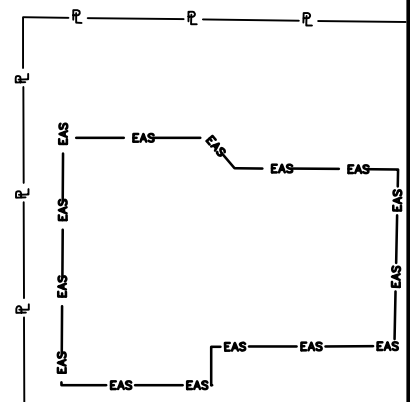
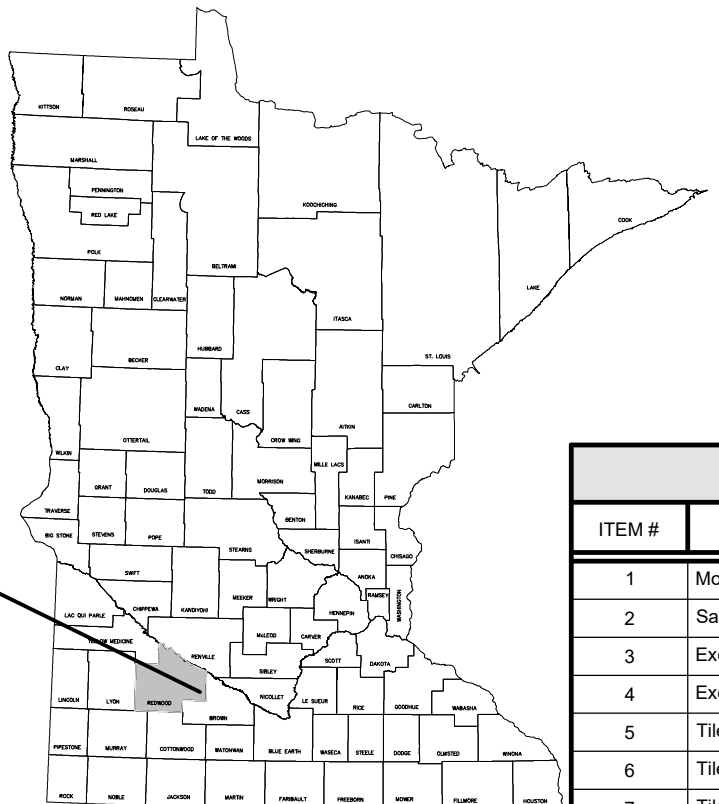


MORGAN ROAD BANKING WETLAND RESTORATION

COUNTY **SECTION** **TOWNSHIP** **RANGE**
REDWOOD **13** **111 N.** **34 W.**



LOCATION MAP
SCALE: 1" = 1320'

DRAWING SHEET INDEX	
DESCRIPTION	NUMBER
Embankment and Spillway Details	7
Scrape Details	8
West Fill Details	9
North Fill Details	10
Northeast Fill Details	11
Bedding Details	12
JD 17 Branch 6 Re-Route Details	13
JD 17 Branch 6D Re-Route Details	14
Outlet Structure Details for Wetland 1	15
Outlet Structure Details for Wetland 1	16
Outlet Structure Details for Wetland 1	17
Outlet Structure Details for Wetland 1	18
Collection Manhole Details	19
Collection Manhole Details	20
Tile Drainage Outlet Details	21

DRAWING SHEET INDEX	
DESCRIPTION	NUMBER
Coversheet	1
Erosion Control Details	2
Existing Conditions and Drainage Features	3
Plan View	4
Proposed Tile Block Locations	5
Tile Block Removal Details	6

ESTIMATED QUANTITIES TABLE

ITEM #	ITEM DESCRIPTION	UNIT	QUANTITY
1	Mobilization	L.S.	1
2	Salvage and Spread Topsoil, Embankment/Berm East of Wetland #1 (P)	C.Y.	327
3	Excavation - Spillway for Wetland #1 (P)	HR.	1
4	Excavation - Scrapes/Sediment Removal Areas #1 thru #4 (P)	C.Y.	11,138
5	Tile Investigation	HR.	4
6	Tile Block/Removal - Tile Removal Trench Type "A"	L.F.	900
7	Tile Block/Removal - Tile Removal Trench Type "B"	L.F.	160
8	F&I 6" Tile Outlet #1 Includes 40 L.F. of 6" Perforated CPE Tile, 100 L.F. of 6" Non-Perforated CPE Tile, CMP Outlet Sleeve, Rock Riprap, Excavated Outlet Channel and All Items for Junction, See Details Sheet #21	L.S.	1
9	F&I 6" Tile Outlet #2 Includes 400 L.F. of 6" Perforated CPE Tile, 390 L.F. of 6" Non-Perforated CPE Tile, CMP Outlet Sleeve, Rock Riprap, Excavated Outlet Channel and All Items for Junction, See Details Sheet #21	L.S.	1
10	F&I 8" HDPE Dual-Walled 10.8 PSI Bell & Spigot Non-Perf. Drainage Pipe (Br. 6D Re-Route), See Profile Sheet #14	L.F.	385
11	F&I 8" HDPE Dual-Walled 10.8 PSI Bell & Spigot Perf. Drainage Pipe (Br. 6D Re-Route), See Profile Sheet #14	L.F.	200
12	F&I 8" HDPE Dual-Walled Pipe Bell End 45° Elbows (Br. 6D Re-Route), See Profile Sheet #14	Each	3
13	F&I 12" HDPE Dual-Walled 10.8 PSI Bell & Spigot Perf. Drainage Pipe (Br. 6 Re-Route), See Profile Sheet #13	L.F.	1,928
14	F&I 12" HDPE Dual-Walled 10.8 PSI Bell & Spigot Non-Perf. Drainage Pipe (Br. 6 Re-Route), See Profile Sheet #13	L.F.	402
15	F&I 12" HDPE Dual-Walled Pipe Bell End 45° Elbows (Br. 6 Re-Route), See Profile Sheet #13	Each	3
16	F&I Jct. @ Sta. 98+03 (Br. 6 Re-Route) Includes, 12" x 8" HDPE Reducer, 12" HDPE Dual-Walled Bell End 45° Wye, Marmac Similar Coupler for 8" HDPE Pipe Connection for Br. 6D Re-Route, See Details Sheet #13	L.S.	1
17	F&I 12" Inspection Intakes @ Sta. 86+00 & 97+00 (Br. 6 Re-Route) Includes, ±6 L.F. 12" HDPE Pipe for Riser, 12" HDPE Dual-Walled Bell End Tee, Pipe Straps, 12" Heavy Duty Trash Guard, See Details Sheet #13	Each	2
18	F&I Water Control Structure for Wetland #1, See Bill of Materials on Sheet #18	L.S.	1
19	F&I 36" RCP Collection Manhole @ Sta. 74+73 (Br. 6), See Bill of Materials Sheet #20	L.S.	1
20	Seeding - Wetland Construction Mix, Embankment/Berm, Tile Re-Route & Removal Areas, Spillway & Other Disturbed Areas	Acre	4
21	Mulching (P)	Acre	2

NPDES PERMIT REQUIRED

MINNESOTA'S CONSTRUCTION STORMWATER PERMIT IS AN EXTENSION OF THE NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) STORMWATER PROGRAM, WHICH IS PART OF THE FEDERAL CLEAN WATER ACT. THE STATE'S CONSTRUCTION STORMWATER PERMIT FULFILLS FEDERAL AND STATE REQUIREMENTS BY REQUIRING PERMITTEES TO CONTROL RUNOFF. THE FEDERAL GOVERNMENT REQUIRES PERMIT COVERAGE. OWNERS AND OPERATORS OF CONSTRUCTION ACTIVITY THAT FAIL TO OBTAIN PERMIT COVERAGE ARE OPEN TO THIRD-PARTY CIVIL SUITS. SITES THAT LACK PERMIT COVERAGE AND/OR FAIL TO MEET PERMIT TERMS AND CONDITIONS WILL BE SUBJECT TO **MPCA** ENFORCEMENT ACTION, CIVIL PENALTIES AND/OR CRIMINAL CHARGES. HIRED CONTRACTOR SHALL BE RESPONSIBLE TO OBTAIN PERMIT PRIOR TO CONSTRUCTION STARTING. THE PREPARED CONSTRUCTION PLANS FOR THE PROJECT WILL SERVE AS THE STORMWATER POLLUTION PREVENTION PLAN (SWPPP). WWW.PCA.STATE.MN.US

COOPERATORS AGREEMENT STATEMENT

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

SIGNATURE: _____ DATE: _____

CONSTRUCTION REQUIREMENTS

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

CONSTRUCTION CERTIFICATION STATEMENT

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

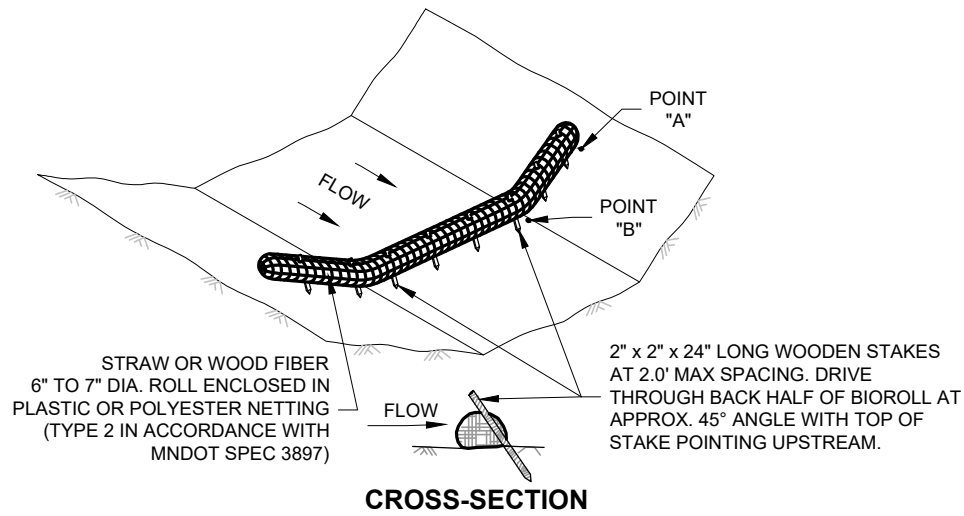
SIGNATURE: _____ DATE: _____

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.
THOMAS A. WENZEL DATE: 5/20/24 P.E. NO. 22148



MORGAN - REDWOOD COUNTY
ROAD BANKING WETLAND RESTORATION
COVERSHEET

REV#	DATE	REVISION DESCRIPTION	BY	HORZ DATUM: NAD83	SURVEY DATE: 11/2/2021	DESIGN DATE: 5/20/24	PROJECT #:
				VERT DATUM: NAVD88	SURVEYED BY: KB, SD	DESIGNED BY: JRL	2021-203
				GEODETIC CONTROL REF: MNDOT DISK "	DRAWN BY: JRL	DRAWN BY: JRL	SHEET NO.
				CONTROL EL.: 1035.74	CHECKED BY: TAW	CHECKED BY: TAW	1 OF 21

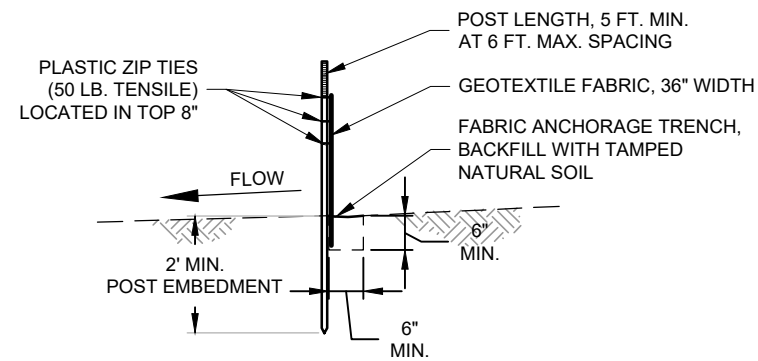


CROSS-SECTION

NOTE:
POINT "A" MUST BE A MINIMUM OF 6 INCHES HIGHER THAN POINT "B" TO ENSURE THAT WATER FLOWS OVER THE DITCH CHECK AND NOT AROUND THE ENDS.

BIOROLL DITCH CHECK

NOT TO SCALE

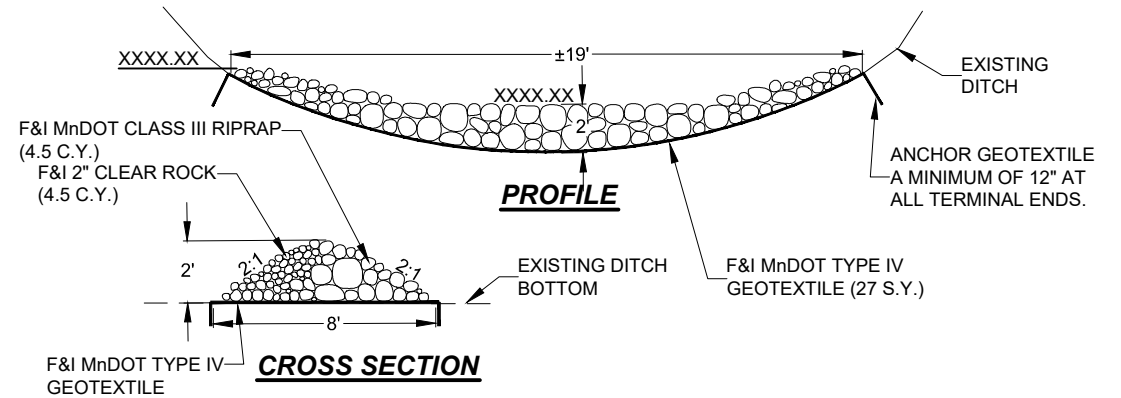


NOTE:

1. SILT SHALL BE REMOVED WHEN IT REACHES HALF THE FENCE HEIGHT.
2. CONTRACTOR SHALL NOT REMOVE FENCE UNTIL DIRECTED BY ENGINEER.
3. MACHINE SLICED SILT FENCE MEETING MnDOT SPECIFICATION 3886.1 ACCEPTABLE

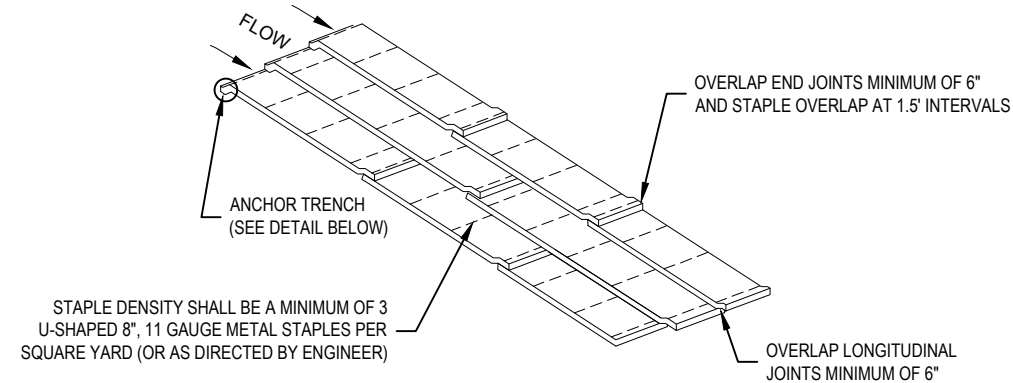
HEAVY DUTY SILT FENCE

NOT TO SCALE



ROCK WEEPER DETAILS

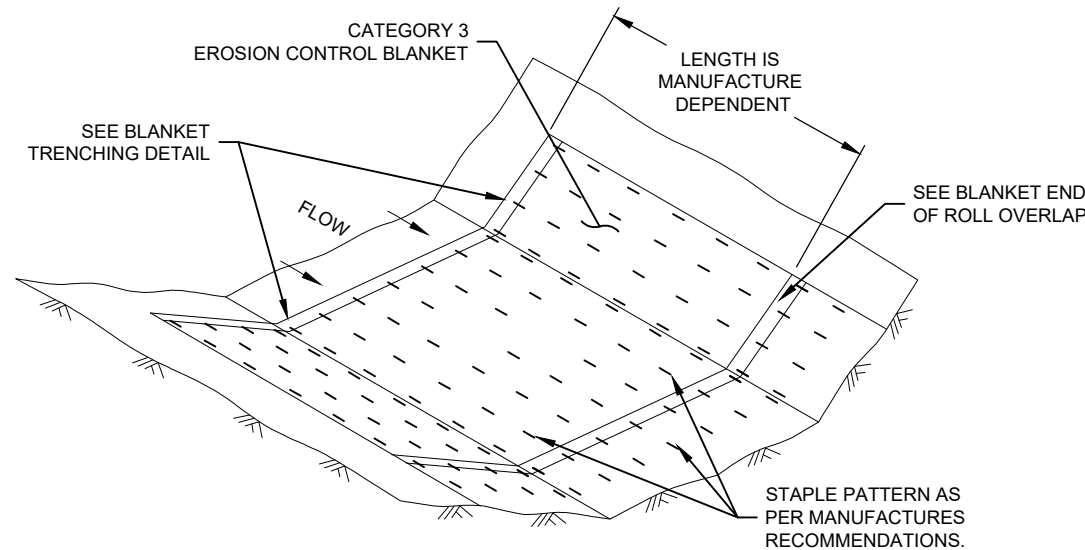
NOT TO SCALE



EROSION CONTROL BLANKET DETAIL

(SLOPE)

NOT TO SCALE



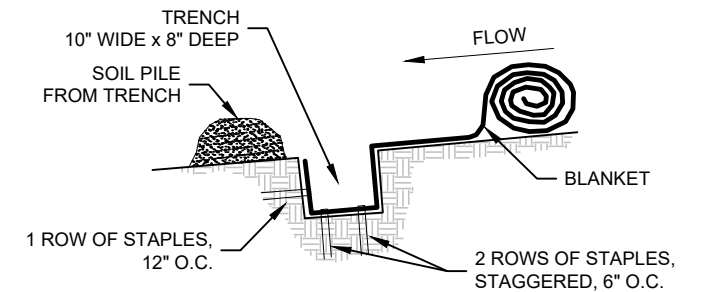
EROSION CONTROL BLANKET LAYOUT

(CHANNEL)

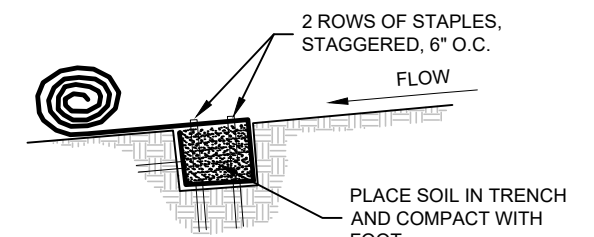
NOT TO SCALE

NOTES:

1. SLOPE SURFACE SHALL BE FREE OF ROCKS, CLODS, STICKS AND GRASS. MATS/BLANKETS SHALL HAVE GOOD SOIL CONTACT.
2. APPLY PERMANENT SEEDING BEFORE PLACING BLANKETS.
3. LAY BLANKETS LOOSELY AND STAKE OR STAPLE TO MAINTAIN DIRECT CONTACT WITH THE SOIL. DO NOT STRETCH.
4. STAKING OR STAPLING LAYOUT PER MANUFACTURERS SPECIFICATIONS.



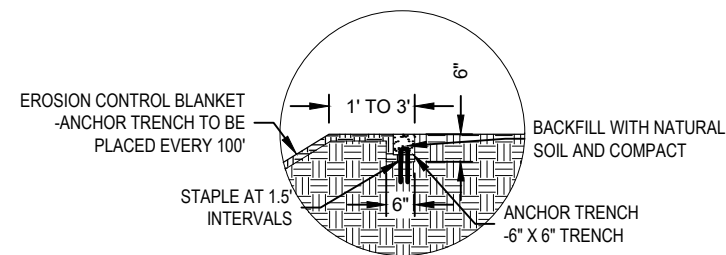
STEP 1



STEP 2

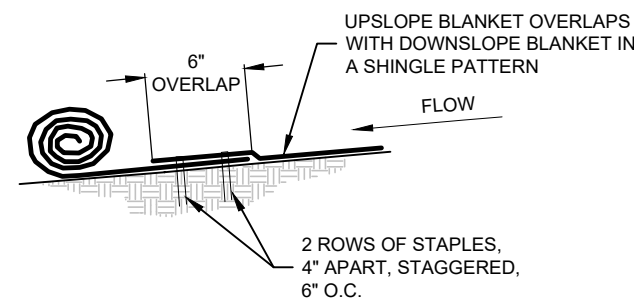
BLANKET TRENCHING DETAIL

NOT TO SCALE



EROSION CONTROL BLANKET ANCHOR TRENCH

NOT TO SCALE



BLANKET END OF ROLL OVERLAP

NOT TO SCALE

EROSION CONTROL NOTE:

Unless specifically requested or identified elsewhere within this construction plan, these erosion and sediment control BMP's are for reference only and their use and installation will only be required when it is necessary to maintain compliance with BWSR Construction Specification 2.110.

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.



