6. PERFORM MASS GRADING, ROUGH GRADE TO ESTABLISH PROPOSED DRAINAGE PATTERNS.  
7. BEGIN EXCAVATION OF PERMANENT STORMWATER BASIN AREAS. SEE SEQUENCING BELOW FOR ADDITIONAL INFORMATION.  
8. START CONSTRUCTION OF THE BUILDING PAD AND STRUCTURES.  
9. INSTALL SMALL UTILITIES (GAS, ELECTRIC, PHONE, CABLE, ETC.).  
10. PAVE CURB AND GUTTER, SIDEWALK, AND PARKING LOT/ DRIVEWAYS.  
11. TEMPORARILY SEED WITH PURE LIVE SEED THROUGHOUT CONSTRUCTION. DISTURBED AREAS THAT WILL BE INACTIVE FOR 7 DAYS OR MORE AS REQUIRED BY NPDES OR PERMIT.

SEDIMENT CONTROL PRACTICES MUST MINIMIZE SEDIMENT FROM ENTERING SURFACE WATERS, INCLUDING CURB AND GUTTER SYSTEMS AND STORM SEWER INLETS. THE FOLLOWING MEASURES WILL BE TAKEN AS SEDIMENT CONTROL PRACTICES IN ORDER TO MINIMIZE SEDIMENTS FROM ENTERING SURFACE WATERS:

1. INSTALLATION OF SEDIMENT CONTROL PRACTICES ON ALL DOWN GRADIENT PERIMETERS PRIOR TO LAND DISTURBING ACTIVITIES.  
2. SILT FENCING, BIOLOGS, OR OTHER SEDIMENT CONTROL SURROUNDING TEMPORARY SOIL STOCKPILES.  
3. VEHICLE TRACKING BMP AT CONSTRUCTION SITE ENTRANCE/EXIT. STREET SWEEPING SHALL BE PERFORMED IF VEHICLE TRACKING BMPs ARE NOT ADEQUATE TO PREVENT SEDIMENT TRACKING. TRACKED SEDIMENT MUST BE REMOVED FROM ALL PAVED SURFACES BOTH ON AND OFFSITE WITHIN 24 HOURS OF DISCOVERY PER THE PERMIT.  
4. STREET SWEEPING IS NOT TO BE USED AS A PRIMARY BMP FOR SEDIMENT TRACKING. IF SEDIMENT IS TRACKED OFFSITE, WORK WILL CEASE UNTIL PROPER EROSION CONTROL AND SEDIMENT CONTROL DEVICES ARE INSTALLED AND/OR BEING MAINTAINED TO PREVENT TRACKING BEYOND THE SITE'S PERIMETER (CONTAINMENT AREA). ALL STREET SWEEPING MUST BE PERFORMED UTILIZING A PICK-UP SWEEPER. IF NECESSARY WATER WILL ALSO BE USED TO CLEAN UP THE STREETS PRIOR TO BEING SWEEPED TO ENSURE THEY ARE FULLY CLEANED.

THE FOLLOWING GUIDELINES WILL BE USED TO DETERMINE IF POLLUTION CONTROL DEVICES REQUIRE MAINTENANCE, REPAIR, OR REPLACEMENT:  
-IF SEDIMENT CONTROL DEVICES SUCH AS SILT FENCE ARE FILLED TO 1/3 THE HEIGHT OF THE FENCE, REMOVE ALL SEDIMENT WITHIN 24 HOURS OF DETECTION OR NOTIFICATION.  
-IF INLET PROTECTION DEVICES APPEAR PLUGGED WITH SEDIMENT, ARE FILLED TO 1/3 CAPACITY, OR HAVE STANDING WATER AROUND THEM, REMOVE THE SEDIMENT AND CLEAN OR REPLACE THE FILTER WITHIN 24 HOURS OF DETECTION OR NOTIFICATION.  
-IF THE GRAVEL CONSTRUCTION ENTRANCE(S) ARE FILLED WITH SEDIMENT EITHER REPLACE THE ENTRANCE OR ADD ADDITIONAL GRAVEL WITH 24 HOURS OF DETECTION OR NOTIFICATION.  
-IF SEDIMENT FROM THE SITE IS OBSERVED ON ADJACENT STREETS OR OTHER PROPERTIES, THE INSPECTOR SHALL IDENTIFY THE SOURCE AND DISCHARGE LOCATION OF THE SEDIMENT AND INSTRUCT TO IMPLEMENT ADDITIONAL EROSION AND SEDIMENT CONTROLS AT THOSE LOCATIONS TO PREVENT FUTURE DISCHARGES.  
-IF BUILDING MATERIALS, CHEMICALS, OR GENERAL REFUSE IS BEING USED, STORED, DISPOSED OF, OR OTHERWISE MANAGED INAPPROPRIATELY, CORRECT SUCH DEFECTS WITHIN 24 HOURS OF DETECTION OR NOTIFICATION.  
-IF EXCESSIVE SEDIMENTS OR DEBRIS ARE OBSERVED AT THE FLARED END SECTION OUTFALLS, THE INSPECTOR SHALL DETERMINE THE SOURCE AND DISCHARGE LOCATIONS OF SUCH MATERIALS. IF THE DISCHARGE HAS OCCURRED ON THE PROPERTY, REMOVE THE SEDIMENTS AND DEBRIS WITHIN 24 HOURS OF NOTIFICATION AND CORRECT THE SOURCE OF SUCH MATERIALS AS DIRECTED BY THE INSPECTOR

POLLUTION PREVENTION MEASURES

SOLID WASTE:  
SOLID WASTE, INCLUDING BUT NOT LIMITED TO, COLLECTED ASPHALT AND CONCRETE MILLINGS, FLOATING DEBRIS, PAPER, PLASTIC, FABRIC, CONSTRUCTION AND DEMOLITION DEBRIS AND OTHER WASTE, INCLUDING ALL TRASH ONSITE, MUST BE REGULARLY DISPOSED OF PROPERLY AND MUST COMPLY WITH MPCA DISPOSAL REQUIREMENTS.

HAZARDOUS MATERIALS:  
HAZARDOUS MATERIALS, INCLUDING BUT NOT LIMITED TO OIL, GASOLINE, PAINT AND ANY HAZARDOUS SUBSTANCE MUST BE PROPERLY STORED INCLUDING SECONDARY CONTAINMENTS, TO PREVENT SPILLS, LEAKS OR OTHER DISCHARGE. RESTRICTED ACCESS TO STORAGE AREAS MUST BE PROVIDED TO PREVENT VANDALISM. STORAGE AND DISPOSAL OF HAZARDOUS WASTE MUST BE IN COMPLIANCE WITH MPCA REGULATIONS.

CONSTRUCTION EQUIPMENT/VEHICLES:  
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. REASONABLE STEPS TO PREVENT THE DISCHARGE OF SPILLED OR LEAKED CHEMICALS SHALL BE TAKEN. ADEQUATE SUPPLIES MUST BE AVAILABLE AT ALL TIMES TO CLEAN UP DISCHARGED MATERIALS; CONDUCT FUELING IN A CONTAINED AREA UNLESS INFEASIBLE.

CONCRETE WASHOUT AREA:  
CONCRETE WASHOUT WILL BE PERMITTED ON-SITE; CONTRACTOR SHALL FOLLOW ALL PERMIT REQUIREMENTS FOR CONCRETE WASHOUT. THE CONTRACTOR SHALL PROVIDE EFFECTIVE CONTAINMENT FOR ALL LIQUID AND SOLID WASTES GENERATED BY WASHOUT OPERATIONS. LIQUID AND SOLID WASHOUT WASTES MUST NOT CONTACT THE GROUND AND THE CONTAINMENT MUST BE DESIGNED TO PROHIBIT RUNOFF FROM THE WASHOUT OPERATIONS/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 CONCRETE WASHOUT AND DISPOSAL OF WASHOUT WASTES. CONTRACTOR SHALL REVERSE SWPPP TO INDICATE WASHOUT LOCATION ONCE THE LOCATION HAS BEEN DETERMINED.

FERTILIZERS AND LANDSCAPE MATERIALS MUST BE UNDER COVER TO PREVENT THE DISCHARGE OF POLLUTANTS OR PROTECTED BY SIMILARLY EFFECTIVE MEANS DESIGNED TO MINIMIZE CONTACT WITH STORMWATER.

PORTABLE TOILETS MUST BE POSITIONED SO THAT THEY ARE SECURE AND WILL NOT BE TIPPED OR KNOCKED OVER. SANITARY WASTE MUST BE DISPOSED OF PROPERLY.

FILTRATION BASIN SEQUENCING NOTES

1. CONTRACTOR SHALL STAGE CONSTRUCTION APPROPRIATELY AND SHALL NOT INSTALL FILTER MEDIA UNTIL THEY CONSTRUCT AND FULLY STABILIZE CONTRIBUTING DRAINAGE AREA.  
2. IN THE EVENT THAT SEDIMENT IS INTRODUCED INTO THE FILTRATION BASIN, THIS MATERIAL WILL NEED TO BE REMOVED PRIOR TO PROCEEDING WITH CONSTRUCTION.  
3. ALL SLOPES WITHIN PERMANENT STORMWATER SYSTEM (INCLUDING SWALES, BASINS, AND PONDS) SHALL BE STABILIZED WITH A EROSION CONTROL BLANKET.  
4. PROVIDE TOPSOIL AND SEED IN ACCORDANCE WITH THE EROSION CONTROL PLAN, LANDSCAPE PLAN, AND NPDES PERMIT.

GENERAL SWPPP NOTES

DEWATERING IS ANTICIPATED TO BE REQUIRED DURING TRENCHING FOR UTILITY CONSTRUCTION. IN THE EVENT THAT DEWATERING IS NECESSARY CONTRACTOR SHALL COMPLY WITH PERMIT SECTION 10.1 REQUIREMENTS FOR DEWATERING.

THIS SWPPP SHALL BE AMENDED BY THE CONTRACTOR IN ACCORDANCE WITH THE PERMIT AS NECESSARY TO INCLUDE ADDITIONAL REQUIREMENTS, TO CORRECT PROBLEMS IDENTIFIED, OR TO ADDRESS SITUATIONS PER SECTION 6.1 OF THE PERMIT.

THE PROJECT WILL DISTURB MORE LESS THAN 5 ACRES THAT PROMOTE DRAINAGE TO A COMMON LOCATION, THEREFORE A TEMPORARY SEDIMENT BASIN WILL NOT BE REQUIRED. THIS SWPPP SHALL BE AMENDED BY THE CONTRACTOR IN ACCORDANCE WITH THE GENERAL PERMIT TO INCLUDE TEMPORARY SEDIMENTATION BASINS, IF THEY BECOME NECESSARY. BASINS, IF DESIGNED BY THE CONTRACTOR, SHALL ACCOMMODATE NO LESS THAN 3,600 CUBIC FEET OF LIVE STORAGE PER ACRE OF CONTRIBUTING DRAINAGE AREA. BASIN OUTLETS SHALL BE DESIGNED TO WITHDRAW WATER FROM THE SURFACE OF THE BASIN. PREVENT SHORT-CIRCUITING AND THE DISCHARGE OF FLOATING DEBRIS. BASINS SHALL HAVE A STABILIZED EMERGENCY OVERFLOW LOCATION AND BE DESIGNED TO PREVENT THE DISCHARGE OF POLLUTANTS TO THE EXTENT PRACTICAL.

FINAL STABILIZATION:  
ALL PERVIOUS AREAS DISTURBED BY CONSTRUCTION AS DESIGNATED WILL RECEIVE VEGETATIVE COVER ACCORDING TO THE PLANS AND SPECIFICATIONS AND WITHIN THE SPECIFIED VEGETATIVE TIME SCHEDULE. FINAL STABILIZATION WILL OCCUR WHEN THE SITE HAS A UNIFORM VEGETATIVE COVER WITH A DENSITY OF 70% OVER THE RESTORED PERVIOUS AREAS. ALL TEMPORARY SYNTHETIC EROSION PREVENTION AND SEDIMENT CONTROL BMPs (SUCH AS SILT FENCE) MUST BE REMOVED AS PART OF THE SITE FINAL STABILIZATION. ALL SEDIMENT MUST BE CLEANED OUT OF CONVEYANCES AND TEMPORARY SEDIMENTATION BASINS IF APPLICABLE. NOTICE OF TERMINATION (NOT) MUST BE SUBMITTED WITHIN 30 DAYS OF FINAL STABILIZATION.

