

Joint County Ditch #4 Meeting

March 7, 2023 – 7:30 a.m. Carver

County Board Room Carver

County Government Center

Chaska, MN 55318

7:30 a.m. **A. Convene Joint Ditch 4 Meeting** – Carver County Commissioners Fahey, Lynch, Workman will be present in the County Board Room. McLeod County Commissioner Schmalz and Wright County Commissioner Kaczmarek will be participating remotely from the McLeod County and Wright County Court House

1. Joint Ditch 4 Public Hearing: Petition for Partial Abandonment, Impounding, Re-Routing and Diverting Drainage System 1-41

Adjourn Joint Ditch 4

David Frischmon
Carver County Property & Finance Director

CARVER/MCLEOD/WRIGHT JOINT DITCH #4 Request for Board Action

Agenda Item:

Joint Ditch 4 Public Hearing: Petition for Partial Abandonment, Impounding, Re-Routing and Diverting Drainage System Waters

Primary Originating Division/Dept: Property & Financial Services

Meeting Date: 3/7/2023

Contact: Kathleen Smith Title: Land Records & Vitals Manager

Item Type:
Ditch/Rail Authority

Amount of Time Requested: minutes

Presenter: Joe Lewis Title: Houston Engineering Principal/Se

Attachments: ☒ Yes ☐ No

Strategic Initiative:

Communities: Create and maintain safe, healthy, and livable communities

BACKGROUND/JUSTIFICATION:

County staff received a petition dated 3/24/2022 for a partial abandonment and re-routing of JD4 on the Hart property. This ditch is shared with McLeod, Wright and Carver Counties.

ACTION REQUESTED:

Motion to open public hearing

Presentation of Engineers Report: Joe Lewis Houston Engineering

Public comment

Motion to close public hearing

Approve JD4 Petition

FISCAL IMPACT: None

If "Other", specify:

FUNDING

County Dollars =

FTE IMPACT: None

Total

\$0.00

☒ Insert additional funding source

Related Financial/FTE Comments:

This project does not create a significant benefit for JD4. The property owners are not seeking the use of any drainage system funds for this project.

Office use only:

RBA 2023 - 8929

Before the Joint Board of Commissioners Acting
as Drainage Authority for Carver, McLeod and
Wright Counties - Judicial Ditch No. 4

**Petition for Impounding, Rerouting, and Diverting
Drainage System Waters and Partial Abandonment of a
Drainage System Pursuant to Minnesota Statutes
103E.227 and 103E.806**

1. Judicial Ditch No. 4 (JD 4) is a drainage system located in Carver, McLeod and Wright Counties, Minnesota.
2. The undersigned petitioning landowners are the owners of properties located in portions of the Southeast $\frac{1}{4}$ of Section 5 and the North $\frac{1}{2}$ of Section 8, Township 117 North, Range 26 West, Hollywood Township, Carver County, Minnesota.
3. The undersigned petitioners hereby petition the Joint Board of Commissioners for JD 4, acting as the drainage authority, to partially abandon and to re-route portions of JD 4 located within the above described properties.
4. The petition is offered as a result of a perpetual easement that the State of Minnesota is in the process of securing on lands owned by the petitioning landowner. Said easements will be located as follows:
 - a. Section 5 - The Southwest $\frac{1}{4}$ of the Southwest $\frac{1}{4}$ of the Southeast $\frac{1}{4}$.
 - b. Section 8 - Part of the East $\frac{1}{2}$ of the Northwest $\frac{1}{4}$ and part of the West $\frac{1}{2}$ of the Northeast $\frac{1}{4}$.
5. That within the secured easements will be the restoration of drained wetlands and adjoining uplands (Project).
6. That existing within the Project area are portions of the JD 4 Main open ditch and the Lateral 2 open ditch.
7. To facilitate restoration of Project wetlands and to maintain the drainage benefits of surrounding properties it will be necessary to reroute portions of the JD 4 Main open ditch and the Lateral 2 open ditch.
8. More specifically, the petition seeks to modify the JD 4 drainage system as follows:
 - a. JD 4 Main is an open ditch that is approximately 1,750 feet in length as it traverses through the Project area.
 - i. That pursuant to MN Statute 103E.227, the petition requests that a portion of the JD 4 Main be rerouted around the north edge of planned Project wetland no. 1. The petition proposes to reroute the JD 4 Main with approximately 1,276 feet of new open ditch. The reroute will begin at current Station 107+52 and will rejoin the existing ditch at Station 124+00. The new alignment will decrease the overall length of the JD 4 Main within the Project area by 372 feet. To avoid re-stationing the entire Main ditch, its new terminus (new junction with the main ditch) will be co-labeled as Station 120+28/124+00.
 - ii. That pursuant to MN Statutes 103E.806, the petition requests that the current reach of JD 4 Main between existing Station 107+52 and Station 124+00 be abandoned and removed from the drainage system as it will no longer serve a benefit or purpose for the drainage system.
 - b. Lateral 2 is an open ditch that is approximately 2,400 feet in length as it traverses through the Project area. At its current Station 0+00, it terminates in the central region of the Project where it junctions with Station 113+56 of the Main ditch.
 - i. That pursuant to MN Statute 103E.227, the petition requests that the lower portion of Lateral 2 be rerouted around the west edge of planned Project wetland no. 1. The petition proposes to reroute Lateral 2 with approximately 723 feet of new open ditch. The reroute will begin at current

station 8+15 and terminate into the Main ditch approximately 585 feet further west than it does currently. Its new terminus will occur at Station 107+52 of the Main ditch. To avoid re-stationing the entire Lateral 2 ditch, its new terminus will occur at Station 0+92, instead of Station 0+00, as the reach of new ditch will be 92 feet shorter in length than the reach it will be replacing.

- ii. That pursuant to MN Statutes 103E.806, the petition requests that the current reach of Lateral 2 that lies between existing Station 0+00 and Station 8+15 be abandoned and removed from the drainage system as it will no longer serve a benefit or purpose for the drainage system.
9. That for the following reasons, the drainage authority for JD 4 be responsible for future operation and maintenance of the above described modified and rerouted portions of the Main and Lateral 2 ditches:
 - a. The modified, rerouted portions of the Main and Lateral 2 ditches will continue to provide drainage benefits to assessed lands within the JD 4 drainage system and maintenance of these modified ditches will be simpler, more effective and have a greater degree of security if managed by the drainage authority,
 - b. The costs to maintain the modified portions of the Main and Lateral 2 ditches will be no greater than the cost to maintain what exists currently for these portions of the JD 4 drainage system.
10. That no other portions of the JD 4 drainage system will be modified as part of the Project. They will continue to function in their current condition and be operated and maintained by the drainage authority.
11. That other Project components not identified as being part of the JD 4 drainage system be managed and maintained in accordance with terms of the applicable conservation easement.
12. That attached, as:
 - a. Figure 1 is a map of the existing JD 4 drainage system located within the general Project area.
 - b. Figure 2 is a map of the proposed JD 4 drainage system within the general Project area, after completion of the Project.
 - c. Figures 3 are revised profiles for the proposed modified reaches of the Main and Lateral 2 ditches within the Project area, as described herein by this petition.
13. The petition does not seek through separable repairs the use of any drainage system funds for construction of the Project. Those costs will be the responsibility of the property owner for which conservation easement(s) will be or have been conveyed. The property owner will utilize conservation program payments to pay for the construction costs.
14. That pursuant to Subd. 2 of 103E.227, a bond for the Project will not be required as the petition is filed by a state agency or the local Soil and Water Conservation District in support of this Project and its property owners/co-petitioners.
15. Because the proposed Project will not significantly benefit the JD 4 drainage system the petitioning property owners agree, if required by the drainage authority, to utilize eligible conservation program payments and be responsible for the costs associated with conducting the associated drainage hearing for this Project.
16. That the proposed JD 4 drainage system modifications have been discussed with the owners of the properties in which proposed drainage system modifications will be occurring. The landowners acknowledge the drainage authority's need for and legal right of future access to inspect and maintain the rerouted portions of JD 4, as requested in this petition. If required, the affected landowners agree to convey an easement and right-of-way to the drainage authority providing future rights for access, inspection, and maintenance for the realigned

reaches of the drainage system and they request said easement and right-of-way documents be prepared and secured after construction of the Project and be a condition of the Project's approval. The petitioning landowner agrees to be responsible for the costs and to utilize Project funds to secure the necessary right-of-way easement.

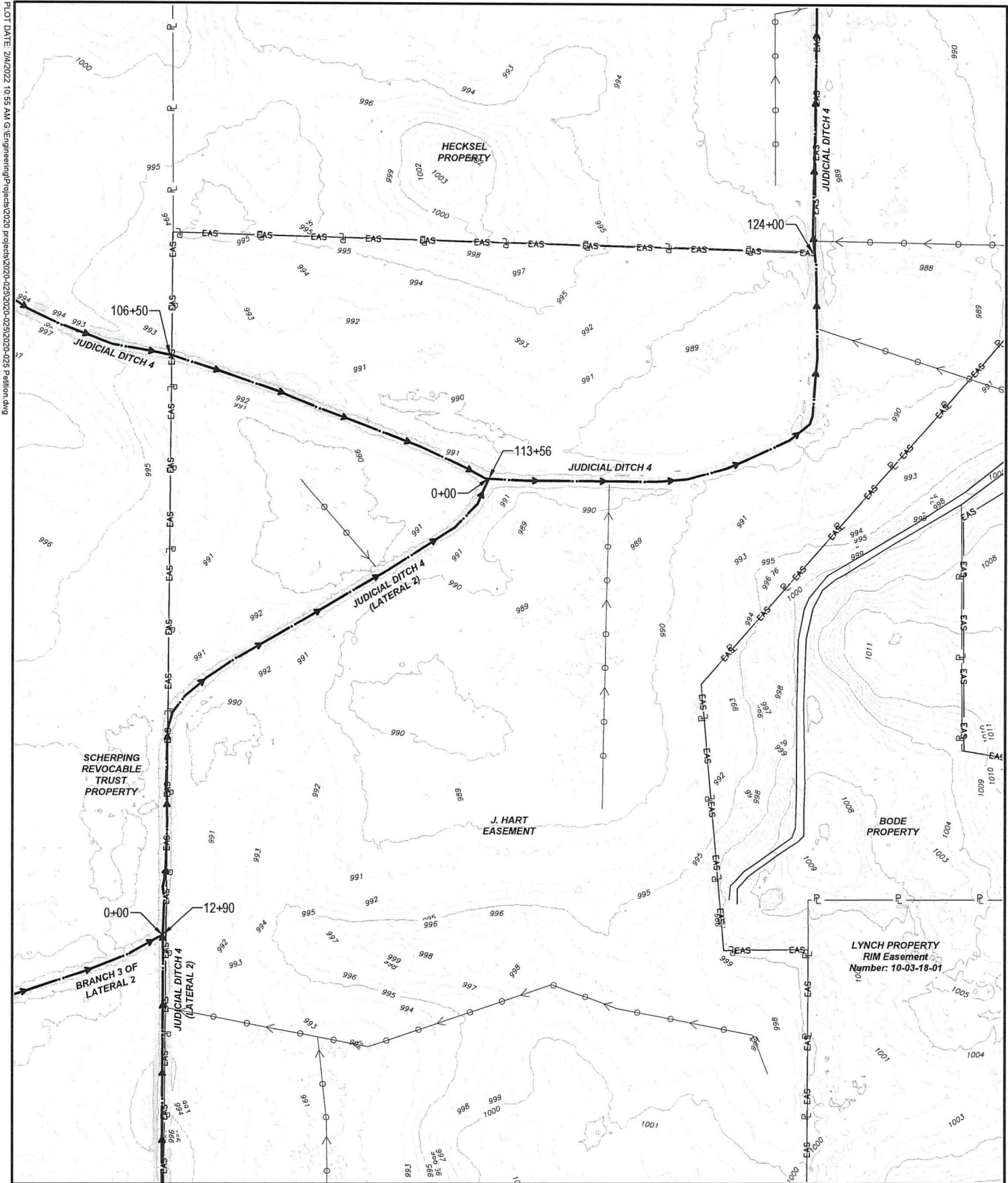
17. That no public water work permit, water use permit, or other permits required under Minnesota Statutes 103G are needed for this project.
18. That either as part of the submitted petition or shortly after the drainage authorities accepts the petition, a design report and preliminary construction plan will be provided by the petitioners to the drainage authority for its consideration and review prior to the scheduled hearing.

Dated this 24th Day of March, 2022

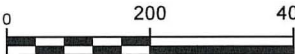

Jeffrey Hart (for Jeffrey D and Terri D Hart)


Shawn Bode


Sharon Doucette, BWSR Easement Section Manager







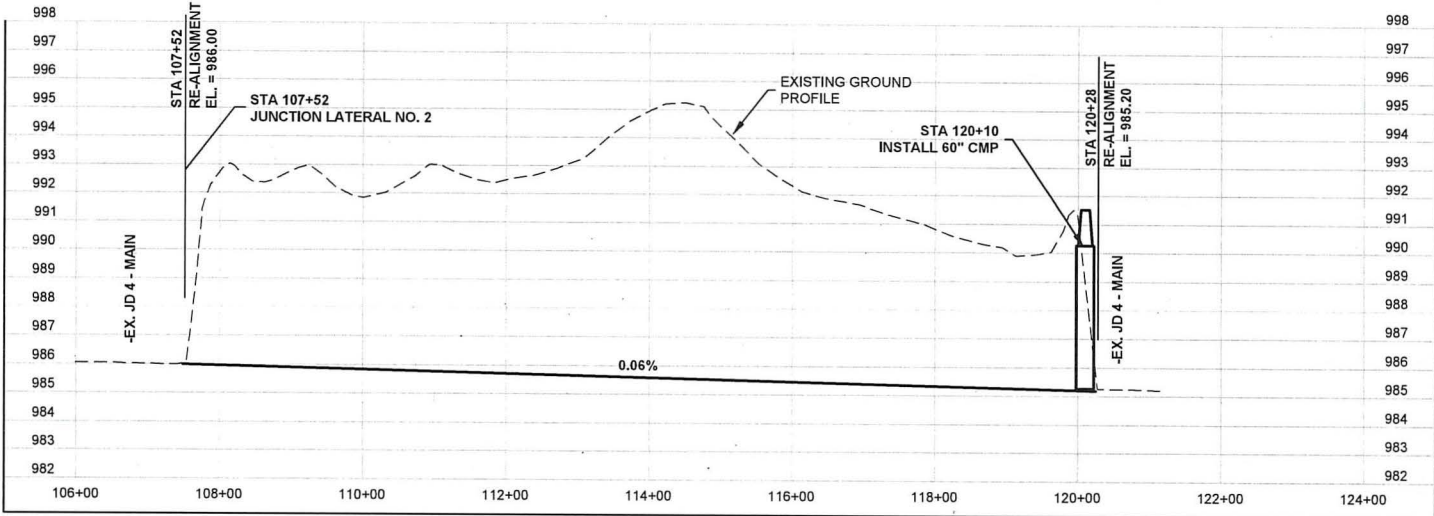
SCALE (IN FEET)

LEGEND

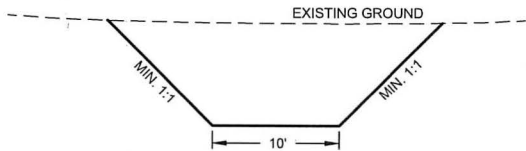
	PUBLIC DITCH
	PRIVATE TILE
	APPROXIMATE PROPERTY LINE
	CONSERVATION EASEMENT

JD 4 - DITCH MODIFICATIONS - CARVER, MCLEOD & WRIGHT COUNTIES		02/04/2022
EXISTING CONDITIONS		FIGURE 1

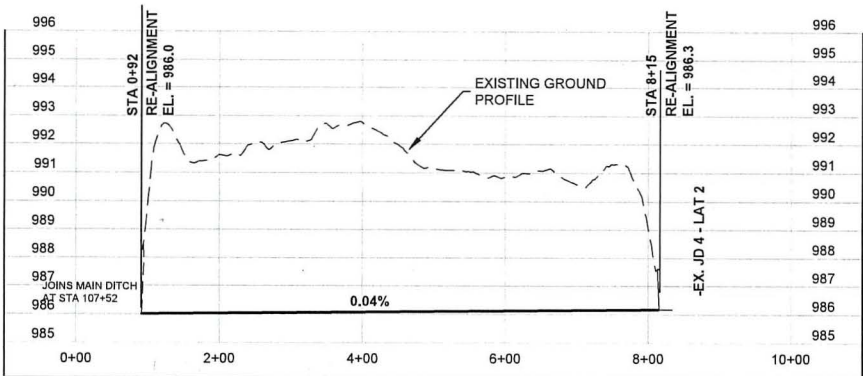
PLOT DATE: 2/4/2022 10:54 AM G:\Engineering\proj\2020-02\2020-02-25\2020-02-25\Partion.dwg



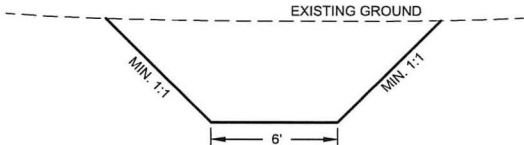
PROFILE ALONG CENTERLINE OF PROPOSED RE-ALIGNMENT OF JD 4 - MAIN
 SCALE 1" = 200'



X-SECTION OF JD 4 MAIN
 NOT TO SCALE



PROFILE ALONG PROPOSED RE-ALIGNMENT OF JD 4 - LAT 2
 SCALE 1" = 200'



X-SECTION OF LATERAL NO. 2
 NOT TO SCALE

STATE OF MINNESOTA
JOINT DRAINAGE AUTHORITY OF CARVER, WRIGHT, AND McLEOD COUNTIES
SITTING AS THE DRAINAGE AUTHORITY FOR
JUDICIAL DITCH 4

In the Matter of the Petition for Impounding,
Rerouting, and Diverting Drainage System
Waters and Partial Abandonment of Carver-
Wright-McLeod Judicial Ditch 4 Pursuant to
Minnesota Statutes, sections 103E.227 and
103E.806 (Hart et al.)

ENGINEER'S BOND
(MINN. STAT. § 103E.241, SUBD. 2)

KNOW ALL BY THESE PRESENTS, that Chris Otterness, P.E., of Houston Engineering, Inc., ("Engineer") as principal and surety, is held and firmly bound to the Joint Drainage Authority Board of Commissioners of Carver, Wright and McLeod Counties, Drainage Authority for Carver-Wright-McLeod Judicial Ditch (JD) 4, in an amount equal to coverage limits on Engineer's professional liability insurance, to pay on any proven claim by any person or the Drainage Authority for damages and injuries resulting from negligence of the Engineer while the Engineer is acting in the proceedings or construction for the Petition of Hart et al. to impound, reroute, and divert and partially abandon JD 4.

The condition of the above obligation is such: Engineer was appointed by the Drainage Authority as the engineer for the impound, reroute, and diversion and partial abandonment of JD 4. Minnesota Statutes, section 103E.241, subd. 2, requires Engineer to file a bond with the Drainage Authority upon appointment. The bond must be conditioned to pay any person or the Drainage Authority for damages and injuries resulting from negligence of Engineer while Engineer is acting in the proceedings or construction and provide that Engineer will diligently and honestly perform Engineer's duties. The aggregate liability of Engineer for all proven claims shall not exceed the amount of Engineer's professional liability insurance.

Signed this ____ day of _____, 2022.

Houston Engineering, Inc.

By _____

Its _____

**STATE OF MINNESOTA
JOINT DRAINAGE AUTHORITY OF CARVER, WRIGHT, AND MCLEOD COUNTIES
SITTING AS THE DRAINAGE AUTHORITY FOR
JUDICIAL DITCH 4**

In the Matter of the Petition for Impounding, Rerouting, and Diverting Drainage System Waters and Partial Abandonment of Carver-Wright-McLeod Judicial Ditch 4 Pursuant to Minnesota Statutes, sections 103E.227 and 103E.806 (Hart et al.)	PUBLIC HEARING NOTICE
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Joint Ditch 4 Meeting – Carver County Commissioners Fahey, Lynch, Workman will be present in County Board Room. McLeod County Commissioners Schmalz and Wright County Commissioner Kaczmarek will be participating remotely.

PLEASE TAKE NOTICE, the Joint Drainage Authority of Carver, Wright, and McLeod Counties, sitting as the public drainage authority for Carver-Wright-McLeod Judicial Ditch 4, pursuant to Minn. Stat. § 103E.227 and 103E.806, shall hold a public hearing, in person and remotely, on the petition of Jeffrey Hart, Terri Hart, Shawn Bode, and the Minnesota Board of Water and Soil Resources requesting to Impound, Reroute, and Divert drainage system waters and partially abandon drainage system waters within Sections 5 and 8 of Township 117N, Range 26W, Hollywood Township, Carver County, Minnesota.

The hearing will be conducted at 7:30 a.m. or shortly thereafter as the agenda allows on March 7, 2023, in the Carver County Boardroom of the Carver County Government Center, 600 East 4th Street, Chaska, Minnesota. Certain members of the Joint Drainage Authority may be attending the meeting by interactive video teleconference from their regular meeting place at their county of origin pursuant to statutes section 13D.02. The public may attend the hearing in person or by remote means. If attending the hearing remotely, access codes and instructions for the hearing are as follows:

A copy of the petition and engineer’s report is available for inspection at the office of Kathy Smith, Land Records & Vitals Manager, Carver County Land Records Office, Carver County Government Center, 600 East 4th Street, Chaska, Minnesota, or can be requested via email at ksmith@co.carver.mn.us. At the public hearing, the Joint Drainage Authority will accept public comment regarding the petition and Engineer’s Report. Written comments will be accepted by mail or email received by the Land Records & Vitals Manager, Kathy Smith, up to March 6, 2023. Written comments may be mailed to Carver County Government Center, Property & Financial Services Division, Attn: Kathy Smith, 600 East 4th Street, Chaska, MN 55318 or via email at ksmith@co.carver.mn.us. Any comments received by mail or email prior to the public hearing will be read into the record at the March 7, 2023, hearing.

Join from the meeting link
<https://carvercounty.webex.com/carvercounty/j.php?MTID=m539a1abf841c1d764f5acf1235e2654d>

Join by meeting number
Meeting number (access code): 2495 008 6253
Meeting password: 3bsUbHPJ5m2

Tap to join from a mobile device (attendees only)
+1-415-655-0002, 24950086253## United States Toll

Join by phone
+1-415-655-0002 United States Toll
Global call-in numbers

Join from a video system or application
Dial 24950086253@webex.com
You can also dial 173.243.2.68 and enter your meeting number.

If you are a host, click here and login site to view host information.
Need help? Go to <https://help.webex>.

