Minnesota Department of Natural Resources
Division of Ecological & Water Resources
500 Lafayette Road, Box 25
St. Paul, MN 55155-4025

February 27, 2026

Jon Lore
Minnesota DNR EWR Clean Water

RE: Natural Heritage Review of the proposed **Skandia WMA Stream and Wetland Restoration**,
T108N R41W Sections 19 and 30; Murray County

Dear Jon Lore,

For all correspondence regarding the Natural Heritage Review of this project please include the project ID **MCE-2026-00064** in the email subject line.

As requested, the Minnesota Natural Heritage Information System has been reviewed to determine if the proposed project has the potential to impact any rare species or other significant natural features. Based on the project details provided with the request, the following rare features may be impacted by the proposed project:

Ecologically Significant Areas and State-listed Species

- Calcareous fens (Skandia WMA, Fen ID# 42026) with state-listed threatened plants, were documented near the proposed project. A calcareous fen is a rare and distinctive peat-accumulating wetland that is legally protected in Minnesota. The Wetlands Conservation Act (WCA), authorized by Minnesota Statutes, section 103G.223, states that calcareous fens may not be filled, drained, or otherwise degraded, wholly or partially, by any activity, except as provided for in a management plan approved by the commissioner of the Department of Natural Resources. Many of the unique characteristics of calcareous fens result from the upwelling of groundwater through calcareous substrates. Because of this dependence on groundwater hydrology, calcareous fens can be affected by nearby activities or even those several miles away. For more information regarding calcareous fens, please see the Calcareous Fen Fact Sheet. To minimize stormwater impacts, please refer to the Minnesota Pollution Control Agency's General Principles for Erosion Prevention and Sediment Control in the Minnesota Stormwater Manual. Please note that calcareous fens are "Special Waters" and a buffer zone may be required.

  As discussed with the Calcareous Fen Program Coordinator, Keylor Andrews, **the proposed project must maintain a minimum 500-foot buffer from the calcareous fens**. Contact Keylor if there are changes to the project as additional avoidance measures may be needed to achieve avoidance. If it is determined the project will impact the calcareous fens, then a rare plant survey will likely be required.

- Additional actions to avoid or minimize disturbance include, but are not limited to, the following recommendations:
    - Use effective erosion prevention and sediment control measures.
    - Inspect and clean equipment prior to operation and follow recommendations to prevent the spread of invasive species.
    - Revegetate disturbed soil with native species suitable to the local habitat as soon after construction as possible.
    - Use only weed-free mulches, topsoils, and seed mixes. Of particular concern are birdsfoot trefoil (*Lotus corniculatus*) and crown vetch (*Coronilla varia*), two invasive species that are sold commercially and are problematic in prairies and disturbed open areas.

- Ecologically Significant Areas can be viewed using the Explore page in Minnesota Conservation Explorer (MCE) or their GIS shapefiles can be downloaded from DNR Quick Layers. To receive a list of ecologically significant areas in the vicinity of your project, create a Conservation Planning Report using the Explore page in MCE.

- Please report incidental sightings of state-listed species via the DNR Plant and Animal Observation Form.

Federally Protected Species

- To ensure compliance with federal law, conduct a federal regulatory review using the U.S. Fish and Wildlife Service's (USFWS) online Information for Planning and Consultation (IPaC) tool.

Environmental Review and Permitting

- The Environmental Assessment Worksheet (EAW) should address whether the proposed project has the potential to adversely affect the above rare features and, if so, it should identify specific measures that will be taken to avoid or minimize disturbance. Sufficient information should be provided so the DNR can determine whether a permit to take will be needed for any of the above protected species.

- Please include a copy of this letter and the MCE-generated Final Project Report in any state or local license or permit application. Please note that measures to avoid or minimize disturbance to the above rare features may be included as restrictions or conditions in any required permits or licenses.

The Natural Heritage Information System (NHIS), a collection of databases that contains information about Minnesota’s rare natural features, is maintained by the Division of Ecological and Water Resources, Department of Natural Resources. The NHIS is continually updated as new information becomes available and is the most complete source of data on Minnesota's native plant communities, rare species, and other rare features. However, the NHIS is not an exhaustive inventory and does not contain the locations of all rare features in the state. Therefore, ecologically significant features for which we have no records may exist within the project area. If additional information becomes available regarding rare features in the vicinity of the project, further review may be necessary.

For environmental review purposes, the results of this Natural Heritage Review are valid for one year; the results are only valid for the project location and project description provided with the request. **If project details change or the project has not occurred within one year, please resubmit the project for review within one year of initiating project activities.** Resubmit by selecting *Clone Project as Draft* on the project page in MCE.

The Natural Heritage Review does not constitute project approval by the Department of Natural Resources. Instead, it identifies issues regarding known occurrences of rare features and potential impacts to these rare features. Visit Natural Heritage Review for additional information regarding this process, survey guidance, and other related information. For information on the environmental review process or other natural resource concerns, please contact your DNR Regional Environmental Assessment Ecologist.

Thank you for consulting us on this matter and for your interest in preserving Minnesota's rare natural resources.

Sincerely,

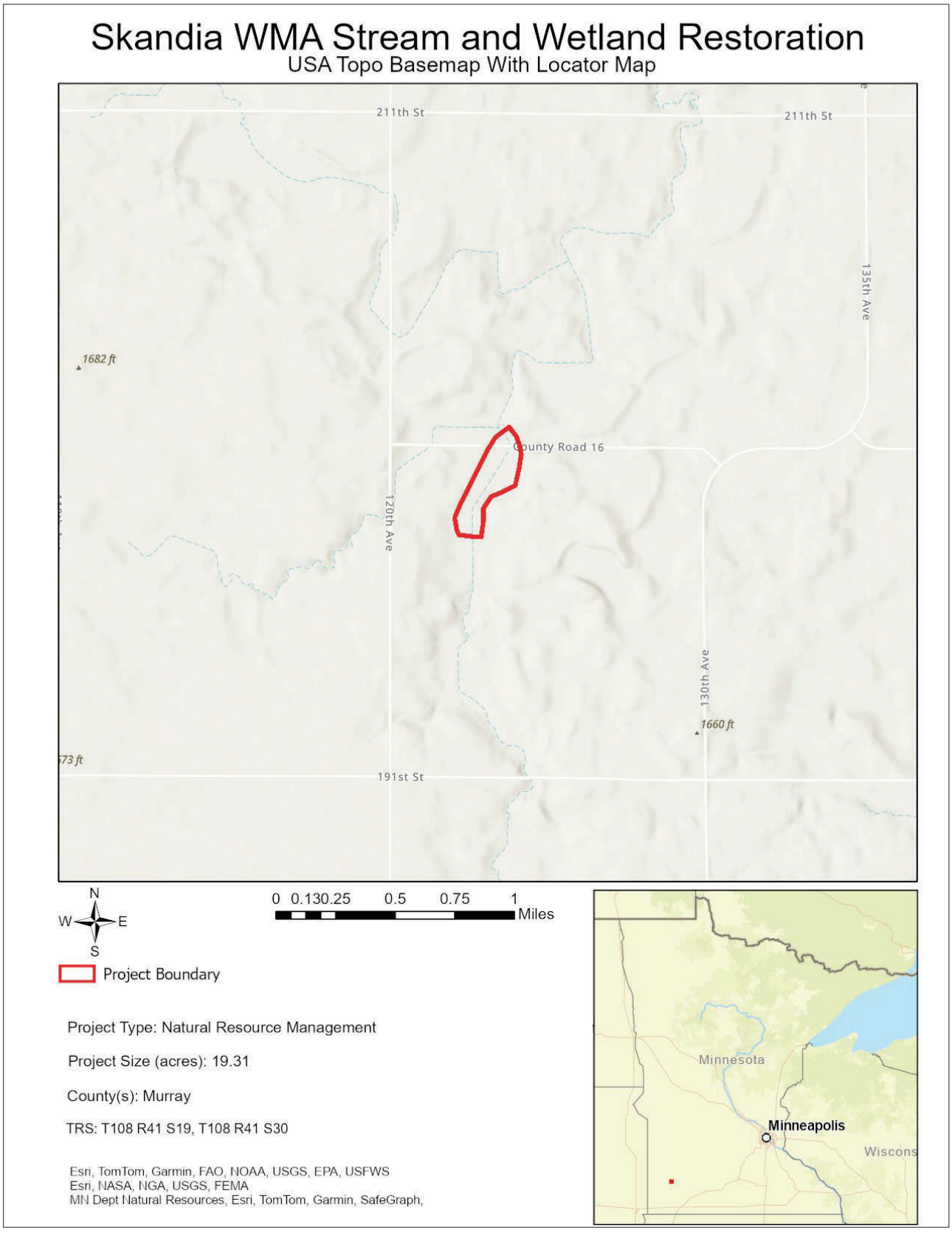
Molly Barrett

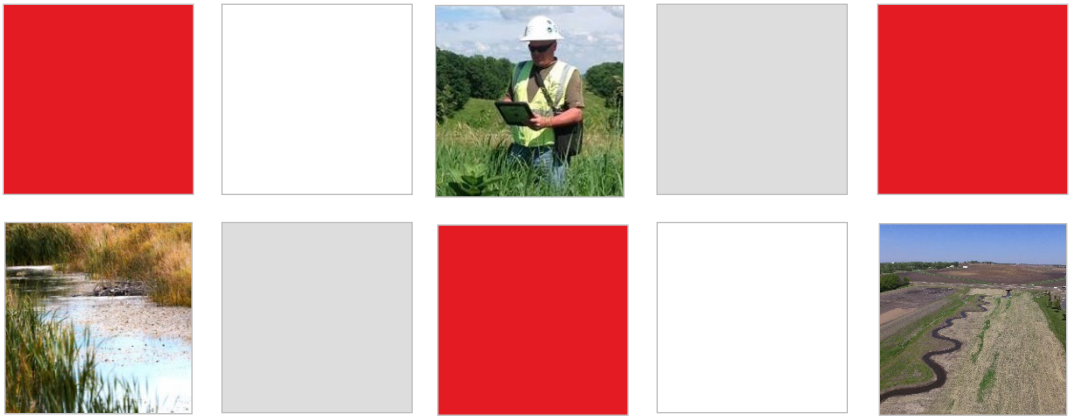
Digitally signed by Molly Barrett
Date: 2026.02.27 18:13:58 -06'00'

Natural Heritage Review Specialist
molly.barrett@state.mn.us

Cc: Haley Byron, Regional Environmental Assessment Ecologist, South (Region 4)
Cc: Megan Benage, Regional Ecologist, South (Region 4)
Cc: Keylor Andrews, Calcareous Fen Program Coordinator

For more project details, see the MCE-generated Final Project Report, available on the MCE project page.





PREPARED FOR

Minnesota DNR
Skandia WMA Stream and Wetland Restoration
Murray County, MN

Design Documentation Report

PREPARED BY

Merjent, Inc.
1 Main Street SE, Suite 300
Minneapolis, MN 55414

March 2026

merjent

Report Revision Summary			
Prepared By	Rebecca Hillman	on	12/19/2025
Reviewed By	Mike Behan	on	1/8/2026
Revised By	Rebecca Hillman	on	3/11/2026

TABLE OF CONTENTS

1.0 PROJECT OVERVIEW 1
1.1 PROJECT LOCATION 1
1.2 PROJECT TIMELINE 2
1.3 PROJECT OBJECTIVES 2
2.0 HYDROLOGIC AND HYDRAULIC ANALYSIS 3
2.1 EXISTING CONDITIONS ANALYSIS 3
2.2 PROPOSED CONDITIONS ANALYSIS 4
3.0 PROPOSED DESIGN 5
3.1 CHANNEL DESIGN 5
3.1.1 Culvert and Roadway 6
3.1.2 Clay Plugs 6
3.2 FLOODPLAIN DESIGN 6
3.2.1 Seeding 7
3.2.2 Excess Material Piles 7
4.0 PERMITTING/REGULATORY SUMMARY 8
4.1 NPDES PERMIT REQUIREMENTS 8
4.2 OTHER PERMITTING REQUIREMENTS 8
4.2.1 Wetlands 8
4.2.2 Township Coordination 9
4.2.3 Local and Non-governmental Land Use Requirements 9
5.0 CONSTRUCTION 10
5.1 SEQUENCING/STAGING PLAN 10
5.2 FINAL ENGINEER'S OPINION OF PROBABLE COST (OPC) 11
6.0 REFERENCES 12

LIST OF TABLES

Table 1.2-1 Anticipated Project Timeline 2
Table 2.1-1 Design Storm Discharges 3
Table 2.1-2 Existing Culvert Conditions Analysis 3
Table 2.2-1 Proposed Culvert Conditions Analysis 4
Table 3.1-1 Proposed Cross Sectional Geometry 5
Table 3.1-2 Proposed Stream Channel Classification 5
Table 3.2-1 Proposed Seed Mixes 7

LIST OF APPENDICES

Appendix A - Maps and Exhibits
Appendix B - H&H Modeling Reports
Appendix C - 95% Design Plans
Appendix D - 95% Engineer's Opinion of Probable Cost

LIST OF ABBREVIATIONS AND TERMS

ADT	average daily traffic
BWSR	Board of Water and Soil Resources
cfs	cubic feet per second
CMP	corrugated metal pipe
DDR	Design Documentation Report
DRR	Design Recommendations Report
EAW	Environmental Assessment Worksheet
EQB	Environmental Quality Board
Merjent	Merjent, Inc.
MNDNR	Minnesota Department of Natural Resources
MNDOT	Minnesota Department of Transportation
MNR	Midwest Natural Resources, Inc.
MPCA	Minnesota Pollution Control Agency
NPDES	National Pollutant Discharge Elimination System
NWI	National Wetlands inventory
NWP	Nationwide Permit
OPC	Opinion of Probable Cost
Project or Project Area	Skandia WMA Stream and Wetland Restoration
RCP	reinforced concrete pipe
SWPPP	Stormwater Pollution Prevention Plan
TEP	Technical Evaluation Panel
USACE	U.S. Army Corps of Engineers
WMA	Wildlife Management Area

1.0 PROJECT OVERVIEW

Merjent, Inc. (Merjent) was contracted by the Minnesota Department of Natural Resources (MNDNR) to design and oversee the construction of the Skandia Wildlife Management Area (WMA) Stream and Wetland Restoration (Project). The overall goal of the Skandia WMA is to restore the former agricultural land into a natural prairie representative of pre-settlement conditions. The MNDNR performs ongoing work such as seeding and prescribed burning to promote the establishment of native vegetation. However, this Project is focused on restoring the stream and wetland communities within the WMA.

Stream restoration will be achieved through re-meandering the stream to a more natural pattern. In many agricultural settings, landowners will straighten streams to maximize the amount of available cropland. This often leads to a significant increase in channel slope and water velocity, which can then lead to channel instability. Re-meandering the main channel will raise the local water table, prevent the upstream calcareous fens from draining, and contribute to the overall goal of creating a natural habitat at the WMA. Wetland restoration will be achieved through a series of shallow scrapes in depressional and/or flat areas of the site. Hydrology is anticipated to be supplied through stream bankfull events (floodplain activation) and/or expression of shallow groundwater following the scrape. All project areas will be seeded with the Minnesota Board of Water and Soil Resources (BWSR) or Minnesota Department of Transportation (MNDOT) native seed mixes appropriate for southwest Minnesota.

Field assessments were conducted by the MNDNR and consultants during Spring 2025 to collect information regarding stream condition, existing channel morphology, culvert and road dimensions, plant communities, and a topographic survey of the Project Area. These data were analyzed in RiverMorph (version 5.2.0) and Civil3D (version 2024.3). The Design Recommendations Report (DRR; Merjent, 2025) contains detailed information on the stream's existing condition.

1.1 PROJECT LOCATION

The Project is located in Township 108 North, Range 41 West, in Lake Sarah Township, Murray County, Minnesota. Two first order unnamed streams are within the Project Area. In this report, the main channel refers to the stream that flows south from the calcareous fens to Lake Maria north of Skandia WMA. The other stream is referred to as the tributary, which originates from the west of the WMA and flows into the main channel north of 201st Street (Figure 1 in Appendix A).

The Project Area is within the Prairie Coteau subregion of the Northern Glaciated Plains ecoregion, which is characterized by flat to gently rolling hills made up of glacial drift sediments (White, 2020). The bedrock in this area consists of Precambrian age metamorphic (Sioux quartzite formation) and Cretaceous age sedimentary (undifferentiated sandstone and mudstone) deposits (Jirsa, et al., 2011). Clay to silty clay loam soils dominate the Project Area and approximately 40 percent of the soil in the Project Area has a hydric soil rating (Soil Survey Staff, 2025). Based on historical maps and aerial photographs of the area, the main channel in the Project Area was likely channelized for agricultural purposes in the early to mid-1900s.

1.2 PROJECT TIMELINE

The anticipated schedule for the Project is shown in Table 1.2-1 below. The initial field assessments and an in-person kickoff meeting were completed in Spring 2025, and the concept plans were developed immediately afterward. The DRR (Merjent, 2025) summarized the field assessments and conceptual analysis completed in the development of a 30% design deliverable for the Project. Following the MNDNRs approval of the DRR, Merjent advanced the plans to 95% design and prepared this document, the Design Documentation Report (DDR). Once the DDR and final plans have been approved, Merjent will assist the MNDNR in preparation of the construction bid documents. During construction, Merjent will have staff onsite to ensure the design is being properly implemented.

Table 1.2-1

Anticipated Project Timeline

Key Project Milestones / Deliverables	Estimated Time of Completion
Field Assessments	Spring 2025
Concept Plans and Design Recommendations Report (DRR)	Summer 2025
Final Plans and Design Documentation Report (DDR)	Winter 2025 / 2026
MNDNR Bid Advertisement	Fall 2026 / Winter 2027
Construction	Spring / Summer 2027

1.3 PROJECT OBJECTIVES

The primary goal of the Project is to restore the channelized stream in Skandia WMA to a natural channel. Restoring the stream to a meandering stable condition will improve aquatic habitat, increase floodplain storage, and reduce bank erosion. As a secondary benefit, the Project aims to improve upstream fen quality by keeping water on the landscape for longer periods of time. Because the primary use of WMAs across Minnesota is recreational hunting, restoration of Skandia WMA will include improving habitat for popular game species such as pheasants, deer, and waterfowl by increasing inundation and native plant species populations.

2.0 HYDROLOGIC AND HYDRAULIC ANALYSIS

2.1 EXISTING CONDITIONS ANALYSIS

As part of the Project, the existing culverts on the main channel under 201st Street will be replaced. The existing crossing consists of one 36-inch round reinforced concrete pipe (RCP) culvert for the main channel flow and a secondary 42-inch round corrugated metal pipe (CMP) to convey flood flows. Design discharges were obtained using HydroCAD (version 10.20-5c) utilizing the Rational Method to model the drainage area to the culvert, which is approximately 1,660 acres. The total drainage area for the Project is approximately 1,670 acres and includes the portion north of 201st Street (Figure 2 in Appendix A). Land uses in the modeled drainage area are predominantly agricultural row crop production and pastureland (Figure 3 in Appendix A). The calculated flow rates are included in Table 2.1-1 below and the full HydroCAD report is included in Appendix B.

Table 2.1-1

Design Storm Discharges

Storm Event	Discharge (cubic feet per second, cfs)
2-Year	93.11
25-Year	166.45
50-Year	190.97
100-Year	216.62

A roadway overtopping analysis was performed utilizing the Federal Highway Administration HY-8 software (version 7.8). Merjent utilized the modeled flow rates and constructed an existing conditions performance model utilizing topographic survey collected for the existing culverts and roadway profile. Under existing conditions, the 36-inch RCP and 42-inch CMP culvert configuration is estimated to overtop the roadway in approximately the 25-year storm. Table 2.1-2 below contains a summary of the existing conditions analysis and Appendix B includes more detailed information.

Table 2.1-2

Existing Culvert Conditions Analysis

Storm Event	Total Discharge (cfs)	Main Outlet Discharge (cfs)	Secondary Outlet Discharge [a] (cfs)	Roadway Discharge [b] (cfs)
2-Year	93.11	58.90	34.02	0.00
25-Year	166.45	54.57	46.81	64.98
50-Year	190.97	51.57	48.08	91.25
100-Year	216.62	48.47	48.45	119.25
Overtopping [c]	101.27	61.35	32.92	0.00

Notes:

[a] Secondary outlet refers to the 42-inch CMP located in the floodplain.

[b] Roadway discharge refers to the amount of water overtopping the roadway.

[c] Overtopping refers to the minimum discharge for overtopping to occur. Anything greater than this flow would result in overtopping of the roadway.

The MNDOT Drainage Manual provides design standards for culvert capacity on culverts of various sizes based on location and average daily traffic (ADT; MNDOT, 2000). For minor culverts, defined as 48 inches or less in diameter, a 50-year storm design frequency is required. For larger culverts greater than 48 inches the minimum roadway overtopping frequency is dictated by projected ADT. All centerline culverts greater than 48 inches in diameter require a risk assessment to evaluate practical detours and potential damages that may arise from a culvert failure.

For a projected ADT less than 1,500 cars per day, a 25-year storm (or lesser depending on exact projected ADT) design storm may be used. The Drainage Manual notes that a more conservative design frequency (e.g., the 100-Year storm event) may be required if there is significant flood damage potential upstream.

2.2 PROPOSED CONDITIONS ANALYSIS

Culvert replacement and enhancement is scoped as a part of the Skandia WMA project to improve aquatic organism passage and overall stream function. Based on the existing conditions analysis, Merjent advanced a reinforced concrete box culvert design to better match the channel dimensions with an invert over-bury of 12 inches to provide streambed substrate continuity through the culvert crossing. The proposed design is a 6-foot span and 5-foot rise concrete box culvert with an upstream invert elevation of 1575.8 feet and a downstream invert elevation of 1575.1 feet. The proposed culvert was designed to be 52 feet long and have square edge headwalls.

The design storm performance ensures zero overtopping through the 100-year storm. Table 2.2-1 below includes a summary of the proposed condition results, and the full HY-8 report is included in Appendix B.

Table 2.2-1

Proposed Culvert Conditions Analysis

Storm Event	Total Discharge (cfs)	Culvert Discharge [a] (cfs)	Roadway Discharge [b] (cfs)
2-Year	93.11	93.11	0.00
25-Year	166.45	166.45	0.00
50-Year	190.97	190.97	0.00
100-Year	216.62	216.62	0.00
Overtopping [c]	217.37	217.37	0.00

Notes:

[a] Culvert discharge and total discharge are equivalent in the proposed condition because there is only one barrel in the culvert.

[b] Roadway discharge refers to the amount of water overtopping the roadway.

[c] Overtopping refers to the minimum discharge for overtopping to occur. Anything greater than this flow would result in overtopping of the roadway.

3.0 PROPOSED DESIGN

3.1 CHANNEL DESIGN

The proposed design was achieved by first creating a centerline alignment that was reflective of natural E type streams. Pattern variables such as meander width ratio, belt width, and sinuosity, were measured to verify consistency with natural E type streams. Due to a lack of suitable nearby reference reaches, a range of values for each parameter was obtained from Rosgen (2022). E-type stream data from the MNDNR was examined, but the Project's drainage area is not within the range of values for other streams. Because of this, the proposed cross section was designed to contain similar flow events as the existing channel. The proposed riffle cross section has a slightly larger area than the existing riffle and the pool area is 1.4 times greater than the proposed riffle area. Table 3.1-1 includes key dimensions for each type of cross section present in the proposed design.

Table 3.1-1

Proposed Cross Sectional Geometry

Parameter	Riffle Cross Section	Transition Cross Section	Pool Cross Section
Bankfull Width (ft)	8.0	9.5	11
Maximum Depth (ft)	1.5	2	2.5
Bankfull Cross-sectional Area (ft^2)	12	14.25	16.5

The proposed riffle has a slightly narrower width but has a deeper mean depth than the existing riffle. This resulted in a slightly greater bankfull area for the proposed section. The bed material will be slightly coarser in the riffle sections than elsewhere in the channel. Class 3 aggregate material is suggested as per the design plans. The proposed pool section has a similar width to existing and has a slightly deeper mean depth. The proposed bankfull area is slightly larger than the existing for the pool sections. The transition section was designed to create a smooth transition between the riffle and pool geometry. The bank slopes, width, and depth of the transition section are in between the equivalent values for the riffle and pools sections. Class 2 aggregate material is recommended for use as bed material in the transition and pool sections.

As described in the DRR (Merjent, 2025), the proposed stream was designed to fit Rosgen's E type stream characteristics based on the landscape and geology on the site. As shown in Table 3.1-2, the classification criteria will be met by the proposed design.

Table 3.1-2

Proposed Stream Channel Classification

Parameter	Proposed Stream	Rosgen E Type Range
Entrenchment Ratio [a]	4.3	> 2.2
Width to Depth Ratio [b]	5.3	< 12
Sinuosity	1.6	> 1.5
Channel Slope	0.002	< 0.002

Notes:
[a] Entrenchment ratio is calculated by dividing the floodprone width by the riffle bankfull width.
[b] Width to depth ratio is calculated by dividing the bankfull width by the bankfull mean depth of riffle cross sections.

3.1.1 Culvert and Roadway

Based on the hydraulics analysis, a 6-foot-spanby 5-foot-rise box culvert will be installed in the new channel. The culvert will be located approximately 95 feet west of the existing main culvert to match the relocated channel restoration alignment. The box culvert will be 52 feet long and have 1 foot of channel bed overbury to ensure a natural bottom substrate and aquatic organism passage. The overbury material will be the same Class III material found in the riffles throughout the stream restoration areas. As stated in the Section 2.2, the proposed culvert improves hydraulic performance with no overtopping of the roadway in the 100-year storm.

The Lake Sarah Township road will be reconstructed maintaining the same vertical profile and curve / sag as existing. The restored roadway will consist of 6 inches of Class V aggregate base material and 3 inches of aggregate surfacing. Engineer-approved granular backfill will be placed surrounding the culvert.

3.1.2 Clay Plugs

The existing channel will be filled in with the excavated material from the new channel. This material will be compacted in 6-inch lifts to limit settling. The locations where the new channel intersects or abuts against the filled channel will be the most prone to erosion risk. These locations will be stabilized with clay plugs built in the filled channel.

The plugs will be constructed using impervious material that is denser than the surrounding fill. The plugs should extend to the maximum depth of the proposed channel and be compacted in 6-inch lifts. Refer to the plans and specifications for more detailed instructions regarding construction and placement of the clay plugs.

3.2 FLOODPLAIN DESIGN

One key aim of the design is to increase the amount of time water spends in the Project Area. Careful consideration was taken to increase the retention of water on the landscape while also not negatively impacting the fen upstream. The MNDNR Groundwater Technical Team reviewed the site following the Project's kick-off meeting and does not expect the project to directly impact the fen. To ensure this, no work will be done within 500 feet of the fen and the starting and ending elevations of the proposed channel will match the existing stream. While the elevations at project tie-in points will remain relatively the same, the slope of the proposed channel is less than the existing one. However, because of the 500-foot buffer away from the fen, it is unlikely that any potentially ponded water in the stream would affect the fen.

The 95% design plans (Appendix C) include no impacts to National Wetland Inventory (NWI) mapped wetlands or field mapped wetlands on the site. One wetland feature was identified during the wetland delineation by MNR. This wetland is within the 500-foot buffer from the fen area and will not be disturbed. The wetland delineation report (MNR, 2025) stated that the incised stream had effectively drained the soils that should have been hydric. By reconnecting the stream with its floodplain, this Project aims to restore some hydric soil characteristics back to the site.

Seven wetland scrapes are proposed in this Project. These scrapes are designed to be areas of micro-topography to promote water retention, groundwater recharge, and wetland creation. The scrapes will not be directly connected to the channel, but the highest elevation will be similar to that along the top of bank so when the channel overtops water will flow into the wetland scrapes.

These areas are not intended to be ponded water for months at a time. Instead, they are meant to provide floodplain roughness, flood storage, and plant diversity.

3.2.1 Seeding

Three seed mixes will be used in the proposed design (Table 3.2-1). Each seed mix contains a large percentage of cover crops such as oats (*Avena* sativa) or winter wheat (*Triticum* aestivum) to promote establishment. The Riparian South and West mix will be placed on the banks of the new channel. This mix includes a variety of native species commonly found in riparian areas in southwest Minnesota such as big bluestem (*Andropogon gerardii*), a variety of sedges (*Carex sp.*), and Virginia wild rye (*Elymus virginicus*). The primary function of this seed mix is to establish dense vegetation along the stream to provide bank stability as well as wildlife habitat.

The Wet Meadow South and West seed mix will be used specifically in areas where wetland scrapes are proposed. Because these areas mostly have hydric soil, the intent is that lowering the topography will effectively elevate the groundwater table to support wetland communities. This seed mix includes wetland vegetation such as swamp milkweed (*Asclepias incarnata*), a variety of asters (*Symphyotrichum sp.*), bulrush (*Scirpus atrovirens*), and Virginia wild rye.

The rest of the disturbed Project area (floodplains and excess material areas) will be seeded with the Mesic Prairie Southwest seed mix. This mix is intended for areas with full sun for at least 70 percent of the day and aims to benefit wildlife habitat, stabilize soils, and provide water quality benefits. Some plant species in this mix include sideoats grama (*Bouteloua curtipendula*), little bluestem (*Schizachyrium scoparium*), and partridge pea (*Chamaecrista fasciculata*).

Table 3.2-1

Proposed Seed Mixes

Name (Label)	Use	Acres
Riparian South and West (34-265)	Streambanks	2.6
Wet Meadow South and West (34-272)	Wetland Scrapes	3.3
Mesic Prairie Southwest (35-542)	Remaining Project Area	13.9

3.2.2 Excess Material Piles

Excavation work at the site will result in approximately 16,000 cubic yards of excess material for disposal. Two locations have been designated on the plans as excess material piles. These piles are to be located at the base of hills and blended into the terrain as much as possible. The excess material piles are to be stabilized and seeded as per the plans (Appendix C).

4.0 PERMITTING/REGULATORY SUMMARY

4.1 NPDES PERMIT REQUIREMENTS

A stream realignment project in Minnesota that disturbs one acre or more of land and involves channel modification will trigger several permitting requirements, particularly from the Minnesota Pollution Control Agency (MPCA) and the U.S. Army Corps of Engineers (USACE).

When a project reaches the one-acre disturbance threshold, it must be covered under the MPCA Construction Stormwater General Permit, issued under the National Pollutant Discharge Elimination System (NPDES) program. This permit is designed to prevent sediment, debris, and other pollutants from being washed off construction sites into nearby waters. A core requirement of the permit is the development of a Stormwater Pollution Prevention Plan (SWPPP), which must be prepared before construction begins. The SWPPP details how erosion and sediment will be controlled on-site, how stormwater will be managed, and what practices will be used to stabilize the site during and after construction. Permit coverage is obtained by submitting a Notice of Intent to the MPCA. Once the site is fully stabilized and construction is complete, a Notice of Termination must be submitted to close out permit coverage.

Merjent prepared a SWPPP that is included in the plan set. A review meeting with the MPCA will occur in early 2026.

4.2 OTHER PERMITTING REQUIREMENTS

The Project will require a Section 404 permit from the USACE under the Clean Water Act. This applies to any discharge of dredged or fill material into waters of the United States, including most streams and wetlands. For relatively minor impacts, the USACE may authorize the work under a Nationwide Permit (NWP), such as NWP 27, which covers stream and wetland restoration projects, but more extensive alterations may require an Individual Permit, which involves a more detailed review and public notice process. Merjent and MDNR will meet with the USACE to determine if the Project will fall under a NWP or an Individual Permit.

In addition, any activity that requires a Section 404 permit will also require a Section 401 Water Quality Certification from the MPCA. This certification ensures the proposed work will not violate state water quality standards. The MPCA evaluates potential impacts to aquatic ecosystems, habitat conditions, and water chemistry, and may require mitigation to offset adverse effects.

Merjent prepared an Environmental Assessment Worksheet (EAW) on behalf of MNDNR. This form will be submitted to the Environmental Quality Board (EQB) for review in early 2026. The purpose of the EAW is to describe environmental effects caused by the project. Merjent does not anticipate substantial comments from the EQB because by nature of the Project it should be considered to have a net positive impact on the environment.

4.2.1 Wetlands

One wetland was found on the site and is shown in the design plans (Appendix C). The wetland Technical Evaluation Panel (TEP) is in the process of reviewing the wetland delineation. Based on the location of the wetland, no impacts are expected at this point. The wetland is shown on the plans near the south end of the Project where no grading is planned.

4.2.2 Township Coordination

Merjent has confirmed with Murray County that the road authority is Lake Sarah Township for the 201st. gravel roadway. Lake Sarah Township has requested Merjent complete a grading permit for the Project but raised no concern over the Project in general.

Contact information for the aforementioned representatives is included below:

- Lake Sarah Township - lakesarahtownship@gmail.com
- Murray County Conservation District - (507) 836-6990 ext. 3

4.2.3 Local and Non-governmental Land Use Requirements

The entirety of the Project site is owned by the MNDNR with the exception of 201st Street that intersects Skandia WMA. As previously stated, this road is under the authority of Lake Sarah Township.

5.0 CONSTRUCTION

5.1 SEQUENCING/STAGING PLAN

Merjent has prepared a sequencing plan to assist in the construction process for the Project. The overall intent of the plan requires the contractor to plan and phase construction to minimize impacts to the greatest extent possible. Merjent recommends the contractor construct portions of the channel offline from the existing channel to the extent possible and construct each segment in phases. The general sequence of construction is as follows (see Sequencing Plan in Appendix C for more details):

1. Establish vehicle tracking pads such as rock construction entrances.
2. Install perimeter controls, such as silt fence, at downgradient perimeters of site.
3. Create stabilized staging areas and preserve vegetative buffer at site perimeters.
4. Create temporary crossings of the waterbody areas with timber matting or equivalent to avoid rutting.
5. Construct new channel and scrapes as shown in plans.
    a. Install new culvert and repair roadway.
6. Remove existing culvert and repair roadway.
7. Divert flow into new channel and fill in existing ditch.
8. Place excess material in locations shown in plans.
9. Provide temporary stabilization of disturbed soils that will remain idle for a period of 14 days or more.
10. Perform final stabilization of all disturbed soils.
11. Remove all temporary sediment control devices once the site has achieved final stabilization.

The contractor shall prevent sediment from being transported downstream during all phases of construction. Merjent recommends constructing the channel from downstream to upstream to limit the amount of water in the new channel during construction. Areas where the proposed stream and existing channel intersect may be done at the end for the same purpose.

Once the majority of the stream is constructed and vegetation is established sufficient enough to provide erosion and sediment control, the filling of the existing channel shall occur. Excess material shall be disposed of in the material piles denoted on the plans. These areas shall be stabilized and seeded in accordance with the design. Following site stabilization, all temporary sediment control devices shall be removed.

5.2 FINAL ENGINEER'S OPINION OF PROBABLE COST (OPC)

Merjent estimates the construction cost of the Project to be **$765,253** based on estimated quantities with a 10 percent contingency. See Appendix D for the detailed 95% design engineer's opinion of probable cost.

6.0 REFERENCES

Jirsa, M.A., T.J. Boerboom, V.W. Chandler, J.H. Mossler, A.C. Runkel, and D.R. Setterholm. 2011. Geologic Map of Minnesota, Bedrock Geology: Minnesota Geological Survey State Map Series S-21, scale 1:500,000.

Merjent, 2025. Design Recommendations Report. Skandia WMA Stream and Wetland Restoration, Murray County, MN.

Midwest Natural Resources (MNR). 2025. Wetland Delineation Report, Skandia WMA Stream Restoration Project, Murray County, Minnesota.

Minnesota Department of Transportation (MNDOT). 2000. Office of Bridges and Structures. Drainage Manual – Transmittal Letter No. 00-01.

Rosgen, D. L. 2022. River Assessment Field Guide, third edition. Wildlands Hydrology, Fort Collins, Colorado.

Soil Survey Staff, Natural Resources Conservation Service, United States Department of Agriculture. Web Soil Survey. Available online at https://websoilsurvey.nrcs.usda.gov/app/ . Accessed June 2025.

White, D. 2020. Ecological Regions of Minnesota: Level III and IV maps and descriptions. Available online at https://www.epa.gov/eco-research/ecoregion-download-files-state-region-5#pane-21. Accessed May 2025.

Appendix A -
Maps and Exhibits

Appendix B -
H&H Modeling Reports

Appendix C -
95% Design Plans

Appendix D -
95% Engineer's Opinion of Probable Cost

95% DESIGN-CONSTRUCTION PLANS
FOR
SKANDIA WMA STREAM AND WETLAND RESTORATION
MINNESOTA DNR
MURRAY COUNTY, MINNESOTA

OWNER CONTACT:

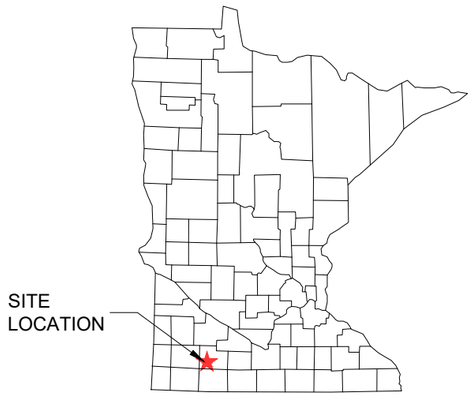
Jon Lore
Clean Water Legacy Specialist
Minnesota DNR

MINNESOTA DNR
117 Rogers Street
Mankato, MN 56001
507-910-1703

ENGINEER CONTACT:

Josh Petersen, PE

Merjent, Inc.
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
612-746-3660



STATE MAP
NOT TO SCALE

LOCATION MAP
NOT TO SCALE

VICINITY MAP
SCALE 1" = 300'

INDEX	
TITLE SHEET	1
GENERAL NOTES	2
EXISTING CONDITIONS	3
TYPICAL SECTIONS	4-5
SEQUENCING PLAN	6
GRADING PLAN - CHANNEL GRADING	7-8
GRADING PLAN - WETLAND SCRAPE AREAS	9
GRADING PLAN - EXCESS MATERIAL PILE	10
PLAN & PROFILE	11-13
EROSION & SEDIMENT CONTROL PLAN	14-18
BOX CULVERT DETAILS	19-22
CHANNEL SECTIONS	23-53
DETAILS	54-55

811 Know what's below. Call before you dig.

DATE OF PLOT: 01/07/2026

95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

DRAFT

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES
SKANDIA WMA - STREAM & WETLAND RESTORATION
MURRAY COUNTY, MINNESOTA

TITLE SHEET

C100

SHEET 1 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_PMN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Plan Sheets\2025.0224-Title Sheet.dwg

GENERAL NOTES:

1. THE CONTRACTOR SHALL VERIFY ALL FIELD CONDITIONS PRIOR TO WORK COMMENCING.
2. CONTRACTOR SHALL CONTACT UTILITY LOCATION SERVICES 48 HOURS PRIOR TO STARTING WORK.
3. THIS SITE PLAN IS FOR INSTALLATION OF CIVIL WORKS ONLY. ALL MECHANICAL EQUIPMENT, BUILDING PADS, BUILDING STRUCTURES SHALL BE BY OTHERS.
4. STOP WORK IF ENCOUNTERING ANY SUBSURFACE LATENT CONDITIONS, PIPE LINE BREAKS, DAMAGED UTILITIES, OR OTHER UNKNOWN OR UNFORESEEN INFRASTRUCTURE DAMAGE.
5. CONTRACTOR SHALL TAKE EVERY PRECAUTION TO PROTECT THE OWNERS EXISTING PROPERTY FROM DAMAGE DUE DIRECTLY OR INDIRECTLY FROM THE CONTRACTORS WORK. CONTRACTOR SHALL BE RESPONSIBLE FOR ANY SUCH DAMAGE.
6. CONTRACTOR SHALL BE RESPONSIBLE FOR ALL INJURY AND DAMAGE OF ANY KIND RESULTING FROM THIS WORK TO PERSONS OR PROPERTY.
7. RENTAL CHARGES, SAFETY, PROTECTION AND MAINTENANCE OF RENTED EQUIPMENT SHALL BE CONTRACTOR'S RESPONSIBILITY.
8. CONTRACTOR SHALL COMPLY WITH ALL APPLICABLE CODES, AND SHALL PAY FOR AND OBTAIN PERMITS AND ALL NECESSARY APPROVALS. CONTRACTOR SHALL OBTAIN ALL APPROVALS AND PERMITS FOR CONSTRUCTION FROM THE MUNICIPAL AGENCIES HAVING JURISDICTION, PRIOR TO COMMENCEMENT OF WORK, AT THEIR OWN EXPENSE.
9. ANY PRODUCT SPECIFIED SHOULD COMPLY WITH MANUFACTURER'S RECOMMENDATIONS AND REQUIREMENTS AND COMPLY WITH MANUFACTURER'S INSTALLATION PROCEDURES.
10. THE WORK UNDER THIS SITE PLAN SHALL BE CONSTRUCTED IN ACCORDANCE WITH LOCAL AND STATE REQUIREMENTS.
11. IN ACCORDANCE WITH NPDES, THE CONTRACTOR SHALL BE RESPONSIBLE FOR MAINTAINING EROSION CONTROL PROTECTION DURING CONSTRUCTION AS WELL AS PROVIDING PROTECTION TO ADJOINING STREETS FROM POLLUTED RUNOFF AS WELL AS KEEPING EXISTING PAVEMENT CLEAN OF MUD AND DEBRIS. PAVEMENT SWEEPING OF CITY ROADS SHALL BE PERFORMED AS NECESSARY OR AT THE DIRECTION OF THE LOCAL JURISDICTION.
12. ALL EROSION CONTROL MEASURES SHALL BE INSPECTED AND CLEANED OR OTHERWISE MAINTAINED ON A WEEKLY BASIS, AND WITHIN 24 HOURS AFTER ANY SIGNIFICANT RAINFALL (0.5 INCHES OR GREATER) TO ENSURE THAT ANY DAMAGE THAT MAY HAVE OCCURRED IS REPAIRED.
13. SEVEN (7) DAYS PRIOR TO CONSTRUCTION, THE CONTRACTOR SHALL NOTIFY THE ENGINEER INTENT TO BEGIN CONSTRUCTION AND MAY BE REQUESTED TO ATTEND AN ON-SITE MEETING PRIOR TO CONSTRUCTION BEGINNING.
14. RECORD DRAWINGS SHOULD BE KEPT ON THE PROJECT FOR ANY CHANGES OR FINAL CONDITIONS OF THE DESIGN ON THE PROJECT. RECORD DRAWINGS SHALL INCLUDE RIM AND INVERT ELEVATIONS ON STORMWATER STRUCTURES, MAJOR VARIATIONS IN GRADING SITE PLAN, AND ANY OTHER DEVIATIONS FROM DESIGN PLANS.
15. UNLESS DIRECTLY NOTIFIED ON THE DEMOLITION PLAN, ALL EXISTING UTILITIES ON-SITE SHOULD BE PROTECTED AND PREVENTED FROM DAMAGE OR OUTAGES.
16. IF STONE, BONE, OR OTHER ARTIFACTS ARE UNCOVERED, WORK SHALL CEASE IMMEDIATELY AND A QUALIFIED ARCHAEOLOGIST SHALL BE CONSULTED TO DEVELOP ANY REQUIRED MITIGATION MEASURES TO REDUCE ARCHAEOLOGICAL IMPACTS BEFORE WORK RESUMES ON-SITE.
17. NO WORK SHALL BE COMPLETED IN THE COUNTY RIGHT OF WAY UNTIL APPROVAL TO PROCEED HAS BEEN GRANTED BY THE COUNTY OR LOCAL JURISDICTION.
18. CONTRACTOR SHALL BE RESPONSIBLE FOR INSTALLATION AND MAINTENANCE OF TEMPORARY SIGNS, BRIDGES, BARRICADES, FLAGGING PERSONNEL, AND OTHER FACILITIES TO ADEQUATELY SAFEGUARD THE GENERAL PUBLIC AND WORK, AND TO PROVIDE FOR PROPER ROUTING OF VEHICULAR AND PEDESTRIAN TRAFFIC AS NECESSARY.
19. WORK SHALL BE COORDINATED WITH OWNER'S REPRESENTATIVE AND ALL IDENTIFIED PROJECT REPRESENTATIVES.
20. VERIFY WITH LOCAL JURISDICTION FOR REGULAR WORK HOURS AND REQUIREMENTS FOR NOISE AND OTHER IMPACTS DURING CONSTRUCTION.
21. WETLAND IMPACTS (IF ANY) WILL BE CONDUCTED IN COMPLIANCE WITH PERMIT ISSUED BY LOCAL GOVERNMENT UNIT.
22. GRADING AND ELEVATION TOLERANCE WITHIN THE STREAM RESTORATION CORRIDOR ARE +/- 0.1-FOOT. GRADING AND ELEVATION TOLERANCE WITHIN THE WETLAND RESTORATION ARE +/- 0.4-FOOT.
23. FINAL SURFACE GRADES ARE EXPECTED TO BE IRREGULAR AND ROUGH GRADED WITH SCATTERED MICRO-DEPRESSIONS AS DIRECTED BY THE ENGINEER.
24. FINAL GRADES ARE EXPECTED TO HAVE A MINIMUM TOPSOIL DEPTH OF 0.5 FEET.

CHANNEL DESIGN TABLE

CROSS SECTION TYPE	START STATION	MIDPOINT STATION	THALWEG STATION	BANKFULL ELEV.	LENGTH (FT)
RIFFLE	0+00	0+09	1580.8	1582.3	17
TRANSITION	0+17	0+23	1580.3	1582.3	10
POOL	0+27	0+32	1579.8	1582.3	9
TRANSITION	0+36	0+41	1580.2	1582.1	10
RIFFLE	0+46	1+15	1580.6	1582.1	137
TRANSITION	1+83	1+97	1579.9	1581.8	27
POOL	2+10	2+24	1579.4	1581.9	27
TRANSITION	2+37	2+51	1579.8	1581.7	28
RIFFLE	2+65	3+08	1580.2	1581.7	86
TRANSITION	3+51	3+63	1579.6	1581.5	24
POOL	3+75	3+86	1579.1	1581.6	22
TRANSITION	3+98	4+10	1579.6	1581.5	24
RIFFLE	4+22	4+67	1579.9	1581.4	90
TRANSITION	5+12	5+20	1579.3	1581.2	16
POOL	5+28	5+36	1578.8	1581.3	16
TRANSITION	5+44	5+52	1579.3	1581.2	16
RIFFLE	5+60	6+01	1579.7	1581.2	81
TRANSITION	6+41	6+57	1579.1	1581.1	31
POOL	6+72	6+86	1578.5	1581	28
TRANSITION	7+00	7+14	1579	1580.9	28
RIFFLE	7+28	7+70	1579.4	1580.9	84
TRANSITION	8+12	8+28	1578.8	1580.7	31
POOL	8+43	8+59	1578.2	1580.7	32
TRANSITION	8+75	8+91	1578.7	1580.6	31
RIFFLE	9+06	9+39	1579.1	1580.6	65
TRANSITION	9+71	9+88	1578.5	1580.4	33
POOL	10+04	10+21	1577.9	1580.4	33
TRANSITION	10+37	10+54	1578.4	1580.4	33
RIFFLE	10+70	11+08	1578.8	1580.3	76
TRANSITION	11+46	11+63	1578.2	1580.1	33
POOL	11+79	11+97	1577.6	1580.1	35
TRANSITION	12+14	12+31	1578	1579.9	33
RIFFLE	12+47	12+69	1578.5	1580	43
TRANSITION	12+90	13+03	1577.9	1579.8	25
POOL	13+15	13+28	1577.4	1579.9	25
TRANSITION	13+39	13+51	1577.8	1579.8	23
RIFFLE	13+62	13+78	1578.3	1579.8	32
TRANSITION	13+94	14+03	1577.7	1579.6	18
POOL	14+12	14+20	1577.2	1579.7	15
TRANSITION	14+27	14+35	1577.7	1579.6	16
RIFFLE	14+43	14+49	1578.1	1579.6	11
TRANSITION	14+54	14+66	1577.6	1579.5	23
POOL	14+77	14+87	1577.1	1579.6	20
TRANSITION	14+97	15+08	1577.5	1579.4	22
RIFFLE	15+19	15+28	1578	1579.5	18
TRANSITION	15+37	15+49	1577.4	1579.3	23
POOL	15+60	15+72	1576.9	1579.4	23
TRANSITION	15+83	15+95	1577.4	1579.3	23
RIFFLE	16+06	16+29	1577.8	1579.3	46
TRANSITION	16+52	16+67	1577.2	1579.1	30
POOL	16+82	16+97	1576.7	1579.2	30
TRANSITION	17+12	17+27	1577.1	1579	30
RIFFLE	17+42	17+82	1577.5	1579	80
TRANSITION	18+22	18+28	1576.9	1578.8	11
POOL	18+33	18+39	1576.4	1578.9	11
TRANSITION	18+44	18+50	1576.9	1578.8	11
RIFFLE	18+55	19+07	1577.3	1578.8	104
TRANSITION	19+59	19+68	1576.7	1578.6	17
POOL	19+76	19+84	1576.1	1578.6	16
TRANSITION	19+92	19+97	1576.6	1578.5	10
RIFFLE	20+02	20+21	1577.1	1578.6	37
TRANSITION	20+39	20+49	1576.5	1578.4	20
POOL	20+59	20+68	1576	1578.5	18
TRANSITION	20+77	20+87	1576.4	1578.3	19
RIFFLE	20+96	21+30	1576.9	1578.4	67
TRANSITION	21+63	21+72	1576.3	1578.2	17
POOL	21+80	21+89	1575.8	1578.3	18
TRANSITION	21+98	22+07	1576.2	1578.1	18
RIFFLE	22+16	22+75	1576.6	1578.1	118
TRANSITION	23+34	23+47	1576	1577.9	26
POOL	23+60	23+72	1575.4	1577.9	24
TRANSITION	23+84	23+97	1575.9	1577.8	25
RIFFLE	24+09	24+48	1576.3	1577.8	77
TRANSITION	24+86	24+91	1575.7	1577.6	10
POOL	24+96	25+01	1575.2	1577.7	10
TRANSITION	25+06	25+11	1575.7	1577.6	10
RIFFLE	25+16	25+45	1576.1	1577.6	58
TRANSITION	25+74	25+90	1575.5	1577.4	32
POOL	26+06	26+23	1574.9	1577.4	33
TRANSITION	26+39	26+56	1575.4	1577.3	34
RIFFLE	26+73	27+38	1575.7	1577.2	129
TRANSITION	28+02	28+06	1575.1	1577	8
POOL	28+10	28+15	1574.6	1577.1	9
TRANSITION	28+19	28+24	1575.1	1577	9
RIFFLE	28+28	29+06	1575.4	1576.9	156
TRANSITION	29+84	29+88	1574.8	1576.7	8
POOL	29+92	29+96	1574.3	1576.8	8
TRANSITION	30+00	30+04	1574.7	1576.6	8
RIFFLE	30+08	31+00	1575.1	1576.6	184
END	31+92				

STATEMENT OF ESTIMATED QUANTITIES

NOTE	NO.	MATERIAL	UNIT	QTY
1	2012.602	TRAFFIC CONTROL	LUMP SUM	1
	2021.501	MOBILIZATION	LUMP SUM	1
	2031.502	FIELD OFFICE	EACH	1
2	2051.501	MAINTENANCE AND RESTORATION OF HAUL ROADS	LUMP SUM	1
3	2101.501	CLEARING & GRUBBING	LUMP SUM	1
	2104.502	REMOVE CULVERTS	EACH	2
	2104.507	REMOVE AGGREGATE	CU. YD	1
4	2106.507	EXCAVATION - COMMON (CV)	CU. YD	4500
4	2106.507	EXCAVATION - CHANNEL (CV)	CU. YD.	17500
5	2106.507	EMBANKMENT (FILLING OF EXISTING CHANNEL) (CV)	CU. YD.	3800
5	2106.507	EMBANKMENT (PLACEMENT OF EXCESS MATERIAL) (CV)	CU. YD.	16000
	2106.601	DEWATERING	LUMP SUM	1
7	2108.504	GEOTEXTILE FABRIC - TYPE 4	SQ. YD	40
	2118.507	AGGREGATE SURFACING (CV) CLASS 2	TON	50
	2118.507	AGGREGATE SURFACING (CV) CLASS 5	TON	155
	2118.507	AGGREGATE SURFACING (CV) CLASS 3 SUBBASE (CHANNEL BOTTOM RIFFLE)	TON	375
	2118.507	AGGREGATE SURFACING (CV) CLASS 2 SURFACING (CHANNEL BOTTOM)	TON	295
	2412.502	6X5 PRECAST CONCRETE BOX CULVERT END SECTION	EACH	2
	2412.503	6X5 PRECAST CONCRETE BOX CULVERT	LIN. FT.	52
7	2451.507	COURSE AGGREGATE BEDDING	CU. YD	55
6	2451.507	GRANULAR BACKFILL (CV)	CU. YD	1100
	2501.507	CULVERT EXCAVATION	CU. YD	1300
	2573.053	SILT FENCE TYPE HI	LIN. FT.	5265
8	2573.507	CLAY DITCH PLUG	CU. YD.	145
	2573.601	TEMPORARY STREAM DIVERSION	LUMP SUM	1
	2575.503	FLOTATION SILT CURTAIN TYPE STILL WATER	SQ. YD	50
	2575.504	ROLLED EROSION PREVENTION CATEGORY 30	SQ. YD.	12590
	2575.505	SEEDING	AC.	20
	2575.508	SEED MIX - 34-265	LBS.	82
	2575.508	SEED MIX - 34-272	LBS.	40
	2575.508	SEED MIX - 35-542	LBS.	490
	2575.509	MULCH MATERIAL TYPE 3	TON	34

ESTIMATE NOTES:

1. INCLUDES NECESSARY TRAFFIC CONTROL PLAN THAT MEETS THE MNUTCD MANUAL FOR ROAD CLOSURE WITH A DETOUR ROUTE.
2. MAINTENANCE AND RESTORATION OF HAUL ROADS PAY ITEM INCLUDES ANY WETLAND AND WATERBODY CROSSINGS.
3. INCLUDES ANY TREES OR SHRUBS ON-SITE AT THE TIME OF CONSTRUCTION THAT ARE REQUIRED TO BE REMOVED FOR CONSTRUCTION. CONTRACTOR TO VERIFY WITH ENGINEER IN THE FIELD.
4. INCLUDES TOPSOIL STRIPPING.
5. INCLUDES TOPSOIL PLACEMENT.
6. TO BE USED FOR CULVERT BACKFILL.
7. TO BE USED FOR CULVERT BEDDING.
8. TO BE USED TO PROTECT EXISTING CHANNEL. SEE PLAN FOR LOCATIONS.