IMPAIRED WATERS, SPECIAL WATERS, AND WETLANDS

THIS PROJECT IS LOCATED WITHIN ONE MILE OF LONG LAKE CREEK AND ULTIMATELY DISCHARGES TO LONG LAKE AN IMPAIRED WATER. LONG LAKE IS LOCATED SOUTHEAST OF THE PROJECT LOCATION AND IS LISTED AS IMPAIRED FOR FISH BIOASSESSMENTS FISH HG-F, NUTRIENTS. DISCHARGE TO AN IMPAIRED WATER REQUIRES IMPLEMENTATION OF SECTION 23.1 OF THE PERMIT AS INCORPORATED INTO THIS SWPPP DOCUMENT.

THE PROJECT SITE DISCHARGES TO EXISTING STORMWATER POND FOR STORMWATER MANAGEMENT PRIOR TO THE ULTIMATE DISCHARGE POINT ONSITE. THE PROJECT WILL NOT IMPACT WETLANDS. SITE SOILS - SITE SOILS ARE SHOWN ON THIS SHEET. THIS PROJECT IS NOT LOCATED IN A KARST AREA.

ESTIMATED BMP QUANTITIES AND INSTALLATION SCHEDULE

THE ADJACENT TABLE INDICATES THE ESTIMATED MATERIAL QUANTITIES NECESSARY TO IMPLEMENT THE TEMPORARY AND PERMANENT EROSION PREVENTION AND SEDIMENT CONTROL BMPs IDENTIFIED IN THIS SWPPP AND ON THE CONSTRUCTION DRAWINGS. TEMPORARY AND PERMANENT EROSION PREVENTION AND SEDIMENT CONTROL BMPs WILL BE INSTALLED/CONSTRUCTED WHEN NECESSARY AS CONSTRUCTION ACTIVITIES PROGRESS AND IN ACCORDANCE WITH THE NPDES PERMIT REQUIREMENTS.

MAINTAIN AND REPLACE BMPs DURING THE EXECUTION OF THE PROJECT AS REQUIRED TO CONTINUE SWPPP COVERAGE DURING CONSTRUCTION

ESTIAMTED BMP QUANTITIES		
ITEM	QUANTITY	UNIT
FLARED END PROTECTION	4	EA
STABILIZED CONSTRUCTION EXIT	1	EA
SEDIMENT CONTROL LOG	601	LF
SILT FENCE	233	LF
FLotation SILT CURTAIN	253	LF
TURF REINFORCEMENT MAT	165	SY
EROSION CONTROL BLANKET	2508	SY
TURF ESTABLISHMENT	1.69	AC

NOTE: QUANTITIES ON PLAN SUPERCEDES LIST QUANTITIES IN A DISCREPANCY

CERTIFICATION

IN ACCORDANCE WITH SECTION 21 OF THE GENERAL PERMIT AUTHORIZATION TO DISCHARGE STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITY UNDER THE NPDES. THE PREPARER OF THIS DOCUMENT WAS TRAINED UNDER THE UNIVERSITY OF MINNESOTA EROSION AND SEDIMENT CONTROL CERTIFICATION PROGRAM. BEN OTTO'S CERTIFICATION IN DESIGN OF SWPPP IS VALID THROUGH MAY 2025.



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DISTRICT

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MINNETONKA, MN 55345



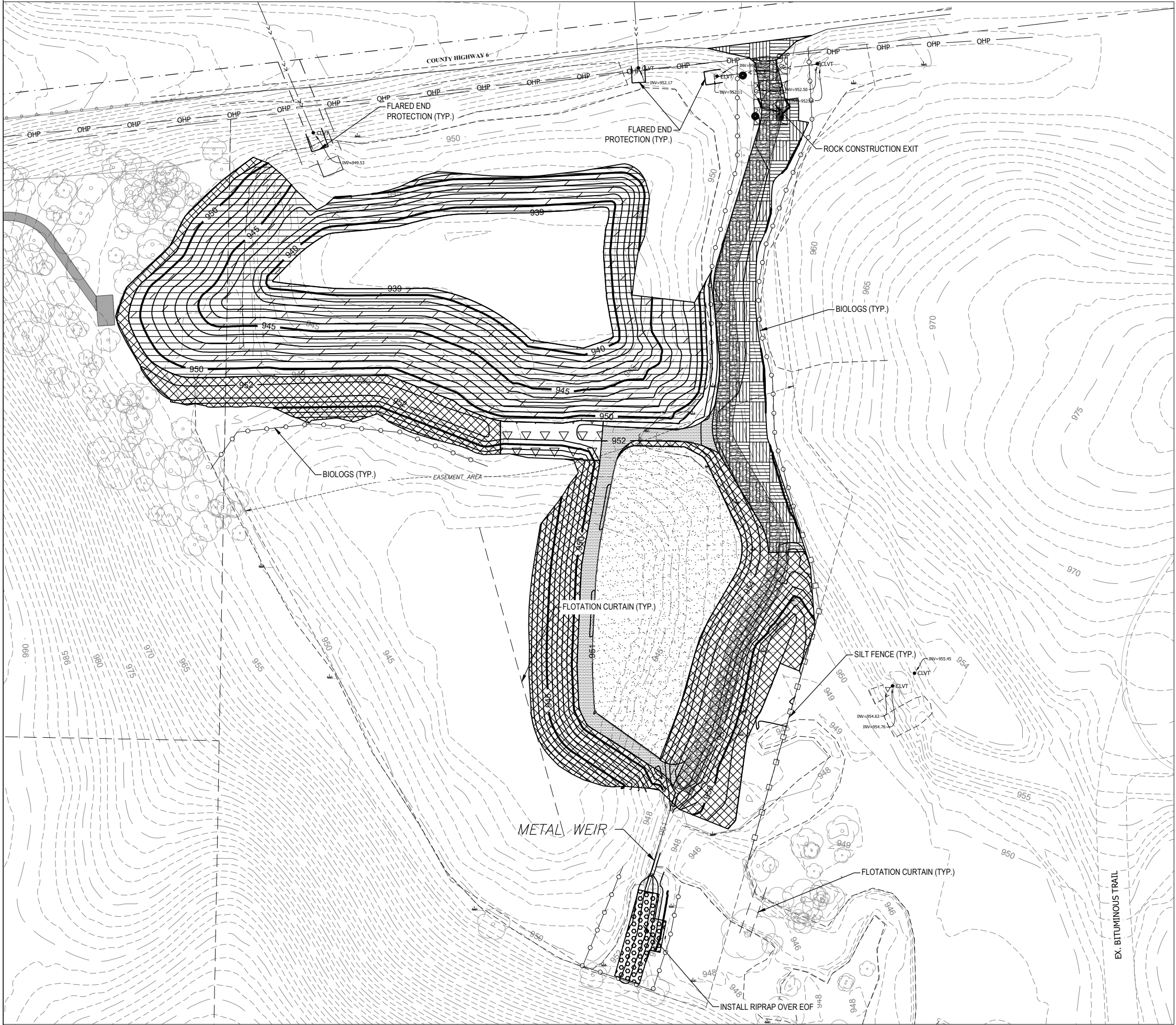
COUNTY ROAD 6  
STORMWATER POND RETROFIT  
COUNTY ROAD 6 STORMWATER POND  
ORONO, MINNESOTA

PROJECT TITLE:		ISSUE NO.:		DESCRIPTION:		DATE:		ISSUED FOR 90% REVIEW		0																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																	
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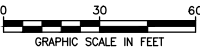
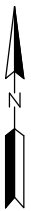


HATCH PATTERNS

	ROCK CONSTRUCTION EXIT
	EROSION CONTROL BLANKET WITH MNDOT SEED MIX 33-261
	STRAW MULCH WITH MNDOT SEED MIX 33-261
	TEMPORARY SEEDING WITH STRAW MULCH MNDOT SEED MIX 21-112 (SEE NOTES)
	TURF REINFORCEMENT MAT CATEGORY-75
	GRANITE RIPRAP
	BIOLOGS
	SILT FENCE TYPE MS
	FLOTATION SILT CURTAIN

NOTES

- SEE SHEET G-002 FOR ADDITIONAL PROJECT NOTES
- CONTRACTOR TO PROVIDE EROSION CONTROL BLANKET ON ALL SLOPES ABOVE NWL GREATER THAN 4:1 SLOPE UPON FINAL EXCAVATION FOR POND SIDE SLOPE RESTORATION.
- ALL STOCKPILING MUST TAKE PLACE WITHIN EXCAVATED POND FOOTPRINT.
- TEMPORARY SEEDING ON THE IN SLOPES OF THE POND IF CONSTRUCTION ACTIVITIES HAVE NOT BEEN COMPLETED PRIOR TO WINTER.



ONE CARLSON PARKWAY, SUITE 100  
PLYMOUTH MN, 55447  
PHONE: 763-479-4200  
FAX: 763-479-4242  
WWW.STANTEC.COM

CLIENT:  
**MINNEHAHA CREEK  
WATERSHED  
DISTRICT**  
15320 MINNETONKA BLVD  
MINNETONKA, MN 55345



COUNTY ROAD 6  
STORMWATER POND RETROFIT  
COUNTY ROAD 6 STORMWATER POND  
ORONO, MINNESOTA

PROJECT TITLE:

ISSUE NO.	DESCRIPTION:	DATE:
0	ISSUED FOR 90% REVIEW	03/12/25

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.

CHRIS J. MEEHAN  
LICENSE NO.: 43066  
DATE: XX/XX/2024

PROJECT NO.: 227707038

DWN BY: SMD CHKD BY: NPW APP'D BY: CJM  
ISSUE DATE: XX/XX/2024

ISSUE NO.: 0

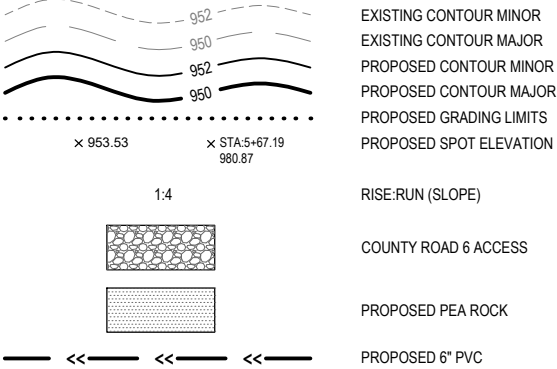
SHEET TITLE:  
RESTORATION AND EROSION  
CONTROL PLAN

SHEET NO.:  
C-202





LEGEND



ONE CARLSON PARKWAY, SUITE 100  
PLYMOUTH MN, 55447  
PHONE: 763-479-4200  
FAX: 763-479-4242  
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CLIENT:  
**MINNEHAHA CREEK  
WATERSHED  
DISTRICT**  
15320 MINNETONKA BLVD  
MINNETONKA, MN 55345