There is also a link on the Carver County website: [Joint Ditch Meetings | Carver County, MN](#)

Technical Memorandum

To: Carver-Wright-McLeod JD 4 Joint Drainage Authority
From: Chris Otterness PE
Houston Engineering, Inc.
Subject: Petition to Partially Abandon, Impound, and Reroute Portions of the Main Trunk and Lateral 2 on Carver-Wright-McLeod JD 4
Date: July 25, 2022
Project: 6577-0003

BACKGROUND

In 2022, several landowners whose properties drain to Judicial Ditch (JD) 4 petitioned the Carver-Wright-McLeod Joint Board to partially abandon, impound, and reroute portions of JD 4's Main Ditch and Lateral 2. The petition is included as **Appendix A**. These properties are located within Sections 5 and 8 of Hollywood Township in Carver County. The petition was submitted in conjunction with a perpetual conservation easement that the state of Minnesota is in the process of securing on lands owned by the petitioning landowners. The conservation easement was secured as part of the Conservation Reserve Enhancement Program (CREP) and a flowage easement that is being secured on an adjoining property. The proposed drainage system modifications in the petition are to allow for a wetland restoration project within the drainage area currently served by the Main Ditch and Lateral 2.

The specific details of the petitioned project, shown in **Figures 1 and 2 of Appendix A**, include the following:

- Abandonment of 1,648 feet of the JD 4 Main Ditch open channel and replacement with a rerouted open channel ditch alignment of 1,276 feet around the proposed wetland restoration; and
- Abandonment of the most downstream 815 feet of the JD 4 Lateral 2 open channel ditch, and replacement with a rerouted open channel ditch alignment of 723 feet around the proposed wetland restoration.

The following sections further describe the petitioned project's effect on the JD 4 public drainage system and benefiting lands along with other considerations related to long-term operation and maintenance of the drainage system.

UTILITY OF SYSTEM / OUTLET ADEQUACY

The Minnesota Board of Soil and Water Resources (BWSR) analyzed the petitioned project and summarized the results within a design report (see **Appendix B**). A HydroCAD hydrologic model was utilized to determine the effects of the planned wetland restorations along with other drainage system modifications on surrounding properties.

Current Drainage System

The project site is approximately 3 miles east of Winsted in Carver County and is along the JD 4 drainage system. The project area is located west of CSAH 33 and north of the Luce Line Trail. Historic wetland within the project area were extensively drained by both the JD 4 system and private tile drainage systems that utilize JD 4 as an outlet.

The JD 4 Main ditch enters the northwest part of the southern area of the project and flows southeast and then east across the site before turning north and flowing off the site. Lateral 2 enters the southwest part of the southern area of the site and flows north and then northeast before entering the Main. Lateral 2 has three Branches, 1, 2, and 3, which are upstream of the project area.

Proposed Modifications

Main Ditch

The Main Ditch will be modified by abandoning 1,648 feet of open channel ditch between Stations 107+52 and 124+00. The ditch will be realigned with 1,276 feet of new ditch between these Stations, which will be 372 feet shorter in length. To avoid re-stationing the entire Main ditch, the upper junction of the new ditch segment will be co-labeled as Station 120+28/124+00. **Figures 1 and 2 of Appendix A** display these changes and their realignments in relation to the project boundary.

The proposed open channel segment is designed to match the hydraulic capacity of the current as-constructed Main Ditch open channel. Specifically, the new open channel will match the existing Main Ditch cross section, which consists of a 10-foot bottom with minimum 1:1 side slopes. This steep of a bank slope is less likely to slump in area with low hydraulic pressure (for example, where a clay core is being installed in the bank) but more likely to erode in areas with higher hydraulic pressure. For this reason, the applicant will be flattening the west side slope (on the side away from the wetland embankment) to 1.5:1 to increase slope stability. Resloping of the ditch for stability purposes is considered to meet the definition of “repair” under MN 103E.

The applicant located the as-constructed hard channel bottom at the two tie-in points for the new channel during field survey and has matched these elevations.

The proposed grades do not match prior repair plans for the JD 4 open channel (by TKDA in the 1980s). However, given that there has been maintenance on the system in the last ten years and that the hardpan elevation of the channel was verified with modern GPS equipment, it appears likely that

the prior repair plans did not match the as-constructed grade of the system. The proposed grades will link the as-constructed system at the upstream and downstream of the realignment. at a 0.06% grade, slightly increasing the grade of the ditch in this segment as the new length will be slightly shorter.

A 60-inch culvert crossing will be installed across the new alignment of the Main Ditch as a field crossing to replace a 60-inch culvert being removed along the abandoned portion of the ditch.

Lateral 2

Lateral 2 will be modified by abandoning the most downstream 815 feet of open channel ditch between stations 0+00 and 8+15. The ditch will be realigned with 723 feet of new ditch, which will be 92-feet shorter in length, and now outlet into the Main ditch further west at Main ditch station 107+52 rather than Main ditch station 113+56. To avoid re-stationing the entire Lateral 2, its new terminus will occur as Station 0+92, rather than station 0+00. **Figures 1 and 2 of Appendix A** display these changes and their realignments in relation to the project boundary. The proposed open channel segment is designed to match the hydraulic capacity of the current Lateral 2 open ditch. Specifically, the new open channel ditch will match the existing cross-section with 6-foot bottom width and minimum 1:1 side slopes. The ditch will have a 0.04% longitudinal grade, matching the as-constructed grades discovered during field survey. The applicant will be increasing the west side slope (on the side away from the wetland embankment) to 1.5:1 to increase slope stability.

Based on the information submitted, the Main Ditch and Lateral 2 modifications will continue to provide drainage function consistent with current conditions to the lands along the JD 4 public drainage system upstream of the petitioner's property where modifications are proposed.

BENEFITS

Analysis results provided within the petitioner's design are displayed for the wetland restoration for the 2-, 10-, 25-, and 100-year return periods in **Table 1** below.

Table 1 – Modeling Result for Proposed (Restored) Condition

Return Period	Peak Flood Stage Elevation (ft)	Storage Volume (Ac. ft.)	Peak Discharge (cfs)
2-yr	991.8	7.1	1.2
10-yr	992.0	13.8	2.2
25-yr	992.1	18.7	3.6
100-yr	992.4	27.1	14.6

The provided analysis modeled only the 97.4 acre direct contributing drainage area to the wetland restoration and does not predict peak stages or flows resulting from out of bank JD 4 flood conditions,

according to the Design Report (Appendix B). The provided design report did not include analysis of the existing conditions for comparison. However, based on the storage volumes provided by the project it is anticipated that the flood storage provided by wetland restoration will attenuate peak flows along the JD 4 Main Ditch and decrease peak flows downstream in JD 4. While the 97.4 acre drainage area flowing through the wetland is small compared to the total upstream drainage area served by JD 4 of approximately 2,030 acres, it does represent an addition of temporary water storage which will reduce peak flows and improve water quality of runoff discharged into JD 4.

As previously stated, the rerouted segments of the Main Ditch and Lateral 2 were designed to maintain the capacity of the existing segments they are replacing. In this way, benefits to upstream landowners are maintained.

Overall, the information regarding the proposed project provided in the petition shows an increase in temporary storage leading to lower peak flood flows on JD 4, a reduction of sediment and nutrients delivered downstream improving water quality, and creation of desirable wildlife habitat while maintaining drainage. Therefore, the petitioned project provides a public and private benefit.

DAMAGE AVOIDANCE

The Design Report (**Appendix B**) mentions several measures to protect the JD 4 drainage system at the project outlet locations. There are two proposed outlets into JD 4 from the project. They include the 15" HDPE outlet into the JD 4 Main ditch and the 15-foot wide secondary spillway that outlets towards JD 4 Lateral 2. The petitioner's submittals indicate that erosion and sediment control associated with the outlets will be sufficiently managed.

In addition to the rerouting of the Main Ditch and Lateral 2, embankments are proposed along the west and north sides of the planned wetland to limit lateral drainage effect impacts from the ditch. Detailed information on the embankments were provided by the petitioner in the form of construction plans dated 6-14-2022. The embankments will include core trenches and cutoff walls, as well as 12-foot minimum separation on the south side of the JD 4 ditch. Where a north spoil bank is required along JD 4, the spoil bank includes 8-feet of flat spoil with 3:1 slopes on either side. These modifications will allow for continued access to the JD 4 Main Ditch and Lateral 2 for future inspection and maintenance requirements.

ENVIRONMENTAL IMPACTS

According to the petition and supporting documents, this project provides an opportunity to restore natural wetlands and create a large block of desired wildlife habitat over an approximate area of 111 acres. Further, this project will retain and provide water quality treatment from a drainage area over 97.4 acres, leading to improved water quality through reducing nutrient loads. Finally, downstream of this project there will be reduced erosion potential due to lower peak flows in the JD 4 system. Because of these features, the petitioned project provides a beneficial environmental benefit.

EASEMENTS

Construction of the proposed project will be paid via conservation programs. The drainage authority will be responsible for future operation and maintenance of the rerouted segment of open ditch on the JD 4 system. These costs will not exceed current existing maintenance costs as it is a shorter overall length.

The petitioners recognize the drainage authority's need for and legal right of future access to inspect and maintain the rerouted portions of JD 4. For all rerouted segments of public conveyance that lie within the project bounds, the conservation easement, Minnesota statutes 103F.515, subd. 4 requires that the grantor and any successor fee owner of the easements allow for access and any necessary inspections and maintenance of public drainage systems existing within their boundaries.

CONCLUSION / RECOMMENDATION

This project is expected to reduce peak flows along JD 4 while providing natural habitat and water quality improvements. The applicant has submitted information demonstrating these public benefits. We recommend the joint board of county commissioners grant the petitioners request complete the petitioned drainage modifications to the JD 4 system as shown in **Figures 1 and 2 of Appendix A**, contingent upon the following:

1. Execution of a project-specific maintenance agreement for responsibility for ditch maintenance through the project area for three years following the construction of the realignment.
2. Preparation of record drawings; and
3. Formal acceptance by the County.

REFERENCES

- **Appendix A** – Petition for Impounding, Rerouting, and Diverting Drainage System Waters and Partial Abandonment of a Drainage System Pursuant to Minnesota Statutes 103E.227 and 103E.806, 3/24/2022
- **Appendix B** – Design Report: Judicial Ditch 4 Restoration Project, 6/13/2022, with updated plans 7/22/202

APPENDIX A- PROJECT PETITION

Before the Joint Board of Commissioners Acting
as Drainage Authority for Carver, McLeod and
Wright Counties - Judicial Ditch No. 4

**Petition for Impounding, Rerouting, and Diverting
Drainage System Waters and Partial Abandonment of a
Drainage System Pursuant to Minnesota Statutes
103E.227 and 103E.806**

1. Judicial Ditch No. 4 (JD 4) is a drainage system located in Carver, McLeod and Wright Counties, Minnesota.
2. The undersigned petitioning landowners are the owners of properties located in portions of the Southeast $\frac{1}{4}$ of Section 5 and the North $\frac{1}{2}$ of Section 8, Township 117 North, Range 26 West, Hollywood Township, Carver County, Minnesota.
3. The undersigned petitioners hereby petition the Joint Board of Commissioners for JD 4, acting as the drainage authority, to partially abandon and to re-route portions of JD 4 located within the above described properties.
4. The petition is offered as a result of a perpetual easement that the State of Minnesota is in the process of securing on lands owned by the petitioning landowner. Said easements will be located as follows:
 - a. Section 5 - The Southwest $\frac{1}{4}$ of the Southwest $\frac{1}{4}$ of the Southeast $\frac{1}{4}$.
 - b. Section 8 - Part of the East $\frac{1}{2}$ of the Northwest $\frac{1}{4}$ and part of the West $\frac{1}{2}$ of the Northeast $\frac{1}{4}$.
5. That within the secured easements will be the restoration of drained wetlands and adjoining uplands (Project).
6. That existing within the Project area are portions of the JD 4 Main open ditch and the Lateral 2 open ditch.
7. To facilitate restoration of Project wetlands and to maintain the drainage benefits of surrounding properties it will be necessary to reroute portions of the JD 4 Main open ditch and the Lateral 2 open ditch.
8. More specifically, the petition seeks to modify the JD 4 drainage system as follows:
 - a. JD 4 Main is an open ditch that is approximately 1,750 feet in length as it traverses through the Project area.
 - i. That pursuant to MN Statute 103E.227, the petition requests that a portion of the JD 4 Main be rerouted around the north edge of planned Project wetland no. 1. The petition proposes to reroute the JD 4 Main with approximately 1,276 feet of new open ditch. The reroute will begin at current Station 107+52 and will rejoin the existing ditch at Station 124+00. The new alignment will decrease the overall length of the JD 4 Main within the Project area by 372 feet. To avoid re-stationing the entire Main ditch, its new terminus (new junction with the main ditch) will be co-labeled as Station 120+28/124+00.
 - ii. That pursuant to MN Statutes 103E.806, the petition requests that the current reach of JD 4 Main between existing Station 107+52 and Station 124+00 be abandoned and removed from the drainage system as it will no longer serve a benefit or purpose for the drainage system.
 - b. Lateral 2 is an open ditch that is approximately 2,400 feet in length as it traverses through the Project area. At its current Station 0+00, it terminates in the central region of the Project where it junctions with Station 113+56 of the Main ditch.
 - i. That pursuant to MN Statute 103E.227, the petition requests that the lower portion of Lateral 2 be rerouted around the west edge of planned Project wetland no. 1. The petition proposes to reroute Lateral 2 with approximately 723 feet of new open ditch. The reroute will begin at current

station 8+15 and terminate into the Main ditch approximately 585 feet further west than it does currently. Its new terminus will occur at Station 107+52 of the Main ditch. To avoid re-stationing the entire Lateral 2 ditch, its new terminus will occur at Station 0+92, instead of Station 0+00, as the reach of new ditch will be 92 feet shorter in length than the reach it will be replacing.

- ii. That pursuant to MN Statutes 103E.806, the petition requests that the current reach of Lateral 2 that lies between existing Station 0+00 and Station 8+15 be abandoned and removed from the drainage system as it will no longer serve a benefit or purpose for the drainage system.
9. That for the following reasons, the drainage authority for JD 4 be responsible for future operation and maintenance of the above described modified and rerouted portions of the Main and Lateral 2 ditches:
 - a. The modified, rerouted portions of the Main and Lateral 2 ditches will continue to provide drainage benefits to assessed lands within the JD 4 drainage system and maintenance of these modified ditches will be simpler, more effective and have a greater degree of security if managed by the drainage authority,
 - b. The costs to maintain the modified portions of the Main and Lateral 2 ditches will be no greater than the cost to maintain what exists currently for these portions of the JD 4 drainage system.
10. That no other portions of the JD 4 drainage system will be modified as part of the Project. They will continue to function in their current condition and be operated and maintained by the drainage authority.
11. That other Project components not identified as being part of the JD 4 drainage system be managed and maintained in accordance with terms of the applicable conservation easement.
12. That attached, as:
 - a. Figure 1 is a map of the existing JD 4 drainage system located within the general Project area.
 - b. Figure 2 is a map of the proposed JD 4 drainage system within the general Project area, after completion of the Project.
 - c. Figures 3 are revised profiles for the proposed modified reaches of the Main and Lateral 2 ditches within the Project area, as described herein by this petition.
13. The petition does not seek through separable repairs the use of any drainage system funds for construction of the Project. Those costs will be the responsibility of the property owner for which conservation easement(s) will be or have been conveyed. The property owner will utilize conservation program payments to pay for the construction costs.
14. That pursuant to Subd. 2 of 103E.227, a bond for the Project will not be required as the petition is filed by a state agency or the local Soil and Water Conservation District in support of this Project and its property owners/co-petitioners.
15. Because the proposed Project will not significantly benefit the JD 4 drainage system the petitioning property owners agree, if required by the drainage authority, to utilize eligible conservation program payments and be responsible for the costs associated with conducting the associated drainage hearing for this Project.
16. That the proposed JD 4 drainage system modifications have been discussed with the owners of the properties in which proposed drainage system modifications will be occurring. The landowners acknowledge the drainage authority's need for and legal right of future access to inspect and maintain the rerouted portions of JD 4, as requested in this petition. If required, the affected landowners agree to convey an easement and right-of-way to the drainage authority providing future rights for access, inspection, and maintenance for the realigned

reaches of the drainage system and they request said easement and right-of-way documents be prepared and secured after construction of the Project and be a condition of the Project's approval. The petitioning landowner agrees to be responsible for the costs and to utilize Project funds to secure the necessary right-of-way easement.

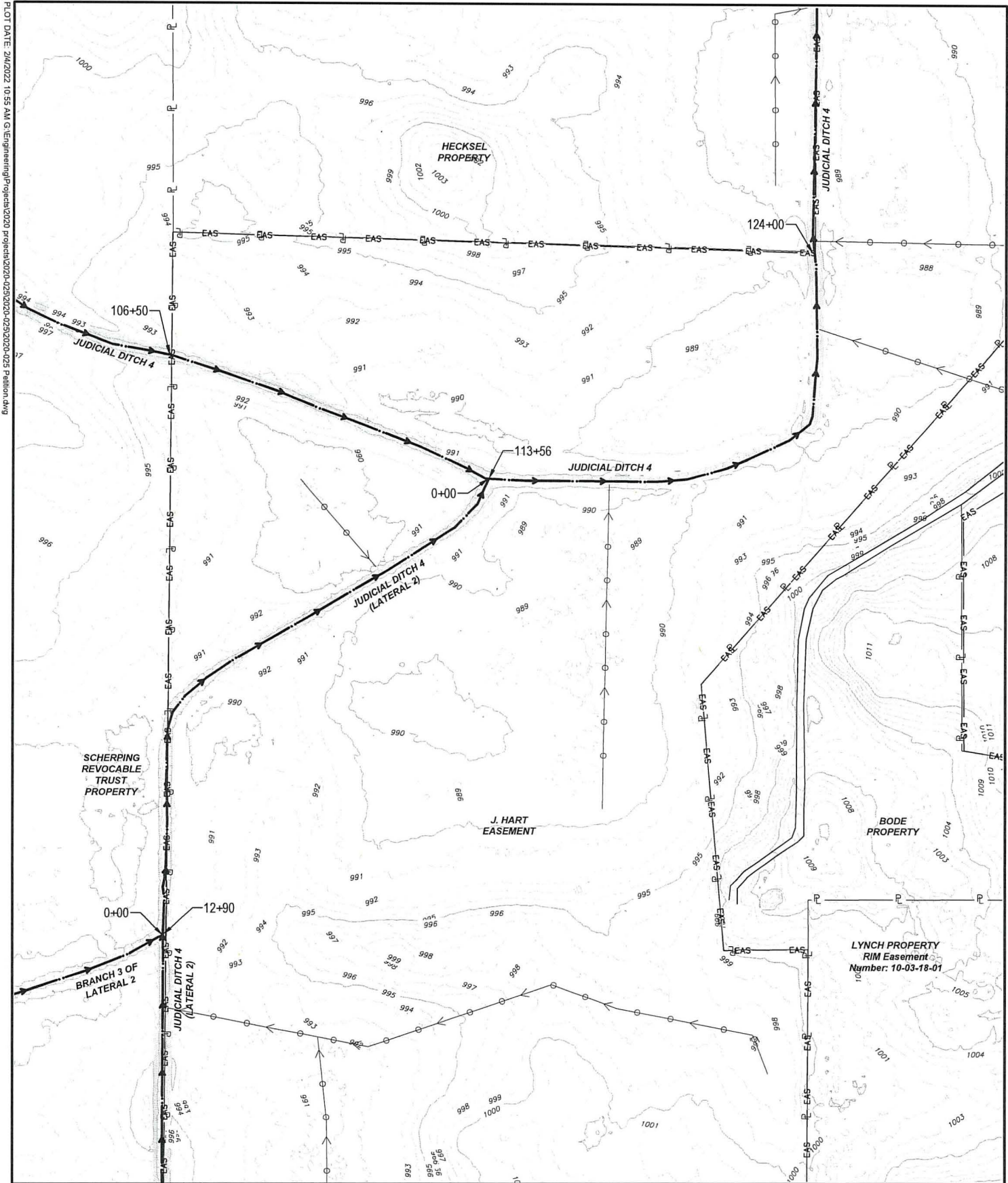
17. That no public water work permit, water use permit, or other permits required under Minnesota Statutes 103G are needed for this project.
18. That either as part of the submitted petition or shortly after the drainage authorities accepts the petition, a design report and preliminary construction plan will be provided by the petitioners to the drainage authority for its consideration and review prior to the scheduled hearing.