95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DNR

SKANDIA WMA STREAM AND WETLAND RESTORATION

MURRAY COUNTY, MINNESOTA

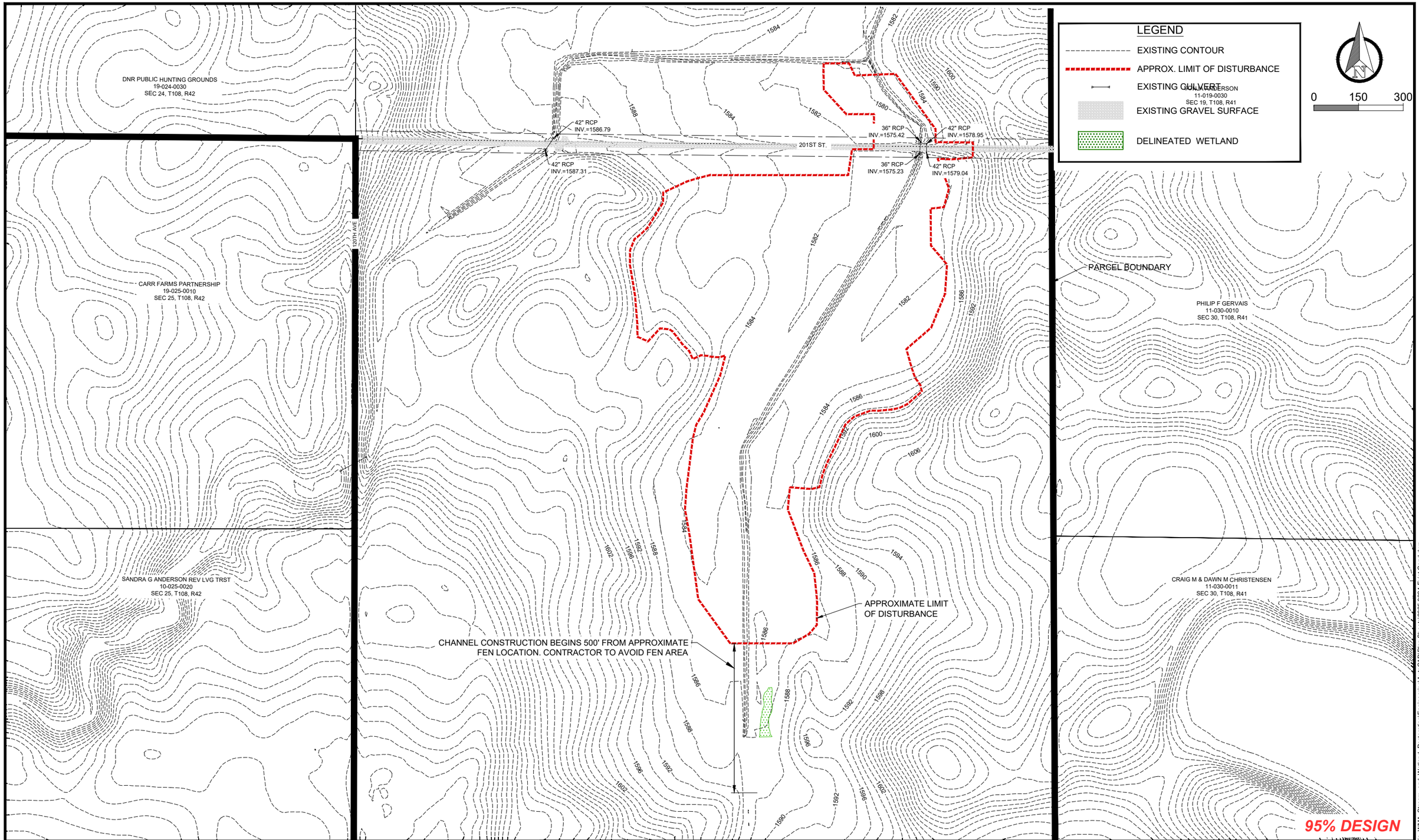
GENERAL NOTES

C101

SHEET 2 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_P\MN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Plan Sheets\2025.0224-General Notes.dwg



merjent
Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DNR

SKANDIA WMA STREAM AND WETLAND RESTORATION

MURRAY COUNTY, MINNESOTA

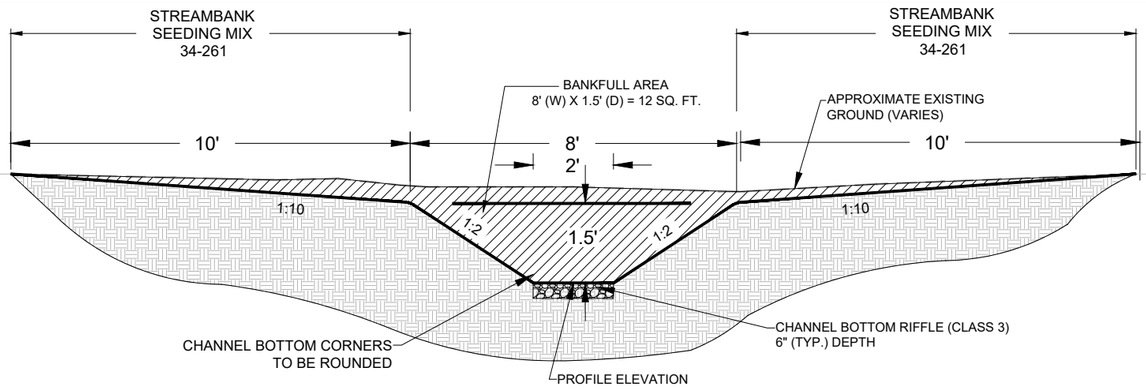
EXISTING CONDITIONS

C102

SHEET 3 OF 55

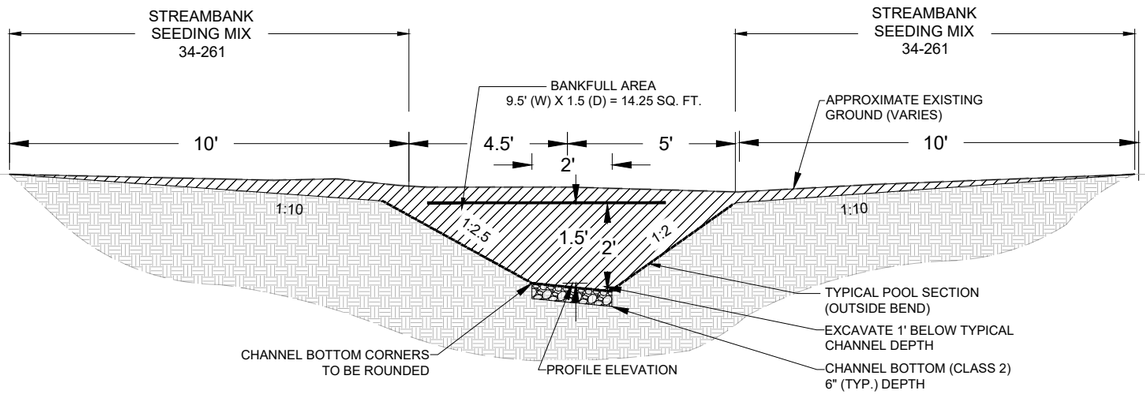
PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_P\MN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Plan Sheets\2025.0224-Exist Cond.dwg



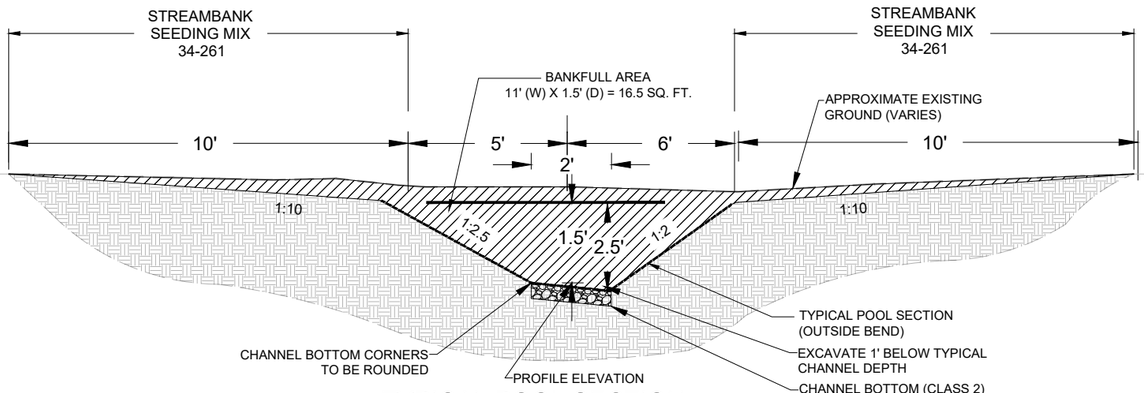
TYPICAL RIFFLE CHANNEL SECTION

NOT TO SCALE



TYPICAL TRANSITION SECTION

NOT TO SCALE



TYPICAL POOL SECTION

NOT TO SCALE

95% DESIGN

merjent
Corporate Office: 1 Main Street SE, Suite 300 Minneapolis, Minnesota 55414 (612) 746-3660
Wisconsin Office: N3764 Uni Drive Freedom, WI 54130 (920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

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

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

SKANDIA WMA - STREAM & WETLAND RESTORATION

MURRAY COUNTY, MINNESOTA

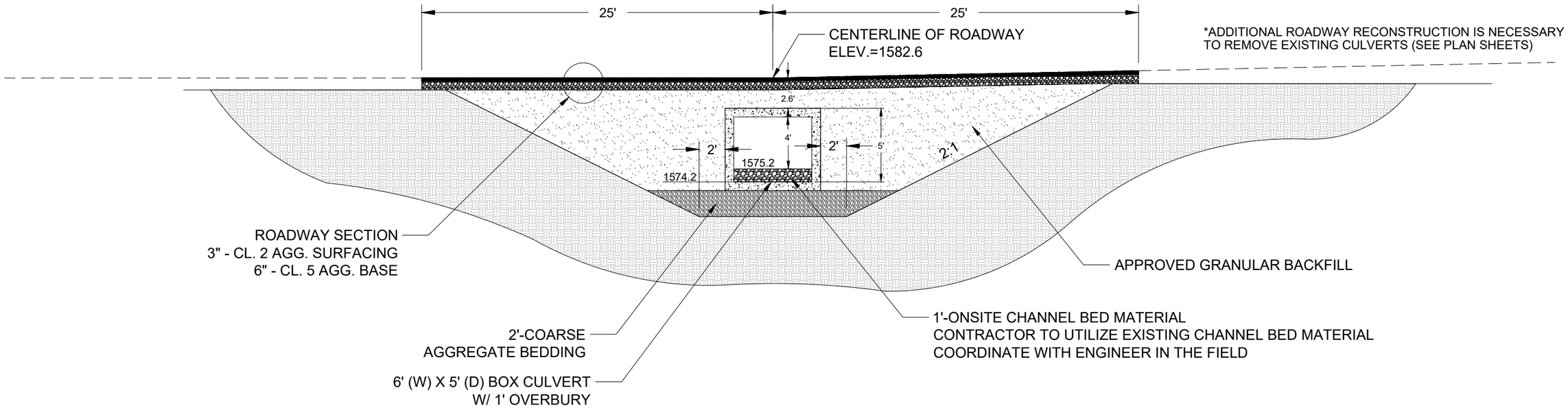
TYPICAL SECTIONS

C103

SHEET 4 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_P\MN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\Auto\CAD\Plan Sheets\2025.0224-Typical Sections.dwg



TYPICAL SECTION - BOX CULVERT

95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

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

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

SKANDIA WMA - STREAM & WETLAND RESTORATION

MURRAY COUNTY, MINNESOTA

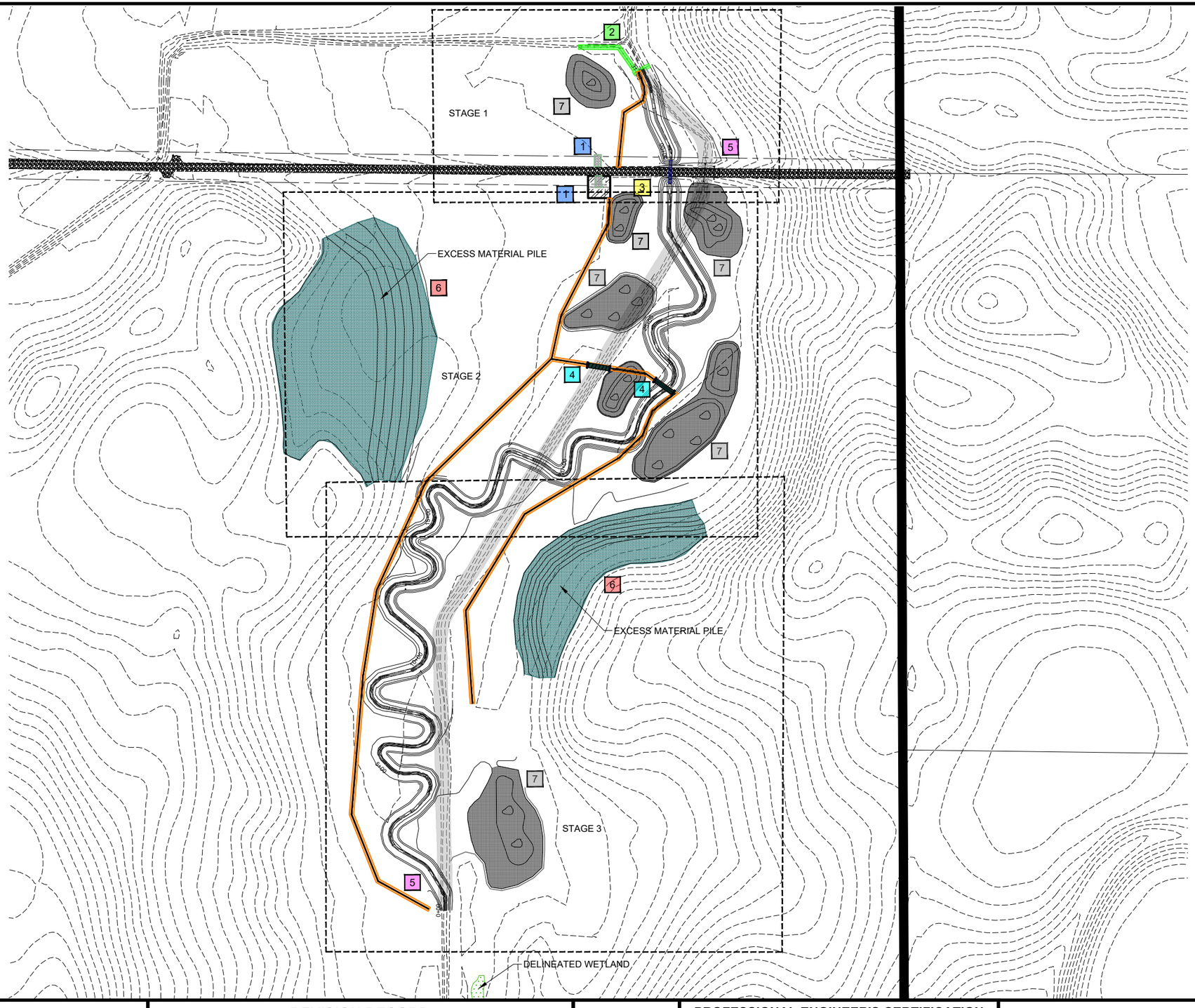
TYPICAL SECTIONS

C104

SHEET 5 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_P\MN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Plan Sheets\2025.0224-Typical Sections.dwg



LEGEND

- EXISTING CONTOUR
- EXISTING CULVERT
- EXISTING GRAVEL SURFACE
- DELINEATED WETLAND
- CHANNEL FILL - EXISTING CHANNEL
- EXCESS MATERIAL PILE
- MICRODEPRESSION / SCRAPE OR HUMMOCK AND HOLLOW GRADING
- PROPOSED ACCESS ROUTE
- PROPOSED TEMPORARY CROSSING

N

0 120 320

NOTES:

1. CONTRACTOR SHALL CONSTRUCT THE CHANNEL IN PHASES TO ALLOW PORTIONS OF THE PROJECT ESTABLISH VEGETATION PRIOR TO GRADING ADDITIONAL PORTIONS OF THE PROJECT.

GRADING/SEQUENCING NOTES:

THE SEQUENCING PLAN IS INTENDED TO BE USED AS A GUIDE FOR DEVELOPING BEST MANAGEMENT PRACTICES FOR EROSION CONTROL AND CONSTRUCTION SEQUENCING

1. ESTABLISH VEHICLE TRACKING PAD (E.G. ROCK CONSTRUCTION ENTRANCES).
2. INSTALL PERIMETER CONTROLS (E.G. SILT FENCE) AT DOWNGRADIENT PERIMETERS OF SITE.
3. CREATE STABILIZED STAGING AREAS AND PRESERVE VEGETATIVE BUFFER AT SITE PERIMETER.
4. CREATE TEMPORARY CROSSING OF WATERBODY/WETLAND AREAS WITH TIMBER MAT OR PROPOSED EQUAL TO AVOID RUTTING.
5. CONTRACTOR TO PLAN & COORDINATE TEMPORARY STREAM DIVERSION. EXISTING CHANNEL AND CROSSING TO REMAIN OPEN DURING CONSTRUCTION TO THE EXTENT POSSIBLE TO ALLOW NEW CHANNEL TO GET ESTABLISHED. THIS MAY NEED BYPASS PUMP OR OPEN CHANNEL EXCAVATION.
6. CONTRACTOR TO PLACE EXCESS MATERIAL IN THIS LOCATION. CONTRACTOR TO COORDINATE WITH ENGINEER IN THE FIELD.
7. PROVIDE TEMPORARY STABILIZATION OF DISTURBED SOILS THAT WILL REMAIN IDLE FOR A PERIOD OF 14 DAYS OR MORE.
8. PERFORM FINAL STABILIZATION OF ALL DISTURBED SOILS.
9. REMOVE ALL TEMPORARY SEDIMENT CONTROL BMPS ONCE THE SITE HAS ACHIEVED FINAL STABILIZATION.

* DO NOT DISTURB UPON COMPLETION OF SITE GRADING CONSTRUCTION AND SITE STABILIZATION.

95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

SKANDIA WMA - STREAM & WETLAND RESTORATION

MURRAY COUNTY, MINNESOTA

SEQUENCING PLAN

C105

SHEET 6 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_P\MN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Plan Sheets\2025.0224-Sequencing.dwg

GRADING NOTES:

1. STRIP AND SALVAGE TOPSOIL MATERAIL FROM PILE LOCATION AND UTILIZE FOR FINAL PROJECT ESTABLISHMENT.
2. PROPOSED DISTURBED AREAS SHALL HAVE TOPSOIL SPREAD WITH 6" OF CLEAN, NUTRIENT RICH SOILS, FREE OF WEEDS/WEED SEEDS TO PROVIDE ADEQUATE VEGETATIVE GROWTH.
3. MAXIMUM PROPOSED SLOPES ON CHANNEL ARE 2:1. GENERAL SLOPE GRADING SHALL NOT EXCEED 3:1. IF EXISTING SITE CONDITIONS VARY, COORDINATE WITH OWNER AND ENGINEER FOR REVISED DESIGN TO MAINTAIN 3:1 OR MORE SLOPES.
4. SOIL CORRECTIONS SHALL BE COMPLETED PER OWNERS REQUIREMENTS. PROPER COMPACTION SHALL OCCUR TO ASSURE NO MAJOR SETTLEMENT.

LEGEND

- EXISTING CONTOUR
- APPROX. LIMIT OF DISTURBANCE
- EXISTING CULVERT
- EXISTING GRAVEL SURFACE
- MICRODEPRESSION / SCRAPE OR HUMMOCK AND HOLLOW GRADING
- CHANNEL FILL - EXISTING CHANNEL
- DELINEATED WETLAND
- EXCESS MATERIAL PILE
- CLAY CHANNEL PLUG

0 40 80

CHANNEL CONSTRUCTION BEGINS 500' FROM APPROXIMATE FEN LOCATION. CONTRACTOR TO AVOID FEN AREA

CLAY CHANNEL PLUG SEE DETAIL

CLAY CHANNEL PLUG SEE DETAIL

EXCESS MATERIAL PILE 1 CONTRACTOR TO VERIFY WITH ENGINEER IN THE FIELD

95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DNR

SKANDIA WMA STREAM AND WETLAND RESTORATION

MURRAY COUNTY, MINNESOTA

GRADING PLAN

C106

SHEET 7 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_PMN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\Auto\CAD\Plan Sheets\20251224-Grading Plan.dwg

GRADING NOTES:

1. STRIP AND SALVAGE TOPSOIL MATERAIL FROM PILE LOCATION AND UTILIZE FOR FINAL PROJECT ESTABLISHMENT.
2. MAXIMUM PROPOSED SLOPES ON CHANNEL ARE 2:1. GENERAL SLOPE GRADING SHALL NOT EXCEED 3:1. IF EXISTING SITE CONDITIONS VARY, COORDINATE WITH OWNER AND ENGINEER FOR REVISED DESIGN TO MAINTAIN 3:1 OR MORE SLOPES.
3. SOIL CORRECTIONS SHALL BE COMPLETED PER CONSTRUCTION SPECIFICATIONS.

LEGEND

- EXISTING CONTOUR
- APPROX. LIMIT OF DISTURBANCE
- EXISTING CULVERT
- EXISTING GRAVEL SURFACE
- MICRODEPRESSION / SCRAPE OR HUMMOCK AND HOLLOW GRADING
- CHANNEL FILL - EXISTING CHANNEL
- DELINEATED WETLAND
- EXCESS MATERIAL PILE
- CLAY CHANNEL PLUG

0 40 80

EXCESS MATERIAL PILE 2
CONTRACTOR TO VERIFY
WITH ENGINEER IN THE FIELD

CLAY CHANNEL PLUG
SEE DETAIL

CLAY CHANNEL PLUG
SEE DETAIL

201 ST.

95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DNR

SKANDIA WMA STREAM AND WETLAND RESTORATION

MURRAY COUNTY, MINNESOTA

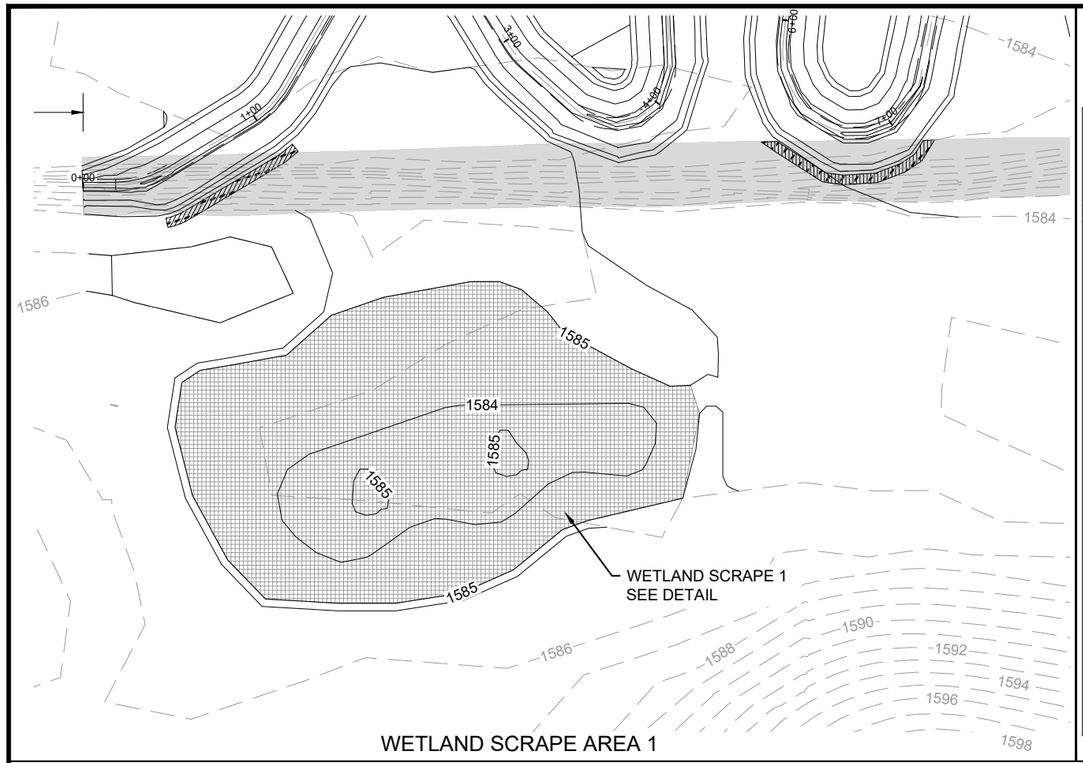
GRADING PLAN

C107

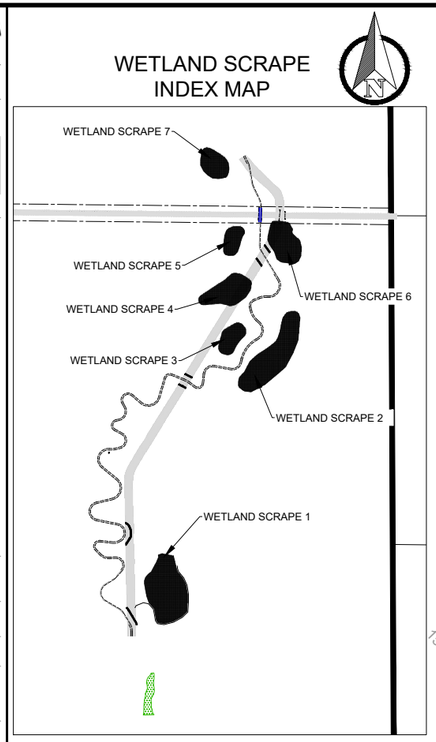
SHEET 8 OF 55

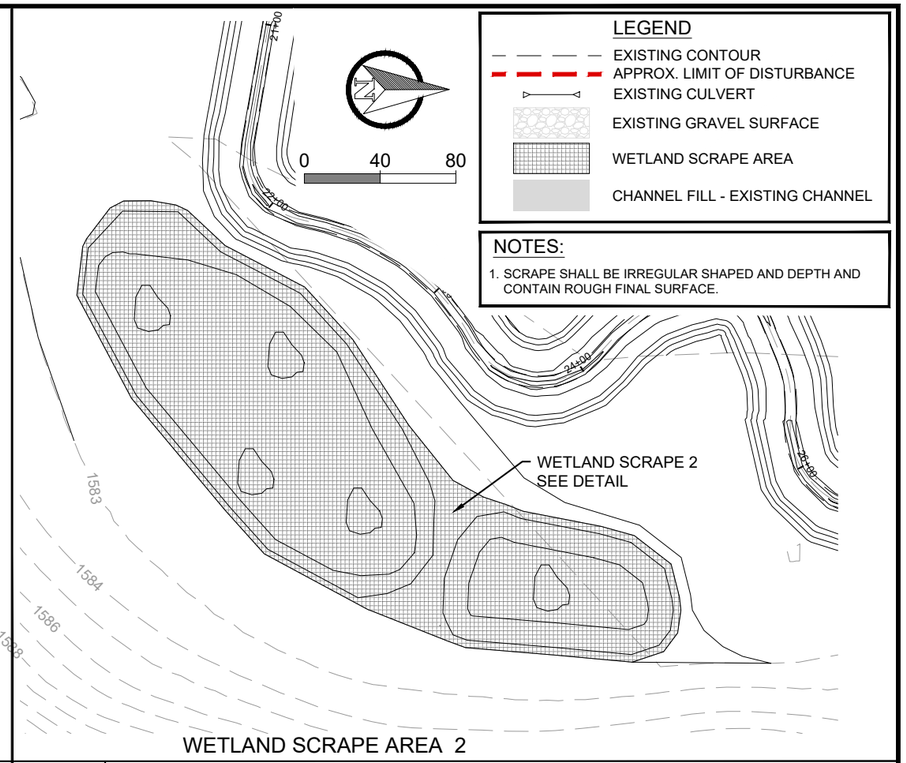
PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_PWN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\Autc\CAD\Plan Sheets\2025.0224-Grading Plan.dwg

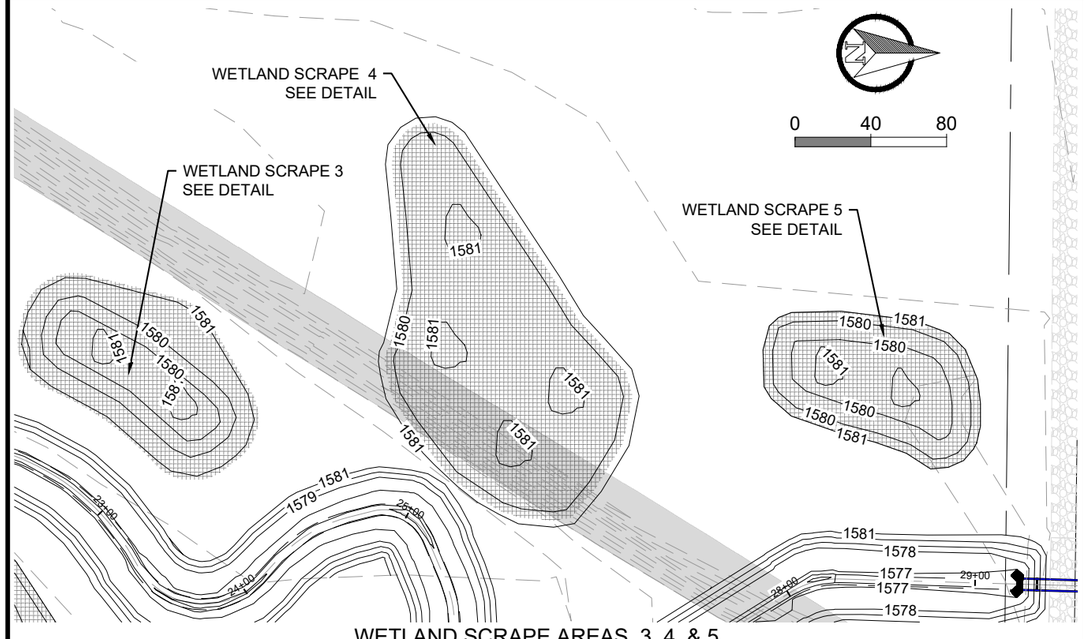


WETLAND SCRAPE AREA 1

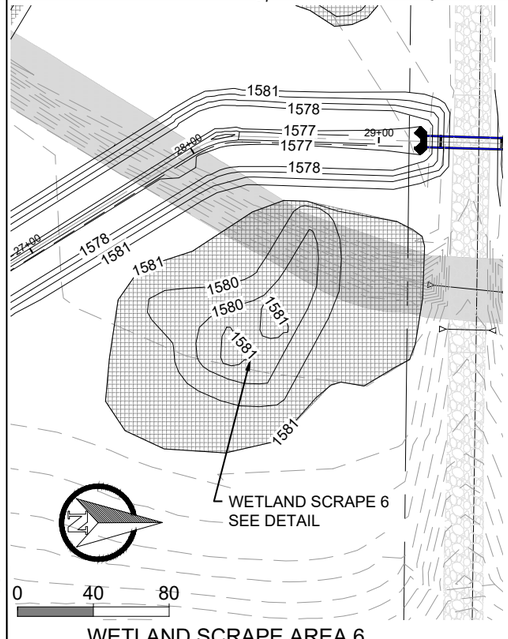




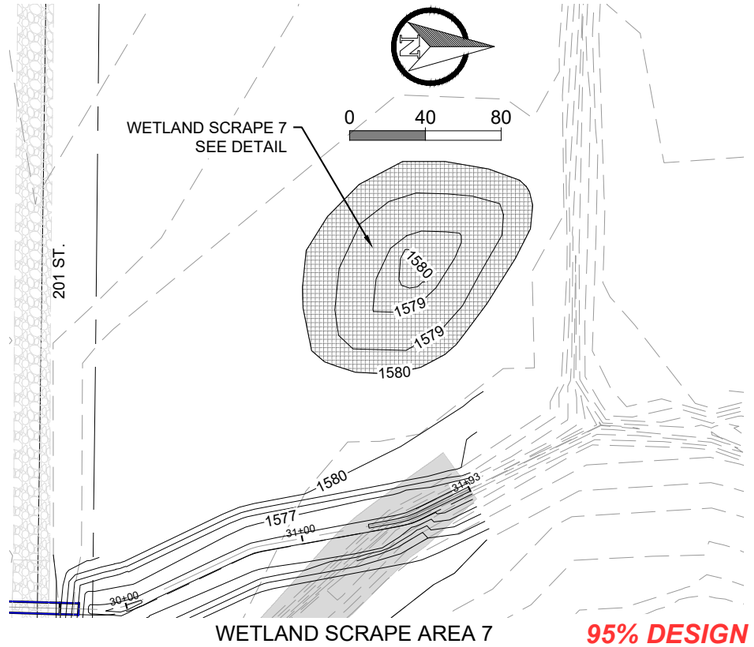
WETLAND SCRAPE AREA 2



WETLAND SCRAPE AREAS 3, 4, & 5



WETLAND SCRAPE AREA 6



WETLAND SCRAPE AREA 7

95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DNR

SKANDIA WMA STREAM AND WETLAND RESTORATION

MURRAY COUNTY, MINNESOTA

GRADING PLAN-WETLAND SCRAPE AREAS

C108

SHEET 9 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_P\MN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Plan Sheets\2025.0224-Wetland Scrape Plan.dwg

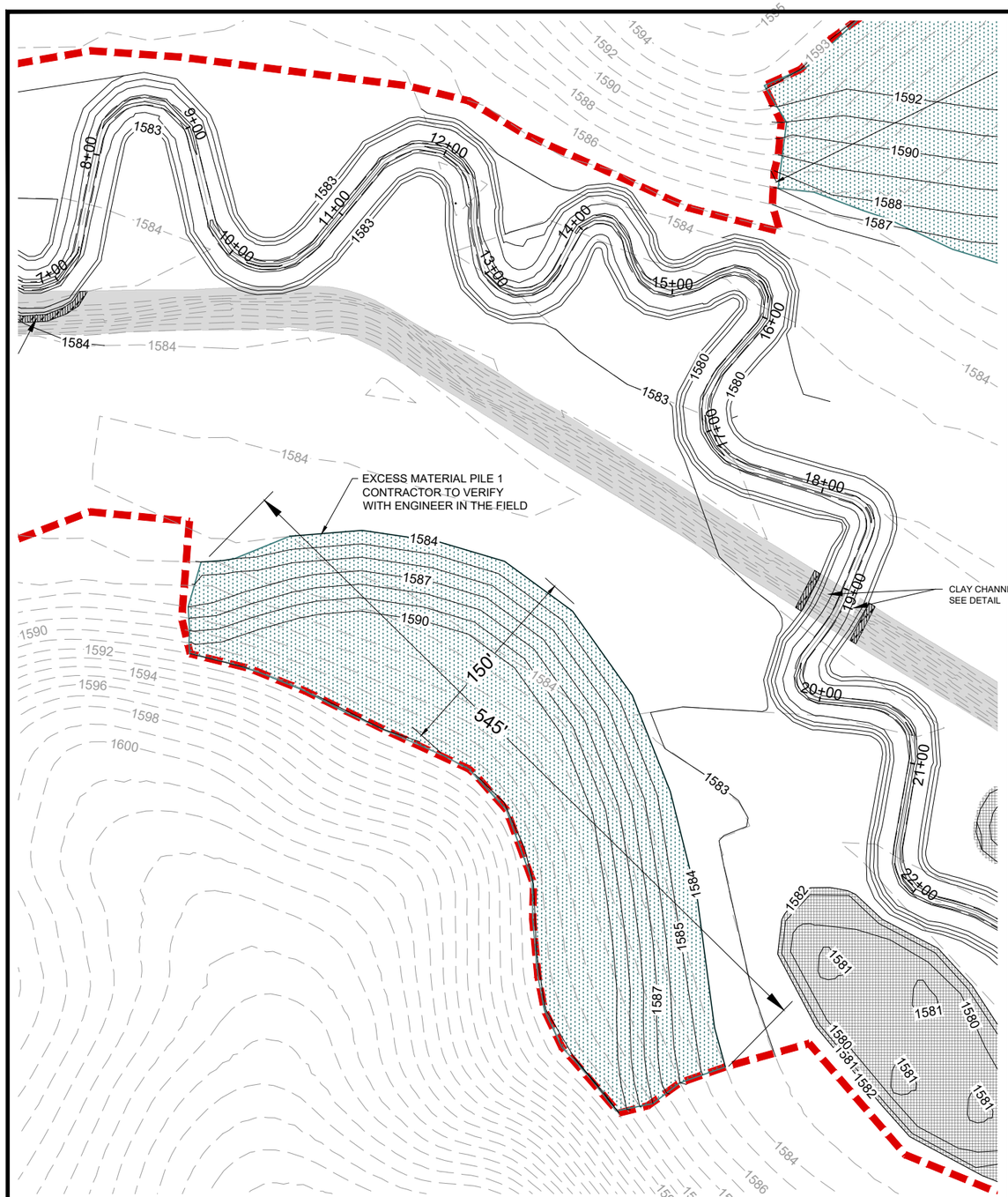
GRADING NOTES:

1. STRIP AND SALVAGE TOPSOIL MATERAIL FROM PILE LOCATION AND UTILIZE FOR FINAL PROJECT ESTABLISHMENT.
2. PROPOSED DISTURBED AREAS SHALL HAVE TOPSOIL SPREAD WITH 6" OF CLEAN, NUTRIENT RICH SOILS, FREE OF WEEDS/WEED SEEDS TO PROVIDE ADEQUATE VEGETATIVE GROWTH.
3. MAXIMUM PROPOSED SLOPES ON CHANNEL ARE 2:1. GENERAL SLOPE GRADING SHALL NOT EXCEED 3:1. IF EXISTING SITE CONDITIONS VARY, COORDINATE WITH OWNER AND ENGINEER FOR REVISED DESIGN TO MAINTAIN 3:1 OR MORE SLOPES.
4. SOIL CORRECTIONS SHALL BE COMPLETED PER OWNERS REQUIREMENTS. PROPER COMPACTION SHALL OCCUR TO ASSURE NO MAJOR SETTLEMENT.

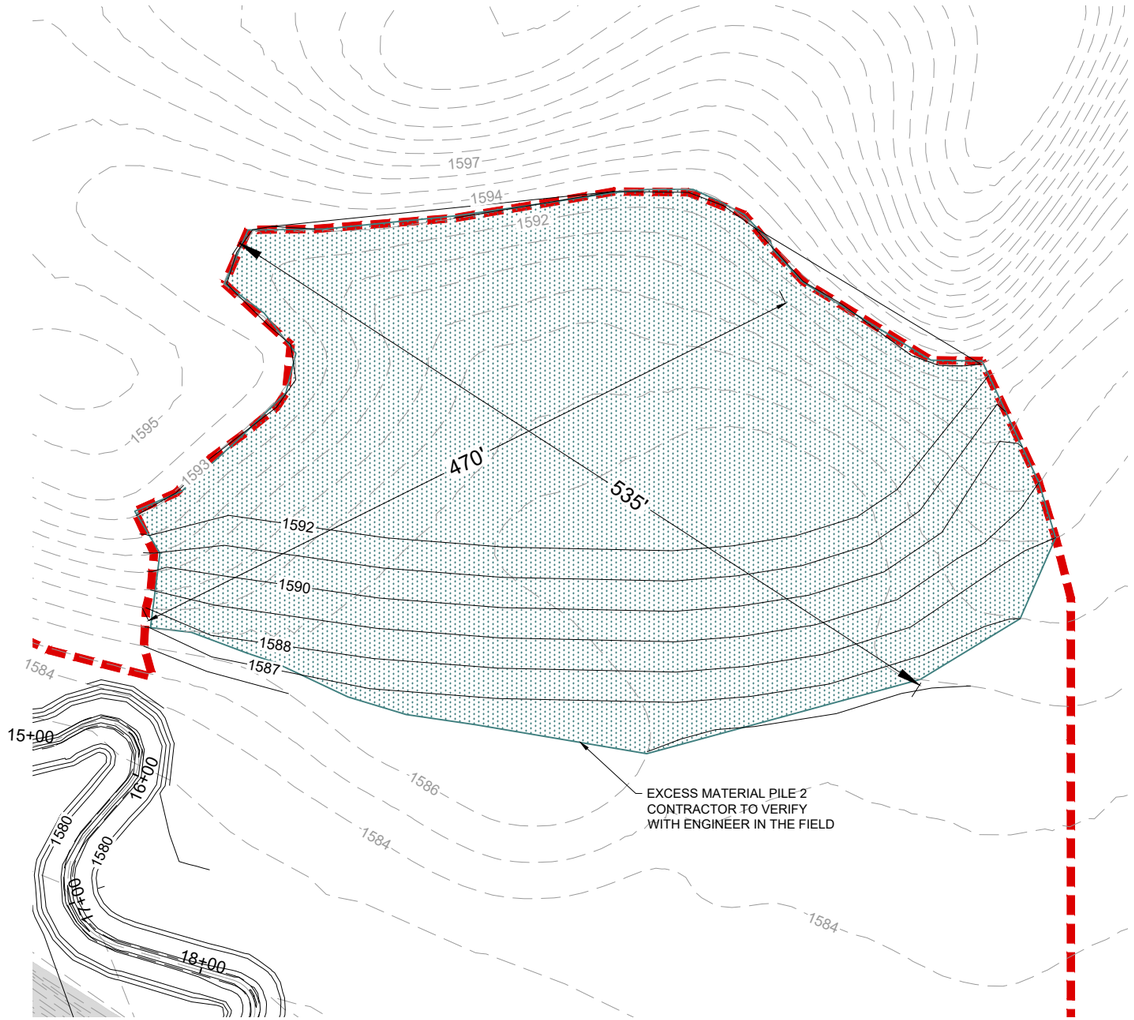
LEGEND

- EXISTING CONTOUR
- APPROX. LIMIT OF DISTURBANCE
- EXISTING CULVERT
- EXISTING GRAVEL SURFACE
- MICRODEPRESSION / SCRAPE OR HUMMOCK AND HOLLOW GRADING
- CHANNEL FILL - EXISTING CHANNEL
- DELINEATED WETLAND
- EXCESS MATERIAL PILE

0 40 80



EXCESS MATERIAL PILE 1



EXCESS MATERIAL PILE 2

95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DNR

SKANDIA WMA STREAM AND WETLAND RESTORATION

MURRAY COUNTY, MINNESOTA

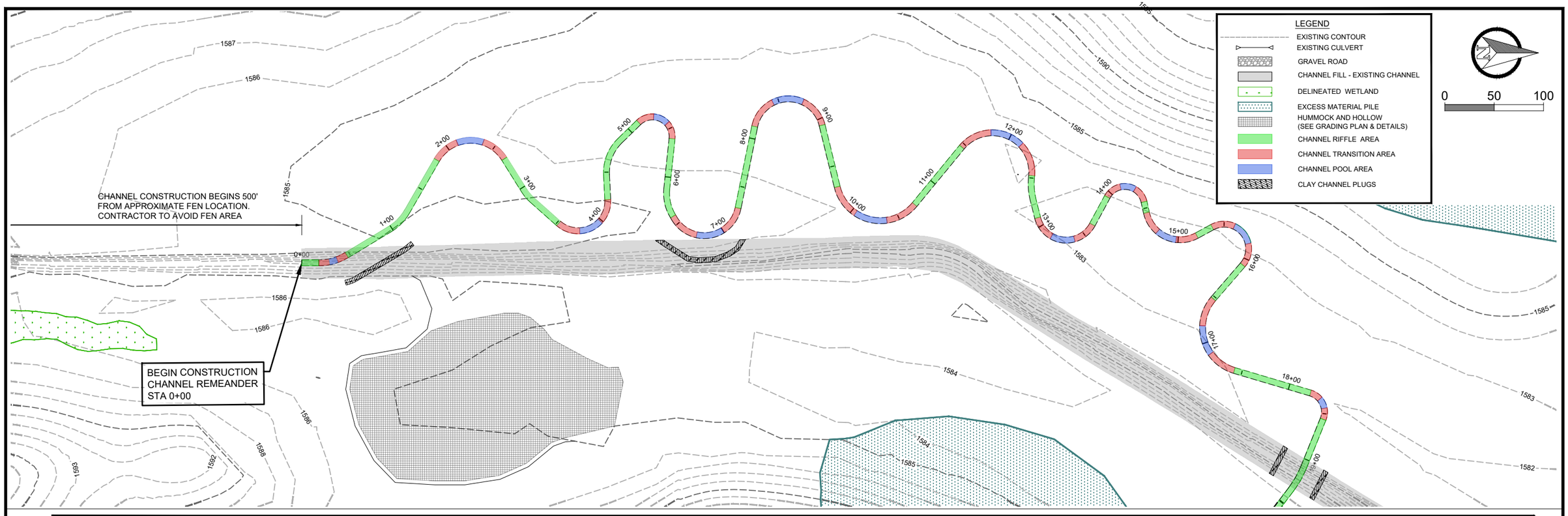
GRADING PLAN-EXCESS MATERIAL PILE

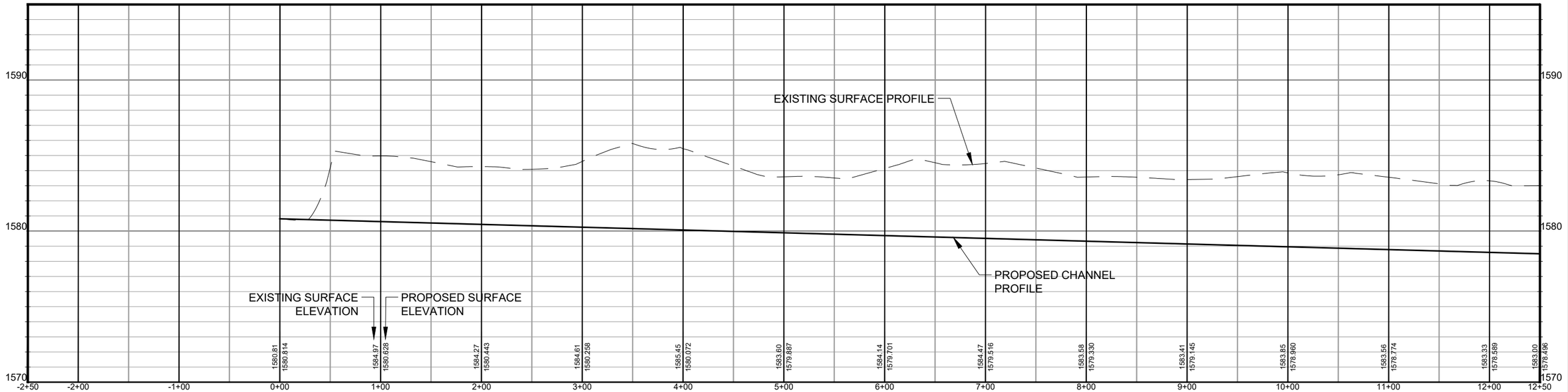
C109

SHEET 10 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_PMN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Plan Sheets\2025.0224-Grading Plan.dwg