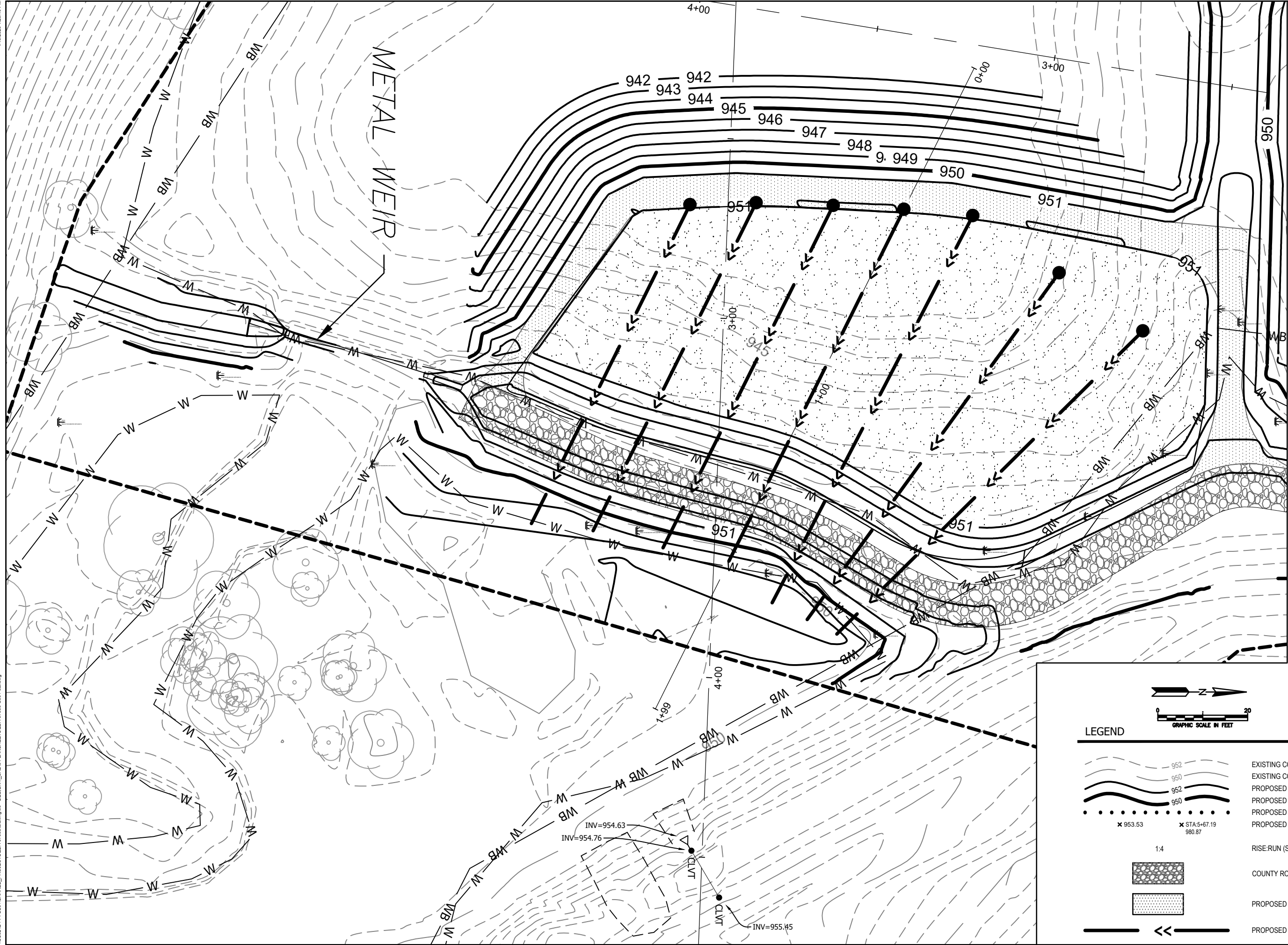
**COUNTY ROAD 6  
STORMWATER POND RETROFIT**  
COUNTY ROAD 6 STORMWATER POND  
ORONO, MINNESOTA

PROJECT TITLE:	COUNTY ROAD 6 STORMWATER POND RETROFIT				
ISSUE NO.:	0				
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CHRIS J. MEEHAN LICENSE NO.: 43066 DATE: XX/XX/2024					
PROJECT NO.: 227707038					
DWN BY:	SMD	CHKD BY:	NPW	APP'D BY:	CJM
ISSUE DATE: XX/XX/2024					
ISSUE NO.: 0					
SHEET TITLE: GRADING PLAN					
SHEET NO.: C-301					



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ONE CARLSON PARKWAY, SUITE 100  
PLYMOUTH MN, 55447  
PHONE: 763-479-4200  
FAX: 763-479-4242  
WWW.STANTEC.COM

CLIENT:  
MINNEHAHA CREEK  
WATERSHED  
DISTRICT  
15320 MINNETONKA BLVD  
MINNETONKA, MN 55345



COUNTY ROAD 6  
STORMWATER POND RETROFIT  
COUNTY ROAD 6 STORMWATER POND  
ORONO, MINNESOTA

DATE:	DESCRIPTION:	ISSUE NO.:	PROJECT TITLE:
10/21/2025	ISSUED FOR 90% REVIEW	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.

CHRIS J. MEEHAN

LICENSE NO.: 43066

DATE: XX/XX/2024

PROJECT NO.: 227707038

DWN BY: SMD CHK'D BY: NPW APP'D BY: CJM

ISSUE DATE: XX/XX/2024

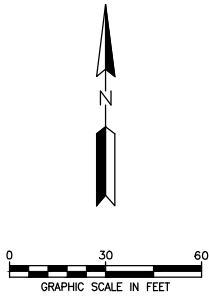
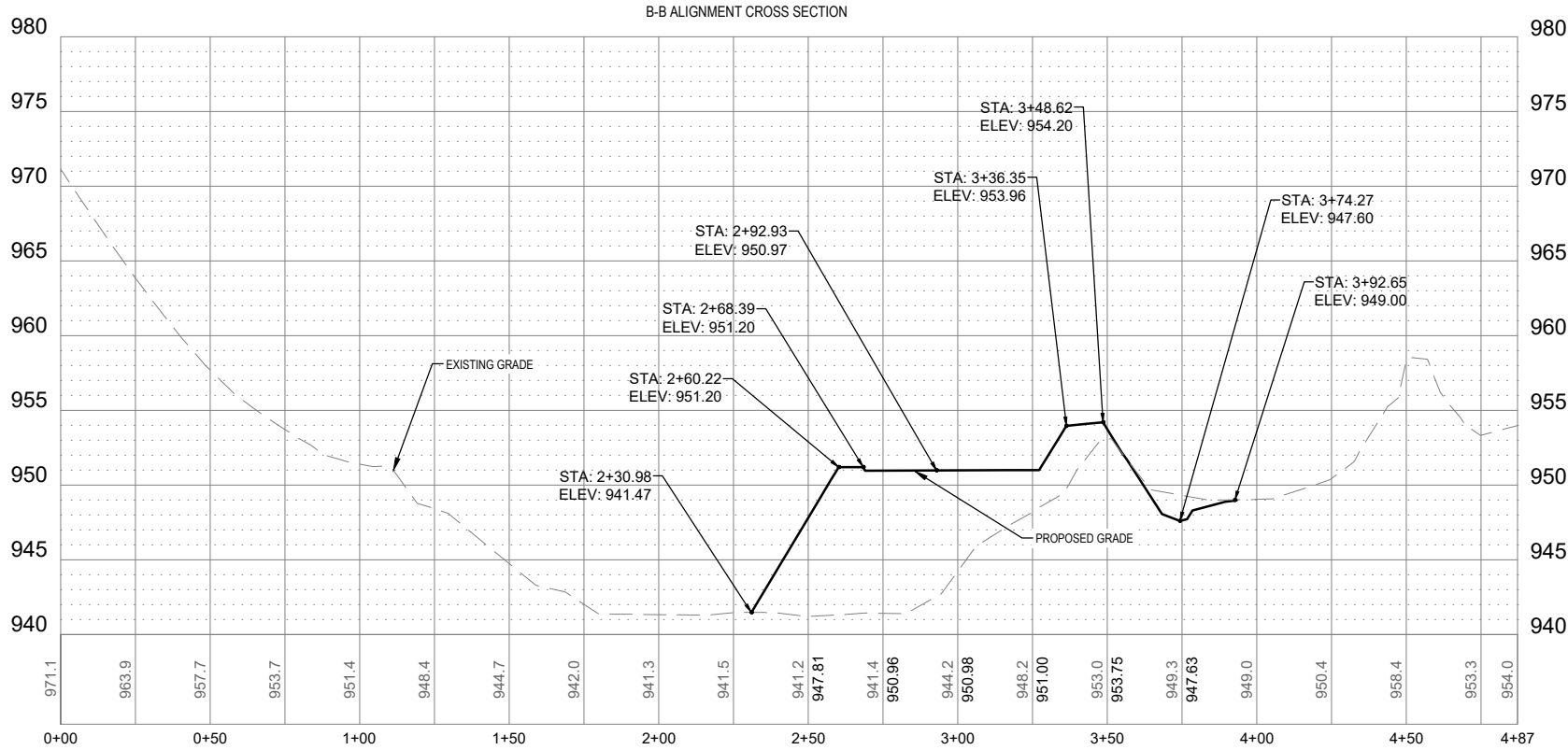
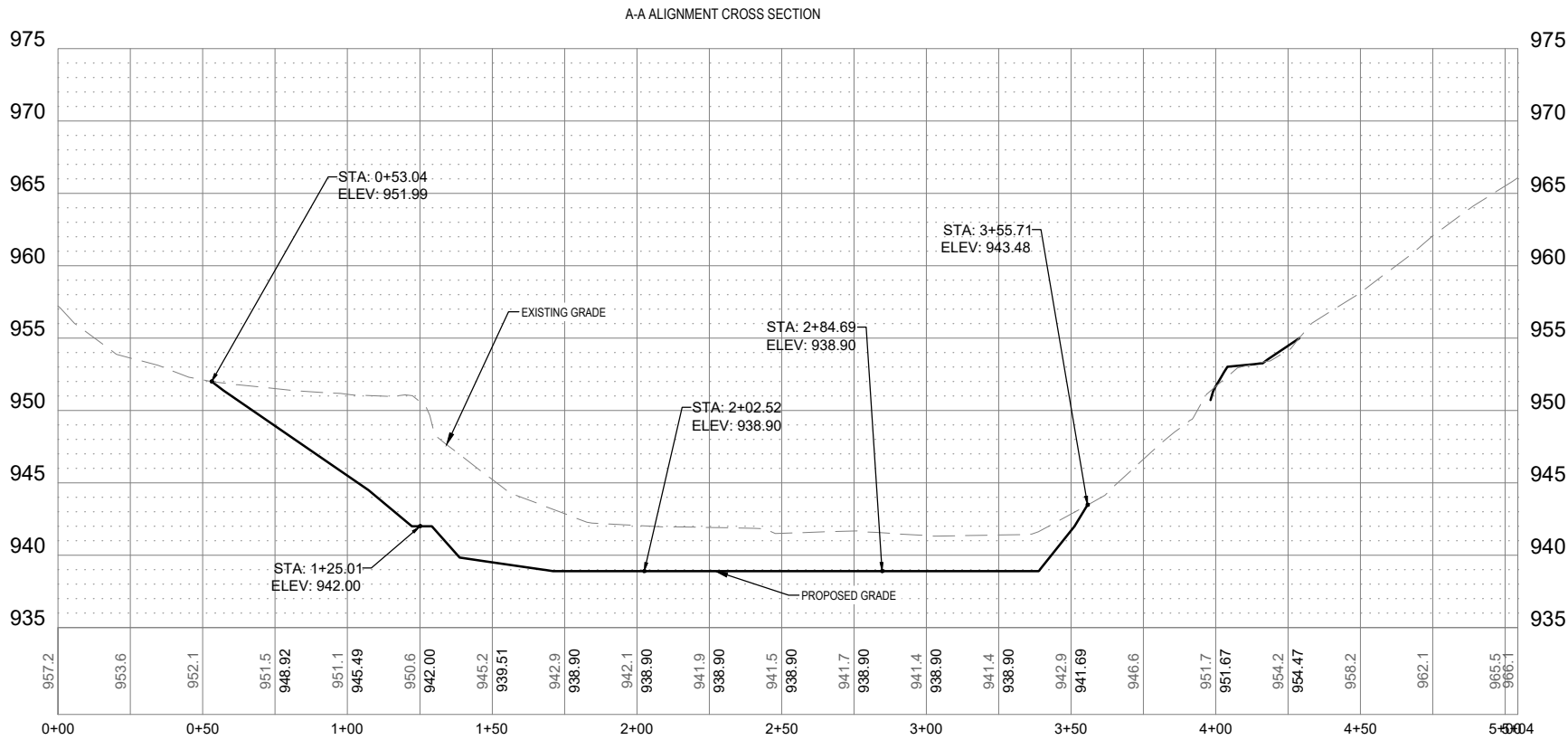
ISSUE NO.: 0

SHEET TITLE:

GRADING PLAN

SHEET NO.:

C-302



LEGEND

- EXISTING CONTOUR MINOR
- EXISTING CONTOUR MAJOR
- PROPOSED CONTOUR MINOR
- PROPOSED CONTOUR MAJOR
- PROPOSED GRADING LIMITS
- PROPOSED SPOT ELEVATION
- RISE:RUN (SLOPE)



ONE CARLSON PARKWAY, SUITE 100  
PLYMOUTH MN, 55447  
PHONE: 763-479-4200  
FAX: 763-479-4242  
WWW.STANTEC.COM

CLIENT:  
**MINNEHAHA CREEK  
WATERSHED  
DISTRICT**  
15320 MINNETONKA BLVD  
MINNETONKA, MN 55345



**COUNTY ROAD 6  
STORMWATER POND RETROFIT**  
COUNTY ROAD 6 STORMWATER POND  
ORONO, MINNESOTA

PROJECT TITLE:

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03/21/2025	ISSUED FOR 90% REVIEW	0

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CHRIS J. MEEHAN  
LICENSE NO.: 43066  
DATE: XX/XX/2024

PROJECT NO.: 227707038

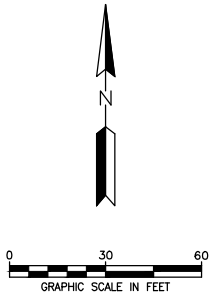
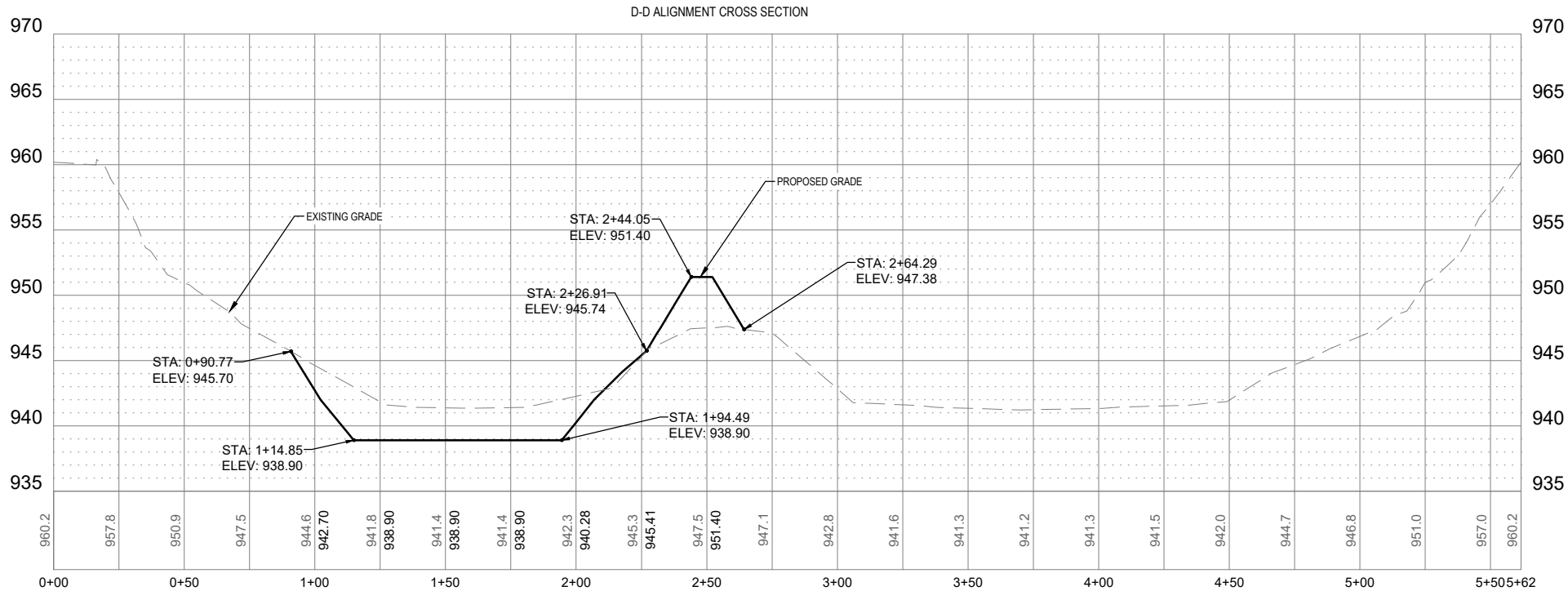
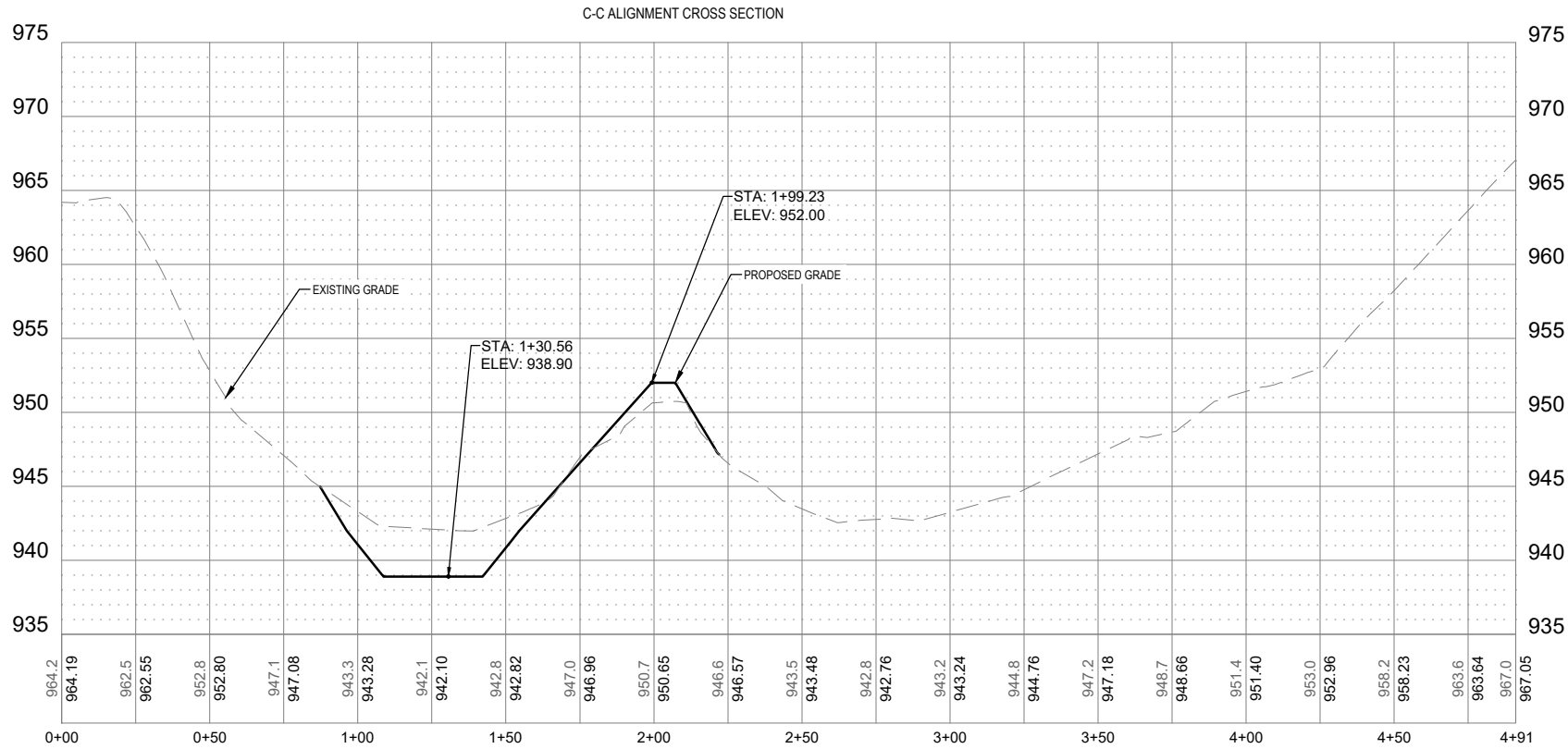
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ISSUE DATE: XX/XX/2024

ISSUE NO.: 0

SHEET TITLE:  
**CROSS SECTIONS**

SHEET NO.:  
**C-303**



LEGEND

- EXISTING CONTOUR MINOR
- EXISTING CONTOUR MAJOR
- PROPOSED CONTOUR MINOR
- PROPOSED CONTOUR MAJOR
- PROPOSED GRADING LIMITS
- PROPOSED SPOT ELEVATION
- RISE:RUN (SLOPE)



ONE CARLSON PARKWAY, SUITE 100  
PLYMOUTH MN, 55447  
PHONE: 763-479-4200  
FAX: 763-479-4242  
WWW.STANTEC.COM

CLIENT:  
**MINNEHAHA CREEK  
WATERSHED  
DISTRICT**  
15320 MINNETONKA BLVD  
MINNETONKA, MN 55345



**COUNTY ROAD 6  
STORMWATER POND RETROFIT**  
COUNTY ROAD 6 STORMWATER POND  
ORONO, MINNESOTA

PROJECT TITLE:

ISSUE NO.	0
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DESCRIPTION:	ISSUED FOR 90% REVIEW
DATE:	03/21/2025

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.

CHRIS J. MEEHAN  
LICENSE NO.: 43066

DATE: XX/XX/2024

PROJECT NO.: 227707038

DWN BY:	SMD	CHKD BY:	NPW	APP'D BY:	CJM
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ISSUE DATE: XX/XX/2024

ISSUE NO.: 0

SHEET TITLE:

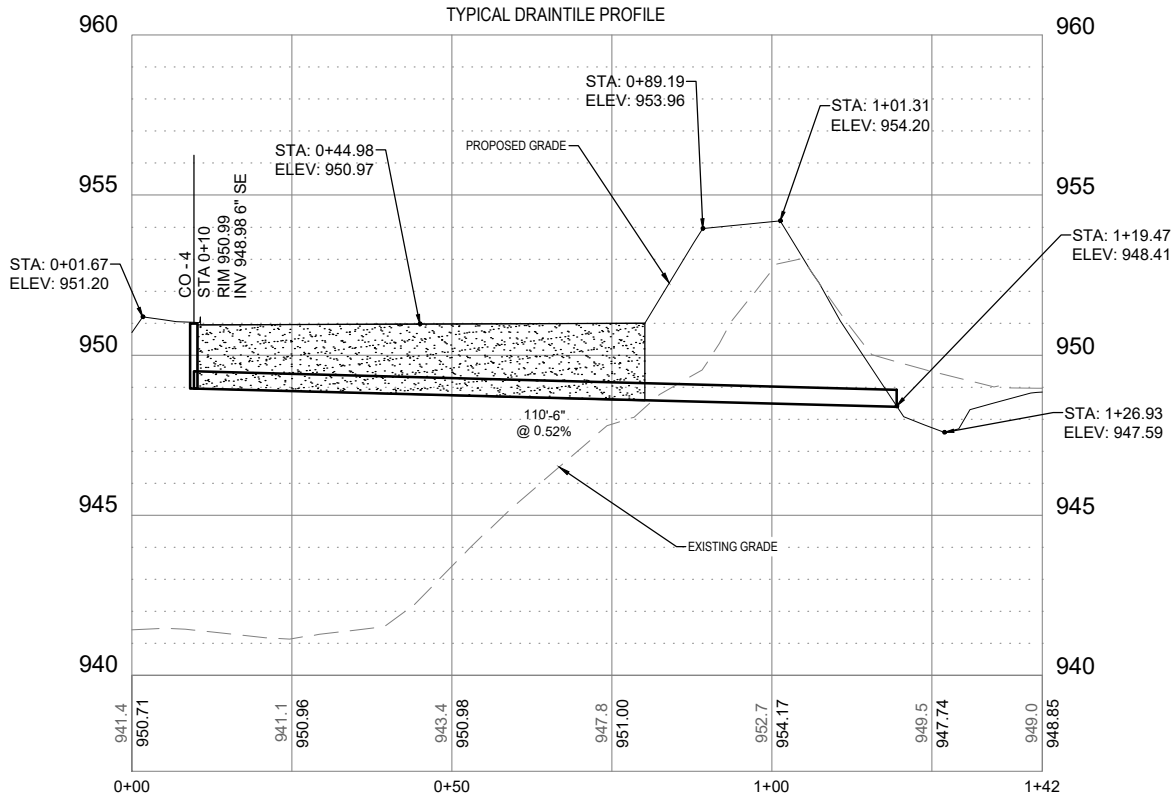
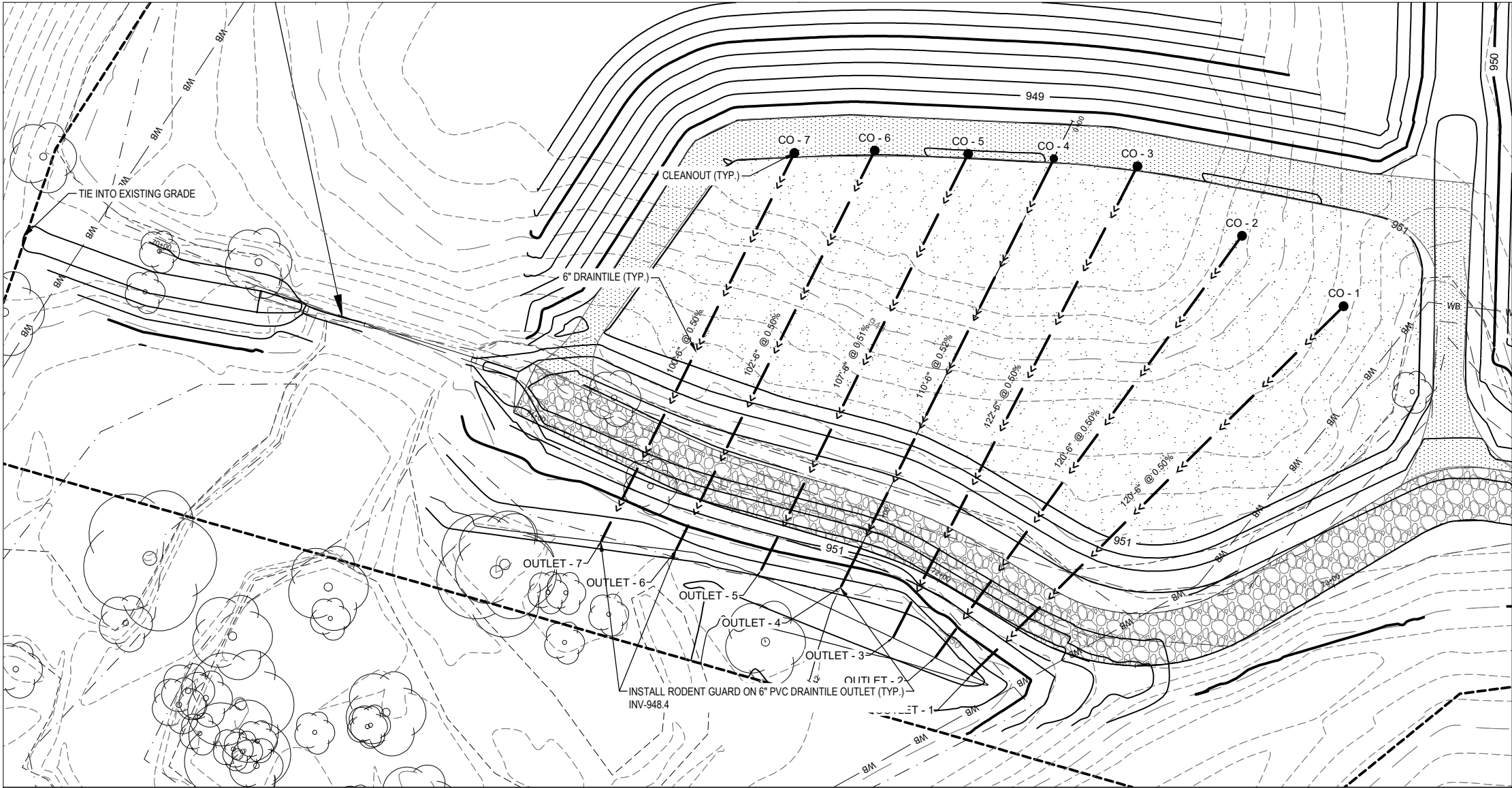
CROSS SECTIONS

