Final Engineer's Report

Judicial Ditch No. 15 Lateral V, Branch C Improvement

24X.136322.000

Buffalo Creek Watershed District
Renville County, Minnesota
December 2025

BOLTON & MENK
Real People. Real Solutions.

Submitted by:
Bolton & Menk, Inc.
1243 Cedar Street NE
Sleepy Eye, MN 56085
P: 507-810-4184

Certification

Final Engineer's Report

For

Judicial Ditch No. 15 Lateral V, Branch C Improvement

In

Buffalo Creek Watershed District
Renville County, Minnesota

24X.136322.000
December 2025

PROFESSIONAL ENGINEER

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: Shaun P. Luker

Typed or Printed Name: Shaun P. Luker

Date: 12-9-2025 License Number: 48756

Table of Contents

Appendix

STATE OF MINNESOTA

RENVILLE COUNTY

IN THE MATTER OF THE PETITION FOR IMPROVEMENT OF JUDICIAL DITCH NO. 15 IN RENVILLE COUNTY, MINNESOTA:

In November 2024, the Buffalo Creek Watershed District, acting as the Drainage Authority for Judicial Ditch No 15 Lateral V Branch C (JD 15 Lat V Br C) in Renville County, in accordance with Minnesota Statute 103E.215, accepted a petition for the Improvement of portions of JD 15. Subsequently after that authorization, field surveys were performed to obtain elevations and establish an alignment for the proposed open ditch and culvert crossing improvements, as well as to evaluate the outlet for the system.

In August 2025, the Drainage Authority held a preliminary hearing and found that the proposed project meets the requirements for an Improvement and they ordered the preparation of this Final Engineer's Report. The Board appointed Viewers to determine the benefits and damages for the system.

This Preliminary Engineer's Report summarizes the findings of the research, surveys, and analysis for the Improvement and is submitted for consideration by the Ditch Authority.

I. LOCATION AND SCOPE OF THE IMPROVEMENT

JD 15 Lat V Br C lies within and provides drainage to a watershed in the north-east portion of Renville County. The proposed project location lies within Section 25 and Section 36 of Preston Lake Township. The system consists of 3,700 linear feet of drainage tile. The outlet for JD 15 Lat V Br C is JD 15 Lateral V Open Ditch in section 25 of Preston Lake Township in Renville County. The project is located about 5.1 miles east of Buffalo Lake, Minnesota. The total estimated watershed for the system based on Lidar contour data, is 250 acres.

The proposed project for JD 15 Lat V Br C includes the construction of drainage pipe. Exhibit 1 shows the general location of JD 15 Lateral V and the proposed project.

Field survey information was collected by Bolton & Menk, Inc. in February of 2025. The survey included GPS locations and elevations for the outlet of the tile and for private and public intakes on the system. The tile system design utilizes Lidar data, provided by the Minnesota Department of Natural Resources. This data, obtained from an aerial flight, results in contours of equal elevation at 2' vertical intervals.

II. EXISTING DITCH SYSTEM

Public records regarding JD 15 Lat V Br C were reviewed from Renville County and Buffalo Creek Watershed.

JD 15 was petitioned for establishment on June 26, 1916. Construction was completed on August 1, 1921.

The benefits for JD 15 were recently redetermined. Current benefits for the JD 15 system are $78,151,901.40.

III. CONDITION OF THE EXISTING DRAINAGE SYSTEM

Through the field survey it was found that blowouts in the existing tile line are occurring near the outlet. These blowouts show that the tile system is inefficient for current weather and rainfall patterns. The petitioners have requested the ditch improvements due to these insufficiencies. The portion of the JD 15 Lateral V system proposed to be improved consists of underground tiles.

Table 1 below shows the existing capacity for the JD 15 Lat V Br C Tiles proposed to be improved. As a way of evaluating the capacity of the existing system using standard engineering methods. The capacity of the existing tile has been estimated using the Mannings equation, assuming the original hydraulic efficiency of the system as constructed and subsequently improved. Estimated tile sizes and grades are based on the field data collected through tile intakes, blowouts, and general surface profile. The amount of drainage which is needed for modern crop production has been compared to the 3/8 of an inch of runoff per day standards that is recommended by Buffalo Creek Watershed District (BCWD). The watershed areas have been estimated using DNR Lidar maps.

Table 1: Existing System Capacity

Tile	Location	Drainage Area (Acres)	Existing Tile Size (Inches)	Existing Grade (%)	Calculated Capacity (CFS) n=0.013	Calculated Coefficient (In. Per Day)
Br C	EOP to 590-Ft south of 790th Ave	210	10	0.40	1.39	0.16
Br C	590-Ft south of 790th Ave to Open Ditch	303	12	0.53	2.60	0.20

As can be seen from Table 1 above, the system is unable to drain the watershed even if it was in good repair. When compared to the BCWD recommended standard of 3/8" per day, the tile main systems are only delivering about 54% of the recommended flow, based on the estimated tile sizes and grades. Therefore, there is inadequate capacity in the existing drainage system to provide for the efficient production of row crops. The result of this insufficient capacity is extended ponding in the low areas of the watershed and inadequate drainage of the tile lines which drain into the ditch system, thus resulting in crop stress and crop loss.

IV. DISCUSSION OF THE IMPROVEMENT

The petitioners for the improvement of JD 15 Lat V Br C have requested consideration for the construction of an improved tile system to increase the capacity to provide an adequate outlet. As noted earlier, the proposed construction would consist of a drain tile reconstruction and improvement. A preliminary survey and hydrologic and hydraulic analysis of such a drainage system was performed to establish preliminary grades and depths for the tile system. They were also used to determine quantities for construction of such a system, to determine the size of proposed tile lines and analyze the outlet. General observations and results of the analysis are summarized as follows:

A. DESCRIPTION

As shown in Exhibit 1, the proposed Improvement consists of 10-inch to 18-inch diameter tile to replace the function of the existing JD 15 Lat V Br C tile from the outlet to the upper end. The township road crossing would be made by open trench methods, and the road

surface restored with class 5 gravel. The new tile will be constructed at a lower elevation, where possible, than the existing tile in order to allow all existing tiles to be connected to the new tile to accommodate adequate drainage, to accommodate current farming practices and to provide more ground cover over the new tile to reduce the probability of crushing.

The proposed tile will end within parcel 22-00730-00 instead of continuing to JD 15 Lateral V open ditch as shown in Exhibit 1. This is due to the existing ground not being deep enough for standard drain tile installation processes. As part of the project, the wetland located on parcel 22-00730-00 will receive an upgraded outlet control structure (OCS). The improvements will consist of installing two culverts and raising the existing ditch banks by approximately 2-feet. The wetland will serve as the outlet and buffer for the tile system after construction.

B. DESIGN DATA – TILE IMPROVEMENT

The proposed drain tile Improvement is shown in Exhibit 1. The type of pipe to be used for construction will be bid with a contractor option as follows:

1. Dual Wall or Triple Wall Polypropylene Drain Tile meeting the requirements of the American Society for Testing Materials F2376. Pipe will be bedded in granular foundation rock.
2. Dual Wall Polyethylene Drain Tile meeting the requirements of the American Society for Testing Materials F 2648. Pipe will be bedded in granular foundation rock as shown on Exhibit 1. Non-perforated pipe will be used. The perforated pipe will include a drain tile sock or micro perforations/slots to avoid granular infiltration into the pipe. An option would be provided for the contractor to shape the bottom of the trench to conform to the pipe and eliminate some of the granular bedding if the pipe manufacturer would warrant the material installation.
3. Reinforced concrete pipe meeting the requirements of MnDOT Specification 2501, with the joints being covered with geotextile fabric or gasketed.

As can be seen in Table 2, the tile capacity for the Improvement System reflects a drainage coefficient of 0.375-inches/day. This is within the recommended drainage capacity from the Buffalo Creek Watershed District of 3/8-inches/day.

Table 2: Improvement System Capacity

Tile	Location	Drainage Area (Acres)	Tile Size (Inches)	Tile Grade (%)	Calculated Capacity (CFS) n=0.012	Calculated Coefficient (In. Per Day)
Br C	EOP to 970-Ft south of 790th Ave	44	10	0.50	1.68	0.91
Br C	970-Ft to 590-Ft south of 790th Ave	210	18	0.10	3.61	0.41
Br C	590-Ft south to 970-Ft north of 790th Ave	250	18	0.12	3.95	0.38

Also included, as part of the project, will be provisions to strip and replace the topsoil on the trench area, to provide rip rap as erosion protection at the outlet, and to construct several intakes on the system. Note that the drainage area in Table 2 is less than the drainage area shown in Table 1. This is due to the tile being proposed to outlet into the existing wetland in the low area of the system. Having the outlet upstream of the wetland allows for additional

treatment of tile water prior to discharge. It also allows for utilization of the existing wetland.

C. DESIGN DATA – OUTLET CONTROL STRUCTURE

In coordination with the Board of Soil and Water Conservation (BWSR) has shown that a dual culverts with a riprap weir meets standard design requirements for these facilities as shown in Exhibit 6.

The lower culvert will be installed to allow the wetland to drain fully in dry periods without changing its status or type. A riprap weir will protect the inlet, prevent clogging, and enable the culvert to be set 1 foot below existing ground for greater head pressure.

The higher culvert is placed such that the wetland can retain a 2-year storm event without overtopping the ditch banks.

A written Flowage Easement and land usage agreement will be required for parcel 22-00730-00 to ensure that the outlet control structure will not negatively impact current land usage. As a part of this easement acquisition we recommend that language be provided such that the Drainage Authority retains the right to repair the outlet. To repair this outlet we recommend language that includes an access route (buffer strip or a direct route from the proposed tile outlet to the outlet control structure), and a maintenance easement that is a 20-foot offset from BWSR project limits (Exhibit 6) to allow for equipment to access and repair the site.

D. TILE SYSTEM DEPTH

Exhibit 1 shows profile views for the proposed tile system. The minimum and maximum depths of cut to the flow line of the pipes are shown on Table 3.

Table 3: Change in Outlet Capacity

Tile Branch	Minimum Depth	Maximum Depth
BR C	5.5’	13.0’

V. ALTERNATE SOLUTIONS

A. “DO NOTHING ALTERNATIVE”

The “Do Nothing” Alternative has been discussed. However, the petitioners have experienced poor drainage throughout the drainage system for many years with the excess surface water damaging crops and resulting in frequent crop stress or crop loss. This loss of production equates to an economic loss for Renville County and the State of Minnesota. The loss results in a reduced property value for the wet acres, thus affecting the taxing capacity of the County and State. In addition, the ability of the landowners to receive a reasonable return on their investment is diminished because of this inadequate drainage.

For these reasons, the “Do Nothing” alternative has been dismissed. The economic question of the cost of the Improvement versus the benefits derived still needs to be evaluated. However, the “Do Nothing” alternative is not viewed as solving the drainage problem in the watershed.

B. REPAIR

Separable Maintenance for this project is estimated at $226,591. A repair would only work as well as was discussed in Section III of this report. Repairing the system to as constructed system would not account for changing rainfall patterns or for additional waters being discharged into the system. Current design standards by Buffalo Creek Watershed District recommends a drainage coefficient of 3/8 inch/day. From Section III the current tile is approximately 54% efficient for a 3/8 inch/day coefficient. Therefore, we do not recommend a repair option when there are willing landowners for an improvement.

C. IMPROVEMENT WITHOUT STORAGE

Alternatively, to discharge onto the existing Riparian Wetland the tile could run underneath the wetland and discharge directly into JD 15 Lat V. The cost to tile through the wetland is approximately $70,000. The tile would either need to be gasketed Reinforced Concrete Pipe or PVC pipe due to the depth requirements. Additional gasket requirements are to prevent root growth through the tile network.

A 24-inch tile running through the wetland would result in a higher discharge rate. It would also result in additional pollutants being discharged into JD 15 Lat V. Therefore, due to the additional discharge and pollutant load we do not recommend this alternative.

D. WASCOB CONSTRUCTION

A standard water quality and storage feature for rural drainage projects is Water and Sediment Control Basin. They can be used to store water in areas that would not normally store water, reducing overall peak flows.

However, for this project they are not currently feasible. Areas within the project boundary that would be adaptable, already store water in excess of 48 hours for the 10-year event. This makes these locations unsuitable for additional storage due to a high risk of crop damages during large rainfall events.

Areas that could be feasible for WASCOB construction are located in the southwest of the watershed. However, additional tile would be required to drain these locations. Additional tile not currently included in the JD 15 Lat V Br C alignment would be outside of the scope of the current petition.

E. WETLAND RESTORATION

Another alternative would be to restore the typically flooded areas of the watershed to wetland use. This alternative would provide storage in the watershed depressional areas for the water that is currently accumulating in these areas and drowning out agricultural crops. The proposal would also have added benefits for wildlife and possibly water quality.

To be effective, this alternative would need to restore sufficient acres to wetland use so that the existing ditch system could convey the excess runoff. Utilizing NRCS data, about 12 acre feet of water cannot be discharged from the JD 15 watershed through the existing drainage systems in a 48-hour period for a 5-year rain event. If sufficient wetland acres were available to store this runoff at a depth of one foot, approximately 12 acres of wetland restoration would be needed to provide sufficient storage capacity for the excess runoff.

To convert the 12 acres to wetlands, at least twice this many acres would need to be acquired for irregular wetland shapes and marginal damp soils. Thus, about 24 acres of land would be needed. This acquisition would likely involve several properties, whose owners would voluntarily need to agree to the reversion. The estimated cost of acquisition plus

reconstructing tile lines for wetland restoration would likely be about $18,000 per acre, resulting in a total cost of about $432,000. Wetland restoration is about 1.7 times the estimated cost for the Improvement.

Wetland restoration remains a viable option for providing some improvement in the functioning of the drainage system. If sufficient acres of wetlands could be restored, particularly in the upper part of the watershed, it could reduce the need for as large of an outlet as is proposed. Finding willing landowners to participate in a restoration project and locating sufficient funding would be critical in order to make this option viable. Copies of this Report will be provided to the SWCD and NRCS so that early coordination can occur for potential funding and technical assistance toward this option.

VI. OTHER CONSIDERATIONS

A. PERMIT REQUIREMENTS

A permit from the Minnesota Pollution Control Agency for stormwater and erosion control for the project would be necessary. This permit requirement, which applies to any construction which disturbs more than one acre of land, requires that the contractor and owner secure a permit for the repair. The permit process will also require erosion control measures to be taken during construction. Typical erosion control measures include placing of riprap and grass stabilization of the ditch bank and inlet protection around installed inlet areas. The fee for this permit is currently $400.00. This permit will be applied for shortly before construction is scheduled so the contractor can sign the permit application.

B. WETLANDS

National Wetland Inventory (NWI) Maps have been reviewed to locate potential wetlands subject to regulations. One wetland is shown on the NWI maps near the Improvement alignment. The wetland is located at the outlet of the Branch C system. If wetlands are identified all piping running directly through must be nonperforated. Along with this all intakes that are within the wetland can be reinstalled at the same nominal size.

Impacts of the potential drainage system on individual land parcels will be evaluated by the Natural Resources Conservation Service upon filing of a Form AD 1026 by landowners. This NRCS process will identify any wetlands and measures which need to be taken in order for the drainage project to avoid impact to these wetlands. Because of federal data privacy requirements, it is not possible for non-landowners to obtain this information. Thus, the obligation for filling out these forms and doing this investigation will rest with individual landowners.

Drainage of non-directly impacted wetlands will be controlled by supplemental drainage systems installed by private owners. Owners are advised that such supplemental drainage may not be permitted under State Wetland Conservation Act, US Army Corps of Engineers and NRCS rules and may affect US Department of Agriculture program eligibility.

C. PUBLIC AND PRIVATE BENEFITS AND COSTS

The estimated cost of the proposed Improvement to JD 15 Lat V Br C is shown in Exhibit 3 of this report. Benefits for the Improvement, both public and private, will be established by the viewers and a report will be available at the final hearing.

Landowners certainly have other costs associated with construction and maintenance of

their individual drainage systems. The proposed Improvement would only serve as an outlet or collector of runoff and drainage flow from the lands within the watershed. Each landowner is responsible to construct and maintain their own drainage system in order to adequately drain their farmlands. Individual benefits for an adequate drainage system are in increased crop production from farmlands.

The estimated cost of the proposed Improvement is included in this report. The public and private benefits and damages will be available at the final hearing.

D. AGRICULTURAL EFFECTS

Once installed, the lands within the improved watershed will be largely dependent on this drainage system for both surface and subsurface drainage flows. Thus it is imperative that the proposed system have adequate capacity in order to allow for modern farming operations.

It should be noted that many of the established ditch systems in Minnesota are now 70 to 100 years old. These systems are approaching the need for complete repair or replacement if the farmland is to remain productive. When feasible, it is economically imperative that these drainage systems be improved to become compatible with present day farming techniques and they be continually maintained. If properly maintained during normal growing seasons, portions of the agricultural lands in the watershed are some of the most productive in the State of Minnesota.

E. ALTERNATIVE MEASURES

Alternative measures, including those identified in the Renville County Water Management Plan and the strategies in the Buffalo Creek Watershed District Water Management Plan, have been considered in conjunction with this project. Specific proposals as part of the project to incorporate these measures include:

1. Measures to conserve, allocate and use drainage waters include the use of non-perforated tiles for the deeper installations so that groundwater is preserved for crop use and the continued infiltration which will occur in depressional areas of the watershed.

2. Measures to reduce downstream peak flows and flooding include the use of hickenbottom risers on intakes which limit the flow capacity of tile intakes, limiting the capacity of the proposed tiles to the minimum recommended standard of the Buffalo Creek Watershed District to limit downstream flows, and construction of the proposed water and sediment control basin.

3. Measures to provide adequate drainage system capacity are being accomplished by designing the size of the tile system to meet the recommended standards of the Buffalo Creek Watershed District.

4. Measures to reduce erosion and sedimentation include the use of hickenbottom risers on the tile intakes which result in reduced discharge of suspended solids, the restoration of the tile trench as soon as possible so that surface erosion of the disturbed soil is reduced, the use of inlet protection during the construction so that the discharge of suspended solids is reduced and the use of a rock filter at the outlet during construction so that suspended solids are captured. Straw mulch will also be utilized to temporarily stabilize the disturbed areas until they can be turned back over

to agricultural production.

F. FISH AND WILDLIFE

The threatened or endangered species having the potential to be in Renville County at the time of this report are the northern long-eared bat, and the prairie bush clover. According to the Minnesota DNR, there are no known northern long-eared bat roost trees or hibernacula in Renville County. Additionally, there are no trees to be removed as a part of the improvement, so there is no anticipated impact to the northern long-eared bat. The prairie bush clover is found within native prairie on well drained soils. The project will take place within agricultural fields, so no impact to the prairie bush clover is anticipated. Bald eagles are present in Renville County, and are protected under the Bald and Golden Eagle Protection Act. Again, there are no trees to be removed as a part of the improvement, so likely impact of bald eagles is low. Roosting behavior will be analyzed near the proposed outlet where there is a patch of trees.

Field investigation has revealed that the only permanent wildlife habitat in the area of the Improvement is along the road ditches and building sites. These areas will not be impacted by the improvement.

Current wet areas within the project watershed do provide for transitory stop over locations for migratory waterfowl. However, these areas currently dry up following wet periods and are then under cultivation and production. It is anticipated that some of these temporary ponding areas will still exist after the construction of the Improvement although ponding times will likely be reduced. Therefore, the provisions for adequate drainage of these lands will not be of a detrimental nature to local wildlife resources.

G. GROUNDWATER

The purpose of an agricultural drainage system is to maintain the elevation of the shallow groundwater table sufficiently below the surface to provide for efficient production of crops. The level at which the groundwater will be maintained has been and will be determined by the depth of the tile system and private tiles in the area. Although the proposed Improvement is somewhat deeper than the existing tiles in the areas, the depth increase is not significant or unusual for drainage systems. Additionally, tiles that have a depth of 6 feet or greater to the invert of the pipe will be non-perforated. Therefore, no change in the availability, distribution or use of the shallow groundwater beyond that necessary for the sufficient production of crops within the watershed is anticipated by this construction.

