



**BOLTON
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Engineer's Repair Report

Repair of County Ditch No. 14 Lyon County, Minnesota

November 2023

S15.116176

Submitted by:

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Certification

Engineer's Repair Report

For

Repair of County Ditch No. 14

In

Lyon County, Minnesota

S15.116176

November 2023

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.

By: Shaun P. Luker
Shaun P. Luker, P.E.
License No. 48756

Date: 11-1-2023

Table of Contents

I.	LOCATION AND SCOPE OF REPAIR.....	1
II.	EXISTING DITCH SYSTEM.....	1
III.	CONDITION OF THE EXISTING DRAINAGE SYSTEM.....	2
IV.	CAPACITY OF EXISTING DRAINAGE SYSTEM.....	2
V.	DISCUSSION OF REPAIR.....	3
	A. DESCRIPTION.....	3
	B. DESIGN DATA.....	3
	C. TILE SYSTEM DEPTH.....	4
	D. EARTHEN DAM.....	4
	E. COUNTY ROAD 63.....	5
VI.	OTHER CONSIDERATIONS.....	5
	A. PERMIT REQUIREMENTS.....	5
	B. WETLANDS.....	5
VII.	ESTIMATE OF COST.....	6
VIII.	RECOMMENDATIONS.....	6

Tables

Table 1: Original Established System Tile Capacity.....	2
Table 2: Repaired Tile Capacity.....	4
Table 3: Depth of Proposed Tile.....	4

Appendix

- Exhibit 1: Preliminary Plans and Profiles
- Exhibit 2: Preliminary Cost Estimate
- Exhibit 3: Technical Specifications
- Exhibit 4: Right-of-Way Table
- Exhibit 5: Flowage Easement

STATE OF MINNESOTA

LYON COUNTY

IN THE MATTER OF THE PETITION FOR AN REPAIR TO COUNTY DITCH NO. 14 IN LYON COUNTY,
MINNESOTA:

In March 2018, the Lyon County Board acting as the Drainage Authority for Lyon County Ditch No. 14 accepted a petition for the Repair of Lyon County Ditch No. 14 (CD 14) in accordance with Minnesota Statute 103E.705. After authorization, field surveys were performed to obtain field elevations and establish an alignment for a proposed drain tile repair as well as to evaluate the outlet for the system.

This report summarizes the findings of the research, surveys and analysis and is submitted for consideration by the Drainage Authority.

I. LOCATION AND SCOPE OF REPAIR

The petitioned repair area of County Ditch No. 14 lies within and provides drainage to portions of Sections 5,6,7,8,17,18, and 20 of Custer Township and portions of Sections 1,11,12, and 13 of Rock Lake Township in Lyon County. The system consists of a Main tile about 2.8 miles in length and three branches that vary in length. The outlet for this tile system is into an unnamed stream in Section 32 of Sodus Township. The unnamed stream then continues northeast and outlets into the Cottonwood River in Section 32 of Sodus Township in Lyon County. The system is located about 2.5 miles northeast of Balaton, Minnesota. The total estimated watershed for the tile system from Lidar contour data, is 2,874 acres.

The proposed repair of County Ditch No. 14 includes the replacement of the Main tile along with Branches 1, 1A, and 2. Also included in the repair is an upstream berm and a downstream earthen dam to help store overland water and reduce the overall peak flows. Exhibit 1 shows the general location of CD 14 and the proposed repair.

Field survey information was collected by Bolton & Menk, Inc. in June of 2018. 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 utilized 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.

Other information used for this report included plans obtained from the Lyon County files. However, the plans do not provide accurate location and elevation data. If the repair proceeds to construction, performing exploratory excavations at key locations to verify the existing tile sizes, locations, and elevations is recommended.

II. EXISTING DITCH SYSTEM

Public records regarding the County Ditch No. 14 system were reviewed from Lyon County. This information provides a limited history of the CD 14 system.

CD 14 was petitioned for establishment in 1914 and thereafter constructed. The Main tile, and Branches 1 through 2 were included in this petition.

III. CONDITION OF THE EXISTING DRAINAGE SYSTEM

The existing tile system consists largely of clay tile that was constructed around 1914. Determining the condition of the existing tile is important for several reasons. The first reason is deficiencies in the tile, such as offset joints, misaligned pipe, root intrusion, and broken or collapsed pipe all cause water to flow slower through the tile than originally designed. The second reason is that deteriorated pipe reduces the reliability of the system. A third reason is that a deteriorated tile system will incur increasingly greater maintenance costs to keep the system functioning.

These reasons contribute to determining if the existing drainage system needs repair. Repairing a drainage system means to restore all or part of a drainage system as nearly as practicable to the same hydraulic capacity as originally constructed and subsequently improved. It should be noted that Minnesota Statute 103E.705 means that the Drainage Authority has an affirmative duty to maintain the drainage systems located in its jurisdiction, and to provide the repairs necessary to make the drainage system efficient. As it pertains to the repair process, the repair costs may be added as a benefit to offset the cost of the repair, as discussed in section VII.K of this report.

From the reports of the petitioners that the tile is draining the lands at a slower rate than in the past and given its age, we have determined that the existing CD 14 tile system within the proposed area needs repair.

IV. CAPACITY OF EXISTING DRAINAGE SYSTEM

The portion of the CD 14 system proposed to be improved consists of underground tiles. From reports of the petitioners, the system is not able to adequately drain the CD 14 watershed, resulting in extended ponding in portions of the watershed. This ponding results in crop stress and crop loss. Because of this limitation of the drainage system, the petitioners have now requested that the drainage system be Repaired. This repair will replace existing clay tile that may currently have obstructions from collapsed tile, roots, and animals.

Table 1: Original Established System Tile Capacity						
Tile/Branch	Location	Drainage Area (Acres)	Existing Tile Size (Inches)	Existing Tile Grade (%)	Calculated Tile Capacity (CFS) n=0.013	Calculated Coefficient (In. Per Day)
CD 14 Main	West Side of 230th Ave/DNR Wetland	615	10	0.16	0.88	0.03
	East Side of 230th Ave.	2224	16	0.12	2.67	0.03
	Main Prior to Branch 1	2238	16	0.12	2.67	0.03
	N 1/2 of NW Quarter of Section 7	2496	18	0.14	3.94	0.04
	South Side of 150th St.	2518	18	0.14	3.94	0.04
	North Side of 150th St.	2539	18	0.14	3.94	0.04
	Main Prior to Branch 2	2618	18	0.16	4.21	0.04
	West Side of CSAH 7	2740	18	0.10	3.33	0.03
	South Side of 160th St.	2874	18	0.10	3.33	0.03
Branch 1A	North of 150th St.	26	6	0.20	0.25	0.23
	South Side of 150th St.	35	8	0.10	0.38	0.26
Branch 1	North Side of 150th St.	83	8	0.25	0.61	0.17
	West Side of 230th Ave.	130	8	0.15	0.47	0.09
	Branch 1 Prior to Main	183	12	0.12	1.24	0.16

Branch 2	NE Quarter of SE Quarter of Section 6	76	8	0.20	0.54	0.17

V. DISCUSSION OF REPAIR

As noted earlier, the petitioners for the Repair of CD 14 have requested the consideration of construction of a repaired tile system to increase efficiency. 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, 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 Repair consists of 6-inch to 18-inch diameter tile to physically replace the existing CD 14 tile system from the outlet to the upper end. CSAH 7 road crossing is proposed to be completed by trenchless installation, while crossing of Township roads will be by open trench methods with the road surface restored with class 5 gravel. The Lyon County Highway Department is exploring the potential to open cut the CSAH 7 road crossing. The new tile will replace existing tile. The new tile will be constructed at a lower elevation than existing tile to allow all existing tiles to be connected to the new tile. The exiting tile will be decommissioned by crushing the pipe and reconnecting all existing tiles to the new main.

B. DESIGN DATA

The proposed grades for the tile repairs are shown on Exhibit 1 and vary from 0.10% to 0.31%. The type of pipe should be used for the construction will be bid as a contractor option as follows:

1. Dual Wall Polyethylene Drain Tile meeting the requirements of the American Society for Testing Materials F 2648. Pipe will be bedded in granular material as shown on Exhibit 1. Non-perforated pipe will be used where the tile is to be greater than 6 feet deep, and perforated pipe will be used where the tile is to be less than 6 feet deep. 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.
2. Reinforced concrete pipe (RC) meeting requirements of MnDOT Specification 2501, with joints being covered with geotextile fabric.
3. 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 material as shown on Exhibit 1.
4. RC tile or polypropylene tile is proposed for all diameters larger than 36-inch diameter.

Table 2: Repaired Tile Capacity						
Tile/Branch	Location	Drainage Area (Acres)	Proposed Tile Size (Inches)	Proposed Tile Grade (%)	Calculated Tile Capacity (CFS) n=0.012	Calculated Coefficient (In. Per Day)
CD 14 Main	West Side of 230th Ave/DNR Wetland	615	10	0.16	0.95	0.04
	East Side of 230th Ave.	2224	15	0.11	2.33	0.02
	Main Prior to Branch 1	2238	18	0.11	3.78	0.04
	N 1/2 of NW Quarter of Section 7	2496	18	0.13	4.11	0.04
	South Side of 150th St.	2518	18	0.14	4.27	0.04
	North Side of 150th St.	2539	18	0.14	4.27	0.04
	Main Prior to Branch 2	2618	18	0.15	4.42	0.04
	West Side of CSAH 7	2740	18	0.08	3.23	0.03
	South Side of 160th St.	2874	18	0.09	3.42	0.03
Branch 1A	North of 150th St.	26	6	0.10	0.19	0.18
	South Side of 150th St.	35	8	0.20	0.59	0.40
Branch 1	North Side of 150th St.	83	8	0.31	0.73	0.21
	West Side of 230th Ave.	130	8	0.10	0.42	0.08
	Branch 1 Prior to Main	183	12	0.17	1.60	0.21
Branch 2	NE Quarter of SE Quarter of Section 6	76	8	0.10	0.42	0.13

Also included as part of the repair will be provisions to strip and replace the topsoil on the trench area, to provide riprap as erosion protection at the outlet, and to construct several intakes on the system. The detail sheet C1.01 in Exhibit 1 provides more information on several of these items.

C. 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 as shown on Table 3.

Table 3: Depth of Proposed Tile		
Tile Branch	Minimum Depth	Maximum Depth
CD 14 Main	6.2'	21.7'
Branch 1A	6.3'	6.8'
Branch 1	6.0'	11.0'
Branch 2	5.2'	8.8'

D. EARTHEN DAM

The Earthen Dam is designed to hold approximately 38 acre-feet of storm water. The proposed Earthen Dam has an emergency spillway at 1457-feet and a top elevation of 1460-feet. For normal storm events the outlet for this temporary storage basin is a 36" RC pipe and a 96" OCS (8.3' above the 36" invert). These two inlet devices are sized to control with a 72" RC pipe outlet downstream of their confluence.

1. The borrow material for the Earthen Dam is to be Engineered Clay Fill as directed by the Geotechnical Report. The Fill is to begin 6-feet below the existing ground to account for the removal of existing sandy soils at the proposed Earthen Dam location.
2. A horizontal drain is to be installed at the downstream toe of the Earthen Dam to allow moisture within the structure to seep out. This horizontal drain is to be a 2' by 2' granular material for the entire length of the Earthen Dam.

E. COUNTY ROAD 63

County Road 63 is proposed to be raised to an elevation of 1486 to prevent current issues with localized flooding. To go along with this the property upstream of County Road 63 is the location of the proposed the Berm. This low area in the property currently experiences seasonal flooding the proposed Berm will increase that storage area by an additional foot of water (1484).

VI. OTHER CONSIDERATIONS

A. PERMIT REQUIREMENTS

A permit from the Minnesota Pollution Control Agency for stormwater and erosion control for the repair 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.

A permit from Lyon County for the tile crossing of the County Highway will be required. This permit will be applied for after the Repair Report Hearing.

A permit for the Earthen Dam is required from the Minnesota Department of Natural Resources. The permit has been applied for, and initial comments have been addressed.

A permit for the Earthen Dam may be required from the Army Corps of Engineers. This permit has been applied for and the Army Corps is currently deciding whether they have jurisdiction in this manner. If they do an additional permit will be required from the MPCA in order to determine what impacts on wetlands are present due to the Earthen Dam.

A joint powers agreement is currently in the works between the County and the Minnesota Department of Natural Resources. This joint power agreement is for the outlet control structure at the upstream end of the system that provides drainage to the Dayland WMA.

B. WETLANDS

National Wetland Inventory Maps was reviewed to locate potential wetlands subject to regulations. Most of the landowners along the repair have already provided documentation from the NRCS to identify any additional potential wetlands. The location of these mapped, but not delineated, wetlands are shown on Exhibit 1. Negative impacts to the wetlands will be mitigated by constructing non-perforated tile through, and near, these wetlands.

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 for the drainage repair 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.

VII. ESTIMATE OF COST

The Repair cost estimate to construct the proposed Repair, is described in this report is shown in Exhibit 2. The total estimated cost for the Repair is \$1,534,406. That price includes the cost of administration and engineering fees.

Included in the estimate are the approximate 64.71 acres of agricultural land which will be temporarily taken out of production by construction. There is an additional 1.14 acres of agricultural land that will be permanently taken out of production. The individual landowners will be compensated for this loss through the damage process of further ditch proceedings.

VIII. RECOMMENDATIONS

The proposed Repair of CD 14 in Lyon 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 a Repair to provide proper drainage for current agricultural practices.

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

Exhibit 1: Preliminary Plans and Profiles

EXISTING TOPOGRAPHIC SYMBOLS

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

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		CAST IRON MONUMENT
	CONTROL POINT		STONE MONUMENT
	MONUMENT FOUND		

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

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 38-02, ENTITLED "STANDARD GUIDELINES FOR THE COLLECTION AND DEPICTION OF EXISTING SUBSURFACE UTILITY DATA"

	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 UNDERGROUND GAS, QUALITY LEVEL A
UTILITY QUALITY LEVEL (A,B,C,D) DEFINITIONS CAN BE FOUND IN CI/ASCE 38-02.

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.

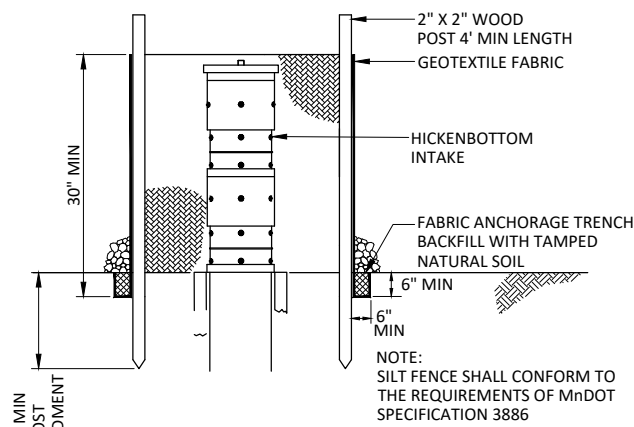
QUALITY LEVEL C: INVOLVES SURVEYING VISIBLE SUBSURFACE UTILITY STRUCTURES SUCH AS MANHOLES, HAND-HOLES, UTILITY VALVES AND METERS, FIRE HYDRANTS, PEDESTALS AND UTILITY MARKERS, AND THEN CORRELATING THE INFORMATION WITH EXISTING UTILITY RECORDS TO CREATE COMPOSITE DRAWINGS. INCLUDES QUALITY LEVEL D ACTIVITIES.

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.

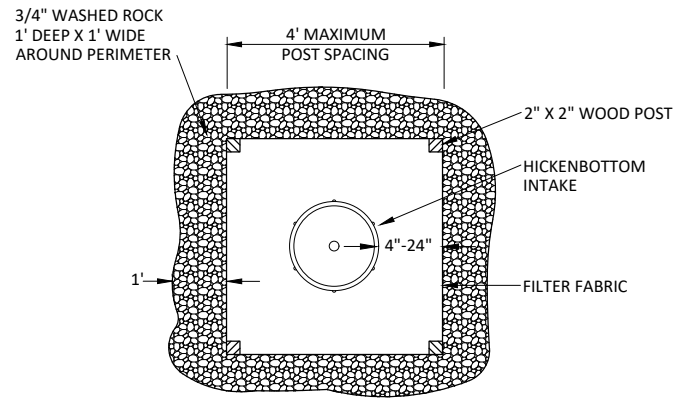
QUALITY LEVEL A: PROVIDES THE HIGHEST LEVEL OF ACCURACY. IT INVOLVES LOCATING OR POTHOLING UTILITIES AS WELL AS ACTIVITIES IN QUALITY LEVELS B, C, AND D. THE LOCATED FACILITY INFORMATION IS SURVEYED AND MAPPED AND THE DATA PROVIDES PRECISE PLAN AND PROFILE INFORMATION.

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		

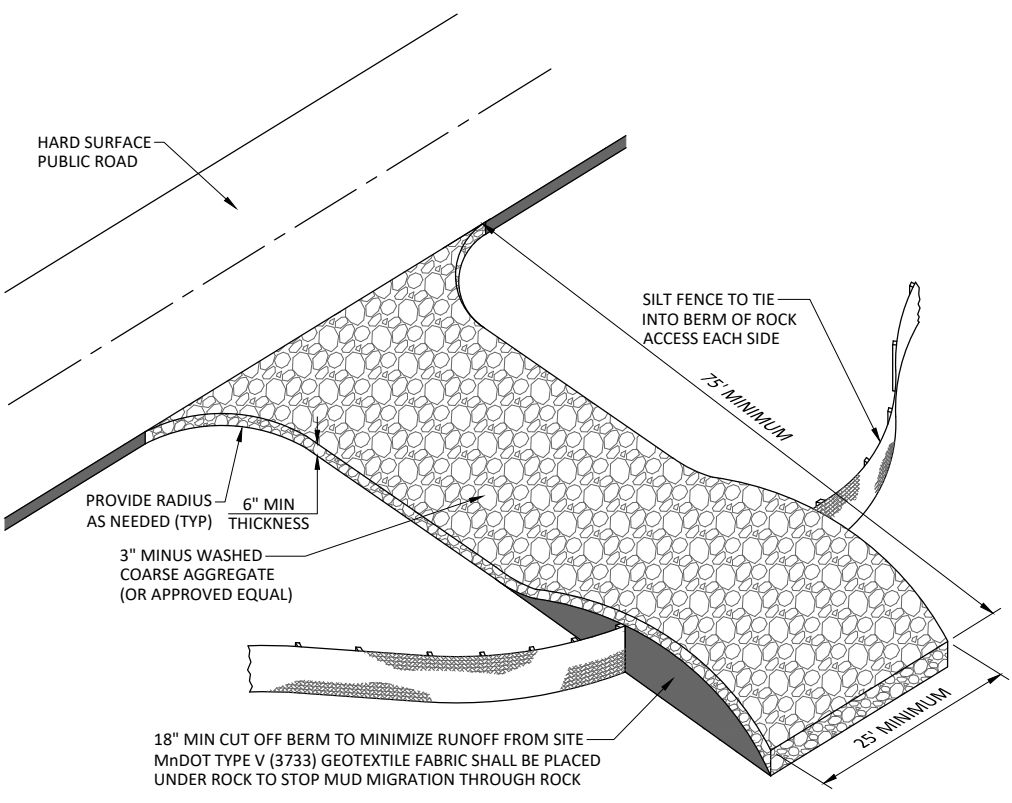


SECTIONAL VIEW

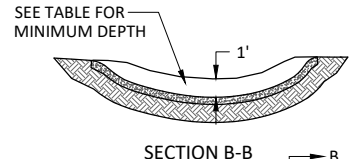


PLAN VIEW

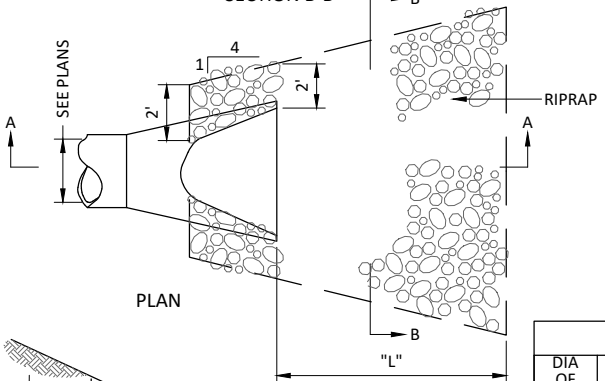
**INLET PROTECTION
PREASSEMBLED SILT FENCE**
NOT TO SCALE



ROCK CONSTRUCTION ENTRANCE
NOT TO SCALE

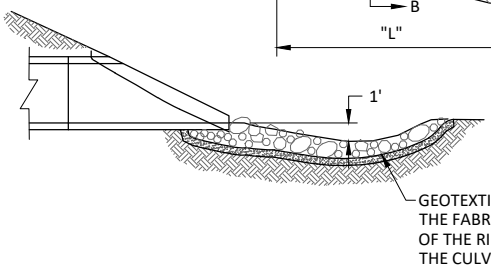


SECTION B-B



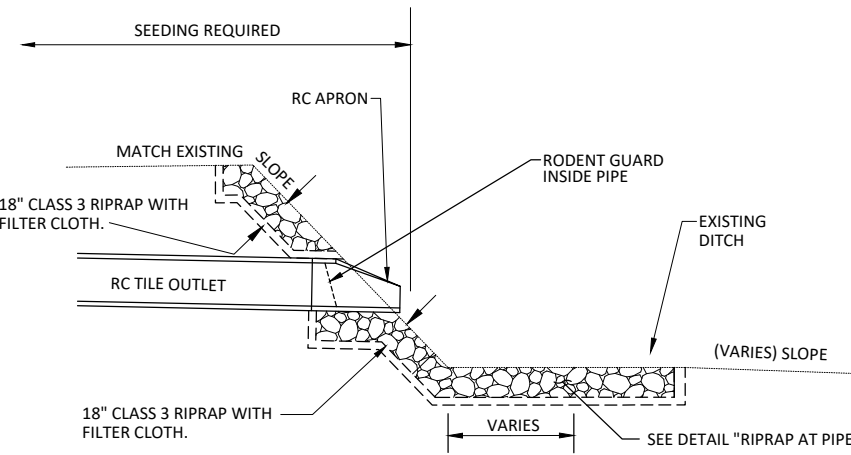
PLAN

CLASS III d50=9"		
DIA OF ROUND PIPE (IN)	L (FT)	18" DEPTH RIPRAP (CU YD)
18	10	10
24	12	15
72	28	60

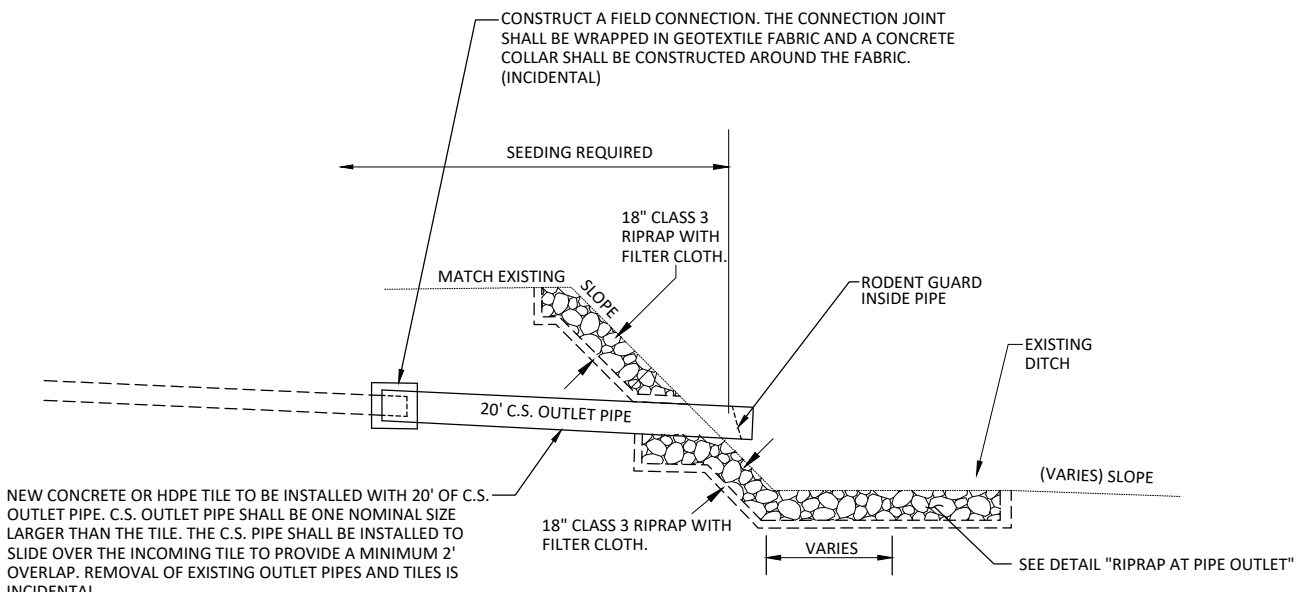


SECTION A-A

RIPRAP AT PIPE OUTLET
NOT TO SCALE



TYPICAL SECTION FOR RC PIPE OUTLET
NOT TO SCALE



TYPICAL SECTION FOR HDPE TILE OUTLET
NOT TO SCALE

NOTE: DETAILS ARE NOT TO SCALE

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Shaun P. Luker
SHAUN P. LUKER, P.E.
LIC. NO. 48756 DATE 02/07/2023



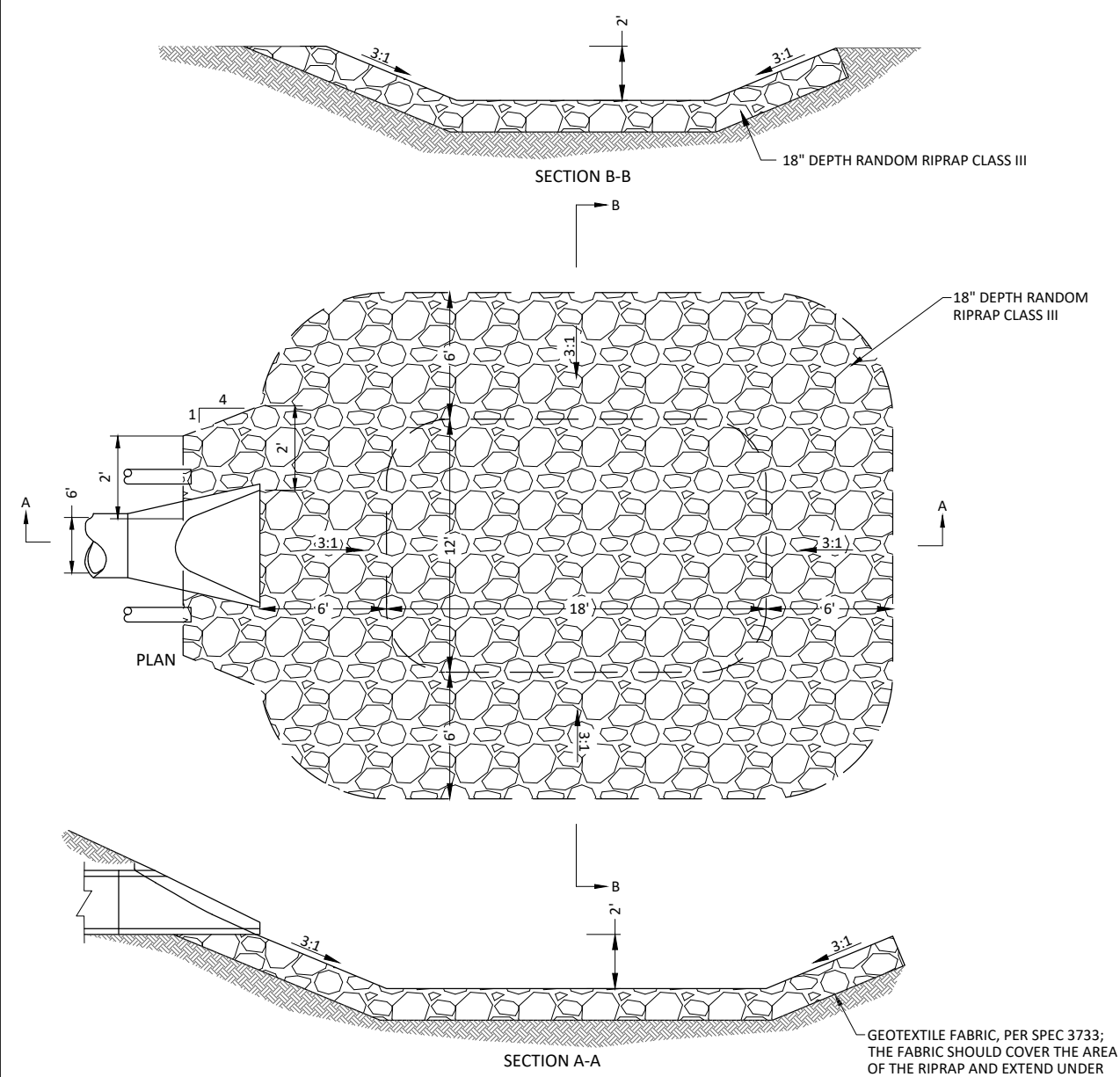
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SLEEPY EYE, MINNESOTA 56085
Phone: (507) 794-5541
Email: SleepyEye@bolton-menk.com
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DRAWN			
sml			
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BLH			
CLIENT PROJ. NO.			
515.116176			

