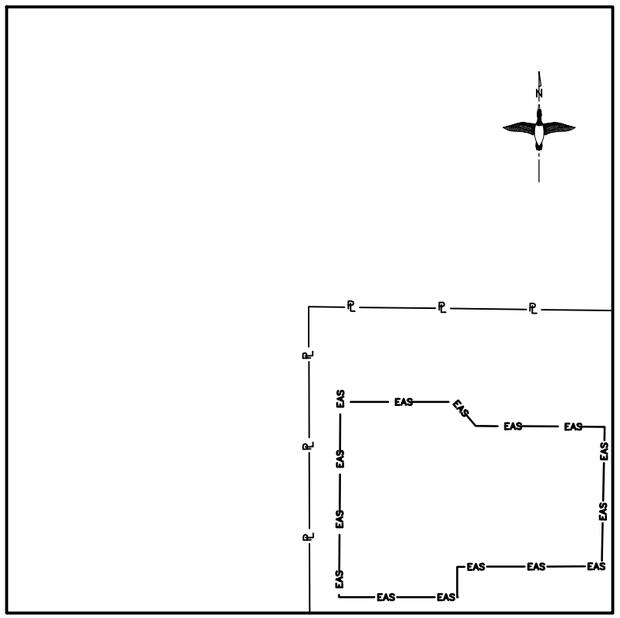
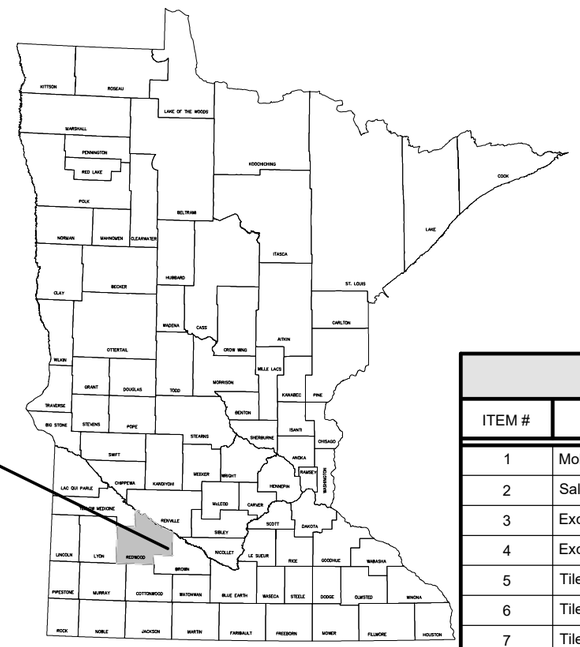
MORGAN
ROAD BANKING WETLAND RESTORATION

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



LOCATION MAP
SCALE: 1" = 1320'



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:

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:

DRAWING SHEET INDEX

DRAWING SHEET INDEX

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 Matterials 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

REV#	DATE	REVISION DESCRIPTION	BY

HORZ DATUM: NAD83	SURVEY DATE:	11/2/2021	DESIGN DATE:	5/20/24
VERT DATUM: NAVD88	SURVEYED BY:	KB, SD	DESIGNED BY	JRL
GEODETIC CONTROL REF: MNDOT DISK "	DRAWN BY:	JRL	DRAWN BY:	JRL
CONTROL EL.: 1035.74	CHECKED BY:	TAW	CHECKED BY:	TAW

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 LIC. NO. 22148 DATE: 5/20/24

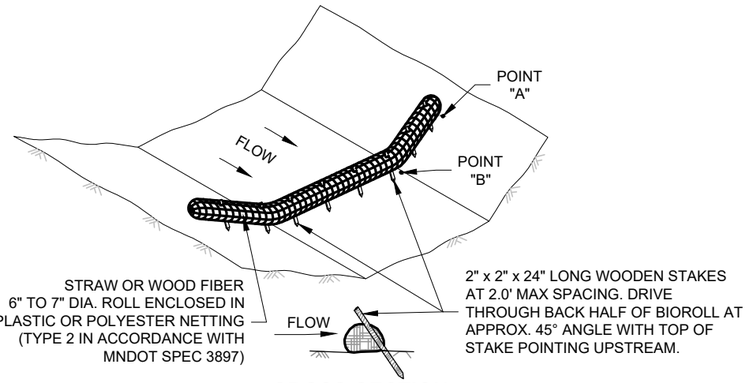
BWSR

PROJECT #: **2021-203**

SHEET NO. **1** OF 21

MORGAN - REDWOOD COUNTY
ROAD BANKING WETLAND RESTORATION
COVERSHEET

PLOT DATE: 5/20/2024 12:41 PM \\edc1adminfs01\bwsr\home\jluniewski\Desktop\New Banking Projects\2021-203 - Morgan\2021-203\2021-203 Design.dwg

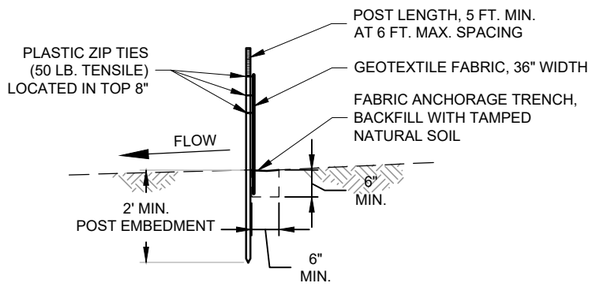


CROSS-SECTION

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

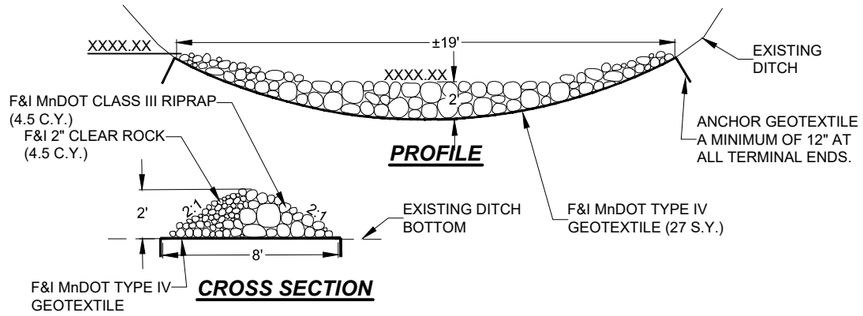
NOT TO SCALE



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

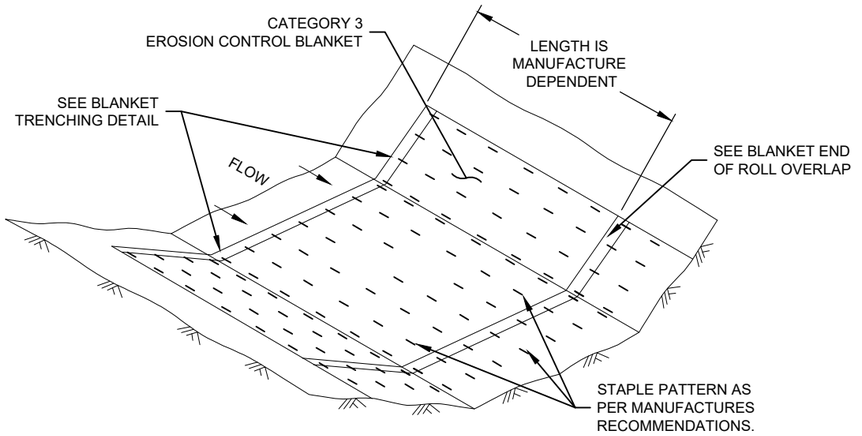


ROCK WEEPER DETAILS

NOT TO SCALE

EROSION CONTROL BLANKET DETAIL (SLOPE)

NOT TO SCALE



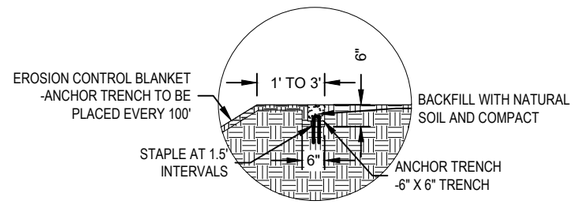
EROSION CONTROL BLANKET LAYOUT (CHANNEL)

NOT TO SCALE

BLANKET TRENCHING DETAIL

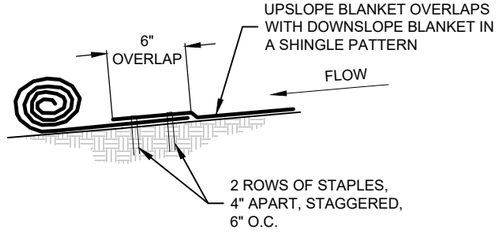
NOT TO SCALE

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.



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.

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

BWSR

MORGAN - REDWOOD COUNTY
ROAD BANKING WETLAND RESTORATION
EROSION CONTROL DETAILS

PROJECT #: **2021-203**

SHEET NO. **2** OF 21

LEGEND

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

TILE INTAKE - 6" PLAST
INTAKE ELEV. = 1021.50
INVERT ELEV. = 1018.18

TILE INTAKE - 5" PLAST
INTAKE ELEV. = 1022.46
INVERT ELEV. = TURNED DOWN

TILE INTAKE - 8" CLAY
INTAKE ELEV. = 1021.06
INVERT ELEV. = 1017.54

TILE INTAKE - CONC.
TOP OF CONC.TILE ELEV. = 1020.10

TILE INTAKE - 4" PLAS.
INTAKE ELEV. = 1026.18
INVERT ELEV. = 1023.78

TILE INTAKE - 8" PLAS.
INTAKE ELEV. = 1021.28
INVERT ELEV. = 1016.82
TOP OF TILE ELEV. = 1017.61

TILE INTAKE - 15" CLAY
INTAKE ELEV. = 1016.31
INVERT ELEV. = 1013.09
TOP OF CLAY TILE ELEV. = 1014.50

TILE INTAKE - 15" CLAY
INTAKE ELEV. = 1018.41
INVERT ELEV. = 1012.53

TILE INTAKE - 15" CLAY
INTAKE ELEV. = 1019.38
INVERT ELEV. = 1012.41

TILE INTAKE - 6" CONC.
INTAKE ELEV. = 1023.70
INVERT ELEV. = 1020.58

CULV. INFO.-18" CMP
INV. WEST END EL.= 1024.42
INV. EAST END EL.= 1024.47

CULV. INFO.-12" CMP
TOP NORTH END EL.= 1020.66
INV. NORTH END EL.= 1019.57
TOP SOUTH END EL.= 1020.22
INV. SOUTH END EL.= 1019.23

CULV. INFO.-18" CMP
TOP WEST END EL.= 1025.76
INV. WEST END EL.= 1024.26
TOP SOUTH END EL.= 1024.06
INV. SOUTH END EL.= 1022.56

TBM #705 - ELEV. = 1020.66
TOP NORTH END OF 12" CMP UNDER EAST FIELD APPROACH

TBM #303 - ELEV. = 1025.09
TOP NORTH END OF 18" RCP UNDER CSAH #3

STA. 3+39 BR. 6E (END)
8" JD 17 TILE, BR. 6E
10" JD 17 TILE, BR. 6 (370 L.F. @ 0.1% GRADE)
STA. 109+20 BR. 6 (END)
STA. 105+50 BR. 6
STA. 0+00 BR. 6E
STA. 100+84 BR.6
STA. 99+12 BR. 6
12" JD 17 TILE, BR. 6 (1,015 L.F. @ 0.1% GRADE)
STA. 91+77 BR. 6
STA. 15+30 BR. 6D (END)
6" JD 17 TILE, BR. 6D (530 L.F. @ 0.3% GRADE)
12" JD 17 TILE, BR. 6 (800 L.F. @ 0.4% GRADE)
STA. 87+35 BR. 6D
6" JD 17 TILE, BR. 6D (500 L.F. @ 0.5% GRADE)
18" JD 17 TILE, BR. 6D (500 L.F. @ 0.1% GRADE)
15" JD 17 TILE BR. 6 (1,262 L.F. @ 0.1% GRADE)
STA. 74+73 BR. 6
16" JD 17 TILE, BR. 6 (0.1% GRADE)
STA. 74+00 BR. 6
STA. 7+53 BR. 6D
STA. 0+00 BR. 6D

TAUER PROPERTY
RJR FARMS PROPERTY
MATHIOWETZ PROPERTY
CHRISTENSEN PROPERTY
MATHIOWETZ PROPERTY
TERRACE AVE
CSAH #3

0 300 600
SCALE (IN FEET)

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

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

BWSR

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

PROJECT #: 2021-203

SHEET NO. 3 OF 21

PLOT DATE: 5/20/2024 12:42 PM \\edc1adminfs01\bwsr\home\jluniewski\Desktop\New Banking Projects\2021-203 - Morgan\2021-203\2021-203 Design.dwg

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

STA.3+39
BR. 6E (END)

STA.106+39
BR. 6 (END)

TAUER PROPERTY

8" JD 17 TILE, BR. 6E

10" JD 17 TILE, BR. 6
(370 L.F. @ 0.1% GRADE)

RJR FARMS PROPERTY

STA.102+69
BR. 6

STA.0+00
BR. 6E

PROPOSED 12" INSPECTION INTAKE @ STA. 97+00, SEE DETAILS SHEET #13

PROPOSED NORTH FILL PLACEMENT, SEE DETAILS SHEET #10

PROPOSED SCRAPE/SEDIMENT REMOVAL AREA #3, SEE DETAILS SHEET #8

MATHIOWETZ PROPERTY

STA.98+03
BR. 6

STA.0+00
BR. 6D

STA.89+68
BR. 6

PROPOSED 12" INSPECTION INTAKE @ STA. 86+00, SEE DETAILS SHEET #13

PROPOSED RE-ALIGNED JD 17 BRANCH 6, SEE DETAILS SHEET #13

STA.87+26
BR. 6

STA.86+00
BR. 6

STA. 79+20
BR. 6

PROPOSED RE-ALIGNED JD 17 BRANCH 6D, SEE DETAILS SHEET #14

PROPOSED NORTHEAST FILL PLACEMENT, SEE DETAILS SHEET #11

STA.0+09
BR. 6D

STA.5+85
BR. 6D

STA.7+78
BR. 6D (END)

6" JD 17 TILE, BR. 6D
(530 L.F. @ 0.1% GRADE)

STA.4+65
BR. 6D

PROPOSED NORTH FILL PLACEMENT, SEE DETAILS SHEET #10

16" JD 17 TILE BR. 6
(0.1% GRADE)

CHRISTENSEN PROPERTY

PROPOSED SCRAPE/SEDIMENT REMOVAL AREA #1, SEE DETAILS SHEET #8

STA. 74+00
BR. 6

STA. 74+73
BR. 6

PROPOSED WEST FILL PLACEMENT, SEE DETAILS SHEET #9

WETLAND #1
POOL EL. = 1019.75

PROPOSED OUTLET STRUCTURE, BERM, SPILLWAY & COLLECTION MANHOLE, SEE DETAILS SHEETS #15 THRU 20

TILE OUTLET #2, SEE DETAILS SHEET #21

PROPOSED SCRAPE/SEDIMENT REMOVAL AREA #4, SEE DETAILS SHEET #8

PROPOSED SCRAPE/SEDIMENT REMOVAL AREA #2, SEE DETAILS SHEET #8

TILE OUTLET #1, SEE DETAILS SHEET #21

MATHIOWETZ PROPERTY

N

0 300 600

SCALE (IN FEET)

