Repair Report
County Ditch 77
Renville County, Minnesota

Date: February 20, 2024

ISG Project No.: 14-16717

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REPORT FOR:
Renville County Drainage Authority
Renville County Government Services Center
105 South 5th Street + Suite 319
Olivia, MN 56277
320.523.3746
seths@renvillecountymn.com

FROM:
ISG
Charles J. Brandel, PE
Senior Civil Engineer
115 East Hickory Street + Suite 300
Mankato, MN 56001
507.387.6651
chuck.brandel@ISGInc.com

SIGNATURE SHEET

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: 

Printed Name: Charles J. Brandel, PE

Date: 2/20/2024

License Number: 43359

ISG
115 East Hickory Street + Suite 300
Mankato, MN 56001

County Ditch No. 77
Renville County, Minnesota

Engineer's Project Number: 14-16717

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APPENDICES

EXECUTIVE SUMMARY

An Improvement Petition was submitted to the Renville County Drainage Authority to restore the outlet for the Renville County Ditch No. 77 (CD77) tile system. The previously proposed improvement was designed to clean the private constructed ditch and altered open channel downstream of CD77 to remove blockages that back up water levels above the top of the CD77 Mainline tile outlet. This would establish a legal county ditch along the historically constructed and altered channel that could be maintained in the future to restore the flow to the CD77 tile drainage system. After years of rigorous permitting, appeals, and challenges from outside groups; petitioners from the CD77 drainage system have elected to review alternative options that allow for the CD77 tile flow to be restored to its As Constructed or Subsequently Improved Condition (ACSIC). A repair option proposes to install a lift station at the end of the CD77 Mainline tile to outlet the tile system into the CD77 public open ditch which flows into the downstream private ditch that over time has converted into a floodplain wetland due to the lack of maintenance to the private ditch and altered watercourse. Currently the drainage of this tile is dependent on wetland water levels and head pressure from upland flooding leading to no drainage of the tile system. The pump station will be restricted to flow at the capacity of the Mainline tile outlet, so that the project will restore the effectiveness of the drainage system and maintain its efficiency.

The CD77 system drains approximately 975 acres of agricultural land. The system drains into a private open ditch that runs through a wetland, altered watercourse, and eventually drains into Limbo Creek. CD77 was originally constructed in 1918, with the private ditch and straightened creek subsequently constructed.

The proposed repair will install a lift station at the outlet of the Mainline tile that will be limited to the same capacity as the originally constructed or ACSIC mainline. This repair will provide an outlet for CD77 that matches the historic and legal flow conditions of the tile. The proposed repair is estimated to cost $185,383

In lieu of cleaning the private ditch and altered water back to its originally constructed conditions to restore full flow to the channel, a small 300 linear foot stretch of open channel downstream of 820th Avenue is proposed to be cleaned to alleviate flooding concerns of downstream landowners and 820th Avenue. The cleaning through this stretch will only clean the top 2 feet of material which is mainly gravel and sediment from the roadway overtopping. If the channel is not cleaned, the current erosion and public safety concerns will persist. The channel cleaning is estimated to cost $47,546.

PETITION

A Petition for Improvement was received by the Renville County Drainage Authority. This petition details how the original private ditch outlet and downstream altered channel are inadequate compared to original conditions. Currently, sediment has built up higher than the top of the Mainline tile outlet and four feet higher than the culvert invert at 820th Avenue. This petition requests that the outlet of CD77 be extended and cleaned to provide a more adequate outlet. This proposal requires extensive permitting and legal considerations. The petition asked for consideration of separable maintenance if applicable with the project. This therefore allows for review of repair alternatives within the said petition.

SYSTEM WATERSHED

Location

Renville County Ditch 77 is located west of the City of Sacred Heart along U.S. Highway 212 (US 212). The CD77 system presently drains approximately 975 acres located in Sections 2, 3, 10, and 11 of Hawk Creek Township and Section 32 of Wang Township. Elevations throughout the watershed range from approximately 1010 to 1060 feet Mean Sea Level (MSL). The hydrologic soil group classification throughout the watershed is predominantly type “B” and “D”.

County Ditch 77 is a mostly tile system and is comprised of 36,000 linear feet of tile ranging in size from 6-inch to 24-inch. The open ditch portion of the CD77 system includes 500 feet at the tile outlet to the outfall in the center of Section 11 of Hawk Creek Township. At this point, the outlet of the public ditch system is 770 linear feet of private ditch that runs due south through the wetland complex in Section 11 to its junction with the altered watercourse.

The overall system outlet is an unaltered and altered watercourse identified as the upper course of Limbo Creek which has a total watershed of 9,335 acres covering portions of Wang, Erickson, Hawk Creek, and Sacred Heard Townships. The outlet of Limbo Creek into the Minnesota River is in Section 27 of Hawk Creek Township. The watercourse tracks upstream to the northeast where it begins in Section 19 of Erickson Township. Limbo Creek is classified as a DNR Public Watercourse from a point in the south half of Section 22 of Hawk Creek Township and to its outlet, the Minnesota River. The remainder of the watercourse upstream is considered an altered watercourse but has the same regulatory restrictions as a public water. Watershed maps are included in Appendix B.

Wetland complexes are scattered throughout the Limbo Creek watershed which provide storage and water quality benefits to the creek. One of these wetland complexes surrounds the outflow of CD77 and stretches downstream around the private ditch and altered portion of Limbo Creek in Section 11. This wetland over time has expanded from historic conditions as the private ditch and downstream watercourse was not maintained. It consists of dense cattails and small pockets of open water. The cattails have restricted flow causing sediment to accumulate through this stretch of the watercourse. This has caused extensive flooding on the edges of the wetland into the adjacent uplands that has not historically existed. This wetland is shown below in Figure 1.

Figure 1. Wetland at CD77 Outlet in Section 11

HISTORY

Renville County Ditch No. 77 was originally established in 1918 as a tile system with a short ditch section at its downstream end which then outflowed into a private open ditch that drains into Limbo Creek, an altered natural watercourse. It consisted of a Mainline tile (24-inch to 12-inch) and 7 tile branches (12-inch to 6-inch) and 500 feet of open ditch.

The downstream conveyance of CD77 includes 770 feet of an excavated channel through the wetland complex in Section 11 up to the Limbo Creek watercourse. From that junction Limbo Creek was altered, channelized and straightened, through the remainder of Section 11 and through Section 12 up to CSAH 10. It is assumed that the construction of these private ditches occurred near the time of construction of CD77 as the natural grade would not allow for flow through this section without altering Limbo Creek and adjacent wetlands. These private channels are easily identifiable in a 1938 historical aerial photo.

Over the years, the tile system has been repaired several times and the ditch portion has been cleaned. Due to failing tile near the outlet into the open ditch, several sections of the public tile were removed and the flow from the tile was conveyed overland into the public ditch portion. The public tiles were not repaired or reinstalled due to the difficulty of construction with flood waters over the top of the tile.

There have also been periodic controlled burns of the wetland complex that surrounds the CD77 outfall to minimize the cattail periodically up until the 1980s when a petition for improvement of Limbo Creek was brought forward. That petition was dismissed and there were no known cleanouts of the private ditch since.

Subsequent Proceedings

Prior to this repair report, a Preliminary and Final Engineer's Report was completed to fulfill the submitted Petition for Improvement. The Preliminary Engineer's Report proposed two options. Option 1 included extending the outlet downstream 1-mile along the current alignment of the private ditch and altered Limbo Creek watercourse. Option 2 included re-rerouting the open ditch in an upland location in Section 22 to avoid working within the wetland complex. After review of applicable permits and discussions with the reviewing agencies, it was determined that Option 2 was not feasible as environmental, wetland, and wildlife impacts were significant. Therefore Option 1 was pursued and further detailed in the Final Engineer's Report.

Comments provided following the submission of the Final Engineer's Report indicated that the permitting and environmental review to proceed with an improvement would substantially extend the drainage process proceedings and increase costs for petitioners and landowners. Because of these obstacles, this Repair Report is offered as a solution to restore the flow for CD77 while reducing impacts to downstream public waters. Timing for repairs is also much quicker as the process is less complex under the repair statute of 103E.

EXISTING CONDITIONS

Information on the existing conditions of CD77 and Limbo Creek in Sections 11, 14, and 15 was obtained from alignments and maps from Renville County, a full topographic survey of the area, a drone aerial survey, and multiple site visits in combination with LiDAR data, DNR watershed boundaries, and both recent and historic aerials.

The topographic and drone surveys revealed significant sediment deposition in the main channel of Limbo Creek downstream of its junction with CD77. In some cases, the accumulated sediment is more than 4 feet higher than the culvert invert elevations and 2 feet higher than the CD77 tile outlet invert (see Figure 2). The sediment depths were calculated based on soil boring performed jointly with the DNR along the altered portion of the channel between 820th Avenue and CSAH 10. It was also observed that the sediment deposits in the channel, a dense monoculture of cattails in and around the channel (Figures 3 & 4), and gravel from the road overtopping accumulated in the channel have caused flow restrictions.

Figure 2. Sediment Covering the CD77 Mainline Tile Outlet

Figure 3. Drone Aerial of 820th Avenue (2019)

Figure 4. 820th Avenue Culvert (2018)

The sediment deposits and dense cattail growth in the large wetland complex in Section 11 that surrounds the CD77 outlet and existing private ditch have added to the channel flow restrictions that exacerbate flooding, road overtopping, and subsequent damage to public infrastructure on 820th Avenue. The downstream portion of the altered Limbo Creek in Section 14 has also significantly restricted flow for the upstream portion due to the sediment and cattails. Given the reduced storage capacity in this section, the flooding extends upstream into Section 14.

Capacity Analysis

The capacity of agricultural drainage conveyance infrastructure (ditch or tile) is expressed as a drainage coefficient in inches per day (in/day); the depth of water over the entire area of the upstream watershed that a ditch, tile, or culvert can drain in 24-hours. The repair must not exceed the capacity of the As Constructed or Subsequently Improved Condition (ACSIC) of the system established in the original design or subsequent improvement. The drainage coefficient for the Mainline outlet was calculated based on the ACSIC tile. Table 1 summarizes the maximum capacity (drainage coefficient) of the tile at the outlet as if they were in new condition with no sediment accumulation, blockages, or submersion.

TABLE 1. ACSIC TILE DRAINAGE CAPACITY

Area	ACSIC Size (in)	ACSIC Slope (%)	Drainage Area (Acres)	ACSIC Drainage Coefficient (in/day)
Main	24	0.07%	944.7	0.18

REPAIRS

Pumps

A dual pump system is proposed to be installed at the outlet of the CD77 Mainline tile. They will be 10 horsepower axial flow pumps from ADS, which have a life expectancy of 8 – 10 years. The dual pump system was selected so that each pump could alternate on low flows, which reduces stress on each pump. Because of this, the dual system is expected to extend the life expectancy of the pumps. The pumps are approximately $8,000 each, so the extended life expectancy will reduce future repair costs. Each pump runs on a variable frequency drive which slowly converts single phase power into three phase power which reduces start up burnout. The pump design requires the drainage tile to drop in elevation as it comes into the pump structure. This is necessary to provide the appropriate sump depth while maintaining the design head pressure of the pumps.

The maximum capacity of the pumps running together at the proposed lift station is the same as the capacity of the Mainline tile. A comparison of this capacity can be seen in Table 2 below. The lift station is designed to outlet water approximately one foot above the flood stage of the wetland to prevent the wetland from backing water up into the Mainline. At high flow, both pumps will run at maximum capacity, which matches the ACSIC capacity. A berm is proposed to access the pump and keep it above the water level of the wetland. It will also prevent the wetland from backing up over CD77 and seeping back into the tile. It should be noted that the during most of the flows when the lift station is operating will be less than the ACSIC capacity as the pumps will only run based on the flow rate coming into the lift station. The maximum dual pump capacity (ACSIC) will only operate after heavy rainfalls when the tile is flow at its full capacity.

TABLE 2. ACSIC AND PUMP CAPACITY COMPARISON

Area	ACSIC Size (in)	ACSIC Slope (%)	Drainage Area (Acres)	ACSIC Capacity (cfs)	Proposed Dual Pump Maximum Capacity (cfs)
Main	24	0.07%	944.7	7.09	7.09

Wetland Impacts

Currently, an application for a drainage repair exemption will be submitted to the Wetland Conservation Act Technical Evaluation Panel (WCA TEP). The TEP has preliminarily agreed that a drainage repair exemption is applicable for the project. Should the exemption be denied, wetland credits may need to be purchased to mitigate the construction of the proposed berm. The application is for 0.33 acres of impacts by constructing the berm to provide access for the restored CD77 outlet via the lift station. It should be noted that these wetland impacts are significantly less than the originally petitioned channel cleaning project from the private ditch downstream to the CSAH 10 crossing. Upon initial review of the project, the TEP has requested that the berm include an emergency overflow with adequate erosion control and that the proposed berm include rodent protection. The design has been updated to include these requests.