MORGAN - REDWOOD COUNTY
ROAD BANKING WETLAND RESTORATION
EROSION CONTROL DETAILS

PROJECT #:

2021-203

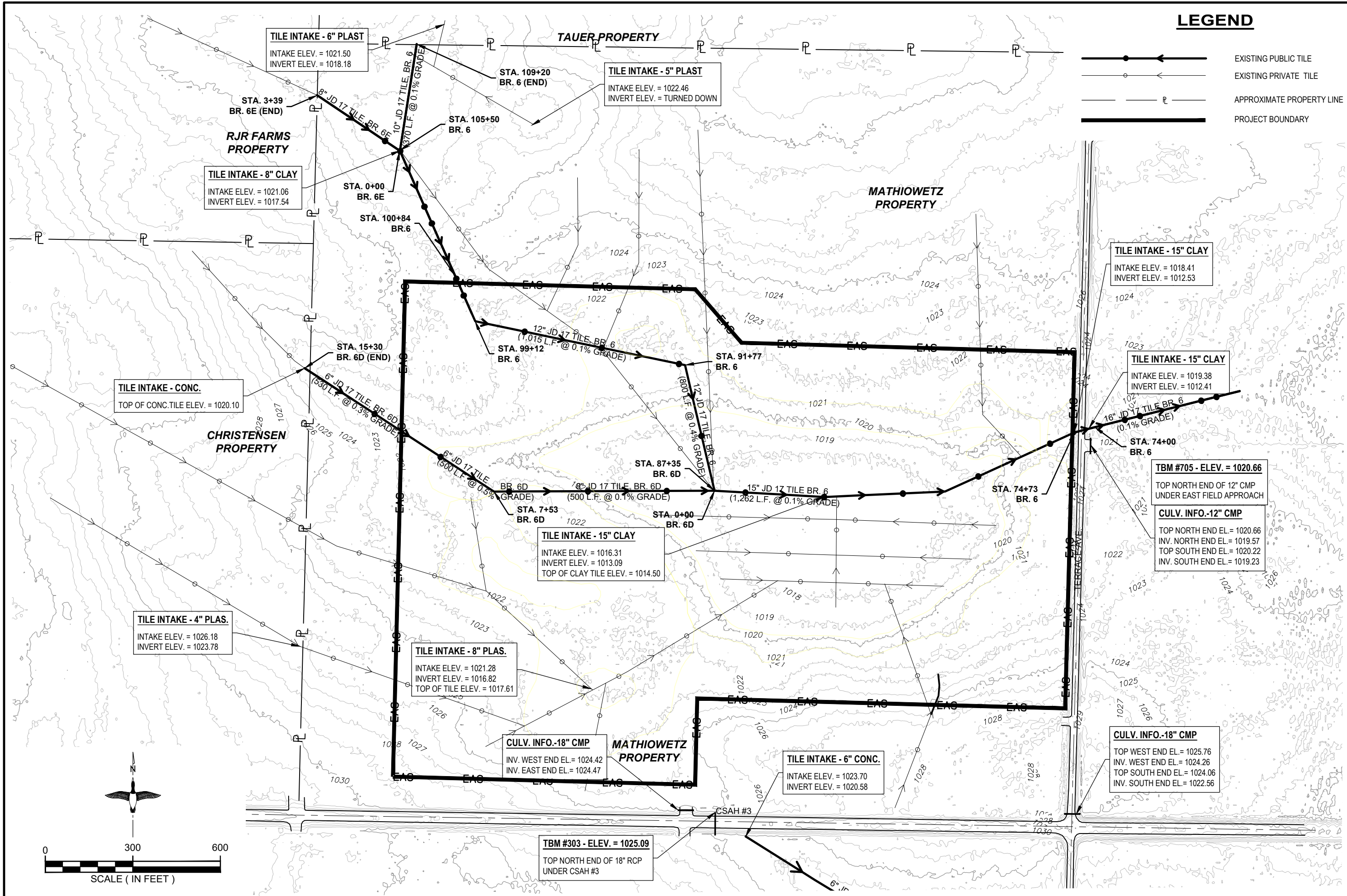
SHEET NO.

2 OF 21

LIC. NO. 22148

DATE: 5/20/24

THOMAS A. WIENZEL



LEGEND

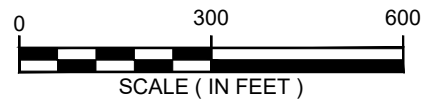
- EXISTING PUBLIC TILE
- EXISTING PRIVATE TILE
- APPROXIMATE PROPERTY LINE
- PROJECT BOUNDARY

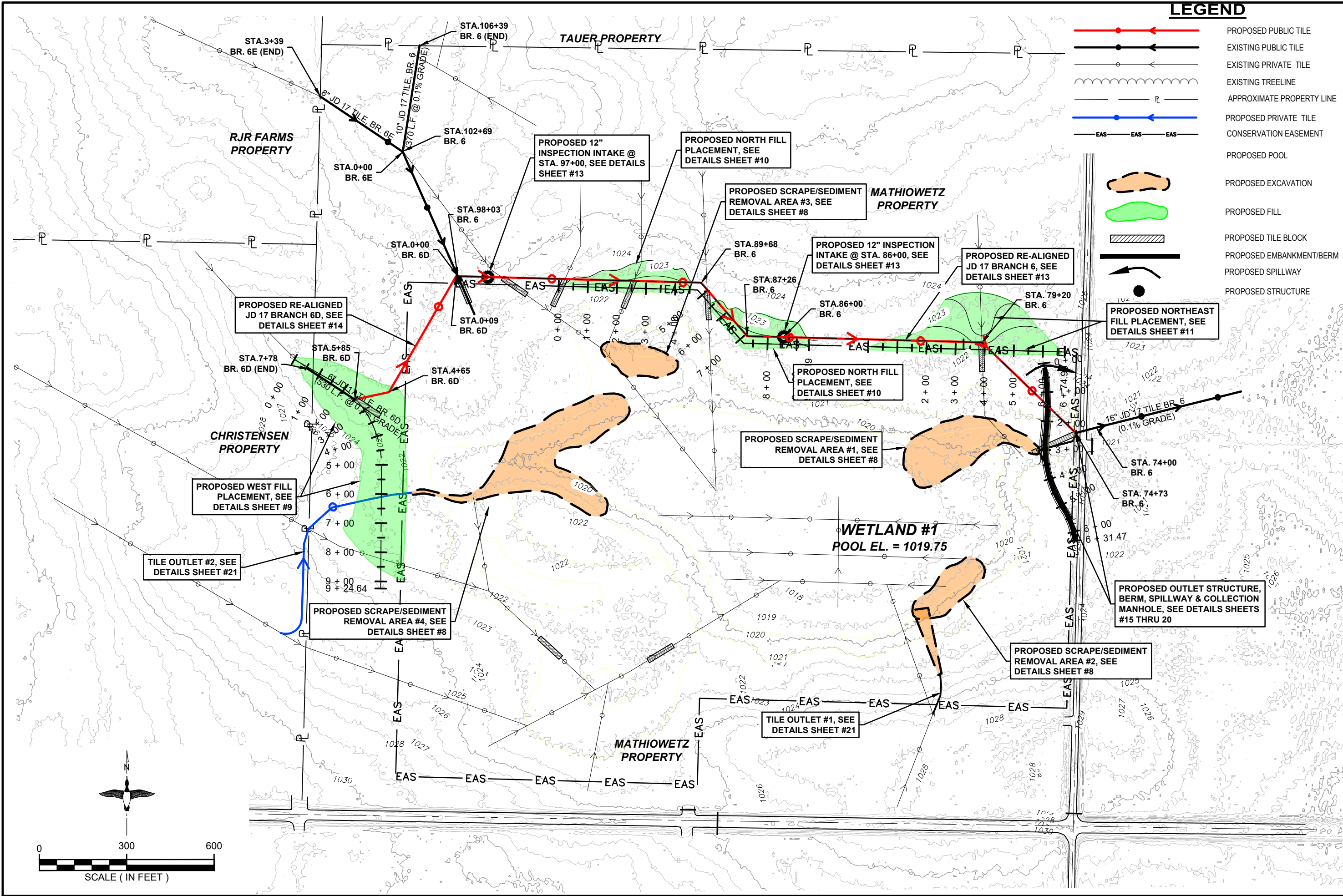
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 THOMAS A. WENZEL DATE: 5/20/24 LIC. NO. 22148



**MORGAN - REDWOOD COUNTY
 ROAD BANKING WETLAND RESTORATION
 EXISTING CONDITIONS AND DRAINAGE FEATURES**

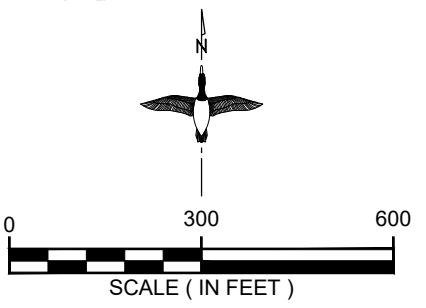
PROJECT #: 2021-203
 SHEET NO. 3 OF 21





LEGEND

- PROPOSED PUBLIC TILE
- EXISTING PUBLIC TILE
- EXISTING PRIVATE TILE
- EXISTING TREELINE
- APPROXIMATE PROPERTY LINE
- PROPOSED PRIVATE TILE
- CONSERVATION EASEMENT
- PROPOSED POOL
- PROPOSED EXCAVATION
- PROPOSED FILL
- PROPOSED TILE BLOCK
- PROPOSED EMBANKMENT/BERM
- PROPOSED SPILLWAY
- PROPOSED STRUCTURE
- PROPOSED NORTHEAST FILL PLACEMENT, SEE DETAILS SHEET #11

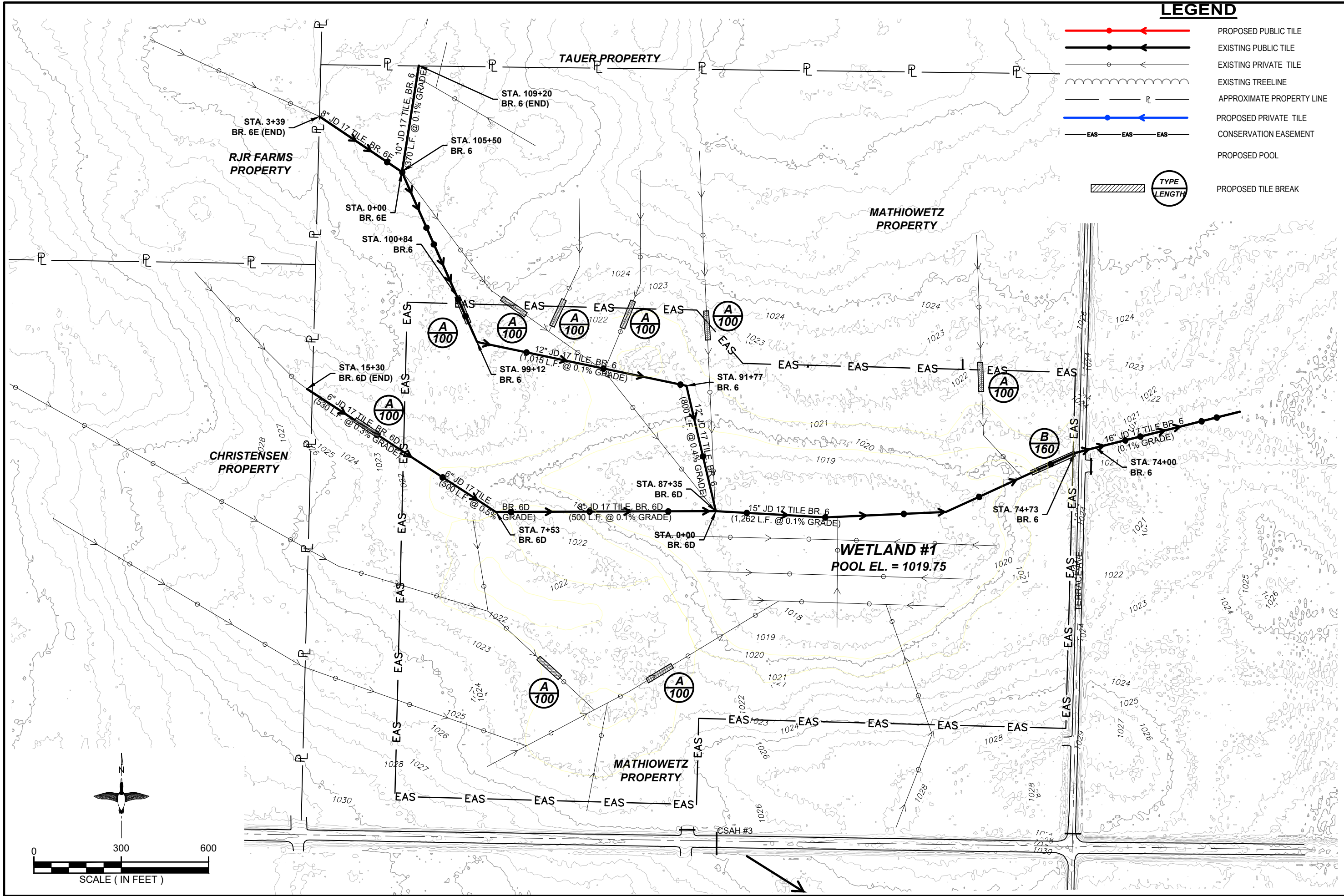


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 THOMAS A. WENZEL DATE: 5/20/24 LIC. NO. 22148



MORGAN - REDWOOD COUNTY
 ROAD BANKING WETLAND RESTORATION
 PLAN VIEW

PROJECT #:
2021-203
 SHEET NO.
4 OF 21



LEGEND

- PROPOSED PUBLIC TILE
- EXISTING PUBLIC TILE
- EXISTING PRIVATE TILE
- EXISTING TREELINE
- APPROXIMATE PROPERTY LINE
- PROPOSED PRIVATE TILE
- CONSERVATION EASEMENT
- PROPOSED POOL
- PROPOSED TILE BREAK

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.

THOMAS A. WENZEL DATE: 5/20/24 LIC. NO.: 22148

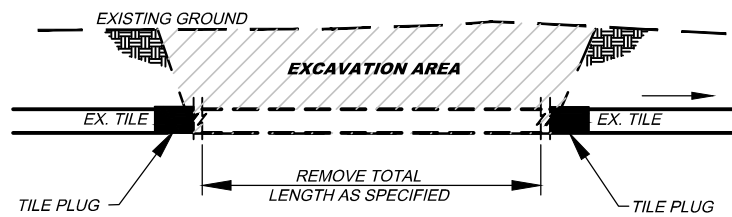


MORGAN - REDWOOD COUNTY
ROAD BANKING WETLAND RESTORATION
PROPOSED TILE BLOCK LOCATIONS

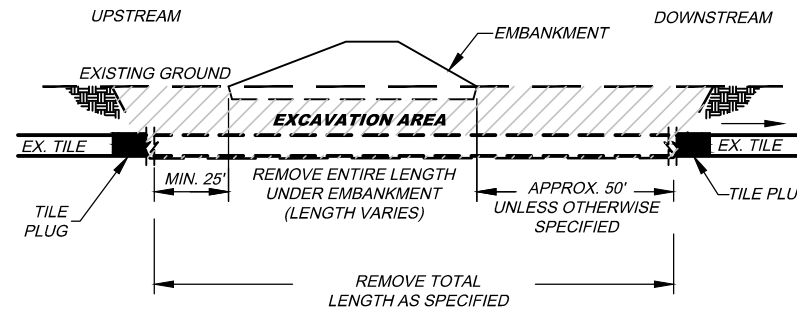
PROJECT #:
2021-203

SHEET NO.
5 OF **21**

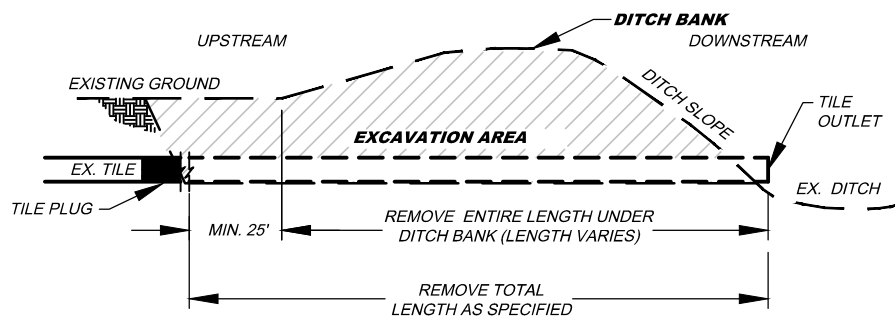
TILE REMOVAL DETAILS/ REQUIREMENTS



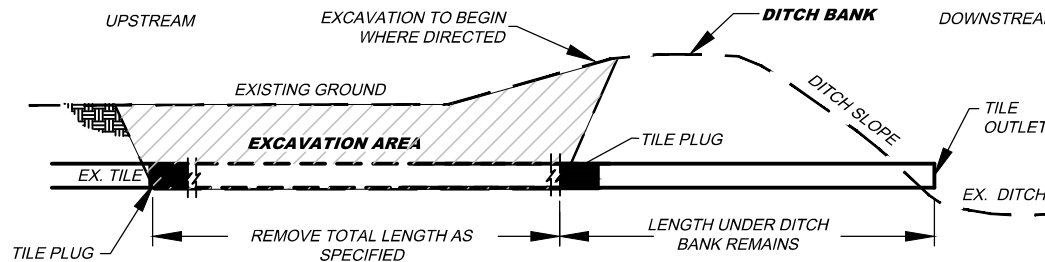
TYPICAL
NOT TO SCALE



UNDER EMBANKMENTS
NOT TO SCALE



AT OUTLET LOCATIONS
NOT TO SCALE



**AT OUTLET LOCATIONS WHERE DIRECTED
TO NOT DISTURB DITCH BANK**
NOT TO SCALE

TILE BLOCK / REMOVAL TABLE

TILE BLOCK CONSTRUCTION TYPE	NO. OF BLOCKS REQUIRED	TOTAL LINEAR FEET OF TILE TO BE REMOVED
A	9	900
B	1	160

DESIGN PLAN IDENTIFICATION

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



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

CONSTRUCTION REQUIREMENTS

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

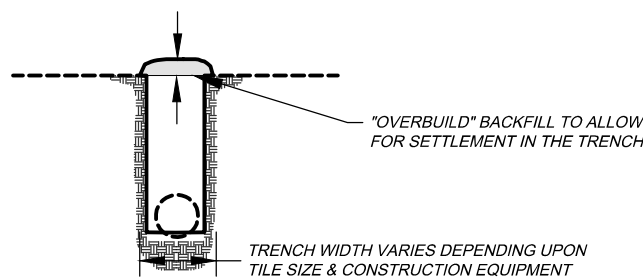
TILE REMOVAL (EXCAVATION):

- THE WORK SHALL INCLUDE ALL LABOR, MATERIALS, AND EQUIPMENT REQUIRED TO COMPLETE THE EXCAVATION AND REMOVAL OF ALL IDENTIFIED TILE DRAINAGE SYSTEMS.
- IDENTIFIED DRAINAGE TILE SHALL BE EXCAVATED AND REMOVED AS REQUIRED BY THE DRAWINGS, AS STAKED, OR AS OTHERWISE SPECIFIED BY THE ENGINEER.
- REFER TO BWSR SPECIFICATION 2.260 "TILE DRAINAGE SYSTEM BLOCKS" FOR ADDITIONAL INFORMATION AND REQUIREMENTS FOR PLUGGING THE TILE ENDS AND BACKFILLING THE EXCAVATED TRENCH.

TILE REMOVAL TRENCH CONSTRUCTION REQUIREMENTS

TYPE A

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



NOT TO SCALE

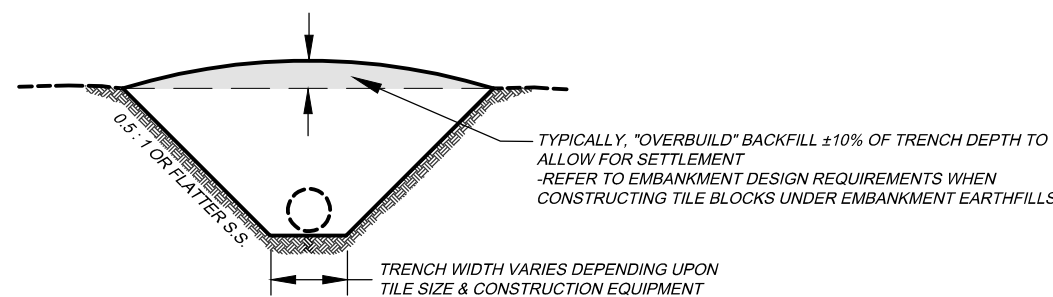
AT LOCATION OF TILE BLOCKS, A SLOPED OR BENCHED TRENCH EXCAVATION MAY BE NECESSARY TO SAFELY PLUG TILE.

THE TRENCH SHALL BE BACKFILLED USING PREVIOUSLY EXCAVATED SOILS.

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

TYPE B

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



NOT TO SCALE

• THE TRENCH SHALL BE BACKFILLED WITH THE MOST SUITABLE MATERIAL AVAILABLE IN LIFTS NOT TO EXCEED 12 INCHES BEFORE COMPACTION. COMPACT EACH LIFT TO A DENSITY EQUAL TO THAT OF THE SURROUNDING UNDISTURBED SOIL. TO ACHIEVE THE REQUIRED COMPACTION DENSITY, COMPACT SOIL IN LIFTS UP TO THE ORIGINAL GROUND SURFACE USING A JUMPING JACK, SHEEPSFOOT ROLLER OR SIMILAR MECHANICAL COMPACTION EQUIPMENT (BUCKET TAMPING WILL NOT BE ALLOWED).

• THE SMALL AMOUNT OF ADDITIONAL MATERIAL NEEDED FOR REQUIRED OVERBUILD CAN BE LIGHTLY COMPACTED WITH TRACKED EQUIPMENT TO ENABLE SUITABLE VEGETATION ESTABLISHMENT.

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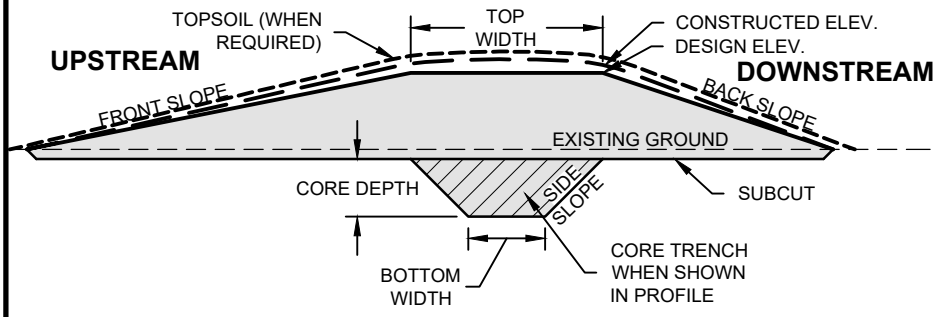


MORGAN - REDWOOD COUNTY
ROAD BANKING WETLAND RESTORATION
TILE BLOCK REMOVAL DETAILS

PROJECT #:
2021-203

SHEET NO.
6 OF **21**

EMBANKMENT CONSTRUCTION REQUIREMENTS



EMBANKMENT DETAIL
NOT TO SCALE

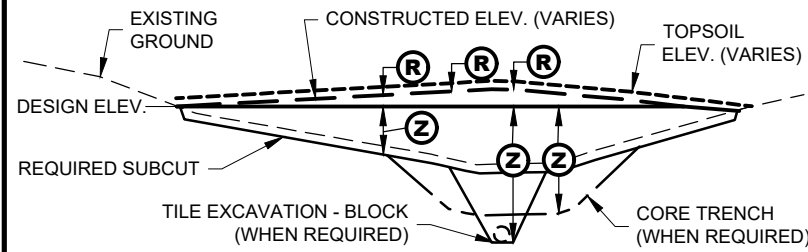
SUBCUT DIMENSIONS SHOWN ON EMBANKMENT PROFILE ARE MINIMUMS. THE SUBCUT DEPTH MAY NEED TO BE INCREASED BASED ON SITE AND SOIL CONDITIONS. ENGINEER MAY DIRECT WHEN TO EXCAVATE TO DIFFERENT DEPTHS THAN SHOWN.

THE FILL VOLUME SHOWN FOR AN EMBANKMENT INCLUDES QUANTITIES FOR SUBCUT AND SETTLEMENT ALLOWANCE.