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

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

BWSR

MORGAN - REDWOOD COUNTY
ROAD BANKING WETLAND RESTORATION
PLAN VIEW

PROJECT #: **2021-203**

SHEET NO. **4** OF 21

PLOT DATE: 5/20/2024 12:42 PM \\edc1adminfs01\bwsr\home\jluniewski\Desktop\New Banking Projects\2021-203 - Morgan\2021-203\2021-203 Design.dwg

LEGEND

- PROPOSED PUBLIC TILE
- EXISTING PUBLIC TILE
- EXISTING PRIVATE TILE
- EXISTING TREELINE
- APPROXIMATE PROPERTY LINE
- PROPOSED PRIVATE TILE
- CONSERVATION EASEMENT (EAS)
- PROPOSED POOL
- PROPOSED TILE BREAK (TYPE / LENGTH)

TAUER PROPERTY

RJR FARMS PROPERTY

MATHIOWETZ PROPERTY

CHRISTENSEN PROPERTY

STA. 3+39
BR. 6E (END)

8" JD 17 TILE, BR. 6E

10" JD 17 TILE, BR. 6
(370 L.F. @ 0.1% GRADE)

STA. 109+20
BR. 6 (END)

STA. 105+50
BR. 6

STA. 0+00
BR. 6E

STA. 100+84
BR.6

STA. 99+12
BR. 6

12" JD 17 TILE, BR. 6
(1,015 L.F. @ 0.1% GRADE)

STA. 91+77
BR. 6

STA. 15+30
BR. 6D (END)

6" JD 17 TILE, BR. 6D
(530 L.F. @ 0.3% GRADE)

6" JD 17 TILE, BR. 6D
(500 L.F. @ 0.5% GRADE)

STA. 7+53
BR. 6D

8" JD 17 TILE, BR. 6D
(500 L.F. @ 0.1% GRADE)

STA. 87+35
BR. 6D

12" JD 17 TILE, BR. 6
(800 L.F. @ 0.4% GRADE)

STA. 0+00
BR. 6D

15" JD 17 TILE BR. 6
(1,262 L.F. @ 0.1% GRADE)

STA. 74+73
BR. 6

16" JD 17 TILE BR. 6
(0.1% GRADE)

STA. 74+00
BR. 6

WETLAND #1
POOL EL. = 1019.75

TERRACE AVE

CSAH #3

A 100 — B 160

N

0 300 600
SCALE (IN FEET)

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

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

BWSR

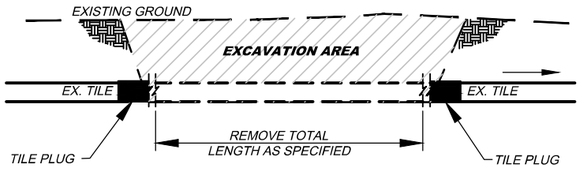
MORGAN - REDWOOD COUNTY
ROAD BANKING WETLAND RESTORATION

PROPOSED TILE BLOCK LOCATIONS

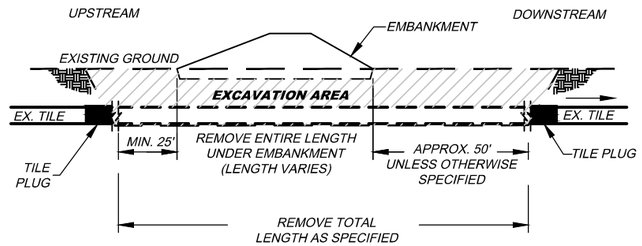
PROJECT #: 2021-203

SHEET NO. 5 OF 21

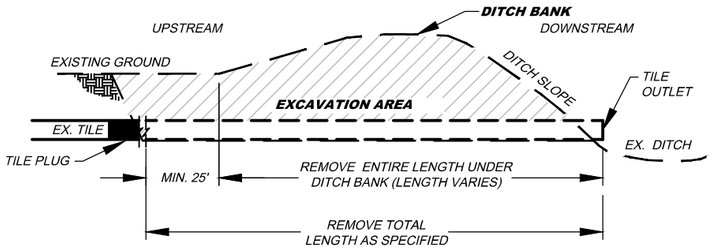
TILE REMOVAL DETAILS/ REQUIREMENTS



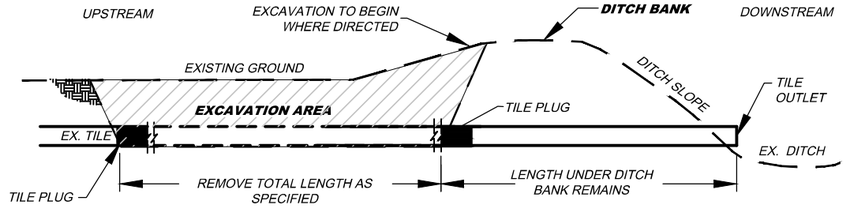
TYPICAL
NOT TO SCALE



UNDER EMBANKMENTS
NOT TO SCALE



AT OUTLET LOCATIONS
NOT TO SCALE

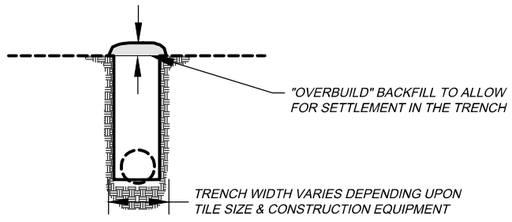


AT OUTLET LOCATIONS WHERE DIRECTED TO NOT DISTURB DITCH BANK
NOT TO SCALE

TILE REMOVAL TRENCH CONSTRUCTION REQUIREMENTS

TYPE A

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



NOT TO SCALE

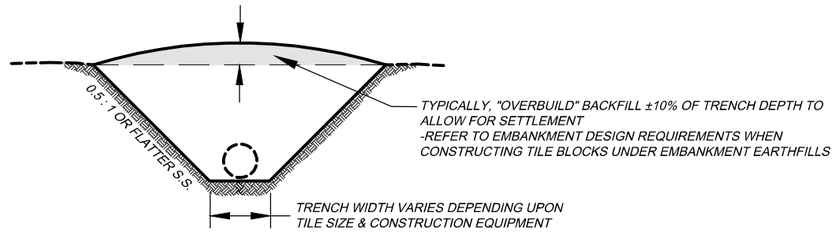
AT LOCATION OF TILE BLOCKS, A SLOPED OR BENCHED TRENCH EXCAVATION MAY ME NECESSARY TO SAFELY PLUG TILE.

THE TRENCH SHALL BE BACKFILLED USING PREVIOUSLY EXCAVATED SOILS.

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

TYPE B

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



NOT TO SCALE

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

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

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:

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

CONSTRUCTION REQUIREMENTS

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

TILE 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.

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 LIC. NO. 22148
DATE: 5/20/24

BWSR

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

PROJECT #:
2021-203

SHEET NO.
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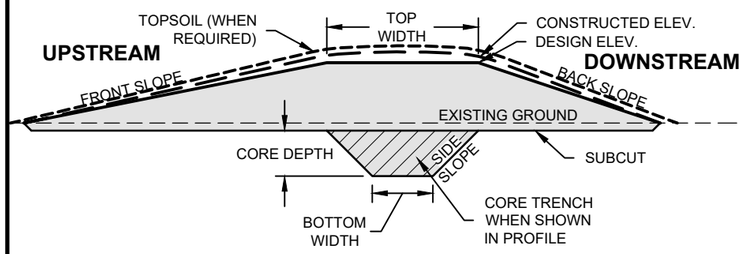
EMBANKMENT CONSTRUCTION REQUIREMENTS



EMBANKMENT DETAIL

NOT TO SCALE

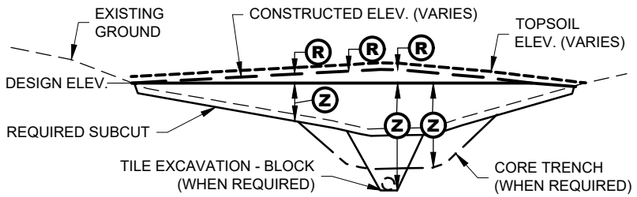
SUBCUT DIMENSIONS SHOWN ON EMBANKMENT PROFILE ARE MINIMUMS. THE SUBCUT DEPTH MAY NEED TO BE INCREASED BASED ON SITE AND SOIL CONDITIONS. ENGINEER MAY DIRECT WHEN TO EXCAVATE TO DIFFERENT DEPTHS THAN SHOWN.

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



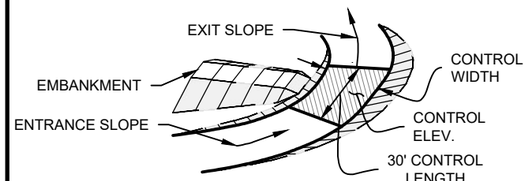
CONSTRUCTED ELEVATION INCLUDES REQUIRED AMOUNT OF OVERBUILD ADDED TO DESIGN ELEVATION TO ACCOUNT FOR EXPECTED SETTLEMENT.

Ⓩ - TOTAL FILL HEIGHT (DESIGN ELEVATION - SUBGRADE ELEVATION)

Ⓡ - SETTLEMENT AMOUNT (OVERBUILD) = Ⓩ x SETTLEMENT % (PER PLAN)

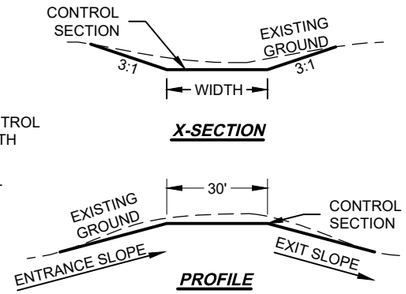
NOTE: THE FIGURE PROVIDED ILLUSTRATES THIS FOR A CONSTRUCTED EMBANKMENT, HOWEVER, THIS REQUIREMENT FOR OVERBUILD APPLIES TO ALL CONSTRUCTED FILLS. TOPSOIL NOT TO BE INCLUDED IN CONSTRUCTED ELEVATION.

SPILLWAY CONSTRUCTION REQUIREMENTS



ISOMETRIC VIEW SPILLWAY

NOT TO SCALE



SPILLWAY DETAIL

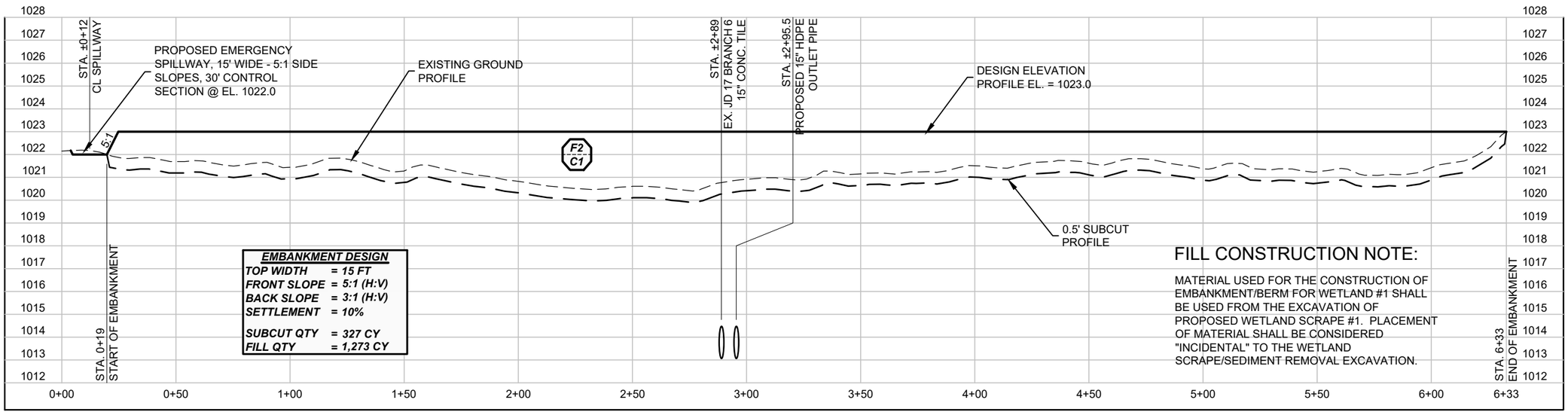
NOT TO SCALE

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.



PROFILE ALONG CL OF EMBANKMENT/BERM FOR WETLAND #1

SCALE 1" = 50'

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 — LIC. NO. 22148 — DATE: 5/20/24

BWSR

MORGAN - REDWOOD COUNTY

ROAD BANKING WETLAND RESTORATION

EMBANKMENT AND SPILLWAY DETAILS

PROJECT #: **2021-203**

SHEET NO. **7** OF 21

PLOT DATE: 5/20/2024 12:44 PM \\edc1adminfs01\bwsr\home\jluniewski\Desktop\New Banking Projects\2021-203 - Morgan\2021-203\2021-203 Design.dwg

SCRAPE / SEDIMENT REMOVAL MATERIAL PLACEMENT LOCATION

SCRAPE ID #	SCRAPE TYPE	RANDOM FILL	BERM / EMBANKMENT	DITCH FILL	SALVAGE TOPSOIL	ADJACENT UPLANDS
1	A	X	X			
2	A	X	X			
3	A	X				
4	B	X				

* FILL IN THE TABLE WITH EITHER AN "X" AND/OR THE MATERIAL PLACEMENT DESCRIPTION AND/OR SHEET # FOR THE LOCATION OF THE EXCAVATED MATERIAL PLACEMENT. THE LOCATION OF THE MATERIAL PLACEMENT MAY VARY AND MAY BE PLACED IN MORE THAN ONE LOCATION. IF THERE ARE NO CELLS FILLED IN, THEN THE EXCAVATED MATERIAL SHALL BE PLACED ON ADJACENT UPLANDS OR AS OTHERWISE DIRECTED BY ENGINEER

SCRAPE / SEDIMENT REMOVAL DESIGN TABLE

Ⓐ APPROXIMATE LENGTH (FEET)	Ⓑ APPROXIMATE LENGTH (FEET)	Ⓒ APPROXIMATE EXCAVATION DEPTH (FEET)	Ⓓ APPROXIMATE SIDE SLOPE (FEET)	ESTIMATED EXCAVATED QUANTITY (C.Y.)
370	185	1.5	8	2709
260	130	1.5	8	1283
270	135	1.5	8	1391
800	130	1.5	8	5755

* THE LENGTHS, DEPTHS, AND SLOPES PROVIDED ARE AVERAGES. DIMENSIONS MAY VARY. (SEE CONSTRUCTION REQUIREMENTS BELOW).