H. ENVIRONMENTAL IMPACT

The adverse effects of the proposed Improvement are of a temporary nature and are listed as follows:

1. Disturbing the ground surface during construction could result in the loss of one crop within the construction limits.
2. The restored trench area will be less productive for the first few years following construction and will require more fertilizer to be as productive as the undisturbed adjoining farmland. The topsoil in this area will be removed and replaced in an effort to maintain the soil productivity.
3. Temporary noise and dust generation can be expected from the construction

operations. These impacts are not viewed as significant since there are few residences near the proposed construction route.

4. Temporary erosion of soil may occur in the construction area until permanent ground cover and ground stabilization occurs. Although these effects need to be considered, they are probably not significantly different than the current topsoil loss that occurs annually from erosion of topsoil due to overland flow in the watershed. This construction erosion will be minimized using inlet protection, riprap and rapid establishment of permanent grass cover.

Numerous beneficial effects are anticipated from the proposed Improvement. Most of these benefits are directly attributable to increased crop production from lands presently damaged through period flooding and ponding. Among the most obvious benefits are:

1. Increased personal farm income.
2. Increased value of benefited farmland.
3. Contribution to the local economy through additional purchases, farm modernization and expansion.

I. LAND USE

The present use of the land in the JD 15 Lateral V Branch C watershed is largely agricultural. It is expected that the land will continue to be used for agricultural purposes in the future.

J. GUIDANCE TO VIEWERS REGARDING IMPROVEMENT BENEFITS

Discussions with the landowners in the JD 15 Lat V Br C system has provided evidence of the condition of the existing tile systems. Previous repairs on the tile have shown that the existing tile is badly deteriorated. In addition, years of use and settlement of sections of the tile have reduced the hydraulic capacity of the tile. Even if JD 15 Lat V Br C had not been petitioned for improvement, a repair is warranted.

Another way to describe this is related to the benefit of avoiding inevitable repair/reconstruction costs on the ditch. Since repair of the system, as required by Minnesota Statue 103E.705, would otherwise be paid for by the entire drainage system in order to restore the system to its as-constructed, and subsequently improved, hydraulic efficiency, the cost of repair may be used to offset a portion of the improvement cost. Thus, the cost of the new tiles may be added as benefit since it avoids costs otherwise required to repair the system. With this information, it is the intent of the Improvement to replace the existing tile. Thus, a portion of the cost of the new JD 15 Lat V Br C tiles should be allocated as a Repair cost. The application of this principal is known as Separable Benefits under the ditch statutes.

The amount of the Improvement which can be allocated to Separable Benefits is shown in Exhibit 3 as $226,591. It is recommended that the Board apply these Separable Benefits to the Improvement in the further ditch proceedings.

VII. ADEQUACY OF THE OUTLET

A. GENERAL INFORMATION

As mentioned earlier, the outlet for Branch LAT V BR C is into the open ditch of JD 15 in Section 25 of Preston Lake Township. The Main open ditch of JD 15 then becomes Buffalo Creek as it enters McLeod County.

B. ADEQUACY OF THE OUTLET

The change in discharge at the outlet was calculated using a HydroCAD model of the watershed. HydroCAD is a computer modeling software that computes runoff storm hydrograph using methodology developed by the NRCS. Peak flows computed in HydroCAD are typically higher than those from other models.

Tailwater conditions we calculated using a combination of Stream Stats with Mannings Equations and interpolating the results of Bridge 43538 Hydraulic Report. Bridge 43538 is located over Judicial Ditch 15 at the border of Renville and McLeod counties. Tailwater conditions are shown in the table below.

Table 4: Tailwater Elevation

Storm Event	Existing Tailwater (ft)
2-year	1036.00
5-year	1037.40
10-year	1038.40
25-year	1039.40
50-year	1040.30
100-year	1041.20

The change in outlet capacity can be seen below.

Table 5: Change in Outlet Capacity

Storm Event	Existing Discharge Rate (cfs)	Proposed Discharge Rate w/o OCS (cfs)	Proposed Discharge Rate with OCS (cfs)
2-year	4	9	1
5-year	4	9	9
10-year	4	10	10
25-year	6	12	10
50-year	16	18	10
100-year	50	52	52

As can be seen from the table above constructing an Outlet Control Structure (OCS) reduces peak flows at the outlet when compared to an improvement with a straight pipe to the ditch. The existing condition has a lower discharge rate for the 2-year through the 25-year events when compared to the proposed condition with the Outlet Control Structure. However, it is our opinion that these increases are minor when looking at the JD 15 system, as a whole. They also do not represent the quality of water being discharged into JD 15 Lat V. Therefore, it is our opinion that the outlet is adequate.

When comparing the alternative option (without an outlet control structure) the change in outlet capacity is less than 5 cubic feet per second for all events. An important note is that

for the 5-year through 100-year storm events the downstream waters control the system (tailwater is higher than headwater). Therefore, it is our opinion that with waters backing up onto the system during the larger events that the outlet is adequate.

VIII. ESTIMATE OF COST

The Improvement cost estimate to construct the proposed Improvement, as described in this report, is shown in Exhibit 2. The total estimated cost for the Improvement is $249,206 that price includes the cost of administration and engineering fees.

Included in the estimate are the approximate 5.96 acres of agricultural land which will be temporarily taken out of production by construction. The individual landowners will be compensated for this loss through the damage process of further ditch proceedings.

IX. RECOMMENDATIONS

The proposed Improvement of JD 15 in Renville County, as described in this report, is feasible, practical and necessary to provide drainage for the cultivation of crops within the watershed area. The existing tile system is in need of an Improvement to provide proper drainage for current agricultural practices.

It is our recommendation to proceed with the Improvement as outlined in this report and that the Engineer's Final Engineer's Report be approved. If there are adequate funds, we recommend the Drainage Authority order the Improvement.

Exhibit 1: Preliminary Plans and Profiles

PRELIMINARY CONSTRUCTION PLANS FOR

JUDICIAL DITCH No. 15, LATERAL V BRANCH "C" IMPROVEMENTS

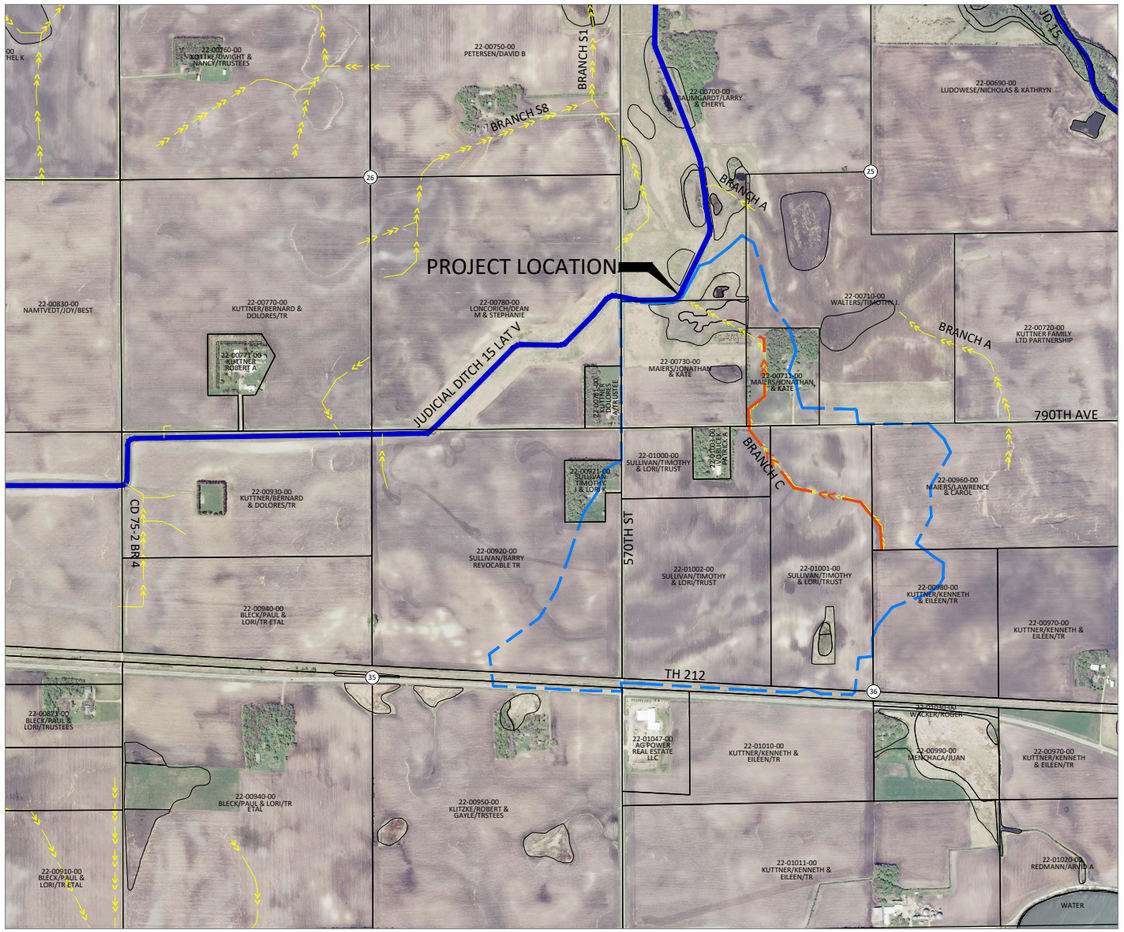
BUFFALO CREEK WATERSHED DISTRICT

RENVILLE COUNTY, MINNESOTA

TILE AND TILE INTAKE IMPROVEMENTS

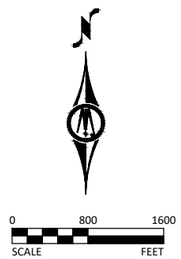
OCTOBER, 2025

PRESTON LAKE TOWNSHIP - T114N, R31W



SHEET NUMBER	SHEET TITLE
GENERAL	
G0.01 - G0.02	TITLE SHEET, LEGEND, GENERAL NOTES
CIVIL	
C1.01 - C1.02	DETAILS AND TYPICAL SECTIONS
C2.01 - C2.04	EROSION CONTROL PLAN, SWPPP
C5.01 - C5.02	JD 15 LATERAL BR C PLAN & PROFILE

THIS PLAN SET CONTAINS 10 SHEETS.



NOTE: EXISTING UTILITY INFORMATION SHOWN ON THIS PLAN HAS BEEN PROVIDED BY THE UTILITY OWNER. THE CONTRACTOR SHALL FIELD VERIFY EXACT LOCATIONS PRIOR TO COMMENCING CONSTRUCTION AS REQUIRED BY STATE LAW. NOTIFY GOPHER STATE ONE CALL, 1-800-252-1166 OR 651-454-0002.

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D UNLESS OTHERWISE NOTED. THIS UTILITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-22, ENTITLED "STANDARD GUIDELINE FOR INVESTIGATING AND DOCUMENTING EXISTING UTILITIES".

LEGEND

- WATERSHED BOUNDARY
- OPEN DITCH
- NWI WETLAND
- EXISTING TILE
- PROPOSED TILE 10" / 24"

BM=1067.51
ALUM ALLOY ROD
RODEL GSID STATION #103537
2.05 MILES ALONG T.H. 212
FROM THE JUNCTION OF T.H. 212
& CO RD 7 IN STEWART

PROJECT DATUM: RENVILLE CO COORDINATES
HORIZONTAL: RENVILLE CO - NAD83 (2011)
VERTICAL: NAVD88

RECORD DRAWING INFORMATION
OBSERVER:
CONTRACTOR:
DATE:

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.

PRELIMINARY NOT FOR CONSTRUCTION

SHAWN J. LUKES
LIC. NO. 48756 DATE MM/DD/YYYY

BOLTON & MENK

1243 CEDAR STREET NE
SLEEPY EYE, MN 56085
Phone: (507) 810-4184
Email: SleepyEye@bolton-menk.com
www.bolton-menk.com

DESIGNED	NO.	ISSUED FOR	DATE
JGB			
DRAWN			
CV			
CHECKED			
SPL			
CLIENT PROJ. NO.			
24X.136322.000			

BUFFALO CREEK WATERSHED DISTRICT

JUDICIAL DITCH NO. 15 LATERAL V BRANCH C IMPROVEMENT

TITLE SHEET

SHEET G0.01

EXISTING TOPOGRAPHIC SYMBOLS

- ACCESS GRATE
- AIR CONDITION UNIT
- ANTENNA
- AUTO SPRINKLER CONNECTION
- BARRICADE PERMANENT
- BASKETBALL POST
- BENCH
- BIRD FEEDER
- BOLLARD
- BUSH
- CATCH BASIN RECTANGULAR CASTING
- CATCH BASIN CIRCULAR CASTING
- CURB STOP
- CLEAN OUT
- CULVERT END
- DRINKING FOUNTAIN
- DOWN SPOUT
- ELECTRIC CAR CHARGE STATION
- FILL PIPE
- FIRE HYDRANT
- FLAG POLE
- FLARED END / APRON
- FUEL PUMP
- GRILL
- GUY WIRE ANCHOR
- HANDHOLE
- HANDICAP SPACE
- IRRIGATION SPRINKLER HEAD
- IRRIGATION VALVE BOX
- LIFT STATION CONTROL PANEL
- LIFT STATION
- LIGHT POLE
- MAILBOX
- MANHOLE-COMMUNICATION
- MANHOLE-ELECTRIC
- MANHOLE-GAS
- MANHOLE-HEAT
- MANHOLE-RECLAIMED WATER
- MANHOLE-SANITARY SEWER
- MANHOLE-STORM SEWER
- MANHOLE-UTILITY
- MANHOLE-WATER
- METER
- DRIVE-THRU MICROPHONE
- PARKING METER
- PAVEMENT MARKING
- PEDESTAL-COMMUNICATION
- PEDESTAL-ELECTRIC
- PEDESTRIAN PUSH BUTTON
- PICNIC TABLE
- POLE-UTILITY
- POST
- RAILROAD SIGNAL POLE
- REGULATION STATION GAS
- SATELLITE DISH
- SIGN TRAFFIC
- SIGNAL CONTROL CABINET
- SOIL BORING
- SIREN
- TELEPHONE BOOTH
- TILE INLET
- TILE OUTLET
- TILE RISER
- TRANSFORMER-ELECTRIC
- TREE-CONIFEROUS
- TREE-DEAD
- TREE-DECIDUOUS
- TREE STUMP
- TRAFFIC ARM BARRIER
- TRAFFIC SIGNAL
- TRASH CAN
- UTILITY MARKER
- VALVE
- VALVE POST INDICATOR
- VALVE VAULT
- VAULT
- VENT PIPE
- WATER SPIGOT
- WELL
- WETLAND DELINEATED MARKER
- WETLAND
- WET WELL
- YARD HYDRANT

PROPOSED TOPOGRAPHIC SYMBOLS

- CLEANOUT
- MANHOLE
- LIFT STATION
- STORM SEWER CIRCULAR CASTING
- STORM SEWER RECTANGULAR CASTING
- STORM SEWER FLARED END / APRON
- STORM SEWER OUTLET STRUCTURE
- STORM SEWER OVERFLOW STRUCTURE
- CURB BOX
- FIRE HYDRANT
- WATER VALVE
- WATER REDUCER
- WATER BEND
- WATER TEE
- WATER CROSS
- WATER SLEEVE
- WATER CAP / PLUG
- RIP RAP
- DRAINAGE FLOW
- TRAFFIC SIGNS

SURVEY SYMBOLS

- BENCHMARK LOCATION
- CONTROL POINT
- MONUMENT FOUND
- CAST IRON MONUMENT
- STONE MONUMENT

EXISTING TOPOGRAPHIC LINES

- RETAINING WALL
- FENCE
- FENCE-DECORATIVE
- GUARD RAIL
- TREE LINE
- BUSH LINE

SURVEY LINES

- CONTROLLED ACCESS
- BOUNDARY
- CENTERLINE
- EXISTING EASEMENT LINE
- PROPOSED EASEMENT LINE
- EXISTING LOT LINE
- PROPOSED LOT LINE
- EXISTING RIGHT-OF-WAY
- PROPOSED RIGHT-OF-WAY
- SETBACK LINE
- SECTION LINE
- QUARTER LINE
- SIXTEENTH LINE
- TEMPORARY EASEMENT

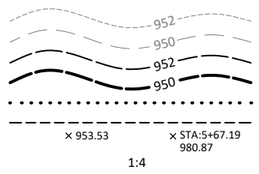
EXISTING UTILITY LINES

- FORCEMAIN
- SANITARY SEWER
- SANITARY SERVICE
- STORM SEWER
- STORM SEWER DRAIN TILE
- WATERMAIN
- WATER SERVICE
- RECLAIMED WATER

PROPOSED UTILITY LINES

- FORCEMAIN
- SANITARY SEWER
- SANITARY SERVICE
- STORM SEWER
- STORM SEWER DRAIN TILE
- WATERMAIN
- WATER SERVICE
- PIPE CASING
- TRENCHLESS PIPE (PLAN VIEW)
- TRENCHLESS PIPE (PROFILE VIEW)

GRADING INFORMATION



- EXISTING CONTOUR MINOR
- EXISTING CONTOUR MAJOR
- PROPOSED CONTOUR MINOR
- PROPOSED CONTOUR MAJOR
- PROPOSED GRADING LIMITS / SLOPE LIMITS
- PROJECT LIMITS
- PROPOSED SPOT ELEVATION
- RISE:RUN (SLOPE)

HATCH PATTERNS

- BITUMINOUS
- GRAVEL
- CONCRETE

EXISTING PRIVATE UTILITY LINES

NOTE:
EXISTING UTILITY INFORMATION SHOWN ON THIS PLAN HAS BEEN PROVIDED BY THE UTILITY OWNER. THE CONTRACTOR SHALL FIELD VERIFY EXACT LOCATIONS PRIOR TO COMMENCING CONSTRUCTION AS REQUIRED BY STATE LAW. NOTIFY GOPHER STATE ONE CALL, 1-800-252-1166 OR 651-454-0002.

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D UNLESS OTHERWISE NOTED. THIS UTILITY LEVEL WAS DETERMINED ACCORDING TO THE GUIDELINES OF CI/ASCE 38-22, ENTITLED "STANDARD GUIDELINE FOR INVESTIGATING AND DOCUMENTING EXISTING UTILITIES".

- UNDERGROUND FIBER OPTIC
- UNDERGROUND ELECTRIC
- UNDERGROUND GAS
- UNDERGROUND COMMUNICATION
- OVERHEAD ELECTRIC
- OVERHEAD COMMUNICATION
- OVERHEAD UTILITY

UTILITIES IDENTIFIED WITH A QUALITY LEVEL :

LINE TYPES FOLLOW THE FORMAT: UTILITY TYPE - QUALITY LEVEL
EXAMPLE: G-A G-A UNDERGROUND GAS, QUALITY LEVEL A
UTILITY QUALITY LEVEL (A,B,C,D) DEFINITIONS CAN BE FOUND IN CI/ASCE 38-22.

UTILITY QUALITY LEVELS:

QUALITY LEVEL D: PROVIDES THE MOST BASIC LEVEL OF INFORMATION. IT INVOLVES COLLECTING DATA FROM EXISTING UTILITY RECORDS. RECORDS MAY INCLUDE AS-BUILT DRAWINGS, DISTRIBUTION AND SERVICES MAPS, EXISTING GEOGRAPHIC INFORMATION SYSTEM DATABASES, CONSTRUCTION PLANS, ETC.

QUALITY LEVEL C: INVOLVES SURVEYING VISIBLE SUBSURFACE UTILITY STRUCTURES SUCH AS MANHOLES, HAND-HOLES, UTILITY VALVES AND METERS, FIRE HYDRANTS, PEDESTALS AND UTILITY MARKERS, AND THEN CORRELATING THE INFORMATION WITH EXISTING UTILITY RECORDS TO CREATE COMPOSITE DRAWINGS. INCLUDES QUALITY LEVEL D ACTIVITIES.

