

CONSTRUCTION PLANS FOR

IDALS PROJECT NO. KOS952810CTZC

BERM CONSTRUCTION, WATER CONTROL STRUCTURES, DRAINAGE TILE, EROSION AND SEDIMENT CONTROL

KOSSUTH COUNTY, IOWA

2023

PLAN REVISIONS		
REV	ISSUED FOR	DATE

GOVERNING SPECIFICATIONS

THE SPECIFICATIONS AS PREPARED BY THE IOWA DEPARTMENT OF AGRICULTURE AND LAND STEWARDSHIP AND BOLTON & MENK, INC. SHALL BE CONSIDERED AS PART OF THIS DOCUMENT. NATURAL RESOURCES CONSERVATION SERVICE CONSTRUCTION SPECIFICATIONS SHALL APPLY.

THE CURRENT EDITION OF THE "IOWA STATEWIDE URBAN STANDARD SPECIFICATIONS FOR PUBLIC IMPROVEMENTS" SHALL GOVERN.

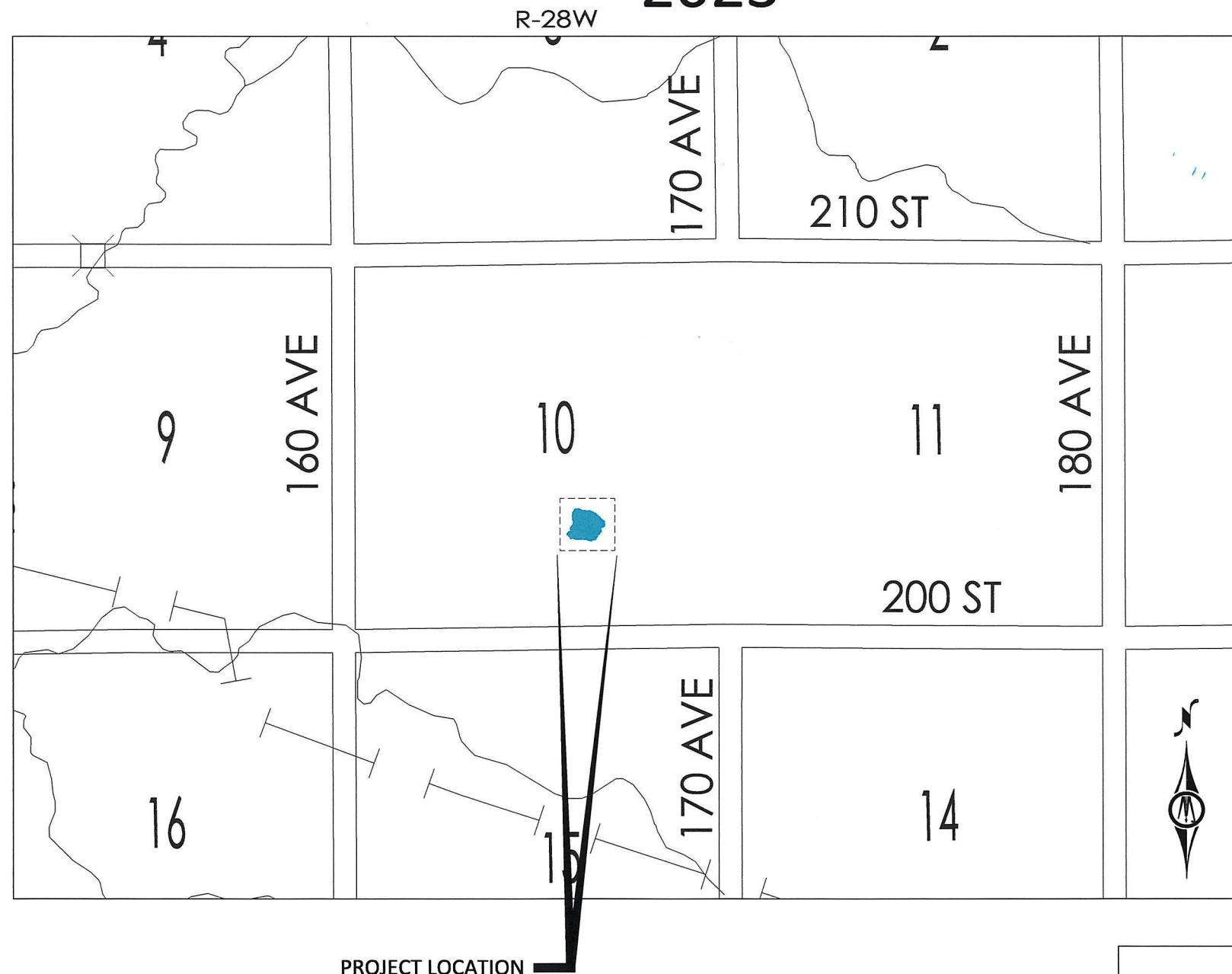
IOWA DEPARTMENT OF TRANSPORTATION "STANDARD SPECIFICATIONS FOR HIGHWAY AND BRIDGE CONSTRUCTION", SERIES 2023 AND ALL CURRENT GENERAL SUPPLEMENTAL SPECIFICATIONS AND MATERIALS INSTRUCTIONAL MEMORANDUM SHALL GOVERN AS REFERENCED.

ALL APPLICABLE FEDERAL, STATE, AND LOCAL LAWS AND ORDINANCES WILL BE COMPLIED WITH IN THE CONSTRUCTION OF THIS PROJECT.



NOTE: THE CONTRACTOR SHALL FIELD VERIFY EXACT LOCATIONS PRIOR TO COMMENCING CONSTRUCTION AS REQUIRED BY STATE LAW. NOTIFY IOWA ONE CALL, 811 OR 1-800-292-8989.

THE SUBSURFACE UTILITY INFORMATION IN THIS PLAN IS UTILITY QUALITY LEVEL D. THIS UTILITY QUALITY 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."



SHEET LIST TABLE	
SHEET NUMBER	SHEET TITLE
A.01	TITLE SHEET
A.02	OVERVIEW
B.01	RCP INSTALLATION
B.02	CPDT INSTALLATION
B.03	IOWA DOT STRUCTURE DETAILS
B.04	MODIFIED STRUCTURE DETAILS
B.05	TRASH GUARD DETAIL
B.06	SEEDING MAP
C.01	ESTIMATED QUANTITIES & REFERENCE NOTES
D.01	PLAN & PROFILE - DIVERSION BERMS
M.01	PLAN & PROFILE - MAIN DIVERSION & SUBMAIN REPLACEMENT
M.02	PLAN & PROFILE - MAIN & LATERAL 9 REROUTES

THESE PLANS PREPARED IN ACCORDANCE WITH NRCS ENGINEERING JOB CLASS V. STANDARDS FOR TASKS ARE AS FOLLOWS:
 659 - SITE DESIGN
 410 - OUTLET CAPACITY
 378 - POOL DESIGN
 TO THE BEST OF MY PROFESSIONAL KNOWLEDGE, JUDGEMENT, AND BELIEVE, THESE PLANS MEET APPLICABLE NRCS STANDARDS.

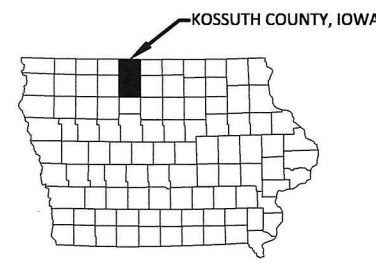
I HEREBY CERTIFY THAT THIS ENGINEERING DOCUMENT WAS PREPARED BY ME OR UNDER MY DIRECT PERSONAL SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF IOWA.

Jonathan P. Rosengren
 JONATHAN P. ROSENGREN, P.E.

LICENSE NUMBER: 21661 DATE: Jan 22, 2024

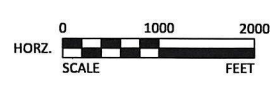
MY LICENSE RENEWAL DATE IS 12/31/2024

PAGES OR SHEETS COVERED BY THIS SEAL:
 ALL PLAN SHEETS



PROJECT LOCATION

DATUM EQUATION: REDRAWN 1982 PLANS + 1198.5 = 2023 DATUM	PROJECT DATUM: IARCS1 HORIZONTAL: NAD83 VERTICAL: NAVD88	RECORD DRAWING INFORMATION OBSERVER: _____ CONTRACTOR: _____ DATE: _____
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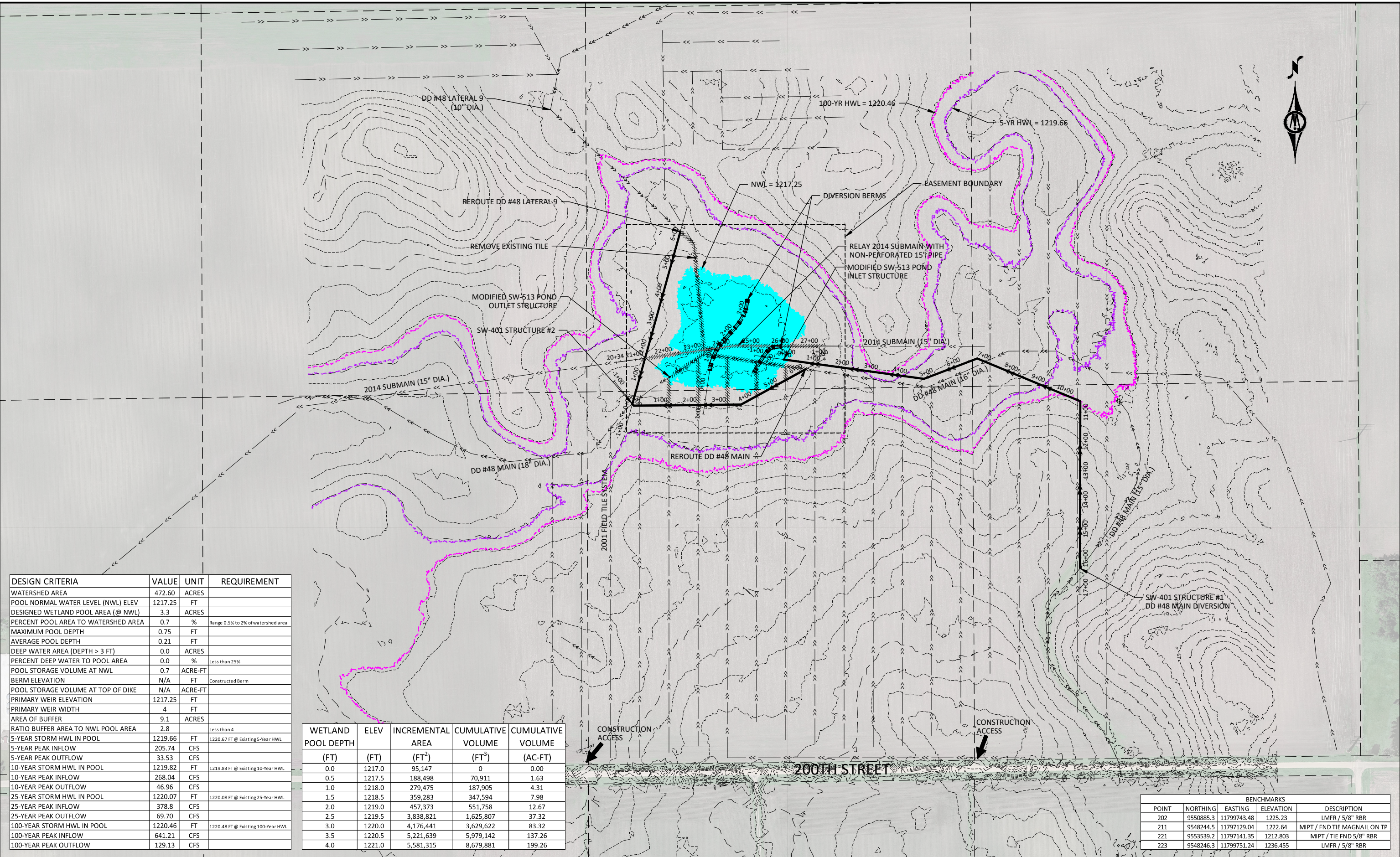
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KOSSUTH COUNTY, IOWA
 BLACK - KOS952810CTZC
 TITLE SHEET