SHEET NO.:  
**C-304**









### LEGEND

- EXISTING CONTOUR MINOR
- EXISTING CONTOUR MAJOR
- PROPOSED CONTOUR MINOR
- PROPOSED CONTOUR MAJOR
- PROPOSED GRADING LIMITS
- PROPOSED SPOT ELEVATION
- RISE:RUN (SLOPE)
- COUNTY ROAD 6 ACCESS
- PROPOSED PEA ROCK
- PROPOSED 6" PVC



ONE CARLSON PARKWAY, SUITE 100  
PLYMOUTH MN, 55447  
PHONE: 763-479-4200  
FAX: 763-479-4242  
WWW.STANTEC.COM

CLIENT:  
**MINNEHAHA CREEK  
WATERSHED  
DISTRICT**  
15320 MINNETONKA BLVD  
MINNETONKA, MN 55345



## COUNTY ROAD 6 STORMWATER POND RETROFIT

COUNTY ROAD 6 STORMWATER POND  
ORONO, MINNESOTA

DATE:	DESCRIPTION:	ISSUE NO.:	PROJECT TITLE:
03/21/2025	ISSUED FOR 90% REVIEW	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.

CHRIS J. MEEHAN  
LICENSE NO.: 43066  
DATE: XX/XX/2024

PROJECT NO.: 227707038

DWN BY: SMD  
CHKD BY: NPW  
APP'D BY: CJM

ISSUE DATE: XX/XX/2024

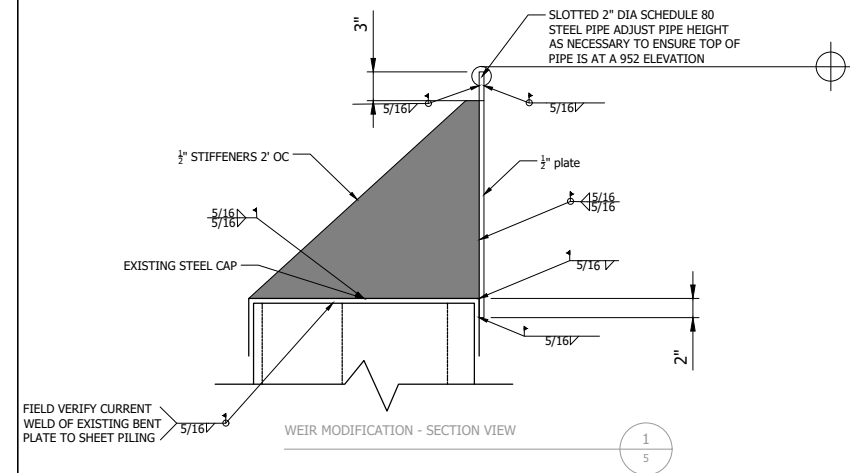
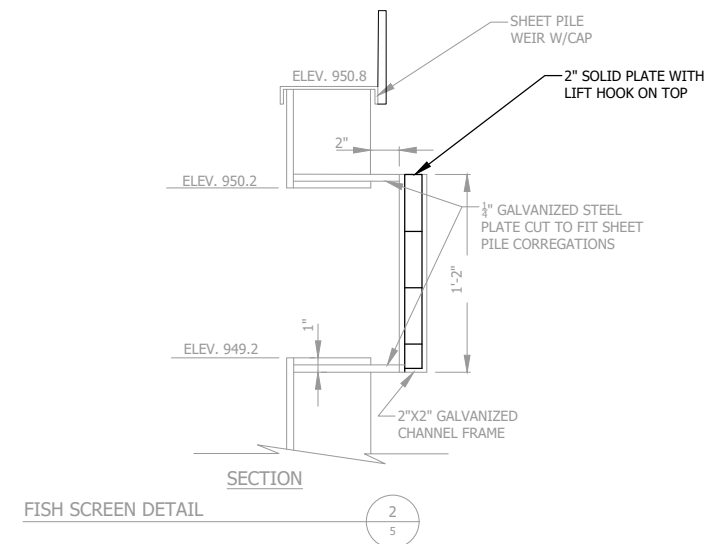
ISSUE NO.: 0