MATERIAL PLACEMENT REQUIREMENTS

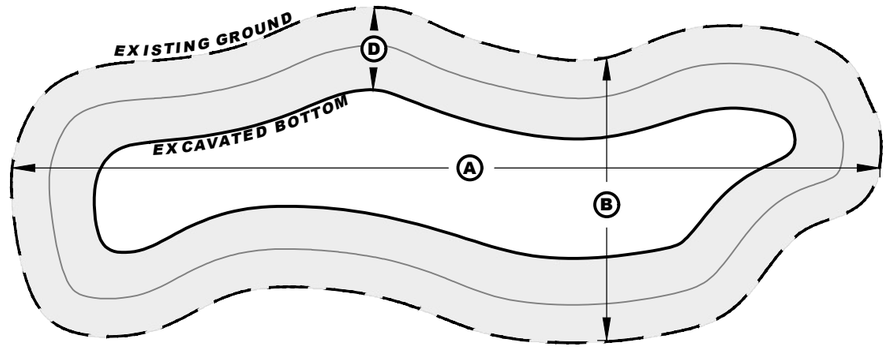
MATERIAL PLACEMENT:
CONTRACTOR SHALL PLACE EXCAVATED MATERIAL IN LOCATIONS AS SHOWN IN MATERIAL PLACEMENT TABLE, DRAWINGS, OR AS OTHERWISE DIRECTED BY ENGINEER.

LOCATION	DESCRIPTION
RANDOM FILL	PLACEMENT OF EXCAVATED MATERIAL FOR RANDOM FILL SHALL BE WELL GRADED TO DIMENSIONS SHOWN IN DRAWINGS OR OTHERWISE DIRECTED BY ENGINEER.
BERM / EMBANKMENT	PLACEMENT OF EXCAVATED MATERIAL FOR BERM SHALL BE TO DIMENSIONS AND COMPACTION REQUIREMENTS SHOWN IN DRAWINGS OR OTHERWISE DIRECTED BY ENGINEER.
DITCH FILL	PLACEMENT OF EXCAVATED MATERIAL FOR DITCH FILL SHALL BE TO DIMENSIONS SHOWN IN DRAWINGS OR OTHERWISE DIRECTED BY ENGINEER.
SALVAGE TOPSOIL	TOPSOIL IS TO BE STRIPPED, STOCK PILED, AND THEN PLACED / GRADED BACK INTO THE EXCAVATED SCRAPE AREA. TOPSOIL STRIPPING DEPTHS SHALL BE 4 TO 6 INCHES UNLESS OTHERWISE DIRECTED BY ENGINEER.
ADJACENT UPLANDS	ANY EXCESS EXCAVATED MATERIALS SHALL BE PLACED ON ADJACENT UPLANDS SHALL BE WELL GRADED, AND CONFORM TO EXISTING TOPOGRAPHY, UNLESS OTHERWISE DIRECTED BY ENGINEER.

CONSTRUCTION REQUIREMENTS

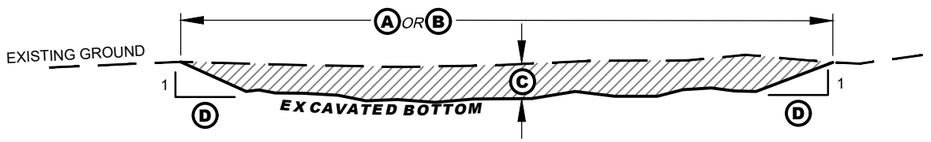
WETLAND SCRAPE / SEDIMENT REMOVAL:
- THE PROJECT ENGINEER OR THE ENGINEER'S REPRESENTATIVE MAY CHANGE THE DEPTH, SLOPE, SHAPE, SIZE, OR LOCATION OF THE EXCAVATION AT THEIR DISCRETION.
- THE FINISHED SHAPE OF THE EXCAVATION SHALL BE IRREGULAR AS SHOWN.
- THE FINISHED SURFACE OF THE EXCAVATION SHALL BE ROUGH (NOT GRADED SMOOTH).

FINAL QUANTITIES AND PAYMENT:
- EXCAVATION QUANTITIES WILL BE FIELD VERIFIED / MEASURED FOR PAYMENT UPON COMPLETION OF THE EXCAVATION. PLACEMENT REQUIREMENTS (LOCATION) SHALL BE INCIDENTAL TO SCRAPE / SEDIMENT REMOVAL.
- THE VOLUME (C.Y.) SHOWN FOR EACH EXCAVATION IS THE MAXIMUM QUANTITY ALLOWABLE FOR PAYMENT WITHOUT PRIOR APPROVAL FOR AN INCREASE FROM THE ENGINEER.
- UNLESS OTHERWISE SPECIFIED THE PLACEMENT OF ALL EXCAVATED MATERIALS SHALL BE INCIDENTAL TO THE COST OF THE EXCAVATION (I.E., NOT A PAY ITEM).



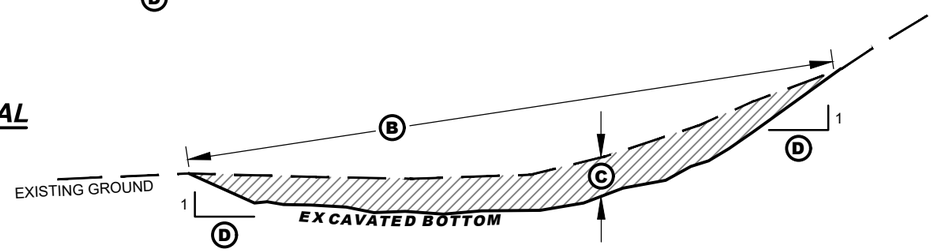
PLANVIEW OF SCRAPE / SEDIMENT REMOVAL

NOT TO SCALE



SECTION OF TYPE A
SCRAPE / SEDIMENT REMOVAL

NOT TO SCALE



SECTION OF TYPE B
SCRAPE / SEDIMENT REMOVAL

NOT TO SCALE

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

THOMAS A. WENZEL LIC. NO. 22148

DATE: 5/20/24

BWSR

MORGAN - REDWOOD COUNTY
ROAD BANKING WETLAND RESTORATION
SCRAPE DETAILS

PROJECT #: **2021-203**

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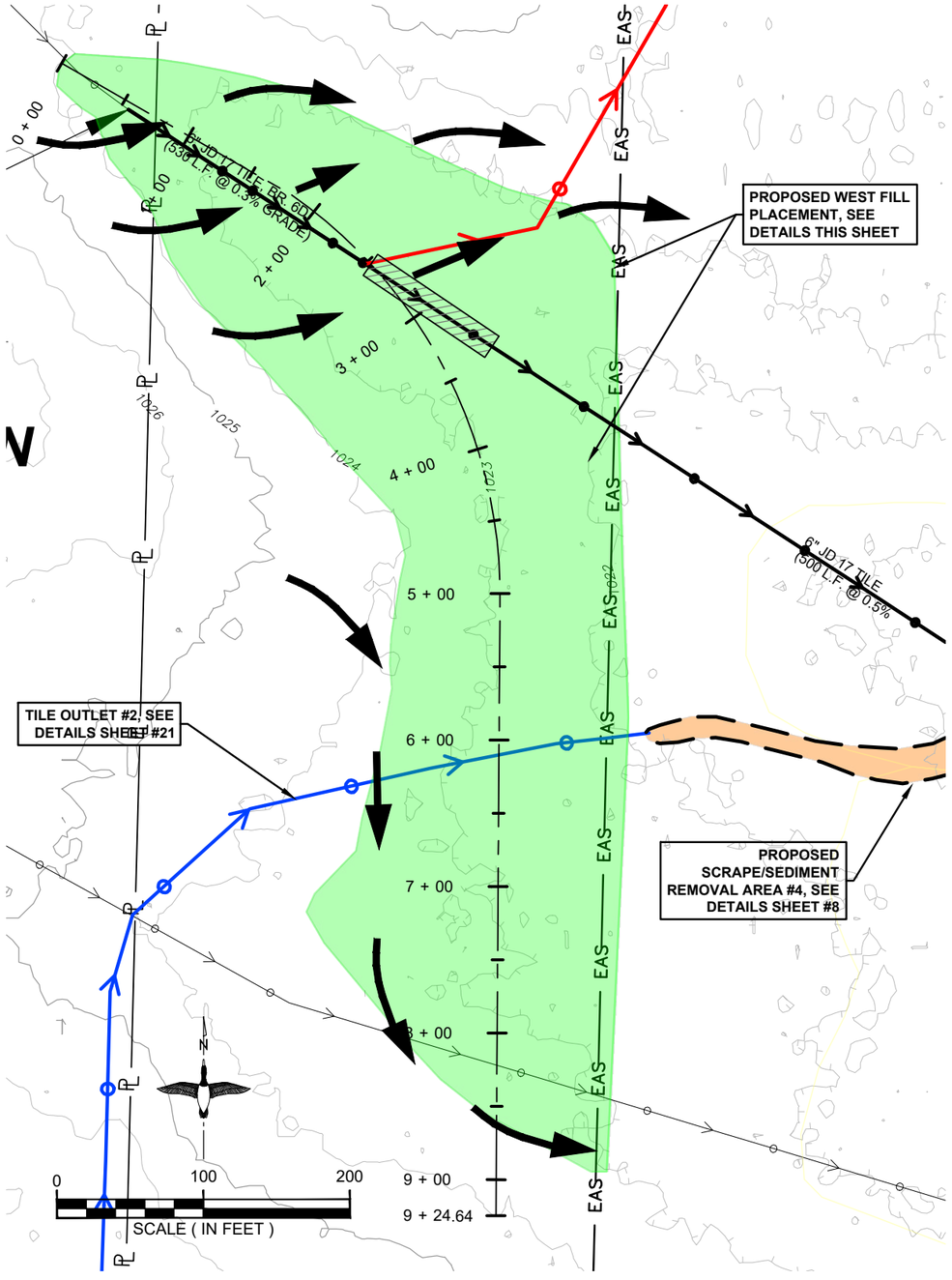
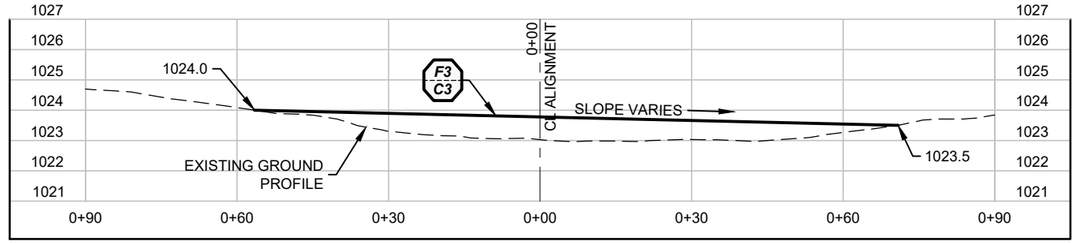


ENLARGED PLAN VIEW OF PROPOSED WEST FILL

SCALE 1" = 100'

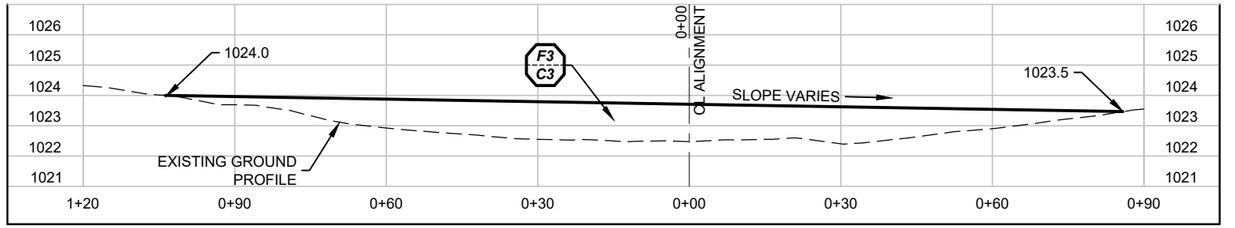
FILL CONSTRUCTION NOTE:

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 SCRAPE/SEDIMENT REMOVAL AREAS.



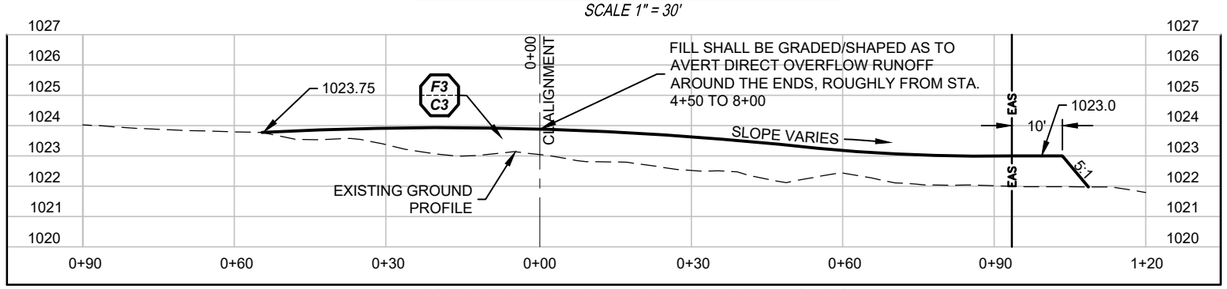
WEST FILL X-SECTION STA. 1+00

SCALE 1" = 30'



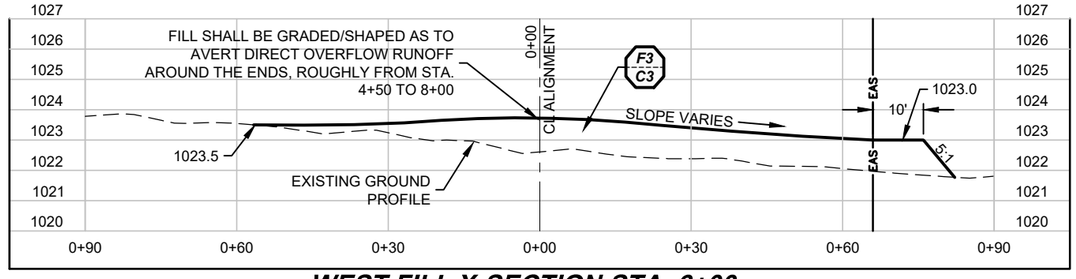
WEST FILL X-SECTION STA. 2+00

SCALE 1" = 30'



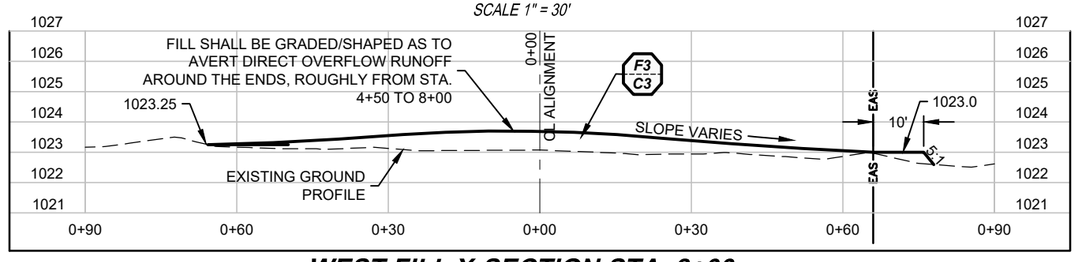
WEST FILL X-SECTION STA. 4+00

SCALE 1" = 30'



WEST FILL X-SECTION STA. 6+00

SCALE 1" = 30'



WEST FILL X-SECTION STA. 8+00

SCALE 1" = 30'