95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

SKANDIA WMA - STREAM & WETLAND RESTORATION

MURRAY COUNTY, MINNESOTA

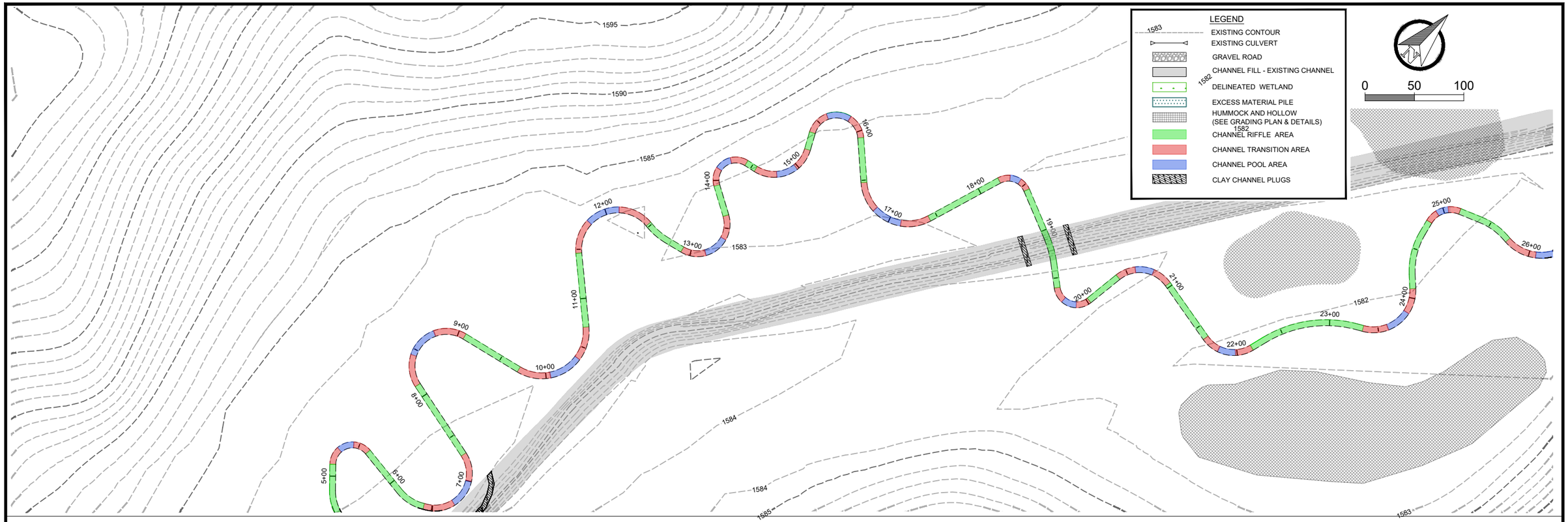
PLAN & PROFILE

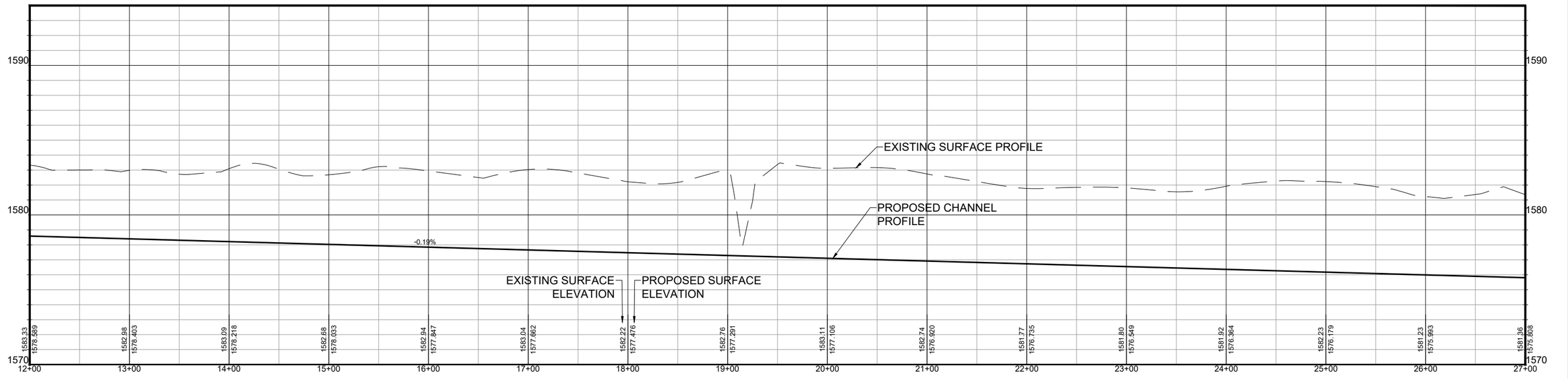
C110

SHEET 11 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_P\MN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Plan Sheets\2025.0224-Plan & Profile.dwg





95% DESIGN

merjent®

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

SKANDIA WMA - STREAM & WETLAND RESTORATION

MURRAY COUNTY, MINNESOTA

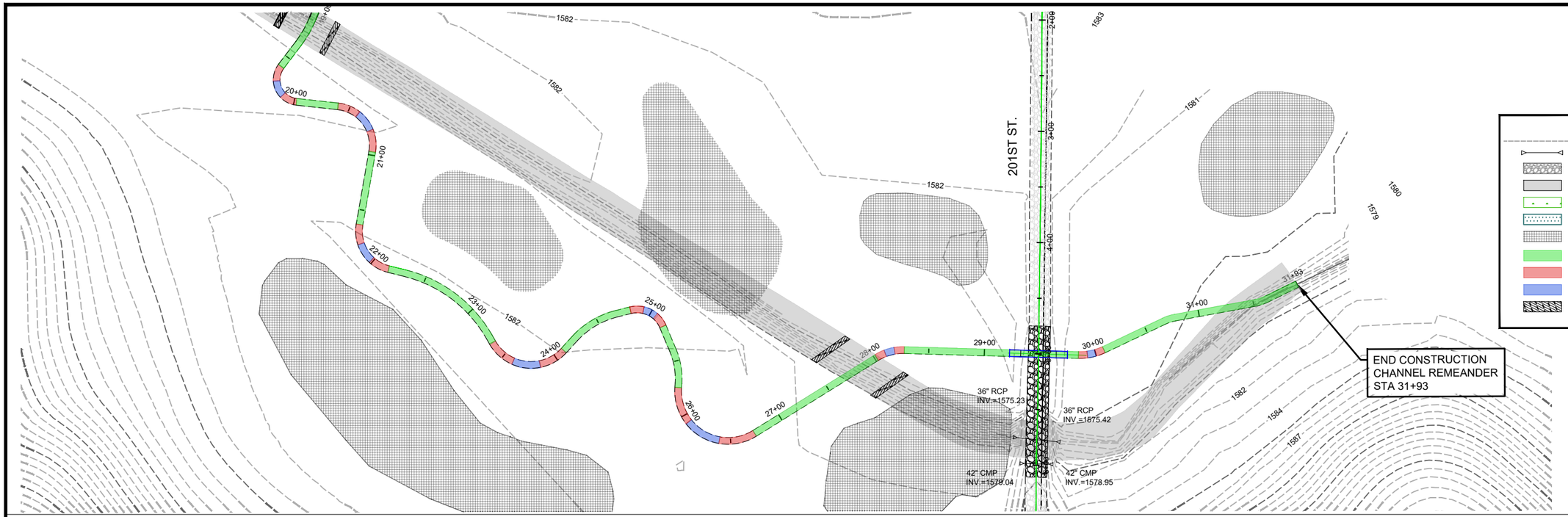
PLAN & PROFILE

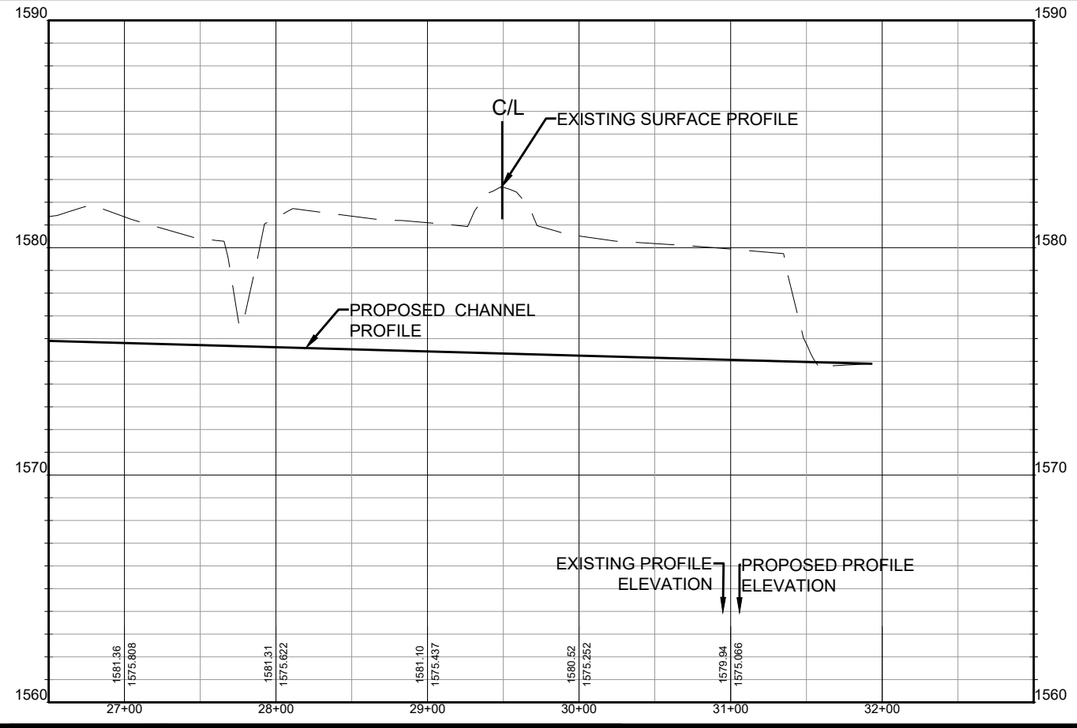
C111

SHEET 12 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_P\MN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Plan Sheets\2025.0224-Plan & Profile.dwg





95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

SKANDIA WMA - STREAM & WETLAND RESTORATION

MURRAY COUNTY, MINNESOTA

PLAN & PROFILE

C112

SHEET 13 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_P\MN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Plan Sheets\2025.0224-Plan & Profile.dwg

PROJECT SPECIFIC SWPPP INFORMATION

I. GENERAL CONSTRUCTION ACTIVITY INFORMATION

PROJECT NAME: SKANDIA WMA STREAM AND WETLAND RESTORATION
LOCATION: MURRAY COUNTY, MINNESOTA

PROJECT CONTACTS

OWNER: JON LORE
MN DNR
507-910-1703
jon.lore@state.mn.us

ENGINEER JOSH PETERSEN, PE
MERJENT, INC.
612-354-4296
josh.petersen@merjent.com

CONTRACTOR: TBD

PROJECT MUNICIPALITY/CITY - LAKE SARAH TOWNSHIP
PROJECT COUNTY - MURRAY

LATITUDE/LONGITUDE OF APPROXIMATE CENTROID OF PROJECT:

PROJECT DESCRIPTION:
THE PROPOSED PROJECT RESTORES A CHANNELIZED STREAM SEGMENT AND ESTABLISHES WETLAND AND FLOODPLAIN ENHANCEMENT AREAS WITHIN THE SKANDIA WILDLIFE MANAGEMENT AREA OWNED/OPERATED BY THE MINNESOTA DEPARTMENT OF NATURAL RESOURCES. THE PROJECT INVOLVES REMOVAL OF CULVERTS, INSTALLATION OF A BOX CULVERT, BIOENGINEERED STREAM RESTORATION PRACTICES, AND WETLAND CREATION/RESTORATION IN AREAS CURRENTLY IDENTIFIED AS UPLAND.

SITE DISTURBANCE SUMMARY
ACRES NUMBER OF ACRES TO BE DISTURBED: 28.5
PRE-CONSTRUCTION ACRES OF IMPERVIOUS: 0.0
POST-CONSTRUCTION ACRES OF IMPERVIOUS 0.0
TOTAL NEW IMPERVIOUS ACRES: 0.0

II. RECEIVING WATERS

RECEIVING WATERS WITHIN ONE MILE OF THE PROJECT PROPERTY EDGE:

NAME OF WATER	BODY TYPE	SPECIAL WATER?	IMPAIRED WATER?
UNNAMED STREAM	RIVER	NO	YES

TOTAL MAXIMUM DAILY LOAD (TMDL WATERS)
N/A

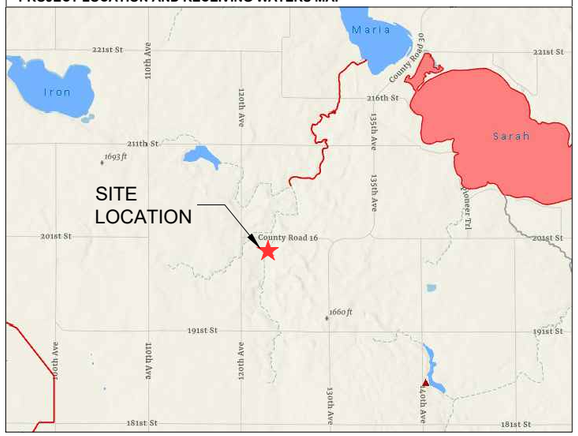
IDENTIFY WETLAND IMPACTS

1. WILL CONSTRUCTION RESULT IN ANY POTENTIAL ADVERSE IMPACTS TO WETLANDS, INCLUDING EXCAVATION, DEGRADATION OF WATER QUALITY, DRAINING, FILLING, PERMANENT INUNDATION OR FLOODING, CONVERSION TO A STORMWATER POND?
   NO.
   IF YES, DESCRIBE IMPACTS AND MITIGATION MEASURES THAT WERE TAKEN TO ADDRESS THE IMPACTS AND INCLUDE COPIES OF PERMITS OR APPROVALS FROM AN OFFICIAL STATEWIDE WETLAND PROGRAM ISSUED SPECIFICALLY FOR THIS PROJECT OR SITE:
   N/A

ENVIRONMENTALLY SENSITIVE AREAS:

1. IDENTIFY ADJACENT PUBLIC WATERS WHERE THE MNDNR HAS DECLARED "WORK IN WATERS RESTRICTIONS' DURING FISH SPAWNING TIMEFRAMES.
   NONE IDENTIFIED.
2. DESCRIBE ANY STORMWATER MITIGATION MEASURES THAT WILL BE IMPLEMENTED AS A RESULT OF ENVIRONMENTAL REVIEW, ENDANGERED OR THREATENED SPECIES REVIEW, OR ARCHEOLOGICAL SITE REVIEW:
   N/A

PROJECT LOCATION AND RECEIVING WATERS MAP



III. PROJECT PLANS AND SPECIFICATIONS

REFER TO PROJECT PLANS, SPECIFICATIONS, GEOTECHNICAL REPORT, AND STORMWATER CALCULATIONS AVAILABLE UPON REQUEST WHICH DEPICT VARIOUS FEATURES RELEVANT TO THIS PROJECT. SUCH FEATURES MAY INCLUDE, BUT ARE NOT LIMITED TO, THE FOLLOWING:

- PROJECT LOCATION AND CONSTRUCTION LIMITS
- EXISTING AND FINAL GRADES, INCLUDING DIVIDING LINES AND DIRECTION OF FLOW FOR ALL PRE AND POST-CONSTRUCTION STOMRWATER RUNOFF DRAINAGE AREAS LOCATED WITHIN THE PROJECT LIMITS
- SOIL TYPES AT THE SITE
- LOCATIONS OF IMPERVIOUS SURFACES
- LOCATIONS OF AREAS NOT TO BE DISTURBED (E.G. BUFFER ZONES, WETLANDS, ETC.)
- STEEP SLOPE LOCATIONS
- LOCATIONS OF AREAS WHERE CONSTRUCTION WILL BE PHASED TO MINIMIZE DURATION OF EXPOSED SOILS
- LOCATIONS OF ALL TEMPORARY AND PERMANENT EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES (BMPS)
- BUFFER ZONES AS REQUIRED IN ITEM 9.17 AND 23.11 OF THE PERMIT
- LOCATIONS OF POTENTIAL POLLUTION-GENERATING ACTIVITIES IDENTIFIED IN SECTION 12 OF THE PERMIT
- STANDARD DETAILS FOR EROSION AND SEDIMENT CONTROL BMPS TO BE INSTALLED AT THE SITE.

TEMPORARY SEDIMENT CONTROL

1. IS THE PROJECT REQUIRED TO INSTALL A TEMPORARY SEDIMENT BASIN DUE TO 10 OR MORE ACRES DRAINING TO A COMMON LOCATION, OR 5 ACRES OR MORE IF THE SITE IS LOCATED WITHIN 1 MILE OF A SPECIAL OR IMPAIRED WATER?
   NO.
   IF YES, DESCRIBE (OR ATTACH PLANS) SHOWING HOW THE BASIN WILL BE DESIGNED AND CONSTRUCTED IN ACCORDANCE WITH SECTION 14.
2. WILL THE PROJECT INCLUDE DEWATERING, BASIN DRAINING?
   YES - TEMPORARY DAM/PUMP AROUND FOR CULVERT INSTALLATION.
   IF YES, DESCRIBE MEASURES TO BE USED TO TREAT/DISPOSE OF TURBID OR SEDIMENT-LADEN WATER AND METHOD TO PREVENT EROSION OR SCOURE OF DISCHARGE POINTS (SEE SECTION 10 OF PERMIT):
   TEMPORARY DAM AND PUMP AROUND FOR CULVERT INSTALLATION WILL BE ROUTED TO A SEDIMENTATION FILTER BAG WITH ADEQUATE RIPRAP SCOUR PROTECTION AS NEEDED.
3. WILL THE PROJECT INCLUDE THE USE OF FILTERS FOR BACKWASH WATER?
   NO.
   IF YES, DESCRIBE HOW FILTER BACKWASH WATER WILL BE MANAGED ON THE SITE OR PROPERLY DISPOSED OF.
   N/A

SWPPP TRAINING (SECTION 21)

SWPPP PREPARER:

COMPANY:	MERJENT, INC.
CONTACT:	MIKE BEHAN, CPESC
EMAIL:	MIKE.BEHAN@MERJENT.COM
COURSE, INSTRUCTOR:	DESIGN OF SWPPP, ONLINE
TRAINING ENTITY:	UNIVERSITY OF MINNESOTA
EXPIRATION	05/31/2028

SWPPP CONTACT:

CONTRACTOR:	**(TBD)**
CONTACT	NAME, PHONE, EMAIL
COURSE, INSTRUCTOR:	
TRAINING ENTITY:	

THIS SWPPP WAS PREPARED BY PERSONNEL CERTIFIED IN THE DESIGN OF CONSTRUCTION SWPPPS AS LISTED ABOVE. COPIES OF RESPECTIVE CERTIFICATIONS ARE AVAILABLE UPON REQUEST. IN ACCORDANCE WITH SECTION 21 OF THE PERMIT, THE FOLLOWING INDIVIDUALS MUST RECEIVE TRAINING, AND THE EXTENT OF TRAINING IS COMMENSURATE WITH THE INDIVIDUAL'S JOB DUTIES AND RESPONSIBILITIES WITH REGARD TO ACTIVITIES COVERED UNDER THE PERMIT:

a. INDIVIDUALS PREPARING THE SWPPP FOR THE PROJECT.
b. INDIVIDUALS OVERSEEING IMPLEMENTATION OF, REVISING, AND/OR AMENDING THE SWPPP, AND INDIVIDUALS PERFORMING INSPECTIONS FOR THE PROJECT.
c. INDIVIDUALS PERFORMING OR SUPERVISING THE INSTALLATION, MAINTENANCE, OR REPAIR OF BMPS.

INDIVIDUALS MUST RECEIVE TRAINING FROM LOCAL, STATE, FEDERAL AGENCIES, PROFESSIONAL ORGANIZATIONS, OR OTHER ENTITIES WITH EXPERTISE IN EROSION PREVENTION, SEDIMENT CONTROL, PERMANENT STORMWATER TREATMENT, AND THE MN NPDES/SDS CONSTRUCTION STORMWATER GENERAL PERMIT. INDIVIDUALS SHALL ATTEND A REFRESHER-TRAINING COURSE EVERY THREE (3) YEARS.

SWPPP IMPLEMENTATION RESPONSIBILITIES:

1. THE OWNER AND CONTRACTOR ARE PERMITTEE(S) AS IDENTIFIED BY THE NPDES PERMIT.
2. THE CONTRACTOR SHALL BE RESPONSIBLE FOR ALL ON-SITE IMPLEMENTATION OF THE SWPPP, INCLUDING AL SUBCONTRACTOR ACTIVITIES.
3. THE CONTRACTOR SHALL PROVIDE KNOWLEDGEABLE AND EXPERIENCED PERSON(S) IN THE APPLICATION, INSTALLATION, AND MAINTENANCE OF EROSION AND SEDIMENT CONTROL BMPS THROUGHOUT THE PROJECT.
4. THE CONTRACTOR SHALL PROVIDE PERSON(S) MEETING THE TRAINING REQUIREMENTS OF THE NPDES PERMIT TO CONDUCT INSPECTION AND MAINTENANCE OF ALL EROSION PREVENTION AND SEDIMENT CONTROL BMPS IN ACCORDANCE WITH PERMIT REQUIREMENTS. ONE OF THESE INDIVIDUALS MUST BE AVAILABLE FOR AN ON-SITE INSPECTION WITHIN 72 HOURS UPON REQUEST BY THE MPCA.
5. THE CONTRACTOR SHALL PROVIDE TRAINING DOCUMENTATION FOR ALL INDIVIDUAL(S) REQUIRED BY THE PERMIT. THIS TRAINING DOCUMENTATION SHALL BE RECORDED IN THE SWPPP PRIOR TO CONSTRUCTION, OR AS SOON AS PERSONNEL FOR THE PROJECT HAVE BEEN DETERMINED. DOCUMENTATION SHALL INCLUDE:
   a. NAMES OF PERSONNEL ASSOCIATED WITH THE PROJECT REQUIRED TO BE TRAINED (AS LISTED ABOVE AND UNDER SECTION 21 OF THE PERMIT).
   b. DATES OF TRAINING, NAME OF INSTRUCTOR, AND ENTITY PROVIDING TRAINING.
   c. CONTENT OF TRAINING COURSE OR WORKSHOP INCLUDING NUMBER OF HOURS OF TRAINING.

INSPECTIONS AND MAINTENANCE:

1. THE CONTRACTOR SHALL PROVIDE PERSON(S) MEETING THE TRAINING REQUIREMENTS TO CONDUCT INSPECTION AND MAINTENANCE OF ALL EROSION PREVENTION AND SEDIMENT CONTROL BMPS UNDER THIS PROJECTI N ACCORDNACE WITH PERMIT REQUIREMENTS.
2. AN EXAMPLE MPCA CONSTRUCTION STORMWATER PERMIT CHECKLIST CAN BE FOUND ONLINE. NOTE: THE TEMPLATE INSPECTION REPORT DOES NOT ADDRESS AL ASPECTS OF THE NPDES PERMIT. THE COMPLETION OF THE MPCA CHECKLIST DOES NOT GUARANTEE THAT ALL PERMIT REQUIREMENTS ARE IN COMPLIANCE. IT IS THE RESPONSIBILITY OF THE PERMITTEE(S) TO READ AND UNDERSTAND THE FULL PERMIT REQUIREMENTS.

RECORDS RETENTION:

THE SWPPP, INCLUDING ALL CHANGES/AMENDMENTS, AND INSPECTIONS AND MAINTENANCE RECORDS SHALL BE KEPT ON SITE DURING NORMAL WORKING HOURS BY INDIVIDUALS WHO HAVE OPERATIONAL CONTROL OF THAT PORTION OF THE SITE.

ALL OWNER(S) SHALL KEEP THE SWPPP, ALONG WITH THE FOLLOWING ADDITIONAL RECORDS, ON FILE FOR THREE (3) YEARS AFTER SUBMITTAL OF THE NOT AS OUTLINED IN SECTION 4:

a. THE FINAL SWPPP;
b. ANY OTHER STORMWATER RELATED PERMITS REQUIRED FOR THE PROJECT
c. RECORDS OF ALL INSPECTION AND MAINTENANCE CONDUCTED DURING CONSTRUCTION
d. ALL PERMANENT OPERATION AND MAINTENANCE AGREEMENTS THAT HAVE BEEN IMPLEMENTED, INCLUDING ALL RIGHT-OF-WAY, CONTRACTS, COVENANTS, AND OTHER BINDING REQUIREMENTS REGARDING PERPETUAL MAINTENANCE; AND
e. ALL REQUIRED CALCULATIONS FOR DESIGN OF THE TEMPORARY AND PERMANENT STORMWATER MANAGEMENT SYSTEMS.

SWPPP AMENDMENTS (SECTION 6):

1. ONE OF THE INDIVIDUALS DESCRIBED IN ITEM 21.2(A) OR 21.2(B) OF THE PERMIT OR ANOTHER QUALIFIED INDIVIDUAL MUST COMPLETE ALL SWPPP CHANGES. CHANGES INVOLVING THE USE OF LESS STRINGENT BMPS MUST INCLUDE A JUSTIFICATION DESCRIBING HOW THE REPLACEMENT BMP IS EFFECTIVE FOR THE SITE CHARACTERISTICS.
2. THE SWPPP SHALL BE AMENDED TO INCLUDE ADDITIONAL OR MODIFIED BMPS AS NECESSARY TO CORRECT PROBLEMS IDENTIFIED OR ADDRESS SITUATIONS WHENEVER THERE IS A CHANGE IN DESIGN, CONSTRUCTION, OPERATION, MAINTENANCE, WEATHER OR SEASONAL CONDITIONS HAVING A SIGNIFICANT EFFECT ON THE DISCHARGE OF POLLUTANTS TO SURFACE WATERS OR GROUNDWATER.
3. PERMITTEES MUST AMEND THE SWPPP WITHIN 7 DAYS TO INCLUDE ADDITIONAL OR MODIFIED BMPS WHENEVER INSPECTIONS OR INVESTIGATIONS BY THE SITE OWNER OR OPERATOR, USEPA OR MPCA OFFICIALS INDICATE THE SWPPP IS NOT EFFECTIVE IN ELIMINATING OR SIGNIFICANTLY MINIMIZING THE DISCHARGE OF POLLUTANTS TO SURFACE WATERS OR GROUNDWATER OR THE DISCHARGES ARE CAUSING WATER QUALITY STANDARD EXCEEDANCES (E.G., NUISANCE CONDITIONS AS DEFINED IN MINN. R. 7050.0210, SUBP. 2) OR THE SWPPP IS NOT CONSISTENT WITH THE OBJECTIVES OF A USEPA APPROVED TMDL.

BMP SELECTION AND INSTALLATION (SECTION 7):

1. ALL BMPS IDENTIFIED IN THE SWPPP DOCUMENT AND CONSTRUCTION PLANS SHALL BE SELECTED, INSTALLED, AND MAINTAINED IN AN APPROPRIATE AND FUNCTIONAL MANNER IN ACCORDANCE WITH THE RELEVANT MANUFACTURER SPECIFICATIONS AND ACCEPTED ENGINEERING PRACTICES.

TEMPORARY EROSION PREVENTION PRACTICES (SECTION 8):

1. PRIOR TO BEGINNING ANY CONSTRUCTION WORK AT THE SITE, LOCATIONS OF AREAS NOT TO BE DISTURBED MUST BE DELINEATED (E.G. WITH FLAGS, STAKES, SIGNS, SILT FENCE, SNOW FENCE, ETC.)O THROUGHOUT THE PROJECT SITE.
2. MINIMIZE THE NEED FOR DISTURBANCE OF PORTIONS OF THE PROJECT WITH STEEP SLOPES. WHEN STEEP SLOPES MUST BE DISTURBED, PERMITTEES MUST USE TECHNIQUES SUCH AS PHASING AND STABILIZATION PRACTICES DESIGNED FOR STEEP SLOPES (E.G., SLOPE DRAINING AND TERRACING).
3. STABILIZE ALL EXPOSED SOIL AREAS, INCLUDING STOCKPILES. STABILIZATION MUST BE INITIATED IMMEDIATELY TO LIMIT SOIL EROSION WHEN CONSTRUCTION ACTIVITY HAS PERMANENTLY OR TEMPORARILY CEASED ON ANY PORTION OF THE SITE AND WILL NOT RESUME FOR A PERIOD EXCEEDING 14 CALENDAR DAYS (7 DAYS FOR SITES DISCHARGING TO SPECIAL OR IMPAIRED WATERS, SEE SECTION 24). STABILIZATION MUST BE COMPLETED NO LATER THAN 14 CALENDAR DAYS AFTER THE CONSTRUCTION ACTIVITY HAS CEASED. STABILIZATION IS NOT REQUIRED ON CONSTRUCTED BASE COMPONENTS OF ROADS, PARKING LOTS AND SIMILAR SURFACES.
4. STABILIZATION IS NOT REQUIRED ON TEMPORARY STOCKPILES WITHOUT SIGNIFICANT SILT, CLAY OR ORGANIC COMPONENTS (E.G., CLEAN AGGREGATE STOCKPILES, DEMOLITION CONCRETE STOCKPILES, SAND STOCKPILES) BUT MUST PROVIDE SEDIMENT CONTROLS AT THE BASE OF THE STOCKPILE.
5. FOR PUBLIC WATERS THAT THE MINNESOTA DNR HAS PROMULGATED "WORK IN WATER RESTRICTIONS" DURING SPECIFIED FISH SPAWNING TIME FRAMES, PERMITTEES MUST COMPLETE STABILIZATION OF ALL EXPOSED SOIL AREAS WITHIN 200 FEET OF THE WATER'S EDGE, AND THAT DRAIN TO THESE WATERS, WITHIN 24 HOURS DURING THE RESTRICTION PERIOD.
6. STABILIZE THE NORMAL WETTED PERIMETER OF THE LAST 200 LINEAR FEET OF TEMPORARY OR PERMANENT DRAINAGE DITCHES OR SWALES THAT DRAIN WATER FROM THE SITE WITHIN 24 HOURS AFTER CONNECTING TO A SURFACE WATER OR PROPERTY EDGE. STABILIZE THE REMAINING PORTIONS OF TEMPORARY OR PERMANENT DITCHES OR SWALES WITHIN 14 CALENDAR DAYS (7 DAYS FOR SITES DISCHARGING TO SPECIAL OR IMPAIRED WATERS, SEE SECTION 24) AFTER CONNECTING TO A SURFACE WATER OR PROPERTY EDGE AND CONSTRUCTION IN THAT PORTION OF THE DITCH TEMPORARILY OR PERMANENTLY CEASES.
7. TEMPORARY OR PERMANENT DITCHES OR SWALES BEING USED AS A SEDIMENT CONTAINMENT SYSTEM DURING CONSTRUCTION (WITH PROPERLY DESIGNED ROCK-DITCH CHECKS, BIO ROLLS, SILT DIKES, ETC.) DO NOT NEED TO BE STABILIZED. THESE AREAS MUST BE STABILIZED WITHIN 24 HOURS AFTER THEIR USE AS A SEDIMENT CONTAINMENT SYSTEM CEASES.

95% DESIGN

merjent
Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DNR
SKANDIA WMA STREAM AND WETLAND RESTORATION
MURRAY COUNTY, MINNESOTA
EROSION & SEDIMENT CONTROL PLAN

C113
SHEET 14 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_P\MN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Plan Sheets\2025.0224-SWPPP & ESC plan.dwg

8. APPLYING MULCH, HYDROMULCH, TACKIFIER, POLYACRYLAMIDE OR SIMILAR EROSION PREVENTION PRACTICES IS NOT ACCEPTABLE WITHIN ANY PORTION OF THE NORMAL WETTED PERIMETER OF A TEMPORARY OR PERMANENT DRAINAGE DITCH OR SWALE SECTION WITH A CONTINUOUS SLOPE OF GREATER THAN 2 PERCENT.

9. PIPE OUTLETS MUST BE PROVIDED WITH TEMPORARY OR PERMANENT ENERGY DISSIPATION WITHIN 24 HOURS AFTER CONNECTION TO A SURFACE WATER.
10. ROUTE WATER AROUND UNSTABILIZED AREAS ON THE SITE AND TO REDUCE EROSION, UNLESS INFEASIBLE. USE EROSION CONTROLS AND VELOCITY DISSIPATION DEVICES SUCH AS CHECK DAMS, SEDIMENT TRAPS, RIPRAP, OR GROUTED RIPRAP AT OUTLETS WITHIN AND ALONG THE LENGTH OF ANY CONSTRUCTED STORMWATER CONVEYANCE CHANNEL, AND AT ANY OUTLET, TO PROVIDE A NON-EROSIVE FLOW VELOCITY, TO MINIMIZE EROSION OF CHANNELS AND THEIR EMBANKMENTS, OUTLETS, ADJACENT STREAM BANKS, SLOPES, AND DOWNSTREAM WATERS DURING DISCHARGE CONDITIONS.
11. UNLESS INFEASIBLE DUE TO LACK OF PERVIOUS OR VEGETATED AREAS, DIRECT DISCHARGES FROM BMPS TO VEGETATED AREAS OF THE SITE (INCLUDING ANY NATURAL BUFFERS) IN ORDER TO INCREASE SEDIMENT REMOVAL AND MAXIMIZE STORMWATER INFILTRATION. USE VELOCITY DISSIPATION DEVICES IF NECESSARY TO PREVENT EROSION WHEN DIRECTING STORMWATER TO VEGETATED AREAS.
12. INFILTRATION AREAS SHALL NOT BE EXCAVATED UNTIL ALL UPSTREAM AREAS HAVE BEEN STABILIZED AND/OR UPSTREAM BMPS ARE IN PLACE TO PROPERLY PREVENT SEDIMENT DEPOSITION. ONLY LOW IMPACT EQUIPMENT SHALL BE ALLOWED IN INFILTRATION AREAS WHICH SHALL BE CLEARLY IDENTIFIED, STAKED, AND MARKED/FENCED OFF.
13. PROJECT PHASING SHALL BE IMPLEMENTED TO ENSURE LAND DISTURBANCE AND TEMPORARY EROSION CONTROL MEASURES CAN BE EFFECTIVELY INSPECTED AND MAINTAINED THROUGHOUT THE DURATION OF THE PROJECT IN ACCORDANCE WITH THE INSPECTION AND MAINTENANCE REQUIREMENTS OF SECTION 11.

GENERAL SWPPP REQUIREMENTS & NOTES (CONT.)

TEMPORARY SEDIMENT CONTROL PRACTICES (SECTION 9)

1. SEDIMENT CONTROL PRACTICES MUST BE ESTABLISHED ON ALL DOWNGRADIENT PERIMETERS OF THE SITE AND DOWNGRADIENT AREAS OF THE SITE THAT DRAIN TO ANY SURFACE WATER, INCLUDING CURB AND GUTTER SYSTEMS. LOCATE SEDIMENT CONTROL PRACTICES UPGRADIENT OF ANY BUFFER ZONES. INSTALL SEDIMENT CONTROL PRACTICES BEFORE ANY UPGRADIENT LAND-DISTURBING ACTIVITIES BEGIN AND MUST KEEP THE SEDIMENT CONTROL PRACTICES IN PLACE UNTIL THEY ESTABLISH PERMANENT COVER.
2. IF DOWNGRADIENT SEDIMENT CONTROLS ARE OVERLOADED, BASED ON FREQUENT FAILURE OR EXCESSIVE MAINTENANCE REQUIREMENT, PERMITTEES MUST INSTALL ADDITIONAL UPGRADIENT SEDIMENT CONTROL PRACTICES OR REDUNDANT BMPS TO ELIMINATE THE OVERLOADING AND AMEND THE SWPPP TO IDENTIFY THESE ADDITIONAL PRACTICES AS REQUIRED IN ITEM 6.3.
3. TEMPORARY OR PERMANENT DRAINAGE DITCHES AND SEDIMENT BASINS DESIGNED AS PART OF A SEDIMENT CONTAINMENT SYSTEM (E.G., DITCHES WITH ROCK-CHECK DAMS) REQUIRE SEDIMENT CONTROL PRACTICES ONLY AS APPROPRIATE FOR SITE CONDITIONS.
4. A FLOATING SILT CURTAIN PLACED IN THE WATER IS NOT A SEDIMENT CONTROL BMP TO SATISFY ITEM 9.2 EXCEPT WHEN WORKING ON A SHORELINE OR BELOW THE WATERLINE. IMMEDIATELY AFTER THE CONSTRUCTION ACTIVITY (E.G., INSTALLATION OF RIP RAP ALONG THE SHORELINE) IN THAT AREA IS COMPLETE,INSTALL AN UPLAND PERIMETER CONTROL PRACTICE IF EXPOSED SOILS STILL DRAIN TO A SURFACE WATER.
5. REINSTALL ALL SEDIMENT CONTROL PRACTICES ADJUSTED OR REMOVED TO ACCOMMODATE SHORT-TERM ACTIVITIES SUCH AS CLEARING OR GRUBBING, OR PASSAGE OF VEHICLES, IMMEDIATELY AFTER THE SHORT-TERM ACTIVITY IS COMPLETED. COMPLETE ANY SHORT-TERM ACTIVITY THAT REQUIRES REMOVAL OF SEDIMENT CONTROL PRACTICES AS QUICKLY AS POSSIBLE AND RE-INSTALL SEDIMENT CONTROL PRACTICES BEFORE THE NEXT ANTICIPATED RAIN EVENT EVEN IF THE SHORT-TERM ACTIVITY IS NOT COMPLETE.
6. ALL STORM DRAIN INLETS MUST BE PROTECTED USING APPROPRIATE BMPS DURING CONSTRUCTION UNTIL THEY ESTABLISH PERMANENT COVER ON ALL AREAS WITH POTENTIAL FOR DISCHARGING TO THE INLET.
7. TEMPORARY STOCKPILES MUST HAVE SILT FENCE OR OTHER EFFECTIVE SEDIMENT CONTROLS AT THE BASE OF STOCKPILES ON THE DOWNGRADIENT PERIMETER PRIOR TO THE INITIATION OF STOCKPILING. SEDIMENT CONTROLS MUST BE MANAGED IN ACCORDANCE WITH SECTION 9.6.
8. WHERE VEHICLE TRAFFIC LEAVES ANY PART OF THE SITE (OR ONTO PAVED ROADS WITHIN THE SITE) INSTALL A VEHICLE TRACKING BMP TO MINIMIZE THE TRACK OUT OF SEDIMENT FROM THE CONSTRUCTION SITE OR ONTO PAVED ROADS WITHIN THE SITE. EXAMPLES OF VEHICLE TRACKING BMPS INCLUDE (BUT ARE NOT LIMITED TO) ROCK PADS, MUD MATS, SLASH MULCH, CONCRETE OR STEEL WASH RACKS, OR EQUIVALENT SYSTEMS.
9. INSTALL INSTALL TEMPORARY SEDIMENT BASINS AS REQUIRED IN SECTION 14.
10. MINIMIZE SOIL COMPACTION BY RESTRICTING VEHICLE ACCESS IN AREAS WHERE FINAL VEGETATIVE STABILIZATION WILL OCCUR, UNLESS OTHERWISE INFEASIBLE.
11. DISCHARGES FROM BMPS SHALL BE DIRECTED TO VEGETATED AREAS, UNLESS INFEASIBLE.
12. PRESERVE A 50 FOOT NATURAL BUFFER OR, IF A BUFFER IS INFEASIBLE ON THE SITE, PROVIDE REDUNDANT (DOUBLE) PERIMETER SEDIMENT CONTROLS WHEN A SURFACE WATER IS LOCATED WITHIN 50 FEET OF THE PROJECT'S LAND DISTURBANCES AND STORMWATER FLOWS TO THE SURFACE WATER.
13. INSTALL PERIMETER SEDIMENT CONTROLS AT LEAST 5 FEET APART UNLESS LIMITED BY LACK OF AVAILABLE SPACE. NATURAL BUFFERS ARE NOT REQUIRED ADJACENT TO ROAD DITCHES, JUDICIAL DITCHES, COUNTY DITCHES, STORMWATER CONVEYANCE CHANNELS, STORM DRAIN INLETS, AND SEDIMENT BASINS. IF PRESERVING THE BUFFER IS INFEASIBLE, PERMITTEES MUST DOCUMENT THE REASONS IN THE SWPPP. SHEET PILING AND OTHER IMPERMEABLE BARRIERS INSTALLED IN A MANNER THAT RETAINS ALL STORMWATER ARE CONSIDERED REDUNDANT PERIMETER CONTROL.
14. THE USE OF POLYMERS, FLOCCULANTS, OR OTHER SEDIMENTATION TREATMENT CHEMICALS MUST BE IN ACCORDANCE WITH ACCEPTED ENGINEERING PRACTICES, DOSING SPECIFICATIONS AND SEDIMENT REMOVAL DESIGN SPECIFICATIONS PROVIDED BY THE MANUFACTURER OR SUPPLIER. USE CONVENTIONAL EROSION AND SEDIMENT CONTROLS PRIOR TO CHEMICAL ADDITION AND MUST DIRECT TREATED STORMWATER TO A SEDIMENT CONTROL SYSTEM FOR FILTRATION OR SETTLEMENT OF THE FLOC PRIOR TO DISCHARGE.
15. IF THE PROPOSED PROJECT AS SHOWN ON THE PLANS HAS 10 OR MORE ACRES DRAINING TO A COMMON LOCATION OR 5 ACRES OR MORE IF THE SITE IS WITHIN ONE MILE OF A SPECIAL OR IMPAIRED WATER (AS IDENTIFIED IN SECTION II - RECEIVING WATERS AND ENVIRONMENTALLY SENSITIVE AREAS), THEN A TEMPORARY SEDIMENT BASIN MUST BE CONSTRUCTED AS SHOWN ON THE PLANS. TEMPORARY SEDIMENT BASINS WILL HAVE A MINIMUM OF 3,600 CUBIC FEET OF STORAGE PER ACRE DRAINING TO THE BASIN. THE BASIN OUTLET SHALL PROVIDE FOR DISCHARGING WATER FROM THE SURFACE TO MINIMIZE DISCHARGING OF POLLUTANTS. A STABILIZED EMERGENCY OVERFLOW SHALL BE CONSTRUCTED.

DEWATERING AND BASIN DRAINING (SECTION 10)

1. DISCHARGE TURBID OR SEDIMENT-LADEN WATERS RELATED TO DEWATERING AND BASIN DRAINING (E.G., PUMPED DISCHARGES, TRENCH/DITCH CUTS FOR DRAINAGE) DISCHARGES. DISCHARGE TURBID OR SEDIMENT-LADEN WATERS RELATED TO DEWATERING OR BASIN DRAINING TO A SEDIMENT CONTROL (E.G. SEDIMENT TRAP OR BASIN, FILTER BAG) DESIGNED TO PREVENT DISCHARGES WITH VISUAL TURBIDITY. TO THE EXTENT FEASIBLE, USE WELL-VEGETATED (E.G., GRASSY OR WOODED), UPLAND AREAS OF THE SITE TO INFILTRATE DEWATERING WATER BEFORE DISCHARGE. DO NOT USE RECEIVING WATERS AS PART OF THE TREATMENT AREA. VISUALLY CHECK AND PHOTOGRAPH THE DISCHARGE AT THE BEGINNING AND AT LEAST ONCE EVERY 24 HOURS OF OPERATION TO ENSURE ADEQUATE TREATMENT HAS BEEN OBTAINED AND NUISANCE CONDITIONS WILL NOT RESULT FROM THE DISCHARGE.
2. DISCHARGE WATER CONTAINING OIL OR GREASE, THEY MUST USE AN OIL-WATER SEPARATOR OR SUITABLE FILTRATION DEVICE (E.G., CARTRIDGE FILTERS, ABSORBENTS PADS) PRIOR TO DISCHARGE.
3. ALL WATER FROM DEWATERING OR BASIN-DRAINING ACTIVITIES IN A MANNER THAT DOES NOT CAUSE EROSION OR SCOUR IN THE IMMEDIATE VICINITY OF DISCHARGE POINTS OR INUNDATION OF WETLANDS IN THE IMMEDIATE VICINITY OF DISCHARGE POINTS THAT CAUSES SIGNIFICANT ADVERSE IMPACT TO THE WETLAND.
4. THE USERS OF FILTERS WITH BACKWASH WATER MUST HAUL THE BACKWASH WATER AWAY FOR DISPOSAL, RETURN THE BACKWASH WATER TO THE BEGINNING OF THE TREATMENT PROCESS, OR INCORPORATE THE BACKWASH WATER INTO THE SITE IN A MANNER THAT DOES NOT CAUSE EROSION.

INSPECTIONS AND MAINTENANCE (SECTION 11)

1. OWNER AND CONTRACTOR SHALL ENSURE THAT A TRAINED PERSON (AS IDENTIFIED IN ITEM 21.2(B) OF THE PERMIT WILL INSPECT THE ENTIRE CONSTRUCTION SITE AT A MINIMUM:
   - ONCE EVERY SEVEN (7) DAYS DURING ACTIVE CONSTRUCTION, AND
   - WITHIN 24 HOURS AFTER A RAINFALL EVENT GREATER THAN 0.5 INCH IN 24 HOURS

2. INSPECT ALL EROSION PREVENTION AND SEDIMENT CONTROL BMPS AND POLLUTION PREVENTION MANAGEMENT MEASURES TO ENSURE INTEGRITY AND EFFECTIVENESS. REPAIR, REPLACE OR SUPPLEMENT ALL NONFUNCTIONAL BMPS WITH FUNCTIONAL BMPS BY THE END OF THE NEXT BUSINESS DAY AFTER DISCOVERY UNLESS ANOTHER TIME FRAME IS SPECIFIED BELOW. INVESTIGATE AND COMPLY WITH THE FOLLOWING INSPECTION AND MAINTENANCE REQUIREMENTS:

   a. ALL PERIMETER CONTROL DEVICES MUST BE REPAIRED, REPLACED, OR SUPPLEMENTED WHEN THEY BECOME NONFUNCTIONAL OR THE SEDIMENT REACHES ONE-HALF (1/2) OF THE HEIGHT OF THE DEVICE. THESE REPAIRS MUST BE MADE BY THE END OF THE NEXT BUSINESS DAY AFTER DISCOVERY, OR THEREAFTER AS SOON AS FIELD CONDITIONS ALLOW ACCESS.
   b. TEMPORARY AND PERMANENT SEDIMENTATION BASINS MUST BE DRAINED AND THE SEDIMENT REMOVED WHEN THE DEPTH OF SEDIMENT COLLECTED IN THE BASIN REACHES ONE-HALF (1/2) THE STORAGE VOLUME. DRAINAGE AND REMOVAL MUST BE COMPLETED WITHIN 72 HOURS OF DISCOVERY, OR AS SOON AS FIELD CONDITIONS ALLOW ACCESS.
   c. SURFACE WATERS, INCLUDING DRAINAGE DITCHES AND CONVEYANCE SYSTEMS, MUST BE INSPECTED FOR EVIDENCE OF EROSION AND SEDIMENT DEPOSITION DURING EACH INSPECTION. REMOVE ALL DELTAS AND SEDIMENT DEPOSITED IN SURFACE WATERS, INCLUDING DRAINAGE WAYS, CATCH BASINS, AND OTHER DRAINAGE SYSTEMS, AND RESTABILIZE THE AREAS WHERE SEDIMENT REMOVAL RESULTS IN EXPOSED SOIL. THE REMOVAL AND STABILIZATION MUST TAKE PLACE WITHIN SEVEN (7) DAYS OF DISCOVERY UNLESS PRECLUDED BY LEGAL, REGULATORY, OR PHYSICAL ACCESS CONSTRAINTS. USE ALL REASONABLE EFFORTS TO OBTAIN ACCESS. IF PRECLUDED, REMOVAL AND STABILIZATION MUST TAKE PLACE WITHIN SEVEN (7) CALENDAR DAYS OF OBTAINING ACCESS. THE CONTACT ALL LOCAL, REGIONAL, STATE AND FEDERAL AUTHORITIES AND RECEIVING ANY APPLICABLE PERMITS, PRIOR TO CONDUCTING ANY WORK IN SURFACE WATERS.
   d. CONSTRUCTION SITE VEHICLE EXIT LOCATIONS MUST BE INSPECTED FOR EVIDENCE OF OFF-SITE SEDIMENT TRACKING ONTO PAVED SURFACES. TRACKED SEDIMENT MUST BE REMOVED FROM ALL PAVED SURFACES BOTH ON AND OFF SITE WITHIN 24 HOURS OF DISCOVERY, OR IF APPLICABLE, WITHIN A SHORTER TIME TO COMPLY WITH THE PERMIT.
   e. STREETS AND OTHER AREAS ADJACENT TO THE PROJECT MUST BE INSPECTED FOR EVIDENCE OF OFF-SITE ACCUMULATIONS OF SEDIMENT. IF SEDIMENT IS PRESENT, IT MUST BE REMOVED IN A MANNER AND AT A FREQUENCY SUFFICIENT TO MINIMIZE OFF-STE IMPACTS (E.G., FUGITIVE SEDIMENT IN STREETS COULD BE WASHED INTO STORM SEWERS BY THE NEXT RAIN AND/OR POSE A SAFETY HAZARD TO USERS OF PUBLIC STREETS).