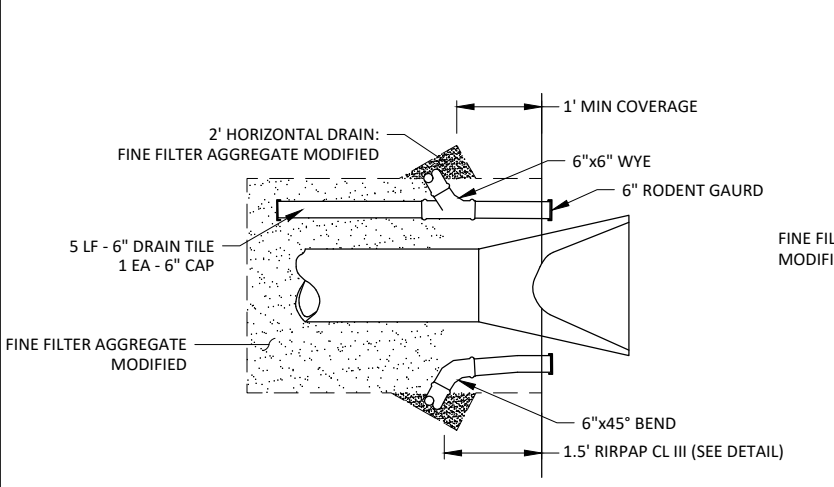
LYON COUNTY, MINNESOTA
COUNTY DITCH No. 14 - MAIN, BR 1, BR 1A & BR2 REPAIRS
DETAILS - EROSION CONTROL

SHEET
C1.02

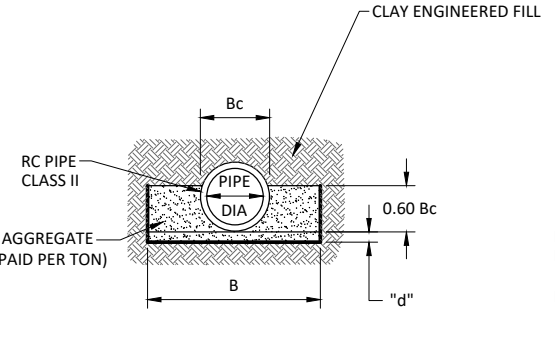
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RIPRAP AT EARTHEN DAM OUTLET
NOT TO SCALE

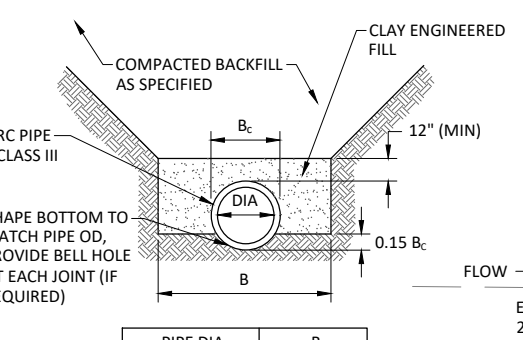


EARTHEN DAM DRAIN OUTLET
NOT TO SCALE



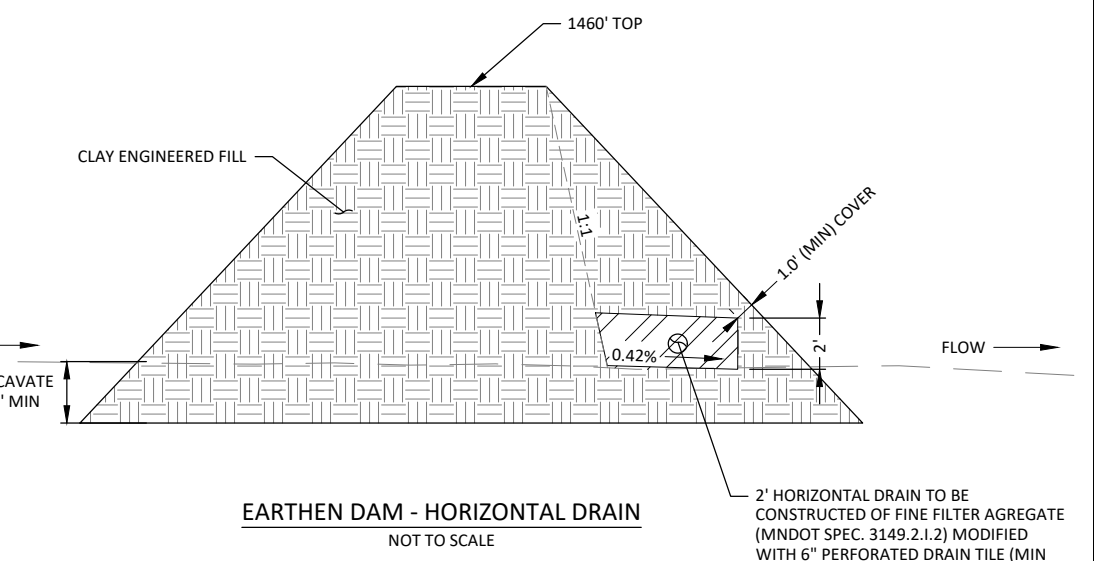
RC PIPE CLASS "B" BEDDING - EARTHEN DAM
STA 12+88.5 TO STA 13+76.5
NOT TO SCALE

PIPE DIA	d	B
27" OR LESS	3"	B _c + 24"
30" TO 60"	4"	1.5 x B _c
66" OR OVER	6"	B _c + 36"

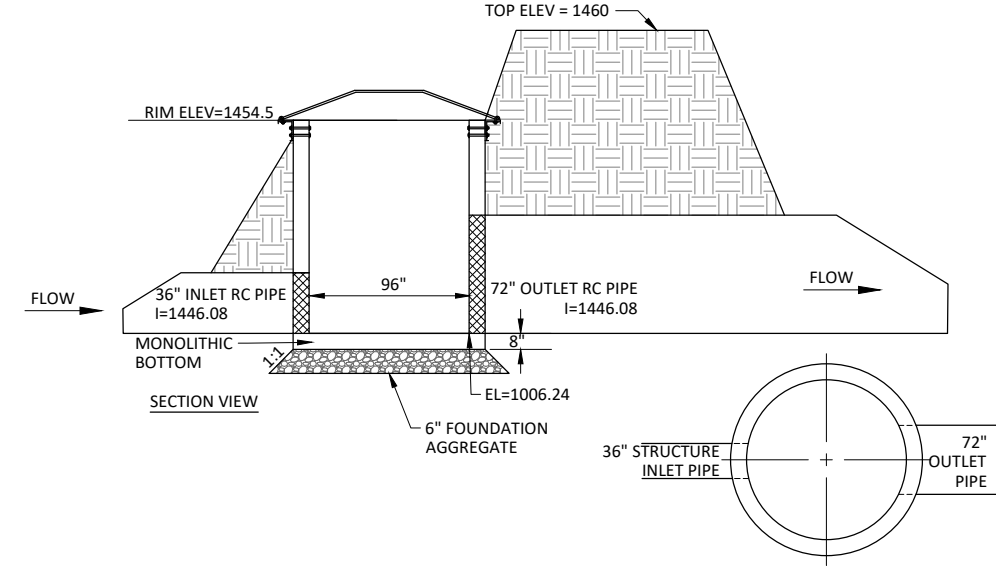


RC PIPE CLASS "C" BEDDING - EARTHEN DAM
STA 13+76.5 TO STA 14+05.5
NOT TO SCALE

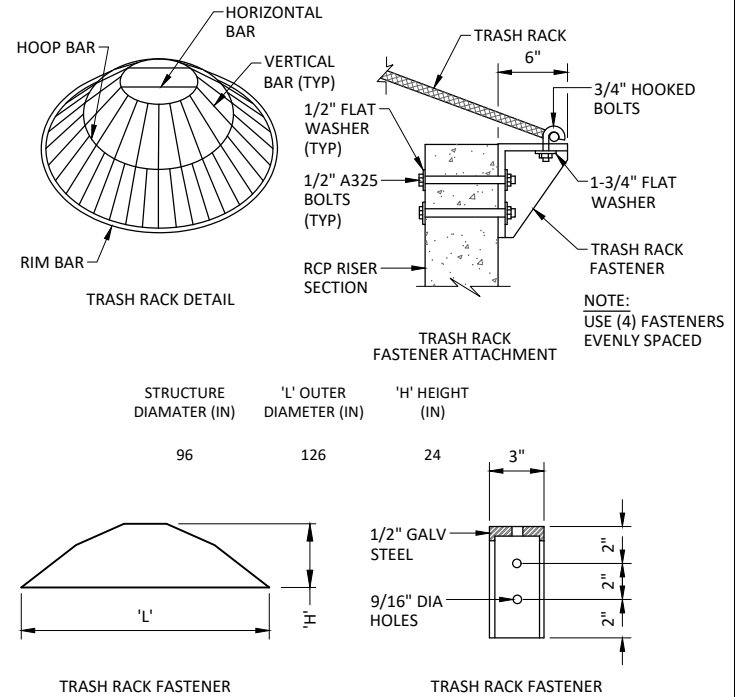
PIPE DIA	B
36" OR LESS	B _c + 24"
42" TO 54"	1.5 x B _c
60" OR OVER	B _c + 36"



EARTHEN DAM - HORIZONTAL DRAIN
NOT TO SCALE

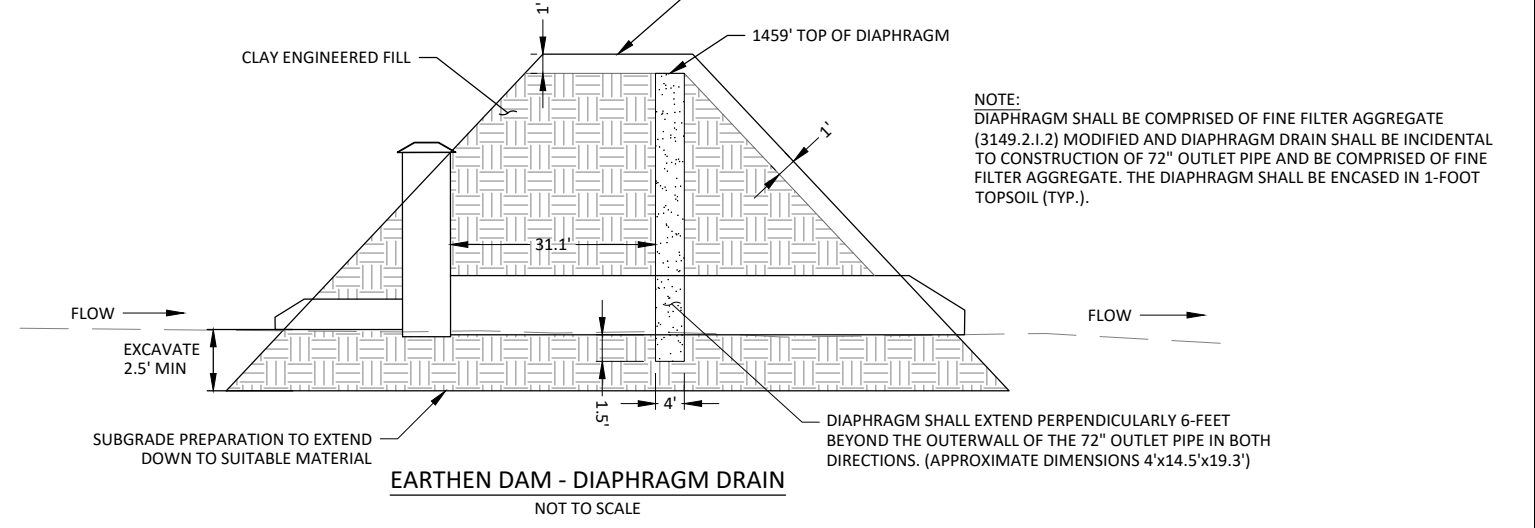


OUTLET CONTROL STRUCTURE - DAM
NOT TO SCALE



STRUCTURE DIAMETER (IN)	'L' OUTER DIAMETER (IN)	'H' HEIGHT (IN)
96	126	24

TRASH RACK FASTENER: 1/2" GALV STEEL, 9/16" DIA HOLES, 3" width, 2" height, 2" spacing.



EARTHEN DAM - DIAPHRAGM DRAIN
NOT TO SCALE

NOTE: DIAPHRAGM SHALL BE COMPRISED OF FINE FILTER AGGREGATE (3149.2.1.2) MODIFIED AND DIAPHRAGM DRAIN SHALL BE INCIDENTAL TO CONSTRUCTION OF 72" OUTLET PIPE AND BE COMPRISED OF FINE FILTER AGGREGATE. THE DIAPHRAGM SHALL BE ENCASED IN 1-FOOT TOPSOIL (TYP.).

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Shaun P. Luker
SHAUN P. LUKER, P.E.
LIC. NO. 48756 DATE 02/07/2023



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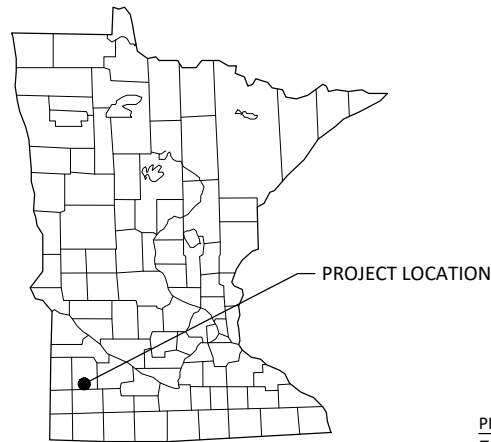
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CHECKED	BLH		
CLIENT PROJ. NO.	515.116176		

LYON COUNTY, MINNESOTA
COUNTY DITCH No. 14 - MAIN, BR 1, BR 1A & BR2 REPAIRS
DETAILS - EARTHEN DAM

SHEET
C1.03

STORMWATER POLLUTION PREVENTION PLAN (SWPPP)

COUNTY DITCH No. 14 - MAIN, BR 1, BR 1A & BR2 REPAIRS
LYON COUNTY, MINNESOTA



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:	LYON COUNTY	JOHN BIREN	507-532-8207
SWPPP DESIGNER:	BOLTON & MENK, INC	CRISTIAN VERA	507-794-5541
CONTRACTOR:	TBD	TBD	TBD
CONSTRUCTION SWPPP MANAGER:	TBD	TBD	TBD
PARTY RESPONSIBLE FOR LONG TERM O&M:	LYON COUNTY	JOHN BIREN	507-532-8207

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:

- The expected amount, frequency, intensity, and duration of precipitation.
- The nature of stormwater runoff and run-on at the site
- Peak flow rates and stormwater volumes to minimize erosion at outlets and downstream channel and stream bank erosion.
- 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.

LEGEND

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

PROJECT AREAS:

Total Project Size (disturbed area) =	32.7	ACRES
Existing area of impervious surface =	1.0	ACRES
Post construction area of impervious surface =	1.0	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

Creating less than 1.0 ac of impervious surface area

PROJECT LOCATION:

COUNTY	TOWNSHIP	RANGE	SECTION	LATITUDE	LONGITUDE
LYON	T110N	R41W	32	44.2873°	-95.8059°
LYON	T109N	R41W;R42W	5,6,7,1,12	44.2654°	-95.8272°

BMP SUMMARY	QUANTITY	UNIT
STABILIZED CONSTRUCTION EXIT	1	LS
SILT FENCE, TYPE MS	1150	LF
RAPID STABILIZATION, METHOD 3	4.2	ACRE
RAPID STABILIZATION, METHOD 4	4300	SQ YD
RIPRAP CLASS 3	340.0	TON
DITCH CHECK, TYPE ROCK	4	EA
INLET PROTECTION	17	EA
MULCH TYPE 1	36.9	TON
A portion of the quantities done by others		

DESCRIPTION OF CONSTRUCTION ACTIVITIES AND STORMWATER MANAGEMENT:

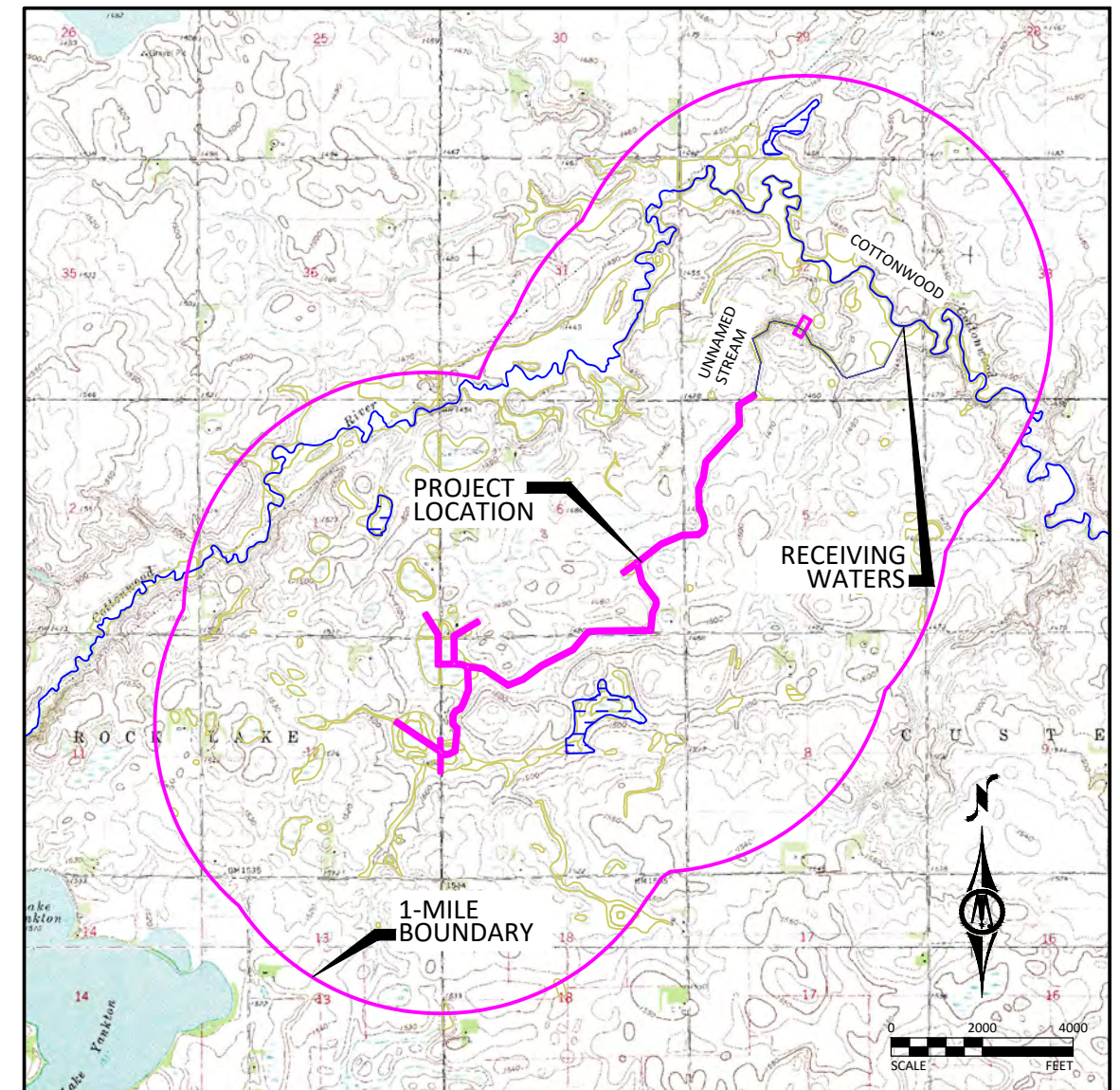
Construction activities include: Drain tile installation, intake construction, culvert replacement, grading, temporary erosion and sediment control, and permanent stabilization.

Stormwater currently flows overland in agriculture fields, through grassy swales and through various tiles, that ultimately drain into the Cottonwood River.

After construction is complete stormwater will continue to flow as is through centerline culverts and into an updated tile system that discharges into a grass spillway to have its flow monitored through the earthen dam.

This project includes the following stormwater management BMPs:

- Stabilized Construction Exit
- Silt Fence, Machine Sliced
- Rapid Stabilization Method 3
- Rapid Stabilization Method 4
- Ditch Check, Type Rock
- RipRap, Class 3
- Inlet Protection
- Mulch Type 1



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
Cottonwood River	River	No	Yes	No
Unnamed Stream	Swale	No	No	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.

- 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.
- Install perimeter sediment control, inlet protection, and construction exit.
- Construct drain tile repairs
- Perform backfill and topsoil placement over tile
- Construct grading and shaping improvements
- Perform backfill, topsoil placement and finish grading operations
- Install Turf Establishment
- Add additional temporary BMPs as necessary during construction based on inspection reports.
- Ensure final stabilization measures are complete.
- Provide digital copy of all Field SWPPP Documentation including Inspection Reports and SWPPP Revisions to the Owner.
- Submit Notice of Termination (NOT) to MPCA. NOTE: The NOT must be submitted to MPCA before Final Stabilization is considered complete.

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 RI00001 (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
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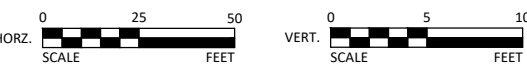
SPECIAL ENVIRONMENTAL CONSIDERATIONS AND PERMITS:

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 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 discharges to during fish spawning?	NO

TYPE OF PERMIT	PERMITTING AGENCY	PERMIT STATUS AND CONDITIONS
Construction Stormwater NPDES	MPCA	To be obtained by Contractor

SWPPP DESIGNER TRAINING DOCUMENTATION:

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 LIC. NO. 48756 DATE 02/07/2023

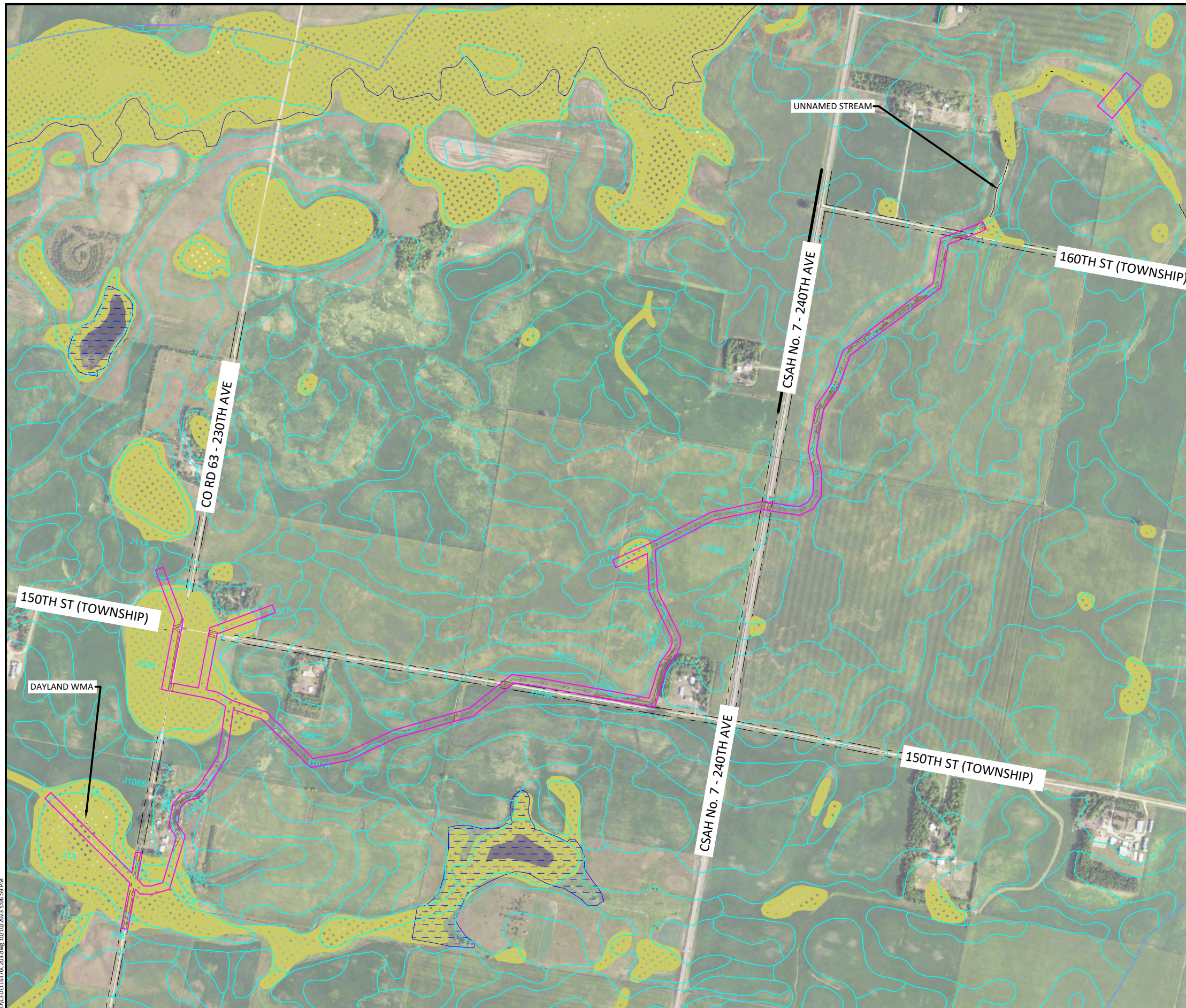


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 STORMWATER POLLUTION PREVENTION PLAN
 NARRATIVE

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



SOIL TYPE SUMMARY

Map Unit Symbol	Soil Name	Hyd. Soil Group	Erodibility
J100D2	BUSE, ERODED-WILNO COMPLEX, 12 TO 18 PERCENT SLOPES	B	NHEL
J101B	HOKANS-SVEA COMPLEX, 1 TO 4 PERCENT SLOPES	B	NHEL
J106B	BARNES-BUSA-SVEA COMPLEX, 1 TO 6 PERCENT SLOPES	B	NHEL
J107A	LAKEPARK-ROLISS-PARNELL, DEPRESSIONAL, COMPLEX, 0 TP 3 PERCENT SLOPES	C/D	NHEL
J11A	VALLERS CLAY LOAM, 0 TO 2 PERCENT SLOPES	C/D	NHEL
J1A	PARNELL SILTY CLAY LOAM, DEPRESSIONAL, 0 TO 1 PERCENT SLOPES	C/D	NHEL
J26B	DARNEN LOAM, 2 TO 6 PERCENT SLOPES	B	NHEL
J32A	BIGSTONE SILTY CLAY LOAM, DEPRESSIONAL, 0 TO 1 PERCENT SLOPES	B/D	NHEL
J57A	BALATON LOAM 1 TO 3 PERCENT SLOPES	B/D	NHEL
J7B	SVERDRUP SANDY LOAM, 2 TO 6 PERCENT SLOPES	A	NHEL
J95E	BUSE, STONY-WILNO COMPLEX, 18 TO 25 PERCENT, MODERATELY ERODED	C	NHEL
J96C2	BARNES-BUSE COMPLEX, 6 TO 12 PERCENT SLOPES, MODERATELY ERODED	C	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
FINAL STABILIZATION	C2.04-C2.07
SOILS	C2.03
STORM SEWER PLAN & PROFILE SHEETS	C5.01 - C5.08
EROSION & SEDIMENT CONTROL DETAILS	C1.02-C1.03
NARRATIVE & NOTES	C2.01 - C2.02