SHEET
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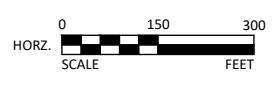


DESIGN CRITERIA	VALUE	UNIT	REQUIREMENT
WATERSHED AREA	472.60	ACRES	
POOL NORMAL WATER LEVEL (NWL) ELEV	1217.25	FT	
DESIGNED WETLAND POOL AREA (@ NWL)	3.3	ACRES	
PERCENT POOL AREA TO WATERSHED AREA	0.7	%	Range 0.5% to 2% of watershed area
MAXIMUM POOL DEPTH	0.75	FT	
AVERAGE POOL DEPTH	0.21	FT	
DEEP WATER AREA (DEPTH > 3 FT)	0.0	ACRES	
PERCENT DEEP WATER TO POOL AREA	0.0	%	Less than 25%
POOL STORAGE VOLUME AT NWL	0.7	ACRE-FT	
BERM ELEVATION	N/A	FT	Constructed Berm
POOL STORAGE VOLUME AT TOP OF DIKE	N/A	ACRE-FT	
PRIMARY WEIR ELEVATION	1217.25	FT	
PRIMARY WEIR WIDTH	4	FT	
AREA OF BUFFER	9.1	ACRES	
RATIO BUFFER AREA TO NWL POOL AREA	2.8		Less than 4
5-YEAR STORM HWL IN POOL	1219.66	FT	1220.67 FT @ Existing 5-Year HWL
5-YEAR PEAK INFLOW	205.74	CFS	
5-YEAR PEAK OUTFLOW	33.53	CFS	
10-YEAR STORM HWL IN POOL	1219.82	FT	1219.83 FT @ Existing 10-Year HWL
10-YEAR PEAK INFLOW	268.04	CFS	
10-YEAR PEAK OUTFLOW	46.96	CFS	
25-YEAR STORM HWL IN POOL	1220.07	FT	1220.08 FT @ Existing 25-Year HWL
25-YEAR PEAK INFLOW	378.8	CFS	
25-YEAR PEAK OUTFLOW	69.70	CFS	
100-YEAR STORM HWL IN POOL	1220.46	FT	1220.48 FT @ Existing 100-Year HWL
100-YEAR PEAK INFLOW	641.21	CFS	
100-YEAR PEAK OUTFLOW	129.13	CFS	

WETLAND POOL DEPTH (FT)	ELEV (FT)	INCREMENTAL AREA (FT ²)	CUMULATIVE VOLUME (FT ³)	CUMULATIVE VOLUME (AC-FT)
0.0	1217.0	95,147	0	0.00
0.5	1217.5	188,498	70,911	1.63
1.0	1218.0	279,475	187,905	4.31
1.5	1218.5	359,283	347,594	7.98
2.0	1219.0	457,373	551,758	12.67
2.5	1219.5	3,838,821	1,625,807	37.32
3.0	1220.0	4,176,441	3,629,622	83.32
3.5	1220.5	5,221,639	5,979,142	137.26
4.0	1221.0	5,581,315	8,679,881	199.26

BENCHMARKS				
POINT	NORTHING	EASTING	ELEVATION	DESCRIPTION
202	9550885.3	11799743.48	1225.23	LMFR / 5/8" RBR
211	9548244.5	11797129.04	1222.64	MIPT / FND TIE MAGNAIL ON TP
221	9553539.2	11797141.35	1212.803	MIPT / TIE FND 5/8" RBR
223	9548246.3	11799751.24	1236.455	LMFR / 5/8" RBR

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KOSSUTH COUNTY, IOWA
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OVERVIEW

SHEET
A.02

**PIPE HAUNCH FILL AND COMPACTION METHOD
PLAN REQUIREMENTS COMPLIANCE VERIFICATION**

THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE INSTALLATION OF ALL PIPE ACCORDING TO PLAN REQUIREMENTS. THE CONTRACTOR'S PARTICIPATION IN AND COMPLIANCE WITH THE FOLLOWING PROCEDURE IS REQUIRED AND WILL ALLOW FOR FEWER SOIL DENSITY TESTS TO ENSURE PROPER PIPE INSTALLATION.

STEP 1
BEFORE COMMENCING PIPE INSTALLATION, STANDARD SOIL PROCTOR DENSITY TEST RESULTS OF REPRESENTATIVE SAMPLE(S) OF PIPE HAUNCH FILL SHALL BE PROVIDED BY AN INDEPENDENT QUALIFIED SOILS TESTING LAB. THE SELECTION OF THE SAMPLE(S) WILL BE MADE BY THE ENGINEER AND CONTRACTOR (WHEN SPECIFIED).

STEP 2
CONTRACTOR MAY BEGIN EXCAVATING THE MODIFIED TYPE 4 TRENCH WITH THE REQUIRED SHAPED BOTTOM GROOVE AND PLACE SEVERAL PIPE SECTIONS ONLY WHEN BOTH ENGINEER AND TESTING LAB TECHNICIAN ARE PRESENT

CONTRACTOR SHALL DEMONSTRATE THE INTENDED METHODS FOR COMPACTING THE FILL FOR THE PIPE HAUNCH AREAS. SOIL DENSITY TESTS SHALL BE TAKEN AT LOCATIONS DESIGNATED BY THE ENGINEER TO CONFIRM THAT THE INTENDED METHODS FOR FILL AND COMPACTION OF THE PIPE HAUNCH AREAS SATISFIES THE PLAN REQUIREMENTS. CONTRACTOR SHALL MODIFY THE INSTALLATION METHODS AND REPEAT STEP 2 UNTIL ACCEPTABLE TESTS RESULTS ARE ACHIEVED.

STEP 3
CONTRACTOR MAY INSTALL THE NEXT SEVERAL HUNDRED FEET OF PIPE. ENGINEER SHALL DESIGNATE SEVERAL LOCATIONS (APPROXIMATELY 10% OF THE INSTALLED LENGTH) WHERE CONTRACTOR SHALL LEAVE THE PIPE UNBLINDED FOR FURTHER DENSITY TESTS OF THE HAUNCH FILL AREA. ALL DENSITY TESTS MUST MEET PLAN REQUIREMENTS BEFORE WORK MAY PROCEED FURTHER.

IF DENSITY TESTING DATA CONFIRMS TO THE SATISFACTION OF THE ENGINEER THAT THE CONTRACTOR'S INSTALLATION METHOD WILL PRODUCE CONSISTENT COMPLIANCE WITH PLAN REQUIREMENTS, CONTRACTOR MAY CONTINUE INSTALLATION OF THE PIPE WITH NO ADDITIONAL TESTING REQUIRED. IF NOT, STEPS 2 AND 3 SHALL BE REPEATED UNTIL A RELIABLE, SUCCESSFUL METHOD OF PIPE INSTALLATION THAT PRODUCES SATISFACTORY RESULTS IS ESTABLISHED.

CONTRACTOR IS REQUIRED TO PROPERLY AND ADEQUATELY INSTRUCT SUBCONTRACTORS AND/OR SUBSEQUENT PIPE INSTALLATION WORKERS ON THE PROPER INSTALLATION METHOD.