3. INSPECTION FREQUENCY ADJUSTMENT:
   a. INSPECTIONS OF AREAS WITH PERMANENT COVER CAN BE REDUCED TO ONCE PER MONTH, EVEN IF CONSTRUCTION ACTIVITY CONTINUES ON OTHER PORTIONS OF THE SITE; OR
   b. WHERE SITES HAVE PERMANENT COVER ON ALL EXPOSED SOIL AND NO CONSTRUCTION ACTIVITY IS OCCURRING ANYWHERE ON THE SITE, INSPECTIONS CAN BE REDUCED TO ONCE PER MONTH AND, AFTER 12 MONTHS, MAY BE SUSPENDED COMPLETELY UNTIL CONSTRUCTION ACTIVITY RESUMES. THE MPCA MAY REQUIRE INSPECTIONS TO RESUME IF CONDITIONS WARRANT; OR
   c. WHERE CONSTRUCTION ACTIVITY HAS BEEN SUSPENDED DUE TO FROZEN GROUND CONDITIONS, INSPECTIONS MAY BE SUSPENDED. INSPECTIONS MUST RESUME WITHIN 24 HOURS OF RUNOFF OCCURRING, OR UPON RESUMING CONSTRUCTION, WHICHEVER COMES FIRST; OR
   d. FOR PROJECTS WHERE A POLLINATOR HABITAT OR NATIVE PRAIRIE TYPE VEGETATED COVER IS BEING ESTABLISHED, INSPECTIONS MAY BE REDUCED TO ONCE PER MONTH IF THE SITE HAS TEMPORARY VEGETATION WITH A DENSITY OF 70% TEMPORARY UNIFORM COVER. IF AFTER 24 MONTHS NO SIGNIFICANT EROSION PROBLEMS ARE OBSERVED, INSPECTIONS MAY BE SUSPENDED COMPLETELY UNTIL THE TERMINATION REQUIREMENTS IN SECTION 13 HAVE BEEN MET.

4. ALL INSPECTIONS AND MAINTENANCE ACTIVITIES WITHIN 24 HOURS OF BEING CONDUCTED AND THESE RECORDS MUST BE RETAINED WITH THE SWPPP. THESE RECORDS MUST INCLUDE:
   a. DATE AND TIME OF INSPECTIONS; AND
   b. NAME OF PERSONS CONDUCTING INSPECTIONS; AND
   c. ACCURATE FINDINGS OF INSPECTIONS, INCLUDING THE SPECIFIC LOCATION WHERE CORRECTIVE ACTIONS ARE NEEDED; AND
   d. CORRECTIVE ACTIONS TAKEN (INCLUDING DATES, TIMES, AND PARTY COMPLETING MAINTENANCE ACTIVITIES); AND
   e. DATE OF ALL RAINFALL EVENTS GREATER THAN ½ INCHES IN 24 HOURS, AND THE AMOUNT OF RAINFALL FOR EACH EVENT. PERMITTEES MUST OBTAIN RAINFALL AMOUNTS BY EITHER A PROPERLY MAINTAINED RAIN GAUGE INSTALLED ONSITE, A WEATHER STATION THAT IS WITHIN ONE (1) MILE OF YOUR LOCATION, OR A WEATHER REPORTING SYSTEM THAT PROVIDES SITE SPECIFIC RAINFALL DATA FROM RADAR SUMMARIES; AND
   f. IF PERMITTEES OBSERVE A DISCHARGE DURING THE INSPECTION, THEY MUST RECORD AND SHOULD PHOTOGRAPH AND DESCRIBE THE LOCATION OF THE DISCHARGE (I.E., COLOR, ODOR, SETTLED OR SUSPENDED SOLIDS, OIL SHEEN, AND OTHER OBVIOUS INDICATORS OF POLLUTANTS); AND
   g. ANY AMENDMENTS TO THE SWPPP PROPOSED AS A RESULT OF THE INSPECTION MUST BE DOCUMENTED AS REQUIRED IN SECTION 6 WITHIN SEVEN (7) CALENDAR DAYS; AND
   h. ALL PHOTOGRAPHS OF DEWATERING ACTIVITIES AND DOCUMENTATION OF NUISANCE CONDITIONS RESULTING FROM DEWATERING ACTIVITIES AS DESCRIBED IN SECTION 10.

5. ALL INFILTRATION AREAS MUST BE INSPECTED TO ENSURE THAT NO SEDIMENT FROM ONGOING CONSTRUCTION ACTIVITY IS REACHING THE INFILTRATION AREA. ALL INFILTRATION AREAS MUST BE INSPECTED TO ENSURE THAT EQUIPMENT IS NOT BEING DRIVEN ACROSS THE INFILTRATION AREA.

POLLUTION PREVENTION MANAGEMENT MEASURES (SECTION 12)

IMPLEMENT THE FOLLOWING POLLUTION PREVENTION MANAGEMENT MEASURES ON THE SITE:

1. STORAGE, HANDLING, AND DISPOSAL OF CONSTRUCTION PRODUCTS, MATERIALS, AND WASTES: THE PERMITTEE(S) SHALL COMPLY WITH THE FOLLOWING TO MINIMIZE THE EXPOSURE TO STORMWATER OF ANY OF THE PRODUCTS, MATERIALS, OR WASTES. PRODUCTS OR WASTES WHICH ARE EITHER NOT A SOURCE OF CONTAMINATION TO STORMWATER OR ARE DESIGNED TO BE EXPOSED TO STORMWATER ARE NOT HELD TO THIS REQUIREMENT:
   a. BUILDING PRODUCTS THAT HAVE THE POTENTIAL TO LEACH POLLUTANTS MUST BE UNDER COVER (E.G., PLASTIC SHEETING OR TEMPORARY ROOFS) TO PREVENT THE DISCHARGE OF POLLUTANTS OR PROTECTED BY A SIMILARLY EFFECTIVE MEANS DESIGNED TO MINIMIZE CONTACT WITH STORMWATER.
   b. PESTICIDES, HERBICIDES, INSECTICIDES, FERTILIZERS, TREATMENT CHEMICALS, AND LANDSCAPE MATERIALS MUST BE UNDER COVER (E.G., PLASTIC SHEETING OR TEMPORARY ROOFS) TO PREVENT THE DISCHARGE OF POLLUTANTS OR PROTECTED BY SIMILARLY EFFECTIVE MEANS DESIGNED TO MINIMIZE CONTACT WITH STORMWATER.
   c. HAZARDOUS MATERIALS, TOXIC WASTE, (INCLUDING OIL, DIESEL FUEL, GASOLINE, HYDRAULIC FLUIDS, PAINT SOLVENTS, PETROLEUM BASED PRODUCTS, WOOD PRESERVATIVES, ADDITIVES, CURING COMPOUNDS, AND ACIDS) MUST BE PROPERLY STORED IN SEALED CONTAINERS TO PREVENT SPILLS, LEAKS OR OTHER DISCHARGE. RESTRICTED ACCESS STORAGE AREAS MUST BE PROVIDED TO PREVENT VANDALISM. STORAGE AND DISPOSAL OF HAZARDOUS WASTE OR HAZARDOUS MATERIALS MUST BE IN COMPLIANCE WITH MINN. R. CH. 7045 INCLUDING SECONDARY CONTAINMENT AS APPLICABLE.
   d. SOLID WASTE MUST BE STORED, COLLECTED AND DISPOSED OF PROPERLY IN COMPLIANCE WITH MINN. R. CH. 7035.
   e. PORTABLE TOILETS MUST BE POSITIONED SO THAT THEY ARE SECURE AND WILL NOT BE TIPPED OR KNOCKED OVER. SANITARY WASTE MUST BE DISPOSED OF PROPERLY IN ACCORDANCE WITH MINN. R. CH. 7041.

2. FUELING AND MAINTENANCE OF EQUIPMENT OR VEHICLES; SPILL PREVENTION AND RESPONSE: TAKE REASONABLE STEPS TO PREVENT THE DISCHARGE OF SPILLED OR LEAKED CHEMICALS, INCLUDING FUEL, FROM ANY AREA WHERE CHEMICALS OR FUEL WILL BE LOADED OR UNLOADED INCLUDING THE USE OF DRIP PANS OR ABSORBENTS UNLESS INFEASIBLE. THE PERMITTEE(S) MUST CONDUCT FUELING IN A CONTAINED AREA UNLESS INFEASIBLE. ENSURE ADEQUATE SUPPLIES ARE AVAILABLE AT ALL TIMES TO CLEAN UP DISCHARGED MATERIALS AND THAT AN APPROPRIATE DISPOSAL METHOD IS AVAILABLE FOR RECOVERED SPILLED MATERIALS. REPORT AND CLEAN UP SPILLS IMMEDIATELY AS REQUIRED BY MINN. STAT. § 115.061, USING DRY CLEAN UP MEASURES WHERE POSSIBLE.
3. VEHICLE AND EQUIPMENT WASHING: WHEN WASHING THE EXTERIOR OF VEHICLES OR EQUIPMENT ON THE PROJECT SITE, WASHING MUST BE LIMITED TO A DEFINED AREA OF THE SITE. RUNOFF FROM THE WASHING AREA MUST BE CONTAINED IN A SEDIMENT BASIN OR OTHER SIMILARLY EFFECTIVE CONTROLS AND WASTE FROM THE WASHING ACTIVITY MUST BE PROPERLY DISPOSED OF. PROPERLY USE AND STORE SOAPS, DETERGENTS, OR SOLVENTS. NO ENGINE DEGREASING IS ALLOWED ON SITE.
4. CONCRETE AND OTHER WASHOUTS WASTE: PROVIDE EFFECTIVE CONTAINMENT FOR ALL LIQUID AND SOLID WASTES GENERATED BY WASHOUT OPERATIONS (CONCRETE, STUCCO, PAINT, FORM RELEASE OILS, CURING COMPOUNDS AND OTHER CONSTRUCTION MATERIALS) RELATED TO THE CONSTRUCTION ACTIVITY. THE LIQUID AND SOLID WASHOUT WASTES MUST NOT CONTACT THE GROUND, AND THE CONTAINMENT MUST BE DESIGNED SO THAT IT DOES NOT RESULT IN RUNOFF FROM THE WASHOUT OPERATIONS OR AREAS. LIQUID AND SOLID WASTES MUST BE DISPOSED OF PROPERLY AND IN COMPLIANCE WITH MPCA RULES. A SIGN MUST BE INSTALLED ADJACENT TO EACH WASHOUT FACILITY THAT REQUIRES SITE PERSONNEL TO UTILIZE THE PROPER FACILITIES FOR DISPOSAL OF CONCRETE AND OTHER WASHOUT WASTES.

5. HOMEOWNER, STRUCTURES ARE FINISHED, AND PERMANENT COVER HAS BEEN ESTABLISHED. FOR LOTS THAT ARE SOLD TO THE HOMEOWNER WHERE PERMANENT COVER HAS NOT BEEN ESTABLISHED, COVERAGE TERMINATES IF TEMPORARY EROSION PREVENTION AND DOWNGRADIENT PERIMETER CONTROL IS PROPERLY INSTALLED, AND THE PERMITTEE DISTRIBUTES THE MPCA'S "HOMEOWNER FACT SHEET" TO THE HOMEOWNER.
6. FOR CONSTRUCTION PROJECTS ON AGRICULTURAL LAND (E.G., PIPELINES ACROSS CROPLAND), PERMITTEES MUST RETURN THE DISTURBED LAND TO ITS PRECONSTRUCTION AGRICULTURAL USE PRIOR TO SUBMITTING THE NOT.
7. WHEN SUBMITTING THE NOT PERMITTEES MUST INCLUDE EITHER GROUND OR AERIAL PHOTOGRAPHS SHOWING THE REQUIREMENTS OF 13.2 HAVE BEEN MET. PERMITTEES ARE NOT REQUIRED TO TAKE PHOTOGRAPHS OF EVERY DISTINCT PART OF THE SITE, HOWEVER THE CONDITIONS PORTRAYED MUST BE SUBSTANTIALLY SIMILAR TO THOSE AREAS THAT ARE NOT PHOTOGRAPHED. PHOTOGRAPHS MUST BE CLEAR AND IN FOCUS AND MUST INCLUDE THE DATE THE PHOTO WAS TAKEN.

95% DESIGN

merjent®
Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DNR

SKANDIA WMA STREAM AND WETLAND RESTORATION

MURRAY COUNTY, MINNESOTA

EROSION & SEDIMENT CONTROL PLAN

C114

SHEET 15 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_PMN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Plan Sheets\2025.0224-SWPPP & ESC plan.dwg

PERMIT TERMINATION (SECTIONS 4 AND 13)

8. PERMITTEES MUST SUBMIT A NOT WITHIN 30 DAYS AFTER ALL TERMINATION CONDITIONS LISTED IN SECTION 13 ARE COMPLETE.
9. PERMITTEES MUST SUBMIT A NOT WITHIN 30 DAYS AFTER SELLING OR OTHERWISE LEGALLY TRANSFERRING THE ENTIRE SITE, INCLUDING PERMIT RESPONSIBILITY FOR ROADS (E.G., STREET SWEEPING) AND STORMWATER INFRASTRUCTURE FINAL CLEAN OUT, OR TRANSFERRING PORTIONS OF A SITE TO ANOTHER PARTY. THE PERMITTEES' COVERAGE UNDER THIS PERMIT TERMINATES AT MIDNIGHT ON THE SUBMISSION DATE OF THE NOT.
10. PERMITTEES MAY TERMINATE PERMIT COVERAGE PRIOR TO COMPLETION OF ALL CONSTRUCTION ACTIVITY IF THEY MEET ALL OF THE FOLLOWING CONDITIONS:
    a. CONSTRUCTION ACTIVITY HAS CEASED FOR AT LEAST 90 DAYS; AND
    b. AT LEAST 90 PERCENT (BY AREA) OF ALL ORIGINALLY PROPOSED CONSTRUCTION ACTIVITY HAS BEEN COMPLETED AND PERMANENT COVER HAS BEEN ESTABLISHED ON THOSE AREAS; AND
    c. ON AREAS WHERE CONSTRUCTION ACTIVITY IS NOT COMPLETE, PERMANENT COVER HAS BEEN ESTABLISHED; AN
    d. THE SITE COMPLIES WITH ITEM 13.3 THROUGH 13.7.

    AFTER PERMIT COVERAGE IS TERMINATED UNDER THIS ITEM, ANY SUBSEQUENT DEVELOPMENT ON THE REMAINING PORTIONS OF THE SITE WILL REQUIRE PERMIT COVERAGE IF THE SUBSEQUENT DEVELOPMENT ITSELF OR AS PART OF THE REMAINING COMMON PLAN OF DEVELOPMENT OR SALE WILL RESULT IN LAND DISTURBING ACTIVITIES OF ONE (1) OR MORE ACRES IN SIZE.

4. PERMITTEES MAY TERMINATE COVERAGE UPON MPCA APPROVAL AFTER SUBMITTING INFORMATION DOCUMENTING THE OWNER CANCELLED THE PROJECT.
5. PERMITTEES MUST COMPLETE ALL CONSTRUCTION ACTIVITY AND MUST INSTALL PERMANENT COVER OVER ALL AREAS PRIOR TO SUBMITTING THE NOT. VEGETATIVE COVER MUST CONSIST OF A UNIFORM PERENNIAL VEGETATION WITH A DENSITY OF 70 PERCENT OF ITS EXPECTED FINAL GROWTH. VEGETATION IS NOT REQUIRED WHERE THE FUNCTION OF A SPECIFIC AREA DICTATES NO VEGETATION, SUCH AS IMPERVIOUS SURFACES OR THE BASE OF A SAND FILTER.
6. PERMITTEES MUST REMOVE ANY ACCUMULATED SEDIMENT AND STABILIZE THE PERMANENT STORMWATER TREATMENT SYSTEM AND MUST ENSURE THE SYSTEM MEETS ALL APPLICABLE REQUIREMENTS IN SECTION 15 THROUGH 19 AND IS OPERATING AS DESIGNED.
7. PERMITTEES MUST REMOVE ALL SEDIMENT FROM CONVEYANCE SYSTEMS PRIOR TO SUBMITTING THE NOT.
8. PERMITTEES MUST REMOVE ALL TEMPORARY SYNTHETIC EROSION PREVENTION AND SEDIMENT CONTROL BMPS PRIOR TO SUBMITTING THE NOT. PERMITTEES MAY LEAVE BMPS DESIGNED TO DECOMPOSE ON-SITE IN PLACE.
9. FOR RESIDENTIAL CONSTRUCTION ONLY, PERMIT COVERAGE TERMINATES ON INDIVIDUAL LOTS IF THE LOT IS SOLD TO THE HOMEOWNER, STRUCTURES ARE FINISHED, AND PERMANENT COVER HAS BEEN ESTABLISHED. FOR LOTS THAT ARE SOLD TO THE HOMEOWNER WHERE PERMANENT COVER HAS NOT BEEN ESTABLISHED, COVERAGE TERMINATES IF TEMPORARY EROSION PREVENTION AND DOWNGRADIENT PERIMETER CONTROL IS PROPERLY INSTALLED, AND THE PERMITTEE DISTRIBUTES THE MPCA'S "HOMEOWNER FACT SHEET" TO THE HOMEOWNER.
10. FOR CONSTRUCTION PROJECTS ON AGRICULTURAL LAND (E.G., PIPELINES ACROSS CROPLAND), PERMITTEES MUST RETURN THE DISTURBED LAND TO ITS PRECONSTRUCTION AGRICULTURAL USE PRIOR TO SUBMITTING THE NOT.
11. WHEN SUBMITTING THE NOT PERMITTEES MUST INCLUDE EITHER GROUND OR AERIAL PHOTOGRAPHS SHOWING THE REQUIREMENTS OF 13.2 HAVE BEEN MET. PERMITTEES ARE NOT REQUIRED TO TAKE PHOTOGRAPHS OF EVERY DISTINCT PART OF THE SITE, HOWEVER THE CONDITIONS PORTRAYED MUST BE SUBSTANTIALLY SIMILAR TO THOSE AREAS THAT ARE NOT PHOTOGRAPHED. PHOTOGRAPHS MUST BE CLEAR AND IN FOCUS AND MUST INCLUDE THE DATE THE PHOTO WAS TAKEN.

LONG TERM OPERATION AND MAINTENANCE

1. UPON THE COMPLETION OF THE CONSTRUCTION ACTIVITY AND NPDES PERMIT TERMINATION, IN ACCORDANCE WITH SECTIONS 4 AND 13, THE PROPERTY OWNER SHALL BECOME THE RESPONSIBLE PARTY FOR LONG TERM OPERATION AND MAINTENANCE (O&M) OF ALL PERMANENT STORMWATER MANAGEMENT FEATURES UNDER THIS PROJECT.
2. ALL ASSOCIATED OPERATIONS, INSPECTIONS, MAINTENANCE, AND RECORD KEEPING SHALL BE PERFORMED BY TRAINED INDIVIDUAL(S) FAMILIAR WITH THE SITE STORMWATER MANAGEMENT SYSTEM.
3. RECORD KEEPING OF INSPECTIONS AND MAINTENANCE ITEMS SHALL BE MAINTAINED BY THE OWNER IN ACCORDANCE WITH APPLICABLE MAINTENANCE AGREEMENTS/DECLARATIONS AS REQUIRED BY LOCAL JURISDICTIONAL AUTHORITIES.

95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DNR

SKANDIA WMA STREAM AND WETLAND RESTORATION

MURRAY COUNTY, MINNESOTA

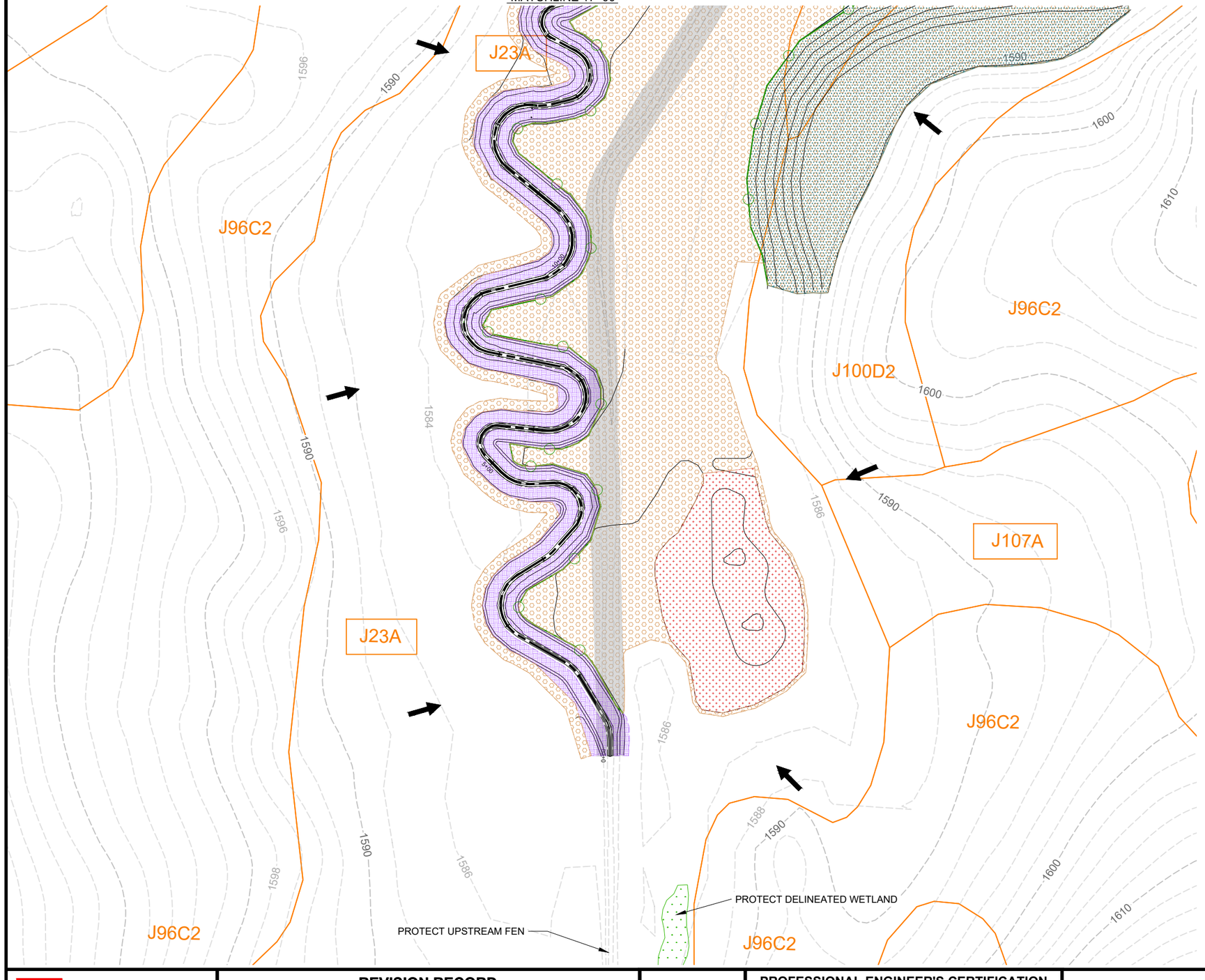
EROSION & SEDIMENT CONTROL PLAN

C115

SHEET 16 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_P\MN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Plan Sheets\2025.0224-SWPPP & ESC plan.dwg



LEGEND

- DRAINAGE AREA
- EXISTING CONTOUR
- EXISTING CULVERT
- SOIL BOUNDARY
- CHANNEL FILL - EXISTING CHANNEL
- DELINEATED WETLAND
- APPROX. LIMIT OF DISTURBANCE
- PROPOSED SEDIMENT BARRIER
- PROPOSED ROCK ENTRANCE
- TEMPORARY ROCK CHECK DAM
- FLOW DIRECTION
- STREAMBANKS 34-265 SEED MIX W/ CAT. 30 ROLLED EROSION PREVENTION
- WETLANDS 34-272 MIX W/ MULCH TYPE 3
- MESIC PRAIRIE 35-542 MIX W. MULCH TYPE 3

	SEED RATES		
STREAMBANK 34-265	RIPARIAN SOUTH & WEST	31.5 LBS/ACRE	2.6 AC.
WETLANDS 34-272	WET MEADOW SOUTH & WEST	12 LBS/ACRE	3.3 AC.
MESIC PRAIRIE 35-542	MESIC PRAIRIE SOUTHWEST	35 LBS/ACRE	13.9 AC.
			19.8 AC.

NOTES:

ALL UPLAND AREAS TO RECEIVE CERTIFIED WEED FREE MULCH AS EROSION PREVENTION AT A RATE OF 2 TONS/ACRE.

ALL CHANNEL EMBANKMENTS AND EXPOSED CHANNEL BOTTOMS TO RECEIVE NATURAL NET EROSION CONTROL BLANKET.

N

0 60 120

95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DNR

SKANDIA WMA STREAM AND WETLAND RESTORATION

MURRAY COUNTY, MINNESOTA

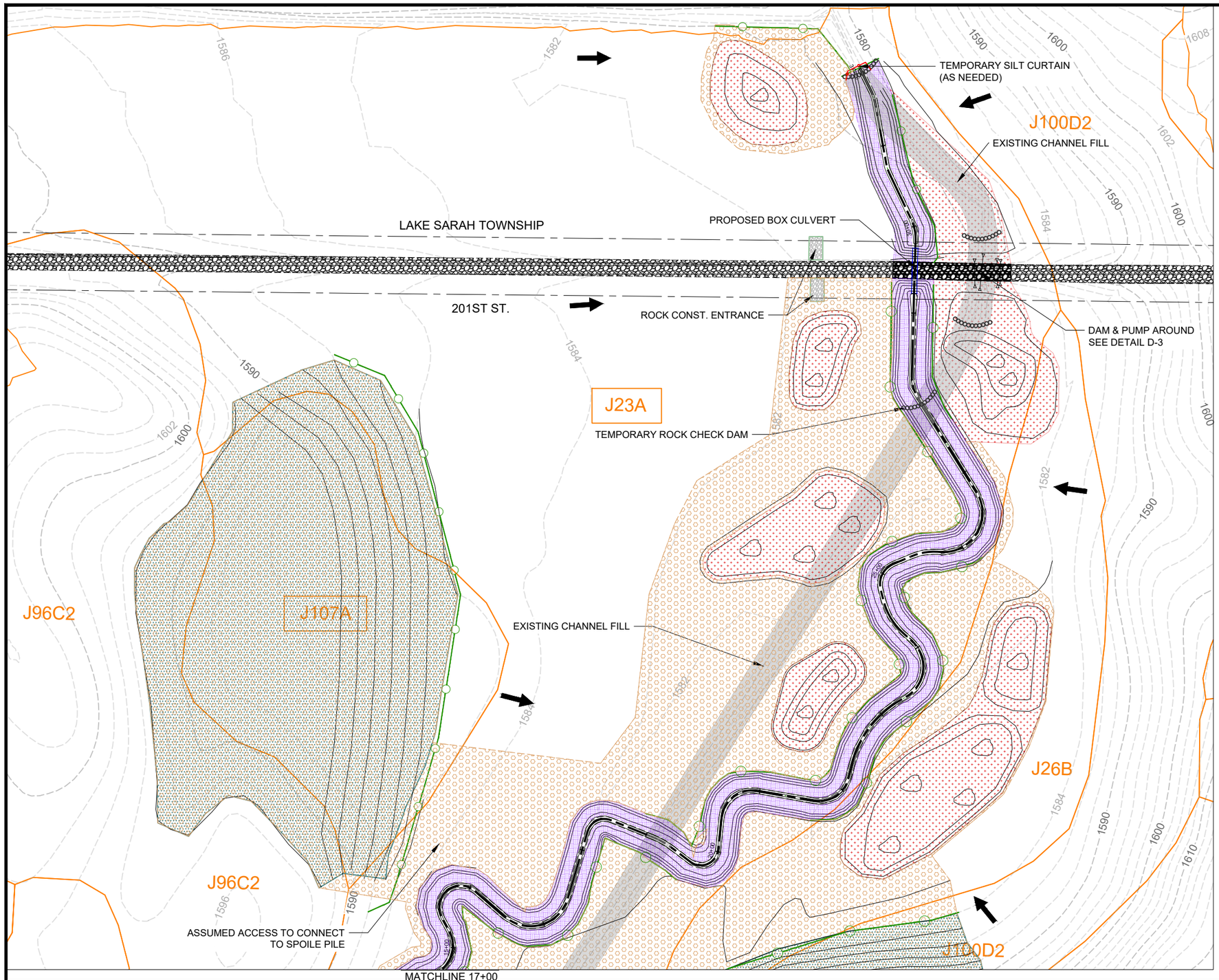
SEEDING & RESTORATION PLAN

C116

SHEET 17 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_P\MN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Plan Sheets\2025.0224-SWPPP & ESC plan.dwg



LEGEND

- DRAINAGE AREA
- EXISTING CONTOUR
- EXISTING CULVERT
- SOIL BOUNDARY
- CHANNEL FILL - EXISTING CHANNEL
- DELINEATED WETLAND
- APPROX. LIMIT OF DISTURBANCE
- PROPOSED SEDIMENT BARRIER
- PROPOSED ROCK ENTRANCE
- TEMPORARY ROCK CHECK DAM
- FLOW DIRECTION
- STREAMBANKS 34-265 SEED MIX W/ CAT. 30 ROLLED EROSION PREVENTION
- WETLANDS 34-272 MIX W/ MULCH TYPE 3
- MESIC PRAIRIE 35-542 MIX W. MULCH TYPE 3

	SEED RATES		
STREAMBANK 34-265	RIPARIAN SOUTH & WEST	31.5 LBS/ACRE	2.6 AC.
WETLANDS 34-272	WET MEADOW SOUTH & WEST	12 LBS/ACRE	3.3 AC.
MESIC PRAIRIE 35-542	MESIC PRAIRIE SOUTHWEST	35 LBS/ACRE	13.9 AC.
			19.8 AC.

NOTES:

ALL UPLAND AREAS TO RECEIVE CERTIFIED WEED FREE MULCH AS EROSION PREVENTION AT A RATE OF 2 TONS/ACRE.

ALL CHANNEL EMBANKMENTS AND EXPOSED CHANNEL BOTTOMS TO RECEIVE NATURAL NET EROSION CONTROL BLANKET.

N

0 60 120

95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DNR

SKANDIA WMA STREAM AND WETLAND RESTORATION

MURRAY COUNTY, MINNESOTA

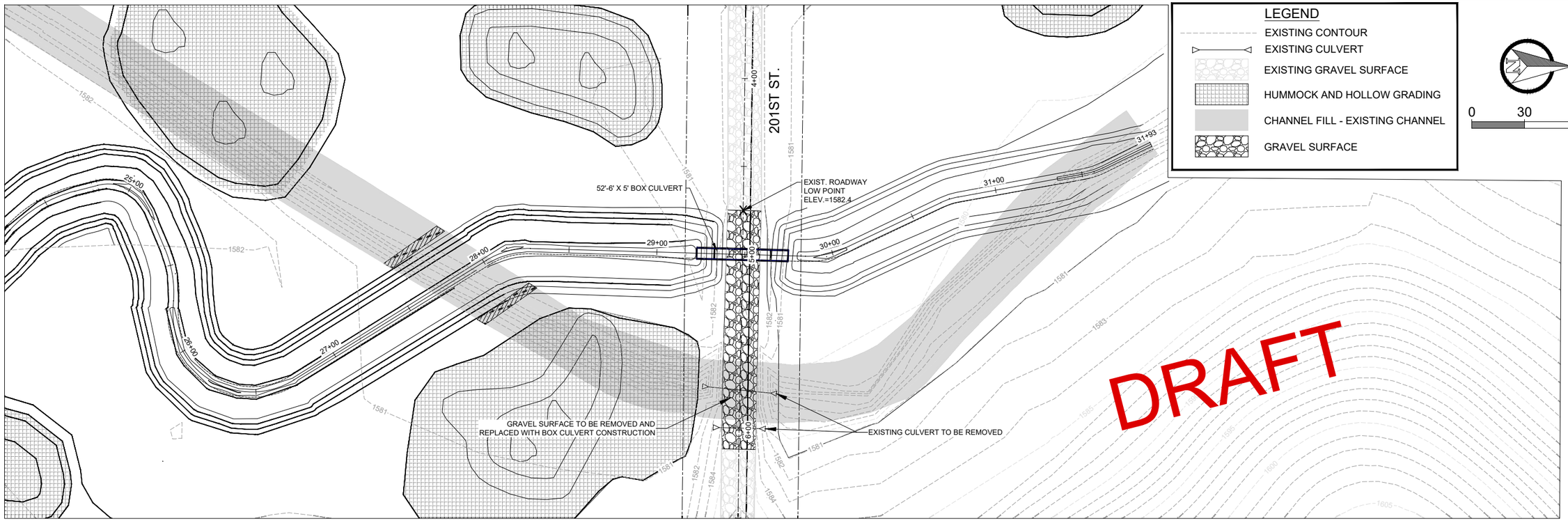
SEEDING & RESTORATION PLAN

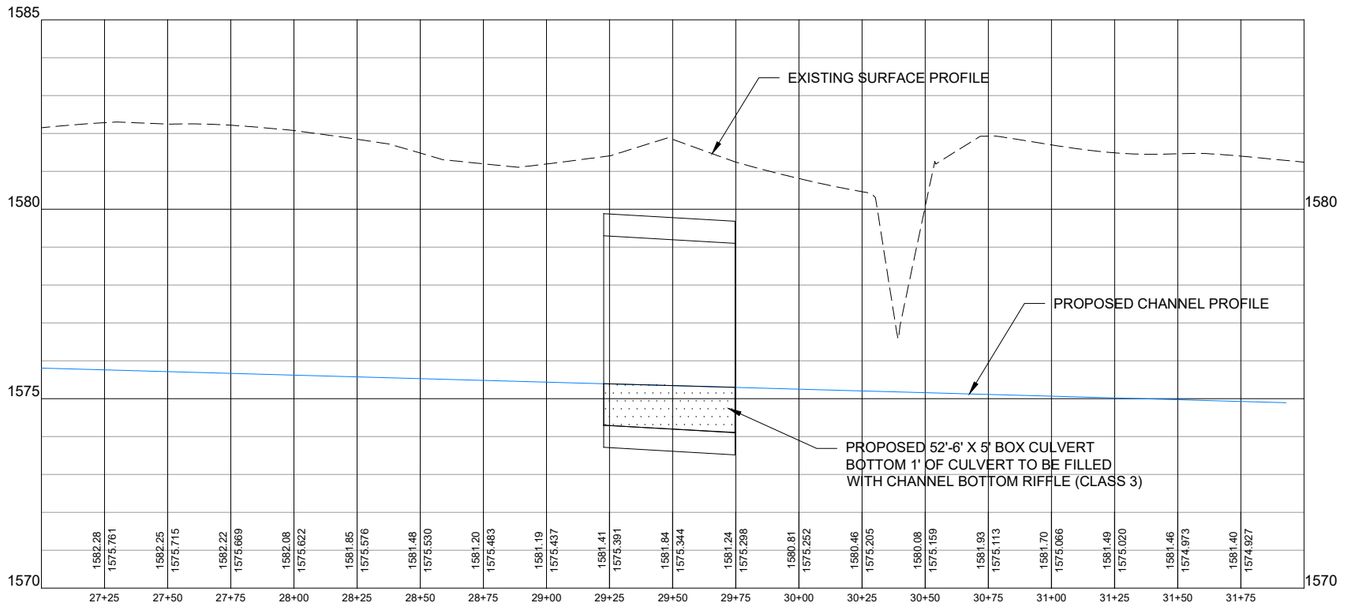
C117

SHEET 18 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_PMN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Plan Sheets\2025.0224-SWPPP & ESC plan.dwg





EXISTING C/L CULVERT DATA		
STORM EVENT.	TOTAL DISCHARGE (CFS)	ROADWAY DISCHARGE (CFS)
2 YR.	93.11	0.00
25 YR.	166.45	64.98
50 YR.	190.97	91.25
100 YR.	216.62	119.28

DATA PROVIDED BY MERJENT HY8 MODEL

PROPOSED C/L CULVERT DATA		
STORM EVENT.	TOTAL DISCHARGE (CFS)	ROADWAY DISCHARGE (CFS)
2 YR.	93.11	0.00
25 YR.	166.45	0.00
50 YR.	190.97	0.00
100 YR.	216.62	0.00

DATA PROVIDED BY MERJENT HY8 MODEL

95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

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

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

SKANDIA WMA - STREAM & WETLAND RESTORATION

MURRAY COUNTY, MINNESOTA

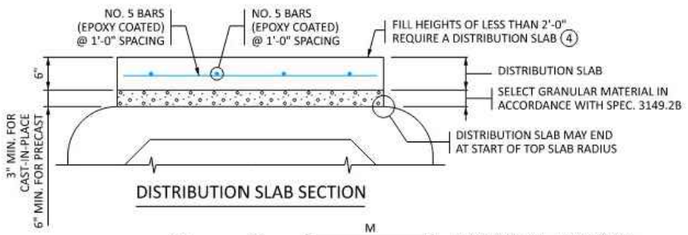
BOX CULVERT DETAILS

C118

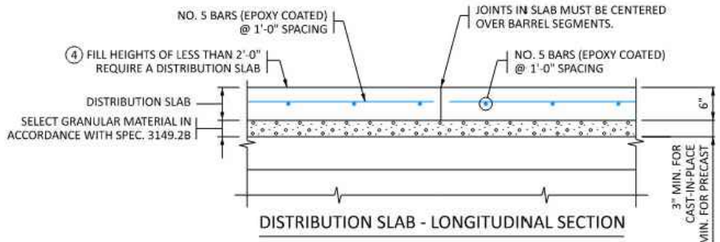
SHEET 19 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

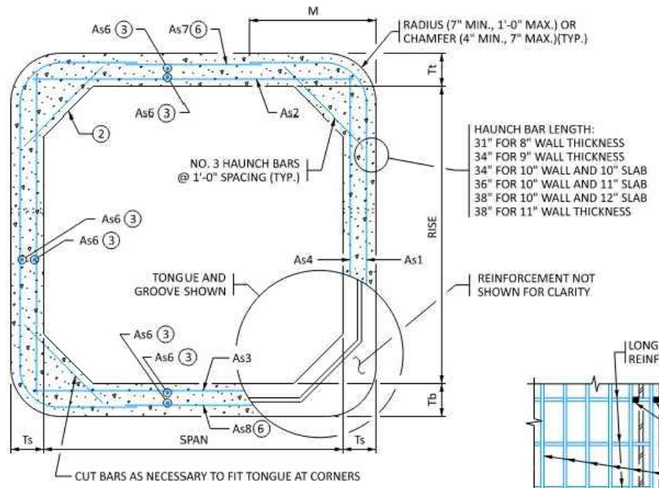
Z:\Clients\M_P\MN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Plan Sheets\2025.0224-Box Culvert Plan.dwg



DISTRIBUTION SLAB SECTION

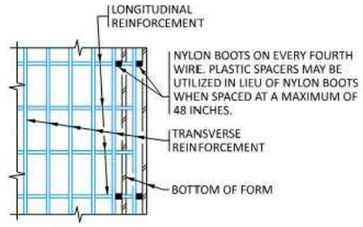


DISTRIBUTION SLAB - LONGITUDINAL SECTION

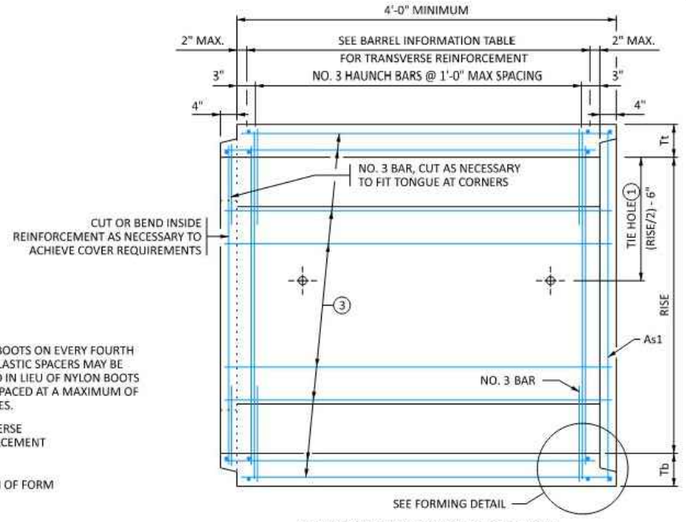


TRANSVERSE BARREL SECTION

BAR REINFORCEMENT OPTION SHOWN

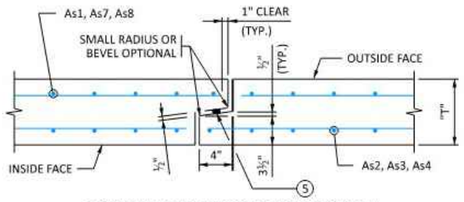


PLAN

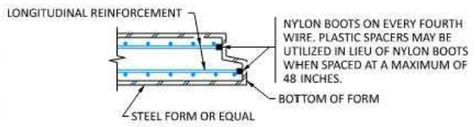


LONGITUDINAL BARREL SECTION

BAR REINFORCEMENT OPTION SHOWN

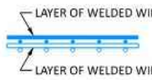


TONGUE AND GROOVE JOINT DETAIL



SECTION

FORMING DETAIL



REINFORCEMENT LAYER DETAIL

WHEN MORE THAN ONE LAYER OF WELDED WIRE REINFORCEMENT IS USED TO OBTAIN THE REQUIRED REINFORCEMENT AREAS, PLACE THE WIRES OF THE WELDED WIRE REINFORCEMENT AS SHOWN

CONSTRUCTION NOTES

CONSTRUCT CULVERTS IN ACCORDANCE WITH SPEC. 2412 EXCEPT AS NOTED.

REFER TO THE GENERAL PLAN AND ELEVATION SHEET FOR THE DISTANCE BETWEEN BARRELS OF ADJACENT BOXES AND TO STANDARD FIGURE 5-395.115 FOR MATERIAL REQUIREMENTS FOR FILL BETWEEN ADJACENT BOXES.

PROVIDE WELDED WIRE REINFORCEMENT, SHEAR REINFORCEMENT AND REINFORCEMENT BARS IN ACCORDANCE WITH THE APPLICABLE REQUIREMENTS OF AASHTO M259.

PROVIDE 1½" MIN. AND 2" MAX. CONCRETE COVER ON ALL REINFORCEMENT, INCLUDING SHEAR REINFORCEMENT, EXCEPT FOR TONGUE AND GROOVE DETAIL. PROVIDE 1" MIN. CONCRETE COVER FOR REINFORCEMENT IN TONGUE AND GROOVE DETAIL.

ANY OF THE FOLLOWING COMBINATIONS OF STEEL REINFORCEMENT MAY BE USED:
(a) 1 OR 2 LAYERS OF WELDED WIRE REINFORCEMENT OR
(b) 1 LAYER OF WELDED WIRE REINFORCEMENT AND 1 LAYER OF REINFORCEMENT BARS OR
(c) 1 LAYER OF REINFORCEMENT BARS.
DEVELOP REINFORCEMENT IN ACCORDANCE WITH AASHTO "LRFD BRIDGE DESIGN SPECIFICATIONS". IF BAR REINFORCEMENT IS SUBSTITUTED FOR WELDED WIRE REINFORCEMENT, INCREASE THE AREA OF REINFORCEMENT BY 8%, AND SUBMIT DESIGN CALCULATIONS VERIFYING COMPLIANCE WITH AASHTO 5.7.3.4. "CONTROL OF CRACKING BY DISTRIBUTION OF REINFORCEMENT".

MAXIMUM SIZE OF REINFORCEMENT BARS IS NO. 6. THE MAXIMUM WELDED WIRE REINFORCEMENT SIZE IS W23 PER LAYER (MAXIMUM OF 2 LAYERS).

SPACE CENTER TO CENTER OF TRANSVERSE WIRES NOT LESS THAN 2" NOR MORE THAN 4". SPACE CENTER TO CENTER OF LONGITUDINAL WIRES NOT MORE THAN 8".

WHEN USING As1, As7, AND As8 REINFORCEMENT AS ONE CONTINUOUS CAGE WITH SPLICES OCCURRING IN THE CENTER OF THE TOP AND BOTTOM OF THE BOX SECTION, THE MIN. LAP LENGTH FOR THE As7 AND As8 IS 15".

WELDING IS NOT PERMITTED ON REINFORCEMENT BARS OR WELDED WIRE REINFORCEMENT, EXCEPT THAT THE ORIGINAL WELDING REQUIRED TO MANUFACTURE WIRE REINFORCEMENT IS ACCEPTABLE.

WHEN REINFORCEMENT IS CUT, PLACE ADDITIONAL REINFORCEMENT ON BOTH SIDES OF THE CUT MEMBER TO REPLACE OR EXCEED THE CUT REINFORCEMENT.

USE CONCRETE MIX NO. 3W82 WITH NO CALCIUM CHLORIDE ALLOWED.

SHOP DRAWING APPROVAL IN ACCORDANCE WITH SPEC. 3238.2A IS NOT REQUIRED UNLESS OPENINGS OR ATTACHMENTS ARE PLACED ON A BARREL SEGMENT.

COMPACT THE FIRST 1.5' (LOOSE) OF FILL ABOVE THE BOX WITH LIGHT COMPACTION EQUIPMENT SUCH AS PLATE COMPACTORS OR WALK BEHIND ROLLERS.

TRANSVERSE REINFORCEMENT IS PARALLEL TO THE CULVERT SPAN.
LONGITUDINAL REINFORCEMENT IS PERPENDICULAR TO THE CULVERT SPAN.

(1) USE 1" DIAMETER CULVERT TIES. REFER TO STANDARD PLATE NO. 3145 FOR DETAILS.

(2) USE 12" VERTICAL, 12" HORIZONTAL HAUNCHES ON ALL BOX SIZES.

(3) PLACE LONGITUDINAL REINFORCEMENT IN ALL SLABS AND WALLS WITH A MINIMUM OF 0.06 SQ. IN./FT.

(4) ROADWAY OR SHOULDER FILL HEIGHTS OF LESS THAN 2'-0" REQUIRE A 6" THICK DISTRIBUTION SLAB WITH CONCRETE MIX 3552.

PLACE CAST-IN-PLACE DISTRIBUTION SLAB WITH 3" MIN. SELECT GRANULAR MATERIAL IN ACCORDANCE WITH SPEC. 3149.2B BETWEEN BARREL AND DISTRIBUTION SLAB.

PRECAST DISTRIBUTION SLABS MAY BE USED FOR FILL HEIGHTS OVER 1'-0". PROVIDE 6" MINIMUM SELECT GRANULAR MATERIAL IN ACCORDANCE WITH SPEC. 3149.2B BETWEEN BARREL AND DISTRIBUTION SLAB.

EXTEND THE WIDTH OF THE DISTRIBUTION SLAB TO THE OUTSIDE EDGES OF THE ROADWAY SHOULDERS UNLESS DIRECTED BY THE ENGINEER.

REDESIGN THE DISTRIBUTION SLAB PER THE MnDOT PAVEMENT DESIGN MANUAL IF IT IS USED AS PAVEMENT SURFACE.

PAYMENT FOR THE DISTRIBUTION SLAB AND SELECT GRANULAR MATERIAL BENEATH THE SLAB IS INCLUDED IN THE PRECAST CONCRETE BOX CULVERT PAY ITEM.

(5) REFER TO SPEC. 2412 FOR SEALANT REQUIREMENTS.

(6) As7 AND As8 REINFORCEMENT MAY BE PLACED INSIDE OR OUTSIDE OF As1.

BARREL INFORMATION TABLE * * *

LOCATION	SIZE	CLASS	f'c (P.S.I.)	FILL HEIGHT RANGE (FT.)	DISTRIBUTION SLAB REQUIRED *	RECESSED TIE RODS REQUIRED * *	DIMENSIONS					WEIGHT (LBS./FT.)	WELDED WIRE REINFORCEMENT											
													As1			As2		As3		As4		As7		As8	
							SPAN (FT.)	RISE (FT.)	Tt (IN.)	Tb (IN.)	Ts (IN.)		AREA (IN.²/FT.)	LENGTH (FT.)	M (FT.)	AREA (IN.²/FT.)	LENGTH (FT.)	AREA (IN.²/FT.)	LENGTH (FT.)	AREA (IN.²/FT.)	LENGTH (FT.)	AREA (IN.²/FT.)	LENGTH (FT.)	AREA (IN.²/FT.)	LENGTH (FT.)
					YES	NO																		
					YES	NO																		

* ALL CLASS 1 CULVERTS WITH FILL HEIGHTS OF LESS THAN 2'-0" REQUIRE A DISTRIBUTION SLAB. IF A DISTRIBUTION SLAB IS NOT REQUIRED, INDICATE "NO" IN THIS BOX.

* * FOR PEDESTRIAN CULVERT APPLICATIONS HIDE-AWAY OR RECESSED TIE CONNECTIONS ARE REQUIRED, REFER TO STANDARD PLATE 3145. IF REQUIRED, INDICATE "YES" IN THIS BOX.

* * * BOX CULVERTS WITH SPANS FROM 6 TO 14 FT. ARE DESIGNED FOR HL-93 LIVE LOADS (AASHTO LRFD 3.6.2.1) NOT INCLUDING THE DESIGN LANE LOAD. BOXES WITH SPANS OF 16 FT. OR GREATER ARE DESIGNED FOR HL-93 LIVE LOADS INCLUDING THE DESIGN LANE LOAD.