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 LIC. NO. 48756 DATE 02/07/2023










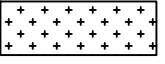
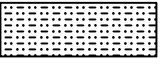
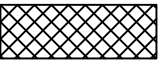
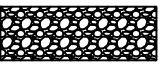

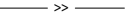
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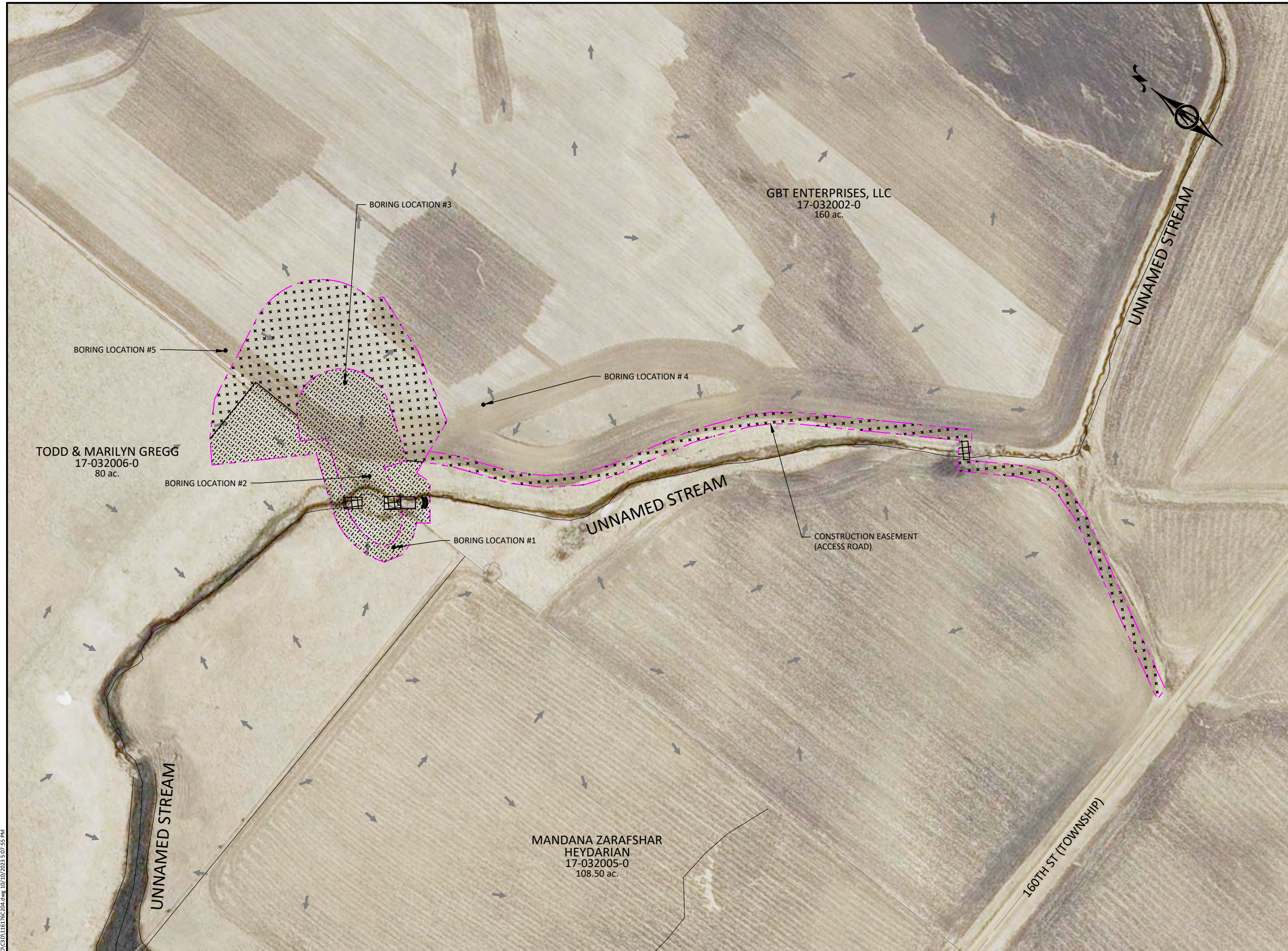
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LYON COUNTY, MINNESOTA
 COUNTY DITCH No. 14 - MAIN, BR 1, BR 1A & BR2 REPAIRS
 STORMWATER POLLUTION PREVENTION PLAN
 SITE AND SOILS MAP

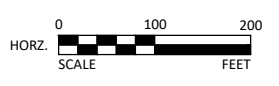
SHEET
C2.03

EROSION CONTROL LEGEND

-  MS MACHINE SLICED SILT FENCE
-  RIP RAP
-  INLET PROTECTION
-  DITCH CHECK - BIOLOG
-  DITCH CHECK - ROCK
-  CULVERT / PIPE PROTECTION
-  EXISTING/PROPOSED DRAINAGE FLOW
-  MULCH TYPE 1
-  RAPID STABILIZATION METHOD 3 HYDROMULCH
-  RAPID STABILIZATION METHOD 4 BLANKET CATEGORY 3
-  STABILIZED CONSTRUCTION EXIT
-  PROPOSED TILE
-  EXISTING TILE



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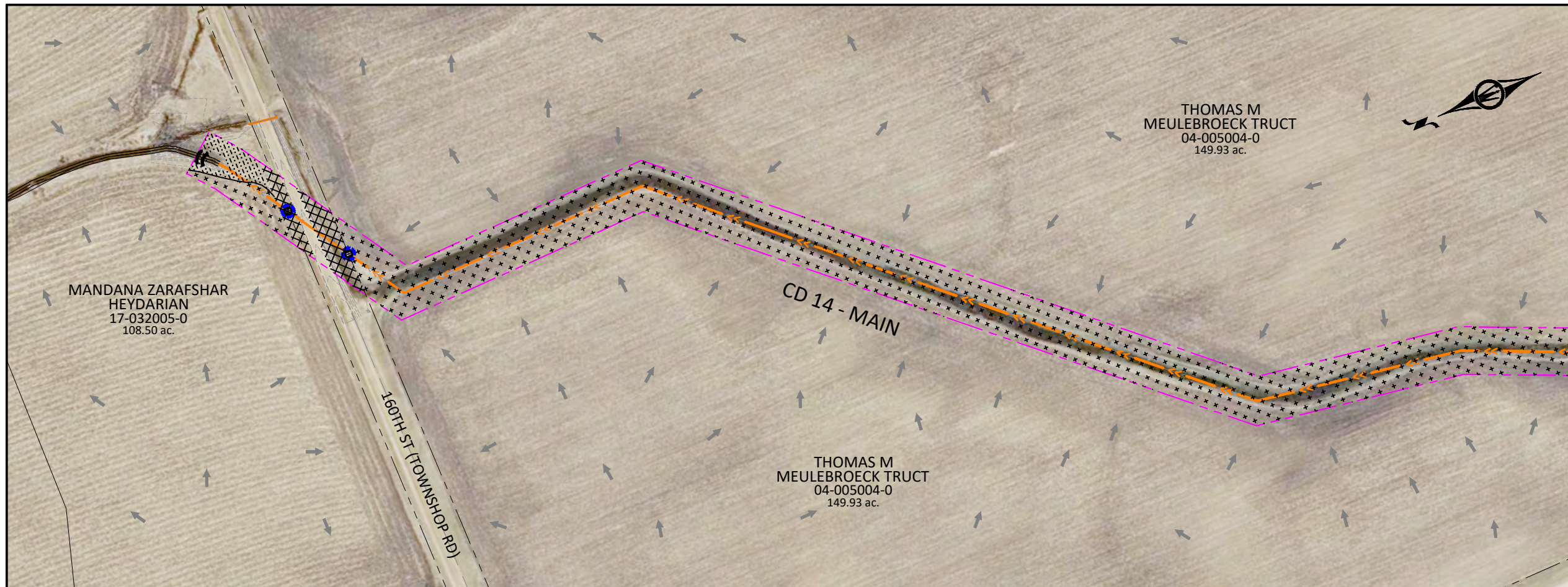


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LYON COUNTY, MINNESOTA
 COUNTY DITCH No. 14 - MAIN, BR 1, BR 1A & BR2 REPAIRS
 STORMWATER POLLUTION PREVENTION PLAN
 EROSION CONTROL PLAN-EARTHEN DAM

SHEET
C2.04

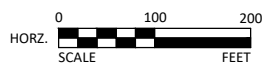


EROSION CONTROL LEGEND

- MS — MACHINE SLICED SILT FENCE
- RIP RAP
- INLET PROTECTION
- DITCH CHECK - BIOLOG
- DITCH CHECK - ROCK
- CULVERT / PIPE PROTECTION
- EXISTING/PROPOSED DRAINAGE FLOW
- MULCH TYPE 1
- RAPID STABILIZATION METHOD 3 HYDROMULCH
- RAPID STABILIZATION METHOD 4 BLANKET CATEGORY 3
- STABILIZED CONSTRUCTION EXIT
- PROPOSED TILE
- EXISTING TILE



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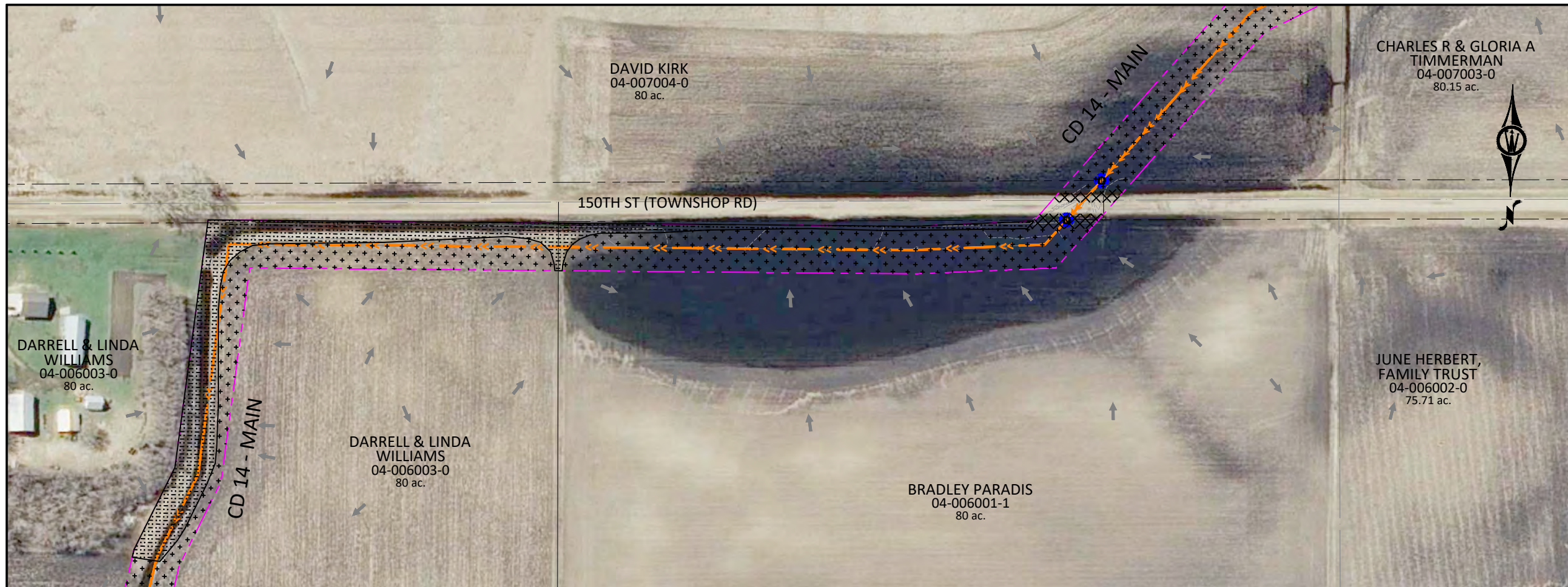


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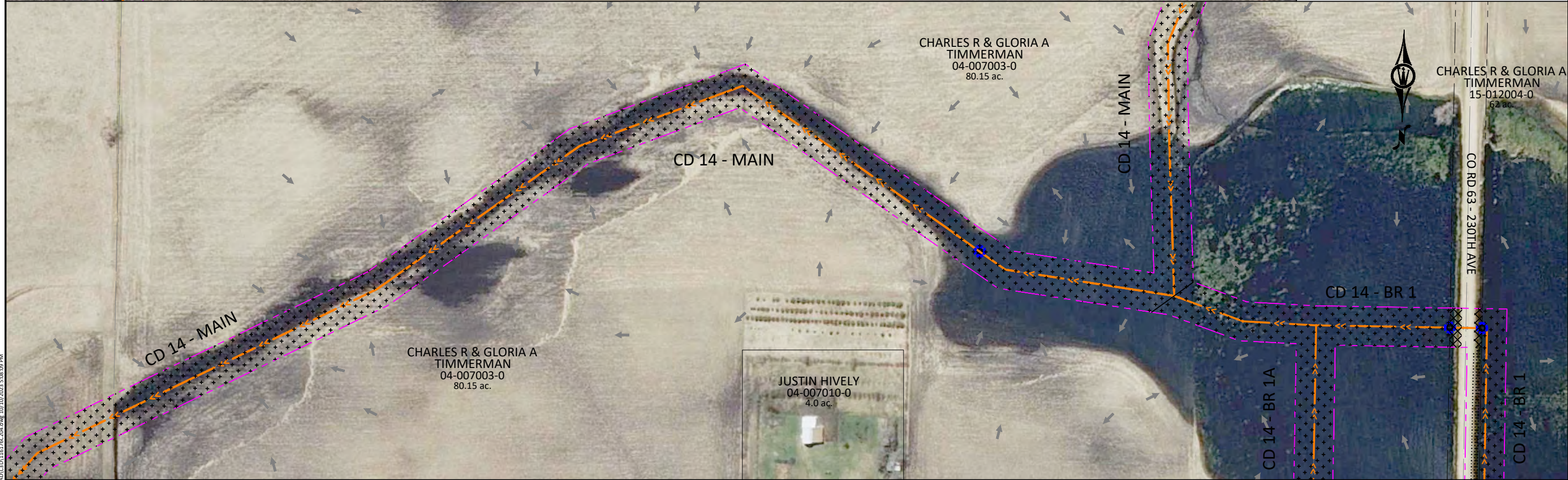
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 COUNTY DITCH No. 14 - MAIN, BR 1, BR 1A & BR2 REPAIRS
 STORMWATER POLLUTION PREVENTION PLAN
 EROSION CONTROL PLAN-CD 14 MAIN, BR 2

SHEET
C2.05

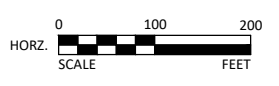


EROSION CONTROL LEGEND

	MS MACHINE SLICED SILT FENCE
	RIP RAP
	INLET PROTECTION
	DITCH CHECK - BIOLOG
	DITCH CHECK - ROCK
	CULVERT / PIPE PROTECTION
	EXISTING/PROPOSED DRAINAGE FLOW
	MULCH TYPE 1
	RAPID STABILIZATION METHOD 3 HYDROMULCH
	RAPID STABILIZATION METHOD 4 BLANKET CATEGORY 3
	STABILIZED CONSTRUCTION EXIT
	PROPOSED TILE
	EXISTING TILE



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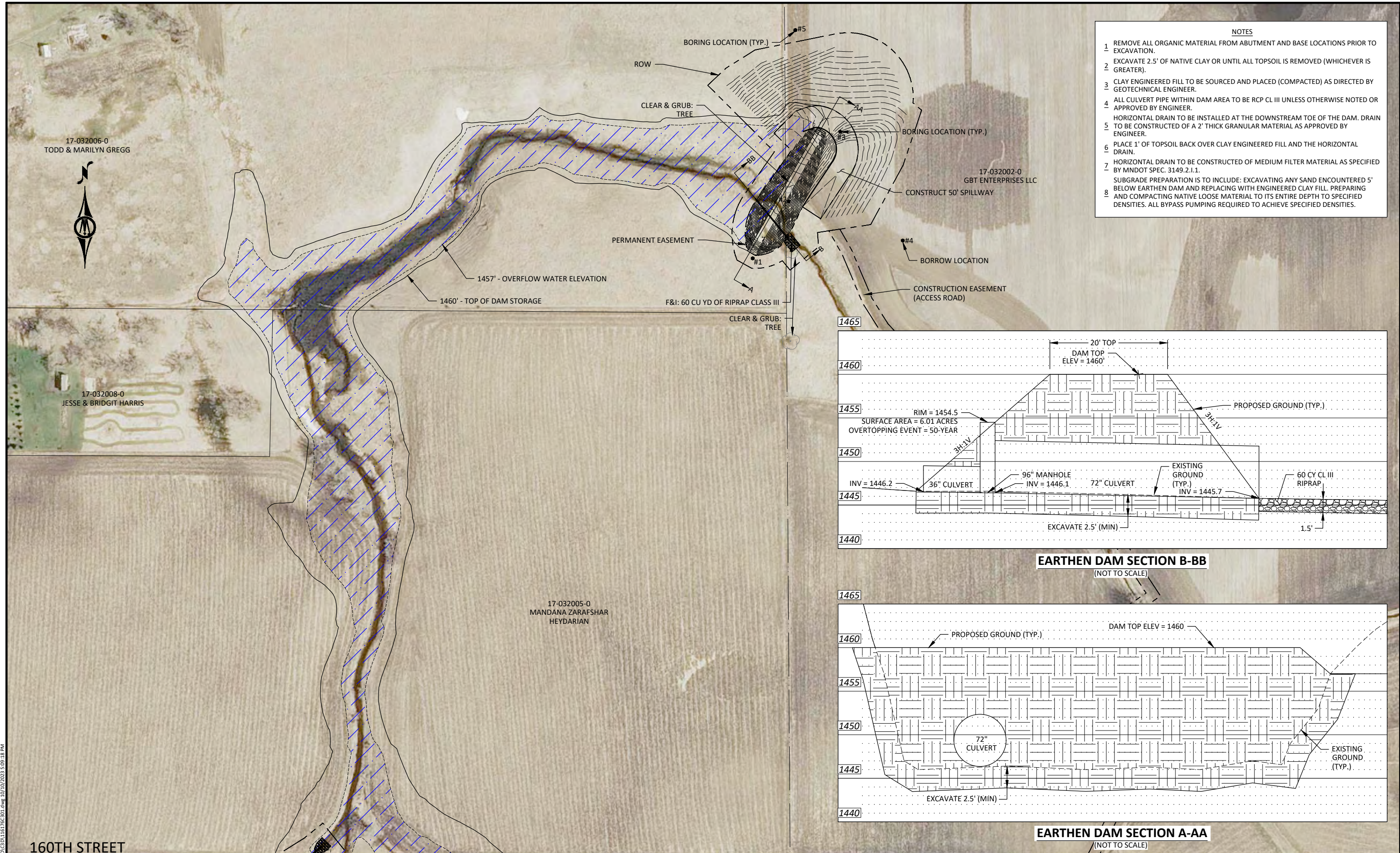


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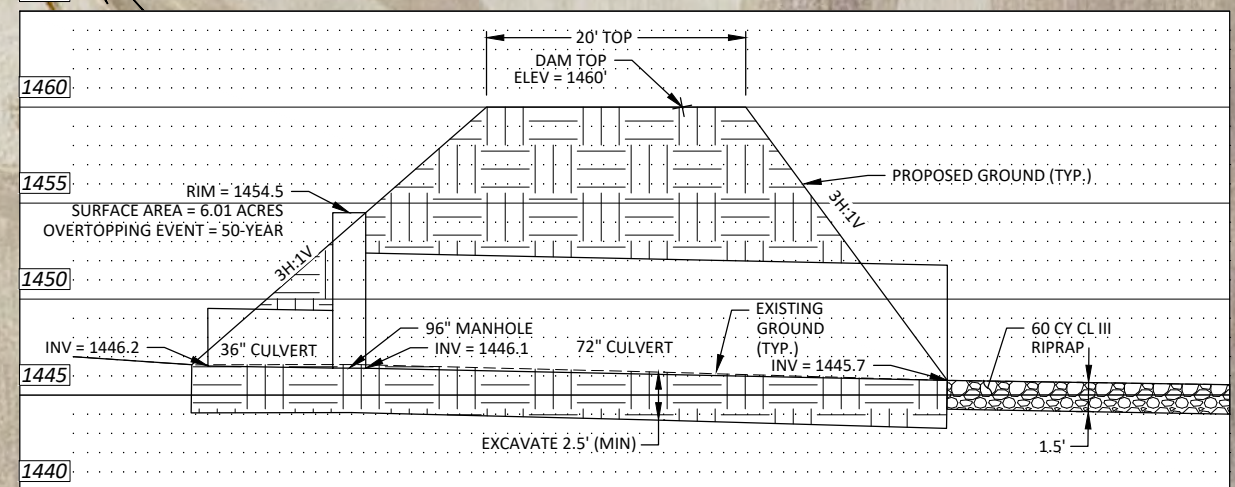
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 STORMWATER POLLUTION PREVENTION PLAN
 EROSION CONTROL PLAN-CD 14 MAIN

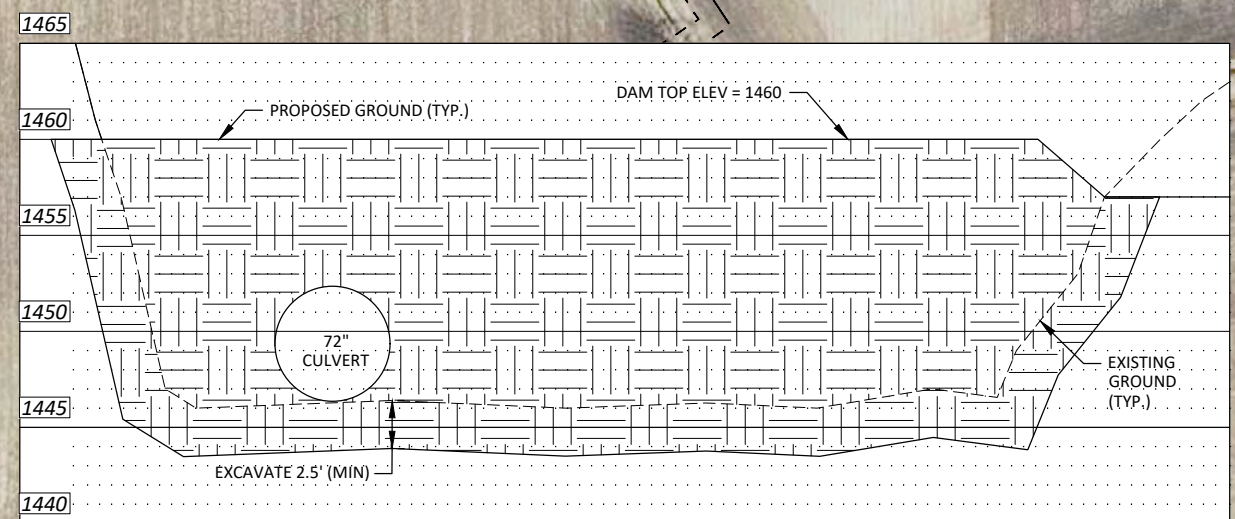
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- NOTES**
- 1 REMOVE ALL ORGANIC MATERIAL FROM ABUTMENT AND BASE LOCATIONS PRIOR TO EXCAVATION.
 - 2 EXCAVATE 2.5' OF NATIVE CLAY OR UNTIL ALL TOPSOIL IS REMOVED (WHICHEVER IS GREATER).
 - 3 CLAY ENGINEERED FILL TO BE SOURCED AND PLACED (COMPACTED) AS DIRECTED BY GEOTECHNICAL ENGINEER.
 - 4 ALL CULVERT PIPE WITHIN DAM AREA TO BE RCP CL III UNLESS OTHERWISE NOTED OR APPROVED BY ENGINEER.
 - 5 HORIZONTAL DRAIN TO BE INSTALLED AT THE DOWNSTREAM TOE OF THE DAM. DRAIN TO BE CONSTRUCTED OF A 2' THICK GRANULAR MATERIAL AS APPROVED BY ENGINEER.
 - 6 PLACE 1' OF TOPSOIL BACK OVER CLAY ENGINEERED FILL AND THE HORIZONTAL DRAIN.
 - 7 HORIZONTAL DRAIN TO BE CONSTRUCTED OF MEDIUM FILTER MATERIAL AS SPECIFIED BY MNDOT SPEC. 3149.2.1.1.
 - 8 SUBGRADE PREPARATION IS TO INCLUDE: EXCAVATING ANY SAND ENCOUNTERED 5' BELOW EARTHEN DAM AND REPLACING WITH ENGINEERED CLAY FILL. PREPARING AND COMPACTING NATIVE LOOSE MATERIAL TO ITS ENTIRE DEPTH TO SPECIFIED DENSITIES. ALL BYPASS PUMPING REQUIRED TO ACHIEVE SPECIFIED DENSITIES.