PLACE ±4 INCHES OF STRIPPED TOPSOIL ON THE ENTIRE EMBANKMENT SURFACE AFTER CONSTRUCTED ELEVATION IS ACHIEVED. TOPSOIL MATERIAL USED SHALL BE SUITABLE FOR VEGETATION ESTABLISHMENT.

WHEN REQUIRED ON EMBANKMENT PROFILE, CORE TRENCH DEPTHS MAY VARY BASED ON SITE AND SOIL CONDITIONS. ENGINEER MAY DIRECT WHEN TO EXCAVATE TO DIFFERENT DEPTHS THAN SHOWN.

DETERMINING CONSTRUCTED ELEVATION

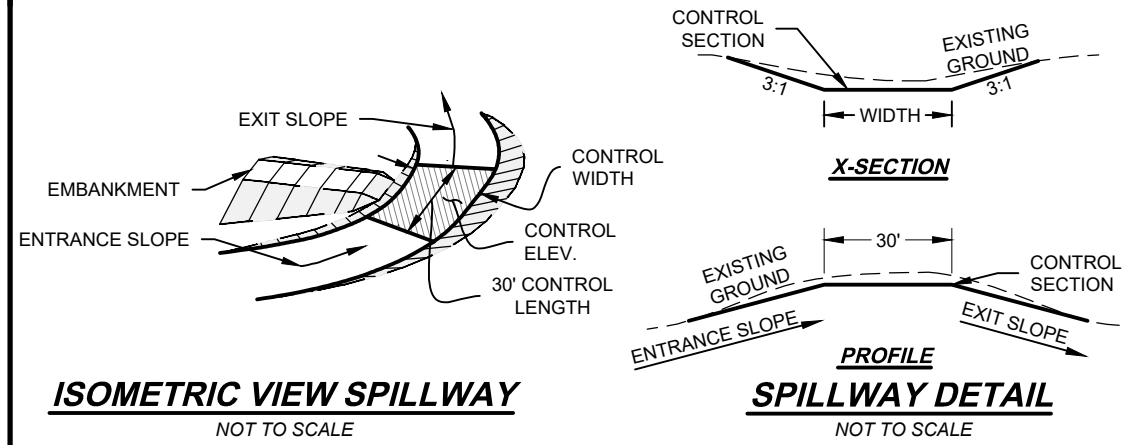


CONSTRUCTED ELEVATION INCLUDES REQUIRED AMOUNT OF OVERBUILD ADDED TO DESIGN ELEVATION TO ACCOUNT FOR EXPECTED SETTLEMENT.

- Z** - TOTAL FILL HEIGHT (DESIGN ELEVATION - SUBGRADE ELEVATION)
- R** - SETTLEMENT AMOUNT (OVERBUILD) = **Z** x SETTLEMENT % (PER PLAN)

NOTE: THE FIGURE PROVIDED ILLUSTRATES THIS FOR A CONSTRUCTED EMBANKMENT, HOWEVER, THIS REQUIREMENT FOR OVERBUILD APPLIES TO ALL CONSTRUCTED FILLS. TOPSOIL NOT TO BE INCLUDED IN CONSTRUCTED ELEVATION.

SPILLWAY CONSTRUCTION REQUIREMENTS



ISOMETRIC VIEW SPILLWAY
NOT TO SCALE

PROFILE SPILLWAY DETAIL
NOT TO SCALE

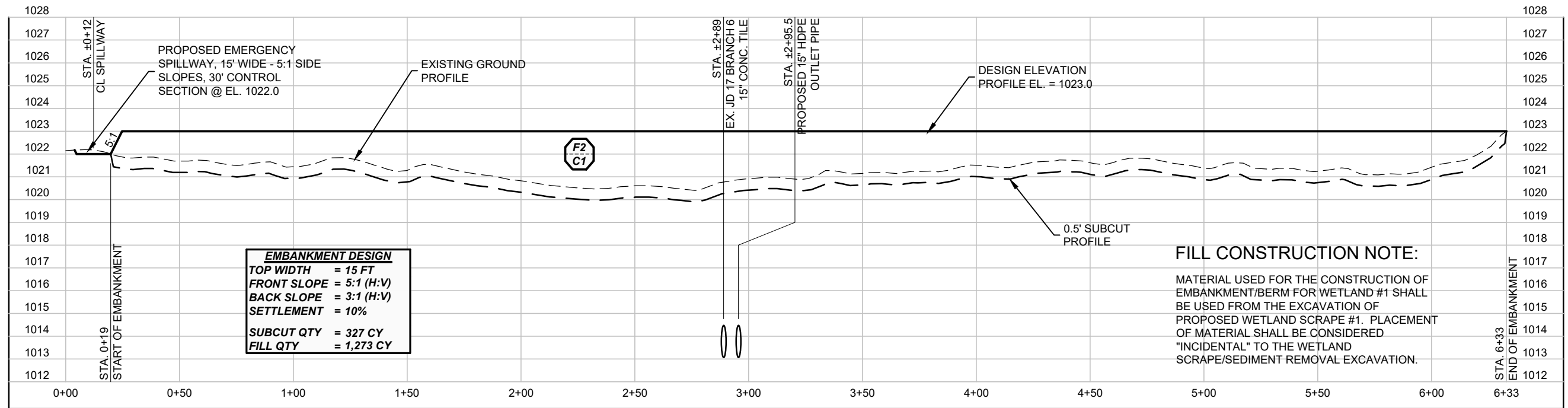
ENTRANCE AND EXIT SLOPES SHALL BE EXCAVATED / GRADED TO ENSURE POSITIVE DRAINAGE IN AND OUT OF SPILLWAY CONTROL SECTION.

ELEVATION AND WIDTH OF CONTROL SECTION SHALL BE AS SHOWN ON PLAN VIEW AND/OR ASSOCIATED EMBANKMENT PROFILE

THE ABILITY TO ESTABLISH QUALITY VEGETATION WITHIN THE CONSTRUCTED SPILLWAY SECTION WILL BE CRITICAL TO THE SPILLWAY'S FUNCTION. WHEN SPILLWAY EXCAVATION RESULTS IN A CONDITION THAT IS UNSUITABLE FOR VEGETATION ESTABLISHMENT, OVER EXCAVATE AS DIRECTED OR NECESSARY TO PROVIDE SUITABLE SUBSTRATE FOR VEGETATION ESTABLISHMENT. (TYPICALLY 4"-6" TOPSOIL)

FINISHED SURFACE SHALL BE REASONABLY SMOOTH AND ACHIEVE / MEET CONTROL ELEVATION SHOWN ABOVE PRIOR TO SEEDING.

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 THOMAS A. WENZEL DATE: 5/20/24 LIC. NO.: 22148



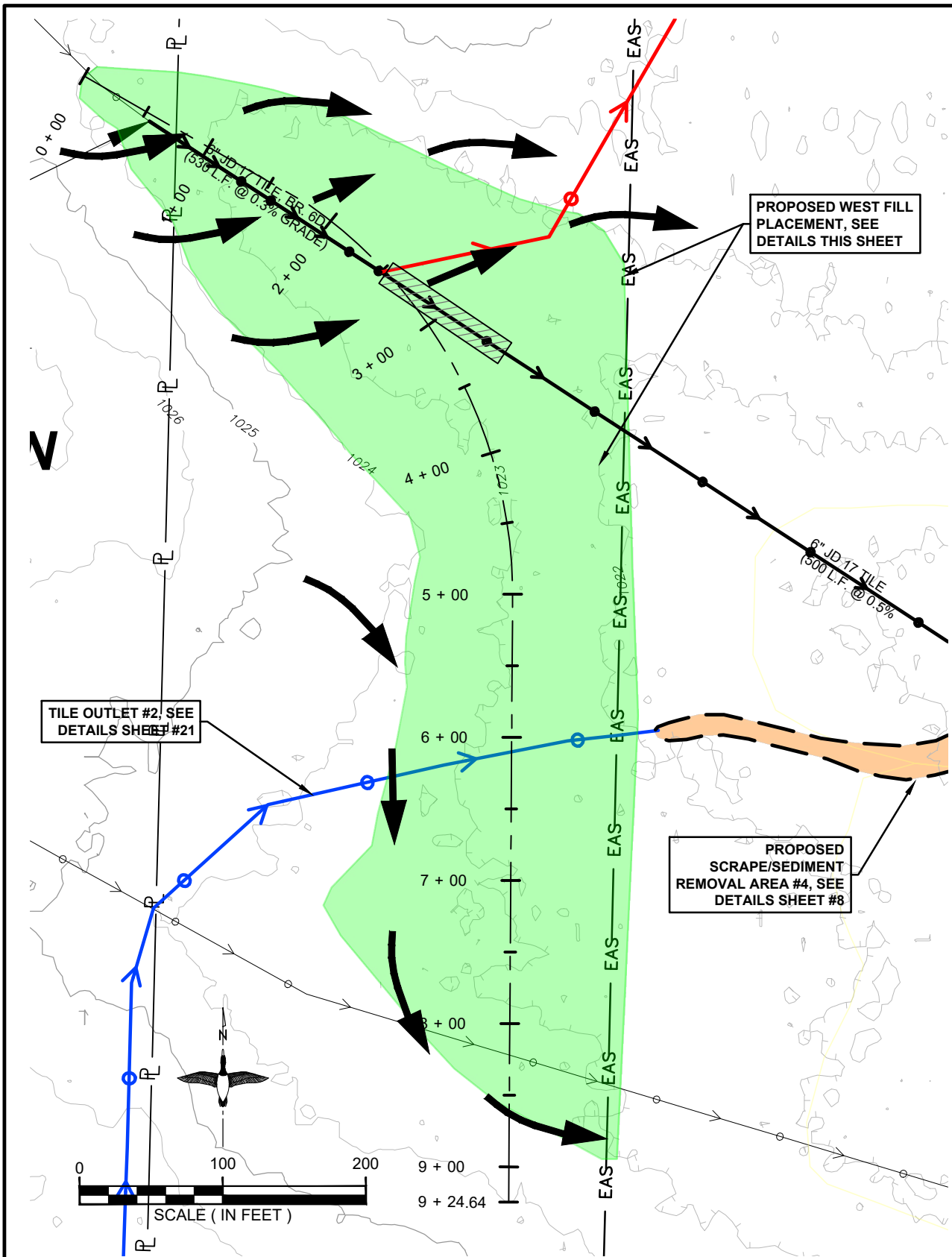
EMBANKMENT DESIGN	
TOP WIDTH	= 15 FT
FRONT SLOPE	= 5:1 (H:V)
BACK SLOPE	= 3:1 (H:V)
SETTLEMENT	= 10%
SUBCUT QTY	= 327 CY
FILL QTY	= 1,273 CY

FILL CONSTRUCTION NOTE:
MATERIAL USED FOR THE CONSTRUCTION OF EMBANKMENT/BERM FOR WETLAND #1 SHALL BE USED FROM THE EXCAVATION OF PROPOSED WETLAND SCRAPE #1. PLACEMENT OF MATERIAL SHALL BE CONSIDERED "INCIDENTAL" TO THE WETLAND SCRAPE/SEDIMENT REMOVAL EXCAVATION.

PROFILE ALONG CL OF EMBANKMENT/BERM FOR WETLAND #1
SCALE 1" = 50'

MORGAN - REDWOOD COUNTY
 ROAD BANKING WETLAND RESTORATION
 EMBANKMENT AND SPILLWAY DETAILS

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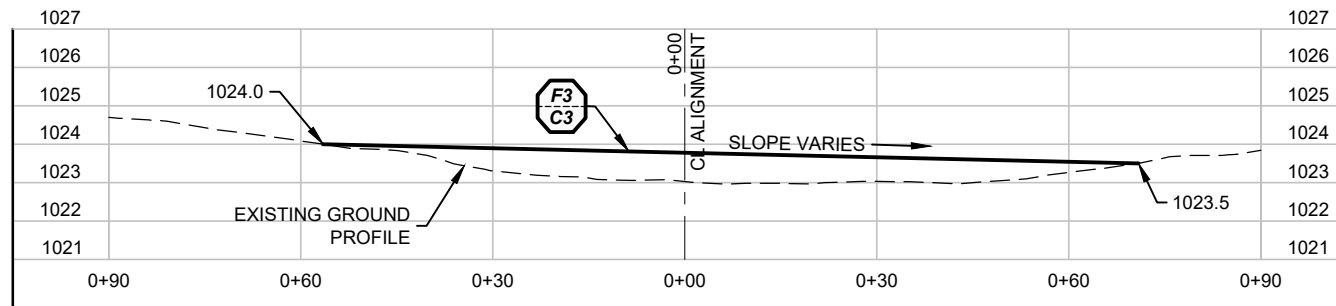


ENLARGED PLAN VIEW OF PROPOSED WEST FILL

SCALE 1" = 100'

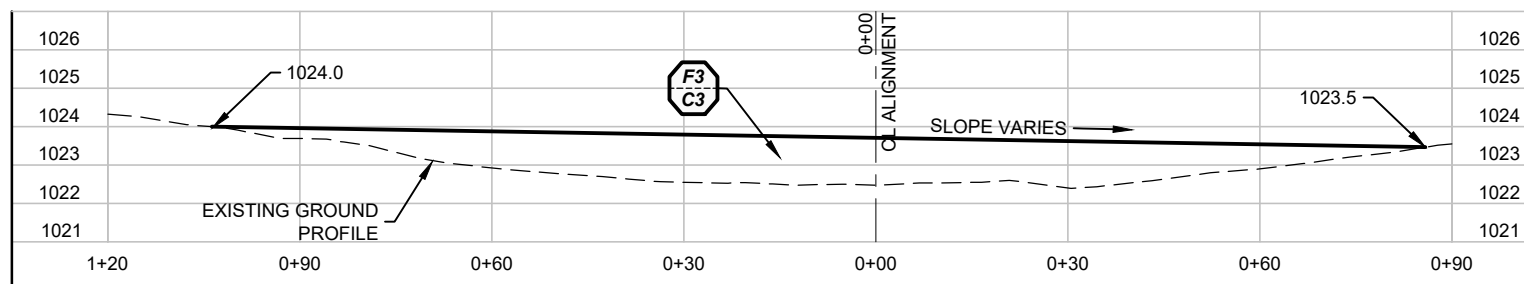
FILL CONSTRUCTION NOTE:

FILL SHALL BE PLACED AND GRADED ACCORDING TO THE X-SECTIONS PROVIDED TO DIVERT SURFACE RUNOUT IN DIRECTIONS SHOWN BY THE FLOW ARROWS. PLACEMENT AND GRADING OF FILL SHALL BE CONSIDERED "INCIDENTAL" TO THE EXCAVATION OF SCRAPER/SEDIMENT REMOVAL AREAS.



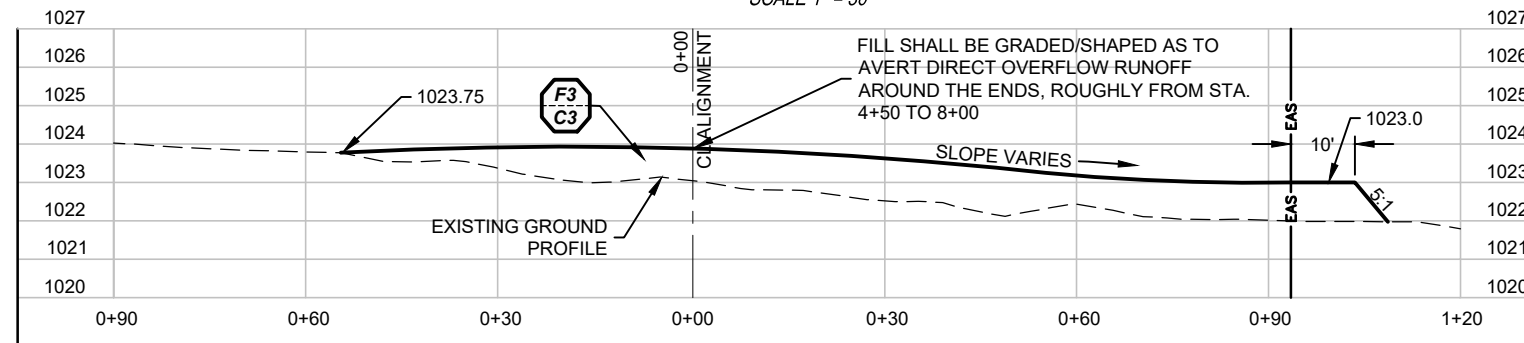
WEST FILL X-SECTION STA. 1+00

SCALE 1" = 30'



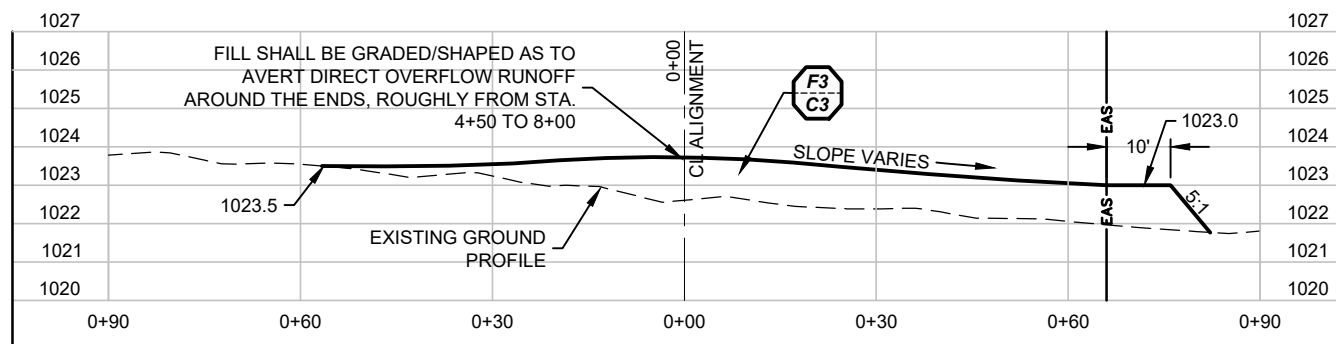
WEST FILL X-SECTION STA. 2+00

SCALE 1" = 30'



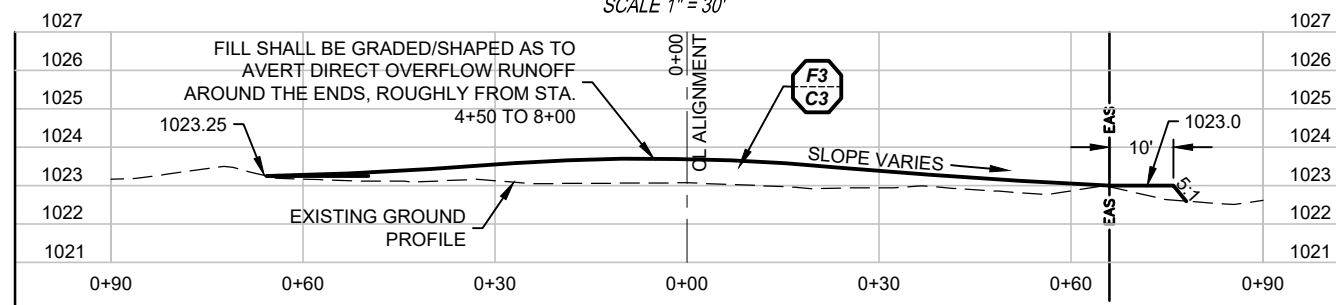
WEST FILL X-SECTION STA. 4+00

SCALE 1" = 30'



WEST FILL X-SECTION STA. 6+00

SCALE 1" = 30'



WEST FILL X-SECTION STA. 8+00

SCALE 1" = 30'

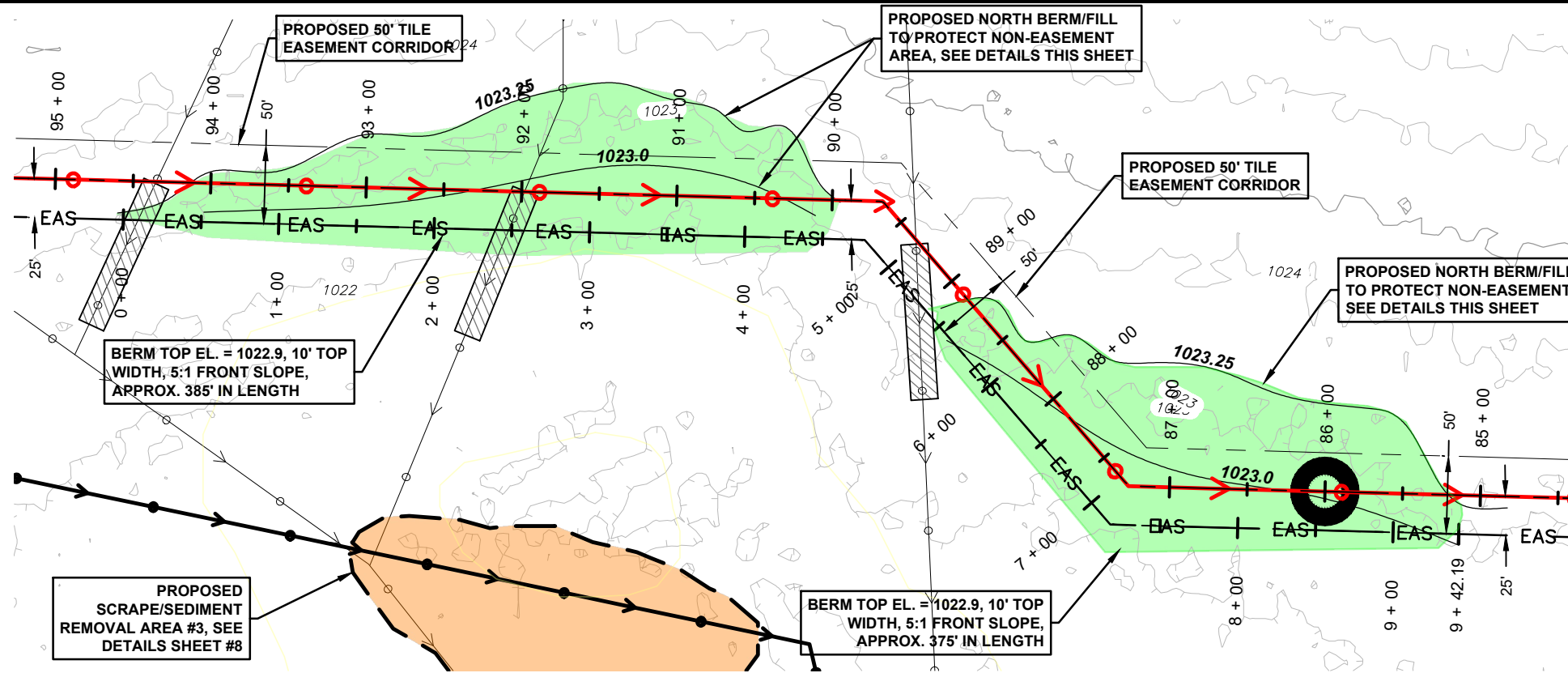
I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.