REVISION: AUGUST 21, 2024

APPROVED: MARCH 24, 2011
Nancy Daubenberger
STATE BRIDGE ENGINEER

REV. NO.	DATE	REVISION DESCRIPTION	BY
△	____	____	____

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

CERTIFIED BY: _____ (LICENSED PROFESSIONAL ENGINEER) (DATE)

NAME: LIC. NO.:

STATE PROJ. NO. __-___ (T.H. _) STA. __+_._

FIG. 5-395.101(A)

TITLE: PRECAST CONCRETE BARREL DETAILS

DES: ____ DR: ____ CHK: ____ CHK: ____ APPROVED:

BRIDGE NO. ____

SHEET NO. __ OF __ SHEETS

95% DESIGN

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

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

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

merjent
Corporate Office: 1 Main Street SE, Suite 300 Minneapolis, Minnesota 55414 (612) 746-3660
Wisconsin Office: N3764 Uni Drive Freedom, WI 54130 (920) 393-9198

MINNESOTA DEPARTMENT OF NATURAL RESOURCES
SKANDIA WMA - STREAM & WETLAND RESTORATION
MURRAY COUNTY, MINNESOTA

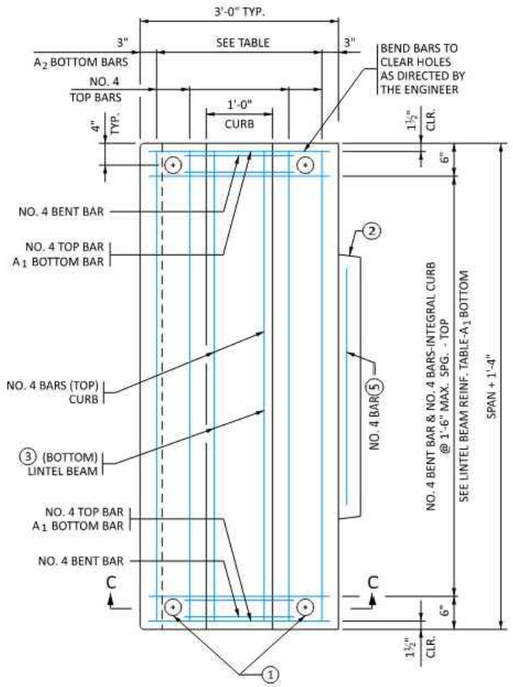
BOX CULVERT DETAILS

C119

SHEET 20 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

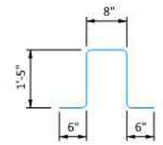
Z:\Clients\M_P\MN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Plan Sheets\2025.0224-Box Culvert Plan.dwg



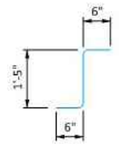
PLAN VIEW OF SQUARE LINTEL BEAM

LINTEL BEAM BOTTOM REINFORCEMENT		
SPAN (FT.)	A_1	A_2
6	NO. 4 @ 1'-2"	NO. 4 @ 9½"
8	NO. 4 @ 8"	NO. 5 @ 8"
10	NO. 5 @ 8"	NO. 6 @ 7½"
12	NO. 5 @ 6"	NO. 6 @ 6"
14	NO. 6 @ 6"	NO. 7 @ 6"
16	NO. 6 @ 6"	NO. 7 @ 6"

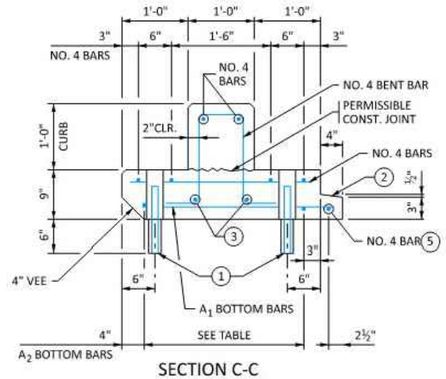
NOTE: MAXIMUM BAR SPACING GIVEN, REDUCE AS NECESSARY



NO. 4 BENT BAR



NO. 4 BENT BAR ALTERNATE
(4)
2 REQUIRED



SECTION C-C

INTEGRAL CURB WITH TONGUE.
ADDITIONAL REINFORCEMENT IN TONGUE NOT SHOWN.

CONSTRUCTION NOTES

REFER TO STANDARD FIG. 5-395.101(A) AND FIG. 5-395.101(B) FOR ADDITIONAL DIMENSIONS AND CONSTRUCTION NOTES.

ALL END SECTIONS REQUIRE CURB ON LINTEL BEAM.

(1) 3" DIA. HOLE THROUGH LINTEL BEAM AND 2" DIA. HOLE IN TOP OF WALL SECTION. PLACE NO. 8 DOWEL, 1'-0" LONG, IN HOLE AND FILL HOLE WITH GROUT. PROVIDE GROUT IN ACCORDANCE WITH THE MnDOT APL "PRE-BLENDED, DRY, AIR-ENTRAINED, BAGGED MORTAR MIX FOR UTILITY/SEWER APPLICATIONS". PREVENT BLEEDOUT.

(2) CHECK THE LOCATION TO DETERMINE WHETHER A TONGUE OR A GROOVE IS USED. TONGUE AND GROOVE TO TERMINATE AT HAUNCH OF BARREL SECTION.

(3) FOR SPANS UNDER 10'-0" USE NO. 8 BARS. FOR SPANS OF 10'-0" TO 12'-0" USE NO. 9 BARS. FOR 14'-0" AND 16'-0" SPAN, USE NO. 10 BARS.

(4) ALTERNATE BAR BEND MAY BE USED FOR NO. 4 BENT BAR.

(5) NO. 4 BAR IN TONGUE MAY BE REPLACED WITH EQUIVALENT WELDED WIRE REINFORCEMENT.

REVISION: AUGUST 21, 2024

APPROVED: MARCH 24, 2011
Nancy Daubenberger
STATE BRIDGE ENGINEER

REV. NO.	DATE	REVISION DESCRIPTION	BY
△	___	_____	___

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

CERTIFIED BY: _____ (LICENSED PROFESSIONAL ENGINEER) (DATE)
NAME: LIC. NO.:

STATE PROJ. NO. __-___ (T.H. _) STA. __+_._

TITLE: PRECAST CONCRETE END SECTION TYPE III - SINGLE OR MULTIPLE BARREL FOR SKEWS UP TO 7½°

FIG. 5-395.104 (2 OF 2)

DES: ___ DR: ___ APPROVED:
CHK: ___ CHK: ___
SHEET NO. _ OF _ SHEETS

BRIDGE NO. ___

95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

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

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES
SKANDIA WMA - STREAM & WETLAND RESTORATION
MURRAY COUNTY, MINNESOTA

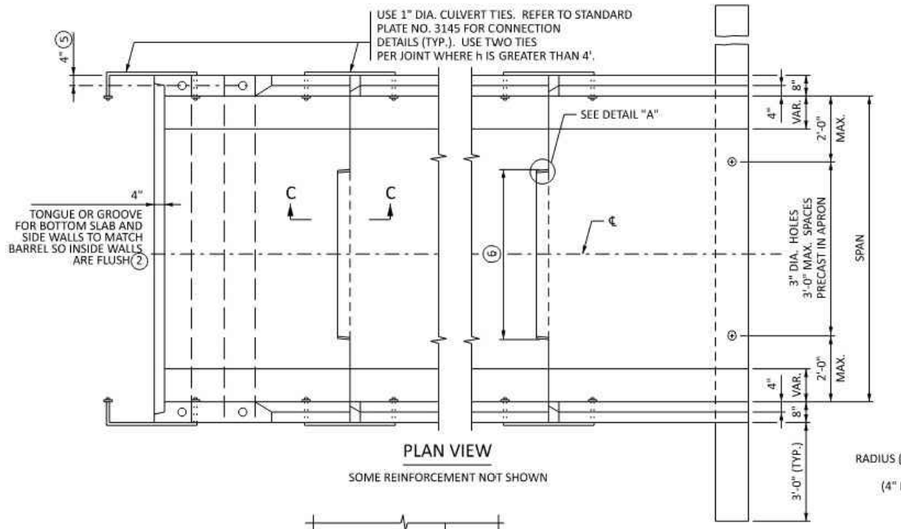
BOX CULVERT DETAILS

C120

SHEET 21 OF 55

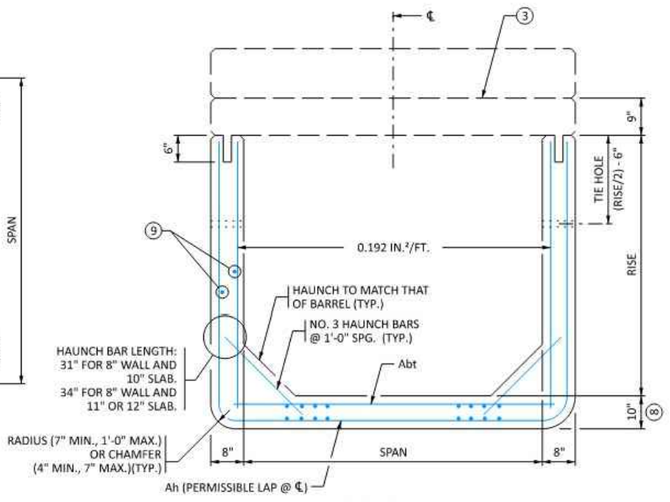
PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_P\MN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Plan Sheets\2025.0224-Box Culvert Plan.dwg

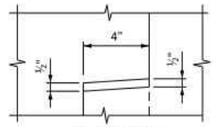


PLAN VIEW

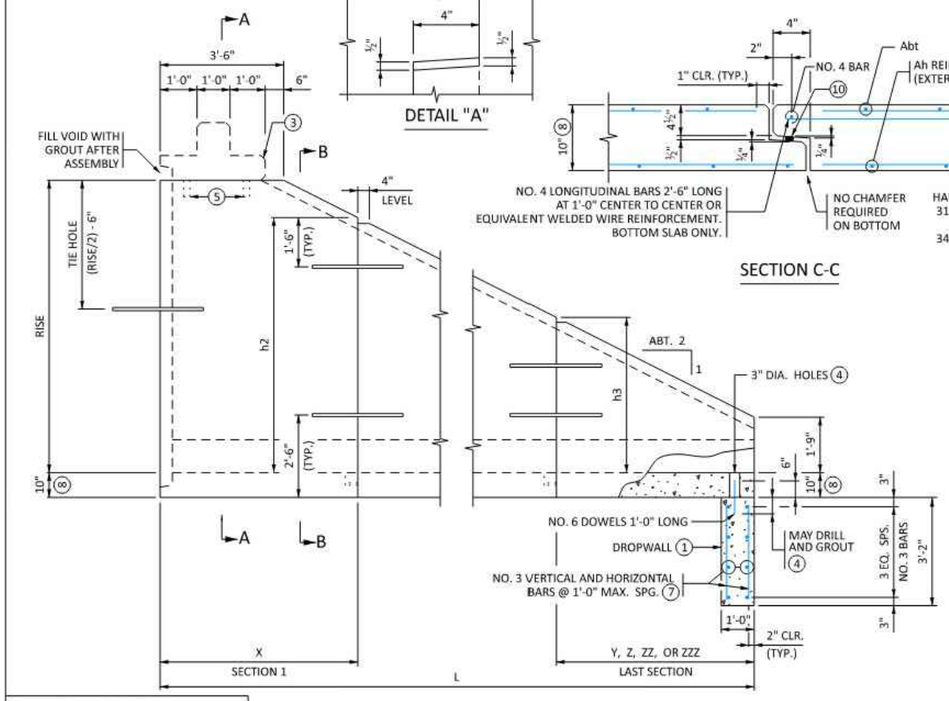
SOME REINFORCEMENT NOT SHOWN



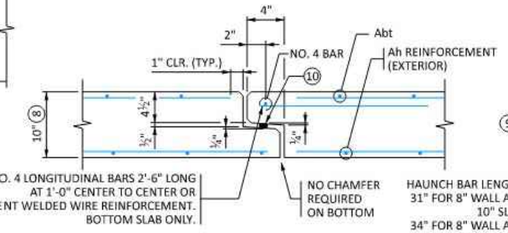
SECTION A-A



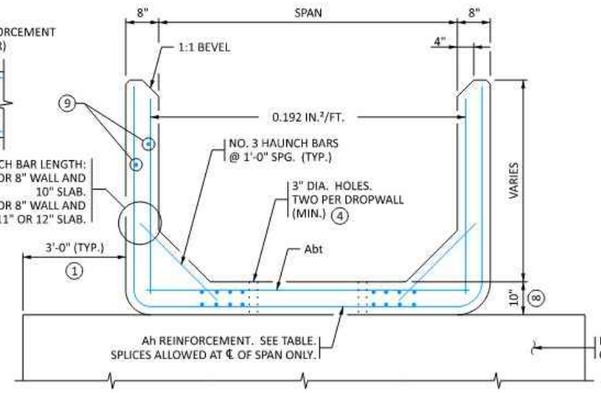
DETAIL "A"



SIDE ELEVATION



SECTION C-C



SECTION B-B

Abt REINFORCEMENT	
SPAN (FT.)	Abt (IN^2/FT.)
6-10	0.20
12	0.30
14	0.39
16	0.39

APRON DIMENSIONS & Ah REINFORCEMENT

RISE FT.	L FT.	SECTION 1 X	SECTION 1 Ah	h2	SECTION 2 Y	SECTION 2 Ah	h3	SECTION 3 Z	SECTION 3 Ah	h4	SECTION 4 ZZ	SECTION 4 Ah	h5	SECTION 5 ZZZ	SECTION 5 Ah	h6
4	8	8' (4')	0.192	1'-9"(3'-9")	(4')	(0.192)	(1'-9")									
5	10	6'	0.192	3'-9"	4'	0.192	1'-9"									
6	12	6'	0.192	4'-9"	6'	0.192	1'-9"									
7	14	6'	0.192	5'-9"	8' (4')	0.192	1'-9"(3'-9")	(4')	(0.192)	(1'-9")						
8	16	6'	0.20	6'-9"	6'	0.192	3'-9"	4'	0.192	1'-9"						
9	18	6'	0.29	7'-9"	6'	0.20	4'-9"	6'	0.192	1'-9"						
10	20	6'	0.42	8'-9"	6'	0.29	5'-9"	8' (4')	0.192	1'-9"(3'-9")	(4')	(0.192)	(1'-9")			
11	22	6'	0.60	9'-9"	6'	0.42	6'-9"	6'	0.192	3'-9"	4'	0.192	1'-9"			
12	24	6'	0.78	10'-9"	6'	0.60	7'-9"	6'	0.20	4'-9"	6'	0.192	1'-9"			
13	26	6'	1.03	11'-9"	6'	0.78	8'-9"	6'	0.28	5'-9"	8' (4')	0.192	1'-9"(3'-9")	(4')	(0.192)	(1'-9")
14	28	6'	1.38	12'-9"	6'	1.03	9'-9"	6'	0.40	6'-9"	6'	0.192	3'-9"	4'	0.192	1'-9"

NOTE: Ah IS AREA OF REINFORCEMENT PER FOOT OF LENGTH (IN^2/FT.)
VALUES IN ( ) MAY BE USED FOR END SECTIONS WITH SPANS OF 14' AND 16' ONLY.

CONSTRUCTION NOTES

REFER TO STANDARD FIG. 5-395.101(A) AND FIG. 5-395.101(B) FOR ADDITIONAL DIMENSIONS AND CONSTRUCTION NOTES.

USE CONCRETE MIX NO. 3W82 WITH NO CALCIUM CHLORIDE ALLOWED.

ON ALL END SECTIONS FOR WATERWAYS, USE DROPWALLS ON INLET AND OUTLET ENDS.

REFER TO STANDARD FIG. 5-395.115 FOR EMBANKMENT PROTECTION.

FINISH ALL EXPOSED EDGES OF CONCRETE WITH ½" OR ¾" CHAMFER OR RADIUS UNLESS OTHERWISE NOTED.

(1) WITH DOUBLE BOXES LOCATE DROPWALL JOINTS BETWEEN END SECTIONS. REFER TO STANDARD FIG. 5-395.111 FOR ALTERNATE DROPWALLS. LIMITS OF EXCAVATION FOR DROPWALL ARE APPROXIMATELY THE SAME AS DROPWALL DIMENSIONS. DROPWALL CONCRETE MIX IS 3G52, OR 3W82 IF PRECAST. FURNISHING AND INSTALLATION OF DROPWALL TO BE INCLUDED IN PRICE BID FOR END SECTIONS. DROPWALL NOT REQUIRED FOR NON-WATERWAY USE.

(2) CHECK LOCATION TO DETERMINE WHETHER A TONGUE OR A GROOVE IS USED.

(3) REFER TO STANDARD FIG. 5-395.104 (2 OF 2) FOR LINTEL BEAM DETAILS.

(4) FILL HOLE WITH GROUT. PROVIDE GROUT IN ACCORDANCE WITH THE MnDOT APL "PRE-BLENDED, DRY, AIR-ENTRAINED, BAGGED MORTAR MIX FOR UTILITY/SEWER APPLICATIONS". PREVENT BLEEDOUT.

(5) 2" DIAMETER HOLE, 6" DEEP IN TOP OF THE SECTION WALL.

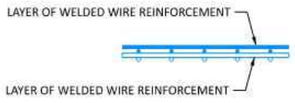
(6) 3'-6" MIN. TONGUE AND 3'-7" MIN. GROOVE FOR CULVERTS WITH 6'-0" SPANS. 5'-0" MIN. TONGUE AND 5'-1" MIN. GROOVE FOR CULVERTS WITH SPANS GREATER THAN 6'-0". CENTER TONGUE AND GROOVE ON ℄ OF EACH APRON JOINT. TONGUE AND GROOVE JOINT ON ALL THREE SIDES OF APRON IS PERMISSIBLE. REFER TO TONGUE AND GROOVE JOINT DETAIL ON STANDARD FIGURE 5-395.101(A) AND 5-395.101(B) WHEN THIS OPTION IS USED.

(7) WELDED WIRE REINFORCEMENT OF EQUAL AREA MAY BE SUBSTITUTED FOR REBAR.

(8) APRON BOTTOM SLAB THICKNESS MAY BE 8" FOR CULVERTS WITH 6' SPANS ONLY. BOTTOM SLAB THICKNESS MAY BE INCREASED UP TO 2" MAX. PROVIDED CONCRETE COVER IS 1½" MIN., 2" MAX.

(9) PLACE LONGITUDINAL REINFORCEMENT PERPENDICULAR TO THE CULVERT SPAN WITH A MINIMUM OF 0.06 SQUARE INCHES PER PERIPHERAL FOOT ON ALL FACES OF THE BARREL.

(10) REFER TO SPEC. 2412 FOR SEALANT REQUIREMENTS.



REINFORCEMENT LAYER DETAIL

WHEN MORE THAN ONE LAYER OF WELDED WIRE REINFORCEMENT IS USED TO OBTAIN THE REQUIRED REINFORCEMENT AREAS, PLACE THE WIRES OF THE WELDED WIRE REINFORCEMENT AS SHOWN.

REVISION: AUGUST 21, 2024

APPROVED: MARCH 24, 2011
Nancy Daubenberger
STATE BRIDGE ENGINEER

REV. NO.	DATE	REVISION DESCRIPTION	BY
△	___	___	___

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

CERTIFIED BY: ___ (LICENSED PROFESSIONAL ENGINEER) (DATE)
NAME: LIC. NO.:

STATE PROJ. NO. __-___ (T.H. _) STA. __+__

TITLE: PRECAST CONCRETE END SECTION TYPE III - SINGLE OR MULTIPLE BARREL FOR SKEWS UP TO 7½°

FIG. 5-395.104 (1 OF 2)

DES: ___ DR: ___ APPROVED:
CHK: ___ CHK: ___
SHEET NO. _ OF _ SHEETS

BRIDGE NO. ___

95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

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

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

SKANDIA WMA - STREAM & WETLAND RESTORATION

MURRAY COUNTY, MINNESOTA

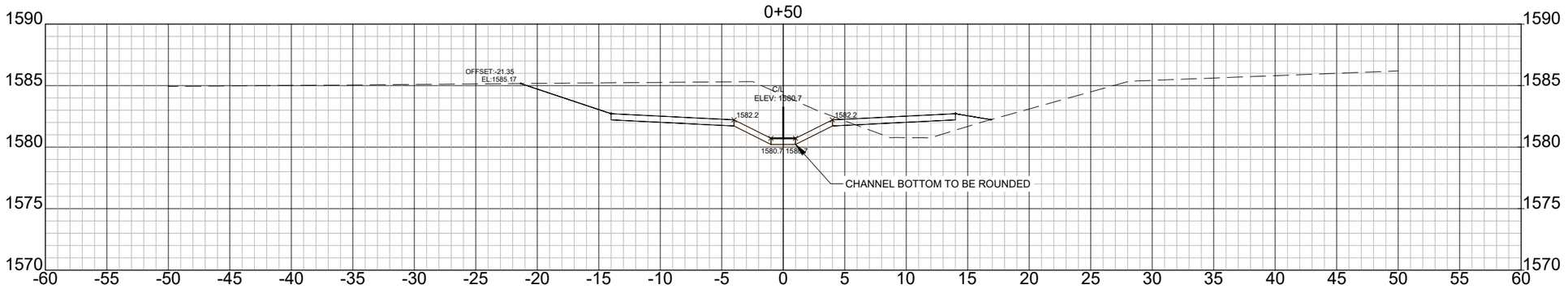
BOX CULVERT DETAILS

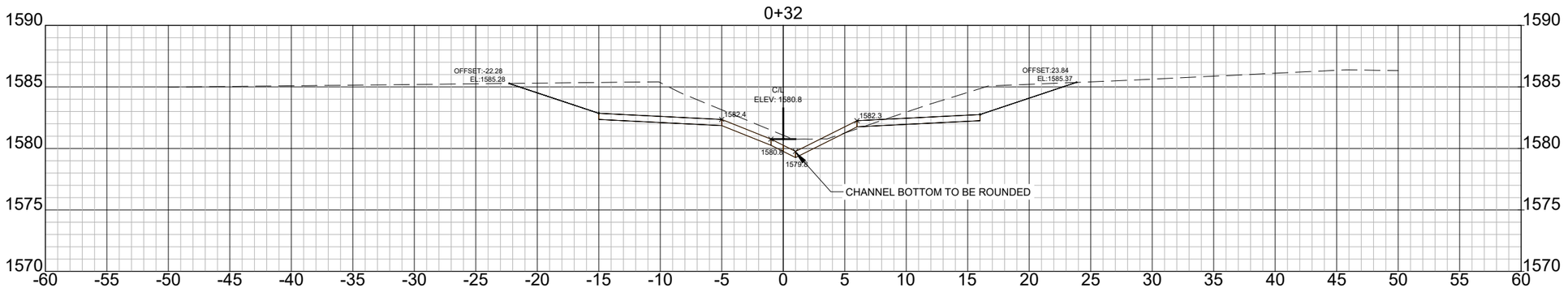
C121

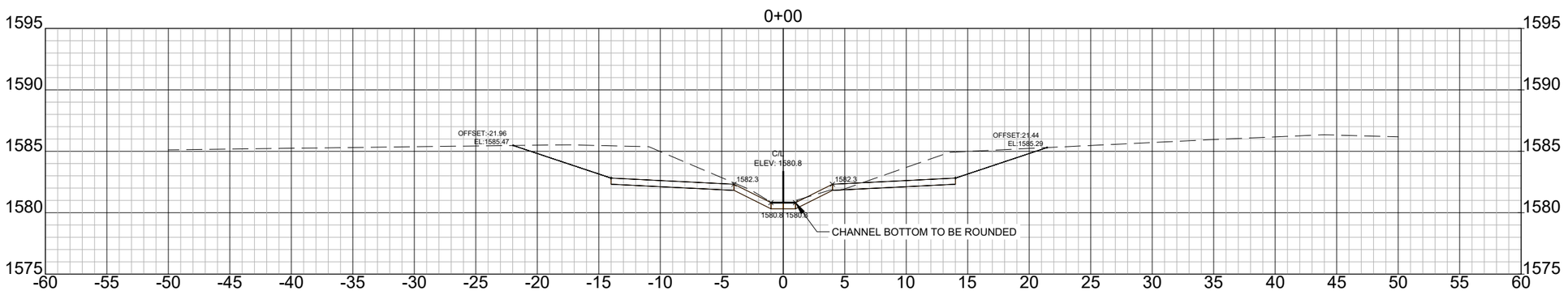
SHEET 22 OF 55

Z:\Clients\M_PMN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\Aub\CAD\Plan Sheets\2025.0224-Box Culvert Plan.dwg

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)







SEE PLAN SHEETS FOR SECTION LOCATIONS

95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) *(Date)*

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

SKANDIA WMA CHANNEL RESTORATION

MURRAY COUNTY, MN

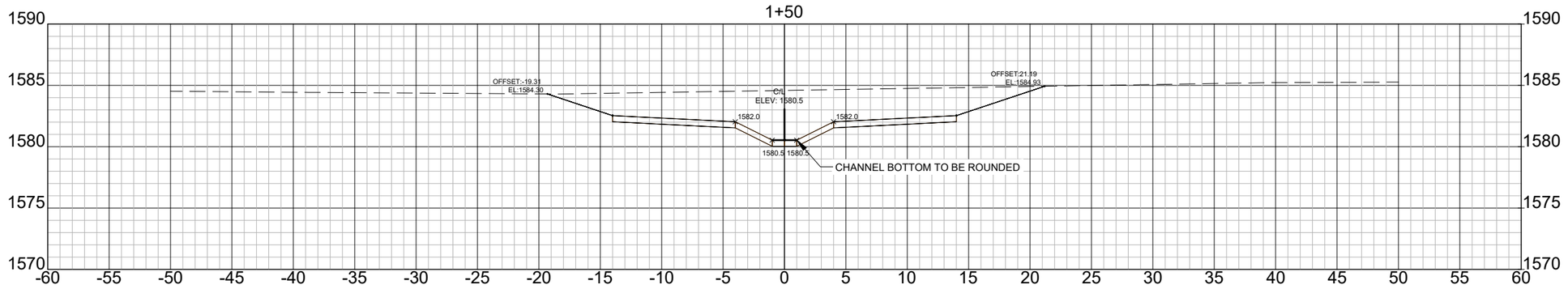
CROSS SECTIONS

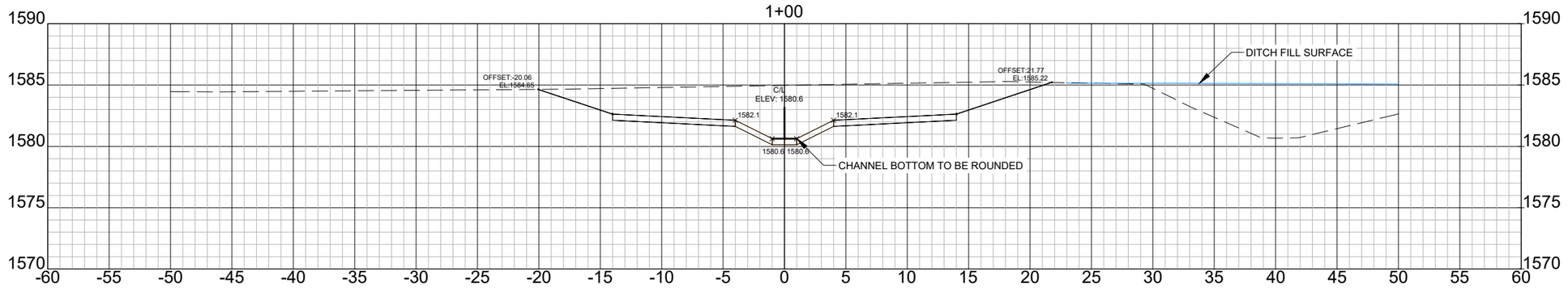
C122

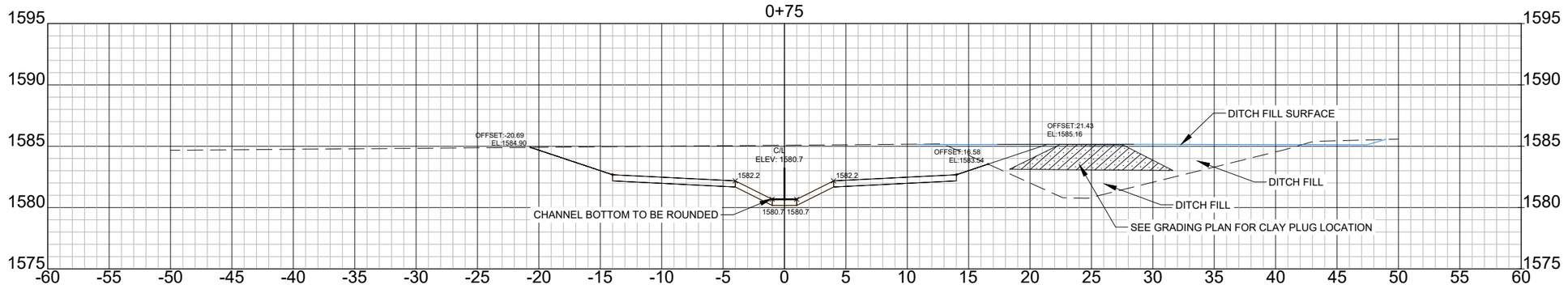
SHEET 23 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_PMN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Base Drawings\2024.0224-Cor.dwg







95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

SKANDIA WMA CHANNEL RESTORATION

MURRAY COUNTY, MN

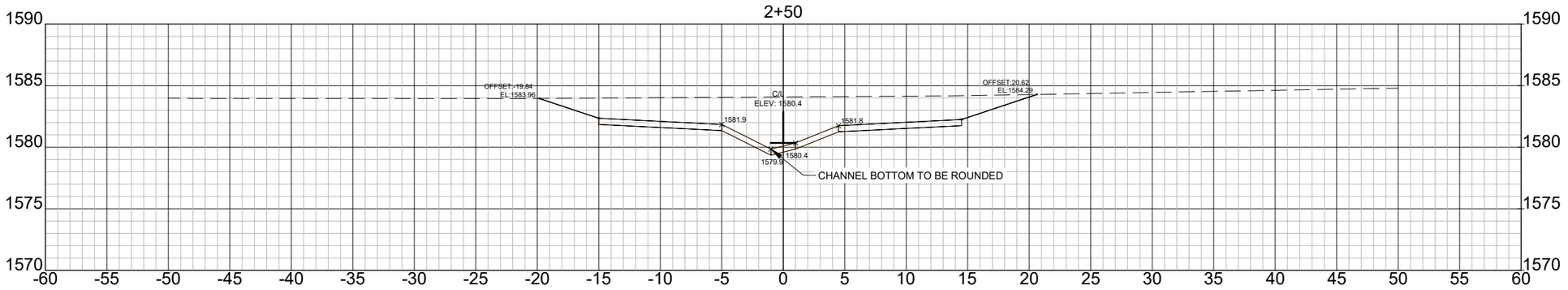
CROSS SECTIONS

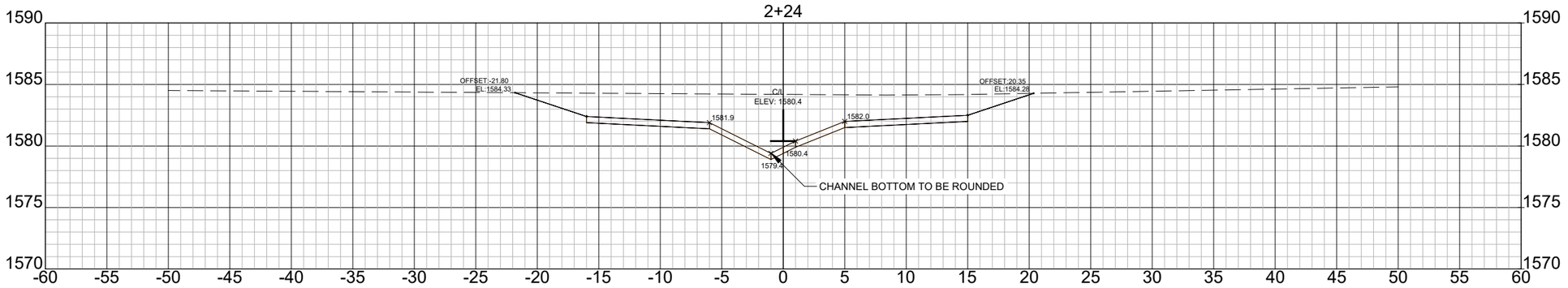
C123

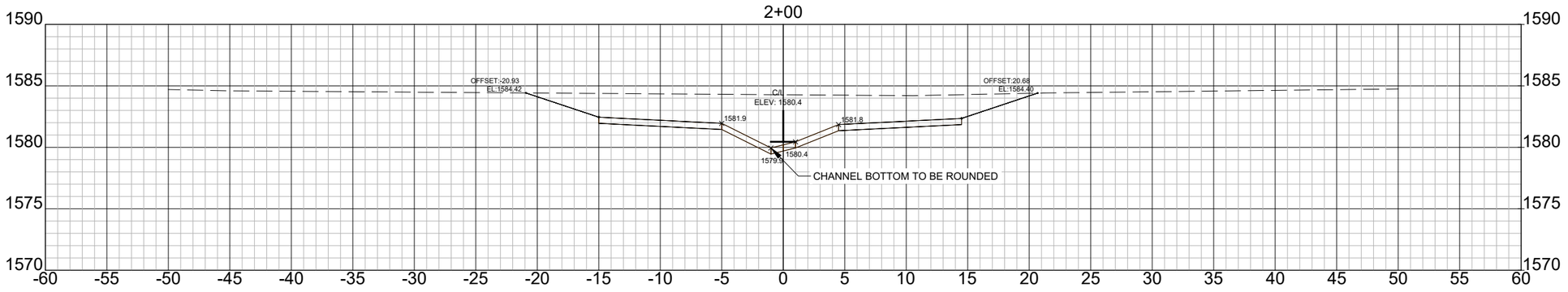
SHEET 24 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_PMN_DNRSkandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Base Drawings\20240224-Cor.dwg







95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

SKANDIA WMA CHANNEL RESTORATION

MURRAY COUNTY, MN

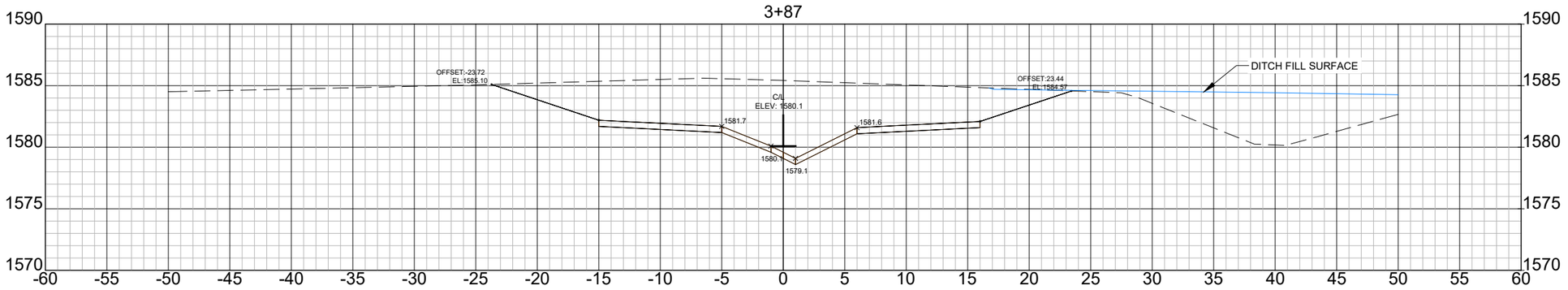
CROSS SECTIONS

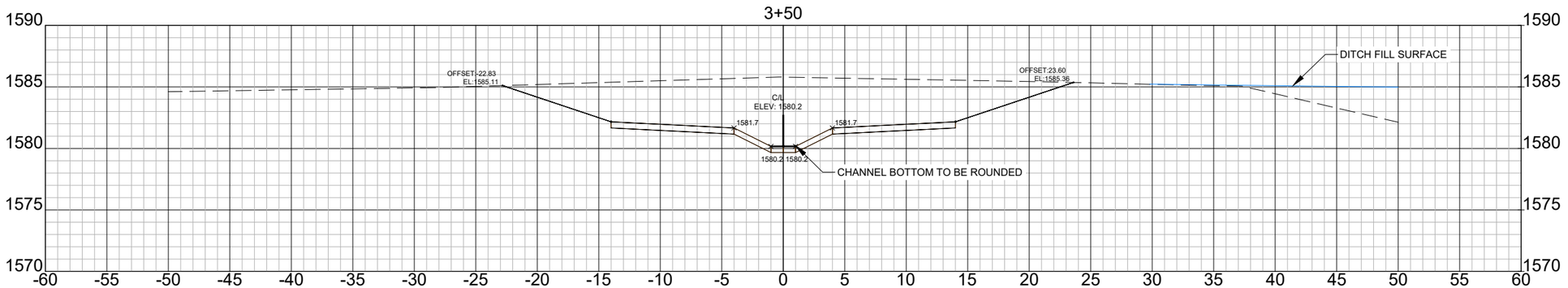
C124

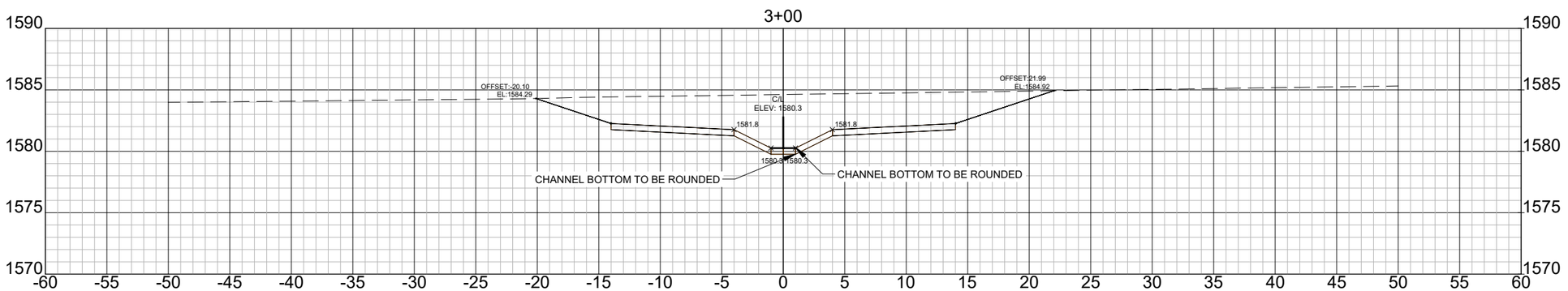
SHEET 24 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_PMN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Base Drawings\2024.0224-Cor.dwg







95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) *(Date)*

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

SKANDIA WMA CHANNEL RESTORATION

MURRAY COUNTY, MN

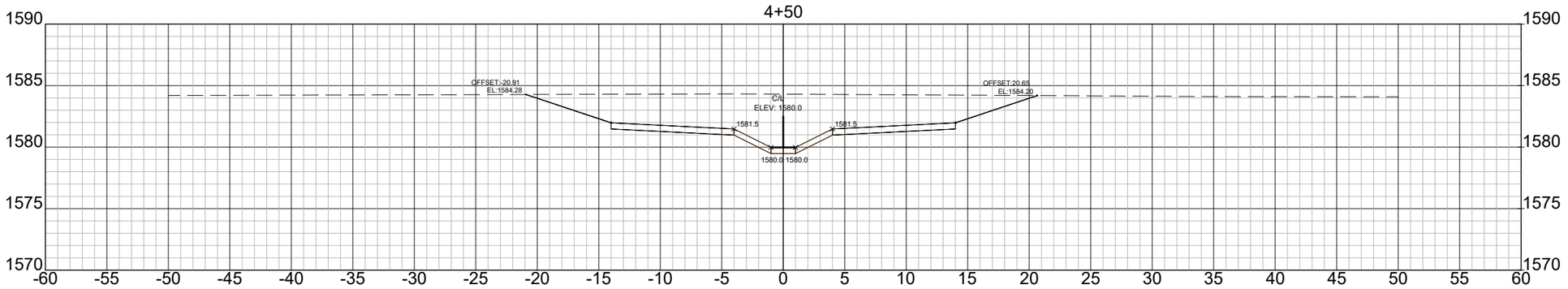
CROSS SECTIONS

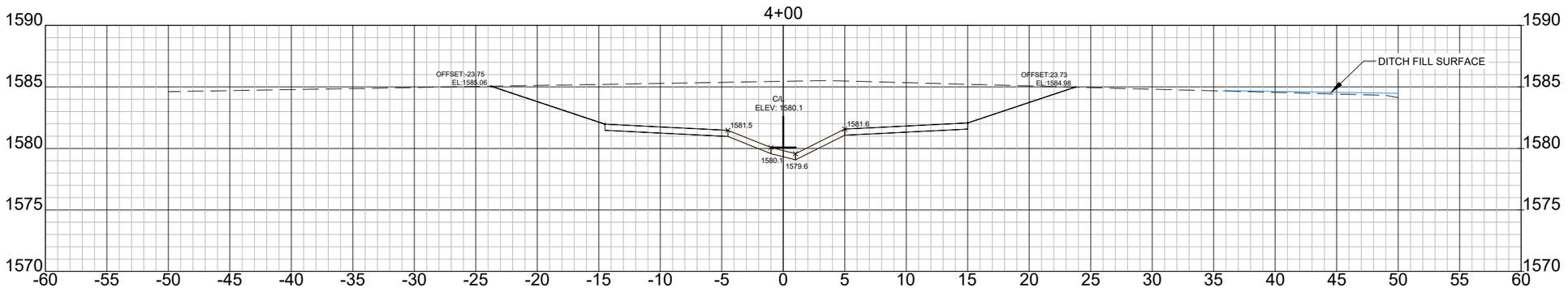
C125

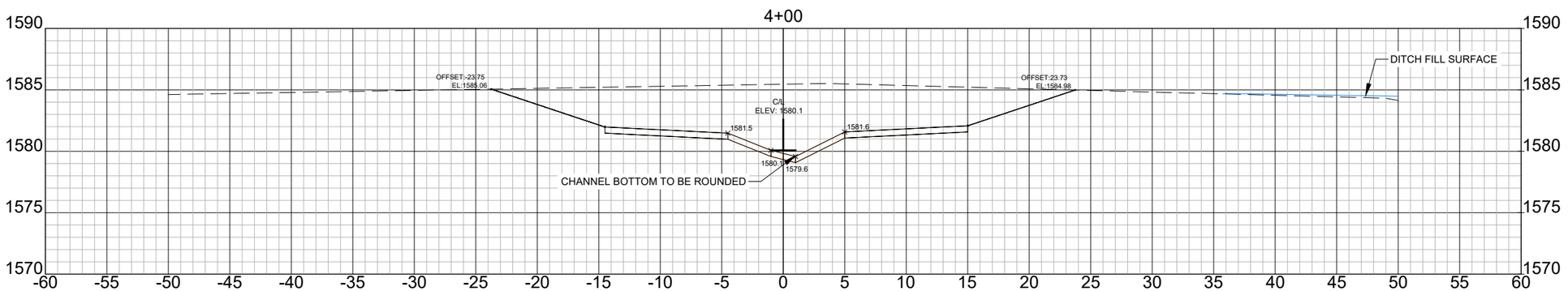
SHEET 26 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_PWN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Base Drawings\2024.0224-Cor.dwg







95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

SKANDIA WMA CHANNEL RESTORATION

MURRAY COUNTY, MN

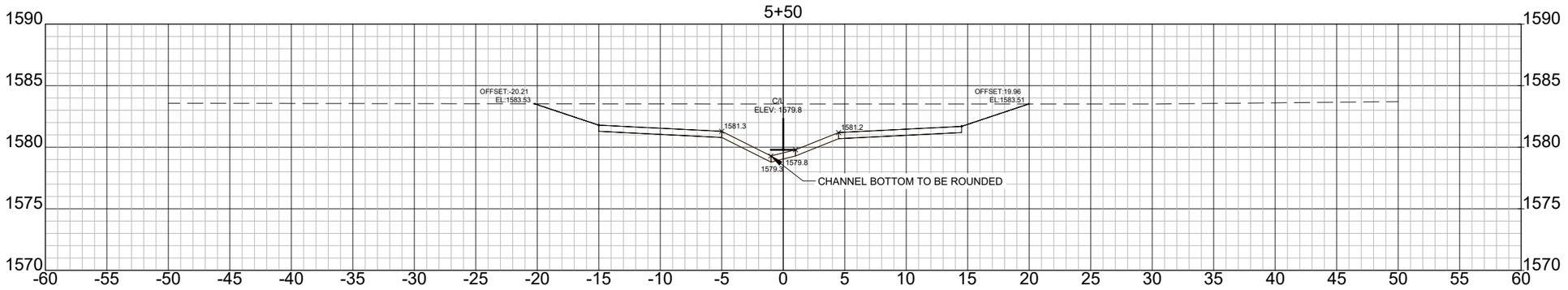
CROSS SECTIONS

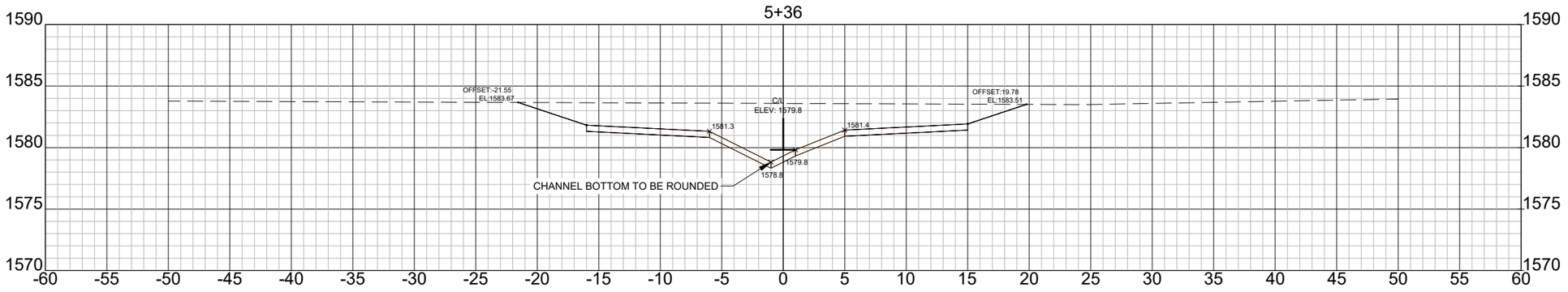
C126

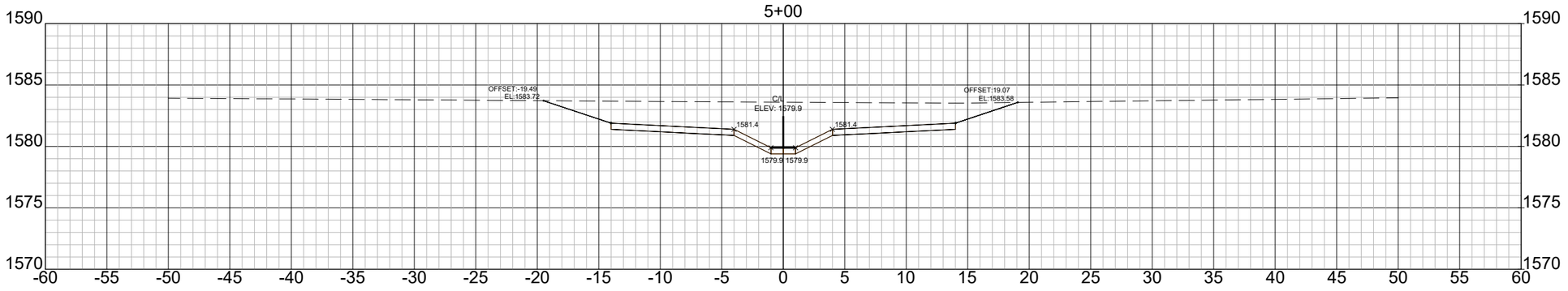
SHEET 27 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_PWN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Base Drawings\2024.0224-Cor.dwg







95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

SKANDIA WMA CHANNEL RESTORATION

MURRAY COUNTY, MN

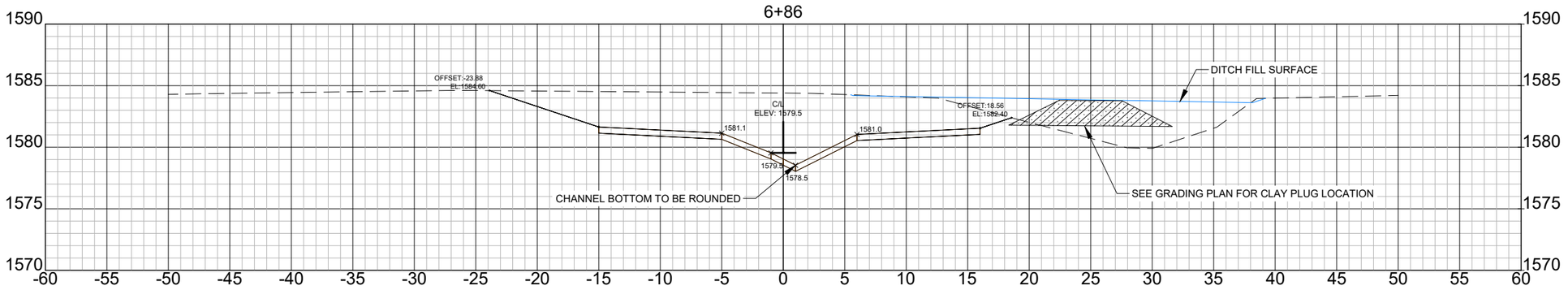
CROSS SECTIONS

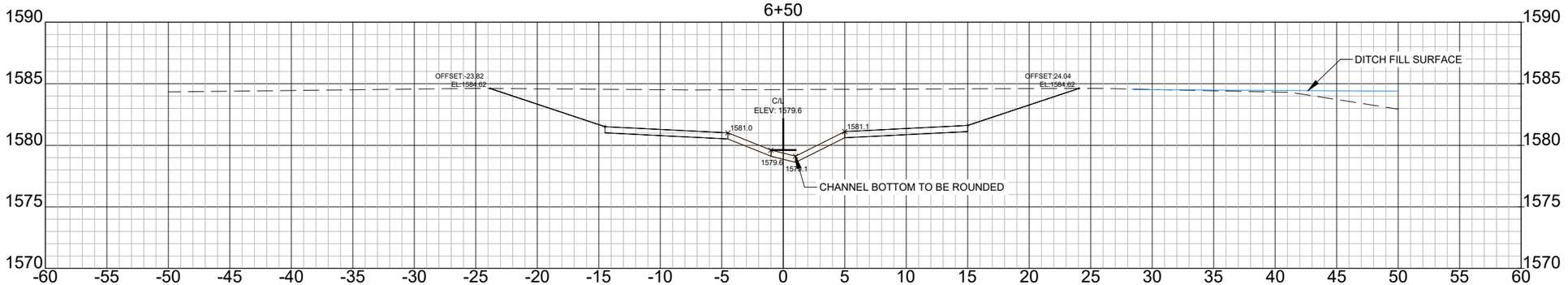
C127

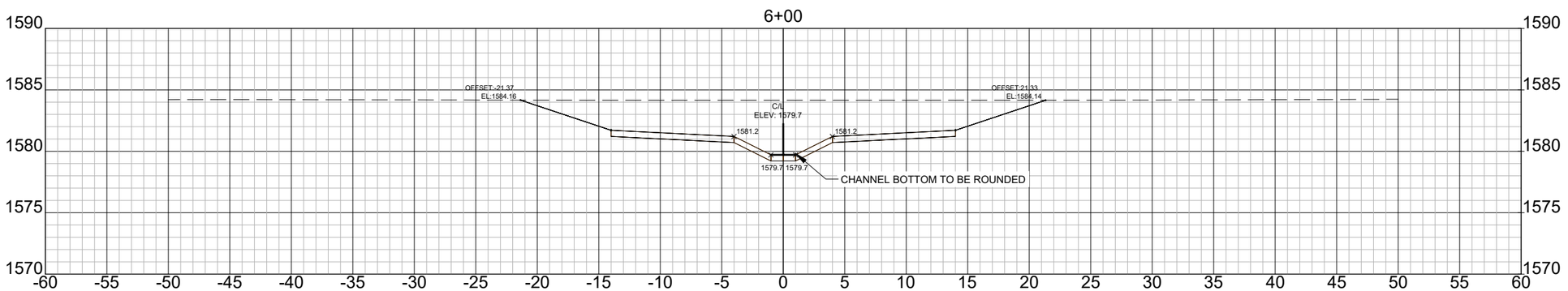
SHEET 28 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_PMN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Base Drawings\2024.0224-Cor.dwg