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

BWSR

MORGAN - REDWOOD COUNTY
ROAD BANKING WETLAND RESTORATION
WEST FILL DETAILS

PROJECT #: 2021-203

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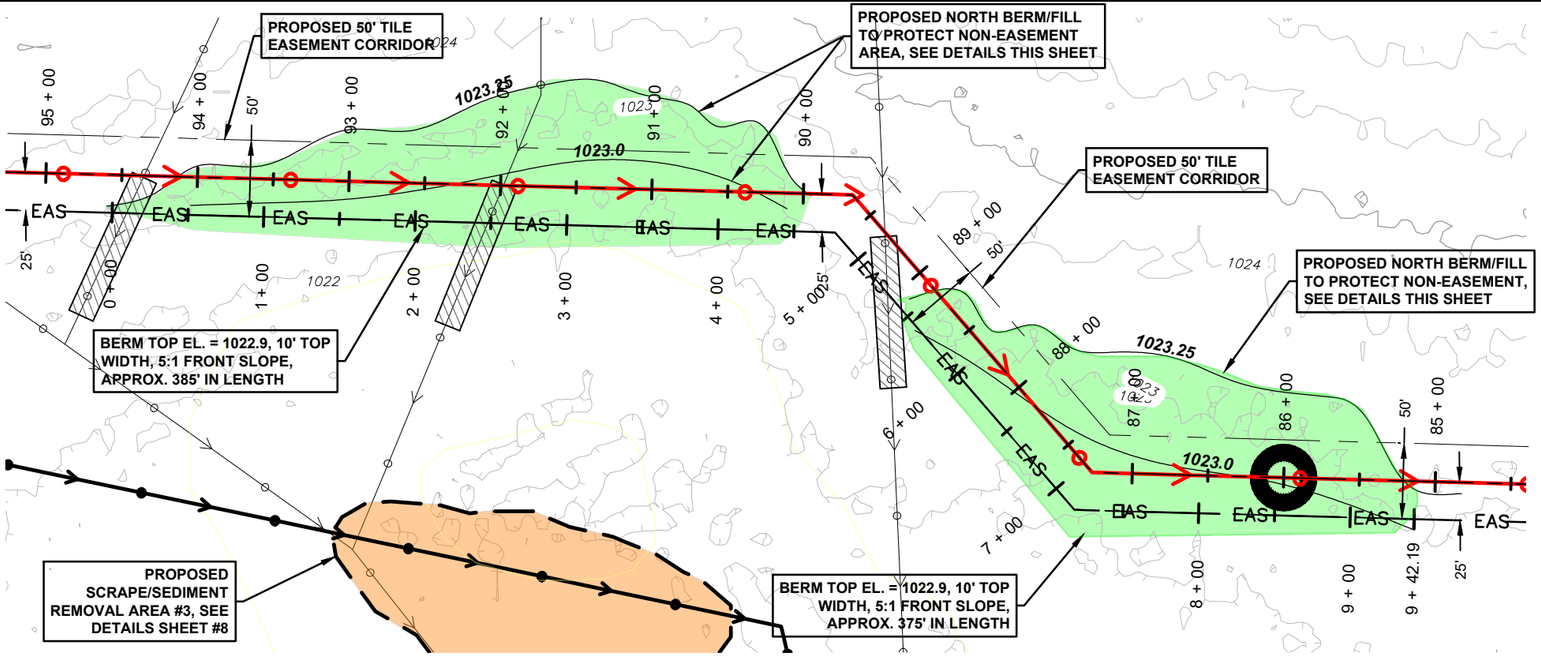
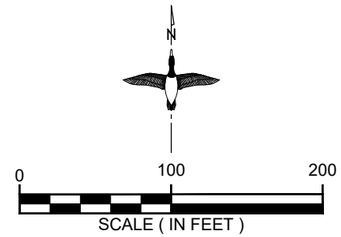
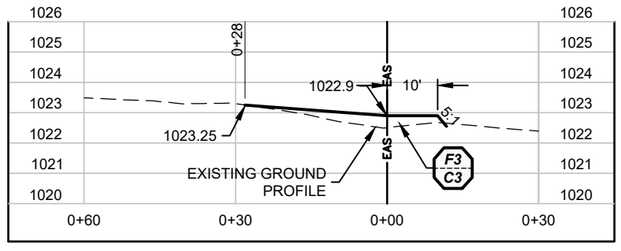




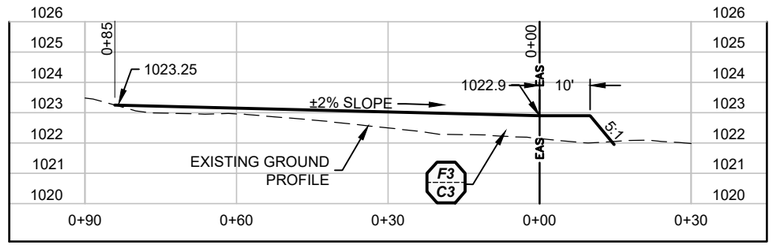
ENLARGED PLAN VIEW OF PROPOSED NORTH FILL

SCALE 1" = 100'



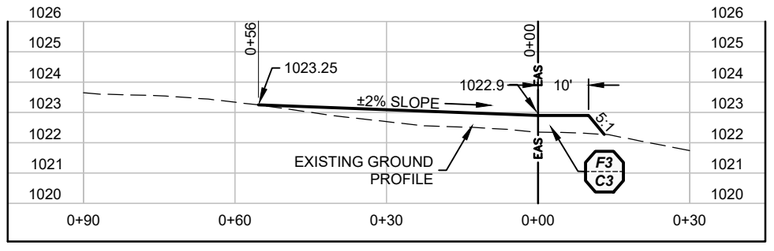
NORTH FILL X-SECTION STA. 1+00

SCALE 1" = 30'



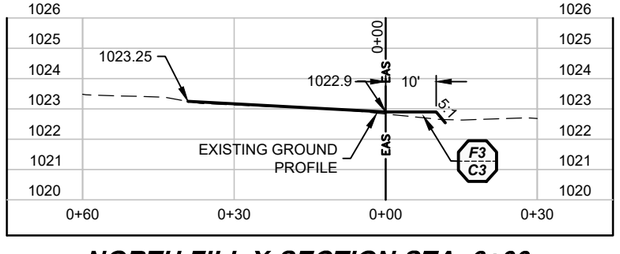
NORTH FILL X-SECTION STA. 3+00

SCALE 1" = 30'



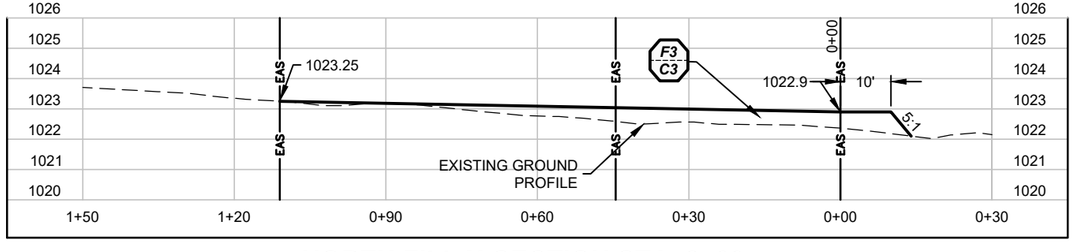
NORTH FILL X-SECTION STA. 4+00

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. MENZEL — DATE: 5/20/24 — LIC. NO. 22148

BWSR

MORGAN - REDWOOD COUNTY
ROAD BANKING WETLAND RESTORATION
NORTH FILL DETSILS

PROJECT #: **2021-203**

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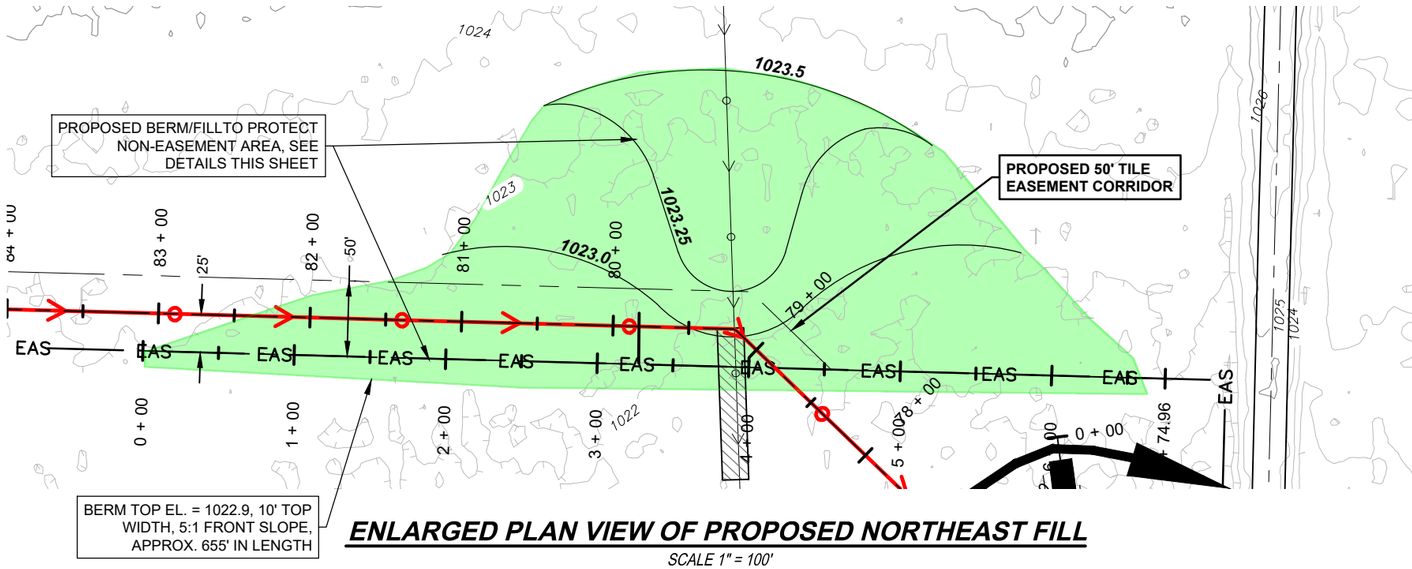
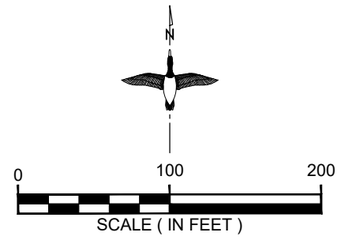
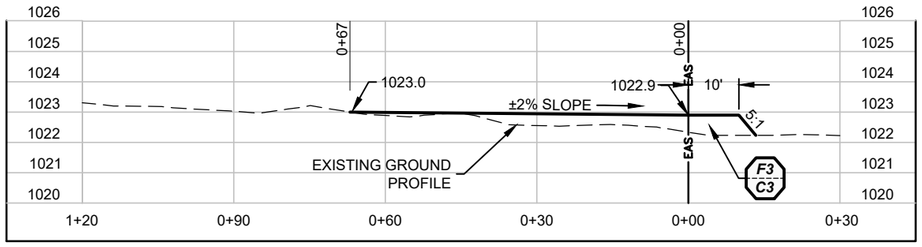


ENLARGED PLAN VIEW OF PROPOSED NORTHEAST FILL

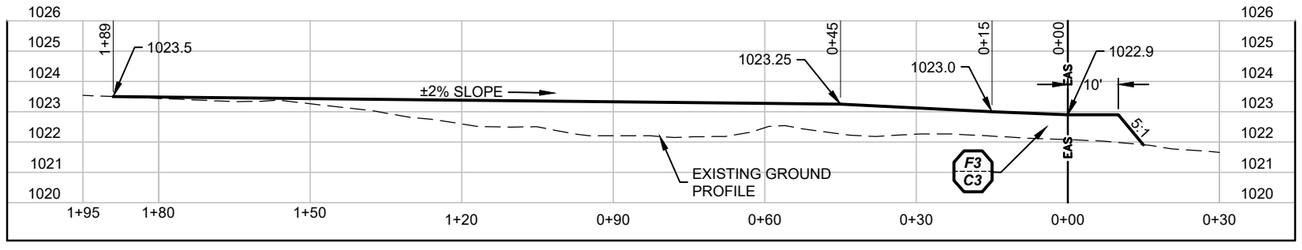
SCALE 1" = 100'





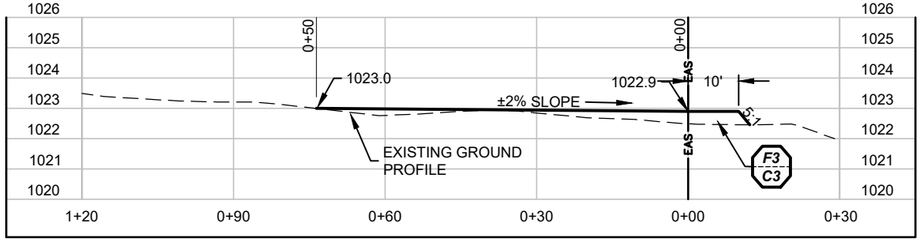
NORTHEAST FILL X-SECTION STA. 2+00

SCALE 1" = 30'



NORTHEAST FILL X-SECTION STA. 3+90

SCALE 1" = 30'



NORTHEAST FILL X-SECTION STA. 6+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 — LIC. NO. 22148 — DATE: 5/20/24

BWSR

MORGAN - REDWOOD COUNTY
ROAD BANKING WETLAND RESTORATION
NORTHEAST FILL DETAILS

PROJECT #: **2021-203**

SHEET NO. **11** OF 21

SERIES 200 BEDDING DETAILS

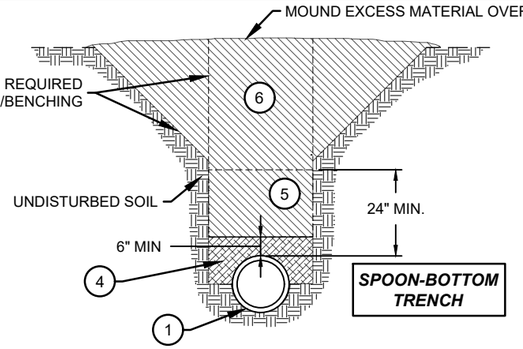
PURPOSE: *SERIES 200 BEDDING DETAILS ARE FOR DEEPER INSTALLATION, OR WHERE OTHERWISE REQUIRED, OF CORRUGATED HDPE PIPE AND AGRICULTURAL DRAINAGE TILE.*

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.

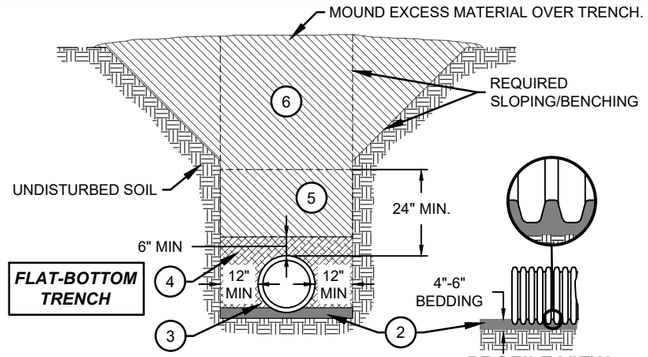
APPROVED MATERIALS FOR BEDDING AND INITIAL BACKFILL

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/SANDMIXTURES; POORLY GRADED SAND, GRAVELS AND GRAVEL/SAND MIXTURE; LITTLE OR NO FINES.