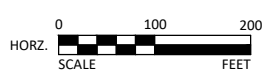
EARTHEN DAM SECTION B-B
(NOT TO SCALE)



EARTHEN DAM SECTION A-AA
(NOT TO SCALE)

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160TH STREET



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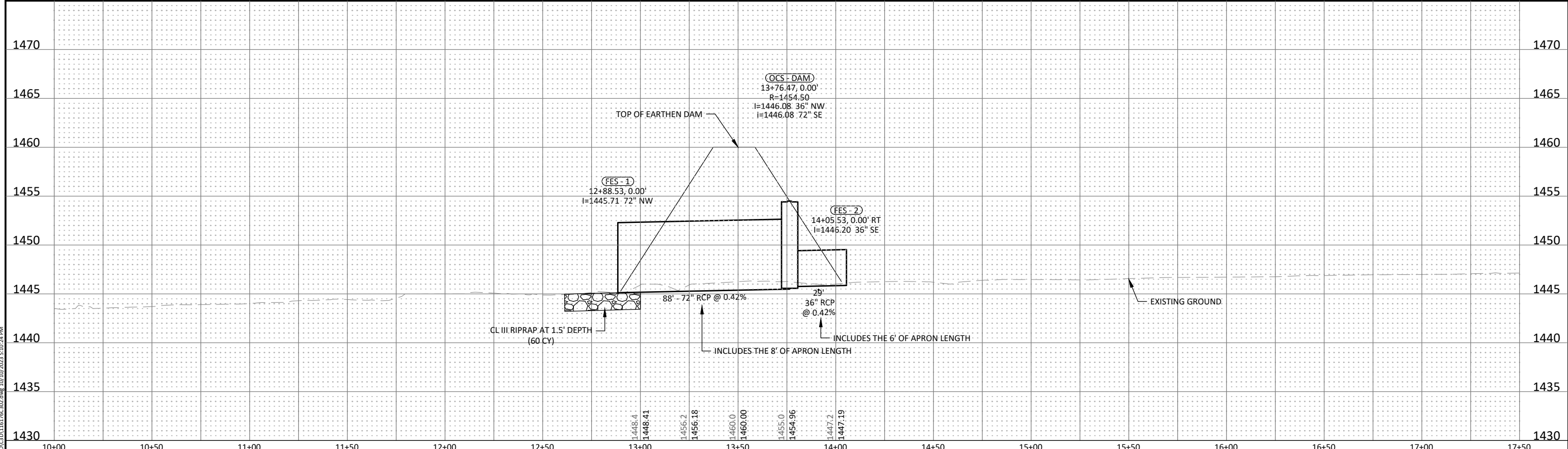
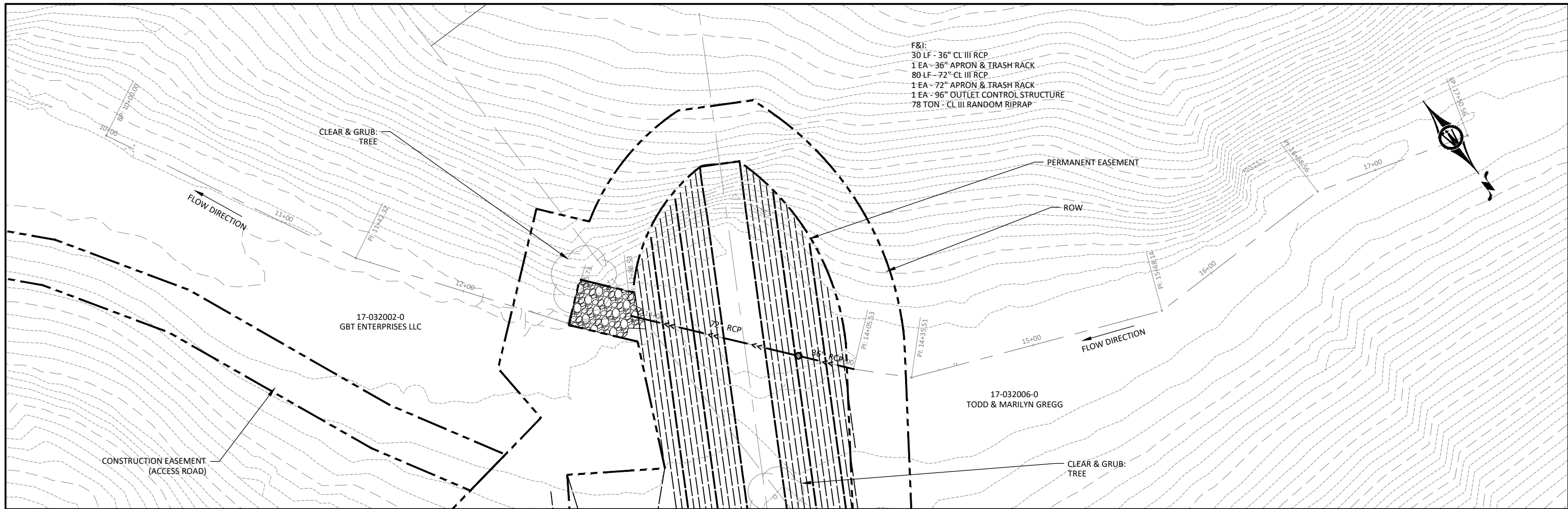


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LYON COUNTY, MINNESOTA
COUNTY DITCH No. 14 - MAIN, BR 1, BR 1A & BR2 REPAIRS
GRADING PLAN - EARTHEN DAM
OVERVIEW

SHEET
C3.01



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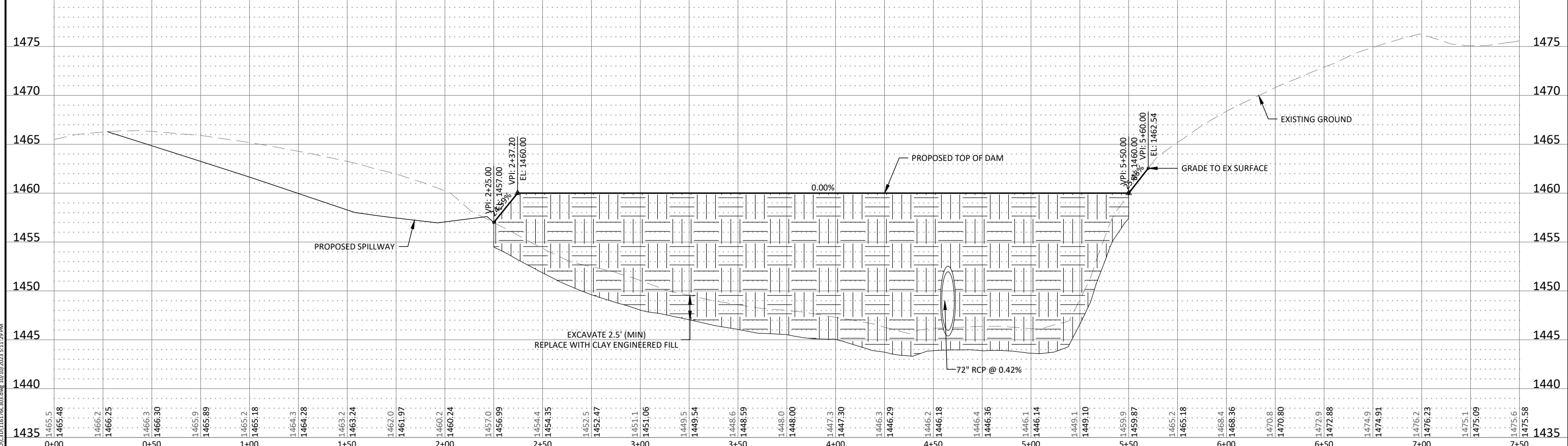
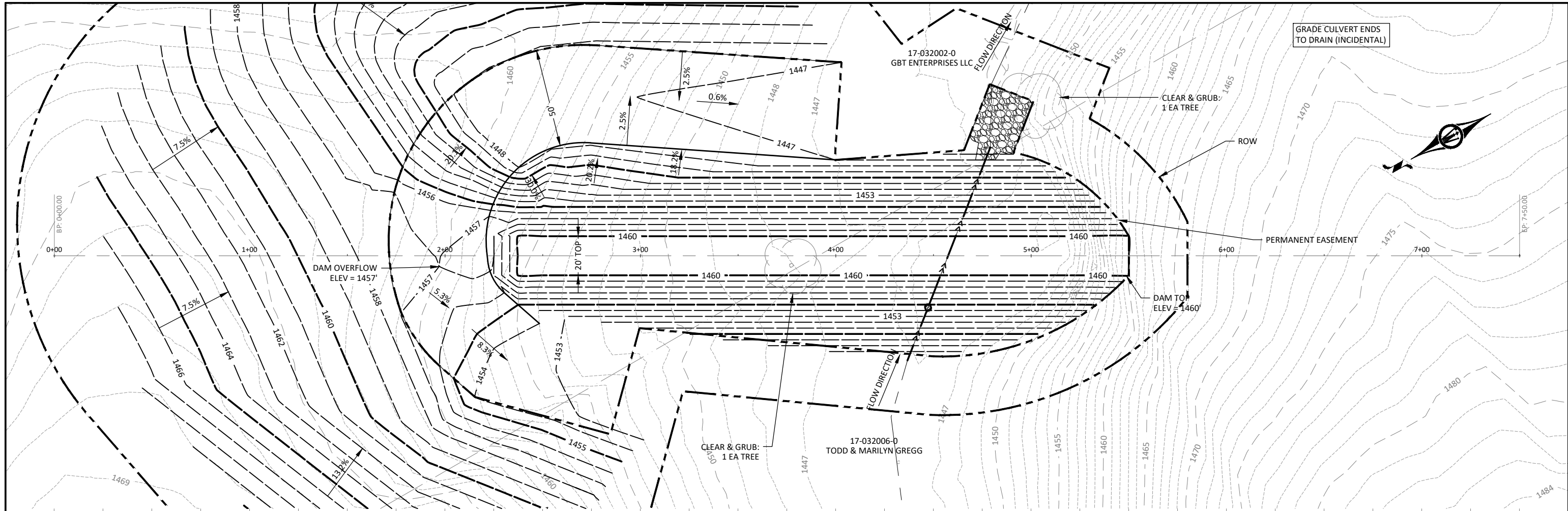


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LYON COUNTY, MINNESOTA
 COUNTY DITCH No. 14 - MAIN, BR 1, BR 1A & BR2 REPAIRS
 GRADING PLAN - EARTHEN DAM
 CULVERT PLAN & PROFILE

SHEET
C3.02



STATION	ELEVATION
0+00	1465.48
0+10	1466.2
0+20	1466.25
0+30	1466.3
0+40	1466.30
0+50	1465.9
1+00	1465.89
1+10	1465.2
1+20	1465.18
1+30	1464.3
1+40	1464.28
1+50	1463.2
1+60	1463.24
1+70	1462.0
1+80	1461.97
1+90	1460.2
2+00	1460.24
2+10	1457.0
2+20	1456.99
2+30	1454.4
2+40	1454.35
2+50	1452.5
2+60	1452.47
2+70	1451.1
2+80	1451.06
2+90	1449.5
3+00	1449.54
3+10	1448.6
3+20	1448.59
3+30	1448.0
3+40	1448.00
3+50	1447.3
3+60	1447.30
3+70	1446.3
3+80	1446.29
3+90	1446.2
4+00	1446.18
4+10	1446.4
4+20	1446.36
4+30	1446.1
4+40	1446.14
4+50	1449.1
4+60	1449.10
4+70	1459.9
4+80	1459.87
4+90	1465.2
5+00	1465.18
5+10	1468.4
5+20	1468.36
5+30	1470.8
5+40	1470.80
5+50	1472.9
5+60	1472.88
5+70	1474.9
5+80	1476.2
5+90	1476.23
6+00	1475.1
6+10	1475.09
6+20	1475.6
6+30	1475.58

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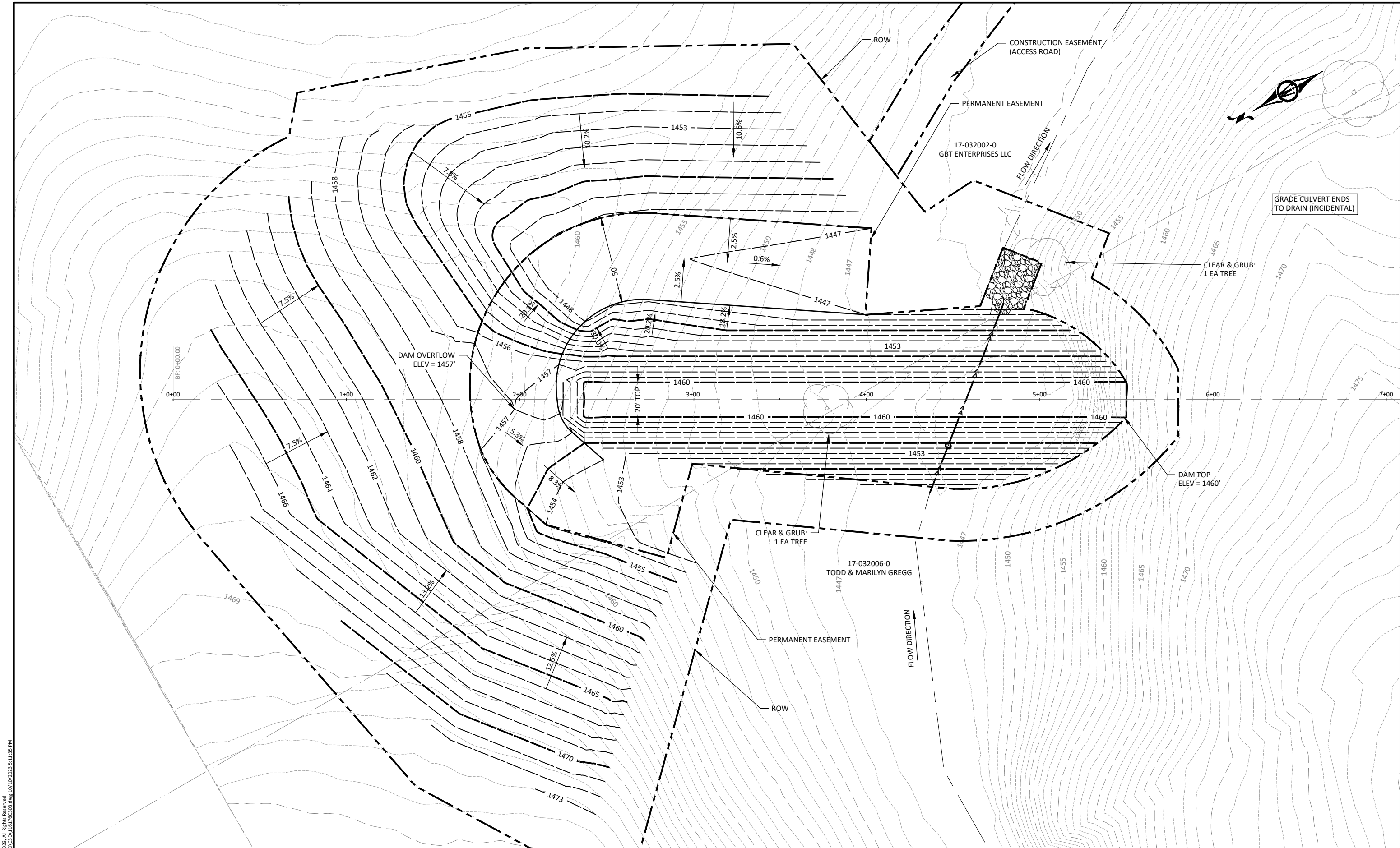
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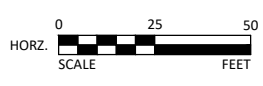
LYON COUNTY, MINNESOTA
 COUNTY DITCH No. 14 - MAIN, BR 1, BR 1A & BR2 REPAIRS
 GRADING PLAN - EARTHEN DAM
 PLAN & PROFILE

SHEET
 C3.03

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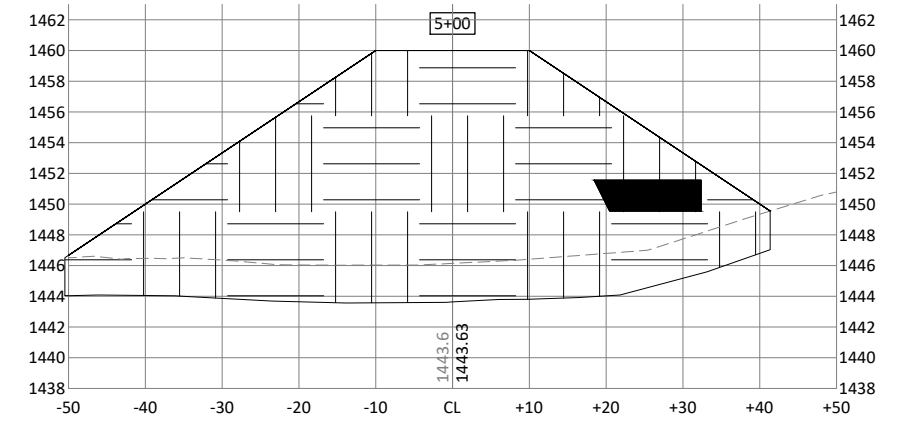
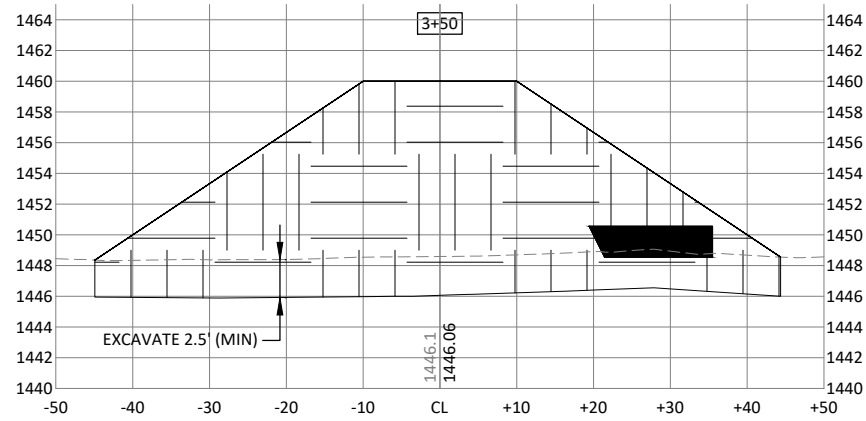
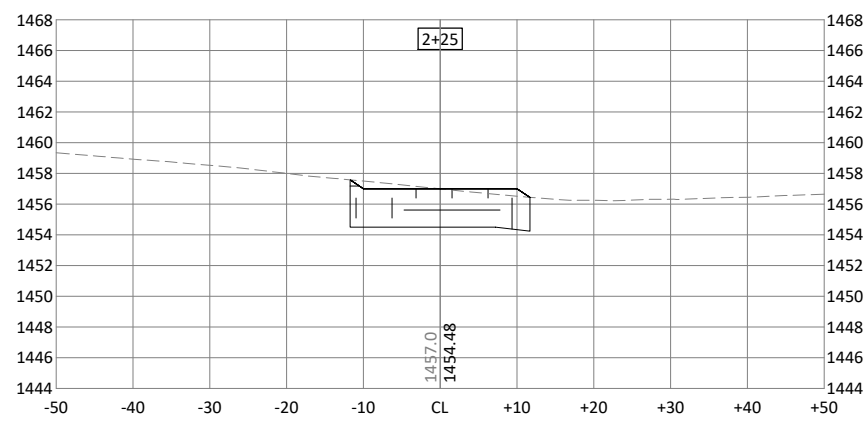
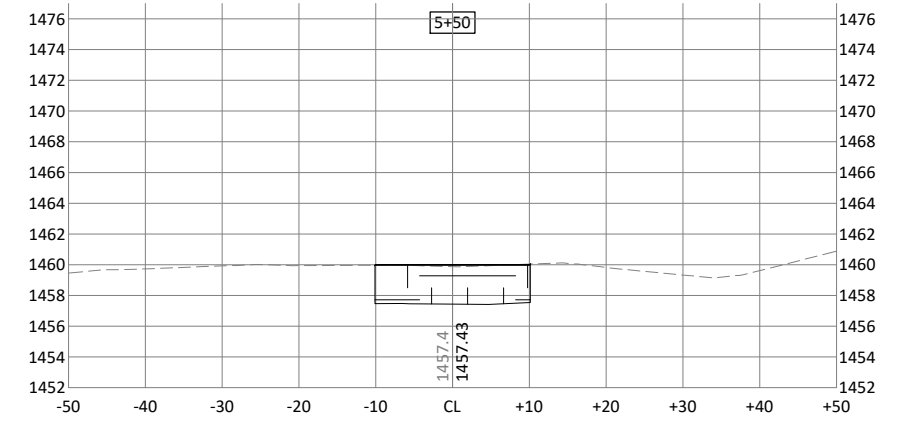
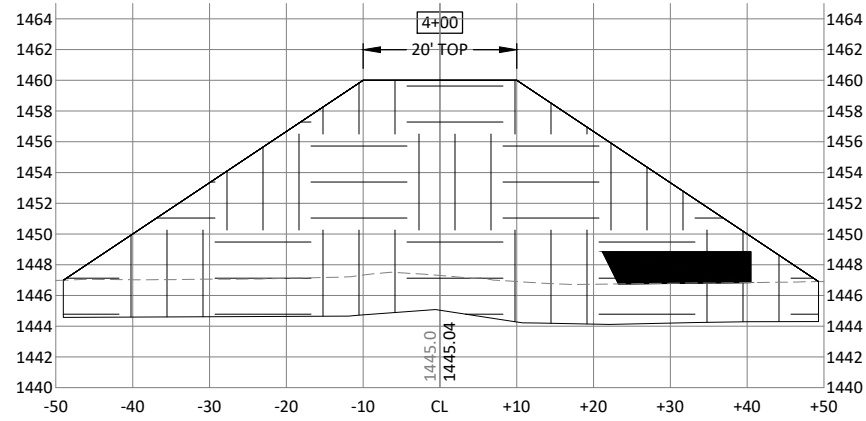
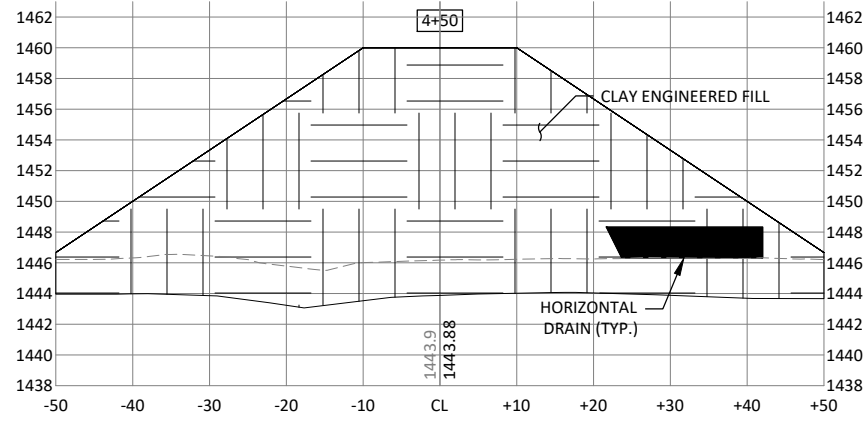
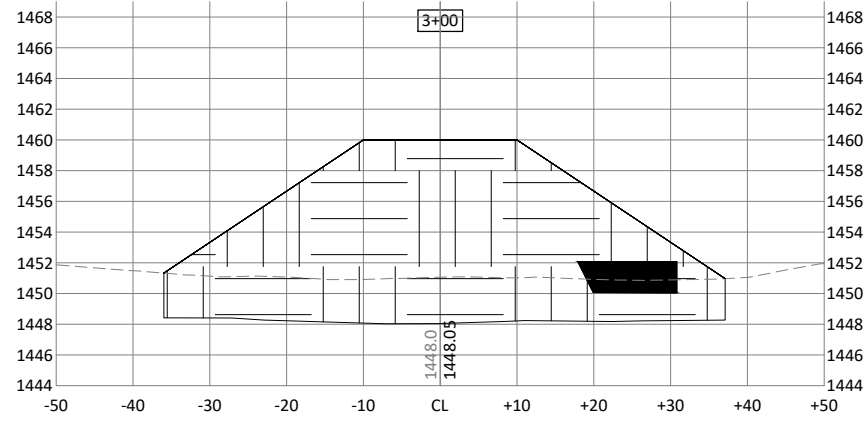


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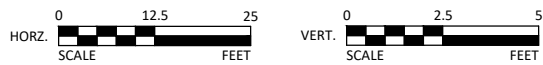
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LYON COUNTY, MINNESOTA
 COUNTY DITCH No. 14 - MAIN, BR 1, BR 1A & BR2 REPAIRS
 GRADING PLAN - EARTHEN DAM
 SPILLWAY PLAN

SHEET
C3.04



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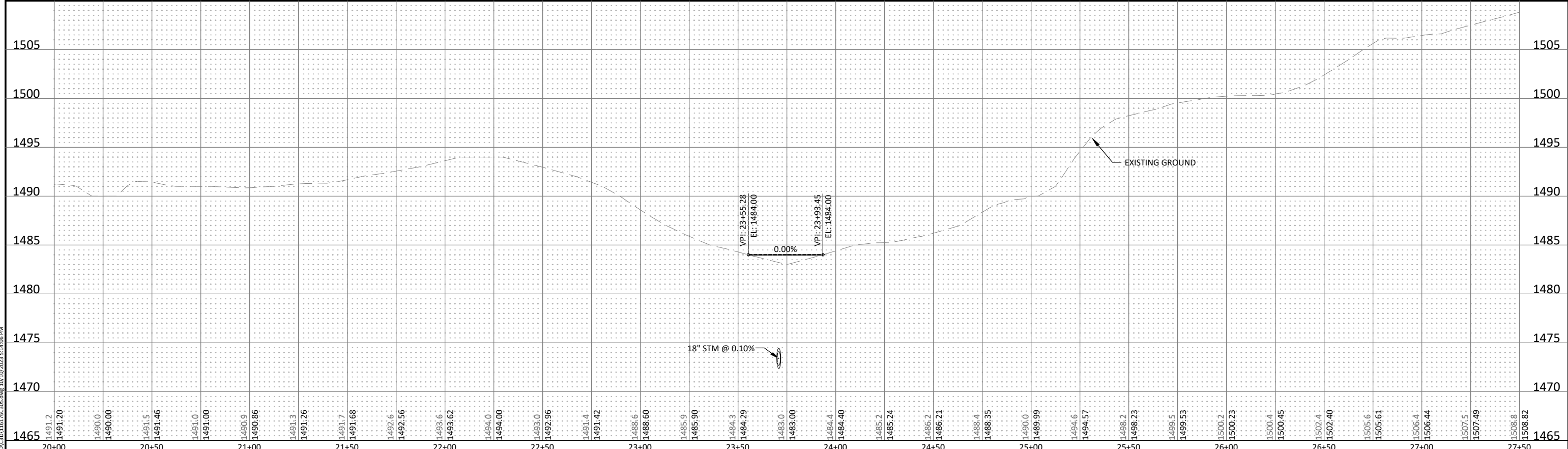
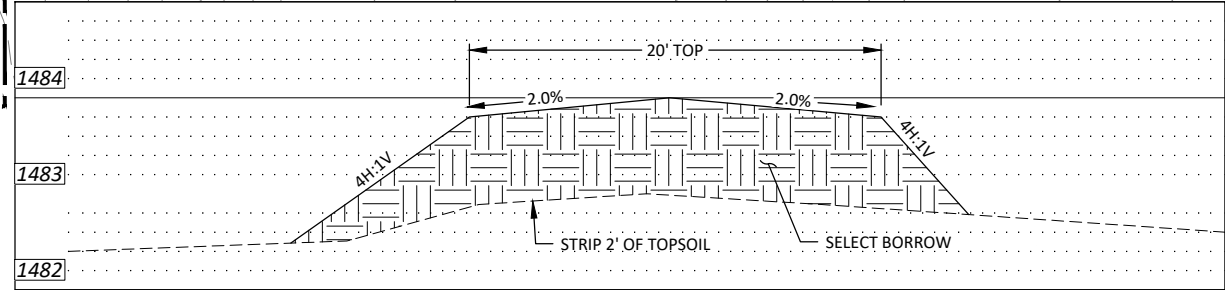
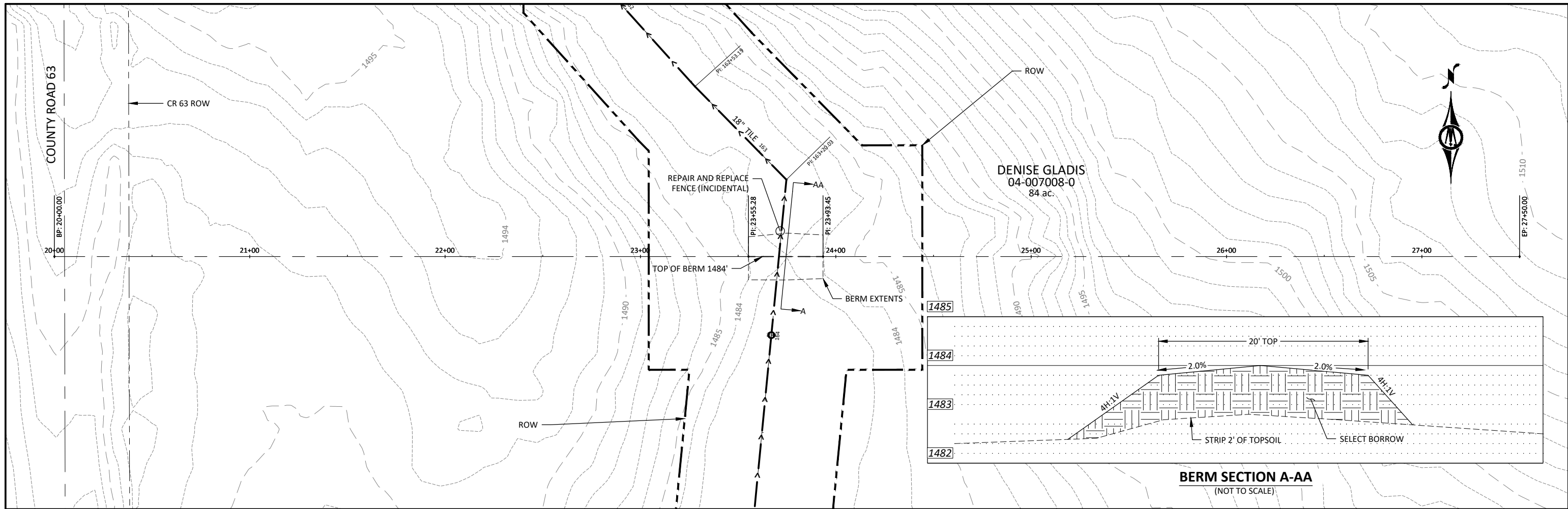