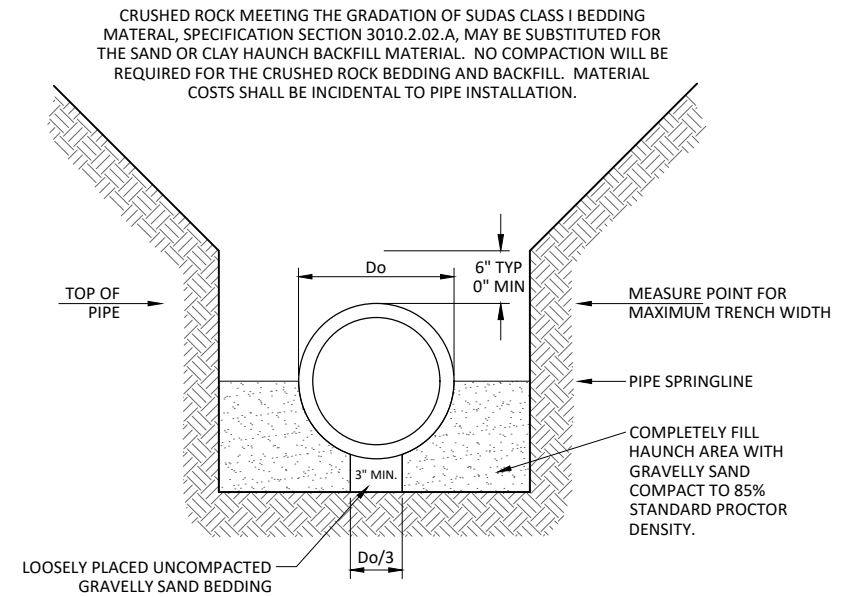
STEP 4A
SOIL OR TRENCH CONDITION CHANGES

TO VERIFY CONTRACTOR'S COMPLIANCE WITH PLAN REQUIREMENTS UNDER THE CHANGED CONDITIONS, ENGINEER MAY STOP WORK AND REQUIRE ADDITIONAL SOIL PROCTOR TESTS AND/OR SOIL DENSITY TESTS SIMILAR TO STEPS 1 THROUGH 3. THE WORK AND COSTS OF THE FIRST TWO REVERIFICATIONS IS SUBSIDIARY TO THE PIPE INSTALLATION. SUBSEQUENT VERIFICATIONS WILL BE CONSIDERED EXTRA WORK.

STEP 4B
CONTRACTOR FAILS TO CONSISTENTLY PERFORM INSTALLATION METHOD OR INSTRUCT OTHER INSTALLERS

IF CONTRACTOR FAILS TO CONSISTENTLY PERFORM OR ADEQUATELY INSTRUCT SUBCONTRACTORS AND/OR SUBSEQUENT PIPE INSTALLATION WORKERS ON THE APPROVED INSTALLATION METHOD, ENGINEER MAY STOP WORK AND REQUIRE ADDITIONAL SOIL PROCTOR TESTS AND/OR SOIL DENSITY TESTS SIMILAR TO STEPS 1 THROUGH 3 TO VERIFY CONTRACTOR'S COMPLIANCE WITH PLAN REQUIREMENTS. THE WORK AND COSTS OF ALL VERIFICATIONS UNDER SUCH CONDITIONS IS SUBSIDIARY TO THE PIPE INSTALLATION.

EXCEPTION
IF CONTRACTOR ELECTS TO SHAPE THE TRENCH BOTTOM SUCH THAT A MINIMUM OF 45% OF THE OUTER CIRCUMFERENCE OF THE PIPE IS FIRMLY BEDDED IN AND CONSISTENTLY SUPPORTED BY UNDISTURBED SOIL, PIPE HAUNCH FILL COMPACTION TESTING WILL NOT BE REQUIRED. THE CONTRACTOR IS REQUIRED TO COMPLY WITH A PROPER INSTALLATION METHOD AND TO FULLY COMPLY WITH THE REQUIREMENTS OF THE VERIFICATION OUTLINED ABOVE FOR ALL SITUATIONS WHERE THIS EXCEPTION IS NOT MET.

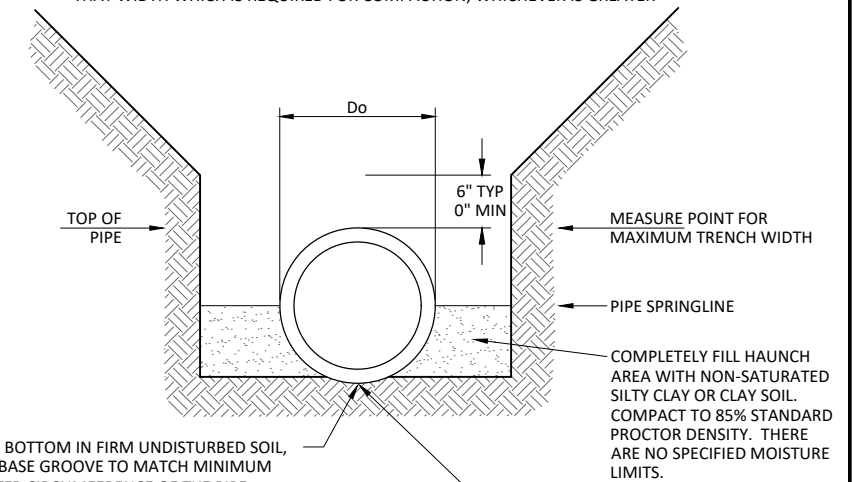


GRAVELLY SAND BEDDING SHALL BE CONSISTENT WITH THE GRADATION AND OTHER CHARACTERISTICS OF STANDARD AASHTO A1 OR A3 SOIL. A REPRESENTATIVE SAMPLE OF THE MATERIAL AND A GRADATION REPORT OR SUPPLIER'S CERTIFICATION OF COMPLIANCE SHALL BE SUBMITTED TO THE ENGINEER FOR APPROVAL PRIOR TO DELIVERY TO SITE. SEE SOIL DATA IN APPENDIX OF SPECIFICATIONS BOOKLET.

TRENCH INSTALLATION TYPE 3

NOT TO SCALE
SOURCE: AMERICAN CONCRETE PIPE ASSOCIATION
CONCRETE PIPE DESIGN MANUAL

MINIMUM TRENCH WIDTH SHALL BE OUTSIDE DIAMETER OF PIPE PLUS 12" OR THAT WIDTH WHICH IS REQUIRED FOR COMPACTION, WHICHEVER IS GREATER

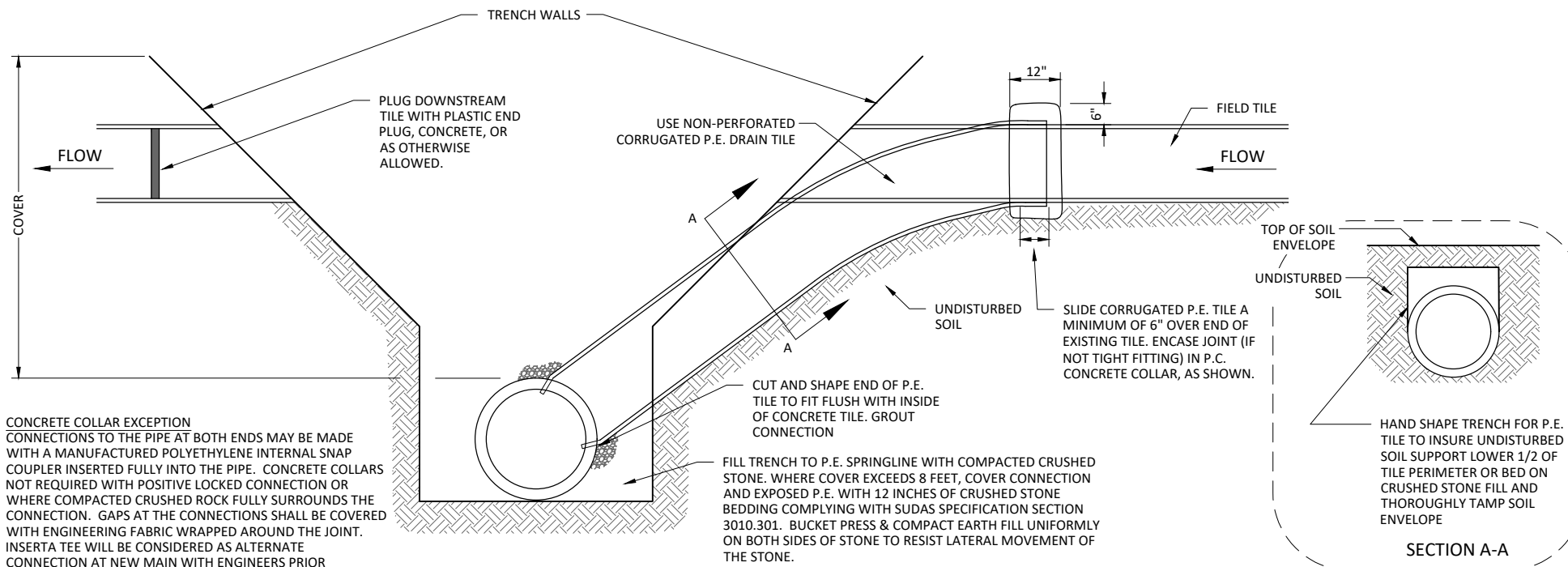


WHERE TRENCH BOTTOM IN FIRM UNDISTURBED SOIL, SHAPE TRENCH BASE GROOVE TO MATCH MINIMUM 1/6 OF THE OUTER CIRCUMFERENCE OF THE PIPE. WHERE THE SHAPED GROOVE CANNOT BE CONSTRUCTED INTO UNDISTURBED GROUND OR WHERE EXCESS CUT OCCURS OVER EXCAVATE AND PLACE MINIMUM 3-INCH THICK COMPACTED GRAVELLY SAND BEDDING TO RESTORE GRADE SUCH THAT 1/6 OR MORE OF THE OUTER CIRCUMFERENCE OF THE PIPE IS BEDDED. THIS MATERIAL AND WORK IS SUBSIDIARY TO THE INSTALLATION OF THE PIPE. CONTRACTOR MAY SUBSTITUTE PIPE BEDDING ROCK AS THE BEDDING MATERIAL. IT ALSO IS SUBSIDIARY.

WHERE FIRM BASE IS NOT ENCOUNTERED. OVER EXCAVATE AS DIRECTED BY ENGINEER. PLACE CRADLING ROCK AND BED PIPE IN IT SUCH THAT 1/6 OR MORE OF THE OUTER CIRCUMFERENCE OF THE PIPE IS SUPPORTED. THIS ROCK IS PAID FOR UNDER A SEPARATE BID ITEM.

MODIFIED TRENCH INSTALLATION TYPE 4

NOT TO SCALE
SOURCE: AMERICAN CONCRETE PIPE ASSOCIATION
CONCRETE PIPE DESIGN MANUAL



TYPICAL FIELD TILE CONNECTION

FOR FIELD TILE UP TO 10" DIAMETER

CONCRETE COLLAR EXCEPTION
CONNECTIONS TO THE PIPE AT BOTH ENDS MAY BE MADE WITH A MANUFACTURED POLYETHYLENE INTERNAL SNAP COUPLER INSERTED FULLY INTO THE PIPE. CONCRETE COLLARS NOT REQUIRED WITH POSITIVE LOCKED CONNECTION OR WHERE COMPACTED CRUSHED ROCK FULLY SURROUNDS THE CONNECTION. GAPS AT THE CONNECTIONS SHALL BE COVERED WITH ENGINEERING FABRIC WRAPPED AROUND THE JOINT. INSERTA TEE WILL BE CONSIDERED AS ALTERNATE CONNECTION AT NEW MAIN WITH ENGINEERS PRIOR APPROVAL AND INSTALLATION PER MANUFACTURERS RECOMMENDATION.