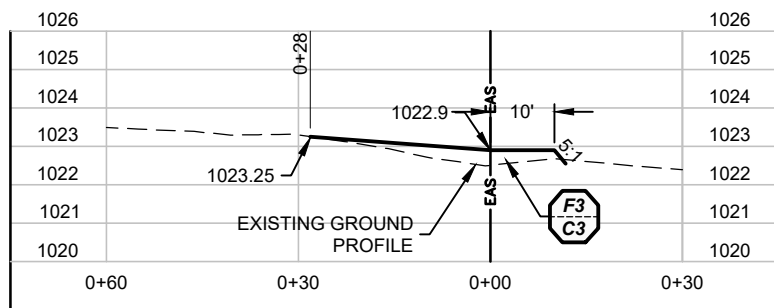
MORGAN - REDWOOD COUNTY
ROAD BANKING WETLAND RESTORATION
WEST FILL DETAILS

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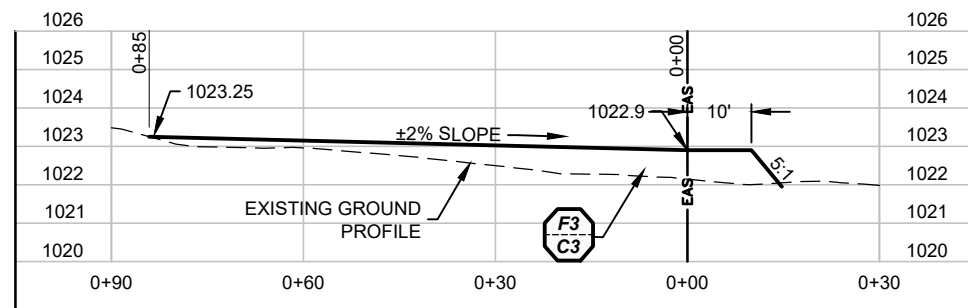
THOMAS A. WENZEL DATE: 5/20/24 LIC. NO. 22148



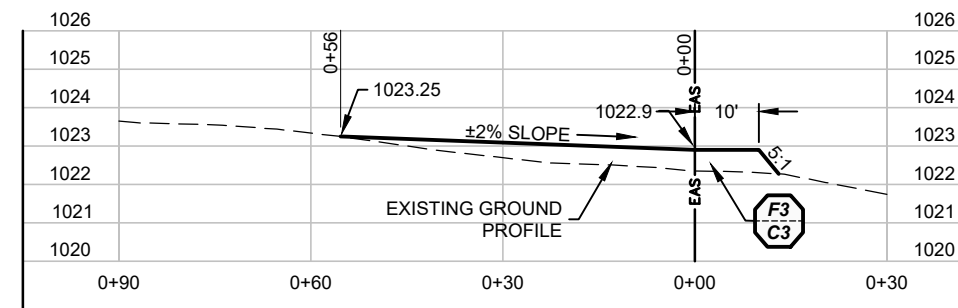
ENLARGED PLAN VIEW OF PROPOSED NORTH FILL
SCALE 1" = 100'



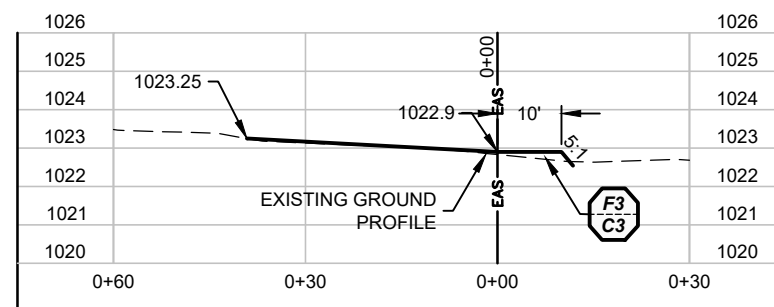
NORTH FILL X-SECTION STA. 1+00
SCALE 1" = 30'



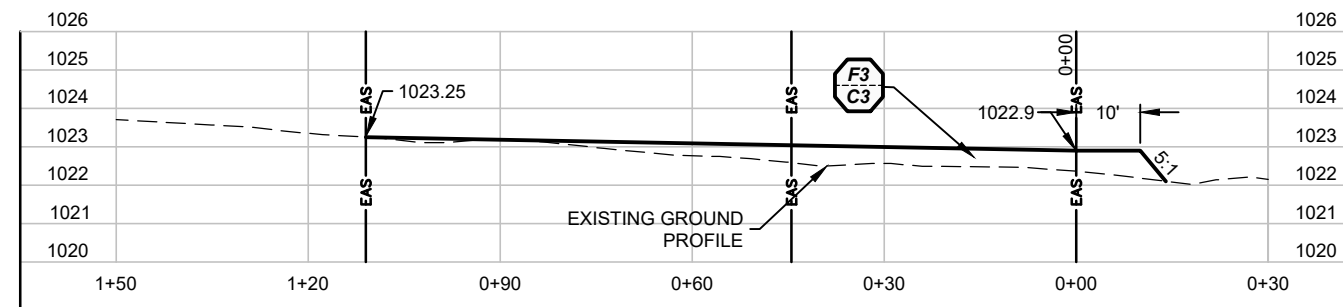
NORTH FILL X-SECTION STA. 3+00
SCALE 1" = 30'



NORTH FILL X-SECTION STA. 4+00
SCALE 1" = 30'



NORTH FILL X-SECTION STA. 6+00
SCALE 1" = 30'



NORTH FILL X-SECTION STA. 8+00
SCALE 1" = 30'

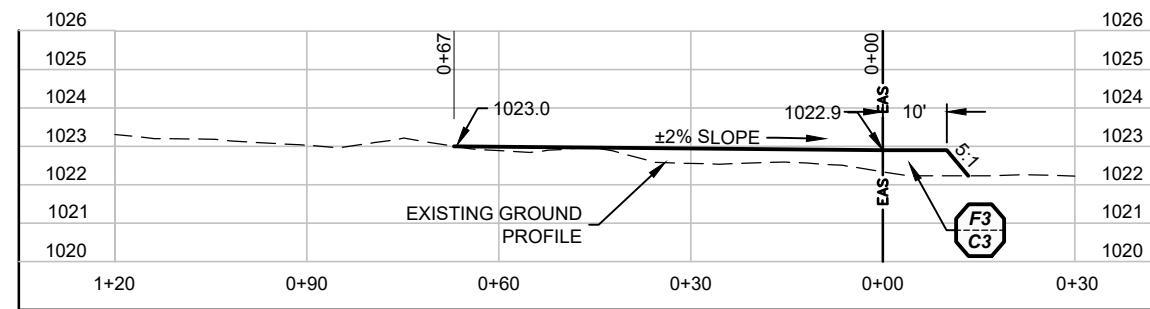
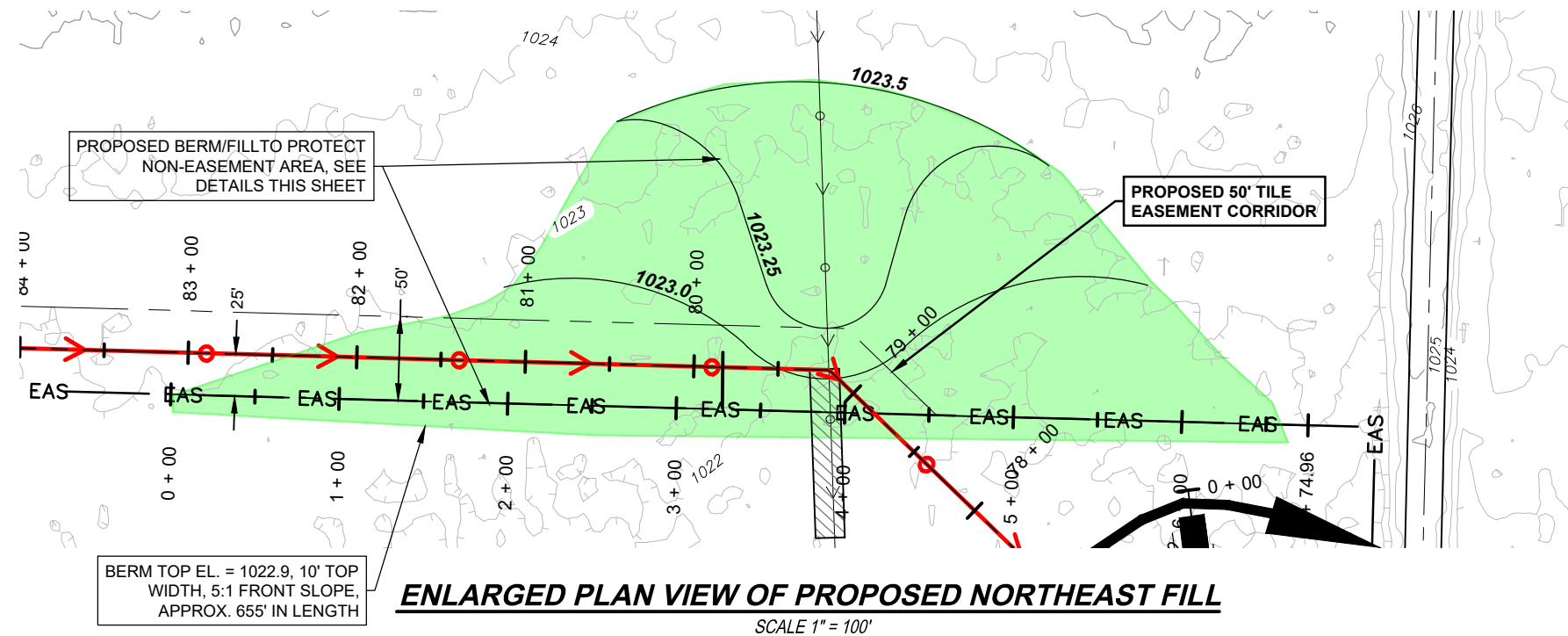
FILL CONSTRUCTION NOTE:
FILL SHALL BE PLACED AND GRADED ACCORDING TO THE X-SECTIONS PROVIDED. PLACEMENT AND GRADING OF FILL SHALL BE CONSIDERED "INCIDENTAL" TO THE EXCAVATION OF SCRAPE/SEDIMENT REMOVAL AREAS.

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.
THOMAS A. WENZEL DATE: 5/20/24 LIC. NO. 22148

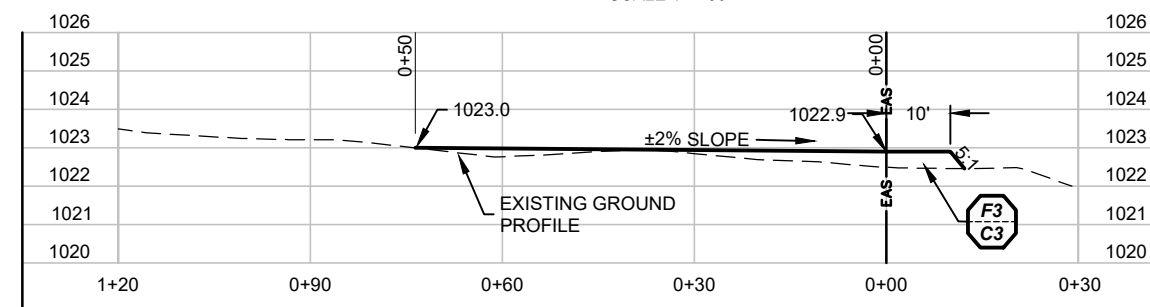
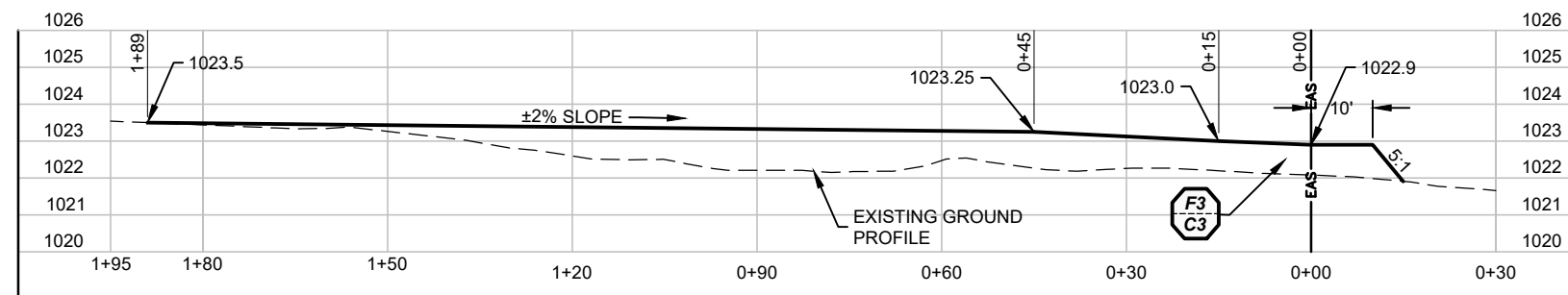


MORGAN - REDWOOD COUNTY
ROAD BANKING WETLAND RESTORATION
NORTH FILL DETAILS

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FILL CONSTRUCTION NOTE:
 FILL SHALL BE PLACED AND GRADED ACCORDING TO THE X-SECTIONS PROVIDED. PLACEMENT AND GRADING OF FILL SHALL BE CONSIDERED "INCIDENTAL" TO THE EXCAVATION OF SCRAPE/SEDIMENT REMOVAL AREAS.



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MORGAN - REDWOOD COUNTY
 ROAD BANKING WETLAND RESTORATION
 NORTHEAST FILL DETAILS

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THOMAS A. WENZEL DATE: 5/20/24 LIC. NO. 22148

SERIES 200 BEDDING DETAILS

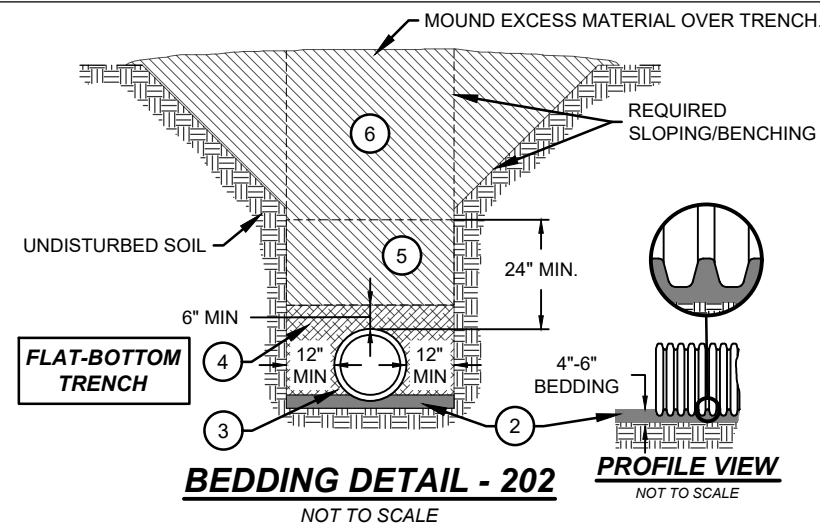
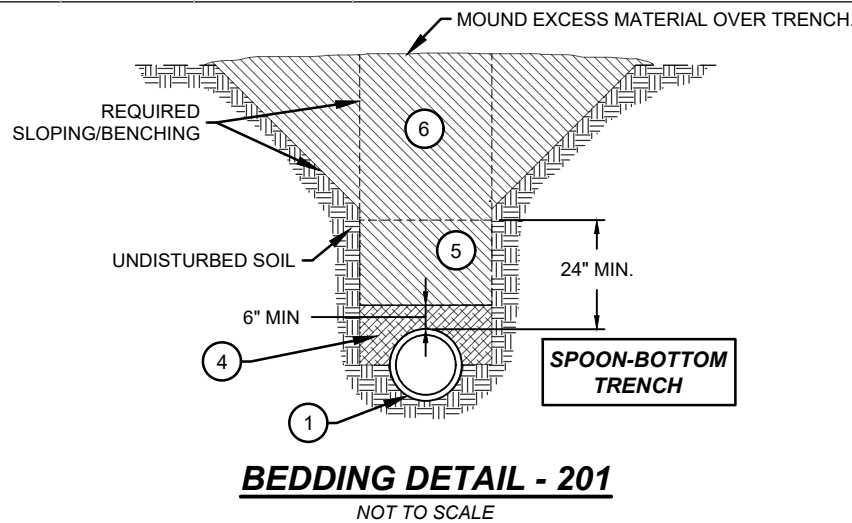
PURPOSE: SERIES 200 BEDDING DETAILS ARE FOR DEEPER INSTALLATION, OR WHERE OTHERWISE REQUIRED, OF CORRUGATED HDPE PIPE AND AGRICULTURAL DRAINAGE TILE.

SEE TABLE BELOW FOR APPROVED MATERIALS FOR BEDDING AND INITIAL BACKFILL

- ① SPOON TRENCH SHALL BE CUT HALF-CIRCLE TO A DEPTH SUCH THAT THE TOP OF THE SPOONED TRENCH BOTTOM EXTENDS TO PIPE SPRINGLINE, OR HIGHER. THE ROUNDED TRENCH BOTTOM SHOULD FIT THE PIPE DIMENSIONS AS CLOSE AS POSSIBLE, WITH A MAXIMUM GAP OF 1" ALLOWED ON EITHER SIDE OF THE PIPE.
- ② PRIOR TO SETTING PIPE, PLACE 4"-6" OF LOOSE FRIABLE APPROVED BEDDING MATERIAL IN THE TRENCH BOTTOM TO ALLOW FILLING OF BOTTOM VALLEYS OF THE PIPE AND TO ENSURE NO VOIDS EXIST WITHIN BEDDING ENVELOPE.
- ③ CAREFULLY LOAD THE PIPE PRIOR TO PLACING INITIAL BACKFILL. SPECIAL CARE MUST BE TAKEN TO FIRST KNIFE IN, COMPLETELY FILL AND COMPACT UNDER THE LOWER HALF OF THE PIPE WITH APPROVED INITIAL BACKFILL MATERIAL..
- ④ INITIAL BACKFILL USING CLASS I MATERIAL SHALL BE CAREFULLY DUMPED AROUND THE PIPE TO COMPLETELY FILL THE EMBEDMENT AREA AND REMOVE VOIDS. INITIAL BACKFILL USING CLASS II MATERIAL SHALL BE COMPACTED USING MANUALLY DIRECTED POWER TAMPERS, VIBRATING PLATE COMPACTORS, OR EQUIVALENT.
- ⑤ BACKFILL WITH EXCAVATED TRENCH MATERIAL AND COMPACT IN 4-6" LIFTS USING MANUALLY DIRECTED POWER TAMPERS OR EQUIVALENT FOR A DEPTH OF AT LEAST 24" ABOVE THE TOP OF THE PIPE.
- ⑥ BACKFILL AND COMPACT REMAINING SOILS PER THE REQUIREMENTS OF THE PLAN, WHEN SPECIFIED. IF NOT SPECIFIED, BACKFILL WITH EXCAVATED TRENCH MATERIAL, IF SUITABLE, AND MODERATELY COMPACT TO AVOID EXCESSIVE SETTLEMENT.

APPROVED MATERIALS FOR BEDDING AND INITIAL BACKFILL

SOIL CLASSIFICATION				SOIL DESCRIPTION
ASTM D2321	SIDD SOIL	AASHTO M 145	ASTM D2487	
Class I	-	-	-	GRADED OR CRUSHED STONE, CRUSHED GRAVEL
Class II	Category 1	A-1, A-3	GW, GP SW, SP	WELL-GRADED SAND, GRAVELS, AND GRAVEL/SAND MIXTURES; POORLY GRADED SAND, GRAVELS AND GRAVEL/SAND MIXTURE; LITTLE OR NO FINES.



BEDDING DETAILS 301 AND 302

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

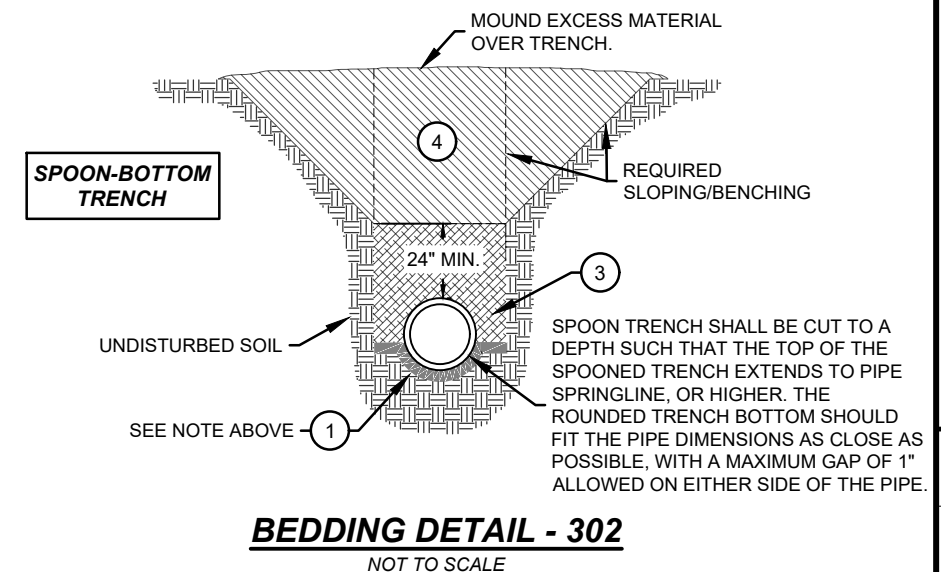
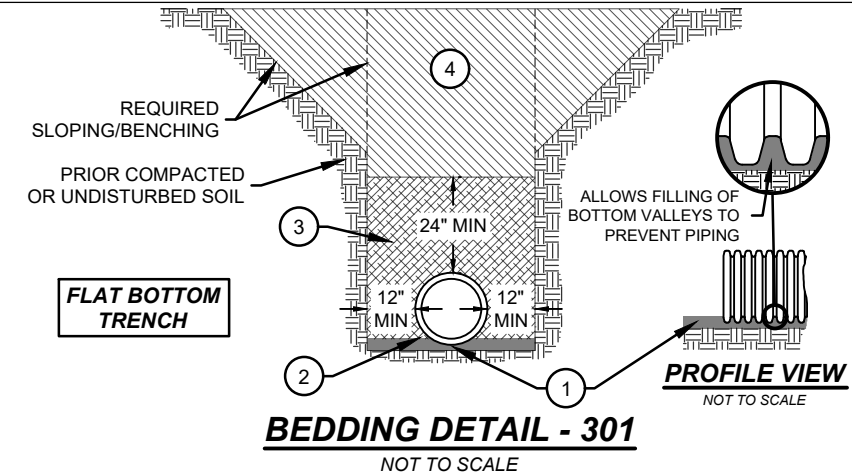
- ① PRIOR TO SETTING PIPE, PLACE 4"-6" OF LOOSE FRIABLE APPROVED SOILS (SEE BELOW) IN THE TRENCH BOTTOM TO ALLOW FILLING OF BOTTOM VALLEYS OF THE PIPE AND TO ENSURE NO VOIDS EXIST WITHIN BEDDING ENVELOPE.
- ② CAREFULLY LOAD THE PIPE PRIOR TO COMPLETELY BACKFILLING AND COMPACTING APPROVED SOILS (SEE BELOW) UNDER THE LOWER HALF OF THE PIPE.
- ③ THE BEDDING AND INITIAL BACKFILL SHALL CONSIST OF APPROVED SOILS FOR BACKFILL (SEE BELOW) PLACED IN 3"-4" LIFTS AND COMPACTED USING MANUALLY DIRECTED POWER TAMPERS OR EQUIVALENT FOR A DEPTH OF AT LEAST 24" ABOVE THE TOP OF THE PIPE.
- ④ BACKFILL AND COMPACT REMAINING SOILS PER THE REQUIREMENTS OF THE PLAN, WHEN SPECIFIED. IF NOT SPECIFIED, BACKFILL WITH EXCAVATED TRENCH MATERIAL, IF SUITABLE, AND MODERATELY COMPACT TO AVOID EXCESSIVE SETTLEMENT.

