MINNEHAHA CREEK
WATERSHED DISTRICT
QUALITY OF WATER, QUALITY OF LIFE

Meeting: Board of Managers
Meeting date: 4/10/2025
Agenda Item #: 10.3
Item type: Permit

Title: Permit 25-117: East Auburn Wetland Restoration

Prepared by: Name: Maggie Menden
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Recommendation
Approval of the Minnehaha Creek Watershed District (MCWD) permit.

Project Location and Scope
Project Purpose and Scope
The East Auburn Wetland Restoration site is in the City of Victoria, in Carver County, comprised of a complex of four wetland cells along Six Mile Creek between Wasserman Lake upstream and East Auburn Lake downstream. A wetland assessment identified this wetland complex as the likely source of elevated total phosphorus loads (TP) to East Auburn Lake through previously collected water quality, flow, level, and sediment data. The Minnehaha Creek Watershed District (MCWD) Project Planning's Department proposes a water quality improvement project aimed at reducing phosphorus loading from the degraded wetland system. Attachment A provides an overview map of the wetland complex and its location in relation to Wassermann Lake and East Auburn Lake.

Extensive monitoring and analysis between 2019 and 2021 identified the first wetland Cell (Cell 1) as the primary contributor to phosphorus export into East Auburn Lake. Cell 1 is the most upstream wetland in the complex and is classified as a Type 2/3 shallow marsh with a fresh (wet) meadow fringe. A historically excavated channel meanders through Cell 1 and passes under a boardwalk before continuing north through the rest of the wetland complex. Cell 1 and Cell 2 of the wetland complex are located entirely on City of Victoria property. Cells 3 and 4 are privately owned. A 2023 feasibility study, conducted by Moore Engineering, recommended the construction of a weir to both restore natural wetland hydrology and reduce the systems nutrient export from this wetland system to East Auburn Lake by 50%. The proposed sheet pile weir (weir) will span the wetland at its narrowest point, between Cell 1 and Cell 2, bisecting the channel.

In conjunction with the construction of the proposed weir, the City of Victoria has requested MCWD advance the design and construct of a new boardwalk to replace the existing failing structure that crosses the wetland near the proposed weir location. A draft agreement between the City and MCWD specifies access and allocates maintenance and ownership roles (see Attachment B).

Regulatory Framework
The proposed project is subject to MCWD's regulations for Floodplain Alteration, Waterbody Crossings and Structures, and Wetland Protection. The wetland is classified as a public waters wetland, and is subject to review by the Minnesota Department of Natural Resources (DNR) for the placement of riprap below the Ordinary High-Water (OHW) level of the wetland. Additionally, since the weir is considered an outlet control structure, the DNR requires a permit, which is currently under review. Initial review and ongoing coordination with the DNR have indicated that the riprap will be viewed as self-replacing, ensuring that the project will meet regulatory expectations and maintain wetland integrity, without necessitating additional mitigation measures.

The Floodplain Alteration rule applies due to fill within the floodplain of the wetland, in the form of the weir structure. The Waterbody Crossings and Structures Rule applies to the construction of a weir and reconstruction of a boardwalk within the public waters wetland. The vegetated buffer requirement of the Wetland Protection rule applies to the

wetland where the weir and boardwalk are to be constructed, because that construction is subject to the Waterbody Crossings and Structures Rule.

The City of Victoria is responsible for the maintenance of the wetland buffers and boardwalk, while the District is responsible for the maintenance of the weir. Wetland buffers and waterbody crossings and structures will be maintained as outlined in the Programmatic Maintenance Agreement (dated January 1, 2014) between the City of Victoria and MCWD (Attachment C).

MCWD Rule Analysis

Floodplain Alteration

The Floodplain Alteration Rule applies when fill is placed within the floodplain of a waterbody. The proposed weir and boardwalk piers within the floodplain are considered fill, so this rule is applicable.

In the area between the Ordinary High Water level (OHW) (943.9') and 100-year water elevation (945.8'), the proposed floodplain fill due to the weir and new boardwalk piles totals 0.37 cubic yards. The removal of the existing boardwalk piles totals 0.56 cubic yards of floodplain cut, which results in a net creation of 0.19 cubic yards of floodplain storage, thereby meeting Section 4(a) which requires no net fill.

Section 4(c), which states that fill in a watercourse must meet no-rise standard is not applicable as there is no floodplain fill within the watercourse (Six Mile Creek), as the weir is being constructed below the OHW.

Staff and the District Engineer have reviewed and determined that the Project meets this rule.

Waterbody Crossings & Structures

MCWD's Waterbody Crossings and Structures Rule applies when a structure interacts with the bed or bank of a waterbody. The proposed weir and boardwalk replacement fall under this regulation, as both will be placed within a wetland and a watercourse.

BOARDWALK

The boardwalk replacement involves removing and replacing failing infrastructure. The existing structure is currently supported by 9-inch round timber piles and helical piers, which will be replaced with new helical piers. No excavation will be conducted to remove the old piles and piers, as they will be extracted vertically, ensuring minimal soil disturbance.

Under Section 3(a) of the Waterbody Crossings and Structures Rule, any use of a waterbody's bed or bank must demonstrate a public benefit. The boardwalk is publicly owned by the City of Victoria and is used to connect the Southwest Regional Trail, which spans 13 miles between Chaska and Victoria.

Section 3(b) requires that the structure retains hydraulic capacity. Due to the nearly in-kind replacement, there will be no change in hydraulic capacity as a result of the boardwalk replacement.

Section 3(c) and 3(d) requires that the boardwalk preserve navigational capacity and aquatic and wildlife passage. The helical piers will be replaced in the same location as the existing piers and will not change the navigational capacity in post-conditions. Similarly, there will be no changes to aquatic and wildlife passage.

The proposed helical piers are designed to not promote erosion or scour, or affect bed stability, as they are screwed into stable soil and do not require any excavation or disturbance, which aligns with 3(e) of this rule.

Per Section 6, a public applicant that is proposing to replace a structure within a waterbody that does not change hydraulic capacity, is not required to demonstrate the proposal is the minimal impact solution. Nevertheless, the boardwalk replacement removes failing, potentially dangerous infrastructure and connects two parts of a regional trail. Doing nothing or building an alternative crossing would be a larger burden to the public and have a larger impact on the surrounding wetland.

The proposed boardwalk replacement meets all requirements of this rule.

WEIR

The weir will be constructed from 0.375-inch-thick steel sheet pile, driven 16 feet below grade at the narrowest point of the wetland. Within the wetland footprint, the weir height will range between one and two feet above the wetland. Within the watercourse, the weir will be set at the same level as the OHW (943.9), with the intent to raise the wetlands normal water level to maintaining saturated conditions for the soil and preventing phosphorus rich groundwater from draining through the channel between wetland cells.

Under Section 3(a), any use of a waterbody bed or bank must demonstrate a public benefit. The weir satisfies that requirement, as it is a project by a public agency to enhance wetland function and reduce nutrient export to the impaired East Auburn Lake, as identified in the 2023 Feasibility Study. The weir is specifically designed to restore the wetland's hydrologic conditions to a more natural state, preventing phosphorus mobilization and improving water retention within the wetland.

Section 3(b) requires a crossing or structure to retain adequate hydraulic capacity, and if a structure is proposed in a watercourse, it may not increase upstream or downstream floodstage.

The proposed Project will result in a slight increase in the 100-year flood stage in Cells 1 and 2. Section 4(a) provides that the Board of Managers may waive a requirement of the rule on a finding that the waterbody is significantly altered from a natural state, that it is degraded, and that the proposed application would provide ecological restoration and a greater degree of resource protection than would conformance to this rule. The present application requests a waiver of the section 3(d) criterion that the structure not increase upstream or downstream flood stage, for the reasons outlined below.

Prior to the establishment of farming in the area, water from Wassermann moved as unconfined overland flow through the wetland. Historic aerials show that the channel has been manipulated from its natural condition and straightened to improve drainage over time (2023 Feasibility Study). As a result, the wetland is no longer functioning as it originally did. The stream and wetland system now have limited biodiversity, degraded habitat characteristics, and disrupted hydrology. The wetland currently dries out during summer months, leading to wet-dry cycling that releases phosphorus downstream, contributing to water quality degradation in East Auburn Lake. This condition is well-documented through monitoring and analysis conducted by MCWD staff in coordination with Stantec, which identified Cell 1 of the wetland as a major source of phosphorus export.

The proposed project aims to restore Cell 1 of the wetland by re-engineering its hydrology to mimic natural conditions that existed before it was altered. Retaining additional water in Cell 1 of the wetland, specifically by optimizing water retention behind the weir, will prevent Cell 1 of the wetland from drying out during the summer months, thus reducing nutrient flushing during rain events. This approach will enhance the wetland's ability to function by promoting nutrient uptake and sediment settling. Conforming to the standard flood stage requirements would not allow for this level of restoration, as it would limit the necessary water retention to restore the wetland's natural functions.

The slight increase in flood stage for the 100-year event (0.06 feet upstream in Cell 1 and 0.02 feet downstream in Cell 2) necessarily results from the intentional design to restore hydrologic conditions, prevent dehydration, and reduce nutrient export. This deviation from the flood stage requirements is minimal but necessary to achieve the ecological benefits the project is designed to provide.

Additionally, the proposed rise in water levels will occur entirely within the project basin, on property owned by the City of Victoria, which is partnering on the project. Hydraulic modeling shows no increase in flood stage for any nearby waterbodies (Wassermann Lake, Carl Krey, East Auburn Lake). There is no modeled rise downstream for Cells 3 and 4, which lie within the boundaries of privately owned properties.

Per Sections 3(c) and 3(d), wildlife passage and navigational capacity will remain unchanged due to the presence of an existing carp barrier located approximately 1,200 feet upstream of the project site.

Additionally, scour and erosion risks are mitigated through the incorporation of engineered riprap downstream of the weir, as required by Section 3(e).

Per Section 3(f), the use of the bed or bank must represent a "minimal impact" solution compared to all other reasonable alternatives. The two alternatives considered include constructing a beaver dam analog, which would block flow through the channel, raising the water level of the upstream Cell 1 of wetland, but the lack of control and permanency of structure would decrease reliability of nutrient improvements. The other alternative is a no-build scenario, which would not achieve the project goal and public benefit of restoring the wetland and reducing nutrient export into East Auburn Lake.

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

Wetland Protection

The Wetland Protection Rule, at Section 4(a)(1), mandates the establishment of a vegetated buffer around a wetland or public water wetland that is disturbed by the placement of a structure subject to the Waterbody Crossings & Structures rule. The affected wetland is classified as a Manage 1 wetland, requiring a 40-foot vegetated buffer. The delineation of the wetland boundary and the corresponding buffer extents are detailed on Page C-101 of the construction plans (Attachment D).

The entirety of the required buffer area is already composed of established vegetation or existing impervious trail surface in functional condition. Pursuant to Section 6(a) of the rule, a supplemental planting plan is not required where vegetative cover is already present. Additionally, under Section 6(d), the removal of existing, functional impervious surface within the designated buffer is not required. As such, the existing conditions—including established vegetation both upgradient and downgradient of impervious surface, trails, and public right-of-way—are considered compliant with buffer requirements.

Any temporary disturbance within the wetland or its buffer will be revegetated utilizing MnDOT-approved native seed mixes (Southern Tallgrass Roadside or Wet Ditch) and stabilized with erosion control blankets to ensure rapid vegetative establishment, minimize sediment transport, and maintain long-term buffer functionality.

Staff have reviewed the proposal and concluded that it meets the requirements of this rule.

Summary and Conclusion

The proposed project fully complies with the District's Floodplain Alteration, and Wetland Protection Rules. The project meets the requirements of the Waterbody Crossings & Structures rule, except that it will increase flood stage above and below the weir, contrary to Section 3(b). Pursuant to the analysis above, a waiver of this standard is requested pursuant to Section 4(a), to allow for a slight increase in the flood stage of Cells 1 and 2 in order to reduce nutrient export and improve ecological function. MCWD staff find that the criteria for the waiver are met.

After review, District staff and the District Engineer recommend that the Board approve the permit application.

Attachments

A: Site Map
B: Draft Project Agreement between MCWD and the City of Victoria
C: Programmatic Maintenance Agreement between MCWD and the City of Victoria
D: Construction Plans

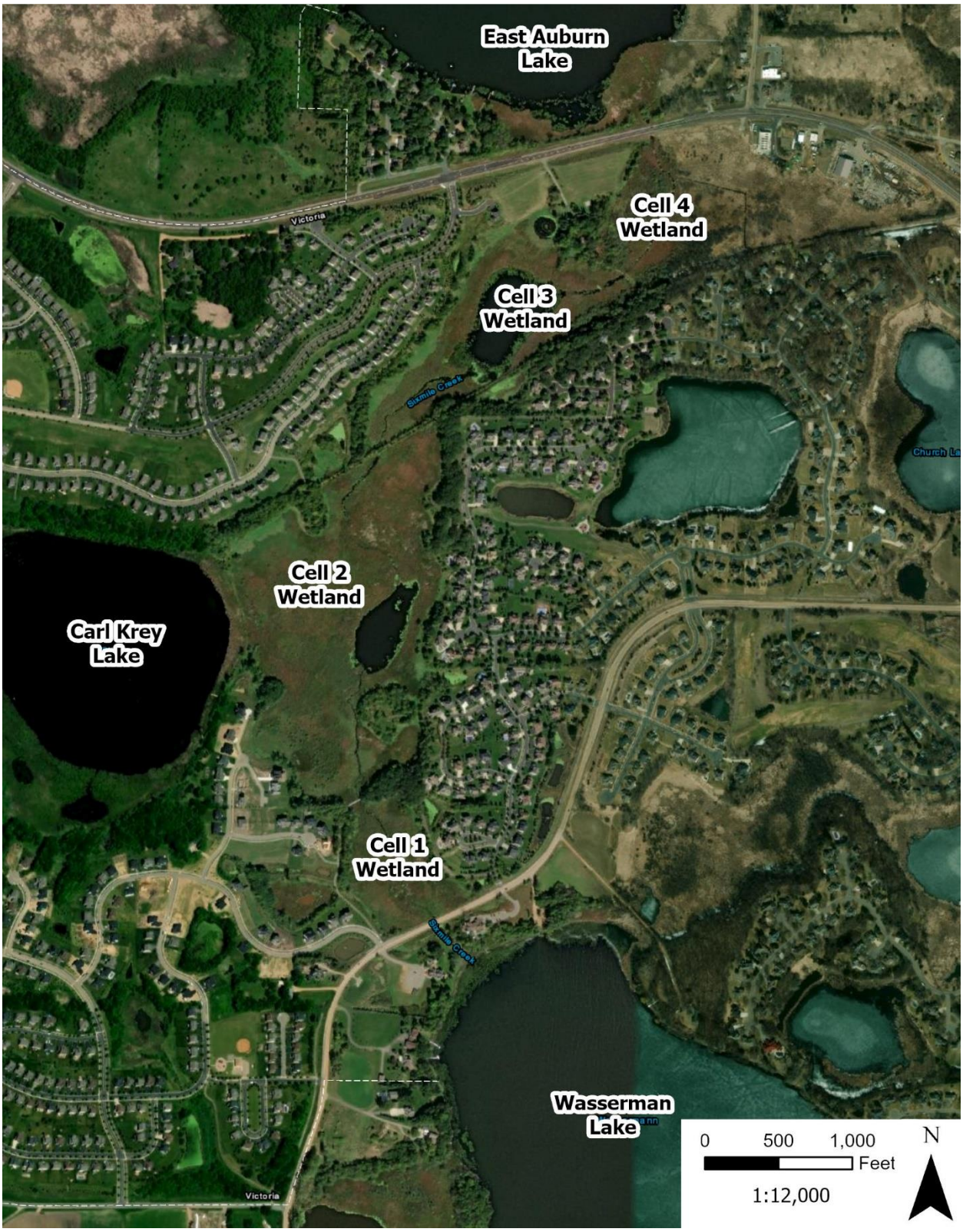


Figure 1-1. Cell 1 Wetland Location

ATTACHMENT B

Term Sheet (Draft 1-28-25)

Project Agreement for
East Auburn Wetland Restoration

City of Victoria & Minnehaha Creek Watershed District

RECITALS

A. MCWD Resolution 14-047 identifies the Six Mile Creek Halsted Bay (SMCHB) subwatershed as a priority focus area.

B. On March 26, 2015, the City and MCWD entered into a memorandum of understanding (MOU) to coordinate on the SMCHB subwatershed implementation plan in the MCWD 2018-27 Watershed Management Plan (WMP), and on the City's corresponding local water management plan.

C. MCWD Resolution 18-004 adopted the WMP, containing an assessment of SMCHB subwatershed goals and priorities, and an implementation plan to pursue them.

D. In 2019, the City adopted its 2040 land use plan, setting forth the City's vision for expansion into the western growth area and, in consultation with MCWD, incorporating the Victoria Chain of Lakes Greenway Policy and Implementation Plan.

E. Since 2015, the City and MCWD have collaborated on initiatives including:

- System-wide habitat restoration through carp management, supported by a Lessard-Sams Outdoor Heritage Council grant.
- Enhancing treatment capacity of ponds near downtown Victoria to reduce phosphorus loading to East Auburn Lake, supported by a Clean Water Fund grant.
- Alum treatments of Wassermann West pond and Wassermann Lake, supported by a Clean Water Fund grant.
- Developing Wassermann Lake Preserve, with related water quality improvements.

The City and MCWD wish to continue their collaboration by partnering in a hydrologic restoration of the East Auburn Wetland, for water quality benefits to East Auburn Lake, and associated trail improvement.

F. MCWD's engineer has performed a feasibility study and concept design for a weir within the wetland that will manage water level to reduce transport of internal nutrient loads downgradient to East Auburn Lake.

G. Weir location and surface water area to be managed all lie on real property owned by the City. The City wishes to facilitate the project by granting a right of access to MCWD to build and maintain the project.

H. The public trail section over the wetland adjacent to the weir location, consisting of boardwalk on helical piers, needs to be refurbished. There are economies in having the work done in conjunction with the weir installation.

DESIGN

1. MCWD has retained Moore Engineering (with Heyer as subconsultant) as design engineer for the weir and boardwalk. The City concurs in the retention.

2. The City does not have an interest, under the agreement, in the weir design.

3. Moore has prepared a 60 percent design for the boardwalk, which the City has reviewed and in which it concurs. Moore will prepare a 90 percent design for City review and approval, and will prepare a 100 percent design conforming to the 90 percent design.

4. The boardwalk design will meet the following criteria:

- The design will be ADA-compliant.
- The boardwalk will have an eight-foot width tied into connecting trail segments.
- The aesthetic and structural design generally will match the Wasserman Lake Preserve boardwalk.
- Dimensionally and structurally, the boardwalk will support City snow removal equipment, specified as a Utility Task Vehicle (UTV) with associated snow removal equipment.

5. The City will timely specify any other criteria, fencing, signage and any other appurtenances for the boardwalk design.

6. The design contract will extend the boardwalk design warranty to the City in the same manner as it extends to MCWD. The City will hold harmless/indemnify MCWD for the boardwalk design.

7. The City will timely advise MCWD and the designer of subsurface facilities, local road restrictions or terms, access routes, staging areas, construction-phase trail closure terms and signage, and any other construction management and site protection requirements.

8. The City will timely process any city permits/approvals without fee. The City, as landowner, will cooperate with respect to permits or approvals of other regulatory bodies. MCWD is responsible for permit fees and costs related to the latter.

CONSTRUCTION

9. The bid form will be unit price, and structured to distinguish MCWD and City (boardwalk) costs, and to bid the boardwalk as an add alternate. Firms may bid on both the weir and the combined project, or on just the combined project.

10. The contract will require:

- Contractor warranties run to both MCWD and the City.
- Contractor names the City as an additional insured for commercial general liability (ongoing & completed operations), automobile liability, and any associated umbrella/excess to $2 million per event/annual aggregate.
- Contractor (or the City) procures builder's risk coverage if/as City chooses.
- Contractor conforms to local load requirements, terms of easement.

11. MCWD will solicit bids for construction. MCWD will share the bid tabulation with the City. The City will decide to proceed with the boardwalk work or not.

12. The City may attend construction meetings. With respect to the boardwalk, MCWD is Owner's representative and assigns to the City all rights and responsibilities of Owner regarding the work, price and schedule changes and acceptance of work. The City holds Owner's rights as to work in progress and owns the improvements.

13. The City holds MCWD harmless and indemnifies it as to its acts as Owner's representative (aside from grossly negligent or willful acts) and as to construction work and defects.

14. MCWD will give the City notice of substantial completion and completion. The City will inspect within the stipulated time frame and formally concur in substantial completion and completion.

MAINTENANCE

15. The City will own the boardwalk and appurtenances, and maintain them according to its own prerogatives.

16. MCWD will own the weir and appurtenances, and maintain them according to its own prerogatives.

17. The City will maintain and manage the real property on which the project is situated, as property owner and public land manager, according to its own prerogatives.

COSTS

18. MCWD will pay the design cost for the project as a whole.

19. The City will pay the construction cost for boardwalk refurbishment. MCWD will pay the weir construction cost, as well as mobilization and any related lump sum project-wide cost.

20. MCWD will manage the construction contract and pay the contractor. On final acceptance, MCWD promptly will transmit to the City an accounting of City costs. The City will pay 20 percent of cost within 30 days, and the remaining amount in four equal annual payments thereafter.

21. Each party will bear its own administrative cost and other cost incurred in fulfilling its responsibilities under this agreement. Each party will bear its own cost to maintain its facilities.

EASEMENT

22. The parties will establish MCWD right of access by means of an easement. The easement will consist of a temporary construction easement; a permanent flowage easement; and a permanent easement to inspect, operate, maintain, repair, reconstruct and remove the weir improvements. The easement will allow MCWD to install and maintain project signage.

23. The easement will specify access routes and staging areas.

24. The easement will be drafted and attached to the agreement. The agreement will provide for the City to sign the easement before the project is published for bids.

MISCELLANEOUS

25. The agreement is not a joint powers agreement; each party acts independently and does not assume liability for the acts of the other. Each party will hold the other harmless, and indemnify it, with respect to claims resulting from the act or inaction of the indemnifying party. The agreement creates no right in a third party or waives any immunity, defense or liability limit of either of the parties.

PROGRAMMATIC MAINTENANCE AGREEMENT
Stormwater Management Facilities, Waterbody Crossings & Structures, Wetland Buffers and Shoreline & Streambank Stabilizations

Between the Minnehaha Creek Watershed District and the City of Victoria

This Maintenance Agreement (Agreement) is made by and between the Minnehaha Creek Watershed District, a watershed district with purposes and powers set forth at Minnesota Statutes chapters 103B and 103D (MCWD), and the City of Victoria, an incorporated municipality and political subdivision of the State of Minnesota (CITY).

Recitals and Statement of Purpose

WHEREAS pursuant to Minnesota Statutes § 103D.345, the MCWD has adopted and implements the Stormwater Management Rule, Wetland Protection Rule, the Waterbody Crossings & Structures Rule and the Shoreline & Streambank Stabilization Rule;

WHEREAS under the Stormwater Management Rule, certain land development activity triggers the requirement that the landowner record a declaration establishing the landowner's perpetual obligation to inspect and maintain stormwater-management facilities;

WHEREAS in each case, a public landowner, as an alternative to a recorded instrument, may meet the maintenance requirement by documenting its obligations in an unrecorded written agreement with the MCWD;

WHEREAS CITY from time to time is subject to stormwater management, wetland buffer, waterbody crossings and structures and shoreline & streambank stabilization maintenance requirements pursuant to the terms of an MCWD permit; and

WHEREAS the parties concur that it is clearer and procedurally more efficient for the MCWD and CITY to agree at this time on standard requirements for stormwater management, wetland buffer protection, waterbody crossings and structures maintenance and shoreline & streambank stabilizations, so that this Agreement may be incorporated into future permits as applicable.

THEREFORE IT IS AGREED as follows:

1. All features requiring maintenance under an MCWD permit shall be maintained in perpetuity in accordance with Attachment A, Maintenance Plan & Schedule.

2. MCWD permits for specific projects may contain additional maintenance conditions in accordance with MCWD rules, as they may be amended from time to time.

3. CITY will submit a copy of the Storm Water Pollution Prevention Plan annual report prepared under its Municipal Separate Storm Sewer System permit to the MCWD each year.

4. If CITY conveys into private ownership a fee interest in any property that has become subject to this Agreement, it shall require as a condition of sale, and enforce: (a) that the purchaser record a declaration on the property incorporating the maintenance requirements of this Agreement; and (b) that recordation occur either before any other encumbrance is recorded on the property or, if after, only as accompanied by a subordination and consent executed by the encumbrance holder

ensuring that the declaration will run with the land in perpetuity. If CITY conveys into public ownership a fee interest in any property that has become subject to this Agreement, it shall require as a condition of the purchase and sale agreement that the purchaser accept an assignment of all obligations vested under this Agreement.

5. This Agreement may be amended only in a writing signed by the parties.

6. This Agreement is in force for five years from the date on which it has been fully executed and will renew automatically for five year terms unless terminated. Either party may terminate the Agreement on 30 days' written notice to the other. Any obligations vested in CITY through incorporation into an issued permit before the effective date of termination will survive expiration.

7. The recitals are incorporated as a part of this Agreement.

IN WITNESS WHEREOF, the parties hereto have executed this Agreement.

MINNEHAHA CREEK WATERSHED DISTRICT

By Sherry Davis White Date: 1-29-14
President, Board of Managers

APPROVED AS TO FORM and EXECUTION

By _____ ~~Date:~~
Its Attorney

CITY OF CITY

By: Tom Campbell Date:
Its Mayor

By: Don Ollman Date:
Its Administrator

APPROVED AS TO FORM and EXECUTION

By: _____ Date:
City Attorney

ATTACHMENT A

MAINTENANCE PLAN & SCHEDULE

1. WETLAND BUFFER AREAS

    a. Buffer vegetation will not be cultivated, cropped, pastured, mowed, fertilized, subject to the placement of mulch or yard waste, or otherwise disturbed, except for periodic cutting or burning that promotes the health of the buffer, actions to address disease or invasive species, mowing for purposes of public safety, temporary disturbance for placement or repair of buried utilities, or other actions to maintain or improve buffer quality, Pesticides and herbicides may be used in accordance with Minnesota Department of Agriculture rules and guidelines. No new structure or hard surface will be placed within a buffer, except that construction of a trail or path of no more than 4 feet in width to provide riparian access through the buffer is acceptable. No fill, debris or other material will be excavated from or placed within a buffer.

    b. Permanent wetland buffer monuments will be maintained in the locations shown on the approved site plan. Language shall indicate the purpose of the buffer, restrictions, and the name and phone number of the Minnehaha Creek Watershed District.

2. SHORELINE & STREAMBANK STABILIZATIONS

    a. The project area will be inspected at least annually and any erosion or structural problems observed will be corrected within 30 days of inspection to establish and maintain a naturalized, ecologically healthy [shoreline/streambank] that is structurally stable and resistant to erosion. [Shoreline/Streambank] plantings will be replaced and seeded areas will be reseeded as necessary in the spring and fall of each year in accordance with the approved plan to maintain the ecological health and function of the shoreline. Removal of invasive species will occur on an ongoing basis. Weeds will be hand pulled or spot treated with aquatic formulations of herbicide according to instructions on the herbicide label. All planted and seeded areas will be maintained in perpetuity free from mowing or other vegetative disturbance, fertilizer application, yard or other waste disposal, the placement of structures or any other alteration that impedes the function of the shoreline in protecting water quality, shading the riparian edge, moderating flow into any adjacent wetland or waterbody, or providing wildlife habitat.

3. WATERBODY CROSSINGS & STRUCTURES

a. Crossings and structures in contact with the bed or bank of a waterbody will be inspected at least once a year and maintained in good repair in perpetuity to ensure continuing adequate hydraulic and navigational capacity is retained in accordance with approved plans, to ensure no net increase in the flood stage beyond that achieved by the approved plans, to prevent adverse effects on water quality, changes to the existing flowline/gradient and increased scour, erosion or sedimentation, and to minimize the potential for obstruction of the waterbody.

4. STORMWATER FACILITIES

a. **Stormwater retention and treatment basin(s).** Stormwater retention and treatment basin(s) must be inspected at least once a year to determine if the basin's retention and treatment characteristics are adequate and continue to perform per design. Culverts and outfall structures must be inspected at least annually and kept clear of any obstructions or sediment accumulation. Sediment accumulation must be measured by a method accurate to within one vertical foot. A storage treatment basin will be considered inadequate if sediment has decreased the wet storage volume by 50 percent of its original design volume. Based on this inspection, if the stormwater basin(s) is identified for sediment cleanout, the basin(s) will be restored to its original design contours and vegetation in disturbed areas restored within one year of the inspection date.

b. **Raingardens, infiltration basins and filtration basins**. Raingardens, infiltration basins and filtration basins will be inspected annually to ensure continued live storage capacity at or above the design volume. Invasive vegetation, excess sediment and debris will be removed as needed and healthy plant growth will be maintained to ensure that the facilities continue to perform per design.

c. **Vegetated swales.** Vegetated swales will remain free from mowing or other vegetative disturbance, fertilizer application, yard or other waste disposal, the placement of structures or any other alteration that impedes the function of the vegetated swale.

d. **Pervious pavement**. Pervious pavement will be inspected after at least one major storm per year and otherwise annually to ensure continuing performance per design. Surface openings will be vacuumed in dry weather to remove dry, encrusted sediment as necessary. Broken units that impair the structural integrity of the surface will be replaced. If water stands for an extended period of time, the base materials will be removed and replaced.

e. **Underground storage facilities.** Underground storage facilities will be inspected at least annually to ensure continuing performance per design. Capacity will be considered inadequate if sediment has decreased the storage volume by 50 percent of the original design volume. Accumulated debris and sediment will be

removed, and inlet and outlet structures will be kept clear of any flow impediments.

f. **Grit chambers, sump catch basins and sump manholes.** Grit chambers, sump catch basins and sump manholes will be inspected in the spring, summer and fall of each year. All sediment and debris will be removed as needed such that the stormwater facilities operate as designed and permitted.

g. **Proprietary stormwater facilities.** Proprietary stormwater facilities will be inspected at least annually and maintained as specified or recommended by the manufacturer and/or installer

h. **Reporting.** The Declarant will submit to the MCWD annually a brief written report that describes stormwater facility maintenance activities performed under this declaration, including dates, locations of inspections and the maintenance activities performed.

ATTACHMENT D

EAST AUBURN WETLAND RESTORATION

MINNEHAHA CREEK WATERSHED DISTRICT
QUALITY OF WATER, QUALITY OF LIFE

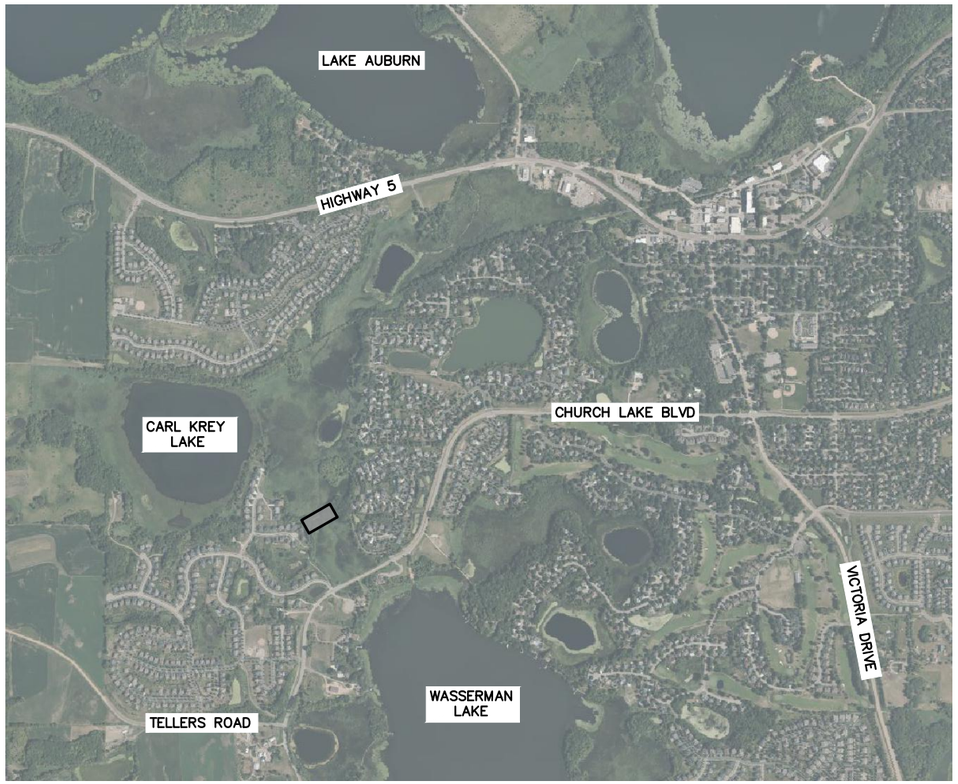
MINNEHAHA CREEK WATERSHED DISTRICT

moore engineering, inc.
Consulting Engineering • Land Surveying
www.mooreengineeringinc.com

CARVER COUNTY, MINNESOTA

SHEET LIST TABLE	
SHEET NUMBER	SHEET TITLE
G-001	COVER
C-001	LEGEND
C-002	NOTES
C-101	SITE ACCESS AND TRAFFIC CONTROL
C-102	TEMPORARY EROSION CONTROL AND REMOVALS
C-103	BOARDWALK PHOTOS
C-201	DETAILS
C-202	DETAILS
C-401	SHEET PILE WEIR PLAN AND PROFILE
C-402	BOARDWALK PLAN AND PROFILE
C-601	RESTORATION PLAN
S001	GENERAL NOTES
S201	OVERALL BOARDWALK WEIR WALL PLAN
S202	HELICAL PILE LAYOUT PLAN
S203	HELICAL PILE LAYOUT PLAN
S204	BOARDWALK FRAMING PLAN
S205	BOARDWALK FRAMING PLAN
S401	SHEET PILE WEIR WALL ELEVATION
S402	FRAMING DETAILS
S403	FRAMING DETAILS
S404	FRAMING DETAILS

VICINITY MAP



PROJECT LOCATION

N
W E
S

PROJECT No. 24026

PRELIMINARY

CIVIL LEGEND

EXISTING

- BENCHMARK
- IRON MONUMENT FOUND
- EXISTING PROPERTY LINE
- EXISTING PLAT LOT LINE
- EXISTING RIGHT OF WAY LINE
- EXISTING EASEMENT LINE
- EXISTING PLAT EASEMENT LINE
- EXISTING GAS LINE MARKER
- EXISTING GAS GATE VALVE
- EXISTING POWER POLE
- EXISTING LIGHT POLE
- EXISTING LIGHT POLE W/SIGN
- EXISTING GUY WIRE
- EXISTING TRAFFIC SIGNAL ARM
- EXISTING SIGN
- EXISTING CULVERT W/FLARED END SECTION (F.E.S.)
- EXISTING FLARED END SECTION (F.E.S.)
- EXISTING CURB STOP
- EXISTING HYDRANT W/GATE VALVE
- EXISTING GATE VALVE
- EXISTING PROPANE TANK
- EXISTING SANITARY SEWER MANHOLE
- EXISTING SANITARY SEWER CLEANOUT
- EXISTING STORM SEWER CATCH BASIN
- EXISTING STORM SEWER MANHOLE
- EXISTING WATER MAIN
- EXISTING WATER SERVICE W/CURB STOP
- EXISTING SANITARY SEWER
- EXISTING SANITARY SEWER (RELINE W/ CIPP)
- EXISTING SANITARY FORCEMAIN
- EXISTING SANITARY SEWER SERVICE
- EXISTING STORM SEWER
- EXISTING STORM SEWER FORCEMAIN
- EXISTING STEAM PIPE
- EXISTING AIR CONDITIONER
- EXISTING UTILITY PEDESTAL
- EXISTING UTILITY MANHOLE
- EXISTING UTILITY VAULT
- EXISTING UNDERGROUND COMMUNICATIONS
- EXISTING UNDERGROUND FIBER
- EXISTING UNDERGROUND TELEPHONE
- EXISTING OVERHEAD TELEPHONE
- EXISTING UNDERGROUND TELEVISION
- EXISTING OVERHEAD TELEVISION
- EXISTING UNDERGROUND GAS
- EXISTING UNDERGROUND ELECTRIC
- EXISTING OVERHEAD POWER
- EXISTING BARBED WIRE FENCE
- EXISTING CHAIN LINK/STEEL FENCE
- EXISTING PVC/WOOD FENCE
- EXISTING RAILROAD
- EXISTING SHRUB
- EXISTING STUMP
- EXISTING BOULDER
- EXISTING TREE/TREE CLUSTER
- EXISTING SPRINKLER HEAD
- EXISTING CLUSTER BOX UNIT (CBU)
- EXISTING MAILBOX
- EXISTING CURB AND GUTTER

PROPOSED

- NEW PROPERTY LINE
- NEWPLAT LOT LINE
- NEW RIGHT OF WAY LINE
- NEW EASEMENT LINE
- NEW PLAT EASEMENT LINE
- CONSTRUCTION EASEMENT
- CONSTRUCTION LIMITS
- NEW LIGHT POLE
- NEW LIGHT POLE W/SIGN
- NEW GUY WIRE
- NEW SIGN
- TRAFFIC CONTROL – DRUM
- TRAFFIC CONTROL – TUBULAR MARKER
- NEW CULVERT W/FLARED END SECTION (F.E.S.)
- NEW FLARED END SECTION (F.E.S.)
- NEW CURB STOP
- NEW HYDRANT W/GATE VALVE
- NEW GATE VALVE
- NEW TAPPING SLEEVE
- NEW FITTINGS
- NEW PLUG
- NEW SANITARY SEWER MANHOLE
- NEW SANITARY SEWER CLEANOUT
- NEW STORM SEWER CATCH BASIN
- NEW STORM SEWER MANHOLE
- NEW WATER MAIN
- NEW WATER SERVICE W/CURB STOP (S.B. ELEV.)
- NEW SANITARY SEWER
- NEW SANITARY FORCEMAIN
- NEW SANITARY SEWER SERVICE (S.S. ELEV.)
- NEW STORM SEWER
- NEW STORM SEWER FORCEMAIN
- NEW STEAM PIPE
- INSULATION PER DETAIL
- NEW BARBED WIRE FENCE
- NEW CHAIN LINK/STEEL FENCE
- NEW PVC/WOOD FENCE
- NEW CLUSTER BOX UNIT (CBU)
- NEW MAILBOX
- NEW LARGE DECIDUOUS TREE
- NEW SMALL DECIDUOUS TREE
- NEW SHRUB
- NEW LARGE EVERGREEN TREE
- NEW SMALL EVERGREEN TREE

WETLAND

- PROPOSED NORMAL WATER LEVEL
- PROPOSED HIGH WATER LEVEL
- EDGE OF WETLAND

REMOVALS

- INDICATES REMOVAL
- REMOVE CURB AND GUTTER
- REMOVE ASPHALT PAVEMENT
- REMOVE CONCRETE PAVEMENT
- REMOVE AGGREGATE SURFACE

PAVEMENT REHAB

- UNIFORM MILL & OVERLAY
- TAPERED MILL & OVERLAY
- LEVELING COURSE
- RECLAIM
- ASPHALT PATCH
- CHIP SEAL

PAVEMENT

- NEW INFLOW CURB AND GUTTER
- NEW OUTFLOW CURB AND GUTTER
- NEW ASPHALT SURFACE
- NEW CONCRETE SURFACE
- NEW GRANULAR SURFACE
- NEW CRUSHED CONCRETE SURFACE
- NEW DECORATIVE COLORED CONCRETE
- NEW ASPHALT SIDEWALK/MULTI–USE PATH
- NEW CONCRETE SIDEWALK/MULTI–USE PATH
- NEW CONCRETE APPROACH/DRIVEWAY
- NEW DETECTABLE WARNING PANEL
- NEW GRAVEL APPROACH/DRIVEWAY
- NEW CONCRETE VALLEY GUTTER
- NEW MEDIAN NOSE APRON
- NEW ADA RAMP W/WARNING PANEL

SOIL DISTURBANCE

- DISTURBANCE AREA / TOPSOIL REMOVAL
- REMOVE STOCKPILE
- EXISTING STOCKPILE
- TEMPORARY STOCKPILE
- PERMANENT STOCKPILE
- REAR YARD GRADING
- GRASS BUFFER STRIP

SOIL STABILIZATION

- DISTURBED SOIL STABILIZATION
- STRAW MULCH
- SEEDING & STRAW MULCH
- SEEDING & HYDRO MULCH
- TOPSOIL, SEEDING & STRAW MULCH
- TOPSOIL, SEEDING & HYDRO MULCH
- TOPSOIL, SEEDING & BLANKET

MISCELLANEOUS

- EXISTING RIPRAP
- NEW RIPRAP
- EXISTING LANDSCAPING AREA
- NEW LANDSCAPING AREA
- EXISTING WATER SURFACE
- NEW WATER SURFACE
- EXISTING WETLAND

EROSION CONTROL

- DRAINAGE BREAK LINE
- EXISTING DRAINAGE DIRECTION
- 2.0% FINISHED DRAINAGE DIRECTION & SLOPE
- 4:1 FINISHED GRADE
- 895 EXISTING CONTOUR ELEVATION
- 895 FINISHED CONTOUR ELEVATION
- FL: 900.07 GRADE ELEVATIONS
- SEDIMENTATION CONTROL WATTLE
- SEDIMENTATION CONTROL FENCE
- ROCK CHECK
- S.C.E. STABILIZED CONSTRUCTION ENTRANCE
- CONCRETE WASHOUT
- INLET PROTECTION DEVICE

ABBREVIATIONS:

BOC	=	BACK OF CURB
BOW	=	BACK OF WALK
C	=	COMMUNICATION
CB#	=	STORM SEWER CATCH BASIN
CIPP	=	CURED IN PLACE PIPE
CL	=	CENTERLINE
CSP	=	CORRUGATED STEEL PIPE
CO#	=	SANITARY SEWER CLEANOUT
CS#	=	CONTROL STRUCTURE
DIA	=	DIAMETER
DIP	=	DUCTILE IRON PIPE
E	=	ELECTRICAL
ECC	=	EDGE OF CRUSHED CONCRETE
EG	=	EXISTING GRADE
EOC	=	EDGE OF CONCRETE
EOG	=	EDGE OF GRAVEL
EOP	=	EDGE OF PAVEMENT
EOW	=	EDGE OF WALK
EX	=	EXISTING
F	=	FIBER OPTIC
FES	=	FLARED END SECTION
FG	=	FINISHED GRADE
FL	=	FLOWLINE
FM	=	FORCEMAIN
G	=	GAS LINE
HP	=	HIGH POINT
INV	=	INVERT
LP	=	LOW POINT
MA	=	MATCH
M#	=	STORM SEWER MANHOLE
MT#	=	STORM SEWER TEE MANHOLE
MM#	=	STORM SEWER MULTI–MANHOLE
MC	=	MIDPOINT OF CURVE
OHP	=	OVERHEAD POWER
OHT	=	OVERHEAD TELEPHONE
OHTV	=	OVERHEAD TELEVISION
PC	=	POINT OF CURVATURE
PRC	=	POINT OF REVERSE CURVE
PVC	=	POLYVINYL CHLORIDE PIPE
PT	=	POINT OF TANGENCY
RIM	=	RIM OF STRUCTURE
S#	=	SANITARY SEWER MANHOLE
S.B. ELEV	=	STOP BOX ELEVATION
S.S. ELEV	=	SANITARY SEWER SERVICE INVERT
SS	=	SANITARY SEWER
ST	=	STORM SEWER
STA	=	ALIGNMENT STATION
T	=	TELEPHONE
TOC	=	TOP OF CONCRETE
TOP	=	TOP OF PAVEMENT
TOP	=	TOP OF PIPE
TOW	=	TOP OF WALK
TR#	=	SANITARY TELEVISING RISER
TRANS	=	TRANSFORMER
TV	=	TELEVISION
U	=	UTILITY (UNKNOWN UTILITY)

PRELIMINARY

moore engineering, inc.

CIVIL
EAST AUBURN WETLAND RESTORATION
MINNEHAHA CREEK WATERSHED DISTRICT
CARVER COUNTY, MINNESOTA
LEGEND

DATE:	3-31-2025
REV DATE:	----
REV NUM:	----
RECORD:	----
PROJECT No.	24026
MANAGER:	JCM
DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

C-001

THE FOLLOWING PLAN NOTES SUPPLEMENT AND AMEND THE PLAN SHEETS, SPECIFICATIONS AND MNDOT REFERENCES AS FOLLOWS:

GENERAL NOTES:

1. Take necessary precautions required to protect adjacent properties during the construction operations.
2. Notify Engineer where section, subsection or property monuments are encountered, before such monuments are removed. Protect and carefully preserve all property markers and monuments until the engineer and authorized surveyor has witnessed or otherwise referenced the location.
3. The drawings designate those existing items for removal, replacement, or improvement. If not designated for removal, replacement, or improvement, all other existing items within the site to be protected.
4. Any construction traffic damage to roads outside the construction area to be repaired by the contractor.

DISPOSAL NOTES:

1. No material shall be wasted on the site or in the project area.
2. Removed pipes, bridge decks, bridge piers, existing weir materials, trees and roots, plastic, wood, metal, tires and other construction material or debris shall be properly disposed of offsite. This work shall be incidental to the project unless otherwise specified.
3. Any removed items not salvaged as shown on the plans become the property of the contractor and are the contractor's responsibility once off the site.
4. No material may be buried or burned on site.

CONSTRUCTION LIMITS:

1. The contractor shall limit work to within the construction easements and right of way shown on the plans. Contractor is responsible for all damage expense for work done outside of project right-of-way.
2. Contractor vehicles, equipment, and materials shall be stored within the site.

HAUL ROADS:

1. It shall be the contractor's responsibility to investigate the suitability of routes with the agency having control of the roads and acquire their approval prior to submitting a bid and doing the work.
2. Any damage to roads as a result of hauling shall be repaired at the contractor's expense and at no cost to the owner.

UNDERGROUND NOTES:

1. Coordinate any utility relocations.
2. Unless otherwise noted, any removal, relocation, replacement, or bracing of power poles or any other utilities is the responsibility of the Contractor.
3. Existing utilities (both public and private) shown on the plans are approximate and may not be complete. It will be the contractor's responsibility to verify and locate any utilities prior to excavation. There will be no additional payment for exploratory time.
4. There is a potential for water on the project. It shall be the contractor's responsibility to dewater for constructability.
5. The subsurface utility information in this plan is Utility Quality Level D. This quality level was determined according to the guidelines of ASCE 38-02 entitled "Standard Guidelines for the Collection and Depiction of Existing Subsurface Utility Data".
6. Verify all existing pipe sizes in the field.

REMOVAL NOTES

1. All miscellaneous debris, fittings, pipe material, appurtenances etc. Resulting from construction operations shall be first right of refusal to the owner. Otherwise, it will become the property of the contractor and shall be properly disposed of off-site.
2. All removals shall be saw cut. Saw cuts must be full depth.

SURVEY NOTES:

1. Engineer requires a 48 hour notice for any contractor requested survey. Contractor shall coordinate with RPR for scheduling.

TRAFFIC CONTROL NOTES:

1. Contractor must follow the current M.U.T.C.D. for traffic control for any and all construction operations that interfere with traffic.
2. Contractor to give no less than 48 hour notice prior to any work being done on the project. All no parking signs and any traffic control shall be posted at least 48 hours prior to work commencing.

PRELIMINARY

moore
engineering, inc.

CIVIL
EAST AUBURN WETLAND RESTORATION
MINNEHAHA CREEK WATERSHED DISTRICT
CARVER COUNTY, MINNESOTA
NOTES

DATE:	3-31-2025
REV DATE:	----
REV NUM:	----
RECORD:	----
PROJECT No.	24026
MANAGER:	JCM
DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

C-002

FILE LOCATION: R:\Projects\24000\24000\24026\CIVIL\PRODUCTION\24026_SiteAccess.dwg

CELL 2

CONSTRUCTION LIMITS

APPROXIMATE 20' WIDE CORRIDOR CITY MAINTENANCE STAFF CLEARED VEGETATION WITHIN THIS AREA TO ACCESS FOR SOIL BORINGS IN SUMMER 2024.

CONST-LIMITS

B-1

B-2

CONST-LIMITS

CONST-LIMITS

PROPOSED NWL: 943.9

CELL 1

ALTERNATE SITE ACCESS. IF ALTERNATE SITE ACCESS IS UTILIZED, CONTRACTOR SHALL INSTALL SILT FENCE DOWN GRADIENT OF ACCESS ROUTE.

ISLAND PT

CONTRACTOR TO KEEP TRAIL CLEAN AND CLEAR OF SEDIMENT AT ALL TIMES DURING CONSTRUCTION. IF MATERIAL BEGINS TO TRACK CONTRACTOR SHALL SWEEP WITH PICKUP BROOM.

DUCK TRL

MARSHVIEW CT

EXISTING HWL: 945.74
PROPOSED HWL: 945.80

WETLAND BOUNDARY DELINEATED JULY 2024

WETLAND BOUNDARY

40'

WETLAND BUFFER (40' FOR MANAGE 1)

1 TYPE III BARRICADES AND TRAIL CLOSED SIGN. BARRICADES AND SIGNS TO BE RE-PLACED AT END OF DAY OF ACCESSING THE SITE

2 TRUCK HAULING SIGN

NORMAL WATER LEVEL (943.9 NAVD88)

EXISTING HIGH WATER LEVEL (945.74 NAVD88)

PROPOSED HIGH WATER LEVEL (945.80 NAVD88)

WETLAND BOUNDARY (DELINEATED JULY 2024)

WETLAND BUFFER (40' FOR MANAGE 1)

FLOW DIRECTION ARROW

943.90

SIXMILE CREEK

CO. RD. 43

48" CSP
N: 940.64

N

W E

S

0 100
Scale in Feet

PRELIMINARY

moore engineering, inc.

PROJECT LAYOUTS
EAST AUBURN WETLAND RESTORATION
MINNEHAHA CREEK WATERSHED DISTRICT
CARVER COUNTY, MINNESOTA
SITE ACCESS AND TRAFFIC CONTROL

DATE:	3-31-2025
REV DATE:	---
REV NUM:	---
RECORD:	---
PROJECT No.	24026
MANAGER:	JCM
DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

C-101

FILE LOCATION: R:\Projects\24000\24000\24026\CIVIL\PRODUCTION\24026_SiteAccess.dwg

NORMAL WATER LEVEL (943.9 NAVD88)

EXISTING HIGH WATER LEVEL (945.74 NAVD88)

PROPOSED HIGH WATER LEVEL (945.80 NAVD88)

WETLAND BOUNDARY (DELINEATED JULY 2024)

WETLAND BUFFER (40' FOR MANAGE 1)

N

W E

S

0 30

Scale in Feet

PRELIMINARY

DOUBLE ROW SILT FENCE, MACHINE SLICED
IF ADD ALTERNATE IS NOT SELECTED, SILT FENCE TO BE INSTALLED
BETWEEN EXISTING BOARDWALK AND LOCATION OF PROPOSED SHEET PILE WIER.

REMOVE BULK HEAD
(ADD ALTERNATE)
(SEE C-103)

REMOVE TRAIL
(ADD ALTERNATE)

SAWCUT PAVEMENT (INCIDENTAL)
(ADD ALTERNATE)

REMOVE BOARDWALK AND PIERS.
EXCAVATION IS NOT AN ALLOWABLE METHOD TO
REMOVE PIERS. (ADD ALTERNATE)
(SEE C-103)

REMOVE TRAIL
(ADD ALTERNATE)

SAWCUT PAVEMENT (INCIDENTAL)
(ADD ALTERNATE)

APPROXIMATE 20' WIDE CORRIDOR THAT CITY STAFF CLEARED VEGETATION WITHIN TO ACCESS FOR SOIL BORING. ANY ADDITIONAL CLEARING IS CONSIDERED INCIDENTAL. CONTRACTOR RESPONSIBLE FOR REMOVING ANY CLEARED VEGETATION FROM THE SITE AND DISPOSING OF APPROPRIATELY.

B-1

B-2

145'

43'

39'

19'

10'

CONST-LIMITS

943 944 945 946 947 948 949 950 955 960

moore engineering, inc.

PROJECT LAYOUTS
EAST AUBURN WETLAND RESTORATION
MINNEHAHA CREEK WATERSHED DISTRICT
CARVER COUNTY, MINNESOTA
TEMPORARY EROSION CONTROL AND REMOVALS

DATE:	3-31-2025
REV DATE:	----
REV NUM:	----
RECORD:	----
PROJECT No.	24026
MANAGER:	JCM
DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

C-102

PHOTO 1: EXISTING BOARDWALK

PHOTO 2: EXISTING ABUTMENT

NOTE:
1. ALL LABOR AND MATERIALS NECESSARY TO COMPLETELY REMOVE THE EXISTING BOARDWALK IS INCLUDED IN THE REMOVE BOARDWALK AND REMOVE BULKHEAD BID ITEMS. THIS INCLUDES BUT IS NOT LIMITED TO REMOVING THE TOE RAIL, THE PLANKS, BEAMS, PIERS, AND OTHER MISCELLANEOUS BRACING.

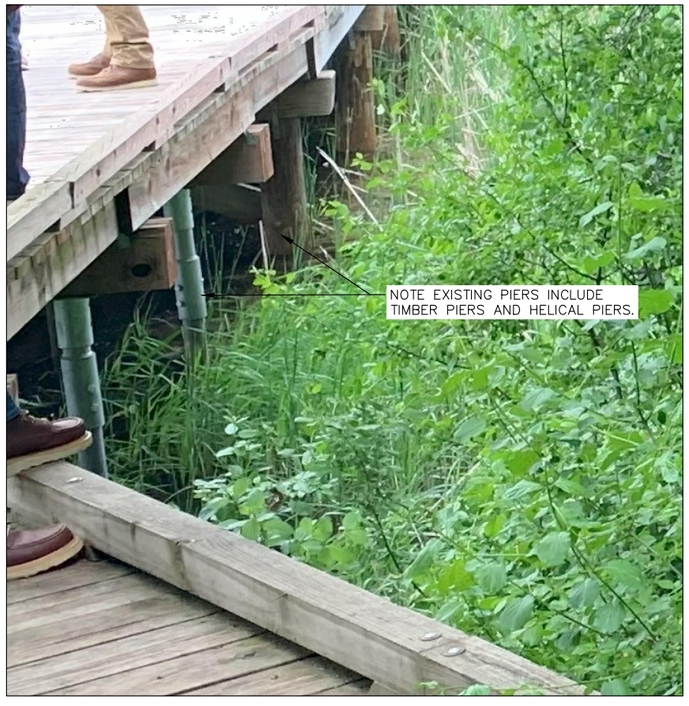


PHOTO 3: TIMBER AND HELICAL PIERS

PHOTO 4: BOARDWALK – BULKHEAD CONNECTION

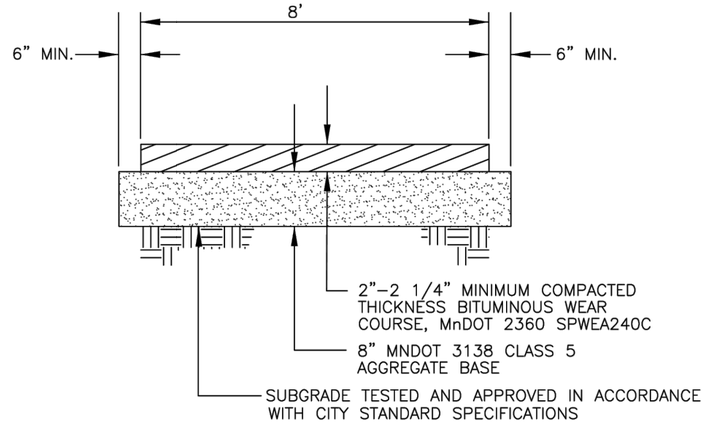
PRELIMINARY

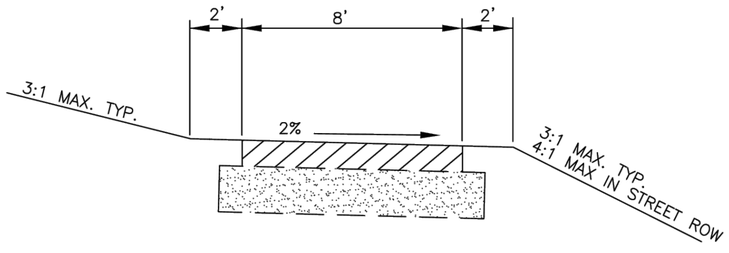
moore engineering, inc.

PROJECT LAYOUTS
EAST AUBURN WETLAND RESTORATION
MINNEHAHA CREEK WATERSHED DISTRICT
CARVER COUNTY, MINNESOTA
BOARDWALK PHOTOS

DATE:	3-31-2025
REV DATE:	----
REV NUM:	----
RECORD:	----
PROJECT No.	24026
MANAGER:	JCM
DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

C-103



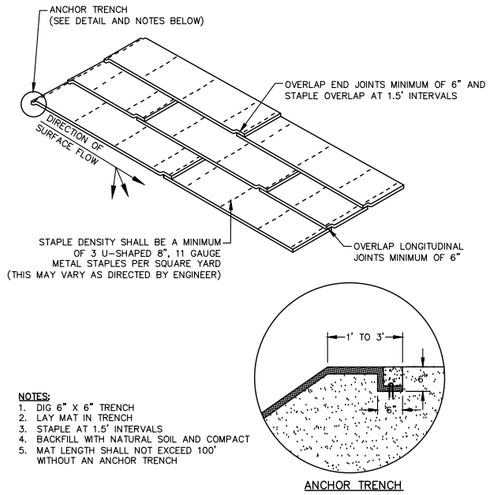


NOTE
1. BITUMINOUS TRAILS SHALL HAVE CONCRETE PED RAMPS AT ALL STREET INTERSECTIONS.
2. PROVIDE 2% CROSS–SLOPE TO MAINTAIN POSITIVE DRAINAGE AWAY FROM TRAIL SURFACE THROUGHOUT LENGTH OF TRAIL.

BICYCLE–PEDESTRIAN PATH

FEBRUARY 2022

VICTORIA City of Lakes & Parks	CITY OF VICTORIA	STANDARD DRAWING NO. 509 Victoria

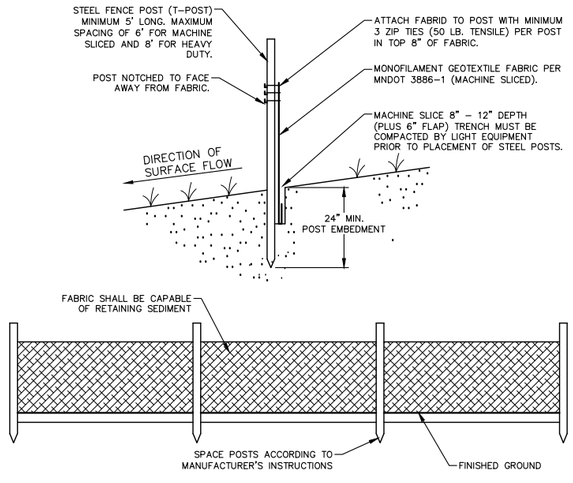


NOTES:
1. DIG 6" X 6" TRENCH
2. LAY MAT IN TRENCH
3. STAPLE AT 1.5' INTERVALS
4. BACKFILL WITH NATURAL SOIL AND COMPACT
5. MAT LENGTH SHALL NOT EXCEED 100' WITHOUT AN ANCHOR TRENCH

ANCHOR TRENCH

EROSION STABILIZATION MAT

NO SCALE EPSC-FI-5 10.19.20



MACHINED SILT FENCE DETAIL

NO SCALE *WRG-312500-02 12.15.17*

NOTES:
1. INSPECT AND REPAIR AFTER EACH STORM EVENT, AND REMOVE SEDIMENT WHEN NECESSARY.
2. REMOVED SEDIMENTS SHALL BE DEPOSITED IN AN AREA THAT WILL NOT CONTRIBUTE SEDIMENT OFF–SITE AND CAN BE PERMANENTLY STABILIZED.

PRELIMINARY

moore engineering, inc.

DETAILS
EAST AUBURN WETLAND RESTORATION
MINNEHAHA CREEK WATERSHED DISTRICT
CARVER COUNTY, MINNESOTA
DETAILS

DATE:	3-31-2025
REV DATE:	----
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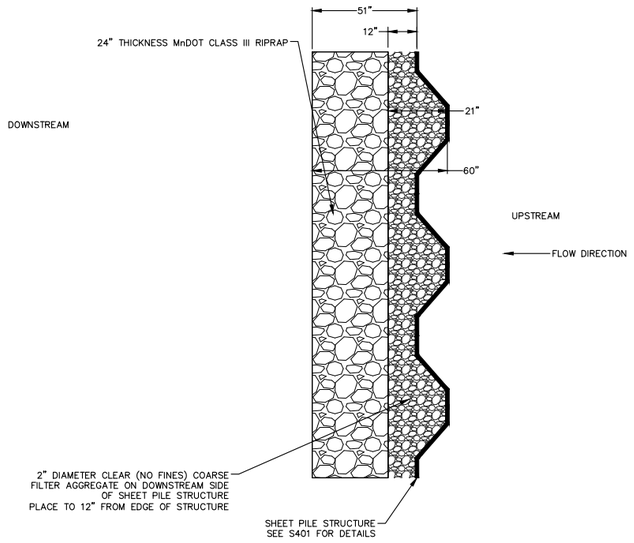
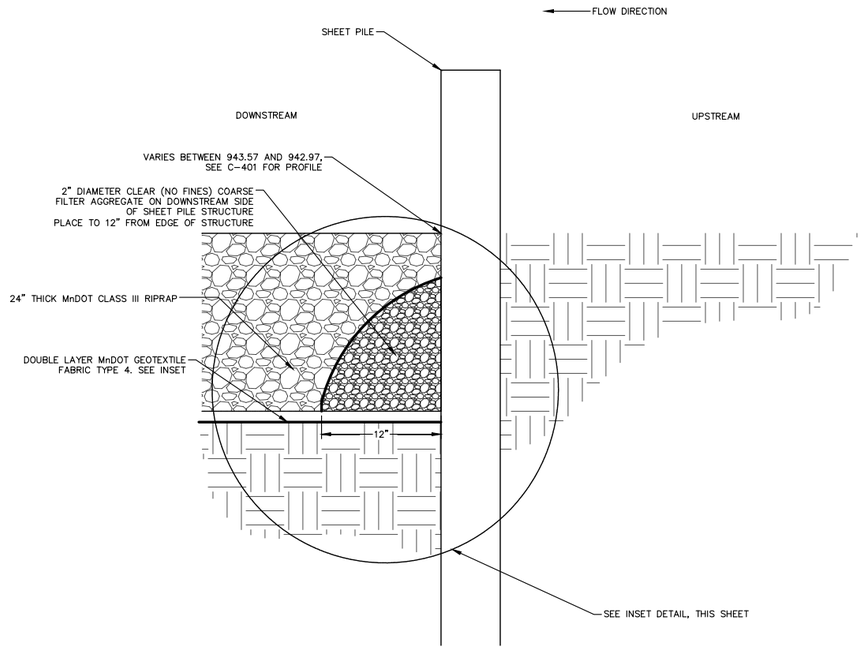
RECORD:	----
PROJECT No.	24026
MANAGER:	JCM
DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

C-201



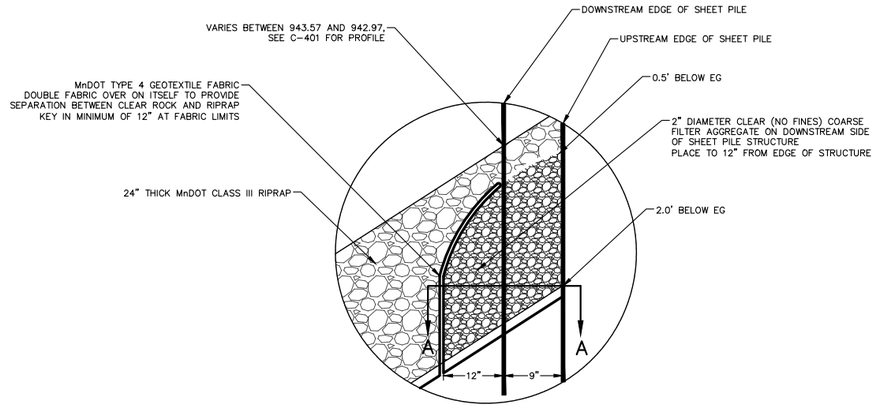
RIPRAP DETAIL - SHEET PILE PLAN VIEW (A-A)

NO SCALE



RIPRAP DETAIL - SHEET PILE SECTION VIEW

NO SCALE



RIPRAP DETAIL - INSET DETAIL

NO SCALE

PRELIMINARY

moore engineering, inc.

DETAILS
EAST AUBURN WETLAND RESTORATION
MINNEHAHA CREEK WATERSHED DISTRICT
CARVER COUNTY, MINNESOTA
DETAILS

DATE:	3-31-2025
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PROJECT No.	24026
MANAGER:	JCM
DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

C-202

FILE LOCATION: R:\Projects\24000\24000\24026\CIVIL\PRODUCTION\24026_Plan.dwg

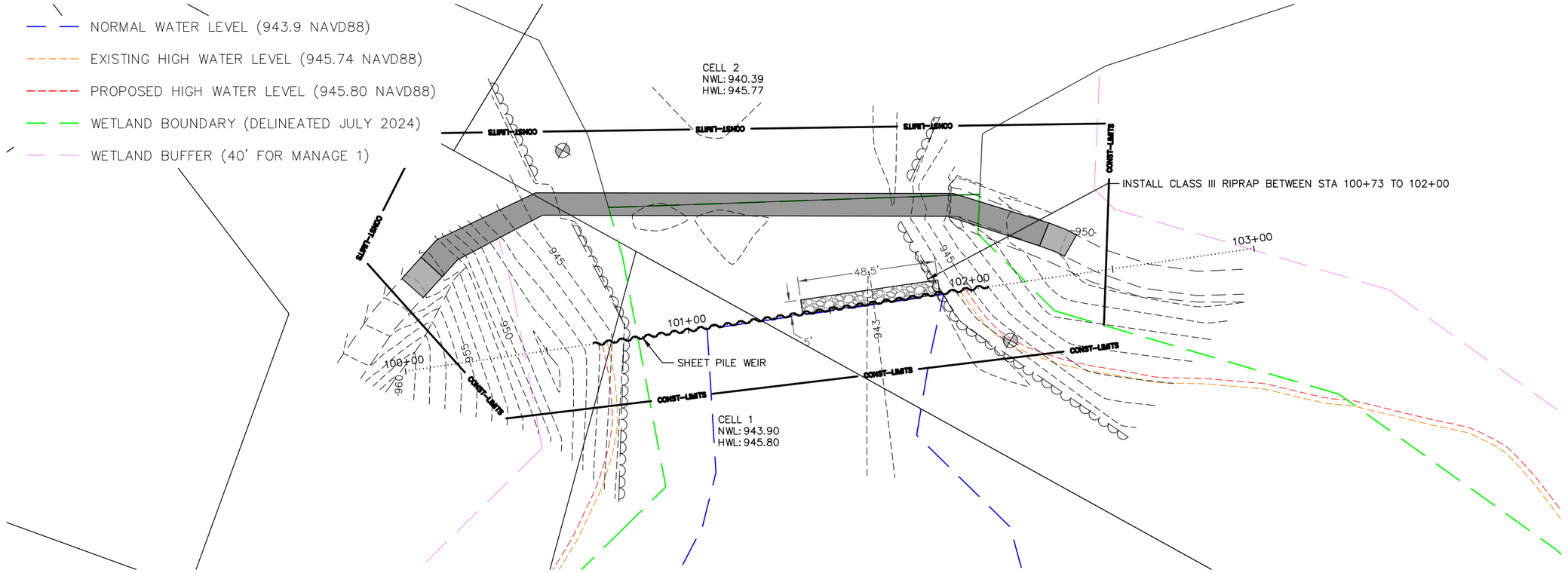
NORMAL WATER LEVEL (943.9 NAVD88)

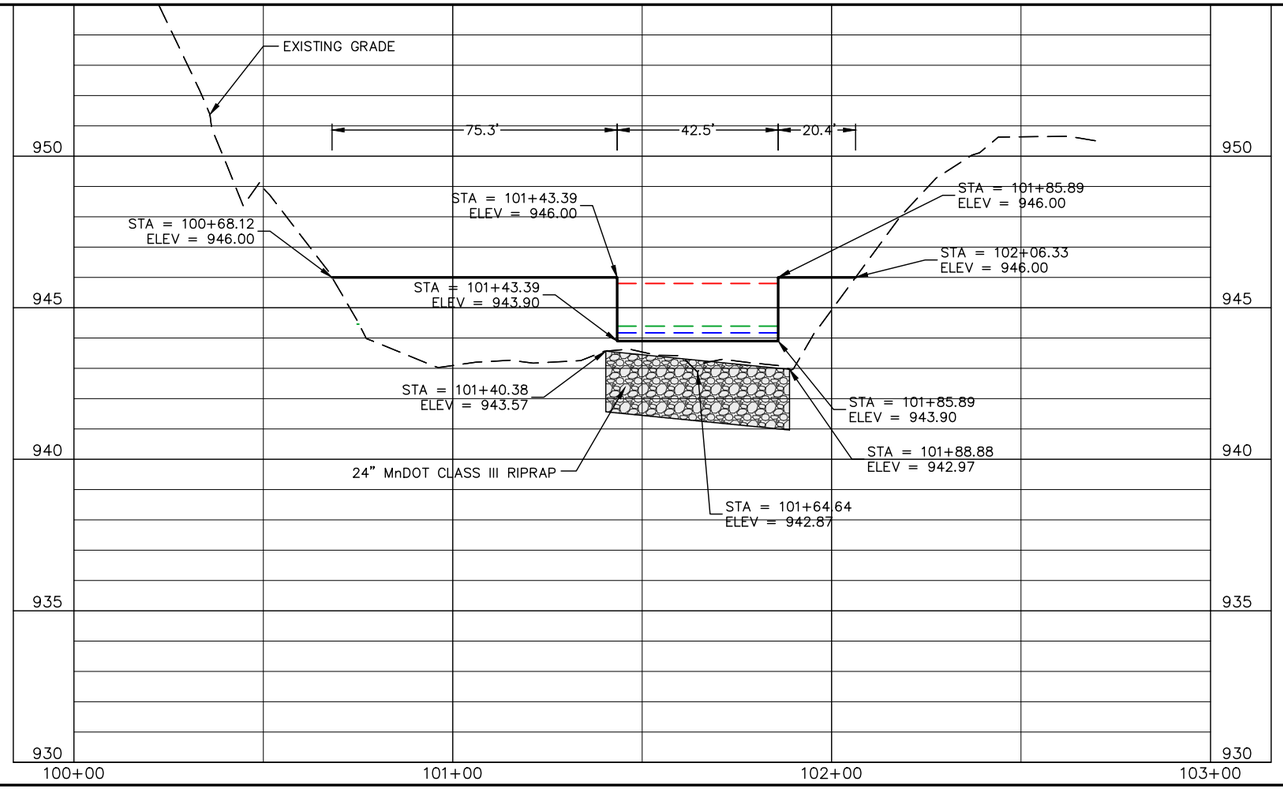
EXISTING HIGH WATER LEVEL (945.74 NAVD88)

PROPOSED HIGH WATER LEVEL (945.80 NAVD88)

WETLAND BOUNDARY (DELINEATED JULY 2024)

WETLAND BUFFER (40' FOR MANAGE 1)



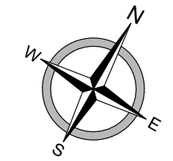


2-YEAR HWL:
ELEV: 944.17

10-YEAR HWL:
ELEV: 944.39

100-YEAR HWL:
ELEV: 945.80

PRELIMINARY



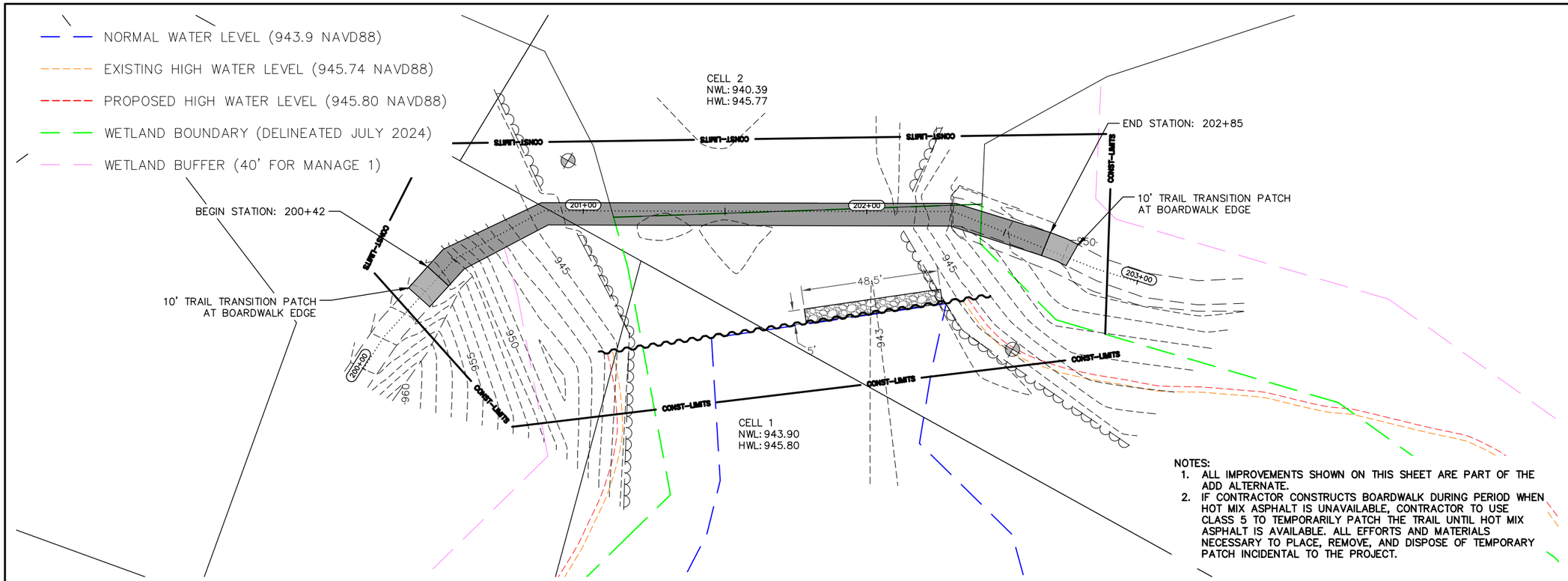
moore engineering, inc.

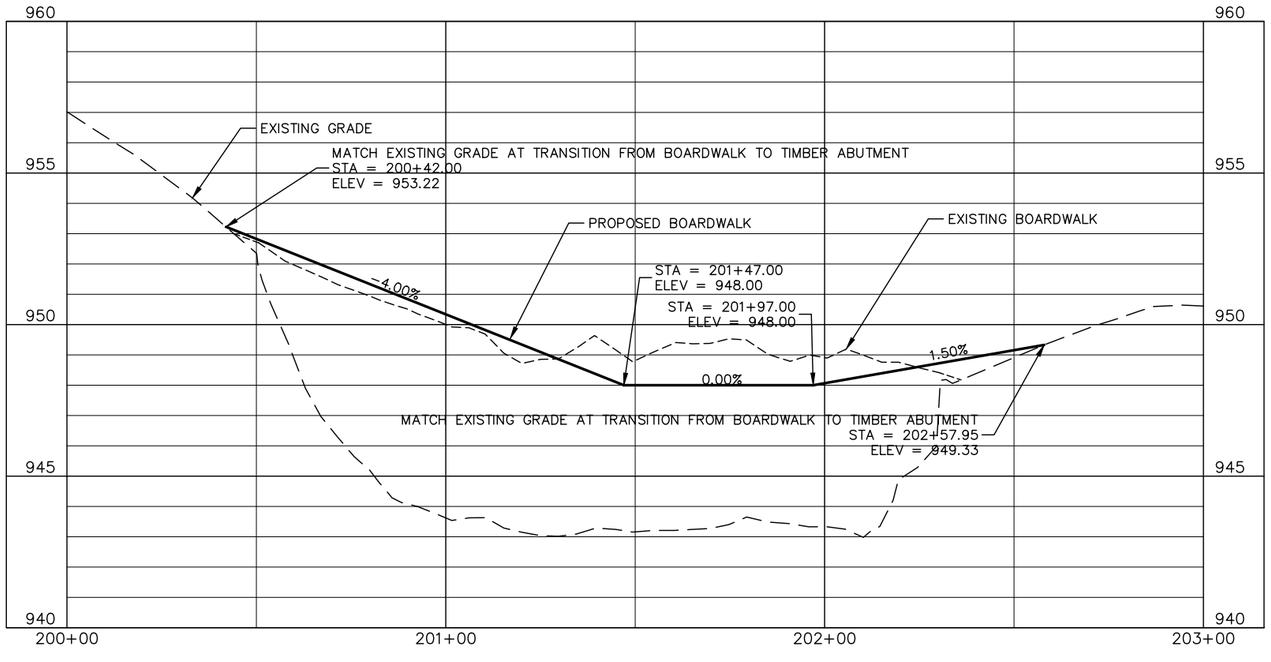
PLAN & PROFILE
EAST AUBURN WETLAND RESTORATION
MINNEHAHA CREEK WATERSHED DISTRICT
CARVER COUNTY, MINNESOTA
SHEET PILE WEIR PLAN AND PROFILE

DATE:	3-31-2025
REV DATE:	----
REV NUM:	----
RECORD:	----
PROJECT No.	24026
MANAGER:	JCM
DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

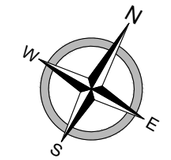
C-401

FILE LOCATION: R:\Projects\24000\24000\24026\CIVIL\PRODUCTION\24026_Plan.dwg





PRELIMINARY



moore engineering, inc.

PLAN & PROFILE
EAST AUBURN WETLAND RESTORATION
MINNEHAHA CREEK WATERSHED DISTRICT
CARVER COUNTY, MINNESOTA
BOARDWALK PLAN AND PROFILE

DATE:	3-31-2025
REV DATE:	----
REV NUM:	----
RECORD:	----
PROJECT No.	24026
MANAGER:	JCM
DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

C-402

FILE LOCATION: R:\Projects\24000\24000\24026\CIVIL\PRODUCTION\24026_Plan.dwg

NORMAL WATER LEVEL (943.9 NAVD88)

EXISTING HIGH WATER LEVEL (945.74 NAVD88)

PROPOSED HIGH WATER LEVEL (945.80 NAVD88)

WETLAND BOUNDARY (DELINEATED JULY 2024)

WETLAND BUFFER (40' FOR MANAGE 1)

CELL 2
NWL: 940.39
HWL: 945.77

MnDOT SEED MIX SOUTHERN TALLGRASS ROADSIDE (STR)
AND CAT 20 EROSION CONTROL BLANKET

CONST-LIMITS

945

950

955

960

BROADCAST SEED DISTURBED AREAS WITHIN THE
WETLAND WITH MnDOT SEED MIX WET DITCH (WD)

CELL 1
NWL: 943.90
HWL: 945.80

MNDOT SEED MIX SOUTHERN TALLGRASS ROADSIDE
(STR), CAT 20 EROSION CONTROL BLANKET AND
SHRUB PLANTINGS, EVENLY DISTRIBUTED

NOTES:
1. SEEDING EXTENTS SHOWN ASSUME ADD ALTERNATE WILL BE AWARDED. IF ADD ALTERNATE IS NOT AWARDED, SEEDING LIMITS WILL NOT EXTEND NORTH OF BOARDWALK. CONTRACTOR SHALL NOT SEED BEYOND THE EXTENTS OF DISTURBED AREA.
2. EXACT BOUNDARY BETWEEN WETLAND SEED MIX AND GRASS SEED MIX TO BE DETERMINED IN THE FIELD AT THE TIME OF CONSTRUCTION.
3. ONLY PERMANENT SEEDING SHOWN. IF CONTRACTOR CONSTRUCTS OUTSIDE OF PERMANENT SEEDING WINDOW, DISTURBED AREA TO BE TEMPORARILY STABILIZED WITH SEED MIX–WINTER WHEAT (WW) AND CATEGORY 10 EROSION PREVENTION.
4. IF TEMPORARY SEED IS PLACED, CONTRACTOR MUST REMOVE EROSION CONTROL BLANKET PRIOR TO PLACING PERMANENT SEED.

PRELIMINARY

N W E S

0 30
Scale in Feet

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PLAN & PROFILE
EAST AUBURN WETLAND RESTORATION
MINNEHAHA CREEK WATERSHED DISTRICT
CARVER COUNTY, MINNESOTA
RESTORATION PLAN

DATE:	3-31-2025
REV DATE:	----
REV NUM:	----
RECORD:	----
PROJECT No.	24026
MANAGER:	JCM
DESIGNER:	QDS
DRAFTER:	DWA
REVIEWER:	DTE

C-601

GENERAL CONSTRUCTION NOTES:

1. THE INTENT OF THESE PLANS AND NOTES IS TO PRESENT THE PROJECT REQUIREMENTS FOR THE EAST AUBURN WETLAND RESTORATION PROJECT IN VICTORIA, MINNESOTA.
2. THESE STRUCTURAL DRAWINGS ARE INTENDED TO BE USED IN CONJUNCTION WITH THE PROCESS DRAWINGS. SOME DIMENSIONS, SECTIONS, AND FRAMING DETAILS MAY BE SHOWN ON THE PROCESS DRAWINGS.
3. DURING CONSTRUCTION, THE CONTRACTOR MAY ENCOUNTER EXISTING CONDITIONS THAT ARE UNKNOWN OR THAT DIFFER THAN AS DEPICTED IN THESE DRAWINGS. SUCH EXISTING CONDITIONS MAY INTERFERE WITH THE NEW CONSTRUCTION OR REQUIRE PROTECTION DURING CONSTRUCTION.
4. CONTRACTOR SHALL NOTIFY CIVIL/STRUCTURAL ENGINEER OF ALL ENCOUNTERED EXISTING CONDITIONS THAT INTERFERE WITH THE PROPER EXECUTION OF NEW WORK OR COMPROMISE THE STRUCTURAL INTEGRITY OF THE EXISTING STRUCTURE.
5. ALL WORK SHALL COMPLY WITH THE 2018 INTERNATIONAL BUILDING CODE, AS APPROVED BY THE STATE OF MINNESOTA / CITY OF VICTORIA.
6. REFERENCE STANDARDS: UNLESS OTHERWISE NOTED, ALL STANDARDS SHALL BE CURRENT EDITION, WITH LATEST ADDENDA, IF APPLICABLE.
7. THE CONTRACTOR SHALL VERIFY ALL CONTRACT DOCUMENTS, SITE ELEVATIONS, DIMENSIONS AND CONDITIONS PRIOR TO STARTING WORK AND SHALL NOTIFY THE CIVIL/STRUCTURAL ENGINEER OF ANY DISCREPANCIES OR INCONSISTENCIES.
8. SPECIFIC NOTES AND DETAILS SHALL TAKE PRECEDENCE OVER GENERAL NOTES.
9. THE CONTRACT STRUCTURAL DRAWINGS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. UNLESS OTHERWISE INDICATED, THEY DO NOT INDICATE THE MEANS, METHODS, TIMING, OR PROCEDURES USED TO COMPLETE THE CONSTRUCTION. TEMPORARY BRACING, SHORING, OR PROTECTION OF THE STRUCTURE AGAINST WIND, ERECTION AND OTHER SITE CONDITIONS DURING CONSTRUCTION OF THE BUILDING SHALL BE THE RESPONSIBILITY OF CONTRACTOR. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE PROTECTION OF THE STRUCTURE DURING ALL PHASES OF DEMOLITION, CONSTRUCTION, AND INSTALLATION.
10. NO AREA OF THE STRUCTURE SHALL BE LOADED WITH CONSTRUCTION MATERIALS OR EQUIPMENT THAT EXCEEDS FINAL DESIGN CRITERIA.
11. HOLES, PIPES, SLEEVES, ETC NOT SHOWN ON THE DRAWINGS MUST BE APPROVED BY THE STRUCTURAL ENGINEER BEFORE PLACEMENT THROUGH STRUCTURAL MEMBERS.
12. SHOP DRAWINGS PREPARED BY SUPPLIERS, SUB CONTRACTORS, ETC, SHALL BE DIMENSIONED, REVIEWED, COORDINATED, AND SIGNED/STAMPED BY THE GENERAL CONTRACTOR PRIOR TO SUBMITTING TO THE STRUCTURAL ENGINEER. MANUFACTURED COMPONENTS SUCH AS TRUSSES OR PRECAST CONCRETE SHALL BE ENGINEERED AND STAMPED PRIOR TO SUBMISSION.
13. FABRICATOR SHALL CLEARLY NOTE CHANGES MADE IN THE SHOP DRAWINGS WHICH DO NOT COMPLY WITH THE CONTRACT DOCUMENTS. REVIEWED APPROVAL SHOP DRAWINGS SHOWING ENGINEERS COMMENTS ACCOMPANIED WITH RECORD SET SHOP DRAWINGS, SHALL BE AVAILABLE FOR REFERENCE AT THE CONSTRUCTION SITE.

DESIGN LOADS:

LIVE LOADS:

4x6 TIMBER DECKING	= 40 psf
FLAT ROOF SNOW	P_f = 40.9 psf
EXPOSURE FACTOR	C_e = 1.0
IMPORTANCE FACTOR	I_s = 1.0
THERMAL FACTOR	C_t = 1.2
GROUND SNOW LOAD	P_g = 50 psf

DEAD LOADS:

4x6 TIMBER DECKING	= 20 psf

LATERAL LOADS (WIND-MWFRS):

ULTIMATE DESIGN WIND SPEED (3 SEC. GUST)	V_{ult} = 109 mph
NOMINAL DESIGN WIND SPEED	V_{asd} = 84.4 mph
WIND EXPOSURE	= "C"
INTERNAL PRESSURE COEFFICIENT	= +/- 0
RISK CATEGORY	= II
COMPONENTS & CLADDING	q_h = 21.9 psf

EQUIPMENT LOADS:

4-WHEELER ATV (50" AXLE SPACING)	= 3,000 lbs
FRONT/REAR AXLE DISTRIBUTION	= 55:45

EXCAVATION AND BACKFILL NOTES:

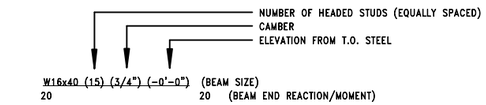
1. EXCAVATION AND BACKFILL SHALL BE EXECUTED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.
2. BACKFILL AND COMPACTION SHALL BE INSPECTED AND CERTIFIED BY A LICENSED GEOTECHNICAL ENGINEER. REPORTS ARE TO BE SUBMITTED TO THE CIVIL/STRUCTURAL ENGINEER.
4. BACKFILL SHALL BE COMPACTED BY MECHANICAL MEANS. FLOODING OR WATER INUNDATION SHALL NOT BE PERMITTED.
5. BACKFILL SHALL BE PLACED IN 8" (ALTERNATING) LIFTS ON EACH SIDE OF THE RETAINING WALLS TO MAINTAIN STABILITY OF RETAINING WALLS.
6. THE CONTRACT STRUCTURAL DOCUMENTS AND SPECIFICATIONS REPRESENT THE FINISHED STRUCTURE. THE MEANS AND METHODS USED TO PERFORM THE EXCAVATION IS AT THE SOLE DISCRETION OF THE CONTRACTOR, INCLUDING THE DESIGN AND INSTALLATION OF TEMPORARY BRACING OR SHORING. CONTRACTOR IS RESPONSIBLE FOR ALL CODE AND REGULATORY SAFETY REQUIREMENTS.

STRUCTURAL STEEL NOTES:

1. STRUCTURAL STEEL WORK SHALL BE PER AMERICAN INSTITUTE OF STEEL CONSTRUCTION (AISC) SPECIFICATION, 14TH EDITION, MATERIAL:

A690	GRADE 50 - SHEET PILES	Fy = 50 ksi
A992	W SHAPES	Fy = 50 ksi
A36	S, AND M SHAPES	Fy = 36 ksi
A53	GRADE C - STANDARD PIPES	Fy = 35 ksi
A500	GRADE C - HSS PIPES	Fy = 46 ksi
A500	GRADE C - HSS TUBES	Fy = 50 ksi
A36	PLATES, BARS, MISC SHAPES (ANGLES), CHANNELS, & RODS	Fy = 36 ksi
A240	GRADE 316 - S.S. PLATE	Fy = 30 ksi
F1554	GRADE 36 - ANCHOR RODS	Fy = 36 ksi
	GRADE 55 - ANCHOR RODS	Fy = 55 ksi
F325	GRADE 105 - ANCHOR RODS GRADE A325 - CONNECTION BOLTS GRADE A490 - CONNECTION BOLTS	Fy = 105 ksi
A563	CONNECTION NUTS	
F436	WASHERS	
A108	HEADED STUD ANCHORS	Fy = 65 ksi
E70XX	ELECTRODES	Fy = 70 ksi
E309LXX	ELECTRODES	Fy = 58 ksi

2. WELDED CONNECTIONS SHALL BE MADE IN ACCORDANCE WITH THE LATEST RECOMMENDATIONS OF:
   AISC - AMERICAN INSTITUTE OF STEEL CONSTRUCTION
   AWS - AMERICAN WELDING SOCIETY
3. COLUMN BASE AND CAP PLATES TO BE WELDED AROUND ALL SIDES.
4. WELDS NOT SPECIFIED SHALL BE A FILLET WELD, CONTINUOUS AND/OR ALL AROUND WITH MINIMUM THROAT DIMENSION AS REQUIRED FOR MATERIAL THICKNESS PER AWS.
5. STRUCTURAL FABRICATORS SHALL SHOW ALL FIELD WELDING REQUIREMENTS ON SHOP DRAWINGS SUBMITTED TO THE ENGINEER.
6. BEAMS AND COLUMNS SHALL BE ERECTED TRUE AND PLUMB WITHIN AISC TOLERANCE. PROVIDE TEMPORARY BRACING AS REQUIRED.
7. PROVIDE DOUBLE ANGLE CONNECTIONS AS DESCRIBED IN PART 10 OF THE AISC. MANUAL OF STEEL CONSTRUCTION (14TH ED-ASD)
   - CONNECTIONS SHALL BE SELECTED TO SUPPORT BEAM END REACTIONS INDICATED ON THE CONTRACT DRAWINGS.
   - IF BEAM END REACTIONS ARE NOT INDICATED, CONNECTIONS SHALL BE SELECTED TO SUPPORT 1/2 THE TOTAL UNIFORM LOAD CAPACITY GIVEN IN THE ALLOWABLE UNIFORM LOAD TABLES, PART 3- FORTEENTH EDITION (ASD), FOR THE SPECIFIED BEAM SIZE, SPAN, AND STEEL GRADE UON. OTHER RATIONAL ENGINEERING CONNECTION DESIGN AND STANDARD CONNECTION PRACTICES MAY BE USED WITH APPROVAL OF THE ENGINEER.
   - CONNECTIONS SHALL HAVE MINIMUM ROWS OF BOLTS FOR BEAM DEPTHS AS INDICATED IN PART 10.
8. FRAMED STEEL BEAM CONNECTIONS SHALL BE "BEARING TYPE" UON.
9. STEEL BEAM KEY:



10. BEAMS SHALL BE MARKED AND ERECTED WITH NATURAL CAMBER PLACED UPWARDS.
11. DO NOT PAINT STEEL SURFACES TO BE FIELD WELDED.
12. ALL STRUCTURAL STEEL MEMBERS AND COMOPNENTS SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM A123 & ASTM A153.
13. ALL STRUCTURAL STEEL SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM A123.
14. ALL STRUCTURAL STEEL FASTENERS AND COMPONENTS SHALL BE HOT DIP GALVANIZED IN ACCORDANCE WITH ASTM A153.

WOOD FRAMING NOTES:

1. WOOD AND TIMBER CONSTRUCTION SHALL CONFORM TO PROJECT SPECIFICATIONS AND AMERICAN INSTITUTE OF TIMBER CONSTRUCTION (AITC) STANDARDS.
2. WOOD CONSTRUCTION SHALL CONFORM TO CHAPTER 23, OF THE INTERNATIONAL BUILDING CODE (UON).
3. ALL NAILING SHALL BE COMMON WIRE NAILS (UON) & SHALL CONFORM TO TABLE 2304.10.1 "FASTENING SCHEDULE" OF THE INTERNATIONAL BUILDING CODE UNLESS OTHER REQUIREMENTS NOTED ON THE PLAN ARE MORE STRICT.
4. FRAMING LUMBER SHALL CONFORM WITH THE PROVISIONS OF THE AMERICAN SOFTWOOD LUMBER STANDARD PS20-10 AND EACH PIECE SHALL BEAR THE GRADE STAMP OF A GRADING AGENCY APPROVED BY THE AMERICAN LUMBER STANDARDS COMMITTEE. ALL FRAMING LUMBER 2" AND LESS IN THICKNESS SHALL BE SEASONED TO A MOISTURE CONTENT OF 19% OR LESS PRIOR TO SURFACING WITH THE INDICATION "S-DRY" ON THE GRADE STAMP.
5. PRESSURE TREATED LUMBER SHALL BE SOUTHERN PINE MEMBERS (MSP), NO. 2 GRADE OR BETTER WITH THE FOLLOWING MINIMUM DESIGN VALUES (UON):

Fb	=	800 psi	- BENDING
Fv	=	175 psi	- SHEAR
Fc	=	1300 psi	- COMPRESSION PARALLEL TO GRAIN
Fc	=	565 psi	- COMPRESSION PERPENDICULAR TO GRAIN
E	=	1400 ksi	- MODULUS OF ELASTICITY
Emin	=	510 ksi	- MINIMUM MODULUS OF ELASTICITY

** SOUTHERN PINE LUMBER MAY BE SUBSTITUTED WITH PRESSURE TREATED LUMBER OF EQUIVALENT SPECIES.

6. LUMBER USED FOR HEADERS, BEAMS, AND JOISTS SHALL BE FREE OF CHECKS AND SPLITS.
7. ALL HEADERS, BEAMS, JOISTS, AND TRUSSES SHALL BEAR FULLY ON STUD WALLS, POSTS, AND JACK STUDS. DO NOT OVERCUT.
8. NO NOTCHING OF STUDS, JOISTS, BEAMS, OR TRUSSES IS PERMITTED WITHOUT THE ENGINEERS APPROVAL. DO NOT OVERCUT NOTCHES. HOLES BORED IN STUDS OR JOISTS SHALL BE IN THE MIDDLE ONE-THIRD OF THE DEPTH AND MIDDLE ONE-THIRD OF THE SPAN. THE DIAMETER OF ANY SUCH HOLE SHALL NOT EXCEED ONE-FOURTH THE DEPTH.

ABBREVIATIONS AND SYMBOLS

AA	ADHESIVE	MFG	MANUFACTURER
AR	ANCHOR ROD	MIN	MINIMUM
APA	AMERICAN PLYWOOD ASSOCIATION	MISC	MISCELLANEOUS
ARCH	ARCHITECT/ARCHITECTURAL	MTL	METAL
BB	BOND BEAM	MO	MASONRY OPENING
BLDG	BUILDING	N	NORTH
BLK	BLOCK	NTS	NOT TO SCALE
BM	BEAM	NS	NON-SHRINK
B.O.	BOTTOM OF	OC	ON CENTER
BOT	BOTTOM	OD	OUTSIDE DIAMETER
BRG	BEARING	OF	OUTSIDE FACE
CL	CENTER LINE	OH	OVERHEAD
CJ	CONTROL JOINT	OPNG	OPENING
CCJ	CONSTRUCTION CONTROL JOINT	ORIG	ORIGINAL
CLR	CLEAR/CLEARANCE	PAF	POWDER ACTUATED FASTENER
CMU	CONCRETE MASONRY UNIT	PART	PARTITION
COL	COLUMN	PC	PRECAST CONCRETE
CONC	CONCRETE	PLF	POUND PER LINEAR FOOT
CONN	CONNECTION	PL	PLATE
CONT	CONTINUOUS	PWD	PLYWOOD
CSA	CONCRETE SCREW ANCHOR	PNL	PANEL
DBL	DOUBLE	PSF	POUNDS PER SQUARE FOOT
DET	DETAIL	PSI	POUNDS PER SQUARE INCH
DEG	DEGREES	RAD	RADIUS
DIA	DIAMETER	RD	ROOF DRAIN
DIM	DIMENSION	REINF	REINFORCING
DL	DEAD LOAD	REM	REMOVE
DT	DRAIN TILE	RQD	REQUIRED
DWL	DOWEL	RFG	ROOFING
EA	EACH	RO	ROOF OPENING
EF	EACH FACE	SA	SCREW ANCHOR
EJ	EXPANSION JOINT	SB	SOIL BORING
EL	ELEVATION	SCHED	SCHEDULE
ELEV	ELEVATOR	SD	SEE DETAIL
EQ	EQUAL	SDL	SUPERIMPOSED DEAD LOAD
EW	EACH WAY	SLL	SUPERIMPOSED LIVE LOAD
(E)	EXISTING	SER	STRUCTURAL ENGINEER OF RECORD
EXC	EXCAVATION	SHT	SHEET
EXP	EXPANSION	SIM	SIMILAR
FD	FLOOR DRAIN	SQ	SQUARE
FDN	FOUNDATION	SJ	STEEL JOIST
FTG	FOOTING	SL	SNOW LOAD
FT	FOOT/FEET	SPA	SPACE/SPACING
GALV	GALVANIZE	SPECS	SPECIFICATIONS
GA	GAUGE	SS	STAINLESS STEEL
GC	GENERAL CONTRACTOR	STD	STANDARD
GT	GIRDER TRUSS	STL	STEEL
HC	HOLLOW CORE	TEMP	TEMPORARY
HORIZ	HORIZONTAL	T & B	TOP & BOTTOM
HSA	HEADED STUD ANCHOR	T & G	TONGUE & GROOVE
HSS	HOLLOW STRUCTURAL SECTION	THK	THICK/THICKENED
IF	INSIDE FACE	T.O.	TOP OF
INT	INTERIOR	TRANS	TRANSVERSE
JST	JOIST	TS	TUBE STEEL
K	KIPS	TYP	TYPICAL
KLF	KIPS PER LINEAR FOOT	UON	UNLESS OTHERWISE NOTED
KSI	KIPS PER SQUARE INCH	VER/(V)	VERIFY
L	ANGLE	VERT	VERTICAL
LL	LIVE LOAD	WF	WIDE FLANGE
LB	LEDGER BEAM	WD	WOOD
LBS	POUNDS	WL	WIND LOAD
LLH	LONG LEG HORIZONTAL	W/	WITH
LLV	LONG LEG VERTICAL	W/O	WITH OUT
LONG	LONGITUDINAL	WT	WEIGHT
MAS	MASONRY	WWF	WELDED WIRE FABRIC
MAX	MAXIMUM	@	AT
MECH	MECHANICAL	+/-	PLUS OR MINUS

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HE 057.0143.2024 KF/JG

STRUCTURAL DRAWINGS
EAST AUBURN WETLAND RESTORATION
MINNEHAHA CREEK WATERSHED DISTRICT
VICTORIA, MINNESOTA
GENERAL NOTES

DATE:	3/28/25-IFR
REVISED:	
REVISED:	
REVISED:	
REVISED:	
REVISED:	
REVISED:	
PROJECT No.	24026
DRAWN BY:	KF
CHECKED BY:	JDG
PROJ. MANAGER:	JCM
PROJ. ENGINEER:	QDS

S001

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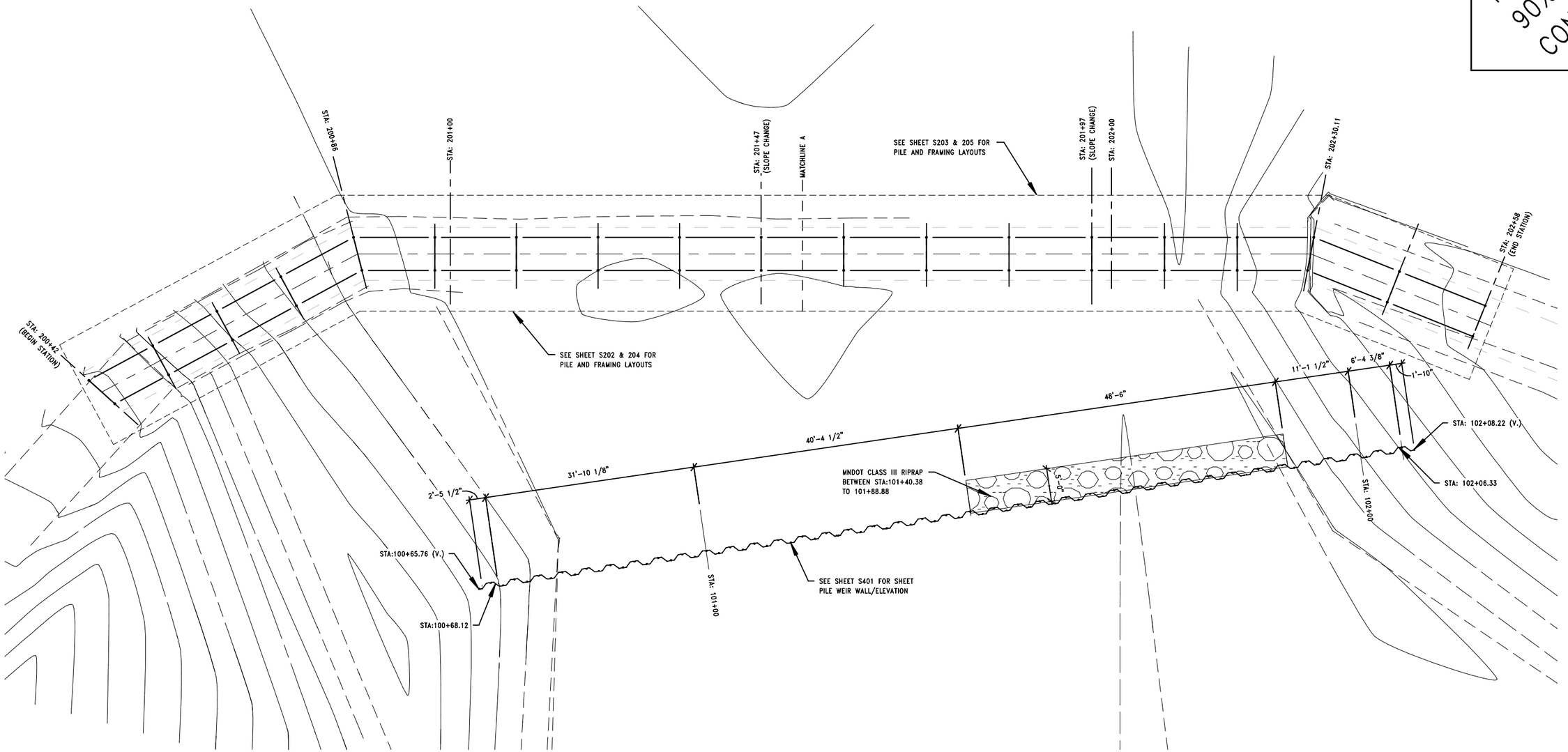
CONSTRUCTION

SHEET NOTES:

1. SEE SHEET S001 FOR GENERAL CONSTRUCTION NOTES.
2. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO NEW ADDITION INSTALL. CONTACT HEYER ENGINEERING IF DIFFERENCES OCCUR.
3. FINAL STATION, ELEVATION, AND DIMENSION CALLOUTS TO BE VERIFIED USING MOORE ENGINEERING PROCESS DRAWINGS.



OVERALL BOARDWALK/WEIR WALL PLAN

1/16" = 1'-0"

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STRUCTURAL DRAWINGS
EAST AUBURN WETLAND RESTORATION
MINNEHAHA CREEK WATERSHED DISTRICT
VICTORIA, MINNESOTA
OVERALL BOARDWALK/WEIR WALL PLAN

DATE:	3/28/25-IFR
REVISED:	
REVISED:	
REVISED:	
REVISED:	
REVISED:	
REVISED:	
PROJECT No.	24026
DRAWN BY:	KF
CHECKED BY:	JDG
PROJ. MANAGER:	JCM
PROJ. ENGINEER:	QDS

S201

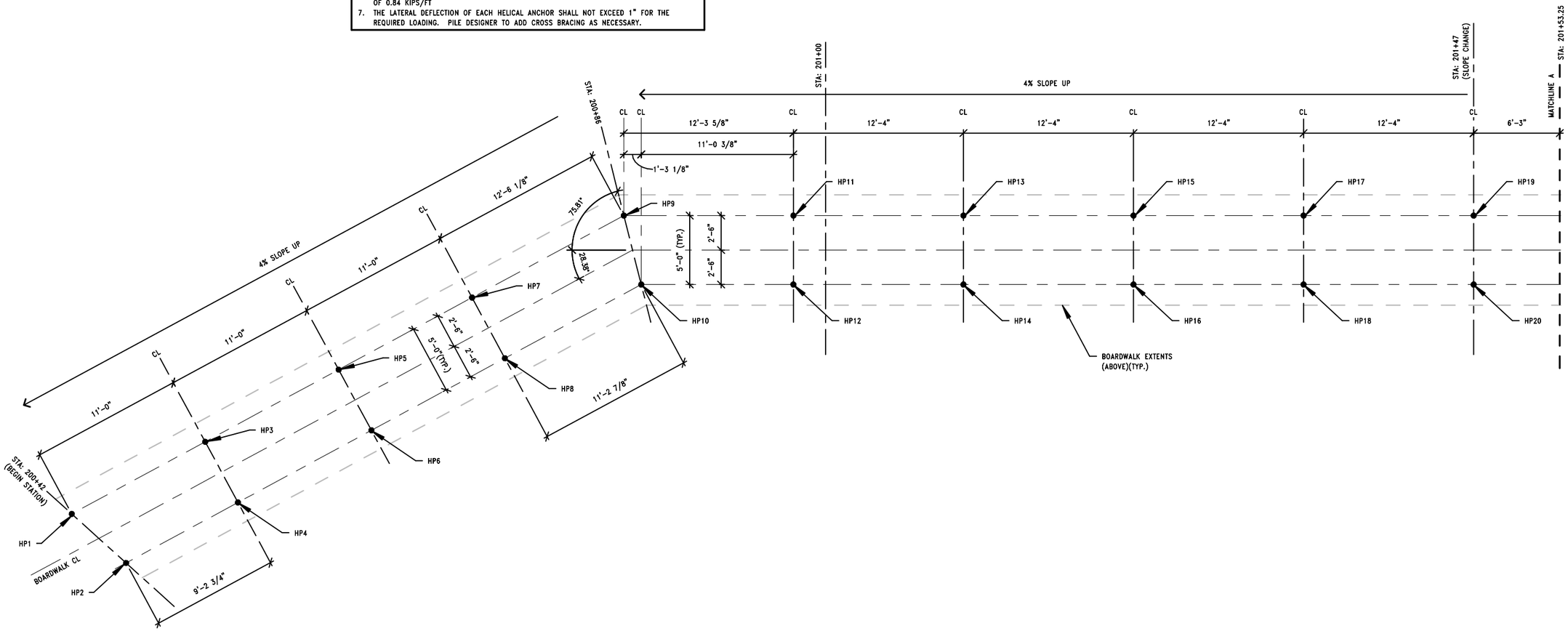
HELICAL PILE PLACEMENT TABLE				
HELICAL #	MIN. HELICAL SIZE	HELICAL DESIGNED WORKING CAPACITY REQUIRED (COMP./TENS.)	ULTIMATE DRIVEN CAPACITY (COMP./TENS.)	NOTES
HP1–HP20	3" DIA.	10 KIPS/2 KIPS	20 KIPS/4 KIPS	1–7

NOTES:
1. ALL HELICAL PIPE PILE & PL'S SHALL BE ASTM A527 (MINIMUM GRADE FOR HELICAL PL).
2. MINIMUM WALL THICKNESS = 0.375"
3. MINIMUM HELIX PL TO BE 3/8". HELICAL ANCHOR SUPPLIER TO DETERMINE FINAL f SIZE.
4. CORRODED PROPERTIES & CAPACITIES INCLUDE A 50 YEAR SCHEDULED SACRIFICIAL LOSS IN THICKNESS PER ICC–ES AC358. ABOVE THIS REQUIREMENT, SOIL TO BE TESTED BY SOIL ENGINEER TO DETERMINE ADDITIONAL REQUIREMENTS.
5. PILE DESIGNER TO DESIGN PILES FOR MAX LATERAL LOAD OF 2 KIPS.
6. PILE DESIGNER TO DESIGN PILE FOR MAX MOMENT AT PILE CAP, DUE TO WIND LOADING, OF 0.84 KIPS/FT
7. THE LATERAL DEFLECTION OF EACH HELICAL ANCHOR SHALL NOT EXCEED 1" FOR THE REQUIRED LOADING. PILE DESIGNER TO ADD CROSS BRACING AS NECESSARY.

SHEET NOTES:

1. SEE SHEET S001 FOR GENERAL CONSTRUCTION NOTES.
2. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO NEW ADDITION INSTALL. CONTACT HEYER ENGINEERING IF DIFFERENCES OCCUR.
3. FINAL STATION, ELEVATION, AND DIMENSION CALLOUTS TO BE VERIFIED USING MOORE ENGINEERING PROCESS DRAWINGS.
4. HPXX – HELICAL PILE MARK SEE SCEHDULE ON THIS SHEET.
5. ALL STRUCUTRAL STEEL TO BE HOT DIPPED GALVANIZED, SEE SHEET S001.

PRELIMINARY
90% NOT FOR CONSTRUCTION



HELICAL PILE LAYOUT PLAN STA:200+42 TO STA:201+53.25

1/8" = 1'–0"

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STRUCTURAL DRAWINGS
EAST AUBURN WETLAND RESTORATION
MINNEHAHA CREEK WATERSHED DISTRICT
VICTORIA, MINNESOTA
HELICAL PILE LAYOUT PLAN

DATE:	3/28/25-IFR
REVISED:	
REVISED:	
REVISED:	
REVISED:	
REVISED:	
REVISED:	
PROJECT No.	24026
DRAWN BY:	KF
CHECKED BY:	JDG
PROJ. MANAGER:	JCM
PROJ. ENGINEER:	QDS

S202

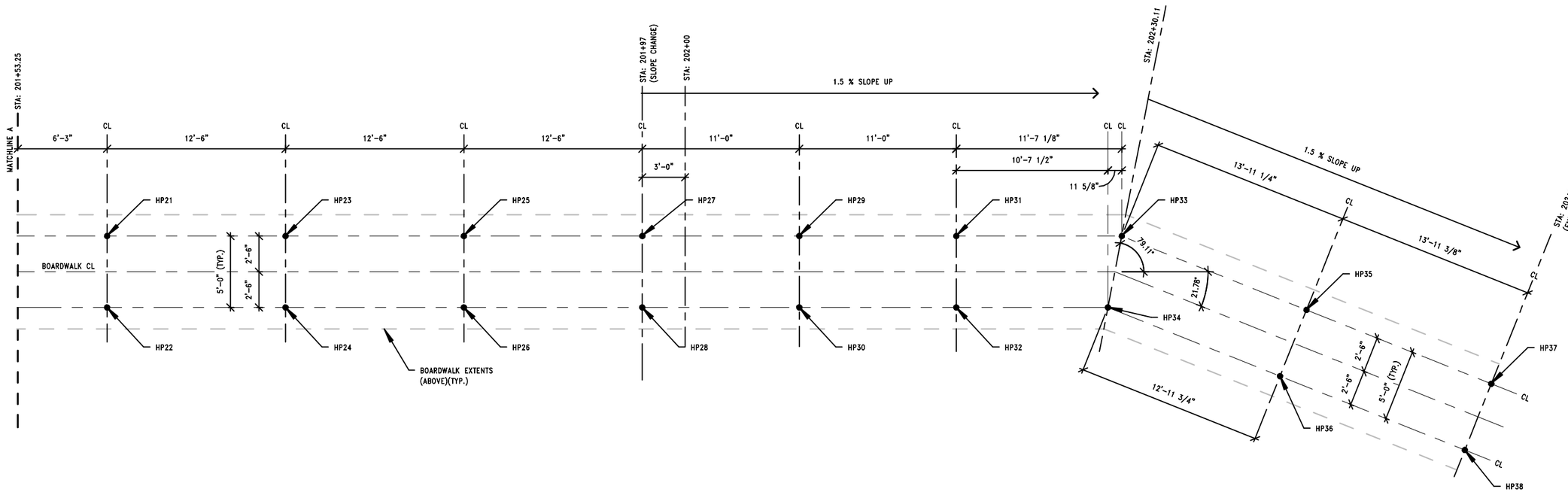
HELICAL PILE PLACEMENT TABLE				
HELICAL #	MIN. HELICAL SIZE	HELICAL DESIGNED WORKING CAPACITY REQUIRED (COMP./TENS.)	ULTIMATE DRIVEN CAPACITY (COMP./TENS.)	NOTES
HP21–HP38	3" DIA.	10 KIPS/2 KIPS	20 KIPS/4 KIPS	1–7

NOTES:
1. ALL HELICAL PIPE PILE & PL'S SHALL BE ASTM A527 (MINIMUM GRADE FOR HELICAL PL).
2. MINIMUM WALL THICKNESS = 0.375"
3. MINIMUM HELIX PL TO BE 3/8". HELICAL ANCHOR SUPPLIER TO DETERMINE FINAL f SIZE.
4. CORRODED PROPERTIES & CAPACITIES INCLUDE A 50 YEAR SCHEDULED SACRIFICIAL LOSS IN THICKNESS PER ICC–ES AC358. ABOVE THIS REQUIREMENT, SOIL TO BE TESTED BY SOIL ENGINEER TO DETERMINE ADDITIONAL REQUIREMENTS.
5. PILE DESIGNER TO DESIGN PILES FOR MAX LATERAL LOAD OF 2 KIPS.
6. PILE DESIGNER TO DESIGN PILE FOR MAX MOMENT AT THE PILE CAP, DUE TO WIND LOADING, OF 0.84 KIP–FT.
7. THE LATERAL DEFLECTION OF EACH HELICAL ANCHOR SHALL NOT EXCEED 1" FOR THE REQUIRED LOADING. PILE DESIGNER TO ADD CROSS BRACING AS NECESSARY

SHEET NOTES:

1. SEE SHEET S001 FOR GENERAL CONSTRUCTION NOTES.
2. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO NEW ADDITION INSTALL. CONTACT HEYER ENGINEERING IF DIFFERENCES OCCUR.
3. FINAL STATION, ELEVATION, AND DIMENSION CALLOUTS TO BE VERIFIED USING MOORE ENGINEERING PROCESS DRAWINGS.
4. HPXX – HELICAL PILE MARK SEE SCEHDULE ON THIS SHEET.
5. ALL STRUCTURAL STEEL TO BE HOT DIPPED GALVANIZED, SEE SHEET S001.

PRELIMINARY
90% NOT FOR CONSTRUCTION



HELICAL PILE LAYOUT PLAN STA:201+53.25 TO STA:202+58

1/8" = 1'–0"

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STRUCTURAL DRAWINGS
EAST AUBURN WETLAND RESTORATION
MINNEHAHA CREEK WATERSHED DISTRICT
VICTORIA, MINNESOTA
HELICAL PILE LAYOUT PLAN

DATE:	3/28/25-IFR
REVISED:	
REVISED:	
REVISED:	
REVISED:	
REVISED:	
REVISED:	
PROJECT No.	24026
DRAWN BY:	KF
CHECKED BY:	JDG
PROJ. MANAGER:	JCM
PROJ. ENGINEER:	QDS

S203

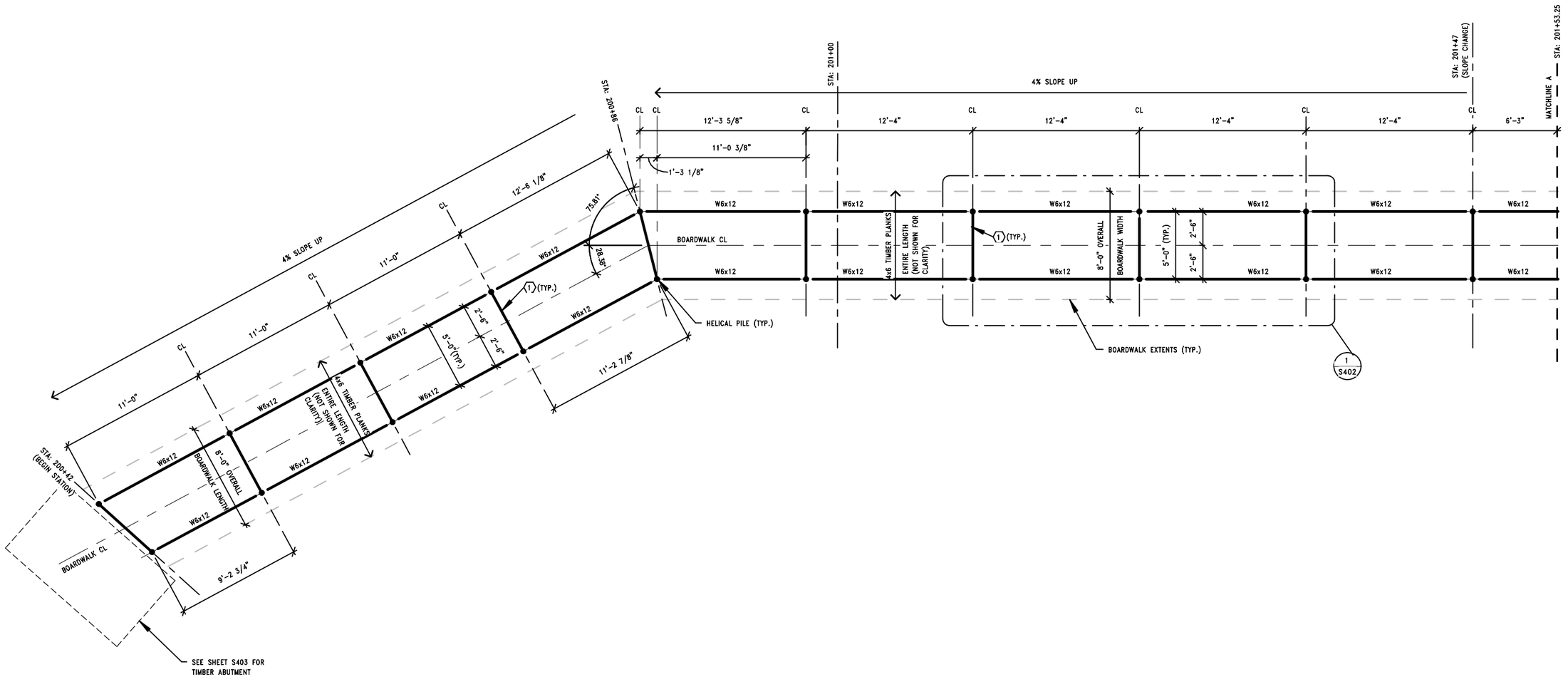
PRELIMINARY
90% NOT FOR
CONSTRUCTION

SHEET NOTES:

1. SEE SHEET S001 FOR GENERAL CONSTRUCTION NOTES.
2. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO NEW ADDITION INSTALL. CONTACT HEYER ENGINEERING IF DIFFERENCES OCCUR.
3. FINAL STATION, ELEVATION, AND DIMENSION CALLOUTS TO BE VERIFIED USING MOORE ENGINEERING PROCESS DRAWINGS.
4. LUMBER NOTATED W/ 'TREATED' SHALL BE PRESSURE TREATED SOUTHERN PINE NO. 2 OR BETTER.
5. ALL STRUCTURAL STEEL TO BE HOT DIPPED GALVANIZED, SEE SHEET S001.
6. TOP OF STEEL ELEVATION AT LEVEL/FLAT SECTION OF BOARDWALK IS 948'-5 3/16".

KEY NOTES:

⟨1⟩ 3" DIA. SCHED 40 PIPE



BOARDWALK FRAMING PLAN STA:200+42 TO STA:201+53.25

1/8" = 1'-0"

T.O. STEEL EL. = VARIES

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STRUCTURAL DRAWINGS
EAST AUBURN WETLAND RESTORATION
MINNEHAHA CREEK WATERSHED DISTRICT
VICTORIA, MINNESOTA
BOARDWALK FRAMING PLAN

DATE:	3/28/25-IFR
REVISED:	
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REVISED:	
PROJECT No.	24026
DRAWN BY:	KF
CHECKED BY:	JDG
PROJ. MANAGER:	JCM
PROJ. ENGINEER:	QDS

S204

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CONSTRUCTION

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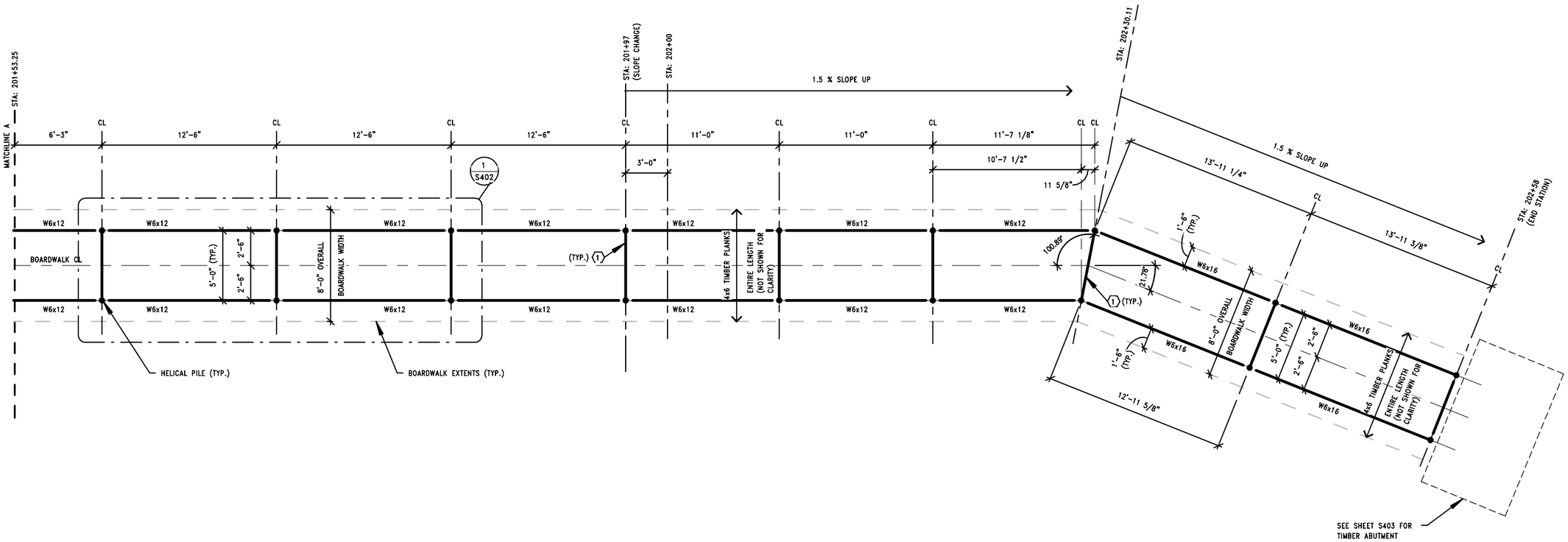
SHEET NOTES:

1. SEE SHEET S001 FOR GENERAL CONSTRUCTION NOTES.
2. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO NEW ADDITION INSTALL. CONTACT HEYER ENGINEERING IF DIFFERENCES OCCUR.
3. FINAL STATION, ELEVATION, AND DIMENSION CALLOUTS TO BE VERIFIED USING MOORE ENGINEERING PROCESS DRAWINGS.
4. LUMBER NOTATED W/ 'TREATED' SHALL BE PRESSURE TREATED SOUTHERN PINE NO. 2 OR BETTER.
5. ALL STRUCTURAL STEEL TO BE HOT DIPPED GALVANIZED, SEE SHEET S001.
5. TOP OF STEEL ELEVATION AT LEVEL/FLAT SECTION OF BOARDWALK IS 948'-5 3/16".

KEY NOTES:

⟨1⟩ 3" DIA. SCHED 40 PIPE



HELICAL PILE LAYOUT PLAN STA:201+53.25 TO STA:202+58

1/8" = 1'-0"

T.O. STEEL EL. = VARIES

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STRUCTURAL DRAWINGS
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BOARDWALK FRAMING PLAN

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CHECKED BY:	JDG
PROJ. MANAGER:	JCM
PROJ. ENGINEER:	QDS

S205

SHEET NOTES:

1. SEE SHEET S001 FOR GENERAL CONSTRUCTION NOTES.
2. FIELD VERIFY ALL EXISTING CONDITIONS PRIOR TO NEW ADDITION INSTALL. CONTACT HEYER ENGINEERING IF DIFFERENCES OCCUR.
3. FINAL STATION, ELEVATION, AND DIMENSION CALLOUTS TO BE VERIFIED USING MOORE ENGINEERING PROCESS DRAWINGS.
4. SHEET PILE TO BE PZ22 A690 GR.50.
5. CONTRACTOR TO INSTALL ONE FULL PILE WIDTH BEYOND INTERSECTION WITH GRADE.