BEDDING DETAIL - 201

NOT TO SCALE



BEDDING DETAIL - 202

NOT TO SCALE

NOT TO SCALE

BEDDING DETAILS 301 AND 302

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

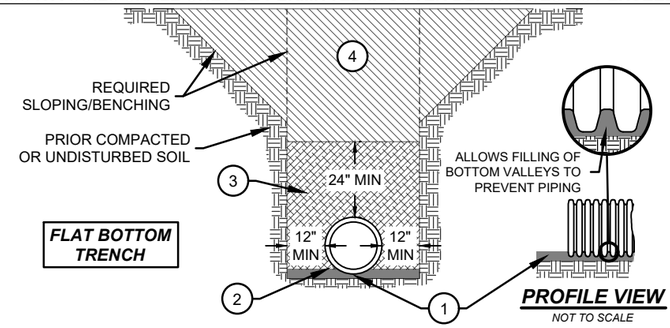
1. PRIOR TO SETTING PIPE, PLACE 4"-6" OF LOOSE FRIABLE APPROVED SOILS (SEE BELOW) IN THE TRENCH BOTTOM TO ALLOW FILLING OF BOTTOM VALLEYS OF THE PIPE AND TO ENSURE NO VOIDS EXIST WITHIN BEDDING ENVELOPE.
2. CAREFULLY LOAD THE PIPE PRIOR TO COMPLETELY BACKFILLING AND COMPACTING APPROVED SOILS (SEE BELOW) 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.

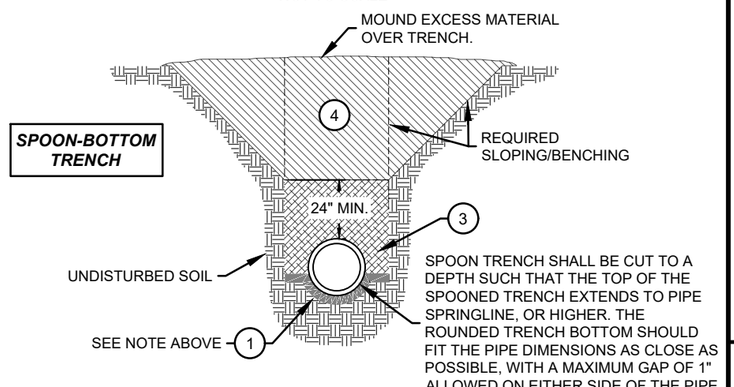
SOIL CLASSIFICATION				SOIL DESCRIPTION
ASTM D2321	SIDD SOIL	AASHTO M 145	ASTM D2487	
Class III	Category 2	A-2-4, A-2-5, A-2-6, OR A-4 OR 1-6 SOILS WITH MORE THAN 30% RETAINED ON #200 SIEVE	GM, GC SM, SC ML, CL	SILTY OR CLAYEY GRAVELS, GRAVELS/SAND/SILT OR GRAVELS AND/CLAY MIXTURES, SILTY OR CLAYEY SANDS, 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.**



BEDDING DETAIL - 301

NOT TO SCALE



BEDDING DETAIL - 302

NOT TO SCALE

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

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

BWSR

MORGAN - REDWOOD COUNTY

ROAD BANKING WETLAND RESTORATION

BEDDING DETAILS

PROJECT #: **2021-203**

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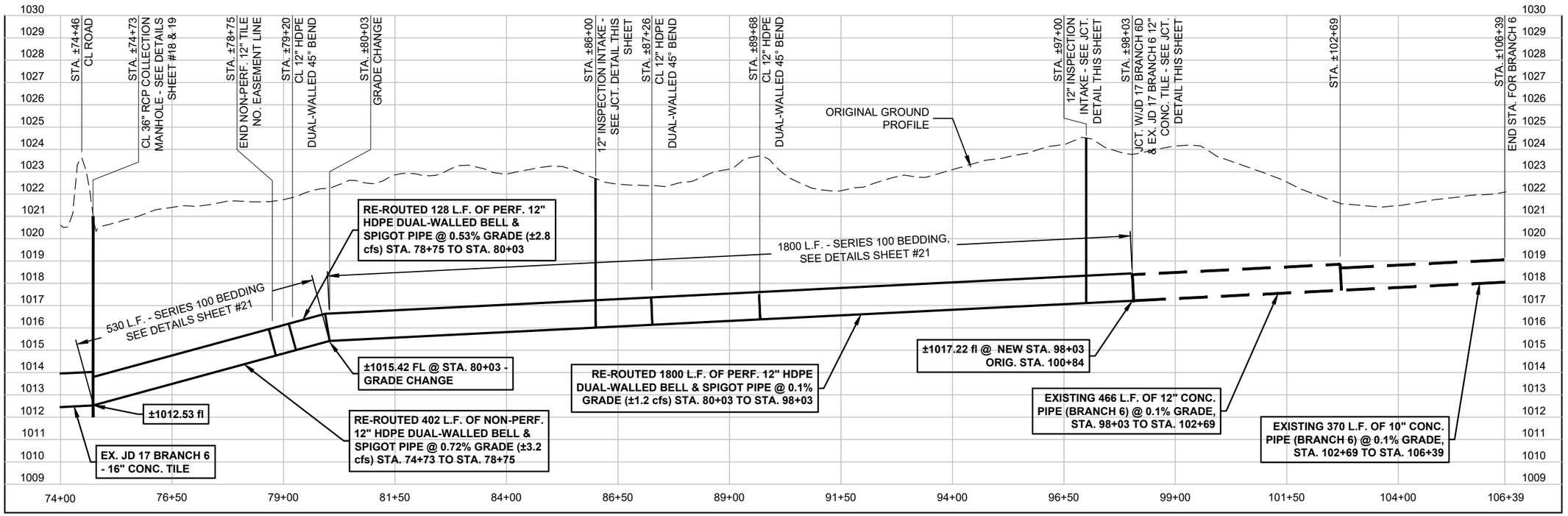
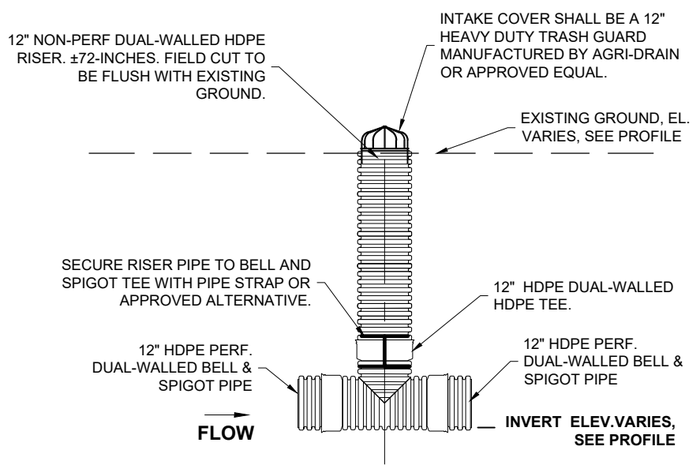


PROFILE ALONG CL OF PROPOSED & EXISTING JD 17 BRANCH 6 TILE

SCALE 1" = 250'

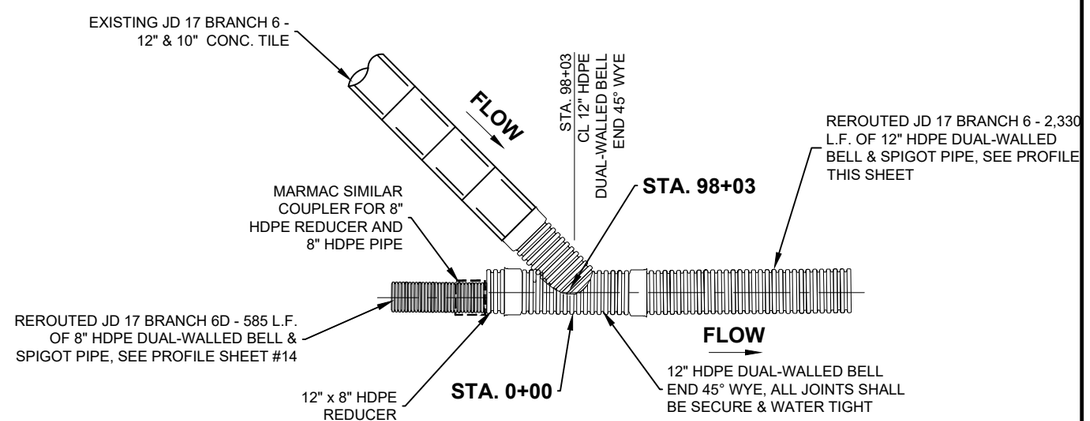
JD 17 - BRANCH 6 RE-ROUTE NOTE:

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

PROJECT #: 2021-203

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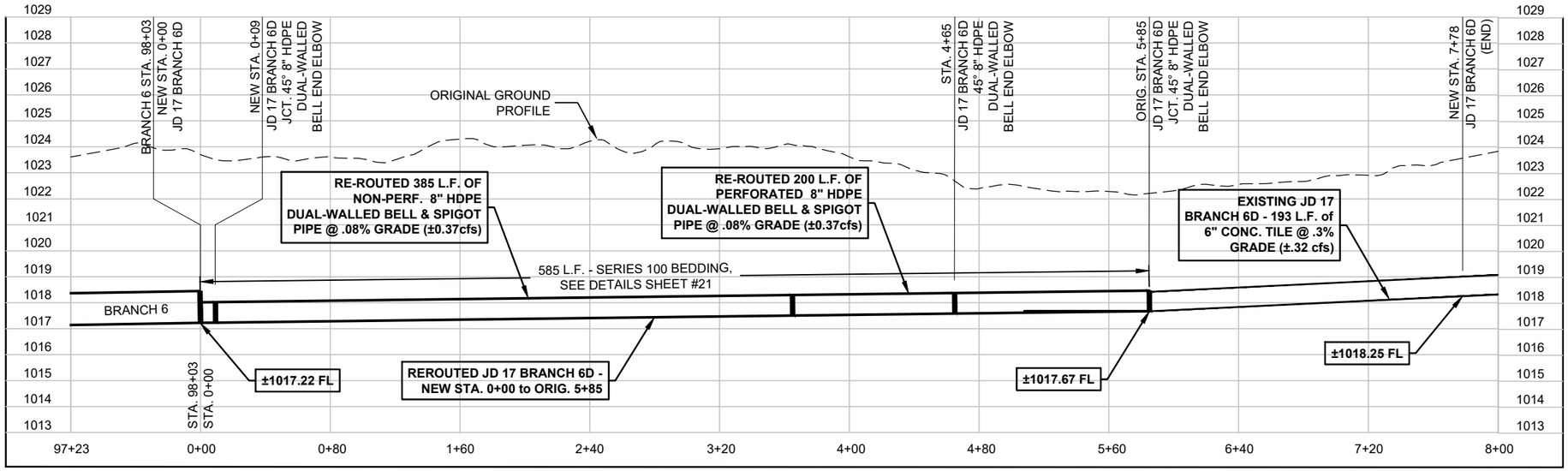
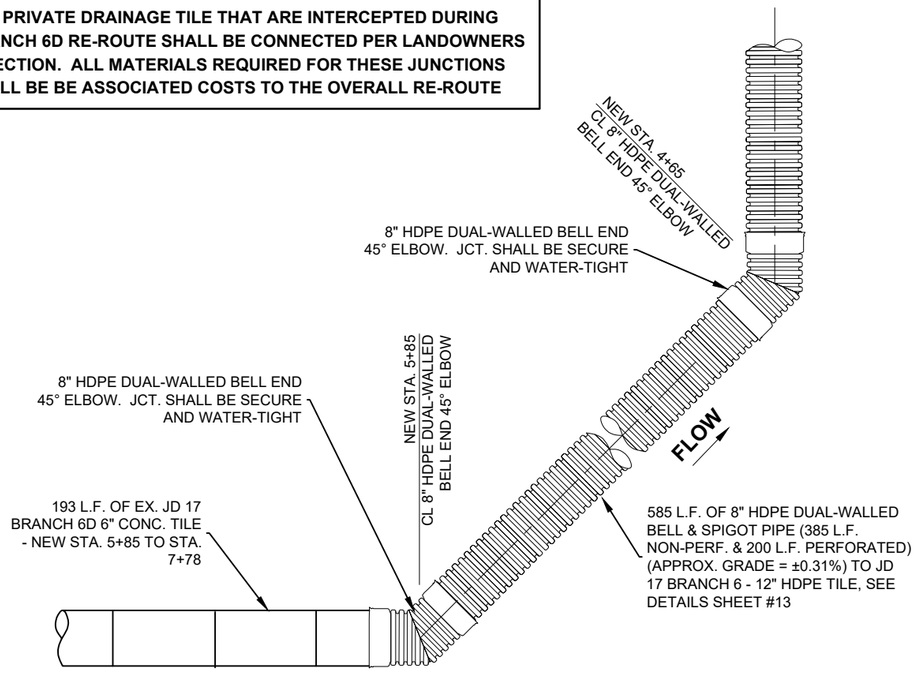


PROFILE ALONG CL OF PROPOSED JD 17 BRANCH 6D RE-ROUTE

SCALE 1" =80'

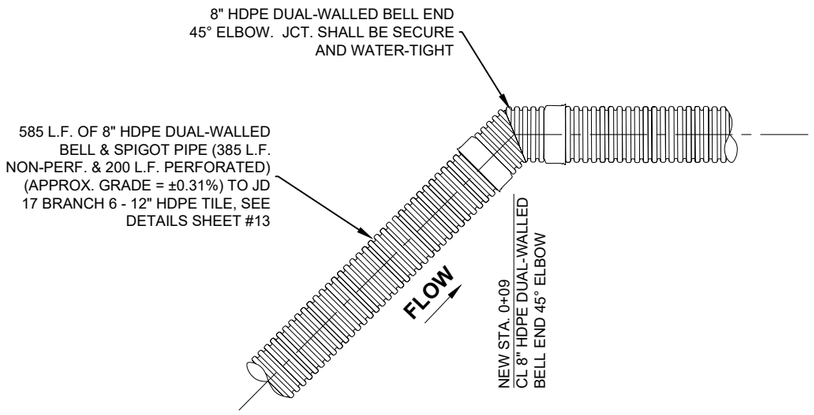
JD 17 - BRANCH 6D RE-ROUTE NOTE:

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 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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DATE: 5/20/24

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ROAD BANKING WETLAND RESTORATION

