



Title: Permit 26-161: Cedar-Greenway Trail Connection

Applicant: Minnehaha Creek Watershed District, Project Planning Department
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Recommendation:

Approval of the Minnehaha Creek Watershed District (MCWD or District) permit 26-161 in accordance with the submitted plans and following condition:

- Contractor information is provided for the party responsible for native plant establishment, monitoring, and invasive species removal during the first three years.

Project Location and Scope:

Project Purpose and Scope

MCWD's Project Planning team (Applicant) has applied for a MCWD permit to create a new trail under the Southwest Light Rail (SWLRT) Green Line extension as part of the District's Minnehaha Creek Greenway focal geography. This linear project (Project) will connect the Minnehaha Creek Preserve Boardwalk to the Cedar Lake Regional Trail, providing pedestrian and cyclist use between the two existing trails. The 1,000-foot-long, 10-foot-wide trail will begin at the Meadowbrook Road and Powell Road intersection and follow the western bank of the Minnehaha Creek underneath the light rail overpass before tying in with the existing Cedar Lake LRT Regional Trail along the light rail. MCWD began a feasibility study of this area with Stantec and Inter-Fluve in 2023 to continue developing the concept design that was completed in 2015-16. In addition to constructing the trail, the Project will also include streambank restoration and stabilization.

Location and Hydrology

The Project is located at 3690 Meadowbrook Road, St. Louis Park in Hennepin County, within the Minnehaha Creek subwatershed and will disturb 0.88 acres of land. The project is located on three publicly owned parcels and the Light Rail right-of-way. Minnehaha Creek (Creek), which is a fifth order, DNR Public Water watercourse, flows through the Project. No wetlands were identified in the project area during a wetland delineation approved through the Wetland Conservation Act (WCA) process on October 29, 2025 (see Attachment A – WCA Notice of Decision). All water within the project drains directly to the Minnehaha Creek, which flows eastward to the Mississippi River.

Regulatory Framework

The MCWD's Waterbody Crossings and Structures and Shoreline and Streambank Stabilization Rules are applicable for the Project. The Stormwater Management Rule is not applicable for the trail's new impervious surface because the trail is less than 12 feet wide and bordered downgradient by pervious vegetated buffer averaging at least half the width of the trail, pursuant to Section 2(b)2 of the Stormwater Management Rule. MCWD does not have regulatory authority for the Erosion and Sediment Control Rule within the city of St. Louis Park, therefore, the City is responsible for disturbed site regulation. The Floodplain Alteration Rule is not applicable because all work within the floodplain conforms to Section 4 of the Shoreline and Streambank Stabilization Rule and is therefore not considered floodplain fill in accordance with Section 4(e) of the Shoreline and Streambank Stabilization Rule.

MCWD staff and the District Engineer have reviewed the Project and concluded it meets applicable MCWD rules. The Project is before the Board of Managers because it is a District-led project.

MCWD Rule Analysis:

Waterbody Crossings and Structures Rule

The Waterbody Crossings and Structures Rule applies when a roadway, bridge, boardwalk, utility, conveyance, or associated structure is placed below the top of bank of a waterbody, beneath a waterbody, or encloses any part of a waterbody within a pipe or culvert. The top of bank of a watercourse is defined as the break in slope. The Minnehaha Creek is a regulated watercourse within the Project, and two new storm sewer pipe outlets (CB-101 and CB-102) will be placed below the break in slope along the stream. CB-101, the northernmost structure, has a catch-basin with a 37-foot-long PVC pipe 12 inches in diameter extending toward the Creek. CB-102, the southernmost structure, also has a catch basin and 24-foot-long PVC pipe 12 inches in diameter tying into the streambank. Both pipe outlets will primarily be flush with the proposed streambank, and only extend a few inches beyond the bank. Therefore, this rule is applicable.

Section 3(a) states that the use of the bed or bank of a waterbody must serve a public purpose for projects in public waters. The purpose of shifting the storm sewer pipe below the break in slope, which will place the outlet below the trail, is to provide piped conveyance preventing surface overflow and trail inundation, where there will be public pedestrian and cyclist use. This provides a public purpose that will allow safe, public use of the trail.

Section 3(b) requires that the project retains adequate hydraulic capacity, and if a structure is located in a watercourse, it may not increase upstream or downstream flood stage. The structure is located in a watercourse, but the pipe outlet is located above the OHW and 100-year floodplain elevation on the Creek. Therefore, the structure will not impact the flood stage of the Creek. The Applicant has also modeled the impacts from both pipe outlets into the watercourse to demonstrate there is no increase in flood stage on the watercourse due to water conveyed through the new pipe. Table 1 and 2 show the changes on the 100-year floodplain elevation of the Minnehaha Creek. Therefore, this rule requirement is met.

Section 3(c) requires that the project preserve navigational capacity. The navigational capacity of this section of the Creek is used by kayaks and canoes. The proposed storm sewer outlet will not extend past the proposed slope of the streambank and the storm sewer outfall is located above the ordinary high-water elevation (OHW) and 100-year floodplain elevation. Therefore, navigational capacity will be preserved with the Project.

Section 3(d) requires that aquatic and upland wildlife passage be preserved. The proposed storm sewer outfall will be located below the top of bank, so upland wildlife passage along the top of bank will be preserved. Since the outfall is located above the OHW and 100-year floodplain, aquatic wildlife passage will be retained. Therefore, this requirement is met.

Section 3(e) requires that the structure be designed to not promote erosion or scour, or otherwise affect bed or bank stability or water quality within the wetland. The streambank below the CB-102 outfall will be stabilized with a geocell bioengineering wall and riprap toe at the outfall to dissipate flow and prevent erosion and scour. The streambank below the CB-101 outfall will be stabilized with the FES lifts and riprap toe. Therefore, this rule requirement is met.

Section 3(f) requires that the structure be the “minimal impact” solution to the specific need. Two alternatives were considered. The first alternative is a no-build alternative, which limits impacts below the top of bank but would cause the existing drainage structures to surface discharge upgradient of the trail. This presents safety concerns for trail users during and after storm events. The second alternative is to install a trench drain at CB-101 and a catch basin inlet at CB-102. The use of a trench drain at CB-101 would have reduced capacity in comparison to a catch basin and water would overflow onto the trail during larger storm events, limiting trail access and causing safety concerns. Therefore, staff have reviewed these alternatives and determined that they are not the minimal impact solution, and providing two storm sewer outlets below the trail at CB-101 and CB-102 minimizes impacts to the bank of the Creek while providing safe access to the trail. Therefore, staff have determined the proposed design to be the minimal impact solution.

Sections 3(g) and (h) are not applicable as no subsurface, sanitary sewer, or siphon crossings are proposed.

Staff and the District Engineer have reviewed the proposal against the rule criterion and determined that the Project meets requirements of the Waterbody Crossings and Structures Rule.

Shoreline and Streambank Stabilization Rule

The Shoreline and Streambank Stabilization Rule applies to any disturbance below the OHW of a waterbasin or watercourse for the purpose of stabilization, or to serve an amenity or other beneficial purpose. The Project proposes work below the OHW on Minnehaha Creek, a watercourse, for the purpose of stabilizing three sections along the western bank of the Creek. Two bioengineering designs, a Geocell wall and fabric encapsulated soil (FES) lifts, are proposed along the Project corridor. Therefore, this rule is applicable.

According to Section 3, erosion intensity calculations are required to support an application for a stabilization practice other than a biological practice. As two bioengineering practices are proposed along the Creek's western bank, the bankful stream velocity and shear stress on the streambank calculations were provided and are included in the permit application design memo in Attachment B. Pursuant to Section 5(a)(2), the higher of the two intensity scores is used, corresponding to a medium erosion intensity, allowing a bioengineering practice.

Section 4 of the rule outlines standards for stabilization designs. Sections 4(a) and (b) apply to this project; Section 4(c) and 4(d) pertain to "structural designs" and retaining walls, and are not applicable, except as section 4(b) incorporates parts of section 4(c), as reviewed below. Retaining walls are structural designs with a slope of 2:1 or steeper. While some portions of the Project's stabilization design have 2:1 slopes, it is staff's judgment and interpretation of the rule (in consultation with counsel) that the design is a bioengineering design and not a structural design because of the predominance of natural elements and the limited extent of hydraulic force deflection of the proposed biological materials.

Section 4(a) outlines the stabilization design standards for any design other than a retaining wall:

Pursuant to Section 4(a)(1), a stabilization practice is required at these locations due to ongoing erosion and human alterations to the bank, which are causing failing streambanks that will not be able to adequately support the trail in existing condition.

Section 4(a)(2) requires that the slope not exceed 3:1 unless impractical due to site-specific conditions. The slopes will be set steeper than 3:1, however, more gradual slopes are not feasible because it is a narrow stretch of bank along the Creek and safe trail alignment would not be able to be provided for the FES lift locations. For the Geocell Wall locations, a more gradual slope would require impacts to existing retaining walls on adjacent properties and redesign of storm sewer infrastructure in the parking lot, which are not feasible. Documentation (Permit Memo, Attachment B) of previous erosion along the streambank over the past 10+ years has been provided, demonstrating that the existing bank is not the original bank grade. Because the streambank stabilization design does not encroach past the previous bank grade as it is restoring it to previous conditions, the encroachment requirements in the subsection do not apply. Therefore, this section of the Rule is met.

Section 4(a)(3) requires that the design reflect the engineering properties of the underlying soils and that it conforms to engineering principles for the hydraulic behavior of open channel flow. The MCWD District Engineer has reviewed the design and confirmed adequate engineering principles are used to stabilize this section of the Creek's bank.

Pursuant to Section 4(a)(4), native vegetation will be used within the streambank stabilization practices and the natural, historic shape of the streambank will be maintained.

Pursuant to Section 4(a)(5), a floating sediment curtain will be placed in the Creek along the streambank stabilization areas during construction to prevent sediment from moving into the watercourse and will be removed afterwards.

Section 4(b) outlines the standards for biological and bioengineering design requirements. Because the streambank stabilization designs are bioengineering designs, this section of the Rule is applicable.

Pursuant to Section 4(b)(1), a list of live plantings, native to Minnesota, have been provided in Section 4.1.4 of the design memo in Attachment B.

Pursuant to Section 4(b)(2), the plantings will be placed within the bioengineering designs in such a way that limits the soil disturbance and provides for successful establishment. The plants placed within the FES lifts and Geocell Wall opening will be shorter stature cultivars due to the limited space, which will help them establish evenly. The methods and schedule of planting are provided in the memo and construction plans (Attachments B and C, respectively), and parties responsible for maintaining proper vegetation establishment in the first three years will be provided as a condition of this permit, in accordance with Section 6(b).

Wave barriers will not be used, therefore, Section 4(b)(3) is not applicable.

Section 4(b)(4) requires that structural elements within a bioengineering design conform to criteria of section 4(c)(1) & (2). The structural elements within the bioengineering designs, namely riprap at the toe of bank slope, will conform to these criteria of Section 4(c).

Staff and the District Engineer have reviewed the proposal against the rule criteria and determined that the Project meets requirements of the Shoreline and Streambank Stabilization Rule.

Because the applicant is the District, the maintenance instrument requirement under Section 7 of the Waterbody Crossings and Structures rule is not applicable. Likewise, the financial assurance component required under MCWD's Procedures Rule for the Shoreline and Streambank Stabilization Rule is not applicable.

Summary and Conclusion:

The MCWD Project Planning Department has applied for a MCWD permit under the Waterbody Crossings and Structures and Shoreline and Streambank Stabilization Rules. Based on review by District staff and the District Engineer, staff finds that the application meets all applicable MCWD rules and recommends the Board approve the permit application.

Attachments:

- Attachment A – WCA Notice of Decision
- Attachment B – 90% Permit Application Design Memo
- Attachment C – Construction Plans

Minnesota Wetland Conservation Act
NOTICE OF DECISION

Date this Notice was sent:	10/29/25
Local Government Unit:	Minnehaha Creek Watershed District
County:	Hennepin
Applicant and (if applicable) Applicant's Representative:	Minnehaha Creek Watershed District, Gabriel Sherman Stantec, Kathryn Keller-Miller
Project Name/Number:	3690 Meadowbrook Road, W25-029
Type of Decision (check all that apply): Note: Boundary/type, sequencing, replacement plan, and bank plan decisions require an associated notice of application prior to the decision being made.	<input checked="" type="checkbox"/> Boundary/Type <input type="checkbox"/> Sequencing (submitted separately from a replacement plan) <input type="checkbox"/> Replacement Plan <input type="checkbox"/> Bank Plan <input type="checkbox"/> Exemption Identify which exemption by Rule or Statute Citation: <input type="checkbox"/> No-Loss Identify which provision by Rule or Statute Citation:
Decision: Note: All replacement plan approvals are conditional upon confirmation from BWSR of withdrawal of specified credits and/or financial assurance received for project-specific replacement.	<input type="checkbox"/> Denied <input checked="" type="checkbox"/> Approved. Valid for <input checked="" type="checkbox"/> 5 yrs (default); <input type="checkbox"/> Other. Specify: <input type="checkbox"/> Approved with Conditions List Conditions: Valid for <input type="checkbox"/> 5 yrs (default); <input type="checkbox"/> Other. Specify:
LGU Representative Name & Signature:	<i>Abigail Couture</i> , Abigail Couture- Permitting Technician

Decision Timeline

An LGU must approve or deny a request within 60 days of receiving a complete application per MINN. STAT. § 15.99.

Date Complete Application Received:	9/4/25
Date of Decision:	10/28/25
If applicable, date of <i>written extension</i> to 60-day decision timeline & number of days extended: Reason for Extension (check one):	N/A <input type="checkbox"/> Other process or decision required to occur before WCA decision. Describe: <input type="checkbox"/> Additional information and/or revision to application submitted. <input type="checkbox"/> Applicant request. <input type="checkbox"/> Other. Describe:

Date & number of days extended for any <i>additional written extensions</i> agreed to by the applicant:	N/A
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Decision Summary

Technical Evaluation Panel Recommendation (check one):	<input checked="" type="checkbox"/> No recommendation <input type="checkbox"/> Approval or approval with conditions (attach recommendation) <input type="checkbox"/> Denial (attach recommendation)
LGU Findings (check all that apply):	<input type="checkbox"/> Findings attached <input checked="" type="checkbox"/> Findings: Stantec conducted the delineation on May 6, 2025, and did not identify any wetlands on the project site. 96 linear feet of the Minnehaha Creek were delineated within the project boundary, but there were no fringe wetlands along the stream. The applicant and MCWD staff conducted a site visit on 10/28/25 and confirmed no wetland findings. The LGU concurs with the delineation report. <input type="checkbox"/> Other attachments. Specify:
For Replacement Plan Decisions <i>Only</i> :	Total wetland impacts requiring replacement (acres): Type of wetland replacement (check all that apply): <input type="checkbox"/> Project-Specific. Number of Credits: <input type="checkbox"/> Banking. Number of Credits by Bank Account #:

Notice Distribution

Notice Recipients (check all that apply):	<input checked="" type="checkbox"/> SWCD TEP Member (if different from LGU): Stacey Lijewski – Stacey.Lijewski@co.hennepin.mn.us <input checked="" type="checkbox"/> BWSR TEP Member: Jed Chesnut – Jed.Chesnut@state.mn.us <input checked="" type="checkbox"/> DNR Representative: Ryan Toot – Ryan.Toot@state.mn.us <input type="checkbox"/> Watershed District or WMO (if applicable): [insert] <input type="checkbox"/> bank.administrator.bwsr@state.mn.us (Bank Plan Applications Only) <input checked="" type="checkbox"/> Applicant: gsherman@minnehahacreek.org <input checked="" type="checkbox"/> Applicant’s Representative (if applicable): Kathryn.keller-miller@stantec.com <input type="checkbox"/> Members of the Public Requesting Notices (if applicable): <input checked="" type="checkbox"/> Corps of Engineers: usace_requests_mn@usace.army.mil <input type="checkbox"/> Others:
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Appeal Process

Appeal Process (check one):	<input checked="" type="checkbox"/> Local Appeal Process (if established). Specify How to Appeal: Send petition and \$100 fee too: Minnehaha Creek Watershed District Attn: Permitting 15320 Minnetonka Blvd Minnetonka, MN 55345
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	<input type="checkbox"/> Board of Water & Soil Resources (see instructions below)
<p>If there is no established Local Appeal Process indicated above, an appeal of this decision may be made to BWSR per the instructions to the right.</p> <p>Note: Decisions are not final until the 30-day appeal window ends.</p>	<p>Mail or email written request to appeal sent to BWSR within 30 days of date this notice was sent. Include copy of this notice, name and contact information of appellant(s) and their representative(s) (if applicable), a statement clarifying intent to appeal, and supporting information as to why the decision is in error.</p> <p>Mail check payable to MN Board of Water & Soil Resources for \$500.</p> <p>Send to:</p> <p style="padding-left: 40px;"> Appeals & Regulatory Compliance Coordinator Minnesota Board of Water & Soil Resources 520 Lafayette Road North St. Paul, MN 55155 travis.germundson@state.mn.us </p>

**Greenway to Cedar Lake Trail
Connection & Streambank Restoration
Project Wetland Delineation Report**



Minnehaha Greenway to Cedar Lake Trail
Connection & Streambank Restoration
Project

St. Louis Park, Hennepin County, MN
Stantec Project #: 227707443

June 4, 2025



Prepared for:

Minnehaha Creek Watershed District
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Prepared by:

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GREENWAY TO CEDAR LAKE TRAIL CONNECTION & STREAMBANK RESTORATION PROJECT WETLAND DELINEATION REPORT

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Minnehaha Greenway Project
June 4, 2025

1.0 INTRODUCTION

Stantec Consulting Services Inc. (Stantec) performed a wetland determination and delineation of the proposed Greenway to Cedar Lake Trail Connection and Streambank Restoration Project (Study Area) on behalf of Minnehaha Creek Watershed District. The Study Area is approximately 0.88 acres in size and located in Section 20, Township 117 North, Range 21 West, City of St. Louis Park, Hennepin County, Minnesota. The Study Area consists of two portions located along the banks of Minnehaha Creek with one parcel on each side of the creek (**Appendix A, Figure 1**).

The purpose and objective of the wetland determination and delineation was to identify the extent and spatial arrangement of wetlands and waterways within the Study Area. The field investigation was performed on May 6, 2025.

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2.0 METHODS

2.1 WETLANDS

Wetland determinations were based on the criteria and methods outlined in the *U.S. Army Corps of Engineers Wetlands Delineation Manual*, Technical Report Y-87-1 (1987) and subsequent guidance documents (USACE 1991, 1992), and applicable Regional Supplements to the *Corps of Engineers Wetland Delineation Manual*.

The wetland determination involved the use of available resources to assist in the assessment such as U.S. Geological Survey (USGS) topographic maps, U.S. Department of Agriculture Natural Resources Conservation Service (NRCS) soil survey, U.S. Fish and Wildlife Service (USFWS) National Wetland Inventory (NWI) mapping, Minnesota Department of Natural Resources (MNDNR) Protected/Public Waters mapping, and aerial photography.

On-site wetland determinations were made using the three criteria (vegetation, soil, and hydrology) and technical approach defined in the USACE 1987 Manual and applicable Regional Supplement. According to procedures described in the 1987 Manual and applicable Regional Supplement, areas that under normal circumstances reflect a predominance of hydrophytic vegetation, hydric soils, and wetland hydrology (e.g., inundated or saturated soils) are considered wetlands.

Additionally, as climate plays an important role in the formation and identification of wetlands, the antecedent precipitation in the months leading up to the field investigations was reviewed. Antecedent precipitation was determined prior to the field investigation utilizing the U.S. Army Corps of Engineers (USACE) Antecedent Precipitation Tool (APT). The tool compares precipitation totals from the three months prior to the date of the field investigation with 30-year normal amounts, calculating a weighted multi-month score and determining the climate conditions (dry, normal, wet).

The wetland boundaries and sampling points were identified and surveyed with a Global Positioning System (GPS) capable of sub-meter accuracy and mapped using Geographical Information System (GIS) software.

2.2 WATERWAYS

Waterways, waterbodies, culverts, and/or other connections to off-site wetland or aquatic features that may be under federal or state authority were surveyed using a GPS and mapped using GIS software. The Ordinary High Water Mark (OHWM) was determined by identifying a line on the shore established by the usual fluctuations of water, often marked by physical characteristics like a distinct line on the bank, shelving, changes in soil, destruction of vegetation, or the presence of debris.

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OHWL is not a specific elevation but rather a location determined by observing natural features and indicators along the shoreline. Indicators of the OHWL may include:

- Physical Indicators:
 - Distinct Line on the Bank: A clear, natural line where the water regularly reaches.
 - Shelving: A gradual slope or ledge where the water often stops.
 - Changes in Soil Character: Different soil types can indicate the usual water level.
 - Destruction of Terrestrial Vegetation: The OHWL is often marked by the line where terrestrial plants are no longer able to survive due to the water's influence.
 - Litter and Debris: The presence of organic matter and debris can point to the area regularly submerged.
- Vegetation Indicators:
 - Change in Plant Communities: A shift in the type of plants present can indicate the OHWL.
 - Matted or Bent Vegetation: Vegetation that is regularly bent or pushed over by the water can be an indicator.
 - Absent Vegetation: Areas where vegetation is completely absent due to water action may be a good indicator.
- Other Indicators:
 - Bank Erosion and Undercutting: The OHWL can be marked by the erosion of the bank or exposed root systems.
 - Water Staining on Rocks: Stains on rocks can show the regular high water level.
 - Historic Stabilization: Locations where previous stabilization efforts have been placed can also indicate the OHWL.

3.0 RESULTS

3.1 SITE DESCRIPTION

The Study Area is comprised of two sections along the banks of Minnehaha Creek. The western Study Area includes a mowed lawn paralleling Powell Road and a forested area that lays adjacent to the west bank of Minnehaha Creek and the foot of the bank along the north side of the Cedar Lake trail. The eastern Study Area is primarily a forested area that lays on the east side of Minnehaha Creek and south of the light rail tracks. The Study Area has variable topography, with relatively flat areas along Powell Road and on the east side of the creek and steeper slopes adjacent to the trail, railroad tracks and portions of the creek (**Appendix A, Figure 5**). NRCS soils present within the Study Area and their hydric status are summarized in **Table 1** and mapped in **Appendix A, Figure 2**.

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Table 1. Summary of Soils Identified within the Study Area

Soil Symbol	Soil Unit Name	Acres in Study Area	% Hydric Rating	Hydric Category
L28A	Suckercreek fine sandy loam, 0 to 2 percent slopes, occasionally flooded	0.16	90	Predominantly Hydric
U1A	Urban land-Udorthents, wet substratum, complex, 0 to 2 percent slopes	0.29	0	Non-Hydric
U4A	Urban land-Udipsamments (cut and fill land) complex, 0 to 2 percent slopes	0.31	0	Non-Hydric
U6B	Urban land-Udorthents (cut and fill land) complex, 0 to 6 percent slopes	0.12	0	Non-Hydric

The MNDNR Protected/Public Waters map identified a protected feature that has a centerline between the two Study Area limits (**Appendix A, Figure 3**). The feature is identified as Minnehaha Creek and partially crosses into the Study Area.

The National Wetland Inventory (NWI) map identified one riverine wetland (R2UBH) within the Study Area corresponding with Minnehaha Creek and one forested wetland (PFO1A) adjacent to the creek (**Appendix A, Figure 4**).

Precipitation was analyzed using the USACE APT which calculates a three-month rolling precipitation total. Precipitation was considered *wetter than normal* prior to the site visit on May 6, 2025, as shown in the precipitation figure in **Appendix D** and **Table 2**, below. Though the 30-day rolling precipitation total was in the normal range (**Appendix D**).

Table 2. Antecedent Precipitation Tool Data

Time Period (30 day period ending on)		30% chance <	30% chance >	Precip	Condition (Dry, Wet, Normal)	Condition Value ¹	Month Weight Value	Product of Previous Two Columns
1st Prior Month	5-06-2025	2.13	3.94	2.21	Normal	2	3	6
2nd Prior Month	4-06-2025	1.37	2.43	2.82	Wet	3	2	6
3rd Prior Month	3-07-2025	0.57	1.28	1.39	Wet	3	1	3
Conclusions²	Prior period has been <i>wetter than normal</i>						Sum	15

Source: Precipitation data was compiled and analyzed using the Army Corps of Engineer Antecedent Precipitation Tool available at: <https://www.epa.gov/wotus/antecedent-precipitation-tool-apt> (accessed May 2025).

¹ Condition Values are as follows: Dry=1, Normal=2, Wet=3

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² Conclusions are as follows: If the sum is 6-9 then the period has been drier than normal; if the sum is 10-14 then that period has been normal; if the sum is 15-18 then the period has been wetter than normal.

3.2 WETLANDS

No wetlands were identified and delineated within the Study Area during the field visit. Two upland sample points were taken in the Study Area. However, the sample points did not meet the hydric soil or wetland hydrology criteria. The sample point locations are shown in **Appendix A, Figure 5**. Wetland determination data forms are contained in **Appendix B**. Photographs of the sample points are contained in **Appendix C**.

3.2.1 Sample Point 1

Sample Point 1 (SP01) is located in the NWI forested wetland in a swale between the toe of the bank of the Cedar Lake trail and a berm to the north. The dominant vegetation at SP01 consisted of FAC and FACU species including bur oak (*Quercus macrocarpa*, FAC) in the tree stratum; common buckthorn (*Rhamnus cathartica*, FAC) in the shrub stratum; and smooth Solomon's seal (*Polygonatum biflorum*, FACU), Tatarian honeysuckle (*Lonicera tatarica*, FACU), and common buckthorn in the herbaceous stratum. The vegetation passes the dominance test and therefore meets the hydrophytic vegetation criterion.

The soil at the sample point did not meet NRCS Field Indicators of hydric soils. The sample point only met the Geomorphic Position (D2) secondary indicator. No water table or soil saturation was present to a depth of 24 inches. As a result, wetland hydrology criterion was not met. As the sample point only met the vegetation criterion and did not meet either the hydric soils or hydrology criteria, SP01 was determined to be upland.

3.2.2 Sample Point 2

Sample Point 2 (SP02) is located on a flat low terrace on the east side of the creek. The dominant vegetation at SP02 consisted of FAC and FACU species including boxelder (*Acer negundo*, FAC) in the tree stratum; common buckthorn in the shrub stratum; and common buckthorn and white snakeroot (*Ageratina altissima*, FACU) in the herbaceous stratum. The vegetation passes the dominance test and therefore meets the hydrophytic vegetation criterion.

The soil at the sample point did not meet NRCS Field Indicators of hydric soils. Gravel and rock present prevented digging beyond 14 inches. The sample point only met the Geomorphic Position (D2) secondary indicator. No water table or soil saturation was present to a depth of 14 inches. As a result, wetland hydrology criterion was not met. As the sample point only met the vegetation criterion and did not meet either the hydric soils or hydrology criteria, SP02 was determined to be upland.

3.3 UPLAND

Upland areas within the Study Area consisted of disturbed mixed growth woodlands and mown lawn. Common species seen within the upland areas of Study Area included American elm (*Ulmus americana*), boxelder, cottonwood (*Populus deltoides*), bur oak, common buckthorn, Tatarian honeysuckle, garlic mustard (*Alliaria petiolate*), common dandelion (*Taraxacum*

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officinale), white snakeroot, common burdock (*Arctium minus*), smooth Solomon's seal, and Kentucky bluegrass (*Poa pratensis*).

3.4 WATERWAYS

One waterway, S01, was identified and delineated within the Study Area. The perennial waterway correlates with a MNDNR Public Water mapped waterway, Minnehaha Creek (M-056). The majority of the waterway is located outside of the Study Area, however portions of the western bank of the waterway were located within the Study Area and totaled 96 linear feet. The ordinary high-water mark (OHWM) of S01 located within the Study Area was mapped and is shown in **Appendix A, Figure 5**.

3.5 OTHER ENVIRONMENTAL CONSIDERATIONS

This report is limited to the identification of state and/or federally regulated wetlands and waterways within the Study Area. However, there may be other regulated environmental features within the Study Area, including, but not limited to, historical or archeological features, endangered or threatened species, and/or floodplains, etc. Federal, state, and local units of government and regional planning organizations may have regulatory authority to control or restrict land uses within or in close proximity to these features. Stantec can assist with identification and/or assessment of additional regulated resources at your request.

GREENWAY TO CEDAR LAKE TRAIL CONNECTION & STREAMBANK RESTORATION PROJECT WETLAND DELINEATION REPORT

Minnehaha Greenway Project
June 4, 2025

4.0 CONCLUSION

Stantec performed a wetland and waterway determination and delineation of the proposed Greenway to Cedar Lake Trail Connection and Streambank Restoration Project for the Minnehaha Creek Watershed District. The purpose and objective were to identify the extent and spatial arrangement of wetlands and waterways within the Study Area.

On May 6, 2025, the boundaries of one waterway were identified and delineated in the Study Area in accordance with state and federal guidelines and were subsequently surveyed with GPS and mapped using GIS software. No wetlands were identified within the Study Area. There were a combined total of **96 linear feet of waterway** delineated within the Study Area, which corresponded with Minnehaha Creek. Adjacent uplands were composed of mixed grassland and upland forest.

Wetlands and waterways that are considered Waters of the U.S. (WOTUS) are subject to regulation under Section 404 of the Clean Water Act (CWA) and the jurisdictional regulatory authority lies with the USACE. The MNDNR has regulatory authority over certain public wetlands and waters and adjacent lands under Statute 103G and Rule 6115.0250. All wetlands in Minnesota are protected under the Minnesota Wetland Conservation Act (WCA) Rules Chapter 8420 and administered by an LGU. LGUs can be a City, County, Watershed District, Soil and Water Conservation District (SWCD) or other entity depending on project location and ownership. For this Study Area the **LGU** is the **Minnehaha Creek Watershed District**. Stantec recommends this report be submitted to the LGU and USACE for a preliminary jurisdictional review and concurrence. Finally, counties, townships and municipalities may have local zoning authority over certain types of wetlands and waterways.

Prior to beginning work at this site or disturbing or altering wetlands, waterways, or adjacent lands, Stantec recommends that the owner obtain the necessary permits or other agency regulatory review and concurrence with regard to the proposed work to comply with applicable regulations. Stantec can assist with identification and/or assessment of additional regulated resources at your request.

The information provided by Stantec regarding wetland boundaries is a scientific-based analysis of the wetland and upland conditions present in the Study Area at the time of the fieldwork. The delineation was performed by experienced and qualified professionals using standard practices and sound professional judgment. The ultimate decision on wetland boundaries rests with the applicable regulatory agencies. As a result, there may be adjustments to boundaries based upon review by a regulatory agency. An agency determination can vary from time to time depending on various factors including, but not limited to recent precipitation patterns and the season of the year. In addition, the physical characteristics of the Study Area can change over time, depending on the weather, vegetation patterns, drainage activities on adjacent parcels, or other events. Any of these factors can change the nature and extent of wetlands on the site. This wetland delineation report and the associated wetland boundaries should not be considered finalized until they are approved by the applicable regulatory agencies. It is recommended to review and confirm these approvals before proceeding with any site work.

GREENWAY TO CEDAR LAKE TRAIL CONNECTION & STREAMBANK RESTORATION PROJECT WETLAND DELINEATION REPORT

Minnehaha Greenway Project
June 4, 2025

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GREENWAY TO CEDAR LAKE TRAIL CONNECTION & STREAMBANK RESTORATION PROJECT WETLAND DELINEATION REPORT

Minnehaha Greenway Project
June 4, 2025

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GREENWAY TO CEDAR LAKE TRAIL CONNECTION & STREAMBANK RESTORATION PROJECT WETLAND DELINEATION REPORT


Minnehaha Greenway Project
June 4, 2025

Sign-off Sheet

This document entitled Greenway to Cedar Lake Trail Connection & Streambank Restoration Project Wetland Delineation Report was prepared by Stantec Consulting Services Inc. ("Stantec") for the account of Minnehaha Creek Watershed District (the "Client"). Any reliance on this document by any third party is strictly prohibited. The material in it reflects Stantec's professional judgment in light of the scope, schedule and other limitations stated in the document and in the contract between Stantec and the Client. The opinions in the document are based on conditions and information existing at the time the document was published and do not take into account any subsequent changes. In preparing the document, Stantec did not verify information supplied to it by others. Any use which a third party makes of this document is the responsibility of such third party. Such third party agrees that Stantec shall not be responsible for costs or damages of any kind, if any, suffered by it or any other third party as a result of decisions made or actions taken based on this document.

Prepared by 
(signature)

Kathryn Keller-Miller, Environmental Scientist

Reviewed by 
(signature)

Tony Kaster, Senior Environmental Scientist

GREENWAY TO CEDAR LAKE TRAIL CONNECTION & STREAMBANK RESTORATION PROJECT WETLAND DELINEATION REPORT

Appendix A Figures
June 4, 2025

Appendix A Figures

Figure 1. Project Location

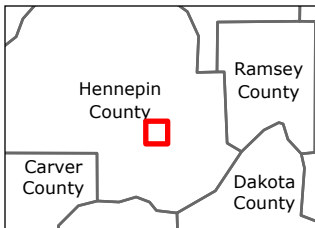
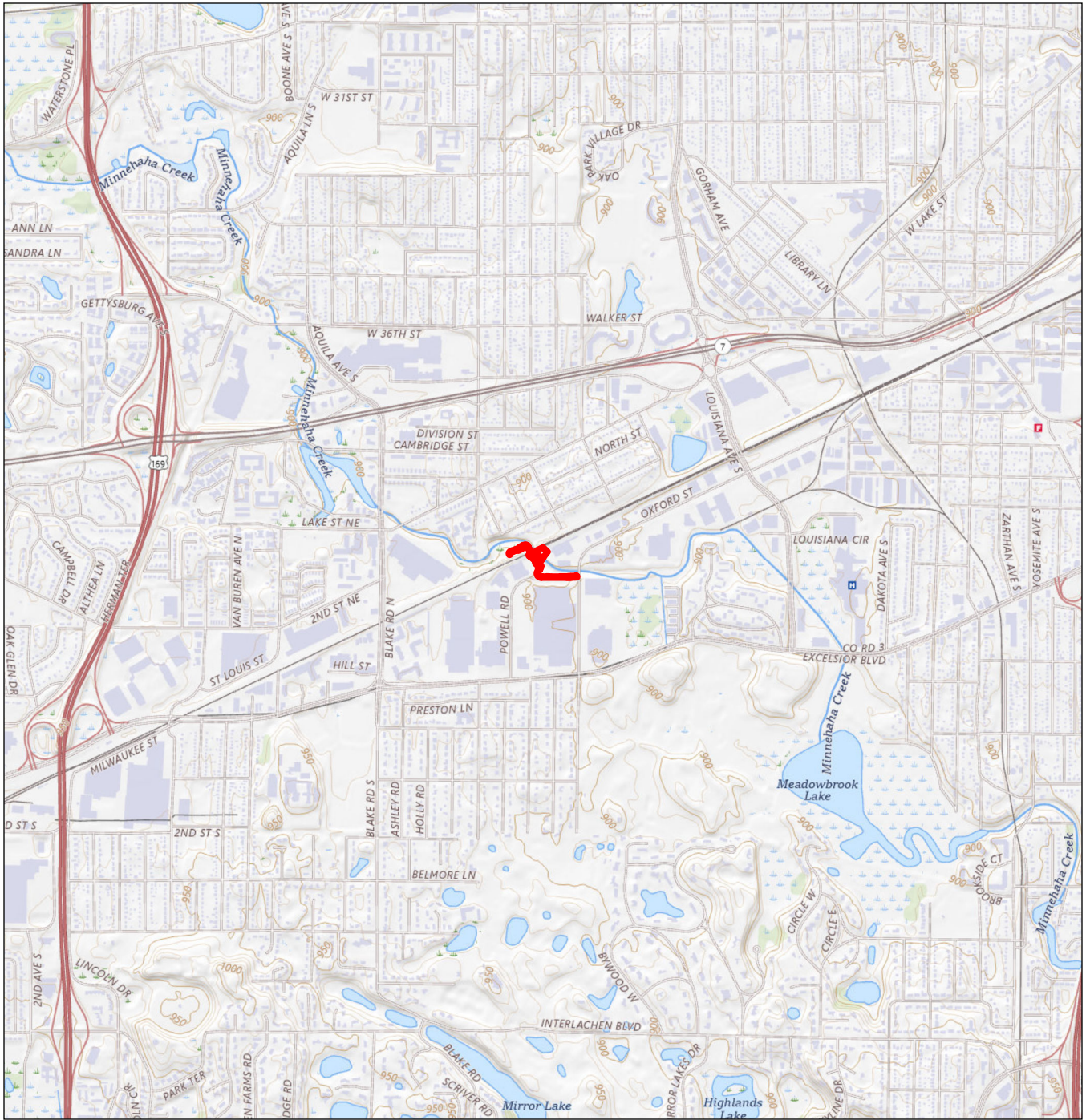
Figure 2. NRCS Soil Survey Data with Hydric Rating


Figure 3. MN Protected/Public Waters Mapping

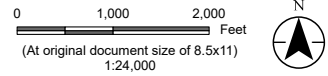
Figure 4. National Wetlands Inventory

Figure 5. Field Collected Data and Topography

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Legend
 Study Area



Project Location Prepared by LAH on 2025-05-08
T117N, R21W, S20
C. of St. Louis Park, Hennepin Co., MN

Client/Project 227707443
MCWD

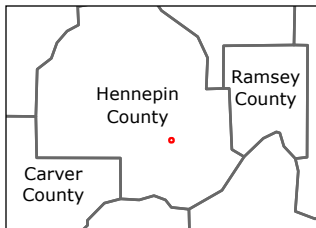
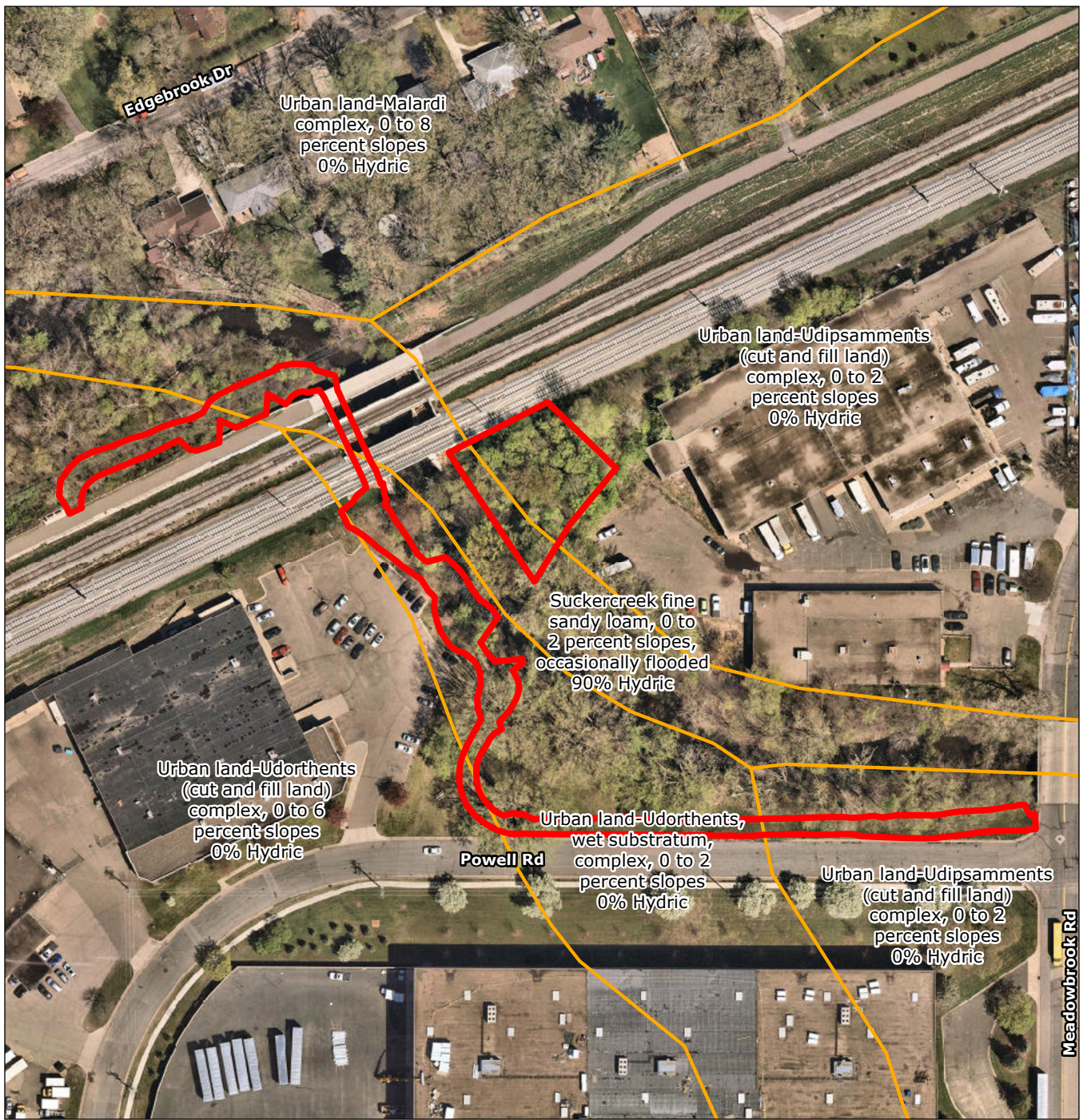
Greenway to Cedar Lake
Trail Wetland Delineation

Figure No. 1
Title

Project Location

- Notes**
- 1. Coordinate System: NAD 1983 UTM Zone 15N
 - 2. Data Sources: Stantec, USGS
 - 3. Background: USGS Topographic

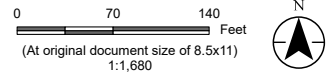
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Legend