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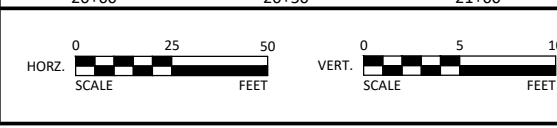
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LYON COUNTY, MINNESOTA
 COUNTY DITCH No. 14 - MAIN, BR 1, BR 1A & BR2 REPAIRS
 GRADING PLAN - EARTHEN DAM
 CROSS SECTIONS

SHEET
 C3.05



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 LIC. NO. 48756 DATE 02/07/2023



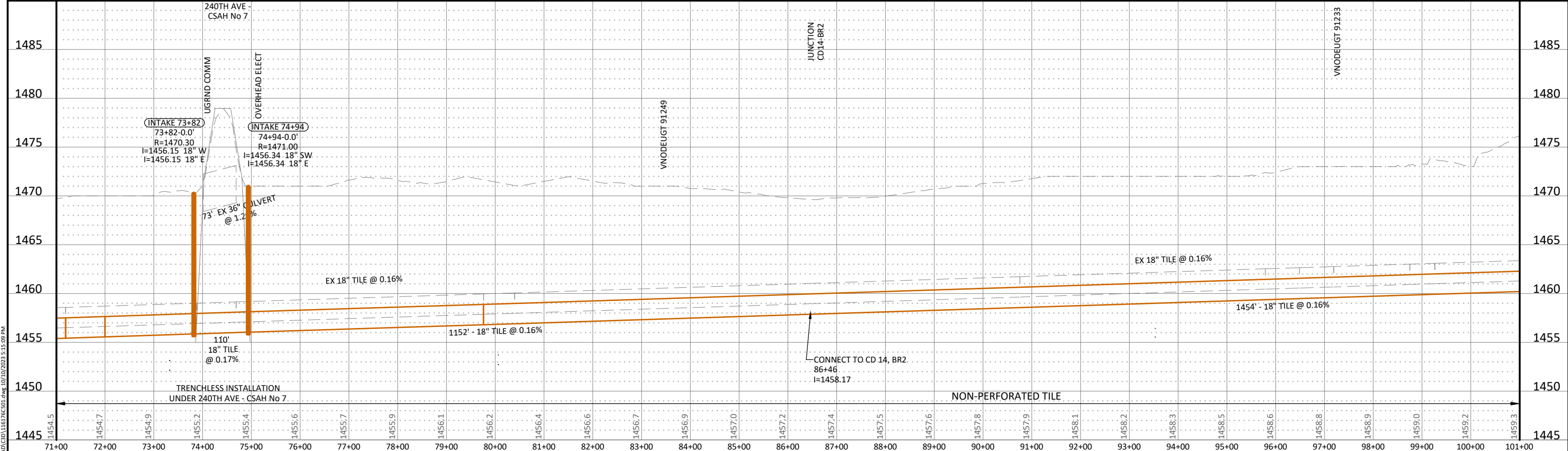
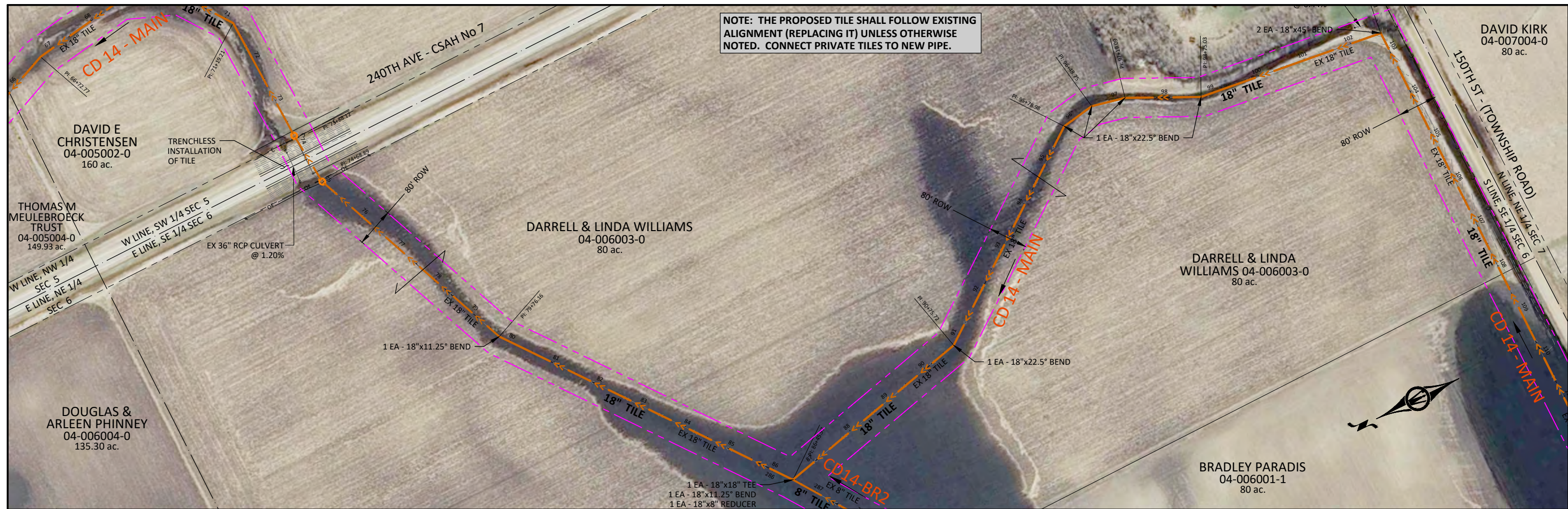
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 Email: SleepyEye@bolton-menk.com
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LYON COUNTY, MINNESOTA
 COUNTY DITCH No. 14 - MAIN, BR 1, BR 1A & BR2 REPAIRS
 GRADING PLAN - BERM
 PLAN & PROFILE

SHEET
C3.06

NOTE: THE PROPOSED TILE SHALL FOLLOW EXISTING ALIGNMENT (REPLACING IT) UNLESS OTHERWISE NOTED. CONNECT PRIVATE TILES TO NEW PIPE.



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LYON COUNTY, MINNESOTA
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 STORM PLAN & PROFILE - COUNTY DITCH NO. 14 - MAIN
 STA 59+00 - STA 89+00

SHEET
C5.03

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04-007004-0
80 ac.

DAVID KIRK
04-007004-0
80 ac.

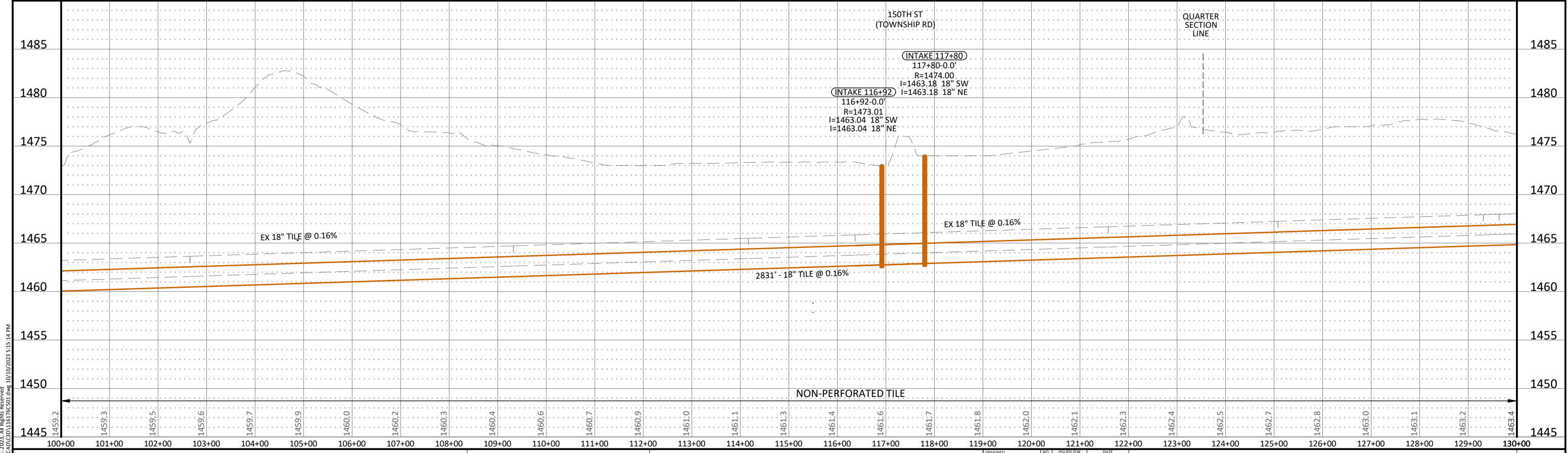
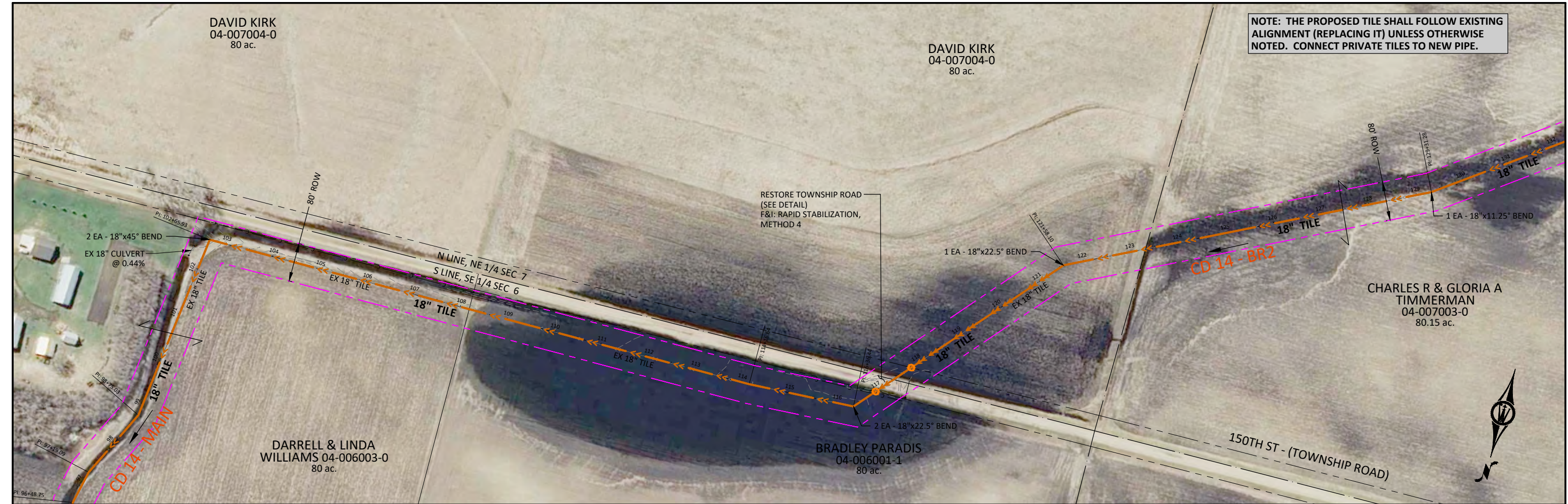
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04-007003-0
80.15 ac.

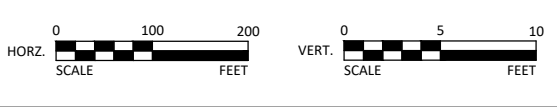
DARRELL & LINDA
WILLIAMS 04-006003-0
80 ac.

BRADLEY PARADIS
04-006001-1
80 ac.

RESTORE TOWNSHIP ROAD
(SEE DETAIL)
F&I: RAPID STABILIZATION,
METHOD 4



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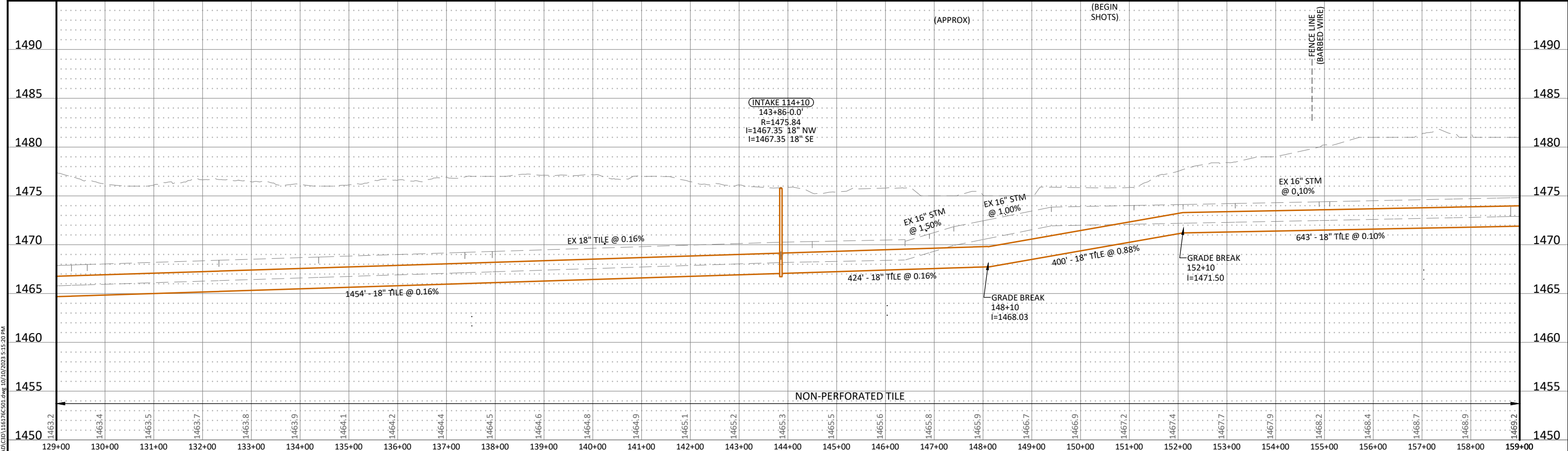
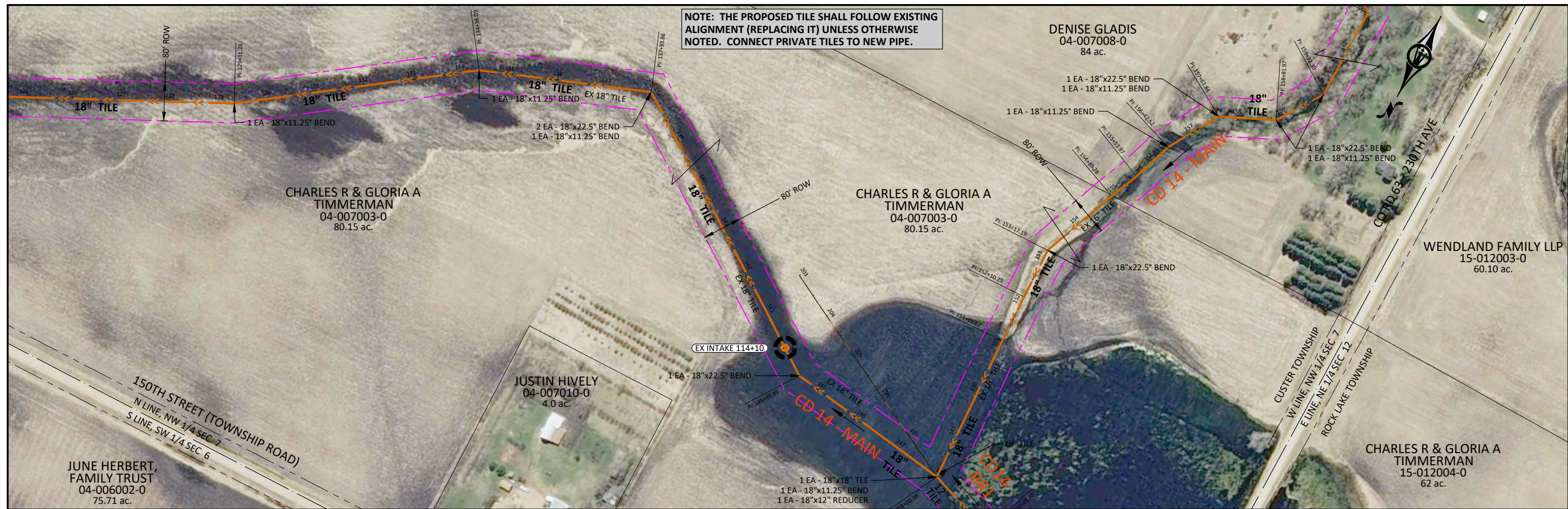


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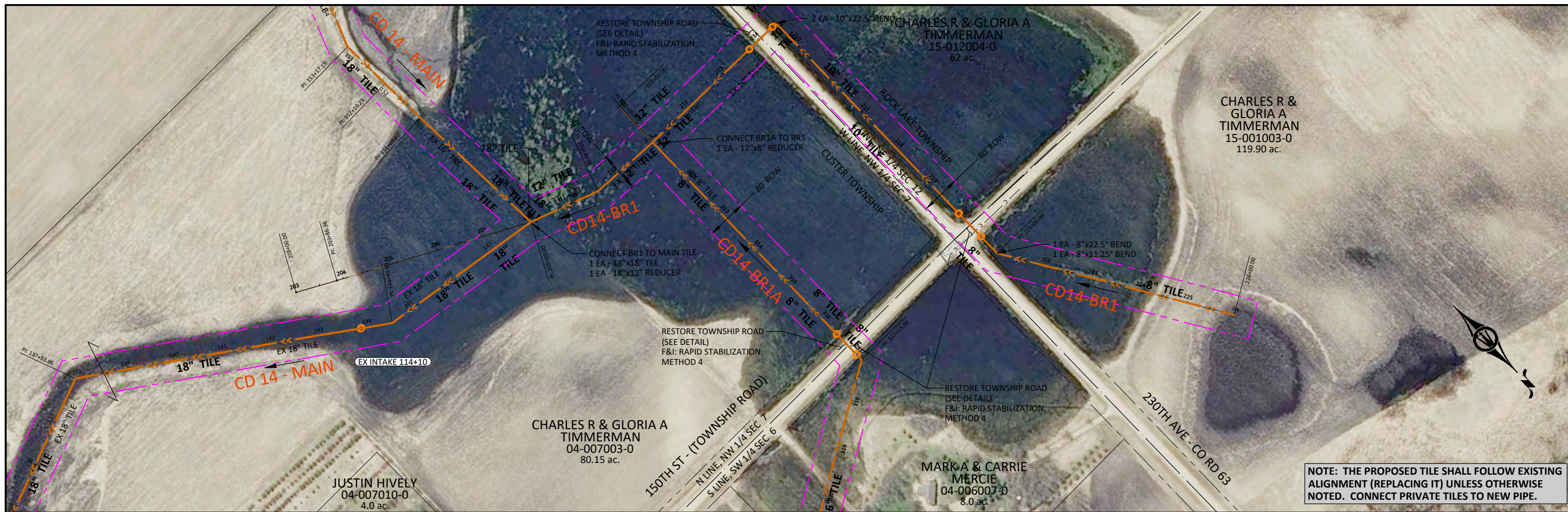
LYON COUNTY, MINNESOTA
COUNTY DITCH No. 14 - MAIN, BR 1, BR 1A & BR 2 REPAIRS
STORM PLAN & PROFILE - COUNTY DITCH NO. 14 - MAIN
STA 88+00 - STA 118+00

SHEET
C5.04

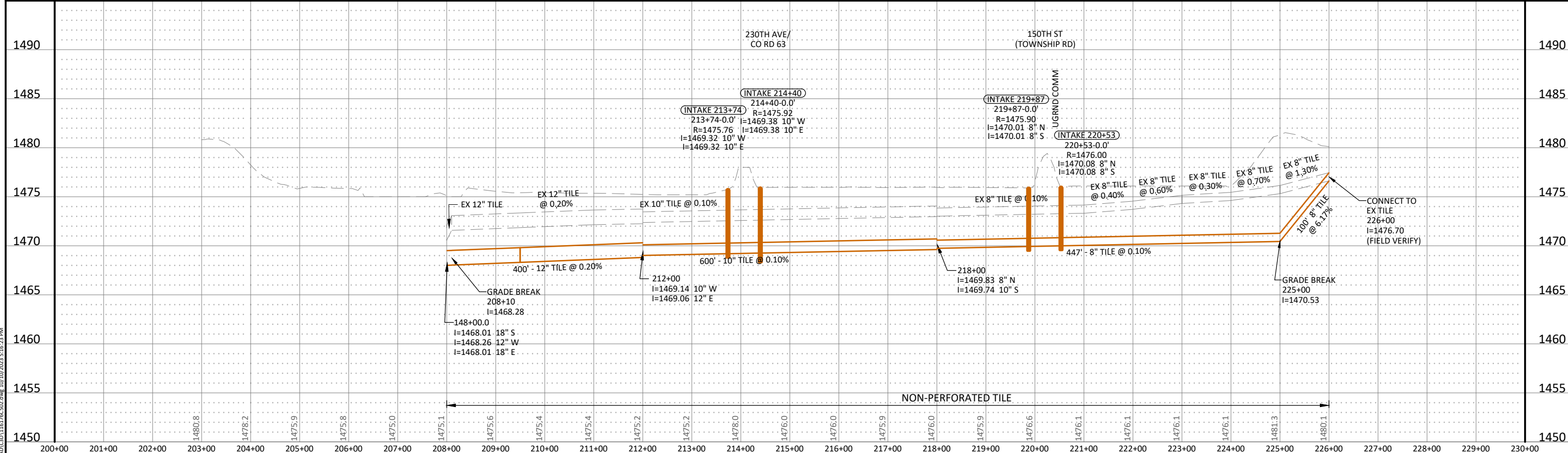


<p>0 100 200 SCALE FEET</p> <p>0 5 10 SCALE FEET</p>	<p>I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.</p> <p><i>Shaun P. Luker</i> SHAUN P. LUKER, P.E. LIC. NO. 48756 DATE 02/07/2023</p>	<p>BOLTON & MENK</p> <p>1243 CEDAR STREET NE SLEEPY EYE, MINNESOTA 56085 Phone: (507) 794-5541 Email: SleepyEye@bolton-menk.com www.bolton-menk.com</p>	<table border="1" style="width:100%; border-collapse: collapse;"> <tr> <td>DESIGNED</td> <td>SPL, BLH</td> </tr> <tr> <td>DRAWN</td> <td>sml</td> </tr> <tr> <td>CHECKED</td> <td>BLH</td> </tr> <tr> <td>CLIENT PROJ. NO.</td> <td>515.116176</td> </tr> </table>	DESIGNED	SPL, BLH	DRAWN	sml	CHECKED	BLH	CLIENT PROJ. NO.	515.116176	<p>LYON COUNTY, MINNESOTA</p> <p>COUNTY DITCH No. 14 - MAIN, BR 1, BR 1A & BR2 REPAIRS</p> <p>STORM PLAN & PROFILE - COUNTY DITCH NO. 14 - MAIN</p> <p>STA 117+00 - STA 141+00</p>	<p>SHEET</p> <p>C5.05</p>
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CLIENT PROJ. NO.	515.116176												

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 SHAUN P. LUKER, P.E.
 LIC. NO. 48756 DATE 02/07/2023

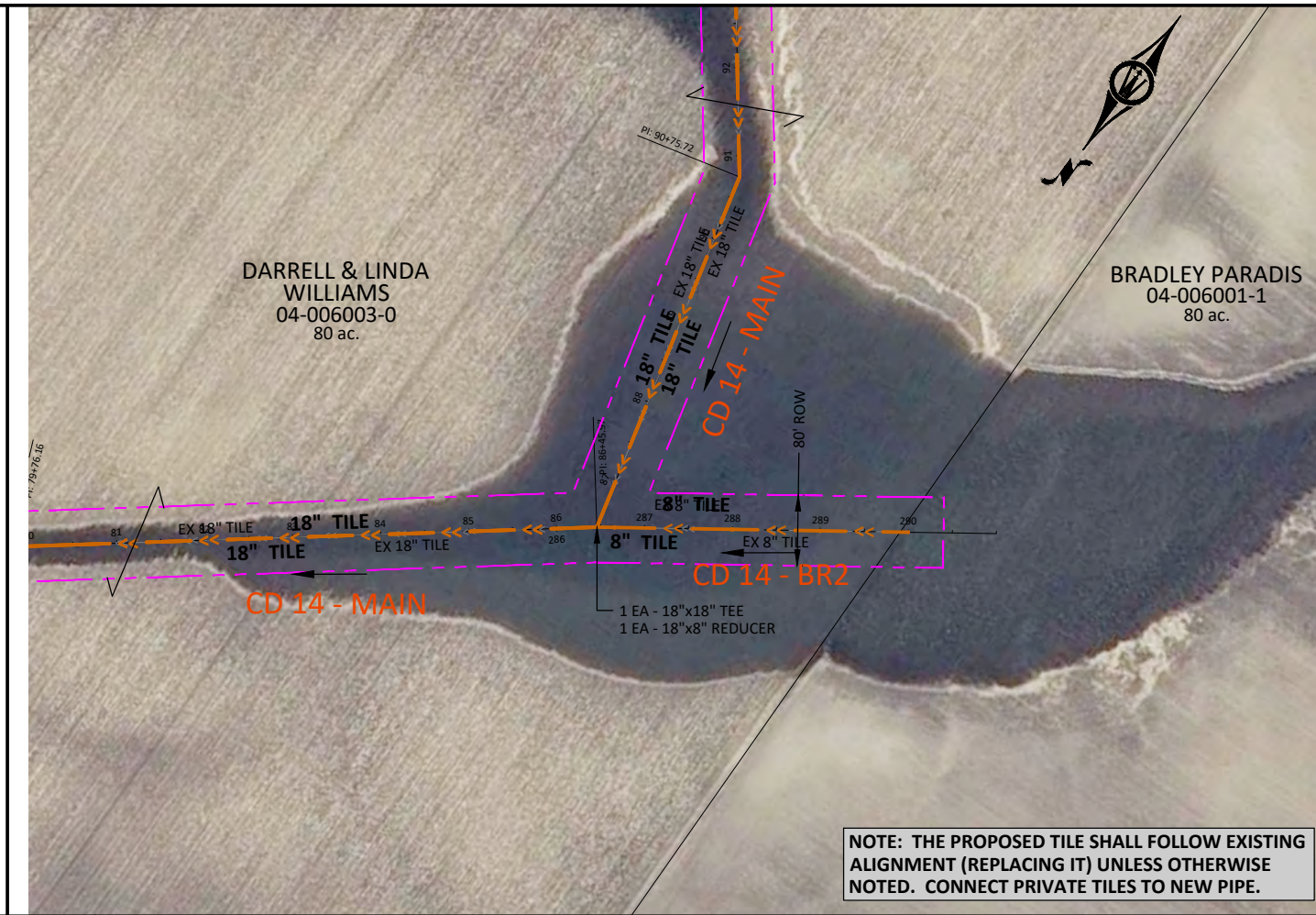


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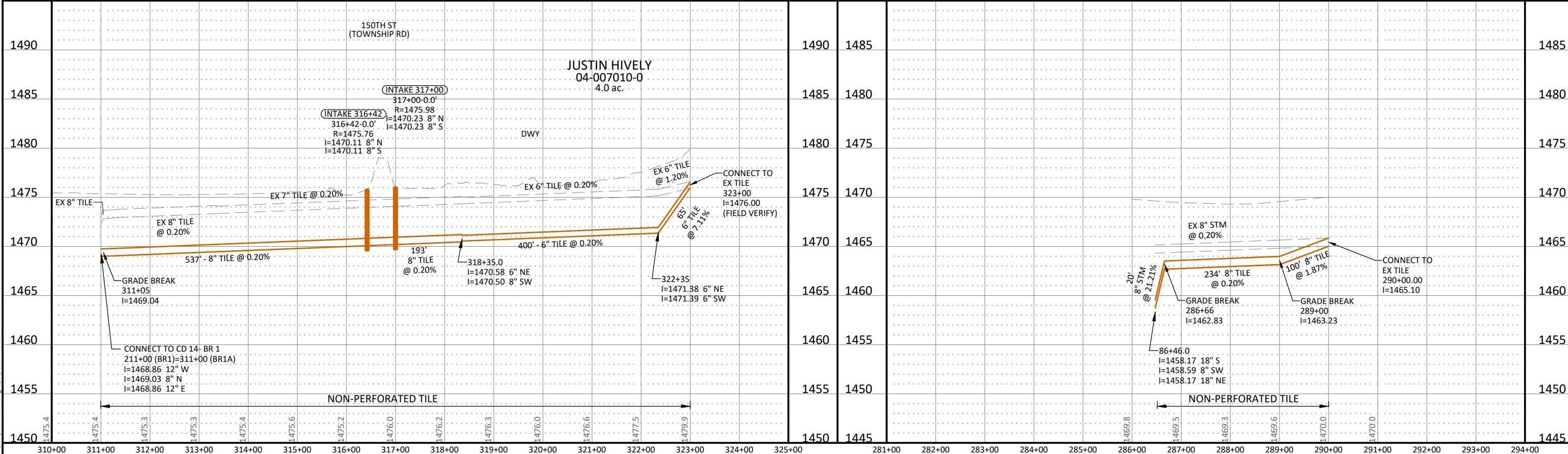
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 STORM PLAN & PROFILE - COUNTY DITCH NO. 14 - BR 1
 BR 1A STA 309+00 - STA 225+00