SHEET TITLE:  
**STORM SEWER PLAN**

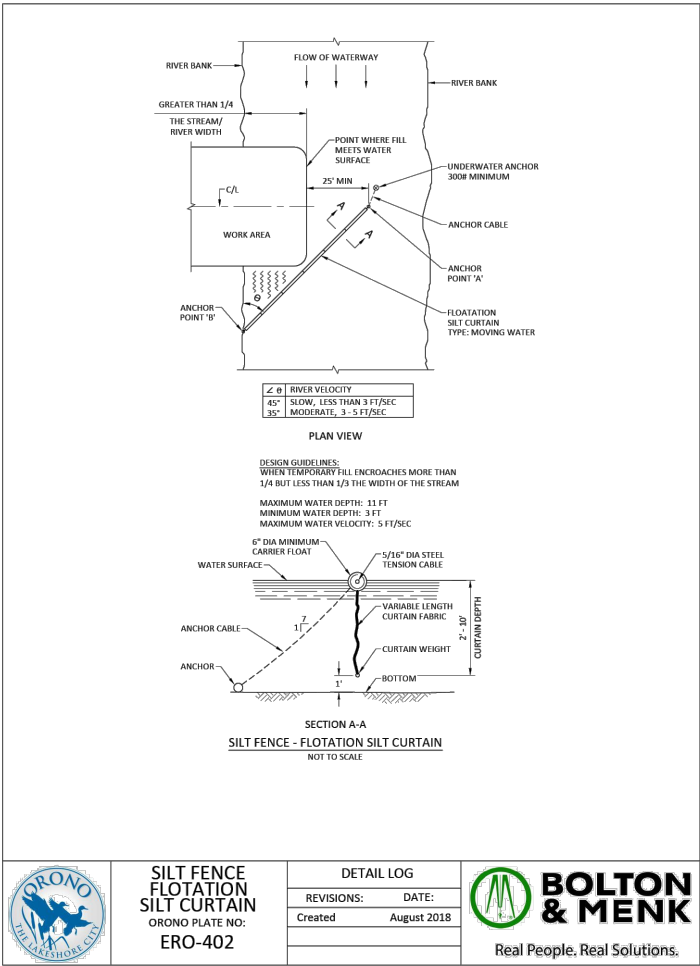
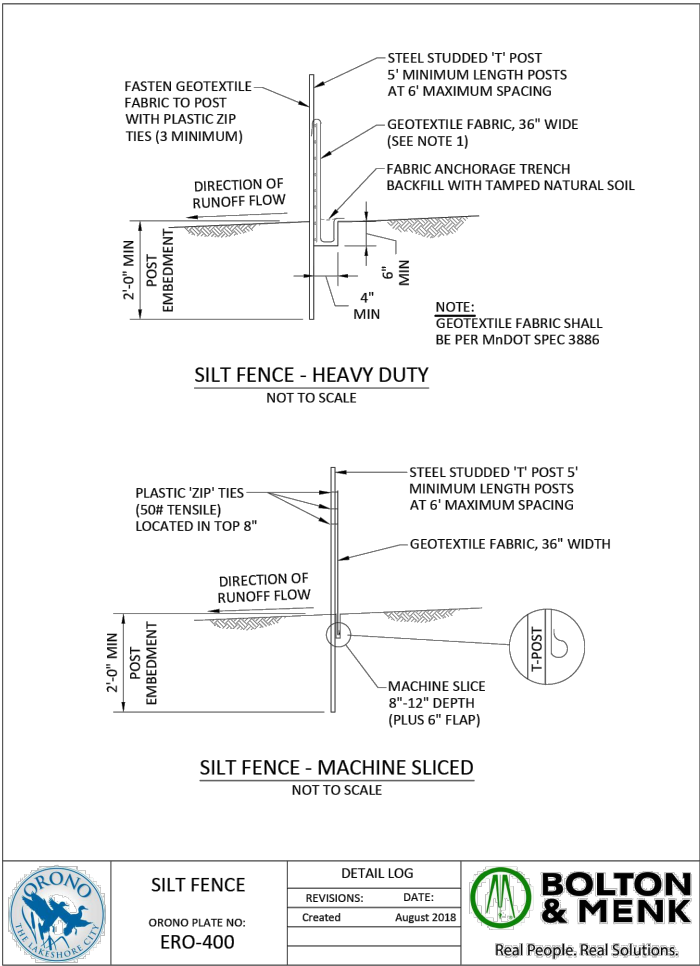
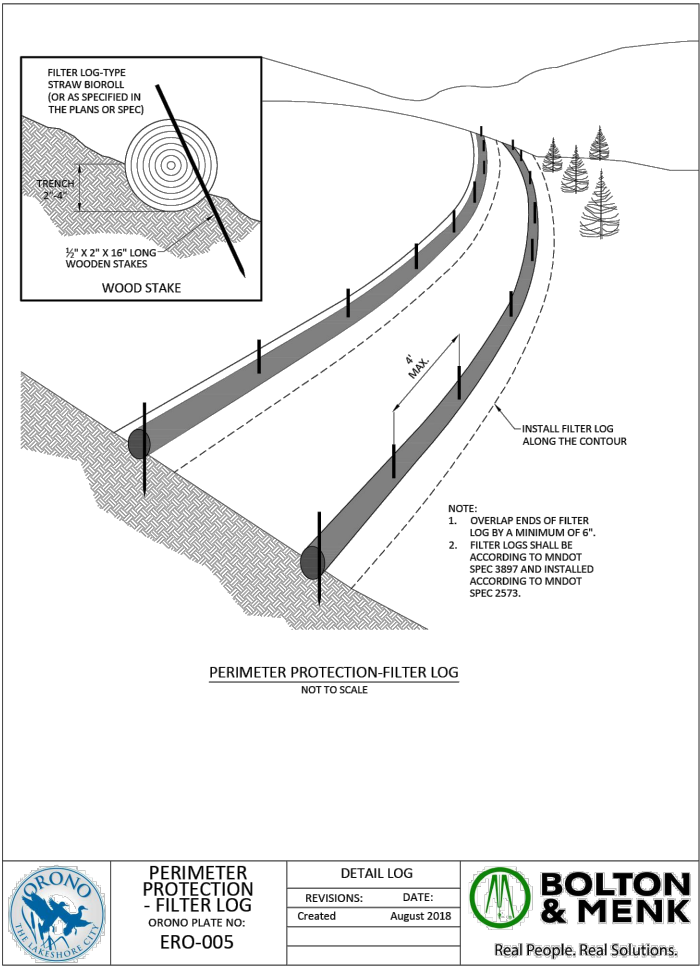
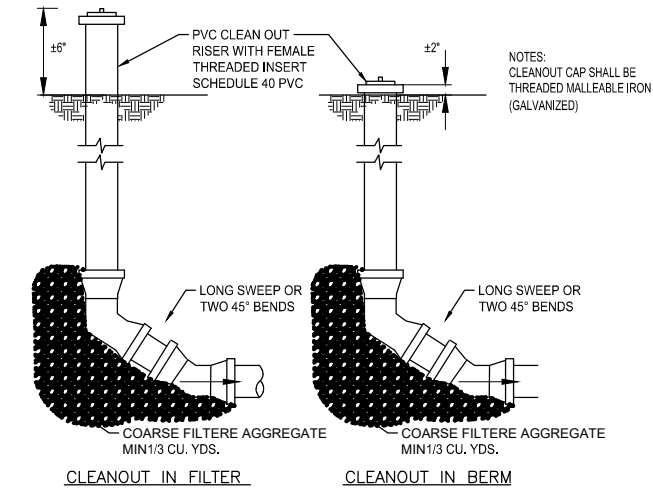
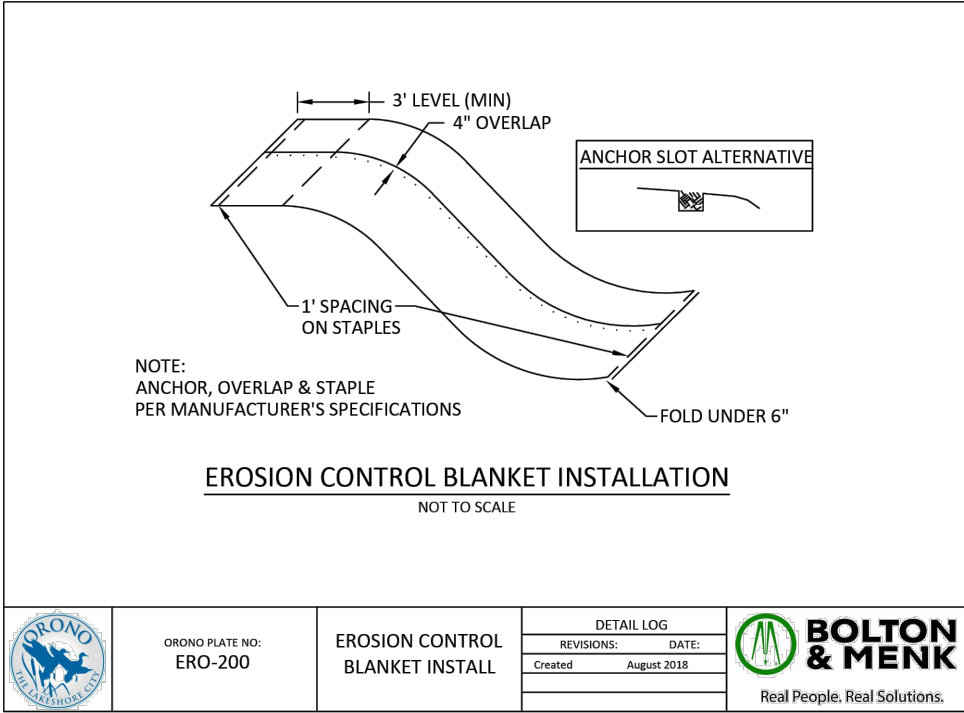
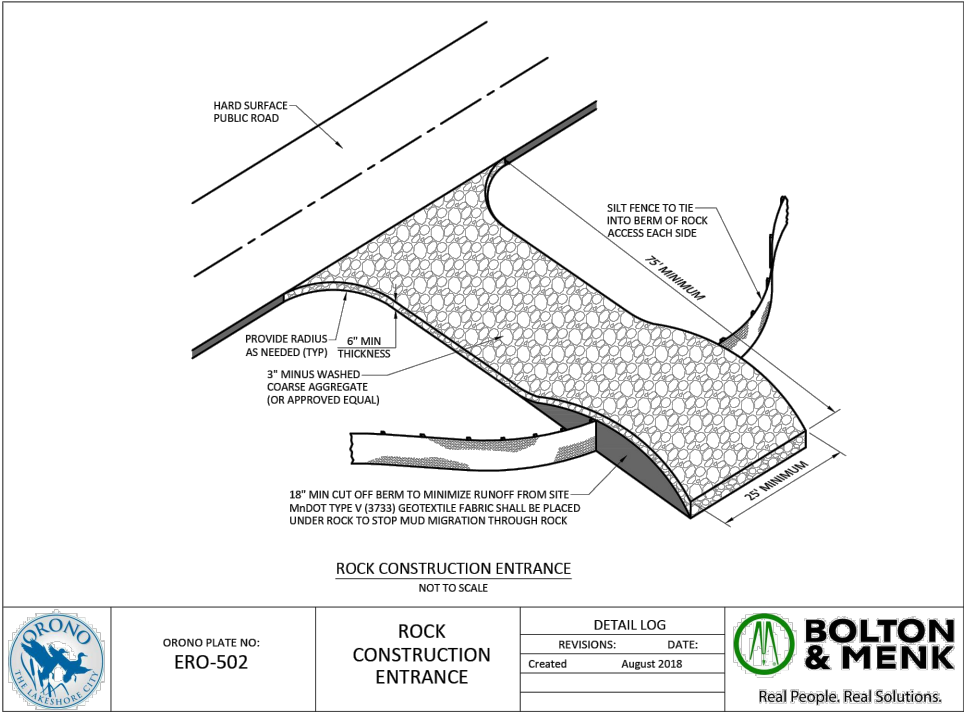
SHEET NO.:  
**C-501**



CONTRACTOR TO PLACE CONTINUOUS WELD  
BEAD BETWEEN CAP AND SHEET PILE.



ST					
PROJECT TITLE:					
ISSUE NO.: 0					
DESCRIPTION: ISSUED FOR 90% REVIEW					
DATE: 03/12/25					
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PROJECT NO.: 227707038					
DWYN BY: SMD	CHKD BY: NPW	APP'D BY: CJM			
ISSUE DATE: XX/XX/2024					
ISSUE NO.: 0					
SHEET TITLE:  DETAILS					
SHEET NO.: C-801					



ONE CARLSON PARKWAY, SUITE 100  
PLYMOUTH MN, 55447  
PHONE: 763-479-4200  
FAX: 763-479-4242  
WWW.STANTEC.COM

CLIENT:  
**MINNEHAHA CREEK WATERSHED DISTRICT**  
15320 MINNETONKA BLVD  
MINNETONKA, MN 55345



**COUNTY ROAD 6  
STORMWATER POND RETROFIT**  
COUNTY ROAD 6 STORMWATER POND  
ORONO, MINNESOTA

PROJECT TITLE:	COUNTY ROAD 6 STORMWATER POND RETROFIT
ISSUE NO.:	0
DESCRIPTION:	ISSUED FOR 90% REVIEW
DATE:	03/21/2025

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.

CHRIS J. MEEHAN

LICENSE NO.: 43066

DATE: XX/XX/2024

PROJECT NO.: 227707038

DWN BY: SMD CHKD BY: NPW APP'D BY: CJM

ISSUE DATE: XX/XX/2024

ISSUE NO.: 0

SHEET TITLE:

DETAILS

SHEET NO.:

C-802

**OPINION OF PROBABLE COST**  
**Minnehaha Creek Watershed District (MCWD)**  
**County Road 6 Pond Modifications**  
**227707038**  
**March 28, 2025**



NO.	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE	TOTAL PRICE
<b>BASE BID SCHEDULE</b>					
1	MOBILIZATION AND DEMOBILIZATION	LUMP SUM	1	\$ 25,000.00	\$ 25,000.00
2	TRAFFIC CONTROL	LUMP SUM	1	\$ 5,000.00	\$ 5,000.00
3	CLEARING AND GRUBBING	TREE	41	\$ 800.00	\$ 32,800.00
4	DEWATERING AND TEMPORARY STORMWATER MANAGEMENT	LUMP SUM	1	\$ 60,000.00	\$ 60,000.00
5	STRIP, STOCKPILE, AND RESPREAD TOPSOIL	LUMP SUM	1	\$ 10,000.00	\$ 10,000.00
6	COMMON EXCAVATION - ONSITE (EV) (P)	CU YD	1061	\$ 15.00	\$ 15,915.00
7	MUCK EXCAVATION AND OFFSITE DISPOSAL (LV)	CU YD	2780	\$ 50.00	\$ 139,000.00
8	COMMON BORROW (CV)	CU YD	3100	\$ 25.00	\$ 77,500.00
9	PEA GRAVEL ACCESS ROAD	CU YD	49	\$ 80.00	\$ 3,920.00
10	GEOTEXTILE FABRIC TYPE 4 NON-WOVEN	SQ YD	1380	\$ 3.00	\$ 4,140.00
11	FINE FILTER AGGREGATE	CU YD	860	\$ 105.00	\$ 90,300.00
12	MEDIUM FILTER AGGREGATE	CU YD	10	\$ 80.00	\$ 800.00
13	COARSE AGGREGATE	CU YD	30	\$ 95.00	\$ 2,850.00
14	6" PERFORATED PVC SCH 40 DRAINTILE PIPE	LIN FT	790	\$ 30.00	\$ 23,700.00
15	6" PVC CLEANOUT W/THREADED CAP	EACH	7	\$ 600.00	\$ 4,200.00
16	RODENT GUARD	EACH	7	\$ 500.00	\$ 3,500.00
17	WEIR MODIFICATION	LUMP SUM	1	\$ 50,000.00	\$ 50,000.00
18	RANDOM RIPRAP, CLASS III	TON	115	\$ 130.00	\$ 14,950.00
19	FLARED END PROTECTION - MAINTAINED	EACH	4	\$ 250.00	\$ 1,000.00
20	STABILIZED CONSTRUCTION EXIT - MAINTAINED	EACH	1	\$ 3,500.00	\$ 3,500.00
21	SEDIMENT CONTROL LOG TYPE STRAW - MAINTAINED	LIN FT	601	\$ 4.00	\$ 2,404.00
22	SILT FENCE, TYPE MS - MAINTAINED	LIN FT	233	\$ 3.00	\$ 699.00
23	FLOTATION SILT CURTAIN, TYPE STILL WATER - MAINTAINED	LIN FT	191	\$ 25.00	\$ 4,775.00
24	FLOTATION SILT CURTAIN, TYPE MOVING WATER - MAINTAINED	LIN FT	62	\$ 40.00	\$ 2,480.00
25	TURF REINFORCEMENT MAT 74	SQ YD	165	\$ 25.00	\$ 4,125.00
26	EROSION CONTROL BLANKET CATEGORY 20	SQ YD	2508	\$ 4.00	\$ 10,032.00
27	TEMPORARY SEEDING	ACRE	1	\$ 1,500.00	\$ 1,500.00
28	SEEDING	SQ YD	8150	\$ 2.00	\$ 16,300.00
29	STRAW MULCH	SQ YD	800	\$ 4.00	\$ 3,200.00
30	SEED MIXTURE 33-261 (@ 35 LB/AC)	POUND	74	\$ 38.00	\$ 2,812.00
<b>SUBTOTAL</b>					<b>\$ 616,410.00</b>
<b>[10%] CONTINGENCY</b>					<b>\$ 61,650.00</b>
<b>TOTAL CONSTRUCTION COST</b>					<b>\$ 678,060.00</b>



**OPERATION AND MAINTENANCE  
MANUAL FOR COUNTY ROAD 6 POND**

April 17, 2025 – 90% Draft

Prepared for:  
Minnehaha Creek Watershed District

Prepared by:  
Chris Meehan, PE  
&  
Nick Wyers, PE



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## 1 Purpose

The purpose of this Manual is to provide the Minnehaha Creek Watershed District (District) with updated operations and maintenance (O&M) guidance for the County Road 6 Stormwater Pond and its associated features, including the sand filter bench. This document captures current and anticipated maintenance needs to support both existing infrastructure and planned improvements to the system.