JD 17 BRANCH 6D RE-ROUTE DETAILS

PROJECT #: **2021-203**

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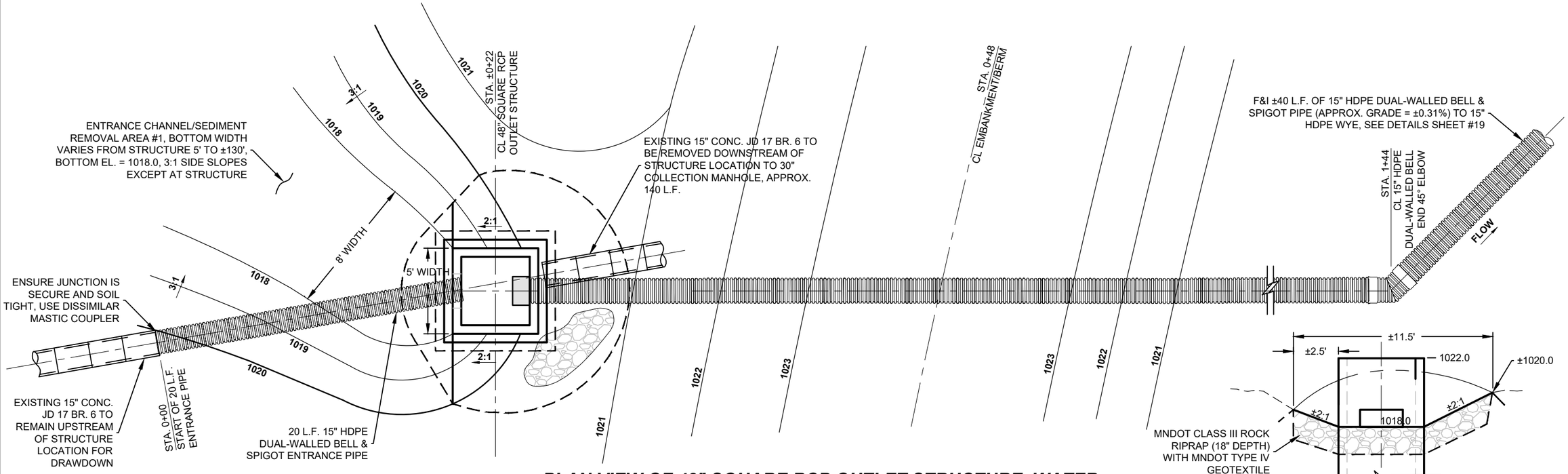
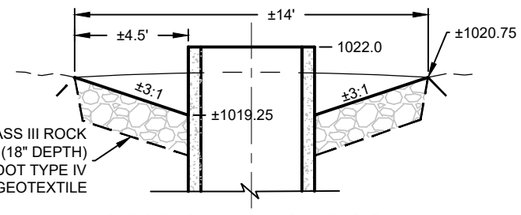


PLAN VIEW OF 48" SQUARE RCP OUTLET STRUCTURE, WATER LEVEL STRUCTURE AND 15" HDPE DUAL-WALLED OUTLET PIPE FOR WETLAND #1

SCALE 1" = 6'

X-SECTION A-A OF ROCK RIPRAP PLACEMENT

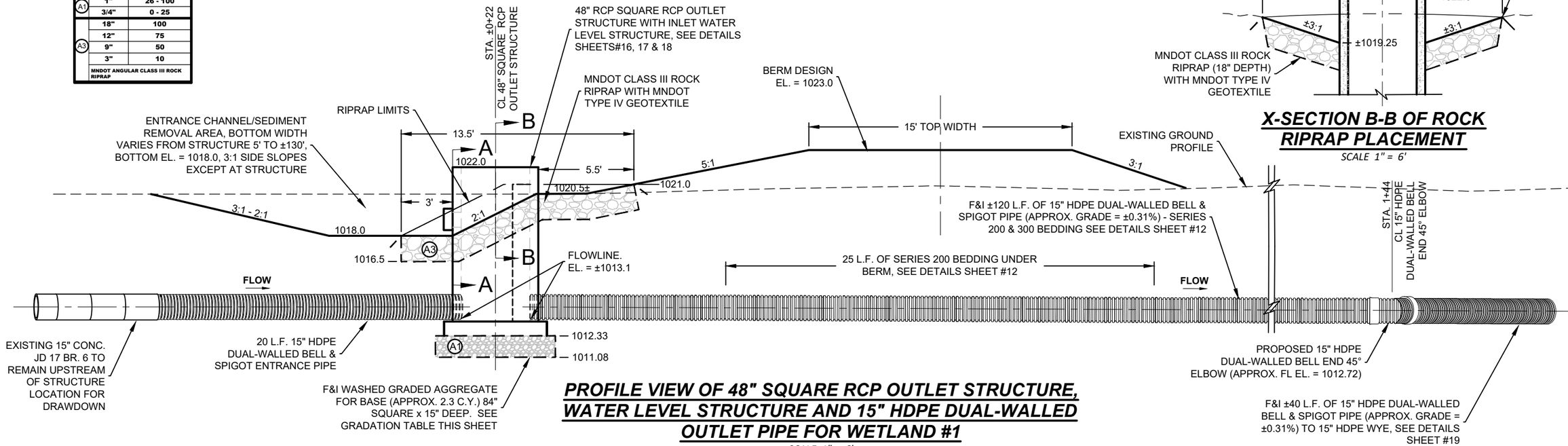
SCALE 1" = 6'



X-SECTION B-B OF ROCK RIPRAP PLACEMENT

SCALE 1" = 6'

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
A3	18"	100
	12"	75
	9"	50
	3"	10
	MNDOT ANGULAR CLASS III ROCK RIPRAP	



PROFILE VIEW OF 48" SQUARE RCP OUTLET STRUCTURE, WATER LEVEL STRUCTURE AND 15" HDPE DUAL-WALLED OUTLET PIPE FOR WETLAND #1

SCALE 1" = 6'

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

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

PROJECT #: 2021-203

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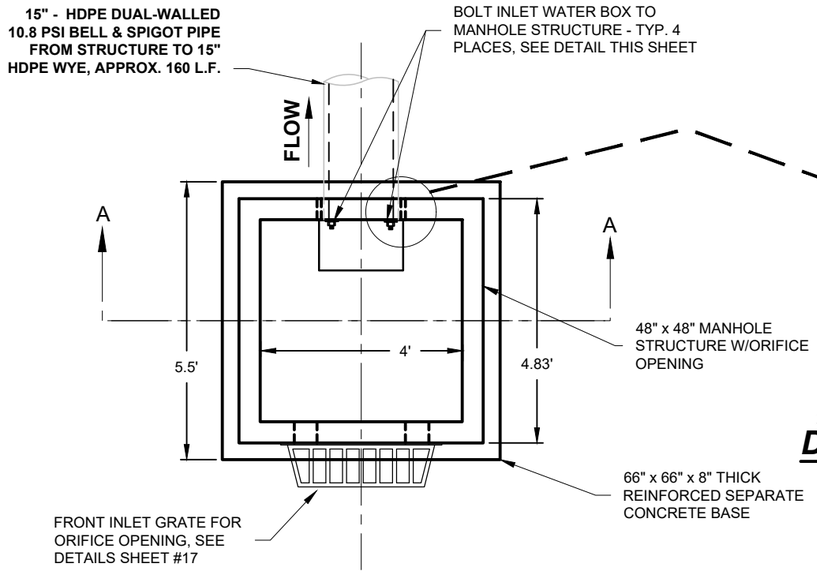
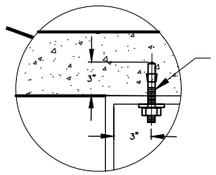
PLOT DATE: 5/20/2024 12:47 PM \\edc1adminfs01\bwsr\home\jluniewski\Desktop\New Banking Projects\2021-203 - Morgan\2021-203\2021-203 Design.dwg



TOP VIEW OF 48" SQUARE RCP STRUCTURE FOR WETLAND #1 (RAISED POND SKIMMER GRATE NOT SHOWN)

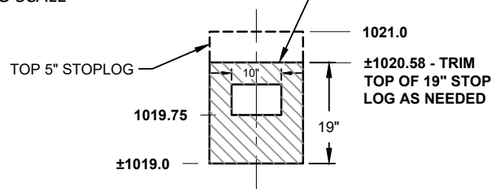
SCALE 1" = 3'



½" X 5" STAINLESS STEEL STUD ANCHORS W/3" x 3" PLATE WASHERS (4 REQ'D) SEE ANCHOR NOTE SHEET #17

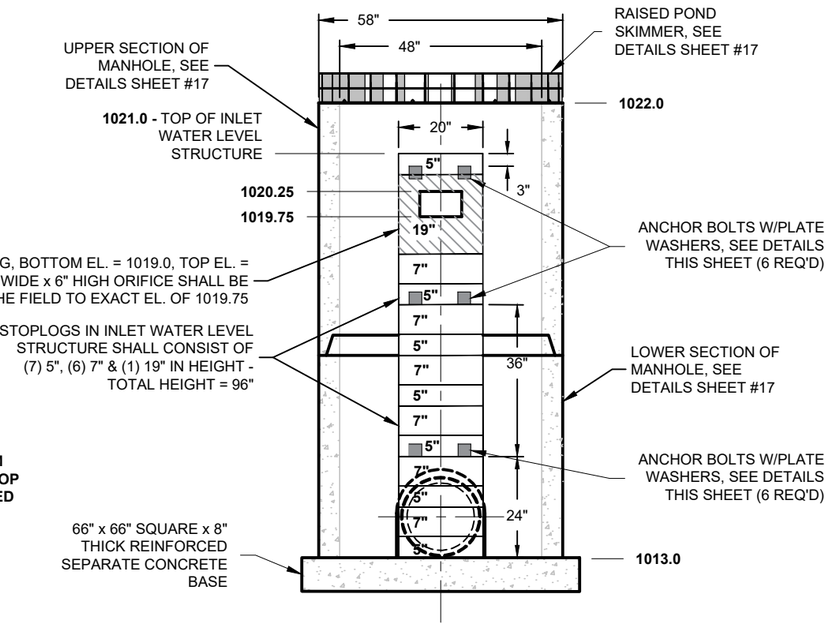
TOP VIEW - ANCHOR BOLT DETAIL (4-REQ'D)

NOT TO SCALE



19" STOPLOG, BOTTOM EL. = 1019.0, TOP EL. = 1020.58. 10" WIDE x 6" HIGH ORIFICE SHALL BE CUT IN THE FIELD TO EXACT EL. OF 1019.75

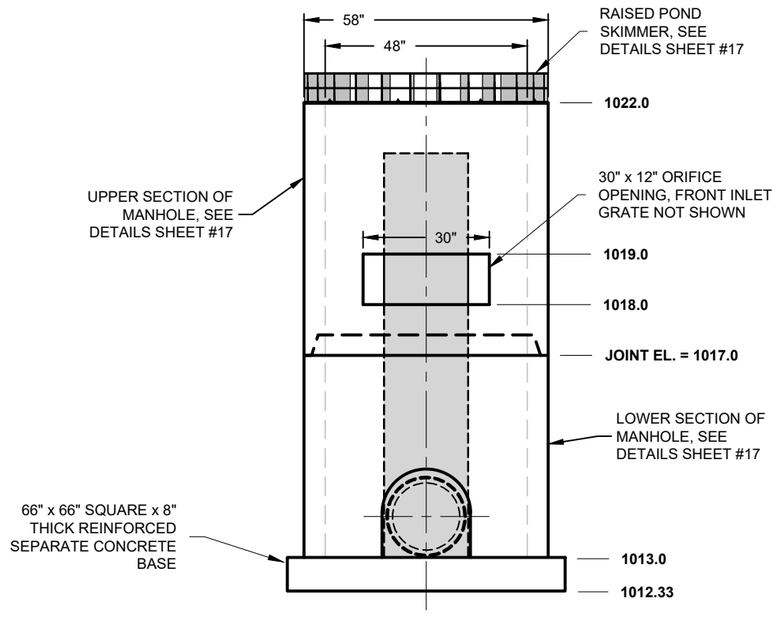
DETAIL OF 19" STOPLOG



SECTION A-A OF 48" SQUARE RCP STRUCTURE FOR WETLAND #1

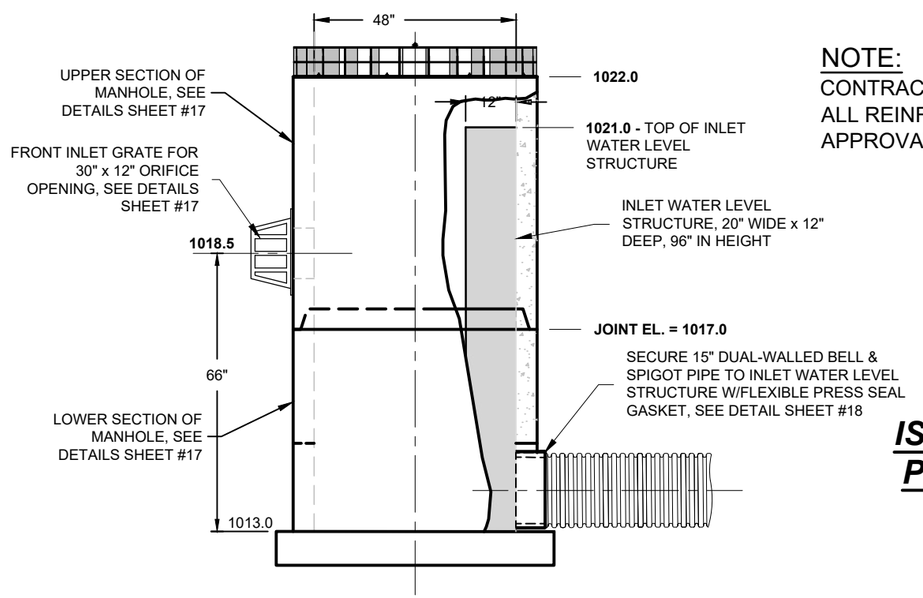
SCALE 1" = 3'

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



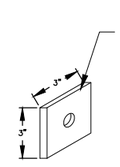
FRONT VIEW OF 48" SQUARE RCP STRUCTURE FOR WETLAND #1

SCALE 1" = 3'



SIDE VIEW OF 48" SQUARE RCP STRUCTURE FOR WETLAND #1

SCALE 1" = 3'



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

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

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

PROJECT #: 2021-203

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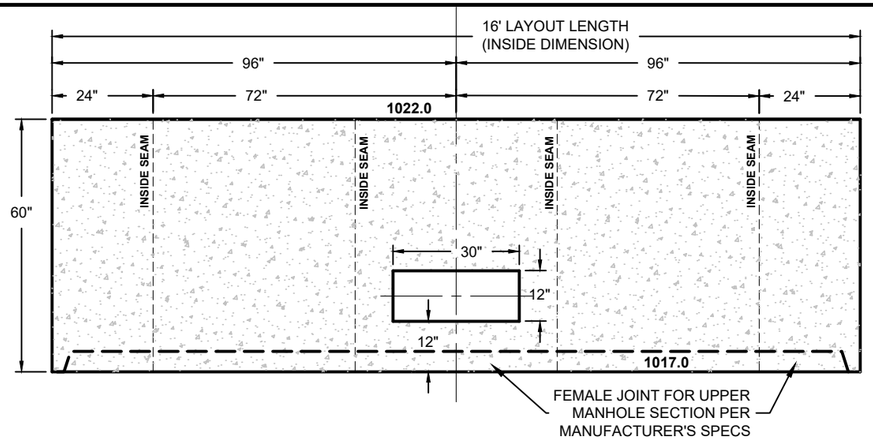
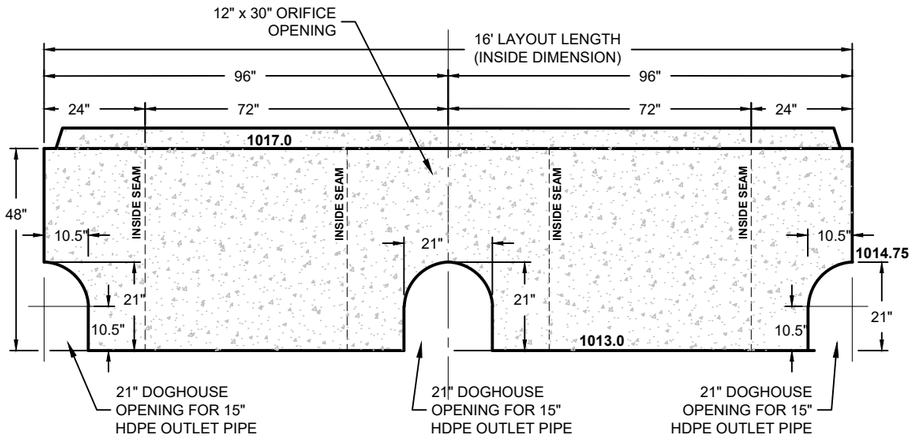


DETAILS OF OPENINGS IN UPPER SECTION FOR 48" SQUARE RCP OUTLET STRUCTURE FOR WETLAND #1

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:

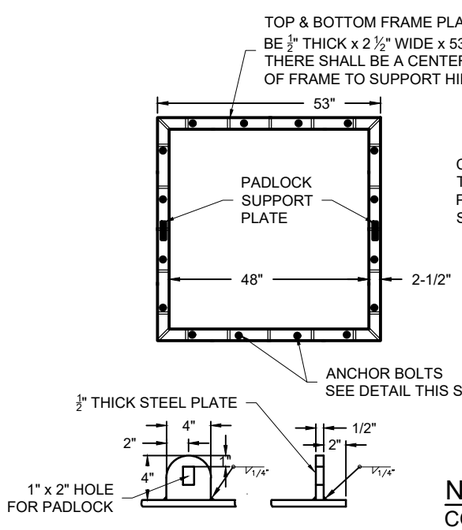
1) THE CONTRACTOR SHALL FOLLOW STEPS LISTED BELOW WHEN INSTALLING STAINLESS STEEL ANCHOR BOLTS. THE COST OF SUCH SHALL BE CONSIDERED "INCIDENTAL" TO STRUCTURE.