PUBLIC UTILITY, BENEFIT, OR WELFARE

In accordance with Section 103E.015, Subd. 2, and on behalf of the Drainage Authority, the Engineer has throughout this report considered whether the present petitioned repair will be of public utility, benefit, or welfare.

The engineer would have the reader be aware of the following as evidence of the required process of consideration:

1. The repair is proposed as an alternative to the Petition for Improvement to find a workable solution to provide an adequate outlet for CD77.
2. The proposed project will positively impact drainage issues by providing a free-flowing outlet to the Mainline tile that is not restricted by wetland water levels.
3. The present repairs have taken into consideration the existing wetland and Public Water, avoiding impact whenever possible. Because this project drains into and includes construction in a delineated wetland, the project is seeking a Drainage Repair Exemption from the WCA TEP.

Having applied appropriate consideration, the Engineer believes that County Ditch 77's repair will be of public utility, benefit, and welfare.

REPAIR COST ESTIMATE

The proposed repair will bring the system back to its As Constructed or Subsequently Improved Condition capacity while providing it an adequate outlet. Table 3 summarizes the cost of the repair project. Detailed cost estimates are included in Appendix C.

Other Project Related Costs

All drainage projects have indirect costs that must be accounted for in project cost estimates and used in cost benefit analyses. They include costs related to drainage authority administration; topographic survey; reports, plans and specifications; and construction staking and administration.

Cost Estimates

The following table summarizes the estimated cost for the proposed repair. The total repair cost for CD77 is approximately $185,383.

TABLE 3. COST ESTIMATE

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	$ 5,000.00	$ 5,000
102	TILE INVESTIGATION	HR	1	$ 149.40	$ 149
103	24-INCH AGRICULTURAL TILE	LF	100	$ 45.00	$ 4,500
104	CONNECT EXISTING 24-INCH TILE	EA	1	$ 1,217.70	$ 1,218
105	GRANULAR PIPE FOUNDATION	CY	3	$ 50.00	$ 150
106	BERM SEEDING (SEED MIX: BUFFER BLEND WITH TYPE 3 MULCH)	AC	0.4	$ 1,388.40	$ 555
107	CLASS III RIPRAP WITH GEOTEXTILE FABRIC	CY	10	$ 120.00	$ 1,200
108	CLASS II RIPRAP WITH GEOTEXTILE FABRIC	CY	15	$ 85.00	$ 1,275
109	REMOVE EXISTING 24-INCH TILE	LF	103	$ 2.20	$ 227
110	BL-1075 PUMP	EA	2	$ 8,000.00	$ 16,000
111	METAL ANCHOR	EA	6	$ 100.00	$ 600
112	10-INCH PVC PIPE	LF	57	$ 35.00	$ 1,995
113	PUMP SCREEN	EA	2	$ 100.00	$ 200
114	PUMP AND ELECTRICAL CONTROLS	LS	1	$ 15,000.00	$ 15,000
115	ELECTRICAL SERVICE EXTENSION	LS	1	$ 40,000.00	$ 40,000
116	LIFT STATION BASE	EA	1	$ 2,000.00	$ 2,000
117	96-INCH PRECAST CONCRETE STRUCTURE	EA	1	$ 12,000.00	$ 12,000
118	TOPSOIL STRIP	AC	1.1	$ 4,200.00	$ 4,620
119	RODENT GUARD ROCK TRENCH	LF	300	$ 7.00	$ 2,100
120	CONSTRUCT CLAY CORE BERM	CY	1762	$ 3.50	$ 6,167
				SUBTOTAL CONSTRUCTION COST	**$ 114,956**
				15% UNFORSEEN	$ 17,243
				TOTAL CONSTRUCTION COST	**$ 132,200**
TEMPORARY DAMAGES		AC	0.34	$ 650.00	$ 224
TELEVISING (POST CONSTRUCTION)		LF	100	$ 1.00	$ 100
				COUNTY ADMINISTRATION COSTS (Legal, Staff, Bonding, Advertisement)	$ 6,610
				REPORTS, PLANS AND SPECIFICATIONS	$ 24,500
				CONSTRUCTION STAKING & ADMINISTRATION	$ 21,750
				TOTAL CD77 REPAIR REPAIR COST	**$ 185,383**

ADDITIONAL RECOMMENDATIONS – CHANNEL CLEANING

Historically, the CD 77 tile drainage system adequately flowed through the private ditch and altered channel. Since the 1980s, maintenance of these channels has not occurred and thus has restricted and plugged the outlet to the CD 77 tile system. With the elected pump repairs and ability to discharge flows at a higher, unrestricted elevation; full cleaning of the downstream channel network is no longer required to provide the restored flow of the system. However, a 300-foot stretch of accumulated sediment and gravel deposits is recommended to be cleaned to restore the base flow through the system. This will alleviate flooding concerns to downstream landowners upstream of 820th Avenue with the project and will also significantly reduce the impacts to downstream ditch and altered watercourse. While this cleaning is proposed to happen outside of the repair proceedings, it is recommended by the engineer as it will address flooding and public safety concerns regarding the roadway.

Currently the flow at this crossing is severely restricted by the downstream sediment/gravel that has built up to the top of the culvert elevation (Figure 5). Approximately 95% of the flow to this point is runoff through the Limbo Creek watercourse. The flow passes through the roadway by either building up enough head pressure to force water laterally around the channel, or the flow over tops the roadway and causes additional sediment and gravel buildup within the channel. Cleaning this stretch is not necessary for the CD 77 pump repair, however it will provide more baseflow to pass through the culvert and reduce the risk of the roadway overtopping and furthermore public safety concerns.

A DNR public waters work permit application has been submitted for this project. The cleaning includes utilizing construction mats and hauling spoil material out of the wetland to be placed in an upland agricultural field to a depth no greater than one foot. Because the proposed cleaning will not be down to the legal grade of the channel, the chosen contractor will be required to have GPS grade control on their equipment so they can accurately clean the channel to the designed elevation. It is anticipated that a decision on the permit will be made after acceptance of this repair report is presented to the drainage authority. A copy of the DNR permit application, including a plan sheet of the proposed work, is included Appendix D.

If a DNR public waters permit is denied and the 300-foot stretch of Limbo Creek is not cleaned, the properties that will continue to be impacted by flooding and erosion concerns include Hawk Creek Township (820th Avenue), Peterson Family Farms, Corey and Cheryl Willert, and Alice & Robert Zimmer-Trustees.

The estimate repair cleaning cost for the 300-foot stretch downstream of 820th Avenue is $47,546.

Figure 5. 820th Avenue Culvert Low Flow Blocked by Downstream Sediment/Gravel Buildup

SUMMARY OF FINDINGS, CONCLUSIONS, + RECOMMENDATIONS

The Renville County Ditch 77 outlet is currently severely restricted from its originally constructed outlet. The tile outlet is frequently underwater and clogged with sediment due to wetland water levels. This restriction increases flooding upstream in the CD77 watershed. To repair these drainage issues, a pump system is proposed at the Mainline tile outlet of CD77 to provide an unrestricted outlet. The pump will be limited to the ACSIC capacity of the CD77 Mainline tile outlet. The estimated cost of the proposed repair is $185,383.

In accordance with Section 103E.715 REPAIR BY PETITION, Subd. 2, Whereas the engineer has ascertained the As Constructed or Subsequently Improved Condition (ACSIC) of the System, and whereas the engineer has shown the necessary repairs, and whereas the engineer has shown the proposed repair to be of public utility, benefit, and welfare per Section 103E.015, Subd. 2, and whereas the engineer has provided estimated costs of the repairs, and whereas the engineer has provided plans for the repair, therefore the engineer recommends the proposed repair project to the Drainage Authority for approval.

In addition to the repair, it is recommended to clean 300 linear feet of open channel downstream of the 820th Ave culvert. This work is recommended because sediment and gravel has built up to 4 feet above the invert of the culvert. This blockage increases the frequency at which the road overtops which has led to erosion and public safety concerns. This work is recommended to alleviate those concerns and to provide a minimally intrusive solution to restore hydrology to the waterway. The cost of the open channel cleaning is estimated at $47,546.

Appendix A: Preliminary Repair Plans

RENVILLE COUNTY
COUNTY DITCH No. 77 PUMP REPAIR
REPAIR REPORT

HAWK CREEK TWP., MINNESOTA

ISG PROJECT # 14-16717

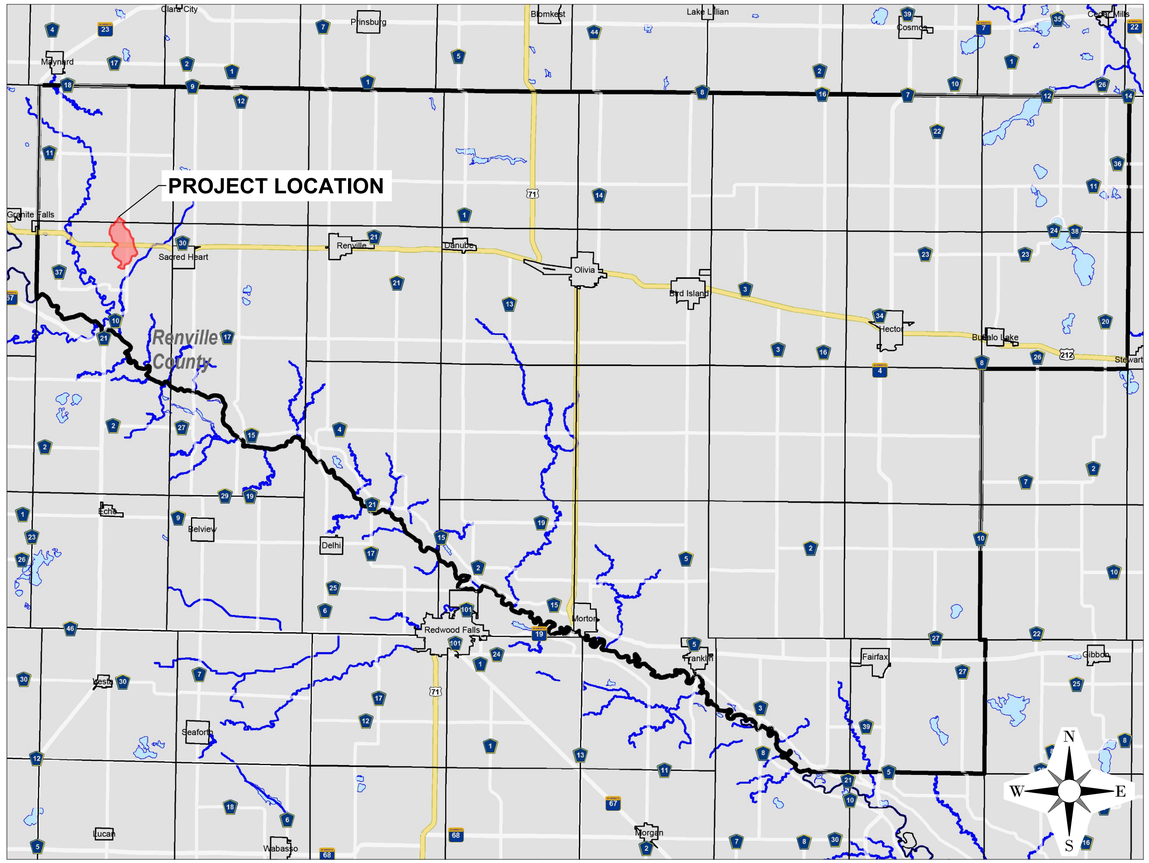
LEGEND

EXISTING

- WATERSHED BOUNDARY
- CITY LIMITS
- SECTION LINE
- QUARTER SECTION LINE
- RIGHT OF WAY LINE
- PROPERTY / LOTLINE
- EASEMENT LINE
- ACCESS CONTROL
- WATER EDGE
- WETLAND BOUNDARY
- FENCE LINE
- EXISTING OPEN DITCH
- CULVERT
- TILE
- PRIVATE TILE
- WATER
- GAS
- OVERHEAD ELECTRIC
- UNDERGROUND ELECTRIC
- UNDERGROUND TELEPHONE
- UNDERGROUND TV
- OVERHEAD UTILITY
- UNDERGROUND UTILITY
- UNDERGROUND FIBER OPTIC
- CONTOUR (MAJOR)
- CONTOUR (MINOR)
- DECIDUOUS TREE
- CONIFEROUS TREE
- TREE LINE
- DROP INTAKE
- HYDRANT
- POWER POLE

PROPOSED

- EASEMENT
- PROPOSED OPEN DITCH
- OPEN DITCH REPAIR
- CULVERT (RCP)
- CULVERT (CMP)
- CULVERT (HDPE)
- TILE
- TILE (PIPE WIDTH)
- PRIVATE TILE
- WATER
- GAS
- OVERHEAD ELECTRIC
- UNDERGROUND ELECTRIC
- UNDERGROUND TV
- CONTOUR (MAJOR)
- CONTOUR (MINOR)
- DROP INTAKE
- SLOUGH REPAIR
- SPOIL PLACEMENT
- TREE CLEARING
- REMOVE TREE
- BUFFER



LOCATION MAP

SHEET INDEX

GIS DISCLAIMER:

INFORMATION FOR THE BOUNDARY / LOT LINES, AND UNDERGROUND UTILITIES SHOWN WAS DERIVED FROM DIGITAL DATABASES AND IS FOR INFORMATIONAL PURPOSES ONLY. DATA MAY NOT HAVE BEEN PREPARED FOR, OR BE SUITABLE FOR: LEGAL, ENGINEERING, OR SURVEYING PURPOSES.

