

3235 Fernbrook Lane N • Plymouth, MN 55447  
 Tel: 763.553.1144 • Fax: 763.553.9326  
 Email: judie@jass.biz • Website: www.shinglecreek.org

November 2, 2023

Commissioners **and**  
 Technical Advisory Committee Members  
 Shingle Creek and West Mississippi  
 Watershed Management Commissions  
 Hennepin County, Minnesota

*The agenda and meeting packets are available on the Commission's web site.*

<http://www.shinglecreek.org/minutes--meeting-packets.html> **and**

<http://www.shinglecreek.org/tac-meetings.html>

Dear Commissioners and Members:

Regular meetings of the Shingle Creek and West Mississippi Watershed Management Commissions will be held Thursday, November 9, 2023, at Plymouth Community Center, 14800 34th Avenue North, Plymouth, MN.

Lunch will be served at 12:00 noon and the meetings will convene concurrently at 12:45.

**The Technical Advisory Committee (TAC) will meet prior to the regular meeting, at 11:30.**

Please make your meal choice from all of the items below and email me at [judie@jass.biz](mailto:judie@jass.biz) to confirm your attendance and your meal selection by **noon, Tuesday, November 7, 2023**. Thank you.

Regards,

Judie A. Anderson  
 Administrator

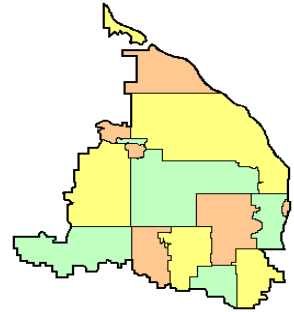
cc: Alternate Commissioners      Member Cites      Troy Gilchrist      TAC Members  
 Stantec Consulting Services      BWSR      MPCA      HCEE

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**Order your deli sandwich box lunch. Sandwiches come with lettuce, tomato and mayo. As an alternative you may specify your sandwich with **wheat bread** or as an **unwich** (lettuce wrapped).**

- |  |                                |
|--|--------------------------------|
| <b>1</b> Pepe – Ham and cheese   | <b>2</b> Big John – Roast beef |
| <b>3</b> Totally Tuna – Tuna salad and cucumber  | <b>4</b> Turkey Tom – Turkey   |
| <b>5</b> Vito – salami, capocollo, cheese, onion, oil and vinegar, oregano-basil (no mayo) |                                |
| <b>6</b> The Veggie – double cheese, avocado spread, cucumber                              |                                |
| <b>14</b> Bootlegger Club – Roast beef and turkey  |                                |

**Please also indicate: your cookie preference: Chocolate Chip or Oatmeal Raisin and your beverage preference: (W) Water (C) Coke (DC) Diet Coke (S) Sprite (N) None**



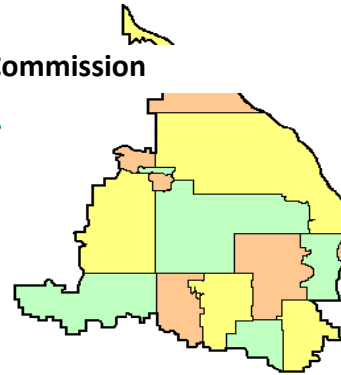
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A combined regular meeting of the Shingle Creek (SC) and West Mississippi (WM) Watershed Management Commissions will be convened Thursday, November 9, 2023, at 12:45 p.m. Agenda items are available at <http://www.shinglecreek.org/minutes--meeting-packets.html>. *Black typeface denotes SCWM items, blue denotes SC items, green denotes WM items.*

**A G E N D A**  
**November 9, 2023**

1. Call to Order.
  - SCWM a. Roll Call.
  - ✓ SCWM b. Approve Agenda.\*
  - ✓ SCWM c. Approve Minutes of Last Meeting.\*
2. Reports.
  - ✓ SC a. Treasurer’s Report and Claims\*\* - voice vote.
  - ✓ WM b. Treasurer’s Report and Claims\*\* - voice vote.
- SCWM 3. Open forum.
4. Project Reviews.
- SC 5. Water Quality.
  - SC a. Eagle Lake SWA presentation.\*
  - SC b. Gaulke Pond presentation.\*
6. Grant Opportunities.
7. Education and Public Outreach.
  - SCWM a. Next WMWA meeting – via zoom. 8:30 a.m., Tuesday, November 14, 2023.
- SCWM 8. Communications.
  - SCWM a. Communications Log.\*
  - b. Staff Report.\*
    - 1) Highway 252/94 EIS Review.      2) Crystal Lake.
    - 3) Meadow Lake.                        4) Eagle Lake SWA.
    - 5) Gaulke Pond SWA.                    6) SC Brookdale Park Remeander,
    - 7) SC Trail Bank Stab., Fish Access. 8) Miss. Bank Stab. Feas. Study.
    - 9) Grant project status.
  - SCWM c. Hennepin County Green Notes.\*
- SCWM 9. Other Business.
- SCWM 10. Adjournment

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 \* In meeting packet or emailed    \*\* Supplemental email / Available at meeting  
 \*\*\* Previously transmitted       \*\*\*\* Available on website    ✓ Item requires action



**REGULAR MEETING MINUTES  
 October 12, 2023**

(Action by the SCWMC appears in blue, by the WMWMC in green and shared information in black.  
 \*indicates items included in the meeting packet.)

I. A joint meeting of the Shingle Creek Watershed Management Commission and the West Mississippi Watershed Management Commission was called to order by Shingle Creek Chairman Andy Polzin at 12:46 p.m. on Thursday, October 12, 2023, at Plymouth Community Center, 14800 34th Avenue North, Plymouth, MN.

Present for Shingle Creek: David Mulla, Brooklyn Center; Greg Spoden, Brooklyn Park; Burt Orred, Jr., Crystal; Karen Jaeger, Maple Grove; Ray Schoch, Minneapolis; Bill Wills, New Hope; John Roach, Osseo; Andy Polzin, Plymouth; and Wayne Sicora, Robbinsdale.

Present for West Mississippi: David Mulla, Brooklyn Center; Melissa Collins, Brooklyn Park; Gerry Butcher, Champlin; Karen Jaeger, Maple Grove; and John Roach, Osseo.

Also present were: Mitch Robinson, Brooklyn Park; Randy Bergstrom and Mark Ray, Crystal; Derek Asche, Maple Grove; Bob Grant and Nick Macklem, New Hope; James Kelly, Osseo; Amy Riegel, Plymouth; Wendy Scherer, Robbinsdale; Todd Shoemaker and Katie Kemmitt, Stantec; Troy Gilchrist, Kennedy & Graven; and Judie Anderson, JASS.

**II. AGENDAS AND MINUTES.**

Motion by Schoch, second by Spoden to approve the **Shingle Creek agenda**. \* Motion carried unanimously.

Motion by Jaeger, second by Collins to approve the **West Mississippi agenda**. \* Motion carried unanimously.

Motion by Schoch, second by Spoden to approve the **minutes\* of the September 14, 2023, regular meeting and public hearing**. Motion carried unanimously.

Motion by Roach, second by Jaeger to approve the **minutes\* of the September 14, 2023, regular meeting and public hearing**. Motion carried unanimously.

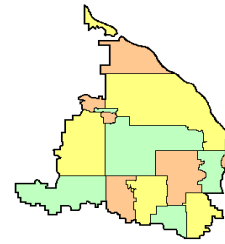
**III. FINANCES AND REPORTS.**

A. Motion by Schoch, second by Spoden to approve the Shingle Creek **October Treasurer's Report\* and claims** totaling \$73,890.38. Voting aye: Mulla, Spoden, Orred, Jaeger, Schoch, Wills, Roach, Polzin, and Sicora; voting nay: none.

B. Motion by Jaeger, second by Butcher to approve the **West Mississippi October Treasurer's Report\* and claims** totaling \$15,167.56. Voting aye: Mulla, Collins, Butcher, Jaeger, and Roach; voting nay: none.

**IV. OPEN FORUM.**

**V. OLD BUSINESS.**



## VI. NEW BUSINESS.

**A. Highway 252/94 EIS Process.\*** During 2023, the cost to review and participate in the Highway 252/94 EIS process has cost both the [Shingle Creek Watershed Management Commission \(SCWMC\)](#) and the [West Mississippi Watershed Management Commission \(WMWMC\)](#) approximately \$12,000 each. These expenditures were not planned for in their 2023 budgets, so the “Project Review” line-item amounts of [\\$30,000](#) and [\\$25,000](#), respectively, have now been exceeded. Staff recommends increasing those line-item amounts to [\\$45,000](#) and [\\$40,000](#), respectively, to account for previous and upcoming costs to review the Highway 252/94 EIS.

As directed by the Commissions, Staff have led and coordinated review of the Minnesota Department of Transportation (MnDOT) Environmental Impact Statement (EIS) process for the proposed project. This long and linear project requires a more extensive project review than most conducted by the Commissions; therefore, they have directed Staff to be very involved in the EIS review process, especially given the magnitude and the potential environmental impacts of the project.

To date, Staff have led five Commission Subgroup meetings to discuss the Highway 252/I-94 project purpose and need, the Commissions’ role and authority, project updates and concerns, and selection criteria used to evaluate the project build alternatives. They have reviewed the EIS Scoping Document (SD) and Draft Scoping Decision Document (DSDD); attended virtual public meetings hosted by MnDOT; researched and recommended an approach to evaluate impacts on groundwater resources; and drafted two rounds of comments on behalf of the Commissions.

At the May joint Commission meeting, Staff noted the total review cost at that time and indicated that an increase to the Project Review budget may be necessary. Also at the May meeting, both Commissions directed Staff to continue their involvement through the EIS process.

The Final Scoping Decision Document (SDD) was released to Participating Agencies on October 2, 2023. For each Commission, the \$3,000 difference between costs incurred to date (\$12,000) and the requested budget increase (\$15,000) will be used to review the Final SDD and coordinate one or two meetings with the Commissions’ Subgroup.

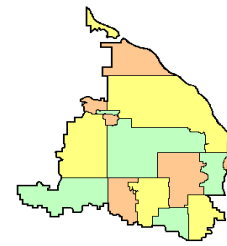
If approved, Staff suggest funding the \$15,000 Project Review increases using the Commissions’ unrestricted reserve accounts. At the end of 2022, the accounts had balances of [\\$69,260 \(Shingle Creek\)](#) and [\\$120,902 \(West Mississippi\)](#).

*Motion by Schoch, second by Mulla to approve the Shingle Creek transfer of funds as described above. Motion carried unanimously.*

*Motion by Butcher, second by Collins to approve the West Mississippi reallocation of funds as described above. Motion carried unanimously.*

**B. Project Review WM2023-04 Riverway Church, Champlin.\*** Construction of a church and parking lot on a 7.46-acre site located north of 117th Avenue North, east of Champlin Drive, and west of Highway-169. Following development, the site will be 39 percent impervious with 2.88 acres of impervious surface, an increase of 2.88 acres. The 2.88 acres of impervious includes 0.70 acres for building expansion and is accounted for in the stormwater management calculations. The complete project application was received on August 30, 2023.

Commission rules require the site to abstract 1.1 inches of runoff from new and reconstructed impervious area within 48 hours. The site is in the Drinking Water Supply Management (DWSMA) Emergency Response Area, which prohibits infiltration of stormwater runoff. The new, future, and reconstructed impervious



area on this site is 2.88 acres, which requires filtration of 20,932 cubic feet within 48 hours. The applicant proposes to construct a filtration basin and underground storage with a manufactured treatment device (MTD) at the outlet. A breakdown of the filtration volume requirements for the practices is provided below. The applicant meets Commission volume control requirements.

The amount of proposed impervious is 125,469 ft<sup>2</sup>.

Volume retention required for infiltration:

$$125,469 \text{ ft}^2 \times 1.1 \text{ inches} \times 1 \text{ ft}/12 \text{ inches} = 11,501 \text{ ft}^3$$

Volume retention required for filtration:

$$11,501 \text{ ft}^3 \times 1.82 \text{ credit factor} = 20,932 \text{ ft}^3$$

To comply with the Commission's water quality treatment requirement, the site must provide treatment so there is no net increase in TP or TSS from pre- to post-development land cover. Meeting the filtration requirement is considered sufficient to provide a similar level of treatment.

The applicant has provided sufficient information to show the filtration volume requirement is met. The applicant meets Commission water quality treatment requirements.

Commission rules require that site runoff is limited to predevelopment rates for the 2-, 10-, and 100-year, 24-hour, and 100-year, 10-day critical storm event. A majority of the runoff from the site is routed to a filtration basin with the remaining to an underground system. The two systems outlet to an existing wetland that discharges northeast on Champlin Drive. The applicant meets Commission rate control requirements.

The erosion control plan includes a rock construction entrance, perimeter silt fence, silt fence surrounding filtration basin, inlet protection, rip rap at inlets, slope checks, and native seed specified on the pond slopes. The erosion control plan meets Commission requirements.

The National Wetlands Inventory identifies two probable wetlands in the northeast half of the site. The onsite wetland delineation approved by the LGU (City of Champlin) identified one jurisdictional wetland. The applicant does not propose any impacts to the wetland. Wetland buffers a minimum of 20 feet in width and averaging 30 feet in width are provided. The applicant meets Commission wetland requirements.

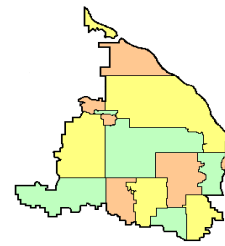
There are no Public Waters on this site. The applicant meets Commission Public Waters requirements. There is no FEMA-regulated floodplain on this site. The low floor elevations of the buildings are at least two feet higher than the high water elevation of the filtration basin according to Atlas 14 precipitation. The applicant meets Commission floodplain requirements.

The site is located in a Drinking Water Management Area and within the Emergency Response Area. Therefore, infiltration is not permitted. The applicant proposes alternative compliance under rule D.3(g)(2)(i). The applicant meets Commission drinking water protection requirements.

A public hearing on the project was conducted on August 16, 2021, as part of Planning Commission and City Council review of this project, meeting Commission public notice requirements.

A draft Operations & Maintenance (O&M) agreement between the applicant and the City of Champlin was not provided.

Motion by Butcher, second by Collins to advise the City of Champlin that project WM2023-04 is approved with the following conditions:



1. Demonstrate by double ring infiltrometer or witness test that the filtration basin can meet the design filtration rate of 0.8 inches/hour.
2. Provide a complete O&M agreement between the applicant and the City of Champlin for all stormwater facilities on the project site. Consistent with the *MN Stormwater Manual*, operation and maintenance actions for the JellyFish unit shall satisfy Tier 2 requirements outlined in the Manual:
  - a. Evidence of a contract with a qualified vendor to conduct maintenance.
  - b. Expected maintenance intervals based on annual runoff volume and sediment loading to each device with a maximum maintenance interval of one year.
  - c. Expected filter media replacement interval.
  - d. Cost estimate for maintenance and replacement of the filter media.
3. Provide project-specific details for the JellyFish unit to verify HydroCAD calculations. The “site specific data requirements” are blank on the “Jellyfish JPPD0806 Standard Detail” exhibit.
4. Add a fourth access port to the north corner (near OCS-2) of the 48” underground system. An access port here provides easier access to the system outlet pipe.

Further, during their review, the Commissioners noted the site’s proximity to the Elm Creek Park Reserve and encourages City staff to work with the applicant to ensure that other natural resources/endangered species approvals/protections (i.e., northern long eared bat, Blandings turtle, rusty patch bumblebee) are in place.

*Motion carried unanimously.*

## VII. WATER QUALITY.

Kemmitt provided an update\* and short presentation on 2023 activities for three grant-funded lake management projects: the Crystal Lake Management Plan (319 grant), Meadow Lake Drawdown and Management Plan (WBIF and CWF grant) , and the Bass Lake Vegetation Improvements (CPL grant).

**Crystal Lake Management Plan.** Water quality and carp reduction numbers were presented, as well as options for future management. Crystal Lake intensive monitoring and management began in 2020. Three years of carp removals and two alum treatments have occurred. Sampling to evaluate project success included vegetation surveys, sediment coring, and water quality monitoring.

**Meadow Lake Drawdown and Management Plan.** Summer 2023 activities were summarized. Water quality and vegetation data following the spring alum and herbicide treatments were also presented. Meadow Lake underwent a full lake drawdown in 2021-2022. The lake has since received an alum treatment to reduce nutrients and an herbicide treatment to treat the aquatic invasive species curly-leaf pondweed.

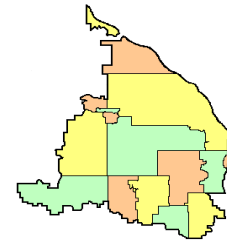
**Bass Lake Vegetation Improvements.** A summary of the project and final vegetation survey data was presented. In 2022, staff and volunteers harvested and transplanted desirable vegetation species to Bass Lake to improve diversity of the aquatic plant community. They monitored the transplants and completed a lake-wide vegetation survey in 2023.

The presentation will be posted to the Shingle Creek website for future viewing.

## VIII. GRANT OPPORTUNITITES.

Applications are being accepted through November 14, 2023, for Hennepin County **Good Steward Grants**.\* Good Steward Grants are primarily for smaller projects that improve water quality, enhance natural areas and promote environmental stewardship to the community. A typical grant amount is \$10,000 to \$20,000, with a





maximum amount of \$25,000. All landowners are eligible to apply, including individuals, nonprofit and non-governmental organizations, local government agencies, and businesses.

**IX. EDUCATION AND PUBLIC OUTREACH.**

**A. WMWA met on October 10, 2023, to discuss ongoing initiatives:**

**1. Joint Education and Outreach Coordinator** Grace Barcelow presented work plans for two initiatives of focus over the coming year. The first is outreach and site improvements at Southgate Apartments in Bloomington adjacent to Smith Park and Smith Pond, contracting with Metro Blooms. This will be similar to the Partnership Grant projects in Shingle Creek at multi-family developments in Brooklyn Park spearheaded by Metro Blooms.

The second initiative is a focused outreach effort with faith-based communities on proper chloride management. This is part of the Low Salt No Salt strategy of building a grass-roots campaign to educate people where they worship and live so they can build demand for similar actions where they work and shop. Phase 1 of this campaign is to develop and implement chloride management plans at ten houses of worship in the five watersheds. Barcelow is currently accepting referrals to congregations that may want to participate and developing initial materials. She is especially looking for congregations with a strong sustainability or environmental mission. On-site consultations with congregation representatives and city staff will be scheduled for next spring. Following successful completion of Phase 1 by fall 2024, this program will be expanded to other strategic locations with a second round of congregations.

Staff and TAC members continue to discuss options for workshops or other projects within Shingle Creek/West Mississippi.

**2. Watershed Prep.** WMWA educator Jessica Sahu-Teli is continuing to provide classroom lessons this fall, which is usually not as busy as the spring. The number of students served is approaching pre-pandemic levels. As this program is growing in popularity and expanding beyond the 4<sup>th</sup>/5<sup>th</sup> grade into work with middle schools and sometimes high schools, WMWA may propose a budget increase for 2025. The program is currently funded at \$16,000 shared among four WMOs. As a side note, Sahu-Teli recently took on the challenge of working as a part-time education and outreach contractor with Freshwater Society focused on recruiting more K-12 students into water resources and watershed-related careers.

**B. The West Metro Water Alliance (WMWA) will meet via Zoom at 8:30 a.m., November 14, 2023.**

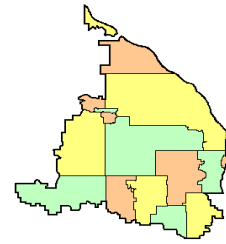
**X. COMMUNICATIONS.**

**A. September Communications Log.\*** No items required action.

**B. October Staff Report.\***

**1. Highways 252/94 EIS Review.** The Federal Highway Administration (FHWA) and Minnesota Department of Transportation (MnDOT) released the Final Scoping Decision Document (SDD) to Participating Agencies on October 2, 2023. The Final SDD includes responses to public and agency comments received during the scoping comment period and identifies alternatives to be studied in the EIS. HDR, on behalf of FHWA and MnDOT will be hosting a virtual meeting on October 12, 2023, to provide an overview of the responses prepared as part of the Scoping Decision Document. Staff will attend that meeting, review the Final SDD, and then coordinate a meeting of the Commission subgroup to discuss the document and next steps.

**2. Meadow Lake.** Staff have worked with the Board of Water and Soil Resources (BWSR) to extend the Meadow Lake Clean Water Fund Projects and Practices grant through the end of 2024, one year longer



than originally planned. The grant extension will allow the Commission to spend more grant funds on monitoring and adaptive management. Staff collected post-alum treatment sediment cores on October 4th, 2023, to evaluate the impact of the alum treatment on sediment phosphorus release rate. Staff have also been collecting water quality data in September to supplement CAMP volunteer water quality monitoring.

**3. Eagle Lake Subwatershed Assessment.** The City of Maple Grove is working on a concurrent study of Cedar Island Lake. When completed, and with the Eagle Lake Subwatershed Assessment, Staff will have a better picture of inputs and impact of upstream lakes on Eagle Lake. They have prioritized potential projects based on water quality impact and cost and will be coordinating further with the City of Maple Grove to determine which project is recommended for 30% design.

**4. Gaulke Pond Subwatershed Assessment.** Stantec is evaluating the selected BMP location relative to the adjacent City drinking water reservoir. Following these efforts, an update will be provided to the TAC and final plans will be developed for acceptance by the Commission.

**5. Shingle Creek Brookdale Park Remeander.** Stantec and the City of Brooklyn Park are exploring a modified concept alternative based on community input received to-date. Stantec is compiling water quality/monitoring data, wetland permitting considerations, and access implications for MCES's sanitary sewer interceptor in consideration of a modified concept. The City will discuss this along with resident input at their November City Council meeting. Stantec and the City anticipate presenting a modified concept alternative to the community prior to progressing the project's preliminary design plans. The date of the next public meeting will be determined in November.

**6. Shingle Creek Trail Bank Stabilization and Fish Access Improvements.** Stantec and the City of Brooklyn Park are exploring a modified concept alternative based on community input received to-date. Stantec is compiling water quality/monitoring data, wetland permitting considerations, and access implications for MCES's sanitary sewer interceptor in consideration of a modified concept. The City will discuss this along with resident input at their November City Council meeting. Stantec and the City anticipate presenting a modified concept alternative to the community prior to progressing the project's preliminary design plans. The date of the next public meeting will be determined in November.

**7. Mississippi Riverbank Stabilization Feasibility Study.** City of Brooklyn Park and Hennepin County staff are contacting residents to gauge interest in additional study. From those who are interested, Staff will then select 5-6 properties to visit and evaluate erosion and potential solutions.

**8.** An addendum to the Staff Report includes the financial status of the grant and cost-share projects currently in progress.

**XI. OTHER BUSINESS.**

There being no further business before the Commissions, the joint meeting was adjourned at 2:21 p.m.

Respectfully submitted,

Judie A. Anderson  
Recording Secretary  
JAA:tim

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**To:** Shingle Creek WMO Commissioners

**From:** Lisa Tilman  
Todd Shoemaker

**Date:** October 31, 2023

**Subject:** Eagle Lake project selection

**Recommended  
Commission Action**

Approval of Eagle Woods Park Infiltration Project for 30% Design

Staff will provide an overview of the Eagle Lake Subwatershed Assessment project selection and prioritization process.

The Eagle Lake Subwatershed Assessment process identified locations for potential projects to address watershed load to Eagle Lake. Seven projects were evaluated and prioritized based on estimated TP reduction, initial project cost, and lifecycle cost. City staff reviewed the options and agreed with the recommended project selection. Staff will present an overview of the project identification and selection process and a summary of the project recommended for 30% design.

To: Shingle Creek Watershed Commissioners  
From: Lisa Tilman, PE  
Project/File: Eagle Lake Subwatershed Assessment  
Date: October 26, 2023  
227705750

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### **Reference: Project Update and Request for Project Selection to Move to 30% Design**

The goal of the Eagle Lake Subwatershed Assessment is to evaluate stormwater management and in-lake management options to address excess phosphorus impacting Eagle Lake's water quality. In this project we're working to:

1. Identify and prioritize potential stormwater management practices to reduce phosphorus and sediment loading in the Eagle Lake subwatershed, and
2. Evaluate sediment phosphorus and aquatic vegetation within Eagle and Pike Lakes to determine appropriate in-lake treatment practices to reduce internal loading.

Based on the 5-year TMDL update in 2019, efforts to restore water quality in Eagle Lake will require improvements in loading from the watershed, from upstream lakes, and from in-lake sediments.

This memo summarizes watershed load reductions to Eagle Lake. Internal phosphorus loads and potential internal load reductions for Eagle Lake and Pike Lake were discussed at the August meeting.

### **Watershed Phosphorus Load Management**

The Eagle Lake TMDL specifies that phosphorus loads need to be reduced by 202 lb/yr total from all sources to Eagle Lake. The internal loading sediment analysis for this project estimated a 164 lb/yr reduction with aluminum sulfate (alum) treatment in Eagle Lake, leaving an additional 38 lbs/yr reduction from external sources in order to meet the TMDL goals and attain water quality standards. The TMDL assumes that upstream lakes already meet water quality goals. Therefore, this would likely require implementation of at least two watershed projects to meet the needed reductions.

For the Eagle Lake Subwatershed Assessment, we evaluated existing total phosphorus loading rates to Eagle Lake and identified 30 locations for potential projects. These initial projects were filtered down to seven sites for prioritization based on location on public land, suitable soils for infiltration (Hydrologic Soil Group A), and feasibility given local conditions and infrastructure. The projects include infiltration, stormwater collection and reuse for irrigation, iron-enhanced sand amendments to existing basins, and manufactured treatment devices.

To identify the most cost-effective projects to reduce watershed phosphorus load to Eagle Lake, we prioritized potential projects through a ranking system using estimated TP reduction, initial project cost, and lifecycle cost.

**Reference:** 227705750

The resulting project prioritization process identified:

- Estimated total phosphorus reduction per project ranging from 5 lb/yr to 36 lb/yr.
- Estimated total suspended solids reductions ranging per project from 894 lb/yr to 10,080 lb/yr.
- Estimated construction costs ranging from \$218,000 to \$4.0 million.

The two top ranked projects are an infiltration basin in Eagle Woods Park and an iron-enhanced sand filter bench retrofit and pond expansion in an existing stormwater basin at Hemlock Lane and East Fish Lake Road.

- Infiltration Basin in Eagle Woods Park
  - 21.8 lb/yr TP reduction
  - \$470,000 construction cost
  - \$498,000 30-year lifecycle cost
  - \$761 per lb TP annually over lifecycle
- Iron-enhanced sand bench retrofit and pond expansion at Hemlock Ln & East Fish Lake Rd.
  - 9.3 lb/yr TP reduction
  - \$218,000 construction cost
  - \$255,000 30-year lifecycle cost
  - \$886 per lb TP annually over lifecycle

### **Requested Action**

Request that the Commission recommend moving to 30% design for an infiltration facility in Eagle Woods Park. Completion of this infiltration project will leave an additional 16 lb total phosphorus reduction needed to fully address the load reductions outlined in the TMDL.

**To:** Shingle Creek/West Mississippi WMO TAC and Commissioners

**From:** Katy Thompson, PE  
Todd Shoemaker, PE

**Date:** November 2, 2023

**Subject:** Gaulke Pond Subwatershed Assessment Update

**Recommended  
Commission Action**

For acceptance

The Shingle Creek Watershed Management Commission (SCWMC) requested Stantec evaluate opportunities to reduce stormwater runoff volume to Gaulke Pond. At the August 10, 2023, Commission meeting, the final eleven best management practices (BMPs) were presented and Opportunity A2, the Colorado Avenue Infiltration Trench, was selected by the Commission as the preferred alternative. The Commission authorized Stantec to proceed with the development of the 30% design plans.

The attached plans show the potential BMP layout within the Colorado Avenue right-of-way and associated details. The BMP design provided is a three-sided 6- by 6-foot concrete box culvert, however we have also included a bid alternative using corrugated polypropylene (PP) pipe chambers, similar to the ADS StormTech chambers installed on Kentucky Avenue in Crystal. If PP chambers are acceptable to the City of Crystal public works staff, this may offer an opportunity to reduce overall implementation costs.

Additionally, the design to date has relied on Minnesota Department of Natural Resources LiDAR topography, City GIS data, and generalized soils information. If the Commission chooses to proceed with 60% design, while out of scope, we recommend collecting detailed topography and utility information, as well as completing a more-thorough geotechnical evaluation of the underlying soils to confirm stability of the nearby city reservoir.



# PRELIMINARY PLANS

FOR

## COLORADO AVENUE STORMWATER INFILTRATION TRENCH CRYSTAL, MN 55422



2080 WOODDALE DRIVE  
SUITE 100  
WOODBURY, MN 55125  
PHONE: 651-294-4580  
FAX: 651-228-1969  
WWW.STANTEC.COM

SUB CONSULTANT:

CLIENT:

SHINGLE CREEK  
WATERSHED  
MANAGEMENT  
COMMISSION

COLORADO AVENUE  
STORMWATER IMPROVEMENTS  
HENNEPIN COUNTY  
CRYSTAL, MN 55422

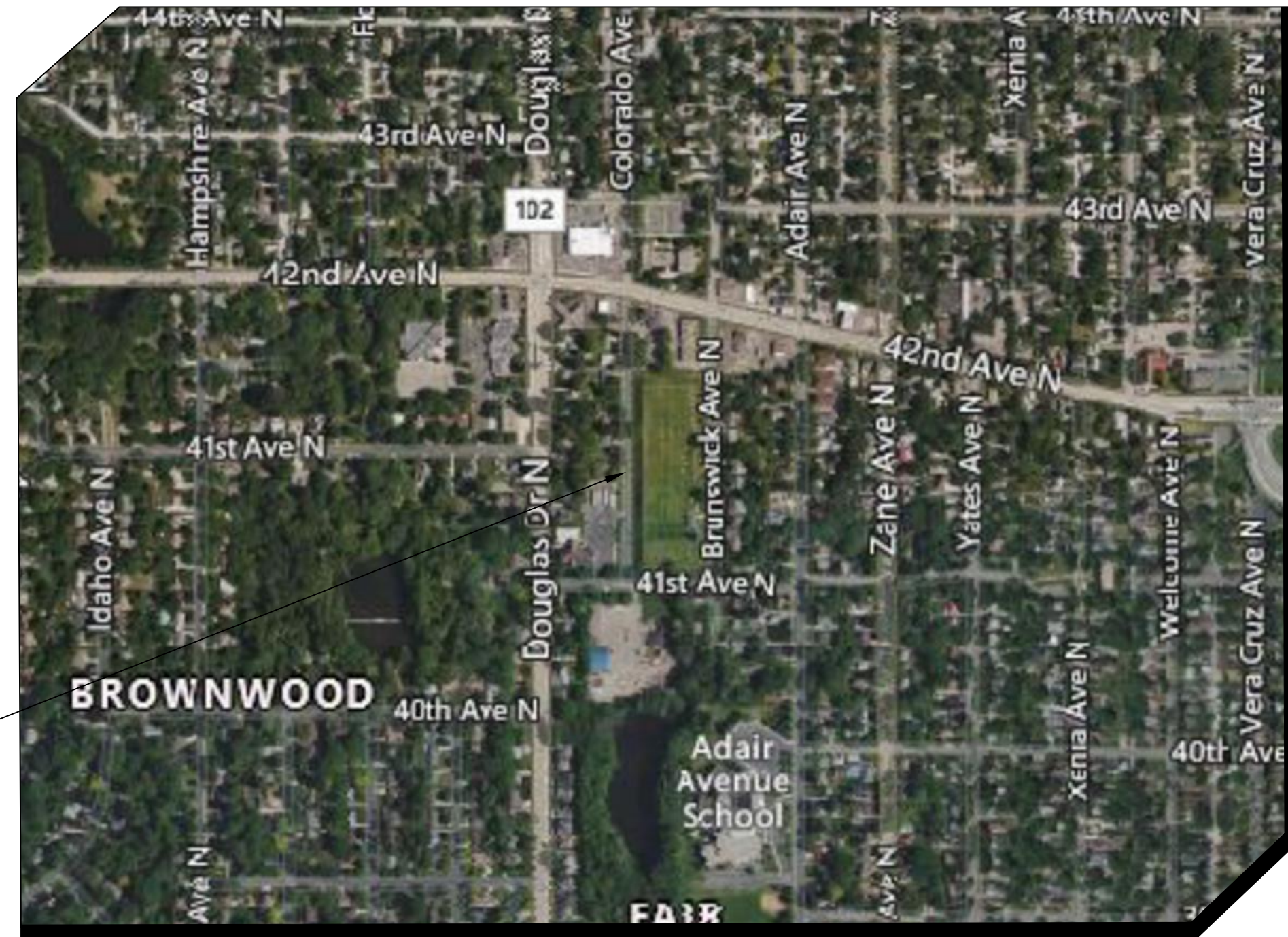
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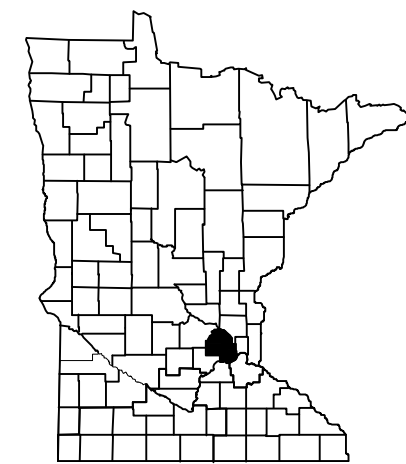
STANTEC  
2080 WOODDALE DRIVE, SUITE 100  
WOODBURY, MN 55125  
(P) - 651-294-4585  
CONTACT: TODD SHOEMAKER  
TODD.SHOEMAKER@STANTEC.COM

Sheet List Table	
Sheet Number	Sheet Title
C-001	COVER SHEET
C-002	GENERAL NOTES
C-003	LEGEND
C-101	STORM SEWER PLAN AND PROFILE
C-801	DETAILS
C-802	DETAILS (BID ALTERNATE)

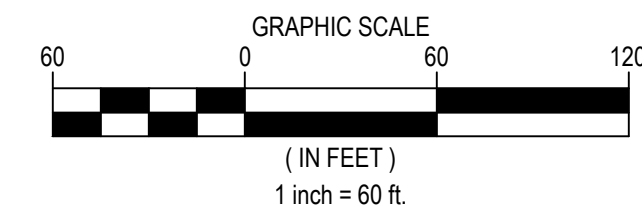
PROJECT LOCATION



VICINITY MAP  
NOT TO SCALE



PROJECT LOCATION  
CITY: CRYSTAL  
COUNTY: HENNEPIN County



PROJECT TITLE:

ISSUE NO.:

0

DESCRIPTION:

30% PLANS

DATE:

10/26/2023

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 PROVISIONS OF THE STATE OF MINNESOTA.

LIC. NO.:

DATE:

PROJECT NO.: 227705751

DWN BY: CCG    CHK'D BY: KT    APP'D BY: ###

ISSUE DATE: 10/26/2023

ISSUE NO.: 0

SHEET TITLE:  
COVER SHEET

SHEET NO.:  
C-001



**GENERAL NOTES:**

- 1. UNTIL THE REVISION BLOCK STATES "ISSUED FOR BID", THE PLAN SET IS NOT CERTIFIED FOR CONSTRUCTION AND CONTRACTOR IS BUILDING AT THEIR OWN RISK.
2. EXISTING CONDITIONS SHOWN ARE FROM A COMBINATION OF TOPOGRAPHIC SURVEY AND LIDAR DATA COMPLETED BY STANTEC CONSULTING SERVICES, INC., DATED 08/12/2021. EXISTING FEATURES MAY NOT BE EXACT TO THEIR LOCATION. THE CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE CONDITIONS OF THE SITE AND SHALL NOTIFY THE ENGINEER OF ANY DISCREPANCIES OR VARIATIONS FROM THE DRAWINGS.
3. ALL QUANTITIES ARE APPROXIMATE AND MAY VARY TO ALLOW COMPLETION OF WORK.
4. THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF C/ASCE 38-2 ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".
5. EXACT LOCATION OF UNDERGROUND UTILITIES SUCH AS GAS, TELEPHONE, FIBER OPTIC, PIPELINES, ELECTRICAL, AND CABLE TV ARE UNKNOWN. CONTRACTOR RESPONSIBLE FOR LOCATING PRIOR TO STARTING WORK.
6. CONTRACTOR SHOULD ANTICIPATE PRIVATE UTILITY CONFLICTS THROUGHOUT THE PROJECT SUB CUT AND TRENCH AREAS AND SHALL COORDINATE WITH PRIVATE UTILITY OWNERS.
7. THE RELOCATION AND OR PROTECTION OF ALL EXISTING UTILITIES MUST BE COORDINATED BY THE CONTRACTOR AND ANY COSTS FOR SUCH WORK SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR. NO ADDITIONAL COMPENSATION WILL BE ALLOWED FOR EXTRA TIME AND EFFORT OF PROVISIONS NECESSARY TO WORK AROUND OR UNDER ANY UTILITIES.
8. CONTRACTOR SHALL SALVAGE AND REINSTALL STREET AND TRAFFIC SIGNS, AS DIRECTED BY FIELD ENGINEER. (INCIDENTAL)
9. CONTRACTOR SHALL COMPLY WITH ALL STATE, COUNTY, AND CITY PERMITS.
10. WORK AND MATERIALS MUST COMPLY WITH CITY, COUNTY, STATE, AND FEDERAL (INCLUDING OSHA) REGULATIONS AND CODES.
11. CONTRACTOR SHALL COORDINATE AND MAINTAIN MAIL, GARBAGE, AND RECYCLING SERVICES TO PROPERTIES THROUGHOUT CONSTRUCTION.
12. CONTRACTOR SHALL PRESERVE AND PROTECT EXISTING PAVEMENT, SITE FEATURES, UTILITIES, TREES, ETC., UNLESS NOTED OR SHOWN OTHERWISE.
13. CONSTRUCTION LIMITS ARE TO PROPERTY LINE UNLESS SHOWN OR NOTED OTHERWISE. CONTRACTOR SHALL RESTRICT CONSTRUCTION ACTIVITIES TO AREAS DESIGNATED ON PLANS WITHIN THE CONSTRUCTION LIMITS.
14. CONTRACTOR SHALL COORDINATE AND MAINTAIN ACCESS TO PROPERTIES THROUGHOUT CONSTRUCTION.
15. CONTRACTOR SHALL TAKE ALL PRECAUTIONS NECESSARY TO AVOID PROPERTY DAMAGE TO ADJACENT PROPERTIES DURING CONSTRUCTION AND WILL BE HELD SOLELY RESPONSIBLE FOR ANY DAMAGES.
16. CONTRACTOR MUST IMMEDIATELY NOTIFY THE OWNER AND ENGINEER IN WRITING OF DISCREPANCIES OR CONFLICTS IN THE CONTRACT DOCUMENTS BEFORE COMMENCING WORK. NO FIELD CHANGES OR DEVIATIONS ARE TO BE MADE WITHOUT PRIOR WRITTEN APPROVAL FROM THE ENGINEER. FAILURE TO NOTIFY OWNER AND ENGINEER OF AN IDENTIFIABLE CONFLICT BEFORE PROCEEDING WITH INSTALLATION RELIEVES OWNER AND ENGINEER OF ANY OBLIGATION TO PAY FOR A RELATED CHANGE ORDER.
17. CONTRACTOR SHALL MAINTAIN DRAINAGE CONVEYANCE DURING CONSTRUCTION (BOTH PIPED AND OVERLAND).
18. CONTRACTOR SHALL HAVE ONE COPY OF EACH REQUIRED CONSTRUCTION PERMIT AND ONE COPY OF THE MOST CURRENT AND COMPLETE SET OF CONSTRUCTION DOCUMENTS (INCLUDING PLANS, SPECIFICATIONS, SPECIAL CONDITIONS AND PROVISIONS, ETC.) AVAILABLE AT THE PROJECT SITE AT ALL TIMES.
19. CONTRACTOR SHALL BE FULLY RESPONSIBLE FOR IMPLEMENTATION AND ENFORCEMENT OF SAFE WORK PRACTICES, INCLUDING BUT NOT LIMITED TO PERSONNEL MONITORING, USE OF TRENCHING, SHEETING, AND SHORING, SCAFFOLDING; MATERIALS HANDLING AND DRILLING; OPERATION OF EQUIPMENT; AND SAFETY OF PUBLIC DURING PROGRESS OF WORK.
20. CONTRACTOR SHALL PLAN FOR AND ENSURE PERSONNEL COMPLY WITH PROVISIONS OF OSHA SAFETY AND HEALTH STANDARDS (29 CFR 1910) AND GENERAL CONSTRUCTION STANDARDS (29 CFR 1926) AS APPROPRIATE.
21. CONTRACTOR SHALL BE RESPONSIBLE FOR INITIATING, MAINTAINING, AND SUPERVISING SAFETY PRECAUTIONS AND PROGRAMS IN CONNECTION WITH WORK. CONTRACTOR SHALL TAKE NECESSARY PRECAUTIONS FOR SAFETY OF EMPLOYEES ON PROJECT SITE AND OTHER PERSONS AND ORGANIZATIONS WHO MAY BE AFFECTED BY THE PROJECT. CONTRACTOR'S DUTIES AND RESPONSIBILITIES FOR SAFETY IN CONNECTION WITH WORK SHALL CONTINUE UNTIL SUCH TIME AS ALL WORK IS COMPLETED, AND ENGINEER HAS ISSUED NOTICE TO CONTRACTOR THAT WORK IS COMPLETE.
22. HAZARDOUS MATERIALS, INCLUDING BUT NOT LIMITED TO OIL, GASOLINE, PAINT AND OTHER HAZARDOUS SUBSTANCES MUST BE PROPERLY STORED, BY THE CONTRACTOR, INCLUDING SECONDARY CONTAINMENTS, TO PREVENT SPILLS, LEAKS, OR OTHER DISCHARGE. RESTRICTED ACCESS TO STORAGE AREAS MUST BE PROVIDED TO PREVENT VANDALISM. STORAGE AND DISPOSAL OF HAZARDOUS WASTE MUST BE IN COMPLIANCE WITH MPCA REGULATIONS. CONTRACTOR SHALL REMOVE SPILL OF FUELS, OILS, OR OTHER CHEMICALS IMMEDIATELY UPON DETECTION.
23. THE EXISTING PAVEMENT CONDITIONS HAVE BEEN DOCUMENTED, AND ANY DAMAGE TO THE EXISTING PAVEMENT, CURBING, AND STRIPING SHALL BE REPLACED BY THE CONTRACTOR, TO THE OWNERS SATISFACTION, AT NO ADDITIONAL COST TO THE OWNER.

**REMOVAL NOTES:**

- 1. SEE GENERAL NOTES FOR ADDITIONAL PROJECT AND SITE INFORMATION.
2. CONTRACTOR SHALL REVIEW FEATURES NOT SPECIFICALLY IDENTIFIED ON PLAN FOR SALVAGE OR REMOVAL THAT CONFLICT WITH CONSTRUCTION WITH THE ENGINEER.
3. MATERIALS REMOVED/DEMOLISHED BY CONTRACTOR BECOME PROPERTY OF THE CONTRACTOR, UNLESS OTHERWISE NOTED. CONTRACTOR SHALL LOAD AND HAUL MATERIAL OFF-SITE AND PROPERLY DISPOSE OF MATERIALS IN ACCORDANCE WITH APPLICABLE REGULATIONS. CONTRACTOR MUST LEAVE THE SITE IN A CONDITION TO THE SATISFACTION OF THE OWNER AND ENGINEER.
4. CONTRACTOR SHALL SALVAGE AND REINSTALL STREET AND TRAFFIC SIGNS IN CONFLICT WITH CONSTRUCTION ACTIVITIES AS NOTED OR AS DIRECTED BY THE ENGINEER. IF SIGNS ARE DAMAGED DURING CONSTRUCTION, CONTRACTOR IS REQUIRED TO PROVIDE NEW SIGNS AT NO ADDITIONAL COST TO THE OWNER.
5. CONTRACTOR SHALL SALVAGE AND REINSTALL FENCE IN CONFLICT WITH CONSTRUCTION ACTIVITIES AS NOTED OR AS DIRECTED BY THE ENGINEER. IF FENCE IS DAMAGED DURING CONSTRUCTION, CONTRACTOR IS REQUIRED TO PROVIDE NEW FENCE, TO OWNER'S SATISFACTION, AT NO ADDITIONAL COST TO THE OWNER.
6. CONTRACTOR SHALL REVIEW ALL TREE REMOVALS WITH THE OWNER AND ENGINEER PRIOR TO REMOVAL OPERATIONS.

**GOVERNING SPECIFICATIONS:**

- 1. THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" MOST RECENT EDITION & LATEST SUPPLEMENTS.
2. CITY ENGINEERS ASSOCIATION OF MINNESOTA (CEAM) STANDARD UTILITIES SPECIFICATIONS (LATEST EDITION)
3. ALL APPLICABLE FEDERAL, STATE AND LOCAL LAWS AND ORDINANCE WILL BE COMPLETED WITH IN THE CONSTRUCTION OF THIS PROJECT.

**TRAFFIC CONTROL NOTES:**

- 1. SEE GENERAL NOTES FOR ADDITIONAL PROJECT AND SITE INFORMATION.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR COORDINATING ALL CONSTRUCTION STAGING, ON OR OFFSITE, AS NECESSARY, TO COMPLETE THE WORK AS SPECIFIED IN THE PROJECT DOCUMENTS. IF OFFSITE STAGING AREA IS REQUIRED, CONTRACTOR IS RESPONSIBLE TO FIND, OBTAIN, AND PAY FOR NECESSARY STAGING AREA AT NO ADDITIONAL COST TO THE OWNER. A STAGING PLAN SHALL BE SUBMITTED TO THE ENGINEER FOR REVIEW AND APPROVAL PRIOR TO ANY CONSTRUCTION RELATED ACTIVITIES.
3. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL TRAFFIC CONTROL. ALL TRAFFIC CONTROL SHALL CONFORM TO THE LATEST EDITION OF THE MMUTCD, INCLUDING THE LATEST FIELD MANUAL FOR TEMPORARY TRAFFIC CONTROL ZONE LAYOUTS. A TRAFFIC CONTROL PLAN SHALL BE SUBMITTED TO THE ENGINEER AND CITIES FOR REVIEW AND APPROVAL PRIOR TO ANY CONSTRUCTION RELATED ACTIVITIES. PLANS SHALL COMPLY WITH ALL APPLICABLE PERMIT REQUIREMENTS.

**TREE PRESERVATION NOTES:**

- 1. PROTECT EXISTING TREES THAT ARE NOT TO BE REMOVED. INSTALL ORANGE MESH FENCING, 4' HIGH, WITH STAKES EVERY 10 FEET, 5' OUTSIDE OF THE DRIP LINE OF ALL PRESERVED TREES, OR AT THE CONSTRUCTION LIMITS AS SHOWN ON THE PLAN. DO NOT PERFORM ACTIONS WITHIN THE PROTECTED AREA THAT MAY HARM THE TREE AND COMPACT THE SOIL, INCLUDING, BUT NOT LIMITED TO EXCAVATION, STORING MATERIALS, PARKING AND TRAFFIC DURING CONSTRUCTION. WHERE CONSTRUCTION REQUIRES DISTURBANCE WITHIN THE PROTECTED AREAS, DISTURB THE ROOT ZONE AS LITTLE AS POSSIBLE. TREE PROTECTION MEASURES SHALL BE CONFIRMED BY OWNER AND ENGINEER PRIOR TO STARTING CONSTRUCTION.
2. ALL TREE PROTECTION FENCING MUST BE IN PLACE PRIOR TO BEGINNING CONSTRUCTION.
3. WHEN TREE ROOTS ARE ENCOUNTERED THAT MUST BE REMOVED, CUT ROOTS CLEANLY AS FAR FROM THE TREE AS POSSIBLE AND IMMEDIATELY WATER AND BACKFILL OVER THE ROOTS TO PREVENT DRYING.

**EROSION CONTROL NOTES:**

- 1. SEE SHEETS C-003 FOR EROSION CONTROL MEASURES.
2. BEFORE SITE DISTURBANCE AND AS REQUIRED AS CONSTRUCTION PROGRESSES, CONTRACTOR SHALL INSTALL, MAINTAIN, REPAIR, AND REPLACE EROSION PREVENTION MEASURES AND SEDIMENT CONTROL DEVICES (INLET PROTECTION, CONSTRUCTION ENTRANCE, BIOLOG, EROSION CONTROL BLANKET, ETC.) IN ACCORDANCE WITH THE EROSION CONTROL PLAN, AND CITY, STATE, AND WATERSHED DISTRICT PERMITS.
3. ADDITIONAL EROSION CONTROL MEASURES MAY BE REQUIRED DEPENDING ON SITE CONDITIONS DURING CONSTRUCTION. COORDINATE WITH ENGINEER.
4. CONCRETE WASH-OUT SHALL BE COMPLETED OFF-SITE OR CONCRETE READY MIX TRUCKS SHALL BE SELF-CONTAINED.
5. CONTRACTOR SHALL REMOVE TRACKED SEDIMENT FROM ALL PAVED SURFACES BOTH ON AND OFFSITE ON A DAILY BASIS (INCIDENTAL).
6. CONTRACTOR SHALL MINIMIZE DUST FROM CONSTRUCTION OPERATIONS BY PROVIDING WATER OR OTHER APPROVED METHOD ON A DAILY BASIS (INCIDENTAL).
7. CONTRACTOR SHALL REMOVE ALL EROSION CONTROL MEASURES AFTER SITE HAS BEEN STABILIZED AND VEGETATION IS ESTABLISHED AS DIRECTED BY ENGINEER. EROSION CONTROL MEASURES USED FOR CONSTRUCTION MUST NOT BE REMOVED UNTIL AUTHORIZED BY OWNER OR ENGINEER.

**REVEGETATION NOTES:**

- 1. REVEGETATE ALL DISTURBED AREAS WITH NATIVE SEED MIX AND EROSION CONTROL BLANKET AS SPECIFIED ON THE EROSION CONTROL DRAWINGS.
2. PRIOR TO SEEDING AND BLANKET INSTALLATION, RIP/SCARIFY ALL SOILS THAT ARE TO BE REVEGETATED TO A 6-INCH DEPTH, AVOIDING SIGNIFICANT TREE ROOT AREAS. (INCIDENTAL)
3. FOR AREAS TO RECEIVE SOD, AFTER INITIAL RIPPING, ADD AND INCORPORATE 3-INCH MINIMUM DEPTH OF MNDOT 3890 GRADE 2 COMPOST INTO TOP 6-INCH DEPTH OF SOIL.

**HORIZONTAL AND VERTICAL CONTROL:**

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



2080 WOODDALE DRIVE
SUITE 100
WOODBURY, MN 55125
PHONE: 651-294-4580
FAX: 651-228-1969
WWW.STANTEC.COM

SUB CONSULTANT:

CLIENT:

SHINGLE CREEK
WATERSHED
MANAGEMENT
COMMISSION

COLORADO AVENUE
STORMWATER IMPROVEMENTS
HENNEPIN COUNTY
CRYSTAL, MN 55422

PROJECT TITLE:

ISSUE NO: 0

DATE: 10/26/2023
DESCRIPTION: 30% PLANS

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.

LICEN NO:

DATE:

PROJECT NO.: 227705751

DWN BY: CCG CHK'D BY: KT APP'D BY: ###

ISSUE DATE: 10/26/2023

ISSUE NO.: 0

SHEET TITLE:

GENERAL NOTES

SHEET NO.:

C-002



### LEGAL / BOUNDARY LEGEND

EXISTING	DESCRIPTION	PROPOSED
	PROPERTY BOUNDARY	
	LOT LINE	
	EASEMENT LINE	
	SETBACK LINE	
	RIGHT OF WAY LINE	
	SECTION LINE	
	QUARTER LINE	

### SITE / MISC. LEGEND

EXISTING	DESCRIPTION	PROPOSED
	RAILROAD TRACK	
	FENCE LINE	
	GUARD RAIL	
	RETAINING WALL	
	BUILDING	
	DITCH CENTERLINE	
	WETLAND BOUNDARY	
	WETLAND	
	SIGN	
	BOLLARD/POST	
	UTILITY POLE	
	ANCHOR CABLE	
	LIGHT POLE	
	DECORATIVE LIGHT	
	ANTENNA	
	BENCH	
	AIR CONDITIONER	
	SOIL BORING	
	MAILBOX	
	HANDICAP PARKING SPACE	
	RAILROAD CROSSING SIGNAL	
	STOP LIGHT	
	HAND HOLE	
	PARKING COUNT	

### GRADING / TOPOGRAPHY LEGEND

EXISTING	DESCRIPTION	PROPOSED
	MINOR CONTOUR	
	MAJOR CONTOUR	
	GRADING LIMITS	
	CONSTRUCTION LIMITS	
	SPOT ELEVATION	
	SURFACE GRADE & FLOW DIRECTION	
	SURFACE SLOPE (H:V) & FLOW DIRECTION	

### PAVEMENT LEGEND

EXISTING	DESCRIPTION	PROPOSED
	EDGE OF PAVEMENT / GRAVEL	
	ROAD CENTERLINE	
	CURB AND GUTTER	
	TIP-OUT CURB AND GUTTER	
	CONCRETE PAVEMENT	
	HEAVY DUTY CONCRETE PAVEMENT	
	BITUMINOUS PAVEMENT	
	LIGHT DUTY BITUMINOUS PAVEMENT	
	HEAVY DUTY BITUMINOUS PAVEMENT	
	GRAVEL SURFACE	

### UTILITY LEGEND

EXISTING	DESCRIPTION	PROPOSED
	STORM SEWER	
	SANITARY SEWER	
	FORCEMAIN	
	WATERMAIN	
	IRRIGATION LINE	
	UNDERGROUND GAS LINE	
	UNDERGROUND COMMUNICATION LINE	
	UNDERGROUND FIBER OPTIC LINE	
	UNDERGROUND ELECTRIC LINE	
	OVERHEAD UTILITY LINE	
	DRAINTILE	
	PIPE CASING	
	SANITARY MANHOLE	
	CLEANOUT	
	STORM SEWER MANHOLE	
	STORM SEWER INLET	
	FLARED END SECTION	
	CURB STOP	
	HYDRANT	
	WATER VALVE	
	REDUCER	
	FIRE DEPARTMENT CONNECTION	
	WATER WELL	
	AUTO SPRINKLER	
	POST INDICATOR VALVE	
	WATER METER	
	SPRINKLER HEAD	
	IRRIGATION CONTROL VALVE	
	GAS MARKER	
	GAS VALVE	
	GAS METER	
	COMMUNICATIONS PEDESTAL	
	TELEPHONE MANHOLE	
	ELECTRICAL PEDESTAL	
	ELECTRIC METER	
	TRANSFORMER	
	ELECTRIC MANHOLE	

### VEGETATION / LANDSCAPING LEGEND

EXISTING	DESCRIPTION	PROPOSED
	TREE LINE	
	STUMP	
	SHRUB/PERENNIAL PLANT	
	DECIDUOUS TREE	
	CONIFEROUS TREE	
	ORNAMENTAL TREE	
	ROCK MULCH	
	WOOD MULCH	
	SEED	
	SOD	

### REMOVALS LEGEND

DESCRIPTION	PROPOSED
REMOVE EXISTING BUILDING	
CLEAR AND GRUB AREA	
REMOVE TREE/SHRUB/STUMP	
REMOVE CURB AND GUTTER	
REMOVE CONCRETE PAVEMENT	
REMOVE BITUMINOUS PAVEMENT	
REMOVE GRAVEL SURFACING	
SAWCUT PAVEMENT	

### EROSION CONTROL LEGEND

DESCRIPTION	PROPOSED
ROCK CONSTRUCTION EXIT	
EROSION CONTROL BLANKET	
TURF REINFORCEMENT MAT	
SEED	
SOD	
RIPRAP	
VEGETATED RIPRAP	
SILT FENCE	
FLOTATION SILT CURTAIN	
BIOLOG (OR DITCH CHECK)	
INLET PROTECTION	
HAY BALES	
CULVERT PROTECTION	
TREE PROTECTION	
TEMPORARY DIVERSION DITCH	
TEMPORARY SEDIMENT TRAP DISCHARGE	

### ABBREVIATIONS

BV	BUTTERFLY VALVE	OC	ON CENTER
BW	BOTTOM OF WALL (AT GRADE)	OCS	OUTLET CONTROL STRUCTURE
BVC	BEGIN VERTICAL CURVE	MAX	MAXIMUM
BOT	BOTTOM	MH	MANHOLE
CB	CATCH BASIN	ME	MATCH EXISTING
CBMH	CATCH BASIN MANHOLE	MIN	MINIMUM
CO	CLEANOUT	NWL	NORMAL WATER LEVEL
CF	CUBIC FEET	OFF	OFFSET
CFS	CUBIC FEET PER SECOND	PC	POINT OF CURVATURE
CL	CENTERLINE	PI	POINT OF INTERSECTION
CL	CLASS	PL	PROPERTY LINE
CMP	CORRUGATED METAL PIPE	PR	PROPOSED
CY	CUBIC YARDS	PT	POINT OF TANGENCY
DIP	DUCTILE IRON PIPE	PVC	POLYVINYL CHLORIDE
EG	EXISTING GRADE	PVI	POINT OF VERTICAL INTERSECTION
EOF	EMERGENCY OVERFLOW	R	RADIUS
EL	ELEVATION	RCP	REINFORCED CONCRETE PIPE
EP	EDGE OF PAVEMENT	RIM	STRUCTURE TOP OF CASTING/GRATE
EVC	END VERTICAL CURVE	ROW	RIGHT OF WAY
EX	EXISTING	SF	SQUARE FEET
F/F	FACE TO FACE	SS	SANITARY SEWER
FFE	FINISHED FLOOR ELEVATION	SSMH	SANITARY SEWER MANHOLE
FES	FLARED END SECTION	ST	STORM SEWER
FM	FORCEMAIN	STA	STATION
FNH	FRONT NOZZLE OF HYDRANT	STD	STANDARD
FG	FINISHED GRADE	STMH	STORM SEWER MANHOLE
FL	FLOW LINE	SW	SIDEWALK
GV	GATE VALVE	SY	SQUARE YARDS
GPM	GALLONS PER MINUTE	TC	TOP OF CURB
HDPE	HIGH-DENSITY POLYETHYLENE	TNH	TOP NUT OF HYDRANT
HP	HIGH POINT	TOE	TOE OF DITCH
HYD	HYDRANT	TOP	TOP OF DITCH
HWL	HIGH WATER LEVEL	TP	TOP OF PIPE
INV	INVERT	TW	TOP OF WALL
LF	LINEAL FEET	TYP	TYPICAL
LFE	LOW FLOOR ELEVATION	VCP	VITRIFIED CLAY PIPE
LP	LOW POINT	WM	WATERMAIN
LVC	LENGTH OF VERTICAL CURVE		



2080 WOODDALE DRIVE  
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SUB CONSULTANT:

CLIENT:

SHINGLE CREEK  
WATERSHED  
MANAGEMENT  
COMMISSION

COLORADO AVENUE  
STORMWATER IMPROVEMENTS  
HENNEPIN COUNTY  
CRYSTAL, MN 55422

PROJECT TITLE:

ISSUE NO.:

0

DESCRIPTION:

30% PLANS

DATE:

10/26/2023

CERTIFICATION:

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DATE:

PROJECT NO.:

227705751

DWN BY:

CGG

CHK'D BY:

KT

ISSUE DATE:

10/26/2023

ISSUE NO.:

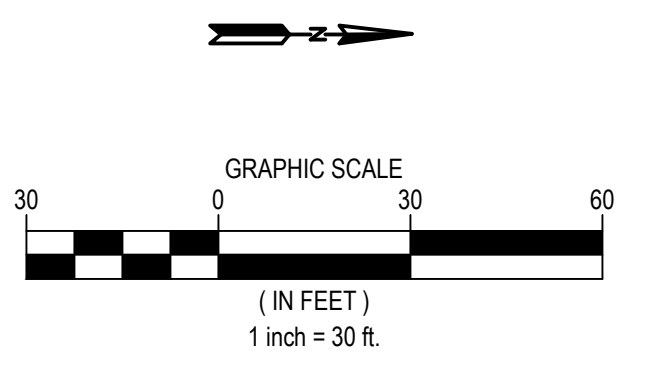
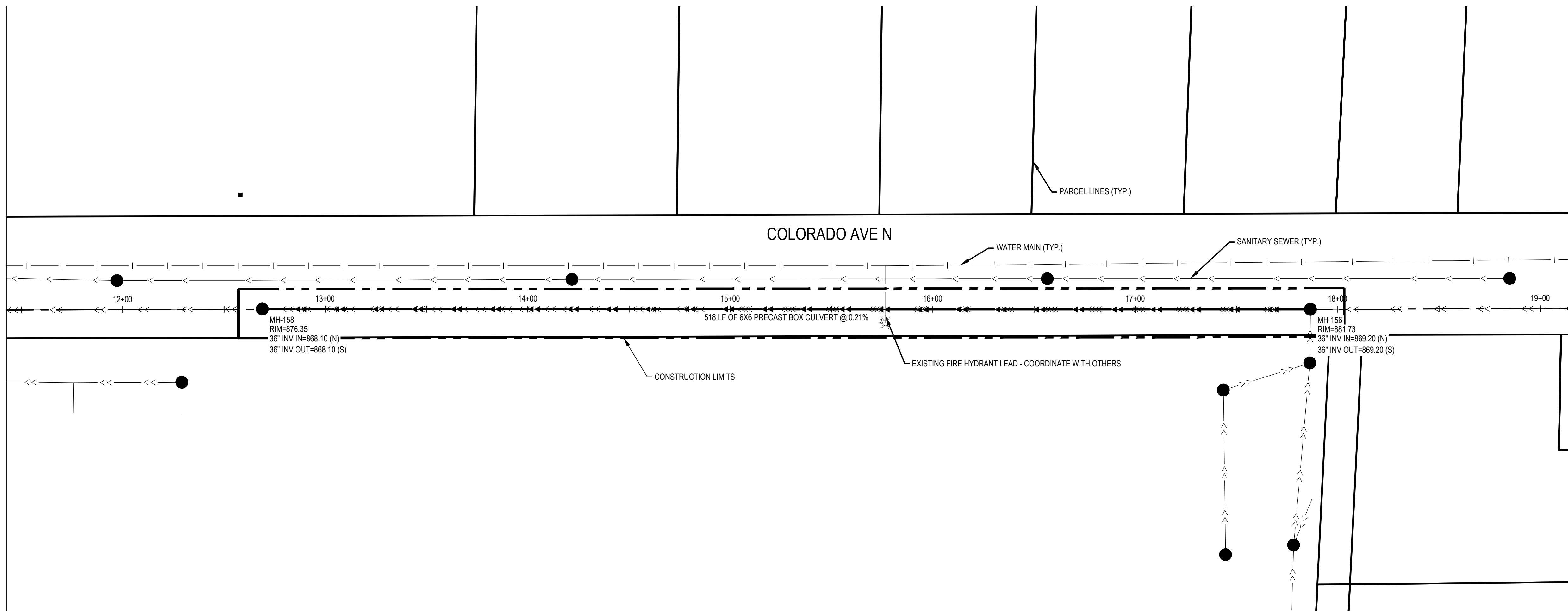
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SHEET TITLE:

LEGEND

SHEET NO.:

C-003



**Stantec**

2080 WOODDALE DRIVE  
SUITE 100  
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SUB CONSULTANT:

CLIENT:  
SHINGLE CREEK  
WATERSHED  
MANAGEMENT  
COMMISSION

PROJECT TITLE:  
**COLORADO AVENUE  
STORMWATER IMPROVEMENTS**  
HENNEPIN COUNTY  
CRYSTAL, MN 55422

ISSUE NO.	DESCRIPTION	DATE
0	30% PLANS	10/26/2023

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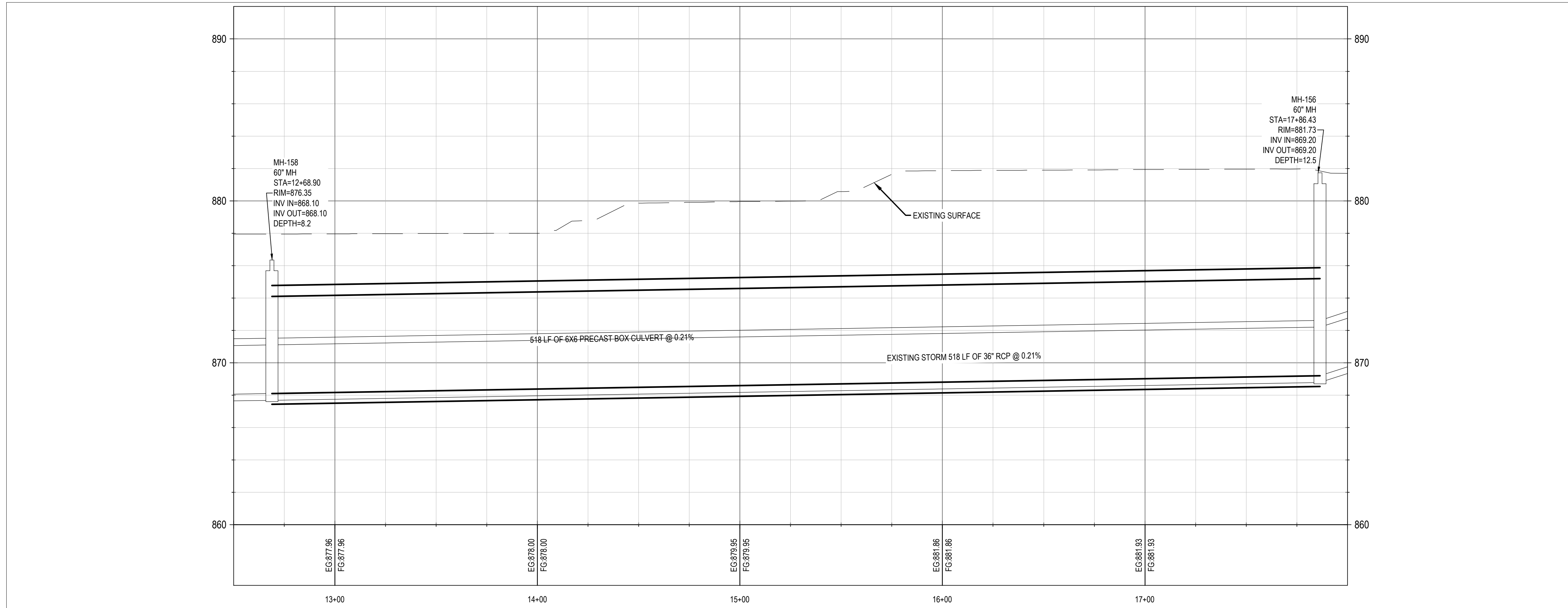
DWN BY: CCG    CHK'D BY: KT    APP'D BY: ###

ISSUE DATE: 10/26/2023

ISSUE NO.: 0

SHEET TITLE:  
STORM  
SEWER PLAN  
AND PROFILE

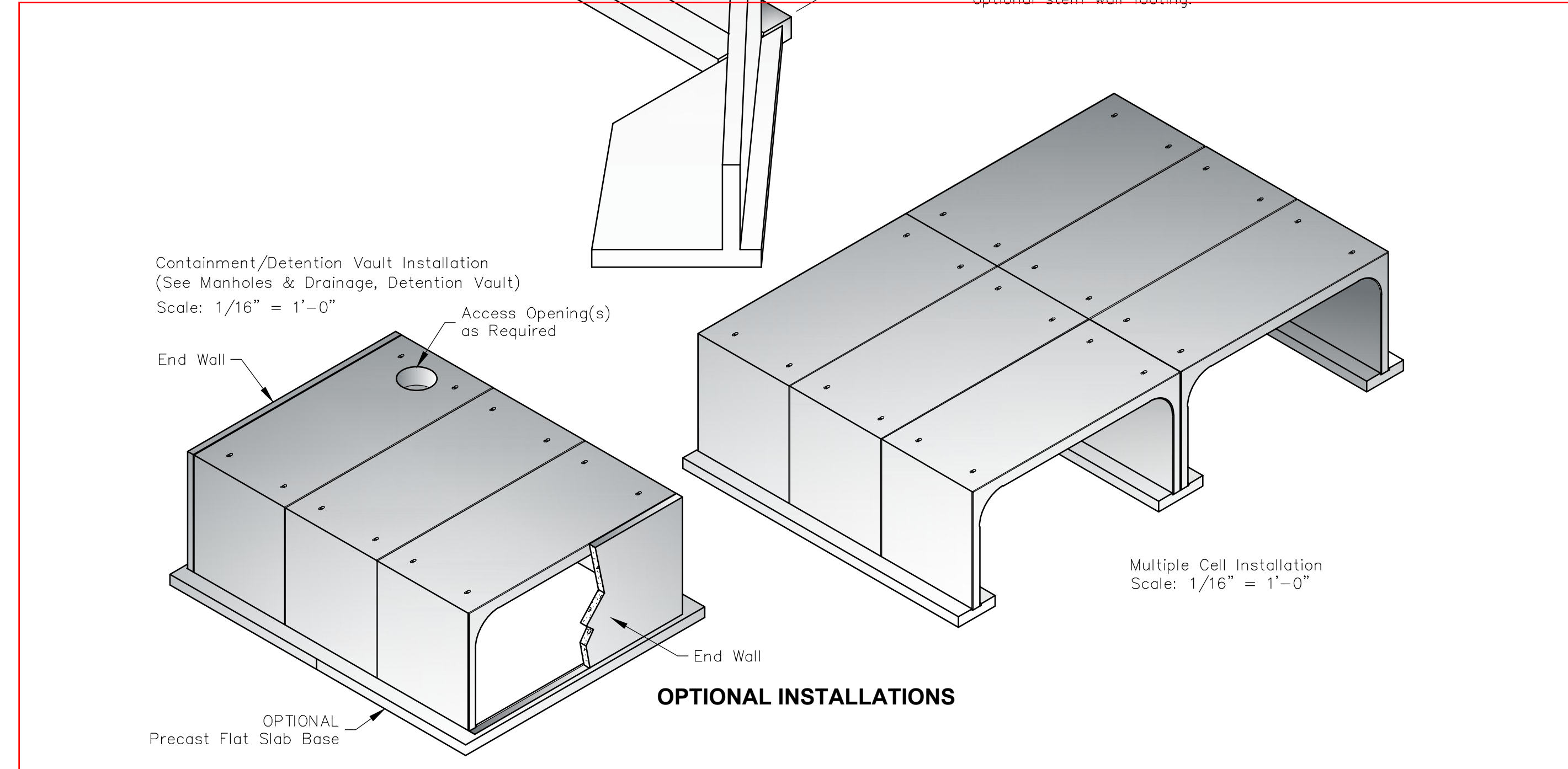
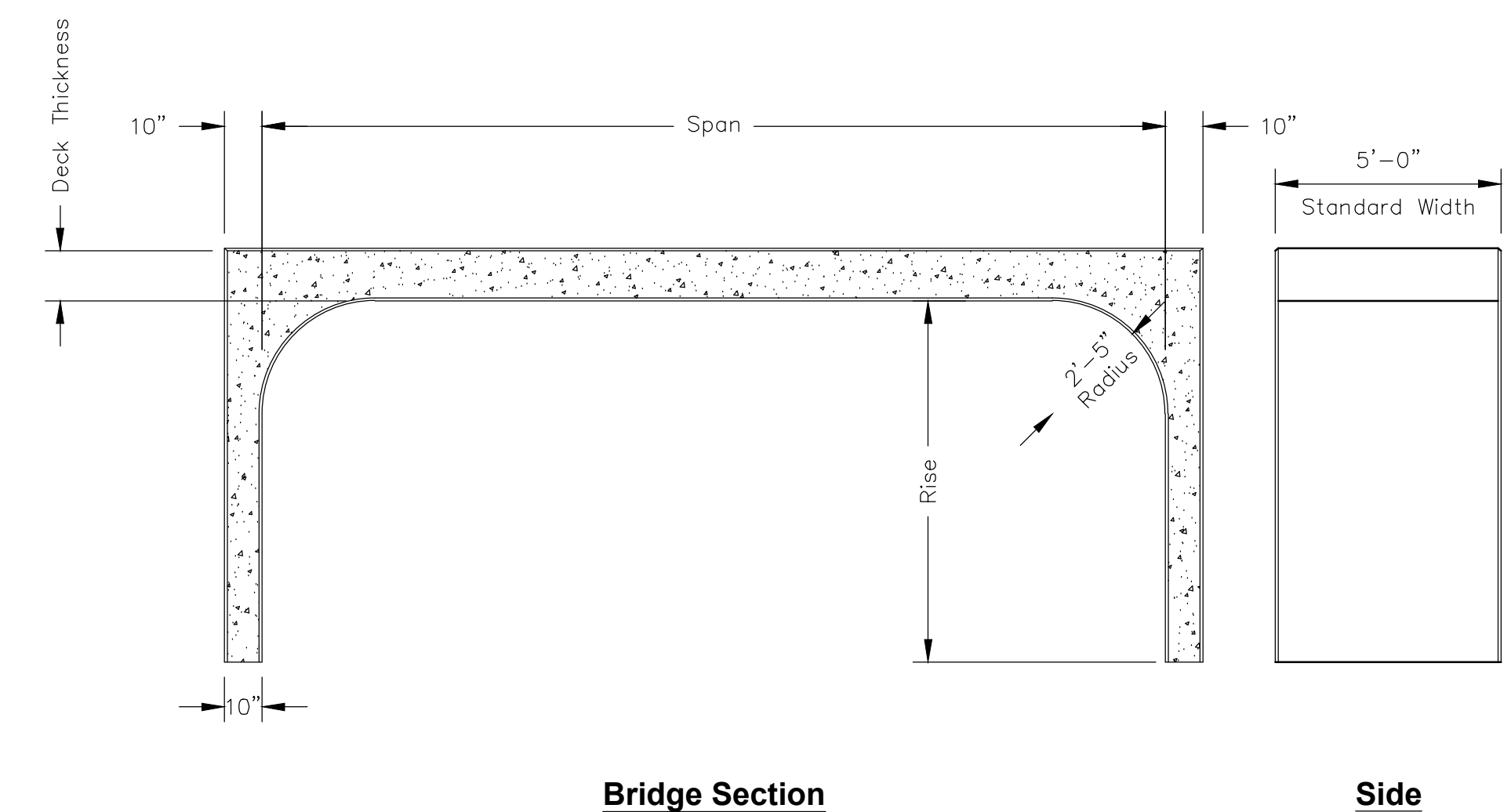
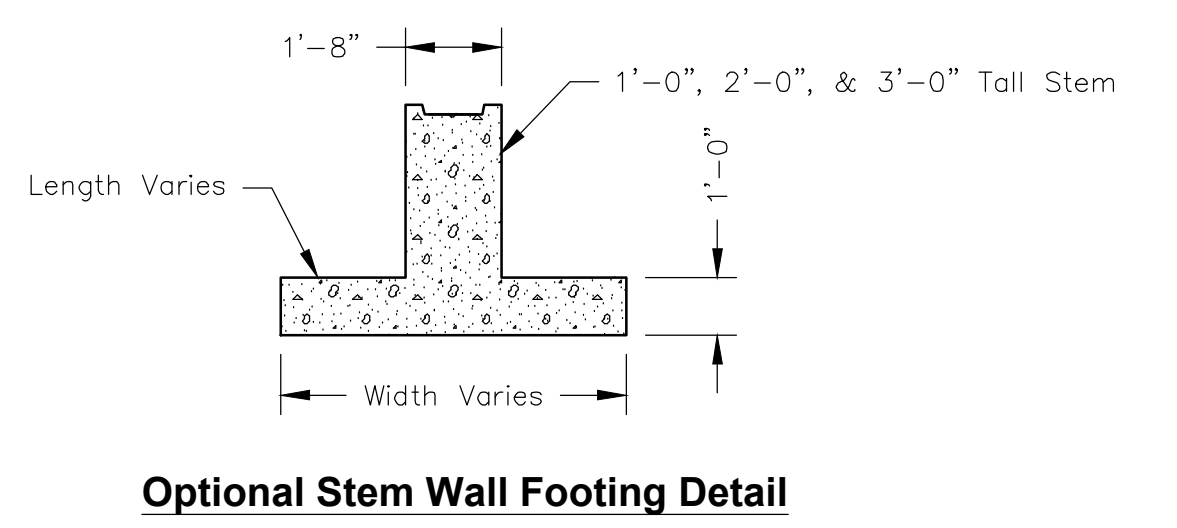
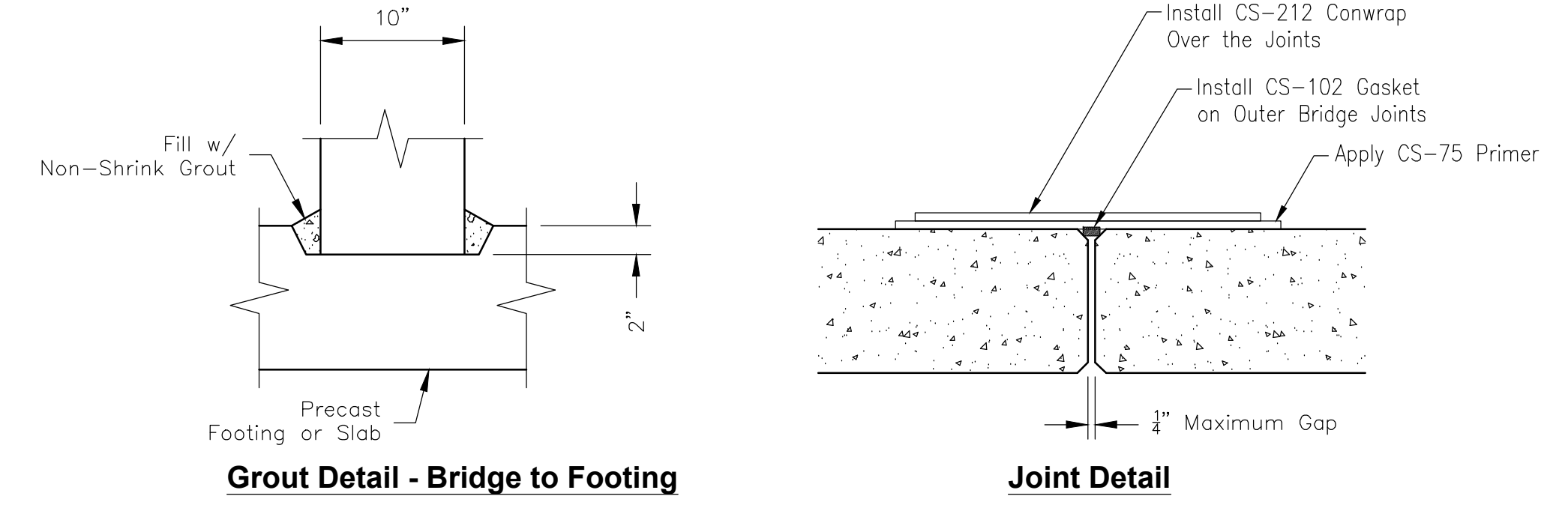
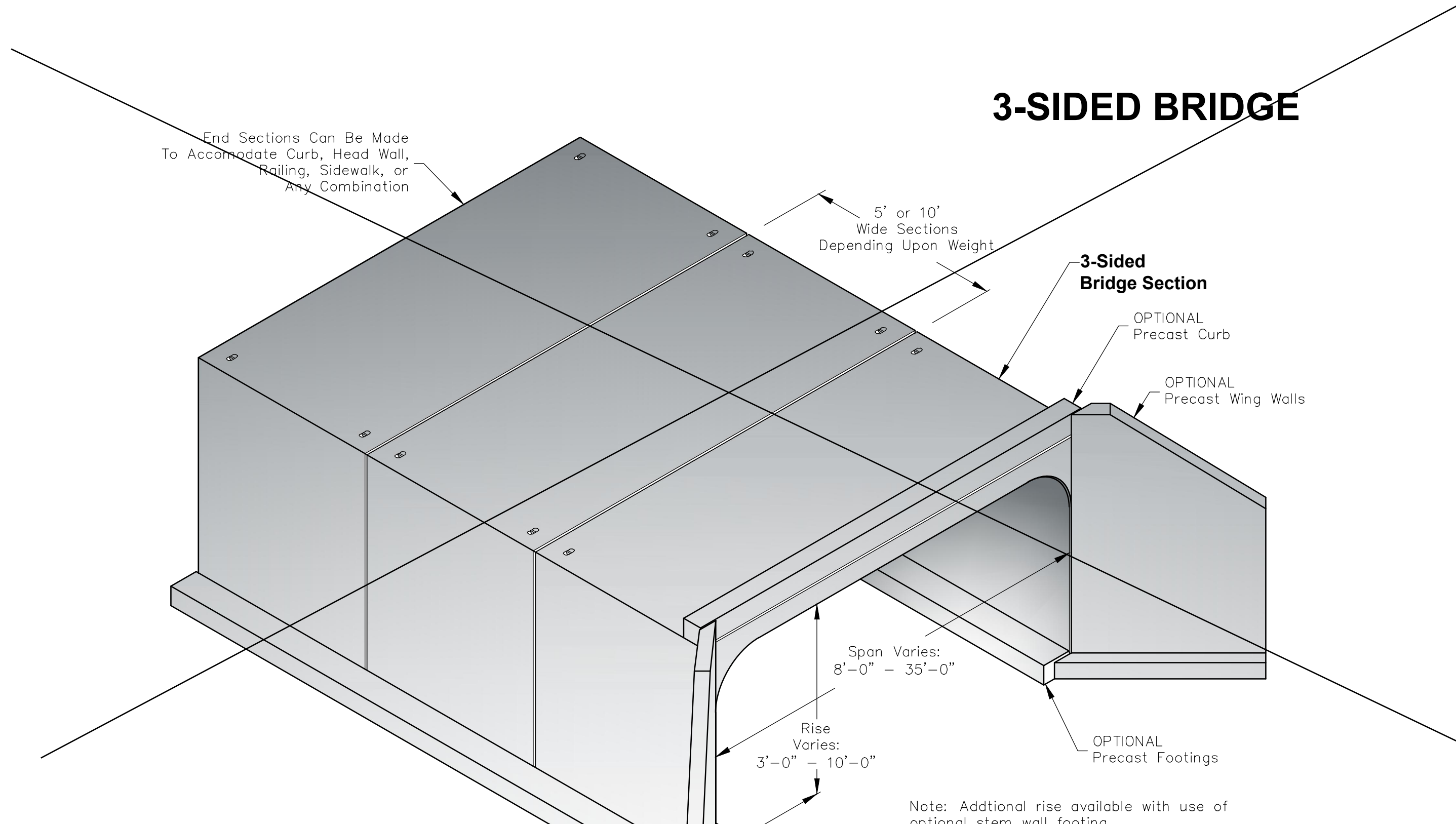
SHEET NO.:  
**C-101**





### 3-SIDED BRIDGE

### 3-SIDED BRIDGE



<p>PO Box 323, Wilsonville, Oregon 97070-0323 Tel: (503) 682-2844 Fax: (503) 682-2657</p>	<p><b>3-SIDED BRIDGE</b></p> <p>File Name: 020-3-SIDED BRIDGE</p>	<p><b>3-SIDED BRIDGE</b></p>
	<p>Issue Date: 2016</p> <p><a href="http://oldcastleprecast.com/wilsonville">oldcastleprecast.com/wilsonville</a></p>	
	<p>1.0</p>	

<p>PO Box 323, Wilsonville, Oregon 97070-0323 Tel: (503) 682-2844 Fax: (503) 682-2657</p>	<p><b>3-SIDED BRIDGE</b></p> <p>File Name: 020-3-SIDED BRIDGE</p>	<p><b>3-SIDED BRIDGE</b></p>
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	<p>1.1</p>	



# BID ALTERNATE - POLYPROPYLENE CORRUGATED PIPE CHAMBER



## DC-780 STORMTECH CHAMBER SPECIFICATIONS

- CHAMBERS SHALL BE STORMTECH DC-780.
- CHAMBERS SHALL BE ARCH-SHAPED AND SHALL BE MANUFACTURED FROM VIRGIN, IMPACT-MODIFIED POLYPROPYLENE COPOLYMERS.
- CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
- CHAMBER ROWS SHALL PROVIDE CONTINUOUS, UNOBSTRUCTED INTERNAL SPACE WITH NO INTERNAL SUPPORTS THAT WOULD IMPEDE FLOW OR LIMIT ACCESS FOR INSPECTION.
- THE STRUCTURAL DESIGN OF THE CHAMBERS, THE STRUCTURAL BACKFILL, AND THE INSTALLATION REQUIREMENTS SHALL ENSURE THAT THE LOAD FACTORS SPECIFIED IN THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS, SECTION 12.12, ARE MET FOR: 1) LONG-DURATION DEAD LOADS AND 2) SHORT-DURATION LIVE LOADS, BASED ON THE AASHTO DESIGN TRUCK WITH CONSIDERATION FOR IMPACT AND MULTIPLE VEHICLE PRESENCES.
- CHAMBERS SHALL BE DESIGNED, TESTED AND ALLOWABLE LOAD CONFIGURATIONS DETERMINED IN ACCORDANCE WITH ASTM F2787, "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS". LOAD CONFIGURATIONS SHALL INCLUDE: 1) INSTANTANEOUS (<1 MIN) AASHTO DESIGN TRUCK LIVE LOAD ON MINIMUM COVER 2) MAXIMUM PERMANENT (75-YR) COVER LOAD AND 3) ALLOWABLE COVER WITH PARKED (1-WEEK) AASHTO DESIGN TRUCK.
- REQUIREMENTS FOR HANDLING AND INSTALLATION:
  - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
  - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
  - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT SHALL BE GREATER THAN OR EQUAL TO 550 LBS/FT<sup>3</sup>. THE ASC IS DEFINED IN SECTION 6.2.8 OF ASTM F2418. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.
- ONLY CHAMBERS THAT ARE APPROVED BY THE SITE DESIGN ENGINEER WILL BE ALLOWED. UPON REQUEST BY THE SITE DESIGN ENGINEER OR OWNER, THE CHAMBER MANUFACTURER SHALL SUBMIT A STRUCTURAL EVALUATION FOR APPROVAL BEFORE DELIVERING CHAMBERS TO THE PROJECT SITE AS FOLLOWS:
  - THE STRUCTURAL EVALUATION SHALL BE SEALED BY A REGISTERED PROFESSIONAL ENGINEER.
  - THE STRUCTURAL EVALUATION SHALL DEMONSTRATE THAT THE SAFETY FACTORS ARE GREATER THAN OR EQUAL TO 1.95 FOR DEAD LOAD AND 1.75 FOR LIVE LOAD. THE MINIMUM REQUIRED BY ASTM F2787 AND BY SECTIONS 3 AND 12.12 OF THE AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS FOR THERMOPLASTIC PIPE.
  - THE TEST DERIVED CREEP MODULUS AS SPECIFIED IN ASTM F2418 SHALL BE USED FOR PERMANENT DEAD LOAD DESIGN EXCEPT THAT IT SHALL BE THE 75-YEAR MODULUS USED FOR DESIGN.
- CHAMBERS AND END CAPS SHALL BE PRODUCED AT AN ISO 9001 CERTIFIED MANUFACTURING FACILITY.

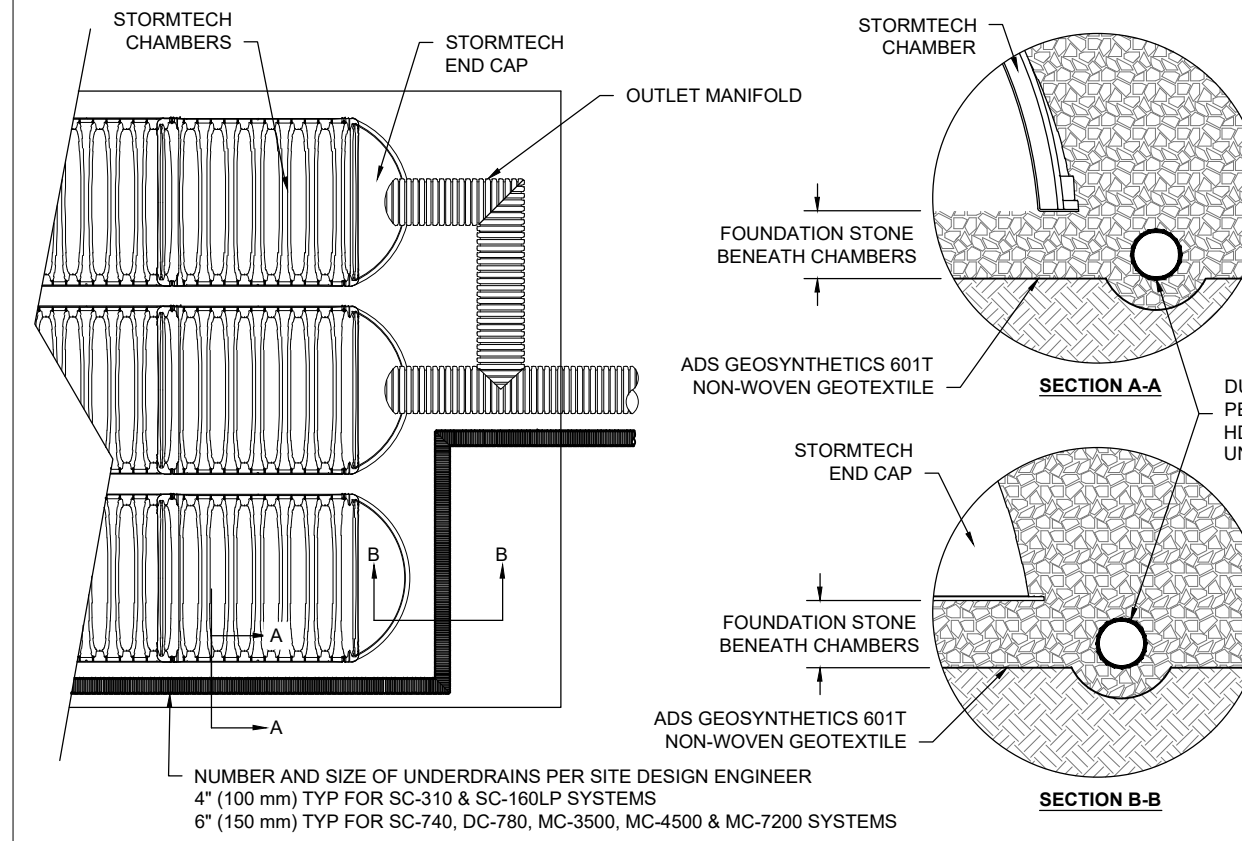
## IMPORTANT - NOTES FOR THE BIDDING AND INSTALLATION OF THE DC-780 CHAMBER SYSTEM

- STORMTECH DC-780 CHAMBERS SHALL NOT BE INSTALLED UNTIL THE MANUFACTURER'S REPRESENTATIVE HAS COMPLETED A PRE-CONSTRUCTION MEETING WITH THE INSTALLERS.
- STORMTECH DC-780 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
- CHAMBERS ARE NOT TO BE BACKFILLED WITH A DOZER OR AN EXCAVATOR SITUATED OVER THE CHAMBERS. STORMTECH RECOMMENDS 3 BACKFILL METHODS:
  - STONESHOOTER LOCATED OFF THE CHAMBER BED.
  - BACKFILL AS ROWS ARE BUILT USING AN EXCAVATOR ON THE FOUNDATION STONE OR SUBGRADE.
  - BACKFILL FROM OUTSIDE THE EXCAVATION USING A LONG BOOM HOE OR EXCAVATOR.
- THE FOUNDATION STONE SHALL BE LEVELED AND COMPACTED PRIOR TO PLACING CHAMBERS.
- JOINTS BETWEEN CHAMBERS SHALL BE PROPERLY SEATED PRIOR TO PLACING STONE.
- MAINTAIN MINIMUM - 6" (150 mm) SPACING BETWEEN THE CHAMBER ROWS.
- EMBEDMENT STONE SURROUNDING CHAMBERS MUST BE A CLEAN, CRUSHED, ANGULAR STONE 3/4"-2" (20-50 mm).
- THE CONTRACTOR MUST REPORT ANY DISCREPANCIES WITH CHAMBER FOUNDATION MATERIALS BEARING CAPACITIES TO THE SITE DESIGN ENGINEER.
- ADS RECOMMENDS THE USE OF "FLEXSTORM CATCH IT" INSERTS DURING CONSTRUCTION FOR ALL INLETS TO PROTECT THE SUBSURFACE STORMWATER MANAGEMENT SYSTEM FROM CONSTRUCTION SITE RUNOFF.

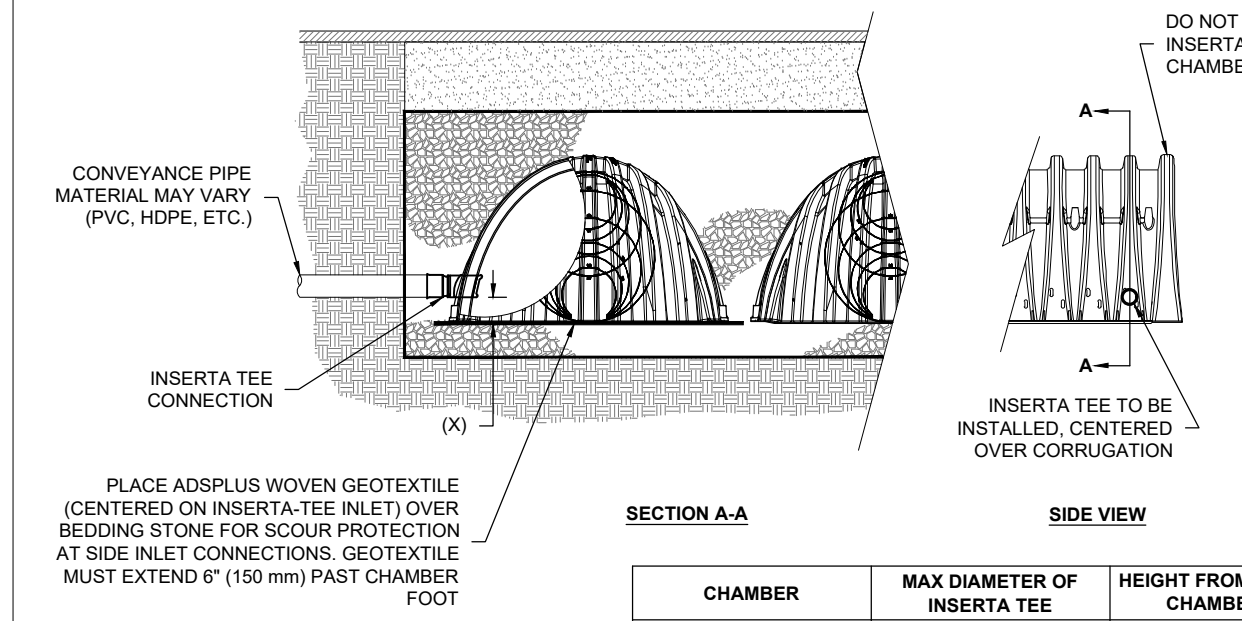
## NOTES FOR CONSTRUCTION EQUIPMENT

- STORMTECH DC-780 CHAMBERS SHALL BE INSTALLED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
- THE USE OF CONSTRUCTION EQUIPMENT OVER DC-780 CHAMBERS IS LIMITED:
  - NO EQUIPMENT IS ALLOWED ON BARE CHAMBERS.
  - NO RUBBER Tired LOADERS, DUMP TRUCKS, OR EXCAVATORS ARE ALLOWED UNTIL PROPER FILL DEPTHS ARE REACHED IN ACCORDANCE WITH THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
  - WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT CAN BE FOUND IN THE "STORMTECH SC-310/SC-740/DC-780 CONSTRUCTION GUIDE".
- FULL 36" (900 mm) OF STABILIZED COVER MATERIALS OVER THE CHAMBERS IS REQUIRED FOR DUMP TRUCK TRAVEL OR DUMPING. USE OF A DOZER TO PUSH EMBEDMENT STONE BETWEEN THE ROWS OF CHAMBERS MAY CAUSE DAMAGE TO THE CHAMBERS AND IS NOT AN ACCEPTABLE BACKFILL METHOD. ANY CHAMBERS DAMAGED BY THE "DUMP AND PUSH" METHOD ARE NOT COVERED UNDER THE STORMTECH STANDARD WARRANTY.

CONTACT STORMTECH AT 1-888-892-2694 WITH ANY QUESTIONS ON INSTALLATION REQUIREMENTS OR WEIGHT LIMITS FOR CONSTRUCTION EQUIPMENT.



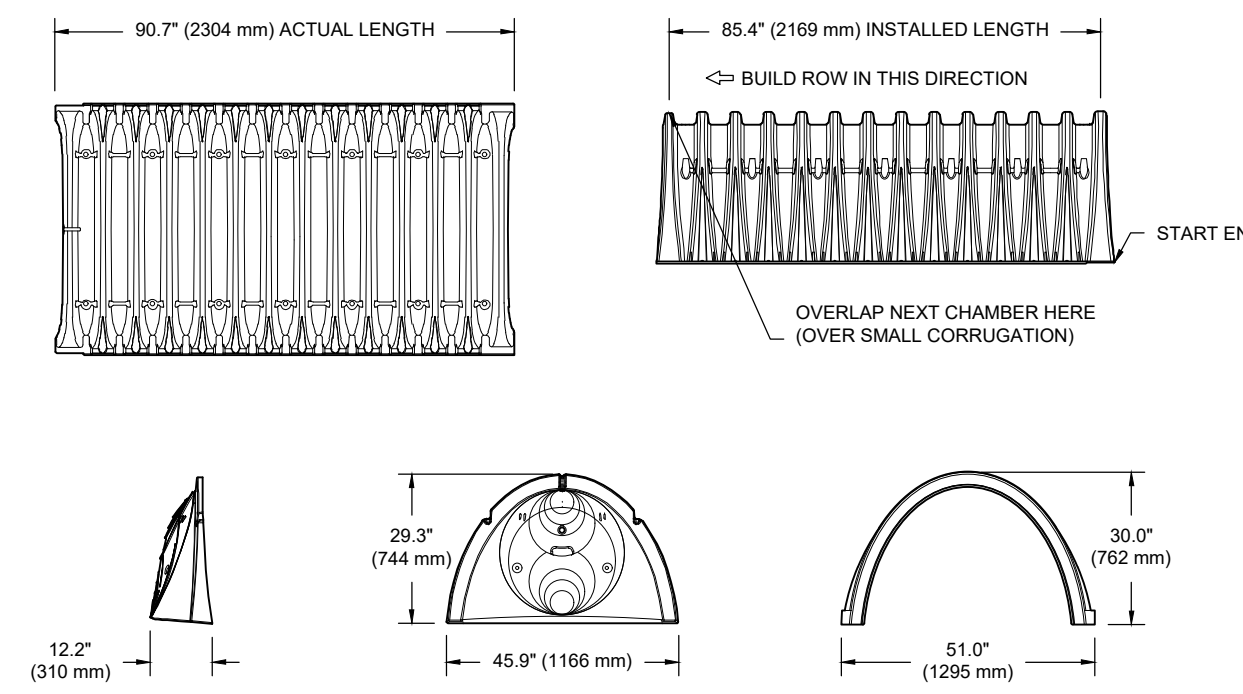
## 5 UNDERDRAIN DETAIL



CHAMBER	MAX DIAMETER OF INSERTA TEE	HEIGHT FROM BASE OF CHAMBER (X)
SC-310	6" (150 mm)	4" (100 mm)
SC-740	10" (250 mm)	4" (100 mm)
DC-780	10" (250 mm)	4" (100 mm)
MC-3500	12" (300 mm)	6" (150 mm)
MC-4500	12" (300 mm)	6" (200 mm)
MC-7200	12" (300 mm)	6" (200 mm)

INSERTA TEE FITTINGS AVAILABLE FOR SDR 26, SDR 35, SCH 40 IPS GASKETED & SOLVENT WELD, N-12, HP STORM, C-900 OR DUCTILE IRON

## 6 INSERTA-TEE SIDE INLET DETAIL



PART #	STUB	A	B	C
SC740EPE06T / SC740EPE06TPC	6" (150 mm)	10.9" (277 mm)	18.5" (470 mm)	—
SC740EPE08B / SC740EPE08BPC	8" (200 mm)	12.2" (310 mm)	16.5" (419 mm)	0.9" (19 mm)
SC740EPE08T / SC740EPE08TPC	8" (200 mm)	12.2" (310 mm)	16.5" (419 mm)	0.6" (15 mm)
SC740EPE10T / SC740EPE10TPC	10" (250 mm)	13.4" (340 mm)	14.5" (368 mm)	—
SC740EPE10B / SC740EPE10BPC	10" (250 mm)	13.4" (340 mm)	14.5" (368 mm)	0.7" (18 mm)
SC740EPE12T / SC740EPE12TPC	12" (300 mm)	14.7" (373 mm)	12.5" (318 mm)	—
SC740EPE12B / SC740EPE12BPC	12" (300 mm)	14.7" (373 mm)	12.5" (318 mm)	1.2" (30 mm)
SC740EPE15T / SC740EPE15TPC	15" (375 mm)	18.4" (467 mm)	9.0" (229 mm)	—
SC740EPE15B / SC740EPE15BPC	15" (375 mm)	18.4" (467 mm)	9.0" (229 mm)	1.3" (33 mm)
SC740EPE18T / SC740EPE18TPC	18" (450 mm)	19.7" (500 mm)	5.0" (127 mm)	—
SC740EPE18B / SC740EPE18BPC	18" (450 mm)	19.7" (500 mm)	5.0" (127 mm)	1.6" (41 mm)
SC740EPE24B*	24" (600 mm)	18.5" (470 mm)	—	0.1" (3 mm)
SC740EPE24BR*	24" (600 mm)	18.5" (470 mm)	—	0.1" (3 mm)

\*ASSUMES 6" (152 mm) STONE ABOVE, 9" (229 mm) BELOW, AND 6" (152 mm) BETWEEN CHAMBERS

PRE-FAB STUB AT BOTTOM OF END CAP WITH FLAMP END WITH "BR"  
 PRE-FAB STUBS AT BOTTOM OF END CAP FOR PART NUMBERS ENDING WITH "B"  
 PRE-FAB STUBS AT TOP OF END CAP FOR PART NUMBERS ENDING WITH "T"  
 PRE-CORED END CAPS END WITH "PC"

ALL STUBS, EXCEPT FOR THE SC740EPE24B/SC740EPE24BR ARE PLACED AT BOTTOM OF END CAP SUCH THAT THE OUTSIDE DIAMETER OF THE STUB IS FLUSH WITH THE BOTTOM OF THE END CAP. FOR ADDITIONAL INFORMATION CONTACT STORMTECH AT 1-888-892-2694.

\* FOR THE SC740EPE24B/SC740EPE24BR THE 24" (600 mm) STUB LIES BELOW THE BOTTOM OF THE END CAP APPROXIMATELY 1.75" (44 mm). BACKFILL MATERIAL SHOULD BE REMOVED FROM BELOW THE N-12 STUB SO THAT THE FITTING SITS LEVEL.

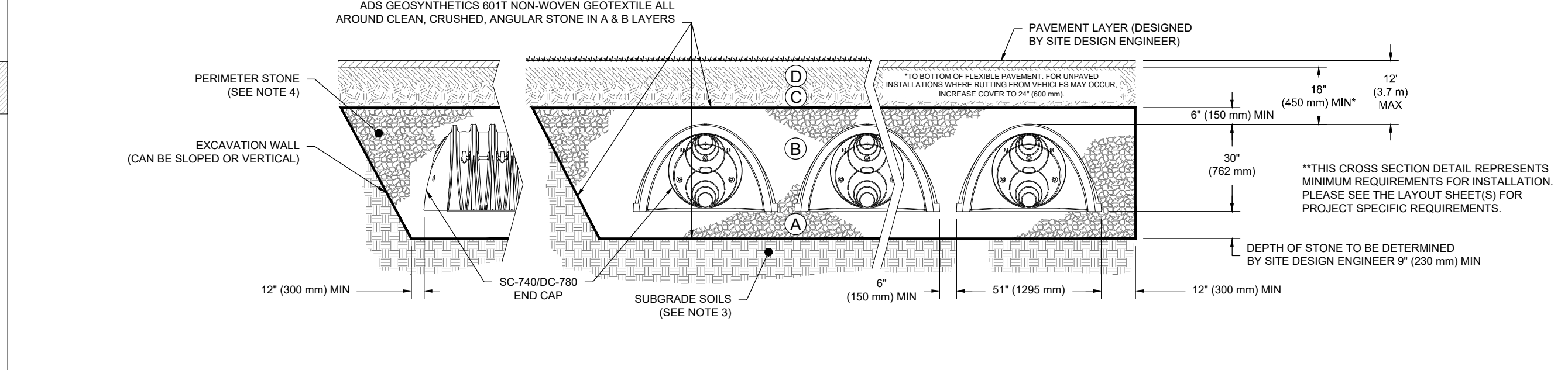
NOTE: ALL DIMENSIONS ARE NOMINAL

## 2 DC-780 TECHNICAL SPECIFICATIONS

## ACCEPTABLE FILL MATERIALS: STORMTECH DC-780 CHAMBER SYSTEMS

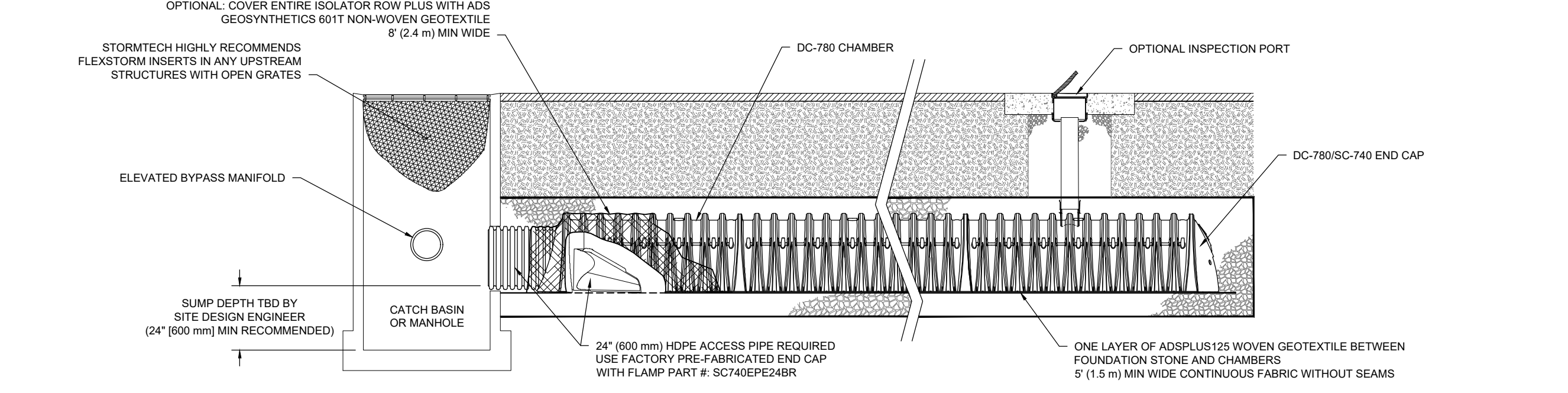
MATERIAL LOCATION	DESCRIPTION	AASHTO MATERIAL CLASSIFICATIONS	COMPACTION / DENSITY REQUIREMENT
D	<b>FINAL FILL:</b> FILL MATERIAL FOR LAYER 'D' STARTS FROM THE TOP OF THE 'C' LAYER TO THE BOTTOM OF FLEXIBLE PAVEMENT OR UNPAVED FINISHED GRADE ABOVE. NOTE THAT PAVEMENT SUBBASE MAY BE PART OF THE 'D' LAYER.	N/A	PREPARE PER SITE DESIGN ENGINEER'S PLANS. PAVED INSTALLATIONS MAY HAVE STRINGENT MATERIAL AND PREPARATION REQUIREMENTS.
C	<b>INITIAL FILL:</b> FILL MATERIAL FOR LAYER 'C' STARTS FROM THE TOP OF THE EMBEDMENT STONE ('B' LAYER) TO 18" (450 mm) ABOVE THE TOP OF THE CHAMBER. NOTE THAT PAVEMENT SUBBASE MAY BE A PART OF THE 'C' LAYER.	GRANULAR WELL-GRADED SOIL/AGGREGATE MIXTURES, <35% FINES OR PROCESSED AGGREGATE. OR AASHTO M43 <sup>1</sup> 3, 357, 4, 467, 5, 56, 57, 6, 67, 68, 7, 78, 8, 89, 9, 10	BEGIN COMPACTIONS AFTER 12" (300 mm) OF MATERIAL OVER THE CHAMBERS IS REACHED. COMPACT ADDITIONAL LAYERS IN 6" (150 mm) MAX LIFTS TO A MIN. 95% PROCTOR DENSITY FOR WELL-GRADED MATERIAL AND 95% RELATIVE DENSITY FOR PROCESSED AGGREGATE MATERIALS. ROLLER GROSS VEHICLE WEIGHT NOT TO EXCEED 12,000 lbs (53 kN). DYNAMIC FORCE NOT TO EXCEED 20,000 lbs (89 kN).
B	<b>EMBEDMENT STONE:</b> FILL SURROUNDING THE CHAMBERS FROM THE FOUNDATION STONE ('A' LAYER) TO THE 'C' LAYER ABOVE.	CLEAN, CRUSHED, ANGULAR STONE AASHTO M43 <sup>1</sup> 3, 357, 4, 467, 5, 56, 57	NO COMPACTION REQUIRED.
A	<b>FOUNDATION STONE:</b> FILL BELOW CHAMBERS FROM THE SUBGRADE UP TO THE FOOT (BOTTOM) OF THE CHAMBER.	CLEAN, CRUSHED, ANGULAR STONE AASHTO M43 <sup>1</sup> 3, 357, 4, 467, 5, 56, 57	PLATE COMPACT OR ROLL TO ACHIEVE A FLAT SURFACE. <sup>2,3</sup>

- PLEASE NOTE:
- THE LISTED AASHTO DESIGNATIONS ARE FOR GRADATIONS ONLY. THE STONE MUST ALSO BE CLEAN, CRUSHED, ANGULAR. FOR EXAMPLE, A SPECIFICATION FOR #4 STONE WOULD STATE: "CLEAN, CRUSHED, ANGULAR NO. 4 (AASHTO M43) STONE".
  - STORMTECH COMPACTION REQUIREMENTS ARE MET FOR 'A' LOCATION MATERIALS WHEN PLACED AND COMPACTED IN 9" (230 mm) (MAX) LIFTS USING TWO FULL COVERS WITH A VIBRATORY COMPACTOR.
  - WHERE INFILTRATION SURFACES MAY BE COMPROMISED BY COMPACTION, FOR STANDARD DESIGN LOAD CONDITIONS, A FLAT SURFACE MAY BE ACHIEVED BY RAKING OR DRAGGING WITHOUT COMPACTION EQUIPMENT. FOR SPECIAL LOAD DESIGNS, CONTACT STORMTECH FOR COMPACTION REQUIREMENTS.
  - ONCE LAYER 'C' IS PLACED, ANY SOIL/MATERIAL CAN BE PLACED IN LAYER 'D' UP TO THE FINISHED GRADE. MOST PAVEMENT SUBBASE SOILS CAN BE USED TO REPLACE THE MATERIAL REQUIREMENTS OF LAYER 'C' OR 'D' AT THE SITE DESIGN ENGINEER'S DISCRETION.

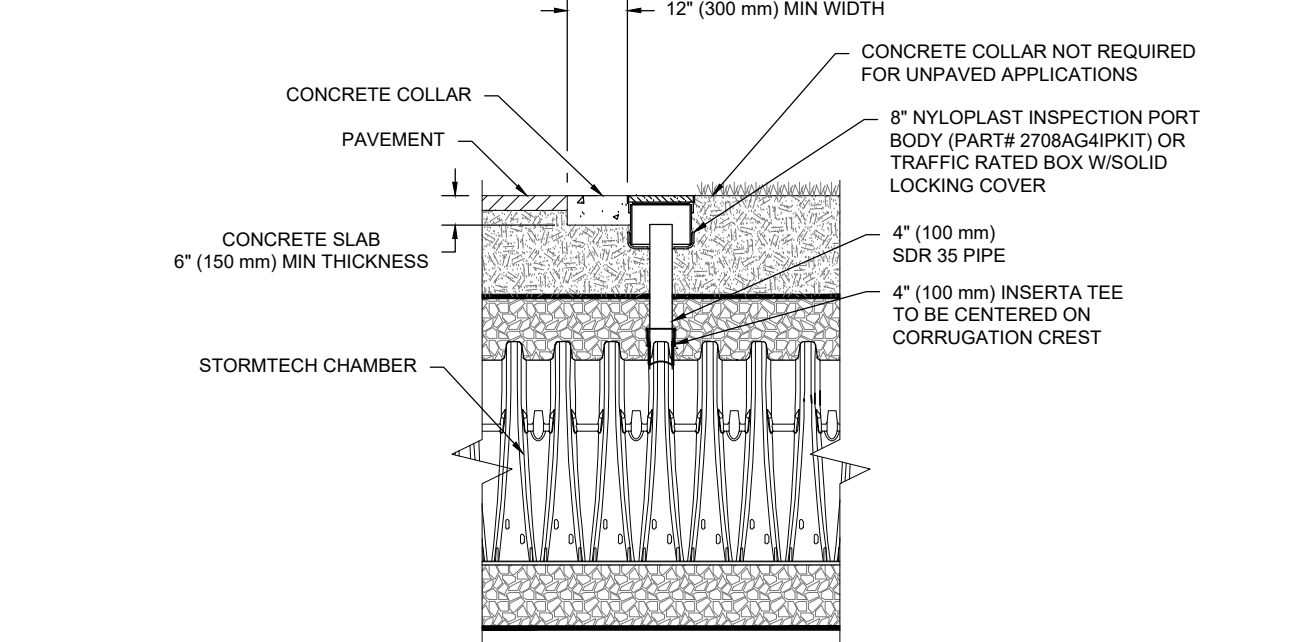


- NOTES:**
- CHAMBERS SHALL MEET THE REQUIREMENTS OF ASTM F2418, "STANDARD SPECIFICATION FOR POLYPROPYLENE (PP) CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
  - DC-780 CHAMBERS SHALL BE DESIGNED IN ACCORDANCE WITH ASTM F2787 "STANDARD PRACTICE FOR STRUCTURAL DESIGN OF THERMOPLASTIC CORRUGATED WALL STORMWATER COLLECTION CHAMBERS".
  - THE SITE DESIGN ENGINEER IS RESPONSIBLE FOR ASSESSING THE BEARING RESISTANCE (ALLOWABLE BEARING CAPACITY) OF THE SUBGRADE SOILS AND THE DEPTH OF FOUNDATION STONE WITH CONSIDERATION FOR THE RANGE OF EXPECTED SOIL MOISTURE CONDITIONS.
  - PERIMETER STONE MUST BE EXTENDED HORIZONTALLY TO THE EXCAVATION WALL FOR BOTH VERTICAL AND SLOPED EXCAVATION WALLS.
  - REQUIREMENTS FOR HANDLING AND INSTALLATION:
    - TO MAINTAIN THE WIDTH OF CHAMBERS DURING SHIPPING AND HANDLING, CHAMBERS SHALL HAVE INTEGRAL, INTERLOCKING STACKING LUGS.
    - TO ENSURE A SECURE JOINT DURING INSTALLATION AND BACKFILL, THE HEIGHT OF THE CHAMBER JOINT SHALL NOT BE LESS THAN 2".
    - TO ENSURE THE INTEGRITY OF THE ARCH SHAPE DURING INSTALLATION, a) THE ARCH STIFFNESS CONSTANT AS DEFINED IN SECTION 6.2.8 OF ASTM F2418 SHALL BE GREATER THAN OR EQUAL TO 550 LBS/FT<sup>3</sup>. AND b) TO RESIST CHAMBER DEFORMATION DURING INSTALLATION AT ELEVATED TEMPERATURES (ABOVE 73° F / 23° C), CHAMBERS SHALL BE PRODUCED FROM REFLECTIVE GOLD OR YELLOW COLORS.

## 1 DC-780 CROSS SECTION DETAIL



## 3 DC-780 ISOLATOR ROW PLUS DETAIL



NOTE: INSPECTION PORTS MAY BE CONNECTED THROUGH ANY CHAMBER CORRUGATION CREST.

## INSPECTION & MAINTENANCE

- STEP 1) INSPECT ISOLATOR ROW PLUS FOR SEDIMENT
- INSPECTION PORTS (IF PRESENT)
  - REMOVE/OPEN LID ON NYLON/PLASTIC INLINE DRAIN
  - REMOVE AND CLEAN FLEXSTORM FILTER IF INSTALLED
  - USING A FLASHLIGHT AND STADIA ROD, MEASURE DEPTH OF SEDIMENT AND RECORD ON MAINTENANCE LOG
  - LOWER A CAMERA INTO ISOLATOR ROW PLUS FOR VISUAL INSPECTION OF SEDIMENT LEVELS (OPTIONAL)
  - IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- B. ALL ISOLATOR PLUS ROWS
- REMOVE COVER FROM STRUCTURE AT UPSTREAM END OF ISOLATOR ROW PLUS
  - USING A FLASHLIGHT, INSPECT DOWN THE ISOLATOR ROW PLUS THROUGH OUTLET PIPE
  - MIRRORS ON POLES OR CAMERAS MAY BE USED TO AVOID A CONFINED SPACE ENTRY
  - FOLLOW OSHA REGULATIONS FOR CONFINED SPACE ENTRY IF ENTERING MANHOLE
  - IF SEDIMENT IS AT, OR ABOVE, 3" (80 mm) PROCEED TO STEP 2. IF NOT, PROCEED TO STEP 3.
- STEP 2) CLEAN OUT ISOLATOR ROW PLUS USING THE JET/VAC PROCESS
- A FIXED CULVERT CLEANING NOZZLE WITH REAR FACING SPRAY OF 45" (1.1 m) OR MORE IS PREFERRED
  - APPLY MULTIPLE PASSES OF JET/VAC UNTIL BACKFLUSH WATER IS CLEAN
  - VACUUM STRUCTURE SUMP AS REQUIRED
- STEP 3) REPLACE ALL COVERS, GRATES, FILTERS, AND LIDS; RECORD OBSERVATIONS AND ACTIONS.
- STEP 4) INSPECT AND CLEAN BASINS AND MANHOLES UPSTREAM OF THE STORMTECH SYSTEM.

## NOTES

- INSPECT EVERY 6 MONTHS DURING THE FIRST YEAR OF OPERATION. ADJUST THE INSPECTION INTERVAL BASED ON PREVIOUS OBSERVATIONS OF SEDIMENT ACCUMULATION AND HIGH WATER ELEVATIONS.
- CONDUCT JETTING AND VACTORING ANNUALLY OR WHEN INSPECTION SHOWS THAT MAINTENANCE IS NECESSARY.

DC-780 STANDARD DETAILS

StormTech Chamber System  
888-892-2694 | WWW.STORMTECH.COM

4640 TRUEMAN BLVD  
HILLIARD, OH 43026



**Stantec**

2080 WOODDALE DRIVE  
SUITE 100  
WOODBURY, MN 55125  
PHONE: 651-294-4580  
FAX: 651-228-1969  
WWW.STANTEC.COM

SUB CONSULTANT:

CLIENT:  
SHINGLE CREEK WATERSHED MANAGEMENT COMMISSION

COLORADO AVENUE  
STORMWATER IMPROVEMENTS  
HENNEPIN COUNTY  
CRYSTAL, MN 55422

PROJECT TITLE:

ISSUE NO.	DATE	DESCRIPTION
0	10/26/2023	30% PLANS

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.: 227705751  
DWN BY: CCG  
CHKD BY: KT  
APPD BY: ####  
ISSUE DATE: 10/26/2023  
ISSUE NO.: 0  
SHEET TITLE:  
BID ALTERNATE DETAILS  
SHEET NO.:  
C-802





SHINGLE CREEK / WEST MISSISSIPPI WATERSHED MANAGEMENT COMMISSION  
MONTHLY COMMUNICATION LOG  
November 2023

Date	From	To	SC	WM	Description
10/6/23	Judie Anderson	Amy Timm, MPCA	X		Transmittal of quarterly report for Crystal Lake Management Plan 319 grant
10/11/23	Amy Timm, MPCA	Judie Anderson, Diane Spector, Katie Kemmitt	X		Notice of excess match funds in grant. Asking if SCWM will be able to spend match funds, and if not, why. Responded that without another grant extension SCWM will not spend all the match funds.
10/24/23	Katie Kemmitt	North Amer Lake Mgmt Society	X		Presentation of Bass Lake Vegetation Improvements project at the North American Lake Management Society annual meeting in Erie, PA.
10/16/23	Todd Shoemaker	Drew McGovern, Hennepin County	X		Respond to questions about SC computer model at Twin Creek & CR 10 (upstream of Twin Lake).
10/16/23	Grace Barcelow, Hennepin County	Diane Spector, Katie Kemmitt	X	X	Meeting to discuss education and outreach efforts for the watersheds. Grace is moving forward with exploring a lakeshore restoration workshop.
10/20/23	Amy Timm, MPCA	Katie Kemmitt	X		Meeting to discuss remaining match funds for Crystal Lake 319 and possibility of extending grant funds through June 2024.
10/20/23	James Soltis, City of Brooklyn Center	Todd Shoemaker	X		Discuss Emerald ash borer pesticide use.
10/24/23	Cara Young, TKDA	Todd Shoemaker	X		Discuss stormwater management requirements for Metro Transit garage redevelopment in Brooklyn Center
10/24/23	Andrew Diehl, CEI	Todd Shoemaker		X	Discuss stormwater management requirements project in Brooklyn Park
10/26/23	Drew McGovern, Hennepin County	Todd Shoemaker	X		Discuss PCSWMM model box culvert size for County Road 10 upstream of Twin Lake.
10/30/23	Grace Barcelow, Hennepin County	Diane Spector, Katie Kemmitt	X	X	Transmittal of Resilient Shorelines Workshop summary from Metro Blooms
10/30/23	Mitch Robinson, Brooklyn Park	Todd Shoemaker		X	Discuss design infiltration rates with MPCA staff.

**To:** Shingle Creek/West Mississippi WMO Commissioners  
**From:** Todd Shoemaker, PE, CFM  
Katie Kemmitt  
**Date:** November 1, 2023  
**Subject:** November 2023 Staff Report

**Recommended  
Commission Action**

For discussion and information.

### **General Updates**

#### *Highways 252/94 EIS Review*

The Federal Highway Administration (FHWA) and Minnesota Department of Transportation (MnDOT) released the Final Scoping Decision Document (SDD) to Participating Agencies on October 2, 2023. MnDOT hosted a virtual Cooperating and Participating Agency Meeting #10 on October 12<sup>th</sup> and Policy Advisory Committee Meeting #11 on October 25<sup>th</sup>. MnDOT received over 500 comments during the 60-day public review period of the Draft SDD, responded to all public and agency comments received, and grouped the comments into nine overarching themes: Alternatives, Air Quality, Environmental Justice, Equity and Health Assessment Recommendations, Property Impacts, Purpose and Need, Traffic Noise, Safety, and Transit.

Stantec attended both meetings and will reconvene the 252/94 EIS Review Subgroup within the next two weeks to discuss the SDD document, MnDOT responses, and next steps.

### **Project Updates**

#### *Crystal Lake Management Plan*

Staff are working with Minnesota Pollution Control Agency (MPCA) to extend the 319 grant through the early part of 2024 to allow the Commission to spend the rest of the grant match requirement, which amounts to \$32,900. Sediment cores were collected in early October to assess alum treatment success. Preliminary results show phosphorus release rates have been significantly reduced.

#### *Meadow Lake Drawdown*

Staff have extended the Meadow Lake Clean Water Fund Projects and Practices grant through the end of 2024, one year longer than originally planned. The grant extension will allow the Commission to spend more grant funds on monitoring and adaptive management. Staff collected post-alum treatment sediment cores on October 4<sup>th</sup>, 2023 to evaluate the impact of the alum treatment on sediment phosphorus release rate. Preliminary results show sediment phosphorus release rates have been significantly reduced. Staff have also been collecting water quality data in September and October to supplement CAMP volunteer water quality monitoring.



*Eagle Lake Subwatershed Assessment*

Technical memorandum included in packet.

*Gaulke Pond Subwatershed Assessment*

Stantec has completed the 30% conceptual design plans; the plans and a short memo are provided in a separate agenda item.

*Shingle Creek Brookdale Park Remeander*

Stantec has modified the concept plan based on community input and City and stakeholder comments. The revised concept will be reviewed by City of Brooklyn Park and discussed for further direction. Stantec and the City anticipate presenting this modified concept alternative to the community prior to progressing the project's preliminary design plans. The date of the next public meeting will be determined in November.

*Shingle Creek Trail Bank Stabilization and Fish Access Improvements*

Stantec has modified the concept plan based on community input and City and stakeholder comments. The revised concept will be reviewed by City of Brooklyn Park and discussed for further direction. Stantec and the City anticipate presenting this modified concept alternative to the community prior to progressing the project's preliminary design plans. The date of the next public meeting will be determined in November.

*Mississippi Riverbank Stabilization Feasibility Study*

City of Brooklyn Park and Hennepin County staff are contacting residents to gauge interest in additional study. From those that are interested, staff will then select 5-6 properties to visit and evaluate erosion and potential solutions. Selected properties will be surveyed this fall.

Items in Bold Italic have changed since the last report

**Grant Projects**

Project	Grant Source	Expiration	Status
<i>Shingle Creek</i>			
Shingle Cr Connections II	CWF	12/31/23	Project is complete, final payment pending
Bass Creek Restoration	WBIF	12/31/23	Project is complete, final payment pending
Meadow Lake Mgmt Plan: Drawdown	WBIF	12/31/23	Complete, final grant payment pending
Crystal Lake Mgmt Plan	MPCA 319	TBA	Waiting on final sediment core results
Wetland 639W SRP Channel Extension	HCES	12/31/23	Considering an extension
Meadow Lake Mgmt Plan	CWF	12/31/24	Grant has been extended for possible 2024 BMPs
Palmer Creek Estates Stream Resto	CWF	12/31/24	Stream work complete, working on hydrodynamic separator installation, completion expected this fall
Bass Lake Vegetation Mgmt	DNR CPL	6/30/25	In progress
Eagle Lake SWA	WBIF	12/31/25	In progress
Gaulke Pond Area SWA	WBIF	12/31/25	In progress
<i>West Mississippi</i>			
Miss Riverbank Streambank Stabilization	WBIF	12/31/25	In progress

**Cost Share Projects**

Project	Partner	Amount	Status
<i>Shingle Creek</i>			
Shingle Creek Rain Gardens	City-Mpls	\$50,000	In progress
<b>Crystal Community Center</b>	<b>City-Crystal</b>	<b>\$41,559</b>	<b>In-progress-Final</b>
Highland Gables	Partner-Metro Blooms	\$49,993	In progress
<i>West Mississippi</i>			
Miss Gateway Shoreline Stabil	Partner-3 Rivers	\$75,000	Awarded, just started

**Encumbered Balances as of 9/30/23 (Amounts are approximate)**

Watershed	City Cost Share	Partnership	Closed Projects	Assigned	Unrestricted
Shingle Creek	<del>\$284,000</del> <b>\$292,639</b>	\$106,000	\$106,000	\$23,000	\$69,000
West Mississippi	\$460,000	\$130,000	\$151,000	\$154,000*	\$120,000

\*About \$89,000 assigned to "Grant Match account"

**Judie Anderson**

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**From:** Hennepin County <hennepin@public.govdelivery.com>  
**Sent:** Tuesday, October 31, 2023 2:27 PM  
**To:** Judie Anderson  
**Subject:** Green Notes: Land protection leaves conservation legacy, become a Minnesota Water Steward, visit the drop-off facilities

[View in browser](#)



## Permanent land protection leaves a conservation legacy



Hennepin County is working to establish 6,000 acres of [conservation easements](#) by 2040. This will provide habitat for a diversity of wildlife, preserve space for residents to connect with nature, and make our communities more resilient to climate change.

A conservation easement is a set of development restrictions that a landowner voluntarily places on their property to protect its natural resources. They provide permanent protection, ensuring that the land is preserved for future generations while allowing the landowner to continue to use and enjoy what they value about their land.

## Building on a tradition of land protection

Hennepin County along with partners like the Minnesota Land Trust, the Minnesota Board of Water and Soil Resources, cities, Three Rivers Park District, and private landowners have already established nearly 1,000 acres of conservation easements across 60 different easements.

Over the past five years, Hennepin County has greatly expanded and accelerated the work of establishing conservation easements by partnering with a nonprofit organization, the Minnesota Land Trust, to secure funding through the state's [Lessard-Sams Outdoor Heritage Fund](#).

Since 2018, Hennepin County and the Minnesota Land Trust have been awarded over \$9.3 million from the Outdoor Heritage Fund, making possible the addition of more than 360 acres of conservation easements as well as funding restoration projects on protected land.

## Hennepin County recognized as Partner of the Year

The Minnesota Land Trust recently recognized Hennepin County as their [Partner of the Year](#). This recognition is a testament to the commitment both organizations have to ensuring exceptional habitat continues to have a place in the most populous county in Minnesota.



### Learn more

Read our new [climate action article](#) to learn more about how conservation easements support resilient ecosystems and mitigate the impacts of climate change and find examples of recent success in protecting and restoring habitat.

If you or someone you know is interested in leaving a legacy of environmental stewardship by establishing a conservation easement, get started at [hennepin.us/land-protection](https://hennepin.us/land-protection).

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## Developing a closure plan for the Hennepin Energy Recovery Center

On October 24, the Hennepin County Board of Commissioners passed a [resolution](#) to develop a closure plan for the [Hennepin Energy Recovery Center \(HERC\)](#) between 2028 to 2040. The resolution included a condition that the HERC closure plan will continue to comply with state law, meet county climate goals, and achieve our [Zero Waste Plan \(PDF\)](#).

Hennepin County plans to aggressively pursue zero-waste policies, programming, and infrastructure. The county will advocate for policy changes at the state, county, and city levels to move toward zero waste and make meaningful progress toward climate emissions reductions. The county will also need to ensure continued funding for natural resources programming and expanded zero-waste efforts.

The county board is seeking comments from cities regarding proposed policy issues relating to closure of the HERC. The HERC closure plan is due to the board by February 1, 2024.

Learn more from the [report \(PDF\)](#) shared with the board in advance of this action.

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## Become a Minnesota Water Steward



Become a champion for clean water in your community! [Minnesota Water Stewards](#) is a program that certifies and supports community leaders to prevent water pollution and educate community members to conserve and protect our waterways.

[Applications](#) to join the 2024 Hennepin County cohort of Minnesota Water Stewards are due November 30. Upcoming [virtual information sessions](#) are scheduled for:

- Tuesday, November 7 at 5 p.m.
- Tuesday, November 21 at noon



For more information, contact Alex Van Loh at [avanloh@freshwater.org](mailto:avanloh@freshwater.org).

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## 25 Healthy Tree Canopy grants awarded



Hennepin County recently awarded 25 [Healthy Tree Canopy grants](#) totaling nearly \$500,000. Grant recipients include 13 cities, two affordable housing properties, five schools, and five nonprofit organizations.



Grant funding will be used for a variety of activities, including conducting tree inventories, expanding the capacity of city forestry teams, treating or replacing ash trees, educating residents on the benefits of trees, and engaging them in tree planting efforts. More than 620 trees will be planted through the grant projects.

The grants will improve livability and reduce disparities by planting trees in areas experiencing disproportionate amounts of economic, environmental, and health inequities. The grants will also protect people and increase the county's resilience to climate change by increasing the benefits that trees provide.

[Learn about the grants awarded](#). For more information, contact [trees@hennepin.us](mailto:trees@hennepin.us).

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## **Planting for pollinators on Nicollet Island**

**Restoration work funded in part by a Hennepin County Good Steward Grant**



Nicollet Island sits within the Mississippi River just north of Saint Anthony Falls in downtown Minneapolis. Before European colonization, the island supported river forest and oak savanna plant communities. Over the years, the island's natural areas have degraded through industrialization and neglect, allowing buckthorn and other aggressive species to move in.

Friends of the Mississippi River are [restoring the island's natural areas](#) with support from a [Hennepin County Good Steward Grant](#), in partnership with the Minneapolis Park and Recreation Board, Mississippi Watershed Management Organization, and Nicollet Island-East Bank Neighborhood Association.

Laura Domyancich-Lee, an ecologist with Friends of the Mississippi River, says they weigh several factors in their restoration work, including identifying historically native plants and their uses — such as habitat quality, medicine, food,

or specific spiritual purposes — with current needs and conditions, including social walking trails and the desire for residents to connect with the river.

The work entails buckthorn and garlic mustard removal, prescribed burns, and pollinator plantings. “With our restorations, we try to be sure we have nectar and floral resources for pollinators throughout the growing season,” says Domyancich-Lee.

Community connections are also a big part of Friends of the Mississippi River’s restoration work. For instance, this past June during Pride month, volunteers recruited from the LGBTQ community helped plant pollinator demonstration boxes. “The most successful restoration work in shared community spaces is when there are long-term stewards connected to that place,” says Domyancich-Lee.

## **Applications for Good Steward Grants due November 14**

Good Steward Grant applications are being accepted through November 14. These grants typically support smaller, community-based or single applicant projects to protect natural resources, such as constructing rain gardens, stabilizing stream banks, restoring native vegetation, installing vegetated filter strips, or implementing other best management practices. The typical funding amount is \$10,000 to \$20,000.

See the [Good Steward Grant application guidelines \(DOCX\)](#) for more information. Access application materials and submit your application online through the [Supplier Portal](#).

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## **Include a trip to a Hennepin County drop-off facility during fall cleanup**



Hennepin County operates [drop-off facilities](#) in Brooklyn Park and Bloomington for residents to safely disposal of a variety of household items. This includes appliances, batteries, electronics, cords and string lights, paint, tires, and household hazardous wastes such as cleaning products, pesticides, and mercury-containing items. The county also accepts recycling, including cardboard, plastic bags and film, and organics, at the drop-off facilities.

Fall and winter are a great time to visit the drop-off facilities since they tend to be slower compared to the spring and summer. Watch this [video from the City of Bloomington](#) to learn what to expect during your visit. The video shows how you check in, describe what materials you brought, and unload your materials – all within a few minutes.

The video also describes some important guidelines for materials, such as that [cardboard](#) must be 3'x3' or smaller with all Styrofoam and other packing materials removed.

Regular hours at the drop-off facilities are Tuesday through Saturday, 9 a.m. to 5 p.m. The facilities are closed on Sundays and Mondays. Learn more about the [locations and hours](#), including holiday closures.

Find out more about what's accepted, any fees and material limits or guidelines, and additional recycling and disposal options for common household items by searching the [Green Disposal Guide](#), calling 612-348-3777, or emailing [environment@hennepin.us](mailto:environment@hennepin.us)



## Celebrating a successful season of household hazardous waste collection events



Hennepin County hosted four [household hazardous waste collection events](#) in 2023. Participation in the events was strong, with 2,563 households bringing in nearly 134,000 pounds of hazardous waste – an average of 52 pounds per household. This included over 4,000 pounds of household batteries!

The county offers collection events throughout the spring, summer, and fall to provide residents a convenient, local option for disposing of household hazardous waste. Event locations and dates for 2024 will be announced in the spring.

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## Don't let your pumpkins go to waste



As you clean up from Halloween, don't let your pumpkins go to waste! Compost pumpkins by putting them in your [backyard compost bin](#) or [organics recycling](#) cart or bringing them to an organics recycling drop-off. Or check to see if your city is

offering any special drop-off events, such as Edina's [Pumpkin Smash and Bash!](#) Before composting, remove all candles, candle wax, paint, and other decorations. You can also simply leave them out for the squirrels and birds to enjoy!

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## In the News

### Apartment recycling champions help their neighbors recycle

Hennepin County launched the Apartment Recycling Champions program in May with the goal of addressing barriers to improve recycling at multifamily properties. Champions are residents at multifamily buildings who are paid by the county to inspire and educate their neighbors, improve the set-up of recycling bins, provide tips, and answer waste reduction and recycling questions.

Champions help to overcome common challenges for recycling programs at multifamily properties, including limited space for recycling containers, high rates of turnover for both residents and property managers, and language or cultural barriers.



Read a [feature of the program in the Sahan Journal](#) to learn what two Recycling Champions did to improve recycling at their apartment buildings. Mohamud Roble, building on his experience working to reduce waste in his native Somalia, hosted educational events for his neighbors to teach them what and how to recycle. Alicia Brandon started talking directly to her neighbors, handed out educational materials and recycling tote bags, and put up signs directing people to the recycling room.

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## Green Tip: Help bats in your own backyard





Bats are an important part of our ecosystem as they eat up to half their body weight in insects every night. Not only do they eat mosquitoes, they also contribute billions of dollars' worth of agricultural production by eating pests.

Hennepin County is home to seven species of bats, including the federally endangered northern long-eared bat. These species depend on decaying trees, caves, mine shafts, and bat houses to raise their pups in the summer and to take shelter in for the winter.

Bats in our area are struggling due to disease, habitat loss, climate change, and development, but there are many things we can do to help bats!

- Build a bat house – find plans for [building a safe and suitable bat house](#) from Bat Conservation International.
- Manage forests in the winter to avoid disturbing young bats during nesting season in the spring.
- Protect wetlands and other sources of freshwater.
- Avoid using pesticides – they can poison or kill bats, who are natural pest controllers.
- Keep cats indoors – they are one of the most common causes of bat fatalities.

- Contact the [Wildlife Rehabilitation Center of Minnesota](#) if you find an injured bat. Don't pick it up.
- Report bats that are sick, deceased, or behaving unusually to the [Minnesota Department of Natural Resources](#).

Find more tips for providing habitat for bats in our [building and maintaining your bat house brochure \(PDF\)](#).



This email was sent to judie@jass.biz using GovDelivery Communications Cloud on behalf of Hennepin County, Minnesota - 300 South Sixth Street - Minneapolis MN 55487 - 612-348-3000