SHEET
C5.07



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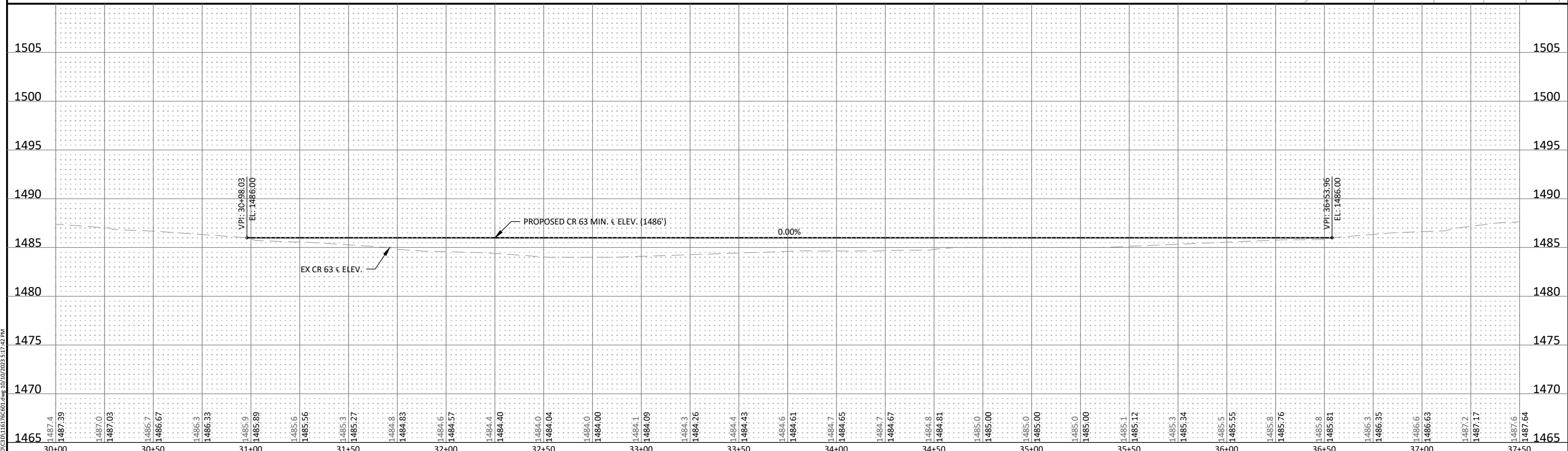
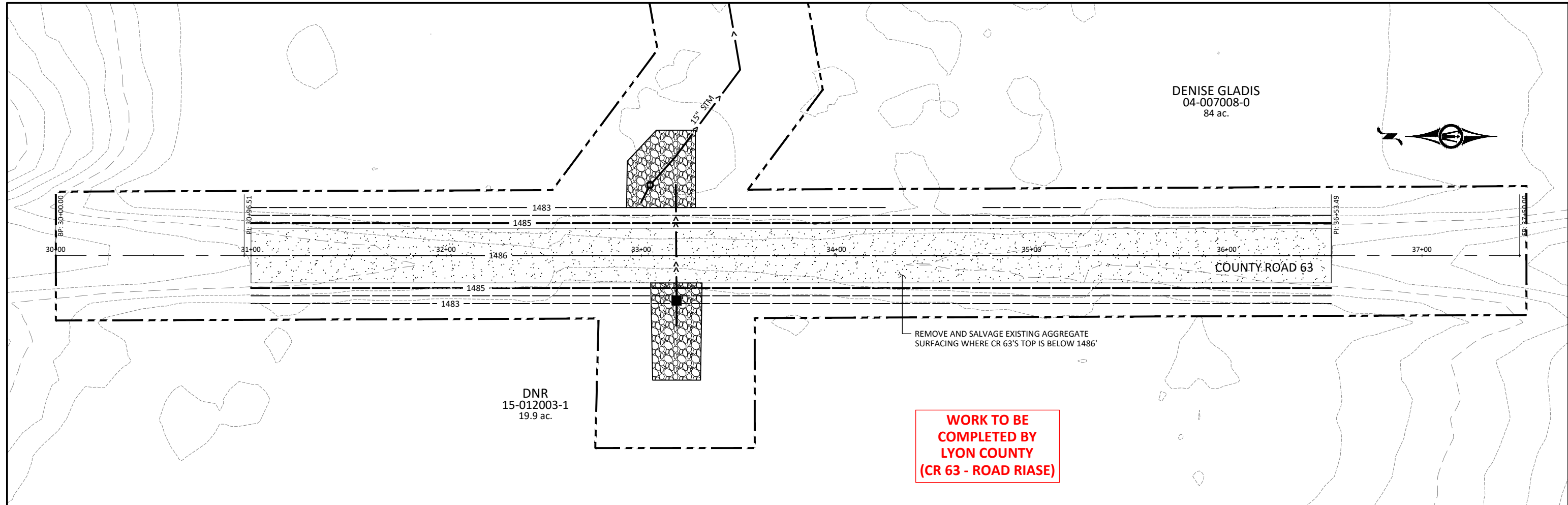
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 BR 1A STA 190+00 - STA 204+00 / BR 2 STA 282+00 - STA 294+00

SHEET
 C5.08

DENISE GLADIS
04-007008-0
84 ac.



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LIC. NO. 48756 DATE 02/07/2023

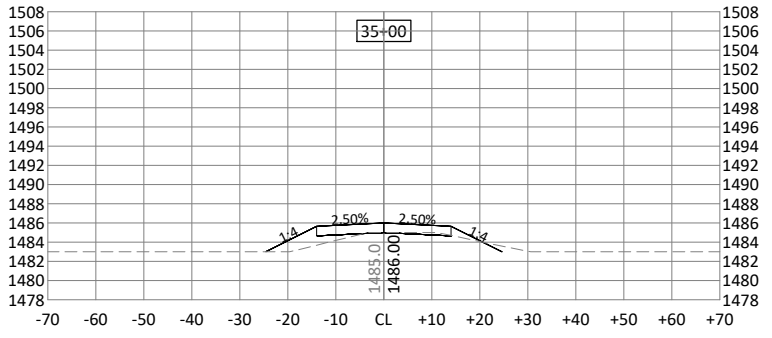
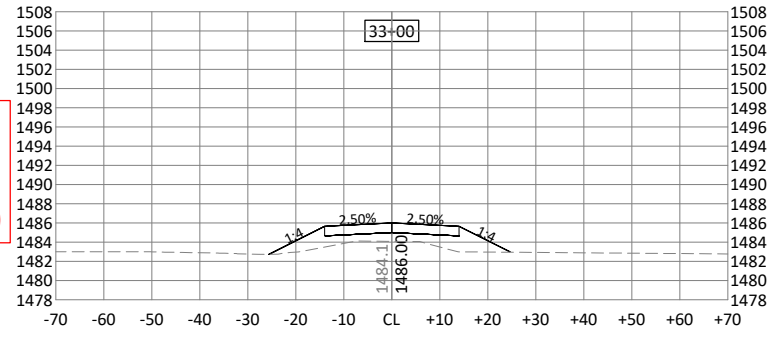
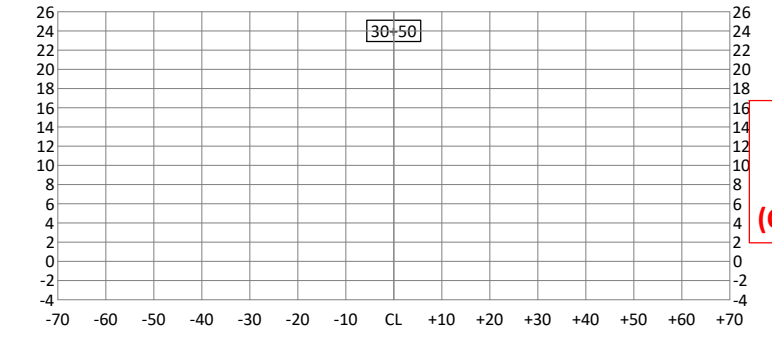
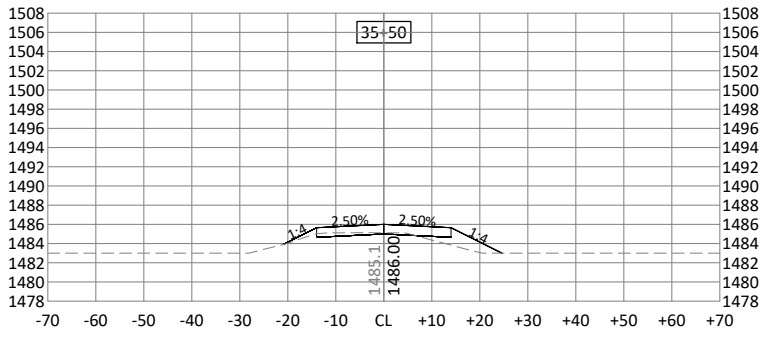
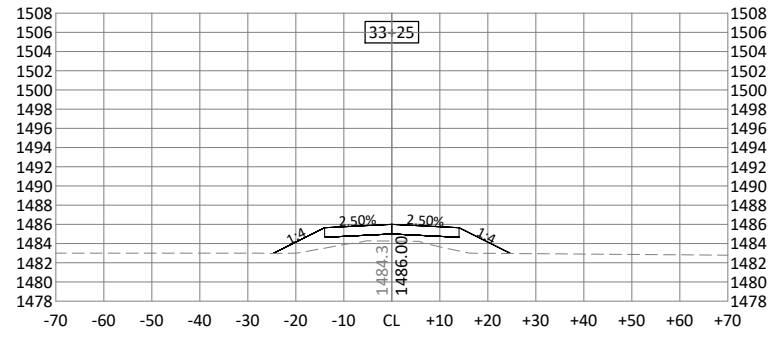
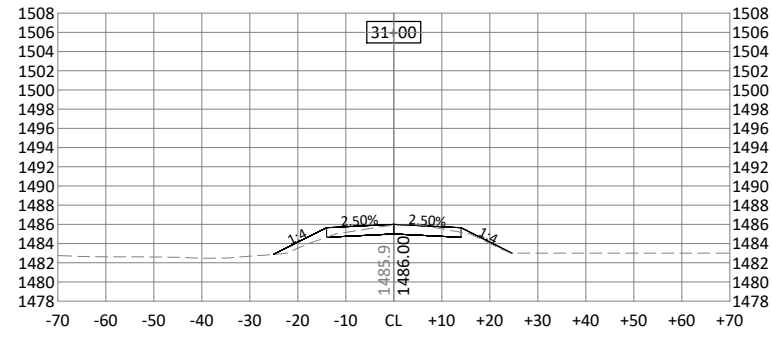
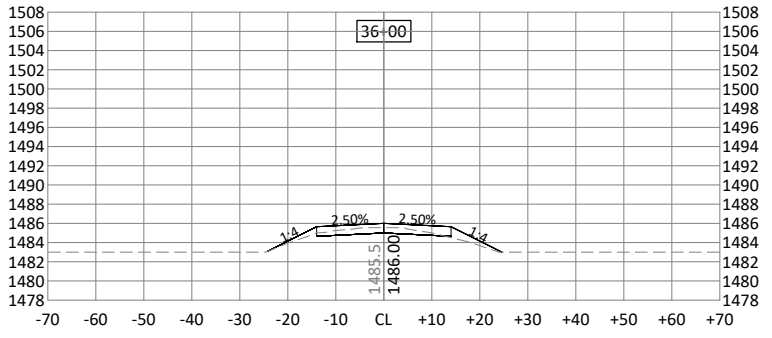
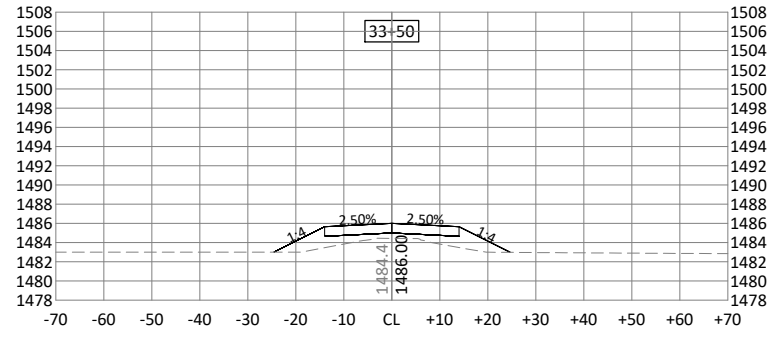
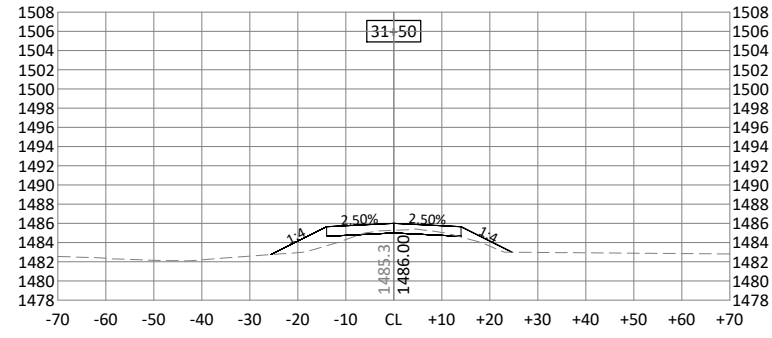
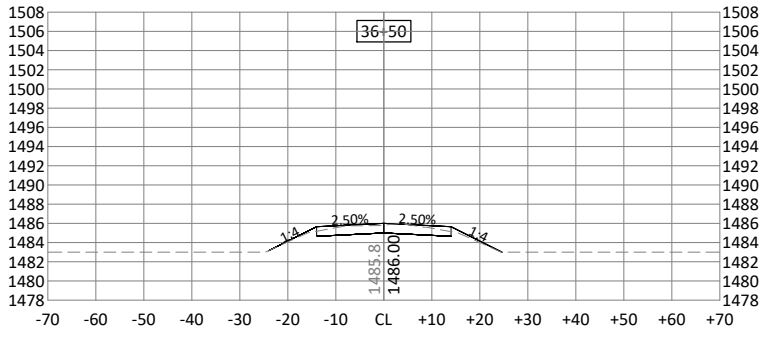
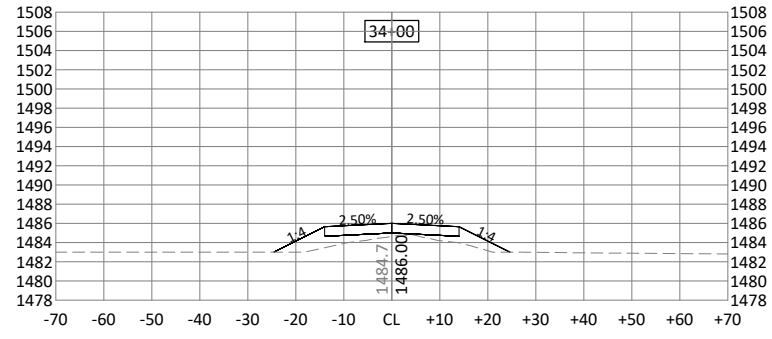
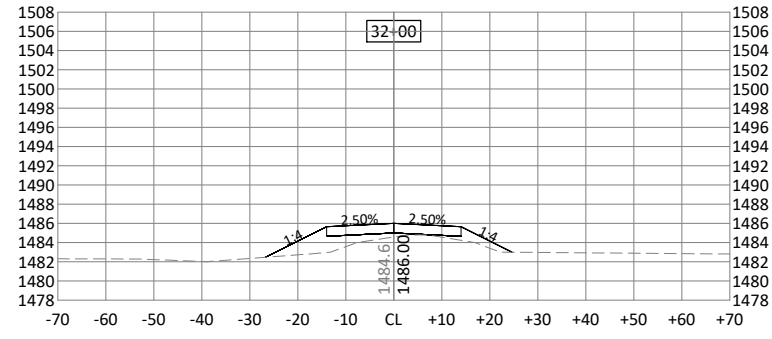
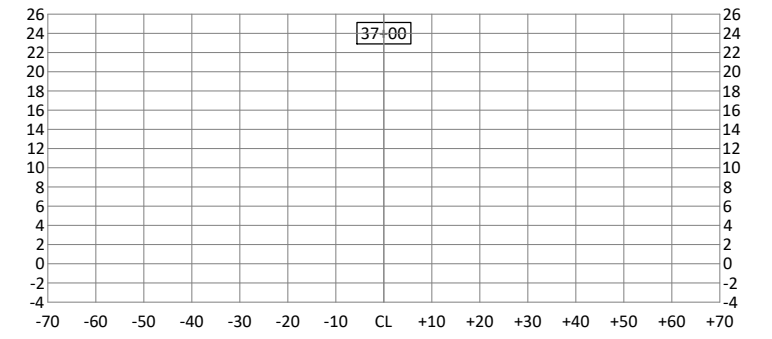
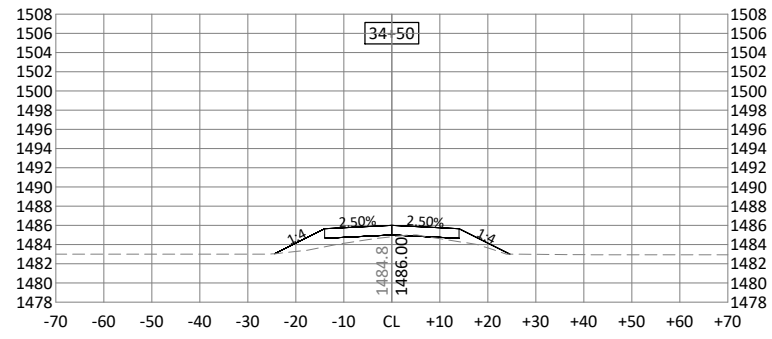
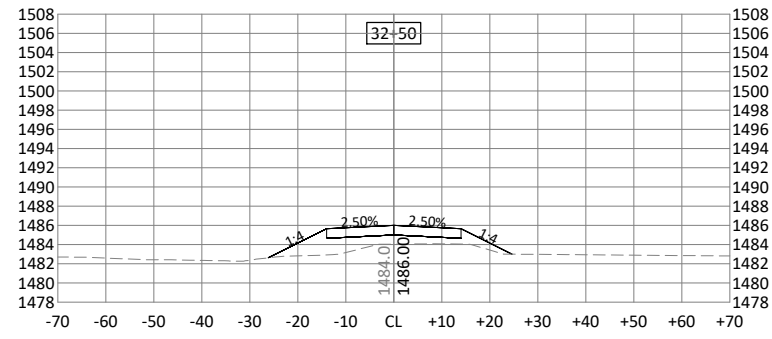


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LYON COUNTY, MINNESOTA
COUNTY DITCH No. 14 - MAIN, BR 1, BR 1A & BR2 REPAIRS
COUNTY ROAD 63
PLAN & PROFILE

SHEET
C6.01



**WORK TO BE
COMPLETED BY
LYON COUNTY
(CR 63 - ROAD RIASE)**

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 LIC. NO. 48756 DATE 02/07/2023



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LYON COUNTY, MINNESOTA
 COUNTY DITCH No. 14 - MAIN, BR 1A, BR 1A & BR2 REPAIRS
COUNTY ROAD 63
 CROSS SECTIONS

SHEET
C6.02

Exhibit 2: Preliminary Cost Estimate

ENGINEER'S REPAIR ESTIMATE

IMPROVEMENT OF COUNTY DITCH 14
 LYON COUNTY
 BMI PROJECT NO. S15.116176



Date: 10/12/2023

Item No.	Item	Estimated Quantity	Unit	Unit Price	Total Amount
BID PACKAGE A					
A.1	Mobilization & Traffic Control	1	LUMP SUM	\$50,000.00	\$50,000.00
A.2	Exploratory Excavation	100	HOUR	\$200.00	\$20,000.00
A.3	Remove PE Pipe Culvert	60	LIN FT	\$20.00	\$1,200.00
A.4	Common Embankment (CV)	15	CU YD	\$50.00	\$750.00
A.5	Aggregate Surfacing, Class 5	175	TON	\$25.00	\$4,375.00
A.6	Ditch Cleaning	20	LIN FT	\$15.00	\$300.00
A.7	6" Drain Tile	480	LIN FT	\$8.00	\$3,840.00
A.8	8" Drain Tile	1,900	LIN FT	\$10.00	\$19,000.00
A.9	10" Drain Tile	600	LIN FT	\$12.00	\$7,200.00
A.10	12" Drain Tile	400	LIN FT	\$16.00	\$6,400.00
A.11	15" Drain Tile	360	LIN FT	\$20.00	\$7,200.00
A.12	18" Drain Tile	13,180	LIN FT	\$25.00	\$329,500.00
A.13	18" Steel Drain Tile - Trenchless Installation	110	LIN FT	\$400.00	\$44,000.00
A.14	24" CMP Pipe	20	LIN FT	\$40.00	\$800.00
A.15	24" RC Pipe Culvert Class III	61	LIN FT	\$175.00	\$10,675.00
A.16	24" RC Pipe Apron	1	EACH	\$1,500.00	\$1,500.00
A.17	4'x4' RC Box Apron	1	EACH	\$8,000.00	\$8,000.00
A.18	Trash guard for 24" RC Pipe Apron	1	EACH	\$1,250.00	\$1,250.00
A.19	Trash guard for 4'x4' RC Box Apron	1	EACH	\$8,000.00	\$8,000.00
A.20	Drain Tile Connections	90	EACH	\$500.00	\$45,000.00
A.21	8" Tile Intakes	14	EACH	\$1,000.00	\$14,000.00
A.22	48" 4020 Drain Intake	5	LIN FT	\$800.00	\$4,160.00
A.23	48" Casting Assembly	1	EACH	\$5,000.00	\$5,000.00
A.24	4'x4' Outlet Control Structure	1	EACH	\$15,000.00	\$15,000.00
A.25	Stabilized Construction Exit	1	LUMP SUM	\$2,000.00	\$2,000.00
A.26	Silt Fence, Type MS	100	LIN FT	\$5.00	\$500.00
A.27	Rapid Stabilization, Method 3	1.7	ACRE	\$5,000.00	\$8,350.00
A.28	Rapid Stabilization, Method 4	3,845	SQ YD	\$3.00	\$11,535.00
A.29	Random Riprap, Class III	230	TON	\$115.00	\$26,450.00
A.30	Ditch Check, Type Rock	4	EACH	\$500.00	\$2,000.00
A.31	Storm Drain Inlet Protection	17	EACH	\$100.00	\$1,700.00
A.32	Mulch, Type 1	31.0	TON	\$200.00	\$6,200.00
SUBTOTAL ESTIMATED CONSTRUCTION BID PACKAGE A ITEMS:					\$665,885.00
	Temporary Right-of-Way	30.06	ACRE	\$600.00	\$18,036.00
TOTAL ESTIMATED CONSTRUCTION COST BID PACKAGE A:					\$683,921.00

ENGINEER'S REPAIR ESTIMATE

IMPROVEMENT OF COUNTY DITCH 14
LYON COUNTY
BMI PROJECT NO. S15.116176



Date: 10/12/2023

Item No.	Item	Estimated Quantity	Unit	Unit Price	Total Amount
BID PACKAGE B					
B.1	Mobilization & Traffic Control	1	LUMP SUM	\$10,000.00	\$10,000.00
B.2	Exploratory Excavation	25	HOUR	\$200.00	\$5,000.00
B.3	Clear and Grub	2	EACH	\$1,000.00	\$2,000.00
B.4	Subgrade Preperation (CV)	9,500	CU YD	\$8.00	\$76,000.00
B.5	Common Embankment (CV)	6,810	CU YD	\$12.00	\$81,720.00
B.6	Fine Filter Aggregate Modified	1,000	TON	\$30.00	\$30,000.00
B.7	36" RC Pipe Culvert Class III	30	LIN FT	\$250.00	\$7,500.00
B.8	72" RC Pipe Culvert Class III	80	LIN FT	\$400.00	\$32,000.00
B.9	36" RC Pipe Apron	1	EACH	\$2,500.00	\$2,500.00
B.10	72" RC Pipe Apron	1	EACH	\$5,000.00	\$5,000.00
B.11	Trash guard for 36" RC Pipe Apron	1	EACH	\$2,500.00	\$2,500.00
B.12	Trash guard for 72" RC Pipe Apron	1	EACH	\$7,000.00	\$7,000.00
B.13	96" Outlet Control Structure	1	EACH	\$20,000.00	\$20,000.00
B.14	Stabilized Construction Exit	1	LUMP SUM	\$1,000.00	\$1,000.00
B.15	Silt Fence, Type MS	1,050	LIN FT	\$5.00	\$5,250.00
B.16	Rapid Stabilization, Method 3	2.0	ACRE	\$5,000.00	\$10,000.00
B.17	Rapid Stabilization, Method 4	305	SQ YD	\$3.00	\$915.00
B.18	Random Riprap, Class III	78.0	TON	\$115.00	\$8,970.00
B.19	Mulch, Type 1	5.9	TON	\$200.00	\$1,180.00
SUBTOTAL ESTIMATED CONSTRUCTION BID PACKAGE B ITEMS:					\$308,535.00
	Temporary Right-of-Way	34.65	ACRE	\$600.00	\$20,790.00
	Permanent Right-of-Way	1.14	ACRE	\$8,500.00	\$9,690.00
TOTAL ESTIMATED CONSTRUCTION COST BID PACKAGE B:					\$339,015.00
				SUBTOTAL:	\$1,022,936.00
				CONTINGENCY:	\$204,590.00
TOTAL ESTIMATED CONSTRUCTION COST:					\$1,227,526.00
DESIGN, ADMINISTRATION AND CONSTRUCTION ENGINEERING:					\$306,880.00
TOTAL ESTIMATED PROJECT COST:					\$1,534,406.00

Exhibit 3: Technical Specifications

TECHNICAL SPECIFICATIONS
IMPROVEMENT OF COUNTY DITCH No. 14
LYON COUNTY, MN

02210 - SUBSURFACE INVESTIGATION
02220 - REMOVING PIPE AND MISCELLANEOUS STRUCTURES
02240 - DEWATERING
02320 - TRENCH EXCAVATION, BEDDING AND BACKFILL
02370 - EROSION CONTROL
02625 - AGRICULTURAL DRAIN TILE
02630 - SURFACE WATER INTAKES
02920 - TURF RESTORATION

SECTION 02210 - SUBSURFACE INVESTIGATION

PART 1 -- GENERAL

1.1 SUMMARY

- A. This section covers the furnishing of all labor, materials, tools, equipment and performances of all work and services necessary or incidental to conducting subsurface investigation as shown on the drawings, as specified herein, and/or as specified by the Engineer.

1.2 METHOD OF MEASUREMENT AND PAYMENT

- A. Measurement and compensation for the following items shall be paid according to the referenced specification or as modified below:

- 1. No exception to the referenced specification is made.