■ Study Area

■ Soil Unit and Hydric Rating



Project Location Prepared by LAH on 2025-05-08
T117N, R21W, S20
C. of St. Louis Park, Hennepin Co., MN

Client/Project 227707443
MCWD

Greenway to Cedar Lake
Trail Wetland Delineation

Figure No.
2

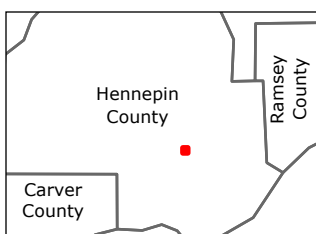
Title
Soil Survey Data Hydric Ratings

Notes




1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources: Stantec, USGS, SSURGO, NHD
3. Background: Hennepin County Aerial, 2024

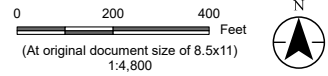
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Legend

-  Study Area
-  Public Waters Basin
-  Public Waters Watercourse



Project Location Prepared by LAH on 2025-05-08
T117N, R21W, S20
C. of St. Louis Park, Hennepin Co., MN

Client/Project 227707443
MCWD

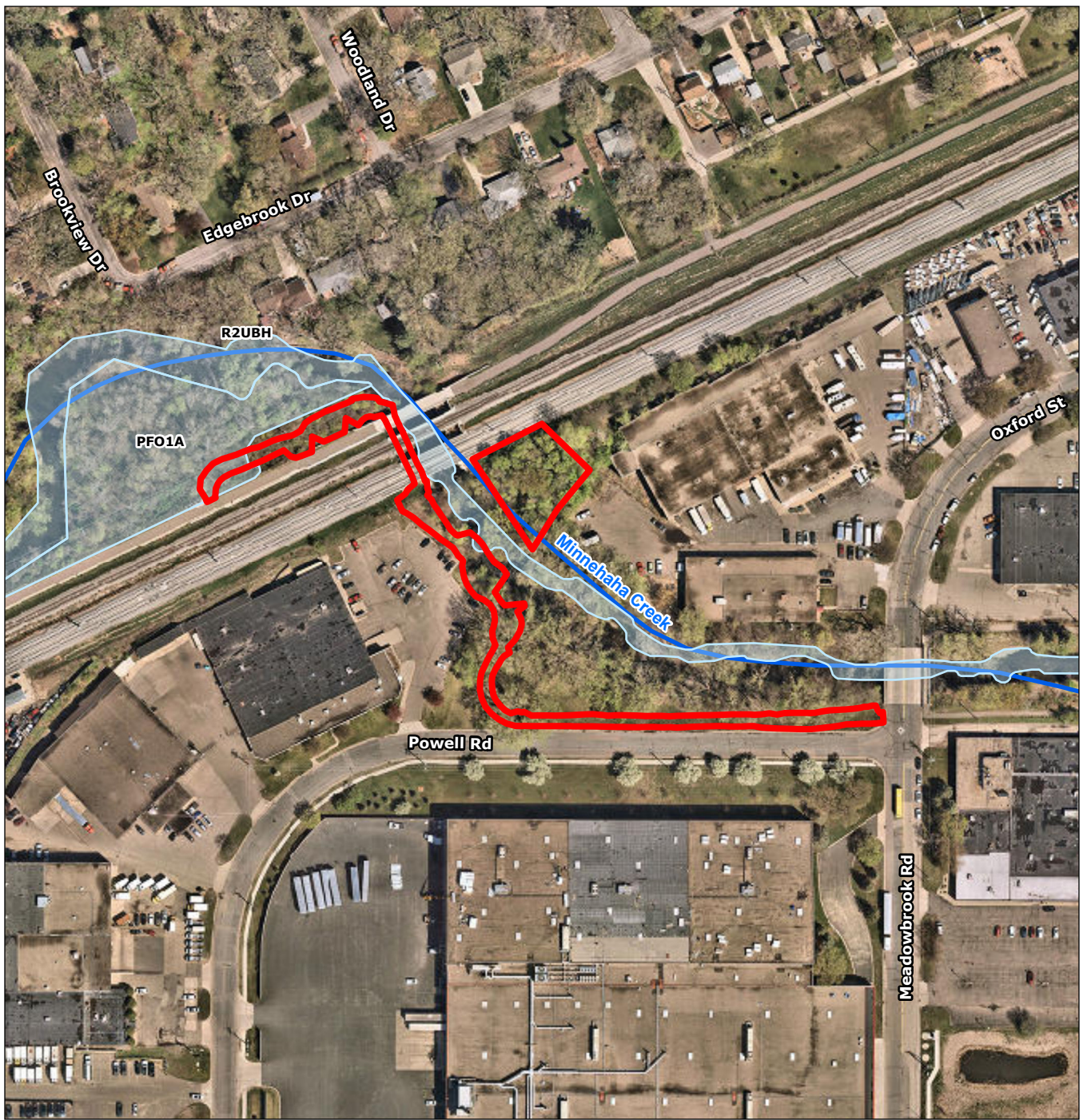
Greenway to Cedar Lake
Trail Wetland Delineation

Figure No.
3

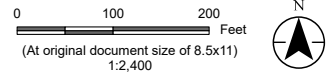
Title
MN Protected & Public Waters

Notes
1. Coordinate System: NAD 1983 UTM Zone 15N
2. Data Sources: Stantec, USGS, NHD, PWI
3. Background: Hennepin County Aerial, 2024

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- Legend**
- Study Area
 - National Wetland Inventory
 - NHD Waterbody
 - ~ NHD Flowline



Project Location Prepared by LAH on 2025-05-08
 T117N, R21W, S20
 C. of St. Louis Park, Hennepin Co., MN

Client/Project 227707443
 MCWD

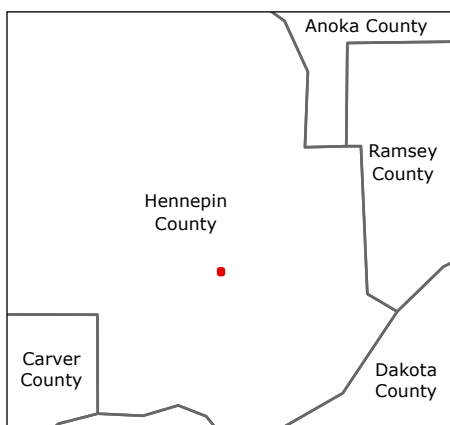
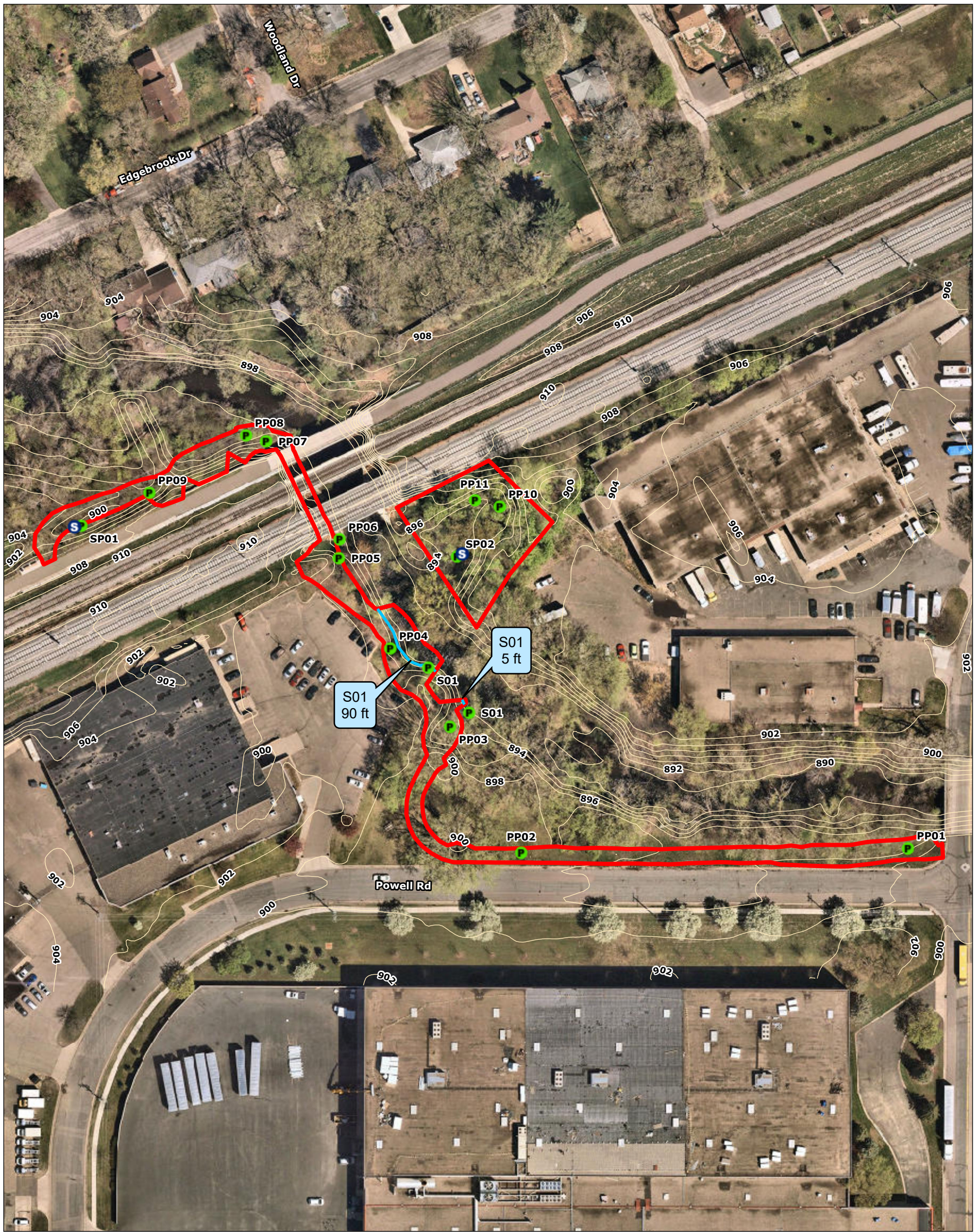
Greenway to Cedar Lake
 Trail Wetland Delineation

Figure No.
4

Title
**National Wetlands Inventory and
 National Hydrography Dataset**

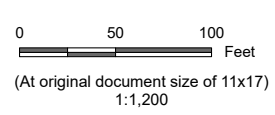
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- Legend**
- Study Area
 - Delineated Waterway
 - 2 ft Contours
 - S Sample Point
 - P Photo Location

Notes
 1. Coordinate System: NAD 1983 UTM Zone 15N
 2. Data Sources: Stantec
 3. Background: Hennepin County Aerial, 2024



Project Location Prepared by LAH on 2025-05-08
 T117N, R21W, S20
 C. of St. Louis Park, Hennepin Co., MN
Client/Project 227707443
 MCWD
 Greenway to Cedar Lake
 Trail Wetland Delineation

Figure No.
5
Title
Field Collected Data

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**GREENWAY TO CEDAR LAKE TRAIL CONNECTION & STREAMBANK RESTORATION PROJECT
WETLAND DELINEATION REPORT**

Appendix B Wetland Determination Data Forms
June 4, 2025

Appendix B Wetland Determination Data Forms

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Minnehaha Greenway Trail City/County: St. Louis Park/Hennepin Sampling Date: 05/06/2025
 Applicant/Owner: Minnehaha Creek WD State: MN Sampling Point: SP01
 Investigator(s): KKM JAL Section, Township, Range: T117N, R021W, S20
 Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope %: 1-2
 Subregion (LRR or MLRA): LRR M, MLRA 103 Lat: 44.930612 Long: -93.379139 Datum: WGS84
 Soil Map Unit Name: Urban land-Udorthents (cut and fill land) complex, 0 to 6 percent NWI classification: PFO1A

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

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

Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Hydric Soil Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Wetland Hydrology Present? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>	Is the Sampled Area within a Wetland? Yes <input type="checkbox"/> No <input checked="" type="checkbox"/>
Remarks: (Explain alternative procedures here or in a separate report.) Located in swale between toe of bank from Cedar Lake trail and berm in woods. Precip prior to the site visit was wetter than normal.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species	Indicator Status	
1. <u>Quercus macrocarpa</u>	10	Yes	FAC	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>5</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>60</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
<u>10</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				
1. <u>Rhamnus cathartica</u>	85	Yes	FAC	Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>110</u> x 3 = <u>330</u> FACU species <u>15</u> x 4 = <u>60</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>125</u> (A) <u>390</u> (B) Prevalence Index = B/A = <u>3.12</u>
2. <u>Acer negundo</u>	7	No	FAC	
3. _____				
4. _____				
5. _____				
<u>92</u> = Total Cover				
Herb Stratum (Plot size: <u>5 ft</u>)				
1. <u>Polygonatum biflorum</u>	10	Yes	FACU	Hydrophytic Vegetation Indicators: - <u>1</u> - Rapid Test for Hydrophytic Vegetation X <u>2</u> - Dominance Test is >50% - <u>3</u> - Prevalence Index is ≤3.0 ¹ - <u>4</u> - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) - <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
2. <u>Lonicera tatarica</u>	5	Yes	FACU	
3. <u>Rhamnus cathartica</u>	5	Yes	FAC	
4. <u>Alliaria petiolata</u>	3	No	FAC	
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
<u>23</u> = Total Cover				
Woody Vine Stratum (Plot size: <u>30 ft</u>)				
1. _____				Hydrophytic Vegetation Present? Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
2. _____				
<u>0</u> = Total Cover				

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP01

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-6	10YR 2/1	100					Sandy Loam	
6-24	10YR 3/2	100					Sand	

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Sandy Gleyed Matrix (S4)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Sandy Redox (S5)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Stripped Matrix (S6)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Dark Surface (S7)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Loamy Mucky Mineral (F1)
<input type="checkbox"/> 2 cm Muck (A10)	<input type="checkbox"/> Loamy Gleyed Matrix (F2)
<input type="checkbox"/> Depleted Below Dark Surface (A11)	<input type="checkbox"/> Depleted Matrix (F3)
<input type="checkbox"/> Thick Dark Surface (A12)	<input type="checkbox"/> Redox Dark Surface (F6)
<input type="checkbox"/> Sandy Mucky Mineral (S1)	<input type="checkbox"/> Depleted Dark Surface (F7)
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	<input type="checkbox"/> Redox Depressions (F8)
	<input type="checkbox"/> Coast Prairie Redox (A16)
	<input type="checkbox"/> Iron-Manganese Masses (F12)
	<input type="checkbox"/> Red Parent Material (F21)
	<input type="checkbox"/> Very Shallow Dark Surface (F22)
	<input type="checkbox"/> Other (Explain in Remarks)

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No <input checked="" type="checkbox"/>
---	--

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input type="checkbox"/> Water-Stained Leaves (B9)	
<input type="checkbox"/> Aquatic Fauna (B13)	
<input type="checkbox"/> True Aquatic Plants (B14)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Gauge or Well Data (D9)	
<input type="checkbox"/> Other (Explain in Remarks)	

Field Observations: Surface Water Present Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Water Table Present Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ Saturation Present Yes _____ No <input checked="" type="checkbox"/> Depth (inches): _____ (includes capillary fringe)	Wetland Hydrology Present? Yes _____ No <input checked="" type="checkbox"/>
--	--

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

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Minnehaha Greenway Trail City/County: St. Louis Park/Hennepin Sampling Date: 05/06/2025
 Applicant/Owner: Minnehaha Creek WD State: MN Sampling Point: SP02
 Investigator(s): KKM JAL Section, Township, Range: T117N, R021W, S20
 Landform (hillside, terrace, etc.): Depression Local relief (concave, convex, none): Concave Slope %: 0-1
 Subregion (LRR or MLRA): LRR M, MLRA 103 Lat: 44.930544 Long: -93.37767 Datum: WGS84
 Soil Map Unit Name: Urban land-Udipsamments (cut and fill land) complex, 0 to 2 percent NWI classification: _____

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

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

Hydrophytic Vegetation Present? Yes <u>X</u> No _____ Hydric Soil Present? Yes _____ No <u>X</u> Wetland Hydrology Present? Yes _____ No <u>X</u>	Is the Sampled Area within a Wetland? Yes _____ No <u>X</u>
Remarks: (Explain alternative procedures here or in a separate report.) Sampled area located on flat low terrace adjacent to and slightly above creek. Precip prior to the site visit was wetter than normal.	

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: <u>30 ft</u>)	Absolute % Cover	Dominant Species	Indicator Status	
1. <u>Acer negundo</u>	30	Yes	FAC	Dominance Test worksheet: Number of Dominant Species That Are OBL, FACW, or FAC: <u>3</u> (A) Total Number of Dominant Species Across All Strata: <u>4</u> (B) Percent of Dominant Species That Are OBL, FACW, or FAC: <u>75</u> (A/B)
2. _____				
3. _____				
4. _____				
5. _____				
<u>30</u> = Total Cover				
Sapling/Shrub Stratum (Plot size: <u>15 ft</u>)				
1. <u>Rhamnus cathartica</u>	55	Yes	FAC	Prevalence Index worksheet: Total % Cover of: Multiply by: OBL species <u>0</u> x 1 = <u>0</u> FACW species <u>0</u> x 2 = <u>0</u> FAC species <u>115</u> x 3 = <u>345</u> FACU species <u>15</u> x 4 = <u>60</u> UPL species <u>0</u> x 5 = <u>0</u> Column Totals: <u>130</u> (A) <u>405</u> (B) Prevalence Index = B/A = <u>3.12</u>
2. _____				
3. _____				
4. _____				
5. _____				
<u>55</u> = Total Cover				
Herb Stratum (Plot size: <u>5 ft</u>)				
1. <u>Rhamnus cathartica</u>	30	Yes	FAC	Hydrophytic Vegetation Indicators: - <u> </u> 1 - Rapid Test for Hydrophytic Vegetation X <u> </u> 2 - Dominance Test is >50% - <u> </u> 3 - Prevalence Index is ≤3.0 ¹ - <u> </u> 4 - Morphological Adaptations ¹ (Provide supporting data in Remarks or on a separate sheet) - <u> </u> Problematic Hydrophytic Vegetation ¹ (Explain) <small>¹Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.</small>
2. <u>Ageratina altissima</u>	10	Yes	FACU	
3. <u>Arctium minus</u>	5	No	FACU	
4. _____				
5. _____				
6. _____				
7. _____				
8. _____				
9. _____				
10. _____				
<u>45</u> = Total Cover				
Woody Vine Stratum (Plot size: <u>30 ft</u>)				
1. _____				Hydrophytic Vegetation Present? Yes <u>X</u> No _____
2. _____				
<u>0</u> = Total Cover				

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: SP02

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)								
Depth (inches)	Matrix		Redox Features				Texture	Remarks
	Color (moist)	%	Color (moist)	%	Type ¹	Loc ²		
0-12	10YR 2/1	100					Silty Clay Loam	
12-14	10YR 3/2	100					Sand	Refusal

¹Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. ²Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:	Indicators for Problematic Hydric Soils ³ :
<input type="checkbox"/> Histosol (A1)	<input type="checkbox"/> Coast Prairie Redox (A16)
<input type="checkbox"/> Histic Epipedon (A2)	<input type="checkbox"/> Iron-Manganese Masses (F12)
<input type="checkbox"/> Black Histic (A3)	<input type="checkbox"/> Red Parent Material (F21)
<input type="checkbox"/> Hydrogen Sulfide (A4)	<input type="checkbox"/> Very Shallow Dark Surface (F22)
<input type="checkbox"/> Stratified Layers (A5)	<input type="checkbox"/> Other (Explain in Remarks)
<input type="checkbox"/> 2 cm Muck (A10)	
<input type="checkbox"/> Depleted Below Dark Surface (A11)	
<input type="checkbox"/> Thick Dark Surface (A12)	
<input type="checkbox"/> Sandy Mucky Mineral (S1)	
<input type="checkbox"/> 5 cm Mucky Peat or Peat (S3)	
<input type="checkbox"/> Sandy Gleyed Matrix (S4)	
<input type="checkbox"/> Sandy Redox (S5)	
<input type="checkbox"/> Stripped Matrix (S6)	
<input type="checkbox"/> Dark Surface (S7)	
<input type="checkbox"/> Loamy Mucky Mineral (F1)	
<input type="checkbox"/> Loamy Gleyed Matrix (F2)	
<input type="checkbox"/> Depleted Matrix (F3)	
<input type="checkbox"/> Redox Dark Surface (F6)	
<input type="checkbox"/> Depleted Dark Surface (F7)	
<input type="checkbox"/> Redox Depressions (F8)	

Restrictive Layer (if observed): Type: _____ Depth (inches): _____	Hydric Soil Present? Yes _____ No <u>X</u>
---	---

Remarks:
Gravel/rock at 14 inches, unable to dig beyond.

HYDROLOGY

Wetland Hydrology Indicators:	Secondary Indicators (minimum of two required)
Primary Indicators (minimum of one is required; check all that apply)	
<input type="checkbox"/> Surface Water (A1)	<input type="checkbox"/> Surface Soil Cracks (B6)
<input type="checkbox"/> High Water Table (A2)	<input type="checkbox"/> Drainage Patterns (B10)
<input type="checkbox"/> Saturation (A3)	<input type="checkbox"/> Dry-Season Water Table (C2)
<input type="checkbox"/> Water Marks (B1)	<input type="checkbox"/> Crayfish Burrows (C8)
<input type="checkbox"/> Sediment Deposits (B2)	<input type="checkbox"/> Saturation Visible on Aerial Imagery (C9)
<input type="checkbox"/> Drift Deposits (B3)	<input checked="" type="checkbox"/> Stunted or Stressed Plants (D1)
<input type="checkbox"/> Algal Mat or Crust (B4)	<input checked="" type="checkbox"/> Geomorphic Position (D2)
<input type="checkbox"/> Iron Deposits (B5)	<input type="checkbox"/> FAC-Neutral Test (D5)
<input type="checkbox"/> Inundation Visible on Aerial Imagery (B7)	
<input type="checkbox"/> Sparsely Vegetated Concave Surface (B8)	
<input type="checkbox"/> Water-Stained Leaves (B9)	
<input type="checkbox"/> Aquatic Fauna (B13)	
<input type="checkbox"/> True Aquatic Plants (B14)	
<input type="checkbox"/> Hydrogen Sulfide Odor (C1)	
<input type="checkbox"/> Oxidized Rhizospheres on Living Roots (C3)	
<input type="checkbox"/> Presence of Reduced Iron (C4)	
<input type="checkbox"/> Recent Iron Reduction in Tilled Soils (C6)	
<input type="checkbox"/> Thin Muck Surface (C7)	
<input type="checkbox"/> Gauge or Well Data (D9)	
<input type="checkbox"/> Other (Explain in Remarks)	

Field Observations:	Wetland Hydrology Present? Yes _____ No <u>X</u>
Surface Water Present Yes _____ No <u>X</u> Depth (inches): _____	
Water Table Present Yes _____ No <u>X</u> Depth (inches): _____	
Saturation Present Yes _____ No <u>X</u> Depth (inches): _____	
(includes capillary fringe)	

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

Remarks:

GREENWAY TO CEDAR LAKE TRAIL CONNECTION & STREAMBANK RESTORATION PROJECT WETLAND DELINEATION REPORT

Appendix C Site Photographs
June 4, 2025

Appendix C Site Photographs



Photo 1. View from the southern S01 photo point towards Minnehaha Creek (S01). Photo taken facing east.



Photo 2. View from the southern S01 photo point looking downstream. Photo taken facing south.



Photo 3. View from the southern S01 photo point looking upstream. Photo taken facing north.



Photo 4. View from the northern S01 photo point looking upstream. Photo taken facing northwest.



Photo 5. View from the northern S01 photo point looking across S01. Photo taken facing northeast.



Photo 6. View from the northern S01 photo point looking downstream. Photo taken facing southeast.



Photo 7. View from upland point SP01. Photo taken facing east.



Photo 8. View from upland point SP01. Photo taken facing north.



Photo 9. View from upland point SP02 looking toward S01. Photo taken facing west.



Photo 10. View from upland point SP02. Photo taken facing south.

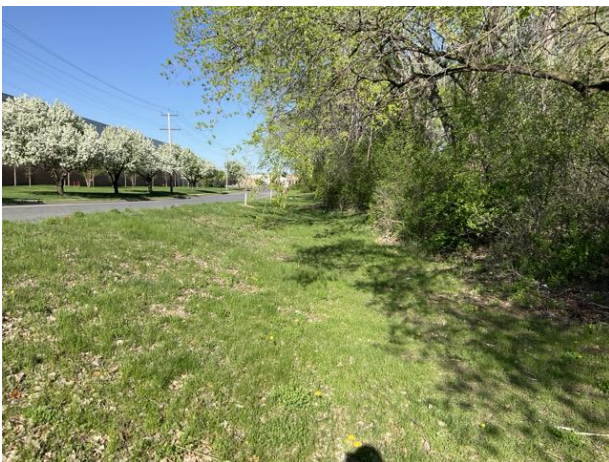


Photo 11. View from upland point PP01 of upland lawn area parallel to Powell Road. Photo taken facing west.



Photo 12. View from upland point PP02 looking towards the creek. Photo taken facing north.



Photo 13. View from PP02 along Powell Road. Photo taken facing west.



Photo 14. View from upland point PP03 with Minnehaha Creek visible on the right side of the photo. Photo taken facing north.



Photo 15. View from upland point PP03 with Minnehaha Creek slightly visible through the trees on the left side of the photo. Photo taken facing east.



Photo 16. View from upland point PP03 into forested upland area, looking away from the creek. Photo taken facing south.



Photo 17. View from PP04. Note some erosion into the bank from the creek at the foot of the bench. Photo taken facing west.



Photo 18. View from PP05 of culvert which empties into creek. Photo taken facing north.



Photo 19. View of PP05 looking towards creek. Photo taken facing east.



Photo 20. View of upland point PP06 under the trail and railroad bridges over Minnehaha Creek. Upland riprap and concrete wall present on west side of creek under bridges. Photo taken facing north.



Photo 21. View from upland point PP07 of riprap under the bridges. Photo taken facing south.



Photo 22. View from upland point PP07 towards bank adjacent to Cedar Lake Trail. Photo taken facing west.



Photo 23. View from upland point PP08 next to Minnehaha Creek on north side of bridges. Photo taken facing north.



Photo 24. View from upland point PP08 looking toward Cedar Lake Trail. Photo taken facing south.



Photo 25. View of upland point PP08. Photo taken facing west.



Photo 26. View of upland point PP09. Photo taken facing north.



Photo 27. View of upland point PP10. Photo taken facing south.



Photo 28. View of culvert outlet at upland point PP10. Photo taken facing east.



Photo 29. View of upland point PP11 looking up the slopes towards the culvert shown in Photo 28. Photo taken facing east.



Photo 30. View of upland point PP11 looking up the bank towards the rail and light rail tracks. Photo taken facing north.



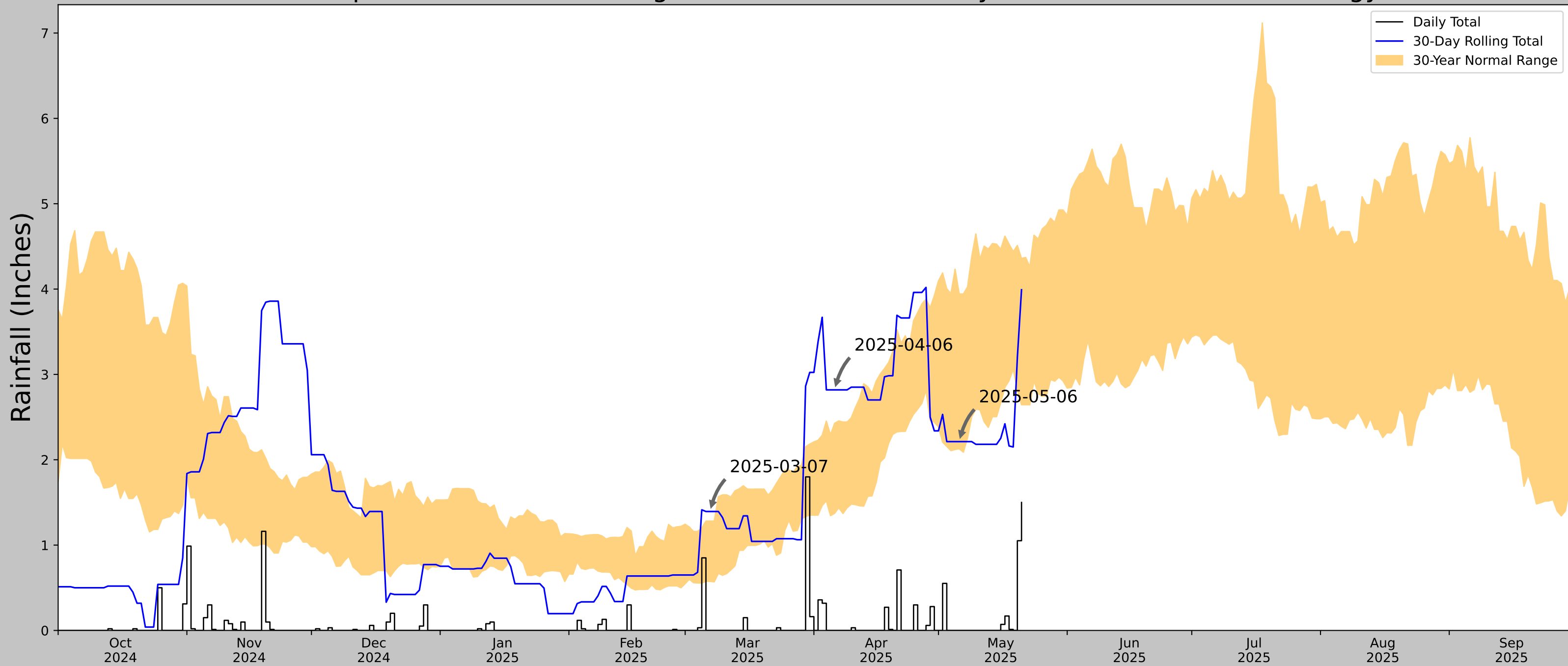
Photo 31. View from upland point PP11 looking towards the creek. Photo taken facing west.

**GREENWAY TO CEDAR LAKE TRAIL CONNECTION & STREAMBANK RESTORATION PROJECT
WETLAND DELINEATION REPORT**

Appendix D Antecedent Precipitation
June 4, 2025

Appendix D Antecedent Precipitation

Antecedent Precipitation vs Normal Range based on NOAA's Daily Global Historical Climatology Network



Coordinates	44.930359, -93.377662
Observation Date	2025-05-06
Elevation (ft)	896.056
Drought Index (PDSI)	Mild drought (2025-04)
WebWIMP H ₂ O Balance	Wet Season

30 Days Ending	30 th %ile (in)	70 th %ile (in)	Observed (in)	Wetness Condition	Condition Value	Month Weight	Product
2025-05-06	2.128347	3.94252	2.212598	Normal	2	3	6
2025-04-06	1.372441	2.427953	2.818898	Wet	3	2	6
2025-03-07	0.574803	1.281496	1.393701	Wet	3	1	3
Result							Wetter than Normal - 15



Figure and tables made by the
Antecedent Precipitation Tool
Version 1.0

Written by Jason Deters
U.S. Army Corps of Engineers

Weather Station Name	Coordinates	Elevation (ft)	Distance (mi)	Elevation Δ	Weighted Δ	Days Normal	Days Antecedent
LOWER ST ANTHONY FALLS	44.9786, -93.2469	753.937	7.21	142.119	4.269	11104	88
MINNEAPOLIS 0.4 NE	44.9671, -93.2622	848.097	1.091	94.16	0.594	9	0
MINNEAPOLIS 0.9 ESE	44.9582, -93.2501	853.018	1.418	99.081	0.779	24	2
MINNEAPOLIS 2.5 ESE	44.9553, -93.2176	833.99	2.155	80.053	1.142	2	0
MINNEAPOLIS 2.4 NE	45.0083, -93.2363	874.016	2.116	120.079	1.206	3	0
MINNEAPOLIS 2.6 ESE	44.951, -93.2175	845.144	2.388	91.207	1.292	5	0
MINNEAPOLIS 1.9 SE	44.9417, -93.2418	857.94	2.562	104.003	1.419	2	0
MINNEAPOLIS 3.0 NNW	45.0039, -93.2895	893.045	2.718	139.108	1.601	1	0
U OF MN ST PAUL	44.9903, -93.18	970.144	3.368	216.207	2.244	203	0

PART ONE: Applicant Information

If applicant is an entity (company, government entity, partnership, etc.), an authorized contact person must be identified. If the applicant is using an agent (consultant, lawyer, or other third party) and has authorized them to act on their behalf, the agent's contact information must also be provided.

Applicant/Landowner Name: Minnehaha Creek Watershed District – Gabe Sherman, Planner/Project Manager

Mailing Address: 15320 Minnetonka Blvd, Minnetonka, MN 55345

Phone: 952-641-4510

E-mail Address: gsherman@minnehahacreek.org

Authorized Contact (do not complete if same as above):

Mailing Address:

Phone:

E-mail Address:

Agent Name: Kathryn Keller-Miller

Mailing Address: One Carlson Parkway, Suite 100, Plymouth, MN 55447

Phone: 763-479-5175

E-mail Address: Kathryn.keller-miller@stantec.com

PART TWO: Site Location Information

County: Hennepin

City/Township: St. Louis Park

Parcel ID and/or Address: 3960 Meadowbrook Rd, St. Louis Park, MN 55426

Legal Description (Section, Township, Range): S20, T117N, R21W

Lat/Long (decimal degrees): 44.9298609, -93.37706634

Attach a map showing the location of the site in relation to local streets, roads, highways.

Approximate size of site (acres) or if a linear project, length (feet): 0.88 acres

If you know that your proposal will require an individual Permit from the U.S. Army Corps of Engineers, you must provide the names and addresses of all property owners adjacent to the project site. This information may be provided by attaching a list to your application or by using block 25 of the Application for Department of the Army permit which can be obtained at:

http://www.mvp.usace.army.mil/Portals/57/docs/regulatory/RegulatoryDocs/engform_4345_2012oct.pdf

PART THREE: General Project/Site Information

If this application is related to a delineation approval, exemption determination, jurisdictional determination, or other correspondence submitted *prior to* this application then describe that here and provide the Corps of Engineers project number.

Describe the project that is being proposed, the project purpose and need, and schedule for implementation and completion. The project description must fully describe the nature and scope of the proposed activity including a description of all project elements that effect aquatic resources (wetland, lake, tributary, etc.) and must also include plans and cross section or profile drawings showing the location, character, and dimensions of all proposed activities and aquatic resource impacts.

The application is being submitted for a wetland delineation on behalf of the Minnehaha Creek Watershed District. No wetlands and one stream were identified during the delineation field investigation. Please see the attached wetland delineation report for more details.

PART FOUR: Aquatic Resource Impact¹ Summary

If your proposed project involves a direct or indirect impact to an aquatic resource (wetland, lake, tributary, etc.) identify each impact in the table below. Include all anticipated impacts, including those expected to be temporary. Attach an overhead view map, aerial photo, and/or drawing showing all of the aquatic resources in the project area and the location(s) of the proposed impacts. Label each aquatic resource on the map with a reference number or letter and identify the impacts in the following table.

Aquatic Resource ID (as noted on overhead view)	Aquatic Resource Type (wetland, lake, tributary etc.)	Type of Impact (fill, excavate, drain, or remove vegetation)	Duration of Impact Permanent (P) or Temporary (T) ¹	Size of Impact ²	Overall Size of Aquatic Resource ³	Existing Plant Community Type(s) in Impact Area ⁴	County, Major Watershed #, and Bank Service Area # of Impact Area ⁵

¹If impacts are temporary; enter the duration of the impacts in days next to the "T". For example, a project with a temporary access fill that would be removed after 220 days would be entered "T (220)".

²Impacts less than 0.01 acre should be reported in square feet. Impacts 0.01 acre or greater should be reported as acres and rounded to the nearest 0.01 acre. Tributary impacts must be reported in linear feet of impact and an area of impact by indicating first the linear feet of impact along the flowline of the stream followed by the area impact in parentheses). For example, a project that impacts 50 feet of a stream that is 6 feet wide would be reported as 50 ft (300 square feet).

³This is generally only applicable if you are applying for a de minimis exemption under MN Rules 8420.0420 Subp. 8, otherwise enter "N/A".

⁴Use *Wetland Plants and Plant Community Types of Minnesota and Wisconsin* 3rd Ed. as modified in MN Rules 8420.0405 Subp. 2.

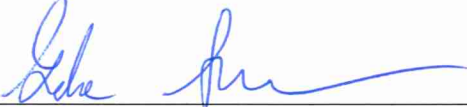
⁵Refer to Major Watershed and Bank Service Area maps in MN Rules 8420.0522 Subp. 7.

If any of the above identified impacts have already occurred, identify which impacts they are and the circumstances associated with each:

PART FIVE: Applicant Signature

Check here if you are requesting a pre-application consultation with the Corps and LGU based on the information you have provided. Regulatory entities will not initiate a formal application review if this box is checked.

By signature below, I attest that the information in this application is complete and accurate. I further attest that I possess the authority to undertake the work described herein.

Signature:  Date: 9/4/2025

I hereby authorize **Stantec Consulting Services** to act on my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this application.

¹ The term "impact" as used in this joint application form is a generic term used for disclosure purposes to identify activities that may require approval from one or more regulatory agencies. For purposes of this form it is not meant to indicate whether or not those activities may require mitigation/replacement.

Attachment A

Request for Delineation Review, Wetland Type Determination, or Jurisdictional Determination

By submission of the enclosed wetland delineation report, I am requesting that the U.S. Army Corps of Engineers, St. Paul District (Corps) and/or the Wetland Conservation Act Local Government Unit (LGU) provide me with the following (check all that apply):

Wetland Type Confirmation

Delineation Concurrence. Concurrence with a delineation is a written notification from the Corps and a decision from the LGU concurring, not concurring, or commenting on the boundaries of the aquatic resources delineated on the property. Delineation concurrences are generally valid for five years unless site conditions change. Under this request alone, the Corps will not address the jurisdictional status of the aquatic resources on the property, only the boundaries of the resources within the review area (including wetlands, tributaries, lakes, etc.).

Preliminary Jurisdictional Determination. A preliminary jurisdictional determination (PJD) is a non-binding written indication from the Corps that waters, including wetlands, identified on a parcel may be waters of the United States. For purposes of computation of impacts and compensatory mitigation requirements, a permit decision made on the basis of a PJD will treat all waters and wetlands in the review area as if they are jurisdictional waters of the U.S. PJDs are advisory in nature and may not be appealed.

Approved Jurisdictional Determination. An approved jurisdictional determination (AJD) is an official Corps determination that jurisdictional waters of the United States are either present or absent on the property. AJDs can generally be relied upon by the affected party for five years. An AJD may be appealed through the Corps administrative appeal process.

In order for the Corps and LGU to process your request, the wetland delineation must be prepared in accordance with the 1987 Corps of Engineers Wetland Delineation Manual, any approved Regional Supplements to the 1987 Manual, and the *Guidelines for Submitting Wetland Delineations in Minnesota* (2013).

<http://www.mvp.usace.army.mil/Missions/Regulatory/DelineationJDGuidance.aspx>

CONSTRUCTION PLANS

FOR

MCWD CEDAR-GREENWAY TRAIL CONNECTION PROJECT

SAINT LOUIS PARK, MINNESOTA

APRIL 2026



ONE CARLSON PARKWAY
SUITE 100
PLYMOUTH, MN 55447
PHONE: 763-252-6800
WWW.STANTEC.COM

CLIENT:



MCWD CEDAR-GREENWAY TRAIL CONNECTION
 CITY OF SAINT LOUIS PARK
 HENNEPIN COUNTY, MINNESOTA

ENGINEER



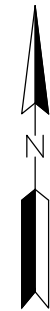
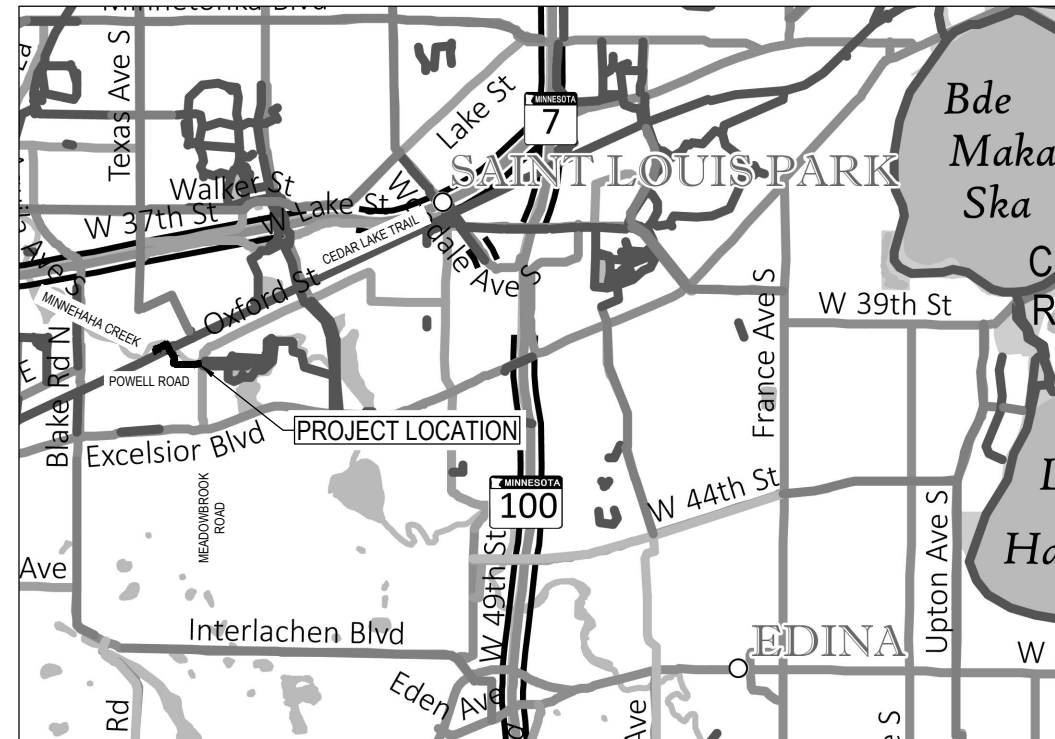
STANTEC CONSULTING SERVICES INC.
ONE CARLSON PARKWAY
SUITE 100
PLYMOUTH, MN 55447

(P) - 763-479-5174
CONTACT: NICK WYERS

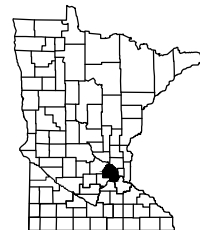
CLIENT



MINNEHAHA CREEK WATERSHED DISTRICT (MCWD)
15320 MINNETONKA BLVD
MINNETONKA, MINNESOTA 55345
(P) - 952-471-0590
CONTACT: GABRIEL SHERMAN



VICINITY MAP
NOT TO SCALE



PROJECT LOCATION
CITY: SAINT LOUIS PARK
COUNTY: HENNEPIN

THIS SHEET SET CONTAINS 23 SHEETS

SHEET INDEX	
Sheet Number	Sheet Title
G0.01	TITLE SHEET
G0.02	LEGENDS
C0.01	EXISTING CONDITIONS & REMOVALS PLAN
C2.01	EROSION CONTROL PLAN
C2.02	PLANTING DETAILS
C3.01	OVERALL CONSTRUCTION PLAN
C3.02	CONSTRUCTION PLAN AND PROFILE
C3.03	CONSTRUCTION PLAN AND PROFILE
C3.04	CONSTRUCTION PLAN AND PROFILE
C3.05	PEDESTRIAN RAMP DESIGN
C3.06	BLOCK RETAINING WALL
C5.01	STORM SEWER PLAN AND PROFILE
C6.01	TRAIL STRIPING
C7.01	CROSS SECTIONS
C7.02	CROSS SECTIONS
C7.03	CROSS SECTIONS
C7.04	CROSS SECTIONS
C7.05	CROSS SECTIONS
C7.06	CROSS SECTIONS
C8.01	DETAILS
C8.02	DETAILS
C8.03	DETAILS
C8.04	DETAILS

ISSUE NO.:

DATE	DESCRIPTION	ISSUE NO.
11/04/2022	FEASIBILITY STUDY	0
XXXX/2025	30% PLANS	1
09/22/2025	60% PLANS	2
04/22/2026	90% PLANS	3

CERTIFICATION:
 I HEREBY CERTIFY THAT THIS PLAN SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER DIRECT SUPERVISION AND IN MY FULL DAILY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

LICENSE NO.:
 DATE:

PROJECT NO.: 227707443

DWN BY: JE CHKD BY: NW APPD BY: NW

ISSUE DATE: 04/23/2026

ISSUE NO.: 3

SHEET TITLE:
TITLE SHEET

SHEET NO.:
G0.01

EXISTING TOPOGRAPHIC SYMBOLS

Table listing existing topographic symbols such as STORM SEWER APRON, BASKETBALL POST, BARRICADE PERMANENT, BENCH, BOOSTER STATION, BUILDING LOWEST OPENING, BURIAL CONTROL MONUMENT, BUSH DECIDUOUS, CATCH BASIN BEEHIVE, CURB BOX, CATCH BASIN, COLUMN, CONTROL BOX SIGNAL, CLEAN OUT (SEWER), CULVERT END, DRINKING FOUNTAIN, ENERGY DISSIPATER, FLAG POLE, FUEL PUMP, GUY WIRE, GRILL, HANDICAP SPACE, HANDHOLE, FIRE HYDRANT, HYDRANT PVMNT MARKER (REFLECTOR), HYDRANT VALVE, INLET (SMALL DIA.), LIFT STATION CONTROL PANEL, LIFT STATION DRY WELL, LIFT STATION WET WELL, LIGHT POLE, LOOP DETECTOR, MAIL BOX, MAIL RELAY BOX, MANHOLE-AIR RELEASE, MANHOLE-HEAT, MANHOLE-GAS, MANHOLE-POWER, MANHOLE-SANITARY SEWER, MANHOLE-STORM SEWER, MANHOLE-COMMUNICATIONS, MANHOLE-UNKNOWN, MANHOLE-WATER, METER POWER, METER GAS, ORDINARY HIGH WATER MARK, OUTLET CONTROL STRUCTURE, PARKING METER, PEDESTRIAN PUSH BUTTON, PEDESTAL POWER, PEDESTAL CATV, PEDESTAL COMMUNICATIONS, POST INDICATOR VALVE, POLE-COMMUNICATIONS, POLE-GUY, POLE-LIGHT, POLE-POWER, POLE-UTILITY, POLE-UTILITY SERVICE, POST, PROPANE TANK, PICNIC TABLE, SAMPLING WELL, ROCK, RR SIGNAL CONTROL BOX, RR CROSSING GATE, RR SIGNAL, REGULATION STATION GAS, SATELLITE DISH, SEPTIC TANK, SEPTIC VENT, SEPTIC DRAIN FIELD, SIGN, SOIL BORING, STAND PIPE GAS, SPIGOT WATER, SPRINKLER HEAD, SPRINKLER VALVE BOX, STUMP, SERVICE-GAS POINT ON LINE, SERVICE-SANITARY SEWER POINT ON LINE, SERVICE-STORM SEWER POINT ON LINE, SERVICE-WATER POINT ON LINE, TELEPHONE BOOTH, TRANSMISSION TOWER ELECTRIC, TEST PIT LOC, TRACER WIRE BOX, TRANSFORMER POWER, TREE DEAD, TREE-CONIFEROUS, TREE-DECIDUOUS, TREE-FRUIT, TRASH CAN, TRAFFIC SIGNAL, VALVE GAS, VALVE, VENT GAS, WATER REDUCER, WETLAND, WELL-MONITORING, WELL-WATER.

SURVEY SYMBOLS

Table listing survey symbols including AIR CONTROL, 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

Table listing proposed topographic symbols such as BOLLARD, SANITARY CLEANOUT, MANHOLE, SANITARY OR STORM LIFT STATION, STORM SEWER BEEHIVE CATCH BASIN, STORM SEWER CATCH BASIN, STORM SEWER FLARED END SECTION, STORM SEWER OUTLET STRUCTURE, STORM SEWER OVERFLOW STRUCTURE, CURB BOX, FIRE HYDRANT, WATER REDUCER, VALVE, RIP RAP, DRAINAGE FLOW, PEDESTRIAN RAMP.

EXISTING PRIVATE UTILITY LINES

Table listing existing private utility lines including CABLE TV QUALITY LEVEL D, C, B, A, FIBER OPTIC QUALITY LEVEL D, C, B, A, POWER QUALITY LEVEL D, C, B, A, GAS QUALITY LEVEL D, C, B, A, COMMUNICATION QUALITY LEVEL D, C, B, A, OVERHEAD POWER, OVERHEAD COMMUNICATION, OVERHEAD UTILITIES.

EXISTING TOPOGRAPHIC LINES

Table listing existing topographic lines such as RETAINING WALL, FENCE - BARBED WIRE, FENCE - CHAIN LINK, FENCE - DECORATIVE, FENCE - STOCKADE, FENCE - WOOD, FENCE - ELECTRIC, GUARD RAIL, TREE LINE, WETLAND.

SURVEY LINES

Table listing survey lines including 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, SECTION LINE.

EXISTING UTILITY LINES

Table listing existing utility lines such as FORCE MAIN, SANITARY SEWER, SANITARY SERVICE, STORM SEWER, WATER MAIN, WATER SERVICE.

PROPOSED UTILITY LINES

Table listing proposed utility lines including FORCE MAIN, SANITARY SEWER, SANITARY SERVICE, STORM SEWER DRAINTILE, STORM SEWER, WATER MAIN, WATER SERVICE, PIPE CASING.

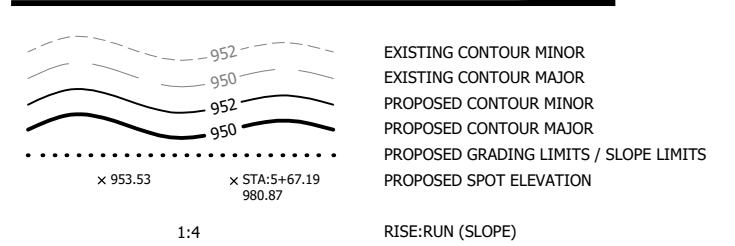
FUTURE UTILITY LINES

Table listing future utility lines such as FORCE MAIN, SANITARY SEWER, SANITARY SERVICE, STORM SEWER DRAINTILE, STORM SEWER, WATER MAIN, WATER SERVICE, PIPE CASING.

CONCRETE CURB AND GUTTER

Table listing concrete curb and gutter types including EXISTING, PROPOSED, FUTURE, DEMOLITION, CONSTRUCTION BOUNDARY.

GRADING INFORMATION



ABBREVIATIONS

Table listing abbreviations such as ALGEBRAIC DIFFERENCE, BUTTERFLY VALVE, BEGIN VERTICAL CURVE ELEVATION, BEGIN VERTICAL CURVE STATION, CENTER LINE, CLASS, CORRUGATED METAL PIPE, CHANGE ORDER, DUCTILE IRON PIPE, ELEVATION, END VERTICAL CURVE ELEVATION, END VERTICAL CURVE STATION, EXISTING, FLARED END SECTION, FACE TO FACE, FORCE MAIN, FIELD ORDER, GATE VALVE, HIGH POINT, HIGH WATER LEVEL, INVERT, CURVE COEFFICIENT, LOW POINT, MANHOLE (SANITARY), NOT TO SCALE, NORMAL WATER LEVEL, POINT OF CURVE, COMPOUND CURVE, POINT OF INTERSECTION, PROPERTY LINE, PERFORATED POLYVINYL CHLORIDE PIPE, POINT OF REVERSE CURVE, POINT OF TANGENT, POLYVINYL CHLORIDE PIPE, POINT OF VERTICAL INTERSECTION, RADIUS, REINFORCED CONCRETE PIPE, RIGHT-OF-WAY, STORM SEWER STRUCTURE, TEMPORARY CONSTRUCTION EASEMENT, TOP NUT HYDRANT, TYPICAL, VERTICAL CURVE, WATER MAIN.

HATCH PATTERNS

Table listing hatch patterns for HEAVY DUTY BITUMINOUS, SAND, BITUMINOUS, BEDROCK, CONCRETE, GROUND, GRAVEL.



ONE CARLSON PARKWAY SUITE 100 PLYMOUTH, MN 55447 PHONE: 763-262-6800 WWW.STANTEC.COM

CLIENT:



MCWD CEDAR-GREENWAY TRAIL CONNECTION CITY OF SAINT LOUIS PARK HENNEPIN COUNTY, MINNESOTA

PROJECT TITLE

ISSUE NO.:

Table with 4 columns for issue numbers 0, 1, 2, 3.

DESCRIPTION:

DATE:

CERTIFICATION:

DATE:

PROJECT NO.:

DATE:

ISSUE DATE:

ISSUE NO.:

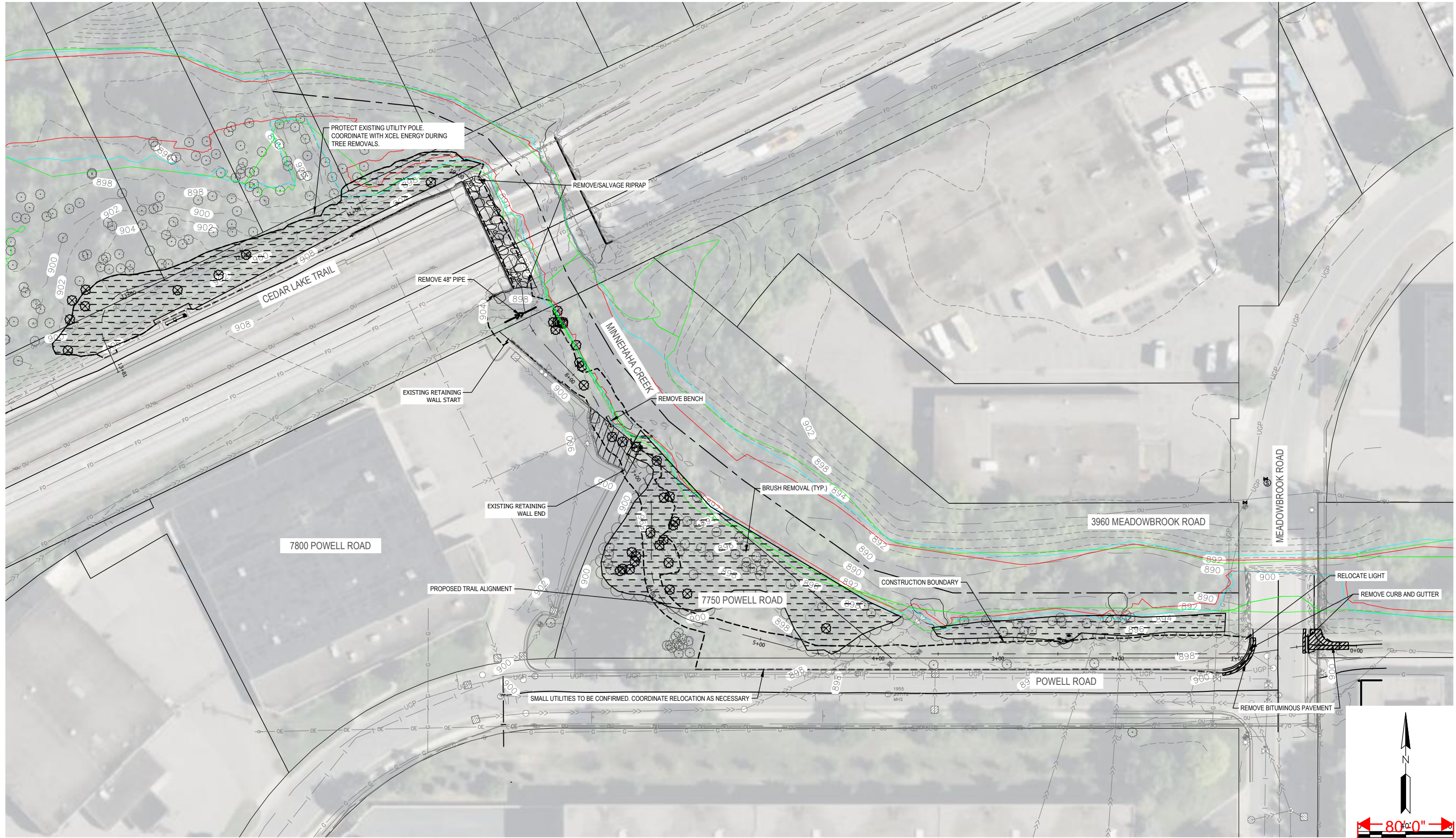
SHEET TITLE:

LEGENDS

SHEET NO.:

G0.02

NOT FOR CONSTRUCTION



MCWD CEDAR-GREENWAY TRAIL CONNECTION
 CITY OF SAINT LOUIS PARK
 HENNEPIN COUNTY, MINNESOTA

PROJECT TITLE:

ISSUE NO.	DESCRIPTION	DATE
0	FEASIBILITY STUDY	11/04/2021
1	30% PLANS	X/02/2025
2	60% PLANS	09/22/2025
3	90% PLANS	04/23/2026

CERTIFICATION:
 I HEREBY CERTIFY THAT THIS PLAN SPECIFICATION, OR REPORT 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.

PROJECT NO.: 227707443

DWN BY: JE	CHKD BY: NW	APPD BY: NW
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ISSUE DATE: 04/23/2026

ISSUE NO.: 3

SHEET TITLE:
 EXISTING CONDITIONS & REMOVALS PLAN

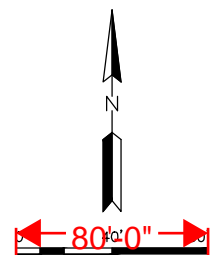
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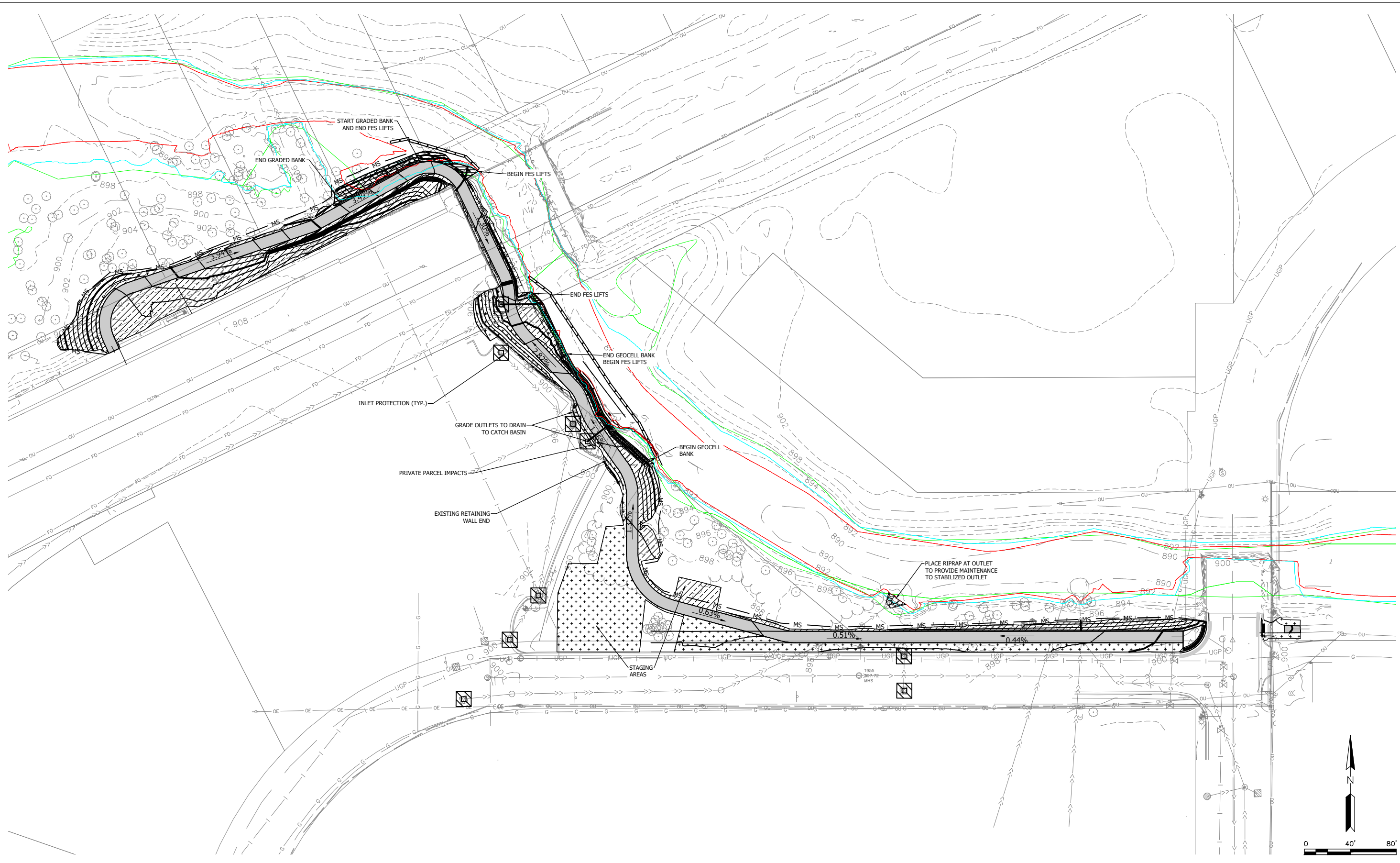
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- EXISTING RETAINING WALL
- EXISTING STORM SEWER
- ZONE AE FLOODPLAIN
- FEMA FIS 100-YR
- APPROXIMATE OHWL
- EXISTING STORM SEWER MANHOLE
- EXISTING STORM SEWER INLET
- EXISTING STORM SEWER INLET
- EXISTING LIGHT POLE
- EXISTING FLARED END SECTION

PROPOSED LEGEND

- TRAIL CENTERLINE
- CONSTRUCTION BOUNDARY
- REMOVE TREE
- BRUSH REMOVAL





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PHONE: 763-252-6800
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MCWD CEDAR-GREENWAY TRAIL CONNECTION
CITY OF SAINT LOUIS PARK
HENNEPIN COUNTY, MINNESOTA

DATE	DESCRIPTION	ISSUE NO.	PROJECT TITLE
11/04/2023	FEASIBILITY STUDY	0	MCWD CEDAR-GREENWAY TRAIL CONNECTION
XXXX/XX/XX	30% PLANS	1	
09/22/2025	60% PLANS	2	
04/23/2026	90% PLANS	3	

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PROJECT NO.: 227707443
DATE:

DWN BY: JE
CHKD BY: NW
APPD BY: NW

ISSUE DATE: 04/23/2026
ISSUE NO.: 3

SHEET TITLE:
EROSION CONTROL PLAN

SHEET NO.:
C2.01

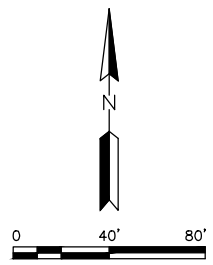
EXISTING LEGEND

- EXISTING PROPERTY LINE
- EXISTING STORM SEWER
- EXISTING LIGHT POLE
- EXISTING FLARED END SECTION
- EXISTING STORM SEWER INLET
- EXISTING STORM SEWER MANHOLE
- EXISTING STORM SEWER INLET

PROPOSED LEGEND

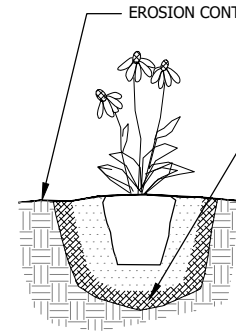
- TRAIL CENTERLINE
- CONSTRUCTION BOUNDARY
- FLOTATION SILT CURTAIN
- BITUMINOUS PAVEMENT
- 6" CONCRETE SIDEWALK
- CLASS III RIPRAP
- INLET PROTECTION
- BANK STABILIZATION (GEOCELL)
- BANK STABILIZATION (FES LIFTS)
- BANK STABILIZATION (GRADED BANK)
- MNDOT SOUTHERN BOULEVARD SEED MIX
- BWSR ERODING BANK STABILIZATION NORTHWEST AND SOUTH (MOD)

NOTES:
1. ALL AREAS WITHIN LIMITS OF DISTURBANCE TO BE RE-VEGETATED PER PLANTING PLANS (SEE SHEET C2.02) AND SPECIFICATIONS.



PLANTING GENERAL NOTES

1. PLANT MATERIALS SHALL BE INSTALLED ON THIS PROJECT USING A VARIETY OF METHODS, ALONE AND IN COMBINATION, AS SPECIFIED. METHODS ARE:
 - 1.A. SEEDING - COVER CROP, NATIVE GRASSES
 - 1.B. HERBACEOUS PLANT PLUGS
2. ALL INFORMATION FOR PLANTING THIS SITE IS NOT NECESSARILY INCLUDED IN THIS PLAN SHEET SET. ADDITIONAL INFORMATION IS CONTAINED IN THE PROJECT TECHNICAL SPECIFICATIONS AND OTHER APPLICABLE CONSTRUCTION DOCUMENTS.
3. SEE SEPARATE TABLES FOR PLANT SPECIES NAME(S), SIZE, TYPE, AND/OR APPLICATION RATE FOR EACH INSTALLATION METHOD.
4. DEPENDING UPON LOCAL AVAILABILITY AND COST, SPECIES SUBSTITUTIONS MAY BE ACCEPTABLE. ALL SUBSTITUTIONS (INCLUDING PRE-PACKAGED SEED MIXES) SHALL BE SUBMITTED TO THE OWNER AT LEAST TWO WEEKS PRIOR TO INSTALLATION FOR APPROVAL.
5. LABELS SHALL BE ATTACHED SECURELY TO ALL PLANTING MATERIALS (SEED, DORMANT CUTTINGS, FERTILIZER, ETC.). LABELS SHALL BE DURABLE, LEGIBLE, USE WEATHER-RESISTANT INK OR OTHER RESILIENT LETTERING, SO THE OWNER MAY DETERMINE THAT ALL MATERIALS CONFORM TO THE SPECIFICATIONS (SIZE, SPECIES, ORIGIN, ETC.)
6. THE BEST SOURCE OF PLANT MATERIAL IS FROM THE AREA LOCAL TO THE PROJECT. PLANT MATERIALS MAY BE OBTAINED FROM COMMERCIAL NURSERIES.
7. ALL PLANT MATERIALS SHALL BE HANDLED WITH CARE AT ALL TIMES INCLUDING DURING HARVESTING, PACKING, DELIVERY, UNLOADING, HANDLING, AND INSTALLATION, AND PROTECTED FROM DISTURBANCE FROM ON-GOING CONSTRUCTION ACTIVITIES AFTER INSTALLATION (WITH FLAGGING, FENCING, ETC., AS NECESSARY).
8. A THREE-YEAR WARRANTY PERIOD BEGINNING UPON COMPLETION OF THE PROJECT IS REQUIRED ON ALL PLANTINGS.



SLICE SMALL HOLE IN EROSION CONTROL BLANKET AND SPADE PLANTING HOLE. INSTALL PLUG ROOTS AT THE SAME ELEVATION AS FINISH GRADE. BACKFILL AND TAMP SOIL AROUND INSTALLED PLUG ROOTS. WATER THOROUGHLY WITHIN 2 HOURS. IF PLANT IS SHIPPED WITH A CONTAINER AROUND THE ROOTBALL, SLICE SIDES OF CONTAINER AROUND THE ROOTBALL, SLICE SIDES OF CONTAINER AND REMOVE COMPLETELY. USE FINGERS OR SMALL HAND TOOLS TO PULL APART ANY POT BOUND OR ENCIRCLING ROOTS.

SPACE PLANTS ACCORDING TO PLAN.

1
C2.02 **PLUG PLANTING DETAIL**

SCIENTIFIC NAME	COMMON NAME	SPACING
BROMUS CILIATUS	FRINGED BROME	PLUGS TO BE INSTALLED AT 18-INCHES ON CENTER SPACING.
CAREX VULPINOIDEA	FOX SEDGE	
ELYMUS VIRGINICUS	VIRGINIA WILD RYE	
PANICUM VIRGATUM	SWITCHGRASS	

NOTES

1. PLANTING ZONES DEPICT AREAS WHERE PLUGS WILL BE LOCATED.
2. PLUG SPECIES COMPOSITION TO BE SELECTED FROM THE SPECIES LIST ABOVE AND APPROVED BY THE ENGINEER.
3. PLUG ROOT SIZE SHALL BE 1" IN DIAMETER, MINIMUM AT TIME OF PLANTING.

2
C2.02 **PLUG PLANTING SCHEDULE**



ONE CARLSON PARKWAY
SUITE 100
PLYMOUTH, MN 55447
PHONE: 763-252-6800
WWW.STANTEC.COM

CLIENT:



MCWD CEDAR-GREENWAY TRAIL CONNECTION
CITY OF SAINT LOUIS PARK
HENNEPIN COUNTY, MINNESOTA

PROJECT TITLE

DATE	DESCRIPTION	ISSUE NO.
T1/04/2022	FEASIBILITY STUDY	0
XXXX/2025	30% PLANS	1
09/22/2025	60% PLANS	2
04/22/2026	90% PLANS	3

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LIC. NO.:
DATE:

PROJECT NO.: 227707443

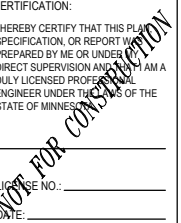
DWN BY: JE CHKD BY: NW APPD BY: NW

ISSUE DATE: 04/23/2026

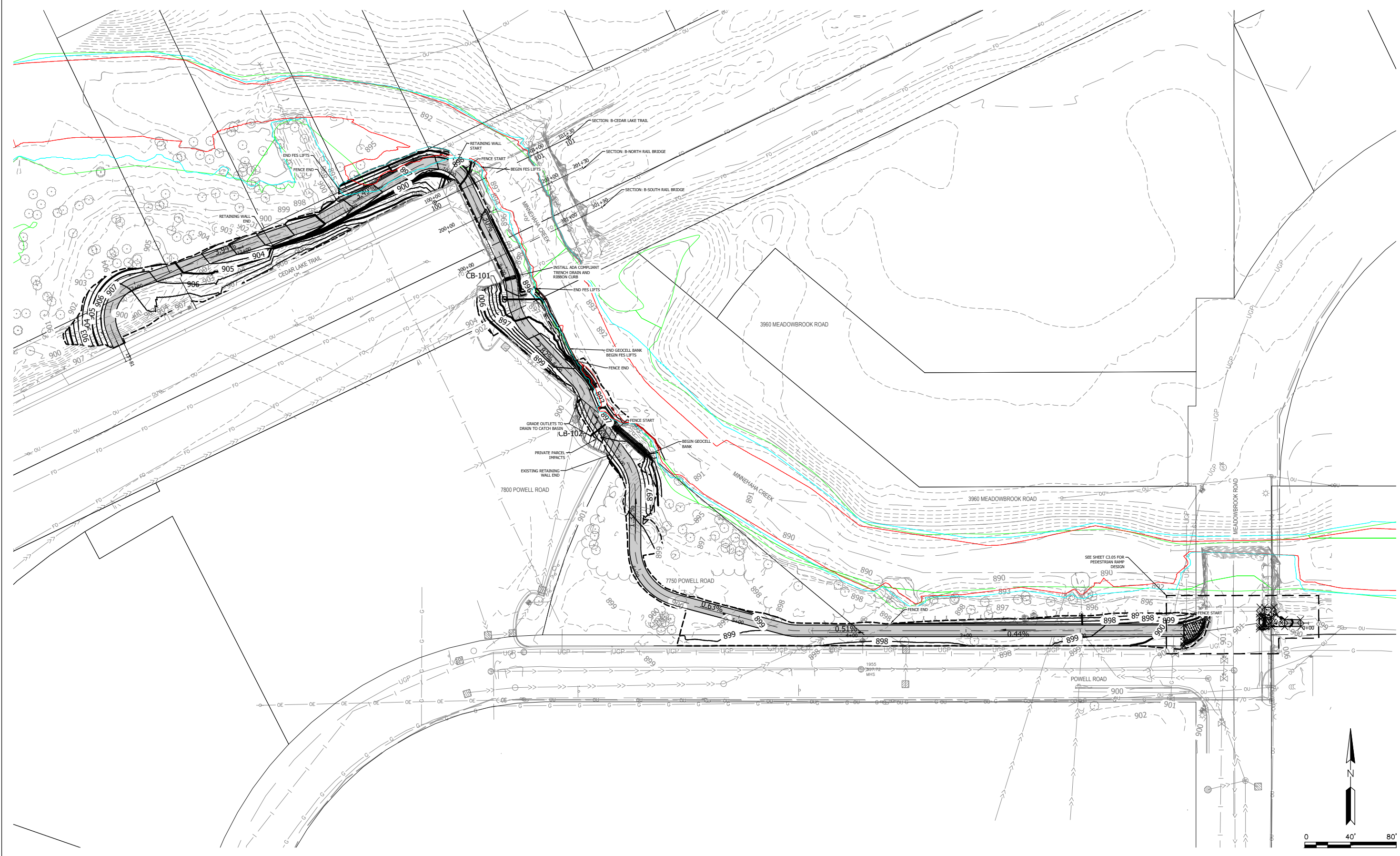
ISSUE NO.: 3

SHEET TITLE:
PLANTING DETAILS

SHEET NO.:
C2.02



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 ONE CARLSON PARKWAY
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 PLYMOUTH, MN 55447
 PHONE: 763-252-6800
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CLIENT:
 MINNEHAHA CREEK
 WATERSHED DISTRICT

**MCWD CEDAR-GREENWAY
 TRAIL CONNECTION**
 CITY OF SAINT LOUIS PARK
 HENNEPIN COUNTY, MINNESOTA

ISSUE NO.	PROJECT TITLE
0	
1	
2	
3	

DATE	DESCRIPTION
11/04/2022	FEASIBILITY STUDY
XXXX/XXXX	30% PLANS
09/22/2025	60% PLANS
04/23/2026	90% PLANS

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PROJECT NO.: 227707443

DWN BY: JE CHKD BY: NW APPD BY: NW

ISSUE DATE: 04/23/2026

ISSUE NO.: 3

SHEET TITLE:
 OVERALL
 CONSTRUCTION
 PLAN

SHEET NO.:
C3.01

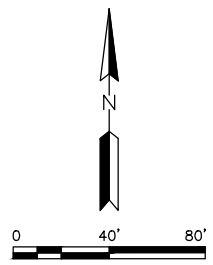
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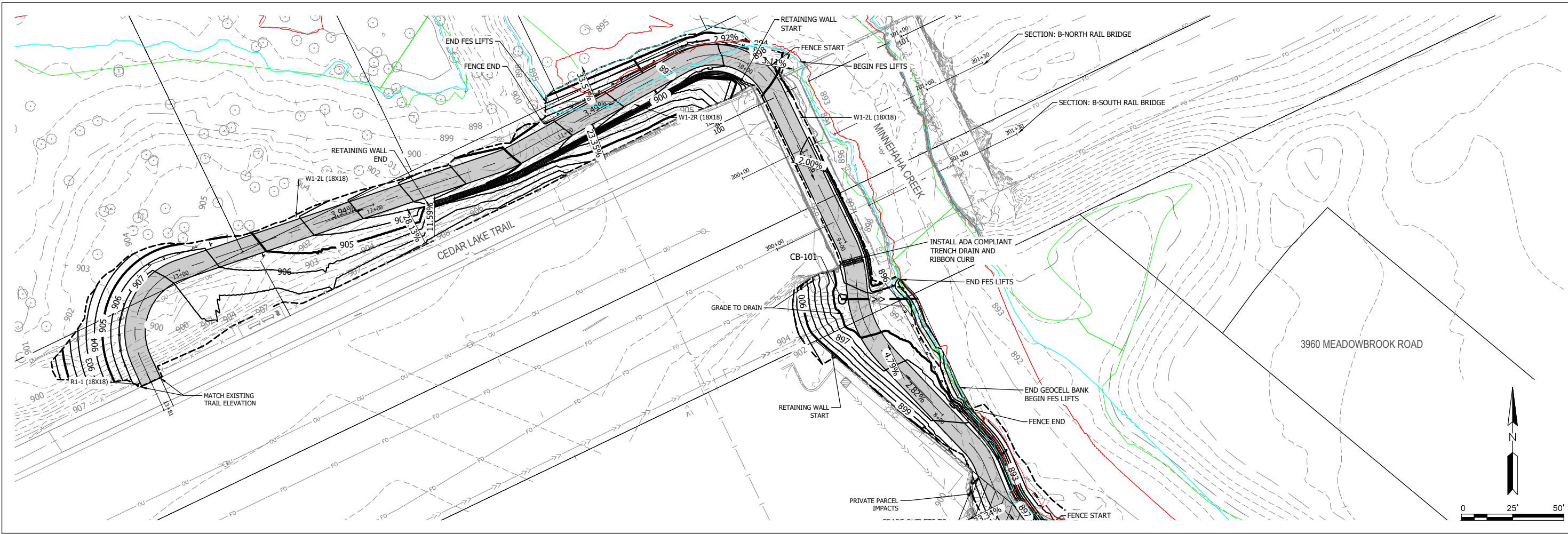
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- EXISTING PROPERTY LINE
- EXISTING RETAINING WALL
- EXISTING STORM SEWER
- EXISTING STORM SEWER MANHOLE
- EXISTING STORM SEWER INLET
- EXISTING STORM SEWER INLET
- EXISTING LIGHT POLE
- EXISTING FLARED END SECTION

PROPOSED LEGEND

- TRAIL CENTERLINE
- CONSTRUCTION BOUNDARY
- BITUMINOUS PAVEMENT
- 6" CONCRETE SIDEWALK

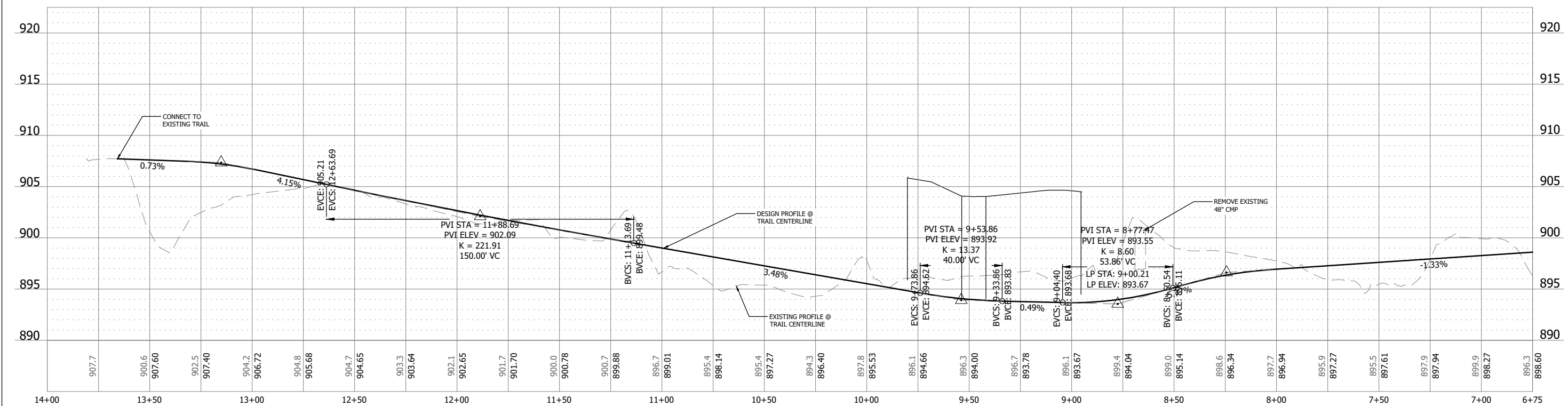
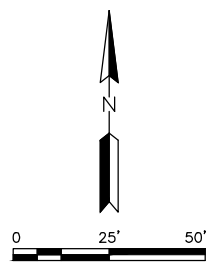




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 PHONE: 763-252-6800
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CLIENT:
 MINNEHAHA CREEK
 WATERSHED DISTRICT

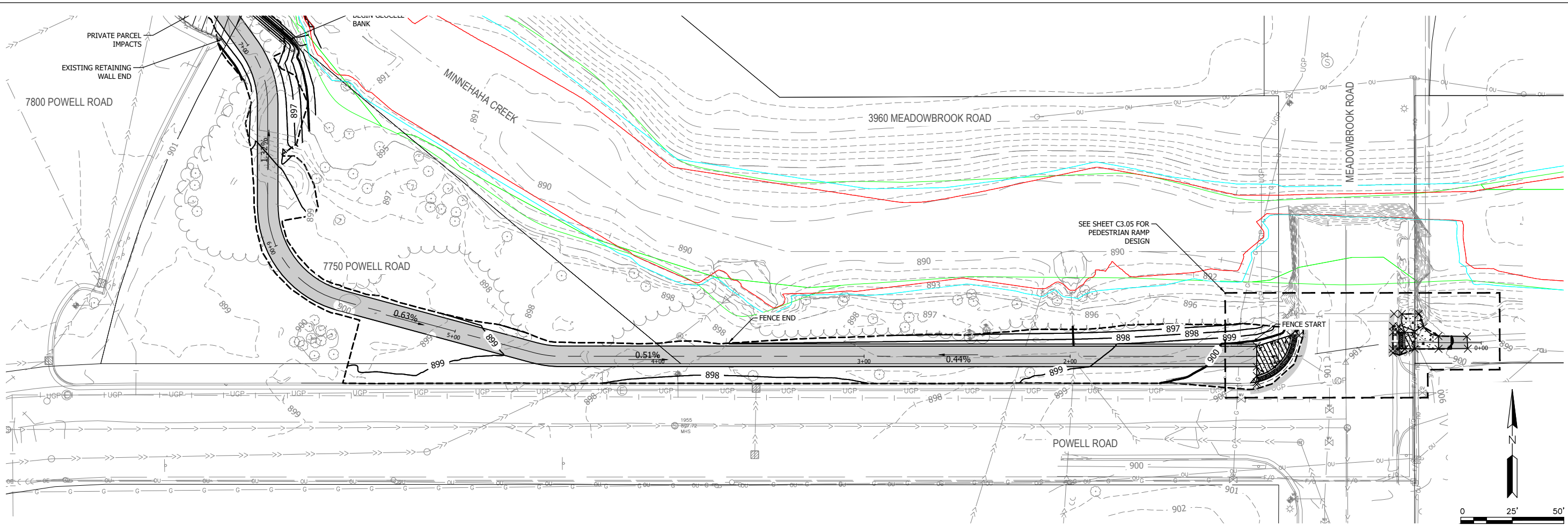
**MCWD CEDAR-GREENWAY
 TRAIL CONNECTION**
 CITY OF SAINT LOUIS PARK
 HENNEPIN COUNTY, MINNESOTA



EXISTING LEGEND		PROPOSED LEGEND	
	EXISTING PROPERTY LINE		TRAIL CENTERLINE
	EXISTING RETAINING WALL		CONSTRUCTION BOUNDARY
	EXISTING STORM SEWER		BITUMINOUS PAVEMENT
	EXISTING STORM SEWER MANHOLE		6" CONCRETE SIDEWALK
	EXISTING STORM SEWER INLET		
	EXISTING LIGHT POLE		
	EXISTING FLARED END SECTION		

PROJECT TITLE	MCWD CEDAR-GREENWAY TRAIL CONNECTION		
ISSUE NO.	0	1	2
DESCRIPTION	FEASIBILITY STUDY	30% PLANS	60% PLANS
DATE	11/04/2022	XXXX/XX/XX	04/23/2026
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.		
PROJECT NO.	227707443		
DWN BY:	JE	CHKD BY:	NW
ISSUE DATE:	04/23/2026		
ISSUE NO.:	3		
SHEET TITLE:	CONSTRUCTION PLAN AND PROFILE		
SHEET NO.:	C3.02		

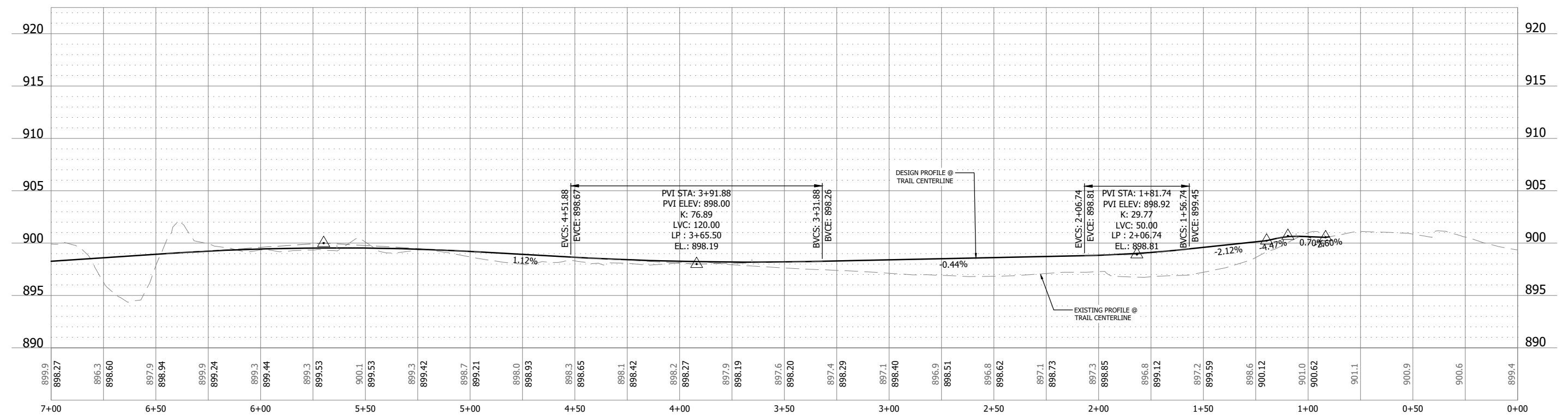
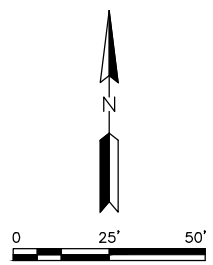
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PLYMOUTH, MN 55447
PHONE: 763-252-6800
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CLIENT:
MINNEHAHA CREEK WATERSHED DISTRICT

MCWD CEDAR-GREENWAY TRAIL CONNECTION
CITY OF SAINT LOUIS PARK
HENNEPIN COUNTY, MINNESOTA



EXISTING LEGEND

- EXISTING PROPERTY LINE
- EXISTING RETAINING WALL
- EXISTING STORM SEWER
- ⊙ EXISTING STORM SEWER MANHOLE
- ⊙ EXISTING STORM SEWER INLET
- ⊙ EXISTING STORM SEWER INLET
- ⊙ EXISTING LIGHT POLE
- ⊙ EXISTING FLARED END SECTION

PROPOSED LEGEND

- TRAIL CENTERLINE
- CONSTRUCTION BOUNDARY
- BITUMINOUS PAVEMENT
- 6" CONCRETE SIDEWALK

DATE	DESCRIPTION	ISSUE NO.	PROJECT TITLE
11/04/2022	FEASIBILITY STUDY	0	MCWD CEDAR-GREENWAY TRAIL CONNECTION
XXXX/2025	30% PLANS	1	
09/22/2025	60% PLANS	2	
04/22/2026	90% PLANS	3	

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USER NO.:
DATE:

PROJECT NO.: 227707443

DWN BY: JE CHKD BY: NW APPD BY: NW

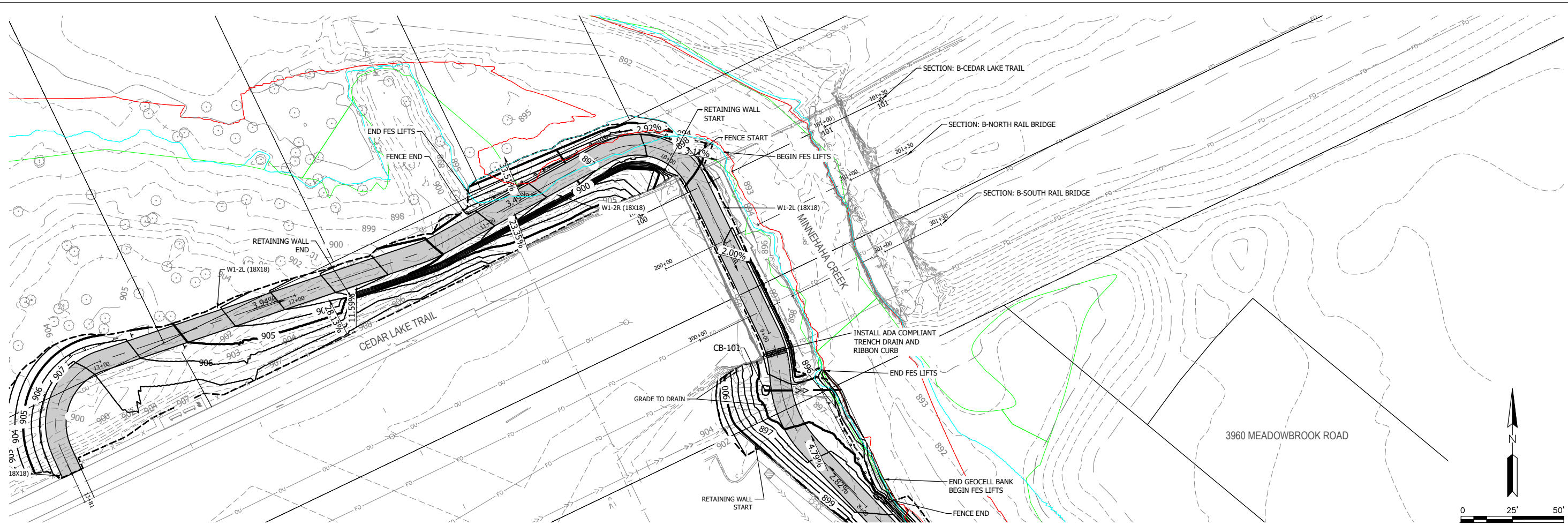
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ISSUE NO.: 3

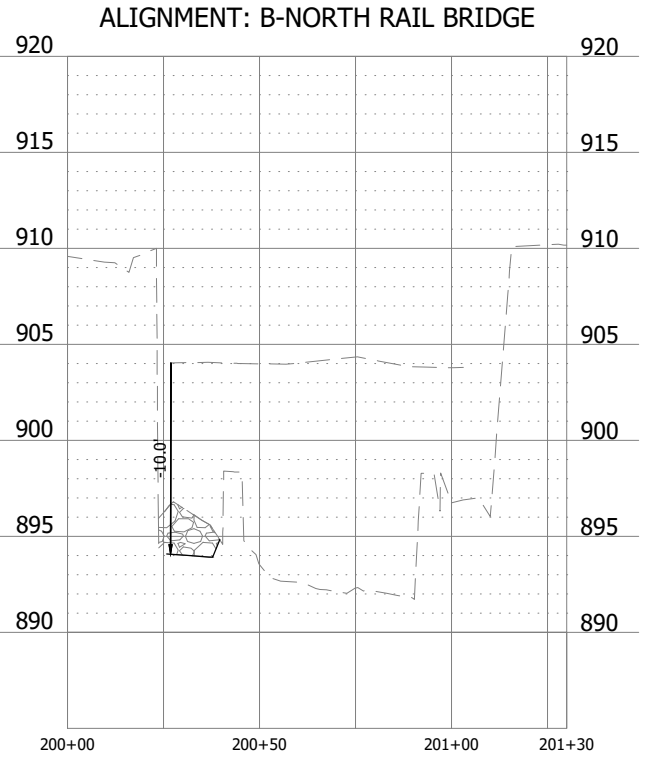
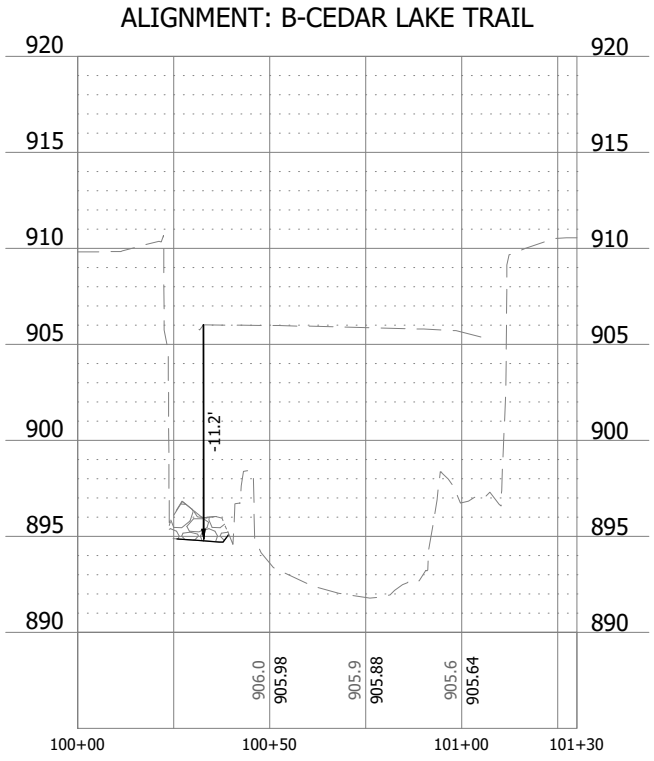
SHEET TITLE:
CONSTRUCTION PLAN AND PROFILE

SHEET NO.:
C3.03

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**MCWD CEDAR-GREENWAY
TRAIL CONNECTION**
CITY OF SAINT LOUIS PARK
HENNEPIN COUNTY, MINNESOTA



EXISTING LEGEND

- EXISTING PROPERTY LINE
- ⊗ EXISTING STORM SEWER MANHOLE
- ⊘ EXISTING STORM SEWER INLET
- ⊙ EXISTING STORM SEWER INLET
- ⊚ EXISTING LIGHT POLE
- ⊛ EXISTING FLARED END SECTION
- ⊜ EXISTING STORM SEWER

PROPOSED LEGEND

- TRAIL CENTERLINE
- - - CONSTRUCTION BOUNDARY
- ▒ BITUMINOUS PAVEMENT
- ▒ 6" CONCRETE SIDEWALK

PROJECT TITLE

ISSUE NO.:	0
	1
	2
	3

DESCRIPTION:

DATE:	11/04/2022	FEASIBILITY STUDY
	XXXX/2025	30% PLANS
	09/22/2025	60% PLANS
	04/22/2026	90% PLANS

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DATE: _____
USER NO.: _____

PROJECT NO.: 227707443

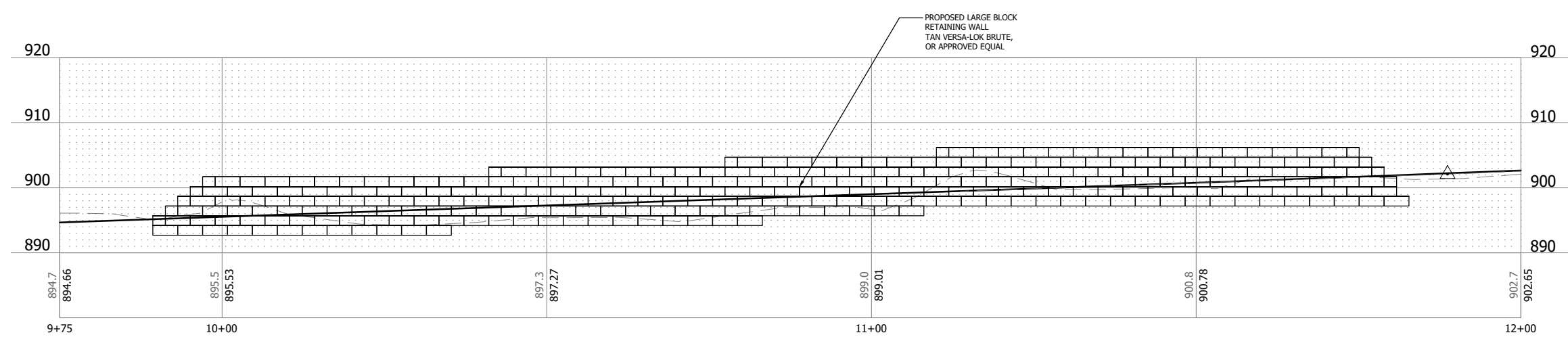
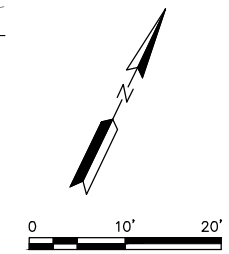
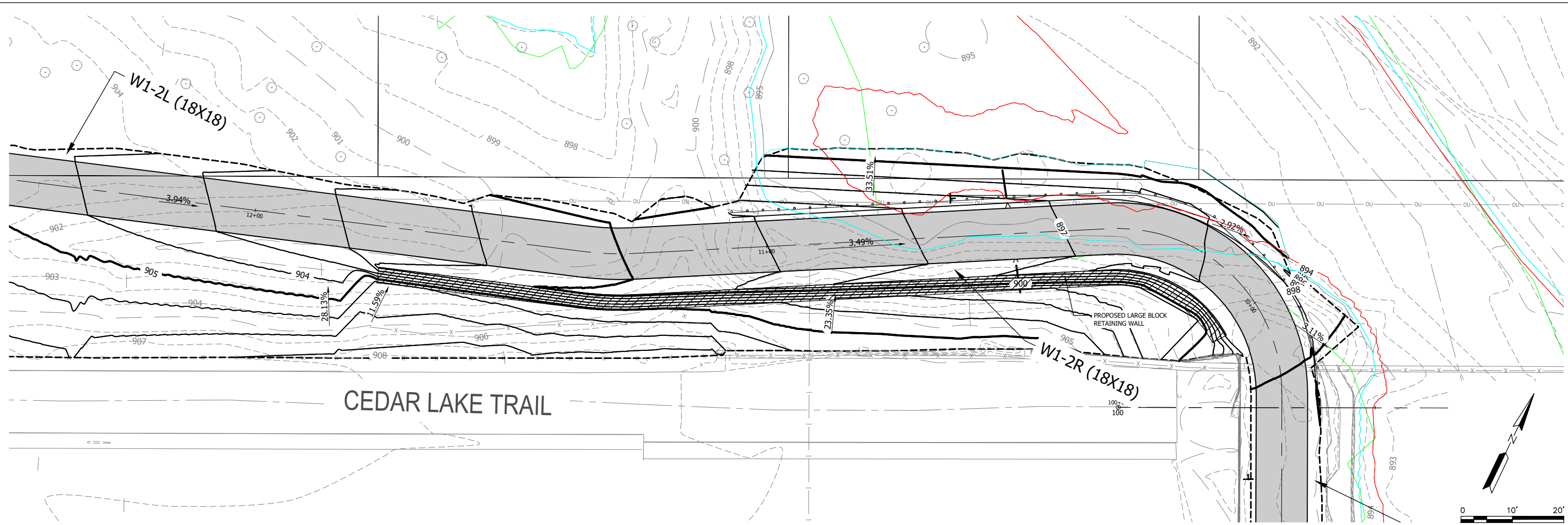
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ISSUE DATE: 04/23/2026

ISSUE NO.: 3

SHEET TITLE:
CONSTRUCTION PLAN AND PROFILE

SHEET NO.:
C3.04



DATE	DESCRIPTION	ISSUE NO.	PROJECT TITLE
11/04/2022	FEASIBILITY STUDY	0	MCWD CEDAR-GREENWAY TRAIL CONNECTION
XXXX/XXXX	30% PLANS	1	
09/22/2025	60% PLANS	2	
04/22/2026	90% PLANS	3	

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DATE: _____
 LICENSE NO.: _____

EXISTING LEGEND

- EXISTING PROPERTY LINE
- EXISTING RETAINING WALL
- EXISTING STORM SEWER
- EXISTING STORM SEWER MANHOLE
- EXISTING STORM SEWER INLET
- EXISTING STORM SEWER INLET
- EXISTING LIGHT POLE
- EXISTING FLARED END SECTION

PROPOSED LEGEND

- TRAIL CENTERLINE
- CONSTRUCTION BOUNDARY
- BITUMINOUS PAVEMENT
- LARGE BLOCK RETAINING WALL

PROJECT NO.: 227707443

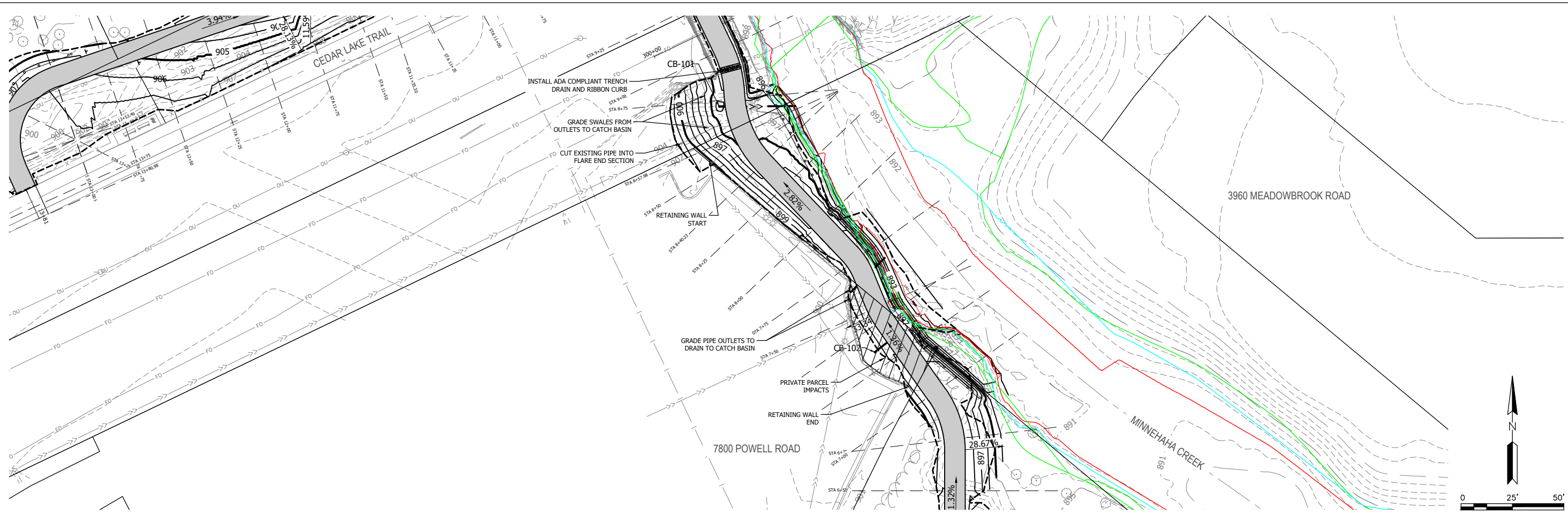
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ISSUE DATE: 04/23/2026

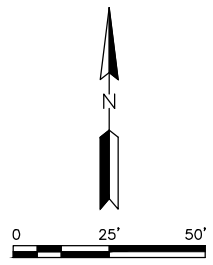
ISSUE NO.: 3

SHEET TITLE:
 BLOCK RETAINING WALL

SHEET NO.:
C3.06

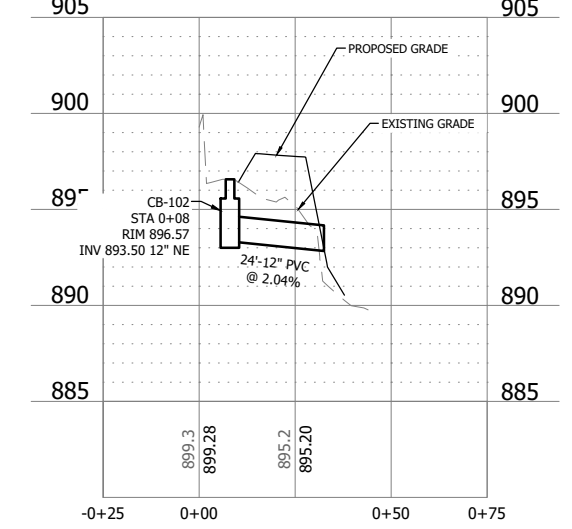


MCWD CEDAR-GREENWAY TRAIL CONNECTION
 CITY OF SAINT LOUIS PARK
 HENNEPIN COUNTY, MINNESOTA

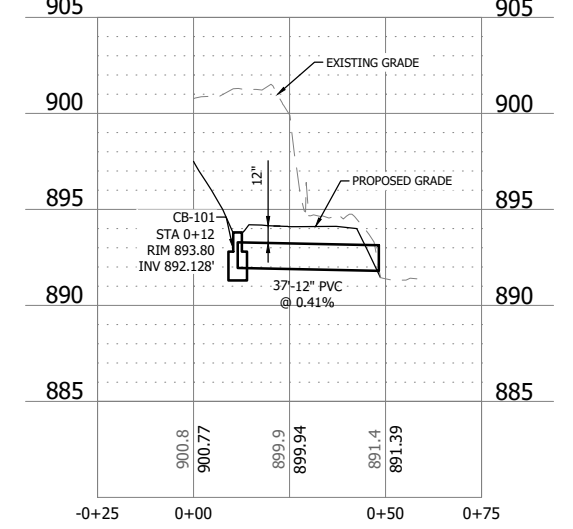


STORM SEWER STRUCTURE SCHEDULE			
STRUCTURE ID	SIZE	CASTING	STRUCTURE DESIGN
CB-101	30"	SEE DETAIL	NYOPLAST 30" BASIN
CB-102	27"	R-4342	MNDOT DESIGN H

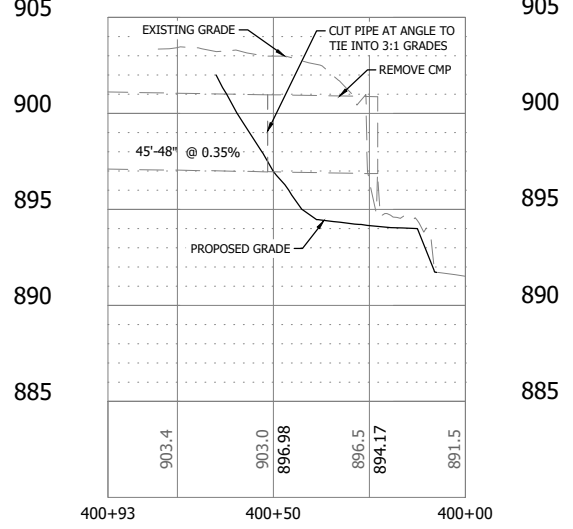
ALIGNMENT: STRM-CROSSING-TRL - STA7+50



ALIGNMENT: STRM-CROSSING-TRL-STA8+50



ALIGNMENT: STRM-CROSSING-TRL-STA8



EXISTING LEGEND

- EXISTING PROPERTY LINE
- EXISTING RETAINING WALL
- EXISTING STORM SEWER
- ZONE AE FLOODPLAIN
- FEMA FIS 100-YR
- APPROXIMATE OHWL
- EXISTING STORM SEWER MANHOLE
- EXISTING STORM SEWER INLET
- EXISTING STORM SEWER INLET
- EXISTING LIGHT POLE
- EXISTING FLARED END SECTION

PROPOSED LEGEND

- TRAIL CENTERLINE
- CONSTRUCTION BOUNDARY
- BITUMINOUS PAVEMENT

ISSUE NO.	PROJECT TITLE
0	
1	
2	
3	

DATE	DESCRIPTION
11/04/2022	FEASIBILITY STUDY
XXXX/2025	30% PLANS
09/22/2025	60% PLANS
04/22/2026	90% PLANS

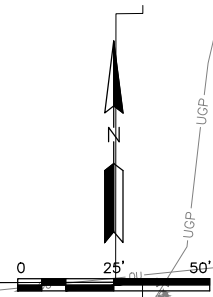
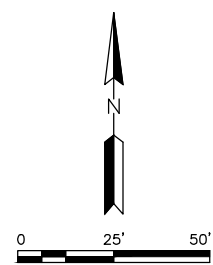
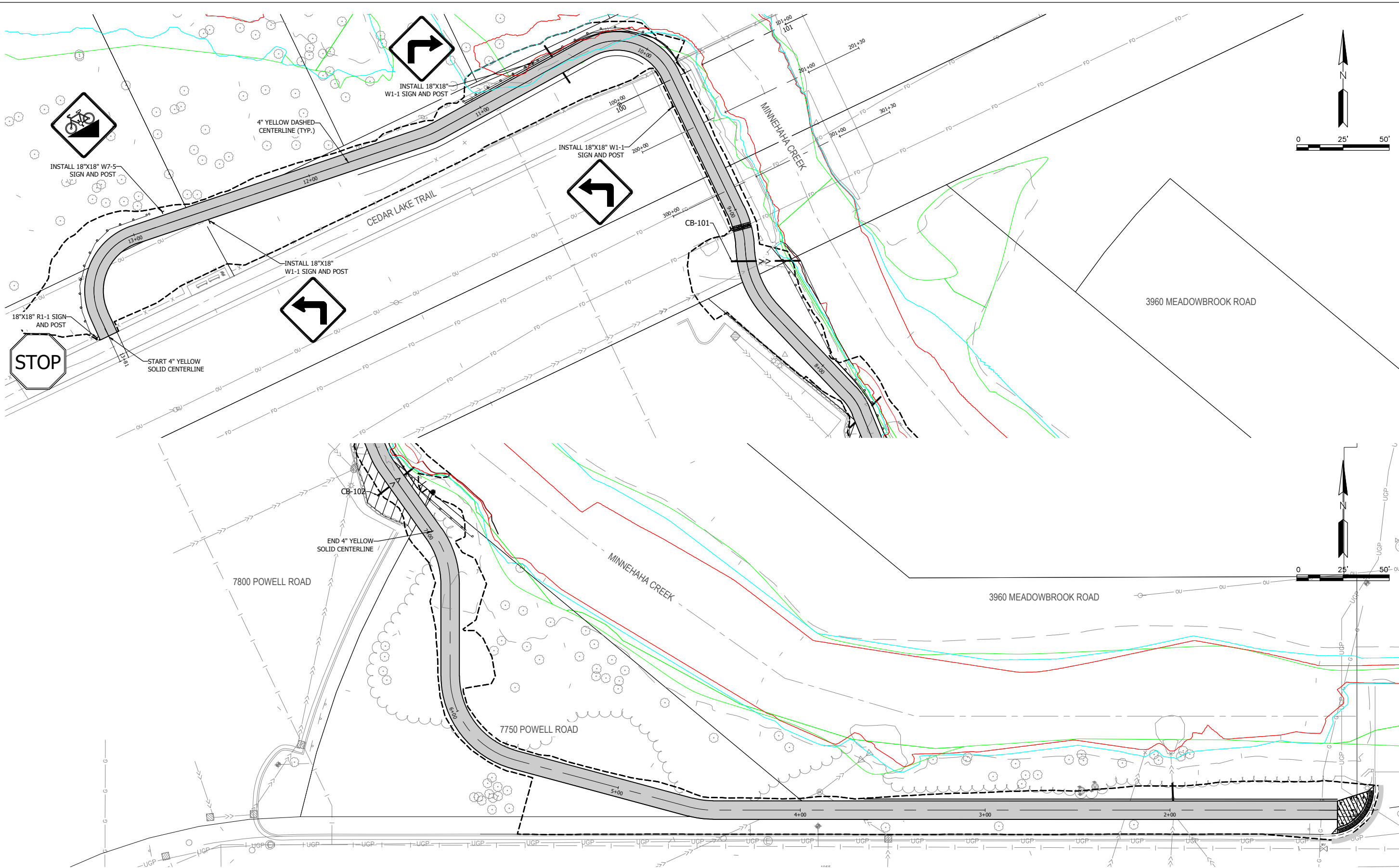
CERTIFICATION:
 I HEREBY CERTIFY THAT THIS PLAN SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER DIRECT SUPERVISION AND IN MY FULL DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PROJECT NO.: 227707443

DWN BY: JE	CHKD BY: NW	APPD BY: NW
ISSUE DATE: 04/23/2026		
ISSUE NO.: 3		
SHEET TITLE: STORM SEWER PLAN AND PROFILE		
SHEET NO.: C5.01		

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Stantec
 ONE CARLSON PARKWAY
 SUITE 100
 PLYMOUTH, MN 55447
 PHONE: 763-252-6800
 WWW.STANTEC.COM

CLIENT:
 MINNEHAHA CREEK
 WATERSHED DISTRICT

**MCWD CEDAR-GREENWAY
 TRAIL CONNECTION**
 CITY OF SAINT LOUIS PARK
 HENNEPIN COUNTY, MINNESOTA

ISSUE NO.	PROJECT TITLE
0	
1	
2	
3	

DATE	DESCRIPTION
11/04/2022	FEASIBILITY STUDY
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09/22/2025	60% PLANS
04/22/2026	90% PLANS

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NOT FOR CONSTRUCTION

PROJECT NO.: 227707443

DWN BY: JE CHKD BY: NW APPD BY: NW

ISSUE DATE: 04/23/2026

ISSUE NO.: 3

SHEET TITLE:
 TRAIL STRIPING

SHEET NO.:
C6.01

EXISTING LEGEND

- EXISTING PROPERTY LINE
- EXISTING RETAINING WALL
- EXISTING STORM SEWER
- EXISTING STORM SEWER MANHOLE
- EXISTING STORM SEWER INLET
- EXISTING STORM SEWER INLET
- EXISTING LIGHT POLE
- EXISTING FLARED END SECTION

PROPOSED LEGEND

- TRAIL CENTERLINE
- CONSTRUCTION BOUNDARY
- BITUMINOUS PAVEMENT
- 6" CONCRETE SIDEWALK



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**MCWD CEDAR-GREENWAY
TRAIL CONNECTION**
CITY OF SAINT LOUIS PARK
HENNEPIN COUNTY, MINNESOTA

PROJECT TITLE

ISSUE NO.:

0	FEASIBILITY STUDY
1	30% PLANS
2	60% PLANS
3	90% PLANS

DATE:

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LIC. NO.:

DATE:

PROJECT NO.: 227707443

DWN BY: JE CHKD BY: NW APPD BY: NW

ISSUE DATE: 04/23/2026

ISSUE NO.: 3

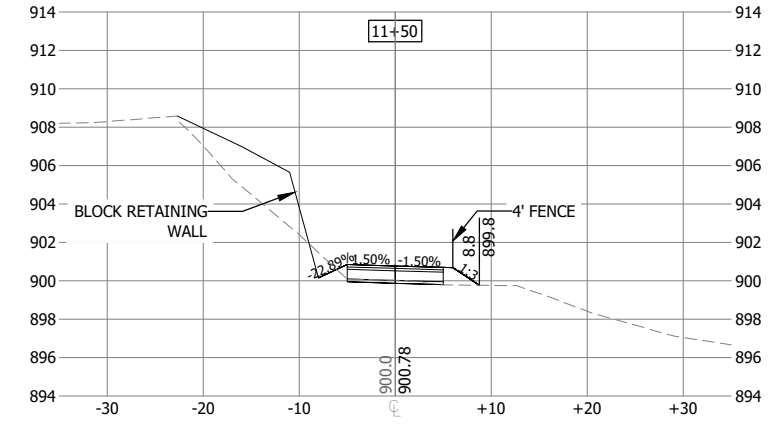
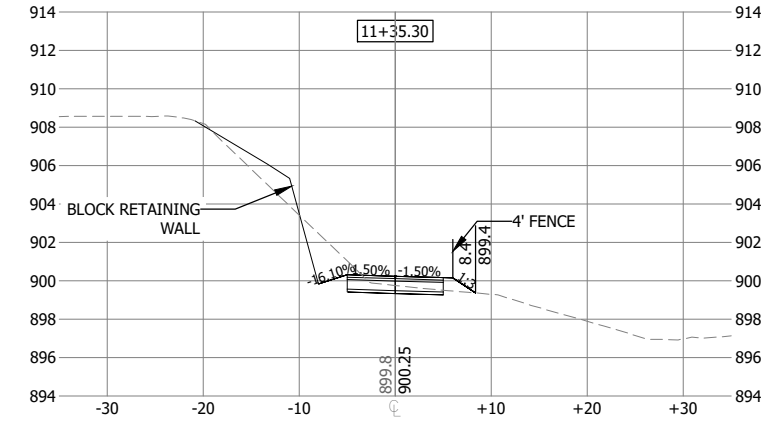
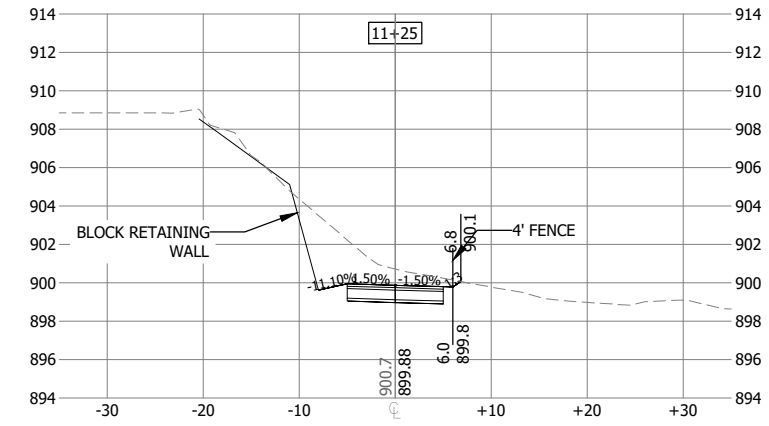
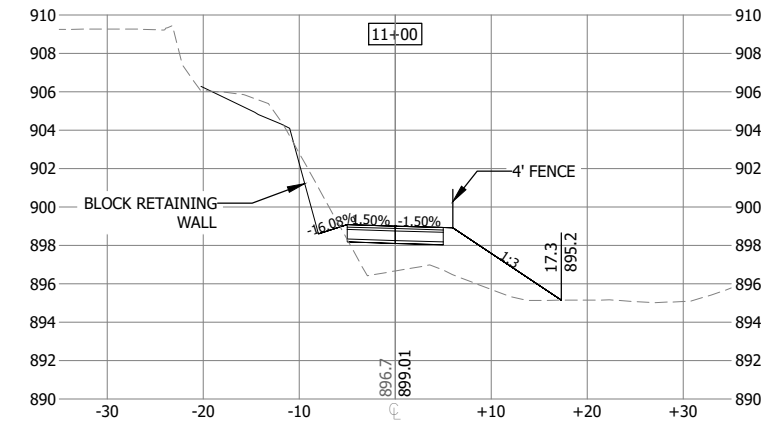
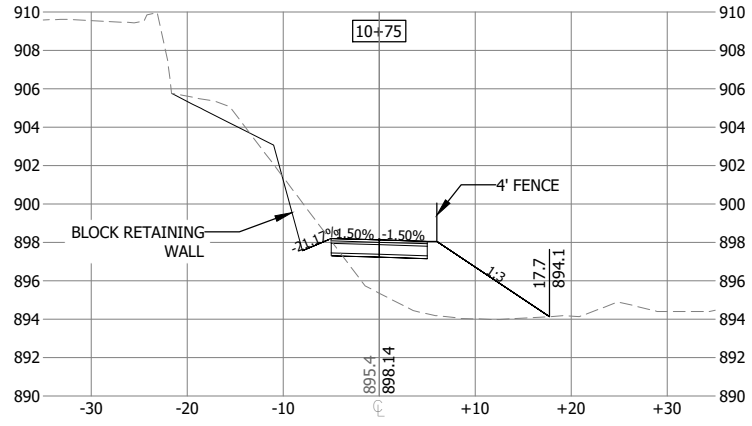
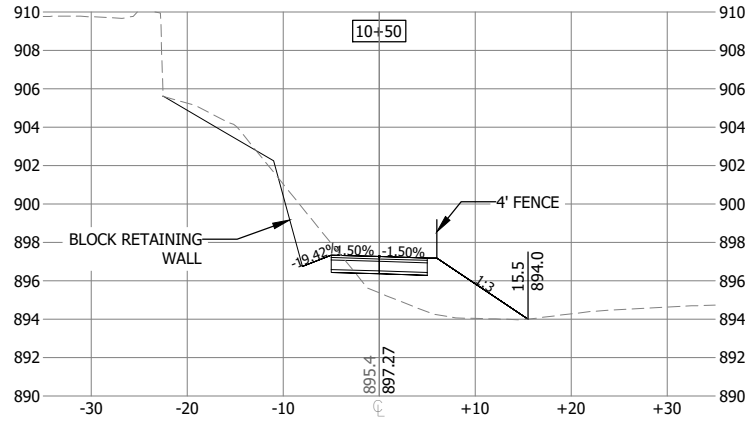
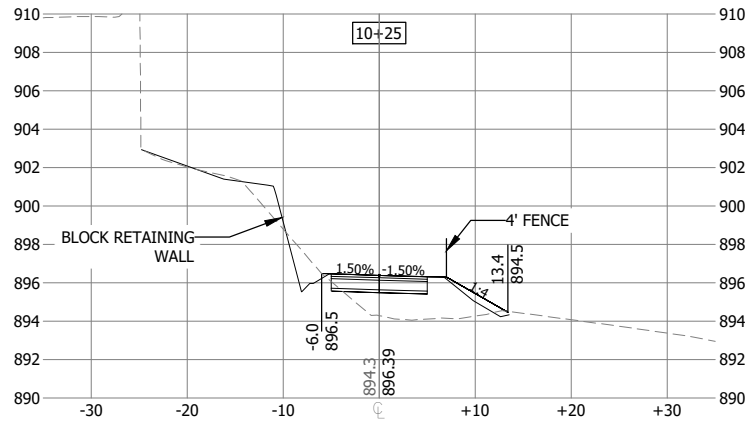
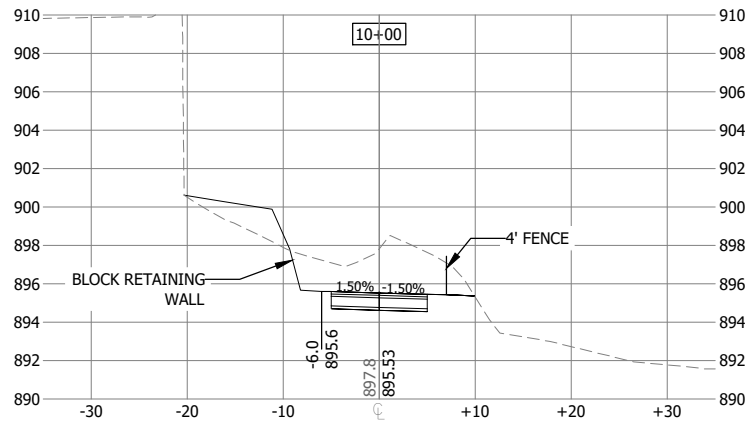
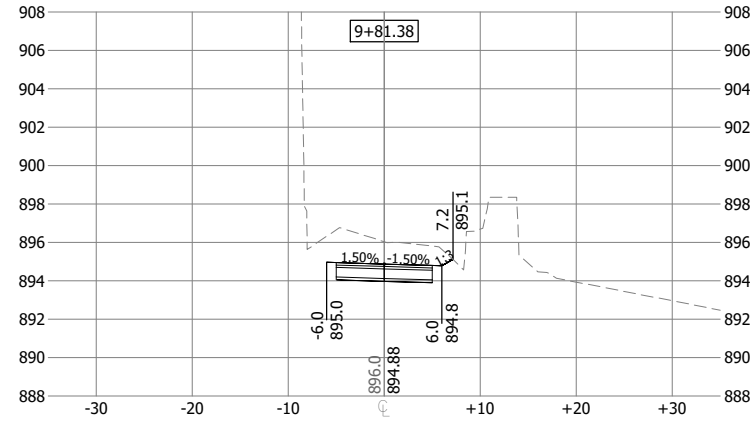
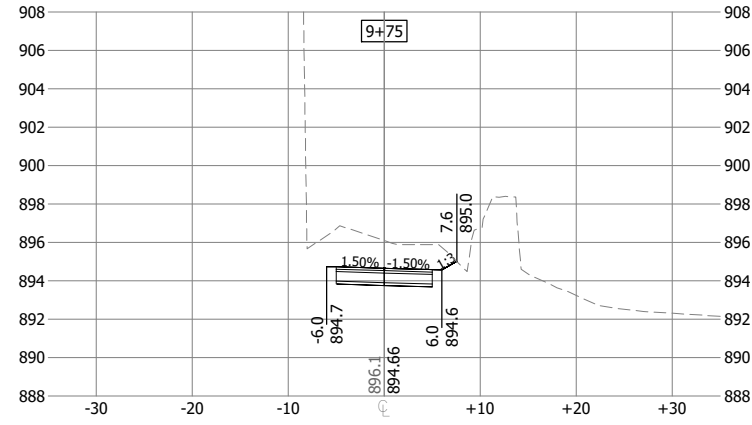
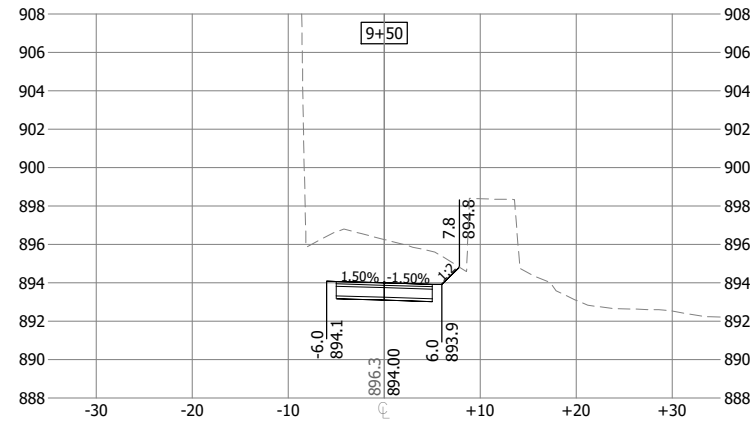
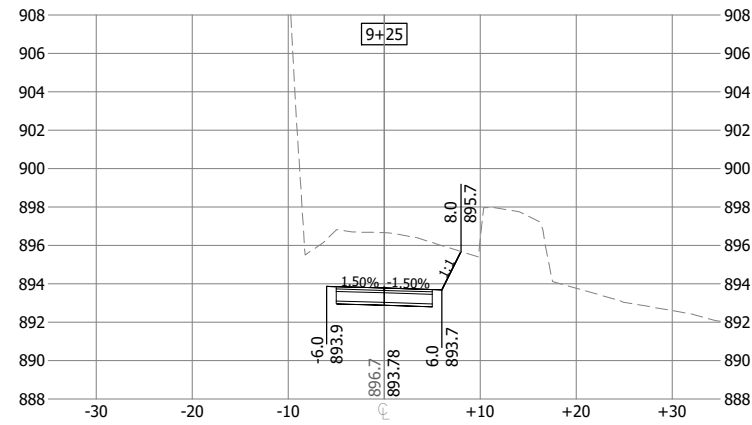
SHEET TITLE:

CROSS SECTIONS

SHEET NO.:

C7.01

NOT FOR CONSTRUCTION



ONE CARLSON PARKWAY
SUITE 100
PLYMOUTH, MN 55447
PHONE: 763-252-8800
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CLIENT:



MCWD CEDAR-GREENWAY TRAIL CONNECTION

CITY OF SAINT LOUIS PARK
HENNEPIN COUNTY, MINNESOTA

PROJECT TITLE:

ISSUE NO.:

0	1	2	3
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DATE:

DESCRIPTION:

FEASIBILITY STUDY

30% PLANS

60% PLANS

90% PLANS

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DATE:

PROJECT NO.:

227707443

DWN BY:

JE

CHKD BY:

NW

APP'D BY:

NW

ISSUE DATE:

04/23/2026

ISSUE NO.:

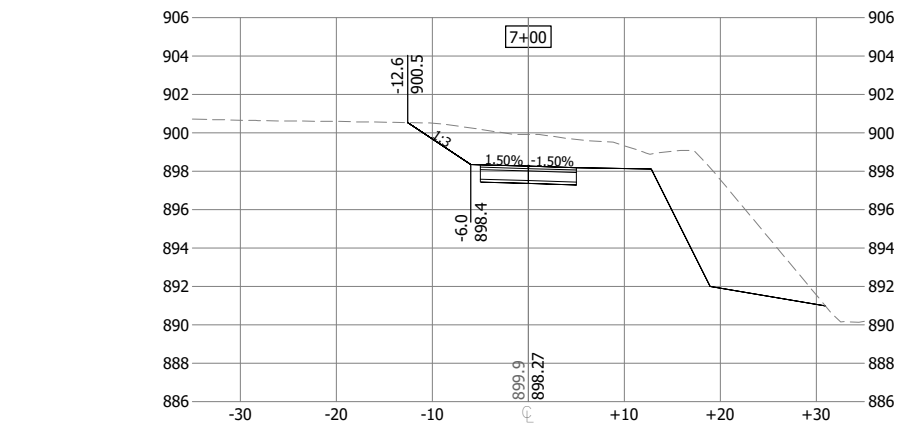
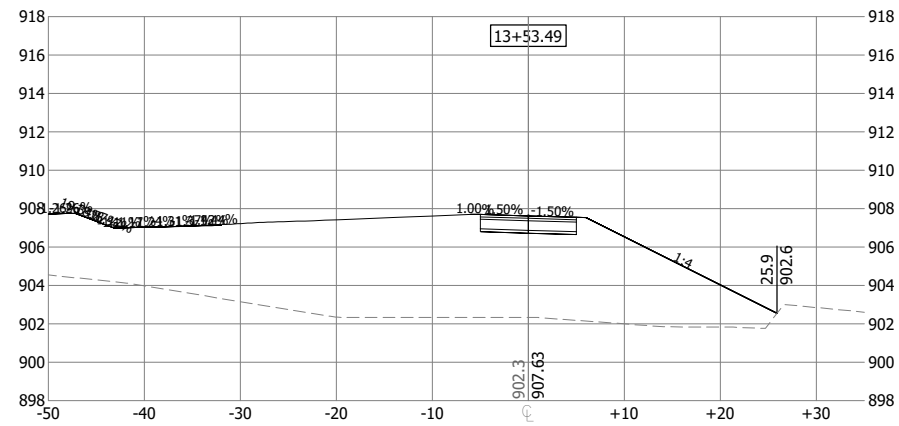
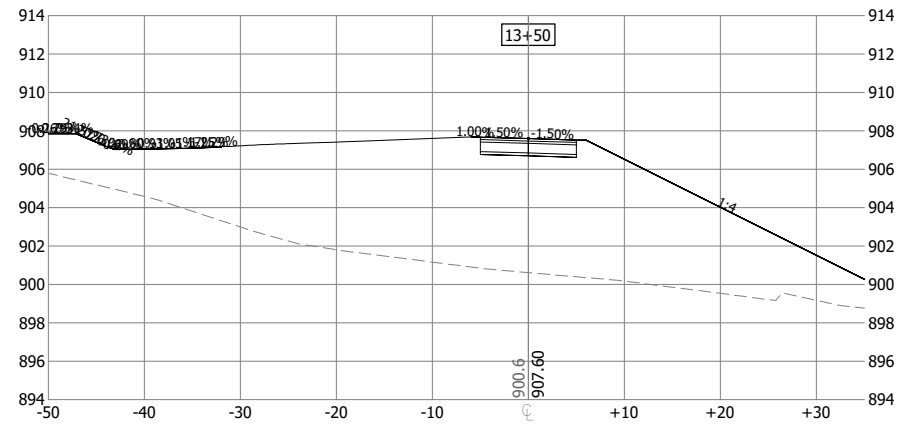
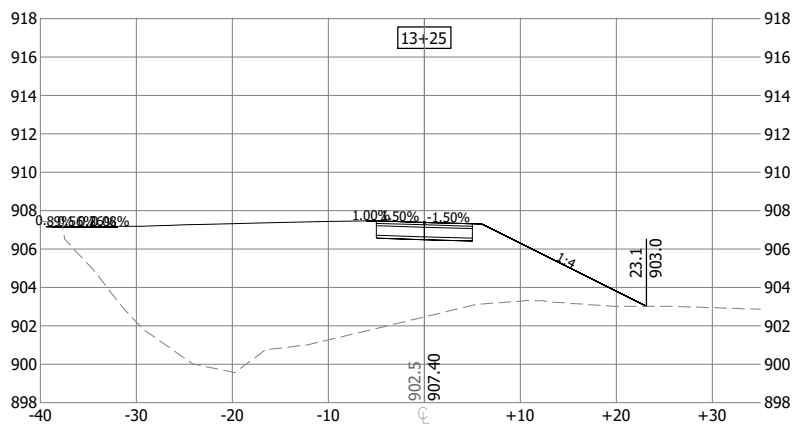
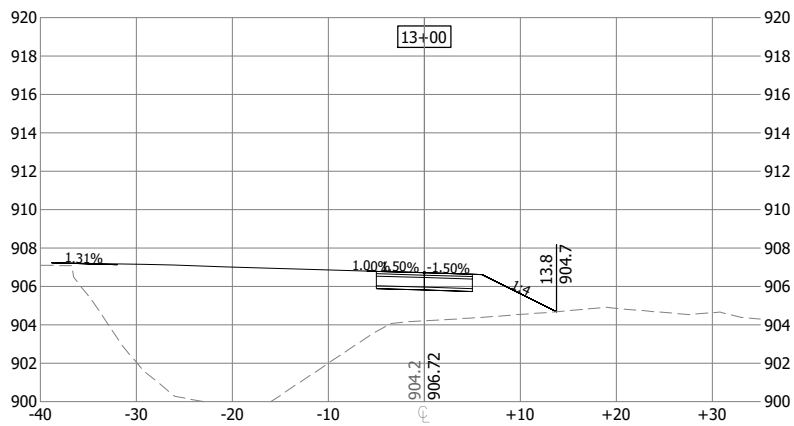
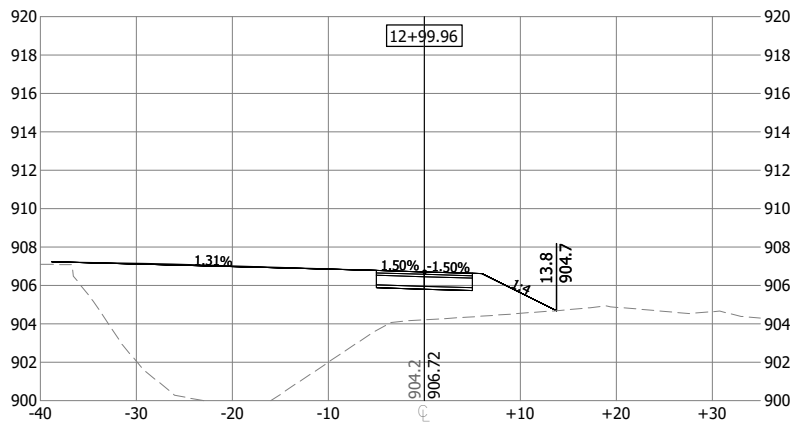
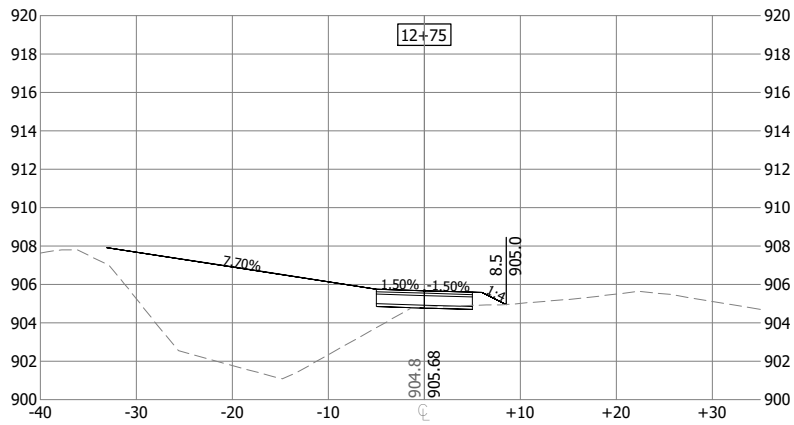
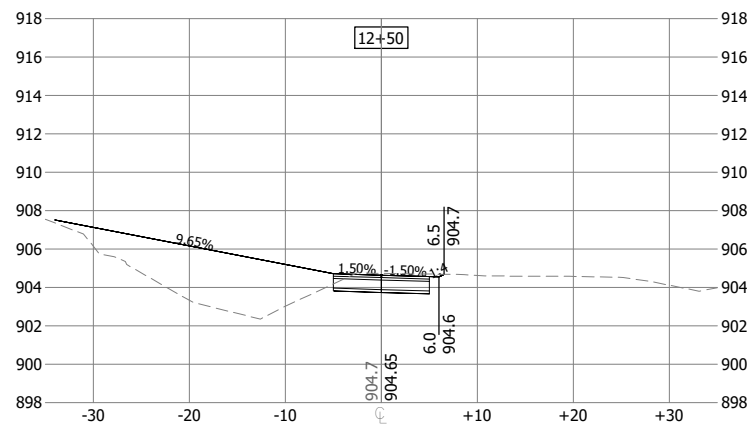
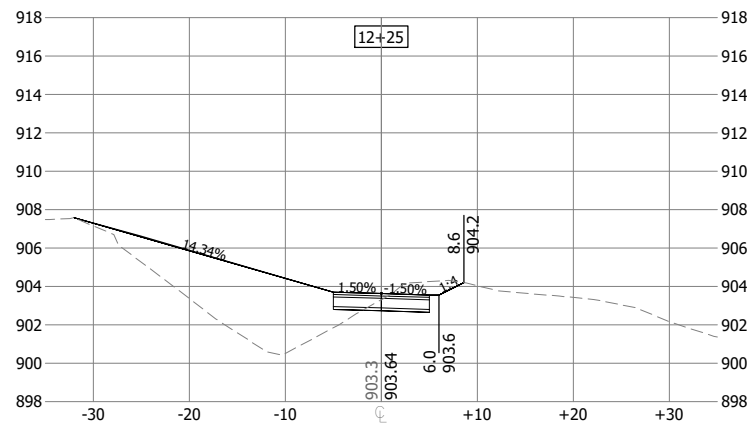
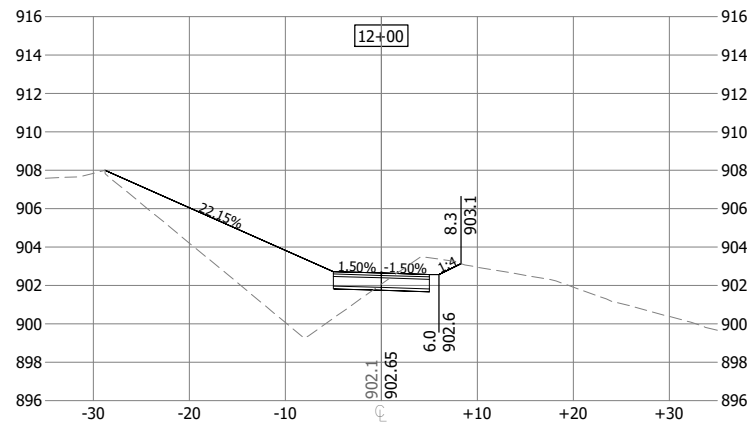
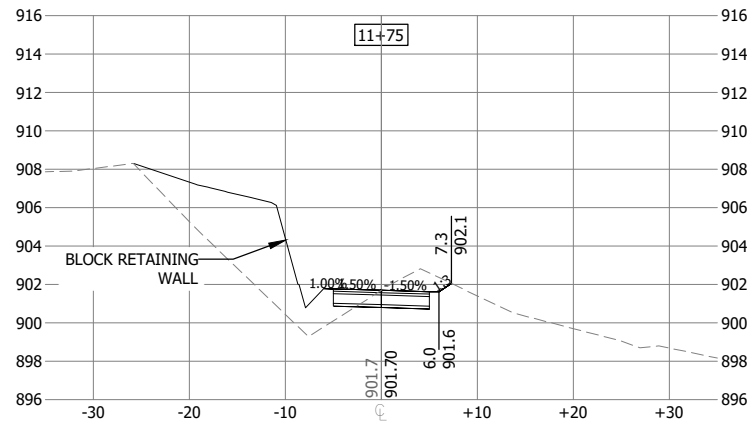
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SHEET TITLE:

CROSS SECTIONS

SHEET NO.:

C7.05

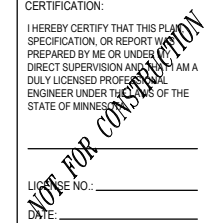


MCWD CEDAR-GREENWAY TRAIL CONNECTION
CITY OF SAINT LOUIS PARK
HENNEPIN COUNTY, MINNESOTA

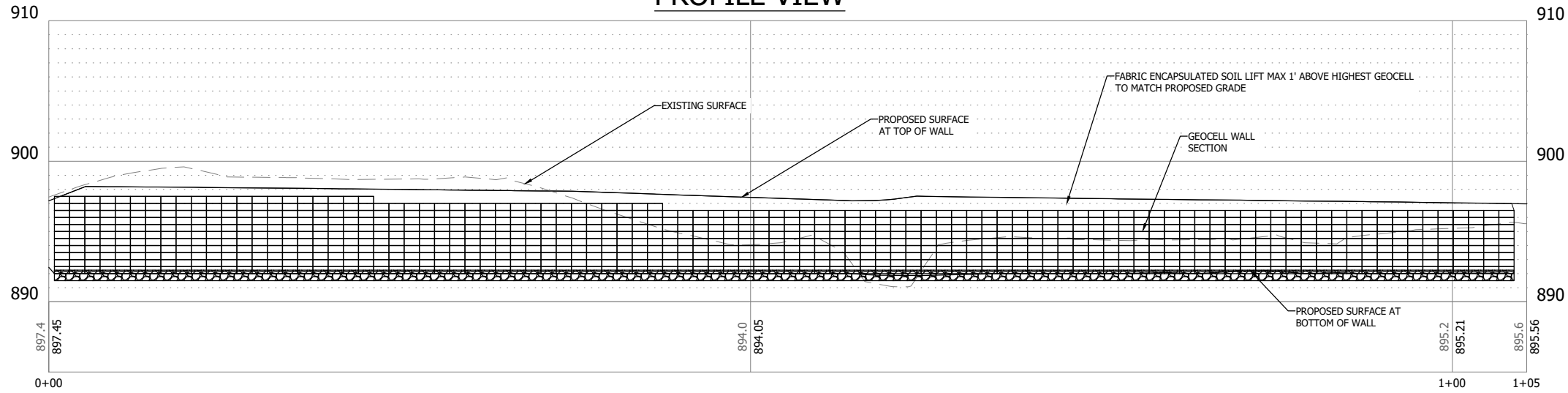
ISSUE NO.	PROJECT TITLE
0	
1	
2	
3	

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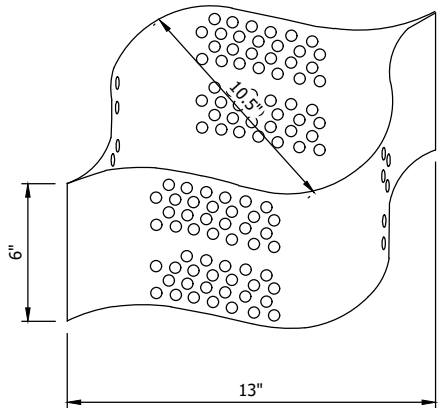
DATE:	11/04/2022	FEASIBILITY STUDY
	XXXX/2025	30% PLANS
	09/22/2025	60% PLANS
	04/23/2026	90% PLANS
PROJECT NO.:	227707443	
DWN BY:	JE	APPD BY: NW
ISSUE DATE:	04/23/2026	
ISSUE NO.:	3	
SHEET TITLE:	CROSS SECTIONS	
SHEET NO.:	C7.06	



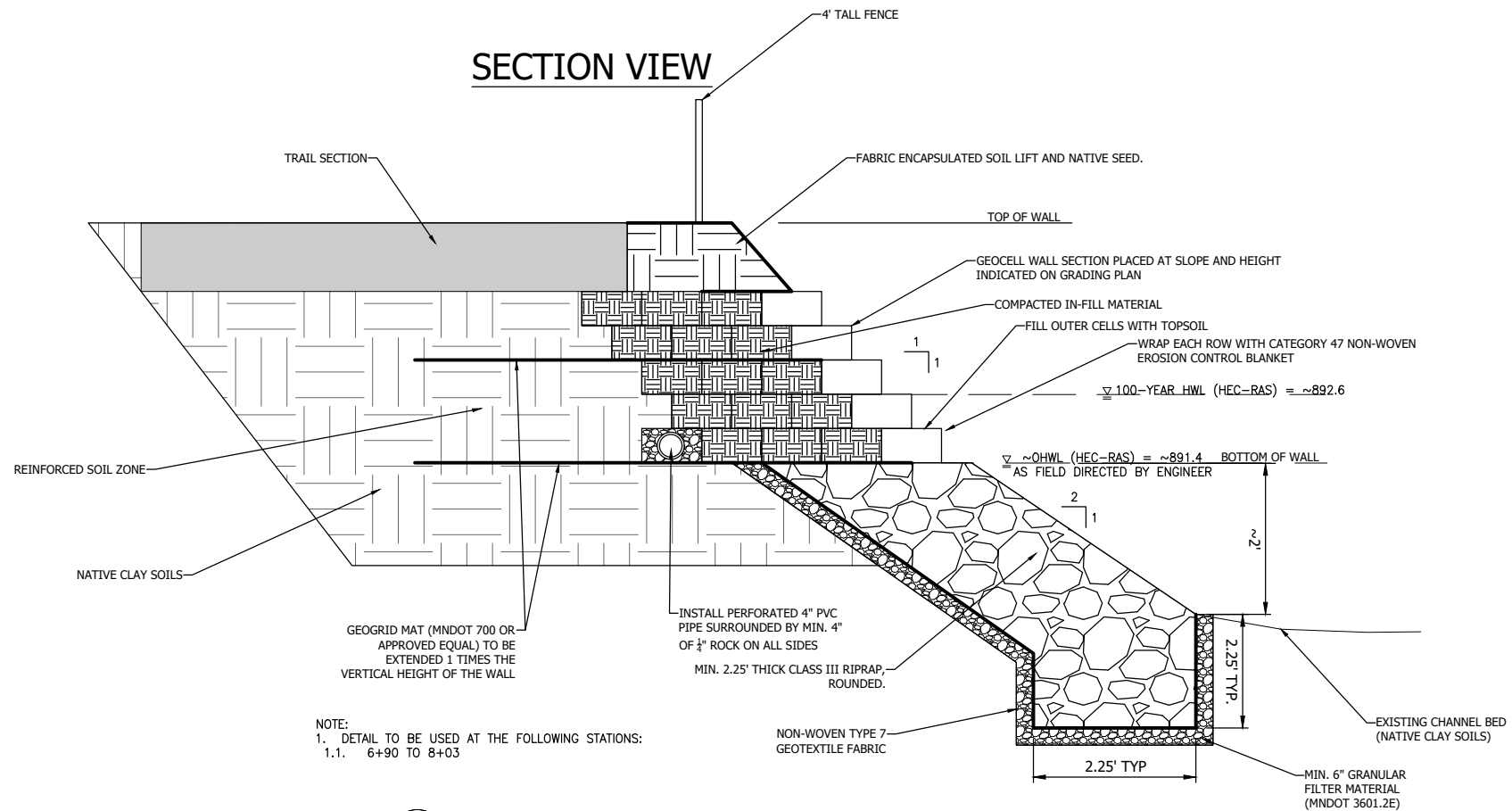
PROFILE VIEW



ISOMETRIC VIEW



SECTION VIEW



NOTE:
 1. DETAIL TO BE USED AT THE FOLLOWING STATIONS:
 1.1. 6+90 TO 8+03

1 GEOCELL WALL DETAIL
 C8.01 NOT TO SCALE

- NOTE:
 1. WRAP EACH ROW WITH NON-WOVEN EROSION CONTROL BLANKET, CATEGORY 47.
 2. EACH TOPSOIL FILLED GEOCELL TO BE SEEDED WITH NATIVE SEED.
 3. PLUGS TO BE PLANTED WITHIN TOPSOIL FILLED GEOCELLS, AT 18-INCHES ON CENTER SPACING.



ONE CARLSON PARKWAY
 SUITE 100
 PLYMOUTH, MN 55447
 PHONE: 763-252-6800
 WWW.STANTEC.COM

CLIENT:



MCWD CEDAR-GREENWAY TRAIL CONNECTION

CITY OF SAINT LOUIS PARK
 HENNEPIN COUNTY, MINNESOTA

PROJECT TITLE

ISSUE NO.	DESCRIPTION	DATE
0	FEASIBILITY STUDY	11/04/2022
1	30% PLANS	XXXX/XX/XX
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3	90% PLANS	04/22/2026

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PROJECT NO.: 227707443

DWN BY: JE CHKD BY: NW APPD BY: NW

ISSUE DATE: 04/23/2026

ISSUE NO.: 3

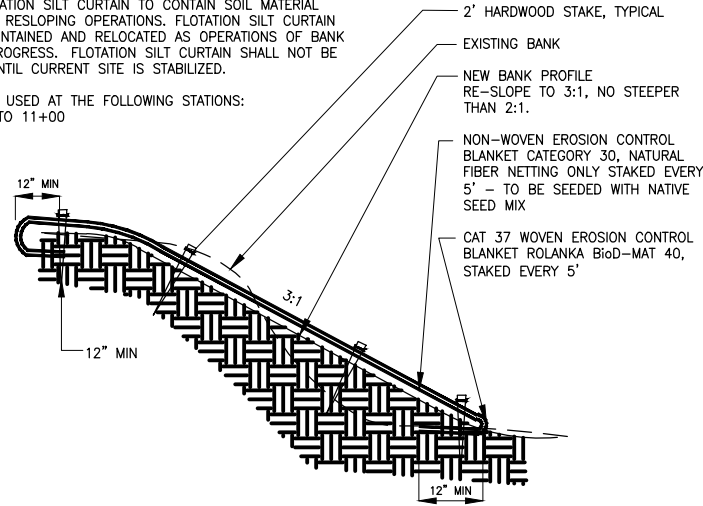
SHEET TITLE: DETAILS

SHEET NO.: C8.01

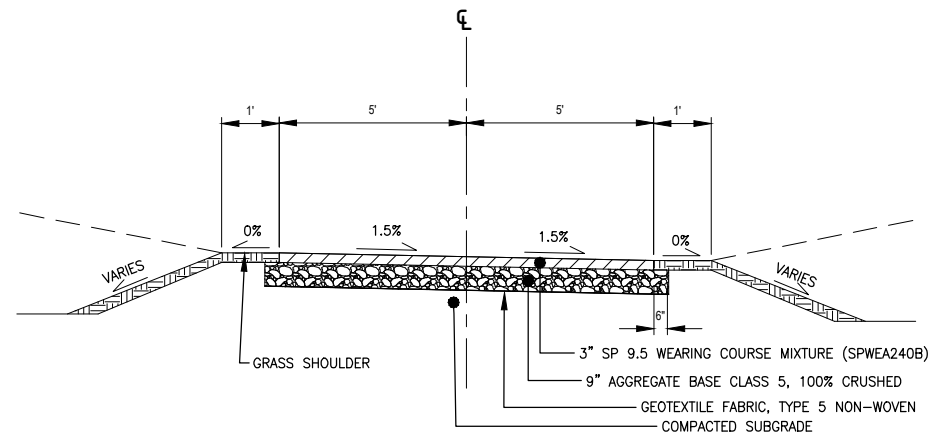
NOT FOR CONSTRUCTION

NOTE:
PROVIDE FLOTATION SILT CURTAIN TO CONTAIN SOIL MATERIAL DURING BANK RESLOPING OPERATIONS. FLOTATION SILT CURTAIN SHALL BE MAINTAINED AND RELOCATED AS OPERATIONS OF BANK RESLOPING PROGRESS. FLOTATION SILT CURTAIN SHALL NOT BE RELOCATED UNTIL CURRENT SITE IS STABILIZED.

DETAIL TO BE USED AT THE FOLLOWING STATIONS:
1. 10+25 TO 11+00

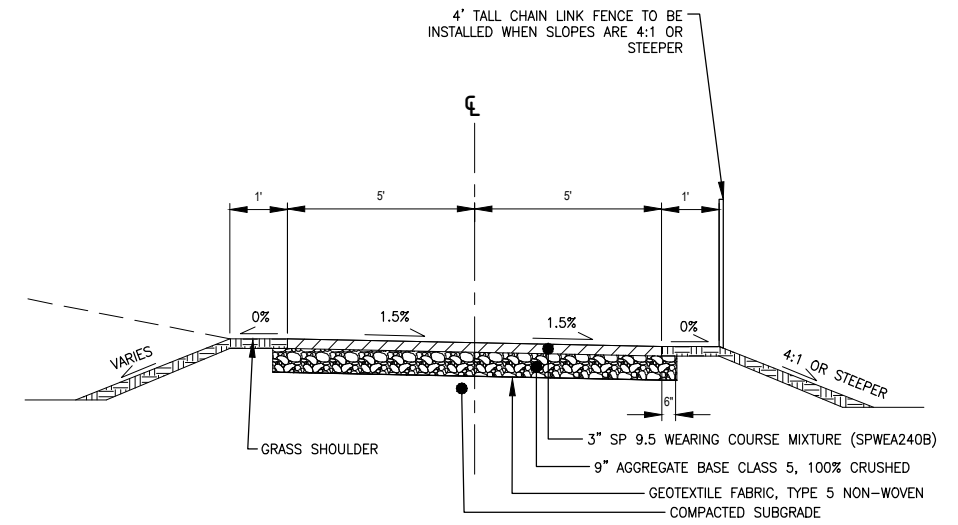


1 GRADED BANK
C8.02 NOT TO SCALE



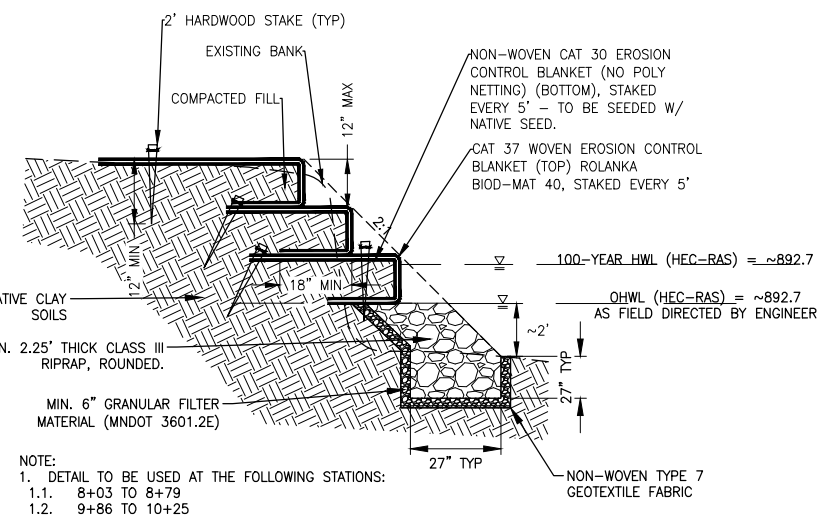
NOTES:
1. SCARIFY AND RECOMPACT SUBGRADE TO A DEPTH OF 12 INCHES

2 TYPICAL PAVING SECTION - TRAIL MAIN
C8.02 NOT TO SCALE



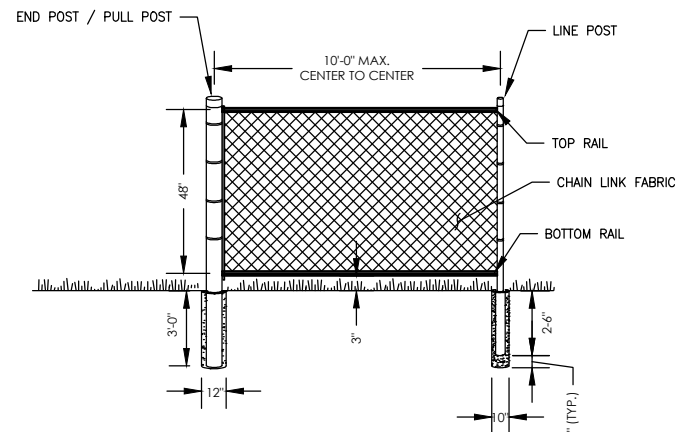
NOTES:
1. SCARIFY AND RECOMPACT SUBGRADE TO A DEPTH OF 12 INCHES

3 TYPICAL PAVING SECTION - STEEP SLOPES
C8.02 NOT TO SCALE



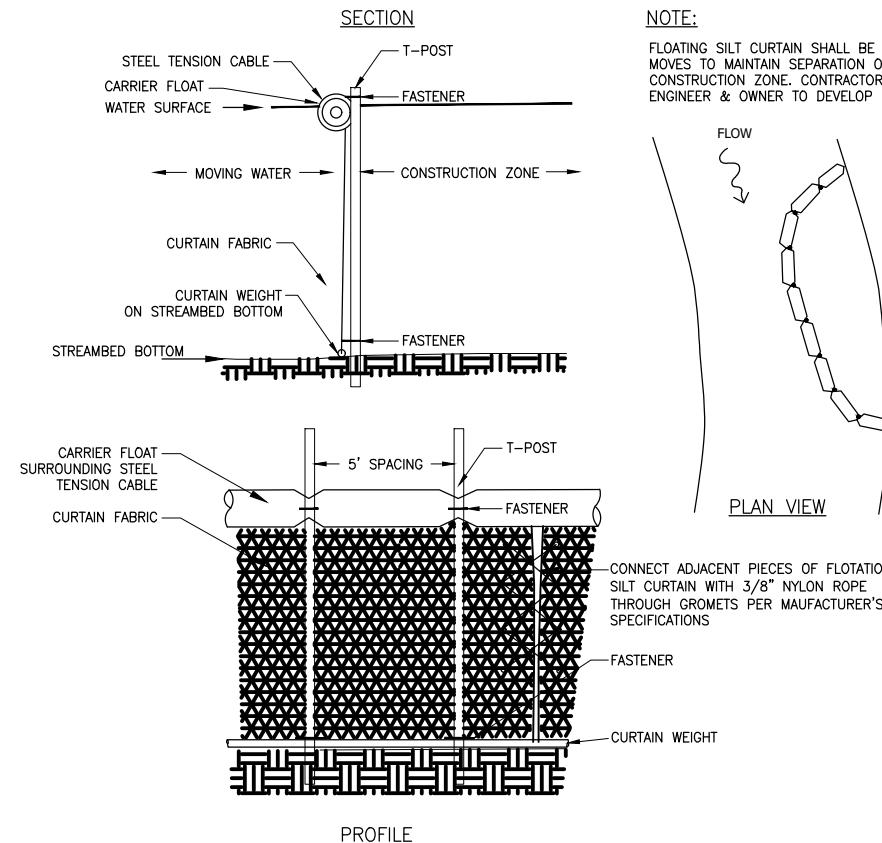
NOTE:
1. DETAIL TO BE USED AT THE FOLLOWING STATIONS:
1.1. 8+03 TO 8+79
1.2. 9+86 TO 10+25

4 ENCAPSULATED SOIL LIFT WITH RIPRAP TOE
C8.02 NOT TO SCALE



NOTES:
1. 100% BONDED VINYL COATED - "BLACK", GALVANIZED.
2. TERMINAL POST END, CORNER OR PULL POST: 3" O.D. GRADE "A" BONDED VINYL.
3. LINE POSTS SHALL BE 2-1/2" O.D. GRADE "A" BONDED VINYL.
4. TOP AND BOTTOM RAIL SHALL BE 1-5/8" O.D. GRADE "A" BONDED VINYL.
5. ALL FITTINGS, TIES, LOOP CAPS AND COMPONENT PARTS SHALL BE VINYL COATED - "BLACK".
6. CHAIN LINK FABRIC SHALL BE 2" MESH WITH KNUCKLED SELVAGE TOP AND BOTTOM, AND CONFORM TO REQUIREMENTS OF AASHTO M 181 TYPE IV.
7. FABRIC SHALL BE TIED BELOW TOP RAIL AND ABOVE BOTTOM RAIL EVERY 12".
8. FENCE SHALL BE GROUNDED.
9. FENCE POSTS SHALL BE DRIVEN OR ENCASED IN CONCRETE FOOTINGS.

5 SAFETY BARRIER - CHAIN LINK W/ TOP RAIL
C8.02 NOT TO SCALE



6 FLOTATION SILT CURTAIN
C8.02 NOT TO SCALE

MCWD CEDAR-GREENWAY
TRAIL CONNECTION
CITY OF SAINT LOUIS PARK
HENNEPIN COUNTY, MINNESOTA

PROJECT TITLE

ISSUE NO.:

0	FEASIBILITY STUDY
1	30% PLANS
2	60% PLANS
3	90% PLANS

DESCRIPTION:

DATE:

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PROJECT NO.:

DWN BY: JE CHKD BY: NW APPD BY: NW

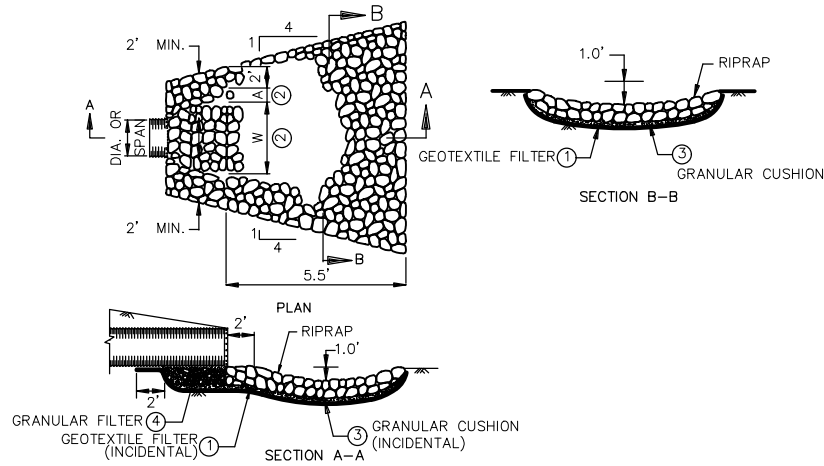
ISSUE DATE: 04/23/2026

ISSUE NO.: 3

SHEET TITLE:

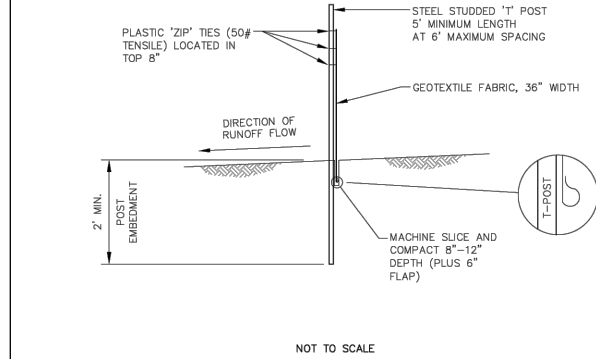
DETAILS

SHEET NO.:

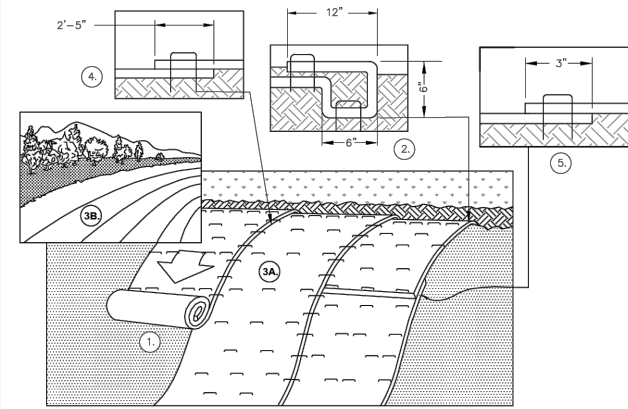


- NOTES:
- GEOTEXTILE FILTER, SPEC. 3733, SHALL COVER THE BOTTOM AND SIDES OF THE AREA EXCAVATED FOR THE RIPRAP, GRANULAR FILTER MATERIALS.
 - DIMENSIONS W AND A ARE GIVEN ON STANDARD PLATES 3122 AND 3123.
 - GRANULAR FILTER, SPEC. 3601, MAY BE USED AS A CUSHION LAYER. PLACE FILTER PER SPEC. 2511. THE CUSHION LAYER IS INCIDENTAL.
 - GRANULAR FILTER OR RIPRAP, SPEC. 3601, TO EXTEND UNDER ENTIRE OPEN PORTION OF PIPE APRON. DEPTH OF MATERIAL UNDER APRON SHALL MATCH RIPRAP DEPTH. WHEN USING RIPRAP INCREASE RIPRAP QUANTITY ACCORDINGLY AND PLACE A 3" LAYER OF 1.5" CRUSHED ROCK UNDER THE APRON TO AID IN GRADING FOR APRON PLACEMENT. CRUSHED ROCK IS INCIDENTAL.

1 PIPE OUTLET RIPRAP
C8.03 NOT TO SCALE

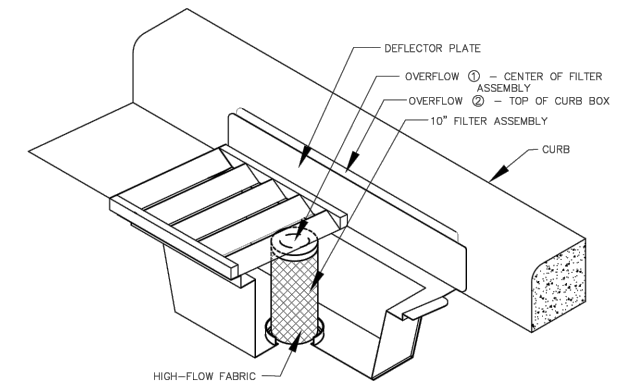


St. Louis Park MINNESOTA SILT FENCE MACHINE SLICED PUBLISH DATE 2/5/26 PLATE NO. EC-1



- NOTES:
- LOOSEN SOIL TO A DEPTH OF 4" AND INSTALL FERTILIZER AND SEED PRIOR TO INSTALLING EROSION CONTROL BLANKET.
 - BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" DEEP X 6" WIDE TRENCH WITH APPROXIMATELY 12" OF BLANKET EXTENDED BEYOND THE UP-SLOPE PORTION OF THE TRENCH. ANCHOR THE BLANKET WITH A ROW OF STAPLES/STAKES APPROXIMATELY 12" APART IN THE BOTTOM OF THE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING. APPLY SEED TO COMPACTED SOIL AND FOLD REMAINING 12" PORTION OF BLANKET BACK OVER SEED AND COMPACTED SOIL. SECURE BLANKET OVER COMPACTED SOIL WITH A ROW OF STAPLES/STAKES SPACED APPROXIMATELY 12" APART ACROSS THE WIDTH OF THE BLANKET.
 - ROLL THE BLANKETS (A) DOWN OR (B) HORIZONTALLY ACROSS THE SLOPE. STAPLE THE BLANKET IN APPROPRIATE LOCATIONS AS SHOWN IN THE STAPLE PATTERN GUIDE. WHEN USING OPTIONAL DOT SYSTEM, STAPLES/STAKES SHOULD BE PLACED THROUGH EACH OF THE COLORED DOTS CORRESPONDING TO THE APPROPRIATE STAPLE PATTERN.
 - THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2"-5" OVERLAP DEPENDING ON BLANKET TYPE. TO ENSURE PROPER SEAM ALIGNMENT, PLACE THE EDGE OF THE OVERLAPPING BLANKET (BLANKET BEING INSTALLED ON TOP) EVEN WITH THE COLORED SEAM STITCH ON THE PREVIOUSLY INSTALLED BLANKET.
 - BLANKETS SPICED DOWN THE SLOPE MUST BE PLACED END OVER END (SHINGLE STYLE) WITH AN APPROXIMATE 3" OVERLAP. STAPLE THROUGH OVERLAPPED AREA, APPROXIMATELY 12" APART ACROSS ENTIRE BLANKET WIDTH.
 - IN LOOSE SOIL CONDITIONS, THE USE OF STAPLE OR STAKE LENGTHS GREATER THAN 6" MAY BE NECESSARY TO PROPERLY SECURE THE BLANKETS.

St. Louis Park MINNESOTA EROSION CONTROL BLANKET PUBLISH DATE 2/5/26 PLATE NO. EC-11



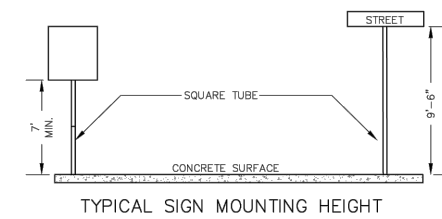
- NOTES:
- AS PART OF SWPPP REQUIREMENTS, THE CONTRACTOR SHALL INSPECT ALL INLET PROTECTION AT DEFINED INTERVALS, AS WELL AS AFTER QUALIFYING RAIN EVENTS. INLET PROTECTION SHALL BE MAINTAINED PER MANUFACTURER'S INSTRUCTIONS AND IN ACCORDANCE WITH ALL SWPPP REQUIREMENTS AND/OR AT THE DIRECTION OF THE ENGINEER.
 - INLET PROTECTION DEVICE MUST BE SPECIFIC FOR CURB TYPE AND FIT PROPERLY. THIS WILL ENSURE WATER AND SEDIMENT DO NOT BYPASS THE DEVICE.
 - AN ATTACHED BACKSTOP IS REQUIRED FOR INLET PROTECTION. ROCK LOGS OR OTHER DEVICES ARE NOT ALLOWED.
 - ALL LABOR, MATERIALS, AND EQUIPMENT TO FURNISH, INSTALL, MAINTAIN, REMOVE DEBRIS AND REMOVE DEVICE SHALL BE PAID PER EACH UNIT.

St. Louis Park MINNESOTA CATCH BASIN METAL INLET PROTECTION PUBLISH DATE 2/4/26 PLATE NO. EC-6

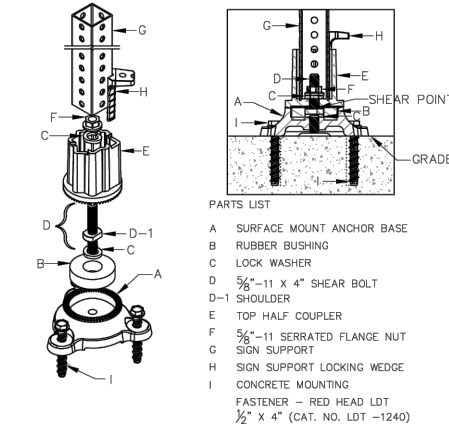
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	BLACK ON FLUORESCENT YELLOW-GREEN	W16-1P	18 X 12
	BLACK ON FLUORESCENT YELLOW-GREEN	W11-15	30 X 30
	BLACK ON FLUORESCENT YELLOW-GREEN	W16-7P (R OR L)	21 X 15
	RED AND BLACK ON WHITE	RB-3	24 X 24
	RED AND BLACK ON WHITE	TYPE SPECIAL	18 X 18
	RED AND BLACK ON WHITE	TYPE SPECIAL	18 X 18

- NOTES:
- ALL SIGNS SHALL MEET THE LATEST REQUIREMENTS OF THE MANUAL ON UNIFORM TRAFFIC CONTROL DEVICES (MUTCD).
 - ALL SIGNS MUST MEET 2K FONT REQUIREMENTS.
 - ALL SIGNS MUST BE MASH-16 COMPLIANT.

St. Louis Park MINNESOTA SIGNAGE PUBLISH DATE 2/6/26 PLATE NO. SS-1

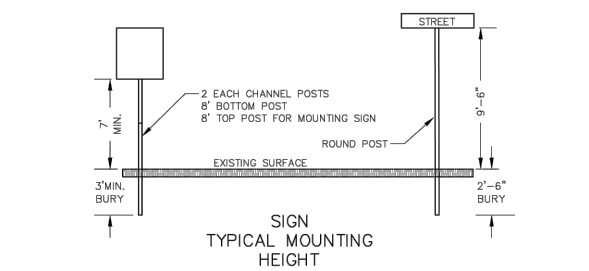


TYPICAL SIGN MOUNTING HEIGHT
KLEEN BREAK MODEL 425
CROSS SECTION VIEW



- NOTES:
- STREET BLADES TO BE INSTALLED ON TOP OF STOP SIGN IF LOCATED IN THE SAME CORNER OF THE INTERSECTION.
 - MOUNTING (PUNCHING CODE) FOR TYPE "C" SIGN PANELS SHALL BE AS INDICATED IN THE STANDARD SIGNS MANUAL UNLESS OTHERWISE SPECIFIED.
 - SQUARE TUBE SIGN POSTS PER MHDOT SPEC. 3402.
 - USE STAINLESS STEEL 5/16" BOLTS, NUTS AND NYLON WASHERS.

St. Louis Park MINNESOTA SIGN INSTALLATION - CONCRETE PUBLISH DATE 2/6/26 PLATE NO. SS-2



CHANNEL POST MOUNTING FOR TYPE "C" SIGNS
ROUND POST INSTALLATION FOR STREET SIGNS USE EARL F. ANDERSON SIGN STABILIZER - SIGN ALIGN

- NOTES:
- STREET BLADES TO BE INSTALLED ON TOP OF STOP SIGN IF LOCATED IN THE SAME CORNER OF THE INTERSECTION.
 - MOUNTING (PUNCHING CODE) FOR TYPE "C" SIGN PANELS SHALL BE AS INDICATED IN THE STANDARD SIGNS MANUAL UNLESS OTHERWISE SPECIFIED.
 - ALL RISER (VERTICAL) "U" POSTS SHALL BE 8" LONG.
 - USE STAINLESS STEEL 5/16" BOLTS, NUTS AND NYLON WASHERS.

St. Louis Park MINNESOTA SIGN INSTALLATION PUBLISH DATE 2/6/26 PLATE NO. SS-3



ONE CARLSON PARKWAY
SUITE 100
PLYMOUTH, MN 55447
PHONE: 763-252-6800
WWW.STANTEC.COM

CLIENT:



MCWD CEDAR-GREENWAY
TRAIL CONNECTION
CITY OF SAINT LOUIS PARK
HENNEPIN COUNTY, MINNESOTA

PROJECT TITLE

ISSUE NO.	DESCRIPTION	DATE
0	FEASIBILITY STUDY	11/04/2022
1	30% PLANS	XXXX/2025
2	60% PLANS	09/22/2025
3	90% PLANS	04/22/2026

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.

PROJECT NO.: 227707443

DWN BY: JE CHKD BY: NW APPD BY: NW

ISSUE DATE: 04/23/2026

ISSUE NO.: 3

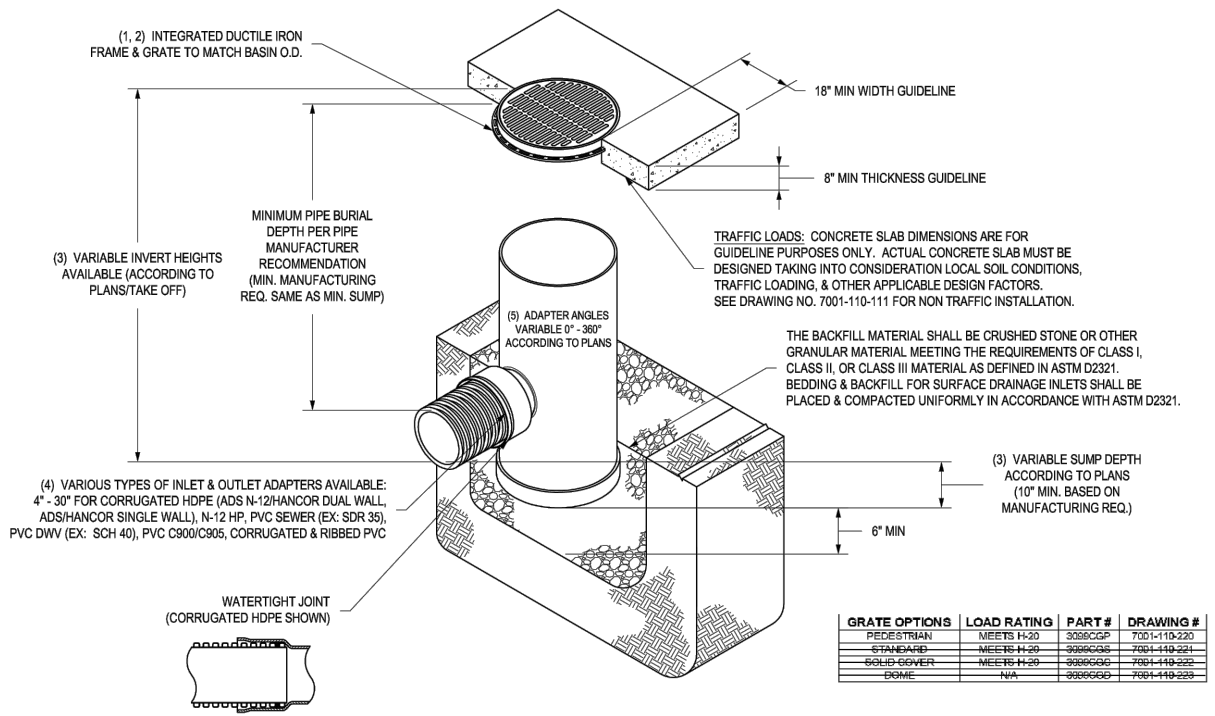
SHEET TITLE:

DETAILS

SHEET NO.:

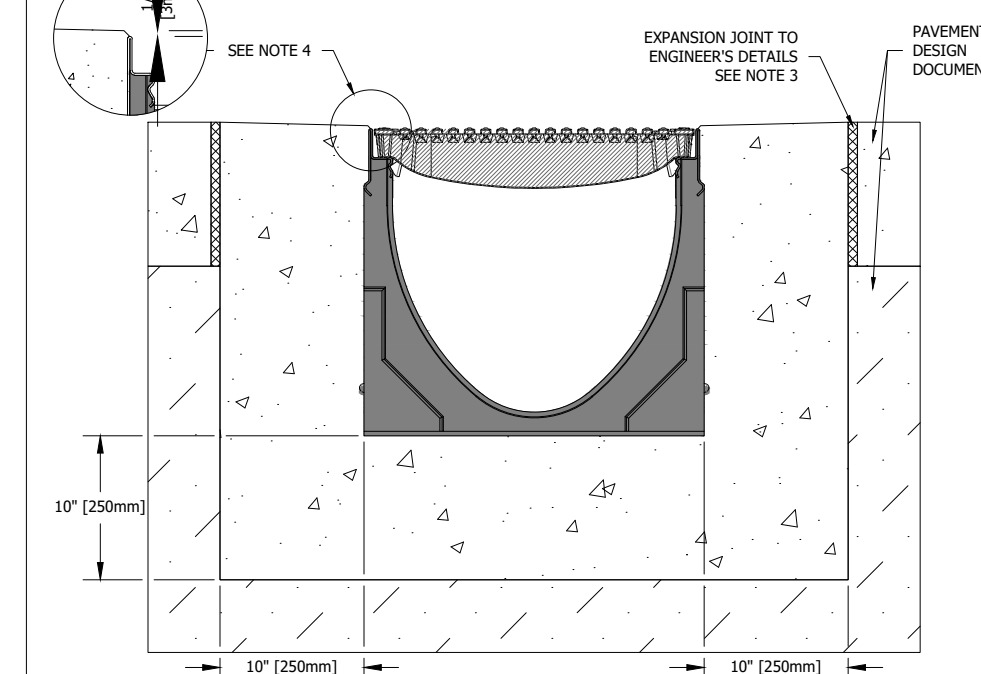
C8.03

NYLOPLAST 30" DRAIN BASIN: 2830AG __X



<p>- GRATES/SOLID COVER SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.</p> <p>- FRAMES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.</p> <p>- DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-065.</p> <p>- DRAINAGE CONNECTION STUB JOINT TIGHTNESS SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL), N-12 HP, & PVC SEWER (4" - 24").</p> <p>- ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.</p>	<p>THIS PRINT DISCLOSES SUBJECT MATTER IN WHICH NYLOPLAST HAS PROPRIETARY RIGHTS. THE RECEIPT OR POSSESSION OF THIS PRINT DOES NOT CONFIR, TRANSFER, OR LICENSE THE USE OF THE DESIGN OR TECHNICAL INFORMATION SHOWN HEREIN. REPRODUCTION OF THIS PRINT OR ANY INFORMATION CONTAINED HEREIN, OR MANUFACTURE OF ANY ARTICLE HEREFROM, FOR THE DISCLOSURE TO OTHERS IS FORBIDDEN, EXCEPT BY SPECIFIC WRITTEN PERMISSION FROM NYLOPLAST.</p>	<p>DRAWN BY: EBC</p> <p>DATE: 04-03-06</p> <p>REVISOR: NMH</p> <p>DATE: 03-14-16</p> <p>DWG SIZE: A</p> <p>SCALE: 1:40</p> <p>SHEET: 1 OF 1</p>	<p>MATERIAL:</p> <p>3130 VERONA AVE BUFORD, GA 30518 PHN (770) 932-2443 FAX (770) 932-2490 www.nyloplast-us.com</p> <p>ADS Nyloplast</p> <p>TITLE: 30 IN DRAIN BASIN QUICK SPEC INSTALLATION DETAIL</p> <p>DWG NO. 7001-110-193</p> <p>REV G</p>
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KS3D-C-ECP



- NOTES:
- ENSURE MINIMUM DIMENSIONS SHOWN ARE SUITABLE FOR EXISTING GROUND CONDITIONS. *ENGINEERING ADVICE MAY BE REQUIRED.*
 - MINIMUM CONCRETE STRENGTH OF 4,000 PSI IS RECOMMENDED. CONCRETE SHOULD BE VIBRATED TO ELIMINATE AIR POCKETS.
 - EXPANSION AND CONTRACTION CONTROL JOINTS AND REINFORCEMENT ARE RECOMMENDED TO PROTECT CHANNEL AND CONCRETE SURROUND. *ENGINEERING ADVICE MAY BE REQUIRED.*
 - THE FINISHED LEVEL OF THE CONCRETE SURROUND MUST BE APPROX. 1/8" [3mm] ABOVE THE TOP OF THE CHANNEL EDGE.
 - CONCRETE BASE THICKNESS SHOULD MATCH SLAB THICKNESS. *ENGINEERING ADVICE MAY BE REQUIRED* TO DETERMINE PROPER LOAD CLASS.
 - REFER TO ACO'S LATEST INSTALLATION INSTRUCTIONS FOR FURTHER DETAILS.

SPECIFICATION CLAUSE

KS300 KLASIKDRAIN 'DRAINLOK' LOAD CLASS C

GENERAL
THE SURFACE DRAINAGE SYSTEM SHALL BE POLYMER CONCRETE KS300 CHANNEL SYSTEM WITH STAINLESS STEEL EDGE RAILS AS MANUFACTURED BY ACO, INC.

MATERIALS
CHANNELS SHALL BE MANUFACTURED FROM POLYESTER RESIN POLYMER CONCRETE WITH AN INTEGRALLY CAST-IN STAINLESS STEEL EDGE RAIL. MINIMUM PROPERTIES OF POLYMER CONCRETE WILL BE AS FOLLOWS:

COMPRESSIVE STRENGTH:	13,000 PSI
FLEXURAL STRENGTH:	3,200 PSI
TENSILE STRENGTH:	1,500 PSI
WATER ABSORPTION:	0.07%
FROST PROOF	YES
DILUTE ACID AND ALKALI RESISTANT	YES
B117 SALT SPRAY TEST COMPLIANT	YES

THE SYSTEM SHALL BE 12" (300mm) NOMINAL INTERNAL WIDTH WITH A 14.2" (390mm) OVERALL WIDTH AND A BUILT-IN SLOPE OF 0.5%. CHANNEL INVERT SHALL HAVE DEVELOPED "V" SHAPE. ALL CHANNELS SHALL BE INTERLOCKING WITH A MALE/FEMALE JOINT.

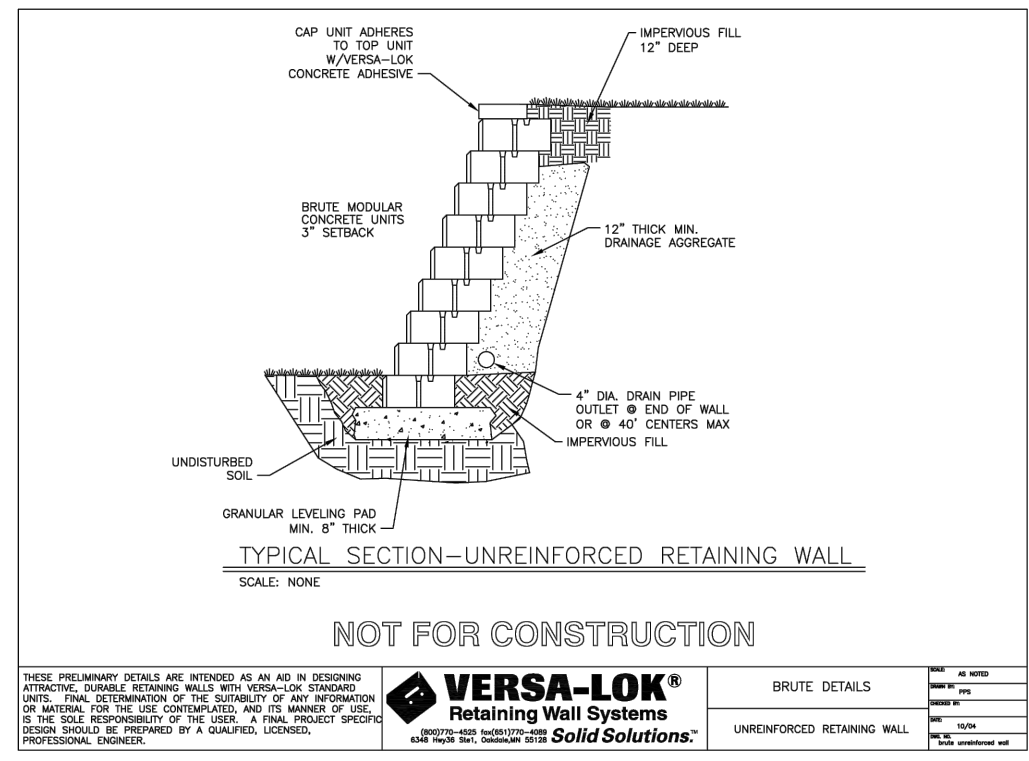
THE COMPLETE DRAINAGE SYSTEM SHALL BE BY ACO, INC. ANY DEVIATION OR PARTIAL SYSTEM DESIGN AND/OR IMPROPER INSTALLATION WILL VOID ANY AND ALL WARRANTIES PROVIDED BY ACO, INC.

CHANNEL SHALL WITHSTAND LOADING TO PROPER LOAD CLASS AS OUTLINED BY EN 1433. GRATE TYPE SHALL BE APPROPRIATE TO MEET THE SYSTEM LOAD CLASS SPECIFIED AND INTENDED APPLICATION. GRATES SHALL BE SECURED USING 'DRAINLOK' BOLTLESS LOCKING SYSTEM. CHANNEL AND GRATE SHALL BE CERTIFIED TO MEET THE SPECIFIED EN 1433 LOAD CLASS. THE SYSTEM SHALL BE INSTALLED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS AND RECOMMENDATIONS.



MCWD CEDAR-GREENWAY TRAIL CONNECTION
CITY OF SAINT LOUIS PARK
HENNEPIN COUNTY, MINNESOTA

PROJECT TITLE	MCWD CEDAR-GREENWAY TRAIL CONNECTION
ISSUE NO.	0
DESCRIPTION	FEASIBILITY STUDY
DATE	11/04/2022
DESCRIPTION	30% PLANS
DATE	XXX/XX/XX
DESCRIPTION	60% PLANS
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CERTIFICATION	I HEREBY CERTIFY THAT THIS PLAN SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER DIRECT SUPERVISION AND WITH MY DAILY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
PROJECT NO.	227707443
DWN BY:	JE
CHKD BY:	NW
APPD BY:	NW
ISSUE DATE:	04/23/2026
ISSUE NO.:	3
SHEET TITLE:	DETAILS
SHEET NO.:	C8.04



VERSA-LOK
Retaining Wall Systems
Solid Solutions

BRUTE DETAILS

UNREINFORCED RETAINING WALL

SCALE	AS NOTED
DRAWN BY	PPS
CHECKED BY	
DATE	10/24
BY	Brute unreinforced wall

4/23/2026 11:03:55 AM

US02-02-PF5501(SHARED)_PROJECTS\227707443\45\fig\fig03 - DESIGN\1_CADD\3_PLANS\HET\227707443-C801-Standard Details.dwg

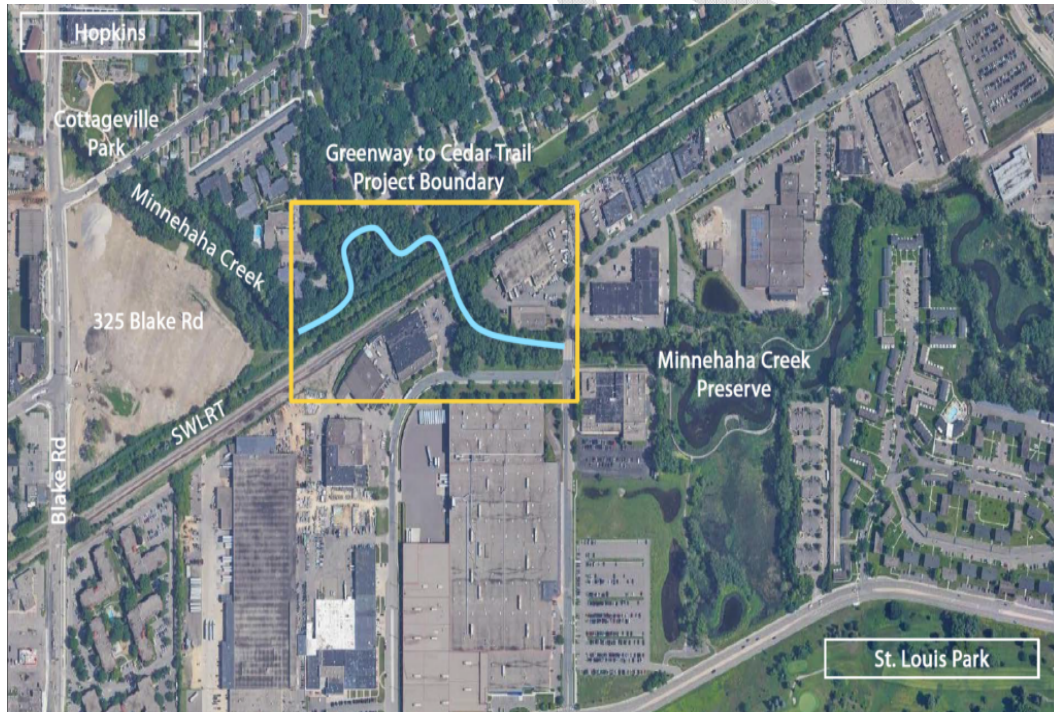
To: Minnehaha Creek Watershed District From: Nick Wyers (PE),
Stantec
Project/File: Cedar – Greenway Trail Connection Project Date: May 7, 2026

Reference: 90% Design Summary Memo

1 Introduction

Minnehaha Creek Watershed District (MCWD) secured space for a trail connection under the new Southwest Light Rail (SWLRT) Green Line extension in 2016 as part of its Minnehaha Creek Greenway focal geography. The Minnehaha Creek Greenway is a linear project in Hopkins and St. Louis Park that is considered one of the largest urban stream restoration in the Twin Cities Metro area. The Greenway features a restored creek, regional trail and light rail connections, new residential development and improved stormwater. One of those regional trail connections is this project which incorporates the connection from the Minnehaha Creek Preserve Boardwalk to the Cedar Lake Regional Trail.

Figure 1. Site Location Map



MCWD consulted with Stantec and Inter-Fluve to complete a feasibility study in 2023 to build off the concept design that was completed in 2015/2016 and evaluate the construction progress and changes to

the original design at the SWLRT site. Throughout the feasibility study two potential trail configurations were evaluated along with streambank stabilization practices and habitat improvement opportunities identified by Inter-Fluve.

2 Existing Conditions

The reach of Minnehaha Creek from Meadowbrook Road to the Cedar Lake Regional Trail has been evaluated multiple times over the last 15 years as part of the Minnehaha Creek Greenway project. Image 2 and Image 6 show historic photos of the Creek within the proposed project area from site visits performed by MCWD in 2012. These images provide the historic context to bank conditions and locations. During the planning for the light rail improvements to the Minnehaha Creek Greenway area, an initial assessment was complete to evaluate the feasibility of a trail connecting the Preserve to the regional trail. The results shared by MCWD were that the project was deemed feasible without the need for boardwalk or piers.

Most recently, this reach was evaluated during the 2023 feasibility study. Inter-Fluve found the reach to be vertically stable with pool-riffle morphology. The streambank stabilization was limited to areas where infrastructure impacts were noted. Those areas include the southwest bank downstream of the Cedar Trail/SWLRT/Rail Crossing bridge to the stormsewer outfall, and either side of the creek upstream of the bridge. Through review of historic photos and conversations with MCWD staff, the bank conditions have eroded over the last 15 years. Image 2 and Image 3 show the same bench with the bank eroded to a condition where the bank is no longer traversable in front of the bench and the bench is at risk of eroding into the creek. The 2023 feasibility study found the trail to be feasible with similar assumptions that no boardwalk or piers would be needed to construct the trail. The feasibility study assumed bank grading would be necessary to stabilize the banks and preserve the bank to benefit the reach beyond the timeline of this project. The bank grading was assumed to restore historic bank conditions as noted in the 2012 site visit without needing additional fill in the historic channel profile. The old railroad spur abutment grading and debris materials downstream of the bench appear to have created a restriction in the creek causing bank erosion upstream. The old railroad spur location is assumed based on the granite slabs and woodpiles located on the right bank downstream of the bridge crossing.

The topographic information and tree survey were completed with the 2023 feasibility study. The tree survey noted tree species, condition, location, and diameter at breast height (DBH) of all trees greater than 6-inches within the proposed trail corridor and construction access routes. All trees with diameters greater than 6-inches were tagged. Additional topographic information was gathered at the start of the 30% design. Public utility locates, additional cross sections and boundary survey were completed to assist with the design. In addition to the survey, site investigation was necessary to determine soil conditions. Soil borings were completed to determine the subgrade material of the trail. 3 soil borings were completed on June 6, 2025. The soil borings found mostly topsoil fill for 5 to 8 inches and fill was encountered to a depth of 4 to 6 feet. Braun recorded groundwater at a depth of approximately 10 feet, however they recommended planning for seasonal fluctuations in groundwater levels in relation to the creek.

The site investigation also included a Phase I Environmental Site Assessment (ESA). The ESA was completed during the 30% design phase, with its intended use for due diligence in support of development as a trail connection between the Cedar Lake LRT and Minnehaha Creek Preserve. The assessment revealed no recognized environmental conditions (RECs), controlled recognized environmental conditions (CRECs) or significant data gaps in connection with the Subject Property. There were 3 business environmental risks (BERs) identified and listed within the Phase I ESA document. These areas require additional coordination prior to the start of construction. During the Phase I ESA, the Merit Gage Inc. site

required additional investigation due to an unknown location of an oil dump site. During the soil borings completed by Braun, Stantec collected samples for laboratory analysis. The laboratory analysis did not identify any impacted soil within the project site and the Merit Gage Oil Dump site is not considered a REC.

During the site investigation stage of the Phase I ESA property owners north of the creek approached MCWD with an interest to sell their properties. MCWD completed its due diligence with property owner discussions, appraisals, board discussions and additional Phase I ESA analysis of the properties. These properties were of interest to MCWD to remove the decaying retaining wall and replace the streambank with a natural stabilization method. It was ultimately determined that the cost of the property and removing it from the City's tax role were not necessary for this project.

Image 1. Riprap Under Bridge



Image 2. Bank at Bench (MCWD 2012 Site Visit)



Image 3. Existing Bank at Bench (Geocell Bank Location)



Image 4. Old Railroad Spur Abutment (Geocell Bank Location)



Image 5. Eroding Bank Downstream of Bridge (FES Lift Location)



Image 6. Bank south of Bridge (48" CMP Outlet Location – MCWD 2012 Site Visit)



Image 7. Bank south of Bridge (FES Lift Location)



Image 8. Bank north of Bridge (FES Lift Location)



Image 9. 7800 Powell Road Retaining Wall



Image 10. Powell Road Boulevard



3 Proposed Conditions

A 2023 feasibility study identified two potential trail alignments and streambank grading and restoration. The trail alignment was coordinated with MCWD, the City of St. Louis Park, Inter-Fluve and Stantec to determine the optimal alignment. Through the methodology described in the next section, the alignment was determined as a hybrid of the feasibility alignments. The trail was designed to meet 12 MPH design criteria and optimized to avoid desirable tree species. Braun's report recommended removing topsoil fill and any soft clays below the new trail alignment, compact soils, complete roll test and place the trail section.

The trail is proposed as a 10' wide section consisting of 6 inches of class 5 aggregate base and 3 inches of bituminous pavement. Depending on future discussion between MCWD and the City, the trail may have segments of concrete for drainage and maintenance concerns.

Bank stabilization was evaluated and determined to be necessary to prevent hydraulically induced bank erosion impacting the new trail location. Due to the proximity to the bank and acceptable slopes, varying stabilization practices are proposed. A stone toe is placed below OHW on each of the stabilization practices to provide streambank stabilization where vegetation will not establish. The other practices include graded bank fabric encapsulated soil lifts and a geocell wall. The assumptions from the feasibility study were evaluated for extend of creek impacts. It was confirmed that the bank stabilization practices are limited to restoring hirsotic bank from eroded areas and not placing additional fill within the historic channel profile.

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. Key design criteria include maintainability, user experience, user accessibility and natural resource impacts.

4.1 Alignment Design Considerations

4.1.1 Tree removals

The trail alignment was carefully coordinated with the City of St. Louis Park to minimize the removal of desirable tree species and limit overall tree disturbance. Only trees located within the designated trail and grading limits will be removed to facilitate construction. In addition, the City requested that buckthorn maintenance be performed within the project area while contractors are onsite. This maintenance, focused south of the bridges, will increase sunlight penetration, resulting in better opportunities for the establishment of native seeds planned for streambank restoration.

To further protect the stability of the streambank, trees outside the trail section and within 10 feet of the top of the streambank will remain undisturbed and will not be grubbed. This approach supports long-term streambank stabilization.

4.1.2 Alignment Grading

The trail alignment was developed to satisfy key criteria: speed, maintenance, safety, user experience, and ADA accessibility. Following the MnDOT Bicycle Facility Design manual, the design team established a maximum speed of 12 MPH for the trail. This speed informed the minimum allowable turn radii and horizontal curve geometry, with the most restrictive curve—located north of the bridge crossing—setting the minimum turn radius for the entire alignment. This approach helps minimize impacts to the stream and floodplain.

Vertical and horizontal curves were designed in accordance with both MnDOT and ADA standards, ensuring the trail is safe, comfortable, and easy to maintain. ADA compliance was prioritized throughout the

design: pedestrian ramps at Meadowbrook Road are fully ADA-compliant, landings have been incorporated, and cross slopes are maintained at less than 2% to ensure accessibility for all users.

4.1.3 Bridge Clearance

Bridge clearance requirements for this project are governed by maintenance needs, the MnDOT Bicycle Facility Design Guide, and rail authority standards. A minimum vertical clearance of 10 feet from the low chord of the bridge is required to ensure safe passage and adequate maintenance access.

In the initial feasibility design, the lowest point of the trail was located on the north side of the bridges. This configuration resulted in steep slopes and made it difficult to provide effective drainage under the bridges. Upon further review, it was determined that the lowest low chord is on the middle bridge. To address these challenges, the design team evaluated the vertical alignment and relocated the low point to the south side of the bridges. This adjustment improves drainage beneath the bridges and flattens the grades approaching the Cedar Lake Regional Trail, enhancing both safety and user experience.

4.1.4 Streambank Stabilization Practices

Streambank Stabilization was originally evaluated during the 2023 feasibility study. The goal of the streambank stabilization was to stabilize the bank in locations where trail is being proposed while being minimally impactful to the stream. The areas upstream and downstream of the Cedar Trail/SWLRT/Railroad bridge crossings were the primary focus of bank stabilization as those are the areas where the trail is closest to the creek. Bankful stream velocities and shear stress were determined using Manning's equation and the shear stress equations found in the Shoreline and Streambank Stabilization Rule requirements. Please see Attachment 1 for calculations. The bankful velocity was found to be 4.11 feet per second corresponding to medium erosion intensity. The shear stress was calculated to be 0.92 pounds per square foot resulting in a low erosion intensity. Each bio-engineered streambank stabilization concept design recommends specific stabilization techniques for mitigating erosion and creating long-term solutions to the current issues.

Fabric Encapsulated Soil Lifts (FESL)

Fabric encapsulated soil lifts are a bioengineering technique in which brush layering are wrapped with geotextile fabrics in tightly packed soil lifts with live stakes anchored within. The FESL provides immediate stabilization without vegetation growth as the geotextile maintains slope stability until the vegetation can be established. Over time, the blankets will naturally biodegrade, while the root system of the live cuttings expands and bind the soil particles together and ultimately increases the overall stability of the bank. In addition to providing a natural approach to bank stabilization, FESL is flexible and can be constructed to meet site specific conditions. Common FESL bank slopes are 2H:1V with typical lifts ranging from 6" to 18" with a maximum of 4 lifts. Due to the site constraints of existing retaining walls, proposed trail alignment and eroding banks, more gradual slopes than the 2H:1V proposed is not feasible for this segment of the creek bank. The more gradual slopes would result in impacts to the existing retaining wall and an infeasible trail alignment. To facilitate vegetative growth on FES lifts, the specified seed mix includes a cover crop in addition to native grasses and forbs. The lifts will also be planted with native riparian species and bare root stock shrubs, which both will establish root systems more quickly than seed. Maintenance for FES lift plantings is required during the initial project warranty period.

Geocell Wall

Areas where the upper banks must be constructed at a 1H:1V slope will consist of vegetated stacked geocells with interlayered geogrids constructed. The geocells will receive native seed and will be planted with plugs and bare root stock shrubs in the exposed horizontal faces. The bank will be tied back with a geogrid at 1' per 1' of vertical wall. Above the geocells, the slope will be composed of compacted fill material at a 2H:1V slope and will include surface fabric to protect against overland runoff during the plant establishment period. A more gradual slope was evaluated during design. The existing retaining wall on adjacent properties and storm sewer infrastructure in the parking lot would have been impacted by any slope more gradual than the proposed 1H:1V of the geocell wall.

Plantings and Seeding Restoration

The site will be restored with native seeding. The boulevards and upland areas will be restored using MnDOT's southern boulevard seed mix. This seed mix is a low maintenance turf that requires less frequent watering and mowings. Native plantings and seeding will be completed within the bioengineering practices. The seeding will be a mixture of BWSR's eroded bank stabilization mix, sedges and rushes from the 34-264 Lakeshore mix and cover crop.

BWSR Eroding Bank Stabilization Northwest and South (Modified)				
	Scientific Name	Common Name	Rate (lb/ac)	Seeds per sq ft
	Cover			
	Avena sativa	Oats (cover crop)	11.14	37.91
	Forb			
	Achillea millefolium	Common Yarrow	0.7	0.01
	Rudbeckia hirta	Black-eyed Susan	2.49	0.07
	Verbena hastata	Blue Vervain	1.9	0.06
	Graminoid			
	Andropogon gerardii	Big Bluestem	5.5	1.5
	Bromus ciliatus	Fringed Brome	3	0.82
	Elymus canadensis	Canada Wild Rye	2.8	1.47
	Elymus riparius	Riverbank Wild Rye	0.175	0.16
	Elymus trachycaulus	Slender Wheatgrass	5.3	2.62
	Elymus virginicus	Virginia Wild Rye	3	1.94
	Panicum virgatum	Switchgrass	3.05	0.59
	Poa palustris	Fowl Bluegrass	16	0.34
	Sorghastrum nutans	Indian Grass	6.6	1.5
	Carex hystericina	Porcupine sedge	0.14	1.54
	Carex scoparia	Pointed broom sedge	0.1	3.09
	Carex stricta	Tussock sedge	0.01	0.19
	Carex vulpinoidea	Fox sedge	0.22	8.08
	Juncus nodosus	Knotted rush	0.01	6.8
	Scirpus atrovirens	Dark green bulrush	0.12	20.28
	Scirpus cyperinus	Woolgrass	0.05	31.22
	Legume			
	Astragalus canadensis	Canada Milk Vetch	0.2	0.04
	Chamaecrista fasciculata	Partridge Pea	0.2	0.2
	Dalea purpurea	Purple Prairie Clover	0.5	0.09
	Desmodium canadense	Canada Tick Trefoil	0.19	0.09
	Vicia americana	American Vetch	0.051	0.07
			63.446	120.68

Plantings will be a mixture of the following plants. The shrub/woody plantings in the encapsulated soil lifts and in each of the geocell wall openings are to be shorter stature cultivars or short shrubs due to limited space. The plantings will be a variety of the following plantings:

- Firedance Dogwood, *Cornus sericea* 'Bailadeline'
- Iroquois Beauty Black Chokeberry, *Aronia melanocarpa* 'Morton'
- Bush Honeysuckle, *Diervilla lonicera*
- Common Snowberry, *Symphoricarpos albus*
- Gro-low Sumac, *Rhus aromatica* 'Gro-low'
- Regent Serviceberry, *Amelanchier alnifolia* 'Regent'

Species and quantity to be determined during construction by the contractor and Engineer based on availability. It is expected that an even distribution of each of the species will be provided.

4.1.5 Storm sewer and drainage

Existing storm sewer was reviewed through site visits and record plans. The site visits found a 12" plastic pipe that outlets from the freight rail bridge on the south side of the bridge retaining wall, a 48" CMP routed parallel to the railroad which outlets to the creek, and a 10" PVC pipe which outlets through the retaining wall at the corner of the 7800 Powell Road. These 3 outlets were reviewed for drainage over the trail or catch basins and outlet pipes provided.

The 48" CMP was reviewed using record plans. During the Powell Diversion project in 2015 the drainage was cut off from being routed to this pipe. The only drainage routed to this pipe currently is the rear yard drainage adjacent to the railroad corridor. This drainage and the 12" pipe from the freight rail bridge was reviewed and determined to be routed to an inlet with a 12" PVC pipe routed to the creek. A trench drain will be provided at the low point in the trail to provide a drainage path for any HWL surface drainage and avoid drainage over the trail.

A catch basin inlet has been provided near the retaining wall at 7800 Powell Road and a 10" PVC pipe has been provided to route the drainage under the trail.

City storm sewer was also evaluated from Powell Road. The flared end at the outside bend in the creek will receive additional riprap to provide additional stabilization at the outlet. There are two outlets near the Meadowbrook Road bridge. one outlet is active and has sufficient riprap stabilization. The other outlet was reviewed and determined to have been bulkheaded during the Japs Olson project. These pipes will be below the trail section and will not be impacted by the proposed trail project.

Trail grades were reviewed to provide the optimal drainage pathways to the creek while providing a sufficient vegetated buffer. The trail cross section slopes toward the creek at a maximum slope of 2%. Longitudinal slopes were reviewed to meet ADA standards and to allow drainage to route to the creek. The slopes under the bridges were evaluated to allow for drainage to flow past the old abutments and into the creek.

4.1.6 Geotechnical Considerations

On June 6, 2025, Braun conducted three soil borings along the proposed trail alignment. The borings revealed predominantly topsoil fill ranging from 5 to 8 inches thick, with additional fill extending to depths of 4 to 6 feet. Groundwater was encountered at approximately 10 feet below the surface. Braun advised that seasonal fluctuations in groundwater levels should be considered due to the proximity of the creek.

Based on these findings, Braun recommended removing all topsoil fill and any soft clays beneath the new trail alignment. The subgrade should be compacted, followed by a roll test to ensure stability before placing the trail section. The proposed trail will be 10 feet wide and constructed with a 6-inch class 5 aggregate base topped by 3 inches of bituminous pavement.

4.2 Permitting and Regulatory

Permitting and regulatory compliance was led by the MCWD staff with support from the Stantec team. A permitting screen was completed to determine the appropriate regulatory framework and begin permit applications. The permitting pathways determined Minnehaha Creek is a regulated watercourse. The applicability of MCWD's rules have been reviewed as follows:

- Erosion Control: The erosion control authority belongs to St. Louis Park as the regulatory agency.
- Waterbody Crossings and Structures:
 - The Waterbody Crossings and Structures Rule is triggered because two storm sewer utilities will be placed below the top of bank: storm sewer outfall CB-101 and storm sewer outfall CB-102. Storm sewer outfall CB-101 is proposed on the south side of the of the Cedar Lake Regional Trail/Blue Line Light Rail crossing. Storm sewer outfall CB-102 is proposed south of CB-101 near the existing retaining wall of the adjacent parking lot. See Sheet C5.01 for the locations of both storm sewer outfalls. MCWD defines "top of bank" as the "break in slope" for watercourses and both storm sewer outlets are proposed below the top of bank of Minnehaha Creek.
 - The public purpose of the two proposed storm sewer outlets is to reduce overtopping across the proposed public trail to stop water from overtopping the trail.
 - The Waterbody Crossings and Structures Rule requires hydraulic capacity to be retained. The proposed structures are new storm sewer outfalls. The direct drainage area of each outfall was delineated and a HydroCAD model was created to compare the existing sheet flow condition and the proposed piped storm sewer outfall condition. The base flow of the Creek Reach in the HydroCAD model was adjusted to represent the existing 100-year HWL of Minnehaha Creek (892.6 ft). Please see a summary of the 100-year peak discharge rates, discharge volumes, and HWLs in existing and proposed conditions in Table 1 and Table 2. No changes are proposed to discharge rates or discharge volumes. Therefore, the proposed storm sewer outfall will not impact the downstream flood stage of Minnehaha Creek. Please see Attachment 2 for the HydroCAD outputs and supporting documentation.

Table 1. HydroCAD Results Summary for CB-101 Outfall

	100-year Discharge Rate (cfs)	100-year Discharge Volume (acre-ft)	100-year HWL of Minnehaha Creek (ft)
Existing	1.1	0.06	892.60
Proposed	1.3	0.06	892.60
Change	+0.2	0.00	0.00

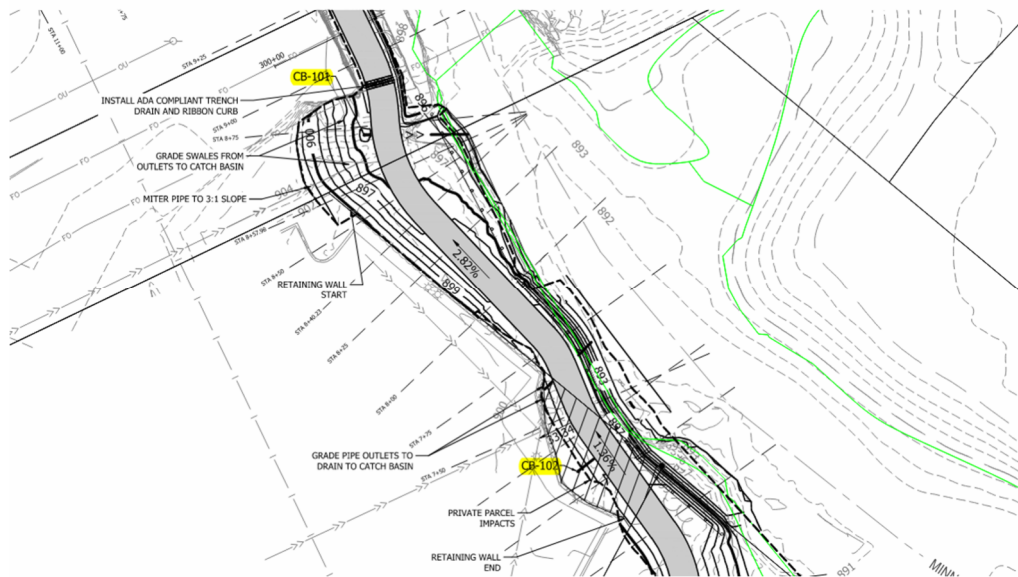
Table 2. HydroCAD Results Summary for CB-102 Outfall

	100-year Discharge Rate (cfs)	100-year Discharge Volume (acre-ft)	100-year HWL of Minnehaha Creek (ft)
Existing	0.4	0.02	892.60
Proposed	0.5	0.02	892.60
Change	+0.1	0.00	0.00

- The proposed storm sewer outfalls will not impact the navigational capacity of Minnehaha Creek. The downstream invert elevations of the storm sewer outfalls are above the OHWL on Minnehaha Creek and do not encroach into the channel. Therefore, the storm sewer outfall will not create a barrier for navigating Minnehaha Creek.
- The proposed storm sewer outfalls do not impact upland wildlife passage along the bank. The storm sewer outfalls will be below grade and wildlife will be able to traverse the bank as in the existing condition. Additionally, the outfalls are above the OHWL of Minnehaha Creek and do not encroach into the channel. Therefore, the outfalls will not create a barrier for aquatic passage along Minnehaha Creek.
- The bank of Minnehaha Creek will be stabilized with encapsulated soils lifts and a riprap toe at storm sewer outfall CB-101 (see Sheet C8.02). The bank of Minnehaha Creek will be stabilized with a geocell wall and riprap toe at the storm sewer outfall CB-102 (see Sheet C8.01). These stabilization practices will prevent erosion and scour at the storm sewer outfalls. The storm sewer outfalls will not otherwise affect bed or bank stability, or water quality.
- Three alternative solutions were considered to maintain the trail drainage and are described below.
 - Alternative 1: No build. This alternative would limit the impacts below the top of bank. However, no drainage structures would be constructed along the trail allowing surface drainage to flow over the trail creating a potential impact the accessibility of the trail during storm events.
 - Alternative 2: Install a trench drain at the CB-101 location and install a catch basin inlet at the CB-102 location. A catch basin will be necessary at the CB-102 location, not only to provide drainage along the trail, but also to direct the discharge from the existing 10-inch drain tile routed from the bottom of the existing parking lot retaining wall. This alternative would limit impacts below the top of bank at the CB-101

location. However, the trench drain at CB-101 would have reduced capacity compared to a catch basin. Therefore, water would spill out onto the trail during larger storm events and limit trail access.

- Alternative 3: Install catch basin inlets at the CB-101 and CB-102 locations (as shown below). The catch basins will direct water underneath the trail to reduce the amount of water flowing over the trail and maintain trail access. Therefore, alternative 3 **represents the minimal impact solution** and is the proposed solution.



- Wetland Protection
 - The Wetland Protection Rule does not apply. Stantec completed a wetland delineation on May 6, 2025 and did not identify any wetlands on the project site. MCWD completed an additional site walkthrough on October 28, 2025 and confirmed there are no wetlands.
- Floodplain Alteration
 - The Floodplain Alteration Rule does not apply to the work completed for this project. The proposed project activity within the floodplain of Minnehaha Creek, above the OHWL and below the 100-year HWL, is to be regulated under the Shoreline & Streambank Stabilization Rule, as directed by District Staff and Section 4.e. of the Shoreline & Streambank Stabilization Rule.
 - MCWD regulates to the best available data. The floodplain elevations (OHWL and 100-year HWL) generated by the project HEC-RAS model differ from the MCWD XP-SWMM Model by approximately 0.3 ft. The HEC-RAS model is based on project site-specific data and provides greater detail of the site conditions, compared to MCWD XP-SWMM Model. Therefore, the HEC-RAS model, and the respective floodplain elevations, represent the best available data in this case.
- Shoreline & Streambank Stabilization
 - The Shoreline & Streambank Stabilization Rule is triggered by the disturbance to the bank of Minnehaha Creek below the OHWL. The target areas have been eroding and will be stabilized using bioengineering (for sections with a medium or high erosion intensity) and biological stabilization (for sections with a low, medium, or high erosion intensity). The

proposed practices include vegetated wall, encapsulated soil lifts, and vegetated banks. This stabilization will provide the necessary streambank stabilization to construct the trail. Please see Attachment 1 for erosion intensity calculations to support the use of the proposed stabilization practices.

- Dredging
 - The Dredging Rule does not apply to the work completed on this project.
- Stormwater Management
 - The Stormwater Management Rule is not triggered by the trail. The proposed trail is 10' wide, bordered downgradient by pervious vegetated buffer averaging at least 5' wide, and the proposed impervious is less than 1 acre.

In addition to the MCWD permitting rules, external agency permit requirements were reviewed. St. Louis Park will require an erosion and sediment control permit and a floodplain review. The Wetland Conservation Act was applied for and the LGU issued the Notice of Decision on October 29, 2025. Between 60% and 90% design phases, Stantec and MCWD engaged in pre-application meetings with the Minnesota Department of Natural Resources (DNR) and the United States Army Corps of Engineers. The DNR reviewed the plans and details and determined the work falls under MCWD's general permit with the DNR and that no Work in Public Waters permit would be needed.

USACE determined a Transportation Regional General Permit (TRGP) would be the most appropriate and efficient mechanism for this project. As part of their review, they ran the Information for Planning and Consultation (IPaC), which indicated the site is a high potential zone (HPZ) for Rusty-patched Bumblebee. Due to this project being within the HPZ a pre-construction notification (PCN) will be required. This PCN will be verified under the same TRGP submittal for the project and may require informal consultation from the United States Fish and Wildlife Service (USFWS). USFWS may request floristic information, including photos, and vegetation observations. Existing conditions on this site are mostly wooded with predominantly cottonwood and buckthorn trees. During construction, an herbicide will be used to treat the buckthorn. Herbicides may be used as necessary post-construction to establish native vegetation and plantings. The MPCA 401 regulations were reviewed. Since this project impacts less than 300 linear feet of streambank, the blanket 401 WQC applies.

4.3 Spatial Considerations

Proposed Retaining wall

The existing grade between the Cedar Lake Trail and Minnehaha Creek is steep and will make achieving safe and adequate slopes along the proposed trail unrealistic. A 170-foot-long, 4-foot-high large block retaining wall is proposed to be installed along the proposed trail where it runs parallel with the existing Cedar Lake Trail. This proposed wall will allow for MnDOT recommended safe slopes on the new trail. The wall will be made out of large pre-poured concrete blocks with draintile installed along the backside to provide drainage. The wall color is proposed to be a tan color and will be treated with anti-graffiti paint.

Existing abutments

There is a light rail train that crosses over Minnehaha Creek where the proposed trail is to be built. When the train bridge over Minnehaha Creek was installed an abutment was placed in the creek for the bridge. The

new proposed trail will utilize this abutment and build the trail over it. Riprap placed underneath and around the abutment will be removed so the trail section can be installed and the side slopes graded.

Existing retaining wall PIC

The existing retaining wall built for the Professional Instruments Company parking lot will remain in place and be protected during construction. Grading will happen along the base of the wall and will be done to direct water away from the base of the wall and either over the trail or into existing green space catch basins.

Tree Removal

Effort was made to save as many of the mature trees along the trail corridor as possible when designing the trail. The trail's location and grading plan have been designed to protect the existing grove of trees located along the north side of Powell Road. Other individual trees along the corridor that were in direct conflict with the proposed route of the trail have been identified to be removed at the start of construction. Removed trees will be replaced per City's ordinance at a greater than 1:1 ratio.

Monitoring wells

The monitoring wells on the north side of Powell Road were identified during the survey. Multiple iterations of the trail location were considered to balance avoidance of the monitoring wells and constructing a boulevard between the trail and Powell Road. The ultimate design has minor side slope fill from the trail that will fill around the base of the monitoring wells and bollards. The grading is not significant enough to diminish the effectiveness of the bollards or the useability of the monitoring wells.

Site Access

Site access will ultimately be determined by the contractor utilizing public right of way and the construction limits. The available site access is from Powell Road and Meadowbrook Road. Alternatively, the site can be accessed from the Cedar Lake Regional Trail. Access from the trail will require additional permitting and possible detour plans. Construction activity will utilize the proposed trail alignment to access through the site from Powell Road to the Cedar Lake Regional Trail

Stockpile and Staging Areas

Although final stockpile and staging areas will be determined by the contractor, the limited site size limits the areas where stockpiling of material can take place. It is expected that majority of the import material will be hauled onsite as-needed. Any material stockpiled will be done within portions of the trail corridor as well as the green space generated after tree removal has taken place. The proposed boulevard near station 5+00 widens out and provides additional space for material staging. The other location for material staging is near station 6+00 along the trail within the St. Louis Park parcel. Perimeter control is expected around the base of any stockpiled material with a downgradient to the creek and storm sewer facilities.

4.4 Operations and Maintenance

O&M for trail

For tree/buckthorn treatment

For plantings and seeding, specifically who is responsible for monitoring and maintenance for storm sewer

Bankful Stream Velocity

$$v = \frac{Q}{A} = \left(\frac{1.49}{n}\right) * R^{2/3} * S^{1/2}$$

R = Hydraulic Radius (ft) = $\frac{XC \text{ Area}}{\text{Wetted Perimeter}}$ measured from typical existing channel cross section at bankful

$$R = \frac{71.7 \text{ sf}}{40.1 \text{ ft}} = 1.8 \text{ ft}$$

S = Slope of Channel Bottom (rise/run) measured along stream centerline in CAD

$$S = \frac{(891.8 - 890.0) \text{ ft}}{279 \text{ ft}} = 0.006$$

Manning's n for Channels (Chow, 1959).

Type of Channel and Description	Minimum	Normal	Maximum
Natural streams - minor streams (top width at floodstage < 100 ft)			
1. Main Channels			
a. clean, straight, full stage, no rifts or deep pools	0.025	0.030	0.033
b. same as above, but more stones and weeds	0.030	0.035	0.040
c. clean, winding, some pools and shoals	0.033	0.040	0.045
d. same as above, but some weeds and stones	0.035	0.045	0.050
e. same as above, lower stages, more ineffective slopes and sections	0.040	0.048	0.055
f. same as "d" with more stones	0.045	0.050	0.060
g. sluggish reaches, weedy, deep pools	0.050	0.070	0.080
h. very weedy reaches, deep pools, or floodways with heavy stand of timber and underbrush	0.075	0.100	0.150

$$n = 0.035$$

$$v = \left(\frac{1.49}{n}\right) * R^{2/3} * S^{1/2} = \left(\frac{1.49}{0.035}\right) * (1.8)^{2/3} * (0.006)^{1/2} = 5.06 \text{ ft/s}$$

5.06 ft/s corresponds to a medium erosion intensity. Bankful stream velocity is the higher intensity score and permits the use of a biological or bioengineering practice.

Shear Stress on the Streambank

$$\tau = d * \mu * S$$

d = Bankful flow depth (ft)

d = 2.6 ft *measured from typical existing channel cross section at bankful*

μ = Unit weight of water (62.4 lbs/cf)

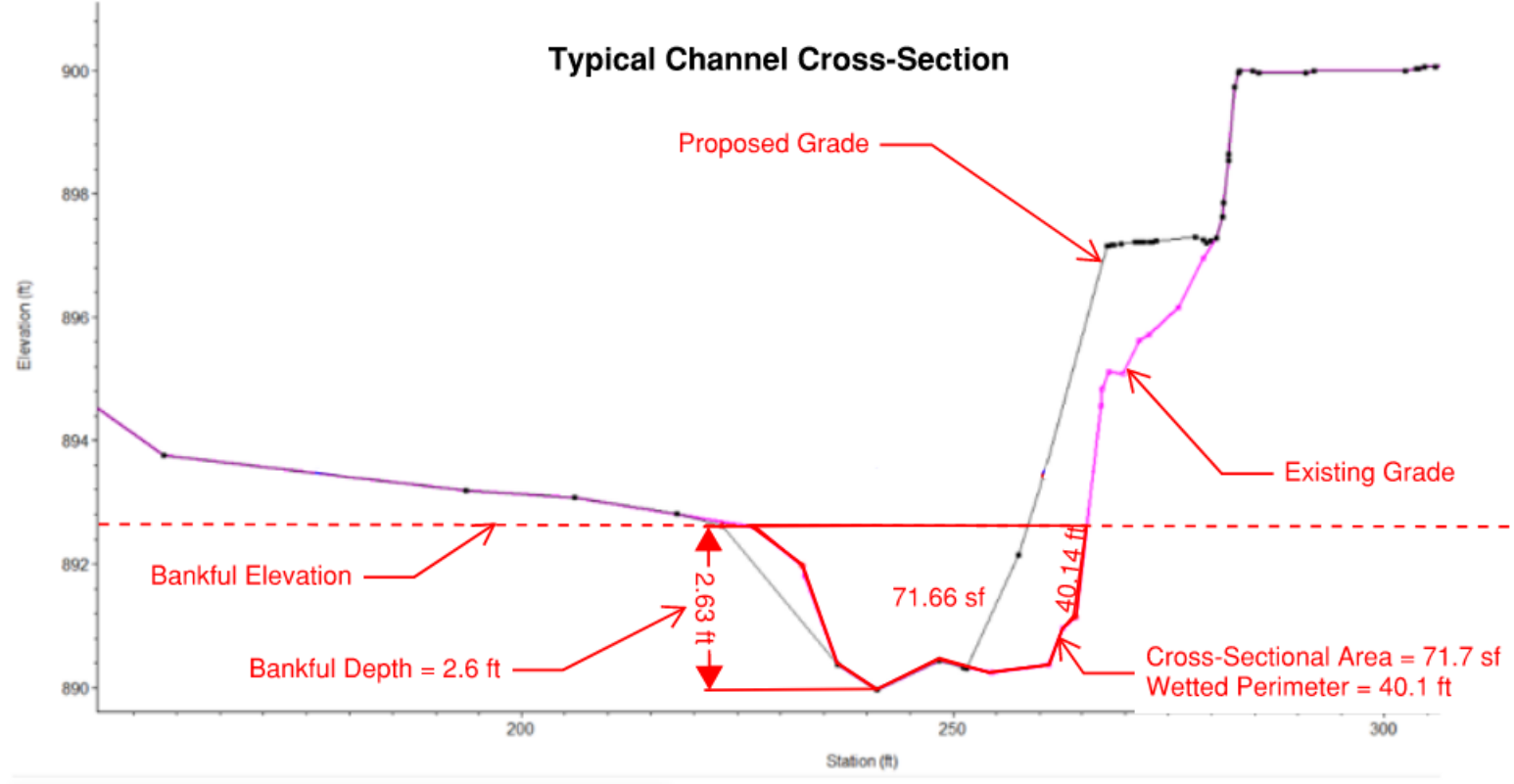
S = Slope of Channel Bottom (rise/run) *measured along stream centerline in CAD*

$$S = \frac{(891.8 - 890.0)ft}{279 ft} = 0.006$$

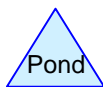
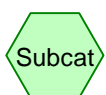
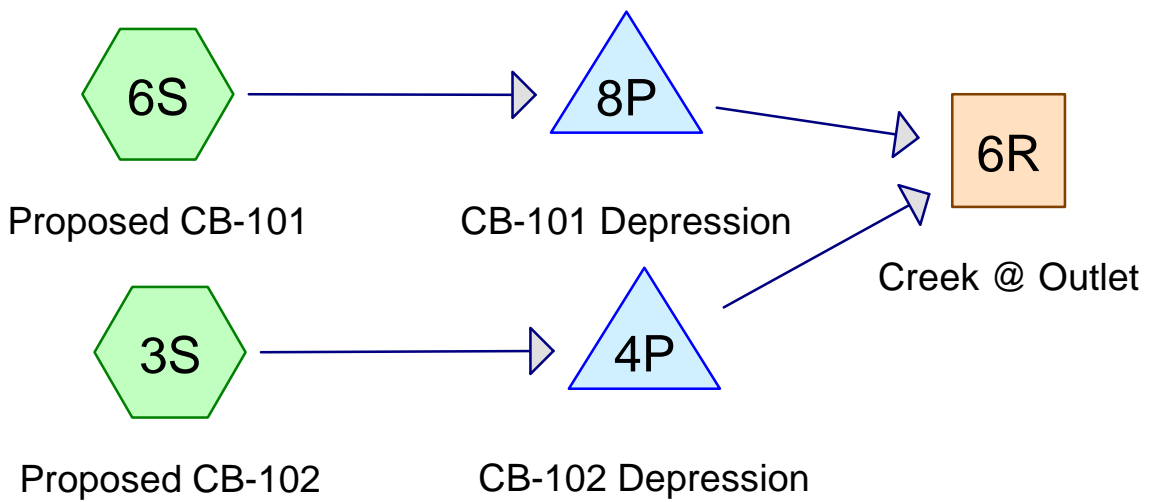
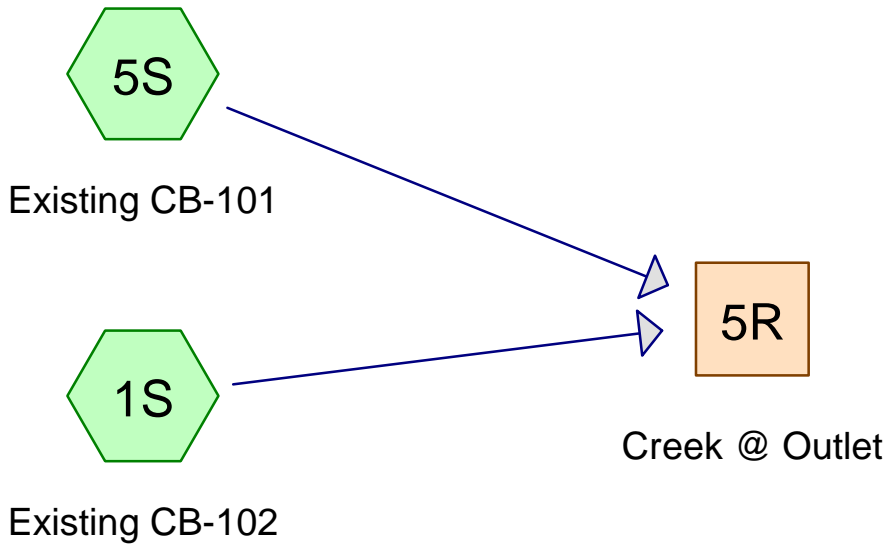
$$\tau = d * \mu * S = 2.6 * 62.4 * 0.006 = \mathbf{0.97 \text{ lbs/sf}}$$

0.97 lbs/sf corresponds to a low erosion intensity.

Typical Channel Cross-Section



ATTACHMENT 2



Routing Diagram for MCWD Cedar Greenway Trail_20260507
 Prepared by Stantec Consultants, Printed 5/7/2026
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MCWD Cedar Greenway Trail_20260507

Prepared by Stantec Consultants

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Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
0.381	82	Woods/grass comb., Fair, HSG D (1S, 3S, 5S, 6S)
0.381	82	TOTAL AREA

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
0.000	HSG C	
0.381	HSG D	1S, 3S, 5S, 6S
0.000	Other	
0.381		TOTAL AREA

MCWD Cedar Greenway Trail_20260507

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Ground Covers (all nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	0.000	0.381	0.000	0.381	Woods/grass comb., Fair	1S, 3S, 5S, 6S
0.000	0.000	0.000	0.381	0.000	0.381	TOTAL AREA	

MCWD Cedar Greenway Trail_20260507

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Pipe Listing (all nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Width (inches)	Diam/Height (inches)	Inside-Fill (inches)	Node Name
1	4P	893.50	893.01	24.0	0.0204	0.010	0.0	12.0	0.0	
2	8P	892.13	891.98	37.0	0.0041	0.010	0.0	12.0	0.0	

Time span=0.00-120.00 hrs, dt=0.01 hrs, 12001 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment 1S: Existing CB-102 Runoff Area=2,300 sf 0.00% Impervious Runoff Depth=5.36"
Flow Length=80' Slope=0.1000 '/' Tc=10.0 min CN=82 Runoff=0.43 cfs 0.024 af

Subcatchment 3S: Proposed CB-102 Runoff Area=2,300 sf 0.00% Impervious Runoff Depth=5.36"
Tc=7.0 min CN=82 Runoff=0.48 cfs 0.024 af

Subcatchment 5S: Existing CB-101 Runoff Area=6,000 sf 0.00% Impervious Runoff Depth=5.36"
Flow Length=91' Slope=0.1000 '/' Tc=11.0 min CN=82 Runoff=1.08 cfs 0.062 af

Subcatchment 6S: Proposed CB-101 Runoff Area=6,000 sf 0.00% Impervious Runoff Depth=5.36"
Tc=7.0 min CN=82 Runoff=1.26 cfs 0.062 af

Reach 5R: Creek @ Outlet Avg. Flow Depth=0.92' Max Vel=6.99 fps Inflow=59.50 cfs 575.340 af
n=0.022 L=20.0' S=0.0200 '/' Capacity=1,808.55 cfs Outflow=92.15 cfs 575.307 af

Reach 6R: Creek @ Outlet Avg. Flow Depth=0.92' Max Vel=6.99 fps Inflow=59.74 cfs 575.339 af
n=0.022 L=20.0' S=0.0200 '/' Capacity=1,808.55 cfs Outflow=92.15 cfs 575.307 af

Pond 4P: CB-102 Depression Peak Elev=896.65' Storage=0.001 af Inflow=0.48 cfs 0.024 af
Outflow=0.48 cfs 0.023 af

Pond 8P: CB-101 Depression Peak Elev=893.93' Storage=1 cf Inflow=1.26 cfs 0.062 af
Outflow=1.26 cfs 0.062 af

Total Runoff Area = 0.381 ac Runoff Volume = 0.170 af Average Runoff Depth = 5.36"
100.00% Pervious = 0.381 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 1S: Existing CB-102

Runoff = 0.43 cfs @ 12.17 hrs, Volume= 0.024 af, Depth= 5.36"
 Routed to Reach 5R : Creek @ Outlet

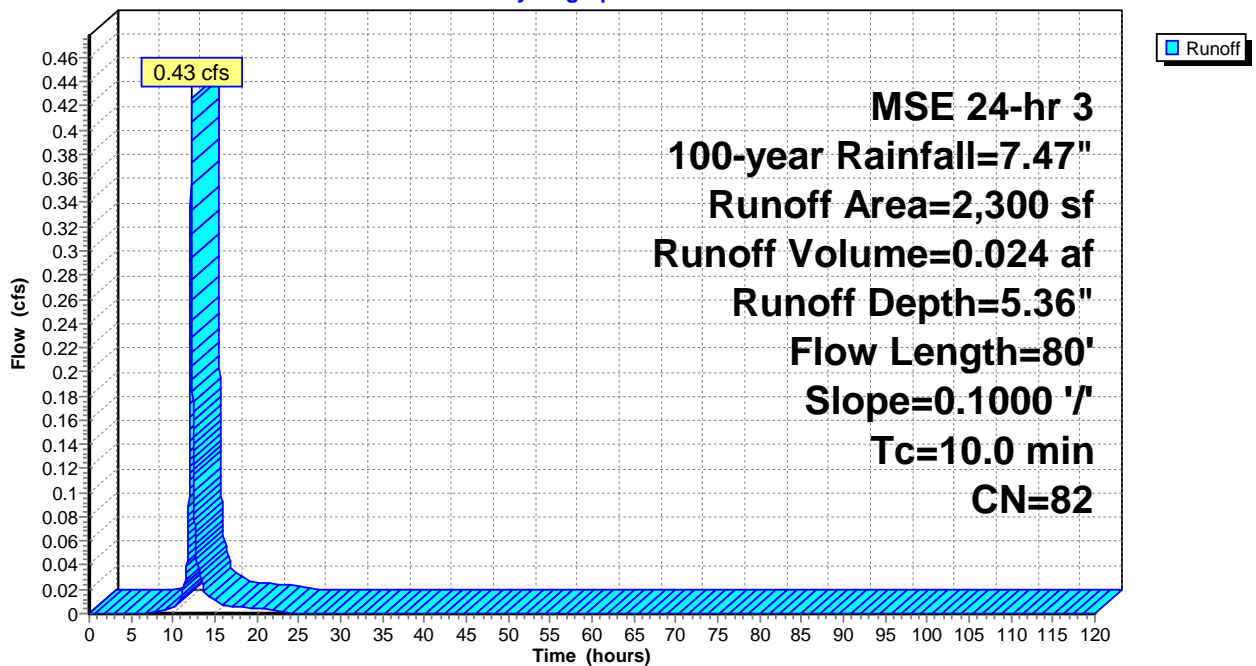
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 100-year Rainfall=7.47"

Area (sf)	CN	Description
2,300	82	Woods/grass comb., Fair, HSG D
2,300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0	80	0.1000	0.13		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.87"

Subcatchment 1S: Existing CB-102

Hydrograph



Summary for Subcatchment 3S: Proposed CB-102

Runoff = 0.48 cfs @ 12.14 hrs, Volume= 0.024 af, Depth= 5.36"
 Routed to Pond 4P : CB-102 Depression

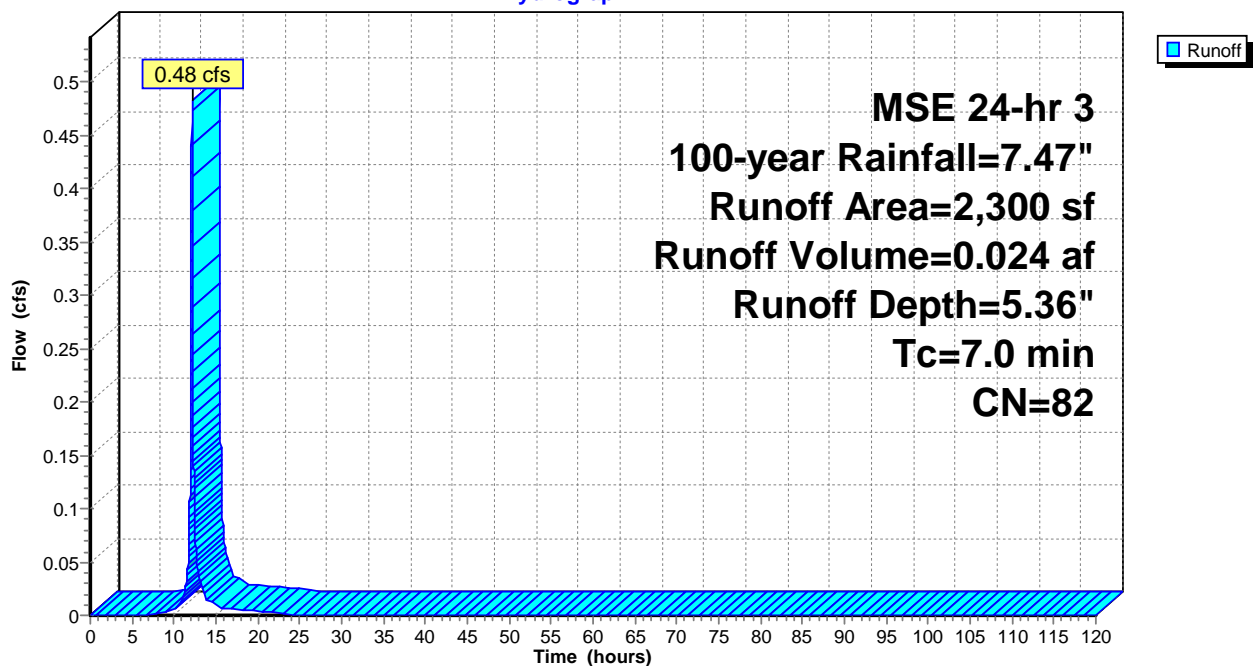
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 100-year Rainfall=7.47"

Area (sf)	CN	Description
2,300	82	Woods/grass comb., Fair, HSG D
2,300		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry, MnDOT Minimum

Subcatchment 3S: Proposed CB-102

Hydrograph



Summary for Subcatchment 5S: Existing CB-101

Runoff = 1.08 cfs @ 12.18 hrs, Volume= 0.062 af, Depth= 5.36"
 Routed to Reach 5R : Creek @ Outlet

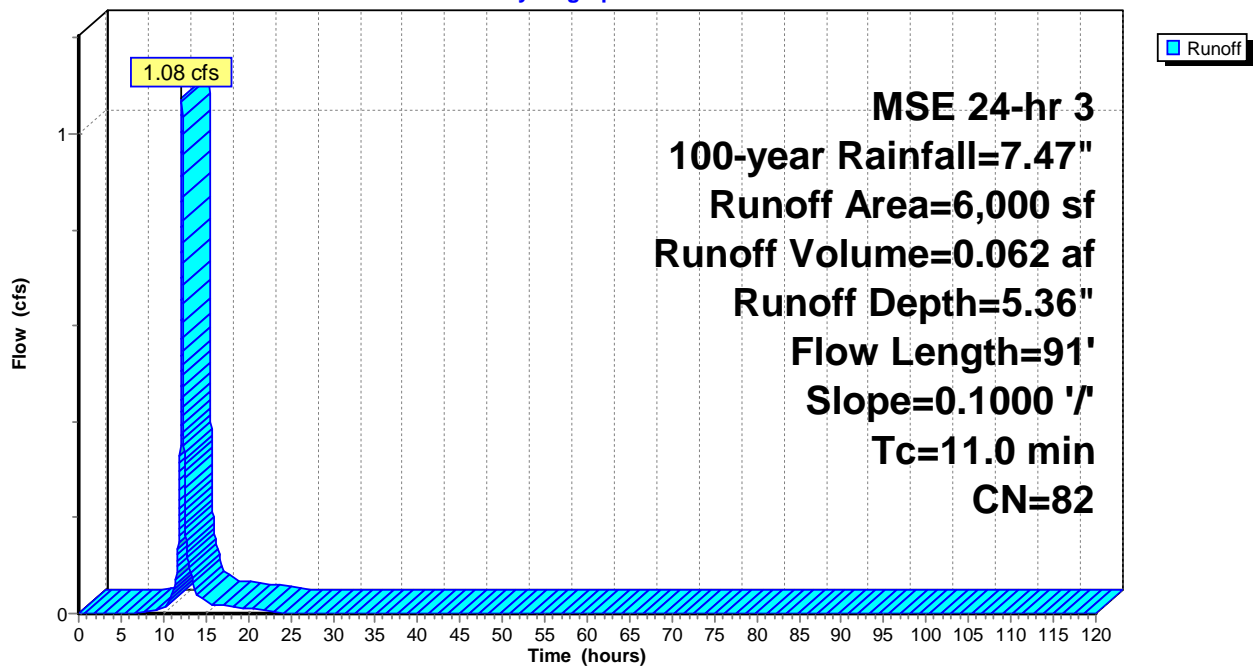
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 100-year Rainfall=7.47"

Area (sf)	CN	Description
6,000	82	Woods/grass comb., Fair, HSG D
6,000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.0	91	0.1000	0.14		Sheet Flow, Woods: Light underbrush n= 0.400 P2= 2.87"

Subcatchment 5S: Existing CB-101

Hydrograph



Summary for Subcatchment 6S: Proposed CB-101

Runoff = 1.26 cfs @ 12.14 hrs, Volume= 0.062 af, Depth= 5.36"
 Routed to Pond 8P : CB-101 Depression

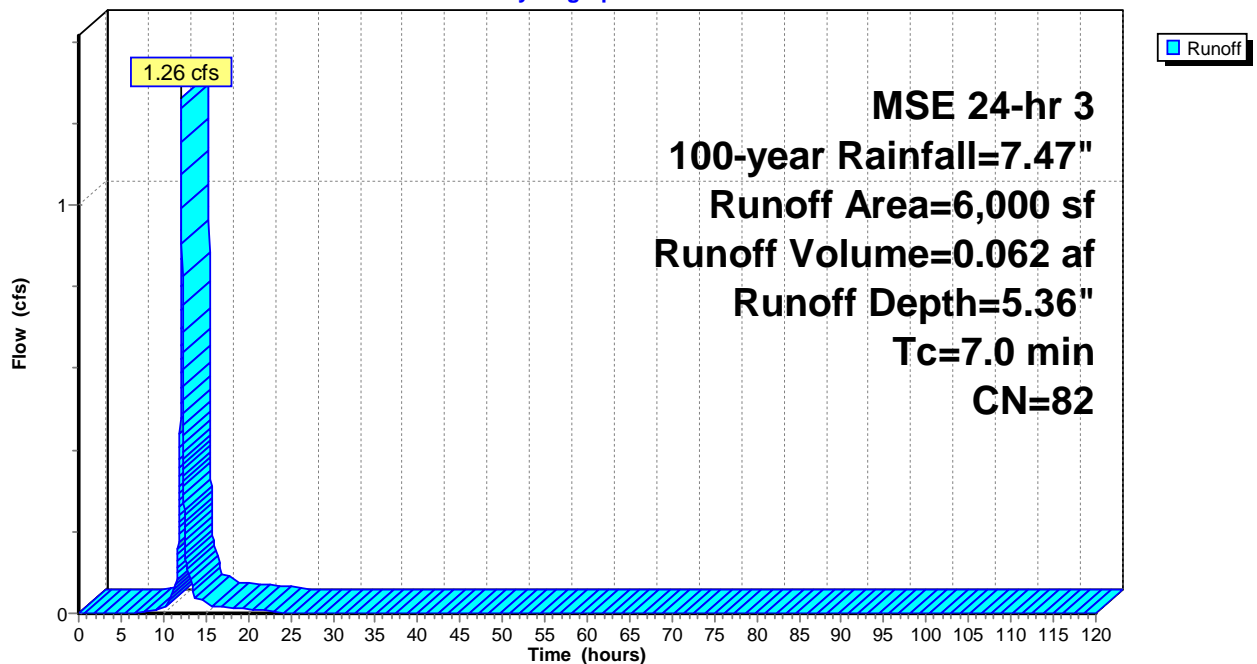
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
 MSE 24-hr 3 100-year Rainfall=7.47"

Area (sf)	CN	Description
6,000	82	Woods/grass comb., Fair, HSG D
6,000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
7.0					Direct Entry, MnDOT Minimum

Subcatchment 6S: Proposed CB-101

Hydrograph



Summary for Reach 5R: Creek @ Outlet

[88] Warning: Qout>Qin may require smaller dt or Finer Routing

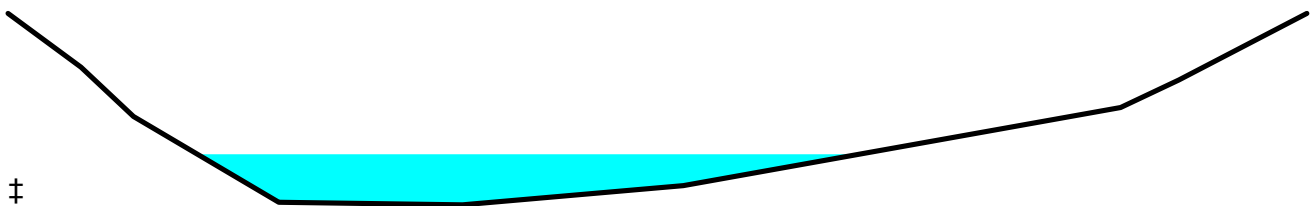
[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=9)

Inflow Area = 0.191 ac, 0.00% Impervious, Inflow Depth=233.92" for 100-year event
 Inflow = 59.50 cfs @ 12.18 hrs, Volume= 575.340 af, Incl. 58.00 cfs Base Flow
 Outflow = 92.15 cfs @ 0.01 hrs, Volume= 575.307 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
 Max. Velocity= 6.99 fps, Min. Travel Time= 0.0 min
 Avg. Velocity= 5.94 fps, Avg. Travel Time= 0.1 min

Peak Storage= 286 cf @ 0.01 hrs
 Average Depth at Peak Storage= 0.92', Surface Width= 22.68'
 Bank-Full Depth= 3.52' Flow Area= 107.1 sf, Capacity= 1,808.55 cfs

Custom cross-section, Length= 20.0' Slope= 0.0200 '/' (103 Elevation Intervals)
 Constant n= 0.022 Earth, clean & straight
 Inlet Invert= 891.68', Outlet Invert= 891.28'

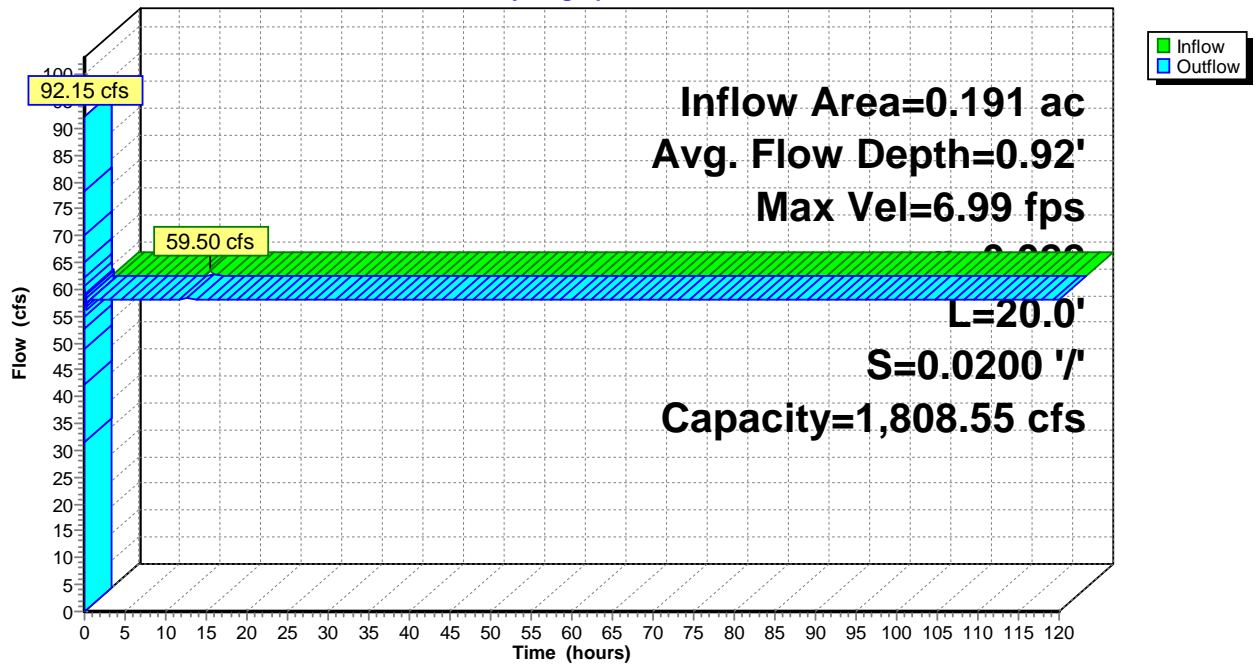


Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	895.20	0.00
2.50	894.21	0.99
4.30	893.30	1.90
9.30	891.73	3.47
15.60	891.68	3.52
23.20	892.03	3.17
38.20	893.47	1.73
40.20	893.98	1.22
44.60	895.20	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Width (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0.0	0	0.00
0.05	0.2	7.4	7.4	4	0.15
0.35	3.5	14.9	14.8	70	12.87
1.62	33.4	32.4	32.1	667	324.62
1.79	39.0	34.6	34.2	780	403.48
2.30	57.2	37.8	37.2	1,144	720.84
2.53	65.9	39.2	38.5	1,319	891.49
3.52	107.1	45.6	44.6	2,142	1,808.55

Reach 5R: Creek @ Outlet

Hydrograph



Summary for Reach 6R: Creek @ Outlet

[88] Warning: Qout>Qin may require smaller dt or Finer Routing

[85] Warning: Oscillations may require smaller dt or Finer Routing (severity=9)

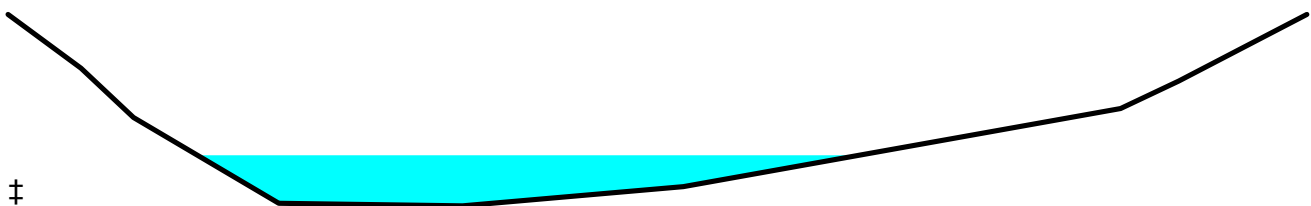
[79] Warning: Submerged Pond 8P Primary device # 2 INLET by 0.47'

Inflow Area = 0.191 ac, 0.00% Impervious, Inflow Depth=233.88" for 100-year event
 Inflow = 59.74 cfs @ 12.14 hrs, Volume= 575.339 af, Incl. 58.00 cfs Base Flow
 Outflow = 92.15 cfs @ 0.01 hrs, Volume= 575.307 af, Atten= 0%, Lag= 0.0 min

Routing by Stor-Ind+Trans method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs
 Max. Velocity= 6.99 fps, Min. Travel Time= 0.0 min
 Avg. Velocity= 5.94 fps, Avg. Travel Time= 0.1 min

Peak Storage= 286 cf @ 0.01 hrs
 Average Depth at Peak Storage= 0.92', Surface Width= 22.68'
 Bank-Full Depth= 3.52' Flow Area= 107.1 sf, Capacity= 1,808.55 cfs

Custom cross-section, Length= 20.0' Slope= 0.0200 '/' (103 Elevation Intervals)
 Constant n= 0.022 Earth, clean & straight
 Inlet Invert= 891.68', Outlet Invert= 891.28'

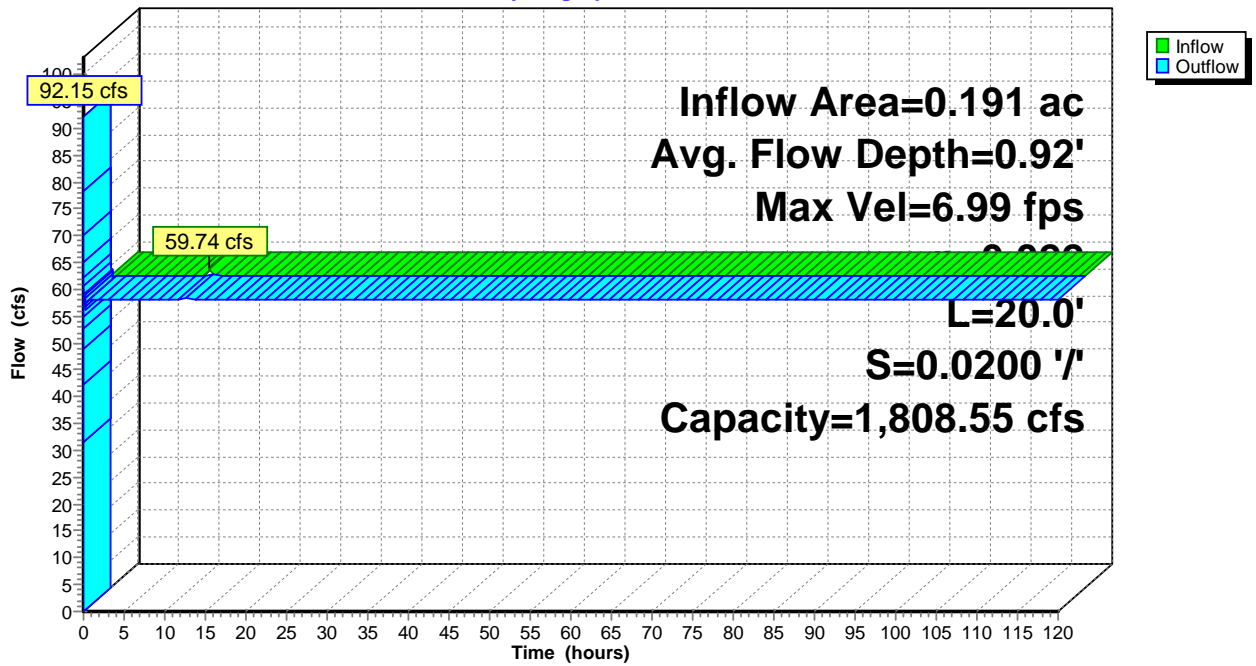


Offset (feet)	Elevation (feet)	Chan.Depth (feet)
0.00	895.20	0.00
2.50	894.21	0.99
4.30	893.30	1.90
9.30	891.73	3.47
15.60	891.68	3.52
23.20	892.03	3.17
38.20	893.47	1.73
40.20	893.98	1.22
44.60	895.20	0.00

Depth (feet)	End Area (sq-ft)	Perim. (feet)	Width (feet)	Storage (cubic-feet)	Discharge (cfs)
0.00	0.0	0.0	0.0	0	0.00
0.05	0.2	7.4	7.4	4	0.15
0.35	3.5	14.9	14.8	70	12.87
1.62	33.4	32.4	32.1	667	324.62
1.79	39.0	34.6	34.2	780	403.48
2.30	57.2	37.8	37.2	1,144	720.84
2.53	65.9	39.2	38.5	1,319	891.49
3.52	107.1	45.6	44.6	2,142	1,808.55

Reach 6R: Creek @ Outlet

Hydrograph



Summary for Pond 4P: CB-102 Depression

Inflow Area = 0.053 ac, 0.00% Impervious, Inflow Depth = 5.36" for 100-year event
 Inflow = 0.48 cfs @ 12.14 hrs, Volume= 0.024 af
 Outflow = 0.48 cfs @ 12.14 hrs, Volume= 0.023 af, Atten= 0%, Lag= 0.1 min
 Primary = 0.48 cfs @ 12.14 hrs, Volume= 0.023 af
 Routed to Reach 6R : Creek @ Outlet

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 896.65' @ 12.14 hrs Surf.Area= 0.001 ac Storage= 0.001 af

Plug-Flow detention time= 19.1 min calculated for 0.023 af (98% of inflow)
 Center-of-Mass det. time= 5.9 min (791.4 - 785.5)

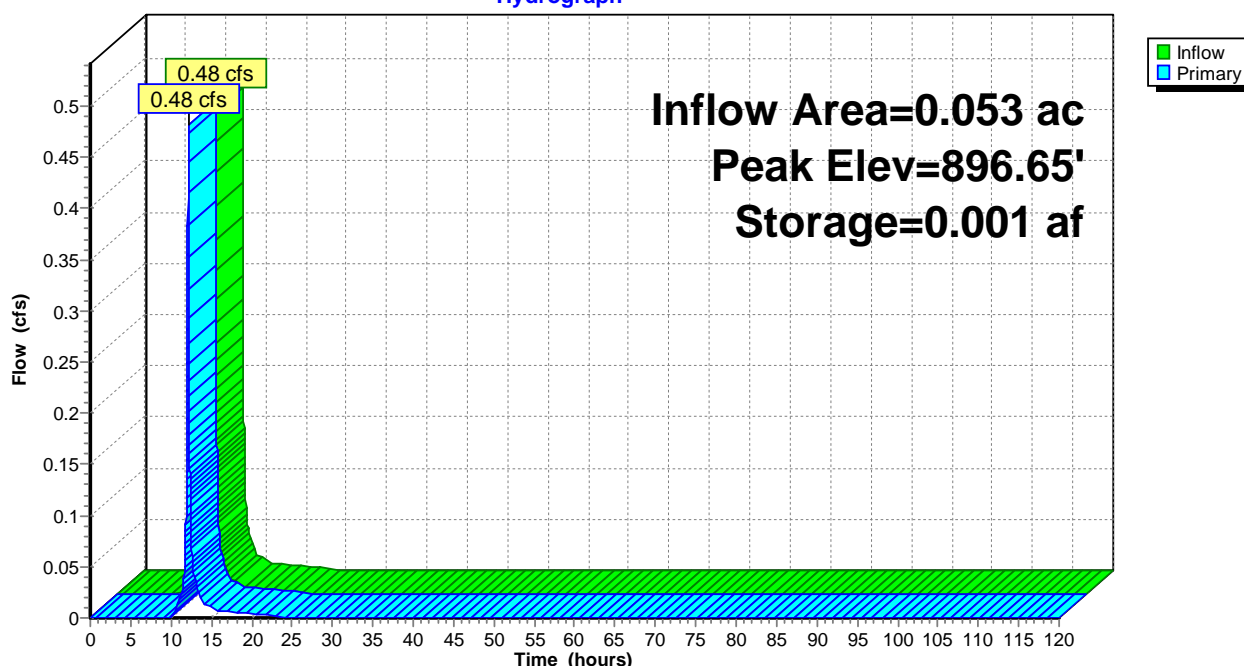
Volume	Invert	Avail.Storage	Storage Description
#1	896.00'	0.002 af	5.00'W x 7.00'L x 1.40'H Depression along Trail (frin STA 7+43 TO STA 7+50)

Device	Routing	Invert	Outlet Devices
#1	Device 2	896.57'	27.0" Horiz. CB-102 RIM C= 0.600 Limited to weir flow at low heads
#2	Primary	893.50'	12.0" Round 12" PVC Pipe L= 24.0' Ke= 0.500 Inlet / Outlet Invert= 893.50' / 893.01' S= 0.0204 '/ Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=0.48 cfs @ 12.14 hrs HW=896.65' (Free Discharge)
 ↳ **2=12" PVC Pipe** (Passes 0.48 cfs of 6.15 cfs potential flow)
 ↳ **1=CB-102 RIM** (Weir Controls 0.48 cfs @ 0.90 fps)

Pond 4P: CB-102 Depression

Hydrograph



Summary for Pond 8P: CB-101 Depression

Inflow Area = 0.138 ac, 0.00% Impervious, Inflow Depth = 5.36" for 100-year event
 Inflow = 1.26 cfs @ 12.14 hrs, Volume= 0.062 af
 Outflow = 1.26 cfs @ 12.14 hrs, Volume= 0.062 af, Atten= 0%, Lag= 0.0 min
 Primary = 1.26 cfs @ 12.14 hrs, Volume= 0.062 af
 Routed to Reach 6R : Creek @ Outlet

Routing by Stor-Ind method, Time Span= 0.00-120.00 hrs, dt= 0.01 hrs / 2
 Peak Elev= 893.93' @ 12.14 hrs Surf.Area= 12 sf Storage= 1 cf

Plug-Flow detention time= 0.0 min calculated for 0.062 af (100% of inflow)
 Center-of-Mass det. time= 0.0 min (785.6 - 785.5)

Volume	Invert	Avail.Storage	Storage Description
#1	893.80'	5 cf	Custom Stage Data (Prismatic) Listed below (Recalc)

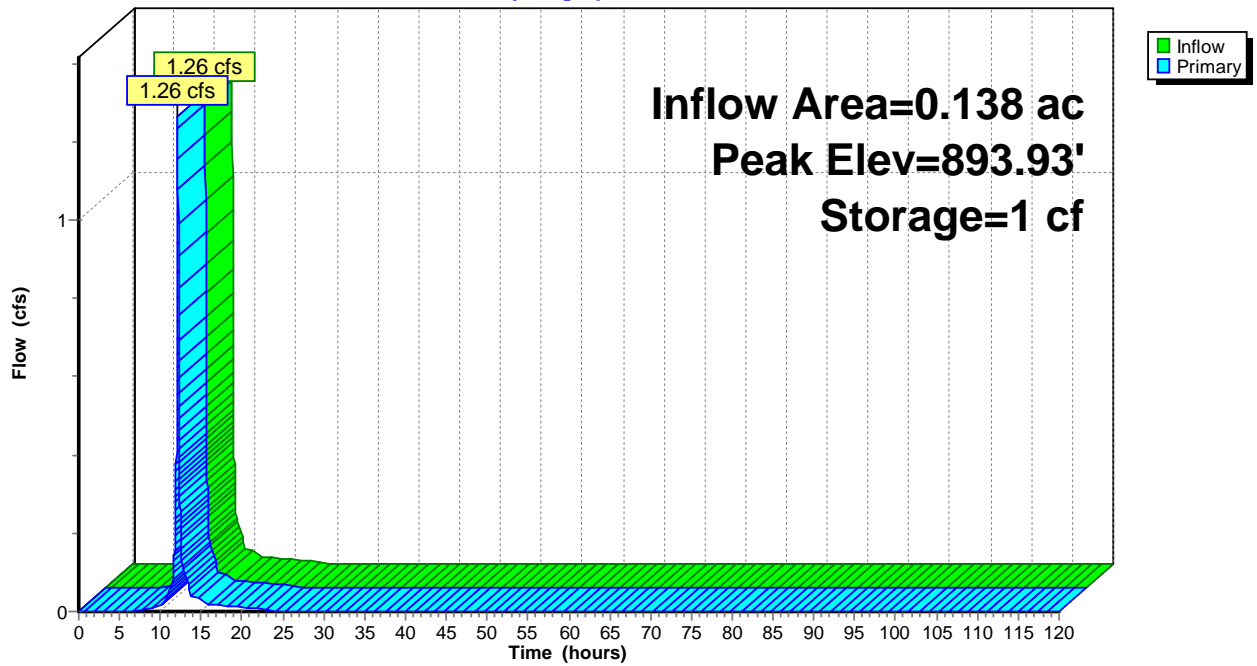
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
893.80	5	0	0
894.00	16	2	2
894.20	16	3	5

Device	Routing	Invert	Outlet Devices
#1	Device 2	893.80'	30.0" Horiz. CB-102 RIM C= 0.600 Limited to weir flow at low heads
#2	Primary	892.13'	12.0" Round 12" PVC Pipe L= 37.0' Ke= 0.500 Inlet / Outlet Invert= 892.13' / 891.98' S= 0.0041 '/ Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 0.79 sf

Primary OutFlow Max=1.26 cfs @ 12.14 hrs HW=893.93' (Free Discharge)
 ↑ **2=12" PVC Pipe** (Passes 1.26 cfs of 4.16 cfs potential flow)
 ↑ **1=CB-102 RIM** (Weir Controls 1.26 cfs @ 1.20 fps)

Pond 8P: CB-101 Depression

Hydrograph





NOAA Atlas 14, Volume 8, Version 2
Location name: Minneapolis, Minnesota, USA*
Latitude: 44.9301°, Longitude: -93.3771°
Elevation: 896 ft**
 * source: ESRI Maps
 ** source: USGS



POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffrey Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

[PF_tabular](#) | [PF_graphical](#) | [Maps_&_aerials](#)

PF tabular

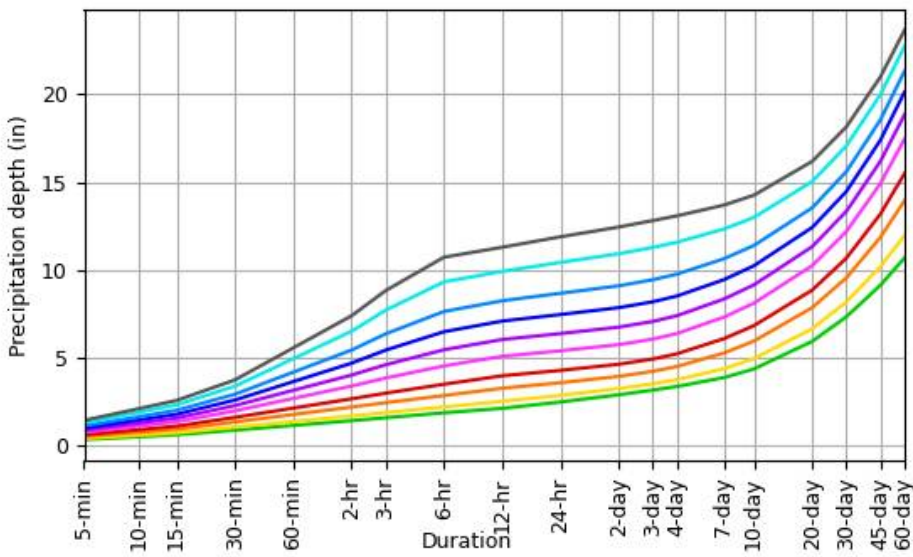
PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)¹										
Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	0.353 (0.285-0.442)	0.418 (0.338-0.524)	0.531 (0.428-0.667)	0.629 (0.504-0.793)	0.771 (0.599-1.01)	0.887 (0.671-1.17)	1.01 (0.736-1.36)	1.13 (0.794-1.56)	1.31 (0.881-1.85)	1.45 (0.946-2.06)
10-min	0.516 (0.418-0.647)	0.613 (0.495-0.768)	0.777 (0.626-0.976)	0.921 (0.738-1.16)	1.13 (0.878-1.48)	1.30 (0.983-1.71)	1.48 (1.08-1.98)	1.66 (1.16-2.29)	1.92 (1.29-2.70)	2.12 (1.39-3.02)
15-min	0.630 (0.510-0.789)	0.747 (0.604-0.936)	0.948 (0.764-1.19)	1.12 (0.900-1.42)	1.38 (1.07-1.80)	1.58 (1.20-2.09)	1.80 (1.31-2.42)	2.02 (1.42-2.79)	2.34 (1.57-3.30)	2.59 (1.69-3.68)
30-min	0.893 (0.722-1.12)	1.07 (0.862-1.34)	1.36 (1.10-1.71)	1.62 (1.30-2.04)	1.99 (1.55-2.60)	2.29 (1.74-3.02)	2.61 (1.90-3.51)	2.94 (2.06-4.04)	3.39 (2.28-4.78)	3.75 (2.45-5.34)
60-min	1.16 (0.941-1.46)	1.39 (1.12-1.74)	1.78 (1.44-2.24)	2.15 (1.72-2.71)	2.70 (2.11-3.55)	3.16 (2.40-4.19)	3.66 (2.68-4.95)	4.19 (2.94-5.80)	4.96 (3.34-7.01)	5.57 (3.64-7.93)
2-hr	1.43 (1.17-1.78)	1.70 (1.39-2.12)	2.21 (1.79-2.75)	2.68 (2.16-3.35)	3.40 (2.68-4.48)	4.02 (3.08-5.33)	4.70 (3.48-6.35)	5.45 (3.86-7.51)	6.52 (4.43-9.19)	7.40 (4.87-10.5)
3-hr	1.60 (1.31-1.98)	1.89 (1.54-2.34)	2.45 (2.00-3.05)	3.00 (2.42-3.74)	3.86 (3.07-5.08)	4.61 (3.56-6.10)	5.44 (4.05-7.34)	6.37 (4.54-8.78)	7.72 (5.28-10.9)	8.83 (5.84-12.4)
6-hr	1.88 (1.54-2.31)	2.21 (1.81-2.72)	2.86 (2.34-3.53)	3.50 (2.85-4.34)	4.54 (3.65-5.97)	5.46 (4.25-7.20)	6.49 (4.87-8.72)	7.64 (5.49-10.5)	9.32 (6.43-13.0)	10.7 (7.14-15.0)
12-hr	2.13 (1.76-2.60)	2.53 (2.09-3.09)	3.28 (2.70-4.02)	3.98 (3.26-4.90)	5.09 (4.09-6.59)	6.05 (4.72-7.88)	7.10 (5.34-9.42)	8.25 (5.96-11.2)	9.92 (6.88-13.7)	11.3 (7.58-15.7)
24-hr	2.49 (2.07-3.02)	2.87 (2.38-3.48)	3.59 (2.97-4.37)	4.29 (3.53-5.24)	5.41 (4.38-6.96)	6.39 (5.02-8.27)	7.47 (5.67-9.86)	8.68 (6.31-11.7)	10.4 (7.30-14.4)	11.9 (8.04-16.4)
2-day	2.90 (2.43-3.50)	3.26 (2.72-3.92)	3.95 (3.29-4.77)	4.64 (3.84-5.63)	5.76 (4.70-7.37)	6.75 (5.35-8.68)	7.86 (6.01-10.3)	9.10 (6.68-12.2)	10.9 (7.70-15.0)	12.4 (8.48-17.0)
3-day	3.17 (2.66-3.80)	3.53 (2.96-4.24)	4.24 (3.54-5.10)	4.94 (4.10-5.96)	6.07 (4.97-7.72)	7.07 (5.62-9.05)	8.19 (6.29-10.7)	9.45 (6.96-12.6)	11.3 (7.99-15.4)	12.8 (8.77-17.5)
4-day	3.38 (2.84-4.04)	3.76 (3.16-4.50)	4.51 (3.78-5.41)	5.24 (4.36-6.30)	6.39 (5.23-8.08)	7.40 (5.89-9.42)	8.52 (6.55-11.1)	9.77 (7.21-13.0)	11.6 (8.22-15.7)	13.1 (8.98-17.8)
7-day	3.88 (3.28-4.62)	4.39 (3.70-5.22)	5.28 (4.44-6.30)	6.10 (5.10-7.30)	7.32 (5.99-9.12)	8.35 (6.66-10.5)	9.45 (7.28-12.1)	10.6 (7.87-14.0)	12.3 (8.78-16.6)	13.7 (9.46-18.5)
10-day	4.37 (3.71-5.18)	4.96 (4.20-5.88)	5.96 (5.03-7.08)	6.84 (5.74-8.15)	8.12 (6.63-10.0)	9.16 (7.30-11.4)	10.2 (7.90-13.0)	11.4 (8.44-14.8)	13.0 (9.27-17.3)	14.3 (9.90-19.2)
20-day	5.95 (5.07-6.99)	6.67 (5.68-7.85)	7.86 (6.68-9.27)	8.86 (7.48-10.5)	10.2 (8.39-12.5)	11.3 (9.07-13.9)	12.4 (9.63-15.6)	13.5 (10.1-17.4)	15.0 (10.8-19.8)	16.2 (11.3-21.6)
30-day	7.34 (6.28-8.59)	8.19 (7.00-9.59)	9.56 (8.14-11.2)	10.7 (9.05-12.6)	12.2 (9.99-14.7)	13.3 (10.7-16.3)	14.5 (11.2-18.0)	15.6 (11.6-19.9)	17.1 (12.3-22.3)	18.1 (12.8-24.2)
45-day	9.14 (7.85-10.7)	10.2 (8.75-11.9)	11.9 (10.1-13.9)	13.2 (11.2-15.5)	14.9 (12.2-17.8)	16.2 (13.0-19.6)	17.4 (13.5-21.5)	18.5 (13.9-23.5)	20.0 (14.4-26.0)	21.0 (14.8-27.8)
60-day	10.7 (9.20-12.4)	12.0 (10.3-13.9)	14.0 (12.0-16.3)	15.5 (13.2-18.1)	17.5 (14.3-20.7)	18.8 (15.2-22.7)	20.1 (15.7-24.8)	21.3 (16.0-26.9)	22.7 (16.4-29.4)	23.6 (16.8-31.3)

¹ Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values. Please refer to NOAA Atlas 14 document for more information.

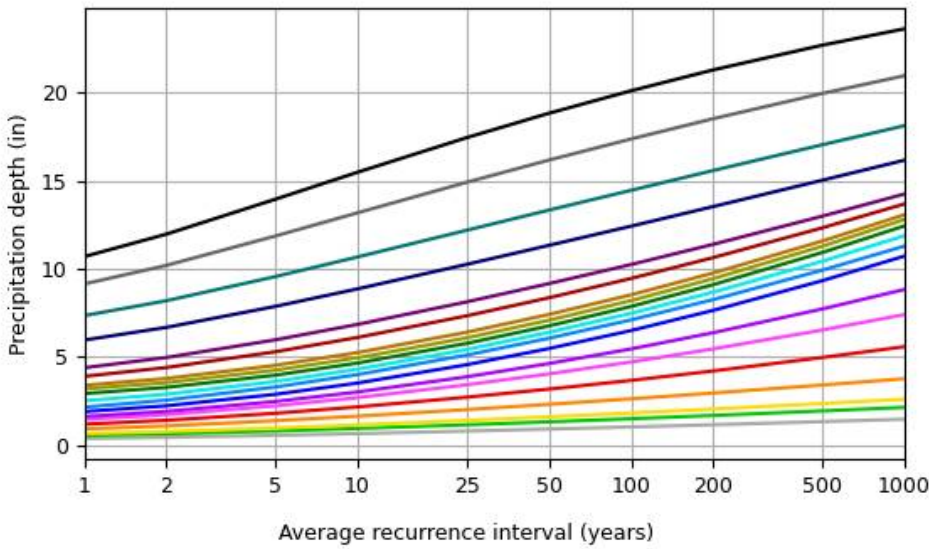
[Back to Top](#)

PF graphical

PDS-based depth-duration-frequency (DDF) curves
 Latitude: 44.9301°, Longitude: -93.3771°



Average recurrence interval (years)
1
2
5
10
25
50
100
200
500
1000

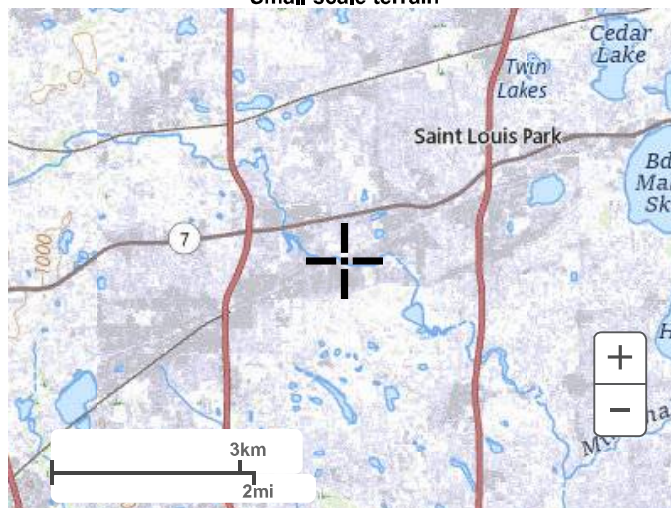


Duration	
5-min	2-day
10-min	3-day
15-min	4-day
30-min	7-day
60-min	10-day
2-hr	20-day
3-hr	30-day
6-hr	45-day
12-hr	60-day
24-hr	

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Maps & aerials

Small scale terrain



Large scale terrain



Large scale map



Large scale aerial



[Back to Top](#)

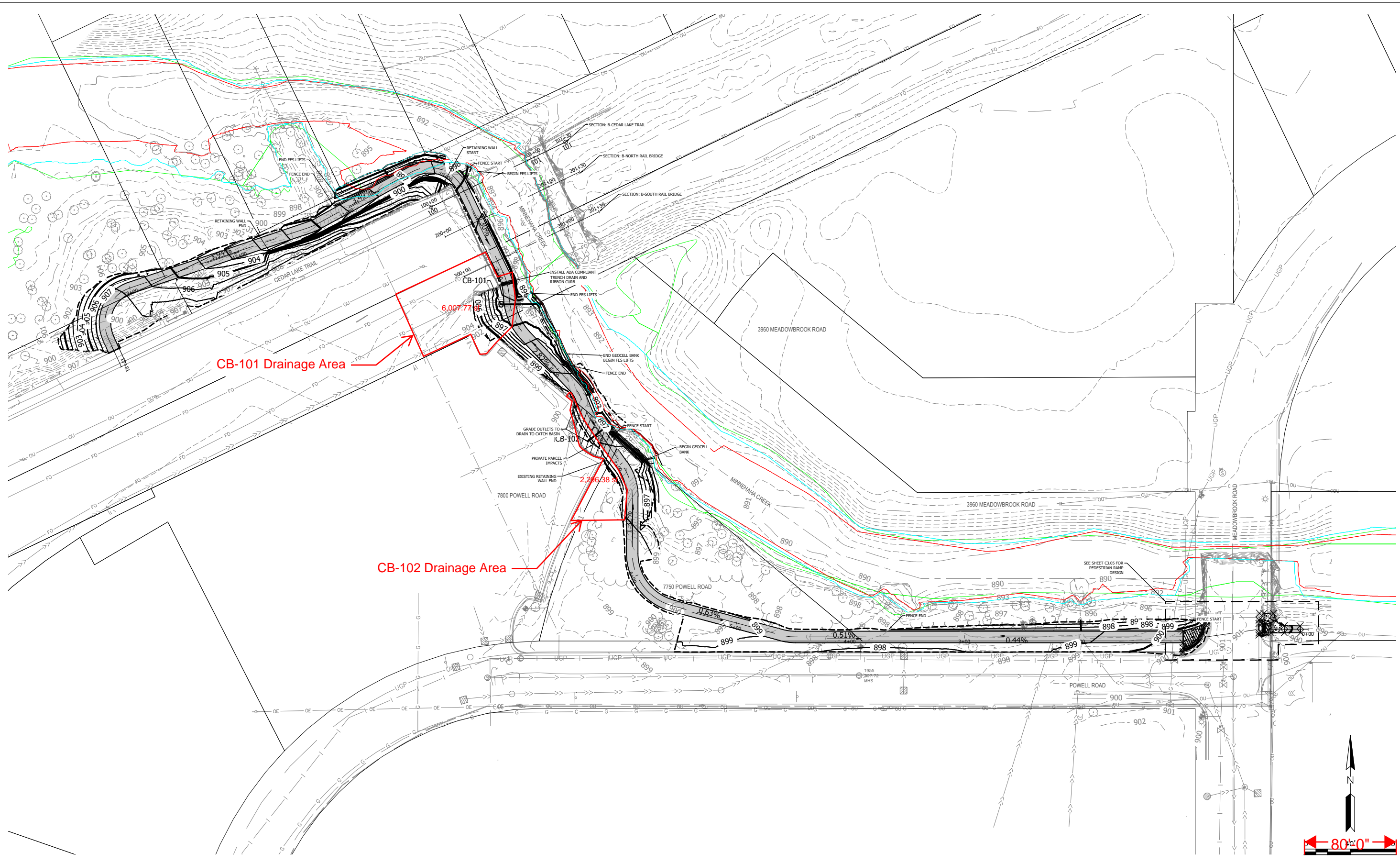
[US Department of Commerce](#)
[National Oceanic and Atmospheric Administration](#)
[National Weather Service](#)
[National Water Center](#)

1325 East West Highway
Silver Spring, MD 20910

Questions?: HDSC.Questions@noaa.gov

[Disclaimer](#)

4/23/2026 11:01:13 AM



Stantec
 ONE CARLSON PARKWAY
 SUITE 100
 PLYMOUTH, MN 55447
 PHONE: 763-252-6800
 WWW.STANTEC.COM

CLIENT:
 MINNEHAHA CREEK
 WATERSHED DISTRICT

**MCWD CEDAR-GREENWAY
 TRAIL CONNECTION**
 CITY OF SAINT LOUIS PARK
 HENNEPIN COUNTY, MINNESOTA

ISSUE NO.	PROJECT TITLE
0	
1	
2	
3	

DATE	DESCRIPTION
11/04/2022	FEASIBILITY STUDY
XXXX/2025	30% PLANS
09/22/2025	60% PLANS
04/22/2026	90% PLANS

CERTIFICATION:
 I HEREBY CERTIFY THAT THIS PLAN SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER DIRECT SUPERVISION AND IN MY FULLY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

PROJECT NO.: 227707443
 ISSUE DATE: 04/23/2026
 ISSUE NO.: 3

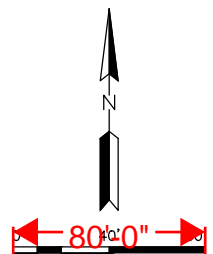
SHEET TITLE:
 OVERALL
 CONSTRUCTION
 PLAN
 SHEET NO.:
C3.01

EXISTING LEGEND

- EXISTING PROPERTY LINE
- EXISTING RETAINING WALL
- EXISTING STORM SEWER
- EXISTING STORM SEWER MANHOLE
- EXISTING STORM SEWER INLET
- EXISTING STORM SEWER INLET
- EXISTING LIGHT POLE
- EXISTING FLARED END SECTION

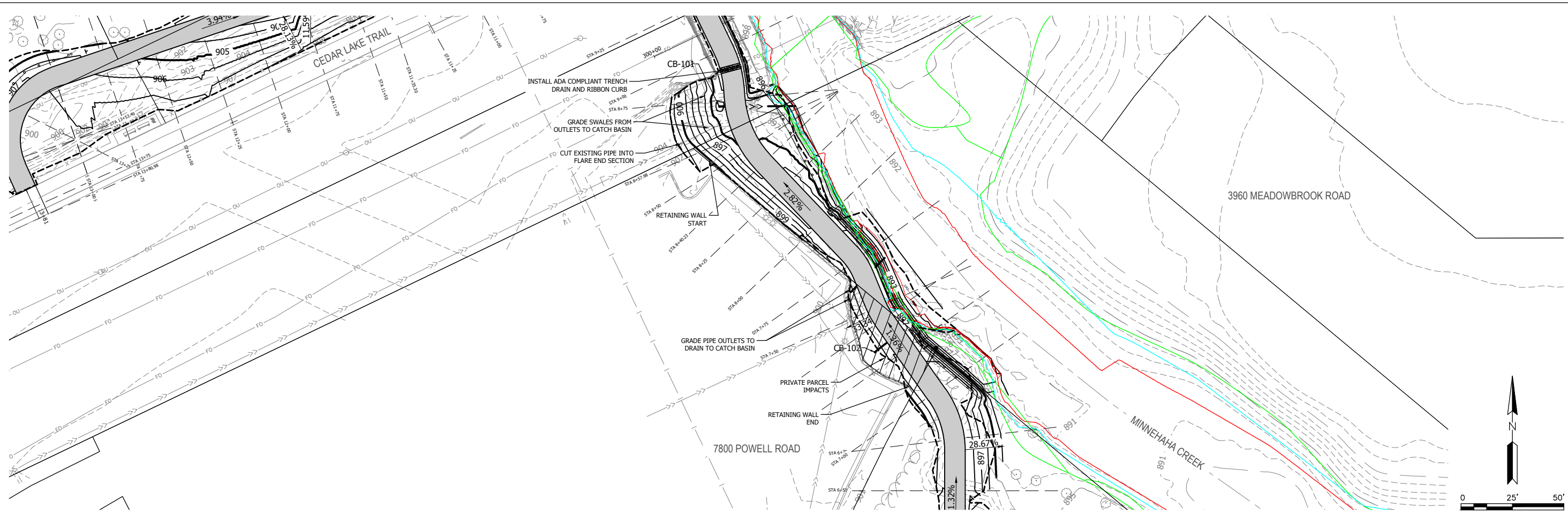
PROPOSED LEGEND

- TRAIL CENTERLINE
- CONSTRUCTION BOUNDARY
- BITUMINOUS PAVEMENT
- 6" CONCRETE SIDEWALK



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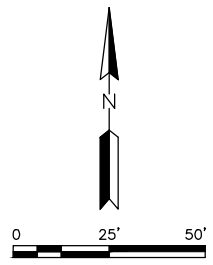
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ONE CARLSON PARKWAY
SUITE 100
PLYMOUTH, MN 55447
PHONE: 763-252-6800
WWW.STANTEC.COM

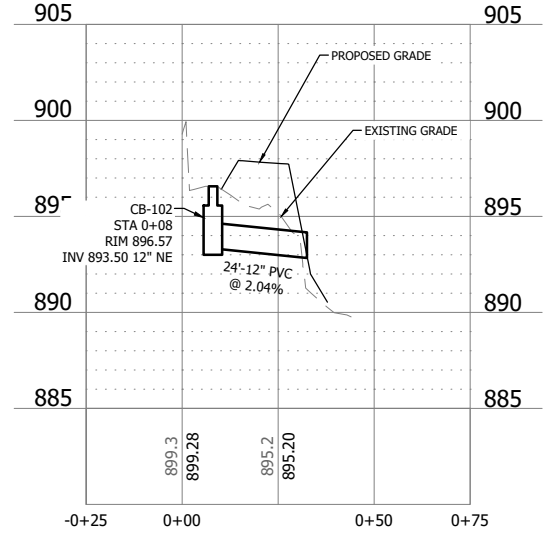


MCWD CEDAR-GREENWAY TRAIL CONNECTION
CITY OF SAINT LOUIS PARK
HENNEPIN COUNTY, MINNESOTA

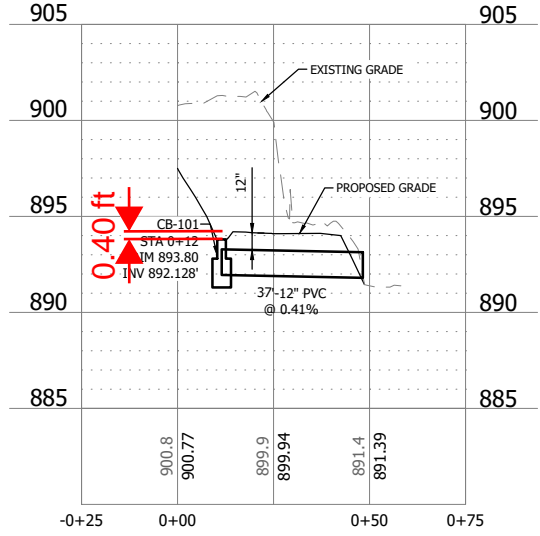


STORM SEWER STRUCTURE SCHEDULE			
STRUCTURE ID	SIZE	CASTING	STRUCTURE DESIGN
CB-101	30"	SEE DETAIL	NYOPLAST 30" BASIN
CB-102	27"	R-4342	MNDOT DESIGN H

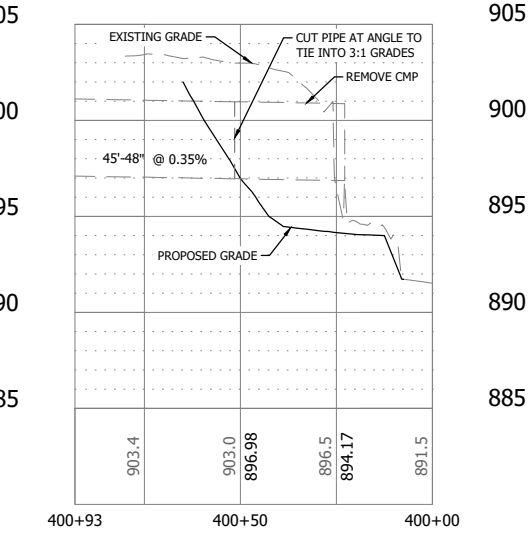
ALIGNMENT: STRM-CROSSING-TRL - STA7+50



ALIGNMENT: STRM-CROSSING-TRL-STA8+50



ALIGNMENT: STRM-CROSSING-TRL-STA8



EXISTING LEGEND

- EXISTING PROPERTY LINE
- EXISTING RETAINING WALL
- EXISTING STORM SEWER
- ZONE AE FLOODPLAIN
- FEMA FIS 100-YR
- APPROXIMATE OHWL
- ⊕ EXISTING STORM SEWER MANHOLE
- ⊙ EXISTING STORM SEWER INLET
- ⊙ EXISTING STORM SEWER INLET
- ⊙ EXISTING LIGHT POLE
- △ EXISTING FLARED END SECTION

PROPOSED LEGEND

- TRAIL CENTERLINE
- CONSTRUCTION BOUNDARY
- BITUMINOUS PAVEMENT

DATE	DESCRIPTION	ISSUE NO.	PROJECT TITLE
11/04/2022	FEASIBILITY STUDY	0	MCWD CEDAR-GREENWAY TRAIL CONNECTION
XXXX/2025	30% PLANS	1	
09/22/2025	60% PLANS	2	
04/22/2026	90% PLANS	3	

PROJECT NO.:	227707443
DWN BY:	JE
CHKD BY:	NW
APPD BY:	NW
ISSUE DATE:	04/23/2026
ISSUE NO.:	3
SHEET TITLE:	STORM SEWER PLAN AND PROFILE
SHEET NO.:	C5.01

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ATTACHMENT 3