PROJECT GENERAL NOTES

1. ALL WORK SHALL CONFORM TO THE CONTRACT DOCUMENTS, WHICH INCLUDE, BUT ARE NOT LIMITED TO, THE OWNER - CONTRACTOR AGREEMENT, THE PROJECT MANUAL (WHICH INCLUDES GENERAL SUPPLEMENTARY CONDITIONS AND SPECIFICATIONS), DRAWINGS OF ALL DISCIPLINES AND ALL ADDENDA, MODIFICATIONS, AND CLARIFICATIONS ISSUED BY ARCHITECT/ENGINEER.
2. CONTRACT DOCUMENTS SHALL BE ISSUED TO ALL SUBCONTRACTORS BY THE GENERAL CONTRACTOR IN COMPLETE SETS IN ORDER TO ACHIEVE THE FULL EXTENT AND COMPLETE COORDINATION OF ALL WORK.
3. WRITTEN DIMENSIONS TAKE PRECEDENCE OVER SCALED DIMENSIONS. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR CONDITIONS REQUIRING INFORMATION OR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
4. FIELD VERIFY ALL EXISTING CONDITIONS AND DIMENSIONS. NOTIFY ARCHITECT/ENGINEER OF ANY DISCREPANCIES OR CONDITIONS REQUIRING INFORMATION OR CLARIFICATION BEFORE PROCEEDING WITH THE WORK.
5. DETAILS SHOWN ARE INTENDED TO BE INDICATIVE OF THE PROFILES AND TYPE OF DETAILING REQUIRED THROUGHOUT THE WORK. DETAILS NOT SHOWN ARE SIMILAR IN CHARACTER TO DETAILS SHOWN. WHERE SPECIFIC DIMENSIONS, DETAILS, OR DESIGN INTENT CANNOT BE DETERMINED, NOTIFY ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK.
6. ALL MANUFACTURED ARTICLES, MATERIALS, AND EQUIPMENT SHALL BE APPLIED, INSTALLED, CONNECTED, ERECTED, CLEANED, AND CONDITIONED ACCORDING TO MANUFACTURERS' INSTRUCTIONS. IN CASE OF DISCREPANCIES BETWEEN MANUFACTURERS' INSTRUCTIONS AND THE CONTRACT DOCUMENTS, NOTIFY ARCHITECT/ENGINEER BEFORE PROCEEDING WITH THE WORK.
7. ALL DISSIMILAR METALS SHALL BE EFFECTIVELY ISOLATED FROM EACH OTHER TO AVOID GALVANIC CORROSION.
8. THE LOCATION AND TYPE OF ALL EXISTING UTILITIES SHOWN ON THE PLANS ARE FOR GENERAL INFORMATION ONLY AND ARE ACCURATE AND COMPLETE TO THE BEST OF THE KNOWLEDGE OF I & S GROUP, INC. (ISG). NO WARRANTY OR GUARANTEE IS IMPLIED. THE CONTRACTOR SHALL VERIFY THE SIZES, LOCATIONS, AND ELEVATIONS OF ALL EXISTING UTILITIES PRIOR TO CONSTRUCTION. CONTRACTOR SHALL IMMEDIATELY NOTIFY ENGINEER OF ANY DISCREPANCIES OR VARIATIONS FROM PLAN.
9. THE CONTRACTOR IS TO CONTACT "GOPHER STATE ONE CALL" FOR UTILITY LOCATIONS A MINIMUM OF 2 BUSINESS DAYS PRIOR TO ANY EXCAVATION / CONSTRUCTION (1-800-252-1166).

PROJECT INDEX:

OWNER:

HAWK CREEK TOWNSHIP
MARK TOLLEFSON
15447 840TH AVENUE
SACRED HEART, MN 56285

PROJECT ADDRESS / LOCATION:

SECTION: 11

HAWK CREEK TWP,
RENVILLE COUNTY
MINNESOTA

MANAGING OFFICE:

MANKATO OFFICE
115 EAST HICKORY STREET
SUITE 300
MANKATO, MN 56001
PHONE: 507.387.6651

PROJECT MANAGER: CHUCK BRANDEL
EMAIL: CHUCK.BRANDEL@ISGINC.COM

SPECIFICATIONS REFERENCE

ALL CONSTRUCTION SHALL COMPLY WITH RENVILLE COUNTY'S REQUIREMENTS AND MnDOT STANDARD SPECIFICATIONS FOR CONSTRUCTION, 2020 EDITION, THE MnDOT SUPPLEMENTAL SPECIFICATIONS, SEPTEMBER 2022, THE STANDARD SPECIFICATIONS FOR SANITARY SEWER, STORM DRAIN AND WATERMAIN AS PROPOSED BY THE CITY ENGINEERS ASSOCIATION OF MINNESOTA 2018, AND THE CURRENT VERSION OF THE MINNESOTA STATE PLUMBING CODE UNLESS DIRECTED OTHERWISE.

PROJECT DATUM

HORIZONTAL COORDINATES HAVE BEEN REFERENCED TO THE NORTH AMERICAN DATUM OF 1983 (NAD83), 1996 ADJUSTMENT (NAD83(1996)) ON THE RENVILLE COUNTY COORDINATE SYSTEM, IN U.S. SURVEY FEET.

ELEVATIONS HAVE BEEN REFERENCED TO THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD 88).
RTK GPS METHODS WERE USED TO ESTABLISH HORIZONTAL AND VERTICAL COORDINATES FOR THIS PROJECT.

B.M. ELEVATION=1048.46
MnDOT GEODETIC MARKER "WANG MNDOT".

TOPOGRAPHIC SURVEY

THIS PROJECT'S TOPOGRAPHIC SURVEY CONSISTS OF DATA COLLECTED IN FEBRUARY 2017 BY ISG.

NOTE:
THE CLARITY OF THESE PLANS DEPEND UPON COLOR COPIES. IF THIS TEXT DOES NOT APPEAR IN COLOR, THIS IS NOT AN ORIGINAL PLAN SET AND MAY RESULT IN MISINTERPRETATION.

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

CHARLES J. BRANDEL

DATE _____ LIC. NO. 43359

PROJECT

RENVILLE COUNTY COUNTY DITCH No.77 PUMP REPAIR

HAWK CREEK TWP. MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

PROJECT NO.	14-16717
FILE NAME	16717 TITLE
DRAWN BY	JAT
DESIGNED BY	JMW
REVIEWED BY	MAO
ORIGINAL ISSUE DATE	--/--/--
CLIENT PROJECT NO.	-

TITLE

TITLE

SHEET

1

OF 10

PLOT DATE: 11/6/2024 8:22 AM

GENERAL PROJECT NOTES:

1. DURING CONSTRUCTION, CONTRACTOR SHALL MAINTAIN A DRAINAGE OUTLET FOR THE ENTIRE CD 77 PROJECT AREA.
2. ALL PIPE DIMENSIONS REFERENCED IN THE PLANS REFER TO THE INSIDE DIAMETER.
3. ALL ROAD SIGNAGE, COORDINATION, AND TRAFFIC CONTROL SIGNAGE SHALL BE INCIDENTAL TO ROAD RESTORATIONS AND SHALL CONFORM TO LOCAL ROAD AUTHORITY PERMITS AND REGULATIONS.
4. THE CONTRACTOR SHALL SUBMIT A WINTER CONSTRUCTION PLAN FOR SITE STABILIZATION, EROSION PREVENTION, AND SEDIMENT CONTROL IF THE PROJECT IS NOT COMPLETED BY OCTOBER 15 OF THE GIVEN CONSTRUCTION SEASON, UNLESS APPROVED BY THE ENGINEER. THE PLAN SHALL BE DEVELOPED TO SPECIFICALLY ADDRESS SHUTDOWN PROCEDURES OR ACTIVE CONSTRUCTION PLANS.
5. ALL DEWATERING FOR THE PROJECT IS INCIDENTAL.
6. PRODUCT MATERIAL SHALL BE AS SPECIFIED IN THE PLANS. IF NO SPECIFIC MATERIAL IS CALLED OUT, MATERIAL SHALL CONFORM TO THE APPROVED PRODUCT LIST IN THE APPROPRIATE SPECIFICATION.
7. ALL EFFORTS SHALL BE MADE DURING CONSTRUCTION TO SEPARATE SOIL TYPES. BACKFILL SHALL BE COMPACTED PRIOR TO PLACEMENT OF TOPSOIL, EXCEPT THE TOP TWO (2) FEET, FOR WHICH COMPACTION SHALL BE MINIMIZED TO THE EXTENT POSSIBLE. TOPSOIL SHALL BE PLACED TO A MINIMUM DEPTH OF 18", OR UNIFORM TO THE TOPSOIL DEPTH OF THE SURROUNDING AREA UNLESS SPECIFIED ELSEWHERE IN THE PLANS. EXCAVATED SPOILS SHALL BE SPREAD EVENLY IN CONSTRUCTION AREA AS TO NOT IMPEDE DRAINAGE. ALL EFFORTS SHALL BE MADE TO KEEP TOPSOIL ON TOP AND SEPARATED. NO TOPSOIL SHALL BE PLACED IN THE TRENCH BELOW 2' FROM EXISTING GROUND UNLESS APPROVED BY THE ENGINEER.
8. ALL SPOIL LEVELING, GRADING, AND RESTORATION OF DISTURBED AREAS SHALL BE IN ACCORDANCE TO THE CONTRACT DOCUMENTS AND SHALL BE INCIDENTAL TO THE WORK UNLESS OTHERWISE SPECIFIED.
9. AGGREGATE SURFACE SHALL BE INCIDENTAL TO CROSSING OR ROAD RESTORATION.
10. RIPRAP QUANTITIES ARE ESTIMATED. ADDITIONAL QUANTITY MAY BE REQUIRED BY THE ENGINEER. ALL RIPRAP QUANTITIES SHALL BE PAID BY THE CUBIC YARD INSTALLED, UNLESS RIPRAP IS INCIDENTAL TO A SEPARATE PAY ITEM. ALL EXCAVATION AND GEOTEXTILE FABRIC SHALL BE INCIDENTAL TO RESPECTIVE BID ITEM.
11. EXISTING TILES THAT ARE DISTURBED DURING CONSTRUCTION SHALL BE REPAIRED AT NO COST TO THE PROJECT, UNLESS OTHERWISE SPECIFIED.
12. ALL SIGNS AND MARKERS SHALL BE PROTECTED OR REMOVED AND REINSTALLED AT NO ADDITIONAL COST TO THE PROJECT, UNLESS OTHERWISE SPECIFIED. THE ENGINEER SHALL BE NOTIFIED OF ANY SIGNS OR MARKERS IN POOR CONDITION PRIOR TO REMOVAL.
13. THE DRAINAGE AUTHORITY TAKES NO AUTHORITY OVER OR RESPONSIBILITY FOR ANY AND ALL PRIVATE TILE SHOWN ON THESE PLANS. PRIVATE TILE LOCATIONS HAVE BEEN SUPPLIED BY LANDOWNERS FOR USE BY THE CONTRACTOR.
14. THE CONTRACTOR SHALL PAY ALL DAMAGES OUTSIDE OF THE AGREED UPON EASEMENT IN AN AMOUNT OF $1,200 PER ACRE OF DISTURBANCE, AS MEASURED BY THE ENGINEER.
15. ALL DUAL WALL HDPE AGRICULTURAL TILE SHALL BE FULLY ENCASED IN FOUNDATION MATERIAL, INCIDENTAL TO CONSTRUCTION.
16. EXISTING 24-INCH MAINLINE TILE SHALL BE EITHER REMOVED OR SAND FILLED IN THE PROJECT AREA.