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RCP INSTALLATION

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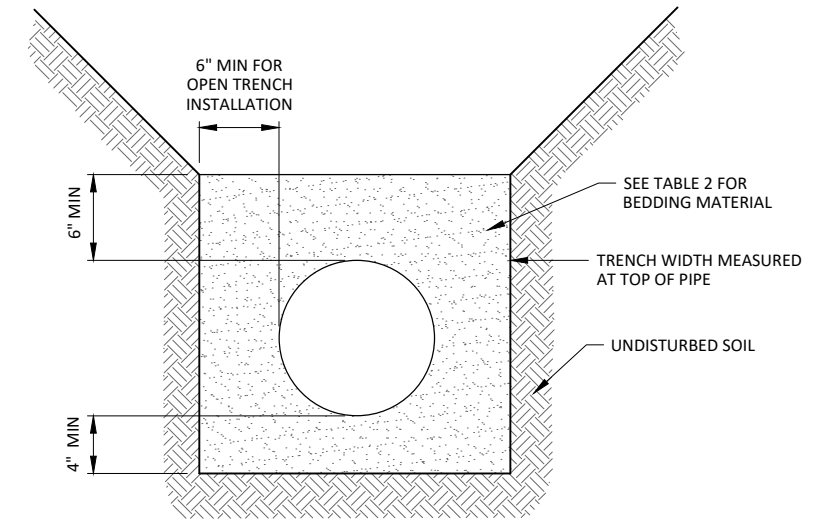
CORRUGATED POLYETHYLENE DRAINAGE TUBING MATERIAL & INSTALLATION NOTES

1. ALL CPDT AND CONNECTORS FURNISHED SHALL BE IN COMPLIANCE WITH MATERIAL STANDARDS ASTM F405 AND F667, AS APPLICABLE, AND SHALL BE CLASSIFIED AS HEAVY-DUTY UNDER THOSE STANDARDS.
2. EXCEPT MODIFIED HEREIN OR OTHERWISE APPROVED BY ENGINEER, ALL CPDT SHALL BE INSTALLED IN COMPLIANCE WITH THE ASTM 449 STANDARD PRACTICE.
3. FOR PIPES 6" DIAMETER AND SMALLER A 90° V GROOVE BOTTOM MAY BE USED, FOR ALL LARGER PIPE A TRAPEZOIDAL BOTTOM OR A CIRCULAR BOTTOM CONFORMING TO THE OUTSIDE DIAMETER OF THE PIPE SHALL BE USED. PRIOR TO THE INSTALLATION OF CPDT, CONTRACTOR MUST PROVE TO ENGINEER THAT THE INSTALLATION REQUIREMENTS, INCLUDING THE SHAPE OF THE TRENCH BOTTOM, WILL BE ACCOMPLISHED.
4. WHERE TRENCH BOTTOM IS IN FIRM UNDISTURBED SOIL, SHAPE TRENCH BASE GROOVE. WHERE EXCESS CUT OCCURS, OVEREXCAVATE AND PLACE MINIMUM THREE (3) INCH THICK, GRAVELLY SAND BEDDING TO RESTORE GRADE. THIS BEDDING SHALL MEET THAT REQUIRED FOR TRENCH INSTALLATION TYPE 3 ON PLAN SHEET C.02. IF DUE TO CONTRACTOR ERROR THIS MATERIAL AND WORK IS SUBSIDIARY TO THE INSTALLATION OF THE PIPE. CONTRACTOR MAY SUBSTITUTE PIPE BEDDING ROCK AS THE BEDDING MATERIAL.
5. NATIVE SOILS MAY BE USED AS BACKFILL MATERIAL UNLESS UNSTABLE TRENCH CONDITIONS PREVENT THE TRENCH BOTTOM HOLDING THE SHAPED GROOVE. IF TRENCH BOTTOM WILL NOT HOLD GROOVE SHAPE CONTRACTOR SHALL NOTIFY ENGINEER IMMEDIATELY. A FLAT BOTTOM TRENCH INSTALLATION WILL THEN BE ASSUMED. THE REQUIRED BEDDING MATERIAL WILL BE PAID UNDER THE TILE TRENCH STABILIZATION AND CRADLING ROCK BID ITEM.
6. MINIMUM TRENCH WIDTH IS PIPE OUTSIDE DIAMETER PLUS FOUR (4) INCHES FOR PLOWED INSTALLATION AND PIPE OUTSIDE DIAMETER PLUS TWELVE (12) INCHES FOR OPEN TRENCH INSTALLATION.
7. ALL LATERAL CONNECTIONS, ELBOWS, TEES, ALIGNMENT CURVES, START HOLES AND ALL PORTIONS OF THE TRENCH NOT MEETING THE GROOVED TRENCH INSTALLATION REQUIREMENTS SHALL BE FILLED TO A MINIMUM OF SIX (6) INCH COVER OVER THE PIPE WITH GRADED CRUSHED STONE OR GRAVEL AS SHOWN ON TABLE 2 OF THIS SHEET. UNLESS DUE TO CONTRACTOR ERROR THIS BEDDING MATERIAL WILL BE PAID UNDER THE TILE TRENCH STABILIZATION AND CRADLING ROCK BID ITEM.
8. MANUFACTURER'S ENDCAPS SHALL BE INSTALLED AT THE TERMINATION OF EACH LINE UNLESS A CONNECTION TO AN EXISTING DRAIN IS MADE.
9. WITH THE INSTALLATION OF THE FIRST REACH OF CPDT ON THE PROJECT, CONTRACTOR IS REQUIRED TO WORK WITH THE ENGINEER TO CHECK AND CONFIRM THAT THE PIPE STRETCH, IF ANY, DOES NOT EXCEED 5%.
10. ALIGNMENT TURNS MAYBE MADE USING EITHER A MANUFACTURED FITTING OR CURVING THE LINE WITH A 25' MINIMUM RADIUS.

Table 1 Maximum Allowable Buried Depth to Flowline of CPDT					
Nominal Pipe Diameter (IN)	Pipe Quality (ASTM)	Trench Width at Top of the Pipe (FT)			
		12"	18"	24"	30" or Greater
4	Standard	13	7	5.5	5
	Heavy-duty	Any	10	7	6
6	Standard	10	7	5.5	5
	Heavy-duty	Any	9.5	6.5	6
8	Standard	10	7	5.5	5
	Heavy-duty	Any	10	7	6
10	Heavy-duty	...	9	7	6
12	Heavy-duty	...	9	7	6
15	Heavy-duty	7	6

Table 2 Acceptable Bedding Material and Compaction Requirements					
Description	Percentage Passing Sieve Sizes			Minimum Standard Density (%)	Maximum Compaction Layer Height (IN.)
	1"	3/4"	No. 4		
Crushed Stone Crushed Gravel*	100%	> 95%	< 5%	Dumped	18

* Class 1 Bedding Material Per SUDAS 3010.202A is an Allowable Substitute

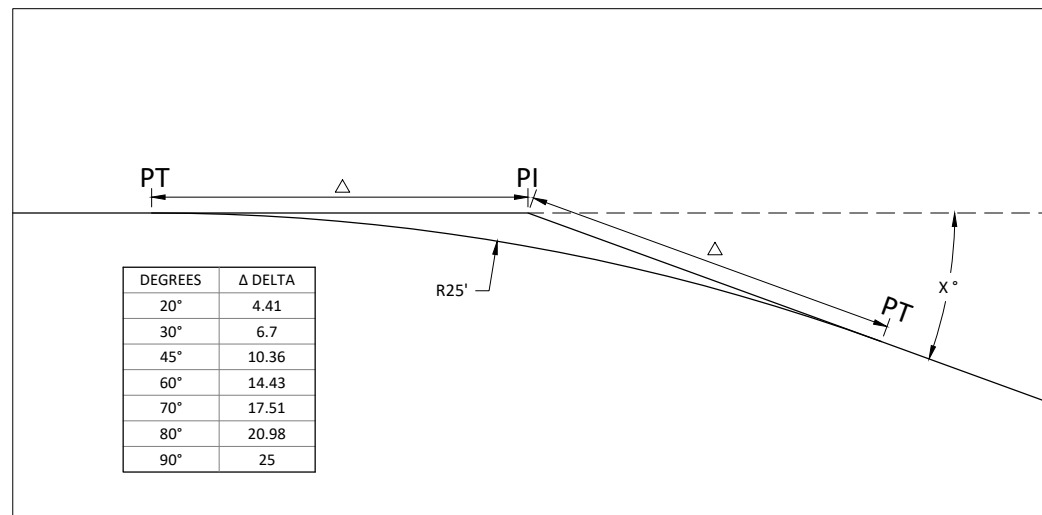


FILL TRENCH TO 6" ABOVE TOP OF PIPE WITH CRUSHED STONE OR GRAVEL MEETING THE REQUIREMENTS IN TABLE 2. BEDDING MATERIAL SHALL BE INCIDENTAL TO THE PIPE INSTALLATION.

FLAT BOTTOM TRENCH INSTALLATION

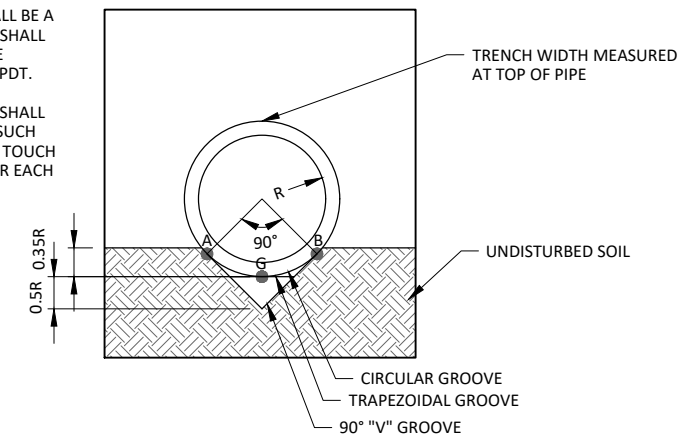
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SOURCE: ASTM F449

NOTE: THIS IS AN ALLOWED ALTERNATIVE INSTALLATION FOR CPDT



THE CIRCULAR GROOVE SHALL BE A MINIMUM 0.35R DEEP AND SHALL MATCH THE OUTSIDE CURVE SHAPE OF THE DEFLECTED CPDT.