## 2 Background

The County Road 6 Pond was identified by the District as a candidate for retrofit based on findings from nutrient and sedimentation monitoring. The County Road 6 Pond treats runoff from a medium density residential and rural catchment running through Long Lake Creek. The County Road 6 Pond is downstream of Holy Name Lake and Wolfed Lake, and is upstream of Long Lake. All three lakes are impaired for excess nutrients. The proposed County Road 6 Pond retrofit is intended to improve the treatment efficiency of the pond and, subsequently, improve the downstream water quality of Long Lake.

The proposed retrofit to the existing, 2.5-acre, dual-celled County Road 6 Pond includes improvements to the berm which separates the two cells and to the outlet weir, as well as the installation of a sand filter bench. The proposed stormwater pond improvements and sand filter bench retrofit provide improved regional treatment for the inflow from upstream impaired water bodies and the runoff from County Road 6 and adjacent housing developments. The treated inflow and runoff will then discharge from the pond into Long Lake.

Regular operation and maintenance are essential to ensure the system continues to function effectively and treat stormwater as designed. This manual outlines the inspection and maintenance requirements for the following site features, each with its own specific needs, frequencies, and procedures:

- Stormwater Pond Maintenance
- Sand Filter Bench Maintenance
- Drain Tile Maintenance
- Weir Maintenance

## 3 Stormwater Pond Maintenance

Long term maintenance is important to ensure the stormwater pond functions as designed. Pollutant removal and flood control capabilities of the site's pond will decrease if the permanent pool elevation fluctuates, sediment accumulation reduces permanent pool volume, debris blocks inlet/outlet structures, and/or pond slopes erode.

Under the improved design, the northern cell of the pond acts as pretreatment for the southern cell and sand filter. The northern cell will allow larger sediment particles to settle prior to entering the southern cell and sand filter. Removal of these larger sediment particles is essential to keeping the filter effective. The northern cell will discharge over the earthen berm which separates the northern cell from the southern cell of the County Road 6 Pond.



## Operation and Maintenance Manual for County Road 6 Pond

Routine inspections specific to just the stormwater pond feature are not anticipated to be needed, as the existing pond has not historically required frequent maintenance or monitoring. Instead, general observations of the pond will be made as MCWD conducts inspections of other on-site features. During these site visits, staff will observe the following:

- Pond levels
- Evidence of debris, trash, dead vegetation, or other nuisance conditions
- Evidence of erosion/scouring along pond's edge and berms
- Inlet and outlet structures for evidence of obstruction, erosion, or other issues

Pond levels should be observed and recorded during open water site visits. Open water inspections are included in the monthly inspection frequency. It is recommended to coordinate the open water site visits after rainfall events 2.4-inches or greater. Floating debris, trash, and dead vegetation should be removed from the pond as needed. It is understood that, currently, floating debris and/or trash does not appear to be a concern at this location. Outlet structures should be maintained monthly or after every storm 2.4 inches or greater. Grass clippings and leaves should be kept out of the stormwater pond system as much as possible. See **Table 1** for the complete maintenance schedule. See **Appendix A** for locations and as-builts of the ponds and outlets.

A 10-foot-wide maintenance access should be maintained for inspections and maintenance. Vegetation maintenance is not needed or expected to occur regularly. Maintenance will include visual inspections of trees and other plantings that would hinder access to the weir and filter.

### Sediment Accumulation

Sediment accumulation near storm inlets and within the northern and southern cells should be inspected every five years, as prescribed in **Table 1**, or more often if debris and sediment is proven to accumulate quicker. Once sediment accumulation within the northern and/or southern cell reaches 50% of the permanent pool capacity, the sediment should be removed to maintain removal efficiency and prevent resuspension of sediment. During the retrofit, the pond was dredged proactively but will return to normal rotation for long-term management. Note, it is intended that sediment removal efforts be focused in the northern cell. Prior to sediment removal, sediment sampling should occur within the pond to assess contamination and required disposal method. If the northern and southern cells are to be dredged, one sediment sample should be taken within the northern cell and another within the southern cell. If only one cell is to be dredged, two sediment samples should be taken within the cell to be dredged. Sediment sample locations may be selected randomly or in a transect from the inlet to the outlet of the pond. Sediment samples should then be analyzed in accordance with MPCA guidance. Sediment removal should occur during winter months to minimize disturbance. The pond should not be drained during the spring due to the possibility of temperature stratification and high chloride concentrations in the bottom of the pond which could be transferred to the receiving waterbody during drawdown. During drawdown of the pond, practices should be implemented to prevent the rapid release of stormwater and minimize the discharge of sediment and/or anoxic water to the receiving waterbody. Conditions following sediment removal should reflect the as-built conditions of the pond.





## 4 Sand Filter Bench Operation and Maintenance

The sand filter bench is designed to reduce particulate phosphorous and fine sediment in the stormwater. Preventing the sand media from clogging is critical for maintaining drainage at the designed rate. Poor drainage of the filter due to a clogged filter surface, inlet/outlet, and underdrains also has the potential to reduce the treatment capacity of the sand filter media. Adequate maintenance is needed to ensure the longevity of the sand filter media.

Routine filter inspections should occur monthly or after a storm event (2.4-inches or greater) as prescribed in Table 1. Routine inspections and maintenance activities may include the following:

### Evidence of debris on the filter bench

To prevent aquatic vegetation from clogging the filter, the design is equipped with a lip of pea gravel on top of the berm between the filter and the pond. It's anticipated that emergent vegetation will grow along this raised lip and act as a natural screen to prevent floating vegetation from reaching the filter bench.

Any material/objects, other than sand, observed on the filter during inspections should be removed if the filter bench is accessible (not under water).

### Evidence of erosion within the filter bench

It's important that the sand media is at a consistent flat elevation of 951.00 ft (NAVD88). Low areas will promote short-circuiting and could lead to additional scouring and reduce treatment capacity. If the sand is observed to have high or low spots, the media can be raked flat. If particular areas of the filter bench are routinely scoured, confirm there is not an issue with the raised pea-gravel lip (i.e. a low spot has developed within the raised pea-gravel lip); water should be uniformly overtopping and spreading over the filter bench.

### Evidence of ponding or clogging within the filter bench

The filter bench has been designed to keep up with the anticipated incoming base flow. However, it's understood that during wet years, the filter bench could stay inundated much of the open water season. This alone does not indicate an issue. However, if the pond has drained down below 951.20 ft (NAVD88) and ponding is observed on the filter, this suggests the filter (and/or its drain tile) is clogged. The surface of the filter may be compacted and needs to be tilled with a roto-till or rake attached to a skid loader. The raking is important to prevent any compaction to the sand layer and keep water free flowing. If ponding persists, the top 2 to 5 inches of sand filter media needs to be replaced during the next 5-year maintenance cycle.

### Media Replacement

The top 2 to 5 inches of sand filter media, over the entire surface of the filter, should be replaced every 5 years. The top 2 to 5 inches of sand filter media needs to be removed with a backhoe, the underlying media surface needs to be roto-tilled or raked with a skid loader, and, backfilled with new media which meets the design specifications. The total depth of the sand filter media should be at least 2 feet. The entire depth (i.e. 2 feet) of filter media should be replaced every 10 years. The entire media depth will need to be removed with a backhoe and backfilled with new filter media which meets the design specifications, See **Appendix A** for the location of the sand filter bench.



## 5 Drain Tile Maintenance

Maintaining the drain tile system is critical to keeping the sand filter bench functioning properly. The drain tile layout was designed to minimize the number of cleanouts and avoid placing them in the sand media where possible. Since cleanouts are prone to breaking, maintenance activities like raking or rototilling should be performed with caution around these areas. Additionally, the design calls for rodent guards where each drain tile daylights as a preventative maintenance measure to prevent small animals from clogging and damaging the drain tile.

The drain tile cleanouts and outlets should be inspected monthly during the open water season, as prescribed in **Table 1**. During inspection, if the water level is above and over the filter bench, water should be visibly discharging from the drain tile outlets (along the east side of the filter).. Lack of flow may indicate clogging in the drain tile or media, which may require jetting to clear the obstruction.

### Jetting the Drain Tile

If the drain tile pipes and cleanouts have accumulated sediment, the pipes should be jetted to remove the sediment as needed. To remove the sediment, a Jetter truck can jet the pipes or the pipes can be flushed by pumping water from the pond into the pipes at an increased velocity. See **Appendix A** for locations of the drain tile piping, cleanouts, and outlet.

### Winter Concerns

If submerged conditions (i.e. high backwater submerges the drain tile outlets) are observed prior to winter, drain tile outlets should be inspected during the winter to ensure outlets do not become blocked with ice. If the drain tile is blocked, the ice will need to be thawed with heat tape or another method. Drain tile outlets blocked with ice are especially a concern when the pond is outflowing into the filter such as during a snowmelt event.

The cleanouts located within the sand media are more likely to be damaged by recreation activities and wildlife during the winter because they are difficult to see under the snow. Prior to winter, these cleanouts should be marked with snow fence or markers.

### Drain Tile Repairs

Cracks in the drain tile will cause the filter media to slowly washout into the drain tile below and may be observed as a depression in the surface of the filter. A crack in the drain tile does not require an emergency repair, but filter media will continue to washout if not addressed. To repair the crack in the drain tile, the media above the crack needs to be excavated with a backhoe, the pipe needs to be replaced or repaired with a sleeve, and the filter media needs to be backfilled with the old filter media, if it is clean, or new filter media. Note, the excavation and backfill of the filter media could be done by hand but this process could be labor intensive.

## 6 Weir Maintenance

Maintenance of the weir is important to ensure it continues to properly maintain normal water levels within the pond and outflows from the pond. Inspect outlet weir annually for signs of failure such as corrosion, chipping, twisting or bending, erosion where the weir ties into the bank, etc. Debris should be removed as needed from weir notch and corners where weir ties into the bank.



## 7 Performance Monitoring

As noted above, if the pond has drained down below 951.20 ft (NAVD88) and ponding is observed on the filter, the filter (and/or its drain tile) is not functioning properly. Initially, a visual inspection can be conducted on site to determine potential issues.

- Check filter surface for evidence of excessive trash, debris, and/or sediment accumulation.
- Check drain tile outlets to see if the drain tile is discharging. If no discharge is observed, check the drain tile outlets for clogs. Also check rodent guards are in place and the drain tile outlet is not collapsed.

If no obvious reasons for clogging are identified during an initial visual inspection, testing may be required to further analyze the performance of the basin.

- To analyze performance of the filter media, conduct an infiltration test for the filter media via a Double Ring Infiltrometer or a modified Phillip-Dunne Permeameter. Compare results to the design filtration rate of the filter.
- To analyze performance of the drain tile, the drain tile can be televised to locate clogs (sediment or debris), cracks, and/or collapsed sections along the drain tile.