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.

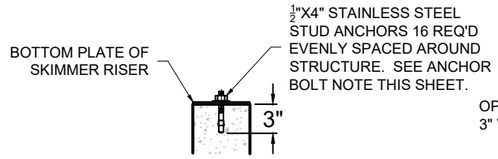
4) "RED HEAD" EPOXY OR OTHER ENGINEER APPROVED EPOXY ADHESIVE SHALL BE PLACED IN HOLE PRIOR TO SETTING ANCHORS. CONTRACTOR WILL USE EPOXY IN EVERY LOCATION OF STAINLESS STEEL ANCHOR BOLTS. (AVAILABLE @ WWW.FASTENAL.COM)

5) ANCHOR NUTS SHALL BE TIGHTENED TO MANUFACTURER'S RECOMMENDED TORQUE SPECIFICATIONS.



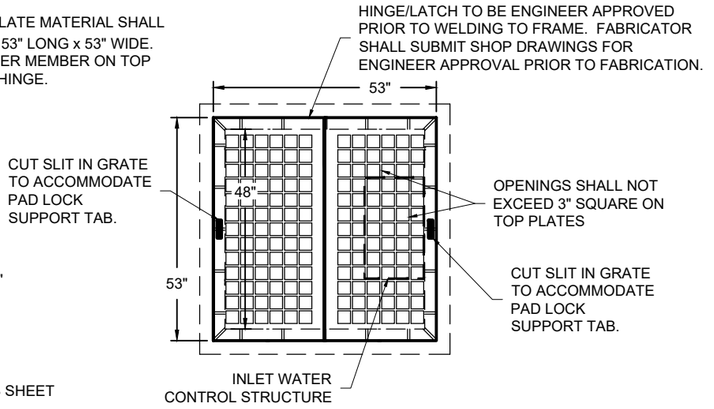
PADLOCK SUPPORT PLATE DETAIL

NOT TO SCALE (2) REQ'D



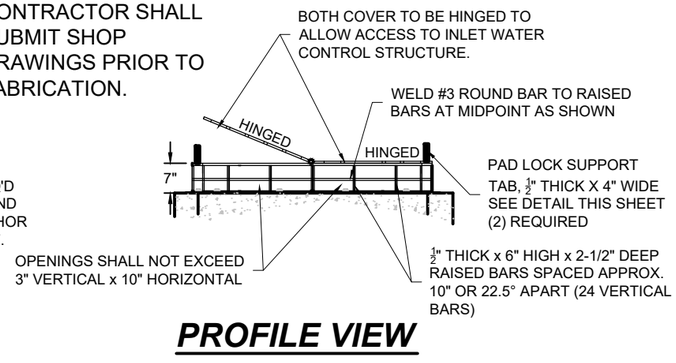
ANCHOR BOLT DETAIL

NOT TO SCALE



TOP VIEW

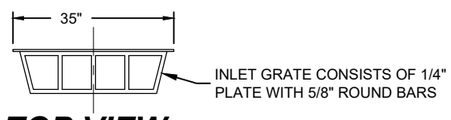
NOTE:
CONTRACTOR SHALL SUBMIT SHOP DRAWINGS PRIOR TO FABRICATION.



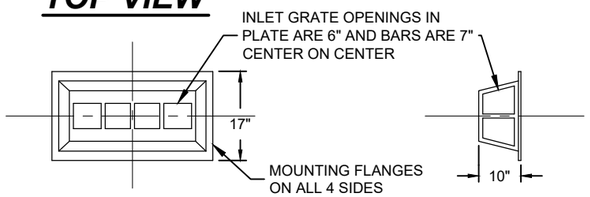
PROFILE VIEW

RAISED POND SKIMMER GRATE FOR 48" SQUARE RCP OUTLET STRUCTURE FOR WETLAND #1

SCALE 1" = 3'



TOP VIEW



FRONT VIEW

PROFILE VIEW

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

INLET GRATE SHALL BE SECURED TO 48" PRECAST STRUCTURE USING ½"x 4" STAINLESS STEEL STUD ANCHORS. SEE ANCHOR BOLT NOTE THIS SHEET.

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

SCALE 1" = 3'

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

PROJECT #:
2021-203

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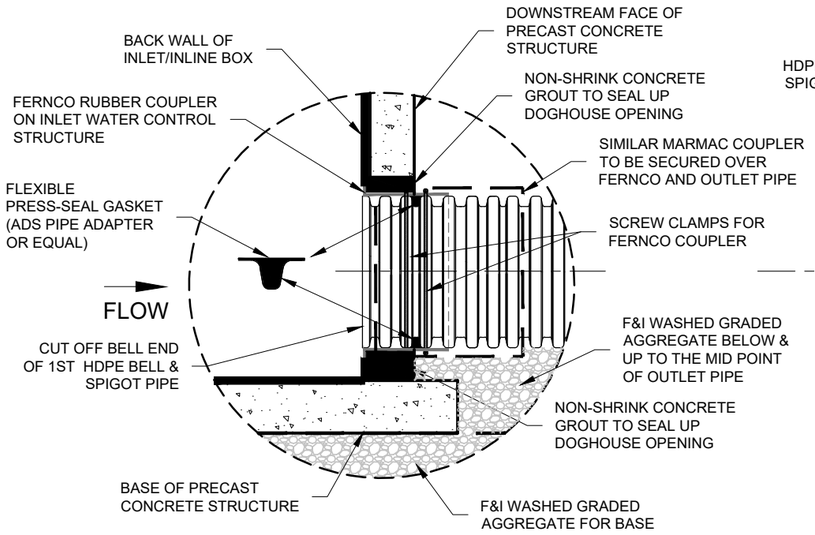
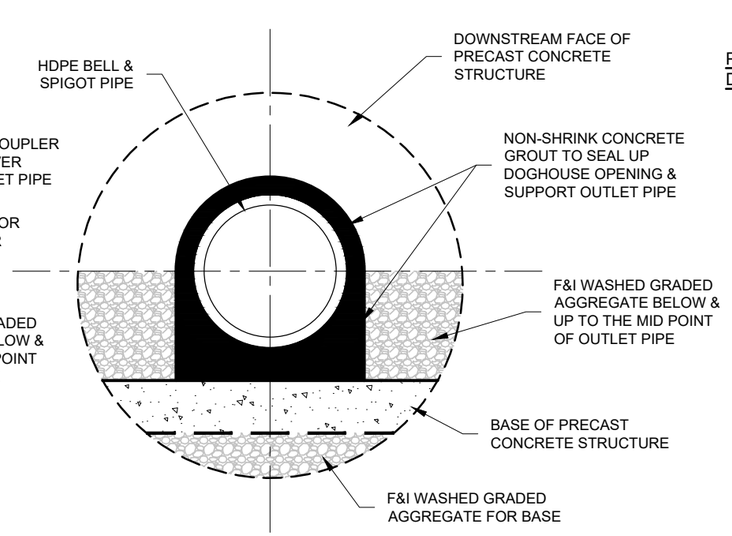
17 OF 21



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 INLINE/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

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 — LIC. NO. 22148 — DATE: 5/20/24

BWSR

MORGAN - REDWOOD COUNTY

ROAD BANKING WETLAND RESTORATION

OUTLET STRUCTURE DETAILS FOR WETLAND 1

PROJECT #: **2021-203**

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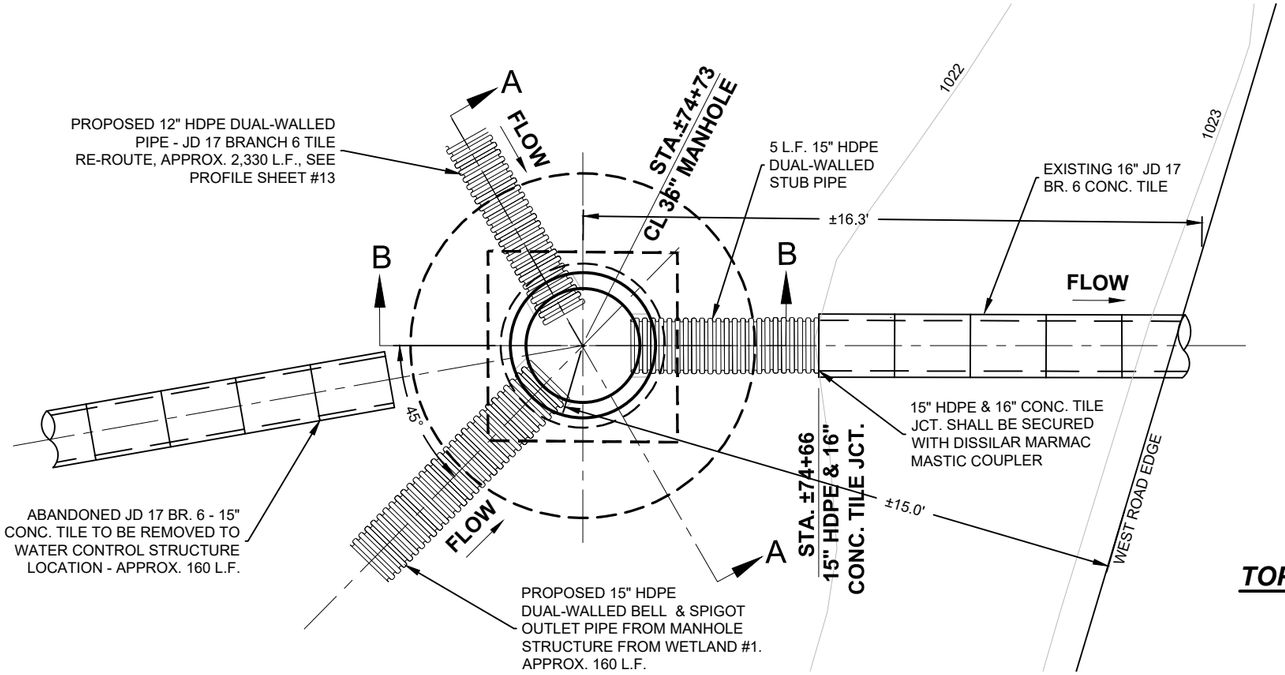
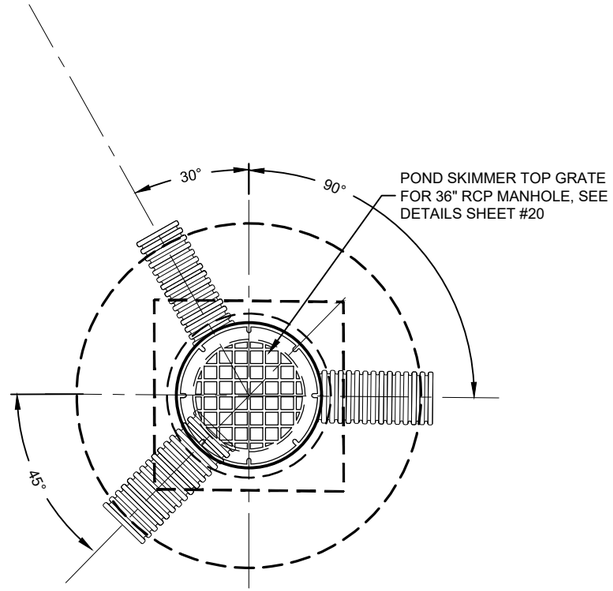


TOP VIEW OF 36" DIA. PRECAST CONCRETE COLLECTION MANHOLE (RIPRAP & COVER NOT SHOWN)

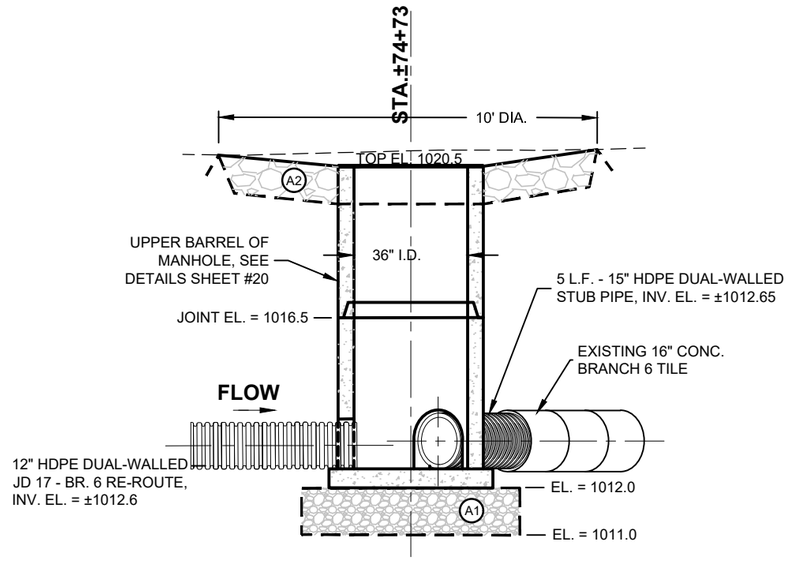
SCALE 1" = 4'



TOP VIEW W/TOP GRATE OF 36" DIA. PRECAST CONCRETE COLLECTION MANHOLE (RIPRAP NOT SHOWN)