THE TRAPEZOIDAL GROOVE SHALL BE SHAPED AND ADJUSTED SUCH THAT POINTS A, B, & C WILL TOUCH THE UNDEFLECTED CPDT FOR EACH SIZE INSTALLED.

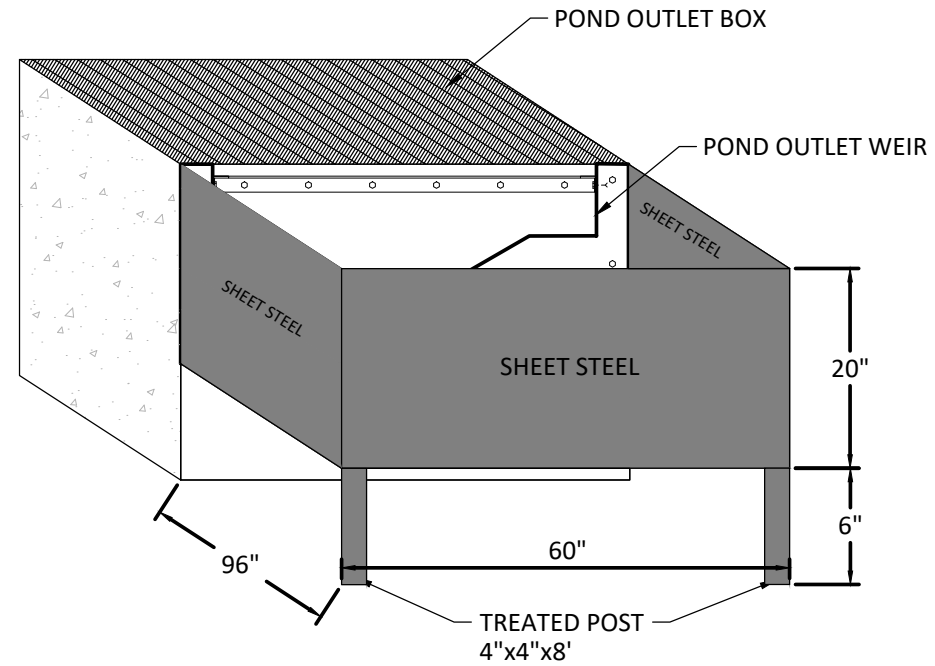


PREFERRED TRENCH INSTALLATION BOTTOM

TRAPEZOIDAL GROOVE, "V" GROOVE, & CIRCULAR GROOVE
NOT TO SCALE
SOURCE: ASTM F449

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NOT TO SCALE



SUBSIDIARY TO "MODIFIED SW-513 POND OUTLET STRUCTURE" BID ITEM
 ALL COSTS TO FURNISH AND INSTALL TRASH GUARD ARE INCIDENTAL TO THAT BID ITEM

- 2 - 4" x 4" x 8' TREATED POSTS
- 3 - SHEET STEEL SHEETS
 - 1 - 60" x 20" 2 - 96" x 20"
- ANGLE IRON--EITHER WELDED OR BOLTED--ON TOP AND BOTTOM OF EACH SHEET AS BRACE
- BOLT TRASH GUARD ONTO BOX
- DIRTWORK AS NECESSARY TO ALLOW FLOW OF WATER UNDER TRASH GUARD WITH 6" MINIMUM CLEARANCE

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KOSSUTH COUNTY, IOWA

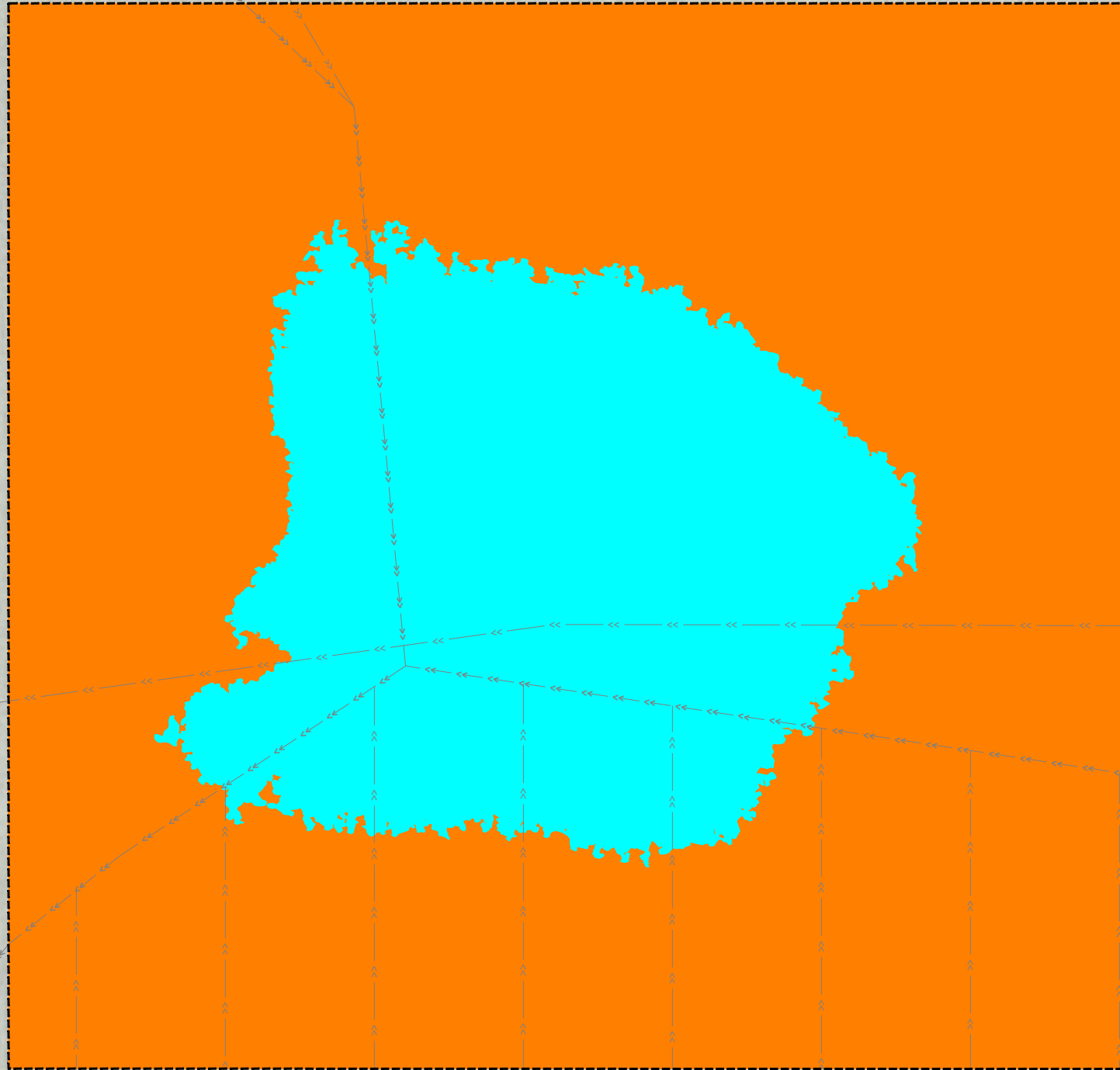
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TRASH GUARD DETAIL

SHEET

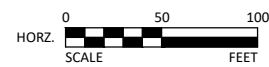
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ALL 9.1 ACRES IN ORANGE ARE TO BE SEEDED
 SEED BED PREPARATION AND SEED MIX WILL FOLLOW IA-CS-6 SPECIFICATIONS



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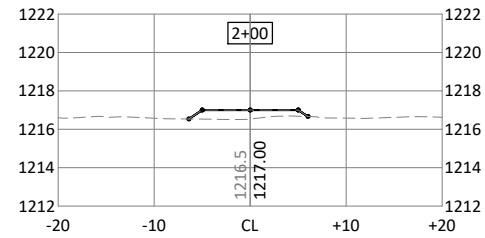
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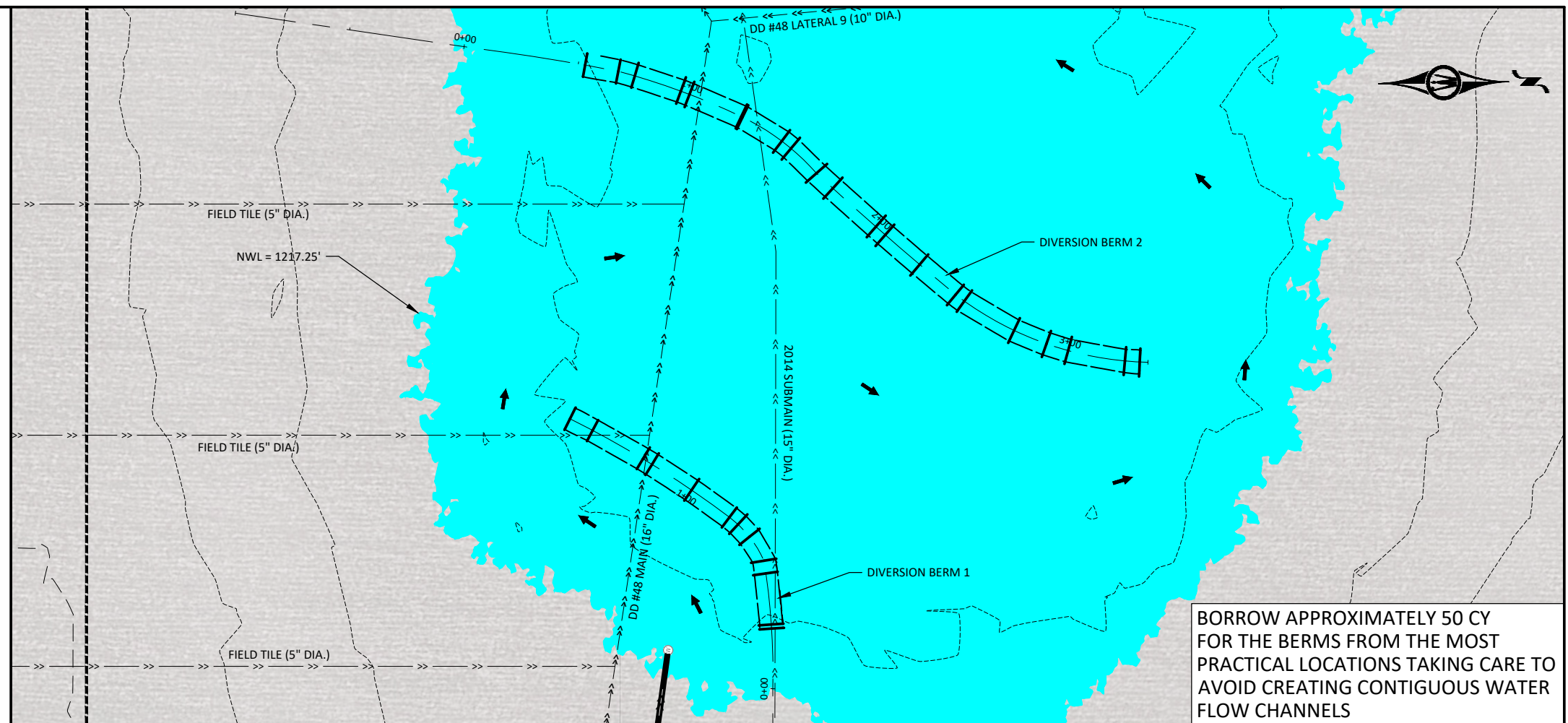
SEEDING MAP