Dated this 24th Day of March, 2022

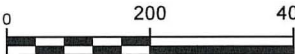

Jeffrey Hart (for Jeffrey D and Terri D Hart)


Shawn Bode


Sharon Doucette, BWSR Easement Section Manager





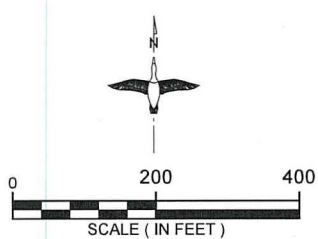
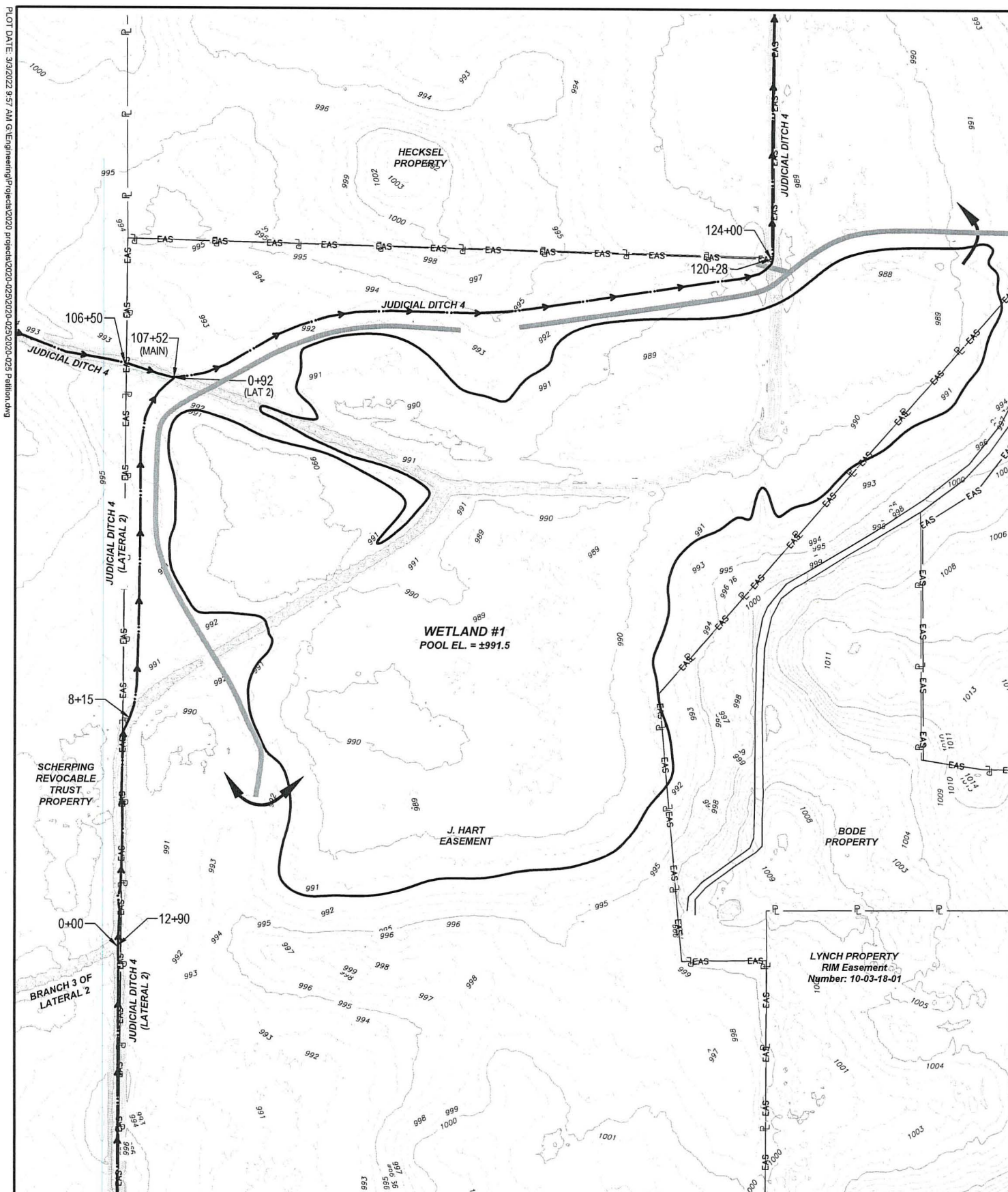


SCALE (IN FEET)

LEGEND

	PUBLIC DITCH
	PRIVATE TILE
	APPROXIMATE PROPERTY LINE
	CONSERVATION EASEMENT

JD 4 - DITCH MODIFICATIONS - CARVER, MCLEOD & WRIGHT COUNTIES		02/04/2022
EXISTING CONDITIONS		FIGURE 1



LEGEND

- | | |
|---|------------------------------|
|  | PUBLIC DITCH |
|  | PRIVATE TILE |
|  | APPROXIMATE
PROPERTY LINE |
|  | CONSERVATION EASEMENT |
|  | PROPOSED SPILLWAY/OUTLET |
|  | PROPOSED EMBANKMENT |
|  | PROPOSED POOL |

JD 4 - DITCH MODIFICATIONS - CARVER, MCLEOD & WRIGHT COUNTIES

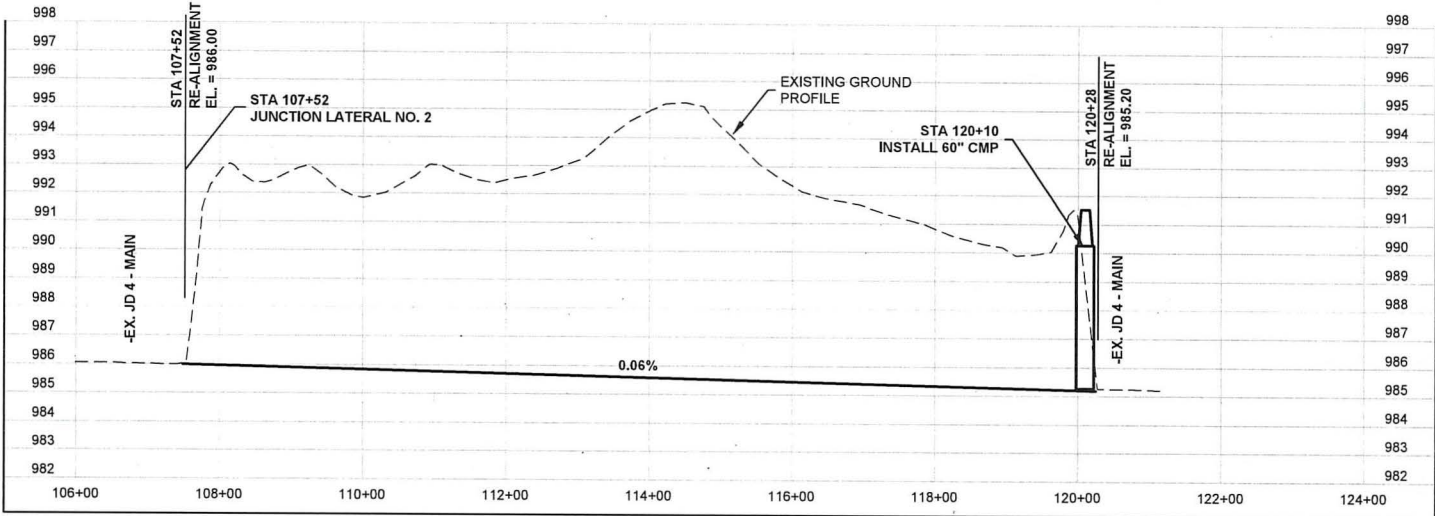
PROPOSED CONDITIONS



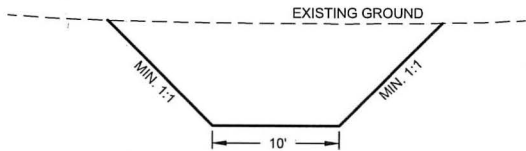
02/04/2022

FIGURE 2

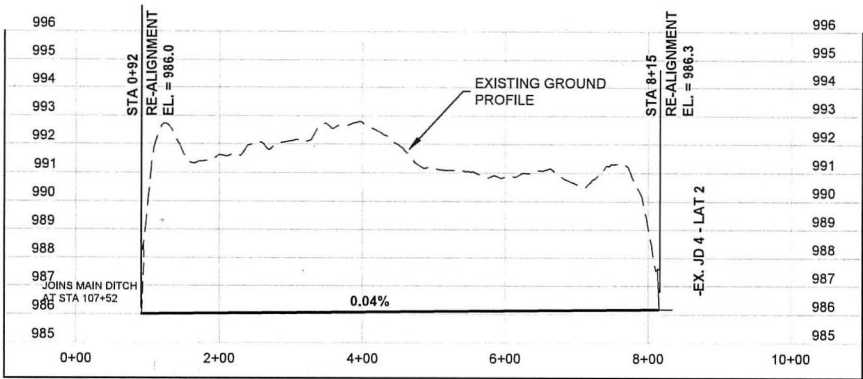
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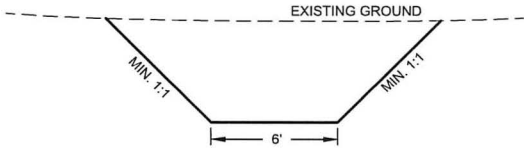
PROFILE ALONG CENTERLINE OF PROPOSED RE-ALIGNMENT OF JD 4 - MAIN
 SCALE 1" = 200'



X-SECTION OF JD 4 MAIN
 NOT TO SCALE



PROFILE ALONG PROPOSED RE-ALIGNMENT OF JD 4 - LAT 2
 SCALE 1" = 200'



X-SECTION OF LATERAL NO. 2
 NOT TO SCALE

APPENDIX B- DESIGN REPORT

DESIGN REPORT

Judicial Ditch No. 4 of Carver, Wright and McLeod Counties CREP Wetland Restoration Project

Sections 5 and 8 Hollywood Township, Carver County

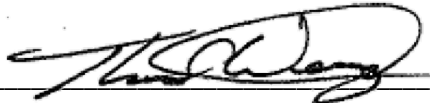
Project # 2020-025

June 13, 2022

Prepared By

Thomas A Wenzel, P.E.
Mn Board of Water and Soil Resources
520 Lafayette Road North
St. Paul, MN 55155
(651) 297-0883

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly Registered Professional Engineer under the laws of the State of Minnesota.



Thomas A Wenzel
Minn. Registration Number: 22148

Date: 6/13/2022

I. BACKGROUND INFORMATION

It is proposed to restore drained wetlands within an area currently drained and benefited by Judicial Ditch 4 of Carver, Wright and McLeod Counties (JD 4). The Minnesota Board of Water and Soil Resources (BWSR), the state agency that administers the Reinvest in Minnesota (RIM) Reserve program, is working with the Carver Soil and Water Conservation District (SWCD), and the petitioning landowners to implement this proposed project. Included within the project area are both the Main and Lateral 2 ditches of JD 4.

The project proposes to restore identified wetlands by rerouting portions of the Main and Lateral 2 ditches and disabling/abandoning existing public and private drainage systems within the site. The work will occur within an approximate 111.0-acre perpetual conservation easement being secured as part of Conservation Reserve Enhancement Program (CREP) and a 1.3-acre flowage easement that is being secured on an adjoining property. These easements are being secured for the purpose of restoring drained wetlands and associated surrounding upland areas. The easement is located within a portion of the southeast quarter of Section 5 and north half of Section 8, all in Hollywood Township in Carver County.

This report will show that the proposed restorations will not negatively impact properties upstream or downstream of the project area nor impair the benefits provided by the JD 4 drainage system to those adjoining properties. The intended functions of the planned wetland restorations are to improve water quality, wildlife habitat, and where possible, flood control benefits to the drainage system and surrounding properties.

A petition that requests necessary modifications and abandonments of portions of JD 4 has been signed by the project landowner's and BWSR and has been filed with the Drainage Authority for JD 4. If approved by the Drainage Authority, the project will be planned for construction in 2022.

II. SITE EVALUATION

A. Existing Conditions

The site includes drained depressional wetlands that have been altered through a series of private and public drainage systems. The public drainage system includes the Main and Lateral 2 ditches of JD 4. The location of these drainage features within the site along with the site's topography are depicted on the figures included with the submitted petition. Prior to conveyance of the conservation easements, the land-use within the project area was primarily agricultural.

B. Site Investigations

A detailed topographic survey and geotechnical investigations have been performed at the project site to evaluate the feasibility and design of the planned wetland restorations. Vertical control for the survey work is in mean sea level datum (NGVD 1988). The elevation and description of the benchmarks used are shown on the preliminary construction plans included as part of this report.

III. PROPOSED DRAINAGE SYSTEM MODIFICATIONS

The JD 4 Main ditch enters the northwest part of the southern area of the project. It generally flows from west to east before turning north and running along the west edge of northern project area. The segment of the Main ditch within the southern project area is approximately 1,750 feet in length (station 106+50 to 124+00) and helps drain a large depressional wetland that is proposed for restoration. The petition proposes to re-align a portion of that ditch with approximately 1,276 feet of new ditch around the north edge of the planned wetland. In addition to being 327-feet shorter in length, the new ditch will be constructed with a 10-foot bottom width and 1:1 side slopes to match existing dimensions of the ditch. That part of the Main ditch from existing stations 107+52 to 124+00 (1,648-feet) will be abandoned as it no longer serves a useful or beneficial purpose to the drainage system.

The Lateral 2 ditch enters the southwest part of the southern area of the project. It generally flows from south to north before outletting into the Main ditch at its station 113+56. The segment of the Lateral 2 ditch within the southern project area is approximately 1,290-feet in length (station 0+00 to 12+90) and also helps drain the large

depressional wetland that is proposed for restoration. The petition proposes to realign the lower portion of Lateral 2 with 723-feet of new ditch around the west edge of the planned wetland. The re-aligned ditch will outlet further west into the Main ditch at its station 107+52. In addition to being 92-feet shorter in length, the new ditch will be constructed with a 6-foot bottom width and 1:1 side slopes to match existing dimensions of the ditch. That part of Lateral 2 ditch from existing stations 0+00 to 8+15 (815-feet) will be abandoned as it no longer serves a useful or beneficial purpose to the drainage system.

IV. OTHER PROPOSED IMPROVEMENTS

Following is a discussion of the work necessary to restore the project wetland affected by JD 4. As previously mentioned, the location and scope of this wetland can be seen within the submitted petition figures and within the preliminary construction plans which are being provided as part of this design report. The planned restoration involves breaking private tile, plugging and filling ditches, constructing earthen embankments, installing outlet structures, and realigning segments of both the Main and Lat 2 ditches of JD 4.

In addition to rerouting the Main and Lateral ditches of JD 4, embankments are proposed along the west and north sides of the planned wetland. The embankments will provide separation between the planned wetland and the re-aligned ditches. Core trenches and cutoff walls will be incorporated into a majority of the embankment lengths where soils are more pervious and control of wetland seepage into the adjoining ditch system through lateral effect will be of concern.

The planned main wetland within the site is proposed to be restored with a normal water surface elevation of 991.5. This will result in a restored pool approximately 27.6 acres in size and about 2.0-feet in depth. The planned wetland has a 97.4-acre direct contributing drainage area. Water levels within the wetland will be controlled by a 15-inch HDPE culvert which will be located at the northeast corner of the wetland. A 15-foot-wide secondary spillway will be located in the wetlands southwest corner and will have a control or crest elevation of 992.0. A primary purpose for the secondary spillway is to allow the planned wetland to remain hydrologically connected to the upstream portions of the JD 4 ditch system and allow occasional out of bank ditch flows to enter the site and stored as part of large runoff events. The smaller diameter principal outlet on the north end will provide some amount of rate control and increased residence times for some or portions of runoff events that enter into the site. Between the invert of the planned 15-inch outlet and the secondary spillway, a storage volume of about 14 acre-feet will exist.

Currently, a crossing with a 60-inch CMP exists across the Main ditch for the landowner to access lands to the northwest portion of his property. The project design includes a new culvert crossing on the north end of the planned wetland using the same size pipe. The culvert will be located at approximate station 119+82 of the Main ditch with invert elevations matching the observed ditch bottom at that location (elevation of 985.2).

Other work is planned within the general easement area to disable private tile drainage systems and restore additional wetland areas that are not directly affected by JD 4.

V. HYDROLOGIC/HYDRAULIC ANALYSIS

Three main goals were considered as part of the project's design. They were:

1. To develop a design that will restore the planned wetland that, to the extent possible, mimics historic conditions for the area.
2. To store and treat as much runoff as possible within the planned wetland in attempt to provide improved wildlife habitat, water quality, flood control, and indirect drainage benefits to remaining parts of JD 4.
3. To not cause adverse hydrologic impacts to adjoining, non-Project properties and ensure that JD 4 continues to drain and provide benefits to those adjoining areas.

To ensure these goals were met, an in-depth design analysis was conducted. A flood routing analysis was performed that determined peak flow rates, flood elevations, storage volumes and durations for a variety of storm events and there associated impacts to the wetland. Flood routing/modeling was performed using Hydro CAD Storm water Modeling software, Version 10, Build 22 along with the MSE 3, 24-Hr storm distribution.

Modeling used the most current rainfall data for the site based on NOAA Atlas 14 Precipitation Frequency Atlas, Volume 8. The modeling assumed that evapotranspiration losses within ponded areas were negligible during the flooding events. Included in **Table 1** is the rainfall data used in this analysis. The results of the hydrologic modeling of the wetland under proposed conditions are shown in **Table 2**.

Table 1. Rainfall Summary

Rainfall Frequency Event	Precipitation Amount (inches)
2-year – 24 hour	2.84
10-year – 24 hour	4.20
25-year – 24 hour	5.26
100- year – 24 hour	7.18

Table 2. Modeling Result – Proposed (Restored) Condition^{1, 2, 3}

Storm Event	Peak Flood Stage Elevation (Ft)	Storage Volume (Ac. Ft.)	Peak Discharge (cfs)
2-year, 24-hour	991.8	7.1	1.2
10-year, 24-hour	992.0	13.8	2.2
25-year, 24-hour	992.1	18.7	3.6
100-year, 24- hour	992.4	27.1	14.6

¹ Assumes the wetland water surface is at normal pool (elevation 991.5) prior to the start of storm event.

² Secondary spillway flow to the southwest occurs at elevation 992.0.

³ The data shown represents model results only from the 97.4 acre direct contributing drainage area to the project. The model does not predict peak stages or flows resulting from out of bank JD 4 flood conditions.

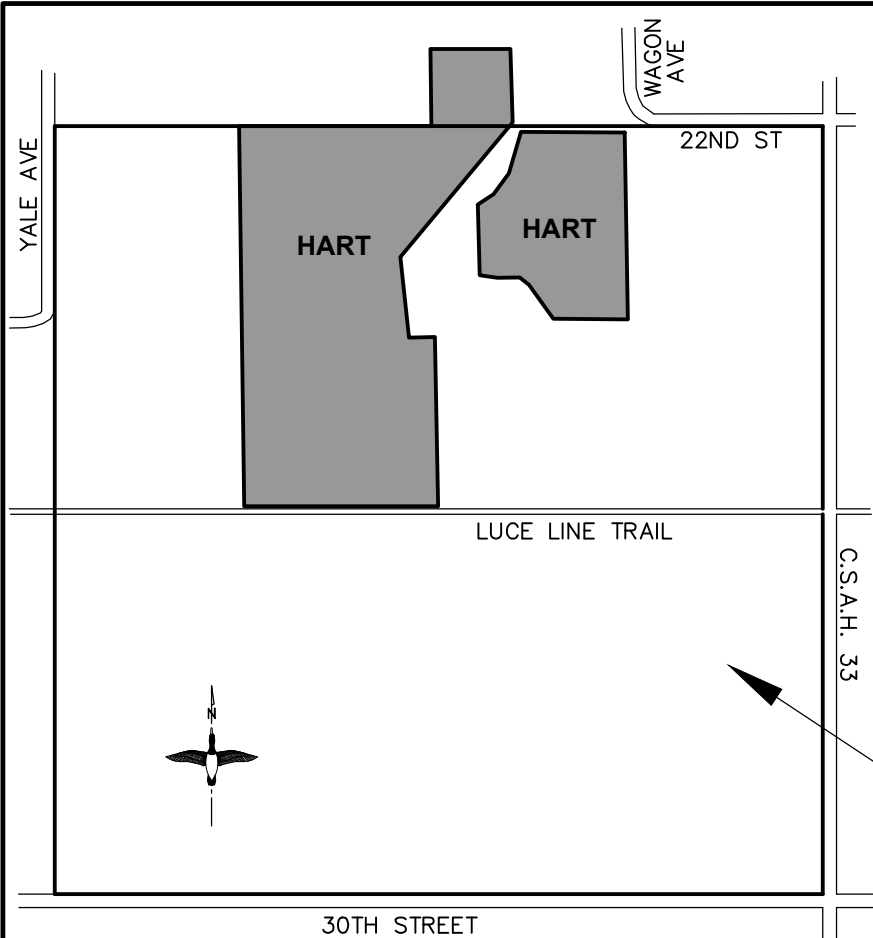
The modeling results show that the proposed wetland will have no adverse impacts to surrounding properties. In fact, the proposed restoration will provide reduced flows into the downstream JD 4 drainage systems. This will likely lead to increased drainage system performance for areas downstream of the project.

VI. ENGINEER'S FINDINGS AND RECOMMENDATIONS

The restoration of easement lands within the project area should have a no impact on the performance of the JD 4 drainage system or on adjoining properties. All property within the project/easement area will be converted from tilled/ditched lands to native prairie grasses and shallow wetlands which will result in reduced runoff from these areas.

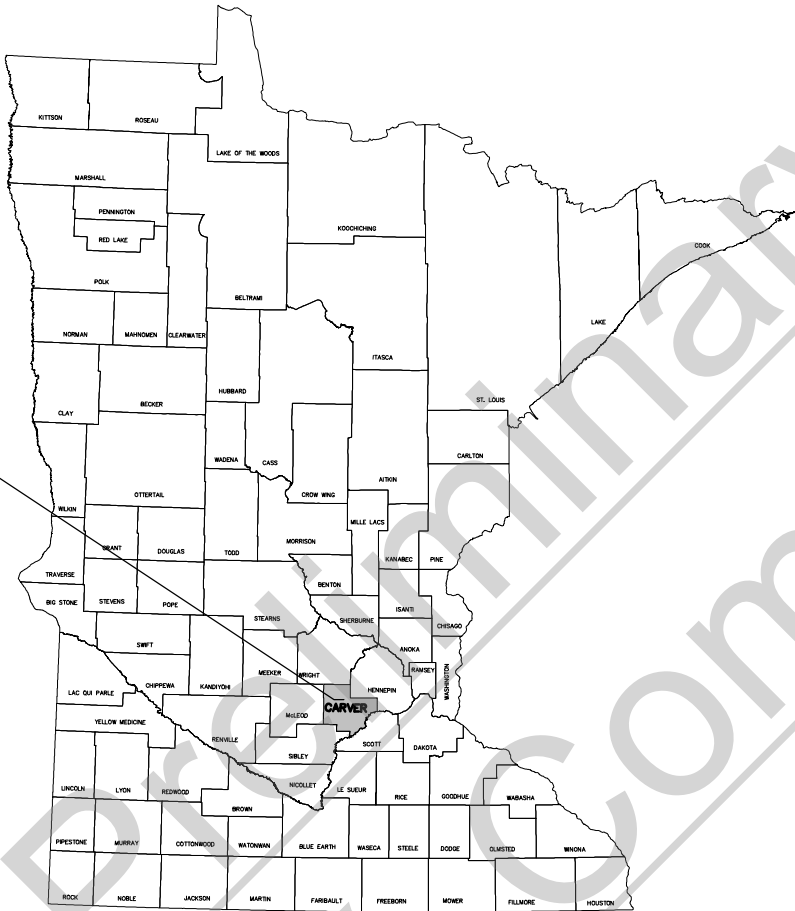
The proposed project will not impair the condition of the JD 4 drainage system or deprive affected landowners of its benefit. There will be no change in hydraulic capacity of these ditch systems as a result of these planned reroutes. The proposed restored wetland is large and provides opportunities for increased detention storage and rate control as part its planned outlets.

The petition is not seeking through separable repairs the use of drainage system funds for construction of the project. The property owner will utilize conservation program practice payments to pay for these construction costs.