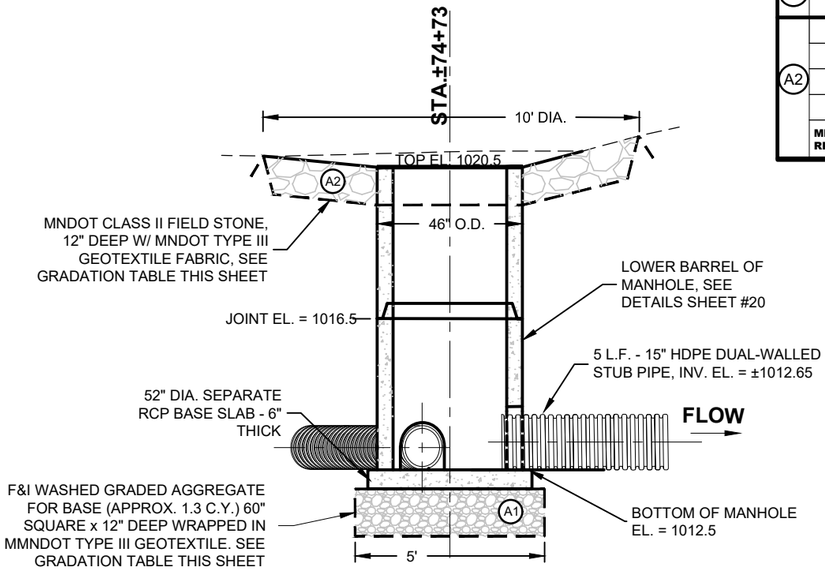
SCALE 1" = 4'

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	



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'

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

BWSR

MORGAN - REDWOOD COUNTY
ROAD BANKING WETLAND RESTORATION
COLLECTION MANHOLE DETAILS

PROJECT #: 2021-203

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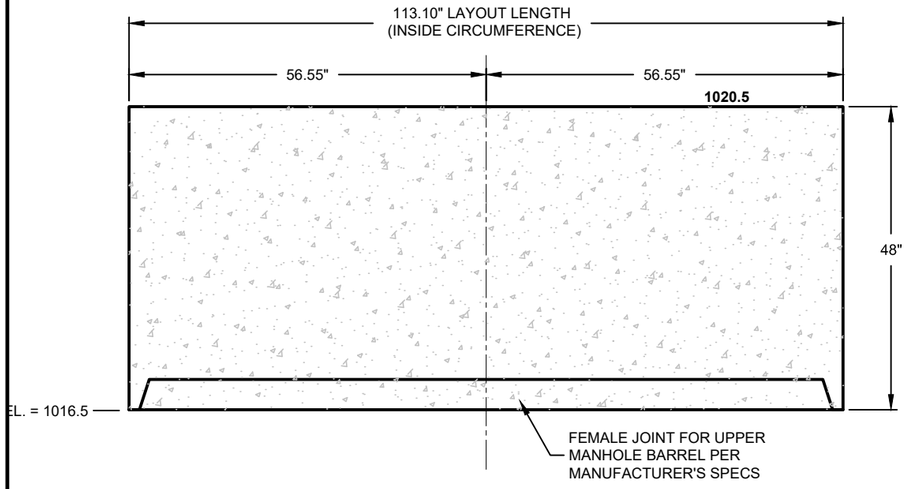
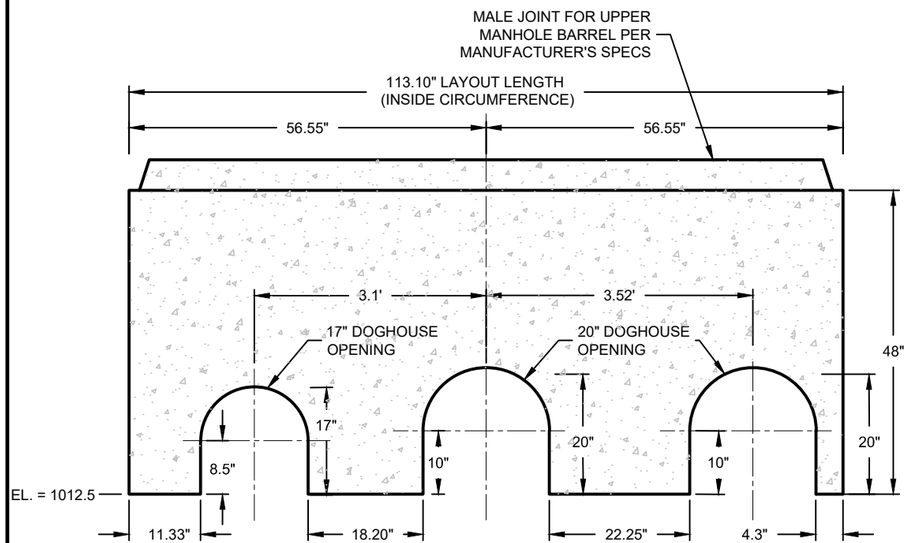


DETAILS OF UPPER BARREL OF 36" DIA. PRECAST CONCRETE COLLECTION MANHOLE

SCALE 1" = 2'



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

SCALE 1" = 2'

STAINLESS STEEL ANCHOR BOLT NOTE:

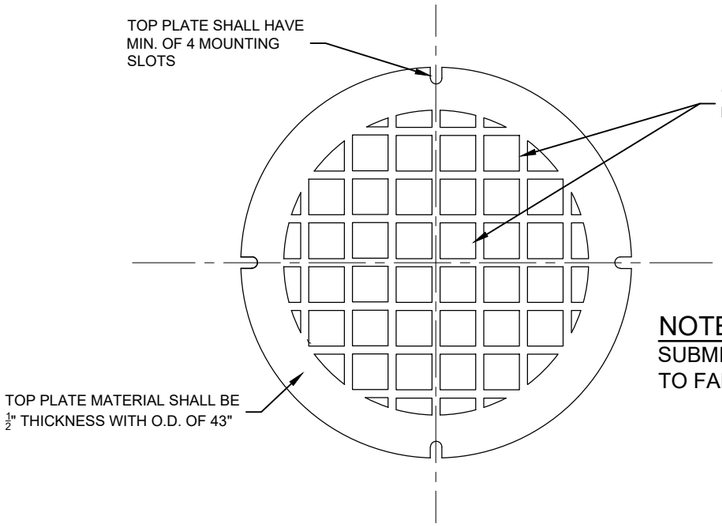
1) THE CONTRACTOR SHALL FOLLOW STEPS LISTED BELOW WHEN INSTALLING STAINLESS STEEL ANCHOR BOLTS. THE COST OF SUCH SHALL BE CONSIDERED "INCIDENTAL" TO STRUCTURE.

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.

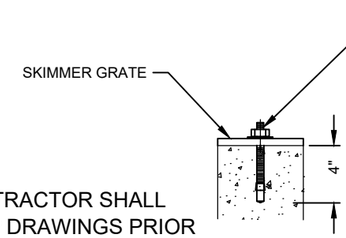
4) "RED HEAD" EPOXY OR OTHER ENGINEER APPROVED EPOXY ADHESIVE SHALL BE PLACED IN HOLE PRIOR TO SETTING ANCHORS. CONTRACTOR WILL USE EPOXY IN EVERY LOCATION OF STAINLESS STEEL ANCHOR BOLTS. (AVAILABLE @ WWW.FASTENAL.COM)

5) ANCHOR NUTS SHALL BE TIGHTENED TO MANUFACTURER'S RECOMMENDED TORQUE SPECIFICATIONS.



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

NOT TO SCALE



NOTE: CONTRACTOR SHALL SUBMIT SHOP DRAWINGS PRIOR TO FABRICATION.

ANCHOR BOLT DETAIL

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 LIC. NO. 22148

BWSR

MORGAN - REDWOOD COUNTY
ROAD BANKING WETLAND RESTORATION
COLLECTION MANHOLE DETAILS

PROJECT #:
2021-203

SHEET NO.
20 OF 21

DRAINAGE SYSTEM OUTLETS - DESIGN TABLE

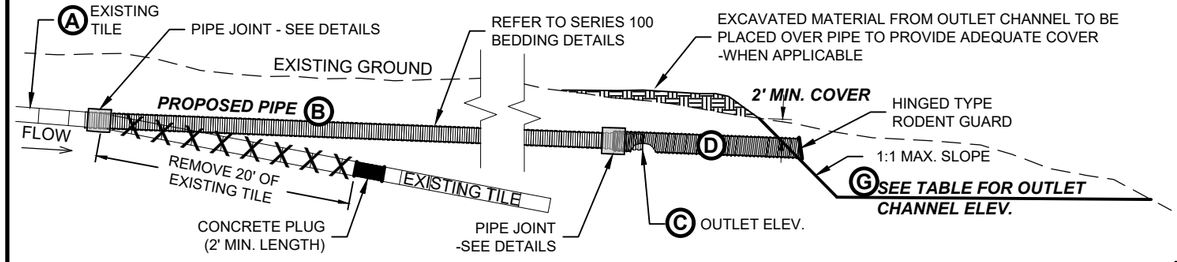
LOCATION	EXISTING TILE (A)		PROPOSED PIPE (B)					OUTLET ELEV. (C)	SLEEVE (D)	RIPRAP (E)	OUTLET CHANNEL (F)			
	DIA. (IN)	VERIFIED (Y/N)	MATERIAL	DIA. (IN)	APPROX. LENGTH (FEET) PERF.	APPROX. LENGTH (FEET) NON-PERF	PLANNED GRADE (%)		REQ'D (Y/N)	REQ'D (Y/N)	REQ'D (Y/N)	CHANNEL ELEV. (G)	EST. LENGTH (FEET)	EST. QTY. (C.Y.)
#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 JUNCTIONS, TILE PLUG/SEAL, CMP SLEEVE AND RODENT GUARD, RIPRAP (IF REQUIRED), AND EXCAVATED OUTLET CHANNEL (IF REQUIRED)

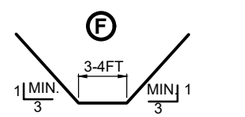
DIAMETER (SIZE) OF CMP SLEEVE (D) WILL BE DEPENDANT ON CONTRACTOR'S CHOICE OF PIPE JOINT TYPE THAT WILL BE USED.

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.



DRAINAGE SYSTEM OUTLET PROFILE

NOT TO SCALE



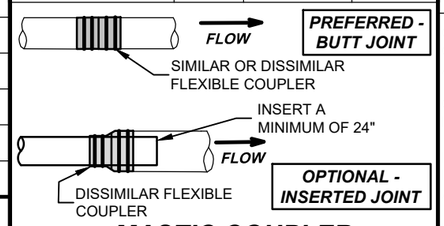
EXCAVATE OUTLET CHANNEL WHEN REQUIRED IN DESIGN TABLE

EXCAVATED OUTLET CHANNEL DETAIL

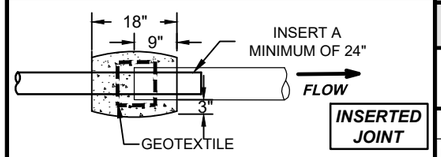
NOT TO SCALE

PIPE JOINT DETAILS

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



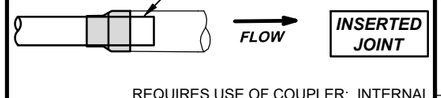
MASTIC COUPLER

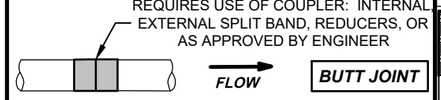


WRAP JOINT WITH GEOTEXTILE FABRIC AND SECURE

ENSURE CONCRETE ENCOMPASSES ENTIRE JOINT AS SHOWN

CONCRETE COLLAR





SECURELY WRAP WITH TILE TAPE EXTENDING SEVERAL INCHES ONTO EACH PIPE

TILE TAPE

(D) CMP SLEEVE DETAILS

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

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

CONTRACTOR TO DETERMINE CMP SLEEVE DIAMETER FROM JOINT TYPE SELECTED

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

REFER TO SPECIFICATION 2.310 - CORRUGATED METAL PIPE

(E) 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.

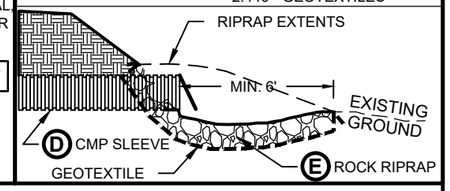
INSTALL RIPRAP/GEOTEXTILE WHEN REQUIRED IN DESIGN TABLE

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 D_{100}

REFER TO SPECIFICATIONS: 2.410 - RIPRAP
2.440 - GEOTEXTILES

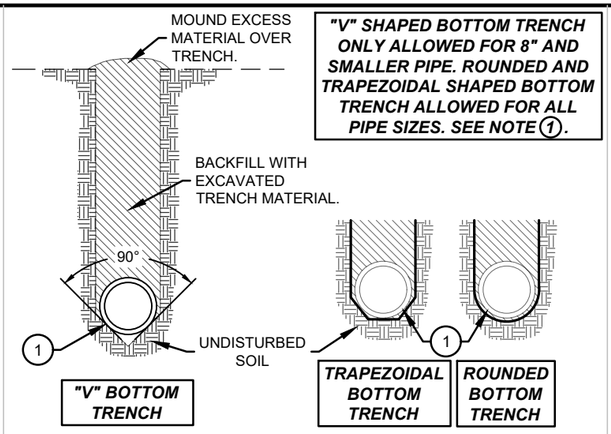


SERIES 100 BEDDING DETAILS

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.



BEDDING DETAIL - 101

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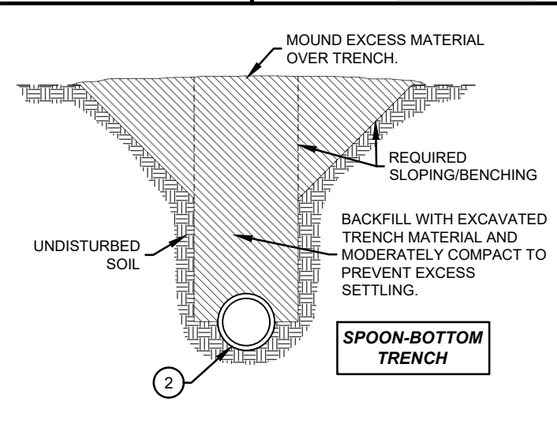

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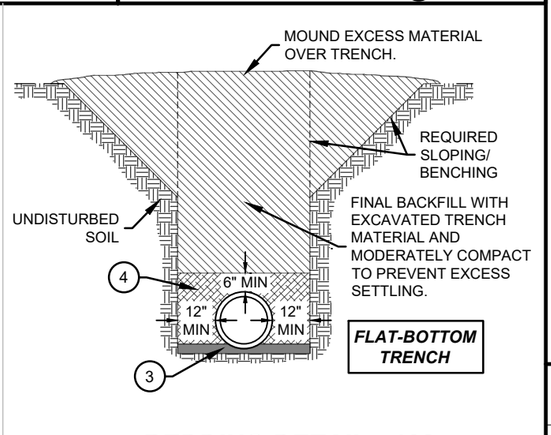

BEDDING DETAIL - 103

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

BWSR

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

PROJECT #: 2021-203

SHEET NO. 21 OF 21