SHEET

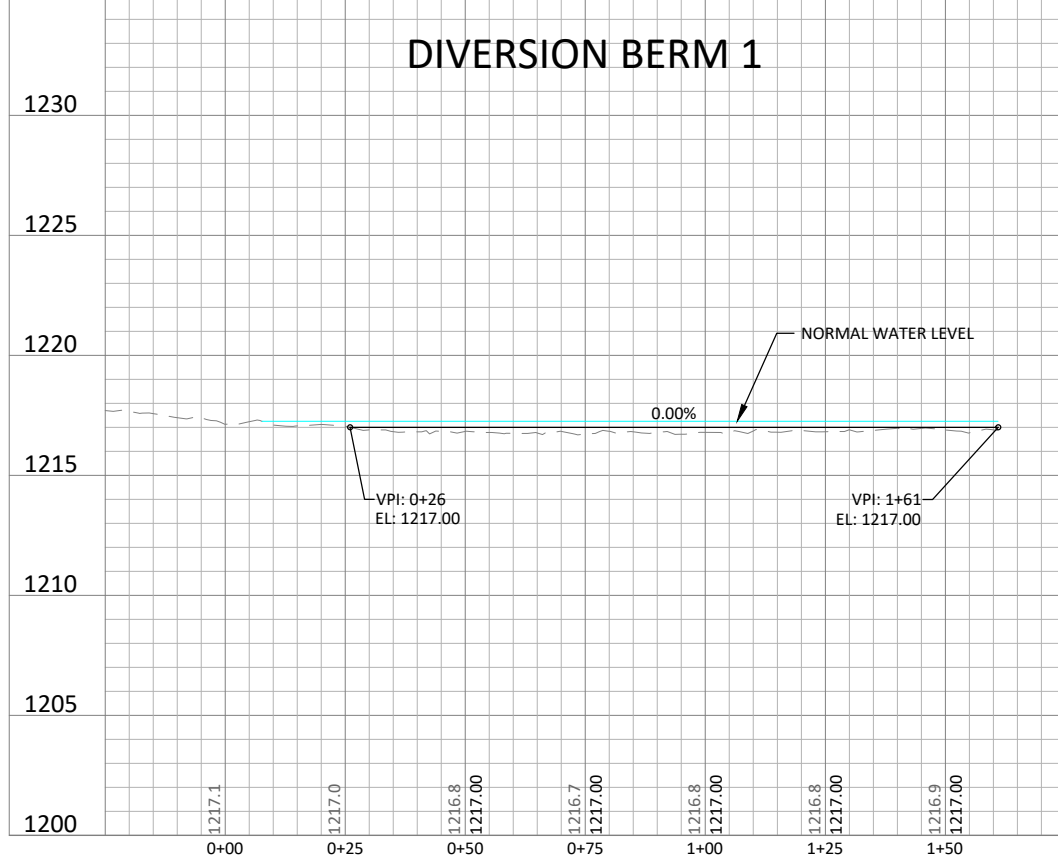
B.06



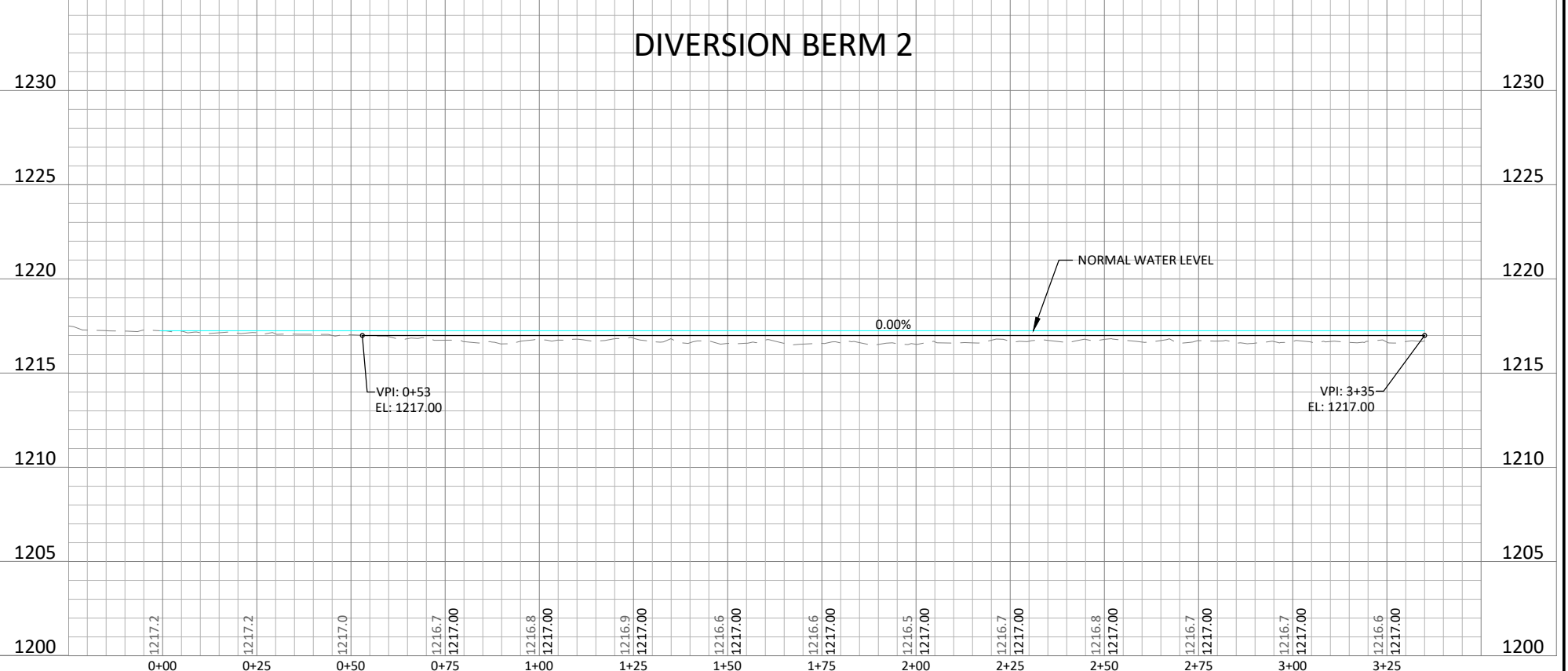
TYPICAL BERM CROSS-SECTION
10' WIDE TOP
3:1 SIDE SLOPES



BORROW APPROXIMATELY 50 CY FOR THE BERMS FROM THE MOST PRACTICAL LOCATIONS TAKING CARE TO AVOID CREATING CONTIGUOUS WATER FLOW CHANNELS

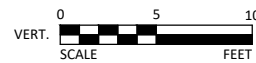
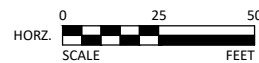