APPROVED SOILS FOR BEDDING AND BACKFILL - BEDDING SERIES 300

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

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

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

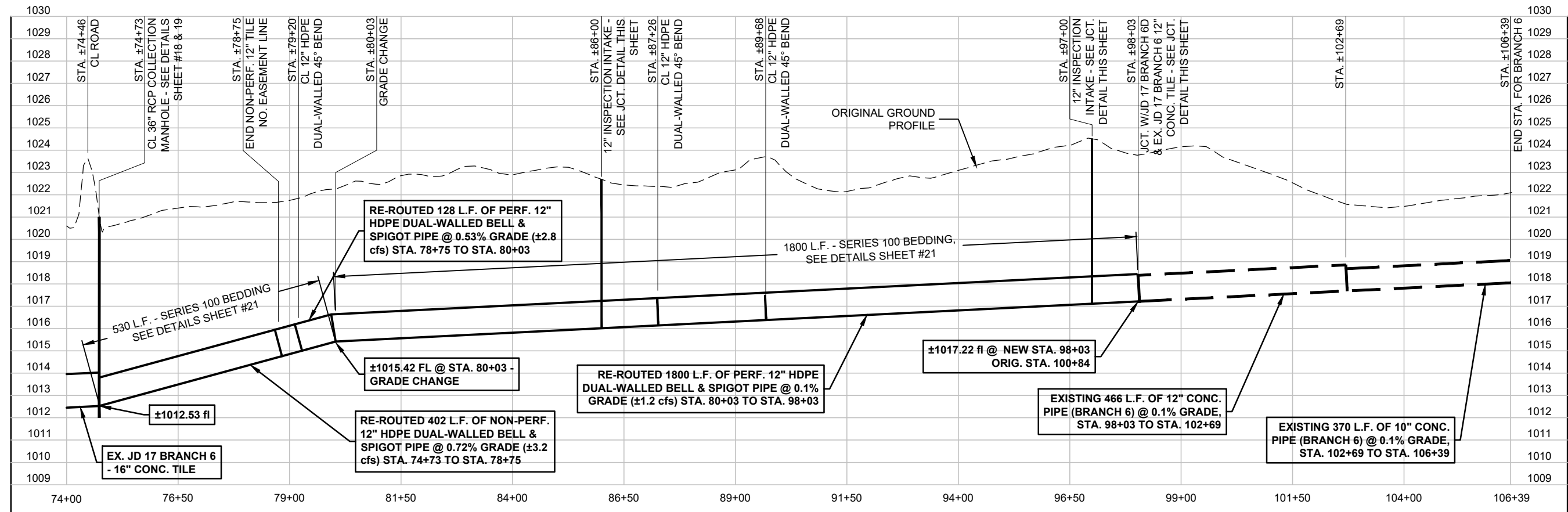


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THOMAS A. WENZEL
DATE: 9/20/24
LIC. NO.: 22148



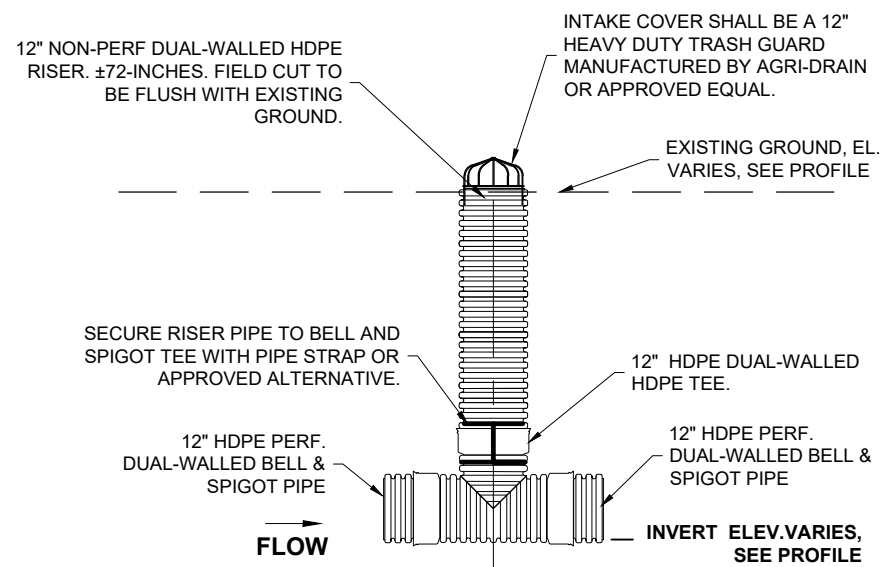
MORGAN - REDWOOD COUNTY
ROAD BANKING WETLAND RESTORATION
BEDDING DETAILS

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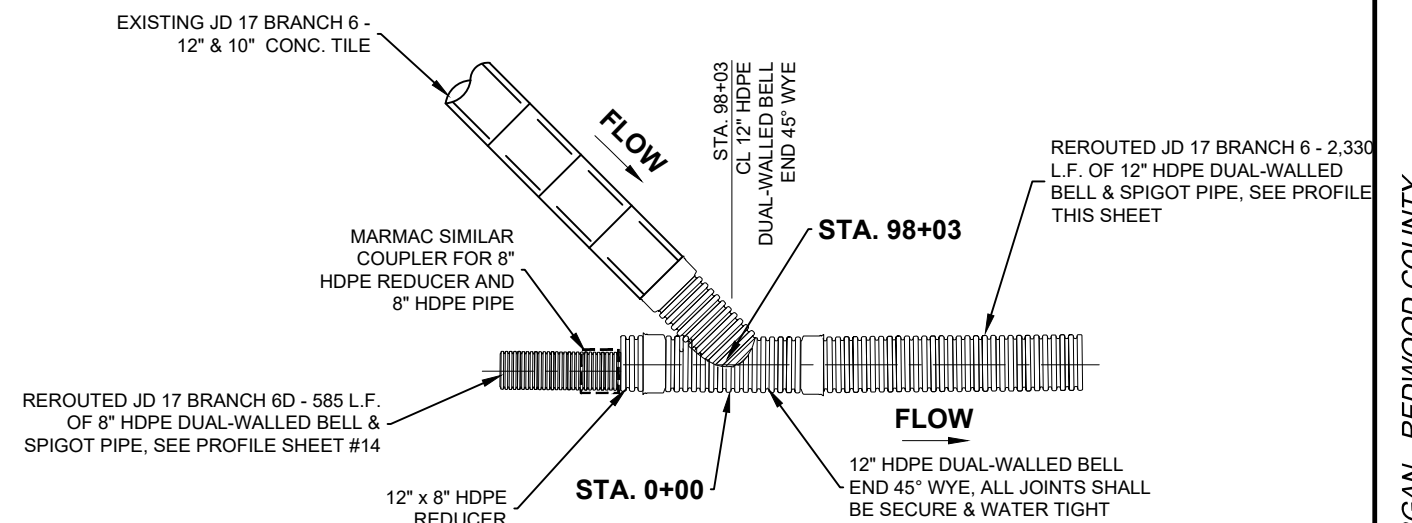
PROFILE ALONG CL OF PROPOSED & EXISTING JD 17 BRANCH 6 TILE
SCALE 1" = 250'

JD 17 - BRANCH 6 RE-ROUTE NOTE:
ALL PRIVATE DRAINAGE TILE THAT ARE INTERCEPTED DURING BRANCH 6 RE-ROUTE SHALL BE CONNECTED PER LANDOWNERS DIRECTION. ALL MATERIALS REQUIRED FOR THESE JUNCTIONS SHALL BE BE ASSOCIATED COSTS TO THE OVERALL RE-ROUTE



DETAIL OF 12" INSPECTION INTAKE @ APPROX. STA. 86+00 & STA. 97+00 ON REROUTED JD 17 BRANCH 6

SCALE 1" = 4'



JUNCTION DETAIL OF 12" HDPE WYE, 12" x 8" HDPE REDUCER @ REROUTED BRANCH 6 - STA. 98+03 & REROUTED BRANCH 6D - STA. 0+00

SCALE 1" = 4'

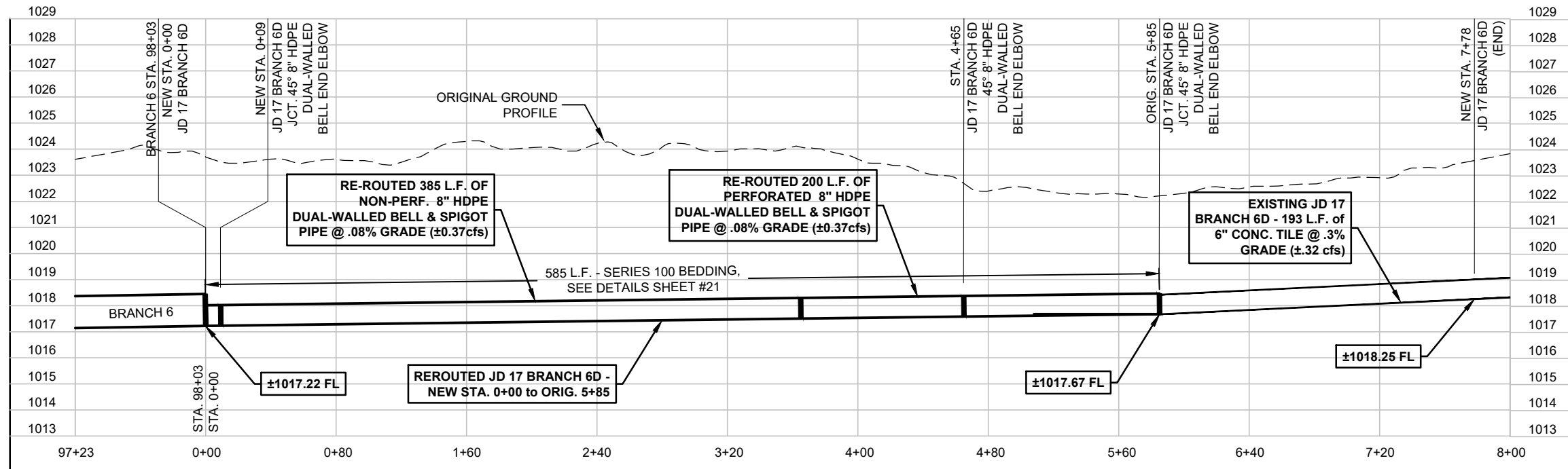
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MORGAN - REDWOOD COUNTY
ROAD BANKING WETLAND RESTORATION
JD 17 BRANCH 6 RE-ROUTE DETAILS

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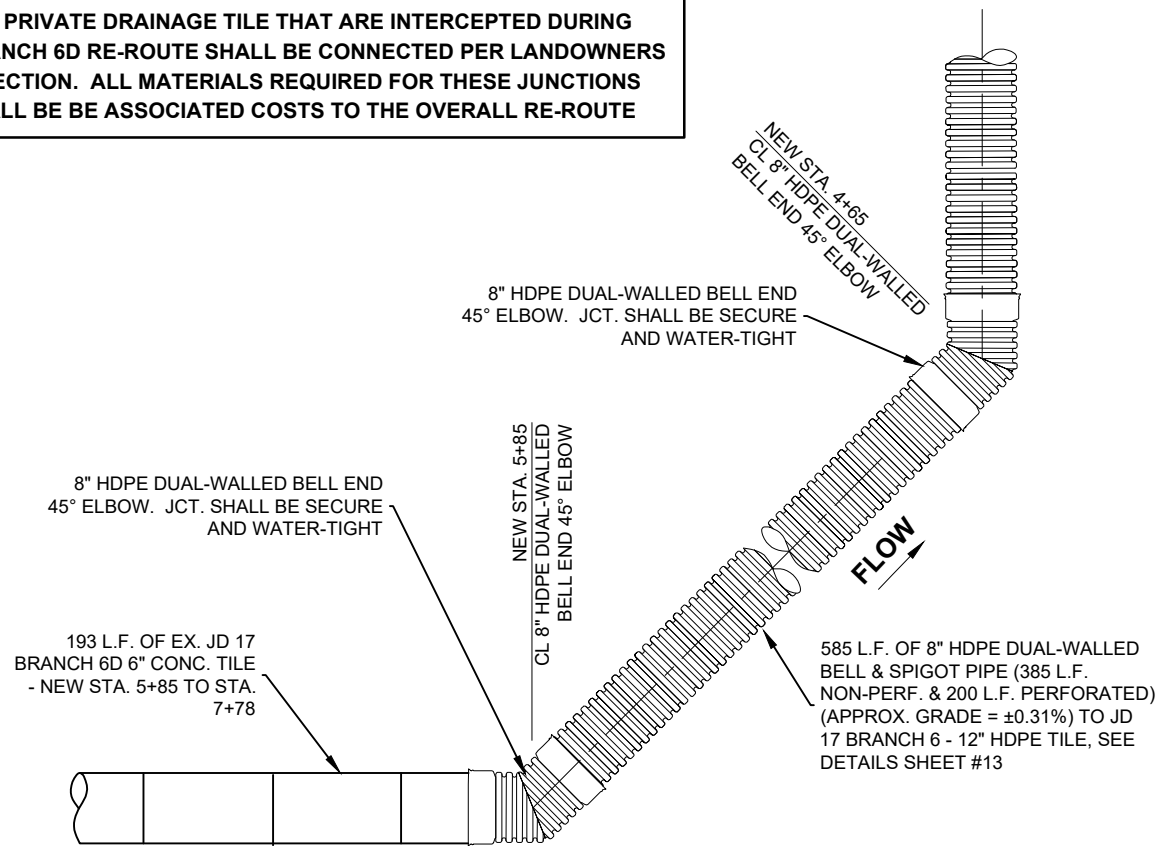
THOMAS A. WENZEL
DATE: 5/20/24
LIC. NO.: 22148



PROFILE ALONG CL OF PROPOSED JD 17 BRANCH 6D RE-ROUTE

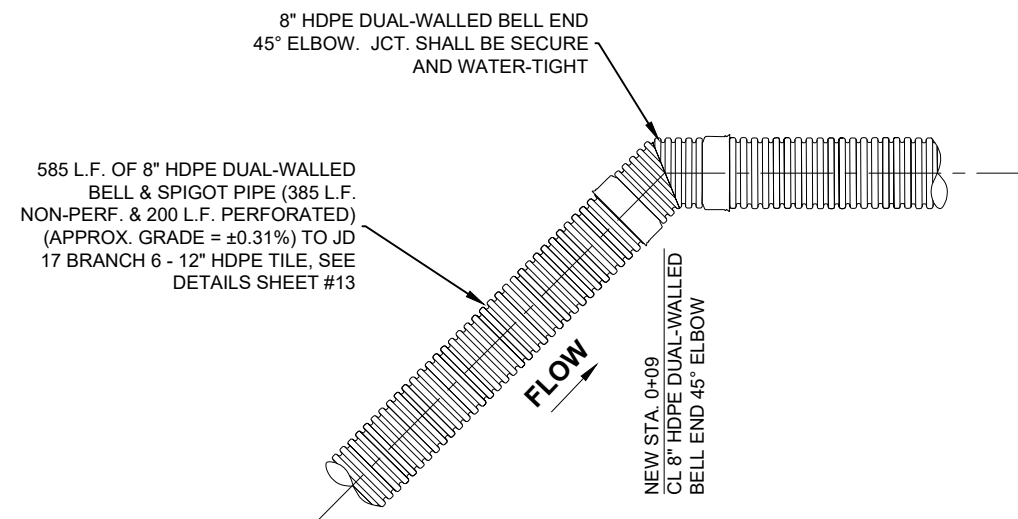
SCALE 1" = 80'

JD 17 - BRANCH 6D RE-ROUTE NOTE:
 ALL PRIVATE DRAINAGE TILE THAT ARE INTERCEPTED DURING BRANCH 6D RE-ROUTE SHALL BE CONNECTED PER LANDOWNERS DIRECTION. ALL MATERIALS REQUIRED FOR THESE JUNCTIONS SHALL BE ASSOCIATED COSTS TO THE OVERALL RE-ROUTE



DETAIL OF 45° HDPE ELBOW JUNCTION WITH JD 17 BRANCH 6D AT NEW STA. 5+85 & STA. 4+65

SCALE 1" = 4'



DETAIL OF 45° HDPE ELBOW JUNCTION WITH JD 17 BRANCH 6D AT NEW STA. 0+09

SCALE 1" = 4'

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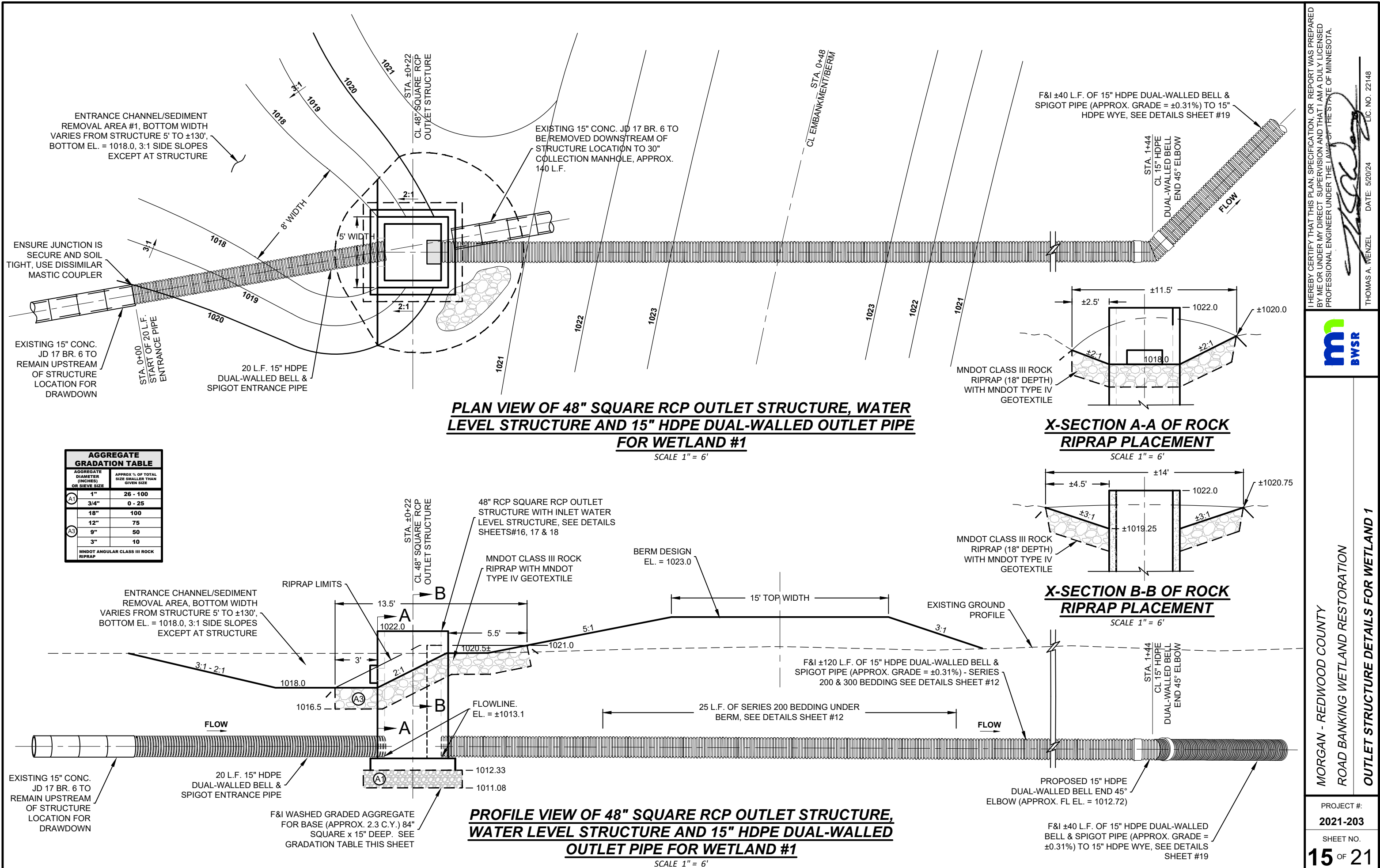
MORGAN - REDWOOD COUNTY
 ROAD BANKING WETLAND RESTORATION
 JD 17 BRANCH 6D RE-ROUTE DETAILS

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THOMAS A. WENZEL DATE: 5/20/24 LIC. NO.: 22148



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THOMAS A. WENZEL DATE: 5/20/24 LIC. NO. 22148

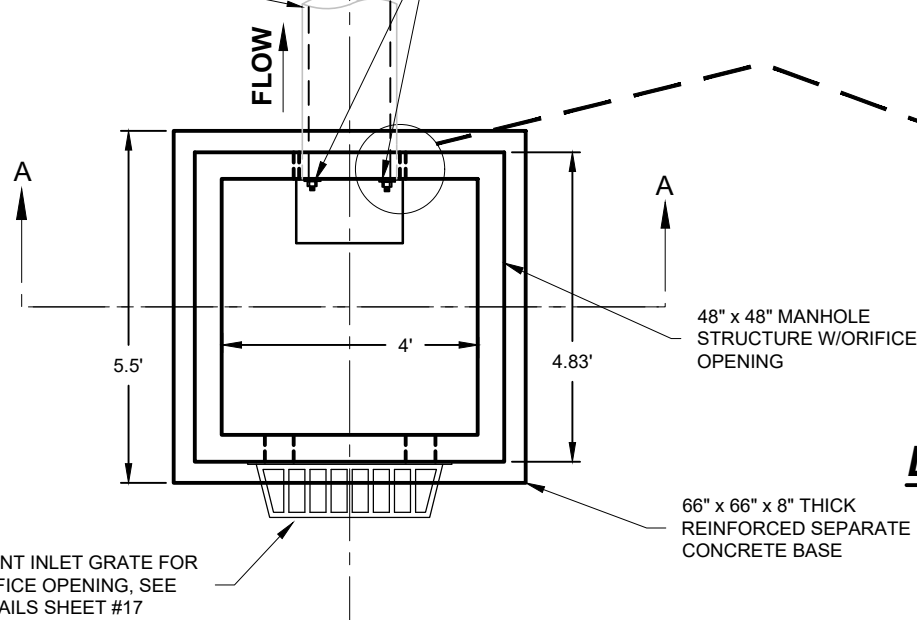


MORGAN - REDWOOD COUNTY ROAD BANKING WETLAND RESTORATION OUTLET STRUCTURE DETAILS FOR WETLAND 1

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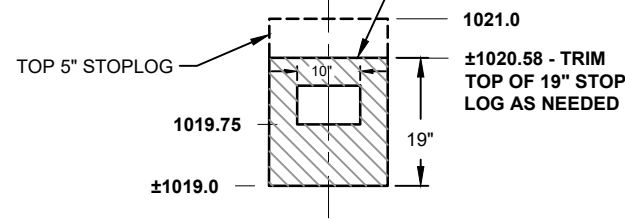
15" - HDPE DUAL-WALLED
10.8 PSI BELL & SPIGOT PIPE
FROM STRUCTURE TO 15"
HDPE WYE, APPROX. 160 L.F.