## 8 Maintenance and Activities Schedule

Inspection Routine	Stormwater System Component	Maintenance Activity
<b>*Monthly Inspections (Open Water Season)</b>	Sand Filter	Check contributing area is stabilized (no bare dirt)
	Sand Filter	Observe depth of water of filter media and check for ponding
	Sand Filter	Remove trash/debris/vegetation from filter
	Sand Filter	Inspect inlet/outlets/overflow berm for signs of erosion
	Sand Filter	Inspect berm between the pond and the filter to ensure vegetation screening is not clogged with debris
	Sand Filter	Measure depth of accumulated sediment on filter
	Drain Tile	Confirm rodent guards are still intact
<b>Annual Fall Inspection/Maintenance</b>	Outlet Structure	Inspect structure for signs of structural damage (cracks, broken concrete, deteriorating joint conditions, signs of flow bypassing)
	Sand Filter	Remove/scrape accumulated sediment; rototill if needed
	Drain Tile	Inspect structural integrity (drain tile cracking, cleanout caps)
	Drain Tile	Install snow fence or markers around cleanouts in filter
<b>As-Needed Maintenance Informed by Inspections</b>	Stormwater Pond	Conduct periodic sedimentation survey
	Stormwater Pond	Repair undercut/eroded areas
	Stormwater Pond	Dredge pond to remove accumulated sediment
	Outlet Structure	Remove accumulated debris from outlet control structure
	Sand Filter	Replace 2-5" of surface media
	Sand Filter	Stabilize eroded areas
	Drain Tile	Jet accumulated sediment if drain tile is clogged

*\*Monthly inspections may decrease to seasonal if little debris/removal work is necessary at the location*



# **Appendix A**

## **As-built Record Drawing**



## **Attachment 2: Land Alteration and Flowage Agreement**

## **AGREEMENT for Land Alteration and Flowage**

### **Minnehaha Creek Watershed District and Todd & Rebecca Epley**

This Agreement is entered into between Todd E. Epley and Rebecca K. Epley, each the spouse of the other (together and individually, "Owners"), and the Minnehaha Creek Watershed District, a local unit of government with powers set forth at Minnesota Statutes Chapters 103B and 103D ("District").

### **RECITALS**

A. Owners own jointly, in fee simple, certain real property with PID 26.118.23.33.0033, and address 1525 Sixth Avenue North, City of Long Lake, Minnesota (the "Property").

B. The District owns, operates and maintains a stormwater treatment basin with associated appurtenances on real property adjacent to the Property. The District holds the right to do so through an easement filed with the Hennepin County Office of the Registrar of Titles that burdens the adjacent property.

C. The District wishes to construct improvements to the basin, for expanded regional water quality benefit, improved habitat, and other water resource benefits (the "Project"). To construct the Project, the District would excavate on, and extend the basin onto, the Property. As it is doing so, the District, for a favorable cost, is able to install a footpath to the basin, and grade and clear an area adjoining the basin, for Owners' amenity use. Owners wish to support the Project, for its water resource benefits, and for the amenity benefit to the Property.

D. The District recognizes that its right to engage in activity, and Owners' restrictions on use of the Property, under this Agreement will terminate when Owners convey the fee interest in the Property. The Agreement provides for Owners to notify the District of a pending transfer of ownership, to facilitate the District's communication with the successor owner.

THEREFORE, for valuable consideration and under the mutual terms set forth herein, the receipt and sufficiency of which hereby are acknowledged, Owners and the District enter into this Agreement, intending that it be legally binding according to its terms.

### **TERMS**

1. Project Area. The Project Area is as delineated on the site plan attached and incorporated as Exhibit A. Within the Project Area, the District has the right to engage in the following activities:

a. Land Alteration. The District may modify lands by excavation, grading, and filling. The District owns all right, title and interest in, and will remove from the Property, any soil and vegetative material excess of the Project, unless the material is disposed of on the Property by agreement of Owners and the District.

b. Rock, Bioengineered and Structural Elements. The District may install rock, sand, bioengineered and structural elements to modify and stabilize the bed and banks of the basin.

c. Vegetation Management. The District may remove surface vegetation, brush and trees as needed to implement the Project. The District may seed, plant and maintain vegetation, but may not plant trees without Owners' written consent. The District will reestablish vegetative cover on any part of the Project Area that it disturbs under this Agreement.

d. Design, Construction and Associated Rights. For Project purposes, the District may engage in activities incidental to those authorized above, including but not limited to site inspection by the District and permitting authorities; investigation and testing; placing and maintaining erosion control and similar construction-phase site measures; placing materials; and staging and operating equipment and vehicles. After Project completion, the District may enter the Project Area to inspect, maintain and modify the Project.

2. Flowage Area. The 100-year high-water elevation may extend to the surface footprint delineated on Exhibit A as the Flowage Area. The 100-year high-water elevation is defined as the water elevation reached as the result of an extreme precipitation event defined as 7.25 inches of rain falling within a 24-hour period. Owners recognize that the water surface footprint may extend beyond the Flowage Area as the result of a precipitation event that exceeds the above-described event in duration or rainfall amount.

3. Owners' Limitations. Owners reserve all rights associated with ownership of the Property except as follows. For the purposes of this section 3, "Owners" includes all those acting under authority or direction of Owners.

a. Prohibited Uses. Owners will not perform an act within the Project Area that materially impairs or interferes with District's ability to exercise its rights under this Agreement, or that alters any element of the Project. All rights reserved by Owners must be exercised in accordance with this paragraph 3.a.

b. Structures and Improvements. Owners will not place or construct a temporary or permanent building, structure, sign or other improvement of any kind within the Project or Flowage Area, except: (i) Owners may maintain the footpath and landing described at section 4, below; and (ii) Owners may maintain a removable dock below the basin top of bank. Owners recognize that the District makes no representation as to the basin water operating level; the suitability of the basin or its waters for any recreational or amenity purpose; or Owners' legal right to be on the basin where it overlies neighboring land.

c. Utilities. Owners will not install a new utility system or expand an existing utility system within the Project Area including but not limited to water, sewer, power, fuel, or communications or data lines, without the prior written approval of and in accordance with terms specified by District.

d. Surface Alteration. Apart from incidental disturbance to maintain improvements permitted under paragraph 3(b), above, Owners will not alter surface vegetation or soils within the Flowage Area, including but not limited to filling, excavating or removing soil, sand,

gravel, rocks or other material. Owners will not engage in an activity or use within the Flowage Area that results in the mobilization or movement of sediments or pollutants.

e. Placement of Waste, Fill or Other Material. Owners will not dump, dispose of or otherwise place refuse, brush or other waste material within the Flowage Area.

4. Path and Landing. In conjunction with its construction of the Project, the District will construct for Owners a level landing adjacent to the basin, and a footpath from Owners' house curtilage to the landing. During design and, as needed, construction phases of the Project, the District and Owners will consult as to the alignment and features of these improvements, which will be subject to Owners' approval and will conform to the following:

a. Footpath Design. The footpath will be up to five feet wide (wider at turns as appropriate) and about 300 feet in length. The trail alignment will be reasonably direct, but will be designed to retain stable side slope, and will not be so direct as to accelerate or concentrate surface stormwater flow to the basin. The alignment will be field-fitted by the District contractor to avoid excessive slope and limit tree removal. Exhibit A shows the approximate footpath alignment.

b. Landing Design. The landing will be approximately 180 square feet in area and will be field-fitted by the District contractor to consider existing grades and to limit tree removal.

c. Surface. The District will surface the footpath and landing with woodchips, pea gravel, recycled class 5 aggregate, or other stable and non-polluting material of equal or lesser cost, as Owners may elect.

The District will require that its contractor repair settling or sloughing of the footpath and landing for a period of one year, and will be responsible to Owners for any necessary work during that period. Thereafter, the District will have no responsibility to maintain or repair the footpath or landing.

5. No Public Access Granted. Nothing in this Agreement authorizes any public right of access onto the Property. The right of entry conveyed to the District under this Agreement is limited to the District and its authorized representatives, agents, contractors and subcontractors.

6. Notice of Property Transfer. Owners will give thirty (30) days' prior written notice to the District of their conveyance of the fee interest in all or part of the Property. The District has no right to block or prevent Owners' conveyance of the Property to any third party, whether by sale, rental, lease, or otherwise.

7. Taxes, Insurance. Owners retain all financial obligations and bear all costs and liabilities of any kind accruing from the fee ownership of the Property. Neither Owners nor the District have an obligation to the other to maintain liability or other insurance, but each will maintain such insurance as they deem appropriate for their own purposes.

8. Waiver. A decision by either party not to exercise its legal rights in the event of a breach of a term of this Agreement is not a waiver of such term, any subsequent breach of the same or any other term, or any of the party's rights under this Agreement. The delay or failure to discover a breach or



to exercise a right of enforcement as to such breach does not impair or waive a party's rights of enforcement, all of which shall be cumulative and not exclusive.

9. Acts Beyond Party's Control. A party will not exercise its right of enforcement against the other party for injury, alteration or encroachment resulting from: (a) a cause beyond the reasonable control of that party, including without limitation fire, flood, a precipitation event with a statistical recurrence interval of 100 years or more, storm, and earth movement resulting from natural forces or the act of a third party; or (b) any prudent action taken by the party under emergency conditions to prevent, abate or mitigate significant injury or alteration resulting from such a cause.

10. Notices. Any notice or other communication that either party must give to the other will be in writing and delivered physically or electronically to the following address or such other address as either party designates by written notice to the other:

**OWNERS**

Todd and Rebecca Epley  
1525 Sixth Avenue North  
Long Lake MN 55356

**DISTRICT**

Kailey Cermak, Planner-Project Manager  
Minnehaha Creek Watershed District  
15320 Minnetonka Boulevard  
Minnetonka MN 55345

RE: County Road 6 Basin

Notice to either Owner constitutes notice to Owners.

11. Recitals Incorporated. All recitals are a part of this Agreement.

12. Miscellaneous. This Agreement is governed by the laws of the State of Minnesota. This Agreement sets forth the entire agreement of the parties and supersedes all prior discussions and agreements. The parties may amend this Agreement only by a writing duly executed by both parties. The District, with thirty (30) days' advance written notice to Owners, may assign this Agreement, or any right or responsibility hereunder, exclusively or non-exclusively, but only to a public body that is authorized to operate and maintain the Project.

**OWNERS**

\_\_\_\_\_  
Rebecca K. Epley      Date:

\_\_\_\_\_  
Todd E. Epley      Date:

STATE OF MINNESOTA  
COUNTY OF HENNEPIN

This instrument was acknowledged before me this \_\_\_\_ day of \_\_\_\_\_, 2025, by Rebecca K. Epley and Todd E. Epley, each the spouse of the other.

\_\_\_\_\_

Notary Public

**MINNEHAHA CREEK WATERSHED DISTRICT**

\_\_\_\_\_  
James Wisker, Administrator

Date:

STATE OF MINNESOTA  
COUNTY OF HENNEPIN

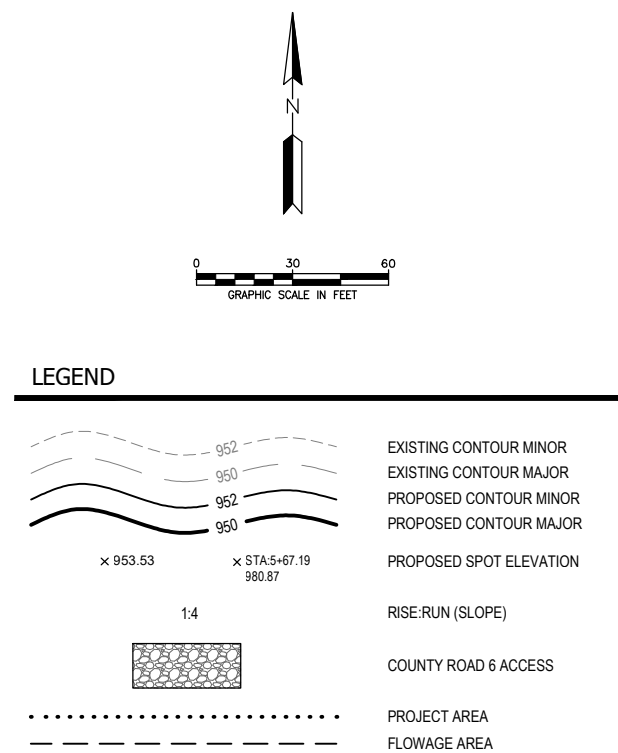
This instrument was acknowledged before me this \_\_\_\_ day of \_\_\_\_\_, 2025, by James Wisker as Administrator of the Minnehaha Creek Watershed District.

\_\_\_\_\_  
Notary Public

This document prepared by:  
Smith Partners P.L.L.P.  
400 Second Avenue South  
Suite 1200  
Minneapolis MN 55401

## **EXHIBIT A**

### **PROJECT AREA and FLOWAGE AREA**

[illegible]

CERTIFICATION:

NOT FOR CONSTRUCTION

PROJECT NO.:		227707038	
DWN BY: SMD	CHK'D BY: NPW	APP'D BY: CJM	
ISSUE DATE:		XX/XX/2024	
ISSUE NO.:		0	

SHEET TITLE:

EXHIBIT A

SHEET NO.: