

**MEETING DATE:** October 11, 2018

**TITLE:** Approval of final design and authorization to solicit bids for the Arden Park Restoration Project

**RESOLUTION NUMBER:** 18-105

**PREPARED BY:** Renae Clark

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**REVIEWED BY:**  Administrator       Counsel       Program Mgr. (Name): \_\_\_\_\_  
 Board Committee       Engineer       Other

**WORKSHOP ACTION:**

<input type="checkbox"/> Advance to Board mtg. Consent Agenda.	<input type="checkbox"/> Advance to Board meeting for discussion prior to action.
<input type="checkbox"/> Refer to a future workshop (date): _____	<input type="checkbox"/> Refer to taskforce or committee (date): _____
<input type="checkbox"/> Return to staff for additional work.	<input type="checkbox"/> No further action requested.
<input checked="" type="checkbox"/> Other (specify): Requesting final action on October 11, 2018	

**PURPOSE or ACTION REQUESTED:**

Staff is requesting Board of Managers approval of the final design for the Arden Park Restoration Project and authorization to bids for construction.

**PROJECT/PROGRAM LOCATION:**

Arden Park, Minnehaha Creek at West 54th St., Edina

**PROJECT TIMELINE:** (see Attachment 1 for details)

- Approval of construction administration contract and bid award for construction November 15, 2018
- Construction – December 15, 2018 – November 2019

**PROJECT/PROGRAM COST:**

Fund name and number: 54<sup>th</sup> Street Stream Restoration, 3147

2019 funding: \$2,287,402

2019 anticipated expenditures: \$2,481,281

Requested amount of funding: \$0

## **PAST BOARD ACTIONS:**

October 10, 2013	Authorization to investigate feasibility of removing the 54th St. grade control structure in Minnehaha Creek, while maintaining recreational functionality (13-101)
March 13, 2014	Authorization to work with the City of Edina to incorporate fish passage into the 54th St. road reconstruction project (14-020)
May 22, 2014	Public hearing in consideration of ordering the 54 <sup>th</sup> St. Bypass Channel Project
September 25, 2014	Ordered the 54th St. Bypass Channel Project in the amount of \$118,750 (14-075)
January 29, 2015	Authorization to pursue plans for removal of the West 54th St. grade control structure and restoration of Reach 15 through Arden Park in lieu of the previously ordered fish bypass channel project (15-009)
April 14, 2016	Staff briefing regarding design development process with respect to the adjusted CIP schedule set by the Board of Managers on April 7, 2016
July 14, 2016	Staff briefing to contextualize the Arden Park project within a newly developed Project Prioritization Framework developed as part of organizational strategic planning
August 25, 2016	Authorization to execute a Memorandum of Agreement with the City of Edina and approve a consultant contract with Hart Howerton to develop an integrated concept plan for Arden Park (16-071)
February 9, 2017	Staff briefing for the review of the draft concept plan for Arden Park, cost estimate, funding, and schedule
May 25, 2017	Staff briefing and review of draft partnership framework with the City of Edina for advancing the project to design and construction, project status, and schedule
July 13, 2017	Staff briefing to the Planning and Policy Committee to review project cost estimates, proposed project cost allocations between the City of Edina and MCWD under the draft Agreement structure, and a proposed funding plan
October 26, 2017	Public hearing for the Arden Park Restoration Project
November 9, 2017	Ordered the Arden Park Restoration Project and approved a project agreement with the City of Edina, and a consultant contract for project design (17-069)
January 25, 2018	Staff briefing regarding 30% project design
May 24, 2018	Approval of the 60% project plans (18-052)
August 23, 2018	Staff briefing of 90% design and cost estimate

## **SUMMARY:**

Between 2013 and 2015 the District analyzed creek restoration options with and without removal of an existing dam at West 54<sup>th</sup> Street in Edina. In 2016, MCWD and the City of Edina approved a Memorandum of Understanding to jointly develop a concept plan for Arden Park to integrate creek restoration with City and community goals for the Park based on the following shared design objectives:

- Restoration of natural stream function and fish passage by actions including removing the grade control structure
- Water resource and riparian habitat improvements which will enhance creek access and draw attention to the role of natural elements in visual composition of the park
- Natural resources, surface water, soil stability and drainage improvements which will provide opportunities to enhance existing and future park restoration value
- Public safety

With the ordering of the Arden Park Restoration Project, on November 9, 2017, the Board of Managers approved a Project Agreement with the City of Edina to jointly develop design of the Project. Building on the August 2016 Memorandum of Agreement, the 2017 Project Agreement allowed the District to retain a consultant to prepare a design for Arden Park that incorporates natural resources, creek access, and trail improvements identified within the concept plan. The agreement does not include the park shelter building or the playground upgrades, which are currently in design phase by the City and are planned to be constructed within the current project construction timeline.



The District has retained the consultant team and is responsible for leading design because the central element of the project is creek restoration with stormwater management and natural areas restoration. The City has concurred with the consultant team and contract, and City staff have been integral in the project design process.

The project design process included check points with the public, Edina Parks and Recreation Commission, City Council, and MCWD Board of Managers at 30%, 60% and 90% design phases. According to the project agreement, 60% and 90% design phases are subject to City concurrence which has been provided. Project adjustments may be made after bid opening, but prior to bid award, if bid prices exceed the engineer's estimate by 20% or greater.

#### **FINAL DESIGN REPORT:**

The Arden Park Restoration Project includes the following integrated improvements:

- Restoration of approximately 2,150 feet of Minnehaha Creek, adding 230 feet of stream length
- Removal of a 4-foot high dam in the creek
- 84-acres of regional stormwater management through underground pretreatment and above-ground filtration swales
- New trails, boardwalk, and bridges and replacement of trails and sidewalk
- Replacement of an aging park shelter building and playground
- Natural area restoration through invasive species removal, native plantings, and vegetation management

Based on the shared goals of the District and City of Edina identified in the 2016 Memorandum of Agreement, the subsequent Project Agreement, and the public input received during concept design, the project design was developed based on the following goals:

- Maintain rustic character of the park;
- Improve public use experience throughout the park, including:
  - Increased fishing and in-stream recreation opportunities;
  - Improved visual and physical access to Minnehaha Creek;
- Update aging park facilities;
- Provide for improved public safety;
- Improve biological and geological function and value of the creek and surrounding corridor; and
- Create regional stormwater management.

#### Creek Restoration

The project is centered on a restored Minnehaha Creek channel that has been adversely impacted due to an existing dam that was installed before 1938. 2,154-feet of the existing creek channel will be reshaped and restored, ultimately adding approximately 230-feet of new channel and improved sinuosity (curvature within the stream channel). Restoration techniques include excavation for dam removal and re-shaping the creek cross section within the existing impoundment area.

The dam removal and new stream cross section will provide new habitat, stream function, and ecological value by connecting 9-miles of stream currently separated by the dam. Removal of an existing concrete apron below the West 54<sup>th</sup> Street bridge will provide extended low flows and a naturalized creek bed throughout. The creek will return to a flowing system with pools and riffles that provide habitat and refuge for fish and insects that fish eat. Creek banks will be reconstructed using fabric encapsulated soil lifts and other soil bioengineering techniques including the incorporation of large wood for stabilization and habitat. Native vegetation establishment is a critical part of the project, with native plant root systems growing and replacing the biodegradable fabrics over time. Large woody habitat will be secured and incorporated into banks to provide fish and macroinvertebrate cover, help define banks, and also allow for the natural occurrence of deeper pool habitat. Small gravel will be incorporated into riffles to provide suitable substrate for fish spawning.

### Stormwater Management

As a result of urbanization, stormwater systems often convey untreated, polluted runoff to natural systems which increases peak flows causing erosion and reducing water quality downstream. Stormwater runoff, which is largely untreated today, discharges through Arden Park directly to Minnehaha Creek through storm sewer. The Arden Park Restoration Project is being constructed to provide regional stormwater treatment for 84-acres of urban stormwater runoff which enters the creek on the north end of Arden Park. Stormwater treatment volumes are designed for 1-inch of runoff at the onset of a storm, i.e. the first flush of stormwater that carries the greatest amount of pollutant load and sediment. The proposed vegetated swales and below ground pre-treatment system are expected to remove approximately 18,000 pounds of total suspended solids per year and approximately 33 pounds of total phosphorus per year.

### Trails and Bridges

Following winter construction of the stream channel, the proposed trails, sidewalk and boardwalk will be constructed beginning in the spring of 2019. The layout and proposed surfaces for the trail systems are shown on Attachment 2.

Trails will provide increased circulation, improve accessibility by reducing slopes of existing trail access points, promote public safety by adding new sidewalk along Brookview Avenue, and provide enhanced connections to natural areas.

As part of the new trail system, two new bridges will be constructed within the park. The southernmost bridge in the center of the park will replace an existing bridge that is to be removed as part of the stream restoration project. The northern bridge will create a new creek crossing to assist in enhanced pedestrian circulation and provide access to restored floodplain wetlands. The north bridge will be for pedestrian use only and will consist of a 6-foot wide bridge deck and an approximate 50-foot span. The south bridge will be for pedestrian use and maintenance vehicle access and will consist of a 10-foot wide bridge deck and an approximate 65-foot span. The design aesthetic for both bridges is a weathered steel beam cross section with wood railings and painted steel posts. Bridge abutments will be poured concrete and are set back, outside the creek bank to provide a continuous streambank.

A boardwalk approximately 200-feet in length will be constructed through a forested floodplain area on the northwest portion of the park to provide additional pedestrian connections and circulation. The boardwalk will be elevated 1-foot above the floodplain for approximately 100-feet to facilitate flows during high water events. Construction for the boardwalk will include installation of helical supports, wood decking and associated railing similar to the Minnehaha Preserve. The boardwalk deck will consist of pressure treated wood with wood railings and painted metal gridded guards in all areas where the elevation exceeds 30-inches from the surface (approximately 65-feet).

### Creek Access

The project area currently has two canoe launch locations, one on each side of West 54<sup>th</sup> Street. The launch on the south side of West 54<sup>th</sup> Street will be eliminated while the launch on the north side of West 54<sup>th</sup> will remain in a modified version. Additionally, three new creek access points will be constructed as part of the creek restoration. Access will accommodate in-stream recreation within the park for fishing and tubing and kayaking loops while also providing a canoe/kayak launch site on this regionally significant recreation system.

### Natural Area Management

Natural area management will include buckthorn and invasive species removal and management, primarily within the wooded area on the west side of the park. It will also include management of the newly established natural areas within the floodplain and creek corridor. With the discovery of Emerald Ash Borer in Edina, the City has decided to proactively remove ash trees within Arden Park with the exception of three specimen trees which will continue to be treated to prevent infestation. The restoration project includes a robust planting plan to enhance native plant communities on the site. The planting plan includes 407 new trees (10-15 gal. pot size) and 1,915 bare root trees. All plantings and natural area management will be implemented in accordance with the attached Management Plan (Attachment 3).

### Tree Impact and Replacement Summary

Total Trees Removed	136
Trees Impacted by Construction	79 (22 are ash, 2 are dying oaks in free skate area)
Additional Ash Trees Removed	57
New Trees Planted	407

### Park Facilities

The final site plan will establish a suitable subgrade foundation for a new shelter building. Shelter building construction is expected to begin in May 2019 under direction of the City of Edina. Coordination of these construction activities is articulated within the project plans and specifications.

Demolition of the existing playground and construction of a new playground container and sub-base is included in the construction plans. City completion of the playground is anticipated in the third quarter of 2019.

Construction of activities related to these City facilities as part of the current construction package will be funded by the City.

### Operations and Maintenance

The Operations and Maintenance Plan is attached (Attachment 4) and was part of the 90% deliverable to the City of Edina. According to the project agreement, the District is responsible for the maintenance of the creek restoration while the City is responsible for the overall park improvements including the stormwater facilities. The Operations and Maintenance Plan and final design (Attachment 5) was developed in coordination with City maintenance staff to ensure the design facilitates efficient and effective maintenance practices. Ultimately, operations and maintenance will be shared between the City and District according to the plan and future agreement.

## Estimated Construction Costs and Funding

The cooperative agreement establishes project cost share as follows:

<b>Project Improvements and Cost Allocation</b>	<b>Description / Assumptions</b>
Park Facilities	Shelter building, utilities, park landscape, benches, lighting
Paths (City cost)	New and replacement sidewalk and trail throughout and around the park
Trails and Vegetation (Cost shared equally)	Nature trails and bridge at north end of park; natural areas restoration and management of extended corridor
Stormwater Management (Cost shared equally)	Stormwater management system including planting in swales
Creek Restoration (MCWD cost)	Creek restoration, creek accesses, demolition of shelter, planting on creek banks

## Construction cost estimates and funding

	<b>MCWD 2019 Budget Assumptions</b>	<b>Current MCWD Cost Projections</b>
Design	\$ 220,000	\$ 232,825
Oversight	\$ 100,000	\$ 175,000
Construction	\$1,967,402	\$2,073,456
Total	\$2,287,402	\$2,481,281

Note: Grant awards for costs that are shared equally will be distributed equally

Pursuant to the cooperative agreement, the District has provided the 90% design plan, cost estimate, and final draft operations and maintenance plan for City review and concurrence prior to MCWD approval of final design and authorization to solicit bids. The above cost projections are based on the 99% design plan and estimates.

On October 2, 2018, following public review and input and Parks Commission review, Edina City Council reviewed these elements and authorized City staff to coordinate with MCWD to solicit bids for construction.

### Requested Action

As part of the Arden Park Restoration project design process, the Board of Managers is requested to approve the final design for the Arden Park Restoration Project and authorize staff to solicit bids for construction.

### **ATTACHMENTS:**

1. Project design process and schedule
2. Overall site plan indicating proposed improvements
3. Natural Areas Management Plan
4. Operations and Management Plan
5. Final design plans

**RESOLUTION**

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**RESOLUTION NUMBER: 18-105**

**TITLE: Approval of final design and authorization to solicit bids for the Arden Park Restoration Project**

WHEREAS, the Minnehaha Creek Watershed District watershed management plan (WMP) capital improvement program includes a Minnehaha Creek Stream Restoration Project which encompasses stream restoration work that would enhance riparian corridor vegetation; stabilize streambanks through bioengineering; add fish and macroinvertebrate habitat; create pool-riffle complexes; incorporate woody debris; remove select grade controls; and enhance educational and recreational opportunities; and

WHEREAS, there is a grade control structure in Minnehaha Creek at the 54<sup>th</sup> Street bridge in Edina that was recommended for removal in the 2003 Stream Assessment because it is a barrier to fish passage and creates an impoundment causing accumulation of sediment and degradation of aquatic habitat upstream; and

WHEREAS, Minnehaha Creek is on the State's Impaired Waters List for both fish and macroinvertebrate index of biotic integrity; and

WHEREAS, on August 25, 2016, the Board of Managers approved a Memorandum of Agreement with the City of Edina to jointly develop a concept plan for Arden Park which integrates the following goals:

- Restoration of natural stream function and fish passage by actions including removing the grade control structure
- Water resource and riparian habitat improvement to enhance creek access and draw attention to the role of natural elements in visual composition of the park
- Natural resource, surface water, soils stability, and drainage improvements to provide opportunities to enhance existing and future park recreation value
- Public safety; and

WHEREAS, on November 9, 2017 the Board of Managers approved a Project Agreement with the City of Edina to coordinate the development and share the costs of design and construction of the Arden Park Restoration Project which incorporates stream restoration and further community goals as indicated within the Concept Plan for Arden Park and further defined in the Agreement; and

WHEREAS, the Agreement obligates the District to transmit a 90% project design with preliminary cost estimates and a maintenance plan for the inspection and maintenance of the stormwater management improvements and native vegetation management for City concurrence; and

WHEREAS, the Edina City Council provided its concurrence in the 90% project design, Operations and Maintenance Plan, and cost estimate on October 2, 2018.

NOW THEREFORE BE IT RESOLVED, the Minnehaha Creek Watershed District Board of Managers approves the design, operations and maintenance Plan, and authorizes staff to solicit bids for construction.

Resolution Number 18-105 moved by Manager \_\_\_\_\_, seconded by Manager \_\_\_\_\_.  
Motion to adopt the resolution \_\_\_ ayes, \_\_\_ nays, \_\_\_ abstentions. Date: October 11, 2018.








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










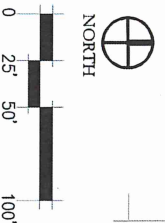




# LEGEND

-  FLOODPLAIN FOREST TREES AND NEAR LANDINGS
-  BIOFILTRATION SWALE TREES
-  CONIFEROUS TREES
-  CREEK BANK TREES - BARE ROOT TYPE
-  UPLAND TREES - OAK SPECIES, TYP.
-  CONTAINER GROWN SHRUBS AND LARGE PERENNIALS
-  EXISTING TREE - SEE CIVIL DRAWING FOR REMOVAL OR PRESERVATION

-  BIOFILTRATION SWALE BASIN - NATIVE GRASSES FROM PLUGS, SEE SHT. L2.5
-  BIOFILTRATION SWALE SIDE SLOPES - NATIVE GRASSES FROM PLUGS, SEE SHT. L2.5
-  WILDFLOWER PLUGS AT 30" O.C. INTERPLANTED WITH GRASSES. SEE SHT. L2.5 FOR SPECIES
-  CUSTOM WETLAND MEADOW SEED MIX. SEE SHT. L2.5
-  STREAM BANK PLANTING TYPE 1 - OUTSIDE BANK SEED MIX WITH PLUGS, BARE ROOT OR LIVE STAKE SHRUBS AND BARE ROOT TREES WHERE SHOWN. SEE DETAIL 5A.2.4
-  STREAM BANK PLANTING TYPE 2 - INSIDE BANK LIVE STAKE SHRUBS AND BARE ROOT TREES WHERE SHOWN. SEE DETAIL 4I.2.4
-  STREAM BANK PLANTING TYPE 3 - INSIDE BANK WITH NO SHRUBS. SEED MIX WITH PLUGS, NO SHRUBS, BARE ROOT TREES WHERE SHOWN. SEE DETAIL 5A.2.4







## **Arden Park Restoration Project**

### **Natural Areas Management Plan**

**July 2018**

#### **EXECUTIVE SUMMARY**

The City of Edina (City or Edina) and Minnehaha Creek Watershed District (MCWD) have partnered to improve the creek, habitat and the public use experience within Arden Park. A conceptual plan was developed based on public input received over a period of 12 months, and this plan is a balance of enhancements to the park that improve fish passage, wildlife habitat and water quality, while retaining the park’s natural character. Project elements included replacing the 4-foot dam at 54th Street with a rock rapids upstream, re-meandering the creek, and providing more access for fishing and other recreation. Project design based on the concept plan will progress throughout 2018 with opportunities for community engagement at key milestones throughout project development.

To ensure that a comprehensive plan is in place to manage the park’s natural areas, the MCWD and City have coordinated to develop this Natural Areas Management Plan. This Plan is focused on vegetation management within informal areas of the park where restoration will include phased removal of invasive species, management of ash related to the presence of emerald ash borer in Edina, and reforestation and restoration of native vegetation within the western woodland and wetlands and floodplain forest associated with Minnehaha Creek.

This Natural Areas Management Plan is supplementary to the Arden Park Operations and Maintenance (O&M) Plan which was developed as required by the project Cooperative Agreement. The O&M Plan specifies roles and responsibilities for maintenance of park improvements, while the Natural Areas Management Plan provides technical guidance for long-term management of the site’s land and water resources. This plan will also provide detail regarding permit requirements of the US Army Corps of Engineers to monitor project efficacy and report that information. Specific performance standards are



evaluated to determine overall success of the restoration. Project efficacy monitoring will be completed by MCWD Project Maintenance-Land Management and Research and Monitoring staff.

Any activities not consistent with the Cooperative Agreement and this Natural Areas Management Plan must be agreed to, in writing, by both parties. All activities will contribute to the rational management of the facilities as a whole.

This Natural Areas Management Plan is organized into the following sections:

- I. Introduction
- II. Project Areas Requiring Restoration and Management
- III. Phasing
- IV. Long-term Management – Roles and Responsibilities
- V. Permit Required Monitoring and Efficacy Monitoring
- VI. Conclusion

**I. Introduction**

A Cooperative Agreement between MCWD and the City of Edina (Edina) was executed on January 17, 2018 (Attachment X) and describes roles and responsibilities related to the design, construction, and maintenance of the Arden Park Improvement Project. Significant project infrastructure including the stormwater facilities, playground, and park shelter will be designed with formal landscape plantings. The broader landscape of the park includes large wetlands and woodlands that require removal of invasive species and restoration of native vegetation. A phased approach is planned based on considerations of aesthetics, slope stabilization, and cost.

According to the Cooperative Agreement, when the District engineer has certified completion and delivered record drawings to the City, ownership of all improvements will vest in the City. At this time, MCWD and Edina will record mutual covenants in which Edina will maintain the paths, trails, vegetation, and stormwater management improvements and MCWD will maintain the creek restoration improvements. On MCWD’s request, Edina will make reasonable arrangements for MCWD to access and occupy the park property for maintenance. The duration of the maintenance responsibilities will, at a minimum, meet applicable grant requirements.

**Commented [LD1]:** Edit based on possible conveyance of easement for MCWD maintenance.

This Natural Areas Management plan will provide a guideline to MCWD and the City in planning management of the park natural areas during project construction and in future years, the roles and responsibilities of MCWD and the City, and any coordination that must occur to perform management. All management will be performed in a manner that reasonably minimizes impact to the surrounding natural environment and to any prior-constructed improvements. Each party is responsible for any damage it causes to the facilities owned by the other party due to management and other activity.

**II. Project Areas Requiring Restoration and Management**

Table 1 specifies the areas that require or would benefit from invasive species removal, restoration of native plant communities and associated activities, typical costs as of the date of this Plan, and the party responsible for this work. The timing for phased implementation of the activities listed below are based on a consideration of potential hazards, public use patterns, the benefits of early identification of management, and staff/contractor costs. The attached Site Plan (Attachment X) identifies location(s) of those prioritized activities. Add ash tree management details.

**Table 1: Restoration and Management Responsibilities for the Arden Park Restoration Project**

Management Area	Description of Restoration and Associated Activities	Typical Costs	Responsible Party	Timing
<b>PRIMARY MANAGEMENT</b>				
Woodland management adjacent to existing or new trail	Cut and stump treat mature invasive trees and shrubs (high infestation)	\$3000/acre		Fall 2018- Winter 2019
Woodland management adjacent to new boardwalk	Cut and stump treat mature invasive trees and shrubs (high infestation)	\$3000/acre		Fall 2018- Winter 2019
Woodland management adjacent to Brookview Ave, north of accessible trail	Cut and stump treat mature invasive trees and shrubs (high infestation)	\$3000/acre		Fall 2018- Winter 2019
Wetland fringe invasive vegetation removal	Remove cattail & reed canary grass biomass through prescribed fire or scraping	\$5000/acre for burn; \$6000/acre for scrape		Fall 2018- Winter 2019
Fresh meadow wetland restoration	Plant live, #1 or larger pots within areas that receive flood flows	\$10/pot		Spring-Summer 2019
Floodplain forest restoration (east)	Cut and stump treat mature invasive trees and shrubs (high infestation)	\$3000/acre		Fall 2018- Winter 2019
Floodplain forest restoration (west)	Cut and stump treat mature invasive trees and shrubs (moderate infestation)	\$2000/acre		Fall 2018- Winter 2019
<b>SECONDARY MANAGEMENT</b>				
Woodland adjacent to Brookview Ave, south of accessible trail	Cut and stump treat mature invasive trees and shrubs (high infestation)	\$3000/acre		Fall 2019- Winter 2020
Woodland south of 54 <sup>th</sup> Street	Cut and stump treat mature invasive trees and shrubs (moderate infestation)	\$2000/acre		Fall 2019- Winter 2020
Follow-up spot treatment of woody invasives in primary management areas	Foliar application of herbicide to resprouts of invasive trees and shrubs	\$450/acre		Fall 2019
Enhancement planting of woodland areas with excellent invasive control.	Herbaceous plug and shrub planting within areas near trails and overlooks and in areas with erosion potential.	\$4/each for grass/forb plugs; \$60/each for #5 shrubs		Spring 2020

### III. **Phasing**

Phasing will be determined in consideration of the following:

**Budget:** Natural areas management may be bid separately from construction of the park restoration and prioritized based on available funding and the possible award of grant monies such as the Conservation Partners Legacy (CPL) grant.

**Concurrent construction activities:** Natural areas management in and around areas of other park restoration and construction activities may be prioritized to take advantage of concurrent access and equipment availability.

**Public Interaction:** Natural areas management may be prioritized in areas with public visibility and interaction.

**Water quality protection:** Natural areas management may be prioritized in highly erodible areas and in areas receiving stormwater.

### IV. **Long-Term Management – Roles and Responsibilities**

*TBD based on possible easement conveyance by the City of Edina to MCWD for MCWD's management of park natural areas.*

### V. **Permit Required Monitoring and Efficacy Monitoring**

The U.S. Army Corps of Engineers (USACE) permit requires project monitoring during the first, third, and fifth years after final completion of the project. The monitoring will seek to determine if the goals of the restoration are met. These goals are to:

1. reduce stormwater nutrient inputs;
2. improve fish passage;
3. improve habitat for fish, wildlife, and other aquatic organisms;
4. improve overall recreation and use of Arden Park by integrating natural resources and park use

The supplemental Arden Park Monitoring Plan (**Attachment X?**) developed by MCWD specifies research and monitoring activities that will be performed to gather baseline, pre-construction data on existing conditions within Arden Park and Minnehaha Creek within this corridor and post-construction data that will determine the efficacy of the improvements. Metrics to be measured or assessed include stormwater inputs, macroinvertebrates, dissolved oxygen, the riparian vegetation community, an assessment of stream habitat (MN Stream Habitat Assessment), and overall park use by visitors. This data will fulfill monitoring requirements of the USACE permit, as well as provide the City and MCWD an understanding of project efficacy.

**VI. Conclusion**

The City of Edina and MCWD accept perpetual maintenance responsibility for the natural areas management within this Plan and will work to coordinate specific work determined to be necessary. Both parties will work in a good faith effort toward the rational management of the natural areas as a whole.

IN WITNESS WHEREOF, the parties execute this Arden Park Natural Areas Management Plan by their authorized officers.

CITY OF EDINA

By \_\_\_\_\_ Date: \_\_\_\_\_

Its City Manager

MINNEHAHA CREEK WATERSHED DISTRICT

By \_\_\_\_\_ Date: \_\_\_\_\_

Its Administrator

Approved for form and execution:

\_\_\_\_\_

MCWD Counsel



# **Arden Park Restoration Project**

## **Operations and Maintenance Plan**

**August 2018**

### **EXECUTIVE SUMMARY**

The City of Edina and Minnehaha Creek Watershed District have partnered to improve the creek, habitat, and the public use experience in Arden Park. A conceptual plan was developed based on public input received over a period of 12 months, and this plan is a balance of enhancements to the park that improve fish passage, wildlife habitat and water quality, while retaining the park's natural character. Project elements included replacing the 4-foot dam at 54th Street with a rock rapids upstream, re-meandering the creek, and providing more access for fishing and other recreation. The City will also replace an aging park shelter building.

To ensure that maintenance roles and responsibilities for Arden Park are clearly communicated between parties, this Operations and Maintenance (O&M) plan has been prepared as a cooperative effort by the Minnehaha Creek Watershed District and the City of Edina. In fulfillment of the conditions of the Cooperative Agreement, and in furtherance of the mutual goals of the District and the City, the goals of this plan are to outline specific roles and responsibilities for the periodic and long-term maintenance of project elements associated with the Arden Park project.

This O&M plan fulfills obligations under the Cooperative Agreement dated January 17, 2018. It authorizes no acts contrary to the Cooperative Agreement, and in the case of ambiguity, the O&M plan should be interpreted consistent with the Cooperative Agreement. Any activities not consistent with the Cooperative Agreement and this O&M Plan must be agreed to, in writing, by both parties. All use will contribute to the rational management of the facilities as a whole.

This O&M Plan is organized into the following sections:

- I. Introduction
- II. Project Elements Requiring Maintenance
- III. Site Boundaries and Posting Protected Areas

- IV. Law Enforcement and Site Protection and Safety
- V. Conclusion

## I. Introduction

A Cooperative Agreement between Minnehaha Creek Watershed District (MCWD) and the City of Edina (Edina) was executed on January 17, 2018 (Attachment X) and describes roles and responsibilities related to the design and construction of the Arden Park Improvement Project. The Cooperative Agreement also states that the design phase of the project will include a maintenance plan that specifies inspection and maintenance terms for Stormwater Management improvements and native vegetation management. This O&M Plan aims to fulfill this purpose.

According to the Cooperative Agreement, when the District engineer has certified completion and delivered record drawings to the City, ownership of all improvements will vest in the City. At this time, MCWD and Edina will record mutual covenants in which Edina will maintain the paths, trails, vegetation, and stormwater management improvements and MCWD will maintain the creek and natural areas restoration improvements.

This O&M plan will provide a quick reference to specific maintenance needs, the frequency at which inspection and maintenance is recommended to occur, the responsible party, and any coordination that must occur to perform maintenance. All maintenance and other activities will be performed in a manner that reasonably minimizes impact to the surrounding natural environment and to any prior-constructed improvements. Each party is responsible to correct or repair any disturbance to the property that it causes by its inspection and maintenance activity.

The regular safety inspections and associated maintenance of these facilities will be performed to reduce the risk of hazards. Further, the documentation of inspections and maintenance tasks is important to combat possible liability claims. Inspection records (Attachment X) should be completed during each inspection and follow-up maintenance should be documented.

## II. Project Elements Requiring Maintenance

### **Tables 1 and 2: Inspection, Operations, and Maintenance Tasks and Responsibilities for the Arden Park Restoration Project**

Table 1 specifies the City-owned, operated, and maintained facilities that require routine inspection and maintenance, potential issues with those facilities, and the frequency at which inspection and/or maintenance is recommended to occur. Table 2 specifies facilities for which MCWD bears responsibility for routine inspection and maintenance based on the 2018 Cooperative Agreement, potential issues with those facilities, and the frequency at which inspection and/or maintenance is recommended to occur. The timing and inspection frequency for items listed in Tables 1 and 2 below are advisory and should be based on a consideration of potential hazards, public use patterns, the benefits of early identification of maintenance and repair needs, staff/contractor costs and budgets, and internal policies. The attached Site Plan (Attachment X) identifies location(s) of these facilities. Each responsible

party will also respond to information and complaints received about site conditions involving the facility.

**Table 1. City of Edina Maintained Facilities**

<b>Facility to be Maintained or Inspected</b>	<b>Description</b>	<b>Advised Frequency</b>	<b>Comments/Responsible Party</b>
Bituminous, concrete, or crushed rock paths, terrace, steppers, and pavers	Freeze/thaw or tree roots cause trail materials to heave; unstable slopes adjacent to paths cause erosion and trail failure	Annually in spring	Edina inspects and maintains
Pervious pavers	Sediments can clog pore spaces and cause pavers to lose perviousness	Annually in spring	Edina inspects and maintains
Bridges and landings	Inspection by Professional Engineer	Every 2 years by PE; annually by Staff	Edina inspects and maintains
Abutments connecting bridge to trail	Frost and water cause path and abutment to become askew; timbers can degrade over time	Annually in spring	Edina inspects and maintains
Storm pipes under trail	Trail settles on either side of storm pipe causing uneven trail	Annually in spring	Edina inspects and maintains
Path: debris	Leaves, sticks, dirt accumulate on trail and boardwalk	Annually in spring	Edina inspects and maintains with blower/sweeper
Path (bituminous and concrete): snow removal	Snow and ice accumulate during the winter months	November-April	Edina inspects and maintains select trails; boardwalk and crushed granite nature trail is not maintained during winter months
Boardwalk, landings, bio-filtration swale crossings, and stairs surface and structure	Boardwalk, landing, crossings, and stair materials can warp and degrade over time	Twice annually in spring and fall	Edina inspects and maintains
Watercraft landings and fishing access points	Public use and creek inundation can degrade materials over time and cause poor vegetation condition	Three times annually in early spring, summer, and fall	Edina inspects and maintains structural elements; MCWD inspects and maintains vegetation
Inspect for bee/wasp nests	Railings, boardwalk, and stairs may be a location for bee/wasp nests	As needed	Edina inspects and maintains
Benches	Materials can degrade over time; benches may be vandalized	Twice annually in spring and fall	Edina inspects and maintains
Park shelter	All components can degrade over time, may be vandalized, may require repair due to ordinary wear and tear	As needed	Edina inspects and maintains

**Table 1. (Continued)**

<b>Maintenance or Inspection Activity</b>	<b>Description</b>	<b>Frequency</b>	<b>Comments/Responsible Party</b>
Park lighting and electrical system	All components can degrade over time and may require repair due to ordinary wear and tear	As needed	Edina inspects and maintains
Playground	All components can degrade over time, may be vandalized, may require repair due to ordinary wear and tear	As needed	Edina inspects and maintains
Electrical utility and lighting maintenance	Utilities may require repair due to regular use; replacement of lighting components will be required	Twice annually in spring and fall	Edina inspects and maintains
Stormwater system sediment chamber	7' x 15' structure with weir will require dewatering by Vactor truck and periodic sediment removal by Vactor truck with maximum boom access of 12-15'; net bag and oil sorbing mat will require replacement twice annually or more	Inspect 3 times annually; determine sediment level and need for removal by Vactor truck; inspect net bag and oil sorbing mat and determine need for replacement	Edina inspects and maintains
Bio-filtration swales and overflow swale: general condition	Monitor for performance: if not performing as designed, determine cause; monitor sediment levels; monitor vegetation condition and condition of turf reinforcement mat	Monitor 2 times annually and maintain 3 times annually in spring, early summer and late summer	Edina inspects and maintains
Bio-filtration swales: drain tile	Monitor for performance and determine if sedimentation is obstructing drainage; jet drain tile with ¾-1" x 600' hose with cleaning nozzle	Monitor and maintain 3 times annually	Edina inspects and maintains
Outfall structure, 54th Street storm sewer (SAFL baffle)	Monitor for performance: if not performing as designed, determine cause	Monitor 2 times annually and after precipitation events over 1"	MCWD performs storm sampling; Edina inspects and maintains infrastructure as needed
Removal of trees/limbs capable of falling	Evaluation / removal of unhealthy or dead trees and limbs	Twice annually in spring and fall and after major storms	Edina inspects and maintains
Turf maintenance	Mowing throughout growing season and weed treatment and fertilization during 3-year turf establishment period only	As needed throughout growing season	Edina inspects and maintains
Landscape vegetation management within the programmed park space [Indicated in red on Site Plan]	Weed treatment (herbicide application during 3-year plant establishment period only or hand weeding), plant replacement, pruning	Weed treatment 3 times annually; plant replacement and pruning once annually or as needed	Edina inspects and maintains



**Table 2. MCWD Maintained Facilities**

<b>Facility to be Maintained or Inspected</b>	<b>Description</b>	<b>Frequency</b>	<b>Comments/Responsible Party</b>
Landscape vegetation management within the non-programmed park areas [Indicated in blue on Site Plan]	Weed treatment (herbicide application or spot mowing or hand weeding), plant replacement and vegetation enhancement, and pruning within restored wetlands, woodland east of Brookview Avenue and specified upland areas	Weed treatment 3 times during growing season at minimum; phased enhancement planting to improve understory vegetation	MCWD inspects and maintains; Edina manages damaged/downed trees
Streambank/floodplain vegetation management and erosion control prevention [Indicated in blue on Site Plan]	Weed treatment (herbicide application or spot mowing or hand weeding), plant replacement and vegetation enhancement, pruning, application of erosion control practices	Weed treatment 3 times during growing season; plant replacement, pruning and erosion control as needed	MCWD inspects and maintains; Edina manages damaged/downed trees
Interpretive signage	Develop, locate, and maintain informational and interpretive signs	Twice annually in spring and fall	MCWD develops, installs, and maintains (City review and permitting as required)
Wayfinding/directional signage	Develop, locate, and maintain wayfinding and directional signs	Twice annually in spring and fall	MCWD develops, installs, and maintains (City review and permitting as required)
Wildlife control	Wildlife abatement	Coordinated annual evaluation by City and MCWD	Addressed on as-needed basis

### **III. Site Boundaries and Key Areas of Inspection and Maintenance**

**Attachment X**, Site Plan, details the site boundaries of the project area subject to this Operations and Maintenance Plan and key areas of inspection and maintenance identified in Table 1.

### **IV. Site Protection and Safety**

The City of Edina, as park property owner and general police power authority, is responsible for ordinary management and monitoring of site use for public safety purposes. Trimming of vegetation will be completed to maintain adequate sight distance for crime prevention purposes. The City of Edina and MCWD will work in coordination to identify areas that require open sight lines, and the City and MCWD will complete necessary pruning and trimming within their respective areas of management.

**V. Conclusion**

The City of Edina and MCWD accept perpetual maintenance responsibility for the project elements detailed within this Operations and Maintenance Plan and will work to coordinate specific maintenance tasks determined to be necessary. Both parties will work in a good faith effort toward the rational management of the facilities as a whole.

This plan is for the use and guidance of the City and MCWD only, in order to coordinate roles with respect to managing and maintaining the Arden Park facilities. The policy is for the benefit of serving the general public and not for the benefit of any individual or specific group of individuals. It is not intended to and does not create any right or expectation in any third party. The City and MCWD, together, may amend this plan or make exceptions to it as they determine to be appropriate.

IN WITNESS WHEREOF, the parties execute this Operations & Maintenance Plan by their authorized officers.

CITY OF EDINA

By \_\_\_\_\_ Date: \_\_\_\_\_

Its City Manager

MINNEHAHA CREEK WATERSHED DISTRICT

By \_\_\_\_\_ Date: \_\_\_\_\_

Its Administrator

Approved for form and execution:

\_\_\_\_\_

MCWD Counsel

# ARDEN PARK CREEK RESTORATION

MINNEHAHA CREEK WATERSHED DISTRICT  
CITY OF EDINA, MINNESOTA

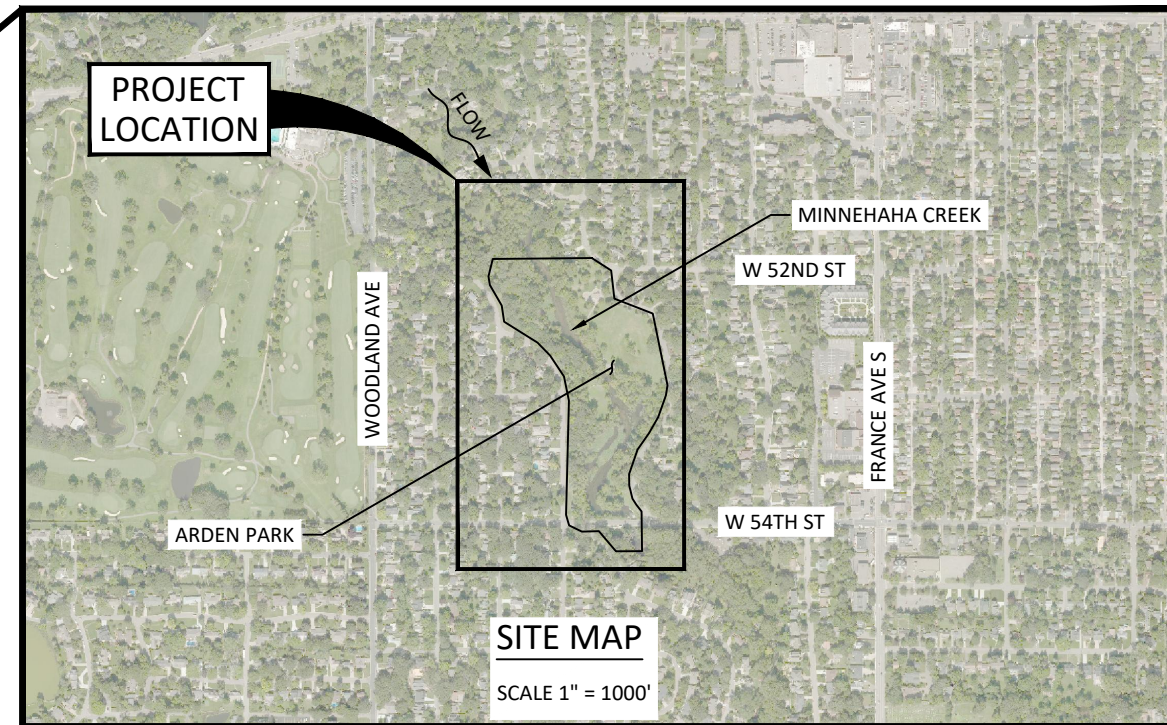
100% DRAFT, September 28, 2018

NOT FOR CONSTRUCTION



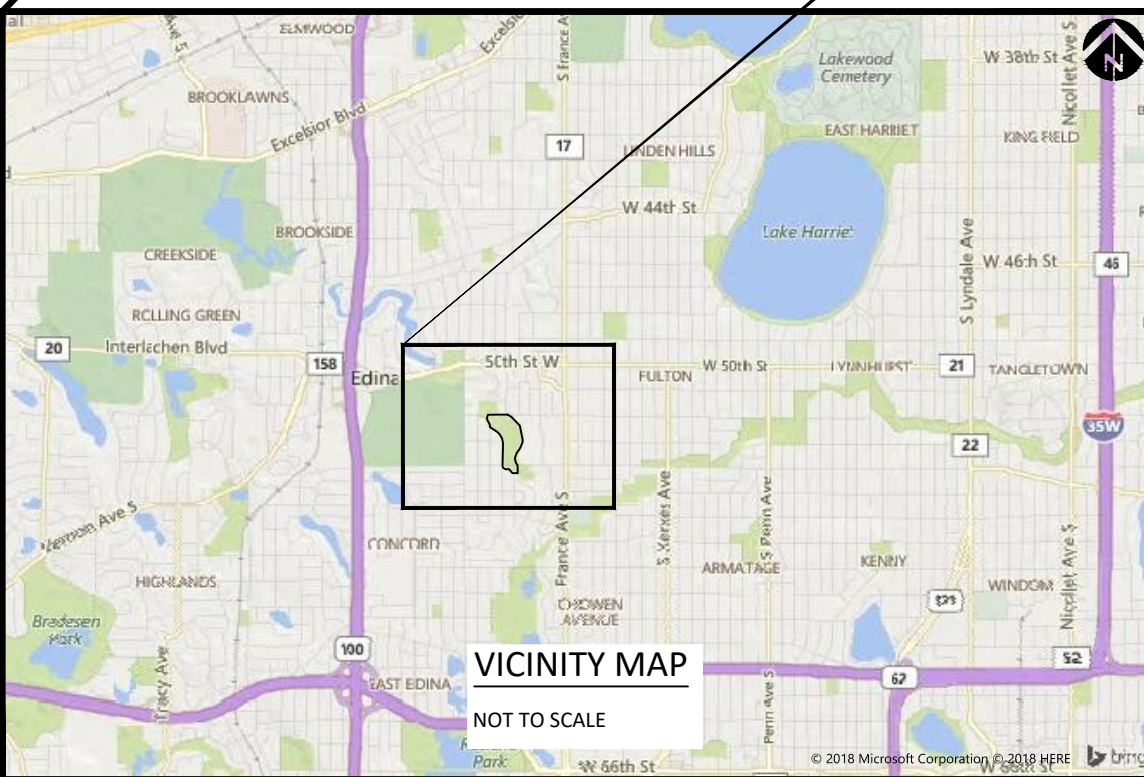
STATE MAP - MINNESOTA

NOT TO SCALE



SITE MAP

SCALE 1" = 1000'



VICINITY MAP

NOT TO SCALE

## SHEET INDEX

### NOTES, REMOVALS, AND SITE PLAN

- CS-001 - PROJECT LOCATION AND SHEET INDEX
- CS-002 - LEGEND AND GENERAL NOTES
- CS-003 - STORM WATER POLLUTION PREVENTION PLAN
- CS-101 - EXISTING UTILITY PLAN
- CS-102 - EROSION & SEDIMENT CONTROL PLAN 1
- CS-103 - EROSION & SEDIMENT CONTROL PLAN 2
- CS-104 - REMOVALS
- CS-105 - TREE REMOVAL
- CS-106 - TREE REMOVAL TABLES
- CS-107 - INVASIVE SHURB REMOVAL
- CS-108 - SEDIMENT MANAGEMENT PLAN
- CS-109 - SITE PLAN

### STREAM RESTORATION DRAWINGS

- CS-401 - STREAM GRADING PLAN AND PROFILE 1 OF 2
- CS-402 - STREAM GRADING PLAN AND PROFILE 2 OF 2
- CS-403 - STREAM GRADING CROSS SECTIONS 1 OF 2
- CS-404 - STREAM GRADING CROSS SECTIONS 2 OF 2
- CS-405 - TREATMENT PLAN 1 OF 2
- CS-406 - TREATMENT PLAN 2 OF 2
- CS-407 - 54TH STREET BRIDGE PLAN AND CROSS SECTIONS
- CS-701 - TYPICAL SECTIONS 1
- CS-702 - TYPICAL SECTIONS 2
- CS-703 - TYPICAL DETAILS

### CS-704 - 54TH STREET BRIDGE CHANNEL WORK

- CS-705 - CREEK ACCESS DETAILS
- CS-706 - FABRIC INSTALLATION DETAILS
- CS-707 - FES LIFT DETAILS
- CS-708 - BRIDGE DESIGN DETAILS
- CS-709 - BRIDGE DESIGN DETAILS
- CS-710 - 54TH STREET BRIDGE DETAIL - REFERENCE ONLY
- CS-711 - 54TH STREET BRIDGE DETAIL - REFERENCE ONLY

### STORM WATER BMP DRAWINGS

- C-501 - OVERALL STORM SEWER AND BMP PLAN
- C-502 - STORM SEWER AND BMP PLAN NORTH
- C-503 - STORM SEWER AND BMP PLAN SOUTH
- C-504 - PROFILES
- C-505 - DETAILS
- C-506 - DETAILS
- C-507 - DETAILS
- C-508 - DETAILS
- C-509 - DETAILS

### TRAILS AND OTHER PARK IMPROVEMENTS

- C-601 - OVERALL GRADING OF TRAILS
- C-602 - NORTH INTERIOR GRADING
- C-603 - SOUTH INTERIOR GRADING
- C-604 - BOARDWALK PLAN AND PROFILE
- C-605 - TRAIL 1 PLAN AND PROFILE
- C-606 - TRAIL 2 PLAN AND PROFILE
- C-607 - TRAIL 3 PLAN AND PROFILE

### C-608 - TRAIL 4 PLAN AND PROFILE

- C-609 - TRAIL 5 PLAN AND PROFILE
- C-610 - TRAIL 6 PLAN AND PROFILE
- C-611 - TRAIL 7 PLAN AND PROFILE
- C-612 - TRAIL 8 PLAN AND PROFILE
- C-613 - TRAIL 9 PLAN AND PROFILE
- C-614 - DETAILS
- C-615 - DETAILS
- C-616 - DETAILS
- C-617 - DETAILS
- C-618 - DETAILS

### CITY PLANS

- C-703 BROOKVIEW PLAN & PROFILE
- C-704 BROOKVIEW PLAN & PROFILE
- C-705 BROOKVIEW PLAN & PROFILE
- C-706 54TH STREET PLAN & PROFILE
- C-707 BROOKVIEW CROSS SECTIONS
- C-708 BROOKVIEW CROSS SECTIONS
- C-709 BROOKVIEW CROSS SECTIONS
- C-710 54TH STREET CROSS SECTIONS
- C-711 SEWER AND WATER UTILITIES

### PLANTING AND SEEDING DRAWINGS

- L-2.1 - PLANTING PLAN
- L-2.2 - PLANTING PLAN
- L-2.3 - PLANTING PLAN
- L-2.4 - DETAILED PLANTING PLANS
- L-2.5 - PLANTING DETAILS
- L-2.6 - PLANT LIST

NO.	DATE	REVISION DESCRIPTION

CP,GS,BL	MM,BL	MM
DRAWN	DESIGNED	CHECKED
JK	9/28/2018	18-04-01
APPROVED	DATE	PROJECT

ARDEN PARK CREEK RESTORATION  
MINNEHAHA CREEK WATERSHED DISTRICT  
EDINA, MINNESOTA



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 in the State of Minnesota.  
Signature: **NATHAN KUSA**  
Typed or Printed Name: **NATHAN KUSA**  
Date: 9/28/18 License Number: 44129

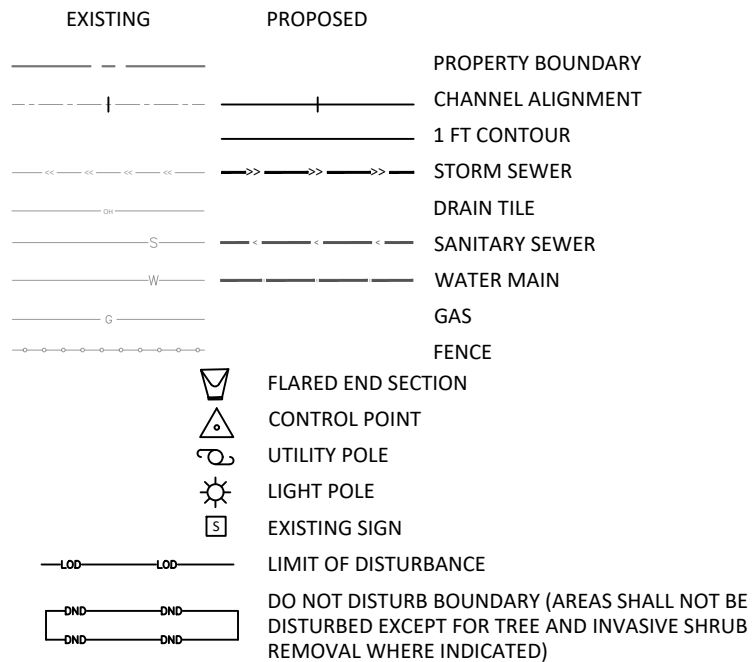
**DRAFT**

PROJECT LOCATION  
AND SHEET INDEX

SHEET  
CS-001



**LEGEND**



PROPOSED CHANNEL

**ABBREVIATIONS**

APPROX. CFS	APPROXIMATE CUBIC FEET PER SECOND	FT	FOOT	TBD	TO BE DETERMINED
CL	CENTER LINE	HDPE	HIGH DENSITY POLYETHYLENE	PROP.	PROPOSED
CONC.	CONCRETE	IN.	INCHES	PVC	POLYVINYL CHLORIDE
C.P.	CONTROL POINT	INV	INVERT	RCP	REINFORCED CONCRETE PIPE
CY	CUBIC YARDS	LB	POUND	SY	SQUARE YARDS
DIA.	DIAMETER	LF	LINEAR FOOT	TYP.	TYPICAL
DBH	DIAMETER AT BREAST HEIGHT	LOD	LIMIT OF DISTURBANCE	WSE	WATER SURFACE ELEVATION
ELEC.	ELECTRICAL	MAX.	MAXIMUM	YR	YEAR
ELEV./EL.	ELEVATION	MIN.	MINIMUM		
EX./EXIST.	EXISTING	OHW	ORDINARY HIGH WATER		
		STA	STATION		

**GENERAL NOTES**

- APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND ORDINANCES WILL BE COMPLIED WITH IN THE CONSTRUCTION OF THIS PROJECT.
- ALL WORK SHALL BE DONE IN ACCORDANCE WITH THE MOST RECENT VERSION OF THE MnDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION.
- IN CASE OF A CONFLICT BETWEEN REGULATORY STANDARDS, DRAWINGS, OR SPECIFICATIONS, THE MORE STRINGENT SHALL APPLY AT THE DISCRETION OF THE ENGINEER.
- SEVERAL ITEMS ARE TO BE CONSTRUCTED OR PLACED IN FIELD PER DIRECTION OF THE ENGINEER. CONTRACTOR SHALL COORDINATE WITH ENGINEER FOR WHEN ENGINEER'S PRESENCE IS NECESSARY ONSITE TO COMPLETE THE WORK PER THE DRAWINGS AND SHALL ALLOW FOR TIME IN CONSTRUCTION SCHEDULE FOR ONSITE DIRECTION FROM ENGINEER.
- CONTRACTOR SHALL NOTE THAT IT IS ANTICIPATED THAT ANOTHER CONTRACTOR WILL BE ONSITE DURING THE END OF THE CONSTRUCTION SCHEDULE TO CONSTRUCT THE PROPOSED NEW BUILDING. CONTRACTOR SHALL COMMUNICATE AND COORDINATE WITH OTHER CONTRACTOR TO ENSURE NEEDS OF BOTH CONTRACTORS ARE MET. ANY DISPUTES SHALL BE BROUGHT TO ENGINEER.
- CONTRACTOR SHALL COMPLETE QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES TO ENSURE CONTROL POINTS AND REFERENCE DATUM ARE ACCURATELY MAINTAINED THROUGHOUT CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR MAINTAINING SURVEY CONTROL THROUGHOUT PROJECT AND IS RESPONSIBLE FOR VERIFYING THAT THE WORK IS COMPLETED CORRECTLY PER THE LOCATIONS, LINES, AND GRADES SPECIFIED ON THE DRAWINGS. CONTRACTOR IS SOLELY RESPONSIBLE FOR COMPLETING ANY REWORK NECESSARY TO CORRECTLY IMPLEMENT THE WORK. CONTRACTOR SHALL ALLOW TIME FOR ENGINEER TO COMPLETE SURVEY CONTROL CHECKS, AT MINIMUM, MONTHLY AND PRIOR TO THE INITIATION OF EACH MAJOR SCOPE OF WORK ITEM.
- EXISTING DATA AND SURVEY:**
  - AN INITIAL TOPOGRAPHIC SURVEY WAS COLLECTED BY THE DISTRICT ENGINEER IN OCTOBER 2016. ADDITIONAL INFORMATION WAS SURVEYED BY THE CITY OF EDINA IN NOVEMBER OF 2017. LL WORK SHOWN HEREON IS IN THE FOLLOWING COORDINATE SYSTEM, PROJECTION AND VERTICAL DATUM.  
HORIZONTAL DATUM: HENNEPIN COUNTY COORDINATE SYSTEM NAD83(2011)  
VERTICAL DATUM: NGVD29
  - CONTROL POINTS SHOWN HEREON WERE SET AND COLLECTED DURING THE CITY OF EDINA SURVEY.
  - PROPERTY BOUNDARIES SHOWN ARE FROM "METROGIS REGIONAL PARCEL DATASET - (YEAR END 2017)".
  - UTILITIES: EXISTING UTILITY LOCATIONS SHOWN HEREON ARE APPROXIMATE ONLY. THE SUBSURFACE UTILITY INFORMATION IN THE PLAN IS QUALITY LEVEL C. THE QUALITY LEVEL WAS DETERMINED ACCORDING TO GUIDELINES OF CI/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA". CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR HAVING UTILITIES LOCATED PRIOR TO CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL CALL GOPHER STATE ONE CALL AT 811 OR 1-800-252-1166 FOR UTILITY LOCATION. CONTRACTOR SHALL IMMEDIATELY CONTACT THE AFFECTED UTILITY SERVICE TO REPORT ANY DAMAGED OR DESTROYED UTILITIES. CONTRACTOR SHALL PROVIDE EQUIPMENT AND LABOR TO AID THE AFFECTED UTILITY SERVICE IN REPAIRING DAMAGED OR DESTROYED UTILITIES IN ACCORDANCE WITH UTILITY'S RULES AND REQUIREMENTS. CONTRACTOR SHALL COORDINATE WITH UTILITIES FOR ANY NECESSARY UTILITY SERVICE DISRUPTIONS IN ACCORDANCE WITH APPROPRIATE UTILITY'S RULES AND REQUIREMENTS. CONTRACTOR SHALL PROVIDE EQUIPMENT AND LABOR TO AID IN TEMPORARY SERVICE DISRUPTIONS AND SHALL PAY ANY FEES INQUIRED FROM UTILITY PROVIDER FOR DISRUPTIONS OR DAMAGE.
  - CONSTRUCTION STAKING:** THE ENGINEER WILL COMPLETE CONSTRUCTION STAKING FOR CONSTRUCTION GRADES AND LINES AND STRUCTURE LOCATIONS. SOME FIELD ADJUSTMENTS TO THE LINES AND GRADES ASSOCIATED WITH THE CHANNEL WORK ARE TO BE EXPECTED AND SHALL BE COMPLETED BY THE CONTRACTOR PER THE DIRECTION OF THE ENGINEER. THE CONTRACTOR IS RESPONSIBLE FOR REPLACING DAMAGED OR DESTROYED CONSTRUCTION STAKES.
  - HYDROLOGIC CONDITIONS:** HYDRAULIC MODELING WAS PERFORMED BY INTER-FLUVE, INC. USING USACE HEC-RAS. ORDINARY HIGH WATER (OHW) LINES DISPLAYED IN THE DESIGN PACKAGE WERE IDENTIFIED BY INTER-FLUVE STAFF AND ARE BASED UPON FIELD OBSERVATION, MODELING AND BEST PROFESSIONAL JUDGEMENT.
  - SOILS:** GEOTECHNICAL TESTING THAT HAS BEEN COMPLETED ONSITE IS DOCUMENTED IN REPORTS PROVIDED AS AN EXHIBIT TO THE SPECIFICATIONS.
- PERMITS:**
  - CONTRACTOR IS RESPONSIBLE FOR ACQUIRING ANY AND ALL CONSTRUCTION PERMITS NECESSARY TO COMPLETE THE WORK.
  - CONTRACTOR SHALL PERFORM WORK IN ACCORDANCE WITH ALL PROJECT AND REGULATORY PERMITS AND ASSOCIATED RULES, REQUIREMENTS, REGULATIONS AND CONDITIONS. ADDITIONAL PERMITTING INFORMATION IS LISTED IN SECTION 014100 - REGULATORY REQUIREMENTS OF THE SPECIFICATIONS.

- A CULTURAL RESOURCES LITERATURE REVIEW AND ASSESSMENT HAS BEEN CONDUCTED FOR THE PROJECT AREA AND IS AVAILABLE TO THE CONTRACTOR UPON REQUEST. IF WORK BRINGS CONTRACTOR IN CONTACT WITH ANY CULTURAL RESOURCES OR ARTIFACTS, WORK MUST IMMEDIATELY DISCONTINUE ALL GROUND DISTURBING ACTIVITY. DO NOT TOUCH OR MOVE THE OBJECTS AND MAINTAIN THE CONFIDENTIALITY OF THE SITE. NOTIFY ENGINEER AND OWNER IMMEDIATELY.
- CONTRACTOR SHALL HAVE SOLE AND COMPLETE RESPONSIBILITY FOR THE JOB SITE CONDITIONS DURING THE COURSE OF CONSTRUCTION OF THIS PROJECT, INCLUDING SAFETY OF ALL PERSONS AND PROPERTY.
- NEITHER THE OWNER NOR THE ENGINEER WILL BE RESPONSIBLE FOR ENFORCING SAFETY MEASURES OR REGULATIONS. CONTRACTOR SHALL DESIGN, CONSTRUCT AND MAINTAIN ALL SAFETY DEVICES AND SHALL BE SOLELY RESPONSIBLE FOR CONFORMING TO ALL LOCAL, STATE AND FEDERAL HEALTH AND SAFETY STANDARDS, LAWS AND REGULATIONS.
- CONTRACTOR SHALL HAVE ONSITE THE MOST RECENT APPROVED SET OF FINAL PLANS AND ALL CONTRACT DOCUMENTS ON THE JOB SITE AT ALL TIMES.
- UPON COMPLETION OF EACH DAY'S WORK, CONTRACTOR SHALL BE RESPONSIBLE FOR LEAVING THE WORK AREA FREE OF HAZARDS, IN A NEAT AND SIGHTLY CONDITION FREE OF DEBRIS AND LITTER, AND SHALL PROVIDE ALL NECESSARY TEMPORARY SIGNS, DEVICES AND BARRICADES.
- CONTRACTOR SHALL MINIMIZE DISTURBANCE TO EXISTING VEGETATION AND GROUND SURFACES.
- FOR THE DURATION OF THE PROJECT, CONTRACTOR SHALL KEEP ALL ROADS USED FOR ACCESS FREE OF DEBRIS AND MUD. AT PROJECT COMPLETION, PAVEMENT SHALL BE RESTORED TO A CONDITION BETTER THAN OR EQUAL TO ITS PRE-CONSTRUCTION CONDITION, AS DETERMINED BY THE CITY.
- ALL EXISTING STRUCTURES NOT EXPLICITLY INDICATED FOR REMOVAL WITHIN ARDEN PARK, ON ADJACENT PUBLIC PROPERTY AND ON ADJACENT PRIVATE PROPERTY SHALL NOT BE DAMAGED DURING CONSTRUCTION. CONTRACTOR IS RESPONSIBLE FOR REPAIRING ANY DAMAGED PROPERTY TO A CONDITION BETTER THAN OR EQUAL TO ITS CONDITION PRIOR TO DAMAGE, AS DETERMINED BY THE PROPERTY OWNER.
- ANY EXCESS MATERIAL SHALL BE STOCKPILED NEATLY IN AN APPROVED LOCATION OF THE STOCKPILE AND STAGING AREA. AT THE COMPLETION OF WORK, THE MATERIAL SHALL BECOME THE PROPERTY OF THE CONTRACTOR AND SHALL BE REMOVED FROM THE SITE OF AND DISPOSED OF LEGALLY, OR AS DIRECTED BY THE CITY.
- CONTRACTOR SHALL KEEP ACCURATE AND LEGIBLE RECORDS OF ALL CHANGES OF WORK THAT OCCUR DURING CONSTRUCTION AND INFORMATION ON "AS-BUILT" CONDITIONS. DOCUMENTATION OF CHANGES AND AS-BUILT INFORMATION SHALL BE NOTED ON AS-BUILT SURVEY.
- CONTRACTOR SHALL TAKE NECESSARY STEPS TO PROTECT THE PROJECT AND ADJACENT PROPERTY, STRUCTURES, UTILITIES AND LANDSCAPING FROM ANY DAMAGE, EROSION OR SILTATION.
- ALL NON-PAVED DISTURBED AREAS SHALL BE RESTORED AS SHOWN ON THE PLANS.
- WATER LEVEL IS SUBJECT TO CHANGE. CONTRACTOR MUST COMPLY WITH APPROVED DEWATERING AND DIVERSION PLAN THROUGHOUT CONSTRUCTION.
- ALL ONSITE WORK SHALL BE IN COMPLIANCE WITH THE APPROVED CONSTRUCTION OPERATIONS PLAN.
- MEASURES SHALL BE TAKEN TO PREVENT DEBRIS FROM BEING TRANSPORTED DOWNSTREAM.

**EROSION/SEDIMENTATION CONTROL NOTES**

- CONTRACTOR SHALL COMPLY WITH SWPPP.
- CONTRACTOR SHALL BE SOLELY RESPONSIBLE TO IMPLEMENT SOIL EROSION AND SEDIMENT CONTROL WORK IN ACCORDANCE WITH ALL APPLICABLE REGULATIONS AND PERMITS.
- SOIL EROSION AND SEDIMENT CONTROLS MUST BE IMPLEMENTED PRIOR TO ANY GROUND DISTURBING ACTIVITY ON THE PROJECT SITE, AND IN SUCH A MANNER TO ENSURE THAT SEDIMENT AND SEDIMENT LADEN WATER DOES NOT LEAVE THE SITE, ENTER DRAINAGE SYSTEMS OR VIOLATE APPLICABLE WATER STANDARDS.

**SUGGESTED CONSTRUCTION SEQUENCE**

- INSTALL EROSION AND SEDIMENT CONTROL MEASURES AND ESTABLISH ACCESS.
- GRUB AND COMPLETE TREE AND OTHER VEGETATION REMOVAL; SALVAGE TREES FOR REUSE.
- COMPLETE OTHER REMOVALS.
- COMPLETE DAM REMOVAL
- COMPLETE ROUGH GRADING AND IN-STREAM GRADING.
- PLACE FILL IN FES LIFTS AND COMPACT TO SPECIFICATIONS. INSTALL LARGE WOOD STRUCTURES.
- INSTALL OTHER IN-STREAM IMPROVEMENTS.
- COMPLETE SUBSURFACE SITE WORK AND COORDINATE WITH PHASE 2 CONTRACTOR FOR ELECTRICAL CONDUIT AND FIXTURE INSTALLATIONS.
- COMPLETE FINE GRADING AND SURFACE IMPROVEMENTS (TRAILS, STAIRS, BRIDGES, PLAYGROUND, FURNISHINGS, ETC.)
- DECOMMISSION ACCESS ROUTES, MATERIALS AND EQUIPMENT NOT NECESSARY FOR PHASE 2 WORK OR POST-PHASE 2 IMPROVEMENT AREAS.
- COMPLETE VEGETATION INSTALLATION AND SEEDING.
- COORDINATE SCHEDULE FOR POST-PHASE 2 IMPROVEMENT AREA WITH CITY OF EDINA.

CONTROL POINT TABLE				CONTROL POINT TABLE			
Point #	Existing Elevation	Northing	Easting	Point #	Existing Elevation	Northing	Easting
717	864.50	143085.35	512267.56	656	886.51	142374.14	512508.90
716	862.86	142868.38	512394.50	655	866.45	142196.31	512615.70
715	859.73	141413.95	512994.76	654	883.57	142275.10	512491.76
713	887.35	143531.29	512119.20	653	866.17	142361.24	512604.68
712	886.02	143464.37	512248.40	652	876.02	142104.68	512493.95
711	868.06	143081.16	512518.49	651	877.97	141887.70	512412.23
710	867.90	142939.42	512652.11	650	877.18	141785.49	512412.48
708	867.30	142702.68	512939.41	608	882.82	141663.05	512455.73
704	875.12	142026.65	512836.23	45	861.74	141495.01	512790.76
703	869.77	141799.11	512778.86	44	869.07	141687.78	512842.55
702	868.50	141710.68	512817.04	43	872.65	141903.72	512775.01
700	866.94	141612.21	512752.28	42	872.24	142162.99	512922.71
673	866.45	143421.40	511754.98	41	871.77	142249.67	512993.25
672	866.79	143241.62	511873.60	40	865.62	142615.73	512876.76
671	864.54	143291.50	512205.79	39	867.73	142989.50	512574.02
670	864.07	143239.97	512243.33	38	872.44	142161.95	512959.59
669	864.16	143196.37	512197.04	37	882.82	141663.05	512455.73
668	865.41	143154.84	512148.68	36	880.92	141972.81	512412.79
667	867.69	143078.47	511972.33	35	864.39	142140.97	512566.21
665	866.53	143084.74	512137.44	34	891.67	142458.16	512377.96
664	876.05	142950.80	512015.43	33	887.32	142515.55	512453.82
663	868.94	142944.20	512156.53	32	884.27	142201.66	512476.42
662	893.29	142559.22	512250.34	31	885.31	142864.06	512232.23
661	893.09	142669.25	512243.70	30	891.65	142442.72	512364.58
660	888.44	142779.13	512236.84	29	896.47	142768.46	512089.56
659	886.08	142547.23	512365.71	28	895.50	141643.20	514078.94
657	881.86	142508.12	512444.14	27	881.26	144267.12	511301.90

NO.	DATE	REVISION DESCRIPTION

CP,GS,BL	MM,BL	MM
DRAWN	DESIGNED	CHECKED
JK	9/28/2018	18-04-01
APPROVED	DATE	PROJECT

**ARDEN PARK CREEK RESTORATION**  
**MINNEHAHA CREEK WATERSHED DISTRICT**  
**EDINA, MINNESOTA**



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 in the State of Minnesota.  
 Signature: \_\_\_\_\_  
 Typed or Printed Name: NATHAN KUSA  
 Date: 9/28/18 License Number: 44129

**LEGEND AND GENERAL NOTES**

SHEET  
**CS-002**



**PROJECT INFORMATION**

PROJECT NAME: ARDEN PARK RESTORATION  
 PROJECT LOCATION: 5230 MINNEHAHA BLVD, EDINA, MN 55424  
 PROJECT TYPE: STREAM RESTORATION AND PARK REDEVELOPMENT

TOTAL AREA DISTURBED BY CONSTRUCTION: ±19 ACRES.  
 TOTAL SITE AREA: ±19 ACRES.  
 ESTIMATED CONSTRUCTION DATES:  
 NOVEMBER 2018 TO DECEMBER 2019

CUMULATIVE IMPERVIOUS SURFACE/PERMANENT STORMWATER MANAGEMENT REQUIREMENTS:  
 THERE IS CURRENTLY ±1.0 ACRES OF EXISTING IMPERVIOUS SURFACE IN THE PROJECT AREA.

THE PROPOSED AREA OF IMPERVIOUS IS ±1.2 ACRES RESULTING IN A ±0.2 ACRE NET INCREASE INCREASE IMPERVIOUS SURFACE.

THE SITE CONSISTS OF AND ULTIMATELY DRAINS TO MINNEHAHA CREEK, WHICH IS LISTED AS AN IMPAIRED WATER FOR AQUATIC LIFE AND AQUATIC RECREATION. THERE ARE CURRENT EPA APPROVED TMDLS FOR THE WATERBODY FOR CHLORIDE AND FECAL COLIFORM.

THE DEMOLITION PLANS CALL FOR REMOVAL OF IMPERVIOUS AREAS, EXISTING PARK FURNISHINGS, EXISTING PARK SHELTER, EXISTING DAM. THE PROPOSED SITE PLAN INCLUDES PLANTING, SEEDING AND MULCHING OF PROJECT AREA FOR VEGETATIVE ESTABLISHMENT, REMEANDERING MINNEHAHA CREEK, BANK STABILIZATION, REBUILDING PARK FURNISHINGS.

PARTY RESPONSIBLE FOR LONG TERM OPERATION AND MAINTENANCE OF THE SITE (OWNER):  
 CITY OF EDINA  
 CONTACT: TOM SWENSON  
 CONTACT PHONE: (952) 826-0317  
 CONTACT EMAIL: TSWENSON@EDINAMN.GOV

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

**ESTIMATED BMP QUANTITIES AND INSTALLATION SCHEDULE**

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

BMP QUANTITIES	
SILT FENCE: ±3,550 LF	
STORM WATER SWALES: ±0.5 AC	
NATIVE VEGETATION ESTABLISHMENT: ±4.8 AC	
STABILIZED CONSTRUCTION ENTRANCES: ±2 EA	



**EROSION AND SEDIMENT CONTROL**

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

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

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

**SWPPP IMPLEMENTATION, PHASING, AND SEQUENCE OF CONSTRUCTION**

- BMP AND EROSION CONTROL INSTALLATION SEQUENCE SHALL BE AS FOLLOWS:
1. CONSTRUCT STABILIZED CONSTRUCTION ENTRANCE AND INSTALL SILT FENCE.
  2. INSTALL INLET PROTECTION AT EXISTING STORMWATER CULVERTS AND INLETS.
  3. PREPARE TEMPORARY STORAGE, PARKING, AND PHASING AREAS.
  4. DEWATERING OF STREAM RESTORATION AREA.
  5. PERFORM CLEARING AND GRUBBING OF THE SITE, IF APPLICABLE.
  6. START REMOVAL OF THE BUILDING STRUCTURE AND PAVED AREAS.
  7. PERFORM MASS GRADING, ROUGH GRADE TO ESTABLISH PROPOSED DRAINAGE PATTERNS.
  8. TEMPORARILY SEED WITH PURE LIVE SEED THROUGHOUT CONSTRUCTION DISTURBED AREAS THAT WILL BE INACTIVE FOR SEVEN (7 DAYS) OR MORE AS REQUIRED BY NPDES PERMIT.

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

1. INSTALLATION OF SEDIMENT CONTROL PRACTICES ON ALL DOWN GRADIENT PERIMETERS PRIOR TO LAND DISTURBING ACTIVITIES.
2. SILT FENCING, BIOLOGS, OR OTHER SEDIMENT CONTROL SURROUNDING TEMPORARY SOIL STOCKPILES.
3. VEHICLE TRACKING BMP AT CONSTRUCTION SITE ENTRANCE/EXIT. STREET SWEEPING SHALL BE PERFORMED IF VEHICLE TRACKING BMPS ARE NOT ADEQUATE TO PREVENT SEDIMENT TRACKING. TRACKED SEDIMENT MUST BE REMOVED FROM ALL PAVED SURFACES BOTH ON AND OFFSITE WITHIN 24 HOURS OF DISCOVERY PER THE PERMIT.

THE FOLLOWING GUIDELINES WILL BE USED TO DETERMINE IF POLLUTION CONTROL DEVICES REQUIRE MAINTENANCE, REPAIR, OR REPLACEMENT:

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

**POLLUTION PREVENTION MEASURES**

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

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

**CONSTRUCTION EQUIPMENT/VEHICLES**  
 EXTERNAL WASHING OF TRUCKS AND OTHER CONSTRUCTION VEHICLES MUST BE LIMITED TO A DEFINED AREA OF THE SITE. RUNOFF MUST BE CONTAINED AND WASTE PROPERLY DISPOSED OF. NO ENGINE DEGREASING IS ALLOWED ON SITE. REASONABLE STEPS TO PREVENT THE DISCHARGE OF SPILLED OR LEAKED CHEMICALS SHALL BE TAKEN. ADEQUATE SUPPLIES MUST BE AVAILABLE AT ALL TIMES TO CLEAN UP DISCHARGED MATERIALS; CONDUCT FUELING IN A

CONTAINED AREA UNLESS INFEASIBLE.

CONCRETE WASHOUT AREA  
 CONCRETE WASHOUT WILL BE PERMITTED ON-SITE. CONTRACTOR SHALL FOLLOW ALL PERMIT REQUIREMENTS FOR CONCRETE WASHOUT. THE CONTRACTOR SHALL PROVIDE EFFECTIVE CONTAINMENT FOR ALL LIQUID AND SOLID WASTES GENERATED BY WASHOUT OPERATIONS. LIQUID AND SOLID WASTES MUST NOT CONTACT THE GROUND AND THE CONTAINMENT MUST BE DESIGNED TO PROHIBIT RUNOFF FROM THE WASHOUT OPERATIONS/AREAS. LIQUID AND SOLID WASTES MUST BE DISPOSED OF PROPERLY AND IN COMPLIANCE WITH MPCA RULES. A SIGN MUST BE INSTALLED ADJACENT TO EACH WASHOUT FACILITY THAT REQUIRES SITE PERSONNEL TO UTILIZE THE PROPER FACILITIES FOR CONCRETE WASHOUT AND DISPOSAL OF WASHOUT WASTES. WASHOUT LOCATION IS SHOWN ON THE EROSION AND SEDIMENT CONTROL PLAN SHEETS. SHOULD CONTRACTOR NEED TO RELOCATE THE CONCRETE WASHOUT, CONTRACTOR SHALL REVISE THE SWPPP ACCORDINGLY WITH APPROVAL FROM THE ENGINEER AND THE MCWD.

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

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

**GENERAL SWPPP NOTES**

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

THE PROJECT MAY DISTURB 5 OR MORE ACRES THAT PROMOTE DRAINAGE TO A COMMON LOCATION. THEREFORE A TEMPORARY SEDIMENT BASIN MAY BE REQUIRED. THIS SWPPP SHALL BE AMENDED BY THE CONTRACTOR IN ACCORDANCE WITH THE GENERAL PERMIT TO INCLUDE TEMPORARY SEDIMENTATION BASINS. BASINS SHALL BE DESIGNED TO ACCOMMODATE NO LESS THAN 3,600 CUBIC FEET OF LIVE STORAGE PER ACRE OF CONTRIBUTING DRAINAGE AREA. BASIN OUTLETS SHALL BE DESIGNED TO WITHDRAW WATER FROM THE SURFACE OF THE BASIN, PREVENT SHORT-CIRCUITING AND THE DISCHARGE OF FLOATING DEBRIS. BASINS SHALL HAVE A STABILIZED EMERGENCY OVERFLOW LOCATION AND BE DESIGNED TO PREVENT THE DISCHARGE OF POLLUTANTS TO THE EXTENT PRACTICAL.

**FINAL STABILIZATION**

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

**DEWATERING AND DIVERSION**

WORK MAY NOT COMMENCE ONSITE UNTIL THE APPROVED DEWATERING AND DIVERSION PLAN HAS BEEN SET IN PLACE PER THE REQUIREMENTS SET FORTH IN THE CONTRACT DOCUMENTS.

**IMPAIRED WATERS, SPECIAL WATERS, AND WETLANDS**

THIS PROJECT IS LOCATED WITHIN ONE MILE OF, AND ULTIMATELY DISCHARGES TO, AN IMPAIRED WATER. MINNEHAHA CREEK IS LOCATED THROUGH THE CENTER OF THE PROJECT LOCATION AND IS LISTED AS IMPAIRED FOR AQUATIC LIFE AND AQUATIC RECREATION. DISCHARGE TO AN IMPAIRED WATER REQUIRES IMPLEMENTATION OF PARTS C.1 AND C.2 OF APPENDIX A OF THE PERMIT AS INCORPORATED INTO THIS SWPPP DOCUMENT.

THE PROJECT SITE DISCHARGES VIA OVERLAND FLOW DIRECTLY TO MINNEHAHA CREEK.

SITE SOILS - SITE SOILS ARE SHOWN ON THIS SHEET. THIS PROJECT IS NOT LOCATED IN A KARST AREA.

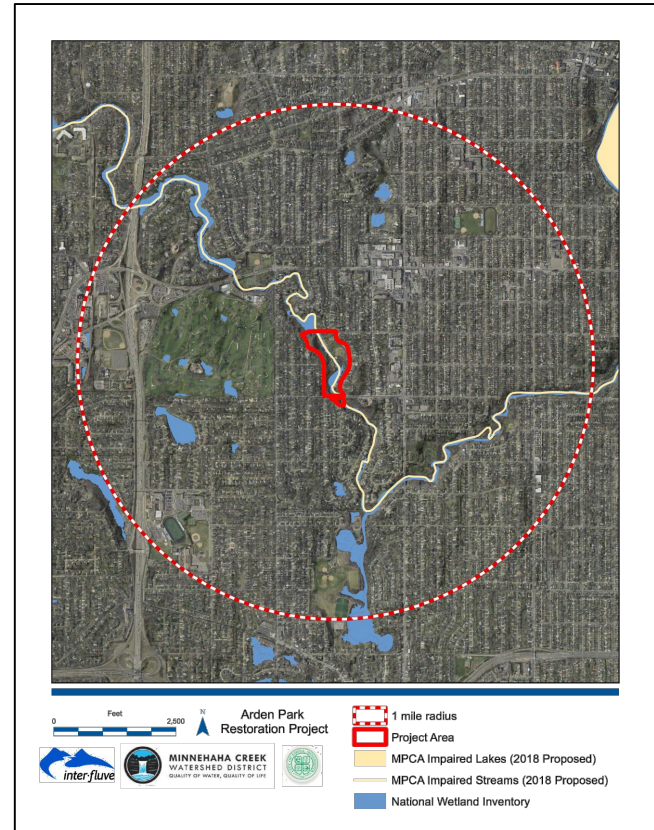
**SWPPP DOCUMENTS**

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

ARDEN PARK RESTORATION CIVIL CONSTRUCTION DRAWINGS BY INTER-FLUVE AND WENCK ASSOCIATES DATED SEPTEMBER 2018

RECORD RETENTION - THE SWPPP, ALL CHANGES TO IT, AND INSPECTION AND MAINTENANCE RECORDS MUST BE KEPT ON-SITE DURING CONSTRUCTION; THE CONSTRUCTION DRAWINGS ARE INCORPORATED HEREIN BY REFERENCE, AND A COPY OF THE PLAN SET SHOULD BE KEPT ON-SITE WITH THE SWPPP RECORDS. THE OWNER MUST RETAIN A COPY OF THE SWPPP ALONG WITH THE FOLLOWING RECORDS FOR THREE (3) YEARS AFTER SUBMITTAL OF THE NOTICE OF TERMINATION:

1. ANY OTHER PERMITS REQUIRED FOR THE PROJECT;
2. RECORDS OF ALL INSPECTION AND MAINTENANCE CONDUCTED DURING CONSTRUCTION;
3. ALL PERMANENT OPERATIONS AND MAINTENANCE AGREEMENTS THAT HAVE BEEN IMPLEMENTED, INCLUDING ALL RIGHT OF WAY, CONTRACT, COVENANTS AND OTHER BINDING REQUIREMENTS REGARDING PERPETUAL MAINTENANCE; AND
4. ALL REQUIRED CALCULATIONS FOR DESIGN OF THE TEMPORARY AND PERMANENT STORMWATER MANAGEMENT SYSTEMS.



**INSPECTIONS**

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

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

1. THE INDIVIDUAL PERFORMING INSPECTIONS MUST BE TRAINED AS REQUIRED BY PART IV.E OF THE PERMIT. TRAINING DOCUMENTATION SHALL BE PROVIDED BY THE CONTRACTOR FOR INCORPORATION INTO THE SWPPP. INSPECTIONS MUST INCLUDE STABILIZED AREAS, EROSION PREVENTION AND SEDIMENT CONTROL BMPS, AND INFILTRATION AREAS. CORRECTIVE ACTIONS MUST BE IDENTIFIED AND DATE OF CORRECTION MUST BE NOTED AS IDENTIFIED IN SECTION IV.E.2.F OF THE PERMIT. ANY OFFSITE DISCHARGE MUST BE DOCUMENTED AS IDENTIFIED IN SECTION IV.E.2.F OF THE PERMIT. ANY AMENDMENTS TO THE SWPPP PROPOSED AS A RESULT OF THE INSPECTION MUST BE DOCUMENTED WITHIN SEVEN (7) CALENDAR DAYS. AN INSPECTION LOG IS ALSO ATTACHED; THE INSPECTION LOG AND SWPPP MUST BE KEPT ON-SITE FOR THE DURATION OF THE CONSTRUCTION PROJECT.

AT A MINIMUM, THE FOLLOWING SHALL BE COMPLETED DURING EACH INSPECTION:

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

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

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

NO.	DATE	REVISION DESCRIPTION

CP,GS,BL	MM,BL	MM
DRAWN	DESIGNED	CHECKED
JK	9/28/2018	18-04-01
APPROVED	DATE	PROJECT

**ARDEN PARK CREEK RESTORATION**  
**MINNEHAHA CREEK WATERSHED DISTRICT**  
 EDINA, MINNESOTA

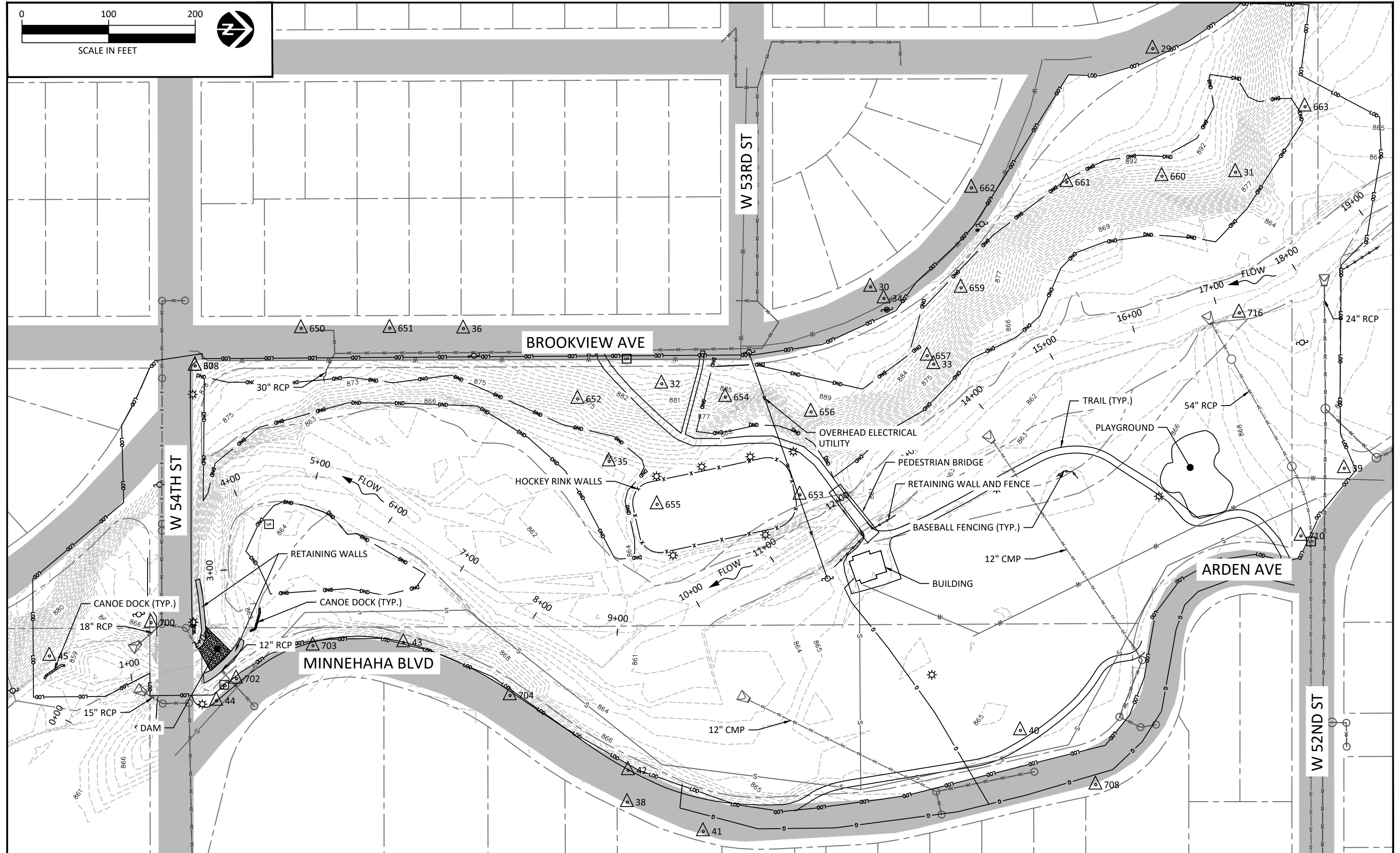
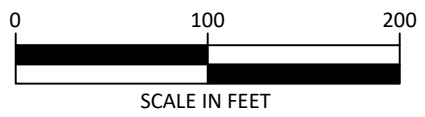


I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer in the State of Minnesota.  
 Signature: \_\_\_\_\_  
 Typed or Printed Name: NATHAN KUSA  
 Date: 9/28/18 License Number: 44129

**STORM WATER**  
**POLLUTION PREVENTION**  
**PLAN**

SHEET  
 CS-003





NO.	DATE	REVISION DESCRIPTION

CP,GS,BL	MM,BL	MM
DRAWN	DESIGNED	CHECKED
JK	9/28/2018	18-04-01
APPROVED	DATE	PROJECT

**ARDEN PARK CREEK RESTORATION**  
**MINNEHAHA CREEK WATERSHED DISTRICT**  
**EDINA, MINNESOTA**









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 in the State of Minnesota.  
 Signature: **DRAFT**  
 Typed or Printed Name: **NATHAN KUSA**  
 Date: 9/28/18 License Number: 44129

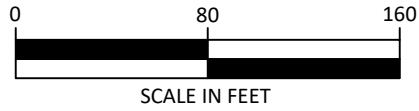
**EXISTING UTILITY PLAN**

SHEET  
**CS-101**



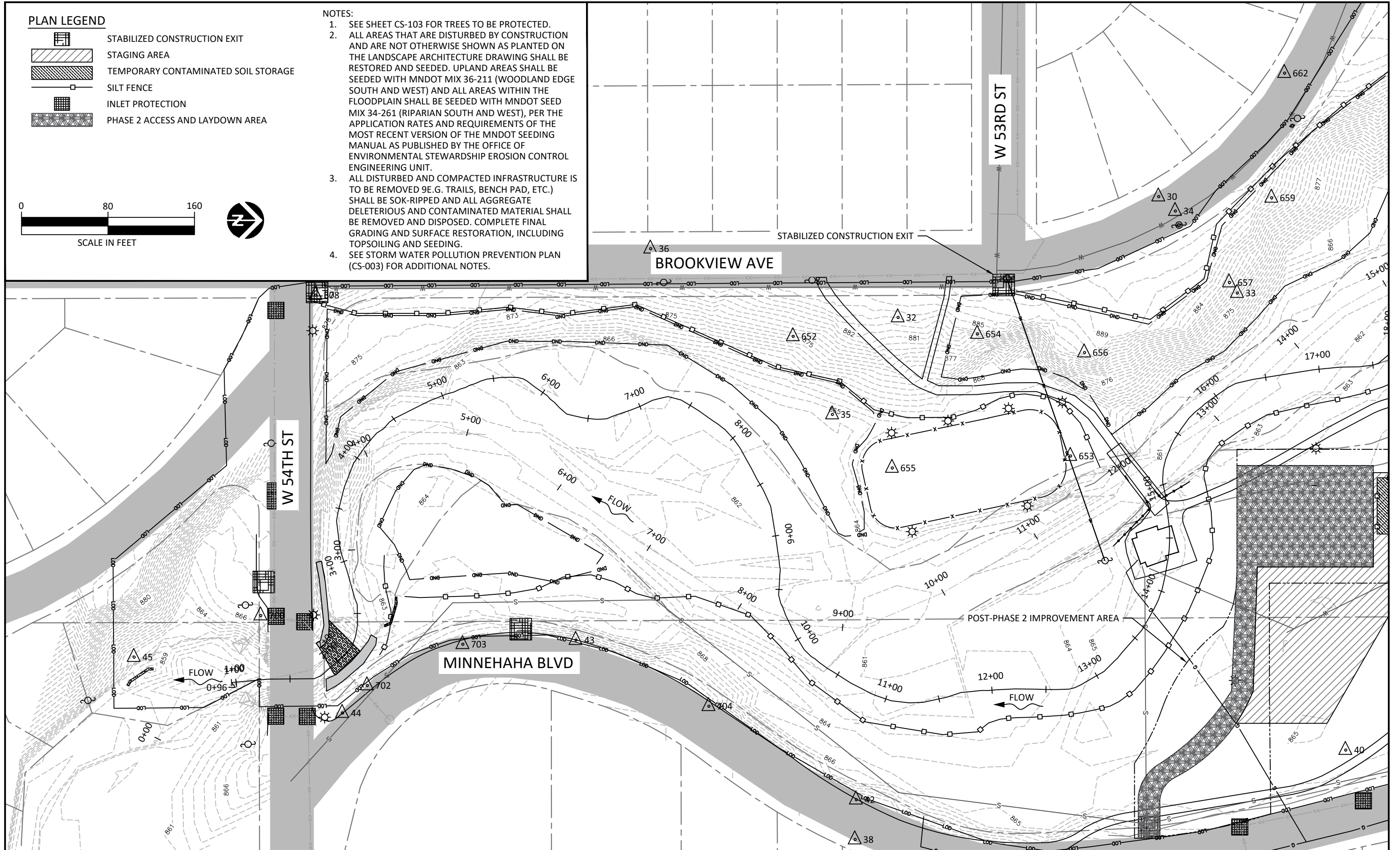
**PLAN LEGEND**

-  STABILIZED CONSTRUCTION EXIT
-  STAGING AREA
-  TEMPORARY CONTAMINATED SOIL STORAGE
-  SILT FENCE
-  INLET PROTECTION
-  PHASE 2 ACCESS AND LAYDOWN AREA



**NOTES:**

1. SEE SHEET CS-103 FOR TREES TO BE PROTECTED.
2. ALL AREAS THAT ARE DISTURBED BY CONSTRUCTION AND ARE NOT OTHERWISE SHOWN AS PLANTED ON THE LANDSCAPE ARCHITECTURE DRAWING SHALL BE RESTORED AND SEEDED. UPLAND AREAS SHALL BE SEEDED WITH MNDOT MIX 36-211 (WOODLAND EDGE SOUTH AND WEST) AND ALL AREAS WITHIN THE FLOODPLAIN SHALL BE SEEDED WITH MNDOT SEED MIX 34-261 (RIPARIAN SOUTH AND WEST), PER THE APPLICATION RATES AND REQUIREMENTS OF THE MOST RECENT VERSION OF THE MNDOT SEEDING MANUAL AS PUBLISHED BY THE OFFICE OF ENVIRONMENTAL STEWARDSHIP EROSION CONTROL ENGINEERING UNIT.
3. ALL DISTURBED AND COMPACTED INFRASTRUCTURE IS TO BE REMOVED (E.G. TRAILS, BENCH PAD, ETC.) SHALL BE SOK-RIPPED AND ALL AGGREGATE DELETERIOUS AND CONTAMINATED MATERIAL SHALL BE REMOVED AND DISPOSED. COMPLETE FINAL GRADING AND SURFACE RESTORATION, INCLUDING TOPSOILING AND SEEDING.
4. SEE STORM WATER POLLUTION PREVENTION PLAN (CS-003) FOR ADDITIONAL NOTES.



NO.	DATE	REVISION DESCRIPTION

CP,GS,BL	MM,BL	MM
DRAWN	DESIGNED	CHECKED
JK	9/28/2018	18-04-01
APPROVED	DATE	PROJECT

**ARDEN PARK CREEK RESTORATION**  
**MINNEHAHA CREEK WATERSHED DISTRICT**  
**EDINA, MINNESOTA**

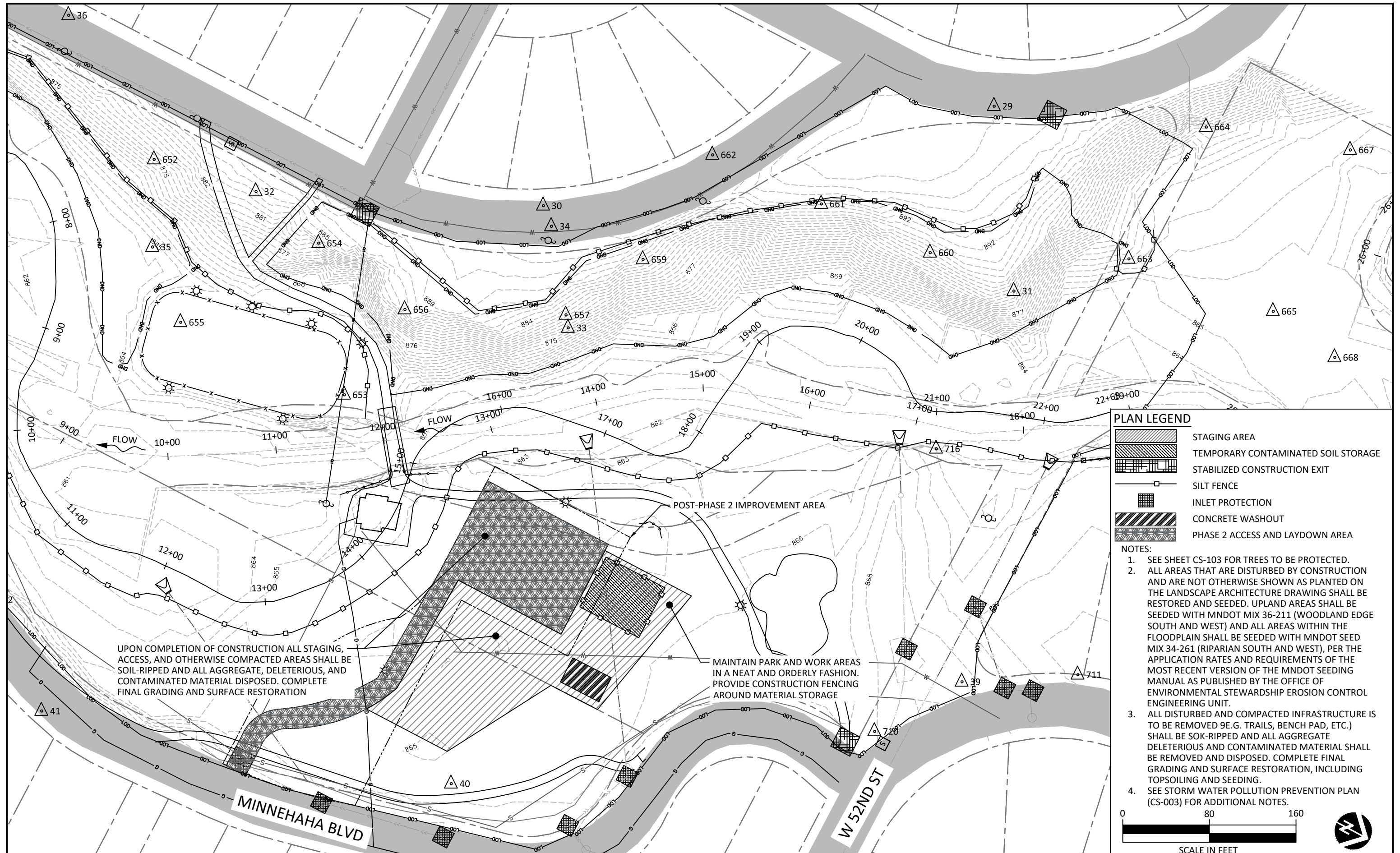


I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer in the State of Minnesota.  
 Signature: **NATHAN KUSA**  
 Typed or Printed Name: **NATHAN KUSA**  
 Date: 9/28/18 License Number: 44129

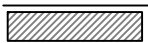

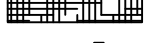
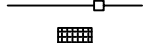


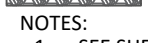
**EROSION & SEDIMENT CONTROL PLAN 1**

SHEET  
**CS-102**

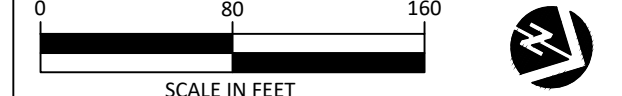




**PLAN LEGEND**

-  STAGING AREA
-  TEMPORARY CONTAMINATED SOIL STORAGE
-  STABILIZED CONSTRUCTION EXIT
-  SILT FENCE
-  INLET PROTECTION
-  CONCRETE WASHOUT
-  PHASE 2 ACCESS AND LAYDOWN AREA

- NOTES:**
1. SEE SHEET CS-103 FOR TREES TO BE PROTECTED.
  2. ALL AREAS THAT ARE DISTURBED BY CONSTRUCTION AND ARE NOT OTHERWISE SHOWN AS PLANTED ON THE LANDSCAPE ARCHITECTURE DRAWING SHALL BE RESTORED AND SEEDED. UPLAND AREAS SHALL BE SEEDED WITH MNDOT MIX 36-211 (WOODLAND EDGE SOUTH AND WEST) AND ALL AREAS WITHIN THE FLOODPLAIN SHALL BE SEEDED WITH MNDOT SEED MIX 34-261 (RIPARIAN SOUTH AND WEST), PER THE APPLICATION RATES AND REQUIREMENTS OF THE MOST RECENT VERSION OF THE MNDOT SEEDING MANUAL AS PUBLISHED BY THE OFFICE OF ENVIRONMENTAL STEWARDSHIP EROSION CONTROL ENGINEERING UNIT.
  3. ALL DISTURBED AND COMPACTED INFRASTRUCTURE IS TO BE REMOVED (E.G. TRAILS, BENCH PAD, ETC.) SHALL BE SOK-RIPPED AND ALL AGGREGATE DELETERIOUS AND CONTAMINATED MATERIAL SHALL BE REMOVED AND DISPOSED. COMPLETE FINAL GRADING AND SURFACE RESTORATION, INCLUDING TOPSOILING AND SEEDING.
  4. SEE STORM WATER POLLUTION PREVENTION PLAN (CS-003) FOR ADDITIONAL NOTES.



UPON COMPLETION OF CONSTRUCTION ALL STAGING, ACCESS, AND OTHERWISE COMPACTED AREAS SHALL BE SOIL-RIPPED AND ALL AGGREGATE, DELETERIOUS, AND CONTAMINATED MATERIAL DISPOSED. COMPLETE FINAL GRADING AND SURFACE RESTORATION

MAINTAIN PARK AND WORK AREAS IN A NEAT AND ORDERLY FASHION. PROVIDE CONSTRUCTION FENCING AROUND MATERIAL STORAGE

NO.	DATE	REVISION DESCRIPTION

CP,GS,BL	MM,BL	MM
DRAWN	DESIGNED	CHECKED
JK	9/28/2018	18-04-01
APPROVED	DATE	PROJECT

**ARDEN PARK CREEK RESTORATION**  
**MINNEHAHA CREEK WATERSHED DISTRICT**  
 EDINA, MINNESOTA



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 in the State of Minnesota.  
 Signature: **NATHAN KUSA**  
 Typed or Printed Name: **NATHAN KUSA**  
 Date: 9/28/18 License Number: 44129


**DRAFT**

**EROSION & SEDIMENT CONTROL PLAN 2**

SHEET  
**CS-103**



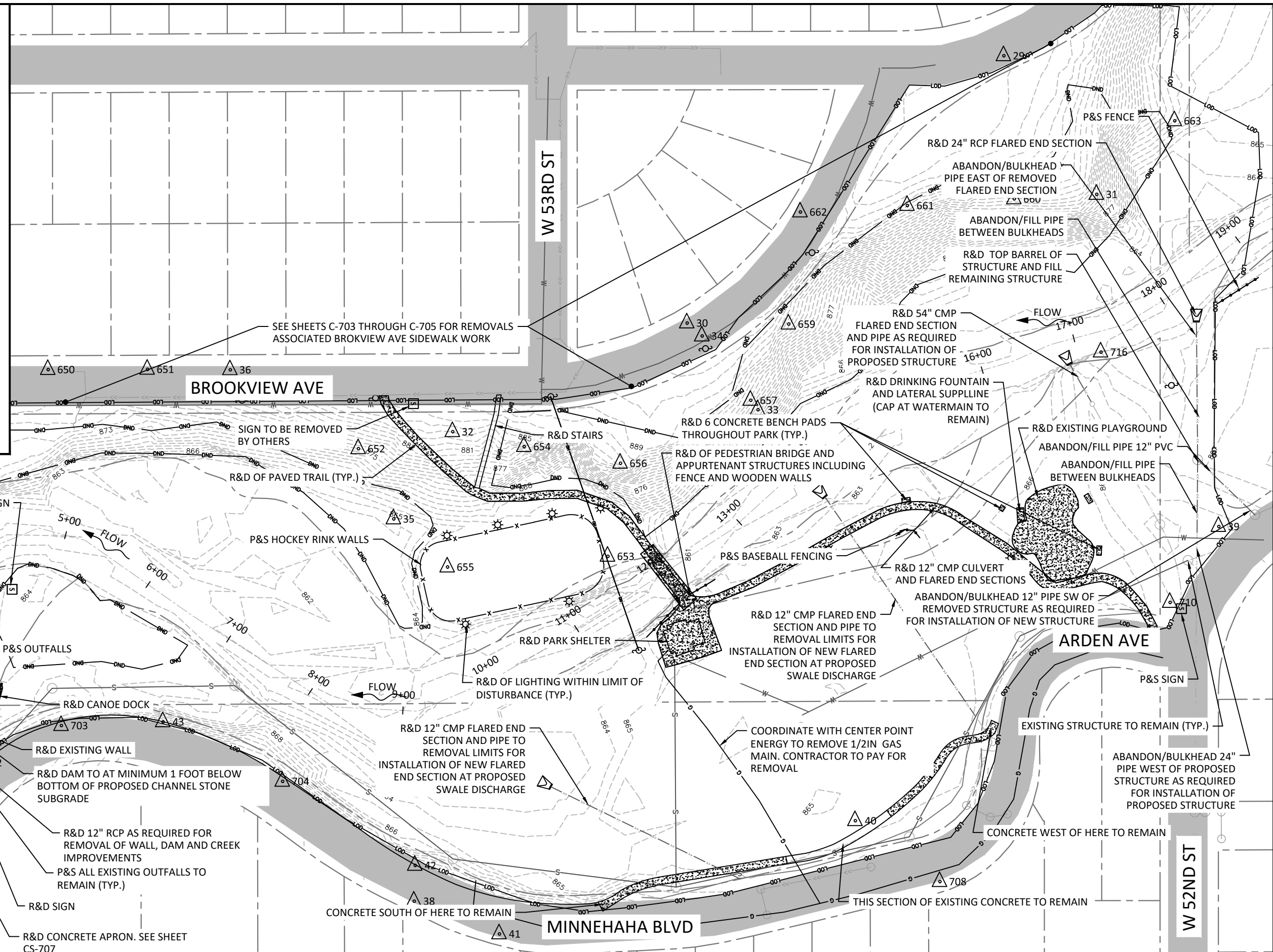
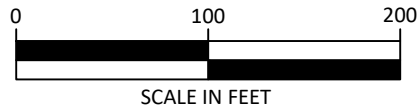
**PLAN LEGEND**

 STRUCTURE OR SURFACE TO BE REMOVED AND DISPOSED

R&D - REMOVE AND DISPOSE  
P&S - PROTECT AND SUPPORT

**NOTES:**

1. PLAYGROUND REMOVAL INCLUDES PLAYGROUND STRUCTURES, PEA GRAVEL SUBSTRATE, AND THE CONCRETE APRON.
2. SEE SHEETS CS-105 AND CS-106 FOR TREE REMOVALS AND PROTECTION
3. SEE CS-107 FOR INVASIVE SHRUB REMOVAL
4. DISPOSE OF REMOVED MATERIALS OFFSITE IN COMPLIANCE WITH ALL APPLICABLE LAWS, RULES, AND REGULATIONS
5. P&S ALL INFRASTRUCTURE NOT INDICATED FOR REMOVAL



SEE SHEET C-706 FOR REMOVALS ASSOCIATED WITH 54TH STREET SIDEWALK WORK

GRIND STUMP

W 54TH ST

W 53RD ST

BROOKVIEW AVE

ARDEN AVE

MINNEHAHA BLVD


W 52ND ST

NO.	DATE	REVISION DESCRIPTION

CP,GS,BL	MM,BL	MM
DRAWN	DESIGNED	CHECKED
JK	9/28/2018	18-04-01
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**ARDEN PARK CREEK RESTORATION**  
MINNEHAHA CREEK WATERSHED DISTRICT  
EDINA, MINNESOTA



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Signature:   
Typed or Printed Name: NATHANIEL KUSA  
Date: 9/28/18 License Number: 44129





**DRAFT**

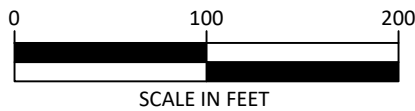
REMOVALS

SHEET  
CS-104



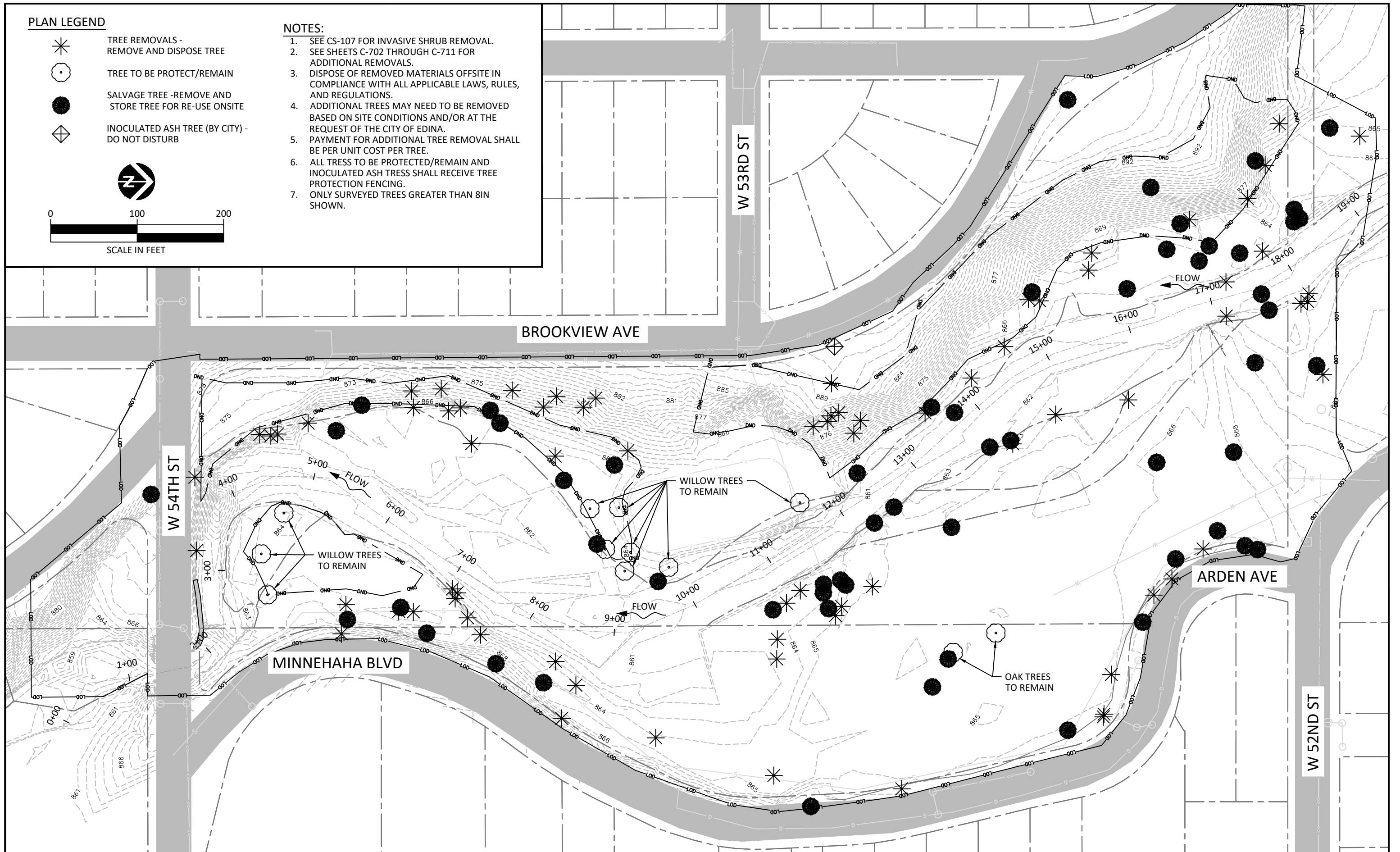
**PLAN LEGEND**

-  TREE REMOVALS - REMOVE AND DISPOSE TREE
-  TREE TO BE PROTECT/REMAIN
-  SALVAGE TREE - REMOVE AND STORE TREE FOR RE-USE ONSITE
-  INOCULATED ASH TREE (BY CITY) - DO NOT DISTURB



**NOTES:**

1. SEE CS-107 FOR INVASIVE SHRUB REMOVAL.
2. SEE SHEETS C-702 THROUGH C-711 FOR ADDITIONAL REMOVALS.
3. DISPOSE OF REMOVED MATERIALS OFFSITE IN COMPLIANCE WITH ALL APPLICABLE LAWS, RULES, AND REGULATIONS.
4. ADDITIONAL TREES MAY NEED TO BE REMOVED BASED ON SITE CONDITIONS AND/OR AT THE REQUEST OF THE CITY OF EDINA.
5. PAYMENT FOR ADDITIONAL TREE REMOVAL SHALL BE PER UNIT COST PER TREE.
6. ALL TREES TO BE PROTECTED/REMAIN AND INOCULATED ASH TREES SHALL RECEIVE TREE PROTECTION FENCING.
7. ONLY SURVEYED TREES GREATER THAN 8IN SHOWN.



NO.	DATE	REVISION DESCRIPTION

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**ARDEN PARK CREEK RESTORATION**  
**MINNEHAHA CREEK WATERSHED DISTRICT**  
**EDINA, MINNESOTA**



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 Signature: **NATHAN KUSA**  
 Typed or Printed Name: **NATHAN KUSA**  
 Date: 9/28/18 License Number: 44129

**TREE REMOVAL**

SHEET  
**CS-105**



CONSTRUCTION REMOVAL TREES

Easting	Northing	TagID	Scientific	Common_nam	DBH__in__
512766.3917	141833.7846	155	Ulmus americana	American elm	12
512554.7875	142866.4295	2455	Acer platanoides	Norway maple	15
512641.6453	142540.248	2424	Acer saccharinum	Silver maple	18
512606.1993	142547.295	136	Fraxinus pennsylvanica	Green ash	0
512885.0479	142198.3093	681	Acer negundo	Box elder	9
512746.3217	141980.8122	140	Fraxinus pennsylvanica	Green ash	8
512928.6287	142334.7928	2188	Fraxinus pennsylvanica	Green ash	8
512748.2847	141841.8227	151	Ulmus americana	American elm	14
512483.4519	142032.3267	2249	Fraxinus pennsylvanica	Green ash	8
512502.7843	142068.5331	2236	Fraxinus pennsylvanica	Green ash	11
512490.2439	142083.5462	2253	Ulmus americana	American elm	10
512502.8845	142114.7188	2278	Fraxinus pennsylvanica	Green ash	8
512397.579	142857.982	3792		Tree	8
512710.1159	142448.8411	2443	Pinus resinosa	Red pine	20
512636.7654	142451.1369	2434	Salix nigra	Black willow	24
512618.3699	142473.6781	2422	Salix nigra	Black willow	56
512549.0495	142584.4761	133	Ulmus americana	American elm	13
512545.2934	142611.1303	2454	Acer saccharinum	Silver maple	8
512541.3037	142608.7088	129	Acer saccharinum	Silver maple	16
512511.4447	142660.7956	131	Acer saccharinum	Silver maple	11
512390.7414	142907.4775	2058	Acer saccharinum	Silver maple	19
512372.1693	142898.6227	2059	Populus deltoides	Eastern cottonwood	68
512383.1786	142944.3742	265	Acer saccharinum	Silver maple	10
512371.805	142953.5043	2456	Acer saccharinum	Silver maple	11
512380.6515	142951.9476	2459	Fraxinus pennsylvanica	Green ash	9
512708.3908	142417.9761	697	Populus deltoides	Eastern cottonwood	39
512702.7142	142412.028	692	Populus deltoides	Eastern cottonwood	28
512707.5569	142392.3112	695	Populus deltoides	Eastern cottonwood	41
512717.572	142392.1222	694	Populus deltoides	Eastern cottonwood	26
512733.093	142413.1891	687	Fraxinus pennsylvanica	Green ash	11
512735.6788	142398.0305	693	Populus deltoides	Eastern cottonwood	44
512743.7185	142406.0904	698	Fraxinus pennsylvanica	Green ash	9
512729.4288	142349.5116	696	Fraxinus pennsylvanica	Green ash	10
512714.7342	142365.4401	690	Fraxinus pennsylvanica	Green ash	8
512736.9694	142333.9727	691	Populus deltoides	Eastern cottonwood	47
512793.9039	142338.2002	680	Fraxinus pennsylvanica	Green ash	11
512534.3575	141740.423	2292	Tilia americana	Basswood	12
512533.9152	141761.0961	2234	Tilia americana	Basswood	10
512536.063	141753.2124	2233	Fraxinus pennsylvanica	Green ash	12
512521.3478	141796.4265	2211	Ulmus americana	American elm	10
512530.1351	141828.9496	2217	Acer saccharinum	Silver maple	14
512500.5306	141858.4489	2221	Populus deltoides	Eastern cottonwood	36
512503.1338	141918.1268	2268	Fraxinus pennsylvanica	Green ash	11
512503.713	141972.6945	2247	Fraxinus pennsylvanica	Green ash	8
512507.1758	141958.7972	2246	Fraxinus pennsylvanica	Green ash	12
512545.0429	141985.3657	2238	Ulmus americana	American elm	8
512661.1061	142130.3154	2520	Fraxinus pennsylvanica	Green ash	13
512704.2754	142201.0789	2561	Salix nigra	Black willow	16
512579.1435	142431.2299	2531	Salix babylonica	Weeping willow	35
512502.943	142517.1156	2554	Quercus macrocarpa	Bur oak	21
512469.1604	142563.2068	2598	Fraxinus pennsylvanica	Green ash	10
512509.0896	142543.7443	2577	Quercus macrocarpa	Bur oak	16
512432.8753	142601.2774	2562	Acer saccharinum	Silver maple	12
512344.4368	142698.6064	2547	Tilia americana	Basswood	10
512324.6464	142702.3762	2550	Tilia americana	Basswood	9
512366.0167	142743.3213	2544	Acer saccharinum	Silver maple	13
512320.4325	142789.1205	2807	Fraxinus pennsylvanica	Green ash	14
512333.9362	142826.5664	2808	Fraxinus pennsylvanica	Green ash	16
512358.0258	142857.6421	2811	Fraxinus pennsylvanica	Green ash	10
512324.8558	142873.4308	2812	Fraxinus pennsylvanica	Green ash	14
512288.4283	142936.0884	2875	Acer saccharinum	Silver maple	20
512322.5019	142899.9341	2900	Fraxinus pennsylvanica	Green ash	9
512284.7758	142942.8918	2823	Salix nigra	Black willow	22
512667.4139	142894.0307	2091	Malus sp.	Apple or crabapple	15
512663.0048	142879.6498	2484	Picea pungens	Colorado spruce (& blue Colorado spruce)	14

CONSTRUCTION REMOVAL TREES, CONTINUED

512645.7524	142847.8285	2092	Acer saccharinum	Silver maple	22
512666.7492	142831.1617	2485	Picea pungens	Colorado spruce (& blue Colorado spruce)	9
512678.2129	142799.4925	2500	Picea pungens	Colorado spruce (& blue Colorado spruce)	15
512701.3967	142795.1217	2094	Tilia americana	Basswood	16
512720.1256	142774.2593	2093	Picea pungens	Colorado spruce (& blue Colorado spruce)	7
512751.3485	142761.3859	2096	Picea pungens	Colorado spruce (& blue Colorado spruce)	13
512811.8948	142725.0481	2492	Picea pungens	Colorado spruce (& blue Colorado spruce)	12
512857.6867	142716.5893	2095	Tilia americana	Basswood	13
512860.8347	142715.8295	2066	Picea pungens	Colorado spruce (& blue Colorado spruce)	8
512876.2454	142674.7686	2487	Thuja occidentalis	Northern white cedar, arborvitae	14
512943.9998	142482.7559	2069	Tilia americana	Basswood	10
512565.9836	142748.9762	2478	Malus sp.	Apple or crabapple	6
512475.324	142401.608	7420		Pine	15

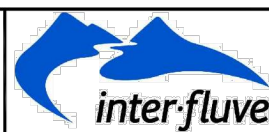
ASH TREE REMOVALS

Easting	Northing	TagID	Scientific	Common_nam	DBH__in__
512964.2463	142377.5752	2072	Fraxinus pennsylvanica	Green ash	16
512566.7154	142777.4962	2412	Fraxinus pennsylvanica	Green ash	16
512451.5007	142891.3301	2062	Fraxinus pennsylvanica	Green ash	22
512494.4331	142744.7617	2415	Fraxinus pennsylvanica	Green ash	11
512771.0557	142338.9226	679	Fraxinus pennsylvanica	Green ash	10
512824.3216	142106.0032	446	Fraxinus pennsylvanica	Green ash	8
512862.6083	142089.6052	686	Fraxinus pennsylvanica	Green ash	9
512796.8615	142082.4674	173	Fraxinus pennsylvanica	Green ash	9
512821.2747	142068.6855	174	Fraxinus pennsylvanica	Green ash	26
512799.3367	142013.6099	153	Fraxinus pennsylvanica	Green ash	13
512765.948	141995.7967	138	Fraxinus pennsylvanica	Green ash	8
512724.0177	141966.4026	172	Fraxinus pennsylvanica	Green ash	8
512717.4717	141968.7086	2187	Fraxinus pennsylvanica	Green ash	12
512712.9386	141963.2025	2184	Fraxinus pennsylvanica	Green ash	9
512764.1412	141933.5853	160	Fraxinus pennsylvanica	Green ash	13
512734.3881	141903.5168	159	Fraxinus pennsylvanica	Green ash	14
512738.837	141901.1483	158	Fraxinus pennsylvanica	Green ash	10
512739.3969	141918.1106	2287	Fraxinus pennsylvanica	Green ash	8
512731.2019	141840.091	2289	Fraxinus pennsylvanica	Green ash	12
512668.6557	141667.5373	2291	Fraxinus pennsylvanica	Green ash	12
512583.8184	141665.3838	143	Fraxinus pennsylvanica	Green ash	12
512484.1071	141915.8805	2226	Fraxinus pennsylvanica	Green ash	8
512481.742	141950.3006	142	Fraxinus pennsylvanica	Green ash	8
512503.8387	142011.3802	2243	Fraxinus pennsylvanica	Green ash	11
512506.6001	142007.0179	2242	Fraxinus pennsylvanica	Green ash	15
512516.2916	142025.9993	2241	Fraxinus pennsylvanica	Green ash	10
512522.7223	142018.9169	2239	Fraxinus pennsylvanica	Green ash	9
512521.4259	142018.1953	2240	Fraxinus pennsylvanica	Green ash	16
512492.2286	142128.9399	2257	Fraxinus pennsylvanica	Green ash	10
512559.458	142082.1007	2262	Fraxinus pennsylvanica	Green ash	11
512587.5172	142092.0704	2283	Fraxinus pennsylvanica	Green ash	18
512569.7398	142150.5229	2272	Fraxinus pennsylvanica	Green ash	16
512553.2255	142166.0423	2274	Fraxinus pennsylvanica	Green ash	10
512147.5204	142674.6245	2512	Fraxinus pennsylvanica	Green ash	16
512525.1208	142380.388	2524	Fraxinus pennsylvanica	Green ash	9
512519.3498	142397.2087	2566	Fraxinus pennsylvanica	Green ash	11
512509.1472	142409.9615	2525	Fraxinus pennsylvanica	Green ash	9
512512.8204	142400.8705	2567	Fraxinus pennsylvanica	Green ash	9
512514.8593	142434.7862	2526	Fraxinus pennsylvanica	Green ash	11
512532.9409	142427.2633	2533	Fraxinus pennsylvanica	Green ash	8
512509.5755	142509.6764	2556	Fraxinus pennsylvanica	Green ash	9
512369.7326	142633.4837	2588	Fraxinus pennsylvanica	Green ash	13
512377.9947	142629.2	2589	Fraxinus pennsylvanica	Green ash	11
512379.9284	142642.3022	2586	Fraxinus pennsylvanica	Green ash	10
512290.917	142804.6245	2805	Fraxinus pennsylvanica	Green ash	13
512286.2507	142815.4964	2806	Fraxinus pennsylvanica	Green ash	11
512316.4292	142838.2113	2810	Fraxinus pennsylvanica	Green ash	13
512248.867	142770.6937	2813	Fraxinus pennsylvanica	Green ash	14
512261.6847	142882.4803	2814	Fraxinus pennsylvanica	Green ash	12
512218.1412	142891.6127	2824	Fraxinus pennsylvanica	Green ash	20
512223.3197	142902.948	2809	Fraxinus pennsylvanica	Green ash	12
512274.2832	142936.4483	2825	Fraxinus pennsylvanica	Green ash	13
512175.0784	142919.2103	2832	Fraxinus pennsylvanica	Green ash	10
512180.1333	142977.5377	2840	Fraxinus pennsylvanica	Green ash	14
512189.5562	143012.4008	2836	Fraxinus pennsylvanica	Green ash	11
512454.8013	142962.5026	688	Fraxinus pennsylvanica	Green ash	13
512465.1293	142969.7495	700	Fraxinus pennsylvanica	Green ash	11
512826.1554	142518.2224	2081	Quercus macrocarpa	Bur oak	15
512793.916	142536.4247	2413	Quercus macrocarpa	Bur oak	24

NO.	DATE	REVISION DESCRIPTION

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ARDEN PARK CREEK RESTORATION  
MINNEHAHA CREEK WATERSHED DISTRICT  
EDINA, MINNESOTA



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Signature: \_\_\_\_\_  
Typed or Printed Name: NATHAN KUSA  
Date: 9/18/18 License Number: 44129

TREE REMOVAL TABLES

SHEET  
CS-106



**PLAN LEGEND**

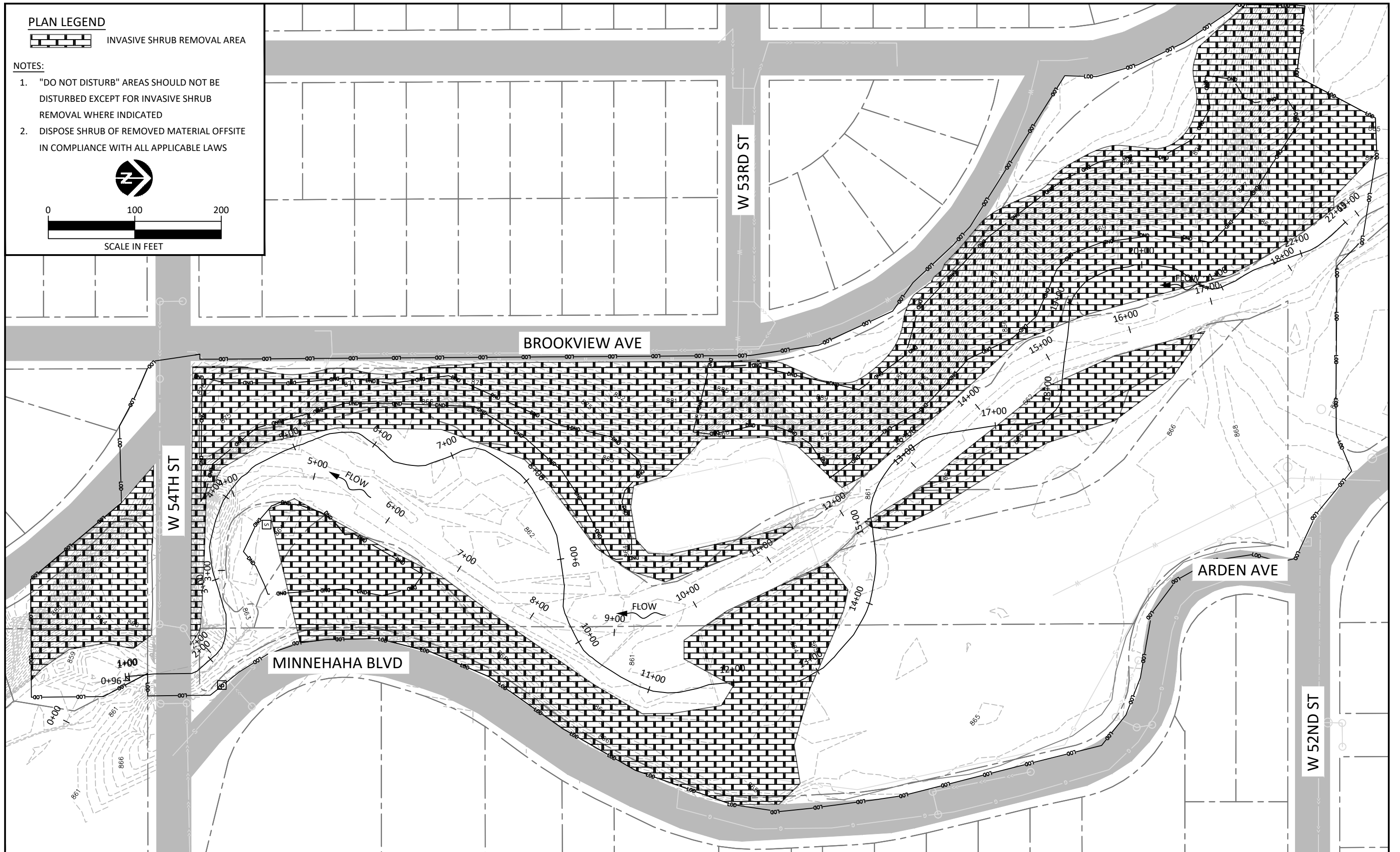
 INVASIVE SHRUB REMOVAL AREA

**NOTES:**

- "DO NOT DISTURB" AREAS SHOULD NOT BE DISTURBED EXCEPT FOR INVASIVE SHRUB REMOVAL WHERE INDICATED
- DISPOSE SHRUB OF REMOVED MATERIAL OFFSITE IN COMPLIANCE WITH ALL APPLICABLE LAWS



SCALE IN FEET



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**DRAFT**

**INVASIVE SHRUB REMOVAL**

SHEET  
**CS-107**



**PLAN LEGEND**

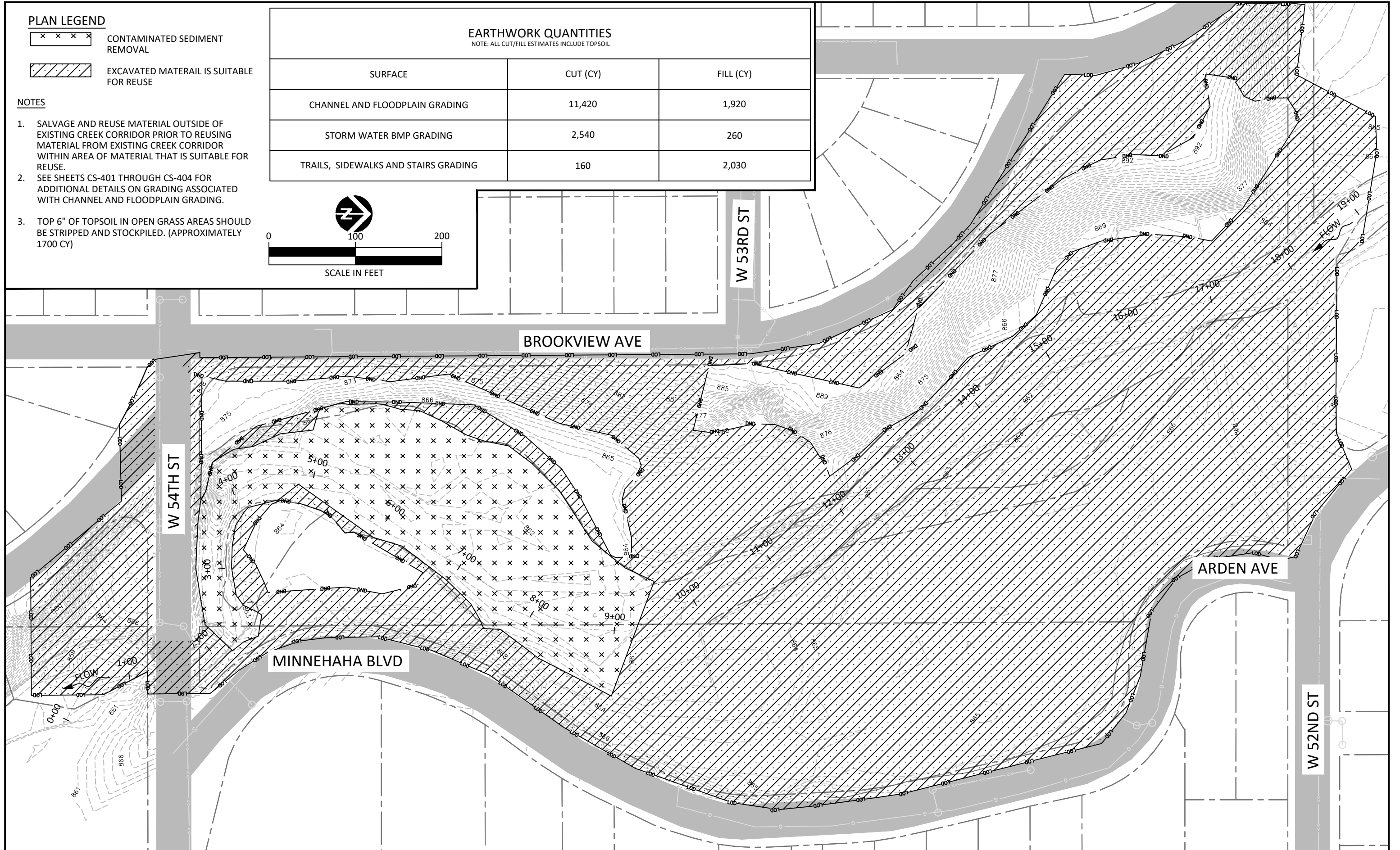
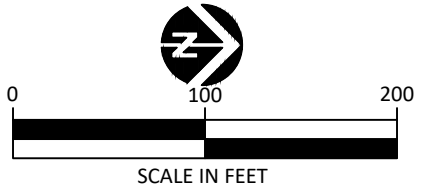
CONTAMINATED SEDIMENT REMOVAL

EXCAVATED MATERIAL IS SUITABLE FOR REUSE

**NOTES**

1. SALVAGE AND REUSE MATERIAL OUTSIDE OF EXISTING CREEK CORRIDOR PRIOR TO REUSING MATERIAL FROM EXISTING CREEK CORRIDOR WITHIN AREA OF MATERIAL THAT IS SUITABLE FOR REUSE.
2. SEE SHEETS CS-401 THROUGH CS-404 FOR ADDITIONAL DETAILS ON GRADING ASSOCIATED WITH CHANNEL AND FLOODPLAIN GRADING.
3. TOP 6" OF TOPSOIL IN OPEN GRASS AREAS SHOULD BE STRIPPED AND STOCKPILED. (APPROXIMATELY 1700 CY)

EARTHWORK QUANTITIES		
NOTE: ALL CUT/FILL ESTIMATES INCLUDE TOPSOIL		
SURFACE	CUT (CY)	FILL (CY)
CHANNEL AND FLOODPLAIN GRADING	11,420	1,920
STORM WATER BMP GRADING	2,540	260
TRAILS, SIDEWALKS AND STAIRS GRADING	160	2,030



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 Date: 9/28/18 License Number: 44129

**SEDIMENT MANAGEMENT PLAN**

SHEET  
**CS-108**

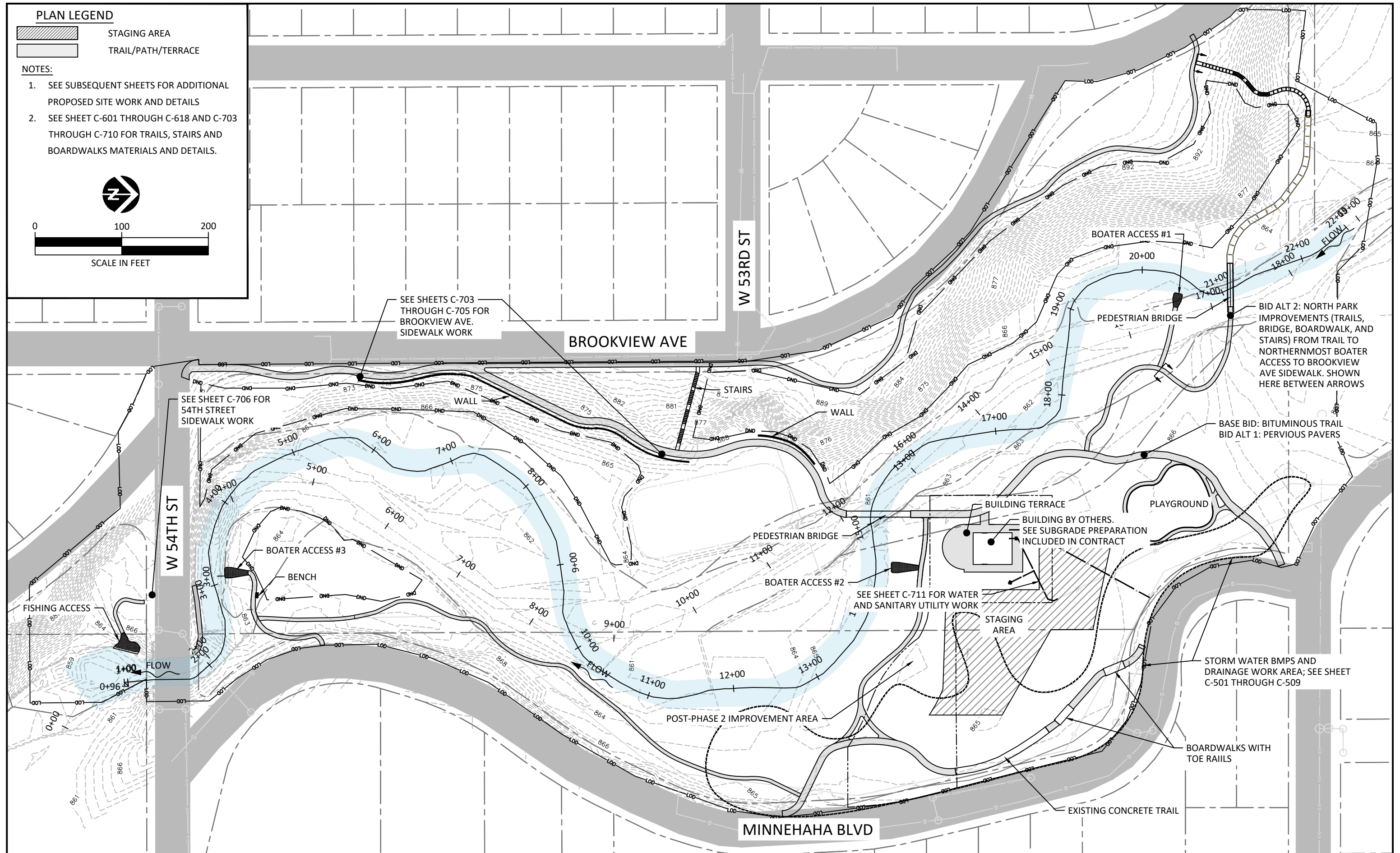
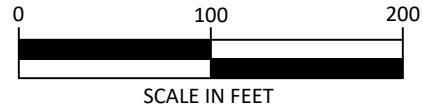


**PLAN LEGEND**

- STAGING AREA
- TRAIL/PATH/TERRACE

**NOTES:**

1. SEE SUBSEQUENT SHEETS FOR ADDITIONAL PROPOSED SITE WORK AND DETAILS
2. SEE SHEET C-601 THROUGH C-618 AND C-703 THROUGH C-710 FOR TRAILS, STAIRS AND BOARDWALKS MATERIALS AND DETAILS.



SEE SHEETS C-703 THROUGH C-705 FOR BROOKVIEW AVE. SIDEWALK WORK

SEE SHEET C-706 FOR 54TH STREET SIDEWALK WORK

BID ALT 2: NORTH PARK IMPROVEMENTS (TRAILS, BRIDGE, BOARDWALK, AND STAIRS) FROM TRAIL TO NORTHERNMOST BOATER ACCESS TO BROOKVIEW AVE SIDEWALK. SHOWN HERE BETWEEN ARROWS

BASE BID: BITUMINOUS TRAIL  
BID ALT 1: PERVIOUS PAVERS

SEE SHEET C-711 FOR WATER AND SANITARY UTILITY WORK

STORM WATER BMPS AND DRAINAGE WORK AREA; SEE SHEET C-501 THROUGH C-509

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**ARDEN PARK CREEK RESTORATION**  
**MINNEHAHA CREEK WATERSHED DISTRICT**  
 EDINA, MINNESOTA

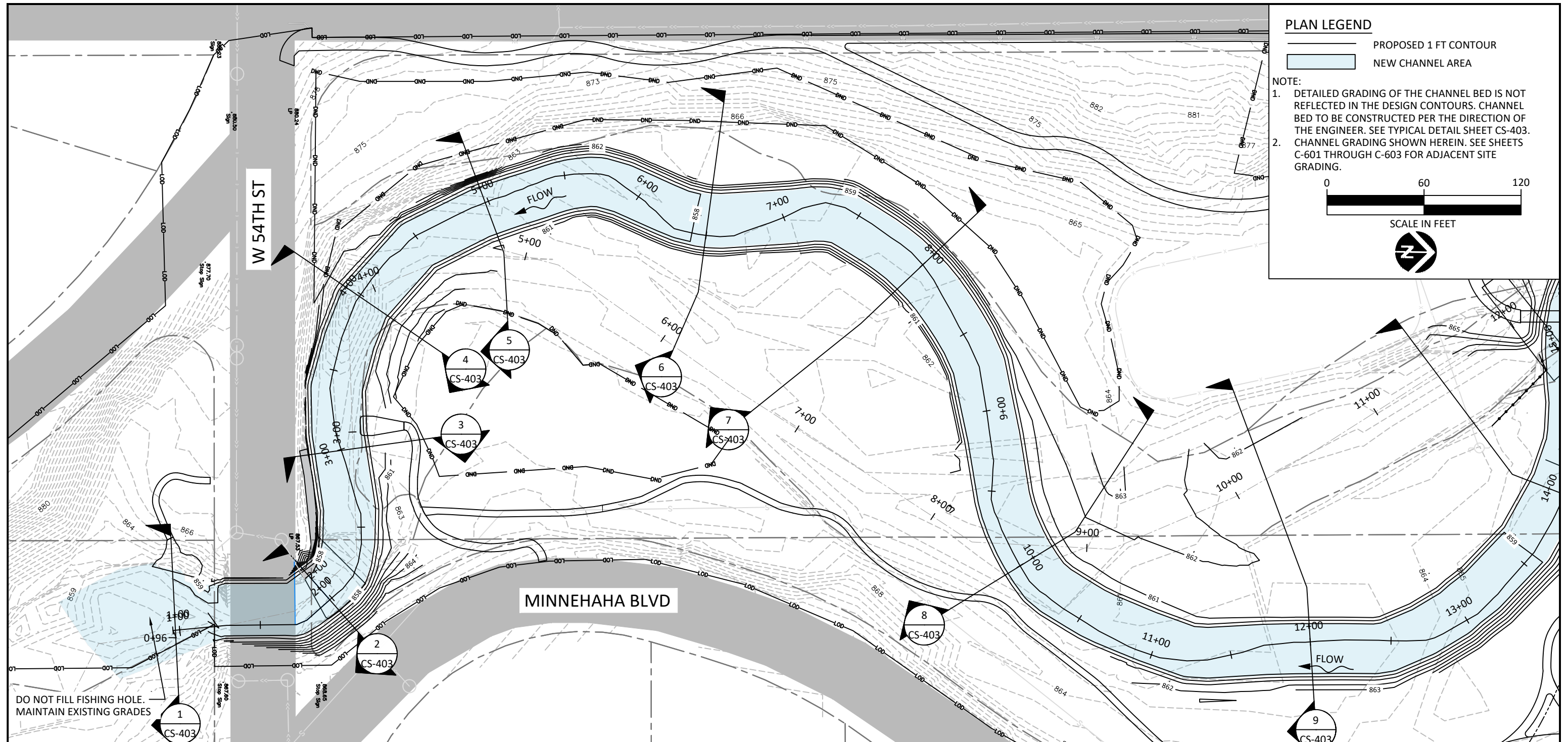


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 Signature: **NATHAN KUSA**  
 Typed or Printed Name: **NATHAN KUSA**  
 Date: 9/28/18 License Number: 44129

**DRAFT**  
 SITE PLAN

SHEET  
**CS-109**





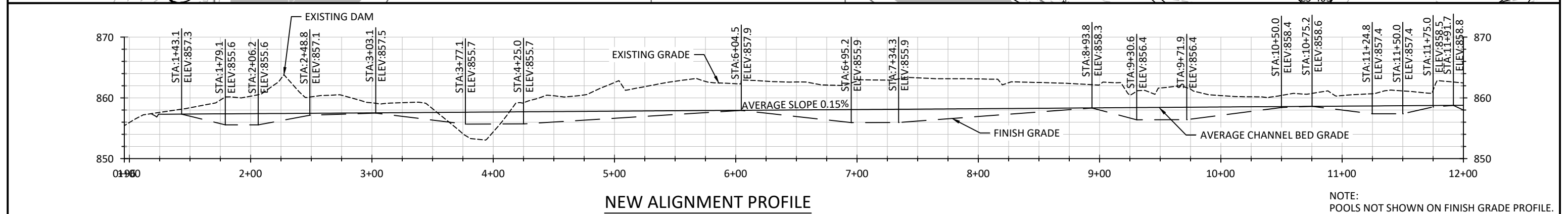
**PLAN LEGEND**

- PROPOSED 1 FT CONTOUR
- NEW CHANNEL AREA

**NOTE:**

- DETAILED GRADING OF THE CHANNEL BED IS NOT REFLECTED IN THE DESIGN CONTOURS. CHANNEL BED TO BE CONSTRUCTED PER THE DIRECTION OF THE ENGINEER. SEE TYPICAL DETAIL SHEET CS-403.
- CHANNEL GRADING SHOWN HEREIN. SEE SHEETS C-601 THROUGH C-603 FOR ADJACENT SITE GRADING.

0 60 120  
SCALE IN FEET



**NEW ALIGNMENT PROFILE**

NOTE:  
POOLS NOT SHOWN ON FINISH GRADE PROFILE.

NO.	DATE	REVISION DESCRIPTION

CP,GS,BL	MM,BL	MM
DRAWN	DESIGNED	CHECKED
JK	9/28/2018	18-04-01
APPROVED	DATE	PROJECT

**ARDEN PARK CREEK RESTORATION**  
**MINNEHAHA CREEK WATERSHED DISTRICT**  
 EDINA, MINNESOTA

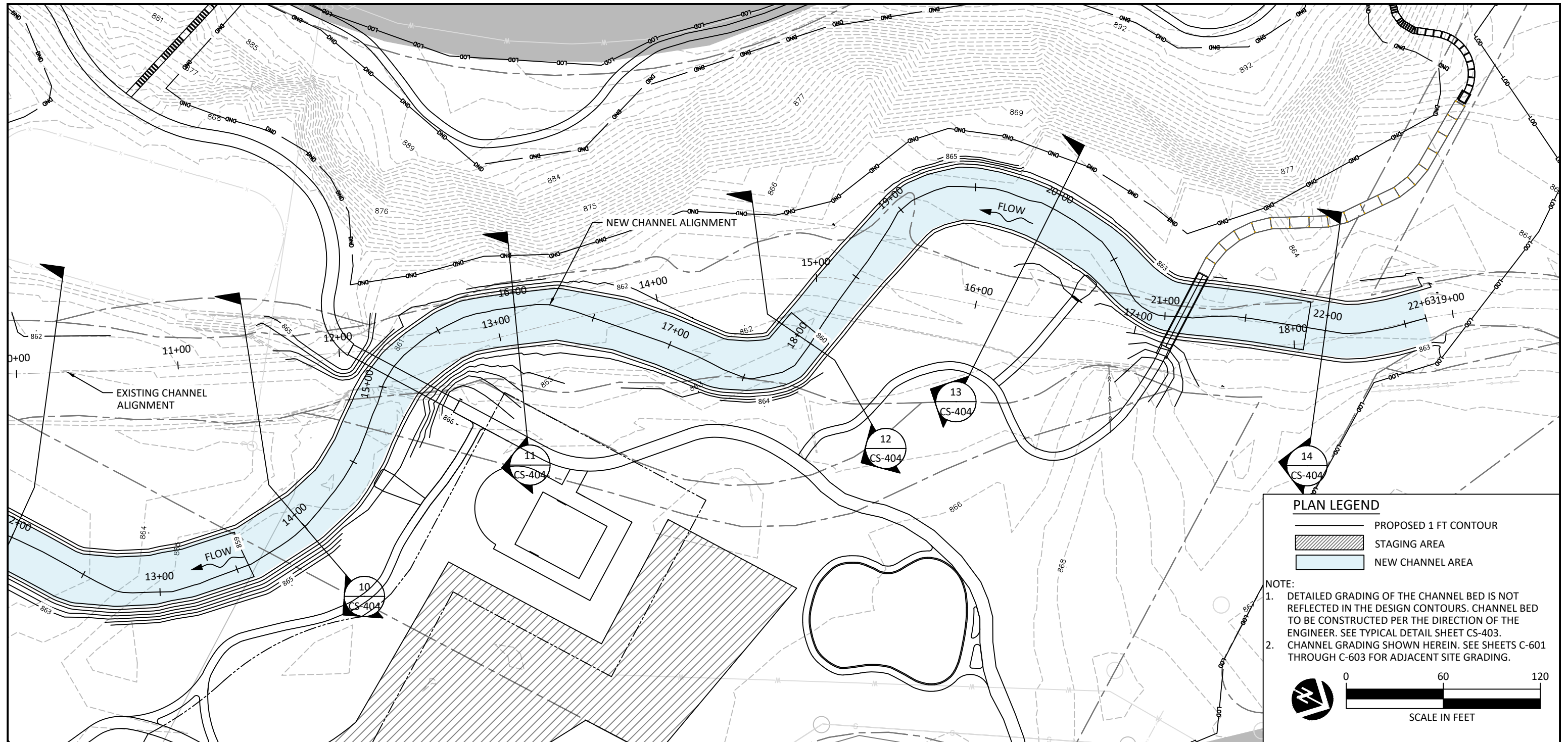


I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer in the State of Minnesota.  
 Signature: **DRAFT**  
 Typed or Printed Name: NATHAN KUSA  
 Date: 9/28/18 License Number: 44129

**STREAM GRADING**  
**PLAN AND PROFILE 1**  
 OF 2

SHEET  
**CS-401**





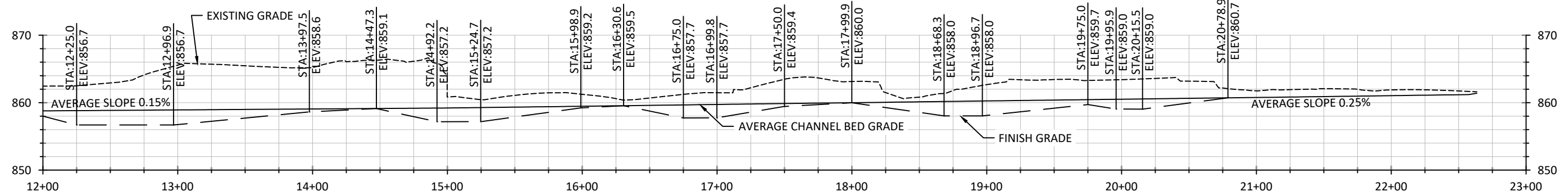
**PLAN LEGEND**

- PROPOSED 1 FT CONTOUR
- STAGING AREA
- NEW CHANNEL AREA

**NOTE:**

- DETAILED GRADING OF THE CHANNEL BED IS NOT REFLECTED IN THE DESIGN CONTOURS. CHANNEL BED TO BE CONSTRUCTED PER THE DIRECTION OF THE ENGINEER. SEE TYPICAL DETAIL SHEET CS-403.
- CHANNEL GRADING SHOWN HEREIN. SEE SHEETS C-601 THROUGH C-603 FOR ADJACENT SITE GRADING.

0 60 120  
SCALE IN FEET



**NEW ALIGNMENT PROFILE**

NOTE: POOLS NOT SHOWN ON FINISH GRADE PROFILE.

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APPROVED	DATE	PROJECT

**ARDEN PARK CREEK RESTORATION**  
**MINNEHAHA CREEK WATERSHED DISTRICT**  
**EDINA, MINNESOTA**



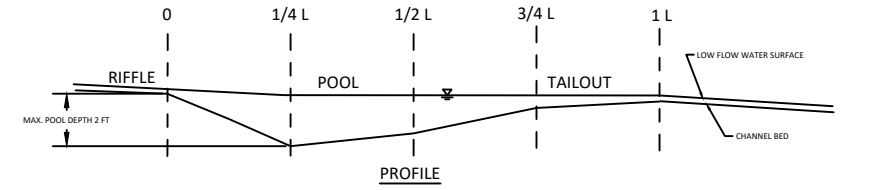
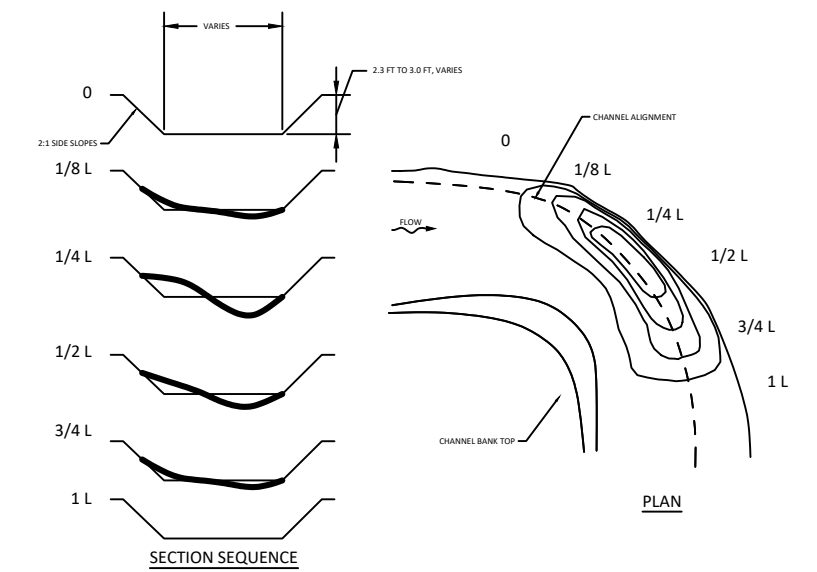
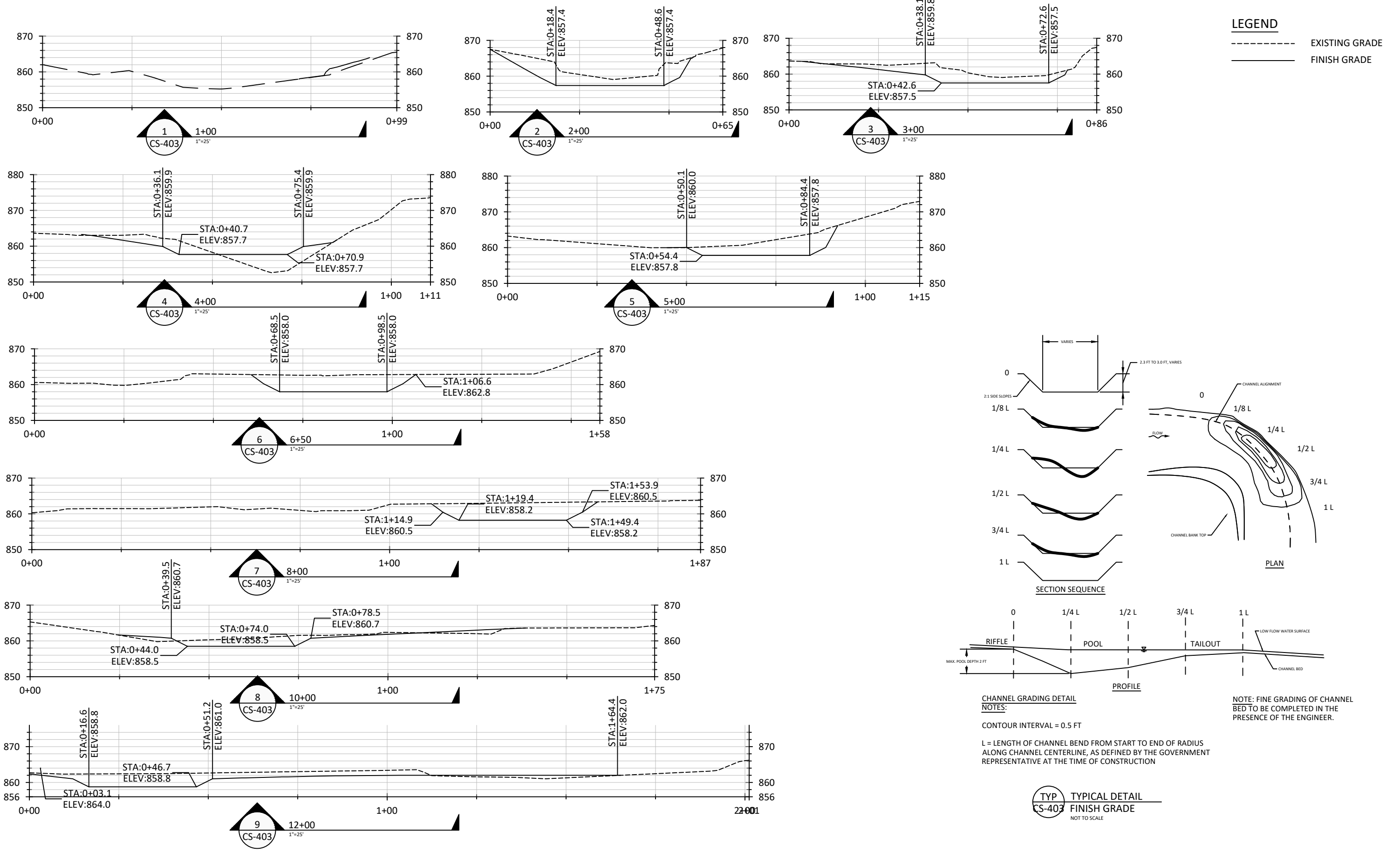
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 Date: 9/28/18 License Number: 44129

**STREAM GRADING**  
**PLAN AND PROFILE 2**  
**OF 2**

SHEET  
**CS-402**

**DRAFT**





**CHANNEL GRADING DETAIL NOTES:**  
 CONTOUR INTERVAL = 0.5 FT  
 L = LENGTH OF CHANNEL BEND FROM START TO END OF RADIUS ALONG CHANNEL CENTERLINE, AS DEFINED BY THE GOVERNMENT REPRESENTATIVE AT THE TIME OF CONSTRUCTION  
 NOTE: FINE GRADING OF CHANNEL BED TO BE COMPLETED IN THE PRESENCE OF THE ENGINEER.

**TYP** TYPICAL DETAIL  
**CS-403** FINISH GRADE  
 NOT TO SCALE

NO.	DATE	REVISION DESCRIPTION

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DRAWN	DESIGNED	CHECKED
JK	9/28/2018	18-04-01
APPROVED	DATE	PROJECT

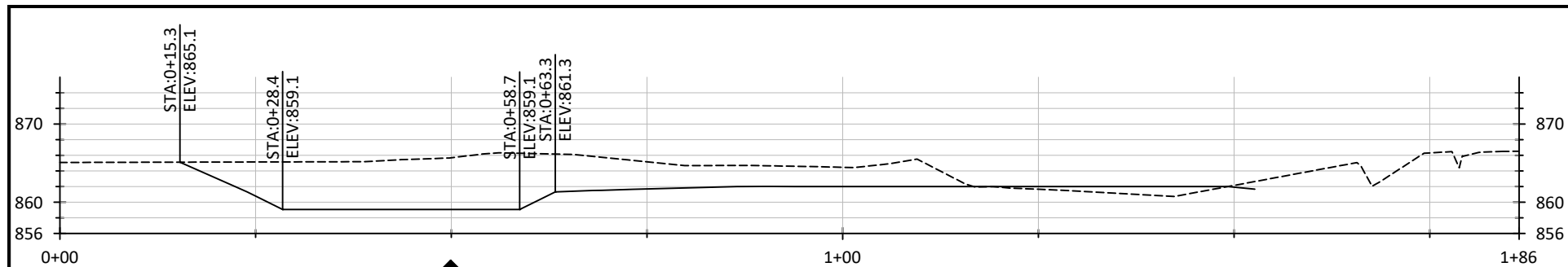
**ARDEN PARK CREEK RESTORATION**  
**MINNEHAHA CREEK WATERSHED DISTRICT**  
 EDINA, MINNESOTA



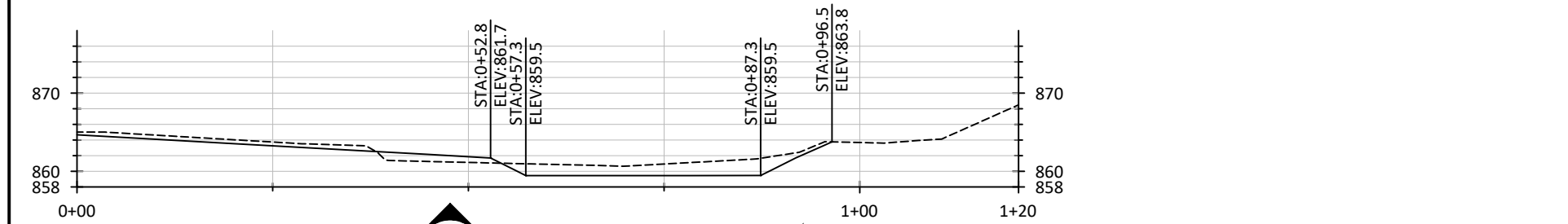
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**STREAM GRADING CROSS SECTIONS 1 OF 2**

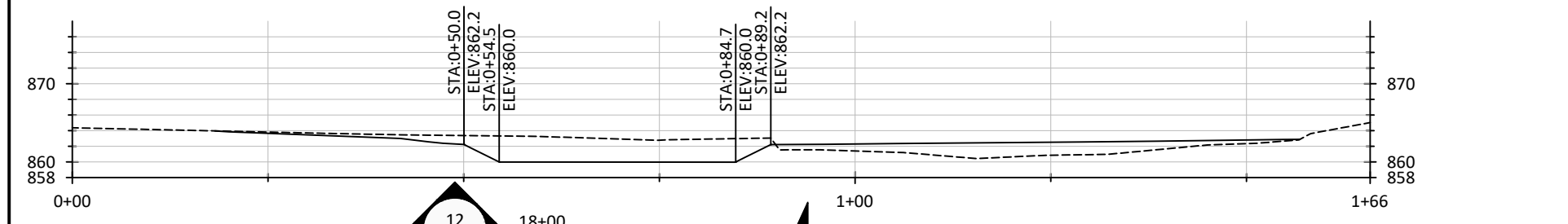
SHEET  
**CS-403**



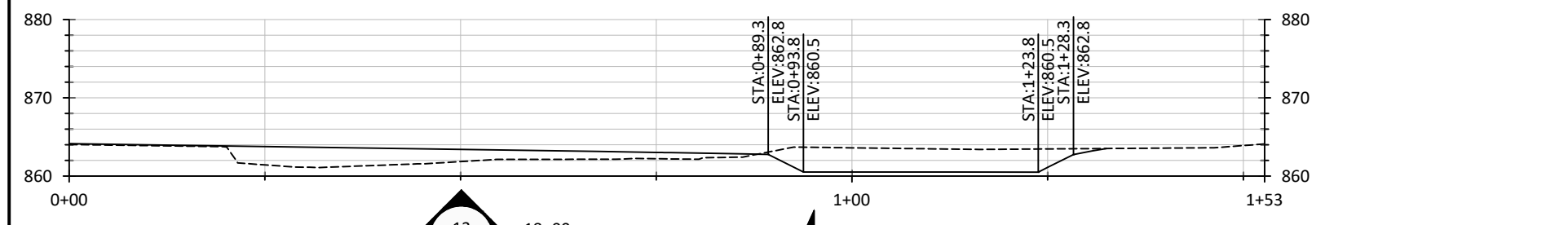
10  
CS-404  
14+00  
1"=20'



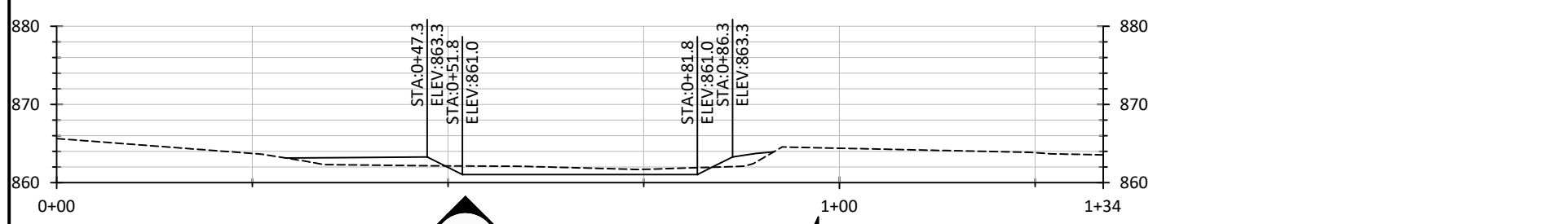
11  
CS-404  
16+00  
1"=20'



12  
CS-404  
18+00  
1"=20'



13  
CS-404  
18+00  
1"=20'



14  
CS-404  
22+00  
1"=20'

**LEGEND**  
 - - - - - EXISTING GRADE  
 \_\_\_\_\_ FINISH GRADE

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DRAWN	DESIGNED	CHECKED
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APPROVED	DATE	PROJECT

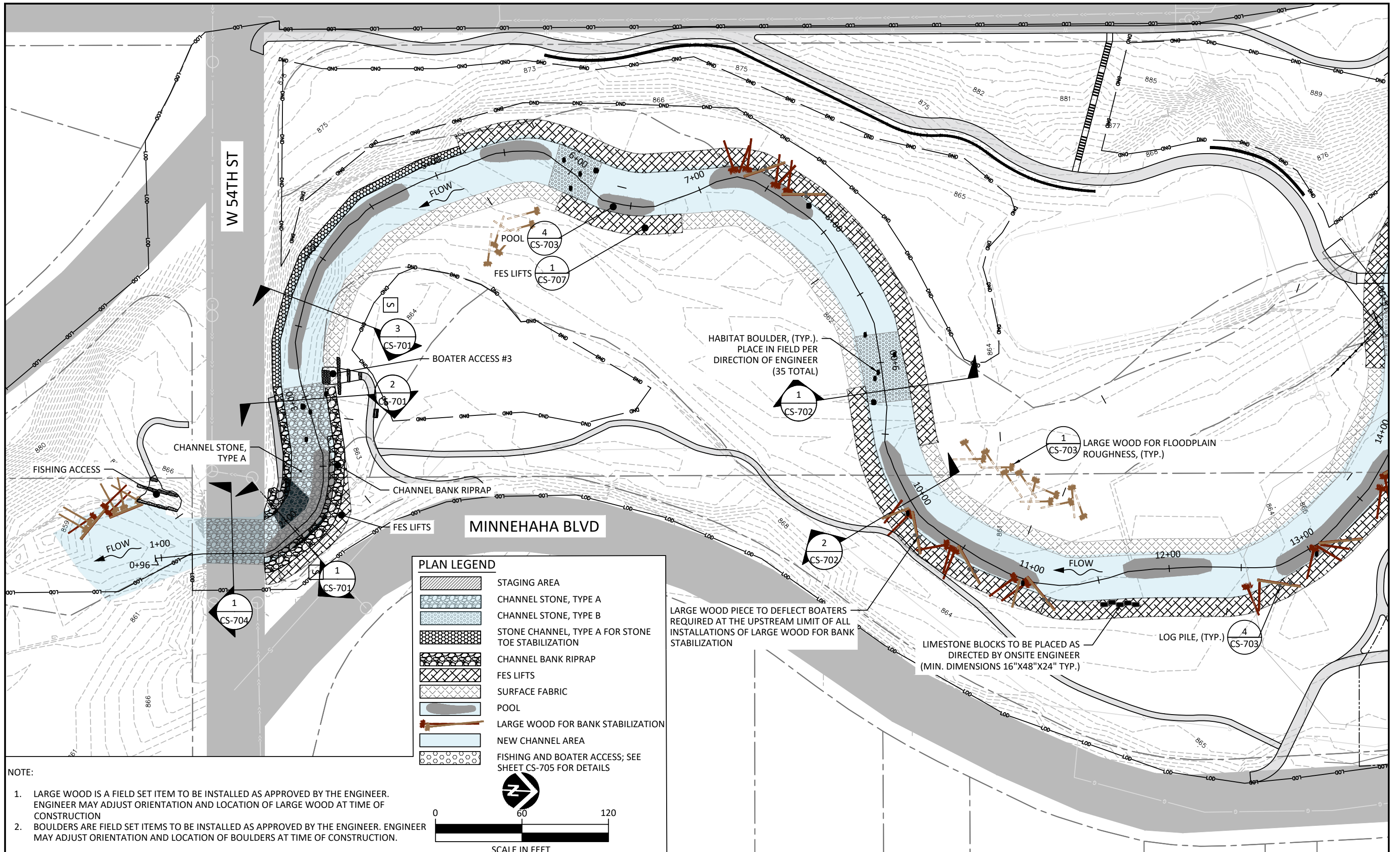
ARDEN PARK CREEK RESTORATION  
 MINNEHAHA CREEK WATERSHED DISTRICT  
 EDINA, MINNESOTA



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STREAM GRADING CROSS  
 SECTIONS 2 OF 2

SHEET  
 CS-404



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APPROVED	DATE	PROJECT

**ARDEN PARK CREEK RESTORATION**  
**MINNEHAHA CREEK WATERSHED DISTRICT**  
**EDINA, MINNESOTA**

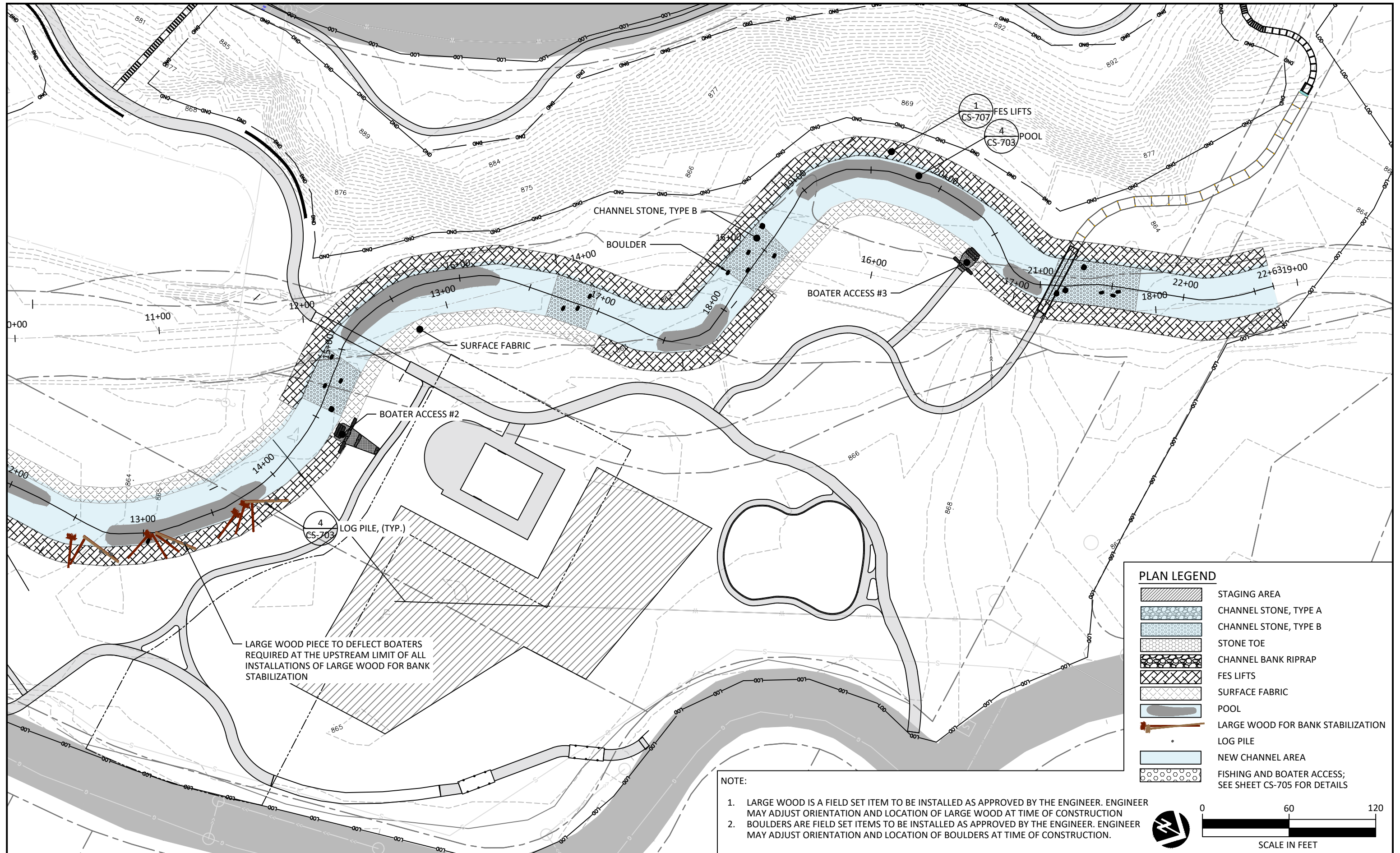


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**TREATMENT PLAN 1 OF 2**

SHEET  
**CS-405**



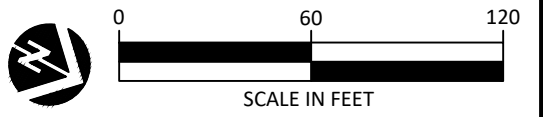


**PLAN LEGEND**

- STAGING AREA
- CHANNEL STONE, TYPE A
- CHANNEL STONE, TYPE B
- STONE TOE
- CHANNEL BANK RIPRAP
- FES LIFTS
- SURFACE FABRIC
- POOL
- LARGE WOOD FOR BANK STABILIZATION
- LOG PILE
- NEW CHANNEL AREA
- FISHING AND BOATER ACCESS; SEE SHEET CS-705 FOR DETAILS

**NOTE:**

- LARGE WOOD IS A FIELD SET ITEM TO BE INSTALLED AS APPROVED BY THE ENGINEER. ENGINEER MAY ADJUST ORIENTATION AND LOCATION OF LARGE WOOD AT TIME OF CONSTRUCTION
- BOULDERS ARE FIELD SET ITEMS TO BE INSTALLED AS APPROVED BY THE ENGINEER. ENGINEER MAY ADJUST ORIENTATION AND LOCATION OF BOULDERS AT TIME OF CONSTRUCTION.



NO.	DATE	REVISION DESCRIPTION

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JK	9/28/2018	18-04-01
APPROVED	DATE	PROJECT

**ARDEN PARK CREEK RESTORATION**  
**MINNEHAHA CREEK WATERSHED DISTRICT**  
**EDINA, MINNESOTA**

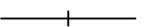

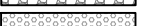
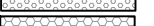






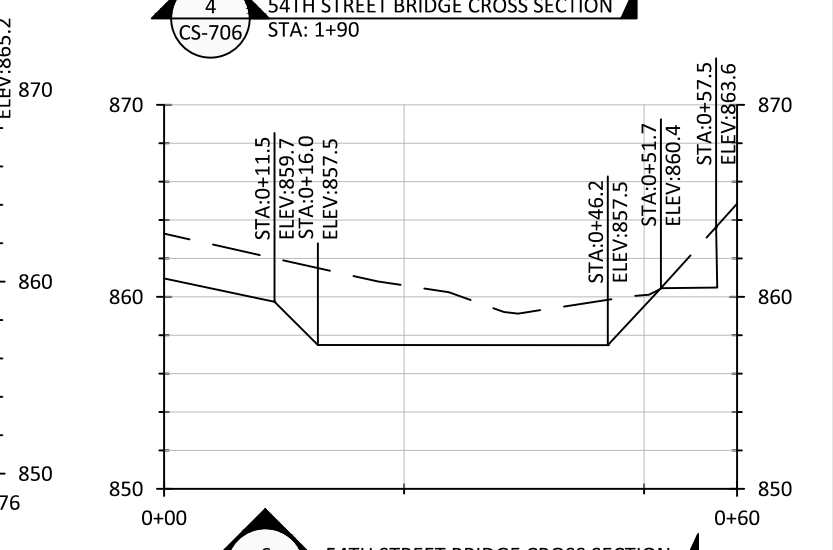
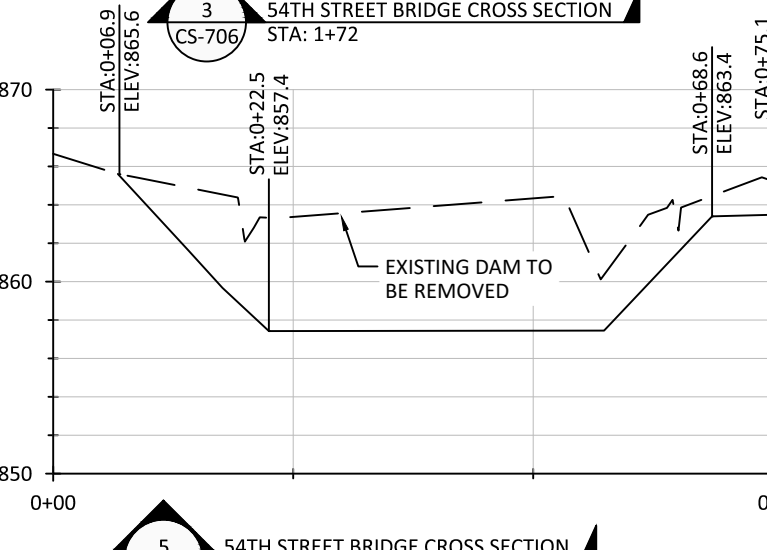
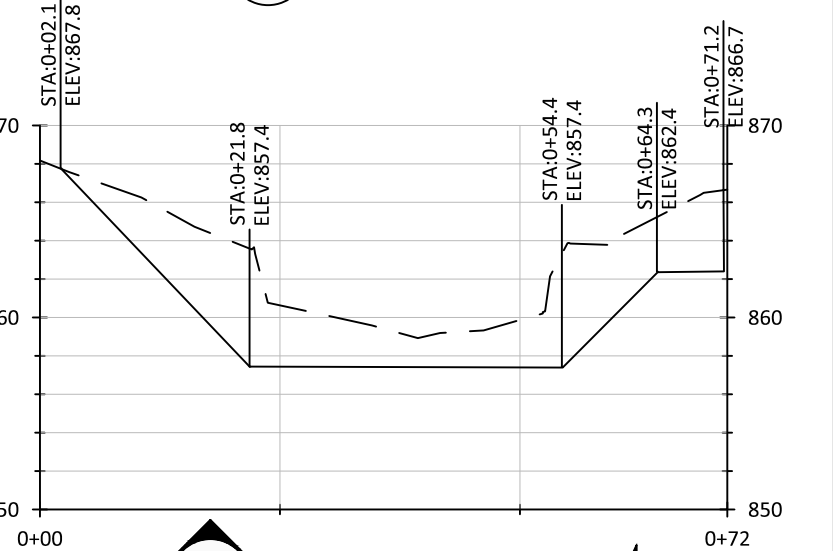
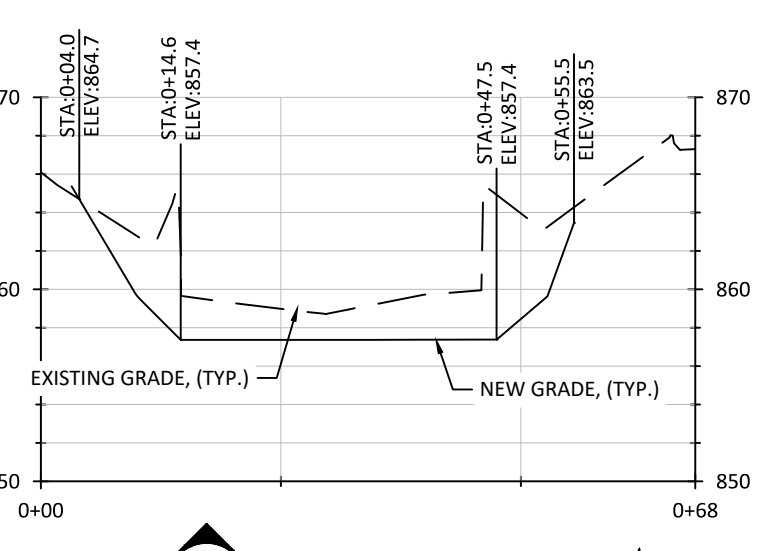
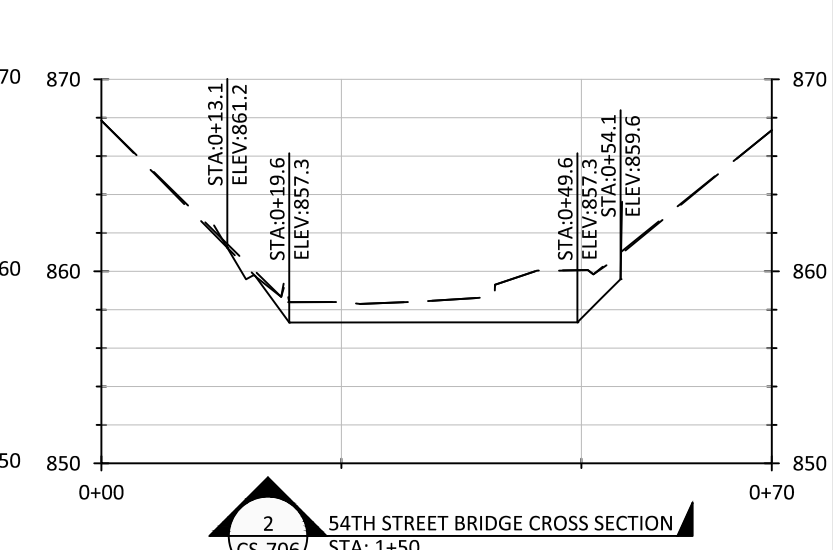
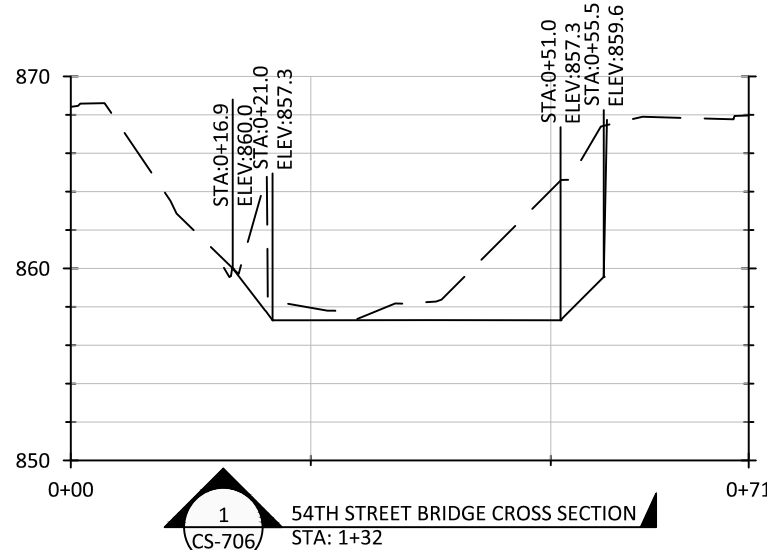
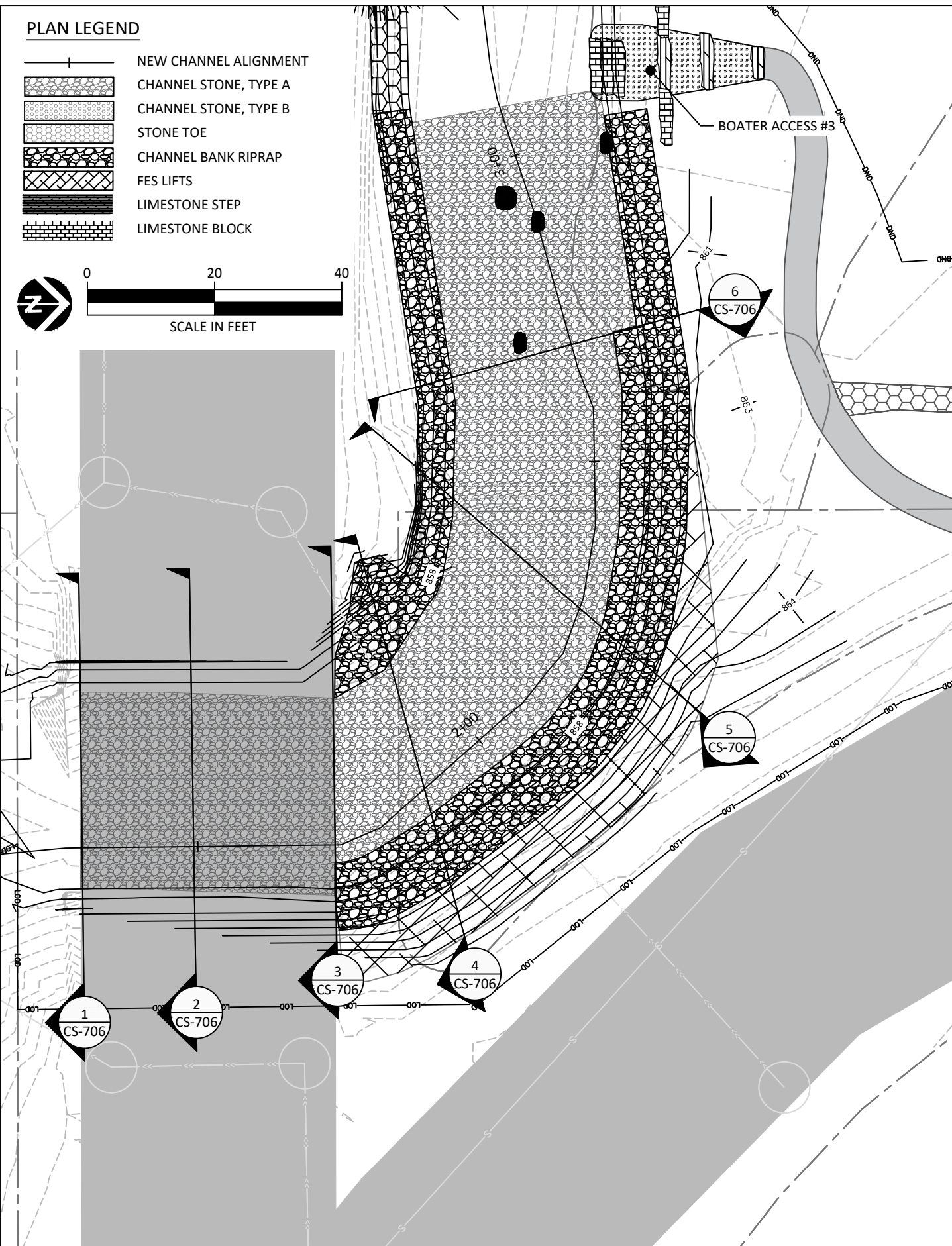
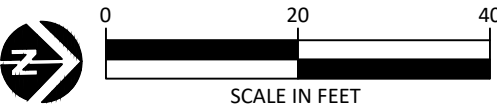
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 Signature: **WENCK**  
 Typed or Printed Name: **WENCK**  
 Date: 9/28/18 License Number: 44129

**TREATMENT PLAN 2 OF 2**  
**2**  
 SHEET  
**CS-406**



**PLAN LEGEND**

-  NEW CHANNEL ALIGNMENT
-  CHANNEL STONE, TYPE A
-  CHANNEL STONE, TYPE B
-  STONE TOE
-  CHANNEL BANK RIPRAP
-  FES LIFTS
-  LIMESTONE STEP
-  LIMESTONE BLOCK



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**ARDEN PARK CREEK RESTORATION**  
**MINNEHAHA CREEK WATERSHED DISTRICT**  
**EDINA, MINNESOTA**

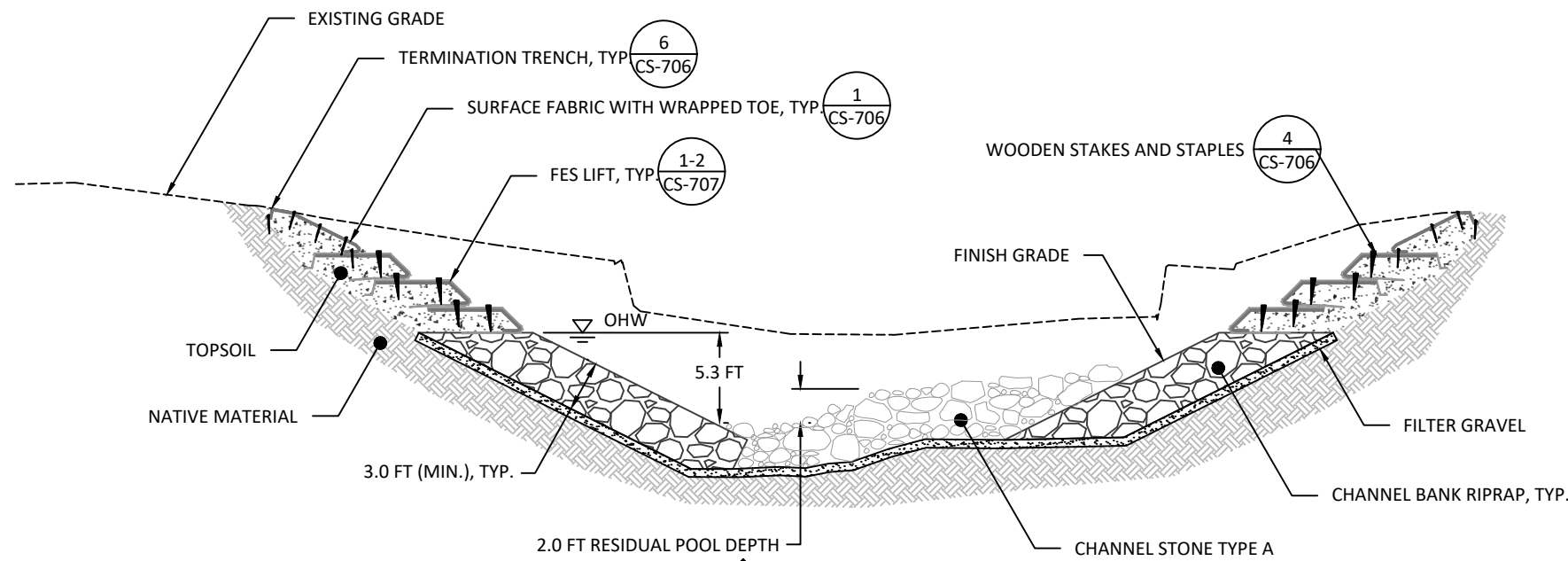


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 Signature: \_\_\_\_\_  
 Typed or Printed Name: NATHAN KRUSA  
 Date: 9/28/18 License Number: 44129

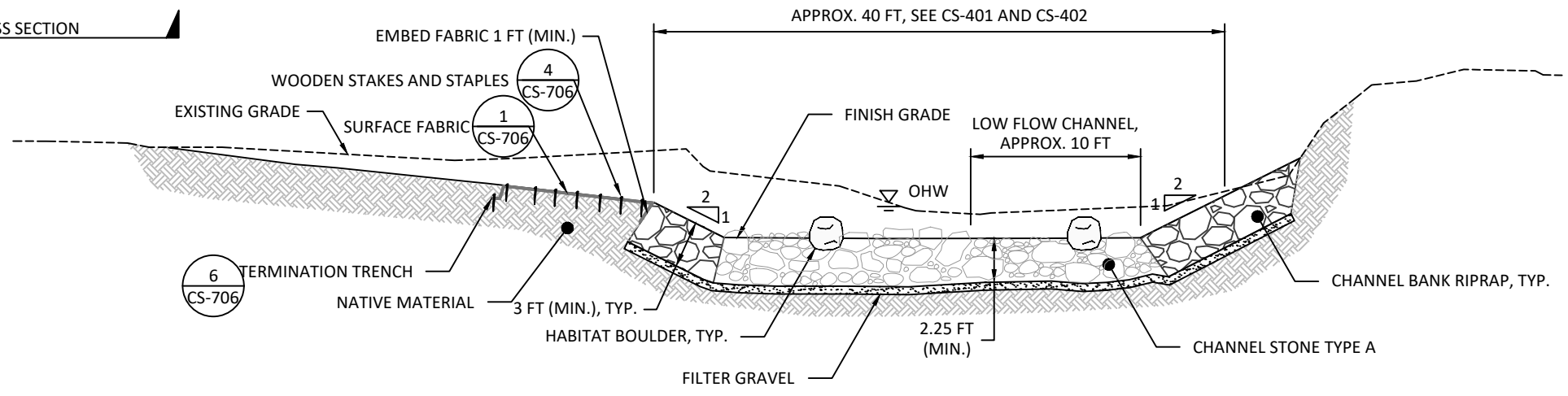
**54TH STREET BRIDGE PLAN AND CROSS SECTIONS**

SHEET  
**CS-407**

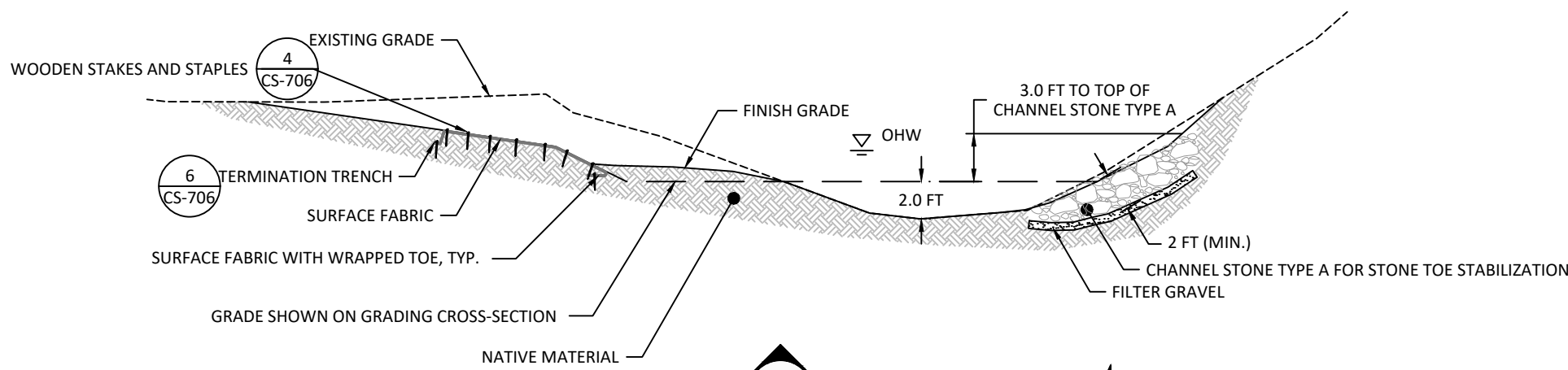




1 TYPICAL CROSS SECTION  
STA: 2+06



2 TYPICAL CROSS SECTION  
STA: 2+75 TO 3+10



3 TYPICAL CROSS SECTION  
STA: 3+10 TO 5+20

NOTES:

1. LOW FLOW CHANNEL ALIGNMENT TO BE INSTALLED AS DIRECTED BY THE ENGINEER AT THE TIME OF CONSTRUCTION.
2. BOULDERS ARE TO BE FIELD SET AND INCORPORATED INTO CHANNEL STONE. LOCATIONS TO BE VERIFIED/DIRECTED IN THE FIELD BY THE ENGINEER AT THE TIME OF CONSTRUCTION.
3. WASH ALL RIPRAP VOID SPACES WITH TOPSOIL ABOVE THE ORDINARY HIGH WATER MARK.
4. STREAMBED GRANULAR FILTER TYPE A REQUIRED WITHIN VOIDS OF CHANNEL STONE TYPE A.
5. FINE GRADING OF THE CHANNEL BED TO BE COMPLETED IN THE PRESENCE OF THE ENGINEER.
6. PROTECT TREES TO REMAIN ADJACENT TO CHANNEL WORK.
7. ALL CHANNEL WORK TO BE COMPLETED PER DIRECTION OF ENGINEER.

NO.	DATE	REVISION DESCRIPTION

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JK	9/28/2018	18-04-01
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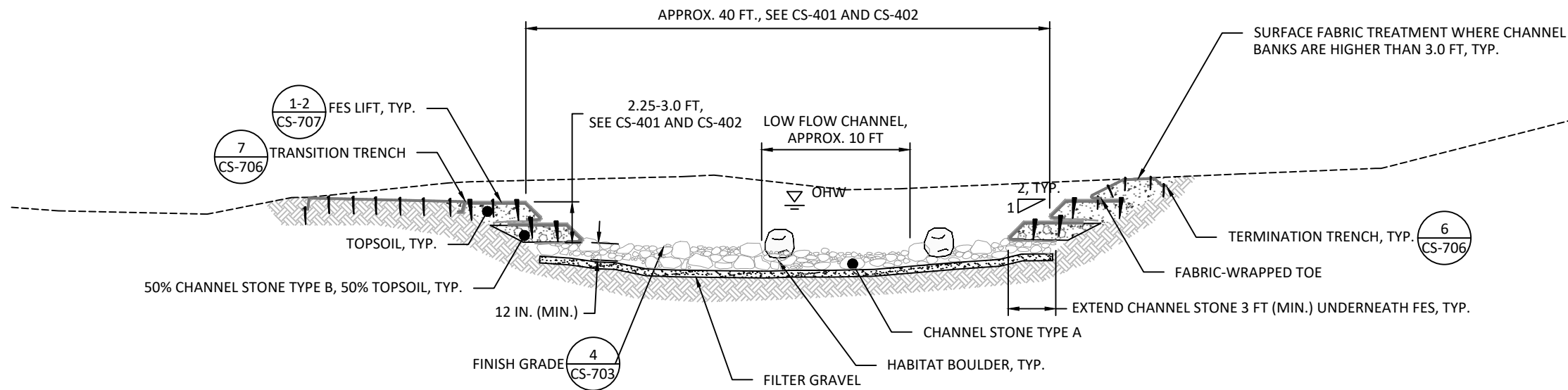
ARDEN PARK CREEK RESTORATION  
MINNEHAHA CREEK WATERSHED DISTRICT  
EDINA, MINNESOTA



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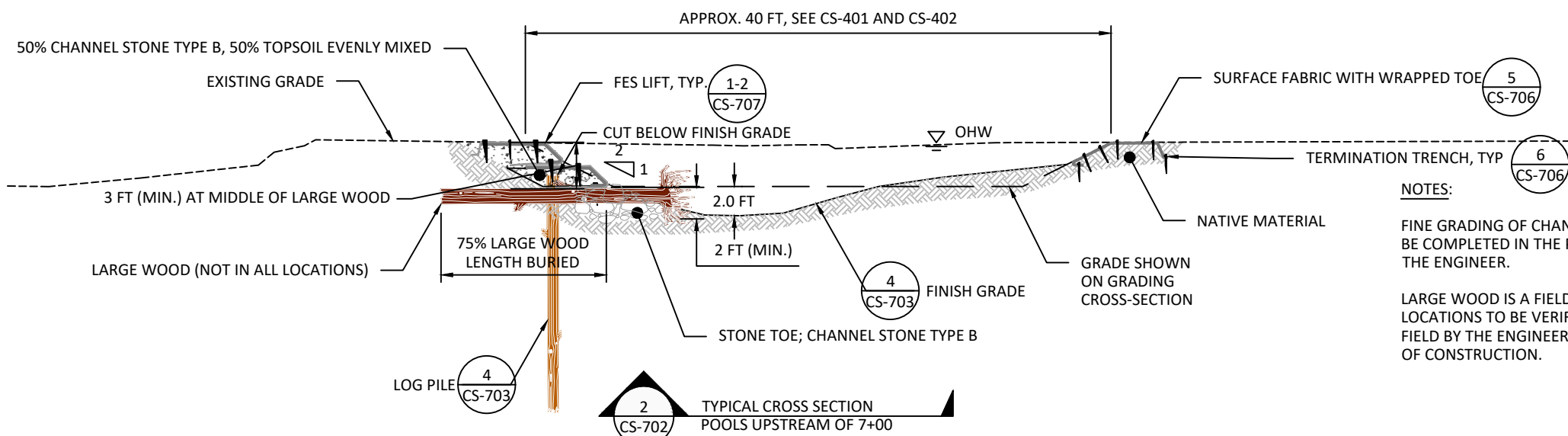
TYPICAL SECTIONS 1

SHEET  
CS-701



1  
CS-702  
TYPICAL CROSS SECTION  
RIFFLES UPSTREAM OF 3+10

- NOTES:
1. LOW FLOW CHANNEL ALIGNMENT TO BE INSTALLED AS DIRECTED BY THE ENGINEER AT THE TIME OF CONSTRUCTION.
  2. BOULDERS ARE TO BE FIELD SET AND INCORPORATED INTO CHANNEL STONE. LOCATIONS TO BE VERIFIED/DIRECTED IN THE FIELD BY THE ENGINEER AT THE TIME OF CONSTRUCTION.
  3. WASH ALL RIPRAP VOID SPACES WITH TOPSOIL ABOVE THE ORDINARY HIGH WATER MARK.
  4. STREAMBED GRANULAR FILTER TYPE A REQUIRED WITHIN VOIDS OF CHANNEL STONE TYPE A.
  5. FINE GRADING OF THE CHANNEL BED TO BE COMPLETED IN THE PRESENCE OF THE ENGINEER.
  6. PROTECT TREES TO REMAIN ADJACENT TO CHANNEL WORK.
  7. ALL CHANNEL WORK TO BE COMPLETED PER DIRECTION OF ENGINEER.



2  
CS-702  
TYPICAL CROSS SECTION  
POOLS UPSTREAM OF 7+00

- NOTES:
1. FINE GRADING OF CHANNEL BED TO BE COMPLETED IN THE PRESENCE OF THE ENGINEER.
  2. LARGE WOOD IS A FIELD SET ITEM. LOCATIONS TO BE VERIFIED IN THE FIELD BY THE ENGINEER AT THE TIME OF CONSTRUCTION.

NO.	DATE	REVISION DESCRIPTION

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JK	9/28/2018	18-04-01
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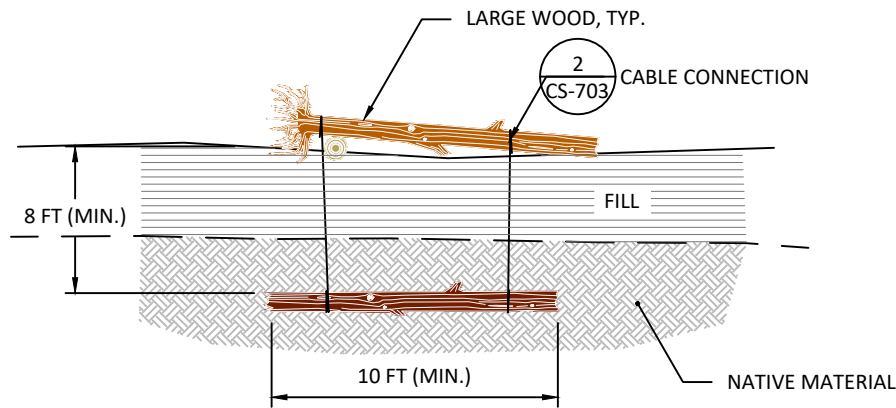
ARDEN PARK CREEK RESTORATION  
MINNEHAHA CREEK WATERSHED DISTRICT  
EDINA, MINNESOTA



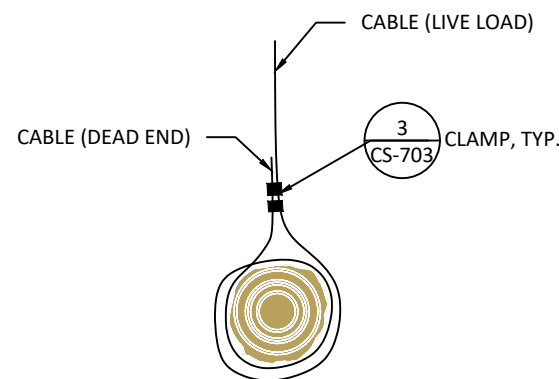
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TYPICAL SECTIONS 2

SHEET  
CS-702



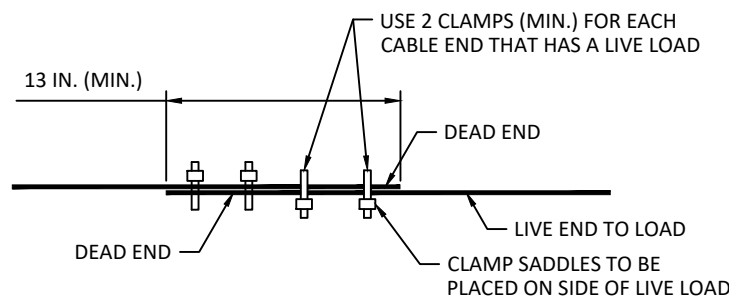
**1** TYPICAL DETAIL  
**CS-703** FLOODPLAIN ROUGHNESS  
 NOT TO SCALE



**2** TYPICAL DETAIL  
**CS-703** CABLE CONNECTIONS  
 NOT TO SCALE

**NOTES:**

1. WRAP CABLE TIGHTLY AROUND BOTH LARGE WOOD
2. COMPLETE TWO FULL WRAPS MINIMIZE LOOSE CABLE
3. CLAMP LOOSE ENDS AS CLOSE TO THE LOG AS POSSIBLE
4. COVER CABLE WITH SOIL



**3** TYPICAL DETAIL  
**CS-703** CABLE CLAMPS  
 NOT TO SCALE

**CABLE CLAMPS NOTES:**

1. 4 CLAMPS REQUIRED WHERE BOTH ENDS HAVE LIVE LOADS

**NOTES:**

**GENERAL**

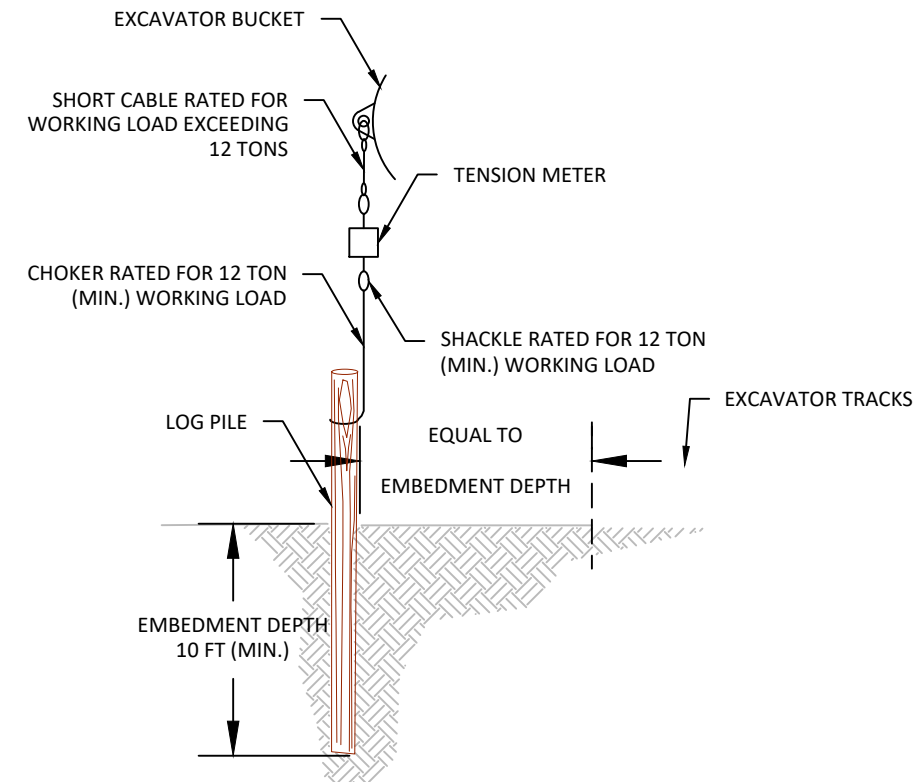
1. ALL CHANNEL WORK TO BE COMPLETED PER ONSITE DIRECTION OF ENGINEER.

**RIGGING**

1. RIGGING FOR PILE TESTING SHALL CONFORM TO THE TENSION SCALE MANUFACTURER'S RECOMMENDATIONS.
2. CHOKERS, CABLES AND SHACKLES SHALL HAVE MINIMUM WORKING LOAD RATING OF 12 TONS. FITTINGS SHALL BE SIZED ACCORDINGLY.

**TESTING**

1. TESTING OF PILES SHALL BE PERFORMED IN THE PRESENCE OF THE ENGINEER. UP TO FOUR LOAD TESTS SHALL BE APPLIED TO EACH TESTED PILE. EACH OF THE FOUR LOAD TESTS SHALL BE APPLIED TO THE PILE WITH A DIFFERENT INSTALLED DEPTH.
2. EACH PILE TEST SHALL HAVE UPWARD LOAD GRADUALLY INCREASED AND AS CLOSELY ALIGNED TO AXIS OF PILE AS POSSIBLE. RECORD THE PILE DIAMETER, EMBEDMENT DEPTH AND MAXIMUM FORCE REQUIRED TO MOVE THE PILE VERTICALLY APPROXIMATELY 1 INCH. THEN DRIVE THE PILE TO A NEW DEPTH TO BE DETERMINED BY THE CONTRACTOR'S ENGINEER IN CONSULTATION WITH THE ENGINEER. APPLY NEW LOAD AND RECORD MAX FORCE THAT CAUSES THE PILE TO MOVE VERTICALLY 1 INCH. REPEAT FOR THIRD AND FOURTH TEST.
3. PROOF TESTS SHALL BE MADE AT UP TO FOUR EMBEDMENT DEPTHS FOR EACH PILE. DEPTHS SHALL BE DETERMINED IN THE FIELD. AS A GUIDELINE, TEST EMBEDMENT DEPTHS MAY INCLUDE 8 FT, 10 FT, 12 FT, AND 14 FT. TESTS AT 12 FT AND 14 FT WILL ONLY BE REQUIRED IF PILES MUST BE DRIVEN DEEPER THAN 10 FT TO ACHIEVE TARGET PULLOUT RESISTANCE. SEE NOTE BELOW.
4. EXCAVATOR CONDUCTING PULL OUT LOADING SHALL BE POSITIONED NO CLOSER THAN EMBEDMENT DEPTH OF PILE, IF POSSIBLE. IF A CLOSER POSITIONING IS REQUIRED, EXCAVATOR SHALL BE NO CLOSER THAN THAT REQUIRED TO GENERATE DESIRED LOADING WITH DISTANCE FROM PILE NOTED IN THE TEST RECORD. LIMIT COMPRESSIVE LOADING OF THE TRACKS ON THE GROUND BY DRIVING THE EXCAVATOR ONTO LOGS LAID ON THE GROUND TO DISTRIBUTE THE WEIGHT OVER A LARGER AREA.
5. PULL OUT RESISTANCE READING SHALL BE COMPARED AGAINST EXCAVATOR MAX LIFT OFFSET TABLE.
6. UP TO 10% OF PRODUCTION PILING SHALL BE PROOF TESTED. IF RESULTS VARY MORE THAN 50% THEN IT SHOULD BE ANTICIPATED THAT UP TO 25% OF THE PRODUCTION PILING SHALL BE PROOF TESTED.
7. PILE EMBEDMENT DEPTH SPECIFIED IN THESE DRAWINGS MAY BE INCREASED, AT NO ADDITIONAL COST, PENDING COMPARISON OF PULL OUT TEST RESULTS TO AN ASSUMED RAW PULLOUT RESISTANCE OF 15,000 POUNDS. IF TESTING REVEALS FIELD PULLOUT RESISTANCE VALUES THAT ARE LESS THAN THE ASSUMED VALUES, PILES MAY BE REQUIRED TO BE DRIVEN UP TO 5 FT DEEPER THAN INDICATED. ENGINEER WILL DETERMINE WHETHER THE NUMBER OF PILES MAY BE REDUCED IF TESTING YIELDS VALUES THAT EXCEED ASSUMED VALUES, BASED ON EVALUATION OF VERTICAL PULLOUT AND LATERAL BRACING OBJECTIVES AT EACH LOCATION.



**4** TYPICAL SECTION  
**CS-703** LOG PULL OUT TEST  
 NOT TO SCALE

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ARDEN PARK CREEK RESTORATION  
 MINNEHAHA CREEK WATERSHED DISTRICT  
 EDINA, MINNESOTA

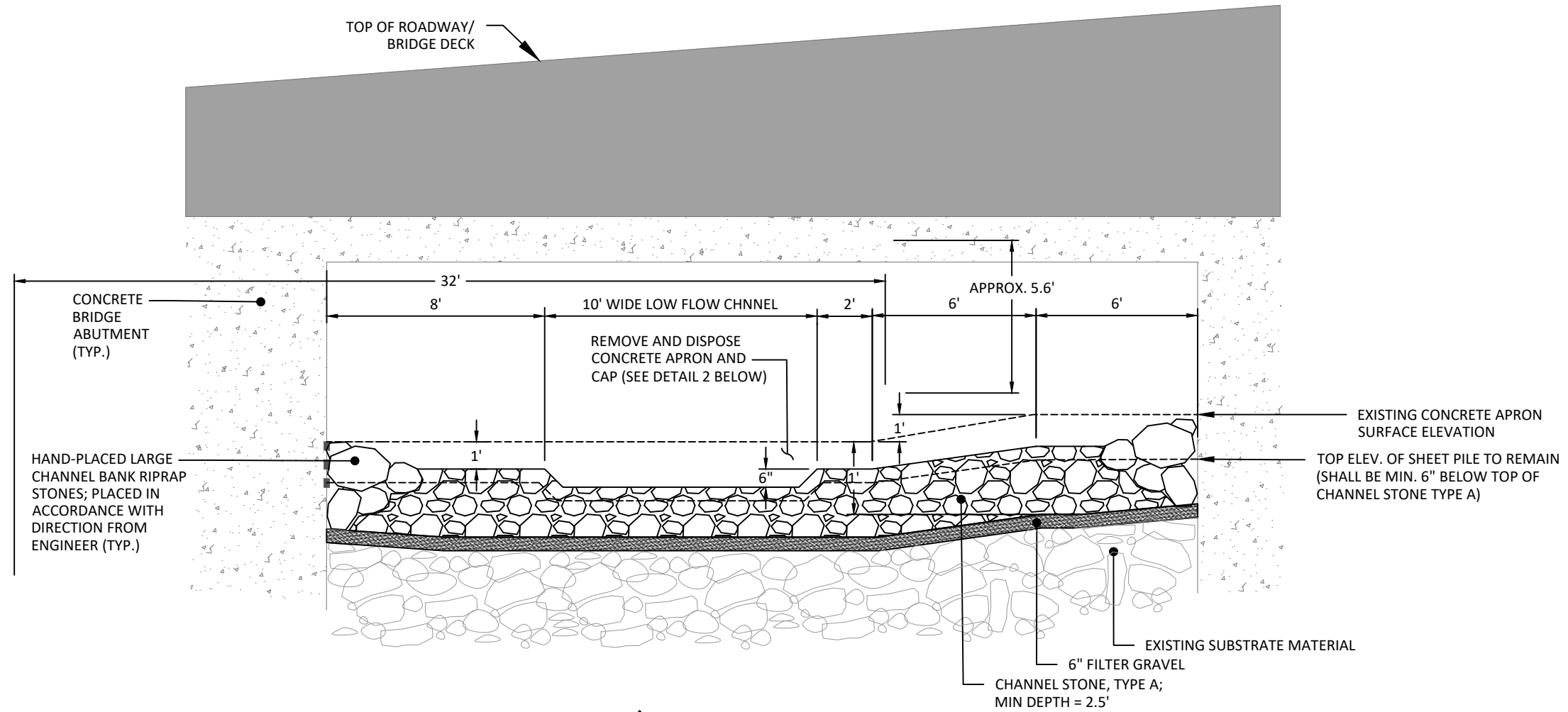


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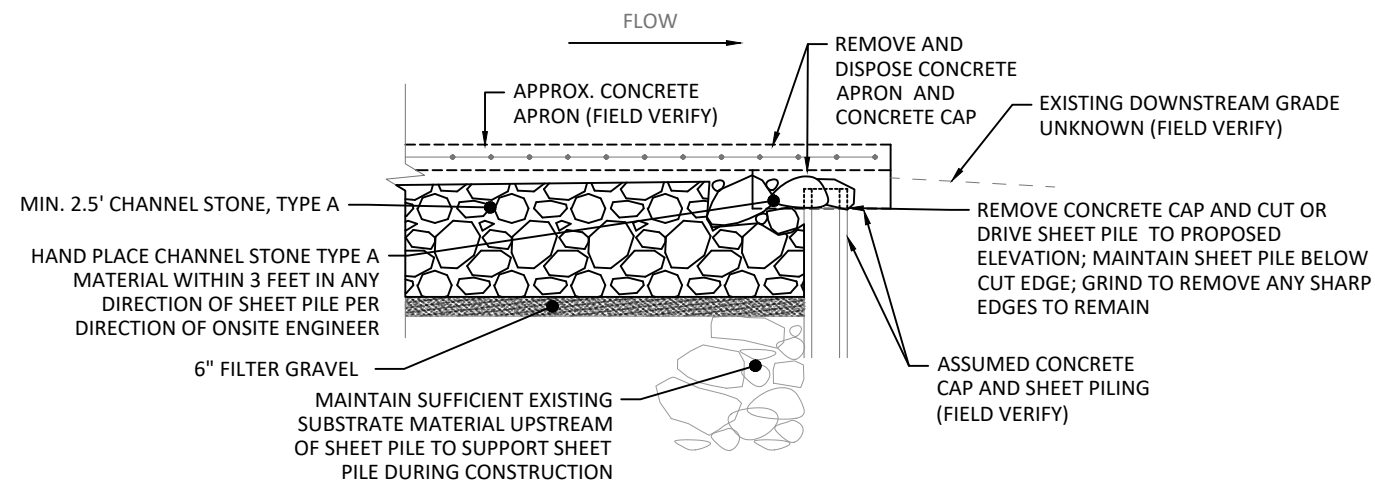
TYPICAL DETAILS

SHEET  
 CS-703

FACING DOWNSTREAM



1 54TH STREET BRIDGE CROSS SECTION  
CS-704 STA: 1+72



2 54TH STREET BRIDGE DOWNSTREAM PROFILE (CONCRETE APRON REMOVAL)  
CS-704

- NOTES:
- 1) SEE SHEETS CS-708 AND CS-709 FOR 54TH STREET BRIDGE DETAILS FOR REFERENCE.
  - 2) IN NO LOCATION SHALL THE TOP OF THE CHANNEL STONE, TYPE A BE LESS THEN 6" ABOVE THE TOP ELEVATION OF THE SHEET PILE TO REMAIN.

NO.	DATE	REVISION DESCRIPTION

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ARDEN PARK CREEK RESTORATION  
MINNEHAHA CREEK WATERSHED DISTRICT  
EDINA, MINNESOTA

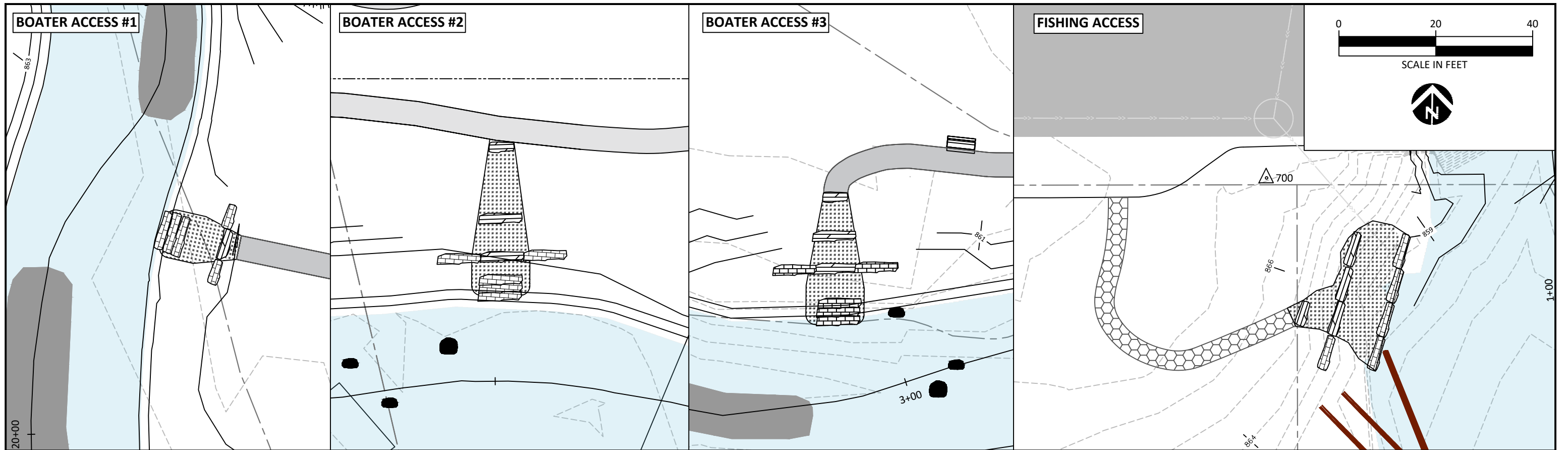


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54TH STREET BRIDGE  
CHANNEL WORK

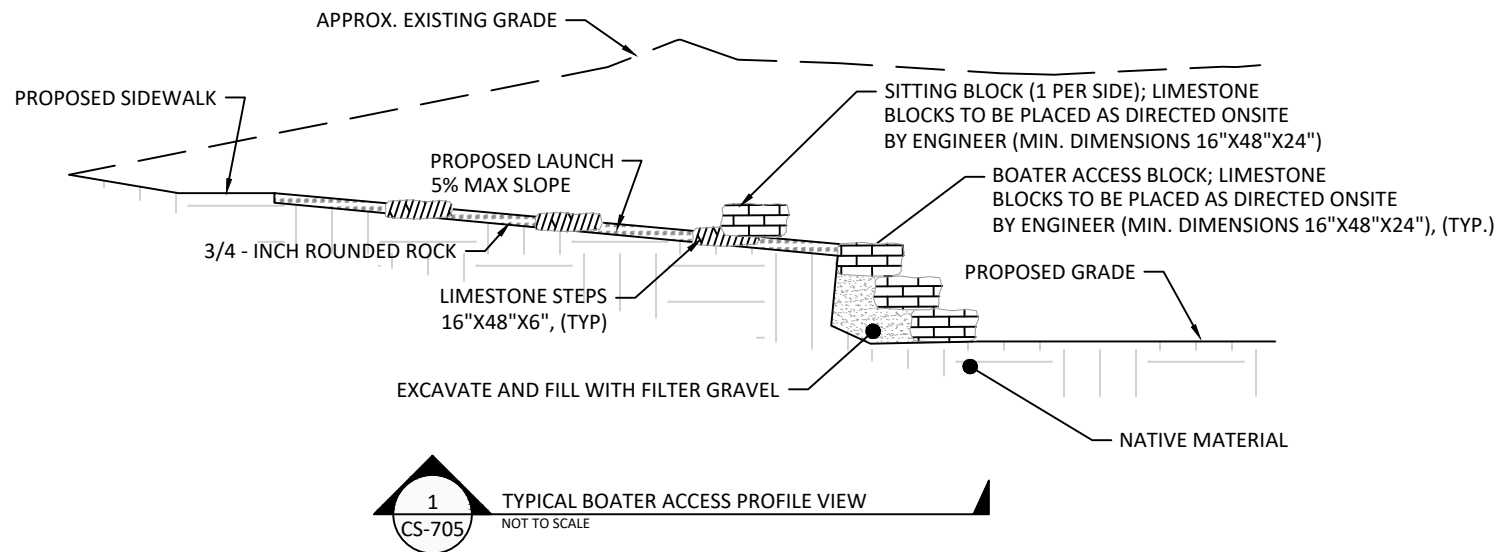
SHEET  
CS-704



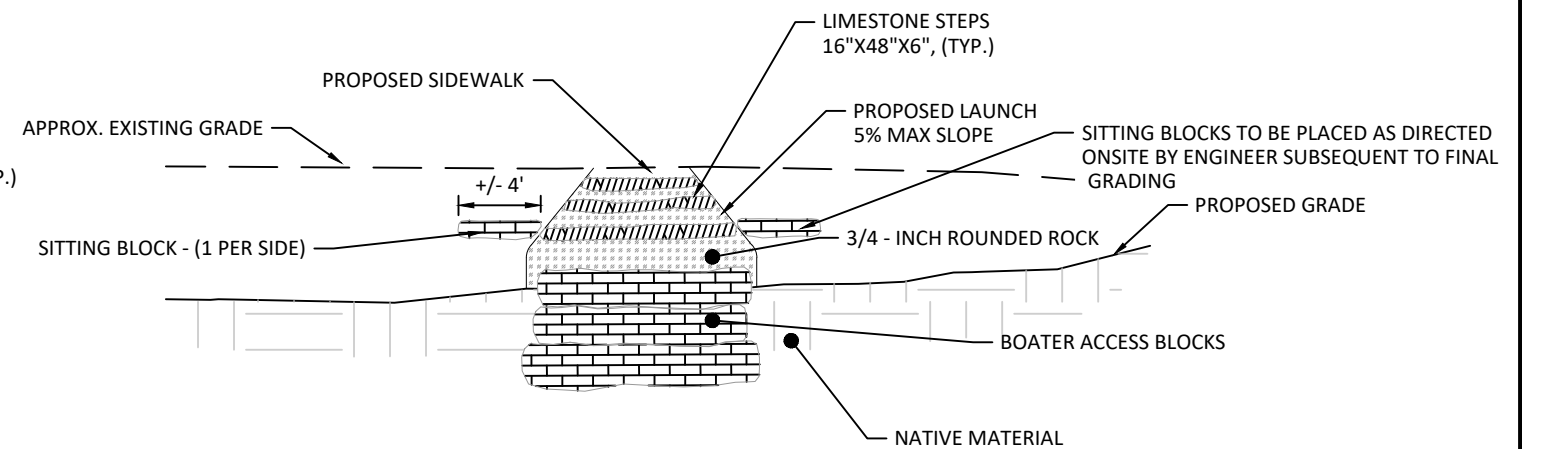


**PLAN LEGEND**

- BITUMINOUS TRAIL
- CRUSHED GRANITE
- 3/4 - INCH ROUNDED ROCK
- LIMESTONE STEP
- LIMESTONE BLOCK



**1** TYPICAL BOATER ACCESS PROFILE VIEW  
 CS-705 NOT TO SCALE



**2** TYPICAL BOATER ACCESS - ELEVATION VIEW  
 CS-705 NOT TO SCALE

NO.	DATE	REVISION DESCRIPTION

CP,GS,BL	MM,BL	MM
DRAWN	DESIGNED	CHECKED
JK	9/28/2018	18-04-01
APPROVED	DATE	PROJECT

**ARDEN PARK CREEK RESTORATION**  
**MINNEHAHA CREEK WATERSHED DISTRICT**  
**EDINA, MINNESOTA**

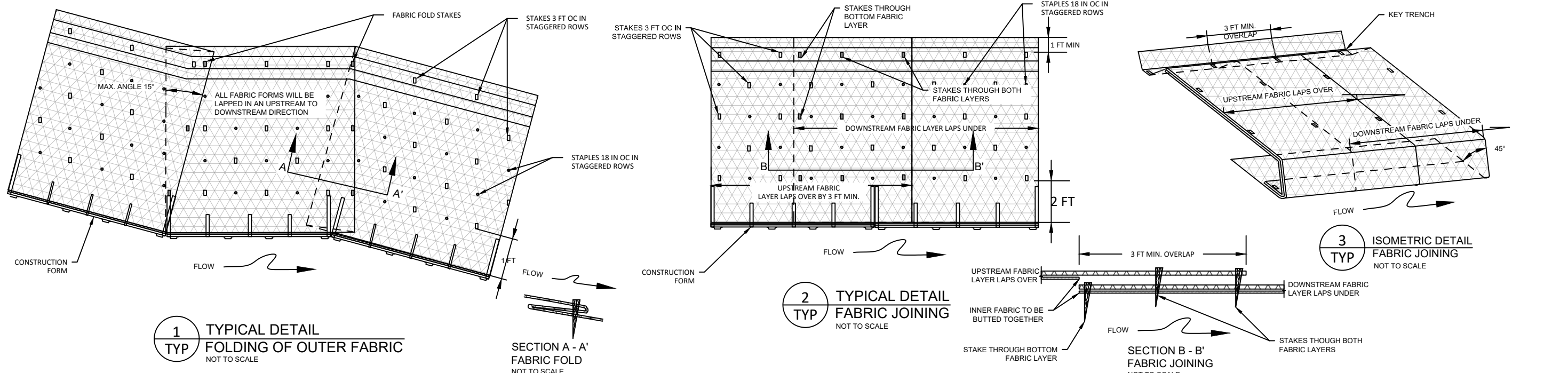


I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Professional Engineer under the laws of the State of Minnesota.  
 Signature: **NATHAN KUSA**  
 Typed or Printed Name: **NATHAN KUSA**  
 Date: 9/28/18 License Number: 44129

**CREEK ACCESS DETAILS**

SHEET  
**CS-705**

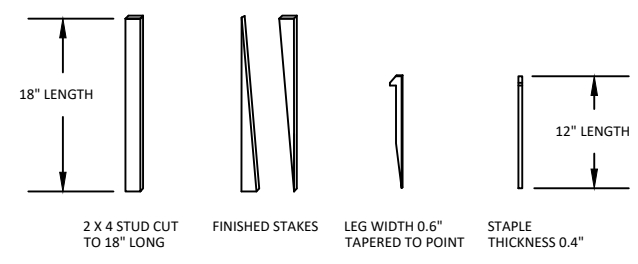




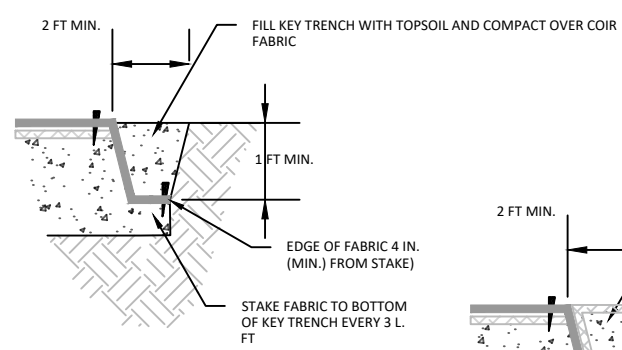
**1** TYPICAL DETAIL  
TYP FOLDING OF OUTER FABRIC  
NOT TO SCALE

**2** TYPICAL DETAIL  
TYP FABRIC JOINING  
NOT TO SCALE

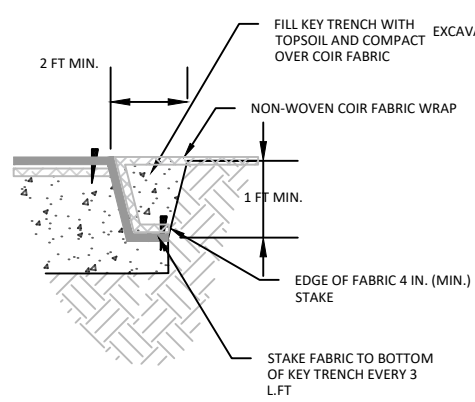
**3** ISOMETRIC DETAIL  
TYP FABRIC JOINING  
NOT TO SCALE



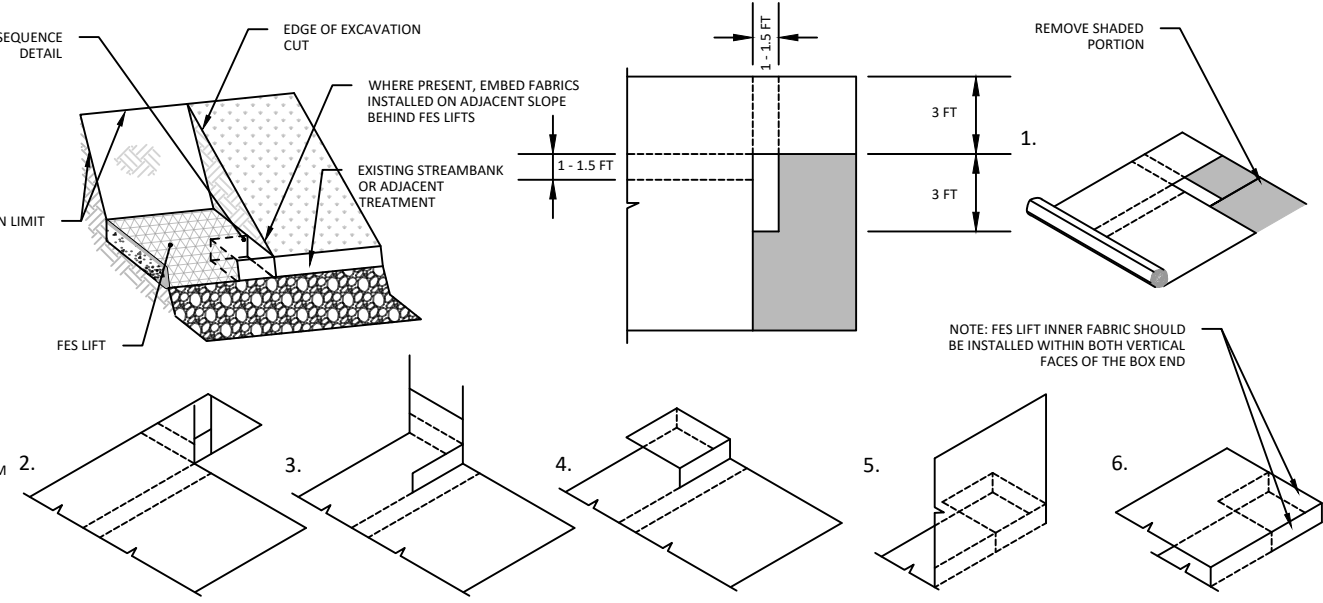
**4** TYP WOODEN STAKE AND STAPLES  
TYP FABRICATING DETAIL  
NOT TO SCALE



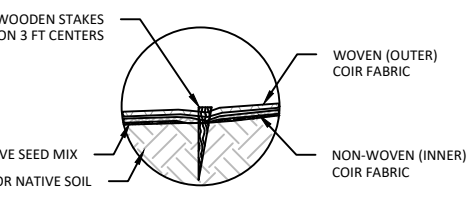
**6** TYP KEY TRENCH DETAIL  
TYP TERMINATION TRENCH  
NOT TO SCALE



**7** TYP KEY TRENCH DETAIL  
TYP TRANSITION TRENCH  
NOT TO SCALE



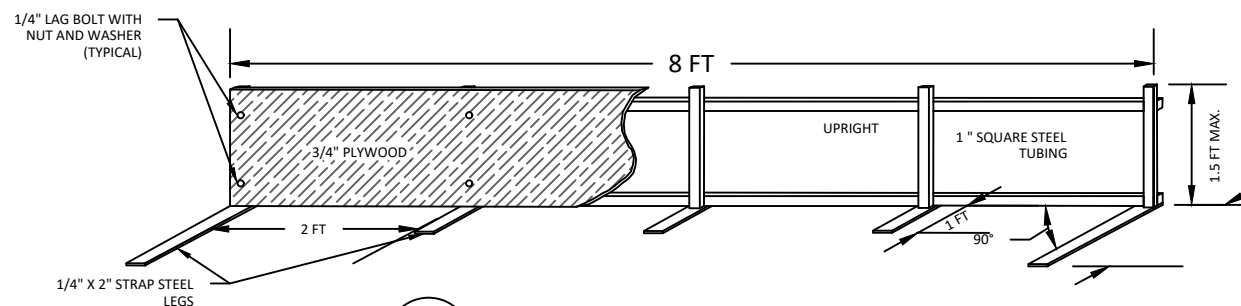
**8** TYP SUGGESTED CONSTRUCTION SEQUENCE  
TYP FES LIFT - BOX ENDS  
NOT TO SCALE



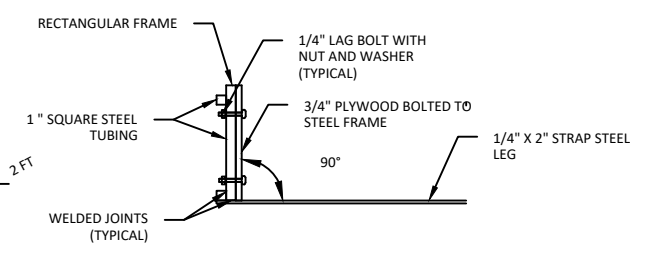
**5** TYP TOE DETAIL  
TYP BIODEGRADABLE FABRICS AND STAKES  
NOT TO SCALE

**GENERAL NOTES ON SECURING COIR FABRIC**

1. SECURE THE OUTER FABRIC (WOVEN, WHERE APPLICABLE), WITH A WOODEN STAKE THROUGH THE FABRIC ON 3 FT CENTERS (SEE DETAIL VIEW 2)  
NOTE: THE HOLES FOR STAKES SHALL NOT BE PRECUT. ALLOW THE STAKE TO BREAK THE MINIMUM NUMBER OF STRANDS AS IT IS BEING DRIVEN IN. DRIVE STAKES SO THAT 2" TO 3" OF THE TOP OF THE STAKE IS LEFT EXPOSED.
2. OUTER FABRIC ENDS SHALL BE JOINED BY LAPPING THE UPSTREAM PIECE OF FABRIC OVER THE DOWNSTREAM PIECE AS SHOWN IN SECTION B-B. OVERLAPS SHALL BE A MINIMUM OF 3 FT, INNER FABRIC ENDS SHALL BE BUTTED TOGETHER, NOT OVERLAPPED. OVERLAPS SHALL BE STAGGERED FROM LIFT TO LIFT BY A MINIMUM OF 15 FT.
3. STAKE AND STAPLE SPACING IS DEFINED IN SPECIFICATIONS FOR FES LIFT AND SURFACE FABRIC.



**9** TYPICAL DETAIL  
TYP STREAM BANK CONSTRUCTION FORM - FES LIFT  
NOT TO SCALE



**10** TYPICAL DETAIL  
TYP STREAM BANK CONSTRUCTION FORM - FES LIFT  
NOT TO SCALE

NO.	DATE	REVISION DESCRIPTION

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DRAWN	DESIGNED	CHECKED
JK	9/28/2018	18-04-01
APPROVED	DATE	PROJECT

ARDEN PARK CREEK RESTORATION  
MINNEHAHA CREEK WATERSHED DISTRICT  
EDINA, MINNESOTA



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Signature: NATHAN KUSA  
Typed or Printed Name: NATHAN KUSA  
Date: 9/28/18 License Number: 44129

FABRIC INSTALLATION  
DETAILS

SHEET  
CS-706

GENERAL INSTRUCTIONS FOR FABRIC ENCAPSULATED LIFTS

1. BANKS MAY BE CONSTRUCTED IN EITHER AN UPSTREAM OR DOWNSTREAM DIRECTION, AS LONG AS THE FABRIC IS OVERLAPPED IN THE PROPER DIRECTION.
2. PLACE A SERIES OF THREE OR MORE FORMS ON THE GROUND SO THAT THE FORMS FOLLOW THE PROPOSED STREAM BANK ALIGNMENT. BUTT THE ENDS OF THE FORMS TIGHTLY TOGETHER.
3. UNROLL THE OUTER FABRIC PARALLEL TO THE LONG AXIS OF THE CHANNEL AND POSITION IT SO THAT 3 FEET EXTENDS FOR EMBEDMENT ON THE BANK SIDE OF THE FORMS (FIG B), AND A MINIMUM 3 FEET EXTENDS LENGTHWISE BEYOND THE LAST FORM FOR OVERLAP. DRAPE THE REMAINDER OF THE FABRIC OVER THE TOP OF THE FORMS ON THE STREAM SIDE (FIG B).
4. UNROLL THE INNER FABRIC OVER THE TOP OF THE WOVEN COIR FABRIC (FIG B) AND POSITION IT SO THAT AT LEAST 1 FOOT OF THE INNER FABRIC EXTENDS AS AN EMBEDMENT LENGTH ON THE BANK SIDE OF THE FORMS (FIG C). DRAPE THE REMAINDER OF THE FABRIC OVER THE TOP OF THE FORMS ON THE STREAM SIDE AND ALIGN THE LONG EDGES OF THE FABRICS. STRETCH AND PULL THE FABRIC LAYERS TO REMOVE WRINKLES.
5. APPLY NATIVE SEED MIX TO INNER FABRIC ALONG VERTICAL EDGE OF LIFT (FIG C). PLACE TOPSOIL/CHANNEL BANK STONE OVER THE FABRIC ON THE BANK SIDE OF THE FORMS.
6. APPLY NATIVE SEED MIX TO TOP OF FILL (FIG C).
7. FOLD THE LOOSE ENDS OF THE TWO COIR FABRIC LAYERS BACK OVER THE COMPACTED FILL MATERIAL AND STRETCH TIGHTLY TO REMOVE WRINKLES (FIG D). SECURE WITH WOODEN STAKES 1 PER 3 L.F. ALONG THE BACK EDGE AND INTO UNDISTURBED SOIL.
8. REMOVE THE FORMS FROM THE FRONT OF THE COMPLETED LIFTS (FIG. 2). LEAVE THE LAST FORM IN PLACE AT THE END OF THE NEWLY CONSTRUCTED LIFT (FIG. 2).
9. WHERE THE TOP OF THE LIFT MEETS THE GROUND SURFACE, EXCAVATE A KEY TRENCH 1 FOOT DEEP ALONG THE EDGE OF THE OUTER FABRIC LAYER, PARALLEL TO THE FORMS. SEED ENTIRE AREA OF TOP LIFT. SECURE FABRIC IN THE TRENCH WITH WOODEN STAKES, 3 FT O.C. TO TRANSITION TO EITHER SURFACE FABRIC OR STRAW EROSION CONTROL BLANKET.
10. SUPPLEMENT LIFT STAKING WITH ADDITIONAL WOODEN STAPLES ON 18" CENTERS EXCEPT WHERE WOODEN STAKES HAVE ALREADY BEEN PLACED.

SUGGESTED SEQUENCE FOR PLACEMENT OF FORMS

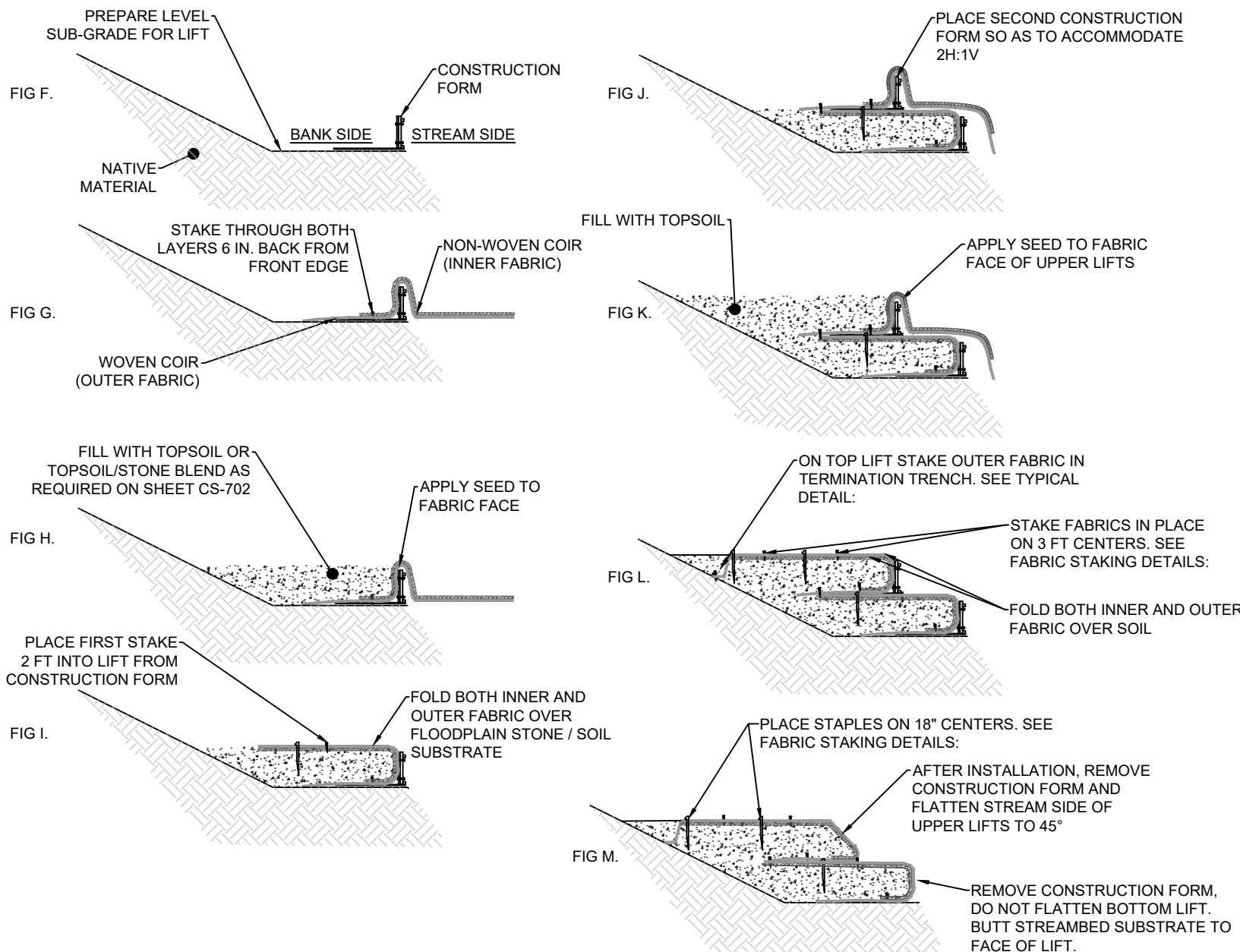
PROFILE VIEW LOOKING INTO BANK



FIG 1. PLACE A ROW OF CONSTRUCTION FORMS ALONG DESIRED CHANNEL ALIGNMENT FOR FIRST FES LIFT.



FIG 2. CONSTRUCT FES LIFTS ALONG LENGTH OF FIRST SET OF FORMS AND THEN BEGIN PLACEMENT OF FORMS AND CONSTRUCTION OF SECOND LIFT.



INSTRUCTIONS FOR FES MULTIPLE LIFT SLOPED CONSTRUCTION

1. REMOVE THE FORMS FROM THE FRONT OF THE COMPLETED LIFTS. LEAVE THE LAST FORM IN PLACE AT THE END OF THE NEWLY CONSTRUCTED LIFT, SEE SUGGESTED SEQUENCE FOR PLACEMENT OF FORMS:
2. REPEAT STEPS TWO THROUGH EIGHT UNTIL FINISH GRADES ARE ATTAINED.
3. WHERE THE TOP OF MEETS THE FINISH GROUND SURFACE, EXCAVATE A TERMINATION TRENCH 1 FOOT DEEP ALONG THE BACK EDGE OF THE OUTER FABRIC LAYER, PARALLEL TO THE FORMS. SECURE FABRIC IN THE TERMINATION TRENCH WITH WOODEN STAKES, 3 FT O.C.
4. BACKFILL THE TERMINATION TRENCH WITH TOPSOIL AND CONTINUE TO APPLY TOPSOIL TO SMOOTHLY MERGE WITH FINISH CONTOURS. APPLY NATIVE SEED MIX TO TERMINATION TRENCH AREA.

1 TYPICAL DETAIL FES LIFTS CONSTRUCTION SEQUENCE  
 CS-707 NOT TO SCALE

NO.	DATE	REVISION DESCRIPTION

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JK	9/28/2018	18-04-01
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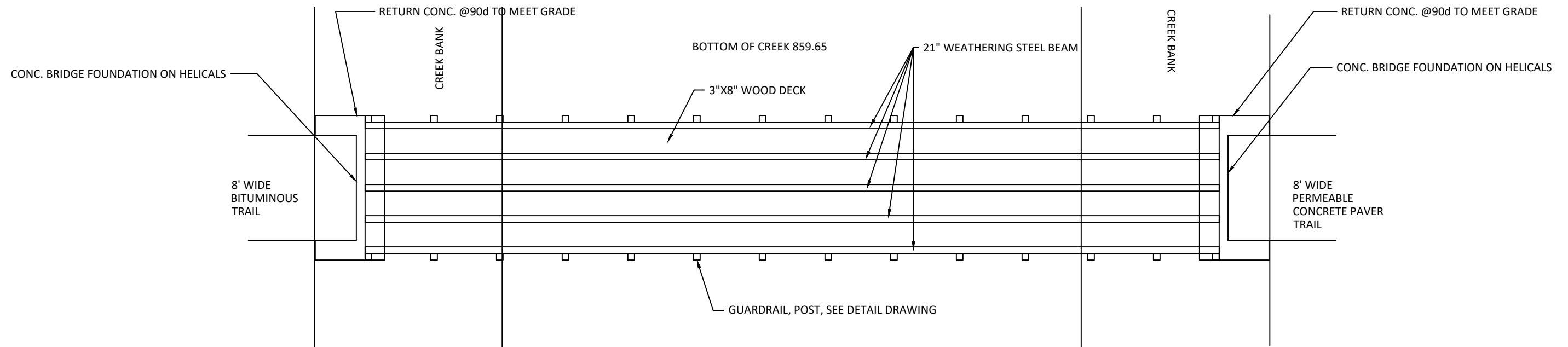
ARDEN PARK CREEK RESTORATION  
 MINNEHAHA CREEK WATERSHED DISTRICT  
 EDINA, MINNESOTA



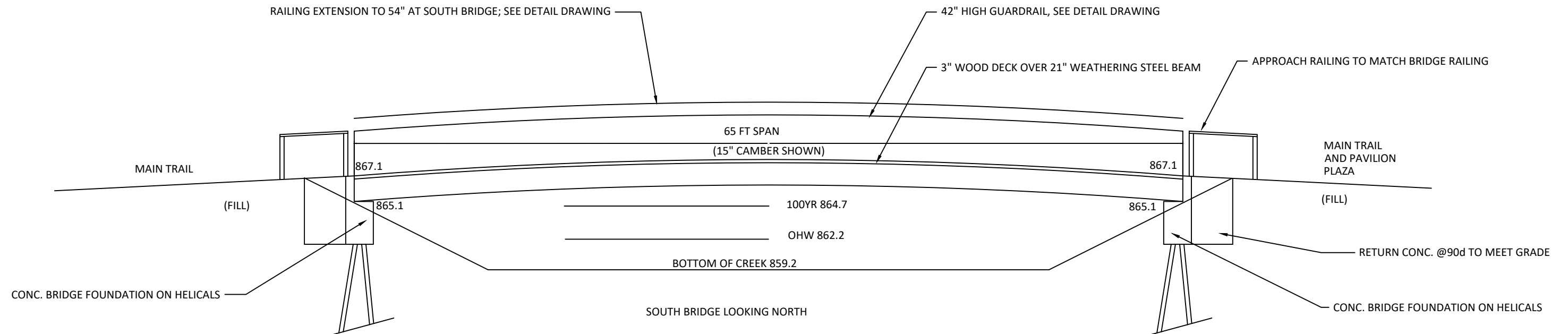
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 Signature: \_\_\_\_\_  
 Typed or Printed Name: NATHAN KUSA  
 Date: 9/28/18 License Number: 44129

FES LIFT DETAILS

SHEET  
 CS-707



### SOUTH BRIDGE PLAN VIEW



### SOUTH BRIDGE ELEVATION CROSS-SECTION

NO.	DATE	REVISION DESCRIPTION

CP,GS,BL	MM,BL	MM
DRAWN	DESIGNED	CHECKED
JK	9/28/2018	18-04-01
APPROVED	DATE	PROJECT

ARDEN PARK CREEK RESTORATION  
 MINNEHAHA CREEK WATERSHED DISTRICT  
 EDINA, MINNESOTA

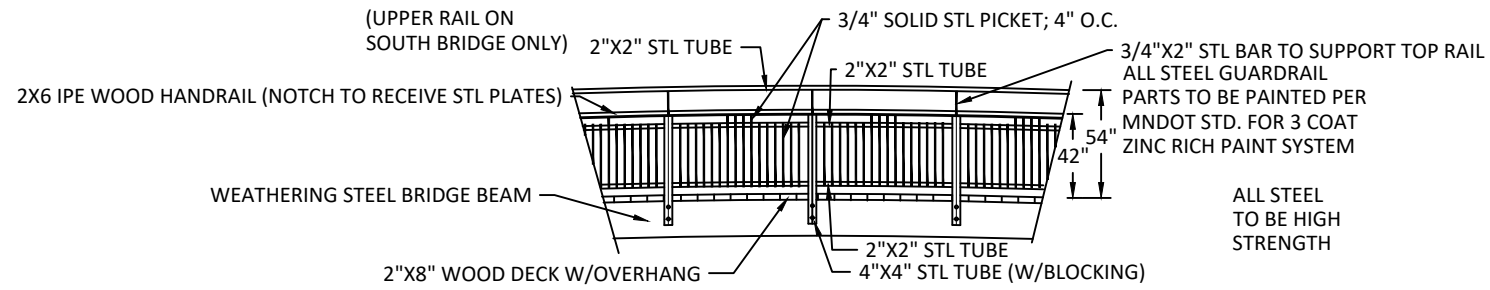


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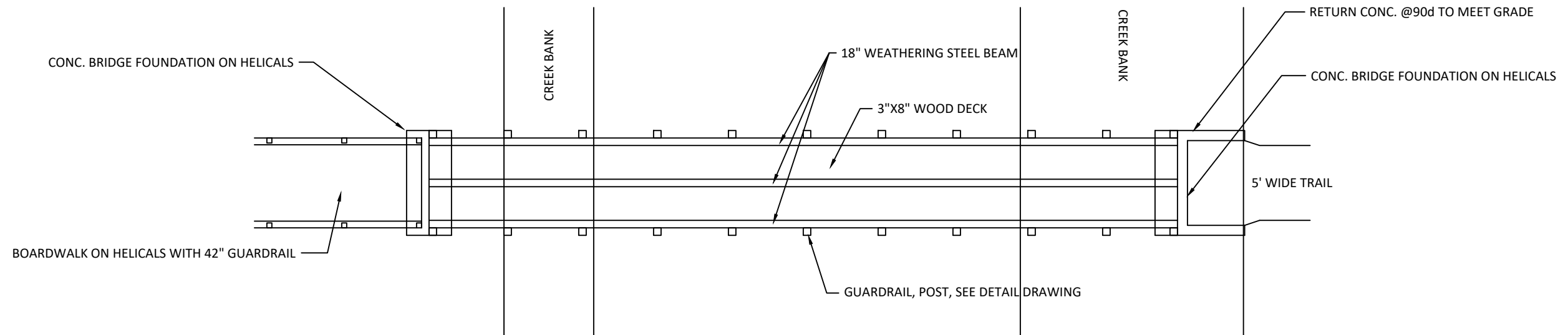
BRIDGE DESIGN  
 DETAILS

SHEET  
 CS-708

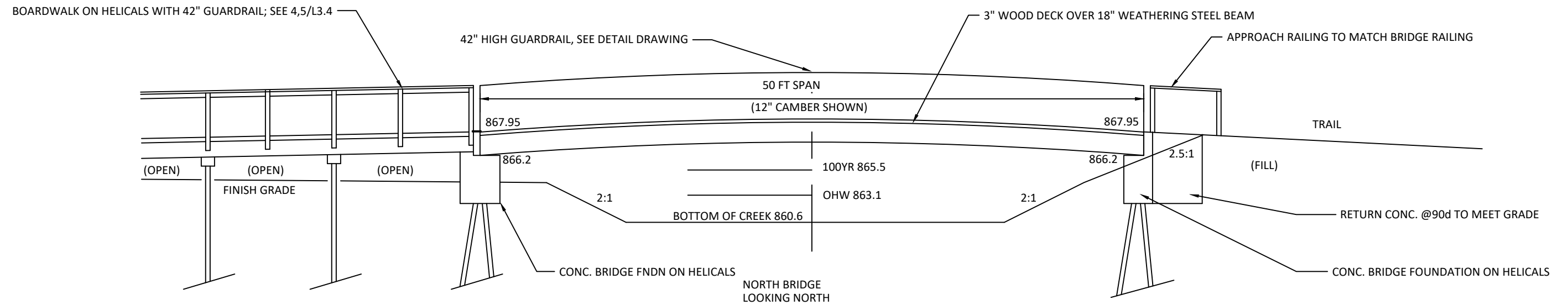




## BRIDGE GUARDRAIL ELEVATION



## NORTH BRIDGE PLAN VIEW



## NORTH BRIDGE ELEVATION CROSS-SECTION

NO.	DATE	REVISION DESCRIPTION

CP,GS,BL	MM,BL	MM
DRAWN	DESIGNED	CHECKED
JK	9/28/2018	18-04-01
APPROVED	DATE	PROJECT

ARDEN PARK CREEK RESTORATION  
 MINNEHAHA CREEK WATERSHED DISTRICT  
 EDINA, MINNESOTA

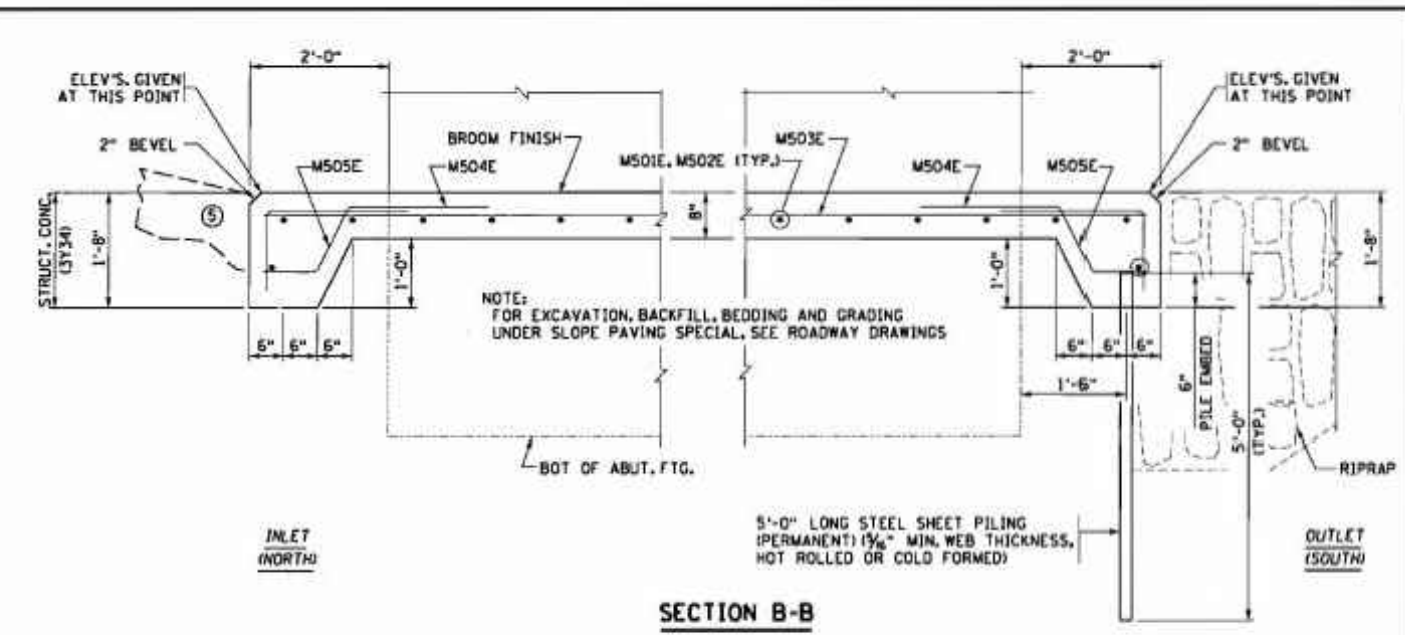
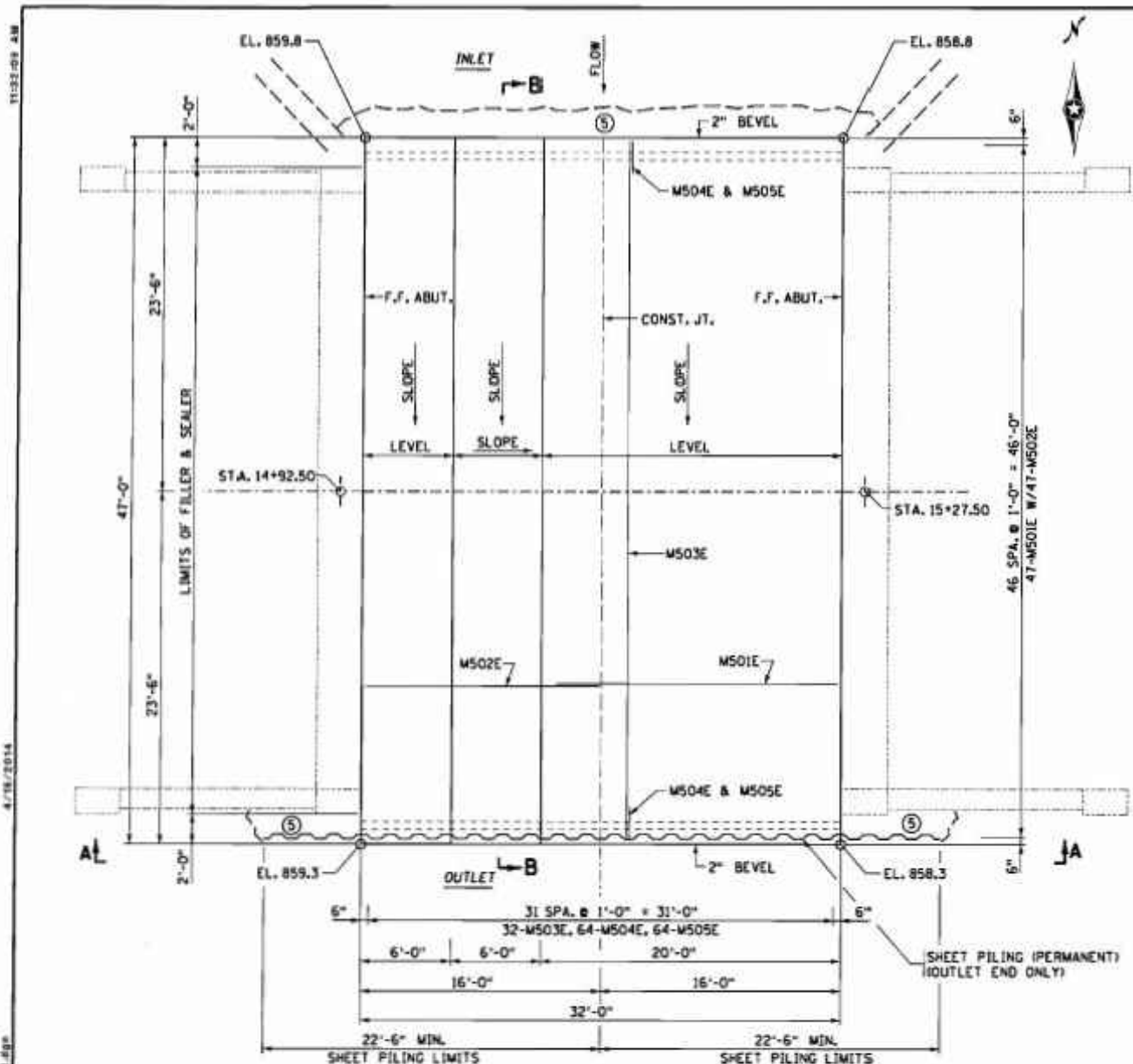


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 Signature: \_\_\_\_\_  
 Typed or Printed Name: NATHAN KUSA  
 Date: 9/28/18 License Number: 44129

**DRAFT**

BRIDGE DESIGN  
 DETAILS

SHEET  
 CS-709



**SLOPE PAVING SPECIAL NOTES**

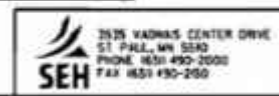
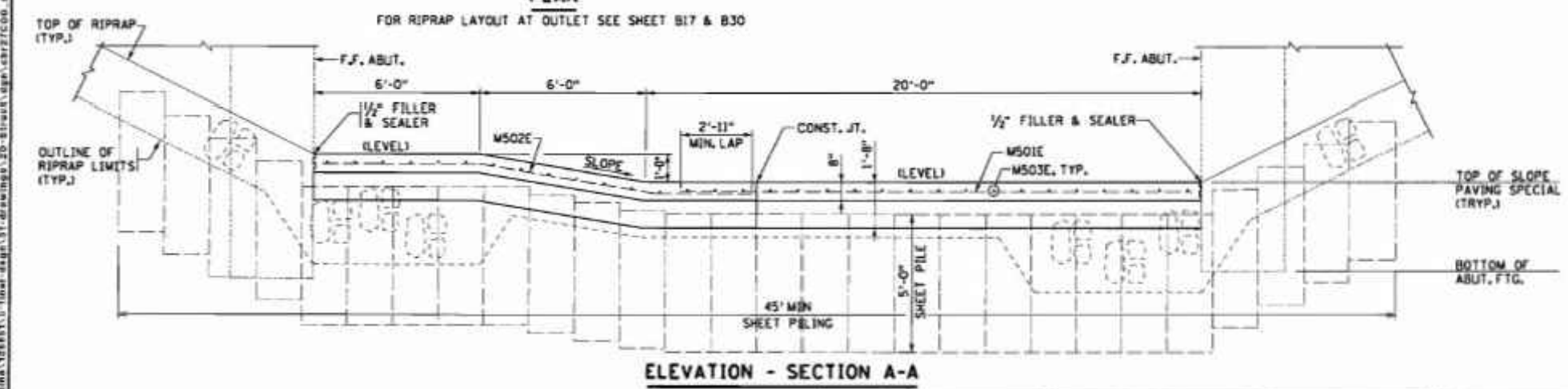
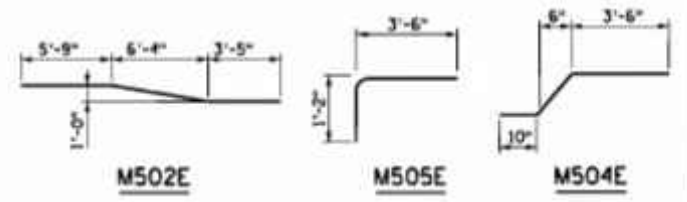
SHEET PILE CAN BE DRIVEN OR PLACED AND BACKFILLED IN TRENCH.

SUMMARY OF QUANTITIES SLOPE PAVING SPECIAL		
ITEM	UNIT	TOTAL
① SLOPE PAVING SPECIAL	SQ. YD.	167
② PERFORMED JOINT FILLER		
④ STEEL SHEET PILING (PERMANENT)	SQ. FT.	225

**QUANTITY NOTES**

- ① SEE SPECIAL PROVISIONS.
- ② APPROXIMATE CONCRETE QUANTITY:  
40 CU. YDS. FOR SLOPE PAVING SPECIAL (3Y34)
- APPROXIMATE REINFORCEMENT QUANTITY:  
4000 POUNDS REINFORCEMENT BARS (EPOXY COATED)
- ③ INCLUDES EXCAVATION, BACKFILL, BEDDING AND GRADING UNDER SLOPE PAVING SPECIAL.
- ④ INCLUDED IN PRICE BID FOR OTHER ITEMS, APPROX. QJANT. = 2 - 1/2" X 8" X 43'-0" LONG.
- ⑤ 8" MIN. THICK CONCRETE TO FILL SPACE BETWEEN INLET END SLOPE PAVING & EXISTING GROUND RIPRAP SPILLWAY OR BETWEEN OUTLET SHEET PILE AND ABUTMENT/WINGWALL. (INCIDENTAL)

BAR MARK	NO. OF BARS	LENGTH	SHAPE	LOCATION
SLOPE PAVING SPECIAL				
EPOXY				
M501E	47	20'-9"	STR	TRANS
M502E	47	15'-8"	BENT	TRANS
M503E	32	46'-4"	STR	LONGIT
M504E	64	5'-4"	BENT	LUG
M505E	64	4'-8"	BENT	LUG



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.  
 Signature: *Nathan C. Klopp* Date: 4/18/2018  
 Printed Name: NATHAN C. KLOPP Reg. No. 43836

TITLE: SLOPE PAVING SPECIAL DETAILS  
 S.A.P. NO. 120-142-003  
 DES: JAJ DR: DLF APPROVED:  
 CHK: NCK CHK: NCK  
 SHEET NO B16 OF B30 SHEETS

BRIDGE NO 27C00

NO.	DATE	REVISION DESCRIPTION

CP,GS,BL	MM,BL	MM
DRAWN	DESIGNED	CHECKED
JK	9/28/2018	18-04-01
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ARDEN PARK CREEK RESTORATION  
 MINNEHAHA CREEK WATERSHED DISTRICT  
 EDINA, MINNESOTA



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 Signature: *Nathan C. Klopp*  
 Typed or Printed Name: NATHAN C. KLOPP  
 Date: 9/28/18 License Number: 44129

54TH STREET BRIDGE  
 DETAIL - REFERENCE ONLY

SHEET CS-710



MATCH INTO EXISTING SLOPE PROTECTION AND WALLS AT THE N.W. & N.E. CORNER. RECONSTRUCT LOW STONE WALLS & GROUTED RIPRAP CHANNEL BOTTOM TO TIE INTO NEW BRIDGE. (INCIDENTAL)

SEE CIVIL DRAWING FOR ADDITIONAL ORNAMENTAL METAL RAILING AND STRUCTURAL SIDEWALK LOCATION AND QUANTITIES, TYP.

COMMUNICATION CONDUIT ON BRIDGE TO BE ABANDONED

14+00  
P.I. STA. 14+24.98  
14+50  
END OF APPR. PANEL STA. 14+75.00 EL. 867.30  
END OF DECK STA. 14+91.67 EL. 867.45

EXISTING BR. 90640 (TO BE REMOVED)

CONTROL POINT W.P. C  
C/L BRG. W. ABUT.  
STA. 14+92.50  
EL. 867.46

17'-6" TYP. ALL WINGS  
END OF SLOPE PAVING  
CONCRETE SLOPE PAVING, SPECIAL (SEE SHEET B16 FOR DIMENSIONS)

36'-8" END TO END BRIDGE  
35'-0" SPAN  
3'-0" 32'-0" 3'-0"  
C/L BRG. W. ABUT. MINNEHAHA CREEK C/L BRG. E. ABUT.  
END OF SLOPE PAVING MATCH INTO EXISTING CHANNEL BOTTOM PROTECTION

BRIDGE NAME PLATE  
EDGE OF SDWK.  
FACE OF PARAPET RAIL  
1'-2" 6'-0" 14'-0" 42'-4"  
OUT TO OUT  
16'-00  
P.I. STA. 15+95.98  
END OF DECK STA. 15+28.33 EL. 867.81  
END OF APPR. PANEL STA. 15+45.00 EL. 867.97  
W.P. D C/L BRG. E. ABUT. STA. 15+27.50 EL. 867.80

90° TYP.  
15'-00  
C/L NEW BR STA. 15+10.00  
AZ 88° 50' 34.70"

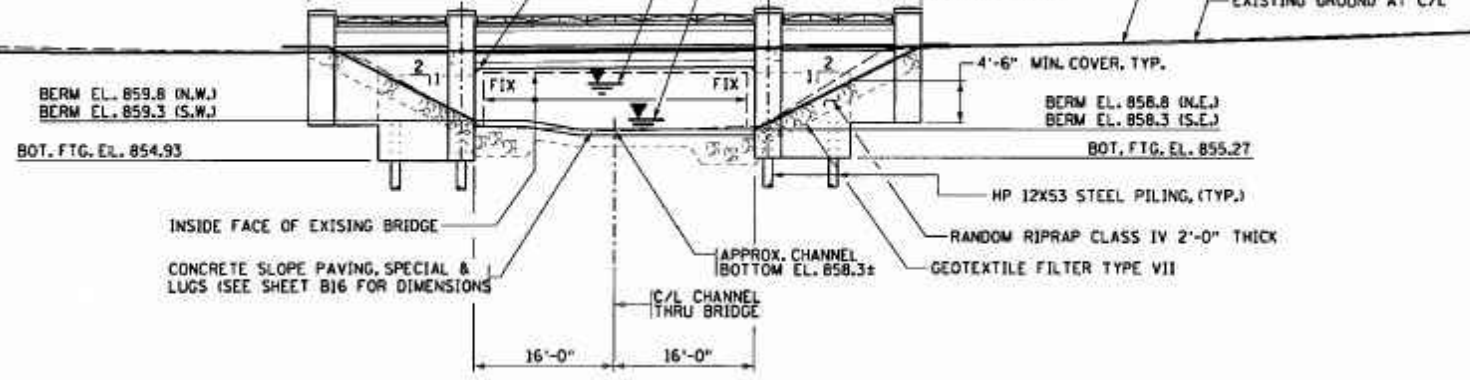
W.P. A  
GUTTER W.P. B  
W.P. E  
GUTTER W.P. F

17'-6" TYP. ALL WINGS  
END OF SLOPE PAVING  
CONCRETE SLOPE PAVING, SPECIAL (SEE SHEET B16 FOR DIMENSIONS)

**GENERAL PLAN**

STEEL SHEET PILING (TEMPORARY)  
EXTENT OF RIPRAP (PAID FOR WITH BRIDGE QUANTITIES) (SEE SHEET B17 & B30 FOR DIMENSIONS)  
MATCH INTO EXIST. CHANNEL BOTTOM PROTECTION

C/L BRG. W. ABUT. 17'-6" 35'-0" 17'-6" C/L BRG. E. ABUT.  
GRADE +0.96%  
DESIGN HEADWATER (100 YR.) EL. 863.70  
OBSERVED WATER EL. 859.6±, JULY 2013  
PROFILE GRADE  
EXISTING GROUND AT C/L  
EXIST LOW MEMBER EL. 864.8, NEW LOW MEMBER EL. 865.40



**GENERAL ELEVATION**

LOOKING UPSTREAM  
0 10 20

**CONSTRUCTION NOTES**

THE 2014 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR CONSTRUCTION" AND THE 2014 EDITION OF THE "MATERIALS LAB SUPPLEMENTAL SPECIFICATIONS FOR CONSTRUCTION" SHALL GOVERN.  
THE BAR SIZES SHOWN IN THIS PLAN ARE IN U.S. CUSTOMARY DESIGNATIONS.  
BARS MARKED WITH THE SUFFIX "E" SHALL BE EPOXY COATED IN ACCORDANCE WITH SPEC. 3301.  
BARS MARKED WITH THE SUFFIX "S" INDICATES THE BAR IS STAINLESS STEEL IN ACCORDANCE WITH SPEC. 3312.  
THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF C/ASCE 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA".  
THE BRIDGE PILE LOADS SHOWN IN THE PLANS AND THE CORRESPONDING NOMINAL PILE BEARING RESISTANCE (R<sub>n</sub>) WERE COMPUTED USING LRFD METHODOLOGY. PILE BEARING RESISTANCE DETERMINED IN THE FIELD SHALL INCORPORATE THE METHODS AND/OR FORMULAS DESCRIBED IN THE SPECIAL PROVISIONS.  
WARNING: DIAL GOPHER STATE ONE CALL AT 1-800-252-1166 48 HOURS IN ADVANCE OF CONSTRUCTION OPERATIONS TO OBTAIN COMPLETE UTILITY PROPERTY OWNERSHIP AND LOCATION INFORMATION. NOTE: FIELD VERIFY ALL UTILITIES.

**CONSTRUCTION NOTES**

CONSTRUCTION OF EACH ABUTMENT SHALL NOT BE STARTED UNTIL THE APPROACH FILL AT THAT ABUTMENT HAS BEEN CONSTRUCTED TO THE FULL HEIGHT AND CROSS SECTION.  
CONTRACTOR SHALL DRESS SLOPES AND PLACE FILTER MATERIALS AND RIPRAP IN APPROXIMATE AREAS AS DIRECTED BY THE ENGINEER.  
FOR INPLACE UTILITIES SEE ROW DRAWINGS.  
DRAWINGS ARE NOT TO BE SCALED.  
APPROACH FILL AND ROUGH GRADING PROVIDED UNDER GRADING PORTION OF CONTRACT. RESTORATION OF SIDE SLOPES SHALL BE INCLUDED IN PRICE BID FOR STRUCTURE EXCAVATION. FORESLOPE SHALL BE PLACED AND COMPACTED IN SUBSTANTIAL CONFORMANCE WITH ITS FINAL SHAPE BEFORE ABUTMENT IS BACKFILLED.  
EXISTING UTILITIES TO BE RELOCATED UNDER GRADING PORTION OF THE CONTRACT.  
MATCH AREA INCLUDE IN STRUCTURE EXCAVATION. SEE BRIDGE SURVEY PLAN AND PROFILE SHEET.  
TRAFFIC IS TO BE DETOURED DURING CONSTRUCTION.

**DESIGN DATA**

2012 AND CURRENT INTERIM AASHTO LRFD BRIDGE DESIGN SPECIFICATIONS  
LOAD AND RESISTANCE FACTOR DESIGN METHOD  
HL93 LIVE LOAD  
DEAD LOAD INCLUDES 20 PSF ALLOWANCE FOR FUTURE WEARING COURSE MODIFICATIONS  
MATERIAL DESIGN PROPERTIES:  
REINFORCED CONCRETE:  
f'<sub>c</sub> = 4 KSI n = 8  
f<sub>y</sub> = 60 KSI REINFORCEMENT  
DESIGN SPEED = 30 MPH  
DECK AREA = 1529 SQ. FT.  
HL93 LRFR BRIDGE OPERATING RATING = 1.35  
CURRENT ADT (2014) = 3000  
PROJECTED ADT (2034) = 3300

**LIST OF SHEETS**

NO.	DESCRIPTION
B1	GENERAL PLAN AND ELEVATION
B2	BRIDGE QUANTITIES & TYPICAL SECTION
B3	BRIDGE LAYOUT
B4-B8	WEST AND EAST ABUTMENT DETAILS
B9	WEST AND EAST ABUTMENT BARLIST AND QUANTITIES
B10-B11	SUPERSTRUCTURE DETAILS
B12	SUPERSTRUCTURE BARLIST AND QUANTITIES
B13	CONCRETE PARAPET (TYPE MOD. P-1)
B14	ORNAMENTAL METAL RAILING TYPE SPECIAL 1
B15	CONDUIT SYSTEM (LIGHTING)
B16	SLOPE PAVING SPECIAL DETAILS
B17	RIPRAP SLOPE WITH GEOTEXTILE FILTER
B18-B25	BRIDGE APPROACH PANEL DETAILS
B26-B27	B DETAILS
B28	AS BUILT BRIDGE DATA
B29	BRIDGE SURVEY
B30	BRIDGE SURVEY PLAN AND PROFILE

BENCH MARK; SEE BRIDGE SURVEY SHEET

APPROVED: [Signature] CITY OF EDINA  
DATE: 8/23/14

SEH 3535 VADNAIS CENTER DRIVE  
ST. PAUL, MN 55102  
PHONE (651) 490-2000  
FAX (651) 490-2950

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

SIGNED: [Signature] DATE: 4/16/2014  
NAME: NATHAN C. KLOPP LIC. NO. 43836

MINNESOTA DEPARTMENT OF TRANSPORTATION

**BRIDGE 27C00**

54 TH. STREET SOUTH OVER MINNEHAHA CREEK  
IN HENNEPIN COUNTY  
BETWEEN WOODDALE AVE. AND FRANCE AVE.  
IN THE CITY OF EDINA  
35'-0" SINGLE SPAN CAST-IN-PLACE CONC. SLAB BRIDGE  
42'-8" WIDE. INCLUDES (2) 14'-0" LANES  
IDENTIFICATION NO. 109  
**GENERAL PLAN AND ELEVATION**  
SEC 18 TWP 28 N R 24 W  
CITY OF EDINA HENNEPIN CO

APPROVED: [Signature] STATE BRIDGE ENGINEER

DES. NCK DR. DLF 27C00  
CHK. JAJ CHK. NCK

STATE AID PROJ. NO. 120-142-003

SHEET NO B1 OF B30 SHEETS

NO.	DATE	REVISION DESCRIPTION

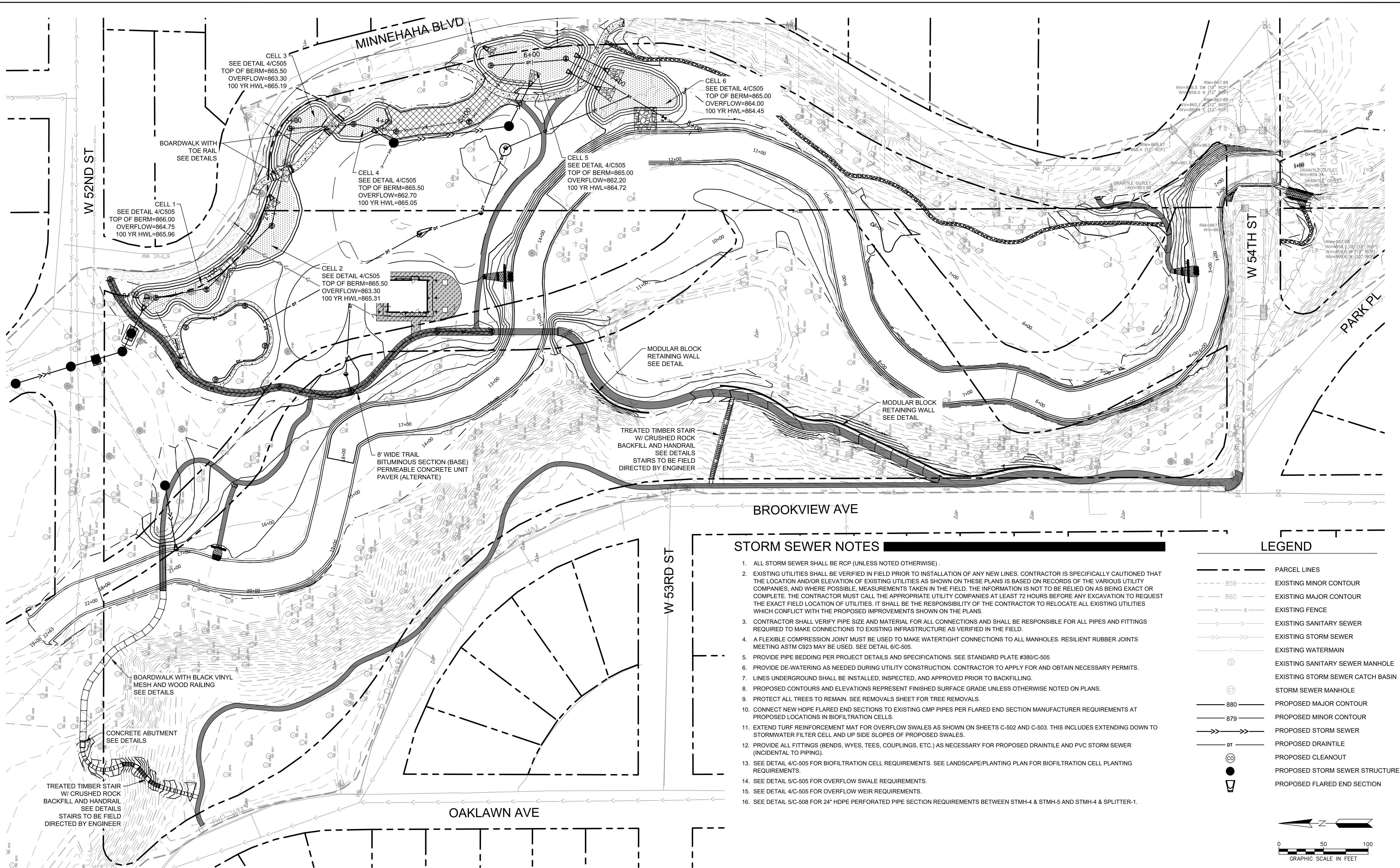
ARDEN PARK CREEK RESTORATION  
MINNEHAHA CREEK WATERSHED DISTRICT  
EDINA, MINNESOTA



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.  
Signature: [Signature]  
Typed or Printed Name: NATHAN C. KLOPP  
Date: 9/28/18 License Number: 44129

54TH STREET BRIDGE  
DETAIL - REFERENCE ONLY  
SHEET CS-711



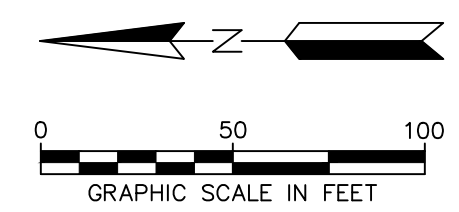


**STORM SEWER NOTES**

1. ALL STORM SEWER SHALL BE RCP (UNLESS NOTED OTHERWISE).
2. EXISTING UTILITIES SHALL BE VERIFIED IN FIELD PRIOR TO INSTALLATION OF ANY NEW LINES. CONTRACTOR IS SPECIFICALLY CAUTIONED THAT THE LOCATION AND/OR ELEVATION OF EXISTING UTILITIES AS SHOWN ON THESE PLANS IS BASED ON RECORDS OF THE VARIOUS UTILITY COMPANIES, AND WHERE POSSIBLE, MEASUREMENTS TAKEN IN THE FIELD. THE INFORMATION IS NOT TO BE RELIED ON AS BEING EXACT OR COMPLETE. THE CONTRACTOR MUST CALL THE APPROPRIATE UTILITY COMPANIES AT LEAST 72 HOURS BEFORE ANY EXCAVATION TO REQUEST THE EXACT FIELD LOCATION OF UTILITIES. IT SHALL BE THE RESPONSIBILITY OF THE CONTRACTOR TO RELOCATE ALL EXISTING UTILITIES WHICH CONFLICT WITH THE PROPOSED IMPROVEMENTS SHOWN ON THE PLANS.
3. CONTRACTOR SHALL VERIFY PIPE SIZE AND MATERIAL FOR ALL CONNECTIONS AND SHALL BE RESPONSIBLE FOR ALL PIPES AND FITTINGS REQUIRED TO MAKE CONNECTIONS TO EXISTING INFRASTRUCTURE AS VERIFIED IN THE FIELD.
4. A FLEXIBLE COMPRESSION JOINT MUST BE USED TO MAKE WATERTIGHT CONNECTIONS TO ALL MANHOLES. RESILIENT RUBBER JOINTS MEETING ASTM C923 MAY BE USED. SEE DETAIL 6/C-505.
5. PROVIDE PIPE BEDDING PER PROJECT DETAILS AND SPECIFICATIONS. SEE STANDARD PLATE #380/C-505
6. PROVIDE DE-WATERING AS NEEDED DURING UTILITY CONSTRUCTION. CONTRACTOR TO APPLY FOR AND OBTAIN NECESSARY PERMITS.
7. LINES UNDERGROUND SHALL BE INSTALLED, INSPECTED, AND APPROVED PRIOR TO BACKFILLING.
8. PROPOSED CONTOURS AND ELEVATIONS REPRESENT FINISHED SURFACE GRADE UNLESS OTHERWISE NOTED ON PLANS.
9. PROTECT ALL TREES TO REMAIN. SEE REMOVALS SHEET FOR TREE REMOVALS.
10. CONNECT NEW HDPE FLARED END SECTIONS TO EXISTING CMP PIPES PER FLARED END SECTION MANUFACTURER REQUIREMENTS AT PROPOSED LOCATIONS IN BIOFILTRATION CELLS.
11. EXTEND TURF REINFORCEMENT MAT FOR OVERFLOW SWALES AS SHOWN ON SHEETS C-502 AND C-503. THIS INCLUDES EXTENDING DOWN TO STORMWATER FILTER CELL AND UP SIDE SLOPES OF PROPOSED SWALES.
12. PROVIDE ALL FITTINGS (BENDS, WYES, TEES, COUPLINGS, ETC.) AS NECESSARY FOR PROPOSED DRAINTILE AND PVC STORM SEWER (INCIDENTAL TO PIPING).
13. SEE DETAIL 4/C-505 FOR BIOFILTRATION CELL REQUIREMENTS. SEE LANDSCAPE/PLANTING PLAN FOR BIOFILTRATION CELL PLANTING REQUIREMENTS.
14. SEE DETAIL 5/C-505 FOR OVERFLOW SWALE REQUIREMENTS.
15. SEE DETAIL 4/C-505 FOR OVERFLOW WEIR REQUIREMENTS.
16. SEE DETAIL 5/C-508 FOR 24" HDPE PERFORATED PIPE SECTION REQUIREMENTS BETWEEN STMH-4 & STMH-5 AND STMH-4 & SPLITTER-1.

**LEGEND**

- PARCEL LINES
- - - 859 - - - EXISTING MINOR CONTOUR
- - - 860 - - - EXISTING MAJOR CONTOUR
- x - x - EXISTING FENCE
- - - - - EXISTING SANITARY SEWER
- - - - - EXISTING STORM SEWER
- - - - - EXISTING WATERMAIN
- ⊙ EXISTING SANITARY SEWER MANHOLE
- ⊙ EXISTING STORM SEWER CATCH BASIN
- ⊙ STORM SEWER MANHOLE
- 880 — PROPOSED MAJOR CONTOUR
- 879 — PROPOSED MINOR CONTOUR
- - - - - PROPOSED STORM SEWER
- - - - - PROPOSED DRAINTILE
- ⊙ PROPOSED CLEANOUT
- PROPOSED STORM SEWER STRUCTURE
- ▽ PROPOSED FLARED END SECTION



**ARDEN PARK CREEK RESTORATION**  
**MINNEHAHA CREEK WATERSHED DISTRICT**  
**EDINA, MINNESOTA**



**DRAFT**

**OVERALL STORM SEWER AND BMP PLAN**

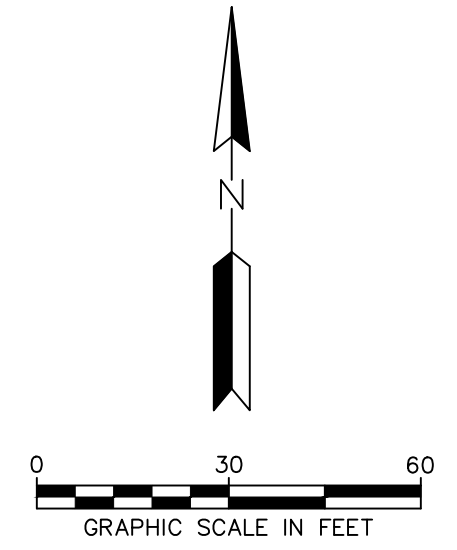
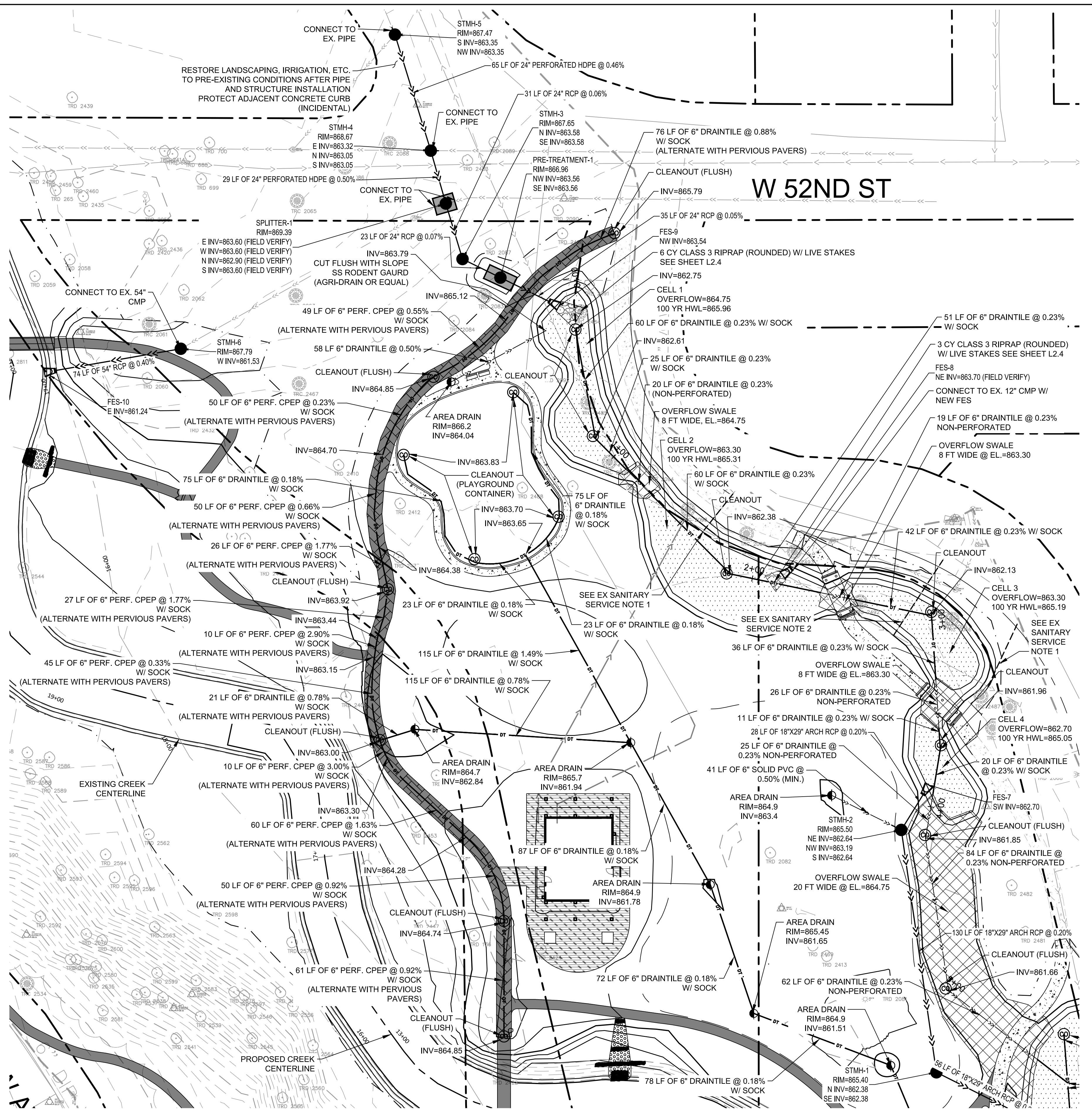
SHEET  
**C-501**

NO.	DATE	REVISION DESCRIPTION

DRAWN	DESIGNED	CHECKED
	9/28/2018	18-04-01
APPROVED	DATE	PROJECT





**LEGEND**

- PARCEL LINES
- EXISTING MINOR CONTOUR
- EXISTING MAJOR CONTOUR
- EXISTING FENCE
- EXISTING SANITARY SEWER
- EXISTING STORM SEWER
- EXISTING WATERMAIN
- EXISTING SANITARY SEWER MANHOLE
- EXISTING STORM SEWER CATCH BASIN
- STORM SEWER MANHOLE
- PROPOSED MAJOR CONTOUR
- PROPOSED MINOR CONTOUR
- PROPOSED STORM SEWER
- PROPOSED DRAINTILE (PERFORATED)
- PROPOSED CLEANOUT
- PROPOSED STORM SEWER STRUCTURE
- PROPOSED FLARED END SECTION
- PROPOSED STORMWATER FILTER CELL
- PROPOSED OVERFLOW SWALE
- PROPOSED PERMEABLE PAVERS (ALTERNATE)

- DRAINTILE NOTES:**
- DRAINTILE UNDER PERVIOUS PAVERS SHALL BE PERFORMED CPEP, EXCEPT WHERE NOTED AS "DRAINTILE", WHICH SHALL BE PERFORMED PVC.
  - DRAINTILE IN THE BIOFILTRATION SWALES AND OVERFLOW SWALES SHALL BE PVC SCH 40 PIPE, PERFORATED OR NON-PERFORATED AS NOTED ON THE PLANS.
  - DRAINTILE OUTSIDE OF THE SWALES SHALL BE PVC SCH 40 WITH GEOTEXTILE AND AGGREGATE PER DETAIL 4/C-508, EXCEPT FOR THE ALTERNATE PERVIOUS TRAILS AND PLAYGROUND CONTAINER.
  - DRAINTILE WITHIN THE PLAYGROUND CONTAINER SHALL BE CPEP.

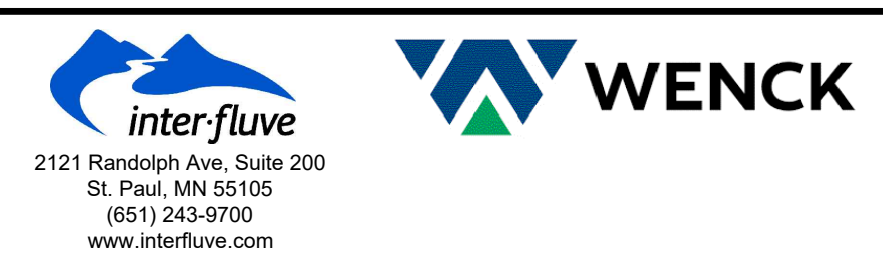
- EX SANITARY SERVICE NOTES:**
- LOCATE SANITARY SERVICE, EXPOSE SERVICE PIPE, AND INSULATE W/ 4" POLYSTYRENE WITH GRANULAR BEDDING, BACKFILL AND COMPACT AS DIRECTED BY CITY AND ENGINEER.
  - LOCATE SANITARY SERVICE, EXPOSE SERVICE PIPE, REMOVE SANITARY PIPE AND REQUIRED SECTION OF RISER PIPE WITHIN THE SWALE CELL FOOTPRINT, INSTALL NEW PVC SDR 26 PIPE AND FITTINGS (VERIFY PIPE SIZE AND TYPE IN FIELD) AT LOWER INVERT (UP TO 2.5 FT LOWER THAN EXISTING). CONNECT TO EXISTING RISER/SERVICE PIPE WITH FERNCO 5002 SERIES STRONG BACK COUPLINGS (EXCEPT AT PVC TO PVC CONNECTIONS) AS DIRECTED BY CITY AND ENGINEER. INSULATE PIPE AS DIRECTED WITH 4" POLYSTYRENE W/ GRANULAR BEDDING PER DETAIL 3/C-509. RECONNECT TRACER WIRE AS REQUIRED. COORDINATE TEMPORARY SERVICE SHUTDOWN WITH RESIDENT AND CITY. EXISTING SANITARY MAIN LINE PIPE IS 24" CLAY LINED WITH CIPP. SANITARY SERVICES ARE CLAY OR DIP AT 4 INCH OR 6 INCH DIAMETER.

**STRUCTURE TABLE**

STRUCTURE	DETAIL	CASTING	SIZE	NOTES
SPLITTER-1	2/C-506	R-1733	8'X10'	1
STMH-1	PLATE #230/C-505	R-1733	5' Ø	
STMH-2	PLATE #230/C-505	R-1733	5' Ø	
STMH-3	PLATE #230/C-505	R-1733	4' Ø	
STMH-4	3/C-506	R-1733	7' Ø	
STMH-5	3/C-508	R-1733	4' Ø	
STMH-6	PLATE #230/C-505	R-1733	7' Ø	
PRE-TREATMENT-1	1/C-507	R-1733 & ACCESS HATCH	7'X15'	
FES-1	PLATE #240/C-505	--	27"X44" RC ARCH	3
FES-2	PLATE #240/C-505	--	27"X44" RC ARCH	3
FES-3	PLATE #240/C-505	--	27"X44" RC ARCH	3
FES-4	PLATE #240/C-505	--	27"X44" RC ARCH	3
FES-5	PLATE #240/C-505	--	18"X29" RC ARCH	3
FES-6	PLATE #240/C-505	--	12" HDPE	1,2
FES-7	PLATE #240/C-505	--	18"X29" RC ARCH	3
FES-8	PLATE #240/C-505	--	12" HDPE	1,2
FES-9	PLATE #240/C-505	--	24" RCP	3
FES-10	PLATE #240/C-505	--	54" RCP	3

- TABLE NOTES:**
- FIELD VERIFY PIPE SIZES, LOCATIONS, AND INVERTS.
  - CONNECT TO EXISTING PIPE AT REMOVAL LOCATION PER MANUFACTURER REQUIREMENTS.
  - PROVIDE TRASH RACK

**ARDEN PARK CREEK RESTORATION**  
**MINNEHAHA CREEK WATERSHED DISTRICT**  
**EDINA, MINNESOTA**



**DRAFT**

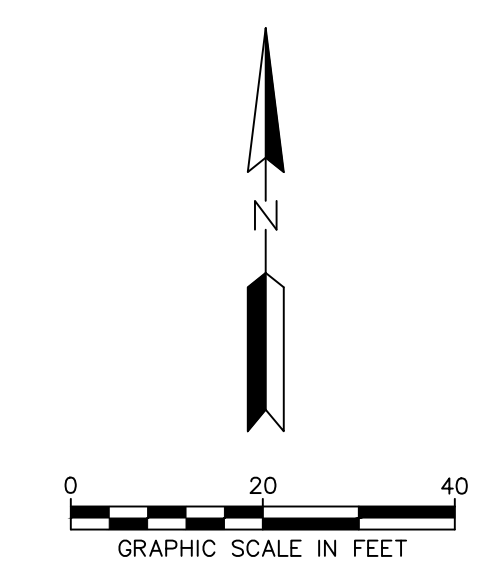
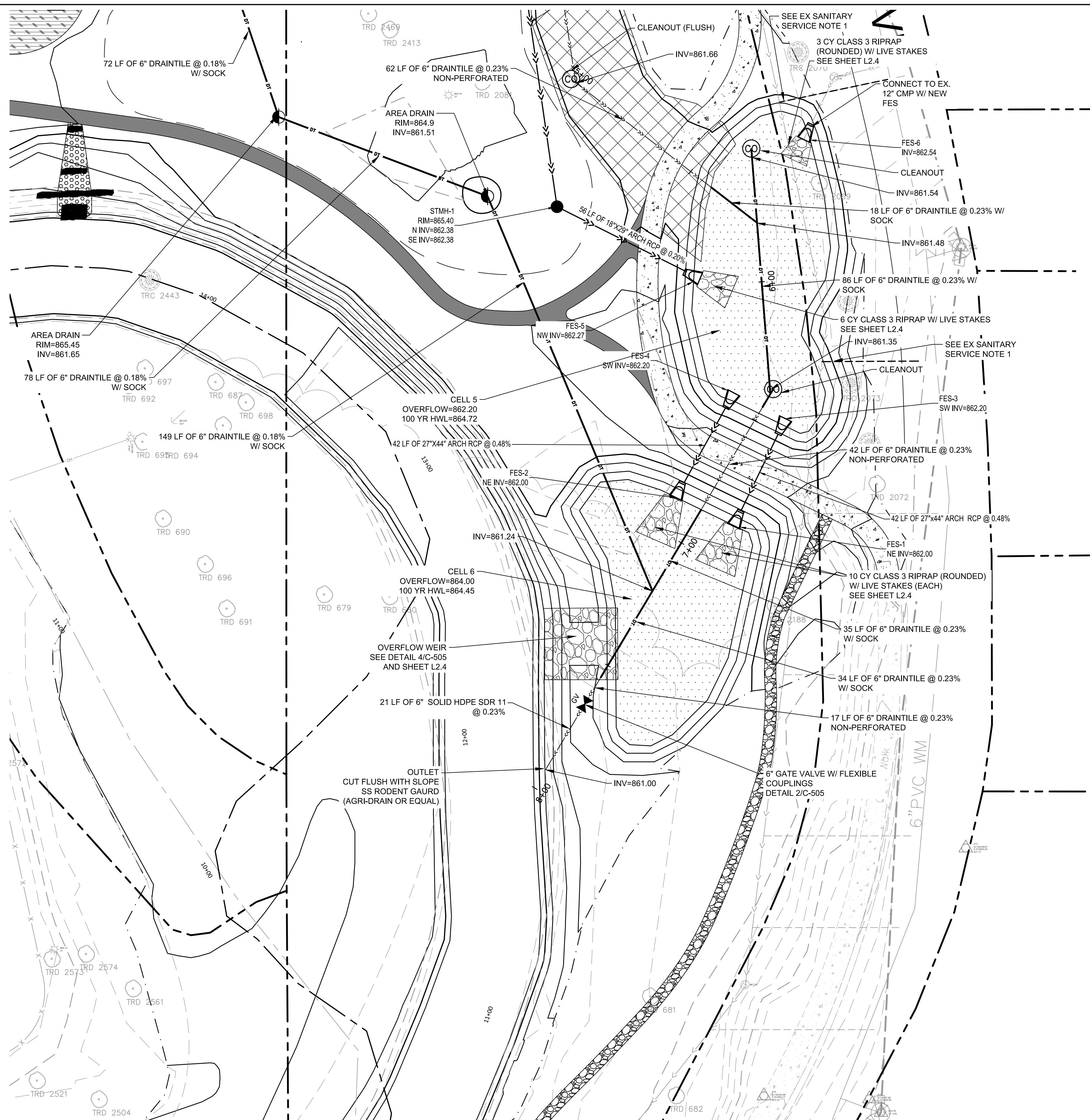
**STORM SEWER AND BMP PLAN NORTH**

SHEET  
**C-502**

NO.	DATE	REVISION DESCRIPTION

APPROVED	DESIGNED	CHECKED
	9/28/2018	18-04-01
	DATE	PROJECT





**LEGEND**

—	PARCEL LINES
- - - 859	EXISTING MINOR CONTOUR
- - - 860	EXISTING MAJOR CONTOUR
- x - x -	EXISTING FENCE
- - - - -	EXISTING SANITARY SEWER
- - - - -	EXISTING STORM SEWER
- - - - -	EXISTING WATERMAIN
⊙	EXISTING SANITARY SEWER MANHOLE
⊙	EXISTING STORM SEWER CATCH BASIN
⊙	STORM SEWER MANHOLE
— 880	PROPOSED MAJOR CONTOUR
— 879	PROPOSED MINOR CONTOUR
- - - - -	PROPOSED STORM SEWER
- dt -	PROPOSED DRAINTILE(PERFORATED)
⊙	PROPOSED CLEANOUT
●	PROPOSED STORM SEWER STRUCTURE
▭	PROPOSED FLARED END SECTION
▭	PROPOSED STORMWATER FILTER CELL
▭	PROPOSED OVERFLOW SWALE
▭	PROPOSED PERMEABLE PAVERS (ALTERNATE)

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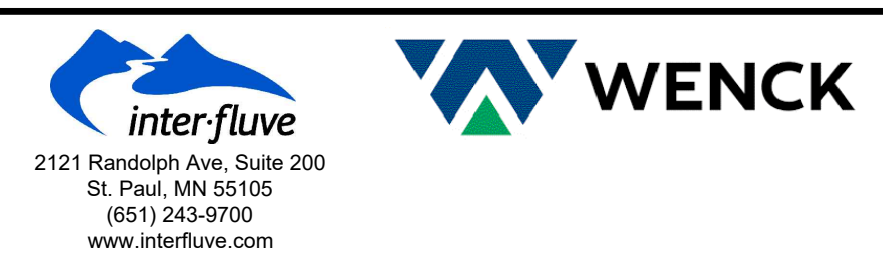
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FES-10	PLATE #240/C-505	--	54" RCP	3

- TABLE NOTES:**
1. FIELD VERIFY PIPE SIZES, LOCATIONS, AND INVERTS.
  2. CONNECT TO EXISTING PIPE AT REMOVAL LOCATION PER MANUFACTURER REQUIREMENTS.
  3. PROVIDE TRASH RACK

**ARDEN PARK CREEK RESTORATION  
MINNEHAHA CREEK WATERSHED DISTRICT  
EDINA, MINNESOTA**



**DRAFT**

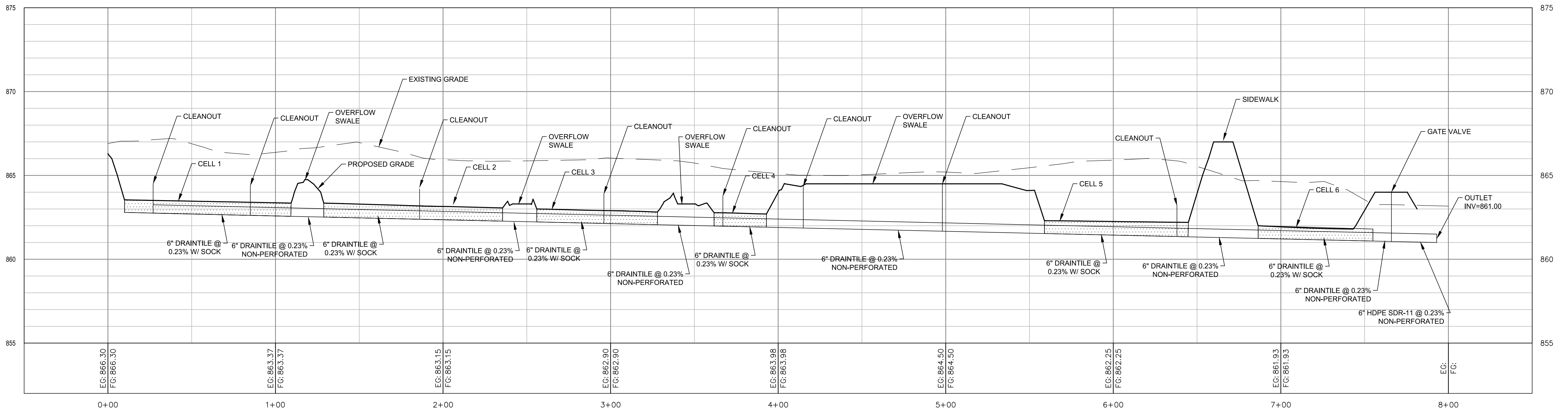
**STORM SEWER AND  
BMP PLAN SOUTH**

SHEET  
**C-503**

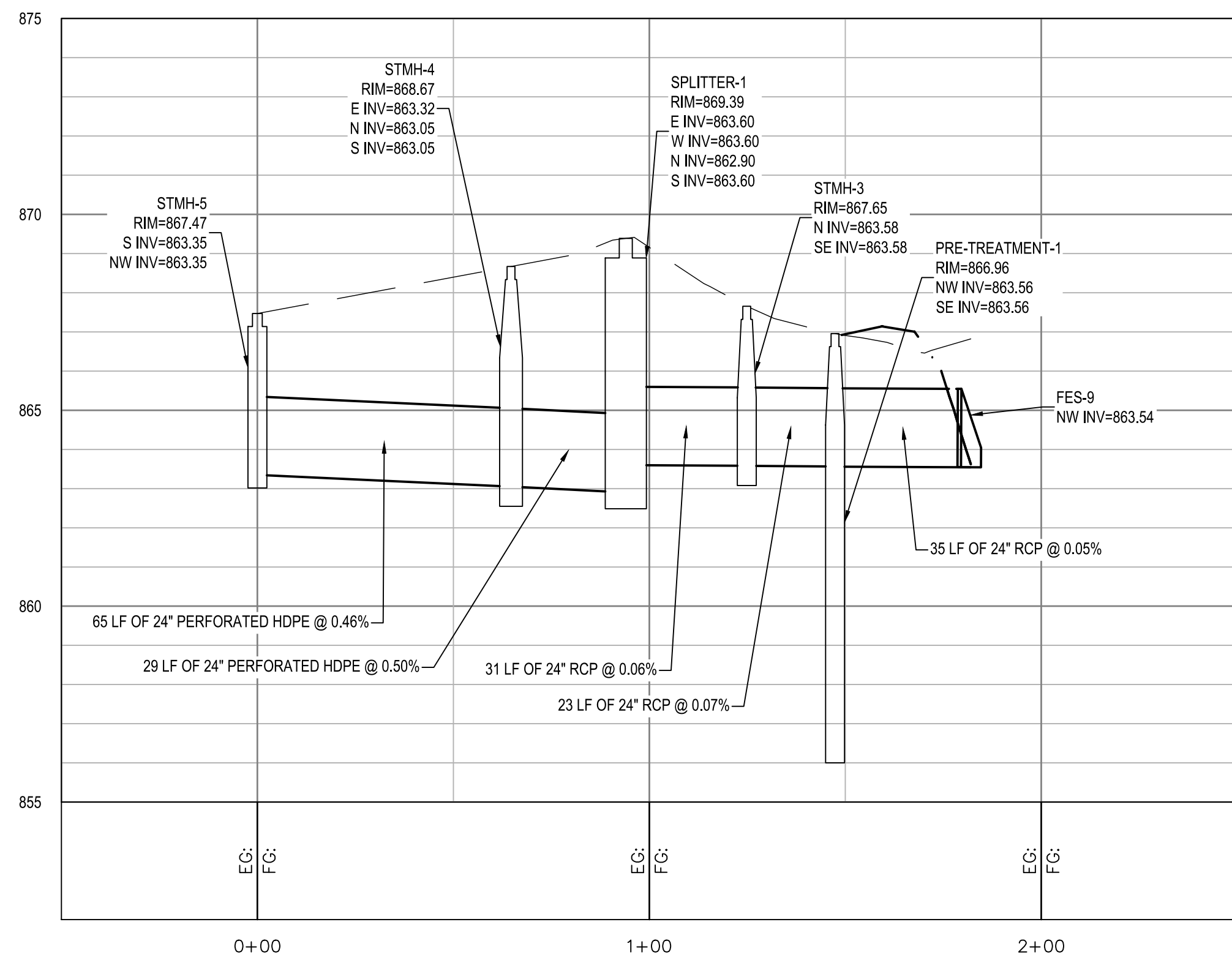
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	9/28/2018	18-04-01	
APPROVED	DATE	PROJECT	

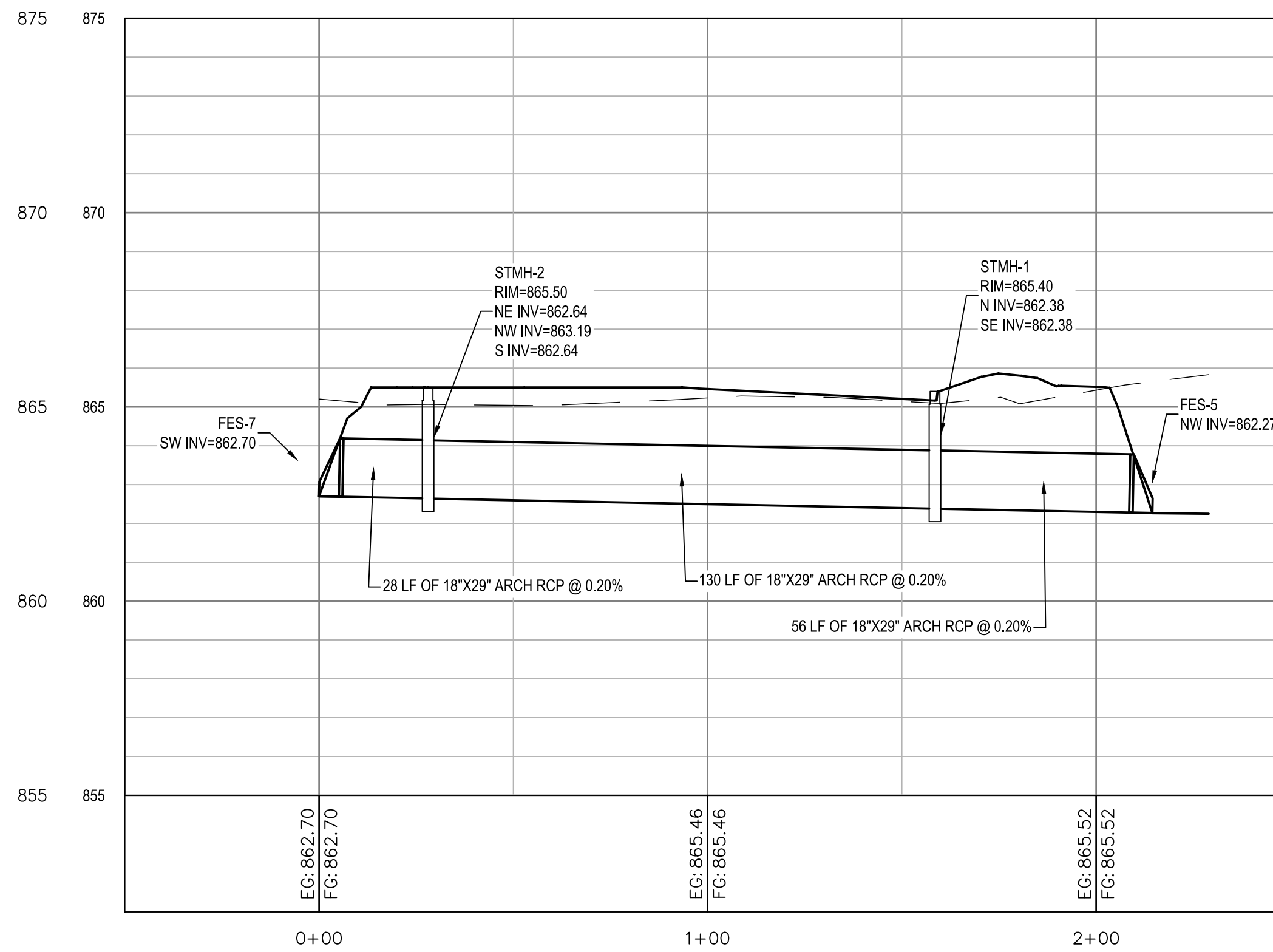




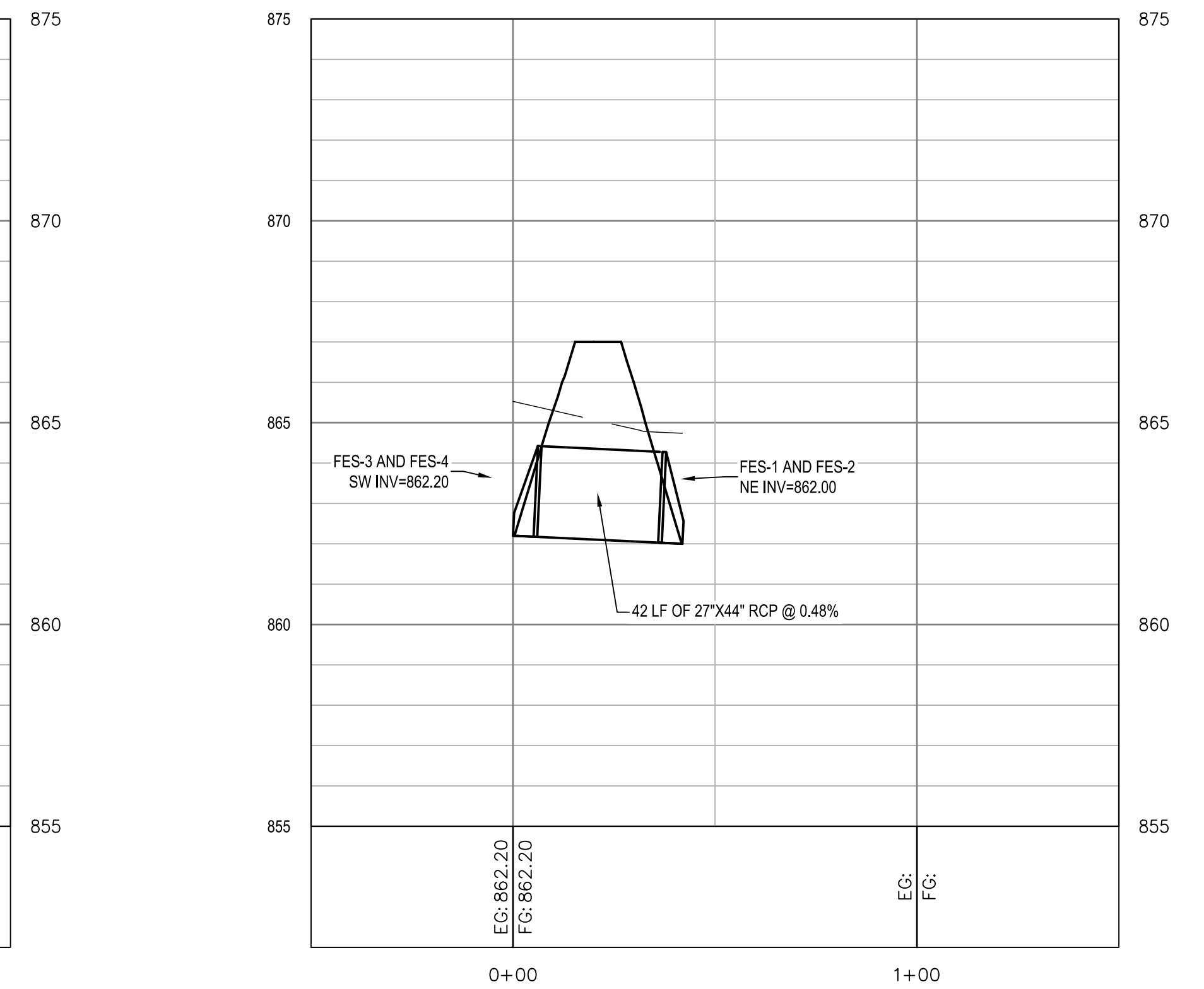
**FILTRATION SWALE CELLS PROFILE**



**STMH-5 TO FES-9 PROFILE**



**FES-7 TO FES-5 PROFILE**



**FES-3 & FES-4 TO FES-1 & FES-2 PROFILE**

NO.	DATE	REVISION DESCRIPTION

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**ARDEN PARK CREEK RESTORATION**  
**MINNEHAHA CREEK WATERSHED DISTRICT**  
**EDINA, MINNESOTA**

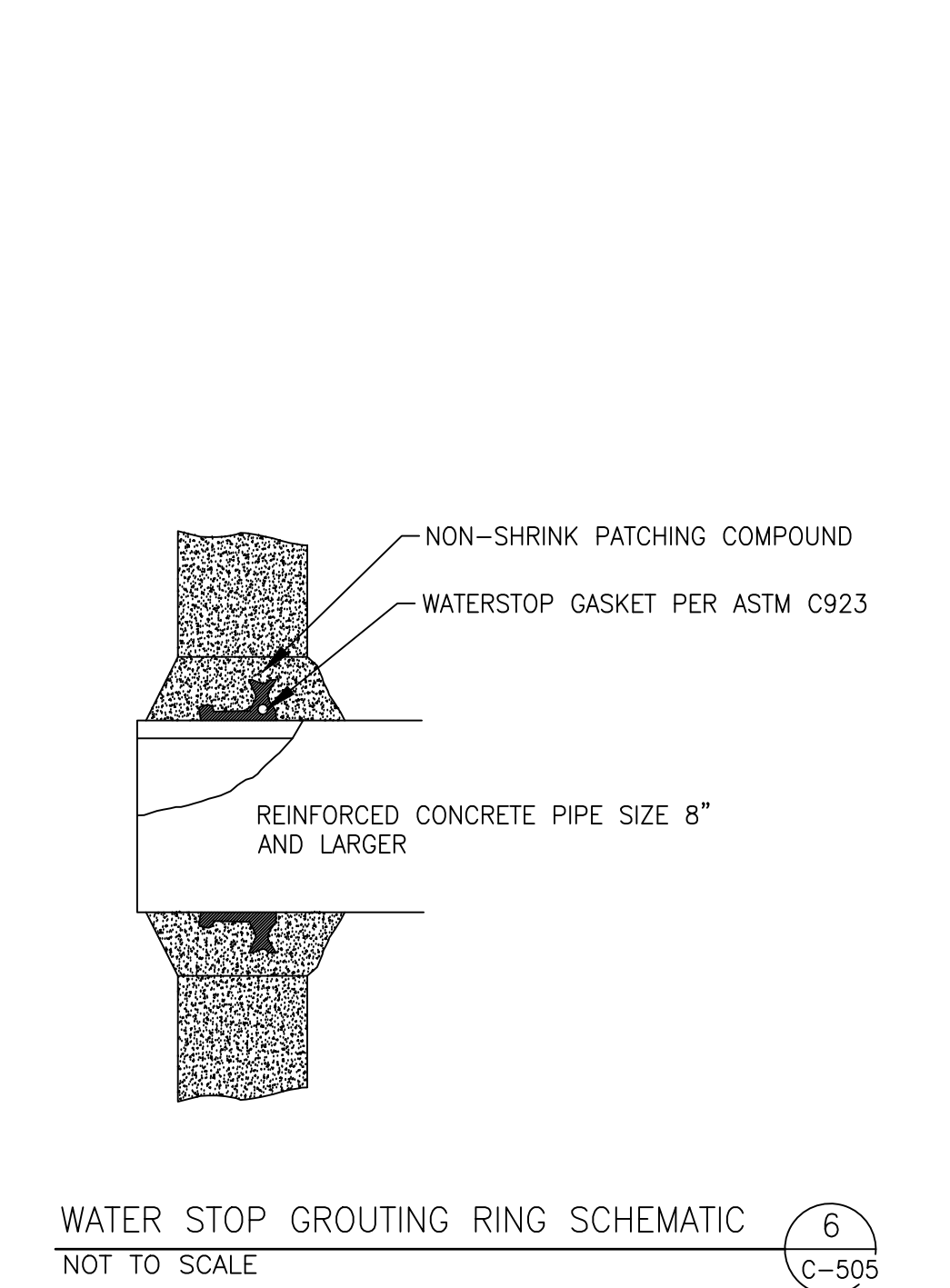
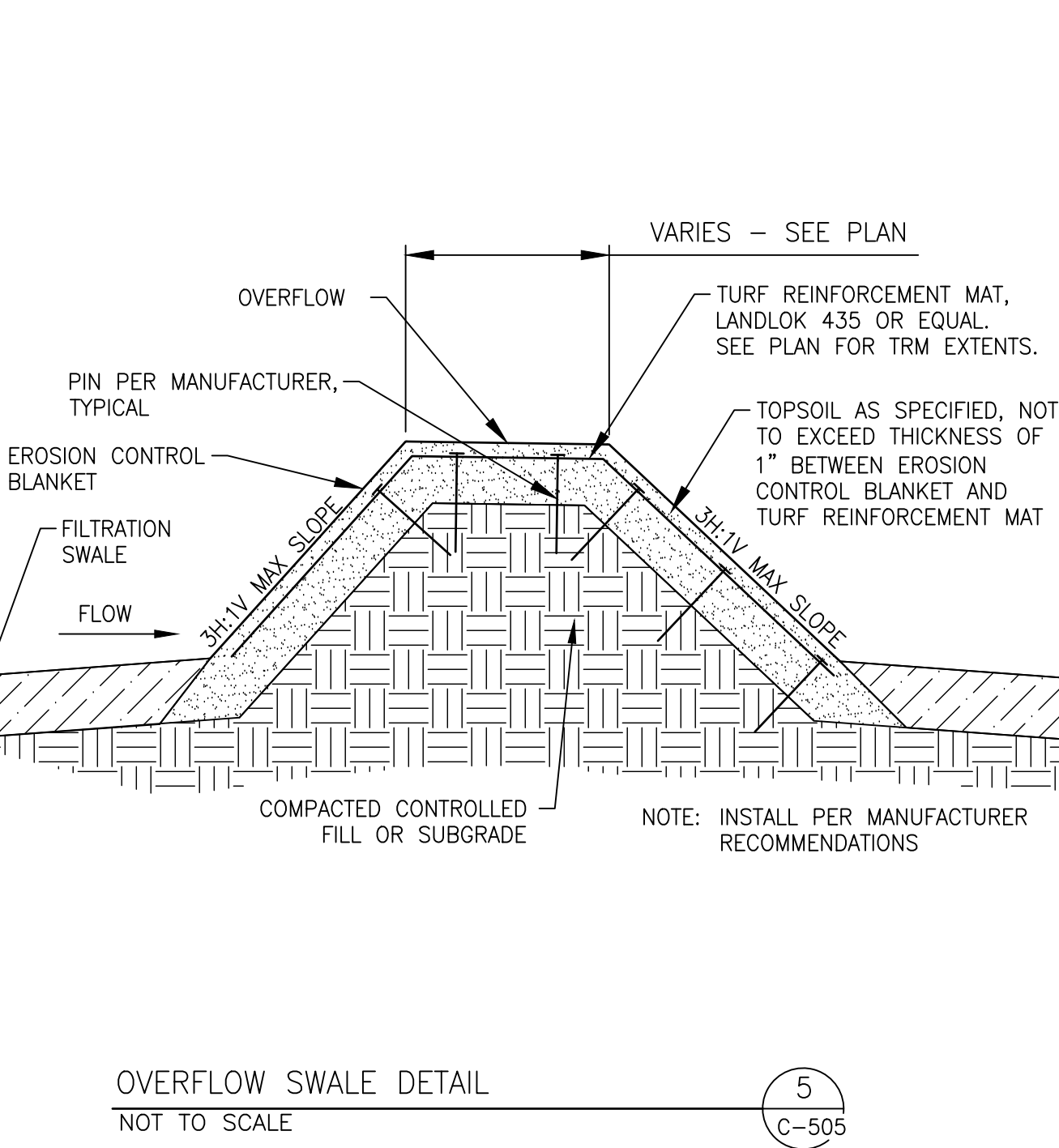
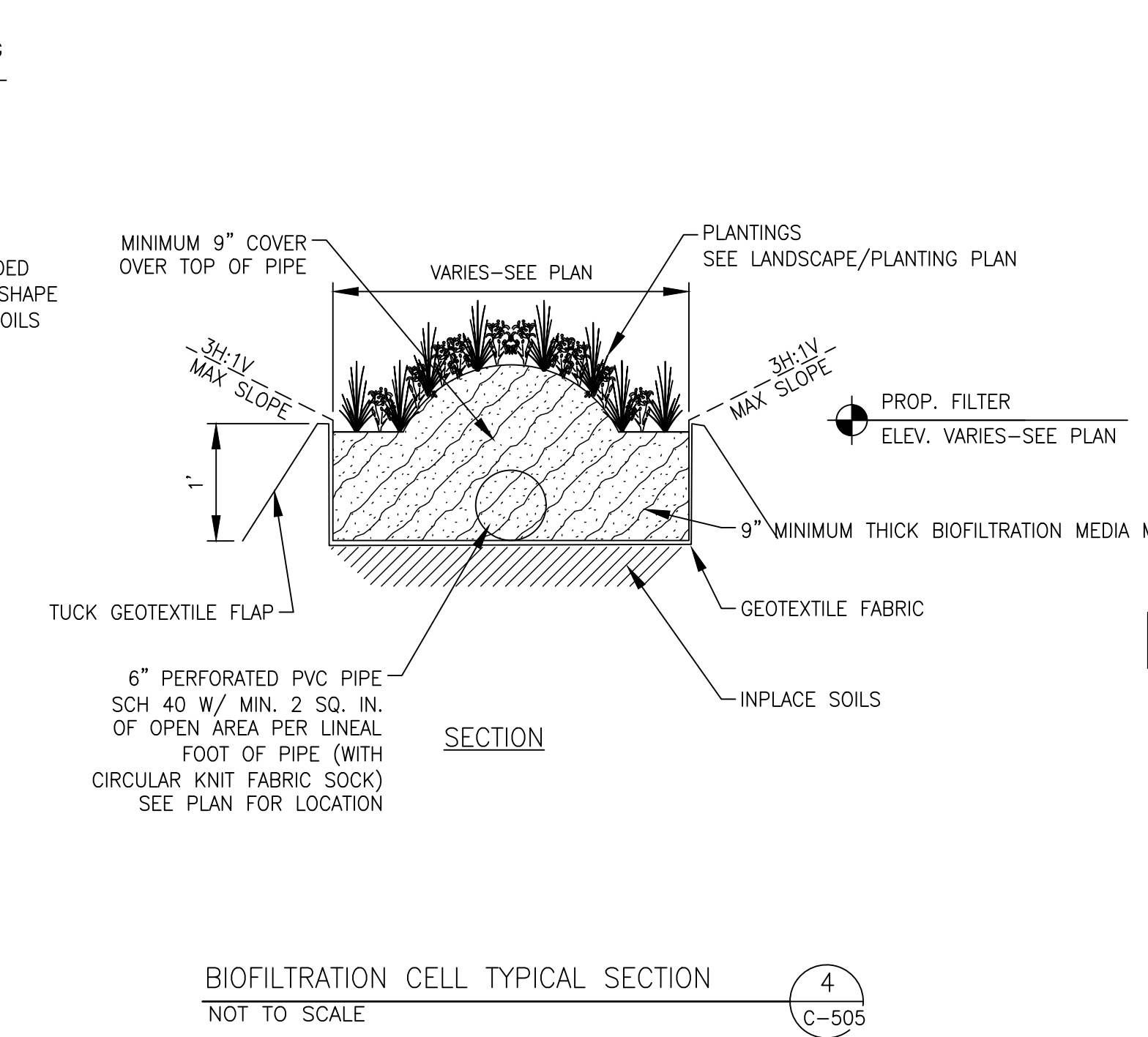
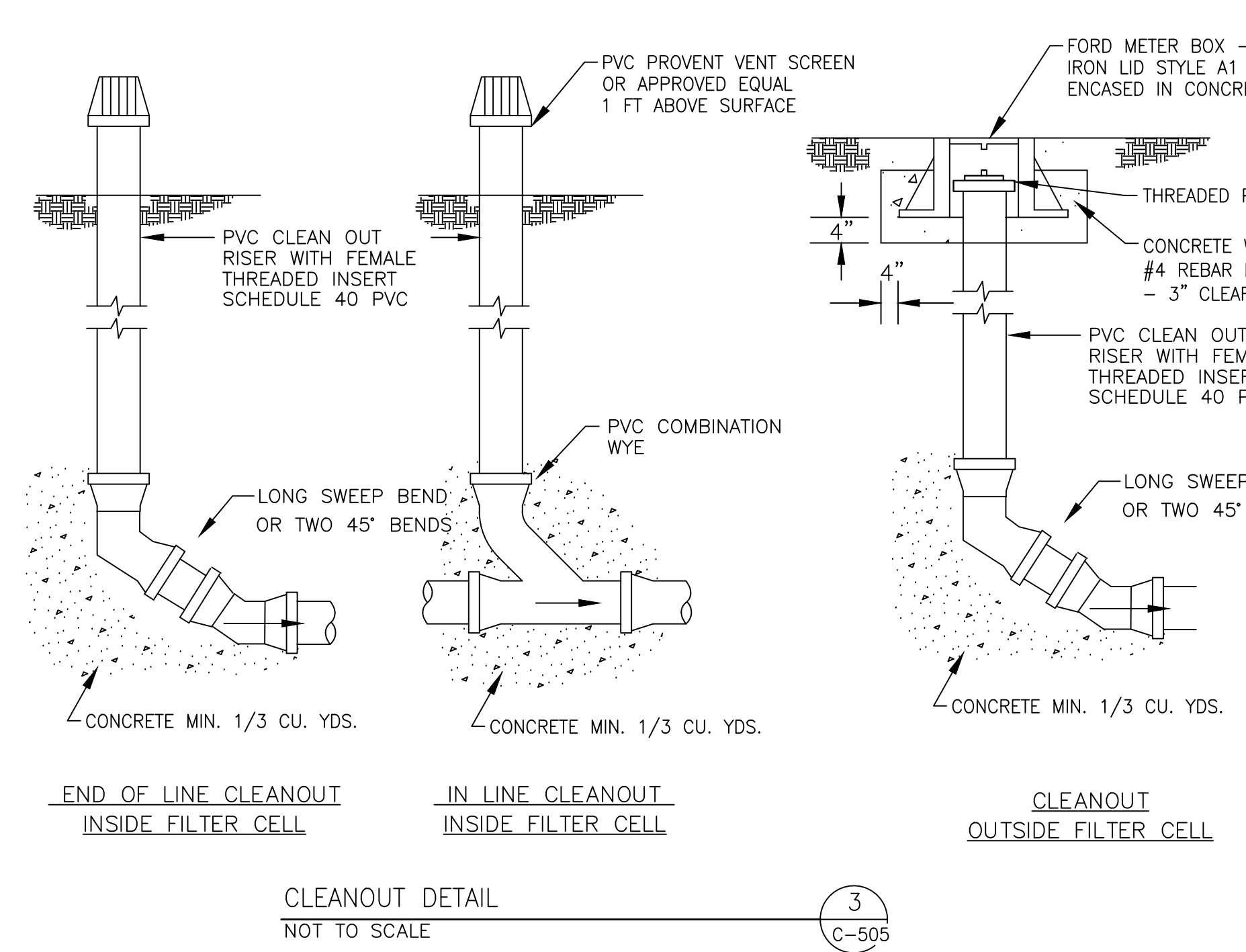
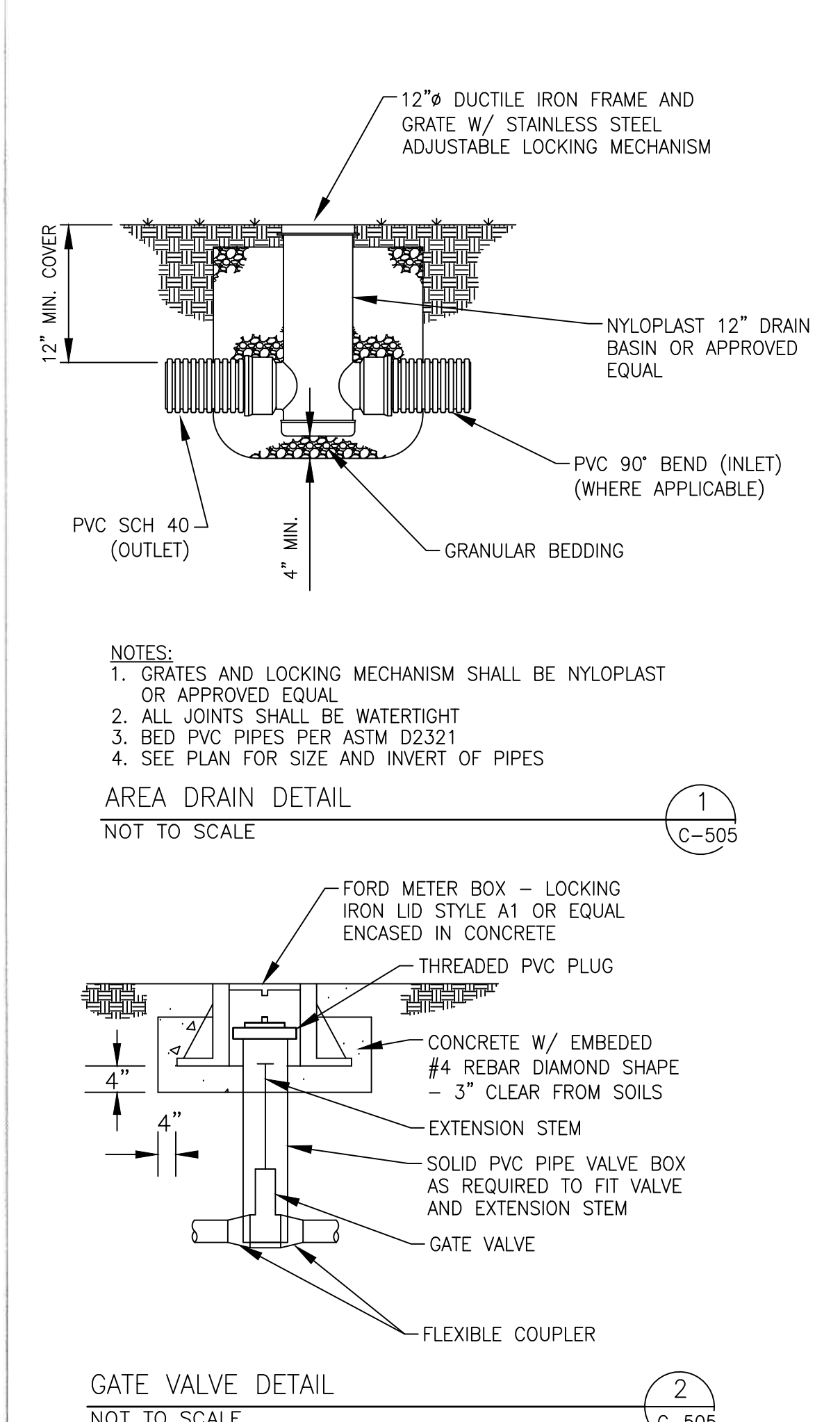
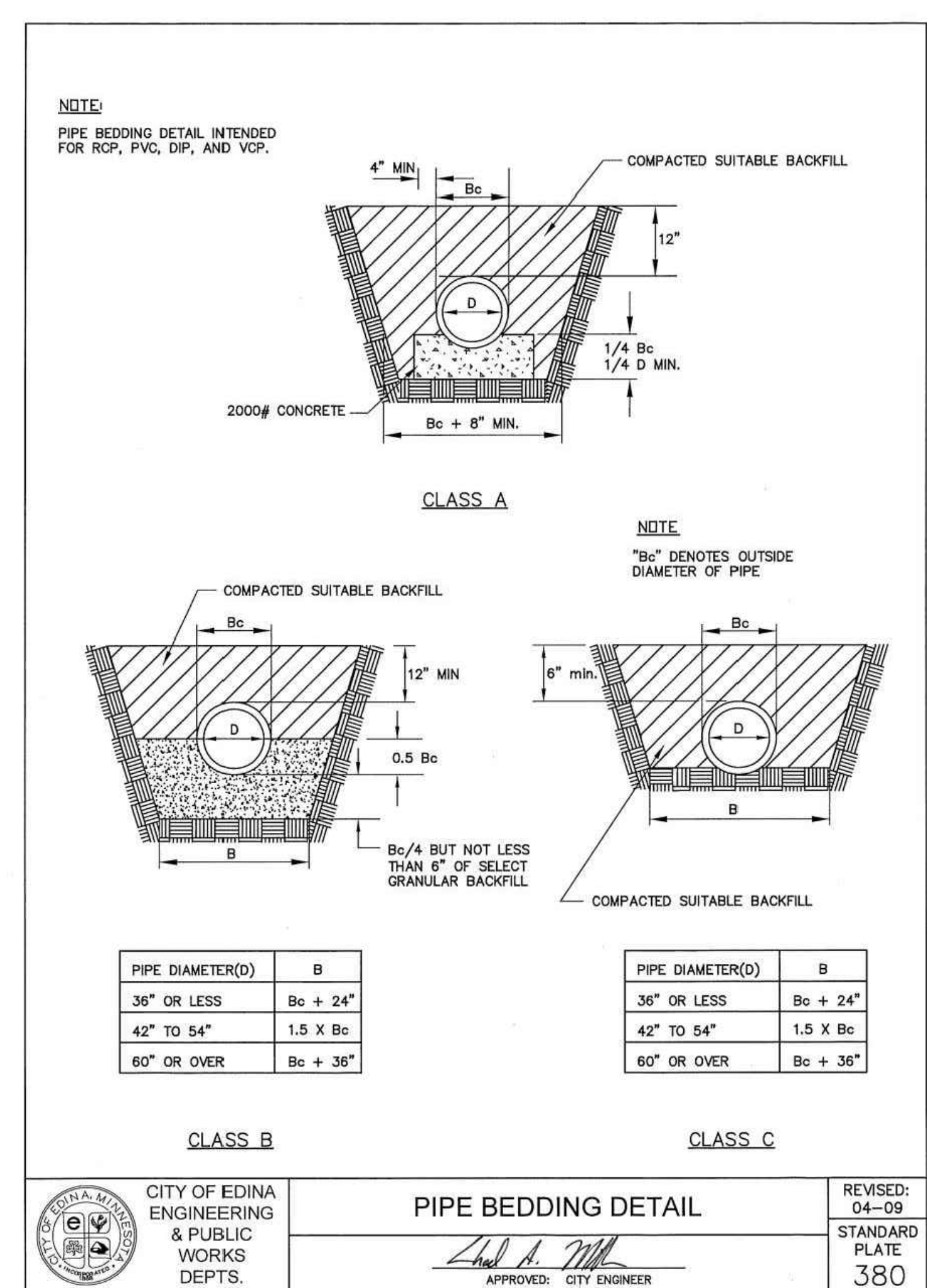
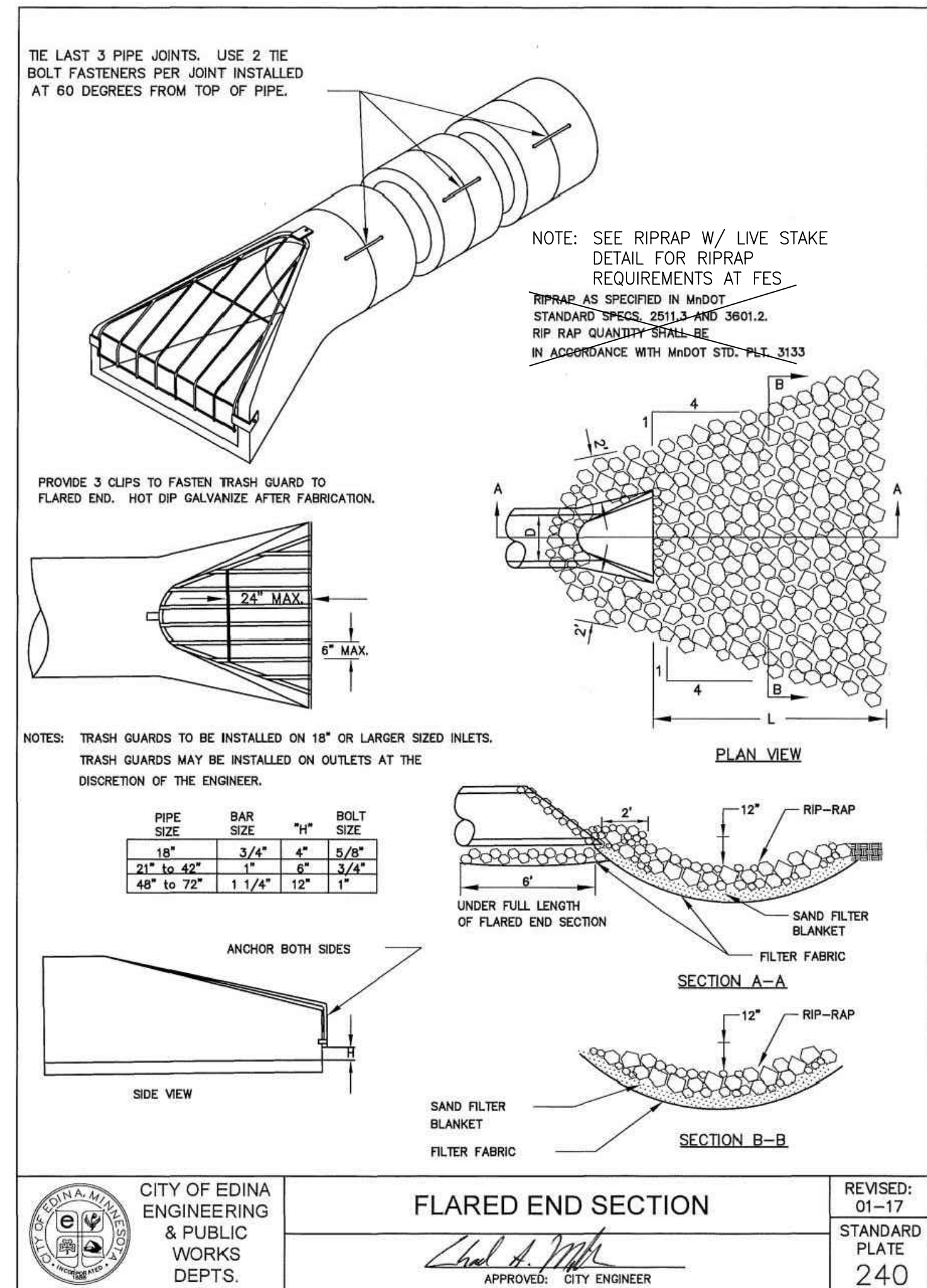
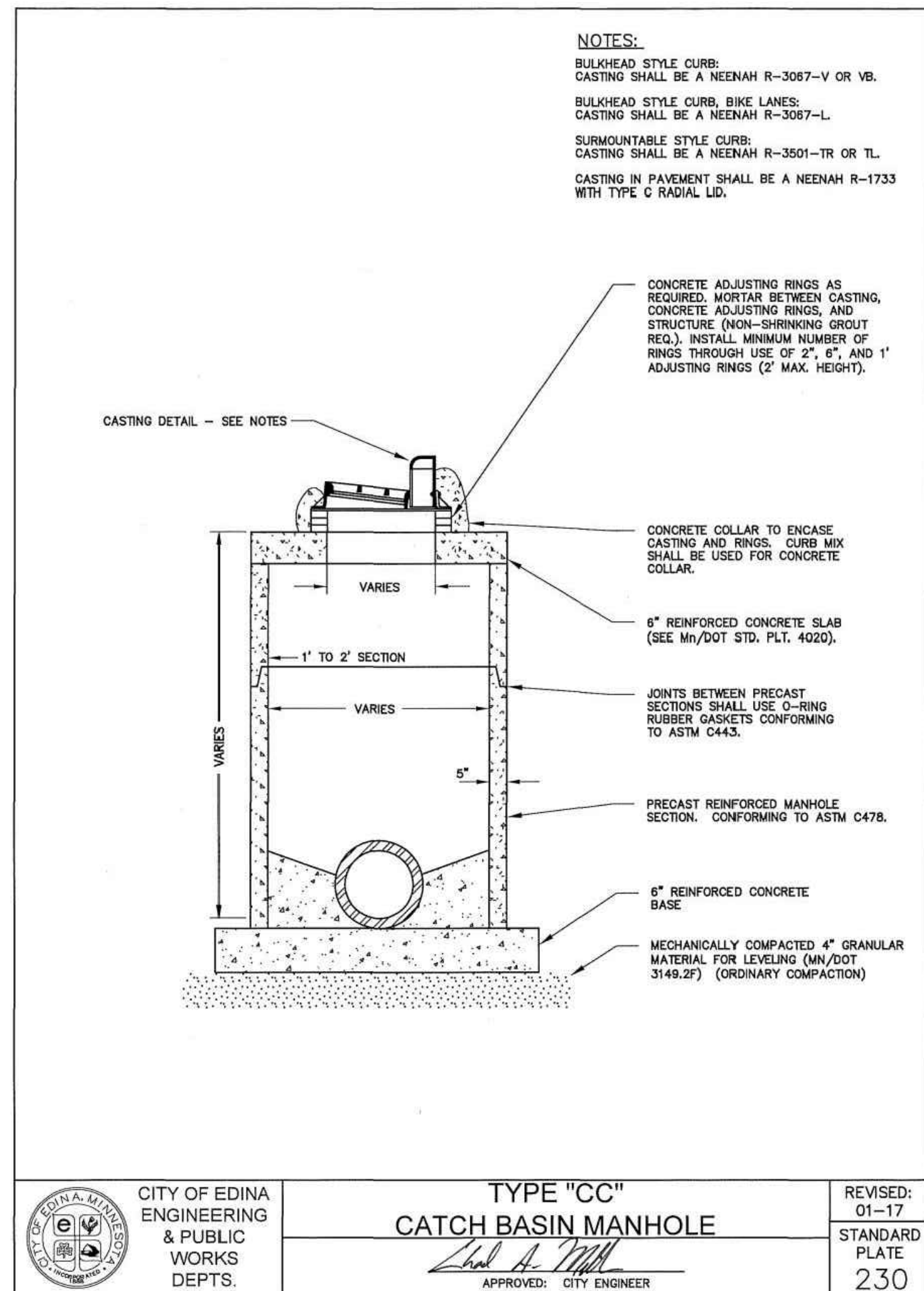


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**PROFILES**

SHEET  
**C-504**





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	9/28/2018	18-04-01
APPROVED	DATE	PROJECT

**ARDEN PARK CREEK RESTORATION**  
**MINNEHAHA CREEK WATERSHED DISTRICT**  
**EDINA, MINNESOTA**

interfluve  
 2121 Randolph Ave. Suite 200  
 St. Paul, MN 55105  
 (651) 243-9700  
 www.interfluve.com

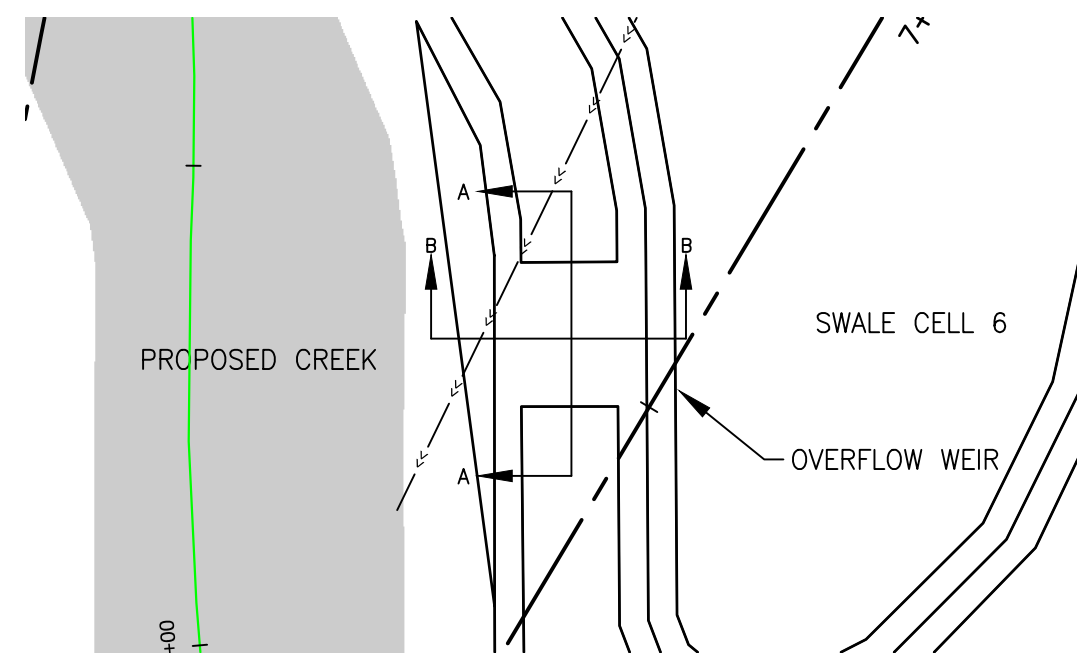
**WENCK**

**DRAFT**

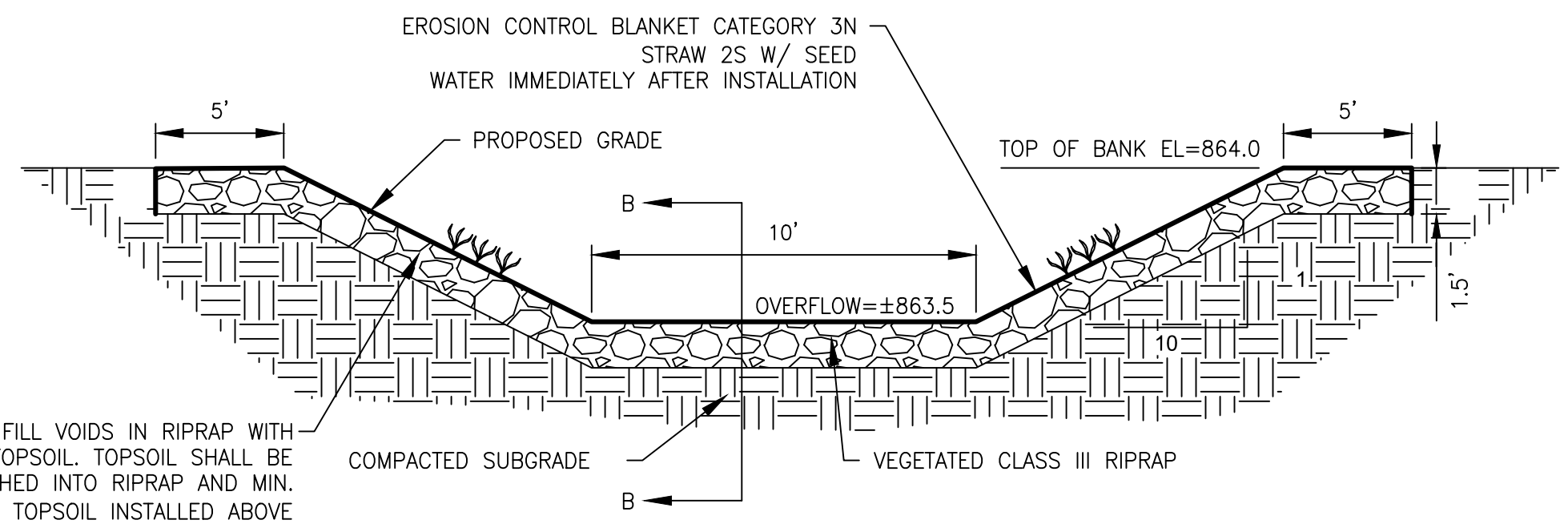
**DETAILS**

SHEET  
**C-505**

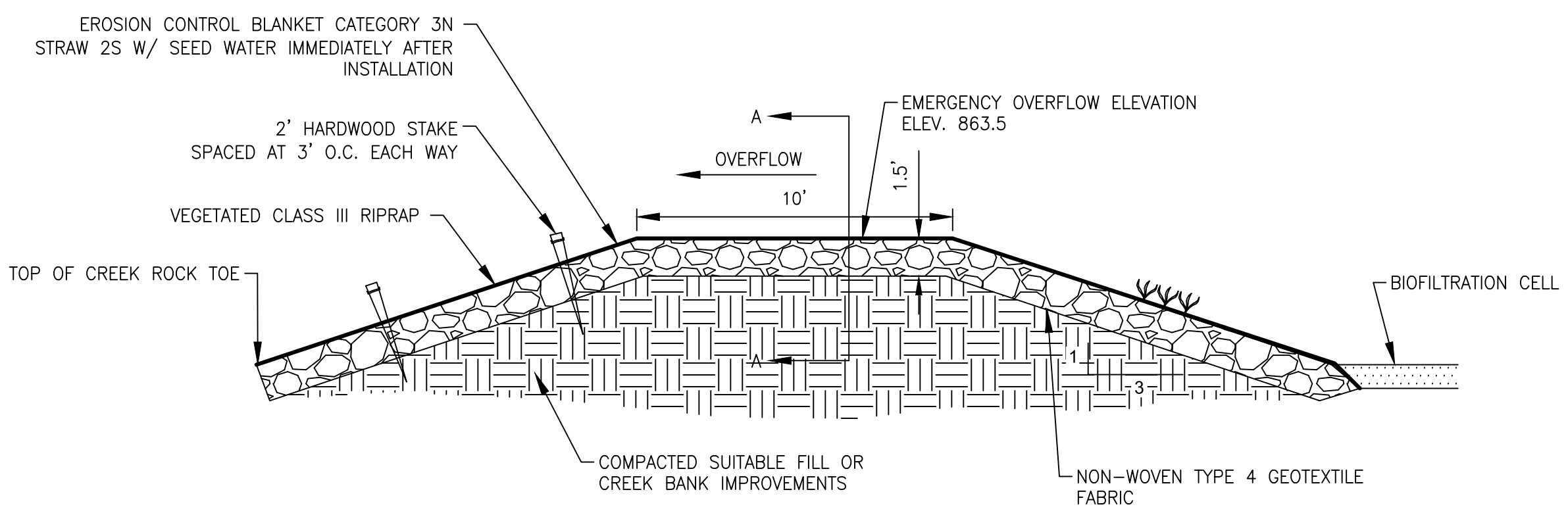




PLAN VIEW



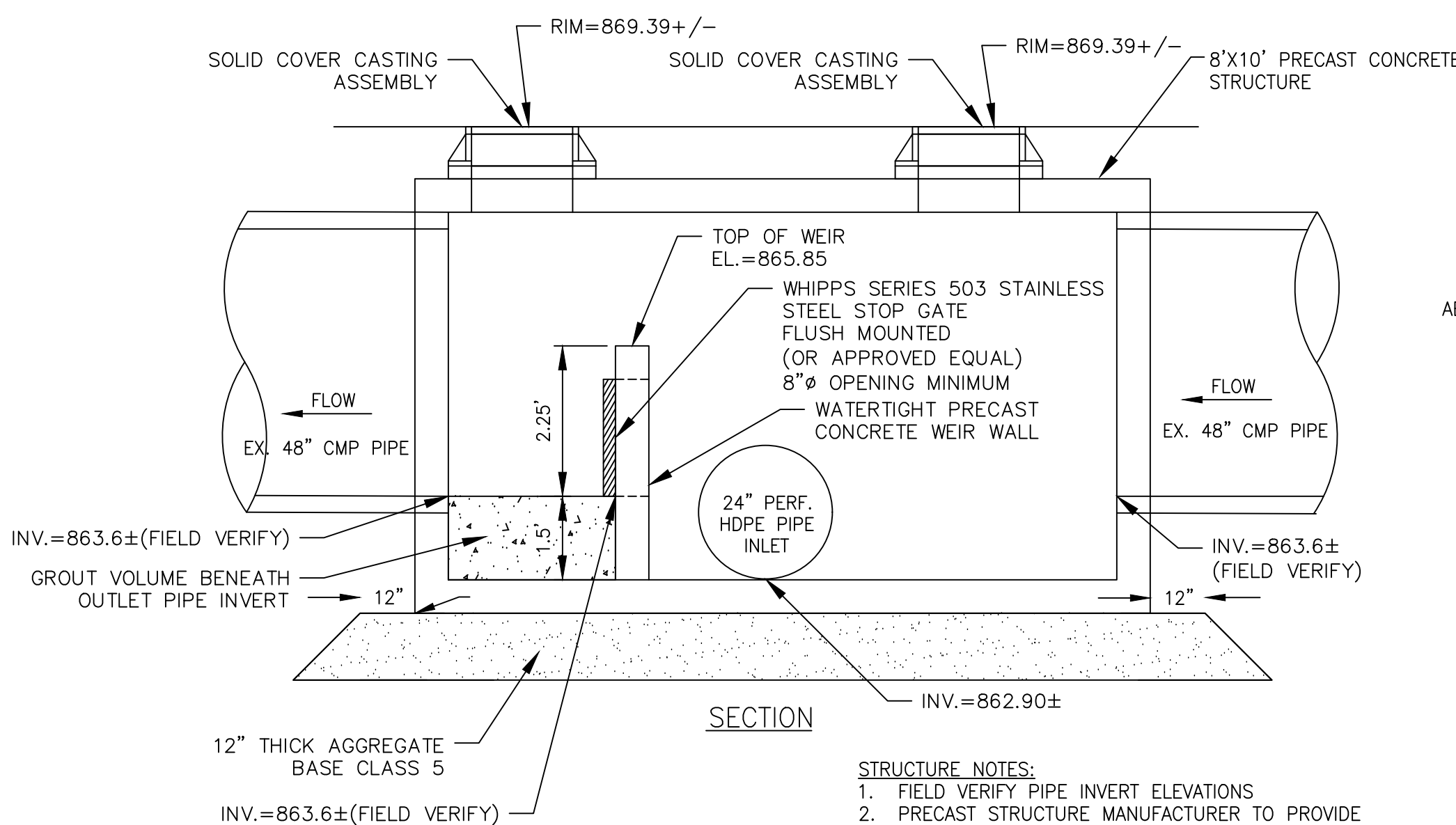
SECTION A-A



SECTION B-B

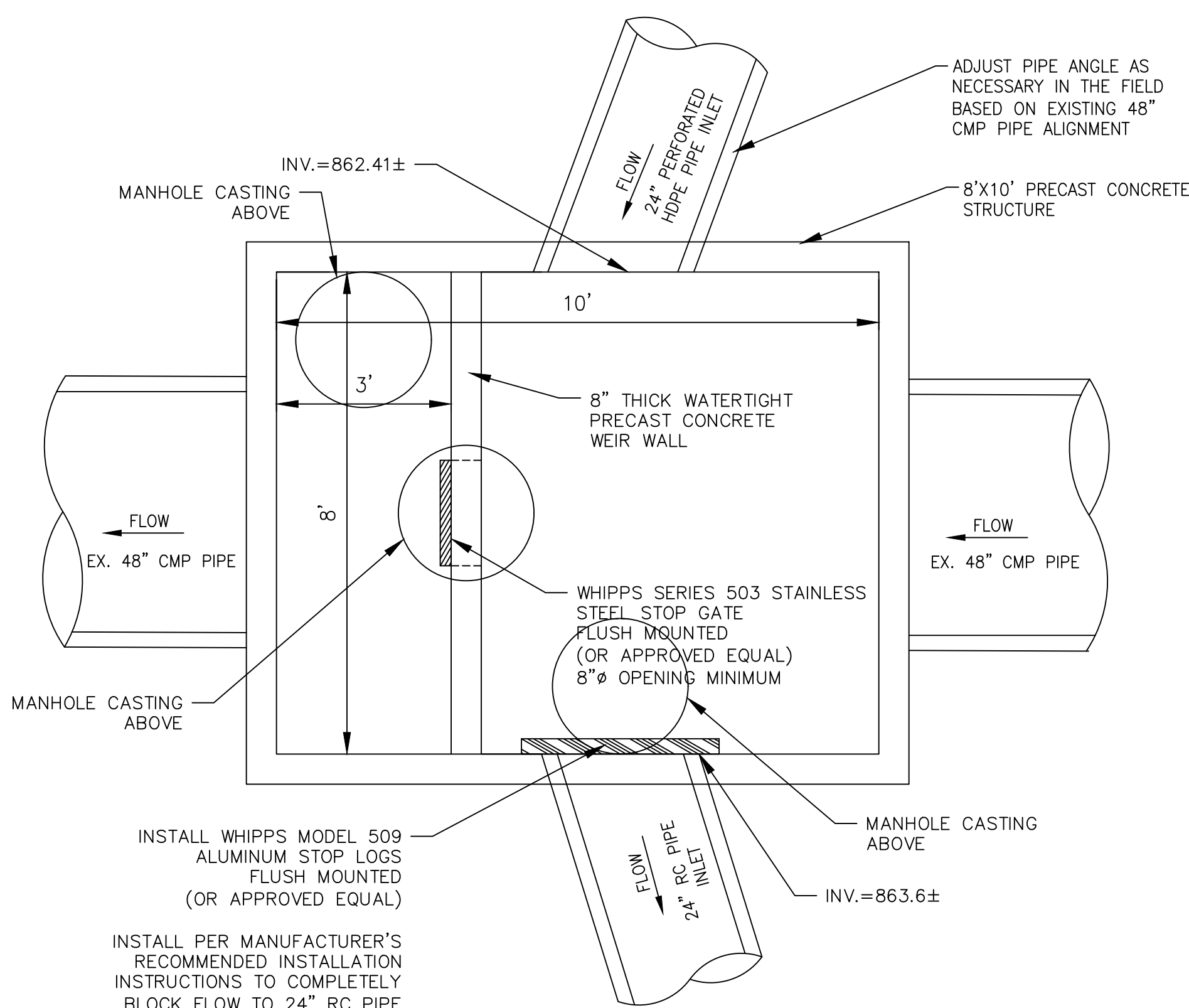
OVERFLOW WEIR DETAIL  
NOT TO SCALE

1  
C-506



SECTION

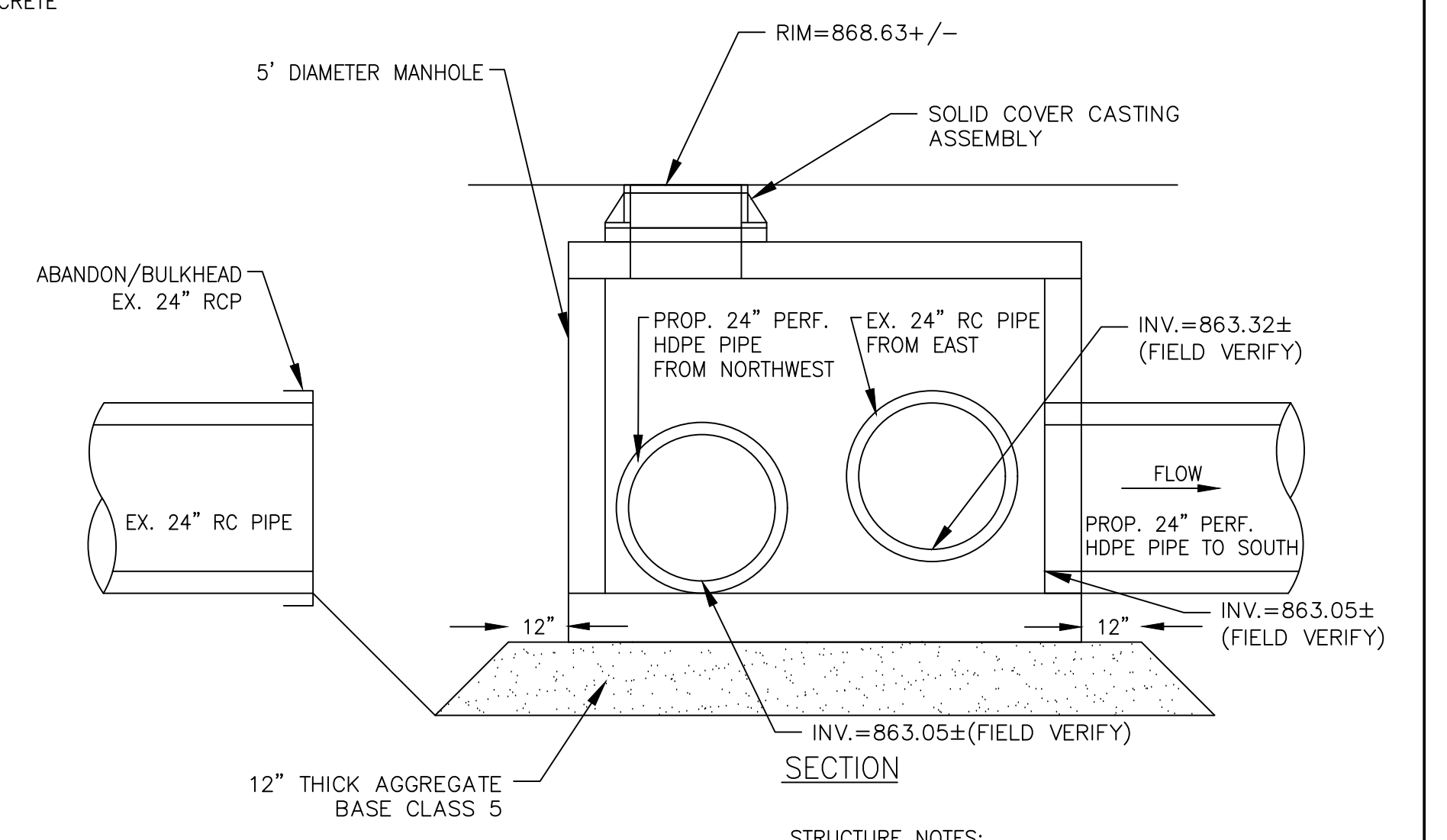
- STRUCTURE NOTES:
1. FIELD VERIFY PIPE INVERT ELEVATIONS
  2. PRECAST STRUCTURE MANUFACTURER TO PROVIDE DOWELING/CONNECTIONS AND WATERSTOP AS REQUIRED AT BASE JOINT AND WEIR WALL JOINTS
  3. DOGHOUSES MUST BE GROUTED BOTH INSIDE AND OUTSIDE STRUCTURE AND SHALL BE WATERTIGHT. GROUT WITH HYDRAULIC CEMENT REPAIR MORTAR.
  4. INCREASE OPENING WIDTH OF 48" PIPE CONNECTION TO ALLOW FOR FIELD ADJUSTMENT AS STRUCTURE WILL BE PLACED ALONG EXISTING LONG RADIUS BENDS.
  5. PROVIDE TEMPORARY STOPLOG TO BLOCK FLOW TO THE SWALES UNTIL VEGETATION IS ESTABLISHED.



PLAN VIEW

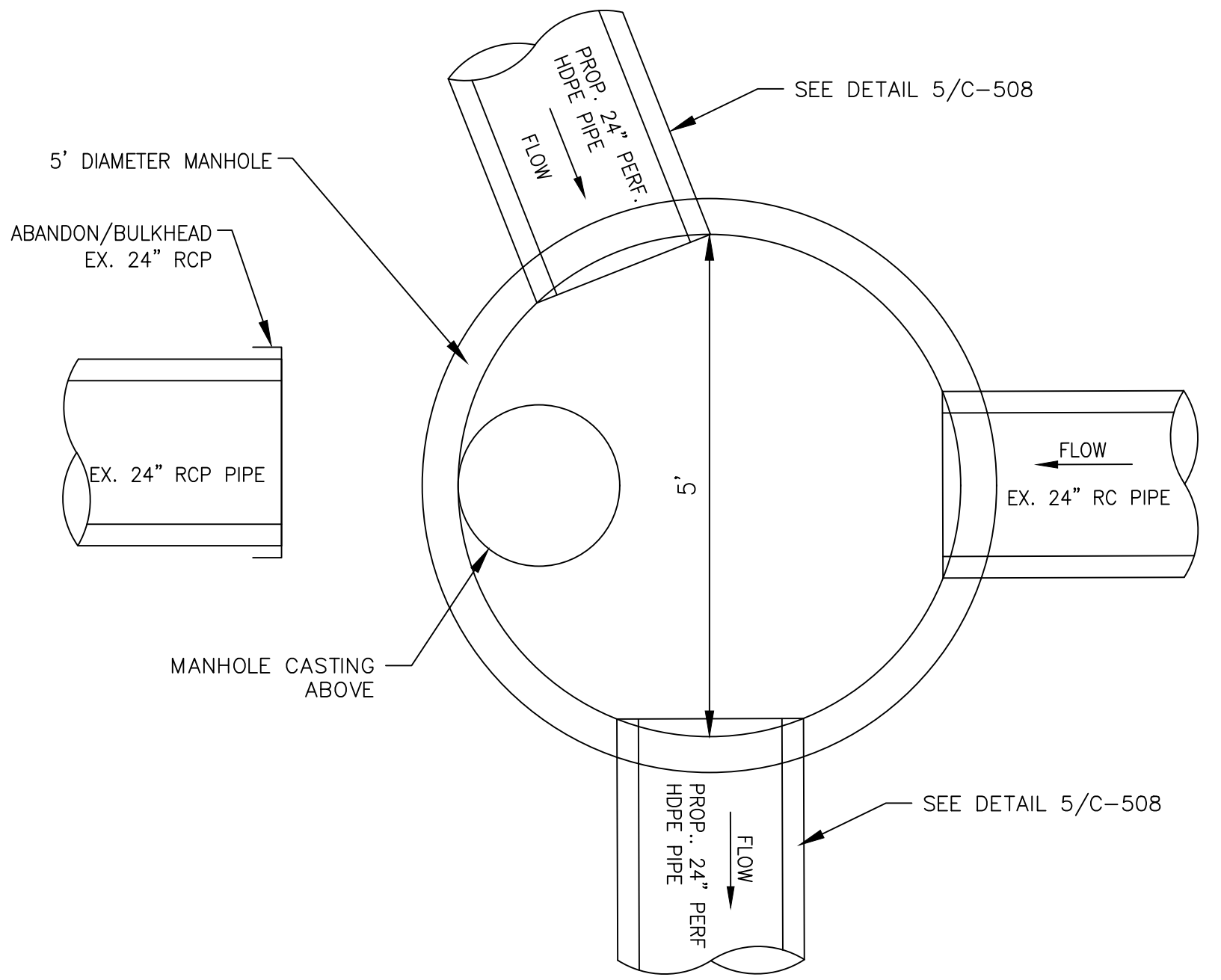
PRECAST CONCRETE - SPLITTER-1 STRUCTURE  
NOT TO SCALE

2  
C-506



SECTION

- STRUCTURE NOTES:
1. FIELD VERIFY PIPE INVERT ELEVATIONS
  2. PRECAST STRUCTURE MANUFACTURER TO PROVIDE DOWELING/CONNECTIONS AND WATERSTOP AS REQUIRED AT BASE JOINT AND WEIR WALL JOINTS
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PLAN VIEW

PRECAST CONCRETE - STMH-4 STRUCTURE  
NOT TO SCALE

3  
C-506

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ARDEN PARK CREEK RESTORATION  
MINNEHAHA CREEK WATERSHED DISTRICT  
EDINA, MINNESOTA

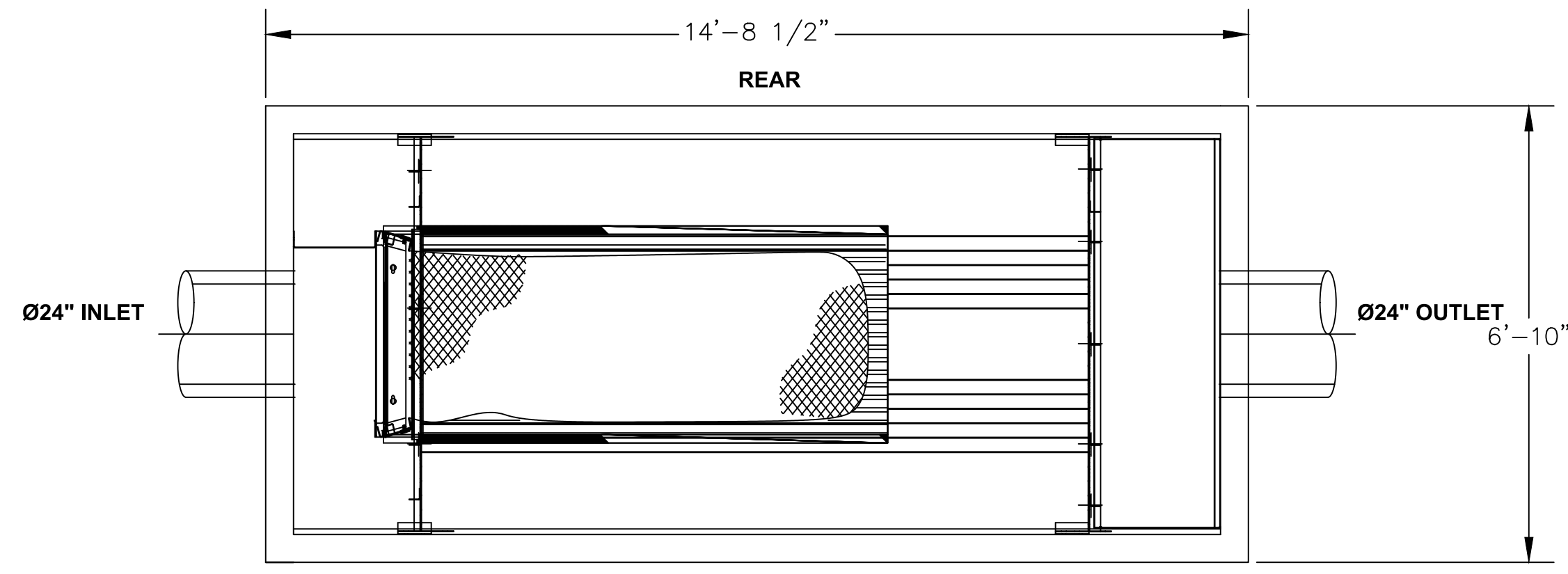


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DETAILS

SHEET  
C-506





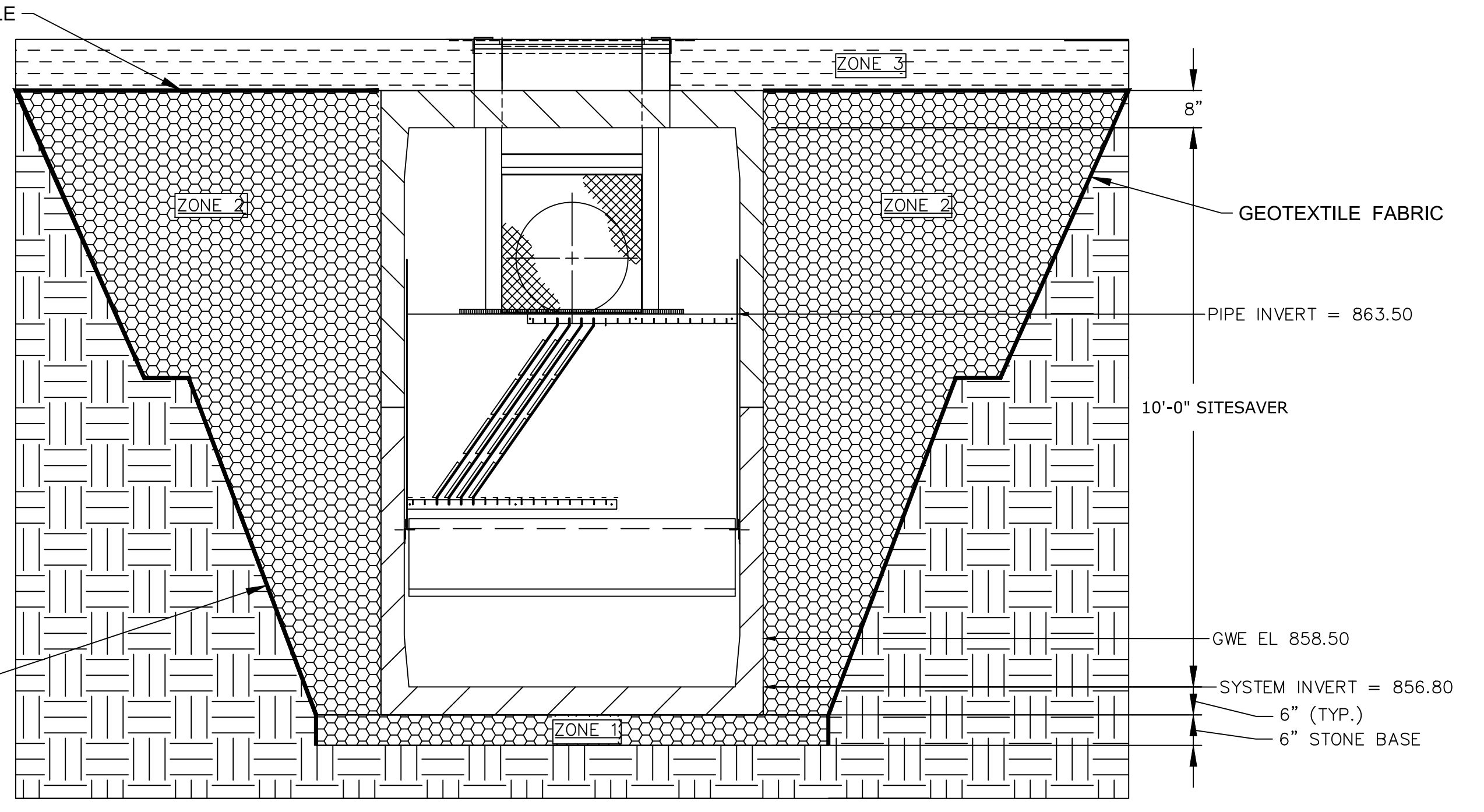
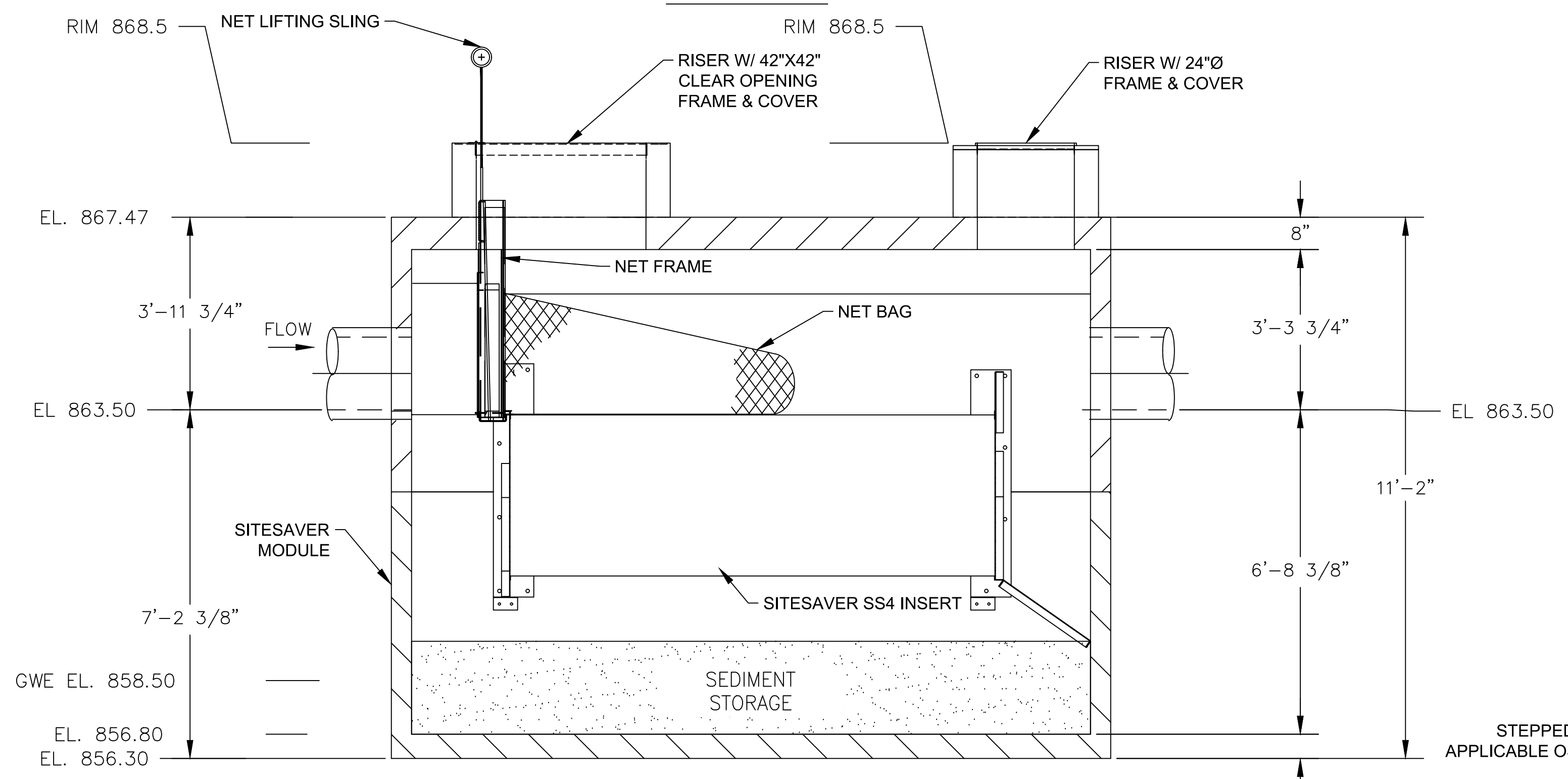
BILL OF MATERIALS	
QTY	DESCRIPTION
1	SITESAVER MODULE (TOP & BOTTOM)
1	42" X 42" HATCH
1	Ø24" MANHOLE FRAME & COVER
1	SITESAVER SS4 INSERT
3	NET BAG 303048
3	NET FRAME
3	NET LIFTING SLING (CABLE W/RING)
1	FIBERGLASS GRATING
1	INSTALLATION HARDWARE KIT
6	SWELLSTOP ROLLS

SYSTEM INFORMATION	
WATER QUALITY FLOW RATE:	26 CFS
PEAK FLOW RATE:	32.50 CFS
SEDIMENT STORAGE:	166.00 FT <sup>3</sup>
EFFECTIVE SETTLING AREA:	86.00 FT <sup>2</sup>
FOOTPRINT AREA:	104.80 FT <sup>2</sup>
INLET TYPE:	24" RCP (MAX)
OUTLET TYPE:	24" RCP (MAX)

- NOTES & SPECIFICATIONS:**
1. PROVIDE SITESAVER STSS-4 BY STORMTRAP OR APPROVED EQUAL.
  2. CONTRACTOR TO MAKE STRUCTURE WATERTIGHT IN THE FIELD.
  3. STRUCTURE TO HAVE HS-20 LOAD RATING WITH 6" MIN TO 10'-0" MAX EARTH COVER.
  4. APPROXIMATE GROUNDWATER ELEVATION = 858.50 AND SOIL DENSITY OF 120 PCF. MANUFACTURE TO DESIGN/PROVIDE ANTI-FLOTATION SYSTEM.
  5. SITESAVER SHALL BE INSTALLED IN ACCORDANCE WITH ASTM C891, STANDARD FOR INSTALLATION OF UNDERGROUND PRECAST CONCRETE UTILITY STRUCTURES AND MANUFACTURER REQUIREMENTS. STRUCTURE SHALL BE PLACED ON A LEVEL, 6" FOUNDATION OF 3/4" AGGREGATE EXTENDING 2 FEET PAST THE OUTSIDE OF THE SYSTEM AND PLACED ON PROPERLY COMPACTED SOILS. THE HORIZONTAL JOINT BETWEEN THE TOP AND BASE LEG CONNECTION OF THE SITESAVER MODULES SHALL BE SEALED WITH SIKA GREENSTREAK SWELLSTOP 3/4" X 1" PER MANUFACTURER'S INSTRUCTIONS.
  6. THE FILL PLACED AROUND THE SITESAVER MODULES MUST DEPOSITED ON BOTH SIDES AT THE SAME TIME AND TO APPROXIMATELY THE SAME ELEVATION. AT NO TIME SHALL THE FILL BEHIND ONE SIDE WALL BE MORE THAN 2'-0" HIGHER THAN THE FILL ON THE OPPOSITE SIDE. BACKFILL SHALL EITHER BE COMPACTED AND/OR VIBRATED TO ENSURE THAT BACKFILL AGGREGATE/STONE MATERIAL IS WELL SEATED AND PROPERLY INTER LOCKED. CARE SHALL BE TAKEN TO PREVENT ANY WEDGING ACTION AGAINST THE STRUCTURE, AND ALL SLOPES WITHIN THE AREA TO BE BACKFILLED MUST BE STEPPED OR SERRATED TO PREVENT WEDGING ACTION. BACKFILL MATERIAL SHALL BE CLEAN, CRUSHED, ANGULAR No. 5 (AASHTO M43) AGGREGATE.
  7. FREE DRAINING AGGREGATE - 80% AGGREGATE RETAINED ON 1/2" SIEVE MAJORITY OF AGGREGATE SIZE BETWEEN 1/2" AND 1" ONLY 5% OF MATERIAL PASSING #200 SIEVE NO FINES.
  8. CONNECTING PIPES SHALL BE INSTALLED WITH STRUCTURAL GRADE CONCRETE OR HIGH STRENGTH, NON-SHRINK GROUT WITH A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 3000 PSI SHALL BE USED (SEE PIPE CONNECTION DETAIL).
  9. THE ANNULAR SPACE BETWEEN THE PIPE AND THE HOLE SHALL BE FILLED WITH HIGH STRENGTH NON-SHRINK GROUT.

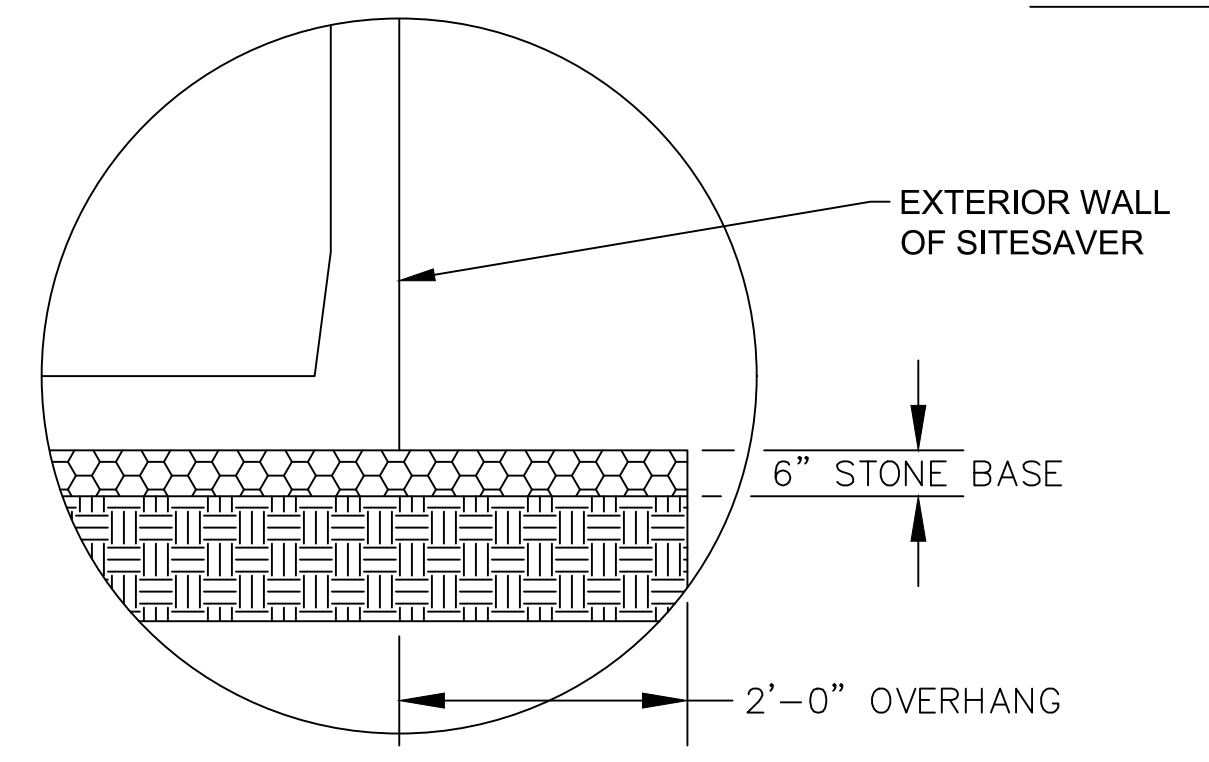
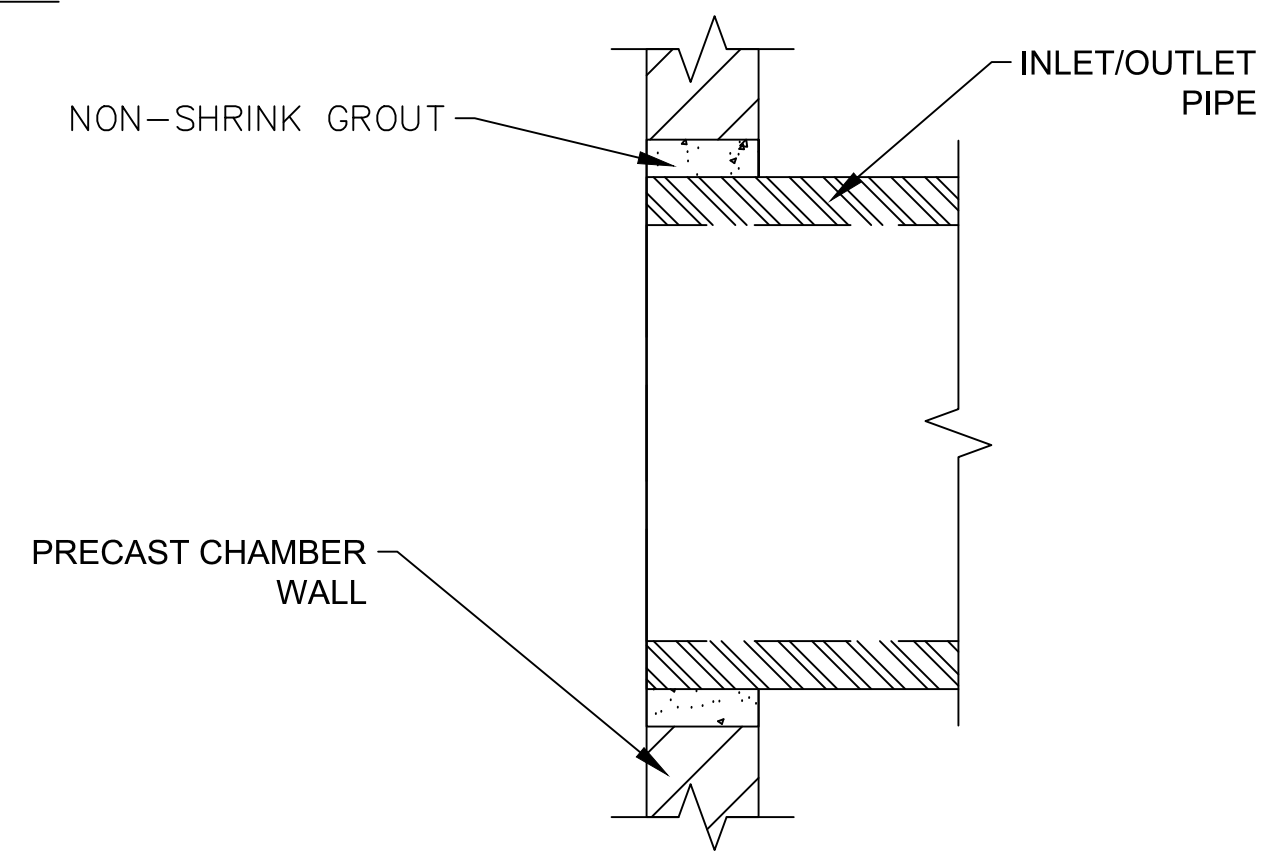
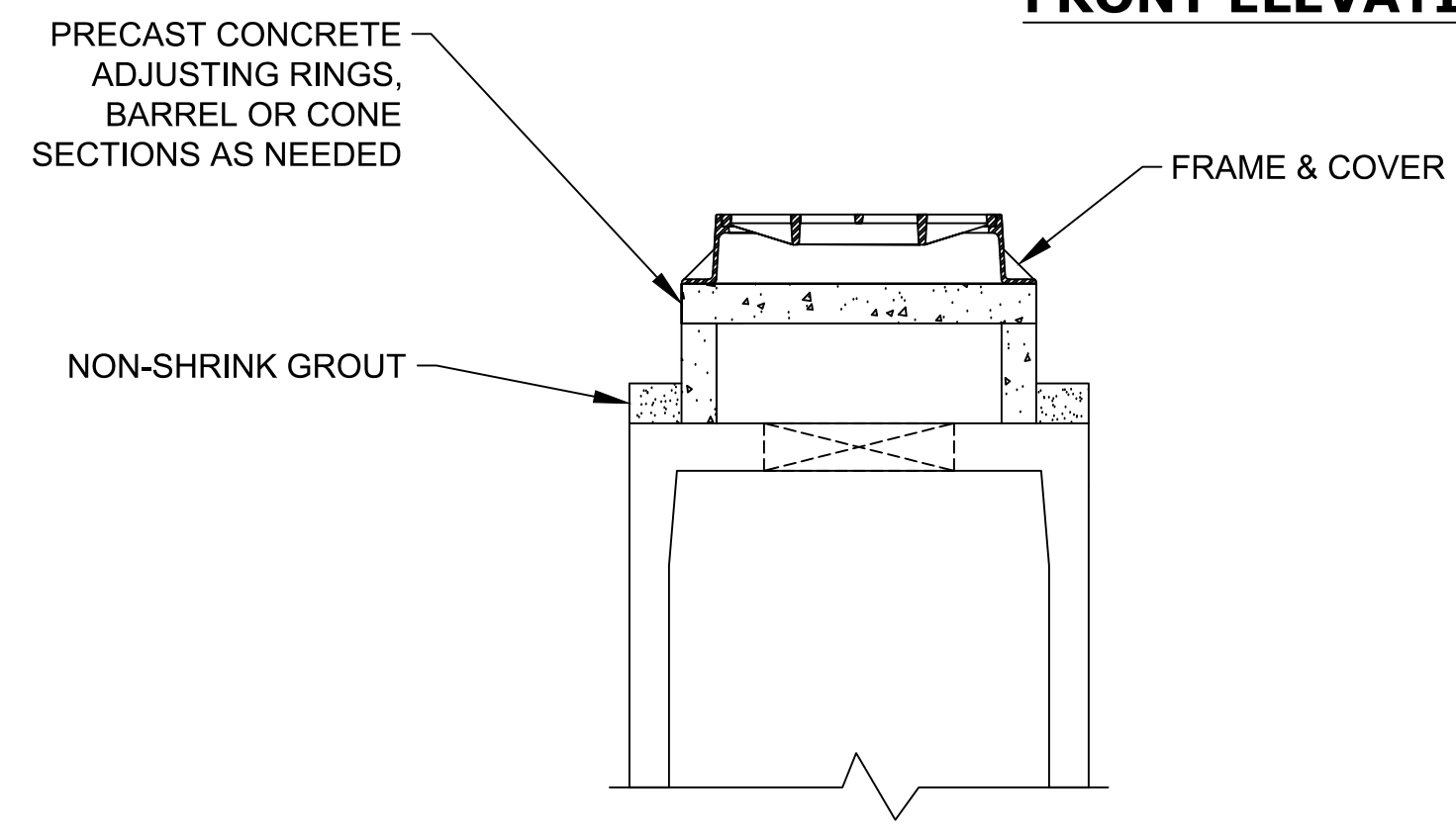
**PLAN VIEW**

ZONE CHART		
ZONES	ZONE DESCRIPTIONS	REMARKS
ZONE 1	FOUNDATION AGGREGATE	#5 (3/4") AGGREGATE (SEE NOTE 4 FOR DESCRIPTION)
ZONE 2	BACKFILL	#5 (3/4") AGGREGATE (SEE NOTE 4 FOR DESCRIPTION)
ZONE 3	FINAL COVER OVERTOP	MATERIALS NOT TO EXCEED 120 PCF



**FRONT ELEVATION**

**BACKFILL DETAIL**



**RISER DETAIL**

**PIPE CONNECTION DETAIL**

**EDGE OF STRUCTURE DETAIL**

PRE-TREATMENT STRUCTURE DETAIL  
NOT TO SCALE

NO.	DATE	REVISION DESCRIPTION

DRAWN	DESIGNED	CHECKED
-	-	-
-	9/28/2018	18-04-01
APPROVED	DATE	PROJECT

ARDEN PARK CREEK RESTORATION  
MINNEHAHA CREEK WATERSHED DISTRICT  
EDINA, MINNESOTA

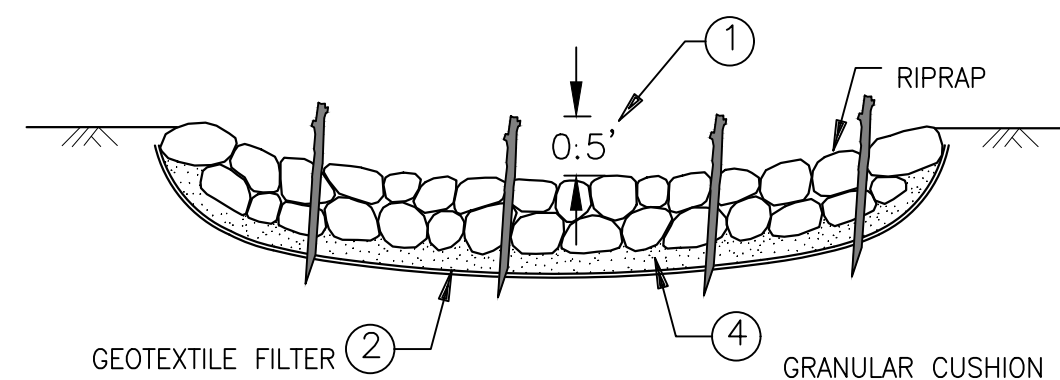
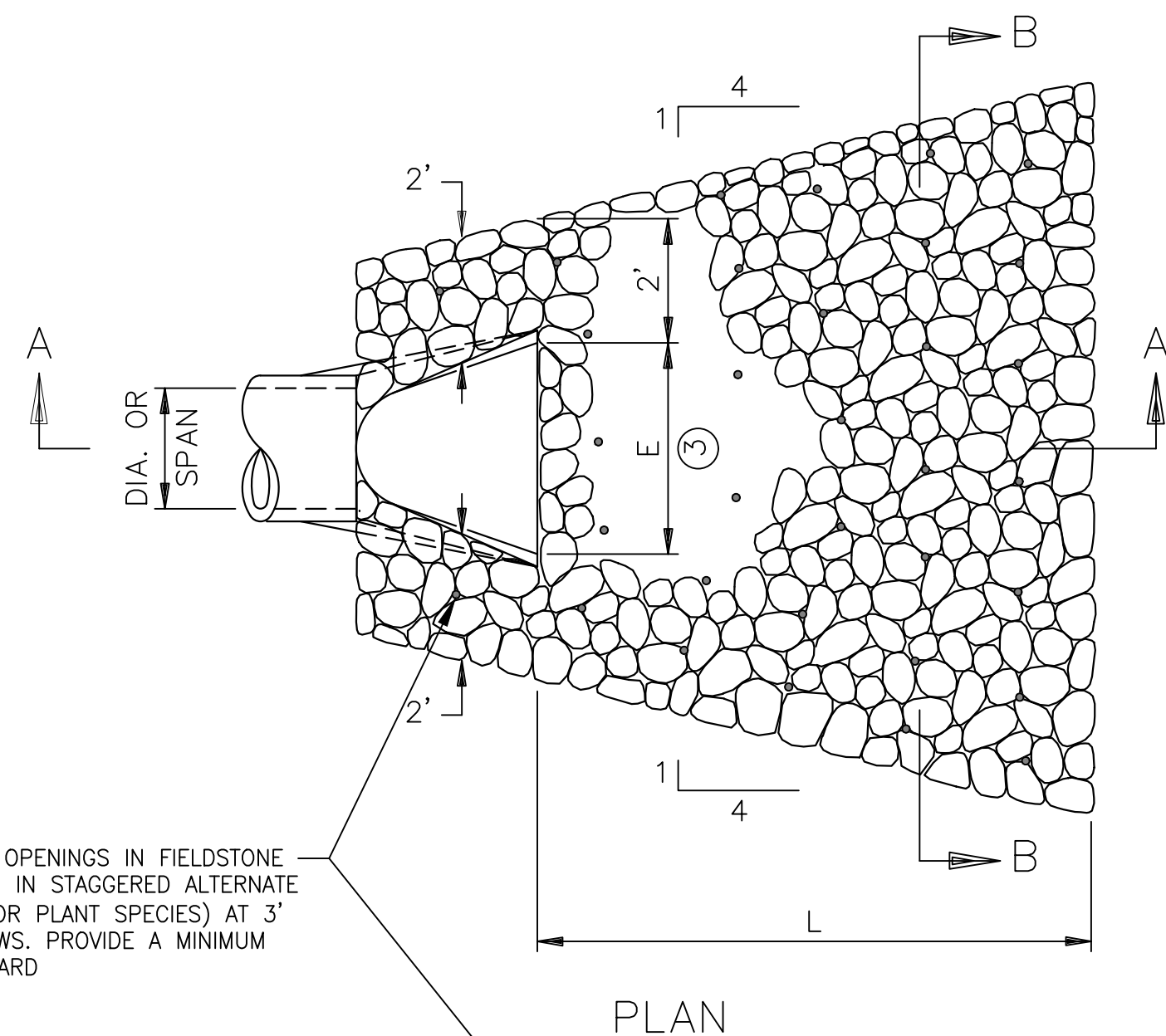


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DETAILS

SHEET  
C-507



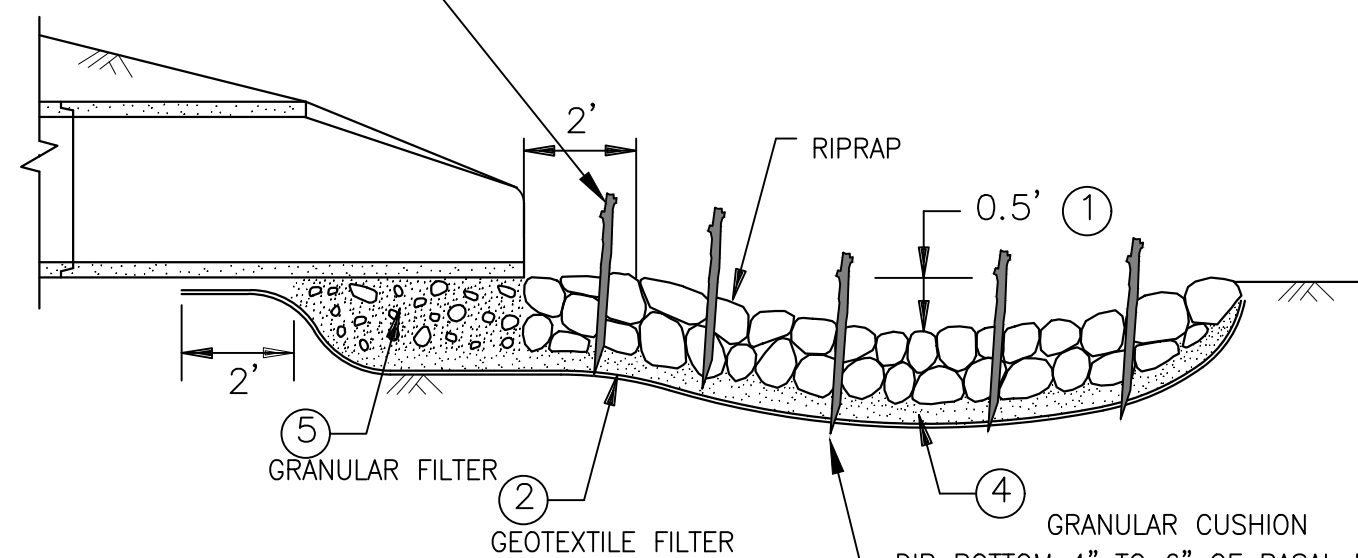


SECTION B-B

- NOTES:
- FOR PIPES GREATER THAN OR EQUAL TO 30" USE STAKES CAPABLE OF LIVE EXPOSURE ABOVE RIPRAP SURFACE EQUAL TO 1.5'.
  - GEOTEXTILE FILTER, SPEC. 3733, SHALL COVER THE BOTTOM AND SIDES OF THE AREA EXCAVATED FOR THE RIPRAP, GRANULAR FILTER MATERIALS.
  - DIMENSION E IS GIVEN ON STANDARD PLATES 3100 AND 3110.
  - 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.

NOTE: ALL LIVE STAKES REQUIRE MACHINE DRIVEN PILOT HOLE.

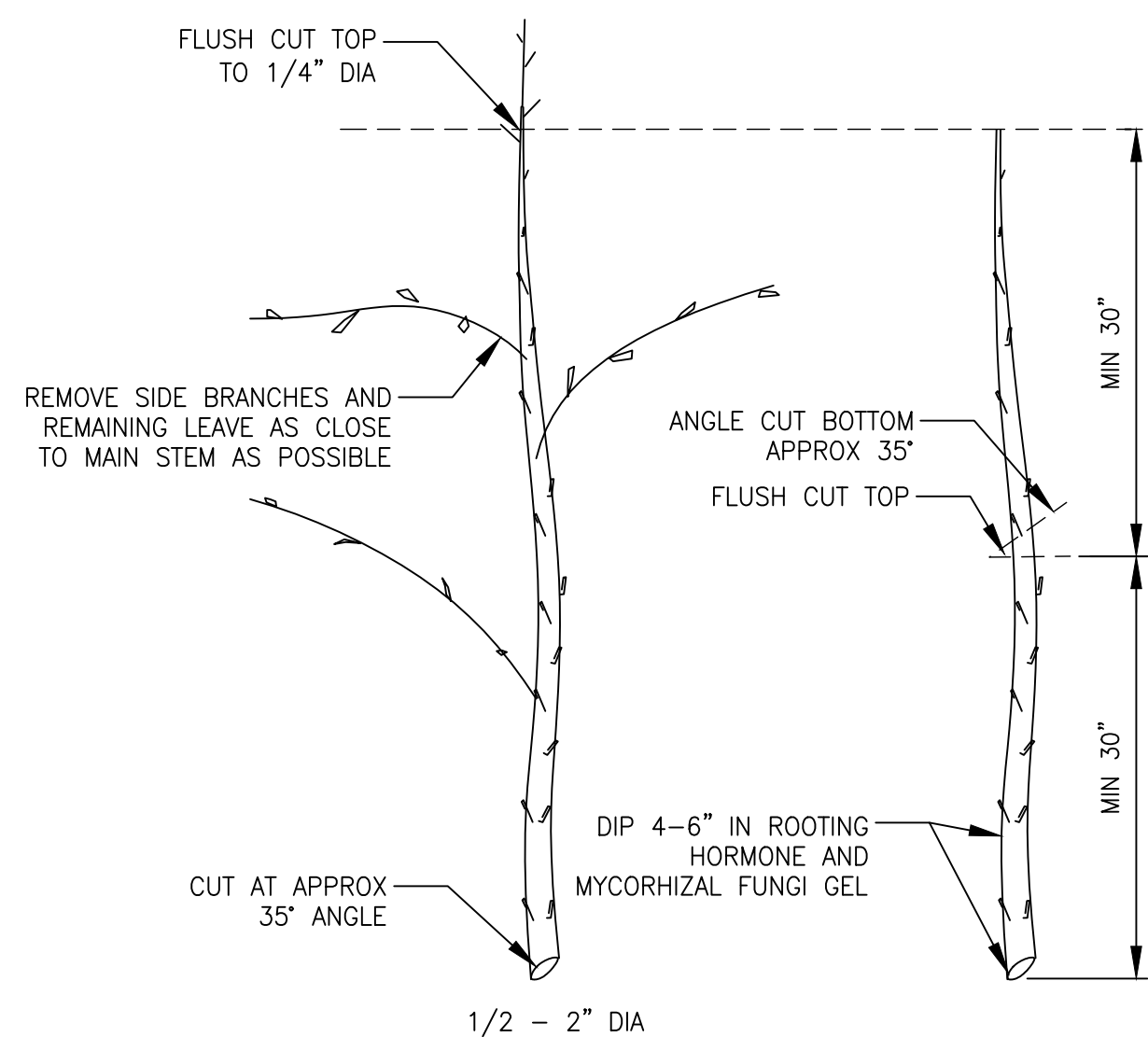
NOTE: RIPRAP QUANTITY SHALL BE IN ACCORDANCE WITH MNDOT STD. PLT. 3133



SECTION A-A

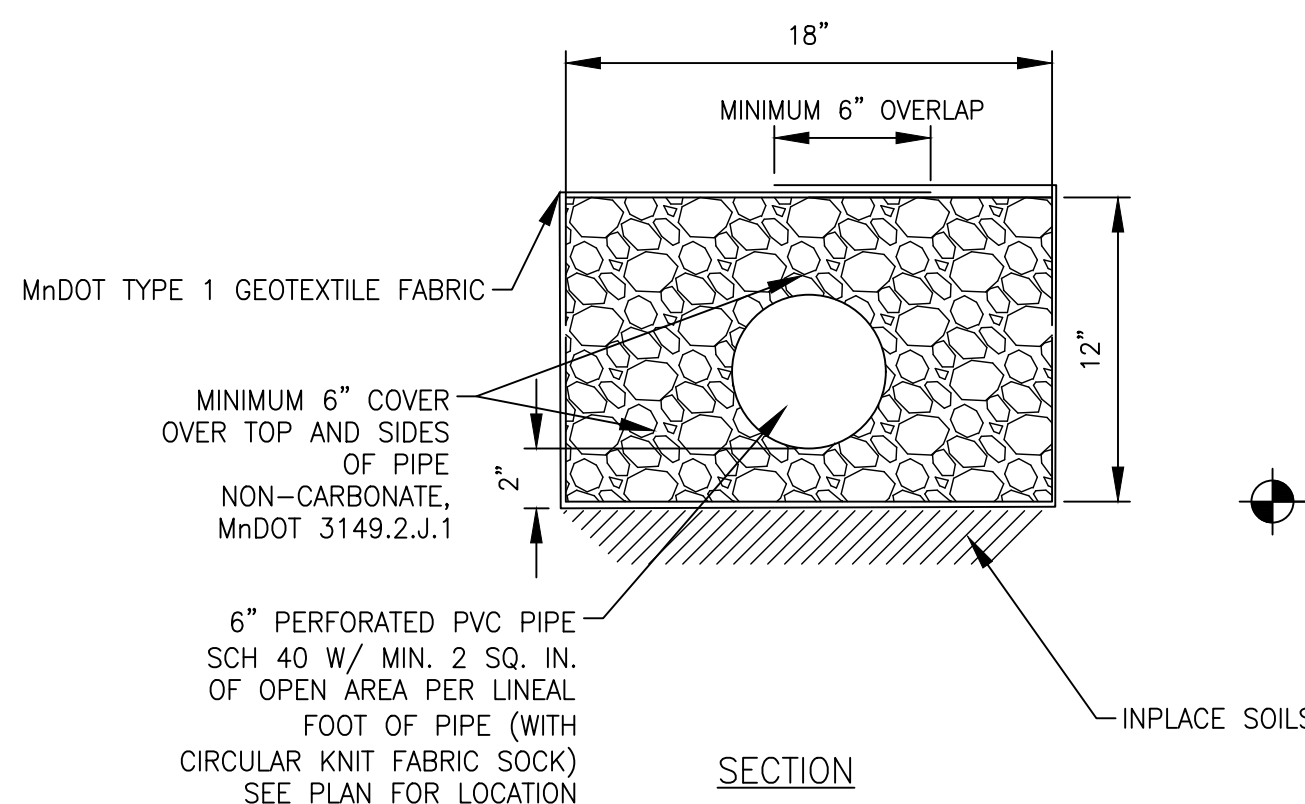
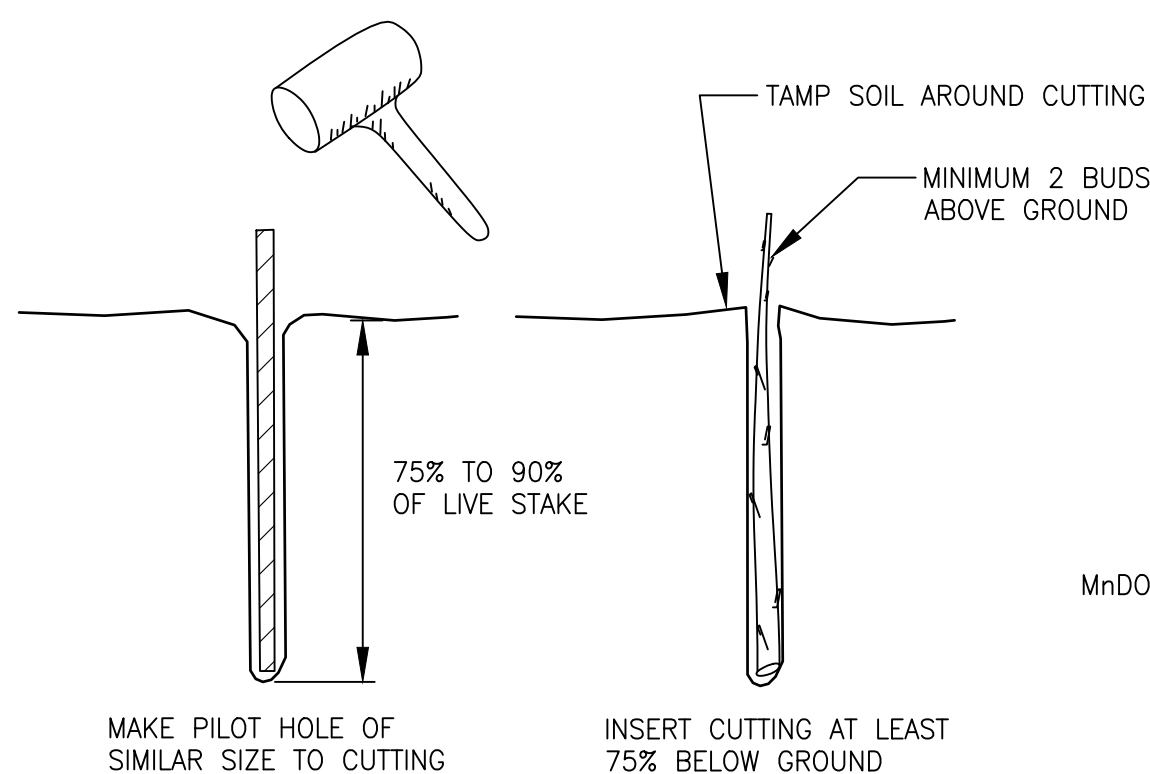
DIP BOTTOM 4" TO 6" OF BASAL ENDS OF LIVE STAKES INTO IBA ROOTING HORMONE POWDER AND INCORPORATE 1 TEABAG MYCORRHIZAE INTO EACH LIVE STAKE PILOT HOLE. LIVE STAKES MUST EXTEND A MINIMUM OF 8" INTO SOIL BELOW AGGREGATE. USE STAKES LONGER THAN 36" IF NECESSARY TO REACH 8" BELOW AGGREGATE

RIPRAP (ROUNDED) W/ LIVE STAKES AT OUTLETS  
NOT TO SCALE

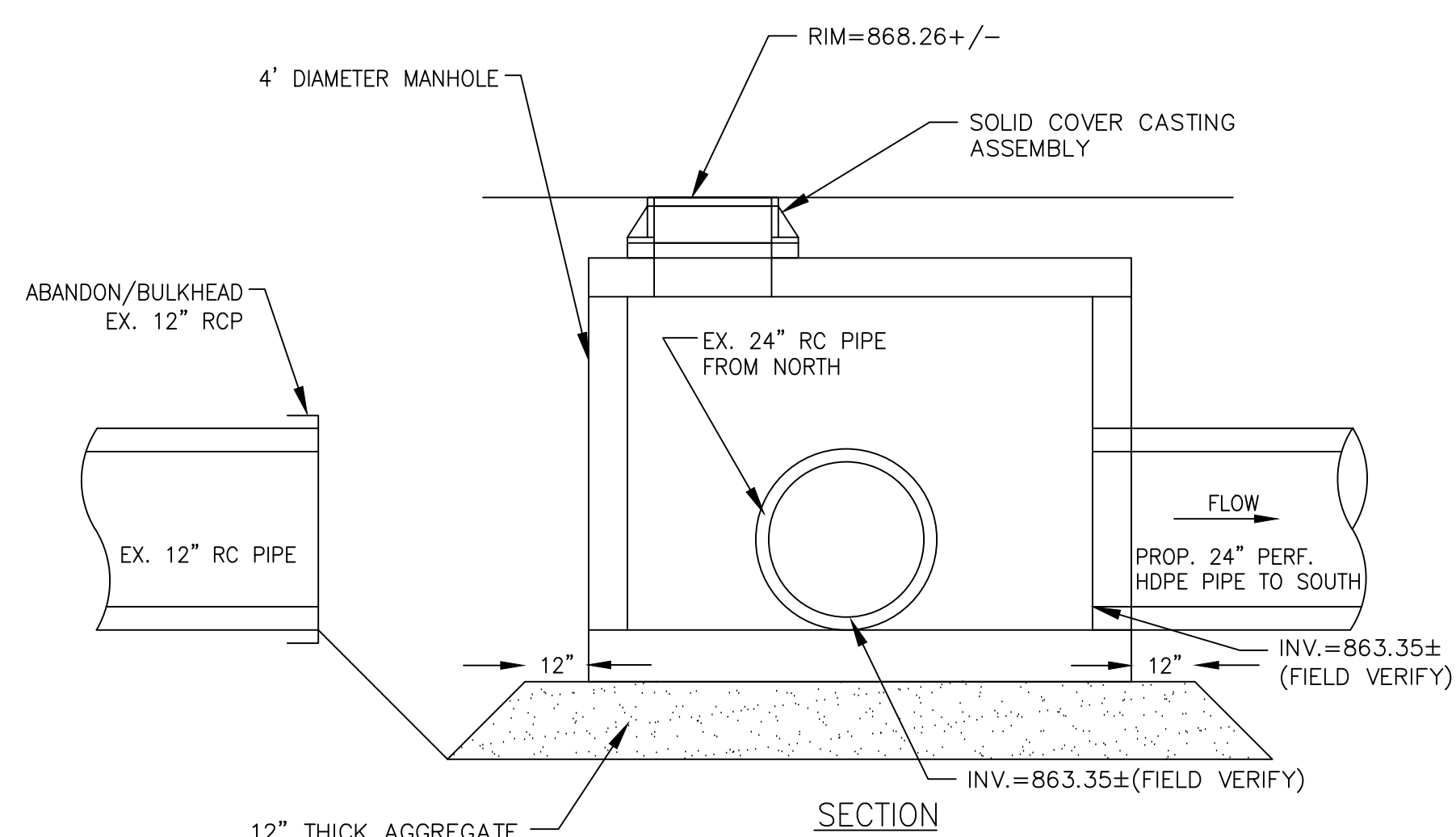


- NOTES:
- HARVEST AND PLANT STAKES DURING THE DORMANT SEASON
  - USE HEALTHY, STRAIGHT, LIVE WOOD AT LEAST 1 YEAR OLD
  - MAKE CLEAN CUTS AND DO NOT DAMAGE STAKES OR SPLIT THE ENDS DURING INSTALLATION. USE A PILOT AR IN FIRM SOILS
  - SOAK ENTIRE CUTTING FOR 24 HOURS (MINIMUM) PRIOR TO INSTALLATION
  - DIP BOTTOM 4-6 INCHES IN ROOTING HORMONE
  - INSTALL THE CUTTING AND TAMP THE SOIL AROUND THE STAKE

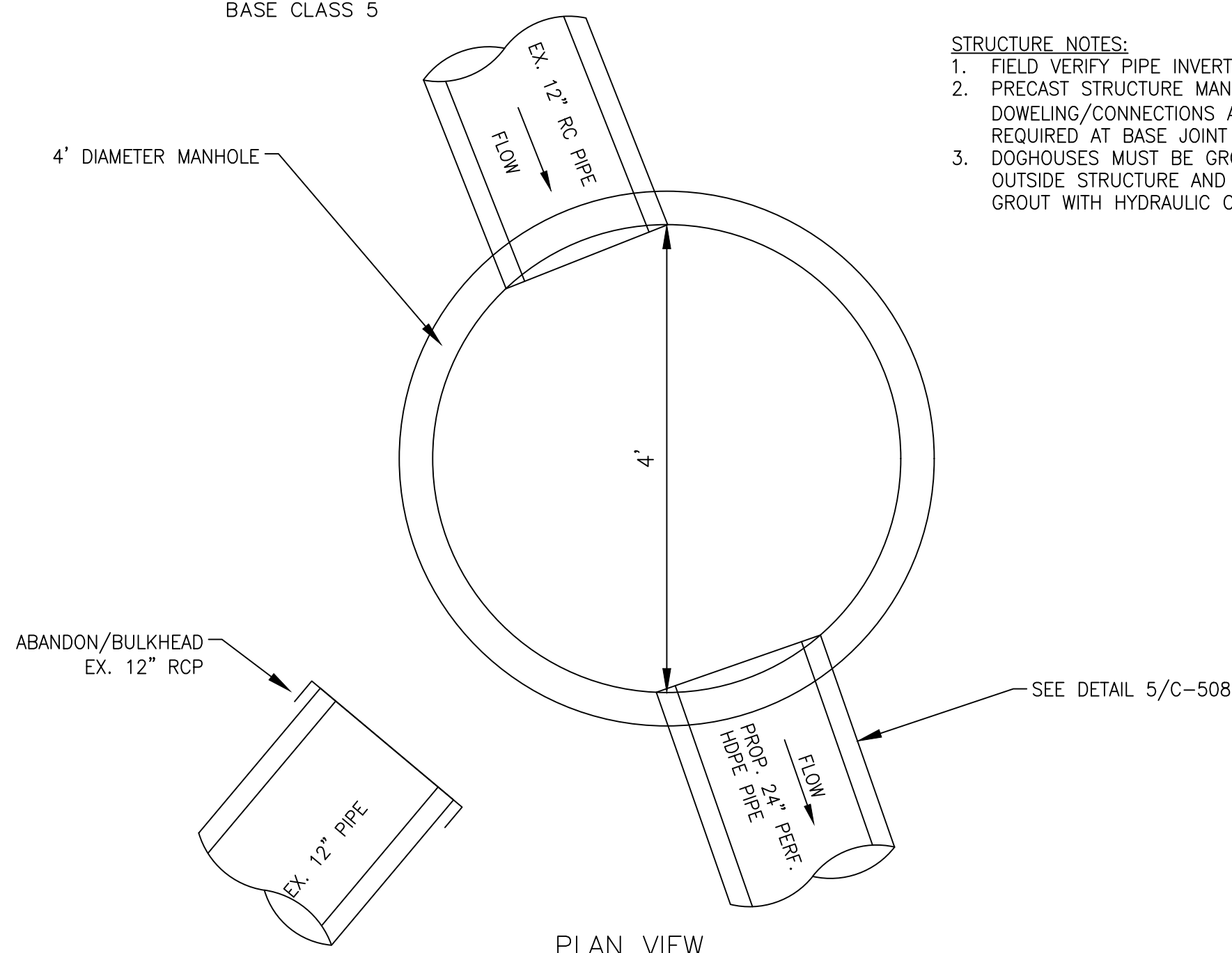
LIVE STAKE HARVEST AND INSTALLATION  
NOT TO SCALE



FIELD DRAINTILE TYPICAL SECTION  
NOT TO SCALE



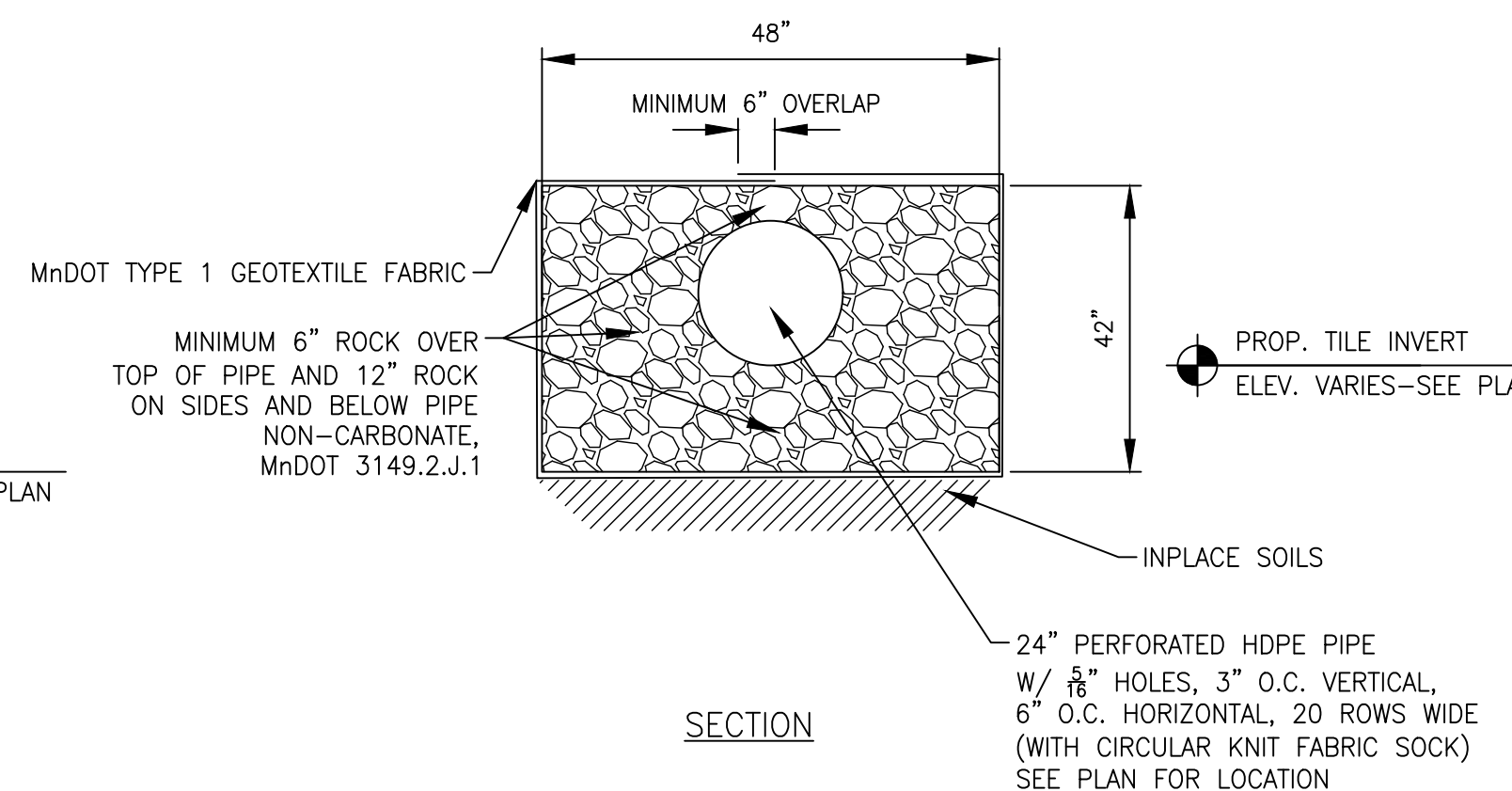
SECTION



PLAN VIEW

PRECAST CONCRETE - STMH-5 STRUCTURE  
NOT TO SCALE

- STRUCTURE NOTES:
- FIELD VERIFY PIPE INVERT ELEVATIONS
  - PRECAST STRUCTURE MANUFACTURER TO PROVIDE DOWELING/CONNECTIONS AND WATERSTOP AS REQUIRED AT BASE JOINT AND WEIR WALL JOINTS
  - DOGHOUSES MUST BE GROUTED BOTH INSIDE AND OUTSIDE STRUCTURE AND SHALL BE WATERTIGHT. GROUT WITH HYDRAULIC CEMENT REPAIR MORTAR.



24" PERFORATED HDPE PIPE TYPICAL SECTION  
NOT TO SCALE

NO.	DATE	REVISION DESCRIPTION

APPROVED	DATE	PROJECT

ARDEN PARK CREEK RESTORATION  
MINNEHAHA CREEK WATERSHED DISTRICT  
EDINA, MINNESOTA

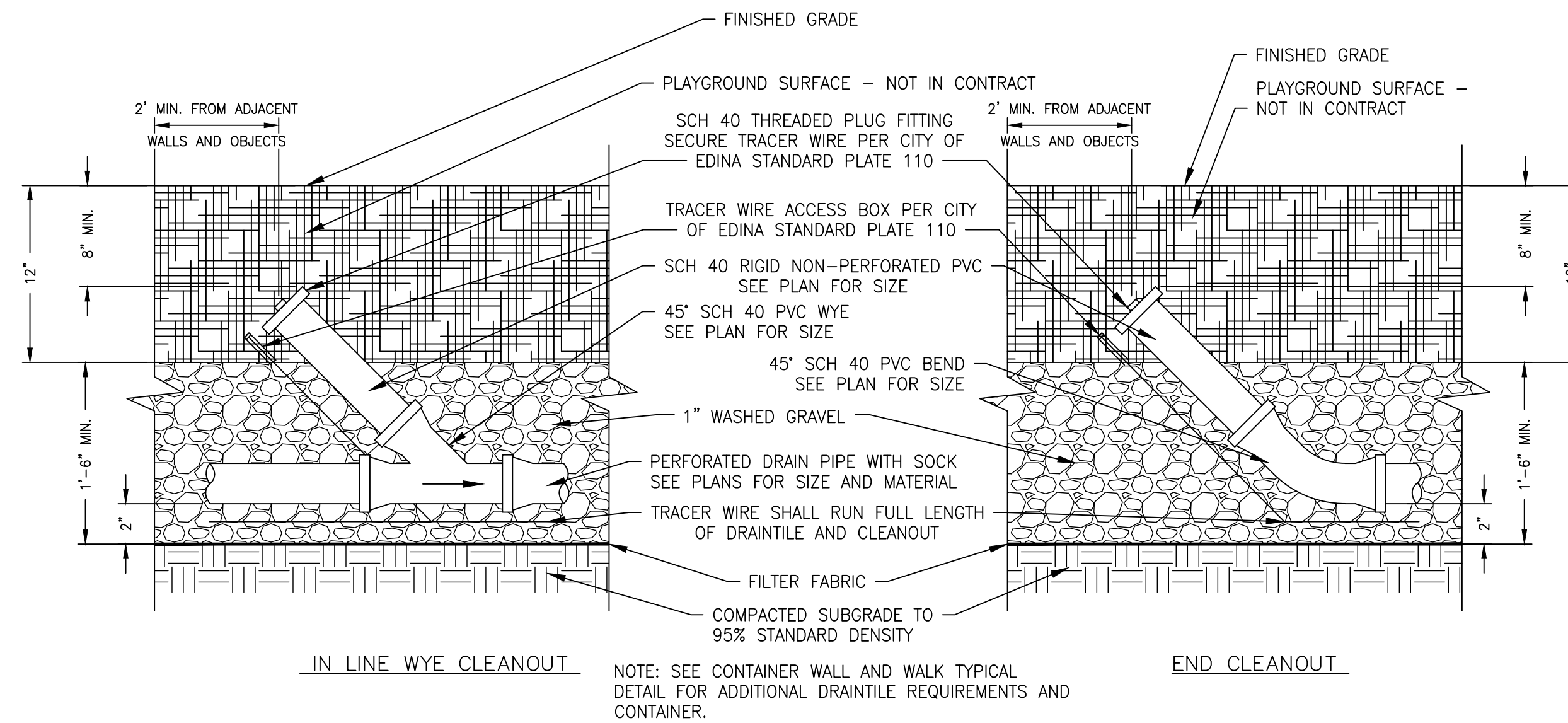


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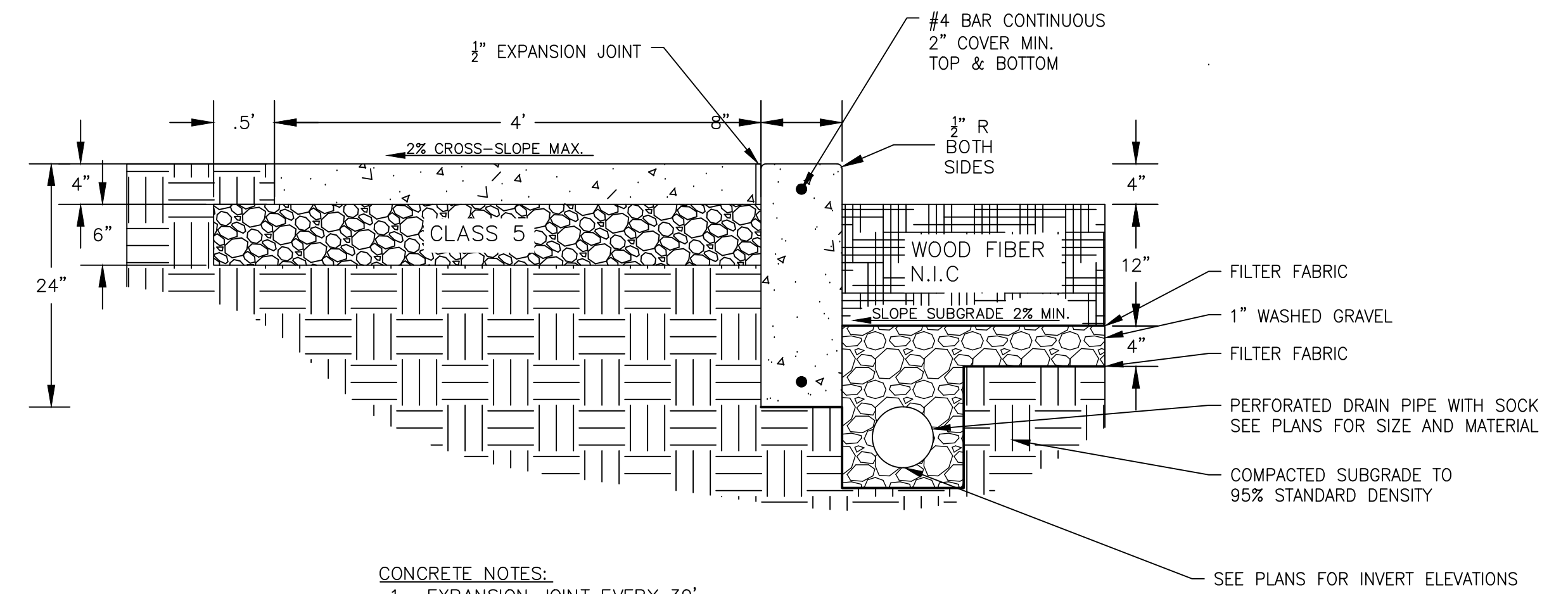
DETAILS

SHEET  
C-508

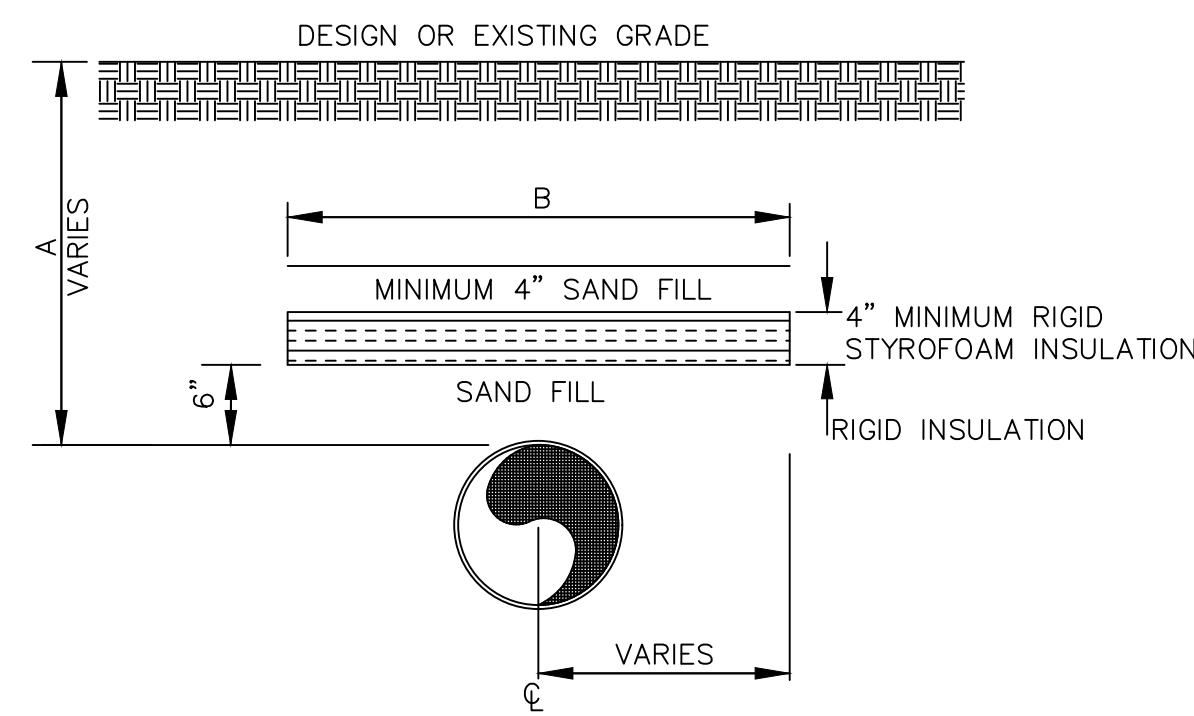




PLAYGROUND DRAINTILE CLEANOUT DETAIL 1  
NOT TO SCALE C-509



CONTAINER WALL AND WALK TYPICAL 2  
NOT TO SCALE C-509



NOTE: PIPE SHALL BE CENTERED UNDER INSULATION UNLESS OTHERWISE SPECIFIED.

COVER OVER PIPE - A	WIDTH OF INSULATING BOARD - B
2'	11'
3'	9'
4'	7'
5'	5'
6'	3'

PIPE INSULATION 3  
NOT TO SCALE C-509

NO.	DATE	REVISION DESCRIPTION

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	9/28/2018	18-04-01
APPROVED	DATE	PROJECT

ARDEN PARK CREEK RESTORATION  
MINNEHAHA CREEK WATERSHED DISTRICT  
EDINA, MINNESOTA

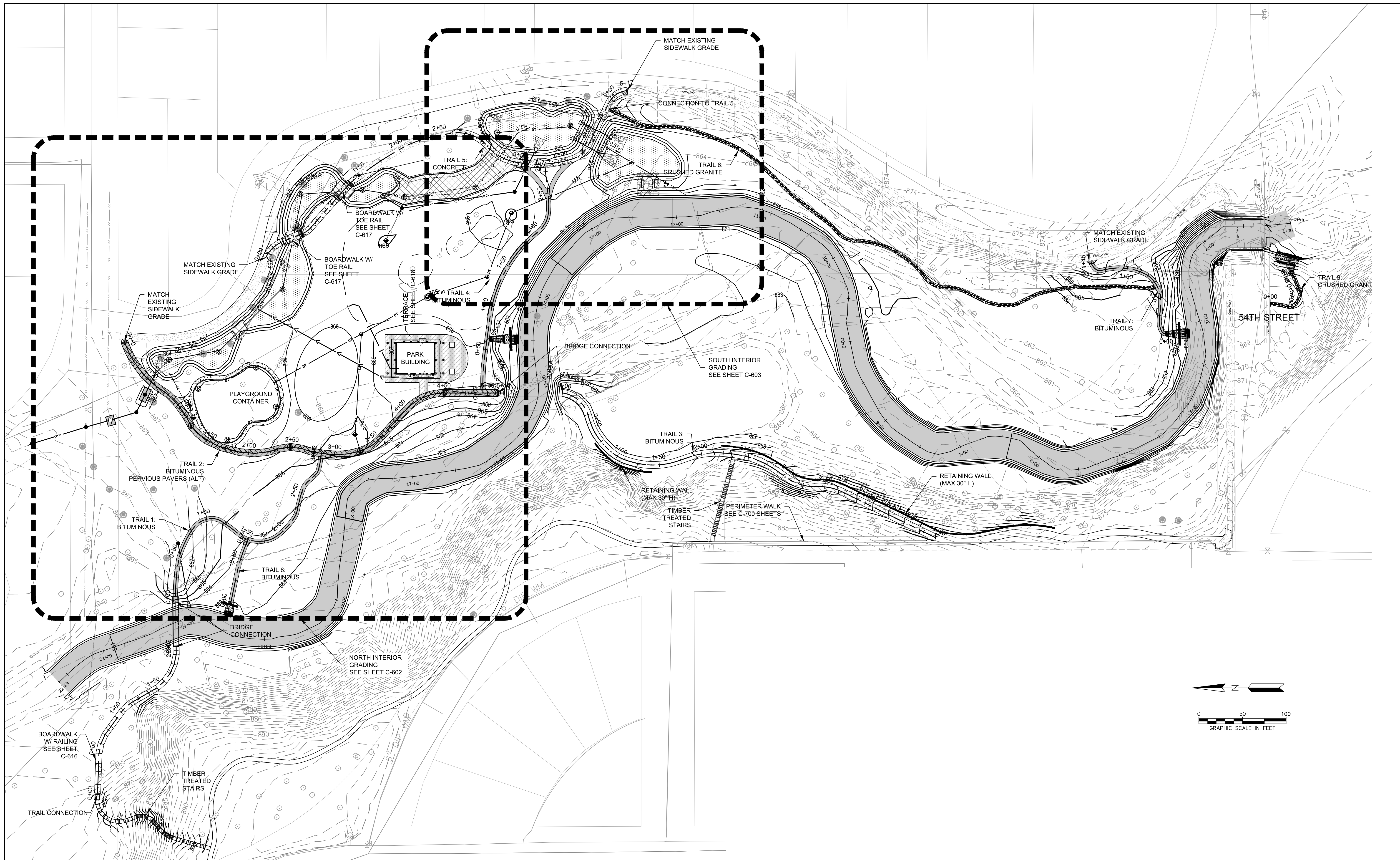


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DETAILS

SHEET  
C-509





NO.	DATE	REVISION DESCRIPTION

DRAWN	DESIGNED	CHECKED
	9/28/2018	18-04-01
APPROVED	DATE	PROJECT

**ARDEN PARK CREEK RESTORATION**  
**MINNEHAHA CREEK WATERSHED DISTRICT**  
**EDINA, MINNESOTA**

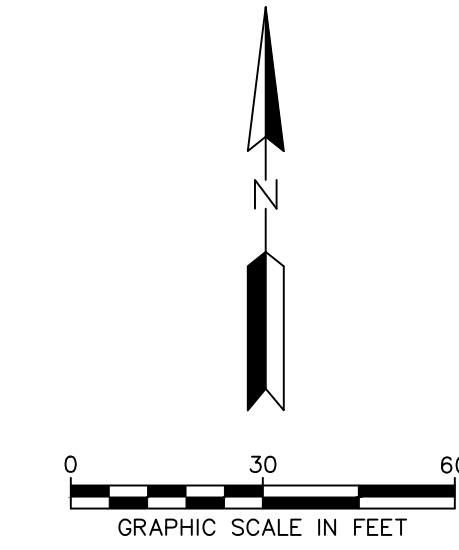
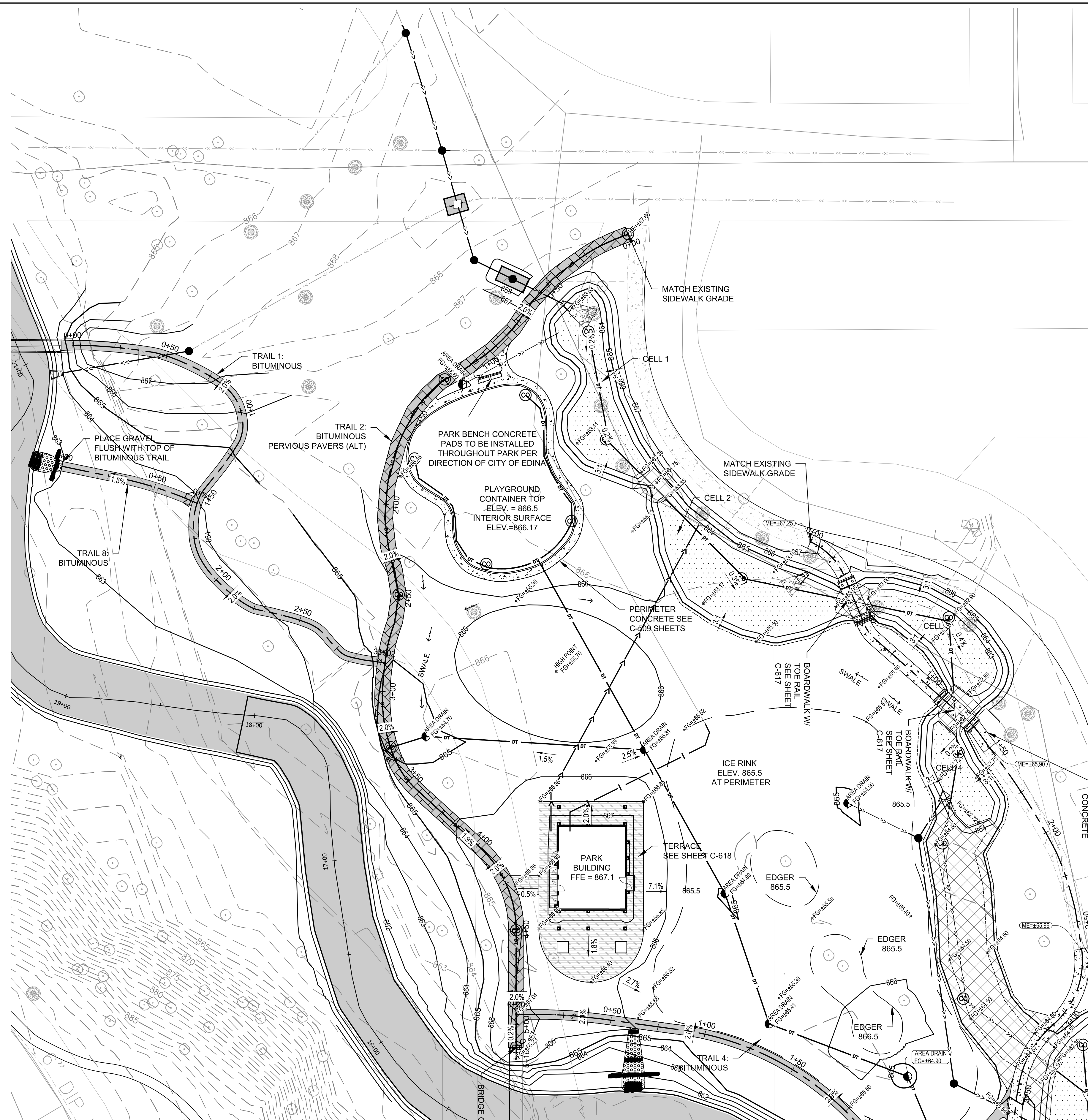


**DRAFT**

**OVERALL GRADING**  
**OF TRAILS**

SHEET  
**C-601**





**LEGEND**

- PARCEL LINES
- - - 859 EXISTING MINOR CONTOUR
- - - 860 EXISTING MAJOR CONTOUR
- x - x - EXISTING FENCE
- 880 PROPOSED MAJOR CONTOUR
- 879 PROPOSED MINOR CONTOUR
- ▬ PROPOSED BITUMINOUS TRAIL
- ▨ PROPOSED CONCRETE TRAIL
- ▩ PROPOSED CRUSHED GRANITE TRAIL
- ▧ PROPOSED PERMEABLE PAVERS (ALTERNATE)
- ▦ PROPOSED TERRACE

- GRADING NOTES:**
- BIOFILTRATION SWALE CELLS DO NOT SHOW SURFACE MOUNDING REQUIRED OVER THE TOP OF THE DRAINTILE WITHIN THE CELLS. SEE DETAIL 4/C-505 FOR PIPE COVER REQUIREMENTS.
  - PARK BUILDING NOT IN CONTRACT. TERRACE AND BUILDING SOIL CORRECTIONS ARE INCLUDED WITH THIS CONTRACT. SEE SHEET C-618 FOR SOIL CORRECTION REQUIREMENTS.

- EXISTING SANITARY NOTES:**
- SEE SHEETS C-502 & C-503.

NO.	DATE	REVISION DESCRIPTION

DRAWN	DESIGNED	CHECKED
-	-	-
APPROVED	DATE	PROJECT
-	9/28/2018	18-04-01

**ARDEN PARK CREEK RESTORATION**  
**MINNEHAHA CREEK WATERSHED DISTRICT**  
**EDINA, MINNESOTA**

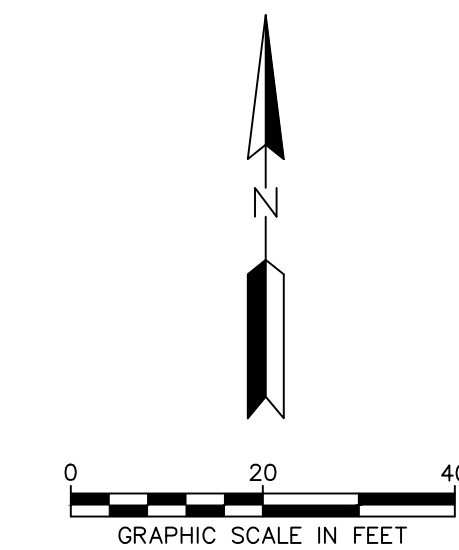
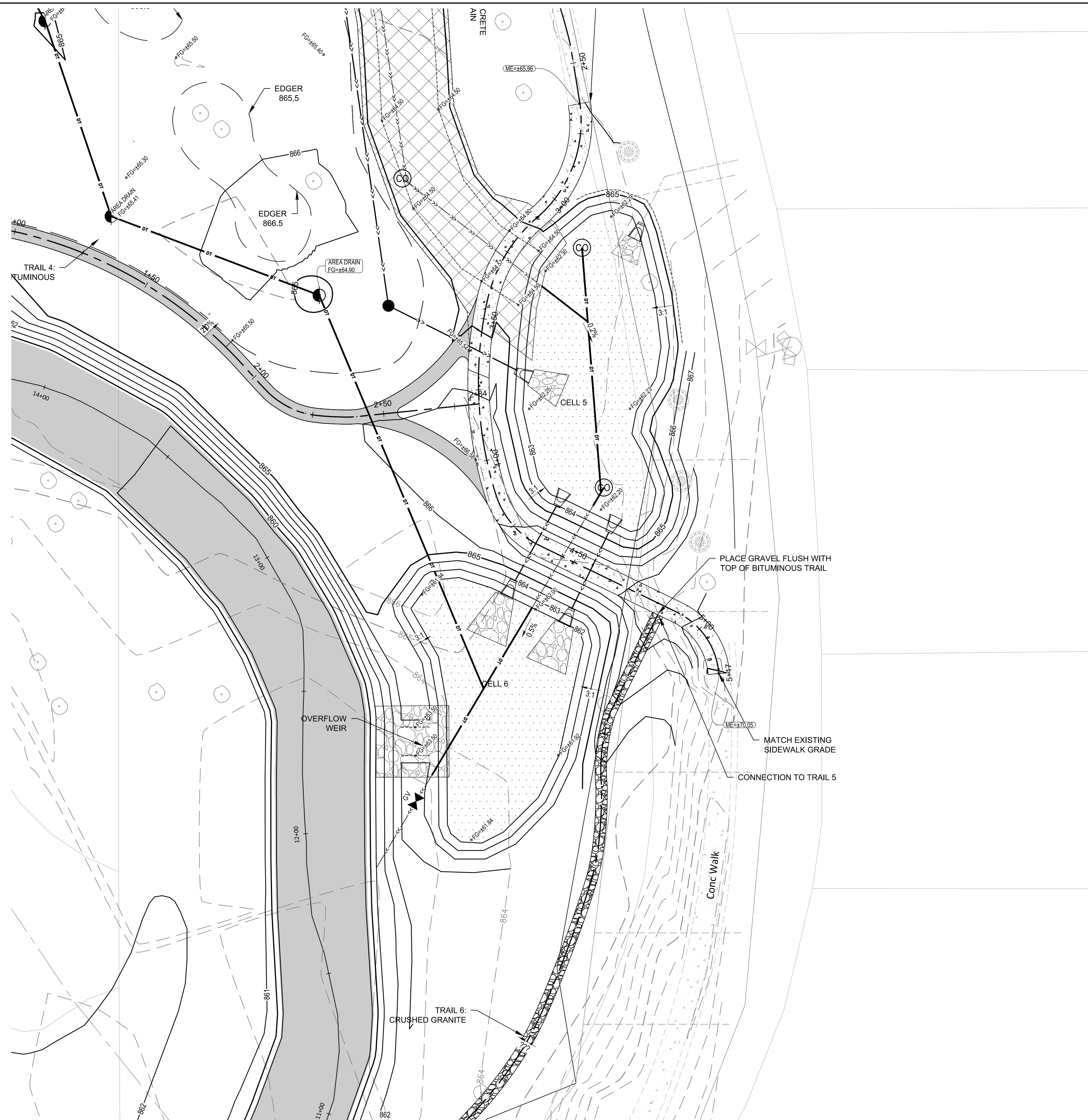


**DRAFT**

**NORTH INTERIOR GRADING**

SHEET  
**C-602**





**LEGEND**

- PARCEL LINES
- - - 859 EXISTING MINOR CONTOUR
- - - 860 EXISTING MAJOR CONTOUR
- x - x - EXISTING FENCE
- 880 PROPOSED MAJOR CONTOUR
- 879 PROPOSED MINOR CONTOUR
- PROPOSED BITUMINOUS TRAIL
- ▨ PROPOSED CONCRETE TRAIL
- ▩ PROPOSED CRUSHED GRANITE TRAIL
- ▧ PROPOSED PERMEABLE PAVERS (ALTERNATE)

**GRADING NOTES:**

1. BIOFILTRATION SWALE CELLS DO NOT SHOW SURFACE MOUNDING REQUIRED OVER THE TOP OF THE DRAINTILE WITHIN THE CELLS. SEE DETAIL 4/C-505 FOR PIPE COVER REQUIREMENTS.
2. PARK BUILDING NOT IN CONTRACT. TERRACE AND BUILDING SOIL CORRECTIONS ARE INCLUDED WITH THIS CONTRACT. SEE SHEET C-618 FOR SOIL CORRECTION REQUIREMENTS.

**EXISTING SANITARY NOTES:**

1. SEE SHEETS C-502 & C-503.

**ARDEN PARK CREEK RESTORATION  
MINNEHAHA CREEK WATERSHED DISTRICT  
EDINA, MINNESOTA**



**DRAFT**

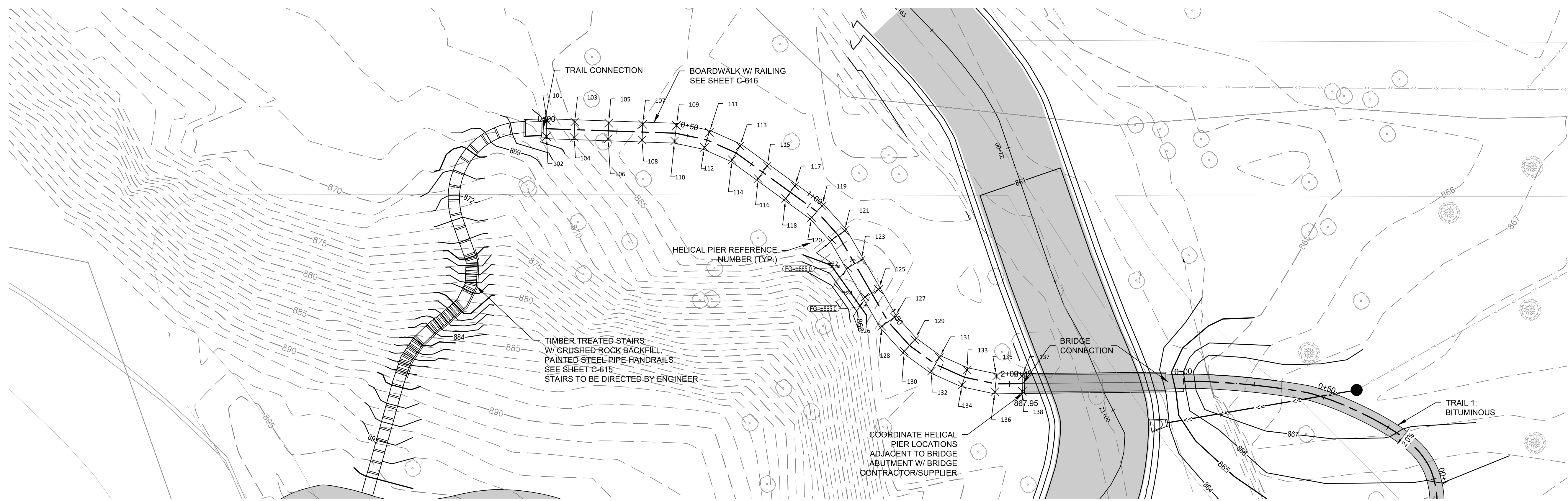
**SOUTH INTERIOR  
GRADING**

SHEET  
**C-603**

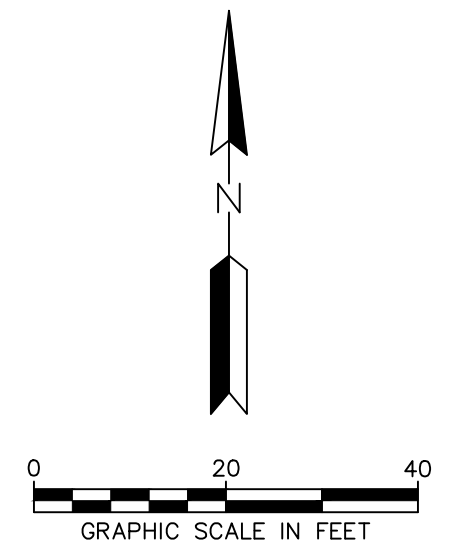
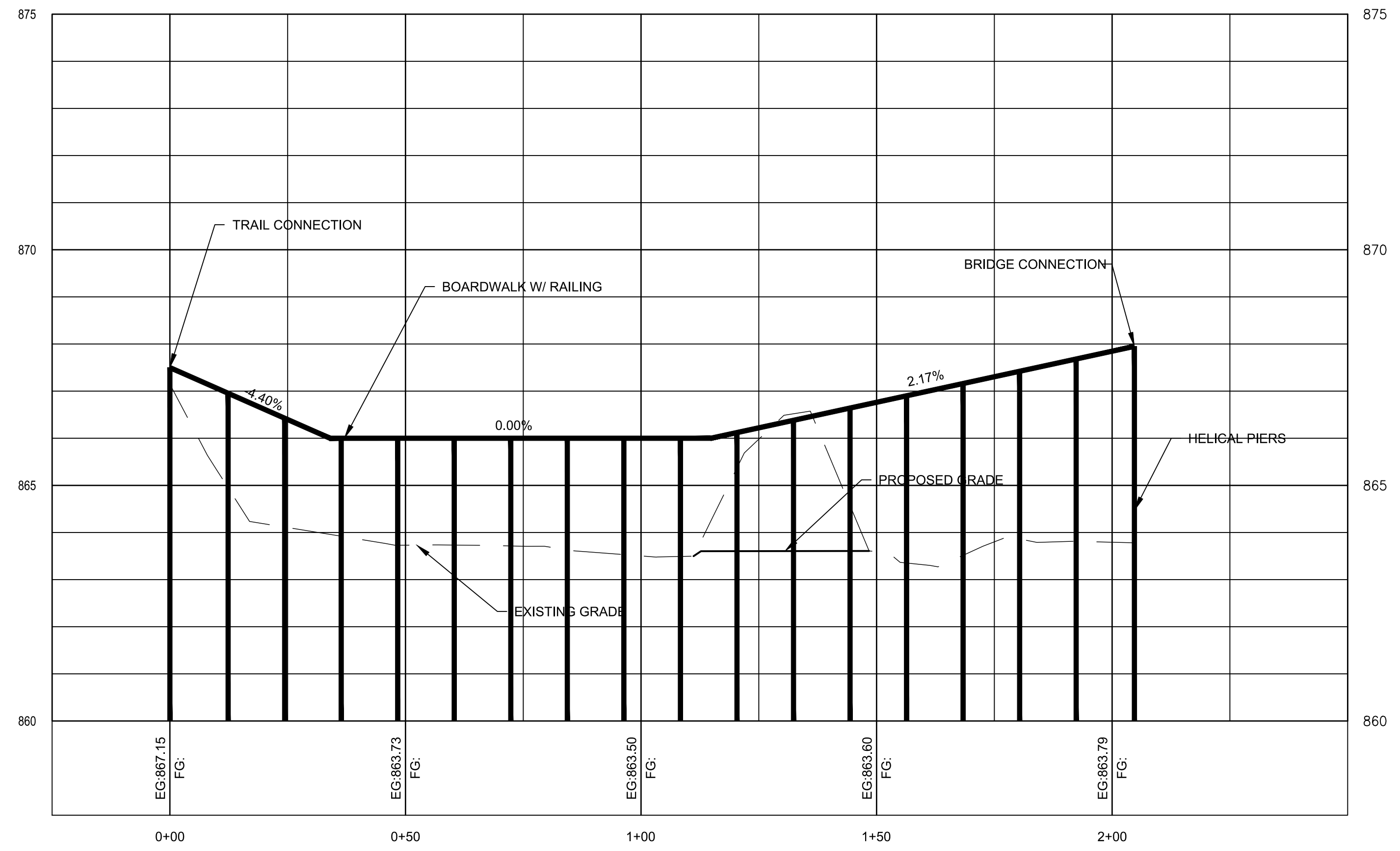
NO.	DATE	REVISION DESCRIPTION

DRAWN	DESIGNED	CHECKED
	9/28/2018	18-04-01
APPROVED	DATE	PROJECT





BOARDWALK PROFILE



NO.	DATE	REVISION DESCRIPTION

DRAWN	DESIGNED	CHECKED
-	-	-
APPROVED	9/28/2018	18-04-01
DATE	PROJECT	

ARDEN PARK CREEK RESTORATION  
MINNEHAHA CREEK WATERSHED DISTRICT  
EDINA, MINNESOTA

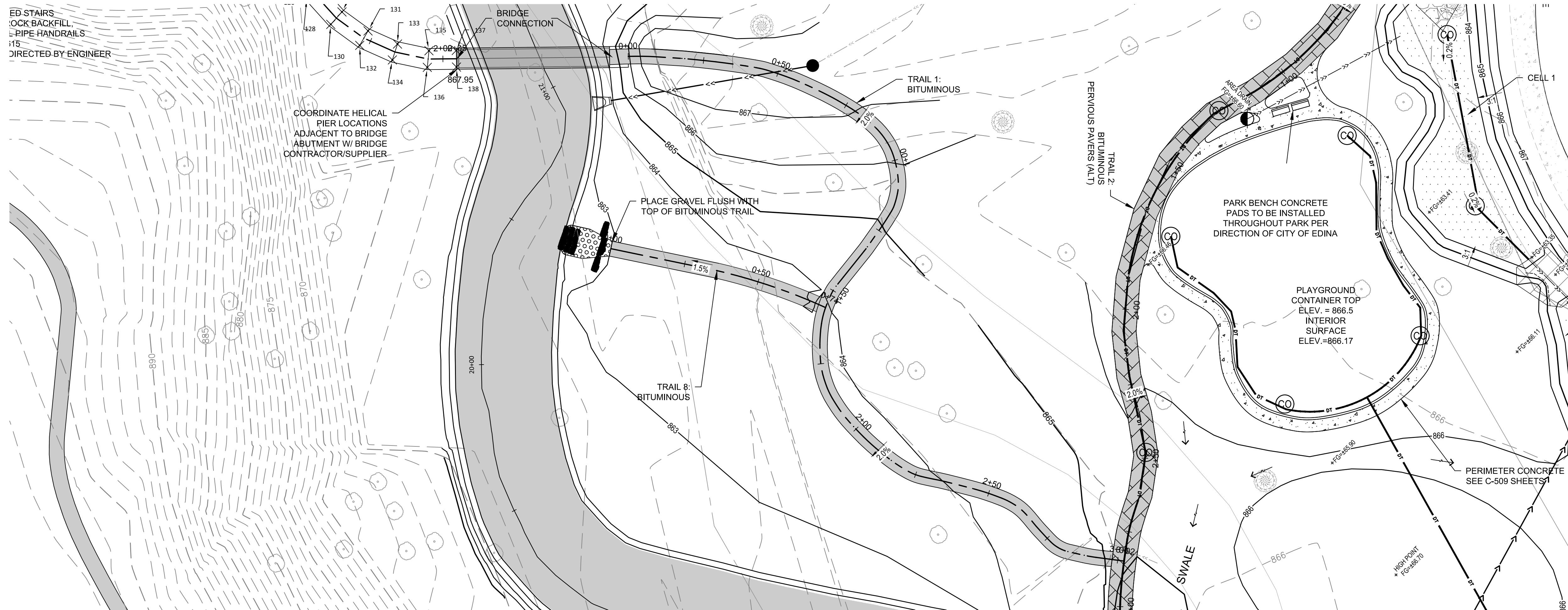


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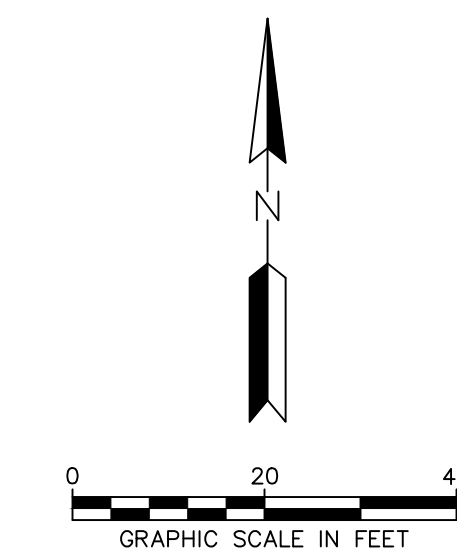
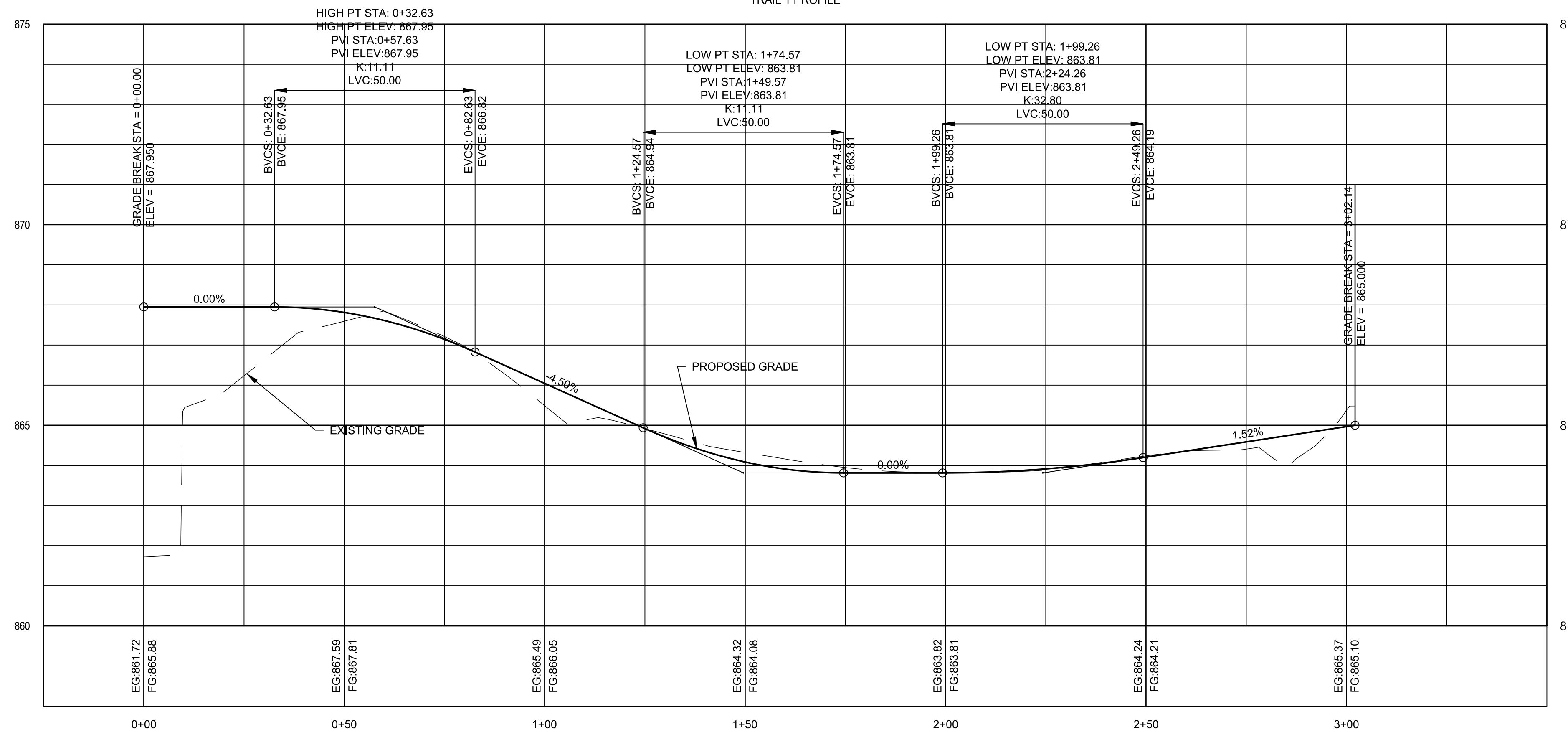
BOARDWALK PLAN  
AND PROFILE

SHEET  
C-604





TRAIL 1 PROFILE



NO.	DATE	REVISION DESCRIPTION

DRAWN	DESIGNED	CHECKED
-	-	-
APPROVED	DATE	PROJECT
-	9/28/2018	18-04-01

**ARDEN PARK CREEK RESTORATION**  
**MINNEHAHA CREEK WATERSHED DISTRICT**  
**EDINA, MINNESOTA**

**DRAFT**

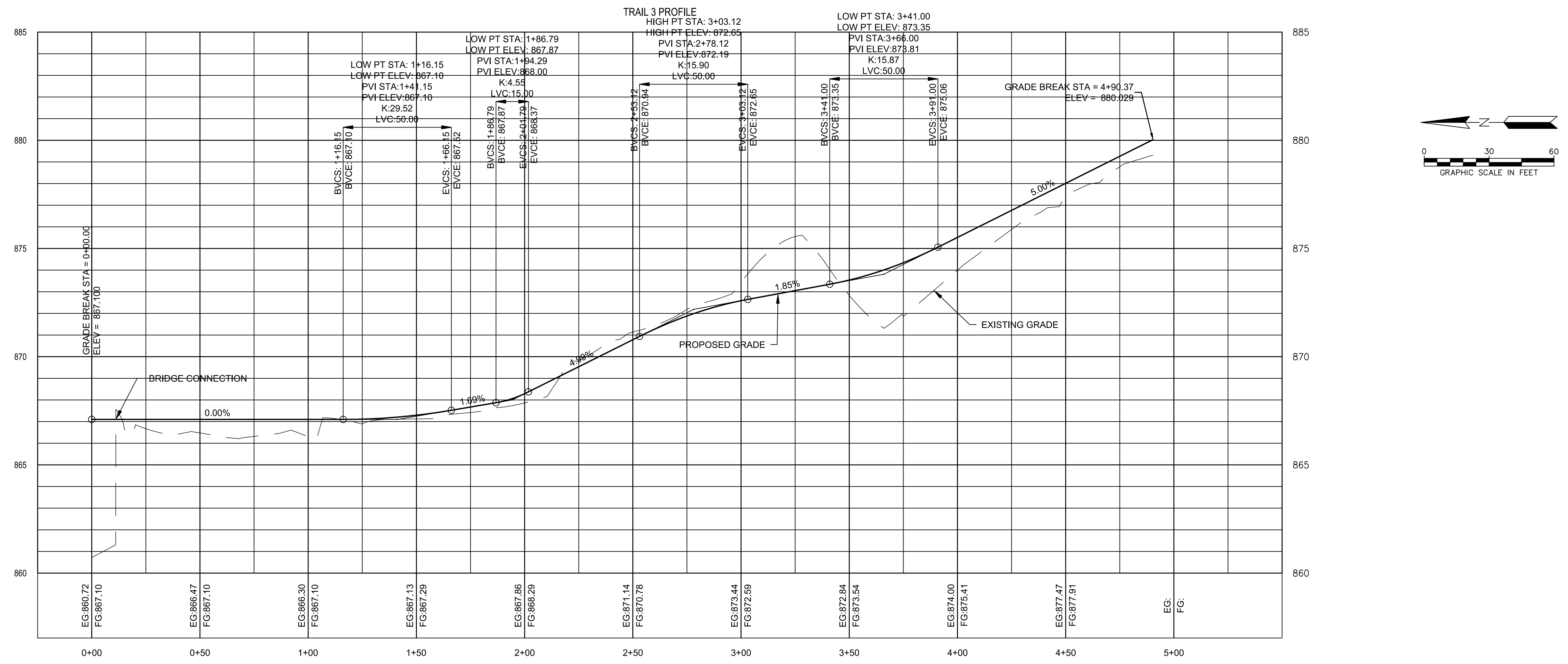
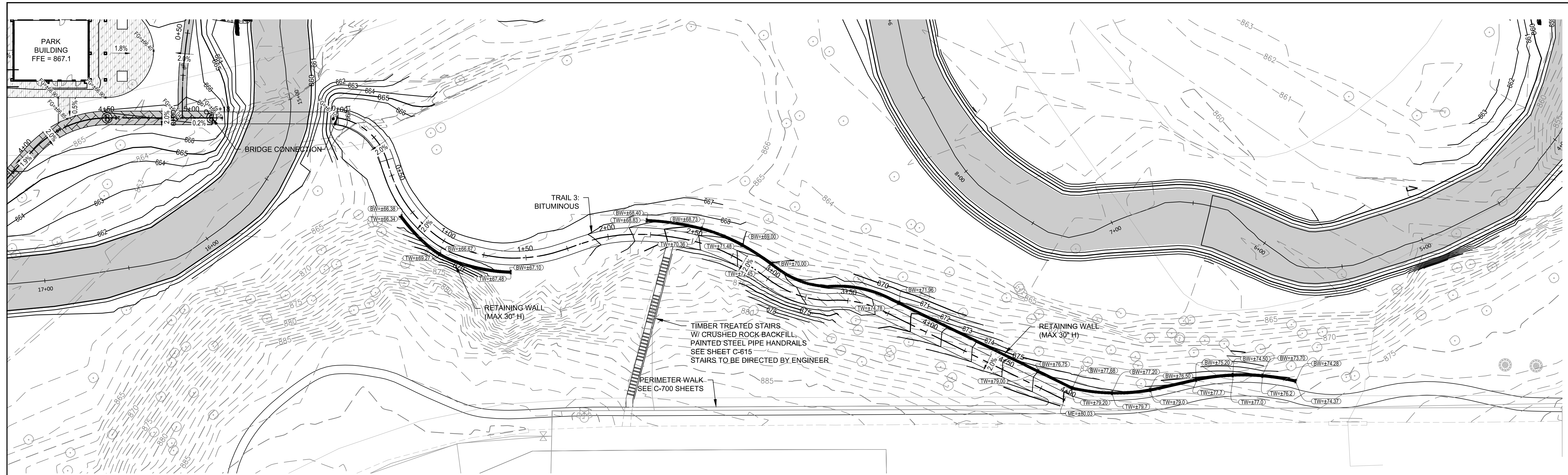
**TRAIL 1 PLAN AND PROFILE**

SHEET  
**C-605**









NO.	DATE	REVISION DESCRIPTION

APPROVED	DATE	PROJECT

**ARDEN PARK CREEK RESTORATION**  
**MINNEHAHA CREEK WATERSHED DISTRICT**  
**EDINA, MINNESOTA**

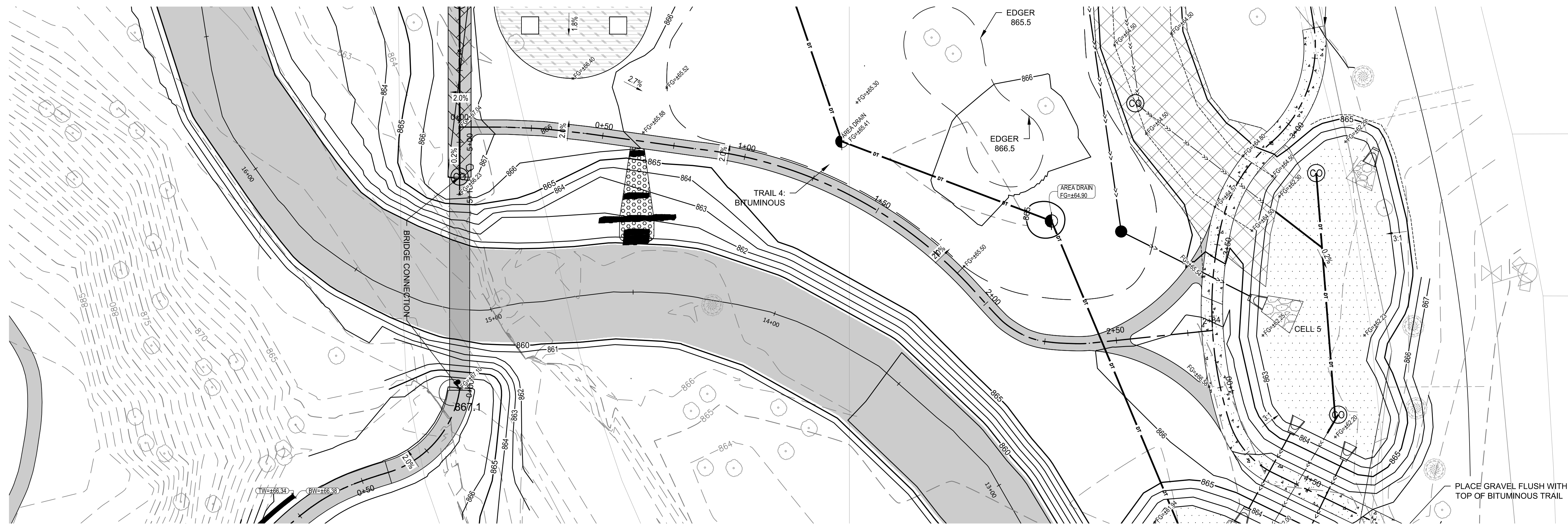


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**TRAIL 3 PLAN AND PROFILE**

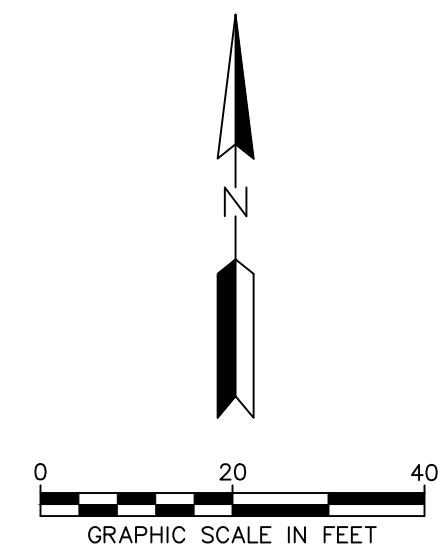
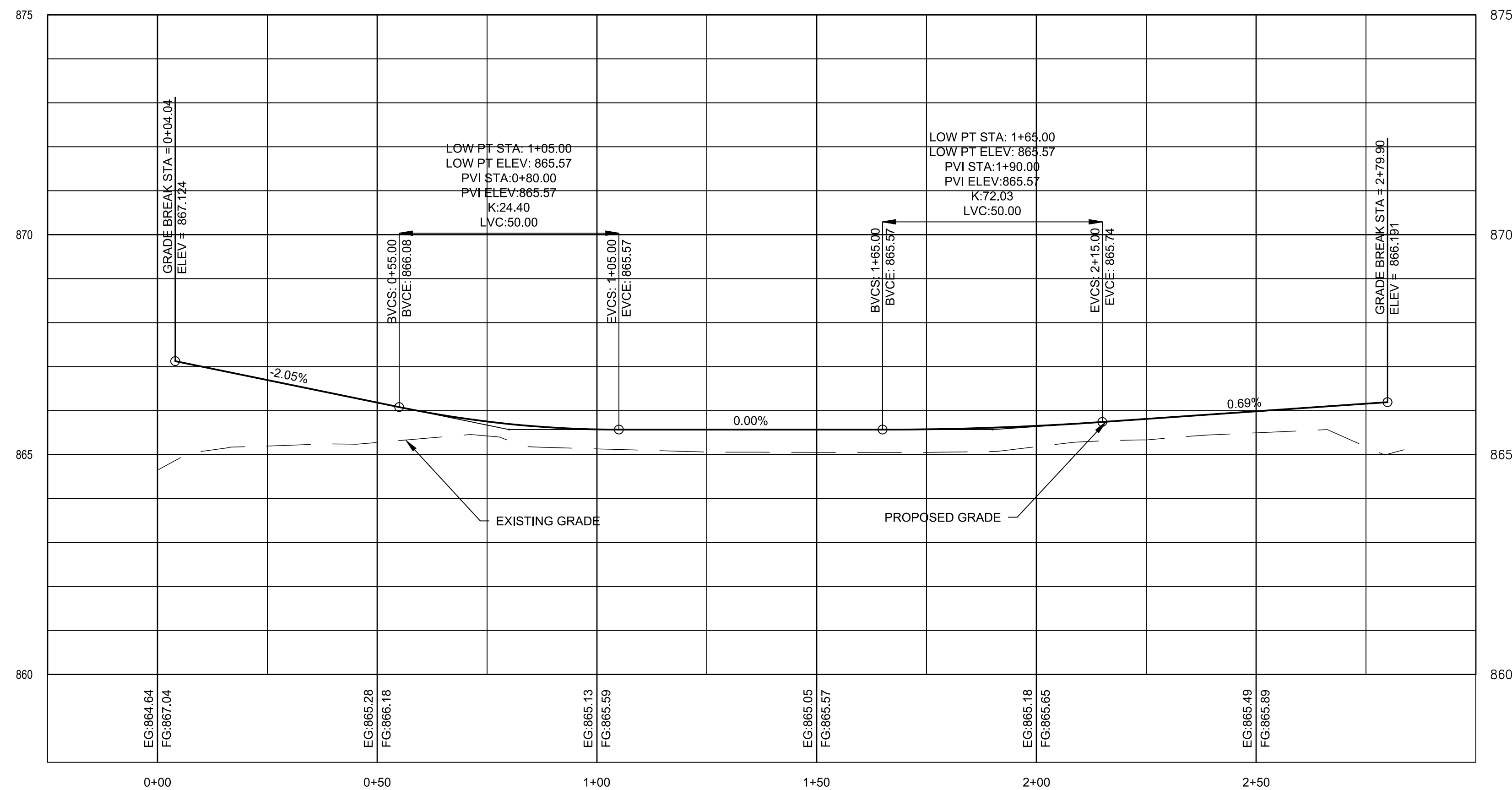
SHEET  
**C-607**





PLACE GRAVEL FLUSH WITH TOP OF BITUMINOUS TRAIL

TRAIL 6 (3) PROFILE



NO.	DATE	REVISION DESCRIPTION

DRAWN	DESIGNED	CHECKED
-	-	-
APPROVED	9/28/2018	18-04-01
DATE	PROJECT	

ARDEN PARK CREEK RESTORATION  
MINNEHAHA CREEK WATERSHED DISTRICT  
EDINA, MINNESOTA

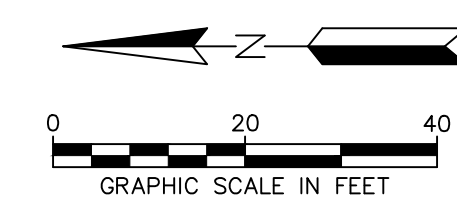
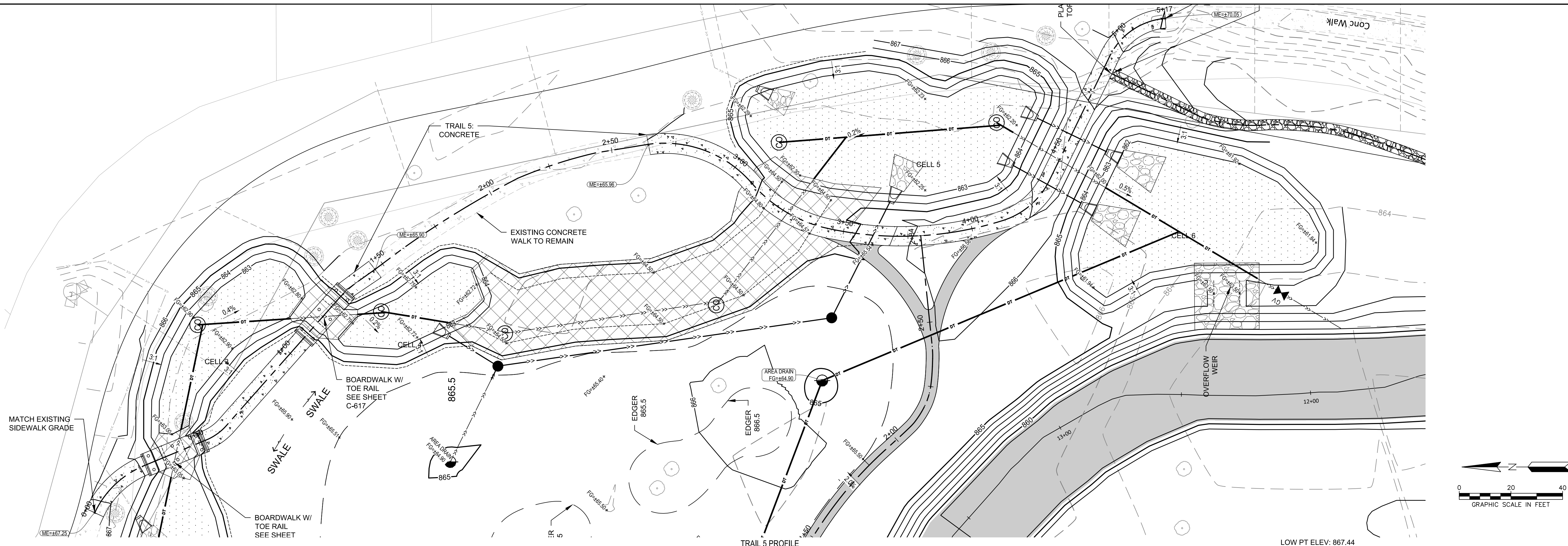


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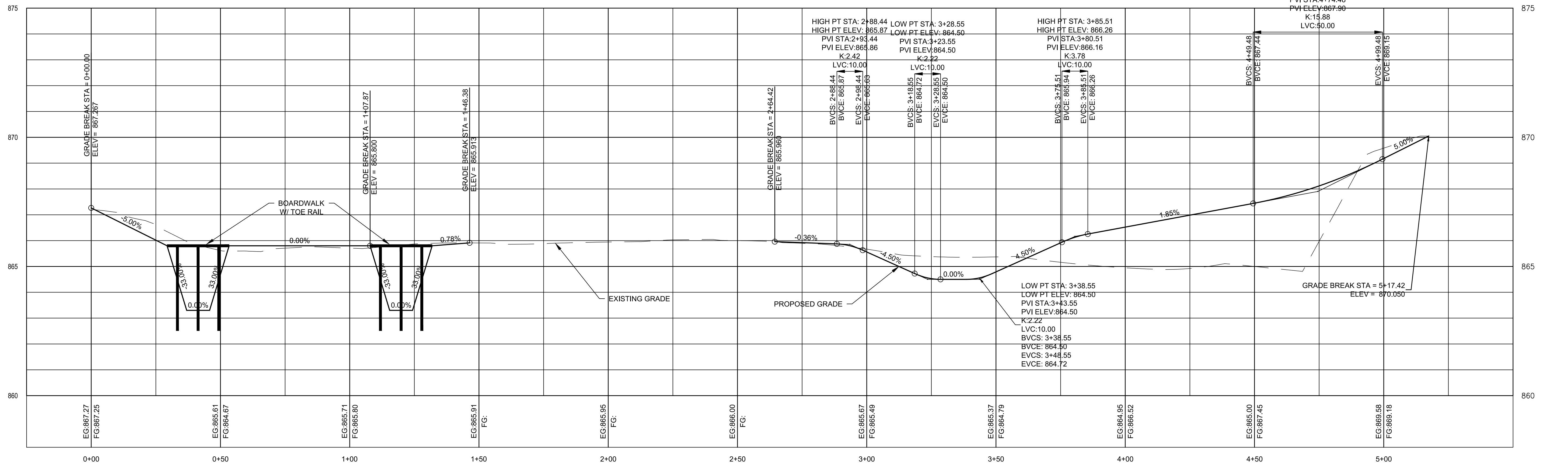
TRAIL 4 PLAN AND PROFILE

SHEET  
C-608





TRAIL 5 PROFILE



NO.	DATE	REVISION DESCRIPTION

APPROVED	DATE	PROJECT

**ARDEN PARK CREEK RESTORATION**  
**MINNEHAHA CREEK WATERSHED DISTRICT**  
**EDINA, MINNESOTA**

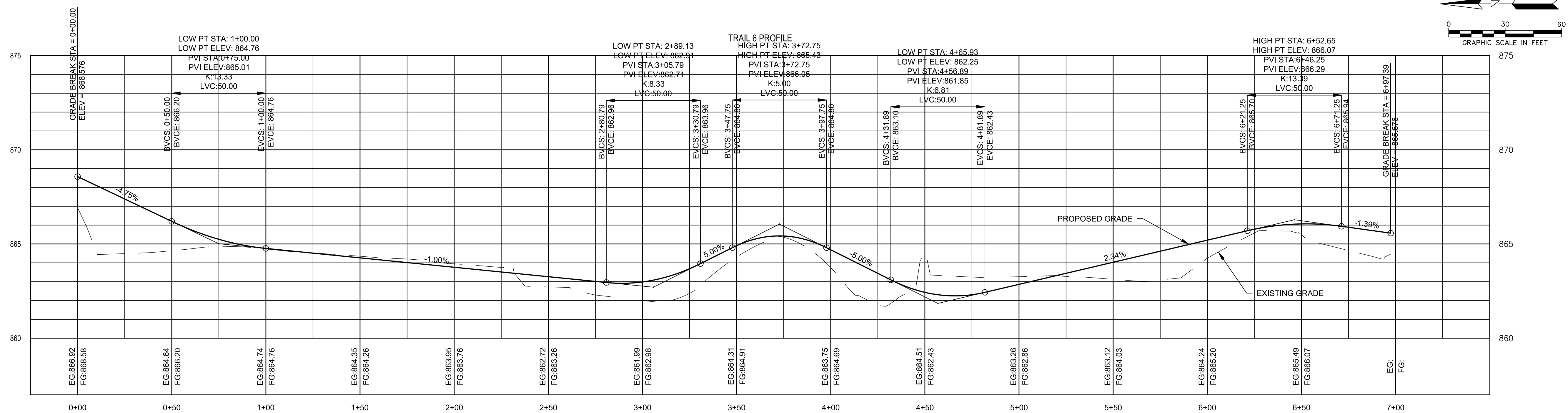
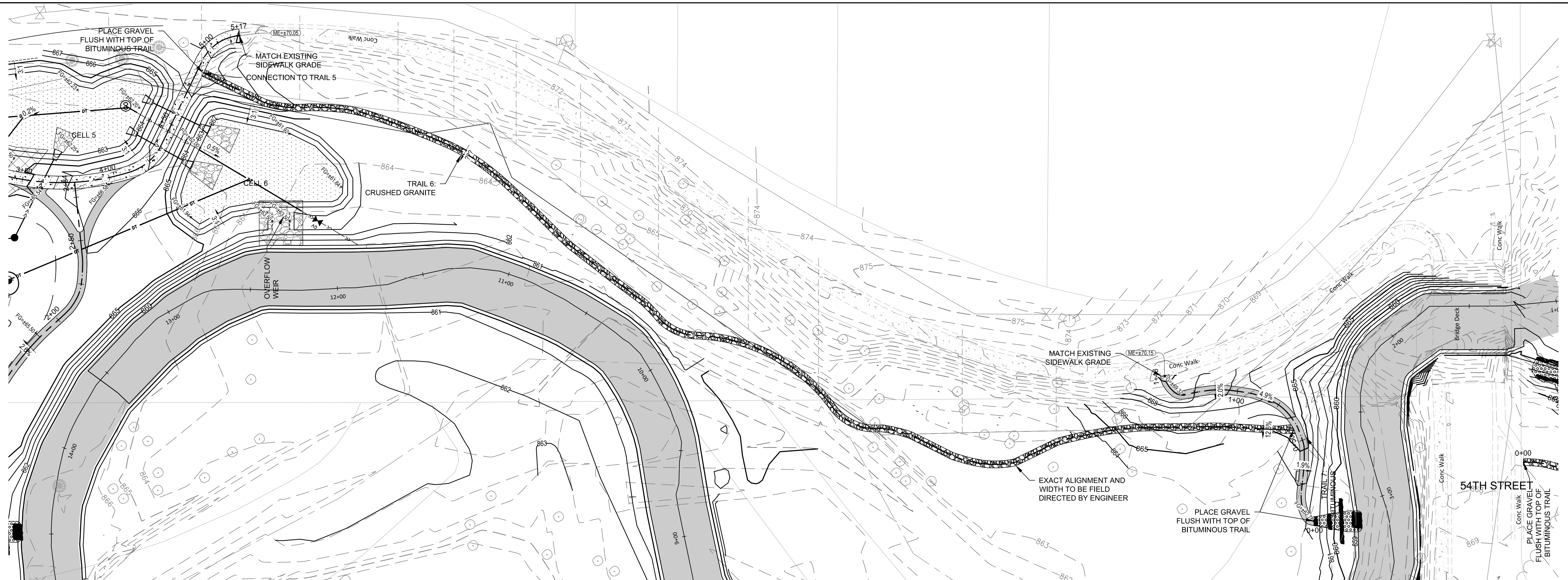


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**TRAIL 5 PLAN AND PROFILE**

SHEET  
**C-609**





NO.	DATE	REVISION DESCRIPTION

DRAWN	DESIGNED	CHECKED
	9/28/2018	18-04-01
APPROVED	DATE	PROJECT

**ARDEN PARK CREEK RESTORATION**  
**MINNEHAHA CREEK WATERSHED DISTRICT**  
**EDINA, MINNESOTA**

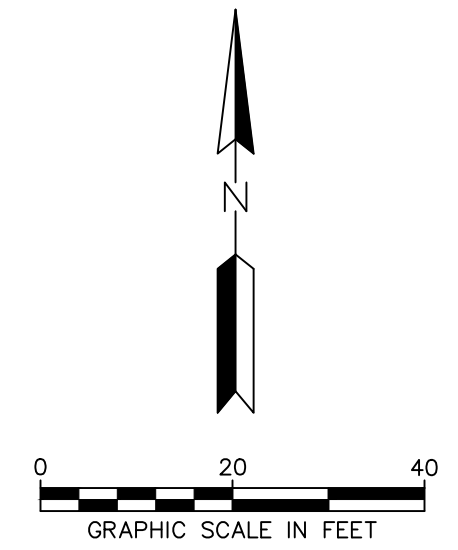
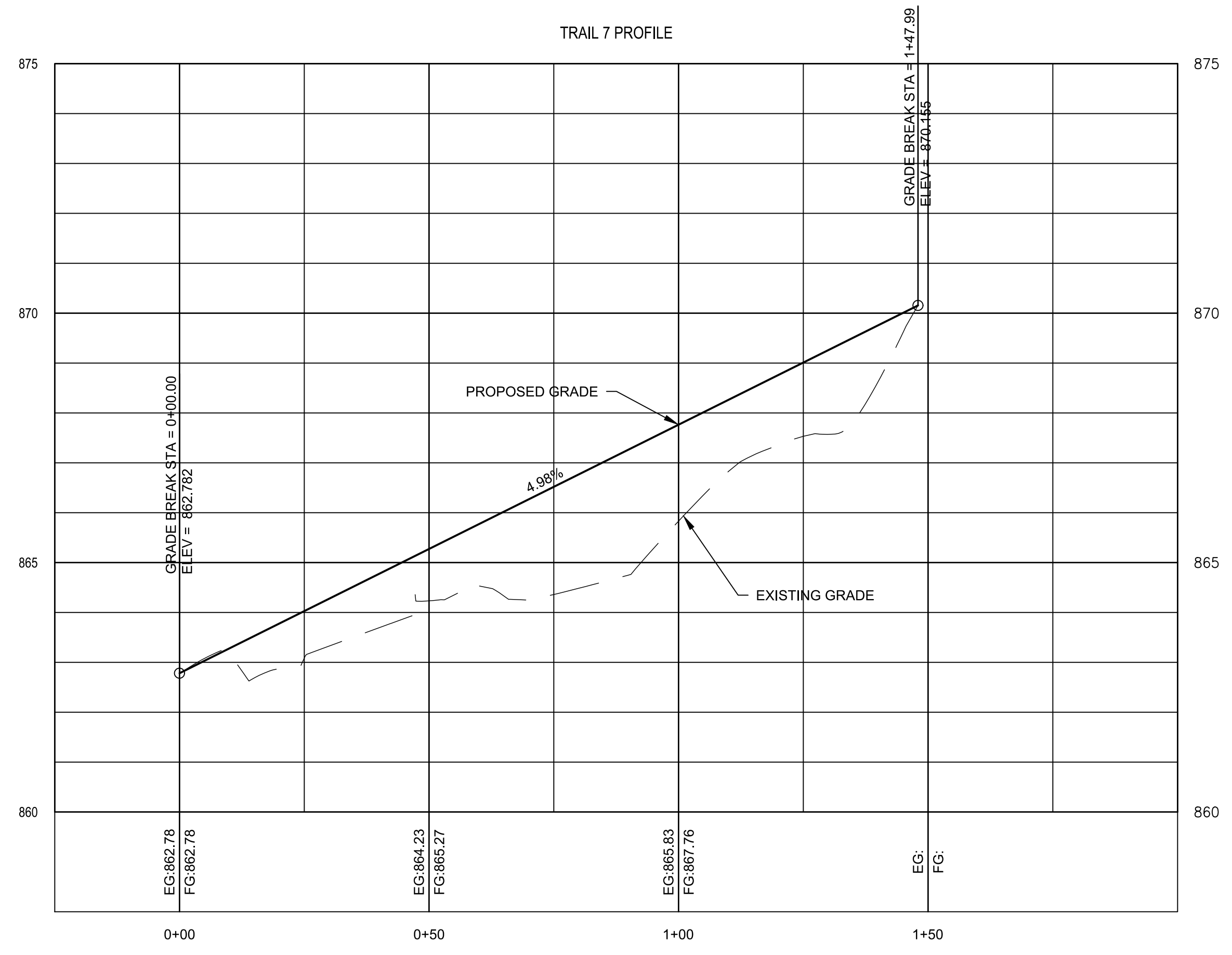
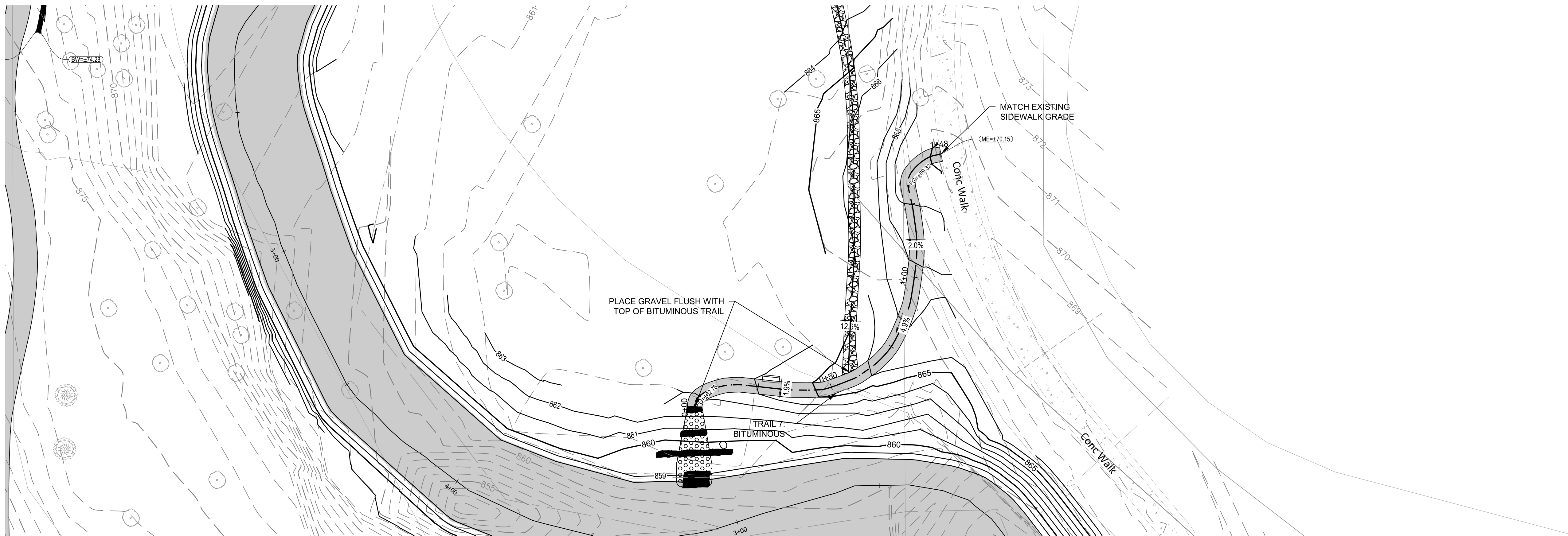


**DRAFT**

**TRAIL 6 PLAN AND PROFILE**

SHEET  
**C-610**





NO.	DATE	REVISION DESCRIPTION

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DRAWN	DESIGNED	CHECKED
-	9/28/2018	18-04-01
APPROVED	DATE	PROJECT

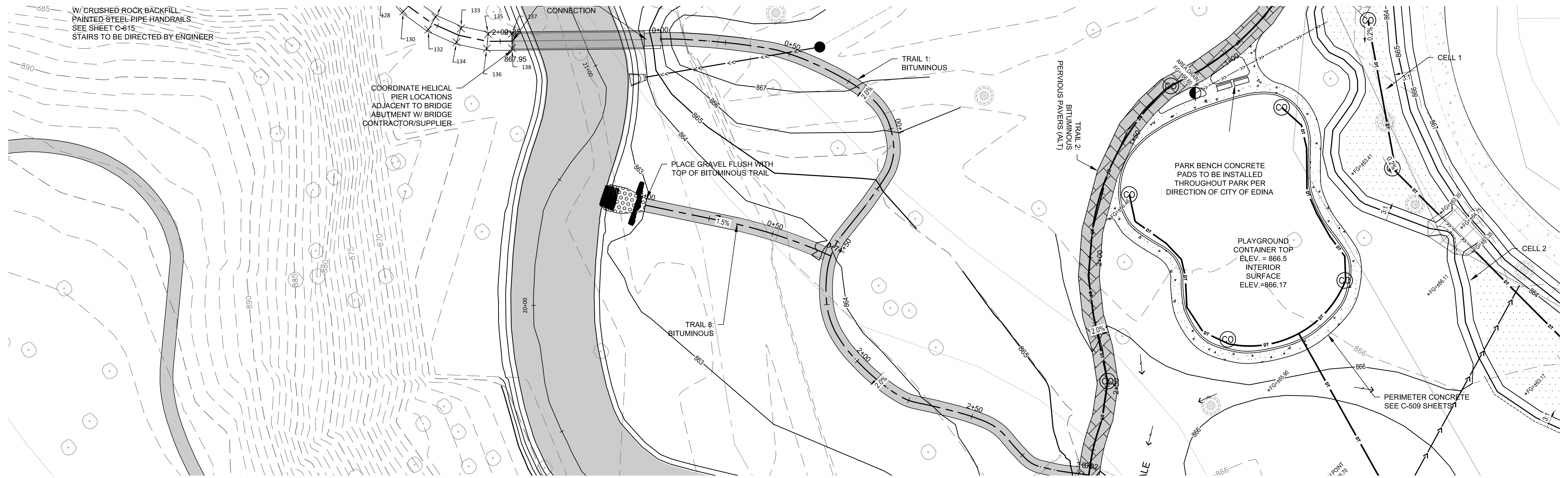
**ARDEN PARK CREEK RESTORATION**  
**MINNEHAHA CREEK WATERSHED DISTRICT**  
**EDINA, MINNESOTA**

DRAFT

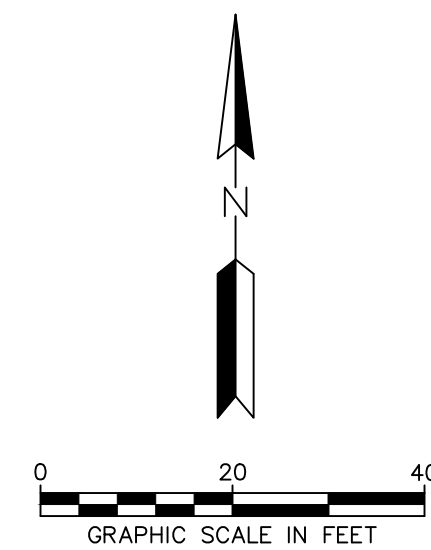
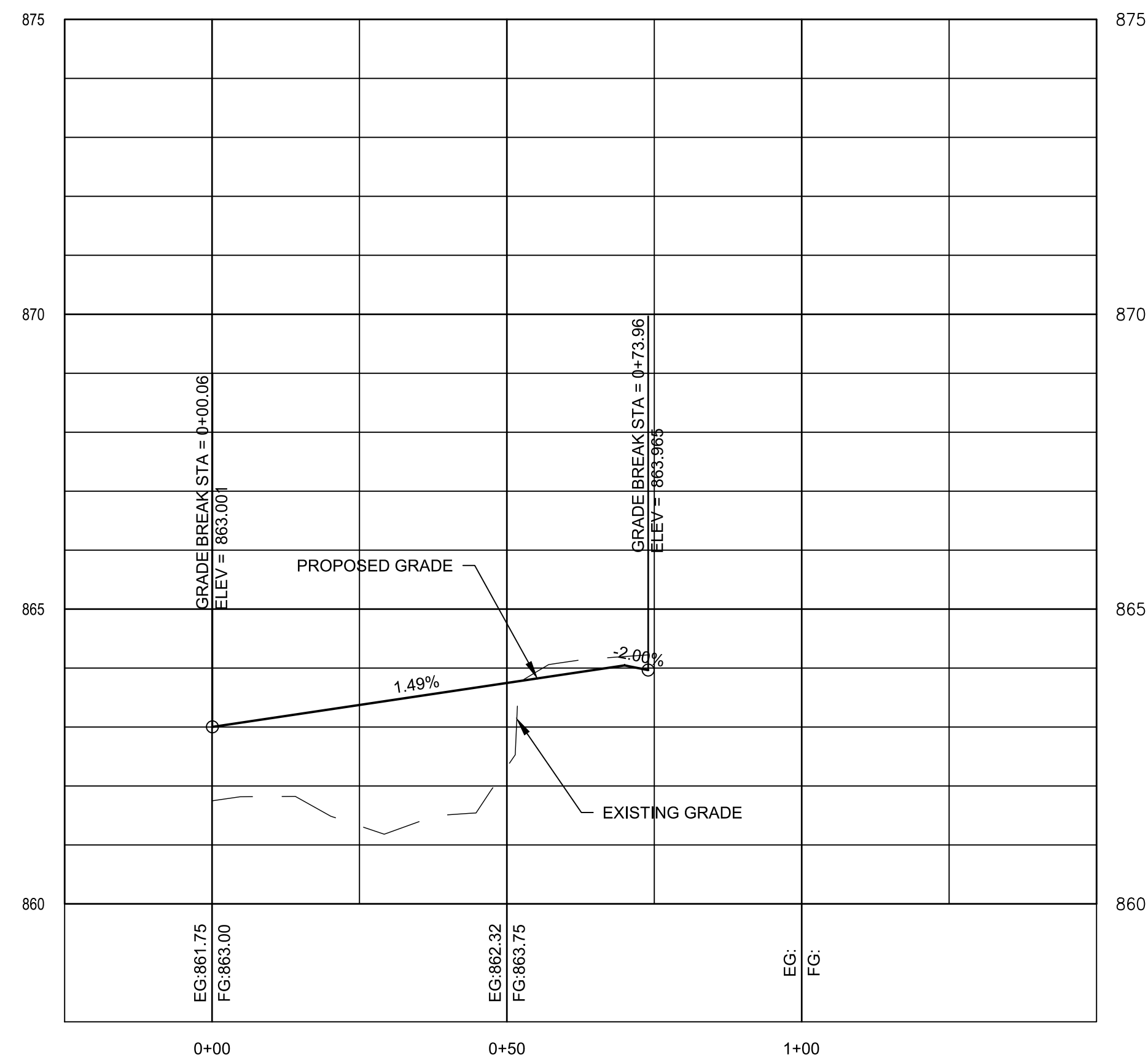
TRAIL 7 PLAN AND  
PROFILE

SHEET  
C-611





TRAIL 8 PROFILE



NO.	DATE	REVISION DESCRIPTION

DRAWN	DESIGNED	CHECKED
-	-	-
APPROVED	DATE	PROJECT
-	9/28/2018	18-04-01

ARDEN PARK CREEK RESTORATION  
 MINNEHAHA CREEK WATERSHED DISTRICT  
 EDINA, MINNESOTA

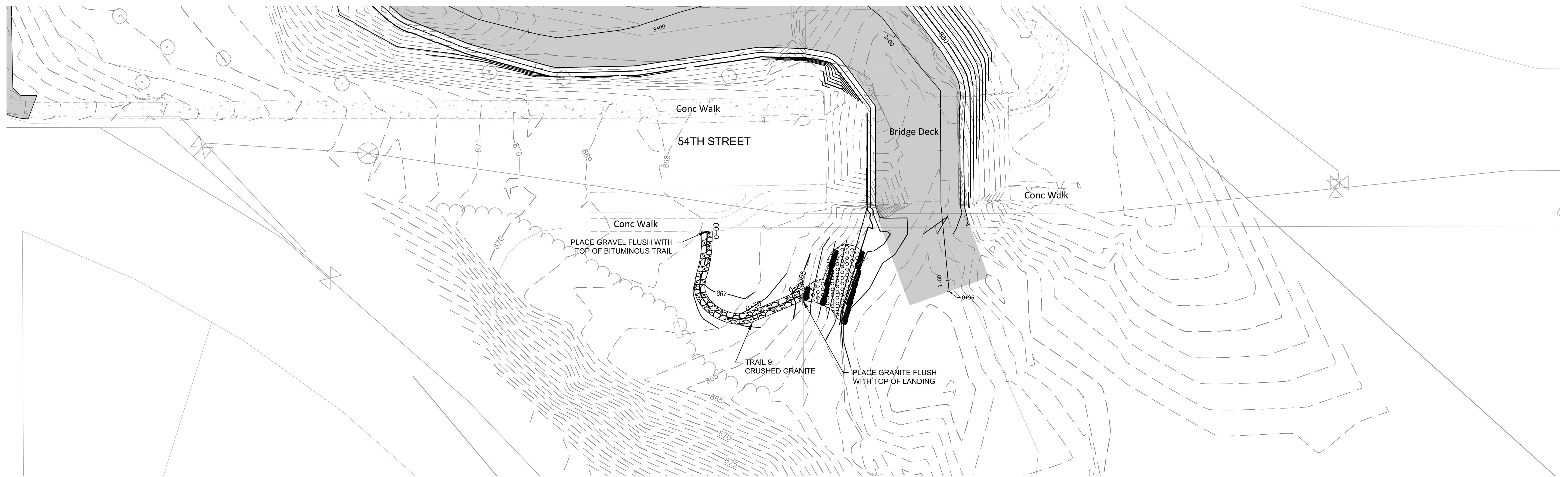


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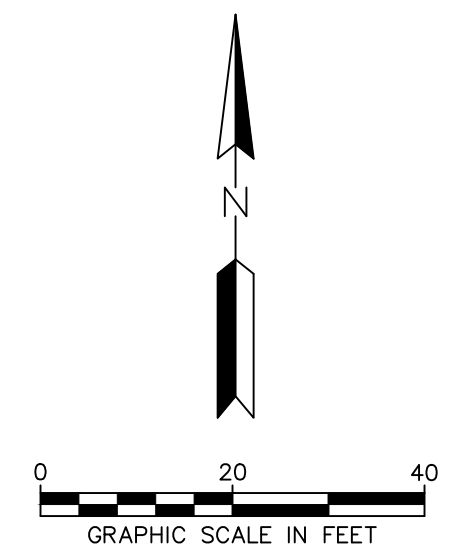
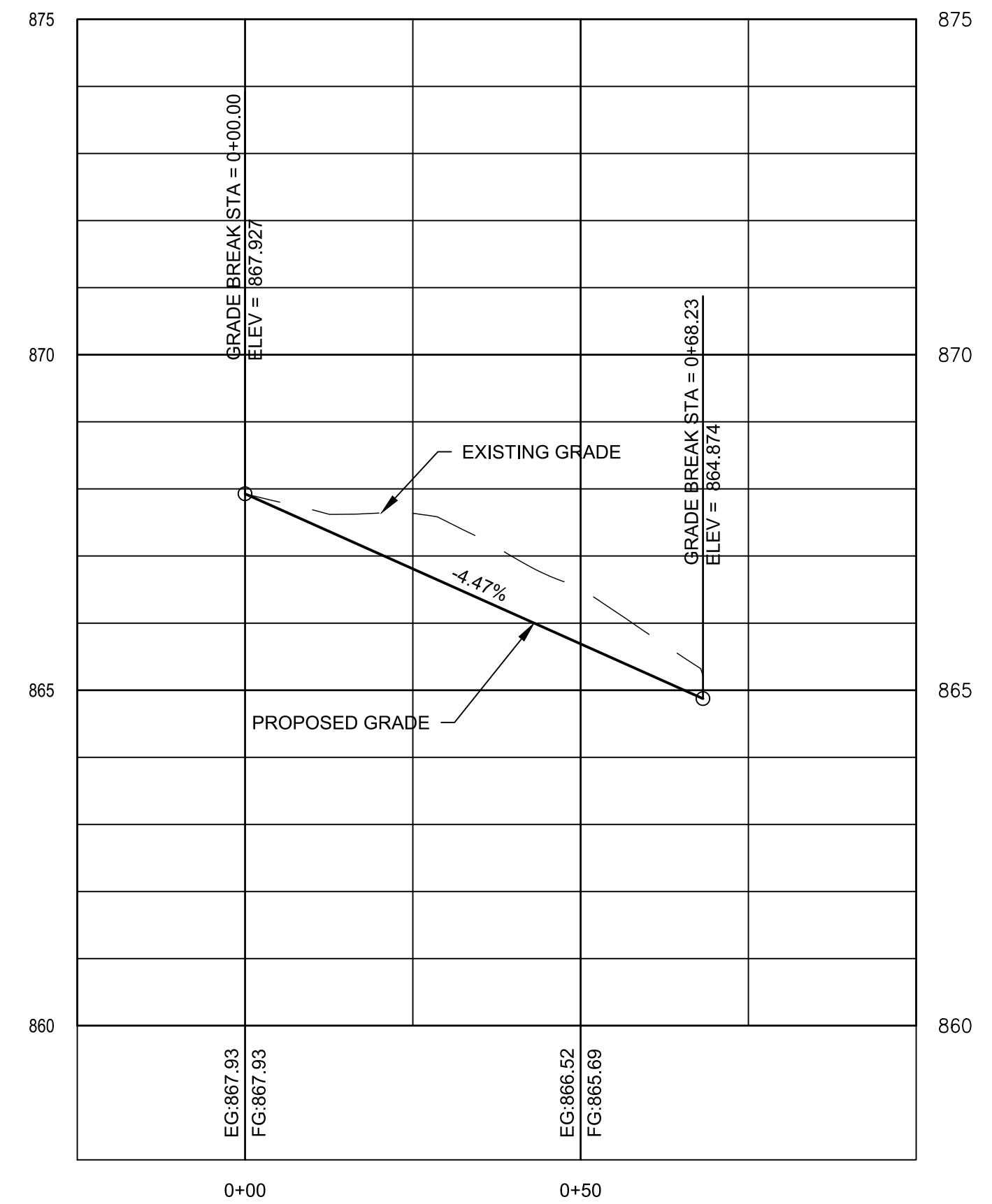
TRAIL 8 PLAN AND PROFILE

SHEET  
 C-612





TRAIL 9 PROFILE



NO.	DATE	REVISION DESCRIPTION

DRAWN	DESIGNED	CHECKED
-	-	-
-	9/28/2018	18-04-01
APPROVED	DATE	PROJECT

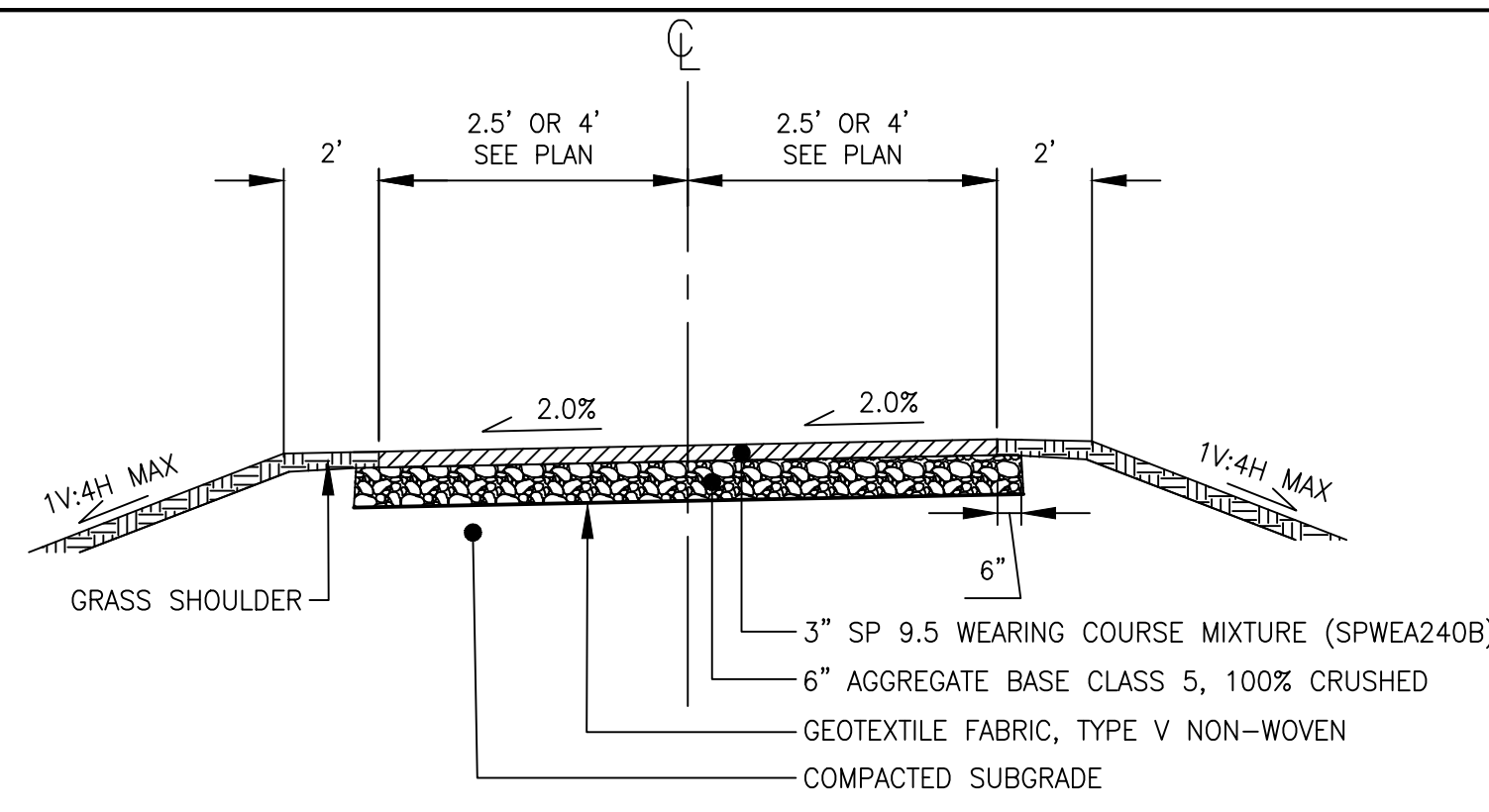
ARDEN PARK CREEK RESTORATION  
 MINNEHAHA CREEK WATERSHED DISTRICT  
 EDINA, MINNESOTA

**DRAFT**

TRAIL 9 PLAN AND  
 PROFILE

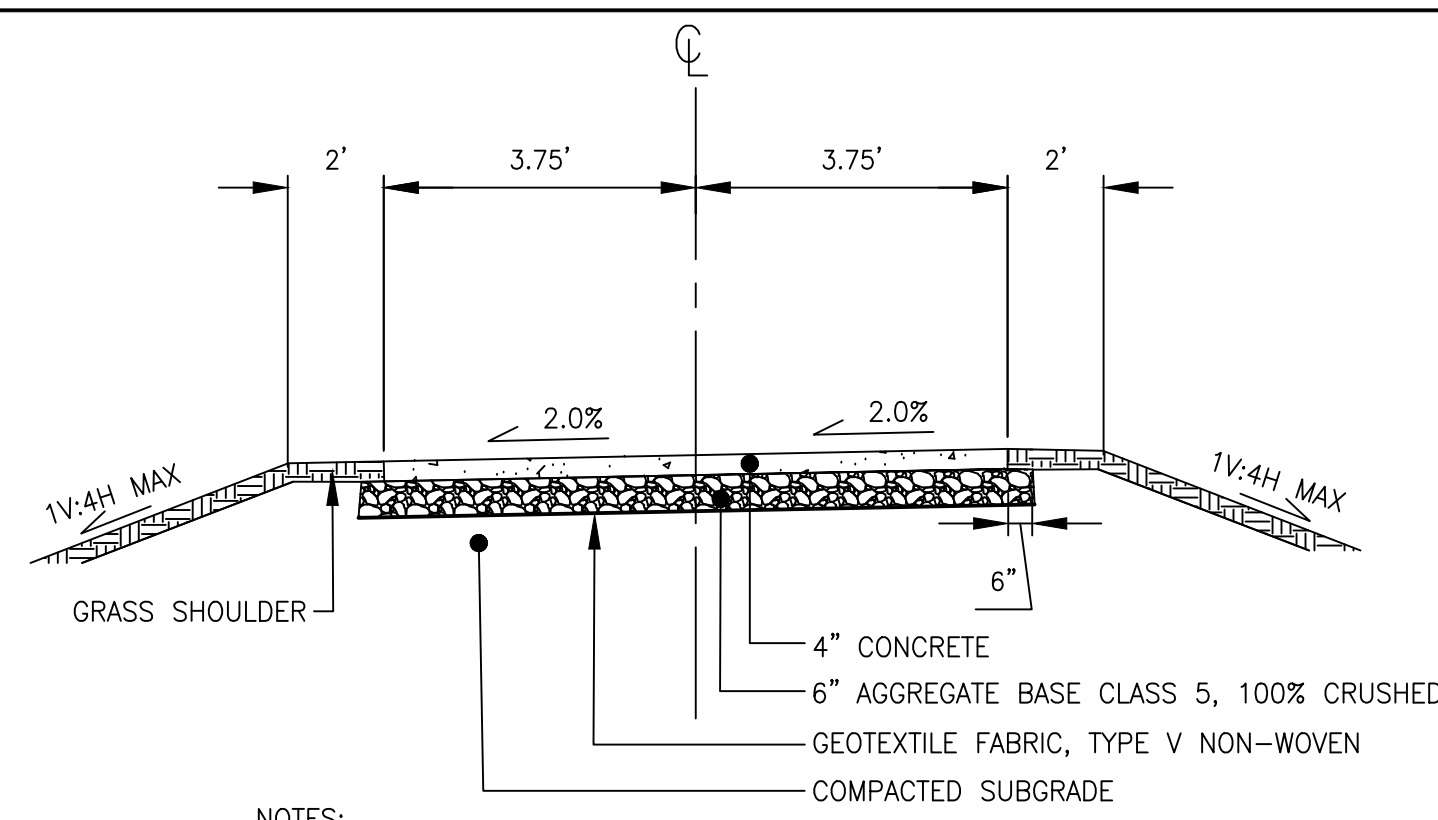
SHEET  
 C-613





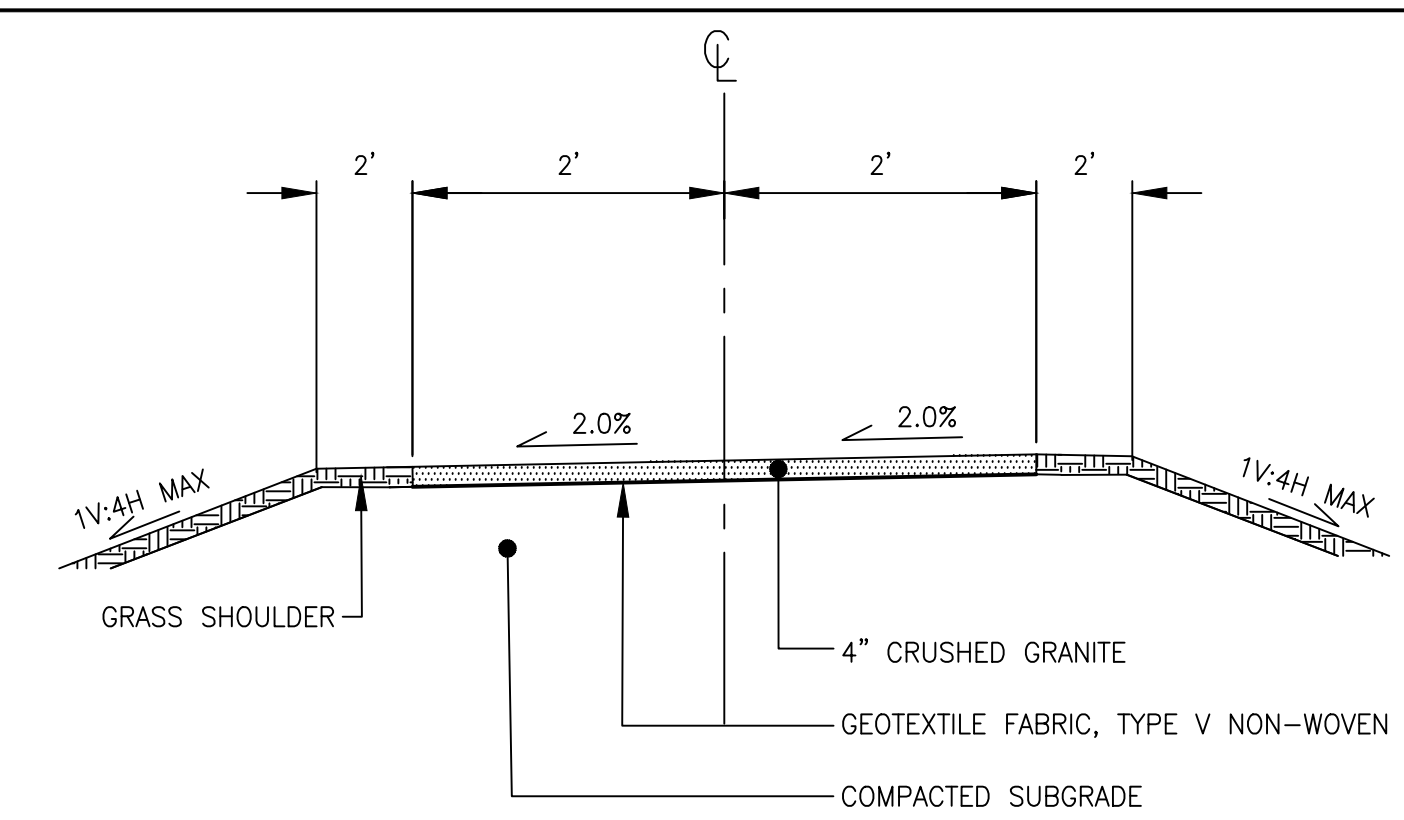
NOTES:  
 1. SCARIFY AND RECOMPACT SUBGRADE TO A DEPTH OF 12 INCHES  
 2. SEE PLAN FOR DIRECTION OF CROSS SLOPE

TYPICAL BITUMINOUS PAVING SECTION  
 NOT TO SCALE



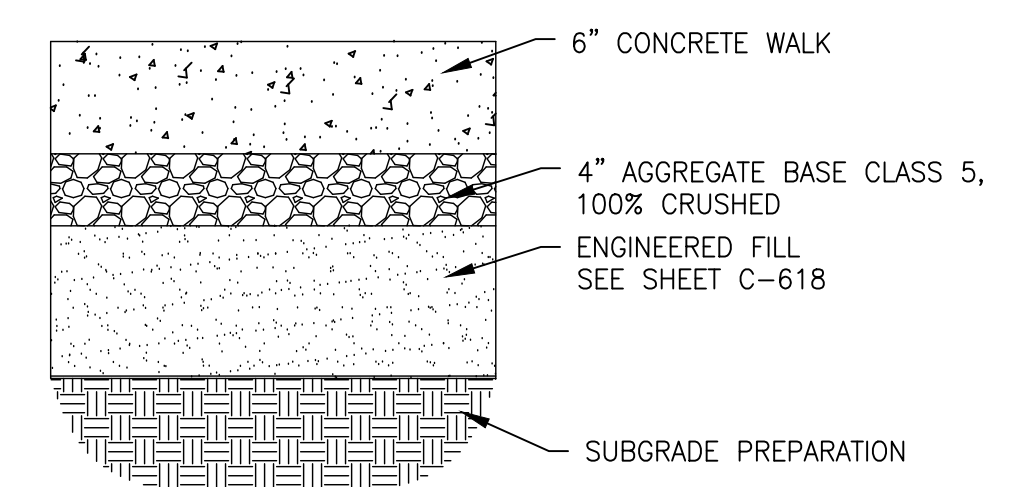
NOTES:  
 1. SCARIFY AND RECOMPACT SUBGRADE TO A DEPTH OF 12 INCHES  
 2. SEE PLAN FOR DIRECTION OF CROSS SLOPE  
 3. SEE DETAIL 9/C-614, DETAIL 10/C-614, AND CONCRETE NOTES FOR JOINTING REQUIREMENTS.

TYPICAL CONCRETE PAVING SECTION  
 NOT TO SCALE



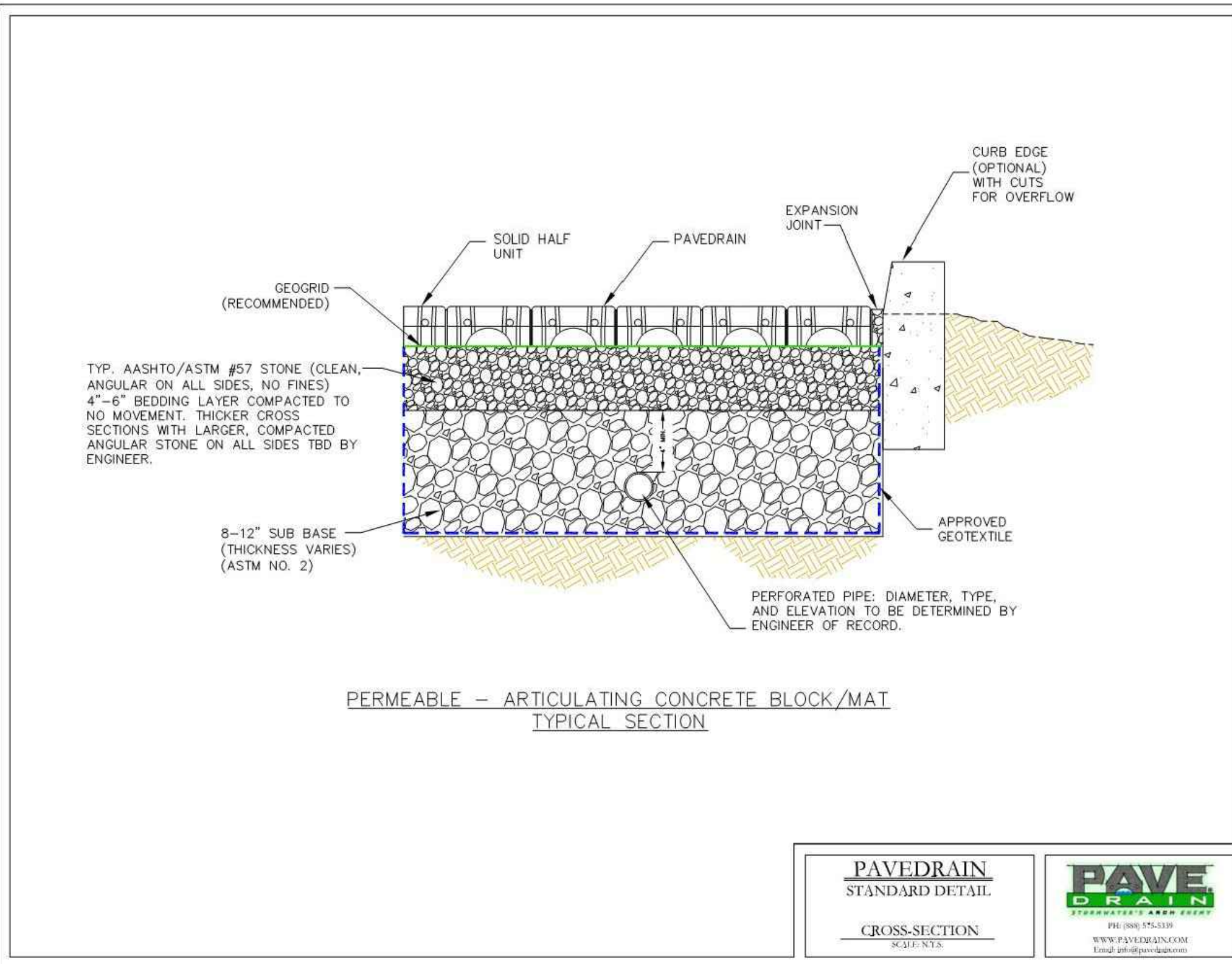
NOTES:  
 1. SCARIFY AND RECOMPACT SUBGRADE TO A DEPTH OF 12 INCHES  
 2. SEE PLAN FOR DIRECTION OF CROSS SLOPE

TYPICAL CRUSHED ROCK PAVING SECTION  
 NOT TO SCALE



NOTES:  
 1. SEE SHEET C-818, DETAIL 9/C-614, DETAIL 10/C-614, AND CONCRETE NOTES FOR JOINTING REQUIREMENTS.

TYPICAL TERRACE PAVING SECTION  
 NOT TO SCALE



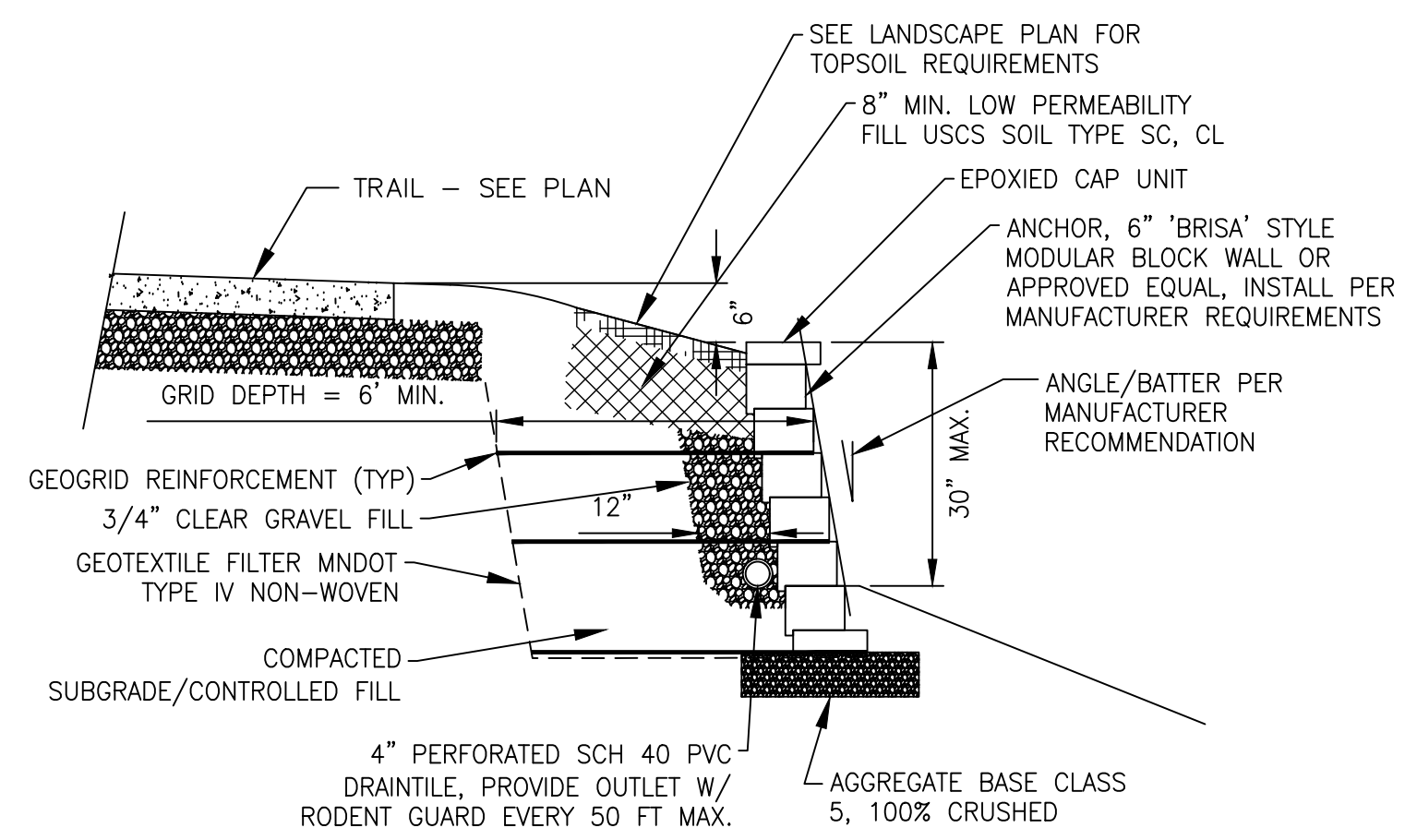
TYP. AASHTO/ASTM #57 STONE (CLEAN, ANGULAR ON ALL SIDES, NO FINES) 4\"/>

PERMEABLE - ARTICULATING CONCRETE BLOCK/MAT  
 TYPICAL SECTION



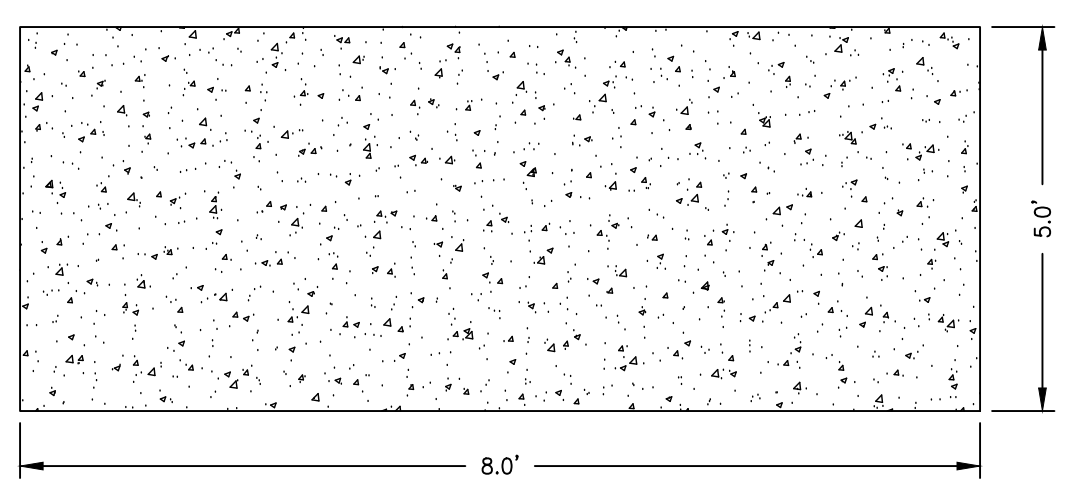
NOTES:  
 1. PROVIDE GEOGRID BETWEEN PAVEDRAIN AND AASHTO #57 STONE.  
 2. AASHTO #57 STONE BEDDING SHALL BE 6\"/>

PERMEABLE PAVERS (ALTERNATE)  
 NOT TO SCALE

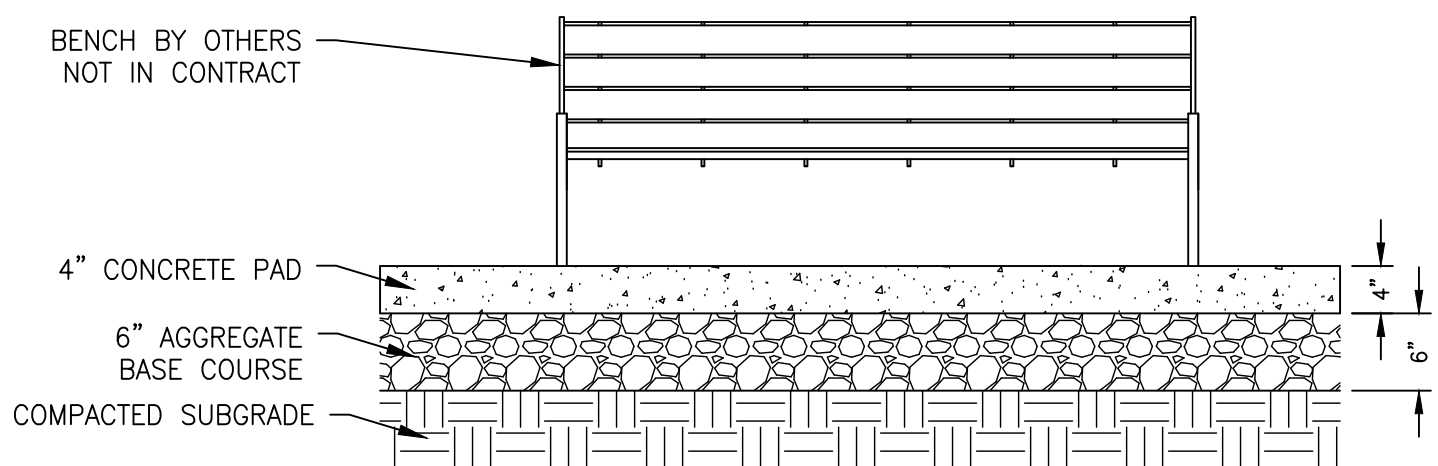


NOTES:  
 1. SUBGRADE SOIL SUITABILITY SHALL BE VERIFIED BY GEOTECHNICAL ENGINEER PRIOR TO WALL CONSTRUCTION. UNSUITABLE SUBGRADE SOILS WILL BE SUBCUT APPROXIMATELY 2 FEET AND REPLACED WITH COMPACTED SUITABLE SOIL PRIOR TO WALL CONSTRUCTION.  
 2. INSTALL BLOCK RETAINING WALL PER MANUFACTURER REQUIREMENTS

RETAINING WALL - TRAIL ABOVE  
 NOT TO SCALE

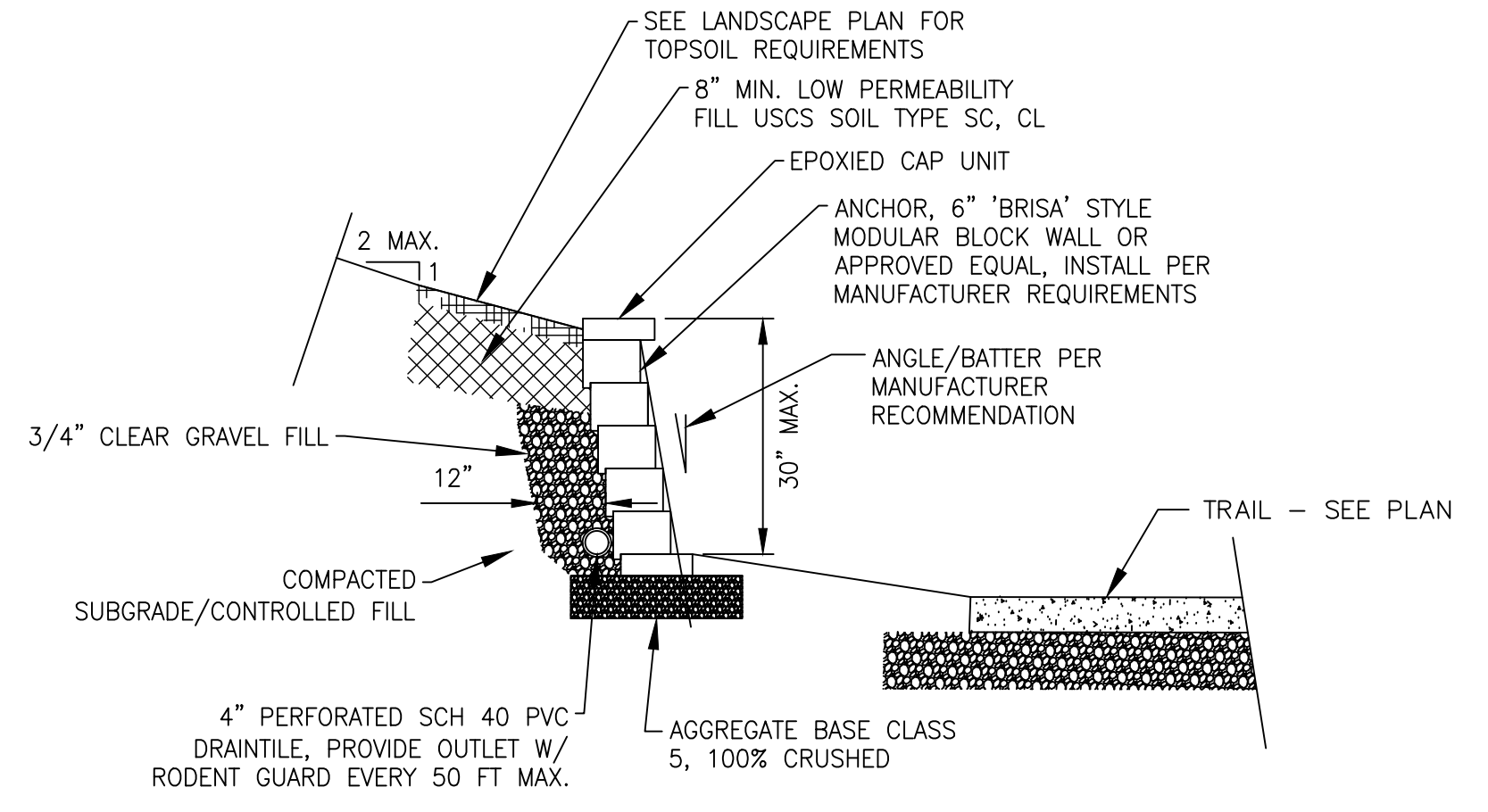


PLAN



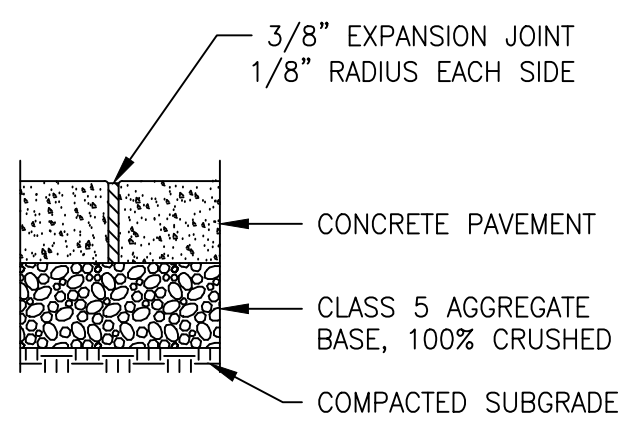
SECTION

PARK BENCH CONCRETE PAD  
 NOT TO SCALE

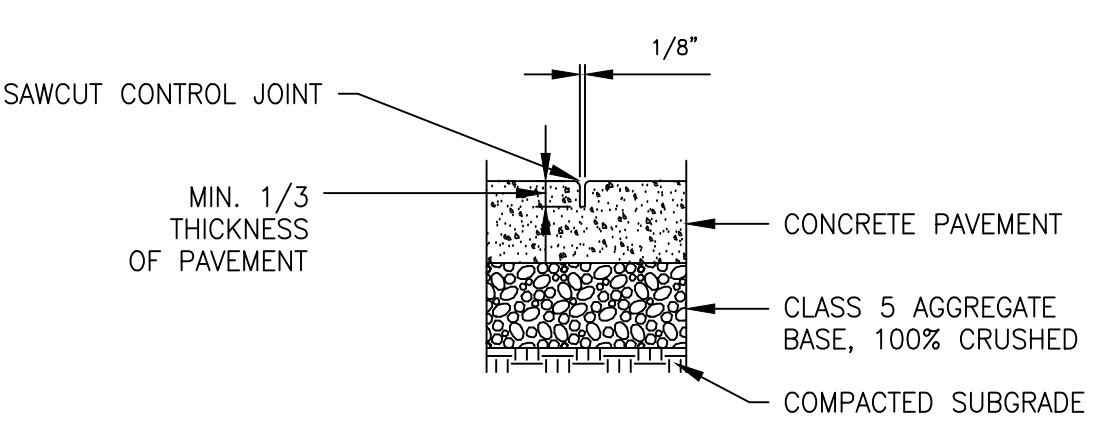


NOTES:  
 1. SUBGRADE SOIL SUITABILITY SHALL BE VERIFIED BY GEOTECHNICAL ENGINEER PRIOR TO WALL CONSTRUCTION. UNSUITABLE SUBGRADE SOILS WILL BE SUBCUT APPROXIMATELY 2 FEET AND REPLACED WITH COMPACTED SUITABLE SOIL PRIOR TO WALL CONSTRUCTION.  
 2. INSTALL BLOCK RETAINING WALL PER MANUFACTURER REQUIREMENTS

RETAINING WALL - TRAIL BELOW  
 NOT TO SCALE



CONCRETE EXPANSION JOINT DETAIL  
 NOT TO SCALE



PARK BENCH CONCRETE PAD  
 NOT TO SCALE

CONCRETE NOTES:  
 1. CONTROL JOINTS - MAINTAIN AN ASPECT RATIO (LENGTH TO WIDTH) BETWEEN CONTROL JOINTS AS CLOSE TO 1:1 AS FEASIBLE. DO NOT EXCEED ASPECT RATIO GREATER THAN 1.5:1, EXCEPT IF NOTED OTHERWISE.  
 2. EXPANSION JOINTS - PROVIDE AT MAXIMUM 60' SPACING AND THE FOLLOWING:  
 2.1. LOCATIONS WHERE ABRUPT CHANGES IN DIRECTION OCCUR  
 2.2. LOCATIONS WHERE CHANGES IN WIDTH OCCUR  
 2.3. LOCATIONS WHERE ADJOINING EXISTING CONCRETE  
 2.4. LOCATIONS ON THE EXTREME THAT ABOUT THE BUILDING INCLUDING RAMPS, STAIRS, LANDINGS, CONCRETE APRONS, ARCHITECTURAL AND LANDSCAPE FEATURES, ETC.  
 2.5. LOCATIONS IN CHANGES IN DEPTH.  
 3. WHENEVER POSSIBLE MATCH JOINTS OF ADJACENT CONCRETE WORK.  
 4. JOINT FACES SHALL BE CLEANED AND DRIED BY SANDBLASTING AND AIR BLASTING. PRIOR TO SEALING THE JOINT, A CLOSED CELL BACKER ROD CAPABLE OF WITHSTANDING SEALANT TEMPERATURES OF 400 DEGREES F, WITH A DIAMETER 1/8 IN. LARGER THAN THE JOINT OPENING, MAY BE PLACED 1/2 IN. BELOW THE TOP OF PAVEMENT.

NO.	DATE	REVISION DESCRIPTION

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ARDEN PARK CREEK RESTORATION  
 MINNEHAHA CREEK WATERSHED DISTRICT  
 EDINA, MINNESOTA

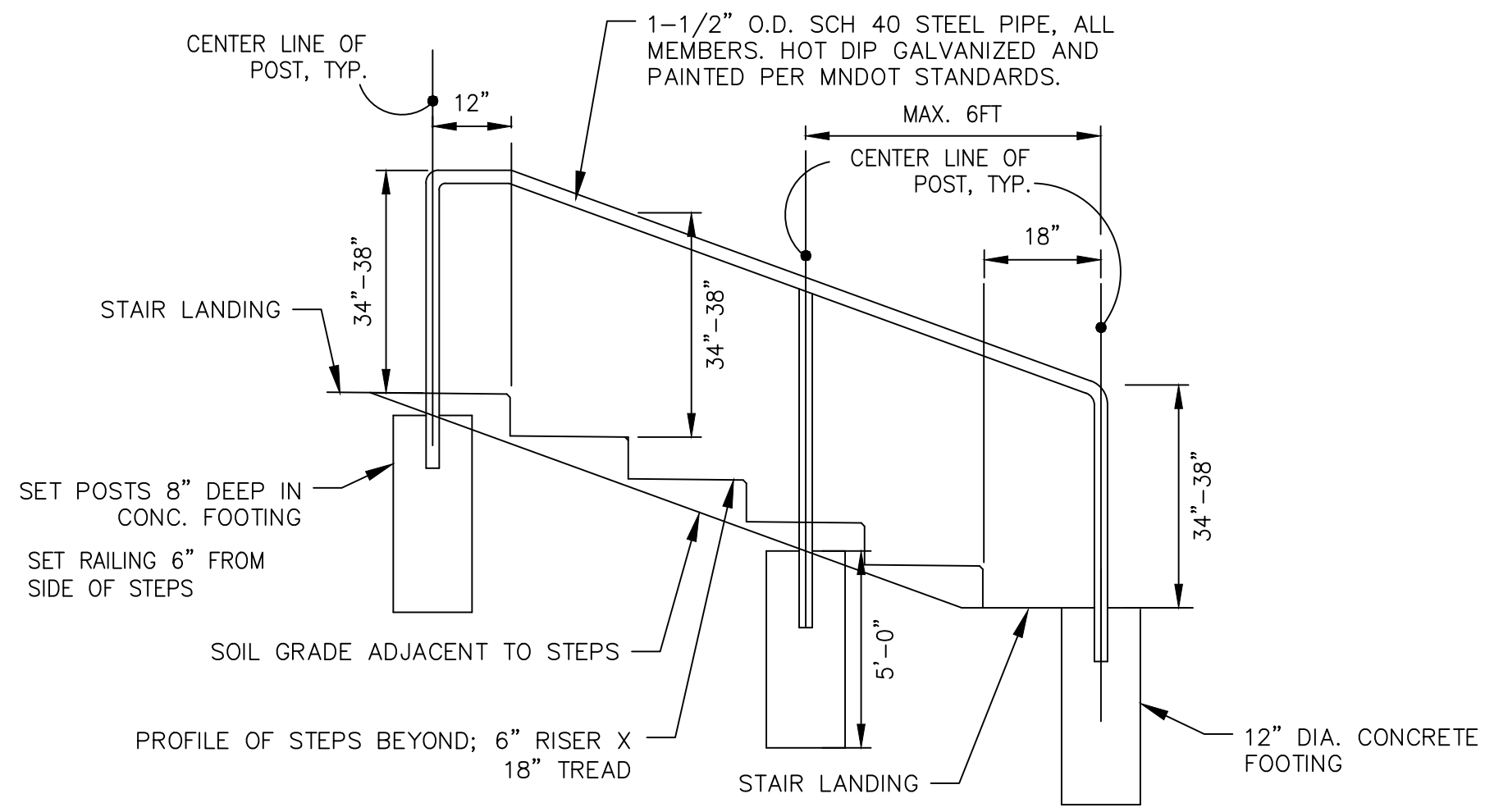


DRAFT

DETAILS

SHEET  
 C-614

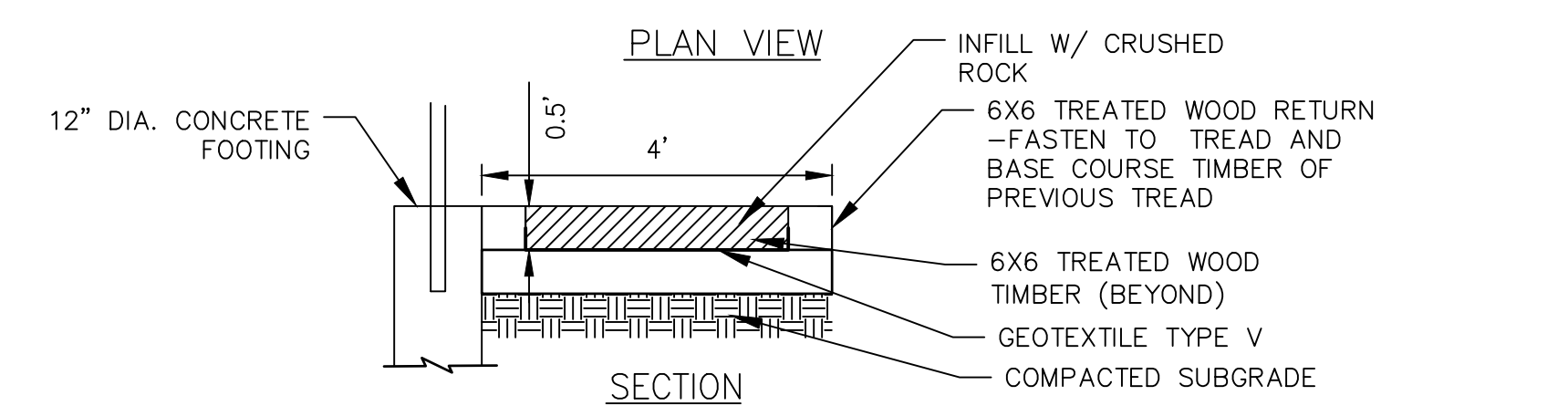
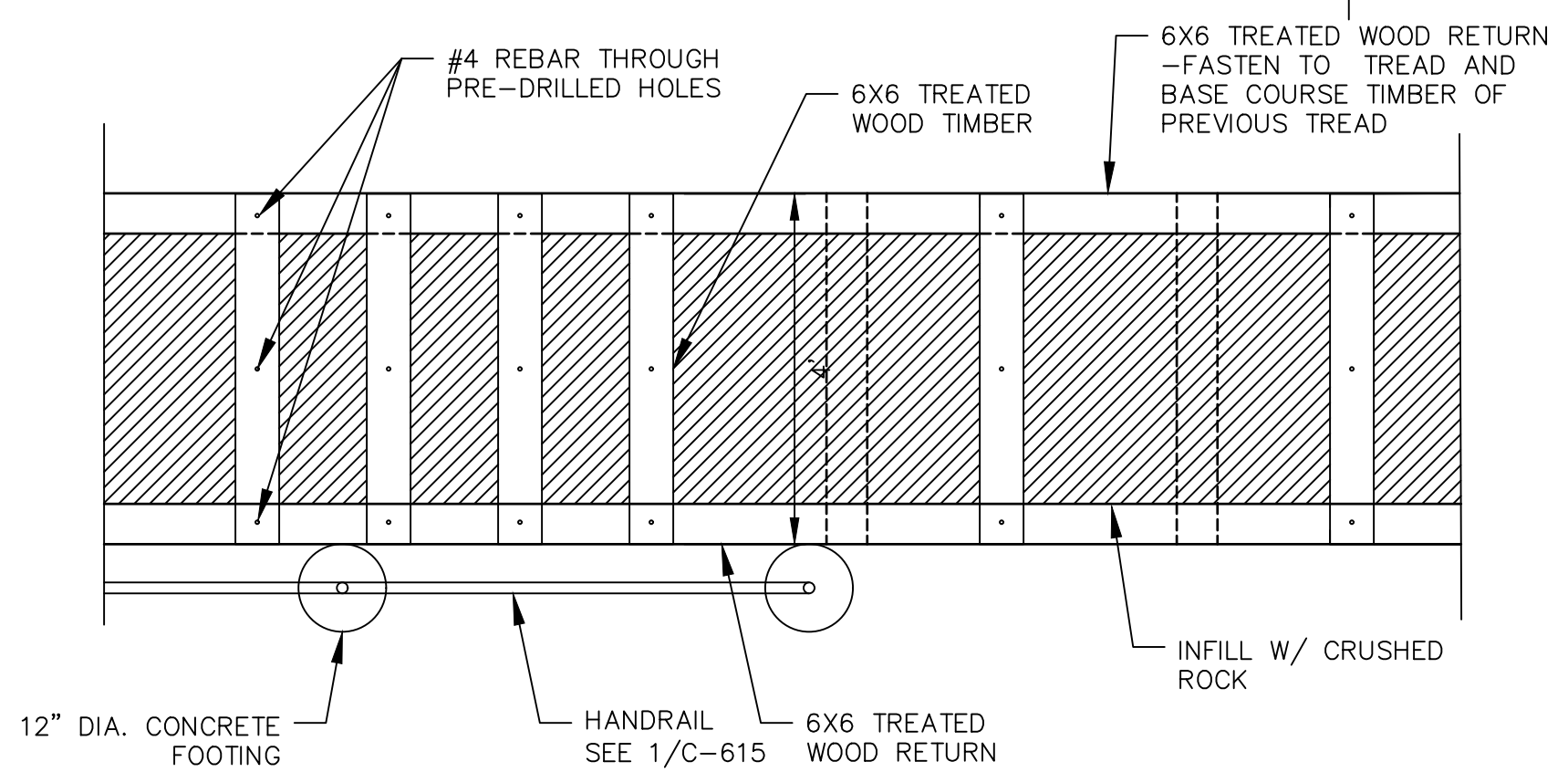
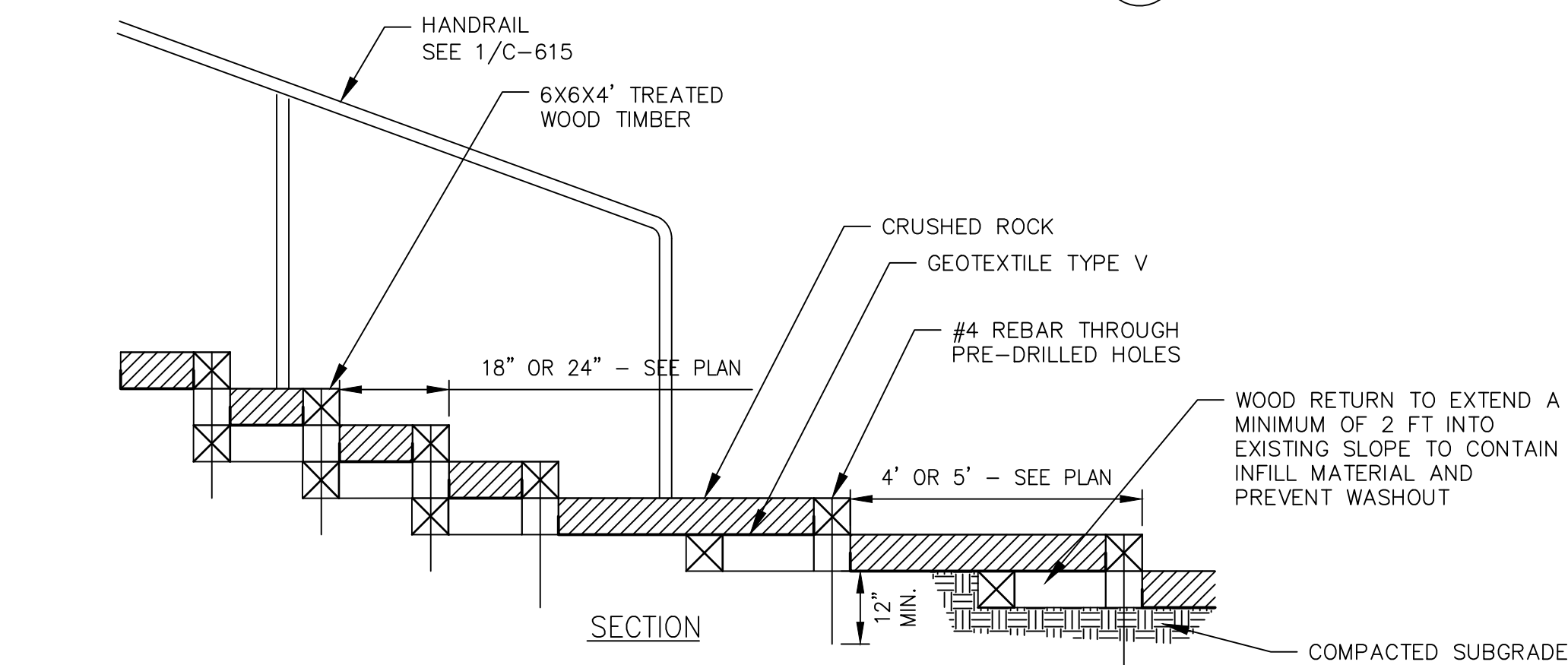




NOTE: DETAIL ABOVE SHOWS GENERAL RAILING REQUIREMENTS ONLY. SEE PLAN FOR LENGTH AND LOCATION.

HANDRAIL AT STAIRS  
NOT TO SCALE

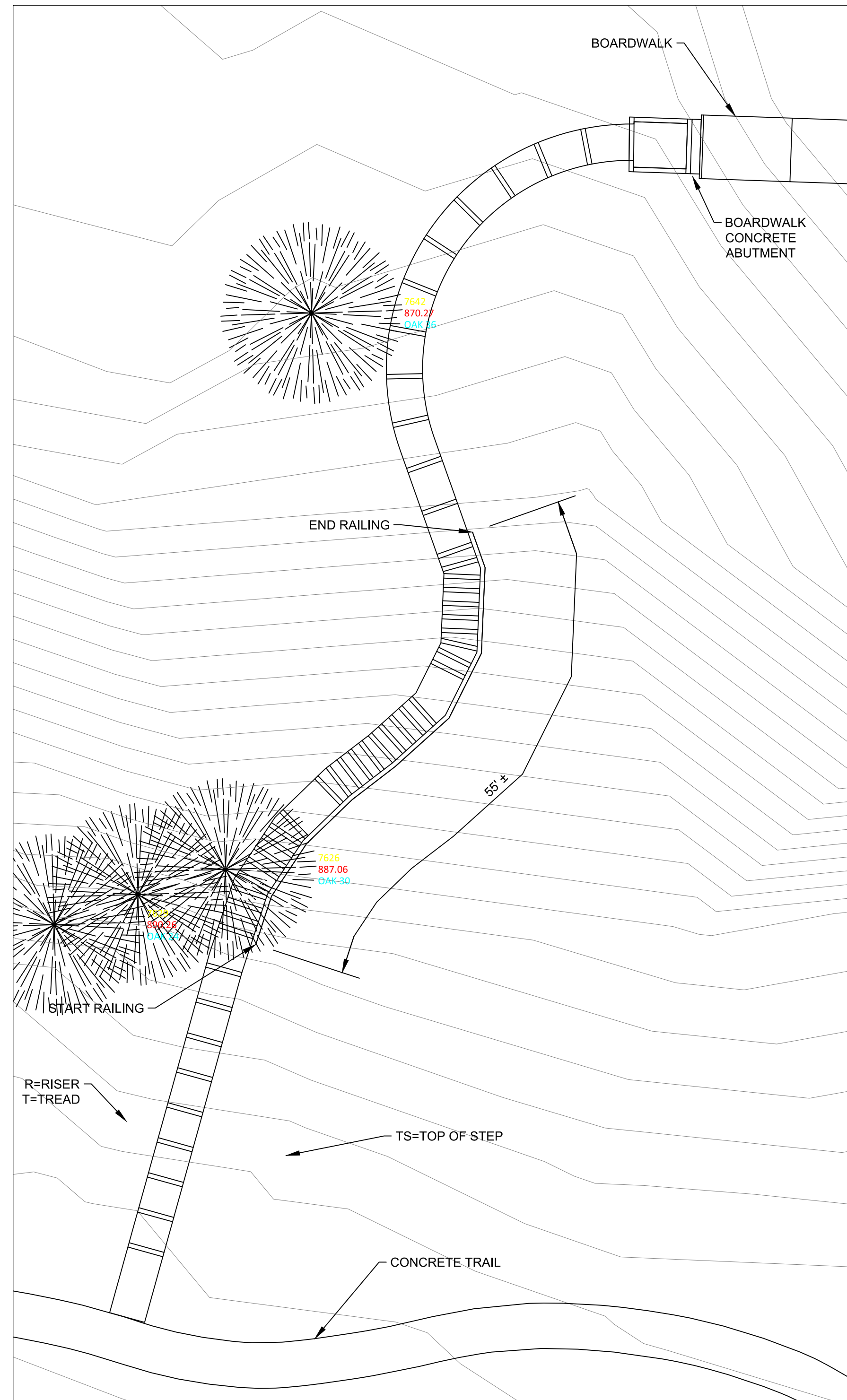
1  
C-615



NOTE: DETAILS ABOVE SHOWS GENERAL STAIR REQUIREMENTS ONLY. SEE PLAN FOR FULL EXTENT OF STAIR ALIGNMENT AND DIMENSIONS.

WOOD STAIRS  
NOT TO SCALE

2  
C-615

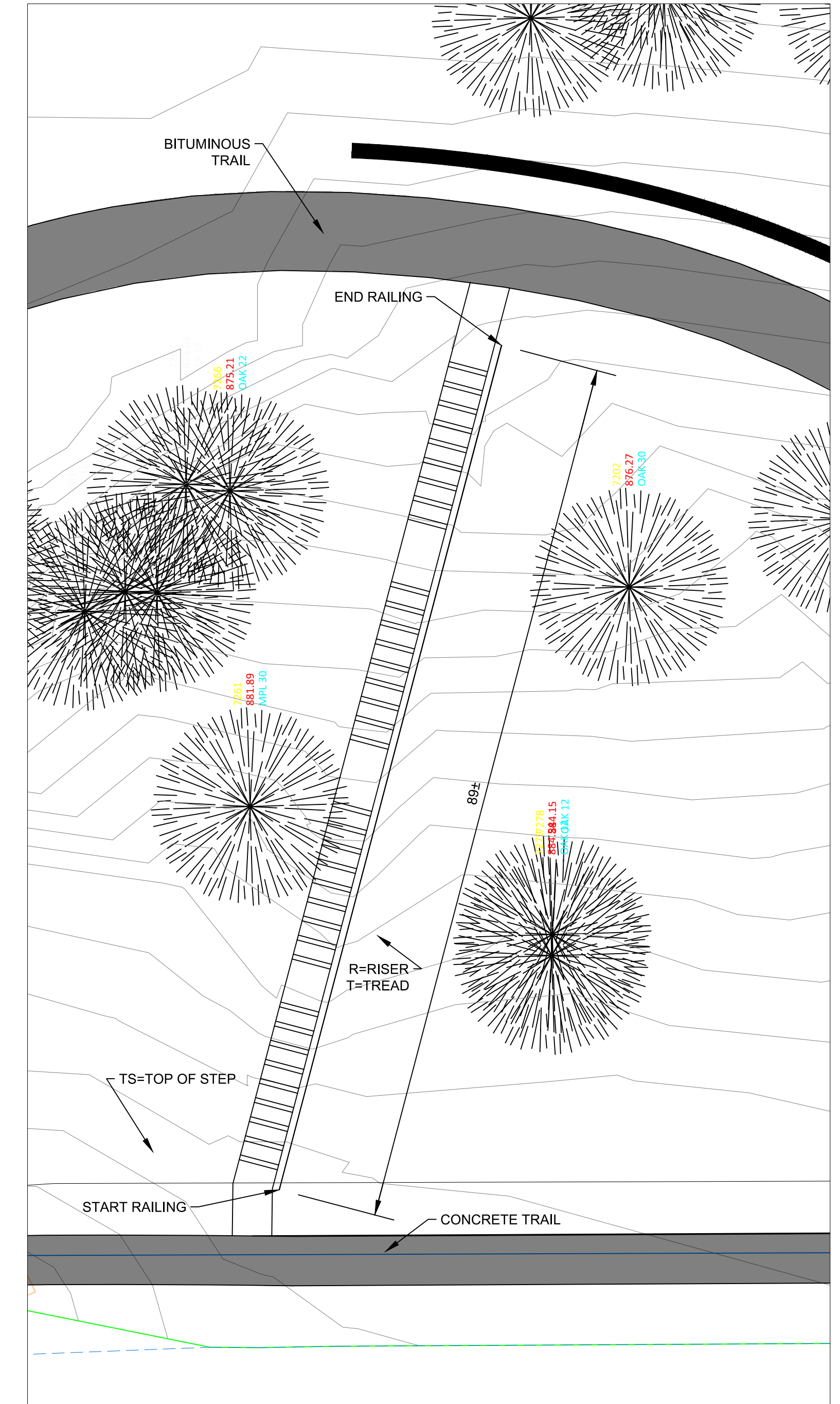


NOTE: TRAIL PLAN IS APPROXIMATE AND TO BE FIELD DIRECTED BY ENGINEER

OAKLAWN STAIR CONNECTION PLAN

3  
C-615

0 10 20  
GRAPHIC SCALE IN FEET



NOTE: TRAIL PLAN IS APPROXIMATE AND TO BE FIELD DIRECTED BY ENGINEER

BROOKVIEW STAIR CONNECTION PLAN

3  
C-615

0 10 20  
GRAPHIC SCALE IN FEET

NO.	DATE	REVISION DESCRIPTION

DRAWN	DESIGNED	CHECKED
-	9/28/2018	18-04-01
APPROVED	DATE	PROJECT

ARDEN PARK CREEK RESTORATION  
MINNEHAHA CREEK WATERSHED DISTRICT  
EDINA, MINNESOTA

inter-fluve  
2121 Randolph Ave, Suite 200  
St. Paul, MN 55105  
(651) 243-9700  
www.interfluve.com

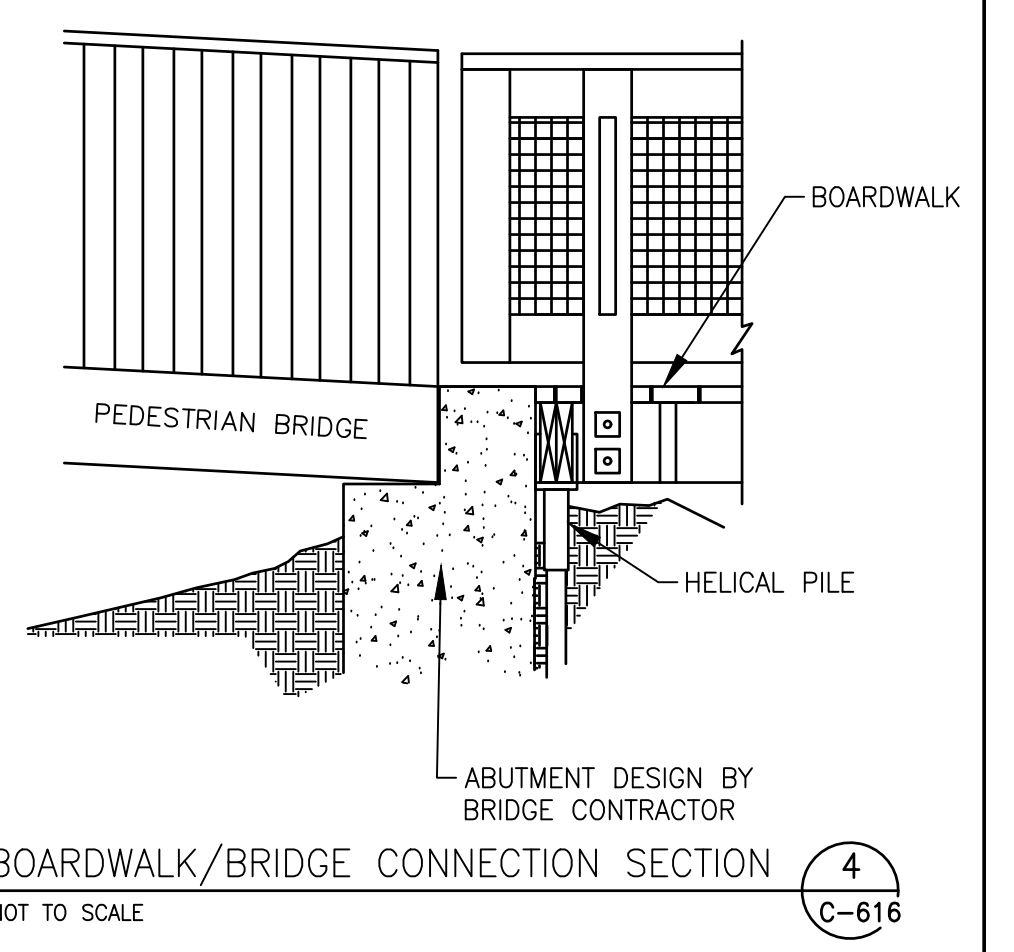
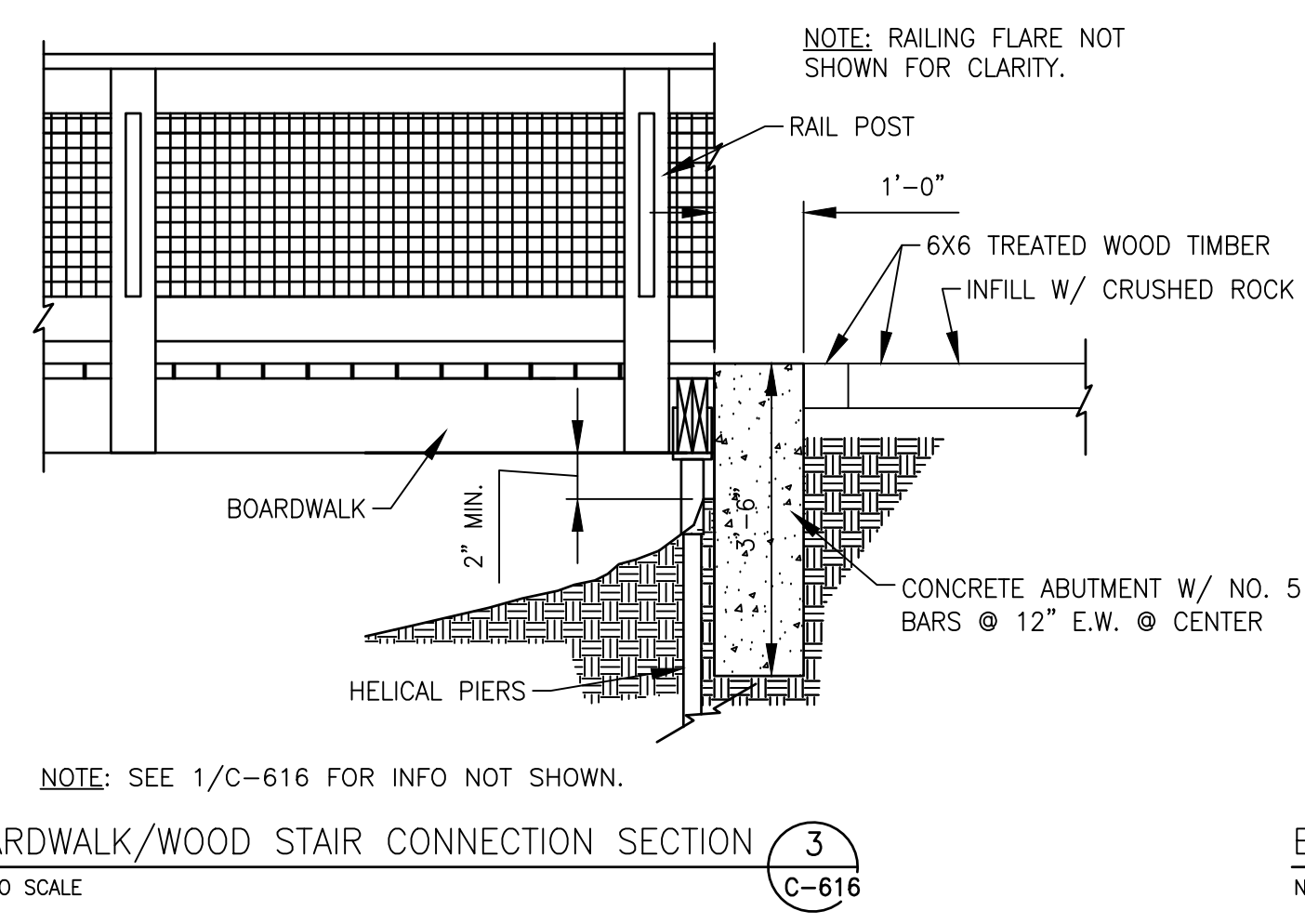
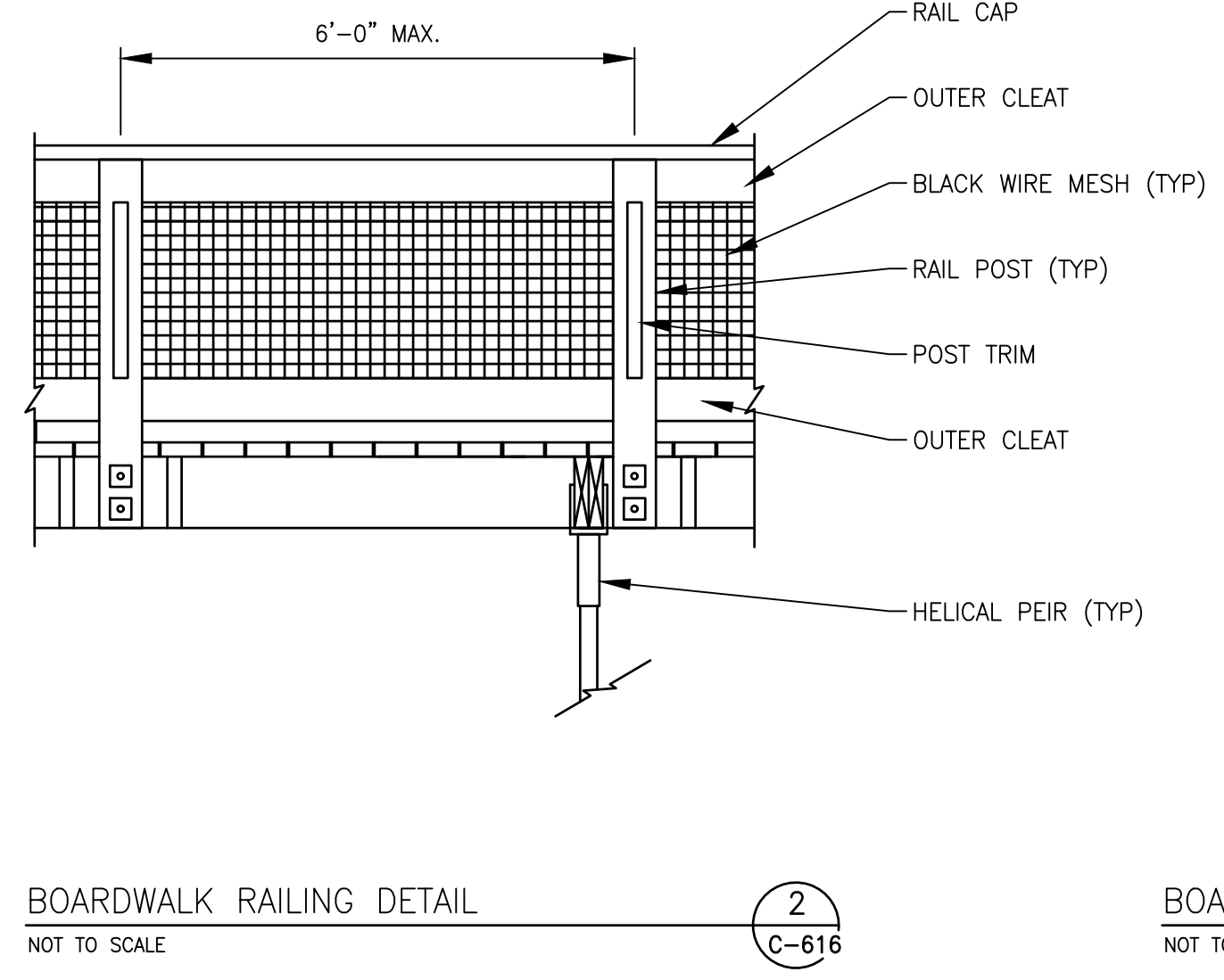
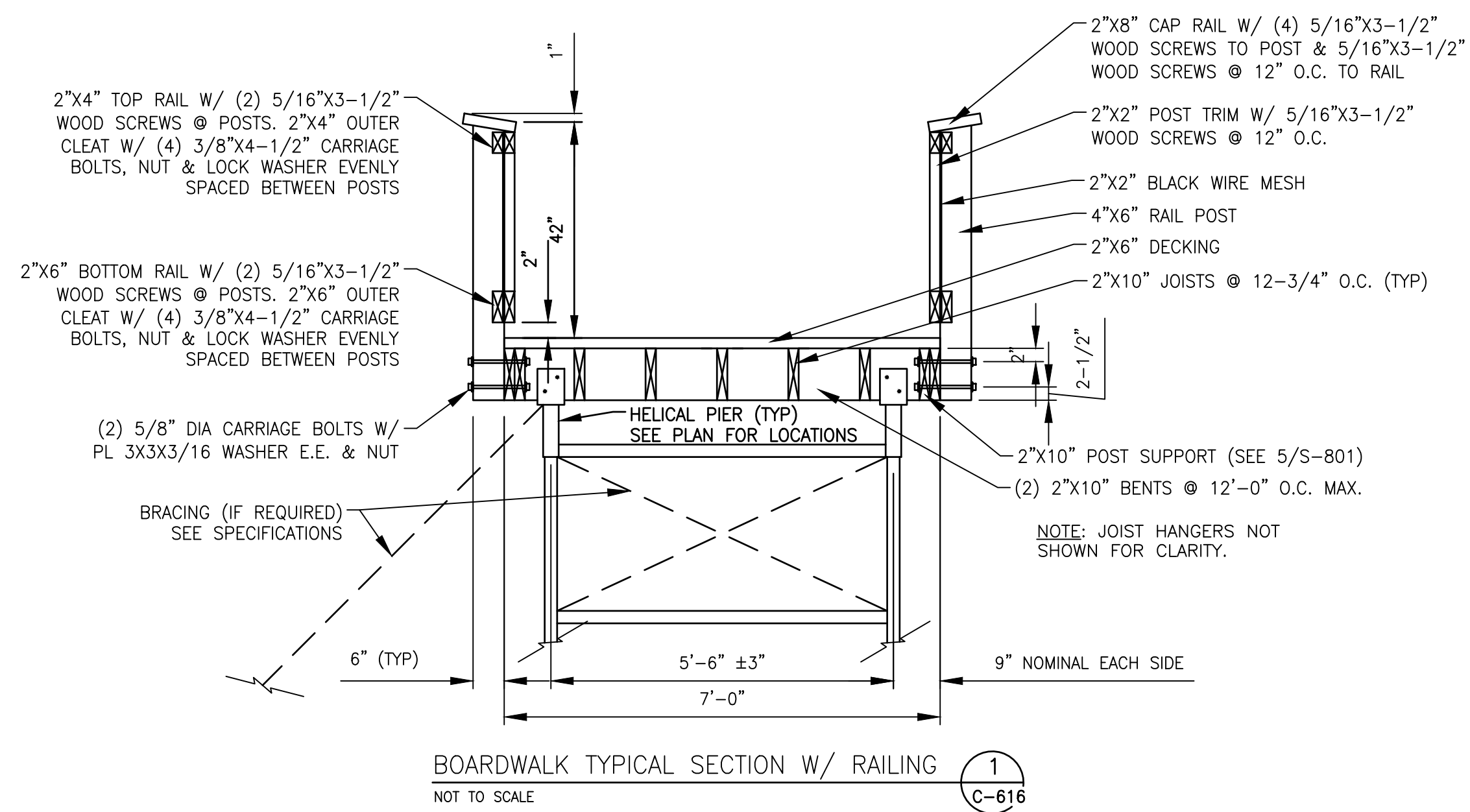
WENCK

DRAFT

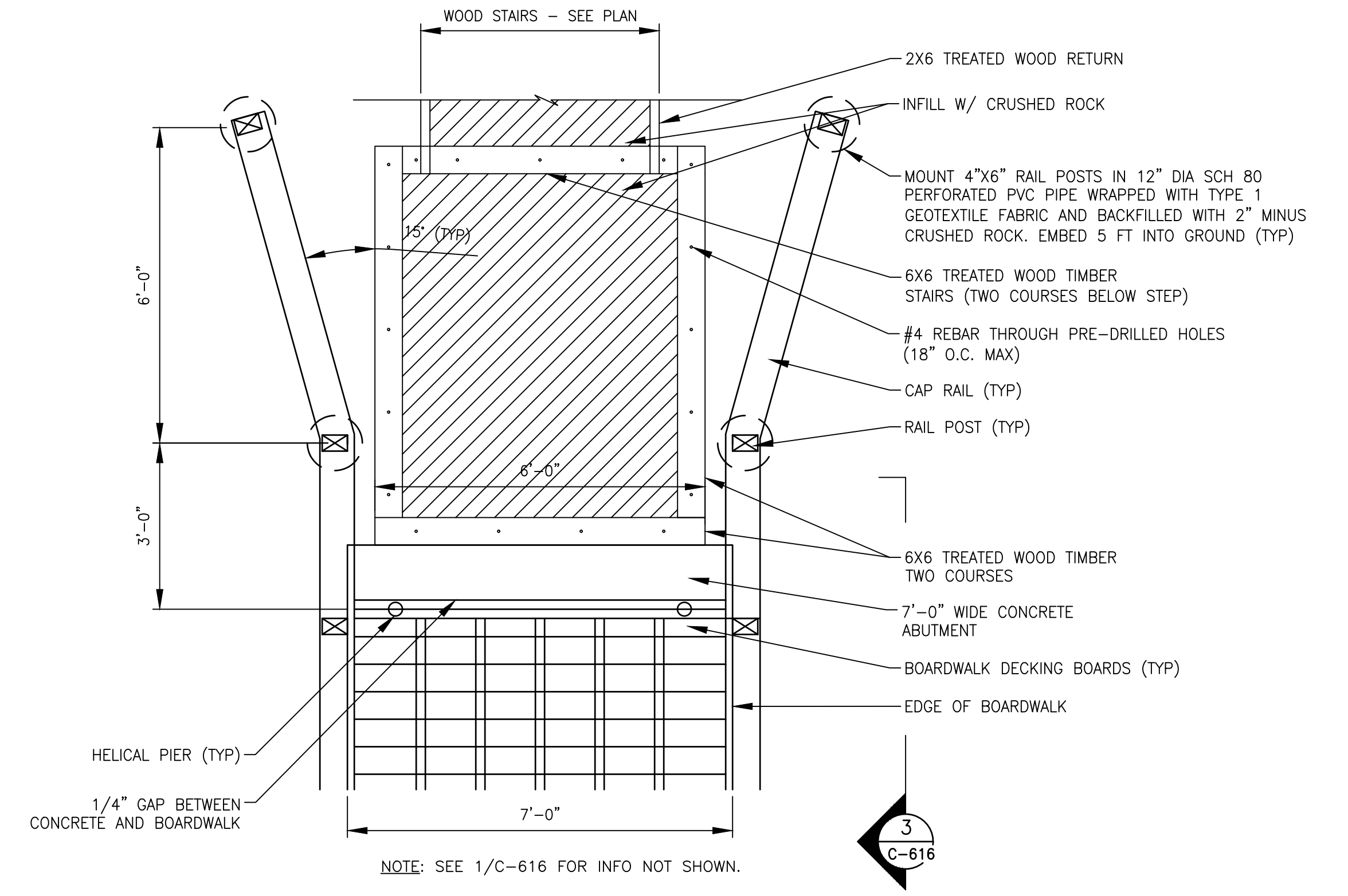
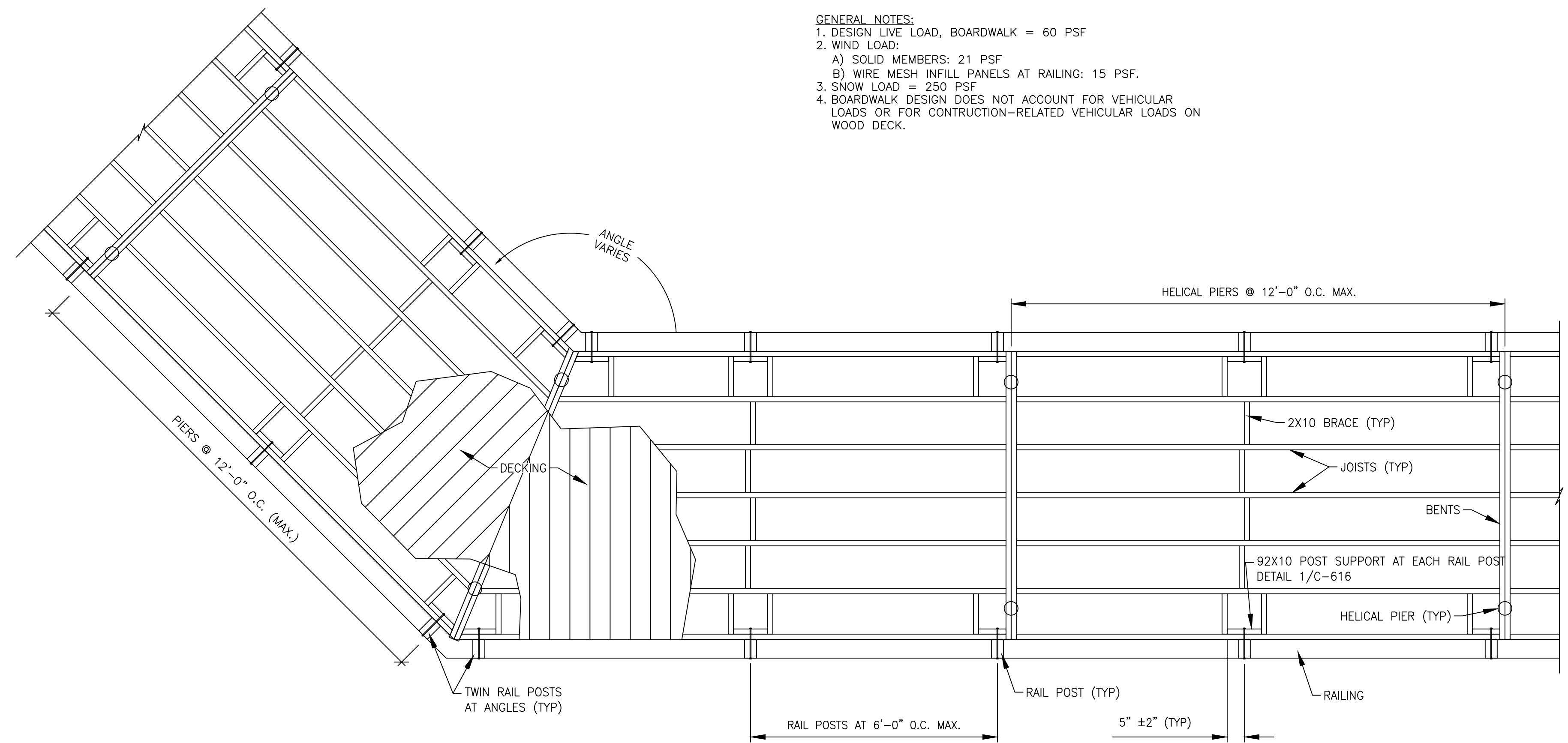
DETAILS

SHEET  
C-615





- GENERAL NOTES:
- DESIGN LIVE LOAD, BOARDWALK = 60 PSF
  - WIND LOAD:
    - SOLID MEMBERS: 21 PSF
    - WIRE MESH INFILL PANELS AT RAILING: 15 PSF
  - SNOW LOAD = 250 PSF
  - BOARDWALK DESIGN DOES NOT ACCOUNT FOR VEHICULAR LOADS OR FOR CONSTRUCTION-RELATED VEHICULAR LOADS ON WOOD DECK.



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MINNEHAHA CREEK WATERSHED DISTRICT  
EDINA, MINNESOTA

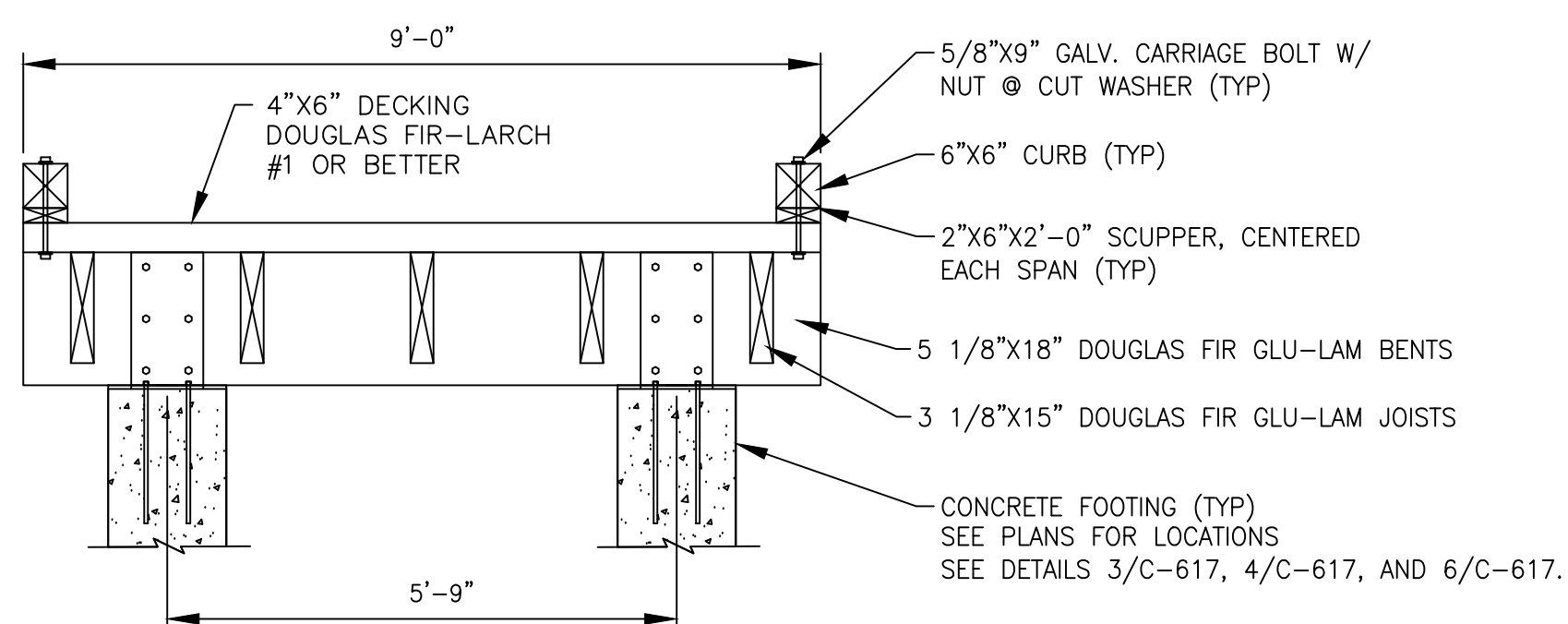


DRAFT

DETAILS

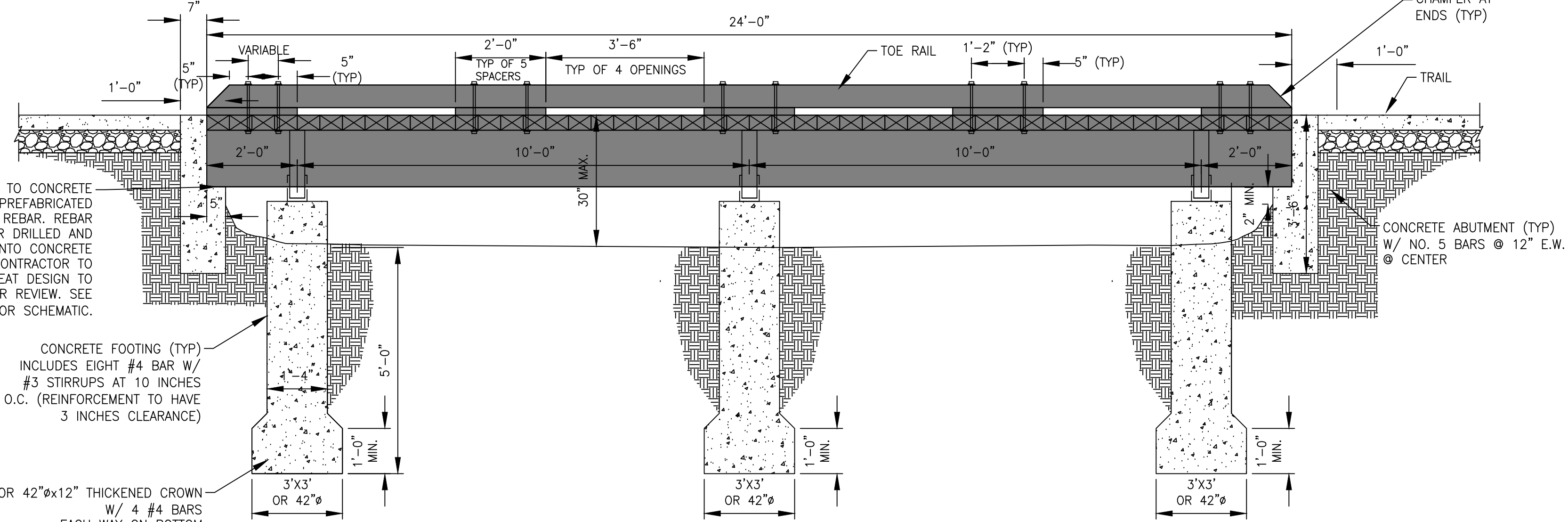
SHEET  
C-616





NOTES:  
 1. SPECIFICATIONS OF DOUGLAS FIR GLUED-LAMINATED (GLU-LAM) BENTS AND JOISTS ARE AS FOLLOWS:  
 1.1.  $F_b = 2,400$  PSI  
 1.2.  $E = 1.80 \times 10^6$  PSI  
 1.3.  $F_v = 265$  PSI  
 2. WHERE JOISTS CONNECT TO BENTS USE HEAVY DUTY BOLTED GLU-LAM HANGERS WITH TOP FLANGE.  
 3. FOR BENT CONNECTION TO FOOTINGS USE USP STRUCTURAL CONNECTOR BEAM SEAT OR AS SHOWN IN DETAILS 3/C-617. SUBMIT PLAN TO ENGINEER FOR REVIEW.

BOARDWALK TYPICAL SECTION W/ TOE RAIL (1)  
 NOT TO SCALE C-617



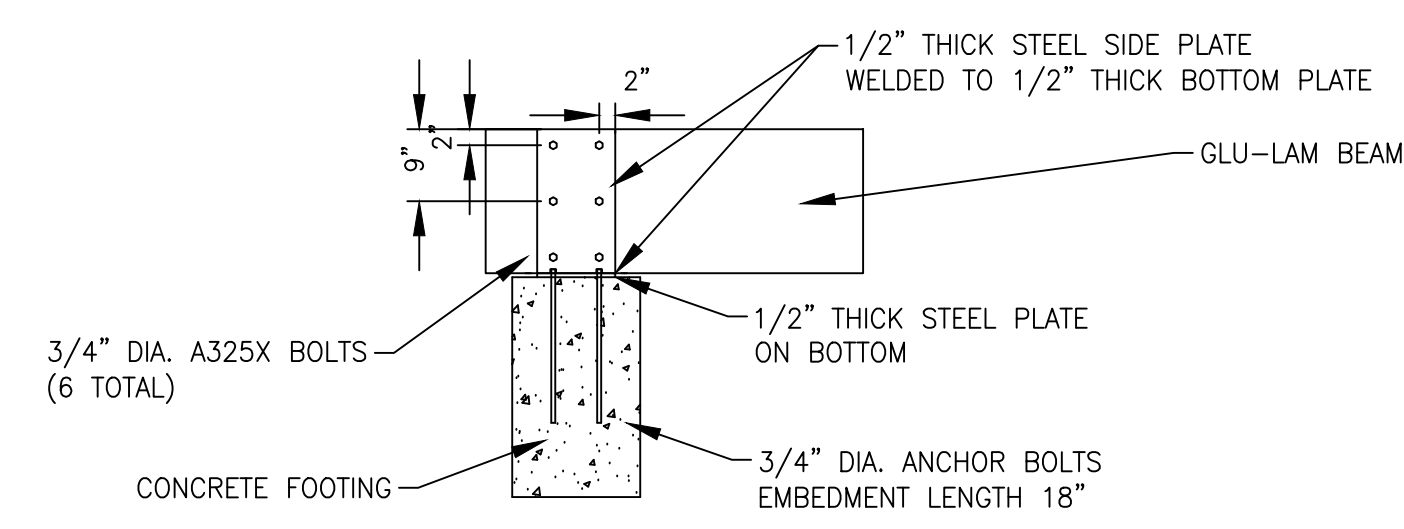
CONNECT JOIST TO CONCRETE ABUTMENT USING PREFABRICATED BEAM SEAT WITH REBAR. REBAR MAY BE SET OR DRILLED AND EXPOSED INTO CONCRETE ABUTMENT. CONTRACTOR TO SUBMIT BEAM SEAT DESIGN TO ENGINEER FOR REVIEW. SEE DETAIL 5/C-617 FOR SCHEMATIC.

CONCRETE FOOTING (TYP) INCLUDES EIGHT #4 BAR W/ #3 STIRRUPS AT 10 INCHES O.C. (REINFORCEMENT TO HAVE 3 INCHES CLEARANCE)

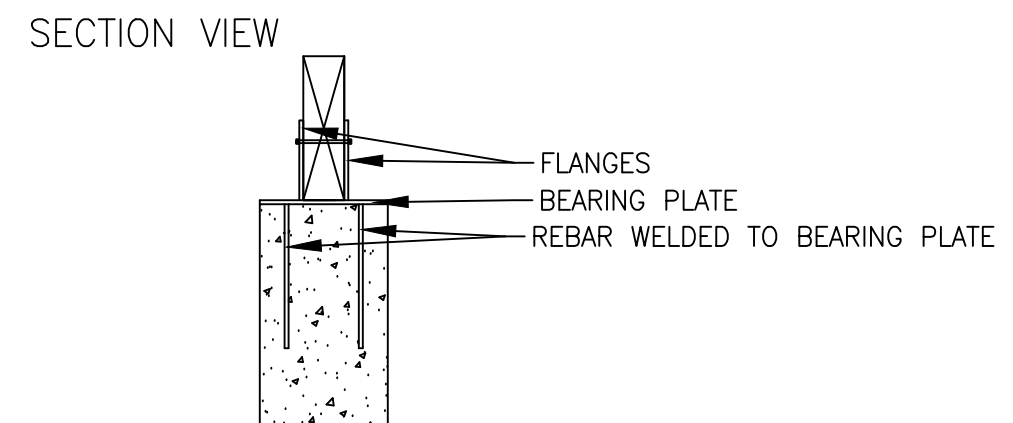
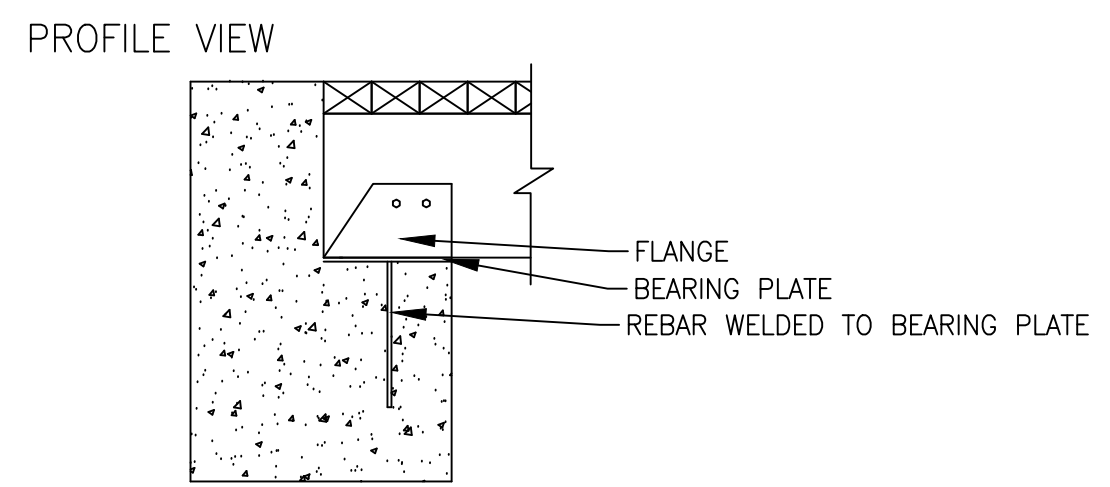
3'X3'X12" OR 42"X12" THICKENED CROWN W/ 4 #4 BARS EACH WAY ON BOTTOM (MAINTAIN 3" CLEARANCE) (TYP)

NOTES:  
 1. SEE DETAIL 1/C-617 FOR TYPICAL SECTION  
 2. PROVIDE ALL NECESSARY HARDWARE INCLUDING HARDWARE TO CONNECT WALK TO CONCRETE FOOTING

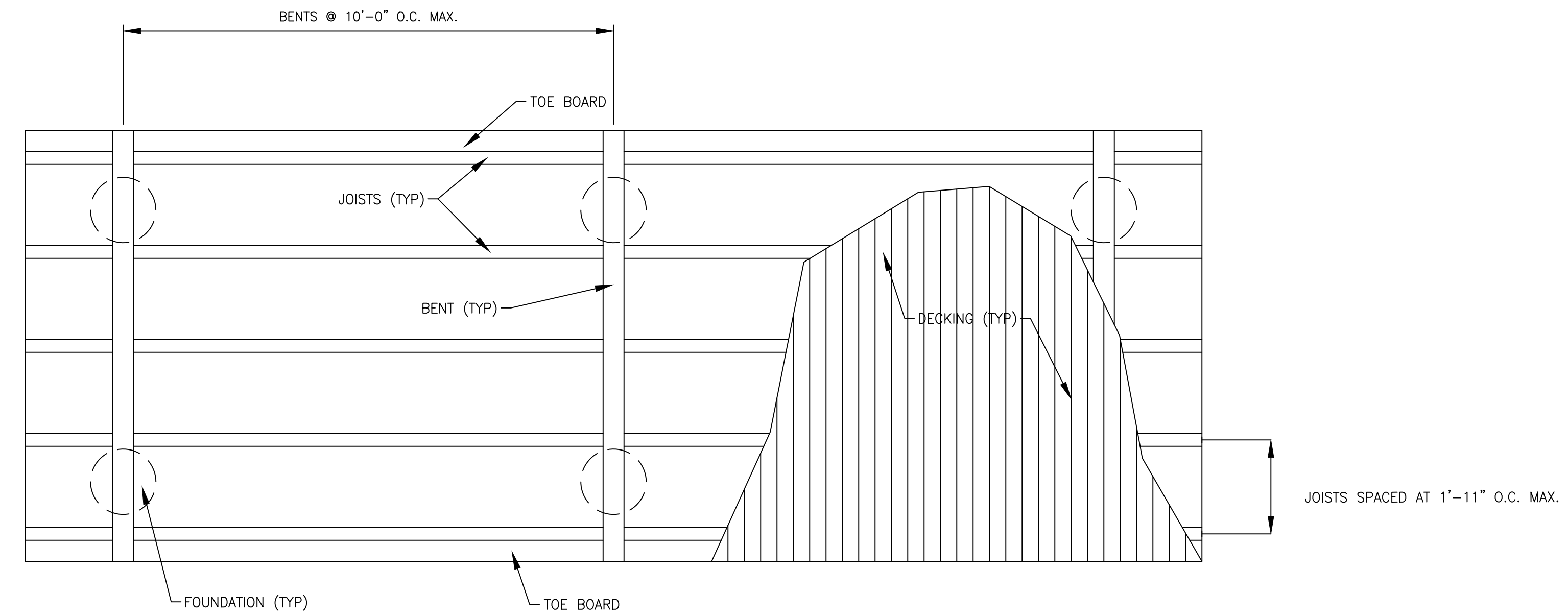
BOARDWALK TYPICAL ELEVATION W/ TOE RAIL (2)  
 NOT TO SCALE C-617



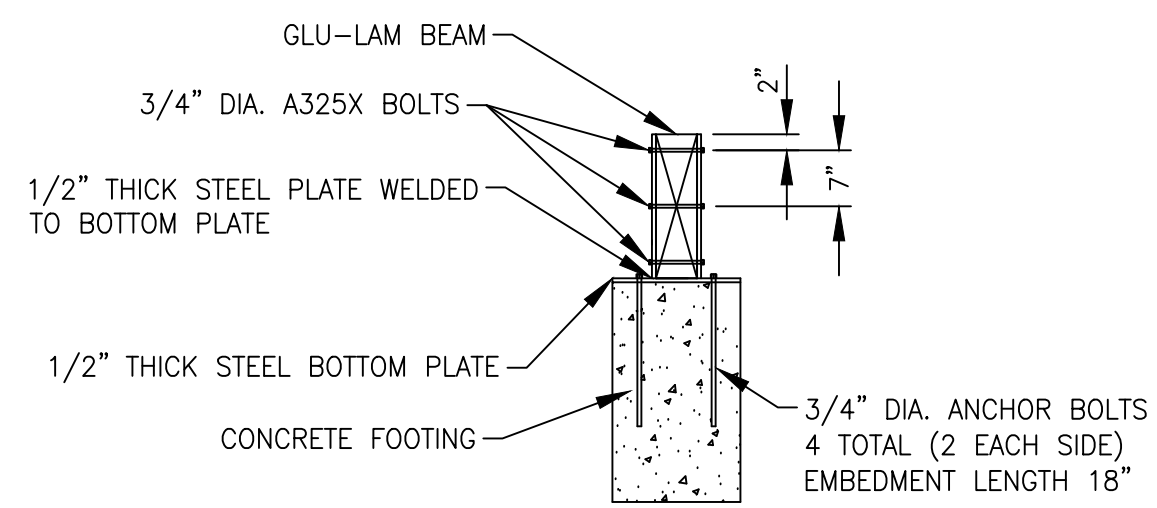
BENT TO FOOTING CONNECTION PROFILE VIEW (3)  
 NOT TO SCALE C-617



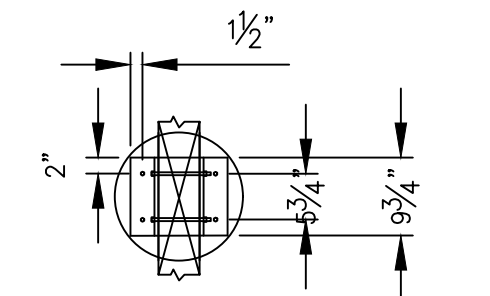
JOIST TO ABUTMENT PROFILE AND SECTION VIEWS (5)  
 NOT TO SCALE; FOR REFERENCE ONLY C-510



TYPICAL BOARDWALK W/ TOE RAIL PLAN DETAIL (7)  
 NOT TO SCALE C-617



BENT TO FOOTING CONNECTION SECTION VIEW (4)  
 NOT TO SCALE C-617



BENT TO FOOTING CONNECTION PLAN VIEW (6)  
 NOT TO SCALE C-617

NO.	DATE	REVISION DESCRIPTION

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ARDEN PARK CREEK RESTORATION  
 MINNEHAHA CREEK WATERSHED DISTRICT  
 EDINA, MINNESOTA

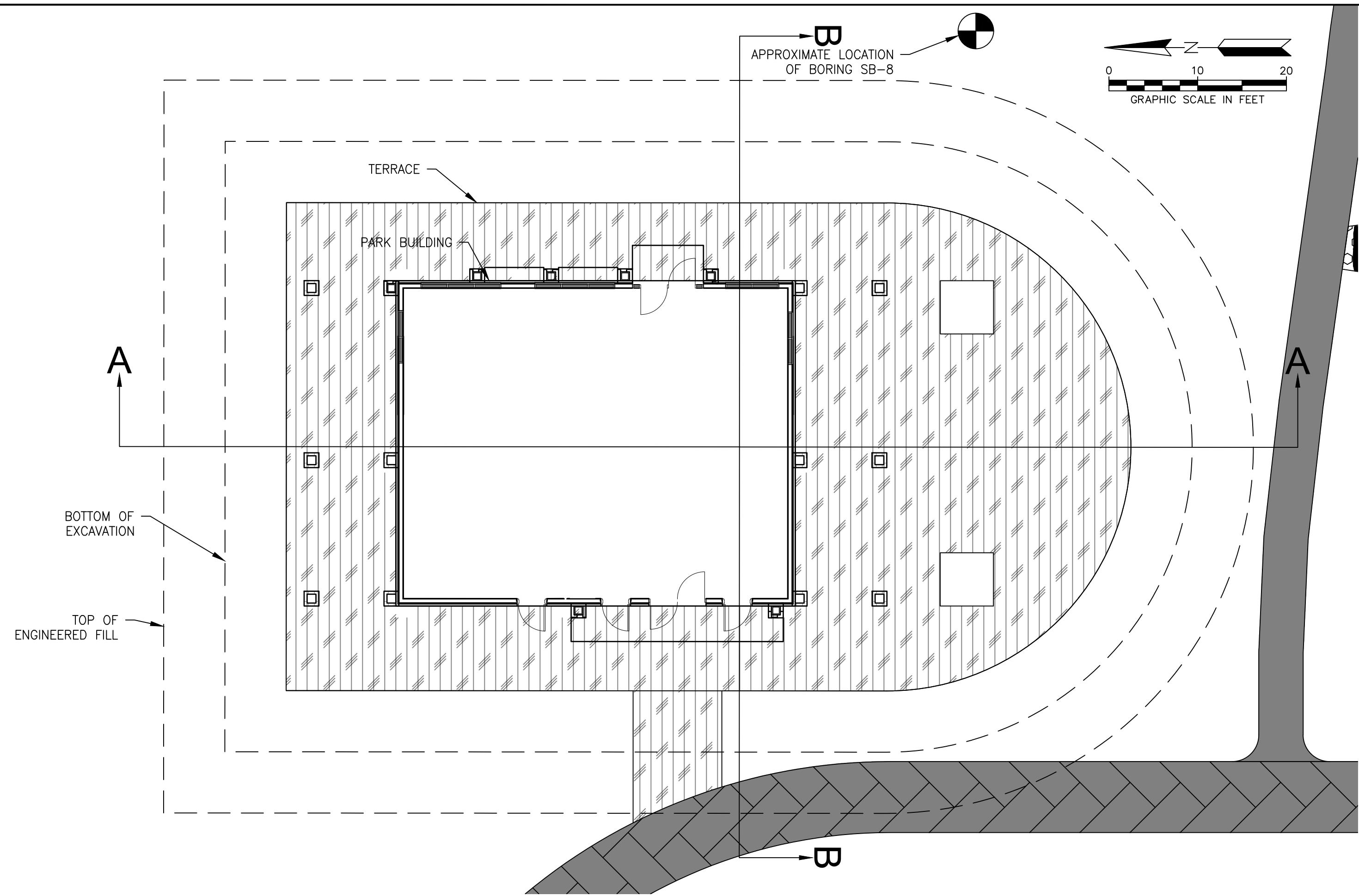
interfluve  
 2121 Randolph Ave. Suite 200  
 St. Paul, MN 55105  
 (651) 243-9700  
 www.interfluve.com

WENCK

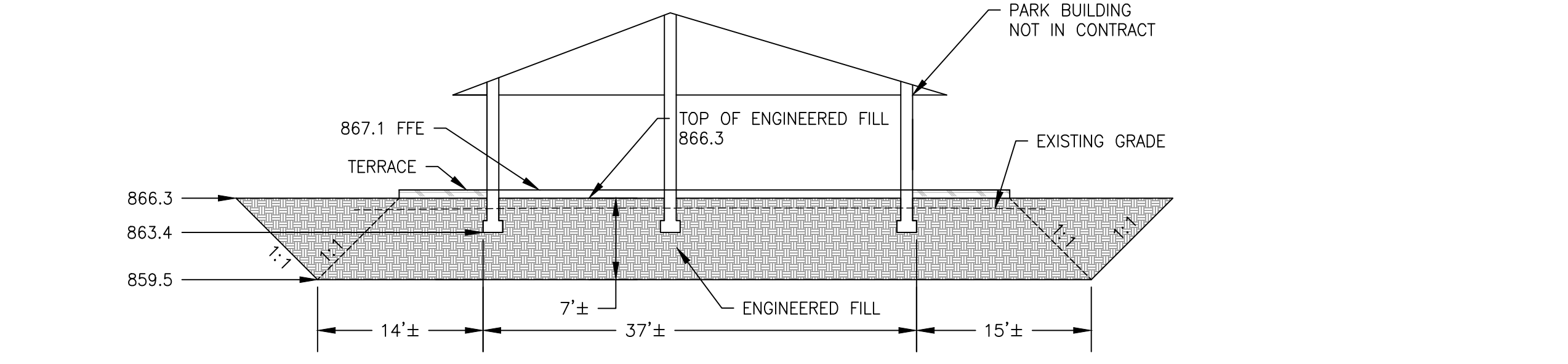
DRAFT

DETAILS

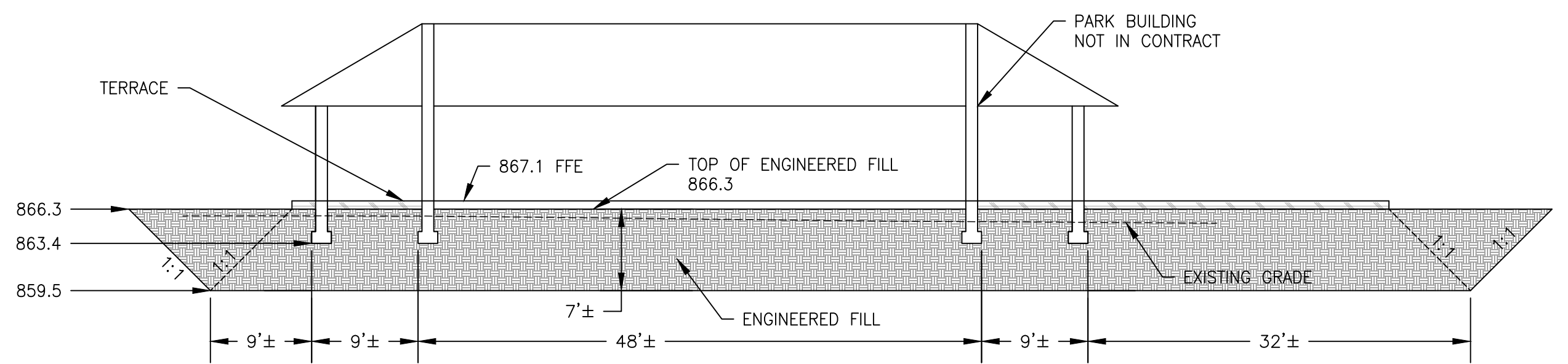
SHEET  
 C-617



PLAN VIEW



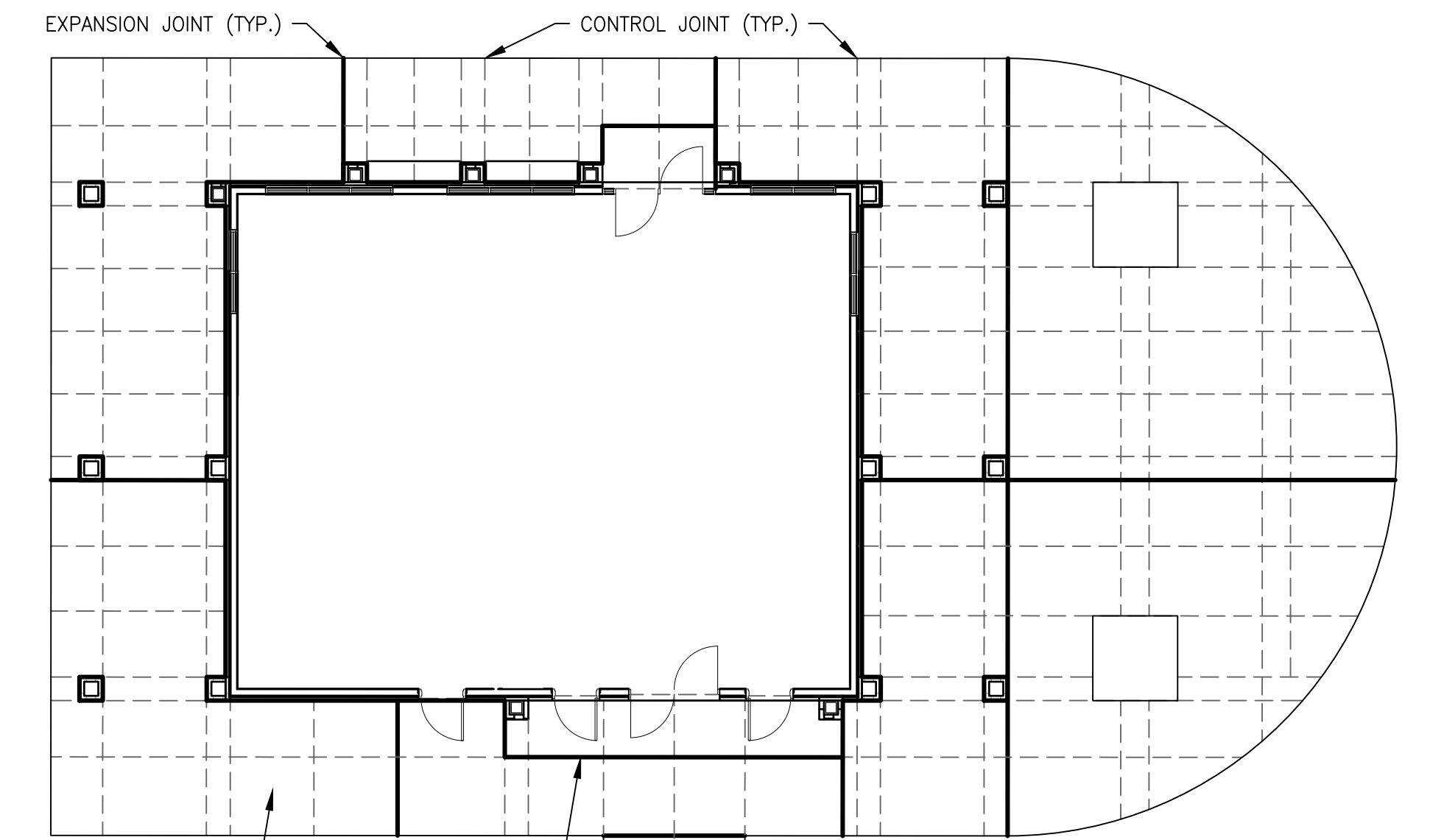
SECTION B-B



SECTION A-A

- NOTES:
1. GEOTECHNICAL ENGINEER TO OBSERVE BOTTOM OF EXCAVATION BEFORE ENGINEERED FILL IS PLACED. COMPACT BOTTOM OF EXCAVATION AS REQUIRED BY GEOTECHNICAL REPORT AND SPECIFICATIONS.
  2. GEOTECHNICAL ENGINEER TO OBSERVE PLACEMENT AND COMPACTION OF ENGINEERED FILL.

PARK PAD SOIL CORRECTIONS SECTION 1 C-618



TERRACE JOINTING PLAN 2 C-618

LEGEND:

- - - - - EXPANSION JOINT
- CONTROL JOINT

NOTES:

1. FINISH SHALL BE MEDIUM SHOT FLASH FINISH. SEE SPECIFICATIONS FOR MOCKUP REQUIREMENTS
2. SEE SHEET C-614 FOR PAVEMENT SECTION AND JOINTING REQUIREMENTS.

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-	-	-
APPROVED	DATE	PROJECT
-	9/28/2018	18-04-01

ARDEN PARK CREEK RESTORATION  
 MINNEHAHA CREEK WATERSHED DISTRICT  
 EDINA, MINNESOTA



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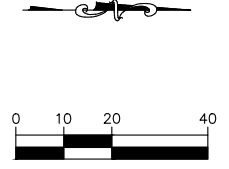
DETAILS

SHEET  
 C-618

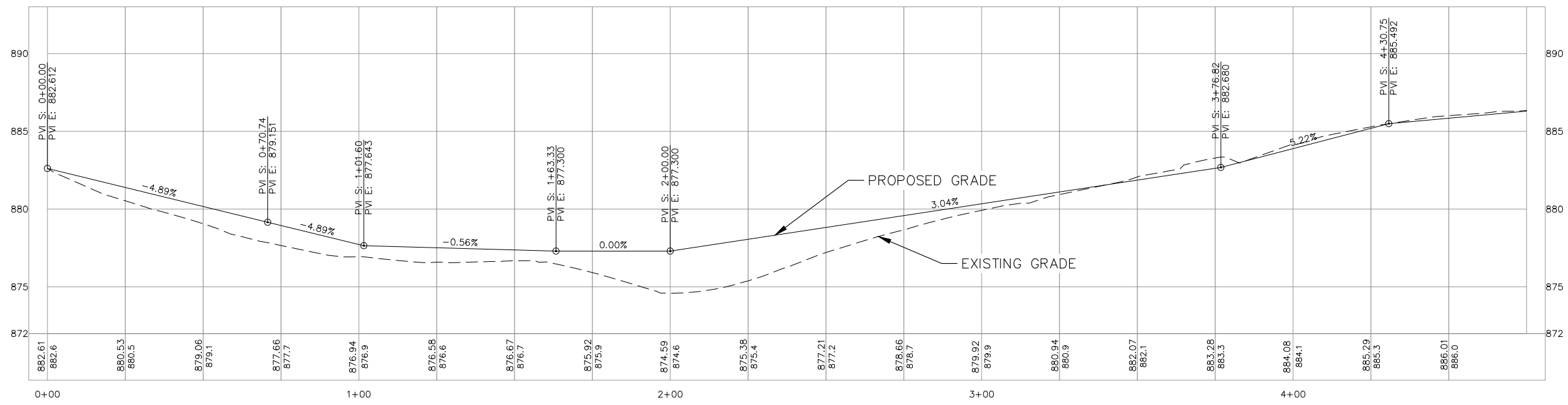
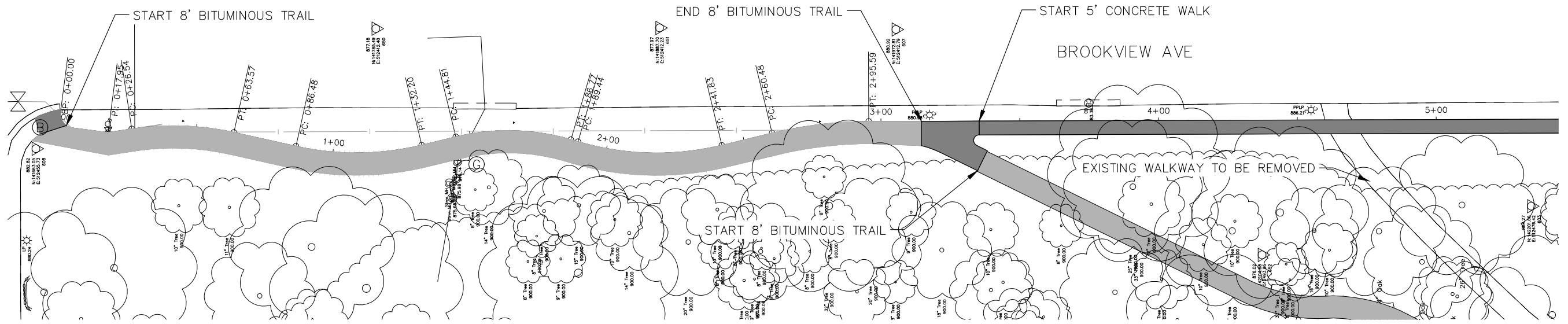


- (B) INSTALL TRUNCATED DOMES AND ADA PED RAMP PER MNDOT SPEC
- (C) ADJUST MANHOLE

CONCRETE WALK  
 BITUMINOUS TRAIL



5336	5328	5324	5320	5316	5312	5308	5304
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NO.	DATE	BY	REMARKS

## BROOKVIEW PLAN & PROFILE

**CITY OF EDINA**  
 7450 METRO BOULEVARD  
 EDINA, MN 55439-3037  
 Ph: 952-826-0371  
 Fax: 952-826-0392

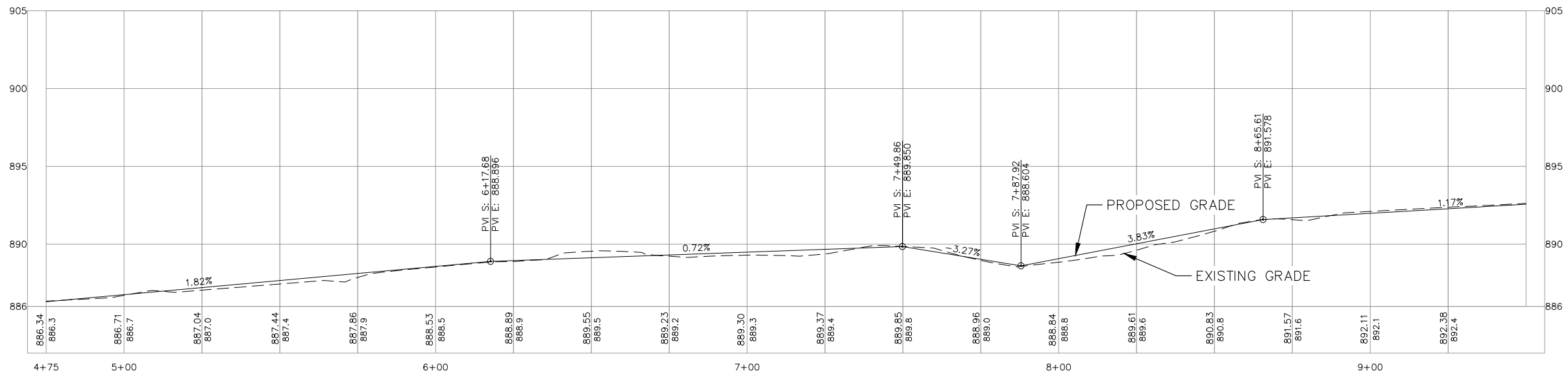
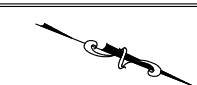
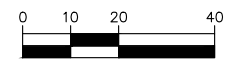
## ARDEN PARK IMPROVEMENTS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

DRAWN: \_\_\_\_\_  
 CHECKED: \_\_\_\_\_  
 APPROVED: \_\_\_\_\_  
 DATE: XX/XX/XX  
 CONTR.# ENG XX-X  
 SHEET **C-703**

DATE: \_\_\_\_\_  
 LIC. NO. \_\_\_\_\_

- ⊙ REMOVE TREE
- ⊕ UTILITY RELOCATED BY OTHERS
- CONCRETE WALK
- BITUMINOUS TRAIL



NO.	DATE	BY	REMARKS

## BROOKVIEW PLAN & PROFILE

**CITY OF EDINA**  
 7450 METRO BOULEVARD  
 EDINA, MN 55439-3037  
 Ph: 952-826-0371  
 Fax: 952-826-0392

## ARDEN PARK IMPROVEMENTS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

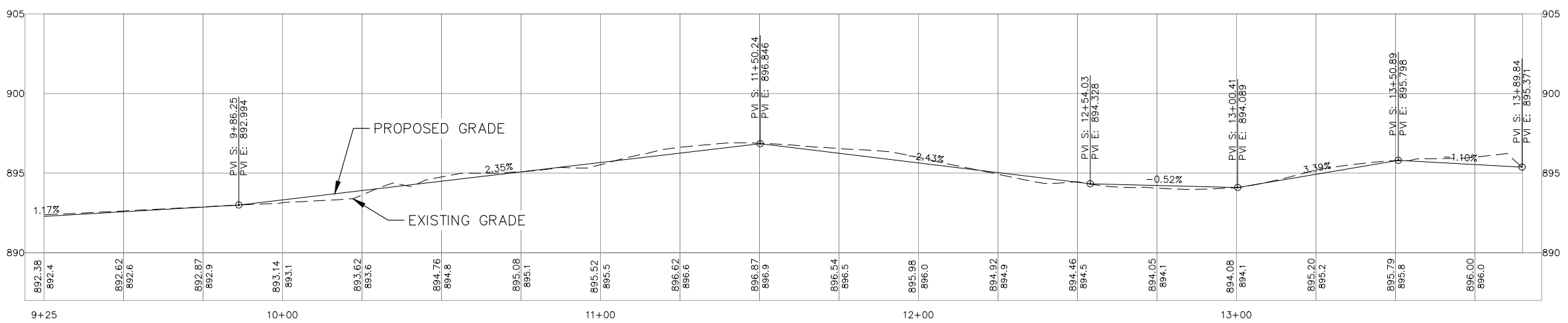
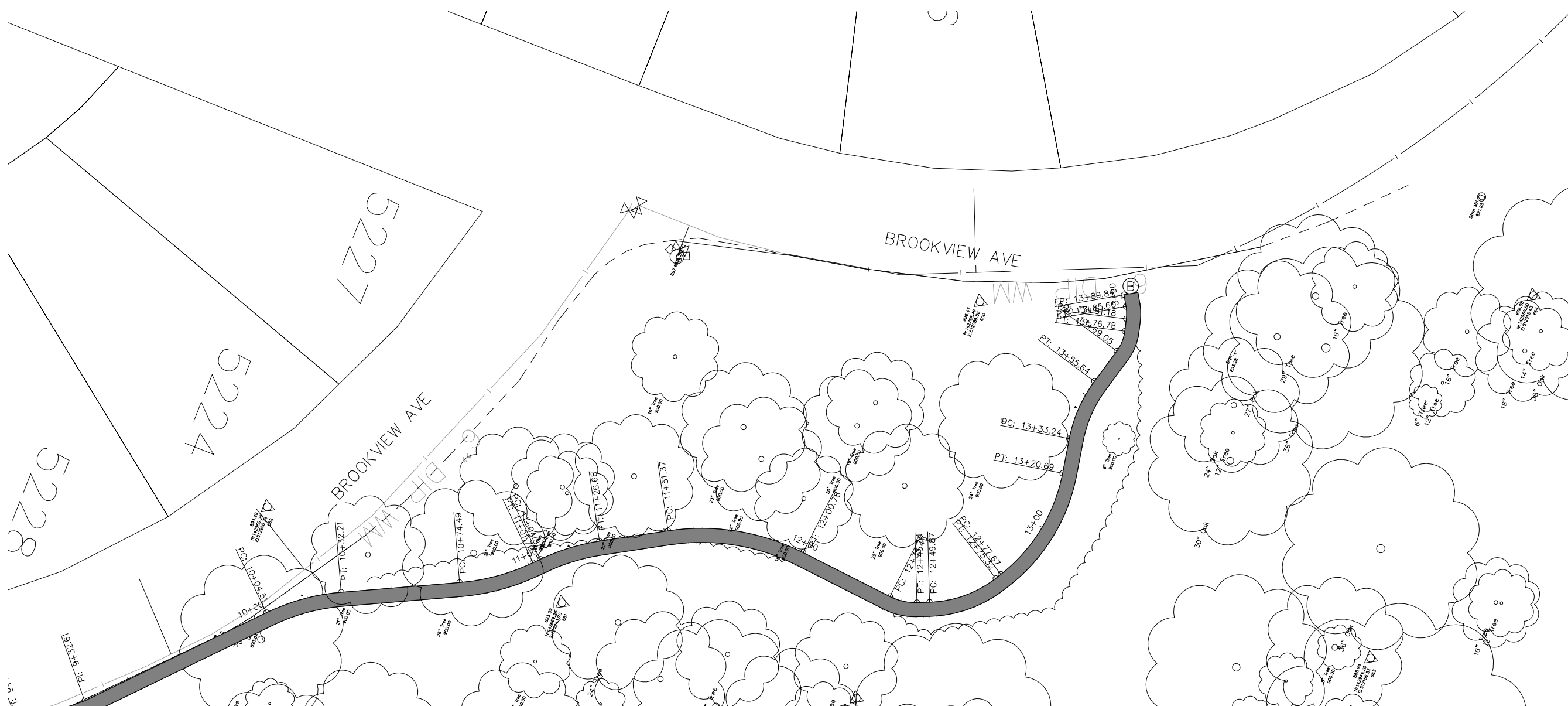
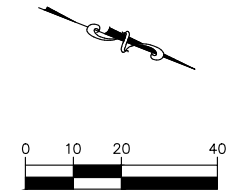
DATE: \_\_\_\_\_ L.C. NO. \_\_\_\_\_

DRAWN: \_\_\_\_\_ CG  
 CHECKED: \_\_\_\_\_  
 APPROVED: \_\_\_\_\_  
 DATE: XX/XX/XX  
 CONTR.# ENG XX-X  
 SHEET **C-704**



Ⓑ INSTALL TRUNCATED DOMES AND ADA PED RAMP PER MNDOT SPEC

CONCRETE WALK  
BITUMINOUS TRAIL



NO.	DATE	BY	REMARKS

## BROOKVIEW PLAN & PROFILE

**CITY OF EDINA**  
7450 METRO BOULEVARD  
EDINA, MN 55439-3037  
Ph: 952-826-0371  
Fax: 952-826-0392

## ARDEN PARK IMPROVEMENTS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

DATE: XX/XX/XX  
CONTR.# ENG XX-X  
SHEET **C-705**

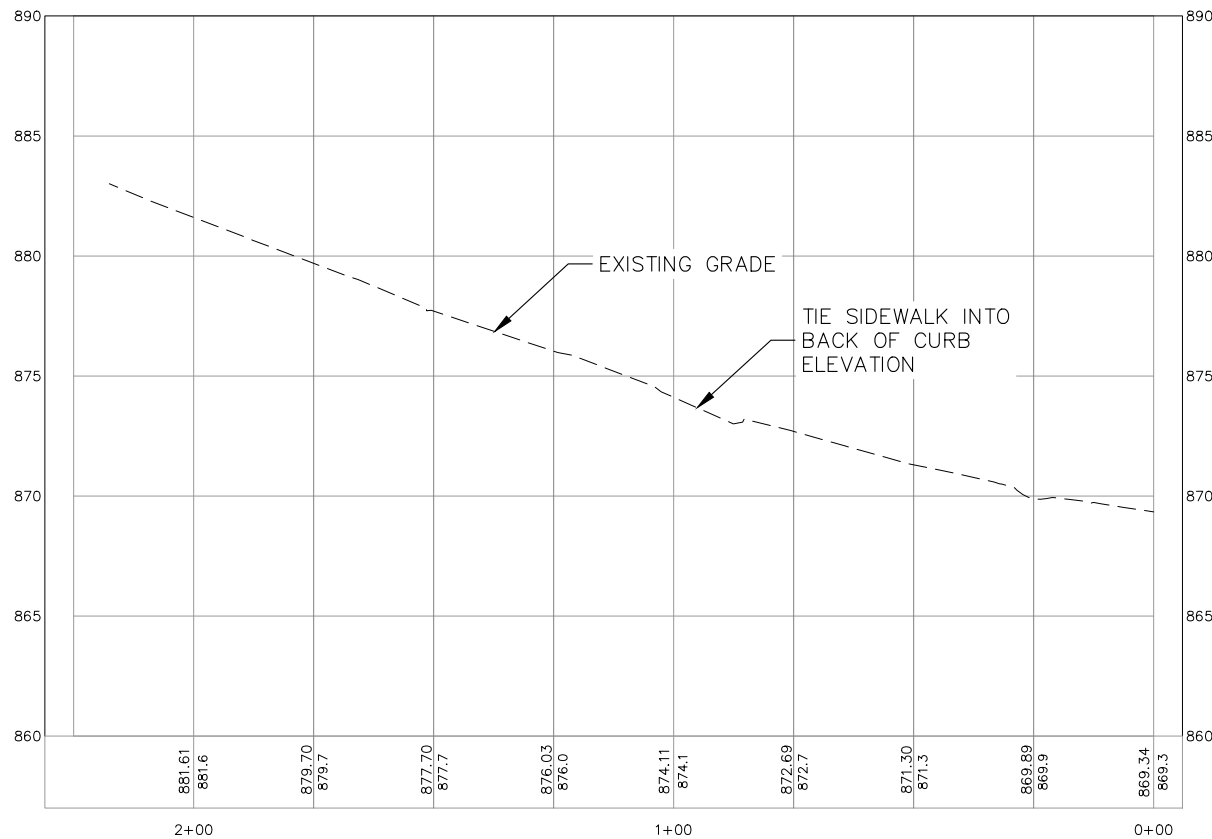
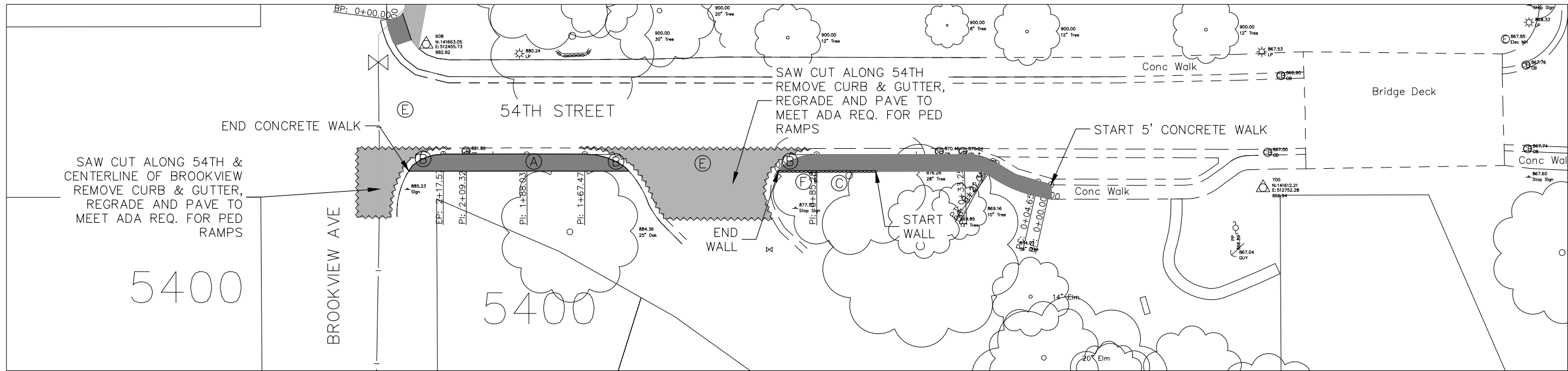
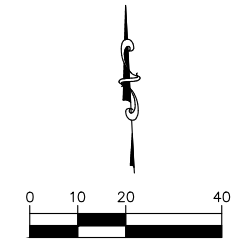
L.C. NO. \_\_\_\_\_  
DATE: \_\_\_\_\_

CG

CGERK, 7/31/2018 11:25 AM, G:\ENG\CONTRACTS\2018\ENG 18-5 Arden Park Improvements\CAD\DWG\Arden-03-Profiles - HH.dwg

- (A) SALVAGE SIGN & RELOCATE BEHIND PROPOSED WALK
- (B) INSTALL TRUNCATED DOMES AND ADA PED RAMP PER MNDOT SPEC
- (C) REMOVE TREE
- (E) INSTALL CROSSWALK PAVEMENT PARKINGS PER EDINA PLATE 716
- (F) UTILITY RELOCATED BY OTHERS

- CONCRETE WALK
- BITUMINOUS TRAIL



**54TH STREET  
PLAN & PROFILE**

**CITY OF EDINA**  
 7450 METRO BOULEVARD  
 EDINA, MN 55439-3037  
 Ph: 952-826-0371  
 Fax: 952-826-0392



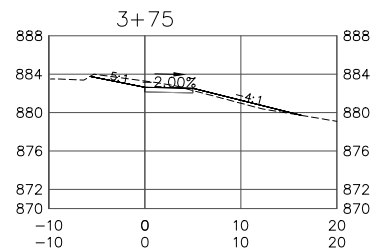
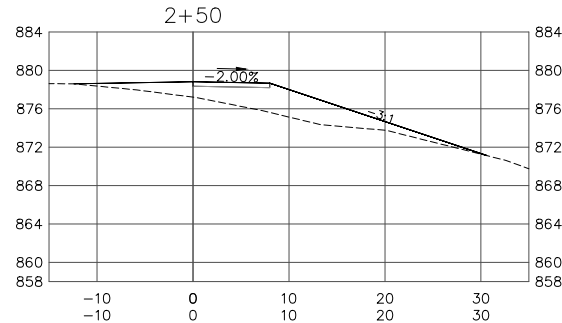
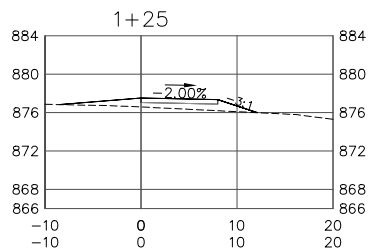
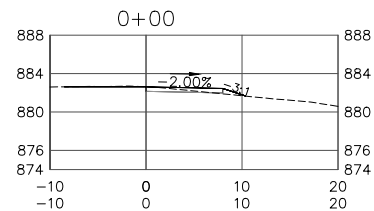
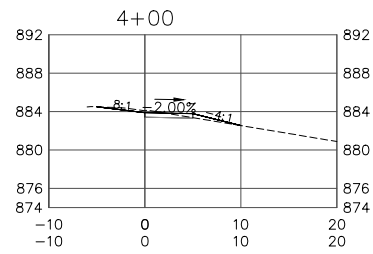
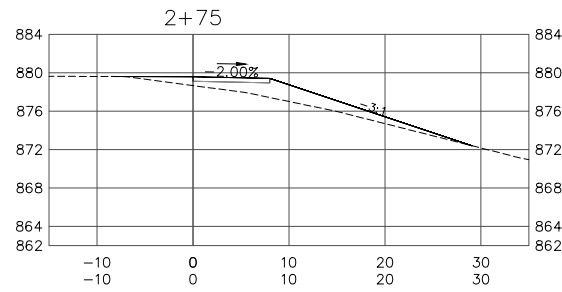
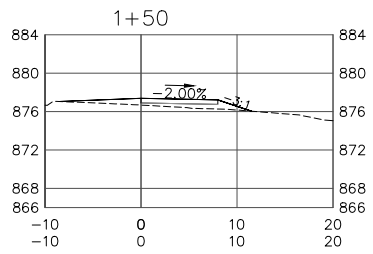
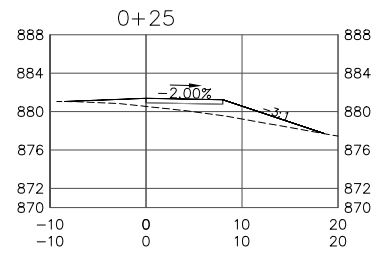
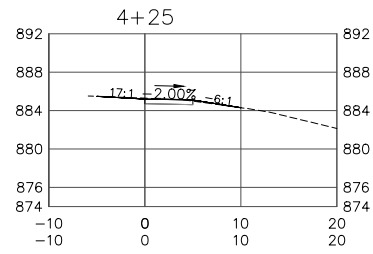
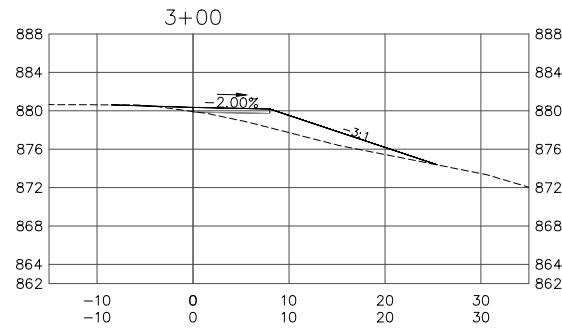
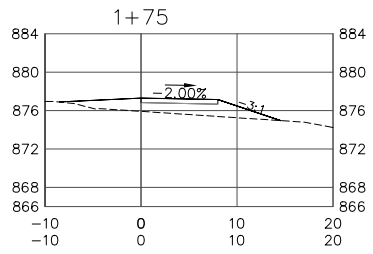
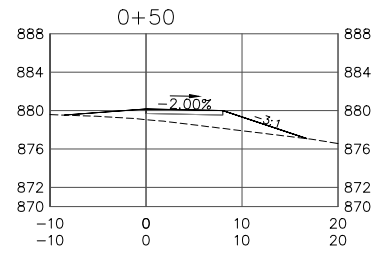
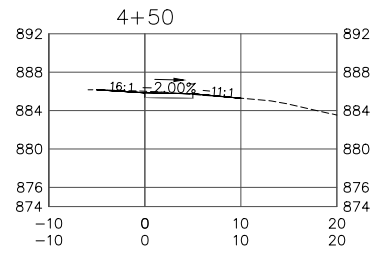
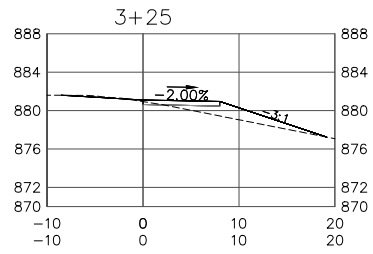
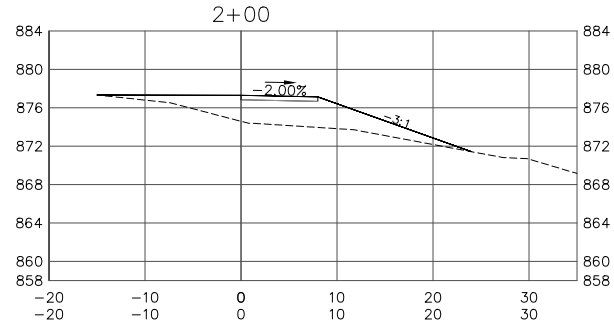
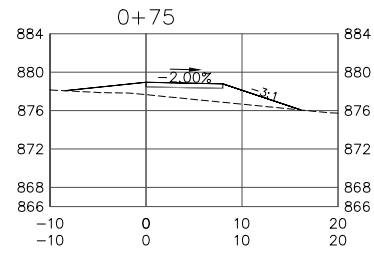
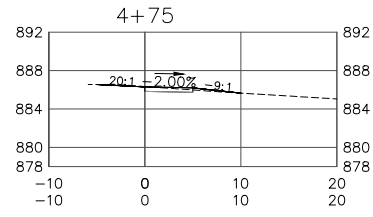
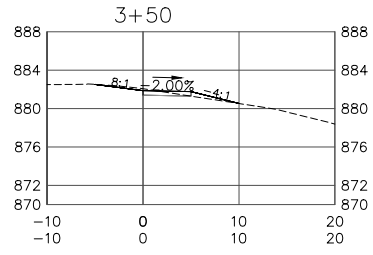
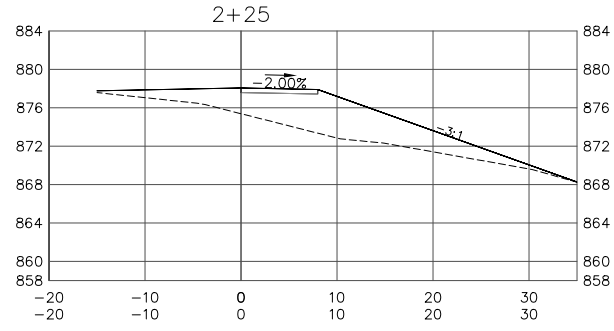
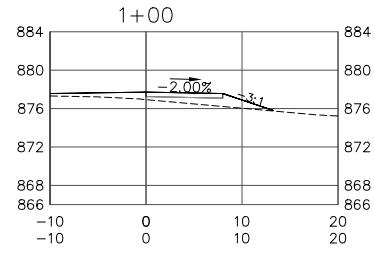
**ARDEN PARK IMPROVEMENTS**

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

DATE: XX/XX/XX  
 CONTR.# ENG XX-X  
 SHEET **C-706**

NO.	DATE	BY	REMARKS





NO.	DATE	BY	REMARKS

## BROOKVIEW CROSS SECTIONS

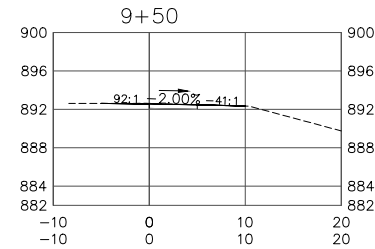
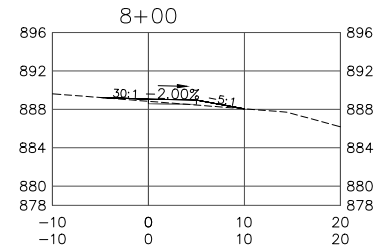
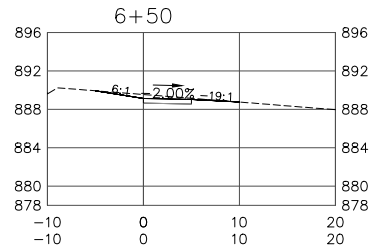
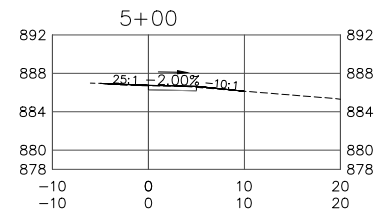
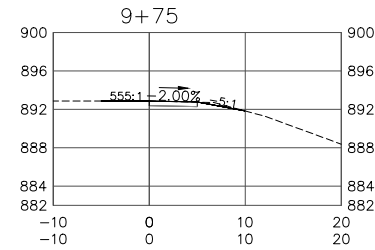
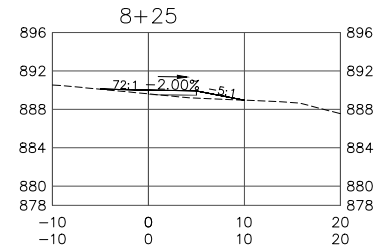
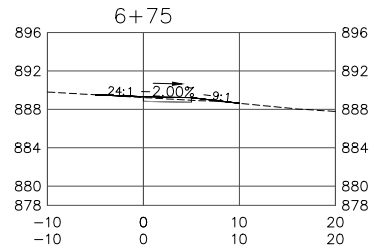
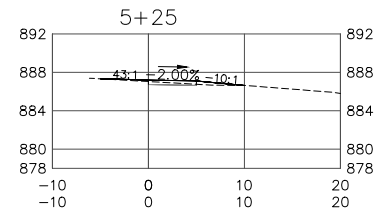
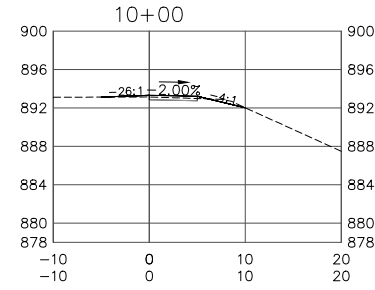
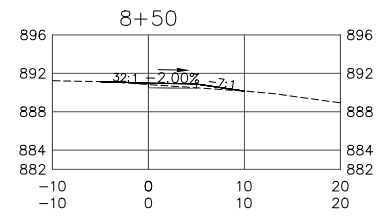
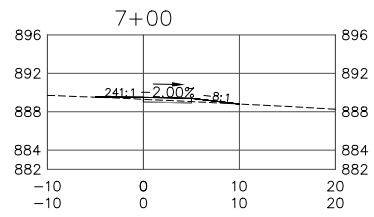
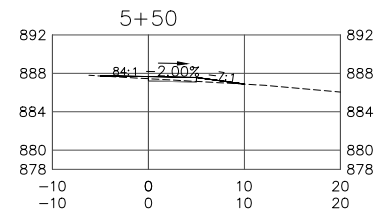
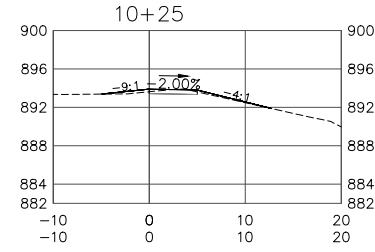
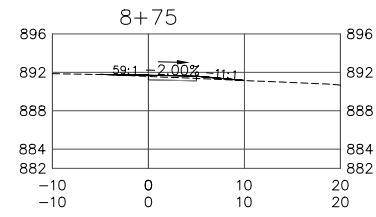
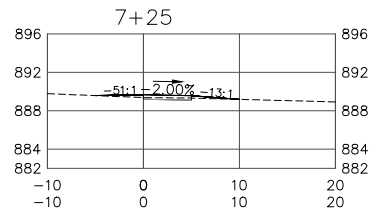
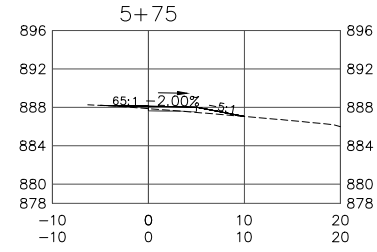
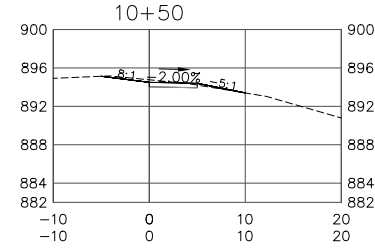
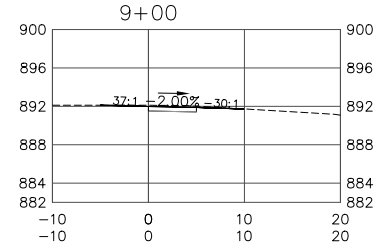
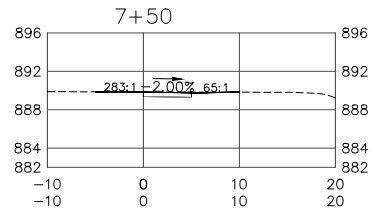
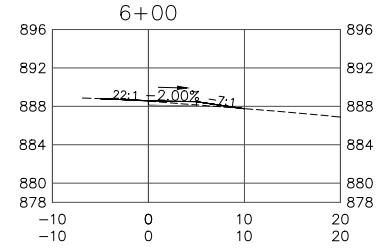
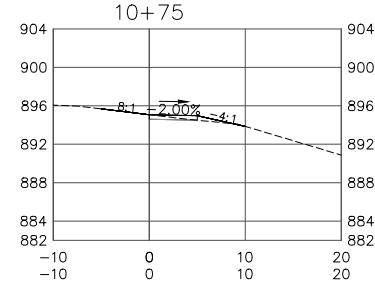
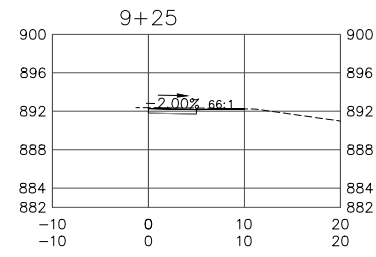
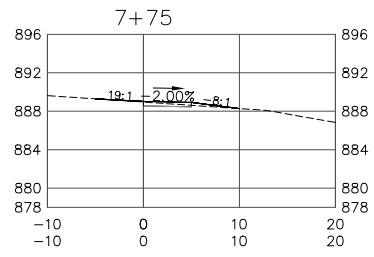
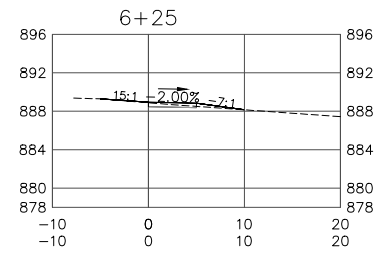
**CITY OF EDINA**  
 7450 METRO BOULEVARD  
 EDINA, MN 55439-3037  
 Ph: 952-826-0371  
 Fax: 952-826-0392

## ARDEN PARK IMPROVEMENTS

I HEREBY CERTIFY THAT THIS PLAN WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA

DATE: XX/XX/XX LIC. NO. \_\_\_\_\_

DRAWN:  
 CHECKED:  
 APPROVED:  
 DATE: XX/XX/XX  
 CONTR.# ENG XX-X  
 SHEET **C-707**



**BROOKVIEW  
CROSS SECTIONS**

**CITY OF EDINA**  
 7450 METRO BOULEVARD  
 EDINA, MN 55439-3037  
 Ph: 952-826-0371  
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**ARDEN PARK IMPROVEMENTS**

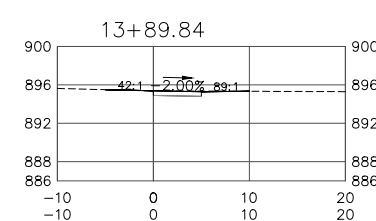
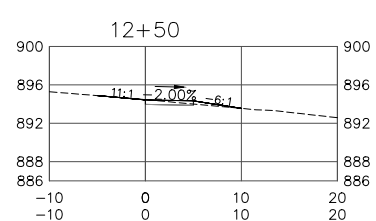
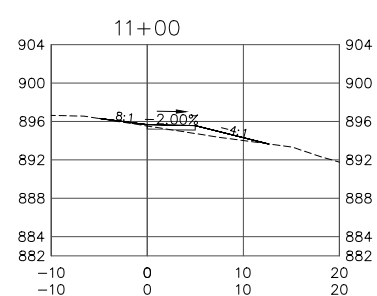
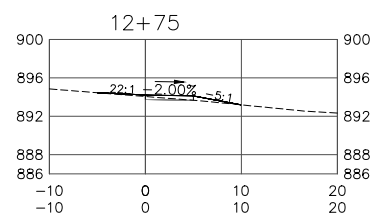
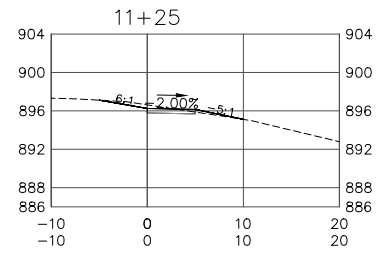
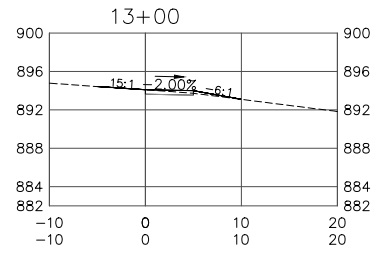
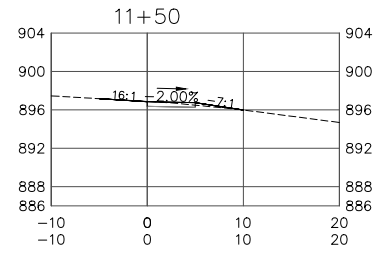
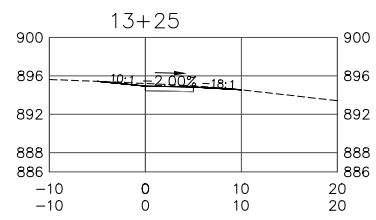
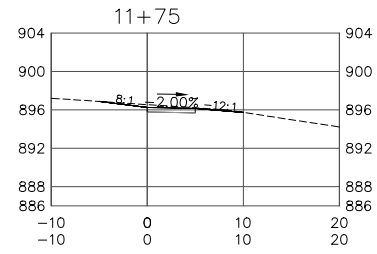
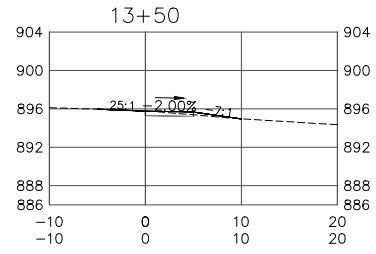
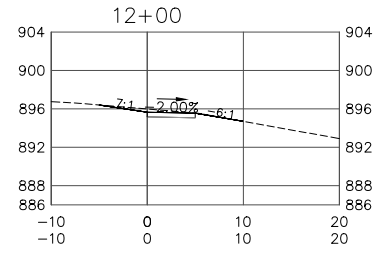
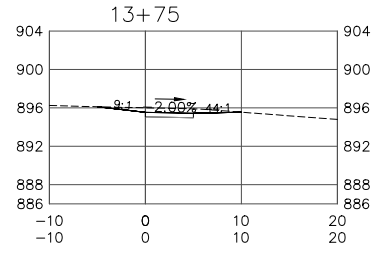
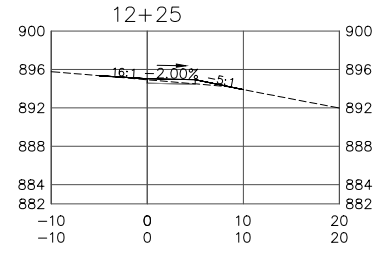
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DRAWN:  
 CHECKED:  
 APPROVED:  
 DATE: XX/XX/XX  
 CONTR.# ENG XX-X  
 SHEET **C-708**

NO.	DATE	BY	REMARKS

DATE: XX/XX/XX LIC. NO.





NO.	DATE	BY	REMARKS

## BROOKVIEW CROSS SECTIONS

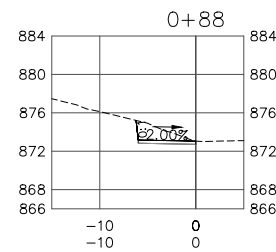
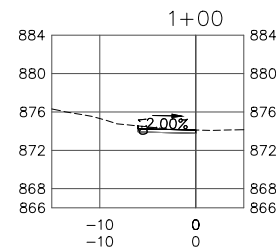
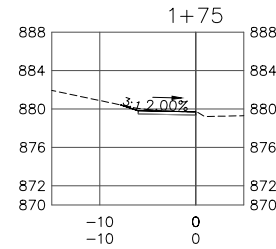
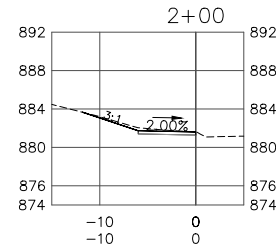
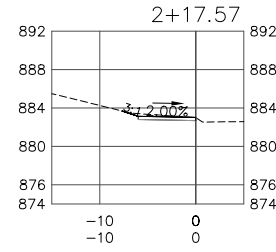
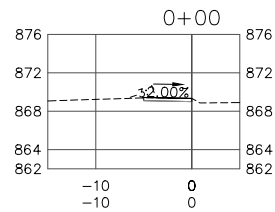
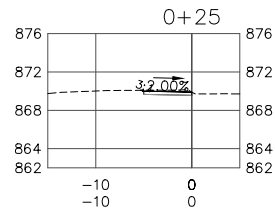
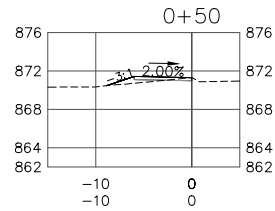
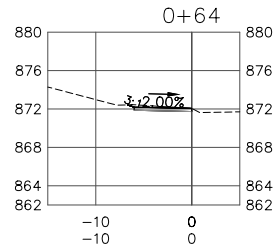
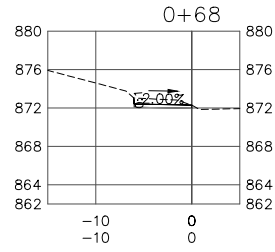
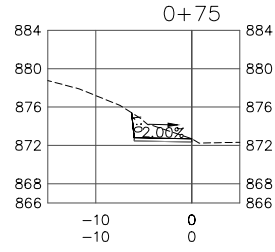
**CITY OF EDINA**  
 7450 METRO BOULEVARD  
 EDINA, MN 55439-3037  
 Ph: 952-826-0371  
 Fax: 952-826-0392

## ARDEN PARK IMPROVEMENTS

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DATE: XX/XX/XX LIC. NO. \_\_\_\_\_

DRAWN:  
 CHECKED:  
 APPROVED:  
 DATE: XX/XX/XX  
 CONTR.# ENG XX-X  
 SHEET **C-709**



# 54th STREET CROSS SECTIONS

**CITY OF EDINA**  
 7450 METRO BOULEVARD  
 EDINA, MN 55439-3037  
 Ph: 952-826-0371  
 Fax: 952-826-0392



## ARDEN PARK IMPROVEMENTS

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DATE: XX/XX/XX LIC. NO. \_\_\_\_\_

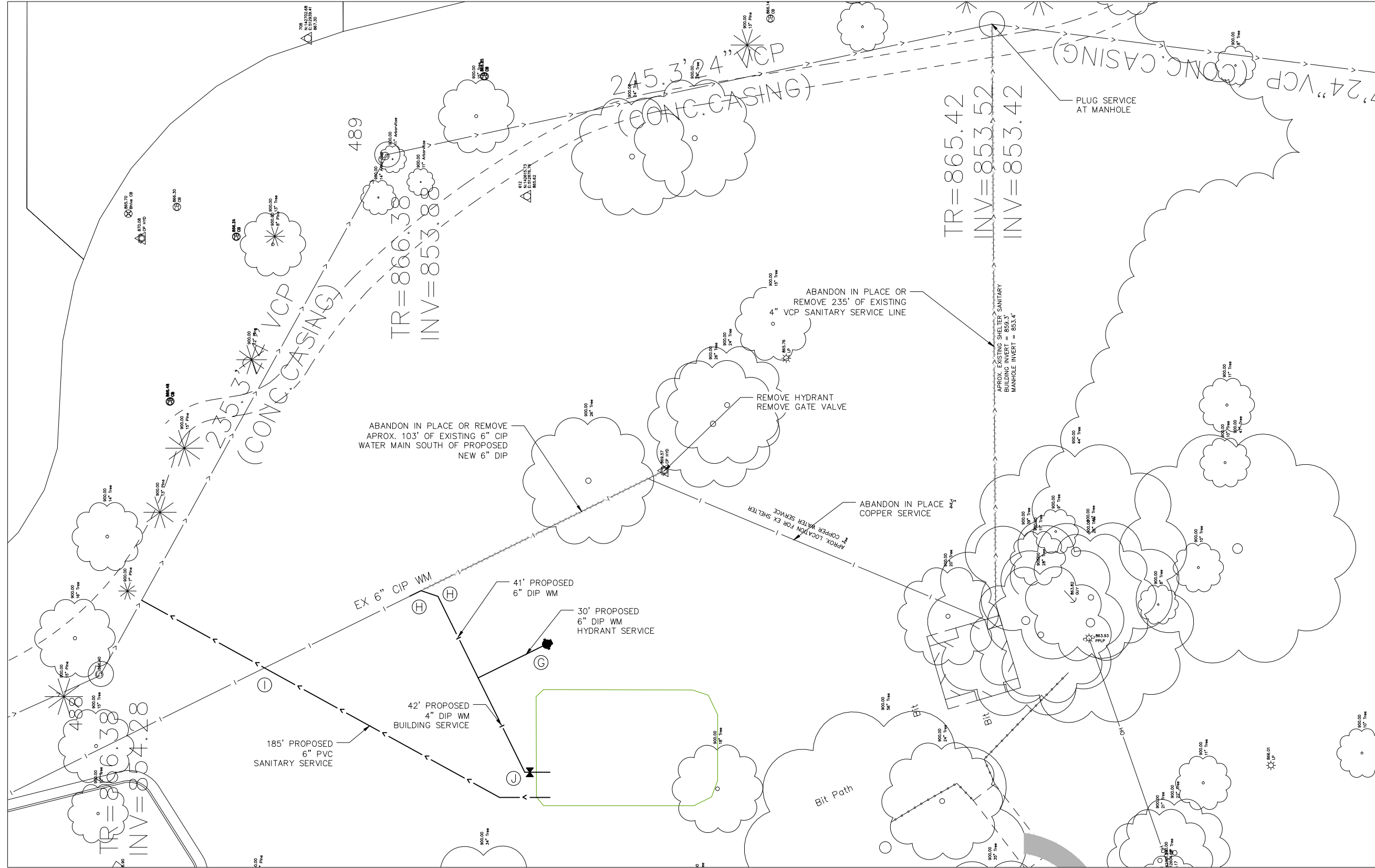
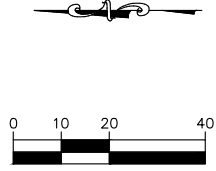
DRAWN:  
 CHECKED:  
 APPROVED:  
 DATE: XX/XX/XX  
 CONTR.# ENG XX-X  
 SHEET **C-710**

NO.	DATE	BY	REMARKS



- Ⓒ INSTALL HYDRANT AND GATE VALVE PER EDINA PLATE 100
- Ⓓ INSTALL THRUST BLOCK PER EDINA PLATE 120
- Ⓔ OFFSET WATER MAIN IF REQUIRED PER EDINA PLATE 125
- Ⓕ INSTALL GATE VALVE PER EDINA PLATE 105

NOTES:  
 MAXIMUM BEND ON WATER MAIN 45-DEGREES  
 CONTRACTOR TO PROVIDE BENDS AS NEEDED



NO.	DATE	BY	REMARKS

**SEWER AND WATER UTILITIES**

**CITY OF EDINA**  
 7450 METRO BOULEVARD  
 EDINA, MN 55439-3037  
 Ph: 952-826-0371  
 Fax: 952-826-0392

**ARDEN PARK IMPROVEMENTS**

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 DATE: XX/XX/XX LIC. NO. \_\_\_\_\_  
 DRAWN: CG  
 CHECKED:  
 APPROVED:  
 DATE: XX/XX/XX  
 CONTR.# ENG XX-X  
 SHEET **C-711**



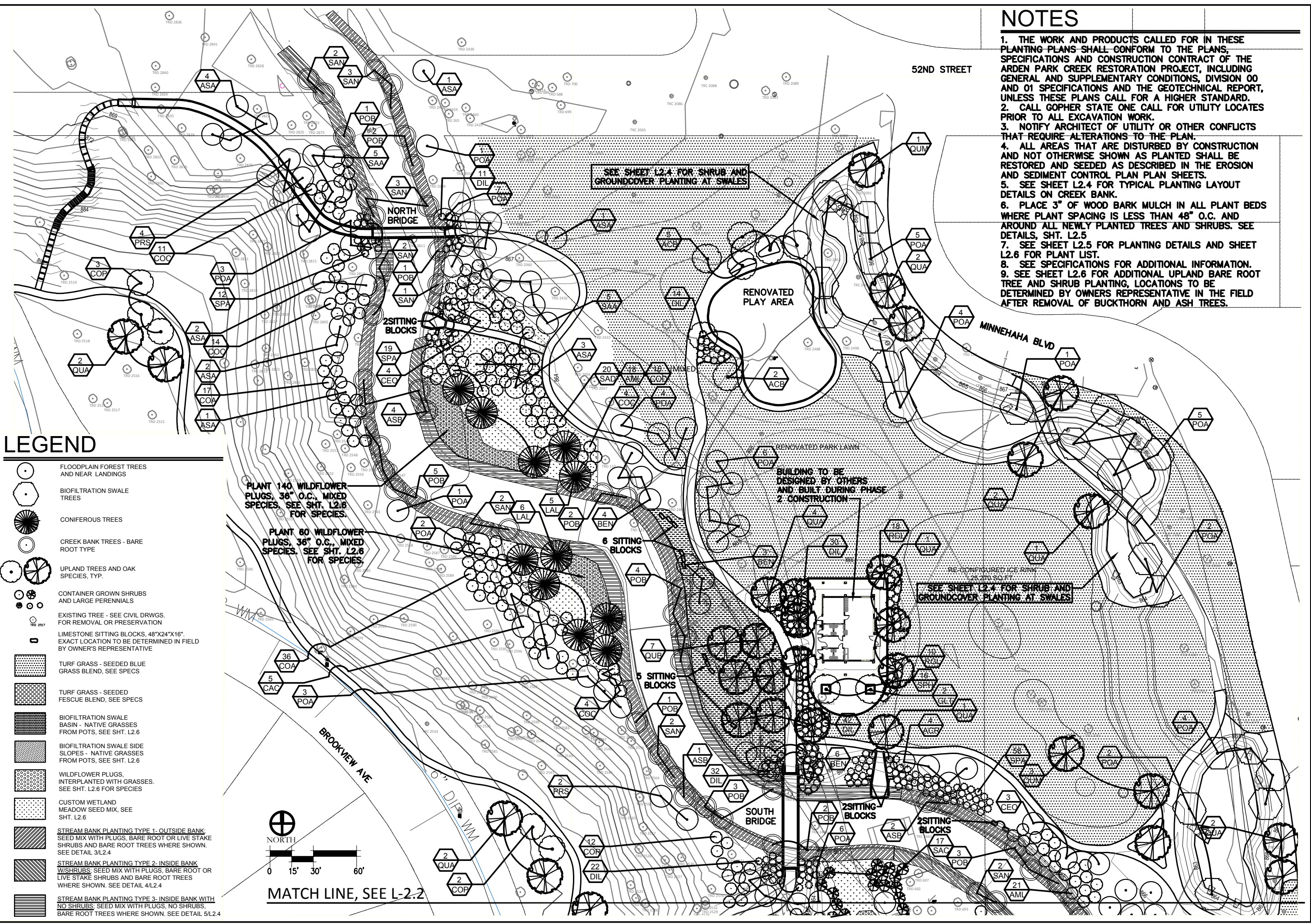
DATE/REVISIONS		
NO	DATE	ISSUE
07/26/18		BID ISSUE

DRAWING TITLE:  
**PLANTING PLAN**

PROJECT #:  
 16-028  
 DRAWN BY:  
 JAL  
 CHECKED BY:  
 RSA  
 DRAWING NO:  
**L-2.1**

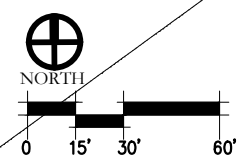
# NOTES

1. THE WORK AND PRODUCTS CALLED FOR IN THESE PLANTING PLANS SHALL CONFORM TO THE PLANS, SPECIFICATIONS AND CONSTRUCTION CONTRACT OF THE ARDEN PARK CREEK RESTORATION PROJECT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS, DIVISION 00 AND 01 SPECIFICATIONS AND THE GEOTECHNICAL REPORT, UNLESS THESE PLANS CALL FOR A HIGHER STANDARD.
2. CALL GOPHER STATE ONE CALL FOR UTILITY LOCATES PRIOR TO ALL EXCAVATION WORK.
3. NOTIFY ARCHITECT OF UTILITY OR OTHER CONFLICTS THAT REQUIRE ALTERATIONS TO THE PLAN.
4. ALL AREAS THAT ARE DISTURBED BY CONSTRUCTION AND NOT OTHERWISE SHOWN AS PLANTED SHALL BE RESTORED AND SEEDS AS DESCRIBED IN THE EROSION AND SEDIMENT CONTROL PLAN PLAN SHEETS.
5. SEE SHEET L2.4 FOR TYPICAL PLANTING LAYOUT DETAILS ON CREEK BANK.
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8. SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.
9. SEE SHEET L2.6 FOR ADDITIONAL UPLAND BARE ROOT TREE AND SHRUB PLANTING, LOCATIONS TO BE DETERMINED BY OWNERS REPRESENTATIVE IN THE FIELD AFTER REMOVAL OF BUCKTHORN AND ASH TREES.



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- BIOFILTRATION SWALE TREES
- CONIFEROUS TREES
- CREEK BANK TREES - BARE ROOT TYPE
- UPLAND TREES AND OAK SPECIES, TYP.
- CONTAINER GROWN SHRUBS AND LARGE PERENNIALS
- EXISTING TREE - SEE CIVIL DRWGS. FOR REMOVAL OR PRESERVATION
- LIMESTONE SITTING BLOCKS, 48"X24"X16". EXACT LOCATION TO BE DETERMINED IN FIELD BY OWNER'S REPRESENTATIVE
- TURF GRASS - SEEDDED BLUE GRASS BLEND, SEE SPECS
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- STREAM BANK PLANTING TYPE 3 - INSIDE BANK WITH NO SHRUBS; SEED MIX WITH PLUGS, NO SHRUBS, BARE ROOT TREES WHERE SHOWN. SEE DETAIL 5/L2.4



MATCH LINE, SEE L-2.2

SEE SHEET L2.4 FOR SHRUB AND GROUNDCOVER PLANTING AT SWALES

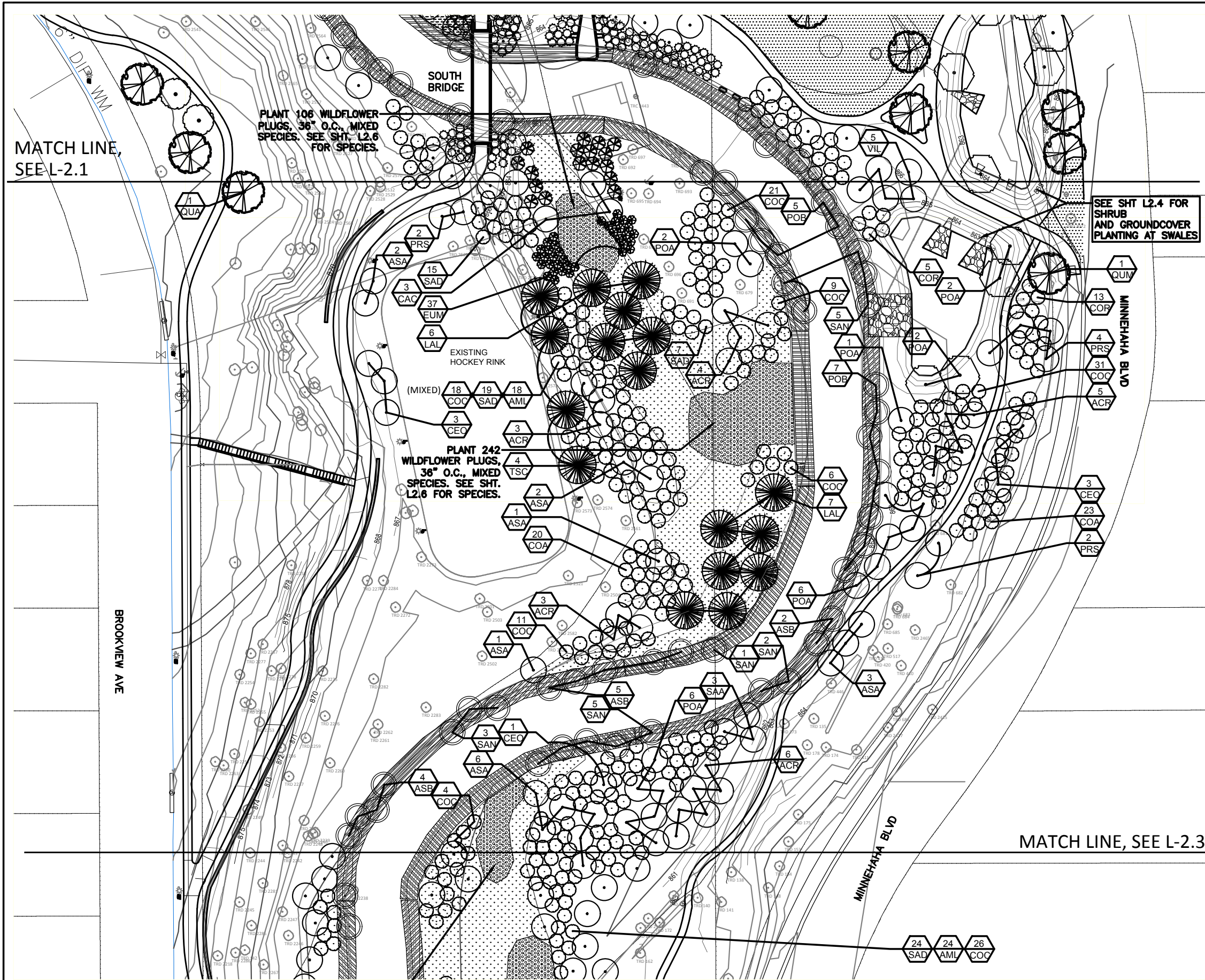
SEE SHEET L2.4 FOR SHRUB AND GROUNDCOVER PLANTING AT SWALES

BUILDING TO BE DESIGNED BY OTHERS AND BUILT DURING PHASE 2 CONSTRUCTION

PLANT 140 WILDFLOWER PLUGS, 36" O.C., MIXED SPECIES. SEE SHT. L2.6 FOR SPECIES.

PLANT 60 WILDFLOWER PLUGS, 36" O.C., MIXED SPECIES. SEE SHT. L2.6 FOR SPECIES.





MATCH LINE, SEE L-2.1

SEE SHT L2.4 FOR SHRUB AND GROUND COVER PLANTING AT SWALES

MATCH LINE, SEE L-2.3

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HART HOWERTON  
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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Landscape Architect under the laws of the state of Minnesota.  
Signature: *Hart Howerton*  
Typed or Printed Name: David Howerton  
Date: 1/24/2018 License Number: 545512

Arden Park  
Creek Restoration  
Minnehaha Creek Watershed District  
Edina, Minnesota

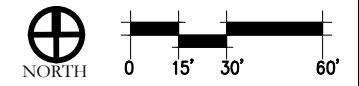
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NOTE: THIS DRAWING IS A PRELIMINARY DESIGN. THE PROPOSED DIMENSIONS, FINISHES, OR OTHER INFORMATION FROM ARCHITECT FOR MEASUREMENTS THAT ARE NOT INDICATED.

DATE/REVISIONS		
NO	DATE	ISSUE
01	09/26/18	BID ISSUE

DRAWING TITLE:  
**PLANTING PLAN**

PROJECT #:  
16-028  
DRAWN BY:  
JAL  
CHECKED BY:  
RSA

DRAWING NO:  
**L-2.2**





DATE/REVISIONS		
NO.	DATE	ISSUE
01	09/26/18	BID ISSUE

DRAWING TITLE:  
**PLANTING PLAN**

PROJECT #:  
 16-028  
 DRAWN BY:  
 JAL  
 CHECKED BY:  
 RSA

DRAWING NO:  
**L-2.3**

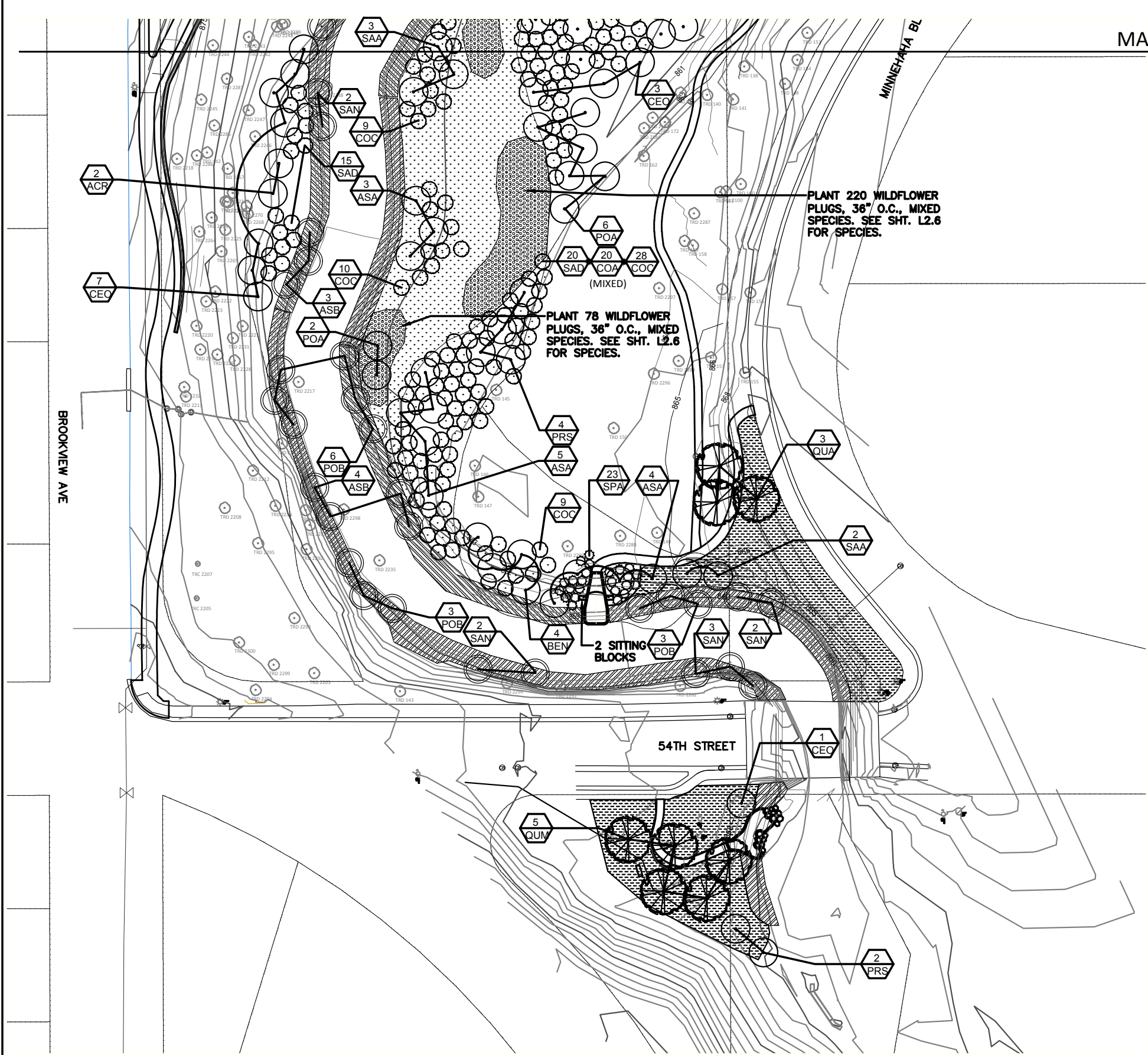
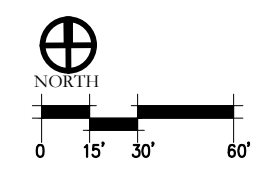
MATCH LINE, SEE L-2.2

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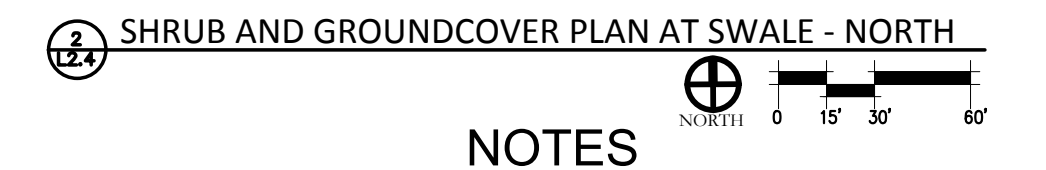
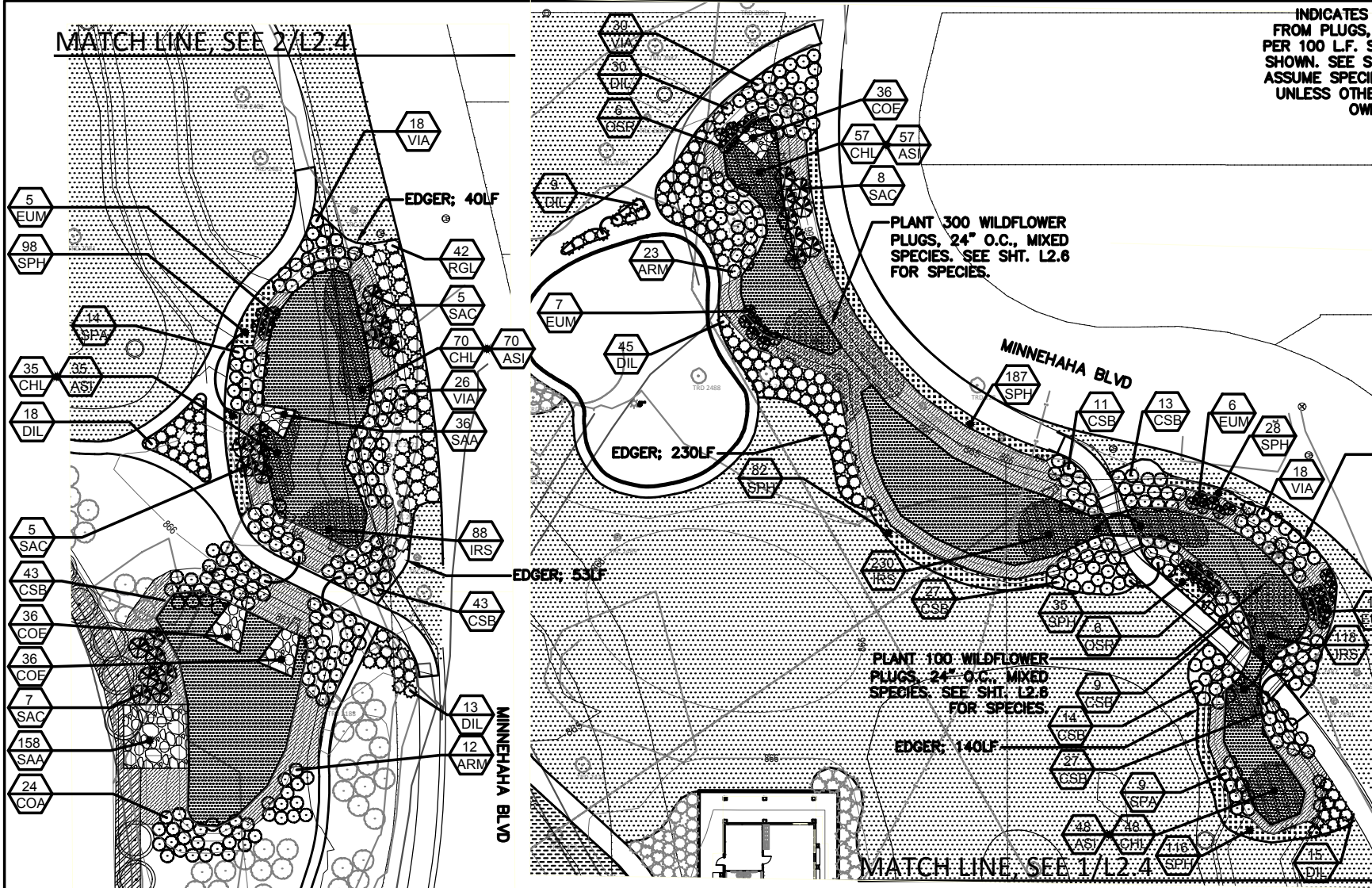
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DATE/REVISIONS		
NO	DATE	ISSUE
05/13/18		60% SET
07/31/18		90% SET

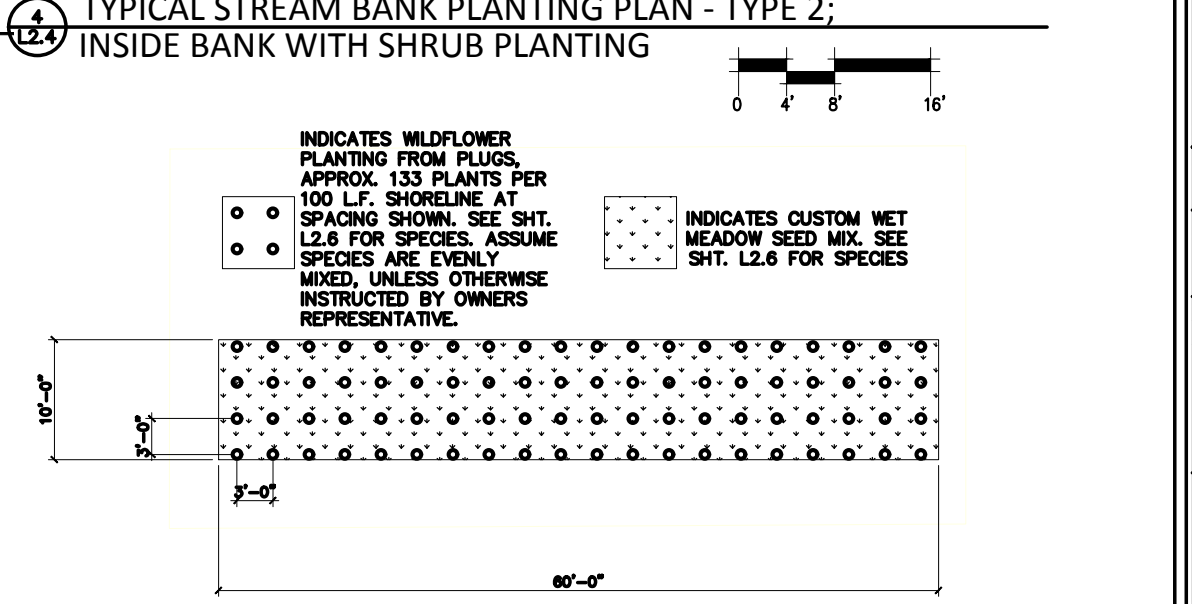
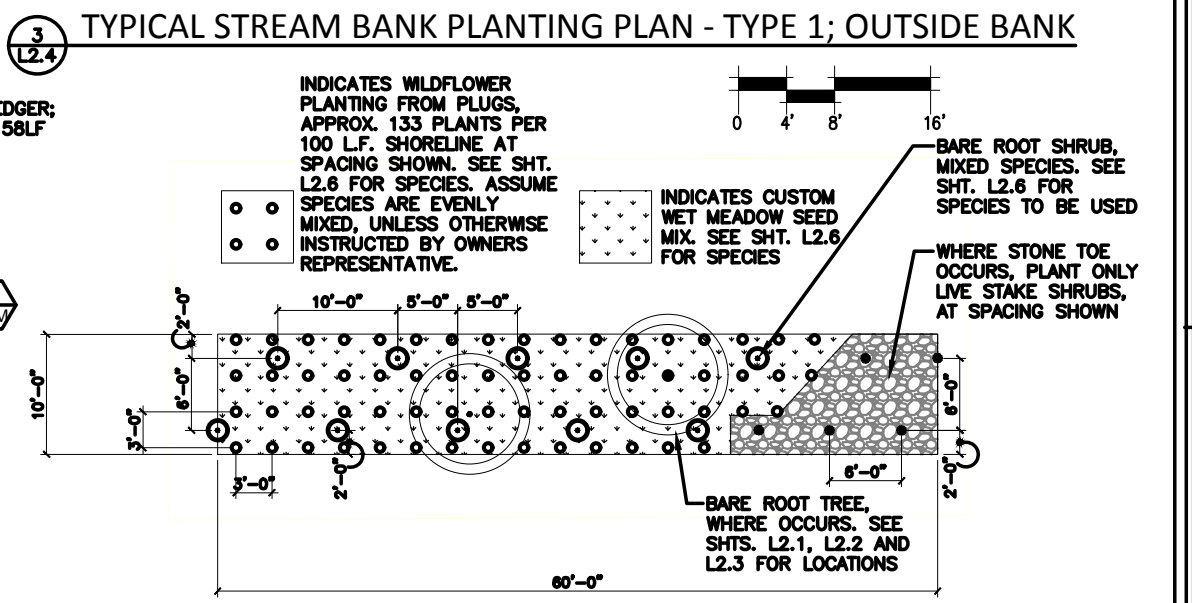
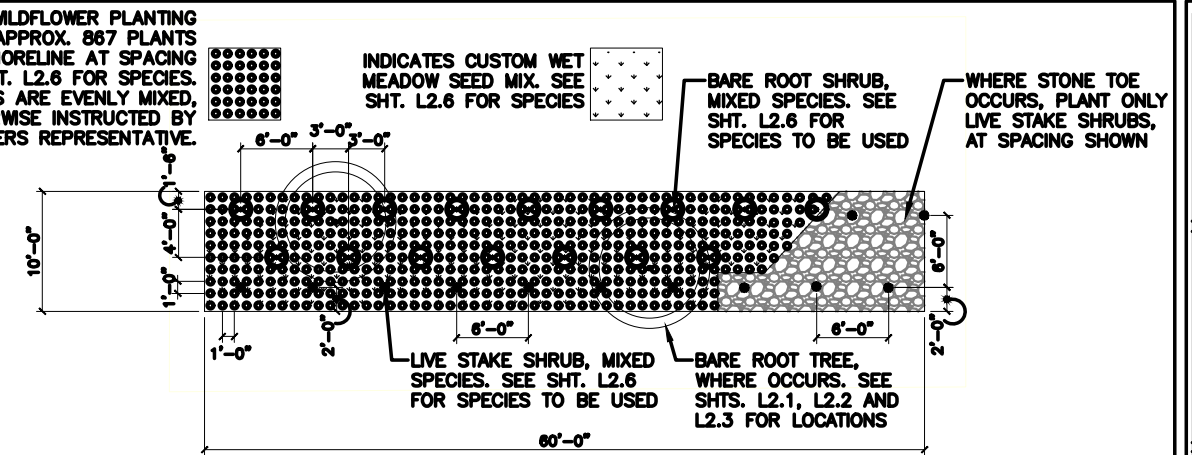


**LEGEND**

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			STREAM BANK PLANTING TYPE 3 - INSIDE BANK WITH NO SHRUBS; SEED MIX WITH PLUGS, NO SHRUBS, BARE ROOT TREES WHERE SHOWN. SEE DETAIL 5/L2.4

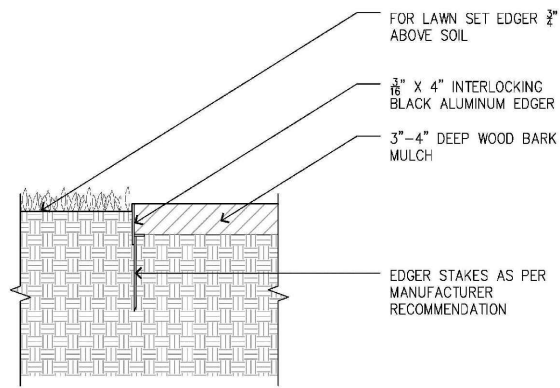
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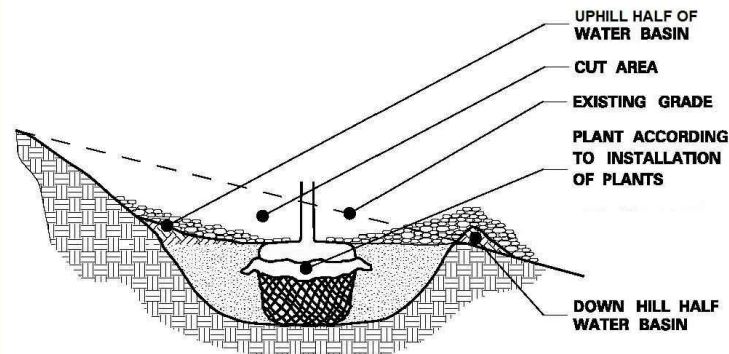


- STREAM BANK PLANTING NOTES**
1. AREA SHOWN IN DETAILS 3/L2.4, 4/L2.4 AND 5/L2.4 IS PROTOTYPICAL, TO INDICATE INTENDED SPACING OF PLANTS. STAKE OUT AND CONFIRM EXACT EXTENT OF STREAM BANK PLANTING AREA FOR EACH TYPE IN THE FIELD WITH OWNERS REPRESENTATIVE BEFORE PLANTING.
  2. SEE FABRIC INSTALLATION DETAILS, FES LIFT DETAILS IN CIVIL DRAWINGS AND SPECIFICATION SECTION 313519 FOR DETAILS REGARDING PLANTINGS ON FES LIFTS.





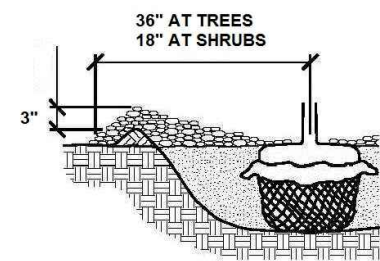
**1**  
L2.5  
**LANDSCAPE EDGER DETAIL**  
N.T.S.



NOTE:  
1. ON 1:2 SLOPES OR GREATER, DO NOT CONSTRUCT THE UPHILL HALF OF THE WATERING BASIN.

**PLANTING ON STEEP SLOPES**

**2**  
L2.5  
**STANDARD SLOPE DETAIL**  
N.T.S.



**MULCH PLACEMENT**

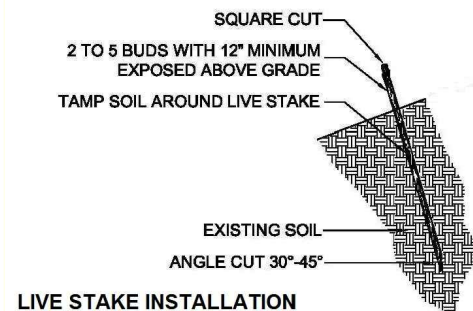
- PULL MULCH BACK NO LESS THAN 3" AND NO MORE THAN 6" FROM TREE TRUNKS.
- SUBSIDING OR DETERIORATING MULCH IS ACCEPTABLE THROUGHOUT THE CONTRACT IF THE MULCH DEPTH IS MAINTAINED AT A MINIMUM 3" DEPTH.
- IF THE MULCH DEPTH IS LESS THAN 3" ADDITIONAL MULCH IS REQUIRED TO PROVIDE THE MINIMUM DEPTH
- MULCH CONTAMINATED WITH SOIL MUST BE REMOVED AND REPLACED.

**3**  
L2.5  
**STANDARD MULCH DETAIL**  
N.T.S.

**NOTES**

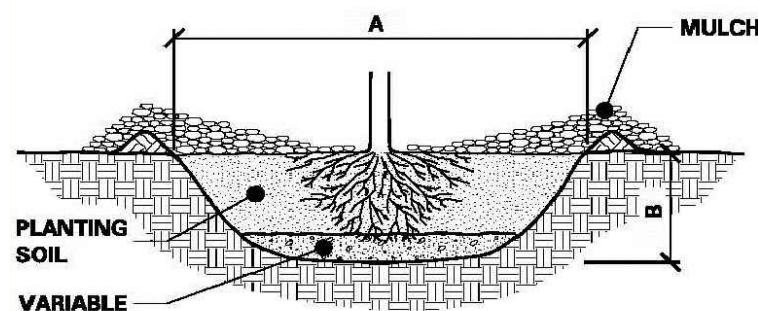
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**LIVE STAKE INSTALLATION**

**4**  
L2.5  
**LIVE STAKE PLANTING DETAIL**  
N.T.S.



**BARE ROOT STOCK**

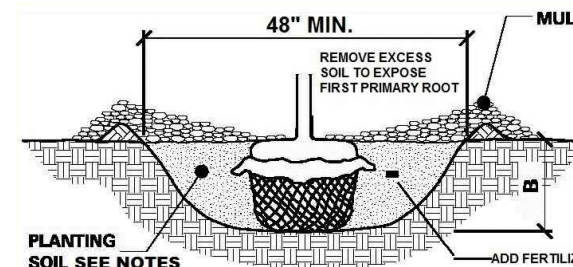
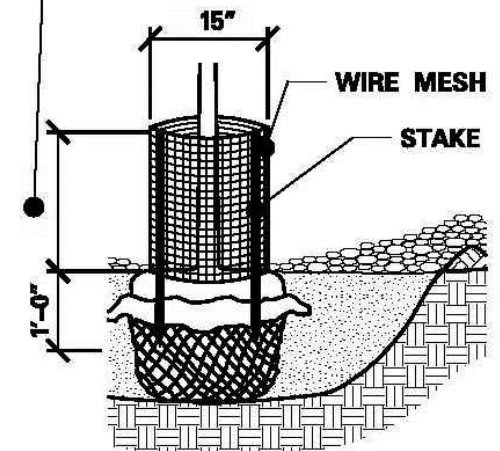
- SOAK ROOTS IN WATER FOR AT LEAST ONE HOUR BUT NOT MORE THAN 24 HOURS PRIOR TO PLANTING.
- SCARIFY SIDES AND BOTTOM OF HOLE.
- PROCEED WITH CORRECTIVE PRUNING OF THE TOP AND ROOTS.
- TRANSFER PLANT DIRECTLY FROM WATER TO HOLE. SET PLANT SO THE ROOT FLARE IS APPROXIMATELY AT THE FINISHED SOIL ELEVATION. SPREAD ROOTS OUT EVENLY. PLUMB AND IMMEDIATELY BACKFILL WITH PLANTING SOIL.
- WATER THOROUGHLY WITHIN 2 HOURS TO SETTLE PLANTS AND FILL VOIDS.
- BACK FILL VOIDS AND WATER SECOND TIME.
- PLACE MULCH WITHIN 48 HOURS OF THE SECOND WATERING UNLESS SOIL MOISTURE IS EXCESSIVE.

**5**  
L2.5  
**BARE ROOT PLANTING DETAIL**  
N.T.S.

- FORM A DOUBLE-LAYERED CYLINDER USING 0.25" GRID GALVANIZED WELDED WIRE MESH (HARDWARE CLOTH). OVERLAP THE CUT END 2".
- DRIVE TWO 1" x 1" OPPOSING HEARTWOOD WHITE OAK STAKES INTO THE GROUND 7" FROM THE CENTER OF THE TREE STEM.
- SECURE THE MESH CYLINDER TO THE OUTSIDE OF THE STAKES USING EITHER, SCREWS AND WASHERS OR RATCHET-LOCKING TIES ALONG THE OVERLAP. SPACE APPROXIMATELY 4" ON CENTER ALONG THE OVERLAP.
  - SCREWS SHALL BE ROUND HEAD GALVANIZED 1/8" DIA. x 3/4" LONG WITH WASHERS.
  - RATCHET-LOCK TIES SHALL BE NYLON AND AT LEAST 8" LONG.
- EMBED THE LOWER EDGE OF THE MESH CYLINDER 1" BELOW THE SOIL SURFACE WITHOUT DISTURBING THE TREE ROOTS.
- CUT EDGES WILL NOT BE PERMITTED AT THE TOP OF THE CYLINDER. STAKE WILL BE FLUSH WITH THE TOP OF THE CYLINDER.
- MULCH WITHIN THE CYLINDER SHALL NOT EXCEED 3" DEPTH AND SHALL BE PULLED BACK FROM THE TRUNK AS SPECIFIED IN MULCH PLACEMENT DETAIL.
- THE BOTTOM WHORL OF PINE BRANCHES MAY HAVE TO BE REMOVED TO PERMIT INSTALLATION OF 12" MIN. HEIGHT RODENT GUARDS.
- INSTALL AT ALL AMELANCHIER (AML) AND ARONIA (ARM) SHRUBS ONLY

**6**  
L2.5  
**RODENT GUARD DETAIL**  
N.T.S.

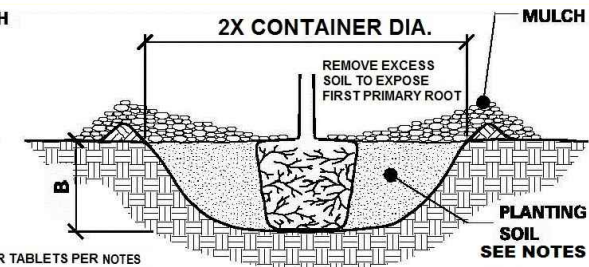
**24" MIN. HT. FOR DECIDUOUS TREES**  
**12" MIN. HT. FOR CONIFEROUS TREES**



**BALLED & BURLAPPED STOCK**

- SCARIFY SIDES AND BOTTOM OF HOLE.
- PROCEED WITH CORRECTIVE PRUNING.
- SET PLANT ON UNDISTURBED NATIVE SOIL OR THOROUGHLY COMPACTED PLANTING SOIL. INSTALL PLANT SO THE ROOT FLARE IS AT OR UP TO 2" ABOVE THE FINISHED GRADE WITH BURLAP AND WIRE BASKET, (IF USED), INTACT.
- SLIT REMAINING TREATED BURLAP AT 6" INTERVALS.
- BACKFILL TO WITHIN APPROXIMATELY 12" OF THE TOP OF THE ROOTBALL, THEN WATER PLANT. REMOVE THE TOP 1/3 OF THE BASKET OR THE TOP TWO HORIZONTAL RINGS WHICHEVER IS GREATER. REMOVE ALL BURLAP AND NAILS FROM THE TOP 1/3 OF THE BALL. REMOVE ALL TWINE. REMOVE OR CORRECT STEM GIRDLING ROOTS.
- PLUMB AND BACKFILL WITH PLANTING SOIL. ADD FERTILIZER TABLETS PER NOTES
- WATER THOROUGHLY WITHIN 2 HOURS TO SETTLE PLANTS AND FILL VOIDS.
- BACK FILL VOIDS AND WATER SECOND TIME.
- PLACE MULCH WITHIN 48 HOURS OF THE SECOND WATERING UNLESS SOIL MOISTURE IS EXCESSIVE.

**7**  
L2.5  
**STANDARD PLANTING DETAIL**  
N.T.S.



**CONTAINER STOCK**

- SCARIFY SIDES AND BOTTOM OF HOLE.
- PROCEED WITH CORRECTIVE PRUNING OF TOP AND ROOT.
- REMOVE CONTAINER AND SCORE OUTSIDE OF SOIL MASS TO REDIRECT AND PREVENT CIRCLING FIBROUS ROOTS. REMOVE OR CORRECT STEM GIRDLING ROOTS.
- SET PLANT ON UNDISTURBED NATIVE SOIL OR THOROUGHLY COMPACTED PLANTING SOIL. INSTALL PLANT SO THE TOP OF THE ROOT FLARE IS AT OR UP TO 2" ABOVE THE FINISHED GRADE.
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HART HOWERTON  
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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Landscape Architect under the laws of the state of Minnesota.  
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Date: 11/12/18 License Number: 54594

**Arden Park  
Creek Restoration**  
Minnehaha Creek Watershed District  
Edina, Minnesota

SCALE: AS NOTED  
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DATE/REVISIONS		
NO.	DATE	ISSUE
01	07/26/18	BID ISSUE

DRAWING TITLE:  
**PLANTING  
DETAILS**

PROJECT #:  
16-028  
DRAWN BY:  
JAL  
CHECKED BY:  
RSA

DRAWING NO:  
**L-2.5**



# PLANT LIST

KEY	BOTANICAL NAME	COMMON NAME	QUANT.	SIZE	COMMENTS
<b>SWALE AND UPLAND PARK PLANTING</b>					
<b>A. TREES</b>					
ACB	ACER RUBRUM	RED MAPLE	7	2" CAL.	B&B; STANDARD FORM
COP	CORNUS ALTERNIFOLIA	PAGODA DOGWOOD	5	#15 CONT.	CONTAINER GROWN, FULL FORM, FULLY ROOTED
GLT	GLEDETZIA T. I. "SKYCOLE"	SKYLINE HONEYLOCUST	2	2" CAL.	B&B; STANDARD FORM
POA	POPULUS D. "SIOUXLAND"	SIOUXLAND POPLAR	27	#15 CONT.	CONTAINER GROWN; STANDARD FORM
QUA	QUERCUS BICOLOR	SWAMP WHITE OAK	23	2" CAL.	B&B; STANDARD FORM
QUM	QUERCUS MACROCARPA	BUR OAK	10	2" CAL.	B&B; STANDARD FORM
TSC	TSUGA CANADENSIS	CANADIAN HEMLOCK	4	6 FT TALL	B&B; FULL FORM TO THE GROUND
<b>B. SHRUBS</b>					
<b>1 UPLAND SHRUBS</b>					
DIL	DIERVILLA LONICERA	DWARF BUSH HONEYSUCKLE	216	#5 CONT.	CONTAINER GROWN, FULL FORM, FULLY ROOTED
RGL	RHUS A. "GRO-LOW"	GRO-LOW FRAGRANT SUMAC	70	#2 CONT.	CONTAINER GROWN, FULL FORM, FULLY ROOTED
<b>2 TALL SHRUBS AT SWALE</b>					
ARM	ARONIA MELANOCARPA	GLOSSY BLACK CHOKEBERRY	35	#5 CONT.	CONTAINER GROWN, FULL FORM, FULLY ROOTED
COA	CORNUS RACEMOSA	GRAY DOGWOOD	24	#5 CONT.	CONTAINER GROWN, FULL FORM, FULLY ROOTED
COE	CORNUS SERICEA	RED-OSIER DOGWOOD	108	#5 CONT.	BARE ROOT; FULL FORM, FULLY ROOTED
CSB	CORNUS SERICEA "BAILEDLINE"	FIREDANCE DOGWOOD	185	#5 CONT.	CONTAINER GROWN, FULL FORM, FULLY ROOTED
SAA	SAMBUCUS CANADENSIS	AMERICAN ELDER	194	#5 CONT.	BARE ROOT; FULL FORM, FULLY ROOTED
SAC	SAMBUCUS CANADENSIS	AMERICAN ELDER	25	#10 CONT.	CONTAINER GROWN, FULL FORM, FULLY ROOTED
VIA	VIBURNUM TRILOBUM	AMERICAN HIGH BUSH CRANBERRY	92	#5 CONT.	CONTAINER GROWN, FULL FORM, FULLY ROOTED
<b>3 MEDIUM SHRUBS AT SWALE</b>					
SPA	SPIREA ALBA	MEADOWSWEET	23	#2 CONT.	CONTAINER GROWN, FULL FORM, FULLY ROOTED
<b>C. PERENNIALS AND GRASSES</b>					
<b>1 UPLAND GRASSES</b>					
SPH	SPOROBOLUS HETEROLEPIS	PRAIRIE DROPS EED	562	#1 CONT.	24" ON CENTER; FULL FORM, FULLY ROOTED
<b>2 GRASSES/PERENNIALS ON SWALE BOTTOM</b>					
<b>(SEE PLANTING PLANS AND PLANT LEGEND FOR LOCATIONS)</b>					
ASI	ASCLEPIAS INCARNATA	MARSH MILKWEED	210	4" POT	24" ON CENTER; FULL FORM, FULLY ROOTED
CHL	CHELONE GLABRA	TURTLEHEAD	3390	4" POT	24" ON CENTER; FULL FORM, FULLY ROOTED
CHL	CHELONE GLABRA	TURTLEHEAD	210	4" POT	24" ON CENTER; FULL FORM, FULLY ROOTED
IRS	IRIS VERSICOLOR	BLUE FLAG IRIS	436	4" POT	24" ON CENTER; FULL FORM, FULLY ROOTED
<b>3 GRASSES/PERENNIALS ON SWALE SIDE SLOPES</b>					
<b>(SEE PLANTING PLANS AND PLANT LEGEND FOR LOCATIONS)</b>					
EUM	CAREX HYSTERICINA	PORCUPINE SEDGE	644	4" POT	24" ON CENTER; FULL FORM, FULLY ROOTED
OSR	CAREX VULPINOIDEA	FOX SEDGE	644	4" POT	24" ON CENTER; FULL FORM, FULLY ROOTED
EUM	EUPATORIUM MACULATUM	JOE-PYE WEED	28	#1 CONT.	CONTAINER GROWN, FULL FORM, FULLY ROOTED
OSR	OSMUNDA REGALIS	SWORD FERN	12	#1 CONT.	CONTAINER GROWN, FULL FORM, FULLY ROOTED
<b>4 HERBACEOUS PLUGS TO SUPPLEMENT GRASSES IN SWALES</b>					
<b>(SEE PLANTING PLANS AND PLANT LEGEND FOR LOCATIONS)</b>					
	ASCLEPIAS INCARNATA	MARSH MILKWEED	80	PLUGS	2" LINERS, FULLY ROOTED; 24" O.C.
	CHELONE GLABRA	TURTLEHEAD	80	PLUGS	2" LINERS, FULLY ROOTED; 24" O.C.
	LIATRIS LIGULALISTYLIS	MEADOW BLAZINGSTAR	80	PLUGS	2" LINERS, FULLY ROOTED; 24" O.C.
	LOBELIA SIPHILTICA	GREAT BLUE LOBELIA	80	PLUGS	2" LINERS, FULLY ROOTED; 24" O.C.
	VERBENA HASTATA	BLUE VERVAIN	80	PLUGS	2" LINERS, FULLY ROOTED; 24" O.C.

KEY	BOTANICAL NAME	COMMON NAME	QUANT.	SIZE	COMMENTS
<b>FLOODPLAIN PLANTING ZONE</b>					
<b>A. FLOODPLAIN FOREST AREAS AND NEAR LANDINGS</b>					
<b>1 TREES</b>					
ACR	ACER RUBRUM	RED MAPLE	27	#15 CONT.	CONTAINER GROWN; STANDARD FORM
ASA	ACER SACCHARINUM	SILVER MAPLE	42	#15 CONT.	CONTAINER GROWN; STANDARD FORM
BEN	BETULA NIGRA	RIVER BIRCH	17	#15 CONT.	CONTAINER GROWN, MULTI-TRUNK
CAC	CARPINUS CAROLINIANA	BLUE BEECH	8	#15 CONT.	CONTAINER GROWN; STANDARD FORM
CEO	CELTIS OCCIDENTALIS	HACKBERRY	25	#15 CONT.	CONTAINER GROWN; STANDARD FORM
LAL	LARIX LARICINA	TAMARACK	24	6 FT TALL	B&B; FULL FORM TO THE GROUND
POA	POPULUS D. "SIOUXLAND"	SIOUXLAND POPLAR	48	#15 CONT.	CONTAINER GROWN; LOW BRANCHING
PRS	PRUNUS SEROTINA	BLACK CHERRY	20	#10 CONT.	CONTAINER GROWN; STANDARD FORM
QAB	QUERCUS BICOLOR	SWAMP WHITE OAK	7	#15 CONT.	CONTAINER GROWN; STANDARD FORM
SAA	SALIX AMYGDALOIDES	PEACHLEAF WILLOW	18	#10 CONT.	CONTAINER GROWN; STANDARD FORM
VIL	VIBURNUM LENTAGO	NANNYBERRY VIBURNUM	5	#10 CONT.	CONTAINER GROWN; LOW BRANCHING
<b>2 SHRUBS</b>					
AML	AMELANCHIER LAEVIS	ALLEGHENY SERVICEBERRY	81	#10 CONT.	CONTAINER GROWN, MULTI-TRUNK
COA	CORNUS RACEMOSA	GRAY DOGWOOD	140	#5 CONT.	CONTAINER GROWN; FULL FORM, FULLY ROOTED
COC	CORNUS SERICEA	RED-OSIER DOGWOOD	231	#5 CONT.	CONTAINER GROWN; FULL FORM, FULLY ROOTED
COR	CORYLUS AMERICANA	AMERICAN HAZELNUT	30	#5 CONT.	CONTAINER GROWN; FULL FORM, FULLY ROOTED
DIL	DIERVILLA LONICERA	DWARF BUSH HONEYSUCKLE	124	#5 CONT.	CONTAINER GROWN; FULL FORM, FULLY ROOTED
SAD	SALIX DISCOLOR	PUSSY WILLOW	120	#5 CONT.	CONTAINER GROWN; FULL FORM, FULLY ROOTED
SAC	SAMBUCUS CANADENSIS	AMERICAN ELDER	17	#10 CONT.	CONTAINER GROWN, MULTI-TRUNK
SPA	SPIREA ALBA	MEADOWSWEET	112	#2 CONT.	CONTAINER GROWN; FULL FORM, FULLY ROOTED
EUM	EUPATORIUM MACULATUM	JOE PYE WEED	37	#1 CONT.	CONTAINER GROWN; FULL FORM, FULLY ROOTED
<b>B. STREAM BANKS</b>					
<b>1 TREES</b>					
ASB	ACER SACCHARINUM	SILVER MAPLE	25	1/2" CAL.	BARE ROOT; 2 YEAR MIN., FULL BRANCHING
POB	POPULUS D. "SIOUXLAND"	SIOUXLAND POPLAR	48	1/2" CAL.	BARE ROOT; 2 YEAR MIN., FULL BRANCHING
SAN	SALIX NIGRA	BLACK WILLOW	42	1/2" CAL.	BARE ROOT; 2 YEAR MIN., FULL BRANCHING
<b>2 SHRUBS</b>					
AMF	AMORPHA FRUTICOSA	INDIGIO BUSH	110	18"	BARE ROOT; FULL FORM, FULLY ROOTED
CEP	CEPHALANTHUS OCCIDENTALIS	BUTTONBUSH	220	18"	BARE ROOT; FULL FORM, FULLY ROOTED
COM	CORNUS AMOMIUM	SILKY DOGWOOD	220	18"	BARE ROOT; FULL FORM, FULLY ROOTED
COB	CORNUS RACEMOSA	GRAY DOGWOOD	110	18"	BARE ROOT; FULL FORM, FULLY ROOTED
COD	CORNUS SERICEA	RED-OSIER DOGWOOD	220	18"	BARE ROOT; FULL FORM, FULLY ROOTED
SAE	SALIX EXIGUA	SANDBAR WILLOW	135		LIVE STAKE
SAH	SALIX H. VAR. "HUMILIS"	PRAIRIE WILLOW	265		LIVE STAKE
VIB	VIBURNUM TRILOBUM	AMERICAN HIGH BUSH CRANBERRY	110	18"	BARE ROOT; FULL FORM, FULLY ROOTED

B.	BOTANICAL NAME	COMMON NAME	QUANT.	SIZE	COMMENTS
<b>B. FLOODPLAIN PLUGS</b>					
<b>1 HERBACEOUS PLUGS ON OUTSIDE BANKS (SEE DETAIL 3/L2.4 FOR LOCATIONS)</b>					
	GRASSES				
	CAREX COMOSA	BOTTLEBRUSH SEDGE	2500	PLUGS	2" LINERS, FULLY ROOTED
	CAREX HYSTERICINA	PORCUPINE SEDGE	2500	PLUGS	2" LINERS, FULLY ROOTED
	CAREX STIPATA	FOX SEDGE	2500	PLUGS	2" LINERS, FULLY ROOTED
	ELYMUS VIRGINICUS	VIRGINIA WILD RYE	2500	PLUGS	2" LINERS, FULLY ROOTED
	LEERSIA ORYZOIDES	RICE CUT GRASS	2500	PLUGS	2" LINERS, FULLY ROOTED
	SPARTINA PECTINATA	PRAIRIE CORD GRASS	2500	PLUGS	2" LINERS, FULLY ROOTED
	FORBS				
	ASCLEPIAS INCARNATA	SWAMP MILKWEED	5132	PLUGS	2" LINERS, FULLY ROOTED
<b>2 HERBACEOUS PLUGS ON INSIDE BANKS (SEE DETAILS 4,5/L2.4 FOR LOCATIONS)</b>					
	GRASSES				
	CAREX COMOSA	BOTTLEBRUSH SEDGE	365	PLUGS	2" LINERS, FULLY ROOTED
	CAREX LACRUSTRIS	LAKE SEDGE	365	PLUGS	2" LINERS, FULLY ROOTED
	CAREX STIPATA	FOX SEDGE	365	PLUGS	2" LINERS, FULLY ROOTED
	ELYMUS VIRGINICUS	VIRGINIA WILD RYE	365	PLUGS	2" LINERS, FULLY ROOTED
	LEERSIA ORYZOIDES	RICE CUT GRASS	365	PLUGS	2" LINERS, FULLY ROOTED
	SPARTINA PECTINATA	PRAIRIE CORD GRASS	365	PLUGS	2" LINERS, FULLY ROOTED
<b>3 HERBACEOUS FORB PLUGS TO SUPPLEMENT SEED MIX IN FLOODPLAIN (SEE PLANTING PLANS AND PLANT LEGEND FOR LOCATIONS)</b>					
	ACORUS CALAMUS	SWEET FLAG	78	PLUGS	2" LINERS, FULLY ROOTED
	ASTER LUCIDULUS	SWAMP ASTER	78	PLUGS	2" LINERS, FULLY ROOTED
	ASTER PUNICEUS	RED-STEMMED ASTER	78	PLUGS	2" LINERS, FULLY ROOTED
	AGASTACHE FOENICULUM	GIANT HYSSOP	78	PLUGS	2" LINERS, FULLY ROOTED
	EUPATORIUM MACULATUM	JOE-PYE WEED	78	PLUGS	2" LINERS, FULLY ROOTED
	HELIUM AUTUMNALE	SNEEZEWEEED	78	PLUGS	2" LINERS, FULLY ROOTED
	IRIS VERSICOLOR	BLUE FLAG IRIS	78	PLUGS	2" LINERS, FULLY ROOTED
	LIATRIS LIGULALISTYLIS	MEADOW BLAZINGSTAR	78	PLUGS	2" LINERS, FULLY ROOTED
	MIMULUS RINGENS	MONKEYFLOWER	78	PLUGS	2" LINERS, FULLY ROOTED
	SAGITTARIA LATIFOLIA	BROAD-LEAF ARROWHEAD	78	PLUGS	2" LINERS, FULLY ROOTED
	VERNONIA FASCICULATA	IRONWEED	78	PLUGS	2" LINERS, FULLY ROOTED
	VERBENA HASTATA	BLUE VERVAIN	78	PLUGS	2" LINERS, FULLY ROOTED

KEY	BOTANICAL NAME	COMMON NAME	QUANT.	SIZE	COMMENTS
<b>A. ASH AND INVASIVES REMOVAL AREAS - SEE PLANTING NOTE #9</b>					
<b>1 TREES</b>					
	ACER RUBRUM	RED MAPLE	900 TOTAL	1/2" CAL.	GROWN FOR 2 YEARS MINIMUM
	ACER SACCHARINUM	SUGAR MAPLE	T.B.D.		BARE ROOT; FULL FORM, FULLY ROOTED
	CARPINUS CAROLINIANA	BLUE BEECH	T.B.D.		BARE ROOT; FULL FORM, FULLY ROOTED
	CELTIS OCCIDENTALIS	HACKBERRY	T.B.D.		BARE ROOT; FULL FORM, FULLY ROOTED
	JUGLANS NIGRA	BLACK WALNUT	T.B.D.		BARE ROOT; FULL FORM, FULLY ROOTED
	OSTRYA VIRGINIANA	IRONWOOD	T.B.D.		BARE ROOT; FULL FORM, FULLY ROOTED
	PINUS RESINOSA	RED PINE	T.B.D.		BARE ROOT; FULL FORM, FULLY ROOTED
	PINUS STROBUS	WHITE PINE	T.B.D.		BARE ROOT; FULL FORM, FULLY ROOTED
	POPULUS TREMULOIDES	QUAKING ASPEN	T.B.D.		BARE ROOT; FULL FORM, FULLY ROOTED
	PRUNUS SEROTINA	BLACK CHERRY	T.B.D.		BARE ROOT; FULL FORM, FULLY ROOTED
	QUERCUS ALBA	WHITE OAK	T.B.D.		BARE ROOT; FULL FORM, FULLY ROOTED
	QUERCUS MACROCARPA	BUR OAK	T.B.D.		BARE ROOT; FULL FORM, FULLY ROOTED
	QUERCUS RUBRA	RED OAK	T.B.D.		BARE ROOT; FULL FORM, FULLY ROOTED
	TILIA AMERICANA	BASSWOOD	T.B.D.		BARE ROOT; FULL FORM, FULLY ROOTED
	ULMUS AMERICANA	AMERICAN ELM	T.B.D.		BARE ROOT; FULL FORM, FULLY ROOTED
<b>2 SHRUBS</b>					
	ARONIA MELANOCARPA	GLOSSY BLACK CHOKEBERRY	900 TOTAL	18"	ABOVE GROUND HEIGHT
	CORNUS RACEMOSA	GRAY DOGWOOD	T.B.D.		BARE ROOT; FULL FORM, FULLY ROOTED
	CORNUS SERICEA	RED-OSIER DOGWOOD	T.B.D.		BARE ROOT; FULL FORM, FULLY ROOTED
	DIERVILLA LONICERA	DWARF BUSH HONEYSUCKLE	T.B.D.		BARE ROOT; FULL FORM, FULLY ROOTED
	SAMBUCUS CANADENSIS	AMERICAN ELDER	T.B.D.		BARE ROOT; FULL FORM, FULLY ROOTED
	SYMPHORICARPOS ALBUS	SNOWBERRY	T.B.D.		BARE ROOT; FULL FORM, FULLY ROOTED
	VIBURNUM LENTAGO	NANNYBERRY VIBURNUM	T.B.D.		BARE ROOT; FULL FORM, FULLY ROOTED

BOTANICAL NAME COMMON NAME

## FLOODPLAIN GRASSES AND FORBS

### A. CUSTOM WETLAND MEADOW SEED MIX

Common Name	Scientific Name	Rate (lb/ac)	% of Mix (% by wt)
Blue Joint Grass	<i>Calamagrostis canadensis</i>	0.24	1.00%
Virginia wild rye	<i>Elymus virginicus</i>	0.14	25.00%
Reed manna grass	<i>Glyceria grandis</i>	0.36	3.75%
Rice cut grass	<i>Leersia oryzoides</i>	0.12	3.00%
Switchgrass	<i>Panicum virgatum</i>	0.06	4.47%
Fowl bluegrass	<i>Poa palustris</i>	2.65	15.00%
Prairie Cord Grass	<i>Spartina pectinata</i>	0.06	6.25%
American slough grass	<i>Beckmannia syzigachne</i>	1.5	4.00%
<b>Total Grasses</b>		<b>5.13</b>	<b>62.47%</b>
Bebb's Oval Sedge	<i>Carex bebbii</i>	0.09	1.88%
Bottlebrush Sedge	<i>Carex comosa</i>	0.08	1.88%
Porcupine Sedge	<i>Carex hystericina</i>	0.08	1.88%
Fox Sedge	<i>Carex stipata</i>	0.09	1.88%
Brown Fox Sedge	<i>Carex vulpinoidea</i>	0.34	2.50%
Green Bulrush	<i>Sagittaria arifoliosa</i>	0.39	0.63%
Woolgrass	<i>Scirpus cyperinus</i>	1.44	0.63%
Softstem Bulrush	<i>Scirpus validus</i>	0.05	1.25%
<b>Total Sedges and Rushes</b>		<b>2.56</b>	<b>12.53%</b>
Swamp Milkweed	<i>Asclepias incarnata</i>	0.02	3.75%
New England Aster	<i>Aster novae-angliae</i>	0.11	1.25%
Nodding Bur Marigold	<i>Bidens cernua</i>	0.04	1.63%
Joe Pye Weed	<i>Eupatorium maculatum</i>	0.08	0.63%
Boneset	<i>Eupatorium perfoliatum</i>	0.13	0.63%
Sneezeweed	<i>Helenium autumnale</i>	0.22	1.25%
Great St. John's Wort	<i>Hypericum pyramidatum</i>	0.1	0.38%
Monkey flower	<i>Mimulus ringens</i>	0.31	0.10%
Wild Bergamot	<i>Monarda fistulosa</i>	0.12	1.25%
Mountain Mint	<i>Pycnanthemum virginianum</i>	0.11	0.38%
Yellow Coneflower	<i>Ratibida pinnata</i>	0.1	3.00%
Black-eyed Susan	<i>Rudbeckia hirta</i>	0.31	2.75%
Brown-eyed Susan	<i>Rudbeckia triloba</i>	0.12	3.00%
Blue Vervain	<i>Verbena hastata</i>	0.22	3.00%
Common Ironweed	<i>Vernonia fasciculata</i>	0.06	2.00%
<b>Total Forbs</b>		<b>2.05</b>	<b>25.00%</b>
<b>Totals:</b>		<b>9.74</b>	<b>100.00%</b>

## NOTES

- THE WORK AND PRODUCTS CALLED FOR IN THESE PLANTING PLANS SHALL CONFORM TO THE PLANS, SPECIFICATIONS AND CONSTRUCTION CONTRACT OF THE ARDEN PARK CREEK RESTORATION PROJECT, INCLUDING GENERAL AND SUPPLEMENTARY CONDITIONS, DIVISION 00 AND 01 SPECIFICATIONS AND THE GEOTECHNICAL REPORT, UNLESS THESE PLANS CALL FOR A HIGHER STANDARD.
- CALL GOPHER STATE ONE CALL FOR UTILITY LOCATES PRIOR TO ALL EXCAVATION WORK.
- NOTIFY ARCHITECT OF UTILITY OR OTHER CONFLICTS THAT REQUIRE ALTERATIONS TO THE PLAN.
- ALL AREAS THAT ARE DISTURBED BY CONSTRUCTION AND NOT OTHERWISE SHOWN AS PLANTED SHALL BE RESTORED AND SEEDS AS DESCRIBED IN THE EROSION AND SEDIMENT CONTROL PLAN SHEETS.
- SEE SHEET L2.4 FOR TYPICAL PLANTING LAYOUT DETAILS ON CREEK BANK.
- PLACE 3" OF WOOD BARK MULCH IN ALL PLANT BEDS WHERE PLANT SPACING IS LESS THAN 48" O.C. AND AROUND ALL NEWLY PLANTED TREES AND SHRUBS. SEE DETAILS, SHT. L2.5
- SEE SHEET L2.5 FOR PLANTING DETAILS AND SHEET L2.6 FOR PLANT LIST.
- SEE SPECIFICATIONS FOR ADDITIONAL INFORMATION.
- SEE SHEET L2.6 FOR ADDITIONAL UPLAND BARE ROOT TREE AND SHRUB PLANTING, LOCATIONS TO BE DETERMINED BY OWNERS REPRESENTATIVE IN THE FIELD AFTER REMOVAL OF BUCKTHORN AND ASH TREES.



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I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Licensed Landscape Architect under the laws of the state of Minnesota.  
Signature: *David Howerton*  
Typed or Printed Name: David Howerton  
Date: 11/26/18 License Number: 54594

Arden Park  
Creek Restoration  
Minnehaha Creek Watershed District  
Edina, Minnesota

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DATE/REVISIONS		
NO	DATE	ISSUE
	07/26/18	BID ISSUE

DRAWING TITLE:  
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16-028  
DRAWN BY :  
JAL  
CHECKED BY :  
RSA

DRAWING NO :  
**L-2.6**