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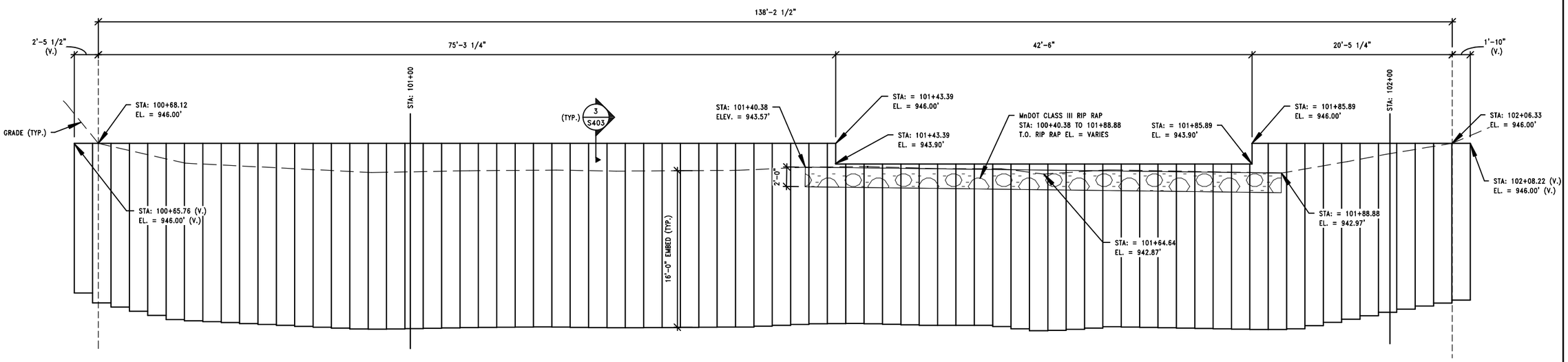

1/S401 SHEET PILE/WEIR WALL ELEVATION

3/32" = 1'-0"

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VICTORIA, MINNESOTA
SHEET PILE WEIR WALL ELEVATION

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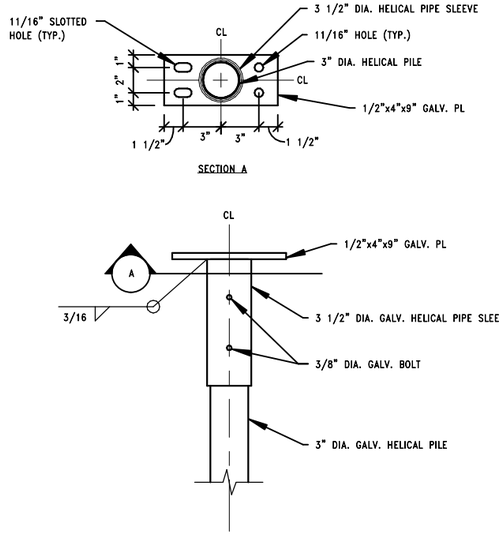
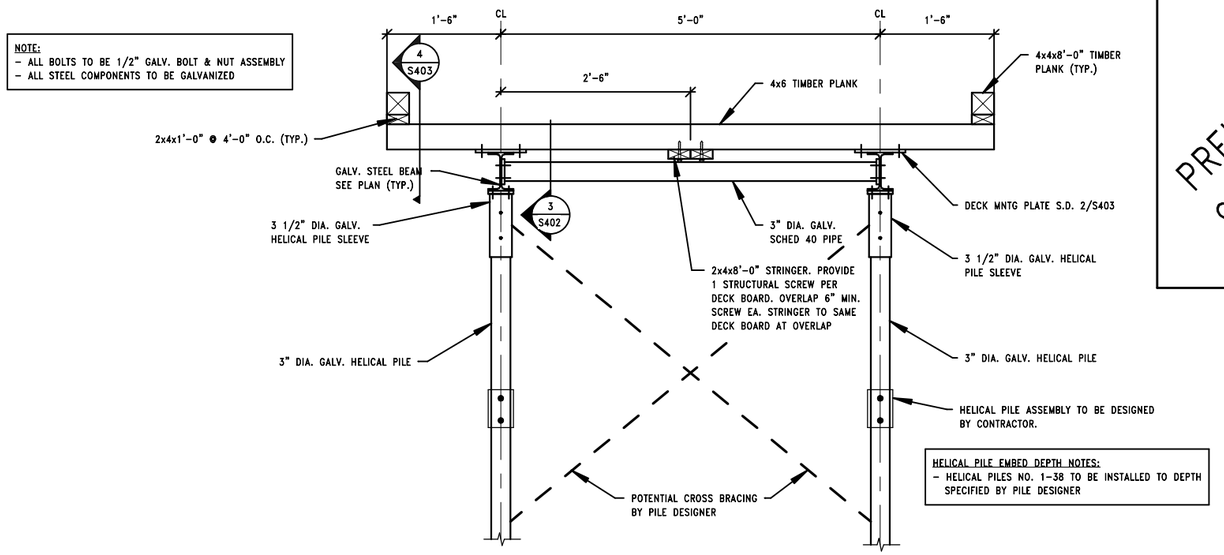
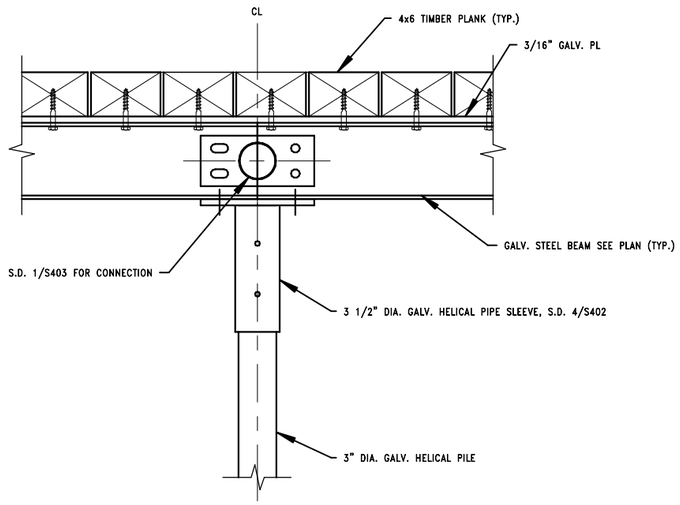
S401



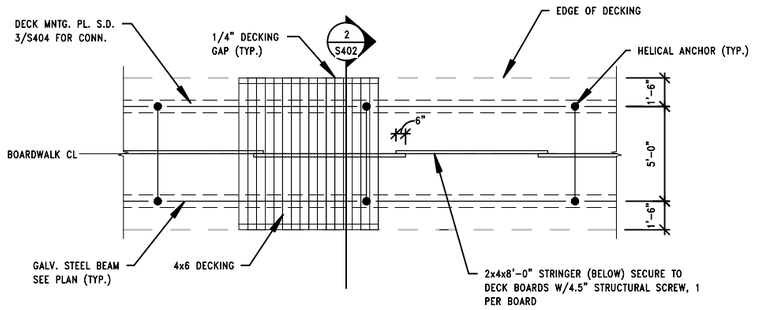
4/S402 PILE & PILE CAP DETAIL
1" = 1'-0"



2/S402 BOARDWALK SECTION
1/2" = 1'-0"



3/S402 BOARDWALK ELEVATION
1" = 1'-0"



1/S402 BOARDWALK DETAIL PLAN
1/8" = 1'-0"

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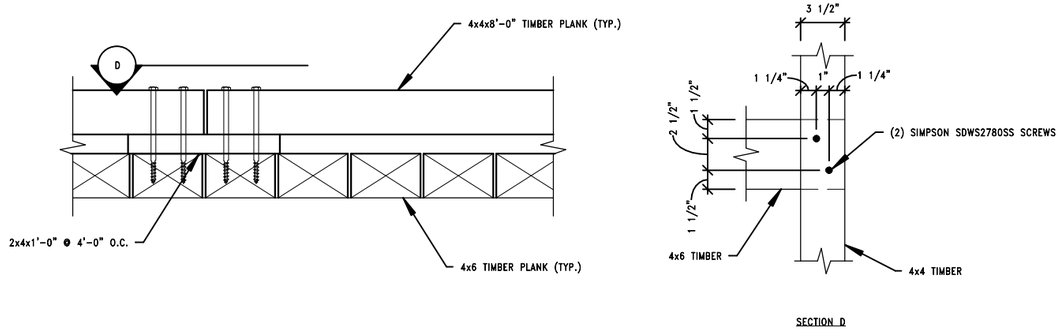
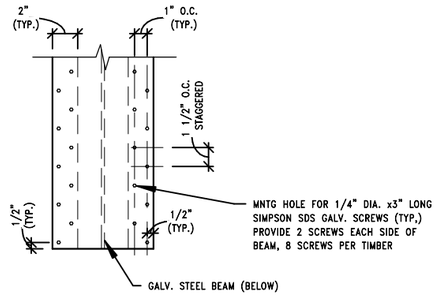


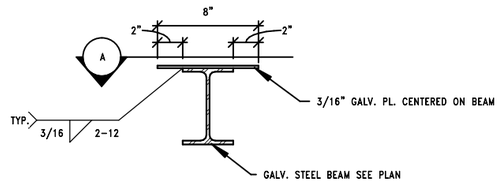
SECTION D

4 S403 BOARDWALK BUILT UP EDGE DETAIL

1" = 1'-0"

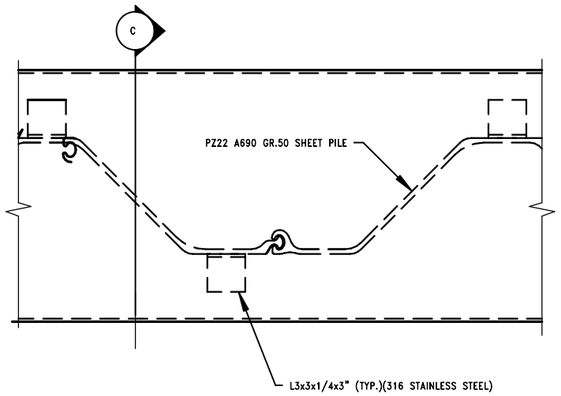


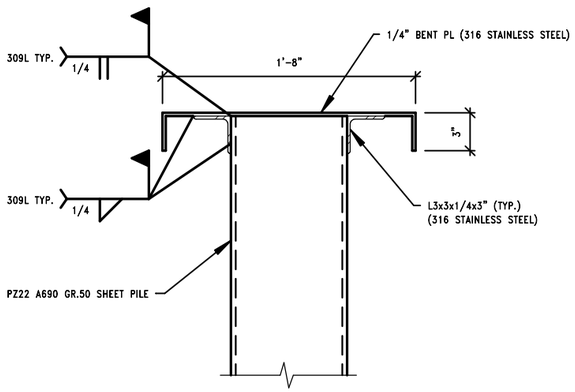
SECTION A



2 S403 DECK MTNG PLATE DETAIL

1" = 1'-0"

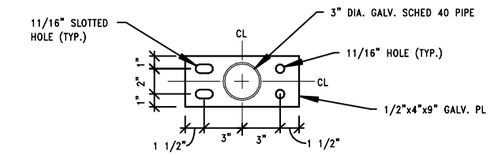




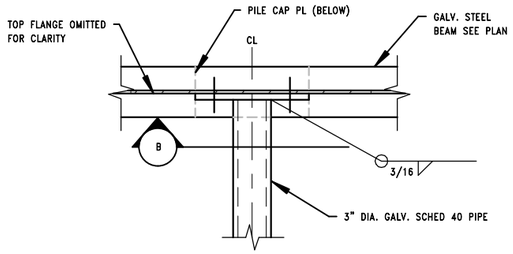
SECTION C

3 S403 PILE CAP DETAIL

1" = 1'-0"



SECTION B



1 S403 CROSS PIPE & PLATE DETAIL

1" = 1'-0"

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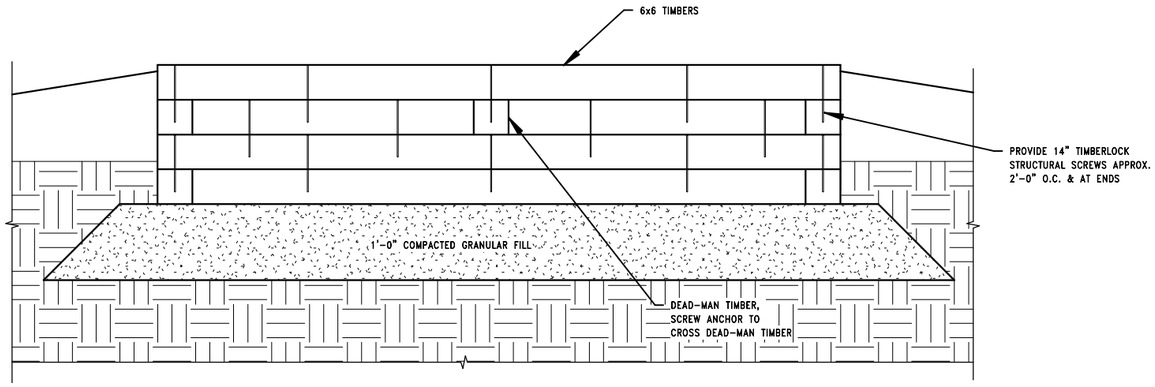
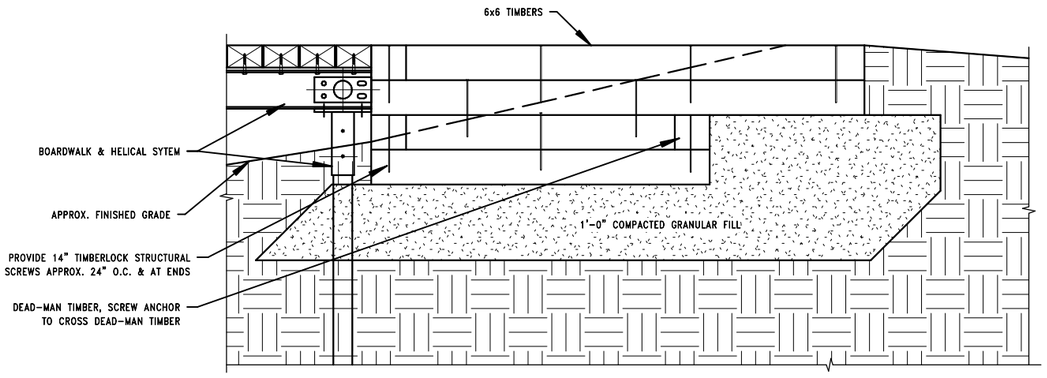


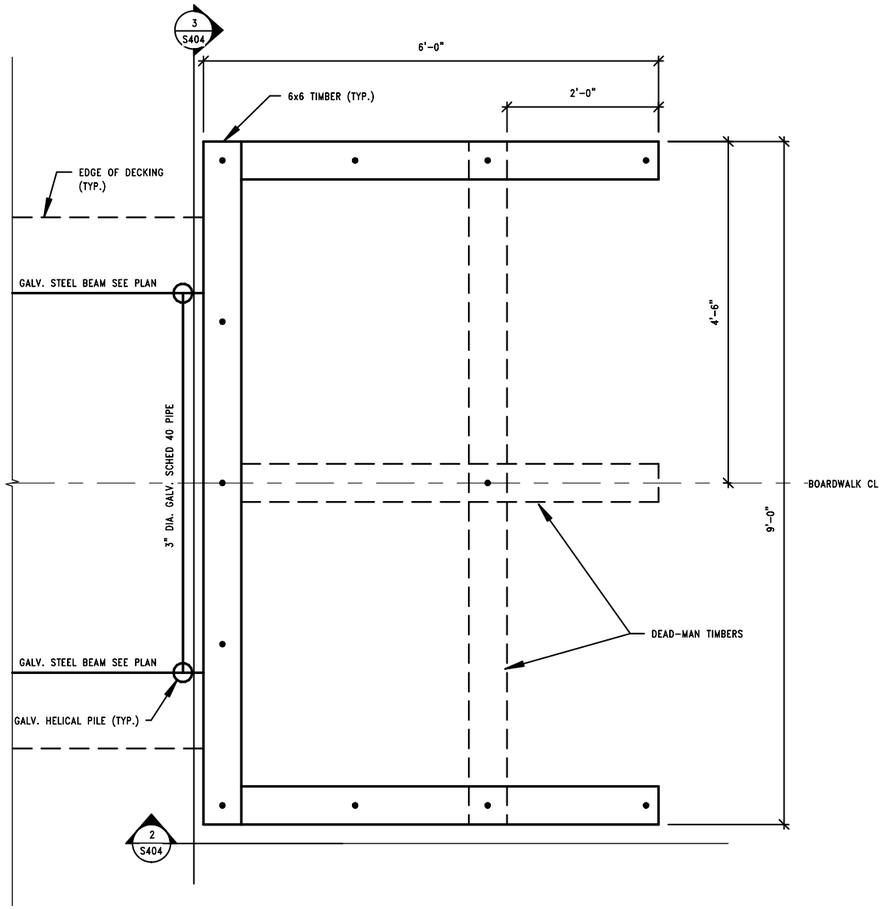
3 / S404 TIMBER ABUTMENT ELEVATION

1/2" = 1'-0"



2 / S404 TIMBER ABUTMENT SECTION

1/2" = 1'-0"



1 / S404 TIMBER ABUTMENT DETAIL

1/2" = 1'-0"

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DRAWN BY:	Author
CHECKED BY:	Designer
PROJ. MANAGER:	JCM
PROJ. ENGINEER:	QDS

S404

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