LIFT STATION NOTES

1. POWER SUPPLY SHALL BE SINGLE PHASE OVERHEAD ELECTRIC SUPPLY WITH THREE PHASE VFD CONVERTERS, AND ALL APPROPRIATE ELECTRICAL CONNECTS. PAID FOR BY "POWER SUPPLY" LUMP SUM.
2. PUMP SELECTION SHALL MEET THE SPECIFICATIONS LISTED ON PUMP DETAIL SHEET OR AN APPROVED EQUAL.
3. FURNISH AND INSTALL PUMPS, SCREENS, TRANSDUCERS, AND ALL OTHER MISCELLANEOUS EQUIPMENT FOR PROPER PUMP INSTALLATION, INCIDENTAL TO PUMP CONSTRUCTION.
4. FURNISH AND INSTALL ALL PIPING WITHIN THE PUMP STATION, FITTINGS, REDUCERS, SUPPORTS, VALVES, FLOOR SLEEVES, APPURTENANCES, AND OTHER MISCELLANEOUS EQUIPMENT AND MATERIAL AS INDICATED IN THE PLANS. INCIDENTAL TO PUMP CONSTRUCTION.
5. PVC DISCHARGE PIPES SHALL BE INSTALLED AS SHOWN WITH METAL ANCHORING STAKES. METAL ANCHORS SHALL BE STAKED EVERY 6-FEET AND SECURELY FASTENED TO EACH INDIVIDUAL DISCHARGE PIPE, INCIDENTAL TO PVC DISCHARGE PIPE CONSTRUCTION.
6. ALL EXPOSED PVC PIPES AND FITTINGS SHALL BE UV PROTECTED.
7. ALL PVC CONNECTIONS ARE INCIDENTAL TO CONSTRUCTION.

TOTAL ESTIMATED QUANTITIES

Item Code	Item	Unit	Estimated Quantity
01.7113.1000.01	MOBILIZATION	LS	1
25.0350.3131.01	10-INCH PVC PIPE	LF	57
25.5060.1003.60	PUMP SCREEN	EA	2
25.5060.1003.60	PUMP AND ELECTRICAL CONTROLS	LS	1
25.5060.1003.60	ELECTRICAL SERVICE EXTENSION	LS	1
31.2316.1000.05	TOPSOIL STRIP	AC	1.1
31.2316.1000.07	CONSTRUCT CLAY CORE BERM	CY	1762
31.2500.1000.03	METAL ANCHOR	EA	6
31.3700.1000.07	CLASS II RIPRAP WITH GEOTEXTILE FABRIC	CY	15
31.3700.1000.07	CLASS III RIPRAP WITH GEOTEXTILE FABRIC	CY	10
32.9219.1000.10	BERM SEEDING (SEED MIX: BUFFER BLEND WITH TYPE 3 MULCH)	AC	0.4
33.0513.1000.02	LIFT STATION BASE	EA	1
33.0513.1000.02	96-INCH PRECAST CONCRETE STRUCTURE	EA	1
33.4510.1000.02	CONNECT EXISTING 24-INCH TILE	EA	1
33.4510.1000.03	24-INCH AGRICULTURAL TILE	LF	100
33.4510.1000.03	REMOVE EXISTING 24-INCH TILE	LF	103
33.4510.1000.07	GRANULAR PIPE FOUNDATION	CY	3
33.4510.1000.10	TILE INVESTIGATION	HR	1
34.0100.1000.07	RODENT GUARD ROCK TRENCH	LF	300
DTM-15HF	BL-1075 PUMP	EA	2

ABBREVIATIONS

AC	ACRE	GA	GAUGE	PP	POLYPROPYLENE
ADD	ADDENDUM	GAL	GALLON	PSI	POUNDS PER SQUARE INCH
AGG	AGGREGATE	GPM	GALLONS PER MINUTE	PVC	POLYVINYL CHLORIDE
APPROX	APPROXIMATE	HDPE	HIGH DENSITY POLYETHYLENE	PVMT	PAVEMENT
BIT	BITUMINOUS	HORIZ	HORIZONTAL	QTY	QUANTITY
CAD	COMPUTER-AIDED DESIGN	HR	HOUR	RCP	REINFORCED CONCRETE PIPE
CFS	CUBIC FEET PER SECOND	HWL	HIGH WATER LEVEL	REBAR	REINFORCING BAR
CF	CUBIC FOOT	HWY	HIGHWAY	REM	REMOVE
CL	CENTERLINE	HYD	HYDRANT	ROW	RIGHT OF WAY
CMP	CORRUGATED METAL PIPE	I	INVERT	R/W	RIGHT OF WAY
CONC	CONCRETE	ID	INSIDE DIAMETER	SCH	SCHEDULE
CONST	CONSTRUCTION	IN	INCH	SF	SQUARE FOOT
CONT	CONTINUOUS	INV	INVERT	SPEC	SPECIFICATION
CR	COUNTY ROAD	LF	LINEAR FEET	SQ	SQUARE
CSAH	COUNTY STATE AID HIGHWAY	LIN	LINEAR	STA	STATION
CY	CUBIC YARD	LS	LUMP SUM	SY	SQUARE YARD
DI	DROP INTAKE	MAX	MAXIMUM	TEMP	TEMPORARY
DIA	DIAMETER	MH	MANHOLE	THRU	THROUGH
DIM	DIMENSION	MIN	MINIMUM	TRANS	TRANSFORMER
EA	EACH	MISC	MISCELLANEOUS	TV	TELEVISION
ELEC	ELECTRICAL	NO	NUMBER	TYP	TYPICAL
ELEV	ELEVATION	NTS	NOT TO SCALE	UT	UTILITY, UNDERGROUND TELEPHONE
EOF	EMERGENCY OVERFLOW	NWL	NORMAL WATER LEVEL	VCP	VITRIFIED CLAY PIPE
EQ	EQUAL	OC	ON CENTER	W/O	WITHOUT
EX	EXISTING	OCEW	ON CENTER EACH WAY	W/	WITH
FDN	FOUNDATION	OH	OVERHEAD	YD	YARD
FPM	FEET PER MINUTE	OHWL	ORDINARY HIGH WATER	YR	YEAR
FPS	FEET PER SECOND	OZ	OUNCE		
FT	FOOT, FEET	PERF	PERFORATED		
		PL	PROPERTY LINE		

PLOT DATE: 11/6/2024 9:41 AM

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PRELIMINARY - NOT FOR CONSTRUCTION

CHARLES J. BRANDEL

DATE _____ LIC. NO. 43359

PROJECT

RENVILLE COUNTY COUNTY DITCH No.77 PUMP REPAIR

HAWK CREEK TWP. MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

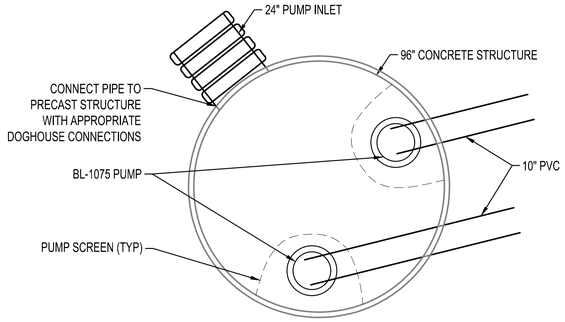
PROJECT NO.	14-16717
FILE NAME	16717 NOTES AND QUANTITIES
DRAWN BY	JAT
DESIGNED BY	JMW
REVIEWED BY	MAO
ORIGINAL ISSUE DATE	--/--/--
CLIENT PROJECT NO.	-

TITLE

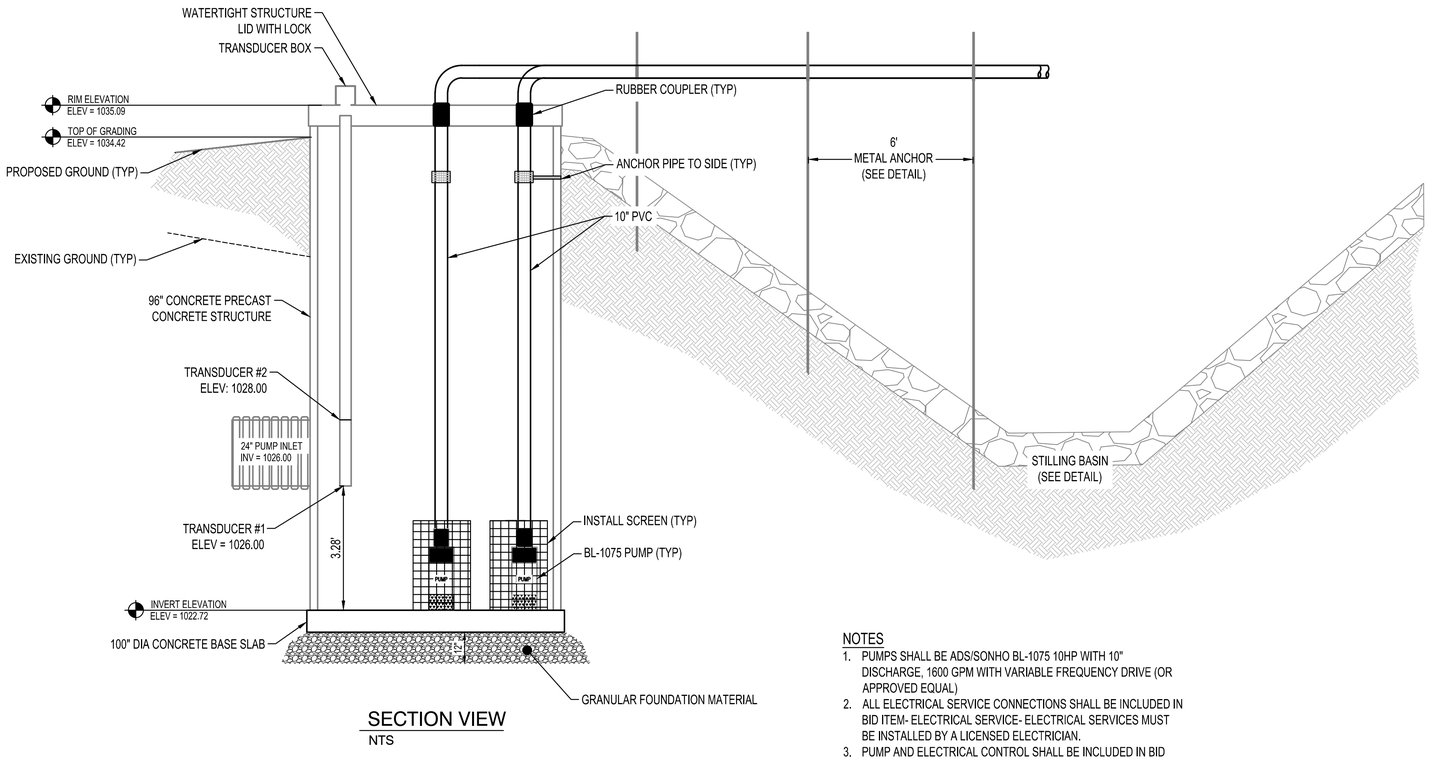
NOTES - QUANTITIES

SHEET

2 OF 10



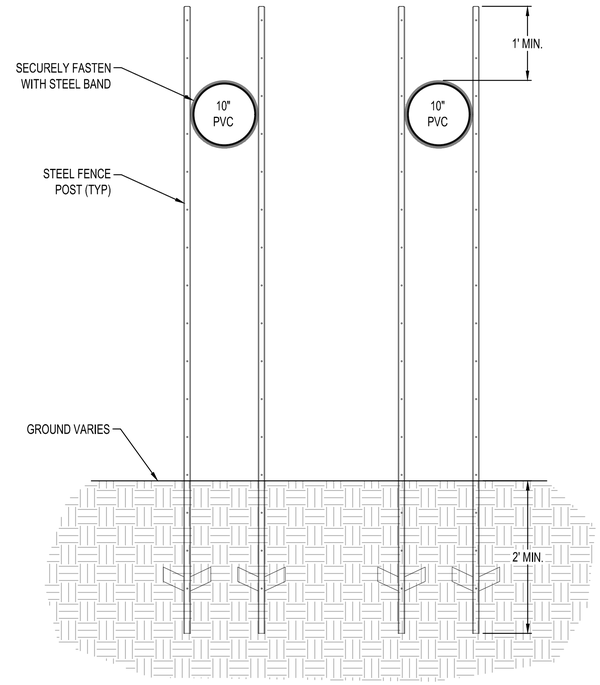
PLAN VIEW
NTS



SECTION VIEW
NTS

PUMP LIFT STATION DETAIL
NTS

NOTES
1. PUMPS SHALL BE ADS/SONHO BL-1075 10HP WITH 10" DISCHARGE, 1600 GPM WITH VARIABLE FREQUENCY DRIVE (OR APPROVED EQUAL)
2. ALL ELECTRICAL SERVICE CONNECTIONS SHALL BE INCLUDED IN BID ITEM- ELECTRICAL SERVICE- ELECTRICAL SERVICES MUST BE INSTALLED BY A LICENSED ELECTRICIAN.
3. PUMP AND ELECTRICAL CONTROL SHALL BE INCLUDED IN BID ITEM- PUMP AND ELECTRICAL CONTROLS.
4. LIFT STATION ACCESS BID ITEM INCLUDES: GRADING, AGGREGATE BASE AND POSITIVE DRAINAGE.
5. 10" PUMP OUTLET TILE HAS ITS OWN BID ITEM.
6. PUMP SCREEN SHALL COVER ENTIRE PUMP TO PREVENT DEBRIS FROM ENTERING PUMP. SCREEN MAXIMUM OPENING SHALL BE 1-INCH UNLESS OTHERWISE RECOMMENDED BY MANUFACTURER.
7. STRUCTURE LID SHOULD BE WATERTIGHT AND INCLUDE A LOCK.