DIVERSION BERM 1



DIVERSION BERM 2

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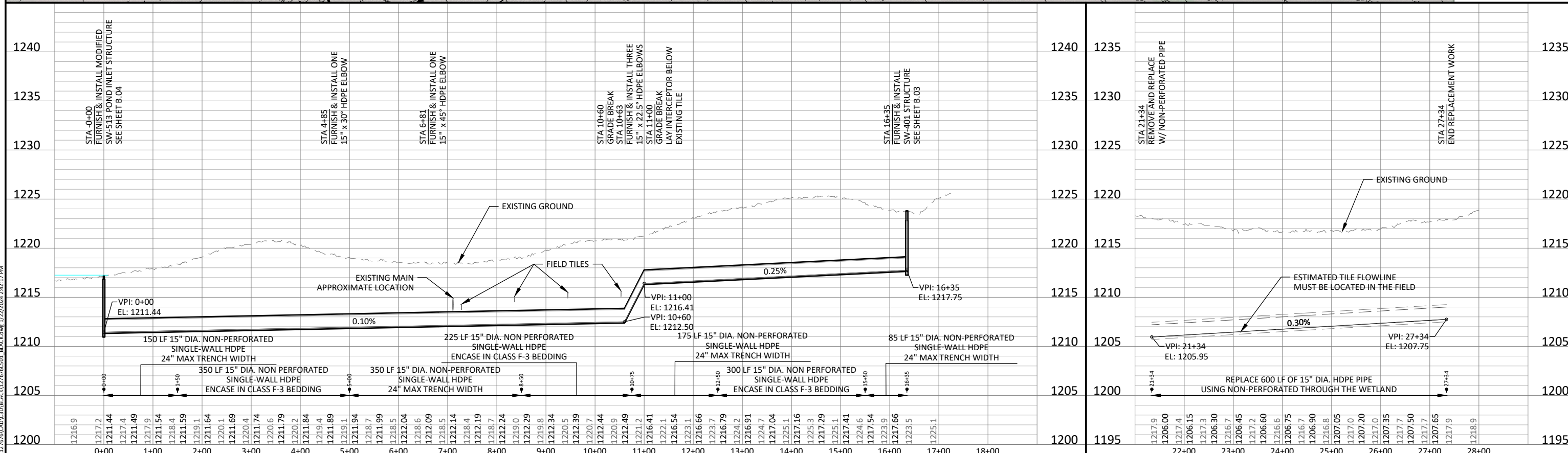
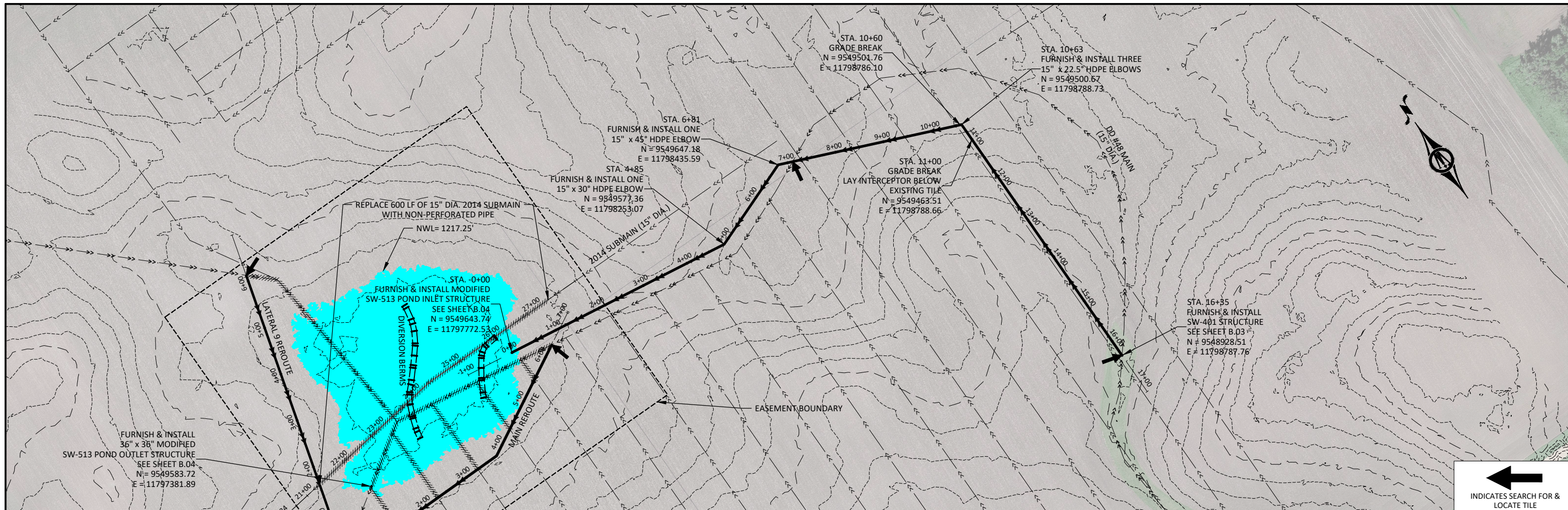


1519 BALTIMORE DRIVE
AMES, IOWA 50010
Phone: (515) 233-6100
Email: Ames@bolton-menk.com
www.bolton-menk.com

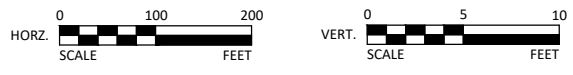
DESIGNED	REV	DESCRIPTION	DATE
SPM			
TJB			
JPR			
CLIENT PROJ. NO.	0P1.127676		

KOSSUTH COUNTY, IOWA
BLACK - KOS952810CTZC
PLAN & PROFILE - DIVERSION BERMS

SHEET
D.01



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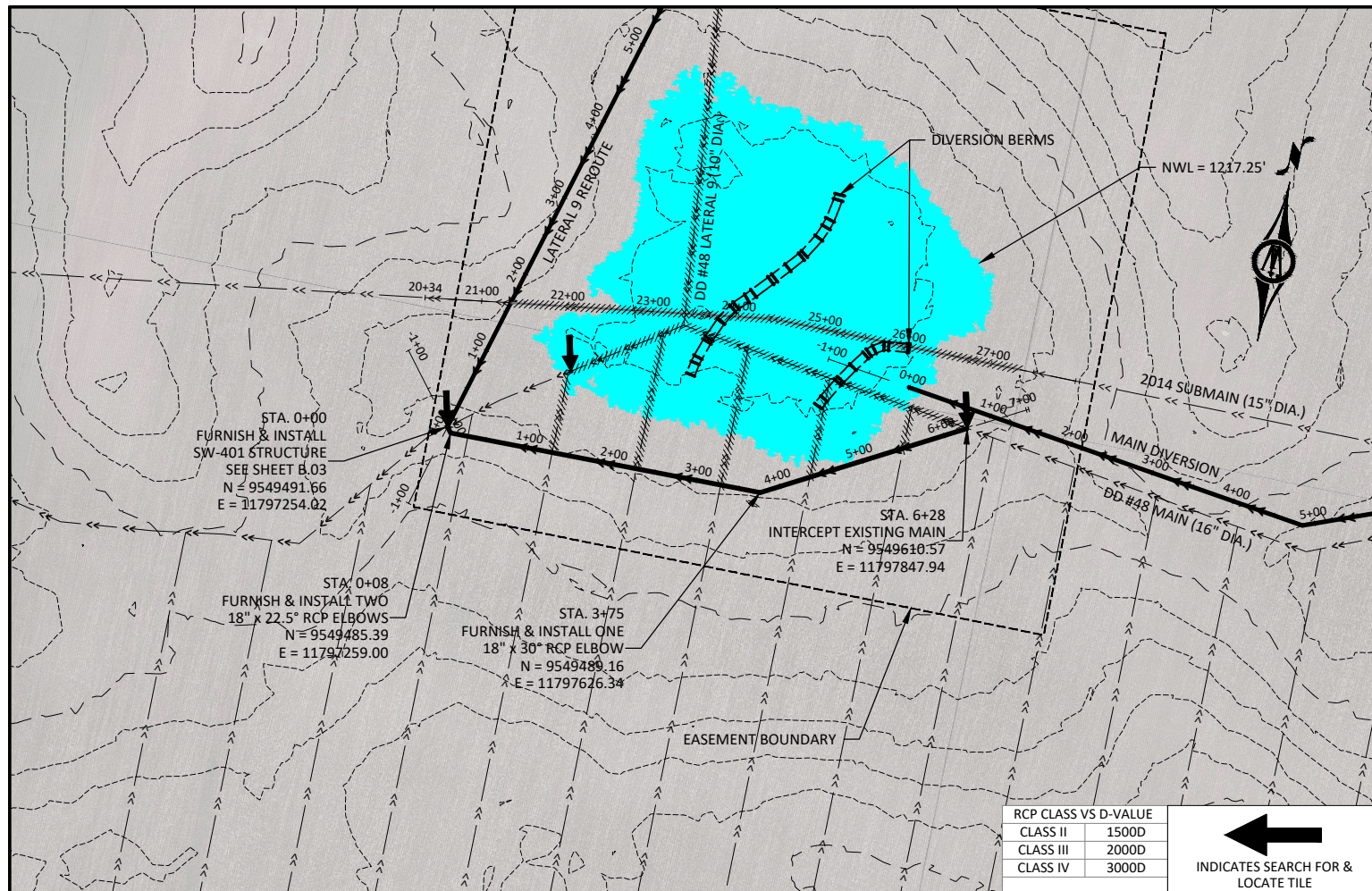
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DESIGNED	REV	DESCRIPTION	DATE
SPM			
TJB			
JPR			
CLIENT PROJ. NO.	0P1.127676		