BOLT INLET WATER BOX TO
MANHOLE STRUCTURE - TYP. 4
PLACES, SEE DETAIL THIS SHEET

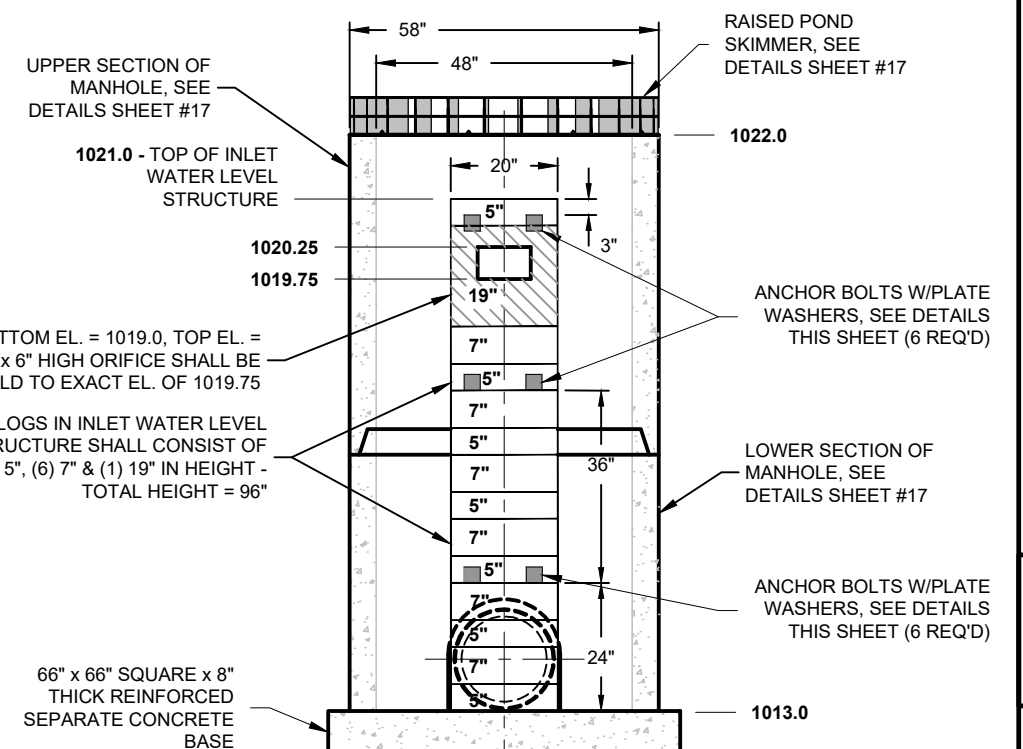


**TOP VIEW -
ANCHOR BOLT
DETAIL (4-REQ'D)**
NOT TO SCALE

1/2" X 5" STAINLESS STEEL
STUD ANCHORS W/3" x
3" PLATE WASHERS (4
REQ'D) SEE ANCHOR
NOTE SHEET #17



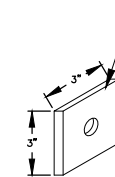
**DETAIL OF 19"
STOPLOG**



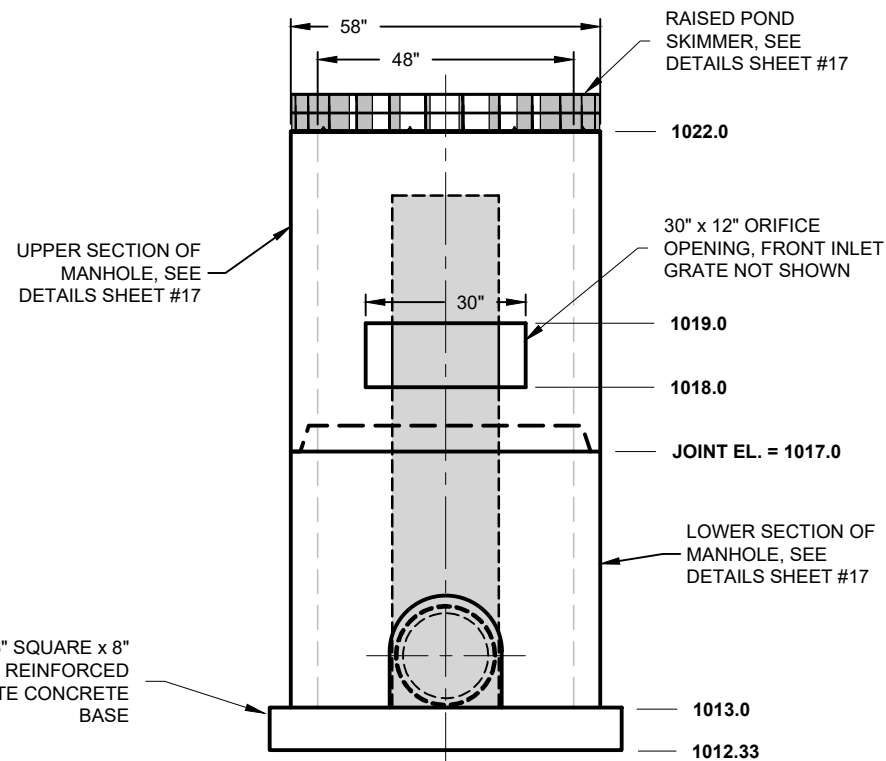
**SECTION A-A OF 48" SQUARE RCP
STRUCTURE FOR WETLAND #1**
SCALE 1" = 3'

NOTE:
CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR
ALL REINFORCED CONCRETE STRUCTURES FOR
APPROVAL PRIOR TO FABRICATION.

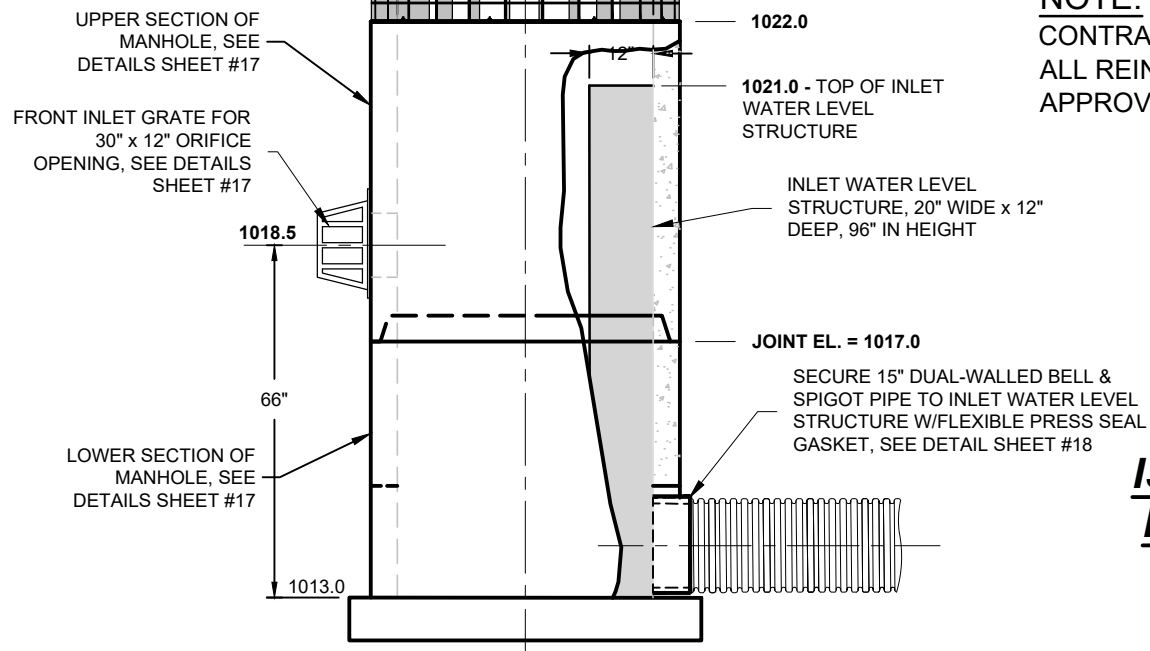
3" x 3" x 3/16" PLATE WASHERS (6
REQUIRED) SHALL BE MADE OF
ALUMINUM, STAINLESS STEEL OR
OTHER NON-CORROSIVE MATERIAL



**ISOMETRIC VIEW
PLATE WASHER
(6-REQ'D)**
NOT TO SCALE



**FRONT VIEW OF 48" SQUARE RCP
STRUCTURE FOR WETLAND #1**
SCALE 1" = 3'



**SIDE VIEW OF 48" SQUARE RCP
STRUCTURE FOR WETLAND #1**
SCALE 1" = 3'

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BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED
PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.

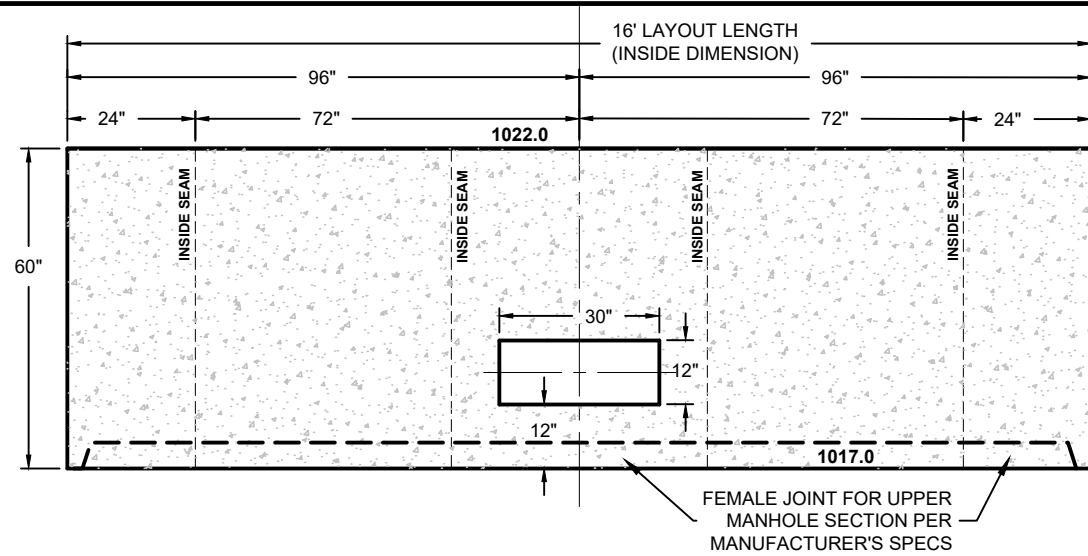


MORGAN - REDWOOD COUNTY
ROAD BANKING WETLAND RESTORATION
OUTLET STRUCTURE DETAILS FOR WETLAND 1

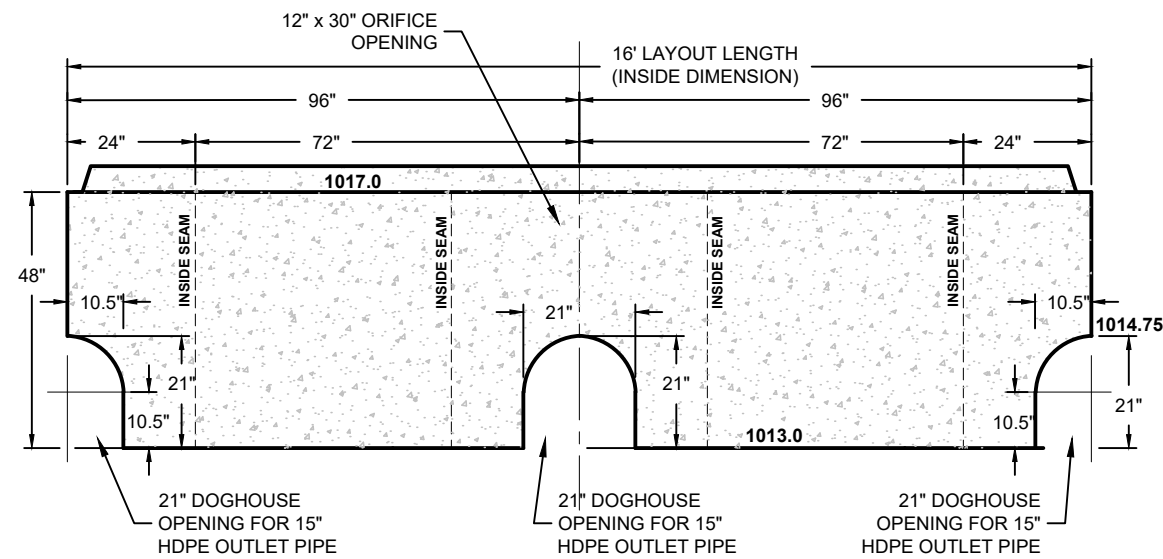
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DETAILS OF OPENINGS IN UPPER SECTION FOR 48" SQUARE RCP OUTLET STRUCTURE FOR WETLAND #1
SCALE 1" = 3'

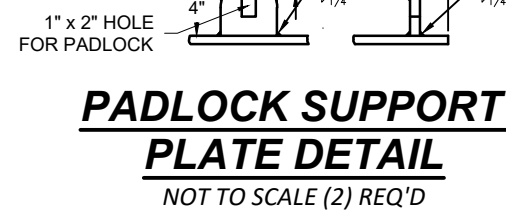
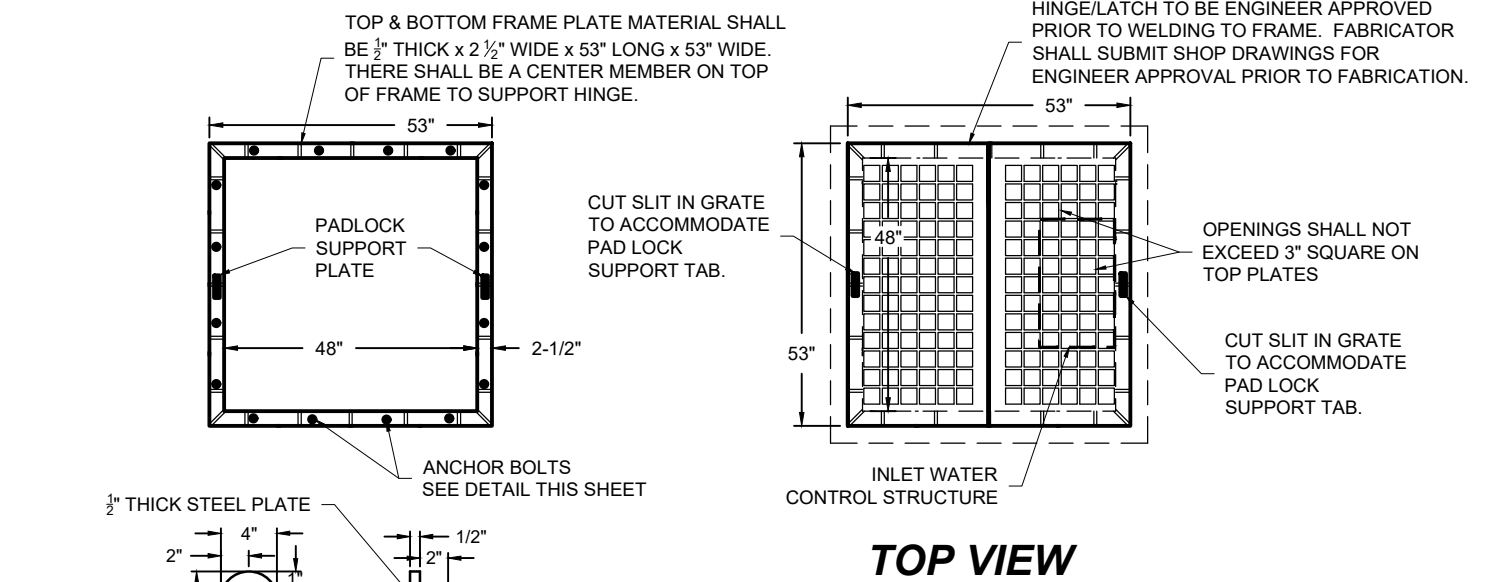


DETAILS OF OPENINGS IN LOWER SECTION FOR 48" SQUARE RCP OUTLET STRUCTURE FOR WETLAND #1
SCALE 1" = 3'

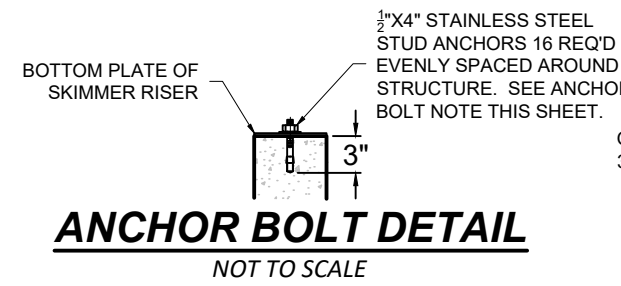
NOTE:
CONTRACTOR SHALL SUBMIT SHOP DRAWINGS FOR ALL REINFORCED CONCRETE STRUCTURES FOR APPROVAL PRIOR TO FABRICATION.

STAINLESS STEEL ANCHOR BOLT NOTE:

- 1) THE CONTRACTOR SHALL FOLLOW STEPS LISTED BELOW WHEN INSTALLING STAINLESS STEEL ANCHOR BOLTS. THE COST OF SUCH SHALL BE CONSIDERED "INCIDENTAL" TO STRUCTURE.
- 2) ALL ANCHORS SHALL BE A304 STAINLESS STEEL STUD ANCHORS SIZED AS SHOWN OR APPROVED EQUAL.
- 3) ANCHOR HOLES SHALL BE DRILLED TO PROPER DEPTHS & DIAMETERS AND BLOWN CLEAN OF CONCRETE DUST USING COMPRESSED AIR.
- 4) "RED HEAD" EPOXY OR OTHER ENGINEER APPROVED EPOXY ADHESIVE SHALL BE PLACED IN HOLE PRIOR TO SETTING ANCHORS. CONTRACTOR WILL USE EPOXY IN EVERY LOCATION OF STAINLESS STEEL ANCHOR BOLTS. (AVAILABLE @ WWW.FASTENAL.COM)
- 5) ANCHOR NUTS SHALL BE TIGHTENED TO MANUFACTURER'S RECOMMENDED TORQUE SPECIFICATIONS.

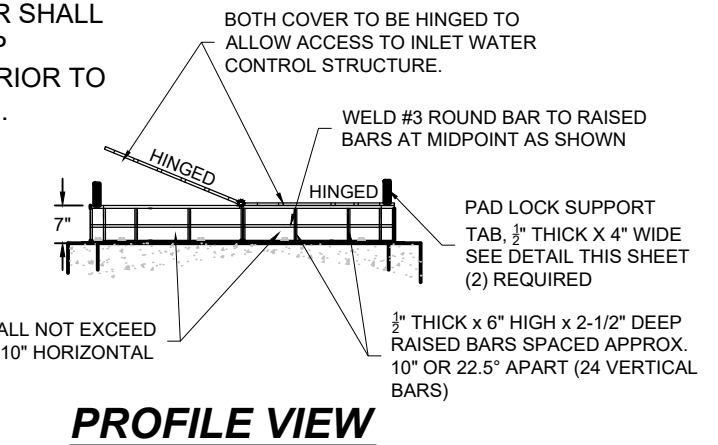


PADLOCK SUPPORT PLATE DETAIL
NOT TO SCALE (2) REQ'D



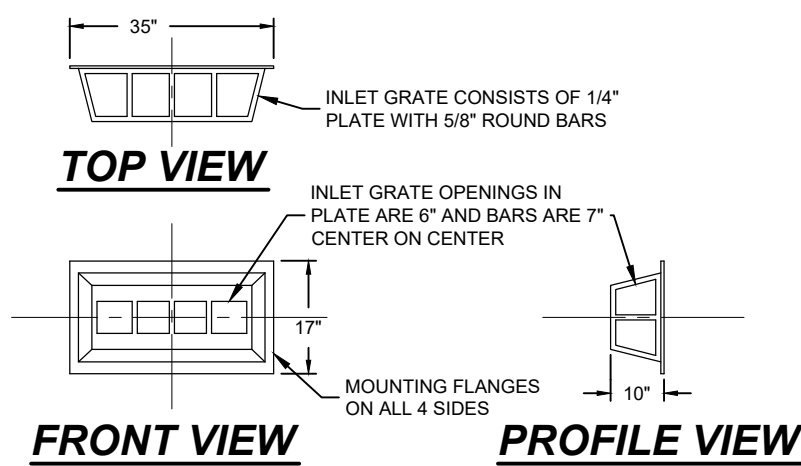
ANCHOR BOLT DETAIL
NOT TO SCALE

NOTE:
CONTRACTOR SHALL SUBMIT SHOP DRAWINGS PRIOR TO FABRICATION.