QUALITY LEVEL B: INVOLVES DESIGNATING THE HORIZONTAL POSITION OF SUBSURFACE UTILITIES THROUGH SURFACE DETECTION METHODS AND COLLECTING THE INFORMATION THROUGH A SURVEY METHOD. INCLUDES QUALITY LEVEL C AND D TASKS.

QUALITY LEVEL A: PROVIDES THE HIGHEST LEVEL OF ACCURACY. IT INVOLVES LOCATING OR POTHOLING UTILITIES AS WELL AS ACTIVITIES IN QUALITY LEVELS B, C, AND D. THE LOCATED FACILITY INFORMATION IS SURVEYED AND MAPPED AND THE DATA PROVIDES PRECISE PLAN AND PROFILE INFORMATION.

ABBREVIATIONS

A	ALGEBRAIC DIFFERENCE	GRAV	GRAVEL	RSC	RIGID STEEL CONDUIT
ADJ	ADJUST	GU	GUTTER	RT	RIGHT
ALT	ALTERNATE	GV	GATE VALVE	SAN	SANITARY SEWER
B-B	BACK TO BACK	HDPE	HIGH DENSITY POLYETHYLENE	SCH	SCHEDULE
BIT	BITUMINOUS	HH	HANDHOLE	SERV	SERVICE
BLDG	BUILDING	HP	HIGH POINT	SHLD	SHOULDER
BMP	BEST MANAGEMENT PRACTICE	HWL	HIGH WATER LEVEL	STA	STATION
BR	BEGIN RADIUS	HYD	HYDRANT	STD	STANDARD
BV	BUTTERFLY VALVE	I	INVERT	STM	STORM SEWER
CB	CATCH BASIN	K	CURVE COEFFICIENT	TC	TOP OF CURB
C&G	CURB AND GUTTER	L	LENGTH	TE	TEMPORARY EASEMENT
CIP	CAST IRON PIPE	LO	LOWEST OPENING	TEMP	TEMPORARY
CIPP	CURED-IN-PLACE PIPE	LP	LOW POINT	TNH	TOP NUT HYDRANT
CL	CENTER LINE	LT	LEFT	TP	TOP OF PIPE
CL.	CLASS	MAX	MAXIMUM	TYP	TYPICAL
CLVT	CULVERT	MH	MANHOLE	VCP	VITRIFIED CLAY PIPE
CMP	CORRUGATED METAL PIPE	MIN	MINIMUM	VERT	VERTICAL
C.O.	CHANGE ORDER	MR	MID RADIUS	VPC	VERTICAL POINT OF CURVE
COMM	COMMUNICATION	NIC	NOT IN CONTRACT	VPI	VERTICAL POINT OF INTERSECTION
CON	CONCRETE	NMC	NON-METALLIC CONDUIT	VPT	VERTICAL POINT OF TANGENT
CSP	CORRUGATED STEEL PIPE	NTS	NOT TO SCALE	WM	WATERMAIN
DIA	DIAMETER	NWL	NORMAL WATER LEVEL		
DIP	DUCTILE IRON PIPE	OHW	ORDINARY HIGH WATER LEVEL		
DWY	DRIVEWAY	PC	POINT OF CURVE	AC	ACRES
E	EXTERNAL CURVE DISTANCE	PCC	POINT OF COMPOUND CURVE	CF	CUBIC FEET
ELEC	ELECTRIC	PE	PERMANENT EASEMENT	CV	COMPACTED VOLUME
ELEV	ELEVATION	PED	PEDESTRIAN, PEDESTAL	CY	CUBIC YARD
EOF	EMERGENCY OVERFLOW	PERF	PERFORATED PIPE	EA	EACH
ER	END RADIUS	PERM	PERMANENT	EV	EXCAVATED VOLUME
ESMT	EASEMENT	PI	POINT OF INTERSECTION	LB	POUND
EX	EXISTING	PL	PROPERTY LINE	LF	LINEAR FEET
FES	FLARED END SECTION	PRC	POINT OF REVERSE CURVE	LS	LUMP SUM
F-F	FACE TO FACE	PT	POINT OF TANGENT	LV	LOOSE VOLUME
FF	FINISHED FLOOR	PVC	POLYVINYL CHLORIDE PIPE	SF	SQUARE FEET
F&I	FURNISH AND INSTALL	PVMT	PAVEMENT	SV	STOCKPILE VOLUME
FM	FORCEMAIN	R	RADIUS	SY	SQUARE YARD
FO	FIBER OPTIC	R/W	RIGHT-OF-WAY		
F.O.	FIELD ORDER	RCP	REINFORCED CONCRETE PIPE		
GRAN	GRANULAR	RET	RETAINING		

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PRELIMINARY NOT FOR CONSTRUCTION

SHARON L. LUKER
LIC. NO. 48756 DATE MM/DD/YYYY

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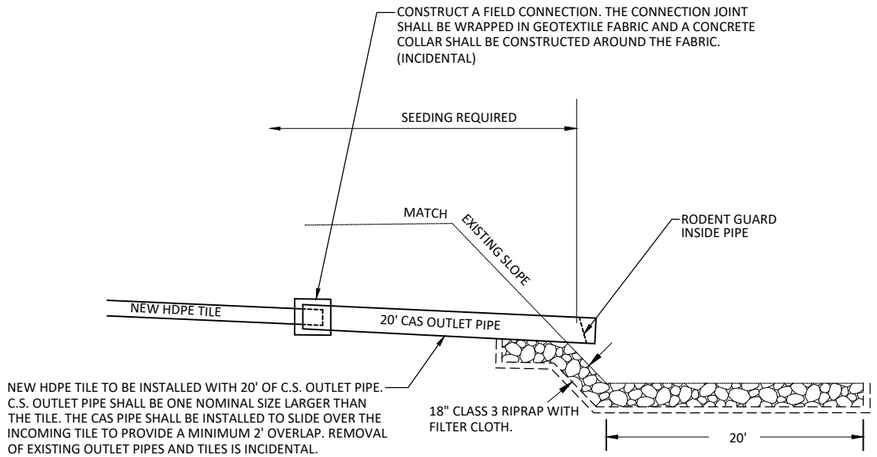
DESIGNED	NO.	ISSUED FOR	DATE
JGB			
DRAWN			
CV			
CHECKED			
SPL			
CLIENT PROJ. NO.			
24X.136322.000			

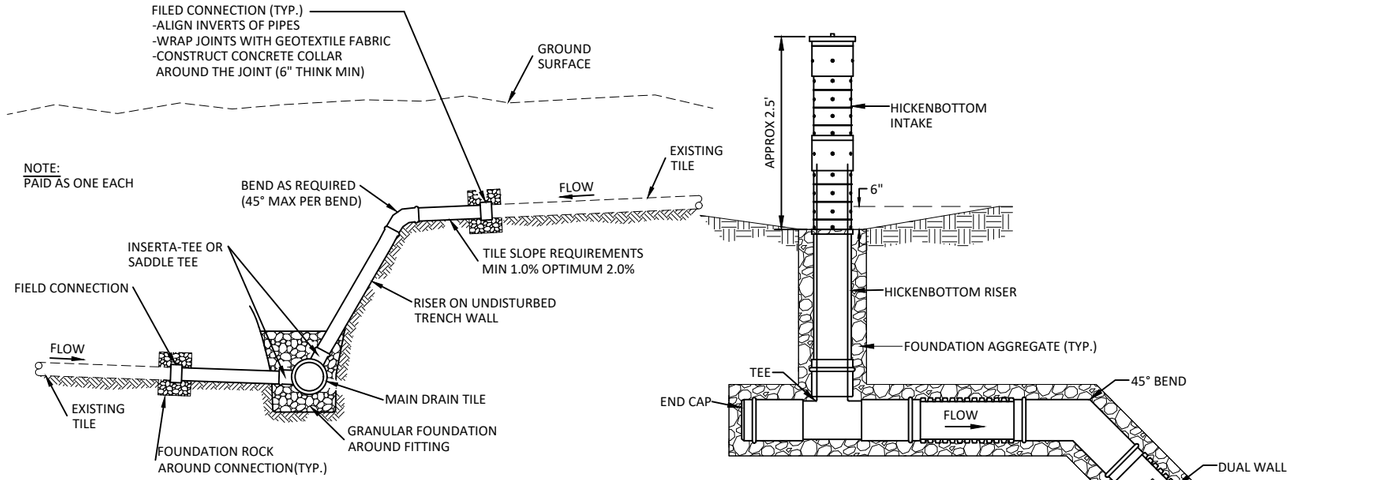
BUFFALO CREEK WATERSHED DISTRICT
JUDICIAL DITCH NO. 15 LATERAL V BRANCH C IMPROVEMENT
LEGEND

SHEET
G0.02



TYPICAL SECTION AT OPEN DITCH FOR HDPE TILE

NOT TO SCALE

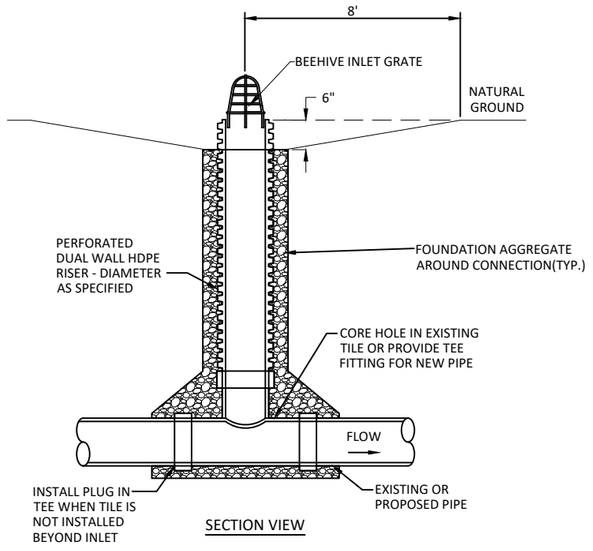


DRAIN TILE CONNECTION

NOT TO SCALE

HICKENBOTTOM INTAKE - IN ROADSIDE DITCHES

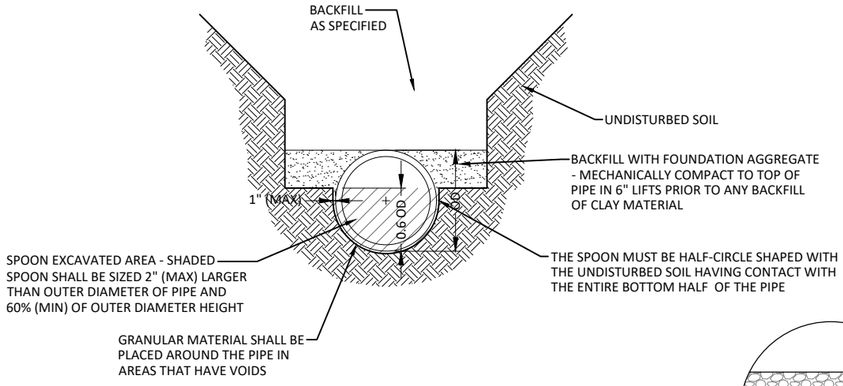
NOT TO SCALE



SECTION VIEW

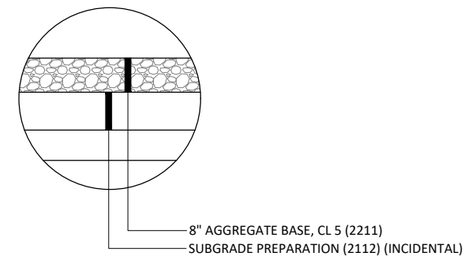
FIELD INTAKE - IN FIELDS

NOT TO SCALE



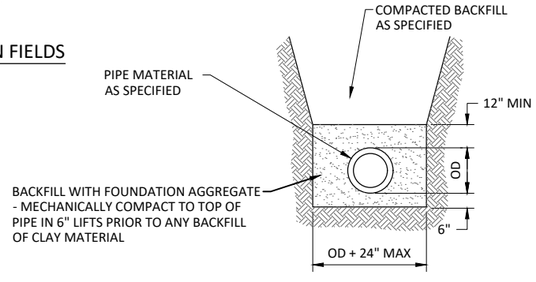
HDPE "SPOON" TRENCH BEDDING DETAIL

NOT TO SCALE



TOWNSHIP ROAD RESTORATION

NOT TO SCALE



HDPE RECTANGULAR TRENCH BEDDING DETAIL

NOT TO SCALE

GRANULAR MATERIAL DEPTH TO INVERT TABLE (ASTM F2648)	
TILE SIZE (IN)	MAX PIPE DEPTH (FT)
4	21
6	21
8	21
10	21
12	21
15	21
18	21
24	19
30	19
36	18
42	18
48	18
60	17

NOTE: THIS TABLE IS FOR REFERENCE PURPOSES ONLY. ACTUAL MAXIMUM AND MINIMUM DEPTHS SHALL BE DETERMINED IN CONJUNCTION WITH MANUFACTURER AND TESTING AGENCIES.

NOT TO SCALE

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PRELIMINARY NOT FOR CONSTRUCTION

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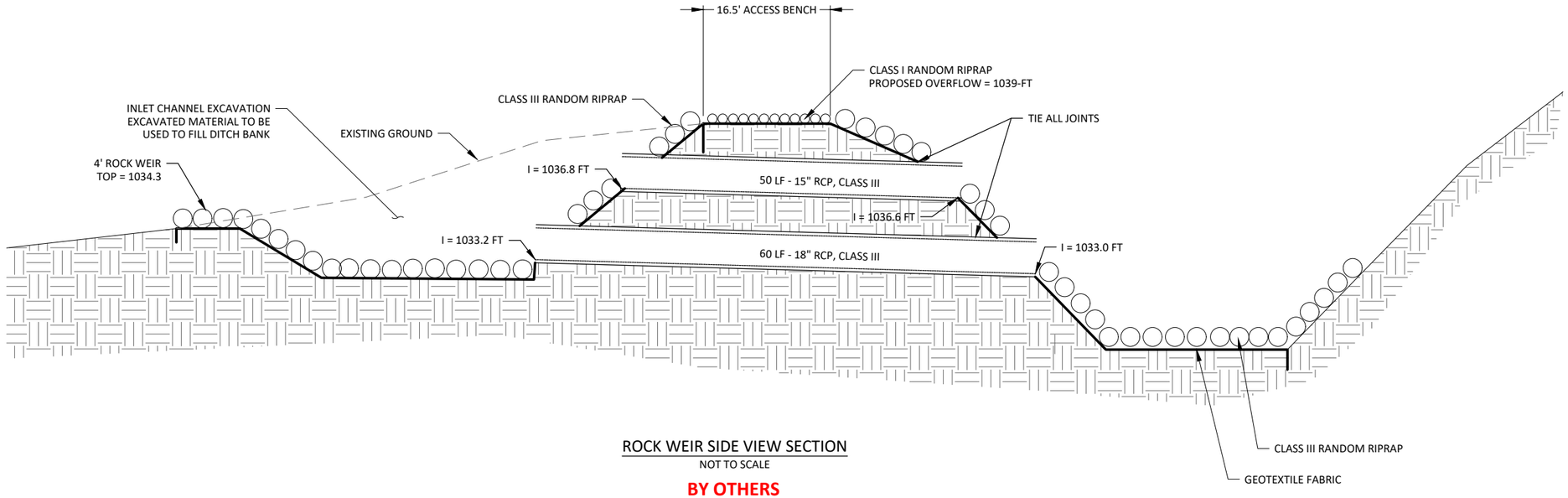
SPL			
CLIENT PROJ. NO.			
24X.136322.000			

BUFFALO CREEK WATERSHED DISTRICT

JUDICIAL DITCH NO. 15 LATERAL V BRANCH C IMPROVEMENT

DETAILS AND TYPICAL SECTIONS

SHEET C1.01



ROCK WEIR SIDE VIEW SECTION

NOT TO SCALE

BY OTHERS

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.

SHARYL LUKE

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CHECKED	SPL
CLIENT PROJ. NO.	24X.136322.000

NO.	ISSUED FOR	DATE

BUFFALO CREEK WATERSHED DISTRICT

JUDICIAL DITCH NO. 15 LATERAL V BRANCH C IMPROVEMENT

DETAILS AND TYPICAL SECTIONS

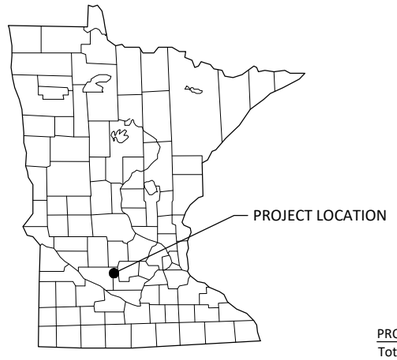
OUTLET CONTROL STRUCTURE

SHEET C1.02

STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

CD 15 LATERAL V BR C IMP - 2025

BUFFALO CREEK WATER DISTRICT
RENVILLE COUNTY, MINNESOTA



LEGEND

- 1-MILE BOUNDARY
- PROJECT BOUNDARY
- OR — IMPAIRED, SPECIAL OR PROTECTED WATERS
- NATIONAL WETLANDS INVENTORY
- CALCAREOUS FEN
- RECEIVING WATERS

RESPONSIBLE PARTIES:
The Contractor and Owner will be joint applicants under the MPCA's General Stormwater Permit for Construction Activity as required by the National Pollutant Discharge Elimination System (NPDES) Phase II program.

The Contractor shall provide one or more trained Construction SWPPP Manager(s) knowledgeable and experienced in the application of erosion prevention and sediment control BMPs that will oversee the implementation of the SWPPP, and the installation, inspection and maintenance of the erosion prevention and sediment control BMPs.

A Construction SWPPP Manager must be available for an on-site inspection within 72 hours upon request by the MPCA.

	COMPANY	CONTACT PERSON	PHONE
OWNER:	Buffalo Creek Watershed District	LARRY PHILIPS	320-510-0504
SWPPP DESIGNER:	Bolton & Menk, Inc.	JORDAN BENGTSON	507-810-4184
CONTRACTOR:	TBD	TBD	TBD
CONSTRUCTION SWPPP MANAGER:	TBD	TBD	TBD
PARTY RESPONSIBLE FOR LONG TERM O&M:	Buffalo Creek Watershed District	LARRY PHILIPS	320-510-0504

The SWPPP Designer, Construction SWPPP Manager, and BMP Installer must have appropriate training. Documentation showing training commensurate with the job duties and responsibilities is required to be included in the SWPPP prior to any work beginning on the site. Training documentation for the SWPPP Designer is included on the Narrative sheet. The Contractor shall attach training documentation to this SWPPP for the Construction SWPPP Manager and BMP Installer prior to the start of construction. This information shall be kept up to date until the project NOT is filed.

ADDITIONAL COMPENSATION
Payment for all work associated with Erosion and Sediment Control shall be as described in the Project Manual. Unless otherwise authorized by the Owner no additional payment shall be made for any work required to administer and maintain the site erosion and sediment control in compliance with the Minnesota Pollution Control Agency (MPCA) - General Stormwater Permit for Construction Activity (MN R100001) including but not limited to inspection, maintenance, and removal of BMPs or addition of BMPs to accommodate Contractor phasing.

DOCUMENT RETENTION
Permittees must make the SWPPP, including all inspection reports, maintenance records, training records and other information required by this permit, available to federal, state, and local officials within three (3) days upon request for the duration of the permit and for three (3) years following the NOT.

GENERAL STORMWATER DISCHARGE REQUIREMENTS
All requirements listed in Section 5.1 of the Permit for the design of the permanent stormwater management system and discharge have been included in the preparation of this SWPPP. These include but are not limited to:

1. The expected amount, frequency, intensity, and duration of precipitation.
2. The nature of stormwater runoff and run-on at the site
3. Peak flow rates and stormwater volumes to minimize erosion at outlets and downstream channel and stream bank erosion.
4. The range of soil particle sizes expected to be present on the site.

Permanent stormwater treatment systems for this project have been designed in accordance with the guidance in the MN Stormwater Manual in place at the time of bidding. Copies of the design information and calculations are part of this SWPPP and will be provided in digital format upon written request to the Engineer.