LOCATION MAP
SCALE: 1" = 1320'

HART
CREP WETLAND RESTORATION
COUNTY **SECTION** **TOWNSHIP** **RANGE**
CARVER **8** **117 N. 26 W.**



DRAWING SHEET INDEX	
DESCRIPTION	NUMBER
COVERSHEET	1
EROSION CONTROL DETAILS	2
PLANVIEW AND VEGETATIVE SPILLWAY 2 DETAILS	3
SUGGESTED SEQUENCING PLAN	4
PHASE ONE SEQUENCEING PLAN WITH TYPICAL AND SECTIONS	5
PHASE TWO SEQUENCING TYPICAL AND SECTIONS	6
PHASE THREE SEQUENCEING PLAN WITH TYPICAL AND SECTIONS	7
JUDICIAL DITCH 4 CONSTRUCTION DETAILS	8
JUDICIAL DITCH 4 60-INCH CMP DETAILS	9
EMBANKMENT 2 PROFILE AND DETAILS	10
EMBANKMENT 1 PROFILE AND DETAILS	11
15-INCH HDPE FOR WETLAND 1 CONSTRUCTION DETAILS	12
SCRAPE DETAILS	13
TILE RE-ALIGNMENT AND OUTLET DETAIL	14
TILE BLOCK-REMOVAL DETAILS	15

CONSTRUCTION REQUIREMENTS

- THE PROJECT SPECIFIC CONSTRUCTION AND MATERIAL SPECIFICATIONS PREPARED BY THE MINNESOTA BOARD OF WATER AND SOIL RESOURCES (BWSR) ALONG WITH THE 2016 EDITION OF THE MINNESOTA DEPARTMENT OF TRANSPORTATION (MnDOT) "STANDARD SPECIFICATIONS FOR CONSTRUCTION" SHALL BE USED FOR CONSTRUCTION. IF ANY CONFLICTS SHOULD ARISE BETWEEN THESE DOCUMENTS, THE PROJECT SPECIFIC CONSTRUCTION AND MATERIAL SPECIFICATION PREPARED BY BWSR SHALL GOVERN.
- ANY CHANGES TO THE DRAWINGS OR SPECIFICATIONS MUST BE AUTHORIZED BY THE PROJECT ENGINEER OR ENGINEER'S REPRESENTATIVE.
- BEFORE START OF CONSTRUCTION, THE OWNER OF ANY UTILITIES INVOLVED MUST BE NOTIFIED. THE CONTRACTOR / EXCAVATOR IS RESPONSIBLE FOR GIVING THIS NOTICE BY CALLING "GOPHER STATE ONE-CALL" AT (651) 454 - 0002 (TWIN CITIES METRO AREA) OR (800) 252-1166 (ALL OTHER LOCATIONS) AT LEAST 48 HOURS PRIOR TO ANY EXCAVATION.
- THE OWNER IS RESPONSIBLE FOR SECURING ALL NECESSARY LAND RIGHTS, PERMITS AND LICENSES REQUIRED TO COMPLETE THE WORK IN ACCORDANCE WITH ALL LOCAL, STATE AND FEDERAL LAWS.

CONSTRUCTION CERTIFICATION STATEMENT

I HEREBY CERTIFY THAT THIS PROJECT HAS BEEN COMPLETED AND THAT, TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, JUDGEMENT, AND BELIEF, A FINAL INSPECTION OF THE CONSTRUCTION PROJECT HAS BEEN PERFORMED, THE PRACTICE HAS BEEN INSTALLED, AND THE WORK COMPLETED IS IN ACCORDANCE WITH THE APPROVED PROJECT CONSTRUCTION PLANS AND SPECIFICATIONS AND THAT ANY CHANGES TO THE PLANS AND SPECIFICATIONS ARE AS NOTED.

SIGNATURE: DATE:

COOPERATORS AGREEMENT STATEMENT

I HAVE REVIEWED AND UNDERSTAND THE PLANS AND SPECIFICATIONS AND AGREE TO COMPLETE THE WORK ACCORDINGLY. FAILURE TO MEET THESE PLANS AND SPECIFICATIONS MAY JEOPARDIZE ANY COST SHARE APPLIED FOR. I UNDERSTAND THAT IT IS MY RESPONSIBILITY TO SECURE ALL NECESSARY PERMITS AND LICENSES, AND TO COMPLETE THE WORK IN ACCORDANCE WITH ALL LOCAL, STATE, AND FEDERAL LAWS. MODIFICATIONS OF THESE PLANS OR SPECIFICATIONS MUST BE APPROVED BY PROJECT ENGINEER OR ENGINEER'S REPRESENTATIVE PRIOR TO INSTALLATION. I ASSUME RESPONSIBILITY FOR NEGOTIATIONS AND AGREEMENTS WITH THE CONTRACTORS.

SIGNATURE: DATE:

NRCS DESIGN CERTIFICATION STATEMENT

BY SIGNING THIS PLAN, I HEREBY CERTIFY THAT THIS DESIGN HAS BEEN COMPLETED IN ACCORDANCE WITH ALL APPLICABLE NRCS STANDARDS AND SPECIFICATIONS AND IS IN COMPLIANCE WITH PERMITS (NEM PART 505, SUBPART A).

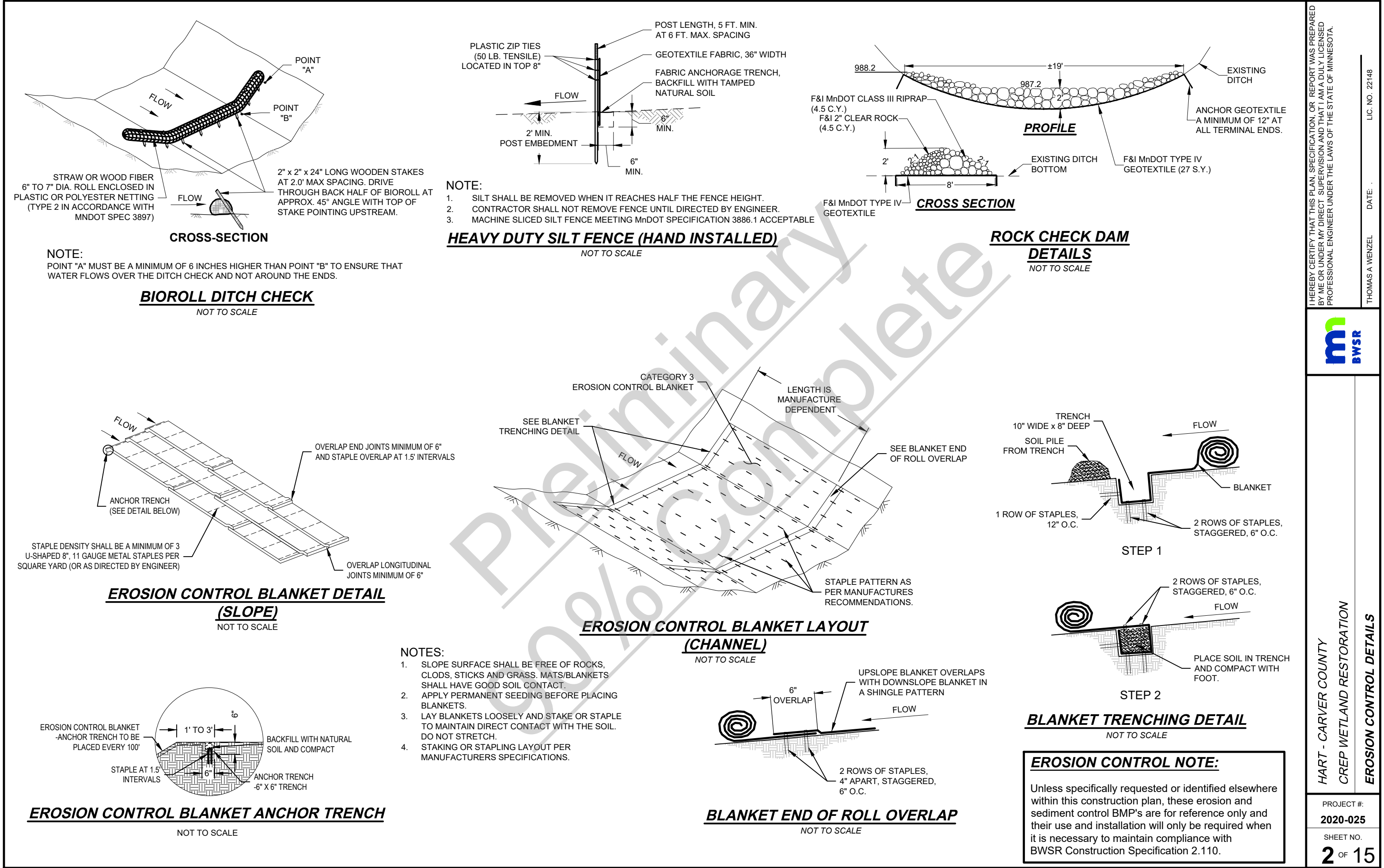
ENGINEERING JOB CLASS : IV

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				VERT DATUM: NAVD88	SURVEYED BY: KB,SD	DESIGNED BY: TAW	2020-025
				GEODETIC CONTROL REF: MNDOT DISK "MCDONALD"	DRAWN BY: SD	DRAWN BY: KMB	SHEET NO.
				CONTROL EL.: 982.28	CHECKED BY: TAW	CHECKED BY: TAW	1 OF 15

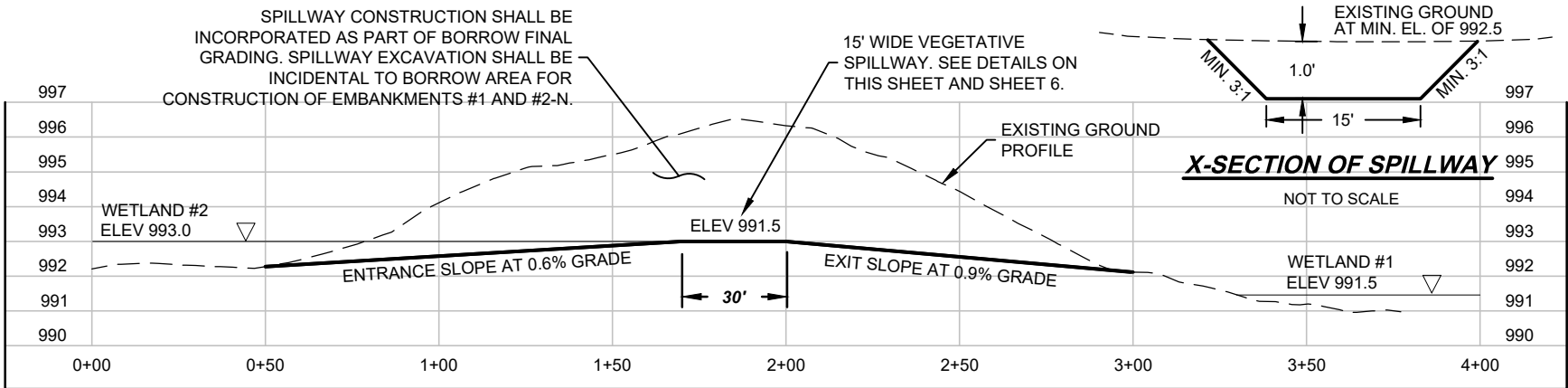
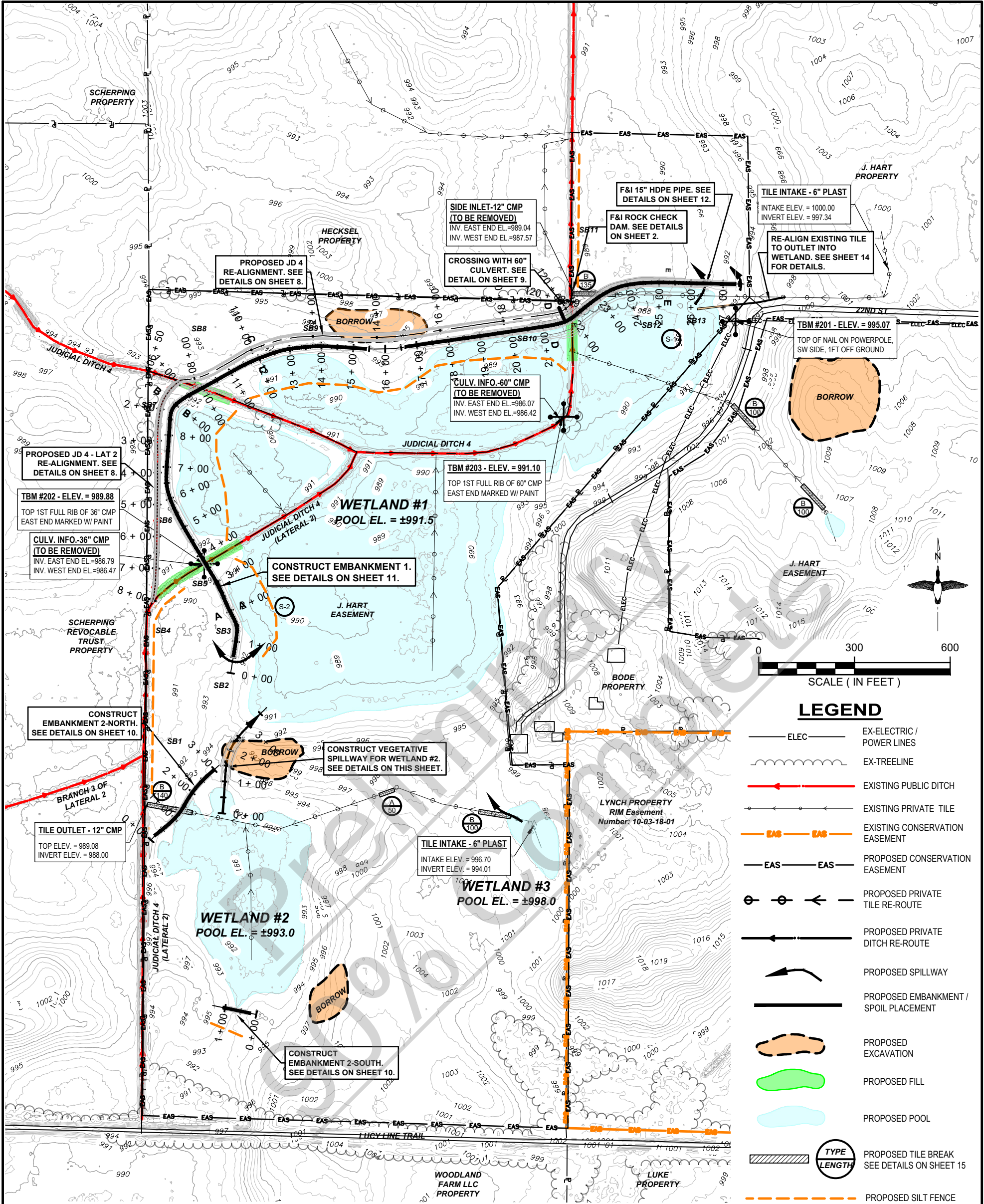
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

THOMAS A WENZEL DATE: . LIC. NO. 22148

HART - CARVER COUNTY
CREP WETLAND RESTORATION
COVERSHEET



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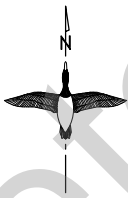
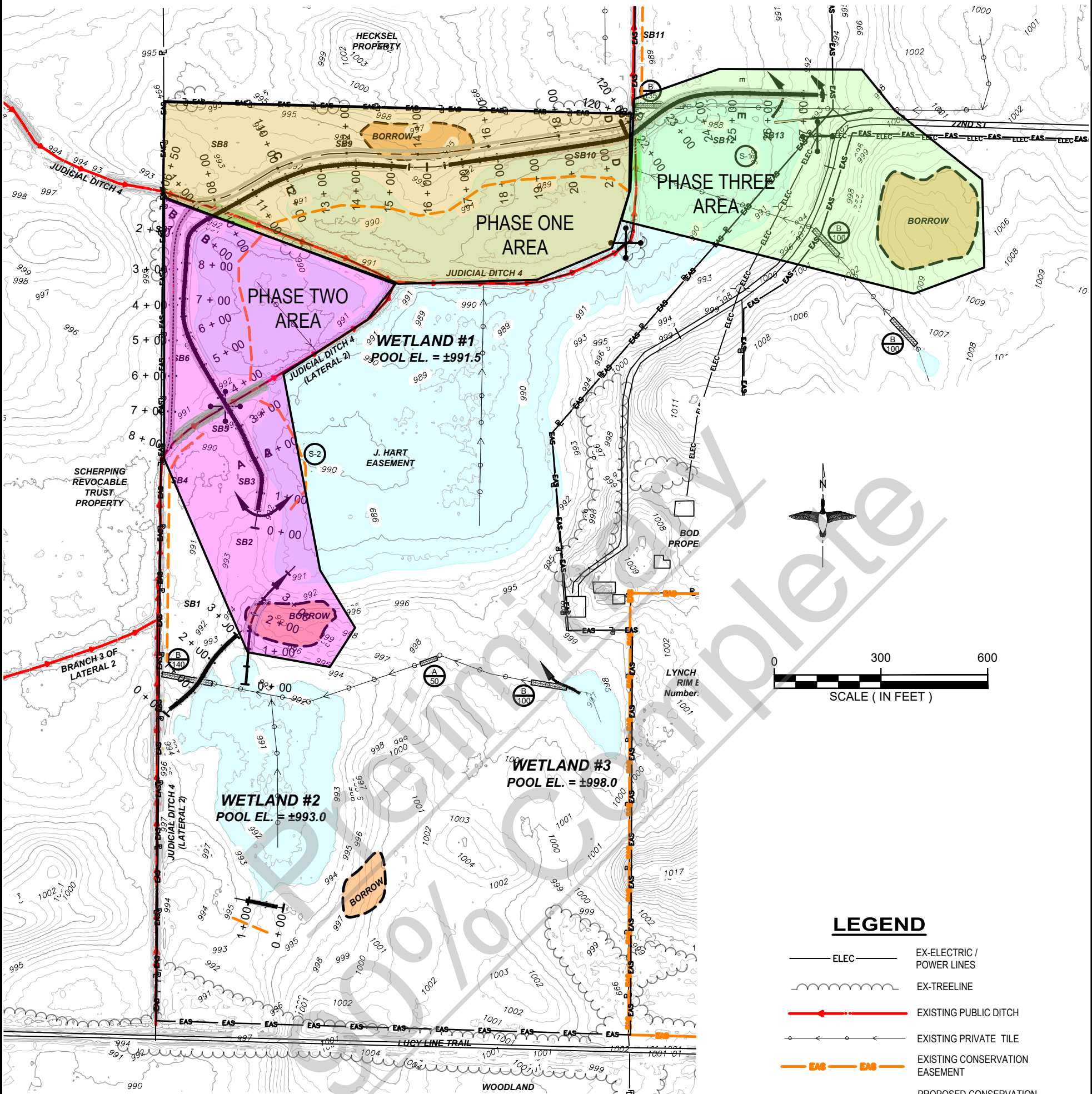


PROFILE ALONG VEGETATIVE SPILLWAY AT WETLAND 2

SCALE 1" = 50'

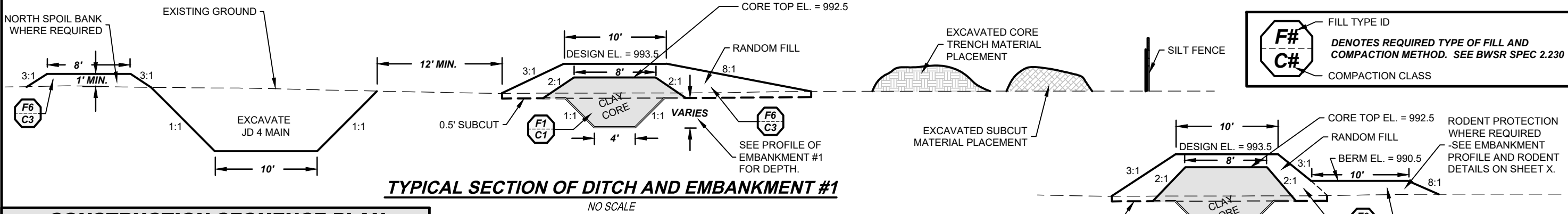
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SEQUENCING PLAN MAP



LEGEND

- ELEC EX-ELECTRIC / POWER LINES
- EX-TREELINE
- EXISTING PUBLIC DITCH
- EXISTING PRIVATE TILE
- EXISTING CONSERVATION EASEMENT
- PROPOSED CONSERVATION EASEMENT
- PROPOSED PRIVATE TILE RE-ROUTE
- PROPOSED PRIVATE DITCH RE-ROUTE
- PROPOSED SPILLWAY
- PROPOSED EMBANKMENT / SPOIL PLACEMENT
- PROPOSED EXCAVATION
- PROPOSED FILL
- PROPOSED POOL
- PROPOSED TILE BREAK SEE DETAILS ON SHEET 15



CONSTRUCTION SEQUENCE PLAN

PHASE ONE

WETLAND 1 AND DITCH REROUTE CONSTRUCTION REQUIREMENTS AND RECOMMENDED SEQUENCING

ALL EROSION AND SEDIMENT CONTROL REQUIREMENTS SHALL BE INSTALLED PRIOR TO BEGINNING ANY CONSTRUCTION WORK. THIS INCLUDES, BUT IS NOT LIMITED TO THE INSTALLATION OF SILT FENCE AND ROCK CHECKS/WEEPERS.

PHASE 1: TO PROVIDE ACCESS AND BETTER MANAGE FLOW CONDITIONS IN PUBLIC DITCH SYSTEMS, IT IS RECOMMENDED TO COMPLETE A MAJORITY OF THE WORK WITHIN THE PHASE 1 AREA PRIOR TO PHASE 2 AND 3 AREAS.

STEP 1. EXCAVATE REQUIRED SUBCUT.

STRIP LIMITS OF PLANNED EMBANKMENT AS DRAWN, STAKED AND/OR AS DIRECTED. THE STRIPPED MATERIAL SHOULD BE STOCKPILED TO THE SOUTH OF PLANNED EMBANKMENT FOR LATER USE. LOCATE STOCKPILED MATERIAL FAR ENOUGH FROM EMBANKMENT TO PROVIDE ROOM FOR STOCKPIILING OF EXCAVATED CORE TRENCH MATERIAL (STEP 2). STRIPPING OF THE SUBCUT SHALL BE CONSIDERED PART OF THE SALVAGING AND SPREADING TOPSOIL PAY ITEM.

STEP 2. EXCAVATE EMBANKMENT CORE TRENCH.

THE CORE TRENCH FOR THE PLANNED EMBANKMENT SHALL BE EXCAVATED TO THE LINES AND GRADES SHOWN AND AS STAKED OR AS OTHERWISE DIRECTED. EXCAVATED MATERIAL SHOULD BE PLACED TO THE SOUTH OF THE EMBANKMENT AND GENERALLY KEPT SEPARATE FROM THE STRIPPED TOPSOIL AS PART OF STEP 1. STOCKPILED MATERIAL WILL BE USED IN STEP 4 AS PART OF THE RANDOM FILL PORTION OF EMBANKMENT. ACTUAL QUANTITIES MEASURED OF THE CORE TRENCH EXCAVATION WILL BE USED FOR PAYMENT.