95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) *(Date)*

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

SKANDIA WMA CHANNEL RESTORATION

MURRAY COUNTY, MN

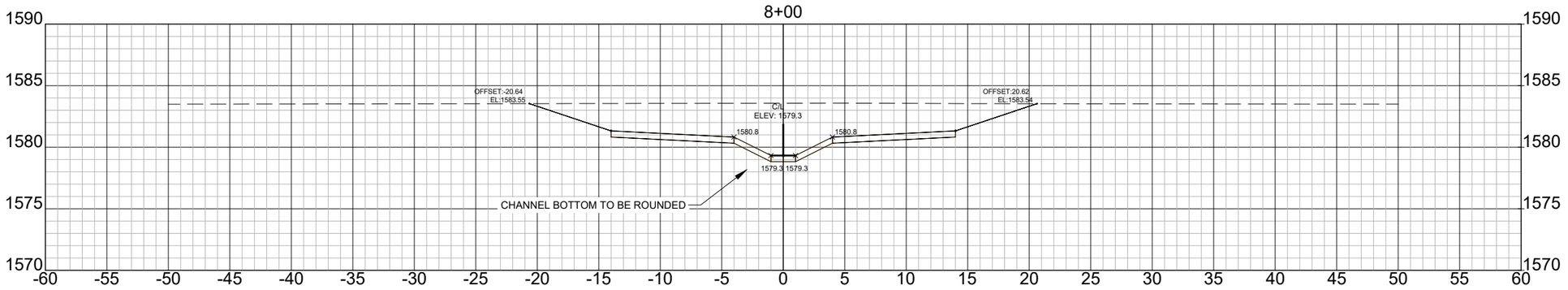
CROSS SECTIONS

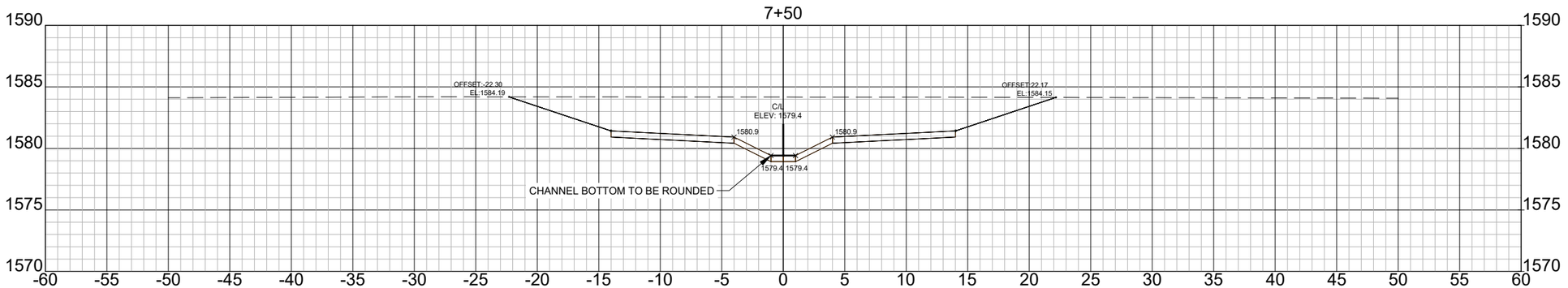
C128

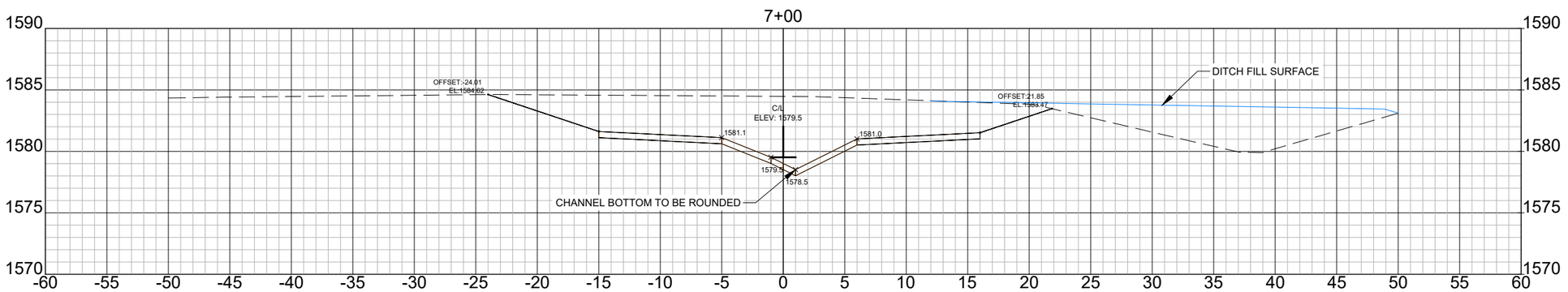
SHEET 29 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_PMN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Base Drawings\2024.0224-Cor.dwg







95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

SKANDIA WMA CHANNEL RESTORATION

MURRAY COUNTY, MN

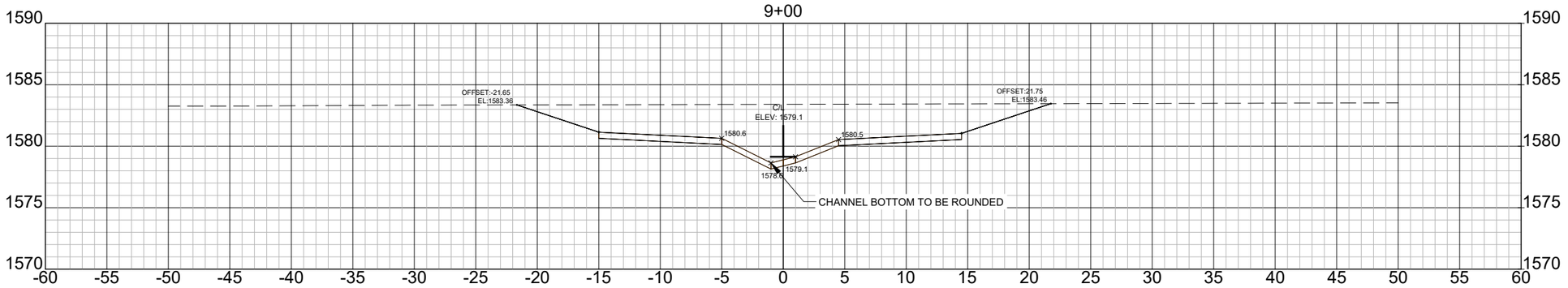
CROSS SECTIONS

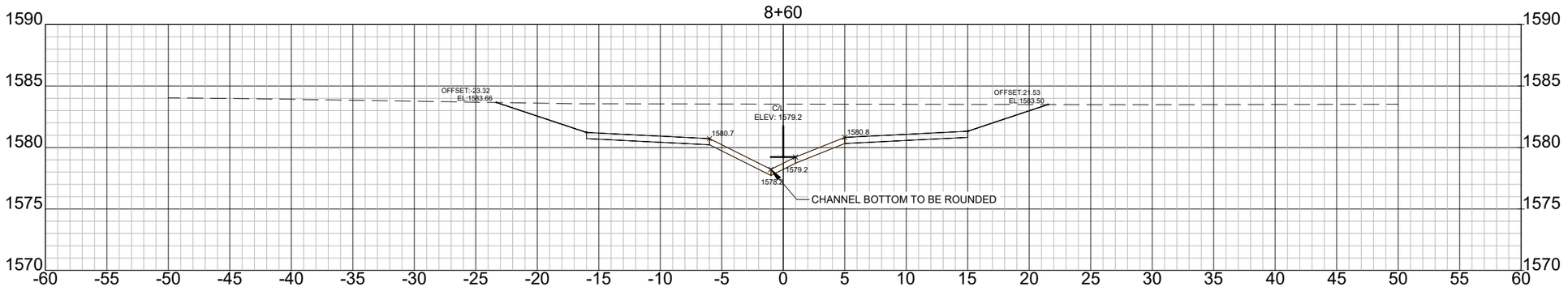
C129

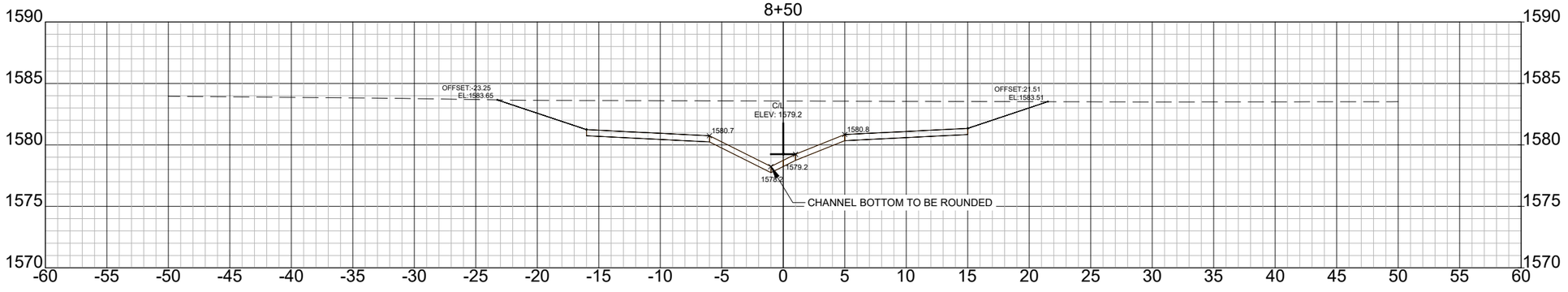
SHEET 30 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_PMN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Base Drawings\2024.0224-Cor.dwg







95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

SKANDIA WMA CHANNEL RESTORATION

MURRAY COUNTY, MN

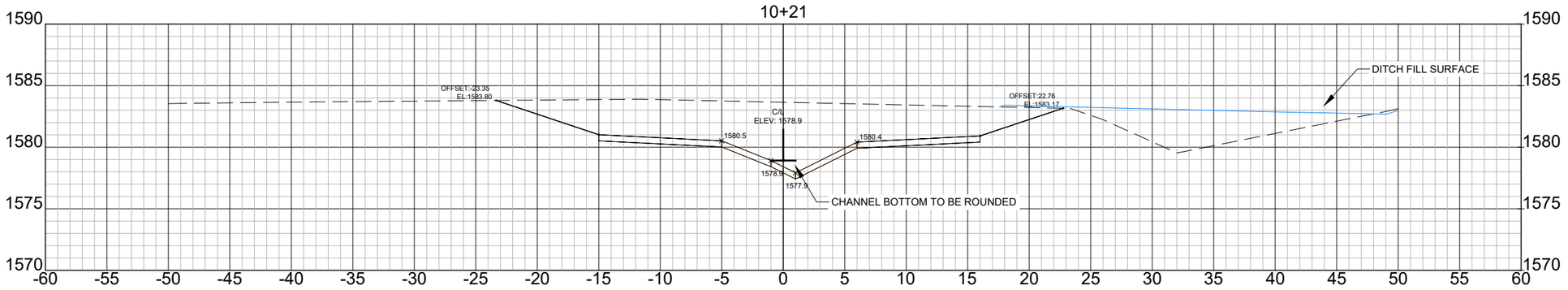
CROSS SECTIONS

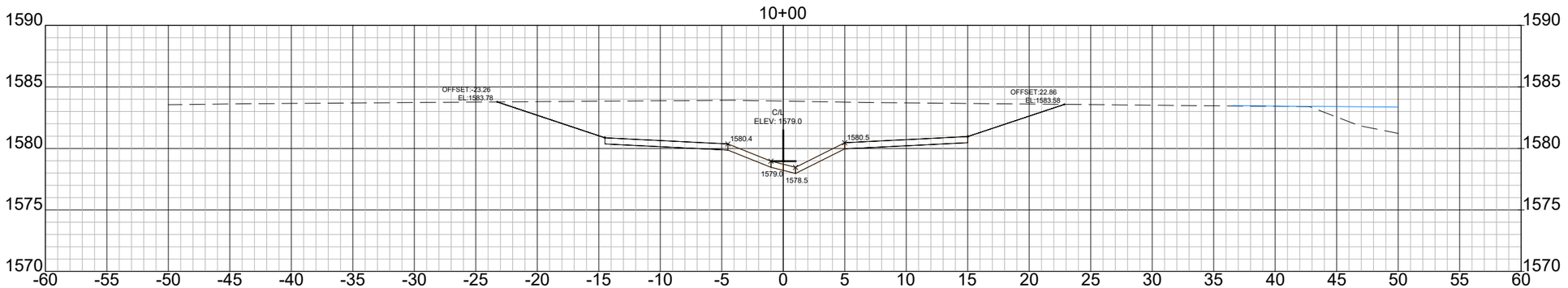
C130

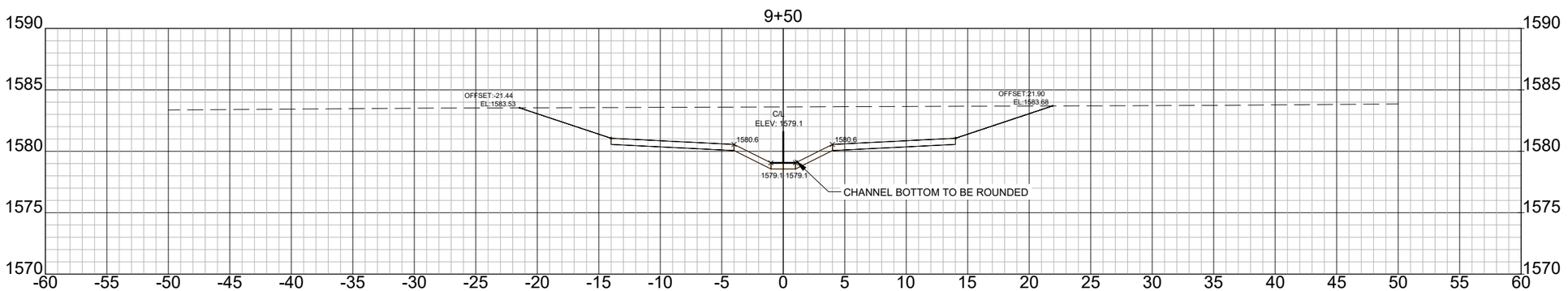
SHEET 31 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_P\MN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Base Drawings\2024.0224-Cor.dwg







95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) *(Date)*

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

SKANDIA WMA CHANNEL RESTORATION

MURRAY COUNTY, MN

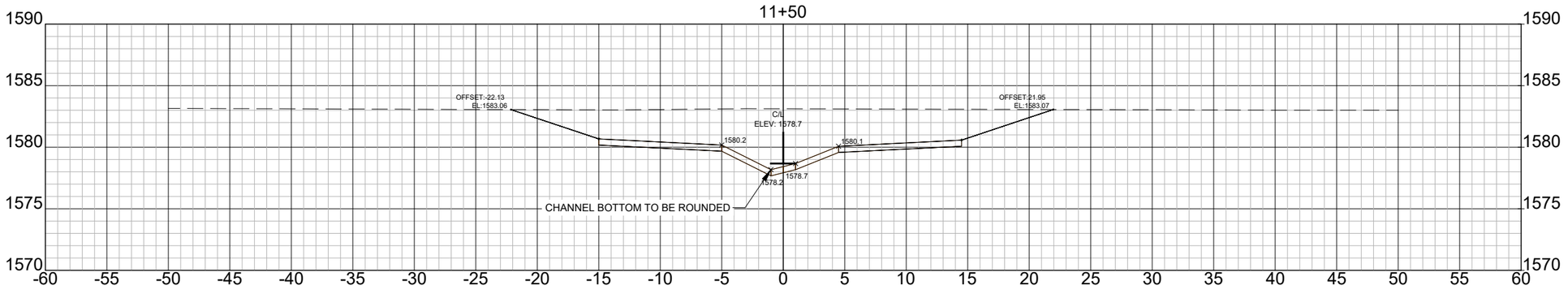
CROSS SECTIONS

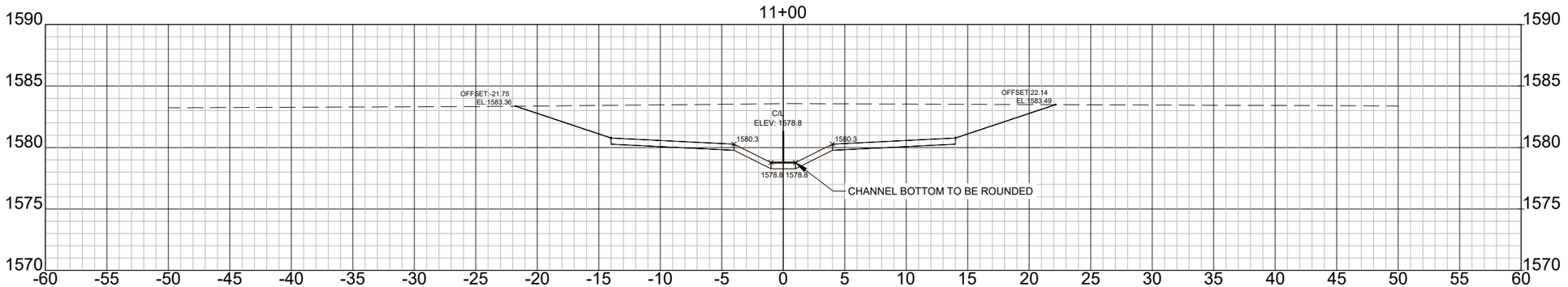
C131

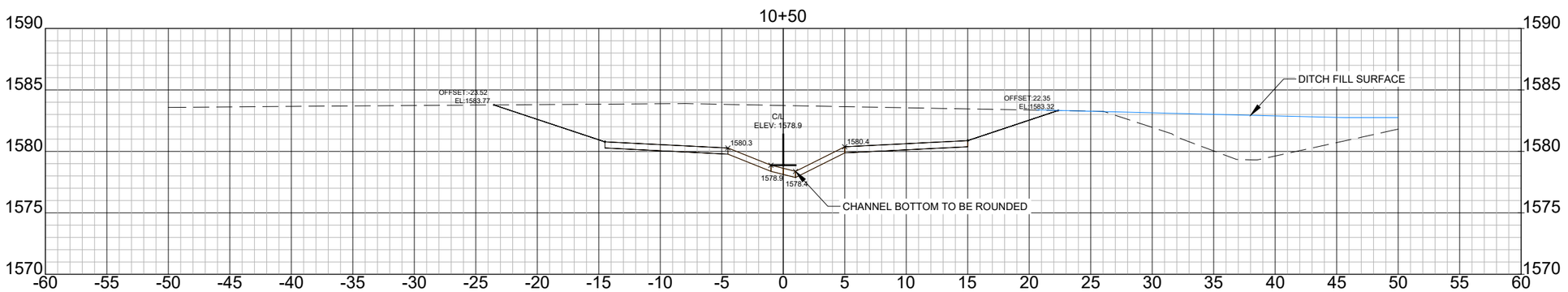
SHEET 32 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_PMN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Base Drawings\2024.0224-Cor.dwg







95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

SKANDIA WMA CHANNEL RESTORATION

MURRAY COUNTY, MN

CROSS SECTIONS

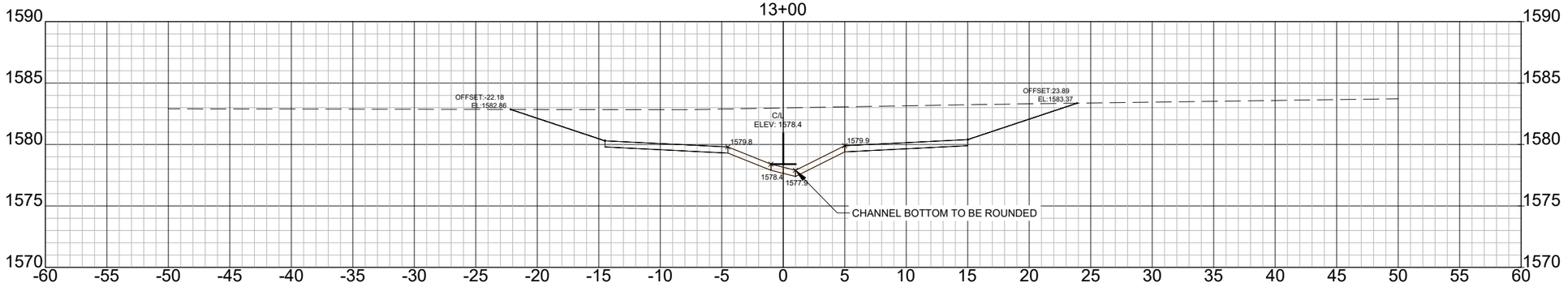
C132

SHEET 33 OF 55

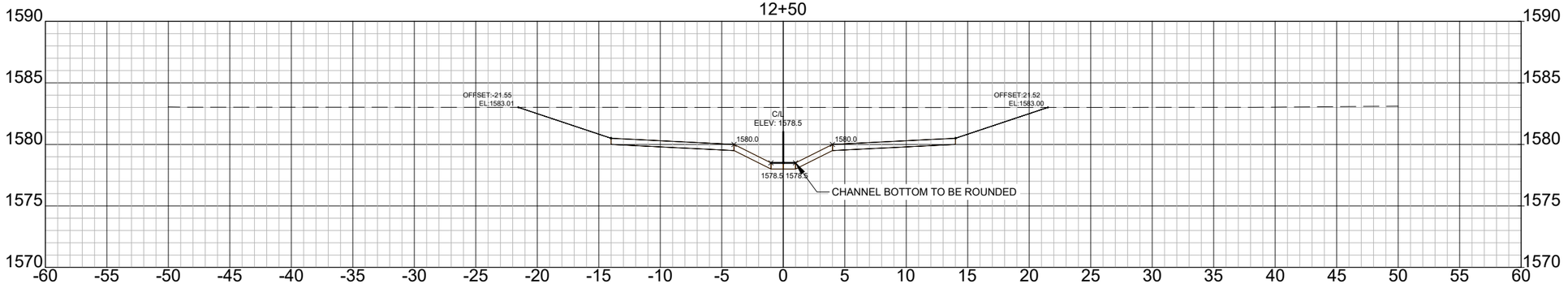
PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_PWN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Base Drawings\2024.0224-Cor.dwg

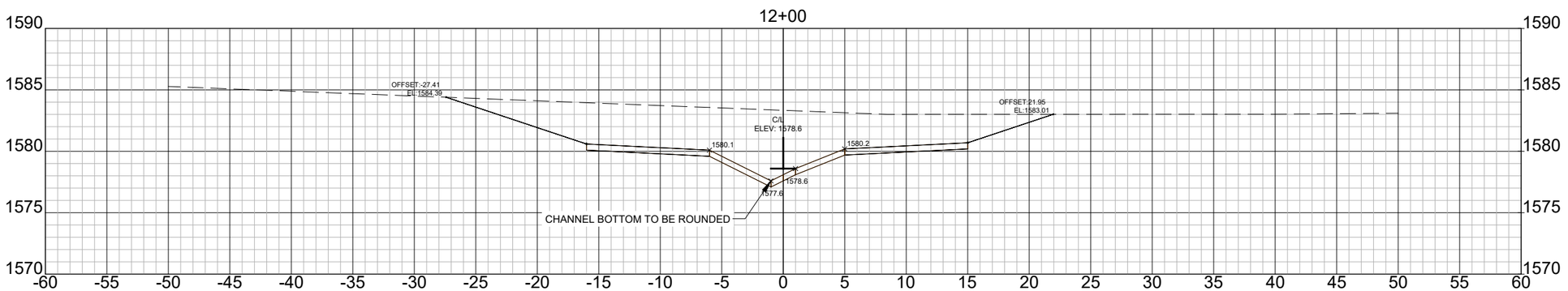
13+00



12+50



12+00



95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

SKANDIA WMA CHANNEL RESTORATION

MURRAY COUNTY, MN

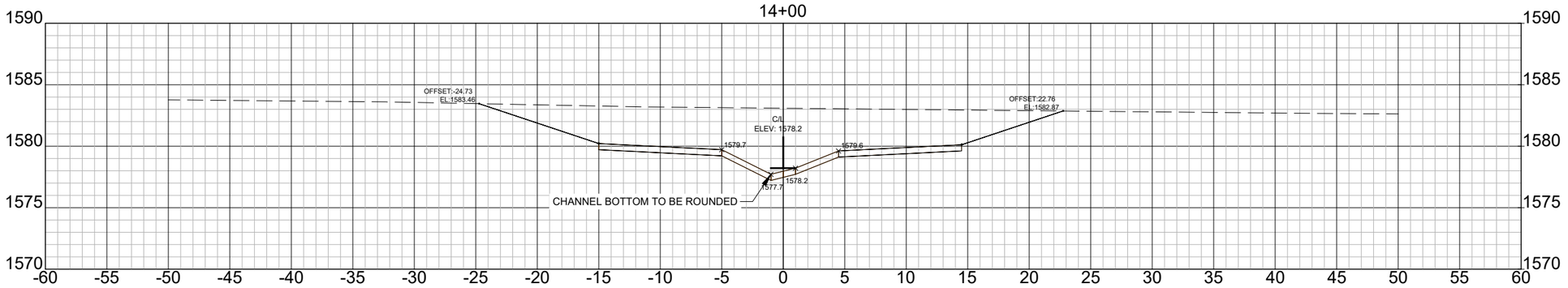
CROSS SECTIONS

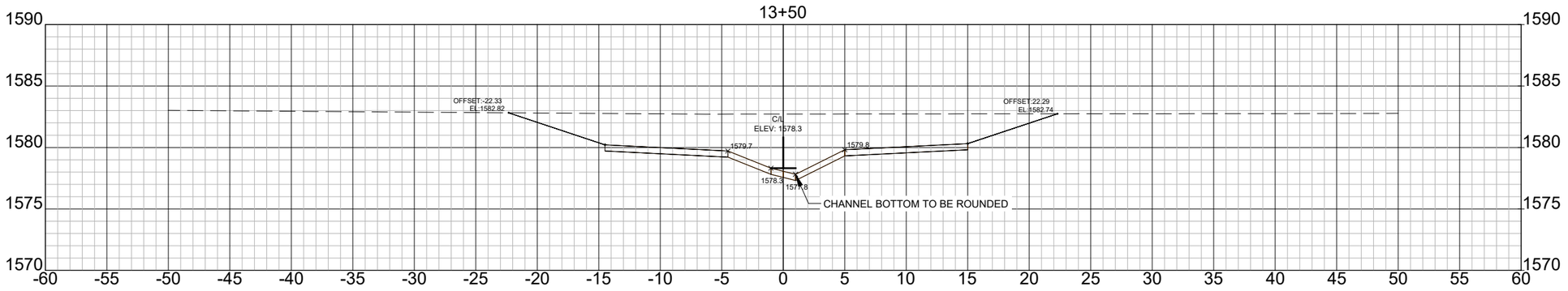
C133

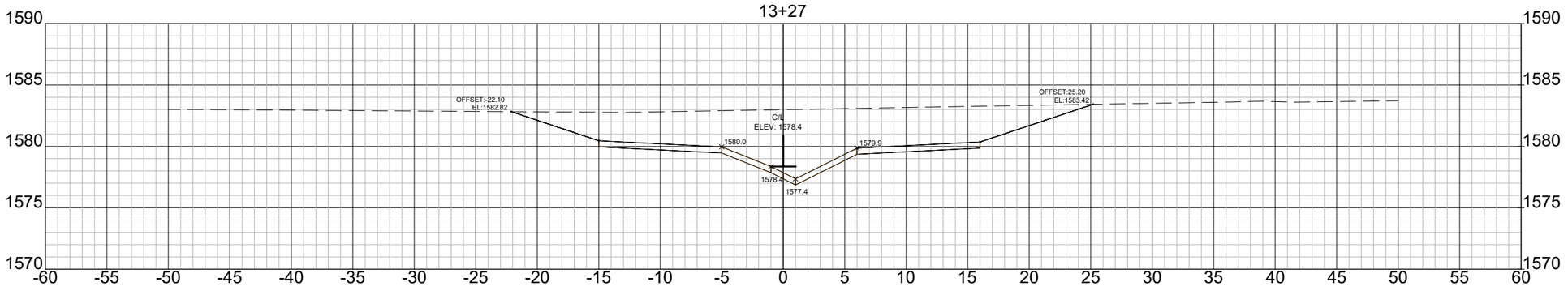
SHEET 34 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_PMN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Base Drawings\2024.0224-Cor.dwg







95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

SKANDIA WMA CHANNEL RESTORATION

MURRAY COUNTY, MN

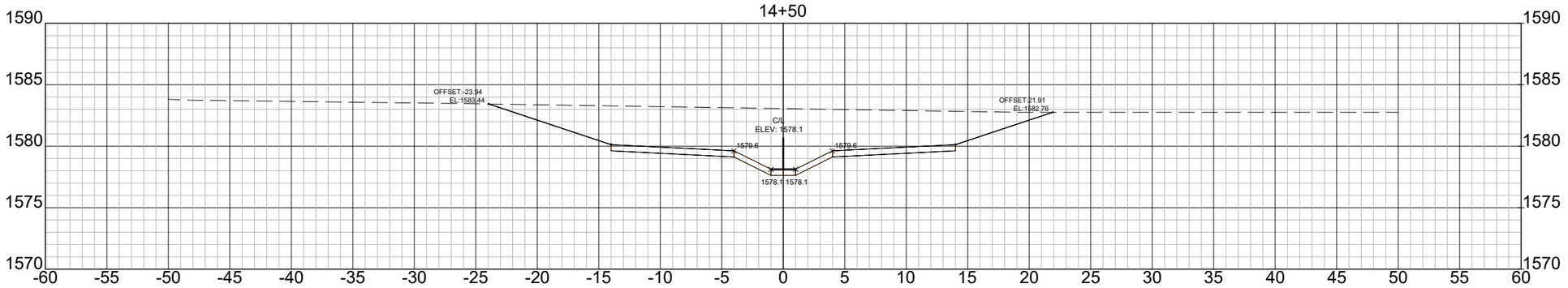
CROSS SECTIONS

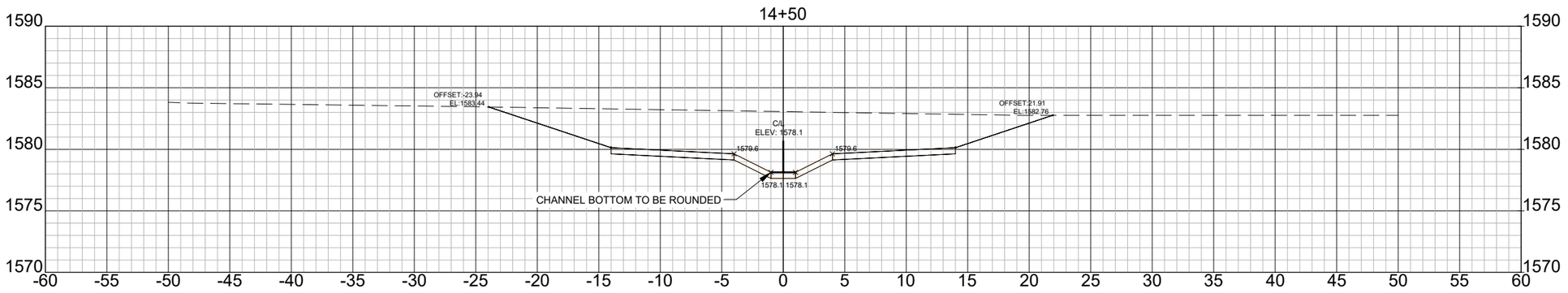
C134

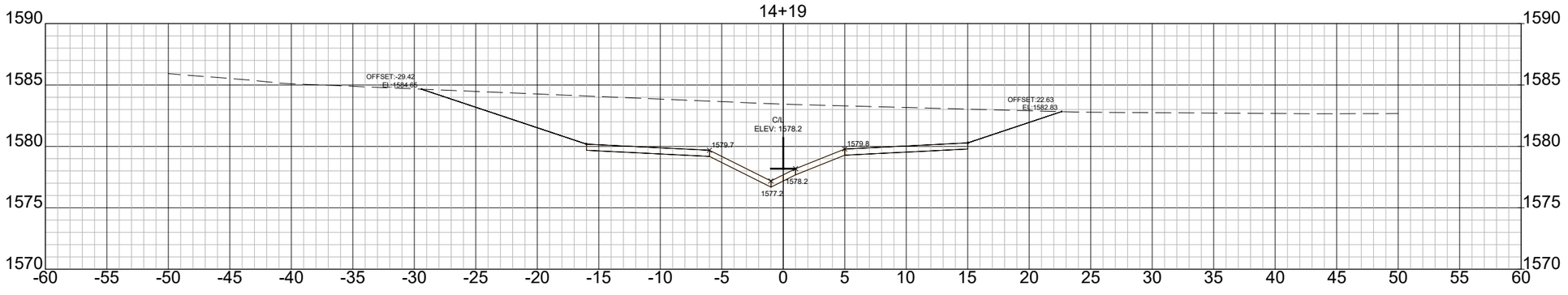
SHEET 35 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_P\MN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Base Drawings\2024.0224-Cor.dwg







95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

SKANDIA WMA CHANNEL RESTORATION

MURRAY COUNTY, MN

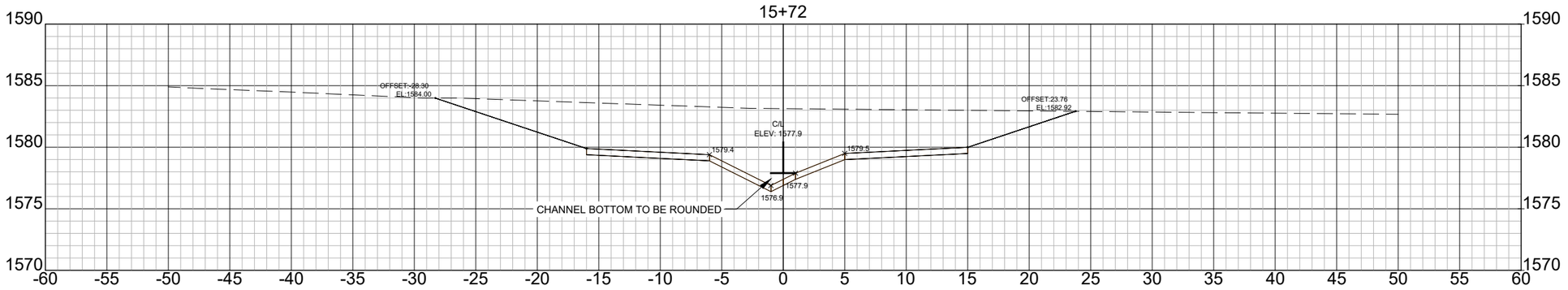
CROSS SECTIONS

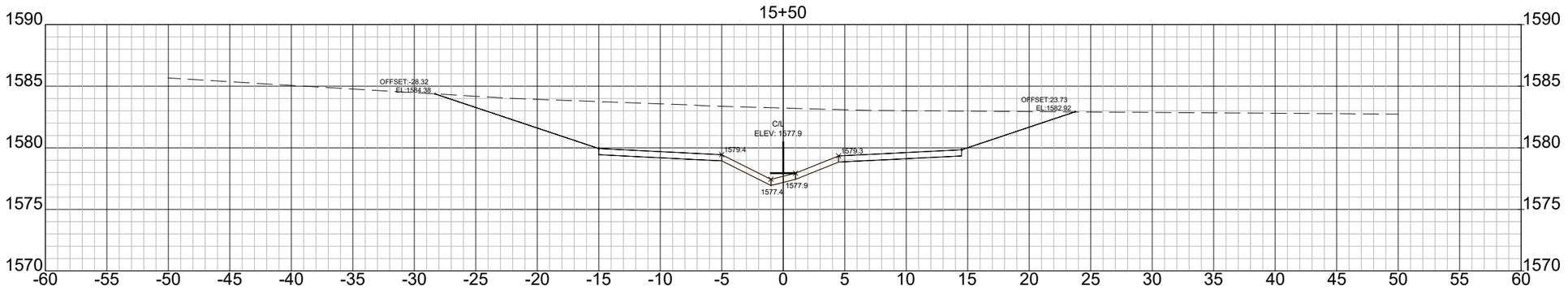
C135

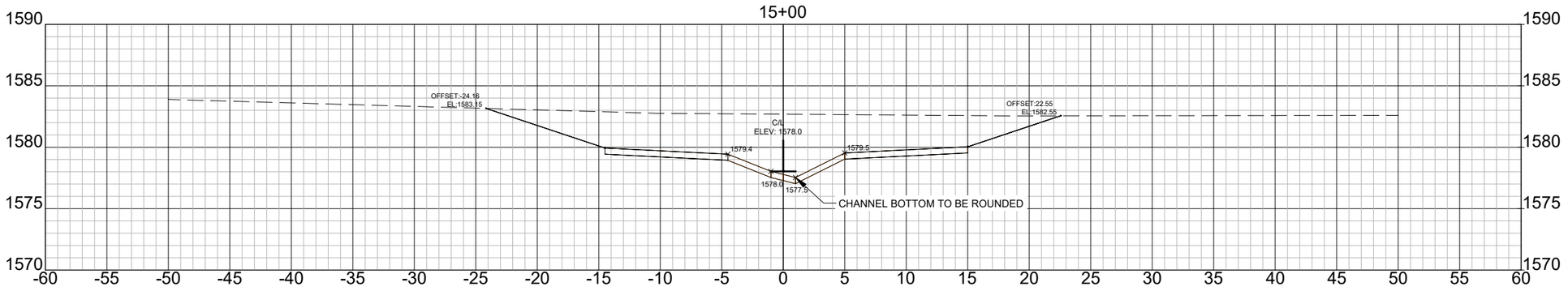
SHEET 36 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_P\MN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Base Drawings\2024.0224-Cor.dwg







95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES
SKANDIA WMA CHANNEL RESTORATION
MURRAY COUNTY, MN

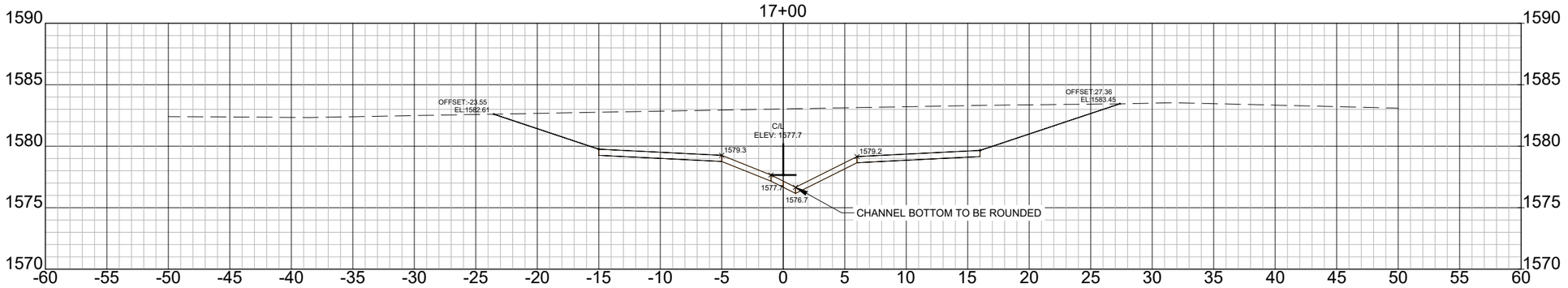
CROSS SECTIONS

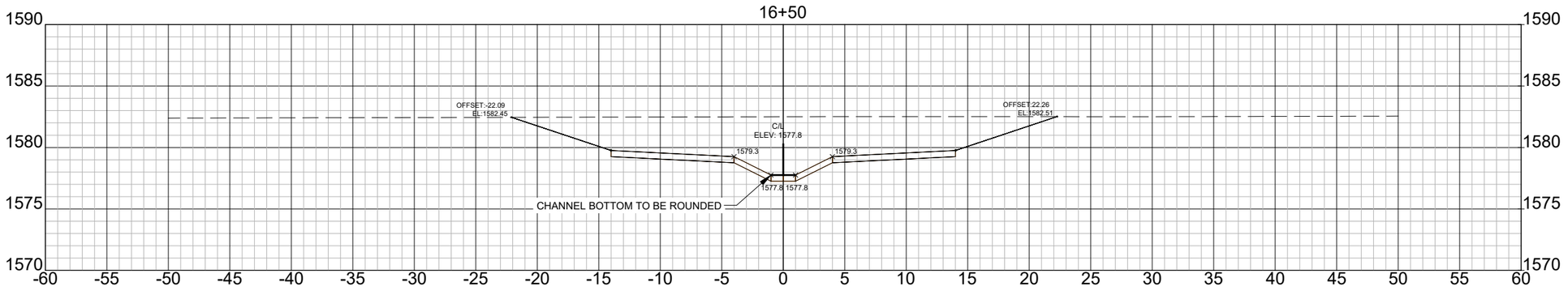
C136

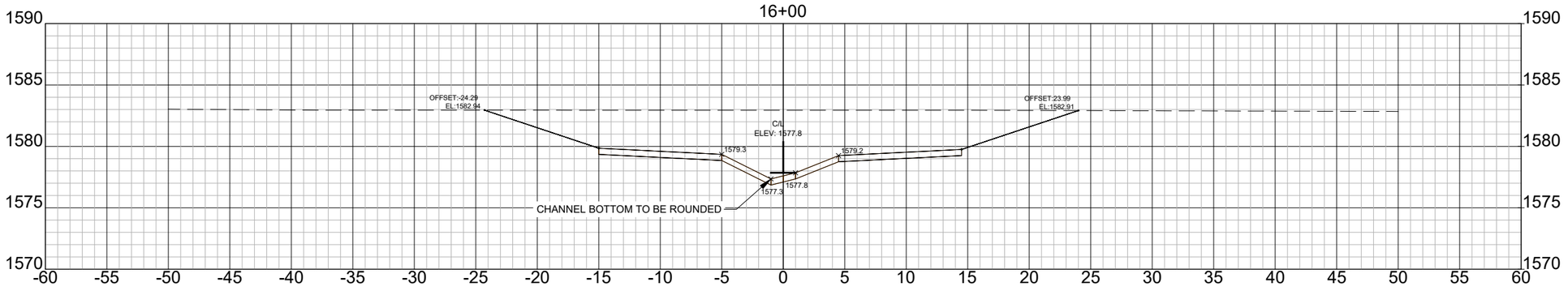
SHEET 37 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_PMN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Base Drawings\2024.0224-Cor.dwg







95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

SKANDIA WMA CHANNEL RESTORATION

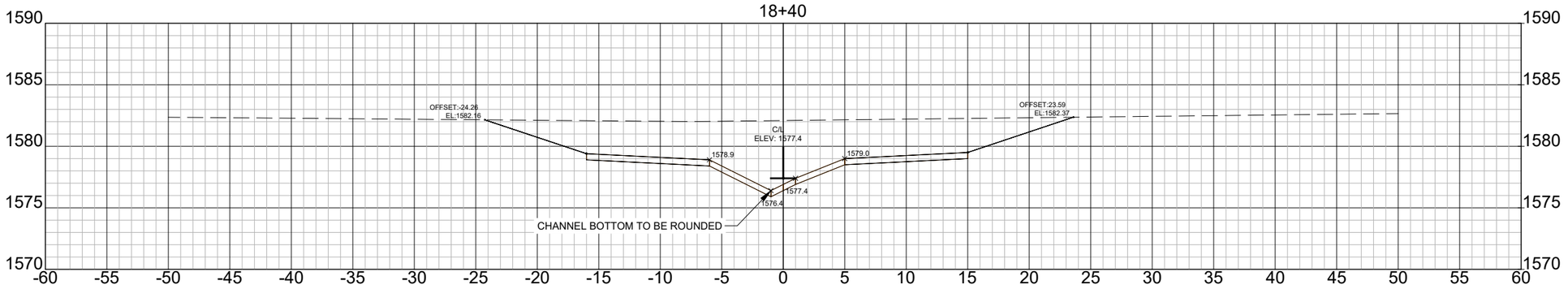
MURRAY COUNTY, MN

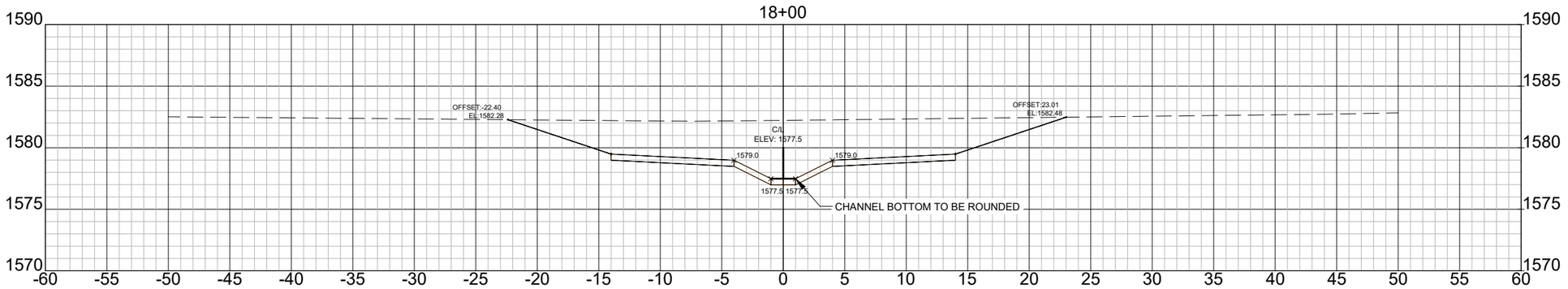
CROSS SECTIONS

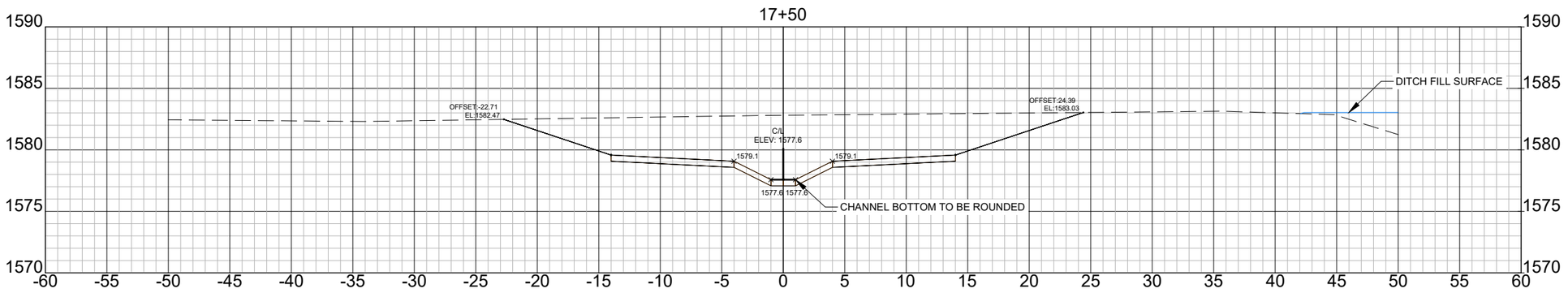
C137

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_P\MN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Base Drawings\2024.0224-Cor.dwg