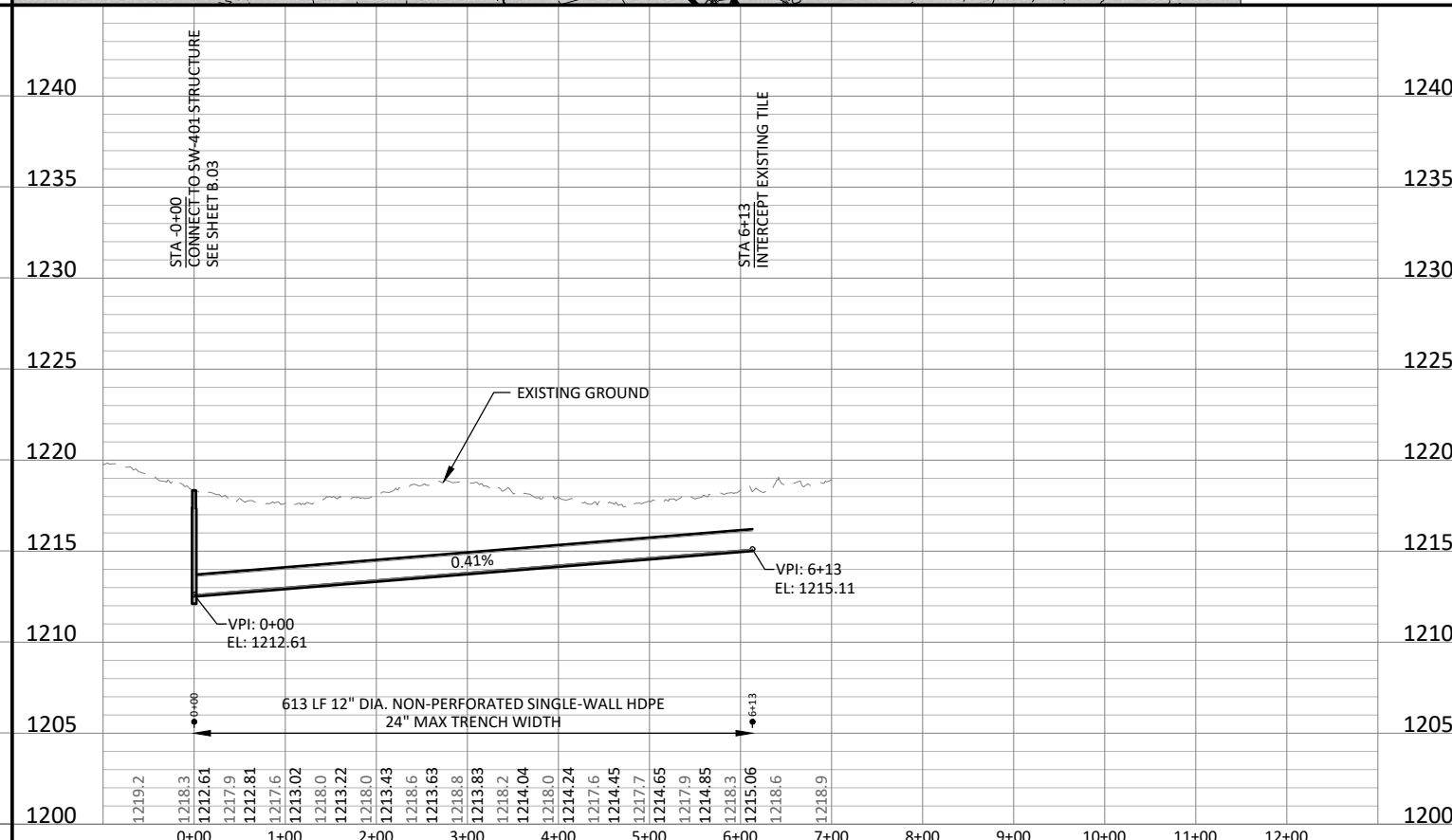
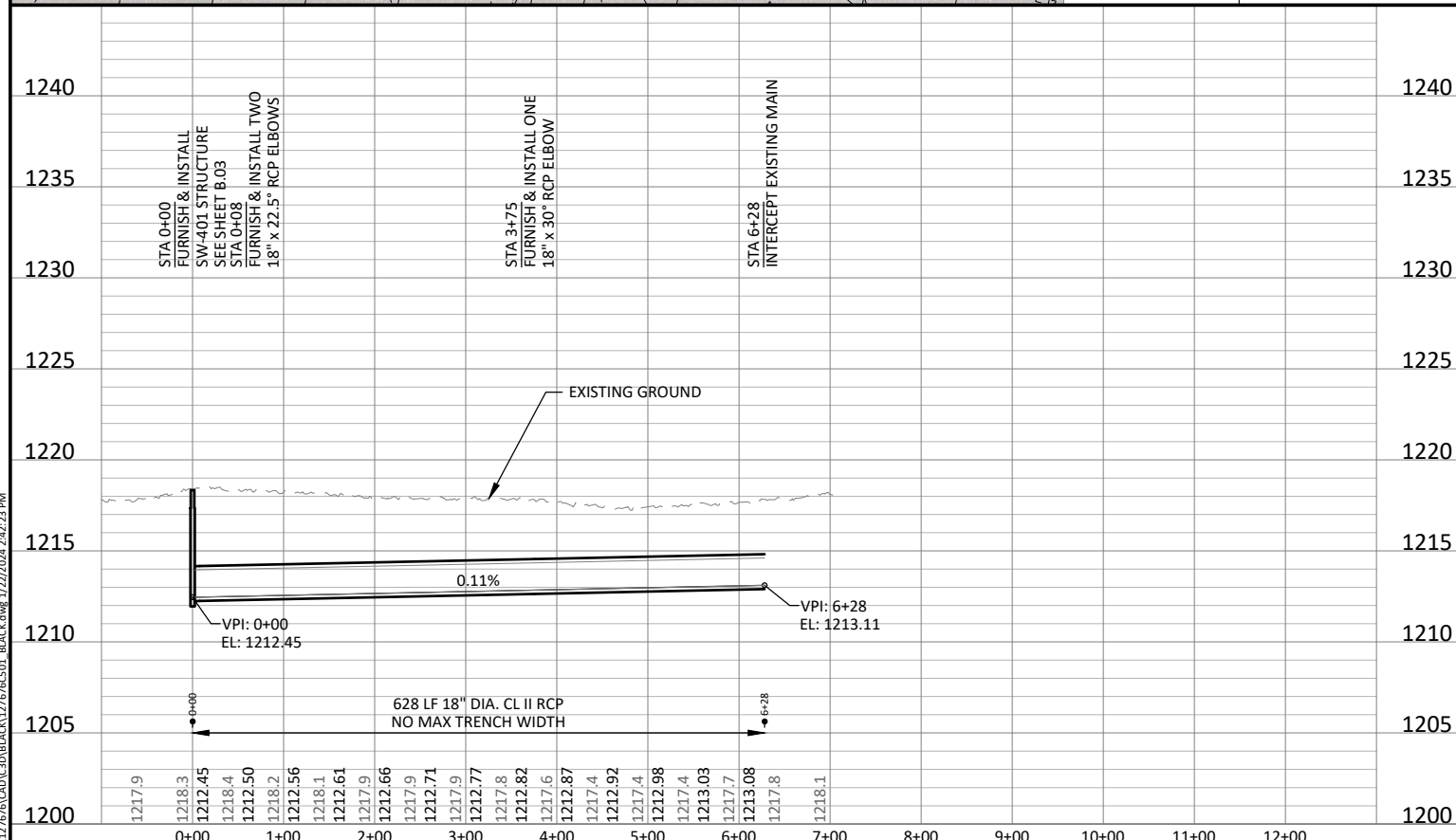
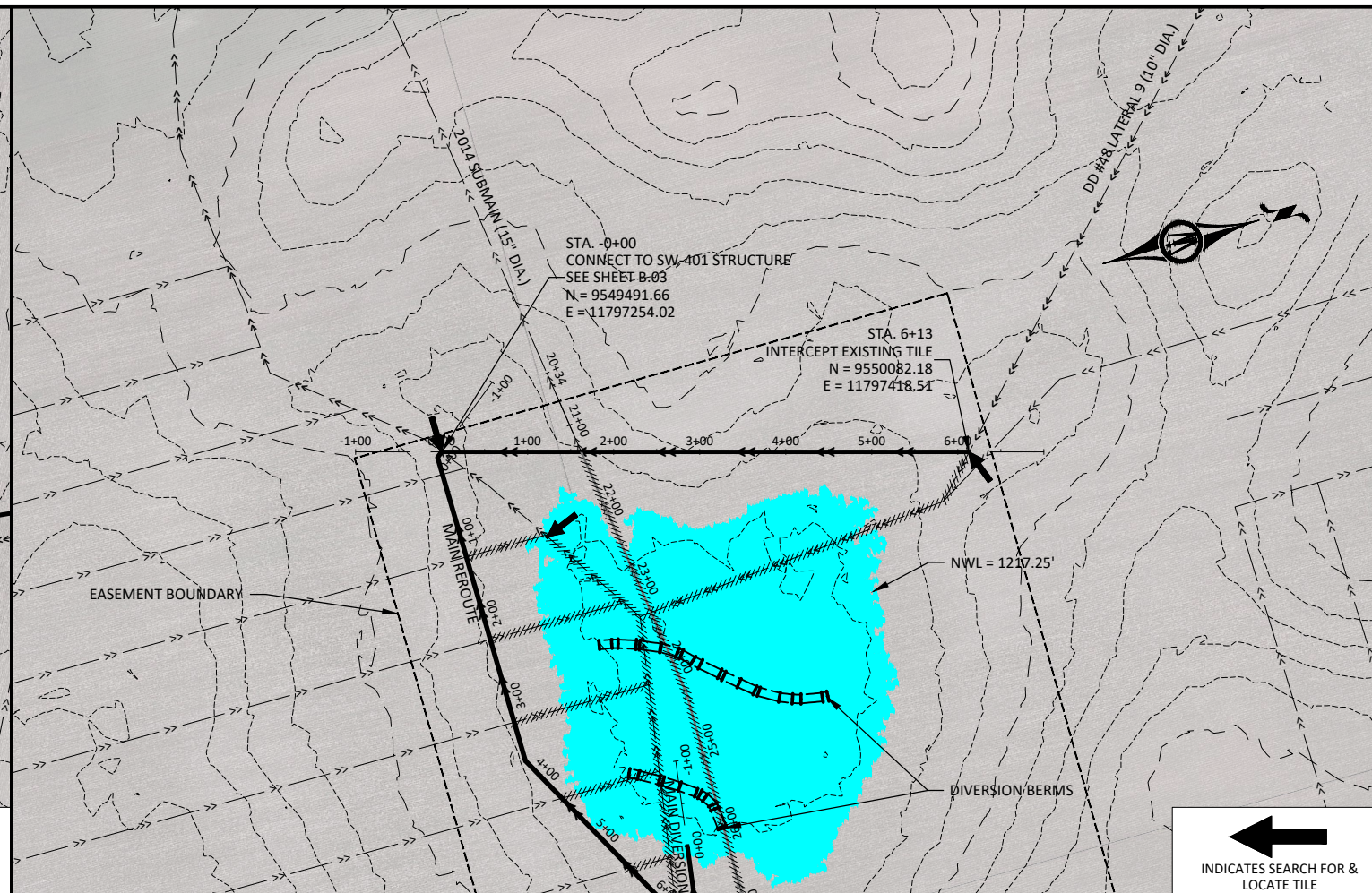
KOSSUTH COUNTY, IOWA
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SHEET
M.01

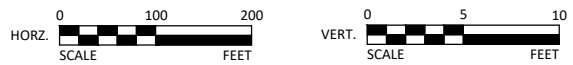
PLAN & PROFILE - MAIN DIVERSION & SUBMAIN REPLACEMENT



RCP CLASS VS D-VALUE	
CLASS II	15000
CLASS III	20000
CLASS IV	30000



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SPM			
TJB			
JPR			
CLIENT PROJ. NO.	0P1.127676		

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SHEET
M.02

PLAN & PROFILE - MAIN & LATERAL 9 REROUTES