METAL ANCHOR DETAIL
NTS

PLOT DATE: 1/16/2024 8:23 AM

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PRELIMINARY - NOT FOR CONSTRUCTION

CHARLES J. BRANDEL

DATE _____ LIC. NO. 43359

PROJECT

RENVILLE COUNTY COUNTY DITCH No.77 PUMP REPAIR

HAWK CREEK TWP. MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

PROJECT NO.	14-16717
FILE NAME	16717 DETAILS
DRAWN BY	JAT
DESIGNED BY	JMW
REVIEWED BY	MAO
ORIGINAL ISSUE DATE	--/--/--
CLIENT PROJECT NO.	-

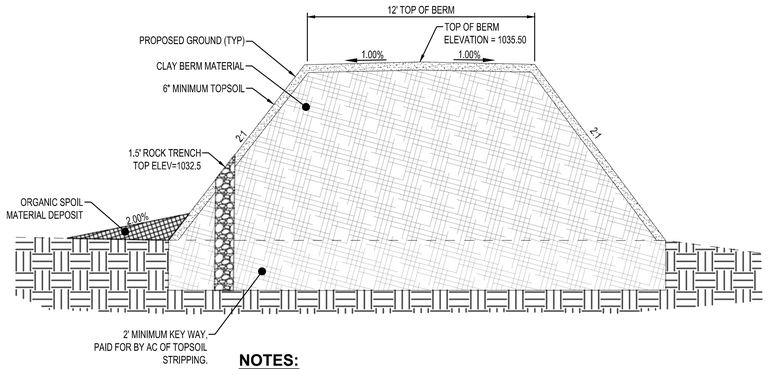
TITLE

DETAILS

SHEET

3

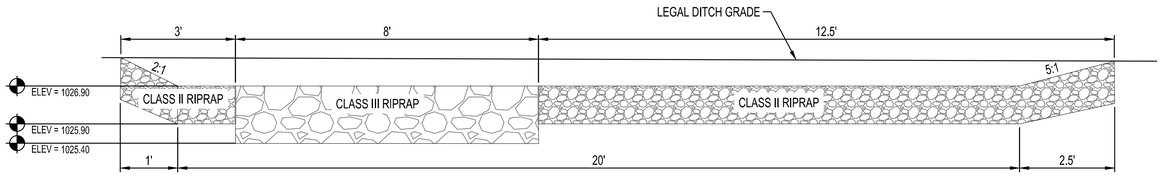
OF 10



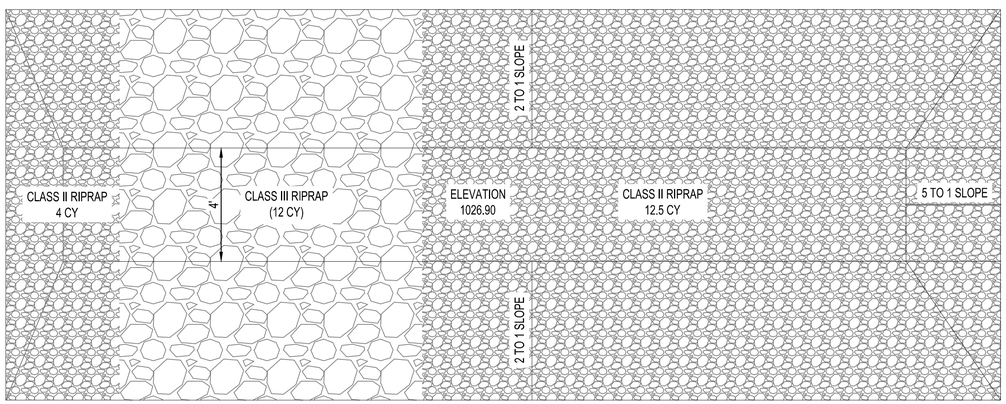
NOTES:

1. BERM MATERIAL SHOULD BE PLACED TO 95% STANDARD PROCTOR COMPACTION (MAXIMUM 6" LIFTS)
2. BERM MATERIAL SHOULD BE KEYED ON ALL SIDES INTO TILL MATERIAL
3. ROCK TRENCH SHOULD CONSIST OF CLASS I BALLAST ROCK (3/4" - 4")

BERM
NTS



SECTION VIEW
NTS



PLAN VIEW
NTS

STILLING BASIN DETAIL
NTS

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HAWK CREEK TWP. MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

PROJECT NO.	14-16717
FILE NAME	16717 DETAILS
DRAWN BY	JAT
DESIGNED BY	JMW
REVIEWED BY	MAO
ORIGINAL ISSUE DATE	--/--/--
CLIENT PROJECT NO.	-

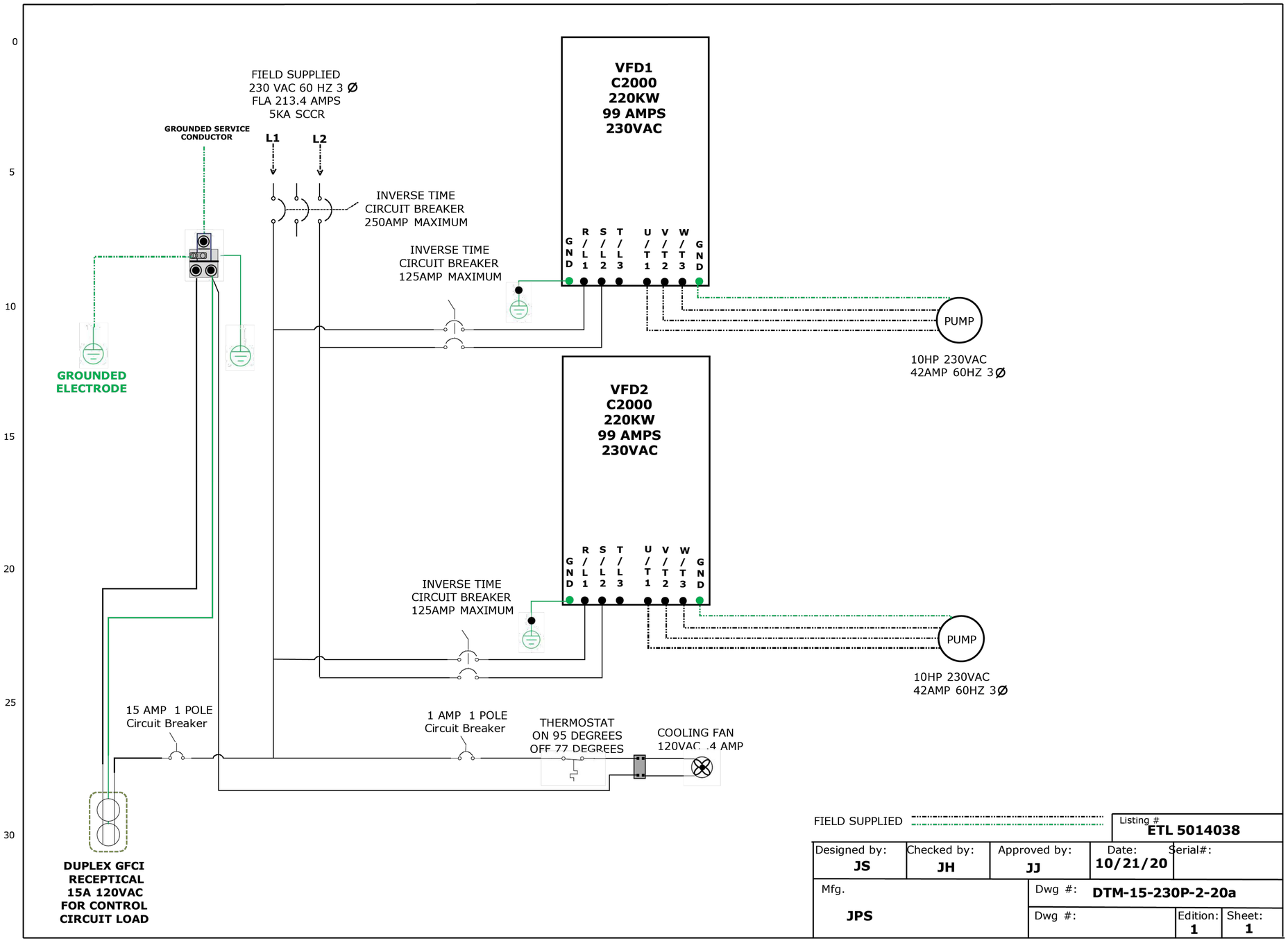
TITLE

DETAILS

SHEET

4

OF 10



FIELD SUPPLIED

Designed by: JS	Checked by: JH	Approved by: JJ	Date: 10/21/20	Serial#:
Mfg. JPS		Dwg #: DTM-15-230P-2-20a		
		Dwg #:	Edition: 1	Sheet: 1

Listing # ETL 5014038

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PROJECT

RENVILLE COUNTY COUNTY DITCH No.77 PUMP REPAIR

HAWK CREEK TWP. MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

PROJECT NO.	14-16717
FILE NAME	16717 DETAILS
DRAWN BY	JAT
DESIGNED BY	JMW
REVIEWED BY	MAO
ORIGINAL ISSUE DATE	--/--/--
CLIENT PROJECT NO.	-