PROJECT AREAS:

Total Project Size (disturbed area) =	6.9	ACRES
Existing area of impervious surface =	0.05	ACRES
Post construction area of impervious surface =	0.05	ACRES
Total new impervious surface area created =	0.0	ACRES
Planned Construction Start Date:	TBD	
Estimated Construction Completion Date:	TBD	

PERMANENT STORMWATER MANAGEMENT SYSTEM:
Type of storm water management used if more than 1 acre of new impervious surface is created:

	Wet Sedimentation Basin
	Infiltration/Filtration
	Regional Pond
X	Permanent Stormwater Management Not Required
X	Wetland

PROJECT LOCATION:

COUNTY	TOWNSHIP	RANGE	SECTION	LATITUDE	LONGITUDE
RENVILLE	T115N	R31W	25, 36	44.73522°	-94.51606°

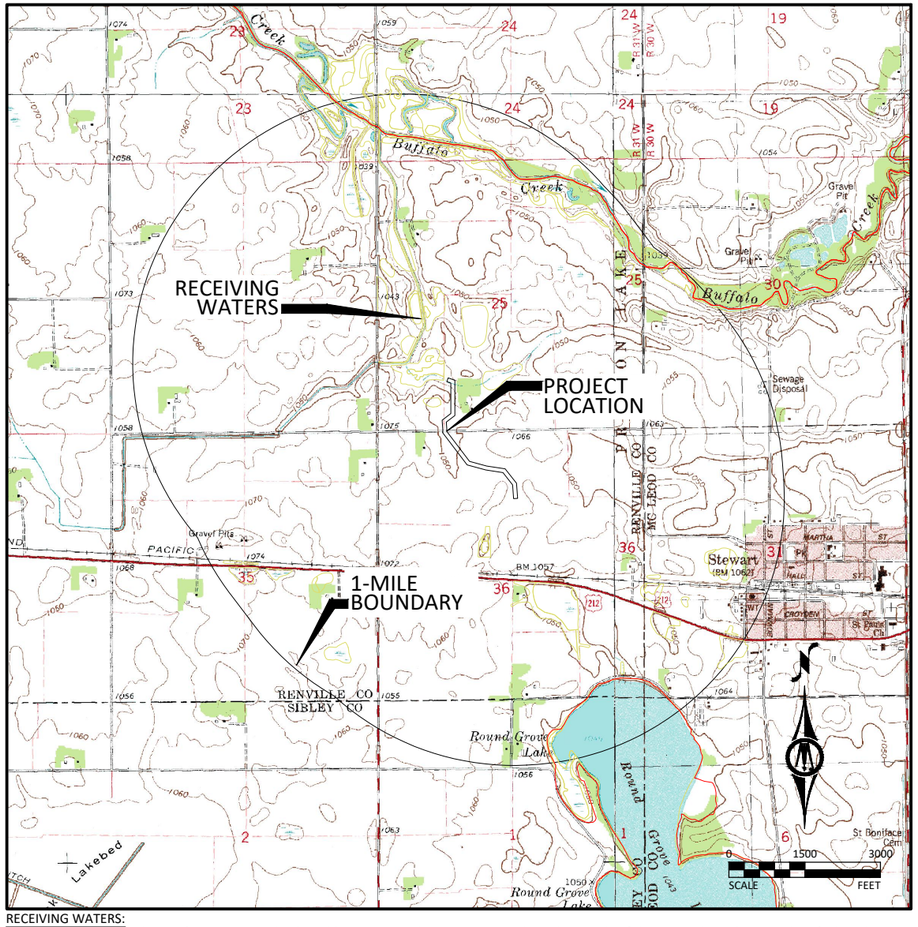
BMP SUMMARY	QUANTITY	UNIT
RAPID STABILIZATION, METHOD 4	380	SQ YD
TYPE 1 MULCH	12	TON
INLET PROTECTION	12	EA
RIPRAP, CLASS III	29	TON
STABILIZED CONSTRUCTION EXIT	1	EA

DESCRIPTION OF CONSTRUCTION ACTIVITIES AND STORMWATER MANAGEMENT:
Construction activities include: Drain tile installation, intake construction, temporary erosion and sediment control, and permanent stabilization.

Stormwater currently flows overland in agriculture fields, through grassy swales and through various tiles that drains ultimately to Judicial Ditch 15.

After construction is complete stormwater will continue to flow as is through an updated system. But, the tile will outlet into the downstream wetland and ultimately to Judicial Ditch 15, and not directly into Judicial Ditch 15.

This project includes the following stormwater management BMPs:
-Silt Fence, Machine Slided
-Rapid Stabilization Method 4
-Ditch Check, Type Rock
-Riprap, Class 3
-Inlet Protection
-Mulch, Type 2



RECEIVING WATERS:
Receiving waters, including surface water, wetlands, Public Waters, and stormwater ponds, within 1-mile of the project boundary are identified on the USGS 7.5 min quad map above. Receiving waters that are impaired, the impairment, and WLA are listed as follows. All specific BMPs relative to construction activities listed in the permit for special, prohibited, restricted, or impaired have been incorporated into this plan. All specific BMPs listed in approved TMDLs and those BMPs listed for construction related waste load allocations have also been incorporated.

NAME OF WATER BODY	TYPE (ditch, pond, wetland, lake, etc.)	Special, Prohibited, Restricted Water [1]	Flows to Impaired Water Within 1-Mile [2]	USEPA Approved Construction Related TMDL [3]
JUDICIAL DITCH 15 LATERAL V	DITCH	NO	YES	NO
JUDICIAL DITCH 15	DITCH	NO	YES	NO

[1] Special, prohibited, and restricted waters are listed in Section 23 of the MN Construction Stormwater General Permit (MNR100001).
[2] Identified as impaired under section 303 (d) of the federal Clean Water Act for phosphorus, turbidity, TSS, dissolved oxygen, and/or aquatic biota.
[3] Construction Related TMDLs include those related to: phosphorus, turbidity, TSS, dissolved oxygen, and/or aquatic biota.

IMPLEMENTATION SCHEDULE AND PHASING: The Contractor is required to provide an updated schedule and site management plan meeting the minimum requirements of Section 1717 of the Minnesota Standard Specifications for Construction.

1) Submit SWPPP Updates to Engineer. Submittal shall include any requested changes to the SWPPP, including but not limited to: Trained Personnel, Locations for Stockpiles, Concrete Washout, Sanitation Facilities, Types and Locations of Erosion & Sediment Control. Failure to submit updates shall be considered acceptance of the SWPPP as designed with no changes.
2) Install perimeter sediment control, inlet protection, and construction exit.
3) Install drain tile.
4) Backfilling and final grading.
5) Add additional temporary BMPs as necessary during construction based on inspection reports.
6) Ensure final stabilization measures are complete.
7) Provide digital copy of all Field SWPPP Documentation including Inspection Reports and SWPPP Revisions to the Owner.
8) Submit Notice of Termination (NOT) to MPCA. NOTE: The NOT must be submitted to MPCA before Final Stabilization is considered complete.

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.

PRELIMINARY - NOT FOR CONSTRUCTION

SHAWN P. LUKES
LIC. NO. 48756 DATE MM/DD/YYYY

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24X.136322.000			

BUFFALO CREEK WATERSHED DISTRICT
JUDICIAL DITCH NO. 15 LATERAL V BRANCH C IMPROVEMENT
STORM WATER POLLUTION PREVENTION PLAN
SWPPP PLAN

SHEET C2.01

Information contained in this SWPPP narrative sheet summarizes requirements of the GENERAL PERMIT AUTHORIZATION TO DISCHARGE STORMWATER ASSOCIATED WITH CONSTRUCTION ACTIVITY UNDER THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM/STATE DISPOSAL SYSTEM PROGRAM - Permit No: MN RI0000I (Permit) as they apply to this project. All provisions of the Permit including those not specifically cited herein shall apply to this project. The Contractor is responsible to be familiar with and comply with all conditions of the permit. The full text of the Permit is available at: https://www.pca.state.mn.us/sites/default/files/wq-strm2-80a.pdf

SWPPP AMENDMENTS AND SUBMITTALS

Contractor must prepare and submit to the Engineer a SWPPP amendment as necessary to include additional Best Management Practices (BMPs) to correct problems identified or address the following situations.

1. Contact information and training documentation for Construction SWPPP Manager and BMP Installer,
2. There is a change in construction method of phasing, operation, maintenance, weather or seasonal conditions not anticipated during the design of the SWPPP including but not limited to:
   a. Types and/or Locations of BMPs
   b. Material Storage and Spill Response
   c. Fueling Plans
   d. Locations for Stockpiles, Concrete Washout, and Sanitation Facilities and
   e. Project Phasing
3. It is determined that the SWPPP is not achieving objectives of minimizing pollutants in stormwater discharges associated with construction activity, or
4. The SWPPP is not consistent with the terms and conditions of the permit.

The Contractor may implement SWPPP amendments immediately and is not required to wait for Engineer review of the submittal. The responsibility for completeness of SWPPP amendments and compliance with the Permit lies with the Contractor. Review, comment, or lack of comment by the Engineer on a SWPPP amendment shall not absolve the responsibilities of the Contractor in any way.

If a change order is issued for a design change the SWPPP amendment will be prepared by the Engineer and included in the change order.

In addition to SWPPP amendments, the Contractor shall submit to the Engineer Weekly Erosion and Sediment Control Schedule meeting the requirements of MnDOT 1717.

The Contractor shall keep copies of all SWPPP amendments, Weekly Erosion and Sediment Control Schedules, inspection logs, and maintenance logs with the field copy of the SWPPP. A PDF copy of these documents will be provided along with a copy of the final Field Copy of the SWPPP to the Engineer along with the signed Notice of Termination when final stabilization is complete.

EROSION PREVENTION PRACTICES

Stormwater conveyance channels shall be routed around unstabilized areas. Erosion controls and velocity dissipation devices shall be used at outlets within and along the length of any constructed conveyance channel.

The normal wetted perimeter of all ditches or swales, including storm water management pond slopes, that drain waters from the site must be stabilized within 200' of any property edge or discharge point, including storm sewer inlets, within 24 hours of connection.

Temporary or permanent ditches or swales used as sediment containment during construction do not need to be stabilized during temporary period of use and shall be stabilized within 24 hours after no longer used as sediment containment.

Mulch, hydromulch, tackifier, or similar practice shall not be used in any portion of the wetted perimeter of a temporary or permanent drainage ditch or swale section with a continuous slope of greater than 2 percent.

Energy dissipation shall be installed at all temporary or permanent pipe outlets within 24 hours of connection to a surface water or permanent stormwater treatment system.

The Contractor shall phase construction and use construction methods to the extent practical to minimize exposed soils. The project phasing shall be documented in the Weekly Erosion and Sediment Control Schedule.

SEDIMENT CONTROL PRACTICES

Down gradient BMPs including perimeter BMPs must be in place before up gradient land- disturbing activities begin and shall remain in place until final stabilization.

All BMPs that have been adjusted or removed to accommodate short-term activities shall be re-installed or replaced the earlier of the end of the work day or before the next precipitation event even if the activity is not complete.

Inlet BMPs may be removed for specific safety concerns. The BMPs shall be replaced as soon as the safety concern is resolved. The removal shall be documented in the SWPPP as a SWPPP amendment.

Temporary stockpiles must have sediment control BMPs. The Contractor shall prepare and submit to the Engineer a SWPPP amendment showing the location of temporary stockpiles and the BMPs for each stockpile. The SWPPP amendment must meet the minimum requirements of Section 9 of the Permit.

Soil compaction shall be minimized and topsoil shall be preserved, unless infeasible or if construction activities dictate soil compaction or topsoil stripping.

The use of polymers, flocculants, or other sedimentation treatment chemicals are not proposed as part of this SWPPP as designed by the Engineer. If methods or phasing of construction require the use of any of these chemicals, the Contractor shall prepare and submit to the Engineer a SWPPP amendment that meets the minimum requirements of Section 9 of the Permit.

TEMPORARY SEDIMENTATION BASINS

A temporary sedimentation basin has not been included in this SWPPP as designed by the Engineer. If a basin is later determined to be desirable or necessary the Contractor shall prepare and submit to the Engineer a SWPPP amendment. Temporary sedimentation basins shall meet or exceed the minimum requirements of Section 14 of the Permit and shall include a basin draining plan meeting or exceeding the minimum requirements of Section 10 of the Permit. Where the site discharges to Special and/or Impaired Waters the SWPPP amendment shall also meet or exceed the minimum requirements of Section 23 of the permit.

DEWATERING

A dewatering plan has not been included in this SWPPP as designed by the Engineer. If dewatering is required for this project, the Contractor shall prepare and submit to the Engineer a SWPPP amendment. All dewatering shall meet or exceed the minimum requirements of Section 10 of the Permit.

POLLUTION PREVENTION

Products and materials that have the potential to leach pollutants that are stored on the site must be stored in a manner designed to minimize contact with stormwater. Materials that are not a source of potential contamination to stormwater or that are designed for exposure to stormwater are not required to be covered.

Hazardous materials including but not limited to pesticides, fertilizer, petroleum products, curing compounds and toxic waste must be properly stored and protected from stormwater exposure as recommended by the manufacturer in an access restricted area.

Solid waste must be stored, collected and disposed of in compliance with Minnesota Administrative Rules Chapter 7035.

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.

Exterior vehicle or equipment washing on the project site shall be limited to a defined area of the site. No engine degreasing is allowed on site. 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.

The Contractor shall prepare and submit a SWPPP amendment detailing the location and BMPs proposed for storage of materials, solid waste, portable toilets, and exterior vehicle or equipment washing on the site. The SWPPP amendment shall include a spill prevention and response plan that is appropriate for the materials proposed to be on the site. The SWPPP amendment shall meet or exceed the minimum requirements of Section 12 of the Permit.

INSPECTION & MAINTENANCE

A trained person shall routinely inspect the entire construction site at the time interval indicated on this sheet of the SWPPP during active construction and within 24-hours after a rainfall event greater than 0.5 inches in 24 hours. Following an inspection that occurs within 24-hours after a rainfall event, the next inspection must be conducted at the time interval indicated in the Receiving Waters Table found on the SITE PLAN AND INFORMATION SHEET of the SWPPP.

All inspections and maintenance conducted during construction must be recorded on the day it is completed and must be retained with the SWPPP. Inspection report forms are available in the Project Specifications. Inspection report forms other than those provided shall be approved by the engineer.

The Contractor may request a change in inspection schedule for the following conditions:

a. Inspections of areas with permanent cover to be reduced to once per month,
b. Inspections of areas that have permanent cover and have had no construction activity for 12 months to be suspended until construction resumes,
c. Inspections of areas where construction is suspended due to frozen ground conditions, inspections to be suspended until the earlier of within 24 hours of runoff occurring, or upon resuming construction.

No change in inspection schedule shall occur until authorized by the Engineer.

Inspections must include:

1. All erosion prevention and sediment control BMPs and Pollution Prevention Management Measures to ensure integrity and effectiveness.
2. Surface waters, including drainage ditches and conveyance systems for evidence of erosion and sediment deposition.
3. Construction site vehicle exit locations, streets and curb and gutter systems within and adjacent to the project for sedimentation from erosion or tracked sediment from vehicles.
4. Infiltration areas to ensure that no sediment from ongoing construction activity is reaching the infiltration area and that equipment is not being driven across the infiltration area.

All non-functioning BMPs and those BMPs where sediment reaches one-half (1/2) of the depth of the BMP, or in the case of sediment basins one-half (1/2) of the storage volume, must be repaired, replaced, or supplemented by the end of the next business day after discovery, or as soon as field conditions allow.

Permittees must repair, replace or supplement all nonfunctional BMPs with functional BMPs by the end of the next business day after discovery, or as soon as field conditions allow.

Any sediment that escapes the site must be removed and the area stabilized within 7 calendar days of discovery unless precluded by legal, regulatory, or physical access in which case the work shall be completed within 7 calendar days of authorization. Paved surfaces such as streets shall have any escaped or tracked sediment removed by the end of the day that it is discovered. Sediment release, other than paved surfaces that can be cleaned up with street sweeping shall be reported immediately upon discovery to the Engineer.

PUBLIC WATER RESTRICTIONS:

For public waters that have been promulgated "work in water restrictions" during fish spawning time frames, all exposed soil areas that are within 200 feet of the water's edge, and drain to these waters must complete stabilization within 24-hours during the time period. MN DNR permits are not valid for work in waters that are designated as infested waters unless accompanied by an Infested Waters Permit or written notification has been obtained from MN DNR stating that such permit is not required. There is no exception for pre-existing permits. If a MN DNR Permit has been issued for the project and the water is later designated as infested, the Contractor shall halt all work covered by the MN DNR Permit until an Infested Waters Permit is obtained or that written notification is obtained stating that such permit is not required.

FINAL STABILIZATION

Final Stabilization is not complete until all the following requirements have been met:

1. Substantial Completion has been reached and no ground disturbing activities are anticipated.
2. Permanent cover has been installed with an established minimum uniform perennial vegetation density of 70 percent of its expected final growth. Vegetation is not required in areas where no vegetation is proposed by this project such as impervious surfaces or the base of a sand filter.
3. Accumulated sediment has been removed from all permanent stormwater treatment systems as necessary to ensure the system is operating as designed.
4. All sediment has been removed from conveyance systems
5. All temporary synthetic erosion prevention and sediment control BMPs have been removed. BMPs designated on the SWPPP to remain to decompose on-site may remain.
6. For residential construction only, permit coverage terminates on individual lots if the structures are finished and temporary erosion prevention and downgradient perimeter control is complete, the residence sells to the homeowner, and the permittee distributes the MPCA's "Homeowner Fact Sheet" to the homeowner.
7. For agricultural land only (e.g., pipelines across cropland), the disturbed land must be returned to its preconstruction agricultural use prior to submitting the NOT.

SITE STABILIZATION COMPLETION:

Stabilization of exposed soils shall begin immediately and shall be completed after the construction activity has temporarily or permanently ceased no later than:	7 calendar days

SITE INSPECTION INTERVAL:

A trained person shall routinely inspect the entire construction site during active construction at an interval of no more than:	7 calendar days

SPECIAL ENVIRONMENTAL CONSIDERATIONS AND PERMITS:

1)	Was an environmental review required for this project or any part of a common plan of development or sale that includes all or any portion of this project?	NO
2)	Does any portion of the site have the potential to affect threatened or endangered species or their critical habitat?	NO
3)	Does any portion of this site discharge to a Calcareous fen.	NO
4)	Will any portion of the site potentially affect properties listed on the National Register of Historic Places or a known or discovered archeological site?	NO
5)	Have any Karst features have been identified in the project vicinity?	NO
6)	Is compliance with temporary or permanent stormwater management design requirements infeasible for this project?	NO
7)	Has the MN DNR promulgated "work in water restrictions" for any Public Water this site disharges to during fish spawning?	NO

TYPE OF PERMIT	PERMITTING AGENCY	PERMIT STATUS AND CONDITIONS
Construction Stormwater NPDES	MPCA	

SWPPP DESIGNER TRAINING DOCUMENTATION:

UNIVERSITY OF MINNESOTA
Jordan Bengtson
Construction Site Management (May 31 2026)
Design of Construction SWPPP (May 31 2028)

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.