STEP 3. CONSTRUCT CLAY CORE COMPONENT OF EMBANKMENT.

CLAY MATERIAL FROM IDENTIFIED BORROW AREAS TO NORTH OF PLANNED DITCH SHALL BE USED TO BUILD EMBANKMENT CLAY CORE. FROM ABOUT STATION 15+00 TO 17+00 BORROW MATERIAL SHALL BE OBTAINED IN CLOSE PROXIMITY TO THE NORTH EDGE OF THE EMBANKMENT WITH THE INTENT OF REDUCING EXCAVATION DEPTHS FOR THE PLANNED DITCH IN THIS REACH (STEP 5). PLACE AND COMPACT CLAY CORE AS SPECIFIED. PAYMENT FOR THE CLAY CORE PORTION OF THE EMBANKMENT WILL BE BY THE DESIGN (PLAN) QUANTITY USING COMPACTED VOLUMES.

STEP 4. CONSTRUCT INITIAL PORTION OF RANDOM FILL COMPONENT OF EMBANKMENT.

MATERIAL THAT WAS EXCAVATED FROM EMBANKMENT'S CORE TRENCH AND TEMPORARILY STOCKPILED TO SOUTH OF THE EMBANKMENT (STEP 2) SHALL BE USED TO BEGIN THE FINISH GRADING OF THE RANDOM FILL PORTION OF THE EMBANKMENT. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE CORE EXCAVATION COMPLETED AS PART OF STEP 2.

STEP 5. EXCAVATE PLANNED DITCH.

EXCAVATE DITCH TO THE LINES AND GRADES SHOWN AND AS STAKED OR OTHERWISE DIRECTED. BEGIN EXCAVATION AT DOWNSTREAM END TO HELP WITH ANY NEEDED DEWATERING. PLACE EXCAVATED MATERIAL ON EMBANKMENT TO COMPLETE THE RANDOM FILL PORTION OF THE EMBANKMENT, AS SHOWN, STAKED AND OTHERWISE DIRECTED. REMAINING EXCAVATED MATERIAL TO BE PLACED ON NORTH DITCH BANK AND/OR PLACED ALONG REACHES OF THE TO BE ABANDONED DITCHES FOR LATER USE IN FILLING THOSE DITCHES AFTER ALL REROUTES ARE COMPLETED AND STABILIZED. PLACE AND COMPACT EXCAVATED RANDOM FILL MATERIAL AS SPECIFIED. THE PLACEMENT, GRADING AND COMPACTION OF RANDOM FILLS SHALL BE CONSIDERED INCIDENTAL TO THE DITCH EXCAVATION. PAYMENT FOR THE DITCH EXCAVATION WILL BE BY THE DESIGN (PLAN) QUANTITY.

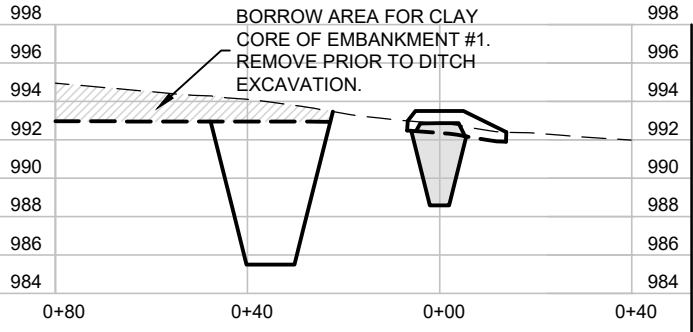
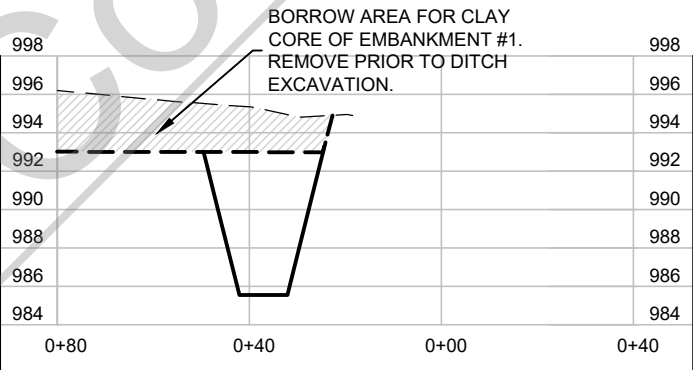
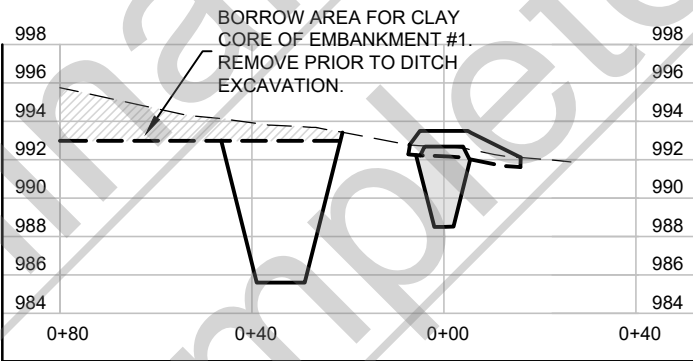
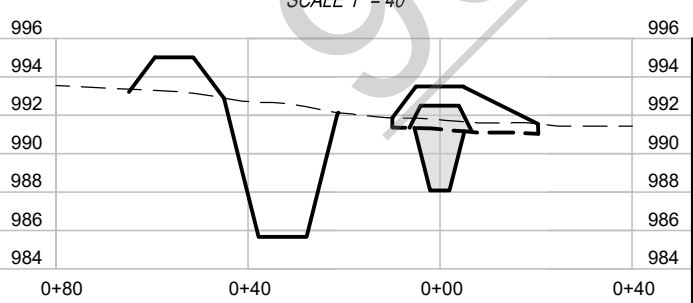
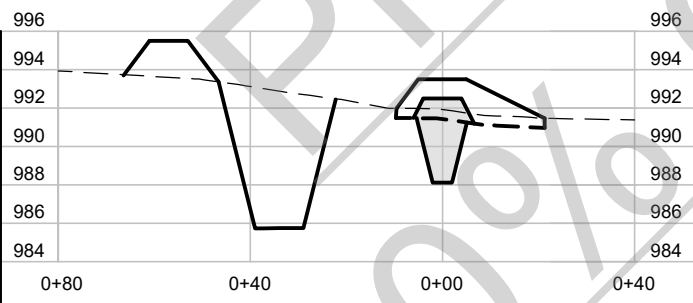
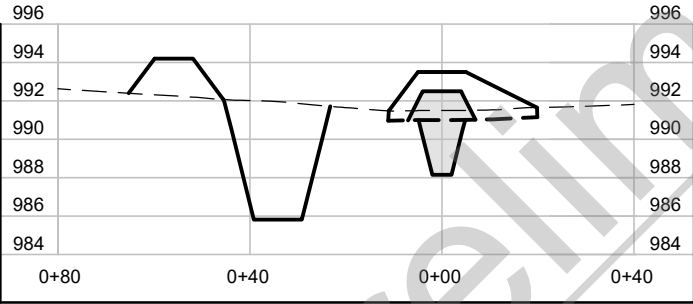
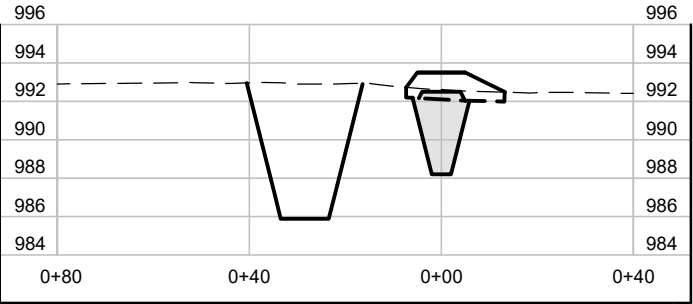
CONSIDER INSTALLING 60-INCH CULVERT AT DITCH STATION 119+82 TO HELP WITH ACCESSING AREAS TO THE NORTH OF THE DITCH AS DITCH CONSTRUCTION PROGRESSES.

STEP 6. COMPLETE TOPSOILING OF EMBANKMENT AND DITCH WITH STOCKPILED MATERIAL FROM STEP 1.

STOCKPILED STRIPPED MATERIAL AS PART OF STEP 1 AND OF NORTH BORROW EXCAVATIONS SHALL BE USED TO FINISH GRADING AND TOPSOILING OF THE EMBANKMENT AND DITCH TO PREPARE THEM FOR SEEDING. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE SUBCUT EXCAVATION COMPLETED AS PART OF STEP 1.

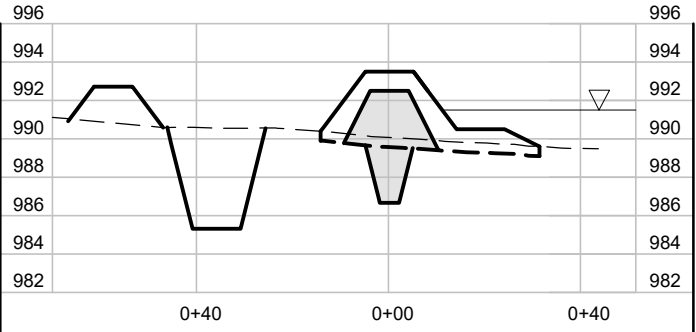
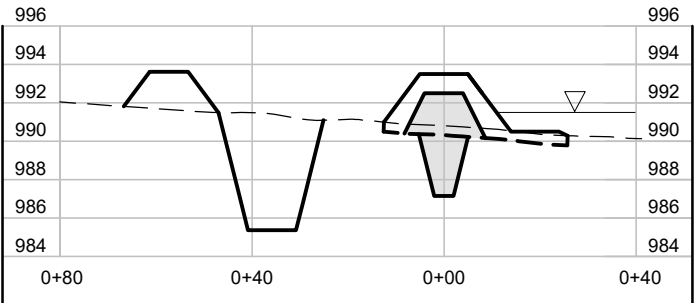
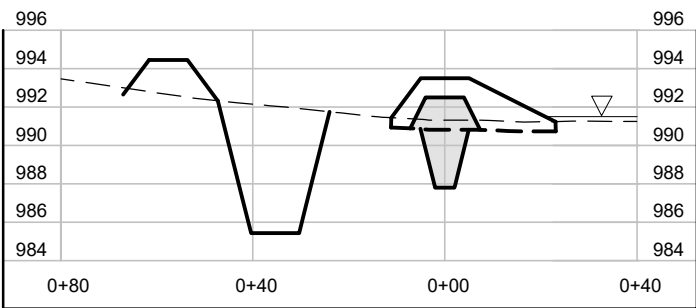
STEP 7. STABILIZING CONSTRUCTION AREAS WITHIN THIS WORK PHASE.

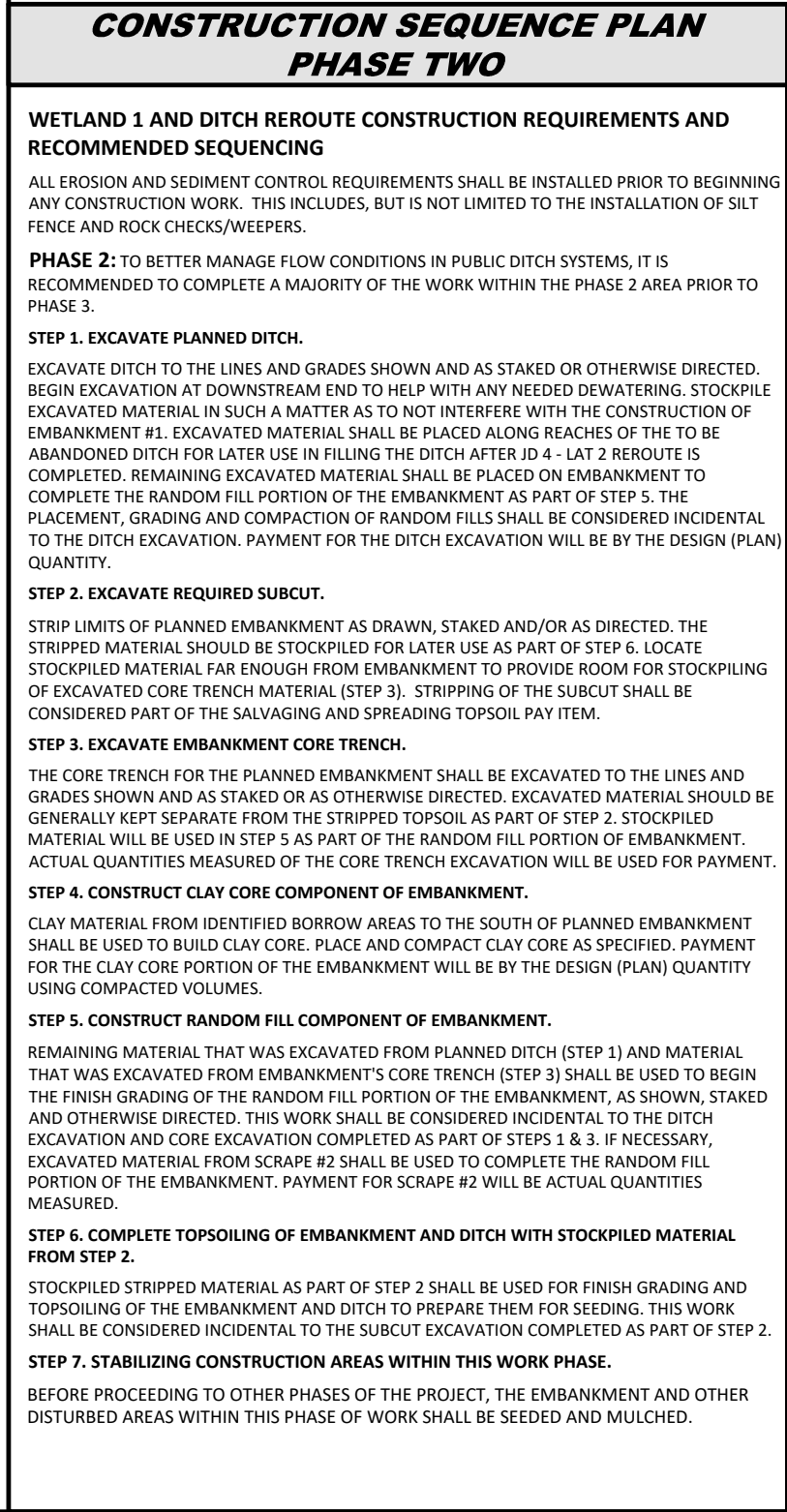
BEFORE PROCEEDING TO OTHER PHASES OF THE PROJECT, THE EMBANKMENT AND OTHER DISTURBED AREAS WITHIN THIS PHASE OF WORK SHALL BE SEEDED AND MULCHED.

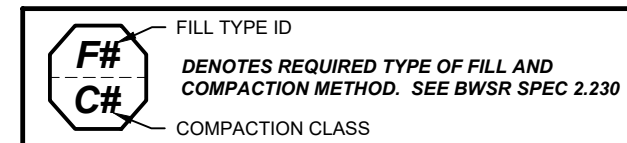


TYPICAL SECTION OF EMBANKMENT WITH RODENT PROTECTION FROM STA 19+00 TO 26+00

NO SCALE







CORE TOP EL. = 992.5
DESIGN EL. = 993.5
RANDOM FILL
3:1
2:1
10'
CLAY CORE
3:1
2:1
10'
RANDOM FILL
8:1
VINYL SHEET PILING
10' HEIGHT
F1
C1
F6
C3

TYPICAL SECTION OF EMBANKMENT AT STATIONS 22+50 TO 25+50
NO SCALE

CONSTRUCTION SEQUENCE PLAN PHASE THREE

WETLAND 1 AND DITCH REROUTE CONSTRUCTION REQUIREMENTS AND RECOMMENDED SEQUENCING

ALL EROSION AND SEDIMENT CONTROL REQUIREMENTS SHALL BE INSTALLED PRIOR TO BEGINNING ANY CONSTRUCTION WORK. THIS INCLUDES, BUT IS NOT LIMITED TO THE INSTALLATION OF SILT FENCE AND ROCK CHECKS/WEEPERS.

PHASE 3: TO PROVIDE ACCESS AND BETTER MANAGE FLOW CONDITIONS IN PUBLIC DITCH SYSTEMS, IT IS RECOMMENDED TO COMPLETE A MAJORITY OF THE WORK WITHIN THE PHASE 1 AND 2 AREA PRIOR TO BEGINNING PHASE 3.

STEP 1. EXCAVATE REQUIRED SUBCUT.

STRIP LIMITS OF PLANNED EMBANKMENT AS DRAWN, STAKED AND/OR AS DIRECTED. THE STRIPPED MATERIAL SHOULD BE STOCKPILED TO THE NORTH OF PLANNED EMBANKMENT FOR LATER USE. LOCATE STOCKPILED MATERIAL FAR ENOUGH FROM EMBANKMENT TO PROVIDE ROOM FOR CONSTRUCTING THE RANDOM FILL FOR EMBANKMENT. STRIPPING OF THE SUBCUT SHALL BE CONSIDERED PART OF THE SALVAGING AND SPREADING TOPSOIL PAY ITEM.

STEP 2. CONSTRUCT CLAY CORE COMPONENT OF EMBANKMENT.

CLAY MATERIAL FROM IDENTIFIED BORROW AREAS TO THE EAST ACROSS THE DRIVEWAY SHALL BE USED TO BUILD EMBANKMENT CLAY CORE. PLACE AND COMPACT CLAY CORE AS SPECIFIED. PAYMENT FOR THE CLAY CORE PORTION OF THE EMBANKMENT WILL BE BY THE DESIGN (PLAN) QUANTITY USING COMPACTED VOLUMES.

STEP 3. INSTALLATION OF VINYL SHEET PILING WITH CLAY CORE.

UPON COMPLETION OF CLAY CORE, VINYL SHEET PILING SHALL BE INSTALLED AS DRAWN, STAKED AND/OR AS DIRECTED.

STEP 4. CONSTRUCT RANDOM FILL COMPONENT OF EMBANKMENT.

FINISH GRADING OF RANDOM FILL PORTION OF THE EMBANKMENT SHALL BE OBTAINED FROM SCRAPE 1 SHOWN ON THE PLAN. SCRAPE AREA SHALL BE A MINIMUM OF 100' FROM FINAL EMBANKMENT SOUTH TOE SLOPE. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE SCRAPE 1 EXCAVATION.

STEP 5. COMPLETE TOPSOILING OF EMBANKMENT WITH STOCKPILED MATERIAL FROM STEP 1.

STOCKPILED STRIPPED MATERIAL AS PART OF STEP 1 SHALL BE USED FOR FINISH GRADING AND TOPSOILING OF THE EMBANKMENT TO PREPARE FOR SEEDING. THIS WORK SHALL BE CONSIDERED INCIDENTAL TO THE SUBCUT EXCAVATION COMPLETED AS PART OF STEP 1.

STEP 6. STABILIZING CONSTRUCTION AREAS WITHIN THIS WORK PHASE.

PRIOR TO INSTALLING RODENT PROTECTION, THE SOUTH SLOPE OF THE EMBANKMENT SHALL BE SEEDED. AFTER COMPLETION OF RODENT PROTECTION, THE EMBANKMENT AND OTHER DISTURBED AREAS WITHIN THIS PHASE OF WORK SHALL BE SEEDED AND MULCHED.

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.

LIC. NO. 22148

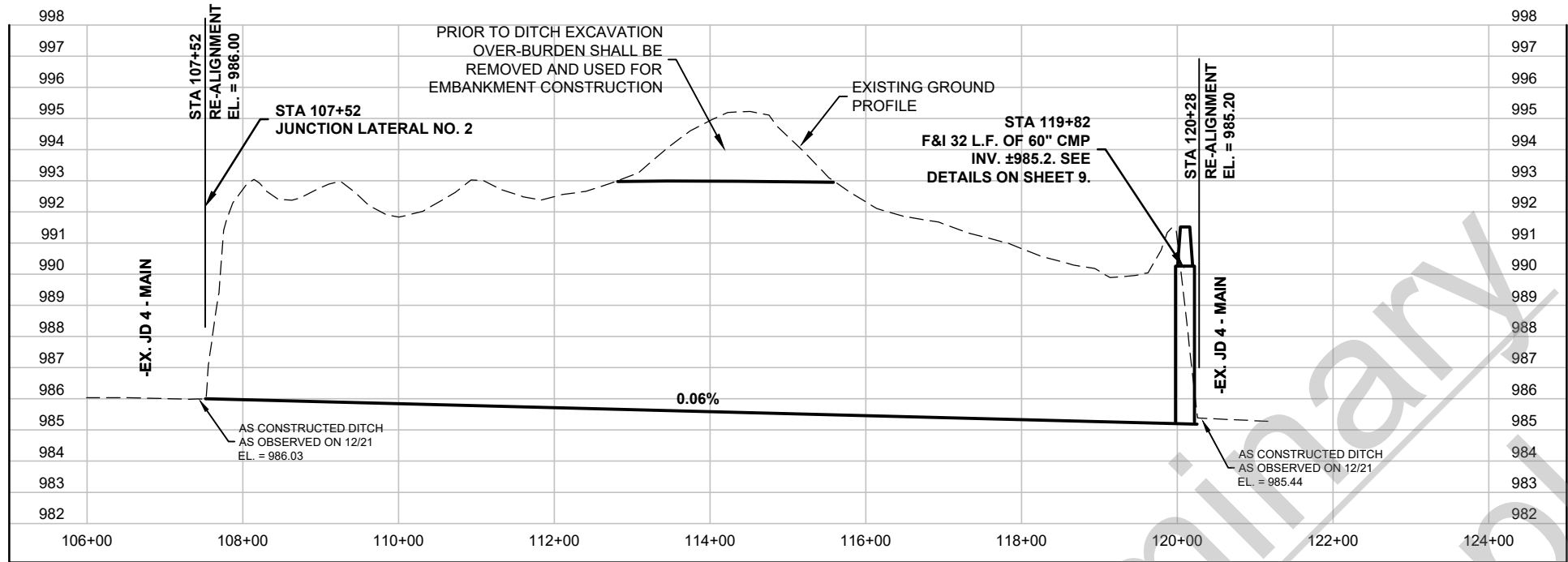
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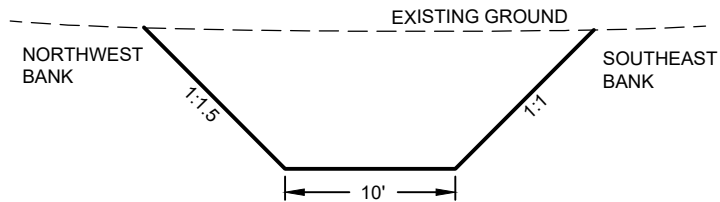
HART - CARVER COUNTY
CREP WETLAND RESTORATION
PHASE THREE SEQUENCEING PLAN WITH TYPICAL AND SECTIONS

PROJECT #:
2020-025

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7 OF **15**

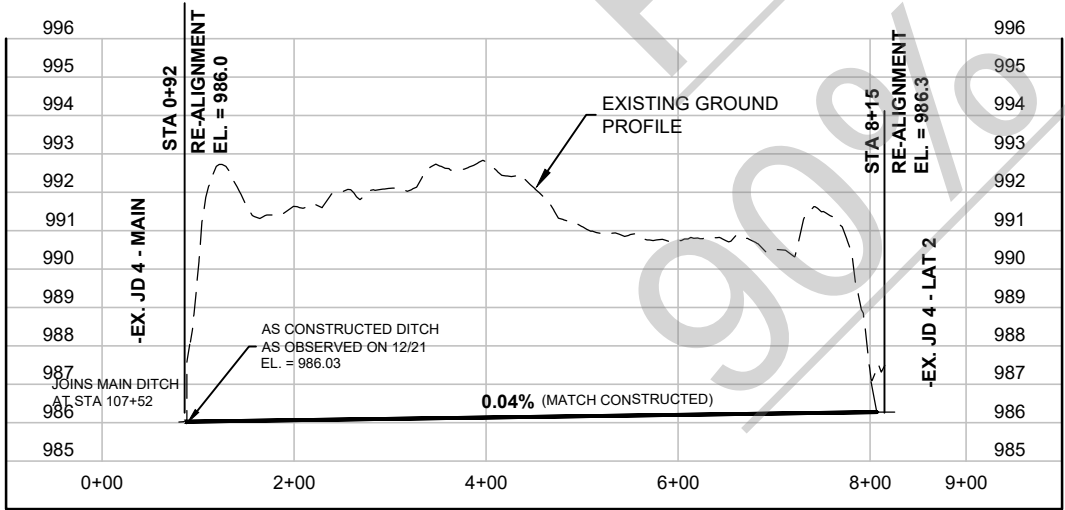


PROFILE ALONG CENTERLINE OF PROPOSED RE-ALIGNMENT OF JD 4 - MAIN
SCALE 1" = 200'

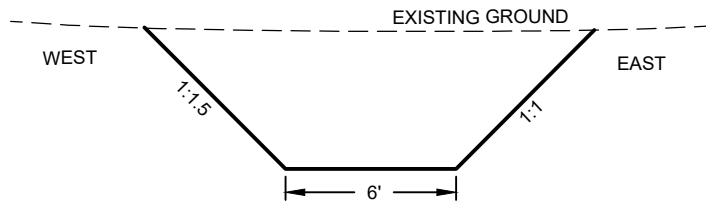


X-SECTION OF JD 4 MAIN
NOT TO SCALE

STABILIZING DITCH CONSTRUCTION AREAS
BEFORE PROCEEDING TO OTHER PHASES OF THE PROJECT, THE DITCHES SHALL BE TOPSOILED AND HYDRO-SEEDED WITH WETLAND CONSTRUCTION MIX ON ALL SIDE SLOPES.