95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES
SKANDIA WMA CHANNEL RESTORATION
MURRAY COUNTY, MN

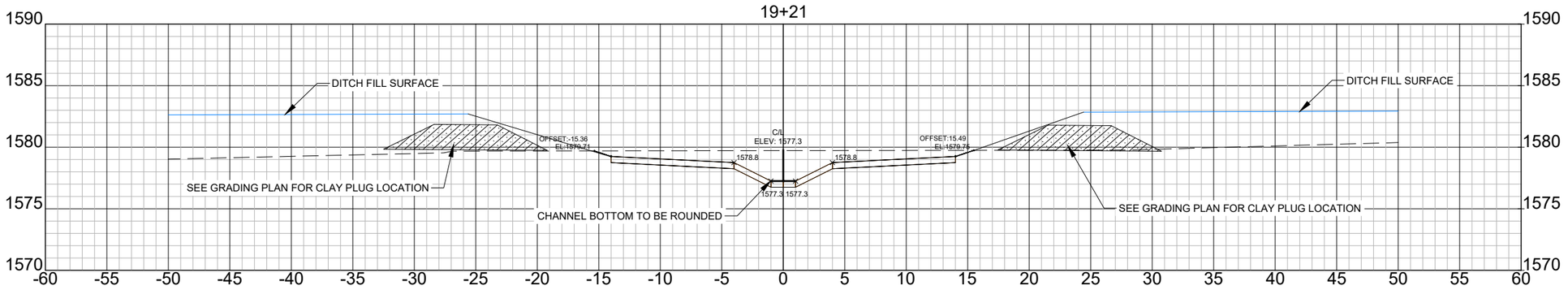
CROSS SECTIONS

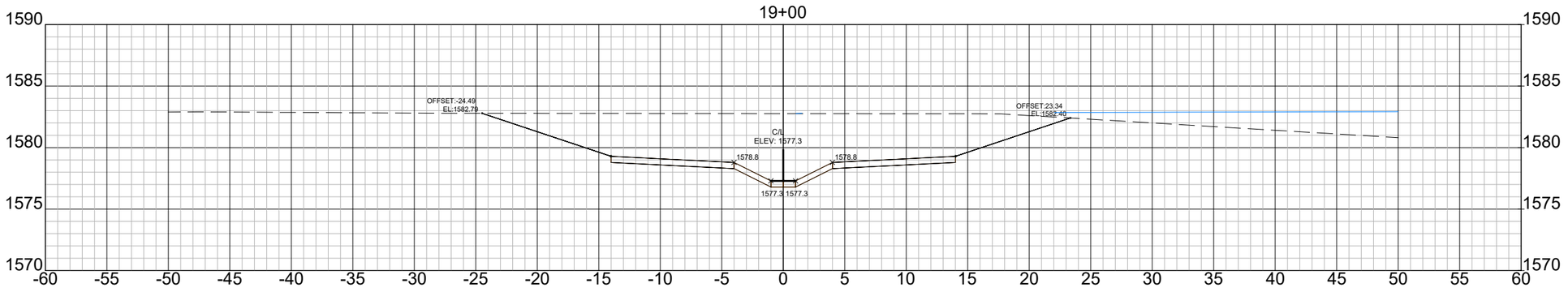
C138

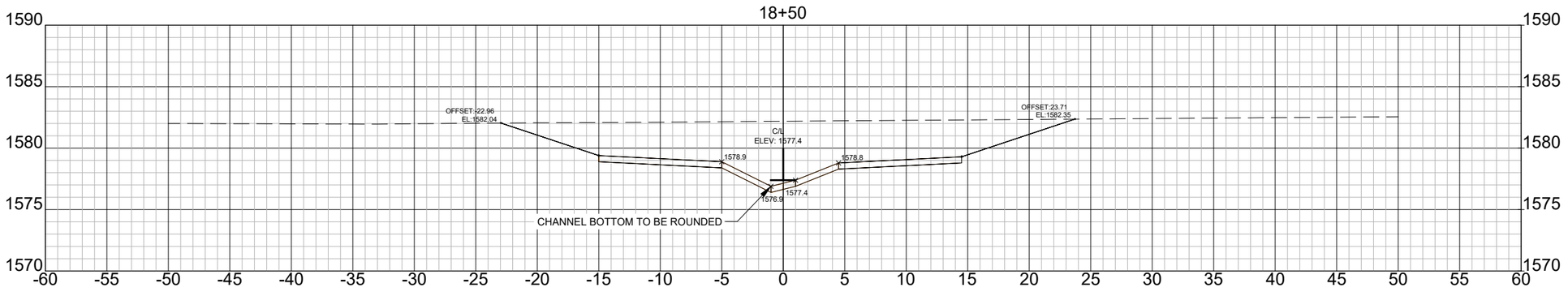
SHEET 39 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_P\MN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Base Drawings\2024.0224-Cor.dwg







95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) *(Date)*

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES
SKANDIA WMA CHANNEL RESTORATION
MURRAY COUNTY, MN

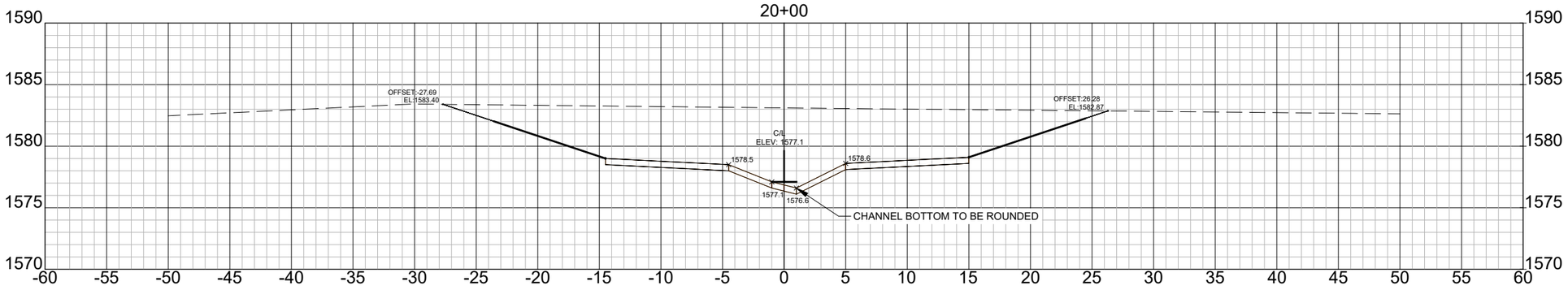
CROSS SECTIONS

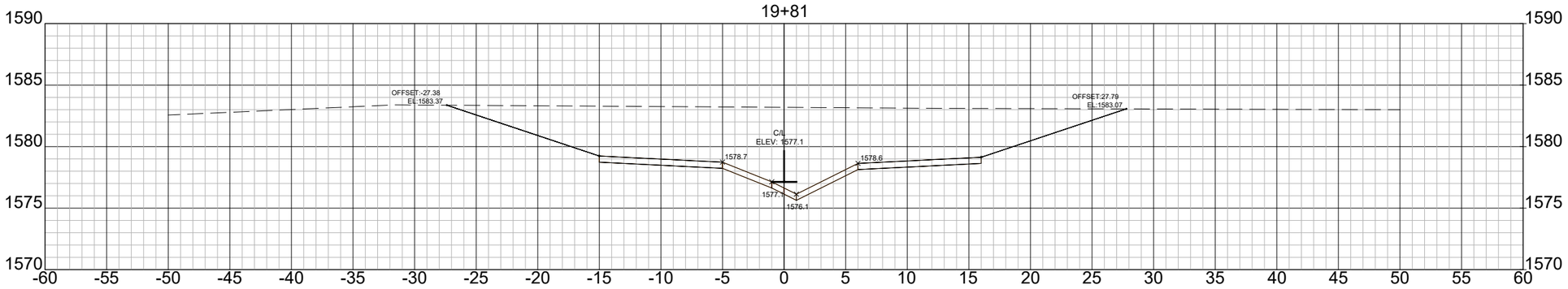
C139

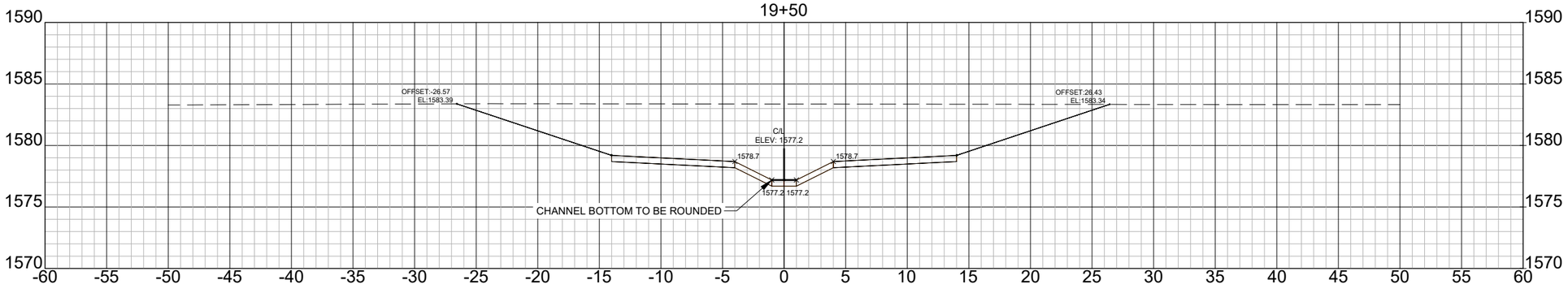
SHEET 40 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_PMN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Base Drawings\2024.0224-Cor.dwg







95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

SKANDIA WMA CHANNEL RESTORATION

MURRAY COUNTY, MN

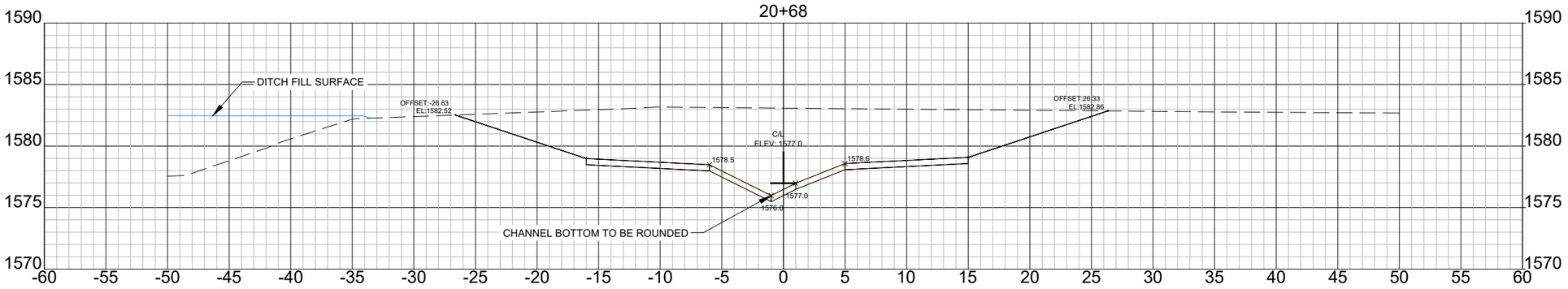
CROSS SECTIONS

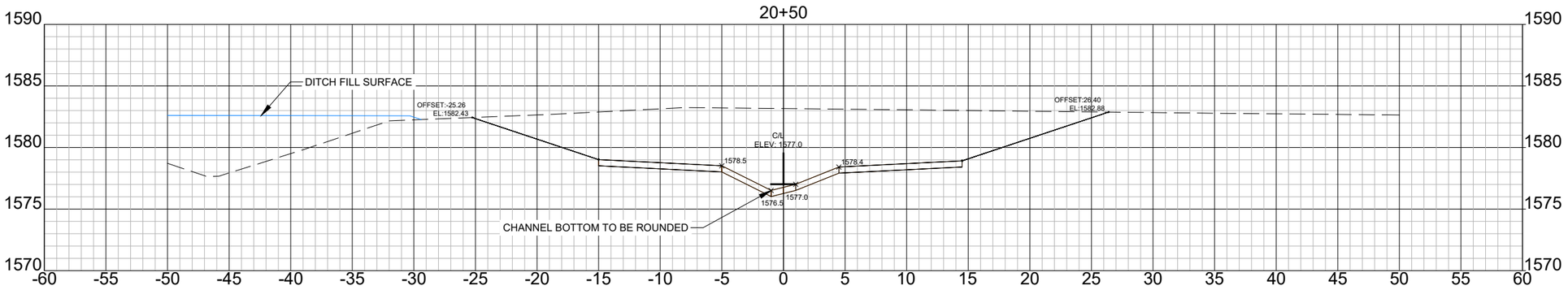
C140

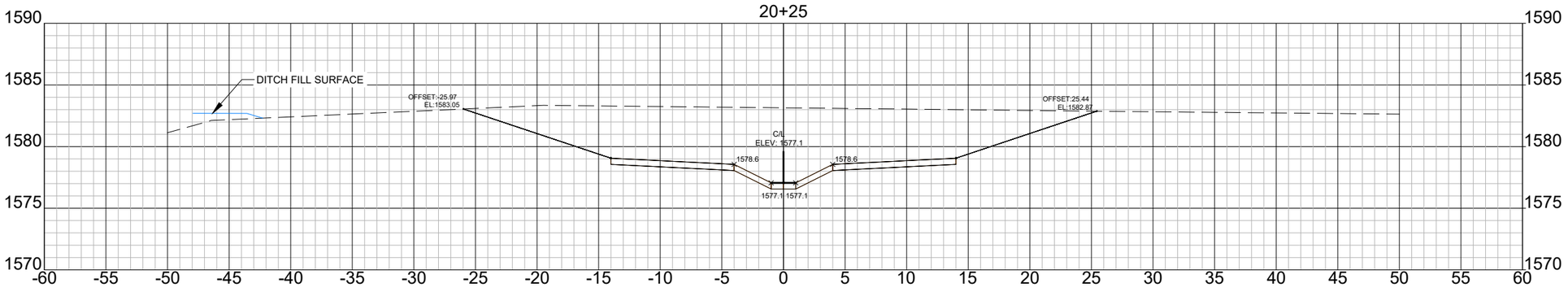
SHEET 41 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_PMN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Base Drawings\2024.0224-Cor.dwg







95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

SKANDIA WMA CHANNEL RESTORATION

MURRAY COUNTY, MN

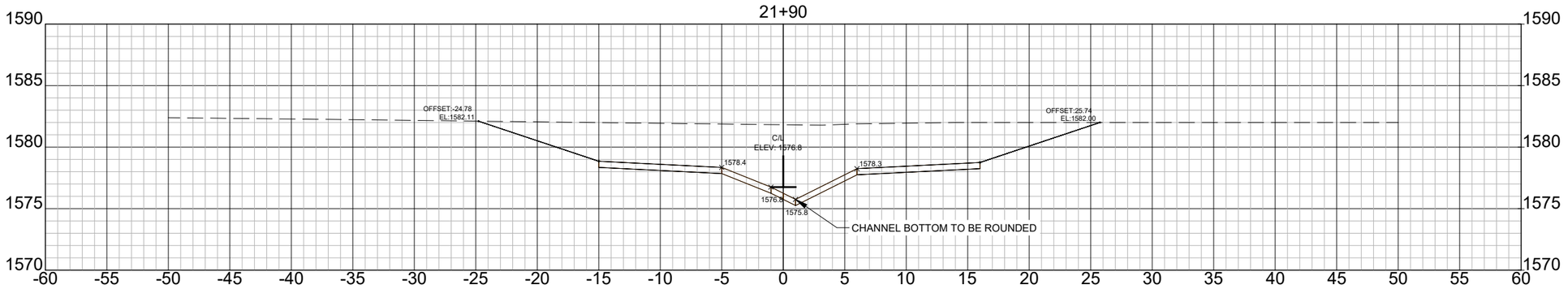
CROSS SECTIONS

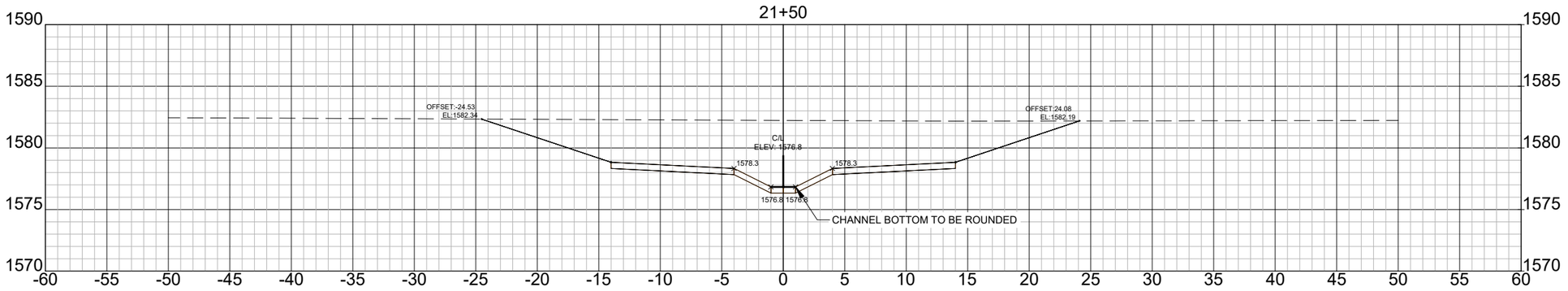
C141

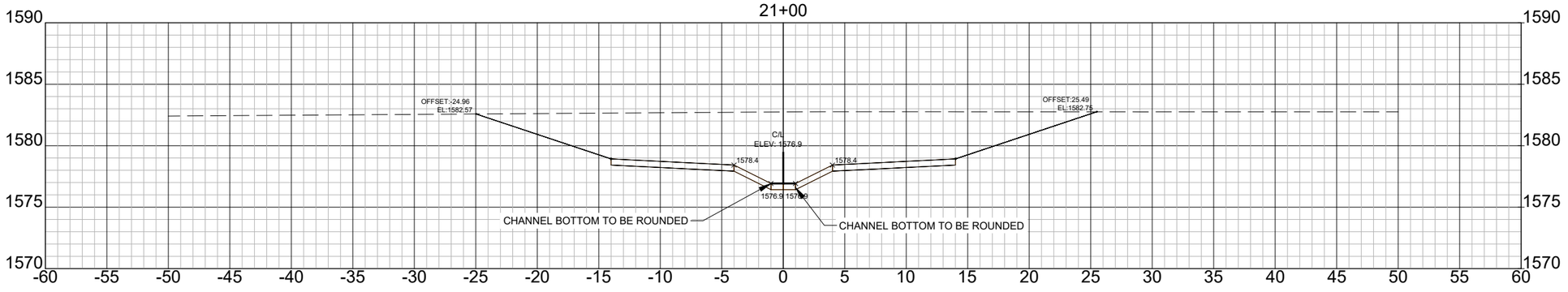
SHEET 42 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_PMN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\Auto\CAD\Base Drawings\2024.0224-Cor.dwg







95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

SKANDIA WMA CHANNEL RESTORATION

MURRAY COUNTY, MN

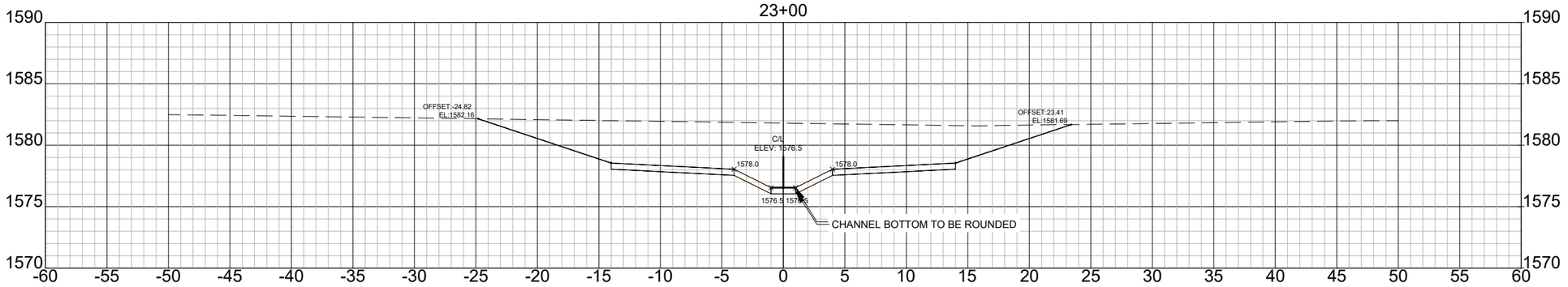
CROSS SECTIONS

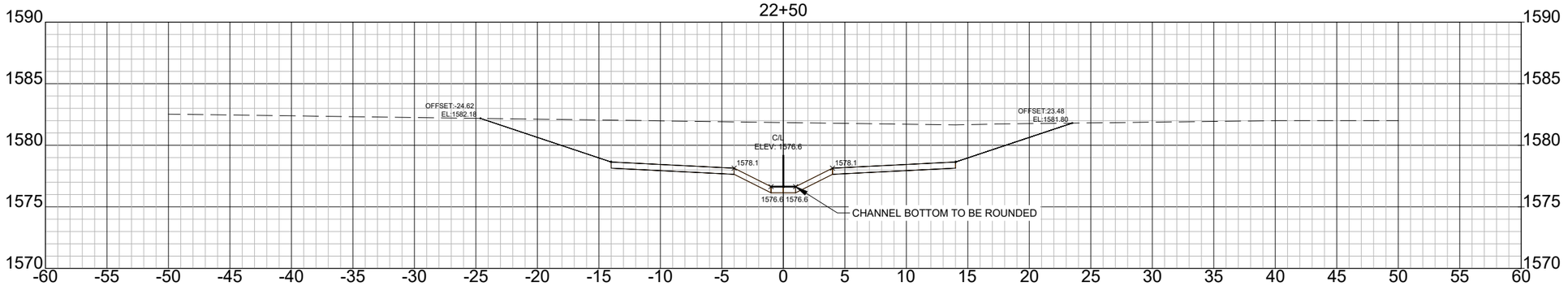
C142

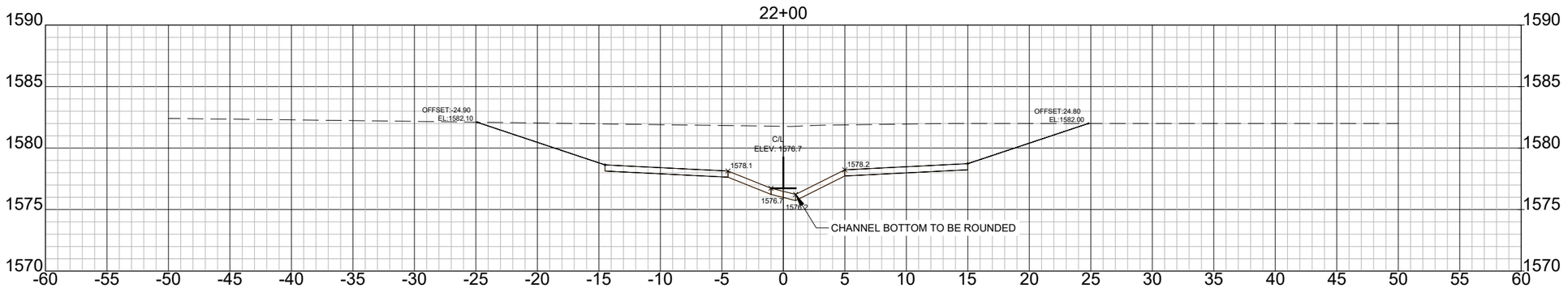
SHEET 43 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_P\MN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Base Drawings\2024.0224-Cor.dwg







95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES
SKANDIA WMA CHANNEL RESTORATION
MURRAY COUNTY, MN

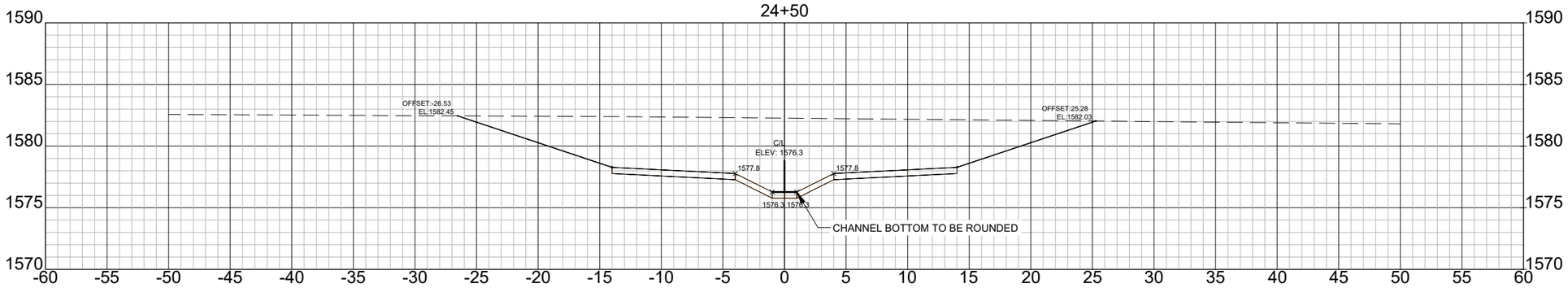
CROSS SECTIONS

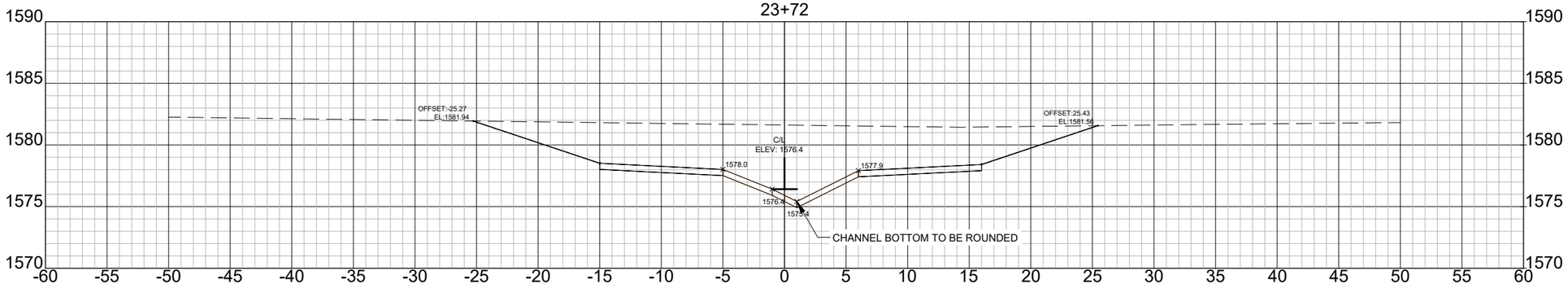
C143

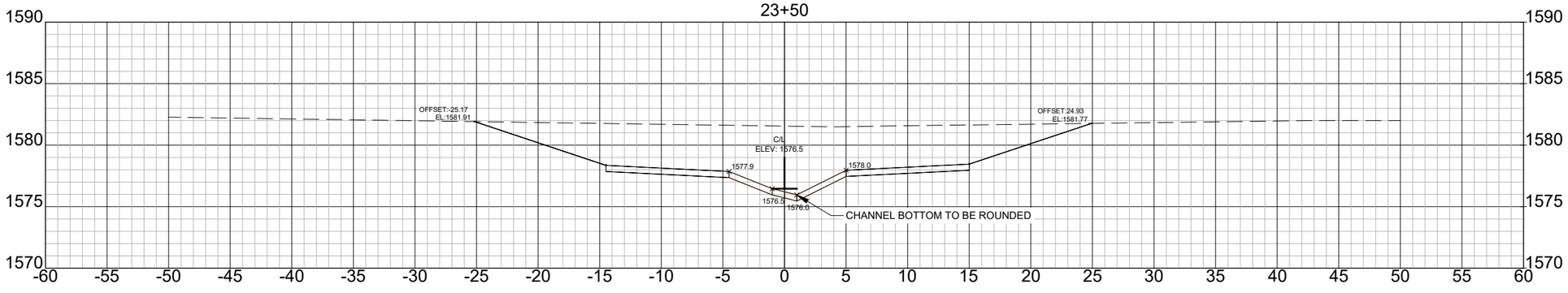
SHEET 44 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_PMN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Base Drawings\20240224-Cor.dwg







95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

SKANDIA WMA CHANNEL RESTORATION

MURRAY COUNTY, MN

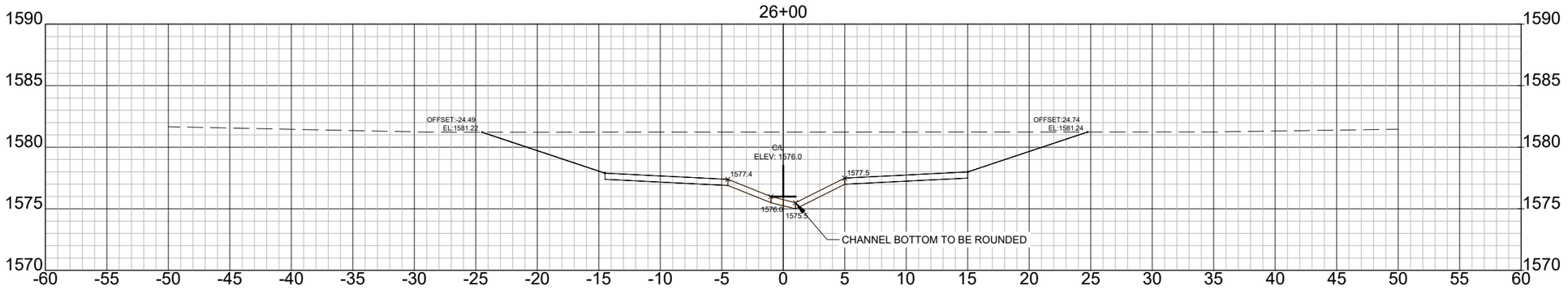
CROSS SECTIONS

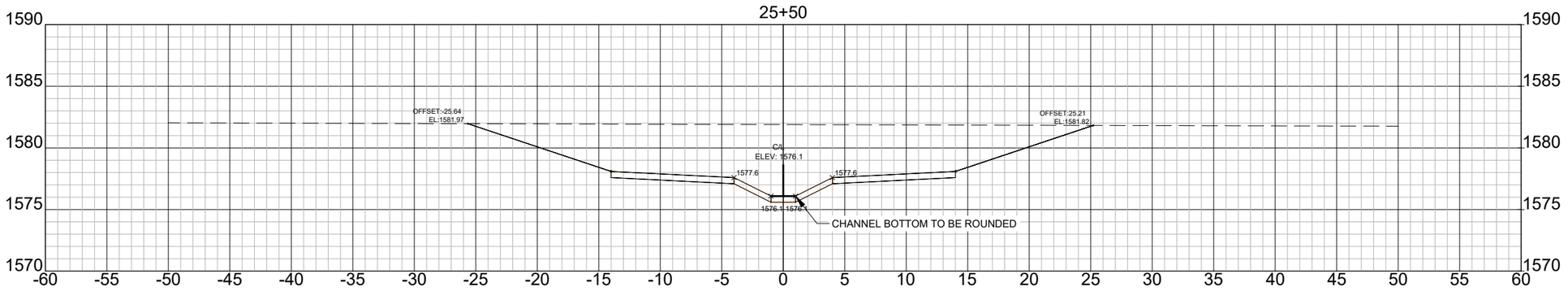
C144

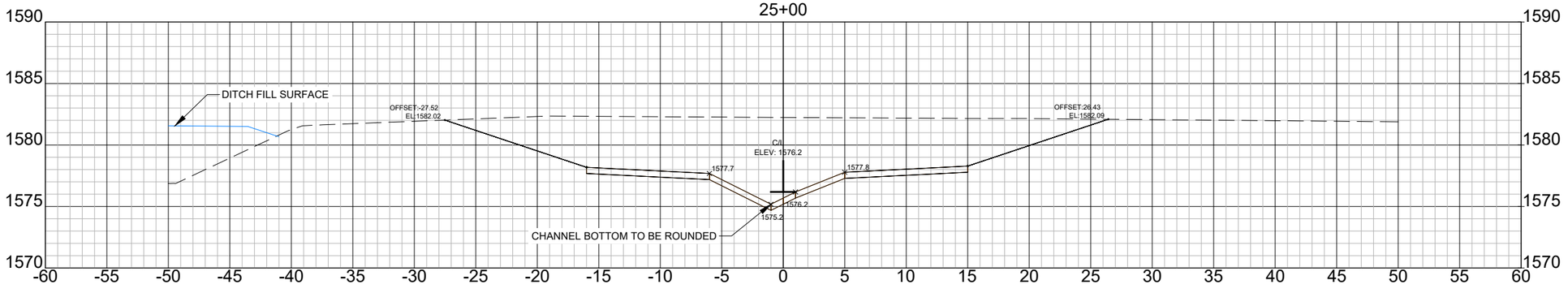
SHEET 45 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_PMN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Base Drawings\2024.0224-Cor.dwg







95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

SKANDIA WMA CHANNEL RESTORATION

MURRAY COUNTY, MN

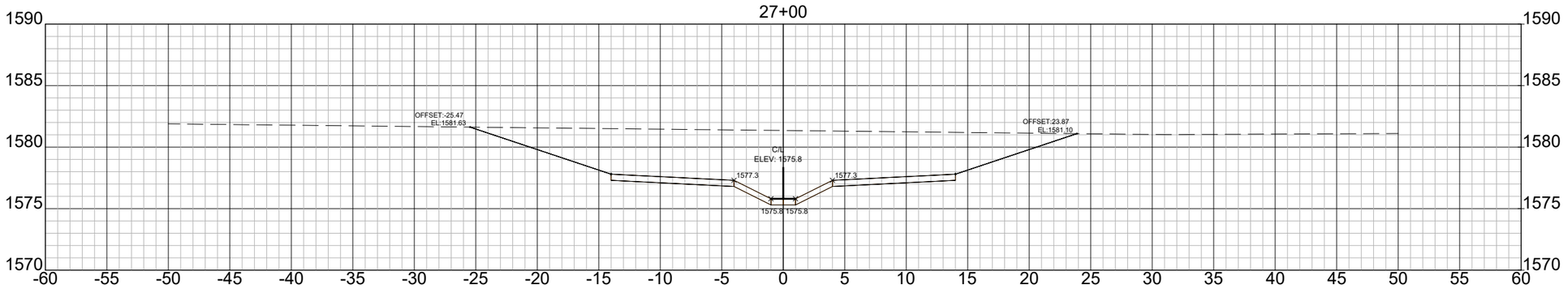
CROSS SECTIONS

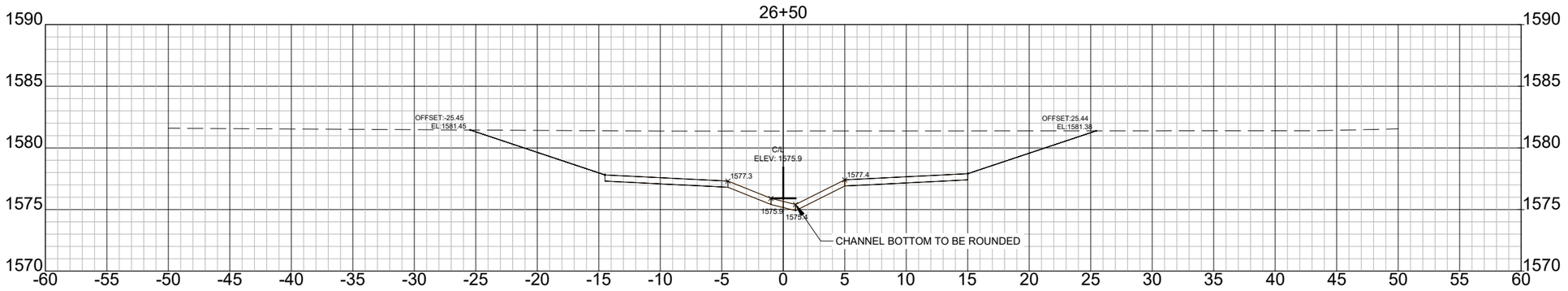
C145

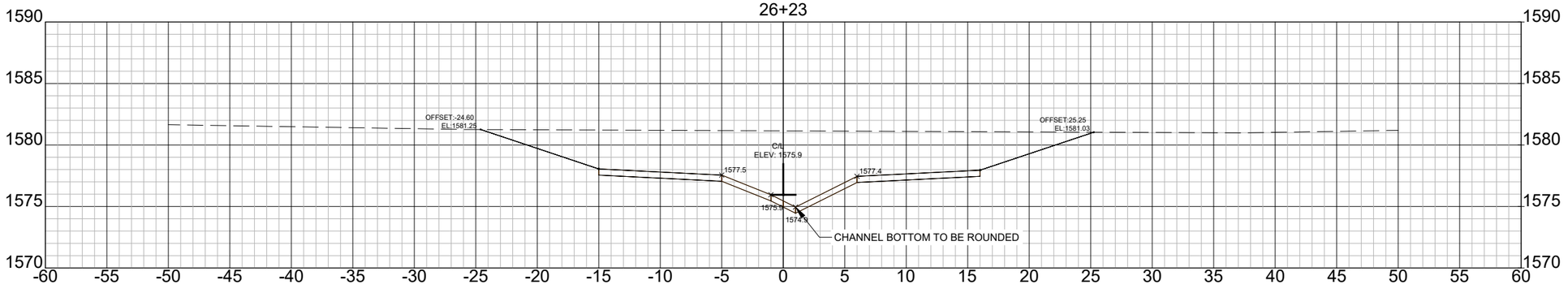
SHEET 46 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_P\MN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Base Drawings\2024.0224-Cor.dwg







95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) *(Date)*

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

SKANDIA WMA CHANNEL RESTORATION

MURRAY COUNTY, MN

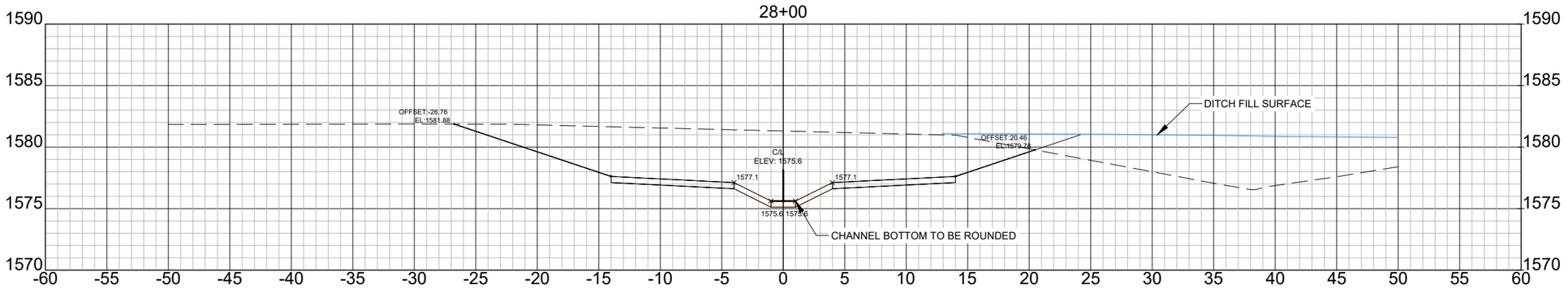
CROSS SECTIONS

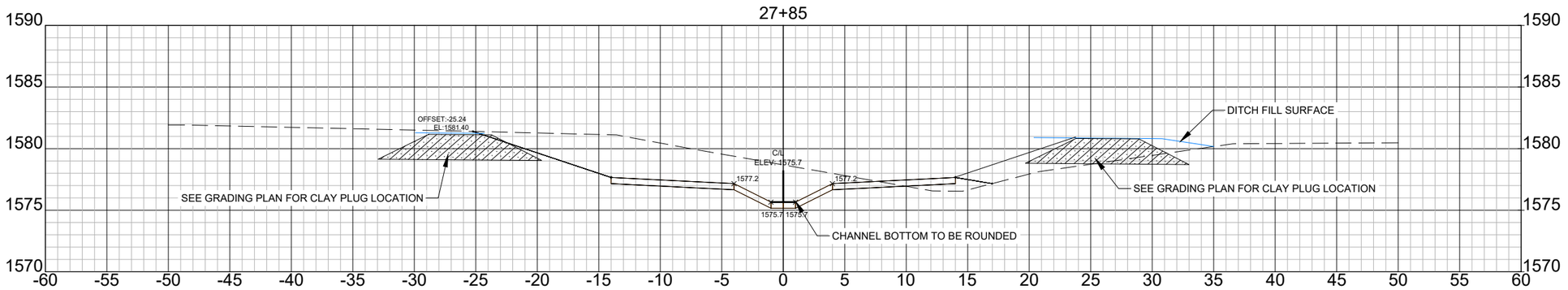
C146

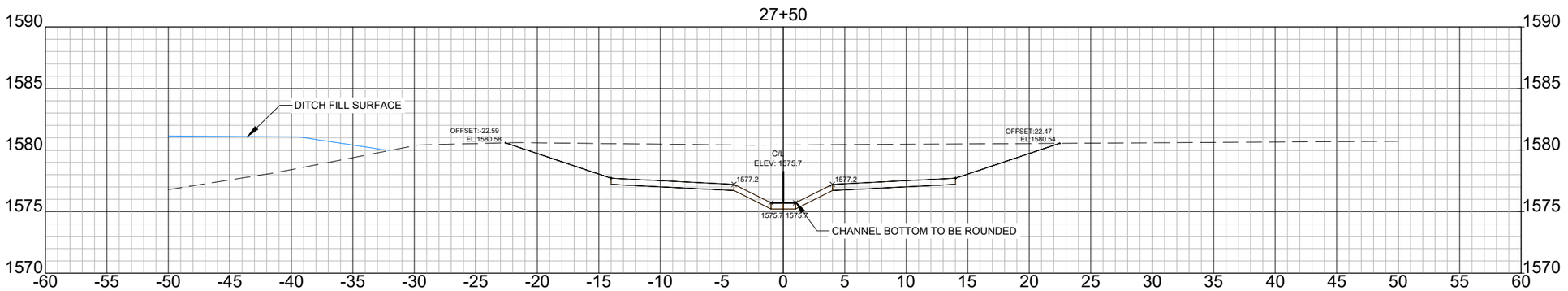
SHEET 47 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_P\MN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Base Drawings\2024.0224-Cor.dwg







95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

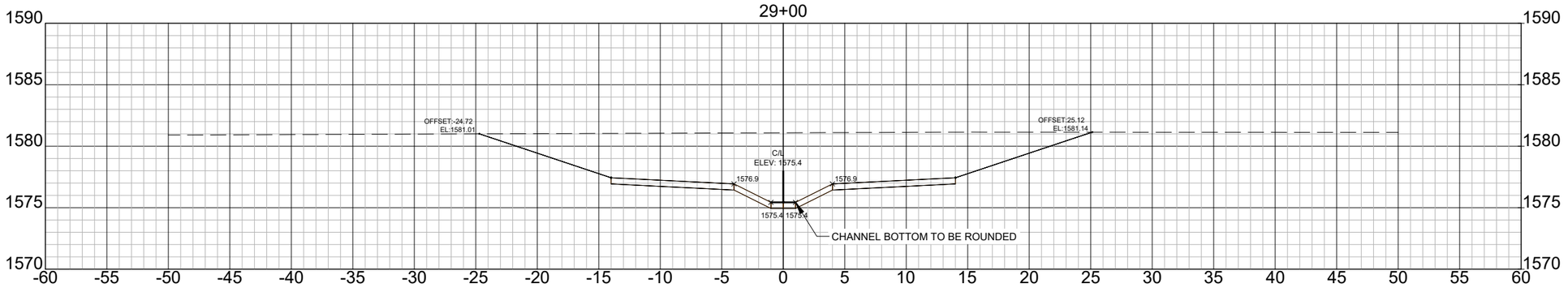
MINNESOTA DEPARTMENT OF NATURAL RESOURCES
SKANDIA WMA CHANNEL RESTORATION
MURRAY COUNTY, MN
CROSS SECTIONS

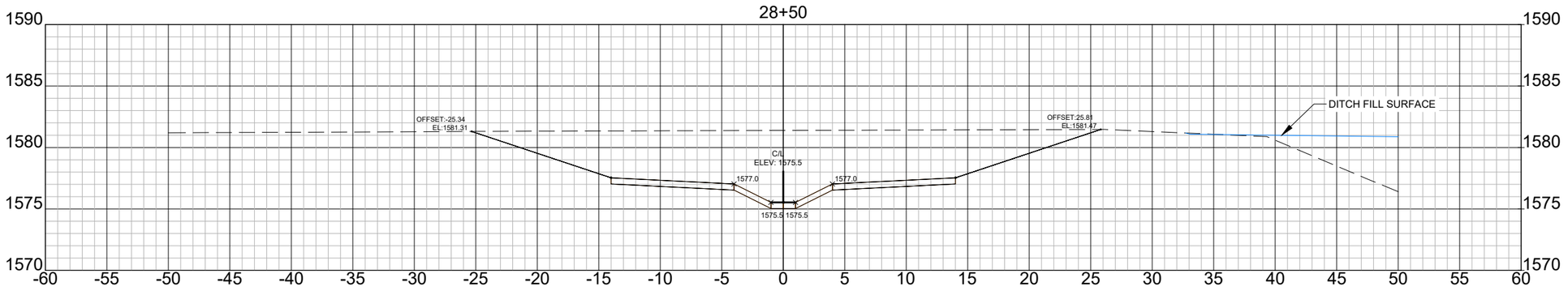
C147

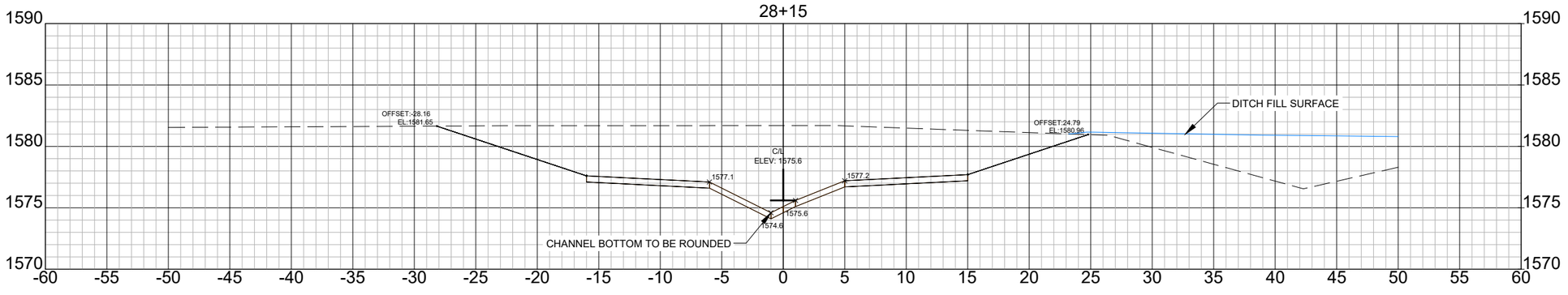
SHEET 48 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_P\MN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\Autocad\Base Drawings\2024.0224-Cor.dwg







95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) *(Date)*

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

SKANDIA WMA CHANNEL RESTORATION

MURRAY COUNTY, MN

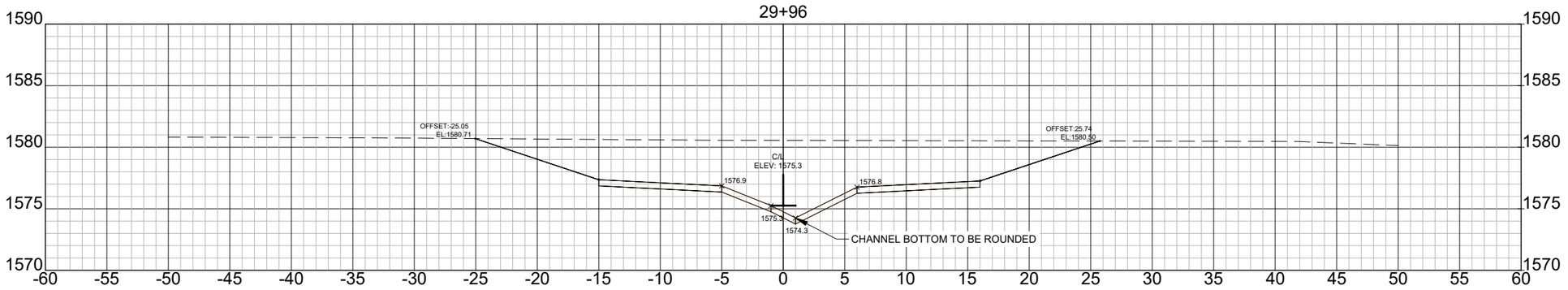
CROSS SECTIONS

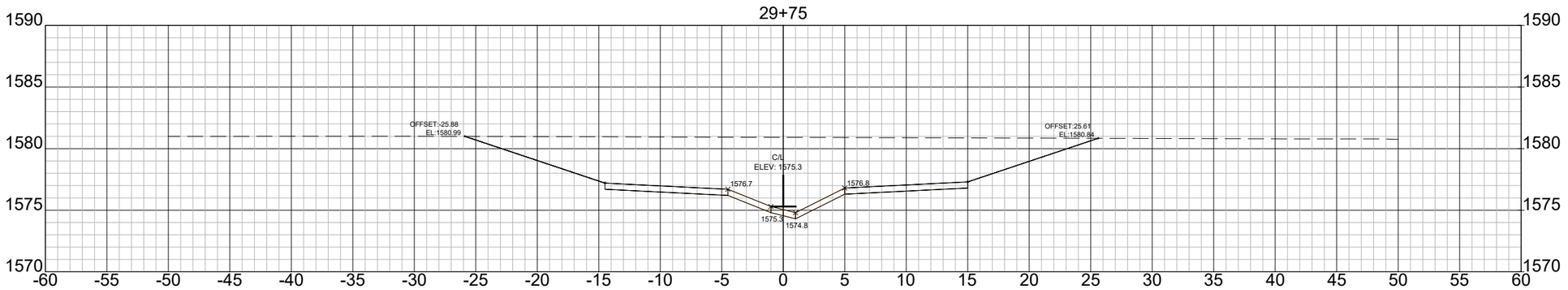
C148

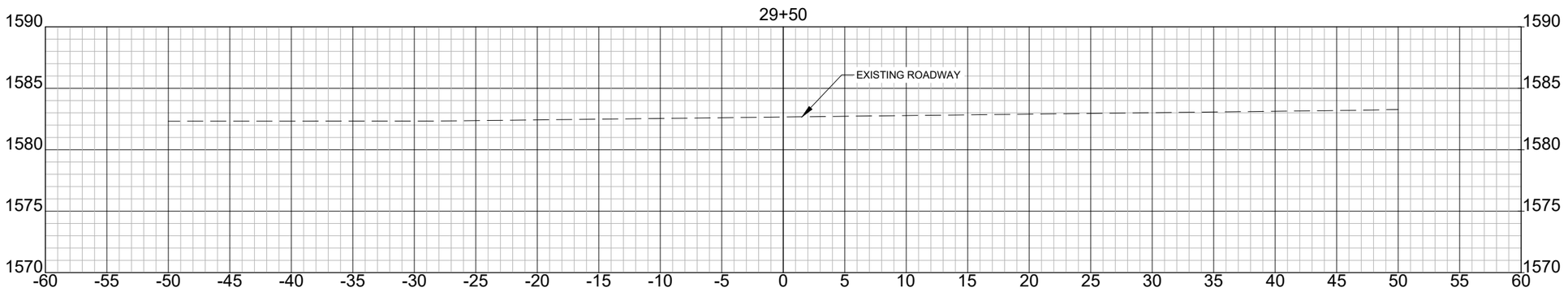
SHEET 49 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_PMN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Base Drawings\2024.0224-Cor.dwg