PRELIMINARY NOT FOR CONSTRUCTION

SHANNA LUKES
LIC. NO. 48756 DATE MM/DD/YYYY

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DESIGNED	NO.	ISSUED FOR	DATE
JGB			
DRAWN			
CV			
CHECKED			
SPL			
CLIENT PROJ. NO.			
24X.136322.000			

BUFFALO CREEK WATERSHED DISTRICT
JUDICIAL DITCH NO. 15 LATERAL V BRANCH C IMPROVEMENT
STORM WATER POLLUTION PREVENTION PLAN
SWPPP NARRATIVE

SHEET C2.02

LEGEND

- PROJECT BOUNDARY
- SOIL TYPE
- IMPAIRED, SPECIAL OR PROTECTED WATERS
- NATIONAL WETLANDS INVENTORY
- DWSMA, LOW VULNERABILITY
- STEEP SLOPES (>33.3%)
- RECEIVING WATERS

N

0 200 400
SCALE FEET

SOIL TYPE SUMMARY

Map Unit Symbol	Soil Name	Hyd. Soil Group	Erodibility
336	DELFT CLAY LOAM, 0 TO 2 PERCENT SLOPES	C/D	NHEL
L13A	KLOSSNER MUCK, 0 TO 1 PERCENT SLOPES	C/D	PHEL
86	CANISTEO CLAY LOAM, 0 TO 2 PERCENT SLOPES	C/D	NHEL
1376C	CLARION-STORDEN COMPLEX, 6 TO 10 PERCENT SLOPES, MODERATELY ERODED	B	HEL
L85A	NICOLLET CLAY LOAM, 1 TO 3 PERCENT SLOPES	C/D	PHEL
118	CRIPPIN LOAM, 1 TO 3 PERCENT SLOPES	B/D	PHEL
L107A	CANISTEO-GLENCOE COMPLEX, 0 TO 2 PERCENT SLOPES	C/D	NHEL
887B	CLARION-SWANLAKE COMPLEX, 2 TO 6 PERCENT SLOPES	C	PHEL
102B	CLARION LOAM, 2 TO 6 PERCENT SLOPES	C	NHEL
L83A	WEBSTER CLAY LOAM, 0 TO 2 PERCENT SLOPES	B/D	NHEL

NHEL - Not Highly Erodible Land
PHEL - Potentially Highly Erodible Land
HEL - Highly Erodible Land

LOCATION OF SWPPP REQUIREMENTS IN PROJECT PLAN

DESCRIPTION	SHEET NO.
SITE MAP	C2.01
DIRECTION OF FLOW	C2.04
FINAL STABILIZATION	C2.04
SOILS	C2.03
DRAINAGE STRUCTURES	C1.01
STORM SEWER PLAN & PROFILE SHEETS	C5.01 - C5.02
EROSION & SEDIMENT CONTROL DETAILS	C2.04
EROSION CONTROL TABULATION	C2.01
TURF ESTABLISHMENT TABULATION	C2.01
NARRATIVE & NOTES	C2.01 - C2.02

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BUFFALO CREEK WATERSHED DISTRICT
JUDICIAL DITCH NO. 15 LATERAL V BRANCH C IMPROVEMENT
STORM WATER POLLUTION PREVENTION PLAN
SWPPP SOILS

SHEET C2.03

LEGEND

- EXISTING/PROPOSED DRAINAGE PATTERN
- RANDOM RIPRAP, CLASS III
- RAPID STABILIZATION, METHOD 4
- MULCH TYPE 1
- STABILIZED CONSTRUCTION EXIT (TO BE DETERMINED BY CONTRACTOR & MARKED ON PLANS)
- STORM DRAIN INLET PROTECTION (EXISTING INLET)
- STORM DRAIN INLET PROTECTION (PROPOSED INLET)

SEEDING QUANTITY TABLE							
ITEM		SEED		FERTILIZER		EROSION CONTROL	
BID ITEM	QTY (SQ YD)	MIX	QTY (LBS)	TYPE	QTY (LBS)	TYPE	QTY (LBS)
RAPID STABILIZATION MEDTHOD 4	380	MI	100	10-10-10	27	EROSION CONTROL BLANKET	N/A
MULCH TYPE 1	28,556	NONE		NONE		MULCH TYPE 1	23,600

HORZ. SCALE 0 100 200 FEET

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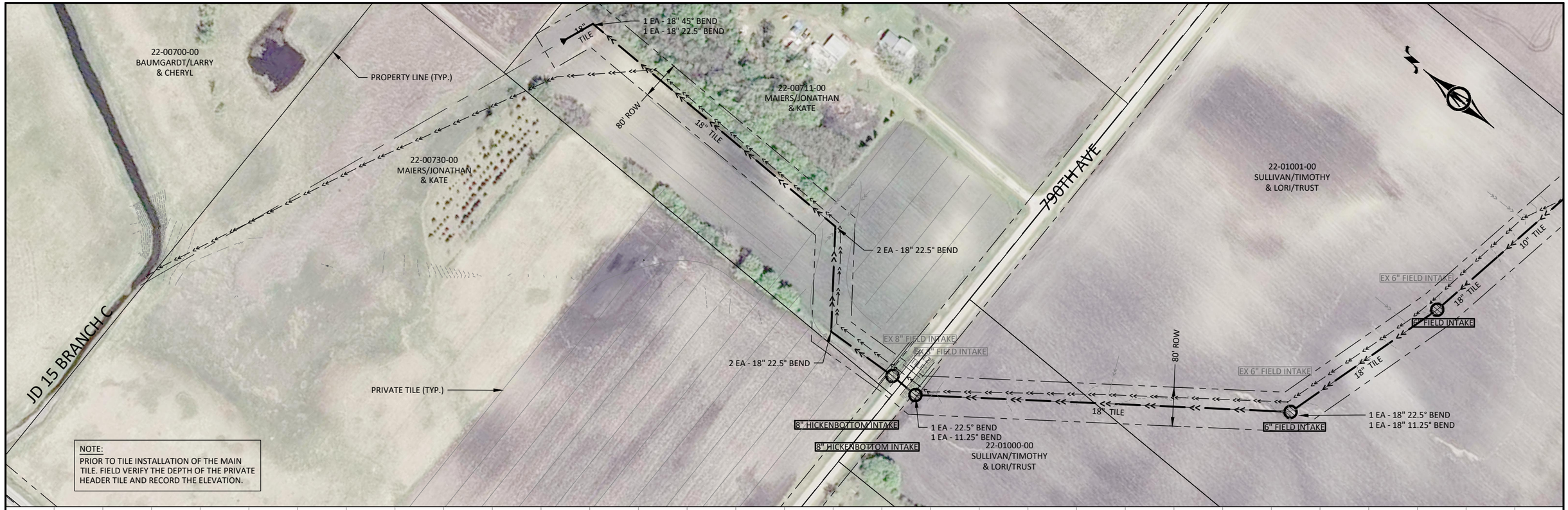
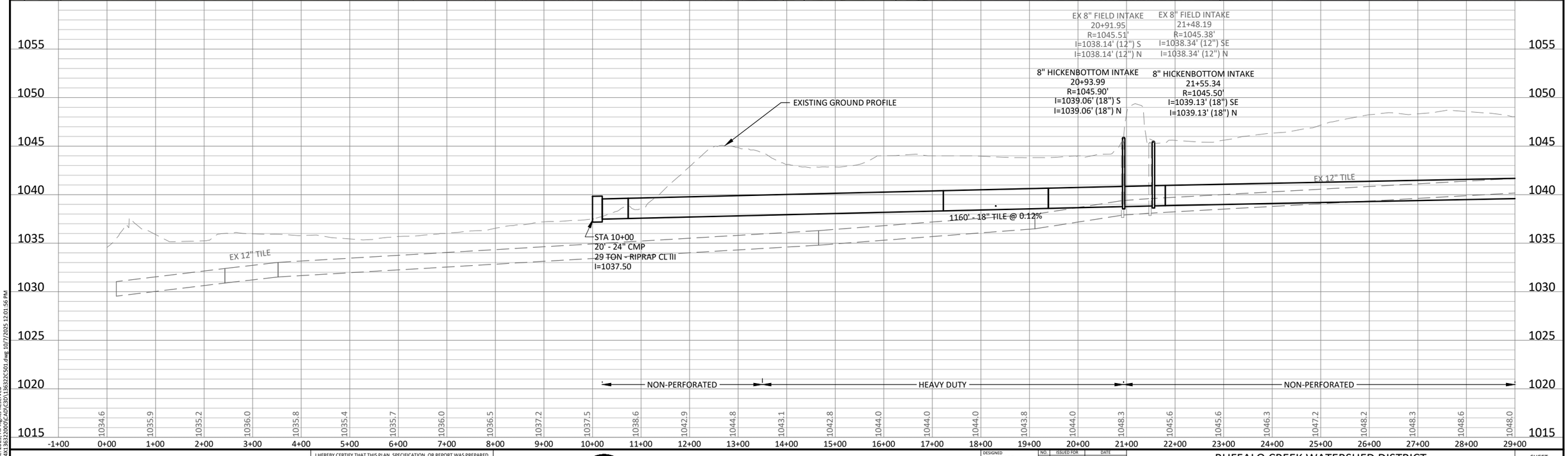
BUFFALO CREEK WATERSHED DISTRICT
JUDICIAL DITCH NO. 15 LATERAL V BRANCH C IMPROVEMENT
STORM WATER POLLUTION PREVENTION PLAN
SWPPP SITE PLAN

SHEET C2.04





HORZ. SCALE 0 100 200 FEET

VERT. SCALE 0 5 10 FEET

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SHARYL LUKER
LIC. NO. 48756 DATE MM/DD/YYYY

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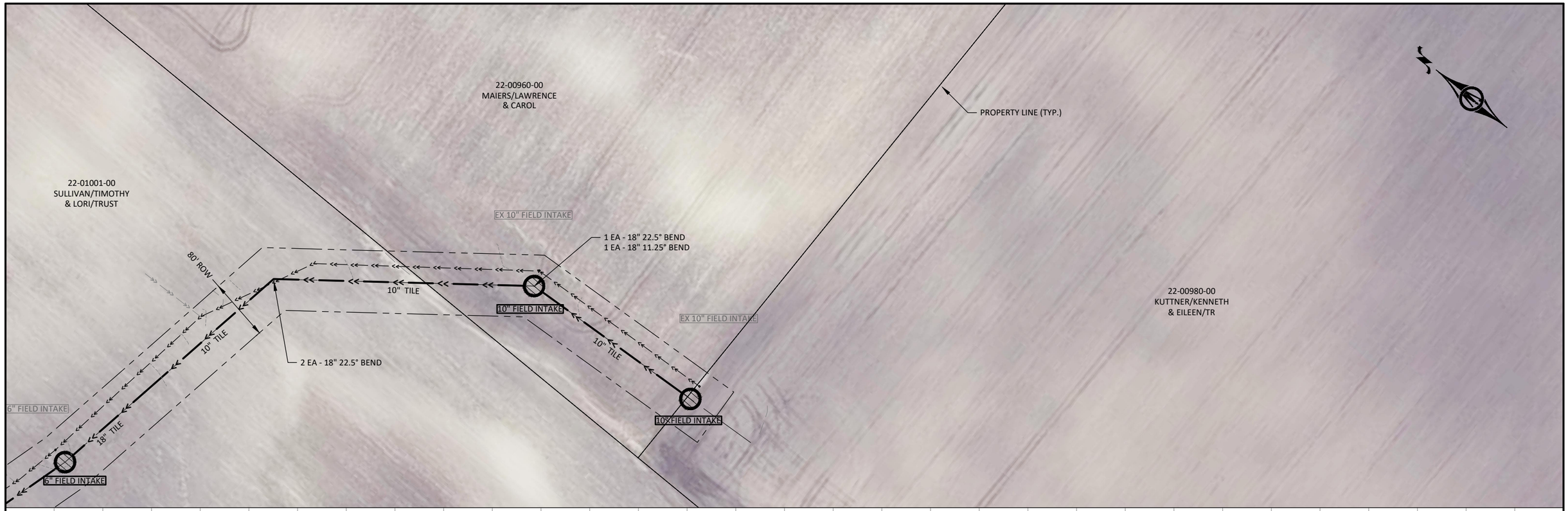
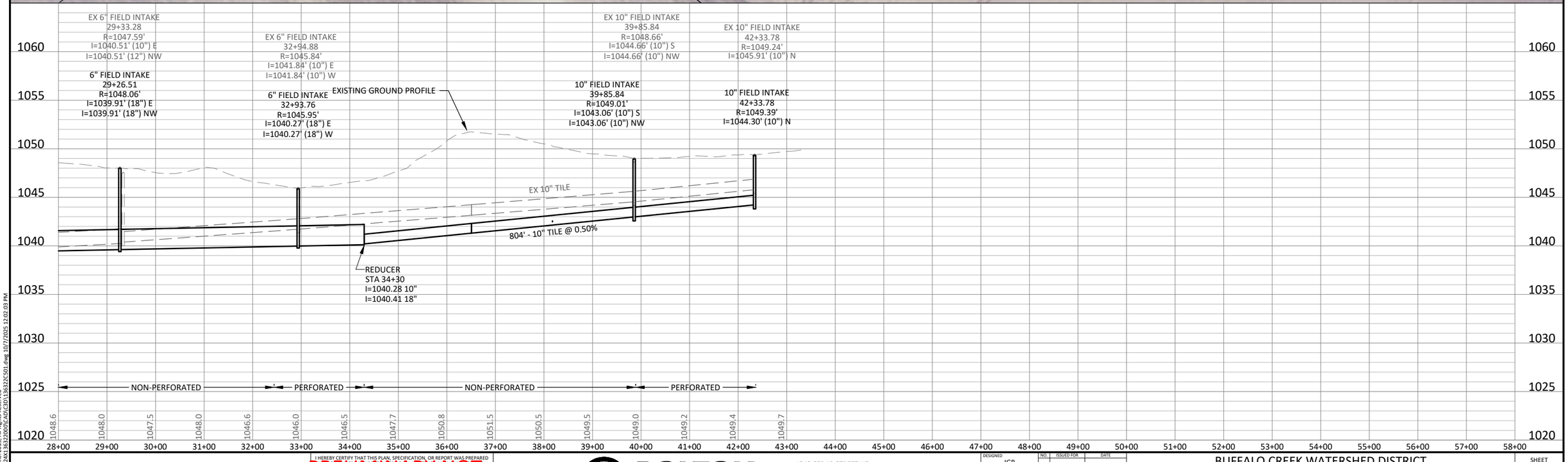
CLIENT PROJ. NO.	24X.136322.000

NO.	ISSUED FOR	DATE

BUFFALO CREEK WATERSHED DISTRICT
JUDICIAL DITCH NO. 15 LATERAL V BRANCH C IMPROVEMENT
TILE PLAN AND PROFILE - BRANCH C
STA -1+00 - 29+00

SHEET C5.01





HORZ. SCALE 0 100 200 FEET

VERT. SCALE 0 5 10 FEET

PRELIMINARY NOT FOR CONSTRUCTION

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SIGNATURE: TYLER J. BOLKEN
LIC. NO. 48756 DATE MM/DD/YYYY

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NO.	ISSUED FOR	DATE

BUFFALO CREEK WATERSHED DISTRICT
JUDICIAL DITCH NO. 15 LATERAL V BRANCH C IMPROVEMENT
TILE PLAN AND PROFILE - BRANCH C
STA 28+00 - 58+00

SHEET C5.02

Exhibit 2: Preliminary Cost Estimate

PRELIMINARY ENGINEER'S ESTIMATE

Judicial Ditch No. 15 Lateral V, Branch C Improvement
Buffalo Creek Watershed District
24X.136322.000

BOLTON & MENK
Real People. Real Solutions.

Date: 12/9/2025

Item No.	Item	Estimated Quantity	Unit	Unit Price	Total Amount
BASE BID					
1	MOBILIZATION	1	LUMP SUM	$5,000.00	$5,000.00
2	EXPLORATORY EXCAVATION	30	HOUR	$300.00	$9,000.00
3	DRAIN TILE CONNECTION	20	EACH	$1,000.00	$20,000.00
4	AGGREGATE SURFACING, CLASS 5	30	TON	$35.00	$1,050.00
5	6" FIELD INTAKE	2	EACH	$1,000.00	$2,000.00
6	8" HICKENBOTTOM INTAKE	2	EACH	$2,000.00	$4,000.00
7	10" FIELD INTAKE	2	EACH	$2,000.00	$4,000.00
8	10" NON-PERFORATED DRAIN TILE	260	LIN FT	$20.00	$5,200.00
9	10" PERFORATED DRAIN TILE	560	LIN FT	$20.00	$11,200.00
10	18" NON-PERFORATED DRAIN TILE	1360	LIN FT	$28.00	$38,080.00
11	18" PERFORATED DRAIN TILE	200	LIN FT	$28.00	$5,600.00
12	18" HEAVY DUTY TILE	850	LIN FT	$60.00	$51,000.00
13	24" CS TILE	20	LIN FT	$80.00	$1,600.00
14	RANDOM RIPRAP, CLASS III	29	TON	$110.00	$3,190.00
15	STABILIZED CONSTRUCTION EXIT	1	LUMP SUM	$2,000.00	$2,000.00
16	INLET PROTECTION	12	EACH	$150.00	$1,800.00
17	TYPE 1 MULCH	12	TON	$350.00	$4,200.00
18	RAPID STABILIZATION, METHOD 4	380	SQ YD	$3.50	$1,330.00
				ESTIMATED BASE BID TOTAL:	**$170,250.00**
	TEMPORARY RIGHT-OF-WAY DAMAGES	5.96	ACRE	$600.00	$3,576.00
				SUBTOTAL:	$173,826.00
				10% CONTINGENCY:	$17,380.00
				TOTAL ESTIMATED CONSTRUCTION COST:	**$191,206.00**
				DESIGN, ADMINISTRATION AND CONSTRUCTION ENGINEERING:	$58,000.00
				TOTAL ESTIMATED PROJECT COST:	**$249,206.00**

Exhibit 3: Separable Maintenance

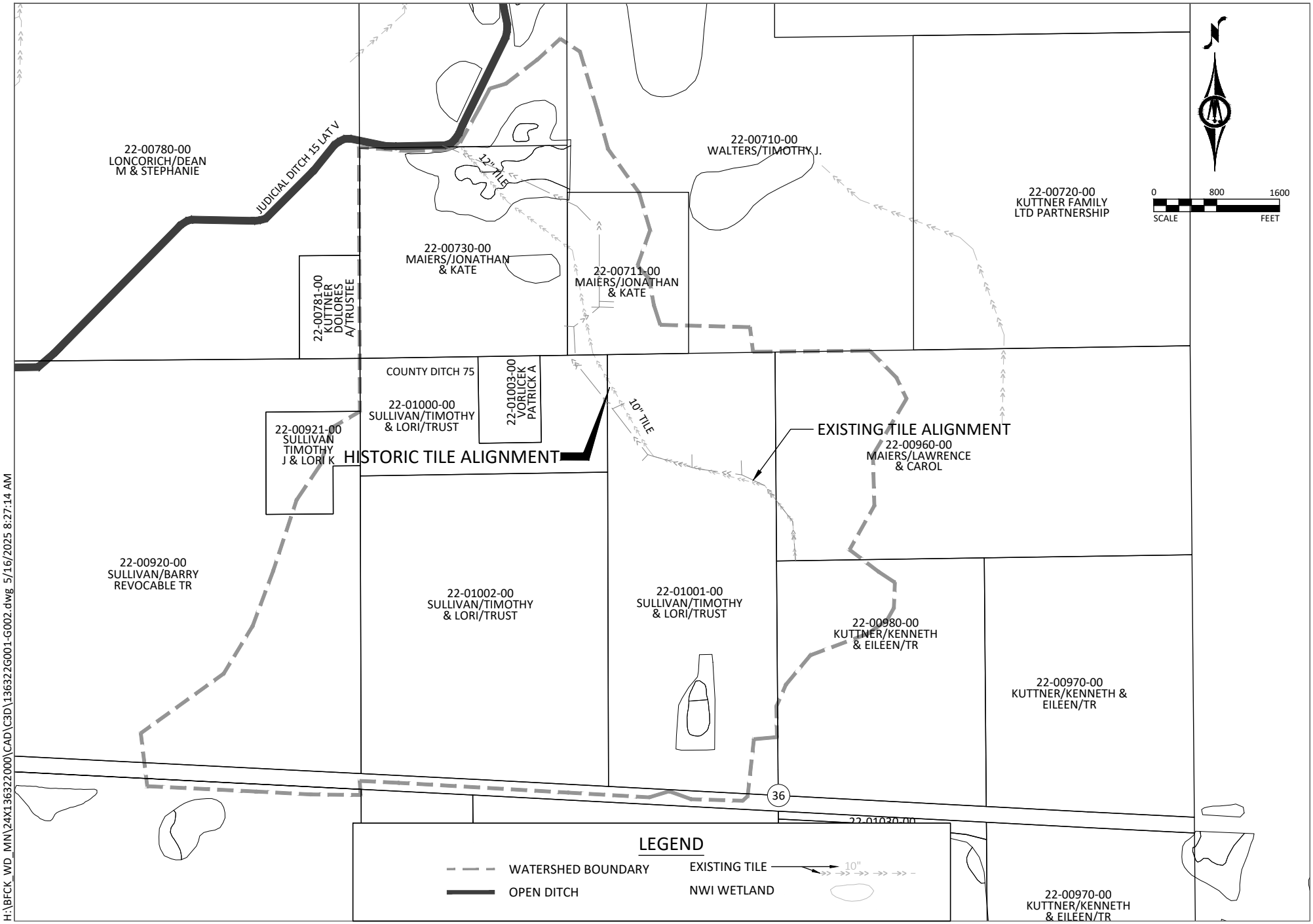
JD 25 LAT V, BR C IMPROVEMENT

BUFFALO CREEK WATERSHED DISTRICT

SEPARABLE MAINTENANCE

APRIL 2025

BOLTON & MENK



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SEPARABLE MAINTENANCE

Judicial Ditch No. 15 Lateral V, Branch C Improvement
Buffalo Creek Watershed District
24X.136322.000

BOLTON & MENK
Real People. Real Solutions.