PROFILE ALONG PROPOSED RE-ALIGNMENT OF JD 4 - LAT 2
SCALE 1" = 200'



X-SECTION OF LATERAL NO. 2
NOT TO SCALE

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HART - CARVER COUNTY
CREP WETLAND RESTORATION
JUDICIAL DITCH 4 CONSTRUCTION DETAILS

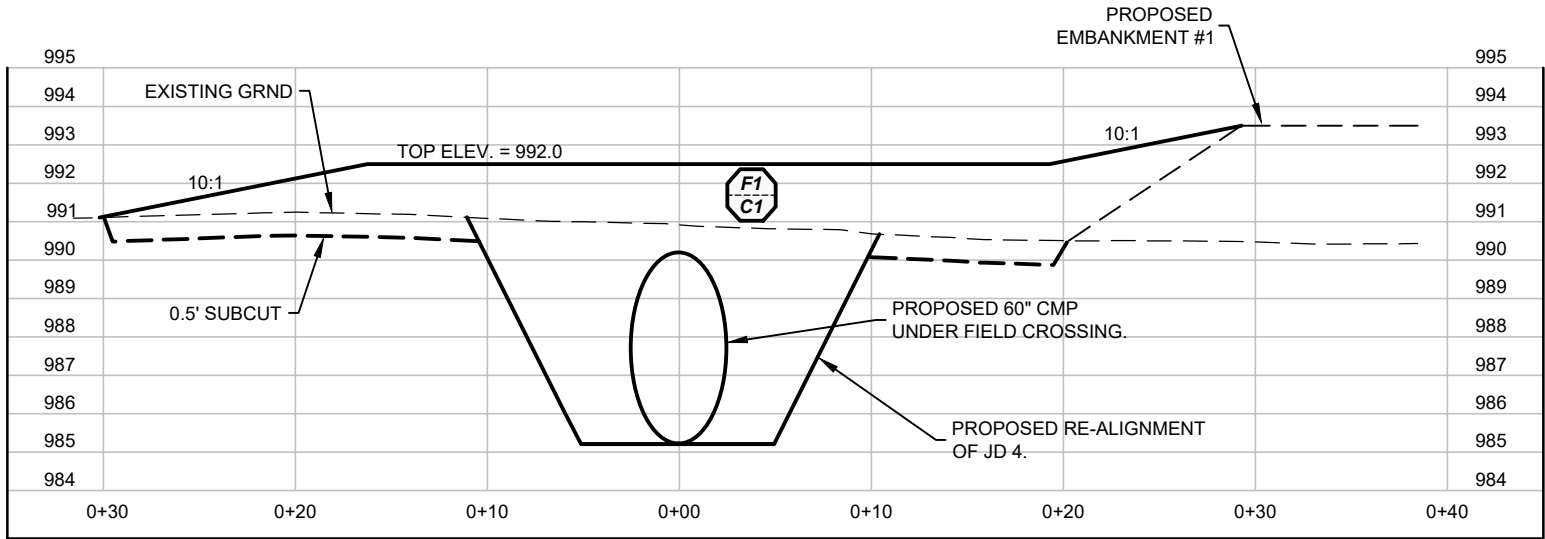
PROJECT #:
2020-025

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LIC. NO. 22148

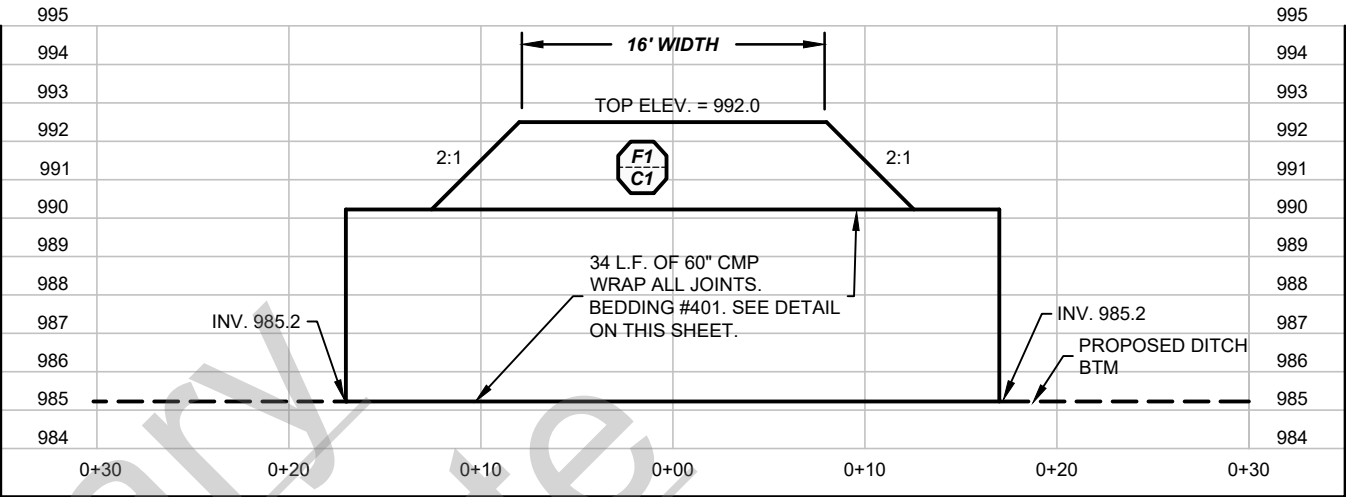
DATE: . .

THOMAS A WENZEL



PROFILE ALONG CL OF PROPOSED ACCESS/CROSSING WITH 60" CMP

SCALE 1" = 10'



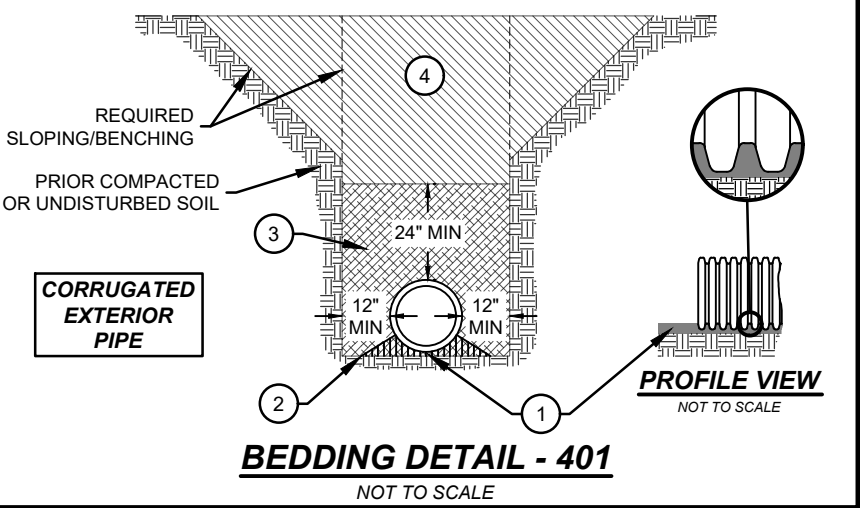
X-SEC ALONG CL OF PROPOSED ACCESS/CROSSING WITH 60" CMP

SCALE 1" = 10'

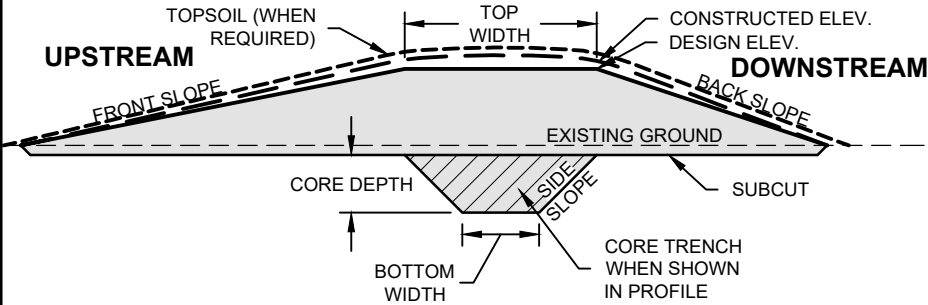
PURPOSE: FOR THE INSTALLATION OF **CORRUGATED** OUTER WALL PIPES THROUGH FIELD ROADS, APPROACHES, AND OTHER ROADS WITH GENERAL BACKFILL AND COMPACTION REQUIREMENTS.

- 1 PRIOR TO SETTING PIPE, PLACE 4"-6" OF LOOSE FRIABLE NON-ORGANIC MATERIAL IN THE TRENCH BOTTOM AS BEDDING TO ALLOW FILLING OF BOTTOM VALLEYS OF THE PIPE AND TO ENSURE NO VOIDS EXIST WITHIN BEDDING ENVELOPE.
- 2 CAREFULLY LOAD THE PIPE PRIOR TO COMPLETELY BACKFILLING AND COMPACTING NON-ORGANIC MATERIALS UNDER THE LOWER HALF OF THE PIPE.
- 3 THE BEDDING AND INITIAL BACKFILL SHALL CONSIST OF NON-ORGANIC MATERIALS PLACED IN 3"-4" LIFTS AND HAND OR MECHANICALLY TAMPED.
- 4 UNLESS OTHERWISE SHOWN IN THE DRAWINGS, BACKFILL REMAINING TRENCH WITH NON-ORGANIC MATERIAL.

UNLESS OTHERWISE SHOWN IN THE DRAWINGS, COMPACT BACKFILL TO A DENSITY EQUAL TO OR GREATER THAN THAT OF THE SURROUNDING UNDISTURBED SOIL.



EMBANKMENT CONSTRUCTION REQUIREMENTS



EMBANKMENT DETAIL

NOT TO SCALE

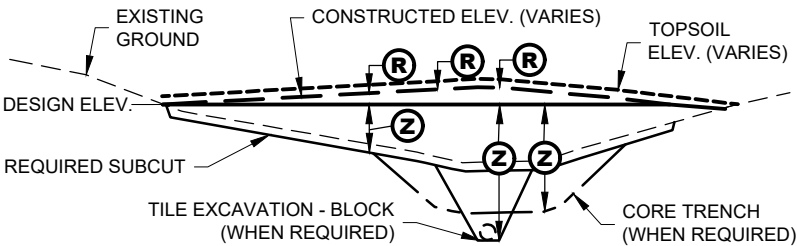
SUBCUT DIMENSIONS SHOWN ON EMBANKMENT PROFILE ARE MINIMUMS. THE SUBCUT DEPTH MAY NEED TO BE INCREASED BASED ON SITE AND SOIL CONDITIONS. ENGINEER MAY DIRECT WHEN TO EXCAVATE TO DIFFERENT DEPTHS THAN SHOWN.

THE FILL VOLUME SHOWN FOR AN EMBANKMENT INCLUDES QUANTITIES FOR SUBCUT AND SETTLEMENT ALLOWANCE.

PLACE ±4 INCHES OF STRIPPED TOPSOIL ON THE ENTIRE EMBANKMENT SURFACE AFTER CONSTRUCTED ELEVATION IS ACHIEVED. TOPSOIL MATERIAL USED SHALL BE SUITABLE FOR VEGETATION ESTABLISHMENT.

WHEN REQUIRED ON EMBANKMENT PROFILE, CORE TRENCH DEPTHS MAY VARY BASED ON SITE AND SOIL CONDITIONS. ENGINEER MAY DIRECT WHEN TO EXCAVATE TO DIFFERENT DEPTHS THAN SHOWN.

DETERMINING CONSTRUCTED ELEVATION



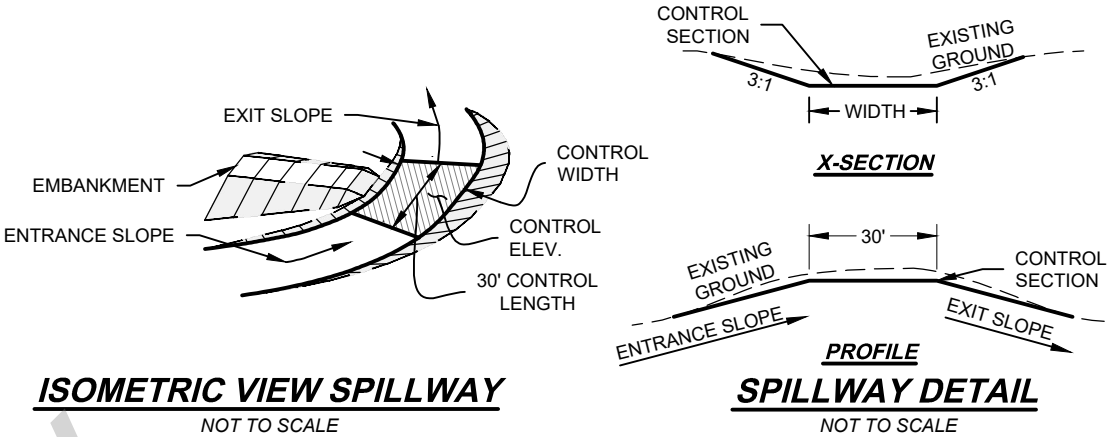
CONSTRUCTED ELEVATION INCLUDES REQUIRED AMOUNT OF OVERBUILD ADDED TO DESIGN ELEVATION TO ACCOUNT FOR EXPECTED SETTLEMENT.

ⓐ - TOTAL FILL HEIGHT (DESIGN ELEVATION - SUBGRADE ELEVATION)

Ⓡ - SETTLEMENT AMOUNT (OVERBUILD) = ⓐ x SETTLEMENT % (PER PLAN)

NOTE: THE FIGURE PROVIDED ILLUSTRATES THIS FOR A CONSTRUCTED EMBANKMENT, HOWEVER, THIS REQUIREMENT FOR OVERBUILD APPLIES TO ALL CONSTRUCTED FILLS. TOPSOIL NOT TO BE INCLUDED IN CONSTRUCTED ELEVATION.

SPILLWAY CONSTRUCTION REQUIREMENTS

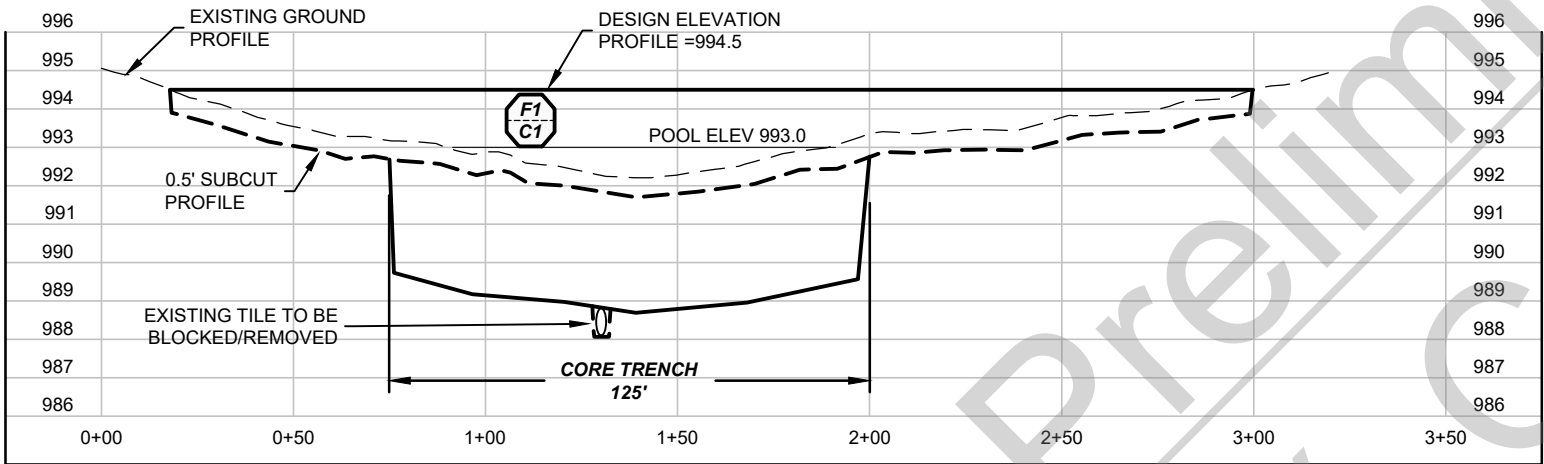


ENTRANCE AND EXIT SLOPES SHALL BE EXCAVATED / GRADED TO ENSURE POSITIVE DRAINAGE IN AND OUT OF SPILLWAY CONTROL SECTION.

ELEVATION AND WIDTH OF CONTROL SECTION SHALL BE AS SHOWN ON PLAN VIEW AND/OR ASSOCIATED EMBANKMENT PROFILE

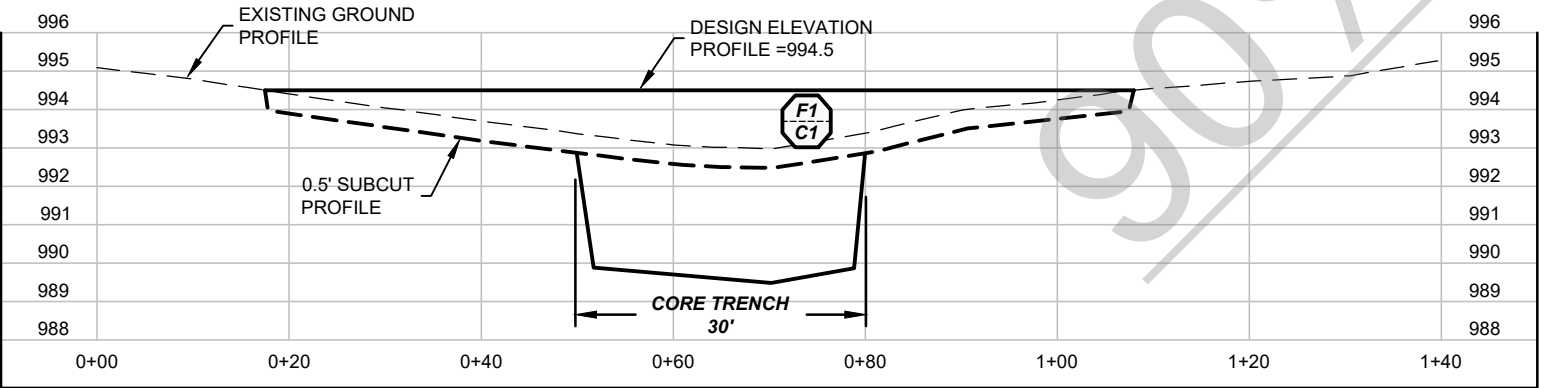
THE ABILITY TO ESTABLISH QUALITY VEGETATION WITHIN THE CONSTRUCTED SPILLWAY SECTION WILL BE CRITICAL TO THE SPILLWAY'S FUNCTION. WHEN SPILLWAY EXCAVATION RESULTS IN A CONDITION THAT IS UNSUITABLE FOR VEGETATION ESTABLISHMENT, OVER EXCAVATE AS DIRECTED OR NECESSARY TO PROVIDE SUITABLE SUBSTRATE FOR VEGETATION ESTABLISHMENT. (TYPICALLY 4"-6" TOPSOIL)

FINISHED SURFACE SHALL BE REASONABLY SMOOTH AND ACHIEVE / MEET CONTROL ELEVATION SHOWN ABOVE PRIOR TO SEEDING.