PROFILE VIEW

RAISED POND SKIMMER GRATE FOR 48" SQUARE RCP OUTLET STRUCTURE FOR WETLAND #1
SCALE 1" = 3'



FRONT VIEW PROFILE VIEW

INLET GRATE FOR 12" x 30" ORIFICE OPENING IN 48" SQUARE RCP OUTLET STRUCTURE FOR WETLAND #1
SCALE 1" = 3'

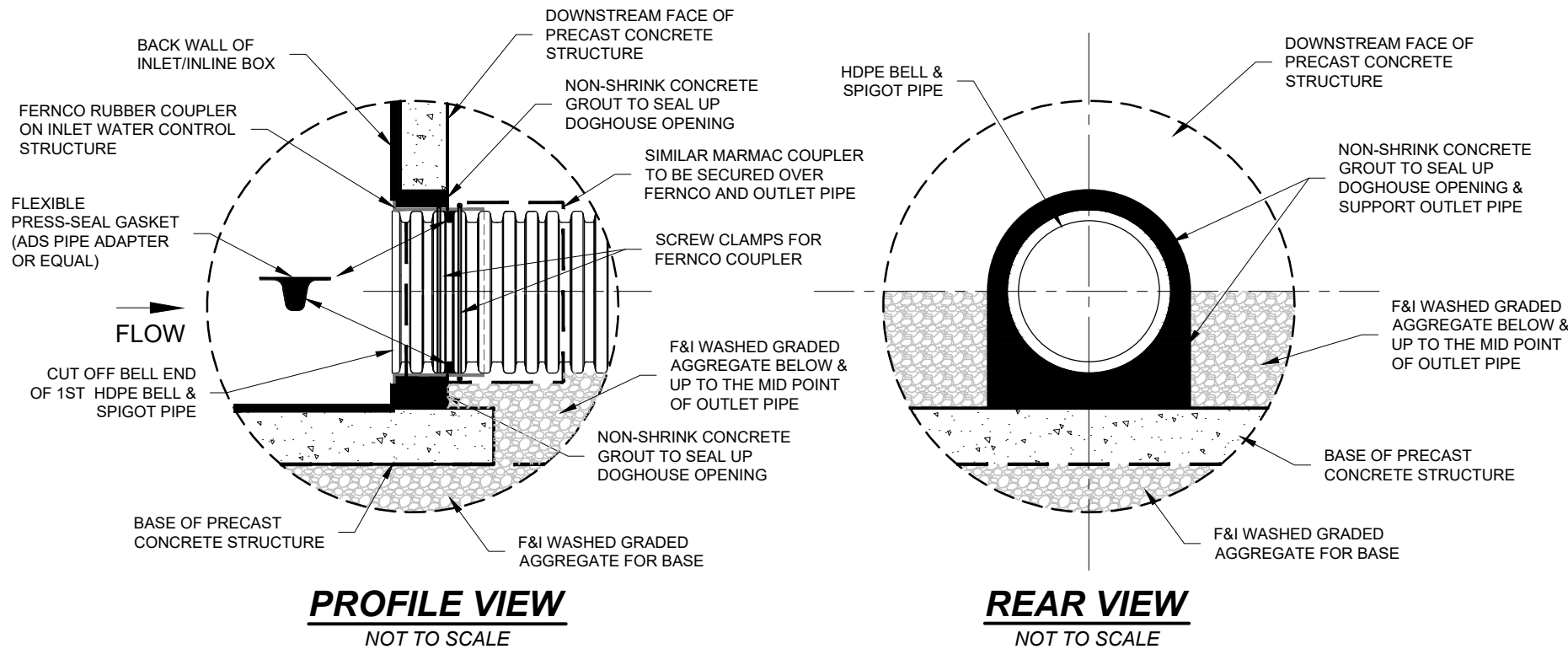
NOTE:
INLET GRATE APPROVED VENDOR HAALA INDUSTRIES, ITEM # IG123010 OR APPROVED EQUAL.

INLET GRATE SHALL BE SECURED TO 48" PRECAST STRUCTURE USING 1/2" x 4" STAINLESS STEEL STUD ANCHORS. SEE ANCHOR BOLT NOTE THIS SHEET.

I HEREBY CERTIFY THAT THIS PLAN, SPECIFICATION, OR REPORT WAS PREPARED BY ME OR UNDER MY DIRECT SUPERVISION AND THAT I AM A DULY LICENSED PROFESSIONAL ENGINEER UNDER THE LAWS OF THE STATE OF MINNESOTA.
THOMAS A. WENZEL DATE: 5/20/24 LIC. NO. 22148



MORGAN - REDWOOD COUNTY ROAD BANKING WETLAND RESTORATION OUTLET STRUCTURE DETAILS FOR WETLAND 1



PROFILE VIEW
NOT TO SCALE

REAR VIEW
NOT TO SCALE

**OUTLET CONNECTION DETAIL FOR
AGRI-DRAIN INLET/INLINE STRUCTURE**
NOT TO SCALE

PRESS-SEAL GASKET, FERNCO & SIMILAR TYPE MARMAC COUPLER INSTALLATION DIRECTIONS:

1. IF BELL & SPIGOT PIPE IS TO BE USED, THE UPSTREAM BELL END OF PIPE SHALL BE CUT OFF PRIOR TO INSERTING PIPE INTO INLET/INLINE FERNCO COUPLER.
2. IF PRECAST STRUCTURE HAS AN INTEGRAL BASE ATTACHED, THE INLET/INLET STRUCTURE SHALL BE PLACED WITHIN PRECAST STRUCTURE AS TO WHERE PIPE CAN BE EASILY INSTALLED AND ACCESSABLE TO SECURE TO INLET/INLINE STRUCTURE. THE PRESS-SEAL GASKET SHALL BE INSTALLED ON PIPE PRIOR TO INSERTING INTO FERNCO COUPLER OF INLET/INLINE STRUCTURE. CARE SHALL BE TAKEN TO NOTE WHERE THE CORRUGATIONS ARE LOCATED WHERE THE GASKET IS PLACED TO PROPERLY SECURE WORM DRIVE CLAMPS OVER THE TOP OF THE CORRUGATIONS. ONCE PIPE IS SECURED TO INLET/INLINE STRUCTURE, A SIMILAR MARMAC COUPLER SHALL BE INSTALLED OVER BOTH THE FERNCO COUPLER AND MATING PIPE. ONCE MARMAC COUPLER IS SECURED AND CLAMPED, THE INLET/INLINE STRUCTURE CAN BE SLID INTO PLACE AND SECURED TO PRECAST STRUCTURE.
3. IF PRECAST STRUCTURE HAS A SEPARATE BASE AND DOGHOUSE - FOLLOW ABOVE DIRECTIONS PRIOR TO PLACING PRECAST STRUCTURE ONTO THE SEPARATE BASE.
4. WHEN STEPS 1 THRU 3 ARE COMPLETED, TO HELP WITH SUPPORTING THE OUTLET PIPE AND KEEPING SEDIMENT/SOIL FROM ENTERING THE INSIDE OF THE PRECAST STRUCTURE, THE ENTIRE DOGHOUSE OPENING SHALL BE SEALED USING NON-SHRINK CONCRETE GROUT.

BILL OF MATERIALS - 48" SQUARE RCP OUTLET STRUCTURE FOR WETLAND #1		
ITEM DESCRIPTION	UNIT	QUANTITY
48" SQUARE RCP MANHOLE LOWER SECTION WITH OPENINGS	L.F.	4
48" SQUARE RCP MANHOLE UPPER SECTION WITH OPENINGS	L.F.	5
66" SQUARE SEPARATE CONCRETE BASE SLAB 8" THICK	L.S.	1
TOP RAISED POND SKIMMER	L.S.	1
FRONT INLET GRATE FOR 30" x 12" ORIFICE OPENING	L.S.	1
20" WIDE x 12" DEEP INLET WATER LEVEL STRUCTURE	L.F.	8
FLEXIBLE PRESS-SEAL GASKET FOR 15" OUTLET CONNECTION	L.S.	1
SIMILAR MARMAC COUPLER FOR 15" OUTLET CONNECTION	L.S.	1
15" HDPE DUAL-WALLED NON-PERFORATED BELL & SPIGOT 10.8 PSI PIPE	L.F.	180
15" - 45° DUAL-WALLED BELL END ELBOW	L.S.	1
F&I MNDOT TYPE IV GEOTEXTILE FABRIC	S.Y.	75
F&I MNDOT CLASS III ANGULAR ROCK RIPRAP	C.Y.	14
F&I 1/2" x 4" STAINLESS STEEL STUD ANCHORS	EACH	16
F&I 3" x 3" x 3/16" PLATE WASHERS FOR INLET WATER LEVEL STRUCTURE	EACH	6
F&I NON-SHRINK GROUT FOR OPENINGS IN MANHOLE STRUCTURE	L.S.	1

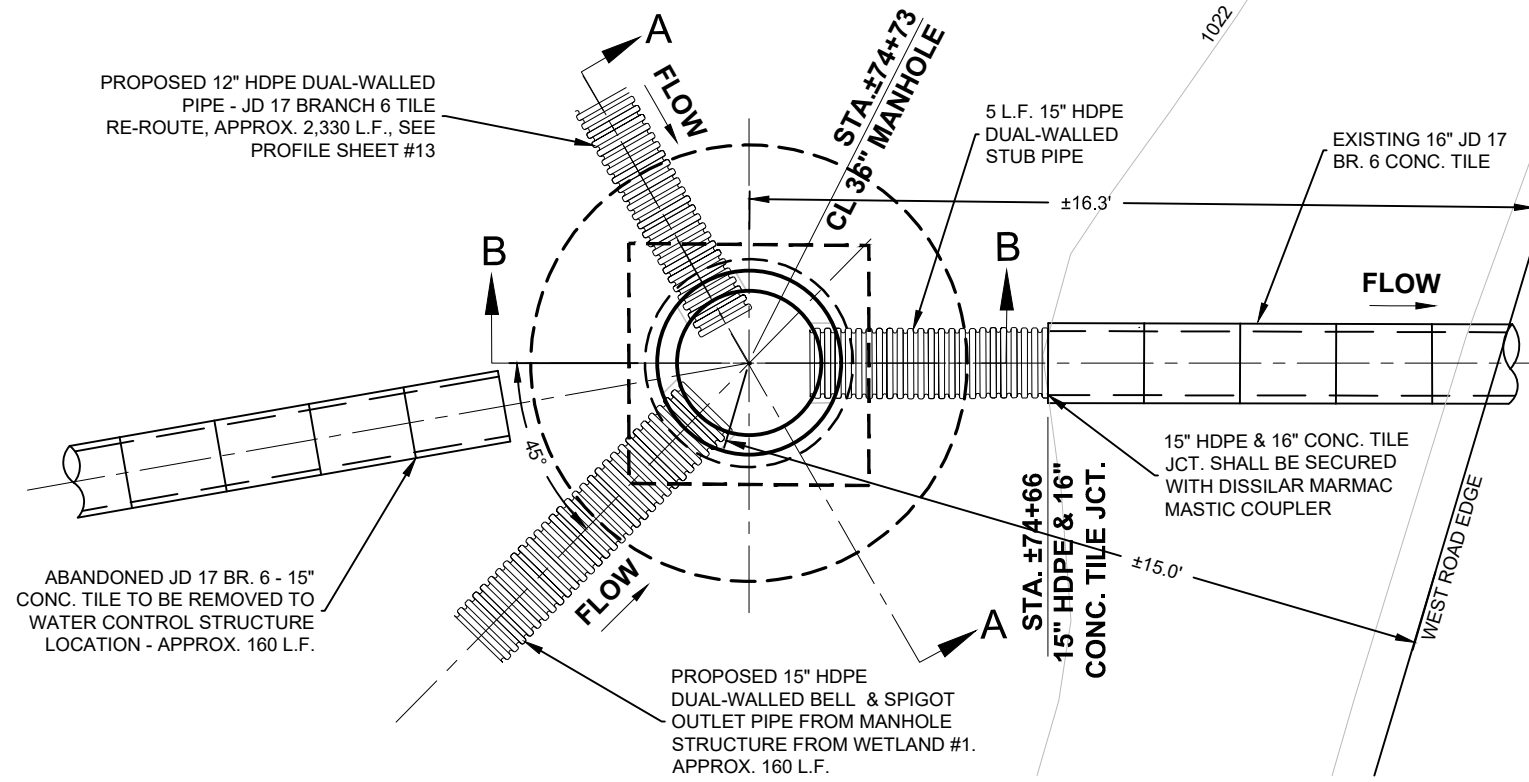
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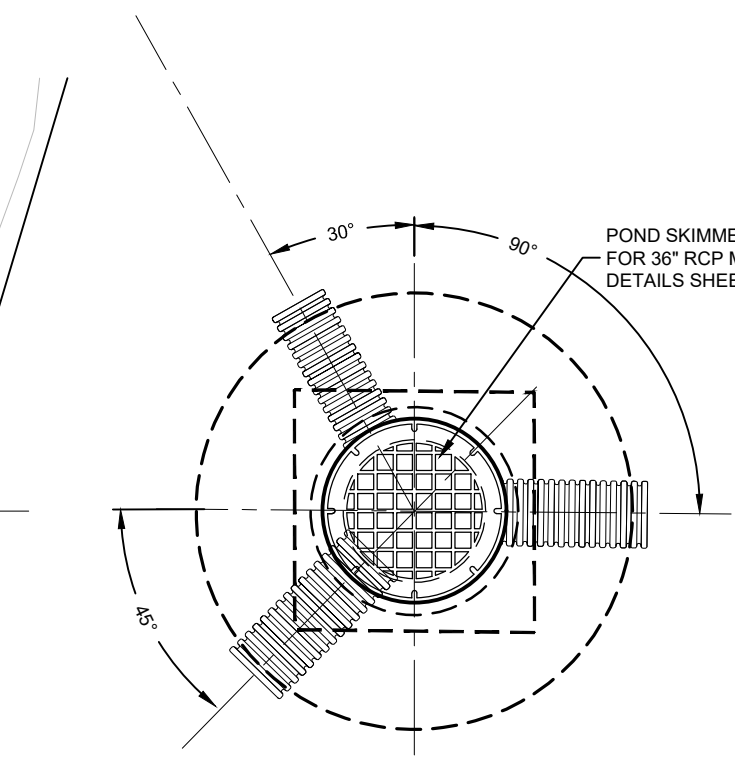
MORGAN - REDWOOD COUNTY
ROAD BANKING WETLAND RESTORATION
OUTLET STRUCTURE DETAILS FOR WETLAND 1

PROJECT #:
2021-203
SHEET NO.
18 OF **21**

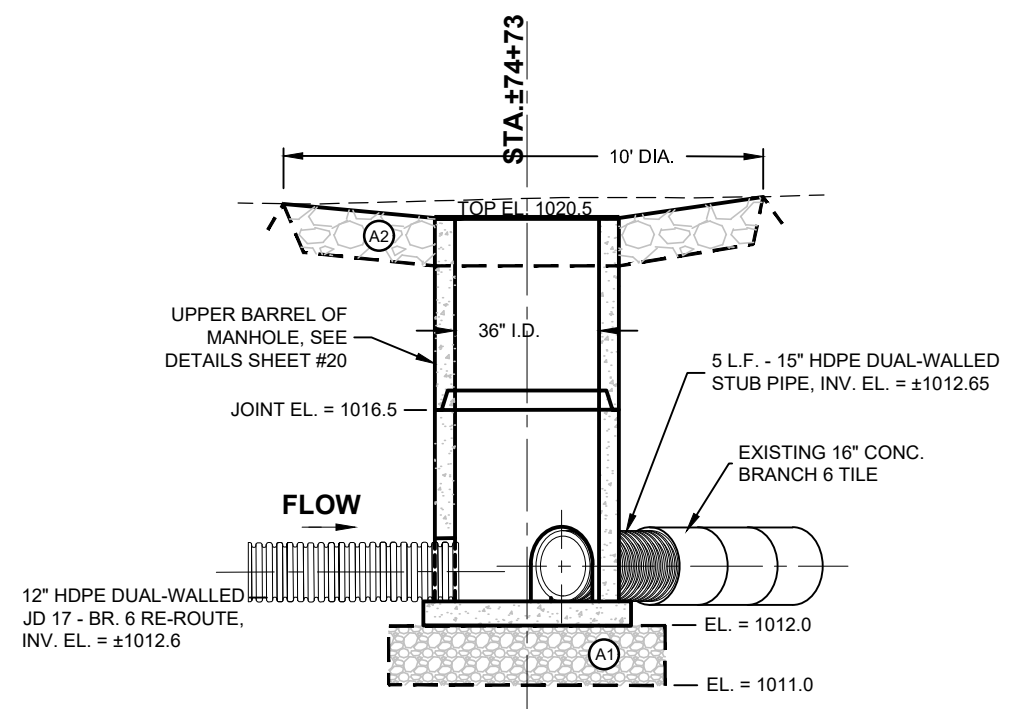
THOMAS A. WENZEL DATE: 5/20/24 LIC. NO.: 22148



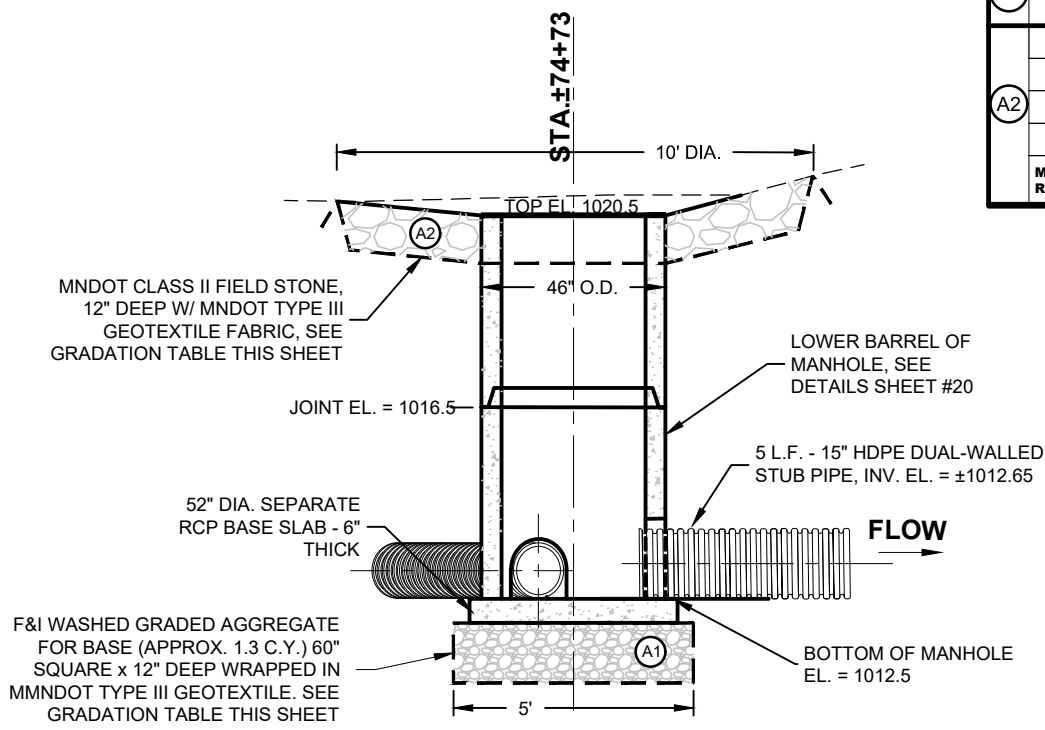
TOP VIEW OF 36" DIA. PRECAST CONCRETE COLLECTION MANHOLE (RIPRAP & COVER NOT SHOWN)
SCALE 1" = 4'



TOP VIEW W/TOP GRATE OF 36" DIA. PRECAST CONCRETE COLLECTION MANHOLE (RIPRAP NOT SHOWN)
SCALE 1" = 4'



SECTION A-A OF 36" DIA. PRECAST CONCRETE COLLECTION MANHOLE
SCALE 1" = 4'



SECTION B-B OF 36" DIA. PRECAST CONCRETE COLLECTION MANHOLE
SCALE 1" = 4'

AGGREGATE GRADATION TABLE		
AGGREGATE DIAMETER (INCHES) OR SIEVE SIZE	APPROX % OF TOTAL SIZE SMALLER THAN GIVEN SIZE	
A1	1"	26 - 100
	3/4"	0 - 25
A2	12"	100
	9"	75
	6"	50
	2"	10
MNDOT ANGULAR CLASS II ROCK RIPRAP		

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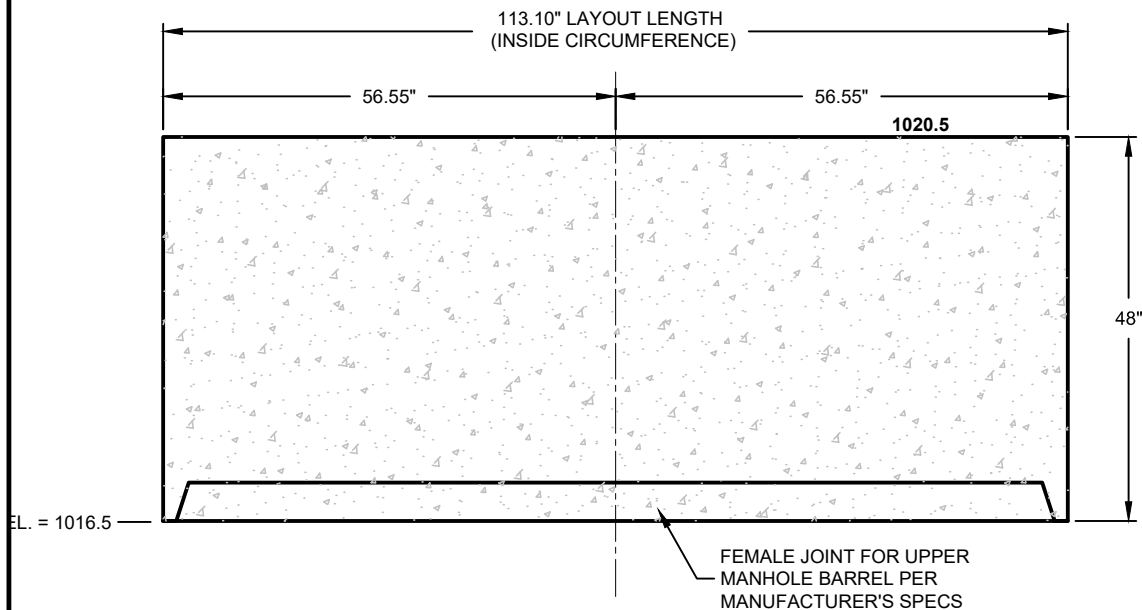


MORGAN - REDWOOD COUNTY
ROAD BANKING WETLAND RESTORATION
COLLECTION MANHOLE DETAILS

PROJECT #: 2021-203
SHEET NO. 19 OF 21

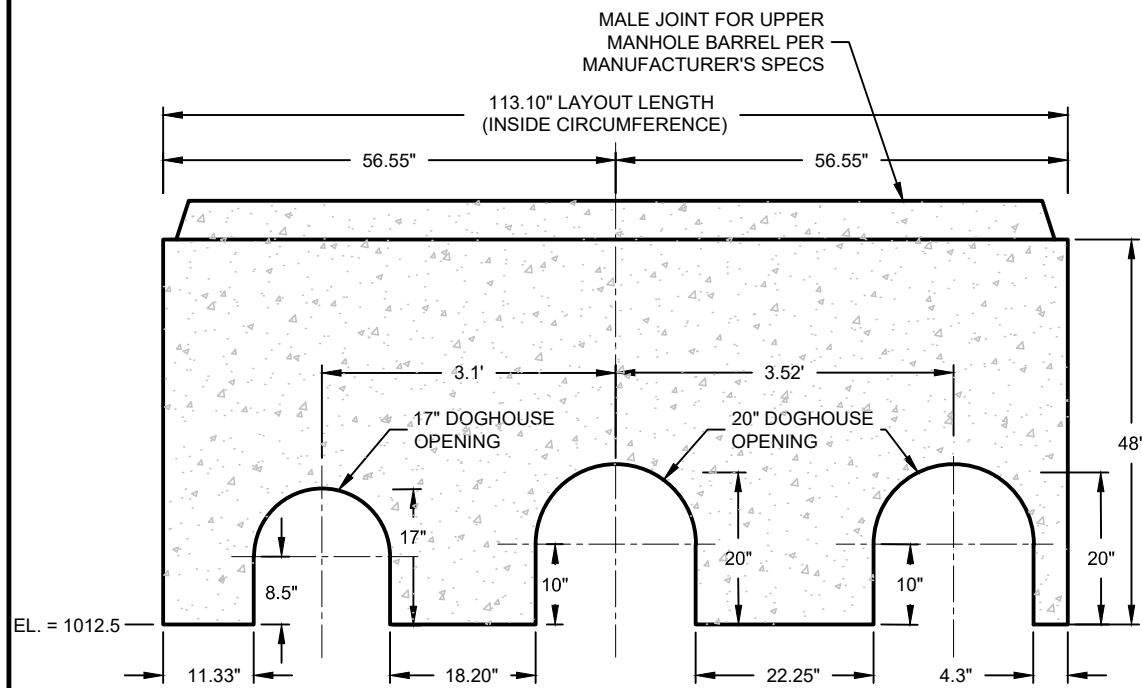
STAINLESS STEEL ANCHOR BOLT NOTE:

- 1) THE CONTRACTOR SHALL FOLLOW STEPS LISTED BELOW WHEN INSTALLING STAINLESS STEEL ANCHOR BOLTS. THE COST OF SUCH SHALL BE CONSIDERED "INCIDENTAL" TO STRUCTURE.
- 2) ALL ANCHORS SHALL BE A304 STAINLESS STEEL STUD ANCHORS SIZED AS SHOWN OR APPROVED EQUAL.
- 3) ANCHOR HOLES SHALL BE DRILLED TO PROPER DEPTHS & DIAMETERS AND BLOWN CLEAN OF CONCRETE DUST USING COMPRESSED AIR.
- 4) "RED HEAD" EPOXY OR OTHER ENGINEER APPROVED EPOXY ADHESIVE SHALL BE PLACED IN HOLE PRIOR TO SETTING ANCHORS. CONTRACTOR WILL USE EPOXY IN EVERY LOCATION OF STAINLESS STEEL ANCHOR BOLTS. (AVAILABLE @ WWW.FASTENAL.COM)
- 5) ANCHOR NUTS SHALL BE TIGHTENED TO MANUFACTURER'S RECOMMENDED TORQUE SPECIFICATIONS.