1.3 SPECIFICATION REFERENCES

- A. Mn/DOT Specification Section 2123 shall apply, except as modified herein.
- B. Unless noted otherwise, the provisions in this section are in addition to the referenced specification.

PART 2 -- PRODUCTS

2.1 MATERIALS

- A. No exception to the referenced specification is made.

PART 3 -- EXECUTION

3.1 CONSTRUCTION REQUIREMENTS

- A. The Contractor shall:
 - 1. Perform underground utility exploration as directed by the Engineer which involves excavation to locate pipelines for location and elevation verification.
 - 2. Other work associated with the Project, as directed by the Engineer.
 - 3. Subsurface investigation shall consist of a rubber-tired backhoe, operator and laborer to find the tile.
- B. Where exploratory excavation is performed in a location that will not be disturbed later, the backfill shall be placed and compacted to the density specified elsewhere in these Specifications for the type of utility located.

****END OF SECTION****

SECTION 02220 - REMOVING PIPE AND MISCELLANEOUS STRUCTURES

PART 1 -- GENERAL

1.1 SUMMARY

- A. This section covers the furnishing of all labor, materials, tools, equipment and performances of all work and services necessary or incidental to the removal of pipe and miscellaneous structures as indicated on the drawings or as specified herein.

1.2 METHOD OF MEASUREMENT AND PAYMENT

- A. Measurement and compensation for the following items shall be paid according to the referenced specification or as modified below:
 - 1. The UNIT PRICE bid for removing miscellaneous structures shall include all costs of labor, materials, equipment and ultimate disposal required to complete the work, as specified.
- B. The furnishing and installing of specific items and/or the performance of work under certain circumstances shall not be individually paid. The costs shall be included in the unit price bid for the associated removal and excavation items. Such items of work include but are not limited to:
 - 1. Off-site disposal of debris.
 - 2. Fees and permits for the disposal of materials.
 - 3. Removal and disposal of existing tiles which conflict with the construction
 - 4. Bulkheading the ends of existing pipes designated by the Engineer to be abandoned in place.
 - 5. Salvage and reinstall fence (as needed)
 - 6. Protection from damage of structures or other surface improvements that are not to be removed, and subsequent repair and/or replacement if damaged by Contractor operations.

1.3 SPECIFICATIONS REFERENCES

- A. Mn/DOT Specification Section 2104 shall apply to the removal of pipe and miscellaneous structures, except as modified herein.
- B. Unless noted otherwise, the provisions in this section are in addition to the referenced specification.

1.4 SUBMITTALS

- A. No exception to the referenced specification is made.

PART 2 -- PRODUCTS

2.1 NO EXCEPTION TO THE REFERENCED SPECIFICATION IS MADE.

PART 3 -- EXECUTION

3.1 CONSTRUCTION REQUIREMENTS

- A. Salvage existing fences where shown on the plans and/or required for the construction of the project, including posts and hardware. Replace when construction is complete, including new posts and wire if needed.

- B. Dispose of all concrete items, rubbish and debris outside of the construction zone. It shall be the Contractor's responsibility to secure all required permits and pay all fees associated with the disposal of the material and to secure the disposal site.
- C. The Contractor shall take full responsibility to protect structures or other surface improvements from damage that are not to be removed. If damage to these facilities occurs due to the construction of the project, the Contractor shall replace or repair them.
- D. Where existing pipes are to be abandoned in place, the exposed pipe ends shall be bulkheaded shut with a watertight non-shrink concrete grout at a thickness of not less than one pipe diameter.

******END OF SECTION******

SECTION 02240 - DEWATERING

PART 1 -- GENERAL

1.1 SUMMARY

- A. This section covers the furnishing of all labor, materials, tools, equipment and performances of all work and services necessary or incidental to the dewatering of trenches as necessary to construct the elements shown on the drawings or as specified herein.
- B. This item shall be considered exempt from the requirements of Supplementary Condition 11.03.

1.2 METHOD OF MEASUREMENT AND PAYMENT

- A. Measurement and compensation for the following items shall be paid according to the referenced specification or as modified below:
 - 1. No dewatering payment will be made for dewatering for the construction.
- B. The furnishing and installing of specific items and/or the performance of work under certain circumstances shall not be individually paid. The costs shall be included in the unit price bid for other associated improvements, as indicated. Such items of work include but are not limited to:
 - 1. The costs of furnishing discharge pumps, rock, piping including bends, and adapters, include in the price bid for tile construction.
 - 2. Protecting existing improvements from damage, include in the price bid for tile construction.
 - 3. Digging a portion of the ditch, allowing it to dewater, and returning later to finish the installation, include in the price bid for tile construction.

1.3 SPECIFICATION REFERENCES

- A. Mn/DOT Specification Section 2451.3C shall apply to the dewatering of trenches, except as modified herein.
- B. Unless noted otherwise, the provisions in this section are in addition to the referenced specification.

PART 2 -- PRODUCTS

2.1 MATERIALS

- A. None

PART 3 -- EXECUTION

3.1 CONSTRUCTION REQUIREMENTS

- A. The Contractor shall furnish and install all necessary discharge piping and obtain all permits, easements, rights-of-way, etc. to convey and discharge the water at a sufficient distance from the project area to eliminate recharge of the ground water at the project site.
- B. Water from dewatering operations shall not be discharged where it will pond or cause damage to cropland or personal property due to the presence of standing or flowing water.

- C. Water shall be discharged into temporary sedimentary basins prior to ultimate discharge into natural streams or waterways.

******END OF SECTION******

SECTION 02320 - TRENCH EXCAVATION, BEDDING AND BACKFILL

PART 1 -- GENERAL

1.1 SUMMARY

- A. This section covers the furnishing of all labor, materials, tools, equipment and performances of all work and services necessary or incidental to maintenance of utility service, trench excavation, bedding and backfill necessary for the construction of underground utilities and structures, as indicated on the drawings or as specified herein.

1.2 DEFINITIONS

- A. Excess Material - Material that is not needed to complete the earthwork balance.
- B. Suitable Material - Sand, silty sand or low plasticity clay soils with no organic content. The Engineer shall make the final determination as to what material will be considered suitable.
- C. Unsuitable Material - Soil with organic content including topsoil, swamp deposits, peat, muck, or other material deemed by the Engineer to be unsuitable for fill or embankment construction.

1.3 METHOD OF MEASUREMENT AND PAYMENT

- A. Measurement and compensation for the following items shall be paid according to the referenced specification or as modified below:
 - 1. Rock Excavation
 - (a) No extra payment will be made for rock excavation.
 - 2. Items specifically identified in the *Schedule of Unit Prices* will be compensated in accordance with the description of measurement and payment contained in the section applicable to the individual item. Otherwise, no direct compensation shall be granted for compliance with the provisions contained herein.
- B. The furnishing and installing of specific items and/or the performance of work under certain circumstances shall not be individually paid. The costs shall be included in the unit price bid for the individual pipeline items associated with the stated specific item or work effort. Such items of work include but are not limited to:
 - 1. Interference with other above and underground structures and utilities.
 - (a) The removal and restoration, or protection of existing structures and utilities that are shown on the plans and for which there is no bid item for removing and restoring, or working around the utility.
 - 2. Any dewatering necessary for construction.
 - 3. Foundation materials placed in addition to or in lieu of performing necessary dewatering.
 - 4. Bulkheading of existing pipes to be abandoned in place.
 - 5. Granular foundation, granular bedding and granular encasement materials.
 - 6. Granular foundation materials used in lieu of bedding materials in the specified bedding zone, where specified.
 - 7. Granular foundation materials used in unstable trench conditions.
 - 8. The removal and disposal of native materials that are unsuitable for bedding and/or backfill.

9. Providing and maintaining flow through the existing tiles.
10. The removal of excess materials above the original topography resulting from the additional volume created from pipe and pipe bedding.
11. Delays due to other utility conflicts that result during the course of construction.
12. Protecting existing improvements and previously accepted elements of this construction from damage.
13. Protecting the inverts of other utility pipes from the accumulation of debris and soil, the removal of blockages that threaten to damage property, and/or the cleaning of both the newly constructed lines and the existing lines of all debris and soil that accumulated during the construction.
14. Providing temporary bypass pumping / control of storm water flows around the construction zone, include in the price bid for the associated items being installed.
15. The use of special construction techniques such as trench boxes, sheeting, shoring, etc., include in the price bid for the associated items being installed.
16. Shaping and grading of the construction zone so that surface drainage is restored following the construction.

1.4 SPECIFICATION REFERENCES

- A. Reference CEAM Specification No. 2600 shall apply to excavating, installing bedding, and backfilling all trench excavation construction necessary for the completion of work, except as modified herein.
 1. All references to Mn/DOT specifications shall mean the specific edition, including Supplemental Specifications and Technical Memoranda as identified in Section 01420 of these Specifications.
 2. CEAM Specification 2600.3.A1 Maintenance of Traffic is hereby deleted, See Section 01555 of these Specifications.
 3. CEAM Specification 2600.3.A2 Establishing Line and Grade is modified by Section 01720 of these Specifications.
 4. CEAM Specification 2600.3.A3 Protection of Surface Structures:
 - (a) The last sentence in the third paragraph is deleted.
 5. CEAM Specification 2600.3.A5 Removal of Surface Improvements - All rubble and debris to be disposed of off-site, shall be disposed of at a location secured by the Contractor and in a manner in compliance with applicable Local, State and Federal regulations.
 6. CEAM Specification 2600.3.B3 Excavation Limits and Requirements - OSHA limitations shall also apply to the top of trench width determination. The seven day written notice is waived if changing soil conditions and OSHA compliance apply.
 7. CEAM 2600.3.F1 Turf Restoration is hereby deleted, See Section 02920 of these Specifications.
 8. CEAM 2600.4 Method of Measurement Paragraphs B and C are hereby deleted. See applicable sections of these Specifications.
- B. Reference Mn/DOT Specification No. 2451 shall apply to granular materials for foundation, bedding and encasement of utility line construction, except as modified herein.
- C. Unless noted otherwise, the provisions in this section are in addition to the referenced specification.

1.5 SUBMITTALS

- A. No exception to the referenced specification is made.

PART 2 -- PRODUCTS

2.1 GRANULAR MATERIALS

- A. Granular Bedding and Granular Encasement - Granular bedding and granular encasement materials used in the pipe zone in dry conditions shall conform to CEAM specifications, with the gradation limits modified as shown below.

<u>Granular Bedding and Granular Encasement</u>	
Sieve Size	Percent Passing
1½"	100
# 4	35 - 85
# 10	20 - 70
# 40	5 - 35
# 200	0 - 15

- B. Granular Foundation - Granular foundation material shall be rock material, with the gradation limits as modified as shown below. This material shall be used in lieu of standard granular bedding and granular encasement materials where added pipe support is needed due to poor or wet subgrade soil conditions. This rock material shall also be used along with the required trench dewatering to provide for a stable pipe foundation.

<u>Granular Foundation</u>	
Sieve Size	Percent Passing
2"	100
1½"	95 - 100
¾	20 - 40
# 4	0 - 5

PART 3 -- EXECUTION

3.1 CONSTRUCTION REQUIREMENTS

3.2 EXCAVATION AND PREPARATION OF TRENCH

A. Interference and Protection of Underground Structures

1. If an existing utility is shown on the plans and there is no bid item for removing and restoring, or working around the utility, the Contractor shall be required to remove and restore, or protect the utility.
2. The inverts of existing tiles, culverts, drains, etc. shall be protected during construction. The Contractor is responsible to inspect and clean, if necessary, all lines which have become compromised by the construction operations.

B. Excavation Limits and Requirements

1. The trench for all flexible pipe shall be undercut six-inches below the pipe barrel to permit the installation of granular bedding or foundation material.
2. The Contractor shall be responsible for any damage to adjacent structures or buildings caused by the dewatering operations
3. Use of granular foundation material in lieu of performing dewatering is permitted.

C. Preparation and Maintenance of Foundation

1. Flexible Pipe Materials

- (a) In ordinary trench conditions, the pipe shall be bedded in compacted granular bedding which extends from 6" below the bottom of the pipe to the spring line of the pipe. The Contractor shall bed and encase the pipe in bedding and encasement material, as shown on the plan details. The bedding and encasement shall be compacted to 95% Standard Proctor Density, or as recommended by the pipe manufacturer, whichever is denser.
- (b) Where the trench foundation has been found to be unstable and/or not suitable for pipe support, the trench shall be undercut until acceptable conditions are found. The Contractor shall furnish and install compacted granular foundation material from the bottom of the excavation to the bottom of the pipe. Bedding material shall then be placed to the spring line of the pipe.

3.3 INSTALLATION OF PIPE AND FITTINGS

A. The Contractor shall keep accurate records as to the location of the tile connections, utility crossings, etc. either constructed or encountered during the construction. Measurements to lines shall be taken from the two nearest permanent structures (i.e., roads, intakes, etc). Final payment for the project will not be made until the information is in the possession of the Owner.

B. When connection to an existing tile is required, the Contractor shall expose and verify the elevation of the existing tile prior to laying any pipe toward, or away from, the connection point. If the elevation of the existing tile does not match the elevation shown on the plans, the Contractor shall notify the Engineer, at which time the Engineer may adjust the proposed grades.

C. Connection and Assembly of Joints

1. For dual wall polyethylene pipe, a soil-tight joint is required.

D. Bulkheading Open Pipe Ends

1. The Contractor shall furnish, install and maintain a temporary, water-tight plug adequately blocked in place to prevent flooding of the existing downstream tile system. The plug shall be placed at the beginning of the project or at the end of each working day at the end of the day's operation.
2. When flows are diverted from an existing tile to be abandoned in place, the Contractor shall construct a water-tight plug on the open end of the abandoned pipe.
3. Permanent watertight plugs shall be constructed with concrete grout with a thickness of not less than 1 pipe diameter.

3.4 BACKFILLING OPERATIONS

A. Backfill material around all utilities shall be compacted with hand machines. The maximum lift thickness shall be 6-inches.

B. Flexible Pipe Materials

1. Granular bedding and granular encasement material shall be furnished, placed and compacted to bed and encase the pipe to an elevation 12 inches above the pipe the full width of the trench. The

contractor shall bed and encase the pipe in granular bedding and granular encasement material to 95% Standard Proctor Density or as recommended by the pipe manufacturer, whichever is denser. Select native material shall be used above the bedding and encasement material (12-inches above the pipe) up to the bottom of the subgrade excavation zone.

- C. Trench backfill for road crossing shall be compacted in accordance with the Quality Compaction Method. In agricultural fields, no compaction is required on the trench above the bedding and encasement zone.

3.5 SOURCE QUALITY CONTROL

- A. The Contractor shall arrange for having the following testing performed:
 - 1. One (1) gradation test per each 500 tons or 275 cubic yards (CV) of granular materials.

******END OF SECTION*****

SECTION 02370 -EROSION & SEDIMENT CONTROL

PART 1 -- GENERAL

1.1 SUMMARY

- A. This section covers the furnishing of all labor, materials, tools, equipment and performances of all work and services necessary or incidental to storm water management as indicated on the plans or as specified herein or as directed by the Engineer.
- B. The Contractor and Owner shall identify a person knowledgeable and experienced in the application of erosion and sediment control BMP's who will oversee the implementation of the SWPPP.
- C. Minnesota Pollution Control Agency (MPCA) - General Storm Water Permit for Construction Activity (MN R100001)
 1. The **Owner** has developed a **Storm Water Pollution Prevention Plan (SWPPP)** in accordance with Part III (Storm Water Discharge Design Requirements) of the National Pollutant Discharge Elimination System (NPDES)/State Disposal System Permit that is included in the Appendix or in the drawings.
 2. As a condition of the Award, the Contractor shall assume the role of "**Operator**" under the NPDES Permit by applying and paying for the permit within 7 days of acknowledging the *Notice of Award*. Late submittals will not be rejected; however, the MPCA reserves the right to take enforcement for any unpermitted discharges or permit noncompliance for the new registered party that has assumed control of the site.
 3. For **storm water** discharges from construction activities where the **Owner** or **Operator (Contractor)** changes, the new **Owner** or **Operator** can implement the original **SWPPP** created for the project or develop and implement their own **SWPPP**.
 4. **Permittee(s)** shall ensure either directly or through coordination with other **Permittee(s)** that their **SWPPP** meets all terms and conditions of this permit and that their activities do not render ineffective another party's **erosion prevention** and **sediment control Best Management Practices (BMP's)**."
 5. The Contractor shall maintain copies of the SWPPP on the project site at all times and comply with all provisions contained therein.
 6. Process Summary:
 - (a) Owner issues *Notice of Award* to Contractor
 - (b) Contractor acknowledges the *Notice of Award*
 - (c) Within 7 days of acknowledgement, the Contractor applies and pays for the **MPCA Permit Application** to the MPCA to accept the responsibilities of the "Operator" on the NPDES Permit. Copies of the application shall be sent to the Owner and the Engineer.
 - (d) The Contractor may then review the SWPPP and propose changes or a new SWPPP to the Engineer for review and comment; and the Owner for approval.
 - (1) During the review and modification period, all work performed on the project shall be in compliance with the original SWPPP, including having copies available on the project site.
 - (2) Once a SWPPP is modified / amended, the Contractor shall distribute new copies to the Owner, the Engineer, the on-site project supervisor and the construction observer.

1.2 METHOD OF MEASUREMENT AND PAYMENT

- A. Measurement and compensation for the following items shall be paid according to the referenced specification or as modified below:
 - 1. Erosion and Sediment Control
 - (a) Payment for "Inlet Protection" shall be at the contract price per EACH for furnishing, installing, maintaining, and removing the materials as detailed in the plans. Eighty percent (80%) of payment shall be made upon installation. The remaining 20% shall be made upon complete removal of the control measure, removal of any accumulated sediment and surface restoration.
- B. The furnishing and installing specific items and/or the performance of work under certain circumstances shall not be individually paid. The costs shall be included in the unit price bid for the associated erosion control and excavation items. Such items of work include but are not limited to:
 - 1. Complying with the Minnesota Pollution Control Agency (MPCA) - General Storm Water Permit for Construction Activity (MN R100001) – Reference Storm Water Pollution Prevention Plan (SWPPP) included in the Appendix.
 - 2. Maintaining clean exit areas or roads from the site.
 - 3. Clean adjacent roads of excess soil.
 - 4. Cleaning drain tiles and culverts that have been partially or completely obstructed by sediment that originated from the site.
 - 5. Geotextile fabric for rock installation.
 - 6. Emergency erosion control mobilization.

1.3 SPECIFICATION REFERENCES

- A. Mn/DOT Specification Section 2573 shall apply to temporary erosion control.
- B. Mn/DOT Specification Section 1717.2 shall apply to erosion control.
- C. Section 02930 of these specifications shall apply to Rapid Stabilization, if applicable.
- D. Unless noted otherwise, the provisions in this section are in addition to the referenced specification.

PART 2 -- PRODUCTS

2.1 EROSION CONTROL

- A. Seeding shall be performed as outlined in Section 02920.

PART 3 -- EXECUTION

3.1 GENERAL

- A. Construction and/or installation of all erosion & sediment control devices shall be completed prior to any soil disturbing activities. The rock check dam shall be installed prior to starting any excavation work.
- B. Prior to construction, the Owner, Engineer and Contractor shall observe the existing open ditch and discharge area and shall document the existing conditions. Upon completion of turf establishment, the open ditch and discharge area shall be observed and all increased sediment deposits shall be removed and disposed of by the Contractor. All increases in sediment deposits shall be considered to have originated from the project site.

- C. Exit areas or roads shall be kept clean of excess soil by routine blading.
- D. The Contractor shall salvage, transport and place cohesive materials excavated from the work for use in constructing berms for temporary sediment traps.

3.2 CONSTRUCTION REQUIREMENTS

- A. A goal of the project during construction is to get the cleanest water possible into the drainage system and protect critical and unique areas. Every effort shall be required by the Contractor to achieve these goals.
- B. The Contractor shall limit the area of disturbance and shall finish shaping and restoring an area before progressing into new areas. **Less than one half mile of tile shall be under construction and not fully graded and leveled at any one time.**
- C. The Contractor shall control drainage and erosion on the project including: haul roads, temporary construction, waste disposal sites, plant and storage locations. The contractor shall clean up the area, shape the area to allow storm runoff with a minimum of erosion and/or siltation, replace topsoil, and establish vegetative cover to the satisfaction of the Engineer on areas where the potential for pollution has been increased due to the Contractor's operations.
- D. If Contractor fails to install and/or perform the appropriate erosion and sediment control practices, as determined by the Engineer, the Engineer may issue a written order to the Contractor. The Contractor shall respond within 24 hours with sufficient personnel, equipment and/or materials and conduct the **required work or be subject to a \$ 500 per calendar day deduction for non-completion.**
- E. When the Engineer determines that the erosion and/or sediment control practices installed by the Contractor have failed, the Contractor shall correct the cause and alleviate all sediment deposition, to the fullest extent possible. If the corrective action is not taken in a timely manner, the Engineer may issue a written order to the Contractor. The Contractor shall respond within 24 hours with sufficient personnel, equipment and/or materials and conduct the **required work or be subject to a \$ 500 per calendar day deduction for non-completion.**
- F. The Contractor shall remove all deltas and sediment deposited in drainage ways or tiles and re-stabilize the areas where sediment removal results in exposed soil. The removal and stabilization shall take place within 7 calendar days of discovery.
- G. Where applicable, the Contractor will be required to co-sign for a "General Storm Water Permit" for construction activity with the Minnesota Pollution Control Agency (MPCA). The application form and information is included an appendix of these specifications. The Owner will initiate the Permit process and pay the required "Application Fee." The Contractor will be required to comply with all of the terms and conditions of the Permit that also includes performing the required inspections of the erosion control devices and maintaining an Inspector's Log for the MPCA Storm Water Permit. A copy of the proposed log form is available from the Engineer.
- H. Energy dissipation or other outlet treatment must be installed within 24 hours of connection to surface water.

3.3 EROSION CONTROL

- A. Unless precluded by snow cover, all exposed soil areas, including topsoil stockpiles, shall have temporary erosion control or permanent cover for the exposed soil areas within 14 days where the area has not been, or will not be, worked by the Contractor.

NOTE THAT THIS REQUIREMENT WILL RESULT IN MULTIPLE MOBILIZATIONS IN ORDER TO PROVIDE THE REQUIRED STABILIZATION.

3.4 SEDIMENT CONTROL

- A. The Contractor shall install Sediment Control Devices where control is required and/or where directed by the Engineer. The control measures as shown on the plans shall be considered the minimum requirements with additional measures required dependent on construction sequencing and scheduling.
- B. Inlet Protection shall be used around inlets and/or other surface water accesses to any existing or proposed storm water conveyance system.
- C. The Contractor shall take all steps necessary to prevent excess soil erosion of the project. Temporary erosion control devices shall be constructed, maintained and left in place to such time as permanent erosion control measures are in place or instructed to remove them by the Engineer.
- D. The Contractor shall construct temporary sediment traps with granular outlets within the disturbed area and shall stockpile a sufficient quantity of suitable fill material to regrade sedimentation ponds and temporary ditches to match the subgrade elevation.

3.5 INSPECTION AND MAINTENANCE:

- A. The Contractor shall routinely inspect the construction site once every seven (7) days during active construction and within 24 hours of a rainfall event greater than 0.5 inches in a 24 hour period.
- B. All inspections performed during construction must be recorded and records retained with the SWPP in accordance with the Storm Water Permit.
- C. Silt fence, erosion control, and other BMP's must be replaced, repaired, or supplemented when they reach 50% design load.

3.6 FINAL STABILIZATION:

- A. The Contractor shall ensure final stabilization of the site. The Contractor shall submit a Notice Of Termination within 30 days after final stabilization is complete or control has been passed to another owner.
- B. The Contractor shall remove all temporary erosion control measures and BMP's as part of the final site stabilization.
- C. The storm water permit further defines final stabilization and its requirements.

******END OF SECTION******

SECTION 02625 – AGRICULTURAL DRAIN TILE

PART 1 -- GENERAL

1.1 SUMMARY

- A. This section covers the furnishing of all labor, materials, tools, equipment and performances of all work and services necessary or incidental to drain tile construction as indicated on the drawings or as specified herein.

1.2 METHOD OF MEASUREMENT AND PAYMENT

- A. Measurement and compensation for the following items shall be paid according to the referenced specification or as modified below:

1. Drain Tile Pipe

- (a) Measurement of main line drain tile pipe shall be along the centerline of the pipe. Payment shall be at the unit price bid for the specified size, type and class of pipe, regardless of depth.

2. Tile Connections

- (a) Measurement for the connection of existing lateral drain tile to the new main line tile where necessary, shall be per each connection and paid for at the unit price bid.

- B. The furnishing and installing of specific items and/or the performance of work under certain circumstances shall not be individually paid. The costs shall be included in the unit price bid for the drain tile items, as indicated. Such items of work include but are not limited to:

1. Excavating, salvaging, stockpiling and replacing the full depth of existing topsoil over the trench in agricultural and turf areas, include in the price bid for drain tile.
2. Providing, installing and compacting granular bedding and encasement material for the polyethylene tile construction.
3. Providing and installing granular foundation materials if unsuitable soils are encountered, include in the price bid for drain tile.
4. Furnishing and placing geotextile fabric at open pipe joints, include in the price bid for drain tile.
5. Furnishing and installing necessary bends, fittings, wyes, tees and adaptors on the drain tile line, include in the unit price bid for the drain tile.
6. Providing an inventory of additional pipe, bends, fittings, wyes, tees and adaptors of various sizes at the project site to accommodate changes which occur during construction and ordering additional materials as needed to complete the work, include in the price bid for drain tile.
7. Marking the location of existing tiles with lathe so that the Engineer can record the location on the plan, include in the price bid for lateral tile connection.
8. Connection of existing lateral drain tiles to the new main tile, including tees, wyes, bends and fittings, include in the price bid for lateral tile connection.
9. Performing the required 12 inch deep tillage of all disturbed areas, include in the price bid for drain tile.
10. Trench excavation, backfill and compaction, include in the price bid for drain tile.
11. Bulkheading of existing pipes to be abandoned in place, include in the price bid for drain tile.

12. Maintenance of an appropriate drain tile outlet during construction, include in the price bid for drain tile.
13. Dewatering or trench pumping necessary for drain tile construction, include in the price bid for drain tile.
14. Removing and replacing fences as necessary to construct the improvements, include in the price bid for drain tile.
15. Removing and disposing of miscellaneous trees and brush necessary to construct the improvements, include in the price bid for drain tile.
16. Delays due to other utility conflicts, which result during the course of construction, include in the price bid for drain tile.
17. Protecting existing improvements from damage, include in the price bid for drain tile.
18. Protecting the inverts of other pipes from the accumulation of debris and soil, the removal of blockages which threaten to damage property, and/or the clearing of both the newly constructed lines and the existing lines of all debris and soil which accumulated during construction, include in the unit price bid for drain tile.
19. Interference and protection of underground structures and utilities, include in the price bid for drain tile.
 - (a) The removal and restoration, or protection of existing utilities for which there is no bid item for removing and restoring, or working around the utility.
 - (b) The utility information included on the Plan may not be complete and is furnished from information supplied by various utility companies as an indication of the presence of utility lines in the vicinity of construction. The Contractor shall contact the utility companies to determine the extent and exact location of their facilities. In the event of accidental damage to any such facility, the Contractor shall immediately notify the utility company and cooperate fully in whatever is necessary to repair such facility or restore service.

1.3 SPECIFICATION REFERENCES

- A. Reference Section 02320 of these Specifications for trench excavation, bedding and backfill, except as modified herein.
- B. CEAM Specification No. 2621 shall apply to construction of pipe sewers/drain tile, except as modified herein.
- C. MnDOT Specification No. 2503 shall apply to measurement and payment of pipe sewers/drain tile, except as modified herein.
- D. MnDOT Standard Plates Manual with latest revisions.
- E. Unless noted otherwise, the provisions in this section are in addition to the referenced specification.