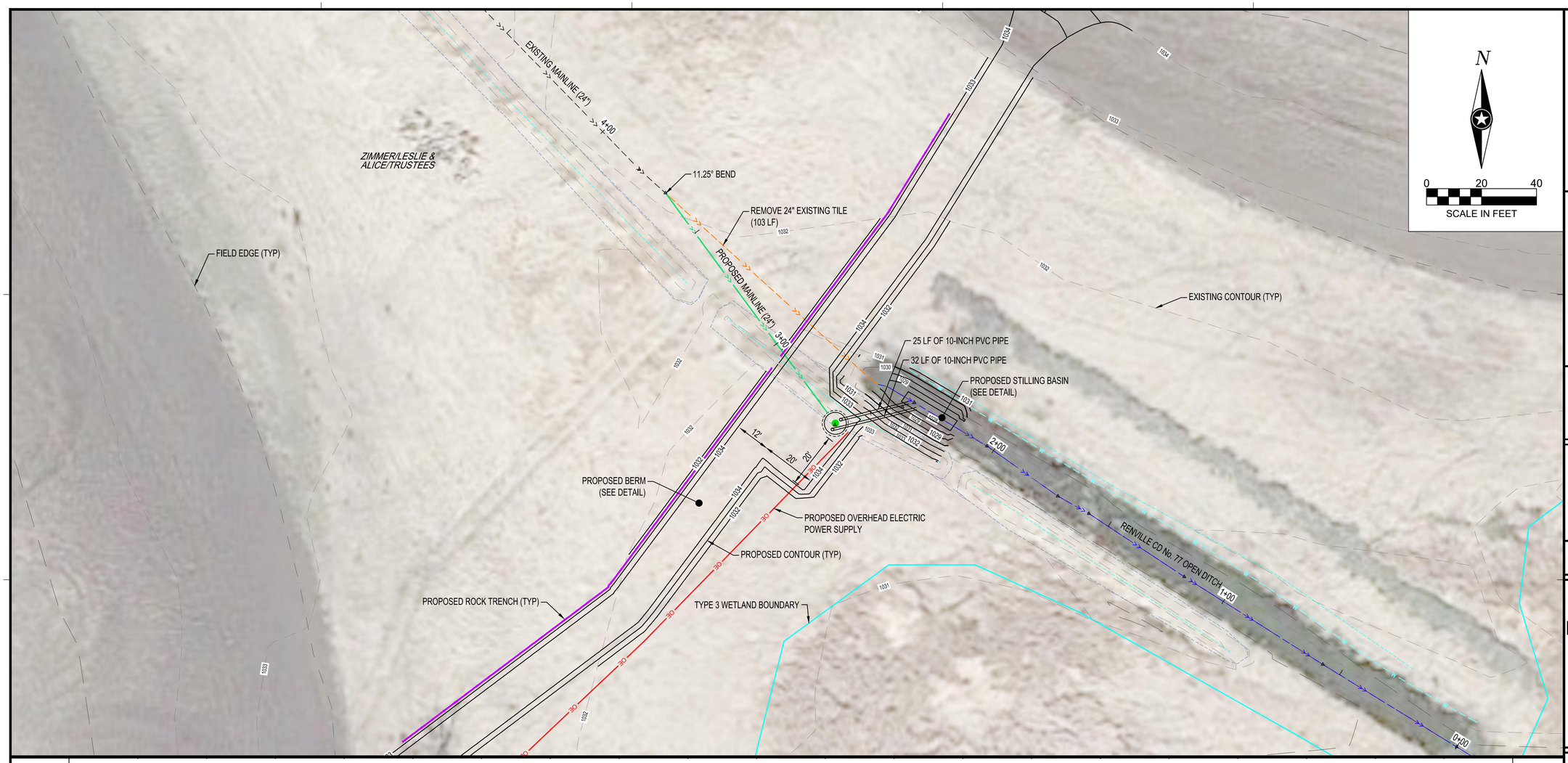
TITLE

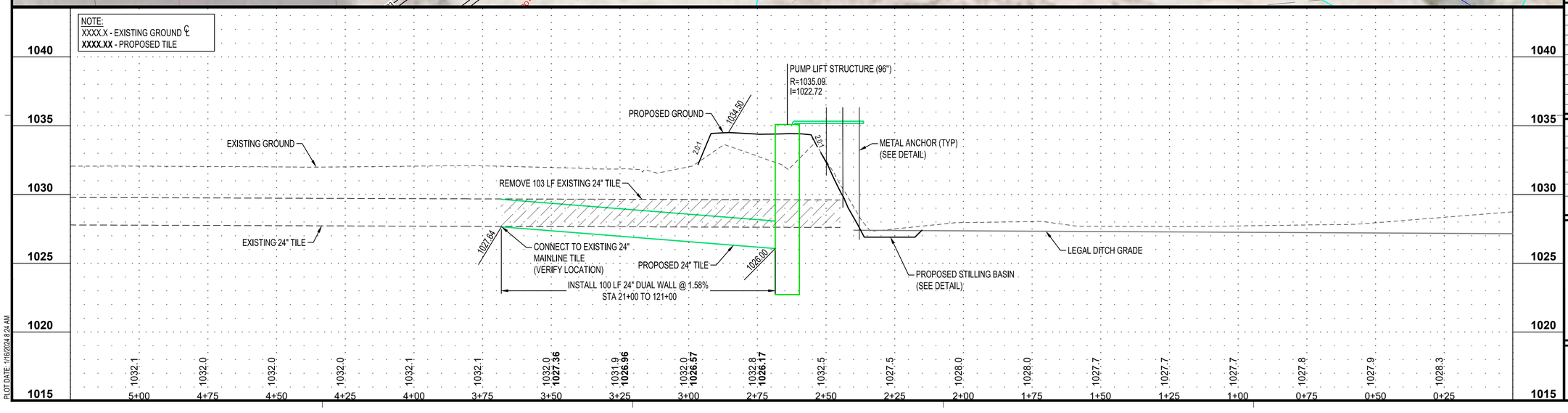
WIRING DETAILS

SHEET

5 OF 10

PLOT DATE: 11/6/2024 8:23 AM





PLOT DATE - 1/16/2024 8:24 AM

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PROJECT

RENVILLE COUNTY COUNTY DITCH No.77 PUMP REPAIR

HAWK CREEK TWP. MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

PROJECT NO.	14-16717
FILE NAME	16717 GRADING
DRAWN BY	JAT
DESIGNED BY	JMW
REVIEWED BY	MAO
ORIGINAL ISSUE DATE	--/--/--
CLIENT PROJECT NO.	-

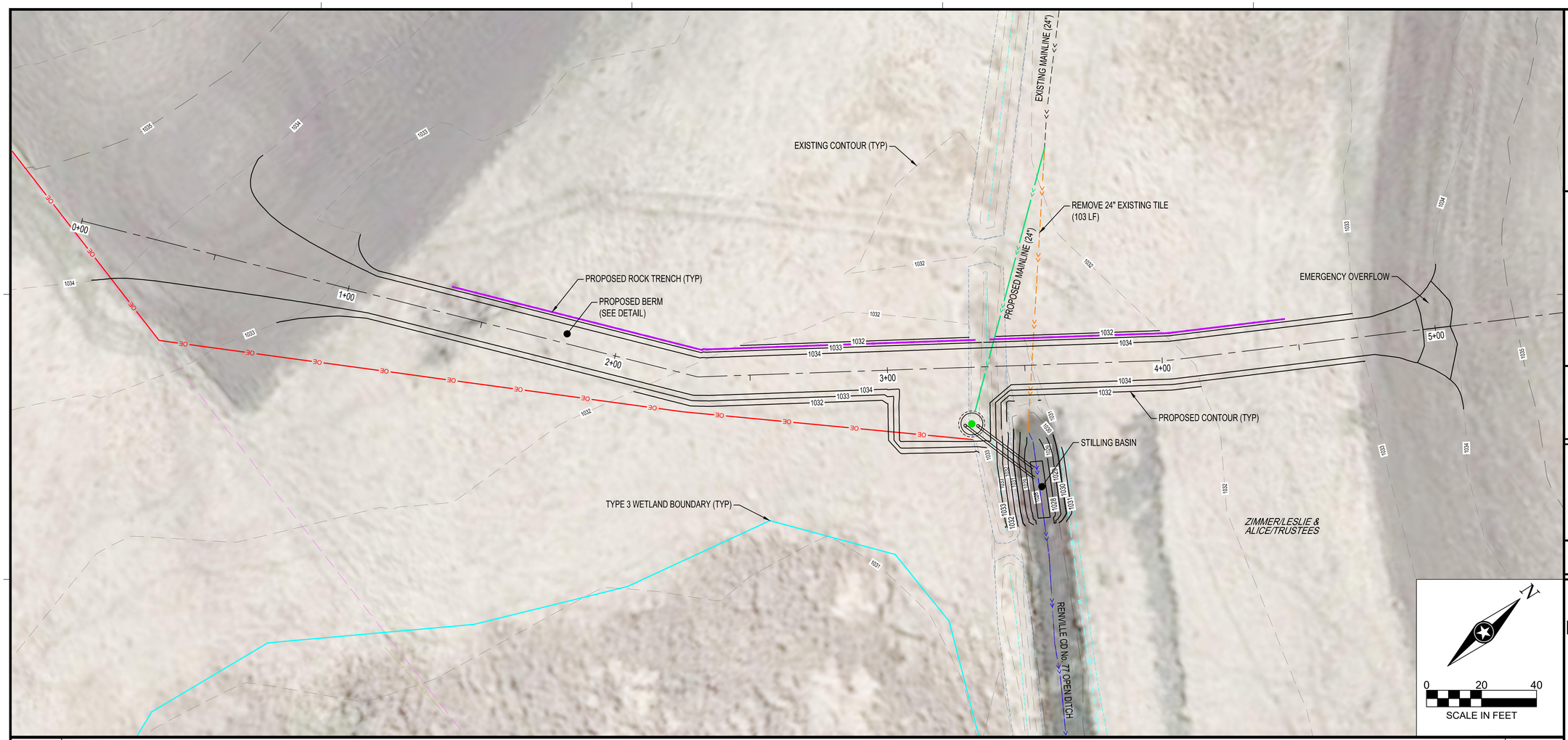
TITLE

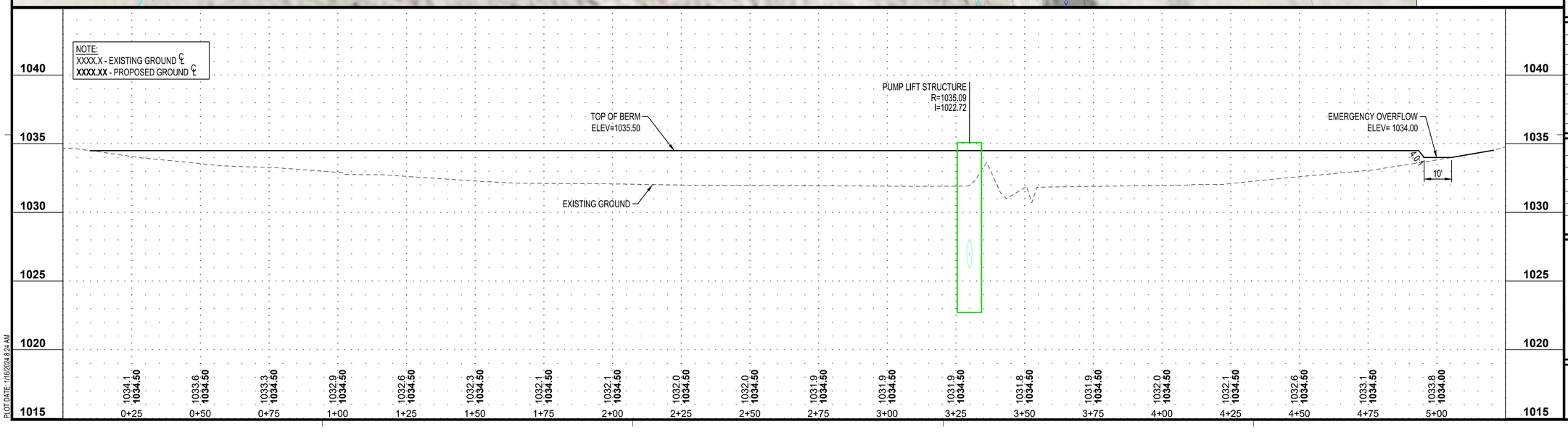
PLAN - PROFILE

SHEET

6

OF 10





PLOT DATE - 1/18/2024 8:24 AM

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RENVILLE COUNTY COUNTY DITCH No.77 PUMP REPAIR

HAWK CREEK TWP. MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

PROJECT NO.	14-16717
FILE NAME	16717 PROFILES
DRAWN BY	JAT
DESIGNED BY	JMW
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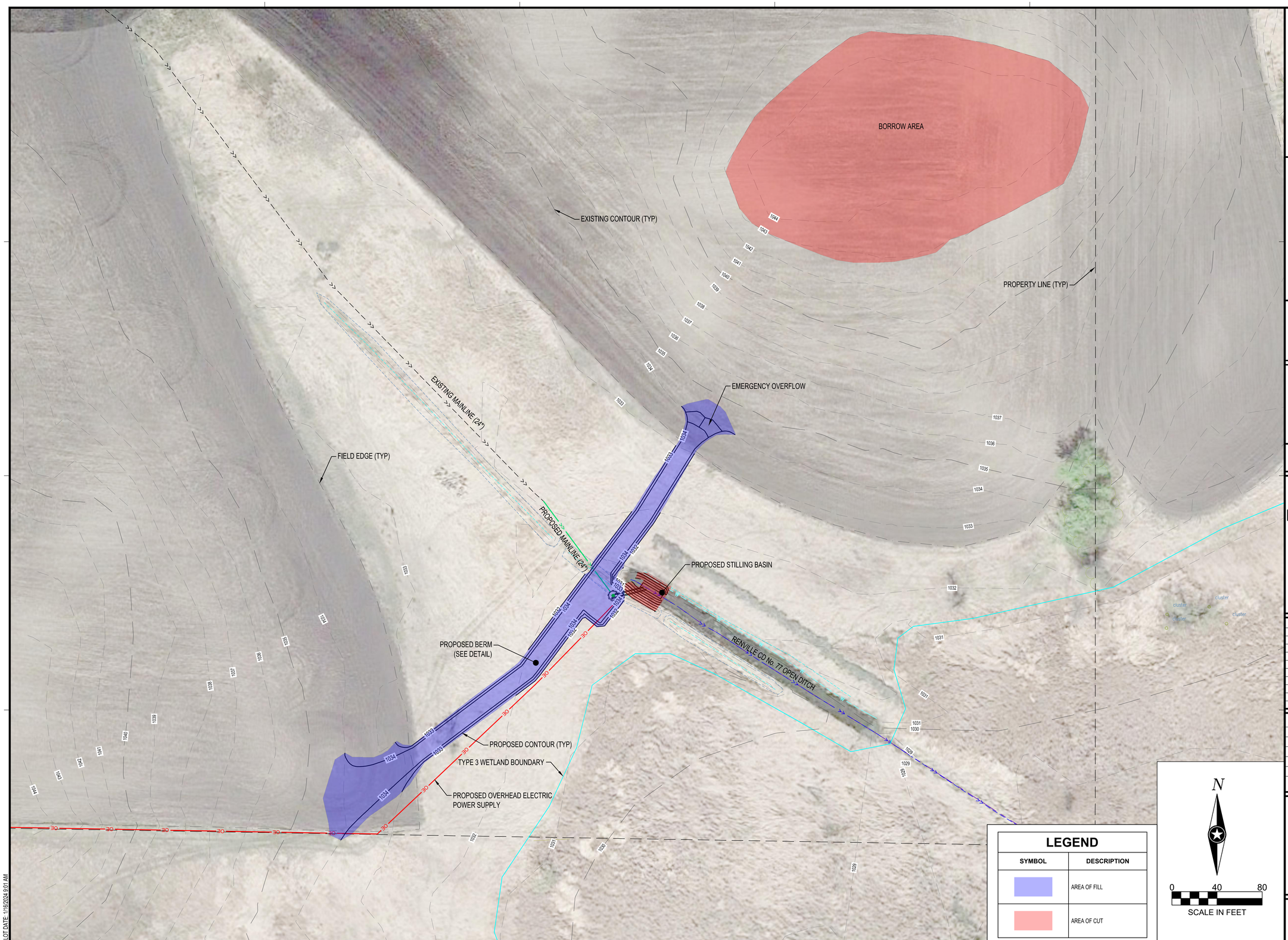
ORIGINAL ISSUE DATE	--/--/--
CLIENT PROJECT NO.	-