Date: 12/9/2025

Item No.	Item	Estimated Quantity	Unit	Unit Price	Total Amount
BASE BID					
1	MOBILIZATION	1	LUMP SUM	$5,000.00	$5,000.00
2	EXPLORATORY EXCAVATION	30	HOUR	$300.00	$9,000.00
3	DRAIN TILE CONNECTION	20	EACH	$1,000.00	$20,000.00
4	AGGREGATE SURFACING, CLASS 5	25	TON	$35.00	$875.00
5	6" FIELD INTAKE	2	EACH	$1,000.00	$2,000.00
6	8" HICKENBOTTOM INTAKE	2	EACH	$2,000.00	$4,000.00
7	10" FIELD INTAKE	2	EACH	$2,000.00	$4,000.00
8	10" DRAIN TILE	1300	LIN FT	$20.00	$26,000.00
9	12" DRAIN TILE	2940	LIN FT	$22.00	$64,680.00
10	15" CS TILE	20	LIN FT	$60.00	$1,200.00
11	RANDOM RIPRAP, CLASS III	29	TON	$110.00	$3,190.00
12	STABILIZED CONSTRUCTION EXIT	1	LUMP SUM	$2,000.00	$2,000.00
13	INLET PROTECTION	12	EACH	$150.00	$1,800.00
14	TYPE 1 MULCH	12	TON	$350.00	$4,200.00
15	RAPID STABILIZATION, METHOD 4	380	SQ YD	$3.50	$1,330.00
16	WETLAND SEEDING	0.9	ACRE	$4,500.00	$4,050.00
				ESTIMATED BASE BID TOTAL:	**$153,325.00**
	TEMPORARY RIGHT-OF-WAY DAMAGES	5.96	ACRE	$600.00	$3,576.00
				SUBTOTAL:	$156,901.00
				10% CONTINGENCY:	$15,690.00
				TOTAL ESTIMATED CONSTRUCTION COST:	**$172,591.00**
				DESIGN, ADMINISTRATION AND CONSTRUCTION ENGINEERING:	$54,000.00
				TOTAL ESTIMATED PROJECT COST:	**$226,591.00**

Exhibit 4: Right-of-Way Table

Judicial Ditch No. 15 Lateral V, Branch C Improvement

Buffalo Creek Watershed District

Right-of-way Table

BOLTON & MENK

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Date: 10/7/2025

Parcel No.	Property Owner	Legal Description	Repair Right-of-Way					Temporary
			Station to Station		Length	Width	Area (Acres)	$600
Lateral V - Branch C								
22-00711-00	MAIERS/JOHANTHAN & KATE	SE 1/4, SW 1/4	9+60	19+25	965	80	1.77	1062.00
		SE 1/4, SW 1/4	19+25	20+84	159	65	0.24	144.00
22-00730-00	MAIERS/JOHANTHAN & KATE	SW 1/4, SW 1/4	19+25	20+84	159	15	0.05	$30.00
22-01000-00	SULLIVAN/TIMOTHY & LORI/TRUST	NE 1/4, NW 1/4	21+51	25+23	372	80	0.68	408.00
22-01001-00	SULLIVAN/TIMOTHY & LORI/TRUST	NE 1/4, NW 1/4	25+23	38+46	1323	80	2.43	1458.00
22-00960-00	MAIERS/LAWRENCE & CAROL	NE 1/4, NE 1/4	38+46	42+30	384	80	0.71	426.00
22-00980-00	KUTTNER/KENNETH & EILEEN/TR	SW 1/4, NE 1/4	42+30	42+75	45	80	0.08	48.00
	Total			**Total Improvement Right-of-Way Damages =**			**5.96**	**$3,576.00**

H:\BFCK_WD_MN\24X136322000\2_Preliminary\A_Calculations\[136322_ROW.xlsx]Sheet1

Exhibit 5: Petition for Improvement

Renville COUNTY
Service · Stewardship · Shared Responsibility

Exhibit A

Legend

- Judicial Ditch 15
- Tile, Active
- Tile, Retired
- County-State Aid Highway
- Township Road
- Township
- Tax Parcel
- Quarter Quarter

STATE OF MINNESOTA
COUNTY OF RENVILLE

In Re:

Renville County Judicial Ditch No. 15, Lateral V, Branch C
Renville County, Minnesota.

PETITION FOR IMPROVEMENT OF DRAINAGE SYSTEM

TO: THE BOARD OF MANAGERS OF THE BUFFALO CREEK WATERSHED DISTRICT AS THE DRAINAGE AUTHORITY FOR JUDICIAL DITCH NO. 15 (RENVILLE COUNTY, MINNESOTA)

Petitioners respectfully represent, state and request the following:

1. **Jurisdiction.**

The undersigned Petitioners constitute (1) at least 26% of the owners of the property affected by the proposed improvement; (2) at least 26% of the owners of property that the proposed improvement passes over; (3) the owners of at least 26% of the property area affected by the proposed improvement; or (4) the owners of at least 26% of the property area that the proposed improvement passes over.

2. **Designation of Drainage System.**

This Petition requests the improvement of the drainage system known by and designated as Judicial Ditch No. 15, Lateral V, Branch C, located in Preston Lake Township, Renville County, Minnesota.

3. **Need for Improvement.**

The drainage system has insufficient capacity or needs enlarging or extending to furnish sufficient capacity or a better outlet. Judicial Ditch No. 15, Lateral V, Branch C provides beneficial drainage to agricultural properties, public roadways and other lands located in Sections 25 and 36, Township 115, Range 31, Renville County, Minnesota. Judicial Ditch No. 15, Lateral V, Branch C is in need of repair. Judicial Ditch No. 15, Lateral V, Branch C has remained in service since its original construction. Other than minor repairs, no major repairs have been made to Judicial Ditch No. 15, Lateral V, Branch C since it was constructed. Even in a repaired state, Judicial Ditch No. 15, Lateral V, Branch C is inadequate to support beneficial drainage for current farming and drainage practices. Judicial Ditch No. 15, Lateral V, Branch C has insufficient capacity and needs enlarging to furnish sufficient capacity and better outlet.

4. **Description of Improvement.**

The proposed improvements include: Enlarging the existing tile to provide a 3/8 drainage coefficient in the manner to be determined by the engineer, Bolton & Menk, Inc.

The following is a description of a starting point, general course, and terminus of the proposed improvement: Commencing at a point in the Northwest Quarter of the Southeast Quarter (NW1/4SE1/4), Section 36, Township 115, Range 31, Preston Lake Township, Renville County, Minnesota; thence northwesterly; terminating at a point located in the Northwest Quarter of the Southwest Quarter (NW1/4SW1/4), Section 25, Township 115, Range 31, Preston Lake Township, Renville County, Minnesota.

Set forth below is a list of the forty-acre tracts or Government Lots that the proposed improvement would pass over, together with the names and addresses of the owners of those tracts.

Tract	PIN	Owner	Address	Description	Sec.	Twp.	Rge.
1	22-00980-00	Kuttner Family Limited Partnership	57648 780th Ave Stewart, MN 55385	SW¼NE¼	36	115	31
2	22-00960-00	Lawrence & Carol Maiers	1441 8th Ave SW Hutchinson, MN 55350	NW¼NE¼	36	115	31
3	22-01001-00	Timothy & Lori Sullivan Trust and Denise Pichotta	78871 CO RD 20 Stewart, MN 55385	PT NE¼NW¼	36	115	31
3	22-01000-00	Timothy & Lori Sullivan Trust and Denise Pichotta	78871 CO RD 20 Stewart, MN 55385	PT NE¼NW¼	36	115	31
4	22-00711-00	Jonathan & Kate Maiers	57332 790th Ave Stewart, MN 55385	PT SE¼SW¼	25	115	31
5	22-00730-00	Jonathan & Kate Maiers	57332 790th Ave Stewart, MN 55385	SW¼SW¼	25	115	31
6	22-00700-00	Larry & Sheryl Baumgardt	310 Burnside SW Sleepy Eye, MN 56085	NW¼SW¼	25	115	31

5. **Public Utility and Health.**

The proposed improvement will be of public utility and will promote the public health.

6. **Agreement by Petitioners.**

The undersigned Petitioners have been informed and understand that they may not withdraw as a petitioner at any time after this Petition is accepted by the drainage authority, except with the written consent of all other Petitioners on the filed Petition. Also, the undersigned Petitioners acknowledge and agree that they will pay all costs and expenses that may be incurred if the improvement proceedings are dismissed. The undersigned Petitioners acknowledge and

agree that they will pay all costs and expenses that may be incurred if the improvement proceedings are dismissed or if a contract is not awarded for construction of the improvement.

7. **Cost Bond.**

One or more petitioners shall cause a bond to be filed in the amount of at least $10,000.00 payable to the drainage authority. The bond will be conditioned to pay the costs incurred if the proceedings are dismissed or if a contract is not awarded to construct the proposed improvement described in the petition. In lieu of a bond, one or more Petitioners may request permission to deposit $10,000.00 cash with the drainage authority to secure payment of such costs.

8. **Separable Maintenance.**

Because Judicial Ditch No. 15, Lateral V, Branch C is in need of repair, Petitioners request, to the extent practicable, that the drainage authority consider, under Minn. Stat. § 103E.215, subd. 6, the separable maintenance portion of the work when determining benefits and assessing costs of the improvement.

WHEREFORE, the Petitioners respectfully request the following:

a. That the drainage authority accept this Petition, review it and determine that it is legally adequate; and

b. That the drainage authority appoint Shaun Luker of Bolton & Menk as engineer for purposes of the proposed improvement and direct the engineer to prepare an engineer's preliminary report for the proposed improvement, including allowing the engineer to analyze other potential routes for the proposed improvement and whether separable maintenance may be employed.

FLUEGEL, ANDERSON, MCLAUGHLIN & BRUTLAG, CHARTERED

Dated: July 30, 2024

By s/ *Jason G. Lina*

Jason G. Lina, #347541
Attorneys for Petitioners
215 Atlantic Avenue, PO Box 527
Morris, MN 56267
(320) 589-4151/phone
(320) 589-4154/fax
jlina@fluegellaw.com

SIGNATURE PAGES FOR
PETITION FOR IMPROVEMENT TO JUDICIAL DITCH NO. 15, LATERAL V, BRANCH C (RENVILLE COUNTY, MINNESOTA)

Name of Petitioner(s) (please print or type):

Gregory Kuttner
Douglas Kuttner

Ownership (check one):

_____ Individual
_____ Co-Owners (# of co-owners: _____)
✓ Partner (name of Partnership: Kuttner Family Limited Partnership)
_____ Corporation or limited liability company (name of corporation or LLC: _____)
_____ Trust (complete name of trust: _____)
_____ Other (explanation: _____)

Statement of Authority:

The undersigned states and represents that if he or she is executing in a representative capacity, he or she has the authority to execute on behalf of the respective partnership, corporation, limited liability company, trust or other such entity.

The above-named Petitioner(s) own the following tract(s) which the proposed improvement will pass over or which is affected by the proposed improvement:

Tract Description	Section	Township	Range	County
SW ¼ NE¼	36	115	31	Renville

Dated: 8-22-2024 — Gregory Kuttner (Signature)

Dated: 8-22-2024 — Douglas Kuttner (Signature)

Dated: _____ — _____ (Signature)

SIGNATURE PAGES FOR
PETITION FOR IMPROVEMENT TO JUDICIAL DITCH NO. 15, LATERAL V, BRANCH C (RENVILLE COUNTY, MINNESOTA)

Name of Petitioner(s) (please print or type):
Denise Pichotta

Ownership (check one):

X Individual
_____ Co-Owners (# of co-owners: _____)
_____ Partner (name of Partnership: _____)
_____ Corporation or limited liability company (name of corporation or LLC: _____)
_____ Trust (complete name of trust: _____)
_____ Other (explanation: _____)

Statement of Authority:

The undersigned states and represents that if he or she is executing in a representative capacity, he or she has the authority to execute on behalf of the respective partnership, corporation, limited liability company, trust or other such entity.

The above-named Petitioner(s) own the following tract(s) which the proposed improvement will pass over or which is affected by the proposed improvement:

Tract Description	Section	Township	Range	County

Dated: 8-21-24 Denise Pichotta
(Signature)

Dated: _____ _____
(Signature)

Dated: _____ _____
(Signature)

SIGNATURE PAGES FOR
PETITION FOR IMPROVEMENT TO JUDICIAL DITCH NO. 15, LATERAL V, BRANCH C (RENVILLE COUNTY, MINNESOTA)

Name of Petitioner(s) (please print or type):

Tim Sullivan
Lori Sullivan

Ownership (check one):

_____ Individual
_____ Co-Owners (# of co-owners: _____)
_____ Partner (name of Partnership: _____)
_____ Corporation or limited liability company (name of corporation or LLC: _____)
X Trust (complete name of trust: Tim + Lori Sullivan)
_____ Other (explanation: _____)

Statement of Authority:

The undersigned states and represents that if he or she is executing in a representative capacity, he or she has the authority to execute on behalf of the respective partnership, corporation, limited liability company, trust or other such entity.

The above-named Petitioner(s) own the following tract(s) which the proposed improvement will pass over or which is affected by the proposed improvement:

Tract Description	Section	Township	Range	County

Dated: 8/21/24 — Tim Sullivan (Signature)

Dated: 8-21-24 — Lori Sullivan (Signature)

Dated: _____ — _____ (Signature)

SIGNATURE PAGES FOR
PETITION FOR IMPROVEMENT TO JUDICIAL DITCH NO. 15, LATERAL V, BRANCH C (RENVILLE COUNTY, MINNESOTA)

Name of Petitioner(s) (please print or type):

Lawrence Maiers
Carol Maiers

Ownership (check one):

_____ Individual
__✓__ Co-Owners (# of co-owners: 2)
_____ Partner (name of Partnership: _____)
_____ Corporation or limited liability company (name of corporation or LLC: _____)
_____ Trust (complete name of trust: _____)
_____ Other (explanation: _____)

Statement of Authority:

The undersigned states and represents that if he or she is executing in a representative capacity, he or she has the authority to execute on behalf of the respective partnership, corporation, limited liability company, trust or other such entity.

The above-named Petitioner(s) own the following tract(s) which the proposed improvement will pass over or which is affected by the proposed improvement:

Tract Description	Section	Township	Range	County
NW ¼ NE ¼	36	115	31	Renville

Dated: 8/23/2024 — Lawrence Maiers (Signature)

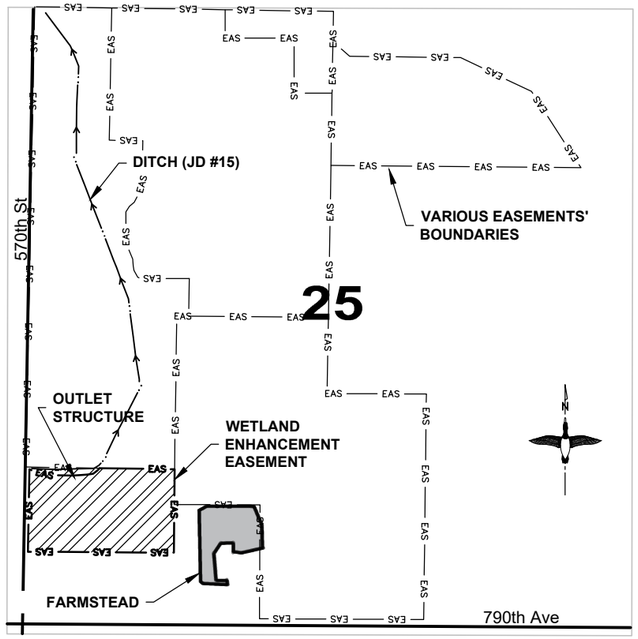
Dated: 8/23/2024 — Carol Maiers (Signature)

Dated: _____ — _____ (Signature)

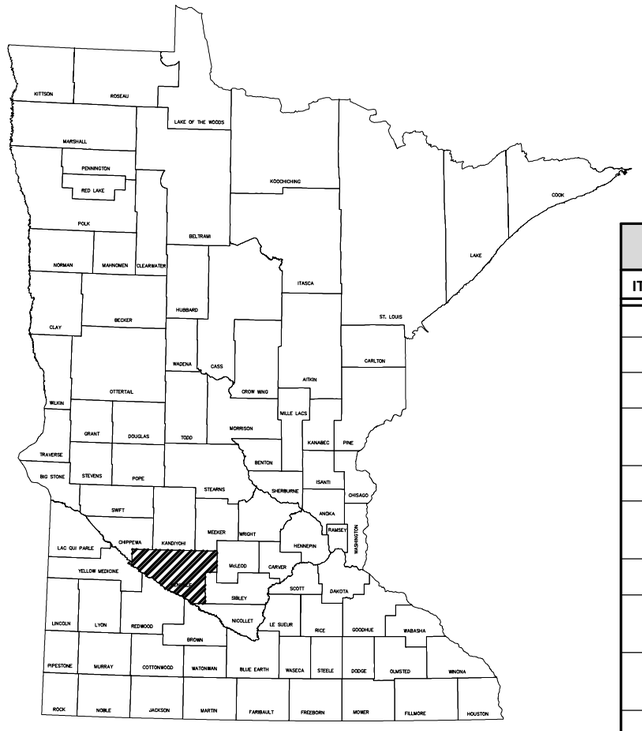
Exhibit 6: BWSR Outlet Control Plans

MAIERS
WETLAND ENHANCEMENT PROJECT

COUNTY	SECTION	TOWNSHIP		RANGE	
RENVILLE	25	115	N.	31	W.