PART 2 -- PRODUCTS

2.1 DRAIN TILE PIPE

- A. Perforated Dual Wall Polyethylene Pipe
 1. Dual wall perforated and non-perforated corrugated polyethylene pipe shall conform to the requirement of the American Society for Testing Materials F2648 and shall be perforated or non-perforated as shown on the plans. Perforated pipe shall be installed with woven geotechnical sock. Joints shall be water tight gasketed joints.

B. Reinforced concrete pipe

1. All reinforced concrete pipe shall meet MnDOT Standard Plate 3000 or 3006.
2. Reinforced concrete pipe shall conform to MnDOT 3236 with tongue and groove joints, Class 3 minimum except as shown otherwise on the plans. Provide geotextile wrap of all joints.
3. Pipe ties shall be required for all joints.
4. Fittings for bends and lateral tile connections shall be precast.
5. Connections of private tile shall be made by sawing a hole in the pipe and making a field connection using inserta-tee fittings or equivalent connections.

2.2 GEOTEXTILE FABRIC

- A. Mn/DOT 3733, Type I, knit sock.

PART 3 -- EXECUTION

3.1 INSTALLATION OF PIPE AND FITTINGS

A. Drain Tile

1. All piping shall be installed in accordance with the details in the Plans. Granular bedding and encasement materials shall be installed and compacted as noted.

B. Equipment

1. The use of rubber tired earth moving equipment shall not be permitted on the agricultural fields. Backfill and leveling shall be accomplished with dozers.

C. Bulkheading Open Pipe Ends

1. When flows are diverted from an existing drain tile to be abandoned in place, the Contractor shall construct a water-tight plug on the open ends of the abandoned tile. The plugs shall be constructed with concrete grout and with a thickness of not less than 1 pipe diameter.

D. Backfilling

1. The initial lift of native backfill material, from the top of the granular material to 2' higher, shall be gently placed with a backhoe to avoid placing rocks on the pipe and to avoid impacting the pipe.

3.2 DRAIN TILE CONNECTIONS

A. Connect to Main Tile

1. When connection to an existing tile or concrete main is made, the Contractor shall expose and verify the elevation of the existing tile prior to laying any tile to, or from, the connection point. If the elevation of the existing tile does not match the elevation shown on the plans, the Contractor shall notify the Engineer, at which time the Engineer may adjust the proposed grades.
2. When connecting to a plastic main, appropriate fittings shall be furnished and installed for the connection so that the main tile does not need to be cut for the connection.
3. If there is a vertical elevation difference of more than 2 feet between the existing tile and the new tile connection, the existing tile shall be reconstructed upstream to a point where the tile can be laid at a 45 degree slope to the connection. The tile shall rest on undisturbed soil or soil which has been compacted to a density of the adjacent soil.

****END OF SECTION****

SECTION 02630 – SURFACE WATER INTAKES

PART 1 -- GENERAL

1.1 SUMMARY

- A. This section covers the furnishing of all labor, materials, tools, equipment and performances of all work and services necessary or incidental to intake construction as indicated on the drawings or as specified herein.

1.2 METHOD OF MEASUREMENT AND PAYMENT

- A. Measurement and compensation for the following items shall be paid according to the referenced specification or as modified below:
 - 1. Surface Water Intakes
 - (a) Surface water intakes shall be measured by the individual unit based on the inside diameter of the riser.
- B. The furnishing and installing of specific items and/or the performance of work under certain circumstances shall not be individually paid. The costs shall be included in the unit price bid for the intake items, as indicated. Such items of work include but are not limited to:
 - 1. Locating and connecting to drain tile, include in the price bid for Surface Water Intakes.
 - 2. The costs of furnishing bends and adapters, include in the price bid for Surface Water Intakes.
 - 3. Trench excavation, backfill and compaction, include in the price bid for Surface Water Intakes.
 - 4. Furnishing and installing a Hickenbottom riser, or approved equal, on the intake.
 - 5. Furnishing and installing a field marker at each intake.

1.3 SPECIFICATION REFERENCES

- A. Reference Section 02320 of these Specifications for trench excavation, bedding and backfill, except as modified herein.
- B. CEAM Specification No. 2621 shall apply to construction of pipe, except as modified herein.
- C. Mn/DOT Standard Plates Manual with latest revisions.
- D. Unless noted otherwise, the provisions in this section are in addition to the referenced specification.

PART 2 -- PRODUCTS

2.1 PIPE AND FITTINGS

- 1. Dual Wall polyethylene pipe as specified in Section 02625.
- 2. Hickenbottom tee and riser sections, or approved equal.

2.2 GEOTEXTILE FABRIC

- A. Mn/DOT 3733, Type II, non-woven for use in wrapping joints in pipe.

PART 3 -- EXECUTION

- A. Surface water intake locations and sizes will be staked by the Engineer as the project progresses. Surface water intakes shall be constructed within two days following the tile construction.
- B. The Contractor shall assure that surface water has an outlet at all times into either the existing tile system, or once it is constructed, the new tile. If the Contractor fails to provide such an outlet, any claims for crop damages will be deducted from payments to the Contractor.
- C. Additional grading shall be performed around the intakes to permit farming operations around the intakes.

******END OF SECTION******

SECTION 02920 - TURF RESTORATION

PART 1 -- GENERAL

1.1 SUMMARY

- A. This section covers the furnishing of all labor, materials, tools, equipment and performances of all work and services necessary or incidental to turf restoration as indicated on the drawings or as specified herein.
- B. A goal of the project during construction is to get the cleanest water possible into the protected drainage systems as quickly as possible and protect critical and unique areas. Every effort shall be required by the Contractor to achieve these goals.
- C. Temporary seeding may be necessary during construction in erosion sensitive areas. The Contractor shall do temporary seeding work as specified herein, as required to comply with the MPCA permit or as directed by the Engineer at no additional expense.

1.2 METHOD OF MEASUREMENT AND PAYMENT

- A. Measurement and compensation for the following items shall be paid according to the referenced specification or as modified below:
 - 1. Payment for seeding shall include the costs for furnishing and placing the designated seed mixture, fertilizer and mulch at the rate specified and shall be measured by the ACRE.
- B. The furnishing and installing specific items and/or the performance of work under certain circumstances shall not be individually paid. The costs shall be included in the unit price bid for the associated seeding and sodding items. Such items of work include but are not limited to:
 - 1. Complying with the Minnesota Pollution Control Agency (MPCA) - General Storm Water Permit for Construction Activity (MN R100001) – Reference Section 02370 – Storm Water Pollution Prevention Plan (SWPPP).
 - 2. Subgrade preparation and topsoil placement as required on all areas shown on the plans.
 - 3. Maintenance of newly seeded areas, as specified, include in the unit price for the associated items.
 - 4. All re-work necessary to repair areas that do not grow, include in the unit price for the associated items.

1.3 SPECIFICATION REFERENCES

- A. Mn/DOT Specification Sections 2575, 3876, and 3878, Controlling Erosion, Establishing Vegetation and Seed shall apply to the establishment of grass and sod as shown on the plans.
- B. Unless noted otherwise, the provisions in this section are in addition to the referenced specification.

PART 2 -- PRODUCTS

2.1 MATERIALS

- A. Seeding Items
 - 1. The seed mixtures to be used are shown below. In general, all application rates for mixes, except oats, are 150% the rate in Mn/DOT Table.
 - 2. Seeding with the various seed mixture designations shall utilize the following combinations of seed, fertilizer and mulch:

- (a) Type 1 mulch shall consist of clean straw with no pasture hay.
- (b) Temporary seeding, if required, shall use Seed Mixture – 110B Oats.
- (c) Fertilizer shall be 22-5-10. (Phosphorous use in fertilizer for first establishment and the first year is allowed unless limited or prohibited by local ordinances.)

APPLICATION RATES						
Seed Mix	FERTILIZER		MULCH		Typical Use	
	Rate	Type	Rate	Type		
	lb/AC		lb/AC	ton/AC		
25-141 (Mesic General Roadside)	105	22-5-10	200	1	2	All.
21-111 (Oats)	100	22-5-10	200	1	2	All, temporary seeding
Temporary Stabilization- Ag Areas				1	2	Pipe Trench Areas

B. Seed Mixtures:

- 1. The application rates for Mn/DOT seed mixes shall be at 1.5 times that specified in the referenced specification.

PART 3 -- EXECUTION

3.1 CONSTRUCTION REQUIREMENTS

A. GENERAL

- 1. Prior to construction, the Owner, Engineer and Contractor shall observe the existing storm water outfall system and discharge area and shall document the existing conditions. Upon completion of surface restoration (i.e., paving and turf establishment), the storm water outfall system and discharge area shall be observed and all increased sediment deposits shall be removed and disposed of by the Contractor. All increases in sediment deposits shall be considered to have originated from the project site.
- 2. Prior to construction, the Owner, Engineer and Contractor shall review the project to identify critical areas that could require rapid stabilization during the construction process, and develop a plan to either mitigate disturbance to those areas or identify the methods of rapid stabilization most appropriate.
- 3. If Contractor fails to install and/or perform the appropriate rapid stabilization practices and immediate ditch seeding within 7 days following final slope shaping, the Contractor will **be subject to a \$ 500 per calendar day deduction for non-completion.**
- 4. The subgrade shall be shaped to approximate contour of the finished surface. All construction debris shall be removed from the area prior to the placement of the topsoil.
- 5. The topsoil shall be shaped to the approximate the contour of the finished surface, with a minimum depth of 12-inches.. All construction debris shall be removed from the area prior to seeding. The topsoil shall be loosened with a disc or harrow to its full depth prior to seeding.
- 6. The Contractor shall be responsible for providing water and maintenance until final acceptance by the Engineer or Owner, to firmly establish the seed. The term maintenance shall include mowing, weed control and watering, as necessary.
- 7. The Contractor shall remove all rocks and debris from the surface prior to seeding and mulching.

B. SEEDING REQUIREMENTS

- 1. Turf establishment by seeding shall be done utilizing the various combinations of seed mixtures, fertilizing and mulching as described.
- 2. Areas prepared for seeding shall be free of rocks, debris and clumps of soil. The areas shall be graded uniformly dragged until free of chunks exceeding 1 inches diameter.

3. Seed shall be applied with a drill seeder, unless otherwise approved in writing by the Engineer.
4. The Contractor shall furnish weight tickets documenting pounds of fertilizer placed and pounds of seed placed. The seed tickets shall show individual plant species along with the percent purity and percent germination. The fertilizer tickets shall show mix proportions. The Contractor shall also furnish its QA/QC data to the Engineer.
5. Dormant seeding and snow seeding may be utilized in accordance with the referenced specification and technical memorandum, provided the final acceptance standards are met.
6. Final acceptance of seeding shall be based on an established growth of 6-inches with a uniform density to cover 70% of the designated area, free of weeds and bare spots. Any re-seeding necessary shall be performed at the Contractor's expense.

******END OF SECTION******

Exhibit 4: Right-of-Way Table

Improvement of County Ditch No. 14

Lyon County, MN

Right-of-Way Table

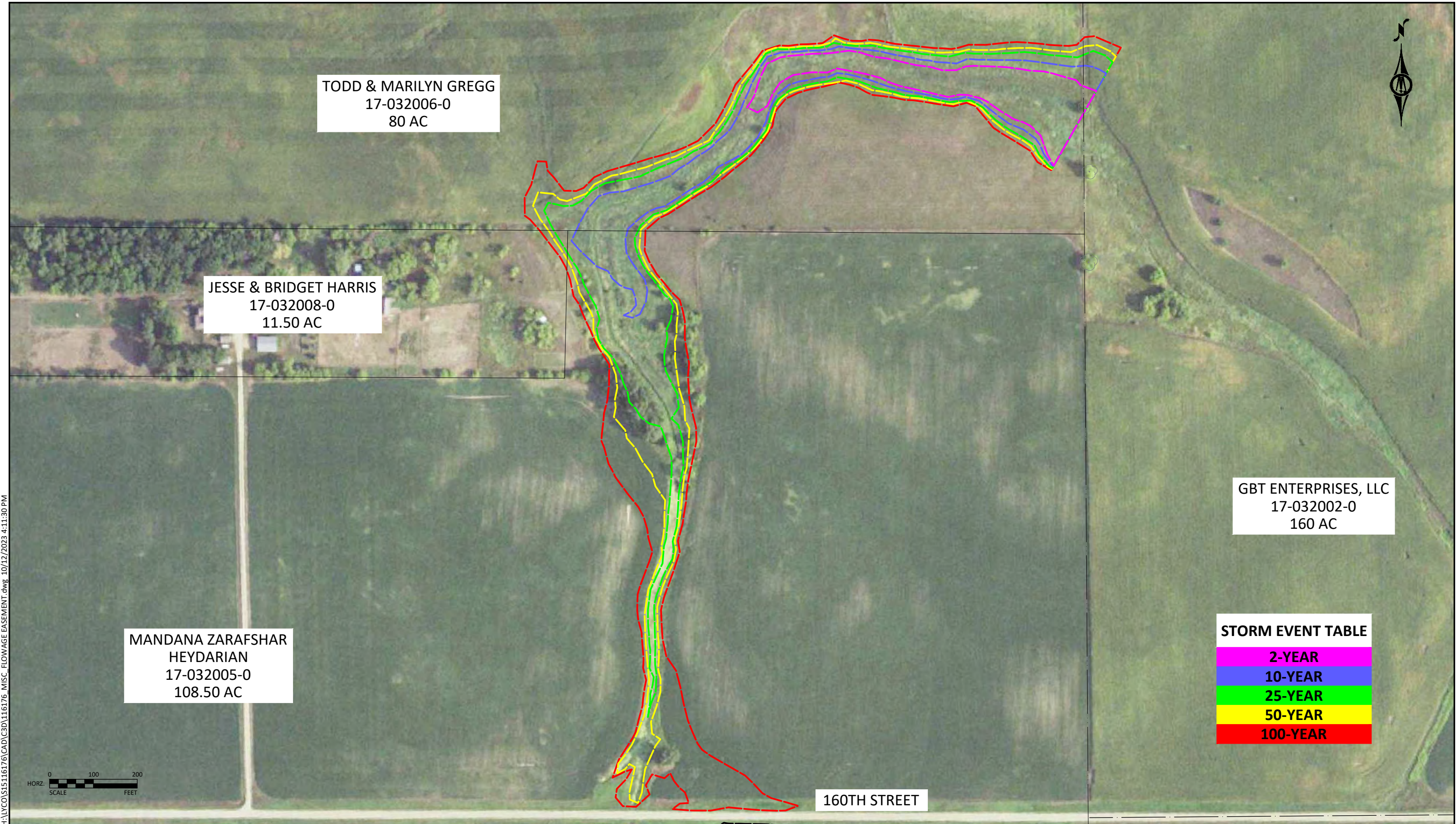
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10/12/2023

Parcel No.	Property Owner	Legal Description	Tile Improvement Right-of-Way Damages				Amount/Ac		
			Station to Station	Length	Width	Area (Acres)	\$600		
Main									
17-032005-0	Heydarian/Mandana Zarafshar	SE 1/4 SW 1/4 32-110-41	34+59	36+41	182	80	0.34	\$204.00	
04-005004-0	Thomas M Meulebroeck Trust	NW1/4 NW1/4 5-109-41	37+65	52+63	1498	80	2.76	\$1,656.00	
		SW 1/4 NW 1/4 5-109-41	52+63	65+75	1312	80	2.41	\$1,446.00	
04-005002-0	Christensen/David E	NW 1/4 SW 1/4 5-109-41	65+75	73+87	812	80	1.50	\$900.00	
04-006003-0	Williams/Darrell & Linda	NE 1/4 SE 1/4 6-109-41	74+88	89+04	1416	80	2.61	\$1,566.00	
		SE 1/4 SE 1/4 6-109-41	89+04	108+19	1915	80	3.52	\$2,112.00	
04-006001-1	Paradis/Bradley	SW 1/4 SE 1/4 6-109-41	108+19	116+92	873	80	1.61	\$966.00	
04-007004-0	Kirk/David	NW 1/4 NE 1/4 7-109-41	117+80	123+31	551	80	1.02	\$612.00	
04-007003-0	Timmerman/Charles R & Gloria A	NE 1/4 NW 1/4 7-109-41	123+31	139+23	1592	80	2.93	\$1,758.00	
		NW 1/4 NW 1/4 7-109-41	139+23	154+91	1568	80	2.88	\$1,728.00	
04-007008-0	Gladis/Denise	SW 1/4 NW 1/4 7-109-41	154+91	171+41	1650	80	3.04	\$1,824.00	
15-012003-1	DNR	SE 1/4 NE 1/4 12-109-42	172+07	172+79	72	80	0.14	\$84.00	
Branch 1									
04-007003-0	Timmerman/ Charles R & Gloria A	NW 1/4 NW 1/4 7-109-41	208+00	213+74	574	80	1.06	\$636.00	
15-012004-0	Timmerman/ Charles R & Gloria A	NE 1/4 NE 1/4 12-109-42	214+39	219+87	548	80	1.01	\$606.00	
15-001003-0	Timmerman/ Charles R & Gloria A	SE 1/4 SE1/4 12-109-42	220+53	226+00	547	80	1.01	\$606.00	
Branch 1A									
04-007003-0	Timmerman/ Charles R & Gloria A	NW 1/4 NW 1/4 7-109-41	311+00	316+42	542	80	1.00	\$600.00	
04-006007-0	Mercie/Mark A & Carrie	SW 1/4 SW 1/4 6-109-41	317+08	321+46	438	80	0.81	\$486.00	
04-006002-0	June Herbert Family Trust	SW 1/4 SW 1/4 6-109-41	321+46	323+00	154	80	0.29	\$174.00	
Branch 2									
04-006003-0	Williams/Darrell & Linda	NE 1/4 SE 1/4 6-109-41	286+46	289+91	345	80	0.64	\$384.00	
04-006001-1	Paradis/Bradley	NW 1/4 SE 1/4 6-109-41	289+91	290+00	9	80	0.02	\$12.00	
	Total						Tile Improvement Right-of-Way Damages =	30.60	\$18,360.00

Parcel No.	Property Owner	Legal Description	Surface Improvement Right-of-Way Damages				Amount/Ac		
			Station to Station	Length	Width	Area (Acres)	\$600		
Earthen Dam									
17-032002-0	GBT Enterprises LLC	NW 1/4 SE 1/4 32-110-41	7+09	7+40	31	Varies	1.99	\$1,194.00	
17-032006-0	Todd & Marilyn Gregg	NW 1/4 NW 1/4 32-110-41	9+08	9+38	30	Varies	0.86	\$516.00	
Access Road									
17-032002-0	GBT Enterprises LLC	NW 1/4 SE 1/4 32-110-41			213	24	0.12	\$72.00	
		SW 1/4 SE 1/4 32-110-41			1673	24	0.93	\$558.00	
Berm									
04-007008-0	Denise Gladis	SW 1/4 NW 1/4 7-109-41	162+95	164+18	123	Varies	0.15	\$90.00	
	Total						Surface Improvement Right-of-Way Damages =	4.05	\$2,430.00
							Total Improvement Right-of-Way Damages =	34.65	\$20,790.00

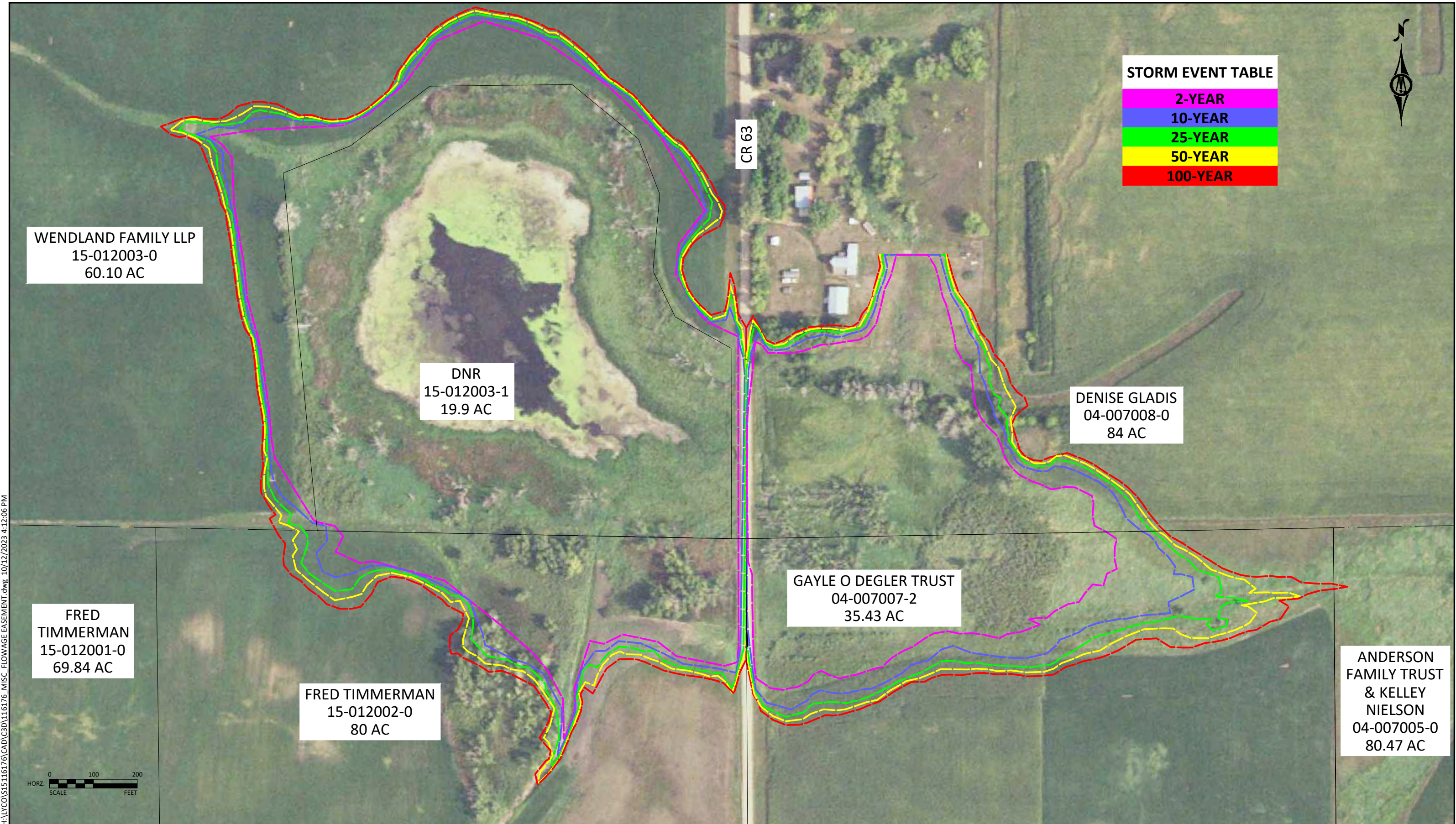
Exhibit 5: Flowage Easement



STORM EVENT TABLE

2-YEAR
10-YEAR
25-YEAR
50-YEAR
100-YEAR

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STORM EVENT TABLE

2-YEAR
10-YEAR
25-YEAR
50-YEAR
100-YEAR

WENDLAND FAMILY LLP
15-012003-0
60.10 AC

DNR
15-012003-1
19.9 AC

DENISE GLADIS
04-007008-0
84 AC

GAYLE O DEGLER TRUST
04-007007-2
35.43 AC

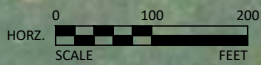
FRED
TIMMERMAN
15-012001-0
69.84 AC

FRED TIMMERMAN
15-012002-0
80 AC

ANDERSON
FAMILY TRUST
& KELLEY
NIELSON
04-007005-0
80.47 AC

CR 63

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Improvement of County Ditch No. 14

Lyon County, MN

Right-of-Way Table

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10/4/2023

Parcel No.	Property Owner	Legal Description	Flowage Area Calculations							
			Storm Event	Existing Time above Specified Elevation (hrs)	Proposed Time above Specified Elevation (hrs)	Existing Area (Acres)	Proposed Area (Acres)	Difference in Area (Acres)	Damages/Acre	Total Damages
Earthen Dam (Overland Outlet = 1449.2' - Top of Proposed Culvert)										
17-032006-0	Todd & Marilyn Gregg	NW 1/4 SW 1/4 32-110-41	2-year	0	0	0.00	1.43	1.43	500	\$715.00
			10-year	0	4	0.00	2.57	2.57	400	\$1,028.00
			25-year	0	7	0.00	3.41	3.41	300	\$1,023.00
			50-year	0	23	0.00	3.92	3.92	200	\$784.00
			100-year	0	27	0.00	5.23	5.23	100	\$523.00
17-032008-0	Nicole Raske	NW 1/4 SW 1/4 32-110-41	2-year	0	0	0.00	0.00	0.00	500	\$0.00
			10-year	0	4	0.00	0.00	0.00	400	\$0.00
			25-year	0	7	0.00	0.01	0.01	300	\$3.00
			50-year	0	23	0.00	0.03	0.03	200	\$6.00
			100-year	0	27	0.00	0.05	0.05	100	\$5.00
17-032005-0	Mandana Zarafshar Heydarian	SE 1/4 SW 1/4 32-110-41	2-year	0	0	0.00	0.00	0.00	500	\$0.00
			10-year	0	4	0.00	0.36	0.36	400	\$144.00
			25-year	0	7	0.00	1.95	1.95	300	\$585.00
			50-year	0	23	0.00	3.02	3.02	200	\$604.00
			100-year	0	27	0.00	7.25	7.25	100	\$725.00
Berm (Overland Outlet = 1483.0' - Berm Top)										
04-007008-0	Denise Gladis	SW 1/4 NW 1/4 7-109-41	2-year	136	176	6.94	6.85	-0.09	500	\$0.00
			10-year	138	211	7.69	7.52	-0.17	400	\$0.00
			25-year	145	218	8.06	7.88	-0.18	300	\$0.00
			50-year	147	222	8.60	8.28	-0.32	200	\$0.00
			100-year	150	224	8.76	8.44	-0.32	100	\$0.00
04-007007-2	Gayle O Degler Trust	NE 1/4 SW 1/4 7-109-41	2-year	136	176	5.13	4.82	-0.31	500	\$0.00
			10-year	138	211	6.72	6.47	-0.25	400	\$0.00
			25-year	145	218	7.69	7.35	-0.34	300	\$0.00
			50-year	147	222	8.38	7.98	-0.40	200	\$0.00
			100-year	150	224	8.98	8.58	-0.40	100	\$0.00
DNR WMA Wetland (Overland Outlet = 1484.3' - Existing Roadway Low Point)										
15-012003-1	DNR	SE 1/4 SE 1/4	2-year	17	65	19.90	19.90	0.00	500	\$0.00
			10-year	18	70	19.90	19.90	0.00	400	\$0.00
			25-year	19	71	19.90	19.90	0.00	300	\$0.00
			50-year	19	72	19.90	19.90	0.00	200	\$0.00
			100-year	20	72	19.90	19.90	0.00	100	\$0.00
15-012002-0	Fred Timmerman	NE 1/4 SE 1/4	2-year	17	65	3.73	3.44	-0.29	500	\$0.00
			10-year	18	70	4.79	4.81	0.02	400	\$8.00
			25-year	19	71	5.61	5.37	-0.24	300	\$0.00
			50-year	19	72	6.28	5.87	-0.41	200	\$0.00
			100-year	20	72	7.02	6.73	-0.29	100	\$0.00
15-012003-0	Wendland Family LLP	SE 1/4 SE 1/4	2-year	17	65	3.99	3.37	-0.62	500	\$0.00
			10-year	18	70	4.89	4.91	0.02	400	\$8.00
			25-year	19	71	5.82	5.60	-0.22	300	\$0.00
			50-year	19	72	6.32	6.17	-0.15	200	\$0.00
			100-year	20	72	6.77	6.77	0.00	100	\$0.00
Totals										
			2-year			34.56	34.99	1.43	500	\$715.00
			10-year			37.27	40.07	2.97	400	\$1,188.00
			25-year			39.39	44.11	5.36	300	\$1,608.00
			50-year			41.10	47.16	6.94	200	\$1,388.00
			100-year			42.45	54.32	12.48	100	\$1,248.00
			Total			194.77	220.65	29.18	1500.00	\$6,147.00