TITLE

PLAN - PROFILE

SHEET

7 OF 10



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PROJECT

RENVILLE COUNTY COUNTY DITCH No.77 PUMP REPAIR

HAWK CREEK TWP. MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

PROJECT NO.	14-16717
FILE NAME	16717 OVERALL GRADING
DRAWN BY	JAT
DESIGNED BY	JMW
REVIEWED BY	MAO
ORIGINAL ISSUE DATE	--/--/--
CLIENT PROJECT NO.	-

TITLE

OVERALL GRADING

SHEET

8

OF 10

PLOT DATE: 11/6/2024 8:35 AM

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PROJECT

RENVILLE COUNTY COUNTY DITCH No.77 PUMP REPAIR

HAWK CREEK TWP. MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

PROJECT NO.	14-16717
FILE NAME	16717 GRADING
DRAWN BY	JAT
DESIGNED BY	JMW
REVIEWED BY	MAO
ORIGINAL ISSUE DATE	--/--/--
CLIENT PROJECT NO.	-

TITLE

DETAILED GRADING

SHEET

9 OF 10

PLOT DATE: 1/16/2024 8:26 AM

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DATE _____ LIC. NO. 43359

PROJECT

RENVILLE COUNTY COUNTY DITCH No.77 PUMP REPAIR

HAWK CREEK TWP. MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

PROJECT NO.	14-16717
FILE NAME	16717 ELECTRICAL
DRAWN BY	JAT
DESIGNED BY	JMW
REVIEWED BY	MAO
ORIGINAL ISSUE DATE	--/--/--
CLIENT PROJECT NO.	-

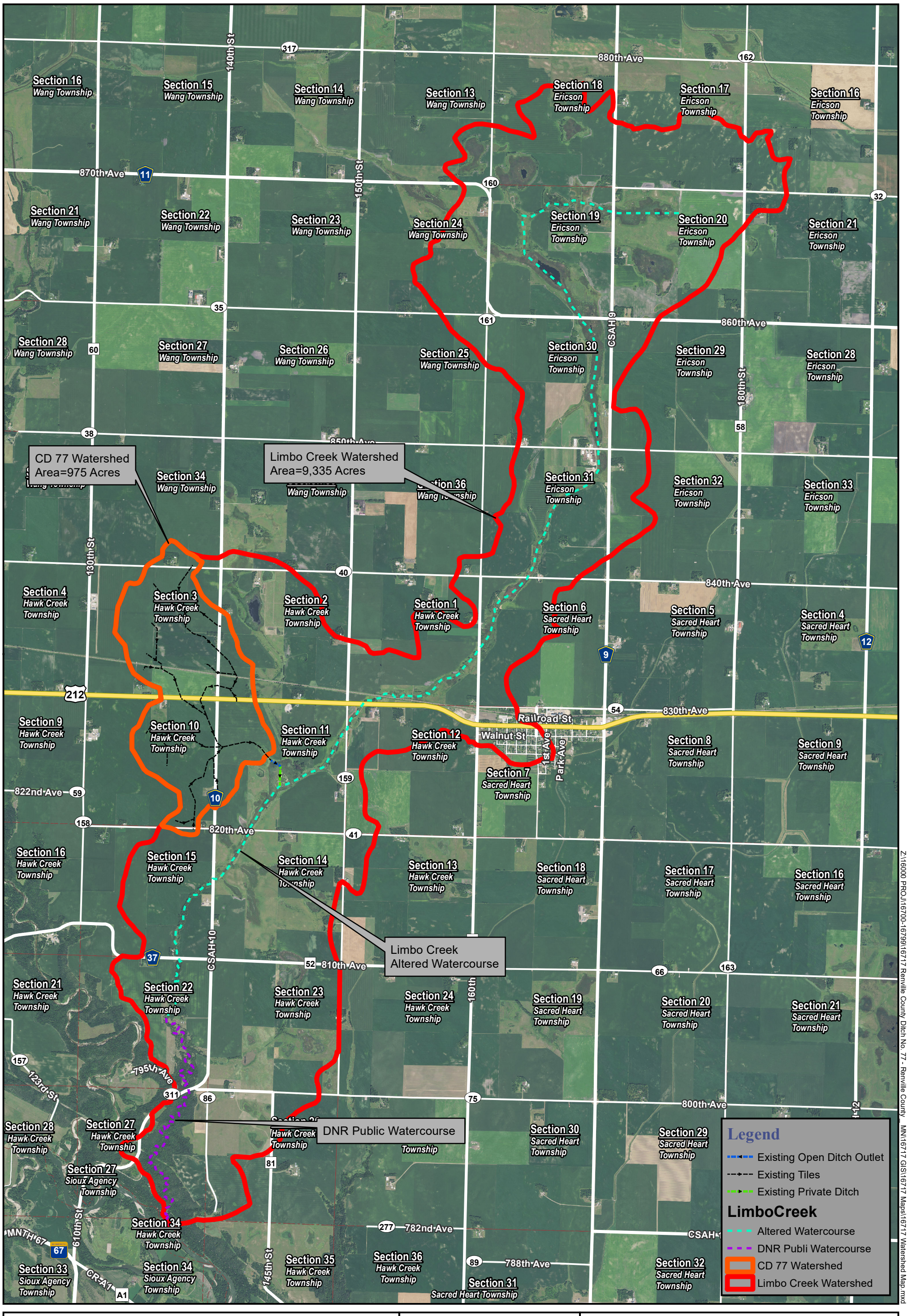
TITLE

SITE ELECTRIC PLAN

SHEET

10 OF 10

Appendix B: Maps


CD 77 Watershed
Area=975 Acres
Limbo Creek Watershed
Area=9,335 Acres
Limbo Creek
Altered Watercourse
DNR Public Watercourse
Section 16 Wang Township
Section 15 Wang Township
Section 14 Wang Township
Section 13 Wang Township
Section 18 Ericson Township
Section 17 Ericson Township
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150th St
130th St
160th St
145th St
610th St
180th St
CSAH 10
CSAH 9
CSAH 12
317th Ave
880th Ave
870th Ave
860th Ave
850th Ave
840th Ave
830th Ave
822nd Ave
820th Ave
810th Ave
800th Ave
795th Ave
782nd Ave
788th Ave
123rd St
Railroad St
Walnut St
1st Ave
Park Ave
MNTH 67
CR-A1
A1
Legend
Existing Open Ditch Outlet
Existing Tiles
Existing Private Ditch
LimboCreek
Altered Watercourse
DNR Publi Watercourse
CD 77 Watershed
Limbo Creek Watershed
0 1,750 3,500 7,000 Feet
1 inch = 3,500 feet
N
ISG
PN: 14-16717 Source:
Orthophotograph (Renville County, 2016)
Municipalities (MnGeo/MN DOT, 5/29/2014)
Lakes (MN DNR, July, 2008)
Major Stream (MN DNR, July 2008)
USGS Streams (MN DNR, January, 2008)
Counties (MN DNR, July 2013)
PLSS (MnGeo/USGS)
Figure 1
Watershed Map
Renville County Ditch No. 77
Renville County, Minnesota
Thursday, October 19, 2023
Z:\16000-16799\16717 Renville County Ditch No. 77 - Renville County_MN\16717 GIS\16717 Maps\16717 Watershed Map.mxd

CD 77 Watershed Area=975 Acres

Section 11 Wetland Complex

Limbo Creek

Legend

- Limbo Creek Watershed
- CD 77 Watershed
- Sections
- Parcels
- Existing Tiles
- Petition/Deepened Outlet
- Existing Open Ditch Outlet

0 500 1,000 2,000 Feet

1 inch = 1,000 feet

PN: 14-16717 Source:

Orthophotograph (Renville County, 2016)
Municipalities (MnGeo/MN DOT, 5/29/2014)
Lakes (MN DNR, July, 2008)
Major Stream (MN DNR, July 2008)
USGS Streams (MN DNR, January, 2008)
Counties (MN DNR, July 2013)
PLSS (MnGeo/USGS)

Figure 2

CD 77 Watershed Map

Renville County Ditch No. 77

Renville County, Minnesota

Thursday, October 19, 2023

Z:\16000 PROJ\16700-16799\16717 Renville County Ditch No. 77 - Renville County_ MN\16717 GIS\16717 Maps\16717 CD 77 Watershed Map.mxd

ZIMMER/LESLIE &
ALICE/TRUSTEES

SKALBECK/TODD

24

CD 77 Watershed
Area=975 Acres

PAPE/DOUGLAS
& MARY

11

PETERSON
FAMILY
FARMS

WILLERT/COREY
S. & CHERYL

Section 11
Wetland Complex

Limbo Creek

EVANS/ROBERT
& NANCY

FAGEN/BRE
& LIZA

820th Ave

41

KELLEY/JAMES
M/TRUSTEE

14

FAGE
&

Legend

- Pumps
- Berm
- Light Cleaning
- Limbo Creek Watershed
- CD 77 Watershed
- Sections
- Parcels
- Existing Tiles
- Petition/Deepened Outlet
- Existing Open Ditch Outlet

Z:\16000 PROJ\16700-16799\16717 Renville County Ditch No. 77 - Renville County_ MN\16717 GIS\16717 Maps\16717 CD 77 Repair Map.mxd

ISG

0 250 500 Feet

1 inch = 250 feet

N

PN: 14-16717 Source:

Orthophotograph (Renville County, 2016)
Municipalities (MnGeo/MN DOT, 5/29/2014)
Lakes (MN DNR, July, 2008)
Major Stream (MN DNR, July 2008)
USGS Streams (MN DNR, January, 2008)
Counties (MN DNR, July 2013)
PLSS (MnGeo/USGS)

Figure 2

CD 77 Watershed Map

Renville County Ditch No. 77

Renville County, Minnesota

Thursday, October 19, 2023

Appendix C: Cost Estimates

RENVILLE COUNTY
COUNTY DITCH No. 77

REPAIR COST

CD77 Repair

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	$ 5,000.00	$ 5,000
102	TILE INVESTIGATION	HR	1	$ 149.40	$ 149
103	24-INCH AGRICULTURAL TILE	LF	100	$ 45.00	$ 4,500
104	CONNECT EXISTING 24-INCH TILE	EA	1	$ 1,217.70	$ 1,218
105	GRANULAR PIPE FOUNDATION	CY	3	$ 50.00	$ 150
106	BERM SEEDING (SEED MIX: BUFFER BLEND WITH TYPE 3 MULCH)	AC	0.4	$ 1,388.40	$ 555
107	CLASS III RIPRAP WITH GEOTEXTILE FABRIC	CY	10	$ 120.00	$ 1,200
108	CLASS II RIPRAP WITH GEOTEXTILE FABRIC	CY	15	$ 85.00	$ 1,275
109	REMOVE EXISTING 24-INCH TILE	LF	103	$ 2.20	$ 227
110	BL-1075 PUMP	EA	2	$ 8,000.00	$ 16,000
111	METAL ANCHOR	EA	6	$ 100.00	$ 600
112	10-INCH PVC PIPE	LF	57	$ 35.00	$ 1,995
113	PUMP SCREEN	EA	2	$ 100.00	$ 200
114	PUMP AND ELECTRICAL CONTROLS	LS	1	$ 15,000.00	$ 15,000
115	ELECTRICAL SERVICE EXTENSION	LS	1	$ 40,000.00	$ 40,000
116	LIFT STATION BASE	EA	1	$ 2,000.00	$ 2,000
117	96-INCH PRECAST CONCRETE STRUCTURE	EA	1	$ 12,000.00	$ 12,000
118	TOPSOIL STRIP	AC	1.1	$ 4,200.00	$ 4,620
119	RODENT GUARD ROCK TRENCH	LF	300	$ 7.00	$ 2,100
120	CONSTRUCT CLAY CORE BERM	CY	1762	$ 3.50	$ 6,167
				SUBTOTAL CONSTRUCTION COST	**$ 114,956**
				15% UNFORSEEN	$ 17,243
				TOTAL CONSTRUCTION COST	**$ 132,200**
	TEMPORARY DAMAGES	AC	0.34	$ 650.00	$ 224
	TELEVISING (POST CONSTRUCTION)	LF	100	$ 1.00	$ 100
				COUNTY ADMINISTRATION COSTS (Legal, Staff, Bonding, Advertisement)	$ 6,610
				REPORTS, PLANS AND SPECIFICATIONS	$ 24,500
				CONSTRUCTION STAKING & ADMINISTRATION	$ 21,750
				TOTAL CD77 REPAIR REPAIR COST	**$ 185,383**