LOCATION MAP
SCALE: 1" = 1320'



DRAWING SHEET INDEX

ESTIMATED QUANTITIES TABLE

ITEM #	ITEM DESCRIPTION	UNIT	QUANTITY
1	Mobilization	L.S.	1
2	Salvage and Spread Topsoil (P) (6" depth within ditch bank fill area)	C.Y.	250
3	Excavation - Outlet Channel (P) (Includes shaping outlet area)	C.Y.	450
4	Excavation - Core Trench (P)	C.Y.	190
5	Earthfill - Ditch Bank (P) (CV) (Includes subcut, 10% settlement, and core trench)	C.Y.	1090
6	Tile Block/Removal - Trench Type 'A' (Includes minor filling of any tile blowouts)	L.F.	100
7	Tile Block/Removal - Trench Type 'B' (See sheet 5)	L.F.	125
8	F&I 18" HDPE Dual Walled Pipe, 10.8 psi Bell & Spigot (Includes pipe straps. See bedding requirements)	L.F.	44
9	F&I 15" HDPE Dual Walled Pipe, 10.8 psi Bell & Spigot (Includes pipe straps. See bedding requirements)	L.F.	28
10	F&I CMP Outlet Pipe Sleeve and Rodent Guard (Fit over 15" pipe. See sheet 6)	EA	1
11	F&I CMP Outlet Pipe Sleeve and Rodent Guard (Fit over 18" pipe. See sheet 6)	EA	1
12	F&I Metal Inlet Apron (To fit 15" dia. HDPE)	EA	1
13	F&I Metal Inlet Apron (To fit 18" dia. HDPE)	EA	1
14	F&I Anti-Seep Collar (5'H x 5'W, to fit 18" dia. HDPE)	L.S.	1
15	F&I Rock Weir Outlet (MNDOT Class III Angular Riprap)	C.Y.	65
16	F&I Geotextile Fabric, MnDOT Type IV (Non-woven; under riprap)	S.Y.	150
17	Seeding - MN Native Construction Mix 32-241 (Channel, bank fill, borrow, other disturbed areas)	Acre	0.75
18	Mulching (P) (Front slope of bank fill)	Acre	0.25
19	Erosion Control Blanket (Ditch bank slope. MNDOT Cat. 10)	S.Y.	400

CONSTRUCTION REQUIREMENTS

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

CONSTRUCTION CERTIFICATION STATEMENT

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

SIGNATURE: DATE:

COOPERATORS AGREEMENT STATEMENT

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

SIGNATURE: DATE:

NRCS DESIGN CERTIFICATION STATEMENT

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

ENGINEERING JOB CLASS : .

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.

PRELIMINARY

AARON PETER DATE: . LIC. NO. 47038

BWSR

REV#	DATE	REVISION DESCRIPTION	BY

HORZ DATUM: NAD83	SURVEY DATE:	12/9/24	DESIGN DATE:	2025	PROJECT #: 2008-063
VERT DATUM: NAVD88	SURVEYED BY:	MA	DESIGNED BY	AP	
GEODETIC CONTROL REF: MNDOT DISK "	DRAWN BY:	.	DRAWN BY:	AP	SHEET NO. 1 OF 6
CONTROL EL.: .	CHECKED BY:	.	CHECKED BY:	.	

MAIERS; RENVILLE COUNTY
WETLAND ENHANCEMENT PROJECT
COVERSHEET

PLOT DATE: 12/5/2025 8:39 AM \\edc1adminfs01\BWSR\home\apeter\Documents\Civil 3D Projects\Maiers\Design\MaiersEnhancement3.dwg

CONTOURS ARE FROM LiDAR EXCEPT THE DASHED LINES IN THE BOTTOM OF THE BASIN WHICH ARE ESTIMATED FROM SURVEY.
TILE LINES IN BASIN ARE APPROXIMATE BASED ON BLOW OUTS AND AERIAL PHOTOGRAPHY SIGNATURES.

SEEDING
SEED OUTLET CHANNEL, BANK FILL AREA, BORROW AREA, AND ANY OTHER DISTURBED AREAS

CENTERLINE DITCH (JD #15)

TBM #1 - ELEV. = 1037.96
TOP OF CULVERT THROUGH 570th ST, EAST END

F&I OVERFLOW CULVERT. SEE SHEET 6

TBM #2 - ELEV. = 1049.82
TOP OF CULVERT IN FIELD APPROACH.

INSTALL OUTLET:
ROCK WEIR + CULVERT
OUTLET ELEV. 1034.3
SEE SHEET 4

OUTLET CHANNEL SEE SHEET 4

DITCH BANK FILL SEE SHEET 3

TILE LINE

A 50

TILE BREAKS SEE SHEET 5

TILE LINE

A 50

FILL TILE BLOWOUT HOLES

RIM EASEMENT

RIM - WRP EASEMENT

PROJECT'S EASEMENT BOUNDARY

RIM EASEMENT

1034.5 ESTIMATED CONTOURS

1035

APPROX. LOCATION OF NEW COUNTY TILE OUTLET (BY OTHERS)

FARMSTEAD

N

0 100 200
SCALE (IN FEET)

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.

AARON PETER DATE: . LIC. NO. 47038

BWSR

MAIERS; RENVILLE COUNTY
WETLAND ENHANCEMENT PROJECT
PLAN VIEW

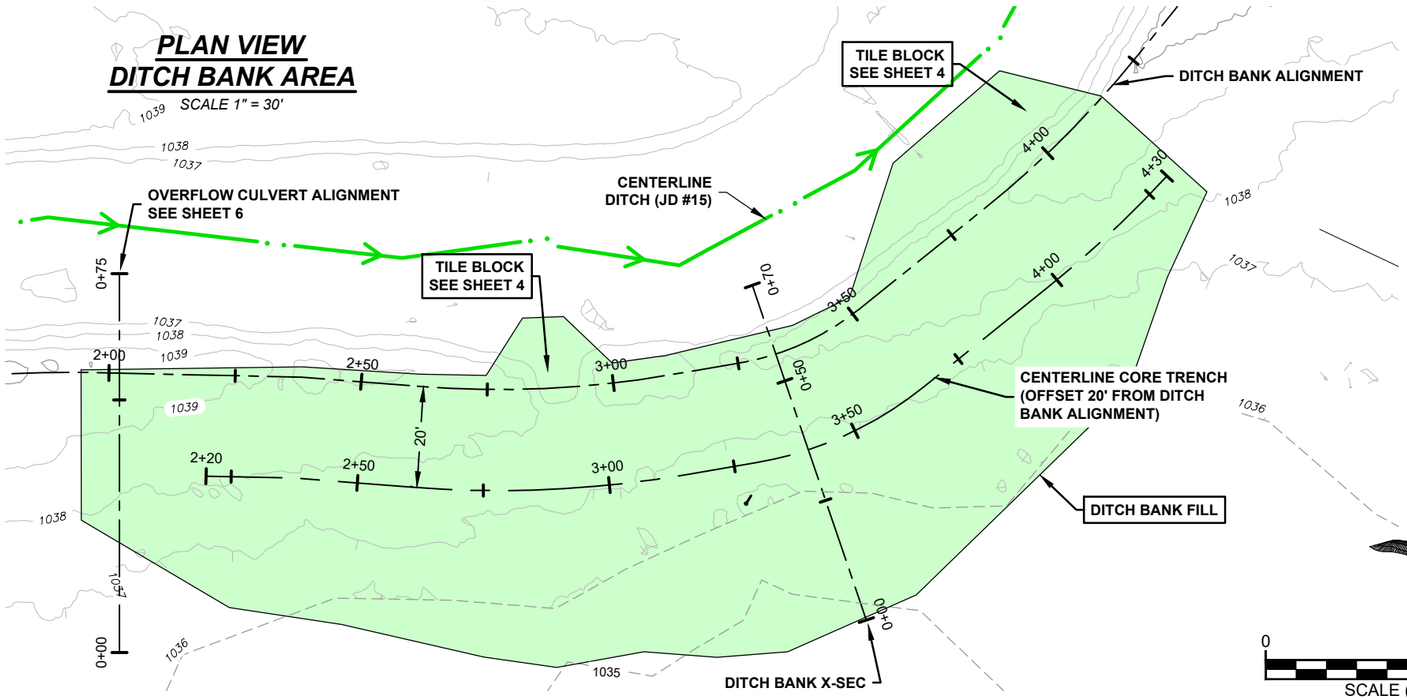
PROJECT #: **2008-063**

SHEET NO. **2** OF 6

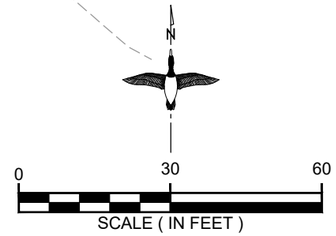
PLOT DATE: 12/5/2025 8:39 AM \\edc1adminfs01\BWSR\home\apeter\Documents\Civil 3D Projects\Maiers\Design\MaiersEnhancement3.dwg

PLAN VIEW
DITCH BANK AREA

SCALE 1" = 30'



THE DITCH BANK ALIGNMENT IS ON THE DITCH SIDE OF THE BANK TOP. SEE X-SECTION BELOW

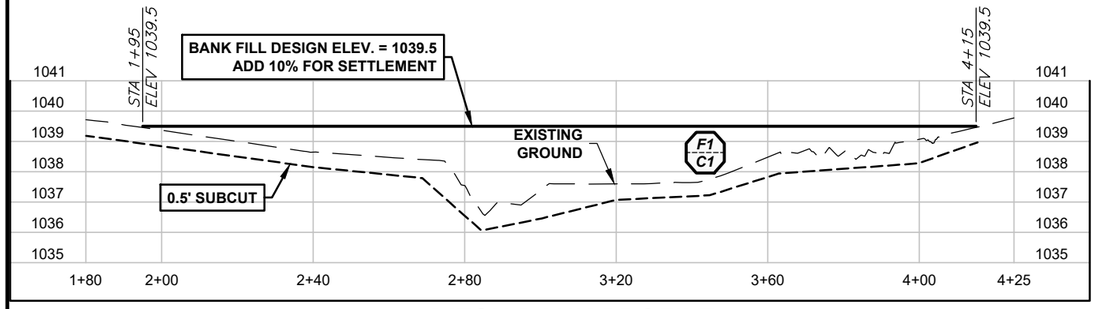


F# / **C#**
FILL TYPE ID
DENOTES REQUIRED TYPE OF FILL AND COMPACTION METHOD. SEE BWSR SPEC 2.230
COMPACTION CLASS

CONSTRUCTION NOTE:
INSTALL MNDOT CATEGORY 10 OR BETTER EROSION CONTROL BLANKET ON DISTURBED AREAS OF BACKSLOPE (DITCH SIDE) ONLY

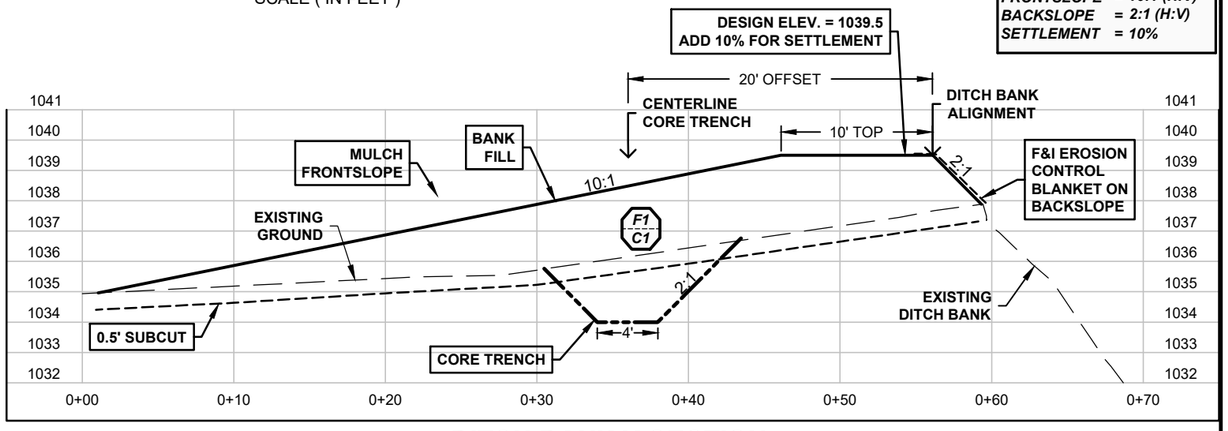
EMBANKMENT DESIGN

TOP WIDTH	*= 10 FT*
FRONTSLOPE	*= 10:1 (H:V)*
BACKSLOPE	*= 2:1 (H:V)*
SETTLEMENT	*= 10%*



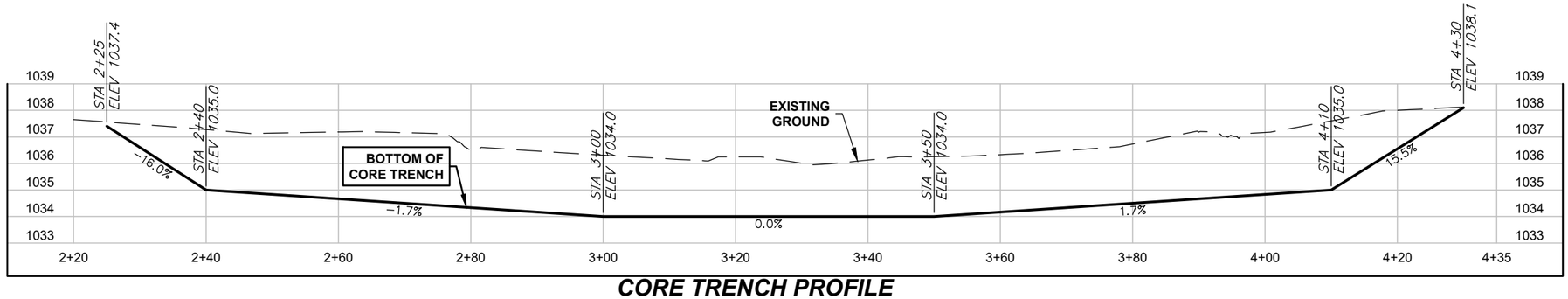
DITCH BANK PROFILE

SCALE 1" = 40'



DITCH BANK X-SECTION

SCALE 1" = 10'



CORE TRENCH PROFILE

SCALE 1" = 20'

CORE TRENCH DESIGN (MIN.'s)

BOTTOM WIDTH	=	*4 FT*
SIDE SLOPES	=	*2:1 (H:V)*
BACKSLOPE	=	*2:1 (H:V)*
AVG. DEPTH	=	*2 FT*

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.

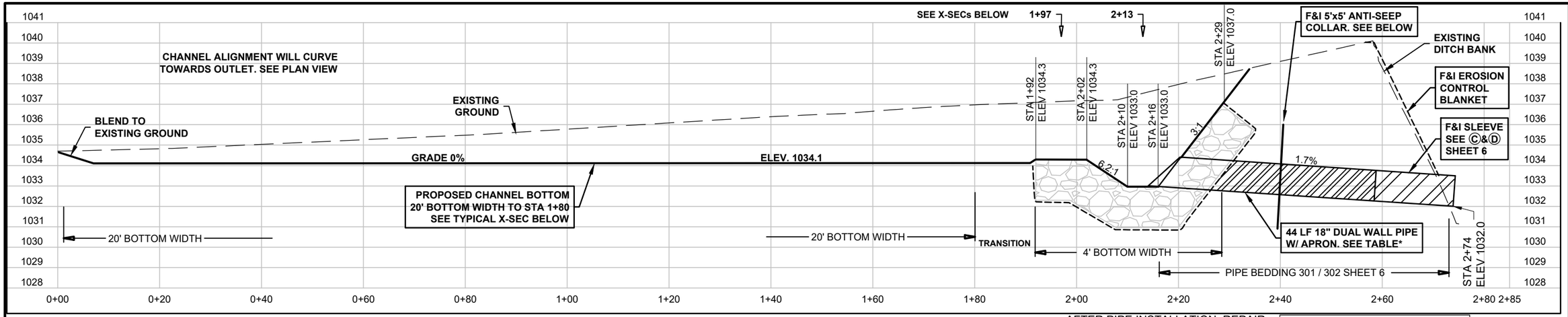
AARON PETER — DATE: . — LIC. NO. 47038

BWSR

MAIERS; RENVILLE COUNTY
WETLAND ENHANCEMENT PROJECT
DITCH BANK

PROJECT #: **2008-063**

SHEET NO. **3** OF 6



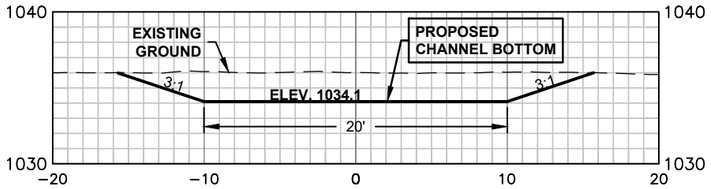
OUTLET CHANNEL CENTERLINE PROFILE

SCALE 1" = 5'

AFTER PIPE INSTALLATION, REPAIR DITCH BANK WITH 10' TOP WIDTH, ELEV. =1039.5, 2:1 BACKSLOPE, 10:1 FRONT SLOPE.

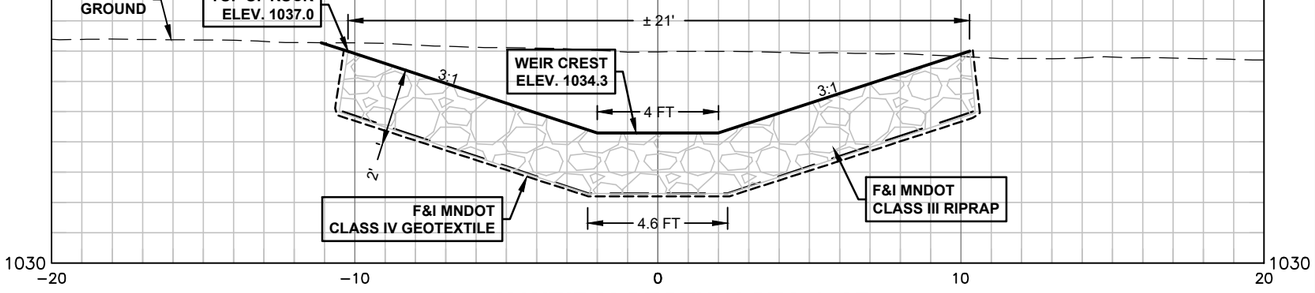
***18" DUAL WALL HDPE NON-PERF PIPE**

TYPE: BELL AND SPIGOT, 10.8 PSI JOINTS
INLET INVERT EL.=1033.0
SLEEVE INVERT EL. = 1032.0
F&I PIPE STRAPS



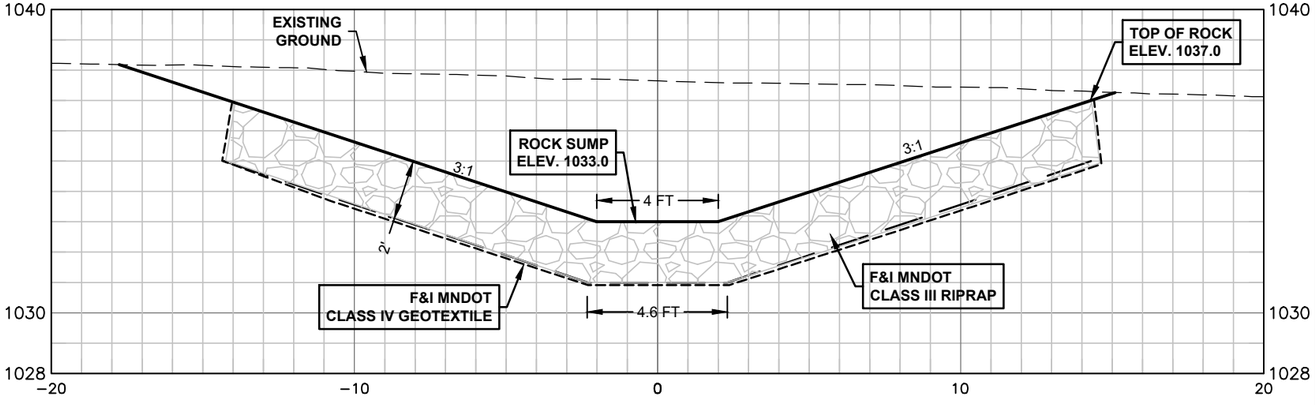
TYPICAL CHANNEL X-SECTION STA 0+00 - 1+80

SCALE 1" = 10'



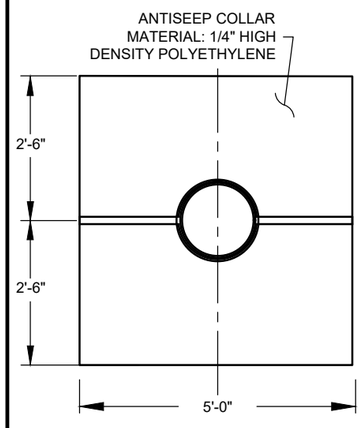
ROCK WEIR X-SECTION STA 1+97

SCALE 1" = 5'



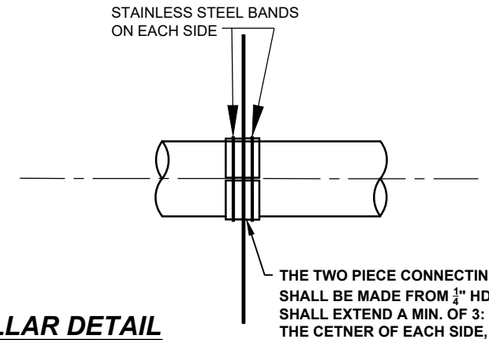
ROCK SUMP AREA X-SECTION STA 2+13

SCALE 1" = 5'



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

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



THE TWO PIECE CONNECTING BAND SHALL BE MADE FROM $\frac{1}{4}$" HDPE. IT SHALL EXTEND A MIN. OF 3: FROM THE CETNER OF EACH SIDE, AND SHALL BE JOINED TO THE BODY BY A CONTINUOUS WELD ON BOTH SIDES.