95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES
SKANDIA WMA CHANNEL RESTORATION
MURRAY COUNTY, MN

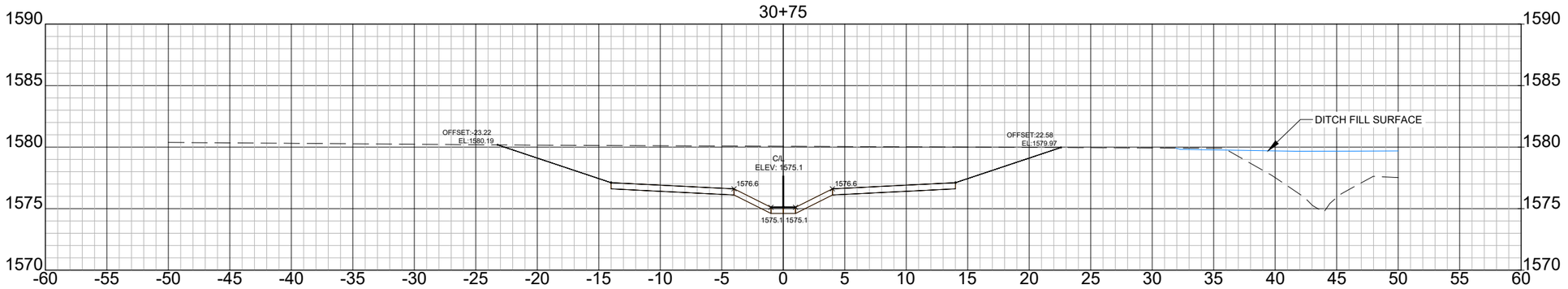
CROSS SECTIONS

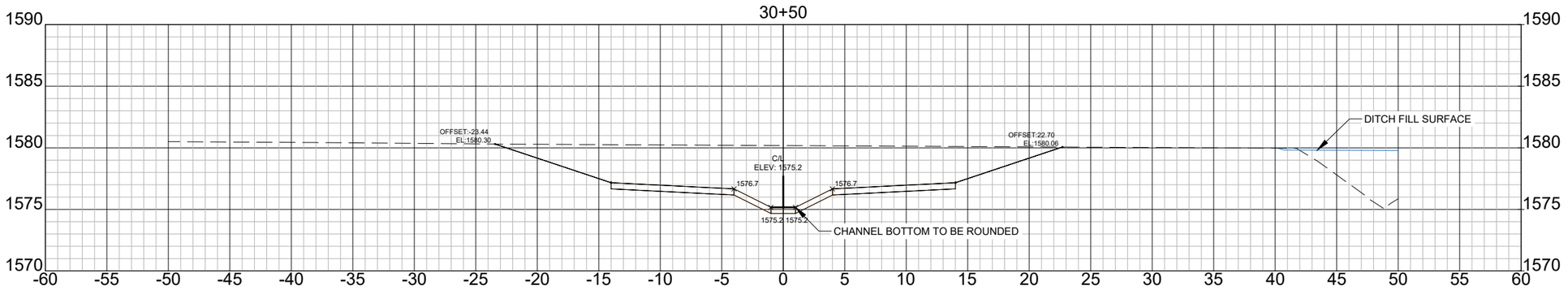
C149

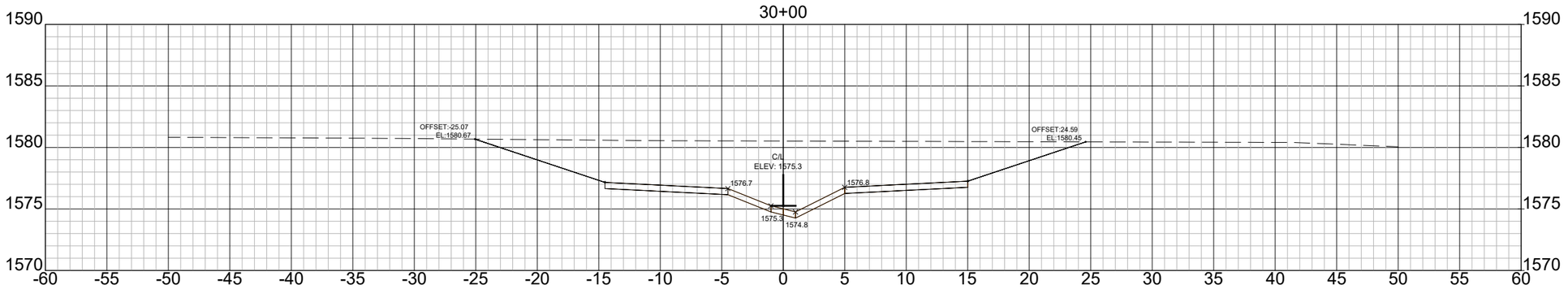
SHEET 50 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_PMN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\Autocad\Base Drawings\2024.0224-Cor.dwg







95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES
SKANDIA WMA CHANNEL RESTORATION
MURRAY COUNTY, MN

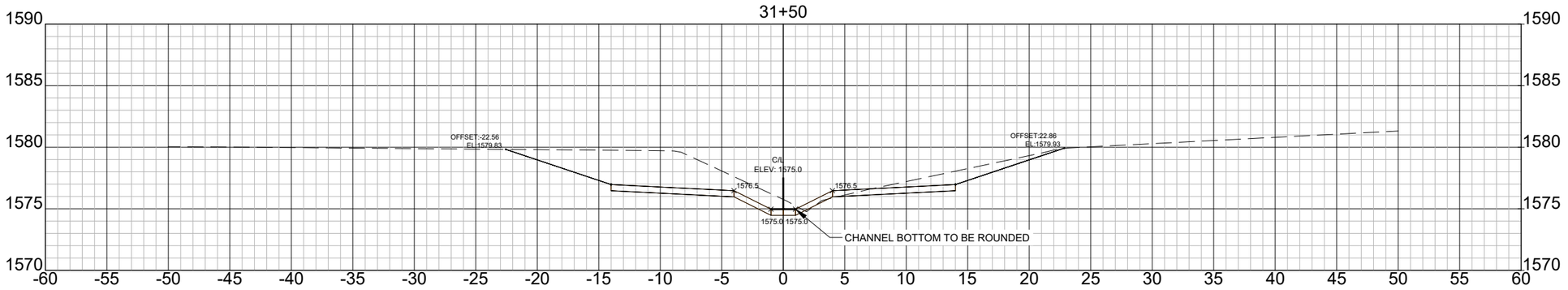
CROSS SECTIONS

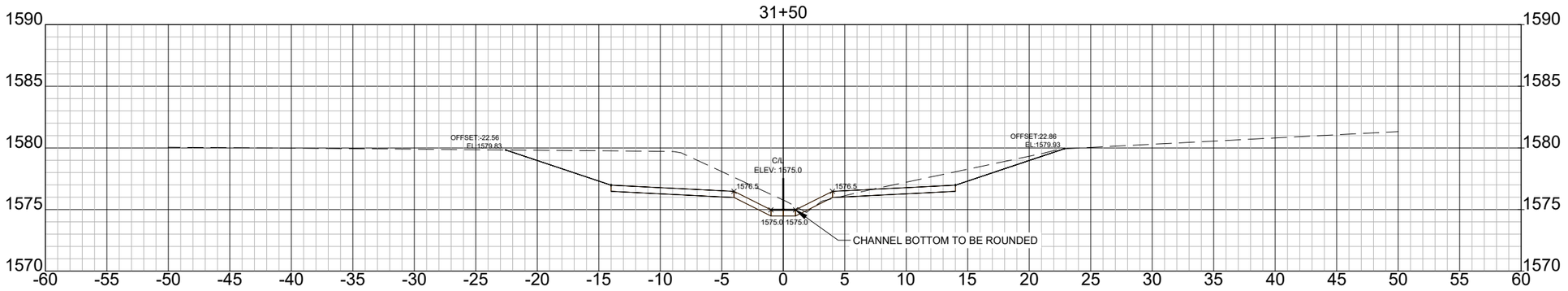
C150

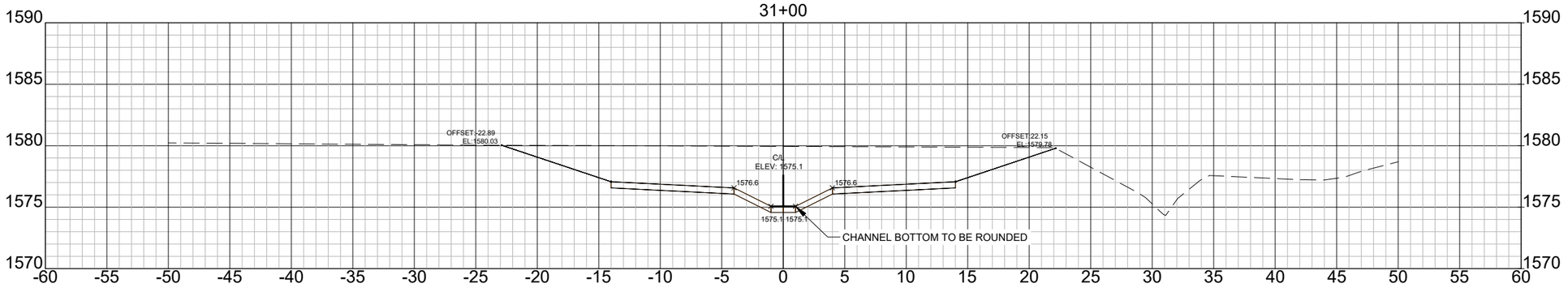
SHEET 51 OF 55

Z:\Clients\M_P\MN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Base Drawings\2024.0224-Cor.dwg

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)







95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) *(Date)*

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

SKANDIA WMA CHANNEL RESTORATION

MURRAY COUNTY, MN

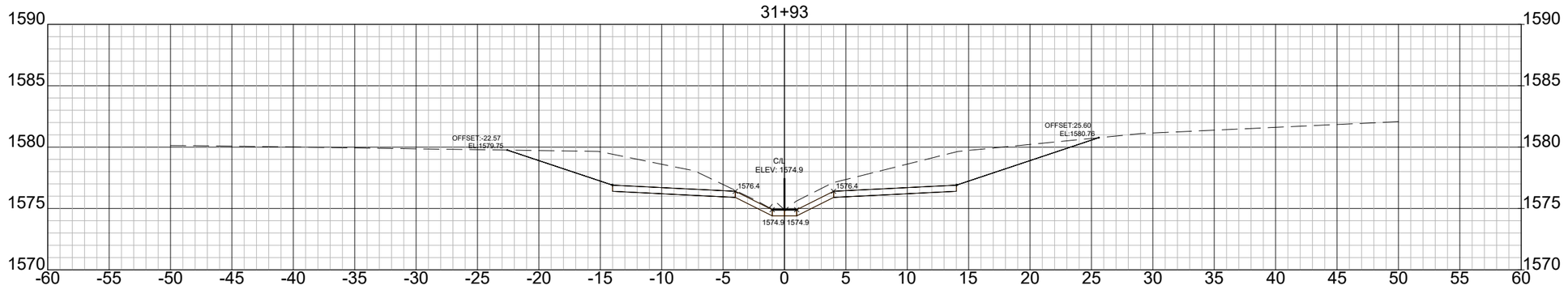
CROSS SECTIONS

C151

SHEET 52 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_P\MN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Base Drawings\2024.0224-Cor.dwg



95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES

SKANDIA WMA CHANNEL RESTORATION

MURRAY COUNTY, MN

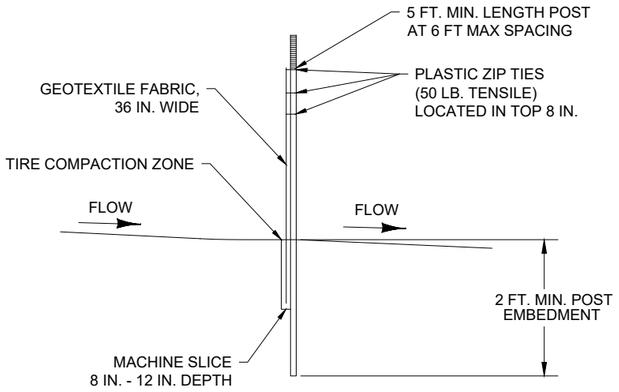
CROSS SECTIONS

C152

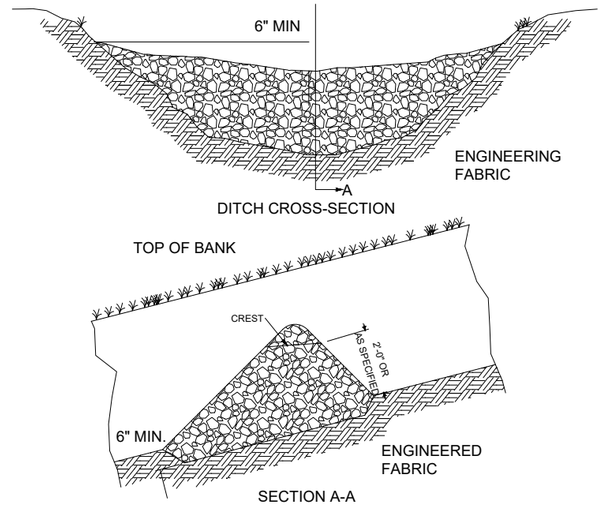
SHEET 53 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

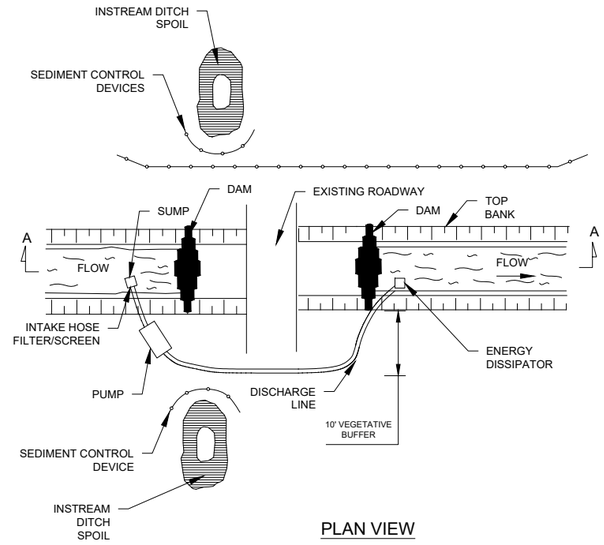
Z:\Clients\M_P\MN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Base Drawings\2024.0224-Cor.dwg



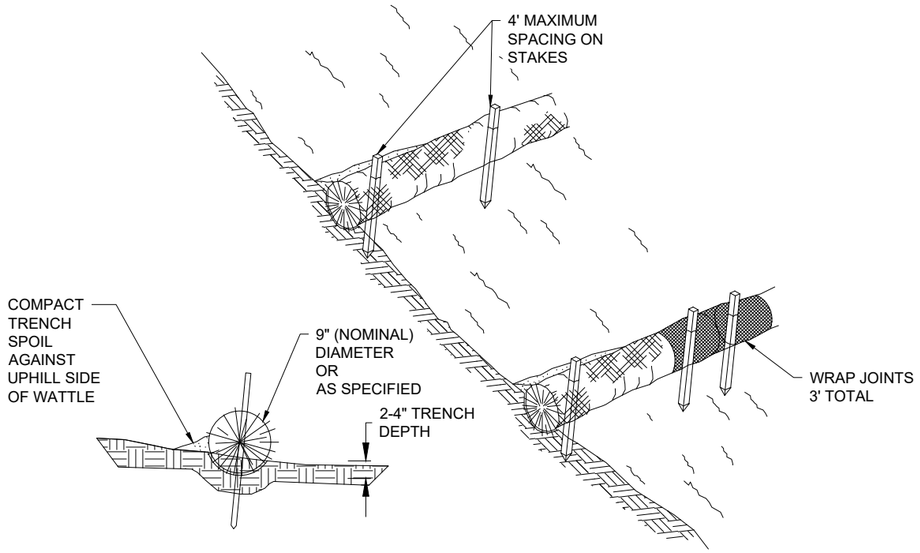
D-1 SILT FENCE
NOT TO SCALE



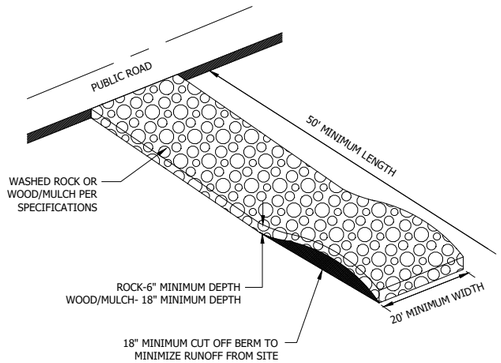
D-2 ROCK DITCH CHECK
NOT TO SCALE



D-3 CULVERT DAM & PUMP AROUND
NOT TO SCALE

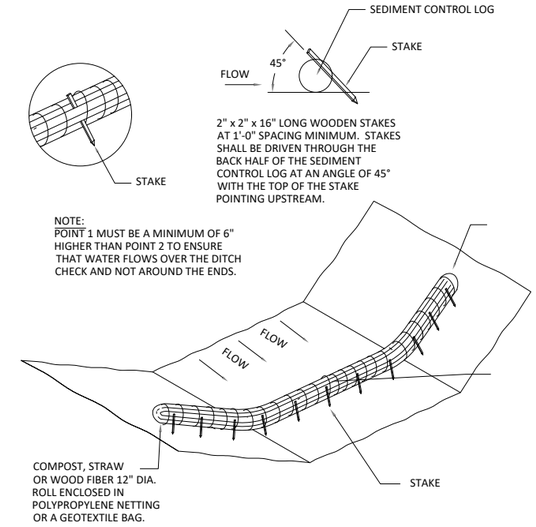


D-4 BIOLOG DETAILS
NOT TO SCALE



NOTES:
1. FILTER FABRIC SHALL BE PLACED UNDER ROCK OR MULCH TO STOP MUD MIGRATION THROUGH MATERIAL.
2. ENTRANCE MUST BE MAINTAINED REGULARLY TO PREVENT SEDIMENTATION ON PUBLIC ROADWAYS. FUGITIVE ROCK OR MULCH WILL BE REMOVED FROM ADJACENT ROADWAYS DAILY OR MORE FREQUENTLY AS NECESSARY.

D-5 CONSTRUCTION ENTRANCE
-ROCK OR WOOD / MULCH
NOT TO SCALE



D-6 FILTER BERM - SEDIMENT
CONTROL LOG
NOT TO SCALE

merjent®
Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DNR

SKANDIA WMA STREAM AND WETLAND RESTORATION

MURRAY COUNTY, MINNESOTA

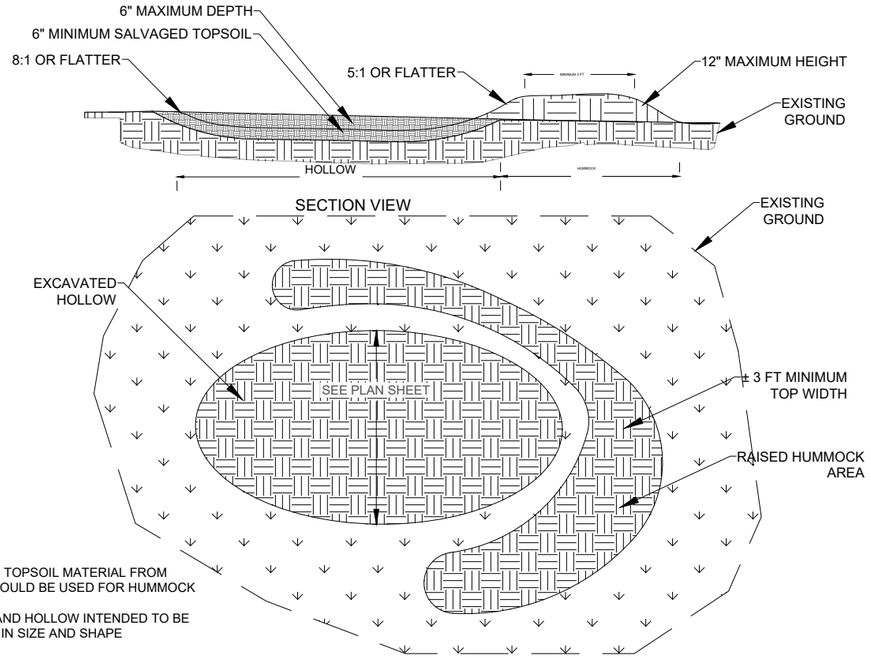
EROSION & SEDIMENT CONTROL PLAN

C153

SHEET 54 OF 55

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

Z:\Clients\M_PMN_DNRS\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Plan Sheets\2025.0224-Details.dwg

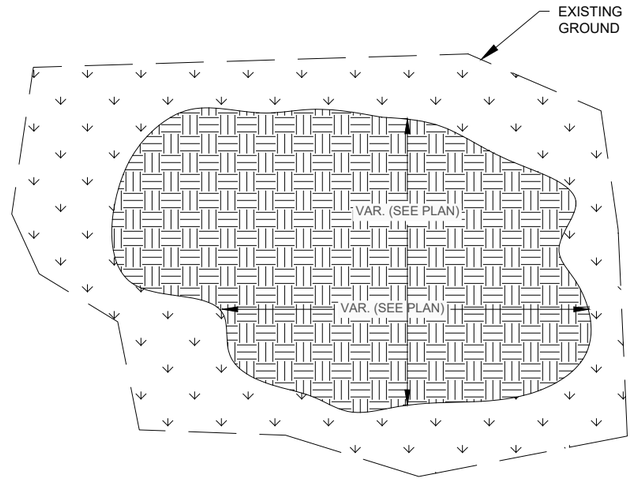


NOTE:
EXCAVATED TOPSOIL MATERIAL FROM HOLLOW SHOULD BE USED FOR HUMMOCK

HUMMOCK AND HOLLOW INTENDED TO BE IRREGULAR IN SIZE AND SHAPE

D-7 TYPICAL HUMMOCK AND HOLLOW MICRO-TOPOGRAPHY DETAIL

NOT TO SCALE

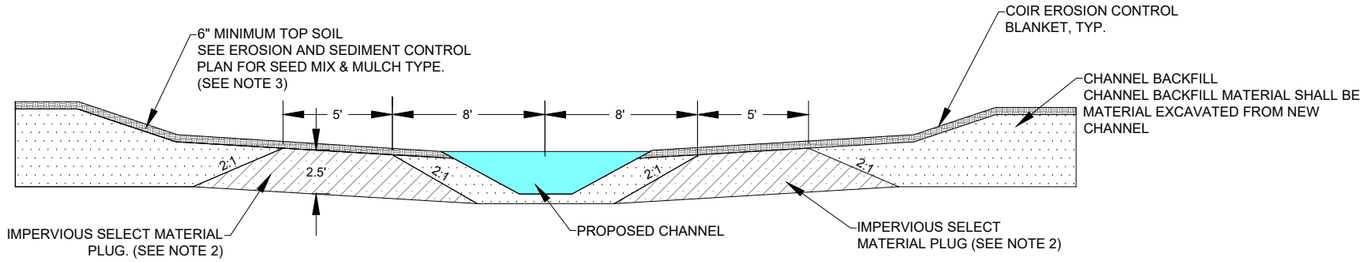


D-9 TYPICAL SHALLOW MICRO-DEPRESSION (SCRAPE) DETAIL

NOT TO SCALE

SCRAPE NOTES:

1. MICRO-DEPRESSIONS (SCRAPE) INTENDED TO BE IRREGULAR IN SHAPE AND DEPTH
2. EXCESS MATERIAL TO BE DEPOSITED IN THE NEAREST UPLAND AREA
3. MAINTAIN AT LEAST 6" OF TOPSOIL THROUGHOUT THE MICRO-DEPRESSION AREA
4. MICRO-DEPRESSION INTENDED TO BE CONSTRUCTED WITH LOW GROUND PRESSURE EQUIPMENT AND ROUGH FINAL SURFACE (+/- 0.3 FEET)



D-8 CLAY CHANNEL PLUG DETAIL

NOT TO SCALE

CLAY CHANNEL PLUG NOTES:

1. CLAY CHANNELS ARE USED TO BLOCK ABANDONED SECTIONS OF CHANNEL WHEN A STREAM IS REALIGNED AND THE NEW CHANNEL INTERSECTS THE EXISTING CHANNEL. THE CLAY CHANNEL PLUG ALSO PREVENTS SUBSURFACE FLOW LOSS TO THE EXISTING CHANNEL.
2. PLACE IMPERVIOUS SELECT MATERIAL PLUG (CLAY, CRUSHED LIMESTONE, ETC., AS SPECIFIED) TO MAXIMUM DEPTH OF PROPOSED CHANNEL AND COMPACT WITH EXCAVATION BUCKET IN 6-INCH LIFTS.
3. PLACE MINIMUM OF 6 INCHES OF TOPSOIL ON STREAM BANKS AND TILL INTO SURFACE OF PLUG, SEED WITH TEMPORARY AND PERMANENT SEED MIXES, AND MULCH LIGHTLY WITH STRAW OR AS SHOWN ON EROSION AND SEDIMENT CONTROL PLAN.

95% DESIGN

merjent

Corporate Office:
1 Main Street SE, Suite 300
Minneapolis, Minnesota 55414
(612) 746-3660

Wisconsin Office:
N3764 Uni Drive
Freedom, WI 54130
(920) 393-9198

REVISION RECORD

NO.	DATE	DESCRIPTION	BY	CHK'D	APP'D

PROFESSIONAL ENGINEER'S CERTIFICATION

I hereby certify that this plan, specification, or report was prepared by me or under my direct supervision and that I am a duly licensed professional engineer under the laws of the State of Minnesota

(Signature) (Date)

Printed Name: Josh Petersen, P.E.
My license renewal date is 06/30/2026 License No: 49518

MINNESOTA DEPARTMENT OF NATURAL RESOURCES
SKANDIA WMA - STREAM & WETLAND RESTORATION
MURRAY COUNTY, MINNESOTA

DETAILS

C154

SHEET 55 OF 55

Z:\Clients\M_P\MN_DNR\Skandia_WMA_Stream_and_Wetland_Restoration\Engineering\AutoCAD\Plan Sheets\2025.0224-Details.dwg

PLOTTED SIZE: ANSI full bleed B (11.00 x 17.00 Inches)

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Minnesota-Wisconsin Ecological Services Field Office
3815 American Blvd East
Bloomington, MN 55425-1659
Phone: (952) 858-0793

In Reply Refer To: 01/21/2026 14:26:27 UTC
Project Code: 2026-0038886
Project Name: Skandia WMA

Subject: List of threatened and endangered species that may occur in your proposed project location or may be affected by your proposed project

To Whom It May Concern:

This response has been generated by the Information, Planning, and Conservation (IPaC) system to provide information on natural resources that could be affected by your project. The U.S. Fish and Wildlife Service (Service) provides this response under the authority of the Endangered Species Act of 1973 (16 U.S.C. 1531-1543), the Bald and Golden Eagle Protection Act (16 U.S.C. 668-668d), the Migratory Bird Treaty Act (16 U.S.C. 703-712), and the Fish and Wildlife Coordination Act (16 U.S.C. 661 *et seq.*).

Threatened and Endangered Species
The enclosed species list identifies threatened, endangered, proposed and candidate species, as well as proposed and final designated critical habitat, that may occur within the boundary of your proposed project and may be affected by your proposed project. The species list fulfills the requirement for obtaining a Technical Assistance Letter from the U.S. Fish and Wildlife Service under section 7(c) of the Endangered Species Act (Act) of 1973, as amended (16 U.S.C. 1531 *et seq.*).

New information based on updated surveys, changes in the abundance and distribution of species, changed habitat conditions, or other factors could change this list. Note that under 50 CFR 402.12(e) of the regulations implementing section 7 of the Act, the accuracy of this species list should be verified after 90 days. The Service recommends that verification be completed by visiting the IPaC website at regular intervals during project planning and implementation for updates to species lists and information. An updated list may be requested through the IPaC system by completing the same process used to receive the enclosed list.

Consultation Technical Assistance
Please refer to refer to our Section 7 website for guidance and technical assistance, including step-by-step instructions for making effects determinations for each species that might be present and for specific guidance on the following types of projects: projects in developed areas, HUD, CDBG, EDA, USDA Rural Development projects, pipelines, buried utilities, telecommunications, and requests for a Conditional Letter of Map Revision (CLOMR) from FEMA.

We recommend running the project (if it qualifies) through our **Minnesota-Wisconsin Federal Endangered Species Determination Key (Minnesota-Wisconsin ("D-key"))**. A demonstration video showing how-to access and use the determination key is available. Please note that the Minnesota-Wisconsin D-key is the third option of 3 available d-keys. D-keys are tools to help Federal agencies and other project proponents determine if their proposed action has the potential to adversely affect federally listed species and designated critical habitat. The Minnesota-Wisconsin D-key includes a structured set of questions that assists a project proponent in determining whether a proposed project qualifies for a certain predetermined consultation outcome for all federally listed species found in Minnesota and Wisconsin (except for the northern long-eared bat- see below), which includes determinations of “no effect” or “may affect, not likely to adversely affect." In each case, the Service has compiled and analyzed the best available information on the species’ biology and the impacts of certain activities to support these determinations.

If your completed d-key output letter shows a "No Effect" (NE) determination for all listed species, print your IPaC output letter for your files to document your compliance with the Endangered Species Act.

For Federal projects with a “Not Likely to Adversely Affect” (NLAA) determination, our concurrence becomes valid if you do not hear otherwise from us after a 30-day review period, as indicated in your letter.

If your d-key output letter indicates additional coordination with the Minnesota-Wisconsin Ecological Services Field Office is necessary (i.e., you get a “May Affect” determination), you will be provided additional guidance on contacting the Service to continue ESA coordination outside of the key; ESA compliance cannot be concluded using the key for “May Affect” determinations unless otherwise indicated in your output letter.

Note: Once you obtain your official species list, you are not required to continue in IPaC with d-keys, although in most cases these tools should expedite your review. If you choose to make an effects determination on your own, you may do so. If the project is a Federal Action, you may want to review our section 7 step-by-step instructions before making your determinations.

Using the IPaC Official Species List to Make No Effect and May Affect Determinations for Listed Species

1. If IPaC returns a result of “There are no listed species found within the vicinity of the project,” then project proponents can conclude the proposed activities will have **no effect** on any federally listed species under Service jurisdiction. Concurrence from the Service is not required for **no effect** determinations. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records.
2. If IPaC returns one or more federally listed, proposed, or candidate species as potentially present in the action area of the proposed project – other than bats (see below) – then project proponents must determine if proposed activities will have **no effect** on or **may affect** those species. For assistance in determining if suitable habitat for listed, candidate, or proposed species occurs within your project area or if species may be affected by project activities, you can obtain Life History Information for Listed and Candidate Species on our office website. If no impacts will occur to a species on the IPaC species list (e.g., there is no habitat present in the project area), the appropriate determination is **no effect**. No further consultation or coordination is required. Attach this letter to the dated IPaC species list report for your records.

3. Should you determine that project activities **may affect** any federally listed, please contact our office for further coordination. Letters with requests for consultation or correspondence about your project should include the Consultation Tracking Number in the header. Electronic submission is preferred.

Northern Long-Eared Bats
Northern long-eared bats occur throughout Minnesota and Wisconsin and the information below may help in determining if your project may affect these species.

Suitable summer habitat for northern long-eared bats consists of a wide variety of forested/wooded habitats where they roost, forage, and travel and may also include some adjacent and interspersed non-forested habitats such as emergent wetlands and adjacent edges of agricultural fields, old fields and pastures. This includes forests and woodlots containing potential roosts (i.e., live trees and/or snags ≥3 inches dbh for northern long-eared bat that have exfoliating bark, cracks, crevices, and/or hollows), as well as linear features such as fencerows, riparian forests, and other wooded corridors. These wooded areas may be dense or loose aggregates of trees with variable amounts of canopy closure. Individual trees may be considered suitable habitat when they exhibit the characteristics of a potential roost tree and are located within 1,000 feet (305 meters) of forested/wooded habitat. Northern long-eared bats have also been observed roosting in human-made structures, such as buildings, barns, bridges, and bat houses; therefore, these structures should also be considered potential summer habitat and evaluated for use by bats. If your project will impact caves or mines or will involve clearing forest or woodland habitat containing suitable roosting habitat, northern long-eared bats could be affected. For bat activity dates, please review Appendix L in the Range-wide Indiana Bat and Northern Long-Eared Bat Survey Guidelines.

Examples of unsuitable habitat include:

- Individual trees that are greater than 1,000 feet from forested or wooded areas,
- Trees found in highly developed urban areas (e.g., street trees, downtown areas),
- A pure stand of less than 3-inch dbh trees that are not mixed with larger trees, and
- A monoculture stand of shrubby vegetation with no potential roost trees.

If IPaC returns a result that northern long-eared bats are potentially present in the action area of the proposed project, project proponents can conclude the proposed activities **may affect** this species **IF** one or more of the following activities are proposed:

- Clearing or disturbing suitable roosting habitat, as defined above, at any time of year,
- Any activity in or near the entrance to a cave or mine,
- Mining, deep excavation, or underground work within 0.25 miles of a cave or mine,
- Construction of one or more wind turbines, or
- Demolition or reconstruction of human-made structures that are known to be used by bats based on observations of roosting bats, bats emerging at dusk, or guano deposits or stains.

If none of the above activities are proposed, project proponents can conclude the proposed activities will have **no effect** on the northern long-eared bat. Concurrence from the Service is not required for **No Effect** determinations. No further consultation or coordination is required. Attach this letter to the dated IPaC

species list report for your records.

If any of the above activities are proposed, and the northern long-eared bat appears on the user's species list, the federal project user will be directed to either the northern long-eared bat and tricolored bat range-wide D-key or the Federal Highways Administration, Federal Railways Administration, and Federal Transit Administration Indiana bat/Northern long-eared bat D-key, depending on the type of project and federal agency involvement. Similar to the Minnesota-Wisconsin D-key, these d-keys helps to determine if prohibited take might occur and, if not, will generate an automated verification letter. Additional information about available tools can be found on the Service's northern long-eared bat website.

Whooping Crane
Whooping crane is designated as a non-essential experimental population in Wisconsin and consultation under Section 7(a)(2) of the Endangered Species Act is only required if project activities will occur within a National Wildlife Refuge or National Park. If project activities are proposed on lands outside of a National Wildlife Refuge or National Park, then you are not required to consult. For additional information on this designation and consultation requirements, please review "Establishment of a Nonessential Experimental Population of Whooping Cranes in the Eastern United States."

Other Trust Resources and Activities
Bald and Golden Eagles - Although the bald eagle has been removed from the endangered species list, this species and the golden eagle are protected by the Bald and Golden Eagle Act and the Migratory Bird Treaty Act. It is the responsibility of the project proponent to survey the area for any migratory bird nests. If there is an eagle nest on-site while work is on-going, eagles may be disturbed. We recommend avoiding and minimizing disturbance to eagles whenever practicable. If you cannot avoid eagle disturbance, you may seek a permit. A nest take permit is always required for removal, relocation, or obstruction of an eagle nest. For communication and wind energy projects, please refer to additional guidelines below.

Migratory Birds - The Migratory Bird Treaty Act (MBTA) prohibits the taking, killing, possession, transportation, and importation of migratory birds, their eggs, parts, and nests, except when specifically authorized by the Service. The Service has the responsibility under the MBTA to proactively prevent the mortality of migratory birds whenever possible and we encourage implementation of recommendations that minimize potential impacts to migratory birds. Such measures include clearing forested habitat outside the nesting season (generally March 1 to August 31) or conducting nest surveys prior to clearing to avoid injury to eggs or nestlings.

Communication Towers - Construction of new communications towers (including radio, television, cellular, and microwave) creates a potentially significant impact on migratory birds, especially some 350 species of night-migrating birds. However, the Service has developed voluntary guidelines for minimizing impacts.

Transmission Lines - Migratory birds, especially large species with long wingspans, heavy bodies, and poor maneuverability can also collide with power lines. In addition, mortality can occur when birds, particularly hawks, eagles, kites, falcons, and owls, attempt to perch on uninsulated or unguarded power poles. To minimize these risks, please refer to guidelines developed by the Avian Power Line Interaction Committee and the Service. Implementation of these measures is especially important along sections of lines adjacent to wetlands or other areas that support large numbers of raptors and migratory birds.

Wind Energy - To minimize impacts to migratory birds and bats, wind energy projects should follow the Service's Wind Energy Guidelines. In addition, please refer to the Service's Eagle Conservation Plan Guidance, which provides guidance for conserving bald and golden eagles in the course of siting, constructing, and operating wind energy facilities.

State Department of Natural Resources Coordination
While it is not required for your Federal section 7 consultation, please note that additional state endangered or threatened species may also have the potential to be impacted. **Please contact the Minnesota or Wisconsin Department of Natural Resources for information on state listed species that may be present in your proposed project area.**

Minnesota
Minnesota Department of Natural Resources - Endangered Resources Review Homepage
Email: Review.NHIS@state.mn.us

Wisconsin
Wisconsin Department of Natural Resources - Endangered Resources Review Homepage
Email: DNRERReview@wi.gov

We appreciate your concern for threatened and endangered species. Please feel free to contact our office with questions or for additional information.

Attachment(s):

- Official Species List
- USFWS National Wildlife Refuges and Fish Hatcheries
- Bald & Golden Eagles
- Migratory Birds
- Wetlands

OFFICIAL SPECIES LIST

This list is provided pursuant to Section 7 of the Endangered Species Act, and fulfills the requirement for Federal agencies to "request of the Secretary of the Interior information whether any species which is listed or proposed to be listed may be present in the area of a proposed action".

This species list is provided by:

Minnesota-Wisconsin Ecological Services Field Office
3815 American Blvd East
Bloomington, MN 55425-1659
(952) 858-0793

PROJECT SUMMARY

Project Code: 2026-0038886
Project Name: Skandia WMA
Project Type: Restoration / Enhancement of Waterbody
Project Description: Stream Wetland Restoration
Project Location:

The approximate location of the project can be viewed in Google Maps: https://www.google.com/maps/@44.136353299999996,-95.81740021866725,14z

Counties: Murray County, Minnesota

ENDANGERED SPECIES ACT SPECIES

There is a total of 3 threatened, endangered, or candidate species on this species list.

Species on this list should be considered in an effects analysis for your project and could include species that exist in another geographic area. For example, certain fish may appear on the species list because a project could affect downstream species.

IPaC does not display listed species or critical habitats under the sole jurisdiction of NOAA Fisheries[1], as USFWS does not have the authority to speak on behalf of NOAA and the Department of Commerce.

See the "Critical habitats" section below for those critical habitats that lie wholly or partially within your project area under this office's jurisdiction. Please contact the designated FWS office if you have questions.

---

1. NOAA Fisheries, also known as the National Marine Fisheries Service (NMFS), is an office of the National Oceanic and Atmospheric Administration within the Department of Commerce.

INSECTS

NAME	STATUS
Monarch Butterfly *Danaus plexippus* There is **proposed** critical habitat for this species. Your location does not overlap the critical habitat. Species profile: https://ecos.fws.gov/ecp/species/9743	Proposed Threatened
Suckley's Cuckoo Bumble Bee *Bombus suckleyi* Population: No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/10885	Proposed Endangered
Western Regal Fritillary *Argynnis idalia occidentalis* No critical habitat has been designated for this species. Species profile: https://ecos.fws.gov/ecp/species/12017	Proposed Threatened

CRITICAL HABITATS

THERE ARE NO CRITICAL HABITATS WITHIN YOUR PROJECT AREA UNDER THIS OFFICE'S JURISDICTION.

YOU ARE STILL REQUIRED TO DETERMINE IF YOUR PROJECT(S) MAY HAVE EFFECTS ON ALL ABOVE LISTED SPECIES.

USFWS NATIONAL WILDLIFE REFUGE LANDS AND FISH HATCHERIES

Any activity proposed on lands managed by the National Wildlife Refuge system must undergo a 'Compatibility Determination' conducted by the Refuge. Please contact the individual Refuges to discuss any questions or concerns.

THERE ARE NO REFUGE LANDS OR FISH HATCHERIES WITHIN YOUR PROJECT AREA.

BALD & GOLDEN EAGLES

Bald and Golden Eagles are protected under the Bald and Golden Eagle Protection Act [2] and the Migratory Bird Treaty Act (MBTA) [1]. Any person or organization who plans or conducts activities that may result in impacts to Bald or Golden Eagles, or their habitats, should follow appropriate regulations and consider implementing appropriate avoidance and minimization measures, as described in the various links on this page.

---

1. The Bald and Golden Eagle Protection Act of 1940.
2. The Migratory Birds Treaty Act of 1918.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

There are Bald Eagles and/or Golden Eagles in your project area.

Measures for Proactively Minimizing Eagle Impacts
For information on how to best avoid and minimize disturbance to nesting bald eagles, please review the National Bald Eagle Management Guidelines. You may employ the timing and activity-specific distance recommendations in this document when designing your project/ activity to avoid and minimize eagle impacts. For bald eagle information specific to Alaska, please refer to Bald Eagle Nesting and Sensitivity to Human Activity.

The FWS does not currently have guidelines for avoiding and minimizing disturbance to nesting Golden Eagles. For site-specific recommendations regarding nesting Golden Eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

If disturbance or take of eagles cannot be avoided, an incidental take permit may be available to authorize any take that results from, but is not the purpose of, an otherwise lawful activity. For assistance making this determination for Bald Eagles, visit the Do I Need A Permit Tool. For assistance making this determination for golden eagles, please consult with the appropriate Regional Migratory Bird Office or Ecological Services Field Office.

Ensure Your Eagle List is Accurate and Complete
If your project area is in a poorly surveyed area in IPaC, your list may not be complete and you may need to rely on other resources to determine what species may be present (e.g. your local FWS field office, state surveys, your own surveys). Please review the Supplemental Information on Migratory Birds and Eagles, to help you properly interpret the report for your specified location, including determining if there is sufficient data to ensure your list is accurate.

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to bald or golden eagles on your list, see the "Probability of Presence Summary" below to see when these bald or golden eagles are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Dec 1 to Aug 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

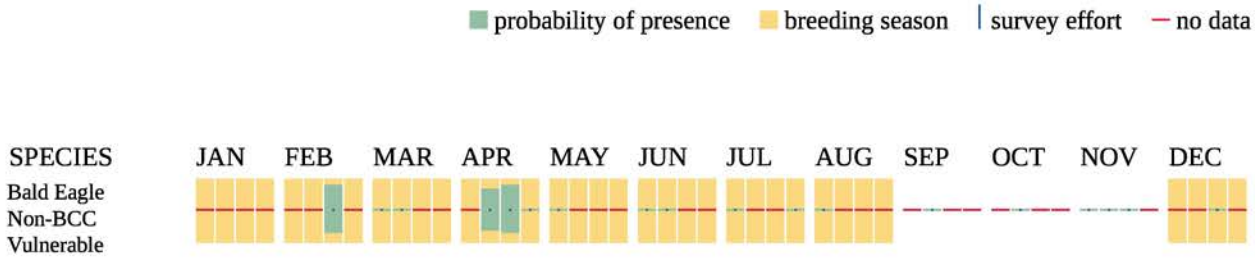
Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.



Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds https://www.fws.gov/sites/default/files/documents/nationwide-standard-conservation-measures.pdf
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

MIGRATORY BIRDS

The Migratory Bird Treaty Act (MBTA) [1] prohibits the take (including killing, capturing, selling, trading, and transport) of protected migratory bird species without prior authorization by the Department of Interior U.S. Fish and Wildlife Service (Service).

---

1. The Migratory Birds Treaty Act of 1918.
2. The Bald and Golden Eagle Protection Act of 1940.
3. 50 C.F.R. Sec. 10.12 and 16 U.S.C. Sec. 668(a)

For guidance on when to schedule activities or implement avoidance and minimization measures to reduce impacts to migratory birds on your list, see the "Probability of Presence Summary" below to see when these birds are most likely to be present and breeding in your project area.

NAME	BREEDING SEASON
Bald Eagle *Haliaeetus leucocephalus* This is not a Bird of Conservation Concern (BCC) in this area, but warrants attention because of the Eagle Act or for potential susceptibilities in offshore areas from certain types of development or activities. https://ecos.fws.gov/ecp/species/1626	Breeds Dec 1 to Aug 31
Black Tern *Chlidonias niger surinamenisis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/3093	Breeds May 15 to Aug 20
Chimney Swift *Chaetura pelagica* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9406	Breeds Mar 15 to Aug 25
Franklin's Gull *Leucophaeus pipixcan* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/10567	Breeds May 1 to Jul 31
Grasshopper Sparrow *Ammodramus savannarum perpallidus* This is a Bird of Conservation Concern (BCC) only in particular Bird Conservation Regions (BCRs) in the continental USA https://ecos.fws.gov/ecp/species/8329	Breeds Jun 1 to Aug 20
Lesser Yellowlegs *Tringa flavipes* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9679	Breeds elsewhere
Pectoral Sandpiper *Calidris melanotos* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/9561	Breeds elsewhere
Western Grebe *aechmophorus occidentalis* This is a Bird of Conservation Concern (BCC) throughout its range in the continental USA and Alaska. https://ecos.fws.gov/ecp/species/6743	Breeds Jun 1 to Aug 31

PROBABILITY OF PRESENCE SUMMARY

The graphs below provide our best understanding of when birds of concern are most likely to be present in your project area. This information can be used to tailor and schedule your project activities to avoid or minimize impacts to birds. Please make sure you read "Supplemental

Information on Migratory Birds and Eagles", specifically the FAQ section titled "Proper Interpretation and Use of Your Migratory Bird Report" before using or attempting to interpret this report.

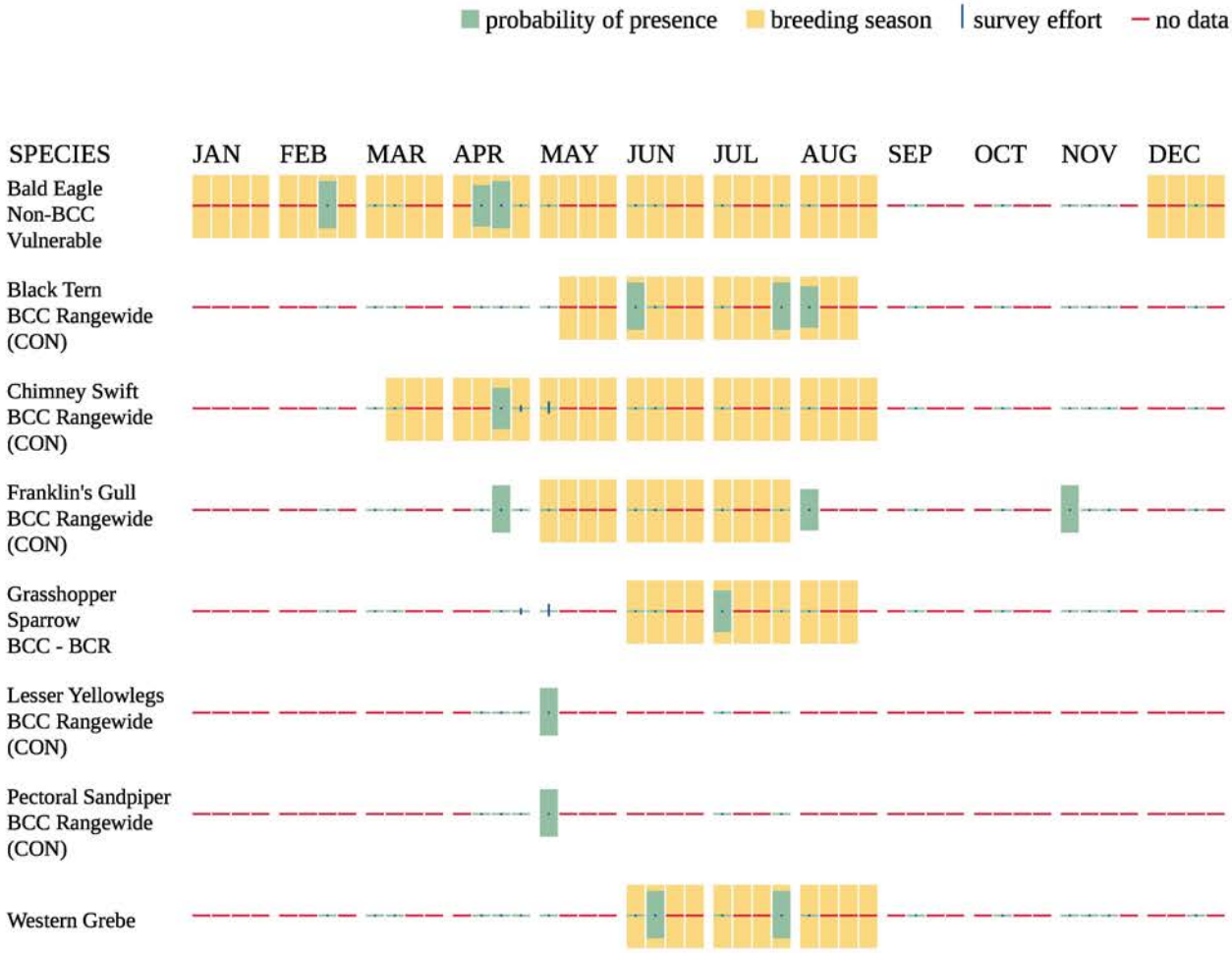
Probability of Presence (■)

Green bars; the bird's relative probability of presence in the 10km grid cell(s) your project overlaps during that week of the year.

Breeding Season (■)
Yellow bars; liberal estimate of the timeframe inside which the bird breeds across its entire range.

Survey Effort (|)
Vertical black lines; the number of surveys performed for that species in the 10km grid cell(s) your project area overlaps.

No Data (–)
A week is marked as having no data if there were no survey events for that week.



BCC Rangewide
(CON)

Additional information can be found using the following links:

- Eagle Management https://www.fws.gov/program/eagle-management
- Measures for avoiding and minimizing impacts to birds https://www.fws.gov/library/collections/avoiding-and-minimizing-incidental-take-migratory-birds
- Nationwide avoidance and minimization measures for birds
- Supplemental Information for Migratory Birds and Eagles in IPaC https://www.fws.gov/media/supplemental-information-migratory-birds-and-bald-and-golden-eagles-may-occur-project-action

WETLANDS

Impacts to NWI wetlands and other aquatic habitats may be subject to regulation under Section 404 of the Clean Water Act, or other State/Federal statutes.

For more information please contact the Regulatory Program of the local U.S. Army Corps of Engineers District.

Please note that the NWI data being shown may be out of date. We are currently working to update our NWI data set. We recommend you verify these results with a site visit to determine the actual extent of wetlands on site.

WETLAND INFORMATION WAS NOT AVAILABLE WHEN THIS SPECIES LIST WAS GENERATED. PLEASE VISIT HTTPS://WWW.FWS.GOV/WETLANDS/DATA/MAPPER.HTML OR CONTACT THE FIELD OFFICE FOR FURTHER INFORMATION.

IPAC USER CONTACT INFORMATION

Agency:	Private Entity
Name:	Rosemary Hopson
Address:	1 Main Street SE
Address Line 2:	Suite 300
City:	Minneapolis
State:	MN
Zip:	55414
Email	rosemary.hopson@merjent.com
Phone:	9209448838