Open Ditch Cleaning

Item No.	Item	Unit	Quantity	Unit Price	Amount
101	MOBILIZATION	LS	1	$ 1,440.00	$ 1,440
102	SEED MIX 25-142 W/MNDOT EROSION CONTROL BLANKET CATEGORY 20	SY	500	$ 2.70	$ 1,350
103	INSTALL FLOATATION SILT CURTAIN	EA	1	$ 2,250.00	$ 2,250
104	INSTALL PERIMETER CONTROL	LF	500	$ 2.70	$ 1,350
105	INSTALLATION AND REMOVAL OF CONSTRUCTION MATS	LF	450	$ 20.00	$ 9,000
106	DITCH CLEANING, SPOIL HAULING, AND LEVELING (5' DITCH BOTTOM THROUGH WETLAND AREA)	LF	300	$ 27.00	$ 8,100
107	SPOIL LEVELING	AC	1	$ 6,500.00	$ 6,500
				SUBTOTAL CONSTRUCTION COST	**$ 29,990**
				20% UNFORSEEN	$ 5,998
				TOTAL CONSTRUCTION COST	**$ 35,988**
	TEMPORARY DAMAGES	AC	2.00	$ 650.00	$ 1,300
				COUNTY ADMINISTRATION COSTS (Legal, Staff, Bonding, Advertisement)	$ 1,800
				REPORTS, PLANS AND SPECIFICATIONS	$ 3,599
				CONSTRUCTION STAKING & ADMINISTRATION	$ 4,859
				TOTAL OPEN DITCH CLEANING REPAIR COST	**$ 47,546**

Appendix D: DNR Permit Application

DEPARTMENT OF NATURAL RESOURCES
Division of Ecological & Water Resources

MPARS
MNDNR PERMITTING AND REPORTING SYSTEM
www.mndnr.gov/mpars

MNDNR PERMITTING AND REPORTING SYSTEM

REVISION 20211001 **APP ID** 67096

Public Waters Work Permit Application

Reference Number: 2023-2616

Date Submitted to DNR: August 8, 2023 at 12:44 PM

Application Reference Name: Limbo Creek Sediment Cleaning

DNR Lead Hydrologist: **Emily Javens**
Area: Spicer
Email: emily.javens@state.mn.us
Phone: 320-409-2042

DNR Region: Southern Region 4
Address: Minnesota Department of Natural Resources
164 County Road 8 NE PO Box 457
Spicer, MN 56288

Parties (*Individuals and Organizations associated with the permit application*)

Renville County Public Works Dept - Landowner or Government Unit	**Address:** 105 S 5th St, Ste 319, Olivia, MN 56277 **Phone:** 320-523-3759
Mark Origer - Contact (*representing ISG*) (*submitted application*)	**Address:** 115 E Hickory St Suite 300, Mankato, MN 56001 **Phone:** 507-387-6651 **Email:** mark.origer@is-grp.com
Seth Sparks - Contact (*representing Renville County Public Works Dept*)	**Address:** 105 South 5th Street, Suite 319, Olivia, MN 56277 **Phone:** 320-523-3759 **Email:** seths@renvillecountymn.com
ISG - Agent	**Address:** 115 E Hickory Street, Suite 300, Mankato, MN 56001 **Phone:** 507-387-6651

Proposed Activity

Sediment Removal

Location and Water Resources (*within 50 meters*)

Site Name: 820th Avenue
(Sediment Removal)
Counties: Renville
Watersheds: Minnesota River - Yellow Medicine River
PLS: T115N-R38W-S11 SWSW, T115N-R38W-S11 SESW, T115N-R38W-S14 NENW, T115N-R38W-S14 NWNW
UTM: X:310385 Y:4960635 (Centroid)
Water Resources: Stream/River: Unnamed Stream (M-055-144) - Public Waters Watercourse, Ditch

Project Overview

1	Please assign a reference/project name to this application.	Limbo Creek Sediment Cleaning
2	When is the anticipated start date for the project?	11/01/2023
3	When is the expected completion date for the entire project?	11/30/2023
4	Briefly describe the overall project purpose and need.	Removal of sediment/gravel for 300 feet along Limbo Creek immediately downstream of 820th Avenue.
5	Has any portion of the proposed work in wetlands or water areas already started?	No
6	Is this a transportation project sponsored by a government unit?	No
7	Will the project require any dewatering (the deliberate removal of water through the use of a pump, ditch, etc. to lower water levels to allow work to be accomplished)?	No
8	Has an Environmental Assessment Worksheet (EAW) or Environmental Impact Statement (EIS) been completed for the project, or will it be required?	No
9	Has the project gone through a Natural Heritage (endangered species) review?	Unknown
10	Have you developed any mitigation plans for the portion(s) of the project that will impact public waters?	No
11	Describe TWO alternatives to the proposed project that were considered that would avoid or minimize impacts to public waters. One option may be "no build" or "do nothing".	Clean larger stretch of Limbo Creek Abandon roadway

Project Overview (*continued*)

12	Why did you choose to pursue the option proposed in this application over these alternatives?	This alternative is less impactful and will provide more consistent roadway access and flow through the creek.
13	What is the project cost for the work that will be conducted in Public Waters? (estimate if unknown)	$35,000.00

Activity Detail

Activity: Sediment Removal

How many different sites will have sediment removal work (i.e., the number of individual stream/river, ditch, lake, pond, pit, and/or wetland impact areas)? 1

Site Name: 820th Avenue

1	Is the proposed sediment removal to maintain an area previously authorized by a DNR work permit?	No
2	Describe the source of the sediment.	820th Avenue overtopping, overland sediment accumulation
3	Has a survey or borings been taken to determine the depth of sediment?	Yes
4	How many cubic yards of material are proposed to be excavated, if any?	85 cubic yards
5	If applicable, what is the size of the area to be excavated?	300
6	Please choose units:	linear feet
7	What is the area of stream impact in square feet?	1,500 square feet
8	Is the excavation permanent or temporary?	Permanent
9	What type of material will be excavated? (select all that apply)	Gravel,Silt
10	What is the proposed method of sediment removal?	Mechanical
11	When will the sediment be excavated at this site? (select all months that apply)	Nov
12	What is the proposed depth of excavation at this site (in feet)?	1.5 feet
13	If applicable, how many feet of shoreline will be affected by the proposed work?	0 feet
14	Where will the excavated material (spoils) be disposed?	offsite farmland
15	How many cubic yards of fill are proposed, if any?	0 cubic yards
16	Is the fill permanent or temporary?	Not applicable
17	Will you be removing any vegetation from an aquatic resource that is not already associated with excavation/filling?	No
18	Will work at this site result in the draining of any water resources?	No
19	What is the proposed finished width of the channel bottom (in feet)?	5 feet
20	What is the proposed finished side slope of the channel banks? (horizontal to vertical)	2:1
21	How do you plan to stabilize the channel side slopes? (select all that apply)	Other
22	If Other, please specify:	no resloping of ditch banks is proposed
23	How wide of a permanent vegetative buffer do you intend to install and maintain along the watercourse (in feet)?	50 feet

Activity Detail (*Continued*)

24	Describe the potential impacts of the project on any nearby lakes or wetlands.	minimal, only impacts will be temporary wetland vegetation by mechanical equipment/construction mats
25	Please upload a list of names and addresses of all landowners located immediately upstream, downstream, and adjacent to the proposed channel project.	Names_and_Addresses.xlsx
26	Please upload a channel profile of the affected reach showing existing and proposed elevations.	16717_Sediment-Gravel_Cleaning_Profile.pdf
27	Please upload photo(s) of the site.	20140723_115829.jpg
28	Select the resource(s) below that describes the type of water bodies that could be impacted at this site.	stream/river, ditch
29	Counties	Renville
30	Watersheds	Minnesota River - Yellow Medicine River
31	PLS	T115N-R38W-S11 SWSW, T115N-R38W-S11 SESW, T115N-R38W-S14 NENW, T115N-R38W-S14 NWNW
32	UTMXY	X:310385 Y:4960635 (Centroid)
33	Water resources	Stream/River: Unnamed Stream (M-055-144) - Public Waters Watercourse, Ditch

Attachment(s): 20140723_115829.jpg
Names_and_Addresses.xlsx
16717_Sediment-Gravel_Cleaning_Profile.pdf

Acknowledgment (*By the party who submitted the permit application*)

☑ **I attest that:**
·I own or control (by lease, license, or other permission) the land that I propose to alter, AND
·There are no easements or other restrictions on the land that would prohibit the proposed activities from being authorized under a permit, AND
·I possess the authority to undertake the work described, or I am acting as a duly authorized agent, AND
·The information submitted and the statements made concerning this application are true and correct to the best of my knowledge.

PRINTED: 08/08/2023 at 12:45 PM

SPOILS SHALL BE REMOVED FROM WETLAND AREAS AND SPREAD ON DESIGNATED NON WETLAND AREAS.

PROPERTY LINE, TYP.

PETERSON FAMILY FARMS

SPOIL PLACEMENT LOCATION

820TH AVENUE

JOSEPH GERALD SCHMIEG

EXISTING 60" RCP
I(N)= 1025.29
I(S)= 1025.43

EXISTING CONTOUR (TYP)

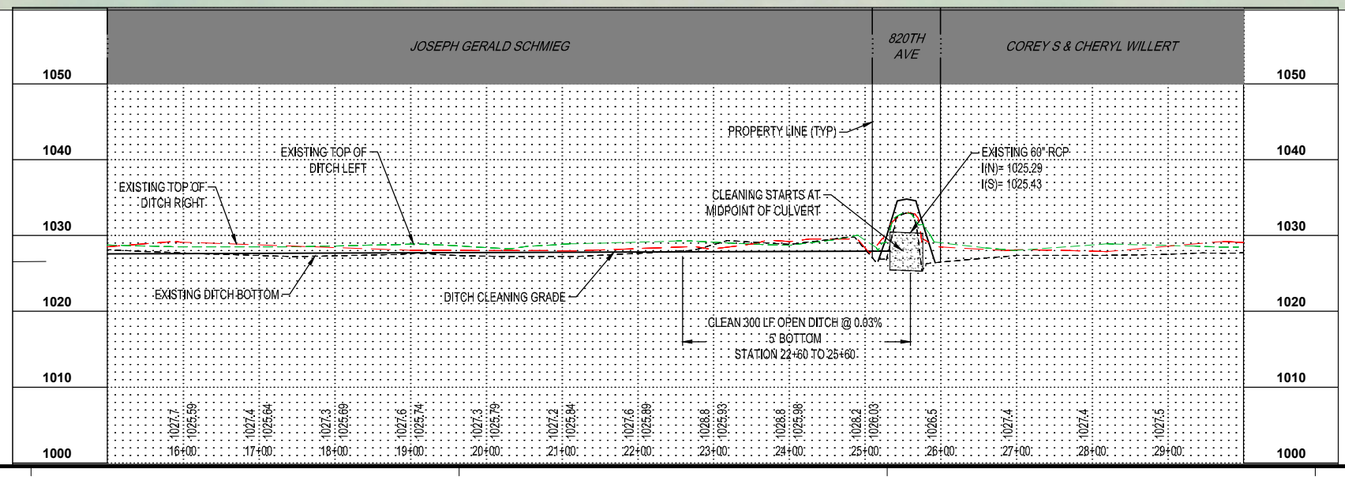
OPEN DITCH ALIGNMENT

REPAIR MAT LOCATION

COREY S & CHERYL WILLERT

JOHNSON, PAUL M & JANE

0 100 200
SCALE IN FEET



NOTE:
THE CLARITY OF THESE PLANS DEPEND UPON COLOR COPIES. IF THIS TEXT DOES NOT APPEAR IN COLOR, THIS IS NOT AN ORIGINAL PLAN SET AND MAY RESULT IN MISINTERPRETATION.

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

MARK A. ORSER

DATE _____ LIC. NO. 54863

PROJECT

RENVILLE COUNTY COUNTY DITCH No.77 PUMP REPAIR

HAWK CREEK TWP. MINNESOTA

REVISION SCHEDULE

DATE	DESCRIPTION	BY

PROJECT NO.	14-16717
FILE NAME	16717-PROFILES-DITCH
DRAWN BY	JAT
DESIGNED BY	JMW
REVIEWED BY	MAO
ORIGINAL ISSUE DATE	--/--/--
CLIENT PROJECT NO.	-

TITLE

PLAN - PROFILE (OPEN DITCH)

SHEET

11 OF 11