PROFILE ALONG CENTERLINE OF NORTH EMBANKMENT #2

SCALE 1" = 50'



PROFILE ALONG CENTERLINE OF SOUTH EMBANKMENT #2

SCALE 1" = 20'

EMBANKMENT DESIGN

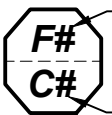
TOP WIDTH = 10 FT
FRONT SLOPE = 5:1 (H:V)
BACK SLOPE = 3:1 (H:V)
SETTLEMENT = 10%

SUBCUT QTY = 107 CY
FILL QTY = 460 CY

CORE DESIGN

BOTTOM WIDTH = 4 FT
SIDE SLOPE = 1:1 (H:V)

CORE TRENCH QTY = 100 CY



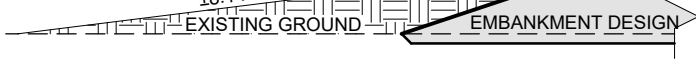
FILL TYPE ID

DENOTES REQUIRED TYPE OF FILL AND COMPACTION METHOD. SEE BWSR SPEC 2.230

COMPACTION CLASS

EXCAVATED CORE MATERIAL SHALL BE TEMPORARILY STOCKPILED ON WETLAND SIDE OF EMBANKMENT AND LATER USED ON FRONT FACE OF EMBANKMENT TO FLATTEN SLOPE TO ±8:1. THIS IS INCIDENTAL TO CORE EXCAVATION.

UPSTREAM



SLOPED BERM DETAIL

NOT TO SCALE

EMBANKMENT DESIGN

TOP WIDTH = 10 FT
FRONT SLOPE = 5:1 (H:V)
BACK SLOPE = 3:1 (H:V)
SETTLEMENT = 10%

SUBCUT QTY = 27 CY
FILL QTY = 101 CY

CORE DESIGN

BOTTOM WIDTH = 4 FT
SIDE SLOPE = 1:1 (H:V)

CORE TRENCH QTY = 22 CY

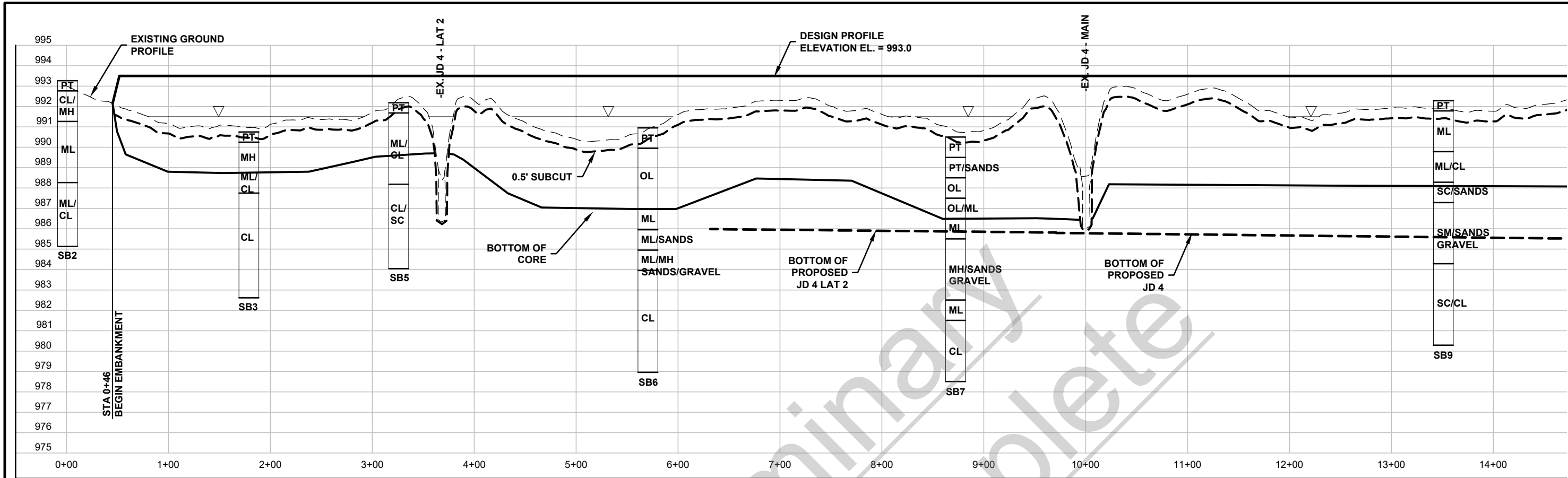
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.



HART - CARVER COUNTY
CREP WETLAND RESTORATION
EMBANKMENT 2 PROFILE AND DETAILS

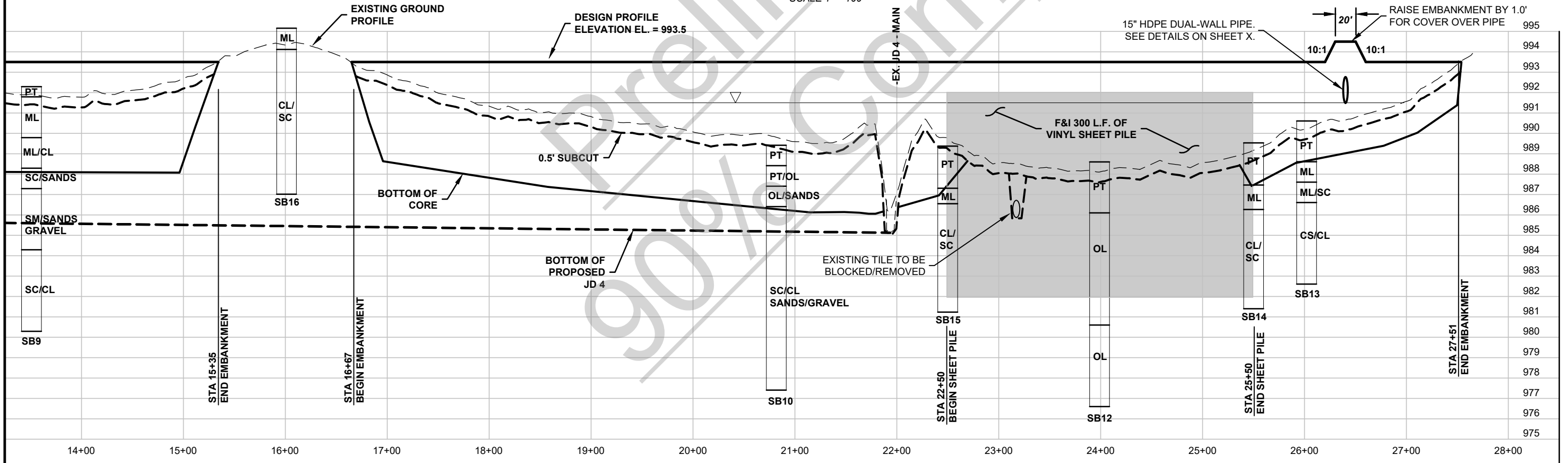
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PROFILE ALONG CENTERLINE OF EMBANKMENT #1

SCALE 1" = 100'



PROFILE ALONG CENTERLINE OF EMBANKMENT #1

SCALE 1" = 100'

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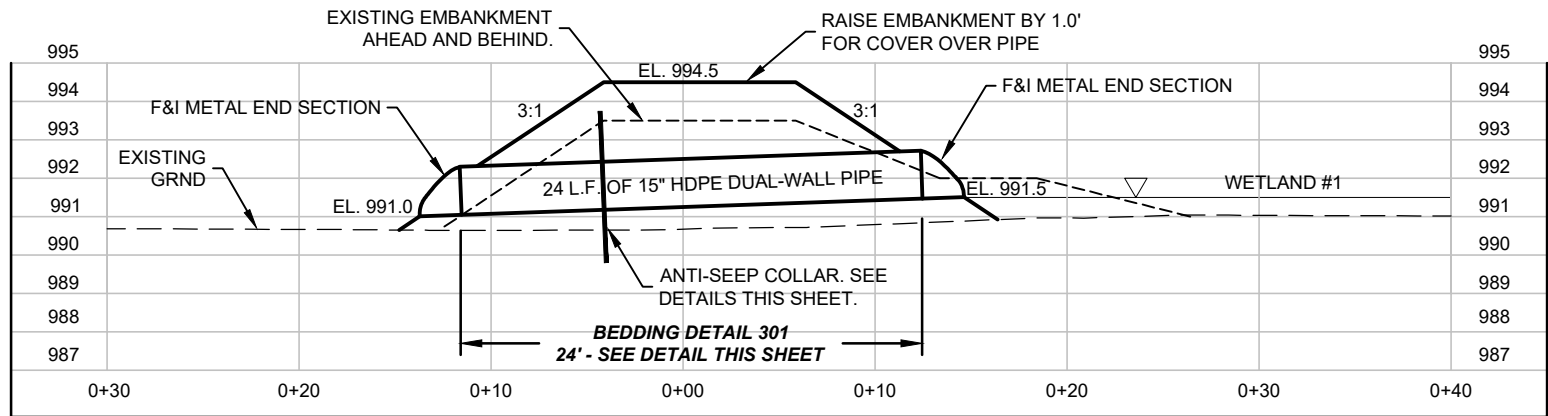
THOMAS A WENZEL DATE: . LIC. NO. 22148



HART - CARVER COUNTY
CREP WETLAND RESTORATION
EMBANKMENT 1 PROFILE AND DETAILS

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PROFILE ALONG 15" HDPE PIPE AT STA 26+40

SCALE 1" = 10'

300 SERIES BEDDING DETAILS

PURPOSE: FOR THE INSTALLATION OF CORRUGATED OUTER WALL PIPE REQUIRING COMPACTED FINE GRAINED SOILS AS BACKFILL FOR SEEPAGE CONTROL.

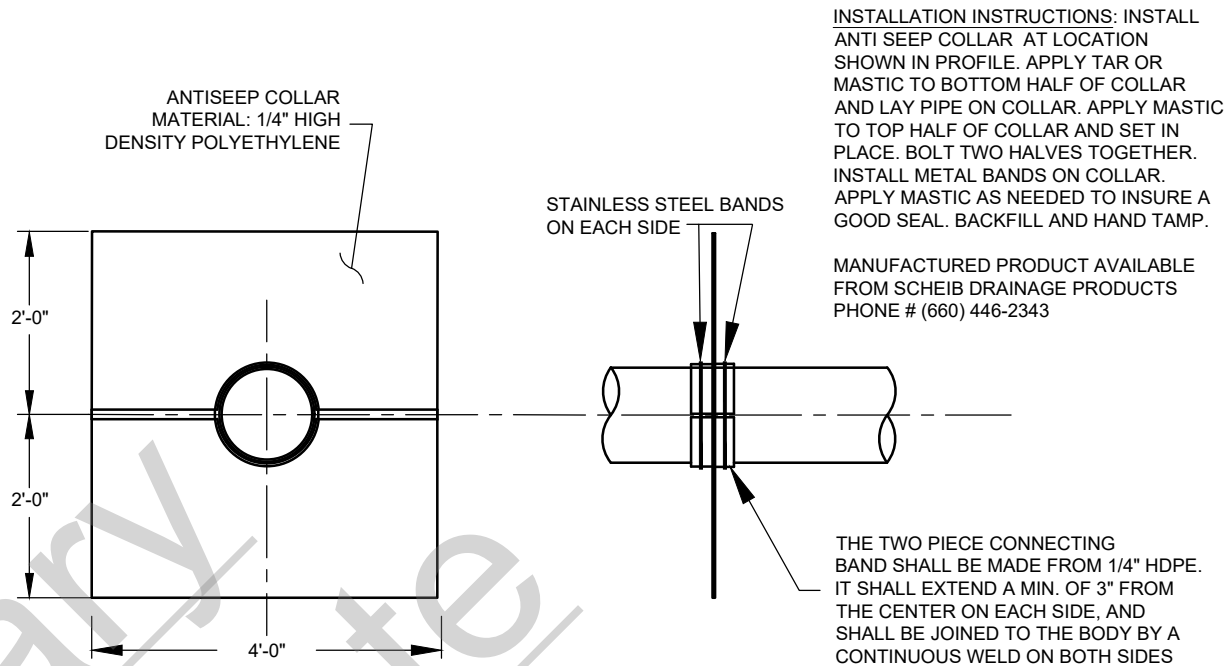
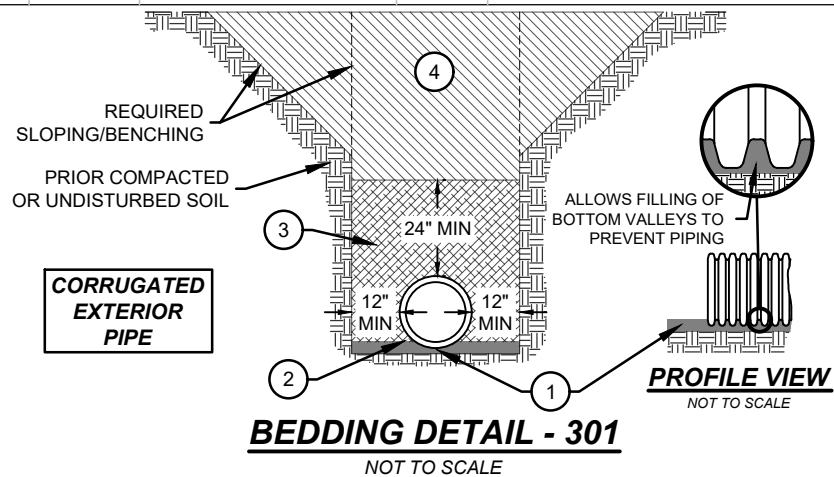
- 1 PRIOR TO SETTING PIPE, PLACE 4"-6" OF LOOSE FRIABLE APPROVED SOILS (SEE BELOW) IN THE TRENCH BOTTOM AS BEDDING TO ALLOW FILLING OF BOTTOM VALLEYS OF THE PIPE AND TO ENSURE NO VOIDS EXIST WITHIN BEDDING ENVELOPE.
- 2 CAREFULLY LOAD THE PIPE PRIOR TO COMPLETELY BACKFILLING AND COMPACTING APPROVED SOILS (SEE BELOW) UNDER THE LOWER HALF OF THE PIPE.
- 3 THE BEDDING AND INITIAL BACKFILL SHALL CONSIST OF APPROVED SOILS FOR BACKFILL (SEE BELOW) PLACED IN 3"-4" LIFTS AND HAND OR MECHANICALLY TAMPED.
- 4 UNLESS OTHERWISE SHOWN IN THE DRAWINGS, BACKFILL REMAINING TRENCH WITH APPROVED SOILS FOR BACKFILL (SEE BELOW).

UNLESS OTHERWISE SHOWN IN THE DRAWINGS, COMPACT BACKFILL TO A DENSITY EQUAL TO OR GREATER THAN THAT OF THE SURROUNDING UNDISTURBED SOIL.

APPROVED SOILS FOR BEDDING AND BACKFILL - BEDDING DETAIL 301

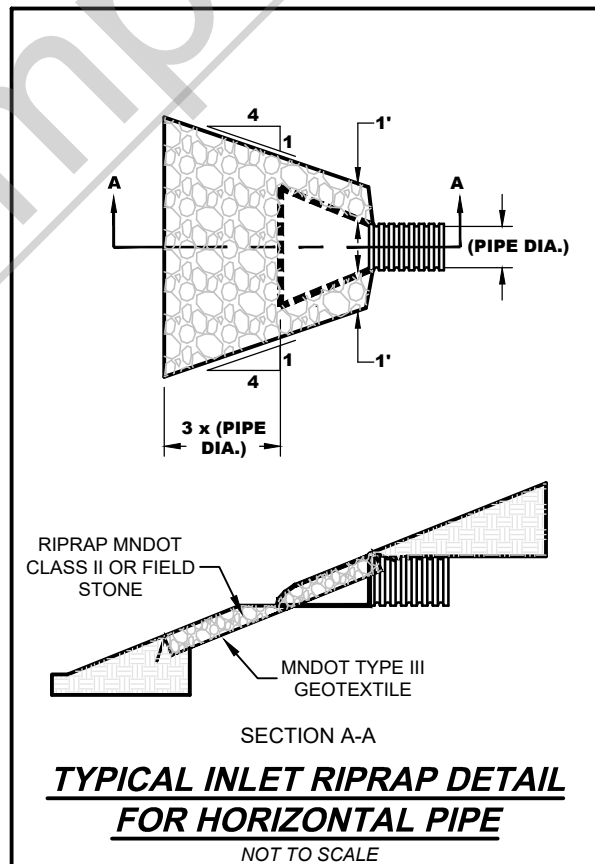
UNLESS OTHERWISE IDENTIFIED/SHOWN IN THESE DRAWINGS, THE APPROVED SOILS TYPES FOR BACKFILL SHALL BE AS SHOWN BELOW.

SOIL CLASSIFICATION				SOIL DESCRIPTION
ASTM D2321	SIDD SOIL	AASHTO M 145	ASTM D2487	
Class III	Category 2	A-2-4, A-2-5, A-2-6, OR A-4 OR 1-6 SOILS WITH MORE THAN 30% RETAINED ON #200 SIEVE	GM, GC SM, SC ML, CL	SILTY OR CLAYEY GRAVELS, GRAVELS/SAND/SILT OR GRAVELS AND/CLAY MIXTURES, SILTY OR CLAYEY SANDS, SAND, CLAY OR SAND/SILT MIXTURES.
Class IV	Category 3	A-2-7 OR A-4 OR A-6 SOILS WITH 30% OR LESS RETAINED ON #200 SIEVE	ML CL	INORGANIC SILTS AND LOW TO MEDIUM PLASTICITY CLAYS; GRAVELLY, SANDY, OR SILTY CLAYS; SOME FINE SANDS.



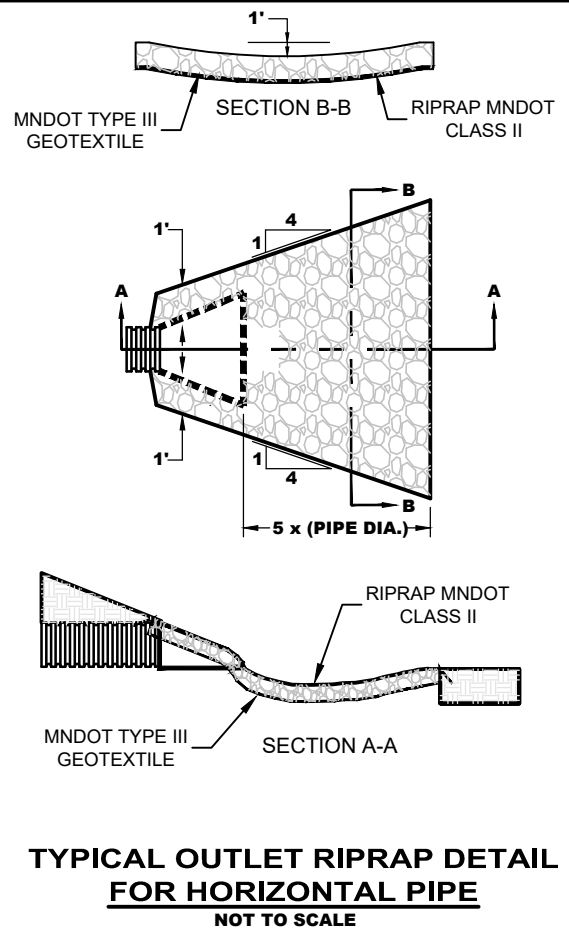
ANTI-SEEP DIAPHRAGM DETAIL FOR 15" HDPE PIPE

NOT TO SCALE



ROCK RIPRAP & GEOTEXTILE REQUIREMENTS

(D) PIPE DIAMETER (INCHES)	PLACEMENT THICKNESS (INCHES)	GEOTEXTILE (S.Y.)		ROCK RIPRAP (C.Y.)	
		INLET	OUTLET	INLET	OUTLET
15"	15"	10.0	14.0	1.5	2.5



INSTALLATION INSTRUCTIONS: INSTALL ANTI SEEP COLLAR AT LOCATION SHOWN IN PROFILE. APPLY TAR OR MASTIC TO BOTTOM HALF OF COLLAR AND LAY PIPE ON COLLAR. APPLY MASTIC TO TOP HALF OF COLLAR AND SET IN PLACE. BOLT TWO HALVES TOGETHER. INSTALL METAL BANDS ON COLLAR. APPLY MASTIC AS NEEDED TO INSURE A GOOD SEAL. BACKFILL AND HAND TAMP.