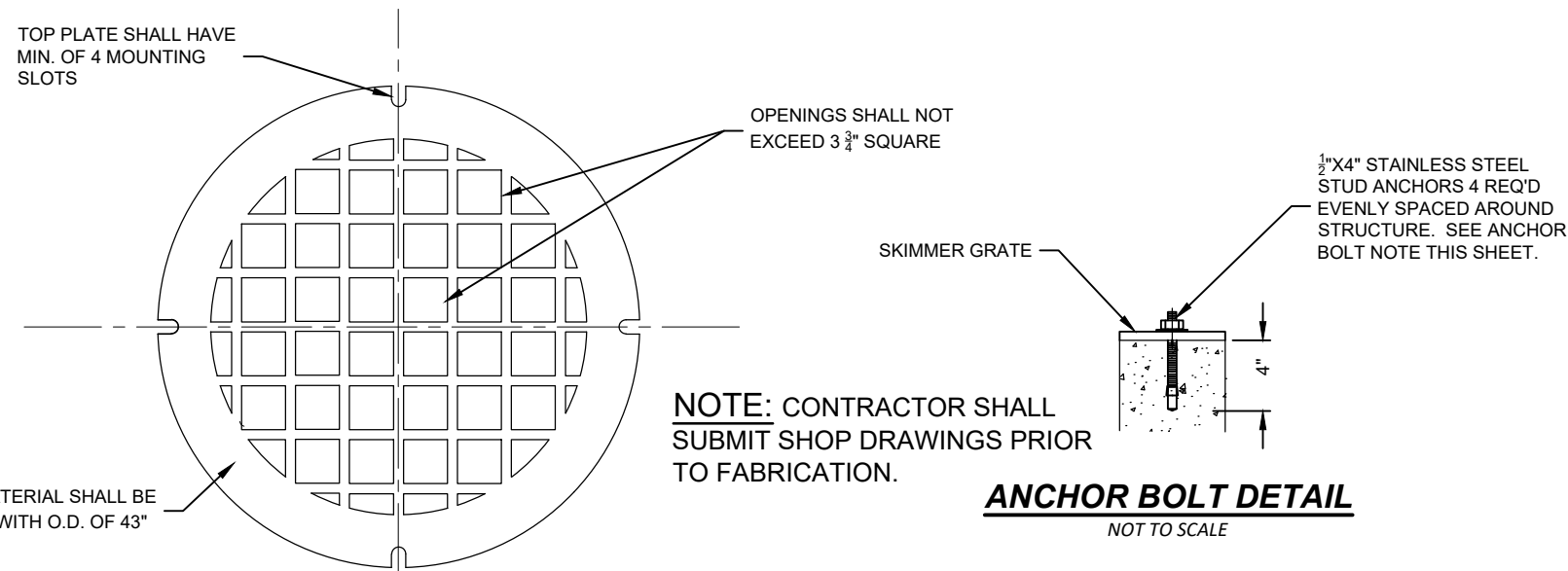
DETAILS OF UPPER BARREL OF 36" DIA. PRECAST CONCRETE COLLECTION MANHOLE

SCALE 1" = 2'



DETAILS OF OPENINGS IN LOWER BARREL OF 36" DIA. PRECAST CONCRETE COLLECTION MANHOLE

SCALE 1" = 2'



TOP VIEW OF POND SKIMMER GRATE COVER FOR 36" RCP COLLECTION MANHOLE

NOT TO SCALE

FINISH NOTE:

ALL STEEL ASSOCIATED WITH THE POND SKIMMER GRATE SHALL BE FINISHED TO PROTECT AGAINST CORROSION. FINISHING METHODS MAY INCLUDE GALVANIZED DIPPING (MNDOT SPEC. 3394, EDITION 2005), EPOXY ZINC-RICH COATING (MNDOT SPEC. 3520, EDITION 2005) POWDER WRINKLE COAT OR OTHER APPROVED METHOD. PRIOR TO FINISHING, ALL STEEL AND WELDED SURFACES SHALL BE CLEANED BY APPROVED METHODS, SEE ABOVE MNDOT SPECS. APPROVED VENDOR: HAALA INDUSTRIES, SLEEPY EYE MN. - WWW.HAALA.COM OR APPROVED EQUAL

BILL OF MATERIALS - 36" RCP COLLECTION MANHOLE @ STA. 74+73 ON JD 17 - BRANCH 6		
ITEM DESCRIPTION	UNIT	QUANTITY
36" RCP PRECAST MANHOLE WITH DOGHOUSE OPENINGS - LOWER BARREL	L.F.	4
36" RCP PRECAST MANHOLE - UPPER BARREL	L.F.	4
52" DIA. SEPARATE RCP BASE SLAB - 6" THICK	L.S.	1
POND SKIMMER GRATE COVER FOR 36" RCP PRECAST MANHOLE	L.S.	1
1" - 3/4" AGGREGATE FOR FOUNDATIONAL BASE	C.Y.	1.3
MNDOT CLASS II FIELD STONE AROUND TOP OF MANHOLE	C.Y.	2
MNDOT TYPE III GEOTEXTILE FABRIC FOR BASE AND FIELD STONE	S.Y.	40
NON-SHRINK GROUT FOR DOGHOUSE OPENINGS	L.S.	1
1/2" x 4" STAINLESS STEEL STUD ANCHORS FOR MOUNTING COVER (MIN. 4)	L.S.	1

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 THOMAS A. WENZEL DATE: 5/20/24 P.E. NO. 22148



MORGAN - REDWOOD COUNTY ROAD BANKING WETLAND RESTORATION COLLECTION MANHOLE DETAILS

PROJECT #: 2021-203
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DRAINAGE SYSTEM OUTLETS - DESIGN TABLE

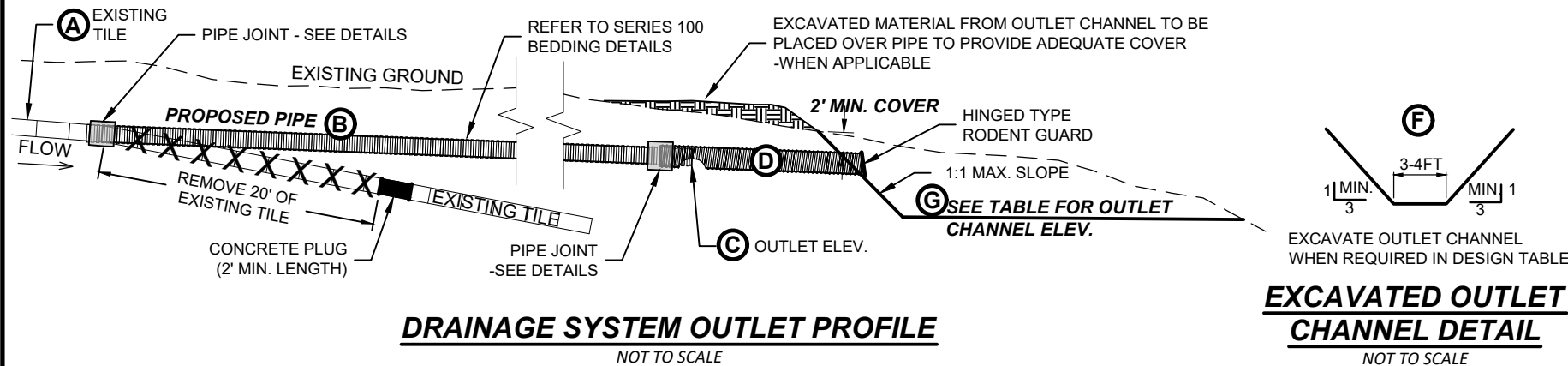
LOCATION	EXISTING TILE (A)		PROPOSED PIPE (B)					SLEEVE (D)	RIPRAP (E)	OUTLET CHANNEL (F)				
	DIA. (IN)	VERIFIED (Y/N)	MATERIAL	DIA. (IN)	APPROX. LENGTH (FEET)		PLANNED GRADE (%)	OUTLET ELEV. (C)	REQ'D (Y/N)	REQ'D (Y/N)	REQ'D (Y/N)	CHANNEL ELEV. (G)	EST. LENGTH (FEET)	EST. QTY. (C.Y.)
					PERF.	NON-PERF.								
#1 - S. OF WETLAND #1	6	N	CPE	6	40	100	TBD	1021	Y	Y	Y	1019	235	123
#2 - W. OF WETLAND #1	6	N	CPE	6	400	390	±0.35%	1021	Y	Y	Y	1019	100	70

20 L.F. OF THE EXISTING TILE IMMEDIATELY DOWNSTREAM OF THE UPSTREAM PIPE JUNCTION SHALL BE REMOVED (SEE DETAIL). THE OPEN END OF THE DOWNSTREAM TILE SHALL BE EFFECTIVELY PLUGGED/SEALED AS PER REQUIREMENTS IN CONSTRUCTION SPECIFICATION 2.260 (SEE DETAIL).

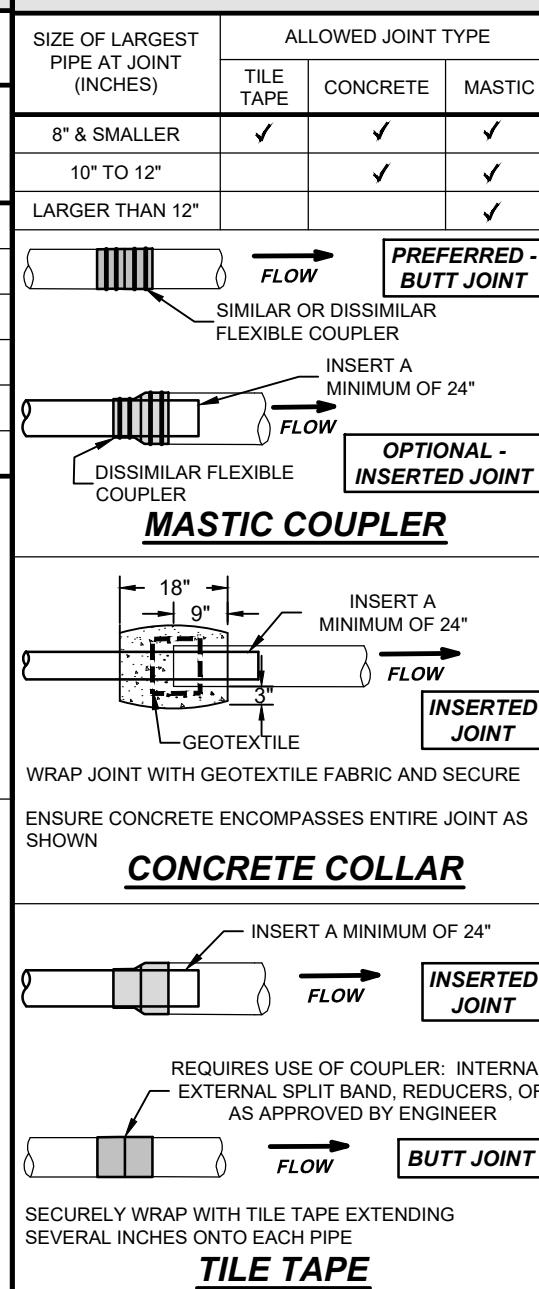
LENGTH OF PROPOSED PIPE (B) WILL BE A SEPERATE BID ITEM. UNLESS OTHERWISE INDICATED, REMAINING ITEMS ASSOCIATED WITH CONSTRUCTING THE OUTLET SHALL BE INCIDENTAL TO THE ASSOCIATED TILE OUTLET BID ITEM. THIS WILL INCLUDE TILE REMOVAL, FURNISHING AND INSTALLING PIPE JOCTIONS, TILE PLUG/SEAL, CMP SLEEVE AND RODENT GUARD, RIPRAP (IF REQUIRED), AND EXCAVATED OUTLET CHANNEL (IF REQUIRED)

DIAMETER (SIZE) OF CMP SLEEVE (D) WILL BE DEPENDANT ON CONTRACTOR'S CHOICE OF PIPE JOINT TYPE THAT WILL BE USED.

WHERE EXISTING TILE SIZE IS SHOWN AS NOT BEING VERIFIED, IT IS RECOMMENDED TO FIELD VERIFY THE SIZE, LOCATION, AND ELEVATIONS OF THE EXISTING TILE PRIOR TO ORDERING MATERIALS AND INSTALLING THE OUTLET. IF THE DIAMETER OF THE EXISTING TILE DIFFERS FROM WHAT IS SHOWN, THE ENGINEER SHALL BE CONTACTED TO DISCUSS NECESSARY CONSTRUCTION MODIFICATIONS AND ASSOCIATED COST ADJUSTMENTS, WHEN NECESSARY.



PIPE JOINT DETAILS



CMP SLEEVE DETAILS

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

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

CONTRACTOR TO DETERMINE CMP SLEEVE DIAMETER FROM JOINT TYPE SELECTED

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

REFER TO SPECIFICATION 2.310 - CORRUGATED METAL PIPE

ROCK RIPRAP DETAILS

CMP SLEEVE SIZE (INCHES)	GEOTEXTILE QUANTITY (S.Y.)	ROCK QUANTITY (C.Y.)
6" TO 15"	±12 S.Y.	±2 C.Y.
LARGER THAN 15"	±20 S.Y.	±4 C.Y.

INSTALL RIPRAP/GEOTEXTILE WHEN REQUIRED IN DESIGN TABLE

GEOTEXTILE TO BE MNDOT TYPE III OR IV

ROCK RIPRAP SHOULD BE A MINIMUM OF MNDOT CLASS II, EITHER FIELD STONE OR ANGULAR ROCK MAY BE USED

THICKNESS OF RIPRAP TO BE 1.25 X D₁₀₀

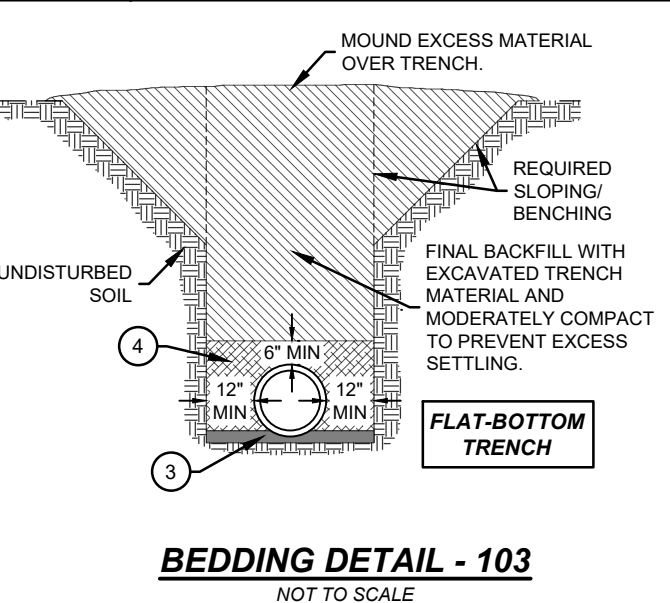
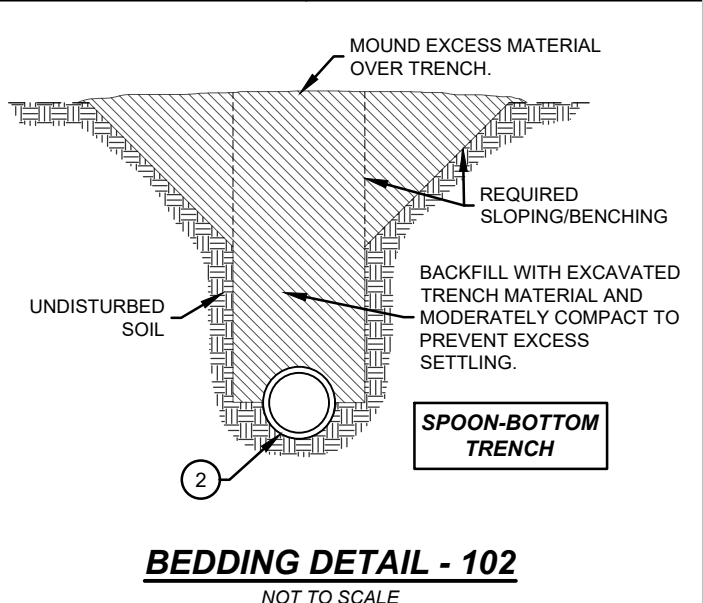
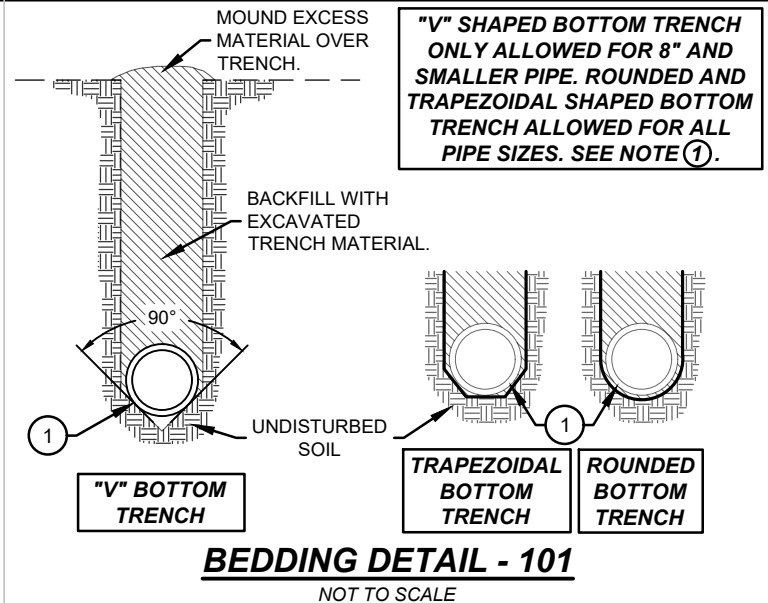
REFER TO SPECIFICATIONS: 2.410 - RIPRAP
2.440 - GEOTEXTILES

SERIES 100 BEDDING DETAILS

PURPOSE: SERIES 100 BEDDING DETAILS ARE FOR THE GENERAL INSTALLATION OF CORRUGATED HDPE PIPE AND AGRICULTURAL DRAINAGE TILE.

- 1 THE VARIOUS SHAPED BOTTOM TRENCHES SHALL BE FORMED USING SPECIFIC PLOW ATTACHMENTS. FOR ROUNDED OR TRAPEZOIDAL SHAPES, THE PIPE SHALL REST ON THE TRENCH BOTTOM. THE TRENCH SIDES SHALL FIT THE DIMENSIONS OF THE PIPE AS CLOSE AS POSSIBLE, WITH A MAXIMUM GAP OF LESS THAN 1" ON EITHER SIDE OF THE PIPE.
- 2 SPOON TRENCH SHALL BE CUT HALF-CIRCLE TO A DEPTH SUCH THAT THE TOP OF THE SPOONED TRENCH BOTTOM EXTENDS TO PIPE SPRINGLINE, OR HIGHER. THE ROUNDED TRENCH BOTTOM SHOULD FIT THE PIPE DIMENSIONS AS CLOSE AS POSSIBLE, WITH A MAXIMUM GAP OF 1" ALLOWED ON EITHER SIDE OF THE PIPE.
- 3 PRIOR TO SETTING PIPE, PLACE 4"-6" OF LOOSE FRIABLE SOILS IN THE TRENCH BOTTOM AS BEDDING.
- 4 THE INITIAL BACKFILL SHALL CONSIST OF LOOSE EXCAVATED TRENCH MATERIAL PLACED IN 3"-4" LIFTS AND HAND OR MECHANICALLY TAMPED AROUND THE PIPE.

SPECIAL CARE MUST BE TAKEN TO COMPLETELY FILL AND COMPACT THE INITIAL BACKFILL UNDER THE LOWER HALF OF THE PIPE.



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MORGAN - REDWOOD COUNTY ROAD BANKING WETLAND RESTORATION TILE DRAINAGE OUTLET DETAILS