5'X5' ANTI-SEEP COLLAR DETAIL FOR 18" HDPE PIPE

NOT TO SCALE

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.

AARON PETER — DATE: . — LIC. NO. 47038

BWSR

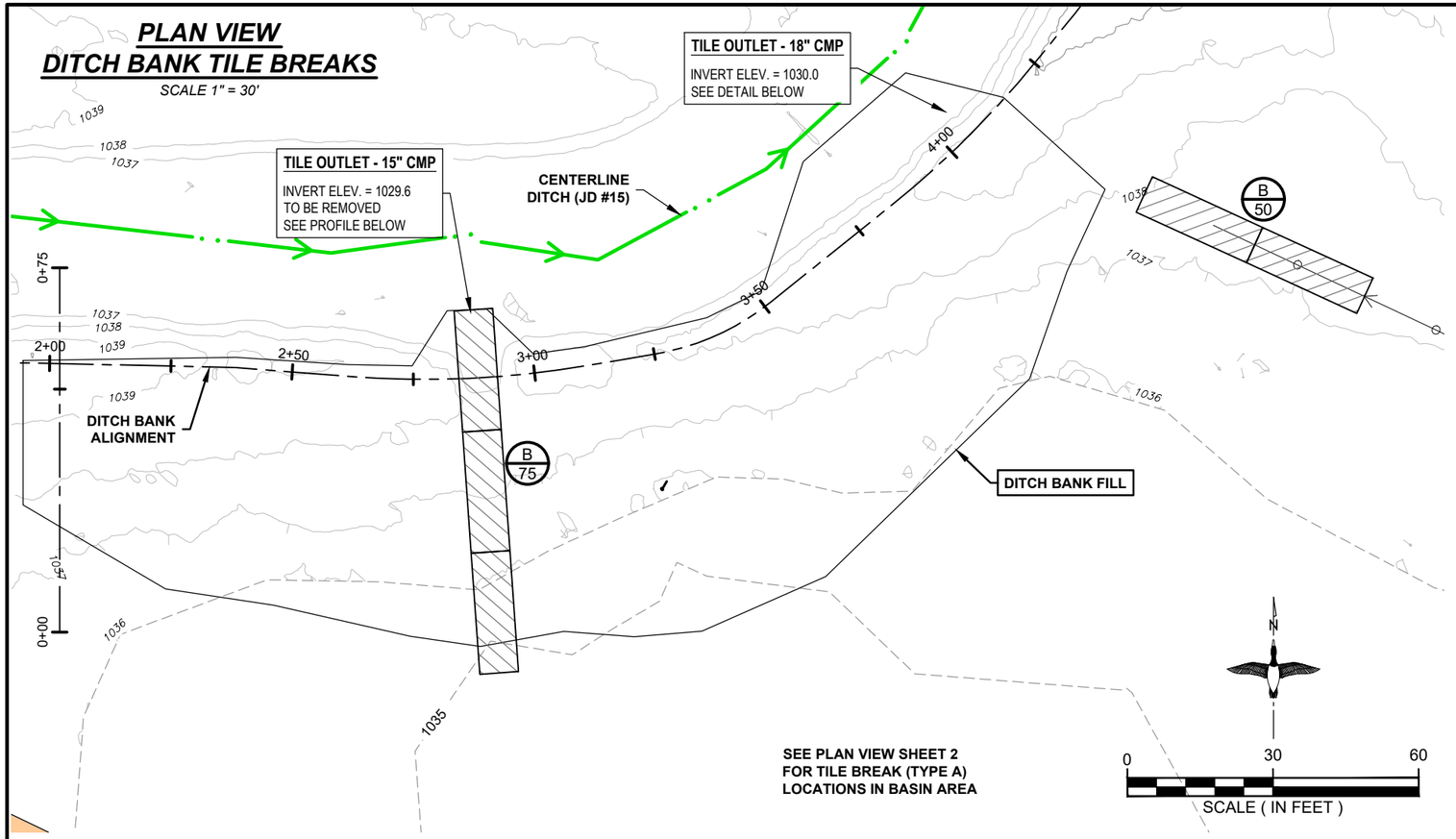
MAIERS; RENVILLE COUNTY
WETLAND ENHANCEMENT PROJECT
OUTLET STRUCTURE DETAILS

PROJECT #: **2008-063**

SHEET NO. **4** OF 6

PLAN VIEW
DITCH BANK TILE BREAKS

SCALE 1" = 30'



SEE PLAN VIEW SHEET 2 FOR TILE BREAK (TYPE A) LOCATIONS IN BASIN AREA

TILE BLOCK / REMOVAL TABLE

TILE BLOCK CONSTRUCTION TYPE	NO. OF BLOCKS REQUIRED	TOTAL LINEAR FEET OF TILE TO BE BLOCKED
A	2	100
B	2	125

DESIGN PLAN IDENTIFICATION

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

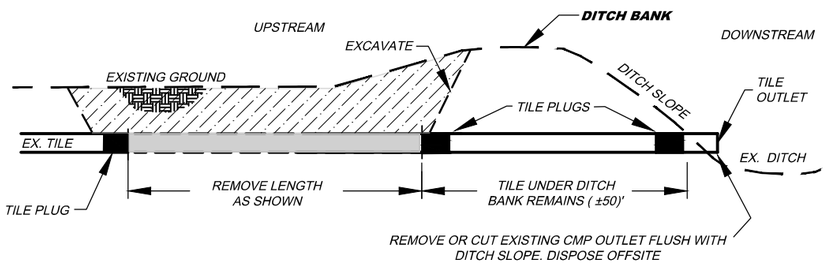
A / 100 = ***EXAMPLE: CONSTRUCT TYPE "A"REMOVAL TRENCH AND REMOVE / BLOCK 100 FEET OF EXISTING DRAIN TILE***

CONSTRUCTION REQUIREMENTS

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

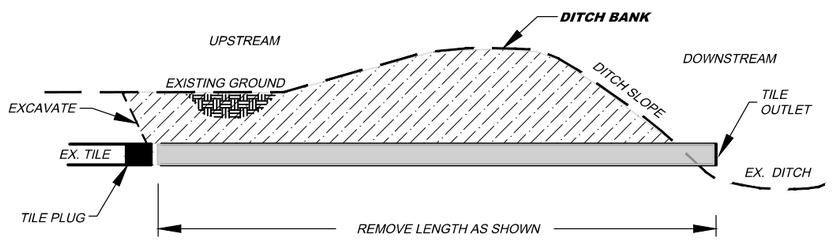
TILE PLUGGING:

- THE WORK SHALL INCLUDE ALL LABOR, MATERIALS, AND EQUIPMENT REQUIRED TO COMPLETE THE PLUGGING OF ALL IDENTIFIED TILE DRAINAGE SYSTEMS.
- IDENTIFIED DRAINAGE TILE SHALL BE PLUGGED AS REQUIRED BY THE DRAWINGS, AS STAKED, OR AS OTHERWISE SPECIFIED BY THE ENGINEER.
- MEANS TO ACCESS THE TILE DRAINAGE SYSTEM TO CONSTRUCT APPROPRIATE PLUGS SHALL BE APPROVED BY THE ENGINEER.
- CONSTRUCTED PLUGS SHALL BE MADE PERMANENT AND WATERTIGHT. METHODS TO PLUG THE TILE SYSTEM INCLUDE USING SAND SLURRY MIXES, CONCRETE GROUT, OR CERTAIN EXPANDING POLYURETHANE FOAMS. IF PLUGGING METHOD IS NOT SPECIFIED, THE METHOD PROPOSED REQUIRES ENGINEER'S APPROVAL.
- AREAS THAT ARE EXCAVATED TO ACCESS THE TILE SYSTEM SHALL BE CAREFULLY BACKFILLED AND COMPACTED IN LIFTS WITH SUITABLE SOIL MATERIAL. BACKFILL SHALL BE COMPACTED TO A DENSITY EQUAL TO SURROUNDING UNDISTURBED SOIL.



18" OUTLET TILE BOCK AND REMOVAL DETAIL

NOT TO SCALE



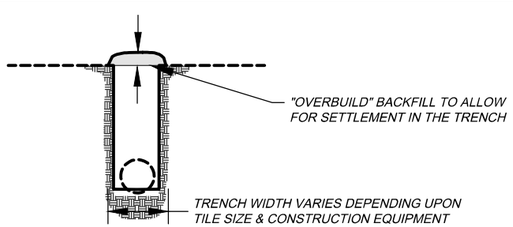
15" TILE REMOVAL PROFILE

NOT TO SCALE

TILE REMOVAL TRENCH CONSTRUCTION REQUIREMENTS

TYPE A

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



NOT TO SCALE

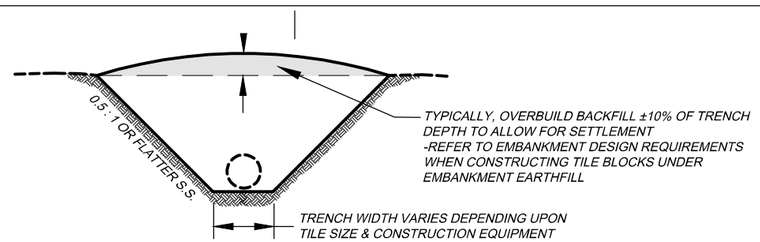
AT LOCATION OF TILE BLOCKS, A SLOPED OR BENCHED TRENCH EXCAVATION MAY ME NECESSARY TO SAFELY PLUG TILE.

THE TRENCH SHALL BE BACKFILLED USING PREVIOUSLY EXCAVATED SOILS.

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

TYPE B

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



NOT TO SCALE

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

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

AARON PETER — DATE: . — LIC. NO. 47038

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MAIERS; RENVILLE COUNTY
WETLAND ENHANCEMENT PROJECT
TILE BLOCKS

PROJECT #: **2008-063**

SHEET NO. **5** OF 6

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BEDDING DETAILS 301 AND 302

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

1. PRIOR TO SETTING PIPE, PLACE 1"-3", COMMENSURATE WITH DEPTH OF CORRUGATIONS, OF LOOSE FRIABLE APPROVED SOILS (SEE BELOW) IN THE TRENCH BOTTOM TO ALLOW FILLING OF BOTTOM VALLEYS OF THE PIPE AND TO ENSURE NO VOIDS EXIST WITHIN BEDDING ENVELOPE.
2. CAREFULLY LOAD THE PIPE PRIOR TO COMPLETELY BACKFILLING AND COMPACTING APPROVED SOILS (SEE BELOW) UNDER THE LOWER HALF OF THE PIPE. SPECIAL CARE MUST BE TAKEN TO FIRST KNIFE IN, COMPLETELY FILL AND COMPACT UNDER THE LOWER HALF OF THE PIPE WITH APPROVED INITIAL BACKFILL MATERIAL.
3. THE BEDDING AND INITIAL BACKFILL SHALL CONSIST OF APPROVED SOILS FOR BACKFILL (SEE BELOW) PLACED IN 3"-4" LIFTS AND COMPACTED USING MANUALLY DIRECTED POWER TAMPERS OR EQUIVALENT FOR A DEPTH OF AT LEAST 24" ABOVE THE TOP OF THE PIPE.
4. ALL PIPE INSTALLATIONS THROUGH OR UNDER EMBANKMENTS/BERMS SHALL HAVE SOILS IN THIS ZONE BACKFILLED AND COMPACTED PER THE REQUIREMENTS OF THE EMBANKMENT/BERM. TO ACCOMMODATE COMPACTION EQUIPMENT AND ACHIEVE NECESSARY COMPACTION DENSTIES, TRENCH SIDE SLOPES IN THIS ZONE SHALL BE A MINIMUM OF 1:1.

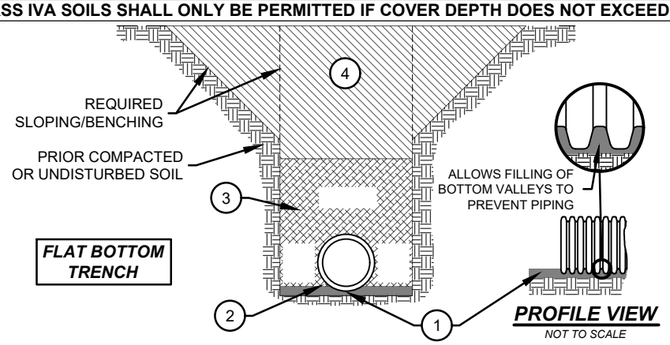
   FOR ALL OTHER INSTALLATIONS, BACKFILL AND COMPACT SOILS IN THIS ZONE PER THE REQUIREMENTS OF THE PLAN, WHEN SPECIFIED. IF NOT SPECIFIED, BACKFILL WITH EXCAVATED TRENCH MATERIAL, IF SUITABLE, AND MODERATELY COMPACT TO AVOID EXCESSIVE SETTLEMENT.

APPROVED MATERIALS FOR BEDDING AND INITIAL BACKFILL

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

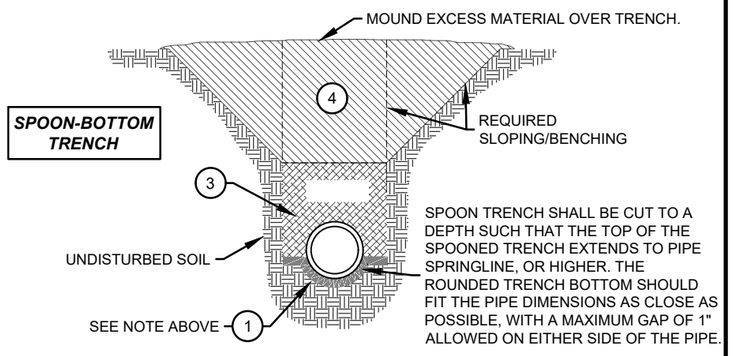
SOIL CLASSIFICATION				SOIL DESCRIPTION
ASTM D2321	SIDD SOIL	AASHTO M 145	ASTM D2487	
Class III	Category 2	A-2-4, A-2-5, A-2-6, OR A-4 OR 1-6 SOILS WITH MORE THAN 30% RETAINED ON #200 SIEVE	GM, GC SM, SC ML, CL	SILTY OR CLAYEY GRAVELS, GRAVELS/SAND/SILT OR GRAVELS AND/CLAY MIXTURES, SILTY OR CLAYEY SANDS,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

***CLASS IVA SOILS SHALL ONLY BE PERMITTED IF COVER DEPTH DOES NOT EXCEED 8 FT.**



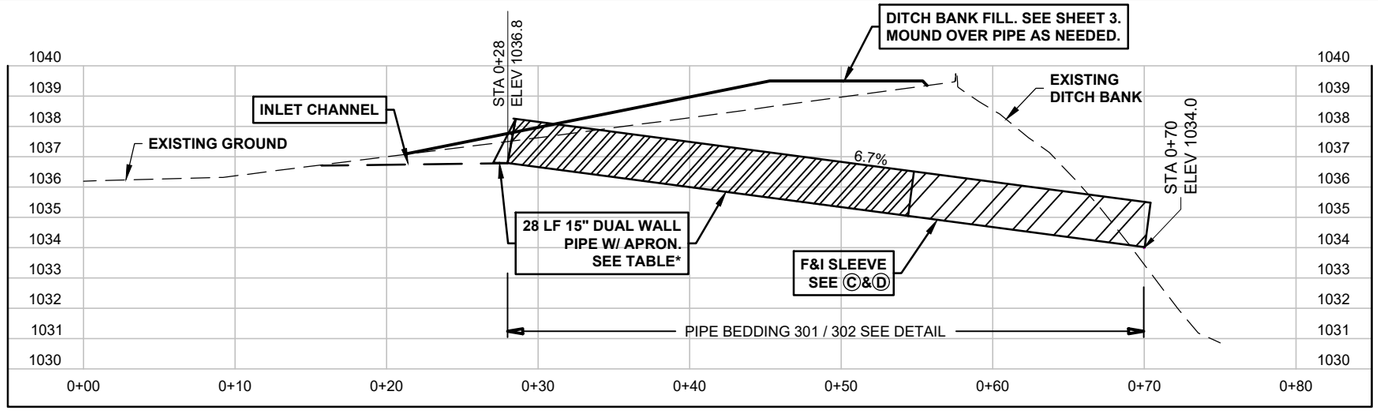
BEDDING DETAIL - 301

NOT TO SCALE



BEDDING DETAIL - 302

NOT TO SCALE



OVERFLOW CULVERT PROFILE

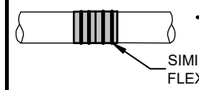
SCALE 1" = 10'

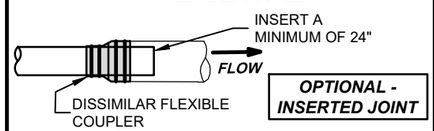
***15" DUAL WALL HDPE NON-PERF PIPE**

TYPE: BELL AND SPIGOT, 10.8 PSI JOINTS
INLET INVERT EL.=1036.8
SLEEVE INVERT EL. = 1034.0
F&I PIPE STRAPS

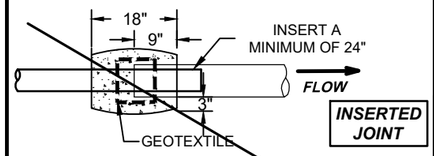
© PIPE JOINT DETAILS

SIZE OF LARGEST PIPE AT JOINT (INCHES)	ALLOWED JOINT TYPE		
	TILE TAPE	CONCRETE	MASTIC
8" & SMALLER	✓	✓	✓
10" TO 12"		✓	✓
LARGER THAN 12"			✓





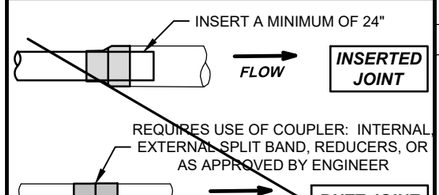
MASTIC COUPLER



WRAP JOINT WITH GEOTEXTILE FABRIC AND SECURE

ENSURE CONCRETE ENCOMPASSES ENTIRE JOINT AS SHOWN

CONCRETE COLLAR



SECURELY WRAP WITH TILE TAPE EXTENDING SEVERAL INCHES ONTO EACH PIPE

TILE TAPE

Ⓓ CMP SLEEVE DETAILS

CMP SLEEVE SIZE (INCHES)	MINIMUM LENGTH (FEET)
8" & SMALLER	10
10" TO 12"	12
15" TO 18"	16
LARGER THAN 18"	20

CORRUGATED METAL PIPE (CMP) SHALL BE A MINIMUM OF 16 GAUGE GALVANIZED PIPE. OTHER COATINGS AS APPROVED BY ENGINEER

CONTRACTOR TO DETERMINE CMP SLEEVE DIAMETER FROM JOINT TYPE SELECTED

EITHER ANNULAR OF HELICAL PIPE IS ACCEPTABLE. FIELD CUTTING OF HELICAL PIPE WILL NOT BE ALLOWED

REFER TO SPECIFICATION 2.310 - CORRUGATED METAL PIPE

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.

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MAIERS; RENVILLE COUNTY
WETLAND ENHANCEMENT PROJECT
BEDDING AND CULVERT DETAILS

PROJECT #: **2008-063**

SHEET NO. **6** OF 6

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