MANUFACTURED PRODUCT AVAILABLE FROM SCHEIB DRAINAGE PRODUCTS PHONE # (660) 446-2343

THE TWO PIECE CONNECTING BAND SHALL BE MADE FROM 1/4" HDPE. IT SHALL EXTEND A MIN. OF 3" FROM THE CENTER ON EACH SIDE, AND SHALL BE JOINED TO THE BODY BY A CONTINUOUS WELD ON BOTH SIDES

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HART - CARVER COUNTY
CREP WETLAND RESTORATION
15-INCH HDPE FOR WETLAND 1 CONSTRUCTION DETAILS

PROJECT #:
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SCRAPE / SEDIMENT REMOVAL MATERIAL PLACEMENT LOCATION							SCRAPE / SEDIMENT REMOVAL DESIGN TABLE				
SCRAPE ID #	SCRAPE TYPE	RANDOM FILL	BERM / EMBANKMENT	DITCH FILL	SALVAGE TOPSOIL	ADJACENT UPLANDS	A APPROXIMATE LENGTH (FEET)	B APPROXIMATE LENGTH (FEET)	C APPROXIMATE EXCAVATION DEPTH (FEET)	D APPROXIMATE SIDE SLOPE (FEET)	ESTIMATED EXCAVATED QUANTITY (C.Y.)
1	A		X				150	75	2	8:1	475
2	A	X					105	53	2	8:1	205
* FILL IN THE TABLE WITH EITHER AN "X" AND/OR THE MATERIAL PLACEMENT DESCRIPTION AND/OR SHEET # FOR THE LOCATION OF THE EXCAVATED MATERIAL PLACEMENT. THE LOCATION OF THE MATERIAL PLACEMENT MAY VARY AND MAY BE PLACED IN MORE THAN ONE LOCATION. IF THERE ARE NO CELLS FILLED IN, THEN THE EXCAVATED MATERIAL SHALL BE PLACED ON ADJACENT UPLANDS OR AS OTHERWISE DIRECTED BY ENGINEER							* THE LENGTHS, DEPTHS, AND SLOPES PROVIDED ARE AVERAGES. DIMENSIONS MAY VARY. (SEE CONSTRUCTION REQUIREMENTS BELOW).				
MATERIAL PLACEMENT REQUIREMENTS			CONSTRUCTION REQUIREMENTS				PLANVIEW OF SCRAPE / SEDIMENT REMOVAL NOT TO SCALE				
MATERIAL PLACEMENT: CONTRACTOR SHALL PLACE EXCAVATED MATERIAL IN LOCATIONS AS SHOWN IN MATERIAL PLACEMENT TABLE, DRAWINGS, OR AS OTHERWISE DIRECTED BY ENGINEER.			WETLAND SCRAPE / SEDIMENT REMOVAL: - THE PROJECT ENGINEER OR THE ENGINEER'S REPRESENTATIVE MAY CHANGE THE DEPTH, SLOPE, SHAPE, SIZE, OR LOCATION OF THE EXCAVATION AT THEIR DISCRETION. - THE FINISHED SHAPE OF THE EXCAVATION SHALL BE IRREGULAR AS SHOWN. - THE FINISHED SURFACE OF THE EXCAVATION SHALL BE ROUGH (NOT GRADED SMOOTH).								
			FINAL QUANTITIES AND PAYMENT: - EXCAVATION QUANTITIES WILL BE FIELD VERIFIED / MEASURED FOR PAYMENT UPON COMPLETION OF THE EXCAVATION. PLACEMENT REQUIREMENTS (LOCATION) SHALL BE INCIDENTAL TO SCRAPE / SEDIMENT REMOVAL. - THE VOLUME (C.Y.) SHOWN FOR EACH EXCAVATION IS THE MAXIMUM QUANTITY ALLOWABLE FOR PAYMENT WITHOUT PRIOR APPROVAL FOR AN INCREASE FROM THE ENGINEER. - UNLESS OTHERWISE SPECIFIED THE PLACEMENT OF ALL EXCAVATED MATERIALS SHALL BE INCIDENTAL TO THE COST OF THE EXCAVATION (I.E., NOT A PAY ITEM).								
LOCATION	DESCRIPTION										
RANDOM FILL	PLACEMENT OF EXCAVATED MATERIAL FOR RANDOM FILL SHALL BE WELL GRADED TO DIMENSIONS SHOWN IN DRAWINGS OR OTHERWISE DIRECTED BY ENGINEER.										
BERM / EMBANKMENT	PLACEMENT OF EXCAVATED MATERIAL FOR BERM SHALL BE TO DIMENSIONS AND COMPACTION REQUIREMENTS SHOWN IN DRAWINGS OR OTHERWISE DIRECTED BY ENGINEER.										
DITCH FILL	PLACEMENT OF EXCAVATED MATERIAL FOR DITCH FILL SHALL BE TO DIMENSIONS SHOWN IN DRAWINGS OR OTHERWISE DIRECTED BY ENGINEER.										
SALVAGE TOPSOIL	TOPSOIL IS TO BE STRIPPED, STOCK PILED, AND THEN PLACED / GRADED BACK INTO THE EXCAVATED SCRAPE AREA. TOPSOIL STRIPPING DEPTHS SHALL BE 4 TO 6 INCHES UNLESS OTHERWISE DIRECTED BY ENGINEER.										
ADJACENT UPLANDS	ANY EXCESS EXCAVATED MATERIALS SHALL BE PLACED ON ADJACENT UPLANDS SHALL BE WELL GRADED, AND CONFORM TO EXISTING TOPOGRAPHY, UNLESS OTHERWISE DIRECTED BY ENGINEER.										
SECTION OF TYPE A - SCRAPE / SEDIMENT REMOVAL NOT TO SCALE											
TYPICAL DITCH FILL "A" - OLD DITCH AT EMBANKMENTS NOT TO SCALE											
DITCH FILL "A" NOTE: FILL MATERIAL SHALL COME FROM DITCH EXCAVATIONS. FILL MATERIAL SHALL BE COMPACTED PER SPEC. 2.230. CONSTRUCTION OF DITCH FILLS SHALL BE INCIDENTAL TO EXCAVATION OF DITCH REROUTES.											
TYPICAL DITCH FILL "B" - OLD DITCH INTERNAL AREAS NOT TO SCALE											
DITCH FILL "B" NOTE: CONTRACTOR SHALL PUSH IN EXISTING SPOIL BANK MATERIAL INTO EXISTING DITCH AND COMPACT PER SPEC. 2.230. CONSTRUCTION OF DITCH FILL SHALL BE PAID FOR BY THE HOUR. (APPROXIMATELY 2,000 L.F.)											

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.

mBWSR

HART - CARVER COUNTY
CREP WETLAND RESTORATION
SCRAPE DETAILS

PROJECT #: 2020-025
SHEET NO. 13 OF 15

THOMAS A WENZEL
DATE: .
LIC. NO. 22148

[illegible]

The diagram illustrates the profile of a drainage system outlet and the detail of the excavated outlet channel.

Drainage System Outlet Profile:

- EXISTING TILE:** Indicated by a dashed line and label (A).
- PIPE JOINT - SEE DETAILS:** Two locations are marked along the pipe.
- EXISTING GROUND:** Shown as a dashed line above the pipe.
- PROPOSED PIPE:** The main pipe section, labeled (B).
- REMOVE 20' OF EXISTING TILE:** A section of the existing tile is to be removed, indicated by 'X' marks.
- CONCRETE PLUG (2' MIN. LENGTH):** A plug is shown at the end of the removed tile section.
- REFER TO SERIES 100 BEDDING DETAILS:** A note pointing to the pipe bedding.
- EXCAVATED MATERIAL FROM OUTLET CHANNEL TO BE PLACED OVER PIPE TO PROVIDE ADEQUATE COVER:** A note pointing to the material above the pipe.
- 2' MIN. COVER:** The minimum cover depth over the pipe.
- HINGED TYPE RODENT GUARD:** A guard is shown at the outlet.
- 1:1 MAX. SLOPE:** The maximum slope of the outlet channel.
- OUTLET ELEV.:** Labeled (C), indicating the outlet elevation.
- SEE TABLE FOR OUTLET CHANNEL ELEV.:** Labeled (G), indicating the outlet channel elevation.

Excavated Outlet Channel Detail:

- 3.0 FT:** The width of the excavated outlet channel.
- 1 MIN.:** The minimum depth of the excavated outlet channel.
- EXCAVATE OUTLET CHANNEL WHEN REQUIRED IN DESIGN TABLE:** A note indicating when to excavate the outlet channel.

NOT TO SCALE

PIPE JOINT DETAILS

SIZE OF LARGEST
PIPE AT JOINT
(INCHES)

ALLOWED JOINT TYPE

TILE
TAPE

CONCRETE

MASTIC

8" & SMALLER

10" TO 12"

LARGER THAN 12"

FLOW

**PREFERRED -
BUTT JOINT**

SIMILAR OR DISSIMILAR
FLEXIBLE COUPLER

INSERT A
MINIMUM OF 24"

FLOW

**OPTIONAL -
INSERTED JOINT**

DISSIMILAR FLEXIBLE
COUPLER

MASTIC COUPLER

INSERT A
MINIMUM OF 24"

FLOW

**INSERTED
JOINT**

WRAP JOINT WITH GEOTEXTILE FABRIC AND SECURE

ENSURE CONCRETE ENCOMPASSES ENTIRE JOINT AS
SHOWN

CONCRETE COLLAR

INSERT A MINIMUM OF 24"

FLOW

**INSERTED
JOINT**

REQUIRES USE OF COUPLER: INTERNAL
EXTERNAL SPLIT BAND, REDUCERS, OR
AS APPROVED BY ENGINEER

FLOW

BUTT JOINT

SECURELY WRAP WITH TILE TAPE EXTENDING
SEVERAL INCHES ONTO EACH PIPE

TILE TAPE

D CMP SLEEVE DETAILS				
CMP SLEEVE SIZE (INCHES)	MINIMUM LENGTH (FEET)			
8" & SMALLER	10			
10" TO 12"	12			
15" TO 18"	16			
LARGER THAN 18"	20			
CORRUGATED METAL PIPE (CMP) SHALL BE A MINIMUM OF 16 GAUGE GALVANIZED PIPE. OTHER COATINGS AS APPROVED BY ENGINEER				
CONTRACTOR TO DETERMINE CMP SLEEVE DIAMETER FROM JOINT TYPE SELECTED				
EITHER ANNULAR OF HELICAL PIPE IS ACCEPTABLE. FIELD CUTTING OF HELICAL PIPE WILL NOT BE ALLOWED				
REFER TO SPECIFICATION 2.310 - CORRUGATED METAL PIPE				
E ROCK RIPRAP DETAILS				
CMP SLEEVE SIZE (INCHES)	GEOTEXTILE QUANTITY (S.Y.)	ROCK QUANTITY (C.Y.)		
6" TO 15"	±12 S.Y.	±2 C.Y.		
LARGER THAN 15"	±20 S.Y.	±4 C.Y.		
INSTALL RIPRAP/GEOTEXTILE WHEN REQUIRED IN DESIGN TABLE				
GEOTEXTILE TO BE MNDOT TYPE III OR IV				
ROCK RIPRAP SHOULD BE A MINIMUM OF MNDOT CLASS II, EITHER FIELD STONE OR ANGULAR ROCK MAY BE USED				
THICKNESS OF RIPRAP TO BE $1.25 \times D_{100}$				
REFER TO SPECIFICATIONS: 2.410 - RIPRAP 2.440 - GEOTEXTILES				

The diagram illustrates a cross-section of a trench bedding detail. It shows a central trench with a flat bottom. The bottom is composed of a 6" MIN thick layer (labeled 4) on top of a 12" MIN thick layer (labeled 3). The trench walls are sloped and benched, with a required sloping/benching angle indicated. The trench is filled with final backfill material, which is moderately compacted to prevent excess settling. The surrounding area is undisturbed soil. The diagram is labeled with dimensions and callouts: 6" MIN, 12" MIN, 4, 3, MOUND EXCESS MATERIAL OVER TRENCH, REQUIRED SLOPING/BENCHING, FINAL BACKFILL WITH EXCAVATED TRENCH MATERIAL AND MODERATELY COMPACT TO PREVENT EXCESS SETTLING, and FLAT-BOTTOM TRENCH.

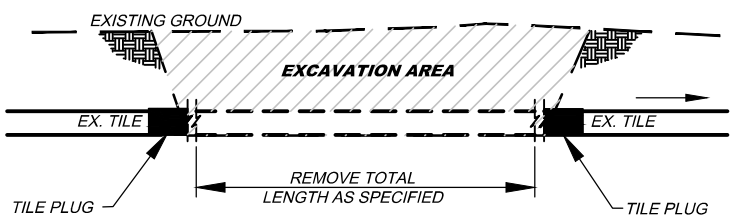
BEDDING DETAIL - 103

NOT TO SCALE

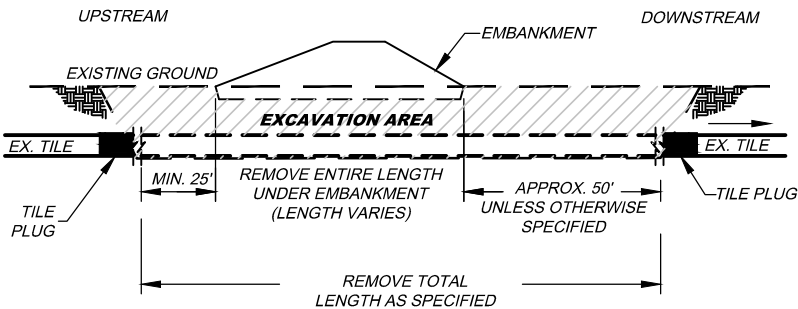
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14 OF **15**

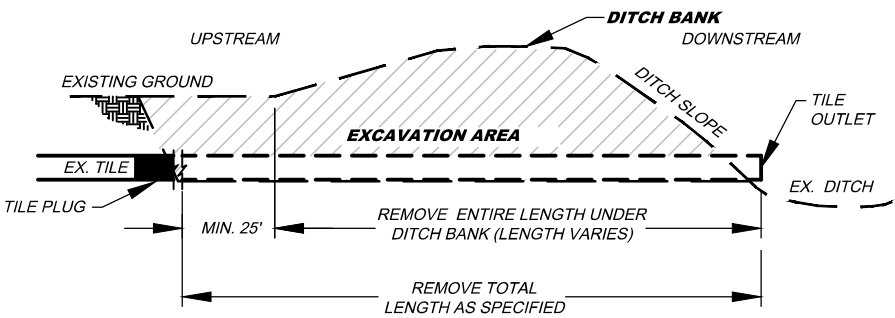
TILE REMOVAL DETAILS/ REQUIREMENTS



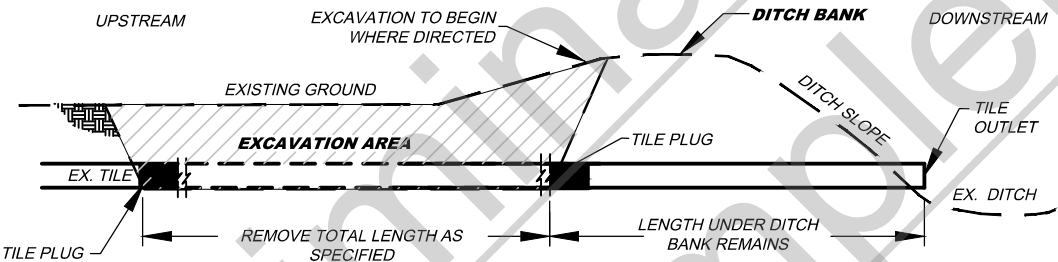
TYPICAL
NOT TO SCALE



UNDER EMBANKMENTS
NOT TO SCALE



AT OUTLET LOCATIONS
NOT TO SCALE



AT OUTLET LOCATIONS WHERE DIRECTED
TO NOT DISTURB DITCH BANK
NOT TO SCALE

TILE BLOCK / REMOVAL TABLE

TILE BLOCK CONSTRUCTION TYPE	NO. OF BLOCKS REQUIRED	TOTAL LINEAR FEET OF TILE TO BE REMOVED
A	1	50
B	5	575

DESIGN PLAN IDENTIFICATION

TILE BLOCK / REMOVAL LOCATION AND DESIGN WILL BE SPECIFIED ON PLAN VIEW WITH THIS REFERENCED CALL-OUT:



= EXAMPLE: CONSTRUCT TYPE "A" REMOVAL TRENCH AND REMOVE / BLOCK 100 FEET OF EXISTING DRAIN TILE

CONSTRUCTION REQUIREMENTS

SHOULD UNEXPECTED DRAIN TILE (NOT SHOWN ON PLAN DRAWINGS) BE DISCOVERED DURING CONSTRUCTION THE PROJECT ENGINEER SHALL BE CONTACTED FOR APPROPRIATE COURSE OF ACTION FOR THE TILE BLOCK.

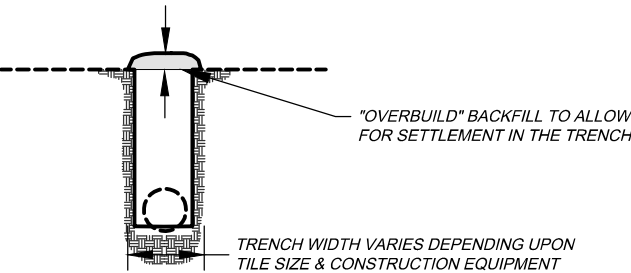
TILE REMOVAL (EXCAVATION):

- THE WORK SHALL INCLUDE ALL LABOR, MATERIALS, AND EQUIPMENT REQUIRED TO COMPLETE THE EXCAVATION AND REMOVAL OF ALL IDENTIFIED TILE DRAINAGE SYSTEMS.
- IDENTIFIED DRAINAGE TILE SHALL BE EXCAVATED AND REMOVED AS REQUIRED BY THE DRAWINGS, AS STAKED, OR AS OTHERWISE SPECIFIED BY THE ENGINEER.
- REFER TO BWSR SPECIFICATION 2.260 "TILE DRAINAGE SYSTEM BLOCKS" FOR ADDITIONAL INFORMATION AND REQUIREMENTS FOR PLUGGING THE TILE ENDS AND BACKFILLING THE EXCAVATED TRENCH.

TILE REMOVAL TRENCH CONSTRUCTION REQUIREMENTS

TYPE A

PURPOSE: TYPE 'A' TILE REMOVAL TRENCH SHALL BE USED IN LOCATIONS WHERE COMPACTION IS NOT CRITICAL. THIS INCLUDES AREAS THAT WILL NOT HAVE CONCENTRATED FLOWS ACROSS THE SURFACE OF THE COMPLETED TILE BLOCK.



NOT TO SCALE

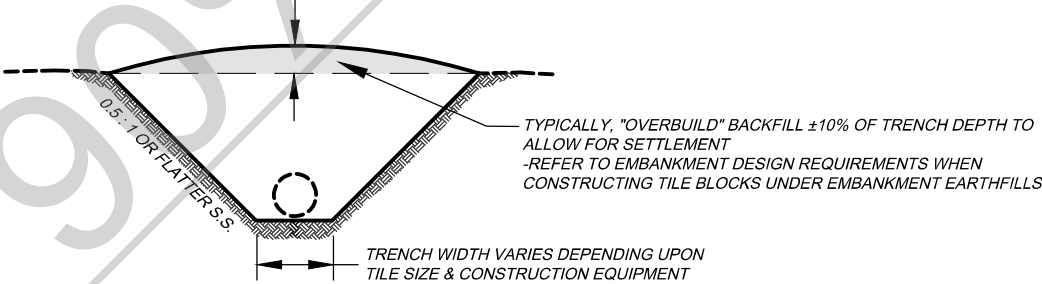
AT LOCATION OF TILE BLOCKS, A SLOPED OR BENCHED TRENCH EXCAVATION MAY ME NECESSARY TO SAFELY PLUG TILE.

THE TRENCH SHALL BE BACKFILLED USING PREVIOUSLY EXCAVATED SOILS.

BACKFILL AND COMPACT IN 12 INCH LIFTS USING BUCKET COMPACTION OR OTHER SUITABLE METHODS, AS ALLOWED.

TYPE B

PURPOSE: TYPE 'B' TILE REMOVAL TRENCH SHALL BE USED IN LOCATIONS WHERE COMPACTION IS CRITICAL. THIS INCLUDES UNDER CONSTRUCTED EARTHFILLS/EMBANKMENTS, AREAS WHERE SURFACE FLOWS MAY OCCUR ACROSS SURFACE OF COMPLETED TILE BLOCK (EXAMPLE: SPILLWAYS) OR OTHER AREAS WHERE EXCESS TRENCH SETTLEMENT IS OF CONCERN.



NOT TO SCALE

- THE TRENCH SHALL BE BACKFILLED WITH THE MOST SUITABLE MATERIAL AVAILABLE IN LIFTS NOT TO EXCEED 12 INCHES BEFORE COMPACTION. COMPACT EACH LIFT TO A DENSITY EQUAL TO THAT OF THE SURROUNDING UNDISTURBED SOIL. TO ACHIEVE THE REQUIRED COMPACTION DENSITY, COMPACT SOIL IN LIFTS UP TO THE ORIGINAL GROUND SURFACE USING A JUMPING JACK, SHEEPSFOOT ROLLER OR SIMILAR MECHANICAL COMPACTION EQUIPMENT (BUCKET TAMPING WILL NOT BE ALLOWED).

- THE SMALL AMOUNT OF ADDITIONAL MATERIAL NEEDED FOR REQUIRED OVERBUILD CAN BE LIGHTLY COMPACTED WITH TRACKED EQUIPMENT TO ENABLE SUITABLE VEGETATION ESTABLISHMENT.

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.

LIC. NO. 22148

DATE: .

THOMAS A WENZEL



HART - CARVER COUNTY
CREP WETLAND RESTORATION
TILE BLOCK-REMOVAL DETAILS

PROJECT #:

2020-025

SHEET NO.

15 OF 15

**STATE OF MINNESOTA
JOINT DRAINAGE AUTHORITY OF CARVER, WRIGHT, AND MCLEOD COUNTIES
SITTING AS THE DRAINAGE AUTHORITY FOR
JUDICIAL DITCH 4**

In the Matter of the Petition for Impounding,
Rerouting, and Diverting Drainage System
Waters and Partial Abandonment of Carver-
Wright-McLeod Judicial Ditch 4 Pursuant to
Minnesota Statutes, sections 103E.227 and
103E.806 (Hart et al.)

PUBLIC HEARING NOTICE

Joint Ditch 4 Meeting – Carver County Commissioners Fahey, Lynch, Workman will be present in County Board Room. McLeod County Commissioners Schmalz and Wright County Commissioner Kaczmarek will be participating remotely.

PLEASE TAKE NOTICE, the Joint Drainage Authority of Carver, Wright, and McLeod Counties, sitting as the public drainage authority for Carver-Wright-McLeod Judicial Ditch 4, pursuant to Minn. Stat. § 103E.227 and 103E.806, shall hold a public hearing, in person and remotely, on the petition of Jeffrey Hart, Terri Hart, Shawn Bode, and the Minnesota Board of Water and Soil Resources requesting to Impound, Reroute, and Divert drainage system waters and partially abandon drainage system waters within Sections 5 and 8 of Township 117N, Range 26W, Hollywood Township, Carver County, Minnesota.

The hearing will be conducted at 7:30 a.m. or shortly thereafter as the agenda allows on March 7, 2023, in the Carver County Boardroom of the Carver County Government Center, 600 East 4th Street, Chaska, Minnesota. Certain members of the Joint Drainage Authority may be attending the meeting by interactive video teleconference from their regular meeting place at their county of origin pursuant to statutes section 13D.02. The public may attend the hearing in person or by remote means. If attending the hearing remotely, access codes and instructions for the hearing are as follows:

A copy of the petition and engineer’s report is available for inspection at the office of Kathy Smith, Land Records & Vitals Manager, Carver County Land Records Office, Carver County Government Center, 600 East 4th Street, Chaska, Minnesota, or can be requested via email at ksmith@co.carver.mn.us. At the public hearing, the Joint Drainage Authority will accept public comment regarding the petition and Engineer’s Report. Written comments will be accepted by mail or email received by the Land Records & Vitals Manager, Kathy Smith, up to March 6, 2023. Written comments may be mailed to Carver County Government Center, Property & Financial Services Division, Attn: Kathy Smith, 600 East 4th Street, Chaska, MN 55318 or via email at ksmith@co.carver.mn.us. Any comments received by mail or email prior to the public hearing will be read into the record at the March 7, 2023, hearing.

Join from the meeting link

<https://carvercounty.webex.com/carvercounty/j.php?MTID=m539a1abf841c1d764f5acf1235e2654d>

Join by meeting number

Meeting number (access code): 2495 008 6253

Meeting password: 3bsUbHPJ5m2

Tap to join from a mobile device (attendees only)

+1-415-655-0002, 24950086253## United States Toll

Join by phone

+1-415-655-0002 United States Toll

Global call-in numbers

Join from a video system or application

Dial 24950086253@webex.com

You can also dial 173.243.2.68 and enter your meeting number.

If you are a host, click [here](#) and login site to view host information.

Need help? Go to <https://help.webex>.

There is also a link on the Carver County website: [Joint Ditch Meetings | Carver County, MN](#)